Intel® Rack Scale Architecture Storage Services

API Specification
Software v1.1

August 2015

Revision 002

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Contents

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Revision History

Revision	Description	Date
001	Initial public release. Assigned document number 332878.	August 3, 2015
002	Minor updates.	August 17, 2015

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1 Introduction

1.1 Scope

This document contains information about the Intel® Rack Scale Architecture Storage Services REST API, which was designed and implemented for the Intel® Rack Scale Architecture Software v1.1 release for the Bulldog Creek SDV.

1.2 Intended audience

The intended audiences for this document include designers and engineers working with the Intel® Rack Scale Architecture Software v1.1 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

Number	Title	Location
332971	Intel® Rack Scale Architecture Getting Started Guide	*https://github.com/01org/RSA*
332868	Intel® Rack Scale Architecture GAMI API Specification	*https://github.com/01org/RSA*
332869	Intel® Rack Scale Architecture Pod Manager API Specification	*https://github.com/01org/RSA*
332870	Intel® Rack Scale Architecture Pod Manager Release Notes	*https://github.com/01org/RSA*
332871	Intel® Rack Scale Architecture Pod Manager User Guide	*https://github.com/01org/RSA*
332872	Intel® Rack Scale Architecture PSME Release Notes	*https://github.com/01org/RSA*
332873	Intel® Rack Scale Architecture PSME API Specification	*https://github.com/01org/RSA*
332874	Intel® Rack Scale Architecture PSME User Guide	*https://github.com/01org/RSA*
332875	Intel® Rack Scale Architecture RMM Installation Guide	*https://github.com/01org/RSA*
332876	Intel® Rack Scale Architecture RMM Release Notes	*https://github.com/01org/RSA*
332877	Intel® Rack Scale Architecture RMM API Specification	*https://github.com/01org/RSA*
332878	Intel® Rack Scale Architecture Storage Services API Specification	This document.
	Scalable Platforms Management	*https://github.com/01org/RSA*
	Intel® Rack Scale Architecture System Manageability Architecture Specification	
	Intel® Rack Scale Architecture Platform Design Guide	

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2 Storage Services API

2.1 Storage Services API structure and relations

The Intel® Rack Scale Architecture 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 Architecture Storage Services REST API hierarchy.

Figure 1 Intel® Rack Scale Architecture Storage Services REST API hierarchy

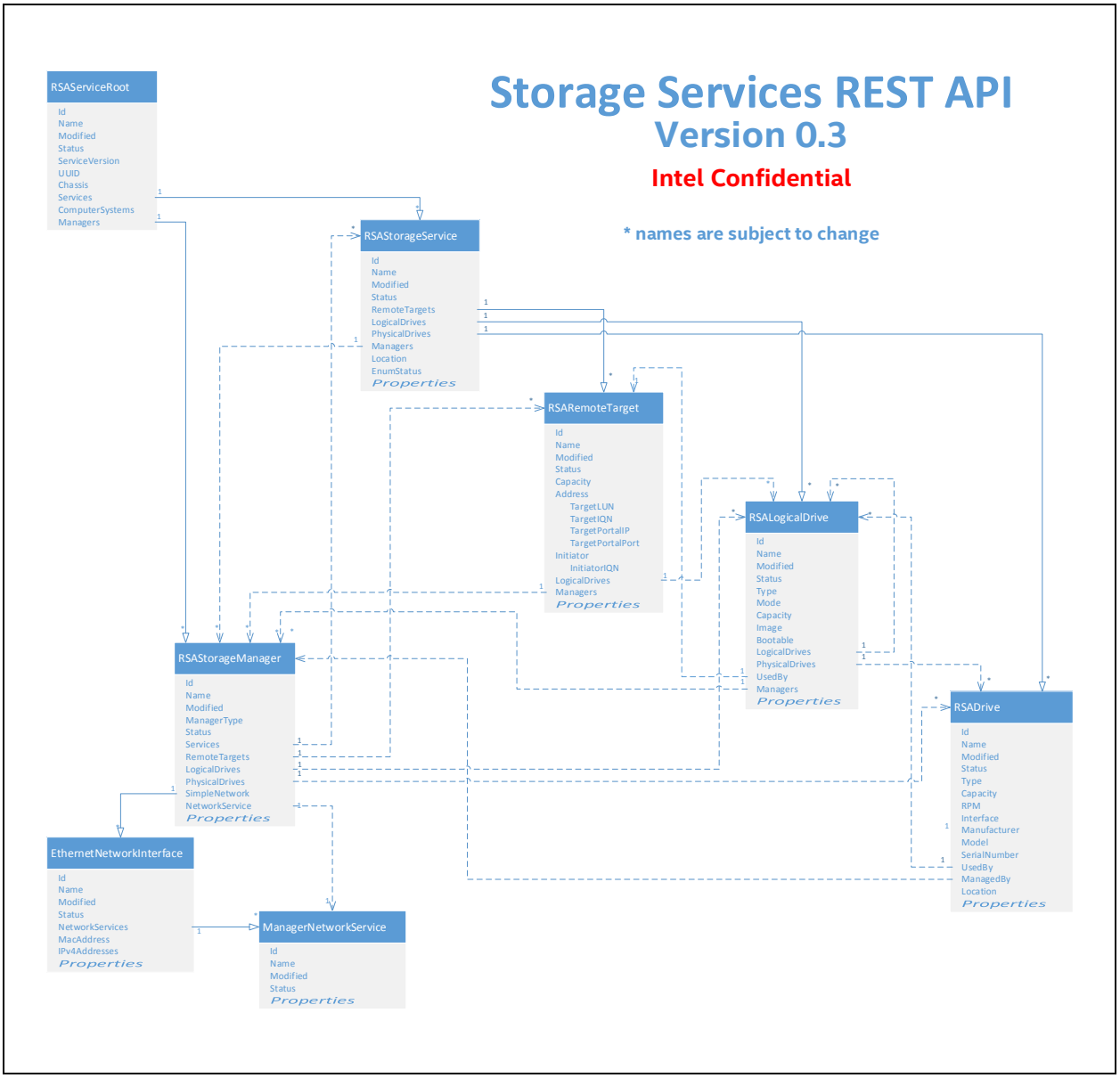

Table 3 Resources and URIs

Resource	URI
Service Root	/rest/v1
Manager Collection	/rest/v1/Managers
Storage Service Collection	/rest/v1/Services
Storage Service	/rest/v1/Services/{serviceID}
Remote Target Collection	/rest/v1/Services/1/Targets
Remote Target	/rest/v1/Services/1/Targets/{targetID}
Logical Drive Collection	/rest/v1/Services/1/LogicalDrives
Logical Drive	/rest/v1/Services/1/LogicalDrives/{driveID}
Drive Collection	/rest/v1/Services/1/Drives
Drive	/rest/v1/Services/1/Drives/{driveID}
Manager	/rest/v1/Managers/{managerID}
Network Service	/rest/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 Architecture v1.1 software release.

3.1 API error response

In the case of an error, the 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 enable deterministic error semantics. Storage Services REST API return extended error information as a JSON object with single property named “error”. The value of this property shall be JSON object with the properties shown in Table 4.

Table 4 API error properties

Attribute	Description
code	String indicating a specific error or message (not to be confused with the HTTP status code).
message	A human readable error message indicating the semantics associated with the error.
target	An optional string defining the target of the particular error.
message.parameters	An optional array of strings representing the substitution parameter values for the message.
message.severity	An optional string representing the severity of the error. The Severity attribute is an annotation specified in the DMTF namespace and shall be prefixed with the alias “message”.
message.resolution	An optional string describing recommended action(s) to take to resolve the error. The Resolution attribute is an annotation specified in the DMTF namespace and shall be prefixed with the alias “message”.

3.1.1 Example error JSON object

```
{
        “error”: {
                “code”: “Base.1.0.InvalidEndpoint”,
                “message”: “Invalid endpoint in /rest/v1 namespace”,
                “details”: [
                        {
                        }
                ]
        }
}
```

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 in /rest/v1 namespace.	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 Intel® Rack Scale Architecture service root

Intel® Rack Scale Architecture service root resource – entry point.

Table 7 Intel® Rack Scale Architecture service root attributes

Name	Intel® Rack Scale Architecture service root		
Type URI	/rest/v1/		
Attribute	**Type**	**Required**	**Description**
Id	String	Yes	Provides an ID of this resource.
Name	String	Yes	Name of service root.
Modified	String	Yes	The date-time stamp that the object was last modified.
ServiceVersion	String	Yes	Version of Redfish service in majorversion.minorversion.errata format.
UUID	String	Yes	Unique identifier for a service instance.
Chassis	Link	No	Link to chassis collection (drawers).
Systems	Link	No	Link to computer systems collection (logical server nodes).
Services	Link	No	Link to services collection.
Managers	Link	Yes	Link to Managers collection.

4.1.1 Metadata

TBD

4.1.2 JSON serialization

```
{
       “@odata.context”: string,
       “@odata.id”: string,
       “@odata.type”: string,
       “Id”:                  string,
       “Name”:        string,
       “Modified”:    string,
       “Time”:        string,
       “ServiceVersion”: string,
       “UUID”:        string,
       “Links”: {
              “Chassis”:     {
                     “@odata.id”: string
              },
              “Systems”:     {
                     “@odata.id”: string
              },
              “Services”:    {
                     “@odata.id”: string
              },
              “Managers”: {
                            “@odata.id”: string
              },
       }
}
```

4.1.3 Operations

4.1.3.1 Get

Request

```
GET /rest/v1
Content-Type: applicaton/json
```

Response

```
{
       “@odata.context”: “/rest/v1/$metadata#ServiceRoot”,
       “@odata.id”: “/rest/v1”,
       “@odata.type”: “#RSAServiceRoot.1.0.0.RSAServiceRoot”,
       “Id”: “RootService”,
       “Name”: “RSA Service Root”,
       “Modified”: “2015-02-20T14:44:01+00:00”,
       “Time”: “2015-03-04T13:45:04+00:00”,
       “ServiceVersion” : “1.0.0”,
       “UUID”: ““00000000-0000-0000-0000-000000000000”,
       “Links”: {
              “Services”:    {
               “@odata.id”: “/rest/v1/Services”
              },
              “Managers”: {
                     “@odata.id”: “/rest/v1/Managers”
              },
       }
}
```

4.1.3.2 Put

Operation is not allowed on this resource.

4.1.3.3 Patch

Operation is not allowed on this resource.

4.1.3.4 Post

Operation is not allowed on this resource.

4.1.3.5 Delete

Operation is not allowed on this resource.

4.2 Intel® Rack Scale Architecture storage service collection

Intel® Rack Scale Architecture storage service collection resource – provides collection of available storage services.

Table 8 Intel® Rack Scale Architecture storage services collection attributes

Name	Intel® Rack Scale Architecture Storage Services		
Type URI	/rest/v1/Services		
Attribute	**Type**	**Required**	**Description**
Name	String	Yes	Name of service collection.
Modified	String	Yes	The date-time stamp that the object was last modified.

4.2.1 Metadata

4.2.2 JSON serialization

```
{
       “@odata.context”:      string,
       “@odata.id”:                              string,
       “@odata.type”:                            string,
       “Name”:                                   string,
       “Modified”:                               string,
       “Links”: {
              “Members@odata.count”: number,
              “Members”: [
               {
                     “@odata.id”: string
               }
              ]
       }
}
```

4.2.3 Operations

4.2.3.1 Get

Request

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

Response

```
{
       “@odata.context”: “/rest/v1/$metadata#RSAStorageServices”,
       “@odata.id”: “/rest/v1/Services”,
       “@odata.type”:
“#RSAStorageService.1.0.0.RSAStorageServicesCollection”,
       “Name”: “Storage Services Collection”,
       “Modified”: “2015-02-23T14:44:00+00:00”,
       “Links”: {
              “Members@odata.count”: 1,
              “Members”: [
               {
                     “@odata.id”: “/rest/v1/Services/1”
               }
              ]
       }
}
```

4.2.3.2 Put

Operation is not allowed on this resource.

4.2.3.3 Patch

Operation is not allowed on this resource.

4.2.3.4 Post

Operation is not allowed on this resource.

4.2.3.5 Delete

Operation is not allowed on this resource.

4.3 Intel® Rack Scale Architecture storage service

Intel® Rack Scale Architecture storage service resource – provides detailed information about a storage service provided by PSME.

Table 9 Intel® Rack Scale Architecture storage service attributes

Name	Intel® Rack Scale Architecture storage service		
Type URI	/rest/v1/Services/{serviceId}		
Attribute	**Type**	**Required**	**Description**
Id	String	Yes	Resource identifier
Name	String	Yes	Name of service.
Modified	String	Yes	The date-time stamp that the object was last modified.
Status	Object, null	No	Status of resource.
EnumStatus	String	Yes	Enumeration status of this component.
Location	Object	Yes	Location in environment info (location of computer system hosting service).
Oem	Object,null	No	OEM specific object.
RemoteTargets	Link	Yes	Link to remote targets collection available under this service.
LogicalDrives	Link	Yes	Link to logical volumes collection available under this service.
Drives	Link	Yes	Link to drives collection exposed by this service.
ManagedBy	Array	Yes	Array of managers for this service.

4.3.1 Metadata

4.3.2 JSON serialization

```
{
       “@odata.context”:      string,
       “@odata.id”:           string,
       “@odata.type”:         string,
       “Id”:                  string,
       “Name”:                                  string,
       “Modified”:                              string,
       “Status”: {
              “State”:                                  enum {“Enabled”,
“Disabled”, “Offline”, “InTest”, “Starting”, “Absent”},
              “Health”:                                 enum {“OK”, “Warning”,
“Critical”}
       },
       “EnumStatus”:          enum {“Enumerated”, “NotEnumerated”},
       “Location”: {
              “Pod”:                            number,
              “Rack”:                           number,
              “Drawer”:      number,
       },
       “Oem”: {},
       “Links”: {
              “RemoteTargets”: {
                     “@odata.id”:               string
              },
```

```
                “LogicalDrives”: {
                        “@odata.id”:                string
                },
                “Drives”: {
                        “@odata.id”:                string
                },
                “ManagedBy”: [
                 {
                        “@odata.id”:                string
                 }
                ],
                “Oem” :                                 object
        }
}
```

4.3.3 Operations

4.3.3.1 Get

Request

```
GET /rest/v1/Services/1
Content-Type: applicaton/json
```

Response

```
{
        “@odata.context”:
“/rest/v1/$metadata#RSAStorageServices/Links/Members/$entity”,
        “@odata.id”: “/rest/v1/Services/1”,
        “@odata.type”: “#RSAStorageService.1.0.0.RSAStorageService”,
        “Id”: “1”,
        “Name”: “RSA Storage Service”,
        “Modified”: “2015-02-22T14:44:00+00:00”,
        “Status”: {
                “State”: < { “Enabled”, “Disabled”, “Offline”, “InTest”,
“Starting”, “Absent” } >
                “Health”: < {“OK”, “Warning”, “Critical” } >
        },
        “EnumStatus”: < { “Enumerated”, “NotEnumerated” } >
        “Location”: {
                 “Pod”: 1,
                 “Rack”: 1,
                 “Drawer”: 1
        },
        “Oem”: {},
        “Links”: {
                “RemoteTargets”: {
                        “@odata.id”: “/rest/v1/Services/1/Targets”
                },
                “LogicalDrives”: {
                        “@odata.id”: “/rest/v1/Services/1/LogicalDrives”
                },
                “Drives”: {
                        “@odata.id”: “/rest/v1/Services/1/Drives”
                },
                “ManagedBy”: [
```

```
                {
                        “@odata.id”: “/rest/v1/Managers/1”
                }
                ],
                “Oem” : {}
        }
}
```

4.3.3.2 Put

Operation is not allowed on this resource.

4.3.3.3 Patch

Operation is not allowed on this resource.

4.3.3.4 Post

Operation is not allowed on this resource.

4.3.3.5 Delete

Operation is not allowed on this resource.

4.4 Intel® Rack Scale Architecture remote target collection

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

Table 10 Intel® Rack Scale Architecture remote targets collection attributes

Name	Intel® Rack Scale Architecture remote target collection		
Type URI	/rest/v1/Services/{serviceID}/Targets		
Attribute	**Type**	**Required**	**Description**
Name	String	Yes	Name of collection.
Modified	String	Yes	The date-time stamp that the object was last modified.

4.4.1 Metadata

TBD.

4.4.2 JSON serialization

```
{
        “@odata.context”:       string,
        “@odata.id”:                                    string,
        “@odata.type”:                                  string,
        “Name”:                                         string,
        “Modified”:                                     string,
        “Links”: {
                “Members@odata.count”: number,
                “Members”: [
                {
                        “@odata.id”: string
                }
                ]
        }
}
```

4.4.3 Operations

4.4.3.1 Get

Request

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

Response

```
{
       “@odata.context”: “/rest/v1/$metadata#RSARemoteTargets”,
       “@odata.id”: “/rest/v1/Services/1/Targets”,
       “@odata.type”: “#RSARemoteTarget.1.0.0.RSARemoteTargetCollection”,
       “Name”: “Remote Targets Collection”,
       “Modified”: “2015-02-23T14:44:00+00:00”,
       “Links”: {
              “Members@odata.count”: 1,
              “Members”: [
               {
                     “@odata.id”: “/rest/v1/Services/1/Targets/1”
               }
              ]
       }
}
```

4.4.3.2 Put

Operation is not allowed on this resource.

4.4.3.3 Patch

Operation is not allowed on this resource.

4.4.3.4 Post

Request

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

       "@odata.id": "/rest/v1/Services/1/LogicalDrives/1"
                                                                }
                    }
                ],
                "TargetIQN": "iqn.2015-01.com.example:ceph-ubuntu14"
            }
        }
    ],
    "Initiator": [
        {
            "iSCSI": {
                "InitiatorIQN": "iqn.2015-01.com.example:fedora21"
            }
        }
    ]
}
```

Response

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

4.4.3.5 Delete

Operation is not allowed on this resource.

4.5 Intel® Rack Scale Architecture remote target

Intel® Rack Scale Architecture remote target resource – provides detailed information about a storage remote target.

Table 11 Intel® Rack Scale Architecture remote target attributes

<table>
<tr><td>Name</td><td colspan="3">Intel® Rack Scale Architecture remote target</td></tr>
<tr><td>Type URI</td><td colspan="3">/rest/v1/Services/{serviceId}/Targets/{targetID}</td></tr>
<tr><td>Attribute</td><td>Type</td><td>Required</td><td>Description</td></tr>
<tr><td>Id</td><td>String</td><td>Yes</td><td>Resource identifier</td></tr>
<tr><td>Name</td><td>String</td><td>Yes</td><td>Name of component.</td></tr>
<tr><td>Modified</td><td>String</td><td>Yes</td><td>The date-time stamp that the object was last modified.</td></tr>
<tr><td>Status</td><td>Object</td><td>Yes</td><td>Resource status represented by following object:
<table>
<tr><td>Name</td><td>Type</td><td>Required</td><td>Description</td></tr>
<tr><td>State</td><td>String</td><td>Yes</td><td>Known state of the resource.</td></tr>
<tr><td>Health</td><td>String,null</td><td>No</td><td>Overall health state from the view of this resource.</td></tr>
<tr><td>HealthRollup</td><td>String,null</td><td>No</td><td>Health state of this resource in the absence of its dependent resources.</td></tr>
</table></td></tr>
<tr><td>EnumStatus</td><td>String</td><td>Yes</td><td>Enumeration status of this component.</td></tr>
<tr><td>Type</td><td>String,null</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
<table>
<tr><td>Name</td><td>Type</td><td>Reqiured</td><td>Description</td></tr>
<tr><td>TargetLUN</td><td>Array</td><td>Yes</td><td>iSCSI target LUN and related logical drive URL</td></tr>
<tr><td>TargetIQN</td><td>String</td><td>Yes</td><td>iSCSI target IQN</td></tr>
<tr><td>TargetPortalIP</td><td>String</td><td>Yes</td><td>iSCSI target IP</td></tr>
<tr><td>TargetPortalPort</td><td>Number</td><td>YES</td><td>iSCSI target port number</td></tr>
</table></td></tr>
<tr><td>Oem</td><td>Object,null</td><td>No</td><td>OEM specific object.</td></tr>
<tr><td>Initiator</td><td>Object,null</td><td>No</td><td>iSCSI (or other type) addresses of initiators. If set to non-null value, this indicates the target is in use.</td></tr>
<tr><td>LogicalDrives</td><td>Array</td><td>Yes</td><td>Array of logical drives included in this target.</td></tr>
<tr><td>ManagedBy</td><td>Array</td><td>Yes</td><td>Array of managers for this remote target.</td></tr>
</table>

4.5.1 Metadata

4.5.2 JSON serialization

```
{
       “@odata.context”:                          string,
       “@odata.id”:                                     string,
       “@odata.type”:                                   string,
       “Id”:                                                  string,
       “Name”:                                          string,
       “Modified”:                                      string,
       “Status”: {
              “State”:                                          enum (“Enabled”,
“Disabled”, “Offline”, “InTest”, “Starting”, “Absent”)
              “Health”:                                 enum (“OK”, “Warning”,
“Critical”),
```

```
                “HealthRollup”:                         enum (“OK”, “Warning”,
“Critical”)
        },
        “EnumStatus”:                                   enum (“EnumStatus”,
“NotEnumStatus”)
        “Type”:                                         string,
        “Addresses”: [
                {
                        enum( “iSCSI”) :
                        {
                                “TargetLUN”: [
                                                        {
                                                                “LUN”:
        number,
                                                                “LogicalDrive”:
                                                                {
                                                                        “@odata.id”:
        string(URL)
                                                                }
                                                        }
                                ]
                                “TargetIQN”:            string,
                                “TargetPortalIP”:       string,
                                “TargetPortalPort”:     number
                        }
                }
        ],
        “Initiator”: [
                {
                        “iSCSI”:
                        {
                                “InitiatorIQN”:         string
                        }
                }
        ]
        “Oem”: {},
        “Links”: {
                “LogicalDrives”: [
                        {
                                “@odata.id”:            string
                        }
                ],
                “ManagedBy”: [
                        {
                                “@odata.id”:            string
                        }
                ],
                “Oem”:                                                  object
        }
}
```

4.5.3 Operations

4.5.3.1 Get

Request

```
GET /rest/v1/Services/1/Targets/1
Content-Type: applicaton/json
```

Response

```
{
       “@odata.context”:
“/rest/v1/$metadata#RSARemoteTargets/Links/Members/$entity”,
       “@odata.id”: “/rest/v1/Services/1/Targets/1”,
       “@odata.type”: “#RSARemoteTarget.1.0.0.RSARemoteTarget”,
       “Id”: “1”,
       “Name”: “RSA Remote Target”,
       “Modified”: “2015-02-22T14:44”,
       “Status”: {
              “State”: < { “Enabled”, “Disabled”, “Offline”, “InTest”,
“Starting”, “Absent” } >
              “Health”: < {“OK”, “Warning”, “Critical” } >
       },
       “EnumStatus”: < { “Enumerated”, “NotEnumerated” } >
       “Type”: “Network Storage”,
       “Address”: [
              {
               “iSCSI”:
               {
                     “TargetLUN”: [
                            {
                                                “LUN” : 1,
                                                “Drive”:
“/rest/v1/Services/1/LogicalDrives/1”
                            }
                     ],
                     “TargetIQN”: “iqn.2015-01.com.example:ceph-ubuntu14”,
                     “TargetPortalIP”: “10.102.44.54”,
                     “TargetPortalPort”: 3260
               }
              }
       ],
       “Initiator”: [
              {
               “iSCSI”:
               {
                     “InitiatorIQN”: “iqn.2015-01.com.example:fedora21”
               }
              }
       ]
       “Oem”: {},
       “Links”: {
              “LogicalDrives”: [
               {
                     “@odata.id”: “/rest/v1/Services/1/LogicalDrives/1”
               }
```

```
                ],
                “ManagedBy”: [
                {
                        “@odata.id”: “/rest/v1/Managers/1”
                }
                ],
                “Oem” : {}
        }
}
```

4.5.3.2 Put

Operation is not allowed on this resource.

4.5.3.3 Patch

Request

```
PATCH /rest/v1/Services/1/Targets/2
Content-Type: application/json
{
        “Addresses”: [
                {
                “iSCSI”:
                {
                        “TargetIQN”: “iqn.2015-01.com.example:ceph-ubuntu14”,
                }
                }
        ],
        “Initiator”: [
                {
                “iSCSI”:
                {
                        “InitiatorIQN”: “iqn.2015-01.com.example:fedora21”
                }
                }
        ]
}
```

Response

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

4.5.3.4 Post

Operation is not allowed on this resource.

4.5.3.5 Delete

Request:

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

Response:

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

4.6 Intel® Rack Scale Architecture logical drive collection

Intel® Rack Scale Architecture logical drive collection resource – provides collection of available storage logical drives (logical discs, partitions, volume groups, volumes, etc.).

Table 12 Intel® Rack Scale Architecture logical drive collection attributes

Name	Intel® Rack Scale Architecture logical drives		
Type URI	/rest/v1/Services/{serviceID}/LogicalDrives		
Attribute	**Type**	**Required**	**Description**
Name	String	Yes	Name of collection.
Modified	String	Yes	The date-time stamp that the object was last modified.

4.6.1 Metadata

4.6.2 JSON serialization

```
{
       “@odata.context”:      string,
       “@odata.id”:                                  string,
       “@odata.type”:                                string,
       “Name”:                                       string,
       “Modified”:                                   string,
       “Links”: {
              “Members@odata.count”:number,
              “Members”: [
               {
                     “@odata.id”: string
               }
              ]
       }
}
```

4.6.3 Operations

4.6.3.1 Get

Request

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

Response

```
{
       “@odata.context”: “/rest/v1/$metadata#RSALogicalDrives”,
       “@odata.id”: “/rest/v1/Services/1/LogicalDrives”,
       “@odata.type”: “#RSALogicalDrive.1.0.0.RSALogicalDriveCollection”,
       “Name”: “Logical Drives Collection”,
       “Modified”: “2015-02-23T14:44:00+00:00”,
       “Links”: {
              “Members@odata.count”: 1,
              “Members”: [
               {
                     “@odata.id”: “/rest/v1/Services/1/LogicalDrives/1”
               }
              ]
```

```
        }
}
```

4.6.3.2 Put

Operation is not allowed on this resource.

4.6.3.3 Patch

Operation is not allowed on this resource.

4.6.3.4 Post

Request

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

Note: LogicalDrives must contain single link to LogicalDrive which is Logical Volume Group (“Mode” = “LVG”). MasterDrive shall contain link to single LogicalDrive which is Logical Volume (“Mode” = “LV”) and which should be used as source for snapshot/clone.

Response:

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

4.6.3.5 Delete

Operation is not allowed on this resource.

4.7 Intel® Rack Scale Architecture logical drive

Intel® Rack Scale Architecture logical drive resource – provides detailed information about a single logical drive available in storage service.

Table 13 Intel® Rack Scale Architecture logical drive attributes

<table>
<tr><td>Name</td><td colspan="3">Intel® Rack Scale Architecture logical drive</td></tr>
<tr><td>Type URI</td><td colspan="3">/rest/v1/Services/{serviceId}/LogicalDrives/{driveID}</td></tr>
<tr><td>Attribute</td><td>Type</td><td>Required</td><td>Description</td></tr>
<tr><td>Id</td><td>String</td><td>Yes</td><td>Provides a description of this resource.</td></tr>
<tr><td>Name</td><td>String</td><td>Yes</td><td>Name of component.</td></tr>
<tr><td>Modified</td><td>String</td><td>Yes</td><td>The date-time stamp that the object was last modified.</td></tr>
<tr><td>Status</td><td>Object</td><td>Yes</td><td>Resource status represented by the following object:
<table>
<tr><td>Name</td><td>Type</td><td>Required</td><td>Description</td></tr>
<tr><td>State</td><td>String</td><td>Yes</td><td>Known state of the resource.</td></tr>
<tr><td>Health</td><td>String</td><td>No</td><td>Overall health state from the view of this resource.</td></tr>
<tr><td>HealthRollup</td><td>String</td><td>No</td><td>Health state of this resource in the absence of its dependent resources.</td></tr>
</table></td></tr>
<tr><td>Type</td><td>String,null</td><td>No</td><td>Type of volume</td></tr>
<tr><td>Mode</td><td>String(enum)</td><td>Yes</td><td>Mode defines how the logical drive is built on top of underlying physical/logical drives. The value shall correspond to the logical drive type.
Generic:
“JBOD”, “BlockDevice”, “LogicalDrive”
Logical Volume Manager:
“PV”, “LV”, “LVG”
CEPH:
“OSD”, “Pool”
RSTe, MDRAID:
“RAID0”, “RAID1”, “RAID10”, “RAID5”, “RAID6”, “RAID50”, “RAID60”</td></tr>
<tr><td>Protected</td><td>Bool</td><td>Yes</td><td>Write (modify) protection state.</td></tr>
<tr><td>Snapshot</td><td>Bool</td><td>No</td><td>Indicates if the logical drive should be created as a snapshot of the source master drive, or should be created as a full copy of an image from the source master drive.</td></tr>
<tr><td>AssetTag</td><td>String,null</td><td>No</td><td>Customer writable tag.</td></tr>
<tr><td>CapacityGB</td><td>Number</td><td>Yes</td><td>Drive capacity in GB.</td></tr>
<tr><td>Image</td><td>String,null</td><td>No</td><td>Image name.</td></tr>
<tr><td>Bootable</td><td>Bool</td><td>No</td><td>Specify if target is bootable.</td></tr>
<tr><td>LogicalDrives</td><td>Array</td><td>Yes</td><td>Array of links to logical drives.</td></tr>
<tr><td>PhysicalDrives</td><td>Array</td><td>Yes</td><td>Array of links to physical drives.</td></tr>
<tr><td>MasterDrive</td><td>Link</td><td>No</td><td>Link to master copy of this logical drive (if created by cloning).</td></tr>
<tr><td>UsedBy</td><td>Array</td><td>No</td><td>Array of links to other logical drive using this volume.</td></tr>
<tr><td>Targets</td><td>Array</td><td>No</td><td>Array of targets using this logical drive.</td></tr>
<tr><td>ManagedBy</td><td>Array</td><td>Yes</td><td>Array of links to managers of this volume..</td></tr>
</table>

4.7.1 Metadata

TBD.

4.7.2 JSON serialization

```
{
	“@odata.context”:                          string,
	“@odata.id”:                                    string,
	“@odata.type”:                                  string,
	“Id”:                                           string,
	“Name”:                                         string,
	“Modified”:                                     string,
	“Status”: {
		“State”:                                        enum (“Enabled”,
“Disabled”, “Offline”, “InTest”, “Starting”, “Absent”)
		“Health”:                               enum (“OK”, “Warning”,
“Critical”),
	},
	“Type”:                                         string,
	“Mode”:                                         enum (“PV”, “LV”,
“LVG”, “OSD”, “Pool”, “RAID0”, “RAID1”, “RAID10”, “RAID5”, “RAID6”, “RAID50”,
“RAID60”, “JBOD”, “BlockDevice”, “LogicalDrive”),
	“Protected”:                                    boolean,
	“Snapshot”:                                     boolean,
	“CapacityGB”:                           number,
	“AssetTag”:                                     string,
	“Image”:                                              string,
	“Bootable”:                                     boolean,
	“Oem”:                                  object,
	“Links”: {
		“LogicalDrives”: [
		{
			“@odata.id”:            string
		}
		],
		“PhysicalDrives”: [
		{
			“@odata.id”:            string
		}
		],
		“MasterDrive”: {
			“@odata.id”:            string
		},
		“UsedBy”:[
		{
			“@odata.id”:            string
		}
		],
		“Targets”:  [
		{
			“@odata.id”:            string
		}
		],
		“ManagedBy”: [
		{
			“@odata.id”:            string
		}
		],
		“Oem” :                                         object
```

```
        }
}
```

4.7.3 Operations

4.7.3.1 Get

Request

```
GET /rest/v1/Services/1/LogicalDrives/1
Content-Type: applicaton/json
```

Response

```
{
        “@odata.context”:
“/rest/v1/$metadata#RSALogicalDrives/Links/Members/$entity”,
        “@odata.id”: “/rest/v1/Services/1/LogicalDrives/1”,
        “@odata.type”: “#RSALogicalDrive.1.0.0.RSALogicalDrive”,
        “Id”: “1”,
        “Name”: “RSA Logical Drive”,
        “Modified”: “2015-02-23T23:23:23+00:00”,
        “Status”: {
                “State”: < { “Enabled”, “Disabled”, “Offline”, “InTest”,
“Starting”, “Absent” } >
                “Health”: < {“OK”, “Warning”, “Critical”}>
        },
        “Type”: “LVM”,
        “Mode”: “RAID0”,
        “Protected”: false,
        “AssetTag”: “CustomerWritableThing”,
        “CapacityGB”: 8096,
        “Image”: “Ubuntu 12.04.4LTS / Linux 3.11 / 2014.1”,
        “Bootable”: true,
        “Snapshot”: false,
        “Oem”: {},
        “Links”: {
                “LogicalDrives”: [
                ],
                “PhysicalDrives”: [
                 {
                        “@odata.id”: “/rest/v1/Services/1/Drives/2”
                 }
                ],
                “MasterDrive”: {
                        “@odata.id”: “/rest/v1/Services/1/LogicalDrives/12”
                },
                “UsedBy”: [
                 {
                        “@odata.id”: “/rest/v1/Services/1/LogicalDrives/14”
                 }
                ],
                “Targets”: [
                 {
                        “@odata.id”: “/rest/v1/Services/1/Targets/2”
                 }
                ],
```

```
                “ManagedBy”: [
                 {
                        “@odata.id”: “/rest/v1/Managers/1”
                 }
                ],
                “Oem”: {}
        }
}
```

4.7.3.2 Put

Operation is not allowed on this resource.

4.7.3.3 Patch

Operation is not allowed on this resource.

4.7.3.4 Post

Operation is not allowed on this resource.

4.7.3.5 Delete

Request

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

Response

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

4.8 Physical drive collection

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

Table 14 Physical drive collection attributes

Name	Physical drives		
Type URI	/rest/v1/Services/{serviceId}/Drives		
Attribute	**Type**	**Required**	**Description**
Name	String	Yes	Name of collection.
Modified	String	Yes	The date-time stamp that the object was last modified.

4.8.1 Metadata

TBD.

4.8.2 JSON serialization

```
{
        “@odata.context”:       string,
        “@odata.id”:                                    string,
        “@odata.type”:                                  string,
        “Name”:                                         string,
        “Modified”:                                     string,
        “Links”: {
                “Members@odata.count”: number,
                “Members”: [
                 {
                        “@odata.id”: string
```

```
                }
                ]
        }
}
```

4.8.3 Operations

4.8.3.1 Get

Request:

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

Response:

```
{
        “@odata.context”: “/rest/v1/$metadata#Drives”,
        “@odata.id”: “/rest/v1/Services/1/Drives”,
        “@odata.type”: #PhysicalDrive.1.0.0.PhysicalDrivesCollection”,
        “Name”: “Physical Drives Collection”,
        “Modified”: “2015-03-17T12:44:00+00:00”,
        “Links”: {
                “Members@odata.count”: 1,
                “Members”: [
                 {
                        “@odata.id”: “/rest/v1/Services/1/Drives/1”
                 }
                ]
        }
}
```

4.8.3.2 Put

Operation is not allowed on this resource.

4.8.3.3 Patch

Operation is not allowed on this resource.

4.8.3.4 Post

Operation is not allowed on this resource.

4.8.3.5 Delete

Operation is not allowed on this resource.

4.9 Physical drive

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

Table 15 Physical drive attributes

Name	**Physical drive**		
Type URI	**/rest/v1/Services/{serviceId}/Drives/{driveID}**		
Attribute	**Type**	**Mandatory**	**Description**
Id	String	Yes	Provides an ID of this resource.
Name	String	Yes	Name of module.
Modified	String	Yes	The date-time stamp that the object was last modified.
Interface	String (enum)	Yes	Controller interface.
CapacityGB	Number	Yes	Drive capacity in GB.
Type	String	No	Drive type.
RPM	Number	No	For traditional drive, rotation per minute.
Manufacturer	String	No	Drive manufacturer name.
Model	String	No	Drive model.
SerialNumber	String	No	Drive serial number.
Status	Object	Yes	Resource status represented by following object: **Name** / **Type** / **Required** / **Description** State / String / Yes / Known state of the resources. Health / String / No / Overall health state from the view of the resources. HealthRollup / String / No / Health state of this resource in the absence of its dependent resource.
Oem	Object	No	OEM defined object.
UsedBy	Array	No	Array of links to block devices build on this drive.

4.9.1 Metadata

4.9.2 JSON serialization

```
{
       “@odata.context”:                              string,
       “@odata.id”:                                         string,
       “@odata.type”:                                       string,
       “Id”:                                                string,
       “Name”:                                              string,
       “Modified”:                                          string,
       “Interface”:                                         enum (“PCIe”, “SAS”,
“SATA”)
       “CapacityGB”:                                  number,
       “Type”:                                              enum (“HDD”, “SSD”)
       “RPM”:                                         number,
       “Manufacturer”:                                      string,
       “Model”:                                                   string,
       “SerialNumber”:                                      string,
       “Status”: {
              “State”:                                                enum (“Enabled”,
“Disabled”, “Offline”, “InTest”, “Starting”, “Absent”)
```

```
                “Health”:                                   enum (“OK”, “Warning”,
“Critical”),
                “HealthRollup”:                     enum (“OK”, “Warning”,
“Critical”)
        },
        “Oem”:                                      object,
        “Links”: {
                “UsedBy”: {
                        “@odata.id”:                string
                },
                “ManagedBy”: [
                 {
                        “@odata.id”:                string
                 }
                ],
                “Oem”:                                      object
        }
}
```

4.9.3 Operations

4.9.3.1 Get

Request:

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

Response:

```
{
        “@odata.context”: “/rest/v1/$metadata#Drive/Links/Members/$entity”,
        “@odata.id”: “/rest/v1/Services/1/Drives/1”,
        “@odata.type”: “#PhysicalDrive.1.0.0.PhysicalDrive”,
        “Id”: “1”,
        “Name”: “Simple drive”
        “Modified”: “2015-03-17T12:44:00+00:00”,
        “Interface”: < { “PCIe”, “SAS”, “SATA” } >
        “CapacityGB”: 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”: “/rest/v1/Services/1/LogicalDrives/1”
                 }
                ],
```

```
                “ManagedBy”: [
                {
                        “@odata.id”: “/rest/v1/Managers/1”
                }
                ],
                “Oem”: {}
        }
}
```

4.9.3.2 Put

Operation is not allowed on this resource.

4.9.3.3 Patch

Operation is not allowed on this resource.

4.9.3.4 Post

Operation is not allowed on this resource.

4.9.3.5 Delete

Operation is not allowed on this resource.

4.10 Intel® Rack Scale Architecture storage manager collection

Intel® Rack Scale Architecture storage manager collection resource – provides collection of available storage managers.

Table 16 Intel® Rack Scale Architecture storage manager collection attributes

Name	Intel® Rack Scale Architecture storage manager collection		
Type URI	/rest/v1/Managers		
Attribute	**Type**	**Required**	**Description**
Name	String	Yes	Name of service collection.
Modified	String	Yes	The date-time stamp that the object was last modified.

4.10.1 Metadata

4.10.2 JSON serialization

```
{
        “@odata.context”:       string,
        “@odata.id”:                                    string,
        “@odata.type”:                                  string,
        “Name”:                                         string,
        “Modified”:                                     string,
        “Links”: {
                “Members@odata.count”: number,
                “Members”: [
                {
                        “@odata.id”: string
                }
                ]
        }
}
```

4.10.3 Operations

4.10.3.1 Get

Request

```
GET /rest/v1/Managers
Content-Type: application/json
```

Response

```
{
       “@odata.context”: “/rest/v1/$metadata#RSAStorageManagers”,
       “@odata.id”: “/rest/v1/Managers”,
       “@odata.type”: “#RSAStorageManager.1.0.0.RSAStorageManagers”,
       “Name”: “Storage Managers Collection”,
       “Modified”: “2015-02-23T14:44:00+00:00”,
       “Links”: {
              “Members@odata.count”: 1,
              “Members”: [
               {
                     “@odata.id”: “/rest/v1/Managers/1”
               }
              ]
       }
}
```

4.10.3.2 Put

Operation is not allowed on this resource.

4.10.3.3 Patch

Operation is not allowed on this resource.

4.10.3.4 Post

Operation is not allowed on this resource.

4.10.3.5 Delete

Operation is not allowed on this resource.

4.11 Intel® Rack Scale Architecture storage manager

Intel® Rack Scale Architecture storage manager resource – provides detailed information about a storage manager.

Table 17 Intel® Rack Scale Architecture storage manager attributes

Name	Intel® Rack Scale Architecture storage manager		
Type URI	/rest/v1/Managers/{managerID}		
Attribute	**Type**	**Mandatory**	**Description**
Id	String	Yes	Provides a ID of this resource.
Name	String	Yes	Name of resource.
Modified	String	Yes	The date-time stamp that the object was last modified.
ManagerType	String	Yes	Type of manager.

<table>
<tr><td>Name</td><td colspan="3">Intel® Rack Scale Architecture storage manager</td></tr>
<tr><td>Type URI</td><td colspan="3">/rest/v1/Managers/{managerID}</td></tr>
<tr><td>Attribute</td><td>Type</td><td>Mandatory</td><td>Description</td></tr>
<tr><td>Status</td><td>Object</td><td>Yes</td><td>Resource status represented by following object:
<table>
<tr><th>Name</th><th>Type</th><th>Mandatory</th><th>Description</th></tr>
<tr><td>State</td><td>String</td><td>Yes</td><td>Known state of the resource.</td></tr>
<tr><td>Health</td><td>String,null</td><td>No</td><td>Overall health state from the view of this resource.</td></tr>
<tr><td>HealthRollup</td><td>String,null</td><td>No</td><td>Health state of this resource in the absence of its dependent resources.</td></tr>
</table></td></tr>
<tr><td>Firmware</td><td>Object</td><td>No</td><td>Resource status represented by following object:
<table>
<tr><th>Name</th><th>Type</th><th>Mandatory</th><th>Description</th></tr>
<tr><td>Current</td><td>String</td><td>Yes</td><td>Current firmware version</td></tr>
</table></td></tr>
<tr><td>Oem</td><td>Object.null</td><td>No</td><td>OEM defined object</td></tr>
<tr><td>GraphicalConsole</td><td>Object</td><td>Yes</td><td>Resource status represented by following object:
<table>
<tr><th>Name</th><th>Type</th><th>Mandatory</th><th>Description</th></tr>
<tr><td>Enabled</td><td>Boolean</td><td>Yes</td><td>Console availability</td></tr>
<tr><td>MaxConcurrentSessions</td><td>Number</td><td>No</td><td>Number of sessions that can be established at the same time.</td></tr>
<tr><td>ConnectTypesSupported</td><td>Enum</td><td>No</td><td>Supported types of connection.</td></tr>
</table></td></tr>
<tr><td>SerialConsole</td><td>Object</td><td>Yes</td><td>Resource status represented by following object:
<table>
<tr><th>Name</th><th>Type</th><th>Mandatory</th><th>Description</th></tr>
<tr><td>Enabled</td><td>Boolean</td><td>Yes</td><td>Console availability.</td></tr>
<tr><td>MaxConcurrentSessions</td><td>Number</td><td>No</td><td>Number of sessions that can be established at the same time.</td></tr>
<tr><td>ConnectTypesSupported</td><td>Enum</td><td>No</td><td>Supported types of connection.</td></tr>
</table></td></tr>
<tr><td>CommandShell</td><td>Object</td><td>Yes</td><td>Resource status represented by following object:
<table>
<tr><th>Name</th><th>Type</th><th>Mandatory</th><th>Description</th></tr>
<tr><td>Enabled</td><td>Boolean</td><td>Yes</td><td>Console availability.</td></tr>
<tr><td>MaxConcurrentSessions</td><td>Number</td><td>No</td><td>Number of sessions that can be established at the same time.</td></tr>
<tr><td>ConnectTypesSupported</td><td>Enum</td><td>No</td><td>Supported types of connection.</td></tr>
</table></td></tr>
<tr><td>SimpleNetwork</td><td>Link</td><td>Yes</td><td>Link to collection of Network Interfaces.</td></tr>
<tr><td>NetworkService</td><td>Link</td><td>Yes</td><td>Link to Network Protocol object containing list of all protocols supported by this manager.</td></tr>
</table>

4.11.1 Metadata

TBD.

4.11.2 JSON serialization

```
{
       “@odata.context”:                          string,
       “@odata.id”:                                     string,
       “@odata.type”:                                   string,
       “Id”:                                            string,
       “Name”:                                          string,
       “Modified”:                                      string,
       “ManagerType”:                             enum (“ManagementController”,
“EnclosureManager”, “BMC”)
       “Status”: {
              “State”:                                          enum (“Enabled”,
“Disabled”, “Offline”, “InTest”, “Starting”, “Absent”)
              “Health”:                                 enum (“OK”, “Warning”,
“Critical”),
       },
       “Firmware”: {
              “Current”: {
               “VersionString”:                 string
              }
       },
       “GraphicalConsole”: {
              “Enabled”:                                boolean,
              “MaxConcurrentSessions” Number,
              “ConnectTypesSupported” enum (“KVMIP”, “Oem”)
       },
       “SerialConsole”: {
              “Enabled”:                                boolean,
              “MaxConcurrentSessions” Number,
              “ConnectTypesSupported” enum (“SSH”, “Telnet”, “IPMI”, “Oem”)
       },
       “CommandShell”: {
              “Enabled”:                                boolean,
              “MaxConcurrentSessions” Number,
              “ConnectTypesSupported” enum (“SSH”, “Telnet”, “IPMI”, “Oem”)
       },
       “Oem”:                                     object,
       “Links”: {
              “Services”: [
               {
                     “@odata.id”:               string
               }
              ],
              “RemoteTargets”: [
               {
                     “@odata.id”:               string
               }
              ],
              “LogicalDrives”: [
               {
                     “@odata.id”:               string
               }
              ],
              “NetworkService”: {
               “@odata.id”:                     string
```

```
                },
                "SimpleNetwork": {
                 "@odata.id":                    string
                },
                "Oem" : {}
        }
}
```

4.11.3 Operations

4.11.3.1 Get

Request

```
GET /rest/v1/Managers/1
```

Response

```
{
        "@odata.context":
"/rest/v1/$metadata#RSAStorageManagers/Links/Members/$entity",
        "@odata.id": "/rest/v1/Managers/1",
        "@odata.type": "#RSAStorageManager.1.0.0.RSAStorageManager",
        "Id": "1",
        "Name": "RSA Storage Manager",
        "Modified": "2015-02-22T14:44:00+00:00",
        "ManagerType": "ManagementController",
        "Status": {
                "State": < { "Enabled", "Disabled", "Offline", "InTest",
"Starting", "Absent" } >
                "Health": < {"OK", "Warning", "Critical" } >
        },
        "Firmware": {
                "Current": {
                 "VersionString": "1.1.2.0"
                }
        },
        "GraphicalConsole": {
                "Enabled": false,
        },
        "SerialConsole": {
                "Enabled": false,
        },
        "CommandShell": {
                "Enabled": false,
        },
        "Oem": {},
        "Links": {
                "Services": [
                 {
                        "@odata.id": "/rest/v1/Services/1"
                 }
                ],
                "RemoteTargets": [
                 {
                        "@odata.id": "/rest/v1/Services/1/Targets/1"
                 }
```

```
                ],
                "LogicalDrives": [
                {
                        "@odata.id": "/rest/v1/Services/1/LogicalDrives/1"
                }
                ],
                "NetworkService": {
                "@odata.id": "/rest/v1/Managers/1/NetworkService"
                },
                "SimpleNetwork": {
                "@odata.id": "/rest/v1/Managers/1/EthernetInterfaces"
                },
                "Oem" : {}
        }
}
```

4.11.3.2 Put

Operation is not allowed on this resource.

4.11.3.3 Patch

Operation is not allowed on this resource.

4.11.3.4 Post

Operation is not allowed on this resource.

4.11.3.5 Delete

Operation is not allowed on this resource.

4.12 Network service

Refer to the *Intel® Rack Scale Architecture PSME API Specification*.

4.13 Network interface collection

Refer to the *Intel® Rack Scale Architecture PSME API Specification*.

4.14 Network interface

Refer to the *Intel® Rack Scale Architecture PSME API Specification*.

§