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<th>Revision</th>
<th>Description</th>
<th>Date</th>
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<tbody>
<tr>
<td>002</td>
<td>Added CHAP authentication to RemoteTarget resource</td>
<td>May 8, 2017</td>
</tr>
<tr>
<td>001</td>
<td>Initial release.</td>
<td>February 9, 2017</td>
</tr>
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1 Introduction

1.1 Scope

This document contains information about the Intel® Rack Scale Design (Intel® RSD) Storage Services REST API, which was designed and implemented for the Intel® RSD Software v2.1 release.

The interface specified in this document is based on the Distributed Management Task Force's Redfish* Interface Specification and schema (see dmtf.org) version 2016.3.

1.2 Intended audience

The intended audiences for this document include designers and engineers working with the Intel® RSD Software v2.1 release.

1.3 Terminology

Table 1 Terminology

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMC</td>
<td>Baseboard management controller</td>
</tr>
<tr>
<td>HTTP</td>
<td>Hypertext Transfer Protocol</td>
</tr>
<tr>
<td>JSON</td>
<td>JavaScript object notation</td>
</tr>
<tr>
<td>NIC</td>
<td>Network interface card</td>
</tr>
<tr>
<td>OData</td>
<td>Open data protocol</td>
</tr>
<tr>
<td>Pod</td>
<td>A physical collection of multiple racks.</td>
</tr>
<tr>
<td>PODM</td>
<td>Pod Manager</td>
</tr>
<tr>
<td>PSME</td>
<td>Pooled System Management Engine</td>
</tr>
<tr>
<td>REST</td>
<td>Representational State Transfer</td>
</tr>
<tr>
<td>URI</td>
<td>Uniform resource identifier</td>
</tr>
<tr>
<td>UUID</td>
<td>Universally unique identifier</td>
</tr>
<tr>
<td>XML</td>
<td>Extensible Markup Language</td>
</tr>
</tbody>
</table>

1.4 References

Table 2 Reference documents

<table>
<thead>
<tr>
<th>Doc ID</th>
<th>Title</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>335451</td>
<td>Intel® Rack Scale Design Generic Assets Management Interface API Specification</td>
<td>Intel.com/intelrsd_resources</td>
</tr>
<tr>
<td>335452</td>
<td>Intel® Rack Scale Design BIOS &amp; BMC Technical Guide</td>
<td>Intel.com/intelrsd_resources</td>
</tr>
<tr>
<td>335501</td>
<td>Intel® Rack Scale Design Architecture Specification</td>
<td>Intel.com/intelrsd_resources</td>
</tr>
<tr>
<td>335454</td>
<td>Intel® Rack Scale Design Software Reference Kit Getting Started Guide</td>
<td>Intel.com/intelrsd_resources</td>
</tr>
<tr>
<td>335455</td>
<td>Intel® Rack Scale Design Pod Manager API Specification</td>
<td>Intel.com/intelrsd_resources</td>
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<td>Intel® Rack Scale Design Pod Manager User Guide</td>
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<td>335458</td>
<td>Intel® Rack Scale Design PSME REST API Specification</td>
<td>Intel.com/intelrsd_resources</td>
</tr>
<tr>
<td>335459</td>
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</tr>
<tr>
<td>335460</td>
<td>Intel® Rack Scale Design PSME User Guide</td>
<td>Intel.com/intelrsd_resources</td>
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</tbody>
</table>
## Introduction

<table>
<thead>
<tr>
<th>Doc ID</th>
<th>Title</th>
<th>Location</th>
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</thead>
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<td>Intel.com/intelrsd_resources</td>
</tr>
<tr>
<td>335462</td>
<td>Intel® Rack Scale Design Rack Management Module (RMM) API Specification</td>
<td>Intel.com/intelrsd_resources</td>
</tr>
<tr>
<td>335463</td>
<td>Intel® Rack Scale Design RMM Release Notes</td>
<td>Intel.com/intelrsd_resources</td>
</tr>
<tr>
<td>335464</td>
<td>Intel® Rack Scale Design Software RMM User Guide</td>
<td>Intel.com/intelrsd_resources</td>
</tr>
<tr>
<td>DSP0266</td>
<td>Redfish Scalable Platform Management API Specification</td>
<td><a href="http://dmtf.org/standards/redfish">http://dmtf.org/standards/redfish</a></td>
</tr>
</tbody>
</table>
2 Storage Services API

2.1 Storage Services API structure and relations

The Intel® RSD 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 illustrates the Intel® RSD Storage Services REST API hierarchy.

*names are subject to change
Table 3  Resources and URIs

<table>
<thead>
<tr>
<th>Resource</th>
<th>URI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service Root</td>
<td>/redfish/v1</td>
</tr>
<tr>
<td>Manager Collection</td>
<td>/redfish/v1/Managers</td>
</tr>
<tr>
<td>Storage Service Collection</td>
<td>/redfish/v1/Services</td>
</tr>
<tr>
<td>Storage Service</td>
<td>/redfish/v1/Services/{serviceID}</td>
</tr>
<tr>
<td>Remote Target Collection</td>
<td>/redfish/v1/Services/1/Targets</td>
</tr>
<tr>
<td>Remote Target</td>
<td>/redfish/v1/Services/1/Targets/{targetID}</td>
</tr>
<tr>
<td>Logical Drive Collection</td>
<td>/redfish/v1/Services/1/LogicalDrives</td>
</tr>
<tr>
<td>Logical Drive</td>
<td>/redfish/v1/Services/1/LogicalDrives/{driveID}</td>
</tr>
<tr>
<td>Drive Collection</td>
<td>/redfish/v1/Services/1/Drives</td>
</tr>
<tr>
<td>Drive</td>
<td>/redfish/v1/Services/1/Drives/{driveID}</td>
</tr>
<tr>
<td>Manager</td>
<td>/redfish/v1/Managers/{managerID}</td>
</tr>
<tr>
<td>Network Service</td>
<td>/redfish/v1/Managers/{managerID}/NetworkService</td>
</tr>
</tbody>
</table>
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® RSD v2.1 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 shall be the JSON object with the properties listed in Table 4.

#### Table 4  API error response attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MessageId</td>
<td>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.</td>
</tr>
<tr>
<td>Message</td>
<td>A human readable error message indicating the semantics associated with the error. This shall be the complete message, and not rely on substitution variables.</td>
</tr>
<tr>
<td>MessageArgs</td>
<td>An optional array of strings representing the substitution parameter values for the message. This shall be included in the response if a MessageId is specified for a parameterized message.</td>
</tr>
<tr>
<td>Severity</td>
<td>An optional string representing the severity of the error.</td>
</tr>
<tr>
<td>Resolution</td>
<td>An optional string describing recommended action(s) to take to resolve the error.</td>
</tr>
<tr>
<td>RelatedProperties</td>
<td>An optional array of JSON Pointers defining the specific properties within a JSON payload described by the message.</td>
</tr>
</tbody>
</table>

#### 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"
                ]
            ]
        }
    ]
}
```
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>
<thead>
<tr>
<th>Error code</th>
<th>Description</th>
<th>HTTP status code</th>
</tr>
</thead>
<tbody>
<tr>
<td>UnknownException</td>
<td>Exception that causes response generation to fail.</td>
<td>500 Internal Error.</td>
</tr>
</tbody>
</table>

### 3.2.2 Request error codes

<table>
<thead>
<tr>
<th>Error code</th>
<th>Description</th>
<th>HTTP status code</th>
</tr>
</thead>
<tbody>
<tr>
<td>InvalidEndpoint</td>
<td>Invalid endpoint.</td>
<td>404 Not Found.</td>
</tr>
<tr>
<td>MalformedUri</td>
<td>URI is malformed.</td>
<td>400 Bad Request.</td>
</tr>
<tr>
<td>InvalidPayload</td>
<td>Request payload is invalid or missing.</td>
<td>400 Bad Request.</td>
</tr>
</tbody>
</table>
4 Storage Services REST API Definition

4.1 Odata support

Intel® RSD supports Odata v4.0 as it is defined in the Redfish specification.

All resources within the RESTfull API are identified by a unique identifier property named "@odata.id". Resource Identifiers shall be represented in JSON payloads as uri paths relative to the Redfish Schema portion of the uri. That is, they shall 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 shall be "/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 minorversions.
- **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 shall 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's properties 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 properties 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 RSD 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 properties 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® RSD remote target collection resource – provides a collection of available storage remote targets.

Detailed info about this resource properties 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**

```json
{
   "@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 a new remote target resource. The following parameters should be used in this call:

**Table 7 Remote target POST attributes**

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Required</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>String</td>
<td>No</td>
<td>Name of target</td>
</tr>
<tr>
<td>Type</td>
<td>String</td>
<td>No</td>
<td>Type of target</td>
</tr>
<tr>
<td>Addresses</td>
<td>Array</td>
<td>Yes</td>
<td>Array of objects with address of target. Details for currently supported “iSCSI” objects are in Table 8.</td>
</tr>
<tr>
<td>Initiator</td>
<td>Array</td>
<td>Yes</td>
<td>Array of objects with initiator details. Details in Table 9 below.</td>
</tr>
</tbody>
</table>
Table 8  Details of Addresses "iSCSI" object

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Required</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>TargetLUN</td>
<td>Array</td>
<td>Yes</td>
<td>Array of objects mapping Logical drives to LUN numbers:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>Attribute</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>LUN</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Logical Drive</td>
</tr>
<tr>
<td>TargetIQN</td>
<td>String</td>
<td>Yes</td>
<td>iSCSI target IQN</td>
</tr>
<tr>
<td>CHAP</td>
<td>Object</td>
<td>No</td>
<td>Challenge Handshake Authentication Protocol (CHAP) authentication parameters of iSCSI target.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>Attribute</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Type</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Username</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Secret</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>MutualUsername</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>MutualSecret</td>
</tr>
</tbody>
</table>

Table 9  Details of Initiator "iSCSI" object

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Required</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>InitiatorIQN</td>
<td>String</td>
<td>Yes</td>
<td>String containing initiator IQN. If ALL initiators are allowed to connect to target, InitiatorIQN should be an empty string (&quot;&quot;), or an Initiator array should be empty.</td>
</tr>
</tbody>
</table>

Request

```json
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"
            }
         }
      }  
   }  
}
```
Remote target resource – provides detailed information about a storage remote target.

Detailed info about this resource properties 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**

```json
{
  "@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": {
```

**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.
"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": null,
            "MutualUsername": "user2",
            "MutualSecret": null
         }
      }
   }
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 properties 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",
  "count": 0,
  "@odata.count": 0
}
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>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Required</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>String</td>
<td>Yes</td>
<td>REST name of drive</td>
</tr>
<tr>
<td>Type</td>
<td>String</td>
<td>Yes</td>
<td>Type of drive – currently only &quot;LVM&quot; is supported.</td>
</tr>
<tr>
<td>Mode</td>
<td>String</td>
<td>Yes</td>
<td>Drive mode – for Type==&quot;LVM&quot; only supported mode is &quot;LV&quot;</td>
</tr>
<tr>
<td>Protected</td>
<td>boolean</td>
<td>Yes</td>
<td>If new drive should be protected</td>
</tr>
<tr>
<td>CapacityGiB</td>
<td>Number</td>
<td>Yes</td>
<td>New drive capacity in GiB</td>
</tr>
<tr>
<td>Image</td>
<td>String</td>
<td>No</td>
<td>Any name that identifies the content of image which was copied to this</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Logical Volume (LV).</td>
</tr>
<tr>
<td>Bootable</td>
<td>Boolean</td>
<td>Yes</td>
<td>If the Logical Volume (LV) contains a bootable operating system.</td>
</tr>
<tr>
<td>Snapshot</td>
<td>Boolean</td>
<td>Yes</td>
<td>Type of drive replication – Yes – using Copy On Write, No – using disc</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>clone</td>
</tr>
<tr>
<td>Links-&gt; LogicalDrives</td>
<td>Link object</td>
<td>Yes</td>
<td>Must contain single link to LogicalDrive which is Logical Volume Group</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(&quot;Mode&quot; = &quot;LVG&quot;).</td>
</tr>
<tr>
<td>Links-&gt; MasterDrive</td>
<td>Link object</td>
<td>Yes</td>
<td>Shall contain link to single LogicalDrive which is Logical Volume (&quot;Mode&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>= &quot;LV&quot;) and which should be used as source for snapshot/clone.</td>
</tr>
</tbody>
</table>

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": {
        }
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 properties 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
Or:
HTTP/1.1 200 OK
{
  (updated resource body)
}

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 properties 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 properties 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 API Specification.

4.12 Network protocol
Refer to the Intel® Rack Scale Design PSME API Specification.

4.13 Ethernet interface collection
Refer to the Intel® Rack Scale Design PSME API Specification.

4.14 Ethernet interface
Refer to the Intel® Rack Scale Design PSME API Specification.
5 Common Property Description

5.1 Status

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Nullable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>State</td>
<td>String</td>
<td>Yes</td>
<td>This indicates the known state of the resource, such as if it is enabled.</td>
</tr>
<tr>
<td>Health</td>
<td>String</td>
<td>Yes</td>
<td>This represents the health state of this resource in the absence of its</td>
</tr>
<tr>
<td>HealthRollup</td>
<td>String</td>
<td>Yes</td>
<td>dependent resources. Allowed values – see Status -&gt; Health</td>
</tr>
</tbody>
</table>

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 undergoing 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