Intel® Rack Scale Design Storage Services

API Specification
Software v2.2

December 19, 2017

Revision 001

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Revision History

Revision	Description	Date
001	Initial Release	December 19, 2017

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1 Introduction

1.1 Scope

This document contains information about the Intel® Rack Scale Design Storage Services REST API, which is designed and implemented for the Intel® Rack Scale Design Software v2.2 release.

There are no technical changes from the Intel® RSD 2.1.3 Storage Services API Specifications.

1.2 Intended audience

The intended audiences for this document include designers and engineers working with the Intel® Rack Scale Design Software v2.2 release.

1.3 Terminology

Table 1. **Terminology**

Term	Definition
BMC	Baseboard management controller
HTTP	Hypertext Transfer Protocol
JSON	JavaScript object notation
NIC	Network interface card
OCCI	Open Cloud Computing Interface
OData	Open data protocol
OVF	Open virtualization format
Pod	A physical collection of multiple racks.
PODM	Pod Manager
PSME	Pooled System Management Engine
REST	Representational State Transfer
SDV	Software development vehicle
URI	Uniform resource identifier
UUID	Universally unique identifier
VM	Virtual machine
XML	Extensible Markup Language

1.4   References

Table 2.   Reference Documents

Doc ID	Title	Location
336811	Intel® Rack Scale Design (RSD) Conformance and Software Reference Kit Getting Started Guide v2.2, Revision 001	*http://www.intel.com/intelRSD*
336814	Intel® Rack Scale Design Pod Manager (PDOM) Release Notes, Software v2.2, Revision 001	
336815	Intel® Rack Scale Design Pod Manager (PDOM) User Guide, Software v2.2, Revision 001	
336816	Intel® Rack Scale Design PSME Release Notes, Software v2.2, Revision 001	
336810	Intel® Rack Scale Design PSME User Guide, Software v2.2, Revision 001	
336855	Intel® Rack Scale Design PSME REST API Specification, Software v2.2, Revision 001	
336857	Intel® Rack Scale Design Pod Manager REST API Specification, Software v2.2, Revision 001	
336858	Intel® Rack Scale Design Rack Management Module (RMM) API Specification, Software v2.2, Revision 001	
336859	Intel® Rack Scale Design Generic Assets Management Interface API Specification, Software v2.2, Revision 001	
336860	Intel® Rack Scale Design Firmware Extension Specification, Software v2.2, Revision 001	
336861	Intel® Rack Scale Design Architecture Specification, Software v2.2, Revision 001	
336862	Intel® RSD v2.2 Solid State Drive (SSD) Technical Advisory	
RFC2119	Key words for use in RFCs to Indicate Requirement Levels, March 1997	*https://www.ietf.org/rfc/rfc2119.txt*
SDP0266	Scalable Platforms Management API Specification v1.1.0	*https://www.dmtf.org/sites/default/files/standards/documents/DSP0266_1.1.0.pdf*
DSP8010	Redfish Schema v2016.3	*https://www.dmtf.org/sites/default/files/standards/documents/DSP8010_2016.3.zip*

1.5   Notes and Symbol Convention

- Symbol and note convention are similar to typographical conventions used in CIMI specification.
- Notation used in JSON serialization description:
- Mandatory in italics indicate data types instead of literal Mandatory.
- Characters are appended to items to indicate cardinality:
  - "?" (0 or 1)
  - "*" (0 or more)
  - "+" (1 or more)
- Vertical bars, "|", denote choice. For example, "a|b" means a choice between "a" and "b".
- Parentheses, "(" and ")", are used to indicate the scope of the operators "?", "*", "+" and "|".
- Ellipses (i.e., "...") indicate points of extensibility.

Note: The lack of ellipses does not mean no extensibility point exists; rather it is just not explicitly called out.

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2 Storage Services API

2.1 Storage Services API structure and relations

The Intel® Rack Scale Design Storage Services REST API provides the REST-based interface that allows full management of Storage Services including storage asset discovery and configuration.

2.1.1 Storage Services API physical resource hierarchy

Figure 1 shows the Intel® Rack Scale Design Storage Services REST API hierarchy.

Figure 1.   Intel® Rack Scale Design Storage Services REST API Hierarchy
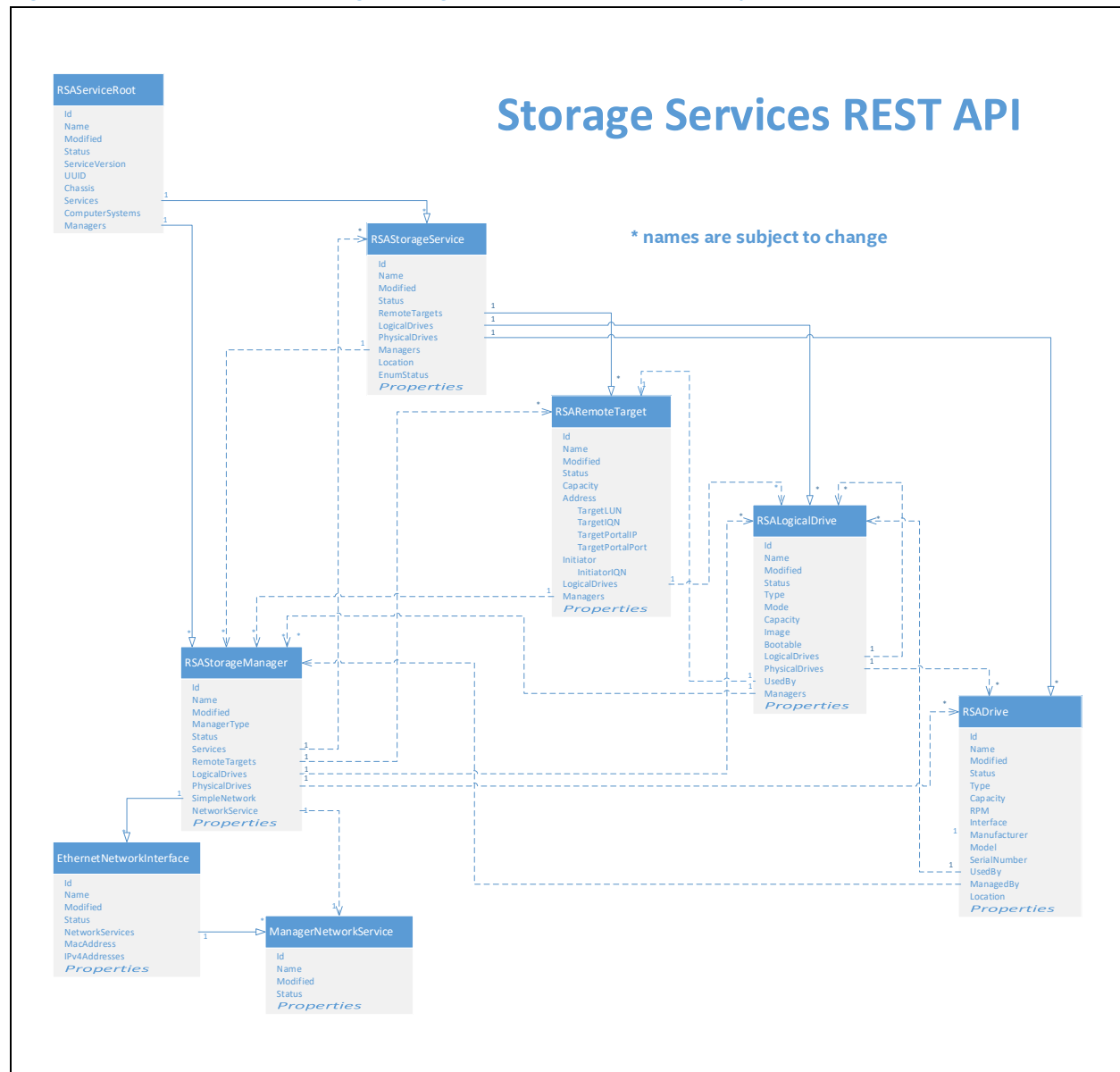
Table 3.   Resources and URIs

Resource	URI
Service Root	`/redfish/v1`
Manager Collection	`/redfish/v1/Managers`
Storage Service Collection	`/redfish/v1/Services`
Storage Service	`/redfish/v1/Services/{serviceID}`
Remote Target Collection	`/redfish/v1/Services/1/Targets`
Remote Target	`/redfish/v1/Services/1/Targets/{targetID}`
Logical Drive Collection	`/redfish/v1/Services/1/LogicalDrives`
Logical Drive	`/redfish/v1/Services/1/LogicalDrives/{driveID}`
Drive Collection	`/redfish/v1/Services/1/Drives`
Drive	`/redfish/v1/Services/1/Drives/{driveID}`
Manager	`/redfish/v1/Managers/{managerID}`
Network Service	`/redfish/v1/Managers/{managerID}/NetworkService`

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3 Storage Services REST API Error Codes

This chapter contains descriptions of all error codes that may be returned by the REST calls implemented in the Storage Services REST API of the Intel® Rack Scale Design v2.2 software release.

3.1 API error response

In the case of an error, Storage Services REST API responds with an HTTP status code, as defined by the HTTP 1.1 specification and constrained by additional requirements defined in this specification.

HTTP response status codes alone often do not provide enough information to determine the error cause. The PODM REST API returns extended error information as a JSON object with a single property named "error". The value of this property is the JSON object with the properties listed in Table 4.

Table 4.   API Error Response Attributes

Attribute	Description
MessageId	String indicating a specific error or message (not to be confused with the HTTP status code). This code can be used to access a detailed message from a message registry.
Message	A human readable error message indicating the semantics associated with the error. This is the complete message, and do not rely on substitution variables.
MessageArgs	An optional array of strings representing the substitution parameter values for the message. This will be included in the response if a MessageId is specified for a parameterized message
Severity	An optional string representing the severity of the error.
Resolution	An optional string describing recommended action(s) to take to resolve the error.
RelatedProperties	An optional array of JSON Pointers defining the specific properties within a JSON payload described by the message.

3.1.1 Example error JSON object

```
{
    "error": {
        "code": "Base.1.0.GeneralError",
        "message": "A general error has occurred. See ExtendedInfo for more
information.",
        "@Message.ExtendedInfo": [
            {
                "@odata.type" : "/redfish/v1/$metadata#Message.v1_0_0.Message",
                "MessageId": "Base.1.0. MalformedJSON",
                "Message": "The request body submitted was malformed JSON and could
not be parsed by the receiving service",
                "Severity": "Error"
            }
            {
                "@odata.type" : "/redfish/v1/$metadata#Message.v1_0_0.Message",
                "MessageId": "Base.1.0.PropertyNotWriteable",
                "RelatedProperties": [
                    "#/Name"
                ],
                "Message": "The property Name is a read only property and cannot be
assigned a value",
                "MessageArgs": [
                    "Name"
                ],
                "Severity": "Warning",
                "Resolution": "Remove the property from the request body and resubmit
the request if the operation failed"
            }
```

```
        ]
    }
}
```

3.2   API error codes

In general, if an error is not described in any of the following tables, it is to be mapped into HTTP 500 Internal Error code.

3.2.1   General error codes

Table 5.   General Error Codes

Error code	Description	HTTP status code
UnknownException	Exception that causes response generation to fail.	500 Internal Error.

3.2.2   Request error codes

Table 6.   Request Error Codes

Error code	Description	HTTP status code
InvalidEndpoint	Invalid endpoint.	404 Not Found.
MalformedUri	URI is malformed.	400 Bad Request.
InvalidPayload	Request payload is invalid or missing.	400 Bad Request.

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4 Storage Services REST API Definition

4.1 Odata support

Intel® Rack Scale Design support Odata v4.0 as it is defined in Redfish* specification.

All resources within this `RESTfull` API are identified by unique identifier property named "`@odata.id`". Resource Identifiers are represented in JSON payloads as uri paths relative to the Redfish Schema portion of the uri. Uri paths always start with "`/redfish/`". The resource identifier is the canonical URL for the resource and can be used to retrieve or edit the resource, as appropriate.

Protocol version:

The protocol version is separate from the version of the resources or the version of the Redfish Schema supported by them.

Each version of the Redfish protocol is strongly typed. This is accomplished using the URI of the Redfish service in combination with the resource obtained at that URI, called the `ServiceRoot`.

The root URI for this version of the Redfish protocol is "`/redfish/v1/`".

While the major version of the protocol is represented in the URI, the major version, minor version and errata version of the protocol are represented in the Version property of the `ServiceRoot` resource, as defined in the Redfish Schema for that resource. The protocol version is a string of the form:

`MajorVersion.MinorVersion.Errata`

Where:

- *MajorVersion* = integer: something in the class changed in a backward incompatible way.
- *MinorVersion* = integer: a minor update. New functionality may have been added but nothing removed. Compatibility will be preserved with previous minor versions.
- *Errata* = integer: something in the prior version was broken and needed to be fixed.

Any resource discovered through links found by accessing the root service or any service or resource referenced using references from the root service will conform to the same version of the protocol supported by the root service.

4.1.1 Operations

4.1.1.1 GET

Request:

```
GET /redfish
Content-Type: application/json
```

Response:

```
{
        "v1": "/redfish/v1/"
}
```

4.2 Service root

Service Root resource – entry point.

Detailed info about this resource property can be obtained from metadata file: `ServiceRoot.xml`

4.2.1   Operations

4.2.1.1   GET

Request:

```
GET /redfish/v1
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#ServiceRoot",
  "@odata.id": "/redfish/v1",
  "@odata.type": "#ServiceRoot.v1_0_0.ServiceRoot",
  "Id": "RootService",
  "Name": "Root Service",
  "Description": "description-as-string",
  "RedfishVersion": "1.0.0",
  "UUID": "92384634-2938-2342-8820-489239905423",
  "Systems": {
  },
  "Chassis": {
  },
  "Managers": {
    "@odata.id": "/redfish/v1/Managers"
  },
  "EventService": {
    "@odata.id": "/redfish/v1/EventService"
  },
  "Services": {
    "@odata.id": "/redfish/v1/Services"
  },
  "EthernetSwitches": {
  },
  "PCIeSwitches": {
  },
  "Devices": {
  },
  "Oem": {
    "Intel_RackScale": {
      "@odata.type": "#Intel.Oem.ServiceRoot",
      "ApiVersion": "2.0.0"
    }
  },
  "Links": {}
}
```

4.2.1.2   PUT

Operation is not allowed on this resource.

4.2.1.3   PATCH

Operation is not allowed on this resource.

4.2.1.4   POST

Operation is not allowed on this resource.

4.2.1.5   DELETE

Operation is not allowed on this resource.

4.3　Storage service collection

Storage service collection resource – provides a collection of available storage services.

Detailed info about this resource property can be obtained from metadata file: `StorageServiceCollection.xml`

4.3.1　Operations

4.3.1.1　GET

Request:

```
GET /redfish/v1/Services
Content-Type: application/json
```

Response:

```
{
        "@odata.context": "/redfish/v1/$metadata#StorageServices",
        "@odata.id": "/redfish/v1/Services",
        "@odata.type": "#StorageServiceCollection.StorageServiceCollection",
        "Name": "Storage Services Collection",
        "Description": "Collection of Storage Services",
        "Members@odata.count": 1,
        "Members": [
                {
                "@odata.id": "/redfish/v1/Services/1"
                }
        ]
}
```

4.3.1.2　PUT

Operation is not allowed on this resource.

4.3.1.3　PATCH

Operation is not allowed on this resource.

4.3.1.4　POST

Operation is not allowed on this resource.

4.3.1.5　DELETE

Operation is not allowed on this resource.

4.4　Storage service

Storage service resource – provides detailed information about a storage service provided by PSME.

Detailed info about this resource property can be obtained from metadata file: `StorageService.xml`

4.4.1　Operations

4.4.1.1　GET

Request:

```
GET /redfish/v1/Services/1
Content-Type: application/json
```

Response:

```
{
    "@odata.context": "/redfish/v1/$metadata#Services/Members/1/$entity",
    "@odata.id": "/redfish/v1/Services/RSS1",
    "@odata.type": "#StorageService.v1_0_0.StorageService",
    "Id": "RSS1",
    "Name": "Storage Service",
    "Description": "Storage Service",
    "Status": {
        "State": "Enabled",
        "Health": "OK"
    },
    "RemoteTargets": {
        "@odata.id": "/redfish/v1/Services/RSS1/Targets"
    },
    "LogicalDrives": {
        "@odata.id": "/redfish/v1/Services/RSS1/LogicalDrives"
    },
    "Drives": {
        "@odata.id": "/redfish/v1/Services/RSS1/Drives"
    },
    "Oem": {},
    "Links": {
        "ManagedBy": [
            {
                "@odata.id": "/redfish/v1/Managers/RSS"
            }
        ],
        "Oem": {}
    }
}
```

4.4.1.2   PUT

Operation is not allowed on this resource.

4.4.1.3   PATCH

Operation is not allowed on this resource.

4.4.1.4   POST

Operation is not allowed on this resource.

4.4.1.5   DELETE

Operation is not allowed on this resource.

4.5   Remote target collection

Intel® Rack Scale Design remote target collection resource – provides a collection of available storage remote targets.

Detailed info about this resource property can be obtained from metadata file: `RemoteTargetCollection.xml`

4.5.1   Operations

4.5.1.1 GET

Request:

```
GET /redfish/v1/Services/1/Targets
Content-Type: application/json
```

Response:

```
{
        "@odata.context": "/redfish/v1/$metadata#RemoteTargets",
        "@odata.id": "/redfish/v1/Services/1/Targets",
        "@odata.type": "#RemoteTargetCollection.RemoteTargetCollection",
        "Name": "Remote Targets Collection",
        "Members@odata.count": 1,
        "Members": [
                {
                "@odata.id": "/redfish/v1/Services/1/Targets/1"
                }
        ]
}
```

4.5.1.2 PUT

Operation is not allowed on this resource.

4.5.1.3 PATCH

Operation is not allowed on this resource.

4.5.1.4 POST

POST operation is used to create new remote target resource. The following parameters should be used in this call:

Table 7. Remote Target POST Attributes

Attribute	Type	Required	Description
Name	String	No	Name of target.
Type	String	No	Type of target
Addresses	Array	Yes	Array of objects with address of target. Details for currently supported "iSCSI" object are in Table 8 below.
Initiator	Array	Yes	Array of objects with initiator details. Details in table below.

Table 8. Details of Addresses "iSCSI" Object

Attribute	Type	Required	Description			
TargetLUN	Array	Yes	Array of objects mapping Logical drives to LUN numbers:			
				Attribute	Type	Required	Description
				LUN	Number	Yes	LUN (Logical Unit Number)
				Logical Drive	Link Object	Yes	Object containing odata.id reference to Logical Drive assigned to LUN number
TargetIQN	String	Yes	iSCSI target IQN			

Attribute	Type	Required	Description			
CHAP	Object	No	Challenge Handshake Authentication Protocol (CHAP) authentication parameters of iSCSI target.			
			Attribute	**Type**	**Required**	**Description**
			Type	String (enum)	Yes	Type of CHAP: "**OneWay**" - One-way CHAP authentication. The target authenticates the initiator, but the initiator does not authenticate the target. "**Mutual**" - Mutual CHAP authentication. The target authenticates the initiator and the initiator authenticate the target.
			Username	String	Yes	CHAP one way user name.
			Secret	String	Yes	CHAP one way secret.
			MutualUsername	String	No	CHAP mutual user name.
			MutualSecret	String	No	CHAP mutual secret.

Table 9.   Details of Initiator "iSCSI" Object

Attribute	Type	Required	Description
InitiatorIQN	String	Yes	String containing InitiatorIQN. If ALL initiators are allowed to connect to target, InitiatorIQN should be an empty string (""), or an Initiator array should be empty.

Request:

```
POST /redfish/v1/Services/1/Targets
Content-Type: application/json
{
    "Name": "Remote Target",
    "Type": "Network Storage",
    "Addresses": [
        {
            "iSCSI": {
                "TargetLUN": [
                    {
                        "LUN": 1,
                        "LogicalDrive":

                                                                    {

        "@odata.id": "/redfish/v1/Services/1/LogicalDrives/1"

                                                                    }

                    }
                ],
                "TargetIQN": "iqn.2015-01.com.example:ceph-ubuntu14",
                "CHAP": {
                  "Type": "Mutual",
                  "Username": "valid_user",
                  "Secret": "my_password",
                  "MutualUsername": "user2",
                  "MutualSecret": "user_password"
                }

            }
```

```
        }
    ],
    "Initiator": [
        {
            "iSCSI": {
                "InitiatorIQN": "iqn.2015-01.com.example:fedora21"
            }
        }
    ]
}
```

Response:

```
HTTP/1.1 201 Created
Location: http://<IP>:<PORT>/redfish/v1/Services/1/Targets/2
```

4.5.1.5   DELETE

Operation is not allowed on this resource.

4.6   Remote target

Remote target resource – provides detailed information about the storage remote target.

```
Detailed info about this resource property can be obtained from metadata file:
RemoteTarget.xml
```

4.6.1   Operations

4.6.1.1   GET

Note: Because of confidential nature of CHAP secret fields, it won't be shown in GET request, *null* will be shown
instead.

Request:

```
GET /redfish/v1/Services/1/Targets/1
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#RemoteTargets/Links/Members/$entity",
  "@odata.id": "/redfish/v1/Services/1/Targets/1",
  "@odata.type": "#RemoteTarget.v1_1_0.RemoteTarget",
  "Id": "1",
  "Name": "Remote Target",
  "Description": "Remote Target",
  "Status": {
    "State": "Enabled",
    "Health": "OK"
  },
  "Type": "Network Storage",
  "Addresses": [
    {
      "iSCSI":
      {
        "TargetLUN": [
          {
            "LUN" : 1,
            "LogicalDrive": "/redfish/v1/Services/1/LogicalDrives/1"
          }
        ],
```

```
                "TargetIQN": "iqn.2015-01.com.example:ceph-ubuntu14",
                "TargetPortalIP": "10.102.44.54",
                "TargetPortalPort": 3260,
                "CHAP": {
                    "Type": "Mutual",
                    "Username": "valid_user",
                    "Secret": null,
                    "MutualUsername": "user2",
                    "MutualSecret": null
                }
            }
        }
    ],
    "Initiator": [
        {
            "iSCSI":
            {
                "InitiatorIQN": "iqn.2015-01.com.example:fedora21"
            }
        }
    ],
    "Oem": {},
    "Links": {}
}
```

4.6.1.2   PUT

Operation is not allowed on this resource.

4.6.1.3   PATCH

Request:

```
PATCH /redfish/v1/Services/1/Targets/2
Content-Type: application/json
{
    "Addresses": [
        {
            "iSCSI":
            {
                "CHAP": {
                    "Type": "Mutual",
                    "Username": "valid_user",
                    "Secret": "mypass",
                    "MutualUsername": "user2",
                    "MutualSecret": "userpass"
                }
            }
        }
    ],
    "Initiator": [
        {
            "iSCSI":
            {
                "InitiatorIQN": "iqn.2015-01.com.example:fedora21"
            }
        }
    ]
}
```

Response:

```
HTTP/1.1 204 No Content
```

or

```
HTTP/1.1 200 OK
```

with full resource representation.

4.6.1.4   POST

Operation is not allowed on this resource.

4.6.1.5   DELETE

Request:

```
DELETE /redfish/v1/Services/1/Targets/2
```

Response:

```
HTTP/1.1 204 No Content
```

4.7   Logical drive collection

Logical drive collection resource – provides a collection of available storage logical drives (logical discs, partitions, volume groups, volumes, etc.).

Detailed info about this resource property can be obtained from metadata file: `LogicalDriveCollection.xml.`

4.7.1   Operations

4.7.1.1   GET

Request:

```
GET /redfish/v1/Services/1/LogicalDrives
Content-Type: application/json
```

Response:

```
{
        "@odata.context": "/redfish/v1/$metadata#LogicalDrives",
        "@odata.id": "/redfish/v1/Services/1/LogicalDrives",
        "@odata.type": "#LogicalDriveCollection.LogicalDriveCollection",
        "Name": "Logical Drives Collection",
        "Members@odata.count": 1,
        "Members": [
                {
                "@odata.id": "/redfish/v1/Services/1/LogicalDrives/1"
                }
        ]
}
```

4.7.1.2   PUT

Operation is not allowed on this resource.

4.7.1.3   PATCH

Operation is not allowed on this resource.

4.7.1.4 POST

Table 10. Logical Drive POST Attributes

Attribute	Type	Required	Description
Name	String	Yes	REST name of drive
Type	String	Yes	Type of drive – currently only "LVM" is supported
Mode	String	Yes	Drive mode – for Type=="LVM" only supported mode is "LV"
Protected	boolean	Yes	If new drive should be protected
CapacityGiB	Number	Yes	New drive capacity in GiB
Image	String	No	Any name that identifies the content of image which was copied to this Logical Volume (LV)
Bootable	Boolean	Yes	If the Logical Volume (LV) contains a bootable operating system
Snapshot	Boolean	Yes	Type of drive replication – Yes – using Copy On Write, No – using disc clone
Links-> LogicalDrives	Link object	Yes	Must contain single link to LogicalDrive which is Logical Volume Group ("Mode" = "LVG")
Links-> MasterDrive	Link object	Yes	Contains the link to the single LogicalDrive which is Logical Volume ("Mode" = "LV") and which should be used as source for snapshot/clone

Request:

```
POST /redfish/v1/Services/1/LogicalDrives
Content-Type: application/json
{
    "Name": "Logical Drive",
    "Type": "LVM",
    "Mode": "LV",
    "Protected": false,
    "CapacityGiB": 8096,
    "Image": "Ubuntu 12.04.4LTS / Linux 3.11 / 2014.1",
    "Bootable": true,
    "Snapshot": true,
    "Links": {
        "LogicalDrives": [
            {
                "@odata.id": "/redfish/v1/Services/1/LogicalDrives/4"
            }
        ],
        "MasterDrive": {
            "@odata.id": "/redfish/v1/Services/1/LogicalDrives/12"
        }
    }
}
```

Response:

```
HTTP/1.1 201 Created
Location: http://<IP>:<PORT>/redfish/v1/Services/1/LogicalDrives/2
```

4.7.1.5 DELETE

Operation is not allowed on this resource.

4.8 Logical drive

Logical drive resource – provides detailed information about a single logical drive available in storage service.

Detailed info about this resource property can be obtained from metadata file: LogicalDrive.xml

4.8.1 Operations

4.8.1.1 GET

Request:

```
GET /redfish/v1/Services/1/LogicalDrives/1
Content-Type: application/json
```

Response:

```
{
        "@odata.context": "/redfish/v1/$metadata#LogicalDrives/Links/Members/$entity",
        "@odata.id": "/redfish/v1/Services/1/LogicalDrives/1",
        "@odata.type": "#LogicalDrive.LogicalDrive",
        "Id": "1",
        "Name": "Logical Drive",
        "Description": "Logical Drive",
        "Status": {
                "State": "Enabled",
                "Health": "OK",
        },
        "Type": "LVM",
        "Mode": "RAID0",
        "Protected": false,
        "CapacityGiB": 8096,
        "Image": "Ubuntu 12.04.4LTS / Linux 3.11 / 2014.1",
        "Bootable": true,
        "Snapshot": false,
        "Oem": {},
        "Links": {
                "LogicalDrives": [
                ],
                "PhysicalDrives": [
                {
                        "@odata.id": "/redfish/v1/Services/1/Drives/2"
                }
                ],
                "MasterDrive": {
                        "@odata.id": "/redfish/v1/Services/1/LogicalDrives/12"
                },
                "UsedBy": [
                {
                        "@odata.id": "/redfish/v1/Services/1/LogicalDrives/14"
                }
                ],
                "Targets": [
                {
                        "@odata.id": "/redfish/v1/Services/1/Targets/2"
                }
                ],
                "Oem": {}
        }
}
```

4.8.1.2 PUT

Operation is not allowed on this resource.

4.8.1.3 PATCH

Request:

```
PATCH /redfish/v1/Services/1/LogicalDrives/1
Content-Type: application/json
{
        "Bootable": true,
}
```

Response:

```
HTTP/1.1 204 No Content
```

4.8.1.4 POST

Operation is not allowed on this resource.

4.8.1.5 DELETE

Request:

```
DELETE /redfish/v1/Services/1/LogicalDrives/5
```

Response:

```
HTTP/1.1 204 No Content
```

4.9 Physical drive collection

Physical drive collection resource – provides a collection of all storage drives available in a storage service.

Detailed info about this resource property can be obtained from metadata file: `PhysicalDriveCollection.xml`

4.9.1 Operations

4.9.1.1 GET

Request:

```
GET /redfish/v1/Services/1/Drives
Content-Type: application/json
```

Response:

```
{
        "@odata.context": "/redfish/v1/$metadata#Drives",
        "@odata.id": "/redfish/v1/Services/1/Drives",
        "@odata.type": "#PhysicalDriveCollection.PhysicalDriveCollection",
        "Name": "Physical Drives Collection",
        "Members@odata.count": 1,
        "Members": [
                {
                "@odata.id": "/redfish/v1/Services/1/Drives/1"
                }
        ]
}
```

4.9.1.2 PUT

Operation is not allowed on this resource.

4.9.1.3 PATCH

Operation is not allowed on this resource.

4.9.1.4   POST

Operation is not allowed on this resource.

4.9.1.5   DELETE

Operation is not allowed on this resource.

4.10   Physical drive

Physical drive resource – provides detailed information about a single drive identified by {driveID}.

Detailed info about this resource property can be obtained from metadata file: PhysicalDrive.xml

4.10.1   Operations

4.10.1.1   GET

Request:

```
GET /redfish/v1/Services/1/Drives/{driveID}
Content-Type: application/json
```

Response:

```
{
        "@odata.context": "/redfish/v1/$metadata#Drive/Links/Members/$entity",
        "@odata.id": "/redfish/v1/Services/1/Drives/1",
        "@odata.type": "#PhysicalDrive.v1_0_0.PhysicalDrive",
        "Id": "1",
        "Name": "Simple drive"
        "Description": "Physical drive"
        "Interface": < { "PCIe", "SAS", "SATA" } >
        "CapacityGiB": 500,
        "Type": < { "HDD", "SSD" } >,
        "RPM": 0,
        "Manufacturer": "Intel",
        "Model": "S3710",
        "SerialNumber": "XYZ123456789",
        "Status": {
                "State": < { "Enabled", "Disabled", "Offline", "InTest", "Starting",
"Absent" } >,
                "Health": < {"OK", "Warning", "Critical" } >,
                "HealthRollup": < {"OK", "Warning", "Critical" } >
        },
        "Oem": {},
        "Links": {
                "UsedBy": [
                {
                        "@odata.id": "/redfish/v1/Services/1/LogicalDrives/1"
                }
                ],
                "Oem": {}
        }
}
```

4.10.1.2   PUT

Operation is not allowed on this resource.

4.10.1.3   PATCH

Operation is not allowed on this resource.

4.10.1.4 POST

Operation is not allowed on this resource.

4.10.1.5 DELETE

Operation is not allowed on this resource.

4.11 Manager

Refer to the *Intel® Rack Scale Design PSME REST API Specification*, Doc# 560243

4.12 Network protocol

Refer to the *Intel® Rack Scale Design PSME API Specification*, Doc# 560244

4.13 Ethernet interface collection

Refer to the *Intel® Rack Scale Design PSME REST API Specification*, Doc# 560243.

4.14 Ethernet interface

Refer to the *Intel® Rack Scale Design PSME API Specification*, Doc# 560244.

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5   Common Property Description

5.1   Status

Table 11.   Redfish Status Properties

Attribute	Type	Nullable	Description
State	String	Yes	This indicates the known state of the resource, such as if it is enabled. Allowed values – refer to Status -> Health
Health	String	Yes	This represents the health state of this resource in the absence of its dependent resources. Allowed values – refer to Status -> Health
HealthRollup	String	Yes	This represents the overall health state from the view of this resource. Allowed values – refer to Status -> Health

5.2   Status -> State

- **Enabled:** This function or resource has been enabled
- **Disabled**: This function or resource has been disabled
- **Offline**: This function or resource is enabled, but currently unavailable
- **InTest**: This function or resource is under doing testing
- **Starting**: This function or resource is starting
- **Absent**: This function or resource is not installed

5.3   Status -> Health

- **OK**: Normal
- **Warning**: A condition exists that requires attention
- **Critical**: A critical condition exists that requires immediate attention

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