Redfish Resource and Schema Guide

CONTENTS

1 Overview

The Redfish standard comprises a set of specifications maintained by the Redfish Forum, a working group within the DMTF. The standard defines a protocol that uses RESTful interfaces to provide access to data and operations associated with the management of systems and networks. One of the strengths of the Redfish protocol is that it works with a wide range of servers: from stand-alone servers to rack-mount and bladed environments to large-scale data centers and cloud environments.

The Redfish standard addresses several key issues for infrastructures that require scalability. Large infrastructures often consist of many simple servers of different makes and types. This hyper-scale usage model requires a new approach to systems management. The Redfish protocol addresses these needs by providing a standard protocol based on out-of-band systems management.

With these goals in mind, the Redfish protocol was designed as an open-industry standard to meet scalability requirements in multi-vendor deployments. It easily integrates with commonly used tools, using RESTful interfaces to perform operations and using JSON and OData formats for data payloads.

1.1 Who should read this document?

This document is useful to people who want to understand how to use the Redfish API. This includes application developers who want to create client-side software to communicate with a Redfish Service, and other consumers of the API.

1.2 How can I provide feedback?

Feedback on all Redfish specifications and documents is encouraged. Feedback can be directed to the DMTF and the Redfish Forum by the following means:

- **Redfish User Forum:** http://www.redfishforum.com User forum monitored by DMTF Redfish Forum personnel to answer questions about any Redfish-related topics.
- **DMTF Feedback Portal:** https://www.dmtf.org/standards/feedback Formal submission portal for enhancements or proposals to the DMTF and Redfish Forum.

1.3 Where can I find more information?

These web sites provide more information about the Redfish standard:

- **Redfish Developer Hub:** http://redfish.dmtf.org Resources for developers building applications using Redfish. An interactive schema explorer, hosted schema and other links.
- **Redfish User Forum:** http://www.redfishforum.com User forum monitored by DMTF Redfish personnel to

answer questions about any Redfish-related topics:

- **DMTF Github Repositories:** http://www.github.com/DMTF Open source tools and libraries for working with Redfish.

- **Redfish Standards:** http://www.dmtf.org/standards/redfish Schemas, specs, mockups, white papers, FAQ, educational material and more.

- **DMTF Redfish Forum** (Working group that maintains the Redfish standard): http://www.dmtf.org/standards/spmf Companies involved, upcoming schedules and future work, charter, and information about joining.

2 Using this guide

Every Redfish response consists of a JSON payload containing properties that are strictly defined by a schema for that Resource. The schema defining a particular Resource can be determined from the value of the "@odata.type" property returned in every Redfish response. This guide details the definitions for every Redfish standard schema.

Each schema section contains:

- The schema's name, its current version, and description.
- The schema release history, which lists each minor schema version and the DSP8010 release bundle that includes it.
- The list of URIs where schema-defined Resources appear in a Redfish Service v1.6 and later. For more information, see URI listings.
- The table of properties, which includes additional property details, when available.
- The list of available schema-defined actions.
- The example schema-defined JSON payload for a Resource.

The property-level details include:

Column	Purpose
Property name	The case-sensitive name of the JSON property as it appears in the JSON payload. Lists the schema version in parentheses when properties were added to or deprecated in the schema after the initial v1.0.0 release.
Type	The JSON data types for the property, which can include boolean, number, string, or object. The `string (enum)` tag identifies enumerated strings. Number types that use units specify the units.
Attributes	Designates whether: • The property is read-only or read-write, if supported by the implementation. • The service might return a `null` value if the property value is temporarily unavailable.

Column	Purpose
Description	The normative description of the property, as copied directly from the schema `LongDescription` definition.

2.1 URI listings

The Redfish Specification v1.6.0 added mandatory OpenAPI Specification v3.0 support. As part of this support, the URIs for every Redfish Resource are defined to appear at known, fixed locations. Resource Collections also appear at fixed locations, with the members of each collection appearing at URIs constructed by using a fixed path structure, with appropriate path segments equal to the value of Id properties of members along the path.

To determine support for v1.6.0 and OpenAPI, compare the RedfishVersion property value in the Service root (`\redfish\v1\`). Services that report a `1.6.0` or greater value, such as `1.6.1` or `1.7.0` , adhere to the URI definitions shown.

The URI listings do not apply to Redfish Services that report support of versions earlier than Specification v1.6.0. For those Services, clients must use the API's hypermedia features to discover links from the Service root to each Resource. While Services typically match the URIs listed in this documents for many of their Resources, this is not guaranteed and results in errors.

3 Common properties

3.1 Properties that all Redfish schemas define

The following properties are defined for inclusion in every Redfish schema, and therefore may be encountered in any response payload. They are documented in this guide to avoid repetition in the Reference Guide property tables. Note that several of these properties are payload annotations, but appear in this guide because they are required for all Redfish Resources.

3.1.1 Properties

Property	Type	Attributes	Notes
@odata.context	string (URI)	read-only	The URL to a metadata document with a fragment that describes the data, which is typically rooted at the top-level singleton or collection. Technically, the metadata document has to only define, or reference, any of the types that it directly uses, and different payloads could reference different metadata documents. However, because this property provides a root URL for resolving a relative reference, such as `@odata.id`, the API returns the canonical metadata document.
@odata.etag	string	read-only	The current ETag for the Resource.
@odata.id	string (URI)	read-only required	The unique ID for the Resource.
@odata.type	string	read-only required	The type of a resource.
Description	string	read-only	The human-readable description for the Resource.
Id	string	read-only	The ID that uniquely identifies the Resource within the collection that contains it. This value is unique within a collection.
Name	string	read-only required	The human-readable moniker for a Resource. The type is string. The value is NOT necessarily unique across Resource instances within a collection.
Oem {}	object		The manufacturer- or provider-specific extension moniker that divides the `Oem` object into sections.

3.2 Frequently used properties

In addition, the following properties are frequently defined in Redfish schemas. Their definition and usage is the same throughout the Redfish data model.

3.2.1 Properties

Property	Type	Attributes	Notes
Actions {}	object		The Redfish actions available for this Resource.
Links {}	object		The links associated with the Resource, as defined by that Resource's schema definition. All associated reference properties defined for a Resource are nested under the Links property. Find all directly referenced, or subordinate, Resource properties from the root of the Resource.
RelatedItem [{	array		An array of links. Each link points to a Resource or part of a Resource as defined by that Resource's schema. This representation is not intended to be a strong linking methodology like other references. Instead, it shows a relationship between elements or subelements in disparate parts of the service. For example, fans might be in one area of the system and processors in another. The relationship between the two might not be obvious. This property can show that one is related to the other. In this example, it might indicate that a specific fan cools a specific processor.
@odata.id	string (URI)	*read-only*	The unique identifier for a resource.
}]			

3.3 Payload annotations

Payload annotations enable a Service to provide additional information about a property or object. Redfish limits usage of these annotations to OData core terms, Redfish extensions, or Redfish messages.

3.3.1 Property-level annotations

A payload annotation for a single property takes the form of an additional property:

```
Property@Schema.Term
```

where

Variable	Description
Property	The JSON property being annotated.

Variable	Description
`Schema`	The schema file that contains the definition for the annotation.
`Term`	The name of the annotation.

3.3.2 Properties

Property	Type	Attributes	Notes
@Message.ExtendedInfo {}	object		The additional information for a set of message structures for a property. These messages can be useful when a property is `null` due to an error condition and the service wants to convey why the property is `null` .
@odata.count	integer	*read-only*	The number of items in a collection.
@Redfish.AllowableValues [ ]	array (string)	*read-only*	The string values that a service accepts for a property or action parameter.

In this example, the ResetType property is annotated with the AllowableValues term, which the Redfish schema defines. Redfish is an alias for RedfishExtensions. This code indicates to the client that the Service supports the `On` and `ForceOff` values for ResetType.

```
{
    "ResetType@Redfish.AllowableValues": [
        "On",
        "ForceOff"
    ]
}
```

3.3.3 Resource or object-level annotations

A payload annotation for an entire Resource or a JSON object takes the `@Schema.Term` form, where `Namespace` is the schema file where the definition is found and `Term` is the name of the Annotation. These payload annotations are used to provide further information about the object itself.

3.3.4 Properties

Property	Type	Attributes	Notes
@Redfish.ActionInfo	string (URI)	*read-only*	The URI to an ActionInfo Resource, which describes the parameters that this Action instance supports.
@Redfish.CollectionCapabilities {}	object		The reference to the Resource that represents the POST capabilities of a collection. For property details, see CollectionCapabilities.
@Redfish.MaintenanceWindow {}	object		The maintenance window configuration that defines when to apply settings or operations to a Resource. For property details, see MaintenanceWindow.
@Redfish.OperationApplyTime	string (enum)	*read-write*	The client's requested apply time to complete a create, delete, or action operation. *For the possible property values, see @Redfish.OperationApplyTime in Property details.*
@Redfish.OperationApplyTimeSupport {}	object		An indication of whether a client can request a specific apply time for a create, delete, or action operation for a Resource through the OperationApplyTime term. For property details, see OperationApplyTimeSupport.
@Redfish.Settings {}	object		The reference to the Resource that represents the settings to apply to this object. For property details, see Settings.
@Redfish.SettingsApplyTime {}	object		The configuration settings that define when to apply the settings to a Resource. For property details, see PreferredApplyTime.

3.3.5 Property details

3.3.5.1 @Redfish.OperationApplyTime:

The client's requested apply time to complete a create, delete, or action operation.

string	Description
AtMaintenanceWindowStart	The requested operation is applied within the administrator-specified maintenance window.
Immediate	The requested operation is applied immediately.
InMaintenanceWindowOnReset	The requested operation is applied after a reset but within the administrator-specified maintenance window.
OnReset	The requested operation is applied on a reset.
OnStartUpdateRequest	The requested operation is applied when the StartUpdate action of the update service is invoked.

This example annotates the object with the Redfish schema-defined ActionInfo term. Redfish is an alias for RedfishExtensions. This term indicates that the client can find more information about the `#ComputerSystem.Reset` action at the `/redfish/v1/Systems/1/ResetActionInfo` URI:

```json
{
    "#ComputerSystem.Reset": {
        "target": "/redfish/v1/Systems/1/Actions/ComputerSystem.Reset",
        "@Redfish.ActionInfo": "/redfish/v1/Systems/1/ResetActionInfo"
    }
}
```

4 Common objects

Redfish schemas frequently define the following JSON objects. Like the individual common properties listed above, these objects share a common definition that is shown here to avoid repetition in the Reference Guide property tables.

4.1 Actions

The Actions object contains descriptions of the defined and available actions for this Resource.

4.1.1 Properties

Property	Type	Attributes	Notes
#{action name} {	object		A single Redfish action.
@Redfish.ActionInfo	string	*read-only*	The URI for an ActionInfo Resource that describes this action.
target	string	*read-only*	The target URI for the POST operation to invoke the action.
}			

4.2 Capacity

4.2.1 Description

This is the schema definition for the Capacity of a device. It represents the properties for capacity for any data store.

4.2.2 Properties

Property	Type	Attributes	Notes
Data {	object		The capacity information relating to the user data.
AllocatedBytes	integer (bytes)	*read-write (null)*	The number of bytes currently allocated by the storage system in this data store for this data type.
ConsumedBytes	integer (bytes)	*read-only (null)*	The number of bytes consumed in this data store for this data type.

Property	Type	Attributes	Notes
GuaranteedBytes	integer (bytes)	*read-write (null)*	The number of bytes the storage system guarantees can be allocated in this data store for this data type.
ProvisionedBytes	integer (bytes)	*read-write (null)*	The maximum number of bytes that can be allocated in this data store for this data type.
}			
IsThinProvisioned	boolean	*read-only (null)*	Marks that the capacity is not necessarily fully allocated.
Metadata {	object		The capacity information relating to metadata.
AllocatedBytes	integer (bytes)	*read-write (null)*	The number of bytes currently allocated by the storage system in this data store for this data type.
ConsumedBytes	integer (bytes)	*read-only (null)*	The number of bytes consumed in this data store for this data type.
GuaranteedBytes	integer (bytes)	*read-write (null)*	The number of bytes the storage system guarantees can be allocated in this data store for this data type.
ProvisionedBytes	integer (bytes)	*read-write (null)*	The maximum number of bytes that can be allocated in this data store for this data type.
}			
Snapshot {	object		The capacity information relating to snapshot or backup data.
AllocatedBytes	integer (bytes)	*read-write (null)*	The number of bytes currently allocated by the storage system in this data store for this data type.
ConsumedBytes	integer (bytes)	*read-only (null)*	The number of bytes consumed in this data store for this data type.
GuaranteedBytes	integer (bytes)	*read-write (null)*	The number of bytes the storage system guarantees can be allocated in this data store for this data type.
ProvisionedBytes	integer (bytes)	*read-write (null)*	The maximum number of bytes that can be allocated in this data store for this data type.
}			

4.3 Condition

4.3.1 Description

A condition that requires attention.

4.3.2 Properties

Property	Type	Attributes	Notes
LogEntry {	object		The link to the log entry created for this condition. See the *LogEntry* schema for details on this property.
@odata.id	string	*read-only*	Link to a LogEntry resource. See the Links section and the *LogEntry* schema for details.
}			
Message	string	*read-only*	The human-readable message for this condition.
MessageArgs [ ]	array (string)	*read-only*	An array of message arguments that are substituted for the arguments in the message when looked up in the message registry.
MessageId	string	*read-only required*	The identifier for the message.
OriginOfCondition {	object		A link to the resource or object that originated the condition.
@odata.id	string (URI)	*read-only*	The unique identifier for a resource.
}			
Resolution *(v1.14+)*	string	*read-only*	Suggestions on how to resolve the condition.
Severity	string (enum)	*read-only*	The severity of the condition. *For the possible property values, see Severity in Property details.*
Timestamp	string (date-time)	*read-only*	The time the condition occurred.

4.3.3 Property details

4.3.3.1 Severity:

The severity of the condition.

string	Description
Critical	A critical condition requires immediate attention.

string	Description
OK	Normal.
Warning	A condition requires attention.

4.4 Identifier

4.4.1 Description

Any additional identifiers for a resource.

4.4.2 Properties

Property	Type	Attributes	Notes
DurableName *(v1.1+)*	string	*read-only (null)*	The world-wide, persistent name of the resource.
DurableNameFormat *(v1.1+)*	string (enum)	*read-only (null)*	The format of the durable name property. *For the possible property values, see DurableNameFormat in Property details.*

4.4.3 Property details

4.4.3.1 DurableNameFormat:

The format of the durable name property.

string	Description
EUI	The IEEE-defined 64-bit Extended Unique Identifier (EUI).
FC_WWN	The Fibre Channel (FC) World Wide Name (WWN).
iQN	The iSCSI Qualified Name (iQN).
MACAddress *(v1.14+)*	The media access control address (MAC address).
NAA	The Name Address Authority (NAA) format.
NGUID *(v1.10+)*	The Namespace Globally Unique Identifier (NGUID).
NQN *(v1.6+)*	The NVMe Qualified Name (NQN).

string	Description
NSID *(v1.6+, deprecated v1.12)*	The NVM Namespace Identifier (NSID). *Deprecated in v1.12 and later. This value has been deprecated due to its non-uniqueness and* `NGUID` *should be used.*
UUID	The Universally Unique Identifier (UUID).

4.5 IOStatistics

4.5.1 Description

The properties of this type represent IO statistics.

4.5.2 Properties

Property	Type	Attributes	Notes
NonIORequests	integer ({tot})	*read-write (null)*	Count of non IO requests.
NonIORequestTime	string	*read-write (null)*	The time that the resource is busy processing write requests.
ReadHitIORequests	integer ({tot})	*read-write (null)*	Count of read IO requests satisfied from memory.
ReadIOKiBytes	integer (KiBy)	*read-write (null)*	Number of kibibytes read.
ReadIORequests	integer ({tot})	*read-write (null)*	Count of read IO requests.
ReadIORequestTime	string	*read-write (null)*	The time that the resource is busy processing read requests.
WriteHitIORequests	integer ({tot})	*read-write (null)*	Count of write IO requests coalesced into memory.
WriteIOKiBytes	integer (KiBy)	*read-write (null)*	Number of kibibytes written.
WriteIORequests	integer ({tot})	*read-write (null)*	Count of write IO requests.
WriteIORequestTime	string	*read-write (null)*	The time that the resource is busy processing write requests.

4.6 IPv4Address

4.6.1 Description

This type describes an IPv4 address.

4.6.2 Properties

Property	Type	Attributes	Notes
Address	string	*read-write (null)*	The IPv4 address.
AddressOrigin	string (enum)	*read-only (null)*	This indicates how the address was determined. *For the possible property values, see AddressOrigin in Property details.*
Gateway	string	*read-write (null)*	The IPv4 gateway for this address.
Oem {}	object		See the Oem object definition in the Common properties section.
SubnetMask	string	*read-write (null)*	The IPv4 subnet mask.

4.6.3 Property details

4.6.3.1 AddressOrigin:

This indicates how the address was determined.

string	Description
BOOTP	A BOOTP service-provided address.
DHCP	A DHCPv4 service-provided address.
IPv4LinkLocal	The address is valid for only this network segment, or link.
Static	A user-configured static address.

4.7 IPv6Address

4.7.1 Description

This type describes an IPv6 address.

4.7.2 Properties

Property	Type	Attributes	Notes
Address	string	*read-write (null)*	The IPv6 address.
AddressOrigin	string (enum)	*read-only (null)*	This indicates how the address was determined. *For the possible property values, see AddressOrigin in Property details.*
AddressState	string (enum)	*read-only (null)*	The current RFC4862-defined state of this address. *For the possible property values, see AddressState in Property details.*
Oem {}	object		See the Oem object definition in the Common properties section.
PrefixLength	integer	*read-only (null)*	The IPv6 address prefix Length.

4.7.3 Property details

4.7.3.1 AddressOrigin:

This indicates how the address was determined.

string	Description
DHCPv6	A DHCPv6 service-provided address.
LinkLocal	The address is valid for only this network segment, or link.
SLAAC	A stateless autoconfiguration (SLAAC) service-provided address.
Static	A static user-configured address.

4.7.3.2 AddressState:

The current RFC4862-defined state of this address.

string	Description
Deprecated	This address is currently within its valid lifetime but is now outside its RFC4862-defined preferred lifetime.
Failed	This address has failed Duplicate Address Detection (DAD) testing, as defined in RFC4862, section 5.4, and is not currently in use.
Preferred	This address is currently within both its RFC4862-defined valid and preferred lifetimes.
Tentative	This address is currently undergoing Duplicate Address Detection (DAD) testing, as defined in RFC4862, section 5.4.

4.8 IPv6GatewayStaticAddress

4.8.1 Description

This type represents a single IPv6 static address to be assigned on a network interface.

4.8.2 Properties

Property	Type	Attributes	Notes
Address *(v1.1+)*	string	*read-write required (null)*	A valid IPv6 address.
Oem *(v1.1+)* {}	object		See the Oem object definition in the Common properties section.
PrefixLength *(v1.1+)*	integer	*read-write (null)*	The IPv6 network prefix length, in bits, for this address.

4.9 IPv6StaticAddress

4.9.1 Description

This type represents a single IPv6 static address to be assigned on a network interface.

4.9.2 Properties

Property	Type	Attributes	Notes
Address	string	*read-write required (null)*	A valid IPv6 address.
Oem {}	object		See the Oem object definition in the Common properties section.
PrefixLength	integer	*read-write required (null)*	The prefix length, in bits, of this IPv6 address.

4.10 Location

4.10.1 Description

The location of a resource.

4.10.2 Properties

Property	Type	Attributes	Notes
AltitudeMeters *(v1.6+)*	number (meters)	*read-write (null)*	The altitude of the resource in meters.
Contacts *(v1.7+)* [{	array		An array of contact information.
ContactName *(v1.7+)*	string	*read-write (null)*	Name of this contact.
EmailAddress *(v1.7+)*	string	*read-write (null)*	Email address for this contact.
PhoneNumber *(v1.7+)*	string	*read-write (null)*	Phone number for this contact.
}]			
Info *(v1.1+, deprecated v1.5*	string	*read-only (null)*	The location of the resource. *Deprecated in v1.5 and later. This property has been deprecated in favor of the PostalAddress, Placement, and PartLocation properties.*

Property	Type	Attributes	Notes
InfoFormat *(v1.1+, deprecated v1.5*	string	*read-only (null)*	The format of the Info property. *Deprecated in v1.5 and later. This property has been deprecated in favor of the PostalAddress, Placement, and PartLocation properties.*
Latitude *(v1.6+)*	number (deg)	*read-write (null)*	The latitude of the resource.
Longitude *(v1.6+)*	number (deg)	*read-write (null)*	The longitude of the resource in degrees.
Oem *(v1.1+)* {	object		See the Oem object definition in the Common properties section.
(pattern) {}	object		Property names follow regular expression pattern "^[A-Za-z0-9_]+$"
}			
PartLocation *(v1.5+)* {	object		The part location for a resource within an enclosure.
LocationOrdinalValue *(v1.5+)*	integer	*read-only (null)*	The number that represents the location of the part. For example, if LocationType is `Slot` and this unit is in slot 2, the LocationOrdinalValue is `2` .
LocationType *(v1.5+)*	string (enum)	*read-only (null)*	The type of location of the part. *For the possible property values, see LocationType in Property details.*
Orientation *(v1.5+)*	string (enum)	*read-only (null)*	The orientation for the ordering of the slot enumeration used by the LocationOrdinalValue property. *For the possible property values, see Orientation in Property details.*
Reference *(v1.5+)*	string (enum)	*read-only (null)*	The reference point for the part location. Provides guidance about the general location of the part. *For the possible property values, see Reference in Property details.*
ServiceLabel *(v1.5+)*	string	*read-only (null)*	The label of the part location, such as a silk-screened name or a printed label.
}			
Placement *(v1.3+)* {	object		A place within the addressed location.
AdditionalInfo *(v1.7+)*	string	*read-write (null)*	Area designation or other additional info.
Rack *(v1.3+)*	string	*read-write (null)*	The name of a rack location within a row.
RackOffset *(v1.3+)*	integer	*read-write (null)*	The vertical location of the item, in terms of RackOffsetUnits.
RackOffsetUnits *(v1.3+)*	string (enum)	*read-write (null)*	The type of rack units in use. *For the possible property values, see RackOffsetUnits in Property details.*

Property	Type	Attributes	Notes
Row *(v1.3+)*	string	*read-write (null)*	The name of the row.
}			
PostalAddress *(v1.3+)* {	object		The postal address of the addressed resource.
AdditionalCode *(v1.3+)*	string	*read-write (null)*	The additional code.
AdditionalInfo *(v1.7+)*	string	*read-write (null)*	The room designation or other additional information.
Building *(v1.3+)*	string	*read-write (null)*	The name of the building.
City *(v1.3+)*	string	*read-write (null)*	City, township, or shi (JP).
Community *(v1.3+)*	string	*read-write (null)*	The postal community name.
Country *(v1.3+)*	string	*read-write (null)*	The country.
District *(v1.3+)*	string	*read-write (null)*	A county, parish, gun (JP), or district (IN).
Division *(v1.3+)*	string	*read-write (null)*	City division, borough, city district, ward, or chou (JP).
Floor *(v1.3+)*	string	*read-write (null)*	The floor.
GPSCoords *(v1.3+, deprecated v1.6*	string	*read-write (null)*	The GPS coordinates of the part. *Deprecated in v1.6 and later. This property has been deprecated in favor of the Longitude and Latitude properties.*
HouseNumber *(v1.3+)*	integer	*read-write (null)*	The numeric portion of house number.
HouseNumberSuffix *(v1.3+)*	string	*read-write (null)*	The house number suffix.
Landmark *(v1.3+)*	string	*read-write (null)*	The landmark.
LeadingStreetDirection *(v1.3+)*	string	*read-write (null)*	A leading street direction.
Location *(v1.3+, deprecated v1.7*	string	*read-write (null)*	The room designation or other additional information. *Deprecated in v1.7 and later. This property has been deprecated in favor of the AdditionalInfo property.*

Property	Type	Attributes	Notes
Name *(v1.3+)*	string	*read-write (null)*	The name.
Neighborhood *(v1.3+)*	string	*read-write (null)*	Neighborhood or block.
PlaceType *(v1.3+)*	string	*read-write (null)*	The description of the type of place that is addressed.
POBox *(v1.3+)*	string	*read-write (null)*	The post office box (PO box).
PostalCode *(v1.3+)*	string	*read-write (null)*	The postal code or zip code.
Road *(v1.3+)*	string	*read-write (null)*	The primary road or street.
RoadBranch *(v1.3+)*	string	*read-write (null)*	The road branch.
RoadPostModifier *(v1.3+)*	string	*read-write (null)*	The road post-modifier.
RoadPreModifier *(v1.3+)*	string	*read-write (null)*	The road pre-modifier.
RoadSection *(v1.3+)*	string	*read-write (null)*	The road section.
RoadSubBranch *(v1.3+)*	string	*read-write (null)*	The road sub branch.
Room *(v1.3+)*	string	*read-write (null)*	The name or number of the room.
Seat *(v1.3+)*	string	*read-write (null)*	The seat, such as the desk, cubicle, or workstation.
Street *(v1.3+)*	string	*read-write (null)*	Street name.
StreetSuffix *(v1.3+)*	string	*read-write (null)*	Avenue, Platz, Street, Circle.
Territory *(v1.3+)*	string	*read-write (null)*	A top-level subdivision within a country.
TrailingStreetSuffix *(v1.3+)*	string	*read-write (null)*	A trailing street suffix.

Property	Type	Attributes	Notes
Unit *(v1.3+)*	string	*read-write (null)*	The name or number of the apartment unit or suite.
}			

4.10.3 Property details

4.10.3.1 LocationType:

The type of location of the part.

string	Description
Backplane *(v1.12+)*	A backplane.
Bay	A bay.
Connector	A connector or port.
Embedded *(v1.13+)*	Embedded within a part.
Slot	A slot.
Socket	A socket.

4.10.3.2 Orientation:

The orientation for the ordering of the slot enumeration used by the LocationOrdinalValue property.

string	Description
BackToFront	The ordering for the LocationOrdinalValue is back to front.
BottomToTop	The ordering for LocationOrdinalValue is bottom to top.
FrontToBack	The ordering for LocationOrdinalValue is front to back.
LeftToRight	The ordering for the LocationOrdinalValue is left to right.
RightToLeft	The ordering for the LocationOrdinalValue is right to left.
TopToBottom	The ordering for the LocationOrdinalValue is top to bottom.

4.10.3.3 RackOffsetUnits:

The type of rack units in use.

string	Description
EIA_310	A rack unit that is equal to 1.75 in (44.45 mm).
OpenU	A rack unit that is equal to 48 mm (1.89 in).

4.10.3.4 Reference:

The reference point for the part location. Provides guidance about the general location of the part.

string	Description
Bottom	The part is in the bottom of the unit.
Front	The part is in the front of the unit.
Left	The part is on the left side of of the unit.
Middle	The part is in the middle of the unit.
Rear	The part is in the rear of the unit.
Right	The part is on the right side of the unit.
Top	The part is in the top of the unit.

4.11 Message

4.11.1 Description

The message that the Redfish service returns.

4.11.2 Properties

Property	Type	Attributes	Notes
Message	string	*read-only*	The human-readable message.

Property	Type	Attributes	Notes
MessageArgs [ ]	array (string)	*read-only*	An array of message arguments that are substituted for the arguments in the message when looked up in the message registry.
MessageId	string	*read-only required*	The identifier for the message.
MessageSeverity *(v1.1+)*	string (enum)	*read-only*	The severity of the message. *For the possible property values, see MessageSeverity in Property details.*
Oem {}	object		See the Oem object definition in the Common properties section.
RelatedProperties [ ]	array (string)	*read-only*	A set of properties described by the message.
Resolution	string	*read-only*	Used to provide suggestions on how to resolve the situation that caused the message.
Severity *(deprecated v1.1)*	string	*read-only*	The severity of the message. *Deprecated in v1.1 and later. This property has been deprecated in favor of MessageSeverity, which ties the values to the enumerations defined for the Health property within Status.*

4.11.3 Property details

4.11.3.1 MessageSeverity:

The severity of the message.

string	Description
Critical	A critical condition requires immediate attention.
OK	Normal.
Warning	A condition requires attention.

4.12 Redundancy

4.12.1 Description

The common redundancy definition and structure used in other Redfish schemas.

4.12.2 Properties

Property	Type	Attributes	Notes
@odata.id	string (URI)	read-only required	The unique identifier for a resource.
Actions *(v1.2+)* {}	object		The available actions for this resource.
MaxNumSupported	integer	read-only (null)	The maximum number of members allowable for this particular redundancy group.
MemberId	string	read-only required	The identifier for the member within the collection.
MinNumNeeded	integer	read-only required (null)	The minimum number of members needed for this group to be redundant.
Mode	string (enum)	read-write required (null)	The redundancy mode of the group. *For the possible property values, see Mode in Property details.*
Name	string	read-only required	The name of the resource or array member.
Oem {}	object		See the Oem object definition in the Common properties section.
RedundancyEnabled *(v1.1+)*	boolean	read-write (null)	An indication of whether redundancy is enabled.
RedundancySet [{	array	* required*	The links to components of this redundancy set.
@odata.id	string (URI)	read-only	The unique identifier for a resource.
}]			
Status {}	object	* required*	The status and health of the resource and its subordinate or dependent resources. For property details, see Status.

4.12.3 Property details

4.12.3.1 Mode:

The redundancy mode of the group.

string	Description
Failover	Failure of one unit automatically causes a standby or offline unit in the redundancy set to take over its functions.
N+m	Multiple units are available and active such that normal operation will continue if one or more units fail.
NotRedundant *(v1.3+)*	The subsystem is not configured in a redundancy mode, either due to configuration or the functionality has been disabled by the user.
Sharing	Multiple units contribute or share such that operation will continue, but at a reduced capacity, if one or more units fail.
Sparing	One or more spare units are available to take over the function of a failed unit, but takeover is not automatic.

4.13 RedundantGroup

4.13.1 Description

The redundancy information for the devices in a redundancy group.

4.13.2 Properties

Property	Type	Attributes	Notes
MaxSupportedInGroup *(v1.4+)*	integer	*read-only* *(null)*	The maximum number of devices supported in this redundancy group.
MinNeededInGroup *(v1.4+)*	integer	*read-only* *required* *(null)*	The minimum number of devices needed for this group to be redundant.
RedundancyGroup *(v1.4+)* [{	array	* required*	The links to the devices included in this redundancy group.
@odata.id	string (URI)	*read-only*	The unique identifier for a resource.
}]			
RedundancyType *(v1.4+)*	string (enum)	*read-only* *required* *(null)*	The redundancy mode of the group. *For the possible property values, see RedundancyType in Property details.*
Status *(v1.4+)* {}	object	* required*	The status and health of the resource and its subordinate or dependent resources. For property details, see Status.

4.13.3 Property details

4.13.3.1 RedundancyType:

The redundancy mode of the group.

string	Description
Failover	Failure of one unit automatically causes a standby or offline unit in the redundancy set to take over its functions.
NotRedundant	The subsystem is not configured in a redundancy mode, either due to configuration or the functionality has been disabled by the user.
NPlusM	Multiple units are available and active such that normal operation will continue if one or more units fail.
Sharing	Multiple units contribute or share such that operation will continue, but at a reduced capacity, if one or more units fail.
Sparing	One or more spare units are available to take over the function of a failed unit, but takeover is not automatic.

4.14 ReplicaInfo

4.14.1 Description

Defines the characteristics of a replica of a source.

4.14.2 Properties

Property	Type	Attributes	Notes
ConsistencyEnabled	boolean	*read-only (null)*	True if consistency is enabled.
ConsistencyState	string (enum)	*read-only (null)*	The current state of consistency. *For the possible property values, see ConsistencyState in Property details.*
ConsistencyStatus	string (enum)	*read-only (null)*	The current status of consistency. *For the possible property values, see ConsistencyStatus in Property details.*
ConsistencyType	string (enum)	*read-only (null)*	Indicates the consistency type used by the source and its associated target group. *For the possible property values, see ConsistencyType in Property details.*

Property	Type	Attributes	Notes
DataProtectionLineOfService *(v1.1+)* {	object		A pointer to the DataProtection line of service element that describes this replica.
@odata.id	string (URI)	*read-only*	The unique identifier for a resource.
}			
FailedCopyStopsHostIO	boolean	*read-only (null)*	If true, the storage array tells host to stop sending data to source element if copying to a remote element fails.
PercentSynced	integer (%)	*read-only (null)*	Specifies the percent of the work completed to reach synchronization.
Replica {	object		Deprecated - Use Source Replica. The resource that is the source of this replica.
@odata.id	string (URI)	*read-only*	The unique identifier for a resource.
}			
ReplicaFaultDomain *(v1.3+)*	string (enum)	*read-only (null)*	ReplicaFaultDomain describes the fault domain (local or remote) of the replica relationship. *For the possible property values, see ReplicaFaultDomain in Property details.*
ReplicaPriority	string (enum)	*read-only (null)*	The priority of background copy engine I/O to be managed relative to host I/O operations during a sequential background copy operation. *For the possible property values, see ReplicaPriority in Property details.*
ReplicaProgressStatus	string (enum)	*read-only (null)*	The status of the session with respect to Replication activity. *For the possible property values, see ReplicaProgressStatus in Property details.*
ReplicaReadOnlyAccess	string (enum)	*read-only (null)*	This property specifies whether the source, the target, or both elements are read only to the host. *For the possible property values, see ReplicaReadOnlyAccess in Property details.*
ReplicaRecoveryMode	string (enum)	*read-only (null)*	Describes whether the copy operation continues after a broken link is restored. *For the possible property values, see ReplicaRecoveryMode in Property details.*
ReplicaRole	string (enum)	*read-only (null)*	The source or target role of this replica. *For the possible property values, see ReplicaRole in Property details.*
ReplicaSkewBytes	integer (bytes)	*read-only (null)*	Applies to Adaptive mode and it describes maximum number of bytes the SyncedElement (target) can be out of sync.
ReplicaState	string (enum)	*read-only (null)*	ReplicaState describes the state of the relationship with respect to Replication activity. *For the possible property values, see ReplicaState in Property details.*

Property	Type	Attributes	Notes
ReplicaType	string (enum)	*read-only (null)*	ReplicaType describes the intended outcome of the replication. *For the possible property values, see ReplicaType in Property details.*
ReplicaUpdateMode	string (enum)	*read-only (null)*	Describes whether the target elements will be updated synchronously or asynchronously. *For the possible property values, see ReplicaUpdateMode in Property details.*
RequestedReplicaState	string (enum)	*read-only (null)*	The last requested or desired state for the relationship. *For the possible property values, see RequestedReplicaState in Property details.*
SourceReplica *(v1.2+)* {	object		The resource that is the source of this replica.
@odata.id	string (URI)	*read-only*	The unique identifier for a resource.
}			
SyncMaintained	boolean	*read-only (null)*	Synchronization is maintained.
UndiscoveredElement	string (enum)	*read-only (null)*	This property specifies whether the source, the target, or both elements involved in a copy operation are undiscovered. *For the possible property values, see UndiscoveredElement in Property details.*
WhenActivated	string (%)	*read-only (null)*	Specifies when point-in-time copy was taken or when the replication relationship is activated, reactivated, resumed or re-established.
WhenDeactivated	string (%)	*read-only (null)*	Specifies when the replication relationship is deactivated.
WhenEstablished	string (%)	*read-only (null)*	Specifies when the replication relationship is established.
WhenSuspended	string (%)	*read-only (null)*	Specifies when the replication relationship is suspended.
WhenSynced	string	*read-only (null)*	The point in time that the Elements were synchronized.
WhenSynchronized	string (%)	*read-only (null)*	Specifies when the replication relationship is synchronized.

4.14.3 Property details

4.14.3.1 ConsistencyState:

The current state of consistency.

string	Description
Consistent	Consistent.
Inconsistent	Not consistent.

4.14.3.2 ConsistencyStatus:

The current status of consistency.

string	Description
Consistent	Consistent.
Disabled	Consistency disabled.
InError	Consistency error.
InProgress	Becoming consistent.

4.14.3.3 ConsistencyType:

Indicates the consistency type used by the source and its associated target group.

string	Description
SequentiallyConsistent	Sequentially consistent.

4.14.3.4 ReplicaFaultDomain:

ReplicaFaultDomain describes the fault domain (local or remote) of the replica relationship.

string	Description
Local	Local indicates that the source and target replicas are contained within a single fault domain.
Remote	Remote indicates that the source and target replicas are in separate fault domains.

4.14.3.5 ReplicaPriority:

The priority of background copy engine I/O to be managed relative to host I/O operations during a sequential background copy operation.

string	Description
High	Copy engine I/O has higher priority than host I/O.
Low	Copy engine I/O lower priority than host I/O.
Same	Copy engine I/O has the same priority as host I/O.
Urgent	Copy operation to be performed as soon as possible, regardless of the host I/O requests.

4.14.3.6 ReplicaProgressStatus:

The status of the session with respect to Replication activity.

string	Description
Aborting	Abort in progress.
Completed	The request is completed. Data flow is idle.
Detaching	Detach in progress.
Dormant	Indicates that the data flow is inactive, suspended or quiesced.
FailingBack	Undoing the result of failover.
FailingOver	In the process of switching source and target.
Fracturing	Fracture in progress.
Initializing	In the process of establishing source/replica relationship and the data flow has not started.
Mixed	Applies to groups with element pairs with different statuses. Generally, the individual statuses need to be examined.
Pending	The flow of data has stopped momentarily due to limited bandwidth or a busy system.
Preparing	Preparation in progress.
RequiresActivate	The requested operation has completed, however, the synchronization relationship needs to be activated before further copy operations can be issued.
RequiresDetach	The requested operation has completed, however, the synchronization relationship needs to be detached before further copy operations can be issued.
RequiresFracture	The requested operation has completed, however, the synchronization relationship needs to be fractured before further copy operations can be issued.
RequiresResume	The requested operation has completed, however, the synchronization relationship needs to be resumed before further copy operations can be issued.

string	Description
RequiresResync	The requested operation has completed, however, the synchronization relationship needs to be resynced before further copy operations can be issued.
RequiresSplit	The requested operation has completed, however, the synchronization relationship needs to be split before further copy operations can be issued.
Restoring	Restore in progress.
Resyncing	Resync in progress.
Splitting	Split in progress.
Suspending	The copy operation is in the process of being suspended.
Synchronizing	Sync in progress.
Terminating	The relationship is in the process of terminating.

4.14.3.7 ReplicaReadOnlyAccess:

This property specifies whether the source, the target, or both elements are read only to the host.

string	Description
Both	Both the source and the target elements are read only to the host.
ReplicaElement	The replica element.
SourceElement	The source element.

4.14.3.8 ReplicaRecoveryMode:

Describes whether the copy operation continues after a broken link is restored.

string	Description
Automatic	Copy operation resumes automatically.
Manual	ReplicaState is set to Suspended after the link is restored. It is required to issue the Resume operation to continue.

4.14.3.9 ReplicaRole:

The source or target role of this replica.

string	Description
Source	The source element.
Target	The target element.

4.14.3.10 ReplicaState:

ReplicaState describes the state of the relationship with respect to Replication activity.

string	Description
Aborted	The copy operation is aborted with the Abort operation. Use the Resync Replica operation to restart the copy operation.
Broken	The relationship is non-functional due to errors in the source, the target, the path between the two or space constraints.
Failedover	Reads and writes are sent to the target element. Source element is not reachable.
Fractured	Target is split from the source.
Inactive	Data flow has stopped, writes to source element will not be sent to target element.
Initialized	The link to enable replication is established and source/replica elements are associated, but the data flow has not started.
Invalid	The array is unable to determine the state of the replication relationship, for example, after the connection is restored; however, either source or target elements have an unknown status.
Mixed	Applies to the ReplicaState of GroupSynchronized. It indicates the StorageSynchronized relationships of the elements in the groups have different ReplicaState values.
Partitioned	State of replication relationship can not be determined, for example, due to a connection problem.
Prepared	Initialization is completed, however, the data flow has not started.
Restored	It indicates the source element was restored from the target element.
Skewed	The target has been modified and is no longer synchronized with the source element or the point-in-time view.
Split	The target element was gracefully (or systematically) split from its source element -- consistency is guaranteed.
Suspended	Data flow between the source and target elements has stopped. Writes to source element are held until the relationship is Resumed.
Synchronized	For the Mirror, Snapshot, or Clone replication, the target represents a copy of the source.

string	Description
Unsynchronized	Not all the source element data has been copied to the target element.

4.14.3.11 ReplicaType:

ReplicaType describes the intended outcome of the replication.

string	Description
Clone	Create a point in time, full copy the source.
Mirror	Create and maintain a copy of the source.
Snapshot	Create a point in time, virtual copy of the source.
TokenizedClone	Create a token based clone.

4.14.3.12 ReplicaUpdateMode:

Describes whether the target elements will be updated synchronously or asynchronously.

string	Description
Active	Active-Active (i.e. bidirectional) synchronous updates.
Adaptive	Allows implementation to switch between synchronous and asynchronous modes.
Asynchronous	Asynchronous updates.
Synchronous	Synchronous updates.

4.14.3.13 RequestedReplicaState:

The last requested or desired state for the relationship.

string	Description
Aborted	The copy operation is aborted with the Abort operation. Use the Resync Replica operation to restart the copy operation.
Broken	The relationship is non-functional due to errors in the source, the target, the path between the two or space constraints.

string	Description
Failedover	Reads and writes are sent to the target element. Source element is not reachable.
Fractured	Target is split from the source.
Inactive	Data flow has stopped, writes to source element will not be sent to target element.
Initialized	The link to enable replication is established and source/replica elements are associated, but the data flow has not started.
Invalid	The array is unable to determine the state of the replication relationship, for example, after the connection is restored; however, either source or target elements have an unknown status.
Mixed	Applies to the ReplicaState of GroupSynchronized. It indicates the StorageSynchronized relationships of the elements in the groups have different ReplicaState values.
Partitioned	State of replication relationship can not be determined, for example, due to a connection problem.
Prepared	Initialization is completed, however, the data flow has not started.
Restored	It indicates the source element was restored from the target element.
Skewed	The target has been modified and is no longer synchronized with the source element or the point-in-time view.
Split	The target element was gracefully (or systematically) split from its source element -- consistency is guaranteed.
Suspended	Data flow between the source and target elements has stopped. Writes to source element are held until the relationship is Resumed.
Synchronized	For the Mirror, Snapshot, or Clone replication, the target represents a copy of the source.
Unsynchronized	Not all the source element data has been copied to the target element.

4.14.3.14 UndiscoveredElement:

This property specifies whether the source, the target, or both elements involved in a copy operation are undiscovered.

string	Description
ReplicaElement	The replica element is undiscovered.
SourceElement	The source element is undiscovered.

4.15 Schedule

4.15.1 Description

Schedule a series of occurrences.

4.15.2 Properties

Property	Type	Attributes	Notes
EnabledDaysOfMonth [ ]	array (integer, null)	read-write	Days of the month when scheduled occurrences are enabled. `0` indicates that every day of the month is enabled.
EnabledDaysOfWeek [ ]	array (string (enum))	read-write (null)	Days of the week when scheduled occurrences are enabled, for enabled days of the month and months of the year. If not present, all days of the week are enabled. *For the possible property values, see EnabledDaysOfWeek in Property details.*
EnabledIntervals *(v1.1+)* [ ]	array (string, null)	read-write	Intervals when scheduled occurrences are enabled.
EnabledMonthsOfYear [ ]	array (string (enum))	read-write (null)	The months of the year when scheduled occurrences are enabled. If not present, all months of the year are enabled. *For the possible property values, see EnabledMonthsOfYear in Property details.*
InitialStartTime	string (date-time)	read-write (null)	The date and time when the initial occurrence is scheduled to occur.
Lifetime	string	read-write (null)	The time after provisioning when the schedule as a whole expires.
MaxOccurrences	integer	read-write (null)	The maximum number of scheduled occurrences.
Name	string	read-write (null)	The schedule name.
RecurrenceInterval	string	read-write (null)	The amount of time until the next occurrence occurs.

4.15.3 Property details

4.15.3.1 EnabledDaysOfWeek:

Days of the week when scheduled occurrences are enabled, for enabled days of the month and months of the year. If not present, all days of the week are enabled.

string	Description
Every	Every day of the week.
Friday	Friday.
Monday	Monday.
Saturday	Saturday.
Sunday	Sunday.
Thursday	Thursday.
Tuesday	Tuesday.
Wednesday	Wednesday.

4.15.3.2 EnabledMonthsOfYear:

The months of the year when scheduled occurrences are enabled. If not present, all months of the year are enabled.

string	Description
April	April.
August	August.
December	December.
Every	Every month of the year.
February	February.
January	January.
July	July.
June	June.
March	March.
May	May.
November	November.
October	October.
September	September.

4.16 Status

4.16.1 Description

The status and health of a resource and its children.

4.16.2 Properties

Property	Type	Attributes	Notes
Conditions *(v1.11+)* [{	array		Conditions in this resource that require attention.
LogEntry {	object		The link to the log entry created for this condition. See the *LogEntry* schema for details on this property.
@odata.id	string	*read-only*	Link to a LogEntry resource. See the Links section and the *LogEntry* schema for details.
}			
Message	string	*read-only*	The human-readable message for this condition.
MessageArgs [ ]	array (string)	*read-only*	An array of message arguments that are substituted for the arguments in the message when looked up in the message registry.
MessageId	string	*read-only required*	The identifier for the message.
OriginOfCondition {	object		A link to the resource or object that originated the condition.
@odata.id	string (URI)	*read-only*	The unique identifier for a resource.
}			
Resolution *(v1.14+)*	string	*read-only*	Suggestions on how to resolve the condition.
Severity	string (enum)	*read-only*	The severity of the condition. *For the possible property values, see Severity in Property details.*
Timestamp	string (date-time)	*read-only*	The time the condition occurred.
}]			

Property	Type	Attributes	Notes
Health	string (enum)	*read-only (null)*	The health state of this resource in the absence of its dependent resources. *For the possible property values, see Health in Property details.*
HealthRollup	string (enum)	*read-only (null)*	The overall health state from the view of this resource. *For the possible property values, see HealthRollup in Property details.*
Oem {	object		See the Oem object definition in the Common properties section.
(pattern) {}	object		Property names follow regular expression pattern "^[A-Za-z0-9_]+$"
}			
State	string (enum)	*read-only (null)*	The known state of the resource, such as, enabled. *For the possible property values, see State in Property details.*

4.16.3 Property details

4.16.3.1 Health:

The health state of this resource in the absence of its dependent resources.

string	Description
Critical	A critical condition requires immediate attention.
OK	Normal.
Warning	A condition requires attention.

4.16.3.2 HealthRollup:

The overall health state from the view of this resource.

string	Description
Critical	A critical condition requires immediate attention.
OK	Normal.
Warning	A condition requires attention.

4.16.3.3 Severity:

The severity of the condition.

string	Description
Critical	A critical condition requires immediate attention.
OK	Normal.
Warning	A condition requires attention.

4.16.3.4 State:

The known state of the resource, such as, enabled.

string	Description
Absent	This function or resource is either not present or detected.
Deferring *(v1.2+)*	The element does not process any commands but queues new requests.
Disabled	This function or resource is disabled.
Enabled	This function or resource is enabled.
InTest	This function or resource is undergoing testing, or is in the process of capturing information for debugging.
Qualified *(v1.9+)*	The element quality is within the acceptable range of operation.
Quiesced *(v1.2+)*	The element is enabled but only processes a restricted set of commands.
StandbyOffline	This function or resource is enabled but awaits an external action to activate it.
StandbySpare	This function or resource is part of a redundancy set and awaits a failover or other external action to activate it.
Starting	This function or resource is starting.
UnavailableOffline *(v1.1+)*	This function or resource is present but cannot be used.
Updating *(v1.2+)*	The element is updating and might be unavailable or degraded.

5 Resource collections

A core concept in Redfish is a collection of Resources. A collection is a group of like Resources where the number of instances in the group can shrink or grow depending on the scope of the Redfish Service or the configuration of the devices being managed. Every Resource in a collection has the same set of supported properties, and all contain `Collection` in the name of their schema. Every Resource linked in the Members array within a Resource Collection have the same Resource type, or the same schema with the same major version, but can vary in minor or errata schema versions, which are all compatible.

The properties of a Resource Collection are as follows:

5.0.1 Properties

Property	Type	Attributes	Notes
@odata.context	string (URI)	*read-only*	The OData description of a payload.
@odata.id	string (URI)	*read-only required*	The unique identifier for a resource.
@odata.type	string	*read-only required*	The type of a resource.
Description	string	*read-only (null)*	The description of this resource. Used for commonality in the schema definitions.
Members [{	array	* required*	The members of this collection.
@odata.id	string (URI)	*read-only*	The link to a Resource instance, which is a member of this collection.
}]			
Members@odata.count	integer	*read-only*	The number of items in a collection.
Members@odata.navigationLink	string (URI)	*read-write*	
Name	string	*read-only required*	The name of the resource or array member.
Oem {}	object		The manufacturer- or provider-specific extension moniker that divides the `Oem` object into sections.

As shown in the following example, a Redfish Service may provide management functionality for several Computer

Systems, and therefore a ComputerSystemCollection Resource is provided. This example shows a Service with multiple ComputerSystem instances, or members.

```json
{
    "@odata.type": "#ComputerSystemCollection.ComputerSystemCollection",
    "Name": "Computer System Collection",
    "Members@odata.count": 4,
    "Members": [{
            "@odata.id": "/redfish/v1/Systems/529QB9450R6"
        },
        {
            "@odata.id": "/redfish/v1/Systems/529QB9451R6"
        },
        {
            "@odata.id": "/redfish/v1/Systems/529QB9452R6"
        },
        {
            "@odata.id": "/redfish/v1/Systems/529QB9453R6"
        }
    ],
    "@odata.context": "/redfish/v1/$metadata#ComputerSystemCollection.ComputerSystemCollection",
    "@odata.id": "/redfish/v1/Systems"
}
```

5.1 Collection Capabilities annotation (#CollectionCapabilities)

This annotation is used to inform the client how to form the request body for a create (POST) operation to a given collection based on a specified use case, which will result in a new member being added to the given collection.

5.1.1 Properties

Property	Type	Attributes	Notes
Capabilities [{	array		The list of capabilities supported by this resource.
CapabilitiesObject {	object	*required*	The link to the resource the client can issue a GET request against to understand how to form a POST request for a collection.
@odata.id	string (URI)	*read-only*	The unique identifier for a resource.
}			
Links {	object	*required*	The links to other resources that are related to this resource.
Oem {}	object		The OEM extension property. For property details, see Oem.

Property	Type	Attributes	Notes
RelatedItem [{	array		An array of links to resources associated with this capability.
@odata.id	string (URI)	*read-only*	The unique identifier for a resource.
}]			
RelatedItem@odata.count	integer	*read-only*	The number of items in a collection.
TargetCollection {	object	* required*	The link to the collection that this capabilities structure is describing.
@odata.id	string (URI)	*read-only*	The unique identifier for a resource.
}			
}			
UseCase	string (enum)	*read-only* *required*	The use case in which a client can issue a POST request to the collection. *For the possible property values, see UseCase in Property details.*
}]			
MaxMembers *(v1.2+)*	integer	*read-only*	The maximum number of members allowed in this collection.

5.1.2 Property details

5.1.2.1 UseCase:

The use case in which a client can issue a POST request to the collection.

string	Description
ComputerSystemComposition	This capability describes a client creating a new computer system resource from a set of disaggregated hardware.
ComputerSystemConstrainedComposition *(v1.1+)*	This capability describes a client creating a new computer system resource from a set of constraints.
ResourceBlockComposition *(v1.3+)*	This capability describes a client creating a new resource block from a set of other resource blocks.
ResourceBlockConstrainedComposition *(v1.3+)*	This capability describes a client creating a new resource block from a set of constraints.
VolumeCreation	This capability describes a client creating a new volume resource as part of an existing storage subsystem.

5.1.3 Example Collection Capabilities annotation

```
{
    "@Redfish.CollectionCapabilities": {
        "@odata.type": "#CollectionCapabilities.v1_1_0.CollectionCapabilities",
        "Capabilities": [
            {
                "CapabilitiesObject": {
                    "@odata.id": "/redfish/v1/Systems/Capabilities"
                },
                "UseCase": "ComputerSystemComposition",
                "Links": {
                    "TargetCollection": {
                        "@odata.id": "/redfish/v1/Systems"
                    }
                }
            },
            {
                "CapabilitiesObject": {
                    "@odata.id": "/redfish/v1/Systems/ConstrainedCompositionCapabilities"
                },
                "UseCase": "ComputerSystemConstrainedComposition",
                "Links": {
                    "TargetCollection": {
                        "@odata.id": "/redfish/v1/Systems"
                    }
                }
            }
        ]
    },
    ...
}
```

5.2 Resource collection URIs for Redfish v1.6 and later

The following table lists the Redfish-defined Resource Collections and the URIs where they can appear. NOTE: The URIs listed are valid for Redfish Services conforming to the Redfish Specification v1.6.0 or higher. Services built on earlier versions of the Specification may use different URIs. To discover these URIs, follow the links from the Service Root (/redfish/v1/).

Collection Type	URIs
AccelerationFunctionCollection	/redfish/v1/CompositionService/ResourceBlocks/*{ResourceBlockId}*/Processors/*{ProcessorId}*/AccelerationFunctions /redfish/v1/CompositionService/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/Processors/*{ProcessorId}*/AccelerationFunctions /redfish/v1/ResourceBlocks/*{ResourceBlockId}*/Processors/*{ProcessorId}*/AccelerationFunctions /redfish/v1/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/Processors/*{ProcessorId}*/AccelerationFunctions /redfish/v1/Systems/*{ComputerSystemId}*/Processors/*{ProcessorId}*/AccelerationFunctions
AddressPoolCollection	/redfish/v1/Fabrics/*{FabricId}*/AddressPools
AggregateCollection	/redfish/v1/AggregationService/Aggregates
AggregationSourceCollection	/redfish/v1/AggregationService/AggregationSources
AllowDenyCollection	/redfish/v1/Chassis/*{ChassisId}*/NetworkAdapters/*{NetworkAdapterId}*/NetworkDeviceFunctions/*{NetworkDeviceFunctionId}*/AllowDeny /redfish/v1/CompositionService/ResourceBlocks/*{ResourceBlockId}*/NetworkInterfaces/*{NetworkInterfaceId}*/NetworkDeviceFunctions{NetworkDeviceFunctionId}/AllowDeny /redfish/v1/CompositionService/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/NetworkInterfaces/*{NetworkInterfaceId}*/NetworkDeviceFunctions{NetworkDeviceFunctionId}/AllowDeny /redfish/v1/ResourceBlocks/*{ResourceBlockId}*/NetworkInterfaces/*{NetworkInterfaceId}*/NetworkDeviceFunctions{NetworkDeviceFunctionId}/AllowDeny /redfish/v1/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/NetworkInterfaces/*{NetworkInterfaceId}*/NetworkDeviceFunctions{NetworkDeviceFunctionId}/AllowDeny /redfish/v1/Systems/*{ComputerSystemId}*/NetworkInterfaces/*{NetworkInterfaceId}*/NetworkDeviceFunctions{NetworkDeviceFunctionId}/AllowDeny
BatteryCollection	/redfish/v1/Chassis/*{ChassisId}*/PowerSubsystem/Batteries
BootOptionCollection	/redfish/v1/CompositionService/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/BootOptions /redfish/v1/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/BootOptions /redfish/v1/Systems/*{ComputerSystemId}*/BootOptions
CableCollection	/redfish/v1/Cables

Collection Type	URIs
CertificateCollection	/redfish/v1/AccountService/Accounts/*{ManagerAccountId}*/Certificates /redfish/v1/AccountService/ActiveDirectory/Certificates /redfish/v1/AccountService/ExternalAccountProviders/*{ExternalAccountProviderId}*/Certificates /redfish/v1/AccountService/LDAP/Certificates /redfish/v1/Chassis/*{ChassisId}*/Certificates /redfish/v1/Chassis/*{ChassisId}*/Drives/*{DriveId}*/Certificates /redfish/v1/Chassis/*{ChassisId}*/Memory/*{MemoryId}*/Certificates /redfish/v1/Chassis/*{ChassisId}*/NetworkAdapters/*{NetworkAdapterId}*/Certificates /redfish/v1/CompositionService/ResourceBlocks/*{ResourceBlockId}*/Drives/*{DriveId}*/Certificates /redfish/v1/CompositionService/ResourceBlocks/*{ResourceBlockId}*/Memory/*{MemoryId}*/Certificates /redfish/v1/CompositionService/ResourceBlocks/*{ResourceBlockId}*/Processors/*{ProcessorId}*/Certificates /redfish/v1/CompositionService/ResourceBlocks/*{ResourceBlockId}*/Storage/*{StorageId}*/Controllers/*{StorageControllerId}*/Certificates /redfish/v1/CompositionService/ResourceBlocks/*{ResourceBlockId}*/Storage/*{StorageId}*/Drives/*{DriveId}*/Certificates /redfish/v1/CompositionService/ResourceBlocks/*{ResourceBlockId}*/Storage/*{StorageId}*/StorageControllers/*{StorageControllerId}*/Certificates /redfish/v1/CompositionService/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/Boot/Certificates /redfish/v1/CompositionService/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/Certificates /redfish/v1/CompositionService/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/KeyManagement/KMIPCertificates /redfish/v1/CompositionService/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/Memory/*{MemoryId}*/Certificates /redfish/v1/CompositionService/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/Processors/*{ProcessorId}*/Certificates /redfish/v1/CompositionService/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/SecureBoot/SecureBootDatabases/*{DatabaseId}*/Certificates /redfish/v1/CompositionService/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/Storage/*{StorageId}*/Controllers/*{StorageControllerId}*/Certificates /redfish/v1/CompositionService/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/Storage/*{StorageId}*/Drives/*{DriveId}*/Certificates /redfish/v1/CompositionService/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/Storage/*{StorageId}*/StorageControllers/*{StorageControllerId}*/Certificates /redfish/v1/CompositionService/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/VirtualMedia/*{VirtualMediaId}*/Certificates /redfish/v1/CompositionService/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/VirtualMedia/*{VirtualMediaId}*/ClientCertificates /redfish/v1/EventService/Subscriptions/*{EventDestinationId}*/Certificates /redfish/v1/EventService/Subscriptions/*{EventDestinationId}*/ClientCertificates /redfish/v1/Fabrics/*{FabricId}*/Switches/*{SwitchId}*/Certificates /redfish/v1/Managers/*{ManagerId}*/Certificates /redfish/v1/Managers/*{ManagerId}*/NetworkProtocol/HTTPS/Certificates /redfish/v1/Managers/*{ManagerId}*/RemoteAccountService/Accounts/*{ManagerAccountId}*/Certificates /redfish/v1/Managers/*{ManagerId}*/RemoteAccountService/ActiveDirectory/Certificates /redfish/v1/Managers/*{ManagerId}*/RemoteAccountService/ExternalAccountProviders/*{ExternalAccountProviderId}*/Certificates

Collection Type	URIs
	/redfish/v1/Managers/{*ManagerId*}/RemoteAccountService/LDAP/Certificates /redfish/v1/ResourceBlocks/{*ResourceBlockId*}/Drives/{*DriveId*}/Certificates /redfish/v1/ResourceBlocks/{*ResourceBlockId*}/Memory/{*MemoryId*}/Certificates /redfish/v1/ResourceBlocks/{*ResourceBlockId*}/Processors/{*ProcessorId*}/Certificates /redfish/v1/ResourceBlocks/{*ResourceBlockId*}/Storage/{*StorageId*}/Controllers/{*StorageControllerId*}/Certificates /redfish/v1/ResourceBlocks/{*ResourceBlockId*}/Storage/{*StorageId*}/Drives/{*DriveId*}/Certificates /redfish/v1/ResourceBlocks/{*ResourceBlockId*}/Storage/{*StorageId*}/StorageControllers/{*StorageControllerId*}/Certificates /redfish/v1/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/Boot/Certificates /redfish/v1/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/Certificates /redfish/v1/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/KeyManagement/KMIPCertificates /redfish/v1/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/Memory/{*MemoryId*}/Certificates /redfish/v1/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/Processors/{*ProcessorId*}/Certificates /redfish/v1/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/SecureBoot/SecureBootDatabases/{*DatabaseId*}/Certificates /redfish/v1/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/Storage/{*StorageId*}/Controllers/{*StorageControllerId*}/Certificates /redfish/v1/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/Storage/{*StorageId*}/Drives/{*DriveId*}/Certificates /redfish/v1/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/Storage/{*StorageId*}/StorageControllers/{*StorageControllerId*}/Certificates /redfish/v1/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/VirtualMedia/{*VirtualMediaId*}/Certificates /redfish/v1/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/VirtualMedia/{*VirtualMediaId*}/ClientCertificates /redfish/v1/Storage/{*StorageId*}/Controllers/{*StorageControllerId*}/Certificates /redfish/v1/Storage/{*StorageId*}/StorageControllers/{*StorageControllerId*}/Certificates /redfish/v1/Systems/{*ComputerSystemId*}/Boot/Certificates /redfish/v1/Systems/{*ComputerSystemId*}/Certificates /redfish/v1/Systems/{*ComputerSystemId*}/KeyManagement/KMIPCertificates /redfish/v1/Systems/{*ComputerSystemId*}/Memory/{*MemoryId*}/Certificates /redfish/v1/Systems/{*ComputerSystemId*}/Processors/{*ProcessorId*}/Certificates /redfish/v1/Systems/{*ComputerSystemId*}/SecureBoot/SecureBootDatabases/{*DatabaseId*}/Certificates /redfish/v1/Systems/{*ComputerSystemId*}/Storage/{*StorageId*}/Controllers/{*StorageControllerId*}/Certificates /redfish/v1/Systems/{*ComputerSystemId*}/Storage/{*StorageId*}/Drives/{*DriveId*}/Certificates /redfish/v1/Systems/{*ComputerSystemId*}/Storage/{*StorageId*}/StorageControllers/{*StorageControllerId*}/Certificates /redfish/v1/Systems/{*ComputerSystemId*}/VirtualMedia/{*VirtualMediaId*}/Certificates /redfish/v1/Systems/{*ComputerSystemId*}/VirtualMedia/{*VirtualMediaId*}/ClientCertificates /redfish/v1/UpdateService/ClientCertificates /redfish/v1/UpdateService/RemoteServerCertificates
ChassisCollection	/redfish/v1/Chassis

Collection Type	URIs
CircuitCollection	/redfish/v1/PowerEquipment/ElectricalBuses/*{PowerDistributionId}*/Branches /redfish/v1/PowerEquipment/ElectricalBuses/*{PowerDistributionId}*/Mains /redfish/v1/PowerEquipment/FloorPDUs/*{PowerDistributionId}*/Branches /redfish/v1/PowerEquipment/FloorPDUs/*{PowerDistributionId}*/Mains /redfish/v1/PowerEquipment/FloorPDUs/*{PowerDistributionId}*/Subfeeds /redfish/v1/PowerEquipment/PowerShelves/*{PowerDistributionId}*/Branches /redfish/v1/PowerEquipment/PowerShelves/*{PowerDistributionId}*/Mains /redfish/v1/PowerEquipment/RackPDUs/*{PowerDistributionId}*/Branches /redfish/v1/PowerEquipment/RackPDUs/*{PowerDistributionId}*/Mains /redfish/v1/PowerEquipment/Switchgear/*{PowerDistributionId}*/Branches/*{CircuitId}* /redfish/v1/PowerEquipment/Switchgear/*{PowerDistributionId}*/Feeders/*{CircuitId}* /redfish/v1/PowerEquipment/Switchgear/*{PowerDistributionId}*/Mains/*{CircuitId}* /redfish/v1/PowerEquipment/Switchgear/*{PowerDistributionId}*/Subfeeds/*{CircuitId}* /redfish/v1/PowerEquipment/TransferSwitches/*{PowerDistributionId}*/Branches /redfish/v1/PowerEquipment/TransferSwitches/*{PowerDistributionId}*/Feeders /redfish/v1/PowerEquipment/TransferSwitches/*{PowerDistributionId}*/Mains
ComponentIntegrityCollection	/redfish/v1/ComponentIntegrity
CompositionReservationCollection	/redfish/v1/CompositionService/CompositionReservations
ComputerSystemCollection	/redfish/v1/Systems
ConnectionCollection	/redfish/v1/Fabrics/*{FabricId}*/Connections
ConnectionMethodCollection	/redfish/v1/AggregationService/ConnectionMethods
ControlCollection	/redfish/v1/Chassis/*{ChassisId}*/Controls /redfish/v1/PowerEquipment/FloorPDUs/*{PowerDistributionId}*/Controls /redfish/v1/PowerEquipment/PowerShelves/*{PowerDistributionId}*/Controls /redfish/v1/PowerEquipment/RackPDUs/*{PowerDistributionId}*/Controls /redfish/v1/PowerEquipment/Switchgear/*{PowerDistributionId}*/Controls /redfish/v1/PowerEquipment/TransferSwitches/*{PowerDistributionId}*/Controls

Collection Type	URIs
DriveCollection	/redfish/v1/Chassis/*{ChassisId}*/Drives /redfish/v1/Storage/*{StorageId}*/FileSystems/*{FileSystemId}*/CapacitySources/*{CapacitySourceId}*/ProvidingDrives /redfish/v1/Storage/*{StorageId}*/StoragePools/*{StoragePoolId}*/CapacitySources/*{CapacitySourceId}*/ProvidingDrives /redfish/v1/Storage/*{StorageId}*/Volumes/*{VolumeId}*/CapacitySources/*{CapacitySourceId}*/ProvidingDrives /redfish/v1/StorageServices/*{StorageServiceId}*/Drives /redfish/v1/StorageServices/*{StorageServiceId}*/FileSystems/*{FileSystemId}*/CapacitySources/*{CapacitySourceId}*/ProvidingDrives /redfish/v1/StorageServices/*{StorageServiceId}*/StoragePools/*{StoragePoolId}*/CapacitySources/*{CapacitySourceId}*/ProvidingDrives /redfish/v1/StorageServices/*{StorageServiceId}*/Volumes/*{VolumeId}*/CapacitySources/*{CapacitySourceId}*/ProvidingDrives /redfish/v1/Systems/*{ComputerSystemId}*/Storage/*{StorageId}*/FileSystems/*{FileSystemId}*/CapacitySources/*{CapacitySourceId}*/ProvidingDrives /redfish/v1/Systems/*{ComputerSystemId}*/Storage/*{StorageId}*/StoragePools/*{StoragePoolId}*/CapacitySources/*{CapacitySourceId}*/ProvidingDrives /redfish/v1/Systems/*{ComputerSystemId}*/Storage/*{StorageId}*/Volumes/*{VolumeId}*/CapacitySources/*{CapacitySourceId}*/ProvidingDrives
EndpointCollection	/redfish/v1/Fabrics/*{FabricId}*/Endpoints /redfish/v1/Storage/*{StorageId}*/Endpoints /redfish/v1/StorageServices/*{StorageServiceId}*/Endpoints
EndpointGroupCollection	/redfish/v1/Fabrics/*{FabricId}*/EndpointGroups /redfish/v1/Storage/*{StorageId}*/EndpointGroups /redfish/v1/StorageServices/*{StorageServiceId}*/EndpointGroups /redfish/v1/Systems/*{ComputerSystemId}*/Storage/*{StorageId}*/EndpointGroups
EthernetInterfaceCollection	/redfish/v1/Chassis/*{ChassisId}*/NetworkAdapters/*{NetworkAdaptersId}*/NetworkDeviceFunctions/*{NetworkDeviceFunctionId}*/EthernetInterfaces /redfish/v1/CompositionService/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/EthernetInterfaces /redfish/v1/Managers/*{ManagerId}*/EthernetInterfaces /redfish/v1/Managers/*{ManagerId}*/HostInterfaces/*{HostInterfaceId}*/HostEthernetInterfaces /redfish/v1/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/EthernetInterfaces /redfish/v1/Systems/*{ComputerSystemId}*/EthernetInterfaces
EventDestinationCollection	/redfish/v1/EventService/Subscriptions
ExternalAccountProviderCollection	/redfish/v1/AccountService/ExternalAccountProviders /redfish/v1/Managers/*{ManagerId}*/RemoteAccountService/ExternalAccountProviders
FabricAdapterCollection	/redfish/v1/Systems/*{ComputerSystemId}*/FabricAdapters
FabricCollection	/redfish/v1/Fabrics
FacilityCollection	/redfish/v1/Facilities

Collection Type	URIs
FanCollection	/redfish/v1/Chassis/{*ChassisId*}/ThermalSubsystem/Fans
GraphicsControllerCollection	/redfish/v1/Systems/{*ComputerSystemId*}/GraphicsControllers
HostInterfaceCollection	/redfish/v1/Managers/{*ManagerId*}/HostInterfaces
JobCollection	/redfish/v1/JobService/Jobs /redfish/v1/JobService/Jobs/{*JobId*}/Steps
JsonSchemaFileCollection	/redfish/v1/JsonSchemas
KeyCollection	/redfish/v1/KeyService/NVMeoFSecrets
KeyPolicyCollection	/redfish/v1/KeyService/NVMeoFKeyPolicies
LicenseCollection	/redfish/v1/LicenseService/Licenses
LogEntryCollection	/redfish/v1/Chassis/{*ChassisId*}/LogServices/{*LogServiceId*}/Entries /redfish/v1/CompositionService/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/LogServices/{*LogServiceId*}/Entries /redfish/v1/JobService/Log/Entries /redfish/v1/Managers/{*ManagerId*}/LogServices/{*LogServiceId*}/Entries /redfish/v1/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/LogServices/{*LogServiceId*}/Entries /redfish/v1/Systems/{*ComputerSystemId*}/LogServices/{*LogServiceId*}/Entries /redfish/v1/Systems/{*ComputerSystemId*}/Memory/{*MemoryId*}/DeviceLog/Entries /redfish/v1/TelemetryService/LogService/Entries
LogServiceCollection	/redfish/v1/Chassis/{*ChassisId*}/LogServices /redfish/v1/CompositionService/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/LogServices /redfish/v1/Managers/{*ManagerId*}/LogServices /redfish/v1/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/LogServices /redfish/v1/Systems/{*ComputerSystemId*}/LogServices
ManagerAccountCollection	/redfish/v1/AccountService/Accounts /redfish/v1/Managers/{*ManagerId*}/RemoteAccountService/Accounts
ManagerCollection	/redfish/v1/Managers
MediaControllerCollection	/redfish/v1/Chassis/{*ChassisId*}/MediaControllers
MemoryChunksCollection	/redfish/v1/Chassis/{*ChassisId*}/MemoryDomains/{*MemoryDomainId*}/MemoryChunks /redfish/v1/CompositionService/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/MemoryDomains/{*MemoryDomainId*}/MemoryChunks /redfish/v1/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/MemoryDomains/{*MemoryDomainId*}/MemoryChunks /redfish/v1/Systems/{*ComputerSystemId*}/MemoryDomains/{*MemoryDomainId*}/MemoryChunks

Collection Type	URIs
MemoryCollection	/redfish/v1/Chassis/{*ChassisId*}/Memory /redfish/v1/CompositionService/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/Memory /redfish/v1/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/Memory /redfish/v1/Systems/{*ComputerSystemId*}/Memory
MemoryDomainCollection	/redfish/v1/Chassis/{*ChassisId*}/MemoryDomains /redfish/v1/CompositionService/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/MemoryDomains /redfish/v1/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/MemoryDomains /redfish/v1/Systems/{*ComputerSystemId*}/MemoryDomains
MessageRegistryCollection	
MessageRegistryFileCollection	/redfish/v1/Registries
MetricDefinitionCollection	/redfish/v1/TelemetryService/MetricDefinitions
MetricReportCollection	/redfish/v1/TelemetryService/MetricReports
MetricReportDefinitionCollection	/redfish/v1/TelemetryService/MetricReportDefinitions
NetworkAdapterCollection	/redfish/v1/Chassis/{*ChassisId*}/NetworkAdapters
NetworkDeviceFunctionCollection	/redfish/v1/Chassis/{*ChassisId*}/NetworkAdapters/{*NetworkAdapterId*}/NetworkDeviceFunctions /redfish/v1/CompositionService/ResourceBlocks/{*ResourceBlockId*}/NetworkInterfaces/{*NetworkInterfaceId*}/NetworkDeviceFunctions /redfish/v1/CompositionService/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/NetworkInterfaces/{*NetworkInterfaceId*}/NetworkDeviceFunctions /redfish/v1/ResourceBlocks/{*ResourceBlockId*}/NetworkInterfaces/{*NetworkInterfaceId*}/NetworkDeviceFunctions /redfish/v1/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/NetworkInterfaces/{*NetworkInterfaceId*}/NetworkDeviceFunctions /redfish/v1/Systems/{*ComputerSystemId*}/NetworkInterfaces/{*NetworkInterfaceId*}/NetworkDeviceFunctions
NetworkInterfaceCollection	/redfish/v1/CompositionService/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/NetworkInterfaces /redfish/v1/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/NetworkInterfaces /redfish/v1/Systems/{*ComputerSystemId*}/NetworkInterfaces
NetworkPortCollection	/redfish/v1/Chassis/{*ChassisId*}/NetworkAdapters/{*NetworkAdapterId*}/NetworkPorts /redfish/v1/CompositionService/ResourceBlocks/{*ResourceBlockId*}/NetworkInterfaces/{*NetworkInterfaceId*}/NetworkPorts /redfish/v1/CompositionService/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/NetworkInterfaces/{*NetworkInterfaceId*}/NetworkPorts /redfish/v1/ResourceBlocks/{*ResourceBlockId*}/NetworkInterfaces/{*NetworkInterfaceId*}/NetworkPorts /redfish/v1/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/NetworkInterfaces/{*NetworkInterfaceId*}/NetworkPorts /redfish/v1/Systems/{*ComputerSystemId*}/NetworkInterfaces/{*NetworkInterfaceId*}/NetworkPorts

Collection Type	URIs
OperatingConfigCollection	/redfish/v1/Systems/*{ComputerSystemId}*/OperatingConfigs /redfish/v1/Systems/*{ComputerSystemId}*/Processors/*{ProcessorId}*/OperatingConfigs
OutletCollection	/redfish/v1/PowerEquipment/ElectricalBuses/*{PowerDistributionId}*/Outlets /redfish/v1/PowerEquipment/PowerShelves/*{PowerDistributionId}*/Outlets /redfish/v1/PowerEquipment/RackPDUs/*{PowerDistributionId}*/Outlets /redfish/v1/PowerEquipment/TransferSwitches/*{PowerDistributionId}*/Outlets
OutletGroupCollection	/redfish/v1/PowerEquipment/ElectricalBuses/*{PowerDistributionId}*/OutletGroups /redfish/v1/PowerEquipment/PowerShelves/*{PowerDistributionId}*/OutletGroups /redfish/v1/PowerEquipment/RackPDUs/*{PowerDistributionId}*/OutletGroups /redfish/v1/PowerEquipment/TransferSwitches/*{PowerDistributionId}*/OutletGroups
PCIeDeviceCollection	/redfish/v1/Chassis/*{ChassisId}*/PCIeDevices /redfish/v1/CompositionService/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/PCIeDevices /redfish/v1/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/PCIeDevices /redfish/v1/Systems/*{ComputerSystemId}*/PCIeDevices
PCIeFunctionCollection	/redfish/v1/Chassis/*{ChassisId}*/PCIeDevices/*{PCIeDeviceId}*/PCIeFunctions /redfish/v1/CompositionService/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/PCIeDevices/*{PCIeDeviceId}*/PCIeFunctions /redfish/v1/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/PCIeDevices/*{PCIeDeviceId}*/PCIeFunctions /redfish/v1/Systems/*{ComputerSystemId}*/PCIeDevices/*{PCIeDeviceId}*/PCIeFunctions

Collection Type	URIs
PortCollection	/redfish/v1/Chassis/{*ChassisId*}/MediaControllers/{*MediaControllerId*}/Ports /redfish/v1/Chassis/{*ChassisId*}/NetworkAdapters/{*NetworkAdapterId*}/Ports /redfish/v1/CompositionService/ResourceBlocks/{*ResourceBlockId*}/NetworkInterfaces/{*NetworkInterfaceId*}/Ports /redfish/v1/CompositionService/ResourceBlocks/{*ResourceBlockId*}/Storage/{*StorageId*}/Controllers/{*StorageControllerId*}/Ports /redfish/v1/CompositionService/ResourceBlocks/{*ResourceBlockId*}/Storage/{*StorageId*}/StorageControllers/{*StorageControllerId*}/Ports /redfish/v1/CompositionService/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/NetworkInterfaces/{*NetworkInterfaceId*}/Ports /redfish/v1/CompositionService/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/Storage/{*StorageId*}/Controllers/{*StorageControllerId*}/Ports /redfish/v1/CompositionService/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/Storage/{*StorageId*}/StorageControllers/{*StorageControllerId*}/Ports /redfish/v1/Fabrics/{*FabricId*}/Switches/{*SwitchId*}/Ports /redfish/v1/Managers/{*ManagerId*}/USBPorts /redfish/v1/ResourceBlocks/{*ResourceBlockId*}/NetworkInterfaces/{*NetworkInterfaceId*}/Ports /redfish/v1/ResourceBlocks/{*ResourceBlockId*}/Storage/{*StorageId*}/Controllers/{*StorageControllerId*}/Ports /redfish/v1/ResourceBlocks/{*ResourceBlockId*}/Storage/{*StorageId*}/StorageControllers/{*StorageControllerId*}/Ports /redfish/v1/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/NetworkInterfaces/{*NetworkInterfaceId*}/Ports /redfish/v1/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/Storage/{*StorageId*}/Controllers/{*StorageControllerId*}/Ports /redfish/v1/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/Storage/{*StorageId*}/StorageControllers/{*StorageControllerId*}/Ports /redfish/v1/Storage/{*StorageId*}/Controllers/{*StorageControllerId*}/Ports /redfish/v1/Storage/{*StorageId*}/StorageControllers/{*StorageControllerId*}/Ports /redfish/v1/Systems/{*ComputerSystemId*}/FabricAdapters/{*FabricAdapterId*}/Ports /redfish/v1/Systems/{*ComputerSystemId*}/GraphicsControllers/{*ControllerId*}/Ports /redfish/v1/Systems/{*ComputerSystemId*}/NetworkInterfaces/{*NetworkInterfaceId*}/Ports /redfish/v1/Systems/{*ComputerSystemId*}/Processors/{*ProcessorId*}/Ports /redfish/v1/Systems/{*ComputerSystemId*}/Storage/{*StorageId*}/Controllers/{*StorageControllerId*}/Ports /redfish/v1/Systems/{*ComputerSystemId*}/Storage/{*StorageId*}/StorageControllers/{*StorageControllerId*}/Ports /redfish/v1/Systems/{*ComputerSystemId*}/USBControllers/{*ControllerId*}/Ports
PowerDistributionCollection	/redfish/v1/PowerEquipment/ElectricalBuses /redfish/v1/PowerEquipment/FloorPDUs /redfish/v1/PowerEquipment/PowerShelves /redfish/v1/PowerEquipment/RackPDUs /redfish/v1/PowerEquipment/Switchgear /redfish/v1/PowerEquipment/TransferSwitches
PowerDomainCollection	/redfish/v1/Facilities/{*FacilityId*}/PowerDomains
PowerSupplyCollection	/redfish/v1/Chassis/{*ChassisId*}/PowerSubsystem/PowerSupplies /redfish/v1/PowerEquipment/PowerShelves/{*PowerDistributionId*}/PowerSupplies

Collection Type	URIs
ProcessorCollection	/redfish/v1/Chassis/{*ChassisId*}/NetworkAdapters/{*NetworkAdapterId*}/Processors /redfish/v1/Chassis/{*ChassisId*}/NetworkAdapters/{*NetworkAdapterId*}/Processors/{*ProcessorId*}/ SubProcessors /redfish/v1/CompositionService/ResourceBlocks/{*ResourceBlockId*}/Processors/{*ProcessorId*}/ SubProcessors /redfish/v1/CompositionService/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/ Processors /redfish/v1/CompositionService/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/ Processors/{*ProcessorId*}/SubProcessors /redfish/v1/ResourceBlocks/{*ResourceBlockId*}/Processors/{*ProcessorId*}/SubProcessors /redfish/v1/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/Processors /redfish/v1/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/Processors/ {*ProcessorId*}/SubProcessors /redfish/v1/Systems/{*ComputerSystemId*}/Processors /redfish/v1/Systems/{*ComputerSystemId*}/Processors/{*ProcessorId*}/SubProcessors
RegisteredClientCollection	/redfish/v1/RegisteredClients
ResourceBlockCollection	/redfish/v1/CompositionService/ActivePool /redfish/v1/CompositionService/FreePool /redfish/v1/CompositionService/ResourceBlocks /redfish/v1/ResourceBlocks
RoleCollection	/redfish/v1/AccountService/Roles /redfish/v1/Managers/{*ManagerId*}/RemoteAccountService/Roles
RouteEntryCollection	/redfish/v1/Fabrics/{*FabricId*}/Switches/{*SwitchId*}/Ports/{*PortId*}/LPRT /redfish/v1/Fabrics/{*FabricId*}/Switches/{*SwitchId*}/Ports/{*PortId*}/MPRT /redfish/v1/Systems/{*ComputerSystemId*}/FabricAdapters/{*FabricAdapterId*}/MSDT /redfish/v1/Systems/{*ComputerSystemId*}/FabricAdapters/{*FabricAdapterId*}/Ports/{*PortId*}/LPRT /redfish/v1/Systems/{*ComputerSystemId*}/FabricAdapters/{*FabricAdapterId*}/Ports/{*PortId*}/MPRT /redfish/v1/Systems/{*ComputerSystemId*}/FabricAdapters/{*FabricAdapterId*}/SSDT
RouteSetEntryCollection	/redfish/v1/Fabrics/{*FabricId*}/Switches/{*SwitchId*}/Ports/{*PortId*}/LPRT/{*LPRTId*}/RouteSet /redfish/v1/Fabrics/{*FabricId*}/Switches/{*SwitchId*}/Ports/{*PortId*}/MPRT/{*MPRTId*}/RouteSet /redfish/v1/Systems/{*ComputerSystemId*}/FabricAdapters/{*FabricAdapterId*}/MSDT/{*MSDTId*}/RouteSet /redfish/v1/Systems/{*ComputerSystemId*}/FabricAdapters/{*FabricAdapterId*}/Ports/{*PortId*}/LPRT/ {*LPRTId*}/RouteSet /redfish/v1/Systems/{*ComputerSystemId*}/FabricAdapters/{*FabricAdapterId*}/Ports/{*PortId*}/MPRT/ {*MPRTId*}/RouteSet /redfish/v1/Systems/{*ComputerSystemId*}/FabricAdapters/{*FabricAdapterId*}/SSDT/{*SSDTId*}/RouteSet
SecureBootDatabaseCollection	/redfish/v1/CompositionService/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/ SecureBoot/SecureBootDatabases /redfish/v1/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/SecureBoot/ SecureBootDatabases /redfish/v1/Systems/{*ComputerSystemId*}/SecureBoot/SecureBootDatabases

Collection Type	URIs
SensorCollection	/redfish/v1/Chassis/*{ChassisId}*/Sensors /redfish/v1/Facilities/*{FacilityId}*/Sensors /redfish/v1/PowerEquipment/FloorPDUs/*{PowerDistributionId}*/Sensors /redfish/v1/PowerEquipment/PowerShelves/*{PowerDistributionId}*/Sensors /redfish/v1/PowerEquipment/RackPDUs/*{PowerDistributionId}*/Sensors /redfish/v1/PowerEquipment/Switchgear/*{PowerDistributionId}*/Sensors /redfish/v1/PowerEquipment/TransferSwitches/*{PowerDistributionId}*/Sensors
SerialInterfaceCollection	/redfish/v1/Managers/*{ManagerId}*/SerialInterfaces
SessionCollection	/redfish/v1/SessionService/Sessions
SignatureCollection	/redfish/v1/CompositionService/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/SecureBoot/SecureBootDatabases/*{DatabaseId}*/Signatures /redfish/v1/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/SecureBoot/SecureBootDatabases/*{DatabaseId}*/Signatures /redfish/v1/Systems/*{ComputerSystemId}*/SecureBoot/SecureBootDatabases/*{DatabaseId}*/Signatures
SimpleStorageCollection	/redfish/v1/CompositionService/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/SimpleStorage /redfish/v1/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/SimpleStorage /redfish/v1/Systems/*{ComputerSystemId}*/SimpleStorage
SoftwareInventoryCollection	/redfish/v1/UpdateService/FirmwareInventory /redfish/v1/UpdateService/SoftwareInventory
StorageCollection	/redfish/v1/CompositionService/ResourceBlocks/*{ResourceBlockId}*/Storage /redfish/v1/CompositionService/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/Storage /redfish/v1/ResourceBlocks/*{ResourceBlockId}*/Storage /redfish/v1/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/Storage /redfish/v1/Storage /redfish/v1/Systems/*{ComputerSystemId}*/Storage
StorageControllerCollection	/redfish/v1/CompositionService/ResourceBlocks/*{ResourceBlockId}*/Storage/*{StorageId}*/Controllers /redfish/v1/CompositionService/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/Storage/*{StorageId}*/Controllers /redfish/v1/ResourceBlocks/*{ResourceBlockId}*/Storage/*{StorageId}*/Controllers /redfish/v1/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/Storage/*{StorageId}*/Controllers /redfish/v1/Storage/*{StorageId}*/Controllers /redfish/v1/Systems/*{ComputerSystemId}*/Storage/*{StorageId}*/Controllers
SwitchCollection	/redfish/v1/Fabrics/*{FabricId}*/Switches
TaskCollection	/redfish/v1/TaskService/Tasks /redfish/v1/TaskService/Tasks/*{TaskId}*/SubTasks
TriggersCollection	/redfish/v1/TelemetryService/Triggers

Collection Type	URIs
USBControllerCollection	/redfish/v1/Systems/*{ComputerSystemId}*/USBControllers
VCATEntryCollection	/redfish/v1/Fabrics/*{FabricId}*/Switches/*{SwitchId}*/Ports/*{PortId}*/VCAT /redfish/v1/Systems/*{SystemId}*/FabricAdapters/*{FabricAdapterId}*/Ports/*{PortId}*/VCAT /redfish/v1/Systems/*{SystemId}*/FabricAdapters/*{FabricAdapterId}*/REQ-VCAT /redfish/v1/Systems/*{SystemId}*/FabricAdapters/*{FabricAdapterId}*/RSP-VCAT
VirtualMediaCollection	/redfish/v1/CompositionService/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/VirtualMedia /redfish/v1/Managers/*{ManagerId}*/VirtualMedia /redfish/v1/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/VirtualMedia /redfish/v1/Systems/*{ComputerSystemId}*/VirtualMedia
VLanNetworkInterfaceCollection	/redfish/v1/Chassis/*{ChassisId}*/NetworkAdapters/*{NetworkAdapterId}*/NetworkDeviceFunctions/*{NetworkDeviceFunctionId}*/Ethernet/VLANs /redfish/v1/CompositionService/ResourceBlocks/*{ResourceBlockId}*/EthernetInterfaces/*{EthernetInterfaceId}*/VLANs /redfish/v1/CompositionService/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/EthernetInterfaces/*{EthernetInterfaceId}*/VLANs /redfish/v1/Managers/*{ManagerId}*/EthernetInterfaces/*{EthernetInterfaceId}*/VLANs /redfish/v1/ResourceBlocks/*{ResourceBlockId}*/EthernetInterfaces/*{EthernetInterfaceId}*/VLANs /redfish/v1/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/EthernetInterfaces/*{EthernetInterfaceId}*/VLANs /redfish/v1/Systems/*{ComputerSystemId}*/EthernetInterfaces/*{EthernetInterfaceId}*/VLANs

Collection Type	URIs
VolumeCollection	/redfish/v1/CompositionService/ResourceBlocks/{*ResourceBlockId*}/Storage/{*StorageId*}/Volumes /redfish/v1/CompositionService/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/Storage/{*StorageId*}/Volumes /redfish/v1/ResourceBlocks/{*ResourceBlockId*}/Storage/{*StorageId*}/Volumes /redfish/v1/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/Storage/{*StorageId*}/Volumes /redfish/v1/Storage/{*StorageId*}/ConsistencyGroups/{*ConsistencyGroupId*}/Volumes /redfish/v1/Storage/{*StorageId*}/FileSystems/{*FileSystemId*}/CapacitySources/{*CapacitySourceId*}/ProvidingVolumes /redfish/v1/Storage/{*StorageId*}/StoragePools/{*StoragePoolId*}/AllocatedVolumes /redfish/v1/Storage/{*StorageId*}/StoragePools/{*StoragePoolId*}/CapacitySources/{*CapacitySourceId*}/ProvidingVolumes /redfish/v1/Storage/{*StorageId*}/Volumes /redfish/v1/StorageServices/{*StorageServiceId*}/ConsistencyGroups/{*ConsistencyGroupId*}/Volumes /redfish/v1/StorageServices/{*StorageServiceId*}/FileSystems/{*FileSystemId*}/CapacitySources/{*CapacitySourceId*}/ProvidingVolumes /redfish/v1/StorageServices/{*StorageServiceId*}/StoragePools/{*StoragePoolId*}/AllocatedVolumes /redfish/v1/StorageServices/{*StorageServiceId*}/StoragePools/{*StoragePoolId*}/CapacitySources/{*CapacitySourceId*}/ProvidingVolumes /redfish/v1/StorageServices/{*StorageServiceId*}/Volumes /redfish/v1/StorageServices/{*StorageServiceId*}/Volumes/{*VolumeId*}/CapacitySources/{*CapacitySourceId*}/ProvidingVolumes /redfish/v1/Systems/{*ComputerSystemId*}/Storage/{*StorageId*}/ConsistencyGroups/{*ConsistencyGroupId*}/Volumes /redfish/v1/Systems/{*ComputerSystemId*}/Storage/{*StorageId*}/FileSystems/{*FileSystemId*}/CapacitySources/{*CapacitySourceId*}/ProvidingVolumes /redfish/v1/Systems/{*ComputerSystemId*}/Storage/{*StorageId*}/StoragePools/{*StoragePoolId*}/AllocatedVolumes /redfish/v1/Systems/{*ComputerSystemId*}/Storage/{*StorageId*}/StoragePools/{*StoragePoolId*}/CapacitySources/{*CapacitySourceId*}/ProvidingVolumes /redfish/v1/Systems/{*ComputerSystemId*}/Storage/{*StorageId*}/Volumes
ZoneCollection	/redfish/v1/CompositionService/ResourceZones /redfish/v1/Fabrics/{*FabricId*}/Zones

6 Reference Guide

To produce this guide, DMTF's Redfish Documentation Generator merges the DMTF Redfish Schema bundle (DSP8010) contents with supplemental text.

6.1 AccelerationFunction 1.0.3

Version	*v1.0*
Release	2018.3

6.1.1 Description

The AccelerationFunction schema describes an acceleration function that a processor implements. This can include functions such as audio processing, compression, encryption, packet inspection, packet switching, scheduling, or video processing.

6.1.2 URIs

/redfish/v1/CompositionService/ResourceBlocks/*{ResourceBlockId}*/Processors/*{ProcessorId}*/AccelerationFunctions/*{AccelerationFunctionId}*
/redfish/v1/CompositionService/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/Processors/*{ProcessorId}*/AccelerationFunctions/*{AccelerationFunctionId}*
/redfish/v1/ResourceBlocks/*{ResourceBlockId}*/Processors/*{ProcessorId}*/AccelerationFunctions/*{AccelerationFunctionId}*
/redfish/v1/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/Processors/*{ProcessorId}*/AccelerationFunctions/*{AccelerationFunctionId}*
/redfish/v1/Systems/*{ComputerSystemId}*/Processors/*{ProcessorId}*/AccelerationFunctions/*{AccelerationFunctionId}*

6.1.3 Properties

Property	Type	Attributes	Notes
AccelerationFunctionType	string (enum)	*read-only (null)*	The acceleration function type. *For the possible property values, see AccelerationFunctionType in Property details.*
FpgaReconfigurationSlots [ ]	array (string)	*read-only*	An array of the reconfiguration slot identifiers of the FPGA that this acceleration function occupies.

Property	Type	Attributes	Notes
Links {	object		The links to other Resources that are related to this Resource.
Endpoints [{	array		An array of links to the endpoints that connect to this acceleration function.
@odata.id	string	*read-only*	Link to a Endpoint resource. See the Links section and the *Endpoint* schema for details.
}]			
Oem {}	object		See the Oem object definition in the Common properties section.
PCIeFunctions [{	array		An array of links to the PCIeFunctions associated with this acceleration function.
@odata.id	string	*read-only*	Link to a PCIeFunction resource. See the Links section and the *PCIeFunction* schema for details.
}]			
}			
Manufacturer	string	*read-only*	The acceleration function code manufacturer.
PowerWatts	integer (Watts)	*read-only*	The acceleration function power consumption, in watts.
Status {}	object		The status and health of the Resource and its subordinate or dependent Resources. For property details, see Status.
UUID	string	*read-only (null)*	The UUID for this acceleration function.
Version	string	*read-only*	The acceleration function version.

6.1.4 Property details

6.1.4.1 AccelerationFunctionType:

The acceleration function type.

string	Description
AudioProcessing	An audio processing function.
Compression	A compression function.
Encryption	An encryption function.

string	Description
OEM	An OEM-defined acceleration function.
PacketInspection	A packet inspection function.
PacketSwitch	A packet switch function.
Scheduler	A scheduler function.
VideoProcessing	A video processing function.

6.1.5 Example response

```
{
    "@odata.type": "#AccelerationFunction.v1_0_3.AccelerationFunction",
    "Id": "Compression",
    "Name": "Compression Accelerator",
    "Status": {
        "State": "Enabled",
        "Health": "OK"
    },
    "FpgaReconfigurationSlots": [
        "AFU0"
    ],
    "AccelerationFunctionType": "Compression",
    "Manufacturer": "Intel (R) Corporation",
    "Version": "Green Compression Type 1 v.1.00.86",
    "PowerWatts": 15,
    "Links": {
        "Endpoints": [],
        "PCIeFunctions": []
    },
    "Oem": {},
    "@odata.id": "/redfish/v1/Systems/1/Processors/FPGA1/AccelerationFunctions/Compression"
}
```

6.2 AccountService 1.10.0

Version	v1.10	v1.9	v1.8	v1.7	v1.6	v1.5	v1.4	v1.3	v1.2	v1.1	v1.0
Release	2021.2	2021.1	2020.4	2019.4	2019.2	2019.1	2018.3	2018.1	2017.1	2016.3	1.0

6.2.1 Description

The AccountService schema defines an account service. The properties are common to, and enable management of, all user accounts. The properties include the password requirements and control features, such as account lockout. Properties and actions in this service specify general behavior that should be followed for typical accounts, however implementations may override these behaviors for special accounts or situations to avoid denial of service or other deadlock situations.

6.2.2 URIs

/redfish/v1/AccountService
/redfish/v1/Managers/*{ManagerId}*/RemoteAccountService

6.2.3 Properties

Property	Type	Attributes	Notes
AccountLockoutCounterResetAfter	integer (seconds)	*read-write*	The period of time, in seconds, between the last failed login attempt and the reset of the lockout threshold counter. This value must be less than or equal to the AccountLockoutDuration value. A reset sets the counter to `0` .
AccountLockoutCounterResetEnabled *(v1.5+)*	boolean	*read-write*	An indication of whether the threshold counter is reset after AccountLockoutCounterResetAfter expires. If `true` , it is reset. If `false` , only a successful login resets the threshold counter and if the user reaches the AccountLockoutThreshold limit, the account will be locked out indefinitely and only an administrator-issued reset clears the threshold counter. If this property is absent, the default is `true` .
AccountLockoutDuration	integer (seconds)	*read-write (null)*	The period of time, in seconds, that an account is locked after the number of failed login attempts reaches the account lockout threshold, within the period between the last failed login attempt and the reset of the lockout threshold counter. If this value is `0` , no lockout will occur. If the AccountLockoutCounterResetEnabled value is `false` , this property is ignored.
AccountLockoutThreshold	integer	*read-write (null)*	The number of allowed failed login attempts before a user account is locked for a specified duration. If `0` , the account is never locked.
Accounts {	object		The collection of manager accounts. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *ManagerAccount*. See the ManagerAccount schema for details.
}			

Property	Type	Attributes	Notes
ActiveDirectory *(v1.3+)* {}	object		The first Active Directory external account provider that this account service supports. For more information about this property, see ExternalAccountProvider in Property Details.
AdditionalExternalAccountProviders *(v1.3+)* {	object		The additional external account providers that this account service uses. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *ExternalAccountProvider*. See the ExternalAccountProvider schema for details.
}			
AuthFailureLoggingThreshold	integer	*read-write*	The number of authorization failures per account that are allowed before the failed attempt is logged to the manager log.
LDAP *(v1.3+)* {}	object		The first LDAP external account provider that this account service supports. For more information about this property, see ExternalAccountProvider in Property Details.
LocalAccountAuth *(v1.3+)*	string (enum)	*read-write*	An indication of how the service uses the accounts collection within this account service as part of authentication. The enumerated values describe the details for each mode. *For the possible property values, see LocalAccountAuth in Property details.*
MaxPasswordLength	integer	*read-write*	The maximum password length for this account service.
MinPasswordLength	integer	*read-write*	The minimum password length for this account service.
OAuth2 *(v1.10+)* {}	object	*(null)*	The first OAuth 2.0 external account provider that this account service supports. For more information about this property, see ExternalAccountProvider in Property Details.
PasswordExpirationDays *(v1.9+)*	integer	*read-write (null)*	The number of days before account passwords in this account service will expire.
PrivilegeMap *(v1.1+)* {	object		The link to the mapping of the privileges required to complete a requested operation on a URI associated with this service. See the *PrivilegeRegistry* schema for details on this property.
@odata.id	string	*read-only*	Link to a PrivilegeRegistry resource. See the Links section and the *PrivilegeRegistry* schema for details.
}			
RestrictedOemPrivileges *(v1.8+)* [ ]	array (string)	*read-only*	The set of restricted OEM privileges.
RestrictedPrivileges *(v1.8+)* [ ]	array (string (enum))	*read-only*	The set of restricted Redfish privileges. *For the possible property values, see RestrictedPrivileges in Property details.*

Property	Type	Attributes	Notes
Roles {	object		The collection of Redfish roles. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *Role.* See the Role schema for details.
}			
ServiceEnabled	boolean	*read-write* *(null)*	An indication of whether the account service is enabled. If `true` , it is enabled. If `false` , it is disabled and users cannot be created, deleted, or modified, and new sessions cannot be started. However, established sessions might still continue to run. Any service, such as the session service, that attempts to access the disabled account service fails. However, this does not affect HTTP Basic Authentication connections.
Status {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
SupportedAccountTypes *(v1.8+)* [ ]	array (string (enum))	*read-only*	The account types supported by the service. *For the possible property values, see SupportedAccountTypes in Property details.*
SupportedOEMAccountTypes *(v1.8+)* [ ]	array (string)	*read-only*	The OEM account types supported by the service.
TACACSplus *(v1.8+)* {}	object	*(null)*	The first TACACS+ external account provider that this account service supports. For more information about this property, see ExternalAccountProvider in Property Details.

6.2.4 Property details

6.2.4.1 AccountProviderType:

The type of external account provider to which this service connects.

string	Description
ActiveDirectoryService	An external Active Directory service.
LDAPService	A generic external LDAP service.
OAuth2 *(v1.10+)*	An external OAuth 2.0 service.
OEM	An OEM-specific external authentication or directory service.
RedfishService	An external Redfish service.
TACACSplus *(v1.8+)*	An external TACACS+ service.

6.2.4.2 Authentication:

The information required to authenticate to the external service.

AuthenticationType *(v1.3+)*	string (enum)	*read-write (null)*	The type of authentication used to connect to the external account provider. *For the possible property values, see AuthenticationType in Property details.*
EncryptionKey *(v1.8+)*	string	*read-write (null)*	Specifies the encryption key.
EncryptionKeySet *(v1.8+)*	boolean	*read-only (null)*	Indicates if the EncryptionKey property is set.
KerberosKeytab *(v1.3+)*	string	*read-write (null)*	The Base64-encoded version of the Kerberos keytab for this service. A PATCH or PUT operation writes the keytab. This property is `null` in responses.
Oem *(v1.3+)* `{}`	object		See the Oem object definition in the Common properties section.
Password *(v1.3+)*	string	*read-write (null)*	The password for this service. A PATCH or PUT request writes the password. This property is `null` in responses.
Token *(v1.3+)*	string	*read-write (null)*	The token for this service. A PATCH or PUT operation writes the token. This property is `null` in responses.
Username *(v1.3+)*	string	*read-write*	The user name for the service.

6.2.4.3 AuthenticationType:

The type of authentication used to connect to the external account provider.

string	Description
KerberosKeytab	A Kerberos keytab.
OEM	An OEM-specific authentication mechanism.
Token	An opaque authentication token.
UsernameAndPassword	A user name and password combination.

6.2.4.4 ExternalAccountProvider:

The external account provider services that can provide accounts for this manager to use for authentication.

AccountProviderType *(v1.3+, deprecated v1.5*	string (enum)	*read-only* *(null)*	The type of external account provider to which this service connects. *For the possible property values, see AccountProviderType in Property details. Deprecated in v1.5 and later. This property is deprecated because the account provider type is known when used in the LDAP and ActiveDirectory objects.*
Authentication *(v1.3+)* {}	object		The authentication information for the external account provider. For more information about this property, see Authentication in Property Details.
Certificates *(v1.4+)* {	object		The link to a collection of certificates that the external account provider uses. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *Certificate*. See the Certificate schema for details.
}			
LDAPService *(v1.3+)* {}	object		The additional mapping information needed to parse a generic LDAP service. For more information about this property, see LDAPService in Property Details.
OAuth2Service *(v1.10+)* {}	object	*(null)*	The additional information needed to parse an OAuth 2.0 service. For more information about this property, see OAuth2Service in Property Details.
PasswordSet *(v1.7+)*	boolean	*read-only*	Indicates if the Password property is set.
Priority *(v1.8+)*	integer	*read-write* *(null)*	The authentication priority for the external account provider.
RemoteRoleMapping *(v1.3+)* [{	array		The mapping rules to convert the external account providers account information to the local Redfish role.
LocalRole *(v1.3+)*	string	*read-write* *(null)*	The name of the local Redfish role to which to map the remote user or group.
Oem *(v1.3+)* {}	object		See the Oem object definition in the Common properties section.
RemoteGroup *(v1.3+)*	string	*read-write* *(null)*	The name of the remote group, or the remote role in the case of a Redfish service, that maps to the local Redfish role to which this entity links.
RemoteUser *(v1.3+)*	string	*read-write* *(null)*	The name of the remote user that maps to the local Redfish role to which this entity links.
}]			

ServiceAddresses *(v1.3+)* [ ]	array (string, null)	*read-write*	The addresses of the user account providers to which this external account provider links. The format of this field depends on the type of external account provider.
ServiceEnabled *(v1.3+)*	boolean	*read-write (null)*	An indication of whether this service is enabled.
TACACSplusService *(v1.8+)* {}	object	*(null)*	The additional information needed to parse a TACACS+ services. For more information about this property, see TACACSplusService in Property Details.

6.2.4.5 LDAPService:

The settings required to parse a generic LDAP service.

Oem *(v1.3+)* {}	object		See the Oem object definition in the Common properties section.
SearchSettings *(v1.3+)* {	object		The required settings to search an external LDAP service.
BaseDistinguishedNames *(v1.3+)* [ ]	array (string, null)	*read-write*	The base distinguished names to use to search an external LDAP service.
GroupNameAttribute *(v1.3+)*	string	*read-write (null)*	The attribute name that contains the LDAP group name entry.
GroupsAttribute *(v1.3+)*	string	*read-write (null)*	The attribute name that contains the groups for a user on the LDAP user entry.
UsernameAttribute *(v1.3+)*	string	*read-write (null)*	The attribute name that contains the LDAP user name entry.
}			

6.2.4.6 LocalAccountAuth:

An indication of how the service uses the accounts collection within this account service as part of authentication. The enumerated values describe the details for each mode.

string	Description
Disabled	The service never authenticates users based on the account service-defined accounts collection.

string	Description
Enabled	The service authenticates users based on the account service-defined accounts collection.
Fallback	The service authenticates users based on the account service-defined accounts collection only if any external account providers are currently unreachable.
LocalFirst *(v1.6+)*	The service first authenticates users based on the account service-defined accounts collection. If authentication fails, the service authenticates by using external account providers.

6.2.4.7 Mode:

The mode of operation for token validation.

string	Description
Discovery	OAuth 2.0 service information for token validation is downloaded by the service.
Offline	OAuth 2.0 service information for token validation is configured by a client.

6.2.4.8 OAuth2Service:

Various settings to parse an OAuth 2.0 service.

Audience *(v1.10+)* [ ]	array (string)	*read-only*	The allowable audience strings of the Redfish service.
Issuer *(v1.10+)*	string	*read-write (null)*	The issuer string of the OAuth 2.0 service.
Mode *(v1.10+)*	string (enum)	*read-write*	The mode of operation for token validation. *For the possible property values, see Mode in Property details.*
OAuthServiceSigningKeys *(v1.10+)*	string	*read-write (null)*	The Base64-encoded signing keys of the issuer of the OAuth 2.0 service.

6.2.4.9 PasswordExchangeProtocols:

Indicates the allowed TACACS+ password exchange protocols.

string	Description
ASCII	The ASCII Login method.
CHAP	The CHAP Login method.
MSCHAPv1	The MS-CHAP v1 Login method.
MSCHAPv2	The MS-CHAP v2 Login method.
PAP	The PAP Login method.

6.2.4.10 RestrictedPrivileges:

The set of restricted Redfish privileges.

string	Description
ConfigureComponents	Can configure components that this service manages.
ConfigureCompositionInfrastructure	Can view and configure composition service resources.
ConfigureManager	Can configure managers.
ConfigureSelf	Can change the password for the current user account and log out of their own sessions.
ConfigureUsers	Can configure users and their accounts.
Login	Can log in to the service and read Resources.
NoAuth	Authentication is not required.

6.2.4.11 SupportedAccountTypes:

The account types supported by the service.

string	Description
HostConsole	Allow access to the host's console, which could be connected through Telnet, SSH, or other protocol.
IPMI	Allow access to the Intelligent Platform Management Interface service.
KVMIP	Allow access to a Keyboard-Video-Mouse over IP session.
ManagerConsole	Allow access to the manager's console, which could be connected through Telnet, SSH, SM CLP, or other protocol.

string	Description
OEM	OEM account type. See the OEMAccountTypes property.
Redfish	Allow access to the Redfish service.
SNMP	Allow access to SNMP services.
VirtualMedia	Allow access to control virtual media.
WebUI	Allow access to a web user interface session, such as a graphical interface or another web-based protocol.

6.2.4.12 TACACSplusService:

Various settings to parse a TACACS+ service.

PasswordExchangeProtocols *(v1.8+)* [ ]	array (string (enum))	*read-write (null)*	Indicates the allowed TACACS+ password exchange protocols. *For the possible property values, see PasswordExchangeProtocols in Property details.*
PrivilegeLevelArgument *(v1.8+)*	string	*read-write (null)*	Indicates the name of the TACACS+ argument name in an authorization request.

6.2.5 Example response

```
{
    "@odata.type": "#AccountService.v1_10_0.AccountService",
    "Id": "AccountService",
    "Name": "Account Service",
    "Description": "Local Manager Account Service",
    "Status": {
        "State": "Enabled",
        "Health": "OK"
    },
    "ServiceEnabled": true,
    "AuthFailureLoggingThreshold": 3,
    "MinPasswordLength": 8,
    "AccountLockoutThreshold": 5,
    "AccountLockoutDuration": 30,
    "AccountLockoutCounterResetAfter": 30,
    "AccountLockoutCounterResetEnabled": true,
    "Accounts": {
        "@odata.id": "/redfish/v1/AccountService/Accounts"
    },
```

```
    "Roles": {
        "@odata.id": "/redfish/v1/AccountService/Roles"
    },
    "LocalAccountAuth": "Enabled",
    "LDAP": {
        "AccountProviderType": "LDAPService",
        "ServiceEnabled": false,
        "ServiceAddresses": [
            "ldaps://ldap.example.org:636"
        ],
        "Authentication": {
            "AuthenticationType": "UsernameAndPassword",
            "Username": "cn=Manager,dc=example,dc=org",
            "Password": null
        },
        "LDAPService": {
            "SearchSettings": {
                "BaseDistinguishedNames": [
                    "dc=example,dc=org"
                ],
                "UsernameAttribute": "uid",
                "GroupsAttribute": "memberof"
            }
        },
        "RemoteRoleMapping": [
            {
                "RemoteUser": "cn=Manager,dc=example,dc=org",
                "LocalRole": "Administrator"
            },
            {
                "RemoteGroup": "cn=Admins,ou=Groups,dc=example,dc=org",
                "LocalRole": "Administrator"
            },
            {
                "RemoteGroup": "cn=PowerUsers,ou=Groups,dc=example,dc=org",
                "LocalRole": "Operator"
            },
            {
                "RemoteGroup": "(cn=*)",
                "LocalRole": "ReadOnly"
            }
        ]
    },
    "ActiveDirectory": {
        "AccountProviderType": "ActiveDirectoryService",
        "ServiceEnabled": true,
        "ServiceAddresses": [
            "ad1.example.org",
            "ad2.example.org",
            null,
```

```
            null
        ],
        "Authentication": {
            "AuthenticationType": "KerberosKeytab",
            "KerberosKeytab": null
        },
        "RemoteRoleMapping": [
            {
                "RemoteGroup": "Administrators",
                "LocalRole": "Administrator"
            },
            {
                "RemoteUser": "DOMAIN\\Bob",
                "LocalRole": "Operator"
            },
            {
                "RemoteGroup": "PowerUsers",
                "LocalRole": "Operator"
            },
            {
                "RemoteGroup": "Everybody",
                "LocalRole": "ReadOnly"
            }
        ]
    },
    "AdditionalExternalAccountProviders": {
        "@odata.id": "/redfish/v1/AccountService/ExternalAccountProviders"
    },
    "@odata.id": "/redfish/v1/AccountService"
}
```

6.3 ActionInfo 1.2.0

Version	v1.2	v1.1	v1.0
Release	2021.2	2018.2	2016.2

6.3.1 Description

The ActionInfo schema defines the supported parameters and other information for a Redfish action. Supported parameters can differ among vendors and even among resource instances. This data can ensure that action requests from applications contain supported parameters.

6.3.2 Properties

Property	Type	Attributes	Notes
Parameters [{	array		The list of parameters included in the specified Redfish action.
AllowableValues [ ]	array (string, null)	*read-only*	The allowable values for this parameter as applied to this action target.
ArraySizeMaximum *(v1.2+)*	integer	*read-only (null)*	The maximum number of array elements allowed for this parameter.
ArraySizeMinimum *(v1.2+)*	integer	*read-only (null)*	The minimum number of array elements required for this parameter.
DataType	string (enum)	*read-only (null)*	The JSON property type for this parameter. *For the possible property values, see DataType in Property details.*
MaximumValue *(v1.1+)*	number	*read-only (null)*	The maximum supported value for this parameter.
MinimumValue *(v1.1+)*	number	*read-only (null)*	The minimum supported value for this parameter.
Name	string	*read-only required*	The name of the parameter for this action.
ObjectDataType	string	*read-only (null)*	The data type of an object-based parameter.
Required	boolean	*read-only*	An indication of whether the parameter is required to complete this action.
}]			

6.3.3 Property details

6.3.3.1 DataType:

The JSON property type for this parameter.

string	Description
Boolean	A boolean.
Number	A number.
NumberArray	An array of numbers.

string	Description
Object	An embedded JSON object.
ObjectArray	An array of JSON objects.
String	A string.
StringArray	An array of strings.

6.3.4 Example response

```
{
    "@odata.type": "#ActionInfo.v1_2_0.ActionInfo",
    "Id": "ResetActionInfo",
    "Name": "Reset Action Info",
    "Parameters": [
        {
            "Name": "ResetType",
            "Required": true,
            "DataType": "String",
            "AllowableValues": [
                "On",
                "ForceOff",
                "GracefulShutdown",
                "GracefulRestart",
                "ForceRestart",
                "Nmi",
                "ForceOn",
                "PushPowerButton"
            ]
        }
    ],
    "Oem": {},
    "@odata.id": "/redfish/v1/Systems/1/ResetActionInfo"
}
```

6.4 AddressPool 1.2.1

Version	v1.2	v1.1	v1.0
Release	2021.2	2020.3	2019.4

6.4.1 Description

The schema definition of an address pool and its configuration.

6.4.2 URIs

/redfish/v1/Fabrics/*{FabricId}*/AddressPools/*{AddressPoolId}*

6.4.3 Properties

Property	Type	Attributes	Notes
Ethernet *(v1.1+)* {	object		The Ethernet related properties for this address pool.
BFDSingleHopOnly *(v1.1+)* {	object	*(null)*	Bidirectional Forwarding Detection (BFD) related properties for this Ethernet fabric.
DemandModeEnabled *(v1.1+)*	boolean	*read-write* *(null)*	Bidirectional Forwarding Detection (BFD) Demand Mode status.
DesiredMinTxIntervalMilliseconds *(v1.1+)*	integer	*read-write* *(null)*	Desired Bidirectional Forwarding Detection (BFD) minimal transmit interval.
KeyChain *(v1.1+)*	string	*read-write* *(null)*	Bidirectional Forwarding Detection (BFD) Key Chain name.
LocalMultiplier *(v1.1+)*	integer	*read-write* *(null)*	Bidirectional Forwarding Detection (BFD) multiplier value.
MeticulousModeEnabled *(v1.1+)*	boolean	*read-write* *(null)*	Meticulous MD5 authentication of the Bidirectional Forwarding Detection (BFD) session.
RequiredMinRxIntervalMilliseconds *(v1.1+)*	integer	*read-write* *(null)*	Bidirectional Forwarding Detection (BFD) receive value.
SourcePort *(v1.1+)*	integer	*read-write* *(null)*	Bidirectional Forwarding Detection (BFD) source port.
}			
BGPEvpn *(v1.1+)* {	object	*(null)*	BGP Ethernet Virtual Private Network (EVPN) related properties for this Ethernet fabric.
AnycastGatewayIPAddress *(v1.1+)*	string	*read-write* *(null)*	The anycast gateway IPv4 address.
AnycastGatewayMACAddress *(v1.1+)*	string	*read-write* *(null)*	The anycast gateway MAC address.

Property	Type	Attributes	Notes
ARPProxyEnabled *(v1.1+)*	boolean	*read-write (null)*	Address Resolution Protocol (ARP) proxy status.
ARPSupressionEnabled *(v1.1+)*	boolean	*read-write (null)*	Address Resolution Protocol (ARP) suppression status.
ESINumberRange *(v1.1+)* {	object	*(null)*	The Ethernet Segment Identifier (ESI) number range for the fabric.
Lower *(v1.1+)*	integer	*read-write*	Lower Ethernet Segment Identifier (ESI) number.
Upper *(v1.1+)*	integer	*read-write*	Upper Ethernet Segment Identifier (ESI) number.
}			
EVINumberRange *(v1.1+)* {	object	*(null)*	The Ethernet Virtual Private Network (EVPN) Instance number (EVI) number range for the fabric.
Lower *(v1.1+)*	integer	*read-write*	Lower Ethernet Virtual Private Network (EVPN) Instance (EVI) number.
Upper *(v1.1+)*	integer	*read-write*	Upper Ethernet Virtual Private Network (EVPN) Instance (EVI) number.
}			
GatewayIPAddress *(v1.1+)*	string	*read-write (null)*	The gateway IPv4 address.
GatewayIPAddressRange *(v1.2+)* {	object	*(null)*	The IPv4 address range for gateways.
Lower *(v1.2+)*	string	*read-write (null)*	The lower IPv4 address.
Upper *(v1.2+)*	string	*read-write (null)*	The upper IPv4 address.
}			
NDPProxyEnabled *(v1.1+)*	boolean	*read-write (null)*	Network Discovery Protocol (NDP) proxy status.
NDPSupressionEnabled *(v1.1+)*	boolean	*read-write (null)*	Network Discovery Protocol (NDP) suppression status.
RouteDistinguisherAdministratorSubfield *(v1.2+)*	string	*read-write (null)*	The Route Distinguisher (RD) Administrator subfield.
RouteDistinguisherRange *(v1.1+)* {	object	*(null)*	The Route Distinguisher (RD) number range for the fabric.

Property	Type	Attributes	Notes
Lower *(v1.1+)*	integer	*read-write*	Lower Route Distinguisher (RD) number.
Upper *(v1.1+)*	integer	*read-write*	Upper Route Distinguisher (RD) number.
}			
RouteTargetAdministratorSubfield *(v1.2+)*	string	*read-write (null)*	The Route Target (RT) Administrator Subfield.
RouteTargetRange *(v1.1+)* {	object	*(null)*	The Route Target (RT) number range for the fabric.
Lower *(v1.1+)*	integer	*read-write (null)*	Lower Route Target (RT) number.
Upper *(v1.1+)*	integer	*read-write (null)*	Upper Route Target (RT) number.
}			
UnderlayMulticastEnabled *(v1.1+)*	boolean	*read-write (null)*	Underlay multicast status.
UnknownUnicastSuppressionEnabled *(v1.1+)*	boolean	*read-write (null)*	Suppression of unknown unicast packets.
VLANIdentifierAddressRange *(v1.1+)* {	object	*(null)*	Virtual LAN (VLAN) tag related address range applicable to this Ethernet fabric or for end host subnets.
Lower *(v1.1+)*	integer	*read-write (null)*	Virtual LAN (VLAN) tag lower value.
Upper *(v1.1+)*	integer	*read-write (null)*	Virtual LAN (VLAN) tag upper value.
}			
}			
EBGP *(v1.1+)* {	object	*(null)*	External BGP (eBGP) related properties for this Ethernet fabric.
AllowDuplicateASEnabled *(v1.1+)*	boolean	*read-write (null)*	Allow duplicate Autonomous System (AS) path.
AllowOverrideASEnabled *(v1.1+)*	boolean	*read-write (null)*	Option to override an Autonomous System (AS) number with the AS number of the sending peer .
AlwaysCompareMEDEnabled *(v1.1+)*	boolean	*read-write (null)*	Compare Multi Exit Discriminator (MED) status.

Property	Type	Attributes	Notes
ASNumberRange *(v1.1+)* {	object	*(null)*	Autonomous System (AS) number range.
Lower *(v1.1+)*	integer	*read-write*	Lower Autonomous System (AS) number.
Upper *(v1.1+)*	integer	*read-write*	Upper Autonomous System (AS) number.
}			
BGPLocalPreference *(v1.1+)*	integer	*read-write (null)*	Local preference value.
BGPNeighbor *(v1.1+)* {	object	*(null)*	Border Gateway Protocol (BGP) neighbor related properties.
Address *(v1.1+)*	string	*read-write (null)*	Border Gateway Protocol (BGP) neighbor address.
AllowOwnASEnabled *(v1.1+)*	boolean	*read-write (null)*	Allow own Autonomous System (AS) status.
CIDR *(v1.2+)*	integer	*read-write*	The Classless Inter-Domain Routing (CIDR) value used for neighbor communication. This is the number of ones before the first zero in the subnet mask.
ConnectRetrySeconds *(v1.1+)*	integer	*read-write (null)*	Border Gateway Protocol (BGP) retry timer in seconds.
Enabled *(v1.2+)*	boolean	*read-write*	An indication of whether BGP neighbor communication is enabled.
HoldTimeSeconds *(v1.1+)*	integer	*read-write (null)*	Border Gateway Protocol (BGP) hold timer in seconds.
KeepaliveIntervalSeconds *(v1.1+)*	integer	*read-write (null)*	Border Gateway Protocol (BGP) Keepalive timer in seconds.
LocalAS *(v1.1+)*	integer	*read-write (null)*	Local Autonomous System (AS) number.
LogStateChangesEnabled *(v1.1+)*	boolean	*read-write (null)*	Border Gateway Protocol (BGP) neighbor log state change status.
MaxPrefix *(v1.1+)* {	object	*(null)*	Border Gateway Protocol (BGP) max prefix properties.
MaxPrefixNumber *(v1.1+)*	integer	*read-write (null)*	Maximum prefix number.
RestartTimerSeconds *(v1.1+)*	integer	*read-write (null)*	Border Gateway Protocol (BGP) restart timer in seconds.

Property	Type	Attributes	Notes
ShutdownThresholdPercentage *(v1.1+)*	number (%)	*read-write (null)*	Shutdown threshold status.
ThresholdWarningOnlyEnabled *(v1.1+)*	boolean	*read-write (null)*	Threshold warning only status.
}			
MinimumAdvertisementIntervalSeconds *(v1.1+)*	integer	*read-write (null)*	Minimum Border Gateway Protocol (BGP) advertisement interval in seconds.
PassiveModeEnabled *(v1.1+)*	boolean	*read-write (null)*	Border Gateway Protocol (BGP) passive mode status.
PathMTUDiscoveryEnabled *(v1.1+)*	boolean	*read-write (null)*	Path MTU discovery status.
PeerAS *(v1.1+)*	integer	*read-write (null)*	Peer Autonomous System (AS) number.
ReplacePeerASEnabled *(v1.1+)*	boolean	*read-write (null)*	Replace Border Gateway Protocol (BGP) peer Autonomous System (AS) status.
TCPMaxSegmentSizeBytes *(v1.1+)*	integer	*read-write (null)*	TCP max segment size in Bytes.
TreatAsWithdrawEnabled *(v1.1+)*	boolean	*read-write (null)*	Border Gateway Protocol (BGP) treat as withdraw status.
}			
BGPRoute *(v1.1+)* {	object	*(null)*	Border Gateway Protocol (BGP) route related properties.
AdvertiseInactiveRoutesEnabled *(v1.1+)*	boolean	*read-write (null)*	Advertise inactive route status.
DistanceExternal *(v1.1+)*	integer	*read-write (null)*	Route distance for external routes.
DistanceInternal *(v1.1+)*	integer	*read-write (null)*	Route distance for internal routes.
DistanceLocal *(v1.1+)*	integer	*read-write (null)*	Route distance for local routes.
ExternalCompareRouterIdEnabled *(v1.1+)*	boolean	*read-write (null)*	Compare router id status.
FlapDampingEnabled *(v1.1+)*	boolean	*read-write (null)*	Route flap dampening status.

Property	Type	Attributes	Notes
SendDefaultRouteEnabled *(v1.1+)*	boolean	*read-write (null)*	Send default route status.
}			
BGPWeight *(v1.1+)*	integer	*read-write (null)*	BGP weight attribute.
GracefulRestart *(v1.1+)* {	object	*(null)*	Graceful restart related properties.
GracefulRestartEnabled *(v1.1+)*	boolean	*read-write (null)*	Border Gateway Protocol (BGP) graceful restart status.
HelperModeEnabled *(v1.1+)*	boolean	*read-write (null)*	Graceful restart helper mode status.
StaleRoutesTimeSeconds *(v1.1+)*	integer	*read-write (null)*	Stale route timer in seconds.
TimeSeconds *(v1.1+)*	integer	*read-write (null)*	Graceful restart timer in seconds.
}			
MED *(v1.1+)*	integer	*read-write (null)*	BGP Multi Exit Discriminator (MED) value.
MultihopEnabled *(v1.1+)*	boolean	*read-write (null)*	External BGP (eBGP) multihop status.
MultihopTTL *(v1.1+)*	integer	*read-write (null)*	External BGP (eBGP) multihop Time to Live (TTL) value.
MultiplePaths *(v1.1+)* {	object	*(null)*	Multiple path related properties.
MaximumPaths *(v1.1+)*	integer	*read-write (null)*	Maximum paths number.
UseMultiplePathsEnabled *(v1.1+)*	boolean	*read-write (null)*	Border Gateway Protocol (BGP) multiple paths status.
}			
SendCommunityEnabled *(v1.1+)*	boolean	*read-write (null)*	This property shall indicate whether community attributes are sent.
}			

Property	Type	Attributes	Notes
IPv4 *(v1.1+)* {	object	*(null)*	IPv4 and Virtual LAN (VLAN) related addressing for this Ethernet fabric.
AnycastGatewayIPAddress *(v1.1+)*	string	*read-write (null)*	The anycast gateway IPv4 address.
AnycastGatewayMACAddress *(v1.1+)*	string	*read-write (null)*	The anycast gateway MAC address.
DHCP *(v1.1+)* {	object	*(null)*	The Dynamic Host Configuration Protocol (DHCP) related addressing for this Ethernet fabric.
DHCPInterfaceMTUBytes *(v1.1+)*	integer	*read-write (null)*	Dynamic Host Configuration Protocol (DHCP) interface Maximum Transmission Unit (MTU).
DHCPRelayEnabled *(v1.1+)*	boolean	*read-write (null)*	Dynamic Host Configuration Protocol (DHCP) relay status.
DHCPServer *(v1.1+)* [ ]	array (string, null)	*read-write*	The Dynamic Host Configuration Protocol (DHCP) IPv4 addresses for this Ethernet fabric.
}			
DistributeIntoUnderlayEnabled *(v1.1+)*	boolean	*read-write (null)*	Indicates if host subnets should be distributed into the fabric underlay.
DNSDomainName *(v1.1+)*	string	*read-write (null)*	The Domain Name Service (DNS) domain name for this Ethernet fabric.
DNSServer *(v1.1+)* [ ]	array (string, null)	*read-write*	The Domain Name Service (DNS) servers for this Ethernet fabric.
EBGPAddressRange *(v1.1+)* {}	object	*(null)*	External BGP (eBGP) related addressing for this Ethernet fabric. For more information about this property, see IPv4AddressRange in Property Details.
FabricLinkAddressRange *(v1.1+)* {}	object	*(null)*	Link related IPv4 addressing for this Ethernet fabric typically applied to connections between spine and leaf Ethernet switches. For more information about this property, see IPv4AddressRange in Property Details.
GatewayIPAddress *(v1.1+)*	string	*read-write (null)*	The gateway IPv4 address.
HostAddressRange *(v1.1+)* {}	object	*(null)*	IPv4 related host subnet addressing for physical device endpoints that connect to this Ethernet fabric. For more information about this property, see IPv4AddressRange in Property Details.

Property	Type	Attributes	Notes
IBGPAddressRange *(v1.1+)* {}	object	*(null)*	Internal BGP (iBGP) related addressing for this Ethernet fabric. For more information about this property, see IPv4AddressRange in Property Details.
LoopbackAddressRange *(v1.1+)* {}	object	*(null)*	Loopback related IPv4 addressing for this Ethernet fabric. For more information about this property, see IPv4AddressRange in Property Details.
ManagementAddressRange *(v1.1+)* {}	object	*(null)*	Management related addressing for this Ethernet fabric. For more information about this property, see IPv4AddressRange in Property Details.
NativeVLAN *(v1.1+)*	integer	*read-write* *(null)*	The native Virtual LAN (VLAN) tag value.
NTPOffsetHoursMinutes *(v1.1+)*	integer	*read-write* *(null)*	The Network Time Protocol (NTP) offset configuration.
NTPServer *(v1.1+)* [ ]	array (string, null)	*read-write*	The Network Time Protocol (NTP) servers for this Ethernet fabric.
NTPTimezone *(v1.1+)*	string	*read-write* *(null)*	The Network Time Protocol (NTP) timezone for this Ethernet fabric.
SystemMACRange *(v1.2+)* {	object	*(null)*	The MAC address range for systems in this subnet.
Lower *(v1.2+)*	string	*read-write* *(null)*	The lower system MAC address.
Upper *(v1.2+)*	string	*read-write* *(null)*	The upper system MAC address.
}			
VLANIdentifierAddressRange *(v1.1+)* {	object	*(null)*	Virtual LAN (VLAN) tag related addressing for this Ethernet fabric or for end host networks.
Lower *(v1.1+)*	integer	*read-write* *(null)*	Virtual LAN (VLAN) tag lower value.
Upper *(v1.1+)*	integer	*read-write* *(null)*	Virtual LAN (VLAN) tag upper value.
}			
}			
MultiProtocolEBGP *(v1.1+)* {	object	*(null)*	Multi Protocol eBGP (MP eBGP) related properties for this Ethernet fabric.

Property	Type	Attributes	Notes
AllowDuplicateASEnabled *(v1.1+)*	boolean	*read-write (null)*	Allow duplicate Autonomous System (AS) path.
AllowOverrideASEnabled *(v1.1+)*	boolean	*read-write (null)*	Option to override an Autonomous System (AS) number with the AS number of the sending peer .
AlwaysCompareMEDEnabled *(v1.1+)*	boolean	*read-write (null)*	Compare Multi Exit Discriminator (MED) status.
ASNumberRange *(v1.1+)* {	object	*(null)*	Autonomous System (AS) number range.
Lower *(v1.1+)*	integer	*read-write*	Lower Autonomous System (AS) number.
Upper *(v1.1+)*	integer	*read-write*	Upper Autonomous System (AS) number.
}			
BGPLocalPreference *(v1.1+)*	integer	*read-write (null)*	Local preference value.
BGPNeighbor *(v1.1+)* {	object	*(null)*	Border Gateway Protocol (BGP) neighbor related properties.
Address *(v1.1+)*	string	*read-write (null)*	Border Gateway Protocol (BGP) neighbor address.
AllowOwnASEnabled *(v1.1+)*	boolean	*read-write (null)*	Allow own Autonomous System (AS) status.
CIDR *(v1.2+)*	integer	*read-write*	The Classless Inter-Domain Routing (CIDR) value used for neighbor communication. This is the number of ones before the first zero in the subnet mask.
ConnectRetrySeconds *(v1.1+)*	integer	*read-write (null)*	Border Gateway Protocol (BGP) retry timer in seconds.
Enabled *(v1.2+)*	boolean	*read-write*	An indication of whether BGP neighbor communication is enabled.
HoldTimeSeconds *(v1.1+)*	integer	*read-write (null)*	Border Gateway Protocol (BGP) hold timer in seconds.
KeepaliveIntervalSeconds *(v1.1+)*	integer	*read-write (null)*	Border Gateway Protocol (BGP) Keepalive timer in seconds.
LocalAS *(v1.1+)*	integer	*read-write (null)*	Local Autonomous System (AS) number.
LogStateChangesEnabled *(v1.1+)*	boolean	*read-write (null)*	Border Gateway Protocol (BGP) neighbor log state change status.

Property	Type	Attributes	Notes
MaxPrefix *(v1.1+)* {	object	*(null)*	Border Gateway Protocol (BGP) max prefix properties.
MaxPrefixNumber *(v1.1+)*	integer	*read-write (null)*	Maximum prefix number.
RestartTimerSeconds *(v1.1+)*	integer	*read-write (null)*	Border Gateway Protocol (BGP) restart timer in seconds.
ShutdownThresholdPercentage *(v1.1+)*	number (%)	*read-write (null)*	Shutdown threshold status.
ThresholdWarningOnlyEnabled *(v1.1+)*	boolean	*read-write (null)*	Threshold warning only status.
}			
MinimumAdvertisementIntervalSeconds *(v1.1+)*	integer	*read-write (null)*	Minimum Border Gateway Protocol (BGP) advertisement interval in seconds.
PassiveModeEnabled *(v1.1+)*	boolean	*read-write (null)*	Border Gateway Protocol (BGP) passive mode status.
PathMTUDiscoveryEnabled *(v1.1+)*	boolean	*read-write (null)*	Path MTU discovery status.
PeerAS *(v1.1+)*	integer	*read-write (null)*	Peer Autonomous System (AS) number.
ReplacePeerASEnabled *(v1.1+)*	boolean	*read-write (null)*	Replace Border Gateway Protocol (BGP) peer Autonomous System (AS) status.
TCPMaxSegmentSizeBytes *(v1.1+)*	integer	*read-write (null)*	TCP max segment size in Bytes.
TreatAsWithdrawEnabled *(v1.1+)*	boolean	*read-write (null)*	Border Gateway Protocol (BGP) treat as withdraw status.
}			
BGPRoute *(v1.1+)* {	object	*(null)*	Border Gateway Protocol (BGP) route related properties.
AdvertiseInactiveRoutesEnabled *(v1.1+)*	boolean	*read-write (null)*	Advertise inactive route status.
DistanceExternal *(v1.1+)*	integer	*read-write (null)*	Route distance for external routes.
DistanceInternal *(v1.1+)*	integer	*read-write (null)*	Route distance for internal routes.

Property	Type	Attributes	Notes
DistanceLocal *(v1.1+)*	integer	*read-write (null)*	Route distance for local routes.
ExternalCompareRouterIdEnabled *(v1.1+)*	boolean	*read-write (null)*	Compare router id status.
FlapDampingEnabled *(v1.1+)*	boolean	*read-write (null)*	Route flap dampening status.
SendDefaultRouteEnabled *(v1.1+)*	boolean	*read-write (null)*	Send default route status.
}			
BGPWeight *(v1.1+)*	integer	*read-write (null)*	BGP weight attribute.
GracefulRestart *(v1.1+)* {	object	*(null)*	Graceful restart related properties.
GracefulRestartEnabled *(v1.1+)*	boolean	*read-write (null)*	Border Gateway Protocol (BGP) graceful restart status.
HelperModeEnabled *(v1.1+)*	boolean	*read-write (null)*	Graceful restart helper mode status.
StaleRoutesTimeSeconds *(v1.1+)*	integer	*read-write (null)*	Stale route timer in seconds.
TimeSeconds *(v1.1+)*	integer	*read-write (null)*	Graceful restart timer in seconds.
}			
MED *(v1.1+)*	integer	*read-write (null)*	BGP Multi Exit Discriminator (MED) value.
MultihopEnabled *(v1.1+)*	boolean	*read-write (null)*	External BGP (eBGP) multihop status.
MultihopTTL *(v1.1+)*	integer	*read-write (null)*	External BGP (eBGP) multihop Time to Live (TTL) value.
MultiplePaths *(v1.1+)* {	object	*(null)*	Multiple path related properties.
MaximumPaths *(v1.1+)*	integer	*read-write (null)*	Maximum paths number.
UseMultiplePathsEnabled *(v1.1+)*	boolean	*read-write (null)*	Border Gateway Protocol (BGP) multiple paths status.

Property	Type	Attributes	Notes
}			
SendCommunityEnabled *(v1.1+)*	boolean	*read-write (null)*	This property shall indicate whether community attributes are sent.
}			
MultiProtocolIBGP *(v1.1+)* {	object	*(null)*	Multi Protocol iBGP (MP iBGP) related properties for this Ethernet fabric.
ASNumberRange *(v1.1+)* {	object	*(null)*	Autonomous System (AS) number range.
Lower *(v1.1+)*	integer	*read-write*	Lower Autonomous System (AS) number.
Upper *(v1.1+)*	integer	*read-write*	Upper Autonomous System (AS) number.
}			
BGPNeighbor *(v1.1+)* {	object	*(null)*	Border Gateway Protocol (BGP) neighbor related properties.
Address *(v1.1+)*	string	*read-write (null)*	Border Gateway Protocol (BGP) neighbor address.
AllowOwnASEnabled *(v1.1+)*	boolean	*read-write (null)*	Allow own Autonomous System (AS) status.
CIDR *(v1.2+)*	integer	*read-write*	The Classless Inter-Domain Routing (CIDR) value used for neighbor communication. This is the number of ones before the first zero in the subnet mask.
ConnectRetrySeconds *(v1.1+)*	integer	*read-write (null)*	Border Gateway Protocol (BGP) retry timer in seconds.
Enabled *(v1.2+)*	boolean	*read-write*	An indication of whether BGP neighbor communication is enabled.
HoldTimeSeconds *(v1.1+)*	integer	*read-write (null)*	Border Gateway Protocol (BGP) hold timer in seconds.
KeepaliveIntervalSeconds *(v1.1+)*	integer	*read-write (null)*	Border Gateway Protocol (BGP) Keepalive timer in seconds.
LocalAS *(v1.1+)*	integer	*read-write (null)*	Local Autonomous System (AS) number.
LogStateChangesEnabled *(v1.1+)*	boolean	*read-write (null)*	Border Gateway Protocol (BGP) neighbor log state change status.

Property	Type	Attributes	Notes
MaxPrefix *(v1.1+)* {	object	*(null)*	Border Gateway Protocol (BGP) max prefix properties.
MaxPrefixNumber *(v1.1+)*	integer	*read-write (null)*	Maximum prefix number.
RestartTimerSeconds *(v1.1+)*	integer	*read-write (null)*	Border Gateway Protocol (BGP) restart timer in seconds.
ShutdownThresholdPercentage *(v1.1+)*	number (%)	*read-write (null)*	Shutdown threshold status.
ThresholdWarningOnlyEnabled *(v1.1+)*	boolean	*read-write (null)*	Threshold warning only status.
}			
MinimumAdvertisementIntervalSeconds *(v1.1+)*	integer	*read-write (null)*	Minimum Border Gateway Protocol (BGP) advertisement interval in seconds.
PassiveModeEnabled *(v1.1+)*	boolean	*read-write (null)*	Border Gateway Protocol (BGP) passive mode status.
PathMTUDiscoveryEnabled *(v1.1+)*	boolean	*read-write (null)*	Path MTU discovery status.
PeerAS *(v1.1+)*	integer	*read-write (null)*	Peer Autonomous System (AS) number.
ReplacePeerASEnabled *(v1.1+)*	boolean	*read-write (null)*	Replace Border Gateway Protocol (BGP) peer Autonomous System (AS) status.
TCPMaxSegmentSizeBytes *(v1.1+)*	integer	*read-write (null)*	TCP max segment size in Bytes.
TreatAsWithdrawEnabled *(v1.1+)*	boolean	*read-write (null)*	Border Gateway Protocol (BGP) treat as withdraw status.
}			
BGPRoute *(v1.1+)* {	object	*(null)*	Border Gateway Protocol (BGP) route related properties.
AdvertiseInactiveRoutesEnabled *(v1.1+)*	boolean	*read-write (null)*	Advertise inactive route status.
DistanceExternal *(v1.1+)*	integer	*read-write (null)*	Route distance for external routes.
DistanceInternal *(v1.1+)*	integer	*read-write (null)*	Route distance for internal routes.

Property	Type	Attributes	Notes
DistanceLocal *(v1.1+)*	integer	*read-write (null)*	Route distance for local routes.
ExternalCompareRouterIdEnabled *(v1.1+)*	boolean	*read-write (null)*	Compare router id status.
FlapDampingEnabled *(v1.1+)*	boolean	*read-write (null)*	Route flap dampening status.
SendDefaultRouteEnabled *(v1.1+)*	boolean	*read-write (null)*	Send default route status.
}			
GracefulRestart *(v1.1+)* {	object	*(null)*	Graceful restart related properties.
GracefulRestartEnabled *(v1.1+)*	boolean	*read-write (null)*	Border Gateway Protocol (BGP) graceful restart status.
HelperModeEnabled *(v1.1+)*	boolean	*read-write (null)*	Graceful restart helper mode status.
StaleRoutesTimeSeconds *(v1.1+)*	integer	*read-write (null)*	Stale route timer in seconds.
TimeSeconds *(v1.1+)*	integer	*read-write (null)*	Graceful restart timer in seconds.
}			
MultiplePaths *(v1.1+)* {	object	*(null)*	Multiple path related properties.
MaximumPaths *(v1.1+)*	integer	*read-write (null)*	Maximum paths number.
UseMultiplePathsEnabled *(v1.1+)*	boolean	*read-write (null)*	Border Gateway Protocol (BGP) multiple paths status.
}			
SendCommunityEnabled *(v1.1+)*	boolean	*read-write (null)*	This property shall indicate whether community attributes are sent.
}			
}			
GenZ {	object		The Gen-Z related properties for this address pool.

Property	Type	Attributes	Notes
AccessKey	string	*read-write (null)*	The Access Key required for this address pool.
MaxCID	integer	*read-write (null)*	The maximum value for the Component Identifier (CID).
MaxSID	integer	*read-write (null)*	The maximum value for the Subnet Identifier (SID).
MinCID	integer	*read-write (null)*	The minimum value for the Component Identifier (CID).
MinSID	integer	*read-write (null)*	The minimum value for the Subnet Identifier (SID).
}			
Links {	object		The links to other resources that are related to this resource.
Endpoints [{	array		An array of links to the endpoints that this address pool contains.
@odata.id	string	*read-write*	Link to a Endpoint resource. See the Links section and the *Endpoint* schema for details.
}]			
Oem {}	object		See the Oem object definition in the Common properties section.
Zones [{	array		An array of links to the zones that this address pool contains.
@odata.id	string	*read-write*	Link to a Zone resource. See the Links section and the *Zone* schema for details.
}]			
}			
Status {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.

6.4.4 Property details

6.4.4.1 IPv4AddressRange:

IPv4 related address range for an Ethernet fabric.

Lower *(v1.1+)*	string	*read-write (null)*	Lower IPv4 network address.
Upper *(v1.1+)*	string	*read-write (null)*	Upper IPv4 network address.

6.4.5 Example response

```
{
    "@odata.type": "#AddressPool.v1_2_1.AddressPool",
    "Id": "AP1",
    "Name": "Address Pool 1",
    "Description": "Address Pool 1",
    "Status": {
        "State": "Enabled",
        "Health": "OK"
    },
    "GenZ": {
        "MinCID": 1,
        "MaxCID": 4096,
        "MinSID": 100,
        "MaxSID": 8192,
        "AccessKey": "0x1A"
    },
    "Links": {
        "Endpoints": [
            {
                "@odata.id": "/redfish/v1/Fabrics/GenZ/Endpoints/1"
            }
        ]
    },
    "Oem": {},
    "@odata.id": "/redfish/v1/Fabrics/GenZ/AddressPools/AP1"
}
```

6.5 Aggregate 1.0.1

Version	*v1.0*
Release	2020.2

6.5.1 Description

The Aggregate schema describes a grouping method for an aggregation service. Aggregates are formal groups of resources that are more persistent than ad hoc groupings.

6.5.2 URIs

/redfish/v1/AggregationService/Aggregates/{*AggregateId*}

6.5.3 Properties

Property	Type	Attributes	Notes
Elements [{	array	* required*	The elements of this aggregate.
@odata.id	string (URI)	*read-only*	The unique identifier for a resource.
}]			
ElementsCount	integer	*read-only (null)*	The number of entries in the Elements array.

6.5.4 Actions

6.5.4.1 AddElements

Description

This action is used to add one or more resources to the aggregate.

Action URI: {Base URI of target resource}/Actions/Aggregate.AddElements

Action parameters

Parameter Name	Type	Attributes	Notes
Elements [{	array	*required*	An array of resource links to add to the Elements array.
@odata.id	string (URI)	*read-only*	The unique identifier for a resource.
}]			

Request Example

```
{
    "Elements": [
        {
            "@odata.id": "/redfish/v1/Systems/cluster-node7"
        },
        {
            "@odata.id": "node8.intranet.contoso.com/redfish/v1/Systems/1"
        }
    ]
}
```

6.5.4.2 RemoveElements

Description

This action is used to remove one or more resources from the aggregate.

Action URI: {Base URI of target resource}/Actions/Aggregate.RemoveElements

Action parameters

Parameter Name	Type	Attributes	Notes
Elements [{	array	*required*	An array of resource links to remove from the Elements array.
@odata.id	string (URI)	*read-only*	The unique identifier for a resource.
}]			

Request Example

```
{
    "Elements": [
        {
            "@odata.id": "node8.intranet.contoso.com/redfish/v1/Systems/1"
        }
    ]
}
```

6.5.4.3 Reset

Description

This action is used to reset a collection of resources. For example, this could be an aggregate or a list of computer systems.

Action URI: {Base URI of target resource}/Actions/Aggregate.Reset

Action parameters

Parameter Name	Type	Attributes	Notes
BatchSize	integer	*optional*	The number of elements in each batch being reset.
DelayBetweenBatchesInSeconds	integer (seconds)	*optional*	The delay of the batches of elements being reset in seconds.
ResetType	string (enum)	*optional*	The type of reset. *For the possible property values, see ResetType in Property details.*

Request Example

```
{
    "ResetType": "ForceRestart",
    "BatchSize": 5,
    "DelayBetweenBatchesInSeconds": 30
}
```

6.5.4.4 SetDefaultBootOrder

Description

This action is used to restore the boot order to the default state for the computer systems that are members of this aggregate.

Action URI: {Base URI of target resource}/Actions/Aggregate.SetDefaultBootOrder

Action parameters

This action takes no parameters.

6.5.5 Property details

6.5.5.1 ResetType:

The type of reset.

string	Description
ForceOff	Turn off the unit immediately (non-graceful shutdown).
ForceOn	Turn on the unit immediately.
ForceRestart	Shut down immediately and non-gracefully and restart the system.
GracefulRestart	Shut down gracefully and restart the system.
GracefulShutdown	Shut down gracefully and power off.
Nmi	Generate a diagnostic interrupt, which is usually an NMI on x86 systems, to stop normal operations, complete diagnostic actions, and, typically, halt the system.
On	Turn on the unit.
Pause	Pause execution on the unit but do not remove power. This is typically a feature of virtual machine hypervisors.
PowerCycle	Power cycle the unit. Behaves like a full power removal, followed by a power restore to the resource.
PushPowerButton	Simulate the pressing of the physical power button on this unit.
Resume	Resume execution on the paused unit. This is typically a feature of virtual machine hypervisors.
Suspend	Write the state of the unit to disk before powering off. This allows for the state to be restored when powered back on.

6.5.6 Example response

```
{
    "@odata.type": "#Aggregate.v1_0_1.Aggregate",
    "Id": "Aggregate1",
    "Name": "Aggregate One",
    "ElementsCount": 2,
    "Elements": [
        {
            "@odata.id": "/redfish/v1/Systems/cluster-node3"
        },
        {
```

```
            "@odata.id": "/redfish/v1/Systems/cluster-node4"
        }
    ],
    "Actions": {
        "#Aggregate.Reset": {
            "target": "/redfish/v1/AggregationService/Aggregates/Aggregate1/Actions/Aggregate.Reset",
            "@Redfish.ActionInfo": "/redfish/v1/AggregationService/Aggregates/Aggregate1/ResetActionInfo"
        },
        "#Aggregate.SetDefaultBootOrder": {
            "target": "/redfish/v1/AggregationService/Aggregates/Aggregate1/Actions/Aggregate.SetDefaultBootOrder",
            "@Redfish.ActionInfo": "/redfish/v1/AggregationService/Aggregates/Aggregate1/SetDefaultBootOrderActionInfo"
        },
        "#Aggregate.AddElements": {
            "target": "/redfish/v1/AggregationService/Aggregates/Aggregate1/Actions/Aggregate.AddElements",
            "@Redfish.ActionInfo": "/redfish/v1/AggregationService/Aggregates/Aggregate1/AddElementsActionInfo"
        },
        "#Aggregate.RemoveElements": {
            "target": "/redfish/v1/AggregationService/Aggregates/Aggregate1/Actions/Aggregate.RemoveElements",
            "@Redfish.ActionInfo": "/redfish/v1/AggregationService/Aggregates/Aggregate1/RemoveElementsActionInfo"
        }
    },
    "@odata.id": "/redfish/v1/AggregationService/Aggregates/Aggregate1"
}
```

6.6 AggregationService 1.0.1

Version	v1.0
Release	2020.2

6.6.1 Description

The AggregationService schema contains properties for managing aggregation operations, either on ad hoc combinations of resources or on defined sets of resources called aggregates. Access points define the properties needed to access the entity being aggregated and connection methods describe the protocol or other semantics of the connection.

6.6.2 URIs

/redfish/v1/AggregationService

6.6.3 Properties

Property	Type	Attributes	Notes
Aggregates {	object		The link to the collection of aggregates associated with this service. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *Aggregate*. See the Aggregate schema for details.
}			
AggregationSources {	object		The link to the collection of aggregation sources associated with this service. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *AggregationSource*. See the AggregationSource schema for details.
}			
ConnectionMethods {	object		The link to the collection of connection methods associated with this service. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *ConnectionMethod*. See the ConnectionMethod schema for details.
}			
ServiceEnabled	boolean	*read-write (null)*	An indication of whether the aggregation service is enabled.
Status {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.

6.6.4 Actions

6.6.4.1 Reset

Description

This action is used to reset a set of resources. For example this could be a list of computer systems.

Action URI: {Base URI of target resource}/Actions/AggregationService.Reset

Action parameters

Parameter Name	Type	Attributes	Notes
BatchSize	integer	*optional*	The number of elements in each batch being reset.
DelayBetweenBatchesInSeconds	integer (seconds)	*optional*	The delay of the batches of elements being reset in seconds.
ResetType	string (enum)	*optional*	The type of reset. *For the possible property values, see ResetType in Property details.*
TargetURIs [{	array	*required*	An array of links to the resources being reset.
@odata.id	string (URI)	*read-only*	The unique identifier for a resource.
}]			

Request Example

```json
{
    "ResetType": "ForceRestart",
    "BatchSize": 1,
    "DelayBetweenBatchesInSeconds": 30,
    "TargetURIs": [
        {
            "@odata.id": "/redfish/v1/Systems/cluster-node3"
        },
        {
            "@odata.id": "/redfish/v1/Systems/cluster-node4"
        },
        {
            "@odata.id": "node7.intranet.contoso.com/redfish/v1/Systems/1"
        }
    ]
}
```

6.6.4.2 SetDefaultBootOrder

Description

This action is used to restore the boot order to the default state for the specified computer systems.

Action URI: {Base URI of target resource}/Actions/AggregationService.SetDefaultBootOrder

Action parameters

Parameter Name	Type	Attributes	Notes
Systems [{	array	*required*	The computer systems to restore.
@odata.id	string	*read-only*	Link to a ComputerSystem resource. See the Links section and the *ComputerSystem* schema for details.
}]			

Request Example

```
{
    "Systems": [
        {
            "@odata.id": "/redfish/v1/Systems/cluster-node3"
        },
        {
            "@odata.id": "/redfish/v1/Systems/cluster-node4"
        },
        {
            "@odata.id": "node7.intranet.contoso.com/redfish/v1/Systems/1"
        }
    ]
}
```

6.6.5 Property details

6.6.5.1 ResetType:

The type of reset.

string	Description
ForceOff	Turn off the unit immediately (non-graceful shutdown).
ForceOn	Turn on the unit immediately.
ForceRestart	Shut down immediately and non-gracefully and restart the system.
GracefulRestart	Shut down gracefully and restart the system.
GracefulShutdown	Shut down gracefully and power off.
Nmi	Generate a diagnostic interrupt, which is usually an NMI on x86 systems, to stop normal operations, complete diagnostic actions, and, typically, halt the system.

string	Description
On	Turn on the unit.
Pause	Pause execution on the unit but do not remove power. This is typically a feature of virtual machine hypervisors.
PowerCycle	Power cycle the unit. Behaves like a full power removal, followed by a power restore to the resource.
PushPowerButton	Simulate the pressing of the physical power button on this unit.
Resume	Resume execution on the paused unit. This is typically a feature of virtual machine hypervisors.
Suspend	Write the state of the unit to disk before powering off. This allows for the state to be restored when powered back on.

6.6.6 Example response

```
{
    "@odata.type": "#AggregationService.v1_0_1.AggregationService",
    "Id": "AggregationService",
    "Description": "Aggregation Service",
    "Name": "Aggregation Service",
    "ServiceEnabled": true,
    "Status": {
        "Health": "OK",
        "HealthRollup": "OK",
        "State": "Enabled"
    },
    "Aggregates": {
        "@odata.id": "/redfish/v1/AggregationService/Aggregates"
    },
    "AggregationSources": {
        "@odata.id": "/redfish/v1/AggregationService/AggregationSources"
    },
    "ConnectionMethods": {
        "@odata.id": "/redfish/v1/AggregationService/ConnectionMethods"
    },
    "Actions": {
        "#AggregationService.Reset": {
            "target": "/redfish/v1/AggregationService/Actions/AggregationService.Reset",
            "@Redfish.ActionInfo": "/redfish/v1/AggregationService/ResetActionInfo"
        },
        "#AggregationService.SetDefaultBootOrder": {
            "target": "/redfish/v1/AggregationService/Actions/AggregationService.SetDefaultBootOrder",
            "@Redfish.ActionInfo": "/redfish/v1/AggregationService/SetDefaultBootOrderActionInfo"
        }
    },
    "@odata.id": "/redfish/v1/AggregationService/"
}
```

```
    }
```

6.7 AggregationSource 1.2.0

Version	*v1.2*	*v1.1*	*v1.0*
Release	2021.3	2020.4	2020.2

6.7.1 Description

The AggregationSource schema is used to represent the source of information for a subset of the resources provided by a Redfish service. It can be thought of as a provider of information. As such, most such interfaces have requirements to support the gathering of information like address and account used to access the information.

6.7.2 URIs

/redfish/v1/AggregationService/AggregationSources/{*AggregationSourceId*}

6.7.3 Properties

Property	Type	Attributes	Notes
AggregationType *(v1.2+)*	string (enum)	*read-write*	The type of aggregation used towards the aggregation source. *For the possible property values, see AggregationType in Property details.*
HostName	string (URI)	*read-write (null)*	The URI of the system to be accessed.
Links {	object		The links to other resources that are related to this resource.
ConnectionMethod {	object	*(null)*	An array of links to the connection methods used to contact this aggregation source. See the *ConnectionMethod* schema for details on this property.
@odata.id	string	*read-only*	Link to a ConnectionMethod resource. See the Links section and the *ConnectionMethod* schema for details.
}			
Oem {}	object		See the Oem object definition in the Common properties section.

Property	Type	Attributes	Notes
ResourcesAccessed [{	array		An array links to the resources added to the service through this aggregation source. It is recommended that this be the minimal number of properties needed to find the resources that would be lost when the aggregation source is deleted.
@odata.id	string (URI)	*read-only*	The unique identifier for a resource.
}]			
}			
Password	string	*read-write (null)*	The password for accessing the aggregation source. The value is `null` in responses.
SNMP *(v1.1+)* {	object	*(null)*	SNMP settings of the aggregation source.
AuthenticationKey *(v1.1+)*	string	*read-write (null)*	The secret authentication key for SNMPv3.
AuthenticationKeySet *(v1.1+)*	boolean	*read-only*	Indicates if the AuthenticationKey property is set.
AuthenticationProtocol *(v1.1+)*	string (enum)	*read-write (null)*	The authentication protocol for SNMPv3. *For the possible property values, see AuthenticationProtocol in Property details.*
EncryptionKey *(v1.1+)*	string	*read-write (null)*	The secret authentication key for SNMPv3.
EncryptionKeySet *(v1.1+)*	boolean	*read-only*	Indicates if the EncryptionKey property is set.
EncryptionProtocol *(v1.1+)*	string (enum)	*read-write (null)*	The encryption protocol for SNMPv3. *For the possible property values, see EncryptionProtocol in Property details.*
TrapCommunity *(v1.2+)*	string	*read-write (null)*	The SNMP trap community string.
}			
UserName	string	*read-write (null)*	The user name for accessing the aggregation source.

6.7.4 Property details

6.7.4.1 AggregationType:

The type of aggregation used towards the aggregation source.

string	Description
Full	Full aggregation according to connection method.
NotificationsOnly	Only notifications are aggregated.

6.7.4.2 AuthenticationProtocol:

The authentication protocol for SNMPv3.

string	Description
CommunityString	Trap community string authentication.
HMAC128_SHA224	HMAC-128-SHA-224 authentication.
HMAC192_SHA256	HMAC-192-SHA-256 authentication.
HMAC256_SHA384	HMAC-256-SHA-384 authentication.
HMAC384_SHA512	HMAC-384-SHA-512 authentication.
HMAC_MD5	HMAC-MD5-96 authentication.
HMAC_SHA96	HMAC-SHA-96 authentication.
None	No authentication.

6.7.4.3 EncryptionProtocol:

The encryption protocol for SNMPv3.

string	Description
CBC_DES	CBC-DES encryption.
CFB128_AES128	CFB128-AES-128 encryption.
None	No encryption.

6.7.5 Example response

```
{
```

```
    "@odata.type": "#AggregationSource.v1_2_0.AggregationSource",
    "Id": "AggregationSource1",
    "Name": "AggregationSource One",
    "HostName": "https://Someserver.Contoso.com/redfish/v1",
    "UserName": "root",
    "Password": null,
    "Links": {
        "ConnectionMethod": {
            "@odata.id": "/redfish/v1/AggregationService/ConnectionMethods/ConnectionMethod1"
        },
        "ResourcesAccessed": [
            {
                "@odata.id": "/redfish/v1/Managers/1"
            }
        ]
    },
    "Actions": {},
    "@odata.id": "/redfish/v1/AggregationService/AggregationSources/AggregationSource1"
}
```

6.8 AllowDeny 1.0.0

Version	*v1.0*
Release	2021.2

6.8.1 Description

The AllowDeny schema represents a set of allow or deny configurations.

6.8.2 URIs

/redfish/v1/Chassis/*{ChassisId}*/NetworkAdapters/*{NetworkAdapterId}*/NetworkDeviceFunctions/
{NetworkDeviceFunctionId}/AllowDeny/*{AllowDenyId}*
/redfish/v1/CompositionService/ResourceBlocks/*{ResourceBlockId}*/NetworkInterfaces/*{NetworkInterfaceId}*/
NetworkDeviceFunctions{NetworkDeviceFunctionId}/AllowDeny/*{AllowDenyId}*
/redfish/v1/CompositionService/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/
NetworkInterfaces/*{NetworkInterfaceId}*/NetworkDeviceFunctions{NetworkDeviceFunctionId}/AllowDeny/
{AllowDenyId}
/redfish/v1/ResourceBlocks/*{ResourceBlockId}*/NetworkInterfaces/*{NetworkInterfaceId}*/
NetworkDeviceFunctions{NetworkDeviceFunctionId}/AllowDeny/*{AllowDenyId}*
/redfish/v1/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/NetworkInterfaces/

{NetworkInterfaceId}/NetworkDeviceFunctions{NetworkDeviceFunctionId}/AllowDeny/*{AllowDenyId}*
/redfish/v1/Systems/*{ComputerSystemId}*/NetworkInterfaces/*{NetworkInterfaceId}*/
NetworkDeviceFunctions{NetworkDeviceFunctionId}/AllowDeny/*{AllowDenyId}*

6.8.3 Properties

Property	Type	Attributes	Notes
AllowType	string (enum)	*read-write (null)*	Indicates the type of permission. *For the possible property values, see AllowType in Property details.*
DestinationPortLower	integer	*read-write (null)*	The TCP, UDP, or other destination port to which this rule begins to application, inclusive.
DestinationPortUpper	integer	*read-write (null)*	The TCP, UDP, or other destination port to which this rule ends application, inclusive.
Direction	string (enum)	*read-write (null)*	Indicates the direction of the data to which this permission applies. *For the possible property values, see Direction in Property details.*
IANAProtocolNumber	integer	*read-write (null)*	The IANA protocol number to which this permission applies. For TCP, this is `6` . For UDP, this is `17` .
IPAddressLower	string	*read-write (null)*	The lower IP address to which this permission applies.
IPAddressType	string (enum)	*read-write (null)*	The type of IP address populated in the IPAddressLower and IPAddressUpper properties. *For the possible property values, see IPAddressType in Property details.*
IPAddressUpper	string	*read-write (null)*	The upper IP address to which this permission applies.
SourcePortLower	integer	*read-write (null)*	The TCP, UDP, or other source port to which this rule begins application, inclusive.
SourcePortUpper	integer	*read-write (null)*	The TCP, UDP or other source port to which this rule ends application, inclusive.
StatefulSession	boolean	*read-write (null)*	Indicates if this is a permission that only applies to stateful connection.

6.8.4 Property details

6.8.4.1 AllowType:

Indicates the type of permission.

string	Description
Allow	Indicates that traffic that matches the criteria in this resource shall be permitted.
Deny	Indicates that traffic that matches the criteria in this resource shall not be permitted.

6.8.4.2 Direction:

Indicates the direction of the data to which this permission applies.

string	Description
Egress	Indicates that this limit is enforced on packets and bytes transmitted by the network device function.
Ingress	Indicates that this limit is enforced on packets and bytes received by the network device function.

6.8.4.3 IPAddressType:

The type of IP address populated in the IPAddressLower and IPAddressUpper properties.

string	Description
IPv4	IPv4 addressing is used for all IP-fields in this object.
IPv6	IPv6 addressing is used for all IP-fields in this object.

6.8.5 Example response

```
{
    "@odata.type": "#AllowDeny.v1_0_0.AllowDeny",
    "Id": "AllowDeny Rule 1",
    "Name": "Allow Rule 1",
    "Direction": "Ingress",
    "AllowType": "Allow",
    "StatefulSession": true,
    "IPAddressType": "IPv4",
    "IPAddressLower": "192.168.1.1",
    "IPAddressUpper": "192.168.1.100",
    "IANAProtocolNumber": 6,
    "SourcePortLower": 5,
    "SourcePortUpper": 65535,
    "DestinationPortLower": 5,
    "DestinationPortUpper": 65535,
```

```
    "@odata.id": "/redfish/v1/Chassis/Card1/NetworkAdapters/Slot1/NetworkDeviceFunctions/SC2KP1F0/AllowDeny/Rule1"
}
```

6.9 Assembly 1.3.0

Version	v1.3	v1.2	v1.1	v1.0
Release	2020.3	2018.2	2018.1	2017.3

6.9.1 Description

The Assembly schema defines an assembly. Assembly information contains details about a device, such as part number, serial number, manufacturer, and production date. It also provides access to the original data for the assembly.

6.9.2 URIs

/redfish/v1/Chassis/{*ChassisId*}/Assembly
/redfish/v1/Chassis/{*ChassisId*}/Drives/{*DriveId*}/Assembly
/redfish/v1/Chassis/{*ChassisId*}/NetworkAdapters/{*NetworkAdapterId*}/Assembly
/redfish/v1/Chassis/{*ChassisId*}/PCIeDevices/{*PCIeDeviceId*}/Assembly
/redfish/v1/Chassis/{*ChassisId*}/Power/PowerSupplies/{*PowerSupplyId*}/Assembly
/redfish/v1/Chassis/{*ChassisId*}/PowerSubsystem/Batteries/{*BatteryId*}/Assembly
/redfish/v1/Chassis/{*ChassisId*}/PowerSubsystem/PowerSupplies/{*PowerSupplyId*}/Assembly
/redfish/v1/Chassis/{*ChassisId*}/Thermal/Fans/{*FanId*}/Assembly
/redfish/v1/Chassis/{*ChassisId*}/ThermalSubsystem/Fans/{*FanId*}/Assembly
/redfish/v1/CompositionService/ResourceBlocks/{*ResourceBlockId*}/Drives/{*DriveId*}/Assembly
/redfish/v1/CompositionService/ResourceBlocks/{*ResourceBlockId*}/Memory/{*MemoryId*}/Assembly
/redfish/v1/CompositionService/ResourceBlocks/{*ResourceBlockId*}/Processors/{*ProcessorId*}/Assembly
/redfish/v1/CompositionService/ResourceBlocks/{*ResourceBlockId*}/Processors/{*ProcessorId*}/SubProcessors/
{*ProcessorId2*}/Assembly
/redfish/v1/CompositionService/ResourceBlocks/{*ResourceBlockId*}/Storage/{*StorageId*}/Controllers/
{*StorageControllerId*}/Assembly
/redfish/v1/CompositionService/ResourceBlocks/{*ResourceBlockId*}/Storage/{*StorageId*}/Drives/{*DriveId*}/Assembly
/redfish/v1/CompositionService/ResourceBlocks/{*ResourceBlockId*}/Storage/{*StorageId*}/StorageControllers/
{*StorageControllerId*}/Assembly
/redfish/v1/CompositionService/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/Memory/
{*MemoryId*}/Assembly
/redfish/v1/CompositionService/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/Processors/

{ProcessorId}/Assembly

/redfish/v1/CompositionService/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/Processors/
{ProcessorId}/SubProcessors/*{ProcessorId2}*/Assembly

/redfish/v1/CompositionService/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/Storage/
{StorageId}/Controllers/*{StorageControllerId}*/Assembly

/redfish/v1/CompositionService/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/Storage/
{StorageId}/Drives/*{DriveId}*/Assembly

/redfish/v1/CompositionService/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/Storage/
{StorageId}/StorageControllers/*{StorageControllerId}*/Assembly

/redfish/v1/PowerEquipment/PowerShelves/*{PowerDistributionId}*/PowerSupplies/*{PowerSupplyId}*/Assembly

/redfish/v1/ResourceBlocks/*{ResourceBlockId}*/Drives/*{DriveId}*/Assembly

/redfish/v1/ResourceBlocks/*{ResourceBlockId}*/Memory/*{MemoryId}*/Assembly

/redfish/v1/ResourceBlocks/*{ResourceBlockId}*/Processors/*{ProcessorId}*/Assembly

/redfish/v1/ResourceBlocks/*{ResourceBlockId}*/Processors/*{ProcessorId}*/SubProcessors/*{ProcessorId2}*/Assembly

/redfish/v1/ResourceBlocks/*{ResourceBlockId}*/Storage/*{StorageId}*/Controllers/*{StorageControllerId}*/Assembly

/redfish/v1/ResourceBlocks/*{ResourceBlockId}*/Storage/*{StorageId}*/Drives/*{DriveId}*/Assembly

/redfish/v1/ResourceBlocks/*{ResourceBlockId}*/Storage/*{StorageId}*/StorageControllers/*{StorageControllerId}*/
Assembly

/redfish/v1/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/Memory/*{MemoryId}*/Assembly

/redfish/v1/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/Processors/*{ProcessorId}*/Assembly

/redfish/v1/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/Processors/*{ProcessorId}*/
SubProcessors/*{ProcessorId2}*/Assembly

/redfish/v1/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/Storage/*{StorageId}*/Controllers/
{StorageControllerId}/Assembly

/redfish/v1/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/Storage/*{StorageId}*/Drives/*{DriveId}*/
Assembly

/redfish/v1/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/Storage/*{StorageId}*/
StorageControllers/*{StorageControllerId}*/Assembly

/redfish/v1/Storage/*{StorageId}*/Controllers/*{StorageControllerId}*/Assembly

/redfish/v1/Storage/*{StorageId}*/StorageControllers/*{StorageControllerId}*/Assembly

/redfish/v1/Systems/*{ComputerSystemId}*/Memory/*{MemoryId}*/Assembly

/redfish/v1/Systems/*{ComputerSystemId}*/PCIeDevices/*{PCIeDeviceId}*/Assembly

/redfish/v1/Systems/*{ComputerSystemId}*/Processors/*{ProcessorId}*/Assembly

/redfish/v1/Systems/*{ComputerSystemId}*/Processors/*{ProcessorId}*/SubProcessors/*{ProcessorId2}*/Assembly

/redfish/v1/Systems/*{ComputerSystemId}*/Storage/*{StorageId}*/Controllers/*{StorageControllerId}*/Assembly

/redfish/v1/Systems/*{ComputerSystemId}*/Storage/*{StorageId}*/Drives/*{DriveId}*/Assembly

/redfish/v1/Systems/*{ComputerSystemId}*/Storage/*{StorageId}*/StorageControllers/*{StorageControllerId}*/Assembly

6.9.3 Properties

Property	Type	Attributes	Notes
Assemblies [{	array		The assembly records.
@odata.id	string (URI)	*read-only required*	The unique identifier for a resource.
Actions {}	object		The available actions for this Resource.
BinaryDataURI	string (URI)	*read-only (null)*	The URI at which to access an image of the assembly information.
Description	string	*read-only (null)*	The description of the assembly.
EngineeringChangeLevel	string	*read-only (null)*	The engineering change level of the assembly.
Location *(v1.3+)* {}	object		The location of the assembly. For property details, see Location.
LocationIndicatorActive *(v1.3+)*	boolean	*read-write (null)*	An indicator allowing an operator to physically locate this resource.
MemberId	string	*read-only required*	The identifier for the member within the collection.
Model	string	*read-only (null)*	The model number of the assembly.
Name	string	*read-only (null)*	The name of the assembly.
Oem {}	object		See the Oem object definition in the Common properties section.
PartNumber	string	*read-only (null)*	The part number of the assembly.
PhysicalContext *(v1.2+)*	string (enum)	*read-only*	The area or device to which the assembly data applies. *For the possible property values, see PhysicalContext in Property details.*
Producer	string	*read-only (null)*	The producer or manufacturer of the assembly.
ProductionDate	string (date-time)	*read-only (null)*	The production date of the assembly.
SerialNumber *(v1.2+)*	string	*read-only (null)*	The serial number of the assembly.

Property	Type	Attributes	Notes
SKU	string	*read-only (null)*	The SKU of the assembly.
SparePartNumber	string	*read-only (null)*	The spare part number of the assembly.
Status *(v1.1+)* {}	object		The status and health of the Resource and its subordinate or dependent Resources. For property details, see Status.
Vendor	string	*read-only (null)*	The vendor of the assembly.
Version	string	*read-only (null)*	The hardware version of the assembly.
}]			

6.9.4 Property details

6.9.4.1 PhysicalContext:

The area or device to which the assembly data applies.

string	Description
Accelerator	An accelerator.
ACInput	An AC input.
ACMaintenanceBypassInput	An AC maintenance bypass input.
ACOutput	An AC output.
ACStaticBypassInput	An AC static bypass input.
ACUtilityInput	An AC utility input.
ASIC	An ASIC device, such as a networking chip or chipset component.
Back	The back of the chassis.
Backplane	A backplane within the chassis.
Battery	A battery.
Board	A circuit board.

string	Description
Chassis	The entire chassis.
ComputeBay	Within a compute bay.
CoolingSubsystem	The entire cooling, or air and liquid, subsystem.
CPU	A processor (CPU).
CPUSubsystem	The entire processor (CPU) subsystem.
DCBus	A DC bus.
Exhaust	The air exhaust point or points or region of the chassis.
ExpansionBay	Within an expansion bay.
Fan	A fan.
FPGA	An FPGA.
Front	The front of the chassis.
GPU	A graphics processor (GPU).
GPUSubsystem	The entire graphics processor (GPU) subsystem.
Intake	The air intake point or points or region of the chassis.
LiquidInlet	The liquid inlet point of the chassis.
LiquidOutlet	The liquid outlet point of the chassis.
Lower	The lower portion of the chassis.
Memory	A memory device.
MemorySubsystem	The entire memory subsystem.
Motor	A motor.
NetworkBay	Within a networking bay.
NetworkingDevice	A networking device.
PowerSubsystem	The entire power subsystem.
PowerSupply	A power supply.
PowerSupplyBay	Within a power supply bay.
Pump	A pump.

string	Description
Rectifier	A rectifier device.
Room	The room.
StorageBay	Within a storage bay.
StorageDevice	A storage device.
SystemBoard	The system board (PCB).
Transceiver	A transceiver.
Transformer	A transformer.
TrustedModule	A trusted module.
Upper	The upper portion of the chassis.
VoltageRegulator	A voltage regulator device.

6.9.5 Example response

```
{
    "@odata.type": "#Assembly.v1_3_0.Assembly",
    "Id": "Assembly",
    "Name": "System-related Assembly data",
    "Assemblies": [
        {
            "@odata.id": "/redfish/v1/Chassis/1/Assembly#/Assemblies/0",
            "MemberId": "0",
            "Name": "System Board",
            "Description": "PCA System Board",
            "Model": "345TTT",
            "PartNumber": "923943",
            "SparePartNumber": "55-434",
            "SKU": "55ZZATR",
            "SerialNumber": "345394834",
            "Vendor": "Contoso",
            "ProductionDate": "2017-04-01T14:55:33+03:00",
            "Producer": "Contoso Supply Co.",
            "Version": "1.44B",
            "EngineeringChangeLevel": "9",
            "BinaryDataURI": "/dumpster/434",
            "Oem": {
                "Contoso": {
                    "Region": "C",
                    "Packaging": "Retail"
```

```
                }
            }
        },
        {
            "@odata.id": "/redfish/v1/Chassis/1/Assembly#/Assemblies/1",
            "MemberId": "1",
            "Name": "Fan Controller",
            "Description": "PCA Fan Controller",
            "Model": "F58AS",
            "PartNumber": "3434-149",
            "Vendor": "Contoso",
            "Version": "2.4.481",
            "BinaryDataURI": "/dumpster/422",
            "Status": {
                "State": "Enabled",
                "Health": "Warning"
            }
        }
    ],
    "@odata.id": "/redfish/v1/Chassis/1/Assembly"
}
```

6.10 AttributeRegistry 1.3.6

Version	v1.3	v1.2	v1.1	v1.0
Release	2018.3	2018.1	2017.1	2016.1

6.10.1 Description

The AttributeRegistry schema contains a set of key-value pairs that represent the structure of an attribute registry. It includes mechanisms for building user interfaces, or menus, allowing consistent navigation of the contents. The attribute registry is specific to an implementation or product. The attributes and property names are not standardized.

6.10.2 Properties

Property	Type	Attributes	Notes
Language	string	*read-only* *required*	The RFC5646-conformant language code for the attribute registry.

Property	Type	Attributes	Notes
OwningEntity	string	*read-only required*	The organization or company that publishes this attribute registry.
RegistryEntries {	object		The list of all attributes and their metadata for this component.
Attributes [{	array		An array of attributes and their possible values in the attribute registry.
AttributeName	string	*read-only required*	The unique name for the attribute.
CurrentValue	string, boolean, number	*read-only (null)*	The placeholder of the current value for the attribute.
DefaultValue	string, boolean, number	*read-only (null)*	The default value for the attribute.
DisplayName	string	*read-only (null)*	The user-readable display string for the attribute in the defined language.
DisplayOrder	integer	*read-only (null)*	The ascending order, as a number, in which this attribute appears relative to other attributes.
GrayOut	boolean	*read-only (null)*	An indication of whether this attribute is grayed out. A grayed-out attribute is not active and is grayed out in user interfaces but the attribute value can be modified.
HelpText	string	*read-only (null)*	The help text for the attribute.
Hidden	boolean	*read-only (null)*	An indication of whether this attribute is hidden in user interfaces.
Immutable	boolean	*read-only (null)*	An indication of whether this attribute is immutable. Immutable attributes shall not be modified and typically reflect a hardware state.
IsSystemUniqueProperty	boolean	*read-only (null)*	An indication of whether this attribute is unique for this system and should not be replicated.
LowerBound	integer	*read-only (null)*	The lower limit for an integer attribute.
MaxLength	integer	*read-only (null)*	The maximum character length of a string attribute.
MenuPath	string	*read-only (null)*	The path that describes the menu hierarchy of this attribute.
MinLength	integer	*read-only (null)*	The minimum character length of the string attribute.

Property	Type	Attributes	Notes
Oem *(v1.3+)* {}	object		See the Oem object definition in the Common properties section.
ReadOnly	boolean	*read-only (null)*	An indication of whether this attribute is read-only. A read-only attribute cannot be modified, and should be grayed out in user interfaces.
ResetRequired *(v1.2+)*	boolean	*read-only (null)*	An indication of whether a system or device reset is required for this attribute value change to take effect.
ScalarIncrement	integer	*read-only (null)*	The amount to increment or decrement an integer attribute each time a user requests a value change. The `0` value indicates a free-form numeric user-input attribute.
Type	string (enum)	*read-only*	The attribute type. *For the possible property values, see Type in Property details.*
UefiDevicePath *(v1.2+)*	string	*read-only (null)*	The UEFI device path that qualifies this attribute.
UefiKeywordName *(v1.2+)*	string	*read-only*	The UEFI keyword string for this attribute.
UefiNamespaceId *(v1.2+)*	string	*read-only*	The UEFI namespace ID for the attribute.
UpperBound	integer	*read-only (null)*	The upper limit for an integer attribute.
Value [{	array		An array of the possible values for enumerated attribute values.
ValueDisplayName	string	*read-only (null)*	A user-readable display string of the value for the attribute in the defined language.
ValueName	string	*read-only required*	The unique value name for the attribute.
}]			
ValueExpression	string	*read-only (null)*	A valid regular expression, according to the Perl regular expression dialect, that validates the attribute value. Applies to only string and integer attributes.
WarningText	string	*read-only (null)*	The warning text for the attribute.
WriteOnly	boolean	*read-only (null)*	An indication of whether this attribute is write-only. A write-only attribute reverts to its initial value after settings are applied.
}]			
Dependencies [{	array		An array of dependencies of attributes on this component.
Dependency {	object		The dependency expression for one or more attributes in this attribute registry.

Property	Type	Attributes	Notes
MapFrom [{	array		An array of the map-from conditions for a mapping dependency.
MapFromAttribute	string	*read-only*	The attribute to use to evaluate this dependency expression.
MapFromCondition	string (enum)	*read-only*	The condition to use to evaluate this dependency expression. *For the possible property values, see MapFromCondition in Property details.*
MapFromProperty	string (enum)	*read-only*	The metadata property for the attribute that the MapFromAttribute property specifies to use to evaluate this dependency expression. *For the possible property values, see MapFromProperty in Property details.*
MapFromValue	string, boolean, number	*read-only (null)*	The value to use to evaluate this dependency expression.
MapTerms	string (enum)	*read-only*	The logical term that combines two or more map-from conditions in this dependency expression. For example, `AND` for logical AND, or `OR` for logical OR. *For the possible property values, see MapTerms in Property details.*
}]			
MapToAttribute	string	*read-only*	The AttributeName of the attribute that is affected by this dependency expression.
MapToProperty	string (enum)	*read-only*	The metadata property for the attribute that contains the map-from condition that evaluates this dependency expression. *For the possible property values, see MapToProperty in Property details.*
MapToValue	string, boolean, number	*read-only (null)*	The value that the map-to property changes to if the dependency expression evaluates to `true`.
}			
DependencyFor	string	*read-only*	The AttributeName of the attribute whose change triggers the evaluation of this dependency expression.
Type	string (enum)	*read-only*	The type of the dependency structure. *For the possible property values, see Type in Property details.*
}]			
Menus [{	array		An array for the attributes menus and their hierarchy in the attribute registry.
DisplayName	string	*read-only (null)*	The user-readable display string of this menu in the defined language.
DisplayOrder	integer	*read-only (null)*	The ascending order, as a number, in which this menu appears relative to other menus.

Property	Type	Attributes	Notes
GrayOut	boolean	*read-only (null)*	An indication of whether this menu is grayed out. A grayed-only menu is not accessible in user interfaces.
Hidden *(v1.3+)*	boolean	*read-only (null)*	An indication of whether this menu is hidden in user interfaces.
MenuName	string	*read-only*	The unique name string of this menu.
MenuPath	string	*read-only (null)*	The path to the menu names that describes this menu hierarchy relative to other menus.
Oem *(v1.3+)* {}	object		See the Oem object definition in the Common properties section.
ReadOnly	boolean	*read-only (null)*	An indication of whether this menu is read-only. A read-only menu, its properties, and sub-menus are not accessible in user interfaces.
}]			
}			
RegistryVersion	string	*read-only required*	The attribute registry version.
SupportedSystems [{	array		An array of systems that this attribute registry supports.
FirmwareVersion *(v1.1+)*	string	*read-only (null)*	Firmware version.
ProductName	string	*read-only (null)*	The product name of the computer system to which this attribute registry applies.
SystemId	string	*read-only (null)*	The ID of the systems to which this attribute registry applies.
}]			

6.10.3 Property details

6.10.3.1 MapFromCondition:

The condition to use to evaluate this dependency expression.

string	Description
EQU	The logical operation for 'Equal'.
GEQ	The logical operation for 'Greater than or Equal'.

string	Description
GTR	The logical operation for 'Greater than'.
LEQ	The logical operation for 'Less than or Equal'.
LSS	The logical operation for 'Less than'.
NEQ	The logical operation for 'Not Equal'.

6.10.3.2 MapFromProperty:

The metadata property for the attribute that the MapFromAttribute property specifies to use to evaluate this dependency expression.

string	Description
CurrentValue	The dependency on an attribute's CurrentValue.
DefaultValue	The dependency on an attribute's DefaultValue.
GrayOut	The dependency on an attribute's GrayOut state.
Hidden	The dependency on an attribute's Hidden state.
LowerBound	The dependency on an attribute's LowerBound.
MaxLength	The dependency on an attribute's MaxLength.
MinLength	The dependency on an attribute's MinLength.
ReadOnly	The dependency on an attribute's ReadOnly state.
ScalarIncrement	The dependency on an attribute's ScalarIncrement.
UpperBound	The dependency on an attribute's UpperBound.
WriteOnly	The dependency on an attribute's WriteOnly state.

6.10.3.3 MapTerms:

The logical term that combines two or more map-from conditions in this dependency expression. For example, `AND` for logical AND, or `OR` for logical OR.

string	Description
AND	The operation used for logical 'AND' of dependency terms.

string	Description
OR	The operation used for logical 'OR' of dependency terms.

6.10.3.4 MapToProperty:

The metadata property for the attribute that contains the map-from condition that evaluates this dependency expression.

string	Description
CurrentValue	The dependency that affects an attribute's CurrentValue.
DefaultValue	The dependency that affects an attribute's DefaultValue.
DisplayName	The dependency that affects an attribute's DisplayName.
DisplayOrder	The dependency that affects an attribute's DisplayName.
GrayOut	The dependency that affects an attribute's GrayOut state.
HelpText	The dependency that affects an attribute's HelpText.
Hidden	The dependency that affects an attribute's Hidden state.
Immutable	The dependency that affects an attribute's Immutable state.
LowerBound	The dependency that affects an attribute's LowerBound.
MaxLength	The dependency that affects an attribute's MaxLength.
MinLength	The dependency that affects an attribute's MinLength.
ReadOnly	The dependency that affects an attribute's ReadOnly state.
ScalarIncrement	The dependency that affects an attribute's ScalarIncrement.
UpperBound	The dependency that affects an attribute's UpperBound.
ValueExpression	The dependency that affects an attribute's ValueExpression.
WarningText	The dependency that affects an attribute's WarningText.
WriteOnly	The dependency that affects an attribute's WriteOnly state.

6.10.3.5 Type:

6.10.3.5.1 In RegistryEntries: Attributes:

The attribute type.

string	Description
Boolean	A flag with a `true` or `false` value.
Enumeration	A list of the known possible enumerated values.
Integer	An integer value.
Password	Password values that do not appear as plain text. The value shall be null in responses.
String	Free-form text in their values.

6.10.3.5.2 In RegistryEntries: Dependencies:

The type of the dependency structure.

string	Description
Map	A simple mapping dependency. If the condition evaluates to `true` , the attribute or state changes to the mapped value.

6.10.4 Example response

```
{
    "@odata.type": "#AttributeRegistry.v1_3_6.AttributeRegistry",
    "Description": "This registry defines a representation of BIOS Attribute instances",
    "Id": "BiosAttributeRegistryG9000.v1_0_0",
    "Language": "en",
    "Name": "G9000 BIOS Attribute Registry",
    "OwningEntity": "Contoso",
    "RegistryVersion": "1.0.0",
    "SupportedSystems": [
        {
            "ProductName": "Contoso Server GLH9000",
            "SystemId": "G9000",
            "FirmwareVersion": "v1.00 (06/02/2014)"
        }
```

```
        ],
        "RegistryEntries": {
            "Attributes": [
                {
                    "CurrentValue": null,
                    "DisplayName": "Embedded NIC 1 Boot",
                    "DisplayOrder": 5,
                    "HelpText": "Select this option to enable network boot (PXE, iSCSI, or FCoE) for the selected NIC. You may nee
                    "MenuPath": "./SystemOptions/NetworkBootOptions",
                    "AttributeName": "NicBoot1",
                    "ReadOnly": false,
                    "Hidden": false,
                    "Type": "Enumeration",
                    "Value": [
                        {
                            "ValueDisplayName": "Network Boot",
                            "ValueName": "NetworkBoot"
                        },
                        {
                            "ValueDisplayName": "Disabled",
                            "ValueName": "Disabled"
                        }
                    ],
                    "WarningText": "Important: When enabling network boot support for an embedded NIC, the NIC boot option does no
                },
                {
                    "CurrentValue": null,
                    "DisplayName": "Embedded SATA Configuration",
                    "DisplayOrder": 74,
                    "HelpText": "Important: Select this option to configure the embedded chipset SATA controller.",
                    "MenuPath": "./SystemOptions/SataOptions",
                    "AttributeName": "EmbeddedSata",
                    "ReadOnly": false,
                    "Hidden": false,
                    "Type": "Enumeration",
                    "Value": [
                        {
                            "ValueDisplayName": "Enable SATA AHCI Support",
                            "ValueName": "Ahci"
                        },
                        {
                            "ValueDisplayName": "Enable Software RAID Support",
                            "ValueName": "Raid"
                        }
                    ],
                    "WarningText": "Important: Software RAID is not supported when the Boot Mode is configured in Legacy BIOS Mode
                }
            ],
            "Dependencies": [
                {
```

```
              "Dependency": {
                  "MapFrom": [
                      {
                          "MapFromAttribute": "BootMode",
                          "MapFromCondition": "EQU",
                          "MapFromProperty": "CurrentValue",
                          "MapFromValue": "LegacyBios"
                      }
                  ],
                  "MapToAttribute": "EmbeddedSata",
                  "MapToProperty": "ReadOnly",
                  "MapToValue": true
              },
              "DependencyFor": "EmbeddedSata",
              "Type": "Map"
          }
      ],
      "Menus": [
          {
              "DisplayName": "BIOS Configuration",
              "DisplayOrder": 1,
              "MenuPath": "./",
              "MenuName": "BiosMainMenu",
              "Hidden": false,
              "ReadOnly": false
          },
          {
              "DisplayName": "System Options",
              "DisplayOrder": 2,
              "MenuPath": "./SystemOptions",
              "MenuName": "SystemOptions",
              "Hidden": false,
              "ReadOnly": false
          }
      ]
  }
}
```

6.11 Battery 1.0.1

Version	*v1.0*
Release	2021.2

6.11.1 Description

The Battery schema describes a battery unit, such as those used to provide systems with power during a power loss event.

6.11.2 URIs

/redfish/v1/Chassis/*{ChassisId}*/PowerSubsystem/Batteries/*{BatteryId}*

6.11.3 Properties

Property	Type	Attributes	Notes
Assembly {	object		The link to the assembly associated with this battery. See the *Assembly* schema for details on this property.
@odata.id	string	*read-only*	Link to a Assembly resource. See the Links section and the *Assembly* schema for details.
}			
CapacityActualAmpHours	number (A.h)	*read-only (null)*	The actual maximum capacity of this battery in amp-hours.
CapacityActualWattHours	number (W.h)	*read-only (null)*	The actual maximum capacity of this battery in watt-hours.
CapacityRatedAmpHours	number (A.h)	*read-only (null)*	The rated maximum capacity of this battery in amp-hours.
CapacityRatedWattHours	number (W.h)	*read-only (null)*	The rated maximum capacity of this battery in watt-hours.
ChargeState	string (enum)	*read-only (null)*	The charge state of this battery. *For the possible property values, see ChargeState in Property details.*
FirmwareVersion	string	*read-only (null)*	The firmware version for this battery.
HotPluggable	boolean	*read-only (null)*	An indication of whether this device can be inserted or removed while the equipment is in operation.
Location {}	object		The location of the battery. For property details, see Location.
LocationIndicatorActive	boolean	*read-write (null)*	An indicator allowing an operator to physically locate this resource.

Property	Type	Attributes	Notes
Manufacturer	string	*read-only (null)*	The manufacturer of this battery.
MaxChargeRateAmps	number (A)	*read-only (null)*	The maximum charge rate of this battery in amps.
MaxChargeVoltage	number (Volts)	*read-only (null)*	The maximum charge voltage of this battery.
MaxDischargeRateAmps	number (A)	*read-only (null)*	The maximum discharge rate of this battery in amps.
Metrics {	object		The link to the battery metrics resource associated with this battery. See the *BatteryMetrics* schema for details on this property.
@odata.id	string	*read-only*	Link to a BatteryMetrics resource. See the Links section and the *BatteryMetrics* schema for details.
}			
Model	string	*read-only (null)*	The model number for this battery.
PartNumber	string	*read-only (null)*	The part number for this battery.
ProductionDate	string (date-time)	*read-only (null)*	The production or manufacturing date of this battery.
SerialNumber	string	*read-only (null)*	The serial number for this battery.
SparePartNumber	string	*read-only (null)*	The spare part number for this battery.
StateOfHealthPercent {	object (excerpt)		The state of health (percent) of this battery. This object is an excerpt of the *Sensor* resource located at the URI shown in DataSourceUri.
DataSourceUri	string (URI)	*read-only (null)*	The link to the resource that provides the data for this sensor.
Reading	number	*read-only (null)*	The sensor value.
}			
Status {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
Version	string	*read-only (null)*	The hardware version of this battery.

6.11.4 Actions

6.11.4.1 Calibrate

Description

This action performs a self-calibration, or learn cycle, of the battery.

Action URI: {Base URI of target resource}/Actions/Battery.Calibrate

Action parameters

This action takes no parameters.

6.11.4.2 Reset

Description

This action resets the battery.

Action URI: {Base URI of target resource}/Actions/Battery.Reset

Action parameters

Parameter Name	Type	Attributes	Notes
ResetType	string (enum)	*optional*	The type of reset. *For the possible property values, see ResetType in Property details.*

6.11.4.3 SelfTest

Description

This action performs a self-test of the battery.

Action URI: {Base URI of target resource}/Actions/Battery.SelfTest

Action parameters

This action takes no parameters.

6.11.5 Property details

6.11.5.1 ChargeState:

The charge state of this battery.

string	Description
Charging	The battery is charging.
Discharging	The battery is discharging.
Idle	The battery is idle.

6.11.5.2 ResetType:

The type of reset.

string	Description
ForceOff	Turn off the unit immediately (non-graceful shutdown).
ForceOn	Turn on the unit immediately.
ForceRestart	Shut down immediately and non-gracefully and restart the system.
GracefulRestart	Shut down gracefully and restart the system.
GracefulShutdown	Shut down gracefully and power off.
Nmi	Generate a diagnostic interrupt, which is usually an NMI on x86 systems, to stop normal operations, complete diagnostic actions, and, typically, halt the system.
On	Turn on the unit.
Pause	Pause execution on the unit but do not remove power. This is typically a feature of virtual machine hypervisors.
PowerCycle	Power cycle the unit. Behaves like a full power removal, followed by a power restore to the resource.
PushPowerButton	Simulate the pressing of the physical power button on this unit.
Resume	Resume execution on the paused unit. This is typically a feature of virtual machine hypervisors.
Suspend	Write the state of the unit to disk before powering off. This allows for the state to be restored when powered back on.

6.11.6 Example response

```json
{
    "@odata.type": "#Battery.v1_0_1.Battery",
    "Id": "Module1",
    "Name": "Battery 1",
    "Status": {
        "State": "Enabled",
        "Health": "OK"
    },
    "Actions": {
        "#Battery.SelfTest": {
            "target": "/redfish/v1/Chassis/1U/PowerSubsystem/Batteries/Module1/Actions/Battery.SelfTest"
        },
        "#Battery.Calibrate": {
            "target": "/redfish/v1/Chassis/1U/PowerSubsystem/Batteries/Module1/Actions/Battery.Calibrate"
        }
    },
    "Location": {
        "PartLocation": {
            "ServiceLabel": "Battery 1",
            "LocationType": "Bay",
            "LocationOrdinalValue": 0
        }
    },
    "Model": "RKS-440DC",
    "Manufacturer": "Contoso Power",
    "FirmwareVersion": "1.00",
    "Version": "A05",
    "ProductionDate": "2019-10-01T06:00:00Z",
    "SerialNumber": "3488247",
    "PartNumber": "23456-133",
    "SparePartNumber": "93284-133",
    "LocationIndicatorActive": false,
    "HotPluggable": true,
    "CapacityRatedWattHours": 20,
    "CapacityActualWattHours": 19.41,
    "MaxDischargeRateAmps": 10,
    "StateOfHealthPercent": {
        "DataSourceUri": "/redfish/v1/Chassis/1U/Sensors/Battery1StateOfHealth",
        "Reading": 91
    },
    "ChargeState": "Idle",
    "Metrics": {
        "@odata.id": "/redfish/v1/Chassis/1U/PowerSubsystem/Batteries/Module1/Metrics"
    },
    "@odata.id": "/redfish/v1/Chassis/1U/PowerSubsystem/Batteries/Module1"
}
```

6.12 BatteryMetrics 1.0.1

Version	*v1.0*
Release	2021.2

6.12.1 Description

The BatteryMetrics schema contains definitions for the metrics of a battery unit.

6.12.2 URIs

/redfish/v1/Chassis/*{ChassisId}*/PowerSubsystem/Batteries/*{BatteryId}*/Metrics

6.12.3 Properties

Property	Type	Attributes	Notes
CellVoltages [{	array (excerpt)		The cell voltages (V) for this battery. This object is an excerpt of the *Sensor* resource located at the URI shown in DataSourceUri.
CrestFactor *(v1.1+)*	number	*read-only (null)*	The crest factor for this sensor.
DataSourceUri	string (URI)	*read-only (null)*	The link to the resource that provides the data for this sensor.
Reading	number	*read-only (null)*	The sensor value.
THDPercent *(v1.1+)*	number	*read-only (null)*	The total harmonic distortion (THD).
}]			
ChargePercent {}	object		The amount of charge available (percent) in this battery. For more information about this property, see SensorExcerpt in Property Details.
DischargeCycles	number	*read-only (null)*	The number of discharges this battery sustained.
InputCurrentAmps {	object (excerpt)		The input current (A) for this battery. This object is an excerpt of the *Sensor* resource located at the URI shown in DataSourceUri.

Property	Type	Attributes	Notes
CrestFactor *(v1.1+)*	number	*read-only (null)*	The crest factor for this sensor.
DataSourceUri	string (URI)	*read-only (null)*	The link to the resource that provides the data for this sensor.
Reading	number	*read-only (null)*	The sensor value.
THDPercent *(v1.1+)*	number	*read-only (null)*	The total harmonic distortion (THD).
}			
InputVoltage {	object (excerpt)		The input voltage (V) for this battery. This object is an excerpt of the *Sensor* resource located at the URI shown in DataSourceUri.
CrestFactor *(v1.1+)*	number	*read-only (null)*	The crest factor for this sensor.
DataSourceUri	string (URI)	*read-only (null)*	The link to the resource that provides the data for this sensor.
Reading	number	*read-only (null)*	The sensor value.
THDPercent *(v1.1+)*	number	*read-only (null)*	The total harmonic distortion (THD).
}			
OutputCurrentAmps [{	array (excerpt)		The output currents (A) for this battery. This object is an excerpt of the *Sensor* resource located at the URI shown in DataSourceUri.
CrestFactor *(v1.1+)*	number	*read-only (null)*	The crest factor for this sensor.
DataSourceUri	string (URI)	*read-only (null)*	The link to the resource that provides the data for this sensor.
Reading	number	*read-only (null)*	The sensor value.
THDPercent *(v1.1+)*	number	*read-only (null)*	The total harmonic distortion (THD).
}]			
OutputVoltages [{	array (excerpt)		The output voltages (V) for this battery. This object is an excerpt of the *Sensor* resource located at the URI shown in DataSourceUri.

Property	Type	Attributes	Notes
CrestFactor *(v1.1+)*	number	*read-only (null)*	The crest factor for this sensor.
DataSourceUri	string (URI)	*read-only (null)*	The link to the resource that provides the data for this sensor.
Reading	number	*read-only (null)*	The sensor value.
THDPercent *(v1.1+)*	number	*read-only (null)*	The total harmonic distortion (THD).
}]			
Status {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
StoredChargeAmpHours {}	object		The charge (Ah) stored in this battery. For more information about this property, see SensorExcerpt in Property Details.
StoredEnergyWattHours {}	object		The energy (Wh) stored in this battery. For more information about this property, see SensorExcerpt in Property Details.
TemperatureCelsius {}	object		The temperature (C) for this battery. For more information about this property, see SensorExcerpt in Property Details.

6.12.4 Property details

6.12.4.1 SensorExcerpt:

The Sensor schema describes a sensor and its properties. This object is an excerpt of the *Sensor* resource located at the URI shown in DataSourceUri.

DataSourceUri	string (URI)	*read-only (null)*	The link to the resource that provides the data for this sensor.
Reading	number	*read-only (null)*	The sensor value.

6.12.5 Example response

```
{
    "@odata.type": "#BatteryMetrics.v1_0_1.BatteryMetrics",
    "Id": "Metrics",
    "Name": "Metrics for Battery 1",
    "DischargeCycles": 8.67,
    "InputVoltage": {
        "DataSourceUri": "/redfish/v1/Chassis/1U/Sensors/Battery1InputVoltage",
        "Reading": 12.22
    },
    "InputCurrentAmps": {
        "DataSourceUri": "/redfish/v1/Chassis/1U/Sensors/Battery1InputCurrent",
        "Reading": 0
    },
    "OutputVoltages": [
        {
            "DataSourceUri": "/redfish/v1/Chassis/1U/Sensors/Battery1OutputVoltage",
            "Reading": 12.22
        }
    ],
    "OutputCurrentAmps": [
        {
            "DataSourceUri": "/redfish/v1/Chassis/1U/Sensors/Battery1OutputCurrent",
            "Reading": 0
        }
    ],
    "StoredEnergyWattHours": {
        "Reading": 19.41
    },
    "TemperatureCelsius": {
        "DataSourceUri": "/redfish/v1/Chassis/1U/Sensors/Battery1Temp",
        "Reading": 33
    },
    "ChargePercent": {
        "Reading": 100
    },
    "CellVoltages": [
        {
            "Reading": 3.44
        },
        {
            "Reading": 3.45
        },
        {
            "Reading": 3.43
        },
        {
            "Reading": 3.43
```

```
        },
        {
            "Reading": 3.45
        },
        {
            "Reading": 3.44
        },
        {
            "Reading": 3.43
        },
        {
            "Reading": 3.44
        }
    ],
    "@odata.id": "/redfish/v1/Chassis/1U/PowerSubsystem/Batteries/Module1/Metrics"
}
```

6.13 Bios 1.2.0

Version	v1.2	v1.1	v1.0
Release	2021.1	2019.2	2016.1

6.13.1 Description

The Bios schema contains properties related to the BIOS attribute registry. The attribute registry describes the system-specific BIOS attributes and actions for changing to BIOS settings. Changes to the BIOS typically require a system reset before they take effect. It is likely that a client finds the `@Redfish.Settings` term in this resource, and if it is found, the client makes requests to change BIOS settings by modifying the resource identified by the `@Redfish.Settings` term.

6.13.2 URIs

/redfish/v1/CompositionService/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/Bios
/redfish/v1/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/Bios
/redfish/v1/Systems/*{ComputerSystemId}*/Bios

6.13.3 Properties

Property	Type	Attributes	Notes
AttributeRegistry	string	*read-only (null)*	The resource ID of the attribute registry that has the system-specific information about a BIOS resource.
Attributes {	object		The list of BIOS attributes specific to the manufacturer or provider.
(pattern)	string, boolean, number	*read-write (null)*	Property names follow regular expression pattern "^[A-Za-z][A-Za-z0-9_]+$"
}			
Links *(v1.1+)* {	object		The links to other resources that are related to this resource.
ActiveSoftwareImage *(v1.1+)* {	object		The link to the software inventory that represents the active BIOS firmware image. See the *SoftwareInventory* schema for details on this property.
@odata.id	string	*read-write*	Link to a SoftwareInventory resource. See the Links section and the *SoftwareInventory* schema for details.
}			
Oem {}	object		See the Oem object definition in the Common properties section.
SoftwareImages *(v1.1+)* [{	array		The images that are associated with this BIOS.
@odata.id	string	*read-only*	Link to a SoftwareInventory resource. See the Links section and the *SoftwareInventory* schema for details.
}]			
}			
ResetBiosToDefaultsPending *(v1.2+)*	boolean	*read-only (null)*	An indication of whether there is a pending request to reset the BIOS attributes to default values.

6.13.4 Actions

6.13.4.1 ChangePassword

Description

This action changes a BIOS password.

Action URI: {Base URI of target resource}/Actions/Bios.ChangePassword

Action parameters

Parameter Name	Type	Attributes	Notes
NewPassword	string	*required*	The new BIOS password.
OldPassword	string	*required*	The existing BIOS password.
PasswordName	string	*required*	The name of the BIOS password to change.

Request Example

```
{
    "OldPassword": "secret123",
    "NewPassword": "B3tterS3cur1tY!",
    "PasswordName": "Admin"
}
```

6.13.4.2 ResetBios

Description

This action resets the BIOS attributes to default.

Action URI: {Base URI of target resource}/Actions/Bios.ResetBios

Action parameters

This action takes no parameters.

6.13.5 Example response

```
{
    "@odata.type": "#Bios.v1_2_0.Bios",
    "Id": "BIOS",
    "Name": "BIOS Configuration Current Settings",
    "AttributeRegistry": "BiosAttributeRegistryP89.v1_0_0",
    "Attributes": {
        "AdminPhone": "",
        "BootMode": "Uefi",
        "EmbeddedSata": "Raid",
        "NicBoot1": "NetworkBoot",
        "NicBoot2": "Disabled",
        "PowerProfile": "MaxPerf",
```

```
        "ProcCoreDisable": 0,
        "ProcHyperthreading": "Enabled",
        "ProcTurboMode": "Enabled",
        "UsbControl": "UsbEnabled"
    },
    "@Redfish.Settings": {
        "@odata.type": "#Settings.v1_3_4.Settings",
        "ETag": "9234ac83b9700123cc32",
        "Messages": [
            {
                "MessageId": "Base.1.0.SettingsFailed",
                "RelatedProperties": [
                    "#/Attributes/ProcTurboMode"
                ]
            }
        ],
        "SettingsObject": {
            "@odata.id": "/redfish/v1/Systems/437XR1138R2/Bios/Settings"
        },
        "Time": "2016-03-07T14:44.30-05:00"
    },
    "Actions": {
        "#Bios.ResetBios": {
            "target": "/redfish/v1/Systems/437XR1138R2/Bios/Actions/Bios.ResetBios"
        },
        "#Bios.ChangePassword": {
            "target": "/redfish/v1/Systems/437XR1138R2/Bios/Actions/Bios.ChangePassword"
        }
    },
    "@odata.id": "/redfish/v1/Systems/437XR1138R2/Bios"
}
```

6.14 BootOption 1.0.4

Version	*v1.0*
Release	2017.3

6.14.1 Description

The BootOption schema reports information about a single boot option in a system. It represents the properties of a bootable device available in the system.

6.14.2 URIs

/redfish/v1/CompositionService/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/BootOptions/
{BootOptionId}
/redfish/v1/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/BootOptions/*{BootOptionId}*
/redfish/v1/Systems/*{ComputerSystemId}*/BootOptions/*{BootOptionId}*

6.14.3 Properties

Property	Type	Attributes	Notes
Alias	string (enum)	*read-only (null)*	The alias of this boot source. *For the possible property values, see Alias in Property details.*
BootOptionEnabled	boolean	*read-write (null)*	An indication of whether the boot option is enabled. If `true` , it is enabled. If `false` , the boot option that the boot order array on the computer system contains is skipped. In the UEFI context, this property shall influence the load option active flag for the boot option.
BootOptionReference	string	*read-only required (null)*	The unique boot option.
DisplayName	string	*read-only (null)*	The user-readable display name of the boot option that appears in the boot order list in the user interface.
RelatedItem [{	array		An array of links to resources or objects associated with this boot option.
@odata.id	string (URI)	*read-only*	The unique identifier for a resource.
}]			
UefiDevicePath	string	*read-only (null)*	The UEFI device path to access this UEFI boot option.

6.14.4 Property details

6.14.4.1 Alias:

The alias of this boot source.

string	Description
BiosSetup	Boot to the BIOS setup utility.
Cd	Boot from the CD or DVD.
Diags	Boot to the manufacturer's diagnostics program.
Floppy	Boot from the floppy disk drive.
Hdd	Boot from a hard drive.
None	Boot from the normal boot device.
Pxe	Boot from the Pre-Boot EXecution (PXE) environment.
RemoteDrive	Boot from a remote drive, such as an iSCSI target.
SDCard	Boot from an SD card.
UefiBootNext	Boot to the UEFI device that the BootNext property specifies.
UefiHttp	Boot from a UEFI HTTP network location.
UefiShell	Boot to the UEFI Shell.
UefiTarget	Boot to the UEFI device specified in the UefiTargetBootSourceOverride property.
Usb	Boot from a system BIOS-specified USB device.
Utilities	Boot to the manufacturer's utilities program or programs.

6.14.5 Example response

```
{
    "@odata.type": "#BootOption.v1_0_4.BootOption",
    "Id": "1",
    "Name": "Boot Option",
    "Description": "UEFI Boot Option",
    "BootOptionReference": "Boot0000",
    "DisplayName": "Windows Boot Manager",
    "UefiDevicePath": "PciRoot(0x0)/Pci(0x1,0x0)/Pci(0x0,0x0)/Scsi(0x0,0x0)/HD(2,GPT,B02BF459-8975-4222-A1C4-17915C29E5E5,0x96
    "Alias": "Hdd",
    "RelatedItem": [
        {
            "@odata.id": "/redfish/v1/Systems/1/SimpleStorage/1"
        }
    ],
    "Oem": {},
    "@odata.id": "/redfish/v1/Systems/1/BootOptions/1"
```

```
    }
```

6.15 Cable 1.2.0

Version	v1.2	v1.1	v1.0
Release	2021.4	2021.3	2021.2

6.15.1 Description

The Cable schema contains properties that describe a cable connecting endpoints of a chassis, port, or any other cable-compatible endpoint.

6.15.2 URIs

/redfish/v1/Cables/{CableId}

6.15.3 Properties

Property	Type	Attributes	Notes
Assembly {	object		The link to the assembly associated with this cable. See the *Assembly* schema for details on this property.
@odata.id	string	*read-only*	Link to a Assembly resource. See the Links section and the *Assembly* schema for details.
}			
AssetTag	string	*read-write (null)*	The user-assigned asset tag for this cable.
CableClass	string (enum)	*read-write (null)*	The identifier for the downstream resource. *For the possible property values, see CableClass in Property details.*
CableStatus	string (enum)	*read-write*	The user-reported status of this resource. *For the possible property values, see CableStatus in Property details.*
CableType	string	*read-write (null)*	The type of this cable.

Property	Type	Attributes	Notes
DownstreamConnectorTypes [ ]	array (string (enum))	*read-write*	The connector types this cable supports. *For the possible property values, see DownstreamConnectorTypes in Property details.*
DownstreamName	string	*read-write (null)*	The identifier for the downstream resource.
LengthMeters	number	*read-write (null)*	The length of the cable in meters.
Links {	object		The links to other resources that are related to this resource.
DownstreamChassis [{	array		An array of links to the downstream chassis connected to this cable.
@odata.id	string	*read-write*	Link to a Chassis resource. See the Links section and the *Chassis* schema for details.
}]			
DownstreamPorts [{	array		An array of links to the downstream ports connected to this cable.
@odata.id	string	*read-write*	Link to a Port resource. See the Links section and the *Port* schema for details.
}]			
DownstreamResources [{	array		An array of links to the downstream resources connected to this cable.
@odata.id	string (URI)	*read-only*	The unique identifier for a resource.
}]			
Oem {}	object		See the Oem object definition in the Common properties section.
UpstreamChassis [{	array		An array of links to the upstream chassis connected to this cable.
@odata.id	string	*read-write*	Link to a Chassis resource. See the Links section and the *Chassis* schema for details.
}]			
UpstreamPorts [{	array		An array of links to the upstream ports connected to this cable.
@odata.id	string	*read-write*	Link to a Port resource. See the Links section and the *Port* schema for details.
}]			
UpstreamResources [{	array		An array of links to the upstream resources connected to this cable.
@odata.id	string (URI)	*read-only*	The unique identifier for a resource.

Property	Type	Attributes	Notes
}]			
}			
Location {}	object		The location of the assembly. For property details, see Location.
Manufacturer	string	*read-write (null)*	The manufacturer of this cable.
Model	string	*read-write (null)*	The model number of the cable.
PartNumber	string	*read-write (null)*	The part number for this cable.
SerialNumber	string	*read-write (null)*	The serial number for this cable.
SKU	string	*read-write (null)*	The SKU for this cable.
Status {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
UpstreamConnectorTypes [ ]	array (string (enum))	*read-write*	The connector types this cable supports. *For the possible property values, see UpstreamConnectorTypes in Property details.*
UpstreamName	string	*read-write (null)*	The identifier for the downstream resource.
UserDescription	string	*read-write (null)*	The description of this cable.
UserLabel *(v1.1+)*	string	*read-write*	A user-assigned label.
Vendor	string	*read-write (null)*	The manufacturer of this cable.

6.15.4 Property details

6.15.4.1 CableClass:

The identifier for the downstream resource.

string	Description
Fabric	This cable is used for connecting to a fabric.

string	Description
Fan	This cable is used for connecting to a fan system.
General	This cable is used for providing general connectivity.
Network	This cable is used for connecting to a networking system.
PCIe	This cable is used for connecting to a PCIe endpoint.
Power	This cable is used for connecting to a power system.
Serial	This cable is used for connecting to a serial endpoint.
Storage	This cable is used for connecting to a storage system.
USB	This cable is used for connecting to a USB endpoint.
Video	This cable is used for connecting to a video system.

6.15.4.2 CableStatus:

The user-reported status of this resource.

string	Description
Degraded	The cable is degraded.
Disabled	The cable is disabled.
Failed	The cable has failed.
Normal	The cable is operating normally.
SetByService	The cable status is set by the service.
Testing	The cable is under test.

6.15.4.3 DownstreamConnectorTypes:

The connector types this cable supports.

string	Description
ACPower	This cable connects to a AC power connector.
CDFP	This cable connects to a CDFP connector.

string	Description
DB9	This cable connects to a DB9 connector.
DCPower	This cable connects to a DC power connector.
DisplayPort	This cable connects to a DisplayPort power connector.
HDMI	This cable connects to an HDMI connector.
ICI	This cable connects to an ICI connector.
IPASS	This cable connects to an IPASS connector.
OSFP	This cable connects to a OSFP connector.
PCIe	This cable connects to a PCIe connector.
Proprietary	This cable connects to a proprietary connector.
QSFP	This cable connects to a QSFP connector.
RJ45	This cable connects to an RJ45 connector.
SATA	This cable connects to a SATA connector.
SCSI	This cable connects to a SCSI connector.
SFP	This cable connects to a SFP connector.
SFPPlus	This cable connects to a SFPPlus connector.
SlimSAS	This cable connects to a SlimSAS connector.
USBA	This cable connects to a USB-A connector.
USBC	This cable connects to a USB-C connector.

6.15.4.4 UpstreamConnectorTypes:

The connector types this cable supports.

string	Description
ACPower	This cable connects to a AC power connector.
CDFP	This cable connects to a CDFP connector.
DB9	This cable connects to a DB9 connector.
DCPower	This cable connects to a DC power connector.

string	Description
DisplayPort	This cable connects to a DisplayPort power connector.
HDMI	This cable connects to an HDMI connector.
ICI	This cable connects to an ICI connector.
IPASS	This cable connects to an IPASS connector.
OSFP	This cable connects to a OSFP connector.
PCIe	This cable connects to a PCIe connector.
Proprietary	This cable connects to a proprietary connector.
QSFP	This cable connects to a QSFP connector.
RJ45	This cable connects to an RJ45 connector.
SATA	This cable connects to a SATA connector.
SCSI	This cable connects to a SCSI connector.
SFP	This cable connects to a SFP connector.
SFPPlus	This cable connects to a SFPPlus connector.
SlimSAS	This cable connects to a SlimSAS connector.
USBA	This cable connects to a USB-A connector.
USBC	This cable connects to a USB-C connector.

6.15.5 Example response

```
{
    "@odata.type": "#Cable.v1_2_0.Cable",
    "Id": "hdmi_dp",
    "Name": "HDMI to DP Cable",
    "UserDescription": "HDMI to DisplayPort Cable",
    "UpstreamName": "HDMI0",
    "DownstreamName": "Video Out",
    "CableType": "HDMI",
    "LengthMeters": 0.1,
    "CableClass": "Video",
    "UpstreamConnectorTypes": [
        "HDMI"
    ],
    "DownstreamConnectorTypes": [
```

```
        "DisplayPort"
    ],
    "Links": {
        "UpstreamChassis": [
            {
                "@odata.id": "/redfish/v1/Chassis/bmc"
            }
        ]
    },
    "PartNumber": "934AMS02X",
    "Manufacturer": "Cable Co.",
    "SerialNumber": "2345791",
    "Vendor": "Cablestore",
    "Status": {
        "State": "Enabled",
        "Health": "OK"
    },
    "CableStatus": "Normal",
    "@odata.id": "/redfish/v1/Cables/hdmi_dp"
}
```

6.16 Certificate 1.5.0

Version	v1.5	v1.4	v1.3	v1.2	v1.1	v1.0
Release	2021.3	2021.2	2021.1	2020.1	2019.1	2018.3

6.16.1 Description

The Certificate schema describes a certificate that proves the identify of a component, account, or service.

6.16.2 URIs

/redfish/v1/AccountService/Accounts/*{ManagerAccountId}*/Certificates/*{CertificateId}*
/redfish/v1/AccountService/ActiveDirectory/Certificates/*{CertificateId}*
/redfish/v1/AccountService/ExternalAccountProviders/*{ExternalAccountProviderId}*/Certificates/*{CertificateId}*
/redfish/v1/AccountService/LDAP/Certificates/*{CertificateId}*
/redfish/v1/Chassis/*{ChassisId}*/Certificates/*{CertificateId}*
/redfish/v1/Chassis/*{ChassisId}*/Drives/*{DriveId}*/Certificates/*{CertificateId}*
/redfish/v1/Chassis/*{ChassisId}*/Memory/*{MemoryId}*/Certificates/*{CertificateId}*
/redfish/v1/Chassis/*{ChassisId}*/NetworkAdapters/*{NetworkAdapterId}*/Certificates/*{CertificateId}*
/redfish/v1/CompositionService/ResourceBlocks/*{ResourceBlockId}*/Drives/*{DriveId}*/Certificates/*{CertificateId}*
/redfish/v1/CompositionService/ResourceBlocks/*{ResourceBlockId}*/Memory/*{MemoryId}*/Certificates/*{CertificateId}*

/redfish/v1/CompositionService/ResourceBlocks/{*ResourceBlockId*}/Processors/{*ProcessorId*}/Certificates/
{*CertificateId*}
/redfish/v1/CompositionService/ResourceBlocks/{*ResourceBlockId*}/Storage/{*StorageId*}/Controllers/
{*StorageControllerId*}/Certificates/{*CertificateId*}
/redfish/v1/CompositionService/ResourceBlocks/{*ResourceBlockId*}/Storage/{*StorageId*}/Drives/{*DriveId*}/Certificates/
{*CertificateId*}
/redfish/v1/CompositionService/ResourceBlocks/{*ResourceBlockId*}/Storage/{*StorageId*}/StorageControllers/
{*StorageControllerId*}/Certificates/{*CertificateId*}
/redfish/v1/CompositionService/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/Boot/Certificates/
{*CertificateId*}
/redfish/v1/CompositionService/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/Certificates/
{*CertificateId*}
/redfish/v1/CompositionService/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/KeyManagement/
KMIPCertificates
/redfish/v1/CompositionService/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/Memory/
{*MemoryId*}/Certificates/{*CertificateId*}
/redfish/v1/CompositionService/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/Processors/
{*ProcessorId*}/Certificates/{*CertificateId*}
/redfish/v1/CompositionService/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/SecureBoot/
SecureBootDatabases/{*DatabaseId*}/Certificates/{*CertificateId*}
/redfish/v1/CompositionService/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/Storage/
{*StorageId*}/Controllers/{*StorageControllerId*}/Certificates/{*CertificateId*}
/redfish/v1/CompositionService/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/Storage/
{*StorageId*}/Drives/{*DriveId*}/Certificates/{*CertificateId*}
/redfish/v1/CompositionService/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/Storage/
{*StorageId*}/StorageControllers/{*StorageControllerId*}/Certificates/{*CertificateId*}
/redfish/v1/CompositionService/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/VirtualMedia/
{*VirtualMediaId*}/Certificates/{*CertificateId*}
/redfish/v1/CompositionService/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/VirtualMedia/
{*VirtualMediaId*}/ClientCertificates/{*CertificateId*}
/redfish/v1/EventService/Subscriptions/{*EventDestinationId*}/Certificates/{*CertificateId*}
/redfish/v1/EventService/Subscriptions/{*EventDestinationId*}/ClientCertificates/{*CertificateId*}
/redfish/v1/Fabrics/{*FabricId*}/Switches/{*SwitchId*}/Certificates/{*CertificateId*}
/redfish/v1/Managers/{*ManagerId*}/Certificates/{*CertificateId*}
/redfish/v1/Managers/{*ManagerId*}/NetworkProtocol/HTTPS/Certificates/{*CertificateId*}
/redfish/v1/Managers/{*ManagerId*}/RemoteAccountService/Accounts/{*ManagerAccountId*}/Certificates/{*CertificateId*}
/redfish/v1/Managers/{*ManagerId*}/RemoteAccountService/ActiveDirectory/Certificates/{*CertificateId*}
/redfish/v1/Managers/{*ManagerId*}/RemoteAccountService/ExternalAccountProviders/{*ExternalAccountProviderId*}/
Certificates/{*CertificateId*}
/redfish/v1/Managers/{*ManagerId*}/RemoteAccountService/LDAP/Certificates/{*CertificateId*}
/redfish/v1/ResourceBlocks/{*ResourceBlockId*}/Drives/{*DriveId*}/Certificates/{*CertificateId*}
/redfish/v1/ResourceBlocks/{*ResourceBlockId*}/Memory/{*MemoryId*}/Certificates/{*CertificateId*}
/redfish/v1/ResourceBlocks/{*ResourceBlockId*}/Processors/{*ProcessorId*}/Certificates/{*CertificateId*}
/redfish/v1/ResourceBlocks/{*ResourceBlockId*}/Storage/{*StorageId*}/Controllers/{*StorageControllerId*}/Certificates/

{CertificateId}

/redfish/v1/ResourceBlocks/*{ResourceBlockId}*/Storage/*{StorageId}*/Drives/*{DriveId}*/Certificates/*{CertificateId}*

/redfish/v1/ResourceBlocks/*{ResourceBlockId}*/Storage/*{StorageId}*/StorageControllers/*{StorageControllerId}*/
Certificates/*{CertificateId}*

/redfish/v1/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/Boot/Certificates/*{CertificateId}*

/redfish/v1/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/Certificates/*{CertificateId}*

/redfish/v1/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/KeyManagement/KMIPCertificates

/redfish/v1/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/Memory/*{MemoryId}*/Certificates/
{CertificateId}

/redfish/v1/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/Processors/*{ProcessorId}*/Certificates/
{CertificateId}

/redfish/v1/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/SecureBoot/SecureBootDatabases/
{DatabaseId}/Certificates/*{CertificateId}*

/redfish/v1/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/Storage/*{StorageId}*/Controllers/
{StorageControllerId}/Certificates/*{CertificateId}*

/redfish/v1/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/Storage/*{StorageId}*/Drives/*{DriveId}*/
Certificates/*{CertificateId}*

/redfish/v1/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/Storage/*{StorageId}*/
StorageControllers/*{StorageControllerId}*/Certificates/*{CertificateId}*

/redfish/v1/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/VirtualMedia/*{VirtualMediaId}*/
Certificates/*{CertificateId}*

/redfish/v1/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/VirtualMedia/*{VirtualMediaId}*/
ClientCertificates/*{CertificateId}*

/redfish/v1/Storage/*{StorageId}*/Controllers/*{StorageControllerId}*/Certificates/*{CertificateId}*

/redfish/v1/Storage/*{StorageId}*/StorageControllers/*{StorageControllerId}*/Certificates/*{CertificateId}*

/redfish/v1/Systems/*{ComputerSystemId}*/Boot/Certificates/*{CertificateId}*

/redfish/v1/Systems/*{ComputerSystemId}*/Certificates/*{CertificateId}*

/redfish/v1/Systems/*{ComputerSystemId}*/KeyManagement/KMIPCertificates

/redfish/v1/Systems/*{ComputerSystemId}*/Memory/*{MemoryId}*/Certificates/*{CertificateId}*

/redfish/v1/Systems/*{ComputerSystemId}*/Processors/*{ProcessorId}*/Certificates/*{CertificateId}*

/redfish/v1/Systems/*{ComputerSystemId}*/SecureBoot/SecureBootDatabases/*{DatabaseId}*/Certificates/*{CertificateId}*

/redfish/v1/Systems/*{ComputerSystemId}*/Storage/*{StorageId}*/Controllers/*{StorageControllerId}*/Certificates/
{CertificateId}

/redfish/v1/Systems/*{ComputerSystemId}*/Storage/*{StorageId}*/Drives/*{DriveId}*/Certificates/*{CertificateId}*

/redfish/v1/Systems/*{ComputerSystemId}*/Storage/*{StorageId}*/StorageControllers/*{StorageControllerId}*/Certificates/
{CertificateId}

/redfish/v1/Systems/*{ComputerSystemId}*/VirtualMedia/*{VirtualMediaId}*/Certificates/*{CertificateId}*

/redfish/v1/Systems/*{ComputerSystemId}*/VirtualMedia/*{VirtualMediaId}*/ClientCertificates/*{CertificateId}*

/redfish/v1/UpdateService/ClientCertificates/*{CertificateId}*

/redfish/v1/UpdateService/RemoteServerCertificates/*{CertificateId}*

6.16.3 Properties

Property	Type	Attributes	Notes
CertificateString	string	*read-only required on create (null)*	The string for the certificate.
CertificateType	string (enum)	*read-only required on create (null)*	The format of the certificate. *For the possible property values, see CertificateType in Property details.*
CertificateUsageTypes *(v1.4+)* [ ]	array (string (enum))	*read-only (null)*	The types or purposes for this certificate. *For the possible property values, see CertificateUsageTypes in Property details.*
Fingerprint *(v1.3+)*	string	*read-only*	The fingerprint of the certificate.
FingerprintHashAlgorithm *(v1.3+)*	string	*read-only*	The hash algorithm for the fingerprint of the certificate.
Issuer {	object		The issuer of the certificate.
City	string	*read-only*	The city or locality of the organization of the entity.
CommonName	string	*read-only*	The fully qualified domain name of the entity.
Country	string	*read-only*	The country of the organization of the entity.
Email	string	*read-only (null)*	The email address of the contact within the organization of the entity.
Organization	string	*read-only*	The name of the organization of the entity.
OrganizationalUnit	string	*read-only*	The name of the unit or division of the organization of the entity.
State	string	*read-only*	The state, province, or region of the organization of the entity.
}			
KeyUsage [ ]	array (string (enum))	*read-only (null)*	The key usage extension, which defines the purpose of the public keys in this certificate. *For the possible property values, see KeyUsage in Property details.*
Links *(v1.4+)* {	object		The links to other resources that are related to this resource.
Issuer *(v1.4+)* {	object	*(null)*	A link to the certificate of the CA that issued this certificate.
@odata.id	string	*read-write*	Link to another Certificate resource.

Property	Type	Attributes	Notes
}			
Oem {}	object		See the Oem object definition in the Common properties section.
Subjects *(v1.4+)* [{	array		An array of links to certificates that were issued by the CA that is represented by this certificate.
@odata.id	string	*read-write*	Link to another Certificate resource.
}]			
}			
SerialNumber *(v1.3+)*	string	*read-only*	The serial number of the certificate.
SignatureAlgorithm *(v1.3+)*	string	*read-only*	The algorithm used for creating the signature of the certificate.
SPDM *(v1.5+)* {	object	*(null)*	SPDM-related information for the certificate.
SlotId *(v1.5+)*	integer	*read-only (null)*	Slot identifier of the certificate.
}			
Subject {	object		The subject of the certificate.
City	string	*read-only*	The city or locality of the organization of the entity.
CommonName	string	*read-only*	The fully qualified domain name of the entity.
Country	string	*read-only*	The country of the organization of the entity.
Email	string	*read-only (null)*	The email address of the contact within the organization of the entity.
Organization	string	*read-only*	The name of the organization of the entity.
OrganizationalUnit	string	*read-only*	The name of the unit or division of the organization of the entity.
State	string	*read-only*	The state, province, or region of the organization of the entity.
}			
UefiSignatureOwner *(v1.2+)*	string	*read-only (null)*	The UEFI signature owner for this certificate.
ValidNotAfter	string (date-time)	*read-only*	The date when the certificate is no longer valid.

Property	Type	Attributes	Notes
ValidNotBefore	string (date-time)	*read-only*	The date when the certificate becomes valid.

6.16.4 Actions

6.16.4.1 Rekey *(v1.1+)*

Description

This action generates a new key-pair for a certificate and produces a certificate signing request.

Action URI: {Base URI of target resource}/Actions/Certificate.Rekey

Action parameters

Parameter Name	Type	Attributes	Notes
ChallengePassword	string	*optional*	The challenge password to apply to the certificate for revocation requests.
KeyBitLength	integer	*optional*	The length of the key, in bits, if needed based on the KeyPairAlgorithm parameter value.
KeyCurveId	string	*optional*	The curve ID to use with the key, if needed based on the KeyPairAlgorithm parameter value.
KeyPairAlgorithm	string	*optional*	The type of key-pair for use with signing algorithms.

Response Payload

{			
Certificate *(v1.1+)* {	object	** required**	The link to the certificate being rekeyed.
@odata.id	string	*read-only*	Link to another Certificate resource.
}			
CSRString *(v1.1+)*	string	*read-only required*	The string for the certificate signing request.

}			

Request Example

```
{
    "KeyPairAlgorithm": "TPM_ALG_RSA",
    "KeyBitLength": 4096
}
```

Response Example

```
{
    "CSRString": "-----BEGIN CERTIFICATE REQUEST-----...-----END CERTIFICATE REQUEST-----",
    "Certificate": {
        "@odata.id": "/redfish/v1/Managers/BMC/NetworkProtocol/HTTPS/Certificates/1"
    }
}
```

6.16.4.2 Renew *(v1.1+)*

Description

This action generates a certificate signing request by using the existing information and key-pair of the certificate.

Action URI: {Base URI of target resource}/Actions/Certificate.Renew

Action parameters

Parameter Name	Type	Attributes	Notes
ChallengePassword	string	*optional*	The challenge password to apply to the certificate for revocation requests.

Response Payload

{			
Certificate *(v1.1+)*{	object	* required*	The link to the certificate being renewed.

@odata.id	string	*read-only*	Link to another Certificate resource.
}			
CSRString *(v1.1+)*	string	*read-only required*	The string for the certificate signing request.
}			

Request Example

```
{
    "ChallengePassword": "p4ssw0rd"
}
```

Response Example

```
{
    "CSRString": "-----BEGIN CERTIFICATE REQUEST-----...-----END CERTIFICATE REQUEST-----",
    "Certificate": {
        "@odata.id": "/redfish/v1/Managers/BMC/NetworkProtocol/HTTPS/Certificates/1"
    }
}
```

6.16.5 Property details

6.16.5.1 CertificateType:

The format of the certificate.

string	Description
PEM	A Privacy Enhanced Mail (PEM)-encoded single certificate.
PEMchain *(v1.4+)*	A Privacy Enhanced Mail (PEM)-encoded certificate chain.
PKCS7	A Privacy Enhanced Mail (PEM)-encoded PKCS7 certificate.

6.16.5.2 CertificateUsageTypes:

The types or purposes for this certificate.

string	Description
BIOS	This certificate is a BIOS certificate like those associated with UEFI.
Device	This certificate is a device type certificate like those associated with SPDM and other standards.
Platform	This certificate is a platform type certificate like those associated with SPDM and other standards.
SSH	This certificate is used for SSH.
User	This certificate is a user certificate like those associated with a manager account.
Web	This certificate is a web or HTTPS certificate like those used for event destinations.

6.16.5.3 KeyUsage:

The key usage extension, which defines the purpose of the public keys in this certificate.

string	Description
ClientAuthentication	TLS WWW client authentication.
CodeSigning	Signs downloadable executable code.
CRLSigning	Verifies signatures on certificate revocation lists (CRLs).
DataEncipherment	Directly enciphers raw user data without an intermediate symmetric cipher.
DecipherOnly	Deciphers data while performing a key agreement.
DigitalSignature	Verifies digital signatures, other than signatures on certificates and CRLs.
EmailProtection	Email protection.
EncipherOnly	Enciphers data while performing a key agreement.
KeyAgreement	Key agreement.
KeyCertSign	Verifies signatures on public key certificates.
KeyEncipherment	Enciphers private or secret keys.
NonRepudiation	Verifies digital signatures, other than signatures on certificates and CRLs, and provides a non-repudiation service that protects against the signing entity falsely denying some action.

string	Description
OCSPSigning	Signs OCSP responses.
ServerAuthentication	TLS WWW server authentication.
Timestamping	Binds the hash of an object to a time.

6.16.6 Example response

```
{
    "@odata.type": "#Certificate.v1_5_0.Certificate",
    "Id": "1",
    "Name": "HTTPS Certificate",
    "CertificateString": "-----BEGIN CERTIFICATE-----\nMIIFsTCC [*truncated*] GXG5zljlu\n-----END CERTIFICATE-----",
    "CertificateType": "PEM",
    "Issuer": {
        "Country": "US",
        "State": "Oregon",
        "City": "Portland",
        "Organization": "Contoso",
        "OrganizationalUnit": "ABC",
        "CommonName": "manager.contoso.org"
    },
    "Subject": {
        "Country": "US",
        "State": "Oregon",
        "City": "Portland",
        "Organization": "Contoso",
        "OrganizationalUnit": "ABC",
        "CommonName": "manager.contoso.org"
    },
    "ValidNotBefore": "2018-09-07T13:22:05Z",
    "ValidNotAfter": "2019-09-07T13:22:05Z",
    "KeyUsage": [
        "KeyEncipherment",
        "ServerAuthentication"
    ],
    "SerialNumber": "5d:7a:d8:df:f6:fc:c1:b3:ca:fe:fb:cc:38:f3:01:64:51:ea:05:cb",
    "Fingerprint": "A6:E9:D2:5C:DC:52:DA:4B:3B:14:97:F3:A4:53:D9:99:A1:0B:56:41",
    "FingerprintHashAlgorithm": "TPM_ALG_SHA1",
    "SignatureAlgorithm": "sha256WithRSAEncryption",
    "Oem": {},
    "@odata.id": "/redfish/v1/Managers/BMC/NetworkProtocol/HTTPS/Certificates/1"
}
```

6.17 CertificateLocations 1.0.2

Version	*v1.0*
Release	2018.3

6.17.1 Description

The CertificateLocations schema describes a Resource that an administrator can use in order to locate all certificates installed on a given service.

6.17.2 URIs

/redfish/v1/CertificateService/CertificateLocations

6.17.3 Properties

Property	Type	Attributes	Notes
Links {	object		The links to other Resources that are related to this Resource.
Certificates [{	array		An array of links to the certificates installed on this service.
@odata.id	string	*read-only*	Link to a Certificate resource. See the Links section and the *Certificate* schema for details.
}]			
Oem {}	object		See the Oem object definition in the Common properties section.
}			

6.17.4 Example response

```
{
    "@odata.type": "#CertificateLocations.v1_0_2.CertificateLocations",
    "Id": "CertificateLocations",
    "Name": "Certificate Locations",
    "Links": {
        "Certificates": [
```

```
            {
                "@odata.id": "/redfish/v1/Managers/BMC/NetworkProtocol/HTTPS/Certificates/1"
            }
        ]
    },
    "Oem": {},
    "@odata.id": "/redfish/v1/CertificateService/CertificateLocations"
}
```

6.18 CertificateService 1.0.4

Version	*v1.0*
Release	2018.3

6.18.1 Description

The CertificateService schema describes a certificate service that represents the actions available to manage certificates and links to the certificates.

6.18.2 URIs

/redfish/v1/CertificateService

6.18.3 Properties

Property	Type	Attributes	Notes
CertificateLocations {	object		The information about the location of certificates. See the *CertificateLocations* schema for details on this property.
@odata.id	string	*read-only*	Link to a CertificateLocations resource. See the Links section and the *CertificateLocations* schema for details.
}			

6.18.4 Actions

6.18.4.1 GenerateCSR

Description

This action makes a certificate signing request.

Action URI: {Base URI of target resource}/Actions/CertificateService.GenerateCSR

Action parameters

Parameter Name	Type	Attributes	Notes
AlternativeNames [ ]	array (string)	*optional*	The additional host names of the component to secure.
CertificateCollection	object	*required*	The link to the certificate collection where the certificate is installed after the certificate authority (CA) signs the certificate. Contains a link to a resource.
{			
@odata.id	string	*read-only*	Link to Collection of *Certificate*. See the Certificate schema for details.
}			
ChallengePassword	string	*optional*	The challenge password to apply to the certificate for revocation requests.
City	string	*required*	The city or locality of the organization making the request.
CommonName	string	*required*	The fully qualified domain name of the component to secure.
ContactPerson	string	*optional*	The name of the user making the request.
Country	string	*required*	The two-letter country code of the organization making the request.
Email	string	*optional*	The email address of the contact within the organization making the request.
GivenName	string	*optional*	The given name of the user making the request.
Initials	string	*optional*	The initials of the user making the request.
KeyBitLength	integer	*optional*	The length of the key, in bits, if needed based on the KeyPairAlgorithm parameter value.
KeyCurveId	string	*optional*	The curve ID to use with the key, if needed based on the KeyPairAlgorithm parameter value.
KeyPairAlgorithm	string	*optional*	The type of key-pair for use with signing algorithms.
KeyUsage [ ]	array (string (enum))	*read-write*	The usage of the key contained in the certificate. *For the possible property values, see KeyUsage in Property details.*

Parameter Name	Type	Attributes	Notes
Organization	string	*required*	The name of the organization making the request.
OrganizationalUnit	string	*required*	The name of the unit or division of the organization making the request.
State	string	*required*	The state, province, or region of the organization making the request.
Surname	string	*optional*	The surname of the user making the request.
UnstructuredName	string	*optional*	The unstructured name of the subject.

Response Payload

{			
CertificateCollection {	object	* required*	The link to the certificate collection where the certificate is installed. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *Certificate*. See the Certificate schema for details.
}			
CSRString	string	*read-only required*	The string for the certificate signing request.
}			

Request Example

```
{
    "Country": "US",
    "State": "Oregon",
    "City": "Portland",
    "Organization": "Contoso",
    "OrganizationalUnit": "ABC",
    "CommonName": "manager.contoso.org",
    "AlternativeNames": [
        "manager.contoso.com",
        "manager.contoso.us"
    ],
    "Email": "admin@contoso.org",
    "KeyPairAlgorithm": "TPM_ALG_RSA",
    "KeyBitLength": 4096,
    "KeyUsage": [
```

```
        "KeyEncipherment",
        "ServerAuthentication"
    ],
    "CertificateCollection": {
        "@odata.id": "/redfish/v1/Managers/BMC/NetworkProtocol/HTTPS/Certificates"
    }
}
```

Response Example

```
{
    "CSRString": "-----BEGIN CERTIFICATE REQUEST-----...-----END CERTIFICATE REQUEST-----",
    "CertificateCollection": {
        "@odata.id": "/redfish/v1/Managers/BMC/NetworkProtocol/HTTPS/Certificates"
    }
}
```

6.18.4.2 ReplaceCertificate

Description

This action replaces a certificate.

Action URI: {Base URI of target resource}/Actions/CertificateService.ReplaceCertificate

Action parameters

Parameter Name	Type	Attributes	Notes
CertificateString	string	*required*	The string for the certificate.
CertificateType	string (enum)	*required*	The format of the certificate. *For the possible property values, see CertificateType in Property details.*
CertificateUri {	object	*required*	The link to the certificate that is being replaced. See the *Certificate* schema for details on this property.
@odata.id	string	*read-only*	Link to a Certificate resource. See the Links section and the *Certificate* schema for details.
}			

Request Example

```
{
    "CertificateUri": {
        "@odata.id": "/redfish/v1/Managers/BMC/NetworkProtocol/HTTPS/Certificates/1"
    },
    "CertificateString": "-----BEGIN CERTIFICATE-----\n...\n-----END CERTIFICATE-----",
    "CertificateType": "PEM"
}
```

6.18.5 Property details

6.18.5.1 CertificateType:

The format of the certificate.

string	Description
PEM	A Privacy Enhanced Mail (PEM)-encoded single certificate.
PEMchain	A Privacy Enhanced Mail (PEM)-encoded certificate chain.
PKCS7	A Privacy Enhanced Mail (PEM)-encoded PKCS7 certificate.

6.18.5.2 KeyUsage:

The usage of the key contained in the certificate.

string	Description
ClientAuthentication	TLS WWW client authentication.
CodeSigning	Signs downloadable executable code.
CRLSigning	Verifies signatures on certificate revocation lists (CRLs).
DataEncipherment	Directly enciphers raw user data without an intermediate symmetric cipher.
DecipherOnly	Deciphers data while performing a key agreement.
DigitalSignature	Verifies digital signatures, other than signatures on certificates and CRLs.
EmailProtection	Email protection.
EncipherOnly	Enciphers data while performing a key agreement.
KeyAgreement	Key agreement.

string	Description
KeyCertSign	Verifies signatures on public key certificates.
KeyEncipherment	Enciphers private or secret keys.
NonRepudiation	Verifies digital signatures, other than signatures on certificates and CRLs, and provides a non-repudiation service that protects against the signing entity falsely denying some action.
OCSPSigning	Signs OCSP responses.
ServerAuthentication	TLS WWW server authentication.
Timestamping	Binds the hash of an object to a time.

6.18.6 Example response

```
{
    "@odata.type": "#CertificateService.v1_0_4.CertificateService",
    "Id": "CertificateService",
    "Name": "Certificate Service",
    "Actions": {
        "#CertificateService.GenerateCSR": {
            "target": "/redfish/v1/CertificateService/Actions/CertificateService.GenerateCSR",
            "@Redfish.ActionInfo": "/redfish/v1/CertificateService/GenerateCSRActionInfo"
        },
        "#CertificateService.ReplaceCertificate": {
            "target": "/redfish/v1/CertificateService/Actions/CertificateService.ReplaceCertificate",
            "@Redfish.ActionInfo": "/redfish/v1/CertificateService/ReplaceCertificateActionInfo"
        }
    },
    "CertificateLocations": {
        "@odata.id": "/redfish/v1/CertificateService/CertificateLocations"
    },
    "Oem": {},
    "@odata.id": "/redfish/v1/CertificateService"
}
```

6.19 Chassis 1.19.0

Version	v1.19	v1.18	v1.17	v1.16	v1.15	v1.14	v1.13	v1.12	v1.11	v1.10	v1.9	...
Release	2021.4	2021.3	2021.2	2021.1	2020.4	2020.3	2020.2	2020.1	2019.4	2019.2	2018.3	...

6.19.1 Description

The Chassis schema represents the physical components of a system. This resource represents the sheet-metal confined spaces and logical zones such as racks, enclosures, chassis and all other containers. Subsystems, such as sensors, that operate outside of a system's data plane are linked either directly or indirectly through this resource. A subsystem that operates outside of a system's data plane are not accessible to software that runs on the system.

6.19.2 URIs

/redfish/v1/Chassis/*{ChassisId}*

6.19.3 Properties

Property	Type	Attributes	Notes
Assembly *(v1.6+)* {	object		The link to the assembly associated with this chassis. See the *Assembly* schema for details on this property.
@odata.id	string	*read-only*	Link to a Assembly resource. See the Links section and the *Assembly* schema for details.
}			
AssetTag	string	*read-write (null)*	The user-assigned asset tag of this chassis.
Certificates *(v1.15+)* {	object		The link to a collection of certificates for device identity and attestation. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *Certificate*. See the Certificate schema for details.
}			
ChassisType	string (enum)	*read-only required*	The type of physical form factor of the chassis. *For the possible property values, see ChassisType in Property details.*
Controls *(v1.17+)* {	object		The link to the collection of controls located in this chassis. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *Control*. See the Control schema for details.
}			
DepthMm *(v1.4+)*	number (mm)	*read-only (null)*	The depth of the chassis.
Drives *(v1.14+)* {	object		The link to the collection of drives within this chassis. Contains a link to a resource.

Property	Type	Attributes	Notes
@odata.id	string	*read-only*	Link to Collection of *Drive*. See the Drive schema for details.
}			
ElectricalSourceManagerURIs *(v1.18+)* [ ]	array (URI) (string, null)	*read-write*	The URIs of the management interfaces for the upstream electrical source connections for this chassis.
ElectricalSourceNames *(v1.18+)* [ ]	array (string, null)	*read-write*	The names of the upstream electrical sources, such as circuits or outlets, connected to this chassis.
EnvironmentalClass *(v1.9+)*	string (enum)	*read-only (null)*	The ASHRAE Environmental Class for this chassis. *For the possible property values, see EnvironmentalClass in Property details.*
EnvironmentMetrics *(v1.15+)* {	object		The link to the environment metrics for this chassis. See the *EnvironmentMetrics* schema for details on this property.
@odata.id	string	*read-only*	Link to a EnvironmentMetrics resource. See the Links section and the *EnvironmentMetrics* schema for details.
}			
HeightMm *(v1.4+)*	number (mm)	*read-only (null)*	The height of the chassis.
IndicatorLED *(deprecated v1.14)*	string (enum)	*read-write (null)*	The state of the indicator LED, which identifies the chassis. *For the possible property values, see IndicatorLED in Property details. Deprecated in v1.14 and later. This property has been deprecated in favor of the LocationIndicatorActive property.*
Links {	object		The links to other resources that are related to this resource.
Cables *(v1.17+)* [{	array		An array of links to the cables connected to this chassis.
@odata.id	string	*read-only*	Link to a Cable resource. See the Links section and the *Cable* schema for details.
}]			
ComputerSystems [{	array		An array of links to the computer systems that this chassis directly and wholly contains.
@odata.id	string	*read-only*	Link to a ComputerSystem resource. See the Links section and the *ComputerSystem* schema for details.
}]			
ContainedBy {	object		The link to the chassis that contains this chassis.
@odata.id	string	*read-write*	Link to another Chassis resource.

Property	Type	Attributes	Notes
}			
Contains [{	array		An array of links to any other chassis that this chassis has in it.
@odata.id	string	*read-write*	Link to another Chassis resource.
}]			
CooledBy [{	array		An array of links to resources or objects that cool this chassis. Normally, the link is for either a chassis or a specific set of fans.
@odata.id	string (URI)	*read-only*	The unique identifier for a resource.
}]			
Drives *(v1.2+)* [{	array		An array of links to the drives located in this chassis.
@odata.id	string	*read-only*	Link to a Drive resource. See the Links section and the *Drive* schema for details.
}]			
Facility *(v1.11+)* {	object		The link to the facility that contains this chassis. See the *Facility* schema for details on this property.
@odata.id	string	*read-write*	Link to a Facility resource. See the Links section and the *Facility* schema for details.
}			
ManagedBy [{	array		An array of links to the managers responsible for managing this chassis.
@odata.id	string	*read-only*	Link to a Manager resource. See the Links section and the *Manager* schema for details.
}]			
ManagersInChassis *(v1.2+)* [{	array		An array of links to the managers located in this chassis.
@odata.id	string	*read-only*	Link to a Manager resource. See the Links section and the *Manager* schema for details.
}]			
Oem {}	object		See the Oem object definition in the Common properties section.
PCIeDevices *(v1.4+, deprecated v1.10* [{	array		An array of links to the PCIe devices located in this chassis. *Deprecated in v1.10 and later. This property has been deprecated in favor of the PCIeDevices resource collection in the root of this resource.*

Property	Type	Attributes	Notes
@odata.id	string	*read-only*	Link to a PCIeDevice resource. See the Links section and the *PCIeDevice* schema for details.
}]			
PoweredBy [{	array		An array of links to resources or objects that power this chassis. Normally, the link is for either a chassis or a specific set of power supplies.
@odata.id	string (URI)	*read-only*	The unique identifier for a resource.
}]			
PowerOutlets *(v1.18+)* [{	array		An array of links to the outlets that provide power to this chassis.
@odata.id	string	*read-write*	Link to a Outlet resource. See the Links section and the *Outlet* schema for details.
}]			
Processors *(v1.9+)* [{	array		An array of links to the processors located in this chassis.
@odata.id	string	*read-only*	Link to a Processor resource. See the Links section and the *Processor* schema for details.
}]			
ResourceBlocks *(v1.5+)* [{	array		An array of links to the resource blocks located in this chassis.
@odata.id	string	*read-only*	Link to a ResourceBlock resource. See the Links section and the *ResourceBlock* schema for details.
}]			
Storage *(v1.2+)* [{	array		An array of links to the storage subsystems connected to or inside this chassis.
@odata.id	string	*read-only*	Link to a Storage resource. See the Links section and the *Storage* schema for details.
}]			
Switches *(v1.7+)* [{	array		An array of links to the switches located in this chassis.
@odata.id	string	*read-only*	Link to a Switch resource. See the Links section and the *Switch* schema for details.
}]			
}			
Location *(v1.2+)* {}	object		The location of the chassis. For property details, see Location.

Property	Type	Attributes	Notes
LocationIndicatorActive *(v1.14+)*	boolean	*read-write (null)*	An indicator allowing an operator to physically locate this resource.
LogServices {	object		The link to the logs for this chassis. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *LogService*. See the LogService schema for details.
}			
Manufacturer	string	*read-only (null)*	The manufacturer of this chassis.
MaxPowerWatts *(v1.12+)*	number (Watts)	*read-only (null)*	The upper bound of the total power consumed by the chassis.
Measurements *(v1.15+, deprecated v1.19* [{	array		An array of DSP0274-defined measurement blocks. *Deprecated in v1.19 and later. This property has been deprecated in favor of the ComponentIntegrity resource.*
@odata.id	string	*read-only*	Link to a MeasurementBlock resource. See the Links section and the *SoftwareInventory* schema for details.
}]			
MediaControllers *(v1.11+)* {	object		The link to the collection of media controllers located in this chassis. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *MediaController*. See the MediaController schema for details.
}			
Memory *(v1.11+)* {	object		The link to the collection of memory located in this chassis. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *Memory*. See the Memory schema for details.
}			
MemoryDomains *(v1.11+)* {	object		The link to the collection of memory domains located in this chassis. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *MemoryDomain*. See the MemoryDomain schema for details.
}			
MinPowerWatts *(v1.12+)*	number (Watts)	*read-only (null)*	The lower bound of the total power consumed by the chassis.

Property	Type	Attributes	Notes
Model	string	*read-only (null)*	The model number of the chassis.
NetworkAdapters *(v1.4+)* {	object		The link to the collection of network adapters associated with this chassis. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *NetworkAdapter*. See the NetworkAdapter schema for details.
}			
PartNumber	string	*read-only (null)*	The part number of the chassis.
PCIeDevices *(v1.10+)* {	object		The link to the collection of PCIe devices located in this chassis. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *PCIeDevice*. See the PCIeDevice schema for details.
}			
PCIeSlots *(v1.8+)* {	object		The link to the PCIe slot properties for this chassis. See the *PCIeSlots* schema for details on this property.
@odata.id	string	*read-only*	Link to a PCIeSlots resource. See the Links section and the *PCIeSlots* schema for details.
}			
PhysicalSecurity *(v1.1+)* {	object		The state of the physical security sensor.
IntrusionSensor *(v1.1+)*	string (enum)	*read-write (null)*	This indicates the known state of the physical security sensor, such as if it is hardware intrusion detected. *For the possible property values, see IntrusionSensor in Property details.*
IntrusionSensorNumber *(v1.1+)*	integer	*read-only (null)*	A numerical identifier to represent the physical security sensor.
IntrusionSensorReArm *(v1.1+)*	string (enum)	*read-only (null)*	The method that restores this physical security sensor to the normal state. *For the possible property values, see IntrusionSensorReArm in Property details.*
}			
Power *(deprecated v1.15)* {	object		The link to the power properties, or power supplies, power policies, and sensors, for this chassis. See the *Power* schema for details on this property. *Deprecated in v1.15 and later. This link has been deprecated in favor of the PowerSubsystem link property.*
@odata.id	string	*read-only*	Link to a Power resource. See the Links section and the *Power* schema for details.

Property	Type	Attributes	Notes
}			
PowerState *(v1.0.1+)*	string (enum)	*read-only (null)*	The current power state of the chassis. *For the possible property values, see PowerState in Property details.*
PowerSubsystem *(v1.15+)* {	object		The link to the power subsystem properties for this chassis. See the *PowerSubsystem* schema for details on this property.
@odata.id	string	*read-only*	Link to a PowerSubsystem resource. See the Links section and the *PowerSubsystem* schema for details.
}			
Sensors *(v1.9+)* {	object		The link to the collection of sensors located in the equipment and sub-components. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *Sensor*. See the Sensor schema for details.
}			
SerialNumber	string	*read-only (null)*	The serial number of the chassis.
SKU	string	*read-only (null)*	The SKU of the chassis.
SparePartNumber *(v1.16+)*	string	*read-only (null)*	The spare part number of the chassis.
Status {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
Thermal *(deprecated v1.15)* {	object		The link to the thermal properties, such as fans, cooling, and sensors, for this chassis. See the *Thermal* schema for details on this property. *Deprecated in v1.15 and later. This link has been deprecated in favor of the ThermalSubsystem link property.*
@odata.id	string	*read-only*	Link to a Thermal resource. See the Links section and the *Thermal* schema for details.
}			
ThermalSubsystem *(v1.15+)* {	object		The link to the thermal subsystem properties for this chassis. See the *ThermalSubsystem* schema for details on this property.
@odata.id	string	*read-only*	Link to a ThermalSubsystem resource. See the Links section and the *ThermalSubsystem* schema for details.
}			

Property	Type	Attributes	Notes
UUID *(v1.7+)*	string	*read-only (null)*	The UUID for this chassis.
WeightKg *(v1.4+)*	number (kg)	*read-only (null)*	The weight of the chassis.
WidthMm *(v1.4+)*	number (mm)	*read-only (null)*	The width of the chassis.

6.19.4 Actions

6.19.4.1 Reset

Description

This action resets the chassis but does not reset systems or other contained resources, although side effects can occur that affect those resources.

Action URI: {Base URI of target resource}/Actions/Chassis.Reset

Action parameters

Parameter Name	Type	Attributes	Notes
ResetType	string (enum)	*optional*	The type of reset. *For the possible property values, see ResetType in Property details.*

Request Example

```
{
    "ResetType": "ForceRestart"
}
```

6.19.5 Property details

6.19.5.1 ChassisType:

The type of physical form factor of the chassis.

string	Description
Blade	An enclosed or semi-enclosed, typically vertically-oriented, system chassis that must be plugged into a multi-system chassis to function normally.
Card	A loose device or circuit board intended to be installed in a system or other enclosure.
Cartridge	A small self-contained system intended to be plugged into a multi-system chassis.
Component	A small chassis, card, or device that contains devices for a particular subsystem or function.
Drawer	An enclosed or semi-enclosed, typically horizontally-oriented, system chassis that can be slid into a multi-system chassis.
Enclosure	A generic term for a chassis that does not fit any other description.
Expansion	A chassis that expands the capabilities or capacity of another chassis.
IPBasedDrive *(v1.3+)*	A chassis in a drive form factor with IP-based network connections.
Module	A small, typically removable, chassis or card that contains devices for a particular subsystem or function.
Other	A chassis that does not fit any of these definitions.
Pod	A collection of equipment racks in a large, likely transportable, container.
Rack	An equipment rack, typically a 19-inch wide freestanding unit.
RackGroup *(v1.4+)*	A group of racks that form a single entity or share infrastructure.
RackMount	A single-system chassis designed specifically for mounting in an equipment rack.
Row	A collection of equipment racks.
Shelf	An enclosed or semi-enclosed, typically horizontally-oriented, system chassis that must be plugged into a multi-system chassis to function normally.
Sidecar	A chassis that mates mechanically with another chassis to expand its capabilities or capacity.
Sled	An enclosed or semi-enclosed, system chassis that must be plugged into a multi-system chassis to function normally similar to a blade type chassis.
StandAlone	A single, free-standing system, commonly called a tower or desktop chassis.
StorageEnclosure *(v1.6+)*	A chassis that encloses storage.
Zone	A logical division or portion of a physical chassis that contains multiple devices or systems that cannot be physically separated.

6.19.5.2 EnvironmentalClass:

The ASHRAE Environmental Class for this chassis.

string	Description
A1	ASHRAE Environmental Class 'A1'.
A2	ASHRAE Environmental Class 'A2'.
A3	ASHRAE Environmental Class 'A3'.
A4	ASHRAE Environmental Class 'A4'.

6.19.5.3 IndicatorLED:

The state of the indicator LED, which identifies the chassis.

string	Description
Blinking	The indicator LED is blinking.
Lit	The indicator LED is lit.
Off	The indicator LED is off.
Unknown *(deprecated v1.2)*	The state of the indicator LED cannot be determined. *Deprecated in v1.2 and later. This value has been deprecated in favor of returning null if the state is unknown.*

6.19.5.4 IntrusionSensor:

This indicates the known state of the physical security sensor, such as if it is hardware intrusion detected.

string	Description
HardwareIntrusion	A door, lock, or other mechanism protecting the internal system hardware from being accessed is detected to be in an insecure state.
Normal	No abnormal physical security condition is detected at this time.
TamperingDetected	Physical tampering of the monitored entity is detected.

6.19.5.5 IntrusionSensorReArm:

The method that restores this physical security sensor to the normal state.

string	Description
Automatic	Because no abnormal physical security condition is detected, this sensor is automatically restored to the normal state.
Manual	A manual re-arm of this sensor restores it to the normal state.

6.19.5.6 PowerState:

The current power state of the chassis.

string	Description
Off	The components within the chassis have no power, except some components might continue to have AUX power, such as the management controller.
On	The components within the chassis have power.
PoweringOff	A temporary state between on and off. The components within the chassis can take time to process the power off action.
PoweringOn	A temporary state between off and on. The components within the chassis can take time to process the power on action.

6.19.5.7 ResetType:

The type of reset.

string	Description
ForceOff	Turn off the unit immediately (non-graceful shutdown).
ForceOn	Turn on the unit immediately.
ForceRestart	Shut down immediately and non-gracefully and restart the system.
GracefulRestart	Shut down gracefully and restart the system.
GracefulShutdown	Shut down gracefully and power off.
Nmi	Generate a diagnostic interrupt, which is usually an NMI on x86 systems, to stop normal operations, complete diagnostic actions, and, typically, halt the system.
On	Turn on the unit.
Pause	Pause execution on the unit but do not remove power. This is typically a feature of virtual machine hypervisors.

string	Description
PowerCycle	Power cycle the unit. Behaves like a full power removal, followed by a power restore to the resource.
PushPowerButton	Simulate the pressing of the physical power button on this unit.
Resume	Resume execution on the paused unit. This is typically a feature of virtual machine hypervisors.
Suspend	Write the state of the unit to disk before powering off. This allows for the state to be restored when powered back on.

6.19.6 Example response

```json
{
    "@odata.type": "#Chassis.v1_19_0.Chassis",
    "Id": "1U",
    "Name": "Computer System Chassis",
    "ChassisType": "RackMount",
    "AssetTag": "Chicago-45Z-2381",
    "Manufacturer": "Contoso",
    "Model": "3500RX",
    "SKU": "8675309",
    "SerialNumber": "437XR1138R2",
    "PartNumber": "224071-J23",
    "PowerState": "On",
    "LocationIndicatorActive": true,
    "Location": {
        "Placement": {
            "Row": "North",
            "Rack": "WEB43",
            "RackOffsetUnits": "EIA_310",
            "RackOffset": 12
        }
    },
    "Status": {
        "State": "Enabled",
        "Health": "OK"
    },
    "HeightMm": 44.45,
    "WidthMm": 431.8,
    "DepthMm": 711,
    "WeightKg": 15.31,
    "EnvironmentalClass": "A3",
    "Sensors": {
        "@odata.id": "/redfish/v1/Chassis/1U/Sensors"
    },
    "PowerSubsystem": {
        "@odata.id": "/redfish/v1/Chassis/1U/PowerSubsystem"
    },
```

```
    "ThermalSubsystem": {
        "@odata.id": "/redfish/v1/Chassis/1U/ThermalSubsystem"
    },
    "EnvironmentMetrics": {
        "@odata.id": "/redfish/v1/Chassis/1U/EnvironmentMetrics"
    },
    "Links": {
        "ComputerSystems": [
            {
                "@odata.id": "/redfish/v1/Systems/437XR1138R2"
            }
        ],
        "ManagedBy": [
            {
                "@odata.id": "/redfish/v1/Managers/BMC"
            }
        ],
        "ManagersInChassis": [
            {
                "@odata.id": "/redfish/v1/Managers/BMC"
            }
        ],
        "Oem": {}
    },
    "Oem": {},
    "@odata.id": "/redfish/v1/Chassis/1U"
}
```

6.20 Circuit 1.5.0

Version	v1.5	v1.4	v1.3	v1.2	v1.1	v1.0
Release	2021.4	2021.3	2021.2	2020.4	2020.3	2019.4

6.20.1 Description

This is the schema definition for an electrical circuit.

6.20.2 URIs

/redfish/v1/PowerEquipment/ElectricalBuses/{*PowerDistributionId*}/Branches/{*CircuitId*}
/redfish/v1/PowerEquipment/ElectricalBuses/{*PowerDistributionId*}/Mains/{*CircuitId*}
/redfish/v1/PowerEquipment/FloorPDUs/{*PowerDistributionId*}/Branches/{*CircuitId*}
/redfish/v1/PowerEquipment/FloorPDUs/{*PowerDistributionId*}/Mains/{*CircuitId*}

/redfish/v1/PowerEquipment/FloorPDUs/*{PowerDistributionId}*/Subfeeds/*{CircuitId}*
/redfish/v1/PowerEquipment/PowerShelves/*{PowerDistributionId}*/Branches/*{CircuitId}*
/redfish/v1/PowerEquipment/PowerShelves/*{PowerDistributionId}*/Mains/*{CircuitId}*
/redfish/v1/PowerEquipment/RackPDUs/*{PowerDistributionId}*/Branches/*{CircuitId}*
/redfish/v1/PowerEquipment/RackPDUs/*{PowerDistributionId}*/Mains/*{CircuitId}*
/redfish/v1/PowerEquipment/Switchgear/*{PowerDistributionId}*/Branches/*{CircuitId}*
/redfish/v1/PowerEquipment/Switchgear/*{PowerDistributionId}*/Feeders/*{CircuitId}*
/redfish/v1/PowerEquipment/Switchgear/*{PowerDistributionId}*/Mains/*{CircuitId}*
/redfish/v1/PowerEquipment/Switchgear/*{PowerDistributionId}*/Subfeeds/*{CircuitId}*
/redfish/v1/PowerEquipment/TransferSwitches/*{PowerDistributionId}*/Branches/*{CircuitId}*
/redfish/v1/PowerEquipment/TransferSwitches/*{PowerDistributionId}*/Feeders/*{CircuitId}*
/redfish/v1/PowerEquipment/TransferSwitches/*{PowerDistributionId}*/Mains/*{CircuitId}*

6.20.3 Properties

Property	Type	Attributes	Notes
BreakerState	string (enum)	*read-only (null)*	The state of the over current protection device. *For the possible property values, see BreakerState in Property details.*
CircuitType	string (enum)	*read-only (null)*	The type of circuit. *For the possible property values, see CircuitType in Property details.*
ConfigurationLocked *(v1.5+)*	boolean	*read-write*	Indicates whether the configuration is locked.
CriticalCircuit	boolean	*read-write (null)*	Designates if this is a critical circuit.
CurrentAmps {}	object		The current (A) for this single phase circuit. For more information about this property, see SensorCurrentExcerpt in Property Details.
ElectricalConsumerNames *(v1.4+)* [ ]	array (string, null)	*read-write*	An array of names of downstream devices that are powered by this circuit.
ElectricalContext	string (enum)	*read-only (null)*	The combination of current-carrying conductors. *For the possible property values, see ElectricalContext in Property details.*
ElectricalSourceManagerURI *(v1.4+)*	string (URI)	*read-write*	The URI of the management interface for the upstream electrical source connection for this circuit.
ElectricalSourceName *(v1.4+)*	string	*read-write*	The name of the upstream electrical source, such as a circuit or outlet, connected to this circuit.
EnergykWh {}	object		The energy (kWh) for this circuit. For more information about this property, see SensorEnergykWhExcerpt in Property Details.
FrequencyHz {}	object		The frequency (Hz) for this circuit. For more information about this property, see SensorExcerpt in Property Details.

Property	Type	Attributes	Notes
IndicatorLED *(deprecated v1.1)*	string (enum)	*read-write (null)*	The state of the indicator LED, which identifies the circuit. *For the possible property values, see IndicatorLED in Property details. Deprecated in v1.1 and later. This property has been deprecated in favor of the LocationIndicatorActive property.*
Links {	object		The links to other resources that are related to this resource.
BranchCircuit {	object	*(null)*	A reference to the branch circuit related to this circuit.
@odata.id	string	*read-only*	Link to another Circuit resource.
}			
DistributionCircuits *(v1.4+)* [{	array		An array of links to the circuits powered by this circuit.
@odata.id	string	*read-write*	Link to another Circuit resource.
}]			
Oem {}	object		See the Oem object definition in the Common properties section.
Outlets [{	array		An array of references to the outlets contained by this circuit.
@odata.id	string	*read-only*	Link to a Outlet resource. See the Links section and the *Outlet* schema for details.
}]			
PowerOutlet *(v1.4+)* {	object	*(null)*	A link to the power outlet that provides power to this circuit. See the *Outlet* schema for details on this property.
@odata.id	string	*read-write*	Link to a Outlet resource. See the Links section and the *Outlet* schema for details.
}			
SourceCircuit *(v1.4+)* {	object	*(null)*	A link to the circuit that provides power to this circuit.
@odata.id	string	*read-write*	Link to another Circuit resource.
}			
}			
LocationIndicatorActive *(v1.1+)*	boolean	*read-write (null)*	An indicator allowing an operator to physically locate this resource.

Property	Type	Attributes	Notes
NominalVoltage	string (enum)	*read-only (null)*	The nominal voltage for this circuit. *For the possible property values, see NominalVoltage in Property details.*
PhaseWiringType	string (enum)	*read-only (null)*	The number of ungrounded current-carrying conductors (phases) and the total number of conductors (wires). *For the possible property values, see PhaseWiringType in Property details.*
PlugType	string (enum)	*read-only (null)*	The type of plug according to NEMA, IEC, or regional standards. *For the possible property values, see PlugType in Property details.*
PolyPhaseCurrentAmps {	object	*(null)*	The current readings for this circuit.
Line1 {}	object		Line 1 current (A). For more information about this property, see SensorCurrentExcerpt in Property Details.
Line2 {}	object		Line 2 current (A). For more information about this property, see SensorCurrentExcerpt in Property Details.
Line3 {}	object		Line 3 current (A). For more information about this property, see SensorCurrentExcerpt in Property Details.
Neutral {}	object		Neutral line current (A). For more information about this property, see SensorCurrentExcerpt in Property Details.
}			
PolyPhaseEnergykWh {	object	*(null)*	The energy readings for this circuit.
Line1ToLine2 {}	object		The Line 1 to Line 2 energy (kWh) for this circuit. For more information about this property, see SensorEnergykWhExcerpt in Property Details.
Line1ToNeutral {}	object		The Line 1 to Neutral energy (kWh) for this circuit. For more information about this property, see SensorEnergykWhExcerpt in Property Details.
Line2ToLine3 {}	object		The Line 2 to Line 3 energy (kWh) for this circuit. For more information about this property, see SensorEnergykWhExcerpt in Property Details.
Line2ToNeutral {}	object		The Line 2 to Neutral energy (kWh) for this circuit. For more information about this property, see SensorEnergykWhExcerpt in Property Details.
Line3ToLine1 {}	object		The Line 3 to Line 1 energy (kWh) for this circuit. For more information about this property, see SensorEnergykWhExcerpt in Property Details.
Line3ToNeutral {}	object		The Line 3 to Neutral energy (kWh) for this circuit. For more information about this property, see SensorEnergykWhExcerpt in Property Details.
}			

Property	Type	Attributes	Notes
PolyPhasePowerWatts {	object	*(null)*	The power readings for this circuit.
Line1ToLine2 {}	object		The Line 1 to Line 2 power (W) for this circuit. For more information about this property, see SensorPowerExcerpt in Property Details.
Line1ToNeutral {}	object		The Line 1 to Neutral power (W) for this circuit. For more information about this property, see SensorPowerExcerpt in Property Details.
Line2ToLine3 {}	object		The Line 2 to Line 3 power (W) for this circuit. For more information about this property, see SensorPowerExcerpt in Property Details.
Line2ToNeutral {}	object		The Line 2 to Neutral power (W) for this circuit. For more information about this property, see SensorPowerExcerpt in Property Details.
Line3ToLine1 {}	object		The Line 3 to Line 1 power (W) for this circuit. For more information about this property, see SensorPowerExcerpt in Property Details.
Line3ToNeutral {}	object		The Line 3 to Neutral power (W) for this circuit. For more information about this property, see SensorPowerExcerpt in Property Details.
}			
PolyPhaseVoltage {	object	*(null)*	The voltage readings for this circuit.
Line1ToLine2 {}	object		The Line 1 to Line 2 voltage (V) for this circuit. For more information about this property, see SensorVoltageExcerpt in Property Details.
Line1ToNeutral {}	object		The Line 1 to Neutral voltage (V) for this circuit. For more information about this property, see SensorVoltageExcerpt in Property Details.
Line2ToLine3 {}	object		The Line 2 to Line 3 voltage (V) for this circuit. For more information about this property, see SensorVoltageExcerpt in Property Details.
Line2ToNeutral {}	object		The Line 2 to Neutral voltage (V) for this circuit. For more information about this property, see SensorVoltageExcerpt in Property Details.
Line3ToLine1 {}	object		The Line 3 to Line 1 voltage (V) for this circuit. For more information about this property, see SensorVoltageExcerpt in Property Details.
Line3ToNeutral {}	object		The Line 3 to Neutral voltage (V) for this circuit. For more information about this property, see SensorVoltageExcerpt in Property Details.
}			
PowerControlLocked *(v1.5+)*	boolean	*read-write*	Indicates whether power control requests are locked.
PowerCycleDelaySeconds	number	*read-write (null)*	The number of seconds to delay power on after a PowerControl action to cycle power. Zero seconds indicates no delay.

Property	Type	Attributes	Notes
PowerEnabled	boolean	*read-only (null)*	Indicates if the circuit can be powered.
PowerLoadPercent *(v1.3+)* {}	object		The power load (percent) for this circuit. For more information about this property, see SensorExcerpt in Property Details.
PowerOffDelaySeconds	number	*read-write (null)*	The number of seconds to delay power off after a PowerControl action. Zero seconds indicates no delay to power off.
PowerOnDelaySeconds	number	*read-write (null)*	The number of seconds to delay power up after a power cycle or a PowerControl action. Zero seconds indicates no delay to power up.
PowerRestoreDelaySeconds	number	*read-write (null)*	The number of seconds to delay power on after power has been restored. Zero seconds indicates no delay.
PowerRestorePolicy	string (enum)	*read-write*	The desired power state of the circuit when power is restored after a power loss. *For the possible property values, see PowerRestorePolicy in Property details.*
PowerState	string (enum)	*read-only (null)*	The power state of the circuit. *For the possible property values, see PowerState in Property details.*
PowerStateInTransition *(v1.5+)*	boolean	*read-only*	Indicates whether the power state is undergoing a delayed transition.
PowerWatts {}	object		The power (W) for this circuit. For more information about this property, see SensorPowerExcerpt in Property Details.
RatedCurrentAmps	number (A)	*read-only (null)*	The rated maximum current allowed for this circuit.
Status {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
UnbalancedCurrentPercent *(v1.5+)* {}	object		The current imbalance (percent) between phases. For more information about this property, see SensorExcerpt in Property Details.
UnbalancedVoltagePercent *(v1.5+)* {}	object		The voltage imbalance (percent) between phases. For more information about this property, see SensorExcerpt in Property Details.
UserLabel *(v1.4+)*	string	*read-write*	A user-assigned label.
Voltage {}	object		The voltage (V) for this single phase circuit. For more information about this property, see SensorVoltageExcerpt in Property Details.
VoltageType	string (enum)	*read-only (null)*	The type of voltage applied to the circuit. *For the possible property values, see VoltageType in Property details.*

6.20.4 Actions

6.20.4.1 BreakerControl

Description

This action attempts to reset the circuit breaker.

Action URI: {Base URI of target resource}/Actions/Circuit.BreakerControl

Action parameters

Parameter Name	Type	Attributes	Notes
PowerState	string (enum)	*optional*	The desired power state of the circuit if the breaker is reset successfully. *For the possible property values, see PowerState in Property details.*

Request Example

```
{
    "PowerState": "On"
}
```

6.20.4.2 PowerControl

Description

This action turns the circuit on or off.

Action URI: {Base URI of target resource}/Actions/Circuit.PowerControl

Action parameters

Parameter Name	Type	Attributes	Notes
PowerState	string (enum)	*optional*	The desired power state of the circuit. *For the possible property values, see PowerState in Property details.*

Request Example

```
{
    "PowerState": "Off"
}
```

6.20.4.3 ResetMetrics

Description

This action resets metrics related to this circuit.

Action URI: {Base URI of target resource}/Actions/Circuit.ResetMetrics

Action parameters

This action takes no parameters.

6.20.5 Property details

6.20.5.1 BreakerState:

The state of the over current protection device.

string	Description
Normal	The breaker is powered on.
Off	The breaker is off.
Tripped	The breaker has been tripped.

6.20.5.2 CircuitType:

The type of circuit.

string	Description
Branch	A branch (output) circuit.
Bus *(v1.3+)*	An electrical bus circuit.
Feeder	A feeder (output) circuit.

string	Description
Mains	A mains input or utility circuit.
Subfeed	A subfeed (output) circuit.

6.20.5.3 ElectricalContext:

The combination of current-carrying conductors.

string	Description
Line1	The circuits that share the L1 current-carrying conductor.
Line1ToLine2	The circuit formed by L1 and L2 current-carrying conductors.
Line1ToNeutral	The circuit formed by L1 and neutral current-carrying conductors.
Line1ToNeutralAndL1L2	The circuit formed by L1, L2, and neutral current-carrying conductors.
Line2	The circuits that share the L2 current-carrying conductor.
Line2ToLine3	The circuit formed by L2 and L3 current-carrying conductors.
Line2ToNeutral	The circuit formed by L2 and neutral current-carrying conductors.
Line2ToNeutralAndL1L2	The circuit formed by L1, L2, and Neutral current-carrying conductors.
Line2ToNeutralAndL2L3	The circuits formed by L2, L3, and neutral current-carrying conductors.
Line3	The circuits that share the L3 current-carrying conductor.
Line3ToLine1	The circuit formed by L3 and L1 current-carrying conductors.
Line3ToNeutral	The circuit formed by L3 and neutral current-carrying conductors.
Line3ToNeutralAndL3L1	The circuit formed by L3, L1, and neutral current-carrying conductors.
LineToLine	The circuit formed by two current-carrying conductors.
LineToNeutral	The circuit formed by a line and neutral current-carrying conductor.
Neutral	The grounded current-carrying return circuit of current-carrying conductors.
Total	The circuit formed by all current-carrying conductors.

6.20.5.4 IndicatorLED:

The state of the indicator LED, which identifies the circuit.

string	Description
Blinking	The indicator LED is blinking.
Lit	The indicator LED is lit.
Off	The indicator LED is off.

6.20.5.5 NominalVoltage:

The nominal voltage for this circuit.

string	Description
AC100To240V	AC 100-240V nominal.
AC100To277V	AC 100-277V nominal.
AC120V	AC 120V nominal.
AC200To240V	AC 200-240V nominal.
AC200To277V	AC 200-277V nominal.
AC208V	AC 208V nominal.
AC230V	AC 230V nominal.
AC240AndDC380V	AC 200-240V and DC 380V.
AC240V	AC 240V nominal.
AC277AndDC380V	AC 200-277V and DC 380V.
AC277V	AC 277V nominal.
AC400V	AC 400V or 415V nominal.
AC480V	AC 480V nominal.
DC240V	DC 240V nominal.
DC380V	High Voltage DC (380V).
DC48V *(v1.2+)*	DC 48V nominal.
DCNeg48V	-48V DC.

6.20.5.6 PhaseWiringType:

The number of ungrounded current-carrying conductors (phases) and the total number of conductors (wires).

string	Description
OneOrTwoPhase3Wire	Single or Two-Phase / 3-Wire (Line1, Line2 or Neutral, Protective Earth).
OnePhase3Wire	Single-phase / 3-Wire (Line1, Neutral, Protective Earth).
ThreePhase4Wire	Three-phase / 4-Wire (Line1, Line2, Line3, Protective Earth).
ThreePhase5Wire	Three-phase / 5-Wire (Line1, Line2, Line3, Neutral, Protective Earth).
TwoPhase3Wire	Two-phase / 3-Wire (Line1, Line2, Protective Earth).
TwoPhase4Wire	Two-phase / 4-Wire (Line1, Line2, Neutral, Protective Earth).

6.20.5.7 PlugType:

The type of plug according to NEMA, IEC, or regional standards.

string	Description
California_CS8265	California Standard CS8265 (Single-phase 250V; 50A; 2P3W).
California_CS8365	California Standard CS8365 (Three-phase 250V; 50A; 3P4W).
Field_208V_3P4W_60A	Field-wired; Three-phase 200-250V; 60A; 3P4W.
Field_400V_3P5W_32A	Field-wired; Three-phase 200-240/346-415V; 32A; 3P5W.
IEC_60309_316P6	IEC 60309 316P6 (Single-phase 200-250V; 16A; 1P3W; Blue, 6-hour).
IEC_60309_332P6	IEC 60309 332P6 (Single-phase 200-250V; 32A; 1P3W; Blue, 6-hour).
IEC_60309_363P6	IEC 60309 363P6 (Single-phase 200-250V; 63A; 1P3W; Blue, 6-hour).
IEC_60309_460P9	IEC 60309 460P9 (Three-phase 200-250V; 60A; 3P4W; Blue; 9-hour).
IEC_60309_516P6	IEC 60309 516P6 (Three-phase 200-240/346-415V; 16A; 3P5W; Red; 6-hour).
IEC_60309_532P6	IEC 60309 532P6 (Three-phase 200-240/346-415V; 32A; 3P5W; Red; 6-hour).
IEC_60309_560P9	IEC 60309 560P9 (Three-phase 120-144/208-250V; 60A; 3P5W; Blue; 9-hour).
IEC_60309_563P6	IEC 60309 563P6 (Three-phase 200-240/346-415V; 63A; 3P5W; Red; 6-hour).

string	Description
IEC_60320_C14	IEC C14 (Single-phase 250V; 10A; 1P3W).
IEC_60320_C20	IEC C20 (Single-phase 250V; 16A; 1P3W).
NEMA_5_15P	NEMA 5-15P (Single-phase 125V; 15A; 1P3W).
NEMA_5_20P	NEMA 5-20P (Single-phase 125V; 20A; 1P3W).
NEMA_6_15P	NEMA 6-15P (Single-phase 250V; 15A; 2P3W).
NEMA_6_20P	NEMA 6-20P (Single-phase 250V; 20A; 2P3W).
NEMA_L14_20P	NEMA L14-20P (Split-phase 125/250V; 20A; 2P4W).
NEMA_L14_30P	NEMA L14-30P (Split-phase 125/250V; 30A; 2P4W).
NEMA_L15_20P	NEMA L15-20P (Three-phase 250V; 20A; 3P4W).
NEMA_L15_30P	NEMA L15-30P (Three-phase 250V; 30A; 3P4W).
NEMA_L21_20P	NEMA L21-20P (Three-phase 120/208V; 20A; 3P5W).
NEMA_L21_30P	NEMA L21-30P (Three-phase 120/208V; 30A; 3P5W).
NEMA_L22_20P	NEMA L22-20P (Three-phase 277/480V; 20A; 3P5W).
NEMA_L22_30P	NEMA L22-30P (Three-phase 277/480V; 30A; 3P5W).
NEMA_L5_15P	NEMA L5-15P (Single-phase 125V; 15A; 1P3W).
NEMA_L5_20P	NEMA L5-20P (Single-phase 125V; 20A; 1P3W).
NEMA_L5_30P	NEMA L5-30P (Single-phase 125V; 30A; 1P3W).
NEMA_L6_15P	NEMA L6-15P (Single-phase 250V; 15A; 2P3W).
NEMA_L6_20P	NEMA L6-20P (Single-phase 250V; 20A; 2P3W).
NEMA_L6_30P	NEMA L6-30P (Single-phase 250V; 30A; 2P3W).

6.20.5.8 PowerRestorePolicy:

The desired power state of the circuit when power is restored after a power loss.

string	Description
AlwaysOff	Always remain powered off when external power is applied.
AlwaysOn	Always power on when external power is applied.

string	Description
LastState	Return to the last power state (on or off) when external power is applied.

6.20.5.9 PowerState:

6.20.5.9.1 In top level:

The power state of the circuit.

string	Description
Off	The state is powered off.
On	The state is powered on.
Paused	The state is paused.
PoweringOff	A temporary state between on and off.
PoweringOn	A temporary state between off and on.

6.20.5.9.2 In Actions: BreakerControl, Actions: PowerControl:

The desired power state of the circuit if the breaker is reset successfully.

string	Description
Off	Power off.
On	Power on.
PowerCycle *(v1.5+)*	Power cycle.

6.20.5.10 SensorCurrentExcerpt:

The Sensor schema describes a sensor and its properties. This object is an excerpt of the *Sensor* resource located at the URI shown in DataSourceUri.

CrestFactor *(v1.1+)*	number	*read-only* *(null)*	The crest factor for this sensor.

DataSourceUri	string (URI)	*read-only (null)*	The link to the resource that provides the data for this sensor.
Reading	number	*read-only (null)*	The sensor value.
THDPercent *(v1.1+)*	number	*read-only (null)*	The total harmonic distortion (THD).

6.20.5.11 SensorEnergykWhExcerpt:

The Sensor schema describes a sensor and its properties. This object is an excerpt of the *Sensor* resource located at the URI shown in DataSourceUri.

ApparentkVAh *(v1.5+)*	number (kV.A.h)	*read-only (null)*	Apparent energy (kVAh).
DataSourceUri	string (URI)	*read-only (null)*	The link to the resource that provides the data for this sensor.
LifetimeReading *(v1.1+)*	number	*read-only (null)*	The total accumulation value for this sensor.
ReactivekVARh *(v1.5+)*	number (kV.A.h)	*read-only (null)*	Reactive energy (kVARh).
Reading	number	*read-only (null)*	The sensor value.
SensorResetTime	string (date-time)	*read-only (null)*	The date and time when the time-based properties were last reset.

6.20.5.12 SensorExcerpt:

The Sensor schema describes a sensor and its properties. This object is an excerpt of the *Sensor* resource located at the URI shown in DataSourceUri.

DataSourceUri	string (URI)	*read-only (null)*	The link to the resource that provides the data for this sensor.
Reading	number	*read-only (null)*	The sensor value.

6.20.5.13 SensorPowerExcerpt:

The Sensor schema describes a sensor and its properties. This object is an excerpt of the *Sensor* resource located at the URI shown in DataSourceUri.

ApparentVA	number (V.A)	*read-only (null)*	The product of voltage and current for an AC circuit, in volt-ampere units.
DataSourceUri	string (URI)	*read-only (null)*	The link to the resource that provides the data for this sensor.
PhaseAngleDegrees *(v1.5+)*	number	*read-only (null)*	The phase angle (degrees) between the current and voltage waveforms.
PowerFactor	number	*read-only (null)*	The power factor for this sensor.
ReactiveVAR	number (V.A)	*read-only (null)*	The square root of the difference term of squared apparent VA and squared power (Reading) for a circuit, in VAR units.
Reading	number	*read-only (null)*	The sensor value.

6.20.5.14 SensorVoltageExcerpt:

The Sensor schema describes a sensor and its properties. This object is an excerpt of the *Sensor* resource located at the URI shown in DataSourceUri.

CrestFactor *(v1.1+)*	number	*read-only (null)*	The crest factor for this sensor.

DataSourceUri	string (URI)	*read-only (null)*	The link to the resource that provides the data for this sensor.
Reading	number	*read-only (null)*	The sensor value.
THDPercent *(v1.1+)*	number	*read-only (null)*	The total harmonic distortion (THD).

6.20.5.15 VoltageType:

The type of voltage applied to the circuit.

string	Description
AC	Alternating Current (AC) circuit.
DC	Direct Current (DC) circuit.

6.20.6 Example response

```
{
    "@odata.type": "#Circuit.v1_5_0.Circuit",
    "Id": "A",
    "Name": "Branch Circuit A",
    "Status": {
        "State": "Enabled",
        "Health": "OK"
    },
    "CircuitType": "Branch",
    "PhaseWiringType": "TwoPhase3Wire",
    "NominalVoltage": "AC200To240V",
    "RatedCurrentAmps": 16,
    "BreakerState": "Normal",
    "PolyPhaseVoltage": {
        "Line1ToNeutral": {
            "DataSourceUri": "/redfish/v1/PowerEquipment/RackPDUs/1/Sensors/VoltageAL1N",
            "Reading": 118.2
        },
        "Line1ToLine2": {
            "DataSourceUri": "/redfish/v1/PowerEquipment/RackPDUs/1/Sensors/VoltageAL1L2",
            "Reading": 203.5
        }
```

```
        },
        "CurrentAmps": {
            "DataSourceUri": "/redfish/v1/PowerEquipment/RackPDUs/1/Sensors/CurrentA",
            "Reading": 5.19
        },
        "PolyPhaseCurrentAmps": {
            "Line1": {
                "DataSourceUri": "/redfish/v1/PowerEquipment/RackPDUs/1/Sensors/CurrentA",
                "Reading": 5.19
            }
        },
        "PowerWatts": {
            "DataSourceUri": "/redfish/v1/PowerEquipment/RackPDUs/1/Sensors/PowerA",
            "Reading": 937.4,
            "ApparentVA": 937.4,
            "ReactiveVAR": 0,
            "PowerFactor": 1
        },
        "PolyPhasePowerWatts": {
            "Line1ToNeutral": {
                "DataSourceUri": "/redfish/v1/PowerEquipment/RackPDUs/1/Sensors/PowerA1",
                "Reading": 937.4,
                "PeakReading": 1000.5,
                "ApparentVA": 937.4,
                "ReactiveVAR": 0,
                "PowerFactor": 1
            }
        },
        "FrequencyHz": {
            "DataSourceUri": "/redfish/v1/PowerEquipment/RackPDUs/1/Sensors/FrequencyA",
            "Reading": 60
        },
        "EnergykWh": {
            "DataSourceUri": "/redfish/v1/PowerEquipment/RackPDUs/1/Sensors/EnergyA",
            "Reading": 325675
        },
        "Links": {
            "Outlets": [
                {
                    "@odata.id": "/redfish/v1/PowerEquipment/RackPDUs/1/Outlets/A1"
                },
                {
                    "@odata.id": "/redfish/v1/PowerEquipment/RackPDUs/1/Outlets/A2"
                },
                {
                    "@odata.id": "/redfish/v1/PowerEquipment/RackPDUs/1/Outlets/A3"
                }
            ]
        },
        "Actions": {
```

```
        "#Circuit.BreakerControl": {
            "target": "/redfish/v1/PowerEquipment/RackPDUs/1/Branches/A/Circuit.BreakerControl"
        },
        "#Outlet.ResetMetrics": {
            "target": "/redfish/v1/PowerEquipment/RackPDUs/1/Branches/A/Circuit.ResetMetrics"
        }
    },
    "@odata.id": "/redfish/v1/PowerEquipment/RackPDUs/1/Branches/A"
}
```

6.21 ComponentIntegrity 1.0.0

Version	v1.0
Release	2021.4

6.21.1 Description

The ComponentIntegrity resource provides critical and pertinent security information about a specific device, system, software element, or other managed entity.

6.21.2 URIs

/redfish/v1/ComponentIntegrity/{ComponentIntegrityId}

6.21.3 Properties

Property	Type	Attributes	Notes
ComponentIntegrityEnabled	boolean	read-write	An indication of whether security protocols are enabled for the component.
ComponentIntegrityType	string (enum)	read-only required	The type of security technology for the component. *For the possible property values, see ComponentIntegrityType in Property details.*
ComponentIntegrityTypeVersion	string	read-only required	The version of the security technology.
LastUpdated	string (date-time)	read-only (null)	The date and time when information for the component was last updated.

Property	Type	Attributes	Notes
Links {	object		The links to other resources that are related to this resource.
ComponentsProtected [{	array		An array of links to resources that the target component protects.
@odata.id	string (URI)	*read-only*	The unique identifier for a resource.
}]			
Oem {}	object		See the Oem object definition in the Common properties section.
}			
SPDM {	object		Integrity information about the SPDM Responder as reported by an SPDM Requester.
ComponentCommunication {	object	*(null)*	Information about communication between the SPDM Requester and SPDM Responder.
Sessions [{	array		The active sessions or communication channels between two components.
SessionId	integer	*read-only (null)*	The identifier for an active session or communication channel between two components.
SessionType	string (enum)	*read-only (null)*	The type of session or communication channel between two components. *For the possible property values, see SessionType in Property details.*
}]			
}			
IdentityAuthentication {	object	*(null)*	Identity authentication information about the SPDM Requester and SPDM Responder.
RequesterAuthentication {	object	*(null)*	Authentication information of the identity of the SPDM Requester.
ProvidedCertificate {	object		A link to the certificate that represents the identify of the SPDM Requester provided in mutual authentication. See the *Certificate* schema for details on this property.
@odata.id	string	*read-only*	Link to a Certificate resource. See the Links section and the *Certificate* schema for details.
}			
}			

Property	Type	Attributes	Notes
ResponderAuthentication {	object	*(null)*	Authentication information of the identity of the SPDM Responder.
ComponentCertificate {	object		A link to the certificate that represents the identify of the component. See the *Certificate* schema for details on this property.
@odata.id	string	*read-only*	Link to a Certificate resource. See the Links section and the *Certificate* schema for details.
}			
VerificationStatus	string (enum)	*read-only (null)*	The status of the verification of the identity of the component. *For the possible property values, see VerificationStatus in Property details.*
}			
}			
MeasurementSet {	object	*(null)*	Measurement information about the SPDM Responder.
Measurements [{	array		Measurements from an SPDM Responder.
LastUpdated	string (date-time)	*read-only (null)*	The date and time when information for the measurement was last updated.
Measurement	string	*read-only (null)*	The measurement data.
MeasurementHashAlgorithm	string	*read-only (null)*	The hash algorithm used to compute the measurement.
MeasurementIndex	integer	*read-only (null)*	The index of the measurement.
MeasurementType	string (enum)	*read-only (null)*	The type or characteristics of the data that this measurement represents. *For the possible property values, see MeasurementType in Property details.*
Oem {}	object		See the Oem object definition in the Common properties section.
PartofSummaryHash	boolean	*read-only (null)*	Indicates whether this measurement is part of the measurement summary.
}]			

Property	Type	Attributes	Notes
MeasurementSpecification	string (enum)	*read-only (null)*	The measurement specification negotiated between the SPDM Requester and SPDM Responder. *For the possible property values, see MeasurementSpecification in Property details.*
MeasurementSummary	string	*read-only (null)*	The measurement summary data.
MeasurementSummaryHashAlgorithm	string	*read-only (null)*	The hash algorithm used to compute the measurement summary.
MeasurementSummaryType	string (enum)	*read-only (null)*	The type of measurement summary. *For the possible property values, see MeasurementSummaryType in Property details.*
Oem {}	object		See the Oem object definition in the Common properties section.
}			
Requester {	object	** required**	The link to the the component that is reporting the integrity information of the target component.
@odata.id	string (URI)	*read-only*	The unique identifier for a resource.
}			
}			
Status {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
TargetComponentURI	string	*read-only required*	The link to the the component whose integrity that this resource reports.
TPM {	object		Integrity information about the Trusted Platform Module (TPM).
ComponentCommunication {	object	*(null)*	Information about communication with the TPM.
Sessions [{	array		The active sessions or communication channels between two components.
SessionId	integer	*read-only (null)*	The identifier for an active session or communication channel between two components.
SessionType	string (enum)	*read-only (null)*	The type of session or communication channel between two components. *For the possible property values, see SessionType in Property details.*
}]			
}			

Property	Type	Attributes	Notes
IdentityAuthentication {	object	*(null)*	Identity authentication information about the TPM.
ComponentCertificate {	object		A link to the certificate that represents the identify of the component. See the *Certificate* schema for details on this property.
@odata.id	string	*read-only*	Link to a Certificate resource. See the Links section and the *Certificate* schema for details.
}			
VerificationStatus	string (enum)	*read-only* *(null)*	The status of the verification of the identity of the component. *For the possible property values, see VerificationStatus in Property details.*
}			
MeasurementSet {	object	*(null)*	Measurement information from the TPM.
Measurements [{	array		Measurements from a TPM.
LastUpdated	string (date-time)	*read-only* *(null)*	The date and time when information for the measurement was last updated.
Measurement	string	*read-only* *(null)*	The measurement data.
MeasurementHashAlgorithm	string	*read-only* *(null)*	The hash algorithm used to compute the measurement.
PCR	integer	*read-only* *(null)*	The Platform Configuration Register (PCR) bank of the measurement.
}]			
}			
}			

6.21.4 Actions

6.21.4.1 SPDMGetSignedMeasurements

Description

This action generates an SPDM cryptographic signed statement over the given nonce and measurements of the SPDM Responder.

Action URI: {Base URI of target resource}/Actions/ComponentIntegrity.SPDMGetSignedMeasurements

Action parameters

Parameter Name	Type	Attributes	Notes
MeasurementIndices [ ]	array (integer)	*optional*	An array of indices that identify the measurement blocks to sign.
Nonce	string	*optional*	A 32-byte hex-encoded string that is signed with the measurements. The value should be unique.
SlotId	integer	*optional*	The slot identifier for the certificate containing the private key to generate the signature over the measurements.

Response Payload

{			
Certificate {	object		A link to the certificate corresponding to the SPDM slot identifier that can be used to validate the signature. See the *Certificate* schema for details on this property.
@odata.id	string	*read-only*	Link to a Certificate resource. See the Links section and the *Certificate* schema for details.
}			
HashingAlgorithm	string	*read-only required*	The hashing algorithm used for generating the cryptographic signed statement.
Oem {}	object		See the Oem object definition in the Common properties section.
PublicKey	string	*read-only*	A Privacy Enhanced Mail (PEM)-encoded public key that can be used to validate the signature.
SignedMeasurements	string	*read-only required*	Base64 encoded cryptographic signed statement generated by the signer.
SigningAlgorithm	string	*read-only required*	The asymmetric signing algorithm used for generating the cryptographic signed statement.

Version	string	*read-only* *required*	The SPDM version used by the SPDM Responder to generate the cryptographic signed statement.
}			

6.21.5 Property details

6.21.5.1 ComponentIntegrityType:

The type of security technology for the component.

string	Description
OEM	OEM-specific.
SPDM	Security Protocol and Data Model (SPDM) protocol.
TPM	Trusted Platform Module (TPM).

6.21.5.2 MeasurementSpecification:

The measurement specification negotiated between the SPDM Requester and SPDM Responder.

string	Description
DMTF	DMTF.

6.21.5.3 MeasurementSummaryType:

The type of measurement summary.

string	Description
All	The measurement summary covers all measurements in SPDM.
TCB	The measurement summary covers the TCB.

6.21.5.4 MeasurementType:

The type or characteristics of the data that this measurement represents.

string	Description
FirmwareConfiguration	Firmware configuration, such as configurable firmware policy.
HardwareConfiguration	Hardware configuration, such as straps.
ImmutableROM	Immutable ROM.
MeasurementManifest	Measurement Manifest.
MutableFirmware	Mutable firmware or any mutable code.
MutableFirmwareSecurityVersionNumber	Mutable firmware security version number.
MutableFirmwareVersion	Mutable firmware version.

6.21.5.5 SessionType:

The type of session or communication channel between two components.

string	Description
AuthenticatedOnly	An established session where only authentication is protecting the communication.
EncryptedAuthenticated	An established session where both encryption and authentication are protecting the communication.
Plain	A plain text session without any protection.

6.21.5.6 VerificationStatus:

The status of the verification of the identity of the component.

string	Description
Failed	Unsuccessful verification.
Success	Successful verification.

6.21.6 Example response

```
{
    "@odata.type": "#ComponentIntegrity.v1_0_0.ComponentIntegrity",
    "Id": "TPM-0",
```

```
"Description": "TPM physically attached to a GPU.",
"Status": {
    "Health": "OK",
    "State": "Enabled"
},
"ComponentIntegrityType": "TPM",
"ComponentIntegrityTypeVersion": "1.2.0",
"ComponentIntegrityEnabled": true,
"LastUpdated": "2021-11-02T14:09:54-07:00",
"TargetComponentURI": "/redvish/v1/Systems/437XR1138R2#/TrustedModules/0",
"Links": {
    "ComponentsProtected": [
        {
            "@odata.id": "/redfish/v1/Systems/437XR1138R2/GraphicsControllers/GPU1"
        }
    ]
},
"TPM": {
    "MeasurementSet": {
        "Measurements": [
            {
                "PCR": 1,
                "Measurement": "h6spEuxbyOtGhP35UoGhTcVX3iRaZQGDw4Yk5oQcabw=",
                "LastUpdated": "2021-10-31T20:14:27-07:00",
                "MeasurementHashAlgorithm": "TPM_ALG_SHA256"
            },
            {
                "PCR": 3,
                "Measurement": "GnbzS4ToNQb+Y7SxXw4AvRDTf4SzO5eeAlAlDca28AA=",
                "LastUpdated": "2021-10-31T20:14:27-07:00",
                "MeasurementHashAlgorithm": "TPM_ALG_SHA256"
            },
            {
                "PCR": 1,
                "Measurement": "pLJa5Dyh8CDYFZ1WNOrsiSG1eyCPBlre42CD7CTywg7VkcC4afw4ZG3gQxi2XEFCt5jxz6tN1/cbx/DNx2/tOg==",
                "LastUpdated": "2021-10-31T20:14:27-07:00",
                "MeasurementHashAlgorithm": "TPM_ALG_SHA512"
            },
            {
                "PCR": 3,
                "Measurement": "GBgEucATV8omirTmYqY+vvbbisHR1jBKfVAEK1XSifBHnnIYXopsc0NExURDSSyPjO21NrPqnwiq5LhI1p6rzQ==",
                "LastUpdated": "2021-10-31T20:14:27-07:00",
                "MeasurementHashAlgorithm": "TPM_ALG_SHA512"
            }
        ]
    },
    "IdentityAuthentication": {
        "VerificationStatus": "Success",
        "ComponentCertificate": {
            "@odata.id": "/redfish/v1/Systems/437XR1138R2/Certificates/TPMcert"
```

```
            }
        },
        "ComponentCommunication": {
            "Sessions": [
                {
                    "SessionId": 4556,
                    "SessionType": "Plain"
                }
            ]
        }
    },
    "@odata.id": "/redfish/v1/ComponentIntegrity/TPM-0"
}
```

6.22 CompositionReservation 1.0.0

Version	v1.0
Release	2021.1

6.22.1 Description

The CompositionReservation schema contains reservation information related to the Compose action defined in the CompositionService resource when the of RequestType parameter contains the value `PreviewReserve` .

6.22.2 URIs

/redfish/v1/CompositionService/CompositionReservations/*{CompositionReservationId}*

6.22.3 Properties

Property	Type	Attributes	Notes
Client	string	*read-only*	The client that owns the reservation.
Manifest {	object		The manifest document processed by the service that resulted in this reservation.
Description	string	*read-write (null)*	The description of this manifest.

Property	Type	Attributes	Notes
Expand	string (enum)	*read-write (null)*	The expansion control for references in manifest responses, similar to the `$expand=.` query parameter. *For the possible property values, see Expand in Property details.*
Stanzas [{	array		An array of stanzas that describe the requests specified by this manifest.
OEMStanzaType	string	*read-write (null)*	The OEM-defined type of stanza.
Request {}	object	*(null)*	The request details for the stanza.
Response {}	object	*(null)*	The response details for the stanza.
StanzaId	string	*read-write (null)*	The identifier of the stanza. This is a unique identifier specified by the client and is not used by the service.
StanzaType	string (enum)	*read-write (null)*	The type of stanza. *For the possible property values, see StanzaType in Property details.*
}]			
Timestamp	string (date-time)	*read-write (null)*	The date and time when the manifest was created.
}			
ReservationTime	string (date-time)	*read-only*	The date time the service created the reservation.
ReservedResourceBlocks [{	array		The array of links to the reserved resource blocks.
@odata.id	string	*read-only*	Link to a ResourceBlock resource. See the Links section and the *ResourceBlock* schema for details.
}]			

6.22.4 Property details

6.22.4.1 Expand:

The expansion control for references in manifest responses, similar to the `$expand=.` query parameter.

string	Description
All	Expand all subordinate references.
None	Do not expand any references.
Relevant	Expand relevant subordinate references. Relevant references are those that are tied to a constrained composition request, such as a request for a quantity of processors.

6.22.4.2 StanzaType:

The type of stanza.

string	Description
ComposeResource	A stanza that describes the desired end state for a composed resource block. The resources consumed by the composed resource block are moved to the active pool.
ComposeSystem	A stanza that describes the desired end state for computer system composition operation. The resources consumed by the composed computer system are moved to the active pool.
DecomposeResource	A stanza that references a composed resource block to decompose and return resources to the free pool.
DecomposeSystem	A stanza that references a computer system to decompose and return resources to the free pool.
OEM	A stanza that describes an OEM-specific request.

6.23 CompositionService 1.2.0

Version	v1.2	v1.1	v1.0
Release	2021.1	2018.2	2017.1

6.23.1 Description

The CompositionService schema describes a composition service and its properties and links to the resources available for composition.

6.23.2 URIs

/redfish/v1/CompositionService

6.23.3 Properties

Property	Type	Attributes	Notes
ActivePool *(v1.2+)* {	object		The link to the collection of resource blocks within the active pool. Resource blocks in the active pool are contributing to at least one composed resource as a result of a composition request. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *ResourceBlock*. See the ResourceBlock schema for details.
}			
AllowOverprovisioning *(v1.1+)*	boolean	*read-write (null)*	An indication of whether this service is allowed to overprovision a composition relative to the composition request.
AllowZoneAffinity *(v1.1+)*	boolean	*read-only (null)*	An indication of whether a client can request that a specific resource zone fulfill a composition request.
CompositionReservations *(v1.2+)* {	object		The link to the collection of reservations with the composition reservation collection. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *CompositionReservation*. See the CompositionReservation schema for details.
}			
FreePool *(v1.2+)* {	object		The link to the collection of resource blocks within the free pool. Resource blocks in the free pool are not contributing to any composed resources. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *ResourceBlock*. See the ResourceBlock schema for details.
}			
ReservationDuration *(v1.2+)*	string	*read-write (null)*	The length of time a composition reservation is held before the service deletes the reservation marks any related resource blocks as no longer reserved.
ResourceBlocks {	object		The resource blocks available on the service. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *ResourceBlock*. See the ResourceBlock schema for details.
}			
ResourceZones {	object		The resource zones available on the service. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *Zone*. See the Zone schema for details.
}			
ServiceEnabled	boolean	*read-write (null)*	An indication of whether this service is enabled.

Property	Type	Attributes	Notes
Status {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.

6.23.4 Actions

6.23.4.1 Compose *(v1.2+)*

Description

This action performs a set of operations specified by a manifest.

Action URI: {Base URI of target resource}/Actions/CompositionService.Compose

Action parameters

Parameter Name	Type	Attributes	Notes
Manifest {	object	*optional*	The manifest containing the compose operation request.
Description	string	*read-write (null)*	The description of this manifest.
Expand	string (enum)	*read-write (null)*	The expansion control for references in manifest responses, similar to the `$expand=.` query parameter. *For the possible property values, see Expand in Property details.*
Stanzas [{	array		An array of stanzas that describe the requests specified by this manifest.
OEMStanzaType	string	*read-write (null)*	The OEM-defined type of stanza.
Request {}	object	*(null)*	The request details for the stanza.
Response {}	object	*(null)*	The response details for the stanza.
StanzaId	string	*read-write (null)*	The identifier of the stanza. This is a unique identifier specified by the client and is not used by the service.
StanzaType	string (enum)	*read-write (null)*	The type of stanza. *For the possible property values, see StanzaType in Property details.*
}]			

Parameter Name	Type	Attributes	Notes
Timestamp	string (date-time)	*read-write (null)*	The date and time when the manifest was created.
}			
RequestFormat	string (enum)	*required*	The format of the request. *For the possible property values, see RequestFormat in Property details.*
RequestType	string (enum)	*required*	The type of request. *For the possible property values, see RequestType in Property details.*
ReservationId	string	*optional*	The identifier of the composition reservation if applying a reservation. The value for this parameter is obtained from the response of a Compose action where the RequestType parameter contains the value `PreviewReserve` .

Response Payload

{			
Manifest *(v1.2+)* **{**	object		The manifest containing the compose operation response.
Description	string	*read-write (null)*	The description of this manifest.
Expand	string (enum)	*read-write (null)*	The expansion control for references in manifest responses, similar to the `$expand=.` query parameter. *For the possible property values, see Expand in Property details.*
Stanzas [{	array		An array of stanzas that describe the requests specified by this manifest.
OEMStanzaType	string	*read-write (null)*	The OEM-defined type of stanza.
Request {}	object	*(null)*	The request details for the stanza.
Response {}	object	*(null)*	The response details for the stanza.
StanzaId	string	*read-write (null)*	The identifier of the stanza. This is a unique identifier specified by the client and is not used by the service.
StanzaType	string (enum)	*read-write (null)*	The type of stanza. *For the possible property values, see StanzaType in Property details.*

}]			
Timestamp	string (date-time)	*read-write (null)*	The date and time when the manifest was created.
}			
RequestFormat *(v1.2+)*	string (enum)	*read-only required*	The format of the request. *For the possible property values, see RequestFormat in Property details.*
RequestType *(v1.2+)*	string (enum)	*read-only required*	The type of request. *For the possible property values, see RequestType in Property details.*
ReservationId *(v1.2+)*	string	*read-only*	The identifier of the composition reservation that was created.
}			

Request Example

```json
{
    "RequestFormat": "Manifest",
    "RequestType": "Apply",
    "Manifest": {
        "Description": "Specific composition example",
        "Timestamp": "2019-08-22T10:35:16+06:00",
        "Expand": "None",
        "Stanzas": [
            {
                "StanzaType": "ComposeSystem",
                "StanzaId": "Compute1",
                "Request": {
                    "Links": {
                        "ResourceBlocks": [
                            {
                                "@odata.id": "/redfish/v1/CompositionService/ResourceBlocks/BladeServer-1"
                            },
                            {
                                "@odata.id": "/redfish/v1/CompositionService/ResourceBlocks/NVMe-TargetsAppliance-1"
                            },
                            {
                                "@odata.id": "/redfish/v1/CompositionService/ResourceBlocks/NetworkCard1"
                            }
                        ]
                    }
                }
            }
```

```
            }
        ]
    }
}
```

Response Example

```json
{
    "RequestFormat": "Manifest",
    "RequestType": "Apply",
    "Manifest": {
        "Description": "Specific composition example",
        "Timestamp": "2019-08-22T10:35:16+06:00",
        "Expand": "None",
        "Stanzas": [
            {
                "StanzaType": "ComposeSystem",
                "StanzaId": "Compute1",
                "Request": {
                    "Links": {
                        "ResourceBlocks": [
                            {
                                "@odata.id": "/redfish/v1/CompositionService/ResourceBlocks/BladeServer-1"
                            },
                            {
                                "@odata.id": "/redfish/v1/CompositionService/ResourceBlocks/NVMe-TargetsAppliance-1"
                            },
                            {
                                "@odata.id": "/redfish/v1/CompositionService/ResourceBlocks/NetworkCard1"
                            }
                        ]
                    }
                },
                "Response": {
                    "@odata.id": "/redfish/v1/Systems/ComposedCompute1",
                    "@odata.type": "#ComputerSystem.v1_14_0.ComputerSystem",
                    "Id": "ComposedCompute1",
                    "Name": "Computer system composed from Compute1",
                    "Processors": {
                        "@odata.id": "/redfish/v1/Systems/ComposedCompute1/Processors"
                    },
                    "Memory": {
                        "@odata.id": "/redfish/v1/Systems/ComposedCompute1/Memory"
                    },
                    "NetworkInterfaces": {
                        "@odata.id": "/redfish/v1/Systems/ComposedCompute1/NetworkInterfaces"
                    },
                    "Storage": {
```

```
                    "@odata.id": "/redfish/v1/Systems/ComposedCompute1/Storage"
                },
                "Links": {
                    "ResourceBlocks": [
                        {
                            "@odata.id": "/redfish/v1/CompositionService/ResourceBlocks/BladeServer-1"
                        },
                        {
                            "@odata.id": "/redfish/v1/CompositionService/ResourceBlocks/NVMe-TargetsAppliance-1"
                        },
                        {
                            "@odata.id": "/redfish/v1/CompositionService/ResourceBlocks/NetworkCard1"
                        }
                    ]
                }
            }
        }
    ]
}
}
```

6.23.5 Property details

6.23.5.1 Expand:

The expansion control for references in manifest responses, similar to the `$expand=.` query parameter.

string	Description
All	Expand all subordinate references.
None	Do not expand any references.
Relevant	Expand relevant subordinate references. Relevant references are those that are tied to a constrained composition request, such as a request for a quantity of processors.

6.23.5.2 RequestFormat:

The format of the request.

string	Description
Manifest	The request body contains a manifest.

6.23.5.3 RequestType:

The type of request.

string	Description
Apply	Perform the requested operations specified by the manifest and modify resources as needed.
Preview	Preview the outcome of the operations specified by the manifest.
PreviewReserve	Preview the outcome of the operations specified by the manifest and reserve resources.

6.23.5.4 StanzaType:

The type of stanza.

string	Description
ComposeResource	A stanza that describes the desired end state for a composed resource block. The resources consumed by the composed resource block are moved to the active pool.
ComposeSystem	A stanza that describes the desired end state for computer system composition operation. The resources consumed by the composed computer system are moved to the active pool.
DecomposeResource	A stanza that references a composed resource block to decompose and return resources to the free pool.
DecomposeSystem	A stanza that references a computer system to decompose and return resources to the free pool.
OEM	A stanza that describes an OEM-specific request.

6.23.6 Example response

```json
{
    "@odata.type": "#CompositionService.v1_2_0.CompositionService",
    "Id": "CompositionService",
    "Name": "Composition Service",
    "Status": {
        "State": "Enabled",
        "Health": "OK"
    },
    "ServiceEnabled": true,
    "AllowOverprovisioning": true,
    "AllowZoneAffinity": true,
    "ResourceBlocks": {
```

```
        "@odata.id": "/redfish/v1/CompositionService/ResourceBlocks"
    },
    "ResourceZones": {
        "@odata.id": "/redfish/v1/CompositionService/ResourceZones"
    },
    "Oem": {},
    "@odata.id": "/redfish/v1/CompositionService"
}
```

6.24 ComputerSystem 1.17.0

Version	v1.17	v1.16	v1.15	v1.14	v1.13	v1.12	v1.11	v1.10	v1.9	v1.8	v1.7	...
Release	2021.4	2021.2	2021.1	2020.4	2020.3	2020.2	2020.1	2019.4	2019.3	2019.2	2019.1	...

6.24.1 Description

The ComputerSystem schema represents a computer or system instance and the software-visible resources, or items within the data plane, such as memory, CPU, and other devices that it can access. Details of those resources or subsystems are also linked through this resource.

6.24.2 URIs

/redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}
/redfish/v1/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}
/redfish/v1/Systems/{ComputerSystemId}

6.24.3 Properties

Property	Type	Attributes	Notes
AssetTag	string	*read-write* *(null)*	The user-definable tag that can track this computer system for inventory or other client purposes.
Bios *(v1.1+)* {	object		The link to the BIOS settings associated with this system. See the *Bios* schema for details on this property.
@odata.id	string	*read-only*	Link to a Bios resource. See the Links section and the *Bios* schema for details.
}			

Property	Type	Attributes	Notes
BiosVersion	string	*read-only (null)*	The version of the system BIOS or primary system firmware.
Boot {	object		The boot settings for this system.
AliasBootOrder *(v1.6+)* [ ]	array (string (enum))	*read-write (null)*	Ordered array of boot source aliases representing the persistent boot order associated with this computer system. *For the possible property values, see AliasBootOrder in Property details.*
AutomaticRetryAttempts *(v1.11+)*	integer	*read-write (null)*	The number of attempts the system will automatically retry booting.
AutomaticRetryConfig *(v1.11+)*	string (enum)	*read-write (null)*	The configuration of how the system retries booting automatically. *For the possible property values, see AutomaticRetryConfig in Property details.*
BootNext *(v1.5+)*	string	*read-write (null)*	The BootOptionReference of the Boot Option to perform a one-time boot from when BootSourceOverrideTarget is `UefiBootNext` .
BootOptions *(v1.5+)* {	object		The link to the collection of the UEFI boot options associated with this computer system. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *BootOption*. See the BootOption schema for details.
}			
BootOrder *(v1.5+)* [ ]	array (string, null)	*read-write*	An array of BootOptionReference strings that represent the persistent boot order for with this computer system. Changes to the boot order typically require a system reset before they take effect. It is likely that a client finds the `@Redfish.Settings` term in this resource, and if it is found, the client makes requests to change boot order settings by modifying the resource identified by the `@Redfish.Settings` term.
BootOrderPropertySelection *(v1.6+)*	string (enum)	*read-write (null)*	The name of the boot order property that the system uses for the persistent boot order. *For the possible property values, see BootOrderPropertySelection in Property details.*
BootSourceOverrideEnabled	string (enum)	*read-write (null)*	The state of the boot source override feature. *For the possible property values, see BootSourceOverrideEnabled in Property details.*
BootSourceOverrideMode *(v1.1+)*	string (enum)	*read-write (null)*	The BIOS boot mode to use when the system boots from the BootSourceOverrideTarget boot source. *For the possible property values, see BootSourceOverrideMode in Property details.*
BootSourceOverrideTarget	string (enum)	*read-write (null)*	The current boot source to use at the next boot instead of the normal boot device, if BootSourceOverrideEnabled is `true` . *For the possible property values, see BootSourceOverrideTarget in Property details.*
Certificates *(v1.7+)* {	object		The link to a collection of certificates used for booting through HTTPS by this computer system. Contains a link to a resource.

Property	Type	Attributes	Notes
@odata.id	string	*read-only*	Link to Collection of *Certificate*. See the Certificate schema for details.
}			
HttpBootUri *(v1.9+)*	string (URI)	*read-write (null)*	The URI to boot from when BootSourceOverrideTarget is set to `UefiHttp` .
RemainingAutomaticRetryAttempts *(v1.11+)*	integer	*read-only (null)*	The number of remaining automatic retry boots.
StopBootOnFault *(v1.15+)*	string (enum)	*read-write (null)*	If the boot should stop on a fault. *For the possible property values, see StopBootOnFault in Property details.*
TrustedModuleRequiredToBoot *(v1.14+)*	string (enum)	*read-write (null)*	The Trusted Module boot requirement. *For the possible property values, see TrustedModuleRequiredToBoot in Property details.*
UefiTargetBootSourceOverride	string	*read-write (null)*	The UEFI device path of the device from which to boot when BootSourceOverrideTarget is `UefiTarget` .
}			
BootProgress *(v1.13+)* {	object	*(null)*	This object describes the last boot progress state.
LastState *(v1.13+)*	string (enum)	*read-only (null)*	The last boot progress state. *For the possible property values, see LastState in Property details.*
LastStateTime *(v1.13+)*	string (date-time)	*read-only (null)*	The date and time when the last boot state was updated.
Oem *(v1.13+)* {}	object		See the Oem object definition in the Common properties section.
OemLastState *(v1.13+)*	string	*read-only (null)*	The OEM-specific last state, if the LastState type is `OEM` .
}			
Certificates *(v1.14+)* {	object		The link to a collection of certificates for device identity and attestation. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *Certificate*. See the Certificate schema for details.
}			
EthernetInterfaces {	object		The link to the collection of Ethernet interfaces associated with this system. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *EthernetInterface*. See the EthernetInterface schema for details.
}			

Property	Type	Attributes	Notes
FabricAdapters *(v1.10+)* {	object		The link to the collection of fabric adapters associated with this system. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *FabricAdapter*. See the FabricAdapter schema for details.
}			
GraphicalConsole *(v1.13+)* {	object		The information about the graphical console (KVM-IP) service of this system.
ConnectTypesSupported *(v1.13+)* [ ]	array (string (enum))	*read-only*	This property enumerates the graphical console connection types that the implementation allows. *For the possible property values, see ConnectTypesSupported in Property details.*
MaxConcurrentSessions *(v1.13+)*	integer	*read-only*	The maximum number of service sessions, regardless of protocol, that this system can support.
Port *(v1.13+)*	integer	*read-write (null)*	The protocol port.
ServiceEnabled *(v1.13+)*	boolean	*read-write*	An indication of whether the service is enabled for this system.
}			
GraphicsControllers *(v1.15+)* {	object		The link to a collection of graphics controllers that can output video for this system. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *GraphicsController*. See the GraphicsController schema for details.
}			
HostedServices *(v1.2+)* {	object		The services that this computer system supports.
Oem *(v1.2+)* {}	object		See the Oem object definition in the Common properties section.
StorageServices *(v1.2+)* {	object		The link to a collection of storage services that this computer system supports.
@odata.id	string (URI)	*read-only*	The unique identifier for a resource.
}			
}			
HostingRoles *(v1.2+)* [ ]	array (string (enum))	*read-only*	The hosting roles that this computer system supports. *For the possible property values, see HostingRoles in Property details.*

Property	Type	Attributes	Notes
HostName	string	*read-write* *(null)*	The DNS host name, without any domain information.
HostWatchdogTimer *(v1.5+)* {	object		The host watchdog timer functionality for this system.
FunctionEnabled *(v1.5+)*	boolean	*read-write* *required* *(null)*	An indication of whether a user has enabled the host watchdog timer functionality. This property indicates only that a user has enabled the timer. To activate the timer, installation of additional host-based software is necessary; an update to this property does not initiate the timer.
Oem *(v1.5+)* {}	object		See the Oem object definition in the Common properties section.
Status *(v1.5+)* {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
TimeoutAction *(v1.5+)*	string (enum)	*read-write* *required* *(null)*	The action to perform when the watchdog timer reaches its timeout value. *For the possible property values, see TimeoutAction in Property details.*
WarningAction *(v1.5+)*	string (enum)	*read-write* *(null)*	The action to perform when the watchdog timer is close to reaching its timeout value. This action typically occurs from three to ten seconds before to the timeout value, but the exact timing is dependent on the implementation. *For the possible property values, see WarningAction in Property details.*
}			
IdlePowerSaver *(v1.16+)* {	object	*(null)*	The idle power saver settings of the computer system.
Enabled *(v1.16+)*	boolean	*read-write*	An indication of whether idle power saver is enabled.
EnterDwellTimeSeconds *(v1.16+)*	integer (seconds)	*read-write* *(null)*	The duration in seconds the computer system is below the EnterUtilizationPercent value before the idle power save is activated.
EnterUtilizationPercent *(v1.16+)*	number (%)	*read-write* *(null)*	The percentage of utilization that the computer system shall be lower than to enter idle power save.
ExitDwellTimeSeconds *(v1.16+)*	integer (seconds)	*read-write* *(null)*	The duration in seconds the computer system is above the ExitUtilizationPercent value before the idle power save is stopped.
ExitUtilizationPercent *(v1.16+)*	number (%)	*read-write* *(null)*	The percentage of utilization that the computer system shall be higher than to exit idle power save.
}			
IndicatorLED *(deprecated v1.13)*	string (enum)	*read-write* *(null)*	The state of the indicator LED, which identifies the system. *For the possible property values, see IndicatorLED in Property details. Deprecated in v1.13 and later. This property has been deprecated in favor of the LocationIndicatorActive property.*

Property	Type	Attributes	Notes
KeyManagement *(v1.16+)* {	object	*(null)*	The key management settings of the computer system.
KMIPCertificates *(v1.16+)* {	object		The link to a collection of server certificates for the servers referenced by the KMIPServers property. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *Certificate*. See the Certificate schema for details.
}			
KMIPServers *(v1.16+)* [{	array		The KMIP servers to which this computer system is subscribed.
Address *(v1.16+)*	string	*read-write* *(null)*	The KMIP server address.
Password *(v1.16+)*	string	*read-write* *(null)*	The password to access the KMIP server. The value is `null` in responses.
Port *(v1.16+)*	integer	*read-write* *(null)*	The KMIP server port.
Username *(v1.16+)*	string	*read-write* *(null)*	The username to access the KMIP server.
}]			
}			
LastResetTime *(v1.12+)*	string (date-time)	*read-only*	The date and time when the system was last reset or rebooted.
Links {	object		The links to other resources that are related to this resource.
Chassis [{	array		An array of links to the chassis that contains this system.
@odata.id	string	*read-only*	Link to a Chassis resource. See the Links section and the *Chassis* schema for details.
}]			
ConsumingComputerSystems *(v1.5+)* [{	array		An array of links to ComputerSystems that are realized, in whole or in part, from this ComputerSystem.
@odata.id	string	*read-only*	Link to another ComputerSystem resource.
}]			
CooledBy [{	array		An array of links to resources or objects that that cool this computer system. Normally, the link is for either a chassis or a specific set of fans.

Property	Type	Attributes	Notes
@odata.id	string (URI)	*read-only*	The unique identifier for a resource.
}]			
Endpoints *(v1.2+)* [{	array		An array of links to the endpoints that connect to this system.
@odata.id	string	*read-only*	Link to a Endpoint resource. See the Links section and the *Endpoint* schema for details.
}]			
ManagedBy [{	array		An array of links to the managers responsible for this system.
@odata.id	string	*read-only*	Link to a Manager resource. See the Links section and the *Manager* schema for details.
}]			
Oem {}	object		See the Oem object definition in the Common properties section.
OffloadedNetworkDeviceFunctions *(v1.17+)* [{	array		The network device functions to which this system performs offload computation, such as with a SmartNIC.
@odata.id	string	*read-only*	Link to a NetworkDeviceFunction resource. See the Links section and the *NetworkDeviceFunction* schema for details.
}]			
PoweredBy [{	array		An array of links to resources or objects that power this computer system. Normally, the link is for either a chassis or a specific set of power supplies.
@odata.id	string (URI)	*read-only*	The unique identifier for a resource.
}]			
ResourceBlocks *(v1.4+)* [{	array		An array of links to the resource blocks that are used in this computer system.
@odata.id	string	*read-write*	Link to a ResourceBlock resource. See the Links section and the *ResourceBlock* schema for details.
}]			
SupplyingComputerSystems *(v1.5+)* [{	array		An array of links to ComputerSystems that contribute, in whole or in part, to the implementation of this ComputerSystem.
@odata.id	string	*read-only*	Link to another ComputerSystem resource.

Property	Type	Attributes	Notes
}]			
}			
LocationIndicatorActive *(v1.13+)*	boolean	*read-write (null)*	An indicator allowing an operator to physically locate this resource.
LogServices {	object		The link to the collection of log services associated with this system. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *LogService*. See the LogService schema for details.
}			
Manufacturer	string	*read-only (null)*	The manufacturer or OEM of this system.
Measurements *(v1.14+, deprecated v1.17* [{	array		An array of DSP0274-defined measurement blocks. *Deprecated in v1.17 and later. This property has been deprecated in favor of the ComponentIntegrity resource.*
@odata.id	string	*read-only*	Link to a MeasurementBlock resource. See the Links section and the *SoftwareInventory* schema for details.
}]			
Memory *(v1.1+)* {	object		The link to the collection of memory associated with this system. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *Memory*. See the Memory schema for details.
}			
MemoryDomains *(v1.2+)* {	object		The link to the collection of memory domains associated with this system. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *MemoryDomain*. See the MemoryDomain schema for details.
}			
MemorySummary {	object		The central memory of the system in general detail.
MemoryMirroring *(v1.1+)*	string (enum)	*read-only (null)*	The ability and type of memory mirroring that this computer system supports. *For the possible property values, see MemoryMirroring in Property details.*
Metrics *(v1.8+)* {	object		The link to the metrics associated with all memory in this system. See the *MemoryMetrics* schema for details on this property.

Property	Type	Attributes	Notes
@odata.id	string	*read-only*	Link to a MemoryMetrics resource. See the Links section and the *MemoryMetrics* schema for details.
}			
Status *(deprecated v1.16)* {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status. *Deprecated in v1.16 and later. This property has been deprecated in favor of the Conditions property within Status in the root of this resource.*
TotalSystemMemoryGiB	number (GiBy)	*read-only (null)*	The total configured operating system-accessible memory (RAM), measured in GiB.
TotalSystemPersistentMemoryGiB *(v1.4+)*	number (GiBy)	*read-only (null)*	The total configured, system-accessible persistent memory, measured in GiB.
}			
Model	string	*read-only (null)*	The product name for this system, without the manufacturer name.
NetworkInterfaces *(v1.3+)* {	object		The link to the collection of Network Interfaces associated with this system. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *NetworkInterface*. See the NetworkInterface schema for details.
}			
PartNumber	string	*read-only (null)*	The part number for this system.
PCIeDevices *(v1.2+)* [{	array		The link to a collection of PCIe devices that this computer system uses.
@odata.id	string	*read-only*	Link to a PCIeDevice resource. See the Links section and the *PCIeDevice* schema for details.
}]			
PCIeFunctions *(v1.2+)* [{	array		The link to a collection of PCIe functions that this computer system uses.
@odata.id	string	*read-only*	Link to a PCIeFunction resource. See the Links section and the *PCIeFunction* schema for details.
}]			
PowerCycleDelaySeconds *(v1.13+)*	number	*read-write (null)*	The number of seconds to delay power on after a `Reset` action requesting `PowerCycle`. Zero seconds indicates no delay.

Property	Type	Attributes	Notes
PowerMode *(v1.15+)*	string (enum)	*read-write (null)*	The power mode setting of the computer system. *For the possible property values, see PowerMode in Property details.*
PowerOffDelaySeconds *(v1.13+)*	number	*read-write (null)*	The number of seconds to delay power off during a reset. Zero seconds indicates no delay to power off.
PowerOnDelaySeconds *(v1.13+)*	number	*read-write (null)*	The number of seconds to delay power on after a power cycle or during a reset. Zero seconds indicates no delay to power up.
PowerRestorePolicy *(v1.6+)*	string (enum)	*read-write*	The desired power state of the system when power is restored after a power loss. *For the possible property values, see PowerRestorePolicy in Property details.*
PowerState	string (enum)	*read-only (null)*	The current power state of the system. *For the possible property values, see PowerState in Property details.*
Processors {	object		The link to the collection of processors associated with this system. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *Processor*. See the Processor schema for details.
}			
ProcessorSummary {	object		The central processors of the system in general detail.
CoreCount *(v1.14+)*	integer	*read-only (null)*	The number of processor cores in the system.
Count	integer	*read-only (null)*	The number of physical processors in the system.
LogicalProcessorCount *(v1.5+)*	integer	*read-only (null)*	The number of logical processors in the system.
Metrics *(v1.7+)* {	object		The link to the metrics associated with all processors in this system. See the *ProcessorMetrics* schema for details on this property.
@odata.id	string	*read-only*	Link to a ProcessorMetrics resource. See the Links section and the *ProcessorMetrics* schema for details.
}			
Model	string	*read-only (null)*	The processor model for the primary or majority of processors in this system.
Status *(deprecated v1.16)* {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status. *Deprecated in v1.16 and later. This property has been deprecated in favor of the Conditions property within Status in the root of this resource.*

Property	Type	Attributes	Notes
ThreadingEnabled *(v1.15+)*	boolean	*read-write*	An indication of whether threading is enabled on all processors in this system.
}			
Redundancy *(v1.5+)* [{ }]	array (object)		The link to a collection of redundancy entities. Each entity specifies a kind and level of redundancy and a collection, or redundancy set, of other computer systems that provide the specified redundancy to this computer system. For property details, see Redundancy.
SecureBoot *(v1.1+)* {	object		The link to the UEFI Secure Boot associated with this system. See the *SecureBoot* schema for details on this property.
@odata.id	string	*read-only*	Link to a SecureBoot resource. See the Links section and the *SecureBoot* schema for details.
}			
SerialConsole *(v1.13+)* {	object		The serial console services that this system provides.
IPMI *(v1.13+)* {}	object		The connection details for an IPMI Serial-over-LAN service. For more information about this property, see SerialConsoleProtocol in Property Details.
MaxConcurrentSessions *(v1.13+)*	integer	*read-only*	The maximum number of service sessions, regardless of protocol, that this system can support.
SSH *(v1.13+)* {}	object		The connection details for an SSH serial console service. For more information about this property, see SerialConsoleProtocol in Property Details.
Telnet *(v1.13+)* {}	object		The connection details for a Telnet serial console service. For more information about this property, see SerialConsoleProtocol in Property Details.
}			
SerialNumber	string	*read-only (null)*	The serial number for this system.
SimpleStorage {	object		The link to the collection of storage devices associated with this system. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *SimpleStorage*. See the SimpleStorage schema for details.
}			
SKU	string	*read-only (null)*	The manufacturer SKU for this system.

Property	Type	Attributes	Notes
Status {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
Storage *(v1.1+)* {	object		The link to the collection of storage devices associated with this system. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *Storage*. See the Storage schema for details.
}			
SubModel *(v1.5+)*	string	*read-only (null)*	The sub-model for this system.
SystemType	string (enum)	*read-only*	The type of computer system that this resource represents. *For the possible property values, see SystemType in Property details.*
TrustedModules *(v1.1+)* [{	array		An array of trusted modules in the system.
FirmwareVersion *(v1.1+)*	string	*read-only (null)*	The firmware version of this Trusted Module.
FirmwareVersion2 *(v1.3+)*	string	*read-only (null)*	The second firmware version of this Trusted Module, if applicable.
InterfaceType *(v1.1+)*	string (enum)	*read-only (null)*	The interface type of the Trusted Module. *For the possible property values, see InterfaceType in Property details.*
InterfaceTypeSelection *(v1.3+)*	string (enum)	*read-only (null)*	The interface type selection supported by this Trusted Module. *For the possible property values, see InterfaceTypeSelection in Property details.*
Oem *(v1.1+)* {}	object		See the Oem object definition in the Common properties section.
Status *(v1.1+)* {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
}]			
USBControllers *(v1.15+)* {	object		The link to a collection of USB controllers for this system. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *USBController*. See the USBController schema for details.
}			
UUID	string	*read-only (null)*	The UUID for this system. *For more information about this property, see Property details.*
VirtualMedia *(v1.13+)* {	object		The link to the virtual media services for this system. Contains a link to a resource.

Property	Type	Attributes	Notes
@odata.id	string	*read-only*	Link to Collection of *VirtualMedia*. See the VirtualMedia schema for details.
}			
VirtualMediaConfig *(v1.13+)* {	object		The information about the virtual media service of this system.
Port *(v1.13+)*	integer	*read-write (null)*	The protocol port.
ServiceEnabled *(v1.13+)*	boolean	*read-write*	An indication of whether the service is enabled for this system.
}			

6.24.4 Actions

6.24.4.1 AddResourceBlock *(v1.6+)*

Description

This action adds a resource block to a system.

Action URI: {Base URI of target resource}/Actions/ComputerSystem.AddResourceBlock

Action parameters

Parameter Name	Type	Attributes	Notes
ComputerSystemETag	string	*optional*	The current ETag of the system.
ResourceBlock {	object	*required*	The resource block to add to the system. See the *ResourceBlock* schema for details on this property.
@odata.id	string	*read-only*	Link to a ResourceBlock resource. See the Links section and the *ResourceBlock* schema for details.
}			
ResourceBlockETag	string	*optional*	The current ETag of the resource block to add to the system.

Request Example

```
{
```

```
    "ResourceBlock": {
        "@odata.id": "/redfish/v1/CompositionService/ResourceBlocks/Offload-GPU1"
    },
    "ResourceBlockETag": "W/\"19472363938\"",
    "ComputerSystemETag": "W/\"99374369273\""
}
```

6.24.4.2 RemoveResourceBlock *(v1.6+)*

Description

This action removes a resource block from a system.

Action URI: {Base URI of target resource}/Actions/ComputerSystem.RemoveResourceBlock

Action parameters

Parameter Name	Type	Attributes	Notes
ComputerSystemETag	string	*optional*	The current ETag of the system.
ResourceBlock {	object	*required*	The resource block to remove from the system. See the *ResourceBlock* schema for details on this property.
@odata.id	string	*read-only*	Link to a ResourceBlock resource. See the Links section and the *ResourceBlock* schema for details.
}			
ResourceBlockETag	string	*optional*	The current ETag of the resource block to remove from the system.

Request Example

```
{
    "ResourceBlock": {
        "@odata.id": "/redfish/v1/CompositionService/ResourceBlocks/Offload-GPU1"
    },
    "ResourceBlockETag": "W/\"19472363938\"",
    "ComputerSystemETag": "W/\"99374369273\""
}
```

6.24.4.3 Reset

Description

This action resets the system.

Action URI: {Base URI of target resource}/Actions/ComputerSystem.Reset

Action parameters

Parameter Name	Type	Attributes	Notes
ResetType	string (enum)	*optional*	The type of reset. *For the possible property values, see ResetType in Property details.*

6.24.4.4 SetDefaultBootOrder *(v1.5+)*

Description

This action sets the BootOrder to the default settings.

Action URI: {Base URI of target resource}/Actions/ComputerSystem.SetDefaultBootOrder

Action parameters

This action takes no parameters.

6.24.5 Property details

6.24.5.1 AliasBootOrder:

Ordered array of boot source aliases representing the persistent boot order associated with this computer system.

string	Description
BiosSetup	Boot to the BIOS setup utility.
Cd	Boot from the CD or DVD.
Diags	Boot to the manufacturer's diagnostics program.
Floppy	Boot from the floppy disk drive.

string	Description
Hdd	Boot from a hard drive.
None	Boot from the normal boot device.
Pxe	Boot from the Pre-Boot EXecution (PXE) environment.
RemoteDrive	Boot from a remote drive, such as an iSCSI target.
SDCard	Boot from an SD card.
UefiBootNext	Boot to the UEFI device that the BootNext property specifies.
UefiHttp	Boot from a UEFI HTTP network location.
UefiShell	Boot to the UEFI Shell.
UefiTarget	Boot to the UEFI device specified in the UefiTargetBootSourceOverride property.
Usb	Boot from a system BIOS-specified USB device.
Utilities	Boot to the manufacturer's utilities program or programs.

6.24.5.2 AutomaticRetryConfig:

The configuration of how the system retries booting automatically.

string	Description
Disabled	Disable automatic retrying of booting.
RetryAlways	Always automatically retry booting.
RetryAttempts	Automatic retrying of booting is based on a specified retry count.

6.24.5.3 BootOrderPropertySelection:

The name of the boot order property that the system uses for the persistent boot order.

string	Description
AliasBootOrder	The system uses the AliasBootOrder property to specify the persistent boot order.
BootOrder	The system uses the BootOrder property to specify the persistent boot order.

6.24.5.4 BootSourceOverrideEnabled:

The state of the boot source override feature.

string	Description
Continuous	The system boots to the target specified in the BootSourceOverrideTarget property until this property is `Disabled` .
Disabled	The system boots normally.
Once	On its next boot cycle, the system boots one time to the boot source override target. Then, the BootSourceOverrideEnabled value is reset to `Disabled` .

6.24.5.5 BootSourceOverrideMode:

The BIOS boot mode to use when the system boots from the BootSourceOverrideTarget boot source.

string	Description
Legacy	The system boots in non-UEFI boot mode to the boot source override target.
UEFI	The system boots in UEFI boot mode to the boot source override target.

6.24.5.6 BootSourceOverrideTarget:

The current boot source to use at the next boot instead of the normal boot device, if BootSourceOverrideEnabled is `true` .

string	Description
BiosSetup	Boot to the BIOS setup utility.
Cd	Boot from the CD or DVD.
Diags	Boot to the manufacturer's diagnostics program.
Floppy	Boot from the floppy disk drive.
Hdd	Boot from a hard drive.
None	Boot from the normal boot device.
Pxe	Boot from the Pre-Boot EXecution (PXE) environment.

string	Description
RemoteDrive *(v1.2+)*	Boot from a remote drive, such as an iSCSI target.
SDCard *(v1.1+)*	Boot from an SD card.
UefiBootNext *(v1.5+)*	Boot to the UEFI device that the BootNext property specifies.
UefiHttp *(v1.1+)*	Boot from a UEFI HTTP network location.
UefiShell	Boot to the UEFI Shell.
UefiTarget	Boot to the UEFI device specified in the UefiTargetBootSourceOverride property.
Usb	Boot from a system BIOS-specified USB device.
Utilities	Boot to the manufacturer's utilities program or programs.

6.24.5.7 ConnectTypesSupported:

This property enumerates the graphical console connection types that the implementation allows.

string	Description
KVMIP	The controller supports a graphical console connection through a KVM-IP (redirection of Keyboard, Video, Mouse over IP) protocol.
OEM	The controller supports a graphical console connection through an OEM-specific protocol.

6.24.5.8 HostingRoles:

The hosting roles that this computer system supports.

string	Description
Appliance	The system hosts functionality that supports the system acting as an appliance.
ApplicationServer	The system hosts functionality that supports general purpose applications.
BareMetalServer	The system hosts functionality that supports the system acting as a bare metal server.
ContainerServer	The system hosts functionality that supports the system acting as a container server.
StorageServer	The system hosts functionality that supports the system acting as a storage server.
Switch	The system hosts functionality that supports the system acting as a switch.

string	Description
VirtualMachineServer	The system hosts functionality that supports the system acting as a virtual machine server.

6.24.5.9 IndicatorLED:

The state of the indicator LED, which identifies the system.

string	Description
Blinking	The indicator LED is blinking.
Lit	The indicator LED is lit.
Off	The indicator LED is off.
Unknown *(deprecated v1.1)*	The state of the indicator LED cannot be determined. *Deprecated in v1.1 and later. This value has been deprecated in favor of returning null if the state is unknown.*

6.24.5.10 InterfaceType:

The interface type of the Trusted Module.

string	Description
TCM1_0	Trusted Cryptography Module (TCM) 1.0.
TPM1_2	Trusted Platform Module (TPM) 1.2.
TPM2_0	Trusted Platform Module (TPM) 2.0.

6.24.5.11 InterfaceTypeSelection:

The interface type selection supported by this Trusted Module.

string	Description
BiosSetting	The TrustedModule supports switching InterfaceType through platform software, such as a BIOS configuration attribute.
FirmwareUpdate	The TrustedModule supports switching InterfaceType through a firmware update.
None	The TrustedModule does not support switching the InterfaceType.

string	Description
OemMethod	The TrustedModule supports switching InterfaceType through an OEM proprietary mechanism.

6.24.5.12 LastState:

The last boot progress state.

string	Description
BusInitializationStarted	The system has started initializing the buses.
MemoryInitializationStarted	The system has started initializing the memory.
None	The system is not booting.
OEM	A boot progress state in an OEM-defined format.
OSBootStarted	The operating system has started booting.
OSRunning	The operating system is running.
PCIResourceConfigStarted	The system has started initializing the PCI resources.
PrimaryProcessorInitializationStarted	The system has started initializing the primary processor.
SecondaryProcessorInitializationStarted	The system has started initializing the remaining processors.
SetupEntered *(v1.15+)*	The system has entered the setup utility.
SystemHardwareInitializationComplete	The system has completed initializing all hardware.

6.24.5.13 MemoryMirroring:

The ability and type of memory mirroring that this computer system supports.

string	Description
DIMM	The system supports DIMM mirroring at the DIMM level. Individual DIMMs can be mirrored.
Hybrid	The system supports a hybrid mirroring at the system and DIMM levels. Individual DIMMs can be mirrored.
None	The system does not support DIMM mirroring.
System	The system supports DIMM mirroring at the system level. Individual DIMMs are not paired for mirroring in this mode.

6.24.5.14 PowerMode:

The power mode setting of the computer system.

string	Description
BalancedPerformance	The system performs at the highest speeds while utilization is high and performs at reduced speeds when the utilization is low.
MaximumPerformance	The system performs at the highest speeds possible.
OEM	The system power mode is OEM-defined.
OSControlled	The system power mode is controlled by the operating system.
PowerSaving	The system performs at reduced speeds to save power.
Static	The system power mode is static.

6.24.5.15 PowerRestorePolicy:

The desired power state of the system when power is restored after a power loss.

string	Description
AlwaysOff	The system always remains powered off when power is applied.
AlwaysOn	The system always powers on when power is applied.
LastState	The system returns to its last on or off power state when power is applied.

6.24.5.16 PowerState:

The current power state of the system.

string	Description
Off	The system is powered off, although some components might continue to have AUX power such as management controller.
On	The system is powered on.
PoweringOff	A temporary state between on and off. The power off action can take time while the OS is in the shutdown process.

string	Description
PoweringOn	A temporary state between off and on. This temporary state can be very short.

6.24.5.17 ResetType:

The type of reset.

string	Description
ForceOff	Turn off the unit immediately (non-graceful shutdown).
ForceOn	Turn on the unit immediately.
ForceRestart	Shut down immediately and non-gracefully and restart the system.
GracefulRestart	Shut down gracefully and restart the system.
GracefulShutdown	Shut down gracefully and power off.
Nmi	Generate a diagnostic interrupt, which is usually an NMI on x86 systems, to stop normal operations, complete diagnostic actions, and, typically, halt the system.
On	Turn on the unit.
Pause	Pause execution on the unit but do not remove power. This is typically a feature of virtual machine hypervisors.
PowerCycle	Power cycle the unit. Behaves like a full power removal, followed by a power restore to the resource.
PushPowerButton	Simulate the pressing of the physical power button on this unit.
Resume	Resume execution on the paused unit. This is typically a feature of virtual machine hypervisors.
Suspend	Write the state of the unit to disk before powering off. This allows for the state to be restored when powered back on.

6.24.5.18 SerialConsoleProtocol:

The information about a serial console service that this system provides.

ConsoleEntryCommand *(v1.13+)*	string	*read-only (null)*	The command string passed to the service to select or enter the system's serial console.

HotKeySequenceDisplay *(v1.13+)*	string	*read-only (null)*	The hotkey sequence available for the user to exit the serial console session.
Port *(v1.13+)*	integer	*read-write (null)*	The protocol port.
ServiceEnabled *(v1.13+)*	boolean	*read-write*	An indication of whether the service is enabled for this system.
SharedWithManagerCLI *(v1.13+)*	boolean	*read-only*	Indicates whether the serial console service is shared with access to the manager's command-line interface (CLI).

6.24.5.19 StopBootOnFault:

If the boot should stop on a fault.

string	Description
AnyFault	The system should stop the boot on any fault.
Never	The system performs any normal recovery actions during boot if a fault occurs.

6.24.5.20 SystemType:

The type of computer system that this resource represents.

string	Description
Composed *(v1.4+)*	A computer system constructed by binding resource blocks together.
DPU *(v1.16+)*	A computer system that performs the functions of a data processing unit, such as a SmartNIC.
OS	An operating system instance.
Physical	A computer system.
PhysicallyPartitioned	A hardware-based partition of a computer system.
Virtual	A virtual machine instance running on this system.
VirtuallyPartitioned	A virtual or software-based partition of a computer system.

6.24.5.21 TimeoutAction:

The action to perform when the watchdog timer reaches its timeout value.

string	Description
None	No action taken.
OEM	Perform an OEM-defined action.
PowerCycle	Power cycle the system.
PowerDown	Power down the system.
ResetSystem	Reset the system.

6.24.5.22 TrustedModuleRequiredToBoot:

The Trusted Module boot requirement.

string	Description
Disabled	No Trusted Module requirement to boot.
Required	A functional Trusted Module is required to boot.

6.24.5.23 UUID:

The UUID for this system.

The UUID property contains a value that represents the universal unique identifier number (UUID) of a system.

The UUID property is a string data type. The format of the string is the 36-character string format specified in RFC4122: "xxxxxxxx-xxxx-xxxx-xxxx-xxxxxxxxxxxx". Each x represents a hexadecimal digit (0-f).

Regarding the case of the hex values, RFC4122 specifies that the hex values should be lowercase characters. Most modern scripting languages typically also represent hex values in lowercase characters following the RFC. However, dmidecode, WMI and some Redfish implementations currently use uppercase characters for UUID on output.

6.24.5.24 WarningAction:

The action to perform when the watchdog timer is close to reaching its timeout value. This action typically occurs from three to ten seconds before to the timeout value, but the exact timing is dependent on the implementation.

string	Description
DiagnosticInterrupt	Raise a (typically non-maskable) Diagnostic Interrupt.
MessagingInterrupt	Raise a legacy IPMI messaging interrupt.
None	No action taken.
OEM	Perform an OEM-defined action.
SCI	Raise an interrupt using the ACPI System Control Interrupt (SCI).
SMI	Raise a Systems Management Interrupt (SMI).

6.24.6 Example response

```
{
    "@odata.type": "#ComputerSystem.v1_17_0.ComputerSystem",
    "Id": "437XR1138R2",
    "Name": "WebFrontEnd483",
    "SystemType": "Physical",
    "AssetTag": "Chicago-45Z-2381",
    "Manufacturer": "Contoso",
    "Model": "3500RX",
    "SKU": "8675309",
    "SerialNumber": "437XR1138R2",
    "PartNumber": "224071-J23",
    "Description": "Web Front End node",
    "UUID": "38947555-7742-3448-3784-823347823834",
    "HostName": "web483",
    "Status": {
        "State": "Enabled",
        "Health": "OK",
        "HealthRollup": "OK"
    },
    "HostingRoles": [
        "ApplicationServer"
    ],
    "IndicatorLED": "Off",
    "PowerState": "On",
    "Boot": {
        "BootSourceOverrideEnabled": "Once",
        "BootSourceOverrideTarget": "Pxe",
        "BootSourceOverrideTarget@Redfish.AllowableValues": [
            "None",
            "Pxe",
            "Cd",
            "Usb",
            "Hdd",
```

```
                "BiosSetup",
                "Utilities",
                "Diags",
                "SDCard",
                "UefiTarget"
            ],
            "BootSourceOverrideMode": "UEFI",
            "UefiTargetBootSourceOverride": "/0x31/0x33/0x01/0x01"
        },
        "TrustedModules": [
            {
                "FirmwareVersion": "1.13b",
                "InterfaceType": "TPM1_2",
                "Status": {
                    "State": "Enabled",
                    "Health": "OK"
                }
            }
        ],
        "Oem": {
            "Contoso": {
                "@odata.type": "#Contoso.ComputerSystem",
                "ProductionLocation": {
                    "FacilityName": "PacWest Production Facility",
                    "Country": "USA"
                }
            },
            "Chipwise": {
                "@odata.type": "#Chipwise.ComputerSystem",
                "Style": "Executive"
            }
        },
        "BiosVersion": "P79 v1.33 (02/28/2015)",
        "ProcessorSummary": {
            "Count": 2,
            "Model": "Multi-Core Intel(R) Xeon(R) processor 7xxx Series",
            "Status": {
                "State": "Enabled",
                "Health": "OK",
                "HealthRollup": "OK"
            }
        },
        "MemorySummary": {
            "TotalSystemMemoryGiB": 96,
            "TotalSystemPersistentMemoryGiB": 0,
            "MemoryMirroring": "None",
            "Status": {
                "State": "Enabled",
                "Health": "OK",
                "HealthRollup": "OK"
```

```
            }
        },
        "Bios": {
            "@odata.id": "/redfish/v1/Systems/437XR1138R2/BIOS"
        },
        "Processors": {
            "@odata.id": "/redfish/v1/Systems/437XR1138R2/Processors"
        },
        "Memory": {
            "@odata.id": "/redfish/v1/Systems/437XR1138R2/Memory"
        },
        "EthernetInterfaces": {
            "@odata.id": "/redfish/v1/Systems/437XR1138R2/EthernetInterfaces"
        },
        "SimpleStorage": {
            "@odata.id": "/redfish/v1/Systems/437XR1138R2/SimpleStorage"
        },
        "LogServices": {
            "@odata.id": "/redfish/v1/Systems/437XR1138R2/LogServices"
        },
        "Links": {
            "Chassis": [
                {
                    "@odata.id": "/redfish/v1/Chassis/1U"
                }
            ],
            "ManagedBy": [
                {
                    "@odata.id": "/redfish/v1/Managers/BMC"
                }
            ]
        },
        "Actions": {
            "#ComputerSystem.Reset": {
                "target": "/redfish/v1/Systems/437XR1138R2/Actions/ComputerSystem.Reset",
                "ResetType@Redfish.AllowableValues": [
                    "On",
                    "ForceOff",
                    "GracefulShutdown",
                    "GracefulRestart",
                    "ForceRestart",
                    "Nmi",
                    "ForceOn",
                    "PushPowerButton"
                ]
            },
            "Oem": {
                "#Contoso.Reset": {
                    "target": "/redfish/v1/Systems/437XR1138R2/Oem/Contoso/Actions/Contoso.Reset"
                }
```

```
        }
    },
    "@odata.id": "/redfish/v1/Systems/437XR1138R2"
}
```

6.25 Connection 1.1.0

Version	v1.1	v1.0
Release	2021.1	2020.3

6.25.1 Description

The Connection schema describes the access permissions endpoints, or groups of endpoints, have with other resources in the service.

6.25.2 URIs

/redfish/v1/Fabrics/{FabricId}/Connections/{ConnectionId}

6.25.3 Properties

Property	Type	Attributes	Notes
ConnectionKeys (v1.1+) {	object		The permission keys required to access the specified resources for this connection.
GenZ (v1.1+) {	object	(null)	The Gen-Z-specific permission key information for this connection.
AccessKey (v1.1+)	string	read-write	The Access Key for this connection.
RKeyDomainCheckingEnabled (v1.1+)	boolean	read-write	Indicates whether Region Key domain checking is enabled for this connection.
RKeyReadOnlyKey (v1.1+)	string	read-write	The read-only Region Key for this connection.
RKeyReadWriteKey (v1.1+)	string	read-write	The read-write Region Key for this connection.
}			
}			

Property	Type	Attributes	Notes
ConnectionType	string (enum)	*read-only (null)*	The type of resources this connection specifies. *For the possible property values, see ConnectionType in Property details.*
Links {	object		The links to other resources that are related to this resource.
InitiatorEndpointGroups [{	array		An array of links to the initiator endpoint groups that are associated with this connection.
@odata.id	string	*read-write*	Link to a EndpointGroup resource. See the Links section and the *EndpointGroup* schema for details.
}]			
InitiatorEndpoints [{	array		An array of links to the initiator endpoints that are associated with this connection.
@odata.id	string	*read-write*	Link to a Endpoint resource. See the Links section and the *Endpoint* schema for details.
}]			
Oem {}	object		See the Oem object definition in the Common properties section.
TargetEndpointGroups [{	array		An array of links to the target endpoint groups that are associated with this connection.
@odata.id	string	*read-write*	Link to a EndpointGroup resource. See the Links section and the *EndpointGroup* schema for details.
}]			
TargetEndpoints [{	array		An array of links to the target endpoints that are associated with this connection.
@odata.id	string	*read-write*	Link to a Endpoint resource. See the Links section and the *Endpoint* schema for details.
}]			
}			
MemoryChunkInfo *(v1.1+)* [{	array		The set of memory chunks and access capabilities specified for this connection.
AccessCapabilities *(v1.1+)* [ ]	array (string (enum))	*read-write (null)*	Supported IO access capabilities. *For the possible property values, see AccessCapabilities in Property details.*
AccessState *(v1.1+)*	string (enum)	*read-write (null)*	The access state for this connection. *For the possible property values, see AccessState in Property details.*

Property	Type	Attributes	Notes
MemoryChunk *(v1.1+)* {	object	*(null)*	The specified memory chunk. See the *MemoryChunks* schema for details on this property.
@odata.id	string	*read-write*	Link to a MemoryChunks resource. See the Links section and the *MemoryChunks* schema for details.
}			
}]			
Status {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
VolumeInfo [{	array		The set of volumes and access capabilities specified for this connection.
AccessCapabilities [ ]	array (string (enum))	*read-write (null)*	Supported IO access capabilities. *For the possible property values, see AccessCapabilities in Property details.*
AccessState	string (enum)	*read-write (null)*	The access state for this connection. *For the possible property values, see AccessState in Property details.*
Volume {	object		The specified volume.
@odata.id	string (URI)	*read-only*	The unique identifier for a resource.
}			
}]			

6.25.4 Property details

6.25.4.1 AccessCapabilities:

Supported IO access capabilities.

string	Description
Read	Endpoints are allowed to perform reads from the specified resource.
Write	Endpoints are allowed to perform writes to the specified resource.

6.25.4.2 AccessState:

The access state for this connection.

string	Description
NonOptimized	The resource is in an active and non-optimized state.
Optimized	The resource is in an active and optimized state.
Standby	The resource is in a standby state.
Transitioning	The resource is transitioning to a new state.
Unavailable	The resource is in an unavailable state.

6.25.4.3 ConnectionType:

The type of resources this connection specifies.

string	Description
Memory	A connection to memory related resources.
Storage	A connection to storage related resources, such as volumes.

6.25.5 Example response

```
{
    "@odata.type": "#Connection.v1_1_0.Connection",
    "Id": "1",
    "Name": "Connection info for host 1",
    "ConnectionType": "Storage",
    "VolumeInfo": [
        {
            "AccessCapabilities": [
                "Read",
                "Write"
            ],
            "Volume": {
                "@odata.id": "/redfish/v1/Storage/NVMeoF/Volumes/1"
            }
        },
        {
            "AccessCapabilities": [
                "Read",
                "Write"
            ],
            "Volume": {
                "@odata.id": "/redfish/v1/Storage/NVMeoF/Volumes/3"
```

```
                }
            }
        ],
        "Links": {
            "InitiatorEndpoints": [
                {
                    "@odata.id": "/redfish/v1/Fabrics/NVMeoF/Endpoints/Initiator1"
                }
            ]
        },
        "@odata.id": "/redfish/v1/Fabrics/NVMeoF/Connections/1"
    }
```

6.26 ConnectionMethod 1.0.0

Version	*v1.0*
Release	2020.2

6.26.1 Description

The ConnectionMethod schema describes the protocol, provider, or other method used to communicate to a given access point for a Redfish aggregation service.

6.26.2 URIs

/redfish/v1/AggregationService/ConnectionMethods/*{ConnectionMethodId}*

6.26.3 Properties

Property	Type	Attributes	Notes
ConnectionMethodType	string (enum)	*read-only (null)*	The type of connection method. *For the possible property values, see ConnectionMethodType in Property details.*
ConnectionMethodVariant	string	*read-only (null)*	The variant of connection method.
Links {	object		The links to other resources that are related to this resource.
AggregationSources [{	array		An array of links to the access points using this connection method.

Property	Type	Attributes	Notes
@odata.id	string	*read-only*	Link to a AggregationSource resource. See the Links section and the *AggregationSource* schema for details.
}]			
Oem {}	object		See the Oem object definition in the Common properties section.
}			

6.26.4 Property details

6.26.4.1 ConnectionMethodType:

The type of connection method.

string	Description
IPMI15	IPMI 1.5 connection method.
IPMI20	IPMI 2.0 connection method.
NETCONF	NETCONF connection method.
OEM	OEM connection method.
Redfish	Redfish connection method.
SNMP	SNMP connection method.

6.26.5 Example response

```
{
    "@odata.type": "#ConnectionMethod.v1_0_0.ConnectionMethod",
    "Id": "ConnectionMethod1",
    "Name": "ConnectionMethod One",
    "ConnectionMethodType": "Redfish",
    "ConnectionMethodVariant": "Contoso",
    "Links": {
        "AggregationSources": [
            {
                "@odata.id": "/redfish/v1/AggregationService/AggregationSources/AggregationSource1"
            }
        ]
```

```
    },
    "Actions": {},
    "@odata.id": "/redfish/v1/AggregationService/ConnectionMethods/ConnectionMethod1"
}
```

6.27 Control 1.1.0

Version	*v1.1*	*v1.0*
Release	2021.4	2021.2

6.27.1 Description

The Control schema describes a control point and its properties.

6.27.2 URIs

/redfish/v1/Chassis/*{ChassisId}*/Controls/*{ControlId}*
/redfish/v1/PowerEquipment/FloorPDUs/*{PowerDistributionId}*/Controls/*{ControlId}*
/redfish/v1/PowerEquipment/PowerShelves/*{PowerDistributionId}*/Controls/*{ControlId}*
/redfish/v1/PowerEquipment/RackPDUs/*{PowerDistributionId}*/Controls/*{ControlId}*
/redfish/v1/PowerEquipment/Switchgear/*{PowerDistributionId}*/Controls/*{ControlId}*
/redfish/v1/PowerEquipment/TransferSwitches/*{PowerDistributionId}*/Controls/*{ControlId}*

6.27.3 Properties

Property	Type	Attributes	Notes
Accuracy	number (%)	*read-only (null)*	The estimated percent error of measured versus actual values.
AllowableMax	number	*read-only (null)*	The maximum possible setting for this control.
AllowableMin	number	*read-only (null)*	The minimum possible setting for this control.
AllowableNumericValues [ ]	array (number, null)	*read-only*	The supported values for the set point.

Property	Type	Attributes	Notes
AssociatedSensors [{	array		An array of links to the sensors associated with this control.
@odata.id	string	*read-only*	Link to a Sensor resource. See the Links section and the *Sensor* schema for details.
}]			
ControlDelaySeconds	number	*read-write (null)*	The time delay in seconds before the control will activate once the value has deviated from the set point.
ControlLoop {	object	*(null)*	The control loop details.
CoefficientUpdateTime	string (date-time)	*read-only (null)*	The date and time that the control loop coefficients were changed.
Differential	number	*read-write (null)*	The differential coefficient.
Integral	number	*read-write (null)*	The integral coefficient.
Proportional	number	*read-write (null)*	The proportional coefficient.
}			
ControlMode	string (enum)	*read-write (null)*	The current operating mode of the control. *For the possible property values, see ControlMode in Property details.*
ControlType	string (enum)	*read-only (null)*	The type of control. *For the possible property values, see ControlType in Property details.*
DeadBand	number	*read-write (null)*	The maximum deviation from the set point allowed before the control will activate.
Implementation	string (enum)	*read-only (null)*	The implementation of the control. *For the possible property values, see Implementation in Property details.*
Increment	number	*read-only (null)*	The smallest increment supported for the set point.
Location {}	object		The location information for this control. For property details, see Location.
PhysicalContext	string (enum)	*read-only (null)*	The area or device to which this control applies. *For the possible property values, see PhysicalContext in Property details.*
PhysicalSubContext	string (enum)	*read-only (null)*	The usage or location within a device to which this control applies. *For the possible property values, see PhysicalSubContext in Property details.*
RelatedItem [{	array		An array of links to resources that this control services.

Property	Type	Attributes	Notes
@odata.id	string (URI)	read-only	The unique identifier for a resource.
}]			
Sensor {	object (excerpt)		The sensor reading associated with this control. This object is an excerpt of the *Sensor* resource located at the URI shown in DataSourceUri.
DataSourceUri	string (URI)	read-only (null)	The link to the resource that provides the data for this sensor.
Reading	number	read-only (null)	The sensor value.
}			
SetPoint	number	read-write (null)	The desired set point of the control.
SetPointType	string (enum)	read-only (null)	The set point type used to operate the control. *For the possible property values, see SetPointType in Property details.*
SetPointUnits	string	read-only (null)	The units of the set point.
SetPointUpdateTime	string (date-time)	read-only (null)	The date and time that the set point was changed.
SettingMax	number	read-write (null)	The maximum set point in the allowed range.
SettingMin	number	read-write (null)	The minimum set point in the allowed range.
Status {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.

6.27.4 Property details

6.27.4.1 ControlMode:

The current operating mode of the control.

string	Description
Automatic	Automatically adjust control to meet the set point.

string	Description
Disabled	The control has been disabled.
Manual	No automatic adjustments are made to the control.
Override	User override of the automatic set point value.

6.27.4.2 ControlType:

The type of control.

string	Description
Frequency	Frequency (Hz) control.
FrequencyMHz *(v1.1+)*	Frequency (MHz) control.
Power	Power (W) control or power limit.
Pressure *(v1.1+)*	Pressure (kPa) control.
Temperature	Temperature (C) control or thermostat.

6.27.4.3 Implementation:

The implementation of the control.

string	Description
Direct	The set point directly affects the control value.
Monitored	A physical control that cannot be adjusted through this interface.
Programmable	The set point can be adjusted through this interface.

6.27.4.4 PhysicalContext:

The area or device to which this control applies.

string	Description
Accelerator	An accelerator.

string	Description
ACInput	An AC input.
ACMaintenanceBypassInput	An AC maintenance bypass input.
ACOutput	An AC output.
ACStaticBypassInput	An AC static bypass input.
ACUtilityInput	An AC utility input.
ASIC	An ASIC device, such as a networking chip or chipset component.
Back	The back of the chassis.
Backplane	A backplane within the chassis.
Battery	A battery.
Board	A circuit board.
Chassis	The entire chassis.
ComputeBay	Within a compute bay.
CoolingSubsystem	The entire cooling, or air and liquid, subsystem.
CPU	A processor (CPU).
CPUSubsystem	The entire processor (CPU) subsystem.
DCBus	A DC bus.
Exhaust	The air exhaust point or points or region of the chassis.
ExpansionBay	Within an expansion bay.
Fan	A fan.
FPGA	An FPGA.
Front	The front of the chassis.
GPU	A graphics processor (GPU).
GPUSubsystem	The entire graphics processor (GPU) subsystem.
Intake	The air intake point or points or region of the chassis.
LiquidInlet	The liquid inlet point of the chassis.
LiquidOutlet	The liquid outlet point of the chassis.

string	Description
Lower	The lower portion of the chassis.
Memory	A memory device.
MemorySubsystem	The entire memory subsystem.
Motor	A motor.
NetworkBay	Within a networking bay.
NetworkingDevice	A networking device.
PowerSubsystem	The entire power subsystem.
PowerSupply	A power supply.
PowerSupplyBay	Within a power supply bay.
Pump	A pump.
Rectifier	A rectifier device.
Room	The room.
StorageBay	Within a storage bay.
StorageDevice	A storage device.
SystemBoard	The system board (PCB).
Transceiver	A transceiver.
Transformer	A transformer.
TrustedModule	A trusted module.
Upper	The upper portion of the chassis.
VoltageRegulator	A voltage regulator device.

6.27.4.5 PhysicalSubContext:

The usage or location within a device to which this control applies.

string	Description
Input	The input.
Output	The output.

6.27.4.6 SetPointType:

The set point type used to operate the control.

string	Description
Range	Control uses a range of values.
Single	Control uses a single set point.

6.27.5 Example response

```
{
    "@odata.type": "#Control.v1_1_0.Control",
    "Id": "PowerLimit",
    "Name": "System Power Limit",
    "PhysicalContext": "Chassis",
    "ControlType": "Power",
    "ControlMode": "Automatic",
    "SetPoint": 500,
    "SetPointUnits": "W",
    "AllowableMax": 1000,
    "AllowableMin": 150,
    "Sensor": {
        "Reading": 374,
        "DataSourceUri": "/redfish/v1/Chassis/1U/Sensors/TotalPower"
    },
    "Status": {
        "Health": "OK",
        "State": "Enabled"
    },
    "@odata.id": "/redfish/v1/Chassis/1U/Controls/PowerLimit"
}
```

6.28 Drive 1.14.0

Version	v1.14	v1.13	v1.12	v1.11	v1.10	v1.9	v1.8	v1.7	v1.6	v1.5	v1.4	...
Release	2021.4	2021.2	2020.4	2020.3	2020.2	2019.4	2019.3	2019.2	2019.1	2018.2	2018.1	...

6.28.1 Description

The Drive schema represents a single physical drive for a system, including links to associated volumes.

6.28.2 URIs

/redfish/v1/Chassis/*{ChassisId}*/Drives/*{DriveId}*
/redfish/v1/CompositionService/ResourceBlocks/*{ResourceBlockId}*/Drives/*{DriveId}*
/redfish/v1/CompositionService/ResourceBlocks/*{ResourceBlockId}*/Storage/*{StorageId}*/Drives/*{DriveId}*
/redfish/v1/CompositionService/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/Storage/
{StorageId}/Drives/*{DriveId}*
/redfish/v1/ResourceBlocks/*{ResourceBlockId}*/Drives/*{DriveId}*
/redfish/v1/ResourceBlocks/*{ResourceBlockId}*/Storage/*{StorageId}*/Drives/*{DriveId}*
/redfish/v1/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/Storage/*{StorageId}*/Drives/*{DriveId}*
/redfish/v1/Systems/*{ComputerSystemId}*/Storage/*{StorageId}*/Drives/*{DriveId}*

6.28.3 Properties

Property	Type	Attributes	Notes
Assembly *(v1.3+)* {	object		The link to the assembly associated with this drive. See the *Assembly* schema for details on this property.
@odata.id	string	*read-only*	Link to a Assembly resource. See the Links section and the *Assembly* schema for details.
}			
AssetTag	string	*read-write (null)*	The user-assigned asset tag for this drive.
BlockSizeBytes	integer (bytes)	*read-only (null)*	The size, in bytes, of the smallest addressable unit, or block.
CapableSpeedGbs	number (Gbit/s)	*read-only (null)*	The speed, in gigabit per second (Gbit/s), at which this drive can communicate to a storage controller in ideal conditions.
CapacityBytes	integer (bytes)	*read-only (null)*	The size, in bytes, of this drive.
Certificates *(v1.12+)* {	object		The link to a collection of certificates for device identity and attestation. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *Certificate*. See the Certificate schema for details.
}			

Property	Type	Attributes	Notes
EncryptionAbility	string (enum)	*read-only (null)*	The encryption ability of this drive. *For the possible property values, see EncryptionAbility in Property details.*
EncryptionStatus	string (enum)	*read-only (null)*	The status of the encryption of this drive. *For the possible property values, see EncryptionStatus in Property details.*
EnvironmentMetrics *(v1.12+)* {	object		The link to the environment metrics for this drive. See the *EnvironmentMetrics* schema for details on this property.
@odata.id	string	*read-only*	Link to a EnvironmentMetrics resource. See the Links section and the *EnvironmentMetrics* schema for details.
}			
FailurePredicted	boolean	*read-only (null)*	An indication of whether this drive currently predicts a failure in the near future.
HotspareReplacementMode *(v1.5+)*	string (enum)	*read-write (null)*	The replacement mode for the hot spare drive. *For the possible property values, see HotspareReplacementMode in Property details.*
HotspareType	string (enum)	*read-write (null)*	The type of hot spare that this drive serves as. *For the possible property values, see HotspareType in Property details.*
Identifiers [{ }]	array (object)		The durable names for the drive. For property details, see Identifier.
IndicatorLED *(deprecated v1.11)*	string (enum)	*read-write (null)*	The state of the indicator LED, that identifies the drive. *For the possible property values, see IndicatorLED in Property details. Deprecated in v1.11 and later. This property has been deprecated in favor of the LocationIndicatorActive property.*
Links {	object		The links to other resources that are related to this resource.
Chassis *(v1.2+)* {	object		The link to the chassis that contains this drive. See the *Chassis* schema for details on this property.
@odata.id	string	*read-only*	Link to a Chassis resource. See the Links section and the *Chassis* schema for details.
}			
Endpoints *(v1.1+)* [{	array		An array of links to the endpoints that connect to this drive.
@odata.id	string	*read-only*	Link to a Endpoint resource. See the Links section and the *Endpoint* schema for details.
}]			
NetworkDeviceFunctions *(v1.14+)* [{	array		An array of links to the network device functions that provide network connectivity for this drive.

Property	Type	Attributes	Notes
@odata.id	string	read-only	Link to a NetworkDeviceFunction resource. See the Links section and the *NetworkDeviceFunction* schema for details.
}]			
Oem {}	object		See the Oem object definition in the Common properties section.
PCIeFunctions *(v1.6+)* [{	array		An array of links to the PCIe functions that the drive produces.
@odata.id	string	read-only	Link to a PCIeFunction resource. See the Links section and the *PCIeFunction* schema for details.
}]			
Storage *(v1.13+)* {	object		A link to the storage subsystem to which this drive belongs. See the *Storage* schema for details on this property.
@odata.id	string	read-only	Link to a Storage resource. See the Links section and the *Storage* schema for details.
}			
StoragePools *(v1.8+)* [{	array		An array of links to the storage pools to which this drive belongs.
@odata.id	string (URI)	read-only	The unique identifier for a resource.
}]			
Volumes [{	array		An array of links to the volumes that this drive either wholly or only partially contains.
@odata.id	string (URI)	read-only	The unique identifier for a resource.
}]			
}			
Location *(deprecated v1.4)* [{ }]	array (object)		The location of the drive. For property details, see Location. *Deprecated in v1.4 and later. This property has been deprecated in favor of the singular property PhysicalLocation found in Drive.v1_4_0.*
LocationIndicatorActive *(v1.11+)*	boolean	read-write (null)	An indicator allowing an operator to physically locate this resource.
Manufacturer	string	read-only (null)	The manufacturer of this drive.

Property	Type	Attributes	Notes
Measurements *(v1.12+, deprecated v1.14* [{	array		An array of DSP0274-defined measurement blocks. *Deprecated in v1.14 and later. This property has been deprecated in favor of the ComponentIntegrity resource.*
@odata.id	string	*read-only*	Link to a MeasurementBlock resource. See the Links section and the *SoftwareInventory* schema for details.
}]			
MediaType	string (enum)	*read-only (null)*	The type of media contained in this drive. *For the possible property values, see MediaType in Property details.*
Model	string	*read-only (null)*	The model number for the drive.
Multipath *(v1.9+)*	boolean	*read-only (null)*	An indication of whether the drive is accessible from multiple paths.
NegotiatedSpeedGbs	number (Gbit/s)	*read-only (null)*	The speed, in gigabit per second (Gbit/s), at which this drive currently communicates to the storage controller.
Operations *(v1.1+)* [{	array		The operations currently running on the Drive.
AssociatedTask *(v1.1+)* {	object		The link to the task associated with the operation, if any. See the *Task* schema for details on this property.
@odata.id	string	*read-only*	Link to a Task resource. See the Links section and the *Task* schema for details.
}			
OperationName *(v1.1+)*	string	*read-only (null)*	The name of the operation.
PercentageComplete *(v1.1+)*	integer (%)	*read-only (null)*	The percentage of the operation that has been completed.
}]			
PartNumber	string	*read-only (null)*	The part number for this drive.
PhysicalLocation *(v1.4+)* {}	object		The location of the drive. For property details, see Location.
PredictedMediaLifeLeftPercent	number (%)	*read-only (null)*	The percentage of reads and writes that are predicted to be available for the media.
Protocol	string (enum)	*read-only (null)*	The protocol that this drive currently uses to communicate to the storage controller. *For the possible property values, see Protocol in Property details.*

Property	Type	Attributes	Notes
ReadyToRemove *(v1.10+)*	boolean	*read-write (null)*	An indication of whether the drive is prepared by the system for removal.
Revision	string	*read-only (null)*	The revision of this drive. This is typically the firmware or hardware version of the drive.
RotationSpeedRPM	number ({rev}/min)	*read-only (null)*	The rotation speed of this drive, in revolutions per minute (RPM).
SerialNumber	string	*read-only (null)*	The serial number for this drive.
SKU	string	*read-only (null)*	The SKU for this drive.
Status {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
StatusIndicator	string (enum)	*read-write (null)*	The state of the status indicator, which communicates status information about this drive. *For the possible property values, see StatusIndicator in Property details.*
WriteCacheEnabled *(v1.7+)*	boolean	*read-write (null)*	An indication of whether the drive write cache is enabled.

6.28.4 Actions

6.28.4.1 Reset *(v1.7+)*

Description

This action resets this drive.

Action URI: {Base URI of target resource}/Actions/Drive.Reset

Action parameters

Parameter Name	Type	Attributes	Notes
ResetType	string (enum)	*optional*	The type of reset. *For the possible property values, see ResetType in Property details.*

Request Example

```
{
    "ResetType": "On"
}
```

6.28.4.2 SecureErase

Description

This action securely erases the contents of the drive.

Action URI: {Base URI of target resource}/Actions/Drive.SecureErase

Action parameters

This action takes no parameters.

6.28.5 Property details

6.28.5.1 EncryptionAbility:

The encryption ability of this drive.

string	Description
None	The drive is not capable of self-encryption.
Other	The drive is capable of self-encryption through some other means.
SelfEncryptingDrive	The drive is capable of self-encryption per the Trusted Computing Group's Self Encrypting Drive Standard.

6.28.5.2 EncryptionStatus:

The status of the encryption of this drive.

string	Description
Foreign	The drive is currently encrypted, the data is not accessible to the user, and the system requires user intervention to expose the data.
Locked	The drive is currently encrypted and the data is not accessible to the user. However, the system can unlock the drive automatically.

string	Description
Unecrypted *(deprecated v1.1)*	The drive is not currently encrypted. *Deprecated in v1.1 and later. This value has been deprecated in favor of Unencrypted.*
Unencrypted *(v1.1+)*	The drive is not currently encrypted.
Unlocked	The drive is currently encrypted but the data is accessible to the user in unencrypted form.

6.28.5.3 HotspareReplacementMode:

The replacement mode for the hot spare drive.

string	Description
NonRevertible	The hot spare drive that is commissioned due to a drive failure remains as a data drive and does not revert to a hot spare if the failed drive is replaced.
Revertible	The hot spare drive that is commissioned due to a drive failure reverts to a hot spare after the failed drive is replaced and rebuilt.

6.28.5.4 HotspareType:

The type of hot spare that this drive serves as.

string	Description
Chassis	The drive is serving as a hot spare for all other drives in this storage domain that are contained in the same chassis.
Dedicated	The drive is serving as a hot spare for a user-defined set of drives or volumes. Clients cannot specify this value when modifying the HotspareType property. This value is reported as a result of configuring the spare drives within a volume.
Global	The drive is serving as a hot spare for all other drives in this storage domain.
None	The drive is not a hot spare.

6.28.5.5 IndicatorLED:

The state of the indicator LED, that identifies the drive.

string	Description
Blinking	The indicator LED is blinking.
Lit	The indicator LED is lit.
Off	The indicator LED is off.

6.28.5.6 MediaType:

The type of media contained in this drive.

string	Description
HDD	The drive media type is traditional magnetic platters.
SMR	The drive media type is shingled magnetic recording.
SSD	The drive media type is solid state or flash memory.

6.28.5.7 Protocol:

The protocol that this drive currently uses to communicate to the storage controller.

string	Description
AHCI	Advanced Host Controller Interface (AHCI).
DisplayPort	DisplayPort.
DVI	DVI.
Ethernet	Ethernet.
FC	Fibre Channel.
FCoE	Fibre Channel over Ethernet (FCoE).
FCP	Fibre Channel Protocol for SCSI.
FICON	FIbre CONnection (FICON).
FTP	File Transfer Protocol (FTP).
GenZ	GenZ.
HDMI	HDMI.

string	Description
HTTP	Hypertext Transport Protocol (HTTP).
HTTPS	Hypertext Transfer Protocol Secure (HTTPS).
I2C	Inter-Integrated Circuit Bus.
InfiniBand	InfiniBand.
iSCSI	Internet SCSI.
iWARP	Internet Wide Area RDMA Protocol (iWARP).
MultiProtocol	Multiple Protocols.
NFSv3	Network File System (NFS) version 3.
NFSv4	Network File System (NFS) version 4.
NVLink	NVLink.
NVMe	Non-Volatile Memory Express (NVMe).
NVMeOverFabrics	NVMe over Fabrics.
OEM	OEM-specific.
PCIe	PCI Express.
RoCE	RDMA over Converged Ethernet Protocol.
RoCEv2	RDMA over Converged Ethernet Protocol Version 2.
SAS	Serial Attached SCSI.
SATA	Serial AT Attachment.
SFTP	SSH File Transfer Protocol (SFTP).
SMB	Server Message Block (SMB). Also known as the Common Internet File System (CIFS).
TCP	Transmission Control Protocol (TCP).
TFTP	Trivial File Transfer Protocol (TFTP).
UDP	User Datagram Protocol (UDP).
UHCI	Universal Host Controller Interface (UHCI).
USB	Universal Serial Bus (USB).
VGA	VGA.

6.28.5.8 ResetType:

The type of reset.

string	Description
ForceOff	Turn off the unit immediately (non-graceful shutdown).
ForceOn	Turn on the unit immediately.
ForceRestart	Shut down immediately and non-gracefully and restart the system.
GracefulRestart	Shut down gracefully and restart the system.
GracefulShutdown	Shut down gracefully and power off.
Nmi	Generate a diagnostic interrupt, which is usually an NMI on x86 systems, to stop normal operations, complete diagnostic actions, and, typically, halt the system.
On	Turn on the unit.
Pause	Pause execution on the unit but do not remove power. This is typically a feature of virtual machine hypervisors.
PowerCycle	Power cycle the unit. Behaves like a full power removal, followed by a power restore to the resource.
PushPowerButton	Simulate the pressing of the physical power button on this unit.
Resume	Resume execution on the paused unit. This is typically a feature of virtual machine hypervisors.
Suspend	Write the state of the unit to disk before powering off. This allows for the state to be restored when powered back on.

6.28.5.9 StatusIndicator:

The state of the status indicator, which communicates status information about this drive.

string	Description
Fail	The drive has failed.
Hotspare	The drive has been marked to automatically rebuild and replace a failed drive.
InACriticalArray	The array to which this drive belongs has been degraded.
InAFailedArray	The array to which this drive belongs has failed.
OK	The drive is OK.

string	Description
PredictiveFailureAnalysis	The drive still works but is predicted to fail soon.
Rebuild	The drive is being rebuilt.

6.28.6 Example response

```
{
    "@odata.type": "#Drive.v1_14_0.Drive",
    "Id": "3D58ECBC375FD9F2",
    "Name": "Drive Sample",
    "IndicatorLED": "Lit",
    "Model": "C123",
    "Revision": "100A",
    "Status": {
        "State": "Enabled",
        "Health": "OK"
    },
    "CapacityBytes": 899527000000,
    "FailurePredicted": false,
    "Protocol": "SAS",
    "MediaType": "HDD",
    "Manufacturer": "Contoso",
    "SerialNumber": "1234568",
    "PartNumber": "C123-1111",
    "Identifiers": [
        {
            "DurableNameFormat": "NAA",
            "DurableName": "32ADF365C6C1B7BD"
        }
    ],
    "HotspareType": "None",
    "EncryptionAbility": "SelfEncryptingDrive",
    "EncryptionStatus": "Unlocked",
    "RotationSpeedRPM": 15000,
    "BlockSizeBytes": 512,
    "CapableSpeedGbs": 12,
    "NegotiatedSpeedGbs": 12,
    "Links": {
        "Volumes": [
            {
                "@odata.id": "/redfish/v1/Systems/437XR1138R2/Storage/1/Volumes/2"
            },
            {
                "@odata.id": "/redfish/v1/Systems/437XR1138R2/Storage/1/Volumes/3"
            }
        ]
```

```
    },
    "Actions": {
        "#Drive.SecureErase": {
            "target": "/redfish/v1/Systems/437XR1138R2/Storage/1/Drives/3D58ECBC375FD9F2/Actions/Drive.SecureErase"
        }
    },
    "@odata.id": "/redfish/v1/Systems/437XR1138R2/Storage/1/Drives/3D58ECBC375FD9F2"
}
```

6.29 Endpoint 1.6.1

Version	v1.6	v1.5	v1.4	v1.3	v1.2	v1.1	v1.0
Release	2021.1	2020.3	2019.4	2018.3	2018.2	2017.3	2016.2

6.29.1 Description

The Endpoint schema contains the properties of an endpoint resource that represents the properties of an entity that sends or receives protocol-defined messages over a transport.

6.29.2 URIs

/redfish/v1/Fabrics/{*FabricId*}/Endpoints/{*EndpointId*}
/redfish/v1/Storage/{*StorageId*}/Endpoints/{*EndpointId*}
/redfish/v1/StorageServices/{*StorageServiceId*}/Endpoints/{*EndpointId*}

6.29.3 Properties

Property	Type	Attributes	Notes
ConnectedEntities [{	array		All the entities connected to this endpoint.
EntityLink {	object		The link to the associated entity.
@odata.id	string (URI)	*read-only*	The unique identifier for a resource.
}			
EntityPciId {	object		The PCI ID of the connected entity.

Property	Type	Attributes	Notes
ClassCode *(v1.2+)*	string	*read-only (null)*	The Class Code, Subclass, and Programming Interface code of this PCIe function.
DeviceId	string	*read-only (null)*	The Device ID of this PCIe function.
FunctionNumber *(v1.2+)*	integer	*read-only (null)*	The PCI ID of the connected entity.
SubsystemId	string	*read-only (null)*	The Subsystem ID of this PCIe function.
SubsystemVendorId	string	*read-only (null)*	The Subsystem Vendor ID of this PCIe function.
VendorId	string	*read-only (null)*	The Vendor ID of this PCIe function.
}			
EntityRole	string (enum)	*read-only (null)*	The role of the connected entity. *For the possible property values, see EntityRole in Property details.*
EntityType	string (enum)	*read-only (null)*	The type of the connected entity. *For the possible property values, see EntityType in Property details.*
GenZ *(v1.4+)* {	object	*(null)*	The Gen-Z related properties for the entity.
AccessKey *(v1.4+, deprecated v1.6*	string	*read-write (null)*	The Access Key for the entity. *Deprecated in v1.6 and later. This property has been deprecated in favor of the ConnectionKeys property in the Connection resource.*
GCID *(v1.4+)* {	object	*(null)*	The Global Component ID (GCID) for the entity.
CID *(v1.4+)*	string	*read-write (null)*	The component identifier portion of the GCID for the entity.
SID *(v1.4+)*	string	*read-write (null)*	The subnet identifier portion of the GCID for the entity.
}			
RegionKey *(v1.4+, deprecated v1.6*	string	*read-write (null)*	The Region Key for the entity. *Deprecated in v1.6 and later. This property has been deprecated in favor of the ConnectionKeys property in the Connection resource.*
}			

Property	Type	Attributes	Notes
Identifiers [{ }]	array (object)		Identifiers for the remote entity. For property details, see Identifier.
Oem {}	object		See the Oem object definition in the Common properties section.
PciClassCode *(deprecated v1.2)*	string	*read-only (null)*	The Class Code, Subclass, and Programming Interface code of this PCIe function. *Deprecated in v1.2 and later. This property has been deprecated in favor of the ClassCode property inside the EntityPciId object.*
PciFunctionNumber *(deprecated v1.2)*	integer	*read-only (null)*	The PCI ID of the connected entity. *Deprecated in v1.2 and later. This property has been deprecated in favor of the FunctionNumber property inside the EntityPciId object.*
}]			
EndpointProtocol	string (enum)	*read-only (null)*	The protocol supported by this endpoint. *For the possible property values, see EndpointProtocol in Property details.*
HostReservationMemoryBytes	integer (bytes)	*read-only (null)*	The amount of memory in bytes that the host should allocate to connect to this endpoint.
Identifiers [{ }]	array (object)		Identifiers for this endpoint. For property details, see Identifier.
IPTransportDetails *(v1.1+)* [{	array		An array of details for each IP transport supported by this endpoint. The array structure can model multiple IP addresses for this endpoint.
IPv4Address *(v1.1+)* {}	object		The IPv4 addresses assigned to the endpoint. For property details, see IPv4Address.
IPv6Address *(v1.1+)* {}	object		The IPv6 addresses assigned to the endpoint. For property details, see IPv6Address.
Port *(v1.1+)*	number	*read-only*	The UDP or TCP port number used by the endpoint.
TransportProtocol *(v1.1+)*	string (enum)	*read-only*	The protocol used by the connection entity. *For the possible property values, see TransportProtocol in Property details.*
}]			
Links {	object		The links to other resources that are related to this resource.
AddressPools *(v1.4+)* [{	array		An array of links to the address pools associated with this endpoint.
@odata.id	string	*read-write*	Link to a AddressPool resource. See the Links section and the *AddressPool* schema for details.
}]			
ConnectedPorts *(v1.4+)* [{	array		An array of links to the ports that connect to this endpoint.

Property	Type	Attributes	Notes
@odata.id	string	*read-only*	Link to a Port resource. See the Links section and the *Port* schema for details.
}]			
Connections *(v1.5+)* [{	array		The connections to which this endpoint belongs.
@odata.id	string	*read-only*	Link to a Connection resource. See the Links section and the *Connection* schema for details.
}]			
MutuallyExclusiveEndpoints [{	array		An array of links to the endpoints that cannot be used in zones if this endpoint is in a zone.
@odata.id	string	*read-only*	Link to another Endpoint resource.
}]			
NetworkDeviceFunction *(v1.1+)* [{	array		When NetworkDeviceFunction resources are present, this array contains links to the network device functions that connect to this endpoint.
@odata.id	string	*read-only*	Link to a NetworkDeviceFunction resource. See the Links section and the *NetworkDeviceFunction* schema for details.
}]			
Oem {}	object		See the Oem object definition in the Common properties section.
Ports [{	array		An array of links to the physical ports associated with this endpoint.
@odata.id	string	*read-only*	Link to a Port resource. See the Links section and the *Port* schema for details.
}]			
Zones *(v1.6+)* [{	array		The zones to which this endpoint belongs.
@odata.id	string	*read-only*	Link to a Zone resource. See the Links section and the *Zone* schema for details.
}]			
}			
PciId {	object		The PCI ID of the endpoint.
ClassCode *(v1.2+)*	string	*read-only (null)*	The Class Code, Subclass, and Programming Interface code of this PCIe function.
DeviceId	string	*read-only (null)*	The Device ID of this PCIe function.

Property	Type	Attributes	Notes
FunctionNumber *(v1.2+)*	integer	*read-only (null)*	The PCI ID of the connected entity.
SubsystemId	string	*read-only (null)*	The Subsystem ID of this PCIe function.
SubsystemVendorId	string	*read-only (null)*	The Subsystem Vendor ID of this PCIe function.
VendorId	string	*read-only (null)*	The Vendor ID of this PCIe function.
}			
Redundancy [{ }]	array (object)		Redundancy information for the lower-level endpoints supporting this endpoint. For property details, see Redundancy.
Status {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.

6.29.4 Property details

6.29.4.1 EndpointProtocol:

The protocol supported by this endpoint.

string	Description
AHCI	Advanced Host Controller Interface (AHCI).
DisplayPort	DisplayPort.
DVI	DVI.
Ethernet	Ethernet.
FC	Fibre Channel.
FCoE	Fibre Channel over Ethernet (FCoE).
FCP	Fibre Channel Protocol for SCSI.
FICON	FIbre CONnection (FICON).
FTP	File Transfer Protocol (FTP).
GenZ	GenZ.

string	Description
HDMI	HDMI.
HTTP	Hypertext Transport Protocol (HTTP).
HTTPS	Hypertext Transfer Protocol Secure (HTTPS).
I2C	Inter-Integrated Circuit Bus.
InfiniBand	InfiniBand.
iSCSI	Internet SCSI.
iWARP	Internet Wide Area RDMA Protocol (iWARP).
MultiProtocol	Multiple Protocols.
NFSv3	Network File System (NFS) version 3.
NFSv4	Network File System (NFS) version 4.
NVLink	NVLink.
NVMe	Non-Volatile Memory Express (NVMe).
NVMeOverFabrics	NVMe over Fabrics.
OEM	OEM-specific.
PCIe	PCI Express.
RoCE	RDMA over Converged Ethernet Protocol.
RoCEv2	RDMA over Converged Ethernet Protocol Version 2.
SAS	Serial Attached SCSI.
SATA	Serial AT Attachment.
SFTP	SSH File Transfer Protocol (SFTP).
SMB	Server Message Block (SMB). Also known as the Common Internet File System (CIFS).
TCP	Transmission Control Protocol (TCP).
TFTP	Trivial File Transfer Protocol (TFTP).
UDP	User Datagram Protocol (UDP).
UHCI	Universal Host Controller Interface (UHCI).
USB	Universal Serial Bus (USB).

string	Description
VGA	VGA.

6.29.4.2 EntityRole:

The role of the connected entity.

string	Description
Both	The entity can both send and receive commands, messages, and other requests to or from other entities on the fabric.
Initiator	The entity sends commands, messages, or other types of requests to other entities on the fabric, but cannot receive commands from other entities.
Target	The entity receives commands, messages, or other types of requests from other entities on the fabric, but cannot send commands to other entities.

6.29.4.3 EntityType:

The type of the connected entity.

string	Description
AccelerationFunction *(v1.3+)*	The entity is an acceleration function realized through a device, such as an FPGA.
Bridge	The entity is a PCI(e) bridge.
DisplayController	The entity is a display controller.
Drive	The entity is a drive.
FabricBridge *(v1.4+)*	The entity is a fabric bridge.
Manager *(v1.5+)*	The entity is a manager.
MediaController *(v1.4+)*	The entity is a media controller.
MemoryChunk *(v1.4+)*	The entity is a memory chunk.
NetworkController	The entity is a network controller.
Processor	The entity is a processor.
RootComplex	The entity is a PCI(e) root complex.

string	Description
StorageExpander	The entity is a storage expander.
StorageInitiator	The entity is a storage initiator.
StorageSubsystem *(v1.6+)*	The entity is a storage subsystem.
Switch *(v1.4+)*	The entity is a switch, not an expander. Use `Expander` for expanders.
Volume *(v1.1+)*	The entity is a volume.

6.29.4.4 TransportProtocol:

The protocol used by the connection entity.

string	Description
AHCI	Advanced Host Controller Interface (AHCI).
DisplayPort	DisplayPort.
DVI	DVI.
Ethernet	Ethernet.
FC	Fibre Channel.
FCoE	Fibre Channel over Ethernet (FCoE).
FCP	Fibre Channel Protocol for SCSI.
FICON	FIbre CONnection (FICON).
FTP	File Transfer Protocol (FTP).
GenZ	GenZ.
HDMI	HDMI.
HTTP	Hypertext Transport Protocol (HTTP).
HTTPS	Hypertext Transfer Protocol Secure (HTTPS).
I2C	Inter-Integrated Circuit Bus.
InfiniBand	InfiniBand.
iSCSI	Internet SCSI.
iWARP	Internet Wide Area RDMA Protocol (iWARP).

string	Description
MultiProtocol	Multiple Protocols.
NFSv3	Network File System (NFS) version 3.
NFSv4	Network File System (NFS) version 4.
NVLink	NVLink.
NVMe	Non-Volatile Memory Express (NVMe).
NVMeOverFabrics	NVMe over Fabrics.
OEM	OEM-specific.
PCIe	PCI Express.
RoCE	RDMA over Converged Ethernet Protocol.
RoCEv2	RDMA over Converged Ethernet Protocol Version 2.
SAS	Serial Attached SCSI.
SATA	Serial AT Attachment.
SFTP	SSH File Transfer Protocol (SFTP).
SMB	Server Message Block (SMB). Also known as the Common Internet File System (CIFS).
TCP	Transmission Control Protocol (TCP).
TFTP	Trivial File Transfer Protocol (TFTP).
UDP	User Datagram Protocol (UDP).
UHCI	Universal Host Controller Interface (UHCI).
USB	Universal Serial Bus (USB).
VGA	VGA.

6.29.5 Example response

```
{
    "@odata.type": "#Endpoint.v1_6_1.Endpoint",
    "Id": "Drive1",
    "Name": "SAS Drive",
    "Description": "The SAS Drive in Enclosure 2 Bay 0",
    "EndpointProtocol": "SAS",
```

```
    "ConnectedEntities": [
        {
            "EntityType": "Drive",
            "EntityRole": "Target",
            "Identifiers": [
                {
                    "DurableNameFormat": "NAA",
                    "DurableName": "32ADF365C6C1B7C3"
                }
            ],
            "Oem": {}
        }
    ],
    "Links": {
        "MutuallyExclusiveEndpoints": [
            {
                "@odata.id": "/redfish/v1/Fabrics/SAS/Endpoints/Enclosure2"
            }
        ],
        "Ports": [
            {
                "@odata.id": "/redfish/v1/Fabrics/SAS/Switches/Switch1/Ports/8"
            },
            {
                "@odata.id": "/redfish/v1/Fabrics/SAS/Switches/Switch2/Ports/8"
            }
        ],
        "Oem": {}
    },
    "Oem": {},
    "@odata.id": "/redfish/v1/Fabrics/SAS/Endpoints/Drive1"
}
```

6.30 EndpointGroup 1.3.2

Version	v1.3	v1.2	v1.1	v1.0
Release	2020.3	WIP v1.1.0	WIP v1.0.5	TP v1.0.3

6.30.1 Description

The EndpointGroup schema describes group of endpoints that are managed as a unit.

6.30.2 URIs

/redfish/v1/Fabrics/*{FabricId}*/EndpointGroups/*{EndpointGroupId}*
/redfish/v1/Storage/*{StorageId}*/EndpointGroups/*{EndpointGroupId}*
/redfish/v1/StorageServices/*{StorageServiceId}*/EndpointGroups/*{EndpointGroupId}*
/redfish/v1/Systems/*{ComputerSystemId}*/Storage/*{StorageId}*/EndpointGroups/*{EndpointGroupId}*

6.30.3 Properties

Property	Type	Attributes	Notes
AccessState *(deprecated v1.3)*	string (enum)	*read-write (null)*	The access state for this group. *For the possible property values, see AccessState in Property details. Deprecated in v1.3 and later. This property has been deprecated in favor of the AccessState property in the connection resource.*
Endpoints *(deprecated v1.3)* [{	array		The endpoints in this endpoint group. *Deprecated in v1.3 and later. This property has been deprecated in favor of the Endpoints property within Links.*
@odata.id	string	*read-write*	Link to a Endpoint resource. See the Links section and the *Endpoint* schema for details.
}]			
GroupType	string (enum)	*read-write (null)*	The endpoint group type. *For the possible property values, see GroupType in Property details.*
Identifier {}	object		The durable name for the endpoint group. For property details, see Identifier.
Links {	object		The links to other resources that are related to this resource.
Connections *(v1.3+)* [{	array		The connections to which this endpoint group belongs.
@odata.id	string	*read-only*	Link to a Connection resource. See the Links section and the *Connection* schema for details.
}]			
Endpoints *(v1.3+)* [{	array		The endpoints in this endpoint group.
@odata.id	string	*read-write*	Link to a Endpoint resource. See the Links section and the *Endpoint* schema for details.
}]			
Oem {}	object		See the Oem object definition in the Common properties section.
}			

Property	Type	Attributes	Notes
Preferred *(deprecated v1.2)*	boolean	*read-write (null)*	An indication if access to the resources through the endpoint group is preferred. *Deprecated in v1.2 and later. This property has been deprecated in favor of the AccessState property in the connection resource.*
TargetEndpointGroupIdentifier	integer	*read-write (null)*	The SCSI-defined identifier for this group.

6.30.4 Property details

6.30.4.1 AccessState:

The access state for this group.

string	Description
NonOptimized	The endpoints are in an active and non-optimized state.
Optimized	The endpoints are in an active and optimized state.
Standby	The endpoints are in a standby state.
Transitioning	The endpoints are transitioning to a new state.
Unavailable	The endpoints are in an unavailable state.

6.30.4.2 GroupType:

The endpoint group type.

string	Description
Client *(deprecated v1.3)*	The group contains the client (initiator) endpoints. *Deprecated in v1.3 and later. This value has been deprecated in favor of* `Initiator` .
Initiator *(v1.3+)*	The group contains the initiator endpoints.
Server *(deprecated v1.3)*	The group contains the server (target) endpoints. *Deprecated in v1.3 and later. This value has been deprecated in favor of* `Target` .
Target *(v1.3+)*	The group contains the target endpoints.

6.30.5 Example response

```json
{
    "@odata.type": "#EndpointGroup.v1_3_2.EndpointGroup",
    "Id": "1",
    "Name": "Endpoint group for all initiators",
    "GroupType": "Initiator",
    "Links": {
        "Endpoints": [
            {
                "@odata.id": "/redfish/v1/Fabrics/NVMeoF/Endpoints/Initiator1"
            },
            {
                "@odata.id": "/redfish/v1/Fabrics/NVMeoF/Endpoints/Initiator2"
            }
        ],
        "Connections": [
            {
                "@odata.id": "/redfish/v1/Fabrics/NVMeoF/Connections/3"
            }
        ]
    },
    "@odata.id": "/redfish/v1/Fabrics/NVMeoF/EndpointGroups/1"
}
```

6.31 EnvironmentMetrics 1.2.0

Version	v1.2	v1.1	v1.0
Release	2021.4	2021.2	2020.4

6.31.1 Description

The EnvironmentMetrics schema represents the environmental metrics of a device.

6.31.2 URIs

/redfish/v1/Chassis/{*ChassisId*}/Drives/{*DriveId*}/EnvironmentMetrics
/redfish/v1/Chassis/{*ChassisId*}/EnvironmentMetrics
/redfish/v1/Chassis/{*ChassisId*}/MediaControllers/{*MediaControllerId*}/EnvironmentMetrics
/redfish/v1/Chassis/{*ChassisId*}/MediaControllers/{*MediaControllerId*}/Ports/{*PortId*}/EnvironmentMetrics
/redfish/v1/Chassis/{*ChassisId*}/Memory/{*MemoryId*}/EnvironmentMetrics

/redfish/v1/Chassis/*{ChassisId}*/NetworkAdapters/*{NetworkAdapterId}*/EnvironmentMetrics
/redfish/v1/Chassis/*{ChassisId}*/NetworkAdapters/*{NetworkAdapterId}*/Ports/*{PortId}*/EnvironmentMetrics
/redfish/v1/Chassis/*{ChassisId}*/PCIeDevices/*{PCIeDeviceId}*/EnvironmentMetrics
/redfish/v1/CompositionService/ResourceBlocks/*{ResourceBlockId}*/Drives/*{DriveId}*/EnvironmentMetrics
/redfish/v1/CompositionService/ResourceBlocks/*{ResourceBlockId}*/Memory/*{MemoryId}*/EnvironmentMetrics
/redfish/v1/CompositionService/ResourceBlocks/*{ResourceBlockId}*/Processors/*{ProcessorId}*/EnvironmentMetrics
/redfish/v1/CompositionService/ResourceBlocks/*{ResourceBlockId}*/Storage/*{StorageId}*/Controllers/*{ControllerId}*/
EnvironmentMetrics
/redfish/v1/CompositionService/ResourceBlocks/*{ResourceBlockId}*/Storage/*{StorageId}*/Controllers/
{StorageControllerId}/Ports/*{PortId}*/EnvironmentMetrics
/redfish/v1/CompositionService/ResourceBlocks/*{ResourceBlockId}*/Storage/*{StorageId}*/Drives/*{DriveId}*/
EnvironmentMetrics
/redfish/v1/CompositionService/ResourceBlocks/*{ResourceBlockId}*/Storage/*{StorageId}*/StorageControllers/
{StorageControllerId}/Ports/*{PortId}*/EnvironmentMetrics
/redfish/v1/CompositionService/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/Memory/
{MemoryId}/EnvironmentMetrics
/redfish/v1/CompositionService/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/PCIeDevices/
{PCIeDeviceId}/EnvironmentMetrics
/redfish/v1/CompositionService/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/Processors/
{ProcessorId}/EnvironmentMetrics
/redfish/v1/CompositionService/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/Storage/
{StorageId}/Controllers/*{ControllerId}*/EnvironmentMetrics
/redfish/v1/CompositionService/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/Storage/
{StorageId}/Controllers/*{StorageControllerId}*/Ports/*{PortId}*/EnvironmentMetrics
/redfish/v1/CompositionService/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/Storage/
{StorageId}/Drives/*{DriveId}*/EnvironmentMetrics
/redfish/v1/CompositionService/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/Storage/
{StorageId}/StorageControllers/*{StorageControllerId}*/Ports/*{PortId}*/EnvironmentMetrics
/redfish/v1/Fabrics/*{FabricId}*/Switches/*{SwitchId}*/EnvironmentMetrics
/redfish/v1/Fabrics/*{FabricId}*/Switches/*{SwitchId}*/Ports/*{PortId}*/EnvironmentMetrics
/redfish/v1/Facilities/*{FacilityId}*/AmbientMetrics
/redfish/v1/Facilities/*{FacilityId}*/EnvironmentMetrics
/redfish/v1/ResourceBlocks/*{ResourceBlockId}*/Drives/*{DriveId}*/EnvironmentMetrics
/redfish/v1/ResourceBlocks/*{ResourceBlockId}*/Memory/*{MemoryId}*/EnvironmentMetrics
/redfish/v1/ResourceBlocks/*{ResourceBlockId}*/Processors/*{ProcessorId}*/EnvironmentMetrics
/redfish/v1/ResourceBlocks/*{ResourceBlockId}*/Storage/*{StorageId}*/Controllers/*{ControllerId}*/EnvironmentMetrics
/redfish/v1/ResourceBlocks/*{ResourceBlockId}*/Storage/*{StorageId}*/Controllers/*{StorageControllerId}*/Ports/*{PortId}*/
EnvironmentMetrics
/redfish/v1/ResourceBlocks/*{ResourceBlockId}*/Storage/*{StorageId}*/Drives/*{DriveId}*/EnvironmentMetrics
/redfish/v1/ResourceBlocks/*{ResourceBlockId}*/Storage/*{StorageId}*/StorageControllers/*{StorageControllerId}*/Ports/
{PortId}/EnvironmentMetrics
/redfish/v1/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/Memory/*{MemoryId}*/
EnvironmentMetrics
/redfish/v1/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/PCIeDevices/*{PCIeDeviceId}*/

EnvironmentMetrics
/redfish/v1/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/Processors/*{ProcessorId}*/
EnvironmentMetrics
/redfish/v1/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/Storage/*{StorageId}*/Controllers/
{ControllerId}/EnvironmentMetrics
/redfish/v1/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/Storage/*{StorageId}*/Controllers/
{StorageControllerId}/Ports/*{PortId}*/EnvironmentMetrics
/redfish/v1/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/Storage/*{StorageId}*/Drives/*{DriveId}*/
EnvironmentMetrics
/redfish/v1/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/Storage/*{StorageId}*/
StorageControllers/*{StorageControllerId}*/Ports/*{PortId}*/EnvironmentMetrics
/redfish/v1/Storage/*{StorageId}*/Controllers/*{ControllerId}*/EnvironmentMetrics
/redfish/v1/Storage/*{StorageId}*/Controllers/*{StorageControllerId}*/Ports/*{PortId}*/EnvironmentMetrics
/redfish/v1/Storage/*{StorageId}*/StorageControllers/*{StorageControllerId}*/Ports/*{PortId}*/EnvironmentMetrics
/redfish/v1/Systems/*{ComputerSystemId}*/FabricAdapters/*{FabricAdapterId}*/Ports/*{PortId}*/EnvironmentMetrics
/redfish/v1/Systems/*{ComputerSystemId}*/Memory/*{MemoryId}*/EnvironmentMetrics
/redfish/v1/Systems/*{ComputerSystemId}*/PCIeDevices/*{PCIeDeviceId}*/EnvironmentMetrics
/redfish/v1/Systems/*{ComputerSystemId}*/Processors/*{ProcessorId}*/EnvironmentMetrics
/redfish/v1/Systems/*{ComputerSystemId}*/Storage/*{StorageId}*/Controllers/*{ControllerId}*/EnvironmentMetrics
/redfish/v1/Systems/*{ComputerSystemId}*/Storage/*{StorageId}*/Controllers/*{StorageControllerId}*/Ports/*{PortId}*/
EnvironmentMetrics
/redfish/v1/Systems/*{ComputerSystemId}*/Storage/*{StorageId}*/Drives/*{DriveId}*/EnvironmentMetrics
/redfish/v1/Systems/*{ComputerSystemId}*/Storage/*{StorageId}*/StorageControllers/*{StorageControllerId}*/Ports/
{PortId}/EnvironmentMetrics

6.31.3 Properties

Property	Type	Attributes	Notes
AbsoluteHumidity *(v1.2+)* {}	object		Absolute humidity (g/cu m). For more information about this property, see SensorExcerpt in Property Details.
DewPointCelsius *(v1.1+)* {}	object		The dew point temperature (C). For more information about this property, see SensorExcerpt in Property Details.
EnergyJoules *(v1.2+)* {}	object		Energy consumption (J). For more information about this property, see SensorExcerpt in Property Details.
EnergykWh {	object (excerpt)		Energy consumption (kWh). This object is an excerpt of the *Sensor* resource located at the URI shown in DataSourceUri.
ApparentkVAh *(v1.5+)*	number (kV.A.h)	*read-only (null)*	Apparent energy (kVAh).
DataSourceUri	string (URI)	*read-only (null)*	The link to the resource that provides the data for this sensor.

Property	Type	Attributes	Notes
LifetimeReading *(v1.1+)*	number	*read-only (null)*	The total accumulation value for this sensor.
ReactivekVARh *(v1.5+)*	number (kV.A.h)	*read-only (null)*	Reactive energy (kVARh).
Reading	number	*read-only (null)*	The sensor value.
SensorResetTime	string (date-time)	*read-only (null)*	The date and time when the time-based properties were last reset.
}			
FanSpeedsPercent [{	array (excerpt)		Fan speeds (percent). This object is an excerpt of the *Sensor* resource located at the URI shown in DataSourceUri.
DataSourceUri	string (URI)	*read-only (null)*	The link to the resource that provides the data for this sensor.
DeviceName *(v1.2+)*	string	*read-only (null)*	The name of the device.
PhysicalContext	string (enum)	*read-only (null)*	The area or device to which this sensor measurement applies. *For the possible property values, see PhysicalContext in Property details.*
PhysicalSubContext	string (enum)	*read-only (null)*	The usage or location within a device to which this sensor measurement applies. *For the possible property values, see PhysicalSubContext in Property details.*
Reading	number	*read-only (null)*	The sensor value.
SpeedRPM *(v1.2+)*	number ({rev}/min)	*read-only (null)*	The rotational speed.
}]			
HumidityPercent {}	object		Humidity (percent). For more information about this property, see SensorExcerpt in Property Details.
PowerLimitWatts *(v1.1+)* {	object (excerpt)		Power limit (W). This object is an excerpt of the *Control* resource located at the URI shown in DataSourceUri.
AllowableMax	number	*read-only (null)*	The maximum possible setting for this control.
AllowableMin	number	*read-only (null)*	The minimum possible setting for this control.
ControlMode	string (enum)	*read-write (null)*	The current operating mode of the control. *For the possible property values, see ControlMode in Property details.*

Property	Type	Attributes	Notes
DataSourceUri	string (URI)	*read-only (null)*	The link to the resource that provides the data for this control.
Reading	number	*read-only (null)*	The reading of the sensor associated with this control.
ReadingUnits	string	*read-only (null)*	The units of the sensor reading associated with this control.
SetPoint	number	*read-write (null)*	The desired set point of the control.
}			
PowerLoadPercent *(v1.1+)* {}	object		The power load (percent) for this device. For more information about this property, see SensorExcerpt in Property Details.
PowerWatts {	object (excerpt)		Power consumption (W). This object is an excerpt of the *Sensor* resource located at the URI shown in DataSourceUri.
ApparentVA	number (V.A)	*read-only (null)*	The product of voltage and current for an AC circuit, in volt-ampere units.
DataSourceUri	string (URI)	*read-only (null)*	The link to the resource that provides the data for this sensor.
PhaseAngleDegrees *(v1.5+)*	number	*read-only (null)*	The phase angle (degrees) between the current and voltage waveforms.
PowerFactor	number	*read-only (null)*	The power factor for this sensor.
ReactiveVAR	number (V.A)	*read-only (null)*	The square root of the difference term of squared apparent VA and squared power (Reading) for a circuit, in VAR units.
Reading	number	*read-only (null)*	The sensor value.
}			
TemperatureCelsius {}	object		Temperature (Celsius). For more information about this property, see SensorExcerpt in Property Details.

6.31.4 Actions

6.31.4.1 ResetMetrics

Description

This action resets the summary metrics related to this equipment.

Action URI: {Base URI of target resource}/Actions/EnvironmentMetrics.ResetMetrics

Action parameters

This action takes no parameters.

6.31.5 Property details

6.31.5.1 ControlMode:

The current operating mode of the control.

string	Description
Automatic	Automatically adjust control to meet the set point.
Disabled	The control has been disabled.
Manual	No automatic adjustments are made to the control.
Override	User override of the automatic set point value.

6.31.5.2 PhysicalContext:

The area or device to which this sensor measurement applies.

string	Description
Accelerator	An accelerator.
ACInput	An AC input.
ACMaintenanceBypassInput	An AC maintenance bypass input.
ACOutput	An AC output.
ACStaticBypassInput	An AC static bypass input.
ACUtilityInput	An AC utility input.
ASIC	An ASIC device, such as a networking chip or chipset component.
Back	The back of the chassis.
Backplane	A backplane within the chassis.

string	Description
Battery	A battery.
Board	A circuit board.
Chassis	The entire chassis.
ComputeBay	Within a compute bay.
CoolingSubsystem	The entire cooling, or air and liquid, subsystem.
CPU	A processor (CPU).
CPUSubsystem	The entire processor (CPU) subsystem.
DCBus	A DC bus.
Exhaust	The air exhaust point or points or region of the chassis.
ExpansionBay	Within an expansion bay.
Fan	A fan.
FPGA	An FPGA.
Front	The front of the chassis.
GPU	A graphics processor (GPU).
GPUSubsystem	The entire graphics processor (GPU) subsystem.
Intake	The air intake point or points or region of the chassis.
LiquidInlet	The liquid inlet point of the chassis.
LiquidOutlet	The liquid outlet point of the chassis.
Lower	The lower portion of the chassis.
Memory	A memory device.
MemorySubsystem	The entire memory subsystem.
Motor	A motor.
NetworkBay	Within a networking bay.
NetworkingDevice	A networking device.
PowerSubsystem	The entire power subsystem.
PowerSupply	A power supply.

string	Description
PowerSupplyBay	Within a power supply bay.
Pump	A pump.
Rectifier	A rectifier device.
Room	The room.
StorageBay	Within a storage bay.
StorageDevice	A storage device.
SystemBoard	The system board (PCB).
Transceiver	A transceiver.
Transformer	A transformer.
TrustedModule	A trusted module.
Upper	The upper portion of the chassis.
VoltageRegulator	A voltage regulator device.

6.31.5.3 PhysicalSubContext:

The usage or location within a device to which this sensor measurement applies.

string	Description
Input	The input.
Output	The output.

6.31.5.4 SensorExcerpt:

The Sensor schema describes a sensor and its properties. This object is an excerpt of the *Sensor* resource located at the URI shown in DataSourceUri.

DataSourceUri	string (URI)	*read-only (null)*	The link to the resource that provides the data for this sensor.

Reading	number	*read-only (null)*	The sensor value.

6.31.6 Example response

```json
{
    "@odata.type": "#EnvironmentMetrics.v1_2_0.EnvironmentMetrics",
    "Name": "Processor Environment Metrics",
    "TemperatureCelsius": {
        "DataSourceUri": "/redfish/v1/Chassis/1U/Sensors/CPU1Temp",
        "Reading": 44
    },
    "PowerWatts": {
        "DataSourceUri": "/redfish/v1/Chassis/1U/Sensors/CPU1Power",
        "Reading": 12.87
    },
    "FanSpeedsPercent": [
        {
            "DataSourceUri": "/redfish/v1/Chassis/1U/Sensors/CPUFan1",
            "DeviceName": "CPU #1 Fan Speed",
            "Reading": 80
        }
    ],
    "Oem": {},
    "@odata.id": "/redfish/v1/Systems/437XR1138R2/Processors/1/EnvironmentMetrics"
}
```

6.32 EthernetInterface 1.8.0

Version	v1.8	v1.6	v1.5	v1.4	v1.3	v1.2	v1.1	v1.0
Release	2021.2	2020.1	2019.1	2017.3	2017.1	2016.3	2016.2	1.0

6.32.1 Description

The EthernetInterface schema represents a single, logical Ethernet interface or network interface controller (NIC).

6.32.2 URIs

/redfish/v1/Chassis/*{ChassisId}*/NetworkAdapters/*{NetworkAdaptersId}*/NetworkDeviceFunctions/
{NetworkDeviceFunctionId}/EthernetInterfaces/*{EthernetInterfaceId}*

/redfish/v1/CompositionService/ResourceBlocks/*{ResourceBlockId}*/EthernetInterfaces/*{EthernetInterfaceId}*
/redfish/v1/CompositionService/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/
EthernetInterfaces/*{EthernetInterfaceId}*
/redfish/v1/Managers/*{ManagerId}*/EthernetInterfaces/*{EthernetInterfaceId}*
/redfish/v1/ResourceBlocks/*{ResourceBlockId}*/EthernetInterfaces/*{EthernetInterfaceId}*
/redfish/v1/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/EthernetInterfaces/
{EthernetInterfaceId}
/redfish/v1/Systems/*{ComputerSystemId}*/EthernetInterfaces/*{EthernetInterfaceId}*

6.32.3 Properties

Property	Type	Attributes	Notes
AutoNeg	boolean	*read-write (null)*	An indication of whether the speed and duplex are automatically negotiated and configured on this interface.
DHCPv4 *(v1.4+)* {	object		DHCPv4 configuration for this interface.
DHCPEnabled *(v1.4+)*	boolean	*read-write (null)*	An indication of whether DHCP v4 is enabled on this Ethernet interface.
FallbackAddress *(v1.5+)*	string (enum)	*read-write (null)*	DHCPv4 fallback address method for this interface. *For the possible property values, see FallbackAddress in Property details.*
UseDNSServers *(v1.4+)*	boolean	*read-write (null)*	An indication of whether this interface uses DHCP v4-supplied DNS servers.
UseDomainName *(v1.4+)*	boolean	*read-write (null)*	An indication of whether this interface uses a DHCP v4-supplied domain name.
UseGateway *(v1.4+)*	boolean	*read-write (null)*	An indication of whether this interface uses a DHCP v4-supplied gateway.
UseNTPServers *(v1.4+)*	boolean	*read-write (null)*	An indication of whether the interface uses DHCP v4-supplied NTP servers.
UseStaticRoutes *(v1.4+)*	boolean	*read-write (null)*	An indication of whether the interface uses DHCP v4-supplied static routes.
}			
DHCPv6 *(v1.4+)* {	object		DHCPv6 configuration for this interface.
OperatingMode *(v1.4+)*	string (enum)	*read-write (null)*	Determines the DHCPv6 operating mode for this interface. *For the possible property values, see OperatingMode in Property details.*
UseDNSServers *(v1.4+)*	boolean	*read-write (null)*	An indication of whether the interface uses DHCP v6-supplied DNS servers.

Property	Type	Attributes	Notes
UseDomainName *(v1.4+)*	boolean	*read-write (null)*	An indication of whether this interface uses a DHCP v6-supplied domain name.
UseNTPServers *(v1.4+)*	boolean	*read-write (null)*	An indication of whether the interface uses DHCP v6-supplied NTP servers.
UseRapidCommit *(v1.4+)*	boolean	*read-write (null)*	An indication of whether the interface uses DHCP v6 rapid commit mode for stateful mode address assignments. Do not enable this option in networks where more than one DHCP v6 server is configured to provide address assignments.
}			
EthernetInterfaceType *(v1.6+)*	string (enum)	*read-only (null)*	The type of interface. *For the possible property values, see EthernetInterfaceType in Property details.*
FQDN	string	*read-write (null)*	The complete, fully qualified domain name that DNS obtains for this interface.
FullDuplex	boolean	*read-write (null)*	An indication of whether full-duplex mode is enabled on the Ethernet connection for this interface.
HostName	string	*read-write (null)*	The DNS host name, without any domain information.
InterfaceEnabled	boolean	*read-write (null)*	An indication of whether this interface is enabled.
IPv4Addresses [{ }]	array (object)		The IPv4 addresses currently in use by this interface. For property details, see IPv4Address.
IPv4StaticAddresses *(v1.4+)* [{ }]	array (object)	*(null)*	The IPv4 static addresses assigned to this interface. See IPv4Addresses for the addresses in use by this interface. For property details, see IPv4Address.
IPv6Addresses [{ }]	array (object)		The IPv6 addresses currently in use by this interface. For property details, see IPv6Address.
IPv6AddressPolicyTable [{	array		An array that represents the RFC6724-defined address selection policy table.
Label	integer	*read-write (null)*	The IPv6 label, as defined in RFC6724, section 2.1.
Precedence	integer	*read-write (null)*	The IPv6 precedence, as defined in RFC6724, section 2.1.
Prefix	string	*read-write (null)*	The IPv6 address prefix, as defined in RFC6724, section 2.1.
}]			

Property	Type	Attributes	Notes
IPv6DefaultGateway	string	*read-only* *(null)*	The IPv6 default gateway address in use on this interface.
IPv6StaticAddresses [{ }]	array (object)	*(null)*	The IPv6 static addresses assigned to this interface. See IPv6Addresses for the addresses in use by this interface. For property details, see IPv6StaticAddress.
IPv6StaticDefaultGateways *(v1.4+)* [{ }]	array (object)	*(null)*	The IPv6 static default gateways for this interface. For property details, see IPv6GatewayStaticAddress v1.1.3).
Links *(v1.1+)* {	object		The links to other resources that are related to this resource.
Chassis *(v1.3+)* {	object		The link to the chassis that contains this Ethernet interface. See the *Chassis* schema for details on this property.
@odata.id	string	*read-only*	Link to a Chassis resource. See the Links section and the *Chassis* schema for details.
}			
Endpoints *(v1.1+)* [{	array		An array of links to the endpoints that connect to this Ethernet interface.
@odata.id	string	*read-only*	Link to a Endpoint resource. See the Links section and the *Endpoint* schema for details.
}]			
HostInterface *(v1.2+)* {	object		The link to a Host Interface that is associated with this Ethernet interface. See the *HostInterface* schema for details on this property.
@odata.id	string	*read-only*	Link to a HostInterface resource. See the Links section and the *HostInterface* schema for details.
}			
NetworkDeviceFunction *(v1.6+, deprecated v1.7* {	object	*(null)*	The link to the parent network device function and is only used when representing one of the VLANs on that network device function, such as is done in Unix. See the *NetworkDeviceFunction* schema for details on this property. *Deprecated in v1.7 and later. This property has been deprecated in favor of NetworkDeviceFunctions as each EthernetInterface could represent more than one NetworkDeviceFunction.*
@odata.id	string	*read-only*	Link to a NetworkDeviceFunction resource. See the Links section and the *NetworkDeviceFunction* schema for details.
}			
NetworkDeviceFunctions *(v1.7+)* [{	array		The link to the network device functions that comprise this Ethernet interface.

Property	Type	Attributes	Notes
@odata.id	string	read-only	Link to a NetworkDeviceFunction resource. See the Links section and the *NetworkDeviceFunction* schema for details.
}]			
Oem {}	object		See the Oem object definition in the Common properties section.
}			
LinkStatus *(v1.1+)*	string (enum)	read-only (null)	The link status of this interface, or port. *For the possible property values, see LinkStatus in Property details.*
MACAddress	string	read-write (null)	The currently configured MAC address of the interface, or logical port.
MaxIPv6StaticAddresses	integer	read-only (null)	The maximum number of static IPv6 addresses that can be configured on this interface.
MTUSize	integer	read-write (null)	The currently configured maximum transmission unit (MTU), in bytes, on this interface.
NameServers [ ]	array (string)	read-only	The DNS servers in use on this interface.
PermanentMACAddress	string	read-only (null)	The permanent MAC address assigned to this interface, or port.
SpeedMbps	integer (Mbit/s)	read-write (null)	The current speed, in Mbit/s, of this interface.
StatelessAddressAutoConfig *(v1.4+)* {	object		Stateless address autoconfiguration (SLAAC) parameters for this interface.
IPv4AutoConfigEnabled *(v1.4+)*	boolean	read-write (null)	An indication of whether IPv4 stateless address autoconfiguration (SLAAC) is enabled for this interface.
IPv6AutoConfigEnabled *(v1.4+)*	boolean	read-write (null)	An indication of whether IPv6 stateless address autoconfiguration (SLAAC) is enabled for this interface.
}			
StaticNameServers *(v1.4+)* [ ]	array (string, null)	read-write	The statically-defined set of DNS server IPv4 and IPv6 addresses.
Status {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
UefiDevicePath	string	read-only (null)	The UEFI device path for this interface.

Property	Type	Attributes	Notes
VLAN {	object		If this network interface supports more than one VLAN, this property is absent. VLAN collections appear in the Links property of this resource.
Tagged *(v1.3+)*	boolean	*read-write (null)*	An indication of whether this VLAN is tagged or untagged for this interface.
VLANEnable	boolean	*read-write required on create (null)*	An indication of whether this VLAN is enabled for this VLAN network interface.
VLANId	integer	*read-write required on create (null)*	The ID for this VLAN.
VLANPriority *(v1.2+)*	integer	*read-write (null)*	The priority for this VLAN.
}			
VLANs *(deprecated v1.7)* {	object		The link to a collection of VLANs, which applies only if the interface supports more than one VLAN. If this property applies, the VLANEnabled and VLANId properties do not apply. Contains a link to a resource. *Deprecated in v1.7 and later. This property has been deprecated in favor of newer methods indicating multiple VLANs.*
@odata.id	string	*read-only*	Link to Collection of *VLanNetworkInterface*. See the VLanNetworkInterface schema for details.
}			

6.32.4 Property details

6.32.4.1 EthernetInterfaceType:

The type of interface.

string	Description
Physical	A physical Ethernet interface.
Virtual	A virtual Ethernet interface.

6.32.4.2 FallbackAddress:

DHCPv4 fallback address method for this interface.

string	Description
AutoConfig	Fall back to an autoconfigured address.
None	Continue attempting DHCP without a fallback address.
Static	Fall back to a static address specified by IPv4StaticAddresses.

6.32.4.3 LinkStatus:

The link status of this interface, or port.

string	Description
LinkDown	No link is detected on this interface, but the interface is connected.
LinkUp	The link is available for communication on this interface.
NoLink	No link or connection is detected on this interface.

6.32.4.4 OperatingMode:

Determines the DHCPv6 operating mode for this interface.

string	Description
Disabled	DHCPv6 is disabled.
Enabled *(v1.8+)*	DHCPv6 is enabled.
Stateful *(deprecated v1.8)*	DHCPv6 stateful mode. *Deprecated in v1.8 and later. This property has been deprecated in favor of* `Enabled` *. The control between 'stateful' and 'stateless' is managed by the DHCP server and not the client.*
Stateless *(deprecated v1.8)*	DHCPv6 stateless mode. *Deprecated in v1.8 and later. This property has been deprecated in favor of* `Enabled` *. The control between 'stateful' and 'stateless' is managed by the DHCP server and not the client.*

6.32.5 Example response

```json
{
    "@odata.type": "#EthernetInterface.v1_8_0.EthernetInterface",
    "Id": "1",
    "Name": "Ethernet Interface",
    "Description": "Manager NIC 1",
    "Status": {
        "State": "Enabled",
        "Health": "OK"
    },
    "LinkStatus": "LinkUp",
    "PermanentMACAddress": "12:44:6A:3B:04:11",
    "MACAddress": "12:44:6A:3B:04:11",
    "SpeedMbps": 1000,
    "AutoNeg": true,
    "FullDuplex": true,
    "MTUSize": 1500,
    "HostName": "web483",
    "FQDN": "web483.contoso.com",
    "NameServers": [
        "names.contoso.com"
    ],
    "IPv4Addresses": [
        {
            "Address": "192.168.0.10",
            "SubnetMask": "255.255.252.0",
            "AddressOrigin": "DHCP",
            "Gateway": "192.168.0.1"
        }
    ],
    "DHCPv4": {
        "DHCPEnabled": true,
        "UseDNSServers": true,
        "UseGateway": true,
        "UseNTPServers": false,
        "UseStaticRoutes": true,
        "UseDomainName": true
    },
    "DHCPv6": {
        "OperatingMode": "Enabled",
        "UseDNSServers": true,
        "UseDomainName": false,
        "UseNTPServers": false,
        "UseRapidCommit": false
    },
    "StatelessAddressAutoConfig": {
        "IPv4AutoConfigEnabled": false,
        "IPv6AutoConfigEnabled": true
```

```
        },
        "IPv4StaticAddresses": [
            {
                "Address": "192.168.88.130",
                "SubnetMask": "255.255.0.0",
                "Gateway": "192.168.0.1"
            }
        ],
        "IPv6AddressPolicyTable": [
            {
                "Prefix": "::1/128",
                "Precedence": 50,
                "Label": 0
            }
        ],
        "MaxIPv6StaticAddresses": 1,
        "IPv6StaticAddresses": [
            {
                "Address": "fc00:1234::a:b:c:d",
                "PrefixLength": 64
            }
        ],
        "IPv6StaticDefaultGateways": [
            {
                "Address": "fe80::fe15:b4ff:fe97:90cd",
                "PrefixLength": 64
            }
        ],
        "IPv6DefaultGateway": "fe80::214:c1ff:fe4c:5c4d",
        "IPv6Addresses": [
            {
                "Address": "fe80::1ec1:deff:fe6f:1e24",
                "PrefixLength": 64,
                "AddressOrigin": "SLAAC",
                "AddressState": "Preferred",
                "Oem": {}
            },
            {
                "Address": "fc00:1234::a:b:c:d",
                "PrefixLength": 64,
                "AddressOrigin": "Static",
                "AddressState": "Preferred",
                "Oem": {}
            },
            {
                "Address": "2001:1:3:5::100",
                "PrefixLength": 64,
                "AddressOrigin": "DHCPv6",
                "AddressState": "Preferred",
                "Oem": {}
```

```
        },
        {
            "Address": "2002:2:5::1ec1:deff:fe6f:1e24",
            "PrefixLength": 64,
            "AddressOrigin": "SLAAC",
            "AddressState": "Preferred",
            "Oem": {}
        }
    ],
    "StaticNameServers": [
        "192.168.150.1",
        "fc00:1234:200:2500"
    ],
    "VLAN": {
        "VLANEnable": true,
        "VLANId": 101
    },
    "@odata.id": "/redfish/v1/Systems/437XR1138R2/EthernetInterfaces/12446A3B0411"
}
```

6.33 Event 1.7.0

Version	v1.7	v1.6	v1.5	v1.4	v1.3	v1.2	v1.1	v1.0
Release	2021.2	2020.3	2020.2	2019.1	2018.2	2017.1	2016.1	1.0

6.33.1 Description

The Event schema describes the JSON payload received by an event destination, which has subscribed to event notification, when events occur. This resource contains data about events, including descriptions, severity, and a message identifier to a message registry that can be accessed for further information.

6.33.2 Properties

Property	Type	Attributes	Notes
Context *(v1.1+)*	string	*read-only*	A context can be supplied at subscription time. This property is the context value supplied by the subscriber.
Events [{	array	* required*	Each event in this array has a set of properties that describe the event. Because this is an array, more than one event can be sent simultaneously.

Property	Type	Attributes	Notes
Actions *(v1.2+)* {}	object		The available actions for this resource.
Context *(deprecated v1.1)*	string	*read-only*	A context can be supplied at subscription time. This property is the context value supplied by the subscriber. *Deprecated in v1.1 and later. Events are triggered independently from subscriptions to those events. This property has been deprecated in favor of the Context property found at the root level of the object.*
EventGroupId *(v1.3+)*	integer	*read-only*	The identifier that correlates events with the same root cause. If `0`, no other event is related to this event.
EventId	string	*read-only*	The unique instance identifier of an event.
EventTimestamp	string (date-time)	*read-only*	The time the event occurred.
EventType *(deprecated v1.3)*	string (enum)	*read-only required*	The type of event. *For the possible property values, see EventType in Property details. Deprecated in v1.3 and later. This property has been deprecated. Starting with Redfish Specification v1.6 (Event v1.3), subscriptions are based on the RegistryPrefix and ResourceType properties and not on the EventType property.*
LogEntry *(v1.7+)* {	object		The link to a log entry if an entry was created for this event. See the *LogEntry* schema for details on this property.
@odata.id	string	*read-only*	Link to a LogEntry resource. See the Links section and the *LogEntry* schema for details.
}			
MemberId	string	*read-only required*	The unique identifier for the member within an array.
Message	string	*read-only*	The human-readable event message.
MessageArgs [ ]	array (string)	*read-only*	An array of message arguments that are substituted for the arguments in the message when looked up in the message registry.
MessageId	string	*read-only required*	The identifier for the message.
MessageSeverity *(v1.5+)*	string (enum)	*read-only*	The severity of the message in this event. *For the possible property values, see MessageSeverity in Property details.*
Oem {}	object		See the Oem object definition in the Common properties section.
OriginOfCondition {	object		A link to the resource or object that originated the condition that caused the event to be generated.
@odata.id	string (URI)	*read-only*	The unique identifier for a resource.

Property	Type	Attributes	Notes
}			
Severity *(deprecated v1.5)*	string	*read-only*	The severity of the event. *Deprecated in v1.5 and later. This property has been deprecated in favor of MessageSeverity, which ties the values to the enumerations defined for the Health property within Status.*
SpecificEventExistsInGroup *(v1.6+)*	boolean	*read-only*	Indicates this event is equivalent to a more specific event in this Event Group.
}]			

6.33.3 Property details

6.33.3.1 EventType:

The type of event.

string	Description
Alert	A condition requires attention.
MetricReport *(v1.3+)*	The telemetry service is sending a metric report.
Other *(v1.4+)*	Because EventType is deprecated as of Redfish Specification v1.6, the event is based on a registry or resource but not an EventType.
ResourceAdded	A resource has been added.
ResourceRemoved	A resource has been removed.
ResourceUpdated	A resource has been updated.
StatusChange	The status of a resource has changed.

6.33.3.2 MessageSeverity:

The severity of the message in this event.

string	Description
Critical	A critical condition requires immediate attention.
OK	Normal.

string	Description
Warning	A condition requires attention.

6.33.4 Example response

```
{
    "@odata.type": "#Event.v1_7_0.Event",
    "Id": "1",
    "Name": "Event Array",
    "Context": "ABCDEFGH",
    "Events": [
        {
            "EventType": "Alert",
            "EventId": "ABC132489713478812346",
            "Severity": "Warning",
            "Message": "The LAN has been disconnected",
            "MessageId": "Alert.1.0.LanDisconnect",
            "MessageArgs": [
                "EthernetInterface 1",
                "/redfish/v1/Systems/1"
            ],
            "OriginOfCondition": {
                "@odata.id": "/redfish/v1/Systems/1/EthernetInterfaces/1"
            },
            "LogEntry": {
                "@odata.id": "/redfish/v1/Managers/BMC/LogServices/EventLog/Entries/532"
            },
            "Context": "ABCDEFGH"
        }
    ]
}
```

6.34 EventDestination 1.11.2

Version	v1.11	v1.10	v1.9	v1.8	v1.7	v1.6	v1.5	v1.4	v1.3	v1.2	v1.1	...
Release	2021.2	2020.4	2020.3	2020.1	2019.3	2019.2	2019.1	2018.2	2018.1	2017.1	2016.2	...

6.34.1 Description

The EventDestination schema defines the target of an event subscription, including the event types and context to provide to the target in the Event payload.

6.34.2 URIs

/redfish/v1/EventService/Subscriptions/*{EventDestinationId}*

6.34.3 Properties

Property	Type	Attributes	Notes
Certificates *(v1.9+)* {	object		The link to a collection of server certificates for the server referenced by the Destination property. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *Certificate*. See the Certificate schema for details.
}			
ClientCertificates *(v1.11+)* {	object		The link to a collection of client identity certificates provided to the server referenced by the Destination property. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *Certificate*. See the Certificate schema for details.
}			
Context	string	*read-write required (null)*	A client-supplied string that is stored with the event destination subscription.
DeliveryRetryPolicy *(v1.6+)*	string (enum)	*read-write (null)*	The subscription delivery retry policy for events, where the subscription type is RedfishEvent. *For the possible property values, see DeliveryRetryPolicy in Property details.*
Destination	string (URI)	*read-only required on create*	The URI of the destination event receiver.
EventFormatType *(v1.4+)*	string (enum)	*read-only (null)*	The content types of the message that are sent to the EventDestination. *For the possible property values, see EventFormatType in Property details.*
EventTypes *(deprecated v1.5)* [ ]	array (string (enum))	*read-only*	The types of events that are sent to the destination. *For the possible property values, see EventTypes in Property details. Deprecated in v1.5 and later. This property has been deprecated. Starting with Redfish Specification v1.6 (Event v1.3), subscriptions are based on the RegistryPrefix and ResourceType properties and not on the EventType property. Use EventFormatType to create subscriptions for Metric Reports. If the subscription does not include this property, the service shall use a single element with a default of* `Other` *.*
HeartbeatIntervalMinutes *(v1.11+)*	integer	*read-only (null)*	Interval for sending heartbeat events to the destination in minutes.

Property	Type	Attributes	Notes
HttpHeaders [{	array		An array of settings for HTTP headers, such as authorization information. This array is null or an empty array in responses. An empty array is the preferred return value on read operations.
(pattern)	string	*read-write*	Property names follow regular expression pattern "^[^:\\s]+$"
}]			
IncludeOriginOfCondition *(v1.8+)*	boolean	*read-only (null)*	An indication of whether the events subscribed to will also include the entire resource or object referenced the OriginOfCondition property in the event payload.
MessageIds *(v1.1+)* [ ]	array (string, null)	*read-only*	The list of MessageIds that the service sends. If this property is absent or the array is empty, events with any MessageId are sent to the subscriber.
MetricReportDefinitions *(v1.6+)* [{	array		A list of metric report definitions for which the service only sends related metric reports. If this property is absent or the array is empty, metric reports that originate from any metric report definition are sent to the subscriber.
@odata.id	string	*read-only*	Link to a MetricReportDefinition resource. See the Links section and the *MetricReportDefinition* schema for details.
}]			
OEMProtocol *(v1.9+)*	string	*read-only*	The OEM-defined protocol type of the event connection.
OEMSubscriptionType *(v1.9+)*	string	*read-only*	The OEM-defined subscription type for events.
OriginResources *(v1.1+)* [{	array		The array of Resources for which the service sends only related events. If this property is absent or the array is empty, the service sends the events that originate from any Resource to the subscriber.
@odata.id	string (URI)	*read-only*	The unique identifier for a resource.
}]			
Protocol	string (enum)	*read-only required on create*	The protocol type of the event connection. *For the possible property values, see Protocol in Property details.*
RegistryPrefixes *(v1.4+)* [ ]	array (string, null)	*read-only*	The list of the prefixes for the Message Registries that contain the MessageIds that are sent to this event destination.
ResourceTypes *(v1.4+)* [ ]	array (string, null)	*read-only*	The list of Resource Type values (Schema names) that correspond to the OriginOfCondition. The version and full namespace should not be specified.
SendHeartbeat *(v1.11+)*	boolean	*read-only (null)*	Send a heartbeat event periodically to the destination.

Property	Type	Attributes	Notes
SNMP *(v1.7+)* {	object		Settings for an SNMP event destination.
AuthenticationKey *(v1.7+)*	string	*read-write (null)*	The secret authentication key for SNMPv3.
AuthenticationKeySet *(v1.10+)*	boolean	*read-only*	Indicates if the AuthenticationKey property is set.
AuthenticationProtocol *(v1.7+)*	string (enum)	*read-write (null)*	The authentication protocol for SNMPv3. *For the possible property values, see AuthenticationProtocol in Property details.*
EncryptionKey *(v1.7+)*	string	*read-write (null)*	The secret authentication key for SNMPv3.
EncryptionKeySet *(v1.10+)*	boolean	*read-only*	Indicates if the EncryptionKey property is set.
EncryptionProtocol *(v1.7+)*	string (enum)	*read-write (null)*	The encryption protocol for SNMPv3. *For the possible property values, see EncryptionProtocol in Property details.*
TrapCommunity *(v1.7+)*	string	*read-write (null)*	The SNMP trap community string.
}			
Status *(v1.6+)* {}	object		This property shall contain the status of the subscription. For property details, see Status.
SubordinateResources *(v1.4+)*	boolean	*read-only (null)*	An indication of whether the subscription is for events in the OriginResources array and its subordinate Resources. If `true` and the OriginResources array is specified, the subscription is for events in the OriginResources array and its subordinate Resources. Note that Resources associated through the Links section are not considered subordinate. If `false` and the OriginResources array is specified, the subscription shall be for events in the OriginResources array only. If the OriginResources array is not present, this property shall have no relevance.
SubscriptionType *(v1.3+)*	string (enum)	*read-only required (null)*	The subscription type for events. *For the possible property values, see SubscriptionType in Property details.*
SyslogFilters *(v1.9+)* [{	array		A list of filters applied to syslog messages before sending to a remote syslog server. An empty list indicates all syslog messages are sent.
LogFacilities *(v1.9+)* [ ]	array (string (enum))	*read-write (null)*	The types of programs that can log messages. *For the possible property values, see LogFacilities in Property details.*
LowestSeverity *(v1.9+)*	string (enum)	*read-write (null)*	The lowest severity level message that will be forwarded. *For the possible property values, see LowestSeverity in Property details.*
}]			

Property	Type	Attributes	Notes
VerifyCertificate *(v1.9+)*	boolean	*read-write (null)*	An indication of whether the service will verify the certificate of the server referenced by the Destination property prior to sending the event.

6.34.4 Actions

6.34.4.1 ResumeSubscription

Description

This action resumes a suspended event subscription.

Action URI: {Base URI of target resource}/Actions/EventDestination.ResumeSubscription

Action parameters

This action takes no parameters.

6.34.5 Property details

6.34.5.1 AuthenticationProtocol:

The authentication protocol for SNMPv3.

string	Description
CommunityString	Trap community string authentication.
HMAC128_SHA224 *(v1.10+)*	HMAC-128-SHA-224 authentication.
HMAC192_SHA256 *(v1.10+)*	HMAC-192-SHA-256 authentication.
HMAC256_SHA384 *(v1.10+)*	HMAC-256-SHA-384 authentication.
HMAC384_SHA512 *(v1.10+)*	HMAC-384-SHA-512 authentication.
HMAC_MD5	HMAC-MD5-96 authentication.
HMAC_SHA96	HMAC-SHA-96 authentication.
None	No authentication.

6.34.5.2 DeliveryRetryPolicy:

The subscription delivery retry policy for events, where the subscription type is RedfishEvent.

string	Description
RetryForever	The subscription is not suspended or terminated, and attempts at delivery of future events shall continue regardless of the number of retries.
RetryForeverWithBackoff *(v1.10+)*	The subscription is not suspended or terminated, and attempts at delivery of future events shall continue regardless of the number of retries, but issued over time according to a service-defined backoff algorithm.
SuspendRetries	The subscription is suspended after the maximum number of retries is reached.
TerminateAfterRetries	The subscription is terminated after the maximum number of retries is reached.

6.34.5.3 EncryptionProtocol:

The encryption protocol for SNMPv3.

string	Description
CBC_DES	CBC-DES encryption.
CFB128_AES128	CFB128-AES-128 encryption.
None	No encryption.

6.34.5.4 EventFormatType:

The content types of the message that are sent to the EventDestination.

string	Description
Event	The subscription destination receives an event payload.
MetricReport	The subscription destination receives a metric report.

6.34.5.5 EventTypes:

The types of events that are sent to the destination.

string	Description
Alert	A condition requires attention.
MetricReport	The telemetry service is sending a metric report.
Other	Because EventType is deprecated as of Redfish Specification v1.6, the event is based on a registry or resource but not an EventType.
ResourceAdded	A resource has been added.
ResourceRemoved	A resource has been removed.
ResourceUpdated	A resource has been updated.
StatusChange	The status of a resource has changed.

6.34.5.6 LogFacilities:

The types of programs that can log messages.

string	Description
Auth	Security/authentication messages.
Authpriv	Security/authentication messages.
Console	Log alert.
Cron	Clock daemon.
Daemon	System daemons.
FTP	FTP daemon.
Kern	Kernel messages.
Local0	Locally used facility 0.
Local1	Locally used facility 1.
Local2	Locally used facility 2.
Local3	Locally used facility 3.
Local4	Locally used facility 4.
Local5	Locally used facility 5.
Local6	Locally used facility 6.

string	Description
Local7	Locally used facility 7.
LPR	Line printer subsystem.
Mail	Mail system.
News	Network news subsystem.
NTP	NTP subsystem.
Security	Log audit.
SolarisCron	Scheduling daemon.
Syslog	Messages generated internally by syslogd.
User	User-level messages.
UUCP	UUCP subsystem.

6.34.5.7 LowestSeverity:

The lowest severity level message that will be forwarded.

string	Description
Alert	A condition that should be corrected immediately, such as a corrupted system database.
All	A message of any severity.
Critical	Hard device errors.
Debug	Messages that contain information normally of use only when debugging a program.
Emergency	A panic condition.
Error	An Error.
Informational	Informational only.
Notice	Conditions that are not error conditions, but that may require special handling.
Warning	A Warning.

6.34.5.8 Protocol:

The protocol type of the event connection.

string	Description
OEM *(v1.9+)*	The destination follows an OEM protocol for event notifications.
Redfish	The destination follows the Redfish Specification for event notifications.
SMTP *(v1.7+)*	The destination follows the SMTP specification for event notifications.
SNMPv1 *(v1.7+)*	The destination follows the SNMPv1 protocol for event notifications.
SNMPv2c *(v1.7+)*	The destination follows the SNMPv2c protocol for event notifications.
SNMPv3 *(v1.7+)*	The destination follows the SNMPv3 protocol for event notifications.
SyslogRELP *(v1.9+)*	The destination follows syslog RELP for event notifications.
SyslogTCP *(v1.9+)*	The destination follows syslog TCP-based for event notifications.
SyslogTLS *(v1.9+)*	The destination follows syslog TLS-based for event notifications.
SyslogUDP *(v1.9+)*	The destination follows syslog UDP-based for event notifications.

6.34.5.9 SubscriptionType:

The subscription type for events.

string	Description
OEM *(v1.9+)*	The subscription is an OEM subscription.
RedfishEvent	The subscription follows the Redfish Specification for event notifications. To send an event notification, a service sends an HTTP POST to the subscriber's destination URI.
SNMPInform *(v1.7+)*	The subscription follows versions 2 and 3 of SNMP Inform for event notifications.
SNMPTrap *(v1.7+)*	The subscription follows the various versions of SNMP Traps for event notifications.
SSE	The subscription follows the HTML5 server-sent event definition for event notifications.
Syslog *(v1.9+)*	The subscription sends Syslog messages for event notifications.

6.34.6 Example response

```
{
    "@odata.type": "#EventDestination.v1_11_2.EventDestination",
    "Id": "1",
    "Name": "EventSubscription 1",
```

```
    "Destination": "http://www.dnsname.com/Destination1",
    "SubscriptionType": "RedfishEvent",
    "DeliveryRetryPolicy": "TerminateAfterRetries",
    "Status": {
        "State": "Enabled"
    },
    "Actions": {
        "#EventDestination.ResumeSubscription": {
            "target": "/redfish/v1/EventService/Subscriptions/1/Actions/EventDestination.ResumeSubscription"
        }
    },
    "EventTypes": [
        "Alert"
    ],
    "Context": "WebUser3",
    "Protocol": "Redfish",
    "@odata.id": "/redfish/v1/EventService/Subscriptions/1"
}
```

6.35 EventService 1.7.2

Version	v1.7	v1.6	v1.5	v1.4	v1.3	v1.2	v1.1	v1.0
Release	2020.2	2020.1	2019.3	2019.2	2019.1	2018.2	2018.1	1.0

6.35.1 Description

The EventService schema contains properties for managing event subscriptions and generates the events sent to subscribers. The resource has links to the actual collection of subscriptions, which are called event destinations.

6.35.2 URIs

/redfish/v1/EventService

6.35.3 Properties

Property	Type	Attributes	Notes
DeliveryRetryAttempts	integer	*read-write*	The number of times that the POST of an event is retried before the subscription terminates. This retry occurs at the service level, which means that the HTTP POST to the event destination fails with an HTTP `4xx` or `5xx` status code or an HTTP timeout occurs this many times before the event destination subscription terminates.
DeliveryRetryIntervalSeconds	integer (seconds)	*read-write*	The interval, in seconds, between retry attempts for sending any event.
EventFormatTypes *(v1.2+)* [ ]	array (string (enum))	*read-only (null)*	The content types of the message that this service can send to the event destination. *For the possible property values, see EventFormatTypes in Property details.*
EventTypesForSubscription *(deprecated v1.3)* [ ]	array (string (enum))	*read-only*	The types of events to which a client can subscribe. *For the possible property values, see EventTypesForSubscription in Property details. Deprecated in v1.3 and later. This property has been deprecated. Starting with Redfish Specification v1.6 (Event v1.3), subscriptions are based on the RegistryPrefix and ResourceType properties and not on the EventType property.*
IncludeOriginOfConditionSupported *(v1.6+)*	boolean	*read-only (null)*	An indication of whether the service supports including the resource payload of the origin of condition in the event payload.
RegistryPrefixes *(v1.2+)* [ ]	array (string, null)	*read-only*	The list of the prefixes of the message registries that can be used for the RegistryPrefix property on a subscription. If this property is absent or contains an empty array, the service does not support RegistryPrefix-based subscriptions.
ResourceTypes *(v1.2+)* [ ]	array (string, null)	*read-only*	The list of @odata.type values, or schema names, that can be specified in the ResourceTypes array in a subscription. If this property is absent or contains an empty array, the service does not support resource type-based subscriptions.
ServerSentEventUri *(v1.1+)*	string (URI)	*read-only*	The link to a URI for receiving Server-Sent Event representations for the events that this service generates.
ServiceEnabled	boolean	*read-write (null)*	An indication of whether this service is enabled. If `false`, events are no longer published, new SSE connections cannot be established, and existing SSE connections are terminated.
SMTP *(v1.5+)* {	object		Settings for SMTP event delivery.
Authentication *(v1.5+)*	string (enum)	*read-write (null)*	The authentication method for the SMTP server. *For the possible property values, see Authentication in Property details.*

Property	Type	Attributes	Notes
ConnectionProtocol *(v1.5+)*	string (enum)	*read-write (null)*	The connection type to the outgoing SMTP server. *For the possible property values, see ConnectionProtocol in Property details.*
FromAddress *(v1.5+)*	string	*read-write (null)*	The 'from' email address of the outgoing email.
Password *(v1.5+)*	string	*read-write (null)*	The password for authentication with the SMTP server. The value is `null` in responses.
Port *(v1.5+)*	integer	*read-write (null)*	The destination SMTP port.
ServerAddress *(v1.5+)*	string	*read-write (null)*	The address of the SMTP server.
ServiceEnabled *(v1.5+)*	boolean	*read-write (null)*	An indication if SMTP for event delivery is enabled.
Username *(v1.5+)*	string	*read-write (null)*	The username for authentication with the SMTP server.
}			
SSEFilterPropertiesSupported *(v1.2+)* {	object		The set of properties that are supported in the `$filter` query parameter for the ServerSentEventUri.
EventFormatType *(v1.2+)*	boolean	*read-only*	An indication of whether the service supports filtering by the EventFormatType property.
EventType *(v1.2+, deprecated v1.3*	boolean	*read-only*	An indication of whether the service supports filtering by the EventType property. *Deprecated in v1.3 and later. This property has been deprecated. Starting with Redfish Specification v1.6 (Event v1.3), subscriptions are based on the RegistryPrefix and ResourceType properties and not on the EventType property.*
MessageId *(v1.2+)*	boolean	*read-only*	An indication of whether the service supports filtering by the MessageId property.
MetricReportDefinition *(v1.2+)*	boolean	*read-only*	An indication of whether the service supports filtering by the MetricReportDefinition property.
OriginResource *(v1.2+)*	boolean	*read-only*	An indication of whether the service supports filtering by the OriginResource property.
RegistryPrefix *(v1.2+)*	boolean	*read-only*	An indication of whether the service supports filtering by the RegistryPrefix property.
ResourceType *(v1.2+)*	boolean	*read-only*	An indication of whether the service supports filtering by the ResourceType property.

Property	Type	Attributes	Notes
SubordinateResources *(v1.4+)*	boolean	*read-only*	An indication of whether the service supports filtering by the SubordinateResources property.
}			
Status {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
SubordinateResourcesSupported *(v1.2+)*	boolean	*read-only (null)*	An indication of whether the service supports the SubordinateResources property on both event subscriptions and generated events.
Subscriptions {	object		The link to a collection of event destinations. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *EventDestination*. See the EventDestination schema for details.
}			

6.35.4 Actions

6.35.4.1 SubmitTestEvent

Description

This action generates a test event.

Action URI: {Base URI of target resource}/Actions/EventService.SubmitTestEvent

Action parameters

Parameter Name	Type	Attributes	Notes
EventGroupId *(v1.3+)*	integer	*optional*	The group identifier for the event.
EventId	string	*optional*	The ID for the event to add.
EventTimestamp	string (date-time)	*optional*	The date and time for the event to add.
EventType *(deprecated v1.3)*	string (enum)	*optional*	The type for the event to add. *For the possible property values, see EventType in Property details. Deprecated in v1.3 and later. This parameter has been deprecated. Starting with Redfish Specification v1.6 (Event v1.3), subscriptions are based on the RegistryPrefix and ResourceType properties and not on the EventType property.*

Parameter Name	Type	Attributes	Notes
Message	string	*optional*	The human-readable message for the event to add.
MessageArgs [ ]	array (string)	*optional*	An array of message arguments for the event to add.
MessageId	string	*required*	The MessageId for the event to add.
OriginOfCondition	string (URI)	*optional*	The URL in the OriginOfCondition property of the event to add. It is not a reference object.
Severity	string	*optional*	The severity for the event to add.

Request Example

```
{
    "EventId": "5",
    "EventTimestamp": "2016-01-10T18:02:00Z",
    "Severity": "Critical",
    "Message": "Fan 2 crossed Lower Fatal Threshold; fans are no longer redundant",
    "MessageId": "Event.1.0.FanWayTooSlow",
    "MessageArgs": [
        "2"
    ],
    "OriginOfCondition": "/redfish/v1/Chassis/MultiBladeEncl/Thermal"
}
```

6.35.5 Property details

6.35.5.1 Authentication:

The authentication method for the SMTP server.

string	Description
AutoDetect	Auto-detect.
CRAM_MD5	CRAM-MD5 authentication.
Login *(deprecated v1.7)*	LOGIN authentication. *Deprecated in v1.7 and later. This value has been deprecated in favor of* `Plain` *, which supersedes the LOGIN authentication method for SASL.*
None	No authentication.
Plain	PLAIN authentication.

6.35.5.2 ConnectionProtocol:

The connection type to the outgoing SMTP server.

string	Description
AutoDetect	Auto-detect.
None	Clear text.
StartTLS	StartTLS.
TLS_SSL	TLS/SSL.

6.35.5.3 EventFormatTypes:

The content types of the message that this service can send to the event destination.

string	Description
Event	The subscription destination receives an event payload.
MetricReport	The subscription destination receives a metric report.

6.35.5.4 EventType:

The type for the event to add.

string	Description
Alert	A condition requires attention.
MetricReport	The telemetry service is sending a metric report.
Other	Because EventType is deprecated as of Redfish Specification v1.6, the event is based on a registry or resource but not an EventType.
ResourceAdded	A resource has been added.
ResourceRemoved	A resource has been removed.
ResourceUpdated	A resource has been updated.
StatusChange	The status of a resource has changed.

6.35.5.5 EventTypesForSubscription:

The types of events to which a client can subscribe.

string	Description
Alert	A condition requires attention.
MetricReport	The telemetry service is sending a metric report.
Other	Because EventType is deprecated as of Redfish Specification v1.6, the event is based on a registry or resource but not an EventType.
ResourceAdded	A resource has been added.
ResourceRemoved	A resource has been removed.
ResourceUpdated	A resource has been updated.
StatusChange	The status of a resource has changed.

6.35.6 Example response

```
{
    "@odata.type": "#EventService.v1_7_2.EventService",
    "Id": "EventService",
    "Name": "Event Service",
    "Status": {
        "State": "Enabled",
        "Health": "OK"
    },
    "ServiceEnabled": true,
    "DeliveryRetryAttempts": 3,
    "DeliveryRetryIntervalSeconds": 60,
    "EventTypesForSubscription": [
        "StatusChange",
        "ResourceUpdated",
        "ResourceAdded",
        "ResourceRemoved",
        "Alert"
    ],
    "ServerSentEventUri": "/redfish/v1/EventService/SSE",
    "SSEFilterPropertiesSupported": {
        "EventType": true,
        "MetricReportDefinition": false,
        "RegistryPrefix": true,
        "ResourceType": true,
```

```
            "EventFormatType": false,
            "MessageId": true,
            "OriginResource": true,
            "SubordinateResources": true
        },
        "Subscriptions": {
            "@odata.id": "/redfish/v1/EventService/Subscriptions"
        },
        "Actions": {
            "#EventService.SubmitTestEvent": {
                "target": "/redfish/v1/EventService/Actions/EventService.SubmitTestEvent",
                "@Redfish.ActionInfo": "/redfish/v1/EventService/SubmitTestEventActionInfo"
            },
            "Oem": {}
        },
        "Oem": {},
        "@odata.id": "/redfish/v1/EventService"
    }
```

6.36 ExternalAccountProvider 1.3.0

Version	v1.3	v1.2	v1.1	v1.0
Release	2021.2	2020.4	2018.3	2018.1

6.36.1 Description

The ExternalAccountProvider schema represents a remote service that provides accounts for this manager to use for authentication.

6.36.2 URIs

/redfish/v1/AccountService/ExternalAccountProviders/{*ExternalAccountProviderId*}
/redfish/v1/Managers/{*ManagerId*}/RemoteAccountService/ExternalAccountProviders/{*ExternalAccountProviderId*}

6.36.3 Properties

Property	Type	Attributes	Notes
AccountProviderType	string (enum)	*read-only required on create (null)*	The type of external account provider to which this service connects. *For the possible property values, see AccountProviderType in Property details.*
Authentication {	object		The authentication information for the external account provider.
AuthenticationType	string (enum)	*read-write (null)*	The type of authentication used to connect to the external account provider. *For the possible property values, see AuthenticationType in Property details.*
EncryptionKey *(v1.2+)*	string	*read-write (null)*	Specifies the encryption key.
EncryptionKeySet *(v1.2+)*	boolean	*read-only (null)*	Indicates if the EncryptionKey property is set.
KerberosKeytab	string	*read-write (null)*	The Base64-encoded version of the Kerberos keytab for this service. A PATCH or PUT operation writes the keytab. This property is `null` in responses.
Oem {}	object		See the Oem object definition in the Common properties section.
Password	string	*read-write (null)*	The password for this service. A PATCH or PUT request writes the password. This property is `null` in responses.
Token	string	*read-write (null)*	The token for this service. A PATCH or PUT operation writes the token. This property is `null` in responses.
Username	string	*read-write*	The user name for the service.
}			
Certificates *(v1.1+)* {	object		The link to a collection of certificates that the external account provider uses. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *Certificate*. See the Certificate schema for details.
}			
LDAPService {	object		The additional mapping information needed to parse a generic LDAP service.
Oem {}	object		See the Oem object definition in the Common properties section.
SearchSettings {	object		The required settings to search an external LDAP service.

Property	Type	Attributes	Notes
BaseDistinguishedNames array [ ]	array (string, null)	*read-write*	The base distinguished names to use to search an external LDAP service.
GroupNameAttribute	string	*read-write (null)*	The attribute name that contains the LDAP group name entry.
GroupsAttribute	string	*read-write (null)*	The attribute name that contains the groups for a user on the LDAP user entry.
UsernameAttribute	string	*read-write (null)*	The attribute name that contains the LDAP user name entry.
}			
}			
Links {	object		The links to other resources that are related to this resource.
Oem {}	object		See the Oem object definition in the Common properties section.
}			
OAuth2Service *(v1.3+)* {	object	*(null)*	The additional information needed to parse an OAuth 2.0 service.
Audience *(v1.3+)* [ ]	array (string)	*read-only*	The allowable audience strings of the Redfish service.
Issuer *(v1.3+)*	string	*read-write (null)*	The issuer string of the OAuth 2.0 service.
Mode *(v1.3+)*	string (enum)	*read-write*	The mode of operation for token validation. *For the possible property values, see Mode in Property details.*
OAuthServiceSigningKeys *(v1.3+)*	string	*read-write (null)*	The Base64-encoded signing keys of the issuer of the OAuth 2.0 service.
}			
Priority *(v1.2+)*	integer	*read-write (null)*	The authentication priority for the external account provider.
RemoteRoleMapping [{	array		The mapping rules to convert the external account providers account information to the local Redfish role.
LocalRole	string	*read-write (null)*	The name of the local Redfish role to which to map the remote user or group.
Oem {}	object		See the Oem object definition in the Common properties section.

Property	Type	Attributes	Notes
RemoteGroup	string	*read-write (null)*	The name of the remote group, or the remote role in the case of a Redfish service, that maps to the local Redfish role to which this entity links.
RemoteUser	string	*read-write (null)*	The name of the remote user that maps to the local Redfish role to which this entity links.
}]			
ServiceAddresses [ ]	array (string, null)	*read-write*	The addresses of the user account providers to which this external account provider links. The format of this field depends on the type of external account provider.
ServiceEnabled	boolean	*read-write (null)*	An indication of whether this service is enabled.
TACACSplusService *(v1.2+)* {	object	*(null)*	The additional information needed to parse a TACACS+ services.
PasswordExchangeProtocols *(v1.2+)* [ ]	array (string (enum))	*read-write (null)*	Indicates the allowed TACACS+ password exchange protocols. *For the possible property values, see PasswordExchangeProtocols in Property details.*
PrivilegeLevelArgument *(v1.2+)*	string	*read-write (null)*	Indicates the name of the TACACS+ argument name in an authorization request.
}			

6.36.4 Property details

6.36.4.1 AccountProviderType:

The type of external account provider to which this service connects.

string	Description
ActiveDirectoryService	An external Active Directory service.
LDAPService	A generic external LDAP service.
OAuth2 *(v1.3+)*	An external OAuth 2.0 service.
OEM	An OEM-specific external authentication or directory service.
RedfishService	An external Redfish service.
TACACSplus *(v1.3+)*	An external TACACS+ service.

6.36.4.2 AuthenticationType:

The type of authentication used to connect to the external account provider.

string	Description
KerberosKeytab	A Kerberos keytab.
OEM	An OEM-specific authentication mechanism.
Token	An opaque authentication token.
UsernameAndPassword	A user name and password combination.

6.36.4.3 Mode:

The mode of operation for token validation.

string	Description
Discovery	OAuth 2.0 service information for token validation is downloaded by the service.
Offline	OAuth 2.0 service information for token validation is configured by a client.

6.36.4.4 PasswordExchangeProtocols:

Indicates the allowed TACACS+ password exchange protocols.

string	Description
ASCII	The ASCII Login method.
CHAP	The CHAP Login method.
MSCHAPv1	The MS-CHAP v1 Login method.
MSCHAPv2	The MS-CHAP v2 Login method.
PAP	The PAP Login method.

6.36.5 Example response

```json
{
    "@odata.type": "#ExternalAccountProvider.v1_3_0.ExternalAccountProvider",
    "Id": "ExternalRedfishService",
    "Name": "Remote Redfish Service",
    "Description": "Remote Redfish Service providing additional Accounts to this Redfish Service",
    "AccountProviderType": "RedfishService",
    "ServiceAddresses": [
        "http://redfish.dmtf.org/redfish/v1/AccountService"
    ],
    "Authentication": {
        "AuthenticationType": "Token",
        "Token": null
    },
    "RemoteRoleMapping": [
        {
            "RemoteGroup": "Admin",
            "LocalRole": "Administrator"
        },
        {
            "RemoteGroup": "Operator",
            "LocalRole": "Operator"
        },
        {
            "RemoteGroup": "ReadOnly",
            "LocalRole": "ReadOnly"
        }
    ],
    "@odata.id": "/redfish/v1/AccountService/ExternalAccountProviders/ExternalRedfishService"
}
```

6.37 Fabric 1.3.0

Version	v1.3	v1.2	v1.1	v1.0
Release	2021.4	2020.3	2019.4	2016.2

6.37.1 Description

The Fabric schema represents a simple fabric consisting of one or more switches, zero or more endpoints, and zero or more zones.

6.37.2 URIs

/redfish/v1/Fabrics/*{FabricId}*

6.37.3 Properties

Property	Type	Attributes	Notes
AddressPools *(v1.1+)* {	object		The collection of links to the address pools that this fabric contains. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *AddressPool*. See the AddressPool schema for details.
}			
Connections *(v1.2+)* {	object		The collection of links to the connections that this fabric contains. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *Connection*. See the Connection schema for details.
}			
EndpointGroups *(v1.2+)* {	object		The collection of links to the endpoint groups that this fabric contains. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *EndpointGroup*. See the EndpointGroup schema for details.
}			
Endpoints {	object		The collection of links to the endpoints that this fabric contains. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *Endpoint*. See the Endpoint schema for details.
}			
FabricType	string (enum)	*read-only* *(null)*	The protocol being sent over this fabric. *For the possible property values, see FabricType in Property details.*
Links {	object		The links to other resources that are related to this resource.
Oem {}	object		See the Oem object definition in the Common properties section.
}			
MaxZones	integer	*read-only* *(null)*	The maximum number of zones the switch can currently configure.
Status {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.

Property	Type	Attributes	Notes
Switches {	object		The collection of links to the switches that this fabric contains. Contains a link to a resource.
@**odata.id**	string	*read-only*	Link to Collection of *Switch*. See the Switch schema for details.
}			
UUID *(v1.3+)*	string	*read-write (null)*	The UUID for this fabric.
Zones {	object		The collection of links to the zones that this fabric contains. Contains a link to a resource.
@**odata.id**	string	*read-only*	Link to Collection of *Zone*. See the Zone schema for details.
}			

6.37.4 Property details

6.37.4.1 FabricType:

The protocol being sent over this fabric.

string	Description
AHCI	Advanced Host Controller Interface (AHCI).
DisplayPort	DisplayPort.
DVI	DVI.
Ethernet	Ethernet.
FC	Fibre Channel.
FCoE	Fibre Channel over Ethernet (FCoE).
FCP	Fibre Channel Protocol for SCSI.
FICON	FIbre CONnection (FICON).
FTP	File Transfer Protocol (FTP).
GenZ	GenZ.
HDMI	HDMI.
HTTP	Hypertext Transport Protocol (HTTP).

string	Description
HTTPS	Hypertext Transfer Protocol Secure (HTTPS).
I2C	Inter-Integrated Circuit Bus.
InfiniBand	InfiniBand.
iSCSI	Internet SCSI.
iWARP	Internet Wide Area RDMA Protocol (iWARP).
MultiProtocol	Multiple Protocols.
NFSv3	Network File System (NFS) version 3.
NFSv4	Network File System (NFS) version 4.
NVLink	NVLink.
NVMe	Non-Volatile Memory Express (NVMe).
NVMeOverFabrics	NVMe over Fabrics.
OEM	OEM-specific.
PCIe	PCI Express.
RoCE	RDMA over Converged Ethernet Protocol.
RoCEv2	RDMA over Converged Ethernet Protocol Version 2.
SAS	Serial Attached SCSI.
SATA	Serial AT Attachment.
SFTP	SSH File Transfer Protocol (SFTP).
SMB	Server Message Block (SMB). Also known as the Common Internet File System (CIFS).
TCP	Transmission Control Protocol (TCP).
TFTP	Trivial File Transfer Protocol (TFTP).
UDP	User Datagram Protocol (UDP).
UHCI	Universal Host Controller Interface (UHCI).
USB	Universal Serial Bus (USB).
VGA	VGA.

6.37.5 Example response

```json
{
    "@odata.type": "#Fabric.v1_3_0.Fabric",
    "Id": "SAS",
    "Name": "SAS Fabric",
    "FabricType": "SAS",
    "Description": "A SAS Fabric with redundant switches connected to two initiators",
    "Status": {
        "State": "Enabled",
        "Health": "OK"
    },
    "Zones": {
        "@odata.id": "/redfish/v1/Fabrics/SAS/Zones"
    },
    "Endpoints": {
        "@odata.id": "/redfish/v1/Fabrics/SAS/Endpoints"
    },
    "Switches": {
        "@odata.id": "/redfish/v1/Fabrics/SAS/Switches"
    },
    "Links": {
        "Oem": {}
    },
    "Actions": {
        "Oem": {}
    },
    "Oem": {},
    "@odata.id": "/redfish/v1/Fabrics/SAS"
}
```

6.38 FabricAdapter 1.2.0

Version	v1.2	v1.1	v1.0
Release	2021.3	2021.2	2019.4

6.38.1 Description

A FabricAdapter represents the physical fabric adapter capable of connecting to an interconnect fabric. Examples include but are not limited to Ethernet, NVMe over Fabrics, Gen-Z, and SAS fabric adapters.

6.38.2 URIs

/redfish/v1/Systems/*{SystemId}*/FabricAdapters/*{FabricAdapterId}*

6.38.3 Properties

Property	Type	Attributes	Notes
ASICManufacturer	string	*read-only (null)*	The manufacturer name for the ASIC of this fabric adapter.
ASICPartNumber	string	*read-only (null)*	The part number for the ASIC on this fabric adapter.
ASICRevisionIdentifier	string	*read-only (null)*	The revision identifier for the ASIC on this fabric adapter.
FirmwareVersion	string	*read-only (null)*	The firmware version of this fabric adapter.
GenZ {	object		The Gen-Z specific properties for this fabric adapter.
MSDT {	object		The Multi Subnet Destination Table for the component. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *RouteEntry*. See the RouteEntry schema for details.
}			
PIDT [ ]	array (string, null)	*read-write*	An array of table entry values for the Packet Injection Delay Table.
RequestorVCAT {	object		The Requestor Virtual Channel Action Table for the component. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *VCATEntry*. See the VCATEntry schema for details.
}			
ResponderVCAT {	object		The Responder Virtual Channel Action Table for the component. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *VCATEntry*. See the VCATEntry schema for details.
}			
RITable [ ]	array (string, null)	*read-write*	An array of table entry values for the Responder Interface Table.

Property	Type	Attributes	Notes
SSDT {	object		The Single Subnet Destination Table for the component. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *RouteEntry*. See the RouteEntry schema for details.
}			
}			
Links {	object		The links to other Resources that are related to this Resource.
Endpoints [{	array		An array of links to the endpoints that represent the logical fabric connection to this fabric adapter.
@odata.id	string	*read-only*	Link to a Endpoint resource. See the Links section and the *Endpoint* schema for details.
}]			
Oem {}	object		See the Oem object definition in the Common properties section.
PCIeDevices *(v1.2+)* [{	array		An array of links to the PCIe devices associated with this fabric adapter.
@odata.id	string	*read-only*	Link to a PCIeDevice resource. See the Links section and the *PCIeDevice* schema for details.
}]			
}			
Location *(v1.1+)* {}	object		The location of the fabric adapter. For property details, see Location.
Manufacturer	string	*read-only (null)*	The manufacturer or OEM of this fabric adapter.
Model	string	*read-only (null)*	The model string for this fabric adapter.
PartNumber	string	*read-only (null)*	The part number for this fabric adapter.
PCIeInterface {	object		The PCIe interface details for this fabric adapter.
LanesInUse *(v1.3+)*	integer	*read-only (null)*	The number of PCIe lanes in use by this device.
MaxLanes *(v1.3+)*	integer	*read-only (null)*	The number of PCIe lanes supported by this device.

Property	Type	Attributes	Notes
MaxPCIeType *(v1.3+)*	string (enum)	*read-only (null)*	The highest version of the PCIe specification supported by this device. *For the possible property values, see MaxPCIeType in Property details.*
Oem *(v1.3+)* {}	object		See the Oem object definition in the Common properties section.
PCIeType *(v1.3+)*	string (enum)	*read-only (null)*	The version of the PCIe specification in use by this device. *For the possible property values, see PCIeType in Property details.*
}			
Ports {	object		The link to the collection of ports that exist on the fabric adapter. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *Port*. See the Port schema for details.
}			
SerialNumber	string	*read-only (null)*	The serial number for this fabric adapter.
SKU	string	*read-only (null)*	The manufacturer SKU for this fabric adapter.
SparePartNumber	string	*read-only (null)*	The spare part number for this fabric adapter.
Status {}	object		The status and health of the Resource and its subordinate or dependent Resources. For property details, see Status.
UUID	string	*read-only (null)*	The UUID for this fabric adapter.

6.38.4 Property details

6.38.4.1 MaxPCIeType:

The highest version of the PCIe specification supported by this device.

string	Description
Gen1	A PCIe v1.0 slot.
Gen2	A PCIe v2.0 slot.
Gen3	A PCIe v3.0 slot.
Gen4	A PCIe v4.0 slot.

string	Description
Gen5	A PCIe v5.0 slot.

6.38.4.2 PCIeType:

The version of the PCIe specification in use by this device.

string	Description
Gen1	A PCIe v1.0 slot.
Gen2	A PCIe v2.0 slot.
Gen3	A PCIe v3.0 slot.
Gen4	A PCIe v4.0 slot.
Gen5	A PCIe v5.0 slot.

6.38.5 Example response

```
{
    "@odata.type": "#FabricAdapter.v1_2_0.FabricAdapter",
    "Id": "Bridge",
    "Name": "Gen-Z Bridge",
    "Manufacturer": "Contoso",
    "Model": "Gen-Z Bridge Model X",
    "PartNumber": "975999-001",
    "SparePartNumber": "152111-A01",
    "SKU": "Contoso 2-port Gen-Z Bridge",
    "SerialNumber": "2M220100SL",
    "ASICRevisionIdentifier": "A0",
    "ASICPartNumber": "53312",
    "ASICManufacturer": "Contoso",
    "FirmwareVersion": "7.4.10",
    "Status": {
        "State": "Enabled",
        "Health": "OK"
    },
    "Ports": {
        "@odata.id": "/redfish/v1/Systems/GenZ-example/FabricAdapters/1/Ports"
    },
    "PCIeInterface": {
        "MaxPCIeType": "Gen4",
        "MaxLanes": 64,
```

```
        "PCIeType": "Gen4",
        "LanesInUse": 64
    },
    "UUID": "45724775-ed3b-2214-1313-9865200c1cc1",
    "Links": {
        "Endpoints": [
            {
                "@odata.id": "/redfish/v1/Fabrics/GenZ/Endpoints/3"
            }
        ]
    },
    "GenZ": {
        "SSDT": {
            "@odata.id": "/redfish/v1/Systems/GenZ-example/FabricAdapters/1/SSDT"
        },
        "MSDT": {
            "@odata.id": "/redfish/v1/Systems/GenZ-example/FabricAdapters/1/MSDT"
        },
        "RequestorVCAT": {
            "@odata.id": "/redfish/v1/Systems/GenZ-example/FabricAdapters/1/REQ-VCAT"
        },
        "ResponderVCAT": {
            "@odata.id": "/redfish/v1/Systems/GenZ-example/FabricAdapters/1/RSP-VCAT"
        },
        "RITable": [
            "0x12",
            "0x3E",
            "0x12",
            "0x3E",
            "0x12",
            "0x3E",
            "0x12",
            "0x3E",
            "0x12",
            "0x3E",
            "0x12",
            "0x3E",
            "0x12",
            "0x3E",
            "0x12",
            "0x3E"
        ],
        "PIDT": [
            "0x12234568",
            "0x12234568",
            "0x12234568",
            "0x12234568",
            "0x12234568",
            "0x12234568",
            "0x12234568",
```

```
                "0x12234568",
                "0x12234568",
                "0x12234568",
                "0x12234568",
                "0x12234568",
                "0x12234568",
                "0x12234568",
                "0x12234568",
                "0x12234568",
                "0x12234568",
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                "0x12234568",
                "0x12234568",
                "0x12234568",
                "0x12234568",
                "0x12234568",
                "0x12234568",
                "0x12234568",
                "0x12234568"
            ]
        },
        "Oem": {},
        "@odata.id": "/redfish/v1/Systems/GenZ-example/FabricAdapters/1"
    }
```

6.39 Facility 1.3.0

Version	v1.3	v1.2	v1.1	v1.0
Release	2021.3	2021.2	2020.4	2019.4

6.39.1 Description

The Facility schema represents the physical location containing equipment, such as a room, building, or campus.

6.39.2 URIs

/redfish/v1/Facilities/{FacilityId}

6.39.3 Properties

Property	Type	Attributes	Notes
AmbientMetrics *(v1.1+)* {	object		The link to the ambient environment metrics for this facility. See the *EnvironmentMetrics* schema for details on this property.
@odata.id	string	*read-only*	Link to a EnvironmentMetrics resource. See the Links section and the *EnvironmentMetrics* schema for details.
}			
EnvironmentMetrics *(v1.1+)* {	object		The link to the environment metrics for this facility. See the *EnvironmentMetrics* schema for details on this property.
@odata.id	string	*read-only*	Link to a EnvironmentMetrics resource. See the Links section and the *EnvironmentMetrics* schema for details.
}			
FacilityType	string (enum)	*read-only required*	The type of location this resource represents. *For the possible property values, see FacilityType in Property details.*
Links {	object		The links to other resources that are related to this resource.
ContainedByFacility {	object		The link to the facility that contains this facility.
@odata.id	string	*read-write*	Link to another Facility resource.
}			
ContainsChassis [{	array		An array of links to outermost chassis contained within this facility.
@odata.id	string	*read-write*	Link to a Chassis resource. See the Links section and the *Chassis* schema for details.
}]			
ContainsFacilities [{	array		An array of links to other facilities contained within this facility.
@odata.id	string	*read-write*	Link to another Facility resource.
}]			
ElectricalBuses *(v1.3+)* [{	array		An array of links to the electrical buses in this facility.
@odata.id	string	*read-write*	Link to a PowerDistribution resource. See the Links section and the *PowerDistribution* schema for details.

Property	Type	Attributes	Notes
}]			
FloorPDUs [{	array		An array of links to the floor power distribution units in this facility.
@odata.id	string	*read-write*	Link to a PowerDistribution resource. See the Links section and the *PowerDistribution* schema for details.
}]			
ManagedBy [{	array		An array of links to the managers responsible for managing this facility.
@odata.id	string	*read-only*	Link to a Manager resource. See the Links section and the *Manager* schema for details.
}]			
Oem {}	object		See the Oem object definition in the Common properties section.
PowerShelves *(v1.2+)* [{	array		An array of links to the power shelves in this facility.
@odata.id	string	*read-write*	Link to a PowerDistribution resource. See the Links section and the *PowerDistribution* schema for details.
}]			
RackPDUs [{	array		An array of links to the rack-level power distribution units in this facility.
@odata.id	string	*read-write*	Link to a PowerDistribution resource. See the Links section and the *PowerDistribution* schema for details.
}]			
Switchgear [{	array		An array of links to the switchgear in this facility.
@odata.id	string	*read-write*	Link to a PowerDistribution resource. See the Links section and the *PowerDistribution* schema for details.
}]			
TransferSwitches [{	array		An array of links to the transfer switches in this facility.
@odata.id	string	*read-write*	Link to a PowerDistribution resource. See the Links section and the *PowerDistribution* schema for details.
}]			
}			
Location {}	object		The location of the facility. For property details, see Location.
PowerDomains {	object		Link to the power domains in this facility. Contains a link to a resource.

Property	Type	Attributes	Notes
@odata.id	string	*read-only*	Link to Collection of *PowerDomain*. See the PowerDomain schema for details.
}			
Status {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.

6.39.4 Property details

6.39.4.1 FacilityType:

The type of location this resource represents.

string	Description
Building	A structure with a roof and walls.
Floor	A floor inside of a building.
Room	A room inside of a building or floor.
Site	A small area consisting of several buildings.

6.39.5 Example response

```
{
    "@odata.type": "#Facility.v1_3_0.Facility",
    "Id": "Room237",
    "Name": "Room #237, 2nd Floor",
    "FacilityType": "Room",
    "Status": {
        "State": "Enabled",
        "Health": "OK"
    },
    "Location": {
        "PostalAddress": {
            "Country": "US",
            "Territory": "OR",
            "City": "Portland",
            "Street": "1001 SW 5th Avenue",
            "HouseNumber": 1100,
            "Name": "DMTF, Inc.",
            "PostalCode": "97204",
```

```
            "Floor": "2",
            "Room": "237"
        }
    },
    "PowerDomains": {
        "@odata.id": "/redfish/v1/Facilities/Room237/PowerDomains"
    },
    "Links": {
        "ContainedByFacility": {
            "@odata.id": "/redfish/v1/Facilities/Building"
        },
        "RackPDUs": [
            {
                "@odata.id": "/redfish/v1/PowerEquipment/RackPDUs/1"
            }
        ]
    },
    "@odata.id": "/redfish/v1/Facilities/Room237"
}
```

6.40 Fan 1.1.1

Version	*v1.1*	*v1.0*
Release	2021.1	2020.4

6.40.1 Description

The Fan schema describes a cooling fan unit for a computer system or similar devices contained within a chassis.

6.40.2 URIs

/redfish/v1/Chassis/*{ChassisId}*/ThermalSubsystem/Fans/*{FanId}*

6.40.3 Properties

Property	Type	Attributes	Notes
Assembly {	object		The link to the assembly associated with this fan. See the *Assembly* schema for details on this property.

Property	Type	Attributes	Notes
@odata.id	string	*read-only*	Link to a Assembly resource. See the Links section and the *Assembly* schema for details.
}			
HotPluggable	boolean	*read-only (null)*	An indication of whether this device can be inserted or removed while the equipment is in operation.
Location {}	object		The location of the fan. For property details, see Location.
LocationIndicatorActive	boolean	*read-write (null)*	An indicator allowing an operator to physically locate this resource.
Manufacturer	string	*read-only (null)*	The manufacturer of this fan.
Model	string	*read-only (null)*	The model number for this fan.
PartNumber	string	*read-only (null)*	The part number for this fan.
PhysicalContext	string (enum)	*read-only*	The area or device associated with this fan. *For the possible property values, see PhysicalContext in Property details.*
PowerWatts *(v1.1+)* {	object (excerpt)		Power consumption (W). This object is an excerpt of the *Sensor* resource located at the URI shown in DataSourceUri.
ApparentVA	number (V.A)	*read-only (null)*	The product of voltage and current for an AC circuit, in volt-ampere units.
DataSourceUri	string (URI)	*read-only (null)*	The link to the resource that provides the data for this sensor.
PhaseAngleDegrees *(v1.5+)*	number	*read-only (null)*	The phase angle (degrees) between the current and voltage waveforms.
PowerFactor	number	*read-only (null)*	The power factor for this sensor.
ReactiveVAR	number (V.A)	*read-only (null)*	The square root of the difference term of squared apparent VA and squared power (Reading) for a circuit, in VAR units.
Reading	number	*read-only (null)*	The sensor value.
}			
SerialNumber	string	*read-only (null)*	The serial number for this fan.

Property	Type	Attributes	Notes
SparePartNumber	string	*read-only (null)*	The spare part number for this fan.
SpeedPercent {	object (excerpt)		The fan speed (percent). This object is an excerpt of the *Sensor* resource located at the URI shown in DataSourceUri.
DataSourceUri	string (URI)	*read-only (null)*	The link to the resource that provides the data for this sensor.
Reading	number	*read-only (null)*	The sensor value.
SpeedRPM *(v1.2+)*	number ({rev}/min)	*read-only (null)*	The rotational speed.
}			
Status {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.

6.40.4 Property details

6.40.4.1 PhysicalContext:

The area or device associated with this fan.

string	Description
Accelerator	An accelerator.
ACInput	An AC input.
ACMaintenanceBypassInput	An AC maintenance bypass input.
ACOutput	An AC output.
ACStaticBypassInput	An AC static bypass input.
ACUtilityInput	An AC utility input.
ASIC	An ASIC device, such as a networking chip or chipset component.
Back	The back of the chassis.
Backplane	A backplane within the chassis.
Battery	A battery.

string	Description
Board	A circuit board.
Chassis	The entire chassis.
ComputeBay	Within a compute bay.
CoolingSubsystem	The entire cooling, or air and liquid, subsystem.
CPU	A processor (CPU).
CPUSubsystem	The entire processor (CPU) subsystem.
DCBus	A DC bus.
Exhaust	The air exhaust point or points or region of the chassis.
ExpansionBay	Within an expansion bay.
Fan	A fan.
FPGA	An FPGA.
Front	The front of the chassis.
GPU	A graphics processor (GPU).
GPUSubsystem	The entire graphics processor (GPU) subsystem.
Intake	The air intake point or points or region of the chassis.
LiquidInlet	The liquid inlet point of the chassis.
LiquidOutlet	The liquid outlet point of the chassis.
Lower	The lower portion of the chassis.
Memory	A memory device.
MemorySubsystem	The entire memory subsystem.
Motor	A motor.
NetworkBay	Within a networking bay.
NetworkingDevice	A networking device.
PowerSubsystem	The entire power subsystem.
PowerSupply	A power supply.
PowerSupplyBay	Within a power supply bay.

string	Description
Pump	A pump.
Rectifier	A rectifier device.
Room	The room.
StorageBay	Within a storage bay.
StorageDevice	A storage device.
SystemBoard	The system board (PCB).
Transceiver	A transceiver.
Transformer	A transformer.
TrustedModule	A trusted module.
Upper	The upper portion of the chassis.
VoltageRegulator	A voltage regulator device.

6.40.5 Example response

```
{
    "@odata.type": "#Fan.v1_1_1.Fan",
    "Id": "Bay1",
    "Name": "Fan Bay 1",
    "Status": {
        "State": "Enabled",
        "Health": "OK"
    },
    "PhysicalContext": "Chassis",
    "Model": "RKS-440DC",
    "Manufacturer": "Contoso Fans",
    "PartNumber": "23456-133",
    "SparePartNumber": "93284-133",
    "LocationIndicatorActive": true,
    "HotPluggable": true,
    "SpeedPercent": {
        "Reading": 45,
        "SpeedRPM": 2200,
        "DataSourceUri": "/redfish/v1/Chassis/1U/Sensors/FanBay1"
    },
    "Location": {
        "PartLocation": {
            "ServiceLabel": "Chassis Fan Bay 1",
```

```
            "LocationType": "Bay",
            "LocationOrdinalValue": 0
        }
    },
    "@odata.id": "/redfish/v1/Chassis/1U/ThermalSubsystem/Fans/Bay1"
}
```

6.41 GraphicsController 1.0.0

Version	*v1.0*
Release	2021.1

6.41.1 Description

The GraphicsController schema defines a graphics controller that can be used to drive one or more display devices.

6.41.2 URIs

/redfish/v1/Systems/*{ComputerSystemId}*/GraphicsControllers/*{ControllerId}*

6.41.3 Properties

Property	Type	Attributes	Notes
AssetTag	string	*read-write (null)*	The user-assigned asset tag for this graphics controller.
BiosVersion	string	*read-only (null)*	The version of the graphics controller BIOS or primary graphics controller firmware.
DriverVersion	string	*read-only (null)*	The version of the graphics controller driver loaded in the operating system.
Links {	object		The links to other resources that are related to this resource.
Oem {}	object		See the Oem object definition in the Common properties section.
PCIeDevice {	object	*(null)*	A link to the PCIe device that represents this graphics controller. See the *PCIeDevice* schema for details on this property.

Property	Type	Attributes	Notes
@odata.id	string	*read-only*	Link to a PCIeDevice resource. See the Links section and the *PCIeDevice* schema for details.
}			
Processors [{	array		An array of links to the processors that are a part of this graphics controller.
@odata.id	string	*read-only*	Link to a Processor resource. See the Links section and the *Processor* schema for details.
}]			
}			
Location {}	object		The location of the graphics controller. For property details, see Location.
Manufacturer	string	*read-only (null)*	The manufacturer of this graphics controller.
Model	string	*read-only (null)*	The product model number of this graphics controller.
PartNumber	string	*read-only (null)*	The part number for this graphics controller.
Ports {	object		The ports of the graphics controller. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *Port*. See the Port schema for details.
}			
SerialNumber	string	*read-only (null)*	The serial number for this graphics controller.
SKU	string	*read-only (null)*	The SKU for this graphics controller.
SparePartNumber	string	*read-only (null)*	The spare part number of the graphics controller.
Status {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.

6.41.4 Example response

```
{
    "@odata.type": "#GraphicsController.v1_0_0.GraphicsController",
    "Id": "GPU1",
```

```
    "Name": "Contoso Graphics Controller 1",
    "AssetTag": "",
    "Manufacturer": "Contoso",
    "Model": "GPU1",
    "SKU": "80937",
    "SerialNumber": "2M220100SL",
    "PartNumber": "G37891",
    "SparePartNumber": "G37890",
    "BiosVersion": "90.02.17.00.7D",
    "DriverVersion": "27.21.14.6079 (Contoso 460.79) DCH / Win 10 64",
    "Status": {
        "State": "Enabled",
        "Health": "OK"
    },
    "Location": {
        "PartLocation": {
            "ServiceLabel": "Slot 1",
            "LocationOrdinalValue": 1,
            "LocationType": "Slot",
            "Orientation": "LeftToRight",
            "Reference": "Rear"
        }
    },
    "Ports": {
        "@odata.id": "/redfish/v1/Systems/1/GraphicsControllers/GPU1/Ports"
    },
    "Links": {
        "Processors": [
            {
                "@odata.id": "/redfish/v1/Systems/1/Processors/GPU"
            }
        ],
        "PCIeDevice": {}
    },
    "Oem": {},
    "@odata.id": "/redfish/v1/Systems/1/GraphicsControllers/GPU1"
}
```

6.42 HostInterface 1.3.0

Version	v1.3	v1.2	v1.1	v1.0
Release	2020.3	2018.2	2017.1	2016.3

6.42.1 Description

The properties associated with a Host Interface. A Host Interface is a connection between host software and a Redfish Service.

6.42.2 URIs

/redfish/v1/Managers/*{ManagerId}*/HostInterfaces/*{HostInterfaceId}*

6.42.3 Properties

Property	Type	Attributes	Notes
AuthenticationModes [ ]	array (string (enum))	*read-write*	The authentication modes available on this interface. *For the possible property values, see AuthenticationModes in Property details.*
AuthNoneRoleId *(v1.2+)*	string	*read-write*	The role when no authentication on this interface is used.
CredentialBootstrapping *(v1.3+)* {	object		The credential bootstrapping settings for this interface.
EnableAfterReset *(v1.3+)*	boolean	*read-write (null)*	An indication of whether credential bootstrapping is enabled after a reset for this interface.
Enabled *(v1.3+)*	boolean	*read-write (null)*	An indication of whether credential bootstrapping is enabled for this interface.
RoleId *(v1.3+)*	string	*read-write*	The role used for the bootstrap account created for this interface.
}			
ExternallyAccessible	boolean	*read-only (null)*	An indication of whether external entities can access this interface. External entities are non-host entities. For example, if the host and manager are connected through a switch and the switch also exposes an external port on the system, external clients can also use the interface, and this property value is `true` .
FirmwareAuthEnabled (deprecated v1.3)	boolean	*read-write (null)*	An indication of whether this firmware authentication is enabled for this interface. *Deprecated in v1.3 and later. This property has been deprecated in favor of newer methods of negotiating credentials.*
FirmwareAuthRoleId *(deprecated v1.3)*	string	*read-write*	The Role used for firmware authentication on this interface. *Deprecated in v1.3 and later. This property has been deprecated in favor of newer methods of negotiating credentials.*
HostEthernetInterfaces {	object		A link to the collection of network interface controllers or cards (NICs) that a computer system uses to communicate with this Host Interface. Contains a link to a resource.

Property	Type	Attributes	Notes
@odata.id	string	*read-only*	Link to Collection of *EthernetInterface*. See the EthernetInterface schema for details.
}			
HostInterfaceType	string (enum)	*read-only (null)*	The Host Interface type for this interface. *For the possible property values, see HostInterfaceType in Property details.*
InterfaceEnabled	boolean	*read-write (null)*	An indication of whether this interface is enabled.
KernelAuthEnabled *(deprecated v1.3)*	boolean	*read-write (null)*	An indication of whether this kernel authentication is enabled for this interface. *Deprecated in v1.3 and later. This property has been deprecated in favor of newer methods of negotiating credentials.*
KernelAuthRoleId *(deprecated v1.3)*	string	*read-write*	The Role used for kernel authentication on this interface. *Deprecated in v1.3 and later. This property has been deprecated in favor of newer methods of negotiating credentials.*
Links {	object		The links to other Resources that are related to this Resource.
AuthNoneRole *(v1.2+)* {	object		The link to the Redfish Role that contains the privileges on this Host Interface when no authentication is performed. See the *Role* schema for details on this property.
@odata.id	string	*read-only*	Link to a Role resource. See the Links section and the *Role* schema for details.
}			
ComputerSystems [{	array		An array of links to the computer systems connected to this Host Interface.
@odata.id	string	*read-only*	Link to a ComputerSystem resource. See the Links section and the *ComputerSystem* schema for details.
}]			
CredentialBootstrappingRole *(v1.3+)* {	object		The link to the role that contains the privileges for the bootstrap account created for this interface. See the *Role* schema for details on this property.
@odata.id	string	*read-only*	Link to a Role resource. See the Links section and the *Role* schema for details.
}			
FirmwareAuthRole *(deprecated v1.3)* {	object		The link to the Redfish Role that has firmware authentication privileges on this Host Interface. See the *Role* schema for details on this property. *Deprecated in v1.3 and later. This property has been deprecated in favor of newer methods of negotiating credentials.*

Property	Type	Attributes	Notes
@odata.id	string	*read-only*	Link to a Role resource. See the Links section and the *Role* schema for details.
}			
KernelAuthRole *(deprecated v1.3)* {	object		The link to the Redfish Role defining privileges for this Host Interface when using kernel authentication. See the *Role* schema for details on this property. *Deprecated in v1.3 and later. This property has been deprecated in favor of newer methods of negotiating credentials.*
@odata.id	string	*read-only*	Link to a Role resource. See the Links section and the *Role* schema for details.
}			
Oem {}	object		See the Oem object definition in the Common properties section.
}			
ManagerEthernetInterface {	object		A link to a single network interface controllers or cards (NIC) that this manager uses for network communication with this Host Interface. See the *EthernetInterface* schema for details on this property.
@odata.id	string	*read-only*	Link to a EthernetInterface resource. See the Links section and the *EthernetInterface* schema for details.
}			
NetworkProtocol {	object		A link to the network services and their settings that the manager controls. In this property, clients find configuration options for the network and network services. See the *ManagerNetworkProtocol* schema for details on this property.
@odata.id	string	*read-only*	Link to a ManagerNetworkProtocol resource. See the Links section and the *ManagerNetworkProtocol* schema for details.
}			
Status {}	object		The status and health of the Resource and its subordinate or dependent Resources. For property details, see Status.

6.42.4 Property details

6.42.4.1 AuthenticationModes:

The authentication modes available on this interface.

string	Description
AuthNone	Requests without any sort of authentication are allowed.
BasicAuth	Requests using HTTP Basic Authentication are allowed.
OemAuth	Requests using OEM authentication mechanisms are allowed.
RedfishSessionAuth	Requests using Redfish Session Authentication are allowed.

6.42.4.2 HostInterfaceType:

The Host Interface type for this interface.

string	Description
NetworkHostInterface	This interface is a Network Host Interface.

6.42.5 Example response

```
{
    "@odata.type": "#HostInterface.v1_3_0.HostInterface",
    "Id": "1",
    "Name": "Host Interface",
    "Description": "Management Host Interface",
    "HostInterfaceType": "NetworkHostInterface",
    "Status": {
        "State": "Enabled",
        "Health": "OK"
    },
    "InterfaceEnabled": true,
    "ExternallyAccessible": false,
    "AuthenticationModes": [
        "AuthNone",
        "BasicAuth",
        "RedfishSessionAuth",
        "OemAuth"
    ],
    "KernelAuthRoleId": "Administrator",
    "KernelAuthEnabled": true,
    "FirmwareAuthRoleId": "Administrator",
    "FirmwareAuthEnabled": true,
    "HostEthernetInterfaces": {
        "@odata.id": "/redfish/v1/Managers/BMC/HostInterfaces/1/HostEthernetInterfaces"
    },
    "ManagerEthernetInterface": {
```

```
            "@odata.id": "/redfish/v1/Managers/BMC/EthernetInterfaces/ToHost"
        },
        "NetworkProtocol": {
            "@odata.id": "/redfish/v1/Managers/BMC/NetworkProtocol"
        },
        "Links": {
            "ComputerSystems": [
                {
                    "@odata.id": "/redfish/v1/Systems/ORD144"
                }
            ],
            "KernelAuthRole": {
                "@odata.id": "/redfish/v1/AccountService/Roles/Administrator"
            },
            "FirmwareAuthRole": {
                "@odata.id": "/redfish/v1/AccountService/Roles/Administrator"
            }
        },
        "Oem": {},
        "@odata.id": "/redfish/v1/Managers/BMC/HostInterfaces/1"
    }
```

6.43 Job 1.0.7

Version	*v1.0*
Release	2018.2

6.43.1 Description

The Job schema contains information about a job that a Redfish job service schedules or executes. Clients create jobs to describe a series of operations that occur at periodic intervals.

6.43.2 URIs

/redfish/v1/JobService/Jobs/{*JobId*}
/redfish/v1/JobService/Jobs/{*JobId*}/Steps/{*JobId2*}

6.43.3 Properties

Property	Type	Attributes	Notes
CreatedBy	string	*read-only*	The person or program that created this job entry.
EndTime	string (date-time)	*read-only*	The date and time when the job was completed.
HidePayload	boolean	*read-only*	An indication of whether the contents of the payload should be hidden from view after the job has been created. If `true` , responses do not return the payload. If `false` , responses return the payload. If this property is not present when the job is created, the default is `false` .
JobState	string (enum)	*read-write*	The state of the job. *For the possible property values, see JobState in Property details.*
JobStatus	string (enum)	*read-only*	The status of the job. *For the possible property values, see JobStatus in Property details.*
MaxExecutionTime	string	*read-write (null)*	The maximum amount of time the job is allowed to execute.
Messages [{ }]	array (object)		An array of messages associated with the job. For property details, see Message.
Payload {	object		The HTTP and JSON payload details for this job.
HttpHeaders [ ]	array (string)	*read-only*	An array of HTTP headers in this job.
HttpOperation	string	*read-only*	The HTTP operation that executes this job.
JsonBody	string	*read-only*	The JSON payload to use in the execution of this job.
TargetUri	string (URI)	*read-only*	The link to the target for this job.
}			
PercentComplete	integer (%)	*read-only (null)*	The completion percentage of this job.
Schedule {}	object		The schedule settings for this job. For property details, see Schedule.
StartTime	string (date-time)	*read-only*	The date and time when the job was started or is scheduled to start.
StepOrder [ ]	array (string)	*read-only*	The serialized execution order of the job steps.
Steps {	object		The link to a collection of steps for this job. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *Job*. See the Job schema for details.

Property	Type	Attributes	Notes
}			

6.43.4 Property details

6.43.4.1 JobState:

The state of the job.

string	Description
Cancelled	Job was cancelled.
Completed	Job was completed.
Continue	Job is to resume operation.
Exception	Job has stopped due to an exception condition.
Interrupted	Job has been interrupted.
New	A new job.
Pending	Job is pending and has not started.
Running	Job is running normally.
Service	Job is running as a service.
Starting	Job is starting.
Stopping	Job is in the process of stopping.
Suspended	Job has been suspended.
UserIntervention	Job is waiting for user intervention.

6.43.4.2 JobStatus:

The status of the job.

string	Description
Critical	A critical condition requires immediate attention.

string	Description
OK	Normal.
Warning	A condition requires attention.

6.43.5 Example response

```json
{
    "@odata.type": "#Job.v1_0_7.Job",
    "Id": "RebootRack",
    "Name": "Scheduled Nightly Reboot of the rack",
    "JobStatus": "OK",
    "JobState": "Running",
    "StartTime": "2018-04-01T00:01+6:00",
    "PercentComplete": 24,
    "Schedule": {
        "Lifetime": "P4Y",
        "InitialStartTime": "2018-01-01T01:00:00+06:00",
        "RecurrenceInterval": "P1D",
        "EnabledDaysOfWeek": [
            "Monday",
            "Tuesday",
            "Wednesday",
            "Thursday",
            "Friday"
        ]
    },
    "Steps": {
        "@odata.id": "/redfish/v1/JobService/Jobs/RebootRack/Steps"
    },
    "StepOrder": [
        "Red",
        "Orange",
        "Yellow",
        "Green",
        "Blue",
        "Indigo",
        "Violet"
    ],
    "@odata.id": "/redfish/v1/JobService/Jobs/RebootRack"
}
```

6.44 JobService 1.0.4

Version	*v1.0*
Release	2018.2

6.44.1 Description

The JobService schema contains properties for scheduling and execution of operations, represents the properties for the job service itself, and has links to jobs managed by the job service.

6.44.2 URIs

/redfish/v1/JobService

6.44.3 Properties

Property	Type	Attributes	Notes
DateTime	string (date-time)	*read-only (null)*	The current date and time setting for the job service.
Jobs {	object		The links to the jobs collection. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *Job*. See the Job schema for details.
}			
Log {	object		The link to a log service that the job service uses. This service can be a dedicated log service or a pointer a log service under another resource, such as a manager. See the *LogService* schema for details on this property.
@odata.id	string	*read-only*	Link to a LogService resource. See the Links section and the *LogService* schema for details.
}			
ServiceCapabilities {	object		The supported capabilities of this job service implementation.
MaxJobs	integer	*read-only (null)*	The maximum number of jobs supported.

Property	Type	Attributes	Notes
MaxSteps	integer	*read-only (null)*	The maximum number of job steps supported.
Scheduling	boolean	*read-only (null)*	An indication of whether scheduling of jobs is supported.
}			
ServiceEnabled	boolean	*read-write (null)*	An indication of whether this service is enabled.
Status {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.

6.44.4 Example response

```
{
    "@odata.type": "#JobService.v1_0_4.JobService",
    "Id": "JobService",
    "Name": "Job Service",
    "DateTime": "2018-06-13T04:14+06:00",
    "Status": {
        "State": "Enabled",
        "Health": "OK"
    },
    "ServiceEnabled": true,
    "ServiceCapabilities": {
        "MaxJobs": 100,
        "MaxSteps": 50,
        "Scheduling": true
    },
    "Jobs": {
        "@odata.id": "/redfish/v1/JobService/Jobs"
    },
    "Log": {
        "@odata.id": "/redfish/v1/JobService/Log"
    },
    "Actions": {
        "Oem": {
            "#Contoso.EasyButton": {
                "target": "/redfish/v1/JobService/Contoso.EasyButton",
                "@Redfish.ActionInfo": "/redfish/v1/JobService/EasyButtonActionInfo"
            }
        }
    },
    "Oem": {},
    "@odata.id": "/redfish/v1/JobService"
```

```
    }
```

6.45 JsonSchemaFile 1.1.4

Version	v1.1	v1.0
Release	2017.1	1.0

6.45.1 Description

The JsonSchemaFile schema contains the properties that describe the locations, as URIs, of a Redfish Schema definition that a Redfish Service implements or references.

6.45.2 URIs

/redfish/v1/JsonSchemas/{*JsonSchemaFileId*}

6.45.3 Properties

Property	Type	Attributes	Notes
Languages [ ]	array (string)	*read-only* *required*	The RFC5646-conformant language codes for the available schemas.
Location [{	array	* required*	Location information for this schema file.
ArchiveFile	string	*read-only*	The name of the file in the archive, if the schema is hosted on the service in an archive file.
ArchiveUri	string (URI)	*read-only*	The link to an archive file, if the schema is hosted on the service in an archive file.
Language	string	*read-only*	The language code for the schema file.
PublicationUri	string (URI)	*read-only*	The link to publicly available (canonical) URI for schema.
Uri	string (URI)	*read-only*	The link to locally available URI for schema.
}]			

Property	Type	Attributes	Notes
Schema	string	*read-only* *required*	The @odata.type name this schema describes.

6.45.4 Example response

```
{
    "@odata.type": "#JsonSchemaFile.v1_1_4.JsonSchemaFile",
    "Id": "Chassis.v1_11_0",
    "Name": "Chassis Schema File",
    "Description": "Chassis Schema File Location",
    "Languages": [
        "en"
    ],
    "Schema": "#Chassis.v1_11_0.Chassis",
    "Oem": {},
    "Location": [
        {
            "Language": "en",
            "ArchiveUri": "/Schemas.gz",
            "PublicationUri": "http://redfish.dmtf.org/schemas/v1/Chassis.v1_11_0.json",
            "ArchiveFile": "Chassis.v1_11_0.json"
        },
        {
            "Language": "zh",
            "ArchiveUri": "/Schemas.zh.gz",
            "PublicationUri": "http://schemas.contoso.com/Chassis.v1_11_0.zh.json",
            "ArchiveFile": "Chassis.v1_11_0.zh.json"
        },
        {
            "Language": "xy",
            "Uri": "/redfish/v1/JsonSchemas/Chassis.v1_11_0.xy.json",
            "PublicationUri": "http://schemas.contoso.com/Chassis.v1_11_0.xy.json"
        }
    ],
    "@odata.id": "/redfish/v1/JsonSchemas/Chassis.v1_11_0"
}
```

6.46 Key 1.0.0

Version	v1.0
Release	2021.2

6.46.1 Description

The Key schema describes sensitive data for accessing devices or services.

6.46.2 URIs

/redfish/v1/KeyService/NVMeoFSecrets/*{KeyId}*

6.46.3 Properties

Property	Type	Attributes	Notes
KeyString	string	*read-only required on create (null)*	The string for the key.
KeyType	string (enum)	*read-only required on create (null)*	The format of the key. *For the possible property values, see KeyType in Property details.*
NVMeoF {	object	*(null)*	NVMe-oF specific properties.
HostKeyId	string	*read-write (null)*	The identifier of the host key paired with this target key.
NQN	string	*read-only required on create (null)*	The NVMe Qualified Name (NQN) of the host or target subsystem associated with this key.
OEMSecurityProtocolType	string	*read-only (null)*	The OEM security protocol that this key uses.
SecureHashAllowList [ ]	array (string (enum))	*read-only (null)*	The secure hash algorithms allowed with the usage of this key. *For the possible property values, see SecureHashAllowList in Property details.*
SecurityProtocolType	string (enum)	*read-only (null)*	The security protocol that this key uses. *For the possible property values, see SecurityProtocolType in Property details.*
}			

6.46.4 Property details

6.46.4.1 KeyType:

The format of the key.

string	Description
NVMeoF	An NVMe-oF key.

6.46.4.2 SecureHashAllowList:

The secure hash algorithms allowed with the usage of this key.

string	Description
SHA256	SHA-256.
SHA384	SHA-384.
SHA512	SHA-512.

6.46.4.3 SecurityProtocolType:

The security protocol that this key uses.

string	Description
DHHC	Diffie-Hellman Hashed Message Authentication Code Challenge Handshake Authentication Protocol (DH-HMAC-CHAP).
OEM	OEM.
TLS_PSK	Transport Layer Security Pre-Shared Key (TLS PSK).

6.46.5 Example response

```
{
    "@odata.type": "#Key.v1_0_0.Key",
    "Id": "0",
```

```
    "Name": "NVMeoF key 0, target subsystem",
    "KeyType": "NVMeoF",
    "KeyString": "DHHC-1:00:ia6zGodOr4SEG0Zzaw398rpY0wqipUWj4jWjUh4HWUz6aQ2n:",
    "NVMeoF": {
        "NQN": "nqn.corp.com:nvme:target-subsystem-0001",
        "SecurityProtocolType": "DHHC",
        "HostKeyId": "1",
        "SecureHashAllowList": [
            "SHA384",
            "SHA512"
        ]
    },
    "@odata.id": "/redfish/v1/KeyService/NVMeoFSecrets/0"
}
```

6.47 KeyPolicy 1.0.0

Version	*v1.0*
Release	2021.2

6.47.1 Description

The KeyPolicy schema describes settings for how keys are allowed to be used for accessing devices or services.

6.47.2 URIs

/redfish/v1/KeyService/NVMeoFKeyPolicies/*{KeyPolicyId}*

6.47.3 Properties

Property	Type	Attributes	Notes
IsDefault	boolean	*read-write (null)*	Indicates if this is the default key policy.
KeyPolicyType	string (enum)	*read-only required on create (null)*	The type of key policy. *For the possible property values, see KeyPolicyType in Property details.*

Property	Type	Attributes	Notes
NVMeoF {	object	*(null)*	NVMe-oF specific properties.
CipherSuiteAllowList [ ]	array (string (enum))	*read-write (null)*	The cipher suites that this key policy allows. *For the possible property values, see CipherSuiteAllowList in Property details.*
DHGroupAllowList [ ]	array (string (enum))	*read-write (null)*	The Diffie-Hellman (DH) groups that this key policy allows. *For the possible property values, see DHGroupAllowList in Property details.*
OEMSecurityProtocolAllowList [ ]	array (string, null)	*read-write*	The OEM security protocols that this key policy allows.
SecureHashAllowList [ ]	array (string (enum))	*read-write (null)*	The secure hash algorithms that this key policy allows. *For the possible property values, see SecureHashAllowList in Property details.*
SecurityProtocolAllowList [ ]	array (string (enum))	*read-write (null)*	The security protocols that this key policy allows. *For the possible property values, see SecurityProtocolAllowList in Property details.*
SecurityTransportAllowList [ ]	array (string (enum))	*read-write (null)*	The security transports that this key policy allows. *For the possible property values, see SecurityTransportAllowList in Property details.*
}			

6.47.4 Property details

6.47.4.1 CipherSuiteAllowList:

The cipher suites that this key policy allows.

string	Description
TLS_AES_128_GCM_SHA256	TLS_AES_128_GCM_SHA256.
TLS_AES_256_GCM_SHA384	TLS_AES_256_GCM_SHA384.

6.47.4.2 DHGroupAllowList:

The Diffie-Hellman (DH) groups that this key policy allows.

string	Description
FFDHE2048	2048-bit Diffie-Hellman (DH) group.
FFDHE3072	3072-bit Diffie-Hellman (DH) group.
FFDHE4096	4096-bit Diffie-Hellman (DH) group.
FFDHE6144	6144-bit Diffie-Hellman (DH) group.
FFDHE8192	8192-bit Diffie-Hellman (DH) group.

6.47.4.3 KeyPolicyType:

The type of key policy.

string	Description
NVMeoF	An NVMe-oF key policy.

6.47.4.4 SecureHashAllowList:

The secure hash algorithms that this key policy allows.

string	Description
SHA256	SHA-256.
SHA384	SHA-384.
SHA512	SHA-512.

6.47.4.5 SecurityProtocolAllowList:

The security protocols that this key policy allows.

string	Description
DHHC	Diffie-Hellman Hashed Message Authentication Code Challenge Handshake Authentication Protocol (DH-HMAC-CHAP).
OEM	OEM.

string	Description
TLS_PSK	Transport Layer Security Pre-Shared Key (TLS PSK).

6.47.4.6 SecurityTransportAllowList:

The security transports that this key policy allows.

string	Description
TLSv2	Transport Layer Security (TLS) v2.
TLSv3	Transport Layer Security (TLS) v3.

6.47.5 Example response

```
{
    "@odata.type": "#KeyPolicy.v1_0_0.KeyPolicy",
    "Id": "0",
    "Name": "Default NVMeoF Key Policy",
    "IsDefault": true,
    "KeyPolicyType": "NVMeoF",
    "NVMeoF": {
        "SecurityTransportAllowList": [
            "TLSv2",
            "TLSv3"
        ],
        "CipherSuiteAllowList": [
            "TLS_AES_128_GCM_SHA256",
            "TLS_AES_256_GCM_SHA384"
        ],
        "SecurityProtocolAllowList": [
            "DHHC",
            "TLS_PSK"
        ],
        "DHGroupAllowList": [
            "FFDHE2048",
            "FFDHE3072",
            "FFDHE4096",
            "FFDHE6144",
            "FFDHE8192"
        ],
        "SecureHashAllowList": [
            "SHA384",
            "SHA512"
```

```
        ]
    },
    "@odata.id": "/redfish/v1/KeyService/NVMeoFKeyPolicies/0"
}
```

6.48 KeyService 1.0.0

Version	*v1.0*
Release	2021.2

6.48.1 Description

The KeyService schema describes a key service that represents the actions available to manage keys.

6.48.2 URIs

/redfish/v1/KeyService

6.48.3 Properties

Property	Type	Attributes	Notes
NVMeoFKeyPolicies {	object		The NVMe-oF key policies maintained by this service. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *KeyPolicy*. See the KeyPolicy schema for details.
}			
NVMeoFSecrets {	object		The NVMe-oF keys maintained by this service. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *Key*. See the Key schema for details.
}			

6.48.4 Example response

```
{
```

```
    "@odata.type": "#KeyService.v1_0_0.KeyService",
    "Id": "KeyService",
    "Name": "Key Service",
    "Actions": {},
    "NVMeoFSecrets": {
        "@odata.id": "/redfish/v1/KeyService/NVMeoFSecrets"
    },
    "NVMeoFKeyPolicies": {
        "@odata.id": "/redfish/v1/KeyService/NVMeoFKeyPolicies"
    },
    "Oem": {},
    "@odata.id": "/redfish/v1/KeyService"
}
```

6.49 License 1.0.0

Version	*v1.0*
Release	2021.3

6.49.1 Description

The License schema describes a license for a feature.

6.49.2 URIs

/redfish/v1/LicenseService/Licenses/*{LicenseId}*

6.49.3 Properties

Property	Type	Attributes	Notes
AuthorizationScope	string (enum)	read-only (null)	The authorization scope of the license. *For the possible property values, see AuthorizationScope in Property details.*
Contact {	object		The contact of the license.
ContactName	string	read-only (null)	Name of this contact.
EmailAddress	string	read-only (null)	Email address for this contact.

Property	Type	Attributes	Notes
PhoneNumber	string	*read-only (null)*	Phone number for this contact.
}			
DownloadURI	string (URI)	*read-only*	The URI at which to download the license file.
EntitlementId	string	*read-only (null)*	The entitlement identifier for this license.
ExpirationDate	string (date-time)	*read-only (null)*	The date and time when the license expires.
GracePeriodDays	integer	*read-only (null)*	The grace days of this license.
InstallDate	string (date-time)	*read-only (null)*	The date and time when the license was installed.
LicenseInfoURI	string (URI)	*read-only (null)*	The URI at which more information about this license can be obtained.
LicenseOrigin	string (enum)	*read-only (null)*	This indicates the origin of the license. *For the possible property values, see LicenseOrigin in Property details.*
LicenseString	string	*read-only required on create (null)*	The Base64-encoded string of the license.
LicenseType	string (enum)	*read-only (null)*	The type of the license. *For the possible property values, see LicenseType in Property details.*
Links {	object		The links to other resources that are related to this resource.
AuthorizedDevices [{	array		An array of links to devices authorized by the license.
@odata.id	string (URI)	*read-only*	The unique identifier for a resource.
}]			
Oem {}	object		See the Oem object definition in the Common properties section.
}			
Manufacturer	string	*read-only (null)*	The manufacturer or producer of this license.

Property	Type	Attributes	Notes
MaxAuthorizedDevices	integer	*read-only (null)*	The maximum number of devices authorized by the license.
PartNumber	string	*read-only (null)*	The part number for this license.
RemainingDuration	string	*read-only (null)*	The remaining usage duration before the license expires.
RemainingUseCount	integer	*read-only (null)*	The remaining usage count before the license expires.
Removable	boolean	*read-only (null)*	An indication of whether the license is removable.
SerialNumber	string	*read-only (null)*	The serial number for this license.
SKU	string	*read-only (null)*	The SKU for this license.
Status {}	object		The status of the license. For property details, see Status.

6.49.4 Property details

6.49.4.1 AuthorizationScope:

The authorization scope of the license.

string	Description
Capacity	The license authorizes functionality to a number of devices, but not restricted to specific device instances.
Device	The license authorizes functionality for specific device instances.
Service	The license authorizes functionality to this Redfish service.

6.49.4.2 LicenseOrigin:

This indicates the origin of the license.

string	Description
BuiltIn	A license was provided with the product.

string	Description
Installed	A license installed by user.

6.49.4.3 LicenseType:

The type of the license.

string	Description
Production	A license for use in production environments.
Prototype	A prototype version of license.
Trial	A trial license.

6.49.5 Example response

```json
{
    "@odata.type": "#License.v1_0_0.License",
    "Id": "KVM",
    "Name": "Blade KVM-IP License 3-Pack",
    "Status": {
        "State": "Enabled",
        "Health": "OK"
    },
    "EntitlementId": "LIC20180820LDLM5C",
    "LicenseType": "Production",
    "Removable": false,
    "LicenseOrigin": "BuiltIn",
    "AuthorizationScope": "Device",
    "GracePeriodDays": 60,
    "Manufacturer": "Contoso",
    "InstallDate": "2020-08-20T20:13:44Z",
    "ExpirationDate": "2022-08-20T20:13:43Z",
    "Links": {
        "AuthorizedDevices": [
            {
                "@odata.id": "/redfish/v1/Managers/Blade1"
            },
            {
                "@odata.id": "/redfish/v1/Managers/Blade4"
            },
            {
                "@odata.id": "/redfish/v1/Managers/Blade5"
            }
```

```
            ]
        },
        "Contact": {
            "ContactName": "Bob Johnson",
            "EmailAddress": "bjohnson@contoso.com"
        },
        "DownloadURI": "/dumpster/license111",
        "LicenseInfoURI": "http://shop.contoso.com/licenses/blade-kvm",
        "Actions": {},
        "Oem": {},
        "@odata.id": "/redfish/v1/LicenseService/Licenses/KVM"
    }
```

6.50 LicenseService 1.0.0

Version	*v1.0*
Release	2021.3

6.50.1 Description

The LicenseService schema describes the license service and the properties for the service itself with a link to the collection of licenses. The license service also provides methods for installing licenses in a Redfish service.

6.50.2 URIs

/redfish/v1/LicenseService

6.50.3 Properties

Property	Type	Attributes	Notes
LicenseExpirationWarningDays	integer	*read-write (null)*	The number of days prior to a license expiration that a warning message is sent. A value of zero indicates no warning message is sent.
Licenses {	object	*(null)*	The link to the collection of licenses. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *License*. See the License schema for details.
}			

Property	Type	Attributes	Notes
ServiceEnabled	boolean	*read-write (null)*	An indication of whether this service is enabled.

6.50.4 Actions

6.50.4.1 Install

Description

This action installs one or more licenses from a remote file.

Action URI: {Base URI of target resource}/Actions/LicenseService.Install

Action parameters

Parameter Name	Type	Attributes	Notes
LicenseFileURI	string	*required*	The URI of the license file to install.
Password	string	*optional*	The password to access the URI specified by the LicenseFileURI parameter.
TransferProtocol	string (enum)	*optional*	The network protocol that the license service uses to retrieve the license file located at the URI provided in LicenseFileURI. This parameter is ignored if the URI provided in LicenseFileURI contains a scheme. *For the possible property values, see TransferProtocol in Property details.*
Username	string	*optional*	The user name to access the URI specified by the LicenseFileURI parameter.

6.50.5 Property details

6.50.5.1 TransferProtocol:

The network protocol that the license service uses to retrieve the license file located at the URI provided in LicenseFileURI. This parameter is ignored if the URI provided in LicenseFileURI contains a scheme.

string	Description
CIFS	Common Internet File System (CIFS).
FTP	File Transfer Protocol (FTP).

string	Description
HTTP	Hypertext Transfer Protocol (HTTP).
HTTPS	Hypertext Transfer Protocol Secure (HTTPS).
NFS	Network File System (NFS).
OEM	A manufacturer-defined protocol.
SCP	Secure Copy Protocol (SCP).
SFTP	Secure File Transfer Protocol (SFTP).
TFTP	Trivial File Transfer Protocol (TFTP).

6.50.6 Example response

```
{
    "@odata.type": "#LicenseService.v1_0_0.LicenseService",
    "Name": "License Service",
    "ServiceEnabled": true,
    "LicenseExpirationWarningDays": 14,
    "Actions": {
        "#LicenseService.Install": {
            "target": "/redfish/v1/LicenseService/Actions/LicenseService.Install",
            "@Redfish.ActionInfo": "/redfish/v1/LicenseService/InstallActionInfo"
        }
    },
    "Licenses": {
        "@odata.id": "/redfish/v1/LicenseService/Licenses"
    },
    "Oem": {},
    "@odata.id": "/redfish/v1/LicenseService"
}
```

6.51 LogEntry 1.11.0

Version	v1.11	v1.10	v1.9	v1.8	v1.7	v1.6	v1.5	v1.4	v1.3	v1.2	v1.1	...
Release	2021.4	2021.3	2021.1	2020.4	2020.3	2020.1	2019.3	2018.2	2017.3	2017.1	2016.2	...

6.51.1 Description

The LogEntry schema defines the record format for a log. It is designed for Redfish event logs, OEM-specific log formats, and the IPMI System Event Log (SEL). The EntryType field indicates the type of log and the resource includes several additional properties dependent on the EntryType.

6.51.2 URIs

/redfish/v1/Chassis/*{ChassisId}*/LogServices/*{LogServiceId}*/Entries/*{LogEntryId}*
/redfish/v1/CompositionService/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/LogServices/
{LogServiceId}/Entries/*{LogEntryId}*
/redfish/v1/JobService/Log/Entries/*{LogEntryId}*
/redfish/v1/Managers/*{ManagerId}*/LogServices/*{LogServiceId}*/Entries/*{LogEntryId}*
/redfish/v1/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/LogServices/*{LogServiceId}*/Entries/
{LogEntryId}
/redfish/v1/Systems/*{ComputerSystemId}*/LogServices/*{LogServiceId}*/Entries/*{LogEntryId}*
/redfish/v1/Systems/*{ComputerSystemId}*/Memory/*{MemoryId}*/DeviceLog/Entries/*{LogEntryId}*
/redfish/v1/TelemetryService/LogService/Entries/*{LogEntryId}*

6.51.3 Properties

Property	Type	Attributes	Notes
AdditionalDataSizeBytes *(v1.7+)*	integer (bytes)	*read-only (null)*	The size of the additional data for the log entry.
AdditionalDataURI *(v1.7+)*	string (URI)	*read-only (null)*	The URI at which to access the additional data for the log entry, such as diagnostic data, image captures, or other files.
Created	string (date-time)	*read-only*	The date and time when the log entry was created.
DiagnosticDataType *(v1.7+)*	string (enum)	*read-only (null)*	The type of diagnostic data. *For the possible property values, see DiagnosticDataType in Property details.*
EntryCode	string (enum)	*read-only (null)*	The entry code for the log entry if the entry type is `SEL` . *For the possible property values, see EntryCode in Property details.*
EntryType	string (enum)	*read-only required*	The type of log entry. *For the possible property values, see EntryType in Property details.*
EventGroupId *(v1.4+)*	integer	*read-only (null)*	An identifier that correlates events with the same cause.
EventId *(v1.1+)*	string	*read-only*	The unique instance identifier for an event.

Property	Type	Attributes	Notes
EventTimestamp *(v1.1+)*	string (date-time)	*read-only*	The date and time when the event occurred.
EventType *(v1.1+, deprecated v1.4*	string (enum)	*read-only*	The type of event recorded in this log. *For the possible property values, see EventType in Property details. Deprecated in v1.4 and later. This property has been deprecated. Starting with Redfish Specification v1.6 (Event v1.3), subscriptions are based on the RegistryPrefix and ResourceType properties and not on the EventType property.*
GeneratorId *(v1.5+)*	string	*read-only (null)*	An identifier of the device that has generated the IPMI SEL Event Record.
Links {	object		The links to other resources that are related to this resource.
Oem {}	object		See the Oem object definition in the Common properties section.
OriginOfCondition {	object		The link to the resource that caused the log entry.
@odata.id	string (URI)	*read-only*	The unique identifier for a resource.
}			
}			
Message	string	*read-only (null)*	The message of the log entry. This property decodes from the entry type. If the entry type is `Event` , this property contains a message. If the entry type is `SEL` , this property contains an SEL-specific message. Otherwise, this property contains an OEM-specific log entry. In most cases, this property contains the actual log entry.
MessageArgs [ ]	array (string)	*read-only*	The arguments for the message.
MessageId	string	*read-only*	The MessageId, event data, or OEM-specific information. This property decodes from the entry type. If the entry type is `Event` , this property contains a Redfish Specification-defined MessageId. If the entry type is `SEL` , this property contains the Event Data. Otherwise, this property contains OEM-specific information.
Modified *(v1.6+)*	string (date-time)	*read-only*	The date and time when the log entry was last modified.
OEMDiagnosticDataType *(v1.7+)*	string	*read-only (null)*	The OEM-defined type of diagnostic data.
OemLogEntryCode *(v1.3+)*	string	*read-only (null)*	The OEM-specific entry code, if the LogEntryCode type is `OEM` .
OemRecordFormat	string	*read-only (null)*	The OEM-specific format of the entry. If the entry type is `Oem` , this property contains more information about the record format from the OEM.

Property	Type	Attributes	Notes
OemSensorType *(v1.3+)*	string	*read-only (null)*	The OEM-specific sensor type if the sensor type is `OEM`.
Originator *(v1.11+)*	string	*read-only*	The source of the log entry.
OriginatorType *(v1.11+)*	string (enum)	*read-only*	The type of originator data. *For the possible property values, see OriginatorType in Property details.*
Resolution *(v1.9+)*	string	*read-only*	Used to provide suggestions on how to resolve the situation that caused the log entry.
Resolved *(v1.8+)*	boolean	*read-write (null)*	Indicates if the cause of the log entry has been resolved or repaired.
SensorNumber	integer	*read-only (null)*	The IPMI-defined sensor number.
SensorType	string (enum)	*read-only (null)*	The sensor type to which the log entry pertains if the entry type is `SEL`. *For the possible property values, see SensorType in Property details.*
ServiceProviderNotified *(v1.9+)*	boolean	*read-only (null)*	Indicates if the log entry has been sent to the service provider.
Severity	string (enum)	*read-only (null)*	The severity of the log entry. *For the possible property values, see Severity in Property details.*

6.51.4 Property details

6.51.4.1 DiagnosticDataType:

The type of diagnostic data.

string	Description
CPER *(v1.10+)*	UEFI Common Platform Error Record.
CPERSection *(v1.10+)*	A Section of a UEFI Common Platform Error Record.
Manager	Manager diagnostic data.
OEM	OEM diagnostic data.
OS	Operating system (OS) diagnostic data.
PreOS	Pre-OS diagnostic data.

6.51.4.2 EntryCode:

The entry code for the log entry if the entry type is `SEL` .

string	Description
Assert	The condition has been asserted.
D0 Power State	The ACPI-defined D0 power state.
D1 Power State	The ACPI-defined D1 power state.
D2 Power State	The ACPI-defined D2 power state.
D3 Power State	The ACPI-defined D3 power state.
Deassert	The condition has been deasserted.
Device Disabled	A device has been disabled.
Device Enabled	A device has been enabled.
Device Inserted / Device Present	A device has been inserted or is present.
Device Removed / Device Absent	A device has been removed or is absent.
Fully Redundant	Indicates that full redundancy has been regained.
Informational	An informational event.
Install Error	An install error has been detected.
Limit Exceeded	A limit has been exceeded.
Limit Not Exceeded	A limit has not been exceeded.
Lower Critical - going high	The reading crossed the Lower Critical threshold while going high.
Lower Critical - going low	The reading crossed the Lower Critical threshold while going low.
Lower Non-critical - going high	The reading crossed the Lower Non-critical threshold while going high.
Lower Non-critical - going low	The reading crossed the Lower Non-critical threshold while going low.
Lower Non-recoverable - going high	The reading crossed the Lower Non-recoverable threshold while going high.
Lower Non-recoverable - going low	The reading crossed the Lower Non-recoverable threshold while going low.

string	Description
Monitor	A monitor event.
Non-redundant:Insufficient Resources	Unit is non-redundant and has insufficient resources to maintain normal operation.
Non-redundant:Sufficient Resources from Insufficient Resources	Unit has regained minimum resources needed for normal operation.
Non-redundant:Sufficient Resources from Redundant	Redundancy has been lost but unit is functioning with minimum resources needed for normal operation.
OEM *(v1.3+)*	An OEM-defined event.
Performance Lags	Performance does not meet expectations.
Performance Met	Performance meets expectations.
Predictive Failure asserted	A Predictive Failure has been detected.
Predictive Failure deasserted	A Predictive Failure is no longer present.
Redundancy Degraded	Redundancy still exists, but at less than full level.
Redundancy Degraded from Fully Redundant	Unit has lost some redundant resource(s) but is still in a redundant state.
Redundancy Degraded from Non-redundant	Unit has regained some resource(s) and is redundant but not fully redundant.
Redundancy Lost	Entered any non-redundant state, including Non-redundant: Insufficient Resources.
State Asserted	The state has been asserted.
State Deasserted	The state has been deasserted.
Transition to Active	The state transitioned to active.
Transition to Busy	The state transitioned to busy.
Transition to Critical from less severe	A state has changed to Critical from less severe.
Transition to Critical from Non-recoverable	A state has changed to Critical from Non-recoverable.
Transition to Degraded	A state has transitioned to Degraded.
Transition to Idle	The state transitioned to idle.
Transition to In Test	A state has transitioned to In Test.

string	Description
Transition to Non-Critical from more severe	A state has changed to Non-Critical from more severe.
Transition to Non-Critical from OK	A state has changed to Non-Critical from OK.
Transition to Non-recoverable	A state has changed to Non-recoverable.
Transition to Non-recoverable from less severe	A state has changed to Non-recoverable from less severe.
Transition to Off Duty	A state has transitioned to Off Duty.
Transition to Off Line	A state has transitioned to Off Line.
Transition to OK	A state has changed to OK.
Transition to On Line	A state has transitioned to On Line.
Transition to Power Off	A state has transitioned to Power Off.
Transition to Power Save	A state has transitioned to Power Save.
Transition to Running	A state has transitioned to Running.
Upper Critical - going high	The reading crossed the Upper Critical threshold while going high.
Upper Critical - going low	The reading crossed the Upper Critical threshold while going low.
Upper Non-critical - going high	The reading crossed the Upper Non-critical threshold while going high.
Upper Non-critical - going low	The reading crossed the Upper Non-critical threshold while going low.
Upper Non-recoverable - going high	The reading crossed the Upper Non-recoverable threshold while going high.
Upper Non-recoverable - going low	The reading crossed the Upper Non-recoverable threshold while going low.

6.51.4.3 EntryType:

The type of log entry.

string	Description
Event	A Redfish-defined message.
Oem	An entry in an OEM-defined format.

string	Description
SEL	A legacy IPMI System Event Log (SEL) entry.

6.51.4.4 EventType:

The type of event recorded in this log.

string	Description
Alert	A condition requires attention.
MetricReport	The telemetry service is sending a metric report.
Other	Because EventType is deprecated as of Redfish Specification v1.6, the event is based on a registry or resource but not an EventType.
ResourceAdded	A resource has been added.
ResourceRemoved	A resource has been removed.
ResourceUpdated	A resource has been updated.
StatusChange	The status of a resource has changed.

6.51.4.5 OriginatorType:

The type of originator data.

string	Description
Client	A client of the service created this log entry.
Internal	A process running on the service created this log entry.
SupportingService	A process not running on the service but running on a supporting service, such as RDE implementations, UEFI, or host processes, created this log entry.

6.51.4.6 SensorType:

The sensor type to which the log entry pertains if the entry type is `SEL` .

string	Description
Add-in Card	A sensor for an add-in card.
BaseOSBoot/InstallationStatus	A sensor for a base OS boot or installation status event.
Battery	A sensor for a battery.
Boot Error	A sensor for a boot error event.
Button/Switch	A sensor for a button or switch.
Cable/Interconnect	A sensor for a cable or interconnect device type.
Chassis	A sensor for a chassis.
ChipSet	A sensor for a chipset.
CoolingDevice	A sensor for a cooling device.
Critical Interrupt	A sensor for a critical interrupt event.
Current	A current sensor.
Drive Slot/Bay	A sensor for a drive slot or bay.
Entity Presence	A sensor for an entity presence event.
Event Logging Disabled	A sensor for the event log.
Fan	A fan sensor.
FRUState	A sensor for a FRU state event.
LAN	A sensor for a LAN device.
Management Subsystem Health	A sensor for a management subsystem health event.
Memory	A sensor for a memory device.
Microcontroller/Coprocessor	A sensor for a microcontroller or coprocessor.
Module/Board	A sensor for a module or board.
Monitor ASIC/IC	A sensor for a monitor ASIC or IC.
OEM *(v1.3+)*	An OEM-defined sensor.
OS Stop/Shutdown	A sensor for an OS stop or shutdown event
Other FRU	A sensor for another type of FRU.
Other Units-based Sensor	A sensor for a miscellaneous analog sensor.

string	Description
Physical Chassis Security	A physical security sensor.
Platform Alert	A sensor for a platform alert event.
Platform Security Violation Attempt	A platform security sensor.
POST Memory Resize	A sensor for a POST memory resize event.
Power Supply / Converter	A sensor for a power supply or DC-to-DC converter.
PowerUnit	A sensor for a power unit.
Processor	A sensor for a processor.
Session Audit	A sensor for a session audit event.
Slot/Connector	A sensor for a slot or connector.
System ACPI PowerState	A sensor for an ACPI power state event.
System Event	A sensor for a system event.
System Firmware Progress	A sensor for a system firmware progress event.
SystemBoot/Restart	A sensor for a system boot or restart event.
Temperature	A temperature sensor.
Terminator	A sensor for a terminator.
Version Change	A sensor for a version change event.
Voltage	A voltage sensor.
Watchdog	A sensor for a watchdog event.

6.51.4.7 Severity:

The severity of the log entry.

string	Description
Critical	A critical condition that requires immediate attention.
OK	Informational or operating normally.
Warning	A condition that requires attention.

6.51.5 Example response

```
{
    "@odata.type": "#LogEntry.v1_11_0.LogEntry",
    "Id": "1",
    "Name": "Log Entry 1",
    "EntryType": "Event",
    "Severity": "Critical",
    "Created": "2012-03-07T14:44:00Z",
    "Resolved": false,
    "Message": "Temperature threshold exceeded",
    "MessageId": "Contoso.1.0.TempAssert",
    "MessageArgs": [
        "42"
    ],
    "Links": {
        "OriginOfCondition": {
            "@odata.id": "/redfish/v1/Chassis/1U/Thermal"
        },
        "Oem": {}
    },
    "Oem": {},
    "@odata.id": "/redfish/v1/Systems/437XR1138R2/LogServices/Log1/Entries/1"
}
```

6.52 LogService 1.3.0

Version	v1.3	v1.2	v1.1	v1.0
Release	2021.2	2020.3	2017.3	1.0

6.52.1 Description

The LogService schema contains properties for monitoring and configuring a log service. When the Id property contains `DeviceLog` , the log contains device-resident log entries that follow the physical device when moved from system-to-system, and not a replication or subset of a system event log.

6.52.2 URIs

/redfish/v1/Chassis/{*ChassisId*}/LogServices/{*LogServiceId*}
/redfish/v1/CompositionService/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/LogServices/
{*LogServiceId*}

/redfish/v1/JobService/Log
/redfish/v1/Managers/{*ManagerId*}/LogServices/{*LogServiceId*}
/redfish/v1/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/LogServices/{*LogServiceId*}
/redfish/v1/Systems/{*ComputerSystemId*}/LogServices/{*LogServiceId*}
/redfish/v1/Systems/{*ComputerSystemId*}/Memory/{*MemoryId*}/DeviceLog
/redfish/v1/TelemetryService/LogService

6.52.3 Properties

Property	Type	Attributes	Notes
AutoDSTEnabled *(v1.3+)*	boolean	*read-write*	An indication of whether the log service is configured for automatic Daylight Saving Time (DST) adjustment.
DateTime	string (date-time)	*read-write (null)*	The current date and time with UTC offset of the log service.
DateTimeLocalOffset	string	*read-write (null)*	The time offset from UTC that the DateTime property is in `+HH:MM` format.
Entries {	object		The link to the log entry collection. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *LogEntry*. See the LogEntry schema for details.
}			
LogEntryType *(v1.1+)*	string (enum)	*read-only (null)*	The format of the log entries. *For the possible property values, see LogEntryType in Property details.*
MaxNumberOfRecords	integer	*read-only*	The maximum number of log entries that this service can have.
OverWritePolicy	string (enum)	*read-only*	The overwrite policy for this service that takes place when the log is full. *For the possible property values, see OverWritePolicy in Property details.*
ServiceEnabled	boolean	*read-write (null)*	An indication of whether this service is enabled.
Status {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
SyslogFilters *(v1.2+)* [{	array		A list of syslog message filters to be logged locally.
LogFacilities *(v1.2+)* [ ]	array (string (enum))	*read-write (null)*	The types of programs that can log messages. *For the possible property values, see LogFacilities in Property details.*
LowestSeverity *(v1.2+)*	string (enum)	*read-write (null)*	The lowest severity level message that will be logged. *For the possible property values, see LowestSeverity in Property details.*
}]			

6.52.4 Actions

6.52.4.1 ClearLog

Description

The action to clear the log for this log service.

Action URI: {Base URI of target resource}/Actions/LogService.ClearLog

Action parameters

Parameter Name	Type	Attributes	Notes
LogEntriesETag *(v1.3+)*	string	*optional*	The ETag of the log entry collection within this log service. If the provided ETag does not match the current ETag of the log entry collection, the request is rejected.

6.52.4.2 CollectDiagnosticData *(v1.2+)*

Description

The action to collect the diagnostic data for the given type.

Action URI: {Base URI of target resource}/Actions/LogService.CollectDiagnosticData

Action parameters

Parameter Name	Type	Attributes	Notes
DiagnosticDataType	string (enum)	*required*	The type of diagnostic data to collect. *For the possible property values, see DiagnosticDataType in Property details.*
OEMDiagnosticDataType	string	*optional*	The OEM-defined type of diagnostic data to collect.

Request Example

```
{
    "DiagnosticDataType": "Manager"
}
```

6.52.5 Property details

6.52.5.1 DiagnosticDataType:

The type of diagnostic data to collect.

string	Description
Manager	Manager diagnostic data.
OEM	OEM diagnostic data.
OS	Operating system (OS) diagnostic data.
PreOS	Pre-OS diagnostic data.

6.52.5.2 LogEntryType:

The format of the log entries.

string	Description
Event	The log contains Redfish-defined messages.
Multiple	The log contains multiple log entry types and, therefore, the log service cannot guarantee a single entry type.
OEM	The log contains entries in an OEM-defined format.
SEL	The log contains legacy IPMI System Event Log (SEL) entries.

6.52.5.3 LogFacilities:

The types of programs that can log messages.

string	Description
Auth	Security/authentication messages.
Authpriv	Security/authentication messages.
Console	Log alert.
Cron	Clock daemon.

string	Description
Daemon	System daemons.
FTP	FTP daemon.
Kern	Kernel messages.
Local0	Locally used facility 0.
Local1	Locally used facility 1.
Local2	Locally used facility 2.
Local3	Locally used facility 3.
Local4	Locally used facility 4.
Local5	Locally used facility 5.
Local6	Locally used facility 6.
Local7	Locally used facility 7.
LPR	Line printer subsystem.
Mail	Mail system.
News	Network news subsystem.
NTP	NTP subsystem.
Security	Log audit.
SolarisCron	Scheduling daemon.
Syslog	Messages generated internally by syslogd.
User	User-level messages.
UUCP	UUCP subsystem.

6.52.5.4 LowestSeverity:

The lowest severity level message that will be logged.

string	Description
Alert	A condition that should be corrected immediately, such as a corrupted system database.
All	A message of any severity.

string	Description
Critical	Hard device errors.
Debug	Messages that contain information normally of use only when debugging a program.
Emergency	A panic condition.
Error	An Error.
Informational	Informational only.
Notice	Conditions that are not error conditions, but that may require special handling.
Warning	A Warning.

6.52.5.5 OverWritePolicy:

The overwrite policy for this service that takes place when the log is full.

string	Description
NeverOverWrites	When full, new entries to the log are discarded.
Unknown	The overwrite policy is not known or is undefined.
WrapsWhenFull	When full, new entries to the log overwrite earlier entries.

6.52.6 Example response

```
{
    "@odata.type": "#LogService.v1_3_0.LogService",
    "Id": "Log1",
    "Name": "System Log Service",
    "Description": "This log contains entries related to the operation of the host Computer System.",
    "MaxNumberOfRecords": 1000,
    "OverWritePolicy": "WrapsWhenFull",
    "DateTime": "2015-03-13T04:14:33+06:00",
    "DateTimeLocalOffset": "+06:00",
    "ServiceEnabled": true,
    "LogEntryType": "Event",
    "Status": {
        "State": "Enabled",
        "Health": "OK"
    },
    "Oem": {},
```

```
    "Actions": {
        "#LogService.ClearLog": {
            "target": "/redfish/v1/Managers/1/LogServices/Log1/Actions/LogService.ClearLog"
        },
        "Oem": {}
    },
    "Entries": {
        "@odata.id": "/redfish/v1/Managers/1/LogServices/Log1/Entries"
    },
    "@odata.id": "/redfish/v1/Managers/1/LogServices/Log1"
}
```

6.53 Manager 1.14.0

Version	v1.14	v1.13	v1.12	v1.11	v1.10	v1.9	v1.8	v1.7	v1.6	v1.5	v1.4	...
Release	2021.4	2021.2	2021.1	2020.4	2020.3	2020.2	2020.1	2019.4	2019.2	2018.2	2018.1	...

6.53.1 Description

In Redfish, a manager is a systems management entity that can implement or provide access to a Redfish service. Examples of managers are BMCs, enclosure managers, management controllers, and other subsystems that are assigned manageability functions. An implementation can have multiple managers, which might be directly accessible through a Redfish-defined interface.

6.53.2 URIs

/redfish/v1/Managers/{ManagerId}

6.53.3 Properties

Property	Type	Attributes	Notes
AutoDSTEnabled *(v1.4+)*	boolean	*read-write*	An indication of whether the manager is configured for automatic Daylight Saving Time (DST) adjustment.
Certificates *(v1.13+){*	object		The link to a collection of certificates for device identity and attestation. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *Certificate*. See the Certificate schema for details.

Property	Type	Attributes	Notes
}			
CommandShell {	object		The command shell service that this manager provides.
ConnectTypesSupported [ ]	array (string (enum))	*read-only*	This property enumerates the command shell connection types that the implementation allows. *For the possible property values, see ConnectTypesSupported in Property details.*
MaxConcurrentSessions	integer	*read-only*	The maximum number of service sessions, regardless of protocol, that this manager can support.
ServiceEnabled	boolean	*read-write*	An indication of whether the service is enabled for this manager.
}			
DateTime	string (date-time)	*read-write (null)*	The current date and time with UTC offset of the manager.
DateTimeLocalOffset	string	*read-write (null)*	The time offset from UTC that the DateTime property is in `+HH:MM` format.
EthernetInterfaces {	object		The link to a collection of NICs that this manager uses for network communication. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *EthernetInterface*. See the EthernetInterface schema for details.
}			
FirmwareVersion	string	*read-only (null)*	The firmware version of this manager.
GraphicalConsole {	object		The information about the graphical console service of this manager.
ConnectTypesSupported [ ]	array (string (enum))	*read-only*	This property enumerates the graphical console connection types that the implementation allows. *For the possible property values, see ConnectTypesSupported in Property details.*
MaxConcurrentSessions	integer	*read-only*	The maximum number of service sessions, regardless of protocol, that this manager can support.
ServiceEnabled	boolean	*read-write*	An indication of whether the service is enabled for this manager.
}			
HostInterfaces *(v1.3+)* {	object		The link to a collection of host interfaces that this manager uses for local host communication. Clients can find host interface configuration options and settings in this navigation property. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *HostInterface*. See the HostInterface schema for details.

Property	Type	Attributes	Notes
}			
LastResetTime *(v1.9+)*	string (date-time)	*read-only*	The date and time when the manager was last reset or rebooted.
Links {	object		The links to other resources that are related to this resource.
ActiveSoftwareImage *(v1.6+)* {	object		The link to the software inventory resource that represents the active firmware image for this manager. See the *SoftwareInventory* schema for details on this property.
@odata.id	string	*read-write*	Link to a SoftwareInventory resource. See the Links section and the *SoftwareInventory* schema for details.
}			
ManagedBy *(v1.9+)* [{	array		The array of links to the managers responsible for managing this manager.
@odata.id	string	*read-only*	Link to another Manager resource.
}]			
ManagerForChassis [{	array		An array of links to the chassis this manager controls.
@odata.id	string	*read-only*	Link to a Chassis resource. See the Links section and the *Chassis* schema for details.
}]			
ManagerForManagers *(v1.9+)* [{	array		An array of links to the managers that are managed by this manager.
@odata.id	string	*read-only*	Link to another Manager resource.
}]			
ManagerForServers [{	array		An array of links to the systems that this manager controls.
@odata.id	string	*read-only*	Link to a ComputerSystem resource. See the Links section and the *ComputerSystem* schema for details.
}]			
ManagerForSwitches *(v1.4+)* [{	array		An array of links to the switches that this manager controls.
@odata.id	string	*read-only*	Link to a Switch resource. See the Links section and the *Switch* schema for details.
}]			

Property	Type	Attributes	Notes
ManagerInChassis *(v1.1+)* {	object		The link to the chassis where this manager is located. See the *Chassis* schema for details on this property.
@odata.id	string	*read-only*	Link to a Chassis resource. See the Links section and the *Chassis* schema for details.
}			
Oem {}	object		See the Oem object definition in the Common properties section.
SoftwareImages *(v1.6+)* [{	array		The images that are associated with this manager.
@odata.id	string	*read-only*	Link to a SoftwareInventory resource. See the Links section and the *SoftwareInventory* schema for details.
}]			
}			
Location *(v1.11+)* {}	object		The location of the manager. For property details, see Location.
LocationIndicatorActive *(v1.11+)*	boolean	*read-write (null)*	An indicator allowing an operator to physically locate this resource.
LogServices {	object		The link to a collection of logs that the manager uses. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *LogService*. See the LogService schema for details.
}			
ManagerDiagnosticData *(v1.14+)* {	object	*(null)*	The diagnostic data for this manager. See the *ManagerDiagnosticData* schema for details on this property.
@odata.id	string	*read-only*	Link to a ManagerDiagnosticData resource. See the Links section and the *ManagerDiagnosticData* schema for details.
}			
ManagerType	string (enum)	*read-only*	The type of manager that this resource represents. *For the possible property values, see ManagerType in Property details.*
Manufacturer *(v1.7+)*	string	*read-only (null)*	The manufacturer of this manager.
Measurements *(v1.13+, deprecated v1.14* [{	array		An array of DSP0274-defined measurement blocks. *Deprecated in v1.14 and later. This property has been deprecated in favor of the ComponentIntegrity resource.*

Property	Type	Attributes	Notes
@odata.id	string	*read-only*	Link to a MeasurementBlock resource. See the Links section and the *SoftwareInventory* schema for details.
}]			
Model	string	*read-only (null)*	The model information of this manager, as defined by the manufacturer.
NetworkProtocol {	object		The link to the network services and their settings that the manager controls. See the *ManagerNetworkProtocol* schema for details on this property.
@odata.id	string	*read-only*	Link to a ManagerNetworkProtocol resource. See the Links section and the *ManagerNetworkProtocol* schema for details.
}			
PartNumber *(v1.7+)*	string	*read-only (null)*	The part number of the manager.
PowerState *(v1.2+)*	string (enum)	*read-only (null)*	The current power state of the manager. *For the possible property values, see PowerState in Property details.*
Redundancy [{ }]	array (object)		The redundancy information for the managers of this system. For property details, see Redundancy.
RemoteAccountService *(v1.5+)* {	object		The link to the account service resource for the remote manager that this resource represents. See the *AccountService* schema for details on this property.
@odata.id	string	*read-only*	Link to a AccountService resource. See the Links section and the *AccountService* schema for details.
}			
RemoteRedfishServiceUri *(v1.5+)*	string (URI)	*read-only (null)*	The URI of the Redfish service root for the remote manager that this resource represents.
SerialConsole *(deprecated v1.10)* {	object		The serial console service that this manager provides. *Deprecated in v1.10 and later. This property has been deprecated in favor of the SerialConsole property in the ComputerSystem resource.*
ConnectTypesSupported [ ]	array (string (enum))	*read-only*	This property enumerates the serial console connection types that the implementation allows. *For the possible property values, see ConnectTypesSupported in Property details.*
MaxConcurrentSessions	integer	*read-only*	The maximum number of service sessions, regardless of protocol, that this manager can support.
ServiceEnabled	boolean	*read-write*	An indication of whether the service is enabled for this manager.
}			

Property	Type	Attributes	Notes
SerialInterfaces {	object		The link to a collection of serial interfaces that this manager uses for serial and console communication. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *SerialInterface*. See the SerialInterface schema for details.
}			
SerialNumber *(v1.7+)*	string	*read-only (null)*	The serial number of the manager.
ServiceEntryPointUUID	string	*read-only (null)*	The UUID of the Redfish service that is hosted by this manager.
SparePartNumber *(v1.11+)*	string	*read-only (null)*	The spare part number of the manager.
Status {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
TimeZoneName *(v1.10+)*	string	*read-write*	The time zone of the manager.
USBPorts *(v1.12+)* {	object		The USB ports of the manager. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *Port*. See the Port schema for details.
}			
UUID	string	*read-only (null)*	The UUID for this manager.
VirtualMedia *(deprecated v1.10)* {	object		The link to the Virtual Media services for this particular manager. Contains a link to a resource. *Deprecated in v1.10 and later. This property has been deprecated in favor of the VirtualMedia property in the ComputerSystem resource.*
@odata.id	string	*read-only*	Link to Collection of *VirtualMedia*. See the VirtualMedia schema for details.
}			

6.53.4 Actions

6.53.4.1 ForceFailover

Description

The ForceFailover action forces a failover of this manager to the manager used in the parameter.

Action URI: {Base URI of target resource}/Actions/Manager.ForceFailover

Action parameters

Parameter Name	Type	Attributes	Notes
NewManager {	object	*required*	The manager to which to fail over.
@odata.id	string	*read-only*	Link to another Manager resource.
}			

Request Example

```
{
    "NewManager": [
        {
            "@odata.id": "/redfish/v1/Managers/3"
        }
    ]
}
```

6.53.4.2 ModifyRedundancySet

Description

The ModifyRedundancySet operation adds members to or removes members from a redundant group of managers.

Action URI: {Base URI of target resource}/Actions/Manager.ModifyRedundancySet

Action parameters

Parameter Name	Type	Attributes	Notes
Add [{	array	*optional*	An array of managers to add to the redundancy set.
@odata.id	string	*read-only*	Link to another Manager resource.
}]			
Remove [{	array	*optional*	An array of managers to remove from the redundancy set.
@odata.id	string	*read-only*	Link to another Manager resource.
}]			

Request Example

```
{
    "Add": [
        {
            "@odata.id": "/redfish/v1/Managers/4"
        }
    ]
}
```

6.53.4.3 Reset

Description

The reset action resets/reboots the manager.

Action URI: {Base URI of target resource}/Actions/Manager.Reset

Action parameters

Parameter Name	Type	Attributes	Notes
ResetType	string (enum)	*optional*	The type of reset. *For the possible property values, see ResetType in Property details.*

Request Example

```
{
    "ResetType": "ForceRestart"
}
```

6.53.4.4 ResetToDefaults *(v1.8+)*

Description

The reset action resets the manager settings to factory defaults. This can cause the manager to reset.

Action URI: {Base URI of target resource}/Actions/Manager.ResetToDefaults

Action parameters

Parameter Name	Type	Attributes	Notes
ResetType	string (enum)	*required*	The type of reset to defaults. *For the possible property values, see ResetType in Property details.*

Request Example

```
{
    "ResetType": "PreserveNetworkAndUsers"
}
```

6.53.5 Property details

6.53.5.1 ConnectTypesSupported:

6.53.5.1.1 In CommandShell:

This property enumerates the command shell connection types that the implementation allows.

string	Description
IPMI	The controller supports a command shell connection through the IPMI Serial Over LAN (SOL) protocol.
Oem	The controller supports a command shell connection through an OEM-specific protocol.
SSH	The controller supports a command shell connection through the SSH protocol.
Telnet	The controller supports a command shell connection through the Telnet protocol.

6.53.5.1.2 In GraphicalConsole:

This property enumerates the graphical console connection types that the implementation allows.

string	Description
KVMIP	The controller supports a graphical console connection through a KVM-IP (redirection of Keyboard, Video, Mouse over IP) protocol.
Oem	The controller supports a graphical console connection through an OEM-specific protocol.

6.53.5.1.3 In SerialConsole:

This property enumerates the serial console connection types that the implementation allows.

string	Description
IPMI	The controller supports a serial console connection through the IPMI Serial Over LAN (SOL) protocol.
Oem	The controller supports a serial console connection through an OEM-specific protocol.
SSH	The controller supports a serial console connection through the SSH protocol.
Telnet	The controller supports a serial console connection through the Telnet protocol.

6.53.5.2 ManagerType:

The type of manager that this resource represents.

string	Description
AuxiliaryController	A controller that provides management functions for a particular subsystem or group of devices.
BMC	A controller that provides management functions for a single computer system.
EnclosureManager	A controller that provides management functions for a chassis or group of devices or systems.
ManagementController	A controller that primarily monitors or manages the operation of a device or system.
RackManager	A controller that provides management functions for a whole or part of a rack.
Service *(v1.4+)*	A software-based service that provides management functions.

6.53.5.3 PowerState:

The current power state of the manager.

string	Description
Off	The state is powered off.
On	The state is powered on.
Paused	The state is paused.
PoweringOff	A temporary state between on and off.

string	Description
PoweringOn	A temporary state between off and on.

6.53.5.4 ResetType:

6.53.5.4.1 In Actions: Reset:

The type of reset.

string	Description
ForceOff	Turn off the unit immediately (non-graceful shutdown).
ForceOn	Turn on the unit immediately.
ForceRestart	Shut down immediately and non-gracefully and restart the system.
GracefulRestart	Shut down gracefully and restart the system.
GracefulShutdown	Shut down gracefully and power off.
Nmi	Generate a diagnostic interrupt, which is usually an NMI on x86 systems, to stop normal operations, complete diagnostic actions, and, typically, halt the system.
On	Turn on the unit.
Pause	Pause execution on the unit but do not remove power. This is typically a feature of virtual machine hypervisors.
PowerCycle	Power cycle the unit. Behaves like a full power removal, followed by a power restore to the resource.
PushPowerButton	Simulate the pressing of the physical power button on this unit.
Resume	Resume execution on the paused unit. This is typically a feature of virtual machine hypervisors.
Suspend	Write the state of the unit to disk before powering off. This allows for the state to be restored when powered back on.

6.53.5.4.2 In Actions: ResetToDefaults:

The type of reset to defaults.

string	Description
PreserveNetwork	Reset all settings except network settings to factory defaults.

string	Description
PreserveNetworkAndUsers	Reset all settings except network and local user names/passwords to factory defaults.
ResetAll	Reset all settings to factory defaults.

6.53.6 Example response

```
{
    "@odata.type": "#Manager.v1_14_0.Manager",
    "Id": "BMC",
    "Name": "Manager",
    "ManagerType": "BMC",
    "Description": "Contoso BMC",
    "ServiceEntryPointUUID": "92384634-2938-2342-8820-489239905423",
    "UUID": "58893887-8974-2487-2389-841168418919",
    "Model": "Joo Janta 200",
    "FirmwareVersion": "4.4.6521",
    "DateTime": "2015-03-13T04:14:33+06:00",
    "DateTimeLocalOffset": "+06:00",
    "Status": {
        "State": "Enabled",
        "Health": "OK"
    },
    "PowerState": "On",
    "GraphicalConsole": {
        "ServiceEnabled": true,
        "MaxConcurrentSessions": 2,
        "ConnectTypesSupported": [
            "KVMIP"
        ]
    },
    "SerialConsole": {
        "ServiceEnabled": true,
        "MaxConcurrentSessions": 1,
        "ConnectTypesSupported": [
            "Telnet",
            "SSH",
            "IPMI"
        ]
    },
    "CommandShell": {
        "ServiceEnabled": true,
        "MaxConcurrentSessions": 4,
        "ConnectTypesSupported": [
            "Telnet",
            "SSH"
        ]
```

```
        },
        "HostInterfaces": {
            "@odata.id": "/redfish/v1/Managers/9/HostInterfaces"
        },
        "NetworkProtocol": {
            "@odata.id": "/redfish/v1/Managers/BMC/NetworkProtocol"
        },
        "EthernetInterfaces": {
            "@odata.id": "/redfish/v1/Managers/BMC/NICs"
        },
        "SerialInterfaces": {
            "@odata.id": "/redfish/v1/Managers/BMC/SerialInterfaces"
        },
        "LogServices": {
            "@odata.id": "/redfish/v1/Managers/BMC/LogServices"
        },
        "VirtualMedia": {
            "@odata.id": "/redfish/v1/Managers/BMC/VirtualMedia"
        },
        "Links": {
            "ManagerForServers": [
                {
                    "@odata.id": "/redfish/v1/Systems/437XR1138R2"
                }
            ],
            "ManagerForChassis": [
                {
                    "@odata.id": "/redfish/v1/Chassis/1U"
                }
            ],
            "ManagerInChassis": {
                "@odata.id": "/redfish/v1/Chassis/1U"
            },
            "Oem": {}
        },
        "Actions": {
            "#Manager.Reset": {
                "target": "/redfish/v1/Managers/BMC/Actions/Manager.Reset",
                "ResetType@Redfish.AllowableValues": [
                    "ForceRestart",
                    "GracefulRestart"
                ]
            },
            "Oem": {}
        },
        "Oem": {},
        "@odata.id": "/redfish/v1/Managers/BMC"
    }
```

6.54 ManagerAccount 1.8.1

Version	v1.8	v1.7	v1.6	v1.5	v1.4	v1.3	v1.2	v1.1	v1.0
Release	2021.1	2020.4	2020.1	2019.4	2019.3	2019.1	2018.3	2017.1	1.0

6.54.1 Description

The ManagerAccount schema defines the user accounts that are owned by a manager. Changes to a manager account might affect the current Redfish service connection if this manager is responsible for the Redfish service.

6.54.2 URIs

/redfish/v1/AccountService/Accounts/*{ManagerAccountId}*
/redfish/v1/Managers/*{ManagerId}*/RemoteAccountService/Accounts/*{ManagerAccountId}*

6.54.3 Properties

Property	Type	Attributes	Notes
AccountExpiration *(v1.8+)*	string (date-time)	*read-write (null)*	Indicates the date and time when this account expires. If `null`, the account never expires.
AccountTypes *(v1.4+)* [ ]	array (string (enum))	*read-write (null)*	The list of services in the manager that the account is allowed to access. *For the possible property values, see AccountTypes in Property details.*
Certificates *(v1.2+)* {	object		The link to a collection of certificates used for this account. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *Certificate*. See the Certificate schema for details.
}			
Enabled	boolean	*read-write*	An indication of whether an account is enabled. An administrator can disable it without deleting the user information. If `true`, the account is enabled and the user can log in. If `false`, the account is disabled and, in the future, the user cannot log in.
HostBootstrapAccount *(v1.8+)*	boolean	*read-only*	An indication of whether this account is a bootstrap account for the host interface.
Links {	object		The links to other resources that are related to this resource.
Oem {}	object		See the Oem object definition in the Common properties section.

Property	Type	Attributes	Notes
Role {	object		The link to the Redfish role that defines the privileges for this account. See the *Role* schema for details on this property.
@odata.id	string	*read-only*	Link to a Role resource. See the Links section and the *Role* schema for details.
}			
}			
Locked	boolean	*read-write*	An indication of whether the account service automatically locked the account because the lockout threshold was exceeded. To manually unlock the account before the lockout duration period, an administrator can change the property to `false` to clear the lockout condition.
OEMAccountTypes *(v1.4+)* [ ]	array (string, null)	*read-write*	The OEM account types.
Password	string	*read-write* *required on create (null)*	The password. Use this property with a PATCH or PUT to write the password for the account. This property is `null` in responses.
PasswordChangeRequired *(v1.3+)*	boolean	*read-write (null)*	An indication of whether the service requires that the password for this account be changed before further access to the account is allowed.
PasswordExpiration *(v1.6+)*	string (date-time)	*read-write (null)*	Indicates the date and time when this account password expires. If `null`, the account password never expires.
RoleId	string	*read-write required on create*	The role for this account.
SNMP *(v1.4+)* {	object	*(null)*	The SNMP settings for this account.
AuthenticationKey *(v1.4+)*	string	*read-write (null)*	The secret authentication key for SNMPv3.
AuthenticationKeySet *(v1.5+)*	boolean	*read-only*	Indicates if the AuthenticationKey property is set.
AuthenticationProtocol *(v1.4+)*	string (enum)	*read-write (null)*	The authentication protocol for SNMPv3. *For the possible property values, see AuthenticationProtocol in Property details.*
EncryptionKey *(v1.4+)*	string	*read-write (null)*	The secret encryption key used in SNMPv3.
EncryptionKeySet *(v1.5+)*	boolean	*read-only*	Indicates if the EncryptionKey property is set.

Property	Type	Attributes	Notes
EncryptionProtocol *(v1.4+)*	string (enum)	*read-write (null)*	The encryption protocol for SNMPv3. *For the possible property values, see EncryptionProtocol in Property details.*
}			
StrictAccountTypes *(v1.7+)*	boolean	*read-write (null)*	Indicates if the service needs to use the account types exactly as specified when the account is created or updated.
UserName	string	*read-write required on create*	The user name for the account.

6.54.4 Property details

6.54.4.1 AccountTypes:

The list of services in the manager that the account is allowed to access.

string	Description
HostConsole	Allow access to the host's console, which could be connected through Telnet, SSH, or other protocol.
IPMI	Allow access to the Intelligent Platform Management Interface service.
KVMIP	Allow access to a Keyboard-Video-Mouse over IP session.
ManagerConsole	Allow access to the manager's console, which could be connected through Telnet, SSH, SM CLP, or other protocol.
OEM	OEM account type. See the OEMAccountTypes property.
Redfish	Allow access to the Redfish service.
SNMP	Allow access to SNMP services.
VirtualMedia	Allow access to control virtual media.
WebUI	Allow access to a web user interface session, such as a graphical interface or another web-based protocol.

6.54.4.2 AuthenticationProtocol:

The authentication protocol for SNMPv3.

string	Description
HMAC128_SHA224 *(v1.7+)*	HMAC-128-SHA-224 authentication.
HMAC192_SHA256 *(v1.7+)*	HMAC-192-SHA-256 authentication.
HMAC256_SHA384 *(v1.7+)*	HMAC-256-SHA-384 authentication.
HMAC384_SHA512 *(v1.7+)*	HMAC-384-SHA-512 authentication.
HMAC_MD5	HMAC-MD5-96 authentication.
HMAC_SHA96	HMAC-SHA-96 authentication.
None	No authentication.

6.54.4.3 EncryptionProtocol:

The encryption protocol for SNMPv3.

string	Description
CBC_DES	CBC-DES encryption.
CFB128_AES128	CFB128-AES-128 encryption.
None	No encryption.

6.54.5 Example response

```
{
    "@odata.type": "#ManagerAccount.v1_8_1.ManagerAccount",
    "Id": "1",
    "Name": "User Account",
    "Description": "User Account",
    "Enabled": true,
    "Password": null,
    "UserName": "Administrator",
    "RoleId": "Administrator",
    "Locked": false,
    "Links": {
        "Role": {
            "@odata.id": "/redfish/v1/AccountService/Roles/Administrator"
        }
    },
    "@odata.id": "/redfish/v1/AccountService/Accounts/1"
}
```

```
    }
```

6.55 ManagerDiagnosticData 1.0.0

Version	*v1.0*
Release	2021.4

6.55.1 Description

The ManagerDiagnosticData schema defines internal diagnostic data for a manager. It contains information that might be used by vendors to collect debug information about the manager. Clients should not make decisions for raising alerts, creating service events, or other actions based on information in this resource.

6.55.2 URIs

/redfish/v1/Managers/*{ManagerId}*/ManagerDiagnosticData

6.55.3 Properties

Property	Type	Attributes	Notes
BootTimeStatistics {	object		The boot time statistics of the manager.
FirmwareTimeSeconds	number	*read-only (null)*	The number of seconds the manager spent in the firmware stage.
InitrdTimeSeconds	number	*read-only (null)*	The number of seconds the manager spent in the initrd boot stage.
KernelTimeSeconds	number	*read-only (null)*	The number of seconds the manager spent in the kernel stage.
LoaderTimeSeconds	number	*read-only (null)*	The number of seconds the manager spent in the loader stage.
UserSpaceTimeSeconds	number	*read-only (null)*	The number of seconds the manager spent in the user space boot stage.
}			

Property	Type	Attributes	Notes
FreeStorageSpaceKiB	integer (KiBy)	*read-only (null)*	The available storage space on this manager in kibibytes (KiB).
I2CBuses [{	array		The statistics of the I2C buses.
BusErrorCount	integer	*read-only (null)*	The number of bus errors on this I2C bus.
I2CBusName	string	*read-only*	The name of the I2C bus.
NACKCount	integer	*read-only (null)*	The number of NACKs on this I2C bus.
TotalTransactionCount	integer	*read-only (null)*	The total number of transactions on this I2C bus.
}]			
MemoryECCStatistics {	object		The memory ECC statistics of the manager.
CorrectableECCErrorCount	integer	*read-only (null)*	The number of the correctable errors since reset.
UncorrectableECCErrorCount	integer	*read-only (null)*	The number of the uncorrectable errors since reset.
}			
MemoryStatistics {	object		The memory statistics of the manager.
AvailableBytes	integer (bytes)	*read-only (null)*	The amount of memory available in bytes for starting new processes without swapping.
BuffersAndCacheBytes	integer (bytes)	*read-only (null)*	The amount of memory used in bytes by kernel buffers, page caches, and slabs.
FreeBytes	integer (bytes)	*read-only (null)*	The amount of free memory in bytes.
SharedBytes	integer (bytes)	*read-only (null)*	The amount of shared memory in bytes.
TotalBytes	integer (bytes)	*read-only (null)*	The total amount of memory in bytes.
UsedBytes	integer (bytes)	*read-only (null)*	The amount of used memory in bytes.
}			
ProcessorStatistics {	object		The processor statistics of the manager.

Property	Type	Attributes	Notes
KernelPercent	number (%)	*read-only (null)*	The percentage of CPU time spent in kernel mode.
UserPercent	number (%)	*read-only (null)*	The percentage of CPU time spent in user mode.
}			
TopProcesses [{	array		The statistics of the top processes of this manager.
CommandLine	string	*read-only*	The command line of this process.
KernelTimeSeconds	number	*read-only (null)*	The number of seconds this process executed in kernel space.
ResidentSetSizeBytes	integer (bytes)	*read-only (null)*	The resident set size of this process in bytes.
UserTimeSeconds	number	*read-only (null)*	The number of seconds this process executed in user space.
}]			

6.55.4 Actions

6.55.4.1 ResetMetrics

Description

Resets time intervals or counted values of the diagnostic data for this manager.

Action URI: {Base URI of target resource}/Actions/ManagerDiagnosticData.ResetMetrics

Action parameters

This action takes no parameters.

6.55.5 Example response

```
{
    "@odata.type": "#ManagerDiagnosticData.v1_0_0.ManagerDiagnosticData",
    "Id": "ManagerDiagnosticData",
    "Name": "Manager Diagnostic Data",
    "I2CBuses": [
```

```
            {
                "I2CBusName": "i2c-0",
                "TotalTransactionCount": 10000,
                "BusErrorCount": 12,
                "NACKCount": 34
            },
            {
                "I2CBusName": "i2c-1",
                "TotalTransactionCount": 20000,
                "BusErrorCount": 56,
                "NACKCount": 78
            }
        ],
        "MemoryStatistics": {
            "TotalBytes": 1013052000,
            "UsedBytes": 45084000,
            "FreeBytes": 894820000,
            "SharedBytes": 19864000,
            "BuffersAndCacheBytes": 73148000,
            "AvailableBytes": 928248000
        },
        "ProcessorStatistics": {
            "KernelPercent": 12.34,
            "UserPercent": 23.45
        },
        "TopProcesses": [
            {
                "CommandLine": "dbus-broker",
                "UserTimeSeconds": 14400,
                "KernelTimeSeconds": 10800,
                "ResidentSetSizeBytes": 2300000
            },
            {
                "CommandLine": "swampd",
                "UserTimeSeconds": 13200,
                "KernelTimeSeconds": 8441,
                "ResidentSetSizeBytes": 8883000
            },
            {
                "CommandLine": "ipmid",
                "UserTimeSeconds": 13100,
                "KernelTimeSeconds": 6650,
                "ResidentSetSizeBytes": 23400000
            },
            {
                "CommandLine": "phosphor-hwmon-readd -i iface1",
                "UserTimeSeconds": 5100,
                "KernelTimeSeconds": 3200,
                "ResidentSetSizeBytes": 564000
            }
```

```
        ],
        "BootTimeStatistics": {
            "FirmwareTimeSeconds": 42.3,
            "LoaderTimeSeconds": 12.3,
            "KernelTimeSeconds": 33.1,
            "InitrdTimeSeconds": 3.2,
            "UserSpaceTimeSeconds": 81.1
        },
        "MemoryECCStatistics": {
            "CorrectableECCErrorCount": 1,
            "UncorrectableECCErrorCount": 2
        },
        "@odata.id": "/redfish/v1/Managers/BMC/ManagerDiagnosticData"
    }
```

6.56 ManagerNetworkProtocol 1.8.0

Version	v1.8	v1.7	v1.6	v1.5	v1.4	v1.3	v1.2	v1.1	v1.0
Release	2021.2	2020.4	2020.1	2019.3	2018.3	2018.2	2017.1	2016.3	1.0

6.56.1 Description

The network service settings for the manager.

6.56.2 URIs

/redfish/v1/Managers/{*ManagerId*}/NetworkProtocol

6.56.3 Properties

Property	Type	Attributes	Notes
DHCP *(v1.1+)* {}	object		The settings for this manager's DHCPv4 protocol support. For more information about this property, see Protocol in Property Details.
DHCPv6 *(v1.3+)* {}	object		The settings for this manager's DHCPv6 protocol support. For more information about this property, see Protocol in Property Details.
FQDN	string	*read-only (null)*	The fully qualified domain name for the manager obtained by DNS including the host name and top-level domain name.

Property	Type	Attributes	Notes
HostName	string	*read-only (null)*	The DNS host name of this manager, without any domain information.
HTTP {}	object		The settings for this manager's HTTP protocol support. For more information about this property, see Protocol in Property Details.
HTTPS {	object		The settings for this manager's HTTPS protocol support.
Certificates *(v1.4+)* {	object		The link to a collection of certificates used for HTTPS by this manager. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *Certificate*. See the Certificate schema for details.
}			
Port	integer	*read-write (null)*	The protocol port.
ProtocolEnabled	boolean	*read-write (null)*	An indication of whether the protocol is enabled.
}			
IPMI {}	object		The settings for this manager's IPMI-over-LAN protocol support. For more information about this property, see Protocol in Property Details.
KVMIP {}	object		The settings for this manager's KVM-IP protocol support that apply to all system instances controlled by this manager. For more information about this property, see Protocol in Property Details.
NTP *(v1.2+)* {	object		The settings for this manager's NTP protocol support.
NTPServers *(v1.2+)* [ ]	array (string, null)	*read-write*	Indicates to which NTP servers this manager is subscribed.
Port	integer	*read-write (null)*	The protocol port.
ProtocolEnabled	boolean	*read-write (null)*	An indication of whether the protocol is enabled.
}			
Proxy *(v1.8+)* {	object	*(null)*	The HTTP/HTTPS proxy information for this manager.
Enabled *(v1.8+)*	boolean	*read-write*	Indicates if the manager uses the proxy server.
ExcludeAddresses *(v1.8+)* [ ]	array (string, null)	*read-write*	Addresses that do not require the proxy server to access.

Property	Type	Attributes	Notes
Password *(v1.8+)*	string	*read-write (null)*	The password for the proxy. The value is `null` in responses.
PasswordSet *(v1.8+)*	boolean	*read-only*	Indicates if the Password property is set.
ProxyAutoConfigURI *(v1.8+)*	string (URI)	*read-write (null)*	The URI used to access a proxy auto-configuration (PAC) file.
ProxyServerURI *(v1.8+)*	string (URI)	*read-write*	The URI of the proxy server, including the scheme and any non-default port value.
Username *(v1.8+)*	string	*read-write*	The username for the proxy.
}			
RDP *(v1.3+)* {}	object		The settings for this manager's Remote Desktop Protocol support. For more information about this property, see Protocol in Property Details.
RFB *(v1.3+)* {}	object		The settings for this manager's Remote Frame Buffer protocol support, which can support VNC. For more information about this property, see Protocol in Property Details.
SNMP {	object		The settings for this manager's SNMP support.
AuthenticationProtocol *(v1.5+)*	string (enum)	*read-write (null)*	The authentication protocol used for SNMP access to this manager. *For the possible property values, see AuthenticationProtocol in Property details.*
CommunityAccessMode *(v1.5+)*	string (enum)	*read-write (null)*	The access level of the SNMP community. *For the possible property values, see CommunityAccessMode in Property details.*
CommunityStrings *(v1.5+)* [{	array		The SNMP community strings.
AccessMode *(v1.5+)*	string (enum)	*read-write (null)*	The access level of the SNMP community. *For the possible property values, see AccessMode in Property details.*
CommunityString *(v1.5+)*	string	*read-write (null)*	The SNMP community string.
Name *(v1.5+)*	string	*read-write (null)*	The name of the SNMP community.
}]			
EnableSNMPv1 *(v1.5+)*	boolean	*read-write (null)*	Indicates if access via SNMPv1 is enabled.
EnableSNMPv2c *(v1.5+)*	boolean	*read-write (null)*	Indicates if access via SNMPv2c is enabled.

Property	Type	Attributes	Notes
EnableSNMPv3 *(v1.5+)*	boolean	*read-write (null)*	Indicates if access via SNMPv3 is enabled.
EncryptionProtocol *(v1.5+)*	string (enum)	*read-write (null)*	The encryption protocol used for SNMPv3 access to this manager. *For the possible property values, see EncryptionProtocol in Property details.*
EngineId *(v1.5+)* {	object	*(null)*	The engine ID.
ArchitectureId *(v1.6+)*	string	*read-only (null)*	The architecture identifier.
EnterpriseSpecificMethod *(v1.5+)*	string	*read-only (null)*	The enterprise specific method.
PrivateEnterpriseId *(v1.5+)*	string	*read-only (null)*	The private enterprise ID.
}			
HideCommunityStrings *(v1.5+)*	boolean	*read-write (null)*	Indicates if the community strings should be hidden.
Port	integer	*read-write (null)*	The protocol port.
ProtocolEnabled	boolean	*read-write (null)*	An indication of whether the protocol is enabled.
}			
SSDP {	object		The settings for this manager's SSDP support.
NotifyIPv6Scope	string (enum)	*read-write (null)*	The IPv6 scope for multicast NOTIFY messages for SSDP. *For the possible property values, see NotifyIPv6Scope in Property details.*
NotifyMulticastIntervalSeconds	integer (seconds)	*read-write (null)*	The time interval, in seconds, between transmissions of the multicast NOTIFY ALIVE message from this service for SSDP.
NotifyTTL	integer	*read-write (null)*	The time-to-live hop count for SSDP multicast NOTIFY messages.
Port	integer	*read-write (null)*	The protocol port.
ProtocolEnabled	boolean	*read-write (null)*	An indication of whether the protocol is enabled.
}			

Property	Type	Attributes	Notes
SSH {}	object		The settings for this manager's Secure Shell (SSH) protocol support. For more information about this property, see Protocol in Property Details.
Status {}	object		The status and health of the Resource and its subordinate or dependent Resources. For property details, see Status.
Telnet {}	object		The settings for this manager's Telnet protocol support. For more information about this property, see Protocol in Property Details.
VirtualMedia {}	object		The settings for this manager's virtual media support that apply to all system instances controlled by this manager. For more information about this property, see Protocol in Property Details.

6.56.4 Property details

6.56.4.1 AccessMode:

The access level of the SNMP community.

string	Description
Full	READ-WRITE access mode.
Limited	READ-ONLY access mode.

6.56.4.2 AuthenticationProtocol:

The authentication protocol used for SNMP access to this manager.

string	Description
Account	Authentication is determined by account settings.
CommunityString	SNMP community string authentication.
HMAC128_SHA224 *(v1.7+)*	HMAC-128-SHA-224 authentication.
HMAC192_SHA256 *(v1.7+)*	HMAC-192-SHA-256 authentication.
HMAC256_SHA384 *(v1.7+)*	HMAC-256-SHA-384 authentication.
HMAC384_SHA512 *(v1.7+)*	HMAC-384-SHA-512 authentication.
HMAC_MD5	HMAC-MD5-96 authentication.

string	Description
HMAC_SHA96	HMAC-SHA-96 authentication.

6.56.4.3 CommunityAccessMode:

The access level of the SNMP community.

string	Description
Full	READ-WRITE access mode.
Limited	READ-ONLY access mode.

6.56.4.4 EncryptionProtocol:

The encryption protocol used for SNMPv3 access to this manager.

string	Description
Account	Encryption is determined by account settings.
CBC_DES	CBC-DES encryption.
CFB128_AES128	CFB128-AES-128 encryption.
None	No encryption.

6.56.4.5 NotifyIPv6Scope:

The IPv6 scope for multicast NOTIFY messages for SSDP.

string	Description
Link	SSDP NOTIFY messages are sent to addresses in the IPv6 local link scope.
Organization	SSDP NOTIFY messages are sent to addresses in the IPv6 local organization scope.
Site	SSDP NOTIFY messages are sent to addresses in the IPv6 local site scope.

6.56.4.6 Protocol:

The settings for a network protocol associated with a manager.

Port	integer	*read-write (null)*	The protocol port.
ProtocolEnabled	boolean	*read-write (null)*	An indication of whether the protocol is enabled.

6.56.5 Example response

```
{
    "@odata.type": "#ManagerNetworkProtocol.v1_8_0.ManagerNetworkProtocol",
    "Id": "NetworkProtocol",
    "Name": "Manager Network Protocol",
    "Description": "Manager Network Service",
    "Status": {
        "State": "Enabled",
        "Health": "OK"
    },
    "HostName": "web483-bmc",
    "FQDN": "web483-bmc.dmtf.org",
    "HTTP": {
        "ProtocolEnabled": true,
        "Port": 80
    },
    "HTTPS": {
        "ProtocolEnabled": true,
        "Port": 443
    },
    "IPMI": {
        "ProtocolEnabled": true,
        "Port": 623
    },
    "SSH": {
        "ProtocolEnabled": true,
        "Port": 22
    },
    "SNMP": {
        "ProtocolEnabled": true,
        "Port": 161
    },
    "VirtualMedia": {
```

```
        "ProtocolEnabled": true,
        "Port": 17988
    },
    "SSDP": {
        "ProtocolEnabled": true,
        "Port": 1900,
        "NotifyMulticastIntervalSeconds": 600,
        "NotifyTTL": 5,
        "NotifyIPv6Scope": "Site"
    },
    "Telnet": {
        "ProtocolEnabled": true,
        "Port": 23
    },
    "KVMIP": {
        "ProtocolEnabled": true,
        "Port": 5288
    },
    "@odata.id": "/redfish/v1/Managers/BMC/NetworkProtocol"
}
```

6.57 MediaController 1.2.0

Version	v1.2	v1.1	v1.0
Release	2021.1	2020.2	2019.4

6.57.1 Description

The MediaController schema contains the definition of the media controller and its configuration.

6.57.2 URIs

/redfish/v1/Chassis/{*ChassisId*}/MediaControllers/{*MediaControllerId*}

6.57.3 Properties

Property	Type	Attributes	Notes
EnvironmentMetrics *(v1.2+)* {	object		The link to the environment metrics for this media controller. See the *EnvironmentMetrics* schema for details on this property.

Property	Type	Attributes	Notes
@odata.id	string	*read-only*	Link to a EnvironmentMetrics resource. See the Links section and the *EnvironmentMetrics* schema for details.
}			
Links {	object		The links to other resources that are related to this resource.
Endpoints [{	array		An array of links to the endpoints that connect to this media controller.
@odata.id	string	*read-only*	Link to a Endpoint resource. See the Links section and the *Endpoint* schema for details.
}]			
MemoryDomains [{	array		An array of links to the memory domains associated with this media controller.
@odata.id	string	*read-only*	Link to a MemoryDomain resource. See the Links section and the *MemoryDomain* schema for details.
}]			
Oem {}	object		See the Oem object definition in the Common properties section.
}			
Manufacturer	string	*read-only (null)*	The manufacturer of this media controller.
MediaControllerType	string (enum)	*read-only (null)*	The type of media controller. *For the possible property values, see MediaControllerType in Property details.*
Model	string	*read-only (null)*	The model of this media controller.
PartNumber	string	*read-only (null)*	The part number of this media controller.
Ports {	object		The link to the collection of ports associated with this media controller. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *Port*. See the Port schema for details.
}			
SerialNumber	string	*read-only (null)*	The serial number of this media controller.
Status {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.

Property	Type	Attributes	Notes
UUID *(v1.1+)*	string	*read-only (null)*	The UUID for this media controller.

6.57.4 Actions

6.57.4.1 Reset

Description

This action resets this media controller.

Action URI: {Base URI of target resource}/Actions/MediaController.Reset

Action parameters

Parameter Name	Type	Attributes	Notes
ResetType	string (enum)	*optional*	The type of reset. *For the possible property values, see ResetType in Property details.*

Request Example

```
{
    "ResetType": "ForceRestart"
}
```

6.57.5 Property details

6.57.5.1 MediaControllerType:

The type of media controller.

string	Description
Memory	The media controller is for memory.

6.57.5.2 ResetType:

The type of reset.

string	Description
ForceOff	Turn off the unit immediately (non-graceful shutdown).
ForceOn	Turn on the unit immediately.
ForceRestart	Shut down immediately and non-gracefully and restart the system.
GracefulRestart	Shut down gracefully and restart the system.
GracefulShutdown	Shut down gracefully and power off.
Nmi	Generate a diagnostic interrupt, which is usually an NMI on x86 systems, to stop normal operations, complete diagnostic actions, and, typically, halt the system.
On	Turn on the unit.
Pause	Pause execution on the unit but do not remove power. This is typically a feature of virtual machine hypervisors.
PowerCycle	Power cycle the unit. Behaves like a full power removal, followed by a power restore to the resource.
PushPowerButton	Simulate the pressing of the physical power button on this unit.
Resume	Resume execution on the paused unit. This is typically a feature of virtual machine hypervisors.
Suspend	Write the state of the unit to disk before powering off. This allows for the state to be restored when powered back on.

6.57.6 Example response

```
{
    "@odata.type": "#MediaController.v1_2_0.MediaController",
    "Id": "MediaController1",
    "Name": "Media Controller 1",
    "MediaControllerType": "Memory",
    "Manufacturer": "Contoso",
    "Model": "Contoso MediaController",
    "SerialNumber": "2M220100SL",
    "Status": {
        "State": "Enabled",
        "Health": "OK"
    },
```

```
        "UUID": "41784113-ed6b-2284-1414-916520dc1dd1",
        "Ports": {
            "@odata.id": "/redfish/v1/Chassis/GenZ/MediaControllers/1/Ports"
        },
        "Actions": {
            "#MediaController.Reset": {
                "target": "/redfish/v1/Chassis/GenZ/MediaControllers/1/Actions/MediaController.Reset",
                "ResetType@Redfish.AllowableValues": [
                    "ForceRestart"
                ]
            }
        },
        "Links": {
            "Endpoints": [
                {
                    "@odata.id": "/redfish/v1/Fabrics/GenZ/Endpoints/1"
                }
            ],
            "MemoryDomains": [
                {
                    "@odata.id": "/redfish/v1/Chassis/GenZ/MemoryDomains/1"
                }
            ]
        },
        "Oem": {},
        "@odata.id": "/redfish/v1/Chassis/GenZ/MediaControllers/1"
    }
```

6.58 Memory 1.14.0

Version	v1.14	v1.13	v1.12	v1.11	v1.10	v1.9	v1.8	v1.7	v1.6	v1.5	v1.4	...
Release	2021.4	2021.2	2021.1	2020.4	2020.3	2019.4	2019.2	2018.3	2018.2	2018.1	2017.3	...

6.58.1 Description

The Memory schema represents a memory device, such as a DIMM, and its configuration.

6.58.2 URIs

/redfish/v1/Chassis/{*ChassisId*}/Memory/{*MemoryId*}
/redfish/v1/CompositionService/ResourceBlocks/{*ResourceBlockId*}/Memory/{*MemoryId*}
/redfish/v1/CompositionService/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/Memory/{*MemoryId*}

/redfish/v1/ResourceBlocks/*{ResourceBlockId}*/Memory/*{MemoryId}*
/redfish/v1/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/Memory/*{MemoryId}*
/redfish/v1/Systems/*{ComputerSystemId}*/Memory/*{MemoryId}*

6.58.3 Properties

Property	Type	Attributes	Notes
AllocationAlignmentMiB *(v1.2+)*	integer (mebibytes)	*read-only (null)*	The boundary that memory regions are allocated on, measured in mebibytes (MiB).
AllocationIncrementMiB *(v1.2+)*	integer (mebibytes)	*read-only (null)*	The size of the smallest unit of allocation for a memory region in mebibytes (MiB).
AllowedSpeedsMHz [ ]	array (MHz) (integer)	*read-only*	Speeds supported by this memory device.
Assembly *(v1.4+)* {	object		The link to the assembly resource associated with this memory device. See the *Assembly* schema for details on this property.
@odata.id	string	*read-only*	Link to a Assembly resource. See the Links section and the *Assembly* schema for details.
}			
BaseModuleType	string (enum)	*read-only (null)*	The base module type of the memory device. *For the possible property values, see BaseModuleType in Property details.*
BusWidthBits	integer	*read-only (null)*	The bus width, in bits.
CacheSizeMiB *(v1.4+)*	integer (mebibytes)	*read-only (null)*	Total size of the cache portion memory in MiB.
CapacityMiB	integer (mebibytes)	*read-only (null)*	Memory capacity in mebibytes (MiB).
Certificates *(v1.11+)* {	object		The link to a collection of certificates for device identity and attestation. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *Certificate*. See the Certificate schema for details.
}			
ConfigurationLocked *(v1.7+)*	boolean	*read-only (null)*	An indication of whether the configuration of this memory device is locked and cannot be altered.
DataWidthBits	integer	*read-only (null)*	Data width in bits.

Property	Type	Attributes	Notes
DeviceID *(deprecated v1.3)*	string	*read-only (null)*	Device ID. *Deprecated in v1.3 and later. This property has been deprecated in favor of ModuleProductID.*
DeviceLocator *(deprecated v1.9)*	string	*read-only (null)*	Location of the memory device in the platform. *Deprecated in v1.9 and later. This property has been deprecated in favor of the ServiceLabel property within Location.*
Enabled *(v1.12+)*	boolean	*read-write*	An indication of whether this memory is enabled.
EnvironmentMetrics *(v1.11+)* {	object		The link to the environment metrics for this memory. See the *EnvironmentMetrics* schema for details on this property.
@odata.id	string	*read-only*	Link to a EnvironmentMetrics resource. See the Links section and the *EnvironmentMetrics* schema for details.
}			
ErrorCorrection	string (enum)	*read-only (null)*	Error correction scheme supported for this memory device. *For the possible property values, see ErrorCorrection in Property details.*
FirmwareApiVersion	string	*read-only (null)*	Version of API supported by the firmware.
FirmwareRevision	string	*read-only (null)*	Revision of firmware on the memory controller.
FunctionClasses *(deprecated v1.3)* [ ]	array (string)	*read-only*	Function classes by the memory device. *Deprecated in v1.3 and later. This property has been deprecated in favor of OperatingMemoryModes at the root of the resource, or MemoryClassification found within RegionSet.*
IsRankSpareEnabled	boolean	*read-only (null)*	An indication of whether rank spare is enabled for this memory device.
IsSpareDeviceEnabled	boolean	*read-only (null)*	An indication of whether a spare device is enabled for this memory device.
Links *(v1.2+)* {	object		The links to other resources that are related to this resource.
Chassis *(v1.2+)* {	object		The link to the chassis that contains this memory device. See the *Chassis* schema for details on this property.
@odata.id	string	*read-only*	Link to a Chassis resource. See the Links section and the *Chassis* schema for details.
}			
Oem {}	object		See the Oem object definition in the Common properties section.

Property	Type	Attributes	Notes
Processors *(v1.11+)* [{	array		An array of links to the processors associated with this memory device.
@odata.id	string	*read-only*	Link to a Processor resource. See the Links section and the *Processor* schema for details.
}]			
}			
Location *(v1.4+)* {}	object		The location of the memory device. For property details, see Location.
LocationIndicatorActive *(v1.10+)*	boolean	*read-write (null)*	An indicator allowing an operator to physically locate this resource.
Log *(v1.13+)* {	object		The link to the log service associated with this memory. See the *LogService* schema for details on this property.
@odata.id	string	*read-only*	Link to a LogService resource. See the Links section and the *LogService* schema for details.
}			
LogicalSizeMiB *(v1.4+)*	integer (mebibytes)	*read-only (null)*	Total size of the logical memory in MiB.
Manufacturer	string	*read-only (null)*	The memory device manufacturer.
MaxTDPMilliWatts [ ]	array (milliWatts) (integer)	*read-only*	Set of maximum power budgets supported by the memory device in milliwatts.
Measurements *(v1.11+, deprecated v1.14)* [{	array		An array of DSP0274-defined measurement blocks. *Deprecated in v1.14 and later. This property has been deprecated in favor of the ComponentIntegrity resource.*
@odata.id	string	*read-only*	Link to a MeasurementBlock resource. See the Links section and the *SoftwareInventory* schema for details.
}]			
MemoryDeviceType	string (enum)	*read-only (null)*	Type details of the memory device. *For the possible property values, see MemoryDeviceType in Property details.*
MemoryLocation {	object		Memory connection information to sockets and memory controllers.
Channel	integer	*read-only (null)*	The channel number to which the memory device is connected.

Property	Type	Attributes	Notes
MemoryController	integer	*read-only (null)*	The memory controller number to which the memory device is connected.
Slot	integer	*read-only (null)*	The slot number to which the memory device is connected.
Socket	integer	*read-only (null)*	The socket number to which the memory device is connected.
}			
MemoryMedia [ ]	array (string (enum))	*read-only*	Media of this memory device. *For the possible property values, see MemoryMedia in Property details.*
MemorySubsystemControllerManufacturerID *(v1.3+)*	string	*read-only (null)*	The manufacturer ID of the memory subsystem controller of this memory device.
MemorySubsystemControllerProductID *(v1.3+)*	string	*read-only (null)*	The product ID of the memory subsystem controller of this memory device.
MemoryType	string (enum)	*read-only (null)*	The type of memory device. *For the possible property values, see MemoryType in Property details.*
Metrics {	object		The link to the metrics associated with this memory device. See the *MemoryMetrics* schema for details on this property.
@odata.id	string	*read-only*	Link to a MemoryMetrics resource. See the Links section and the *MemoryMetrics* schema for details.
}			
Model *(v1.11+)*	string	*read-only (null)*	The product model number of this device.
ModuleManufacturerID *(v1.3+)*	string	*read-only (null)*	The manufacturer ID of this memory device.
ModuleProductID *(v1.3+)*	string	*read-only (null)*	The product ID of this memory device.
NonVolatileSizeMiB *(v1.4+)*	integer (mebibytes)	*read-only (null)*	Total size of the non-volatile portion memory in MiB.
OperatingMemoryModes [ ]	array (string (enum))	*read-only*	Memory modes supported by the memory device. *For the possible property values, see OperatingMemoryModes in Property details.*
OperatingSpeedMhz	integer (MHz)	*read-only (null)*	Operating speed of the memory device in MHz or MT/s as appropriate.

Property	Type	Attributes	Notes
OperatingSpeedRangeMHz *(v1.13+)* {	object (excerpt)		Range of allowed operating speeds (MHz). This object is an excerpt of the *Control* resource located at the URI shown in DataSourceUri.
AllowableMax	number	*read-only (null)*	The maximum possible setting for this control.
AllowableMin	number	*read-only (null)*	The minimum possible setting for this control.
AllowableNumericValues [ ]	array (number, null)	*read-only*	The supported values for the set point.
ControlMode	string (enum)	*read-write (null)*	The current operating mode of the control. *For the possible property values, see ControlMode in Property details.*
DataSourceUri	string (URI)	*read-only (null)*	The link to the resource that provides the data for this control.
Reading	number	*read-only (null)*	The reading of the sensor associated with this control.
ReadingUnits	string	*read-only (null)*	The units of the sensor reading associated with this control.
SettingMax	number	*read-write (null)*	The maximum set point in the allowed range.
SettingMin	number	*read-write (null)*	The minimum set point in the allowed range.
}			
PartNumber	string	*read-only (null)*	The product part number of this device.
PersistentRegionNumberLimit *(v1.2+)*	integer	*read-only (null)*	Total number of persistent regions this memory device can support.
PersistentRegionSizeLimitMiB	integer (mebibytes)	*read-only (null)*	Total size of persistent regions in mebibytes (MiB).
PersistentRegionSizeMaxMiB *(v1.2+)*	integer (mebibytes)	*read-only (null)*	Maximum size of a single persistent region in mebibytes (MiB).
PowerManagementPolicy {	object		Power management policy information.
AveragePowerBudgetMilliWatts	integer (milliWatts)	*read-only (null)*	Average power budget, in milliwatts.

Property	Type	Attributes	Notes
MaxTDPMilliWatts	integer (milliWatts)	read-only (null)	Maximum TDP in milliwatts.
PeakPowerBudgetMilliWatts	integer (milliWatts)	read-only (null)	Peak power budget, in milliwatts.
PolicyEnabled	boolean	read-only (null)	An indication of whether the power management policy is enabled.
}			
RankCount	integer	read-only (null)	Number of ranks available in the memory device.
Regions [{	array		Memory regions information within the memory device.
MemoryClassification	string (enum)	read-only (null)	The classification of memory that the memory region occupies. *For the possible property values, see MemoryClassification in Property details.*
OffsetMiB	integer (mebibytes)	read-only (null)	Offset within the memory that corresponds to the start of this memory region in mebibytes (MiB).
PassphraseEnabled *(v1.5+)*	boolean	read-only (null)	An indication of whether the passphrase is enabled for this region.
PassphraseState *(deprecated v1.5)*	boolean	read-only (null)	An indication of whether the state of the passphrase for this region is enabled. *Deprecated in v1.5 and later. This property has been deprecated in favor of PassphraseEnabled found within RegionSet.*
RegionId	string	read-only (null)	Unique region ID representing a specific region within the memory device.
SizeMiB	integer (mebibytes)	read-only (null)	Size of this memory region in mebibytes (MiB).
}]			
SecurityCapabilities {	object		Security capabilities of the memory device.
ConfigurationLockCapable *(v1.7+)*	boolean	read-only (null)	An indication of whether this memory device supports the locking, or freezing, of the configuration.
DataLockCapable *(v1.7+)*	boolean	read-only (null)	An indication of whether this memory device supports data locking.
MaxPassphraseCount	integer	read-only (null)	Maximum number of passphrases supported for this memory device.

Property	Type	Attributes	Notes
PassphraseCapable	boolean	*read-only (null)*	An indication of whether the memory device is passphrase capable.
PassphraseLockLimit *(v1.7+)*	integer	*read-only (null)*	The maximum number of incorrect passphrase attempts allowed before memory device is locked.
SecurityStates *(deprecated v1.7)* [ ]	array (string (enum))	*read-only*	Security states supported by the memory device. *For the possible property values, see SecurityStates in Property details. Deprecated in v1.7 and later. This property has been deprecated in favor of using the individual PassphraseCapable, DataLockCapable and ConfigurationLockCapable properties.*
}			
SecurityState *(v1.7+)*	string (enum)	*read-write (null)*	The current security state of this memory device. *For the possible property values, see SecurityState in Property details.*
SerialNumber	string	*read-only (null)*	The product serial number of this device.
SpareDeviceCount	integer	*read-only (null)*	Number of unused spare devices available in the memory device.
SparePartNumber *(v1.11+)*	string	*read-only (null)*	The spare part number of the memory.
Status *(v1.1+)* {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
SubsystemDeviceID *(deprecated v1.3)*	string	*read-only (null)*	Subsystem device ID. *Deprecated in v1.3 and later. This property has been deprecated in favor of MemorySubsystemControllerProductID.*
SubsystemVendorID *(deprecated v1.3)*	string	*read-only (null)*	SubSystem vendor ID. *Deprecated in v1.3 and later. This property has been deprecated in favor of MemorySubsystemControllerManufacturerID.*
VendorID *(deprecated v1.3)*	string	*read-only (null)*	Vendor ID. *Deprecated in v1.3 and later. This property has been deprecated in favor of ModuleManufacturerID.*
VolatileRegionNumberLimit *(v1.2+)*	integer	*read-only (null)*	Total number of volatile regions this memory device can support.
VolatileRegionSizeLimitMiB	integer (mebibytes)	*read-only (null)*	Total size of volatile regions in mebibytes (MiB).
VolatileRegionSizeMaxMiB *(v1.2+)*	integer (mebibytes)	*read-only (null)*	Maximum size of a single volatile region in mebibytes (MiB).
VolatileSizeMiB *(v1.4+)*	integer (mebibytes)	*read-only (null)*	Total size of the volatile portion memory in MiB.

6.58.4 Actions

6.58.4.1 DisablePassphrase

Description

Disable passphrase for given regions.

Action URI: {Base URI of target resource}/Actions/Memory.DisablePassphrase

Action parameters

Parameter Name	Type	Attributes	Notes
Passphrase	string	*required*	Passphrase for doing the operation.
RegionId	string	*required*	The memory region ID to which to apply this action.

Request Example

```
{
    "Passphrase": "FluffyBunny",
    "RegionId": 2
}
```

6.58.4.2 OverwriteUnit *(v1.6+)*

Description

This contains the action for securely erasing given regions using the NIST SP800-88 Purge: Overwrite.

Action URI: {Base URI of target resource}/Actions/Memory.OverwriteUnit

Action parameters

Parameter Name	Type	Attributes	Notes
Passphrase	string	*required*	Passphrase for doing the operation.

Parameter Name	Type	Attributes	Notes
RegionId	string	*required*	The memory region ID to which to apply this action.

Request Example

```
{
    "Passphrase": "FluffyBunny",
    "RegionId": 2
}
```

6.58.4.3 Reset *(v1.8+)*

Description

This action resets this memory device.

Action URI: {Base URI of target resource}/Actions/Memory.Reset

Action parameters

Parameter Name	Type	Attributes	Notes
ResetType	string (enum)	*optional*	The type of reset. *For the possible property values, see ResetType in Property details.*

Request Example

```
{
    "ResetType": "ForceRestart"
}
```

6.58.4.4 SecureEraseUnit

Description

This contains the action for securely erasing given regions using the NIST SP800-88 Purge: Cryptographic Erase.

Action URI: {Base URI of target resource}/Actions/Memory.SecureEraseUnit

Action parameters

Parameter Name	Type	Attributes	Notes
Passphrase	string	*required*	Passphrase for doing the operation.
RegionId	string	*required*	The memory region ID to which to apply this action.

Request Example

```
{
    "Passphrase": "FluffyBunny",
    "RegionId": 2
}
```

6.58.4.5 SetPassphrase

Description

Set passphrase for the given regions.

Action URI: {Base URI of target resource}/Actions/Memory.SetPassphrase

Action parameters

Parameter Name	Type	Attributes	Notes
Passphrase	string	*required*	Passphrase for doing the operation.
RegionId	string	*required*	The memory region ID to which to apply this action.

Request Example

```
{
    "Passphrase": "FluffyBunny",
    "RegionId": 2
}
```

6.58.4.6 UnlockUnit

Description

This contains the action for unlocking given regions.

Action URI: {Base URI of target resource}/Actions/Memory.UnlockUnit

Action parameters

Parameter Name	Type	Attributes	Notes
Passphrase	string	*required*	The passphrase required to complete the operation.
RegionId	string	*required*	The memory region ID to which to apply this action.

Request Example

```
{
    "Passphrase": "FluffyBunny",
    "RegionId": 2
}
```

6.58.5 Property details

6.58.5.1 BaseModuleType:

The base module type of the memory device.

string	Description
Die *(v1.7+)*	A die within a package.
LRDIMM	Load Reduced.
Mini_RDIMM	Mini_RDIMM.
Mini_UDIMM	Mini_UDIMM.
RDIMM	Registered DIMM.
SO_DIMM	SO_DIMM.

string	Description
SO_DIMM_16b	SO_DIMM_16b.
SO_DIMM_32b	SO_DIMM_32b.
SO_RDIMM_72b	SO_RDIMM_72b.
SO_UDIMM_72b	SO_UDIMM_72b.
UDIMM	UDIMM.

6.58.5.2 ControlMode:

The current operating mode of the control.

string	Description
Automatic	Automatically adjust control to meet the set point.
Disabled	The control has been disabled.
Manual	No automatic adjustments are made to the control.
Override	User override of the automatic set point value.

6.58.5.3 ErrorCorrection:

Error correction scheme supported for this memory device.

string	Description
AddressParity	Address parity errors can be corrected.
MultiBitECC	Multibit data errors can be corrected by ECC.
NoECC	No ECC available.
SingleBitECC	Single bit data errors can be corrected by ECC.

6.58.5.4 MemoryClassification:

The classification of memory that the memory region occupies.

string	Description
Block	Block-accessible memory.
ByteAccessiblePersistent	Byte-accessible persistent memory.
Volatile	Volatile memory.

6.58.5.5 MemoryDeviceType:

Type details of the memory device.

string	Description
DDR	DDR.
DDR2	DDR2.
DDR2_SDRAM	DDR2 SDRAM.
DDR2_SDRAM_FB_DIMM	DDR2 SDRAM FB_DIMM.
DDR2_SDRAM_FB_DIMM_PROBE	DDR2 SDRAM FB_DIMM PROBE.
DDR3	DDR3.
DDR3_SDRAM	DDR3 SDRAM.
DDR4	DDR4.
DDR4_SDRAM	DDR4 SDRAM.
DDR4E_SDRAM	DDR4E SDRAM.
DDR5 *(v1.11+)*	Double data rate type five synchronous dynamic random-access memory.
DDR_SDRAM	DDR SDRAM.
DDR_SGRAM	DDR SGRAM.
EDO	EDO.
FastPageMode	Fast Page Mode.
GDDR *(v1.11+)*	Synchronous graphics random-access memory.
GDDR2 *(v1.11+)*	Double data rate type two synchronous graphics random-access memory.
GDDR3 *(v1.11+)*	Double data rate type three synchronous graphics random-access memory.
GDDR4 *(v1.11+)*	Double data rate type four synchronous graphics random-access memory.

string	Description
GDDR5 *(v1.11+)*	Double data rate type five synchronous graphics random-access memory.
GDDR5X *(v1.11+)*	Double data rate type five X synchronous graphics random-access memory.
GDDR6 *(v1.11+)*	Double data rate type six synchronous graphics random-access memory.
HBM *(v1.7+)*	High Bandwidth Memory.
HBM2 *(v1.7+)*	The second generation of High Bandwidth Memory.
HBM3 *(v1.11+)*	The third generation of High Bandwidth Memory.
Logical *(v1.4+)*	Logical Non-volatile device.
LPDDR3_SDRAM	LPDDR3 SDRAM.
LPDDR4_SDRAM	LPDDR4 SDRAM.
OEM *(v1.11+)*	OEM-defined.
PipelinedNibble	Pipelined Nibble.
ROM	ROM.
SDRAM	SDRAM.

6.58.5.6 MemoryMedia:

Media of this memory device.

string	Description
DRAM	DRAM media.
Intel3DXPoint	Intel 3D XPoint media.
NAND	NAND media.
Proprietary	Proprietary media.

6.58.5.7 MemoryType:

The type of memory device.

string	Description
DRAM	The memory device is comprised of volatile memory.
IntelOptane *(v1.6+)*	The memory device is an Intel Optane Persistent Memory Module.
NVDIMM_F	The memory device is comprised of non-volatile memory.
NVDIMM_N	The memory device is comprised of volatile memory backed by non-volatile memory.
NVDIMM_P	The memory device is comprised of a combination of non-volatile and volatile memory.

6.58.5.8 OperatingMemoryModes:

Memory modes supported by the memory device.

string	Description
Block	Block-accessible system memory.
PMEM	Persistent memory, byte-accessible through system address space.
Volatile	Volatile memory.

6.58.5.9 ResetType:

The type of reset.

string	Description
ForceOff	Turn off the unit immediately (non-graceful shutdown).
ForceOn	Turn on the unit immediately.
ForceRestart	Shut down immediately and non-gracefully and restart the system.
GracefulRestart	Shut down gracefully and restart the system.
GracefulShutdown	Shut down gracefully and power off.
Nmi	Generate a diagnostic interrupt, which is usually an NMI on x86 systems, to stop normal operations, complete diagnostic actions, and, typically, halt the system.
On	Turn on the unit.
Pause	Pause execution on the unit but do not remove power. This is typically a feature of virtual machine hypervisors.

string	Description
PowerCycle	Power cycle the unit. Behaves like a full power removal, followed by a power restore to the resource.
PushPowerButton	Simulate the pressing of the physical power button on this unit.
Resume	Resume execution on the paused unit. This is typically a feature of virtual machine hypervisors.
Suspend	Write the state of the unit to disk before powering off. This allows for the state to be restored when powered back on.

6.58.5.10 SecurityState:

The current security state of this memory device.

string	Description
Disabled	Secure mode is disabled.
Enabled	Secure mode is enabled and access to the data is allowed.
Frozen *(deprecated v1.7)*	Secure state is frozen and cannot be modified until reset. *Deprecated in v1.7 and later. This value has been deprecated in favor of using the ConfigurationLocked to indicate that the configuration has been frozen.*
Locked	Secure mode is enabled and access to the data is locked.
Passphraselimit	Number of attempts to unlock the memory exceeded limit.
Unlocked *(deprecated v1.7)*	Secure mode is enabled and access to the data is unlocked. *Deprecated in v1.7 and later. This value has been deprecated in favor of 'Enabled' to indicate normal security operation.*

6.58.5.11 SecurityStates:

Security states supported by the memory device.

string	Description
Disabled	Secure mode is disabled.
Enabled	Secure mode is enabled and access to the data is allowed.
Frozen	Secure state is frozen and cannot be modified until reset.
Locked	Secure mode is enabled and access to the data is locked.
Passphraselimit	Number of attempts to unlock the memory exceeded limit.

string	Description
Unlocked	Secure mode is enabled and access to the data is unlocked.

6.58.6 Example response

```json
{
    "@odata.type": "#Memory.v1_14_0.Memory",
    "Name": "Regular Memory",
    "Id": "1",
    "RankCount": 1,
    "MaxTDPMilliWatts": [
        12000
    ],
    "CapacityMiB": 8192,
    "DataWidthBits": 64,
    "BusWidthBits": 72,
    "ErrorCorrection": "MultiBitECC",
    "MemoryLocation": {
        "Socket": 1,
        "MemoryController": 1,
        "Channel": 1,
        "Slot": 1
    },
    "MemoryType": "DRAM",
    "MemoryDeviceType": "DDR4",
    "BaseModuleType": "RDIMM",
    "MemoryMedia": [
        "DRAM"
    ],
    "Status": {
        "State": "Enabled",
        "Health": "OK"
    },
    "Metrics": {
        "@odata.id": "/redfish/v1/Systems/437XR1138R2/Memory/1/MemoryMetrics"
    },
    "EnvironmentMetrics": {
        "@odata.id": "/redfish/v1/Systems/437XR1138R2/Memory/1/EnvironmentMetrics"
    },
    "Location": {
        "PartLocation": {
            "ServiceLabel": "Socket 1_A",
            "LocationType": "Socket",
            "LocationOrdinalValue": 0
        }
    },
    "@odata.id": "/redfish/v1/Systems/437XR1138R2/Memory/1"
```

```
    }
```

6.59 MemoryChunks 1.4.1

Version	v1.4	v1.3	v1.2	v1.1	v1.0
Release	2020.3	2019.4	2017.3	2017.1	2016.2

6.59.1 Description

The schema definition of a memory chunk and its configuration.

6.59.2 URIs

/redfish/v1/Chassis/{*ChassisId*}/MemoryDomains/{*MemoryDomainId*}/MemoryChunks/{*MemoryChunksId*}
/redfish/v1/CompositionService/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/MemoryDomains/
{*MemoryDomainId*}/MemoryChunks/{*MemoryChunksId*}
/redfish/v1/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/MemoryDomains/{*MemoryDomainId*}/
MemoryChunks/{*MemoryChunksId*}
/redfish/v1/Systems/{*ComputerSystemId*}/MemoryDomains/{*MemoryDomainId*}/MemoryChunks/{*MemoryChunksId*}

6.59.3 Properties

Property	Type	Attributes	Notes
AddressRangeOffsetMiB *(v1.3+)*	integer (mebibytes)	*read-only (null)*	Offset of the memory chunk in the address range in MiB.
AddressRangeType	string (enum)	*read-only (null)*	Memory type of this memory chunk. *For the possible property values, see AddressRangeType in Property details.*
DisplayName *(v1.4+)*	string	*read-write (null)*	A user-configurable string to name the memory chunk.
InterleaveSets [{	array		The interleave sets for the memory chunk.
Memory {	object		Describes a memory device of the interleave set.
@odata.id	string (URI)	*read-only*	The unique identifier for a resource.

Property	Type	Attributes	Notes
}			
MemoryLevel	integer	*read-only* *(null)*	Level of the interleave set for multi-level tiered memory.
OffsetMiB	integer (mebibytes)	*read-only* *(null)*	Offset within the DIMM that corresponds to the start of this memory region, measured in mebibytes (MiB).
RegionId	string	*read-only* *(null)*	DIMM region identifier.
SizeMiB	integer (mebibytes)	*read-only* *(null)*	Size of this memory region measured in mebibytes (MiB).
}]			
IsMirrorEnabled	boolean	*read-only* *(null)*	An indication of whether memory mirroring is enabled for this memory chunk.
IsSpare	boolean	*read-only* *(null)*	An indication of whether sparing is enabled for this memory chunk.
Links *(v1.3+)* {	object		The links to other resources that are related to this resource.
Endpoints *(v1.3+)* [{	array		An array of links to the endpoints that connect to this memory chunk.
@odata.id	string	*read-only*	Link to a Endpoint resource. See the Links section and the *Endpoint* schema for details.
}]			
Oem {}	object		See the Oem object definition in the Common properties section.
}			
MemoryChunkSizeMiB	integer (mebibytes)	*read-only* *(null)*	Size of the memory chunk measured in mebibytes (MiB).
Status *(v1.2+)* {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.

6.59.4 Property details

6.59.4.1 AddressRangeType:

Memory type of this memory chunk.

string	Description
Block	Block accessible memory.
PMEM	Byte accessible persistent memory.
Volatile	Volatile memory.

6.59.5 Example response

```json
{
    "@odata.type": "#MemoryChunks.v1_4_1.MemoryChunks",
    "Name": "Memory Chunk - Whole System",
    "Id": "1",
    "MemoryChunkSizeMiB": 32768,
    "AddressRangeType": "Volatile",
    "IsMirrorEnabled": false,
    "IsSpare": false,
    "InterleaveSets": [
        {
            "Memory": {
                "@odata.id": "/redfish/v1/Systems/2/Memory/1"
            }
        },
        {
            "Memory": {
                "@odata.id": "/redfish/v1/Systems/2/Memory/2"
            }
        },
        {
            "Memory": {
                "@odata.id": "/redfish/v1/Systems/2/Memory/3"
            }
        },
        {
            "Memory": {
                "@odata.id": "/redfish/v1/Systems/2/Memory/4"
            }
        }
    ],
    "@Redfish.Settings": {
        "@odata.type": "#Settings.v1_3_4.Settings",
        "SettingsObject": {
            "@odata.id": "/redfish/v1/Systems/2/MemoryDomains/1/MemoryChunks/1/SD"
        },
        "Time": "2012-03-07T14:44.30-05:00",
        "ETag": "someetag",
        "Messages": [
            {
```

```
            "MessageId": "Base.1.0.Success"
        }
    ]
},
"Oem": {},
"@odata.id": "/redfish/v1/Systems/2/MemoryDomains/1/MemoryChunks/1"
}
```

6.60 MemoryDomain 1.3.0

Version	v1.3	v1.2	v1.1	v1.0
Release	2019.4	2017.1	2016.3	2016.2

6.60.1 Description

The MemoryDomain schema describes a memory domain and its configuration. Memory domains indicate to the client which memory, or DIMMs, can be grouped together in memory chunks to represent addressable memory.

6.60.2 URIs

/redfish/v1/Chassis/{*ChassisId*}/MemoryDomains/{*MemoryDomainId*}
/redfish/v1/CompositionService/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/MemoryDomains/{*MemoryDomainId*}
/redfish/v1/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/MemoryDomains/{*MemoryDomainId*}
/redfish/v1/Systems/{*ComputerSystemId*}/MemoryDomains/{*MemoryDomainId*}

6.60.3 Properties

Property	Type	Attributes	Notes
AllowsBlockProvisioning	boolean	*read-only* *(null)*	An indication of whether this memory domain supports the provisioning of blocks of memory.
AllowsMemoryChunkCreation	boolean	*read-only* *(null)*	An indication of whether this memory domain supports the creation of memory chunks.
AllowsMirroring *(v1.1+)*	boolean	*read-only* *(null)*	An indication of whether this memory domain supports the creation of memory chunks with mirroring enabled.

Property	Type	Attributes	Notes
AllowsSparing *(v1.1+)*	boolean	*read-only (null)*	An indication of whether this memory domain supports the creation of memory chunks with sparing enabled.
InterleavableMemorySets [{	array		The interleave sets for the memory chunk.
MemorySet [{	array		The set of memory for a particular interleave set.
@odata.id	string	*read-only*	Link to a Memory resource. See the Links section and the *Memory* schema for details.
}]			
}]			
Links *(v1.3+)* {	object		The links to other Resources that are related to this Resource.
MediaControllers *(v1.3+)* [{	array		An array of links to the media controllers for this memory domain.
@odata.id	string	*read-only*	Link to a MediaController resource. See the Links section and the *MediaController* schema for details.
}]			
Oem {}	object		See the Oem object definition in the Common properties section.
}			
MemoryChunks {	object		The link to the collection of memory chunks associated with this memory domain. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *MemoryChunks*. See the MemoryChunks schema for details.
}			

6.60.4 Example response

```
{
    "@odata.type": "#MemoryDomain.v1_3_0.MemoryDomain",
    "Name": "Memory Domain - Whole System Mirroring Only",
    "Id": "1",
    "MemoryChunks": {
        "@odata.id": "/redfish/v1/Systems/4/MemoryDomains/1/MemoryChunks"
    },
    "AllowsMemoryChunkCreation": false,
    "AllowsBlockProvisioning": false,
    "InterleavableMemorySets": [
```

```
        {
            "MemorySet": [
                {
                    "@odata.id": "/redfish/v1/Systems/2/Memory/1"
                },
                {
                    "@odata.id": "/redfish/v1/Systems/2/Memory/2"
                },
                {
                    "@odata.id": "/redfish/v1/Systems/2/Memory/3"
                },
                {
                    "@odata.id": "/redfish/v1/Systems/2/Memory/4"
                }
            ]
        }
    ],
    "Oem": {},
    "@odata.id": "/redfish/v1/Systems/2/MemoryDomains/1"
}
```

6.61 MemoryMetrics 1.4.1

Version	v1.4	v1.3	v1.2	v1.1	v1.0
Release	2020.3	2020.1	2019.2	2016.2	2016.1

6.61.1 Description

The usage and health statistics for a memory device or system memory summary.

6.61.2 URIs

/redfish/v1/CompositionService/ResourceBlocks/{*ResourceBlockId*}/Memory/{*MemoryId*}/MemoryMetrics
/redfish/v1/CompositionService/ResourceBlocks/{*ResourceBlockId*}/Processors/{*ProcessorId*}/MemorySummary/
MemoryMetrics
/redfish/v1/CompositionService/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/Memory/
{*MemoryId*}/MemoryMetrics
/redfish/v1/CompositionService/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/
MemorySummary/MemoryMetrics
/redfish/v1/CompositionService/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/Processors/
{*ProcessorId*}/MemorySummary/MemoryMetrics
/redfish/v1/ResourceBlocks/{*ResourceBlockId*}/Memory/{*MemoryId*}/MemoryMetrics

/redfish/v1/ResourceBlocks/{*ResourceBlockId*}/Processors/{*ProcessorId*}/MemorySummary/MemoryMetrics
/redfish/v1/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/Memory/{*MemoryId*}/MemoryMetrics
/redfish/v1/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/MemorySummary/MemoryMetrics
/redfish/v1/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/Processors/{*ProcessorId*}/
MemorySummary/MemoryMetrics
/redfish/v1/Systems/{*ComputerSystemId*}/Memory/{*MemoryId*}/MemoryMetrics
/redfish/v1/Systems/{*ComputerSystemId*}/MemorySummary/MemoryMetrics
/redfish/v1/Systems/{*ComputerSystemId*}/Processors/{*ProcessorId*}/MemorySummary/MemoryMetrics

6.61.3 Properties

Property	Type	Attributes	Notes
BandwidthPercent *(v1.2+)*	number (%)	*read-only (null)*	The memory bandwidth utilization as a percentage.
BlockSizeBytes	integer (bytes)	*read-only (null)*	The block size, in bytes.
CurrentPeriod {	object		The memory metrics since the last reset or ClearCurrentPeriod action.
BlocksRead	integer	*read-only (null)*	The number of blocks read since reset.
BlocksWritten	integer	*read-only (null)*	The number of blocks written since reset.
CorrectableECCErrorCount *(v1.4+)*	integer	*read-only (null)*	The number of the correctable errors since reset.
UncorrectableECCErrorCount *(v1.4+)*	integer	*read-only (null)*	The number of the uncorrectable errors since reset.
}			
HealthData {	object		The health information of the memory.
AlarmTrips {	object		Alarm trip information about the memory.
AddressParityError	boolean	*read-only (null)*	An indication of whether an address parity error was detected that a retry could not correct.
CorrectableECCError	boolean	*read-only (null)*	An indication of whether the correctable error threshold crossing alarm trip was detected.
SpareBlock	boolean	*read-only (null)*	An indication of whether the spare block capacity crossing alarm trip was detected.
Temperature	boolean	*read-only (null)*	An indication of whether a temperature threshold alarm trip was detected.

Property	Type	Attributes	Notes
UncorrectableECCError	boolean	*read-only (null)*	An indication of whether the uncorrectable error threshold alarm trip was detected.
}			
DataLossDetected	boolean	*read-only (null)*	An indication of whether data loss was detected.
LastShutdownSuccess	boolean	*read-only (null)*	An indication of whether the last shutdown succeeded.
PerformanceDegraded	boolean	*read-only (null)*	An indication of whether performance has degraded.
PredictedMediaLifeLeftPercent *(v1.1+)*	number (%)	*read-only (null)*	The percentage of reads and writes that are predicted to still be available for the media.
RemainingSpareBlockPercentage	number (%)	*read-only (null)*	The remaining spare blocks, as a percentage.
}			
LifeTime {	object		The memory metrics for the lifetime of the memory.
BlocksRead	integer	*read-only (null)*	The number of blocks read for the lifetime of the memory.
BlocksWritten	integer	*read-only (null)*	The number of blocks written for the lifetime of the memory.
CorrectableECCErrorCount *(v1.4+)*	integer	*read-only (null)*	The number of the correctable errors for the lifetime of the memory.
UncorrectableECCErrorCount *(v1.4+)*	integer	*read-only (null)*	The number of the uncorrectable errors for the lifetime of the memory.
}			
OperatingSpeedMHz *(v1.3+)*	integer (MHz)	*read-only (null)*	Operating speed of memory in MHz or MT/s as appropriate.

6.61.4 Actions

6.61.4.1 ClearCurrentPeriod

Description

This action sets the CurrentPeriod property's values to 0.

Action URI: {Base URI of target resource}/Actions/MemoryMetrics.ClearCurrentPeriod

Action parameters

This action takes no parameters.

6.61.5 Example response

```json
{
    "@odata.type": "#MemoryMetrics.v1_4_1.MemoryMetrics",
    "Name": "Memory Metrics",
    "Id": "Metrics",
    "BlockSizeBytes": 4096,
    "CurrentPeriod": {
        "BlocksRead": 0,
        "BlocksWritten": 0
    },
    "LifeTime": {
        "BlocksRead": 0,
        "BlocksWritten": 0
    },
    "HealthData": {
        "RemainingSpareBlockPercentage": 50,
        "LastShutdownSuccess": true,
        "DataLossDetected": false,
        "PerformanceDegraded": false,
        "AlarmTrips": {
            "Temperature": true,
            "SpareBlock": false,
            "UncorrectableECCError": false,
            "CorrectableECCError": false
        }
    },
    "Actions": {
        "#MemoryMetrics.ClearCurrentPeriod": {
            "target": "/redfish/v1/Systems/1/Memory/1/Actions/MemoryMetrics.ClearCurrentPeriod"
        },
        "Oem": {}
    },
    "Oem": {},
    "@odata.id": "/redfish/v1/Systems/1/Memory/1/MemoryMetrics"
}
```

6.62 MessageRegistry 1.5.0

Version	v1.5	v1.4	v1.3	v1.2	v1.1	v1.0

Release	2021.3	2020.1	2019.1	2018.2	2017.1	1.0

6.62.1 Description

The MessageRegistry schema describes all message registries. It represents the properties for the message registries themselves.

6.62.2 Properties

Property	Type	Attributes	Notes
Language	string	*read-only* *required*	The RFC5646-conformant language code for the message registry.
Messages {	object	* required*	The message keys contained in the message registry.
(pattern) {	object		Property names follow regular expression pattern "[A-Za-z0-9]+"
ArgDescriptions *(v1.3+)* [ ]	array (string, null)	*read-only*	The MessageArg descriptions, in order, used for this message.
ArgLongDescriptions *(v1.3+)* [ ]	array (string, null)	*read-only*	The MessageArg normative descriptions, in order, used for this message.
ClearingLogic *(v1.2+)* {	object		The clearing logic associated with this message. The properties within indicate that what messages are cleared by this message as well as under what conditions.
ClearsAll *(v1.2+)*	boolean	*read-only* *(null)*	An indication of whether all prior conditions and messages are cleared, provided the ClearsIf condition is met.
ClearsIf *(v1.2+)*	string (enum)	*read-only* *(null)*	The condition when the event is cleared. *For the possible property values, see ClearsIf in Property details.*
ClearsMessage *(v1.2+)* [ ]	array (string, null)	*read-only*	The array of MessageIds that this message clears when the other conditions are met.
}			
Deprecated *(v1.5+)*	string	*read-only* *(null)*	The reason the message has been deprecated.
Description	string	*read-only* *required*	A short description of how and when to use this message.
LongDescription *(v1.3+)*	string	*read-only* *(null)*	The normative language that describes this message's usage.

Property	Type	Attributes	Notes
Message	string	*read-only* *required*	The actual message.
MessageSeverity *(v1.4+)*	string (enum)	*read-only* *required* *(null)*	The severity of the message. *For the possible property values, see MessageSeverity in Property details.*
NumberOfArgs	integer	*read-only* *required*	The number of arguments in the message.
Oem {}	object		See the Oem object definition in the Common properties section.
ParamTypes [ ]	array (string (enum))	*read-only*	The MessageArg types, in order, for the message. *For the possible property values, see ParamTypes in Property details.*
Resolution	string	*read-only* *required*	Used to provide suggestions on how to resolve the situation that caused the error.
Severity *(deprecated v1.4)*	string	*read-only* *required*	The severity of the message. *Deprecated in v1.4 and later. This property has been deprecated in favor of MessageSeverity, which ties the values to the enumerations defined for the Health property within Status.*
VersionAdded *(v1.5+)*	string	*read-only* *(null)*	The registry version which added this message.
VersionDeprecated *(v1.5+)*	string	*read-only* *(null)*	The registry version when the the message was deprecated.
}			
}			
OwningEntity	string	*read-only* *required*	The organization or company that publishes this message registry.
RegistryPrefix	string	*read-only* *required*	The single-word prefix that is used in forming and decoding MessageIds.
RegistryVersion	string	*read-only* *required*	The message registry version in the middle portion of a MessageId.

6.62.3 Property details

6.62.3.1 ClearsIf:

The condition when the event is cleared.

string	Description
SameOriginOfCondition	This enumeration shall describe when the message for an event is cleared by the other messages in the ClearingLogic property, provided the OriginOfCondition for both events are the same.

6.62.3.2 MessageSeverity:

The severity of the message.

string	Description
Critical	A critical condition requires immediate attention.
OK	Normal.
Warning	A condition requires attention.

6.62.3.3 ParamTypes:

The MessageArg types, in order, for the message.

string	Description
number	The argument is a number.
string	The argument is a string.

6.62.4 Example response

```
{
    "@odata.type": "#MessageRegistry.v1_3_1.MessageRegistry",
    "Id": "Basic.1.2.0",
    "Name": "Simple Message Registry",
    "Language": "en",
    "Description": "Collection of Basic messages for numerous use cases",
    "RegistryPrefix": "Basic",
    "RegistryVersion": "1.2.0",
    "OwningEntity": "Contoso",
    "Messages": {
        "Success": {
            "Description": "Indicates that all conditions of a successful operation have been met.",
            "Message": "Successfully Completed Request",
            "Severity": "OK",
```

```
            "NumberOfArgs": 0,
            "Resolution": "None"
        },
        "GeneralError": {
            "Description": "Indicates that a general error has occurred.",
            "Message": "A general error has occurred. See ExtendedInfo for more information.",
            "Severity": "Critical",
            "NumberOfArgs": 0,
            "Resolution": "See ExtendedInfo for more information."
        },
        "ResourceAtUriUnauthorized": {
            "Description": "Indicates that the attempt to access the resource/file/image at the URI was unauthorized.",
            "Message": "While accessing the resource at %1, the service received an authorization error %2.",
            "Severity": "Critical",
            "NumberOfArgs": 2,
            "ParamTypes": [
                "string",
                "string"
            ],
            "Resolution": "Ensure that the appropriate access is provided for the service in order for it to access the URI."
        }
    }
}
```

6.63 MessageRegistryFile 1.1.3

Version	v1.1	v1.0
Release	2017.1	2016.1

6.63.1 Description

The MessageRegistryFile schema describes the Message Registry file locator Resource.

6.63.2 URIs

/redfish/v1/Registries/{*MessageRegistryFileId*}

6.63.3 Properties

Property	Type	Attributes	Notes
Languages [ ]	array (string)	*read-only* *required*	The RFC5646-conformant language codes for the available Message Registries.
Location [{	array	* required*	The location information for this Message Registry file.
ArchiveFile	string	*read-only*	If the service hosts the Message Registry in an archive file, the name of the file within the archive.
ArchiveUri	string (URI)	*read-only*	If the Message Registry is hosted on the service in an archive file, the link to the archive file.
Language	string	*read-only*	The language code for the Message Registry file.
PublicationUri	string (URI)	*read-only*	The link to publicly available (canonical) URI for the Message Registry.
Uri	string (URI)	*read-only*	The link to locally available URI for the Message Registry.
}]			
Registry	string	*read-only* *required*	The registry name and its major and minor versions. This registry can be any type of registry, such as a Message Registry, Privilege Registry, or Attribute Registry.

6.63.4 Example response

```
{
    "@odata.type": "#MessageRegistryFile.v1_1_3.MessageRegistryFile",
    "Id": "Base.v1_0_0",
    "Name": "Base Message Registry File",
    "Description": "Base Message Registry File locations",
    "Languages": [
        "en"
    ],
    "Registry": "Base.1.0",
    "Location": [
        {
            "Language": "en",
            "ArchiveUri": "/FileRepo/Registries.gz",
            "PublicationUri": "http://redfish.dmtf.org/registries/Base.v1_0_0.json",
            "ArchiveFile": "Base.v1_0_0.json"
        },
        {
```

```
            "Language": "zh",
            "ArchiveUri": "/FileRepo/Registries.zh.gz",
            "PublicationUri": "http://redfish.dmtf.org/registries/Base.v1_0_0.zh.json",
            "ArchiveFile": "Base.v1_0_0.zh.json"
        }
    ],
    "Oem": {},
    "@odata.id": "/redfish/v1/Registries/Base.v1_0_0"
}
```

6.64 MetricDefinition 1.2.1

Version	v1.2	v1.1	v1.0
Release	2021.1	2020.3	2018.2

6.64.1 Description

The MetricDefinition schema describes the metadata information for a metric.

6.64.2 URIs

/redfish/v1/TelemetryService/MetricDefinitions/{*MetricDefinitionId*}

6.64.3 Properties

Property	Type	Attributes	Notes
Accuracy	number	*read-only* *(null)*	The estimated percent error of measured versus actual values.
Calculable	string (enum)	*read-write* *(null)*	An indication of whether the metric can be used in a calculation. *For the possible property values, see Calculable in Property details.*
CalculationAlgorithm	string (enum)	*read-only* *(null)*	The calculation that is performed on a source metric to obtain the metric being defined. *For the possible property values, see CalculationAlgorithm in Property details.*
CalculationParameters [{	array		The metric properties that are part of a calculation.

Property	Type	Attributes	Notes
ResultMetric	string	*read-only (null)*	The link to a metric property that stores the result of the calculation. If the link has wildcards, the wildcards are substituted as specified in the Wildcards array property.
SourceMetric	string	*read-only (null)*	The metric property used as the input into the calculation. If the link has wildcards, the wildcards are substituted as specified in the Wildcards array property.
}]			
CalculationTimeInterval	string	*read-write (null)*	The time interval over which the metric calculation is performed.
Calibration	number	*read-only (null)*	The calibration offset added to the metric reading.
DiscreteValues [ ]	array (string, null)	*read-write*	This array property specifies possible values of a discrete metric.
Implementation	string (enum)	*read-only (null)*	The implementation of the metric. *For the possible property values, see Implementation in Property details.*
IsLinear	boolean	*read-write (null)*	An indication of whether the metric values are linear versus non-linear.
MaxReadingRange	number	*read-only (null)*	Maximum value for metric reading.
MetricDataType	string (enum)	*read-write (null)*	The data type of the metric. *For the possible property values, see MetricDataType in Property details.*
MetricProperties [ ]	array (URI) (string, null)	*read-write*	The list of URIs with wildcards and property identifiers that this metric definition defines. If a URI has wildcards, the wildcards are substituted as specified in the Wildcards array property.
MetricType	string (enum)	*read-write (null)*	The type of metric. *For the possible property values, see MetricType in Property details.*
MinReadingRange	number	*read-only (null)*	Minimum value for metric reading.
OEMCalculationAlgorithm *(v1.1+)*	string	*read-only (null)*	The OEM-defined calculation that is performed on a source metric to obtain the metric being defined.
PhysicalContext	string (enum)	*read-only (null)*	The physical context of the metric. *For the possible property values, see PhysicalContext in Property details.*
Precision	integer	*read-only (null)*	Number of significant digits in the metric reading.

Property	Type	Attributes	Notes
SensingInterval	string	*read-write (null)*	The time interval between when a metric is updated.
TimestampAccuracy	string	*read-only (null)*	The accuracy of the timestamp.
Units	string	*read-write (null)*	The units of measure for this metric.
Wildcards [{	array		The wildcards and their substitution values for the entries in the MetricProperties array property.
Name	string	*read-only (null)*	The string used as a wildcard.
Values [ ]	array (string, null)	*read-only*	An array of values to substitute for the wildcard.
}]			

6.64.4 Property details

6.64.4.1 Calculable:

An indication of whether the metric can be used in a calculation.

string	Description
NonCalculatable	No calculations should be performed on the metric reading.
NonSummable	The sum of the metric reading across multiple instances is not meaningful.
Summable	The sum of the metric reading across multiple instances is meaningful.

6.64.4.2 CalculationAlgorithm:

The calculation that is performed on a source metric to obtain the metric being defined.

string	Description
Average	The metric is calculated as the average metric reading over a sliding time interval.
Maximum	The metric is calculated as the maximum metric reading over during a time interval.

string	Description
Minimum	The metric is calculated as the minimum metric reading over a sliding time interval.
OEM *(v1.1+)*	The metric is calculated as specified by an OEM.

6.64.4.3 Implementation:

The implementation of the metric.

string	Description
Calculated	The metric is implemented by applying a calculation on another metric property. The calculation is specified in the CalculationAlgorithm property.
DigitalMeter	The metric is implemented as digital meter.
PhysicalSensor	The metric is implemented as a physical sensor.
Synthesized	The metric is implemented by applying a calculation on one or more metric properties. The calculation is not provided.

6.64.4.4 MetricDataType:

The data type of the metric.

string	Description
Boolean	The JSON boolean definition.
DateTime	The JSON string definition with the date-time format.
Decimal	The JSON decimal definition.
Enumeration	The JSON string definition with a set of defined enumerations.
Integer	The JSON integer definition.
String	The JSON string definition.

6.64.4.5 MetricType:

The type of metric.

string	Description
Countdown	The metric is a countdown metric. The metric reading is a non-negative integer that decreases monotonically. When a counter reaches its minimum, the value resets to preset value and resumes counting down.
Counter	The metric is a counter metric. The metric reading is a non-negative integer that increases monotonically. When a counter reaches its maximum, the value resets to 0 and resumes counting.
Discrete	The metric is a discrete metric. The metric value is discrete. The possible values are listed in the DiscreteValues property.
Gauge	The metric is a gauge metric. The metric value is a real number. When the metric value reaches the gauge's extrema, it stays at that value, until the reading falls within the extrema.
Numeric	The metric is a numeric metric. The metric value is any real number.
String *(v1.2+)*	The metric is a non-discrete string metric. The metric reading is a non-discrete string that displays some non-discrete, non-numeric data.

6.64.4.6 PhysicalContext:

The physical context of the metric.

string	Description
Accelerator	An accelerator.
ACInput	An AC input.
ACMaintenanceBypassInput	An AC maintenance bypass input.
ACOutput	An AC output.
ACStaticBypassInput	An AC static bypass input.
ACUtilityInput	An AC utility input.
ASIC	An ASIC device, such as a networking chip or chipset component.
Back	The back of the chassis.
Backplane	A backplane within the chassis.
Battery	A battery.
Board	A circuit board.
Chassis	The entire chassis.

string	Description
ComputeBay	Within a compute bay.
CoolingSubsystem	The entire cooling, or air and liquid, subsystem.
CPU	A processor (CPU).
CPUSubsystem	The entire processor (CPU) subsystem.
DCBus	A DC bus.
Exhaust	The air exhaust point or points or region of the chassis.
ExpansionBay	Within an expansion bay.
Fan	A fan.
FPGA	An FPGA.
Front	The front of the chassis.
GPU	A graphics processor (GPU).
GPUSubsystem	The entire graphics processor (GPU) subsystem.
Intake	The air intake point or points or region of the chassis.
LiquidInlet	The liquid inlet point of the chassis.
LiquidOutlet	The liquid outlet point of the chassis.
Lower	The lower portion of the chassis.
Memory	A memory device.
MemorySubsystem	The entire memory subsystem.
Motor	A motor.
NetworkBay	Within a networking bay.
NetworkingDevice	A networking device.
PowerSubsystem	The entire power subsystem.
PowerSupply	A power supply.
PowerSupplyBay	Within a power supply bay.
Pump	A pump.
Rectifier	A rectifier device.

string	Description
Room	The room.
StorageBay	Within a storage bay.
StorageDevice	A storage device.
SystemBoard	The system board (PCB).
Transceiver	A transceiver.
Transformer	A transformer.
TrustedModule	A trusted module.
Upper	The upper portion of the chassis.
VoltageRegulator	A voltage regulator device.

6.64.5 Example response

```
{
    "@odata.type": "#MetricDefinition.v1_2_1.MetricDefinition",
    "Id": "PowerConsumedWatts",
    "Name": "Power Consumed Watts Metric Definition",
    "MetricType": "Numeric",
    "Implementation": "PhysicalSensor",
    "PhysicalContext": "PowerSupply",
    "MetricDataType": "Decimal",
    "Units": "W",
    "Precision": 4,
    "Accuracy": 1,
    "Calibration": 2,
    "MinReadingRange": 0,
    "MaxReadingRange": 50,
    "SensingInterval": "PT1S",
    "TimestampAccuracy": "PT1S",
    "Wildcards": [
        {
            "Name": "ChassisID",
            "Values": [
                "1"
            ]
        }
    ],
    "MetricProperties": [
        "/redfish/v1/Chassis/{ChassisID}/Power#/PowerControl/0/PowerConsumedWatts"
    ],
```

```
    "@odata.id": "/redfish/v1/TelemetryService/MetricDefinitions/PowerConsumedWatts"
}
```

6.65 MetricReport 1.4.2

Version	v1.4	v1.3	v1.2	v1.1	v1.0
Release	2020.2	2019.4	2019.2	2018.3	2018.2

6.65.1 Description

The MetricReport schema represents a set of collected metrics.

6.65.2 URIs

/redfish/v1/TelemetryService/MetricReports/{MetricReportId}

6.65.3 Properties

Property	Type	Attributes	Notes
Context *(v1.4+)*	string	*read-only*	A context can be supplied at subscription time. This property is the context value supplied by the subscriber.
MetricReportDefinition {	object		The link to the definition of this metric report. See the *MetricReportDefinition* schema for details on this property.
@odata.id	string	*read-only*	Link to a MetricReportDefinition resource. See the Links section and the *MetricReportDefinition* schema for details.
}			
MetricValues [{	array		An array of metric values for the metered items of this metric report.
MetricDefinition {	object		The link to the metric definition for this metric. See the *MetricDefinition* schema for details on this property.
@odata.id	string	*read-only*	Link to a MetricDefinition resource. See the Links section and the *MetricDefinition* schema for details.
}			

Property	Type	Attributes	Notes
MetricId	string	*read-only* *(null)*	The metric definitions identifier for this metric.
MetricProperty	string (URI)	*read-only* *(null)*	The URI for the property from which this metric is derived.
MetricValue	string	*read-only* *(null)*	The metric value, as a string.
Oem *(v1.2+)* {}	object		See the Oem object definition in the Common properties section.
Timestamp	string (date-time)	*read-only* *(null)*	The date and time when the metric is obtained. A management application can establish a time series of metric data by retrieving the instances of metric value and sorting them according to their timestamp.
}]			
ReportSequence *(deprecated v1.3)*	string	*read-only*	The current sequence identifier for this metric report. *Deprecated in v1.3 and later. This property has been deprecated due to specification changes with regards to Server-Sent Events.*
Timestamp *(v1.1+)*	string (date-time)	*read-only* *(null)*	The time associated with the metric report in its entirety. The time of the metric report can be relevant when the time of individual metrics are minimally different.

6.65.4 Example response

```
{
    "@odata.type": "#MetricReport.v1_4_2.MetricReport",
    "Id": "AvgPlatformPowerUsage",
    "Name": "Average Platform Power Usage metric report",
    "ReportSequence": "127",
    "MetricReportDefinition": {
        "@odata.id": "/redfish/v1/TelemetryService/MetricReportDefinitions/AvgPlatformPowerUsage"
    },
    "MetricValues": [
        {
            "MetricId": "AverageConsumedWatts",
            "MetricValue": "100",
            "Timestamp": "2016-11-08T12:25:00-05:00",
            "MetricProperty": "/redfish/v1/Chassis/Tray_1/Power#/0/PowerConsumedWatts"
        },
        {
            "MetricId": "AverageConsumedWatts",
            "MetricValue": "94",
            "Timestamp": "2016-11-08T13:25:00-05:00",
            "MetricProperty": "/redfish/v1/Chassis/Tray_1/Power#/0/PowerConsumedWatts"
        },
```

```
        {
            "MetricId": "AverageConsumedWatts",
            "MetricValue": "100",
            "Timestamp": "2016-11-08T14:25:00-05:00",
            "MetricProperty": "/redfish/v1/Chassis/Tray_1/Power#/0/PowerConsumedWatts"
        }
    ],
    "@odata.id": "/redfish/v1/TelemetryService/MetricReports/AvgPlatformPowerUsage"
}
```

6.66 MetricReportDefinition 1.4.1

Version	v1.4	v1.3	v1.2	v1.1	v1.0
Release	2020.4	2019.2	2019.1	2018.3	2018.2

6.66.1 Description

The MetricReportDefinition schema describes set of metrics that are collected into a metric report.

6.66.2 URIs

/redfish/v1/TelemetryService/MetricReportDefinitions/{MetricReportDefinitionId}

6.66.3 Properties

Property	Type	Attributes	Notes
AppendLimit	integer	read-only	The maximum number of entries that can be appended to a metric report. When the metric report reaches its limit, its behavior is dictated by the ReportUpdates property.
Links *(v1.2+)* {	object		The links to other resources that are related to this resource.
Oem {}	object		See the Oem object definition in the Common properties section.
Triggers *(v1.2+)* [{	array		The triggers that cause this metric report definition to generate a new metric report upon a trigger occurrence when the TriggerActions property contains `RedfishMetricReport` .
@odata.id	string	read-only	Link to a Triggers resource. See the Links section and the *Triggers* schema for details.

Property	Type	Attributes	Notes
`    }]`			
`}`			
MetricProperties [ ]	array (URI) (string, null)	*read-write*	The list of URIs with wildcards and property identifiers to include in the metric report. If a URI has wildcards, the wildcards are substituted as specified in the Wildcards property.
MetricReport {	object		The location where the resultant metric report is placed. See the *MetricReport* schema for details on this property.
@odata.id	string	*read-only*	Link to a MetricReport resource. See the Links section and the *MetricReport* schema for details.
`}`			
MetricReportDefinitionEnabled *(v1.2+)*	boolean	*read-write (null)*	An indication of whether the generation of new metric reports is enabled.
MetricReportDefinitionType	string (enum)	*read-write (null)*	Specifies when the metric report is generated. *For the possible property values, see MetricReportDefinitionType in Property details.*
MetricReportHeartbeatInterval *(v1.2+)*	string	*read-write (null)*	The interval at which to send the complete metric report because the Redfish client wants refreshed metric data even when the data has not changed. This property value is always greater than the recurrence interval of a metric report, and it only applies when the SuppressRepeatedMetricValue property is `true` .
Metrics [{	array		The list of metrics to include in the metric report. The metrics may include metric properties or calculations applied to a metric property.
CollectionDuration	string	*read-write (null)*	The duration over which the function is computed.
CollectionFunction	string (enum)	*read-write (null)*	Specifies the function to perform on each of the metric properties listed in the MetricProperties property. *For the possible property values, see CollectionFunction in Property details.*
CollectionTimeScope	string (enum)	*read-write (null)*	The scope of time over which the function is applied. *For the possible property values, see CollectionTimeScope in Property details.*
MetricId	string	*read-write (null)*	The label for the metric definition that is derived by applying the CollectionFunction to the metric property. It matches the Id property of the corresponding metric definition.
MetricProperties [ ]	array (URI) (string, null)	*read-write*	The set of URIs for the properties on which this metric is collected.
Oem *(v1.4+)* {}	object		See the Oem object definition in the Common properties section.

Property	Type	Attributes	Notes
`}]`			
ReportActions [ ]	array (string (enum))	*read-write*	The set of actions to perform when a metric report is generated. *For the possible property values, see ReportActions in Property details.*
ReportTimespan *(v1.3+)*	string	*read-write (null)*	The maximum timespan that a metric report can cover.
ReportUpdates	string (enum)	*read-write*	The behavior for how subsequent metric reports are handled in relationship to an existing metric report created from the metric report definition. Namely, whether to overwrite, append, or create a report resource. *For the possible property values, see ReportUpdates in Property details.*
Schedule {}	object		The schedule for generating the metric report. For property details, see Schedule.
Status {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
SuppressRepeatedMetricValue *(v1.2+)*	boolean	*read-write (null)*	An indication of whether any metrics are suppressed from the generated metric report. If `true`, any metric that equals the same value in the previously generated metric report is suppressed from the current report. Also, duplicate metrics are suppressed. If `false`, no metrics are suppressed from the current report. The current report may contain no metrics if all metrics equal the values in the previously generated metric report.
Wildcards [{	array		The set of wildcards and their substitution values for the entries in the MetricProperties property.
Keys *(deprecated v1.1)* [ ]	array (string, null)	*read-write*	An array of values to substitute for the wildcard. *Deprecated in v1.1 and later. This property has been deprecated in favor of using the property Values.*
Name	string	*read-write (null)*	The string used as a wildcard.
Values *(v1.1+)* [ ]	array (string, null)	*read-write*	An array of values to substitute for the wildcard.
`}]`			

6.66.4 Property details

6.66.4.1 CollectionFunction:

Specifies the function to perform on each of the metric properties listed in the MetricProperties property.

string	Description
Average	The metric is calculated as the average metric reading over a duration.
Maximum	The metric is calculated as the maximum metric reading over a duration.
Minimum	The metric is calculated as the minimum metric reading over a duration.
Summation	The metric is calculated as the sum of the values over a duration.

6.66.4.2 CollectionTimeScope:

The scope of time over which the function is applied.

string	Description
Interval	The corresponding metric values apply to a time interval. On the corresponding metric value instances, the Timestamp property value in the metric report specifies the end of the time interval and the CollectionDuration property specifies its duration.
Point	The corresponding metric values apply to a point in time. On the corresponding metric value instances, the Timestamp property value in the metric report specifies the point in time.
StartupInterval	The corresponding metric values apply to a time interval that began at the startup of the measured resource. On the corresponding metric value instances, the Timestamp property value in the metric report shall specifies the end of the time interval. The CollectionDuration property value specifies the duration between the startup of resource and timestamp.

6.66.4.3 MetricReportDefinitionType:

Specifies when the metric report is generated.

string	Description
OnChange	The metric report is generated when any of the metric values change.
OnRequest	The metric report is generated when a HTTP GET is performed on the specified metric report.
Periodic	The metric report is generated at a periodic time interval, specified in the Schedule property.

6.66.4.4 ReportActions:

The set of actions to perform when a metric report is generated.

string	Description
LogToMetricReportsCollection	Record the occurrence to the metric report collection.
RedfishEvent	Send a Redfish event message containing the metric report.

6.66.4.5 ReportUpdates:

The behavior for how subsequent metric reports are handled in relationship to an existing metric report created from the metric report definition. Namely, whether to overwrite, append, or create a report resource.

string	Description
AppendStopsWhenFull	New information is appended to the metric report. The service stops adding entries when the metric report has reached its maximum capacity.
AppendWrapsWhenFull	New information is appended to the metric report. The metric report entries are overwritten with new entries when the metric report has reached its maximum capacity.
NewReport	A new metric report is created, whose resource name is the metric report resource name concatenated with the timestamp.
Overwrite	Overwrite the metric report.

6.66.5 Example response

```
{
    "@odata.type": "#MetricReportDefinition.v1_4_1.MetricReportDefinition",
    "Id": "PlatformPowerUsage",
    "Name": "Transmit and Log Platform Power Usage",
    "MetricReportDefinitionType": "Periodic",
    "Schedule": {
        "RecurrenceInterval": "PT1H"
    },
    "ReportActions": [
        "RedfishEvent",
        "LogToMetricReportsCollection"
    ],
    "ReportUpdates": "AppendWrapsWhenFull",
    "AppendLimit": 256,
    "MetricReport": {
        "@odata.id": "/redfish/v1/TelemetryService/MetricReports/PlatformPowerUsage"
    },
    "Status": {
        "State": "Enabled"
    },
```

```
    "Wildcards": [
        {
            "Name": "PWild",
            "Values": [
                "0"
            ]
        },
        {
            "Name": "TWild",
            "Values": [
                "Tray_1",
                "Tray_2"
            ]
        }
    ],
    "MetricProperties": [
        "/redfish/v1/Chassis/{TWild}/Power#/PowerControl/{PWild}/PowerConsumedWatts"
    ],
    "@odata.id": "/redfish/v1/TelemetryService/MetricReportDefinitions/PlatformPowerUsage"
}
```

6.67 NetworkAdapter 1.9.0

Version	v1.9	v1.8	v1.7	v1.6	v1.5	v1.4	v1.3	v1.2	v1.1	v1.0
Release	2021.4	2021.2	2021.1	2020.4	2020.3	2020.2	2019.2	2018.2	2017.3	2016.3

6.67.1 Description

The NetworkAdapter schema represents a physical network adapter capable of connecting to a computer network. Examples include but are not limited to Ethernet, Fibre Channel, and converged network adapters.

6.67.2 URIs

/redfish/v1/Chassis/{*ChassisId*}/NetworkAdapters/{*NetworkAdapterId*}

6.67.3 Properties

Property	Type	Attributes	Notes
Assembly *(v1.1+)* {	object		The link to the assembly resource associated with this adapter. See the *Assembly* schema for details on this property.
@odata.id	string	*read-only*	Link to a Assembly resource. See the Links section and the *Assembly* schema for details.
}			
Certificates *(v1.6+)* {	object		The link to a collection of certificates for device identity and attestation. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *Certificate*. See the Certificate schema for details.
}			
Controllers [{	array		The set of network controllers ASICs that make up this NetworkAdapter.
ControllerCapabilities {	object		The capabilities of this controller.
DataCenterBridging {	object		Data center bridging (DCB) for this controller.
Capable	boolean	*read-only (null)*	An indication of whether this controller is capable of data center bridging (DCB).
}			
NetworkDeviceFunctionCount	integer	*read-only (null)*	The maximum number of physical functions available on this controller.
NetworkPortCount	integer	*read-only (null)*	The number of physical ports on this controller.
NPAR *(v1.2+)* {	object		NIC Partitioning (NPAR) capabilities for this controller.
NparCapable *(v1.2+)*	boolean	*read-only (null)*	An indication of whether the controller supports NIC function partitioning.
NparEnabled *(v1.2+)*	boolean	*read-write (null)*	An indication of whether NIC function partitioning is active on this controller.
}			
NPIV {	object		N_Port ID Virtualization (NPIV) capabilities for this controller.
MaxDeviceLogins	integer	*read-only (null)*	The maximum number of N_Port ID Virtualization (NPIV) logins allowed simultaneously from all ports on this controller.

Property	Type	Attributes	Notes
MaxPortLogins	integer	*read-only (null)*	The maximum number of N_Port ID Virtualization (NPIV) logins allowed per physical port on this controller.
}			
VirtualizationOffload {	object		Virtualization offload for this controller.
SRIOV {	object		Single-root input/output virtualization (SR-IOV) capabilities.
SRIOVVEPACapable	boolean	*read-only (null)*	An indication of whether this controller supports single root input/output virtualization (SR-IOV) in Virtual Ethernet Port Aggregator (VEPA) mode.
}			
VirtualFunction {	object		The virtual function of the controller.
DeviceMaxCount	integer	*read-only (null)*	The maximum number of virtual functions supported by this controller.
MinAssignmentGroupSize	integer	*read-only (null)*	The minimum number of virtual functions that can be allocated or moved between physical functions for this controller.
NetworkPortMaxCount	integer	*read-only (null)*	The maximum number of virtual functions supported per network port for this controller.
}			
}			
}			
FirmwarePackageVersion	string	*read-only (null)*	The version of the user-facing firmware package.
Identifiers *(v1.3+)* [{ }]	array (object)		The durable names for the network adapter controller. For property details, see Identifier.
Links {	object		The links to other resources that are related to this resource.
NetworkDeviceFunctions [{	array		An array of links to the network device functions associated with this network controller.
@odata.id	string	*read-only*	Link to a NetworkDeviceFunction resource. See the Links section and the *NetworkDeviceFunction* schema for details.
}]			
NetworkPorts *(deprecated v1.5)* [{	array		An array of links to the network ports associated with this network controller. *Deprecated in v1.5 and later. This property has been deprecated in favor of the Ports property.*

Property	Type	Attributes	Notes
@odata.id	string	*read-only*	Link to a NetworkPort resource. See the Links section and the *NetworkPort* schema for details.
}]			
Oem {}	object		See the Oem object definition in the Common properties section.
PCIeDevices [{	array		An array of links to the PCIe devices associated with this network controller.
@odata.id	string	*read-only*	Link to a PCIeDevice resource. See the Links section and the *PCIeDevice* schema for details.
}]			
Ports *(v1.5+)* [{	array		An array of links to the ports associated with this network controller.
@odata.id	string	*read-only*	Link to a Port resource. See the Links section and the *Port* schema for details.
}]			
}			
Location *(v1.1+)* {}	object		The location of the network adapter controller. For property details, see Location.
PCIeInterface *(v1.2+)* {	object		The PCIe interface details for this controller.
LanesInUse *(v1.3+)*	integer	*read-only (null)*	The number of PCIe lanes in use by this device.
MaxLanes *(v1.3+)*	integer	*read-only (null)*	The number of PCIe lanes supported by this device.
MaxPCIeType *(v1.3+)*	string (enum)	*read-only (null)*	The highest version of the PCIe specification supported by this device. *For the possible property values, see MaxPCIeType in Property details.*
Oem *(v1.3+)* {}	object		See the Oem object definition in the Common properties section.
PCIeType *(v1.3+)*	string (enum)	*read-only (null)*	The version of the PCIe specification in use by this device. *For the possible property values, see PCIeType in Property details.*
}			
}]			
EnvironmentMetrics *(v1.7+)* {	object		The link to the environment metrics for this network adapter. See the *EnvironmentMetrics* schema for details on this property.

Property	Type	Attributes	Notes
@odata.id	string	*read-only*	Link to a EnvironmentMetrics resource. See the Links section and the *EnvironmentMetrics* schema for details.
}			
Identifiers *(v1.4+)* [{ }]	array (object)		The durable names for the network adapter. For property details, see Identifier.
LLDPEnabled *(v1.7+)*	boolean	*read-write*	Enable or disable LLDP globally for an adapter.
Location *(v1.4+)* {}	object		The location of the network adapter. For property details, see Location.
Manufacturer	string	*read-only (null)*	The manufacturer or OEM of this network adapter.
Measurements *(v1.6+, deprecated v1.9* [{	array		An array of DSP0274-defined measurement blocks. *Deprecated in v1.9 and later. This property has been deprecated in favor of the ComponentIntegrity resource.*
@odata.id	string	*read-only*	Link to a MeasurementBlock resource. See the Links section and the *SoftwareInventory* schema for details.
}]			
Metrics *(v1.7+)* {	object	*(null)*	The link to the metrics associated with this adapter. See the *NetworkAdapterMetrics* schema for details on this property.
@odata.id	string	*read-only*	Link to a NetworkAdapterMetrics resource. See the Links section and the *NetworkAdapterMetrics* schema for details.
}			
Model	string	*read-only (null)*	The model string for this network adapter.
NetworkDeviceFunctions {	object		The link to the collection of network device functions associated with this network adapter. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *NetworkDeviceFunction*. See the NetworkDeviceFunction schema for details.
}			
NetworkPorts *(deprecated v1.5)* {	object		The link to the collection of network ports associated with this network adapter. Contains a link to a resource. *Deprecated in v1.5 and later. This property has been deprecated in favor of the Ports property.*
@odata.id	string	*read-only*	Link to Collection of *NetworkPort*. See the NetworkPort schema for details.

Property	Type	Attributes	Notes
}			
PartNumber	string	*read-only (null)*	Part number for this network adapter.
Ports *(v1.5+)* {	object		The link to the collection of ports associated with this network adapter. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *Port*. See the Port schema for details.
}			
Processors *(v1.8+)* {	object		The link to the collection of offload processors contained in this network adapter. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *Processor*. See the Processor schema for details.
}			
SerialNumber	string	*read-only (null)*	The serial number for this network adapter.
SKU	string	*read-only (null)*	The manufacturer SKU for this network adapter.
Status {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.

6.67.4 Actions

6.67.4.1 ResetSettingsToDefault

Description

This action is to clear the settings back to factory defaults.

Action URI: {Base URI of target resource}/Actions/NetworkAdapter.ResetSettingsToDefault

Action parameters

This action takes no parameters.

6.67.5 Property details

6.67.5.1 MaxPCIeType:

The highest version of the PCIe specification supported by this device.

string	Description
Gen1	A PCIe v1.0 slot.
Gen2	A PCIe v2.0 slot.
Gen3	A PCIe v3.0 slot.
Gen4	A PCIe v4.0 slot.
Gen5	A PCIe v5.0 slot.

6.67.5.2 PCIeType:

The version of the PCIe specification in use by this device.

string	Description
Gen1	A PCIe v1.0 slot.
Gen2	A PCIe v2.0 slot.
Gen3	A PCIe v3.0 slot.
Gen4	A PCIe v4.0 slot.
Gen5	A PCIe v5.0 slot.

6.67.6 Example response

```
{
    "@odata.type": "#NetworkAdapter.v1_9_0.NetworkAdapter",
    "Id": "9fa725a1",
    "Name": "Network Adapter View",
    "Manufacturer": "Contoso",
    "Model": "599TPS-T",
    "SKU": "Contoso TPS-Net 2-Port Base-T",
```

```
            "SerialNumber": "003BFLRT00023234",
            "PartNumber": "975421-B20",
            "NetworkPorts": {
                "@odata.id": "/redfish/v1/Chassis/1/NetworkAdapters/9fd725a1/NetworkPorts"
            },
            "NetworkDeviceFunctions": {
                "@odata.id": "/redfish/v1/Chassis/1/NetworkAdapters/9fd725a1/NetworkDeviceFunctions"
            },
            "Controllers": [
                {
                    "FirmwarePackageVersion": "7.4.10",
                    "Links": {
                        "PCIeDevices": [
                            {
                                "@odata.id": "/redfish/v1/Systems/1/PCIeDevices/NIC"
                            }
                        ],
                        "NetworkPorts": [
                            {
                                "@odata.id": "/redfish/v1/Chassis/1/NetworkAdapters/9fd725a1/NetworkPorts/1"
                            }
                        ],
                        "NetworkDeviceFunctions": [
                            {
                                "@odata.id": "/redfish/v1/Chassis/1/NetworkAdapters/9fd725a1/NetworkDeviceFunctions/111111111100"
                            }
                        ]
                    },
                    "ControllerCapabilities": {
                        "NetworkPortCount": 2,
                        "NetworkDeviceFunctionCount": 8,
                        "DataCenterBridging": {
                            "Capable": true
                        },
                        "VirtualizationOffload": {
                            "VirtualFunction": {
                                "DeviceMaxCount": 256,
                                "NetworkPortMaxCount": 128,
                                "MinAssignmentGroupSize": 4
                            },
                            "SRIOV": {
                                "SRIOVVEPACapable": true
                            }
                        },
                        "NPIV": {
                            "MaxDeviceLogins": 4,
                            "MaxPortLogins": 2
                        },
                        "NPAR": {
                            "NparCapable": true,
```

```
                       "NparEnabled": false
                   }
               },
               "PCIeInterface": {
                   "PCIeType": "Gen2",
                   "MaxPCIeType": "Gen3",
                   "LanesInUse": 1,
                   "MaxLanes": 4
               },
               "Location": {
                   "PartLocation": {
                       "ServiceLabel": "Slot 1",
                       "LocationType": "Slot",
                       "LocationOrdinalValue": 0,
                       "Reference": "Rear",
                       "Orientation": "LeftToRight"
                   }
               }
           }
       ],
       "Actions": {
           "#NetworkAdapter.ResetSettingsToDefault": {
               "target": "/redfish/v1/Chassis/1/NetworkAdapters/9fd725a1/Actions/NetworkAdapter.ResetSettingsToDefault"
           },
           "Oem": {}
       },
       "@odata.id": "/redfish/v1/Chassis/1/NetworkAdapters/9fd725a1"
   }
```

6.68 NetworkAdapterMetrics 1.0.0

Version	*v1.0*
Release	2021.1

6.68.1 Description

The NetworkAdapterMetrics schema contains usage and health statistics for a network adapter.

6.68.2 URIs

/redfish/v1/Chassis/*{ChassisId}*/NetworkAdapters/*{NetworkAdapterId}*/Metrics

6.68.3 Properties

Property	Type	Attributes	Notes
CPUCorePercent	number (%)	read-only (null)	The device CPU core utilization as a percentage.
HostBusRXPercent	number (%)	read-only (null)	The host bus, such as PCIe, RX utilization as a percentage.
HostBusTXPercent	number (%)	read-only (null)	The host bus, such as PCIe, TX utilization as a percentage.
NCSIRXBytes	integer (bytes)	read-only (null)	The total number of NC-SI bytes received since reset.
NCSIRXFrames	integer	read-only (null)	The total number of NC-SI frames received since reset.
NCSITXBytes	integer (bytes)	read-only (null)	The total number of NC-SI bytes sent since reset.
NCSITXFrames	integer	read-only (null)	The total number of NC-SI frames sent since reset.
RXBytes	integer (bytes)	read-only (null)	The total number of bytes received since reset.
RXMulticastFrames	integer	read-only (null)	The total number of good multicast frames received since reset.
RXUnicastFrames	integer	read-only (null)	The total number of good unicast frames received since reset.
TXBytes	integer (bytes)	read-only (null)	The total number of bytes transmitted since reset.
TXMulticastFrames	integer	read-only (null)	The total number of good multicast frames transmitted since reset.
TXUnicastFrames	integer	read-only (null)	The total number of good unicast frames transmitted since reset.

6.68.4 Example response

```
{
    "@odata.type": "#NetworkAdapterMetrics.v1_0_0.NetworkAdapterMetrics",
```

```
    "Id": "NetworkAdapterMetrics",
    "Name": "Network Adapter Metrics",
    "HostBusRXPercent": 35.53,
    "HostBusTXPercent": 14.17,
    "CPUCorePercent": 8.35,
    "NCSIRXFrames": 0,
    "NCSITXFrames": 0,
    "NCSIRXBytes": 0,
    "NCSITXBytes": 0,
    "RXBytes": 7754199970,
    "RXMulticastFrames": 1941,
    "RXUnicastFrames": 27193387,
    "TXBytes": 9436506547,
    "TXMulticastFrames": 153,
    "TXUnicastFrames": 18205770,
    "@odata.id": "/redfish/v1/Chassis/1U/NetworkAdapters/Slot1/Metrics"
}
```

6.69 NetworkDeviceFunction 1.8.0

Version	v1.8	v1.7	v1.6	v1.5	v1.4	v1.3	v1.2	v1.1	v1.0
Release	2021.4	2021.2	2021.1	2020.3	2020.1	2018.2	2017.3	2017.1	2016.3

6.69.1 Description

The NetworkDeviceFunction schema represents a logical interface that a network adapter exposes.

6.69.2 URIs

/redfish/v1/Chassis/*{ChassisId}*/NetworkAdapters/*{NetworkAdapterId}*/NetworkDeviceFunctions/
{NetworkDeviceFunctionId}

6.69.3 Properties

Property	Type	Attributes	Notes
AllowDeny *(v1.7+)* {	object		The link to the collection of allow and deny permissions for packets leaving and arriving to this network device function. Contains a link to a resource.

Property	Type	Attributes	Notes
@odata.id	string	*read-only*	Link to Collection of *AllowDeny*. See the AllowDeny schema for details.
}			
AssignablePhysicalNetworkPorts *(v1.5+)* [{	array		An array of physical ports to which this network device function can be assigned.
@odata.id	string	*read-only*	Link to a Port resource. See the Links section and the *Port* schema for details.
}]			
AssignablePhysicalPorts *(deprecated v1.5)* [{	array		An array of physical ports to which this network device function can be assigned. *Deprecated in v1.5 and later. This property has been deprecated in favor of the AssignablePhysicalNetworkPorts property.*
@odata.id	string	*read-only*	Link to a NetworkPort resource. See the Links section and the *NetworkPort* schema for details.
}]			
BootMode	string (enum)	*read-write (null)*	The boot mode configured for this network device function. *For the possible property values, see BootMode in Property details.*
DeviceEnabled	boolean	*read-write (null)*	An indication of whether the network device function is enabled.
Ethernet {	object		The Ethernet capabilities, status, and configuration values for this network device function.
EthernetInterfaces *(v1.7+)* {	object	*(null)*	The Ethernet interface collection that represents all the Ethernet Interfaces on this network device function. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *EthernetInterface*. See the EthernetInterface schema for details.
}			
MACAddress	string	*read-write (null)*	The currently configured MAC address.
MTUSize	integer	*read-write (null)*	The maximum transmission unit (MTU) configured for this network device function.
MTUSizeMaximum *(v1.5+)*	integer	*read-only (null)*	The largest maximum transmission unit (MTU) size supported for this network device function.
PermanentMACAddress	string	*read-only (null)*	The permanent MAC address assigned to this function.

Property	Type	Attributes	Notes
VLAN *(v1.3+)* {	object		The VLAN information for this interface. If this network interface supports more than one VLAN, this property is not present.
Tagged *(v1.3+)*	boolean	*read-write (null)*	An indication of whether this VLAN is tagged or untagged for this interface.
VLANEnable	boolean	*read-write required on create (null)*	An indication of whether this VLAN is enabled for this VLAN network interface.
VLANId	integer	*read-write required on create (null)*	The ID for this VLAN.
VLANPriority *(v1.2+)*	integer	*read-write (null)*	The priority for this VLAN.
}			
VLANs *(v1.3+, deprecated v1.7* {	object		The link to a collection of VLANs. This property is used only if the interface supports more than one VLAN. Contains a link to a resource. *Deprecated in v1.7 and later. This property has been deprecated in favor of representing multiple VLANs as EthernetInterface resources.*
@odata.id	string	*read-only*	Link to Collection of *VLanNetworkInterface*. See the VLanNetworkInterface schema for details.
}			
}			
FibreChannel {	object		The Fibre Channel capabilities, status, and configuration values for this network device function.
AllowFIPVLANDiscovery	boolean	*read-write (null)*	An indication of whether the FCoE Initialization Protocol (FIP) populates the FCoE VLAN ID.
BootTargets [{	array		An array of Fibre Channel boot targets configured for this network device function.
BootPriority	integer	*read-write (null)*	The relative priority for this entry in the boot targets array.
LUNID	string	*read-write (null)*	The logical unit number (LUN) ID from which to boot on the device to which the corresponding WWPN refers.
WWPN	string	*read-write (null)*	The World Wide Port Name (WWPN) from which to boot.

Property	Type	Attributes	Notes
}]			
FCoEActiveVLANId	integer	*read-only (null)*	The active FCoE VLAN ID.
FCoELocalVLANId	integer	*read-write (null)*	The locally configured FCoE VLAN ID.
FibreChannelId *(v1.3+)*	string	*read-only (null)*	The Fibre Channel ID that the switch assigns for this interface.
PermanentWWNN	string	*read-only (null)*	The permanent World Wide Node Name (WWNN) address assigned to this function.
PermanentWWPN	string	*read-only (null)*	The permanent World Wide Port Name (WWPN) address assigned to this function.
WWNN	string	*read-write (null)*	The currently configured World Wide Node Name (WWNN) address of this function.
WWNSource	string (enum)	*read-write (null)*	The configuration source of the World Wide Names (WWN) for this World Wide Node Name (WWNN) and World Wide Port Name (WWPN) connection. *For the possible property values, see WWNSource in Property details.*
WWPN	string	*read-write (null)*	The currently configured World Wide Port Name (WWPN) address of this function.
}			
InfiniBand *(v1.5+)* {	object		The InfiniBand capabilities, status, and configuration values for this network device function.
MTUSize *(v1.5+)*	integer	*read-write (null)*	The maximum transmission unit (MTU) configured for this network device function.
NodeGUID *(v1.5+)*	string	*read-only (null)*	This is the currently configured node GUID of the network device function.
PermanentNodeGUID *(v1.5+)*	string	*read-only (null)*	The permanent node GUID assigned to this network device function.
PermanentPortGUID *(v1.5+)*	string	*read-only (null)*	The permanent port GUID assigned to this network device function.
PermanentSystemGUID *(v1.5+)*	string	*read-only (null)*	The permanent system GUID assigned to this network device function.
PortGUID *(v1.5+)*	string	*read-only (null)*	The currently configured port GUID of the network device function.

Property	Type	Attributes	Notes
SupportedMTUSizes *(v1.5+)* [ ]	array (integer, null)	*read-only*	The maximum transmission unit (MTU) sizes supported for this network device function.
SystemGUID *(v1.5+)*	string	*read-only (null)*	This is the currently configured system GUID of the network device function.
}			
iSCSIBoot {	object		The iSCSI boot capabilities, status, and configuration values for this network device function.
AuthenticationMethod	string (enum)	*read-write (null)*	The iSCSI boot authentication method for this network device function. *For the possible property values, see AuthenticationMethod in Property details.*
CHAPSecret	string	*read-write (null)*	The shared secret for CHAP authentication.
CHAPUsername	string	*read-write (null)*	The user name for CHAP authentication.
InitiatorDefaultGateway	string	*read-write (null)*	The IPv6 or IPv4 iSCSI boot default gateway.
InitiatorIPAddress	string	*read-write (null)*	The IPv6 or IPv4 address of the iSCSI initiator.
InitiatorName	string	*read-write (null)*	The iSCSI initiator name.
InitiatorNetmask	string	*read-write (null)*	The IPv6 or IPv4 netmask of the iSCSI boot initiator.
IPAddressType	string (enum)	*read-write (null)*	The type of IP address being populated in the iSCSIBoot IP address fields. *For the possible property values, see IPAddressType in Property details.*
IPMaskDNSViaDHCP	boolean	*read-write (null)*	An indication of whether the iSCSI boot initiator uses DHCP to obtain the initiator name, IP address, and netmask.
MutualCHAPSecret	string	*read-write (null)*	The CHAP secret for two-way CHAP authentication.
MutualCHAPUsername	string	*read-write (null)*	The CHAP user name for two-way CHAP authentication.
PrimaryDNS	string	*read-write (null)*	The IPv6 or IPv4 address of the primary DNS server for the iSCSI boot initiator.

Property	Type	Attributes	Notes
PrimaryLUN	integer	*read-write (null)*	The logical unit number (LUN) for the primary iSCSI boot target.
PrimaryTargetIPAddress	string	*read-write (null)*	The IPv4 or IPv6 address for the primary iSCSI boot target.
PrimaryTargetName	string	*read-write (null)*	The name of the iSCSI primary boot target.
PrimaryTargetTCPPort	integer	*read-write (null)*	The TCP port for the primary iSCSI boot target.
PrimaryVLANEnable	boolean	*read-write (null)*	An indication of whether the primary VLAN is enabled.
PrimaryVLANId	integer	*read-write (null)*	The 802.1q VLAN ID to use for iSCSI boot from the primary target.
RouterAdvertisementEnabled	boolean	*read-write (null)*	An indication of whether IPv6 router advertisement is enabled for the iSCSI boot target.
SecondaryDNS	string	*read-write (null)*	The IPv6 or IPv4 address of the secondary DNS server for the iSCSI boot initiator.
SecondaryLUN	integer	*read-write (null)*	The logical unit number (LUN) for the secondary iSCSI boot target.
SecondaryTargetIPAddress	string	*read-write (null)*	The IPv4 or IPv6 address for the secondary iSCSI boot target.
SecondaryTargetName	string	*read-write (null)*	The name of the iSCSI secondary boot target.
SecondaryTargetTCPPort	integer	*read-write (null)*	The TCP port for the secondary iSCSI boot target.
SecondaryVLANEnable	boolean	*read-write (null)*	An indication of whether the secondary VLAN is enabled.
SecondaryVLANId	integer	*read-write (null)*	The 802.1q VLAN ID to use for iSCSI boot from the secondary target.
TargetInfoViaDHCP	boolean	*read-write (null)*	An indication of whether the iSCSI boot target name, LUN, IP address, and netmask should be obtained from DHCP.
}			
Limits *(v1.7+)* [{	array		The byte and packet limits for this network device function.
BurstBytesPerSecond *(v1.7+)*	integer	*read-write (null)*	The maximum number of bytes per second in a burst for this network device function.

Property	Type	Attributes	Notes
BurstPacketsPerSecond *(v1.7+)*	integer	*read-write (null)*	The maximum number of packets per second in a burst for this network device function.
Direction *(v1.7+)*	string (enum)	*read-write (null)*	Indicates the direction of the data to which this limit applies. *For the possible property values, see Direction in Property details.*
SustainedBytesPerSecond *(v1.7+)*	integer	*read-write (null)*	The maximum number of sustained bytes per second for this network device function.
SustainedPacketsPerSecond *(v1.7+)*	integer	*read-write (null)*	The maximum number of sustained packets per second for this network device function.
}]			
Links {	object		The links to other resources that are related to this resource.
Endpoints *(v1.2+)* [{	array		An array of links to endpoints associated with this network device function.
@odata.id	string	*read-only*	Link to a Endpoint resource. See the Links section and the *Endpoint* schema for details.
}]			
EthernetInterface *(v1.4+, deprecated v1.7* {	object		The link to a virtual Ethernet interface that was created when one of the network device function VLANs is represented as a virtual NIC for the purpose of showing the IP address associated with that VLAN. See the *EthernetInterface* schema for details on this property. *Deprecated in v1.7 and later. This property has been deprecated in favor of EthernetInterfaces as each NetworkDeviceFunction could have more than one EthernetInterface.*
@odata.id	string	*read-only*	Link to a EthernetInterface resource. See the Links section and the *EthernetInterface* schema for details.
}			
EthernetInterfaces *(v1.7+)* [{	array		The links to Ethernet interfaces that were created when one of the network device function VLANs is represented as a virtual NIC for the purpose of showing the IP address associated with that VLAN.
@odata.id	string	*read-only*	Link to a EthernetInterface resource. See the Links section and the *EthernetInterface* schema for details.
}]			
Oem {}	object		See the Oem object definition in the Common properties section.
OffloadProcessors *(v1.7+)* [{	array		The processors that perform offload computation for this network function, such as with a SmartNIC.

Property	Type	Attributes	Notes
@odata.id	string	*read-only*	Link to a Processor resource. See the Links section and the *Processor* schema for details.
}]			
OffloadSystem *(v1.7+)* {	object		The system that performs offload computation for this network function, such as with a SmartNIC. See the *ComputerSystem* schema for details on this property.
@odata.id	string	*read-only*	Link to a ComputerSystem resource. See the Links section and the *ComputerSystem* schema for details.
}			
PCIeFunction {	object		The link to the PCIe function associated with this network device function. See the *PCIeFunction* schema for details on this property.
@odata.id	string	*read-only*	Link to a PCIeFunction resource. See the Links section and the *PCIeFunction* schema for details.
}			
PhysicalNetworkPortAssignment *(v1.5+)* {	object		The physical port to which this network device function is currently assigned. See the *Port* schema for details on this property.
@odata.id	string	*read-only*	Link to a Port resource. See the Links section and the *Port* schema for details.
}			
PhysicalPortAssignment *(v1.3+, deprecated v1.5* {	object		The physical port to which this network device function is currently assigned. See the *NetworkPort* schema for details on this property. *Deprecated in v1.5 and later. This property has been deprecated in favor of the PhysicalNetworkPortAssignment property.*
@odata.id	string	*read-only*	Link to a NetworkPort resource. See the Links section and the *NetworkPort* schema for details.
}			
}			
MaxVirtualFunctions	integer	*read-only (null)*	The number of virtual functions that are available for this network device function.
Metrics *(v1.6+)* {	object	*(null)*	The link to the metrics associated with this network function. See the *NetworkDeviceFunctionMetrics* schema for details on this property.
@odata.id	string	*read-only*	Link to a NetworkDeviceFunctionMetrics resource. See the Links section and the *NetworkDeviceFunctionMetrics* schema for details.

Property	Type	Attributes	Notes
}			
NetDevFuncCapabilities [ ]	array (string (enum))	*read-only (null)*	An array of capabilities for this network device function. *For the possible property values, see NetDevFuncCapabilities in Property details.*
NetDevFuncType	string (enum)	*read-write (null)*	The configured capability of this network device function. *For the possible property values, see NetDevFuncType in Property details.*
PhysicalNetworkPortAssignment *(v1.5+, deprecated v1.8* {	object		The physical port to which this network device function is currently assigned. See the *Port* schema for details on this property. *Deprecated in v1.8 and later. This property has been deprecated in favor of PhysicalNetworkPortAssignment within Links to avoid loops on expand.*
@odata.id	string	*read-only*	Link to a Port resource. See the Links section and the *Port* schema for details.
}			
PhysicalPortAssignment *(deprecated v1.3)* {	object		The physical port to which this network device function is currently assigned. See the *NetworkPort* schema for details on this property. *Deprecated in v1.3 and later. This property has been deprecated and moved to the Links property to avoid loops on expand.*
@odata.id	string	*read-only*	Link to a NetworkPort resource. See the Links section and the *NetworkPort* schema for details.
}			
SAVIEnabled *(v1.7+)*	boolean	*read-write (null)*	Indicates if Source Address Validation Improvement (SAVI) is enabled for this network device function.
Status {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
VirtualFunctionsEnabled	boolean	*read-only (null)*	An indication of whether single root input/output virtualization (SR-IOV) virtual functions are enabled for this network device function.

6.69.4 Property details

6.69.4.1 AuthenticationMethod:

The iSCSI boot authentication method for this network device function.

string	Description
CHAP	iSCSI Challenge Handshake Authentication Protocol (CHAP) authentication is used.

string	Description
MutualCHAP	iSCSI Mutual Challenge Handshake Authentication Protocol (CHAP) authentication is used.
None	No iSCSI authentication is used.

6.69.4.2 BootMode:

The boot mode configured for this network device function.

string	Description
Disabled	Do not indicate to UEFI/BIOS that this device is bootable.
FibreChannel	Boot this device by using the embedded Fibre Channel support and configuration. Only applicable if the NetDevFuncType is `FibreChannel` .
FibreChannelOverEthernet	Boot this device by using the embedded Fibre Channel over Ethernet (FCoE) boot support and configuration. Only applicable if the NetDevFuncType is `FibreChannelOverEthernet` .
iSCSI	Boot this device by using the embedded iSCSI boot support and configuration. Only applicable if the NetDevFuncType is `iSCSI` or `Ethernet` .
PXE	Boot this device by using the embedded PXE support. Only applicable if the NetDevFuncType is `Ethernet` or `InfiniBand` .

6.69.4.3 Direction:

Indicates the direction of the data to which this limit applies.

string	Description
Egress	Indicates that this limit is enforced on packets and bytes transmitted by the network device function.
Ingress	Indicates that this limit is enforced on packets and bytes received by the network device function.
None	Indicates that this limit not enforced.

6.69.4.4 IPAddressType:

The type of IP address being populated in the iSCSIBoot IP address fields.

string	Description
IPv4	IPv4 addressing is used for all IP-fields in this object.
IPv6	IPv6 addressing is used for all IP-fields in this object.

6.69.4.5 NetDevFuncCapabilities:

An array of capabilities for this network device function.

string	Description
Disabled	Neither enumerated nor visible to the operating system.
Ethernet	Appears to the operating system as an Ethernet device.
FibreChannel	Appears to the operating system as a Fibre Channel device.
FibreChannelOverEthernet	Appears to the operating system as an FCoE device.
InfiniBand	Appears to the operating system as an InfiniBand device.
iSCSI	Appears to the operating system as an iSCSI device.

6.69.4.6 NetDevFuncType:

The configured capability of this network device function.

string	Description
Disabled	Neither enumerated nor visible to the operating system.
Ethernet	Appears to the operating system as an Ethernet device.
FibreChannel	Appears to the operating system as a Fibre Channel device.
FibreChannelOverEthernet	Appears to the operating system as an FCoE device.
InfiniBand *(v1.5+)*	Appears to the operating system as an InfiniBand device.
iSCSI	Appears to the operating system as an iSCSI device.

6.69.4.7 WWNSource:

The configuration source of the World Wide Names (WWN) for this World Wide Node Name (WWNN) and World Wide Port Name (WWPN) connection.

string	Description
ConfiguredLocally	The set of FC/FCoE boot targets was applied locally through API or UI.
ProvidedByFabric	The set of FC/FCoE boot targets was applied by the Fibre Channel fabric.

6.69.5 Example response

```
{
    "@odata.type": "#NetworkDeviceFunction.v1_8_0.NetworkDeviceFunction",
    "Id": "111111111100",
    "Name": "Network Device Function View",
    "NetDevFuncType": "Ethernet",
    "DeviceEnabled": true,
    "NetDevFuncCapabilities": [
        "Ethernet",
        "FibreChannel"
    ],
    "Ethernet": {
        "PermanentMACAddress": "00:0C:29:9A:98:ED",
        "MACAddress": "00:0C:29:9A:98:ED",
        "MTUSize": 1500,
        "VLAN": {
            "VLANEnable": true,
            "VLANId": 101
        }
    },
    "iSCSIBoot": {
        "IPAddressType": "IPv4",
        "InitiatorIPAddress": "16.0.11.6",
        "InitiatorName": "iqn.2005-03.com.acme:database-server",
        "InitiatorDefaultGateway": "169.0.16.1",
        "InitiatorNetmask": "255.255.252.0",
        "TargetInfoViaDHCP": false,
        "PrimaryTargetName": "iqn.2005-03.com.acme:image-server",
        "PrimaryTargetIPAddress": "169.0.15.1",
        "PrimaryTargetTCPPort": 3260,
        "PrimaryLUN": 5,
        "PrimaryVLANEnable": true,
        "PrimaryVLANId": 1001,
        "PrimaryDNS": "16.0.10.21",
        "SecondaryTargetName": "iqn.2005-03.com.acme:image-server",
        "SecondaryTargetIPAddress": "16.0.11.5",
        "SecondaryTargetTCPPort": 3260,
        "SecondaryLUN": 5,
        "SecondaryVLANEnable": true,
        "SecondaryVLANId": 1002,
        "SecondaryDNS": "169.0.10.22",
```

```
            "IPMaskDNSViaDHCP": false,
            "RouterAdvertisementEnabled": false,
            "AuthenticationMethod": "CHAP",
            "CHAPUsername": "yosemite",
            "CHAPSecret": "usrpasswd",
            "MutualCHAPUsername": "yosemite",
            "MutualCHAPSecret": "usrpasswd"
        },
        "FibreChannel": {
            "PermanentWWPN": "10:00:B0:5A:DD:BB:74:E0",
            "PermanentWWNN": "10:00:B0:5A:DD:BB:A1:B3",
            "WWPN": "10:00:B0:5A:DD:BB:74:E0",
            "WWNN": "10:00:B0:5A:DD:C4:D3:BB",
            "WWNSource": "ConfiguredLocally",
            "FCoELocalVLANId": 1001,
            "AllowFIPVLANDiscovery": true,
            "FCoEActiveVLANId": 2001,
            "BootTargets": [
                {
                    "WWPN": "10:00:B0:5A:DD:BB:74:FA",
                    "LUNID": "3",
                    "BootPriority": 0
                }
            ]
        },
        "AssignablePhysicalPorts": [
            {
                "@odata.id": "/redfish/v1/Chassis/1/NetworkAdapters/9fd725a1/NetworkPorts/1"
            }
        ],
        "BootMode": "Disabled",
        "VirtualFunctionsEnabled": true,
        "MaxVirtualFunctions": 16,
        "Links": {
            "PCIeFunction": {
                "@odata.id": "/redfish/v1/Systems/1/PCIeDevices/NIC/PCIeFunctions/1"
            },
            "PhysicalPortAssignment": {
                "@odata.id": "/redfish/v1/Chassis/1/NetworkAdapters/9fd725a1/NetworkPorts/1"
            }
        },
        "@odata.id": "/redfish/v1/Chassis/1/NetworkAdapters/9fd725a1/NetworkDeviceFunctions/111111111100"
    }
```

6.70 NetworkDeviceFunctionMetrics 1.1.0

Version	v1.1	v1.0

Release	2021.2	2021.1

6.70.1 Description

The NetworkDeviceFunctionMetrics schema contains usage and health statistics for a network function of a network adapter.

6.70.2 URIs

/redfish/v1/Chassis/*{ChassisId}*/NetworkAdapters/*{NetworkAdapterId}*/NetworkDeviceFunctions/
{NetworkDeviceFunctionId}/Metrics

6.70.3 Properties

Property	Type	Attributes	Notes
Ethernet {	object		The network function metrics specific to Ethernet adapters.
NumOffloadedIPv4Conns	integer	*read-only (null)*	The total number of offloaded TCP/IPv4 connections.
NumOffloadedIPv6Conns	integer	*read-only (null)*	The total number of offloaded TCP/IPv6 connections.
}			
FibreChannel *(v1.1+)* {	object		The network function metrics specific to Fibre Channel adapters.
PortLoginAccepts *(v1.1+)*	integer	*read-only (null)*	The total number of port login (PLOGI) accept (ACC) responses.
PortLoginRejects *(v1.1+)*	integer	*read-only (null)*	The total number of port login (PLOGI) reject (RJT) responses.
PortLoginRequests *(v1.1+)*	integer	*read-only (null)*	The total number of port login (PLOGI) requests transmitted.
RXCongestionFPINs *(v1.1+)*	integer	*read-only (null)*	The total number of Congestion Fabric Performance Impact Notifications (FPINs) received.
RXDeliveryFPINs *(v1.1+)*	integer	*read-only (null)*	The total number of Delivery Fabric Performance Impact Notifications (FPINs) received.
RXExchanges *(v1.1+)*	integer	*read-only (null)*	The total number of Fibre Channel exchanges received.

Property	Type	Attributes	Notes
RXLinkIntegrityFPINs *(v1.1+)*	integer	*read-only (null)*	The total number of Link Integrity Fabric Performance Impact Notifications (FPINs) received.
RXPeerCongestionFPINs *(v1.1+)*	integer	*read-only (null)*	The total number of Peer Congestion Fabric Performance Impact Notifications (FPINs) received.
RXSequences *(v1.1+)*	integer	*read-only (null)*	The total number of Fibre Channel sequences received.
TXCongestionFPINs *(v1.1+)*	integer	*read-only (null)*	The total number of Congestion Fabric Performance Impact Notifications (FPINs) sent.
TXDeliveryFPINs *(v1.1+)*	integer	*read-only (null)*	The total number of Delivery Fabric Performance Impact Notifications (FPINs) sent.
TXExchanges *(v1.1+)*	integer	*read-only (null)*	The total number of Fibre Channel exchanges transmitted.
TXLinkIntegrityFPINs *(v1.1+)*	integer	*read-only (null)*	The total number of Link Integrity Fabric Performance Impact Notifications (FPINs) sent.
TXPeerCongestionFPINs *(v1.1+)*	integer	*read-only (null)*	The total number of Peer Congestion Fabric Performance Impact Notifications (FPINs) sent.
TXSequences *(v1.1+)*	integer	*read-only (null)*	The total number of Fibre Channel sequences transmitted.
}			
RXAvgQueueDepthPercent	number (%)	*read-only (null)*	The average RX queue depth as the percentage.
RXBytes	integer (bytes)	*read-only (null)*	The total number of bytes received on a network function.
RXFrames	integer	*read-only (null)*	The total number of frames received on a network function.
RXMulticastFrames	integer	*read-only (null)*	The total number of good multicast frames received on a network function since reset.
RXQueuesEmpty	boolean	*read-only (null)*	Whether nothing is in a network function's RX queues to DMA.
RXQueuesFull	integer	*read-only (null)*	The number of RX queues that are full.
RXUnicastFrames	integer	*read-only (null)*	The total number of good unicast frames received on a network function since reset.

Property	Type	Attributes	Notes
TXAvgQueueDepthPercent	number (%)	*read-only (null)*	The average TX queue depth as the percentage.
TXBytes	integer (bytes)	*read-only (null)*	The total number of bytes sent on a network function.
TXFrames	integer	*read-only (null)*	The total number of frames sent on a network function.
TXMulticastFrames	integer	*read-only (null)*	The total number of good multicast frames transmitted on a network function since reset.
TXQueuesEmpty	boolean	*read-only (null)*	Whether all TX queues for a network function are empty.
TXQueuesFull	integer	*read-only (null)*	The number of TX queues that are full.
TXUnicastFrames	integer	*read-only (null)*	The total number of good unicast frames transmitted on a network function since reset.

6.71 NetworkInterface 1.2.1

Version	*v1.2*	*v1.1*	*v1.0*
Release	2020.3	2017.1	2016.3

6.71.1 Description

The NetworkInterface schema describes links to the network adapters, network ports, and network device functions, and represents the functionality available to the containing system.

6.71.2 URIs

/redfish/v1/CompositionService/ResourceBlocks/*{ResourceBlockId}*/NetworkInterfaces/*{NetworkInterfaceId}*
/redfish/v1/CompositionService/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/
NetworkInterfaces/*{NetworkInterfaceId}*
/redfish/v1/ResourceBlocks/*{ResourceBlockId}*/NetworkInterfaces/*{NetworkInterfaceId}*
/redfish/v1/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/NetworkInterfaces/
{NetworkInterfaceId}
/redfish/v1/Systems/*{ComputerSystemId}*/NetworkInterfaces/*{NetworkInterfaceId}*

6.71.3 Properties

Property	Type	Attributes	Notes
Links {	object		The links to other resources that are related to this resource.
NetworkAdapter {	object		The link to the network adapter that contains this network interface. See the *NetworkAdapter* schema for details on this property.
@odata.id	string	*read-only*	Link to a NetworkAdapter resource. See the Links section and the *NetworkAdapter* schema for details.
}			
Oem {}	object		See the Oem object definition in the Common properties section.
}			
NetworkDeviceFunctions {	object		The link to the network device functions associated with this network interface. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *NetworkDeviceFunction*. See the NetworkDeviceFunction schema for details.
}			
NetworkPorts *(deprecated v1.2)* {	object		The link to the network ports associated with this network interface. Contains a link to a resource. *Deprecated in v1.2 and later. This property has been deprecated in favor of the Ports property.*
@odata.id	string	*read-only*	Link to Collection of *NetworkPort*. See the NetworkPort schema for details.
}			
Ports *(v1.2+)* {	object		The link to the ports associated with this network interface. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *Port*. See the Port schema for details.
}			
Status {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.

6.71.4 Example response

```
{
    "@odata.type": "#NetworkInterface.v1_2_1.NetworkInterface",
```

```
    "Id": "9fa725a1",
    "Name": "Network Device View",
    "NetworkPorts": {
        "@odata.id": "/redfish/v1/Systems/1/NetworkInterfaces/9fd725a1/NetworkPorts"
    },
    "NetworkDeviceFunctions": {
        "@odata.id": "/redfish/v1/Systems/1/NetworkInterfaces/9fd725a1/NetworkDeviceFunctions"
    },
    "Links": {
        "NetworkAdapter": {
            "@odata.id": "/redfish/v1/Chassis/1/NetworkAdapters/9fd725a1"
        }
    },
    "@odata.id": "/redfish/v1/Systems/1/NetworkInterfaces/9fd725a1"
}
```

6.72 NetworkPort 1.4.1 (deprecated)

Version	v1.4 Deprecated	v1.3	v1.2	v1.1	v1.0
Release	2020.4	2020.3	2018.2	2017.1	2016.3

This schema has been deprecated and use in new implementations is discouraged except to retain compatibility with existing products. This schema has been deprecated in favor of the Port schema.

6.72.1 Description

The NetworkPort schema describes a network port, which is a discrete physical port that can connect to a network.

6.72.2 URIs

/redfish/v1/Chassis/{*ChassisId*}/NetworkAdapters/{*NetworkAdapterId*}/NetworkPorts/{*NetworkPortId*}

6.72.3 Properties

Property	Type	Attributes	Notes
ActiveLinkTechnology	string (enum)	*read-write* *(null)*	Network port active link technology. *For the possible property values, see ActiveLinkTechnology in Property details.*

Property	Type	Attributes	Notes
AssociatedNetworkAddresses [ ]	array (string, null)	*read-only*	An array of configured MAC or WWN network addresses that are associated with this network port, including the programmed address of the lowest numbered network device function, the configured but not active address, if applicable, the address for hardware port teaming, or other network addresses.
CurrentLinkSpeedMbps *(v1.2+)*	integer (Mbit/s)	*read-write (null)*	Network port current link speed.
EEEEnabled	boolean	*read-write (null)*	An indication of whether IEEE 802.3az Energy-Efficient Ethernet (EEE) is enabled for this network port.
FCFabricName *(v1.2+)*	string	*read-only (null)*	The FC Fabric Name provided by the switch.
FCPortConnectionType *(v1.2+)*	string (enum)	*read-only (null)*	The connection type of this port. *For the possible property values, see FCPortConnectionType in Property details.*
FlowControlConfiguration	string (enum)	*read-write (null)*	The locally configured 802.3x flow control setting for this network port. *For the possible property values, see FlowControlConfiguration in Property details.*
FlowControlStatus	string (enum)	*read-only (null)*	The 802.3x flow control behavior negotiated with the link partner for this network port (Ethernet-only). *For the possible property values, see FlowControlStatus in Property details.*
LinkStatus	string (enum)	*read-only (null)*	The status of the link between this port and its link partner. *For the possible property values, see LinkStatus in Property details.*
MaxFrameSize *(v1.2+)*	integer (bytes)	*read-only (null)*	The maximum frame size supported by the port.
NetDevFuncMaxBWAlloc [{	array		An array of maximum bandwidth allocation percentages for the network device functions associated with this port.
MaxBWAllocPercent	integer (%)	*read-write (null)*	The maximum bandwidth allocation percentage allocated to the corresponding network device function instance.
NetworkDeviceFunction {	object		The link to the network device function associated with this bandwidth setting of this network port. See the *NetworkDeviceFunction* schema for details on this property.
@odata.id	string	*read-only*	Link to a NetworkDeviceFunction resource. See the Links section and the *NetworkDeviceFunction* schema for details.
}			
}]			
NetDevFuncMinBWAlloc [{	array		An array of minimum bandwidth allocation percentages for the network device functions associated with this port.

Property	Type	Attributes	Notes
MinBWAllocPercent	integer (%)	*read-write (null)*	The minimum bandwidth allocation percentage allocated to the corresponding network device function instance.
NetworkDeviceFunction {	object		The link to the network device function associated with this bandwidth setting of this network port. See the *NetworkDeviceFunction* schema for details on this property.
@odata.id	string	*read-only*	Link to a NetworkDeviceFunction resource. See the Links section and the *NetworkDeviceFunction* schema for details.
}			
}]			
NumberDiscoveredRemotePorts *(v1.2+)*	integer	*read-only (null)*	The number of ports not on this adapter that this port has discovered.
PhysicalPortNumber	string	*read-only (null)*	The physical port number label for this port.
PortMaximumMTU	integer	*read-only (null)*	The largest maximum transmission unit (MTU) that can be configured for this network port.
SignalDetected	boolean	*read-only (null)*	An indication of whether the port has detected enough signal on enough lanes to establish a link.
Status {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
SupportedEthernetCapabilities [ ]	array (string (enum))	*read-only (null)*	The set of Ethernet capabilities that this port supports. *For the possible property values, see SupportedEthernetCapabilities in Property details.*
SupportedLinkCapabilities [{	array		The link capabilities of this port.
AutoSpeedNegotiation *(v1.2+)*	boolean	*read-only (null)*	An indication of whether the port is capable of autonegotiating speed.
CapableLinkSpeedMbps *(v1.2+)* [ ]	array (integer, null)	*read-only*	The set of link speed capabilities of this port.
LinkNetworkTechnology	string (enum)	*read-only (null)*	The link network technology capabilities of this port. *For the possible property values, see LinkNetworkTechnology in Property details.*
LinkSpeedMbps *(deprecated v1.2)*	integer (Mbit/s)	*read-only (null)*	The speed of the link in Mbit/s when this link network technology is active. *Deprecated in v1.2 and later. This property has been deprecated in favor of the CapableLinkSpeedMbps.*
}]			

Property	Type	Attributes	Notes
VendorId *(v1.2+)*	string	*read-only (null)*	The vendor Identification for this port.
WakeOnLANEnabled	boolean	*read-write (null)*	An indication of whether Wake on LAN (WoL) is enabled for this network port.

6.72.4 Property details

6.72.4.1 ActiveLinkTechnology:

Network port active link technology.

string	Description
Ethernet	The port is capable of connecting to an Ethernet network.
FibreChannel	The port is capable of connecting to a Fibre Channel network.
InfiniBand	The port is capable of connecting to an InfiniBand network.

6.72.4.2 FCPortConnectionType:

The connection type of this port.

string	Description
ExtenderFabric	This port connection type is an extender fabric port.
Generic	This port connection type is a generic fabric port.
NotConnected	This port is not connected.
NPort	This port connects through an N-port to a switch.
PointToPoint	This port connects in a point-to-point configuration.
PrivateLoop	This port connects in a private loop configuration.
PublicLoop	This port connects in a public configuration.

6.72.4.3 FlowControlConfiguration:

The locally configured 802.3x flow control setting for this network port.

string	Description
None	No IEEE 802.3x flow control is enabled on this port.
RX	The link partner can initiate IEEE 802.3x flow control.
TX	This station can initiate IEEE 802.3x flow control.
TX_RX	This station or the link partner can initiate IEEE 802.3x flow control.

6.72.4.4 FlowControlStatus:

The 802.3x flow control behavior negotiated with the link partner for this network port (Ethernet-only).

string	Description
None	No IEEE 802.3x flow control is enabled on this port.
RX	The link partner can initiate IEEE 802.3x flow control.
TX	This station can initiate IEEE 802.3x flow control.
TX_RX	This station or the link partner can initiate IEEE 802.3x flow control.

6.72.4.5 LinkNetworkTechnology:

The link network technology capabilities of this port.

string	Description
Ethernet	The port is capable of connecting to an Ethernet network.
FibreChannel	The port is capable of connecting to a Fibre Channel network.
InfiniBand	The port is capable of connecting to an InfiniBand network.

6.72.4.6 LinkStatus:

The status of the link between this port and its link partner.

string	Description
Down	The port is enabled but link is down.

string	Description
Starting *(v1.3+)*	This link on this interface is starting. A physical link has been established, but the port is not able to transfer data.
Training *(v1.3+)*	This physical link on this interface is training.
Up	The port is enabled and link is good (up).

6.72.4.7 SupportedEthernetCapabilities:

The set of Ethernet capabilities that this port supports.

string	Description
EEE	IEEE 802.3az Energy-Efficient Ethernet (EEE) is supported on this port.
WakeOnLAN	Wake on LAN (WoL) is supported on this port.

6.72.5 Example response

```
{
    "@odata.type": "#NetworkPort.v1_4_1.NetworkPort",
    "Id": "1",
    "Name": "Network Port View",
    "PhysicalPortNumber": "1",
    "LinkStatus": "Up",
    "SupportedLinkCapabilities": [
        {
            "LinkNetworkTechnology": "Ethernet",
            "LinkSpeedMbps": 10000
        }
    ],
    "ActiveLinkTechnology": "Ethernet",
    "SupportedEthernetCapabilities": [
        "WakeOnLAN",
        "EEE"
    ],
    "NetDevFuncMinBWAlloc": [
        {
            "NetworkDeviceFunction": {
                "@odata.id": "/redfish/v1/Chassis/1/NetworkAdapters/9fd725a1/NetworkDeviceFunctions/111111111100"
            },
            "MinBWAllocPercent": 25
        }
    ],
```

```
    "NetDevFuncMaxBWAlloc": [
        {
            "NetworkDeviceFunction": {
                "@odata.id": "/redfish/v1/Chassis/1/NetworkAdapters/9fd725a1/NetworkDeviceFunctions/111111111100"
            },
            "MaxBWAllocPercent": 100
        }
    ],
    "AssociatedNetworkAddresses": [
        "00:0C:29:9A:98:ED",
        "00:0C:29:9A:98:EF"
    ],
    "EEEEnabled": true,
    "WakeOnLANEnabled": true,
    "PortMaximumMTU": 1500,
    "FlowControlStatus": "None",
    "FlowControlConfiguration": "None",
    "SignalDetected": true,
    "@odata.id": "/redfish/v1/Chassis/1/NetworkAdapters/9fd725a1/NetworkPorts/1"
}
```

6.73 OperatingConfig 1.0.2

Version	v1.0
Release	2020.2

6.73.1 Description

The OperatingConfig schema specifies a configuration that can be used when the processor is operational.

6.73.2 URIs

/redfish/v1/Systems/{ComputerSystemId}/Processors/{ProcessorId}/OperatingConfigs/{OperatingConfigId}

6.73.3 Properties

Property	Type	Attributes	Notes
BaseSpeedMHz	integer (MHz)	read-only (null)	The base (nominal) clock speed of the processor in MHz.

Property	Type	Attributes	Notes
BaseSpeedPrioritySettings [{	array		The clock speed for sets of cores when the configuration is operational.
BaseSpeedMHz	integer (MHz)	*read-only (null)*	The clock speed to configure the set of cores in MHz.
CoreCount	integer	*read-only (null)*	The number of cores to configure with a specified speed.
CoreIDs [ ]	array (integer, null)	*read-only*	The identifier of the cores to configure with the specified speed.
}]			
MaxJunctionTemperatureCelsius	integer (Celsius)	*read-only (null)*	The maximum temperature of the junction in degrees Celsius.
MaxSpeedMHz	integer (MHz)	*read-only (null)*	The maximum clock speed to which the processor can be configured in MHz.
TDPWatts	integer (Watts)	*read-only (null)*	The thermal design point of the processor in watts.
TotalAvailableCoreCount	integer	*read-only (null)*	The number of cores in the processor that can be configured.
TurboProfile [{	array		The turbo profiles for the processor. A turbo profile is the maximum turbo clock speed as a function of the number of active cores.
ActiveCoreCount	integer	*read-only (null)*	The number of active cores to be configured with the specified maximum clock speed.
MaxSpeedMHz	integer (MHz)	*read-only (null)*	The maximum turbo clock speed that correspond to the number of active cores in MHz.
}]			

6.73.4 Example response

```
{
    "@odata.type": "#OperatingConfig.v1_0_2.OperatingConfig",
    "Id": "0",
    "Name": "Processor Profile",
    "TotalAvailableCoreCount": 28,
    "TDPWatts": 150,
    "BaseSpeedMHz": 2500,
    "MaxSpeedMHz": 4100,
```

```
        "MaxJunctionTemperatureCelsius": 90,
        "TurboProfile": [
            {
                "ActiveCoreCount": 2,
                "MaxSpeedMHz": 4100
            },
            {
                "ActiveCoreCount": 4,
                "MaxSpeedMHz": 4000
            },
            {
                "ActiveCoreCount": 8,
                "MaxSpeedMHz": 3800
            },
            {
                "ActiveCoreCount": 28,
                "MaxSpeedMHz": 3200
            }
        ],
        "BaseSpeedPrioritySettings": [
            {
                "CoreCount": 8,
                "CoreIDs": [
                    0,
                    2,
                    3,
                    4,
                    5,
                    6,
                    7,
                    8
                ],
                "BaseSpeedMHz": 2900
            },
            {
                "CoreCount": 20,
                "BaseSpeedMHz": 2200
            }
        ],
        "@odata.id": "/redfish/v1/Systems/operating-config-example/Processors/CPU1/OperatingConfigs/0"
    }
```

6.74 Outlet 1.4.0

Version	v1.4	v1.3	v1.2	v1.1	v1.0
Release	2021.4	2021.3	2021.2	2020.3	2019.4

6.74.1 Description

The Outlet schema contains definition for an electrical outlet.

6.74.2 URIs

/redfish/v1/PowerEquipment/ElectricalBuses/*{PowerDistributionId}*/Outlets/*{OutletId}*
/redfish/v1/PowerEquipment/FloorPDUs/*{PowerDistributionId}*/Outlets/*{OutletId}*
/redfish/v1/PowerEquipment/PowerShelves/*{PowerDistributionId}*/Outlets/*{OutletId}*
/redfish/v1/PowerEquipment/RackPDUs/*{PowerDistributionId}*/Outlets/*{OutletId}*
/redfish/v1/PowerEquipment/TransferSwitches/*{PowerDistributionId}*/Outlets/*{OutletId}*

6.74.3 Properties

Property	Type	Attributes	Notes
ConfigurationLocked *(v1.4+)*	boolean	*read-write*	Indicates whether the configuration is locked.
CurrentAmps {}	object		The current (A) for this single phase outlet. For more information about this property, see SensorCurrentExcerpt in Property Details.
ElectricalConsumerNames *(v1.3+)* [ ]	array (string, null)	*read-write*	An array of names of downstream devices that are powered by this outlet.
ElectricalContext	string (enum)	*read-only (null)*	The combination of current-carrying conductors. *For the possible property values, see ElectricalContext in Property details.*
EnergykWh {	object (excerpt)		The energy (kWh) for this outlet. This object is an excerpt of the *Sensor* resource located at the URI shown in DataSourceUri.
ApparentkVAh *(v1.5+)*	number (kV.A.h)	*read-only (null)*	Apparent energy (kVAh).
DataSourceUri	string (URI)	*read-only (null)*	The link to the resource that provides the data for this sensor.
LifetimeReading *(v1.1+)*	number	*read-only (null)*	The total accumulation value for this sensor.
ReactivekVARh *(v1.5+)*	number (kV.A.h)	*read-only (null)*	Reactive energy (kVARh).
Reading	number	*read-only (null)*	The sensor value.
SensorResetTime	string (date-time)	*read-only (null)*	The date and time when the time-based properties were last reset.

Property	Type	Attributes	Notes
}			
FrequencyHz {	object (excerpt)		The frequency (Hz) for this outlet. This object is an excerpt of the *Sensor* resource located at the URI shown in DataSourceUri.
DataSourceUri	string (URI)	*read-only (null)*	The link to the resource that provides the data for this sensor.
Reading	number	*read-only (null)*	The sensor value.
}			
IndicatorLED *(deprecated v1.1)*	string (enum)	*read-write (null)*	The state of the indicator LED, which identifies the outlet. *For the possible property values, see IndicatorLED in Property details. Deprecated in v1.1 and later. This property has been deprecated in favor of the LocationIndicatorActive property.*
Links {	object		The links to other resources that are related to this resource.
BranchCircuit {	object	*(null)*	A reference to the branch circuit related to this outlet. See the *Circuit* schema for details on this property.
@odata.id	string	*read-only*	Link to a Circuit resource. See the Links section and the *Circuit* schema for details.
}			
Chassis *(v1.3+)* [{	array		Any array of links to chassis connected to this outlet.
@odata.id	string	*read-write*	Link to a Chassis resource. See the Links section and the *Chassis* schema for details.
}]			
DistributionCircuits *(v1.3+)* [{	array		An array of links to mains or input circuits powered by this outlet.
@odata.id	string	*read-write*	Link to a Circuit resource. See the Links section and the *Circuit* schema for details.
}]			
Oem {}	object		See the Oem object definition in the Common properties section.
PowerSupplies *(v1.3+)* [{	array		An array of links to the power supplies connected to this outlet.
@odata.id	string	*read-write*	Link to a PowerSupply resource. See the Links section and the *PowerSupply* schema for details.
}]			

Property	Type	Attributes	Notes
}			
LocationIndicatorActive *(v1.1+)*	boolean	*read-write (null)*	An indicator allowing an operator to physically locate this resource.
NominalVoltage	string (enum)	*read-only (null)*	The nominal voltage for this outlet. *For the possible property values, see NominalVoltage in Property details.*
OutletType	string (enum)	*read-only (null)*	The type of receptacle according to NEMA, IEC, or regional standards. *For the possible property values, see OutletType in Property details.*
PhaseWiringType	string (enum)	*read-only (null)*	The number of ungrounded current-carrying conductors (phases) and the total number of conductors (wires). *For the possible property values, see PhaseWiringType in Property details.*
PolyPhaseCurrentAmps {	object	*(null)*	The current readings for this outlet.
Line1 {}	object		Line 1 current (A). For more information about this property, see SensorCurrentExcerpt in Property Details.
Line2 {}	object		Line 2 current (A). For more information about this property, see SensorCurrentExcerpt in Property Details.
Line3 {}	object		Line 3 current (A). For more information about this property, see SensorCurrentExcerpt in Property Details.
Neutral {}	object		Neutral line current (A). For more information about this property, see SensorCurrentExcerpt in Property Details.
}			
PolyPhaseVoltage {	object	*(null)*	The voltage readings for this outlet.
Line1ToLine2 {}	object		The Line 1 to Line 2 voltage (V) for this outlet. For more information about this property, see SensorVoltageExcerpt in Property Details.
Line1ToNeutral {}	object		The Line 1 to Neutral voltage (V) for this outlet. For more information about this property, see SensorVoltageExcerpt in Property Details.
Line2ToLine3 {}	object		The Line 2 to Line 3 voltage (V) for this outlet. For more information about this property, see SensorVoltageExcerpt in Property Details.
Line2ToNeutral {}	object		The Line 2 to Neutral voltage (V) for this outlet. For more information about this property, see SensorVoltageExcerpt in Property Details.
Line3ToLine1 {}	object		The Line 3 to Line 1 voltage (V) for this outlet. For more information about this property, see SensorVoltageExcerpt in Property Details.

Property	Type	Attributes	Notes
Line3ToNeutral {}	object		The Line 3 to Neutral voltage (V) for this outlet. For more information about this property, see SensorVoltageExcerpt in Property Details.
}			
PowerControlLocked *(v1.4+)*	boolean	*read-write*	Indicates whether power control requests are locked.
PowerCycleDelaySeconds	number	*read-write (null)*	The number of seconds to delay power on after a PowerControl action to cycle power. Zero seconds indicates no delay.
PowerEnabled	boolean	*read-only (null)*	Indicates if the outlet can be powered.
PowerLoadPercent *(v1.2+)* {	object (excerpt)		The power load (percent) for this outlet. This object is an excerpt of the *Sensor* resource located at the URI shown in DataSourceUri.
DataSourceUri	string (URI)	*read-only (null)*	The link to the resource that provides the data for this sensor.
Reading	number	*read-only (null)*	The sensor value.
}			
PowerOffDelaySeconds	number	*read-write (null)*	The number of seconds to delay power off after a PowerControl action. Zero seconds indicates no delay to power off.
PowerOnDelaySeconds	number	*read-write (null)*	The number of seconds to delay power up after a power cycle or a PowerControl action. Zero seconds indicates no delay to power up.
PowerRestoreDelaySeconds	number	*read-write (null)*	The number of seconds to delay power on after power has been restored. Zero seconds indicates no delay.
PowerRestorePolicy	string (enum)	*read-write*	The desired power state of the outlet when power is restored after a power loss. *For the possible property values, see PowerRestorePolicy in Property details.*
PowerState	string (enum)	*read-only (null)*	The power state of the outlet. *For the possible property values, see PowerState in Property details.*
PowerStateInTransition *(v1.4+)*	boolean	*read-only*	Indicates whether the power state is undergoing a delayed transition.
PowerWatts {	object (excerpt)		The power (W) for this outlet. This object is an excerpt of the *Sensor* resource located at the URI shown in DataSourceUri.
ApparentVA	number (V.A)	*read-only (null)*	The product of voltage and current for an AC circuit, in volt-ampere units.
DataSourceUri	string (URI)	*read-only (null)*	The link to the resource that provides the data for this sensor.

Property	Type	Attributes	Notes
PhaseAngleDegrees *(v1.5+)*	number	*read-only (null)*	The phase angle (degrees) between the current and voltage waveforms.
PowerFactor	number	*read-only (null)*	The power factor for this sensor.
ReactiveVAR	number (V.A)	*read-only (null)*	The square root of the difference term of squared apparent VA and squared power (Reading) for a circuit, in VAR units.
Reading	number	*read-only (null)*	The sensor value.
}			
RatedCurrentAmps	number (A)	*read-only (null)*	The rated maximum current allowed for this outlet.
Status {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
UserLabel *(v1.3+)*	string	*read-write*	A user-assigned label.
Voltage {}	object		The voltage (V) for this single phase outlet. For more information about this property, see SensorVoltageExcerpt in Property Details.
VoltageType	string (enum)	*read-only (null)*	The type of voltage applied to the outlet. *For the possible property values, see VoltageType in Property details.*

6.74.4 Actions

6.74.4.1 PowerControl

Description

This action turns the outlet on or off.

Action URI: {Base URI of target resource}/Actions/Outlet.PowerControl

Action parameters

Parameter Name	Type	Attributes	Notes
PowerState	string (enum)	*optional*	The desired power state of the outlet. *For the possible property values, see PowerState in Property details.*

6.74.4.2 ResetMetrics

Description

This action resets metrics related to this outlet.

Action URI: {Base URI of target resource}/Actions/Outlet.ResetMetrics

Action parameters

This action takes no parameters.

6.74.5 Property details

6.74.5.1 ElectricalContext:

The combination of current-carrying conductors.

string	Description
Line1	The circuits that share the L1 current-carrying conductor.
Line1ToLine2	The circuit formed by L1 and L2 current-carrying conductors.
Line1ToNeutral	The circuit formed by L1 and neutral current-carrying conductors.
Line1ToNeutralAndL1L2	The circuit formed by L1, L2, and neutral current-carrying conductors.
Line2	The circuits that share the L2 current-carrying conductor.
Line2ToLine3	The circuit formed by L2 and L3 current-carrying conductors.
Line2ToNeutral	The circuit formed by L2 and neutral current-carrying conductors.
Line2ToNeutralAndL1L2	The circuit formed by L1, L2, and Neutral current-carrying conductors.
Line2ToNeutralAndL2L3	The circuits formed by L2, L3, and neutral current-carrying conductors.
Line3	The circuits that share the L3 current-carrying conductor.
Line3ToLine1	The circuit formed by L3 and L1 current-carrying conductors.
Line3ToNeutral	The circuit formed by L3 and neutral current-carrying conductors.
Line3ToNeutralAndL3L1	The circuit formed by L3, L1, and neutral current-carrying conductors.
LineToLine	The circuit formed by two current-carrying conductors.

string	Description
LineToNeutral	The circuit formed by a line and neutral current-carrying conductor.
Neutral	The grounded current-carrying return circuit of current-carrying conductors.
Total	The circuit formed by all current-carrying conductors.

6.74.5.2 IndicatorLED:

The state of the indicator LED, which identifies the outlet.

string	Description
Blinking	The indicator LED is blinking.
Lit	The indicator LED is lit.
Off	The indicator LED is off.

6.74.5.3 NominalVoltage:

The nominal voltage for this outlet.

string	Description
AC100To240V	AC 100-240V nominal.
AC100To277V	AC 100-277V nominal.
AC120V	AC 120V nominal.
AC200To240V	AC 200-240V nominal.
AC200To277V	AC 200-277V nominal.
AC208V	AC 208V nominal.
AC230V	AC 230V nominal.
AC240AndDC380V	AC 200-240V and DC 380V.
AC240V	AC 240V nominal.
AC277AndDC380V	AC 200-277V and DC 380V.
AC277V	AC 277V nominal.

string	Description
AC400V	AC 400V or 415V nominal.
AC480V	AC 480V nominal.
DC240V	DC 240V nominal.
DC380V	High Voltage DC (380V).
DC48V	DC 48V nominal.
DCNeg48V	-48V DC.

6.74.5.4 OutletType:

The type of receptacle according to NEMA, IEC, or regional standards.

string	Description
BS_1363_Type_G	BS 1363 Type G (250V; 13A).
BusConnection *(v1.3+)*	Electrical bus connection.
CEE_7_Type_E	CEE 7/7 Type E (250V; 16A).
CEE_7_Type_F	CEE 7/7 Type F (250V; 16A).
IEC_60320_C13	IEC C13 (250V; 10A or 15A).
IEC_60320_C19	IEC C19 (250V; 16A or 20A).
NEMA_5_15R	NEMA 5-15R (120V; 15A).
NEMA_5_20R	NEMA 5-20R (120V; 20A).
NEMA_L5_20R	NEMA L5-20R (120V; 20A).
NEMA_L5_30R	NEMA L5-30R (120V; 30A).
NEMA_L6_20R	NEMA L6-20R (250V; 20A).
NEMA_L6_30R	NEMA L6-30R (250V; 30A).
SEV_1011_TYPE_12	SEV 1011 Type 12 (250V; 10A).
SEV_1011_TYPE_23	SEV 1011 Type 23 (250V; 16A).

6.74.5.5 PhaseWiringType:

The number of ungrounded current-carrying conductors (phases) and the total number of conductors (wires).

string	Description
OneOrTwoPhase3Wire	Single or Two-Phase / 3-Wire (Line1, Line2 or Neutral, Protective Earth).
OnePhase3Wire	Single-phase / 3-Wire (Line1, Neutral, Protective Earth).
ThreePhase4Wire	Three-phase / 4-Wire (Line1, Line2, Line3, Protective Earth).
ThreePhase5Wire	Three-phase / 5-Wire (Line1, Line2, Line3, Neutral, Protective Earth).
TwoPhase3Wire	Two-phase / 3-Wire (Line1, Line2, Protective Earth).
TwoPhase4Wire	Two-phase / 4-Wire (Line1, Line2, Neutral, Protective Earth).

6.74.5.6 PowerRestorePolicy:

The desired power state of the outlet when power is restored after a power loss.

string	Description
AlwaysOff	Always remain powered off when external power is applied.
AlwaysOn	Always power on when external power is applied.
LastState	Return to the last power state (on or off) when external power is applied.

6.74.5.7 PowerState:

6.74.5.7.1 In top level:

The power state of the outlet.

string	Description
Off	The state is powered off.
On	The state is powered on.
Paused	The state is paused.

string	Description
PoweringOff	A temporary state between on and off.
PoweringOn	A temporary state between off and on.

6.74.5.7.2 In Actions: PowerControl:

The desired power state of the outlet.

string	Description
Off	Power off.
On	Power on.
PowerCycle *(v1.4+)*	Power cycle.

6.74.5.8 SensorCurrentExcerpt:

The Sensor schema describes a sensor and its properties. This object is an excerpt of the *Sensor* resource located at the URI shown in DataSourceUri.

CrestFactor *(v1.1+)*	number	*read-only (null)*	The crest factor for this sensor.
DataSourceUri	string (URI)	*read-only (null)*	The link to the resource that provides the data for this sensor.
Reading	number	*read-only (null)*	The sensor value.
THDPercent *(v1.1+)*	number	*read-only (null)*	The total harmonic distortion (THD).

6.74.5.9 SensorVoltageExcerpt:

The Sensor schema describes a sensor and its properties. This object is an excerpt of the *Sensor* resource located at the URI shown in DataSourceUri.

CrestFactor *(v1.1+)*	number	*read-only (null)*	The crest factor for this sensor.
DataSourceUri	string (URI)	*read-only (null)*	The link to the resource that provides the data for this sensor.
Reading	number	*read-only (null)*	The sensor value.
THDPercent *(v1.1+)*	number	*read-only (null)*	The total harmonic distortion (THD).

6.74.5.10 VoltageType:

The type of voltage applied to the outlet.

string	Description
AC	Alternating Current (AC) outlet.
DC	Direct Current (DC) outlet.

6.74.6 Example response

```
{
    "@odata.type": "#Outlet.v1_4_0.Outlet",
    "Id": "A1",
    "Name": "Outlet A1, Branch Circuit A",
    "Status": {
        "Health": "OK",
        "State": "Enabled"
    },
    "PhaseWiringType": "OnePhase3Wire",
    "VoltageType": "AC",
    "OutletType": "NEMA_5_20R",
    "RatedCurrentAmps": 20,
    "NominalVoltage": "AC120V",
    "IndicatorLED": "Lit",
    "PowerOnDelaySeconds": 4,
    "PowerOffDelaySeconds": 0,
    "PowerState": "On",
    "PowerEnabled": true,
```

```
    "Voltage": {
        "DataSourceUri": "/redfish/v1/PowerEquipment/RackPDUs/1/Sensors/VoltageA1",
        "Reading": 117.5
    },
    "PolyPhaseVoltage": {
        "Line1ToNeutral": {
            "DataSourceUri": "/redfish/v1/PowerEquipment/RackPDUs/1/Sensors/VoltageA1",
            "Reading": 117.5
        }
    },
    "CurrentAmps": {
        "DataSourceUri": "/redfish/v1/PowerEquipment/RackPDUs/1/Sensors/CurrentA1",
        "Reading": 1.68
    },
    "PolyPhaseCurrentAmps": {
        "Line1": {
            "DataSourceUri": "/redfish/v1/PowerEquipment/RackPDUs/1/Sensors/CurrentA1",
            "Reading": 1.68
        }
    },
    "PowerWatts": {
        "DataSourceUri": "/redfish/v1/PowerEquipment/RackPDUs/1/Sensors/PowerA1",
        "Reading": 197.4,
        "ApparentVA": 197.4,
        "ReactiveVAR": 0,
        "PowerFactor": 1
    },
    "FrequencyHz": {
        "DataSourceUri": "/redfish/v1/PowerEquipment/RackPDUs/1/Sensors/FrequencyA1",
        "Reading": 60
    },
    "EnergykWh": {
        "DataSourceUri": "/redfish/v1/PowerEquipment/RackPDUs/1/Sensors/EnergyA1",
        "Reading": 36166
    },
    "Actions": {
        "#Outlet.PowerControl": {
            "target": "/redfish/v1/PowerEquipment/RackPDUs/1/Outlets/A1/Outlet.PowerControl"
        },
        "#Outlet.ResetMetrics": {
            "target": "/redfish/v1/PowerEquipment/RackPDUs/1/Outlets/A1/Outlet.ResetMetrics"
        }
    },
    "Links": {
        "BranchCircuit": {
            "@odata.id": "/redfish/v1/PowerEquipment/RackPDUs/1/Branches/A"
        }
    },
    "@odata.id": "/redfish/v1/PowerEquipment/RackPDUs/1/Outlets/A1"
}
```

6.75 OutletGroup 1.1.0

Version	*v1.1*	*v1.0*
Release	2021.4	2019.4

6.75.1 Description

The OutletGroup schema contains definitions for an electrical outlet group.

6.75.2 URIs

/redfish/v1/PowerEquipment/ElectricalBuses/*{PowerDistributionId}*/OutletGroups/*{OutletGroupId}*
/redfish/v1/PowerEquipment/PowerShelves/*{PowerDistributionId}*/OutletGroups/*{OutletGroupId}*
/redfish/v1/PowerEquipment/RackPDUs/*{PowerDistributionId}*/OutletGroups/*{OutletGroupId}*
/redfish/v1/PowerEquipment/TransferSwitches/*{PowerDistributionId}*/OutletGroups/*{OutletGroupId}*

6.75.3 Properties

Property	Type	Attributes	Notes
ConfigurationLocked *(v1.1+)*	boolean	*read-write*	Indicates whether the configuration is locked.
CreatedBy	string	*read-write (null)*	The creator of this outlet group.
EnergykWh {	object (excerpt)		The energy (kWh) for this outlet group. This object is an excerpt of the *Sensor* resource located at the URI shown in DataSourceUri.
ApparentkVAh *(v1.5+)*	number (kV.A.h)	*read-only (null)*	Apparent energy (kVAh).
DataSourceUri	string (URI)	*read-only (null)*	The link to the resource that provides the data for this sensor.
LifetimeReading *(v1.1+)*	number	*read-only (null)*	The total accumulation value for this sensor.
ReactivekVARh *(v1.5+)*	number (kV.A.h)	*read-only (null)*	Reactive energy (kVARh).
Reading	number	*read-only (null)*	The sensor value.

Property	Type	Attributes	Notes
SensorResetTime	string (date-time)	*read-only (null)*	The date and time when the time-based properties were last reset.
}			
Links {	object		The links to other resources that are related to this resource.
Oem {}	object		See the Oem object definition in the Common properties section.
Outlets [{	array		The set of outlets in this outlet group.
@odata.id	string	*read-write*	Link to a Outlet resource. See the Links section and the *Outlet* schema for details.
}]			
}			
PowerControlLocked *(v1.1+)*	boolean	*read-write*	Indicates whether power control requests are locked.
PowerCycleDelaySeconds	number	*read-write (null)*	The number of seconds to delay power on after a PowerControl action to cycle power. Zero seconds indicates no delay.
PowerEnabled	boolean	*read-only (null)*	Indicates if the outlet group can be powered.
PowerOffDelaySeconds	number	*read-write (null)*	The number of seconds to delay power off after a PowerControl action. Zero seconds indicates no delay to power off.
PowerOnDelaySeconds	number	*read-write (null)*	The number of seconds to delay power up after a power cycle or a PowerControl action. Zero seconds indicates no delay to power up.
PowerRestoreDelaySeconds	number	*read-write (null)*	The number of seconds to delay power on after power has been restored. Zero seconds indicates no delay.
PowerRestorePolicy	string (enum)	*read-write*	The desired power state of the outlet group when power is restored after a power loss. *For the possible property values, see PowerRestorePolicy in Property details.*
PowerState	string (enum)	*read-only (null)*	The power state of the outlet group. *For the possible property values, see PowerState in Property details.*
PowerStateInTransition *(v1.1+)*	boolean	*read-only*	Indicates whether the power state is undergoing a delayed transition.
PowerWatts {	object (excerpt)		The power (W) for this outlet group. This object is an excerpt of the *Sensor* resource located at the URI shown in DataSourceUri.
ApparentVA	number (V.A)	*read-only (null)*	The product of voltage and current for an AC circuit, in volt-ampere units.

Property	Type	Attributes	Notes
DataSourceUri	string (URI)	*read-only (null)*	The link to the resource that provides the data for this sensor.
PhaseAngleDegrees *(v1.5+)*	number	*read-only (null)*	The phase angle (degrees) between the current and voltage waveforms.
PowerFactor	number	*read-only (null)*	The power factor for this sensor.
ReactiveVAR	number (V.A)	*read-only (null)*	The square root of the difference term of squared apparent VA and squared power (Reading) for a circuit, in VAR units.
Reading	number	*read-only (null)*	The sensor value.
}			
Status {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.

6.75.4 Actions

6.75.4.1 PowerControl

Description

This action turns the outlet group on or off.

Action URI: {Base URI of target resource}/Actions/OutletGroup.PowerControl

Action parameters

Parameter Name	Type	Attributes	Notes
PowerState	string (enum)	*optional*	The desired power state of the outlet group. *For the possible property values, see PowerState in Property details.*

6.75.4.2 ResetMetrics

Description

This action resets metrics related to this outlet group.

Action URI: {Base URI of target resource}/Actions/OutletGroup.ResetMetrics

Action parameters

This action takes no parameters.

6.75.5 Property details

6.75.5.1 PowerRestorePolicy:

The desired power state of the outlet group when power is restored after a power loss.

string	Description
AlwaysOff	Always remain powered off when external power is applied.
AlwaysOn	Always power on when external power is applied.
LastState	Return to the last power state (on or off) when external power is applied.

6.75.5.2 PowerState:

6.75.5.2.1 In top level:

The power state of the outlet group.

string	Description
Off	The state is powered off.
On	The state is powered on.
Paused	The state is paused.
PoweringOff	A temporary state between on and off.
PoweringOn	A temporary state between off and on.

6.75.5.2.2 In Actions: PowerControl:

The desired power state of the outlet group.

string	Description
Off	Power off.
On	Power on.
PowerCycle *(v1.1+)*	Power cycle.

6.75.6 Example response

```
{
    "@odata.type": "#OutletGroup.v1_1_0.OutletGroup",
    "Id": "Rack5Storage",
    "Name": "Outlet Group Rack5Storage",
    "Status": {
        "Health": "OK",
        "State": "Enabled"
    },
    "CreatedBy": "Bob",
    "PowerOnDelaySeconds": 4,
    "PowerOffDelaySeconds": 0,
    "PowerState": "On",
    "PowerEnabled": true,
    "PowerWatts": {
        "DataSourceUri": "/redfish/v1/PowerEquipment/RackPDUs/1/Sensors/GroupPowerA",
        "Reading": 412.36
    },
    "EnergykWh": {
        "DataSourceUri": "/redfish/v1/PowerEquipment/RackPDUs/1/Sensors/GroupEnergyA",
        "Reading": 26880
    },
    "Links": {
        "Outlets": [
            {
                "@odata.id": "/redfish/v1/PowerEquipment/RackPDUs/1/Outlets/A1"
            },
            {
                "@odata.id": "/redfish/v1/PowerEquipment/RackPDUs/1/Outlets/A2"
            },
            {
                "@odata.id": "/redfish/v1/PowerEquipment/RackPDUs/1/Outlets/A3"
            }
        ]
    },
    "Actions": {
        "#OutletGroup.PowerControl": {
            "target": "/redfish/v1/PowerEquipment/RackPDUs/1/OutletGroups/Rack5Storage/OutletGroup.PowerControl"
        },
        "#OutletGroup.ResetMetrics": {
```

```
            "target": "/redfish/v1/PowerEquipment/RackPDUs/1/OutletGroups/Rack5Storage/OutletGroup.ResetMetrics"
        }
    },
    "@odata.id": "/redfish/v1/PowerEquipment/RackPDUs/1/OutletGroups/Rack5Storage"
}
```

6.76 PCIeDevice 1.9.0

Version	v1.9	v1.8	v1.7	v1.6	v1.5	v1.4	v1.3	v1.2	v1.1	v1.0
Release	2021.4	2021.3	2021.1	2020.4	2020.3	2019.2	2018.2	2017.3	2017.1	2016.2

6.76.1 Description

The PCIeDevice schema describes the properties of a PCIe device that is attached to a system.

6.76.2 URIs

/redfish/v1/Chassis/{ChassisId}/PCIeDevices/{PCIeDeviceId}
/redfish/v1/CompositionService/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/PCIeDevices/
{PCIeDeviceId}
/redfish/v1/ResourceBlocks/{ResourceBlockId}/Systems/{ComputerSystemId}/PCIeDevices/{PCIeDeviceId}
/redfish/v1/Systems/{ComputerSystemId}/PCIeDevices/{PCIeDeviceId}

6.76.3 Properties

Property	Type	Attributes	Notes
Assembly *(v1.2+)* {	object		The link to the assembly associated with this PCIe device. See the *Assembly* schema for details on this property.
@odata.id	string	*read-only*	Link to a Assembly resource. See the Links section and the *Assembly* schema for details.
}			
AssetTag	string	*read-write (null)*	The user-assigned asset tag for this PCIe device.
DeviceType	string (enum)	*read-only*	The device type for this PCIe device. *For the possible property values, see DeviceType in Property details.*

Property	Type	Attributes	Notes
EnvironmentMetrics *(v1.7+)* {	object		The link to the environment metrics for this PCIe device. See the *EnvironmentMetrics* schema for details on this property.
@odata.id	string	*read-only*	Link to a EnvironmentMetrics resource. See the Links section and the *EnvironmentMetrics* schema for details.
}			
FirmwareVersion	string	*read-only (null)*	The version of firmware for this PCIe device.
Links {	object		The links to other resources that are related to this resource.
Chassis [{	array		An array of links to the chassis in which the PCIe device is contained.
@odata.id	string	*read-only*	Link to a Chassis resource. See the Links section and the *Chassis* schema for details.
}]			
Oem {}	object		See the Oem object definition in the Common properties section.
PCIeFunctions *(deprecated v1.4)* [{	array		An array of links to PCIe functions exposed by this device. *Deprecated in v1.4 and later. This property has been deprecated in favor of the PCIeFunctions property in the root that provides a link to a resource collection.*
@odata.id	string	*read-only*	Link to a PCIeFunction resource. See the Links section and the *PCIeFunction* schema for details.
}]			
}			
Manufacturer	string	*read-only (null)*	The manufacturer of this PCIe device.
Model	string	*read-only (null)*	The model number for the PCIe device.
PartNumber	string	*read-only (null)*	The part number for this PCIe device.
PCIeFunctions *(v1.4+)* {	object		The link to the collection of PCIe functions associated with this PCIe device. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *PCIeFunction*. See the PCIeFunction schema for details.
}			
PCIeInterface *(v1.3+)* {	object		The PCIe interface details for this PCIe device.

Property	Type	Attributes	Notes
LanesInUse *(v1.3+)*	integer	*read-only (null)*	The number of PCIe lanes in use by this device.
MaxLanes *(v1.3+)*	integer	*read-only (null)*	The number of PCIe lanes supported by this device.
MaxPCIeType *(v1.3+)*	string (enum)	*read-only (null)*	The highest version of the PCIe specification supported by this device. *For the possible property values, see MaxPCIeType in Property details.*
Oem *(v1.3+)* {}	object		See the Oem object definition in the Common properties section.
PCIeType *(v1.3+)*	string (enum)	*read-only (null)*	The version of the PCIe specification in use by this device. *For the possible property values, see PCIeType in Property details.*
}			
ReadyToRemove *(v1.7+)*	boolean	*read-write (null)*	An indication of whether the PCIe device is prepared by the system for removal.
SerialNumber	string	*read-only (null)*	The serial number for this PCIe device.
SKU	string	*read-only (null)*	The SKU for this PCIe device.
Slot *(v1.9+)* {	object	*(null)*	Information about the slot for this PCIe device.
Lanes *(v1.9+)*	integer	*read-only (null)*	The number of PCIe lanes supported by this slot.
LaneSplitting *(v1.9+)*	string (enum)	*read-only (null)*	The lane splitting strategy used in the PCIe slot. *For the possible property values, see LaneSplitting in Property details.*
Location *(v1.9+)* {}	object		The location of the PCIe slot. For property details, see Location.
PCIeType *(v1.9+)*	string (enum)	*read-only (null)*	The PCIe specification this slot supports. *For the possible property values, see PCIeType in Property details.*
SlotType *(v1.9+)*	string (enum)	*read-only (null)*	The PCIe slot type. *For the possible property values, see SlotType in Property details.*
}			
SparePartNumber *(v1.6+)*	string	*read-only (null)*	The spare part number of the PCIe device.
Status {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.

Property	Type	Attributes	Notes
UUID *(v1.5+)*	string	*read-only (null)*	The UUID for this PCIe device.

6.76.4 Property details

6.76.4.1 DeviceType:

The device type for this PCIe device.

string	Description
MultiFunction	A multi-function PCIe device.
Simulated	A PCIe device that is not currently physically present, but is being simulated by the PCIe infrastructure.
SingleFunction	A single-function PCIe device.

6.76.4.2 LaneSplitting:

The lane splitting strategy used in the PCIe slot.

string	Description
Bifurcated	The slot is bifurcated to split the lanes with associated devices.
Bridged	The slot has a bridge to share the lanes with associated devices.
None	The slot has no lane splitting.

6.76.4.3 MaxPCIeType:

The highest version of the PCIe specification supported by this device.

string	Description
Gen1	A PCIe v1.0 slot.
Gen2	A PCIe v2.0 slot.
Gen3	A PCIe v3.0 slot.

string	Description
Gen4	A PCIe v4.0 slot.
Gen5	A PCIe v5.0 slot.

6.76.4.4 PCIeType:

The version of the PCIe specification in use by this device.

string	Description
Gen1	A PCIe v1.0 slot.
Gen2	A PCIe v2.0 slot.
Gen3	A PCIe v3.0 slot.
Gen4	A PCIe v4.0 slot.
Gen5	A PCIe v5.0 slot.

6.76.4.5 SlotType:

The PCIe slot type.

string	Description
FullLength	Full-Length PCIe slot.
HalfLength	Half-Length PCIe slot.
LowProfile	Low-Profile or Slim PCIe slot.
M2	PCIe M.2 slot.
Mini	Mini PCIe slot.
OCP3Large	Open Compute Project 3.0 large form factor slot.
OCP3Small	Open Compute Project 3.0 small form factor slot.
OEM	An OEM-specific slot.
U2	U.2 / SFF-8639 slot or bay.

6.76.5 Example response

```json
{
    "@odata.type": "#PCIeDevice.v1_9_0.PCIeDevice",
    "Id": "NIC",
    "Name": "Simple Two-Port NIC",
    "Description": "Simple Two-Port NIC PCIe Device",
    "AssetTag": "ORD-4302015-18432RS",
    "Manufacturer": "Contoso",
    "Model": "SuperNIC 2000",
    "SKU": "89587433",
    "SerialNumber": "2M220100SL",
    "PartNumber": "232-4598D7",
    "DeviceType": "MultiFunction",
    "FirmwareVersion": "12.342-343",
    "Status": {
        "State": "Enabled",
        "Health": "OK",
        "HealthRollup": "OK"
    },
    "PCIeInterface": {
        "PCIeType": "Gen2",
        "MaxPCIeType": "Gen3",
        "LanesInUse": 4,
        "MaxLanes": 4
    },
    "Links": {
        "Chassis": [
            {
                "@odata.id": "/redfish/v1/Chassis/1"
            }
        ],
        "PCIeFunctions": [
            {
                "@odata.id": "/redfish/v1/Systems/1/PCIeDevices/NIC/PCIeFunctions/1"
            },
            {
                "@odata.id": "/redfish/v1/Systems/1/PCIeDevices/NIC/PCIeFunctions/2"
            }
        ],
        "Oem": {}
    },
    "Oem": {},
    "@odata.id": "/redfish/v1/Systems/1/PCIeDevices/NIC"
}
```

6.77 PCIeFunction 1.3.0

Version	v1.3	v1.2	v1.1	v1.0
Release	2021.1	2018.1	2017.1	2016.2

6.77.1 Description

The schema definition for the PCIeFunction Resource. It represents the properties of a PCIeFunction attached to a System.

6.77.2 URIs

/redfish/v1/Chassis/{*ChassisId*}/PCIeDevices/{*PCIeDeviceId*}/PCIeFunctions/{*PCIeFunctionId*}
/redfish/v1/CompositionService/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/PCIeDevices/
{*PCIeDeviceId*}/PCIeFunctions/{*PCIeFunctionId*}
/redfish/v1/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/PCIeDevices/{*PCIeDeviceId*}/
PCIeFunctions/{*PCIeFunctionId*}
/redfish/v1/Systems/{*ComputerSystemId*}/PCIeDevices/{*PCIeDeviceId*}/PCIeFunctions/{*PCIeFunctionId*}

6.77.3 Properties

Property	Type	Attributes	Notes
ClassCode	string	*read-only* *(null)*	The Class Code of this PCIe function.
DeviceClass	string (enum)	*read-only*	The class for this PCIe function. *For the possible property values, see DeviceClass in Property details.*
DeviceId	string	*read-only* *(null)*	The Device ID of this PCIe function.
Enabled *(v1.3+)*	boolean	*read-write*	An indication of whether this PCIe device function is enabled.
FunctionId	integer	*read-only* *(null)*	The PCIe Function Number.
FunctionType	string (enum)	*read-only*	The type of the PCIe function. *For the possible property values, see FunctionType in Property details.*
Links {	object		The links to other Resources that are related to this Resource.

Property	Type	Attributes	Notes
Drives [{	array		An array of links to the drives that the PCIe device produces.
@odata.id	string	*read-only*	Link to a Drive resource. See the Links section and the *Drive* schema for details.
}]			
EthernetInterfaces [{	array		An array of links to the Ethernet interfaces that the PCIe device produces.
@odata.id	string	*read-only*	Link to a EthernetInterface resource. See the Links section and the *EthernetInterface* schema for details.
}]			
NetworkDeviceFunctions *(v1.2+)* [{	array		An array of links to the network device functions that the PCIe device produces.
@odata.id	string	*read-only*	Link to a NetworkDeviceFunction resource. See the Links section and the *NetworkDeviceFunction* schema for details.
}]			
Oem {}	object		See the Oem object definition in the Common properties section.
PCIeDevice {	object		The link to the PCIe device on which this function resides. See the *PCIeDevice* schema for details on this property.
@odata.id	string	*read-only*	Link to a PCIeDevice resource. See the Links section and the *PCIeDevice* schema for details.
}			
StorageControllers [{	array		An array of links to the storage controllers that the PCIe device produces.
@odata.id	string	*read-only*	Link to a StorageController resource. See the Links section and the *Storage* schema for details.
}]			
}			
RevisionId	string	*read-only (null)*	The Revision ID of this PCIe function.
Status {}	object		The status and health of the Resource and its subordinate or dependent Resources. For property details, see Status.
SubsystemId	string	*read-only (null)*	The Subsystem ID of this PCIe function.

Property	Type	Attributes	Notes
SubsystemVendorId	string	*read-only (null)*	The Subsystem Vendor ID of this PCIe function.
VendorId	string	*read-only (null)*	The Vendor ID of this PCIe function.

6.77.4 Property details

6.77.4.1 DeviceClass:

The class for this PCIe function.

string	Description
Bridge	A bridge.
CommunicationController	A communication controller.
Coprocessor	A coprocessor.
DisplayController	A display controller.
DockingStation	A docking station.
EncryptionController	An encryption controller.
GenericSystemPeripheral	A generic system peripheral.
InputDeviceController	An input device controller.
IntelligentController	An intelligent controller.
MassStorageController	A mass storage controller.
MemoryController	A memory controller.
MultimediaController	A multimedia controller.
NetworkController	A network controller.
NonEssentialInstrumentation	A non-essential instrumentation.
Other	A other class. The function Device Class Id needs to be verified.
ProcessingAccelerators	A processing accelerators.
Processor	A processor.

string	Description
SatelliteCommunicationsController	A satellite communications controller.
SerialBusController	A serial bus controller.
SignalProcessingController	A signal processing controller.
UnassignedClass	An unassigned class.
UnclassifiedDevice	An unclassified device.
WirelessController	A wireless controller.

6.77.4.2 FunctionType:

The type of the PCIe function.

string	Description
Physical	A physical PCIe function.
Virtual	A virtual PCIe function.

6.77.5 Example response

```json
{
    "@odata.type": "#PCIeFunction.v1_3_0.PCIeFunction",
    "Id": "2",
    "Name": "FC Port 2",
    "Description": "FC Port 2",
    "FunctionId": 2,
    "FunctionType": "Physical",
    "DeviceClass": "NetworkController",
    "DeviceId": "0xABCD",
    "VendorId": "0xABCD",
    "ClassCode": "0x010802",
    "RevisionId": "0x00",
    "SubsystemId": "0xABCD",
    "SubsystemVendorId": "0xABCD",
    "Status": {
        "State": "Enabled",
        "Health": "OK",
        "HealthRollup": "OK"
    },
    "Links": {
```

```
        "PCIeDevice": {
            "@odata.id": "/redfish/v1/Chassis/1/NetworkAdapters/FC"
        }
    },
    "Oem": {},
    "@odata.id": "/redfish/v1/Chassis/1/PCIeDevices/FC/PCIeFunctions/2"
}
```

6.78 PCIeSlots 1.5.0

Version	v1.5	v1.4	v1.3	v1.2	v1.1	v1.0
Release	2021.3	2020.3	2020.1	2019.4	2019.1	2018.2

6.78.1 Description

The PCIeSlots schema describes PCIe slot properties.

6.78.2 URIs

/redfish/v1/Chassis/{*ChassisId*}/PCIeSlots

6.78.3 Properties

Property	Type	Attributes	Notes
Slots [{	array		An array of PCI Slot information.
HotPluggable *(v1.1+)*	boolean	*read-only (null)*	An indication of whether this PCIe slot supports hotplug.
Lanes	integer	*read-only (null)*	The number of PCIe lanes supported by this slot.
Links {	object		The links to other Resources that are related to this Resource.
Oem {}	object		See the Oem object definition in the Common properties section.
PCIeDevice [{	array		An array of links to the PCIe devices contained in this slot.
@odata.id	string	*read-only*	Link to a PCIeDevice resource. See the Links section and the *PCIeDevice* schema for details.

Property	Type	Attributes	Notes
}]			
Processors *(v1.5+)* [{	array		An array of links to the processors that are directly connected or directly bridged to this PCIe slot.
@odata.id	string	*read-only*	Link to a Processor resource. See the Links section and the *Processor* schema for details.
}]			
}			
Location {}	object		The location of the PCIe slot. For property details, see Location.
LocationIndicatorActive *(v1.4+)*	boolean	*read-write (null)*	An indicator allowing an operator to physically locate this resource.
Oem {}	object		See the Oem object definition in the Common properties section.
PCIeType	string (enum)	*read-only (null)*	The PCIe specification supported by this slot. *For the possible property values, see PCIeType in Property details.*
SlotType	string (enum)	*read-only (null)*	The PCIe slot type for this slot. *For the possible property values, see SlotType in Property details.*
Status {}	object		The status and health of the Resource and its subordinate or dependent Resources. For property details, see Status.
}]			

6.78.4 Property details

6.78.4.1 PCIeType:

The PCIe specification supported by this slot.

string	Description
Gen1	A PCIe v1.0 slot.
Gen2	A PCIe v2.0 slot.
Gen3	A PCIe v3.0 slot.
Gen4	A PCIe v4.0 slot.
Gen5	A PCIe v5.0 slot.

6.78.4.2 SlotType:

The PCIe slot type for this slot.

string	Description
FullLength	Full-Length PCIe slot.
HalfLength	Half-Length PCIe slot.
LowProfile	Low-Profile or Slim PCIe slot.
M2	PCIe M.2 slot.
Mini	Mini PCIe slot.
OCP3Large *(v1.2+)*	Open Compute Project 3.0 large form factor slot.
OCP3Small *(v1.2+)*	Open Compute Project 3.0 small form factor slot.
OEM	An OEM-specific slot.
U2 *(v1.3+)*	U.2 / SFF-8639 slot or bay.

6.78.5 Example response

```
{
    "@odata.type": "#PCIeSlots.v1_5_0.PCIeSlots",
    "Id": "1",
    "Name": "PCIe Slot Information",
    "Slots": [
        {
            "PCIeType": "Gen3",
            "Lanes": 16,
            "SlotType": "FullLength",
            "Status": {
                "State": "Enabled"
            },
            "Location": {
                "PartLocation": {
                    "ServiceLabel": "Slot 1",
                    "LocationOrdinalValue": 1,
                    "LocationType": "Slot",
                    "Orientation": "LeftToRight",
                    "Reference": "Rear"
                }
            },
```

```
                    "Links": {
                        "PCIeDevice": [
                            {
                                "@odata.id": "/redfish/v1/Systems/1/PCIeDevices/NIC"
                            }
                        ]
                    }
                },
                {
                    "PCIeType": "Gen4",
                    "Lanes": 4,
                    "SlotType": "FullLength",
                    "Status": {
                        "State": "Absent"
                    },
                    "Location": {
                        "PartLocation": {
                            "ServiceLabel": "Slot 2",
                            "LocationOrdinalValue": 2,
                            "LocationType": "Slot",
                            "Orientation": "LeftToRight",
                            "Reference": "Rear"
                        }
                    }
                },
                {
                    "PCIeType": "Gen3",
                    "Lanes": 1,
                    "SlotType": "HalfLength",
                    "Status": {
                        "State": "Absent"
                    },
                    "Location": {
                        "PartLocation": {
                            "ServiceLabel": "Slot 3",
                            "LocationOrdinalValue": 3,
                            "LocationType": "Slot",
                            "Orientation": "LeftToRight",
                            "Reference": "Rear"
                        }
                    }
                }
            ],
            "Oem": {},
            "@odata.id": "/redfish/v1/Chassis/1/PCIeSlots"
        }
```

6.79 Port 1.6.0

Version	v1.6	v1.5	v1.4	v1.3	v1.2	v1.1	v1.0
Release	2021.4	2021.2	2021.1	2020.3	2019.4	2017.3	2016.2

6.79.1 Description

The Port schema contains properties that describe a port of a switch, controller, chassis, or any other device that could be connected to another entity.

6.79.2 URIs

/redfish/v1/Chassis/*{ChassisId}*/MediaControllers/*{MediaControllerId}*/Ports/*{PortId}*
/redfish/v1/Chassis/*{ChassisId}*/NetworkAdapters/*{NetworkAdapterId}*/Ports/*{PortId}*
/redfish/v1/CompositionService/ResourceBlocks/*{ResourceBlockId}*/Storage/*{StorageId}*/Controllers/
{StorageControllerId}/Ports/*{PortId}*
/redfish/v1/CompositionService/ResourceBlocks/*{ResourceBlockId}*/Storage/*{StorageId}*/StorageControllers/
{StorageControllerId}/Ports/*{PortId}*
/redfish/v1/CompositionService/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/Storage/
{StorageId}/Controllers/*{StorageControllerId}*/Ports/*{PortId}*
/redfish/v1/CompositionService/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/Storage/
{StorageId}/StorageControllers/*{StorageControllerId}*/Ports/*{PortId}*
/redfish/v1/Fabrics/*{FabricId}*/Switches/*{SwitchId}*/Ports/*{PortId}*
/redfish/v1/Managers/*{ManagerId}*/USBPorts/*{PortId}*
/redfish/v1/ResourceBlocks/*{ResourceBlockId}*/Storage/*{StorageId}*/Controllers/*{StorageControllerId}*/Ports/*{PortId}*
/redfish/v1/ResourceBlocks/*{ResourceBlockId}*/Storage/*{StorageId}*/StorageControllers/*{StorageControllerId}*/Ports/
{PortId}
/redfish/v1/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/Storage/*{StorageId}*/Controllers/
{StorageControllerId}/Ports/*{PortId}*
/redfish/v1/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/Storage/*{StorageId}*/
StorageControllers/*{StorageControllerId}*/Ports/*{PortId}*
/redfish/v1/Storage/*{StorageId}*/Controllers/*{StorageControllerId}*/Ports/*{PortId}*
/redfish/v1/Storage/*{StorageId}*/StorageControllers/*{StorageControllerId}*/Ports/*{PortId}*
/redfish/v1/Systems/*{ComputerSystemId}*/FabricAdapters/*{FabricAdapterId}*/Ports/*{PortId}*
/redfish/v1/Systems/*{ComputerSystemId}*/GraphicsControllers/*{ControllerId}*/Ports/*{PortId}*
/redfish/v1/Systems/*{ComputerSystemId}*/Processors/*{ProcessorId}*/Ports/*{PortId}*
/redfish/v1/Systems/*{ComputerSystemId}*/Storage/*{StorageId}*/Controllers/*{StorageControllerId}*/Ports/*{PortId}*
/redfish/v1/Systems/*{ComputerSystemId}*/Storage/*{StorageId}*/StorageControllers/*{StorageControllerId}*/Ports/*{PortId}*
/redfish/v1/Systems/*{ComputerSystemId}*/USBControllers/*{ControllerId}*/Ports/*{PortId}*

6.79.3 Properties

Property	Type	Attributes	Notes
ActiveWidth *(v1.2+)*	integer	*read-only*	The number of active lanes for this interface.
CapableProtocolVersions *(v1.4+)* [ ]	array (string, null)	*read-only*	The protocol versions capable of being sent over this port.
CurrentProtocolVersion *(v1.4+)*	string	*read-only (null)*	The protocol version being sent over this port.
CurrentSpeedGbps	number (Gbit/s)	*read-only (null)*	The current speed of this port.
Enabled *(v1.4+)*	boolean	*read-write*	An indication of whether this port is enabled.
EnvironmentMetrics *(v1.4+)* {	object		The link to the environment metrics for this port or any attached small form-factor pluggable (SFP) device. See the *EnvironmentMetrics* schema for details on this property.
@odata.id	string	*read-only*	Link to a EnvironmentMetrics resource. See the Links section and the *EnvironmentMetrics* schema for details.
}			
Ethernet *(v1.3+)* {	object	*(null)*	Ethernet properties for this port.
AssociatedMACAddresses *(v1.4+)* [ ]	array (string, null)	*read-only*	An array of configured MAC addresses that are associated with this network port, including the programmed address of the lowest numbered network device function, the configured but not active address, if applicable, the address for hardware port teaming, or other network addresses.
EEEEnabled *(v1.5+)*	boolean	*read-write (null)*	Indicates whether IEEE 802.3az Energy-Efficient Ethernet (EEE) is enabled on this port.
FlowControlConfiguration *(v1.3+)*	string (enum)	*read-write (null)*	The locally configured 802.3x flow control setting for this port. *For the possible property values, see FlowControlConfiguration in Property details.*
FlowControlStatus *(v1.3+)*	string (enum)	*read-only (null)*	The 802.3x flow control behavior negotiated with the link partner for this port. *For the possible property values, see FlowControlStatus in Property details.*
LLDPEnabled *(v1.4+)*	boolean	*read-write*	Enable/disable LLDP for this port.
LLDPReceive *(v1.4+)* {	object	*(null)*	LLDP data being received on this link.

Property	Type	Attributes	Notes
ChassisId *(v1.4+)*	string	*read-only (null)*	Link Layer Data Protocol (LLDP) chassis ID received from the remote partner across this link.
ChassisIdSubtype *(v1.4+)*	string (enum)	*read-only (null)*	The type of identifier used for the chassis ID received from the remote partner across this link. *For the possible property values, see ChassisIdSubtype in Property details.*
ManagementAddressIPv4 *(v1.4+)*	string	*read-only (null)*	The IPv4 management address received from the remote partner across this link.
ManagementAddressIPv6 *(v1.4+)*	string	*read-only (null)*	The IPv6 management address received from the remote partner across this link.
ManagementAddressMAC *(v1.4+)*	string	*read-only (null)*	The management MAC address received from the remote partner across this link.
ManagementVlanId *(v1.4+)*	integer	*read-only (null)*	The management VLAN ID received from the remote partner across this link.
PortId *(v1.4+)*	string	*read-only (null)*	A colon delimited string of hexadecimal octets identifying a port.
PortIdSubtype *(v1.4+)*	string (enum)	*read-only (null)*	The port ID subtype received from the remote partner across this link. *For the possible property values, see PortIdSubtype in Property details.*
}			
LLDPTransmit *(v1.4+)* {	object	*(null)*	LLDP data being transmitted on this link.
ChassisId *(v1.4+)*	string	*read-write (null)*	Link Layer Data Protocol (LLDP) chassis ID.
ChassisIdSubtype *(v1.4+)*	string (enum)	*read-write (null)*	The type of identifier used for the chassis ID. *For the possible property values, see ChassisIdSubtype in Property details.*
ManagementAddressIPv4 *(v1.4+)*	string	*read-write (null)*	The IPv4 management address to be transmitted from this endpoint.
ManagementAddressIPv6 *(v1.4+)*	string	*read-write (null)*	The IPv6 management address to be transmitted from this endpoint.
ManagementAddressMAC *(v1.4+)*	string	*read-write (null)*	The management MAC address to be transmitted from this endpoint.
ManagementVlanId *(v1.4+)*	integer	*read-write (null)*	The management VLAN ID to be transmitted from this endpoint.
PortId *(v1.4+)*	string	*read-write (null)*	A colon delimited string of hexadecimal octets identifying a port to be transmitted from this endpoint.

Property	Type	Attributes	Notes
PortIdSubtype *(v1.4+)*	string (enum)	*read-write (null)*	The port ID subtype to be transmitted from this endpoint. *For the possible property values, see PortIdSubtype in Property details.*
}			
SupportedEthernetCapabilities *(v1.3+, deprecated v1.5* [ ]	array (string (enum))	*read-only (null)*	The set of Ethernet capabilities that this port supports. *For the possible property values, see SupportedEthernetCapabilities in Property details. Deprecated in v1.5 and later. This property has been deprecated in favor of individual fields for the various properties.*
WakeOnLANEnabled *(v1.5+)*	boolean	*read-write (null)*	Indicates whether Wake on LAN (WoL) is enabled on this port.
}			
FibreChannel *(v1.3+)* {	object	*(null)*	Fibre Channel properties for this port.
AssociatedWorldWideNames *(v1.4+)* [ ]	array (string, null)	*read-only*	An array of configured World Wide Names (WWN) that are associated with this network port, including the programmed address of the lowest numbered network device function, the configured but not active address, if applicable, the address for hardware port teaming, or other network addresses.
FabricName *(v1.3+)*	string	*read-only (null)*	The Fibre Channel Fabric Name provided by the switch.
NumberDiscoveredRemotePorts *(v1.3+)*	integer	*read-only (null)*	The number of ports not on the associated device that the associated device has discovered through this port.
PortConnectionType *(v1.3+)*	string (enum)	*read-only (null)*	The connection type of this port. *For the possible property values, see PortConnectionType in Property details.*
}			
FunctionMaxBandwidth *(v1.4+)* [{	array		An array of maximum bandwidth allocation percentages for the functions associated with this port.
AllocationPercent *(v1.4+)*	integer (%)	*read-write (null)*	The maximum bandwidth allocation percentage allocated to the corresponding network device function instance.
NetworkDeviceFunction *(v1.4+)* {	object		The link to the network device function associated with this bandwidth setting of this network port. See the *NetworkDeviceFunction* schema for details on this property.
@odata.id	string	*read-only*	Link to a NetworkDeviceFunction resource. See the Links section and the *NetworkDeviceFunction* schema for details.
}			
}]			

Property	Type	Attributes	Notes
FunctionMinBandwidth *(v1.4+)* [{	array		An array of minimum bandwidth allocation percentages for the functions associated with this port.
AllocationPercent *(v1.4+)*	integer (%)	*read-write (null)*	The minimum bandwidth allocation percentage allocated to the corresponding network device function instance.
NetworkDeviceFunction *(v1.4+)* {	object		The link to the network device function associated with this bandwidth setting of this network port. See the *NetworkDeviceFunction* schema for details on this property.
@odata.id	string	*read-only*	Link to a NetworkDeviceFunction resource. See the Links section and the *NetworkDeviceFunction* schema for details.
}			
}]			
GenZ *(v1.2+)* {	object		Gen-Z specific properties.
LPRT *(v1.2+)* {	object		The Linear Packet Relay Table for the port. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *RouteEntry*. See the RouteEntry schema for details.
}			
MPRT *(v1.2+)* {	object		the Multi-subnet Packet Relay Table for the port. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *RouteEntry*. See the RouteEntry schema for details.
}			
VCAT *(v1.2+)* {	object		the Virtual Channel Action Table for the port. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *VCATEntry*. See the VCATEntry schema for details.
}			
}			
InfiniBand *(v1.6+)* {	object	*(null)*	InfiniBand properties for this port.
AssociatedNodeGUIDs *(v1.6+)* [ ]	array (string, null)	*read-only*	An array of configured node GUIDs that are associated with this network port, including the programmed address of the lowest numbered network device function, the configured but not active address, if applicable, the address for hardware port teaming, or other network addresses.

Property	Type	Attributes	Notes
AssociatedPortGUIDs *(v1.6+)* [ ]	array (string, null)	*read-only*	An array of configured port GUIDs that are associated with this network port, including the programmed address of the lowest numbered network device function, the configured but not active address, if applicable, the address for hardware port teaming, or other network addresses.
AssociatedSystemGUIDs *(v1.6+)* [ ]	array (string, null)	*read-only*	An array of configured system GUIDs that are associated with this network port, including the programmed address of the lowest numbered network device function, the configured but not active address, if applicable, the address for hardware port teaming, or other network addresses.
}			
InterfaceEnabled *(v1.2+)*	boolean	*read-write (null)*	An indication of whether the interface is enabled.
LinkConfiguration *(v1.3+)* [{	array		The link configuration of this port.
AutoSpeedNegotiationCapable *(v1.3+)*	boolean	*read-only (null)*	An indication of whether the port is capable of autonegotiating speed.
AutoSpeedNegotiationEnabled *(v1.3+)*	boolean	*read-write (null)*	Controls whether this port is configured to enable autonegotiating speed.
CapableLinkSpeedGbps *(v1.3+)* [ ]	array (Gbit/s) (number, null)	*read-only*	The set of link speed capabilities of this port.
ConfiguredNetworkLinks *(v1.3+)* [{	array		The set of link speed and width pairs this port is configured to use for autonegotiation.
ConfiguredLinkSpeedGbps *(v1.3+)*	number (Gbit/s)	*read-write (null)*	The link speed per lane this port is configured to use for autonegotiation.
ConfiguredWidth *(v1.3+)*	integer	*read-write (null)*	The link width this port is configured to use for autonegotiation in conjunction with the link speed.
}]			
}]			
LinkNetworkTechnology *(v1.2+)*	string (enum)	*read-only (null)*	The link network technology capabilities of this port. *For the possible property values, see LinkNetworkTechnology in Property details.*
Links {	object		The links to other resources that are related to this resource.
AssociatedEndpoints [{	array		An array of links to the endpoints that connect through this port.
@odata.id	string	*read-only*	Link to a Endpoint resource. See the Links section and the *Endpoint* schema for details.

Property	Type	Attributes	Notes
}]			
Cables *(v1.5+)* [{	array		An array of links to the cables connected to this port.
@odata.id	string	*read-only*	Link to a Cable resource. See the Links section and the *Cable* schema for details.
}]			
ConnectedPorts *(v1.2+)* [{	array		An array of links to the remote ports connected to this port.
@odata.id	string	*read-only*	Link to another Port resource.
}]			
ConnectedSwitches [{	array		An array of links to the switches that connect to the device through this port.
@odata.id	string	*read-only*	Link to a Switch resource. See the Links section and the *Switch* schema for details.
}]			
ConnectedSwitchPorts [{	array		An array of links to the ports that connect to the switch through this port.
@odata.id	string	*read-only*	Link to another Port resource.
}]			
Oem {}	object		See the Oem object definition in the Common properties section.
}			
LinkState *(v1.2+)*	string (enum)	*read-write*	The desired link state for this interface. *For the possible property values, see LinkState in Property details.*
LinkStatus *(v1.2+)*	string (enum)	*read-only*	The link status for this interface. *For the possible property values, see LinkStatus in Property details.*
LinkTransitionIndicator *(v1.2+)*	integer	*read-write*	The number of link state transitions for this interface.
Location *(v1.1+)* {}	object		The location of the port. For property details, see Location.
LocationIndicatorActive *(v1.3+)*	boolean	*read-write (null)*	An indicator allowing an operator to physically locate this resource.
MaxFrameSize *(v1.3+)*	integer (bytes)	*read-only (null)*	The maximum frame size supported by the port.
MaxSpeedGbps	number (Gbit/s)	*read-only (null)*	The maximum speed of this port as currently configured.

Property	Type	Attributes	Notes
Metrics *(v1.2+)* {	object	*(null)*	The link to the metrics associated with this port. See the *PortMetrics* schema for details on this property.
@odata.id	string	*read-only*	Link to a PortMetrics resource. See the Links section and the *PortMetrics* schema for details.
}			
PortId	string	*read-only (null)*	The label of this port on the physical package for this port.
PortMedium *(v1.2+)*	string (enum)	*read-only (null)*	The physical connection medium for this port. *For the possible property values, see PortMedium in Property details.*
PortProtocol	string (enum)	*read-only (null)*	The protocol being sent over this port. *For the possible property values, see PortProtocol in Property details.*
PortType	string (enum)	*read-only (null)*	The type of this port. *For the possible property values, see PortType in Property details.*
SFP *(v1.4+)* {	object	*(null)*	The small form-factor pluggable (SFP) device associated with this port.
FiberConnectionType *(v1.4+)*	string (enum)	*read-only (null)*	The type of fiber connection currently used by this SFP. *For the possible property values, see FiberConnectionType in Property details.*
Manufacturer *(v1.4+)*	string	*read-only (null)*	The manufacturer of this SFP.
MediumType *(v1.4+)*	string (enum)	*read-only (null)*	The medium type connected to this SFP. *For the possible property values, see MediumType in Property details.*
PartNumber *(v1.4+)*	string	*read-only (null)*	The part number for this SFP.
SerialNumber *(v1.4+)*	string	*read-only (null)*	The serial number for this SFP.
Status *(v1.4+)* {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
SupportedSFPTypes *(v1.4+)* [ ]	array (string (enum))	*read-only (null)*	The types of SFP devices that can be attached to this port. *For the possible property values, see SupportedSFPTypes in Property details.*
Type *(v1.4+)*	string (enum)	*read-only (null)*	The type of SFP device that is attached to this port. *For the possible property values, see Type in Property details.*
}			

Property	Type	Attributes	Notes
SignalDetected *(v1.2+)*	boolean	*read-only (null)*	An indication of whether a signal is detected on this interface.
Status {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
Width	integer	*read-only (null)*	The number of lanes, phys, or other physical transport links that this port contains.

6.79.4 Actions

6.79.4.1 Reset

Description

This action resets this port.

Action URI: {Base URI of target resource}/Actions/Port.Reset

Action parameters

Parameter Name	Type	Attributes	Notes
ResetType	string (enum)	*optional*	The type of reset. *For the possible property values, see ResetType in Property details.*

Request Example

```
{
    "ResetType": "ForceRestart"
}
```

6.79.5 Property details

6.79.5.1 ChassisIdSubtype:

The type of identifier used for the chassis ID received from the remote partner across this link.

string	Description
AgentId	Agent circuit ID, based on the agent-local identifier of the circuit as defined in RFC3046.
ChassisComp	Chassis component, based in the value of entPhysicalAlias in RFC4133.
IfAlias	Interface alias, based on the ifAlias MIB object.
IfName	Interface name, based on the ifName MIB object.
LocalAssign	Locally assigned, based on a alpha-numeric value locally assigned.
MacAddr	MAC address, based on an agent detected unicast source address as defined in IEEE Std. 802.
NetworkAddr	Network address, based on an agent detected network address.
NotTransmitted	No data to be sent to/received from remote partner.
PortComp	Port component, based in the value of entPhysicalAlias in RFC4133.

6.79.5.2 FiberConnectionType:

The type of fiber connection currently used by this SFP.

string	Description
MultiMode	The connection is using multi mode operation.
SingleMode	The connection is using single mode operation.

6.79.5.3 FlowControlConfiguration:

The locally configured 802.3x flow control setting for this port.

string	Description
None	No IEEE 802.3x flow control is enabled on this port.
RX	IEEE 802.3x flow control may be initiated by the link partner.
TX	IEEE 802.3x flow control may be initiated by this station.
TX_RX	IEEE 802.3x flow control may be initiated by this station or the link partner.

6.79.5.4 FlowControlStatus:

The 802.3x flow control behavior negotiated with the link partner for this port.

string	Description
None	No IEEE 802.3x flow control is enabled on this port.
RX	IEEE 802.3x flow control may be initiated by the link partner.
TX	IEEE 802.3x flow control may be initiated by this station.
TX_RX	IEEE 802.3x flow control may be initiated by this station or the link partner.

6.79.5.5 LinkNetworkTechnology:

The link network technology capabilities of this port.

string	Description
Ethernet	The port is capable of connecting to an Ethernet network.
FibreChannel	The port is capable of connecting to a Fibre Channel network.
GenZ	The port is capable of connecting to a Gen-Z fabric.
InfiniBand	The port is capable of connecting to an InfiniBand network.

6.79.5.6 LinkState:

The desired link state for this interface.

string	Description
Disabled	This link is disabled.
Enabled	This link is enabled.

6.79.5.7 LinkStatus:

The link status for this interface.

string	Description
LinkDown	The link on this interface is down.
LinkUp	This link on this interface is up.
NoLink	No physical link detected on this interface.
Starting	This link on this interface is starting. A physical link has been established, but the port is not able to transfer data.
Training	This physical link on this interface is training.

6.79.5.8 MediumType:

The medium type connected to this SFP.

string	Description
Copper	The medium connected is copper.
FiberOptic	The medium connected is fiber optic.

6.79.5.9 PortConnectionType:

The connection type of this port.

string	Description
DPort *(v1.5+)*	This port connection type is a diagnostic port.
EPort *(v1.5+)*	This port connection type is an extender fabric port.
EXPort *(v1.5+)*	This port connection type is an external fabric port.
ExtenderFabric	This port connection type is an extender fabric port.
FLPort *(v1.5+)*	This port connects in a fabric loop configuration.
FPort *(v1.5+)*	This port connection type is a fabric port.
Generic	This port connection type is a generic fabric port.
GPort *(v1.5+)*	This port connection type is a generic fabric port.
NLPort *(v1.5+)*	This port connects in a node loop configuration.

string	Description
NotConnected	This port is not connected.
NPort	This port connects through an N-Port to a switch.
NPPort *(v1.5+)*	This port connection type is a proxy N port for N-Port virtualization.
PointToPoint	This port connects in a Point-to-point configuration.
PrivateLoop	This port connects in a private loop configuration.
PublicLoop	This port connects in a public configuration.
TEPort *(v1.5+)*	This port connection type is an trunking extender fabric port.
UPort *(v1.5+)*	This port connection type is unassigned.

6.79.5.10 PortIdSubtype:

The port ID subtype received from the remote partner across this link.

string	Description
AgentId	Agent circuit ID, based on the agent-local identifier of the circuit as defined in RFC3046.
ChassisComp	Chassis component, based in the value of entPhysicalAlias in RFC4133.
IfAlias	Interface alias, based on the ifAlias MIB object.
IfName	Interface name, based on the ifName MIB object.
LocalAssign	Locally assigned, based on a alpha-numeric value locally assigned.
MacAddr	MAC address, based on an agent detected unicast source address as defined in IEEE Std. 802.
NetworkAddr	Network address, based on an agent detected network address.
NotTransmitted	No data to be sent to/received from remote partner.
PortComp	Port component, based in the value of entPhysicalAlias in RFC4133.

6.79.5.11 PortMedium:

The physical connection medium for this port.

string	Description
Electrical	This port has an electrical cable connection.
Optical	This port has an optical cable connection.

6.79.5.12 PortProtocol:

The protocol being sent over this port.

string	Description
AHCI	Advanced Host Controller Interface (AHCI).
DisplayPort	DisplayPort.
DVI	DVI.
Ethernet	Ethernet.
FC	Fibre Channel.
FCoE	Fibre Channel over Ethernet (FCoE).
FCP	Fibre Channel Protocol for SCSI.
FICON	FIbre CONnection (FICON).
FTP	File Transfer Protocol (FTP).
GenZ	GenZ.
HDMI	HDMI.
HTTP	Hypertext Transport Protocol (HTTP).
HTTPS	Hypertext Transfer Protocol Secure (HTTPS).
I2C	Inter-Integrated Circuit Bus.
InfiniBand	InfiniBand.
iSCSI	Internet SCSI.
iWARP	Internet Wide Area RDMA Protocol (iWARP).
MultiProtocol	Multiple Protocols.
NFSv3	Network File System (NFS) version 3.
NFSv4	Network File System (NFS) version 4.

string	Description
NVLink	NVLink.
NVMe	Non-Volatile Memory Express (NVMe).
NVMeOverFabrics	NVMe over Fabrics.
OEM	OEM-specific.
PCIe	PCI Express.
RoCE	RDMA over Converged Ethernet Protocol.
RoCEv2	RDMA over Converged Ethernet Protocol Version 2.
SAS	Serial Attached SCSI.
SATA	Serial AT Attachment.
SFTP	SSH File Transfer Protocol (SFTP).
SMB	Server Message Block (SMB). Also known as the Common Internet File System (CIFS).
TCP	Transmission Control Protocol (TCP).
TFTP	Trivial File Transfer Protocol (TFTP).
UDP	User Datagram Protocol (UDP).
UHCI	Universal Host Controller Interface (UHCI).
USB	Universal Serial Bus (USB).
VGA	VGA.

6.79.5.13 PortType:

The type of this port.

string	Description
BidirectionalPort	This port connects to any type of device.
DownstreamPort	This port connects to a target device.
InterswitchPort	This port connects to another switch.
ManagementPort	This port connects to a switch manager.
UnconfiguredPort	This port has not yet been configured.

string	Description
UpstreamPort	This port connects to a host device.

6.79.5.14 ResetType:

The type of reset.

string	Description
ForceOff	Turn off the unit immediately (non-graceful shutdown).
ForceOn	Turn on the unit immediately.
ForceRestart	Shut down immediately and non-gracefully and restart the system.
GracefulRestart	Shut down gracefully and restart the system.
GracefulShutdown	Shut down gracefully and power off.
Nmi	Generate a diagnostic interrupt, which is usually an NMI on x86 systems, to stop normal operations, complete diagnostic actions, and, typically, halt the system.
On	Turn on the unit.
Pause	Pause execution on the unit but do not remove power. This is typically a feature of virtual machine hypervisors.
PowerCycle	Power cycle the unit. Behaves like a full power removal, followed by a power restore to the resource.
PushPowerButton	Simulate the pressing of the physical power button on this unit.
Resume	Resume execution on the paused unit. This is typically a feature of virtual machine hypervisors.
Suspend	Write the state of the unit to disk before powering off. This allows for the state to be restored when powered back on.

6.79.5.15 SupportedEthernetCapabilities:

The set of Ethernet capabilities that this port supports.

string	Description
EEE	IEEE 802.3az Energy-Efficient Ethernet (EEE) is supported on this port.
WakeOnLAN	Wake on LAN (WoL) is supported on this port.

6.79.5.16 SupportedSFPTypes:

The types of SFP devices that can be attached to this port.

string	Description
cSFP	The SFP conforms to the CSFP MSA Specification.
MiniSASHD	The SFP conforms to the SFF Specification SFF-8644.
QSFP	The SFP conforms to the SFF Specification for QSFP.
QSFP14	The SFP conforms to the SFF Specification for QSFP14.
QSFP28	The SFP conforms to the SFF Specification for QSFP28.
QSFP56	The SFP conforms to the SFF Specification for QSFP56.
QSFPPlus	The SFP conforms to the SFF Specification for QSFP+.
SFP	The SFP conforms to the SFF Specification for SFP.
SFP28	The SFP conforms to the SFF Specification for SFP+ and IEEE 802.3by Specification.
SFPDD	The SFP conforms to the SFP-DD MSA Specification.
SFPPlus	The SFP conforms to the SFF Specification for SFP+.

6.79.5.17 Type:

The type of SFP device that is attached to this port.

string	Description
cSFP	The SFP conforms to the CSFP MSA Specification.
MiniSASHD	The SFP conforms to the SFF Specification SFF-8644.
QSFP	The SFP conforms to the SFF Specification for QSFP.
QSFP14	The SFP conforms to the SFF Specification for QSFP14.
QSFP28	The SFP conforms to the SFF Specification for QSFP28.
QSFP56	The SFP conforms to the SFF Specification for QSFP56.
QSFPPlus	The SFP conforms to the SFF Specification for QSFP+.

string	Description
SFP	The SFP conforms to the SFF Specification for SFP.
SFP28	The SFP conforms to the SFF Specification for SFP+ and IEEE 802.3by Specification.
SFPDD	The SFP conforms to the SFP-DD MSA Specification.
SFPPlus	The SFP conforms to the SFF Specification for SFP+.

6.79.6 Example response

```json
{
    "@odata.type": "#Port.v1_6_0.Port",
    "Id": "1",
    "Name": "SAS Port 1",
    "Description": "SAS Port 1",
    "Status": {
        "State": "Enabled",
        "Health": "OK"
    },
    "PortId": "1",
    "PortProtocol": "SAS",
    "PortType": "BidirectionalPort",
    "CurrentSpeedGbps": 48,
    "Width": 4,
    "MaxSpeedGbps": 48,
    "Actions": {
        "Oem": {}
    },
    "Links": {
        "AssociatedEndpoints": [
            {
                "@odata.id": "/redfish/v1/Fabrics/SAS/Endpoints/Initiator1"
            }
        ]
    },
    "Oem": {},
    "@odata.id": "/redfish/v1/Fabrics/SAS/Switches/Switch1/Ports/1"
}
```

6.80 PortMetrics 1.2.0

Version	v1.2	v1.1	v1.0

Release	2021.2	2021.1	2019.4

6.80.1 Description

The PortMetrics schema contains usage and health statistics for a switch device or component port summary.

6.80.2 URIs

/redfish/v1/Chassis/{*ChassisId*}/MediaControllers/{*MediaControllerId*}/Ports/{*PortId*}/Metrics
/redfish/v1/Chassis/{*ChassisId*}/NetworkAdapters/{*NetworkAdapterId*}/Ports/{*PortId*}/Metrics
/redfish/v1/CompositionService/ResourceBlocks/{*ResourceBlockId*}/Storage/{*StorageId*}/Controllers/
{*StorageControllerId*}/Ports/{*PortId*}/Metrics
/redfish/v1/CompositionService/ResourceBlocks/{*ResourceBlockId*}/Storage/{*StorageId*}/StorageControllers/
{*StorageControllerId*}/Ports/{*PortId*}/Metrics
/redfish/v1/CompositionService/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/Storage/
{*StorageId*}/Controllers/{*StorageControllerId*}/Ports/{*PortId*}/Metrics
/redfish/v1/CompositionService/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/Storage/
{*StorageId*}/StorageControllers/{*StorageControllerId*}/Ports/{*PortId*}/Metrics
/redfish/v1/Fabrics/{*FabricId*}/Switches/{*SwitchId*}/Ports/{*PortId*}/Metrics
/redfish/v1/Managers/{*ManagerId*}/USBPorts/{*PortId*}/Metrics
/redfish/v1/ResourceBlocks/{*ResourceBlockId*}/Storage/{*StorageId*}/Controllers/{*StorageControllerId*}/Ports/{*PortId*}/
Metrics
/redfish/v1/ResourceBlocks/{*ResourceBlockId*}/Storage/{*StorageId*}/StorageControllers/{*StorageControllerId*}/Ports/
{*PortId*}/Metrics
/redfish/v1/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/Storage/{*StorageId*}/Controllers/
{*StorageControllerId*}/Ports/{*PortId*}/Metrics
/redfish/v1/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/Storage/{*StorageId*}/
StorageControllers/{*StorageControllerId*}/Ports/{*PortId*}/Metrics
/redfish/v1/Storage/{*StorageId*}/Controllers/{*StorageControllerId*}/Ports/{*PortId*}/Metrics
/redfish/v1/Storage/{*StorageId*}/StorageControllers/{*StorageControllerId*}/Ports/{*PortId*}/Metrics
/redfish/v1/Systems/{*ComputerSystemId*}/FabricAdapters/{*FabricAdapterId*}/Ports/{*PortId*}/Metrics
/redfish/v1/Systems/{*ComputerSystemId*}/GraphicsControllers/{*ControllerId*}/Ports/{*PortId*}/Metrics
/redfish/v1/Systems/{*ComputerSystemId*}/Processors/{*ProcessorId*}/Ports/{*PortId*}/Metrics
/redfish/v1/Systems/{*ComputerSystemId*}/Storage/{*StorageId*}/Controllers/{*StorageControllerId*}/Ports/{*PortId*}/Metrics
/redfish/v1/Systems/{*ComputerSystemId*}/Storage/{*StorageId*}/StorageControllers/{*StorageControllerId*}/Ports/
{*PortId*}/Metrics
/redfish/v1/Systems/{*ComputerSystemId*}/USBControllers/{*ControllerId*}/Ports/{*PortId*}/Metrics

6.80.3 Properties

Property	Type	Attributes	Notes
FibreChannel *(v1.2+)* {	object		The Fibre Channel-specific port metrics for network ports.
CorrectableFECErrors *(v1.2+)*	integer	*read-only (null)*	The total number of correctable forward error correction (FEC) errors.
InvalidCRCs *(v1.2+)*	integer	*read-only (null)*	The total number of invalid cyclic redundancy checks (CRCs).
InvalidTXWords *(v1.2+)*	integer	*read-only (null)*	The total number of invalid transmission words.
LinkFailures *(v1.2+)*	integer	*read-only (null)*	The total number of link failures.
LossesOfSignal *(v1.2+)*	integer	*read-only (null)*	The total number of losses of signal.
LossesOfSync *(v1.2+)*	integer	*read-only (null)*	The total number of losses of sync.
RXBBCreditZero *(v1.2+)*	integer	*read-only (null)*	The number of times the receive buffer-to-buffer credit count transitioned to zero.
RXExchanges *(v1.2+)*	integer	*read-only (null)*	The total number of Fibre Channel exchanges received.
RXSequences *(v1.2+)*	integer	*read-only (null)*	The total number of Fibre Channel sequences received.
TXBBCredits *(v1.2+)*	integer	*read-only (null)*	The number of transmit buffer-to-buffer credits the port is configured to use.
TXBBCreditZero *(v1.2+)*	integer	*read-only (null)*	The number of times the transmit buffer-to-buffer credit count transitioned to zero.
TXBBCreditZeroDurationMilliseconds *(v1.2+)*	integer (ms)	*read-only (null)*	The total amount of time the port has been blocked from transmitting due to lack of buffer credits.
TXExchanges *(v1.2+)*	integer	*read-only (null)*	The total number of Fibre Channel exchanges transmitted.
TXSequences *(v1.2+)*	integer	*read-only (null)*	The total number of Fibre Channel sequences transmitted.
UncorrectableFECErrors *(v1.2+)*	integer	*read-only (null)*	The total number of uncorrectable forward error correction (FEC) errors.

Property	Type	Attributes	Notes
}			
GenZ {	object		The port metrics specific to Gen-Z ports.
AccessKeyViolations	integer	*read-only (null)*	The total number of Access Key Violations detected.
EndToEndCRCErrors	integer	*read-only (null)*	The total number of ECRC transient errors detected.
LinkNTE	integer	*read-only (null)*	The total number of link-local non-transient errors detected.
LLRRecovery	integer	*read-only (null)*	The total number of times Link-Level Reliability (LLR) recovery has been initiated.
MarkedECN	integer	*read-only (null)*	The number of packets with the Congestion ECN bit set.
NonCRCTransientErrors	integer	*read-only (null)*	The total number transient errors detected that are unrelated to CRC validation.
PacketCRCErrors	integer	*read-only (null)*	The total number of PCRC transient errors detected.
PacketDeadlineDiscards	integer	*read-only (null)*	The number of packets discarded due to the Congestion Deadline sub-field reaching zero.
ReceivedECN	integer	*read-only (null)*	The number of packets received on this interface with the Congestion ECN bit set.
RXStompedECRC	integer	*read-only (null)*	The total number of packets received with a stomped ECRC field.
TXStompedECRC	integer	*read-only (null)*	The total number of packets that this interface stomped the ECRC field.
}			
Networking *(v1.1+)* {	object		The port metrics for network ports, including Ethernet, Fibre Channel, and InfiniBand, that are not specific to one of these protocols.
RDMAProtectionErrors *(v1.1+)*	integer	*read-only (null)*	The total number of RDMA protection errors.
RDMAProtocolErrors *(v1.1+)*	integer	*read-only (null)*	The total number of RDMA protocol errors.
RDMARXBytes *(v1.1+)*	integer	*read-only (null)*	The total number of RDMA bytes received on a port since reset.

Property	Type	Attributes	Notes
RDMARXRequests *(v1.1+)*	integer	*read-only (null)*	The total number of RDMA requests received on a port since reset.
RDMATXBytes *(v1.1+)*	integer	*read-only (null)*	The total number of RDMA bytes transmitted on a port since reset.
RDMATXReadRequests *(v1.1+)*	integer	*read-only (null)*	The total number of RDMA read requests transmitted on a port since reset.
RDMATXRequests *(v1.1+)*	integer	*read-only (null)*	The total number of RDMA requests transmitted on a port since reset.
RDMATXSendRequests *(v1.1+)*	integer	*read-only (null)*	The total number of RDMA send requests transmitted on a port since reset.
RDMATXWriteRequests *(v1.1+)*	integer	*read-only (null)*	The total number of RDMA write requests transmitted on a port since reset.
RXBroadcastFrames *(v1.1+)*	integer	*read-only (null)*	The total number of valid broadcast frames received on a port since reset.
RXDiscards *(v1.1+)*	integer	*read-only (null)*	The total number of frames discarded in a port's receive path since reset.
RXFalseCarrierErrors *(v1.1+)*	integer	*read-only (null)*	The total number of false carrier errors received from phy on a port since reset.
RXFCSErrors *(v1.1+)*	integer	*read-only (null)*	The total number of frames received with frame check sequence (FCS) errors on a port since reset.
RXFrameAlignmentErrors *(v1.1+)*	integer	*read-only (null)*	The total number of frames received with alignment errors on a port since reset.
RXFrames *(v1.1+)*	integer	*read-only (null)*	The total number of frames received on a port since reset.
RXMulticastFrames *(v1.1+)*	integer	*read-only (null)*	The total number of valid multicast frames received on a port since reset.
RXOversizeFrames *(v1.1+)*	integer	*read-only (null)*	The total number of frames that exceed the maximum frame size.
RXPauseXOFFFrames *(v1.1+)*	integer	*read-only (null)*	The total number of flow control frames from the network to pause transmission.
RXPauseXONFrames *(v1.1+)*	integer	*read-only (null)*	The total number of flow control frames from the network to resume transmission.
RXPFCFrames *(v1.1+)*	integer	*read-only (null)*	The total number of priority flow control (PFC) frames received on a port since reset.

Property	Type	Attributes	Notes
RXUndersizeFrames *(v1.1+)*	integer	*read-only (null)*	The total number of frames that are smaller than the minimum frame size of 64 bytes.
RXUnicastFrames *(v1.1+)*	integer	*read-only (null)*	The total number of valid unicast frames received on a port since reset.
TXBroadcastFrames *(v1.1+)*	integer	*read-only (null)*	The total number of good broadcast frames transmitted on a port since reset.
TXDiscards *(v1.1+)*	integer	*read-only (null)*	The total number of frames discarded in a port's transmit path since reset.
TXExcessiveCollisions *(v1.1+)*	integer	*read-only (null)*	The number of times a single transmitted frame encountered more than 15 collisions.
TXFrames *(v1.1+)*	integer	*read-only (null)*	The total number of frames transmitted on a port since reset.
TXLateCollisions *(v1.1+)*	integer	*read-only (null)*	The total number of collisions that occurred after one slot time as defined by IEEE 802.3.
TXMulticastFrames *(v1.1+)*	integer	*read-only (null)*	The total number of good multicast frames transmitted on a port since reset.
TXMultipleCollisions *(v1.1+)*	integer	*read-only (null)*	The times that a transmitted frame encountered 2-15 collisions.
TXPauseXOFFFrames *(v1.1+)*	integer	*read-only (null)*	The total number of XOFF frames transmitted to the network.
TXPauseXONFrames *(v1.1+)*	integer	*read-only (null)*	The total number of XON frames transmitted to the network.
TXPFCFrames *(v1.1+)*	integer	*read-only (null)*	The total number of priority flow control (PFC) frames sent on a port since reset.
TXSingleCollisions *(v1.1+)*	integer	*read-only (null)*	The times that a successfully transmitted frame encountered a single collision.
TXUnicastFrames *(v1.1+)*	integer	*read-only (null)*	The total number of good unicast frames transmitted on a port since reset.
}			
RXBytes *(v1.1+)*	integer (bytes)	*read-only (null)*	The total number of bytes received on a port since reset.
RXErrors *(v1.1+)*	integer	*read-only (null)*	The total number of received errors on a port since reset.

Property	Type	Attributes	Notes
SAS *(v1.1+)* [{	array		The physical (phy) metrics for Serial Attached SCSI (SAS). Each member represents a single phy.
InvalidDwordCount *(v1.1+)*	integer	*read-only (null)*	The number of invalid dwords that have been received by the phy outside of phy reset sequences.
LossOfDwordSynchronizationCount *(v1.1+)*	integer	*read-only (null)*	The number of times the phy has restarted the link reset sequence because it lost dword synchronization.
RunningDisparityErrorCount *(v1.1+)*	integer	*read-only (null)*	The number of dwords containing running disparity errors that have been received by the phy outside of phy reset sequences.
}]			
Transceivers *(v1.1+)* [{	array		The metrics for the transceivers in this port. Each member represents a single transceiver.
RXInputPowerMilliWatts *(v1.1+)*	number (milliWatts)	*read-only (null)*	The RX input power value of a small form-factor pluggable (SFP) transceiver.
SupplyVoltage *(v1.1+)*	number (Volts)	*read-only (null)*	The supply voltage of a small form-factor pluggable (SFP) transceiver.
TXBiasCurrentMilliAmps *(v1.1+)*	number (mA)	*read-only (null)*	The TX bias current value of a small form-factor pluggable (SFP) transceiver.
TXOutputPowerMilliWatts *(v1.1+)*	number (milliWatts)	*read-only (null)*	The TX output power value of a small form-factor pluggable (SFP) transceiver.
}]			
TXBytes *(v1.1+)*	integer (bytes)	*read-only (null)*	The total number of bytes transmitted on a port since reset.
TXErrors *(v1.1+)*	integer	*read-only (null)*	The total number of transmission errors on a port since reset.

6.80.4 Example response

```
{
    "@odata.type": "#PortMetrics.v1_2_0.PortMetrics",
    "Id": "Metrics",
    "Name": "Gen-Z Port 1 Metrics",
    "GenZ": {
        "PacketCRCErrors": 24,
        "EndToEndCRCErrors": 3,
        "RXStompedECRC": 1,
```

```
        "TXStompedECRC": 2,
        "NonCRCTransientErrors": 2,
        "LLRRecovery": 1,
        "MarkedECN": 1,
        "PacketDeadlineDiscards": 1,
        "AccessKeyViolations": 1,
        "LinkNTE": 1,
        "ReceivedECN": 1
    },
    "Oem": {},
    "@odata.id": "/redfish/v1/Fabrics/GenZ/Switches/Switch1/Ports/1/Metrics"
}
```

6.81 Power 1.7.1 (deprecated)

Version	v1.7 Deprecated	v1.6	v1.5	v1.4	v1.3	v1.2	v1.1	v1.0
Release	2020.4	2019.3	2017.3	2017.2	2017.1	2016.2	2016.1	1.0

This schema has been deprecated and use in new implementations is discouraged except to retain compatibility with existing products. This schema has been deprecated in favor of the PowerSubsystem schema.

6.81.1 Description

The Power schema describes power metrics and represents the properties for power consumption and power limiting.

6.81.2 URIs

/redfish/v1/Chassis/*{ChassisId}*/Power

6.81.3 Properties

Property	Type	Attributes	Notes
PowerControl [{	array		The set of power control functions, including power reading and limiting.
@odata.id	string (URI)	*read-only required*	The unique identifier for a resource.
Actions *(v1.3+)* {}	object		The available actions for this resource.

Property	Type	Attributes	Notes
MemberId	string	*read-only required*	The identifier for the member within the collection.
Name	string	*read-only (null)*	The power control function name.
Oem {}	object		See the Oem object definition in the Common properties section.
PhysicalContext *(v1.4+)*	string (enum)	*read-only*	The area, device, or set of devices to which this power control applies. *For the possible property values, see PhysicalContext in Property details.*
PowerAllocatedWatts	number (Watts)	*read-only (null)*	The total amount of power that has been allocated or budgeted to chassis.
PowerAvailableWatts	number (Watts)	*read-only (null)*	The amount of reserve power capacity, in watts, that remains. This value is the PowerCapacityWatts value minus the PowerAllocatedWatts value.
PowerCapacityWatts	number (Watts)	*read-only (null)*	The total amount of power that can be allocated to the chassis. This value can be either the power supply capacity or the power budget that an upstream chassis assigns to this chassis.
PowerConsumedWatts	number (Watts)	*read-only (null)*	The actual power that the chassis consumes, in watts.
PowerLimit {	object		The power limit status and configuration information for this chassis.
CorrectionInMs	integer (ms)	*read-write (null)*	The time required for the limiting process to reduce power consumption to below the limit.
LimitException	string (enum)	*read-write (null)*	The action that is taken if the power cannot be maintained below the LimitInWatts. *For the possible property values, see LimitException in Property details.*
LimitInWatts	number (Watts)	*read-write (null)*	The power limit, in watts. If `null`, power capping is disabled.
}			
PowerMetrics {	object		The power readings for this chassis.
AverageConsumedWatts	number (Watts)	*read-only (null)*	The average power level over the measurement window over the last IntervalInMin minutes.
IntervalInMin	integer (min)	*read-only (null)*	The time interval, or window, over which the power metrics are measured.
MaxConsumedWatts	number (Watts)	*read-only (null)*	The highest power consumption level, in watts, that has occurred over the measurement window within the last IntervalInMin minutes.
MinConsumedWatts	number (Watts)	*read-only (null)*	The lowest power consumption level, in watts, over the measurement window that occurred within the last IntervalInMin minutes.

Property	Type	Attributes	Notes
}			
PowerRequestedWatts	number (Watts)	*read-only (null)*	The potential power, in watts, that the chassis requests, which might be higher than the current level being consumed because the requested power includes a budget that the chassis wants for future use.
RelatedItem [{	array		An array of links to resources or objects associated with this power limit.
@odata.id	string (URI)	*read-only*	The unique identifier for a resource.
}]			
Status {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
}]			
PowerSupplies [{	array		The set of power supplies associated with this system or device.
@odata.id	string (URI)	*read-only required*	The unique identifier for a resource.
Actions *(v1.3+)* {}	object		The available actions for this resource.
Assembly *(v1.5+)* {	object		The link to the assembly resource associated with this power supply. See the *Assembly* schema for details on this property.
@odata.id	string	*read-only*	Link to a Assembly resource. See the Links section and the *Assembly* schema for details.
}			
EfficiencyPercent *(v1.5+)*	number (%)	*read-only (null)*	The measured efficiency of this power supply as a percentage.
FirmwareVersion	string	*read-only (null)*	The firmware version for this power supply.
HotPluggable *(v1.5+)*	boolean	*read-only (null)*	An indication of whether this device can be inserted or removed while the equipment is in operation.
IndicatorLED *(v1.2+)*	string (enum)	*read-write (null)*	The state of The indicator LED, which identifies the power supply. *For the possible property values, see IndicatorLED in Property details.*
InputRanges *(v1.1+)* [{	array		The input ranges that the power supply can use.
InputType *(v1.1+)*	string (enum)	*read-only (null)*	The Input type (AC or DC). *For the possible property values, see InputType in Property details.*

Property	Type	Attributes	Notes
MaximumFrequencyHz *(v1.1+)*	number (Hz)	*read-only (null)*	The maximum line input frequency at which this power supply input range is effective.
MaximumVoltage *(v1.1+)*	number (Volts)	*read-only (null)*	The maximum line input voltage at which this power supply input range is effective.
MinimumFrequencyHz *(v1.1+)*	number (Hz)	*read-only (null)*	The minimum line input frequency at which this power supply input range is effective.
MinimumVoltage *(v1.1+)*	number (Volts)	*read-only (null)*	The minimum line input voltage at which this power supply input range is effective.
Oem *(v1.1+)* {}	object		See the Oem object definition in the Common properties section.
OutputWattage *(v1.1+)*	number (Watts)	*read-only (null)*	The maximum capacity of this power supply when operating in this input range.
}]			
LastPowerOutputWatts	number (Watts)	*read-only (null)*	The average power output of this power supply.
LineInputVoltage	number (Volts)	*read-only (null)*	The line input voltage at which the power supply is operating.
LineInputVoltageType	string (enum)	*read-only (null)*	The line voltage type supported as an input to this power supply. *For the possible property values, see LineInputVoltageType in Property details.*
Location *(v1.5+)* {}	object		The location of the power supply. For property details, see Location.
Manufacturer *(v1.1+)*	string	*read-only (null)*	The manufacturer of this power supply.
MemberId	string	*read-only required*	The identifier for the member within the collection.
Model	string	*read-only (null)*	The model number for this power supply.
Name	string	*read-only (null)*	The name of the power supply.
Oem {}	object		See the Oem object definition in the Common properties section.
PartNumber	string	*read-only (null)*	The part number for this power supply.
PowerCapacityWatts	number (Watts)	*read-only (null)*	The maximum capacity of this power supply.

Property	Type	Attributes	Notes
PowerInputWatts *(v1.5+)*	number (Watts)	*read-only (null)*	The measured input power of this power supply.
PowerOutputWatts *(v1.5+)*	number (Watts)	*read-only (null)*	The measured output power of this power supply.
PowerSupplyType	string (enum)	*read-only (null)*	The power supply type (AC or DC). *For the possible property values, see PowerSupplyType in Property details.*
Redundancy [{ }]	array (object)		The set of redundancy groups for this power supply. For property details, see Redundancy.
RelatedItem [{	array		An array of links to resources or objects associated with this power supply.
@odata.id	string (URI)	*read-only*	The unique identifier for a resource.
}]			
SerialNumber	string	*read-only (null)*	The serial number for this power supply.
SparePartNumber	string	*read-only (null)*	The spare part number for this power supply.
Status {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
}]			
Redundancy [{ }]	array (object)		The redundancy information for the set of power supplies in this chassis. For property details, see Redundancy.
Voltages [{	array		The set of voltage sensors for this chassis.
@odata.id	string (URI)	*read-only required*	The unique identifier for a resource.
Actions *(v1.3+)* {}	object		The available actions for this resource.
LowerThresholdCritical	number (Volts)	*read-only (null)*	The value at which the reading is below normal range but not yet fatal.
LowerThresholdFatal	number (Volts)	*read-only (null)*	The value at which the reading is below normal range and fatal.
LowerThresholdNonCritical	number (Volts)	*read-only (null)*	The value at which the reading is below normal range.
MaxReadingRange	number (Volts)	*read-only (null)*	Maximum value for this sensor.

Property	Type	Attributes	Notes
MemberId	string	*read-only required*	The identifier for the member within the collection.
MinReadingRange	number (Volts)	*read-only (null)*	Minimum value for this sensor.
Name	string	*read-only (null)*	Voltage sensor name.
Oem {}	object		See the Oem object definition in the Common properties section.
PhysicalContext	string (enum)	*read-only*	The area or device to which this voltage measurement applies. *For the possible property values, see PhysicalContext in Property details.*
ReadingVolts	number (Volts)	*read-only (null)*	The reading of the voltage sensor.
RelatedItem [{	array		An array of links to resources or objects to which this voltage measurement applies.
@odata.id	string (URI)	*read-only*	The unique identifier for a resource.
}]			
SensorNumber	integer	*read-only (null)*	A numerical identifier to represent the voltage sensor.
Status {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
UpperThresholdCritical	number (Volts)	*read-only (null)*	The value at which the reading is above normal range but not yet fatal.
UpperThresholdFatal	number (Volts)	*read-only (null)*	The value at which the reading is above normal range and fatal.
UpperThresholdNonCritical	number (Volts)	*read-only (null)*	The value at which the reading is above normal range.
}]			

6.81.4 Actions

6.81.4.1 PowerSupplyReset *(v1.6+)*

Description

This action resets the targeted power supply.

Action URI: {Base URI of target resource}/Actions/Power.PowerSupplyReset

Action parameters

Parameter Name	Type	Attributes	Notes
MemberId	string	*required*	The MemberId of the power supply within the PowerSupplies array on which to perform the reset.
ResetType	string (enum)	*optional*	The type of reset. *For the possible property values, see ResetType in Property details.*

Request Example

```
{
    "MemberId": "0",
    "ResetType": "ForceRestart"
}
```

6.81.5 Property details

6.81.5.1 IndicatorLED:

The state of The indicator LED, which identifies the power supply.

string	Description
Blinking	The indicator LED is blinking.
Lit	The indicator LED is lit.
Off	The indicator LED is off.

6.81.5.2 InputType:

The Input type (AC or DC).

string	Description
AC	Alternating Current (AC) input range.

string	Description
DC	Direct Current (DC) input range.

6.81.5.3 LimitException:

The action that is taken if the power cannot be maintained below the LimitInWatts.

string	Description
HardPowerOff	Turn the power off immediately when the limit is exceeded.
LogEventOnly	Log an event when the limit is exceeded, but take no further action.
NoAction	Take no action when the limit is exceeded.
Oem	Take an OEM-defined action.

6.81.5.4 LineInputVoltageType:

The line voltage type supported as an input to this power supply.

string	Description
AC120V *(v1.1+)*	AC 120V nominal input.
AC240V *(v1.1+)*	AC 240V nominal input.
AC277V *(v1.1+)*	AC 277V nominal input.
ACandDCWideRange *(v1.1+)*	Wide range AC or DC input.
ACHighLine *(deprecated v1.1)*	277V AC input. *Deprecated in v1.1 and later. This value has been deprecated in favor of AC277V.*
ACLowLine *(deprecated v1.1)*	100-127V AC input. *Deprecated in v1.1 and later. This value has been deprecated in favor of AC120V.*
ACMidLine *(deprecated v1.1)*	200-240V AC input. *Deprecated in v1.1 and later. This value has been deprecated in favor of AC240V.*
ACWideRange *(v1.1+)*	Wide range AC input.
DC240V *(v1.1+)*	DC 240V nominal input.
DC380V	High Voltage DC input (380V).
DCNeg48V	-48V DC input.
Unknown	The power supply line input voltage type cannot be determined.

6.81.5.5 PhysicalContext:

The area, device, or set of devices to which this power control applies.

string	Description
Accelerator	An accelerator.
ACInput	An AC input.
ACMaintenanceBypassInput	An AC maintenance bypass input.
ACOutput	An AC output.
ACStaticBypassInput	An AC static bypass input.
ACUtilityInput	An AC utility input.
ASIC	An ASIC device, such as a networking chip or chipset component.
Back	The back of the chassis.
Backplane	A backplane within the chassis.
Battery	A battery.
Board	A circuit board.
Chassis	The entire chassis.
ComputeBay	Within a compute bay.
CoolingSubsystem	The entire cooling, or air and liquid, subsystem.
CPU	A processor (CPU).
CPUSubsystem	The entire processor (CPU) subsystem.
DCBus	A DC bus.
Exhaust	The air exhaust point or points or region of the chassis.
ExpansionBay	Within an expansion bay.
Fan	A fan.
FPGA	An FPGA.
Front	The front of the chassis.
GPU	A graphics processor (GPU).

string	Description
GPUSubsystem	The entire graphics processor (GPU) subsystem.
Intake	The air intake point or points or region of the chassis.
LiquidInlet	The liquid inlet point of the chassis.
LiquidOutlet	The liquid outlet point of the chassis.
Lower	The lower portion of the chassis.
Memory	A memory device.
MemorySubsystem	The entire memory subsystem.
Motor	A motor.
NetworkBay	Within a networking bay.
NetworkingDevice	A networking device.
PowerSubsystem	The entire power subsystem.
PowerSupply	A power supply.
PowerSupplyBay	Within a power supply bay.
Pump	A pump.
Rectifier	A rectifier device.
Room	The room.
StorageBay	Within a storage bay.
StorageDevice	A storage device.
SystemBoard	The system board (PCB).
Transceiver	A transceiver.
Transformer	A transformer.
TrustedModule	A trusted module.
Upper	The upper portion of the chassis.
VoltageRegulator	A voltage regulator device.

6.81.5.6 PowerSupplyType:

The power supply type (AC or DC).

string	Description
AC	Alternating Current (AC) power supply.
ACorDC	The power supply supports both DC or AC.
DC	Direct Current (DC) power supply.
Unknown	The power supply type cannot be determined.

6.81.5.7 ResetType:

The type of reset.

string	Description
ForceOff	Turn off the unit immediately (non-graceful shutdown).
ForceOn	Turn on the unit immediately.
ForceRestart	Shut down immediately and non-gracefully and restart the system.
GracefulRestart	Shut down gracefully and restart the system.
GracefulShutdown	Shut down gracefully and power off.
Nmi	Generate a diagnostic interrupt, which is usually an NMI on x86 systems, to stop normal operations, complete diagnostic actions, and, typically, halt the system.
On	Turn on the unit.
Pause	Pause execution on the unit but do not remove power. This is typically a feature of virtual machine hypervisors.
PowerCycle	Power cycle the unit. Behaves like a full power removal, followed by a power restore to the resource.
PushPowerButton	Simulate the pressing of the physical power button on this unit.
Resume	Resume execution on the paused unit. This is typically a feature of virtual machine hypervisors.
Suspend	Write the state of the unit to disk before powering off. This allows for the state to be restored when powered back on.

6.81.6 Example response

```
{
    "@odata.type": "#Power.v1_7_1.Power",
```

```
    "Id": "Power",
    "Name": "Power",
    "PowerControl": [
        {
            "@odata.id": "/redfish/v1/Chassis/1U/Power#/PowerControl/0",
            "MemberId": "0",
            "Name": "Server Power Control",
            "PowerConsumedWatts": 344,
            "PowerRequestedWatts": 800,
            "PowerAvailableWatts": 0,
            "PowerCapacityWatts": 800,
            "PowerAllocatedWatts": 800,
            "PowerMetrics": {
                "IntervalInMin": 30,
                "MinConsumedWatts": 271,
                "MaxConsumedWatts": 489,
                "AverageConsumedWatts": 319
            },
            "PowerLimit": {
                "LimitInWatts": 500,
                "LimitException": "LogEventOnly",
                "CorrectionInMs": 50
            },
            "RelatedItem": [
                {
                    "@odata.id": "/redfish/v1/Systems/437XR1138R2"
                },
                {
                    "@odata.id": "/redfish/v1/Chassis/1U"
                }
            ],
            "Status": {
                "State": "Enabled",
                "Health": "OK"
            },
            "Oem": {}
        }
    ],
    "Voltages": [
        {
            "@odata.id": "/redfish/v1/Chassis/1U/Power#/Voltages/0",
            "MemberId": "0",
            "Name": "VRM1 Voltage",
            "SensorNumber": 11,
            "Status": {
                "State": "Enabled",
                "Health": "OK"
            },
            "ReadingVolts": 12,
            "UpperThresholdNonCritical": 12.5,
```

```
            "UpperThresholdCritical": 13,
            "UpperThresholdFatal": 15,
            "LowerThresholdNonCritical": 11.5,
            "LowerThresholdCritical": 11,
            "LowerThresholdFatal": 10,
            "MinReadingRange": 0,
            "MaxReadingRange": 20,
            "PhysicalContext": "VoltageRegulator",
            "RelatedItem": [
                {
                    "@odata.id": "/redfish/v1/Systems/437XR1138R2"
                },
                {
                    "@odata.id": "/redfish/v1/Chassis/1U"
                }
            ]
        },
        {
            "@odata.id": "/redfish/v1/Chassis/1U/Power#/Voltages/1",
            "MemberId": "1",
            "Name": "VRM2 Voltage",
            "SensorNumber": 12,
            "Status": {
                "State": "Enabled",
                "Health": "OK"
            },
            "ReadingVolts": 5,
            "UpperThresholdNonCritical": 5.5,
            "UpperThresholdCritical": 7,
            "LowerThresholdNonCritical": 4.75,
            "LowerThresholdCritical": 4.5,
            "MinReadingRange": 0,
            "MaxReadingRange": 20,
            "PhysicalContext": "VoltageRegulator",
            "RelatedItem": [
                {
                    "@odata.id": "/redfish/v1/Systems/437XR1138R2"
                },
                {
                    "@odata.id": "/redfish/v1/Chassis/1U"
                }
            ]
        }
    ],
    "PowerSupplies": [
        {
            "@odata.id": "/redfish/v1/Chassis/1U/Power#/PowerSupplies/0",
            "MemberId": "0",
            "Name": "Power Supply Bay",
            "Status": {
```

```
                    "State": "Enabled",
                    "Health": "Warning"
                },
                "Oem": {},
                "PowerSupplyType": "AC",
                "LineInputVoltageType": "ACWideRange",
                "LineInputVoltage": 120,
                "PowerCapacityWatts": 800,
                "LastPowerOutputWatts": 325,
                "Model": "499253-B21",
                "Manufacturer": "ManufacturerName",
                "FirmwareVersion": "1.00",
                "SerialNumber": "1Z0000001",
                "PartNumber": "0000001A3A",
                "SparePartNumber": "0000001A3A",
                "InputRanges": [
                    {
                        "InputType": "AC",
                        "MinimumVoltage": 100,
                        "MaximumVoltage": 120,
                        "OutputWattage": 800
                    },
                    {
                        "InputType": "AC",
                        "MinimumVoltage": 200,
                        "MaximumVoltage": 240,
                        "OutputWattage": 1300
                    }
                ],
                "RelatedItem": [
                    {
                        "@odata.id": "/redfish/v1/Chassis/1U"
                    }
                ]
            }
        ],
        "Actions": {
            "#Power.PowerSupplyReset": {
                "target": "/redfish/v1/Chassis/1U/Power/Actions/Power.PowerSupplyReset"
            }
        },
        "Oem": {},
        "@odata.id": "/redfish/v1/Chassis/1U/Power"
    }
```

6.82 PowerDistribution 1.2.1

Version	v1.2	v1.1	v1.0
Release	2021.3	2021.2	2019.4

6.82.1 Description

This is the schema definition for a power distribution component or unit, such as a floor power distribution unit (PDU) or switchgear.

6.82.2 URIs

/redfish/v1/PowerEquipment/ElectricalBuses/{*PowerDistributionId*}
/redfish/v1/PowerEquipment/FloorPDUs/{*PowerDistributionId*}
/redfish/v1/PowerEquipment/PowerShelves/{*PowerDistributionId*}
/redfish/v1/PowerEquipment/RackPDUs/{*PowerDistributionId*}
/redfish/v1/PowerEquipment/Switchgear/{*PowerDistributionId*}
/redfish/v1/PowerEquipment/TransferSwitches/{*PowerDistributionId*}

6.82.3 Properties

Property	Type	Attributes	Notes
AssetTag	string	*read-write (null)*	The user-assigned asset tag for this equipment.
Branches {	object		A link to the branch circuits for this equipment. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *Circuit*. See the Circuit schema for details.
}			
EquipmentType	string (enum)	*read-only required*	The type of equipment this resource represents. *For the possible property values, see EquipmentType in Property details.*
Feeders {	object		A link to the feeder circuits for this equipment. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *Circuit*. See the Circuit schema for details.
}			

Property	Type	Attributes	Notes
FirmwareVersion	string	*read-only*	The firmware version of this equipment.
Links {	object		The links to other resources that are related to this resource.
Chassis [{	array		An array of links to the chassis that contain this equipment.
@odata.id	string	*read-only*	Link to a Chassis resource. See the Links section and the *Chassis* schema for details.
}]			
Facility {	object		A link to the facility that contains this equipment. See the *Facility* schema for details on this property.
@odata.id	string	*read-only*	Link to a Facility resource. See the Links section and the *Facility* schema for details.
}			
ManagedBy [{	array		An array of links to the managers responsible for managing this equipment.
@odata.id	string	*read-only*	Link to a Manager resource. See the Links section and the *Manager* schema for details.
}]			
Oem {}	object		See the Oem object definition in the Common properties section.
}			
Location {}	object		The location of the equipment. For property details, see Location.
Mains {	object		A link to the power input circuits for this equipment. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *Circuit*. See the Circuit schema for details.
}			
MainsRedundancy *(v1.1+)* {}	object		The redundancy information for the mains (input) circuits for this equipment. For property details, see RedundantGroup.
Manufacturer	string	*read-only (null)*	The manufacturer of this equipment.
Metrics {	object		A link to the summary metrics for this equipment. See the *PowerDistributionMetrics* schema for details on this property.
@odata.id	string	*read-only*	Link to a PowerDistributionMetrics resource. See the Links section and the *PowerDistributionMetrics* schema for details.

Property	Type	Attributes	Notes
}			
Model	string	*read-only (null)*	The product model number of this equipment.
OutletGroups {	object		A link to the outlet groups for this equipment. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *OutletGroup*. See the OutletGroup schema for details.
}			
Outlets {	object		A link to the outlets for this equipment. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *Outlet*. See the Outlet schema for details.
}			
PartNumber	string	*read-only (null)*	The part number for this equipment.
PowerSupplies *(v1.1+)* {	object		The link to the collection of power supplies for this equipment. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *PowerSupply*. See the PowerSupply schema for details.
}			
PowerSupplyRedundancy *(v1.1+)* [{ }]	array (object)		The redundancy information for the set of power supplies for this equipment. For property details, see RedundantGroup.
ProductionDate	string (date-time)	*read-only (null)*	The production or manufacturing date of this equipment.
Sensors {	object		A link to the collection of sensors located in the equipment and sub-components. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *Sensor*. See the Sensor schema for details.
}			
SerialNumber	string	*read-only (null)*	The serial number for this equipment.
Status {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
Subfeeds {	object		A link to the subfeed circuits for this equipment. Contains a link to a resource.

Property	Type	Attributes	Notes
@odata.id	string	*read-only*	Link to Collection of *Circuit*. See the Circuit schema for details.
}			
TransferConfiguration {	object	*(null)*	The configuration settings for an automatic transfer switch.
ActiveMainsId	string	*read-write (null)*	The mains circuit that is switched on and qualified to supply power to the output circuit.
AutoTransferEnabled	boolean	*read-write (null)*	Indicates if the qualified alternate mains circuit is automatically switched on when the preferred mains circuit becomes unqualified and is automatically switched off.
ClosedTransitionAllowed	boolean	*read-write (null)*	Indicates if a make-before-break switching sequence of the mains circuits is permitted when they are both qualified and in synchronization.
ClosedTransitionTimeoutSeconds	integer	*read-write (null)*	The time in seconds to wait for a closed transition to occur.
PreferredMainsId	string	*read-write (null)*	The preferred source for the mains circuit to this equipment.
RetransferDelaySeconds	integer	*read-write (null)*	The time in seconds to delay the automatic transfer from the alternate mains circuit back to the preferred mains circuit.
RetransferEnabled	boolean	*read-write (null)*	Indicates if the automatic transfer is permitted from the alternate mains circuit back to the preferred mains circuit after the preferred mains circuit is qualified again and the Retransfer Delay time has expired.
TransferDelaySeconds	integer	*read-write (null)*	The time in seconds to delay the automatic transfer from the preferred mains circuit to the alternate mains circuit when the preferred mains circuit is disqualified.
TransferInhibit	boolean	*read-write (null)*	Indicates if any transfer is inhibited.
}			
TransferCriteria {	object	*(null)*	The criteria used to initiate a transfer for an automatic transfer switch.
OverNominalFrequencyHz	number (Hz)	*read-write (null)*	The frequency in hertz over the nominal value that satisfies a criterion for transfer.
OverVoltageRMSPercentage	number (%)	*read-write (null)*	The positive percentage of voltage RMS over the nominal value that satisfies a criterion for transfer.
TransferSensitivity	string (enum)	*read-write (null)*	The sensitivity to voltage waveform quality to satisfy the criterion for initiating a transfer. *For the possible property values, see TransferSensitivity in Property details.*

Property	Type	Attributes	Notes
UnderNominalFrequencyHz	number (Hz)	*read-write (null)*	The frequency in hertz under the nominal value that satisfies a criterion for transfer.
UnderVoltageRMSPercentage	number (%)	*read-write (null)*	The negative percentage of voltage RMS under the nominal value that satisfies a criterion for transfer.
}			
UUID	string	*read-only (null)*	The UUID for this equipment.
Version	string	*read-only (null)*	The hardware version of this equipment.

6.82.4 Actions

6.82.4.1 TransferControl

Description

This action transfers control to the alternative input circuit.

Action URI: {Base URI of target resource}/Actions/PowerDistribution.TransferControl

Action parameters

This action takes no parameters.

6.82.5 Property details

6.82.5.1 EquipmentType:

The type of equipment this resource represents.

string	Description
AutomaticTransferSwitch	An automatic power transfer switch.
Bus *(v1.2+)*	An electrical bus.
FloorPDU	A power distribution unit providing feeder circuits for further power distribution.
ManualTransferSwitch	A manual power transfer switch.

string	Description
PowerShelf *(v1.1+)*	A power shelf.
RackPDU	A power distribution unit providing outlets for a rack or similar quantity of devices.
Switchgear	Electrical switchgear.

6.82.5.2 TransferSensitivity:

The sensitivity to voltage waveform quality to satisfy the criterion for initiating a transfer.

string	Description
High	High sensitivity for initiating a transfer.
Low	Low sensitivity for initiating a transfer.
Medium	Medium sensitivity for initiating a transfer.

6.82.6 Example response

```
{
    "@odata.type": "#PowerDistribution.v1_2_1.PowerDistribution",
    "Id": "1",
    "EquipmentType": "RackPDU",
    "Name": "RackPDU1",
    "FirmwareVersion": "4.3.0",
    "Version": "1.03b",
    "ProductionDate": "2017-01-11T08:00:00Z",
    "Manufacturer": "Contoso",
    "Model": "ZAP4000",
    "SerialNumber": "29347ZT536",
    "PartNumber": "AA-23",
    "UUID": "32354641-4135-4332-4a35-313735303734",
    "AssetTag": "PDX-92381",
    "Status": {
        "State": "Enabled",
        "Health": "OK"
    },
    "Location": {
        "Placement": {
            "Row": "North 1"
        }
    },
    "Mains": {
```

```
            "@odata.id": "/redfish/v1/PowerEquipment/RackPDUs/1/Mains"
        },
        "Branches": {
            "@odata.id": "/redfish/v1/PowerEquipment/RackPDUs/1/Branches"
        },
        "Outlets": {
            "@odata.id": "/redfish/v1/PowerEquipment/RackPDUs/1/Outlets"
        },
        "OutletGroups": {
            "@odata.id": "/redfish/v1/PowerEquipment/RackPDUs/1/OutletGroups"
        },
        "Metrics": {
            "@odata.id": "/redfish/v1/PowerEquipment/RackPDUs/1/Metrics"
        },
        "Sensors": {
            "@odata.id": "/redfish/v1/PowerEquipment/RackPDUs/1/Sensors"
        },
        "Links": {
            "Facility": {
                "@odata.id": "/redfish/v1/Facilities/Room237"
            }
        },
        "@odata.id": "/redfish/v1/PowerEquipment/RackPDUs/1"
    }
```

6.83 PowerDistributionMetrics 1.3.0

Version	*v1.3*	*v1.2*	*v1.1*	*v1.0*
Release	2021.4	2021.2	2021.1	2019.4

6.83.1 Description

This is the schema definition for the metrics of a power distribution component or unit, such as a floor power distribution unit (PDU) or switchgear.

6.83.2 URIs

/redfish/v1/PowerEquipment/ElectricalBuses/*{PowerDistributionId}*/Metrics
/redfish/v1/PowerEquipment/FloorPDUs/*{PowerDistributionId}*/Metrics
/redfish/v1/PowerEquipment/PowerShelves/*{PowerDistributionId}*/Metrics
/redfish/v1/PowerEquipment/RackPDUs/*{PowerDistributionId}*/Metrics

/redfish/v1/PowerEquipment/Switchgear/*{PowerDistributionId}*/Metrics
/redfish/v1/PowerEquipment/TransferSwitches/*{PowerDistributionId}*/Metrics

6.83.3 Properties

Property	Type	Attributes	Notes
AbsoluteHumidity *(v1.3+)* {}	object		Absolute humidity (g/cu m). For more information about this property, see SensorExcerpt in Property Details.
EnergykWh {	object (excerpt)		Energy consumption (kWh). This object is an excerpt of the *Sensor* resource located at the URI shown in DataSourceUri.
ApparentkVAh *(v1.5+)*	number (kV.A.h)	*read-only (null)*	Apparent energy (kVAh).
DataSourceUri	string (URI)	*read-only (null)*	The link to the resource that provides the data for this sensor.
LifetimeReading *(v1.1+)*	number	*read-only (null)*	The total accumulation value for this sensor.
ReactivekVARh *(v1.5+)*	number (kV.A.h)	*read-only (null)*	Reactive energy (kVARh).
Reading	number	*read-only (null)*	The sensor value.
SensorResetTime	string (date-time)	*read-only (null)*	The date and time when the time-based properties were last reset.
}			
HumidityPercent *(v1.1+)* {}	object		Humidity (percent). For more information about this property, see SensorExcerpt in Property Details.
PowerLoadPercent *(v1.2+)* {}	object		The power load (percent) for this equipment. For more information about this property, see SensorExcerpt in Property Details.
PowerWatts {	object (excerpt)		Power consumption (W). This object is an excerpt of the *Sensor* resource located at the URI shown in DataSourceUri.
ApparentVA	number (V.A)	*read-only (null)*	The product of voltage and current for an AC circuit, in volt-ampere units.
DataSourceUri	string (URI)	*read-only (null)*	The link to the resource that provides the data for this sensor.
PhaseAngleDegrees *(v1.5+)*	number	*read-only (null)*	The phase angle (degrees) between the current and voltage waveforms.

Property	Type	Attributes	Notes
PowerFactor	number	*read-only (null)*	The power factor for this sensor.
ReactiveVAR	number (V.A)	*read-only (null)*	The square root of the difference term of squared apparent VA and squared power (Reading) for a circuit, in VAR units.
Reading	number	*read-only (null)*	The sensor value.
}			
TemperatureCelsius *(v1.1+)* {}	object		Temperature (Celsius). For more information about this property, see SensorExcerpt in Property Details.

6.83.4 Actions

6.83.4.1 ResetMetrics

Description

This action resets the summary metrics related to this equipment.

Action URI: {Base URI of target resource}/Actions/PowerDistributionMetrics.ResetMetrics

Action parameters

This action takes no parameters.

6.83.5 Property details

6.83.5.1 SensorExcerpt:

The Sensor schema describes a sensor and its properties. This object is an excerpt of the *Sensor* resource located at the URI shown in DataSourceUri.

DataSourceUri	string (URI)	*read-only (null)*	The link to the resource that provides the data for this sensor.
Reading	number	*read-only (null)*	The sensor value.

6.83.6 Example response

```
{
    "@odata.type": "#PowerDistributionMetrics.v1_3_0.PowerDistributionMetrics",
    "Id": "Metrics",
    "Name": "Summary Metrics",
    "PowerWatts": {
        "DataSourceUri": "/redfish/v1/PowerEquipment/RackPDUs/1/Sensors/PDUPower",
        "Reading": 6438,
        "ApparentVA": 6300,
        "ReactiveVAR": 100,
        "PowerFactor": 0.93
    },
    "EnergykWh": {
        "DataSourceUri": "/redfish/v1/PowerEquipment/RackPDUs/1/Sensors/PDUEnergy",
        "Reading": 56438
    },
    "TemperatureCelsius": {
        "DataSourceUri": "/redfish/v1/PowerEquipment/RackPDUs/1/Sensors/PDUTemp",
        "Reading": 26.3
    },
    "HumidityPercent": {
        "DataSourceUri": "/redfish/v1/PowerEquipment/RackPDUs/1/Sensors/PDUHumidity",
        "Reading": 52.7
    },
    "Actions": {
        "#PowerDistributionMetrics.ResetMetrics": {
            "target": "/redfish/v1/PowerEquipment/RackPDUs/1/Metrics/PowerDistributionMetrics.ResetMetrics"
        }
    },
    "@odata.id": "/redfish/v1/PowerEquipment/RackPDUs/1/Metrics"
}
```

6.84 PowerDomain 1.2.0

Version	v1.2	v1.1	v1.0
Release	2021.3	2021.2	2019.4

6.84.1 Description

The PowerDomain schema contains definition for the DCIM power domain.

6.84.2 URIs

/redfish/v1/Facilities/*{FacilityId}*/PowerDomains/*{PowerDomainId}*

6.84.3 Properties

Property	Type	Attributes	Notes
Links {	object		The links to other resources that are related to this resource.
ElectricalBuses *(v1.2+)* [{	array		An array of links to the electrical buses in this power domain.
@odata.id	string	*read-write*	Link to a PowerDistribution resource. See the Links section and the *PowerDistribution* schema for details.
}]			
FloorPDUs [{	array		An array of links to the floor power distribution units in this power domain.
@odata.id	string	*read-write*	Link to a PowerDistribution resource. See the Links section and the *PowerDistribution* schema for details.
}]			
ManagedBy [{	array		An array of links to the managers responsible for managing this power domain.
@odata.id	string	*read-only*	Link to a Manager resource. See the Links section and the *Manager* schema for details.
}]			
Oem {}	object		See the Oem object definition in the Common properties section.
PowerShelves *(v1.1+)* [{	array		An array of links to the power shelves in this power domain.
@odata.id	string	*read-write*	Link to a PowerDistribution resource. See the Links section and the *PowerDistribution* schema for details.
}]			
RackPDUs [{	array		An array of links to the rack-level power distribution units in this power domain.
@odata.id	string	*read-write*	Link to a PowerDistribution resource. See the Links section and the *PowerDistribution* schema for details.
}]			
Switchgear [{	array		An array of links to the switchgear in this power domain.

Property	Type	Attributes	Notes
@odata.id	string	*read-write*	Link to a PowerDistribution resource. See the Links section and the *PowerDistribution* schema for details.
}]			
TransferSwitches [{	array		An array of links to the transfer switches in this power domain.
@odata.id	string	*read-write*	Link to a PowerDistribution resource. See the Links section and the *PowerDistribution* schema for details.
}]			
}			
Status {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.

6.84.4 Example response

```
{
    "@odata.type": "#PowerDomain.v1_2_0.PowerDomain",
    "Id": "Row1",
    "Name": "Row #1 Domain",
    "Status": {
        "State": "Enabled",
        "Health": "OK"
    },
    "Links": {
        "ManagedBy": [
            {
                "@odata.id": "/redfish/v1/Managers/BMC"
            }
        ],
        "RackPDUs": [
            {
                "@odata.id": "/redfish/v1/PowerEquipment/RackPDUs/1"
            }
        ]
    },
    "@odata.id": "/redfish/v1/Facilities/Room237/PowerDomains/Row1"
}
```

6.85 PowerEquipment 1.2.0

Version	v1.2	v1.1	v1.0
Release	2021.3	2021.2	2019.4

6.85.1 Description

This is the schema definition for the set of power equipment.

6.85.2 URIs

/redfish/v1/PowerEquipment

6.85.3 Properties

Property	Type	Attributes	Notes
ElectricalBuses *(v1.2+)* {	object		The link to a collection of electrical buses. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *PowerDistribution*. See the PowerDistribution schema for details.
}			
FloorPDUs {	object		A link to a collection of floor power distribution units. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *PowerDistribution*. See the PowerDistribution schema for details.
}			
Links {	object		The links to other resources that are related to this resource.
ManagedBy [{	array		An array of links to the managers responsible for managing this power equipment.
@odata.id	string	*read-only*	Link to a Manager resource. See the Links section and the *Manager* schema for details.
}]			
Oem {}	object		See the Oem object definition in the Common properties section.
}			

Property	Type	Attributes	Notes
PowerShelves *(v1.1+)* {	object		A link to a collection of power shelves. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *PowerDistribution*. See the PowerDistribution schema for details.
}			
RackPDUs {	object		A link to a collection of rack-level power distribution units. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *PowerDistribution*. See the PowerDistribution schema for details.
}			
Status {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
Switchgear {	object		A link to a collection of switchgear. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *PowerDistribution*. See the PowerDistribution schema for details.
}			
TransferSwitches {	object		A link to a collection of transfer switches. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *PowerDistribution*. See the PowerDistribution schema for details.
}			

6.85.4 Example response

```
{
    "@odata.type": "#PowerEquipment.v1_2_0.PowerEquipment",
    "Id": "PowerEquipment",
    "Name": "DCIM Power Equipment",
    "Status": {
        "State": "Enabled",
        "HealthRollup": "OK"
    },
    "FloorPDUs": {
        "@odata.id": "/redfish/v1/PowerEquipment/FloorPDUs"
    },
    "RackPDUs": {
        "@odata.id": "/redfish/v1/PowerEquipment/RackPDUs"
    },
    "TransferSwitches": {
        "@odata.id": "/redfish/v1/PowerEquipment/TransferSwitches"
    },
```

```
    "Links": {},
    "@odata.id": "/redfish/v1/PowerEquipment"
}
```

6.86 PowerSubsystem 1.1.0

Version	*v1.1*	*v1.0*
Release	2021.2	2020.4

6.86.1 Description

This PowerSubsystem schema contains the definition for the power subsystem of a chassis.

6.86.2 URIs

/redfish/v1/Chassis/*{ChassisId}*/PowerSubsystem

6.86.3 Properties

Property	Type	Attributes	Notes
Allocation {	object		Power allocation for this subsystem.
AllocatedWatts	number (Watts)	*read-only (null)*	The total amount of power that has been allocated or budgeted to this subsystem.
RequestedWatts	number (Watts)	*read-only (null)*	The potential power, in watts, that the subsystem requests, which might be higher than the current level being consumed because the requested power includes a budget that the subsystem wants for future use.
}			
Batteries *(v1.1+)* {	object		The link to the collection of batteries within this subsystem. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *Battery*. See the Battery schema for details.
}			

Property	Type	Attributes	Notes
CapacityWatts	number (Watts)	*read-only (null)*	The total amount of power that can be allocated to this subsystem. This value can be either the power supply capacity or the power budget that an upstream chassis assigns to this subsystem.
PowerSupplies {	object		The link to the collection of power supplies within this subsystem. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *PowerSupply*. See the PowerSupply schema for details.
}			
PowerSupplyRedundancy [{}]	array (object)		The redundancy information for the set of power supplies in this subsystem. For property details, see RedundantGroup.
Status {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.

6.86.4 Example response

```
{
    "@odata.type": "#PowerSubsystem.v1_1_0.PowerSubsystem",
    "Id": "PowerSubsystem",
    "Name": "Power Subsystem for Chassis",
    "CapacityWatts": 2000,
    "Allocation": {
        "RequestedWatts": 1500,
        "AllocatedWatts": 1200
    },
    "PowerSupplyRedundancy": [
        {
            "RedundancyType": "Failover",
            "MaxSupportedInGroup": 2,
            "MinNeededInGroup": 1,
            "RedundancyGroup": [
                {
                    "@odata.id": "/redfish/v1/Chassis/1U/PowerSubsystem/PowerSupplies/Bay1"
                },
                {
                    "@odata.id": "/redfish/v1/Chassis/1U/PowerSubsystem/PowerSupplies/Bay2"
                }
            ],
            "Status": {
                "State": "UnavailableOffline",
                "Health": "OK"
            }
        }
    ],
```

```
    "PowerSupplies": {
        "@odata.id": "/redfish/v1/Chassis/1U/PowerSubsystem/PowerSupplies"
    },
    "Status": {
        "State": "Enabled",
        "Health": "OK"
    },
    "Oem": {},
    "@odata.id": "/redfish/v1/Chassis/1U/PowerSubsystem"
}
```

6.87 PowerSupply 1.3.0

Version	v1.3	v1.2	v1.1	v1.0
Release	2021.4	2021.3	2021.1	2020.4

6.87.1 Description

The PowerSupply schema describes a power supply unit.

6.87.2 URIs

/redfish/v1/Chassis/{*ChassisId*}/PowerSubsystem/PowerSupplies/{*PowerSupplyId*}
/redfish/v1/PowerEquipment/PowerShelves/{*PowerDistributionId*}/PowerSupplies/{*PowerSupplyId*}

6.87.3 Properties

Property	Type	Attributes	Notes
Assembly {	object		The link to the assembly associated with this power supply. See the *Assembly* schema for details on this property.
@odata.id	string	*read-only*	Link to a Assembly resource. See the Links section and the *Assembly* schema for details.
}			
EfficiencyRatings [{	array		The efficiency ratings of this power supply.
EfficiencyPercent	number (%)	*read-only (null)*	The rated efficiency of this power supply at the specified load.

Property	Type	Attributes	Notes
LoadPercent	number (%)	read-only (null)	The electrical load for this rating.
}]			
ElectricalSourceManagerURIs (v1.2+) [ ]	array (URI) (string, null)	read-write	The URIs of the management interfaces for the upstream electrical source connections for this power supply.
ElectricalSourceNames (v1.2+) [ ]	array (string, null)	read-write	The names of the upstream electrical sources, such as circuits or outlets, connected to this power supply.
FirmwareVersion	string	read-only (null)	The firmware version for this power supply.
HotPluggable	boolean	read-only (null)	An indication of whether this device can be inserted or removed while the equipment is in operation.
InputNominalVoltageType	string (enum)	read-only (null)	The nominal voltage type of the line input to this power supply. *For the possible property values, see InputNominalVoltageType in Property details.*
InputRanges [{	array		The input ranges that the power supply can use.
CapacityWatts	number (Watts)	read-only (null)	The maximum capacity of this power supply when operating in this input range.
NominalVoltageType	string (enum)	read-only (null)	The input voltage range. *For the possible property values, see NominalVoltageType in Property details.*
}]			
LineInputStatus (v1.3+)	string (enum)	read-only (null)	The status of the line input. *For the possible property values, see LineInputStatus in Property details.*
Links {	object		The links to other resources that are related to this resource.
Oem {}	object		See the Oem object definition in the Common properties section.
Outlet {	object		A link to the outlet connected to this power supply. See the *Outlet* schema for details on this property.
@odata.id	string	read-write	Link to a Outlet resource. See the Links section and the *Outlet* schema for details.
}			
PowerOutlets (v1.2+) [{	array		An array of links to the outlets that provide power to this power supply.
@odata.id	string	read-write	Link to a Outlet resource. See the Links section and the *Outlet* schema for details.

Property	Type	Attributes	Notes
}]			
}			
Location {}	object		The location of the power supply. For property details, see Location.
LocationIndicatorActive	boolean	*read-write (null)*	An indicator allowing an operator to physically locate this resource.
Manufacturer	string	*read-only (null)*	The manufacturer of this power supply.
Metrics {	object		The link to the power supply metrics resource associated with this power supply. See the *PowerSupplyMetrics* schema for details on this property.
@odata.id	string	*read-only*	Link to a PowerSupplyMetrics resource. See the Links section and the *PowerSupplyMetrics* schema for details.
}			
Model	string	*read-only (null)*	The model number for this power supply.
OutputRails [{	array		The output power rails provided by this power supply.
NominalVoltage	number	*read-only (null)*	The nominal voltage of this output power rail.
PhysicalContext	string (enum)	*read-only*	The area or device to which this power rail applies. *For the possible property values, see PhysicalContext in Property details.*
}]			
PartNumber	string	*read-only (null)*	The part number for this power supply.
PhaseWiringType	string (enum)	*read-only (null)*	The number of ungrounded current-carrying conductors (phases) and the total number of conductors (wires) provided for the power supply input connector. *For the possible property values, see PhaseWiringType in Property details.*
PlugType	string (enum)	*read-only (null)*	The type of plug according to NEMA, IEC, or regional standards. *For the possible property values, see PlugType in Property details.*
PowerCapacityWatts	number (Watts)	*read-only (null)*	The maximum capacity of this power supply.
PowerSupplyType	string (enum)	*read-only (null)*	The power supply type (AC or DC). *For the possible property values, see PowerSupplyType in Property details.*
ProductionDate *(v1.1+)*	string (date-time)	*read-only (null)*	The production or manufacturing date of this power supply.

Property	Type	Attributes	Notes
SerialNumber	string	*read-only (null)*	The serial number for this power supply.
SparePartNumber	string	*read-only (null)*	The spare part number for this power supply.
Status {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
Version *(v1.1+)*	string	*read-only (null)*	The hardware version of this power supply.

6.87.4 Actions

6.87.4.1 Reset

Description

This action resets the power supply.

Action URI: {Base URI of target resource}/Actions/PowerSupply.Reset

Action parameters

Parameter Name	Type	Attributes	Notes
ResetType	string (enum)	*optional*	The type of reset. *For the possible property values, see ResetType in Property details.*

Request Example

```
{
    "ResetType": "ForceRestart"
}
```

6.87.5 Property details

6.87.5.1 InputNominalVoltageType:

The nominal voltage type of the line input to this power supply.

string	Description
AC100To240V	AC 100-240V nominal.
AC100To277V	AC 100-277V nominal.
AC120V	AC 120V nominal.
AC200To240V	AC 200-240V nominal.
AC200To277V	AC 200-277V nominal.
AC208V	AC 208V nominal.
AC230V	AC 230V nominal.
AC240AndDC380V	AC 200-240V and DC 380V.
AC240V	AC 240V nominal.
AC277AndDC380V	AC 200-277V and DC 380V.
AC277V	AC 277V nominal.
AC400V	AC 400V or 415V nominal.
AC480V	AC 480V nominal.
DC240V	DC 240V nominal.
DC380V	High Voltage DC (380V).
DC48V	DC 48V nominal.
DCNeg48V	-48V DC.

6.87.5.2 LineInputStatus:

The status of the line input.

string	Description
LossOfInput	No power detected at line input.
Normal	Line input is within normal operating range.
OutOfRange	Line input voltage or current is outside of normal operating range.

6.87.5.3 NominalVoltageType:

The input voltage range.

string	Description
AC100To240V	AC 100-240V nominal.
AC100To277V	AC 100-277V nominal.
AC120V	AC 120V nominal.
AC200To240V	AC 200-240V nominal.
AC200To277V	AC 200-277V nominal.
AC208V	AC 208V nominal.
AC230V	AC 230V nominal.
AC240AndDC380V	AC 200-240V and DC 380V.
AC240V	AC 240V nominal.
AC277AndDC380V	AC 200-277V and DC 380V.
AC277V	AC 277V nominal.
AC400V	AC 400V or 415V nominal.
AC480V	AC 480V nominal.
DC240V	DC 240V nominal.
DC380V	High Voltage DC (380V).
DC48V	DC 48V nominal.
DCNeg48V	-48V DC.

6.87.5.4 PhaseWiringType:

The number of ungrounded current-carrying conductors (phases) and the total number of conductors (wires) provided for the power supply input connector.

string	Description
OneOrTwoPhase3Wire	Single or Two-Phase / 3-Wire (Line1, Line2 or Neutral, Protective Earth).

string	Description
OnePhase3Wire	Single-phase / 3-Wire (Line1, Neutral, Protective Earth).
ThreePhase4Wire	Three-phase / 4-Wire (Line1, Line2, Line3, Protective Earth).
ThreePhase5Wire	Three-phase / 5-Wire (Line1, Line2, Line3, Neutral, Protective Earth).
TwoPhase3Wire	Two-phase / 3-Wire (Line1, Line2, Protective Earth).
TwoPhase4Wire	Two-phase / 4-Wire (Line1, Line2, Neutral, Protective Earth).

6.87.5.5 PhysicalContext:

The area or device to which this power rail applies.

string	Description
Accelerator	An accelerator.
ACInput	An AC input.
ACMaintenanceBypassInput	An AC maintenance bypass input.
ACOutput	An AC output.
ACStaticBypassInput	An AC static bypass input.
ACUtilityInput	An AC utility input.
ASIC	An ASIC device, such as a networking chip or chipset component.
Back	The back of the chassis.
Backplane	A backplane within the chassis.
Battery	A battery.
Board	A circuit board.
Chassis	The entire chassis.
ComputeBay	Within a compute bay.
CoolingSubsystem	The entire cooling, or air and liquid, subsystem.
CPU	A processor (CPU).
CPUSubsystem	The entire processor (CPU) subsystem.
DCBus	A DC bus.

string	Description
Exhaust	The air exhaust point or points or region of the chassis.
ExpansionBay	Within an expansion bay.
Fan	A fan.
FPGA	An FPGA.
Front	The front of the chassis.
GPU	A graphics processor (GPU).
GPUSubsystem	The entire graphics processor (GPU) subsystem.
Intake	The air intake point or points or region of the chassis.
LiquidInlet	The liquid inlet point of the chassis.
LiquidOutlet	The liquid outlet point of the chassis.
Lower	The lower portion of the chassis.
Memory	A memory device.
MemorySubsystem	The entire memory subsystem.
Motor	A motor.
NetworkBay	Within a networking bay.
NetworkingDevice	A networking device.
PowerSubsystem	The entire power subsystem.
PowerSupply	A power supply.
PowerSupplyBay	Within a power supply bay.
Pump	A pump.
Rectifier	A rectifier device.
Room	The room.
StorageBay	Within a storage bay.
StorageDevice	A storage device.
SystemBoard	The system board (PCB).
Transceiver	A transceiver.

string	Description
Transformer	A transformer.
TrustedModule	A trusted module.
Upper	The upper portion of the chassis.
VoltageRegulator	A voltage regulator device.

6.87.5.6 PlugType:

The type of plug according to NEMA, IEC, or regional standards.

string	Description
California_CS8265	California Standard CS8265 (Single-phase 250V; 50A; 2P3W).
California_CS8365	California Standard CS8365 (Three-phase 250V; 50A; 3P4W).
Field_208V_3P4W_60A	Field-wired; Three-phase 200-250V; 60A; 3P4W.
Field_400V_3P5W_32A	Field-wired; Three-phase 200-240/346-415V; 32A; 3P5W.
IEC_60309_316P6	IEC 60309 316P6 (Single-phase 200-250V; 16A; 1P3W; Blue, 6-hour).
IEC_60309_332P6	IEC 60309 332P6 (Single-phase 200-250V; 32A; 1P3W; Blue, 6-hour).
IEC_60309_363P6	IEC 60309 363P6 (Single-phase 200-250V; 63A; 1P3W; Blue, 6-hour).
IEC_60309_460P9	IEC 60309 460P9 (Three-phase 200-250V; 60A; 3P4W; Blue; 9-hour).
IEC_60309_516P6	IEC 60309 516P6 (Three-phase 200-240/346-415V; 16A; 3P5W; Red; 6-hour).
IEC_60309_532P6	IEC 60309 532P6 (Three-phase 200-240/346-415V; 32A; 3P5W; Red; 6-hour).
IEC_60309_560P9	IEC 60309 560P9 (Three-phase 120-144/208-250V; 60A; 3P5W; Blue; 9-hour).
IEC_60309_563P6	IEC 60309 563P6 (Three-phase 200-240/346-415V; 63A; 3P5W; Red; 6-hour).
IEC_60320_C14	IEC C14 (Single-phase 250V; 10A; 1P3W).
IEC_60320_C20	IEC C20 (Single-phase 250V; 16A; 1P3W).
NEMA_5_15P	NEMA 5-15P (Single-phase 125V; 15A; 1P3W).
NEMA_5_20P	NEMA 5-20P (Single-phase 125V; 20A; 1P3W).
NEMA_6_15P	NEMA 6-15P (Single-phase 250V; 15A; 2P3W).
NEMA_6_20P	NEMA 6-20P (Single-phase 250V; 20A; 2P3W).

string	Description
NEMA_L14_20P	NEMA L14-20P (Split-phase 125/250V; 20A; 2P4W).
NEMA_L14_30P	NEMA L14-30P (Split-phase 125/250V; 30A; 2P4W).
NEMA_L15_20P	NEMA L15-20P (Three-phase 250V; 20A; 3P4W).
NEMA_L15_30P	NEMA L15-30P (Three-phase 250V; 30A; 3P4W).
NEMA_L21_20P	NEMA L21-20P (Three-phase 120/208V; 20A; 3P5W).
NEMA_L21_30P	NEMA L21-30P (Three-phase 120/208V; 30A; 3P5W).
NEMA_L22_20P	NEMA L22-20P (Three-phase 277/480V; 20A; 3P5W).
NEMA_L22_30P	NEMA L22-30P (Three-phase 277/480V; 30A; 3P5W).
NEMA_L5_15P	NEMA L5-15P (Single-phase 125V; 15A; 1P3W).
NEMA_L5_20P	NEMA L5-20P (Single-phase 125V; 20A; 1P3W).
NEMA_L5_30P	NEMA L5-30P (Single-phase 125V; 30A; 1P3W).
NEMA_L6_15P	NEMA L6-15P (Single-phase 250V; 15A; 2P3W).
NEMA_L6_20P	NEMA L6-20P (Single-phase 250V; 20A; 2P3W).
NEMA_L6_30P	NEMA L6-30P (Single-phase 250V; 30A; 2P3W).

6.87.5.7 PowerSupplyType:

The power supply type (AC or DC).

string	Description
AC	Alternating Current (AC) power supply.
ACorDC	The power supply supports both DC or AC.
DC	Direct Current (DC) power supply.

6.87.5.8 ResetType:

The type of reset.

string	Description
ForceOff	Turn off the unit immediately (non-graceful shutdown).
ForceOn	Turn on the unit immediately.
ForceRestart	Shut down immediately and non-gracefully and restart the system.
GracefulRestart	Shut down gracefully and restart the system.
GracefulShutdown	Shut down gracefully and power off.
Nmi	Generate a diagnostic interrupt, which is usually an NMI on x86 systems, to stop normal operations, complete diagnostic actions, and, typically, halt the system.
On	Turn on the unit.
Pause	Pause execution on the unit but do not remove power. This is typically a feature of virtual machine hypervisors.
PowerCycle	Power cycle the unit. Behaves like a full power removal, followed by a power restore to the resource.
PushPowerButton	Simulate the pressing of the physical power button on this unit.
Resume	Resume execution on the paused unit. This is typically a feature of virtual machine hypervisors.
Suspend	Write the state of the unit to disk before powering off. This allows for the state to be restored when powered back on.

6.87.6 Example response

```
{
    "@odata.type": "#PowerSupply.v1_3_0.PowerSupply",
    "Id": "Bay1",
    "Name": "Power Supply Bay 1",
    "Status": {
        "State": "Enabled",
        "Health": "Warning"
    },
    "LineInputStatus": "Normal",
    "Model": "RKS-440DC",
    "Manufacturer": "Contoso Power",
    "FirmwareVersion": "1.00",
    "SerialNumber": "3488247",
    "PartNumber": "23456-133",
    "SparePartNumber": "93284-133",
    "LocationIndicatorActive": false,
    "HotPluggable": false,
    "PowerCapacityWatts": 400,
```

```json
        "PhaseWiringType": "OnePhase3Wire",
        "PlugType": "IEC_60320_C14",
        "InputRanges": [
            {
                "NominalVoltageType": "AC200To240V",
                "CapacityWatts": 400
            },
            {
                "NominalVoltageType": "AC120V",
                "CapacityWatts": 350
            },
            {
                "NominalVoltageType": "DC380V",
                "CapacityWatts": 400
            }
        ],
        "EfficiencyRatings": [
            {
                "LoadPercent": 25,
                "EfficiencyPercent": 75
            },
            {
                "LoadPercent": 50,
                "EfficiencyPercent": 85
            },
            {
                "LoadPercent": 90,
                "EfficiencyPercent": 80
            }
        ],
        "OutputRails": [
            {
                "NominalVoltage": 3.3,
                "PhysicalContext": "SystemBoard"
            },
            {
                "NominalVoltage": 5,
                "PhysicalContext": "SystemBoard"
            },
            {
                "NominalVoltage": 12,
                "PhysicalContext": "StorageDevice"
            }
        ],
        "Location": {
            "PartLocation": {
                "ServiceLabel": "PSU 1",
                "LocationType": "Bay",
                "LocationOrdinalValue": 0
            }
```

```
        },
        "Links": {
            "Outlet": {
                "@odata.id": "https://redfishpdu.contoso.com/redfish/v1/PowerEquipment/RackPDUs/1/Outlets/A4"
            }
        },
        "Assembly": {
            "@odata.id": "/redfish/v1/Chassis/1U/PowerSubsystem/PowerSupplies/Bay1/Assembly"
        },
        "Metrics": {
            "@odata.id": "/redfish/v1/Chassis/1U/PowerSubsystem/PowerSupplies/Bay1/Metrics"
        },
        "Actions": {
            "#PowerSupply.Reset": {
                "target": "/redfish/v1/Chassis/1U/PowerSubsystem/PowerSupplies/Bay1/PowerSupply.Reset"
            }
        },
        "@odata.id": "/redfish/v1/Chassis/1U/PowerSubsystem/PowerSupplies/Bay1"
    }
```

6.88 PowerSupplyMetrics 1.0.1

Version	*v1.0*
Release	2020.4

6.88.1 Description

The PowerSupplyMetrics schema contains definitions for the metrics of a power supply.

6.88.2 URIs

/redfish/v1/Chassis/*{ChassisId}*/PowerSubsystem/PowerSupplies/*{PowerSupplyId}*/Metrics
/redfish/v1/PowerEquipment/PowerShelves/*{PowerDistributionId}*/PowerSupplies/*{PowerSupplyId}*/Metrics

6.88.3 Properties

Property	Type	Attributes	Notes
EnergykWh {	object (excerpt)		The energy consumption (kWh) of this unit. This object is an excerpt of the *Sensor* resource located at the URI shown in DataSourceUri.

Property	Type	Attributes	Notes
ApparentkVAh *(v1.5+)*	number (kV.A.h)	*read-only (null)*	Apparent energy (kVAh).
DataSourceUri	string (URI)	*read-only (null)*	The link to the resource that provides the data for this sensor.
LifetimeReading *(v1.1+)*	number	*read-only (null)*	The total accumulation value for this sensor.
ReactivekVARh *(v1.5+)*	number (kV.A.h)	*read-only (null)*	Reactive energy (kVARh).
Reading	number	*read-only (null)*	The sensor value.
SensorResetTime	string (date-time)	*read-only (null)*	The date and time when the time-based properties were last reset.
}			
FanSpeedPercent {	object (excerpt)		The fan speed (percent) for this power supply. This object is an excerpt of the *Sensor* resource located at the URI shown in DataSourceUri.
DataSourceUri	string (URI)	*read-only (null)*	The link to the resource that provides the data for this sensor.
Reading	number	*read-only (null)*	The sensor value.
SpeedRPM *(v1.2+)*	number ({rev}/min)	*read-only (null)*	The rotational speed.
}			
FrequencyHz {	object (excerpt)		The frequency (Hz) for this power supply. This object is an excerpt of the *Sensor* resource located at the URI shown in DataSourceUri.
DataSourceUri	string (URI)	*read-only (null)*	The link to the resource that provides the data for this sensor.
Reading	number	*read-only (null)*	The sensor value.
}			
InputCurrentAmps {	object (excerpt)		The input current (A) for this power supply. This object is an excerpt of the *Sensor* resource located at the URI shown in DataSourceUri.
CrestFactor *(v1.1+)*	number	*read-only (null)*	The crest factor for this sensor.

Property	Type	Attributes	Notes
DataSourceUri	string (URI)	*read-only (null)*	The link to the resource that provides the data for this sensor.
Reading	number	*read-only (null)*	The sensor value.
THDPercent *(v1.1+)*	number	*read-only (null)*	The total harmonic distortion (THD).
}			
InputPowerWatts {	object (excerpt)		The input power (W) for this power supply. This object is an excerpt of the *Sensor* resource located at the URI shown in DataSourceUri.
ApparentVA	number (V.A)	*read-only (null)*	The product of voltage and current for an AC circuit, in volt-ampere units.
DataSourceUri	string (URI)	*read-only (null)*	The link to the resource that provides the data for this sensor.
PhaseAngleDegrees *(v1.5+)*	number	*read-only (null)*	The phase angle (degrees) between the current and voltage waveforms.
PowerFactor	number	*read-only (null)*	The power factor for this sensor.
ReactiveVAR	number (V.A)	*read-only (null)*	The square root of the difference term of squared apparent VA and squared power (Reading) for a circuit, in VAR units.
Reading	number	*read-only (null)*	The sensor value.
}			
InputVoltage {	object (excerpt)		The input voltage (V) for this power supply. This object is an excerpt of the *Sensor* resource located at the URI shown in DataSourceUri.
CrestFactor *(v1.1+)*	number	*read-only (null)*	The crest factor for this sensor.
DataSourceUri	string (URI)	*read-only (null)*	The link to the resource that provides the data for this sensor.
Reading	number	*read-only (null)*	The sensor value.
THDPercent *(v1.1+)*	number	*read-only (null)*	The total harmonic distortion (THD).
}			

Property	Type	Attributes	Notes
OutputPowerWatts {	object (excerpt)		The total power output (W) for this power supply. This object is an excerpt of the *Sensor* resource located at the URI shown in DataSourceUri.
ApparentVA	number (V.A)	*read-only (null)*	The product of voltage and current for an AC circuit, in volt-ampere units.
DataSourceUri	string (URI)	*read-only (null)*	The link to the resource that provides the data for this sensor.
PhaseAngleDegrees *(v1.5+)*	number	*read-only (null)*	The phase angle (degrees) between the current and voltage waveforms.
PowerFactor	number	*read-only (null)*	The power factor for this sensor.
ReactiveVAR	number (V.A)	*read-only (null)*	The square root of the difference term of squared apparent VA and squared power (Reading) for a circuit, in VAR units.
Reading	number	*read-only (null)*	The sensor value.
}			
RailCurrentAmps [{	array (excerpt)		The output currents (A) for this power supply. This object is an excerpt of the *Sensor* resource located at the URI shown in DataSourceUri.
CrestFactor *(v1.1+)*	number	*read-only (null)*	The crest factor for this sensor.
DataSourceUri	string (URI)	*read-only (null)*	The link to the resource that provides the data for this sensor.
Reading	number	*read-only (null)*	The sensor value.
THDPercent *(v1.1+)*	number	*read-only (null)*	The total harmonic distortion (THD).
}]			
RailPowerWatts [{	array (excerpt)		The output power readings (W) for this power supply. This object is an excerpt of the *Sensor* resource located at the URI shown in DataSourceUri.
ApparentVA	number (V.A)	*read-only (null)*	The product of voltage and current for an AC circuit, in volt-ampere units.
DataSourceUri	string (URI)	*read-only (null)*	The link to the resource that provides the data for this sensor.
PhaseAngleDegrees *(v1.5+)*	number	*read-only (null)*	The phase angle (degrees) between the current and voltage waveforms.

Property	Type	Attributes	Notes
PowerFactor	number	*read-only (null)*	The power factor for this sensor.
ReactiveVAR	number (V.A)	*read-only (null)*	The square root of the difference term of squared apparent VA and squared power (Reading) for a circuit, in VAR units.
Reading	number	*read-only (null)*	The sensor value.
}]			
RailVoltage [{	array (excerpt)		The output voltages (V) for this power supply. This object is an excerpt of the *Sensor* resource located at the URI shown in DataSourceUri.
CrestFactor *(v1.1+)*	number	*read-only (null)*	The crest factor for this sensor.
DataSourceUri	string (URI)	*read-only (null)*	The link to the resource that provides the data for this sensor.
Reading	number	*read-only (null)*	The sensor value.
THDPercent *(v1.1+)*	number	*read-only (null)*	The total harmonic distortion (THD).
}]			
Status {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
TemperatureCelsius {	object (excerpt)		The temperature (C) for this power supply. This object is an excerpt of the *Sensor* resource located at the URI shown in DataSourceUri.
DataSourceUri	string (URI)	*read-only (null)*	The link to the resource that provides the data for this sensor.
Reading	number	*read-only (null)*	The sensor value.
}			

6.88.4 Actions

6.88.4.1 ResetMetrics

Description

This action resets the summary metrics related to this equipment.

Action URI: {Base URI of target resource}/Actions/PowerSupplyMetrics.ResetMetrics

Action parameters

This action takes no parameters.

6.88.5 Example response

```
{
    "@odata.type": "#PowerSupplyMetrics.v1_0_1.PowerSupplyMetrics",
    "Id": "Metrics",
    "Name": "Metrics for Power Supply 1",
    "Status": {
        "State": "Enabled",
        "Health": "Warning"
    },
    "InputVoltage": {
        "DataSourceUri": "/redfish/v1/Chassis/1U/Sensors/PS1InputVoltage",
        "Reading": 230.2
    },
    "InputCurrentAmps": {
        "DataSourceUri": "/redfish/v1/Chassis/1U/Sensors/PS1InputCurrent",
        "Reading": 5.19
    },
    "InputPowerWatts": {
        "DataSourceUri": "/redfish/v1/Chassis/1U/Sensors/PS1InputPower",
        "Reading": 937.4
    },
    "RailVoltage": [
        {
            "DataSourceUri": "/redfish/v1/Chassis/1U/Sensors/PS1_3VOutput",
            "Reading": 3.31
        },
        {
            "DataSourceUri": "/redfish/v1/Chassis/1U/Sensors/PS1_5VOutput",
            "Reading": 5.03
        },
        {
            "DataSourceUri": "/redfish/v1/Chassis/1U/Sensors/PS1_12VOutput",
            "Reading": 12.06
        }
    ],
    "RailCurrentAmps": [
        {
            "DataSourceUri": "/redfish/v1/Chassis/1U/Sensors/PS1_3VCurrent",
            "Reading": 9.84
        },
        {
            "DataSourceUri": "/redfish/v1/Chassis/1U/Sensors/PS1_5VCurrent",
```

```json
            "Reading": 1.25
        },
        {
            "DataSourceUri": "/redfish/v1/Chassis/1U/Sensors/PS1_12Current",
            "Reading": 2.58
        }
    ],
    "OutputPowerWatts": {
        "DataSourceUri": "/redfish/v1/Chassis/1U/Sensors/PS1OutputPower",
        "Reading": 937.4
    },
    "RailPowerWatts": [
        {
            "DataSourceUri": "/redfish/v1/Chassis/1U/Sensors/PS1_3VPower",
            "Reading": 79.84
        },
        {
            "DataSourceUri": "/redfish/v1/Chassis/1U/Sensors/PS1_5VPower",
            "Reading": 26.25
        },
        {
            "DataSourceUri": "/redfish/v1/Chassis/1U/Sensors/PS1_12VPower",
            "Reading": 91.58
        }
    ],
    "EnergykWh": {
        "DataSourceUri": "/redfish/v1/Chassis/1U/Sensors/PS1Energy",
        "Reading": 325675
    },
    "FrequencyHz": {
        "DataSourceUri": "/redfish/v1/Chassis/1U/Sensors/PS1InputFrequency",
        "Reading": 60
    },
    "TemperatureCelsius": {
        "DataSourceUri": "/redfish/v1/Chassis/1U/Sensors/PS1Temp",
        "Reading": 43.9
    },
    "FanSpeedPercent": {
        "DataSourceUri": "/redfish/v1/Chassis/1U/Sensors/PS1Fan",
        "Reading": 68,
        "SpeedRPM": 3290
    },
    "Actions": {
        "#PowerSupplyMetrics.ResetMetrics": {
            "target": "/redfish/v1/Chassis/1U/PowerSubsystem/PowerSupplies/Bay1/Metrics/PowerSupplyMetrics.ResetMetrics"
        }
    },
    "@odata.id": "/redfish/v1/Chassis/1U/PowerSubsystem/PowerSupplies/Bay1/Metrics"
}
```

6.89 PrivilegeRegistry 1.1.4

Version	*v1.1*	*v1.0*
Release	2017.1	2016.3

6.89.1 Description

The PrivilegeRegistry schema describes the operation-to-privilege mappings.

6.89.2 Properties

Property	Type	Attributes	Notes
Mappings [{	array		The mappings between entities and the relevant privileges that access those entities.
Entity	string	*read-only*	The Resource name, such as `Manager` .
OperationMap {	object		List mapping between HTTP methods and privilege required for the Resource.
DELETE [{	array		The privilege required to complete an HTTP DELETE operation.
Privilege [ ]	array (string)	*read-only*	An array of privileges that are required to complete a specific HTTP operation on a Resource.
}]			
GET [{	array		The privilege required to complete an HTTP GET operation.
Privilege [ ]	array (string)	*read-only*	An array of privileges that are required to complete a specific HTTP operation on a Resource.
}]			
HEAD [{	array		The privilege required to complete an HTTP HEAD operation.
Privilege [ ]	array (string)	*read-only*	An array of privileges that are required to complete a specific HTTP operation on a Resource.
}]			
PATCH [{	array		The privilege required to complete an HTTP PATCH operation.
Privilege [ ]	array (string)	*read-only*	An array of privileges that are required to complete a specific HTTP operation on a Resource.

Property	Type	Attributes	Notes
}]			
POST [{	array		The privilege required to complete an HTTP POST operation.
Privilege [ ]	array (string)	*read-only*	An array of privileges that are required to complete a specific HTTP operation on a Resource.
}]			
PUT [{	array		The privilege required to complete an HTTP PUT operation.
Privilege [ ]	array (string)	*read-only*	An array of privileges that are required to complete a specific HTTP operation on a Resource.
}]			
}			
PropertyOverrides [{	array		The privilege overrides of properties within a Resource.
OperationMap {	object		The mapping between the HTTP operation and the privilege required to complete the operation.
DELETE [{	array		The privilege required to complete an HTTP DELETE operation.
Privilege [ ]	array (string)	*read-only*	An array of privileges that are required to complete a specific HTTP operation on a Resource.
}]			
GET [{	array		The privilege required to complete an HTTP GET operation.
Privilege [ ]	array (string)	*read-only*	An array of privileges that are required to complete a specific HTTP operation on a Resource.
}]			
HEAD [{	array		The privilege required to complete an HTTP HEAD operation.
Privilege [ ]	array (string)	*read-only*	An array of privileges that are required to complete a specific HTTP operation on a Resource.
}]			
PATCH [{	array		The privilege required to complete an HTTP PATCH operation.
Privilege [ ]	array (string)	*read-only*	An array of privileges that are required to complete a specific HTTP operation on a Resource.
}]			
POST [{	array		The privilege required to complete an HTTP POST operation.

Property	Type	Attributes	Notes
Privilege [ ]	array (string)	*read-only*	An array of privileges that are required to complete a specific HTTP operation on a Resource.
}]			
PUT [{	array		The privilege required to complete an HTTP PUT operation.
Privilege [ ]	array (string)	*read-only*	An array of privileges that are required to complete a specific HTTP operation on a Resource.
}]			
}			
Targets [ ]	array (string, null)	*read-only*	The set of URIs, Resource types, or properties.
}]			
ResourceURIOverrides [{	array		The privilege overrides of Resource URIs.
OperationMap {	object		The mapping between the HTTP operation and the privilege required to complete the operation.
DELETE [{	array		The privilege required to complete an HTTP DELETE operation.
Privilege [ ]	array (string)	*read-only*	An array of privileges that are required to complete a specific HTTP operation on a Resource.
}]			
GET [{	array		The privilege required to complete an HTTP GET operation.
Privilege [ ]	array (string)	*read-only*	An array of privileges that are required to complete a specific HTTP operation on a Resource.
}]			
HEAD [{	array		The privilege required to complete an HTTP HEAD operation.
Privilege [ ]	array (string)	*read-only*	An array of privileges that are required to complete a specific HTTP operation on a Resource.
}]			
PATCH [{	array		The privilege required to complete an HTTP PATCH operation.
Privilege [ ]	array (string)	*read-only*	An array of privileges that are required to complete a specific HTTP operation on a Resource.
}]			

Property	Type	Attributes	Notes
POST [{	array		The privilege required to complete an HTTP POST operation.
Privilege [ ]	array (string)	*read-only*	An array of privileges that are required to complete a specific HTTP operation on a Resource.
}]			
PUT [{	array		The privilege required to complete an HTTP PUT operation.
Privilege [ ]	array (string)	*read-only*	An array of privileges that are required to complete a specific HTTP operation on a Resource.
}]			
}			
Targets [ ]	array (string, null)	*read-only*	The set of URIs, Resource types, or properties.
}]			
SubordinateOverrides [{	array		The privilege overrides of the subordinate Resource.
OperationMap {	object		The mapping between the HTTP operation and the privilege required to complete the operation.
DELETE [{	array		The privilege required to complete an HTTP DELETE operation.
Privilege [ ]	array (string)	*read-only*	An array of privileges that are required to complete a specific HTTP operation on a Resource.
}]			
GET [{	array		The privilege required to complete an HTTP GET operation.
Privilege [ ]	array (string)	*read-only*	An array of privileges that are required to complete a specific HTTP operation on a Resource.
}]			
HEAD [{	array		The privilege required to complete an HTTP HEAD operation.
Privilege [ ]	array (string)	*read-only*	An array of privileges that are required to complete a specific HTTP operation on a Resource.
}]			
PATCH [{	array		The privilege required to complete an HTTP PATCH operation.
Privilege [ ]	array (string)	*read-only*	An array of privileges that are required to complete a specific HTTP operation on a Resource.

Property	Type	Attributes	Notes
}]			
POST [{	array		The privilege required to complete an HTTP POST operation.
Privilege [ ]	array (string)	*read-only*	An array of privileges that are required to complete a specific HTTP operation on a Resource.
}]			
PUT [{	array		The privilege required to complete an HTTP PUT operation.
Privilege [ ]	array (string)	*read-only*	An array of privileges that are required to complete a specific HTTP operation on a Resource.
}]			
}			
Targets [ ]	array (string, null)	*read-only*	The set of URIs, Resource types, or properties.
}]			
}]			
OEMPrivilegesUsed [ ]	array (string)	*read-only*	The set of OEM privileges used in this mapping.
PrivilegesUsed [ ]	array (string (enum))	*read-only*	The set of Redfish standard privileges used in this mapping. *For the possible property values, see PrivilegesUsed in Property details.*

6.89.3 Property details

6.89.3.1 PrivilegesUsed:

The set of Redfish standard privileges used in this mapping.

string	Description
ConfigureComponents	Can configure components that this service manages.
ConfigureCompositionInfrastructure	Can view and configure composition service resources.
ConfigureManager	Can configure managers.
ConfigureSelf	Can change the password for the current user account and log out of their own sessions.
ConfigureUsers	Can configure users and their accounts.

string	Description
Login	Can log in to the service and read Resources.
NoAuth	Authentication is not required.

6.89.4 Example response

```
{
    "@odata.type": "#PrivilegeRegistry.v1_1_4.PrivilegeRegistry",
    "Id": "Contoso_1.0.1_PrivilegeRegistry",
    "Name": "Privilege Map",
    "PrivilegesUsed": [
        "Login",
        "ConfigureManager",
        "ConfigureUsers",
        "ConfigureComponents",
        "ConfigureSelf"
    ],
    "OEMPrivilegesUsed": [],
    "Mappings": [
        {
            "Entity": "Manager",
            "OperationMap": {
                "GET": [
                    {
                        "Privilege": [
                            "Login"
                        ]
                    }
                ],
                "HEAD": [
                    {
                        "Privilege": [
                            "Login"
                        ]
                    }
                ],
                "PATCH": [
                    {
                        "Privilege": [
                            "ConfigureManager"
                        ]
                    }
                ],
                "POST": [
                    {
                        "Privilege": [
```

```
                            "ConfigureManager"
                        ]
                    }
                ],
                "PUT": [
                    {
                        "Privilege": [
                            "ConfigureManager"
                        ]
                    }
                ],
                "DELETE": [
                    {
                        "Privilege": [
                            "ConfigureManager"
                        ]
                    }
                ]
            }
        }
    ],
    "@odata.id": "/redfish/v1/JobService"
}
```

6.90 Processor 1.14.0

Version	v1.14	v1.13	v1.12	v1.11	v1.10	v1.9	v1.8	v1.7	v1.6	v1.5	v1.4	...
Release	2021.4	2021.2	2021.1	2020.4	2020.3	2020.2	2020.1	2019.4	2019.3	2019.1	2018.3	...

6.90.1 Description

The Processor schema describes the information about a single processor that a system contains. A processor includes both performance characteristics, clock speed, architecture, core count, and so on, and compatibility, such as the CPU ID instruction results.

6.90.2 URIs

/redfish/v1/Chassis/*{ChassisId}*/NetworkAdapters/*{NetworkAdapterId}*/Processors/*{ProcessorId}*
/redfish/v1/Chassis/*{ChassisId}*/NetworkAdapters/*{NetworkAdapterId}*/Processors/*{ProcessorId}*/SubProcessors/
{ProcessorId2}
/redfish/v1/CompositionService/ResourceBlocks/*{ResourceBlockId}*/Processors/*{ProcessorId}*
/redfish/v1/CompositionService/ResourceBlocks/*{ResourceBlockId}*/Processors/*{ProcessorId}*/SubProcessors/

{ProcessorId2}
/redfish/v1/CompositionService/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/Processors/
{ProcessorId}
/redfish/v1/CompositionService/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/Processors/
{ProcessorId}/SubProcessors/*{ProcessorId2}*
/redfish/v1/ResourceBlocks/*{ResourceBlockId}*/Processors/*{ProcessorId}*
/redfish/v1/ResourceBlocks/*{ResourceBlockId}*/Processors/*{ProcessorId}*/SubProcessors/*{ProcessorId2}*
/redfish/v1/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/Processors/*{ProcessorId}*
/redfish/v1/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/Processors/*{ProcessorId}*/
SubProcessors/*{ProcessorId2}*
/redfish/v1/Systems/*{ComputerSystemId}*/Processors/*{ProcessorId}*
/redfish/v1/Systems/*{ComputerSystemId}*/Processors/*{ProcessorId}*/SubProcessors/*{ProcessorId2}*

6.90.3 Properties

Property	Type	Attributes	Notes
AccelerationFunctions *(v1.4+)* {	object		The link to the collection of acceleration functions associated with this processor. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *AccelerationFunction*. See the AccelerationFunction schema for details.
}			
AppliedOperatingConfig *(v1.9+)* {	object		The link to the operating configuration that is applied to this processor. See the *OperatingConfig* schema for details on this property.
@odata.id	string	*read-write*	Link to a OperatingConfig resource. See the Links section and the *OperatingConfig* schema for details.
}			
Assembly *(v1.2+)* {	object		The link to an assembly associated with this processor. See the *Assembly* schema for details on this property.
@odata.id	string	*read-only*	Link to a Assembly resource. See the Links section and the *Assembly* schema for details.
}			
BaseSpeedMHz *(v1.10+)*	integer (MHz)	*read-only (null)*	The base (nominal) clock speed of the processor in MHz.
BaseSpeedPriorityState *(v1.9+)*	string (enum)	*read-only (null)*	The state of the base frequency settings of the operation configuration applied to this processor. *For the possible property values, see BaseSpeedPriorityState in Property details.*

Property	Type	Attributes	Notes
Certificates *(v1.11+)* {	object		The link to a collection of certificates for device identity and attestation. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *Certificate*. See the Certificate schema for details.
}			
Enabled *(v1.12+)*	boolean	*read-write*	An indication of whether this processor is enabled.
EnvironmentMetrics *(v1.11+)* {	object		The link to the environment metrics for this processor. See the *EnvironmentMetrics* schema for details on this property.
@odata.id	string	*read-only*	Link to a EnvironmentMetrics resource. See the Links section and the *EnvironmentMetrics* schema for details.
}			
FirmwareVersion *(v1.7+)*	string	*read-only*	The firmware version of the processor.
FPGA *(v1.4+)* {	object		The properties for processors of the FPGA type.
ExternalInterfaces *(v1.4+)* [{	array		An array of the FPGA external interfaces.
Ethernet *(v1.4+)* {	object		The Ethernet-related information for this interface.
MaxLanes *(v1.4+)*	integer	*read-only (null)*	The number of lanes supported by this interface.
MaxSpeedMbps *(v1.4+)*	integer (Mbit/s)	*read-only (null)*	The maximum speed supported by this interface.
Oem *(v1.4+)* {}	object		See the Oem object definition in the Common properties section.
}			
InterfaceType *(v1.4+)*	string (enum)	*read-only (null)*	The interface type. *For the possible property values, see InterfaceType in Property details.*
PCIe *(v1.4+)* {	object		The PCIe-related information for this interface.
LanesInUse *(v1.3+)*	integer	*read-only (null)*	The number of PCIe lanes in use by this device.
MaxLanes *(v1.3+)*	integer	*read-only (null)*	The number of PCIe lanes supported by this device.
MaxPCIeType *(v1.3+)*	string (enum)	*read-only (null)*	The highest version of the PCIe specification supported by this device. *For the possible property values, see MaxPCIeType in Property details.*
Oem *(v1.3+)* {}	object		See the Oem object definition in the Common properties section.

Property	Type	Attributes	Notes
PCIeType *(v1.3+)*	string (enum)	*read-only (null)*	The version of the PCIe specification in use by this device. *For the possible property values, see PCIeType in Property details.*
}			
}]			
FirmwareId *(v1.4+)*	string	*read-only*	The FPGA firmware identifier.
FirmwareManufacturer *(v1.4+)*	string	*read-only*	The FPGA firmware manufacturer.
FirmwareVersion *(v1.4+, deprecated v1.9*	string	*read-only*	The FPGA firmware version. *Deprecated in v1.9 and later. This property has been deprecated in favor of the FirmwareVersion property in the root of this resource.*
FpgaType *(v1.4+)*	string (enum)	*read-only*	The FPGA type. *For the possible property values, see FpgaType in Property details.*
HostInterface *(v1.4+, deprecated v1.8* {	object		The FPGA interface to the host. *Deprecated in v1.8 and later. This property has been deprecated in favor of the SystemInterface property in the root of this resource.*
Ethernet *(v1.4+)* {	object		The Ethernet-related information for this interface.
MaxLanes *(v1.4+)*	integer	*read-only (null)*	The number of lanes supported by this interface.
MaxSpeedMbps *(v1.4+)*	integer (Mbit/s)	*read-only (null)*	The maximum speed supported by this interface.
Oem *(v1.4+)* {}	object		See the Oem object definition in the Common properties section.
}			
InterfaceType *(v1.4+)*	string (enum)	*read-only (null)*	The interface type. *For the possible property values, see InterfaceType in Property details.*
PCIe *(v1.4+)* {	object		The PCIe-related information for this interface.
LanesInUse *(v1.3+)*	integer	*read-only (null)*	The number of PCIe lanes in use by this device.
MaxLanes *(v1.3+)*	integer	*read-only (null)*	The number of PCIe lanes supported by this device.
MaxPCIeType *(v1.3+)*	string (enum)	*read-only (null)*	The highest version of the PCIe specification supported by this device. *For the possible property values, see MaxPCIeType in Property details.*
Oem *(v1.3+)* {}	object		See the Oem object definition in the Common properties section.

Property	Type	Attributes	Notes
PCIeType *(v1.3+)*	string (enum)	*read-only (null)*	The version of the PCIe specification in use by this device. *For the possible property values, see PCIeType in Property details.*
}			
}			
Model *(v1.4+)*	string	*read-only*	The FPGA model.
Oem *(v1.4+)* {}	object		See the Oem object definition in the Common properties section.
PCIeVirtualFunctions *(v1.4+)*	integer	*read-write*	The number of the PCIe Virtual Functions.
ProgrammableFromHost *(v1.4+)*	boolean	*read-write (null)*	An indication of whether the FPGA firmware can be reprogrammed from the host by using system software.
ReconfigurationSlots *(v1.4+)* [{	array		An array of the FPGA reconfiguration slots. An FPGA uses a reconfiguration slot to contain an acceleration function that can change as the FPGA is provisioned.
AccelerationFunction *(v1.4+)* {	object		The link to the acceleration function that the code programmed into a reconfiguration slot provides. See the *AccelerationFunction* schema for details on this property.
@odata.id	string	*read-only*	Link to a AccelerationFunction resource. See the Links section and the *AccelerationFunction* schema for details.
}			
ProgrammableFromHost *(v1.4+)*	boolean	*read-write (null)*	An indication of whether the reconfiguration slot can be reprogrammed from the host by using system software.
SlotId *(v1.4+)*	string	*read-only (null)*	The FPGA reconfiguration slot identifier.
UUID *(v1.4+)*	string	*read-only (null)*	The UUID for this reconfiguration slot.
}]			
}			
HighSpeedCoreIDs *(v1.9+)* [ ]	array (integer, null)	*read-only*	The list of core identifiers corresponding to the cores that have been configured with the higher clock speed from the operating configuration applied to this processor.
InstructionSet	string (enum)	*read-only (null)*	The instruction set of the processor. *For the possible property values, see InstructionSet in Property details.*
Links *(v1.1+)* {	object		The links to other resources that are related to this resource.

Property	Type	Attributes	Notes
Chassis *(v1.1+)* {	object		The link to the chassis that contains this processor. See the *Chassis* schema for details on this property.
@**odata.id**	string	*read-only*	Link to a Chassis resource. See the Links section and the *Chassis* schema for details.
}			
ConnectedProcessors *(v1.4+)* [{	array		An array of links to the processors directly connected to this processor.
@**odata.id**	string	*read-only*	Link to another Processor resource.
}]			
Endpoints *(v1.4+)* [{	array		An array of links to the endpoints that connect to this processor.
@**odata.id**	string	*read-only*	Link to a Endpoint resource. See the Links section and the *Endpoint* schema for details.
}]			
GraphicsController *(v1.12+)* {	object	*(null)*	A link to the graphics controller associated with this processor. See the *GraphicsController* schema for details on this property.
@**odata.id**	string	*read-only*	Link to a GraphicsController resource. See the Links section and the *GraphicsController* schema for details.
}			
Memory *(v1.11+)* [{	array		An array of links to the memory associated with this processor.
@**odata.id**	string	*read-only*	Link to a Memory resource. See the Links section and the *Memory* schema for details.
}]			
NetworkDeviceFunctions *(v1.13+)* [{	array		The network device functions to which this processor performs offload computation, such as with a SmartNIC.
@**odata.id**	string	*read-only*	Link to a NetworkDeviceFunction resource. See the Links section and the *NetworkDeviceFunction* schema for details.
}]			
Oem {}	object		See the Oem object definition in the Common properties section.
PCIeDevice *(v1.4+)* {	object		The link to the PCIe device associated with this processor. See the *PCIeDevice* schema for details on this property.

Property	Type	Attributes	Notes
@odata.id	string	*read-only*	Link to a PCIeDevice resource. See the Links section and the *PCIeDevice* schema for details.
}			
PCIeFunctions *(v1.4+)* [{	array		An array of links to the PCIeFunctions associated with this processor.
@odata.id	string	*read-only*	Link to a PCIeFunction resource. See the Links section and the *PCIeFunction* schema for details.
}]			
}			
Location *(v1.2+)* {}	object		The location of the processor. For property details, see Location.
LocationIndicatorActive *(v1.10+)*	boolean	*read-write (null)*	An indicator allowing an operator to physically locate this resource.
Manufacturer	string	*read-only (null)*	The processor manufacturer.
MaxSpeedMHz	integer (MHz)	*read-only (null)*	The maximum clock speed of the processor.
MaxTDPWatts *(v1.4+)*	integer (Watts)	*read-only (null)*	The maximum Thermal Design Power (TDP) in watts.
Measurements *(v1.11+, deprecated v1.14* [{	array		An array of DSP0274-defined measurement blocks. *Deprecated in v1.14 and later. This property has been deprecated in favor of the ComponentIntegrity resource.*
@odata.id	string	*read-only*	Link to a MeasurementBlock resource. See the Links section and the *SoftwareInventory* schema for details.
}]			
MemorySummary *(v1.11+)* {	object		The summary of all memory associated with this processor.
ECCModeEnabled *(v1.13+)*	boolean	*read-write (null)*	An indication of whether memory ECC mode is enabled for this processor.
Metrics *(v1.11+)* {	object		The link to the memory metrics associated with all memory of this processor. See the *MemoryMetrics* schema for details on this property.
@odata.id	string	*read-only*	Link to a MemoryMetrics resource. See the Links section and the *MemoryMetrics* schema for details.
}			

Property	Type	Attributes	Notes
TotalCacheSizeMiB *(v1.11+)*	integer (mebibytes)	*read-only (null)*	Total size of cache memory of this processor.
TotalMemorySizeMiB *(v1.11+)*	integer (mebibytes)	*read-only (null)*	Total size of volatile memory attached to this processor.
}			
Metrics *(v1.4+)* {	object		The link to the metrics associated with this processor. See the *ProcessorMetrics* schema for details on this property.
@odata.id	string	*read-only*	Link to a ProcessorMetrics resource. See the Links section and the *ProcessorMetrics* schema for details.
}			
MinSpeedMHz *(v1.8+)*	integer (MHz)	*read-only (null)*	The minimum clock speed of the processor in MHz.
Model	string	*read-only (null)*	The product model number of this device.
OperatingConfigs *(v1.9+)* {	object		The link to the collection operating configurations that can be applied to this processor. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *OperatingConfig*. See the OperatingConfig schema for details.
}			
OperatingSpeedMHz *(v1.8+)*	integer (MHz)	*read-only (null)*	Operating speed of the processor in MHz.
OperatingSpeedRangeMHz *(v1.13+)* {	object (excerpt)		Range of allowed operating speeds (MHz). This object is an excerpt of the *Control* resource located at the URI shown in DataSourceUri.
AllowableMax	number	*read-only (null)*	The maximum possible setting for this control.
AllowableMin	number	*read-only (null)*	The minimum possible setting for this control.
AllowableNumericValues [ ]	array (number, null)	*read-only*	The supported values for the set point.
ControlMode	string (enum)	*read-write (null)*	The current operating mode of the control. *For the possible property values, see ControlMode in Property details.*
DataSourceUri	string (URI)	*read-only (null)*	The link to the resource that provides the data for this control.

Property	Type	Attributes	Notes
Reading	number	read-only (null)	The reading of the sensor associated with this control.
ReadingUnits	string	read-only (null)	The units of the sensor reading associated with this control.
SettingMax	number	read-write (null)	The maximum set point in the allowed range.
SettingMin	number	read-write (null)	The minimum set point in the allowed range.
}			
PartNumber *(v1.7+)*	string	read-only (null)	The part number of the processor.
Ports *(v1.13+)* {	object		The link to the collection of ports for this processor. Contains a link to a resource.
@odata.id	string	read-only	Link to Collection of *Port*. See the Port schema for details.
}			
ProcessorArchitecture	string (enum)	read-only (null)	The architecture of the processor. *For the possible property values, see ProcessorArchitecture in Property details.*
ProcessorId {	object		The identification information for this processor.
EffectiveFamily	string	read-only (null)	The effective family for this processor.
EffectiveModel	string	read-only (null)	The effective model for this processor.
IdentificationRegisters	string	read-only (null)	The raw manufacturer-provided processor identification registers for this processor.
MicrocodeInfo	string	read-only (null)	The microcode information for this processor.
ProtectedIdentificationNumber *(v1.10+)*	string	read-only (null)	The Protected Processor Identification Number (PPIN) for this processor.
Step	string	read-only (null)	The step value for this processor.
VendorId	string	read-only (null)	The vendor identification for this processor.
}			

Property	Type	Attributes	Notes
ProcessorMemory *(v1.4+)* [{	array		The memory directly attached or integrated within this processor.
CapacityMiB *(v1.4+)*	integer (mebibytes)	*read-only (null)*	The memory capacity in MiB.
IntegratedMemory *(v1.4+)*	boolean	*read-only (null)*	An indication of whether this memory is integrated within the processor.
MemoryType *(v1.4+)*	string (enum)	*read-only (null)*	The type of memory used by this processor. *For the possible property values, see MemoryType in Property details.*
SpeedMHz *(v1.4+)*	integer	*read-only (null)*	The operating speed of the memory in MHz.
}]			
ProcessorType	string (enum)	*read-only (null)*	The type of processor. *For the possible property values, see ProcessorType in Property details.*
SerialNumber *(v1.7+)*	string	*read-only (null)*	The serial number of the processor.
Socket	string	*read-only (null)*	The socket or location of the processor.
SparePartNumber *(v1.11+)*	string	*read-only (null)*	The spare part number of the processor.
SpeedLimitMHz *(v1.10+)*	integer (MHz)	*read-write (null)*	The clock limit of the processor in MHz.
SpeedLocked *(v1.10+)*	boolean	*read-write (null)*	Indicates whether the clock speed of the processor is fixed at the value specified in the SpeedLimitMHz property.
Status {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
SubProcessors *(v1.3+)* {	object		The link to the collection of sub-processors associated with this system, such as cores or threads, that are part of a processor. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *Processor*. See the Processor schema for details.
}			
SystemInterface *(v1.8+)* {	object		The interface between the system and the processor.
Ethernet *(v1.4+)* {	object		The Ethernet-related information for this interface.
MaxLanes *(v1.4+)*	integer	*read-only (null)*	The number of lanes supported by this interface.

Property	Type	Attributes	Notes
MaxSpeedMbps (v1.4+)	integer (Mbit/s)	read-only (null)	The maximum speed supported by this interface.
Oem (v1.4+) {}	object		See the Oem object definition in the Common properties section.
}			
InterfaceType (v1.4+)	string (enum)	read-only (null)	The interface type. For the possible property values, see InterfaceType in Property details.
PCIe (v1.4+) {	object		The PCIe-related information for this interface.
LanesInUse (v1.3+)	integer	read-only (null)	The number of PCIe lanes in use by this device.
MaxLanes (v1.3+)	integer	read-only (null)	The number of PCIe lanes supported by this device.
MaxPCIeType (v1.3+)	string (enum)	read-only (null)	The highest version of the PCIe specification supported by this device. For the possible property values, see MaxPCIeType in Property details.
Oem (v1.3+) {}	object		See the Oem object definition in the Common properties section.
PCIeType (v1.3+)	string (enum)	read-only (null)	The version of the PCIe specification in use by this device. For the possible property values, see PCIeType in Property details.
}			
}			
TDPWatts (v1.4+)	integer (Watts)	read-only (null)	The nominal Thermal Design Power (TDP) in watts.
TotalCores	integer	read-only (null)	The total number of cores that this processor contains.
TotalEnabledCores (v1.5+)	integer	read-only (null)	The total number of enabled cores that this processor contains.
TotalThreads	integer	read-only (null)	The total number of execution threads that this processor supports.
TurboState (v1.9+)	string (enum)	read-only (null)	The state of the turbo for this processor. For the possible property values, see TurboState in Property details.
UUID (v1.4+)	string	read-only (null)	The UUID for this processor.
Version (v1.7+)	string	read-only (null)	The hardware version of the processor.

6.90.4 Actions

6.90.4.1 Reset *(v1.6+)*

Description

This action resets the processor.

Action URI: {Base URI of target resource}/Actions/Processor.Reset

Action parameters

Parameter Name	Type	Attributes	Notes
ResetType	string (enum)	*optional*	The type of reset. *For the possible property values, see ResetType in Property details.*

Request Example

```
{
    "ResetType": "ForceRestart"
}
```

6.90.5 Property details

6.90.5.1 BaseSpeedPriorityState:

The state of the base frequency settings of the operation configuration applied to this processor.

string	Description
Disabled	Base speed priority is disabled.
Enabled	Base speed priority is enabled.

6.90.5.2 ControlMode:

The current operating mode of the control.

string	Description
Automatic	Automatically adjust control to meet the set point.
Disabled	The control has been disabled.
Manual	No automatic adjustments are made to the control.
Override	User override of the automatic set point value.

6.90.5.3 FpgaType:

The FPGA type.

string	Description
Discrete	The discrete FPGA device.
Integrated	The FPGA device integrated with other processor in the single chip.

6.90.5.4 InstructionSet:

The instruction set of the processor.

string	Description
ARM-A32	ARM 32-bit.
ARM-A64	ARM 64-bit.
IA-64	Intel IA-64.
MIPS32	MIPS 32-bit.
MIPS64	MIPS 64-bit.
OEM	OEM-defined.
PowerISA *(v1.4+)*	PowerISA-64 or PowerISA-32.
x86	x86 32-bit.
x86-64	x86 64-bit.

6.90.5.5 InterfaceType:

The interface type.

string	Description
AMBA *(v1.8+)*	The Arm Advanced Microcontroller Bus Architecture interface.
CCIX *(v1.8+)*	The Cache Coherent Interconnect for Accelerators interface.
CXL *(v1.8+)*	The Compute Express Link interface.
Ethernet	An Ethernet interface.
OEM	An OEM-defined interface.
PCIe	A PCI Express interface.
QPI	The Intel QuickPath Interconnect.
UPI	The Intel UltraPath Interconnect.

6.90.5.6 MaxPCIeType:

The highest version of the PCIe specification supported by this device.

string	Description
Gen1	A PCIe v1.0 slot.
Gen2	A PCIe v2.0 slot.
Gen3	A PCIe v3.0 slot.
Gen4	A PCIe v4.0 slot.
Gen5	A PCIe v5.0 slot.

6.90.5.7 MemoryType:

The type of memory used by this processor.

string	Description
DDR	Double data rate synchronous dynamic random-access memory.

string	Description
DDR2	Double data rate type two synchronous dynamic random-access memory.
DDR3	Double data rate type three synchronous dynamic random-access memory.
DDR4	Double data rate type four synchronous dynamic random-access memory.
DDR5	Double data rate type five synchronous dynamic random-access memory.
Flash	Flash memory.
GDDR	Synchronous graphics random-access memory.
GDDR2	Double data rate type two synchronous graphics random-access memory.
GDDR3	Double data rate type three synchronous graphics random-access memory.
GDDR4	Double data rate type four synchronous graphics random-access memory.
GDDR5	Double data rate type five synchronous graphics random-access memory.
GDDR5X	Double data rate type five X synchronous graphics random-access memory.
GDDR6	Double data rate type six synchronous graphics random-access memory.
HBM1	High Bandwidth Memory.
HBM2	The second generation of High Bandwidth Memory.
HBM3	The third generation of High Bandwidth Memory.
L1Cache	L1 cache.
L2Cache	L2 cache.
L3Cache	L3 cache.
L4Cache	L4 cache.
L5Cache	L5 cache.
L6Cache	L6 cache.
L7Cache	L7 cache.
OEM	OEM-defined.
SDRAM	Synchronous dynamic random-access memory.
SGRAM	Synchronous graphics RAM.
SRAM	Static random-access memory.

6.90.5.8 PCIeType:

The version of the PCIe specification in use by this device.

string	Description
Gen1	A PCIe v1.0 slot.
Gen2	A PCIe v2.0 slot.
Gen3	A PCIe v3.0 slot.
Gen4	A PCIe v4.0 slot.
Gen5	A PCIe v5.0 slot.

6.90.5.9 ProcessorArchitecture:

The architecture of the processor.

string	Description
ARM	ARM.
IA-64	Intel Itanium.
MIPS	MIPS.
OEM	OEM-defined.
Power *(v1.4+)*	Power.
x86	x86 or x86-64.

6.90.5.10 ProcessorType:

The type of processor.

string	Description
Accelerator	An accelerator.
Core *(v1.3+)*	A core in a processor.
CPU	A CPU.

string	Description
DSP	A DSP.
FPGA	An FPGA.
GPU	A GPU.
OEM	An OEM-defined processing unit.
Thread *(v1.3+)*	A thread in a processor.

6.90.5.11 ResetType:

The type of reset.

string	Description
ForceOff	Turn off the unit immediately (non-graceful shutdown).
ForceOn	Turn on the unit immediately.
ForceRestart	Shut down immediately and non-gracefully and restart the system.
GracefulRestart	Shut down gracefully and restart the system.
GracefulShutdown	Shut down gracefully and power off.
Nmi	Generate a diagnostic interrupt, which is usually an NMI on x86 systems, to stop normal operations, complete diagnostic actions, and, typically, halt the system.
On	Turn on the unit.
Pause	Pause execution on the unit but do not remove power. This is typically a feature of virtual machine hypervisors.
PowerCycle	Power cycle the unit. Behaves like a full power removal, followed by a power restore to the resource.
PushPowerButton	Simulate the pressing of the physical power button on this unit.
Resume	Resume execution on the paused unit. This is typically a feature of virtual machine hypervisors.
Suspend	Write the state of the unit to disk before powering off. This allows for the state to be restored when powered back on.

6.90.5.12 TurboState:

The state of the turbo for this processor.

string	Description
Disabled	Turbo is disabled.
Enabled	Turbo is enabled.

6.90.6 Example response

```
{
    "@odata.type": "#Processor.v1_14_0.Processor",
    "Name": "Processor",
    "Id": "1",
    "Socket": "CPU 1",
    "ProcessorType": "CPU",
    "ProcessorArchitecture": "x86",
    "InstructionSet": "x86-64",
    "Manufacturer": "Intel(R) Corporation",
    "Model": "Multi-Core Intel(R) Xeon(R) processor 7xxx Series",
    "ProcessorId": {
        "VendorId": "GenuineIntel",
        "IdentificationRegisters": "0x34AC34DC8901274A",
        "EffectiveFamily": "0x42",
        "EffectiveModel": "0x61",
        "Step": "0x1",
        "MicrocodeInfo": "0x429943"
    },
    "MaxSpeedMHz": 3700,
    "TotalCores": 8,
    "TotalThreads": 16,
    "Status": {
        "State": "Enabled",
        "Health": "OK"
    },
    "Location": {
        "PartLocation": {
            "ServiceLabel": "Processor 1",
            "LocationType": "Socket",
            "LocationOrdinalValue": 0
        }
    },
    "@odata.id": "/redfish/v1/Systems/437XR1138R2/Processors/1"
}
```

6.91 ProcessorMetrics 1.4.1

Version	v1.4	v1.3	v1.2	v1.1	v1.0
Release	2021.3	2021.2	2020.4	2020.1	2018.3

6.91.1 Description

The ProcessorMetrics schema contains usage and health statistics for a processor.

6.91.2 URIs

/redfish/v1/CompositionService/ResourceBlocks/{*ResourceBlockId*}/Processors/{*ProcessorId*}/ProcessorMetrics
/redfish/v1/CompositionService/ResourceBlocks/{*ResourceBlockId*}/Processors/{*ProcessorId*}/SubProcessors/
{*ProcessorId2*}/ProcessorMetrics
/redfish/v1/CompositionService/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/Processors/
{*ProcessorId*}/ProcessorMetrics
/redfish/v1/CompositionService/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/Processors/
{*ProcessorId*}/SubProcessors/{*ProcessorId2*}/ProcessorMetrics
/redfish/v1/CompositionService/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/
ProcessorSummary/ProcessorMetrics
/redfish/v1/ResourceBlocks/{*ResourceBlockId*}/Processors/{*ProcessorId*}/ProcessorMetrics
/redfish/v1/ResourceBlocks/{*ResourceBlockId*}/Processors/{*ProcessorId*}/SubProcessors/{*ProcessorId2*}/
ProcessorMetrics
/redfish/v1/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/Processors/{*ProcessorId*}/
ProcessorMetrics
/redfish/v1/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/Processors/{*ProcessorId*}/
SubProcessors/{*ProcessorId2*}/ProcessorMetrics
/redfish/v1/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/ProcessorSummary/ProcessorMetrics
/redfish/v1/Systems/{*ComputerSystemId*}/Processors/{*ProcessorId*}/ProcessorMetrics
/redfish/v1/Systems/{*ComputerSystemId*}/Processors/{*ProcessorId*}/SubProcessors/{*ProcessorId2*}/ProcessorMetrics
/redfish/v1/Systems/{*ComputerSystemId*}/ProcessorSummary/ProcessorMetrics

6.91.3 Properties

Property	Type	Attributes	Notes
AverageFrequencyMHz *(deprecated v1.1)*	number (MHz)	*read-only (null)*	The average frequency of the processor. *Deprecated in v1.1 and later. This property has been deprecated in favor of OperatingSpeedMHz property.*
BandwidthPercent	number (%)	*read-only (null)*	The bandwidth usage of this processor as a percentage.
Cache [{	array		The processor cache metrics.
CacheMiss	number	*read-only (null)*	The number of cache line misses in millions.
CacheMissesPerInstruction	number	*read-only (null)*	The number of cache misses per instruction.
HitRatio	number	*read-only (null)*	The cache line hit ratio.
Level	string	*read-only (null)*	The cache level.
OccupancyBytes	integer (bytes)	*read-only (null)*	The total cache level occupancy in bytes.
OccupancyPercent	number (%)	*read-only (null)*	The total cache occupancy percentage.
}]			
CacheMetricsTotal *(v1.2+)* {	object		The total cache metrics for this processor.
CurrentPeriod *(v1.2+)* {	object		The cache metrics since the last reset for this processor.
CorrectableECCErrorCount *(v1.2+)*	integer	*read-only (null)*	The number of the correctable errors of cache memory since reset.
UncorrectableECCErrorCount *(v1.2+)*	integer	*read-only (null)*	The number of the uncorrectable errors of cache memory since reset.
}			
LifeTime *(v1.2+)* {	object		The cache metrics for the lifetime of this processor.
CorrectableECCErrorCount *(v1.2+)*	integer	*read-only (null)*	The number of the correctable errors for the lifetime of the cache memory.

Property	Type	Attributes	Notes
UncorrectableECCErrorCount *(v1.2+)*	integer	*read-only (null)*	The number of the uncorrectable errors for the lifetime of the cache memory.
}			
}			
ConsumedPowerWatt *(deprecated v1.2)*	number (Watts)	*read-only (null)*	The power, in watts, that the processor has consumed. *Deprecated in v1.2 and later. This property has been deprecated in favor of the properties in EnvironmentMetrics.*
CoreMetrics [{	array		The processor core metrics.
CoreCache [{	array		The cache metrics of this core in the processor.
CacheMiss	number	*read-only (null)*	The number of cache line misses in millions.
CacheMissesPerInstruction	number	*read-only (null)*	The number of cache misses per instruction.
HitRatio	number	*read-only (null)*	The cache line hit ratio.
Level	string	*read-only (null)*	The cache level.
OccupancyBytes	integer (bytes)	*read-only (null)*	The total cache level occupancy in bytes.
OccupancyPercent	number (%)	*read-only (null)*	The total cache occupancy percentage.
}]			
CoreId	string	*read-only (null)*	The processor core identifier.
CStateResidency [{	array		The C-state residency of this core in the processor.
Level	string	*read-only (null)*	The C-state level, such as C0, C1, or C2.
ResidencyPercent	number (%)	*read-only (null)*	The percentage of time that the processor or core has spent in this particular level of C-state.
}]			
InstructionsPerCycle	number	*read-only (null)*	The number of instructions per clock cycle of this core.

Property	Type	Attributes	Notes
IOStallCount	number	*read-only (null)*	The number of stalled cycles due to I/O operations.
MemoryStallCount	number	*read-only (null)*	The number of stalled cycles due to memory operations.
UnhaltedCycles	number	*read-only (null)*	The unhalted cycles count of this core.
}]			
CoreVoltage *(v1.3+)* {	object (excerpt)		The core voltage (V) of this processor. This object is an excerpt of the *Sensor* resource located at the URI shown in DataSourceUri.
CrestFactor *(v1.1+)*	number	*read-only (null)*	The crest factor for this sensor.
DataSourceUri	string (URI)	*read-only (null)*	The link to the resource that provides the data for this sensor.
Reading	number	*read-only (null)*	The sensor value.
THDPercent *(v1.1+)*	number	*read-only (null)*	The total harmonic distortion (THD).
}			
FrequencyRatio	number	*read-only (null)*	The frequency relative to the nominal processor frequency ratio.
KernelPercent	number (%)	*read-only (null)*	The percentage of time spent in kernel mode.
LocalMemoryBandwidthBytes	integer (bytes)	*read-only (null)*	The local memory bandwidth usage in bytes.
OperatingSpeedMHz *(v1.1+)*	integer (MHz)	*read-only (null)*	Operating speed of the processor in MHz.
PCIeErrors *(v1.4+)* {	object		The PCIe errors associated with this processor.
CorrectableErrorCount *(v1.8+)*	integer	*read-only (null)*	The total number of the PCIe correctable errors for this device.
FatalErrorCount *(v1.8+)*	integer	*read-only (null)*	The total number of the PCIe fatal errors for this device.
L0ToRecoveryCount *(v1.8+)*	integer	*read-only (null)*	The total number of times the PCIe link states transitioned from L0 to the recovery state for this device.

Property	Type	Attributes	Notes
NAKReceivedCount *(v1.8+)*	integer	*read-only (null)*	The total number of NAKs issued on the PCIe link by the receiver.
NAKSentCount *(v1.8+)*	integer	*read-only (null)*	The total number of NAKs issued on the PCIe link by this device.
NonFatalErrorCount *(v1.8+)*	integer	*read-only (null)*	The total number of the PCIe non-fatal errors for this device.
ReplayCount *(v1.8+)*	integer	*read-only (null)*	The total number of the PCIe replays issued by this device.
ReplayRolloverCount *(v1.8+)*	integer	*read-only (null)*	The total number of the PCIe replay rollovers issued by this device.
}			
RemoteMemoryBandwidthBytes	integer (bytes)	*read-only (null)*	The remote memory bandwidth usage in bytes.
TemperatureCelsius *(deprecated v1.2)*	number (Celsius)	*read-only (null)*	The temperature of the processor. *Deprecated in v1.2 and later. This property has been deprecated in favor of the properties in EnvironmentMetrics.*
ThrottlingCelsius	number (Celsius)	*read-only (null)*	The CPU margin to throttle (temperature offset in degree Celsius).
UserPercent	number (%)	*read-only (null)*	The percentage of time spent in user mode.

6.91.4 Actions

6.91.4.1 ClearCurrentPeriod *(v1.2+)*

Description

This action sets the CurrentPeriod property's values to 0.

Action URI: {Base URI of target resource}/Actions/ProcessorMetrics.ClearCurrentPeriod

Action parameters

This action takes no parameters.

6.91.5 Example response

```json
{
    "@odata.type": "#ProcessorMetrics.v1_4_1.ProcessorMetrics",
    "Id": "Metrics",
    "Name": "Processor Metrics",
    "BandwidthPercent": 62,
    "AverageFrequencyMHz": 2400,
    "ThrottlingCelsius": 65,
    "TemperatureCelsius": 41,
    "ConsumedPowerWatt": 82,
    "FrequencyRatio": 0.00432,
    "Cache": [
        {
            "Level": "3",
            "CacheMiss": 0.12,
            "HitRatio": 0.719,
            "CacheMissesPerInstruction": 0.00088,
            "OccupancyBytes": 3030144,
            "OccupancyPercent": 90.1
        }
    ],
    "LocalMemoryBandwidthBytes": 18253611008,
    "RemoteMemoryBandwidthBytes": 81788928,
    "KernelPercent": 2.3,
    "UserPercent": 34.7,
    "CoreMetrics": [
        {
            "CoreId": "core0",
            "InstructionsPerCycle": 1.16,
            "UnhaltedCycles": 6254383746,
            "MemoryStallCount": 58372,
            "IOStallCount": 2634872,
            "CoreCache": [
                {
                    "Level": "2",
                    "CacheMiss": 0.472,
                    "HitRatio": 0.57,
                    "CacheMissesPerInstruction": 0.00346,
                    "OccupancyBytes": 198231,
                    "OccupancyPercent": 77.4
                }
            ],
            "CStateResidency": [
                {
                    "Level": "C0",
                    "Residency": 1.13
                },
                {
```

```json
                "Level": "C1",
                "Residency": 26
            },
            {
                "Level": "C3",
                "Residency": 0.00878
            },
            {
                "Level": "C6",
                "Residency": 0.361
            },
            {
                "Level": "C7",
                "Residency": 72.5
            }
        ]
    }
],
"Oem": {},
"@odata.id": "/redfish/v1/Systems/1/Processors/FPGA1/ProcessorMetrics"
}
```

6.92 RegisteredClient 1.0.0

Version	*v1.0*
Release	2021.4

6.92.1 Description

The RegisteredClient schema defines the record format for a registered client. It is designed to allow well behaved clients to register with a Redfish service such that other clients are aware the service might be configured or monitored by the client.

6.92.2 URIs

/redfish/v1/RegisteredClients/{*RegisteredClientId*}

6.92.3 Properties

Property	Type	Attributes	Notes
ClientType	string (enum)	*read-write required*	The type of registered client. *For the possible property values, see ClientType in Property details.*
ClientURI	string	*read-write*	The URI of the registered client.
CreatedDate	string (date-time)	*read-only*	The date and time when the client entry was created.
ExpirationDate	string (date-time)	*read-write*	The date and time when the client entry will expire.
ManagedResources [{	array		An array of resources that the registered client monitors or configures.
IncludesSubordinates	boolean	*read-write (null)*	Indicates whether the subordinate resources of the managed resource are also managed by the registered client.
ManagedResourceURI	string (URI)	*read-write (null)*	The URI of the resource or resource collection managed by the registered client.
PreferExclusive	boolean	*read-write (null)*	Indicates whether the registered client expects to have exclusive access to the managed resource.
}]			

6.92.4 Property details

6.92.4.1 ClientType:

The type of registered client.

string	Description
Configure	The registered client performs update, create, and delete operations on the resources listed in the ManagedResources property as well as read operations on the service.
Monitor	The registered client only performs read operations on this service.

6.92.5 Example response

```json
{
    "@odata.type": "#RegisteredClient.v1_0_0.RegisteredClient",
    "Id": "2",
    "Name": "ContosoConfigure",
    "ClientType": "Configure",
    "CreatedDate": "2021-09-25T20:12:24Z",
    "Description": "Contoso manager access",
    "ExpirationDate": "2022-10-03T20:00:00Z",
    "ManagedResources": [
        {
            "ManagedResourceURI": "/redfish/v1/Systems",
            "PreferExclusive": true,
            "IncludesSubordinates": true
        },
        {
            "ManagedResourceURI": "/redfish/v1/Chassis",
            "PreferExclusive": true,
            "IncludesSubordinates": true
        }
    ],
    "ClientURI": "https://4.5.6.2/ContosoManager",
    "@odata.id": "/redfish/v1/RegisteredClients/2"
}
```

6.93 ResourceBlock 1.4.0

Version	v1.4	v1.3	v1.2	v1.1	v1.0
Release	2020.4	2018.3	2018.2	2018.1	2017.1

6.93.1 Description

The ResourceBlock schema contains definitions resource blocks, its components, and affinity to composed devices.

6.93.2 URIs

/redfish/v1/CompositionService/ResourceBlocks/{*ResourceBlockId*}
/redfish/v1/ResourceBlocks/{*ResourceBlockId*}

6.93.3 Properties

Property	Type	Attributes	Notes
Client *(v1.4+)*	string	*read-write (null)*	The client to which this resource block is assigned.
CompositionStatus {	object	* required*	The composition status details for this resource block.
CompositionState	string (enum)	*read-only required (null)*	The current state of the resource block from a composition perspective. *For the possible property values, see CompositionState in Property details.*
MaxCompositions *(v1.1+)*	integer	*read-only (null)*	The maximum number of compositions in which this resource block can participate simultaneously.
NumberOfCompositions *(v1.1+)*	integer	*read-only (null)*	The number of compositions in which this resource block is currently participating.
Reserved	boolean	*read-write (null)*	An indication of whether any client has reserved the resource block.
SharingCapable *(v1.1+)*	boolean	*read-only (null)*	An indication of whether this resource block can participate in multiple compositions simultaneously.
SharingEnabled *(v1.1+)*	boolean	*read-write (null)*	An indication of whether this resource block is allowed to participate in multiple compositions simultaneously.
}			
ComputerSystems [{	array		An array of links to the computer systems available in this resource block.
@odata.id	string	*read-only*	Link to a ComputerSystem resource. See the Links section and the *ComputerSystem* schema for details.
}]			
Drives *(v1.3+)* [{	array		An array of links to the drives available in this resource block.
@odata.id	string	*read-only*	Link to a Drive resource. See the Links section and the *Drive* schema for details.
}]			
EthernetInterfaces [{	array		An array of links to the Ethernet interfaces available in this resource block.
@odata.id	string	*read-only*	Link to a EthernetInterface resource. See the Links section and the *EthernetInterface* schema for details.
}]			

Property	Type	Attributes	Notes
Links {	object		The links to other resources that are related to this resource.
Chassis [{	array		An array of links to the chassis in which this resource block is contained.
@odata.id	string	*read-only*	Link to a Chassis resource. See the Links section and the *Chassis* schema for details.
}]			
ComputerSystems [{	array		An array of links to the computer systems that are composed from this resource block.
@odata.id	string	*read-only*	Link to a ComputerSystem resource. See the Links section and the *ComputerSystem* schema for details.
}]			
ConsumingResourceBlocks *(v1.4+)* [{	array		An array of links to resource blocks that depend on this resource block.
@odata.id	string	*read-only*	Link to another ResourceBlock resource.
}]			
Oem {}	object		See the Oem object definition in the Common properties section.
SupplyingResourceBlocks *(v1.4+)* [{	array		An array of links to resource blocks that this resource block depends on.
@odata.id	string	*read-only*	Link to another ResourceBlock resource.
}]			
Zones [{	array		An array of links to the zones in which this resource block is bound.
@odata.id	string	*read-only*	Link to a Zone resource. See the Links section and the *Zone* schema for details.
}]			
}			
Memory [{	array		An array of links to the memory available in this resource block.
@odata.id	string	*read-only*	Link to a Memory resource. See the Links section and the *Memory* schema for details.
}]			
NetworkInterfaces [{	array		An array of links to the Network Interfaces available in this resource block.

Property	Type	Attributes	Notes
@odata.id	string	*read-only*	Link to a NetworkInterface resource. See the Links section and the *NetworkInterface* schema for details.
}]			
Pool *(v1.4+)*	string (enum)	*read-write (null)*	The pool to which this resource block belongs. *For the possible property values, see Pool in Property details.*
Processors [{	array		An array of links to the processors available in this resource block.
@odata.id	string	*read-only*	Link to a Processor resource. See the Links section and the *Processor* schema for details.
}]			
ResourceBlockType [ ]	array (string (enum))	*read-only*	The types of resources available on this resource block. *For the possible property values, see ResourceBlockType in Property details.*
SimpleStorage [{	array		An array of links to the simple storage available in this resource block.
@odata.id	string	*read-only*	Link to a SimpleStorage resource. See the Links section and the *SimpleStorage* schema for details.
}]			
Status {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
Storage [{	array		An array of links to the storage available in this resource block.
@odata.id	string	*read-only*	Link to a Storage resource. See the Links section and the *Storage* schema for details.
}]			

6.93.4 Property details

6.93.4.1 CompositionState:

The current state of the resource block from a composition perspective.

string	Description
Composed	Final successful state of a resource block that has participated in composition.
ComposedAndAvailable *(v1.1+)*	The resource block is currently participating in one or more compositions, and is available to use in more compositions.

string	Description
Composing	Intermediate state indicating composition is in progress.
Failed	The final composition resulted in failure and manual intervention might be required to fix it.
Unavailable *(v1.2+)*	The resource block has been made unavailable by the service, such as due to maintenance being performed on the resource block.
Unused	The resource block is free and can participate in composition.

6.93.4.2 Pool:

The pool to which this resource block belongs.

string	Description
Active	This resource block is in the active pool and is contributing to at least one composed resource as a result of a composition request.
Free	This resource block is in the free pool and is not contributing to any composed resources.
Unassigned	This resource block is not assigned to any pools.

6.93.4.3 ResourceBlockType:

The types of resources available on this resource block.

string	Description
Compute	This resource block contains resources of type `Processor` and `Memory` in a manner that creates a compute complex.
ComputerSystem	This resource block contains resources of type `ComputerSystem` .
Expansion	This resource block is capable of changing over time based on its configuration. Different types of devices within this resource block can be added and removed over time.
IndependentResource	This resource block is capable of being consumed as a standalone component. This resource block can represent things such as a software platform on one or more computer systems or an appliance that provides composable resources and other services, and can be managed independently of the Redfish service.
Memory	This resource block contains resources of type `Memory` .
Network	This resource block contains network resources, such as resource of type `EthernetInterface` and `NetworkInterface` .

string	Description
Processor	This resource block contains resources of type `Processor`.
Storage	This resource block contains storage resources, such as resources of type `Storage` and `SimpleStorage`.

6.93.5 Example response

```json
{
    "@odata.type": "#ResourceBlock.v1_4_0.ResourceBlock",
    "Id": "ComputeBlock1",
    "Name": "Compute Block 1",
    "ResourceBlockType": [
        "Compute",
        "Network"
    ],
    "Status": {
        "State": "Enabled",
        "Health": "OK"
    },
    "CompositionStatus": {
        "Reserved": false,
        "CompositionState": "Composed",
        "SharingCapable": false,
        "MaxCompositions": 1,
        "NumberOfCompositions": 1
    },
    "Processors": [
        {
            "@odata.id": "/redfish/v1/CompositionService/ResourceBlocks/ComputeBlock1/Processors/Block1CPU0"
        },
        {
            "@odata.id": "/redfish/v1/CompositionService/ResourceBlocks/ComputeBlock1/Processors/Block1CPU1"
        }
    ],
    "Memory": [
        {
            "@odata.id": "/redfish/v1/CompositionService/ResourceBlocks/ComputeBlock1/Memory/Block1DIMM0"
        },
        {
            "@odata.id": "/redfish/v1/CompositionService/ResourceBlocks/ComputeBlock1/Memory/Block1DIMM1"
        },
        {
            "@odata.id": "/redfish/v1/CompositionService/ResourceBlocks/ComputeBlock1/Memory/Block1DIMM2"
        },
        {
            "@odata.id": "/redfish/v1/CompositionService/ResourceBlocks/ComputeBlock1/Memory/Block1DIMM3"
        }
```

```
    ],
    "EthernetInterfaces": [
        {
            "@odata.id": "/redfish/v1/CompositionService/ResourceBlocks/ComputeBlock1/EthernetInterfaces/Block1OnboardNIC"
        }
    ],
    "ComputerSystems": [],
    "Links": {
        "ComputerSystems": [
            {
                "@odata.id": "/redfish/v1/Systems/ComposedSystem"
            }
        ],
        "Chassis": [
            {
                "@odata.id": "/redfish/v1/Chassis/ComposableModule1"
            }
        ],
        "Zones": [
            {
                "@odata.id": "/redfish/v1/CompositionService/ResourceZones/1"
            }
        ]
    },
    "Oem": {},
    "@odata.id": "/redfish/v1/CompositionService/ResourceBlocks/ComputeBlock1"
}
```

6.94 Role 1.3.1

Version	v1.3	v1.2	v1.1	v1.0
Release	2020.4	2017.2	2017.1	1.0

6.94.1 Description

The Role schema contains a Redfish role to use in conjunction with a manager account.

6.94.2 URIs

/redfish/v1/AccountService/Roles/{*RoleId*}
/redfish/v1/Managers/{*ManagerId*}/RemoteAccountService/Roles/{*RoleId*}

6.94.3 Properties

Property	Type	Attributes	Notes
AlternateRoleId *(v1.3+)*	string	*read-only*	An equivalent role to use when this role is restricted.
AssignedPrivileges [ ]	array (string (enum))	*read-write*	The Redfish privileges for this role. *For the possible property values, see AssignedPrivileges in Property details.*
IsPredefined	boolean	*read-only*	An indication of whether the role is predefined by Redfish or an OEM rather than a client-defined role.
OemPrivileges [ ]	array (string)	*read-write*	The OEM privileges for this role.
Restricted *(v1.3+)*	boolean	*read-only*	An indication of whether use of the role is restricted.
RoleId *(v1.2+)*	string	*read-only required on create*	The name of the role.

6.94.4 Property details

6.94.4.1 AssignedPrivileges:

The Redfish privileges for this role.

string	Description
ConfigureComponents	Can configure components that this service manages.
ConfigureCompositionInfrastructure	Can view and configure composition service resources.
ConfigureManager	Can configure managers.
ConfigureSelf	Can change the password for the current user account and log out of their own sessions.
ConfigureUsers	Can configure users and their accounts.
Login	Can log in to the service and read Resources.
NoAuth	Authentication is not required.

6.94.5 Example response

```json
{
    "@odata.type": "#Role.v1_3_1.Role",
    "Id": "Administrator",
    "Name": "User Role",
    "Description": "Admin User Role",
    "IsPredefined": true,
    "AssignedPrivileges": [
        "Login",
        "ConfigureManager",
        "ConfigureUsers",
        "ConfigureSelf",
        "ConfigureComponents"
    ],
    "OemPrivileges": [
        "OemClearLog",
        "OemPowerControl"
    ],
    "@odata.id": "/redfish/v1/AccountService/Roles/Administrator"
}
```

6.95 RouteEntry 1.0.1

Version	v1.0
Release	2019.4

6.95.1 Description

The RouteEntry schema describes the content of route entry rows. Each route entry contains route sets that list the possible routes for the route entry.

6.95.2 URIs

/redfish/v1/Fabrics/{*FabricId*}/Switches/{*SwitchId*}/Ports/{*PortId*}/LPRT/{*LPRTId*}
/redfish/v1/Fabrics/{*FabricId*}/Switches/{*SwitchId*}/Ports/{*PortId*}/MPRT/{*MPRTId*}
/redfish/v1/Systems/{*ComputerSystemId*}/FabricAdapters/{*FabricAdapterId*}/MSDT/{*MSDTId*}
/redfish/v1/Systems/{*ComputerSystemId*}/FabricAdapters/{*FabricAdapterId*}/Ports/{*PortId*}/LPRT/{*LPRTId*}
/redfish/v1/Systems/{*ComputerSystemId*}/FabricAdapters/{*FabricAdapterId*}/Ports/{*PortId*}/MPRT/{*MPRTId*}
/redfish/v1/Systems/{*ComputerSystemId*}/FabricAdapters/{*FabricAdapterId*}/SSDT/{*SSDTId*}

6.95.3 Properties

Property	Type	Attributes	Notes
MinimumHopCount	integer	*read-write*	The minimum number of hops.
RawEntryHex	string	*read-write*	The raw data of route entry rows.
RouteSet {	object		The link to the collection of route set entries associated with this route. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *RouteSetEntry*. See the RouteSetEntry schema for details.
}			

6.95.4 Example response

```
{
    "@odata.type": "#RouteEntry.v1_0_1.RouteEntry",
    "Id": "0",
    "Name": "LPRT0",
    "Description": "Gen-Z Port 1 LPRT Entry 0",
    "RawEntryHex": "0x34EF124500000000",
    "RouteSet": {
        "@odata.id": "/redfish/v1/Fabrics/GenZ/Switches/Switch1/Ports/1/LPRT/0/RouteSet"
    },
    "MinimumHopCount": 1,
    "Oem": {},
    "@odata.id": "/redfish/v1/Fabrics/GenZ/Switches/Switch1/Ports/1/LPRT/0"
}
```

6.96 RouteSetEntry 1.0.1

Version	*v1.0*
Release	2019.4

6.96.1 Description

The RouteSetEntry schema contains the information about a route. It is part of a larger set that contains possible routes for a particular route entry.

6.96.2 URIs

/redfish/v1/Fabrics/{*FabricId*}/Switches/{*SwitchId*}/Ports/{*PortId*}/LPRT/{*LPRTId*}/RouteSet/{*RouteId*}
/redfish/v1/Fabrics/{*FabricId*}/Switches/{*SwitchId*}/Ports/{*PortId*}/MPRT/{*MPRTId*}/RouteSet/{*RouteId*}
/redfish/v1/Systems/{*ComputerSystemId*}/FabricAdapters/{*FabricAdapterId*}/MSDT/{*MSDTId*}/RouteSet/{*RouteId*}
/redfish/v1/Systems/{*ComputerSystemId*}/FabricAdapters/{*FabricAdapterId*}/Ports/{*PortId*}/LPRT/{*LPRTId*}/RouteSet/
{*RouteId*}
/redfish/v1/Systems/{*ComputerSystemId*}/FabricAdapters/{*FabricAdapterId*}/Ports/{*PortId*}/MPRT/{*MPRTId*}/
RouteSet/{*RouteId*}
/redfish/v1/Systems/{*ComputerSystemId*}/FabricAdapters/{*FabricAdapterId*}/SSDT/{*SSDTId*}/RouteSet/{*RouteId*}

6.96.3 Properties

Property	Type	Attributes	Notes
EgressIdentifier	integer	*read-write*	The egress interface identifier.
HopCount	integer	*read-write*	The number of hops.
Valid	boolean	*read-write*	An indication of whether the entry is valid.
VCAction	integer	*read-write*	The Virtual Channel Action index.

6.96.4 Example response

```
{
    "@odata.type": "#RouteSetEntry.v1_0_1.RouteSetEntry",
    "Id": "0",
    "Name": "RouteSet0",
    "Description": "Gen-Z Port 1 LPRT Entry 0 Route 0",
    "Valid": false,
    "VCAction": 1,
    "HopCount": 2,
    "EgressIdentifier": 0,
    "Oem": {},
    "@odata.id": "/redfish/v1/Fabrics/GenZ/Switches/Switch1/Ports/1/LPRT/0/RouteSet/0"
}
```

6.97 SecureBoot 1.1.0

Version	v1.1	v1.0
Release	2020.1	2016.1

6.97.1 Description

The SecureBoot schema contains UEFI Secure Boot information and represents properties for managing the UEFI Secure Boot functionality of a system.

6.97.2 URIs

/redfish/v1/CompositionService/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/SecureBoot
/redfish/v1/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/SecureBoot
/redfish/v1/Systems/*{ComputerSystemId}*/SecureBoot

6.97.3 Properties

Property	Type	Attributes	Notes
SecureBootCurrentBoot	string (enum)	*read-only (null)*	The UEFI Secure Boot state during the current boot cycle. *For the possible property values, see SecureBootCurrentBoot in Property details.*
SecureBootDatabases *(v1.1+)* {	object		A link to the collection of UEFI Secure Boot databases. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *SecureBootDatabase*. See the SecureBootDatabase schema for details.
}			
SecureBootEnable	boolean	*read-write (null)*	An indication of whether UEFI Secure Boot is enabled.
SecureBootMode	string (enum)	*read-only (null)*	The current UEFI Secure Boot Mode. *For the possible property values, see SecureBootMode in Property details.*

6.97.4 Actions

6.97.4.1 ResetKeys

Description

This action resets the UEFI Secure Boot keys.

Action URI: {Base URI of target resource}/Actions/SecureBoot.ResetKeys

Action parameters

Parameter Name	Type	Attributes	Notes
ResetKeysType	string (enum)	*required*	The type of reset or delete to perform on the UEFI Secure Boot databases. *For the possible property values, see ResetKeysType in Property details.*

Request Example

```
{
    "ResetKeysType": "DeleteAllKeys"
}
```

6.97.5 Property details

6.97.5.1 ResetKeysType:

The type of reset or delete to perform on the UEFI Secure Boot databases.

string	Description
DeleteAllKeys	Delete the contents of all UEFI Secure Boot key databases, including the PK key database. This puts the system in Setup Mode.
DeletePK	Delete the contents of the PK UEFI Secure Boot database. This puts the system in Setup Mode.
ResetAllKeysToDefault	Reset the contents of all UEFI Secure Boot key databases, including the PK key database, to the default values.

6.97.5.2 SecureBootCurrentBoot:

The UEFI Secure Boot state during the current boot cycle.

string	Description
Disabled	UEFI Secure Boot is currently disabled.
Enabled	UEFI Secure Boot is currently enabled.

6.97.5.3 SecureBootMode:

The current UEFI Secure Boot Mode.

string	Description
AuditMode	UEFI Secure Boot is currently in Audit Mode.
DeployedMode	UEFI Secure Boot is currently in Deployed Mode.
SetupMode	UEFI Secure Boot is currently in Setup Mode.
UserMode	UEFI Secure Boot is currently in User Mode.

6.97.6 Example response

```
{
    "@odata.type": "#SecureBoot.v1_1_0.SecureBoot",
    "Id": "SecureBoot",
    "Name": "UEFI Secure Boot",
    "Actions": {
        "#SecureBoot.ResetKeys": {
            "target": "/redfish/v1/Systems/1/SecureBoot/Actions/SecureBoot.ResetKeys",
            "ResetKeysType@Redfish.AllowableValues": [
                "ResetAllKeysToDefault",
                "DeleteAllKeys",
                "DeletePK"
            ]
        },
        "Oem": {}
    },
    "SecureBootEnable": false,
    "SecureBootCurrentBoot": "Disabled",
    "SecureBootMode": "UserMode",
```

```
    "SecureBootDatabases": {
        "@odata.id": "/redfish/v1/Systems/1/SecureBoot/SecureBootDatabases"
    },
    "Oem": {},
    "@odata.id": "/redfish/v1/Systems/1/SecureBoot"
  }
```

6.98 SecureBootDatabase 1.0.1

Version	v1.0
Release	2020.1

6.98.1 Description

The SecureBootDatabase schema describes a UEFI Secure Boot database used to store certificates or hashes.

6.98.2 URIs

/redfish/v1/CompositionService/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/SecureBoot/
SecureBootDatabases/{*DatabaseId*}
/redfish/v1/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/SecureBoot/SecureBootDatabases/
{*DatabaseId*}
/redfish/v1/Systems/{*ComputerSystemId*}/SecureBoot/SecureBootDatabases/{*DatabaseId*}

6.98.3 Properties

Property	Type	Attributes	Notes
Certificates {	object		A link to the collection of certificates contained in this UEFI Secure Boot database. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *Certificate*. See the Certificate schema for details.
}			
DatabaseId	string	*read-only*	This property contains the name of the UEFI Secure Boot database.
Signatures {	object		A link to the collection of signatures contained in this UEFI Secure Boot database. Contains a link to a resource.

Property	Type	Attributes	Notes
@odata.id	string	*read-only*	Link to Collection of *Signature*. See the Signature schema for details.
}			

6.98.4 Actions

6.98.4.1 ResetKeys

Description

This action is used to reset the UEFI Secure Boot keys of this database.

Action URI: {Base URI of target resource}/Actions/SecureBootDatabase.ResetKeys

Action parameters

Parameter Name	Type	Attributes	Notes
ResetKeysType	string (enum)	*required*	The type of reset or delete to perform on this UEFI Secure Boot database. *For the possible property values, see ResetKeysType in Property details.*

Request Example

```
{
    "ResetKeysType": "ResetAllKeysToDefault"
}
```

6.98.5 Property details

6.98.5.1 ResetKeysType:

The type of reset or delete to perform on this UEFI Secure Boot database.

string	Description
DeleteAllKeys	Delete the content of this UEFI Secure Boot key database.
ResetAllKeysToDefault	Reset the content of this UEFI Secure Boot key database to the default values.

6.98.6 Example response

```json
{
    "@odata.type": "#SecureBootDatabase.v1_0_1.SecureBootDatabase",
    "Id": "PK",
    "Name": "PK - Platform Key",
    "Description": "UEFI PK Secure Boot Database",
    "DatabaseId": "PK",
    "Certificates": {
        "@odata.id": "/redfish/v1/Systems/1/SecureBoot/SecureBootDatabases/PK/Certificates/"
    },
    "Actions": {
        "#SecureBootDatabase.ResetKeys": {
            "target": "/redfish/v1/Systems/1/SecureBoot/SecureBootDatabases/PK/Actions/SecureBootDatabase.ResetKeys",
            "ResetKeysType@Redfish.AllowableValues": [
                "ResetAllKeysToDefault",
                "DeleteAllKeys"
            ]
        },
        "Oem": {}
    },
    "Oem": {},
    "@odata.id": "/redfish/v1/Systems/1/SecureBoot/SecureBootDatabases/PK"
}
```

6.99 Sensor 1.5.0

Version	v1.5	v1.4	v1.3	v1.2	v1.1	v1.0
Release	2021.4	2021.2	2021.1	2020.4	2019.4	2018.3

6.99.1 Description

The Sensor schema describes a sensor and its properties.

6.99.2 URIs

/redfish/v1/Chassis/{*ChassisId*}/Sensors/{*SensorId*}
/redfish/v1/PowerEquipment/FloorPDUs/{*PowerDistributionId*}/Sensors/{*SensorId*}
/redfish/v1/PowerEquipment/PowerShelves/{*PowerDistributionId*}/Sensors/{*SensorId*}
/redfish/v1/PowerEquipment/RackPDUs/{*PowerDistributionId*}/Sensors/{*SensorId*}
/redfish/v1/PowerEquipment/Sensors/{*SensorId*}

/redfish/v1/PowerEquipment/Switchgear/*{PowerDistributionId}*/Sensors/*{SensorId}*
/redfish/v1/PowerEquipment/TransferSwitches/*{PowerDistributionId}*/Sensors/*{SensorId}*

6.99.3 Properties

Property	Type	Attributes	Notes
Accuracy	number (%)	*read-only (null)*	The estimated percent error of measured versus actual values.
AdjustedMaxAllowableOperatingValue	number	*read-only (null)*	The adjusted maximum allowable operating value for this equipment based on the environmental conditions.
AdjustedMinAllowableOperatingValue	number	*read-only (null)*	The adjusted minimum allowable operating value for this equipment based on the environmental conditions.
ApparentkVAh *(v1.5+)*	number (kV.A.h)	*read-only (null)*	Apparent energy (kVAh).
ApparentVA	number (V.A)	*read-only (null)*	The product of voltage and current for an AC circuit, in volt-ampere units.
AverageReading *(v1.4+)*	number	*read-only (null)*	The average sensor value.
AveragingInterval *(v1.4+)*	string	*read-write (null)*	The interval over which the average sensor value is calculated.
AveragingIntervalAchieved *(v1.4+)*	boolean	*read-only (null)*	Indicates that enough readings were collected to calculate the average sensor reading over the averaging interval time.
Calibration *(v1.4+)*	number	*read-write (null)*	The calibration offset applied to the Reading.
CalibrationTime *(v1.4+)*	string (date-time)	*read-write (null)*	The date and time that the sensor was last calibrated.
CrestFactor *(v1.1+)*	number	*read-only (null)*	The crest factor for this sensor.
ElectricalContext	string (enum)	*read-only (null)*	The combination of current-carrying conductors. *For the possible property values, see ElectricalContext in Property details.*
Implementation *(v1.1+)*	string (enum)	*read-only (null)*	The implementation of the sensor. *For the possible property values, see Implementation in Property details.*
LifetimeReading *(v1.1+)*	number	*read-only (null)*	The total accumulation value for this sensor.
Links *(v1.3+)* {	object		The links to other resources that are related to this resource.

Property	Type	Attributes	Notes
AssociatedControls *(v1.4+)* [{	array		An array of links to the controls that can affect this sensor.
@odata.id	string	*read-only*	Link to a Control resource. See the Links section and the *Control* schema for details.
}]			
Oem {}	object		See the Oem object definition in the Common properties section.
}			
LoadPercent *(deprecated v1.1)*	number (%)	*read-only (null)*	The power load utilization for this sensor. *Deprecated in v1.1 and later. This property has been deprecated in favor of using a sensor instance with a ReadingType of* `Percent` *to show utilization values when needed.*
Location {}	object		The location information for this sensor. For property details, see Location.
LowestReading *(v1.4+)*	number	*read-only (null)*	The lowest sensor value.
LowestReadingTime *(v1.4+)*	string (date-time)	*read-only (null)*	The time when the lowest sensor value occurred.
MaxAllowableOperatingValue	number	*read-only (null)*	The maximum allowable operating value for this equipment.
MinAllowableOperatingValue	number	*read-only (null)*	The minimum allowable operating value for this equipment.
PeakReading	number	*read-only (null)*	The peak sensor value.
PeakReadingTime	string (date-time)	*read-only (null)*	The time when the peak sensor value occurred.
PhaseAngleDegrees *(v1.5+)*	number	*read-only (null)*	The phase angle (degrees) between the current and voltage waveforms.
PhysicalContext	string (enum)	*read-only (null)*	The area or device to which this sensor measurement applies. *For the possible property values, see PhysicalContext in Property details.*
PhysicalSubContext	string (enum)	*read-only (null)*	The usage or location within a device to which this sensor measurement applies. *For the possible property values, see PhysicalSubContext in Property details.*
PowerFactor	number	*read-only (null)*	The power factor for this sensor.

Property	Type	Attributes	Notes
Precision	number	*read-only (null)*	The number of significant digits in the reading.
ReactivekVARh *(v1.5+)*	number (kV.A.h)	*read-only (null)*	Reactive energy (kVARh).
ReactiveVAR	number (V.A)	*read-only (null)*	The square root of the difference term of squared apparent VA and squared power (Reading) for a circuit, in VAR units.
Reading	number	*read-only (null)*	The sensor value.
ReadingRangeMax	number	*read-only (null)*	The maximum possible value for this sensor.
ReadingRangeMin	number	*read-only (null)*	The minimum possible value for this sensor.
ReadingTime *(v1.1+)*	string (date-time)	*read-only (null)*	The date and time that the reading was acquired from the sensor.
ReadingType	string (enum)	*read-only (null)*	The type of sensor. *For the possible property values, see ReadingType in Property details.*
ReadingUnits	string	*read-only (null)*	The units of the reading and thresholds.
RelatedItem *(v1.2+)* [{	array		An array of links to resources or objects that this sensor services.
@odata.id	string (URI)	*read-only*	The unique identifier for a resource.
}]			
SensingFrequency *(deprecated v1.1)*	number	*read-only (null)*	The time interval between readings of the physical sensor. *Deprecated in v1.1 and later. This property has been deprecated in favor of the SensingInterval property, which uses the duration time format for interoperability.*
SensingInterval *(v1.1+)*	string	*read-only (null)*	The time interval between readings of the sensor.
SensorGroup *(v1.4+)* {}	object		The group of sensors that provide readings for this sensor. For property details, see RedundantGroup.
SensorResetTime	string (date-time)	*read-only (null)*	The date and time when the time-based properties were last reset.
SpeedRPM *(v1.2+)*	number ({rev}/min)	*read-only (null)*	The rotational speed.

Property	Type	Attributes	Notes
Status {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
THDPercent *(v1.1+)*	number	*read-only (null)*	The total harmonic distortion (THD).
Thresholds {	object		The set of thresholds defined for this sensor.
LowerCaution {}	object		The value at which the reading is below normal range. For more information about this property, see Threshold in Property Details.
LowerCautionUser *(v1.2+)* {}	object		The value at which the reading is below normal range. For more information about this property, see Threshold in Property Details.
LowerCritical {}	object		The value at which the reading is below normal range but not yet fatal. For more information about this property, see Threshold in Property Details.
LowerCriticalUser *(v1.2+)* {}	object		The value at which the reading is below normal range but not yet fatal. For more information about this property, see Threshold in Property Details.
LowerFatal {}	object		The value at which the reading is below normal range and fatal. For more information about this property, see Threshold in Property Details.
UpperCaution {}	object		The value at which the reading is above normal range. For more information about this property, see Threshold in Property Details.
UpperCautionUser *(v1.2+)* {}	object		The value at which the reading is above normal range. For more information about this property, see Threshold in Property Details.
UpperCritical {}	object		The value at which the reading is above normal range but not yet fatal. For more information about this property, see Threshold in Property Details.
UpperCriticalUser *(v1.2+)* {}	object		The value at which the reading is above normal range but not yet fatal. For more information about this property, see Threshold in Property Details.
UpperFatal {}	object		The value at which the reading is above normal range and fatal. For more information about this property, see Threshold in Property Details.
}			
VoltageType	string (enum)	*read-only (null)*	The voltage type for this sensor. *For the possible property values, see VoltageType in Property details.*

6.99.4 Actions

6.99.4.1 ResetMetrics

Description

Resets metrics related to this sensor.

Action URI: {Base URI of target resource}/Actions/Sensor.ResetMetrics

Action parameters

This action takes no parameters.

6.99.5 Property details

6.99.5.1 Activation:

The direction of crossing that activates this threshold.

string	Description
Decreasing	Value decreases below the threshold.
Either	Value crosses the threshold in either direction.
Increasing	Value increases above the threshold.

6.99.5.2 ElectricalContext:

The combination of current-carrying conductors.

string	Description
Line1	The circuits that share the L1 current-carrying conductor.
Line1ToLine2	The circuit formed by L1 and L2 current-carrying conductors.
Line1ToNeutral	The circuit formed by L1 and neutral current-carrying conductors.
Line1ToNeutralAndL1L2	The circuit formed by L1, L2, and neutral current-carrying conductors.
Line2	The circuits that share the L2 current-carrying conductor.

string	Description
Line2ToLine3	The circuit formed by L2 and L3 current-carrying conductors.
Line2ToNeutral	The circuit formed by L2 and neutral current-carrying conductors.
Line2ToNeutralAndL1L2	The circuit formed by L1, L2, and Neutral current-carrying conductors.
Line2ToNeutralAndL2L3	The circuits formed by L2, L3, and neutral current-carrying conductors.
Line3	The circuits that share the L3 current-carrying conductor.
Line3ToLine1	The circuit formed by L3 and L1 current-carrying conductors.
Line3ToNeutral	The circuit formed by L3 and neutral current-carrying conductors.
Line3ToNeutralAndL3L1	The circuit formed by L3, L1, and neutral current-carrying conductors.
LineToLine	The circuit formed by two current-carrying conductors.
LineToNeutral	The circuit formed by a line and neutral current-carrying conductor.
Neutral	The grounded current-carrying return circuit of current-carrying conductors.
Total	The circuit formed by all current-carrying conductors.

6.99.5.3 Implementation:

The implementation of the sensor.

string	Description
PhysicalSensor	The reading is acquired from a physical sensor.
Reported	The reading is obtained from software or a device.
Synthesized	The reading is obtained by applying a calculation on one or more properties or multiple sensors. The calculation is not provided.

6.99.5.4 PhysicalContext:

The area or device to which this sensor measurement applies.

string	Description
Accelerator	An accelerator.

string	Description
ACInput	An AC input.
ACMaintenanceBypassInput	An AC maintenance bypass input.
ACOutput	An AC output.
ACStaticBypassInput	An AC static bypass input.
ACUtilityInput	An AC utility input.
ASIC	An ASIC device, such as a networking chip or chipset component.
Back	The back of the chassis.
Backplane	A backplane within the chassis.
Battery	A battery.
Board	A circuit board.
Chassis	The entire chassis.
ComputeBay	Within a compute bay.
CoolingSubsystem	The entire cooling, or air and liquid, subsystem.
CPU	A processor (CPU).
CPUSubsystem	The entire processor (CPU) subsystem.
DCBus	A DC bus.
Exhaust	The air exhaust point or points or region of the chassis.
ExpansionBay	Within an expansion bay.
Fan	A fan.
FPGA	An FPGA.
Front	The front of the chassis.
GPU	A graphics processor (GPU).
GPUSubsystem	The entire graphics processor (GPU) subsystem.
Intake	The air intake point or points or region of the chassis.
LiquidInlet	The liquid inlet point of the chassis.
LiquidOutlet	The liquid outlet point of the chassis.

string	Description
Lower	The lower portion of the chassis.
Memory	A memory device.
MemorySubsystem	The entire memory subsystem.
Motor	A motor.
NetworkBay	Within a networking bay.
NetworkingDevice	A networking device.
PowerSubsystem	The entire power subsystem.
PowerSupply	A power supply.
PowerSupplyBay	Within a power supply bay.
Pump	A pump.
Rectifier	A rectifier device.
Room	The room.
StorageBay	Within a storage bay.
StorageDevice	A storage device.
SystemBoard	The system board (PCB).
Transceiver	A transceiver.
Transformer	A transformer.
TrustedModule	A trusted module.
Upper	The upper portion of the chassis.
VoltageRegulator	A voltage regulator device.

6.99.5.5 PhysicalSubContext:

The usage or location within a device to which this sensor measurement applies.

string	Description
Input	The input.
Output	The output.

6.99.5.6 ReadingType:

The type of sensor.

string	Description
AbsoluteHumidity *(v1.5+)*	Absolute humidity (g/cu m).
AirFlow	Airflow (cu ft/min).
Altitude	Altitude (m).
Barometric	Barometric pressure (mm).
ChargeAh *(v1.4+)*	Charge (Ah).
Current	Current (A).
EnergyJoules	Energy (J).
EnergykWh	Energy (kWh).
EnergyWh *(v1.4+)*	Energy (Wh).
Frequency	Frequency (Hz).
Humidity	Relative humidity (percent).
LiquidFlow	Liquid flow (L/s).
LiquidLevel	Liquid level (cm).
Percent *(v1.1+)*	Percent (%).
Power	Power (W).
Pressure	Pressure (Pa).
PressurekPa *(v1.5+)*	Pressure (kPa).
Rotational	Rotational (RPM).
Temperature	Temperature (C).
Voltage	Voltage (VAC or VDC).

6.99.5.7 Threshold:

The threshold definition for a sensor.

Activation	string (enum)	*read-write (null)*	The direction of crossing that activates this threshold. *For the possible property values, see Activation in Property details.*
DwellTime	string	*read-write (null)*	The duration the sensor value must violate the threshold before the threshold is activated.
Reading	number	*read-write (null)*	The threshold value.

6.99.5.8 VoltageType:

The voltage type for this sensor.

string	Description
AC	Alternating current.
DC	Direct current.

6.99.6 Example response

```
{
    "@odata.type": "#Sensor.v1_5_0.Sensor",
    "Id": "CabinetTemp",
    "Name": "Rack Temperature",
    "ReadingType": "Temperature",
    "ReadingTime": "2019-12-25T04:14:33+06:00",
    "Status": {
        "State": "Enabled",
        "Health": "OK"
    },
    "Reading": 31.6,
    "ReadingUnits": "C",
    "ReadingRangeMin": 0,
    "ReadingRangeMax": 70,
    "Accuracy": 0.25,
    "Precision": 1,
    "SensingInterval": "PT3S",
    "PhysicalContext": "Chassis",
    "Thresholds": {
        "UpperCritical": {
            "Reading": 40,
            "Activation": "Increasing"
```

```
        },
        "UpperCaution": {
            "Reading": 35,
            "Activation": "Increasing"
        },
        "LowerCaution": {
            "Reading": 10,
            "Activation": "Increasing"
        }
    },
    "Oem": {},
    "@odata.id": "/redfish/v1/Chassis/1/Sensors/CabinetTemp"
}
```

6.100 SerialInterface 1.1.8

Version	*v1.1*	*v1.0*
Release	2017.1	1.0

6.100.1 Description

The SerialInterface schema describes an asynchronous serial interface, such as an RS-232 interface, available to a system or device.

6.100.2 URIs

/redfish/v1/Managers/{*ManagerId*}/SerialInterfaces/{*SerialInterfaceId*}

6.100.3 Properties

Property	Type	Attributes	Notes
BitRate	string (enum)	*read-write*	The receive and transmit rate of data flow, typically in bits per second (bit/s), over the serial connection. *For the possible property values, see BitRate in Property details.*
ConnectorType	string (enum)	*read-only*	The type of connector used for this interface. *For the possible property values, see ConnectorType in Property details.*
DataBits	string (enum)	*read-write*	The number of data bits that follow the start bit over the serial connection. *For the possible property values, see DataBits in Property details.*

Property	Type	Attributes	Notes
FlowControl	string (enum)	*read-write*	The type of flow control, if any, that is imposed on the serial connection. *For the possible property values, see FlowControl in Property details.*
InterfaceEnabled	boolean	*read-write (null)*	An indication of whether this interface is enabled.
Parity	string (enum)	*read-write*	The type of parity used by the sender and receiver to detect errors over the serial connection. *For the possible property values, see Parity in Property details.*
PinOut	string (enum)	*read-only (null)*	The physical pinout configuration for a serial connector. *For the possible property values, see PinOut in Property details.*
SignalType	string (enum)	*read-only*	The type of signal used for the communication connection. *For the possible property values, see SignalType in Property details.*
StopBits	string (enum)	*read-write*	The period of time before the next start bit is transmitted. *For the possible property values, see StopBits in Property details.*

6.100.4 Property details

6.100.4.1 BitRate:

The receive and transmit rate of data flow, typically in bits per second (bit/s), over the serial connection.

string	Description
115200	A bit rate of 115200 bit/s.
1200	A bit rate of 1200 bit/s.
19200	A bit rate of 19200 bit/s.
230400	A bit rate of 230400 bit/s.
2400	A bit rate of 2400 bit/s.
38400	A bit rate of 38400 bit/s.
4800	A bit rate of 4800 bit/s.
57600	A bit rate of 57600 bit/s.
9600	A bit rate of 9600 bit/s.

6.100.4.2 ConnectorType:

The type of connector used for this interface.

string	Description
DB25 Female	A DB25 Female connector.
DB25 Male	A DB25 Male connector.
DB9 Female	A DB9 Female connector.
DB9 Male	A DB9 Male connector.
mUSB	A mUSB connector.
RJ11	An RJ11 connector.
RJ45	An RJ45 connector.
USB	A USB connector.
uUSB	A uUSB connector.

6.100.4.3 DataBits:

The number of data bits that follow the start bit over the serial connection.

string	Description
5	Five bits of data following the start bit.
6	Six bits of data following the start bit.
7	Seven bits of data following the start bit.
8	Eight bits of data following the start bit.

6.100.4.4 FlowControl:

The type of flow control, if any, that is imposed on the serial connection.

string	Description
Hardware	Out-of-band flow control imposed.

string	Description
None	No flow control imposed.
Software	XON/XOFF in-band flow control imposed.

6.100.4.5 Parity:

The type of parity used by the sender and receiver to detect errors over the serial connection.

string	Description
Even	An even parity bit.
Mark	A mark parity bit.
None	No parity bit.
Odd	An odd parity bit.
Space	A space parity bit.

6.100.4.6 PinOut:

The physical pinout configuration for a serial connector.

string	Description
Cisco	The Cisco pinout configuration.
Cyclades	The Cyclades pinout configuration.
Digi	The Digi pinout configuration.

6.100.4.7 SignalType:

The type of signal used for the communication connection.

string	Description
Rs232	The serial interface follows RS232.
Rs485	The serial interface follows RS485.

6.100.4.8 StopBits:

The period of time before the next start bit is transmitted.

string	Description
1	One stop bit following the data bits.
2	Two stop bits following the data bits.

6.100.5 Example response

```
{
    "@odata.type": "#SerialInterface.v1_1_8.SerialInterface",
    "Id": "TTY0",
    "Name": "Manager Serial Interface 1",
    "Description": "Management for Serial Interface",
    "InterfaceEnabled": true,
    "SignalType": "Rs232",
    "BitRate": "115200",
    "Parity": "None",
    "DataBits": "8",
    "StopBits": "1",
    "FlowControl": "None",
    "ConnectorType": "RJ45",
    "PinOut": "Cyclades",
    "@odata.id": "/redfish/v1/Managers/BMC/SerialInterfaces/TTY0"
}
```

6.101 ServiceConditions 1.0.0

Version	*v1.0*
Release	2021.4

6.101.1 Description

The ServiceConditions schema contains definitions for reporting the conditions present in the service that require attention.

6.101.2 URIs

/redfish/v1/ServiceConditions

6.101.3 Properties

Property	Type	Attributes	Notes
Conditions [{ }]	array (object)	*(null)*	Conditions reported by this service that require attention. For property details, see Condition.
HealthRollup	string (enum)	*read-only*	The health roll-up for all resources. *For the possible property values, see HealthRollup in Property details.*

6.101.4 Property details

6.101.4.1 HealthRollup:

The health roll-up for all resources.

string	Description
Critical	A critical condition requires immediate attention.
OK	Normal.
Warning	A condition requires attention.

6.101.5 Example response

```
{
    "@odata.type": "#ServiceConditions.v1_0_0.ServiceConditions",
    "Name": "Redfish Service Conditions",
    "HealthRollup": "Warning",
    "Conditions": [
        {
            "MessageId": "ThermalEvents.1.0.OverTemperature",
            "Timestamp": "2020-11-08T12:25:00-05:00 ",
            "Message": "Temperature exceeds rated limit in power supply `A`.",
            "Severity": "Warning",
            "MessageArgs": [
                "A"
```

```
        ],
        "OriginOfCondition": {
            "@odata.id": "/redfish/v1/Chassis/1/Power"
        },
        "LogEntry": {
            "@odata.id": "/redfish/v1/Managers/1/LogServices/Log1/Entries/1"
        }
    },
    {
        "MessageId": "Base.1.9.ConditionInRelatedResource",
        "Message": "One or more conditions exist in a related resource. See the OriginOfCondition property.",
        "Severity": "Warning",
        "OriginOfCondition": {
            "@odata.id": "/redfish/v1/Systems/cpu-memory-example"
        }
    }
    ],
    "Oem": {},
    "@odata.id": "/redfish/v1/ServiceConditions"
}
```

6.102 ServiceRoot 1.13.0

Version	v1.13	v1.12	v1.11	v1.10	v1.9	v1.8	v1.7	v1.6	v1.5	v1.4	v1.3	...
Release	2021.4	2021.3	2021.2	2021.1	2020.3	2020.2	2020.1	2019.4	2018.3	2018.2	2017.3	...

6.102.1 Description

The ServiceRoot schema describes the root of the Redfish Service, located at the '/redfish/v1' URI. All other Resources accessible through the Redfish interface on this device are linked directly or indirectly from the Service Root.

6.102.2 URIs

/redfish/v1
/redfish/v1/

6.102.3 Properties

Property	Type	Attributes	Notes
AccountService {	object		The link to the Account Service. See the *AccountService* schema for details on this property.
@odata.id	string	*read-only*	Link to a AccountService resource. See the Links section and the *AccountService* schema for details.
}			
AggregationService *(v1.8+)* {	object		The link to the aggregation service. See the *AggregationService* schema for details on this property.
@odata.id	string	*read-only*	Link to a AggregationService resource. See the Links section and the *AggregationService* schema for details.
}			
Cables *(v1.11+)* {	object		The link to a collection of cables. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *Cable*. See the Cable schema for details.
}			
CertificateService *(v1.5+)* {	object		The link to the Certificate Service. See the *CertificateService* schema for details on this property.
@odata.id	string	*read-only*	Link to a CertificateService resource. See the Links section and the *CertificateService* schema for details.
}			
Chassis {	object		The link to a collection of chassis. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *Chassis*. See the Chassis schema for details.
}			
ComponentIntegrity *(v1.13+)* {	object		The link to a collection of component integrity information. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *ComponentIntegrity*. See the ComponentIntegrity schema for details.
}			
CompositionService *(v1.2+)* {	object		The link to the Composition Service. See the *CompositionService* schema for details on this property.

Property	Type	Attributes	Notes
@odata.id	string	*read-only*	Link to a CompositionService resource. See the Links section and the *CompositionService* schema for details.
}			
EventService {	object		The link to the Event Service. See the *EventService* schema for details on this property.
@odata.id	string	*read-only*	Link to a EventService resource. See the Links section and the *EventService* schema for details.
}			
Fabrics *(v1.1+)* {	object		The link to a collection of all fabric entities. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *Fabric*. See the Fabric schema for details.
}			
Facilities *(v1.6+)* {	object		The link to a collection of facilities. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *Facility*. See the Facility schema for details.
}			
JobService *(v1.4+)* {	object		The link to the JobService. See the *JobService* schema for details on this property.
@odata.id	string	*read-only*	Link to a JobService resource. See the Links section and the *JobService* schema for details.
}			
JsonSchemas {	object		The link to a collection of JSON Schema files. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *JsonSchemaFile*. See the JsonSchemaFile schema for details.
}			
KeyService *(v1.11+)* {	object		The link to the key service. See the *KeyService* schema for details on this property.
@odata.id	string	*read-only*	Link to a KeyService resource. See the Links section and the *KeyService* schema for details.
}			
LicenseService *(v1.12+)* {	object		The link to the license service. See the *LicenseService* schema for details on this property.

Property	Type	Attributes	Notes
@odata.id	string	*read-only*	Link to a LicenseService resource. See the Links section and the *LicenseService* schema for details.
}			
Links {	object	* required*	The links to other Resources that are related to this Resource.
Oem {}	object		See the Oem object definition in the Common properties section.
Sessions {	object	* required*	The link to a collection of Sessions. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *Session*. See the Session schema for details.
}			
}			
Managers {	object		The link to a collection of managers. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *Manager*. See the Manager schema for details.
}			
NVMeDomains *(v1.10+)* {}	object		The link to a collection of NVMe domains.
PowerEquipment *(v1.6+)* {	object		The link to a set of power equipment. See the *PowerEquipment* schema for details on this property.
@odata.id	string	*read-only*	Link to a PowerEquipment resource. See the Links section and the *PowerEquipment* schema for details.
}			
Product *(v1.3+)*	string	*read-only (null)*	The product associated with this Redfish Service.
ProtocolFeaturesSupported *(v1.3+)* {	object		The information about protocol features that the service supports.
DeepOperations *(v1.7+)* {	object		The information about deep operations that the service supports.
DeepPATCH *(v1.7+)*	boolean	*read-only*	An indication of whether the service supports the deep PATCH operation.
DeepPOST *(v1.7+)*	boolean	*read-only*	An indication of whether the service supports the deep POST operation.
MaxLevels *(v1.7+)*	integer	*read-only*	The maximum levels of resources allowed in deep operations.
}			
ExcerptQuery *(v1.4+)*	boolean	*read-only*	An indication of whether the service supports the excerpt query parameter.

Property	Type	Attributes	Notes
ExpandQuery *(v1.3+)* {	object		The information about the use of $expand in the service.
ExpandAll *(v1.3+)*	boolean	*read-only*	An indication of whether the service supports the asterisk (*) option of the $expand query parameter.
Levels *(v1.3+)*	boolean	*read-only*	An indication of whether the service supports the $levels option of the $expand query parameter.
Links *(v1.3+)*	boolean	*read-only*	An indication of whether this service supports the tilde (~) option of the $expand query parameter.
MaxLevels *(v1.3+)*	integer	*read-only*	The maximum $levels option value in the $expand query parameter.
NoLinks *(v1.3+)*	boolean	*read-only*	An indication of whether the service supports the period (.) option of the $expand query parameter.
}			
FilterQuery *(v1.3+)*	boolean	*read-only*	An indication of whether the service supports the $filter query parameter.
OnlyMemberQuery *(v1.4+)*	boolean	*read-only*	An indication of whether the service supports the only query parameter.
SelectQuery *(v1.3+)*	boolean	*read-only*	An indication of whether the service supports the $select query parameter.
}			
RedfishVersion	string	*read-only*	The version of the Redfish Service.
RegisteredClients *(v1.13+)* {	object		The link to a collection of registered clients. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *RegisteredClient*. See the RegisteredClient schema for details.
}			
Registries {	object		The link to a collection of Registries. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *MessageRegistryFile*. See the MessageRegistryFile schema for details.
}			
ResourceBlocks *(v1.5+)* {	object		The link to a collection of all Resource Block Resources. This collection is intended for implementations that do not contain a Composition Service but that expose Resources to an orchestrator that implements a Composition Service. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *ResourceBlock*. See the ResourceBlock schema for details.
}			

Property	Type	Attributes	Notes
ServiceConditions *(v1.13+)* {	object		The link to the service conditions. See the *ServiceConditions* schema for details on this property.
@odata.id	string	*read-only*	Link to a ServiceConditions resource. See the Links section and the *ServiceConditions* schema for details.
}			
SessionService {	object		The link to the Sessions Service. See the *SessionService* schema for details on this property.
@odata.id	string	*read-only*	Link to a SessionService resource. See the Links section and the *SessionService* schema for details.
}			
Storage *(v1.9+)* {	object		The link to a collection of storage subsystems. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *Storage*. See the Storage schema for details.
}			
StorageServices *(v1.1+)* {}	object		The link to a collection of all storage service entities.
StorageSystems *(v1.1+)* {}	object		The link to a collection of storage systems.
Systems {	object		The link to a collection of systems. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *ComputerSystem*. See the ComputerSystem schema for details.
}			
Tasks {	object		The link to the Task Service. See the *TaskService* schema for details on this property.
@odata.id	string	*read-only*	Link to a TaskService resource. See the Links section and the *TaskService* schema for details.
}			
TelemetryService *(v1.4+)* {	object		The link to the Telemetry Service. See the *TelemetryService* schema for details on this property.
@odata.id	string	*read-only*	Link to a TelemetryService resource. See the Links section and the *TelemetryService* schema for details.
}			
UpdateService *(v1.1+)* {	object		The link to the Update Service. See the *UpdateService* schema for details on this property.

Property	Type	Attributes	Notes
@odata.id	string	read-only	Link to a UpdateService resource. See the Links section and the *UpdateService* schema for details.
}			
UUID	string	read-only (null)	Unique identifier for a service instance. When SSDP is used, this value should be an exact match of the UUID value returned in a 200 OK from an SSDP M-SEARCH request during discovery.
Vendor *(v1.5+)*	string	read-only (null)	The vendor or manufacturer associated with this Redfish Service.

6.102.4 Property details

6.102.4.1 idRef:

@odata.id	string (URI)	read-only	The unique identifier for a resource.

6.102.5 Example response

```
{
    "@odata.type": "#ServiceRoot.v1_13_0.ServiceRoot",
    "Id": "RootService",
    "Name": "Root Service",
    "RedfishVersion": "1.6.0",
    "UUID": "92384634-2938-2342-8820-489239905423",
    "Product": "UR99 1U Server",
    "ProtocolFeaturesSupported": {
        "ExpandQuery": {
            "ExpandAll": true,
            "Levels": true,
            "MaxLevels": 2,
            "Links": true,
            "NoLinks": true
        },
        "SelectQuery": false,
        "FilterQuery": false,
        "OnlyMemberQuery": true,
        "ExcerptQuery": true
    },
    "ServiceConditions": {
        "@odata.id": "/redfish/v1/ServiceConditions"
```

```
        },
        "Systems": {
            "@odata.id": "/redfish/v1/Systems"
        },
        "Chassis": {
            "@odata.id": "/redfish/v1/Chassis"
        },
        "Managers": {
            "@odata.id": "/redfish/v1/Managers"
        },
        "UpdateService": {
            "@odata.id": "/redfish/v1/UpdateService"
        },
        "CompositionService": {
            "@odata.id": "/redfish/v1/CompositionService"
        },
        "Tasks": {
            "@odata.id": "/redfish/v1/TaskService"
        },
        "SessionService": {
            "@odata.id": "/redfish/v1/SessionService"
        },
        "AccountService": {
            "@odata.id": "/redfish/v1/AccountService"
        },
        "EventService": {
            "@odata.id": "/redfish/v1/EventService"
        },
        "Links": {
            "Sessions": {
                "@odata.id": "/redfish/v1/SessionService/Sessions"
            }
        },
        "Oem": {},
        "@odata.id": "/redfish/v1/"
    }
```

6.103 Session 1.3.0

Version	v1.3	v1.2	v1.1	v1.0
Release	2020.3	2019.1	2017.1	1.0

6.103.1 Description

The Session Resource describes a single connection (session) between a client and a Redfish Service instance.

6.103.2 URIs

/redfish/v1/SessionService/Sessions/*{SessionId}*

6.103.3 Properties

Property	Type	Attributes	Notes
ClientOriginIPAddress *(v1.3+)*	string	*read-only (null)*	The IP address of the client that created the session.
OemSessionType *(v1.2+)*	string	*read-only (null)*	The active OEM-defined session type.
Password	string	*read-only required on create (null)*	The password for this session. The value is `null` in responses.
SessionType *(v1.2+)*	string (enum)	*read-only (null)*	The active session type. *For the possible property values, see SessionType in Property details.*
UserName	string	*read-only required on create (null)*	The UserName for the account for this session.

6.103.4 Property details

6.103.4.1 SessionType:

The active session type.

string	Description
HostConsole	The host's console, which could be connected through Telnet, SSH, or other protocol.
IPMI	Intelligent Platform Management Interface.
KVMIP	Keyboard-Video-Mouse over IP Session.
ManagerConsole	The manager's console, which could be connected through Telnet, SSH, SM CLP, or other protocol.
OEM	OEM Type. For OEM session types, see the OemSessionType property.

string	Description
Redfish	A Redfish session.
VirtualMedia	Virtual media.
WebUI	A non-Redfish web user interface session, such as a graphical interface or another web-based protocol.

6.103.5 Example response

```
{
    "@odata.type": "#Session.v1_3_0.Session",
    "Id": "1234567890ABCDEF",
    "Name": "User Session",
    "Description": "Manager User Session",
    "UserName": "Administrator",
    "Oem": {},
    "@odata.id": "/redfish/v1/SessionService/Sessions/1234567890ABCDEF"
}
```

6.104 SessionService 1.1.8

Version	v1.1	v1.0
Release	2016.2	1.0

6.104.1 Description

The SessionService schema describes the session service and its properties, with links to the actual list of sessions.

6.104.2 URIs

/redfish/v1/SessionService

6.104.3 Properties

Property	Type	Attributes	Notes
ServiceEnabled	boolean	*read-write (null)*	An indication of whether this service is enabled. If `true` , this service is enabled. If `false` , it is disabled, and new sessions cannot be created, old sessions cannot be deleted, and established sessions can continue operating.
Sessions {	object		The link to a collection of sessions. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *Session*. See the Session schema for details.
}			
SessionTimeout	integer (seconds)	*read-write*	The number of seconds of inactivity that a session can have before the session service closes the session due to inactivity.
Status {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.

6.104.4 Example response

```
{
    "@odata.type": "#SessionService.v1_1_8.SessionService",
    "Id": "SessionService",
    "Name": "Session Service",
    "Description": "Session Service",
    "Status": {
        "State": "Enabled",
        "Health": "OK"
    },
    "ServiceEnabled": true,
    "SessionTimeout": 30,
    "Sessions": {
        "@odata.id": "/redfish/v1/SessionService/Sessions"
    },
    "@odata.id": "/redfish/v1/SessionService"
}
```

6.105 Signature 1.0.2

Version	*v1.0*

Release	2020.1

6.105.1 Description

The Signature schema describes a signature or a hash.

6.105.2 URIs

/redfish/v1/CompositionService/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/SecureBoot/
SecureBootDatabases/*{DatabaseId}*/Signatures/*{SignatureId}*
/redfish/v1/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/SecureBoot/SecureBootDatabases/
{DatabaseId}/Signatures/*{SignatureId}*
/redfish/v1/Systems/*{ComputerSystemId}*/SecureBoot/SecureBootDatabases/*{DatabaseId}*/Signatures/*{SignatureId}*

6.105.3 Properties

Property	Type	Attributes	Notes
SignatureString	string	*read-only required on create (null)*	The string for the signature.
SignatureType	string	*read-only required on create (null)*	The format of the signature.
SignatureTypeRegistry	string (enum)	*read-only required on create (null)*	The type of the signature. *For the possible property values, see SignatureTypeRegistry in Property details.*
UefiSignatureOwner	string	*read-only (null)*	The UEFI signature owner for this signature.

6.105.4 Property details

6.105.4.1 SignatureTypeRegistry:

The type of the signature.

string	Description
UEFI	A signature defined in the UEFI Specification.

6.105.5 Example response

```
{
    "@odata.type": "#Signature.v1_0_2.Signature",
    "Id": "1",
    "Name": "SHA256 Signature",
    "SignatureString": "80B4D96931BF0D02FD91A61E19D14F1DA452E66DB2408CA8604D411F92659F0A",
    "SignatureTypeRegistry": "UEFI",
    "SignatureType": "EFI_CERT_SHA256_GUID",
    "UefiSignatureOwner": "28d5e212-165b-4ca0-909b-c86b9cee0112",
    "Oem": {},
    "@odata.id": "/redfish/v1/Systems/1/SecureBoot/SecureBootDatabases/db/Signatures/1"
}
```

6.106 SimpleStorage 1.3.1

Version	v1.3	v1.2	v1.1	v1.0
Release	2020.3	2017.1	2016.1	1.0

6.106.1 Description

The SimpleStorage schema represents the properties of a storage controller and its directly-attached devices.

6.106.2 URIs

/redfish/v1/CompositionService/ResourceBlocks/{*ResourceBlockId*}/SimpleStorage/{*SimpleStorageId*}
/redfish/v1/CompositionService/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/SimpleStorage/
{*SimpleStorageId*}
/redfish/v1/ResourceBlocks/{*ResourceBlockId*}/SimpleStorage/{*SimpleStorageId*}
/redfish/v1/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/SimpleStorage/{*SimpleStorageId*}
/redfish/v1/Systems/{*ComputerSystemId*}/SimpleStorage/{*SimpleStorageId*}

6.106.3 Properties

Property	Type	Attributes	Notes
Devices [{	array		The storage devices.
CapacityBytes *(v1.1+)*	integer (bytes)	*read-only (null)*	The size, in bytes, of the storage device.
Manufacturer	string	*read-only (null)*	The name of the manufacturer of this device.
Model	string	*read-only (null)*	The product model number of this device.
Name	string	*read-only required*	The name of the Resource or array member.
Oem {}	object		See the Oem object definition in the Common properties section.
Status {}	object		The status and health of the Resource and its subordinate or dependent Resources. For property details, see Status.
}]			
Links *(v1.2+)* {	object		The links to other Resources that are related to this Resource.
Chassis *(v1.2+)* {	object		The link to the chassis that contains this simple storage. See the *Chassis* schema for details on this property.
@odata.id	string	*read-only*	Link to a Chassis resource. See the Links section and the *Chassis* schema for details.
}			
Oem {}	object		See the Oem object definition in the Common properties section.
Storage *(v1.3+)* {	object		The link to the storage instance that corresponds to this simple storage. See the *Storage* schema for details on this property.
@odata.id	string	*read-only*	Link to a Storage resource. See the Links section and the *Storage* schema for details.
}			
}			
Status {}	object		The status and health of the Resource and its subordinate or dependent Resources. For property details, see Status.
UefiDevicePath	string	*read-only (null)*	The UEFI device path to access this storage controller.

6.106.4 Example response

```json
{
    "@odata.type": "#SimpleStorage.v1_3_1.SimpleStorage",
    "Id": "1",
    "Name": "Simple Storage Controller",
    "Description": "System SATA",
    "UefiDevicePath": "Acpi(PNP0A03,0)/Pci(1F|1)/Ata(Primary,Master)/HD(Part3, Sig00110011)",
    "Status": {
        "State": "Enabled",
        "Health": "OK",
        "HealthRollup": "Warning"
    },
    "Devices": [
        {
            "Name": "SATA Bay 1",
            "Manufacturer": "Contoso",
            "Model": "3000GT8",
            "CapacityBytes": 8000000000000,
            "Status": {
                "State": "Enabled",
                "Health": "OK"
            }
        },
        {
            "Name": "SATA Bay 2",
            "Manufacturer": "Contoso",
            "Model": "3000GT7",
            "CapacityBytes": 4000000000000,
            "Status": {
                "State": "Enabled",
                "Health": "Warning"
            }
        },
        {
            "Name": "SATA Bay 3",
            "Status": {
                "State": "Absent"
            }
        },
        {
            "Name": "SATA Bay 4",
            "Status": {
                "State": "Absent"
            }
        }
    ],
    "@odata.id": "/redfish/v1/Systems/437XR1138R2/SimpleStorage/1"
}
```

6.107 SoftwareInventory 1.6.0

Version	v1.6	v1.5	v1.4	v1.3	v1.2	v1.1	v1.0
Release	2021.4	2021.2	2020.4	2020.1	2018.1	2016.3	2016.2

6.107.1 Description

The SoftwareInventory schema contains an inventory of software components. This can include software components such as BIOS, BMC firmware, firmware for other devices, system drivers, or provider software.

6.107.2 URIs

/redfish/v1/UpdateService/FirmwareInventory/{*SoftwareInventoryId*}
/redfish/v1/UpdateService/SoftwareInventory/{*SoftwareInventoryId*}

6.107.3 Properties

Property	Type	Attributes	Notes
LowestSupportedVersion *(v1.1+)*	string	*read-only (null)*	The lowest supported version of this software.
Manufacturer *(v1.2+)*	string	*read-only (null)*	The manufacturer or producer of this software.
Measurement *(v1.4+, deprecated v1.6* {	object		A DSP0274-defined measurement block. *Deprecated in v1.6 and later. This property has been deprecated in favor of the ComponentIntegrity resource.*
Measurement *(v1.4+)*	string	*read-only (null)*	The hexadecimal string representation of the numeric value of the DSP0274-defined Measurement field of the measurement block.
MeasurementIndex *(v1.5+)*	integer	*read-only (null)*	The DSP0274-defined Index field of the measurement block.
MeasurementSize *(v1.4+)*	integer	*read-only (null)*	The DSP0274-defined MeasurementSize field of the measurement block.
MeasurementSpecification *(v1.4+)*	integer	*read-only (null)*	The DSP0274-defined MeasurementSpecification field of the measurement block.
}			
RelatedItem *(v1.1+)* [{	array		The IDs of the Resources associated with this software inventory item.

Property	Type	Attributes	Notes
@odata.id	string (URI)	read-only	The unique identifier for a resource.
}]			
ReleaseDate *(v1.2+)*	string (date-time)	read-only (null)	The release date of this software.
SoftwareId *(v1.1+)*	string	read-only	The implementation-specific label that identifies this software.
Status {}	object		The status and health of the Resource and its subordinate or dependent Resources. For property details, see Status.
UefiDevicePaths *(v1.1+)* [ ]	array (string, null)	read-only	The list of UEFI device paths of the components associated with this software inventory item.
Updateable	boolean	read-only (null)	An indication of whether the Update Service can update this software.
Version	string	read-only (null)	The version of this software.
WriteProtected *(v1.3+)*	boolean	read-write (null)	Indicates if the software is write-protected.

6.107.4 Example response

```
{
    "@odata.type": "#SoftwareInventory.v1_6_0.SoftwareInventory",
    "Id": "BMC",
    "Name": "Contoso BMC Firmware",
    "Status": {
        "State": "Enabled",
        "Health": "OK"
    },
    "Updateable": true,
    "Manufacturer": "Contoso",
    "ReleaseDate": "2017-08-22T12:00:00",
    "Version": "1.45.455b66-rev4",
    "SoftwareId": "1624A9DF-5E13-47FC-874A-DF3AFF143089",
    "LowestSupportedVersion": "1.30.367a12-rev1",
    "UefiDevicePaths": [
        "BMC(0x1,0x0ABCDEF)"
    ],
    "RelatedItem": [
        {
            "@odata.id": "/redfish/v1/Managers/1"
```

```
        }
    ],
    "Actions": {
        "Oem": {}
    },
    "Oem": {},
    "@odata.id": "/redfish/v1/UpdateService/FirmwareInventory/BMC"
}
```

6.108 Storage 1.12.0

Version	v1.12	v1.11	v1.10	v1.9	v1.8	v1.7	v1.6	v1.5	v1.4	v1.3	v1.2	...
Release	2021.4	2021.2	2020.4	2020.3	2019.3	2019.1	2018.3	2018.2	2017.3	2017.2	2017.1	...

6.108.1 Description

The Storage schema defines a storage subsystem and its respective properties. A storage subsystem represents a set of physical or virtual storage controllers and the resources, such as volumes, that can be accessed from that subsystem.

6.108.2 URIs

/redfish/v1/CompositionService/ResourceBlocks/{*ResourceBlockId*}/Storage/{*StorageId*}
/redfish/v1/CompositionService/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/Storage/{*StorageId*}
/redfish/v1/ResourceBlocks/{*ResourceBlockId*}/Storage/{*StorageId*}
/redfish/v1/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/Storage/{*StorageId*}
/redfish/v1/Storage/{*StorageId*}
/redfish/v1/Systems/{*ComputerSystemId*}/Storage/{*StorageId*}

6.108.3 Properties

Property	Type	Attributes	Notes
ConsistencyGroups *(v1.8+)* {}	object		The consistency groups, each of which contains a set of volumes that are treated by an application or set of applications as a single resource, that are managed by this storage subsystem.

Property	Type	Attributes	Notes
Controllers *(v1.9+)* {	object		The set of controllers instantiated by this storage subsystem. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *StorageController*. See the StorageController schema for details.
}			
Drives [{	array		The set of drives attached to the storage controllers that this resource represents.
@odata.id	string	*read-only*	Link to a Drive resource. See the Links section and the *Drive* schema for details.
}]			
EndpointGroups *(v1.8+)* {	object		All of the endpoint groups, each of which contains a set of endpoints that are used for a common purpose such as an ACL or logical identification, that belong to this storage subsystem. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *EndpointGroup*. See the EndpointGroup schema for details.
}			
FileSystems *(v1.8+)* {}	object		All file systems that are allocated by this storage subsystem.
Identifiers *(v1.9+)* [{ }]	array (object)		The durable names for the storage subsystem. For property details, see Identifier.
Links {	object		The links to other resources that are related to this resource.
Enclosures [{	array		An array of links to the chassis to which this storage subsystem is attached.
@odata.id	string	*read-only*	Link to a Chassis resource. See the Links section and the *Chassis* schema for details.
}]			
HostingStorageSystems *(v1.11+)* [{	array		The storage systems that host this storage subsystem.
@odata.id	string	*read-only*	Link to a ComputerSystem resource. See the Links section and the *ComputerSystem* schema for details.
}]			
Oem {}	object		See the Oem object definition in the Common properties section.

Property	Type	Attributes	Notes
SimpleStorage *(v1.9+)* {	object		The link to the simple storage instance that corresponds to this storage. See the *SimpleStorage* schema for details on this property.
@odata.id	string	*read-only*	Link to a SimpleStorage resource. See the Links section and the *SimpleStorage* schema for details.
}			
StorageServices *(v1.9+)* [{	array		An array of links to the storage services that connect to this storage subsystem.
@odata.id	string (URI)	*read-only*	The unique identifier for a resource.
}]			
}			
Redundancy [{ }]	array (object)		Redundancy information for the storage subsystem. For property details, see Redundancy.
Status { }	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
StorageControllers [{	array		The set of storage controllers that this resource represents.
@odata.id	string (URI)	*read-only required*	The unique identifier for a resource.
Actions *(v1.2+)* { }	object		The available actions for this resource.
Assembly *(v1.4+)* {	object		The link to the assembly associated with this storage controller. See the *Assembly* schema for details on this property.
@odata.id	string	*read-only*	Link to a Assembly resource. See the Links section and the *Assembly* schema for details.
}			
AssetTag	string	*read-write (null)*	The user-assigned asset tag for this storage controller.
CacheSummary *(v1.5+)* {	object		The cache memory of the storage controller in general detail.
PersistentCacheSizeMiB *(v1.5+)*	integer (mebibytes)	*read-only (null)*	The portion of the cache memory that is persistent, measured in MiB.
Status *(v1.5+)* { }	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.

Property	Type	Attributes	Notes
TotalCacheSizeMiB *(v1.5+)*	integer (mebibytes)	*read-only required (null)*	The total configured cache memory, measured in MiB.
}			
Certificates *(v1.10+)* {	object		The link to a collection of certificates for device identity and attestation. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *Certificate*. See the Certificate schema for details.
}			
ControllerRates *(v1.7+)* {	object		This property describes the various controller rates used for processes such as volume rebuild or consistency checks.
ConsistencyCheckRatePercent *(v1.7+)*	integer	*read-write (null)*	The percentage of controller resources used for performing a data consistency check on volumes.
RebuildRatePercent *(v1.7+)*	integer	*read-write (null)*	The percentage of controller resources used for rebuilding/repairing volumes.
TransformationRatePercent *(v1.7+)*	integer	*read-write (null)*	The percentage of controller resources used for transforming volumes from one configuration to another.
}			
FirmwareVersion	string	*read-only (null)*	The firmware version of this storage controller.
Identifiers [{ }]	array (object)		The durable names for the storage controller. For property details, see Identifier.
Links *(v1.1+)* {	object		The links to other resources that are related to this resource.
Endpoints *(v1.1+)* [{	array		An array of links to the endpoints that connect to this controller.
@odata.id	string	*read-only*	Link to a Endpoint resource. See the Links section and the *Endpoint* schema for details.
}]			
Oem {}	object		See the Oem object definition in the Common properties section.
PCIeFunctions *(v1.7+)* [{	array		An array of links to the PCIe functions that the storage controller produces.
@odata.id	string	*read-only*	Link to a PCIeFunction resource. See the Links section and the *PCIeFunction* schema for details.
}]			

Property	Type	Attributes	Notes
StorageServices *(v1.4+, deprecated v1.9* [{	array		An array of links to the storage services that connect to this controller. *Deprecated in v1.9 and later. This property has been deprecated in favor of StorageServices within the Links property at the root level.*
@odata.id	string (URI)	*read-only*	The unique identifier for a resource.
}]			
}			
Location *(v1.4+)* { }	object		The location of the storage controller. For property details, see Location.
Manufacturer	string	*read-only (null)*	The manufacturer of this storage controller.
Measurements *(v1.10+, deprecated v1.12* [{	array		An array of DSP0274-defined measurement blocks. *Deprecated in v1.12 and later. This property has been deprecated in favor of the ComponentIntegrity resource.*
@odata.id	string	*read-only*	Link to a MeasurementBlock resource. See the Links section and the *SoftwareInventory* schema for details.
}]			
MemberId	string	*read-only required*	The unique identifier for the member within an array.
Model	string	*read-only (null)*	The model number for the storage controller.
Name *(v1.3+)*	string	*read-only (null)*	The name of the storage controller.
Oem { }	object		See the Oem object definition in the Common properties section.
PartNumber	string	*read-only (null)*	The part number for this storage controller.
PCIeInterface *(v1.5+)* {	object		The PCIe interface details for this controller.
LanesInUse *(v1.3+)*	integer	*read-only (null)*	The number of PCIe lanes in use by this device.
MaxLanes *(v1.3+)*	integer	*read-only (null)*	The number of PCIe lanes supported by this device.
MaxPCIeType *(v1.3+)*	string (enum)	*read-only (null)*	The highest version of the PCIe specification supported by this device. *For the possible property values, see MaxPCIeType in Property details.*

Property	Type	Attributes	Notes
Oem *(v1.3+)* {}	object		See the Oem object definition in the Common properties section.
PCIeType *(v1.3+)*	string (enum)	*read-only (null)*	The version of the PCIe specification in use by this device. *For the possible property values, see PCIeType in Property details.*
}			
Ports *(v1.7+)* {	object		The link to the collection of ports that exist on the storage controller. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *Port*. See the Port schema for details.
}			
SerialNumber	string	*read-only (null)*	The serial number for this storage controller.
SKU	string	*read-only (null)*	The SKU for this storage controller.
SpeedGbps	number (Gbit/s)	*read-only (null)*	The maximum speed of the storage controller's device interface.
Status {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
SupportedControllerProtocols [ ]	array (string (enum))	*read-only*	The supported set of protocols for communicating to this storage controller. *For the possible property values, see SupportedControllerProtocols in Property details.*
SupportedDeviceProtocols [ ]	array (string (enum))	*read-only*	The protocols that the storage controller can use to communicate with attached devices. *For the possible property values, see SupportedDeviceProtocols in Property details.*
SupportedRAIDTypes *(v1.6+)* [ ]	array (string (enum))	*read-only (null)*	The set of RAID types supported by the storage controller. *For the possible property values, see SupportedRAIDTypes in Property details.*
}]			
StorageGroups *(v1.8+)* {}	object		All of the storage groups, each of which contains a set of volumes and endpoints that are managed as a group for mapping and masking, that belong to this storage subsystem.
StoragePools *(v1.8+)* {}	object		The set of all storage pools that are allocated by this storage subsystem. A storage pool is the set of storage capacity that can be used to produce volumes or other storage pools.
Volumes {}	object		The set of volumes that the storage controllers produce.

6.108.4 Actions

6.108.4.1 ResetToDefaults *(v1.11+)*

Description

The reset action resets the storage device to factory defaults. This can cause the loss of data.

Action URI: {Base URI of target resource}/Actions/Storage.ResetToDefaults

Action parameters

Parameter Name	Type	Attributes	Notes
ResetType	string (enum)	*required*	The type of reset to defaults. *For the possible property values, see ResetType in Property details.*

Request Example

```
{
    "ResetType": "ResetAll"
}
```

6.108.4.2 SetEncryptionKey

Description

This action sets the encryption key for the storage subsystem.

Action URI: {Base URI of target resource}/Actions/Storage.SetEncryptionKey

Action parameters

Parameter Name	Type	Attributes	Notes
EncryptionKey	string	*required*	The encryption key to set on the storage subsystem.

Request Example

```
{
    "EncryptionKey": "566b523d3f955a7fba38a28ec708ca10"
}
```

6.108.5 Property details

6.108.5.1 idRef:

@odata.id	string (URI)	read-only	The unique identifier for a resource.

6.108.5.2 MaxPCIeType:

The highest version of the PCIe specification supported by this device.

string	Description
Gen1	A PCIe v1.0 slot.
Gen2	A PCIe v2.0 slot.
Gen3	A PCIe v3.0 slot.
Gen4	A PCIe v4.0 slot.
Gen5	A PCIe v5.0 slot.

6.108.5.3 PCIeType:

The version of the PCIe specification in use by this device.

string	Description
Gen1	A PCIe v1.0 slot.
Gen2	A PCIe v2.0 slot.
Gen3	A PCIe v3.0 slot.
Gen4	A PCIe v4.0 slot.
Gen5	A PCIe v5.0 slot.

6.108.5.4 ResetType:

The type of reset to defaults.

string	Description
PreserveVolumes	Reset all settings to factory defaults but preserve the configured volumes on the controllers.
ResetAll	Reset all settings to factory defaults and remove all volumes.

6.108.5.5 SupportedControllerProtocols:

The supported set of protocols for communicating to this storage controller.

string	Description
AHCI	Advanced Host Controller Interface (AHCI).
DisplayPort	DisplayPort.
DVI	DVI.
Ethernet	Ethernet.
FC	Fibre Channel.
FCoE	Fibre Channel over Ethernet (FCoE).
FCP	Fibre Channel Protocol for SCSI.
FICON	FIbre CONnection (FICON).
FTP	File Transfer Protocol (FTP).
GenZ	GenZ.
HDMI	HDMI.
HTTP	Hypertext Transport Protocol (HTTP).
HTTPS	Hypertext Transfer Protocol Secure (HTTPS).
I2C	Inter-Integrated Circuit Bus.
InfiniBand	InfiniBand.
iSCSI	Internet SCSI.

string	Description
iWARP	Internet Wide Area RDMA Protocol (iWARP).
MultiProtocol	Multiple Protocols.
NFSv3	Network File System (NFS) version 3.
NFSv4	Network File System (NFS) version 4.
NVLink	NVLink.
NVMe	Non-Volatile Memory Express (NVMe).
NVMeOverFabrics	NVMe over Fabrics.
OEM	OEM-specific.
PCIe	PCI Express.
RoCE	RDMA over Converged Ethernet Protocol.
RoCEv2	RDMA over Converged Ethernet Protocol Version 2.
SAS	Serial Attached SCSI.
SATA	Serial AT Attachment.
SFTP	SSH File Transfer Protocol (SFTP).
SMB	Server Message Block (SMB). Also known as the Common Internet File System (CIFS).
TCP	Transmission Control Protocol (TCP).
TFTP	Trivial File Transfer Protocol (TFTP).
UDP	User Datagram Protocol (UDP).
UHCI	Universal Host Controller Interface (UHCI).
USB	Universal Serial Bus (USB).
VGA	VGA.

6.108.5.6 SupportedDeviceProtocols:

The protocols that the storage controller can use to communicate with attached devices.

string	Description
AHCI	Advanced Host Controller Interface (AHCI).

string	Description
DisplayPort	DisplayPort.
DVI	DVI.
Ethernet	Ethernet.
FC	Fibre Channel.
FCoE	Fibre Channel over Ethernet (FCoE).
FCP	Fibre Channel Protocol for SCSI.
FICON	FIbre CONnection (FICON).
FTP	File Transfer Protocol (FTP).
GenZ	GenZ.
HDMI	HDMI.
HTTP	Hypertext Transport Protocol (HTTP).
HTTPS	Hypertext Transfer Protocol Secure (HTTPS).
I2C	Inter-Integrated Circuit Bus.
InfiniBand	InfiniBand.
iSCSI	Internet SCSI.
iWARP	Internet Wide Area RDMA Protocol (iWARP).
MultiProtocol	Multiple Protocols.
NFSv3	Network File System (NFS) version 3.
NFSv4	Network File System (NFS) version 4.
NVLink	NVLink.
NVMe	Non-Volatile Memory Express (NVMe).
NVMeOverFabrics	NVMe over Fabrics.
OEM	OEM-specific.
PCIe	PCI Express.
RoCE	RDMA over Converged Ethernet Protocol.
RoCEv2	RDMA over Converged Ethernet Protocol Version 2.

string	Description
SAS	Serial Attached SCSI.
SATA	Serial AT Attachment.
SFTP	SSH File Transfer Protocol (SFTP).
SMB	Server Message Block (SMB). Also known as the Common Internet File System (CIFS).
TCP	Transmission Control Protocol (TCP).
TFTP	Trivial File Transfer Protocol (TFTP).
UDP	User Datagram Protocol (UDP).
UHCI	Universal Host Controller Interface (UHCI).
USB	Universal Serial Bus (USB).
VGA	VGA.

6.108.5.7 SupportedRAIDTypes:

The set of RAID types supported by the storage controller.

string	Description
None	A placement policy with no redundancy at the device level.
RAID0	A placement policy where consecutive logical blocks of data are uniformly distributed across a set of independent storage devices without offering any form of redundancy.
RAID00	A placement policy that creates a RAID 0 stripe set over two or more RAID 0 sets.
RAID01	A data placement policy that creates a mirrored device (RAID 1) over a set of striped devices (RAID 0).
RAID1	A placement policy where each logical block of data is stored on more than one independent storage device.
RAID10	A placement policy that creates a striped device (RAID 0) over a set of mirrored devices (RAID 1).
RAID10E	A placement policy that uses a RAID 0 stripe set over two or more RAID 10 sets.
RAID10Triple	A placement policy that uses a striped device (RAID 0) over a set of triple mirrored devices (RAID 1Triple).
RAID1E	A placement policy that uses a form of mirroring implemented over a set of independent storage devices where logical blocks are duplicated on a pair of independent storage devices so that data is uniformly distributed across the storage devices.

string	Description
RAID1Triple	A placement policy where each logical block of data is mirrored three times across a set of three independent storage devices.
RAID3	A placement policy using parity-based protection where logical bytes of data are uniformly distributed across a set of independent storage devices and where the parity is stored on a dedicated independent storage device.
RAID4	A placement policy using parity-based protection where logical blocks of data are uniformly distributed across a set of independent storage devices and where the parity is stored on a dedicated independent storage device.
RAID5	A placement policy using parity-based protection for storing stripes of 'n' logical blocks of data and one logical block of parity across a set of 'n+1' independent storage devices where the parity and data blocks are interleaved across the storage devices.
RAID50	A placement policy that uses a RAID 0 stripe set over two or more RAID 5 sets of independent storage devices.
RAID6	A placement policy using parity-based protection for storing stripes of 'n' logical blocks of data and two logical blocks of independent parity across a set of 'n+2' independent storage devices where the parity and data blocks are interleaved across the storage devices.
RAID60	A placement policy that uses a RAID 0 stripe set over two or more RAID 6 sets of independent storage devices.
RAID6TP	A placement policy that uses parity-based protection for storing stripes of 'n' logical blocks of data and three logical blocks of independent parity across a set of 'n+3' independent storage devices where the parity and data blocks are interleaved across the storage devices.

6.108.6 Example response

```
{
    "@odata.type": "#Storage.v1_12_0.Storage",
    "Id": "1",
    "Name": "Local Storage Controller",
    "Description": "Integrated RAID Controller",
    "Status": {
        "State": "Enabled",
        "Health": "OK",
        "HealthRollup": "OK"
    },
    "StorageControllers": [
        {
            "@odata.id": "/redfish/v1/Systems/437XR1138R2/Storage/1#/StorageControllers/0",
            "MemberId": "0",
            "Name": "Contoso Integrated RAID",
            "Status": {
```

```
                "State": "Enabled",
                "Health": "OK"
            },
            "Identifiers": [
                {
                    "DurableNameFormat": "NAA",
                    "DurableName": "345C59DBD970859C"
                }
            ],
            "Manufacturer": "Contoso",
            "Model": "12Gbs Integrated RAID",
            "SerialNumber": "2M220100SL",
            "PartNumber": "CT18754",
            "SpeedGbps": 12,
            "FirmwareVersion": "1.0.0.7",
            "SupportedControllerProtocols": [
                "PCIe"
            ],
            "SupportedDeviceProtocols": [
                "SAS",
                "SATA"
            ]
        }
    ],
    "Drives": [
        {
            "@odata.id": "/redfish/v1/Systems/437XR1138R2/Storage/1/Drives/35D38F11ACEF7BD3"
        },
        {
            "@odata.id": "/redfish/v1/Systems/437XR1138R2/Storage/1/Drives/3F5A8C54207B7233"
        },
        {
            "@odata.id": "/redfish/v1/Systems/437XR1138R2/Storage/1/Drives/32ADF365C6C1B7BD"
        },
        {
            "@odata.id": "/redfish/v1/Systems/437XR1138R2/Storage/1/Drives/3D58ECBC375FD9F2"
        }
    ],
    "Volumes": {
        "@odata.id": "/redfish/v1/Systems/437XR1138R2/Storage/1/Volumes"
    },
    "Links": {},
    "Actions": {
        "#Storage.SetEncryptionKey": {
            "target": "/redfish/v1/Systems/437XR1138R2/Storage/1/Actions/Storage.SetEncryptionKey"
        }
    },
    "@odata.id": "/redfish/v1/Systems/437XR1138R2/Storage/1"
}
```

6.109 StorageController 1.5.0

Version	v1.5	v1.4	v1.3	v1.2	v1.1	v1.0
Release	2021.4	2021.3	2021.2	2021.1	2020.4	2020.3

6.109.1 Description

The StorageController schema describes a storage controller and its properties. A storage controller represents a physical or virtual storage device that produces volumes.

6.109.2 URIs

/redfish/v1/CompositionService/ResourceBlocks/{*ResourceBlockId*}/Storage/{*StorageId*}/Controllers/{*ControllerId*}
/redfish/v1/CompositionService/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/Storage/{*StorageId*}/Controllers/{*ControllerId*}
/redfish/v1/ResourceBlocks/{*ResourceBlockId*}/Storage/{*StorageId*}/Controllers/{*ControllerId*}
/redfish/v1/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/Storage/{*StorageId*}/Controllers/{*ControllerId*}
/redfish/v1/Storage/{*StorageId*}/Controllers/{*ControllerId*}
/redfish/v1/Systems/{*ComputerSystemId*}/Storage/{*StorageId*}/Controllers/{*ControllerId*}

6.109.3 Properties

Property	Type	Attributes	Notes
Assembly {	object		The link to the assembly associated with this storage controller. See the *Assembly* schema for details on this property.
@odata.id	string	*read-only*	Link to a Assembly resource. See the Links section and the *Assembly* schema for details.
}			
AssetTag	string	*read-write (null)*	The user-assigned asset tag for this storage controller.
CacheSummary {	object		The cache memory of the storage controller in general detail.

Property	Type	Attributes	Notes
PersistentCacheSizeMiB	integer (mebibytes)	*read-only (null)*	The portion of the cache memory that is persistent, measured in MiB.
Status {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
TotalCacheSizeMiB	integer (mebibytes)	*read-only required (null)*	The total configured cache memory, measured in MiB.
}			
Certificates *(v1.1+)* {	object		The link to a collection of certificates for device identity and attestation. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *Certificate*. See the Certificate schema for details.
}			
ControllerRates {	object		This property describes the various controller rates used for processes such as volume rebuild or consistency checks.
ConsistencyCheckRatePercent	integer	*read-write (null)*	The percentage of controller resources used for performing a data consistency check on volumes.
RebuildRatePercent	integer	*read-write (null)*	The percentage of controller resources used for rebuilding/repairing volumes.
TransformationRatePercent	integer	*read-write (null)*	The percentage of controller resources used for transforming volumes from one configuration to another.
}			
EnvironmentMetrics *(v1.2+)* {	object		The link to the environment metrics for this storage controller. See the *EnvironmentMetrics* schema for details on this property.
@odata.id	string	*read-only*	Link to a EnvironmentMetrics resource. See the Links section and the *EnvironmentMetrics* schema for details.
}			
FirmwareVersion	string	*read-only (null)*	The firmware version of this storage controller.

Property	Type	Attributes	Notes
Identifiers [{ }]	array (object)		The durable names for the storage controller. For property details, see Identifier.
Links {	object		The links to other resources that are related to this resource.
AttachedVolumes [{	array		An array of links to volumes that are attached to this controller instance.
@odata.id	string (URI)	*read-only*	The unique identifier for a resource.
}]			
Endpoints [{	array		An array of links to the endpoints that connect to this controller.
@odata.id	string	*read-only*	Link to a Endpoint resource. See the Links section and the *Endpoint* schema for details.
}]			
NetworkDeviceFunctions *(v1.3+)* [{	array		The network device functions that provide connectivity to this controller.
@odata.id	string	*read-only*	Link to a NetworkDeviceFunction resource. See the Links section and the *NetworkDeviceFunction* schema for details.
}]			
Oem {}	object		See the Oem object definition in the Common properties section.
PCIeFunctions [{	array		An array of links to the PCIe functions that the storage controller produces.
@odata.id	string	*read-only*	Link to a PCIeFunction resource. See the Links section and the *PCIeFunction* schema for details.
}]			
}			
Location {}	object		The location of the storage controller. For property details, see Location.
Manufacturer	string	*read-only (null)*	The manufacturer of this storage controller.

Property	Type	Attributes	Notes
Measurements *(v1.1+, deprecated v1.5* [{	array		An array of DSP0274-defined measurement blocks. *Deprecated in v1.5 and later. This property has been deprecated in favor of the ComponentIntegrity resource.*
@odata.id	string	*read-only*	Link to a MeasurementBlock resource. See the Links section and the *SoftwareInventory* schema for details.
}]			
Model	string	*read-only (null)*	The model number for the storage controller.
NVMeControllerProperties {	object		The NVMe related properties for this storage controller.
AllocatedCompletionQueues *(v1.4+)*	integer	*read-only (null)*	The number of I/O completion queues allocated to this NVMe I/O controller.
AllocatedSubmissionQueues *(v1.4+)*	integer	*read-only (null)*	The number of I/O submission queues allocated to this NVMe I/O controller.
ANACharacteristics [{	array		The ANA characteristics and volume information.
AccessState	string (enum)	*read-only (null)*	Reported ANA access state. *For the possible property values, see AccessState in Property details.*
Volume {	object		The specified volume.
@odata.id	string (URI)	*read-only*	The unique identifier for a resource.
}			
}]			
ControllerType	string (enum)	*read-only (null)*	The type of NVMe controller. *For the possible property values, see ControllerType in Property details.*
MaxQueueSize	integer	*read-only (null)*	The maximum individual queue size that an NVMe IO controller supports.
NVMeControllerAttributes {	object	*(null)*	The NVMe controller attributes.
ReportsNamespaceGranularity	boolean	*read-only (null)*	Indicates whether or not the controller supports reporting of Namespace Granularity.

Property	Type	Attributes	Notes
ReportsUUIDList	boolean	*read-only (null)*	Indicates whether or not the controller supports reporting of a UUID list.
Supports128BitHostId	boolean	*read-only (null)*	Indicates whether or not the controller supports a 128-bit Host Identifier.
SupportsEnduranceGroups	boolean	*read-only (null)*	Indicates whether or not the controller supports Endurance Groups.
SupportsExceedingPowerOfNonOperationalState	boolean	*read-only (null)*	Indicates whether or not the controller supports exceeding Power of Non-Operational State in order to execute controller initiated background operations in a non-operational power state.
SupportsNVMSets	boolean	*read-only (null)*	Indicates whether or not the controller supports NVM Sets.
SupportsPredictableLatencyMode	boolean	*read-only (null)*	Indicates whether or not the controller supports Predictable Latency Mode.
SupportsReadRecoveryLevels	boolean	*read-only (null)*	Indicates whether or not the controller supports Read Recovery Levels.
SupportsReservations *(v1.2+)*	boolean	*read-only (null)*	Indicates if the controller supports reservations.
SupportsSQAssociations	boolean	*read-only (null)*	Indicates whether or not the controller supports SQ Associations.
SupportsTrafficBasedKeepAlive	boolean	*read-only (null)*	Indicates whether or not the controller supports restarting Keep Alive Timer if traffic is processed from an admin command or IO during a Keep Alive Timeout interval.
}			
NVMeSMARTCriticalWarnings {	object	*(null)*	The NVMe SMART Critical Warnings for this storage controller. This property contains possible triggers for the predictive drive failure warning for the corresponding drive.
MediaInReadOnly	boolean	*read-only (null)*	Indicates the media has been placed in read only mode.
OverallSubsystemDegraded	boolean	*read-only (null)*	Indicates that the NVM subsystem reliability has been compromised.
PMRUnreliable	boolean	*read-only (null)*	The Persistent Memory Region has become unreliable.

Property	Type	Attributes	Notes
PowerBackupFailed	boolean	*read-only (null)*	Indicates that the volatile memory backup device has failed.
SpareCapacityWornOut	boolean	*read-only (null)*	Indicates that the available spare capacity has fallen below the threshold.
}			
NVMeVersion	string	*read-only (null)*	The version of the NVMe Base Specification supported.
}			
PartNumber	string	*read-only (null)*	The part number for this storage controller.
PCIeInterface {	object		The PCIe interface details for this controller.
LanesInUse *(v1.3+)*	integer	*read-only (null)*	The number of PCIe lanes in use by this device.
MaxLanes *(v1.3+)*	integer	*read-only (null)*	The number of PCIe lanes supported by this device.
MaxPCIeType *(v1.3+)*	string (enum)	*read-only (null)*	The highest version of the PCIe specification supported by this device. *For the possible property values, see MaxPCIeType in Property details.*
Oem *(v1.3+)* {}	object		See the Oem object definition in the Common properties section.
PCIeType *(v1.3+)*	string (enum)	*read-only (null)*	The version of the PCIe specification in use by this device. *For the possible property values, see PCIeType in Property details.*
}			
Ports {	object		The link to the collection of ports that exist on the storage controller. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *Port*. See the Port schema for details.
}			
SerialNumber	string	*read-only (null)*	The serial number for this storage controller.
SKU	string	*read-only (null)*	The SKU for this storage controller.

Property	Type	Attributes	Notes
SpeedGbps	number (Gbit/s)	*read-only (null)*	The maximum speed of the storage controller's device interface.
Status {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
SupportedControllerProtocols [ ]	array (string (enum))	*read-only*	The supported set of protocols for communicating to this storage controller. *For the possible property values, see SupportedControllerProtocols in Property details.*
SupportedDeviceProtocols [ ]	array (string (enum))	*read-only*	The protocols that the storage controller can use to communicate with attached devices. *For the possible property values, see SupportedDeviceProtocols in Property details.*
SupportedRAIDTypes [ ]	array (string (enum))	*read-only (null)*	The set of RAID types supported by the storage controller. *For the possible property values, see SupportedRAIDTypes in Property details.*

6.109.4 Property details

6.109.4.1 AccessState:

Reported ANA access state.

string	Description
Inaccessible	Namespaces in this group are inaccessible. Commands are not able to access user data of namespaces in the ANA Group.
NonOptimized	Commands processed by a controller that reports this state for an ANA Group provide non-optimized access characteristics, such as lower performance or non-optimal use of subsystem resources, to any namespace in the ANA Group.
Optimized	Commands processed by a controller provide optimized access to any namespace in the ANA group.
PersistentLoss	The group is persistently inaccessible. Commands are persistently not able to access user data of namespaces in the ANA Group.

6.109.4.2 ControllerType:

The type of NVMe controller.

string	Description
Admin	The NVMe controller is an admin controller.
Discovery	The NVMe controller is a discovery controller.
IO	The NVMe controller is an IO controller.

6.109.4.3 MaxPCIeType:

The highest version of the PCIe specification supported by this device.

string	Description
Gen1	A PCIe v1.0 slot.
Gen2	A PCIe v2.0 slot.
Gen3	A PCIe v3.0 slot.
Gen4	A PCIe v4.0 slot.
Gen5	A PCIe v5.0 slot.

6.109.4.4 PCIeType:

The version of the PCIe specification in use by this device.

string	Description
Gen1	A PCIe v1.0 slot.
Gen2	A PCIe v2.0 slot.
Gen3	A PCIe v3.0 slot.
Gen4	A PCIe v4.0 slot.
Gen5	A PCIe v5.0 slot.

6.109.4.5 SupportedControllerProtocols:

The supported set of protocols for communicating to this storage controller.

string	Description
AHCI	Advanced Host Controller Interface (AHCI).
DisplayPort	DisplayPort.
DVI	DVI.
Ethernet	Ethernet.
FC	Fibre Channel.
FCoE	Fibre Channel over Ethernet (FCoE).
FCP	Fibre Channel Protocol for SCSI.
FICON	FIbre CONnection (FICON).
FTP	File Transfer Protocol (FTP).
GenZ	GenZ.
HDMI	HDMI.
HTTP	Hypertext Transport Protocol (HTTP).
HTTPS	Hypertext Transfer Protocol Secure (HTTPS).
I2C	Inter-Integrated Circuit Bus.
InfiniBand	InfiniBand.
iSCSI	Internet SCSI.
iWARP	Internet Wide Area RDMA Protocol (iWARP).
MultiProtocol	Multiple Protocols.
NFSv3	Network File System (NFS) version 3.
NFSv4	Network File System (NFS) version 4.
NVLink	NVLink.
NVMe	Non-Volatile Memory Express (NVMe).
NVMeOverFabrics	NVMe over Fabrics.
OEM	OEM-specific.
PCIe	PCI Express.
RoCE	RDMA over Converged Ethernet Protocol.

string	Description
RoCEv2	RDMA over Converged Ethernet Protocol Version 2.
SAS	Serial Attached SCSI.
SATA	Serial AT Attachment.
SFTP	SSH File Transfer Protocol (SFTP).
SMB	Server Message Block (SMB). Also known as the Common Internet File System (CIFS).
TCP	Transmission Control Protocol (TCP).
TFTP	Trivial File Transfer Protocol (TFTP).
UDP	User Datagram Protocol (UDP).
UHCI	Universal Host Controller Interface (UHCI).
USB	Universal Serial Bus (USB).
VGA	VGA.

6.109.4.6 SupportedDeviceProtocols:

The protocols that the storage controller can use to communicate with attached devices.

string	Description
AHCI	Advanced Host Controller Interface (AHCI).
DisplayPort	DisplayPort.
DVI	DVI.
Ethernet	Ethernet.
FC	Fibre Channel.
FCoE	Fibre Channel over Ethernet (FCoE).
FCP	Fibre Channel Protocol for SCSI.
FICON	FIbre CONnection (FICON).
FTP	File Transfer Protocol (FTP).
GenZ	GenZ.
HDMI	HDMI.

string	Description
HTTP	Hypertext Transport Protocol (HTTP).
HTTPS	Hypertext Transfer Protocol Secure (HTTPS).
I2C	Inter-Integrated Circuit Bus.
InfiniBand	InfiniBand.
iSCSI	Internet SCSI.
iWARP	Internet Wide Area RDMA Protocol (iWARP).
MultiProtocol	Multiple Protocols.
NFSv3	Network File System (NFS) version 3.
NFSv4	Network File System (NFS) version 4.
NVLink	NVLink.
NVMe	Non-Volatile Memory Express (NVMe).
NVMeOverFabrics	NVMe over Fabrics.
OEM	OEM-specific.
PCIe	PCI Express.
RoCE	RDMA over Converged Ethernet Protocol.
RoCEv2	RDMA over Converged Ethernet Protocol Version 2.
SAS	Serial Attached SCSI.
SATA	Serial AT Attachment.
SFTP	SSH File Transfer Protocol (SFTP).
SMB	Server Message Block (SMB). Also known as the Common Internet File System (CIFS).
TCP	Transmission Control Protocol (TCP).
TFTP	Trivial File Transfer Protocol (TFTP).
UDP	User Datagram Protocol (UDP).
UHCI	Universal Host Controller Interface (UHCI).
USB	Universal Serial Bus (USB).
VGA	VGA.

6.109.4.7 SupportedRAIDTypes:

The set of RAID types supported by the storage controller.

string	Description
None	A placement policy with no redundancy at the device level.
RAID0	A placement policy where consecutive logical blocks of data are uniformly distributed across a set of independent storage devices without offering any form of redundancy.
RAID00	A placement policy that creates a RAID 0 stripe set over two or more RAID 0 sets.
RAID01	A data placement policy that creates a mirrored device (RAID 1) over a set of striped devices (RAID 0).
RAID1	A placement policy where each logical block of data is stored on more than one independent storage device.
RAID10	A placement policy that creates a striped device (RAID 0) over a set of mirrored devices (RAID 1).
RAID10E	A placement policy that uses a RAID 0 stripe set over two or more RAID 10 sets.
RAID10Triple	A placement policy that uses a striped device (RAID 0) over a set of triple mirrored devices (RAID 1Triple).
RAID1E	A placement policy that uses a form of mirroring implemented over a set of independent storage devices where logical blocks are duplicated on a pair of independent storage devices so that data is uniformly distributed across the storage devices.
RAID1Triple	A placement policy where each logical block of data is mirrored three times across a set of three independent storage devices.
RAID3	A placement policy using parity-based protection where logical bytes of data are uniformly distributed across a set of independent storage devices and where the parity is stored on a dedicated independent storage device.
RAID4	A placement policy using parity-based protection where logical blocks of data are uniformly distributed across a set of independent storage devices and where the parity is stored on a dedicated independent storage device.
RAID5	A placement policy using parity-based protection for storing stripes of 'n' logical blocks of data and one logical block of parity across a set of 'n+1' independent storage devices where the parity and data blocks are interleaved across the storage devices.
RAID50	A placement policy that uses a RAID 0 stripe set over two or more RAID 5 sets of independent storage devices.
RAID6	A placement policy using parity-based protection for storing stripes of 'n' logical blocks of data and two logical blocks of independent parity across a set of 'n+2' independent storage devices where the parity and data blocks are interleaved across the storage devices.

string	Description
RAID60	A placement policy that uses a RAID 0 stripe set over two or more RAID 6 sets of independent storage devices.
RAID6TP	A placement policy that uses parity-based protection for storing stripes of 'n' logical blocks of data and three logical blocks of independent parity across a set of 'n+3' independent storage devices where the parity and data blocks are interleaved across the storage devices.

6.109.5 Example response

```json
{
    "@odata.type": "#StorageController.v1_5_0.StorageController",
    "Id": "1",
    "Name": "NVMe IO Controller",
    "Status": {
        "State": "Enabled",
        "Health": "OK"
    },
    "SupportedControllerProtocols": [
        "NVMeOverFabrics"
    ],
    "NVMeControllerProperties": {
        "NVMeVersion": "1.4",
        "ControllerType": "IO",
        "NVMeControllerAttributes": {
            "ReportsUUIDList": false,
            "SupportsSQAssociations": false,
            "ReportsNamespaceGranularity": false,
            "SupportsTrafficBasedKeepAlive": false,
            "SupportsPredictableLatencyMode": false,
            "SupportsEnduranceGroups": false,
            "SupportsReadRecoveryLevels": false,
            "SupportsNVMSets": false,
            "SupportsExceedingPowerOfNonOperationalState": false,
            "Supports128BitHostId": false
        },
        "NVMeSMARTCriticalWarnings": {
            "PMRUnreliable": false,
            "PowerBackupFailed": false,
            "MediaInReadOnly": false,
            "OverallSubsystemDegraded": false,
            "SpareCapacityWornOut": false
        }
    },
    "Links": {
        "Endpoints": [
            {
```

```
                "@odata.id": "/redfish/v1/Fabrics/NVMeoF/Endpoints/Initiator1"
            },
            {
                "@odata.id": "/redfish/v1/Fabrics/NVMeoF/Endpoints/Target1"
            }
        ],
        "AttachedVolumes": [
            {
                "@odata.id": "/redfish/v1/Storage/NVMeoF/Volumes/1"
            },
            {
                "@odata.id": "/redfish/v1/Storage/NVMeoF/Volumes/3"
            },
            {
                "@odata.id": "/redfish/v1/Storage/NVMeoF/Volumes/4"
            }
        ]
    },
    "@odata.id": "/redfish/v1/Storage/NVMeoF/Controllers/1"
}
```

6.110 Switch 1.8.0

Version	v1.8	v1.7	v1.6	v1.5	v1.3	v1.2	v1.1	v1.0
Release	2021.4	2021.3	2021.1	2020.3	2019.4	2019.2	2017.3	2016.2

6.110.1 Description

The Switch schema contains properties that describe a fabric switch.

6.110.2 URIs

/redfish/v1/Fabrics/{*FabricId*}/Switches/{*SwitchId*}

6.110.3 Properties

Property	Type	Attributes	Notes
AssetTag	string	*read-write (null)*	The user-assigned asset tag for this switch.

Property	Type	Attributes	Notes
Certificates *(v1.5+)* {	object		The link to a collection of certificates for device identity and attestation. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *Certificate*. See the Certificate schema for details.
}			
CurrentBandwidthGbps *(v1.4+)*	number (Gbit/s)	*read-only (null)*	The current internal bandwidth of this switch.
DomainID	integer	*read-only (null)*	The domain ID for this switch.
Enabled *(v1.6+)*	boolean	*read-write*	An indication of whether this switch is enabled.
EnvironmentMetrics *(v1.6+)* {	object		The link to the environment metrics for this switch. See the *EnvironmentMetrics* schema for details on this property.
@odata.id	string	*read-only*	Link to a EnvironmentMetrics resource. See the Links section and the *EnvironmentMetrics* schema for details.
}			
FirmwareVersion *(v1.2+)*	string	*read-only (null)*	The firmware version of this switch.
IndicatorLED *(deprecated v1.4)*	string (enum)	*read-write (null)*	The state of the indicator LED, which identifies the switch. *For the possible property values, see IndicatorLED in Property details. Deprecated in v1.4 and later. This property has been deprecated in favor of the LocationIndicatorActive property.*
IsManaged	boolean	*read-write (null)*	An indication of whether the switch is in a managed or unmanaged state.
Links {	object		The links to other resources that are related to this resource.
Chassis {	object		The link to the chassis that contains this switch. See the *Chassis* schema for details on this property.
@odata.id	string	*read-only*	Link to a Chassis resource. See the Links section and the *Chassis* schema for details.
}			
Endpoints *(v1.3+)* [{	array		An array of links to the endpoints that connect to this switch.
@odata.id	string	*read-only*	Link to a Endpoint resource. See the Links section and the *Endpoint* schema for details.
}]			
ManagedBy [{	array		An array of links to the managers that manage this switch.

Property	Type	Attributes	Notes
@odata.id	string	*read-only*	Link to a Manager resource. See the Links section and the *Manager* schema for details.
}]			
Oem {}	object		See the Oem object definition in the Common properties section.
PCIeDevice *(v1.4+)* {	object	*(null)*	The link to the PCIe device providing this switch. See the *PCIeDevice* schema for details on this property.
@odata.id	string	*read-only*	Link to a PCIeDevice resource. See the Links section and the *PCIeDevice* schema for details.
}			
}			
Location *(v1.1+)* {}	object		The location of the switch. For property details, see Location.
LocationIndicatorActive *(v1.4+)*	boolean	*read-write* *(null)*	An indicator allowing an operator to physically locate this resource.
LogServices {	object		The link to the collection of log services associated with this switch. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *LogService*. See the LogService schema for details.
}			
Manufacturer	string	*read-only* *(null)*	The manufacturer of this switch.
MaxBandwidthGbps *(v1.4+)*	number (Gbit/s)	*read-only* *(null)*	The maximum internal bandwidth of this switch as currently configured.
Measurements *(v1.5+, deprecated v1.8* [{	array		An array of DSP0274-defined measurement blocks. *Deprecated in v1.8 and later. This property has been deprecated in favor of the ComponentIntegrity resource.*
@odata.id	string	*read-only*	Link to a MeasurementBlock resource. See the Links section and the *SoftwareInventory* schema for details.
}]			
Metrics *(v1.7+)* {	object		The link to the metrics associated with this switch. See the *SwitchMetrics* schema for details on this property.
@odata.id	string	*read-only*	Link to a SwitchMetrics resource. See the Links section and the *SwitchMetrics* schema for details.
}			

Property	Type	Attributes	Notes
Model	string	*read-only (null)*	The product model number of this switch.
PartNumber	string	*read-only (null)*	The part number for this switch.
Ports {	object		The link to the collection ports for this switch. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *Port*. See the Port schema for details.
}			
PowerState	string (enum)	*read-only (null)*	The current power state of the switch. *For the possible property values, see PowerState in Property details.*
Redundancy [{ }]	array (object)		Redundancy information for the switches. For property details, see Redundancy.
SerialNumber	string	*read-only (null)*	The serial number for this switch.
SKU	string	*read-only (null)*	The SKU for this switch.
Status {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
SupportedProtocols *(v1.3+)* [ ]	array (string (enum))	*read-only*	The protocols this switch supports. *For the possible property values, see SupportedProtocols in Property details.*
SwitchType	string (enum)	*read-only (null)*	The protocol being sent over this switch. *For the possible property values, see SwitchType in Property details.*
TotalSwitchWidth	integer	*read-only (null)*	The total number of lanes, phys, or other physical transport links that this switch contains.
UUID *(v1.3+)*	string	*read-only (null)*	The UUID for this switch.

6.110.4 Actions

6.110.4.1 Reset

Description

This action resets this switch.

Action URI: {Base URI of target resource}/Actions/Switch.Reset

Action parameters

Parameter Name	Type	Attributes	Notes
ResetType	string (enum)	*optional*	The type of reset. *For the possible property values, see ResetType in Property details.*

Request Example

```
{
    "ResetType": "ForceRestart"
}
```

6.110.5 Property details

6.110.5.1 IndicatorLED:

The state of the indicator LED, which identifies the switch.

string	Description
Blinking	The indicator LED is blinking.
Lit	The indicator LED is lit.
Off	The indicator LED is off.

6.110.5.2 PowerState:

The current power state of the switch.

string	Description
Off	The state is powered off.
On	The state is powered on.
Paused	The state is paused.
PoweringOff	A temporary state between on and off.

string	Description
PoweringOn	A temporary state between off and on.

6.110.5.3 ResetType:

The type of reset.

string	Description
ForceOff	Turn off the unit immediately (non-graceful shutdown).
ForceOn	Turn on the unit immediately.
ForceRestart	Shut down immediately and non-gracefully and restart the system.
GracefulRestart	Shut down gracefully and restart the system.
GracefulShutdown	Shut down gracefully and power off.
Nmi	Generate a diagnostic interrupt, which is usually an NMI on x86 systems, to stop normal operations, complete diagnostic actions, and, typically, halt the system.
On	Turn on the unit.
Pause	Pause execution on the unit but do not remove power. This is typically a feature of virtual machine hypervisors.
PowerCycle	Power cycle the unit. Behaves like a full power removal, followed by a power restore to the resource.
PushPowerButton	Simulate the pressing of the physical power button on this unit.
Resume	Resume execution on the paused unit. This is typically a feature of virtual machine hypervisors.
Suspend	Write the state of the unit to disk before powering off. This allows for the state to be restored when powered back on.

6.110.5.4 SupportedProtocols:

The protocols this switch supports.

string	Description
AHCI	Advanced Host Controller Interface (AHCI).
DisplayPort	DisplayPort.

string	Description
DVI	DVI.
Ethernet	Ethernet.
FC	Fibre Channel.
FCoE	Fibre Channel over Ethernet (FCoE).
FCP	Fibre Channel Protocol for SCSI.
FICON	FIbre CONnection (FICON).
FTP	File Transfer Protocol (FTP).
GenZ	GenZ.
HDMI	HDMI.
HTTP	Hypertext Transport Protocol (HTTP).
HTTPS	Hypertext Transfer Protocol Secure (HTTPS).
I2C	Inter-Integrated Circuit Bus.
InfiniBand	InfiniBand.
iSCSI	Internet SCSI.
iWARP	Internet Wide Area RDMA Protocol (iWARP).
MultiProtocol	Multiple Protocols.
NFSv3	Network File System (NFS) version 3.
NFSv4	Network File System (NFS) version 4.
NVLink	NVLink.
NVMe	Non-Volatile Memory Express (NVMe).
NVMeOverFabrics	NVMe over Fabrics.
OEM	OEM-specific.
PCIe	PCI Express.
RoCE	RDMA over Converged Ethernet Protocol.
RoCEv2	RDMA over Converged Ethernet Protocol Version 2.
SAS	Serial Attached SCSI.

string	Description
SATA	Serial AT Attachment.
SFTP	SSH File Transfer Protocol (SFTP).
SMB	Server Message Block (SMB). Also known as the Common Internet File System (CIFS).
TCP	Transmission Control Protocol (TCP).
TFTP	Trivial File Transfer Protocol (TFTP).
UDP	User Datagram Protocol (UDP).
UHCI	Universal Host Controller Interface (UHCI).
USB	Universal Serial Bus (USB).
VGA	VGA.

6.110.5.5 SwitchType:

The protocol being sent over this switch.

string	Description
AHCI	Advanced Host Controller Interface (AHCI).
DisplayPort	DisplayPort.
DVI	DVI.
Ethernet	Ethernet.
FC	Fibre Channel.
FCoE	Fibre Channel over Ethernet (FCoE).
FCP	Fibre Channel Protocol for SCSI.
FICON	FIbre CONnection (FICON).
FTP	File Transfer Protocol (FTP).
GenZ	GenZ.
HDMI	HDMI.
HTTP	Hypertext Transport Protocol (HTTP).
HTTPS	Hypertext Transfer Protocol Secure (HTTPS).

string	Description
I2C	Inter-Integrated Circuit Bus.
InfiniBand	InfiniBand.
iSCSI	Internet SCSI.
iWARP	Internet Wide Area RDMA Protocol (iWARP).
MultiProtocol	Multiple Protocols.
NFSv3	Network File System (NFS) version 3.
NFSv4	Network File System (NFS) version 4.
NVLink	NVLink.
NVMe	Non-Volatile Memory Express (NVMe).
NVMeOverFabrics	NVMe over Fabrics.
OEM	OEM-specific.
PCIe	PCI Express.
RoCE	RDMA over Converged Ethernet Protocol.
RoCEv2	RDMA over Converged Ethernet Protocol Version 2.
SAS	Serial Attached SCSI.
SATA	Serial AT Attachment.
SFTP	SSH File Transfer Protocol (SFTP).
SMB	Server Message Block (SMB). Also known as the Common Internet File System (CIFS).
TCP	Transmission Control Protocol (TCP).
TFTP	Trivial File Transfer Protocol (TFTP).
UDP	User Datagram Protocol (UDP).
UHCI	Universal Host Controller Interface (UHCI).
USB	Universal Serial Bus (USB).
VGA	VGA.

6.110.6 Example response

```
{
    "@odata.type": "#Switch.v1_8_0.Switch",
    "Id": "Switch1",
    "Name": "SAS Switch",
    "SwitchType": "SAS",
    "Manufacturer": "Contoso",
    "Model": "SAS1000",
    "SKU": "67B",
    "SerialNumber": "2M220100SL",
    "PartNumber": "76-88883",
    "Ports": {
        "@odata.id": "/redfish/v1/Fabrics/SAS/Switches/Switch1/Ports"
    },
    "Redundancy": [
        {
            "@odata.id": "/redfish/v1/Fabrics/SAS/Switches/Switch1#/Redundancy/0",
            "MemberId": "Redundancy",
            "Mode": "Sharing",
            "MaxNumSupported": 2,
            "MinNumNeeded": 1,
            "Status": {
                "State": "Enabled",
                "Health": "OK"
            },
            "RedundancySet": [
                {
                    "@odata.id": "/redfish/v1/Fabrics/SAS/Switches/Switch1"
                },
                {
                    "@odata.id": "/redfish/v1/Fabrics/SAS/Switches/Switch2"
                }
            ]
        }
    ],
    "Links": {
        "Chassis": {
            "@odata.id": "/redfish/v1/Chassis/Switch1"
        },
        "ManagedBy": [
            {
                "@odata.id": "/redfish/v1/Managers/Switch1"
            },
            {
                "@odata.id": "/redfish/v1/Managers/Switch2"
            }
        ],
        "Oem": {}
```

```
        },
        "Actions": {
            "#Switch.Reset": {
                "target": "/redfish/v1/Fabrics/SAS/Switches/Switch1/Actions/Switch.Reset",
                "ResetType@Redfish.AllowableValues": [
                    "ForceRestart",
                    "GracefulRestart"
                ]
            },
            "Oem": {}
        },
        "Oem": {},
        "@odata.id": "/redfish/v1/Fabrics/SAS/Switches/Switch1"
    }
```

6.111 SwitchMetrics 1.0.0

Version	*v1.0*
Release	2021.3

6.111.1 Description

The SwitchMetrics schema contains usage and health statistics for a switch device.

6.111.2 URIs

/redfish/v1/Fabrics/*{FabricId}*/Switches/*{SwitchId}*/SwitchMetrics

6.111.3 Properties

Property	Type	Attributes	Notes
InternalMemoryMetrics {	object		The memory metrics for a switch.
CurrentPeriod {	object		The memory metrics since the last reset for this switch.
CorrectableECCErrorCount	integer	*read-only (null)*	The number of the correctable errors of memory since reset.
UncorrectableECCErrorCount	integer	*read-only (null)*	The number of the uncorrectable errors of memory since reset.

Property	Type	Attributes	Notes
}			
LifeTime {	object		The memory metrics for the lifetime of this switch.
CorrectableECCErrorCount	integer	*read-only (null)*	The number of the correctable errors for the lifetime of the memory.
UncorrectableECCErrorCount	integer	*read-only (null)*	The number of the uncorrectable errors for the lifetime of the memory.
}			
}			
PCIeErrors {	object		The PCIe errors associated with this switch.
CorrectableErrorCount *(v1.8+)*	integer	*read-only (null)*	The total number of the PCIe correctable errors for this device.
FatalErrorCount *(v1.8+)*	integer	*read-only (null)*	The total number of the PCIe fatal errors for this device.
L0ToRecoveryCount *(v1.8+)*	integer	*read-only (null)*	The total number of times the PCIe link states transitioned from L0 to the recovery state for this device.
NAKReceivedCount *(v1.8+)*	integer	*read-only (null)*	The total number of NAKs issued on the PCIe link by the receiver.
NAKSentCount *(v1.8+)*	integer	*read-only (null)*	The total number of NAKs issued on the PCIe link by this device.
NonFatalErrorCount *(v1.8+)*	integer	*read-only (null)*	The total number of the PCIe non-fatal errors for this device.
ReplayCount *(v1.8+)*	integer	*read-only (null)*	The total number of the PCIe replays issued by this device.
ReplayRolloverCount *(v1.8+)*	integer	*read-only (null)*	The total number of the PCIe replay rollovers issued by this device.
}			

6.111.4 Actions

6.111.4.1 ClearCurrentPeriod

Description

This action sets the CurrentPeriod property's values to 0.

Action URI: {Base URI of target resource}/Actions/SwitchMetrics.ClearCurrentPeriod

Action parameters

This action takes no parameters.

6.111.5 Example response

```
{
    "@odata.type": "#SwitchMetrics.v1_0_0.SwitchMetrics",
    "Id": "SwitchMetrics",
    "Name": "PCIe Switch Metrics",
    "PCIeErrors": {
        "CorrectableErrorCount": 0,
        "NonFatalErrorCount": 0,
        "FatalErrorCount": 0,
        "L0ToRecoveryCount": 0,
        "ReplayCount": 0,
        "ReplayRolloverCount": 0,
        "NAKSentCount": 0,
        "NAKReceivedCount": 0
    },
    "InternalMemoryMetrics": {
        "CurrentPeriod": {
            "CorrectableECCErrorCount": 0,
            "UncorrectableECCErrorCount": 0
        },
        "LifeTime": {
            "CorrectableECCErrorCount": 0,
            "UncorrectableECCErrorCount": 0
        }
    },
    "Oem": {},
    "@odata.id": "/redfish/v1/Fabrics/PCIe/Switches/1/SwitchMetrics"
}
```

6.112 Task 1.5.1

Version	v1.5	v1.4	v1.3	v1.2	v1.1	v1.0
Release	2020.3	2018.3	2018.2	2018.1	2017.1	1.0

6.112.1 Description

The Task schema contains information about a task that the Redfish Task Service schedules or executes. Tasks represent operations that take more time than a client typically wants to wait.

6.112.2 URIs

/redfish/v1/TaskService/Tasks/*{TaskId}*
/redfish/v1/TaskService/Tasks/*{TaskId}*/SubTasks/*{TaskId2}*

6.112.3 Properties

Property	Type	Attributes	Notes
EndTime	string (date-time)	*read-only*	The date and time when the task was completed. This property will only appear when the task is complete.
HidePayload *(v1.3+)*	boolean	*read-only*	An indication of whether the contents of the payload are hidden from view after the task has been created. If `true` , responses do not return the payload. If `false` , responses return the payload. If this property is not present when the task is created, the default is `false` .
Messages [{ }]	array (object)		An array of messages associated with the task. For property details, see Message.
Payload *(v1.3+)* {	object		The HTTP and JSON payload details for this task, unless they are hidden from view by the service.
HttpHeaders *(v1.3+)* [ ]	array (string)	*read-only*	An array of HTTP headers that this task includes.
HttpOperation *(v1.3+)*	string	*read-only*	The HTTP operation to perform to execute this task.
JsonBody *(v1.3+)*	string	*read-only*	The JSON payload to use in the execution of this task.
TargetUri *(v1.3+)*	string (URI)	*read-only*	The URI of the target for this task.
}			
PercentComplete *(v1.4+)*	integer (%)	*read-only* *(null)*	The completion percentage of this task.
StartTime	string (date-time)	*read-only*	The date and time when the task was started.

Property	Type	Attributes	Notes
SubTasks *(v1.5+)* {	object		The link to a collection of sub-tasks for this task. Contains a link to a resource.
@**odata.id**	string	*read-only*	Link to Collection of *Task*. See the Task schema for details.
}			
TaskMonitor *(v1.2+)*	string (URI)	*read-only*	The URI of the Task Monitor for this task.
TaskState	string (enum)	*read-only*	The state of the task. *For the possible property values, see TaskState in Property details.*
TaskStatus	string (enum)	*read-only*	The completion status of the task. *For the possible property values, see TaskStatus in Property details.*

6.112.4 Property details

6.112.4.1 TaskState:

The state of the task.

string	Description
Cancelled *(v1.2+)*	Task has been cancelled by an operator or internal process.
Cancelling *(v1.2+)*	Task is in the process of being cancelled.
Completed	Task was completed.
Exception	Task has stopped due to an exception condition.
Interrupted	Task has been interrupted.
Killed *(deprecated v1.2)*	Task was terminated. *Deprecated in v1.2 and later. This value has been deprecated and is being replaced by the Cancelled value, which has more determinate semantics.*
New	A new task.
Pending	Task is pending and has not started.
Running	Task is running normally.
Service	Task is running as a service.
Starting	Task is starting.

string	Description
Stopping	Task is in the process of stopping.
Suspended	Task has been suspended.

6.112.4.2 TaskStatus:

The completion status of the task.

string	Description
Critical	A critical condition requires immediate attention.
OK	Normal.
Warning	A condition requires attention.

6.112.5 Example response

```json
{
    "@odata.type": "#Task.v1_5_1.Task",
    "Id": "545",
    "Name": "Task 545",
    "TaskMonitor": "/taskmon/545",
    "TaskState": "Completed",
    "StartTime": "2012-03-07T14:44+06:00",
    "EndTime": "2012-03-07T14:45+06:00",
    "TaskStatus": "OK",
    "Messages": [
        {
            "MessageId": "Base.1.0.PropertyNotWriteable",
            "RelatedProperties": [
                "SKU"
            ],
            "Message": "The property SKU is a read only property and cannot be assigned a value",
            "MessageArgs": [
                "SKU"
            ],
            "Severity": "Warning"
        }
    ],
    "@odata.id": "/redfish/v1/TaskService/Tasks/545"
}
```

6.113 TaskService 1.2.0

Version	v1.2	v1.1	v1.0
Release	2021.1	2017.1	1.0

6.113.1 Description

The TaskService schema describes a task service that enables management of long-duration operations, includes the properties for the task service itself, and has links to the resource collection of tasks.

6.113.2 URIs

/redfish/v1/TaskService

6.113.3 Properties

Property	Type	Attributes	Notes
CompletedTaskOverWritePolicy	string (enum)	read-only	The overwrite policy for completed tasks. This property indicates if the task service overwrites completed task information. *For the possible property values, see CompletedTaskOverWritePolicy in Property details.*
DateTime	string (date-time)	read-only (null)	The current date and time, with UTC offset, setting that the task service uses.
LifeCycleEventOnTaskStateChange	boolean	read-only	An indication of whether a task state change sends an event.
ServiceEnabled	boolean	read-write (null)	An indication of whether this service is enabled.
Status {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
TaskAutoDeleteTimeoutMinutes (v1.2+)	integer	read-write	The number of minutes after which a completed task is deleted by the service.
Tasks {	object		The links to the collection of tasks. Contains a link to a resource.
@odata.id	string	read-only	Link to Collection of *Task*. See the Task schema for details.
}			

6.113.4 Property details

6.113.4.1 CompletedTaskOverWritePolicy:

The overwrite policy for completed tasks. This property indicates if the task service overwrites completed task information.

string	Description
Manual	Completed tasks are not automatically overwritten.
Oldest	Oldest completed tasks are overwritten.

6.113.5 Example response

```
{
    "@odata.type": "#TaskService.v1_2_0.TaskService",
    "Id": "TaskService",
    "Name": "Tasks Service",
    "DateTime": "2015-03-13T04:14:33+06:00",
    "CompletedTaskOverWritePolicy": "Manual",
    "LifeCycleEventOnTaskStateChange": true,
    "Status": {
        "State": "Enabled",
        "Health": "OK"
    },
    "ServiceEnabled": true,
    "Tasks": {
        "@odata.id": "/redfish/v1/TaskService/Tasks"
    },
    "Oem": {},
    "@odata.id": "/redfish/v1/TaskService"
}
```

6.114 TelemetryService 1.3.1

Version	v1.3	v1.2	v1.1	v1.0
Release	2020.4	2019.4	2018.3	2018.2

6.114.1 Description

The TelemetryService schema describes a telemetry service. The telemetry service is used to for collecting and reporting metric data within the Redfish Service.

6.114.2 URIs

/redfish/v1/TelemetryService

6.114.3 Properties

Property	Type	Attributes	Notes
LogService {	object		The link to a log service that the telemetry service uses. This service can be a dedicated log service or a pointer a log service under another resource, such as a manager. See the *LogService* schema for details on this property.
@odata.id	string	*read-only*	Link to a LogService resource. See the Links section and the *LogService* schema for details.
}			
MaxReports	integer	*read-only (null)*	The maximum number of metric reports that this service supports.
MetricDefinitions {	object		The link to the collection of metric definitions. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *MetricDefinition*. See the MetricDefinition schema for details.
}			
MetricReportDefinitions {	object		The link to the collection of metric report definitions. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *MetricReportDefinition*. See the MetricReportDefinition schema for details.
}			
MetricReports {	object		The link to the collection of metric reports. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *MetricReport*. See the MetricReport schema for details.
}			
MinCollectionInterval	string	*read-only (null)*	The minimum time interval between gathering metric data that this service allows.

Property	Type	Attributes	Notes
ServiceEnabled *(v1.2+)*	boolean	*read-write (null)*	An indication of whether this service is enabled.
Status {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
SupportedCollectionFunctions [ ]	array (string (enum))	*read-write (null)*	The functions that can be performed over each metric. *For the possible property values, see SupportedCollectionFunctions in Property details.*
Triggers {	object		The link to the collection of triggers that apply to metrics. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *Triggers*. See the Triggers schema for details.
}			

6.114.4 Actions

6.114.4.1 ClearMetricReports *(v1.3+)*

Description

The action to clear the metric reports for this telemetry service.

Action URI: {Base URI of target resource}/Actions/TelemetryService.ClearMetricReports

Action parameters

This action takes no parameters.

6.114.4.2 ResetMetricReportDefinitionsToDefaults *(v1.3+)*

Description

The action to reset the metric report definitions to factory defaults.

Action URI: {Base URI of target resource}/Actions/TelemetryService.ResetMetricReportDefinitionsToDefaults

Action parameters

This action takes no parameters.

6.114.4.3 ResetTriggersToDefaults *(v1.3+)*

Description

The action to reset the triggers to factory defaults.

Action URI: {Base URI of target resource}/Actions/TelemetryService.ResetTriggersToDefaults

Action parameters

This action takes no parameters.

6.114.4.4 SubmitTestMetricReport

Description

This action generates a metric report.

Action URI: {Base URI of target resource}/Actions/TelemetryService.SubmitTestMetricReport

Action parameters

Parameter Name	Type	Attributes	Notes
GeneratedMetricReportValues *(v1.1+)* [{	array	*required*	The content of the MetricReportValues in the generated metric report.
MetricDefinition *(v1.1+)* {	object		The link to the metric definition for this metric. See the *MetricDefinition* schema for details on this property.
@odata.id	string	*read-only*	Link to a MetricDefinition resource. See the Links section and the *MetricDefinition* schema for details.
}			
MetricId *(v1.1+)*	string	*read-only (null)*	The metric definitions identifier for this metric.
MetricProperty *(v1.1+)*	string (URI)	*read-only (null)*	The URI for the property from which this metric is derived.
MetricValue *(v1.1+)*	string	*read-only (null)*	The metric value, as a string.
Timestamp *(v1.1+)*	string (date-time)	*read-only (null)*	The date and time when the metric is obtained. A management application can establish a time series of metric data by retrieving the instances of metric value and sorting them according to their timestamp.

Parameter Name	Type	Attributes	Notes
}]			
MetricReportName	string	*required*	The name of the metric report in generated metric report.
MetricReportValues (deprecated v1.1)	string	*optional*	The contents of MetricReportValues array in the generated metric report. *Deprecated in v1.1 and later. This property has been deprecated in favor of using the property 'GeneratedMetricReportValues'.*

Request Example

```
{
    "MetricReportName": "TestMetricReport",
    "GeneratedMetricReportValues": [
        {
            "MetricId": "AverageReadingCelsius",
            "MetricValue": "50",
            "Timestamp": "2020-12-06T12:00:00Z",
            "MetricProperty": "/redfish/v1/Chassis/Tray_1/Thermal#/Temperatures/0/ReadingCelsius",
            "MetricDefinition": {
                "@odata.id": "/redfish/v1/TelemetryService/MetricDefinitions/AverageReadingCelsius"
            }
        },
        {
            "MetricId": "AverageReadingCelsius",
            "MetricValue": "53",
            "Timestamp": "2020-12-06T12:00:01Z",
            "MetricProperty": "/redfish/v1/Chassis/Tray_1/Thermal#/Temperatures/0/ReadingCelsius",
            "MetricDefinition": {
                "@odata.id": "/redfish/v1/TelemetryService/MetricDefinitions/AverageReadingCelsius"
            }
        }
    ]
}
```

6.114.5 Property details

6.114.5.1 SupportedCollectionFunctions:

The functions that can be performed over each metric.

string	Description
Average	An averaging function.

string	Description
Maximum	A maximum function.
Minimum	A minimum function.
Summation	A summation function.

6.114.6 Example response

```
{
    "@odata.type": "#TelemetryService.v1_3_1.TelemetryService",
    "Id": "TelemetryService",
    "Name": "Telemetry Service",
    "Status": {
        "State": "Enabled",
        "Health": "OK"
    },
    "SupportedCollectionFunctions": [
        "Average",
        "Minimum",
        "Maximum"
    ],
    "MetricDefinitions": {
        "@odata.id": "/redfish/v1/TelemetryService/MetricDefinitions"
    },
    "MetricReportDefinitions": {
        "@odata.id": "/redfish/v1/TelemetryService/MetricReportDefinitions"
    },
    "MetricReports": {
        "@odata.id": "/redfish/v1/TelemetryService/MetricReports"
    },
    "Triggers": {
        "@odata.id": "/redfish/v1/TelemetryService/Triggers"
    },
    "LogService": {
        "@odata.id": "/redfish/v1/Managers/1/LogServices/Log1"
    },
    "@odata.id": "/redfish/v1/TelemetryService"
}
```

6.115 Thermal 1.7.1 (deprecated)

Version	v1.7 Deprecated	v1.6	v1.5	v1.4	v1.3	v1.2	v1.1	v1.0

Release	2020.4	2019.4	2018.2	2017.3	2017.1	2016.3	2016.1	1.0

This schema has been deprecated and use in new implementations is discouraged except to retain compatibility with existing products. This schema has been deprecated in favor of the ThermalSubsystem schema.

6.115.1 Description

The Thermal schema describes temperature monitoring and thermal management subsystems, such as cooling fans, for a computer system or similar devices contained within a chassis.

6.115.2 URIs

/redfish/v1/Chassis/*{ChassisId}*/Thermal

6.115.3 Properties

Property	Type	Attributes	Notes
Fans [{	array		The set of fans for this chassis.
@odata.id	string (URI)	*read-only required*	The unique identifier for a resource.
Actions *(v1.3+)* {}	object		The available actions for this resource.
Assembly *(v1.4+)* {	object		The link to the assembly associated with this fan. See the *Assembly* schema for details on this property.
@odata.id	string	*read-only*	Link to a Assembly resource. See the Links section and the *Assembly* schema for details.
}			
FanName *(deprecated v1.1)*	string	*read-only (null)*	The name of the fan. *Deprecated in v1.1 and later. This property has been deprecated in favor of the Name property.*
HotPluggable *(v1.4+)*	boolean	*read-only (null)*	An indication of whether this device can be inserted or removed while the equipment is in operation.
IndicatorLED *(v1.2+)*	string (enum)	*read-write (null)*	The state of the indicator LED, which identifies this fan. *For the possible property values, see IndicatorLED in Property details.*
Location *(v1.4+)* {}	object		The location of the fan. For property details, see Location.
LowerThresholdCritical	integer	*read-only (null)*	The value at which the reading is below normal range but not yet fatal.

Property	Type	Attributes	Notes
LowerThresholdFatal	integer	*read-only (null)*	The value at which the reading is below normal range and fatal.
LowerThresholdNonCritical	integer	*read-only (null)*	The value at which the reading is below normal range.
Manufacturer *(v1.2+)*	string	*read-only (null)*	The manufacturer of this fan.
MaxReadingRange	integer	*read-only (null)*	Maximum value for this sensor.
MemberId	string	*read-only required*	The identifier for the member within the collection.
MinReadingRange	integer	*read-only (null)*	Minimum value for this sensor.
Model *(v1.2+)*	string	*read-only (null)*	The model number for this fan.
Name *(v1.1+)*	string	*read-only (null)*	Name of the fan.
Oem {}	object		See the Oem object definition in the Common properties section.
PartNumber *(v1.2+)*	string	*read-only (null)*	The part number for this fan.
PhysicalContext	string (enum)	*read-only*	The area or device associated with this fan. *For the possible property values, see PhysicalContext in Property details.*
Reading	integer	*read-only (null)*	The fan speed.
ReadingUnits *(v1.0.1+)*	string (enum)	*read-only (null)*	The units in which the fan reading and thresholds are measured. *For the possible property values, see ReadingUnits in Property details.*
Redundancy [{ }]	array (object)		The set of redundancy groups for this fan. For property details, see Redundancy.
RelatedItem [{	array		An array of links to resources or objects that this fan services.
@odata.id	string (URI)	*read-only*	The unique identifier for a resource.
}]			
SensorNumber *(v1.5+)*	integer	*read-only (null)*	The numerical identifier for this fan speed sensor.

Property	Type	Attributes	Notes
SerialNumber *(v1.2+)*	string	*read-only* *(null)*	The serial number for this fan.
SparePartNumber *(v1.2+)*	string	*read-only* *(null)*	The spare part number for this fan.
Status {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
UpperThresholdCritical	integer	*read-only* *(null)*	The value at which the reading is above normal range but not yet fatal.
UpperThresholdFatal	integer	*read-only* *(null)*	The value at which the reading is above normal range and fatal.
UpperThresholdNonCritical	integer	*read-only* *(null)*	The value at which the reading is above normal range.
}]			
Redundancy [{ }]	array (object)		The redundancy information for the set of fans in this chassis. For property details, see Redundancy.
Status {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
Temperatures [{	array		The set of temperature sensors for this chassis.
@odata.id	string (URI)	*read-only* *required*	The unique identifier for a resource.
Actions *(v1.3+)* {}	object		The available actions for this resource.
AdjustedMaxAllowableOperatingValue *(v1.4+)*	integer (Celsius)	*read-only* *(null)*	Adjusted maximum allowable operating temperature for this equipment based on the current environmental conditions present.
AdjustedMinAllowableOperatingValue *(v1.4+)*	integer (Celsius)	*read-only* *(null)*	Adjusted minimum allowable operating temperature for this equipment based on the current environmental conditions present.
DeltaPhysicalContext *(v1.4+)*	string (enum)	*read-only*	The area or device to which the DeltaReadingCelsius temperature measurement applies, relative to PhysicalContext. *For the possible property values, see DeltaPhysicalContext in Property details.*
DeltaReadingCelsius *(v1.4+)*	number (Celsius)	*read-only* *(null)*	The delta temperature reading.
LowerThresholdCritical	number (Celsius)	*read-only* *(null)*	The value at which the reading is below normal range but not yet fatal.
LowerThresholdFatal	number (Celsius)	*read-only* *(null)*	The value at which the reading is below normal range and fatal.

Property	Type	Attributes	Notes
LowerThresholdNonCritical	number (Celsius)	*read-only (null)*	The value at which the reading is below normal range.
LowerThresholdUser *(v1.6+)*	integer (Celsius)	*read-write (null)*	The value at which the reading is below the user-defined range.
MaxAllowableOperatingValue *(v1.4+)*	integer (Celsius)	*read-only (null)*	Maximum allowable operating temperature for this equipment.
MaxReadingRangeTemp	number (Celsius)	*read-only (null)*	Maximum value for this sensor.
MemberId	string	*read-only required*	The identifier for the member within the collection.
MinAllowableOperatingValue *(v1.4+)*	integer (Celsius)	*read-only (null)*	Minimum allowable operating temperature for this equipment.
MinReadingRangeTemp	number (Celsius)	*read-only (null)*	Minimum value for this sensor.
Name	string	*read-only (null)*	The temperature sensor name.
Oem {}	object		See the Oem object definition in the Common properties section.
PhysicalContext	string (enum)	*read-only*	The area or device to which this temperature measurement applies. *For the possible property values, see PhysicalContext in Property details.*
ReadingCelsius	number (Celsius)	*read-only (null)*	The temperature in degrees Celsius.
RelatedItem [{	array		An array of links to resources or objects that represent areas or devices to which this temperature applies.
@odata.id	string (URI)	*read-only*	The unique identifier for a resource.
}]			
SensorNumber	integer	*read-only (null)*	The numerical identifier of the temperature sensor.
Status {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
UpperThresholdCritical	number (Celsius)	*read-only (null)*	The value at which the reading is above normal range but not yet fatal.

Property	Type	Attributes	Notes
UpperThresholdFatal	number (Celsius)	*read-only (null)*	The value at which the reading is above normal range and fatal.
UpperThresholdNonCritical	number (Celsius)	*read-only (null)*	The value at which the reading is above normal range.
UpperThresholdUser *(v1.6+)*	integer (Celsius)	*read-write (null)*	The value at which the reading is above the user-defined range.
`}]`			

6.115.4 Property details

6.115.4.1 DeltaPhysicalContext:

The area or device to which the DeltaReadingCelsius temperature measurement applies, relative to PhysicalContext.

string	Description
Accelerator	An accelerator.
ACInput	An AC input.
ACMaintenanceBypassInput	An AC maintenance bypass input.
ACOutput	An AC output.
ACStaticBypassInput	An AC static bypass input.
ACUtilityInput	An AC utility input.
ASIC	An ASIC device, such as a networking chip or chipset component.
Back	The back of the chassis.
Backplane	A backplane within the chassis.
Battery	A battery.
Board	A circuit board.
Chassis	The entire chassis.
ComputeBay	Within a compute bay.
CoolingSubsystem	The entire cooling, or air and liquid, subsystem.

string	Description
CPU	A processor (CPU).
CPUSubsystem	The entire processor (CPU) subsystem.
DCBus	A DC bus.
Exhaust	The air exhaust point or points or region of the chassis.
ExpansionBay	Within an expansion bay.
Fan	A fan.
FPGA	An FPGA.
Front	The front of the chassis.
GPU	A graphics processor (GPU).
GPUSubsystem	The entire graphics processor (GPU) subsystem.
Intake	The air intake point or points or region of the chassis.
LiquidInlet	The liquid inlet point of the chassis.
LiquidOutlet	The liquid outlet point of the chassis.
Lower	The lower portion of the chassis.
Memory	A memory device.
MemorySubsystem	The entire memory subsystem.
Motor	A motor.
NetworkBay	Within a networking bay.
NetworkingDevice	A networking device.
PowerSubsystem	The entire power subsystem.
PowerSupply	A power supply.
PowerSupplyBay	Within a power supply bay.
Pump	A pump.
Rectifier	A rectifier device.
Room	The room.
StorageBay	Within a storage bay.

string	Description
StorageDevice	A storage device.
SystemBoard	The system board (PCB).
Transceiver	A transceiver.
Transformer	A transformer.
TrustedModule	A trusted module.
Upper	The upper portion of the chassis.
VoltageRegulator	A voltage regulator device.

6.115.4.2 IndicatorLED:

The state of the indicator LED, which identifies this fan.

string	Description
Blinking	The indicator LED is blinking.
Lit	The indicator LED is lit.
Off	The indicator LED is off.

6.115.4.3 PhysicalContext:

The area or device associated with this fan.

string	Description
Accelerator	An accelerator.
ACInput	An AC input.
ACMaintenanceBypassInput	An AC maintenance bypass input.
ACOutput	An AC output.
ACStaticBypassInput	An AC static bypass input.
ACUtilityInput	An AC utility input.
ASIC	An ASIC device, such as a networking chip or chipset component.

string	Description
Back	The back of the chassis.
Backplane	A backplane within the chassis.
Battery	A battery.
Board	A circuit board.
Chassis	The entire chassis.
ComputeBay	Within a compute bay.
CoolingSubsystem	The entire cooling, or air and liquid, subsystem.
CPU	A processor (CPU).
CPUSubsystem	The entire processor (CPU) subsystem.
DCBus	A DC bus.
Exhaust	The air exhaust point or points or region of the chassis.
ExpansionBay	Within an expansion bay.
Fan	A fan.
FPGA	An FPGA.
Front	The front of the chassis.
GPU	A graphics processor (GPU).
GPUSubsystem	The entire graphics processor (GPU) subsystem.
Intake	The air intake point or points or region of the chassis.
LiquidInlet	The liquid inlet point of the chassis.
LiquidOutlet	The liquid outlet point of the chassis.
Lower	The lower portion of the chassis.
Memory	A memory device.
MemorySubsystem	The entire memory subsystem.
Motor	A motor.
NetworkBay	Within a networking bay.
NetworkingDevice	A networking device.

string	Description
PowerSubsystem	The entire power subsystem.
PowerSupply	A power supply.
PowerSupplyBay	Within a power supply bay.
Pump	A pump.
Rectifier	A rectifier device.
Room	The room.
StorageBay	Within a storage bay.
StorageDevice	A storage device.
SystemBoard	The system board (PCB).
Transceiver	A transceiver.
Transformer	A transformer.
TrustedModule	A trusted module.
Upper	The upper portion of the chassis.
VoltageRegulator	A voltage regulator device.

6.115.4.4 ReadingUnits:

The units in which the fan reading and thresholds are measured.

string	Description
Percent	The fan reading and thresholds are measured as a percentage.
RPM	The fan reading and thresholds are measured in revolutions per minute.

6.115.5 Example response

```
{
    "@odata.type": "#Thermal.v1_7_1.Thermal",
    "Id": "Thermal",
    "Name": "Thermal",
    "Temperatures": [
```

```json
        {
            "@odata.id": "/redfish/v1/Chassis/1U/Thermal#/Temperatures/0",
            "MemberId": "0",
            "Name": "CPU1 Temp",
            "SensorNumber": 5,
            "Status": {
                "State": "Enabled",
                "Health": "OK"
            },
            "ReadingCelsius": 41,
            "UpperThresholdNonCritical": 42,
            "UpperThresholdCritical": 45,
            "UpperThresholdFatal": 48,
            "MinReadingRangeTemp": 0,
            "MaxReadingRangeTemp": 60,
            "PhysicalContext": "CPU",
            "RelatedItem": [
                {
                    "@odata.id": "/redfish/v1/Systems/437XR1138R2/Processors/CPU1"
                }
            ]
        },
        {
            "@odata.id": "/redfish/v1/Chassis/1U/Thermal#/Temperatures/1",
            "MemberId": "1",
            "Name": "CPU2 Temp",
            "SensorNumber": 6,
            "Status": {
                "State": "Disabled"
            },
            "UpperThresholdNonCritical": 42,
            "UpperThresholdCritical": 45,
            "UpperThresholdFatal": 48,
            "MinReadingRangeTemp": 0,
            "MaxReadingRangeTemp": 60,
            "PhysicalContext": "CPU",
            "RelatedItem": [
                {
                    "@odata.id": "/redfish/v1/Systems/437XR1138R2/Processors/CPU2"
                }
            ]
        },
        {
            "@odata.id": "/redfish/v1/Chassis/1U/Thermal#/Temperatures/2",
            "MemberId": "2",
            "Name": "Chassis Intake Temp",
            "SensorNumber": 9,
            "Status": {
                "State": "Enabled",
                "Health": "OK"
```

```
            },
            "ReadingCelsius": 25,
            "UpperThresholdUser": 28,
            "UpperThresholdNonCritical": 30,
            "UpperThresholdCritical": 40,
            "UpperThresholdFatal": 50,
            "LowerThresholdUser": 20,
            "LowerThresholdNonCritical": 10,
            "LowerThresholdCritical": 5,
            "LowerThresholdFatal": 0,
            "MinReadingRangeTemp": 0,
            "MaxReadingRangeTemp": 60,
            "PhysicalContext": "Intake",
            "RelatedItem": [
                {
                    "@odata.id": "/redfish/v1/Chassis/1U"
                },
                {
                    "@odata.id": "/redfish/v1/Systems/437XR1138R2"
                }
            ]
        }
    ],
    "Fans": [
        {
            "@odata.id": "/redfish/v1/Chassis/1U/Thermal#/Fans/0",
            "MemberId": "0",
            "Name": "BaseBoard System Fan",
            "PhysicalContext": "Backplane",
            "Status": {
                "State": "Enabled",
                "Health": "OK"
            },
            "Reading": 2100,
            "ReadingUnits": "RPM",
            "LowerThresholdFatal": 0,
            "MinReadingRange": 0,
            "MaxReadingRange": 5000,
            "Redundancy": [
                {
                    "@odata.id": "/redfish/v1/Chassis/1U/Thermal#/Redundancy/0"
                }
            ],
            "RelatedItem": [
                {
                    "@odata.id": "/redfish/v1/Systems/437XR1138R2"
                },
                {
                    "@odata.id": "/redfish/v1/Chassis/1U"
                }
```

```
                ]
            },
            {
                "@odata.id": "/redfish/v1/Chassis/1U/Thermal#/Fans/1",
                "MemberId": "1",
                "Name": "BaseBoard System Fan Backup",
                "PhysicalContext": "Backplane",
                "Status": {
                    "State": "Enabled",
                    "Health": "OK"
                },
                "Reading": 2050,
                "ReadingUnits": "RPM",
                "LowerThresholdFatal": 0,
                "MinReadingRange": 0,
                "MaxReadingRange": 5000,
                "Redundancy": [
                    {
                        "@odata.id": "/redfish/v1/Chassis/1U/Thermal#/Redundancy/0"
                    }
                ],
                "RelatedItem": [
                    {
                        "@odata.id": "/redfish/v1/Systems/437XR1138R2"
                    },
                    {
                        "@odata.id": "/redfish/v1/Chassis/1U"
                    }
                ]
            }
        ],
        "Redundancy": [
            {
                "@odata.id": "/redfish/v1/Chassis/1U/Thermal#/Redundancy/0",
                "MemberId": "0",
                "Name": "BaseBoard System Fans",
                "RedundancySet": [
                    {
                        "@odata.id": "/redfish/v1/Chassis/1U/Thermal#/Fans/0"
                    },
                    {
                        "@odata.id": "/redfish/v1/Chassis/1U/Thermal#/Fans/1"
                    }
                ],
                "Mode": "N+m",
                "Status": {
                    "State": "Enabled",
                    "Health": "OK"
                },
                "MinNumNeeded": 1,
```

```
            "MaxNumSupported": 2
        }
    ],
    "@odata.id": "/redfish/v1/Chassis/1U/Thermal"
}
```

6.116 ThermalMetrics 1.0.1

Version	*v1.0*
Release	2020.4

6.116.1 Description

The ThermalMetrics schema represents the thermal metrics of a chassis.

6.116.2 URIs

/redfish/v1/Chassis/*{ChassisId}*/ThermalSubsystem/ThermalMetrics

6.116.3 Properties

Property	Type	Attributes	Notes
TemperatureReadingsCelsius [{	array (excerpt)		The temperatures (Celsius) from all related sensors for this device. This object is an excerpt of the *Sensor* resource located at the URI shown in DataSourceUri.
DataSourceUri	string (URI)	*read-only (null)*	The link to the resource that provides the data for this sensor.
DeviceName *(v1.2+)*	string	*read-only (null)*	The name of the device.
PhysicalContext	string (enum)	*read-only (null)*	The area or device to which this sensor measurement applies. *For the possible property values, see PhysicalContext in Property details.*
PhysicalSubContext	string (enum)	*read-only (null)*	The usage or location within a device to which this sensor measurement applies. *For the possible property values, see PhysicalSubContext in Property details.*

Property	Type	Attributes	Notes
Reading	number	*read-only (null)*	The sensor value.
}]			
TemperatureSummaryCelsius {	object	*(null)*	The summary temperature readings for this chassis.
Ambient {}	object		The ambient temperature (Celsius) of this subsystem. For more information about this property, see SensorExcerpt in Property Details.
Exhaust {}	object		The exhaust temperature (Celsius) of this subsystem. For more information about this property, see SensorExcerpt in Property Details.
Intake {}	object		The intake temperature (Celsius) of this subsystem. For more information about this property, see SensorExcerpt in Property Details.
Internal {}	object		The internal temperature (Celsius) of this subsystem. For more information about this property, see SensorExcerpt in Property Details.
}			

6.116.4 Actions

6.116.4.1 ResetMetrics

Description

This action resets the summary metrics related to this equipment.

Action URI: {Base URI of target resource}/Actions/ThermalMetrics.ResetMetrics

Action parameters

This action takes no parameters.

6.116.5 Property details

6.116.5.1 PhysicalContext:

The area or device to which this sensor measurement applies.

string	Description
Accelerator	An accelerator.
ACInput	An AC input.
ACMaintenanceBypassInput	An AC maintenance bypass input.
ACOutput	An AC output.
ACStaticBypassInput	An AC static bypass input.
ACUtilityInput	An AC utility input.
ASIC	An ASIC device, such as a networking chip or chipset component.
Back	The back of the chassis.
Backplane	A backplane within the chassis.
Battery	A battery.
Board	A circuit board.
Chassis	The entire chassis.
ComputeBay	Within a compute bay.
CoolingSubsystem	The entire cooling, or air and liquid, subsystem.
CPU	A processor (CPU).
CPUSubsystem	The entire processor (CPU) subsystem.
DCBus	A DC bus.
Exhaust	The air exhaust point or points or region of the chassis.
ExpansionBay	Within an expansion bay.
Fan	A fan.
FPGA	An FPGA.
Front	The front of the chassis.
GPU	A graphics processor (GPU).
GPUSubsystem	The entire graphics processor (GPU) subsystem.
Intake	The air intake point or points or region of the chassis.
LiquidInlet	The liquid inlet point of the chassis.

string	Description
LiquidOutlet	The liquid outlet point of the chassis.
Lower	The lower portion of the chassis.
Memory	A memory device.
MemorySubsystem	The entire memory subsystem.
Motor	A motor.
NetworkBay	Within a networking bay.
NetworkingDevice	A networking device.
PowerSubsystem	The entire power subsystem.
PowerSupply	A power supply.
PowerSupplyBay	Within a power supply bay.
Pump	A pump.
Rectifier	A rectifier device.
Room	The room.
StorageBay	Within a storage bay.
StorageDevice	A storage device.
SystemBoard	The system board (PCB).
Transceiver	A transceiver.
Transformer	A transformer.
TrustedModule	A trusted module.
Upper	The upper portion of the chassis.
VoltageRegulator	A voltage regulator device.

6.116.5.2 PhysicalSubContext:

The usage or location within a device to which this sensor measurement applies.

string	Description
Input	The input.

string	Description
Output	The output.

6.116.5.3 SensorExcerpt:

The Sensor schema describes a sensor and its properties. This object is an excerpt of the *Sensor* resource located at the URI shown in DataSourceUri.

DataSourceUri	string (URI)	*read-only (null)*	The link to the resource that provides the data for this sensor.
Reading	number	*read-only (null)*	The sensor value.

6.116.6 Example response

```json
{
    "@odata.type": "#ThermalMetrics.v1_0_1.ThermalMetrics",
    "Id": "ThermalMetrics",
    "Name": "Chassis Thermal Metrics",
    "TemperatureSummaryCelsius": {
        "Internal": {
            "Reading": 39,
            "DataSourceUri": "/redfish/v1/Chassis/1U/Sensors/CPU1Temp"
        },
        "Intake": {
            "Reading": 24.8,
            "DataSourceUri": "/redfish/v1/Chassis/1U/Sensors/IntakeTemp"
        },
        "Ambient": {
            "Reading": 22.5,
            "DataSourceUri": "/redfish/v1/Chassis/1U/Sensors/AmbientTemp"
        },
        "Exhaust": {
            "Reading": 40.5,
            "DataSourceUri": "/redfish/v1/Chassis/1U/Sensors/ExhaustTemp"
        }
    },
    "TemperatureReadingsCelsius": [
        {
            "Reading": 40,
            "DeviceName": "SystemBoard",
```

```
            "DataSourceUri": "/redfish/v1/Chassis/1U/Sensors/SysBrdTemp"
        },
        {
            "Reading": 24.8,
            "DeviceName": "Intake",
            "DataSourceUri": "/redfish/v1/Chassis/1U/Sensors/IntakeTemp"
        },
        {
            "Reading": 39,
            "DeviceName": "CPUSubsystem",
            "DataSourceUri": "/redfish/v1/Chassis/1U/Sensors/CPUTemps"
        },
        {
            "Reading": 42,
            "DeviceName": "MemorySubsystem",
            "DataSourceUri": "/redfish/v1/Chassis/1U/Sensors/MemoryTemp"
        },
        {
            "Reading": 33,
            "DeviceName": "PowerSupply",
            "DataSourceUri": "/redfish/v1/Chassis/1U/Sensors/PSTemp"
        },
        {
            "Reading": 40.5,
            "DeviceName": "Exhaust",
            "DataSourceUri": "/redfish/v1/Chassis/1U/Sensors/ExhaustTemp"
        }
    ],
    "Oem": {},
    "@odata.id": "/redfish/v1/Chassis/1U/ThermalSubsystem/ThermalMetrics"
}
```

6.117 ThermalSubsystem 1.0.0

Version	*v1.0*
Release	2020.4

6.117.1 Description

This ThermalSubsystem schema contains the definition for the thermal subsystem of a chassis.

6.117.2 URIs

/redfish/v1/Chassis/*{ChassisId}*/ThermalSubsystem

6.117.3 Properties

Property	Type	Attributes	Notes
FanRedundancy [{}]	array (object)		The redundancy information for the groups of fans in this subsystem. For property details, see RedundantGroup.
Fans {	object		The link to the collection of fans within this subsystem. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *Fan*. See the Fan schema for details.
}			
Status {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
ThermalMetrics {	object		The link to the summary of thermal metrics for this subsystem. See the *ThermalMetrics* schema for details on this property.
@odata.id	string	*read-only*	Link to a ThermalMetrics resource. See the Links section and the *ThermalMetrics* schema for details.
}			

6.117.4 Example response

```
{
    "@odata.type": "#ThermalSubsystem.v1_0_0.ThermalSubsystem",
    "Id": "ThermalSubsystem",
    "Name": "Thermal Subsystem for Chassis",
    "FanRedundancy": [
        {
            "RedundancyType": "NPlusM",
            "MaxSupportedInGroup": 2,
            "MinNeededInGroup": 1,
            "RedundancyGroup": [
                {
                    "@odata.id": "/redfish/v1/Chassis/1U/ThermalSubsystem/Fans/Bay1"
                },
                {
                    "@odata.id": "/redfish/v1/Chassis/1U/ThermalSubsystem/Fans/Bay2"
                }
```

```
        ],
        "Status": {
            "State": "Enabled",
            "Health": "OK"
        }
    },
    {
        "RedundancyType": "NPlusM",
        "MaxSupportedInGroup": 2,
        "MinNeededInGroup": 1,
        "RedundancyGroup": [
            {
                "@odata.id": "/redfish/v1/Chassis/1U/ThermalSubsystem/Fans/CPU1"
            },
            {
                "@odata.id": "/redfish/v1/Chassis/1U/ThermalSubsystem/Fans/CPU2"
            }
        ],
        "Status": {
            "State": "Disabled"
        }
    }
],
"Fans": {
    "@odata.id": "/redfish/v1/Chassis/1U/ThermalSubsystem/Fans"
},
"ThermalMetrics": {
    "@odata.id": "/redfish/v1/Chassis/1U/ThermalSubsystem/ThermalMetrics"
},
"Status": {
    "State": "Enabled",
    "Health": "OK"
},
"Oem": {},
"@odata.id": "/redfish/v1/Chassis/1U/ThermalSubsystem"
}
```

6.118 Triggers 1.2.0

Version	v1.2	v1.1	v1.0
Release	2021.2	2019.1	2018.2

6.118.1 Description

The Triggers schema describes a trigger that applies to metrics.

6.118.2 URIs

/redfish/v1/TelemetryService/Triggers/*{TriggersId}*

6.118.3 Properties

Property	Type	Attributes	Notes
DiscreteTriggerCondition	string (enum)	*read-only (null)*	The conditions when a discrete metric triggers. *For the possible property values, see DiscreteTriggerCondition in Property details.*
DiscreteTriggers [{	array		The list of discrete triggers.
DwellTime	string	*read-write (null)*	The amount of time that a trigger event persists before the metric action is performed.
Name	string	*read-only (null)*	The name of trigger.
Severity	string (enum)	*read-write (null)*	The severity of the event message. *For the possible property values, see Severity in Property details.*
Value	string	*read-write (null)*	The discrete metric value that constitutes a trigger event.
}]			
EventTriggers *(v1.1+)* [ ]	array (string, null)	*read-write*	The array of MessageIds that specify when a trigger condition is met based on an event.
Links *(v1.1+)* {	object		The links to other resources that are related to this resource.
MetricReportDefinitions *(v1.1+)* [{	array		The metric report definitions that generate new metric reports when a trigger condition is met and when the TriggerActions property contains `RedfishMetricReport` .
@odata.id	string	*read-write*	Link to a MetricReportDefinition resource. See the Links section and the *MetricReportDefinition* schema for details.
}]			
Oem {}	object		See the Oem object definition in the Common properties section.
}			
MetricIds *(v1.2+)* [ ]	array (string, null)	*read-write*	The label for the metric definitions that contain the property identifiers for this trigger. It matches the Id property of the corresponding metric definition.

Property	Type	Attributes	Notes
MetricProperties [ ]	array (URI) (string, null)	*read-write*	An array of URIs with wildcards and property identifiers for this trigger. Each wildcard shall be replaced with its corresponding entry in the Wildcard array property.
MetricType	string (enum)	*read-only (null)*	The metric type of the trigger. *For the possible property values, see MetricType in Property details.*
NumericThresholds {	object		The thresholds when a numeric metric triggers.
LowerCritical {}	object		The value at which the reading is below normal range and requires attention. For more information about this property, see Threshold in Property Details.
LowerWarning {}	object		The value at which the reading is below normal range. For more information about this property, see Threshold in Property Details.
UpperCritical {}	object		The value at which the reading is above normal range and requires attention. For more information about this property, see Threshold in Property Details.
UpperWarning {}	object		The value at which the reading is above normal range. For more information about this property, see Threshold in Property Details.
}			
Status {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
TriggerActions [ ]	array (string (enum))	*read-only*	The actions that the trigger initiates. *For the possible property values, see TriggerActions in Property details.*
Wildcards [{	array		The wildcards and their substitution values for the entries in the MetricProperties array property.
Name	string	*read-only (null)*	The wildcard.
Values [ ]	array (string, null)	*read-only*	An array of values to substitute for the wildcard.
}]			

6.118.4 Property details

6.118.4.1 Activation:

The direction of crossing that activates this threshold.

string	Description
Decreasing	Value decreases below the threshold.
Either	Value crosses the threshold in either direction.
Increasing	Value increases above the threshold.

6.118.4.2 DiscreteTriggerCondition:

The conditions when a discrete metric triggers.

string	Description
Changed	A discrete trigger condition is met whenever the metric value changes.
Specified	A discrete trigger condition is met when the metric value becomes one of the values that the DiscreteTriggers property lists.

6.118.4.3 MetricType:

The metric type of the trigger.

string	Description
Discrete	The trigger is for a discrete sensor.
Numeric	The trigger is for numeric sensor.

6.118.4.4 Severity:

The severity of the event message.

string	Description
Critical	A critical condition requires immediate attention.
OK	Normal.
Warning	A condition requires attention.

6.118.4.5 Threshold:

A threshold definition for a sensor.

Activation	string (enum)	*read-write (null)*	The direction of crossing that activates this threshold. *For the possible property values, see Activation in Property details.*
DwellTime	string	*read-write (null)*	The duration the sensor value must violate the threshold before the threshold is activated.
Reading	number	*read-write (null)*	The threshold value.

6.118.4.6 TriggerActions:

The actions that the trigger initiates.

string	Description
LogToLogService	When a trigger condition is met, record in a log.
RedfishEvent	When a trigger condition is met, the service sends an event to subscribers.
RedfishMetricReport	When a trigger condition is met, force an update of the specified metric reports.

6.118.5 Example response

```
{
    "@odata.type": "#Triggers.v1_2_0.Triggers",
    "Id": "PlatformPowerCapTriggers",
    "Name": "Triggers for platform power consumed",
    "MetricType": "Numeric",
    "TriggerActions": [
        "RedfishEvent"
    ],
    "NumericThresholds": {
        "UpperCritical": {
            "Reading": 50,
            "Activation": "Increasing",
            "DwellTime": "PT0.001S"
        },
```

```
        "UpperWarning": {
            "Reading": 48.1,
            "Activation": "Increasing",
            "DwellTime": "PT0.004S"
        }
    },
    "MetricProperties": [
        "/redfish/v1/Chassis/1/Power#/PowerControl/0/PowerConsumedWatts"
    ],
    "@odata.id": "/redfish/v1/TelemetryService/Triggers/PlatformPowerCapTriggers"
}
```

6.119 UpdateService 1.11.0

Version	v1.11	v1.10	v1.9	v1.8	v1.7	v1.6	v1.5	v1.4	v1.3	v1.2	v1.1	...
Release	2021.4	2021.2	2021.1	2019.4	2019.3	2019.2	2019.1	2018.3	2018.2	2017.1	2016.3	...

6.119.1 Description

The UpdateService schema describes the update service and the properties for the service itself with links to collections of firmware and software inventory. The update service also provides methods for updating software and firmware of the resources in a Redfish service.

6.119.2 URIs

/redfish/v1/UpdateService

6.119.3 Properties

Property	Type	Attributes	Notes
ClientCertificates *(v1.10+)* {	object		The link to a collection of client identity certificates provided to the server referenced by the ImageURI property in SimpleUpdate. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *Certificate*. See the Certificate schema for details.
}			

Property	Type	Attributes	Notes
FirmwareInventory {	object		An inventory of firmware. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *SoftwareInventory*. See the SoftwareInventory schema for details.
}			
HttpPushUri *(v1.1+)*	string (URI)	*read-only*	The URI used to perform an HTTP or HTTPS push update to the update service. The format of the message is vendor-specific.
HttpPushUriOptions *(v1.4+)* {	object		The options for HttpPushUri-provided software updates.
ForceUpdate *(v1.11+)*	boolean	*read-write*	An indication of whether the service should bypass update policies when applying the HttpPushUri-provided image.
HttpPushUriApplyTime *(v1.4+)* {	object		The settings for when to apply HttpPushUri-provided firmware.
ApplyTime *(v1.4+)*	string (enum)	*read-write*	The time when to apply the HttpPushUri-provided software update. *For the possible property values, see ApplyTime in Property details.*
MaintenanceWindowDurationInSeconds *(v1.4+)*	integer (seconds)	*read-write*	The expiry time, in seconds, of the maintenance window.
MaintenanceWindowStartTime *(v1.4+)*	string (date-time)	*read-write*	The start time of a maintenance window.
}			
}			
HttpPushUriOptionsBusy *(v1.4+)*	boolean	*read-write (null)*	An indication of whether a client has reserved the HttpPushUriOptions properties for software updates.
HttpPushUriTargets *(v1.2+)* [ ]	array (URI) (string, null)	*read-write*	An array of URIs that indicate where to apply the update image.
HttpPushUriTargetsBusy *(v1.2+)*	boolean	*read-write (null)*	An indication of whether any client has reserved the HttpPushUriTargets property.
MaxImageSizeBytes *(v1.5+)*	integer (bytes)	*read-only (null)*	The maximum size in bytes of the software update image that this service supports.
MultipartHttpPushUri *(v1.6+)*	string (URI)	*read-only*	The URI used to perform a Redfish Specification-defined Multipart HTTP or HTTPS push update to the update service.

Property	Type	Attributes	Notes
RemoteServerCertificates *(v1.9+)* {	object		The link to a collection of server certificates for the server referenced by the ImageURI property in SimpleUpdate. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *Certificate*. See the Certificate schema for details.
}			
ServiceEnabled	boolean	*read-write (null)*	An indication of whether this service is enabled.
SoftwareInventory {	object		An inventory of software. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *SoftwareInventory*. See the SoftwareInventory schema for details.
}			
Status {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
VerifyRemoteServerCertificate *(v1.9+)*	boolean	*read-write (null)*	An indication of whether the service will verify the certificate of the server referenced by the ImageURI property in SimpleUpdate prior to sending the transfer request.

6.119.4 Actions

6.119.4.1 SimpleUpdate

Description

This action updates software components.

Action URI: {Base URI of target resource}/Actions/UpdateService.SimpleUpdate

Action parameters

Parameter Name	Type	Attributes	Notes
ForceUpdate *(v1.11+)*	boolean	*optional*	An indication of whether the service should bypass update policies when applying the provided image. The default is `false` .
ImageURI	string	*required*	The URI of the software image to install.

Parameter Name	Type	Attributes	Notes
Password *(v1.4+)*	string	*optional*	The password to access the URI specified by the ImageURI parameter.
Targets *(v1.2+)* [ ]	array (URI) (string)	*optional*	An array of URIs that indicate where to apply the update image.
TransferProtocol	string (enum)	*optional*	The network protocol that the update service uses to retrieve the software image file located at the URI provided in ImageURI. This parameter is ignored if the URI provided in ImageURI contains a scheme. *For the possible property values, see TransferProtocol in Property details.*
Username *(v1.4+)*	string	*optional*	The user name to access the URI specified by the ImageURI parameter.

Request Example

```
{
    "ImageURI": "https://images.contoso.org/bmc_0260_2021.bin"
}
```

6.119.4.2 StartUpdate *(v1.7+)*

Description

This action starts an update of software components.

Action URI: {Base URI of target resource}/Actions/UpdateService.StartUpdate

Action parameters

This action takes no parameters.

6.119.5 Property details

6.119.5.1 ApplyTime:

The time when to apply the HttpPushUri-provided software update.

string	Description
AtMaintenanceWindowStart	Apply during an administrator-specified maintenance window.

string	Description
Immediate	Apply immediately.
InMaintenanceWindowOnReset	Apply after a reset but within an administrator-specified maintenance window.
OnReset	Apply on a reset.
OnStartUpdateRequest *(v1.11+)*	Apply when the StartUpdate action of the update service is invoked.

6.119.5.2 TransferProtocol:

The network protocol that the update service uses to retrieve the software image file located at the URI provided in ImageURI. This parameter is ignored if the URI provided in ImageURI contains a scheme.

string	Description
CIFS	Common Internet File System (CIFS).
FTP	File Transfer Protocol (FTP).
HTTP	Hypertext Transfer Protocol (HTTP).
HTTPS	Hypertext Transfer Protocol Secure (HTTPS).
NFS *(v1.3+)*	Network File System (NFS).
NSF *(deprecated v1.3)*	Network File System (NFS). *Deprecated in v1.3 and later. This value has been deprecated in favor of NFS.*
OEM	A manufacturer-defined protocol.
SCP	Secure Copy Protocol (SCP).
SFTP *(v1.1+)*	Secure File Transfer Protocol (SFTP).
TFTP	Trivial File Transfer Protocol (TFTP).

6.119.6 Example response

```
{
    "@odata.type": "#UpdateService.v1_11_0.UpdateService",
    "Id": "UpdateService",
    "Name": "Update service",
    "Status": {
```

```
        "State": "Enabled",
        "Health": "OK",
        "HealthRollup": "OK"
    },
    "ServiceEnabled": true,
    "HttpPushUri": "/FWUpdate",
    "FirmwareInventory": {
        "@odata.id": "/redfish/v1/UpdateService/FirmwareInventory"
    },
    "SoftwareInventory": {
        "@odata.id": "/redfish/v1/UpdateService/SoftwareInventory"
    },
    "Actions": {
        "#UpdateService.SimpleUpdate": {
            "target": "/redfish/v1/UpdateService/Actions/SimpleUpdate",
            "@Redfish.ActionInfo": "/redfish/v1/UpdateService/SimpleUpdateActionInfo"
        },
        "Oem": {}
    },
    "Oem": {},
    "@odata.id": "/redfish/v1/UpdateService"
}
```

6.120 USBController 1.0.0

Version	*v1.0*
Release	2021.1

6.120.1 Description

The USBController schema defines a Universal Serial Bus controller.

6.120.2 URIs

/redfish/v1/Systems/*{ComputerSystemId}*/USBControllers/*{ControllerId}*

6.120.3 Properties

Property	Type	Attributes	Notes
Links {	object		The links to other resources that are related to this resource.

Property	Type	Attributes	Notes
Oem {}	object		See the Oem object definition in the Common properties section.
PCIeDevice {	object	*(null)*	A link to the PCIe device that represents this USB controller. See the *PCIeDevice* schema for details on this property.
@odata.id	string	*read-only*	Link to a PCIeDevice resource. See the Links section and the *PCIeDevice* schema for details.
}			
Processors [{	array		An array of links to the processors that can utilize this USB controller.
@odata.id	string	*read-only*	Link to a Processor resource. See the Links section and the *Processor* schema for details.
}]			
}			
Manufacturer	string	*read-only (null)*	The manufacturer of this USB controller.
Model	string	*read-only (null)*	The product model number of this USB controller.
PartNumber	string	*read-only (null)*	The part number for this USB controller.
Ports {	object		The ports of the USB controller. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *Port*. See the Port schema for details.
}			
SerialNumber	string	*read-only (null)*	The serial number for this USB controller.
SKU	string	*read-only (null)*	The SKU for this USB controller.
SparePartNumber	string	*read-only (null)*	The spare part number of the USB controller.
Status {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.

6.120.4 Example response

```json
{
    "@odata.type": "#USBController.v1_0_0.USBController",
    "Id": "USB1",
    "Name": "Contoso USB Controller 1",
    "Manufacturer": "Contoso",
    "Model": "USBv3",
    "SKU": "80937",
    "SerialNumber": "2M220100SL",
    "PartNumber": "G37891",
    "SparePartNumber": "G37890",
    "Status": {
        "State": "Enabled",
        "Health": "OK"
    },
    "Ports": {
        "@odata.id": "/redfish/v1/Systems/1/USBControllers/USB1/Ports"
    },
    "Links": {
        "Processors": [
            {
                "@odata.id": "/redfish/v1/Systems/1/Processors/1"
            },
            {
                "@odata.id": "/redfish/v1/Systems/1/Processors/2"
            }
        ],
        "PCIeDevice": {}
    },
    "Oem": {},
    "@odata.id": "/redfish/v1/Systems/1/USBControllers/USB1"
}
```

6.121 VCATEntry 1.0.1

Version	v1.0
Release	2019.4

6.121.1 Description

The VCATEntry schema defines an entry in a Virtual Channel Action Table. A Virtual Channel is a mechanism used to create multiple, logical communication streams across a physical link.

6.121.2 URIs

/redfish/v1/Fabrics/{*FabricId*}/Switches/{*SwitchId*}/Ports/{*PortId*}/VCAT/{*VCATEntryId*}
/redfish/v1/Systems/{*SystemId*}/FabricAdapters/{*FabricAdapterId*}/Ports/{*PortId*}/VCAT/{*VCATEntryId*}
/redfish/v1/Systems/{*SystemId*}/FabricAdapters/{*FabricAdapterId*}/REQ-VCAT/{*VCATEntryId*}
/redfish/v1/Systems/{*SystemId*}/FabricAdapters/{*FabricAdapterId*}/RSP-VCAT/{*VCATEntryId*}

6.121.3 Properties

Property	Type	Attributes	Notes
RawEntryHex	string	*read-write (null)*	The hexadecimal value of the Virtual Channel Action Table entries.
VCEntries [{	array		An array of entries of the Virtual Channel Action Table.
Threshold	string	*read-write (null)*	The configured threshold.
VCMask	string	*read-write (null)*	The bits corresponding to the supported Virtual Channel.
}]			

6.121.4 Example response

```
{
    "@odata.type": "#VCATEntry.v1_0_1.VCATEntry",
    "Id": "0",
    "Name": "VCAT Entry 0",
    "Description": "Gen-Z Port 1 Virtual Channel Action Table Entry 0",
    "RawEntryHex": "0x123456",
    "VCEntries": [
        {
            "VCMask": "0x00000034",
            "Threshold": "0x12"
        },
        {
            "VCMask": "0x00000034",
            "Threshold": "0x12"
        },
        {
            "VCMask": "0x00000034",
            "Threshold": "0x12"
        },
```

```
        {
            "VCMask": "0x00000034",
            "Threshold": "0x12"
        }
    ],
    "Oem": {},
    "@odata.id": "/redfish/v1/Fabrics/GenZ/Switches/Switch1/Ports/1/VCAT/0"
}
```

6.122 VirtualMedia 1.5.1

Version	v1.5	v1.4	v1.3	v1.2	v1.1	v1.0
Release	2021.2	2021.1	2018.3	2017.3	2017.1	1.0

6.122.1 Description

The VirtualMedia schema contains properties related to the monitor and control of an instance of virtual media, such as a remote CD, DVD, or USB device. A manager for a system or device provides virtual media functionality.

6.122.2 URIs

/redfish/v1/CompositionService/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/VirtualMedia/
{VirtualMediaId}
/redfish/v1/Managers/*{ManagerId}*/VirtualMedia/*{VirtualMediaId}*
/redfish/v1/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/VirtualMedia/*{VirtualMediaId}*
/redfish/v1/Systems/*{ComputerSystemId}*/VirtualMedia/*{VirtualMediaId}*

6.122.3 Properties

Property	Type	Attributes	Notes
Certificates *(v1.4+)* {	object		The link to a collection of server certificates for the server referenced by the Image property. Contains a link to a resource.
@odata.id	string	*read-only*	Link to Collection of *Certificate*. See the Certificate schema for details.
}			
ClientCertificates *(v1.5+)* {	object		The link to a collection of client identity certificates provided to the server referenced by the Image property. Contains a link to a resource.

Property	Type	Attributes	Notes
@odata.id	string	*read-only*	Link to Collection of *Certificate*. See the Certificate schema for details.
}			
ConnectedVia	string (enum)	*read-only (null)*	The current virtual media connection method. *For the possible property values, see ConnectedVia in Property details.*
Image	string (URI)	*read-write (null)*	The URI of the location of the selected image.
ImageName	string	*read-only (null)*	The current image name.
Inserted	boolean	*read-write (null)*	An indication of whether virtual media is inserted into the virtual device.
MediaTypes [ ]	array (string (enum))	*read-only*	The media types supported as virtual media. *For the possible property values, see MediaTypes in Property details.*
Password *(v1.3+)*	string	*read-write (null)*	The password to access the Image parameter-specified URI. This property is null in responses.
Status *(v1.4+)* {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
TransferMethod *(v1.3+)*	string (enum)	*read-write (null)*	The transfer method to use with the Image. *For the possible property values, see TransferMethod in Property details.*
TransferProtocolType *(v1.3+)*	string (enum)	*read-write (null)*	The network protocol to use with the image. *For the possible property values, see TransferProtocolType in Property details.*
UserName *(v1.3+)*	string	*read-write (null)*	The user name to access the Image parameter-specified URI.
VerifyCertificate *(v1.4+)*	boolean	*read-write (null)*	An indication of whether the service will verify the certificate of the server referenced by the Image property prior to completing the remote media connection.
WriteProtected	boolean	*read-write (null)*	An indication of whether the media is write-protected.

6.122.4 Actions

6.122.4.1 EjectMedia *(v1.2+)*

Description

This action detaches remote media from virtual media.

Action URI: {Base URI of target resource}/Actions/VirtualMedia.EjectMedia

Action parameters

This action takes no parameters.

6.122.4.2 InsertMedia *(v1.2+)*

Description

This action attaches remote media to virtual media.

Action URI: {Base URI of target resource}/Actions/VirtualMedia.InsertMedia

Action parameters

Parameter Name	Type	Attributes	Notes
Image	string	*required*	The URI of the media to attach to the virtual media.
Inserted	boolean	*optional*	An indication of whether the image is treated as inserted upon completion of the action. The default is `true` .
Password *(v1.3+)*	string	*optional*	The password to access the URI specified by the Image parameter.
TransferMethod *(v1.3+)*	string (enum)	*optional*	The transfer method to use with the image. *For the possible property values, see TransferMethod in Property details.*
TransferProtocolType *(v1.3+)*	string (enum)	*optional*	The network protocol to use with the image. *For the possible property values, see TransferProtocolType in Property details.*
UserName *(v1.3+)*	string	*optional*	The username to access the URI specified by the Image parameter.
WriteProtected	boolean	*optional*	An indication of whether the remote media is treated as write-protected. The default is `true` .

Request Example

```
{
    "Image": "https://192.168.1.225/boot_image.iso",
    "Inserted": true,
    "WriteProtected": true
}
```

6.122.5 Property details

6.122.5.1 ConnectedVia:

The current virtual media connection method.

string	Description
Applet	Connected to a client application.
NotConnected	No current connection.
Oem	Connected through an OEM-defined method.
URI	Connected to a URI location.

6.122.5.2 MediaTypes:

The media types supported as virtual media.

string	Description
CD	A CD-ROM format (ISO) image.
DVD	A DVD-ROM format image.
Floppy	A floppy disk image.
USBStick	An emulation of a USB storage device.

6.122.5.3 TransferMethod:

The transfer method to use with the image.

string	Description
Stream	Stream image file data from the source URI.
Upload	Upload the entire image file from the source URI to the service.

6.122.5.4 TransferProtocolType:

The network protocol to use with the image.

string	Description
CIFS	Common Internet File System (CIFS).
FTP	File Transfer Protocol (FTP).
HTTP	Hypertext Transfer Protocol (HTTP).
HTTPS	Hypertext Transfer Protocol Secure (HTTPS).
NFS	Network File System (NFS).
OEM	A manufacturer-defined protocol.
SCP	Secure Copy Protocol (SCP).
SFTP	Secure File Transfer Protocol (SFTP).
TFTP	Trivial File Transfer Protocol (TFTP).

6.122.6 Example response

```
{
    "@odata.type": "#VirtualMedia.v1_5_1.VirtualMedia",
    "Id": "CD1",
    "Name": "Virtual CD",
    "MediaTypes": [
        "CD",
        "DVD"
    ],
    "Image": "redfish.dmtf.org/freeImages/freeOS.1.1.iso",
    "ImageName": "mymedia-read-only",
    "ConnectedVia": "Applet",
    "Inserted": true,
    "WriteProtected": false,
    "@odata.id": "/redfish/v1/Managers/BMC/VirtualMedia/CD1"
}
```

6.123 VLanNetworkInterface 1.3.0 (deprecated)

Version	v1.3 Deprecated	v1.2	v1.1	v1.0
Release	2021.2	2020.4	2017.1	1.0

This schema has been deprecated and use in new implementations is discouraged except to retain compatibility with existing products. This schema has been deprecated in favor of using individual EthernetInterface resources to show VLAN information.

6.123.1 Description

The VLanNetworkInterface schema describes a VLAN network instance that is available on a manager, system, or other device.

6.123.2 URIs

/redfish/v1/Chassis/*{ChassisId}*/NetworkAdapters/*{NetworkAdapterId}*/NetworkDeviceFunctions/
{NetworkDeviceFunctionId}/Ethernet/VLANs/*{VLanNetworkInterfaceId}*
/redfish/v1/CompositionService/ResourceBlocks/*{ResourceBlockId}*/EthernetInterfaces/*{EthernetInterfaceId}*/VLANs/
{VLanNetworkInterfaceId}
/redfish/v1/CompositionService/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/
EthernetInterfaces/*{EthernetInterfaceId}*/VLANs/*{VLanNetworkInterfaceId}*
/redfish/v1/Managers/*{ManagerId}*/EthernetInterfaces/*{EthernetInterfaceId}*/VLANs/*{VLanNetworkInterfaceId}*
/redfish/v1/ResourceBlocks/*{ResourceBlockId}*/EthernetInterfaces/*{EthernetInterfaceId}*/VLANs/
{VLanNetworkInterfaceId}
/redfish/v1/ResourceBlocks/*{ResourceBlockId}*/Systems/*{ComputerSystemId}*/EthernetInterfaces/
{EthernetInterfaceId}/VLANs/*{VLanNetworkInterfaceId}*
/redfish/v1/Systems/*{ComputerSystemId}*/EthernetInterfaces/*{EthernetInterfaceId}*/VLANs/*{VLanNetworkInterfaceId}*

6.123.3 Properties

Property	Type	Attributes	Notes
VLANEnable	boolean	*read-write required on create (null)*	An indication of whether this VLAN is enabled for this interface.

Property	Type	Attributes	Notes
VLANId	integer	*read-write required on create (null)*	The ID for this VLAN.
VLANPriority *(v1.2+)*	integer	*read-write (null)*	The priority for this VLAN.

6.123.4 Example response

```
{
    "@odata.type": "#VLanNetworkInterface.v1_3_0.VLanNetworkInterface",
    "Id": "1",
    "Name": "VLAN Network Interface",
    "Description": "System NIC 1 VLAN",
    "VLANEnable": true,
    "VLANId": 101,
    "@odata.id": "/redfish/v1/Systems/437XR1138R2/EthernetInterfaces/12446A3B0411/VLANs/1"
}
```

6.124 Volume 1.6.2

Version	v1.6	v1.5	v1.4	v1.3	v1.2
Release	TP v1.2.1	WIP v1.2.0	WIP v1.1.0	TP v1.0.6a	WIP v1.0.5

6.124.1 Description

Volume contains properties used to describe a volume, virtual disk, LUN, or other logical storage entity for any system.

6.124.2 URIs

/redfish/v1/CompositionService/ResourceBlocks/{*ResourceBlockId*}/Storage/{*StorageId*}/Volumes/{*VolumeId*}
/redfish/v1/CompositionService/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/Storage/
{*StorageId*}/Volumes/{*VolumeId*}
/redfish/v1/ResourceBlocks/{*ResourceBlockId*}/Storage/{*StorageId*}/Volumes/{*VolumeId*}
/redfish/v1/ResourceBlocks/{*ResourceBlockId*}/Systems/{*ComputerSystemId*}/Storage/{*StorageId*}/Volumes/
{*VolumeId*}

/redfish/v1/Storage/*{StorageId}*/ConsistencyGroups/*{ConsistencyGroupId}*/Volumes/*{VolumeId}*

/redfish/v1/Storage/*{StorageId}*/FileSystems/*{FileSystemId}*/CapacitySources/*{CapacitySourceId}*/ProvidingVolumes/*{VolumeId}*

/redfish/v1/Storage/*{StorageId}*/StoragePools/*{StoragePoolId}*/AllocatedVolumes/*{VolumeId}*

/redfish/v1/Storage/*{StorageId}*/StoragePools/*{StoragePoolId}*/CapacitySources/*{CapacitySourceId}*/ProvidingVolumes/*{VolumeId}*

/redfish/v1/Storage/*{StorageId}*/Volumes/*{VolumeId}*

/redfish/v1/StorageServices/*{StorageServiceId}*/ConsistencyGroups/*{ConsistencyGroupId}*/Volumes/*{VolumeId}*

/redfish/v1/StorageServices/*{StorageServiceId}*/FileSystems/*{FileSystemId}*/CapacitySources/*{CapacitySourceId}*/ProvidingVolumes/*{VolumeId}*

/redfish/v1/StorageServices/*{StorageServiceId}*/StoragePools/*{StoragePoolId}*/AllocatedVolumes/*{VolumeId}*

/redfish/v1/StorageServices/*{StorageServiceId}*/StoragePools/*{StoragePoolId}*/CapacitySources/*{CapacitySourceId}*/ProvidingVolumes/*{VolumeId}*

/redfish/v1/StorageServices/*{StorageServiceId}*/Volumes/*{VolumeId}*

/redfish/v1/StorageServices/*{StorageServiceId}*/Volumes/*{VolumeId}*/CapacitySources/*{CapacitySourceId}*/ProvidingVolumes/*{ProvidingVolumeId}*

/redfish/v1/Systems/*{ComputerSystemId}*/Storage/*{StorageId}*/ConsistencyGroups/*{ConsistencyGroupId}*/Volumes/*{VolumeId}*

/redfish/v1/Systems/*{ComputerSystemId}*/Storage/*{StorageId}*/FileSystems/*{FileSystemId}*/CapacitySources/*{CapacitySourceId}*/ProvidingVolumes/*{VolumeId}*

/redfish/v1/Systems/*{ComputerSystemId}*/Storage/*{StorageId}*/StoragePools/*{StoragePoolId}*/AllocatedVolumes/*{VolumeId}*

/redfish/v1/Systems/*{ComputerSystemId}*/Storage/*{StorageId}*/StoragePools/*{StoragePoolId}*/CapacitySources/*{CapacitySourceId}*/ProvidingVolumes/*{VolumeId}*

/redfish/v1/Systems/*{ComputerSystemId}*/Storage/*{StorageId}*/Volumes/*{VolumeId}*

6.124.3 Properties

Property	Type	Attributes	Notes
AccessCapabilities *(v1.1+)* [ ]	array (string (enum))	*read-write (null)*	Supported IO access capabilities. *For the possible property values, see AccessCapabilities in Property details.*
AllocatedPools *(v1.1+)* {}	object		An array of references to StoragePools allocated from this Volume.
BlockSizeBytes	integer (bytes)	*read-only (null)*	The size of the smallest addressable unit (Block) of this volume in bytes.
Capacity *(v1.1+)* {}	object		Capacity utilization. For property details, see Capacity v1.0.0).
CapacityBytes	integer (bytes)	*read-write (null)*	The size in bytes of this Volume.
CapacitySources *(v1.1+)* [{	array		An array of space allocations to this volume.

Property	Type	Attributes	Notes
@odata.id	string (URI)	*read-only*	The unique identifier for a resource.
`}]`			
Compressed *(v1.4+)*	boolean	*read-write (null)*	Indicator of whether or not the Volume has compression enabled.
Deduplicated *(v1.4+)*	boolean	*read-write (null)*	Indicator of whether or not the Volume has deduplication enabled.
DisplayName *(v1.4+)*	string	*read-write (null)*	A user-configurable string to name the volume.
Encrypted	boolean	*read-write (null)*	Is this Volume encrypted.
EncryptionTypes [ ]	array (string (enum))	*read-write*	The types of encryption used by this Volume. *For the possible property values, see EncryptionTypes in Property details.*
Identifiers [{ }]	array (object)		The Durable names for the volume. For property details, see Identifier.
InitializeMethod *(v1.6+)*	string (enum)	*read-only (null)*	Indicates the Initialization Method used for this volume. If InitializeMethod is not specified, the InitializeMethod should be Foreground. *For the possible property values, see InitializeMethod in Property details.*
IOPerfModeEnabled *(v1.5+)*	boolean	*read-write (null)*	Indicates the IO performance mode setting for the volume.
IOStatistics *(v1.2+)* { }	object		Statistics for this volume. For property details, see IOStatistics v1.0.3).
Links {	object		Contains references to other resources that are related to this resource.
CacheDataVolumes *(v1.6+)* [{	array		A pointer to the data volumes this volume serves as a cache volume.
@odata.id	string (URI)	*read-only*	The unique identifier for a resource.
`}]`			
CacheVolumeSource *(v1.6+)* { }	object	*(null)*	A pointer to the cache volume source for this volume.
ClassOfService *(v1.1+)* { }	object		The ClassOfService that this storage volume conforms to.

Property	Type	Attributes	Notes
ClientEndpoints *(v1.4+)* [{	array		An array of references to the client Endpoints associated with this volume.
@odata.id	string	*read-only*	Link to a Endpoint resource. See the Links section and the *Endpoint* schema for details.
}]			
ConsistencyGroups *(v1.4+)* [{	array		An array of references to the ConsistencyGroups associated with this volume.
@odata.id	string (URI)	*read-only*	The unique identifier for a resource.
}]			
DedicatedSpareDrives *(v1.2+)* [{	array		An array of references to the drives which are dedicated spares for this volume.
@odata.id	string	*read-write*	Link to a Drive resource. See the Links section and the *Drive* schema for details.
}]			
Drives [{	array		An array of references to the drives which contain this volume. This will reference Drives that either wholly or only partly contain this volume.
@odata.id	string	*read-only*	Link to a Drive resource. See the Links section and the *Drive* schema for details.
}]			
JournalingMedia *(v1.5+)* {}	object	*(null)*	A pointer to the Resource that serves as a journaling media for this volume.
Oem {}	object		See the Oem object definition in the Common properties section.
OwningStorageResource *(v1.5+)* {	object		A pointer to the Storage resource that owns or contains this volume. See the *Storage* schema for details on this property.
@odata.id	string	*read-only*	Link to a Storage resource. See the Links section and the *Storage* schema for details.
}			
OwningStorageService *(v1.4+)* {}	object		A pointer to the StorageService that owns or contains this volume.

Property	Type	Attributes	Notes
ServerEndpoints *(v1.4+)* [{	array		An array of references to the server Endpoints associated with this volume.
@**odata.id**	string	*read-only*	Link to a Endpoint resource. See the Links section and the *Endpoint* schema for details.
}]			
SpareResourceSets *(v1.3+)* [{	array		An array of references to SpareResourceSets.
@**odata.id**	string (URI)	*read-only*	The unique identifier for a resource.
}]			
StorageGroups *(v1.4+)* [{	array		An array of references to the StorageGroups associated with this volume.
@**odata.id**	string (URI)	*read-only*	The unique identifier for a resource.
}]			
}			
LogicalUnitNumber *(v1.4+)*	integer	*read-only (null)*	Indicates the host-visible LogicalUnitNumber assigned to this Volume.
LowSpaceWarningThresholdPercents *(v1.1+)* [ ]	array (%) (integer, null)	*read-write*	Low space warning.
Manufacturer *(v1.1+)*	string	*read-only (null)*	The manufacturer or OEM of this storage volume.
MaxBlockSizeBytes *(v1.1+)*	integer (bytes)	*read-only (null)*	Max Block size in bytes.
MediaSpanCount *(v1.4+)*	integer	*read-only (null)*	Indicates the number of media elements used per span in the secondary RAID for a hierarchical RAID type.
Model *(v1.1+)*	string	*read-only (null)*	The model number for this storage volume.
NVMeNamespaceProperties *(v1.5+)* {	object	*(null)*	This property contains properties to use when Volume is used to describe an NVMe Namespace.
FormattedLBASize *(v1.5+)*	string	*read-only (null)*	The LBA data size and metadata size combination that the namespace has been formatted with.

Property	Type	Attributes	Notes
IsShareable *(v1.5+)*	boolean	*read-write (null)*	Indicates the namespace is shareable.
MetadataTransferredAtEndOfDataLBA *(v1.5+)*	boolean	*read-only (null)*	This property indicates whether or not the metadata is transferred at the end of the LBA creating an extended data LBA.
NamespaceFeatures *(v1.5+)* {	object	*(null)*	This property contains a set of Namespace Features.
SupportsAtomicTransactionSize *(v1.5+)*	boolean	*read-only (null)*	Indicates that the NVM fields for Namespace preferred write granularity (NPWG), write alignment (NPWA), deallocate granularity (NPDG), deallocate alignment (NPDA) and optimal write size (NOWS) are defined for this namespace and should be used by the host for I/O optimization.
SupportsDeallocatedOrUnwrittenLBError *(v1.5+)*	boolean	*read-only (null)*	This property indicates that the controller supports deallocated or unwritten logical block error for this namespace.
SupportsIOPerformanceHints *(v1.5+)*	boolean	*read-only (null)*	Indicates that the Namespace Atomic Write Unit Normal (NAWUN), Namespace Atomic Write Unit Power Fail (NAWUPF), and Namespace Atomic Compare and Write Unit (NACWU) fields are defined for this namespace and should be used by the host for this namespace instead of the controller-level properties AWUN, AWUPF, and ACWU.
SupportsNGUIDReuse *(v1.5+)*	boolean	*read-only (null)*	This property indicates that the namespace supports the use of an NGUID (namespace globally unique identifier) value.
SupportsThinProvisioning *(v1.5+)*	boolean	*read-only (null)*	This property indicates whether or not the NVMe Namespace supports thin provisioning.
}			
NamespaceId *(v1.5+)*	string	*read-only (null)*	The NVMe Namespace Identifier for this namespace.
NumberLBAFormats *(v1.5+)*	integer (bytes)	*read-only (null)*	The number of LBA data size and metadata size combinations supported by this namespace. The value of this property is between 0 and 16.
NVMeVersion *(v1.5+)*	string	*read-only (null)*	The version of the NVMe Base Specification supported.
}			
Operations [{	array		The operations currently running on the Volume.
AssociatedFeaturesRegistry {}	object		A reference to the task associated with the operation if any.

Property	Type	Attributes	Notes
OperationName	string	read-only (null)	The name of the operation.
PercentageComplete	integer	read-only (null)	The percentage of the operation that has been completed.
}]			
OptimumIOSizeBytes	integer (bytes)	read-only (null)	The size in bytes of this Volume's optimum IO size.
ProvisioningPolicy *(v1.4+)*	string (enum)	read-write (null)	This property specifies the volume's storage allocation, or provisioning policy. *For the possible property values, see ProvisioningPolicy in Property details.*
RAIDType *(v1.3.1+)*	string (enum)	read-only (null)	The RAID type of this volume. *For the possible property values, see RAIDType in Property details.*
ReadCachePolicy *(v1.4+)*	string (enum)	read-write (null)	Indicates the read cache policy setting for the Volume. *For the possible property values, see ReadCachePolicy in Property details.*
RecoverableCapacitySourceCount *(v1.3+)*	integer	read-write (null)	Current number of capacity source resources that are available as replacements.
RemainingCapacityPercent *(v1.2+)*	integer	read-only (null)	The percentage of the capacity remaining in the Volume.
ReplicaInfo *(v1.1+)* {}	object		Describes this storage volume in its role as a target replica. For property details, see ReplicaInfo v1.3.0).
ReplicaTargets *(v1.3+)* [{	array		The resources that are target replicas of this source.
@odata.id	string (URI)	read-only	The unique identifier for a resource.
}]			
Status {}	object		The property contains the status of the Volume. For property details, see Status.
StorageGroups *(v1.1+)* {}	object		An array of references to Storage Groups that includes this volume.
StripSizeBytes *(v1.4+)*	integer (bytes)	read-write (null)	The number of blocks (bytes) in a strip in a disk array that uses striped data mapping.
VolumeType	string (enum)	read-only (null)	The type of this volume. *For the possible property values, see VolumeType in Property details.*

Property	Type	Attributes	Notes
VolumeUsage *(v1.4+)*	string (enum)	*read-only (null)*	Indicates the Volume usage type setting for the Volume. *For the possible property values, see VolumeUsage in Property details.*
WriteCachePolicy *(v1.4+)*	string (enum)	*read-write (null)*	Indicates the write cache policy setting for the Volume. *For the possible property values, see WriteCachePolicy in Property details.*
WriteCacheState *(v1.4+)*	string (enum)	*read-only (null)*	Indicates the WriteCacheState policy setting for the Volume. *For the possible property values, see WriteCacheState in Property details.*
WriteHoleProtectionPolicy *(v1.4+)*	string (enum)	*read-write*	The policy that the RAID volume is using to address the write hole issue. *For the possible property values, see WriteHoleProtectionPolicy in Property details.*

6.124.4 Actions

6.124.4.1 AssignReplicaTarget *(v1.4+)*

Description

This action is used to establish a replication relationship by assigning an existing volume to serve as a target replica for an existing source volume.

Action URI: {Base URI of target resource}/Actions/Volume.AssignReplicaTarget

Action parameters

Parameter Name	Type	Attributes	Notes
ReplicaType	string (enum)	*required*	The type of replica relationship to be created. *For the possible property values, see ReplicaType in Property details.*
ReplicaUpdateMode	string (enum)	*required*	The replica update mode (synchronous vs asynchronous). *For the possible property values, see ReplicaUpdateMode in Property details.*
TargetVolume	string	*required*	The Uri to the existing target volume.

Request Example

```
{
```

```
    "ReplicaUpdateMode": "Synchronous",
    "TargetVolume": "/redfish/v1/Storage/1/ConsistencyGroup/CG_DB2",
    "ReplicaType": "Mirror"
}
```

6.124.4.2 ChangeRAIDLayout *(v1.5+)*

Description

Request system change the RAID layout of the volume.

Action URI: {Base URI of target resource}/Actions/Volume.ChangeRAIDLayout

Action parameters

Parameter Name	Type	Attributes	Notes
Drives [{	array	*optional*	An array of the drives to be used by the volume.
@odata.id	string	*read-only*	Link to a Drive resource. See the Links section and the *Drive* schema for details.
}]			
MediaSpanCount	integer	*optional*	The requested number of media elements used per span in the secondary RAID for a hierarchical RAID type.
RAIDType	string (enum)	*optional*	The requested RAID type for the volume. *For the possible property values, see RAIDType in Property details.*
StripSizeBytes	integer	*optional*	The number of blocks (bytes) requested for new strip size.

6.124.4.3 CheckConsistency

Description

This action is used to force a check of the Volume's parity or redundant data to ensure it matches calculated values.

Action URI: {Base URI of target resource}/Actions/Volume.CheckConsistency

Action parameters

This action takes no parameters.

6.124.4.4 CreateReplicaTarget *(v1.4+)*

Description

This action is used to create a new volume resource to provide expanded data protection through a replica relationship with the specified source volume.

Action URI: {Base URI of target resource}/Actions/Volume.CreateReplicaTarget

Action parameters

Parameter Name	Type	Attributes	Notes
ReplicaType	string (enum)	*required*	The type of replica relationship to be created. *For the possible property values, see ReplicaType in Property details.*
ReplicaUpdateMode	string (enum)	*required*	The replica update mode (synchronous vs asynchronous). *For the possible property values, see ReplicaUpdateMode in Property details.*
TargetStoragePool	string	*required*	The Uri to the existing target Storage Pool.
VolumeName	string	*optional*	The Name for the new target volume.

Request Example

```
{
    "VolumeName": "Mirror of Volume 65",
    "ReplicaUpdateMode": "Synchronous",
    "TargetStoragePool": "/redfish/v1/Storage/1/StoragePools/PrimaryPool",
    "ReplicaType": "Mirror"
}
```

6.124.4.5 ForceEnable *(v1.5+)*

Description

Request system force the volume to an enabled state regardless of data loss.

Action URI: {Base URI of target resource}/Actions/Volume.ForceEnable

Action parameters

This action takes no parameters.

6.124.4.6 Initialize *(v1.5+)*

Description

This action is used to prepare the contents of the volume for use by the system. If InitializeMethod is not specified in the request body, but the property InitializeMethod is specified, the property InitializeMethod value should be used. If neither is specified, the InitializeMethod should be Foreground.

Action URI: {Base URI of target resource}/Actions/Volume.Initialize

Action parameters

Parameter Name	Type	Attributes	Notes
InitializeMethod	string (enum)	*optional*	The type of initialization to be performed. *For the possible property values, see InitializeMethod in Property details.*
InitializeType	string (enum)	*optional*	The type of initialization to be performed. *For the possible property values, see InitializeType in Property details.*

Request Example

```
{
    "InitializeMethod": "Background",
    "InitializeType": "Fast"
}
```

6.124.4.7 RemoveReplicaRelationship *(v1.4+)*

Description

This action is used to disable data synchronization between a source and target volume, remove the replication relationship, and optionally delete the target volume.

Action URI: {Base URI of target resource}/Actions/Volume.RemoveReplicaRelationship

Action parameters

Parameter Name	Type	Attributes	Notes
DeleteTargetVolume	boolean	*optional*	Indicate whether or not to delete the target volume as part of the operation.

Parameter Name	Type	Attributes	Notes
TargetVolume	string	*required*	The Uri to the existing target volume.

Request Example

```
{
    "TargetVolume": "/redfish/v1/Storage/1/StoragePools/PrimaryPool/AllocatedVolumes/650973452245",
    "DeleteTargetVolume": "false"
}
```

6.124.4.8 ResumeReplication *(v1.4+)*

Description

This action is used to resume the active data synchronization between a source and target volume, without otherwise altering the replication relationship.

Action URI: {Base URI of target resource}/Actions/Volume.ResumeReplication

Action parameters

Parameter Name	Type	Attributes	Notes
TargetVolume	string	*required*	The Uri to the existing target volume.

Request Example

```
{
    "TargetVolume": "/redfish/v1/Storage/1/StoragePools/PrimaryPool/AllocatedVolumes/650973452245"
}
```

6.124.4.9 ReverseReplicationRelationship *(v1.4+)*

Description

This action is used to reverse the replication relationship between a source and target volume.

Action URI: {Base URI of target resource}/Actions/Volume.ReverseReplicationRelationship

Action parameters

Parameter Name	Type	Attributes	Notes
TargetVolume	string	*required*	The Uri to the existing target volume.

Request Example

```
{
    "TargetVolume": "/redfish/v1/Storage/1/StoragePools/PrimaryPool/AllocatedVolumes/650973452245"
}
```

6.124.4.10 SplitReplication *(v1.4+)*

Description

This action is used to split the replication relationship and suspend data synchronization between a source and target volume.

Action URI: {Base URI of target resource}/Actions/Volume.SplitReplication

Action parameters

Parameter Name	Type	Attributes	Notes
TargetVolume	string	*required*	The Uri to the existing target volume.

Request Example

```
{
    "TargetVolume": "/redfish/v1/Storage/1/StoragePools/PrimaryPool/AllocatedVolumes/650973452245"
}
```

6.124.4.11 SuspendReplication *(v1.4+)*

Description

This action is used to suspend active data synchronization between a source and target volume, without otherwise altering the replication relationship.

Action URI: {Base URI of target resource}/Actions/Volume.SuspendReplication

Action parameters

Parameter Name	Type	Attributes	Notes
TargetVolume	string	*required*	The Uri to the existing target volume.

Request Example

```
{
    "TargetVolume": "/redfish/v1/Storage/1/StoragePools/PrimaryPool/AllocatedVolumes/650973452245"
}
```

6.124.5 Property details

6.124.5.1 AccessCapabilities:

Supported IO access capabilities.

string	Description
Append	AppendOnly.
Execute	Execute access is allowed by the file share.
Read	Read.
Streaming	Streaming.
Write	Write Many.
WriteOnce	WriteOnce.

6.124.5.2 EncryptionTypes:

The types of encryption used by this Volume.

string	Description
ControllerAssisted	The volume is being encrypted by the storage controller entity.

string	Description
NativeDriveEncryption	The volume is utilizing the native drive encryption capabilities of the drive hardware.
SoftwareAssisted	The volume is being encrypted by software running on the system or the operating system.

6.124.5.3 idRef:

@odata.id	string (URI)	*read-only*	The unique identifier for a resource.

6.124.5.4 InitializeMethod:

The type of initialization to be performed.

string	Description
Background	The volume will be available for use immediately, with data erasure and preparation to happen as background tasks.
Foreground	Data erasure and preparation tasks will complete before the volume is presented as available for use.
Skip	The volume will be available for use immediately, with no preparation.

6.124.5.5 InitializeType:

The type of initialization to be performed.

string	Description
Fast	The volume is prepared for use quickly, typically by erasing just the beginning and end of the space so that partitioning can be performed.
Slow	The volume is prepared for use slowly, typically by completely erasing the volume.

6.124.5.6 ProvisioningPolicy:

This property specifies the volume's storage allocation, or provisioning policy.

string	Description
Fixed	Storage is fully allocated.
Thin	Storage may be over allocated.

6.124.5.7 RAIDType:

The requested RAID type for the volume.

string	Description
None	A placement policy with no redundancy at the device level.
RAID0	A placement policy where consecutive logical blocks of data are uniformly distributed across a set of independent storage devices without offering any form of redundancy.
RAID00	A placement policy that creates a RAID 0 stripe set over two or more RAID 0 sets.
RAID01	A data placement policy that creates a mirrored device (RAID 1) over a set of striped devices (RAID 0).
RAID1	A placement policy where each logical block of data is stored on more than one independent storage device.
RAID10	A placement policy that creates a striped device (RAID 0) over a set of mirrored devices (RAID 1).
RAID10E	A placement policy that uses a RAID 0 stripe set over two or more RAID 10 sets.
RAID10Triple	A placement policy that uses a striped device (RAID 0) over a set of triple mirrored devices (RAID 1Triple).
RAID1E	A placement policy that uses a form of mirroring implemented over a set of independent storage devices where logical blocks are duplicated on a pair of independent storage devices so that data is uniformly distributed across the storage devices.
RAID1Triple	A placement policy where each logical block of data is mirrored three times across a set of three independent storage devices.
RAID3	A placement policy using parity-based protection where logical bytes of data are uniformly distributed across a set of independent storage devices and where the parity is stored on a dedicated independent storage device.
RAID4	A placement policy using parity-based protection where logical blocks of data are uniformly distributed across a set of independent storage devices and where the parity is stored on a dedicated independent storage device.
RAID5	A placement policy using parity-based protection for storing stripes of 'n' logical blocks of data and one logical block of parity across a set of 'n+1' independent storage devices where the parity and data blocks are interleaved across the storage devices.

string	Description
RAID50	A placement policy that uses a RAID 0 stripe set over two or more RAID 5 sets of independent storage devices.
RAID6	A placement policy using parity-based protection for storing stripes of 'n' logical blocks of data and two logical blocks of independent parity across a set of 'n+2' independent storage devices where the parity and data blocks are interleaved across the storage devices.
RAID60	A placement policy that uses a RAID 0 stripe set over two or more RAID 6 sets of independent storage devices.
RAID6TP	A placement policy that uses parity-based protection for storing stripes of 'n' logical blocks of data and three logical blocks of independent parity across a set of 'n+3' independent storage devices where the parity and data blocks are interleaved across the storage devices.

6.124.5.8 ReadCachePolicy:

Indicates the read cache policy setting for the Volume.

string	Description
AdaptiveReadAhead	A caching technique in which the controller dynamically determines whether to pre-fetch data anticipating future read requests, based on previous cache hit ratio.
Off	The read cache is disabled.
ReadAhead	A caching technique in which the controller pre-fetches data anticipating future read requests.

6.124.5.9 ReplicaType:

The type of replica relationship to be created.

string	Description
Clone	Create a point in time, full copy the source.
Mirror	Create and maintain a copy of the source.
Snapshot	Create a point in time, virtual copy of the source.
TokenizedClone	Create a token based clone.

6.124.5.10 ReplicaUpdateMode:

The replica update mode (synchronous vs asynchronous).

string	Description
Active	Active-Active (i.e. bidirectional) synchronous updates.
Adaptive	Allows implementation to switch between synchronous and asynchronous modes.
Asynchronous	Asynchronous updates.
Synchronous	Synchronous updates.

6.124.5.11 VolumeType:

The type of this volume.

string	Description
Mirrored	The volume is a mirrored device.
NonRedundant	The volume is a non-redundant storage device.
RawDevice	The volume is a raw physical device without any RAID or other virtualization applied.
SpannedMirrors	The volume is a spanned set of mirrored devices.
SpannedStripesWithParity	The volume is a spanned set of devices which uses parity to retain redundant information.
StripedWithParity	The volume is a device which uses parity to retain redundant information.

6.124.5.12 VolumeUsage:

Indicates the Volume usage type setting for the Volume.

string	Description
CacheOnly	The volume is allocated for use as a non-consumable cache only volume.
Data	The volume is allocated for use as a consumable data volume.
ReplicationReserve	The volume is allocated for use as a non-consumable reserved volume for replication use.
SystemData	The volume is allocated for use as a consumable data volume reserved for system use.

string	Description
SystemReserve	The volume is allocated for use as a non-consumable system reserved volume.

6.124.5.13 WriteCachePolicy:

Indicates the write cache policy setting for the Volume.

string	Description
Off	The write cache is disabled.
ProtectedWriteBack	A caching technique in which the completion of a write request is signaled as soon as the data is in cache, and actual writing to non-volatile media is guaranteed to occur at a later time.
UnprotectedWriteBack	A caching technique in which the completion of a write request is signaled as soon as the data is in cache; actual writing to non-volatile media is not guaranteed to occur at a later time.
WriteThrough	A caching technique in which the completion of a write request is not signaled until data is safely stored on non-volatile media.

6.124.5.14 WriteCacheState:

Indicates the WriteCacheState policy setting for the Volume.

string	Description
Degraded	Indicates an issue with the cache state in which the cache space is diminished or disabled due to a failure or an outside influence such as a discharged battery.
Protected	Indicates that the cache state type in use generally protects write requests on non-volatile media.
Unprotected	Indicates that the cache state type in use generally does not protect write requests on non-volatile media.

6.124.5.15 WriteHoleProtectionPolicy:

The policy that the RAID volume is using to address the write hole issue.

string	Description
DistributedLog	The policy that distributes additional log among the volume's capacity sources to address write hole issue.
Journaling	The policy that uses separate block device for write-ahead logging to address write hole issue.

string	Description
Oem	The policy that is Oem specific.
Off	The volume is not using any policy to address the write hole issue.

6.124.6 Example response

```
{
    "@odata.type": "#Volume.v1_6_2.Volume",
    "Id": "2",
    "Name": "Virtual Disk 2",
    "Status": {
        "State": "Enabled",
        "Health": "OK"
    },
    "Encrypted": false,
    "RAIDType": "RAID0",
    "CapacityBytes": 107374182400,
    "Identifiers": [
        {
            "DurableNameFormat": "UUID",
            "DurableName": "0324c96c-8031-4f5e-886c-50cd90aca854"
        }
    ],
    "Links": {
        "Drives": [
            {
                "@odata.id": "/redfish/v1/Systems/437XR1138R2/Storage/1/Drives/3D58ECBC375FD9F2"
            }
        ]
    },
    "Actions": {
        "#Volume.Initialize": {
            "target": "/redfish/v1/Systems/3/Storage/RAIDIntegrated/Volumes/1/Actions/Volume.Initialize",
            "InitializeType@Redfish.AllowableValues": [
                "Fast",
                "Slow"
            ]
        }
    },
    "@odata.id": "/redfish/v1/Systems/437XR1138R2/Storage/1/Volumes/2"
}
```

6.125 Zone 1.6.1

Version	v1.6	v1.5	v1.4	v1.3	v1.2	v1.1	v1.0
Release	2020.4	2020.3	2019.4	2019.1	2017.3	2017.1	2016.2

6.125.1 Description

The Zone schema describes a simple fabric zone for a Redfish implementation.

6.125.2 URIs

/redfish/v1/CompositionService/ResourceZones/{*ZoneId*}
/redfish/v1/Fabrics/{*FabricId*}/Zones/{*ZoneId*}

6.125.3 Properties

Property	Type	Attributes	Notes
DefaultRoutingEnabled *(v1.4+)*	boolean	*read-write (null)*	This property indicates whether routing within this zone is enabled.
ExternalAccessibility *(v1.3+)*	string (enum)	*read-write (null)*	Indicates accessibility of endpoints in this zone to endpoints outside of this zone. *For the possible property values, see ExternalAccessibility in Property details.*
Identifiers *(v1.2+)* [{ }]	array (object)		The durable names for the zone. For property details, see Identifier.
Links {	object		The links to other resources that are related to this resource.
AddressPools *(v1.4+)* [{	array		An array of links to the address pools associated with this zone.
@odata.id	string	*read-only*	Link to a AddressPool resource. See the Links section and the *AddressPool* schema for details.
}]			
ContainedByZones *(v1.4+)* [{	array		An array of links to the zone that contain this zone.
@odata.id	string	*read-only*	Link to another Zone resource.
}]			

Property	Type	Attributes	Notes
ContainsZones *(v1.4+)* [{	array		An array of links to the zones that are contained by this zone.
@odata.id	string	*read-write*	Link to another Zone resource.
}]			
Endpoints [{	array		The links to the endpoints that this zone contains.
@odata.id	string	*read-only*	Link to a Endpoint resource. See the Links section and the *Endpoint* schema for details.
}]			
InvolvedSwitches [{	array		The links to the collection of switches in this zone.
@odata.id	string	*read-only*	Link to a Switch resource. See the Links section and the *Switch* schema for details.
}]			
Oem {}	object		See the Oem object definition in the Common properties section.
ResourceBlocks *(v1.1+)* [{	array		The links to the resource blocks with which this zone is associated.
@odata.id	string	*read-only*	Link to a ResourceBlock resource. See the Links section and the *ResourceBlock* schema for details.
}]			
}			
Status {}	object		The status and health of the resource and its subordinate or dependent resources. For property details, see Status.
ZoneType *(v1.4+)*	string (enum)	*read-write (null)*	The type of zone. *For the possible property values, see ZoneType in Property details.*

6.125.4 Actions

6.125.4.1 AddEndpoint *(v1.5+)*

Description

This action adds an endpoint to a zone.

Action URI: {Base URI of target resource}/Actions/Zone.AddEndpoint

Action parameters

Parameter Name	Type	Attributes	Notes
Endpoint {	object	*required*	The endpoint to add to the zone. See the *Endpoint* schema for details on this property.
@odata.id	string	*read-only*	Link to a Endpoint resource. See the Links section and the *Endpoint* schema for details.
}			
EndpointETag	string	*optional*	The current ETag of the endpoint to add to the zone.
ZoneETag	string	*optional*	The current ETag of the zone.

Request Example

```
{
    "Endpoint": {
        "@odata.id": "/redfish/v1/Fabrics/SAS/Endpoints/Initiator1"
    },
    "EndpointETag": "W/\"19472363938\"",
    "ZoneETag": "W/\"99374369273\""
}
```

6.125.4.2 RemoveEndpoint *(v1.5+)*

Description

This action removes an endpoint from a zone.

Action URI: {Base URI of target resource}/Actions/Zone.RemoveEndpoint

Action parameters

Parameter Name	Type	Attributes	Notes
Endpoint {	object	*required*	The endpoint to remove from the zone. See the *Endpoint* schema for details on this property.
@odata.id	string	*read-only*	Link to a Endpoint resource. See the Links section and the *Endpoint* schema for details.
}			
EndpointETag	string	*optional*	The current ETag of the endpoint to remove from the system.
ZoneETag	string	*optional*	The current ETag of the zone.

Request Example

```
{
    "Endpoint": {
        "@odata.id": "/redfish/v1/Fabrics/SAS/Endpoints/Initiator1"
    },
    "EndpointETag": "W/\"19472363938\"",
    "ZoneETag": "W/\"99374369273\""
}
```

6.125.5 Property details

6.125.5.1 ExternalAccessibility:

Indicates accessibility of endpoints in this zone to endpoints outside of this zone.

string	Description
GloballyAccessible	Any external entity with the correct access details, which may include authorization information, can access the endpoints that this zone lists.
NoInternalRouting	Routing is not enabled within this zone.
NonZonedAccessible	Any external entity that another zone does not explicitly list can access the endpoints that this zone lists.
ZoneOnly	Only accessible by endpoints that this zone explicitly lists.

6.125.5.2 ZoneType:

The type of zone.

string	Description
Default	The zone in which all endpoints are added by default when instantiated.
ZoneOfEndpoints	A zone that contains endpoints.
ZoneOfResourceBlocks (v1.6+)	A zone that contains resource blocks.
ZoneOfZones	A zone that contains zones.

6.125.6 Example response

```
{
    "@odata.type": "#Zone.v1_6_1.Zone",
    "Id": "1",
    "Name": "SAS Zone 1",
    "Description": "SAS Zone 1",
    "Status": {
        "State": "Enabled",
        "Health": "OK"
    },
    "Links": {
        "Endpoints": [
            {
                "@odata.id": "/redfish/v1/Fabrics/SAS/Endpoints/Initiator1"
            },
            {
                "@odata.id": "/redfish/v1/Fabrics/SAS/Endpoints/Initiator2"
            },
            {
                "@odata.id": "/redfish/v1/Fabrics/SAS/Endpoints/Drive1"
            },
            {
                "@odata.id": "/redfish/v1/Fabrics/SAS/Endpoints/Drive3"
            }
        ]
    },
    "Oem": {},
    "@odata.id": "/redfish/v1/Fabrics/SAS/Zones/1"
}
```

7 Redfish documentation generator

This document was created using the Redfish Documentation Generator utility, which uses the contents of the Redfish schema files (in JSON schema format) to automatically generate the bulk of the text. The source code for the utility is available for download at the DMTF's Github repository located at http://www.github.com/DMTF/Redfish-Tools.

8 ANNEX A

8.1 Change log

Version	Date	Description
2021.4	2021-12-02	Release built from Redfish schemas released in DSP8010 version 2021.4
		Added Collection Capabilities section under Resource Collections.
2021.3	2021-10-15	Release built from Redfish schemas released in DSP8010 version 2021.3
2021.2	2021-08-13	Release built from Redfish schemas released in DSP8010 version 2021.2
		Corrected format of UUID from RFC4122.
2021.1	2021-04-16	Release built from Redfish schemas released in DSP8010 version 2021.1
		Document formatting updated for Documentation Generator v3.
2020.4	2020-12-01	Release built from Redfish schemas released in DSP8010 version 2020.4
2020.3	2020-08-14	Release built from Redfish schemas released in DSP8010 version 2020.3
		Corrected issue that caused read-write links to be listed as read-only.
2020.2	2020-05-08	Release built from Redfish schemas released in DSP8010 version 2020.2
2020.1	2020-03-27	Release built from Redfish schemas released in DSP8010 version 2020.1
2019.4	2019-12-06	Release built from Redfish schemas released in DSP8010 version 2019.4
2019.3	2019-10-11	Release built from Redfish schemas released in DSP8010 version 2019.3
2019.2	2019-09-13	Release built from Redfish schemas released in DSP8010 version 2019.2
2019.1	2019-05-03	Release built from Redfish schemas released in DSP8010 version 2019.1
		Added release version history to match each schema to the DSP8010 version that included it.
		Added Action URIs to the Action Details section, and removed the Action object from the property table for clarity.
2018.3	2018-12-15	Release built from Redfish schemas released in DSP8010 version 2018.3
2018.2	2018-08-10	Release built from Redfish schemas released in DSP8010 version 2018.2
		Expanded introduction section with additional information.
		Expanded Common Objects section to include previously excluded objects.

Version	Date	Description
		Added URI listings for all Resources for use with Redfish Specification v1.6.0
		Added Resource Collection table showing schema names and URIs.
		Restructured common objects section utilizing new Documentation Generator functions.
2018.1	2018-05-01	Initial release. Built from Redfish schemas released in DSP8010 version 2018.1
2017.0a	2017-05-19	Work in progress release to gather feedback on content and format.