

# Swordfish Scalable Storage Management API Specification

#### Version 1.0.6

**ABSTRACT:** The Swordfish Scalable Storage Management API defines a RESTful interface and a standardized data model to provide a scalable, customer-centric interface for managing storage and related data services.

Publication of this Working Draft for review and comment has been approved by the Scalable Storage Management Technical Work Group. This draft represents a 'best effort' attempt by the Scalable Storage Management Technical Work Group to reach preliminary consensus, and it may be updated, replaced, or made obsolete at any time. This document should not be used as reference material or cited as other than a 'work in progress.' Suggestions for revision should be directed to http://www.snia.org/feedback.

# **Working Draft**

Last Updated 13 February 2018

# USAGE

Copyright © 2018 SNIA. All rights reserved. All other trademarks or registered trademarks are the property of their respective owners.

The SNIA hereby grants permission for individuals to use this document for personal use only, and for corporations and other business entities to use this document for internal use only (including internal copying, distribution, and display) provided that:

- 1. Any text, diagram, chart, table or definition reproduced must be reproduced in its entirety with no alteration, and,
- 2. Any document, printed or electronic, in which material from this document (or any portion hereof) is reproduced must acknowledge the SNIA copyright on that material, and must credit the SNIA for granting permission for its reuse.

Other than as explicitly provided above, you may not make any commercial use of this document, or any portion thereof, or distribute this document to third parties. All rights not explicitly granted are expressly reserved to SNIA.

Permission to use this document for purposes other than those enumerated above may be requested by emailing tcmd@snia.org. Please include the identity of the requesting individual and/or company and a brief description of the purpose, nature, and scope of the requested use.

All code fragments, scripts, data tables, and sample code in this SNIA document are made available under the following license:

BSD 3-Clause Software License

Copyright © 2018, The Storage Networking Industry Association

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

- Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
- Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
- Neither the name of The Storage Networking Industry Association (SNIA) nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

### DISCLAIMER

The information contained in this publication is subject to change without notice. The SNIA makes no warranty of any kind with regard to this specification, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose. The SNIA shall not be liable for errors contained herein or for incidental or consequential damages in connection with the furnishing, performance, or use.

Suggestions for revisions should be directed to http://www.snia.org/feedback/.

Copyright © 2016-2018 Storage Networking Industry Association.

### **Revision History**

Date	Revision	Notes
19 September 2016	1.0.0	Initial Release
12 October 2016	1.0.1	Errata release for general clean up and formatting consistency
1 November 2016	1.0.2	Errata release to change multiple collections' types from collections (arrays) to ResourceCollections to conform to Redfish usage guidelines Change multiple collections' types from collections (arrays) to ResourceCollections to conform to Redfish usage guidelines and move NavigationProperties from Links section.
24 January 2017	1.0.3	Errata release to move complex types and enum to versioned namespace Schedule schema: add property json schema fix (Swordfish to swordfish) Specification enhancements, multiple areas User's guide: multiple new use cases and new document section
25 April 2017	1.0.4	Errata release with minor updates to schema: move FileShare collection, integrate DMTF and SNIA versions of Volume, fix incorrect property references and update descriptions. Update mockups. User's guide: Update cross-references.
3 October 2017	1.0.5	Errata release to include schema simplifications and other lessons from initial implementations, as well as general cleanup of specification.

Date	Revision	Notes
13	1.0.6	Updated Storage Systems model – added notion of Integrated Service Configuration in
February		addition to (and named) Hosted Service Configuration
2018		Added ComplexType common definition section
		Added/updated common Redfish property definitions
		Updates to conform to new SNIA templates.

# **Current Revision**

SNIA is actively engaged in expanding and refining the Swordfish specification. The most current revision can be found on the SNIA web site at https://www.snia.org/tech\_activities/standards/curr\_standards/swordfish.

Suggestion for changes or modifications to this document should be sent to SNIA at http://www.snia.org/feedback/.

## Contact SNIA

#### **SNIA Web Site**

Current SNIA practice is to make updates and other information available through their web site at http://www.snia.org.

## FEEDBACK AND INTERPRETATIONS

Requests for interpretation, suggestions for improvement and addenda, or defect reports are welcome. They should be sent via the SNIA Feedback Portal at http://www.snia.org/feedback/ or by mail to the Storage Networking Industry Association, 4360 ArrowsWest Drive, Colorado Springs, Colorado 80907, U.S.A.

### INTENDED AUDIENCE

This document is intended for use by individuals and companies engaged in storage management.

### VERSIONING POLICY

This document is versioned material. Versioned material shall have a three-level revision identifier, comprised of a version number 'v', a release number 'r' and an errata number 'e'. Future publications of this document are subject to specific constraints on the scope of change that is permissible from one revision to the next and the degree of interoperability and backward compatibility that should be assumed between products designed to this standard. This versioning policy applies to all SNIA Swordfish versioned materials.

Version Number: Versioned material having version number 'v' shall be backwards compatible with all of revisions of that material that have the same version number 'v'. There is no assurance of interoperability or backward compatibility between revisions of a versioned material with different version numbers.

Release Number: Versioned material with a version number 'v' and release number 'r' shall be backwards compatible with previous revisions of the material with the same version number, and a lower release number. A minor revision represents a technical change to existing content or an adjustment to the scope of the versioned material. Each minor revision causes the release number to be increased by one.

Errata Number: Versioned material having version number 'v', a release number 'r', and an errata number 'e' should be backwards compatible with previous revisions of the material with the same version number and release number ("errata versions"). An errata revision of versioned material is limited to minor corrections or clarifications of existing versioned material. An errata revision may be backwards incompatible, if the incompatibility is necessary for correct operation of implementations of the versioned material.

# About SNIA

The Storage Networking Industry Association (SNIA) is a non-profit organization made up of member companies spanning information technology. A globally recognized and trusted authority, SNIA's mission is to lead the storage industry in developing and promoting vendor-neutral architectures, standards and educational services that facilitate the efficient management, movement and security of information.

# Acknowledgements

The SNIA Scalable Storage Management Technical Work Group, which developed and reviewed work in progress, would like to recognize the significant contributions made by the following members:

Member	Representatives
Broadcom Limited	Richelle Ahlvers
Dell Inc.	Patrick Boyd George Ericson Michael Raineri Rich Roscoe
Hitachi Data Systems	Eric Hibbard
Hewlett Packard Enterprise	Jeff Hilland Chris Lionetti John Mendonca Doug Voigt
Inova Development Inc.	Karl Schopmeyer
Intel Corporation	Slawek Putyrski Paul von Behren
Microsemi	Anand Nagarjan
Microsoft Corporation	Hector Linares Jim Pinkerton Michael Pizzo Scott Seligman
NetApp, Inc.	Don Deel Nilesh Maheshwari
ScienceLogic	Patrick Strick
VMware, Inc.	Murali Rajagopal

### **Table of Contents**

Swordfish Scalable Storage Management API Specification	1
Version 1.0.6	1
Working Draft	1
Last Updated 13 February 2018	1
USAGE	2
DISCLAIMER	3
Revision History	3
Current Revision	4
Contact SNIA	4
FEEDBACK AND INTERPRETATIONS	4
	4
	4
About SNIA	6
Acknowledgements	6
Table of Contents	7
1 Abstract	9
2 Scope	0
	9
3 Normative References	9
3.1 Overview	9
3.2 Approved references	9
3.3 Reterences under development	10
3.4 Other references	10
4 Terms and Definitions	10
4.1 Overview 4.2 Swordfich specific Torms	10
4.2 Swordlish-specific Terms	11
4.5 Neterence to Neurisi remis	12
5 Swordfich Overview	12
5 1 Introduction	<u>۲</u> ۱ 12
5.2 Relation to Redfish	12
5.3 Storage Services	12
5.4 The ClassOfService resource	10
5.5 The Endpoint resource	17
5.6 The Endpoint Collection resource	17
5.7 The EndpointGroup resource	17
5.8 The EndpointGroupCollection resource	17
5.9 The StorageGroup resource	18
5.10 The StoragePool resource	18
5.11 The Volume resource	18
5.12 The FileSystem resource	18
6 Data model	18
6.1 Swordfish extensions to Redfish	18
6.2 Entity Sets	19
6.3 Addressing entities within a collection	19
6.4 Addressing members of a ResourceCollection	19
6.5 Schema repository	19
b.b Keterencing other schemas	19
/ Schema Considerations	20
7.1 Schema Introduction and Overview	20
7.2 Common schema attributes	20
7.3 Detault values and NULLABLE attributes	20
7.4 Common schema annotations	21
7.5 Schema repository 7.6 Poforonoing other schemas	21
	21

8 Implementation requirements	22
8.1 Security	22
8.2 General constraints	22
8.3 Discovering Swordfish resources	22
8.4 ClassOfService requirements	23
8.5 StorageSystems requirements	23
8.6 Entity Sets	23
8.7 Addressing entities within a collection	23
8.8 Addressing members of a ResourceCollection	23
9 Swordfish type definitions	23
9.1 Overview	23
9.2 Common properties	24
9.3 Complex Types	29
9.4 CapacitySources 1.1.0	29
9.5 ClassOfService 1.1.1	31
9.6 ClassOfServiceCollection	32
9.7 DataProtectionLineOfService 1.1.0	33
9.8 DataProtectionLoSCapabilities 1.1.1	35
9.9 DataSecurityLineOfService 1.0.0	37
9.10 DataSecurityLoSCapabilities 1.1.1	40
9.11 DataStorageLineOfService 1.1.0	43
9.12 DataStorageLoSCapabilities 1.1.1	45
9.13 DriveCollection	47
9.14 EndpointCollection	47
9.15 EndpointGroup 1.1.1	48
9.16 EndpointGroupCollection	49
9.17 FileShare 1.1.1	50
9.18 FileShareCollection	53
9.19 FileSystem 1.1.2	54
9.20 File System Collection	58
9.21 Hosted Storage Services	58
9.22 IOConnectivityLineOtService 1.1.0	58
9.23 IOConnectivityLoSCapabilities 1.1.1	60
9.24 IOPerformanceLineOiService 1.0.1	62
9.25 IOPenormanceLosCapabilities 1.1.1	03 65
9.20 StorageGroup 1.0.1	60
9.27 StorageGroupCollection	00
9.20 Storage Pool Collection	00 71
9.29 Storage Service 1.1.0	71 71
9.30 StorageServiceCollection	75 75
9.32 StorageSystemCollection	70 76
9.32 Olorageo yolem olirolitolitolitolitolitolitolitolitolitolit	70
9.34 VolumeCollection	20 82
	02

# 1 Abstract

The Swordfish Scalable Storage Management API ("Swordfish") defines a RESTful interface and a standardized data model to provide a scalable, customer-centric interface for managing storage and related data services. It extends the Redfish Scalable Platforms Management API Specification (DSP0266) from the DMTF.

# 2 Scope

Swordfish extends the Redfish Scalable Platforms Management API Specification to define a comprehensive, RESTful API for storage management that addresses block storage, file systems, object storage, and storage network infrastructure. It is centered around common operational and business concerns of storage management, including:

- Configuration and provisioning
- Monitoring
- Event and log management
- Performance assessment
- Diagnostics
- Fault detection and remediation
- Security
- Accounting and resource consumption

Swordfish's storage model is built around well-defined classes of service, which provide a means to map high-level business goals and objectives to specific, storage-based actions and requirements, in a clear and consistent way that can be applied uniformly across a broad spectrum of storage configurations and storage types (e.g., block storage, file systems, object stores). Common storage management functionality covered by class of service includes snapshots, replication, mapping and masking, and provisioning.

The Redfish specification provides the protocols and a core set of data models and behaviors for the management of systems. It defines the elements and behaviors that are mandatory for all Redfish implementations. Additionally it defines additional elements and behaviors that can be chosen by system vendors or manufacturers. The specifications also defines points at which OEM (system vendor) extensions can be provided by a given implementation. The specifications specifies normative requirements for Redfish Services and associated materials, such as Redfish Schema files. The Redfish specifications does not set requirements for Redfish clients, but will indicate what a Redfish client should do in order to access and utilize a Redfish Service successfully and effectively.

The Swordfish specification defines additional data models and behaviors for the management of storage systems and storage infrastructure. A Swordfish implementation shall conform to all requirements specified in the Redfish specifications.

Swordfish is suitable for a wide range of storage, from small-scale object drives, integrated RAID cards or RBODs providing storage services, to external disk arrays or file servers, to infrastructure providing storage services for converged, hyperscale and large scale cloud environments.

This document defines the Swordfish Scalable Storage Management API.

# 3 Normative References

### 3.1 Overview

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

### 3.2 Approved references

Table 1: Approved normative references					
Tag	Title (Version)	Author	URL		

Tag	Title (Version)	Author	URL
ISO- 8601	Data elements and interchange formats Information interchange Representation of dates and times Part 1: Basic rules	ISO/IEC	http://www.iso.org/iso/home/store/catalogue_ics/catalogue_detail_ics.htm? csnumber=70907
ISO- Direct	ISO/IEC Directives, Part 2 Principles and rules for the structure and drafting of ISO and IEC documents (Seventh Edition, 2016)	ISO/IEC	http://isotc.iso.org/livelink/livelink/ fetch/2000/2122/4230450/4230456/ ISO_IEC_Directives Part_2 Principles_and_rules_for_the structure_and_drafting_of_ISO_and_IEC documents2016%287th_edition%29 _PDF.pdf?nodeid=17667902&vernum=-2
Redfish	Redfish Scalable Platforms Management API Specification (v1.4.0)	DMTF	http://www.dmtf.org/sites/default/files/standards/documents/DSP0266_1.4.0.pdf
OData	Open Data Protocol (v. 4.0)	OASIS	https://www.oasis-open.org/standards#odatav4.0
RFC3986	Uniform Resource Identifier (URI): Generic Syntax (2005)	The Internet Society	http://www.rfc-base.org/txt/rfc-3986.txt
CSDL	Common Schema Definition Language (4.0)	OASIS	http://docs.oasis-open.org/odata/odata/v4.0/odata-v4.0-part3-csdl.html
ITIL	ITIL Glossary (2011)	ITIL	https://www.axelos.com/Corporate/media/ Files/Glossaries/ ITIL_2011_Glossary_GB- v1-0.pdf
Units	The Unified Code for Units of Measure (v2.0.1)	Regenstrief Institute, Inc. and the UCUM Organization	http://unitsofmeasure.org/trac
TLS	Transport Layer Security (TLS) Protocol Version 1.2	IETF	https://www.ietf.org/rfc/rfc5246.txt
SPC-4	SCSI Primary Commands - 4 (SPC-4) INCITS 513-2015	T10	http://www.techstreet.com/cgi-bin/joint.cgi/incits

## 3.3 References under development

Documents referenced in this section are under active development, and subject to revision or replacement at any time. In the event that the provided URL is no longer valid, refer to the related parent page to locate a replacement.

Table 2.	References	under	development
1 and 2.	Iterer ences	unuci	ucvelopment

Tag	Title (Version)	Author	URL	Parent Page
RedfishResource	Redfish Resource and Schema Guide	DMTF	http://www.dmtf.org/sites/default/files/standards/documents/DSP2046_2017.0a.pdf	http://www.dmtf.org/redfish

### 3.4 Other references

None defined in this document.

# 4 Terms and Definitions

### 4.1 Overview

In this document, some terms have a specific meaning beyond the normal English meaning. Those terms are defined in this clause. New terms, frequently used Redfish terms.

# 4.2 Swordfish-specific Terms

#### 4.2.1 Definitions

The following terms are used in this document.

	Table 2: Swordfish terms
Term	Definition
Entity	An element in a model that represents resources. The element may be either a type declaration or a model instance representing an instance of the resource.
Entity Instance	A model element that represents the information and behaviors of a particular instance of an entity.
Entity Type	A model element that specifies the structure, information and behaviors of an entity.
Instance	See Entity Instance.
OData service	A REST-based service that allows resources, identified using Uniform Resource Locators (URLs) and defined in a model, to be published and edited by Web clients using simple HTTP messages.
Metamodel	A model that defines the semantics for the construction of a model.
Model	A set of entities and the relationships between them that define the semantics, behavior and state of that set.
Resource	A named item of interest. The item may be be a collection of other items. A resource may be assigned a URI that allows it to receive and process messages. A particular instance of a resource is represented in the model by an entity instance. The type of a resource is represented in the model by an entity type.
Schema	A formal language representation of a model that conforms to a metamodel.
Service Document	The term Service Document is used to refer to a particular resource that is directly accessed via the OData service entry point. This resource serves as a starting point for locating and accessing the other resources and associated metadata that together make up an instance of a Swordfish Service. See also OData Service Document
Swordfish service	A service that is a Redfish service and that implements Swordfish extensions to the Redfish model that conform to the requirements of this document.

#### 4.2.2 Symbols and abbreviated terms

None in this document.

## 4.3 Reference to Redfish terms

Many terms in this document were originally defined in the Redfish Specification. Some of the more common terms and definitions are reproduced here, as an aid to the reader.

	Table 3: Redfish terms
Term	Definition (as of 24 January 2017)
OData	The Open Data Protocol, as defined in OData-Protocol.
OData Service Document	The name for a resource that provides information about the Service Root. The Service Document provides a standard format for enumerating the resources exposed by the service that enables generic hypermedia-driven OData clients to navigate to the resources of the Redfish Service. See also Service Document
Redfish Schema	The CSDL definition of Redfish resources.
Redfish service	An OData service that conforms to requirements of the Redfish specification.
Redfish Service Entry Point	Also referred to as "Service Entry Point". An URI through which a particular instance of a Redfish Service is accessed. A Redfish Service may have more than one Service Entry Point
Request	A message from a Client to a Server. It consists of a request line (which includes the Operation), request headers, an empty line and an optional message body.
Service Root	The term Service Root is used to refer to a particular resource that is directly accessed via the Redfish service entry point. This resource serves as a starting point for locating and accessing the other resources and associated metadata that together make up an instance of a Redfish Service.

### 4.4 Keywords (normative language terms)

This document conforms to ISO/IEC Directives, Part 2 for keyword usage. The most common terms and their intended meanings are summarized below.

Term(s)	Meaning
shall / shall not	Used to identify objectively verifiable criteria to be fulfilled and from which no deviation is permitted if compliance with the document is to be claimed
should / should not	Used to identify a suggested possible choice or course of action deemed to be particularly suitable without necessarily mentioning or excluding others
may / need not	Used to convey consent or liberty (or opportunity) to do something
can / cannot	Expected or conceivable material, physical or causal outcome
must	Identifies a constraint or obligation on the user of the document, typically due to one or more legal requirements or laws of nature, that is not stated as a provision of the standard <i>NB</i> : "must" is not an alternative for "shall", and should only be used for constraints that arise from outside this standard

# 5 Swordfish Overview

# 5.1 Introduction

The Swordfish Scalable Storage Management API ("Swordfish") defines a RESTful interface and a standardized data model to provide a scalable, customer-centric interface for managing storage and related data services. It extends the Redfish Scalable Platforms Management API Specification (DSP0266) from the DMTF.

# 5.2 Relation to Redfish



The Swordfish service interface extends the Redfish service interface. As such, a Swordfish service is a Redfish service and includes all required elements of the Redfish model.

Storage systems managed by the Swordfish storage service are located in the ServiceRoot (and ServiceContainer) via the StorageSystems resource collection. They are modeled using Redfish ComputerSystems. The physical infrastructure is modeled using Redfish Chassis.

Each Swordfish StorageService is located in the ServiceRoot (and ServiceContainer) via the StorageServices resource collection. All Swordfish defined instances are located through StorageService intances. A Swordfish management client may focus entirely on entities defined by the Swordfish schema.

The combined Redfish and Swordfish models defines information requirements and constraints on the values that are used as input or output of the operations supported by the Swordfish interface. The Swordfish interface relies on the operations specified by the OData REST protocol (#normative-references). Additional operations (known as Actions) are also defined by the model. The information content is defined by a schema specified using the Common Schema Definition Language (CSDL) (#normative-references) defined by the OData organization within OASIS (https://www.oasis-open.org/).

Each Swordfish service is accessed via well known URLs on the system supporting the Swordfish Service. Since Swordfish is an extension of Redfish, these URLs are the same as for accessing the Redfish defined aspects of the service.

#### 5.2.1 Storage System Models

Swordfish has been designed to support a broad range of configurations, requirements, size and complexity, as well as logical and physical architectures. As a result, there are two primary methods of modelling the storage system for a Swordfish implementation. Either model choice results in the same storage service, regardless of the storage system model.

1. Integrated Service Configuration

The storage systems managed by the Swordfish storage service are modeled using the Redfish Storage resource and StorageController resource collections. The



Storage resource is located in the Redfish hierarchy contained by ComputerSystems, typically running as ApplicationServers. The physical infrastructure is modeled using Redfish Chassis.

This configuration works well when the storage service is hosted by a storage resource within a computer system. An example of a Storage Service for an integrated service configuration is shown below.



2. Hosted Service Configuration

The storage systems managed by the Swordfish storage service are located in the ServiceRoot (and ServiceContainer) via the StorageSystems resource collection. They are modeled using Redfish ComputerSystems. The physical infrastructure is modeled using Redfish Chassis.



They are modeled using Redish Computer Systems. The physical initiastructure is modeled using Redish Chasses.

This configuration works well when the storage system hosts the storage service directly. An example of a Storage Service for a hosted service configuration is shown below.



#### 5.2.2 The ServiceRoot and ServiceContainer entities

#### 5.2.2.1 Overview

A GET of /redfish/v1 will return the ServiceRoot entity. A GET of /redfish/v1/odata will return the ServiceContainer instances that represents the OData service document. Each of these instances provides links to the remainder of the system.

The following are the elements utilized for Swordfish management.

- Systems: A reference to a Systems resource collection;
- Chassis: A reference to a Chasis resource collection;
- StorageSystems: A reference to a StorageSystems resource collection;
- StorageServices: A reference to a StorageServices resource collection.

#### 5.2.2.2 The Systems resource collection

A resource collection that references a set of ComputerSystem resources that each represents a general purpose application server. Each ComputerSystem resource will have an entry with the value of "ApplicationServer" in its HostingRoles property. A particular ComputerSystem resource can be in both the StorageSystems collection and the Systems collection.

#### 5.2.2.3 The Chassis resource collection

A resource collection that references a set of Chassis resources. Each Chassis resource represents physical containers, (i.e. sheet-metal confined spaces and logical zones like racks, enclosures, chassis and all other containers). Subsystems (like sensors), which operate outside of a system's data plane (meaning the resources are not accessible to software running on the system) are linked either directly or indirectly through this resource.

#### 5.2.2.4 The StorageSystems resource collection

A reference to a ComputerSystemCollection with members of type ComputerSystem that support storage services. These ComputerSystem resources represent systems that support Swordfish storage management services. They will have an entry with the value of "StorageServer" in their HostingRoles property. A resource collection that references a set of ComputerSystem resources that each represents a storage server. Each ComputerSystem resource will have an entry with the value of "StorageServer" in its HostingRoles property. A particular ComputerSystem resource can be a member of both the StorageSystems resource collection and the Systems resource collection.

#### 5.2.2.5 The StorageServices resource collection

A reference to a StorageServiceCollection with members that are of type StorageService. A resource collection that references a set of StorageService resources. Each StorageService resource represents the resources and behaviors supported by that storage service.

### 5.3 Storage Services

#### 5.3.1 The StorageService resource

The storage service is hosted on a storage system and exposes logical storage, associated resources and related functionality. Storage service resources can be found in the service root or service container via the StorageServices resource collection.

The following are the principal properties of StorageService that point to resources managed or defined by the storage service:

- ClassesOfService: A reference to a resource collection that specifies the supported ClassOfService resources.
- ClientEndpointGroups: A reference to a resource collection that collects ClientEndpointGroup resources.
- Drives: A reference to a resource collection that collects Drive resources used for storage.
- Enclosures: A reference to a resource collection that collects Chassis resources that contain storage related resources.
- Endponts: A reference to a resource collection that collectsEndpoint resources used to access storage.
- FileSystems: A reference to a resource collection that collects FileSystem resources.
- ServerEndpointGroups: A reference to a resource collection that collects ServerEndpointGroup resources.
- StorageGroups: A reference to a resource collection that collects StorageGroup resources.
- StoragePools: A reference to a resource collection that collects StorageGroup resources.
- Volumes: A reference to a resource collection that collects Volume resources.
- HostingSystem: A reference to the ComputerSystem instance that hosts this StorageService.

The following properties each include a set of attributes that each describe a range of capabilities that the storage service can support for a particular kind of service.

- DataProtectionLoSCapabilities: Replicas that protects data from loss.
- DataSecurityLoSCapabilities: Data security service level requirements. The data security characteristics enable the storage system to be used in an environment where compliance with an externally-specified security standard or standards is required. Examples of such standards include FIPS-140, HIPAA and PCI.
- DataStorageLoSCapabilities: Provisioning and access characteristics for storage of the data.
- IOConnectivityLoSCapabilities: IO connectivity requirements for access to the data
- IOPerformanceLoSCapabilities: IO performance requirements for access to the data.

In each of the above, not all combinations of attribute values are likely to be supported by the storage service.

Known supported combinations of attribute values are used to construct entries in the LinesOfService array property. Not all attributes of a line of service entry need be specified (i.e. some may be Null). If an attribute has no value, the storage service may choose any supported values when provisioning for that entry. Otherwise, the line of service attribute values specifies the kind or level of service to be provided.

#### 5.4 The ClassOfService resource

A class of service represents a choice of utility or warranty offered to customers by a service. (ITIL uses the term service option. See the Normative References.)

Each ClassOfService resource is a uniquely named description of the characteristics of one choice of utility or warranty for a service. Each ClassOfService is a description of the kind and quality of service to provide and is not intended to describe how the service provides that service.

Each ClassOfService is defined by an aggregation of lines of service. Supported lines of service are listed in the corresponding capabilities attributes of the storage service, (see above).

Currently defined lines of service are:

- Data Protection: Describes the characteristics of a replica that protects data from loss.
- Data Security: Describe data security service level requirements. The data security characteristics enable the storage system to be used in an environment where compliance with an externally-specified security standard or standards is required. Examples of such standards include FIPS-140, HIPAA and PCI.
- Data Storage: Describes provisioning and access characteristics for storage of the data.
- IO Connectivity: Describes IO connectivity requirements for access to the data.
- IO Performance: Describes the IO performance requirements for access to the data under a particular workload.

Some advertised ClassOfService resources are created by the service implementation. These are generally not changeable and are intrinsic to the implementation.

A service may support creation or modification of ClassOfService resources. All must be consistent with the capabilities of the service.

### 5.5 The Endpoint resource

Endpoints represent one end of a protocol specific connection that supports sending or receiving messages according to a particular protocol.

#### 5.6 The Endpoint Collection resource

The Endpoint Group is resource collection that references a set of Endpoint resources.

### 5.7 The EndpointGroup resource

The EndpointGroup is a resource that represents a set of Endpoint resources that have the same management characteristics and which will all have the same access state.

### 5.8 The EndpointGroupCollection resource

The EndpointGroupCollection is resource collection that references a set of EndpointGroup resources.

### 5.9 The StorageGroup resource

StorageGroups represent a set of volumes that are managed as a group with the same consistency requirements. The volumes of a storage group are collectively exposed or hidden to a set of clients.

The set of volumes is specified by the Volumes attribute, which is a resource collection that references volumes.

The set of client endpoints to which the volumes can be exposed is specified by the ClientEndpointGroupsattribute. The ClientEndpointGroup resource specifies a collection of EndpointGroup resources.

The set of server endpoints to which the volumes can be exposed is specified by the ServerEndpointGroupsattribute. The ServerEndpointGroup resource specifies a collection of EndpointGroup resources.

### 5.10 The StoragePool resource

The StoragePool resource represents unassigned storage capacity that can be used to produce storage volumes or other storage pools, which conform to one or more classes of service.

The following are the principal properties of Storage Pool that are used to identify resources provisioned or supported by the storage pool:

- ClassesOfService: A reference to a resource collection that specifies the set ClassOfService resources that can be specified when provisioning resources from the storage pool.
- AllocatedVolumes: A reference to a resource collection that collects Volume resources that have been provisioned from the storage pool.
- AllocatedPools: A reference to a resource collection that collects StoragePool resources that have been provisioned from the storage pool.
- DefaultClassOfService: A reference to the default ClassOfService resources used for provisioning from the storage pool.

### 5.11 The Volume resource

Volume resource represents a block-addressable container of storage, sometimes referred to as a "Logical Unit", "LU", "LUN", or "StorageVolume" in the storage industry. Volumes optionally adhere to a ClassOfService, which defines added functionality. Examples include:

- Access capabilities
- · Capacity and capacity sources
- Consumption tracking (e.g., LowSpaceWarningThresholdPercents)
- Replication details
- StorageGroup Information

### 5.12 The FileSystem resource

This FileSystem resource represents a file system. File systems represent file-addressable capacity that are conformant to a ClassOfService. Each FileSystem may contain a collection of FileShares that can be presented to hosts.

# 6 Data model

### 6.1 Swordfish extensions to Redfish

#### 6.1.1 Overview

Redfish has added two properties to the ServiceRoot that provide access to Swordfish resources.

The first is StorageSystems. This property references a collection of ComputerSystem resources that each support Swordfish functionality. Each such ComputerSystem shall have:

• an entry in its HostingRoles property with the value of StorageServer

• at least one entry in its StorageServices.Members property.

The second is StorageServices. This property references a collection of StorageService resources. It provides the client an efficient means to search across all StorageService resources, regardless of which ComputerSystem is supporting the service.

#### 6.1.2 Swordfish and Redfish specific OEM or vendor extensions

The Swordfish and Redfish models are extended by subclassing the OEM ComplexTypes that are defined in the Swordfish and Redfish schemas.

#### 6.1.3 OData specific OEM or vendor extensions

In addition to extending the Redfish model as described above. An OEM may extend the Redfish ServiceContainer by defining a new EntityContainer that extends the ServiceContainer found in the Redfish ServiceRoot\_v1.xml file, (see OData EntityContainer).

Note: This has the same semantics as subclassing in a typical object oriented environment.

An OEM extended implementation of the Swordfish service would access OEM extensions to EntityContainer via the service entry-point /redfish/v1/odata.

### 6.2 Entity Sets

The Swordfish model does not currently expose any explicitly defined entity sets. OData specifies that an entity set is defined for each NavigationProperty that is defined as a collection and that has the ContainsTarget attribute set to true. In all other cases, Swordfish assumes that an entity set is defined globally within the implementation for each entity type. This is effectively the same as if the entity sets were explicitly defined in the ServiceRoot entity container.

### 6.3 Addressing entities within a collection

An instance (entity) of an EntityType is uniquely identified within its entity set by its key. The URI for the reference may specify the key using one of two general strategies

- 1. OData recommends specifying the key value within parenthesis following the path segment that identifies the referencing entity set. (See clause "Canonical URL" in in OData)
- 2. Redfish common practice is to use an alternative form that adds a path segment having the value of the key following the path segment that identifies the referencing collection. (See clause "Alternate Key-as-Segment Syntax" in OData.)

A Swordfish implementation shall support both strategies.

### 6.4 Addressing members of a ResourceCollection

Redfish specifies that subclasses of ResourceCollection shall include a Members collection property (See clause "Collection resource response" in DSP0266)

Redfish allows a POST request to a ResourceCollection to be equivalent to the same POST request to the Members property of that ResourceCollection. For a particular ResourceCollection, if a Swordfish implementation supports either form, it shall support both.

It is common practice in Redfish to also eliminate the Members property from any request URI that navigates through a type hierarchy that includes a Member within a ResourceCollection. Care should be taken when defining and using a ResourceCollection subclass to not introduce ambiguities when an explicit reference to a Members property is dropped from a request URI.

### 6.5 Schema repository

The primary online source for the Swordfish schema shall be co-located on the DMTF schema site with the Redfish schema: http://redfish.dmtf.org/schemas/swordfish Developers may also download the schema as part of the Swordfish bundle from snia.org (refer to snia.org/swordfish for pointers to the bundle locations).

Implementations should refer either to the versions available on the dmtf.org site or to locally provided instances of the schema.

#### 6.6 Referencing other schemas

Swordfish directly reference the following Redfish schemas. - Chassis - ChassisCollection - ComputerSystem - ComputerSystemCollection - Drive - Endpoint - EthernetInterface - EventService - Location - RedfishExtensions - Redundancy - ResourceTask - Schedule - ServiceContainer - ServiceRoot

Other Redfish schema may be added by inference or directly to implementations. Examples are available in the Swordfish mockups.

# 7 Schema Considerations

### 7.1 Schema Introduction and Overview

A complete Swordfish implementation includes a Redfish-defined Service Root, is instantiated upon a StorageSystem/ComputerSystem, and runs on a Redfish Chassis. At the same time, a storage client may focus entirely on the storage schema instantiations and never interact with the Redfish portion of an implementation.

Swordfish is defined in terms of schema extended from Redfish which are defined below. This section provides additional definition and context for these schema.

### 7.2 Common schema attributes

The following table lists common schema attributes used in the definition of Swordfish, for details see CSDL

Name	Applies to	Description
Abstract	ComplexType, EntityType	If true, the entity may not be instantiated
BaseType	ComplexType, EntityType	Names an inherited element.
DefaultValue	Property	The value of a property if not explicitly set
Name	All	The name of the schema element
Nullable	NavigationProperty, Property	If false, the qualified property shall have a value. The default value is true. A navigation property whose Type attribute specifies a collection shall not specify Nullable=false, as the collection always exists, but may just be empty. <i>Note: Null is not itself a value, but is an indication of no value.</i>
Туре	Property	The type of the element

Table 5: Schema attributes

### 7.3 Default values and NULLABLE attributes

The interaction of Nullable and DefaultValue needs to be clearly understood by both implementers and client developers. The possible combinations of are summarized in Table 6. The table contains:

- Nullable: True, if a given property may be NULL
- DefaultValue: True, if a default value is provided for a given property
- Client: True, if a client value is supplied for a given property in a query or response
- - C: The client-provided value
  - D: The default value
  - Null: Null
  - I: Implementation defined
  - Error: Error state

#### Table 6: Default and Nullable Interaction

Nullable	DefaultValue	Client	Value
Т	Т	Т	С
Т	Т	F	D
Т	F	Т	С
Т	F	F	I or Null
F	Т	Т	С

Nullable	DefaultValue	Client	Value
F	Т	F	D
F	F	Т	С
F	F	F	I or Error

### 7.4 Common schema annotations

The following table lists common annotation used in the definition of Swordfish, for details see OData Capabilities Vocabulary, OData Core Vocabulary, OData Measures Vocabulary, and Redfish Extensions,

Name	Applies to	Description
AllowableValues	Parameter	The set of allowable values for a parameter
AutoExpand	NavigationProperty	If true, return expand the target element
AutoExpandReferences	NavigationProperty	If true, return references to the target element
ConformanceLevel	EntityContainer	Specifies OData conformance level
Deprecated	All	Specifies that the element may be removed in future major revisions, but shall continue to be supported as specified in the current revision.
Description	All	A brief description of a model element
LongDescription	All	A normative description of a model element
Maximum	Parameter, Property	Maximum value that an integer property or parameter may have
Minimum	Parameter, Property	Minimum value that an integer property or parameter may have
Pattern	Parameter, Property	Specifies a pattern that the value shall match
Permissions	NavigationProperty, Property	Access permission for the property.
Required	NavigationProperty, Property	If true, property is required to be supported by the service. The default is optional.
RequiredIOnCreate	NavigationProperty, Property	If true, property is required on creation
Unit	Property	The unit of measure for the value.

### 7.5 Schema repository

The primary online source for the Swordfish schema shall be co-located on the DMTF schema site with the Redfish schema: http://redfish.dmtf.org/schemas/swordfish Developers may also download the schema as part of the Swordfish bundle from snia.org (refer to snia.org/swordfish for pointers to the bundle locations).

Implementations should refer either to the versions available on the dmtf.org site or to locally provided instances of the schema.

## 7.6 Referencing other schemas

Swordfish directly references the following Redfish schemas:

<b>Redfish Schema</b>
Chassis
ChassisCollection
ComputerSystem
ComputerSystemCollection
Drive
Endpoint
EthernetInterface

Redfish Schema
EventService
Location
RedfishExtensions
Redundancy
ResourceTask
Schedule
ServiceContainer
ServiceRoot

Other Redfish schema may be added by inference or directly to implementations. Examples are available in the Swordfish mockups.

# 8 Implementation requirements

### 8.1 Security

This document generally adheres to the security requirements defined in the Redfish Specification. It extends the Redfish security model in one important way:

• Swordfish implementations shall implement TLS version 1.2 or greater.

### 8.2 General constraints

The Swordfish service interface extends the Redfish service interface. As such, a Swordfish service is a Redfish service and all required elements of the Redfish model shall be present in a Swordfish model.

Swordfish functionality shall not conflict with any previously defined Redfish functionality but it may add to or extend it, and it may add additional constraints on Redfish functionality.

Additionally, any functionality desired in a Swordfish implementation that is specified in Redfish shall follow the requirements as specified in the Redfish specification.

### 8.3 Discovering Swordfish resources

Each Swordfish implementation supports the following well-known URLs, as defined in Redfish. Specifically:

- /Redfish, which contains one or more version properties for the integrated Swordfish and Redfish implementation, starting with v1.
- /Redfish/vl, which addresses a ServiceRoot instance, which defines the Redfish default principal starting information for version 1 implementation of an integrated Redfish and Swordfish service. A GET operation to it shall retrieve the value of an instance of a ServiceRoot EntityType as defined in the ServiceRoot\_v1.xml file.
- /Redfish/vl/odata, which addresses a ServiceContainer instance, which defines OData conformant principal starting information for the same version 1 implementation of an integrated Redfish and Swordfish service. A GET operation shall retrieve the value of an instance of a ServiceContainer EntityContainer as defined in the ServiceRoot\_v1.xml file.

Note: Since the ServiceContainer is required to return an @odata.context value of /redfish/v1, all other elements accessed via it will be the same elements found via the ServiceRoot.

Note: A Swordfish service is a Redfish service with extensions to support storage management. No additional service entry-points are necessary.

Both the ServiceRoot and ServiceContainer contain a resource collection named Systems that lists ComputerSystem instances. A ComputerSystem instance that supports Swordfish defined services will have a value of "StorageServer" in an entry of its HostingRoles property.

The ServiceContainer additionally has a Service attribute that references the ServiceRoot resource.

Regardless of starting point, the property values of the ServiceRoot instance enable navigation to all other resources exposed by the Swordfish service.

#### 8.4 ClassOfService requirements

Each ClassOfService shall include at least one line of service. The providing server shall assure that the line of service values of a ClassOfService collectively represent a supported choice of service.

### 8.5 StorageSystems requirements

For Hosted Service Configurations, this property of the ServiceRoot references a collection of ComputerSystem resources that each support Swordfish functionality. Each ComputerSystem included in the StorageSystems entry in the ServiceRoot shall have:

- an entry in its HostingRoles property with the value of StorageServer
- at least one entry in its StorageServices.Members property.

For Integrated Service Configurations, the StorageSystems concept is realized through the StorageController resource. Each StorageController instantiated as a Swordfish StorageSystem shall have:

• at least one entry in its StorageController.Links property StorageServices collection identifying related StorageServices

### 8.6 Entity Sets

The Swordfish model does not currently expose any explicitly defined entity sets. OData specifies that an entity set is defined for each NavigationProperty that is defined as a collection and that has the ContainsTarget attribute set to true. In all other cases, Swordfish assumes that an entity set is defined globally within the implementation for each entity type. This is effectively the same as if the entity sets were explicitly defined in the ServiceRoot entity container.

## 8.7 Addressing entities within a collection

An instance (entity) of an EntityType is uniquely identified within its entity set by its key. The URI for the reference may specify the key using one of two general strategies

- 1. OData recommends specifying the key value within parenthesis following the path segment that identifies the referencing entity set. (See clause "Canonical URL" in in OData)
- 2. Redfish common practice is to use an alternative form that adds a path segment having the value of the key following the path segment that identifies the referencing collection. (See clause "Alternate Key-as-Segment Syntax" in OData.)

A Swordfish implementation shall support both strategies.

### 8.8 Addressing members of a ResourceCollection

Redfish specifies that subclasses of ResourceCollection shall include a Members collection property (See clause "Collection resource response" in DSP0266)

Redfish allows a POST request to a ResourceCollection to be equivalent to the same POST request to the Members property of that ResourceCollection. For a particular ResourceCollection, if a Swordfish implementation supports either form, it shall support both.

It is common practice in Redfish to also eliminate the Members property from any request URI that navigates through a type hierarchy that includes a Member within a ResourceCollection. Care should be taken when defining and using a ResourceCollection subclass to not introduce ambiguities when an explicit reference to a Members property is dropped from a request URI.

# 9 Swordfish type definitions

#### 9.1 Overview

The following sections define the schema and type definitions that make up a Swordfish implementation. Each data type or entity within the schema includes a description that defines its implementation requirements and their interaction

Swordfish SSM API Specification

### 9.2 Common properties

This section describes the properties (data fields) that share a common definition across many or all Redfish schema

#### 9.2.1 Properties defined for all Redfish schemas

The following properties are included in every Redfish schema, and therefore may be encountered in any Response payload. They are documented here to avoid repetition in the Resource Guide tables for each schema.

@odata.context	string	read- only	The @odata.context property is a URL to a metadata document with a fragment describing the data (typically rooted at the top-level singleton or collection). Technically the metadata document only has to define, or reference, any of the types that it directly uses, and different payloads could reference different metadata documents. However, since the @odata.context provides a root URL for resolving relative references (such as @odata.id's), we return the canonical metadata document.
@odata.id	string	read- only	The @odata.id property is a string that indicates the unique identifier of a resource.
@odata.type	string	read- only	The @odata.type property is a URL fragment that indicates the type of the resource.
Description	string	read- write	The Description property is used to convey a human-readable description of the resource.
Id	string	read- write	The Id property of a resource uniquely identifies the resource within the Resource Collection that contains it. The value of Id is unique within a Resource Collection.
Name	string	read- write	The Name property is used to convey a human-readable moniker for a resource. The type of the Name property is a string. The value of Name is NOT necessarily unique across resource instances within a Resource Collection.
Oem { }	object	read- write	This is the manufacturer/provider specific extension moniker used to divide the Oem object into sections. See the Resource schema for details on this property.

#### 9.2.2 Links

The Links property represents the links associated with the resource, as defined by that resource's schema definition. All associated reference properties defined for a resource are nested under the Links property. All directly referenced (subordinate) properties defined for a resource can be found from the root of the resource.

#### 9.2.3 Actions

The Actions property contains the actions supported by a resource.

#### 9.2.4 OEM

The OEM property is used for OEM extensions.

#### 9.2.5 RelatedItem

The RelatedItem property is represented as a set of links. The links point to a resource, or part of a resource, as defined by that resource's schema definition.

This representation is not intended to be a strong linking methodology like other references. Instead it is used to show a relationship between elements or sub-elements in disparate parts of the service. For example, Fans may be in one area of the system and Processors in another area of the system. It could be that the relationship between the two is not obvious. The RelatedItem property can be used to show that one is related to the other. In this example, it might indicate that a specific fan is cooling a specific processor.

#### 9.2.6 Status

The Status property is common to many Redfish schema.

Health	string (enum)	read- only	This represents the health state of this resource in the absence of its dependent resources. See Health in Property Details, below, for the possible values of this property.
HealthRollup	string (enum)	read- only	This represents the overall health state from the view of this resource. See HealthRollup in Property Details, below, for the possible values of this property.

Oem { }	object	read- write	Oem extension object.
State	string (enum)	read- only	This indicates the known state of the resource, such as if it is enabled. See State in Property Details, below, for the possible values of this property.

#### 9.2.6.1 Property details

#### Health:

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

string	Description
Critical	A critical condition exists that requires immediate attention.
ОК	Normal.
Warning	A condition exists that requires attention.

#### HealthRollup:

This represents the overall health state from the view of this resource.

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

#### State:

This indicates the known state of the resource, such as if it is enabled.

string	Description
Absent	This function or resource is not present or not detected.
Disabled	This function or resource has been disabled.
Enabled	This function or resource has been enabled.
InTest	This function or resource is undergoing testing.
Quiesced	The element is enabled but only processes a restricted set of commands.
StandbyOffline	This function or resource is enabled, but awaiting an external action to activate it.
StandbySpare	This function or resource is part of a redundancy set and is awaiting a failover or other external action to activate it.
Starting	This function or resource is starting.
UnavailableOffline	This function or resource is present but cannot be used.
Updating	The element is updating and may be unavailable or degraded.

#### 9.2.7 Location

AltitudeMeters	number	read-	The altitude of the resource in meters.
	(m)	only	
		(null)	
Info	string	read-	This indicates the location of the resource.
		only	
		(null)	
InfoFormat	string	read-	This represents the format of the Info property.
		only	
		(null)	
Latitude	number	read-	The latitude resource.
	(deg)	only	
		(null)	
Latitude	number (deg)	read- only (null)	The latitude resource.

Longitude	number (deg)	read- only (null)	The longitude resource in degrees.
Oem { }	object	read- write	Oem extension object. See the <b>Resource</b> schema for details on this property.
PartLocation {	object	read- write	Postal address of the addressed resource.
LocationOrdinalValue	number	read- only (null)	The number that represents the location of the part. If LocationType is slot and this unit is in slot 2 then the LocationOrdinalValue will be 2.
LocationType	string (enum)	read- only	The type of location of the part, such as slot, bay, socket and slot. See LocationType in Property Details, below, for the possible values of this property.
Orientation	string (enum)	read- only	The orientation for the ordering of the slot enumeration used by the LocationOrdinalValue property. See Orientation in Property Details, below, for the possible values of this property.
Reference	string (enum)	read- only	The reference point for the part location. This is used to give guidance as to the general location of the part. See <b>Reference</b> in Property Details, below, for the possible values of this property.
ServiceLabel }	string	read- only (null)	This is the label of the part location, such as a silk screened name or a printed label.
Placement {	object	read- write	A place within the addressed location.
Rack	string	read- write (null)	Name of a rack location within a row.
RackOffset	number	read- write (null)	Vertical location of the item in terms of RackOffsetUnits.
RackOffsetUnits	string (enum)	read- write	The type of Rack Units in use. See RackOffsetUnits in Property Details, below, for the possible values of this property.
Row }	string	read- write (null)	Name of row.
PostalAddress {	object	read- write	Postal address of the addressed resource.
AdditionalCode	string	read- write (null)	Additional code.
Building	string	read- write (null)	Name of the building.
City	string	read- write (null)	City, township, or shi (JP).
Community	string	read- write (null)	Postal community name.
Country	string	read- write (null)	Country.
District	string	read- write (null)	A county, parish, gun (JP), or district (IN).
Division	string	read- write (null)	City division, borough, dity district, ward, chou (JP).

		write	1001.
GPSCoords	string	read- write	The GPS coordinates of the part.
HouseNumber	number	(null)	Numeric parties of house number
HouseMulliber	number	write (null)	Numeric portion of nouse number.
HouseNumberSuffix	string	read- write	House number suffix.
Landmark	string	(null) read- write (null)	Landmark.
LeadingStreetDirection	string	read- write (null)	A leading street direction.
Location	string	read- write (null)	Room designation or other additional info.
Name	string	read- write (null)	Name.
Neighborhood	string	read- write (null)	Neighborhood or block.
POBox	string	read- write (null)	Post office box (P.O. box).
PlaceType	string	read- write (null)	A description of the type of place that is addressed.
PostalCode	string	read- write (null)	Postal code (or zip code).
Road	string	read- write (null)	A primary road or street.
RoadBranch	string	read- write (null)	Road branch.
RoadPostModifier	string	read- write (null)	Road post-modifier.
RoadPreModifier	string	read- write (null)	Road pre-modifier.
RoadSection	string	read- write (null)	Road Section.
RoadSubBranch	string	read- write (null)	Road sub branch.
Room	string	read- write (null)	Name or number of the room.

Seat	string	read- write (null)	Seat (desk, cubicle, workstation).
Street	string	read- write (null)	Street name.
StreetSuffix	string	read- write (null)	Avenue, Platz, Street, Circle.
Territory	string	read- write (null)	A top-level subdivision within a country.
TrailingStreetSuffix	string	read- write (null)	A trailing street suffix.
Unit }	string	read- write (null)	Name or number of the unit (apartment, suite).

#### 9.2.7.1 Property details

#### LocationType:

The type of location of the part, such as slot, bay, socket and slot.

string	Description
Bay	Defines a bay as the type of location.
Connector	Defines a connector as the type of location.
Slot	Defines a slot as the type of location.
Socket	Defines a socket as the type of location.

#### **Orientation:**

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

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

#### RackOffsetUnits:

The type of Rack Units in use.

string	Description
EIA_310	Defines a rack unit as being equal to 1.75 in (44.45 mm).
OpenU	Defines a rack unit as being equal to 48 mm (1.89 in).

#### **Reference:**

The reference point for the part location. This is used to give guidance as to the general location of the part.

string	Description
Bottom	Defines the part as being in the bottom of the unit.
Front	Defines the part as being in the front of the unit.
Left	Defines the part as being in the left of the unit.

string	Description
Middle	Defines the part as being in the middle of the unit.
Rear	Defines the part as being in the rear of the unit.
Right	Defines the part as being in the right of the unit.
Тор	Defines the part as being in the top of the unit.

## 9.3 Complex Types

The following table defines a number of complex types that are used frequently in Swordfish schema. Multiple references to each complex type may be seen in later sections. For detailed definitions and properties contained in each complex type, refer to the schema definitions as referenced in the table.

Capacity {}	This composition may be used to represent storage capacity. The sum of the values in Data, Metadata, and Snapshot shall be equal to the total capacity for the datastore. See the Capacity.v1_1_0 schema for details.
CapacityInfo {}	This composition may be used to represent the utilization of storage capacity. See the Capacity.v1_1_0 schema for details.
IOStatistics {}	See the IOStatistics.v1_0_1 schema for details on this property.
IOWorkload {}	This structure may be used to describe an IO Workload. See the IOPerformanceLoSCapabilities.v1_0_0 schema for details.
IOWorkloadComponent{}	This structure may be used to describe a component of an IO workload. See the IOPerformanceLoSCapabilities.v1_1_1 schema for details.
ReplicaInfo {}	The value shall define the characteristics of a replica. See the StorageReplicaInfo.v1_1_0 schema for details.
ReplicaRequest {}	See the DataProtectionLineOfService.v1_1_0 schema for details.
Schedule {}	Schedule a series of occurrences. See the Schedule.v1_1_0 schema for details.

## 9.4 CapacitySources 1.1.0

This composition may be used to represent storage capacity. The sum of the values in Data, Metadata, and Snapshot shall be equal to the total capacity for the data store.

Description	string	This object represents the Description property. All values for resources described by this schema shall comply to the requirements as described in the Redfish specification
	read- only (null)	requirements as described in the reduish specification.
Id	string	This property represents an identifier for the resource. All values for resources described by this schema shall comply to the requirements as described in the Redfish specification.
	read- only	
Name	string read- only	This object represents the Name property. All values for resources described by this schema shall comply to the requirements as described in the Redfish specification. The value of this string shall be of the format for the reserved word <i>Name</i> .
Oem {}	object read- write	The value of this string shall be of the format for the reserved word <i>Oem</i> . See the <i>Resource</i> schema for details on this property.
ProvidedCapacity {	object read- write (null)	The value shall be the amount of space that has been provided from the ProvidingDrives, ProvidingVolumes, ProvidingMemory or ProvidingPools.
@odata.id	string read- only	Link to another Capacity resource.
}		

ProvidedClassOfService {	object	The value shall reference the provided ClassOfService from the ProvidingDrives, ProvidingVolumes,
		$Providing Memory \ Chunks, Providing Memory \ or \ Providing Pools. \ See \ the \ Class Of Service \ schema \ for \ details \ on \ this \ property.$
	read-	
	write	
	(null)	
@odata.id	string	Link to a ClassOfService resource. See the Links section and the <i>ClassOfService</i> schema for details.
	only	
1	onig	
providence (	-hi-st	The second the second second second states and the second s
ProvidingDrives {	object	If present, the value shall be a reference to a contributing drive or drives. Contains a link to a resource.
	read-	
	write	
	(null)	
@odata.id	string	Link to Collection of <i>Drive</i> . See the Drive schema for details.
	read-	
	only	
}		
ProvidingMemory {	object	If present, the value shall be a reference to the contributing memory.
	7	
	read-	
	(mull)	
Codata id	string	The value of this property shall be the unique identifier for the resource and it shall be of the form defined in the Podfich
@ouata.iu	string	specification.
	read-	
	only	
}		
ProvidingMemoryChunks	object	If present, the value shall be a reference to the contributing memory chunks.
{		
	read-	
	(mull)	
0-1-t- <sup>:1</sup>	(1111)	
@odata.id	string	The value of this property shall be the unique identifier for the resource and it shall be of the form defined in the Redhsh specification
	read-	opecandetoni
	only	
}		
ProvidingPools {	object	If present, the value shall be a reference to a contributing storage pool or storage pools. Contains a link to a resource.
	read-	
	write	
	(null)	
@odata.id	string	Link to Collection of <i>StoragePool</i> . See the StoragePool schema for details.
	read-	
	only	
}		
ProvidingVolumes (	object	If present, the value shall be a reference to a contributing volume or volumes. Contains a link to a resource
- To training to training (	00,000	
	read-	
	write	
	(null)	

@odata.id	string	Link to Collection of <i>Volume</i> . See the Volume schema for details.					
	read-						
	only						
}							

# 9.5 ClassOfService 1.1.1

This resource shall define a service option composed of one or more line of service entities. ITIL defines a service option as a choice of utility or warranty for a service.

read- write     read- write       ClassOfServiceVersion     fits     The version describing the creation or last modification of this service option specification. The string representing the version thall be in the form. M * <sup>2</sup> * N + '' * U Where M * The major version (in numeric form). N - The minor write       DataProtectionLinesOfService ( <i>x1,x1+b</i> ){{ read- write     array hall be present for each replication service options. Within a class of service, one data protection service options. read- write       @eodata.id     string read- write     Link to a DataProtectionLineOfService resource. See the Links section and the DataProtectionLineOfService schema for details.       PlasSecurityLinesOfService ( <i>w1,x1+b</i> ){{ read- write     The value shall be a set of data security service options.       ( <i>w1,x1+b</i> ){{ read- write     Inik to a DataProtectionLineOfService resource. See the Links section and the DataProtectionLineOfService schema for details.       1)     the value shall be a set of data security service options.       ( <i>w1,x1+b</i> ){{ read- write     The value shall be a set of data security service options.       1)     the value shall be a set of data protection service options.       ( <i>w1,x1+b</i> ){{ read- write     The value shall be a set of data protection service options.       1)     that to a DataSecurityLineOfService schema for details.     The value shall be a set of data protection service options.       ( <i>w1,x1+b</i>	<b>Actions</b> ( <i>v</i> 1.1+) {}	object	The Actions property shall contain the available actions for this resource.
Procession     From Procession       ClassOfService/Version     string read- version talls be in the form. M+* + N + 1'+ U Where. M - The major version (in numeric form), N - The minor version (in numeric form), U - The update (e.g. errata or patch in numeric form), N - The minor version (in numeric form), U - The update (e.g. errata or patch in numeric form), N - The minor version (in numeric form), U - The update (e.g. errata or patch in numeric form),       DataProtectionLinesOfService (uri.i.i+)[{     Array in the value shall be a set of data protection service options. Within a class of service, one data protection service option shall be present for each replication session.       @odata.id     array in the value shall be a set of data security service options.       DataSecurityLinesOfService (uri.i+)[{     The value shall be a set of data security service options.       @odata.id     string in the value shall be a set of data security service options.       @odata.id     string in the value shall be a set of data security service options.       @odata.id     string in the value shall be a set of data protection service options.       @odata.id     string in the value shall be a set of data protection service options.       @odata.id     string in the value shall be a set of data protection service options.       @odata.id     array in the value shall be a set of data protection service options.       @odata.id     array in the value shall be a set of data protection service options. <t< td=""><th></th><td>read-</td><td></td></t<>		read-	
ClassOfServiceVersion     string read- write     The version doscribing the evention or last modification of this service option specification. The string representing the version shall be in the form: M + ", + N + ", + U Where: M - The major version (in numeric form). N - The minor version (in numeric form). U - The update (e.g., errata or patch in numeric form).       DataProtectionLineOfService (m, J, +) { ( write     array write     The value shall be a set of data protection service options. Within a class of service, one data protection service option shall be present for each replication session.       @codata.id     string read- write     Link to a DataProtectionLineOfService resource. See the Links section and the DataProtectionLineOfService schema for details.       ?     Link to a DataProtectionLineOfService resource. See the Links section and the DataSecurityLineOfService schema for details.       @codata.id     string read- write     The value shall be a set of data security service options.       ?     Link to a DataSecurityLineOfService resource. See the Links section and the DataSecurityLineOfService schema for details.       ?     The value shall be a set of data protection service options.       ?     The value shall be a set of data protection service options.       ?     The value shall be a set of data protection service options.       ?     The value shall be a set of data protection service options.       ?     The value shall be a set of data protection service options.		write	
Image: section shall be in the form: M + V + N + V + V + V + V + V + V + V + V	ClassOfServiceVersion	string	The version describing the creation or last modification of this service option specification. The string representing the
read- (nuD)   version (in numeric form). U - The update (e.g. errat uo patch in numeric form).     DataProtectionLinesOfService (nuD)   array hava lue shall be a set of data protection service options. Within a class of service, one data protection service option shall be present for each replication session.     @codata.id   read- out   Inits to a DataProtectionLineOfService resource. See the Links section and the DataProtectionLineOfService schema for details.     1   T   Inits to a DataProtectionLineOfService resource. See the Links section and the DataProtectionLineOfService schema for details.     (url J J +) [   T   The value shall be a set of data security service options.     (url J J +) [   read- out   Inits to a DataSecurityLineOfService resource. See the Links section and the DataSecurityLineOfService schema for details.     (url J J +) [   read- out   The value shall be a set of data security service options.     (url J +) [   read- out   The value shall be a set of data protection service options.     (url J +) [   read- out   The value shall be a set of data protection service options.     (url J +) [   read- out   The value shall be a set of data protection service options.     (url J +) [   array   The value shall be a set of data protection service options.     (url J + ) [   read- out   The value shall be a set of data protection service options. <th></th> <td></td> <td>version shall be in the form: M + <math>'</math>.' + N + <math>'</math>.' + U Where: M - The major version (in numeric form). N - The minor</td>			version shall be in the form: M + $'$ .' + N + $'$ .' + U Where: M - The major version (in numeric form). N - The minor
uring     uring       OutaProtectionLinesOfService (uril,i+)[{ uring     array ind     The value shall be a set of data protection service options. Within a class of service, one data protection service option shall be present for each replication session.       (uril,i+)[{ uring     ind     Link to a DataProtectionLineOfService resource. See the Links section and the DataProtectionLineOfService schema for details.       )]     Image: transmission of the section interference in the section interference interfer		read- .,	version (in numeric form). U - The update (e.g. errata or patch in numeric form).
DataProtectionLinesOfService (u:J.t+){{     Tree value shall be aset of data protection service options. Within a class of service, one data protection service option shall be present for each replication session.       @ odata.id     string (v:J.t+){{     Link to a DataProtectionLineOfService resource. See the Links section and the DataProtectionLineOfService schema for details.       PataSecurityLinesOfService (v:J.t+){{     array (v:d.t+)}     Link to a DataSecurityLineOfService schema for details.       @ odata.id     string (v:d.t+){{     Link to a DataSecurityLineOfService read- uvrite     Link to a DataSecurityLineOfService schema for details.       @ odata.id     string (v:d.t+){{     Link to a DataSecurityLineOfService resource. See the Links section and the DataSecurityLineOfService schema for details.       11     array (v:d.t+){{     The value shall be a set of data protection service options.       read- uvrite     array (v:d.t+){{     The value shall be a set of data protection service options.       12     DataSecurityLineOfService (v:d.t+){{     array (v:d.t+){{     The value shall be a set of data protection service options.       13     array (v:d.t+){{     The value shall be a set of data protection service options.     array (details.       14     array (v:d.t+){{     The value shall be a set of locas protection service options.     array (details.       15     array (		(null)	
(u1.1.1)[{     initial be present for each replication session.       read- unite     read- only       @odata.id     String read- only     Link to a DataProtectionLineO/Service resource. See the Links section and the DataProtectionLineO/Service schema for details.       }1     T     DataSecurityLineSOService (u1.1.1)[{     The value shall be a set of data security service options.       @odata.id     string read- only     The value shall be a set of data security service options.       @odata.id     string read- only     Link to a DataSecurityLineO/Service resource. See the Links section and the DataSecurityLineO/Service schema for details.       @odata.id     string read- only     Link to a DataSecurityLineO/Service resource. See the Links section and the DataSecurityLineO/Service schema for details.       }1     The value shall be a set of data protection service options.       (u1.1.1)[     read- only       }1     The value shall be a set of data protection service options.       @urite     read- only       }1     Link to a DataStorageLineO/Service resource. See the Links section and the DataStorageLineO/Service schema for details.       @urite     Link to a DataStorageLineO/Service resource. See the Links section and the DataStorageLineO/Service schema for details.       ?urite     Inits objeet represents the Description property. All valaes for r	DataProtectionLinesOfService	array	The value shall be a set of data protection service options. Within a class of service, one data protection service option
index     index     index       @odata.id     string for details.     link to a DataProtectionLineOService resource. See the Links section and the DataProtectionLineOJService schema for details.       Prode     read     read       write     array     The value shall be a set of data security service options.       (write)     read     read       write     read     read       write     freed     freed	(v1.1.1+) [ {	, in the second s	shall be present for each replication session.
wire     wire       @ odata.id     Is has to a DataProtectionLineOIService resource. See the Links section and the DataProtectionLineOIService schema for details.       read- inf     read- inf       DataSecurityLineSOPService (w1.1.1+)[{     array inf       @ odata.id     array inf       BataSecurityLineSOPService (w1.1.1+)[{     array inf       @ odata.id     array inf       J     Link to a DataSecurityLineOIService resource. See the Links section and the DataSecurityLineOIService schema for details.       J     the value shall be a set of data protection service options.       (w1.1.1+)[{     read- ing       J     the value shall be a set of data protection service options.       (w1.1.1+)[{     read- ing       J     the value shall be a set of data protection service options.       (w1.1.1+)[{     read- ing       J     the value shall be a set of data protection service options.       (w1.1.1+)[{     this to a DataStorageLineOIService schema for details.       indication     this to a DataStorageLineOIService resource. See the Links section and the DataStorageLineOIService schema for details.       indication     this to a DataStorageLineOIService resource. See the Links section and the DataStorageLineOIService schema for details.		read-	
@odata.id   string   Link to a DataProtectionLineOService resource. See the Links section and the DataProtectionLineOService schema for details.     1)   read- only   read- only   read- only     DataSecurityLineoOService (ct1.1+)[{   read- only   The value shall be a set of data security service options.     @odata.id   string   Link to a DataSecurityLineOService resource. See the Links section and the DataSecurityLineOService schema for details.     @odata.id   string   Link to a DataSecurityLineOService resource. See the Links section and the DataSecurityLineOService schema for details.     }   free data   string   the value shall be a set of data protection service options.     (v1.1+)[{   read- ong   read- ong   read- ong     }   free value shall be a set of data protection service options.     (v1.1+)[{   read- ong   read- ong     }   free value shall be a set of data protection service options.     (v1.1+)[{   read- ong   read- ong     }   free value shall be a set of Discreteresource. See the Links section and the DataStorageLineOService schema for details.     }   read- ong   read- ong     }   free value shall be a set of Discreteresource. See the Links section and the DataStorageLineOService schema for details.		write	
read- only     read- inht       )]     I       DataSecurityLinesOService (vr.1.t+)[{     The value shall be a set of data security service options. write       @odata.id     Fread- invite       @odata.id     string ored       Ibit to a DataSecurityLineOfService resource. See the Links section and the DataSecurityLineOfService schema for details.       PataStorageLineSOFService (vr.1.t+)[{     The value shall be a set of data protection service options.       (vr.1.t+)[{     read- onty       PataStorageLineSOFService (vr.1.t+)[{     Array read- intervice       PataStorageLineSOFService (vr.1.t+)[{     Ibit to a DataStorageLineOfService resource. See the Links section and the DataStorageLineOfService schema for details.       PataStorageLineSOFService (vr.1.t+)[{     Ibit to a DataStorageLineOfService resource. See the Links section and the DataStorageLineOfService schema for details.       PataStorageLineOfService (vr.1.t+)[{     This object represents the Description property. All values for resources described by this schema shall comply to the requirements as described in the Redfish specification.       PataStorageLineOfService (vr.1.t+)[{     The value shall be a set of IO connectivity service options. Within a class of service, at most one IO connectivity service option may be present for a value of AccessProtocol.	@odata.id	string	Link to a DataProtectionLineOfService resource. See the Links section and the <i>DataProtectionLineOfService</i> schema for details.
only   only     >)1   I     DataSecurityLinesOfService (vr.1.1+) { { array read- write   array read- write   The value shall be a set of data security service options.     @odata.id   string tetails.   Link to a DataSecurityLineOfService resource. See the Links section and the DataSecurityLineOfService schema for details.     ?   read- only   The value shall be a set of data protection service options.     ?   The value shall be a set of data protection service options.     ?   The value shall be a set of data protection service options.     ?   The value shall be a set of data protection service options.     ?   The value shall be a set of data protection service options.     ?   Link to a DataStorageLineOfService resource. See the Links section and the DataStorageLineOfService schema for details.     ?   Link to a DataStorageLineOfService resource. See the Links section and the DataStorageLineOfService schema for details.     ?   Inits to a DataStorageLineOfService resource. See the Links section and the DataStorageLineOfService schema for details.     ?   Inits object represents the Description property. All values for resources described by this schema shall comply to the requirements as described in the Redfish specification.     ?   Inits option property. All values for resources described by this schema thall comply to the requirements as described in the Redfish specificati		read-	
>1   Image: Construct of the second		only	
DataSecurityLinesOService   array   The value shall be a set of data security service options.     (v1.1.1+)[{   read- write   read- condy     @odata.id   string   Link to a DataSecurityLineOfService resource. See the Links section and the DataSecurityLineOfService schema for details.     PataStorageLineSOfService (v1.1.1+)[{   read- only   The value shall be a set of data protection service options.     @odata.id   array   The value shall be a set of data protection service options.     [v1.1.1+)[{   read- only   The value shall be a set of data protection service options.     @odata.id   string   Link to a DataStorageLineOfService resource. See the Links section and the DataStorageLineOfService schema for details.     @odata.id   string   Link to a DataStorageLineOfService resource. See the Links section and the DataStorageLineOfService schema for details.     ?)]   read- only   Link to a DataStorageLineOfService resource. See the Links section and the DataStorageLineOfService schema for details.     ?)]   tink to a DataStorageLineOfService resource. See the Links section and the DataStorageLineOfService schema for details.     ?)]   tink to a DataStorageLineOfService resource. See the Links section and the DataStorageLineOfService schema for details.     ?)]   tink to a DataStorageLineOfService in the Description property. All values for resources described by this schema shall comply t	}]		
read- write   read- details.     @odata.id   string   Link to a DataSecurityLineOfService resource. See the Links section and the DataSecurityLineOfService schema for details.     read- only   read- only	DataSecurityLinesOfService (v1.1.1+) [ {	array	The value shall be a set of data security service options.
write   write     @odata.id   string   Link to a DataSecurityLineOfService resource. See the Links section and the DataSecurityLineOfService schema for details.     read-only   only     }1   T     DataStorageLinesOfService   array     (v1.1.1+)[{   read-write     read-write   The value shall be a set of data protection service options.     @odata.id   string     %odata.id   string     pead-only   Link to a DataStorageLineOfService resource. See the Links section and the DataStorageLineOfService schema for details.     read-only   Link to a DataStorageLineOfService resource. See the Links section and the DataStorageLineOfService schema for details.     fead-only   This to a DataStorageLineOfService resource. See the Links section and the DataStorageLineOfService schema for details.     }!   read-only   This object represents the Description property. All values for resources described by this schema shall comply to the requirements as described in the Redfish specification.     requirements as described in the Redfish specification.   requirements as described in the Redfish specification.     read-only   The value shall be a set of IO connectivity service options. Within a class of service, at most one IO connectivity service option may be present for a value of AccessProtocol.		read-	
@odata.id   string   Link to a DataSecurityLineOfService resource. See the Links section and the DataSecurityLineOfService schema for details.     read-only   read-only     DataStorageLinesOfService   array     (v1.1.+)[{   read-only     read-write   read-only     write   Link to a DataStorageLineOfService resource. See the Links section and the DataStorageLineOfService schema for details.     @odata.id   string     #read-only   Link to a DataStorageLineOfService resource. See the Links section and the DataStorageLineOfService schema for details.     @odata.id   string     Link to a DataStorageLineOfService resource. See the Links section and the DataStorageLineOfService schema for details.     read-only   this to a DataStorageLineOfService resource. See the Links section and the DataStorageLineOfService schema for details.     read-only   read-only     j1   Image: String     Description   string     his object represents the Description property. All values for resources described by this schema shall comply to the requirements as described in the Redfish specification.     read-only   read-only     only   the value shall be a set of IO connectivity service options. Within a class of service, at most one IO connectivity service option.     function   read-only <th></th> <td>write</td> <td></td>		write	
read- only   read- only     }1   In     DataStorageLinesOfService (v1.1.+)[{   array read- write   The value shall be a set of data protection service options.     @odata.id   read- write   Ink to a DataStorageLineOfService resource. See the Links section and the DataStorageLineOfService schema for details.     Poscription   read- only   Ink to a DataStorageLineOfService resource. See the Links section and the DataStorageLineOfService schema for details.     }1   read- only   Ink to a DataStorageLineOfService resource. See the Links section and the DataStorageLineOfService schema for details.     }1   read- only   Ink to a DataStorageLineOfService resource. See the Links section and the DataStorageLineOfService schema for details.     }1   read- only   Ink to a DataStorageLineOfService resource. See the Links section and the DataStorageLineOfService schema for requirements as described in the Redfish specification.     Induction   read- only   Ink object represents the Description property. All values for resources described by this schema shall comptly to the requirements as described in the Redfish specification.     Induction   read- only   Invalue shall be a set of IO connectivity service options. Within a class of service, at most one IO connectivity service option may be present for a value of AccessProtocol.	@odata.id	string	Link to a DataSecurityLineOfService resource. See the Links section and the <i>DataSecurityLineOfService</i> schema for details.
only   only     }1   In     DataStorageLinesOfService   array   The value shall be a set of data protection service options.     (v1.1.1+)[{   read- write   The value shall be a set of data protection service options.     @odata.id   string   Link to a DataStorageLineOfService resource. See the Links section and the DataStorageLineOfService schema for details.     read- only   read- only   Inik to a DataStorageLineOfService resource. See the Links section and the DataStorageLineOfService schema for details.     }1   read- only   Inik to a DataStorageLineOfService resource. See the Links section and the DataStorageLineOfService schema for details.     pread- only   The value shall be a set of IO concetivity service options. Within a class of service, at most one IO connectivity service option may be present for a value of AccessProtocol.     fuel_uit_1.1+)[{   read- option may be present for a value of AccessProtocol.		read-	
}]   Image: Construct of the section of the section of the section service options.     DataStorageLinesOfService (w.l.l+)[{   array read-write     read-write   interview     @odata.id   string read-only     interview   Link to a DataStorageLineOfService resource. See the Links section and the DataStorageLineOfService schema for details.     read-only   read-only     j]   Image: Construction of the section		only	
DataStorageLinesOfService (v1.1.1+)[{	}]		
(01.1.1+)[{   read- write     @odata.id   string     @odata.id   string     Link to a DataStorageLineOfService resource. See the Links section and the DataStorageLineOfService schema for details.     read- only   read- only     J1   Image: String     Description   string     read- only   This object represents the Description property. All values for resources described by this schema shall comply to the requirements as described in the Redfish specification.     Image: Value shall be a set of IO connectivity service options. Within a class of service, at most one IO connectivity service option may be present for a value of AccessProtocol.     read- (01.1.1+)[{   read- write	DataStorageLinesOfService	array	The value shall be a set of data protection service options.
initial   initial     @odata.id   string   Link to a DataStorageLineOfService resource. See the Links section and the DataStorageLineOfService schema for details.     read- only   read- only   initial     }]   Initial   Initial     Description   string requirements as described in the Redfish specification.     read- only   Initial   This object represents the Description property. All values for resources described by this schema shall comply to the requirements as described in the Redfish specification.     Image: Non- only   Initial   The value shall be a set of IO connectivity service options. Within a class of service, at most one IO connectivity service option may be present for a value of AccessProtocol.     Image: Non- only   read- only   Image: Non- only     Image: Non- only   read- only   The value shall be a set of IO connectivity service options. Within a class of service, at most one IO connectivity service option may be present for a value of AccessProtocol.	(v1.1.1+) [ {	mad	
@odata.id   string   Link to a DataStorageLineOfService resource. See the Links section and the DataStorageLineOfService schema for details.     read-only		write	
image: read- only   details.     }]   image: read- only     }]   image: read- only     Description   string     read- only   This object represents the Description property. All values for resources described by this schema shall comply to the requirements as described in the Redfish specification.     read- only   image: read- only     image: read- (v1.1.1+)[{   The value shall be a set of IO connectivity service options. Within a class of service, at most one IO connectivity service option may be present for a value of AccessProtocol.	@odata.id	string	Link to a DataStorageLineOfService resource. See the Links section and the DataStorageLineOfService schema for
read- only   read- only     }]   Image: I		_	details.
only   only     }]   Image: Construct on the second on		read-	
}]   Image: string   This object represents the Description property. All values for resources described by this schema shall comply to the requirements as described in the Redfish specification.     read-only   read-only     (null)   The value shall be a set of IO connectivity service options. Within a class of service, at most one IO connectivity service option may be present for a value of AccessProtocol.     read-write   read-out option may be present for a value of AccessProtocol.		only	
Description   string   This object represents the Description property. All values for resources described by this schema shall comply to the requirements as described in the Redfish specification.     read-only   read-only     (null)   The value shall be a set of IO connectivity service options. Within a class of service, at most one IO connectivity service option may be present for a value of AccessProtocol.     read-urite   read-only     (v1.1.1+) [ {   read-only     write   read-only	}]		
read- only (null)   read- initial     IOConnectivityLinesOfService   array (v1.1.1+) [ {   The value shall be a set of IO connectivity service options. Within a class of service, at most one IO connectivity service option may be present for a value of AccessProtocol.     read- write   read- write	Description	string	This object represents the Description property. All values for resources described by this schema shall comply to the requirements as described in the Redfish specification.
only (null) only (null)   IOConnectivityLinesOfService array (v1.1.1+) [ {   read- write read- write		read-	
IOConnectivityLinesOfService   array   The value shall be a set of IO connectivity service options. Within a class of service, at most one IO connectivity service option may be present for a value of AccessProtocol.     (v1.1.1+) [ {   read-write		only	
IOConnectivityLinesOfService   array   The value shall be a set of IO connectivity service options. Within a class of service, at most one IO connectivity service option may be present for a value of AccessProtocol.     (v1.1.1+) [ {   read- write   read-		(null)	
read- write	(v1.1.1+)[{	array	I ne value snall be a set of 10 connectivity service options. Within a class of service, at most one 10 connectivity service option may be present for a value of AccessProtocol
write	(	read-	
		write	

@odata.id	string	Link to a IOConnectivity LineOfService resource. See the Links section and the <i>IOConnectivityLineOfService</i> schema for details			
	road-	IOI UETAILS.			
	onhi				
	onig				
}]					
IOPerformanceLinesOfService	array	The value shall be a set of IO performance service options.			
(v1.1.1+) [ {					
	read-				
	write				
@odata.id	string	Link to a IOPerformanceLineOfService resource. See the Links section and the IOPerformanceLineOfService schema			
		for details.			
	read-				
	only				
}]					
Id	string	This property represents an identifier for the resource. All values for resources described by this schema shall comply			
		to the requirements as described in the Redfish specification.			
	read-				
	only				
Identifier		See the http://redfish.dmtf.org/schemas/v1/Resource.json#/definitions/Identifier schema for details.			
	read-				
	write				
	(null)				
Name	string	This object represents the Name property. All values for resources described by this schema shall comply to the			
	0	requirements as described in the Redfish specification. The value of this string shall be of the format for the reserved			
	read-	word Name.			
	only				
Oem {}	object	The value of this string shall be of the format for the reserved word <i>Oem</i> . See the <i>Resource</i> schema for details on this			
	00,000	property.			
	read-	r - r - y -			
	write				
	write				

# 9.6 ClassOfServiceCollection

Description	string	This object represents the Description property. All values for resources described by this schema shall comply to the requirements as
	~ 0	described in the Redfish specification.
	read-	
	only	
	(null)	
Members [ {	array	The value of each member entry shall reference a ClassOfService resource.
	read-	
	only	
@odata.id	string	Link to a ClassOfService resource. See the Links section and the ClassOfService schema for details.
	read-	
	only	
}]		
Name	string	This object represents the Name property. All values for resources described by this schema shall comply to the requirements as
		described in the Redfish specification. The value of this string shall be of the format for the reserved word Name.
	read-	
	only	
<b>Oem</b> {}	object	The value of this string shall be of the format for the reserved word Oem. See the Resource schema for details on this property.
	read-	
	write	

## 9.7 DataProtectionLineOfService 1.1.0

This service option describes a replica that protects data from loss. The requirements must be met collectively by the communication path and the replica.

Description   File alphet represent the Description property. All values for resources described by this schema shall coughly to the regimenents as described in the Rolfsh specification.     Id   This alphet represent the Description property. All values for resources described by this schema shall coughly to the regimenents as described in the Rolfsh specification.     Id   This property regressant an identifier for the resource. All values for resources described by this schema shall coughly to the regimenents as described in the Rolfsh specification.     Id   This algorithm of the regimenents as described in the Rolfsh specification.     Id   This algorithm of the regimenents as described in the Rolfsh specification.     Id   This algorithm of the regimenents as described in the Rolfsh specification.     Name   This algorithm of the regimenents as described in the Rolfsh specification. The value of this schema shall coughly to the regimenents as described in the Rolfsh specification. The value of this schema shall coughly to the regimenent as described in the Rolfsh specification. The value of this schema shall coughly to the regimenent as described in the Rolfsh specification. The value of this schema shall coughly to the regimenent as described in the Rolfsh specification. The value of the schema shall coughly to the regimenent as described in the Rolfsh specification. The value of the schema shall coughly to the regimenent as described in the Rolfsh specification. The value of this schema shall coughly to the regimenent as described in the Rolfsh specification. The value of this schema shall coughly to the regimenent as described in the Rolfsh specificatin. The value of the schema shall coughly to the regimen		1	
regurements a described in the Redifa specification.     regurements a described in the Redifa specification.       14     Figure entry and escribed in the Redifa specification.       15     This property represents an identifier for the resource. All values for resources described by this achean shall compt in the Redifa specification.       16     This property represents an identifier for the resource. All values for resources described by this achean shall compt in the Redifa specification.       16     This shall relate that the replica is in a separate faul identifier for the resource. All values for resources described by this achean shall compt in the replica the antipotent sequences of the antipotent sequences of the replica compt in the replica compt in the replica compt in the replica compt in the Redifa specification.       16     This value shall be an 150 500 duration that specifies the antinuum required lifetime of the replica. Note The antinuum antepies of the property. All values for resources durates that the replica compt in the Redifa specification. The value of this arting value of the instring va	Description	string	This object represents the Description property. All values for resources described by this schema shall comply to the
index     index       Idea     This property repretents an identifier fir the resource. All values for resource described by this schema shall comply to the regimements as described in the Reaffix specification.       Idea     The schema			requirements as described in the Redfish specification.
only (au)     only (au)     only (au)       14     Stapperty regressants an identifier for the resource. All values for resources distributed by this schema shall couply to the requirements an described in the Redful specification.       13     Tread-all infector that the replice is in a separate fault domain from its source. The default value of the preperty is and infector inf		read-	
Induction     Induction     Induction       10     Provide a property represents an identifier for the resource. All whats for resources described by this schema shall comply to the regularization a described in the Additi specification.       11     Provide a property represents an identifier for the resource. All whats for resources described by this schema shall comply to the regularization a separate fault domain from its source. The default value of this property is for the regularization and the regularization and specifies the minimum required lifetime of the region. Note: The maximum number of replicat can be determined using this value together with the replicat. Note: The maximum number of replication and be determined using this value together with the replicat. Note: The maximum number of replication are be determined using this value together with the replicat. Note: The maximum number of replication are be determined using this value together with the replicat. Note: The maximum number of replication and be determined using this value together with the replicat. Note: The maximum number of replication are be determined using this value together with the replicat. Note: The maximum number of replication of the string shall be of the format for the resource of described by this schema shall comply to the requirements: an described at the Relificat specification. The value of this string shall be of the format for the resource of the format for the resource of described by this schema shall comply to the requirements: an described at the Relificat specification. The value of this string shall be of the format for the resource of the fore of the format for the resource of the property.		only	
1d   string read- out   This property represents an identifier for the resource. All values for resources described by this schema shall comply to the requirements as described in the Redish specification.     Istoolated   bodes read- out?   Tree shall indicate that the replica is in a separate fault domain from its source. The default value of this property is fabe.     MinLifetime   string read- (m0)   The value shall be an ISO 8601 duration that specification.     Name   string read- (m0)   The value shall be an ISO 8601 duration that specification. The value of this tring shall be of the format for the respice.     Orem ()   read- out?   This adject represents the Name property. All values for resources described by this schema shall comply to the read- out?     RecoveryGeographicObjective (read- word?   by comparison of this string shall be of the format for the reserved word <i>Ocn</i> . See the <i>Resource</i> schema for details on this property.     RecoveryGeographicObjective (read- word?   string read- word?   The value of this string shall be of the format for the reserved word <i>Ocn</i> . See the <i>Resource</i> schema for details on this property.     RecoveryFountObjectiveTime   string read- word?   The value shall be an ISO 8601 duration that specifies the maximum time over which source data may be lost on failure. In the case that Istolated = falue, falure of the domain is not a consideration.     RecoveryTimeObjectiveTime   string read- word?   The value shall be an ISO 8601 durataken that specifies the maximum time over which sourc		(null)	
Image and the sequence of the	Id	string	This property represents an identifier for the resource. All values for resources described by this schema shall comply
Prede- on/ Prede- on/ Prede- one   Isole Isol	iu .	String	to the requirements as described in the Redfish specification
Index     True shall indicate that the replice is in a separate fault domain from its source. The default value of this property is false.       read- index     True shall indicate that the replice is in a separate fault domain from its source. The default value of this property is false.       MinLifetime     Arrage in the value shall be an ISO 800 duration that specifies the minimum required lifetime of the replice. Note: The maximum number of replices can be determined using this value together with the replices/heldue.       Name     Arrage in the value shall be an ISO 800 duration that specification. The value of this schema shall comply to the requirements as described in the Refats specification. The value of this schema shall comply to the requirements as described in the Refats specification. The value of this schema shall comply to the requirements as described in the Refats specification. The value of this schema shall comply to the requirements as described in the Refats specification. The value of this schema shall comply to the requirements as described in the Refats specification. The value of this schema shall comply to the requirements as described in the Refats specification. The value of this schema shall comply to the requirements as described in the Refats specification. The value of this schema shall comply to the requirements as described in the Refats specification. The value of this schema shall comply to the requirements as described in the Refats specification. The value of this schema shall comply to the requirement is a described in the Refats specification. The value of the requirement is a described in the Refats specification. The value of the requirement is a described in the Refats specification. The value of the requirement is the Refats specification. The value shall for the require shat is folded in the requireme		road-	to the requirements as described in the Reulish specification.
Isolated     Isolated     The shall indicate that the replics is in a separate fault domain from its source. The default value of this property is false.       MinLifetime     string of the value shall be an ISO 8601 duration that specifies the minimum required lifetime of the replica. Note: The maximum number of replicas can be determined using this value together with the replicas/Shelula.       Name     string of the value shall be an ISO 8601 duration that specifies the minimum required lifetime of the replica. Note: The maximum number of replicas can be determined using this value together with the replicas/Shelula.       Name     string of the value shall be of the format for the resources described by this schema shall compty to the requirements as described in the Refificit specification. The value of this string shall be of the format for the reserved word Ocen. See the Resource schema for details on this property.       Oem ()     read- ouly     The value specifies the groupschi scope of the faluer domain. See Recource/GeographicObjective in Property Details, for the possible values of this property.       RecoveryGeographicObjective     string of the possible values of this property.       RecoveryTimeObjective     string of the value shall be an ISO 8001 duration that specifies the maximum time required to access an allernate replica. In the case that 1 stakated = faluer of the dumain is not a consideration.       RecoveryTimeObjective     read- condition     The value shall be an enumeration that indicates the maximum time required to access an allernate replica. In the casch that 1 stakated = faluer, faluer of the dumain is not		onhu	
Isionated   Free Automatication in the registion is a separate fault domain from its source. The default value of this property is fake.     read- write (null)   Free Automatication in the registion in a separate fault domain from its source. The default value of this property (null)     MinLifetime   atring (null)   The value shall be an ISO 8601 duration that specifies the minimum required lifetime of the regist. Note: The maximum number of replicas can be determined using this value together with the replicable-dule.     Name   atring (null)   This object represents the Name property. All values for resources described by this schema aball comply to the requirements as described in the Relifs specification. The value of this string shall be of the format for the reserved word Norme.     Oem ()   object   The value of this string shall be of the format for the reserved word <i>Oem</i> . See the <i>Resource</i> schema for details on this property.     RecoveryGeographicObjective (null)   The value specifies the goografic scope of the failure domain. See <i>RecoveryGeographicObjective in Property Details</i> .     RecoveryFointObjectiveTime (null)   atring (null)   The value specifies the goografic scope of the failure of the domain in not a consideration.     RecoveryTimeObjective (null)   atring (null)   The value shall be an ISO 8601 duration that specifies the maximum time required to access an alternate registe. In the case that IsIsolated – fails, failure of the domain in not a consideration.     RecoveryTimeObjective (null)   atring shall be an enumeration that indicates the m		onuy	
fake.     fake.       read- write     read- write     fake.       MinLifetime     string read- write     The value shall be an ISO 8601 duration that specifies the minimum required lifetime of the replica. Note: The maximum number of replicas can be determined using this value together with the replicas/behalue.       Name     arian     This object represents the Name property. All values for resources described by this schema aball comply to the requirements as described in the Realfish specification. The value of this string shall be of the format for the reserved word Name.       Oem ()     fake.     The values of this tring shall be of the format for the reserved word Oem. See the Resource schema for details on this property.       RecoveryGeographicObjective write     read- read- write     The values of this tring shall be of the format for the reserved word Oem. See the Resource schema for details on this property.       RecoveryGeographicObjective?     string (rema)     The values of this tring shall be of the format for the reserved word Oem. See the Resource schema for details on this property.       RecoveryGeographicObjective?     string (rema)     The values scheffes the maximum time domine to a consideration.       RecoveryGeographicObjective?     string (rema)     The value scheffe the maximum time or expliced to access an alternate replice. In the case that I sloakited = fake, fahure of the domain is not a consideration. See RecoveryTimeObjective in Property Details, belous, for the possible values of this groperty.	IsIsolated	boolean	True shall indicate that the replica is in a separate fault domain from its source. The default value of this property is
read- write (out)     Fread- instrum number of replicas can be determined using this value together with the replical. Note: The maximum number of replicas can be determined using this value together with the replicalSchedule.       Name     Fread- invite     This object represents the Name property. All values for resources described by this schema shall comply to the requirements as described in the Reiffah specification. The value of this string shall be of the format for the reserved word Name.       Orens ()     object     The value of this string shall be of the format for the reserved word Ocen. See the Resource schema for details on this property.       RecoveryGeographicObjective with write w			false.
winds     winds       Mini Lifetime     string read- winds     The value shall be an ISO 8601 duration that specifies the minimum required lifetime of the replica. Note: The maximum number of replicas can be determined using this value together with the replica. Note: The maximum number of replicas can be determined using this value together with the replica. Note: The maximum number of replicas can be determined using this value together with the replica. See the requirements as described in the Refits specification. The value of this string shall be of the format for the reserved work and work       Orm ()     dojet     The value of this string shall be of the format for the reserved word Qem. See the Resource schema for details on this property. read- work       RecoveryGeographicObjective (mai)     the value specifies the geographic schema soft bits property.       RecoveryPointObjective (mai)     the value specifies the geographic schema soft bits property.       RecoveryPointObjective (mai)     the value specifies the geographic schema soft bits property.       RecoveryTimeObjective (mai)     the value shall be an ISO 86nd duration that specifies the maximum time over which source data may be lost on failure. In the case that Isloalited = false, failure of the domain is not a consideration.       RecoveryTimeObjective (mai)     the value shall be an enumeration that indicates the maximum time oregulated on screen an alternate replica. In the case that Isloalited = false, failure of the domain is not a consideration. Facility for the possible values of the domain is not a consideration. Facility for the possible values of the data access location of		read-	
Image: control in the second		write	
Min.Lifetime string Revalue shall be an ISO 8601 duration that specifies the minimum required lifetime of the replica. Most: The minimum number of replicas can be determined using this value together with the replica. Schere The minimum number of replicas can be determined using this value together with the replica. Schere The minimum number of replicas can be determined using this value together with the replica. Schere The minimum number of replicas can be determined using this value together with the replica. Schere The Minimum number of replicas can be determined using this value together with the replica. Schere The Minimum number of replicas can be determined using this value together with the replica. Schere The Minimum number of replicas can be determined using this value together with the replica. Schere The Minimum number of replicas can be determined using this value together with the replica. Schere The Minimum number of replicas can be determined using this value together with the replica. Schere The Minimum number of replicas can be determined using this value together with the replica. Schere The Minimum number of replicas can be determined using this value together with the replica. Schere The Minimum number of replicas can be determined using this value together with the replica. Schere The Minimum number of replicas can be determined using this value together with the replicas. Schere The Minimum number of replicas can be determined using this property.   One 1 Area - Area		(null)	
Image: second	MinLifetime	string	The value shall be an ISO 8601 duration that specifies the minimum required lifetime of the replica. Note: The
rand- india     rand- india       Name     Arian indiana     is big terpresents the Name property. All values for resources described by this schema shall comply to the requirements as described in the Rediffs is specification. The value of this string shall be of the format for the reserved word Name.       Oem (>     Ne value of this string shall be of the format for the reserved word Oem. See the Resource schema for details on this property.       RecoveryGeographicObjective word     Ne value of this string shall be of the format for the reserved word Oem. See the Resource schema for details on this property.       RecoveryFootObjective word     The value specifies the geographic scope of the failure domain. See RecoveryGeographicObjective in Property Details, below. for the possible values of this property.       RecoveryFootObjectiveTime word     The value schells the geographic scope of the failure of the domain is not a consideration.       RecoveryFootObjectiveTime word     The value schell be an ISO 86 or duration that specifies the maximum time or which source data may be load failure. In the case that IsIsolated = failse, failure of the domain is not a consideration.       RecoveryTimeObjectiveTime word     The value schell be an enumeration that indicates the maximum time required to access an alternate replica. In the case that IsIsolated = failse, failure of the domain is not a consideration.       RecoveryTimeObjectiveTime word     The value schell be an enumeration that indicates the maximum time required to see sche an alternate replica. The caset that IsIsolated = failse, failure of the domain is not a consi			maximum number of replicas can be determined using this value together with the replicaSchedule.
under requirements as described in the Redfish specification. The value of this string shall be of the format for the reserved word Norme.       Name     property requirements as described in the Redfish specification. The value of this string shall be of the format for the reserved word Norme.       Oen (>     property.       read- word     The value of this string shall be of the format for the reserved word Own. See the Resource schema for details on this property.       RecoveryGeographicObjective word     The value specifies the geographic scope of the failure domain. See RecoveryGeographicObjective in Property Details, below. for the possible values of this property.       RecoveryFointObjective word word word word     Provide specifies the geographic scope of the failure domain is not a consideration.       read- word word word word word     The value specifies the geographic scope of the failure domain is not a consideration.       RecoveryFointObjectiveFirm word word word word     String failure. In the case that Is looked = faile, failure of the domain is not a consideration.       RecoveryTimeObjective word word word word word word word word		read-	
fund     induction       Name     Sine     This object represents the Name property. All values for resources decirbed by this shema shall compty to the requirements as described in the Redifish specification. The value of this string shall be of the format for the reserved word Name.       Oem ()     object     The value of this string shall be of the format for the reserved word Oem. See the Resource schema for details on this property.       read-     read-     read-     read-       read-     The value of this string shall be of the format for the reserved word Oem. See the Resource schema for details on this property.       read-     read-     read-       read-     The value specifies the geographic Objective in Property Details, Debut, for the possible values of this property.       RecoveryPointObjectiveTime     String     The value shall be an 1SO 460:1 duration that specifies the maximum time over which source data may be lost on faiture. In the case that 1Stolated = false, failure of the domain is not a consideration.       RecoveryTimeObjective     String     The value shall be an enumeration that indicates the maximum time required to see as an alternate replies. In the case that 1Stolated = false, failure of the domain is not a consideration.       RecoveryTimeObjective     Aread-     String     The value shall be used if the data access location of the replice is required to see as a pecific bocation value may be granular. Note 2: A value may be required for some regul		write	
Name     string read- only     This object represents the Name property. All values for resources described by this schema shall comply to the requirements as described in the Refifts specification. The value of this string shall be of the format for the reserved word Name.       Oem {}     object     The value of this string shall be of the format for the reserved word Oem. See the Resource schema for details on this property.       RecoveryGeographicObjective word     string (enum)     The value specifies the geographic scope of the failure domain. See RecoveryGeographicObjective in Property Details, worde worde       RecoveryFointObjectiveTime worde worde     string (enum)     The value shall be an ISO 8601 duration that specifies the maximum time over which source data may be lost on failure. In the case that IsIsolated = false, failure of the domain is not a consideration.       RecoveryTimeObjectiveE (mult)     string (enum)     The value shall be an enumeration that indicates the maximum time required to access an alternate replica. In the case that IsIsolated = false, failure of the domain is not a consideration. See RecoveryTimeObjective in Property Details, below, for the possible values of this property.       ReplicaAccessLocation {} object     object (mult)     The value shall be an enumeration that indicates the maximum time required to be at a specific location. Note 1: The location value may be granular. Note 2: A value may be required for some regulatory compliance. See the Location value may be granular. Note 2: A value may be required for some regulatory compliance. See the Location value may be granular. Note 2: A value may be required for some regulatory compliance. S		(null)	
Image: Second processing and procesprety.     Repl	Name	string	This object represents the Name property. All values for resources described by this schema shall comply to the
read only     wead Name.       Oem {>     freed only     The value of this string shall be of the format for the reserved word Oem. See the Resource schema for details on this property.       read- urite     Tread- tread- veriet     The value of this string shall be of the format for the reserved word Oem. See the Resource schema for details on this property.       RecoveryGeographicObjective     string the value specifies the geographic scope of the failure domain. See RecoveryGeographicObjective in Property Details, below, for the possible values of this property.       RecoveryPointObjectiveTime (num)     The value shall be an ISO 8601 duration that specifies the maximum time over which source data may be lost on failure. In the case that Isloalated = false, failure of the domain is not a consideration.       RecoveryTimeObjectiveTime (num)     String the value shall be an enumeration that indicates the maximum time required to access an alternate replice. In the case that Isloalated = false, failure of the domain is not a consideration. See RecoveryTimeObjective in Property Details, below, for the possible values of this property.       ReplicaAccessLocation {} read- veriet     New alsue shall be used if the data access location of the replice is required to see at specific location. Note 1: The location value may be granular. Note 2: A value may be required for some regulatory compliance. See the location value may be granular. Note 2: A value may be required for some regulatory compliance. See the location value may be granular. Note 2: A value may be required for some regulatory compliance. See the location value may be granular. Note 2: A value may be required for some regulatory complianc		501118	requirements as described in the Redfish specification. The value of this string shall be of the format for the reserved
Induction     Instrume       Oem ()     object     The value of this string shall be of the format for the reserved word Oem. See the Resource schema for details on this property.       read- write     read- write     read- write     read- write       RecoveryGeographicObjective (eman)     string below. for the possible values of this property.     read- write       read- write     read- write     The value specifies the geograbic scope of the failure domain. See RecoveryGeographicObjective in Property Details, below. for the possible values of this property.       RecoveryPointObjectiveTime (mul)     string read- write     The value shall be an ISO 8601 duration that specifies the maximum time over which source data may be lost on failure. In the case that IsIsolated = false, failure of the domain is not a consideration.       RecoveryTimeObjective (mul)     The value shall be an enumeration that indicates the maximum time required to access an alternate replica. In the case that IsIsolated = false, failure of the domain is not a consideration. See RecoveryTimeObjective in Property Petails, below. for the possible values of this property.       ReplicaAccessLocation {} write read-		read-	word Name
Orm     Orm     The value of this string shall be of the format for the reserved word Oem. See the Resource schema for details on this property.       Pread- write     The value of this string shall be of the format for the reserved word Oem. See the Resource schema for details on this property.       RecoveryGeographicObjective     String (emm)     The value specifies the geographic scope of the failure domain. See RecoveryGeographicObjective in Property Details, below, for the possible values of this property.       read- write     read- write     The value shall be an ISO 8601 duration that specifies the maximum time over which source data may be lost on failure. In the case that IsIsolated = false, failure of the domain is not a consideration.       RecoveryTimeObjective     String (emm)     The value shall be an enumeration that indicates the maximum time required to access an alternate replice. In the case that IsIsolated = false, failure of the domain is not a consideration.       RecoveryTimeObjective     String (emm)     The value shall be an enumeration that indicates the maximum time required to access an alternate replice. In the case that IsIsolated = false, failure of the domain is not a consideration. See RecoveryTimeObjective in Property Details, below, for the possible values of this property.       ReplicaAccessLocation {}     object     This value shall be used if the data access location of the replica is required to be at a specific location. Note 1: The location value may be granular. Note 2: A value may be required for some regulatory compliance. See the Locationvu <sub>1</sub> -o_o o schema for details on this property. <th></th> <th>onhi</th> <th></th>		onhi	
Oem {}   oper {}   The value of this string shall be of the format for the reserved word <i>Oem</i> . See the <i>Resource</i> schema for defails on this property.     read- urite   read- urite   the value specifies the geographic scope of the failure domain. See RecoveryGeographicObjective in Property Details, below. for the possible values of this property.     RecoveryPointObjectiveTime   string (mun)   The value shall be an ISO 8601 duration that specifies the maximum time over which source data may be lost on failure. In the case that IsIsolated = false, failure of the domain is not a consideration.     RecoveryTimeObjective   string (mun)   The value shall be an enumeration that indicates the maximum time required to access an alternate replica. In the case that IsIsolated = false, failure of the domain is not a consideration.     RecoveryTimeObjective   string (mun)   The value shall be an enumeration that indicates the maximum time required to access an alternate replica. In the case that IsIsolated = false, failure of the domain is not a consideration. See RecoveryTimeObjective in Property. Details, below. for the possible values of this property.     ReplicaAccessLocation {}   object   This value shall be used if the data access location of the replica is required to be at a specific location. Note 1: The location value may be granular. Note 2: A value may be required for some regulatory compliance. See the <i>ClassOfService</i> {     ReplicaClassOfService {   object   This value shall reference the dass of service that defines the required service levels of the replica. See the <i>ClassOfService</i> schema for details on this property.<		onag	
read- write     property.       RecoveryGeographicObjective (cmm)     String (cmm)     The value specifies the geograhic scope of the failure domain. See RecoveryGeographicObjective in Property Details, below.for the possible values of this property.       read- write (mu)     read- write (mu)     The value shall be an ISO 8601 duration that specifies the maximum time over which source data may be lost on failure. In the case that IsIsolated = false, failure of the domain is not a consideration.       read- write (mu)     The value shall be an enumeration that indicates the maximum time over which source data may be lost on failure. In the case that IsIsolated = false, failure of the domain is not a consideration.       read- write (mu)     The value shall be an enumeration that indicates the maximum time required to access an alternate replica. In the case that IsIsolated = false, failure of the domain is not a consideration. See RecoveryTimeObjective in Property.       read- write (mu)     The value shall be an enumeration that indicates the maximum time required to access an alternate replica. In the case that IsIsolated = false, failure of the domain is not a consideration. See RecoveryTimeObjective in Property.       read- write (mu)     This value shall be used if the data access location of the replica is required to be at a specific location. Note 1: The location value may be granular. Note 2: A value may be required for some regulatory compliance. See the location value may be granular. Note 2: A value may be required for some regulatory compliance. See the location.vu <sub>L</sub> _o o schema for details on this property.       read- write (mu)     The val	<b>Oem</b> {}	object	The value of this string shall be of the format for the reserved word <i>Oem</i> . See the <i>Resource</i> schema for details on this
read- write     read- (cmm)     The value specifies the geographic scope of the failure domain. See RecoveryGeographicObjective in Property Details, below, for the possible values of this property.       RecoveryPointObjectiveTime (null)     The value shall be an ISO 8601 duration that specifies the maximum time over which source data may be lost on failure. In the case that IsIsolated = false, failure of the domain is not a consideration.       RecoveryTimeObjectiveTime (null)     String (null)     The value shall be an enumeration that indicates the maximum time required to access an alternate replica. In the case that IsIsolated = false, failure of the domain is not a consideration.       RecoveryTimeObjective (null)     String (null)     The value shall be an enumeration that indicates the maximum time required to access an alternate replica. In the case that IsIsolated = false, failure of the domain is not a consideration. See RecoveryTimeObjective in Property Details, below, for the possible values of this property.       ReplicaAccessLocation {} ReplicaAccessLocation {} (null)     Object (null)     This value shall be used if the data access location of the replica is required for some regulatory compliance. See the Location.v1_o_o shema for details on this property.       ReplicaClassOfService { (null)     Object (null)     The value shall reference the class of service that defines the required service levels of the replica. See the ClassOfService schema for details on this property.			property.
initial     initial       RecoveryGeographicObjective (cumn)     String (cumn)     The value specifies the geograhic scope of the failure domain. See RecoveryGeographicObjective in Property Details, below.for the possible values of this property.       read- (miD)     read- (miD)     The value shall be an ISO 8601 duration that specifies the maximum time over which source data may be lost on failure. In the case that IsIsolated = false, failure of the domain is not a consideration.       RecoveryTimeObjective (muD)     String (muD)     The value shall be an enumeration that indicates the maximum time required to access an alternate replica. In the case that IsIsolated = false, failure of the domain is not a consideration.       RecoveryTimeObjective (muD)     String (enum)     The value shall be an enumeration that indicates the maximum time required to access an alternate replica. In the case that IsIsolated = false, failure of the domain is not a consideration. See RecoveryTimeObjective in Property Details, below, for the possible values of this property.       ReplicaAccessLocation {} (muD)     This value shall be used if the data access location of the replica is required to be at a specific location. Note 1: The location value may be gramular. Note 2: A value may be required for some regulatory compliance. See the Location.vi_o_o schema for details on this property.       read- (muD)     CaseJService schema for details on this property.       read- (muD)     The value shall reference the dass of service that defines the required service levels of the replica. See the ClasstoJService schema for details on this property.		read-	
RecoveryGeographicObjective   string   The value specifies the geographic scope of the failure domain. See RecoveryGeographicObjective in Property Details, below, for the possible values of this property.     read- urrite   read- (null)		write	
(enum)   below, for the possible values of this property.     read- uvite (null)   read- (null)   read- (null)     RecoveryPointObjectiveTime (null)   string (null)   The value shall be an ISO 8601 duration that specifies the maximum time over which source data may be lost on failure. In the case that IsIsolated = false, failure of the domain is not a consideration.     RecoveryTimeObjective (null)   The value shall be an enumeration that indicates the maximum time required to access an alternate replica. In the case that IsIsolated = false, failure of the domain is not a consideration. See RecoveryTimeObjective in Property Details, below, for the possible values of this property.     ReplicaAccessLocation {} (null)   This value shall be used if the data access location of the replica is required to be at a specific location. Not 1: The location value may be granular. Not 2: A value may be required for some regulatory compliance. See the Location.v1_0_0 schema for details on this property.     ReplicaClassOfService { (null)   The value shall reference the class of service that defines the required service levels of the replica. See the ClassOfService schema for details on this property.     ReplicaClassOfService { (null)   The value shall reference the class of service that defines the required service levels of the replica. See the ClassOfService schema for details on this property.     (au)   The value shall reference the class of service that defines the required service levels of the replica. See the ClassOfService schema for details on this property.	RecoveryGeographicObjective	string	The value specifies the geograhic scope of the failure domain. See RecoveryGeographicObjective in Property Details,
read- write (nul)   read- indure.   Intervalue shall be an ISO 8601 duration that specifies the maximum time over which source data may be lost on failure. In the case that IsIsolated = false, failure of the domain is not a consideration.     read- vried- vried- vried- (nul)   The value shall be an enumeration that indicates the maximum time required to access an alternate replica. In the case that IsIsolated = false, failure of the domain is not a consideration. See RecoveryTimeObjective in Property Details, below, for the possible values of this property.     ReplicaAccessLocation {} (nul)   object   This value shall be used if the data access location of the replica is required to be at a specific location. Not 1: The location value may be granular. Not 2: A value may be required for some regulatory compliance. See the Location value may be granular. Not 2: A value may be required for some regulatory compliance. See the Location value may be granular. Not 2: A value may be required for some regulatory compliance. See the Location value may be granular. Not 2: A value may be required for some regulatory compliance. See the Location value may be granular. Not 2: A value may be required for some regulatory compliance. See the Location value may be granular. Not 2: A value may be required for some regulatory compliance. See the Location value may be granular. Not 2: A value may be required for some regulatory compliance. See the Location value may be granular. Not 2: A value may be required for some regulatory compliance. See the Location value may be granular. Not 2: A value may be required for some regulatory compliance. See the Location value may be granular. Not 2: A value may be required for some regulatory compliance. See the Location value may be granular. Not 2: A value may be required for some regulatory compliance. See the Location value may be gran		(enum)	below, for the possible values of this property.
read- write   read- write     (mul)   The value shall be an ISO 8601 duration that specifies the maximum time over which source data may be lost on failure. In the case that IsIsolated = false, failure of the domain is not a consideration.     read- write   read- (mul)     recoveryTimeObjective   String     RecoveryTimeObjective   String     read- write   The value shall be an enumeration that indicates the maximum time required to access an alternate replica. In the case that IsIsolated = false, failure of the domain is not a consideration. See RecoveryTimeObjective in Property Details, below, for the possible values of this property.     read- write   read- (mul)     ReplicaAccessLocation {}   object     read- write   This value shall be used if the data access location of the replica is required to be at a specific location. Note 1: The location value may be granular. Note 2: A value may be required for some regulatory compliance. See the location value may be granular. Note 2: A value may be required for some regulatory compliance. See the location value may be granular. Note 2: A value may be required for some regulatory compliance. See the location value may be granular. Note 2: A value may be required for some regulatory compliance. See the location value may be granular. Note 2: A value may be required for some regulatory compliance. See the location value may be granular. Note 2: A value may be required for some regulatory compliance. See the location value may be granular. Note 2: A value may be required for some regulatory compliance. See the location value may be granular. Note 2: A value may be required for some regul			
write (null)     write (null)       RecoveryPointObjectiveTime     string read- write (null)     The value shall be an ISO 8601 duration that specifies the maximum time over which source data may be lost on failure. In the case that IsIsolated = false, failure of the domain is not a consideration.       RecoveryTimeObjective     string (null)     The value shall be an enumeration that indicates the maximum time required to access an alternate replica. In the case that IsIsolated = false, failure of the domain is not a consideration. See RecoveryTimeObjective in Property Details, below, for the possible values of this property.       read- write (null)     This value shall be used if the data access location of the replica is required to be at a specific location. Note 1: The location value may be granular. Note 2: A value may be required for some regulatory compliance. See the Location.v1_o_o schema for details on this property.       ReplicaClassOfService { write write (null)     bieset read- write (null)     The value shall reference the class of service that defines the required service levels of the replica. See the ClassOfService schema for details on this property.		read-	
Image: network   Image: network     RecoveryPointObjectiveTime   string   The value shall be an ISO 8601 duration that specifies the maximum time over which source data may be lost on failure. In the case that IsIsolated = false, failure of the domain is not a consideration.     read- (null)   read- (null)   network     RecoveryTimeObjective   string (enum)   The value shall be an enumeration that indicates the maximum time required to access an alternate replica. In the case that IsIsolated = false, failure of the domain is not a consideration. See RecoveryTimeObjective in Property Details, below, for the possible values of this property.     ReplicaAccessLocation {}   object   This value shall be used if the data access location of the replica is required to be at a specific location. Note 1: The location value may be granular. Note 2: A value may be required for some regulatory compliance. See the location value may be granular. Note 2: A value may be required for some regulatory compliance. See the location.or.l_o_o schema for details on this property.     ReplicaClassOfService {   object (null)   The value shall reference the class of service that defines the required service levels of the replica. See the classOfService schema for details on this property.     read- write (null)   The value shall reference the class of service that defines the required service levels of the replica. See the classOfService schema for details on this property.		write	
RecoveryPointObjectiveTime   string   The value shall be an ISO 8601 duration that specifies the maximum time over which source data may be lost on failure. In the case that IsIsolated = failse, failure of the domain is not a consideration.     read- write   read- maile   read- maile     recoveryTimeObjective   string   The value shall be an enumeration that indicates the maximum time required to access an alternate replica. In the case that IsIsolated = failse, failure of the domain is not a consideration. See RecoveryTimeObjective in Property.     read- write   read- maile   The value shall be used if the data access location of the replica is required to be at a specific location. Note 1: The location value may be granular. Note 2: A value may be required for some regulatory compliance. See the maile     ReplicaClassOfService {   Noiset   The value shall reference the class of service that defines the required service levels of the replica. See the ClassOfService schema for details on this property.     read- write (mult)   The value shall reference the class of service that defines the required service levels of the replica. See the ClassOfService schema for details on this property.     read- write (mult)   The value shall reference the class of service that defines the required service levels of the replica. See the ClassOfService schema for details on this property.		(null)	
failure. In the case that Is Isolated = false, failure of the domain is not a consideration.     read- write (null)   interconstruction     RecoveryTimeObjective   String (enum)   The value shall be an enumeration that indicates the maximum time required to access an alternate replica. In the case that IsIsolated = false, failure of the domain is not a consideration. See RecoveryTimeObjective in Property Details, below, for the possible values of this property.     read- write (null)   read- write (null)   This value shall be used if the data access location of the replica is required to be at a specific location. Note 1: The location value may be granular. Note 2: A value may be required for some regulatory compliance. See the Location.v1_0_0 os chema for details on this property.     ReplicaClassOfService {   Note value shall reference the class of service that defines the required service levels of the replica. See the ClassOfService schema for details on this property.     read- write (null)   The value shall reference the class of service that defines the required service levels of the replica. See the ClassOfService schema for details on this property.     read- write (null)   The value shall reference the class of service that defines the required service levels of the replica. See the ClassOfService schema for details on this property.	RecoveryPointObjectiveTime	string	The value shall be an ISO 8601 duration that specifies the maximum time over which source data may be lost on
read- write (nult)   read- write (nult)     RecoveryTimeObjective   string (email)   The value shall be an enumeration that indicates the maximum time required to access an alternate replica. In the case that IsIsolated = false, failure of the domain is not a consideration. See RecoveryTimeObjective in Property Details, below, for the possible values of this property.     read- write (nult)   read- (nult)     ReplicaAccessLocation {}   object     nead- write (nult)   This value shall be used if the data access location of the replica is required to be at a specific location. Note 1: The location value may be granular. Note 2: A value may be required for some regulatory compliance. See the Location.v1_o_o schema for details on this property.     ReplicaClassOfService {   object (nult)   The value shall reference the class of service that defines the required service levels of the replica. See the ClassOfService schema for details on this property.     read- write (nult)   The value shall reference the class of service that defines the required service levels of the replica. See the ClassOfService schema for details on this property.			failure. In the case that IsIsolated = false, failure of the domain is not a consideration.
write (null)   write (null)     RecoveryTimeObjective   string (enum)   The value shall be an enumeration that indicates the maximum time required to access an alternate replica. In the case that IsIsolated = false, failure of the domain is not a consideration. See RecoveryTimeObjective in Property Details, below, for the possible values of this property.     read- write (null)   read- (null)     ReplicaAccessLocation {}   object     nead- write (null)   This value shall be used if the data access location of the replica is required to be at a specific location. Note 1: The location value may be granular. Note 2: A value may be required for some regulatory compliance. See the Location.v1_o_o schema for details on this property.     ReplicaClassOfService {   object (null)   The value shall reference the class of service that defines the required service levels of the replica. See the ClassOfService schema for details on this property.     read- write (null)   The value shall reference the class of service that defines the required service levels of the replica. See the ClassOfService schema for details on this property.		read-	
Image: marking image: marking image: marking ma		write	
RecoveryTimeObjective   string (enum)   The value shall be an enumeration that indicates the maximum time required to access an alternate replica. In the case that IsIsolated = false, failure of the domain is not a consideration. See RecoveryTimeObjective in Property Details, below, for the possible values of this property.     read- write (null)   read- write (null)   This value shall be used if the data access location of the replica is required to be at a specific location. Note 1: The location value may be granular. Note 2: A value may be required for some regulatory compliance. See the Location.v1_0_0 schema for details on this property.     ReplicaClassOfService {   object (null)   The value shall reference the class of service that defines the required service levels of the replica. See the ClassOfService schema for details on this property.		(null)	
Image: Section of the section of th	RecoveryTimeObjective	string	The value shall be an enumeration that indicates the maximum time required to access an alternate replica. In the
Image: Section 1   Details, below, for the possible values of this property.     read- write (null)   read- (null)     ReplicaAccessLocation {}   object     nead- write (null)   This value shall be used if the data access location of the replica is required to be at a specific location. Note 1: The location value may be granular. Note 2: A value may be required for some regulatory compliance. See the Location.v1_o_o schema for details on this property.     ReplicaClassOfService {   object (null)   The value shall reference the class of service that defines the required service levels of the replica. See the ClassOfService schema for details on this property.     read- write (null)   read- write (null)   The value shall reference the class of service that defines the required service levels of the replica. See the ClassOfService schema for details on this property.	<i>v v</i>	(enum)	case that IsIsolated = false, failure of the domain is not a consideration. See RecoveryTimeObjective in Property
read- write (null)   read- (null)     ReplicaAccessLocation {}   object     This value shall be used if the data access location of the replica is required to be at a specific location. Note 1: The location value may be granular. Note 2: A value may be required for some regulatory compliance. See the Location.v1_0_0 o schema for details on this property.     ReplicaClassOfService {   object (null)   The value shall reference the class of service that defines the required service levels of the replica. See the ClassOfService schema for details on this property.     read- write (null)   The value shall reference the class of service that defines the required service levels of the replica. See the ClassOfService schema for details on this property.     read- write (null)   The value shall reference the class of service that defines the required service levels of the replica. See the ClassOfService schema for details on this property.			Details, below, for the possible values of this property.
write (null)   write (null)     ReplicaAccessLocation {}   Diject   This value shall be used if the data access location of the replica is required to be at a specific location. Note 1: The location value may be granular. Note 2: A value may be required for some regulatory compliance. See the read- uvrite     ReplicaClassOfService {   Object   Location.v1_0_0 schema for details on this property.     ReplicaClassOfService {   Object   The value shall reference the class of service that defines the required service levels of the replica. See the ClassOfService schema for details on this property.     read- uvrite (null)   read- uvrite (null)   The value shall reference the class of service that defines the required service levels of the replica. See the ClassOfService schema for details on this property.		read-	
Image:		write	
ReplicaAccessLocation {}   object   This value shall be used if the data access location of the replica is required to be at a specific location. Note 1: The location value may be granular. Note 2: A value may be required for some regulatory compliance. See the Location.v1_o_o schema for details on this property.     ReplicaClassOfService {   object   The value shall reference the class of service that defines the required service levels of the replica. See the ClassOfService schema for details on this property.     read- write (null)   The value shall reference the class of service that defines the required service levels of the replica. See the ClassOfService schema for details on this property.     read- write (null)   read- write (null)   The value shall reference the class of service that defines the required service levels of the replica. See the ClassOfService schema for details on this property.		(null)	
ReplicaClassOfService {   object   This value shall be used in the data access location of the replica is required to be at a specific location. Note 1: The location value may be granular. Note 2: A value may be required for some regulatory compliance. See the Location.v1_0_0 schema for details on this property.     ReplicaClassOfService {   object   The value shall reference the class of service that defines the required service levels of the replica. See the ClassOfService schema for details on this property.     read- write (null)   read- write (null)   The value shall reference the class of service that defines the required service levels of the replica. See the ClassOfService schema for details on this property.	Penlica Access Location ()	object	This value shall be used if the data access location of the raplice is required to be at a specific location. Note to The
ReplicaClassOfService {   object   The value shall reference the class of service that defines the required service levels of the replica. See the ClassOfService schema for details on this property.     read- write (null)   read- vrite (null)   The value shall reference the class of service that defines the required service levels of the replica. See the ClassOfService schema for details on this property.	KephtaAttessLocation (	object	location value may be granular. Note a: A value may be required for some regulatory compliance. See the
ReplicaClassOfService { object The value shall reference the class of service that defines the required service levels of the replica. See the ClassOfService schema for details on this property.   read-write (null)		read_	Location via a location of the second s
ReplicaClassOfService {   object   The value shall reference the class of service that defines the required service levels of the replica. See the ClassOfService schema for details on this property.     read-write   (null)     uvrite   (null)		urito	zoentanioo_o senema ioi detanis on tinis property.
ReplicaClassOfService {   object   The value shall reference the class of service that defines the required service levels of the replica. See the ClassOfService schema for details on this property.     read- write (null)   write		wille	
ReplicaClassOfService {   object   The value shall reference the class of service that defines the required service levels of the replica. See the ClassOfService schema for details on this property.     read-write   (null)		(mull)	
read- write (null)		(null)	
read- write (null)	ReplicaClassOfService {	(null) object	The value shall reference the class of service that defines the required service levels of the replica. See the
write (null)	ReplicaClassOfService {	(null) object	The value shall reference the class of service that defines the required service levels of the replica. See the <i>ClassOfService</i> schema for details on this property.
(null)	ReplicaClassOfService {	(null) object read-	The value shall reference the class of service that defines the required service levels of the replica. See the <i>ClassOfService</i> schema for details on this property.
	ReplicaClassOfService {	(null) object read- write	The value shall reference the class of service that defines the required service levels of the replica. See the <i>ClassOfService</i> schema for details on this property.

@odata.id	string	Link to a ClassOfService resource. See the Links section and the <i>ClassOfService</i> schema for details.
	read-	
	only	
}		
ReplicaType	string	The type of replica shall conform to this value. See ReplicaType in Property Details, below, for the possible values of
	(enum)	this property.
	read-	
	write	
	(null)	
Schedule		See the http://redfish.dmtf.org/schemas/swordfish/v1/Schedule.json#/definitions/Schedule schema for details.
	read-	
	write	
	(null)	

#### 9.7.1 Property Details

#### 9.7.1.1 RecoveryGeographicObjective:

The value specifies the geograhic scope of the failure domain.

string	Description
Datacenter	A facility that provides communication, power, or cooling infrastructure to a co-located set of servers, networking and storage.
Rack	A container within a datacenter that provides communication, power, or cooling to a set of components.
RackGroup	A set of racks that may share common communication, power, or cooling.
Region	A set of resources that are required to be either geographically or politically isolated from resources not in the resources.
Row	A set of adjacent racks or rackgroups that may share common communication, power, or cooling.
Server	Components of a CPU/memory complex that share the same infrastructure.

#### 9.7.1.2 RecoveryTimeObjective:

The value shall be an enumeration that indicates the maximum time required to access an alternate replica. In the case that IsIsolated = false, failure of the domain is not a consideration.

string	Description
Nearline	Access to a replica shall be consistent with switching access to a different path through a different front-end interconnection infrastructure. Some inconsistency may occur. A restore step may be required before recovery can commence.
Offline	Access to a replica may take a significant amount of time. No direct connection to the replica is assumed. Some inconsistency loss may occur. A restore step is likely to be required.
OnlineActive	Access to synchronous replicas shall be instantaneous.
OnlinePassive	Access to a synchronous replica shall be consistent with switching access to a different path the same front-end interconnect. A restore step shall not be required.

#### 9.7.1.3 ReplicaType:

The type of replica shall conform to this value.

string	Description
Clone	This enumeration literal shall indicate that replication shall create a point in time, full copy the source.
Mirror	This enumeration literal shall indicate that replication shall create and maintain a copy of the source.
Snapshot	This enumeration literal shall indicate that replication shall create a point in time, virtual copy of the source.
TokenizedClone	This enumeration literal shall indicate that replication shall create a token based clone.

### 9.8 DataProtectionLoSCapabilities 1.1.1

The capabilities to protect data from loss by the use of a replica. The requirements shall be met collectively by the communication path and the replica. There should be one instance associated to a class of service for each replica. Each replica independently should have a class of service that describes its characteristics.

Actions (v1.1+) {}	object	The Actions property shall contain the available actions for this resource.
	read- write	
Description	string	This object represents the Description property. All values for resources described by this schema
		shall comply to the requirements as described in the Redfish specification.
	read-	
	only (mull)	
Id	string	This property represents an identifier for the resource. All values for resources described by this
14	string	schema shall comply to the requirements as described in the Redfish specification.
	read-	
	only	
Identifier		See the http://redfish.dmtf.org/schemas/v1/Resource.json#/definitions/Identifier schema for
	read-	details.
	write	
	(null)	
Links {	object	The value of this property shall contains links to other resources that are not contained in this
	road-	resource.
	only	
Oem {}	object	This object represents the Oem property. All values for resources described by this schema shall
		comply to the requirements as described in the Redfish specification. See the Resource schema for
	read-	details on this property.
	write	
Supported Replica Options [ {	array	The collection shall contain known and supported replica Classes of Service.
	read-	
	write	
@odata.id	string	Link to a ClassOfService resource. See the Links section and the ClassOfService schema for details.
	noad	
	only	
}]		
SupportedReplicaOptions@odata.count	number	The value of this property shall be an integer representing the number of items in a collection.
	read-	
	onty	
} Name	string	This object represents the Name property. All values for recourses described by this scheme shall
Name	string	comply to the requirements as described in the Redfish specification. The value of this string shall be
	read-	of the format for the reserved word Name.
	only	
0em {}	object	The value of this string shall be of the format for the reserved word <i>Oem</i> . See the <i>Resource</i> schema
	read-	for details on this property.
	write	
SupportedLinesOfService [ {	array	The collection shall contain known and supported DataProtectionLinesOfService.
	read-	
	write	

@odata.id	string read-	Link to a DataProtectionLineOfService resource. See the Links section and the <i>DataProtectionLineOfService</i> schema for details.
	only	
}]		
SupportedMinLifetimes [ ]	array (string, null)	The value of each entry shall be an ISO 8601 duration that specifies the minimum lifetime required for the replica.
	read- write	
SupportedRecoveryGeographicObjectives [	array	The value of each entry shall specify a supported failure domain.
{	read- write	
FailureDomainScope	string (enum) <i>read-</i> write	The enumeration literals of this enumeration shall represent a geographic scope in which all components within that scope have similar vulnerabilities. <i>See FailureDomainScope in Property Details, below, for the possible values of this property.</i>
	(null)	
}]		
SupportedRecoveryPointObjectiveTimes [ ]	array (string, null)	The value of each entry shall specify a supported ISO 8601 time interval defining the maximum source information that may be lost on failure. In the case that IsIsolated = false, failure of the domain is not a consideration.
	read- write	
SupportedRecoveryTimeObjectives [ {	array read-	The value of each entry shall specify an enumerated value that indicates a supported expectation for the time required to access an alternate replica. In the case that IsIsolated = false, failure of the domain is not a consideration.
	write	
RecoveryAccessScope	string (enum)	The enumeration literals shall represent the relative time required to make a replica available as a source. See RecoveryAccessScope in Property Details, below, for the possible values of this property.
	read- write (null)	
}]		
SupportedReplicaTypes [ {	array read-	The value of each entry shall specify a supported replica type
	write	
ReplicaType	string (enum)	The enumeration literals may be used to specify the intended outcome of the replication. See ReplicaType in Property Details, below, for the possible values of this property.
	read- write (null)	
}]		
SupportsIsolated	boolean read- write	A value of true shall indicate that allocating a replica in a separate fault domain is supported. The default value for this property is false.
	(null)	

#### 9.8.1 Property Details
### 9.8.1.1 FailureDomainScope:

The enumeration literals of this enumeration shall represent a geographic scope in which all components within that scope have similar vulnerabilities.

string	Description
Datacenter	A facility that provides communication, power, or cooling infrastructure to a co-located set of servers, networking and storage.
Rack	A container within a datacenter that provides communication, power, or cooling to a set of components.
RackGroup	A set of racks that may share common communication, power, or cooling.
Region	A set of resources that are required to be either geographically or politically isolated from resources not in the resources.
Row	A set of adjacent racks or rackgroups that may share common communication, power, or cooling.
Server	Components of a CPU/memory complex that share the same infrastructure.

#### 9.8.1.2 RecoveryAccessScope:

The enumeration literals shall represent the relative time required to make a replica available as a source.

string	Description
Nearline	Access to a replica shall be consistent with switching access to a different path through a different front-end interconnection infrastructure. Some inconsistency may occur. A restore step may be required before recovery can commence.
Offline	Access to a replica may take a significant amount of time. No direct connection to the replica is assumed. Some inconsistency loss may occur. A restore step is likely to be required.
OnlineActive	Access to synchronous replicas shall be instantaneous.
OnlinePassive	Access to a synchronous replica shall be consistent with switching access to a different path the same front-end interconnect. A restore step shall not be required.

#### 9.8.1.3 ReplicaType:

The enumeration literals may be used to specify the intended outcome of the replication.

string	Description
Clone	This enumeration literal shall indicate that replication shall create a point in time, full copy the source.
Mirror	This enumeration literal shall indicate that replication shall create and maintain a copy of the source.
Snapshot	This enumeration literal shall indicate that replication shall create a point in time, virtual copy of the source.
TokenizedClone	This enumeration literal shall indicate that replication shall create a token based clone.

## 9.9 DataSecurityLineOfService 1.0.0

This structure shall be used to describe data security service level requirements.

AntivirusEngineProvider	string	The value shall specify an AntiVirus provider.
	read-	
	write	
	(null)	
AntivirusScanPolicies [ {	array	The enumeration literal shall specify the policy for triggering an AntiVirus scan.
	read-	
	write	
AntiVirusScanTrigger	string	The enumberation literals shall specify types of antivirus scan triggers. See AntiVirusScanTrigger in Property Details,
	(enum)	below, for the possible values of this property.
	read-	
	write	
	(null)	
}]		
	1	

ChannelEncryptionStrength	string (enum)	The enumeration literal shall specify a key size in a symmetric encryption algorithm for transport channel encryption. <i>See ChannelEncryptionStrength in Property Details, below, for the possible values of this property.</i>
	read-	
	(null)	
DataSanitizationPolicy	string	The enumeration literal shall specify the data sanitization policy. See DataSanitizationPolicy in Property Details, below,
	(enum)	for the possible values of this property.
	read-	
	write	
Description	(null)	This object represents the Description property. All values for resources described by this scheme shall comply to the
Description	string	requirements as described in the Redfish specification.
	read-	
	only (null)	
HostAuthenticationType	string	The enumeration literal shall specify the authentication type for hosts (servers) or initiator endpoints. See
	(enum)	HostAuthenticationType in Property Details, below, for the possible values of this property.
	read-	
	write	
	(null)	
Id	string	This property represents an identifier for the resource. All values for resources described by this schema shall comply to the requirements as described in the Redfish specification.
	read-	
	only	
MediaEncryptionStrength	string (enum)	The enumeration literal shall specify a key size in a symmetric encryption algorithm for media encryption. See MediaEncryptionStrength in Property Details, below, for the possible values of this property.
	read- write	
	(null)	
Name	string	This object represents the Name property. All values for resources described by this schema shall comply to the
	read-	requirements as described in the Redfish specification. The value of this string shall be of the format for the reserved word <i>Name</i> .
	only	
<b>Oem</b> {}	object	The value of this string shall be of the format for the reserved word <i>Oem</i> . See the <i>Resource</i> schema for details on this
	read-	property.
	write	
SecureChannelProtocol	string	The enumeration literal shall specify the protocol that provide encrypted communication. See SecureChannelProtocol in
	(enum)	Property Details, below, for the possible values of this property.
	read-	
	write (null)	
UserAuthenticationType	string	The enumeration literal shall specify the authentication type for users (or programs). See UserAuthenticationType in
	(enum)	Property Details, below, for the possible values of this property.
	read-	
	write	
	(null)	

## 9.9.1 Property Details

### 9.9.1.1 AntiVirusScanTrigger:

The enumberation literals shall specify types of antivirus scan triggers.

string	Description
None	This enumeration literal specifies No trigger.
OnFirstRead	This enumeration literal specifies to trigger on first read.
OnPatternUpdate	This enumeration literal specifies to trigger on antivirus pattern file update.
OnRename	This enumeration literal specifies to trigger on object rename.
OnUpdate	This enumeration literal specifies to trigger on object update.

### 9.9.1.2 ChannelEncryptionStrength:

The enumeration literal shall specify a key size in a symmetric encryption algorithm for transport channel encryption.

string	Description
Bits_0	This enumeration literal specifies that there is no key.
Bits_112	This enumeration literal specifies a 3DES 112 bit key.
Bits_128	This enumeration literal specifies an AES 128 bit key.
Bits_192	This enumeration literal specifies an AES 192 bit key.
Bits_256	This enumeration literal specifies an AES 256 bit key.

#### 9.9.1.3 DataSanitizationPolicy:

The enumeration literal shall specify the data sanitization policy.

string	Description
Clear	This enumeration literal specifies to sanitize data in all user-addressable storage locations for protection against simple non-invasive data recovery techniques.
CryptographicErase	This enumeration literal specifies to leverages the encryption of target data by enabling sanitization of the target data's encryption key. This leaves only the ciphertext remaining on the media, effectively sanitizing the data by preventing read-access. For more information, see NIST800-88 and ISO/IEC 27040.
None	This enumeration literal specifies no sanitization.

### 9.9.1.4 HostAuthenticationType:

The enumeration literal shall specify the authentication type for hosts (servers) or initiator endpoints.

string	Description
None	This enumeration literal specifies No authentication.
PKI	This enumeration literal specifies a Public Key Infrastructure. Customers with the highest assurance requirements roll PKI out to hosts and users (it is more common for hosts than users. User PKI-based authentication has significant operational complications and administrative overheads, e.g., smart cards may be involved.
Password	This enumeration literal specifies Password/shared-secret: Absent an distributed authentication infrastructure, this is what is typically done.
Ticket	This enumeration literal specifies Ticket-based (e.g., Kerberos): This is the most common class of authentication infrastructure used in enterprises. Kerberos is the best known example, and Windows usage of that via Active Directory is so widely deployed as to be a de facto standard. In other areas (e.g., academia) there are comparable ticket-based systems.

#### 9.9.1.5 MediaEncryptionStrength:

The enumeration literal shall specify a key size in a symmetric encryption algorithm for media encryption.

string	Description
Bits_0	This enumeration literal specifies that there is no key.
Bits_112	This enumeration literal specifies a 3DES 112 bit key.
Bits_128	This enumeration literal specifies an AES 128 bit key.
Bits_192	This enumeration literal specifies an AES 192 bit key.
Bits_256	This enumeration literal specifies an AES 256 bit key.

### 9.9.1.6 SecureChannelProtocol:

The enumeration literal shall specify the protocol that provide encrypted communication.

string	Description
IPsec	This enumeration literal specifies Internet Protocol Security (IPsec), as defined by IETF RFC 2401.
None	This enumeration literal specifies no encryption.
RPCSEC_GSS	This enumeration literal specifies RPC access to the Generic Security Services Application Programming Interface (GSS-API), as defined by IETF RPC 2203.
TLS	This enumeration literal specifies Transport Layer Security (TLS), as defined by IETF RFC 5246.

### 9.9.1.7 UserAuthenticationType:

The enumeration literal shall specify the authentication type for users (or programs).

string	Description
None	This enumeration literal specifies No authentication.
PKI	This enumeration literal specifies a Public Key Infrastructure. Customers with the highest assurance requirements roll PKI out to hosts and users (it is more common for hosts than users. User PKI-based authentication has significant operational complications and administrative overheads, e.g., smart cards may be involved.
Password	This enumeration literal specifies Password/shared-secret: Absent an distributed authentication infrastructure, this is what is typically done.
Ticket	This enumeration literal specifies Ticket-based (e.g., Kerberos): This is the most common class of authentication infrastructure used in enterprises. Kerberos is the best known example, and Windows usage of that via Active Directory is so widely deployed as to be a de facto standard. In other areas (e.g., academia) there are comparable ticket-based systems.

# 9.10 DataSecurityLoSCapabilities 1.1.1

This resource may be used to describe data security capabilities.

Actions (ut t))	object	The Actions moneyty shall contain the qualitable actions for this resource
Actions (01.1+) {}	object	The Actions property shall contain the available actions for this resource.
	7	
	read-	
	write	
Description	string	This object represents the Description property. All values for resources described by this schema shall
		comply to the requirements as described in the Redfish specification.
	read-	
	only	
	(null)	
Id	string	This property represents an identifier for the resource. All values for resources described by this schema
iu	String	shall comply to the requirements as described in the Pedfish encodings
		shan comply to the requirements as described in the Rechish specification.
	reau-	
	only	
Identifier		$See \ the \ http://red fish.dmtf.org/schemas/v1/Resource.json \#/definitions/Identifier \ schema \ for \ details.$
	read-	
	write	
	(null)	
Name	string	This object represents the Name property. All values for resources described by this schema shall comply
	0	to the requirements as described in the Redfish specification. The value of this string shall be of the format
	read-	for the reserved word Name
	onhi	
	onug	
<b>Oem</b> {}	object	The value of this string shall be of the format for the reserved word <i>Oem</i> . See the <i>Resource</i> schema for
		details on this property.
	read-	
	write	

SupportedAntivirusEngineProviders [ ]	array (string, null)	The entry values shall specify supported AntiVirus providers.
	read- write	
SupportedAntivirusScanPolicies [ {	array	The enumeration literal shall specify supported policies that trigger an AntiVirus scan.
	read-	
	write	
AntiVirusScanTrigger	string (enum)	The enumberation literals shall specify types of antivirus scan triggers. <i>See AntiVirusScanTrigger in</i> <i>Property Details, below, for the possible values of this property.</i>
	read-	
	write (null)	
}]	()	
SupportedChannelEncryptionStrengths	array	The enumeration literal shall specify supported key sizes in a symmetric encryption algorithm (AES) for
[{	road-	transport channel encryption.
	write	
KeySize	string (enum)	The enumeration literals shall specify Key sizes in a symmetric encryption algorithm, (see NIST SP 800- 57 part 1 (http:/csrc.nist.gov/publications/nistpubs/800-57/sp800-57_part1_rev3_general.pdf) See KeySize in Property Details, below, for the possible values of this property.
	read-	
	write (null)	
}]		
SupportedDataSanitizationPolicies [ {	array	The enumeration literal shall specify supported data sanitization policies.
	read- write	
DataSanitizationPolicy	string (enum)	The enumberation literals shall specify types of data sanitization policies. <i>See DataSanitizationPolicy in</i> <i>Property Details, below, for the possible values of this property.</i>
	read-	
	write (mill)	
}]	(nuu)	
SupportedHostAuthenticationTypes [ {	array	The enumeration literal shall specify supported authentication types for hosts (servers) or initiator
	read-	enuponits.
	write	
AuthenticationType	string (enum)	The enumeration literals shall specify authentication algorithms. <i>See AuthenticationType in Property Details, below, for the possible values of this property.</i>
	read-	
	write (null)	
}]	()	
SupportedLinesOfService [ {	array	The collection shall contain supported DataSecurity service options.
	read- write	
@odata.id	string	Link to a DataSecurityLineOfService resource. See the Links section and the <i>DataSecurityLineOfService</i>
	read-	schema for details.
}]	only	
11		

SupportedMediaEncryptionStrengths [ { KeySize	array read- write string (enum) read- write	The enumeration literal shall specify supported key sizes in a symmetric encryption algorithm (AES) for media encryption. The enumeration literals shall specify Key sizes in a symmetric encryption algorithm, (see NIST SP 800- 57 part 1 (http:/csrc.nist.gov/publications/nistpubs/800-57/sp800-57_part1_rev3_general.pdf) See KeySize in Property Details, below, for the possible values of this property.
	(null)	
}]		
SupportedSecureChannelProtocols [ {	array	The enumeration literal shall specify supported protocols that provide encrypted communication.
	read- write	
SecureChannelProtocol	string (enum) read- write (null)	The enumeration literals shall specify types of Secure channel protocols. See SecureChannelProtocol in Property Details, below, for the possible values of this property.
}]		
SupportedUserAuthenticationTypes [ {	array	The enumeration literal shall specify supported authentication types for users (or programs).
	read- write	
AuthenticationType	string (enum) read- write (null)	The enumeration literals shall specify authentication algorithms. <i>See AuthenticationType in Property Details, below, for the possible values of this property.</i>
}]		

## 9.10.1 Property Details

### 9.10.1.1 AntiVirusScanTrigger:

The enumberation literals shall specify types of antivirus scan triggers.

string	Description
None	This enumeration literal specifies No trigger.
OnFirstRead	This enumeration literal specifies to trigger on first read.
OnPatternUpdate	This enumeration literal specifies to trigger on antivirus pattern file update.
OnRename	This enumeration literal specifies to trigger on object rename.
OnUpdate	This enumeration literal specifies to trigger on object update.

### 9.10.1.2 AuthenticationType:

The enumeration literals shall specify authentication algorithms.

string	Description
None	This enumeration literal specifies No authentication.
PKI	This enumeration literal specifies a Public Key Infrastructure. Customers with the highest assurance requirements roll PKI out to hosts and users (it is more common for hosts than users. User PKI-based authentication has significant operational complications and administrative overheads, e.g., smart cards may be involved.
Password	This enumeration literal specifies Password/shared-secret: Absent an distributed authentication infrastructure, this is what is typically done.

string	Description
Ticket	This enumeration literal specifies Ticket-based (e.g., Kerberos): This is the most common class of authentication infrastructure used in enterprises.
	Kerberos is the best known example, and Windows usage of that via Active Directory is so widely deployed as to be a de facto standard. In other areas (e.g.,
	academia) there are comparable ticket-based systems.

#### 9.10.1.3 DataSanitizationPolicy:

The enumberation literals shall specify types of data sanitization policies.

string	Description
Clear	This enumeration literal specifies to sanitize data in all user-addressable storage locations for protection against simple non-invasive data recovery techniques.
CryptographicErase	This enumeration literal specifies to leverages the encryption of target data by enabling sanitization of the target data's encryption key. This leaves only the ciphertext remaining on the media, effectively sanitizing the data by preventing read-access. For more information, see NIST800-88 and ISO/IEC 27040.
None	This enumeration literal specifies no sanitization.

### 9.10.1.4 KeySize:

The enumeration literals shall specify Key sizes in a symmetric encryption algorithm, (see NIST SP 800-57 part 1 (http:/csrc.nist.gov/publications/nistpubs/800-57/sp800-57\_part1\_rev3\_general.pdf)

string	Description
Bits_o	This enumeration literal specifies that there is no key.
Bits_112	This enumeration literal specifies a 3DES 112 bit key.
Bits_128	This enumeration literal specifies an AES 128 bit key.
Bits_192	This enumeration literal specifies an AES 192 bit key.
Bits_256	This enumeration literal specifies an AES 256 bit key.

#### 9.10.1.5 SecureChannelProtocol:

The enumeration literals shall specify types of Secure channel protocols.

string	Description
IPsec	This enumeration literal specifies Internet Protocol Security (IPsec), as defined by IETF RFC 2401.
None	This enumeration literal specifies no encryption.
RPCSEC_GSS	This enumeration literal specifies RPC access to the Generic Security Services Application Programming Interface (GSS-API), as defined by IETF RPC 2203.
TLS	This enumeration literal specifies Transport Layer Security (TLS), as defined by IETF RFC 5246.

## 9.11 DataStorageLineOfService 1.1.0

This structure may be used to describe a service option covering storage provisioning and availability.

AccessCapabilities (v1.1+) [	array	Each entry specifies a required storage access capability.
{		
	read-	
	write	
StorageAccessCapability	string	StorageAccessCapability enumeration literals may be used to describe abilities to read or write storage. See
	(enum)	StorageAccessCapability in Property Details, below, for the possible values of this property.
	read-	
	write	
	(null)	
}]		

Description	string read- only (null)	This object represents the Description property. All values for resources described by this schema shall comply to the requirements as described in the Redfish specification.
Id	string read- only	This property represents an identifier for the resource. All values for resources described by this schema shall comply to the requirements as described in the Redfish specification.
IsSpaceEfficient	boolean read- write (null)	A value of true shall indicate that the storage is compressed or deduplicated. The default value for this property is false.
Name	string read- only	This object represents the Name property. All values for resources described by this schema shall comply to the requirements as described in the Redfish specification. The value of this string shall be of the format for the reserved word <i>Name</i> .
Oem {}	object read- write	The value of this string shall be of the format for the reserved word <i>Oem</i> . See the <i>Resource</i> schema for details on this property.
ProvisioningPolicy	string (enum) read- write (null)	The enumeration literal shall define the provisioning policy for storage. See ProvisioningPolicy in Property Details, below, for the possible values of this property.
RecoveryTimeObjectives	string (enum) read- write (null)	The enumeration literal specifies the time after a disaster that the client shall regain conformant service level access to the primary store, typical values are 'immediate' or 'offline'. The expectation is that the services required to implement this capability are part of the advertising system. <i>See RecoveryTimeObjectives in Property Details, below, for the possible values of this property.</i>

## 9.11.1 Property Details

### 9.11.1.1 ProvisioningPolicy:

The enumeration literal shall define the provisioning policy for storage.

string	Description		
Fixed	This enumeration literal specifies storage shall be fully allocated.		
Thin	This enumeration literal specifies storage may be over allocated.		

### 9.11.1.2 RecoveryTimeObjectives:

The enumeration literal specifies the time after a disaster that the client shall regain conformant service level access to the primary store, typical values are 'immediate' or 'offline'. The expectation is that the services required to implement this capability are part of the advertising system.

string	Description		
Nearline	Access to a replica shall be consistent with switching access to a different path through a different front-end interconnection infrastructure. Some inconsistency may occur. A restore step may be required before recovery can commence.		
Offline	Access to a replica may take a significant amount of time. No direct connection to the replica is assumed. Some inconsistency loss may occur. A restore step is likely to be required.		
OnlineActive	Access to synchronous replicas shall be instantaneous.		
OnlinePassive	Access to a synchronous replica shall be consistent with switching access to a different path the same front-end interconnect. A restore step shall not be required.		

### 9.11.1.3 StorageAccessCapability:

StorageAccessCapability enumeration literals may be used to describe abilities to read or write storage.

string	Description
Append	This enumeration literal shall indicate that the storage may be written only to append.
Execute	This value shall indicate that Execute access is allowed by the file share.
Read	This enumeration literal shall indicate that the storage may be read.
Streaming	This enumeration literal shall indicate that the storage may be read sequentially.
Write	This enumeration literal shall indicate that the storage may be written multiple times.
WriteOnce	This enumeration literal shall indicate that the storage may be written only once.

# 9.12 DataStorageLoSCapabilities 1.1.1

Each instance of DataStorageLoSCapabilities describes capabilities of the system to support various data storage service options.

<b>Actions</b> ( <i>v</i> 1.1+) {}	object	The Actions property shall contain the available actions for this resource.
	road-	
	write	
Description	string	This object represents the Description property. All values for resources described by this schema shall comply
		to the requirements as described in the Redfish specification.
	read-	
	only	
	(null)	
Id	string	This property represents an identifier for the resource. All values for resources described by this schema shall
	read-	comply to the requirements as described in the Rednish specification.
	only	
Identifier		See the http://redfish.dmtf.org/schemas/v1/Resource.json#/definitions/Identifier schema for details.
	read-	
	write	
	(nuu)	
Name	string	This object represents the Name property. All values for resources described by this schema shall comply to the requirements as described in the Redfish specification. The value of this string shall be of the format for the
	read-	reserved word Name.
	only	
Oem {}	object	The value of this string shall be of the format for the reserved word Oem. See the Resource schema for details
		on this property.
	read-	
	write	
SupportedAccessCapabilities [ {	array	Each entry specifies a storage access capability.
	read-	
	write	
StorageAccessCapability	string	StorageAccessCapability enumeration literals may be used to describe abilities to read or write storage. See
	(enum)	StorageAccessCapability in Property Details, below, for the possible values of this property.
	read-	
	write	
	(null)	
}]		
SupportedLinesOfService [ {	array	The collection shall contain known and supported DataStorageLinesOfService.
	read-	
	write	
1	1	

string read- only	Link to a DataStorageLineOfService resource. See the Links section and the <i>DataStorageLineOfService</i> schema for details.
array	This collection specifies supported storage allocation policies.
read- write	
string (enum)	The enumeration literals may be used to specify space provisioning policy. See ProvisioningPolicy in Property Details, below, for the possible values of this property.
read- write (null)	
array	This collection specifies supported expectations for time to access the primary store after recovery.
read- write	
string (enum)	The enumeration literals shall represent the relative time required to make a replica available as a source. See <i>RecoveryAccessScope in Property Details, below, for the possible values of this property.</i>
read-	
write (mill)	
boolean	The value specifies whether storage compression or deduplication is supported. The default value for this property is false.
read-	
write (null)	
	string read- only array read- write string (enum) read- write (null) array read- write (null) string (enum) read- write (null)

### 9.12.1 Property Details

### 9.12.1.1 ProvisioningPolicy:

The enumeration literals may be used to specify space provisioning policy.

string	Description
Fixed	This enumeration literal specifies storage shall be fully allocated.
Thin	This enumeration literal specifies storage may be over allocated.

### 9.12.1.2 RecoveryAccessScope:

The enumeration literals shall represent the relative time required to make a replica available as a source.

string	Description
Nearline	Access to a replica shall be consistent with switching access to a different path through a different front-end interconnection infrastructure. Some
	inconsistency may occur. A restore step may be required before recovery can commence.
Offline	Access to a replica may take a significant amount of time. No direct connection to the replica is assumed. Some inconsistency loss may occur. A restore step is likely to be required.
OnlineActive	Access to synchronous replicas shall be instantaneous.
OnlinePassive	Access to a synchronous replica shall be consistent with switching access to a different path the same front-end interconnect. A restore step shall not be required.

### 9.12.1.3 StorageAccessCapability:

StorageAccessCapability enumeration literals may be used to describe abilities to read or write storage.

string	Description		
Append	This enumeration literal shall indicate that the storage may be written only to append.		
Execute	This value shall indicate that Execute access is allowed by the file share.		
Read	This enumeration literal shall indicate that the storage may be read.		
Streaming	This enumeration literal shall indicate that the storage may be read sequentially.		
Write	This enumeration literal shall indicate that the storage may be written multiple times.		
WriteOnce	This enumeration literal shall indicate that the storage may be written only once.		

# 9.13 DriveCollection

Description	string	This object represents the Description property. All values for resources described by this schema shall comply to the requirements as
		described in the Redfish specification.
	read-	
	only	
	(null)	
Members [ {	array	The value of each entry of this property shall reference a Drive resource.
	read-	
	only	
@odata.id	string	The value of this property shall be the unique identifier for the resource and it shall be of the form defined in the Redfish specification.
	read-	
	only	
}]		
Name	string	This object represents the Name property. All values for resources described by this schema shall comply to the requirements as
		described in the Redfish specification. The value of this string shall be of the format for the reserved word Name.
	read-	
	only	
<b>Oem</b> {}	object	The value of this string shall be of the format for the reserved word Oem. See the Resource schema for details on this property.
	read-	
	write	

# 9.14 EndpointCollection

Description	string	This object represents the Description property. All values for resources described by this schema shall comply to the requirements as
		described in the Redfish specification.
	read-	
	only	
	(null)	
Members [ {	array	The value of each member entry shall reference an Endpoint resource.
	read-	
	only	
@odata.id	string	The value of this property shall be the unique identifier for the resource and it shall be of the form defined in the Redfish specification.
	read-	
	only	
}]		
Name	string	This object represents the Name property. All values for resources described by this schema shall comply to the requirements as
	0	described in the Redfish specification. The value of this string shall be of the format for the reserved word <i>Name</i> .
	read-	
	onhi	
	onug	I

<b>Oem</b> {}	object	The value of this string shall be of the format for the reserved word <i>Oem</i> . See the <i>Resource</i> schema for details on this property.
	read- write	

# 9.15 EndpointGroup 1.1.1

An EndpointGroup represents a collection of endpoints that are managed as a unit. By grouping together a collection of Endpoints, the EndpointGroup allows a collection of entities from differing sources or hosts to be manipulated uniformly and efficiently.

For any given EndpointGroup, all of its endpoints act exclusively as either server endpoints or client endpoints, as indicated by the value of the EndpointType property. Similarly, each Endpoint within a group has the same AccessState.

A server or client may define multiple EndpointGroup entities that access the same set of resources or functionality. A group may be designated as preferred, which signifies that access should be directed through its members in preference to the Endpoints listed in other EndpointGroups. If the value of EndpointType is Server, an EndpointGroup entity can be used to represent target port group as defined by SCSI. In that mode, the value of the TargetEndpointGroupIdentifier should correspond to the target port group number. (See clause "Device Identification VPD page" as defined in the SCSI Primary Commands specification.)

iemm       Frequery Details, below, for the possible values of this property.         irread- irread- irread- arread- arread- irread	AccessState	string	Access to all associated resources through all aggregated endpoints shall share this access state. See AccessState in
read- urrie (nul)       read- (nul)       The Actions property shall contain the available actions for this resource.         Actions (ur.t+)()       object       The Actions property shall contain the available actions for this resource.         read- urrie       This object represents the Description property. All values for resources described by this schema shall comply to the requirements as described in the Redfish specification.         Pescription       String (nul)       This value of each entry shall reference an Endpoint resource. Contains a link to a resource.         read- urrite (nul)       The value of each entry shall reference an Endpoint resource. Contains a link to a resource.         read- urrite (nul)       The value of each entry shall reference an Endpoint resource. Contains a link to a resource.         read- urrite (nul)       The value of each entry shall reference an Endpoint resource. Contains a link to a resource.         read- urrite (nul)       The value of each entry shall reference an Endpoint resource. Contains a link to a resource.         read- urrite (nul)       The group contains only endpoint. See the Endpoint schema for details.         read- urrite (nul)       The group contains only endpoints of a given type Client/Initiator or Server/Target. If this endpoint group represents a SCSI target group, the value of GroupType shall be Server. See GroupType in Property Details, below. for the possible values of this property.         read- urrite (nul)       This property represents an identifier for the resource. All values for resources described by this schema shall		(enum)	Property Details, below, for the possible values of this property.
read- urite       read- initial         Actions (v1.4+) {}       object       The Actions property shall contain the available actions for this resource.         read- urite       read- initial       read- initial         Pescription       string       This object represents the Description property. All values for resources described by this schema shall comply to the requirements as described in the Redfish specification.         read- only       read- initial       The value of each entry shall reference an Endpoint resource. Contains a link to a resource.         read- only       read- initial       The value of each entry shall reference an Endpoint resource. Contains a link to a resource.         read- only       read- initial       The value of each entry shall reference an Endpoint resource. Contains a link to a resource.         read- only       Inits to Collection of Endpoint. See the Endpoint schema for details.         read- initial       trink to Collection of Endpoint. See the Endpoint schema for details.         read- initial       The group contains only endpoints of a given type Client/Initiator or Server/Target. If this endpoint group represents a SCSI target group, the value of GroupType shall be Server. See GroupType in Property Details, bebus, for the possible values of this property.         read- intered       This property represents an identifier for the resource. All values for resources described by this schema shall comply to the requirements as described in the Redfish specification.         read- intered       T			
write (nul)       write (nul)         Actions (w.r.+) {}       object       The Actions property shall contain the available actions for this resource.         read- write       read- only (nul)       This object represents the Description property. All values for resources described by this achema shall comply to the requirements as described in the Redfish specification.         Fendpoints {       object       The value of each entry shall reference an Endpoint resource. Contains a link to a resource.         @odata.id       object       The value of each entry shall reference an Endpoint schema for details.         @odata.id       string       Link to Collection of Endpoint. See the Endpoint schema for details.         @codata.id       string       Ink to Collection of Endpoint. See the Endpoint schema for details.         ?       read- only       read- only       The group contains only endpoints of a given type Client/Initiator or Server/Target. If this endpoint group represents a SCSI target group, the value of GroupType shall be Server. See GroupType in Property Details, below, for the possible values of this property.         Id       This property represents an identifier for the resource. All values for resources described by this schema shall comply to the requirements as described in the Redfish specification.         Identifier       Link bettp://redfish.dmt/.org/schemas/v1/Resource.jone/.dfajitions/Identifier schema for details.		read-	
Actions (v1,t+) {}       object       The Actions property shall contain the available actions for this resource.         read- uaride       read- invite       This object represents the Description property. All values for resources described by this schema shall comply to the requirements as described in the Redfish specification.         Pescription       fread- ouly (null)       The value of each entry shall reference an Endpoint resource. Contains a link to a resource.         Pendotine       read- ouly       The value of each entry shall reference an Endpoint resource. Contains a link to a resource.         @odata.id       string       Link to Collection of Endpoint. See the Endpoint schema for details.         @odata.id       string       Link to Collection of Endpoint. See the Endpoint schema for details.         Pread- uarite       read- ouly       The group contains only endpoints of a given type Client/Initiator or Server/Target. If this endpoint group represents a SCSI target group, the value of GroupType shall be Server. See GroupType in Property Details, below, for the possible values of this property.         Id       read- urite       This property represents an identifier for the resource. All values for resources described by this schema shall comply to the requirements as described in the Redfish specification.         Id       read- ouly       This property represents an identifier for the resource. All values for resources described by this schema shall comply to the requirements as described in the Redfish specification.         Identifier       In aread- ouly </th <th></th> <th>write</th> <th></th>		write	
Actions (u1, 1+) {}       object       The Actions property shall contain the available actions for this resource.         read- uvite       read- vite       inits object represents the Description property. All values for resources described by this schema shall comply to the requirements as described in the Redfish specification.         Description       read- only (rad)       The value of each entry shall reference an Endpoint resource. Contains a link to a resource.         Endpoints {       object       The value of each entry shall reference an Endpoint resource. Contains a link to a resource.         @odata.id       read- virtie       inits to Collection of Endpoint. See the Endpoint schema for details.         @read- only       Link to Collection of Endpoint. See the Endpoint schema for details.         @read- virtie       Inits opport property. If this endpoint group represents a SCS1 target group, the value of Group Type shall be Server. See Group Type in Property Details, below, for the possible values of this property.         Id       read- virtie       This property represents an identifier for the resource. All values for resources described by this schema shall comply to the requirements as described in the Redfish specification.         Id       Read- virtie       Fread- virtie         wirtie       This property represents an identifier for the resource. All values for resources described by this schema shall comply to the requirements as described in the Redfish specification.         read- vinte       Fread- virtie       See the http://re		(null)	
read- write       read- indication       read- indication       This object represents the Description property. All values for resources described by this schema shall comply to the requirements as described in the Redfish specification.         Fordpoints (       object       Prevalue of each entry shall reference an Endpoint resource. Contains a link to a resource.         Image:	<b>Actions</b> ( <i>v</i> 1.1+) {}	object	The Actions property shall contain the available actions for this resource.
read- write       read- write         Pescription       string read- only (null)       This object represents the Description property. All values for resources described by this schema shall comply to the requirements as described in the Redfish specification.         Findpoints {       object       The value of each entry shall reference an Endpoint resource. Contains a link to a resource.         read- write (null)       read- write (null)       Inte value of each entry shall reference an Endpoint resource. Contains a link to a resource.         @odata.id       string       Link to Collection of Endpoint. See the Endpoint schema for details.         read- only       read- only       The group contains only endpoints of a given type Client/Initiator or Server/Target. If this endpoint group represents a SCSI target group, the value of GroupType shall be Server. See GroupType in Property Details, below, for the possible values of this property.         Id       string       This property represents an identifier for the resource. All values for resources described by this schema shall comply to the requirements as described in the Redfish specification.         Identifier       only       This property represents an identifier for the resource. All values for resources described by this schema shall comply to the requirements as described in the Redfish specification.			
write         write           Description         String read- only (nul)         This object represents the Description property. All values for resources described by this schema shall comply to the requirements as described in the Redfish specification.           Endpoints {         object         The value of each entry shall reference an Endpoint resource. Contains a link to a resource.           write (nul)         write (nul)         Ink to Collection of Endpoint. See the Endpoint schema for details.           @odata.id         string read- only         Link to Collection of Endpoint. See the Endpoint schema for details.           ?         read- only         The group contains only endpoints of a given type Client/Initiator or Server/Target. If this endpoint group represents a SCSI target group, the value of GroupType shall be Server. See GroupType in Property Details, below. for the possible values of this property.           Id         string (enum)         This property represents an identifier for the resource. All values for resources described by this schema shall comply to the requirements as described in the Redfish specification.           Id         string (nul)         This property represents an identifier for the resource. All values for resources described by this schema shall comply to the requirements as described in the Redfish specification.           Identifier         See the http://redfish.dmtf.org/schemas/ut/Resource.json#/definitions/Identifier schema for details.		read-	
Description       string       This object represents the Description property. All values for resources described by this schema shall comply to the requirements as described in the Redfish specification.         read- only       (mil)       The value of each entry shall reference an Endpoint resource. Contains a link to a resource.         Endpoints {       object       The value of each entry shall reference an Endpoint resource. Contains a link to a resource.         read- uvrite       read- uvrite       The value of each entry shall reference an Endpoint resource. Contains a link to a resource.         @odata.id       string       Link to Collection of Endpoint. See the Endpoint schema for details.         read- only       read- only       The group contains only endpoints of a given type Client/Initiator or Server/Target. If this endpoint group represents a SCSI target group, the value of GroupType shall be Server. See GroupType in Property Details, below.for the possible values of this property.         read- indu       This property represents an identifier for the resource. All values for resources described by this schema shall comply to the requirements as described in the Redfish specification.         read- indu       Set the htp://redfish.dmtf.org/schemas/v1/Resource.jon#/definitions/Identifier schema for details.		write	
read-only (null)       in the requirements as described in the Redfish specification.         Fadpoints (       object       The value of each entry shall reference an Endpoint resource. Contains a link to a resource.         read-write (null)       read- write (null)       The value of each entry shall reference an Endpoint resource. Contains a link to a resource.         @odata.id       string       Link to Collection of Endpoint. See the Endpoint schema for details.         read- only       read- only       Intercontent of Endpoint. See the Endpoint schema for details.         foroupType       tread- only       The group contains only endpoints of a given type Client/Initiator or Server/Target. If this endpoint group represents a SCS1 target group, the value of GroupType shall be Server. See GroupType in Property Details, below.for the possible values of this property.         Id       string (enum)       This property represents an identifier for the resource. All values for resources described by this schema shall comply to the requirements as described in the Redfish specification.         Identifier       see the http://redfish.dmtf.org/schemas/v1/Resource.json#/definitions/Identifier schema for details.	Description	string	This object represents the Description property. All values for resources described by this schema shall comply to
read- only only init       read- init         Endpoints {       object       The value of each entry shall reference an Endpoint resource. Contains a link to a resource.         read- inition       read- inition       read- inition         @odata.id       string       Link to Collection of Endpoint. See the Endpoint schema for details.         @odata.id       read- only       Link to Collection of Endpoint. See the Endpoint schema for details.         Pread- only       The group contains only endpoints of a given type Client/Initiator or Server/Target. If this endpoint group represents a SCS1 target group, the value of GroupType shall be Server. See GroupType in Property Details, below, for the possible values of this property.         Id       string (enum)       This property represents an identifier for the resource. All values for resources described by this schema shall comply to the requirements as described in the Redfish specification.         Identifier       See the http://redfish.dmtf.org/schemas/w1/Resource.json#/definitions/Identifier schema for details.			the requirements as described in the Redfish specification.
only (null)       only (null)         Endpoints {       object       The value of each entry shall reference an Endpoint resource. Contains a link to a resource.         read- uvrite (null)       read- (null)       Link to Collection of Endpoint. See the Endpoint schema for details.         @odata.id       string       Link to Collection of Endpoint. See the Endpoint schema for details.         // code- only       Interpretention of the possible value of a given type Client/Initiator or Server/Target. If this endpoint group represents a SCSI target group, the value of GroupType shall be Server. See GroupType in Property Details, below. for the possible values of this property.         Id       String (null)       This property represents an identifier for the resource. All values for resources described by this schema shall comply to the requirements as described in the Redfish specification.         Identifier       Kee the http://redfish.dmt/f.org/schemas/wi/Resource.json#/definitions/Identifier schema for details.		read-	
Image: control in the second secon		only	
Endpoints {       object       The value of each entry shall reference an Endpoint resource. Contains a link to a resource.         read- write (nul)       interad- write (nul)       interad- write (nul)       interad- biologica         @odata.id       string       Link to Collection of Endpoint. See the Endpoint schema for details.         read- only       The group contains only endpoints of a given type Client/Initiator or Server/Target. If this endpoint group represents a SCSI target group, the value of GroupType shall be Server. See GroupType in Property Details, below, for the possible values of this property.         Id       String       This property represents an identifier for the resource. All values for resources described by this schema shall comply to the requirements as described in the Redfish specification.         Identifier       See the http://redfish.dmtf.org/schemas/v1/Resource.json#/definitions/Identifier schema for details.		(null)	
read- write (null)Link to Collection of Endpoint. See the Endpoint schema for details.@odata.idstringLink to Collection of Endpoint. See the Endpoint schema for details.read- onlyread- only>ToGroupTypestring (enum)The group contains only endpoints of a given type Client/Initiator or Server/Target. If this endpoint group represents a SCSI target group, the value of GroupType shall be Server. See GroupType in Property Details, below, for the possible values of this property.IdString read- onlyThis property represents an identifier for the resource. All values for resources described by this schema shall comply to the requirements as described in the Redfish specification.IdentifierSee the http://redfish.dmtf.org/schemas/v1/Resource.json#/definitions/Identifier schema for details.	Endpoints {	object	The value of each entry shall reference an Endpoint resource. Contains a link to a resource.
read- write (null)       read- (null)         @odata.id       string       Link to Collection of Endpoint. See the Endpoint schema for details.         read- only       read- only       .         }       To       .         GroupType       string (enum)       The group contains only endpoints of a given type Client/Initiator or Server/Target. If this endpoint group represents a SCSI target group, the value of GroupType shall be Server. See GroupType in Property Details, below, for the possible values of this property.         read- (null)       read- (null)       .         Id       String only       This property represents an identifier for the resource. All values for resources described by this schema shall comply to the requirements as described in the Redfish specification.         read- only       See the http://redfish.dmtf.org/schemas/v1/Resource.json#/definitions/Identifier schema for details.			
write (null)       write (null)         @odata.id       string       Link to Collection of Endpoint. See the Endpoint schema for details.         read- organ       read- read- indication       read- read- indication       read- represents a SCSI target group, the value of GroupType Schemt/Initiator or Server/Target. If this endpoint group represents a SCSI target group, the value of GroupType shall be Server. See GroupType in Property Details, below, for the possible values of this property.         Id       string read- write (null)       This property represents an identifier for the resource. All values for resources described by this schema shall comply to the requirements as described in the Redfish specification.         Identifier       See the http://redfish.dmtf.org/schemas/v1/Resource.json#/definitions/Identifier schema for details.		read-	
(null)       (null)         @odata.id       string       Link to Collection of Endpoint. See the Endpoint schema for details.         read- only       read- only       ink       read- only         }       Image: Constraint of the point of the point of a given type Client/Initiator or Server/Target. If this endpoint group represents a SCSI target group, the value of GroupType shall be Server. See GroupType in Property Details, below, for the possible values of this property.         Id       string (null)       This property represents an identifier for the resource. All values for resources described by this schema shall comply to the requirements as described in the Redfish specification.         Identifier       See the http://redfish.dmtf.org/schemas/v1/Resource.json#/definitions/Identifier schema for details.		write	
@odata.id       string       Link to Collection of Endpoint. See the Endpoint schema for details.         read- only       read- only       .         }       Image: Collection of Endpoint. See the Endpoint schema for details.         read- only       .         GroupType       string (enum)       The group contains only endpoints of a given type Client/Initiator or Server/Target. If this endpoint group represents a SCSI target group, the value of GroupType shall be Server. See GroupType in Property Details, below, for the possible values of this property.         read- write       .         (null)       .         Id       String null         Id       String null       This property represents an identifier for the resource. All values for resources described by this schema shall comply to the requirements as described in the Redfish specification.         read- only       .       .         Identifier       See the http://redfish.dmtf.org/schemas/v1/Resource.json#/definitions/Identifier schema for details.		(null)	
read- only       read- only         }       Image: Constraint only and points of a given type Client/Initiator or Server/Target. If this endpoint group represents a SCSI target group, the value of GroupType shall be Server. See GroupType in Property Details, below, for the possible values of this property.         read- write (null)       This property represents an identifier for the resource. All values for resources described by this schema shall comply to the requirements as described in the Redfish specification.         Identifier       See the http://redfish.dmtf.org/schemas/v1/Resource.json#/definitions/Identifier schema for details.	@odata.id	string	Link to Collection of <i>Endpoint</i> . See the Endpoint schema for details.
read- only       read- only         }       Image: string (enum)       The group contains only endpoints of a given type Client/Initiator or Server/Target. If this endpoint group represents a SCSI target group, the value of GroupType shall be Server. See GroupType in Property Details, below, for the possible values of this property.         read- write (null)       read- write (null)         Id       string read- only       This property represents an identifier for the resource. All values for resources described by this schema shall comply to the requirements as described in the Redfish specification.         Identifier       See the http://redfish.dmtf.org/schemas/v1/Resource.json#/definitions/Identifier schema for details.			
only       only         }       Image: Constraint only only only only only only only only		read-	
}       Image: Constraint on the property of the property.         Image: Property of the property.         Image: Property of the property of the property of the property of the property.         Image: Property of the property of the property of the property.         Image: Property of the property of the property of the property.         Image: Property of the property of the property of the property.         Image: Property of the property of the property of the property.         Image: Property of the property of the property of the property.         Image: Property of the property of the property of the property.         Image: Property of the property of the property of the property.         Image: Property of the property of the property of the property.         Image: Property of the property of the property of the property.         Image: Property of the property of the property of the property.         Image: Property of the property of the property of the property.         Image: Property of the property of the property of the property.         Image: Property of the property of the property of the property.         Image: Property of the property of the property of the property.         Image: Property of the property of the property of the property.         Image: Property of the property of the property.         Image: Property of		only	
GroupType       string       The group contains only endpoints of a given type Client/Initiator or Server/Target. If this endpoint group         (enum)       represents a SCSI target group, the value of GroupType shall be Server. See GroupType in Property Details, below, for the possible values of this property.         read- write       read- (null)         Id       string       This property represents an identifier for the resource. All values for resources described by this schema shall comply to the requirements as described in the Redfish specification.         read- only       read- (null)       string       See the http://redfish.dmtf.org/schemas/v1/Resource.json#/definitions/Identifier schema for details.	}		
(enum)       represents a SCSI target group, the value of GroupType shall be Server. See GroupType in Property Details, below, for the possible values of this property.         read-write       read-(null)         Id       string       This property represents an identifier for the resource. All values for resources described by this schema shall comply to the requirements as described in the Redfish specification.         Identifier       see the http://redfish.dmtf.org/schemas/v1/Resource.json#/definitions/Identifier schema for details.	GroupType	string	The group contains only endpoints of a given type Client/Initiator or Server/Target. If this endpoint group
Identifier       see the http://redfish.dmtf.org/schemas/v1/Resource.json#/definitions/Identifier schema for details.		(enum)	represents a SCSI target group, the value of GroupType shall be Server. See GroupType in Property Details,
read-write       write         (null)       This property represents an identifier for the resource. All values for resources described by this schema shall comply to the requirements as described in the Redfish specification.         read-only       See the http://redfish.dmtf.org/schemas/v1/Resource.json#/definitions/Identifier schema for details.			below, for the possible values of this property.
write (null)       write (null)         Id       string read- only       This property represents an identifier for the resource. All values for resources described by this schema shall comply to the requirements as described in the Redfish specification.         Identifier       See the http://redfish.dmtf.org/schemas/v1/Resource.json#/definitions/Identifier schema for details.		read-	
(null)       (null)         Id       string       This property represents an identifier for the resource. All values for resources described by this schema shall comply to the requirements as described in the Redfish specification.         read-only       read-only         Identifier       See the http://redfish.dmtf.org/schemas/v1/Resource.json#/definitions/Identifier schema for details.		write	
Id       string       This property represents an identifier for the resource. All values for resources described by this schema shall comply to the requirements as described in the Redfish specification.         read-only       read-only         Identifier       See the http://redfish.dmtf.org/schemas/v1/Resource.json#/definitions/Identifier schema for details.		(null)	
Identifier       comply to the requirements as described in the Redfish specification.         See the http://redfish.dmtf.org/schemas/v1/Resource.json#/definitions/Identifier schema for details.	Id	string	This property represents an identifier for the resource. All values for resources described by this schema shall
read-only       read-only         Identifier       See the http://redfish.dmtf.org/schemas/v1/Resource.json#/definitions/Identifier schema for details.			comply to the requirements as described in the Redfish specification.
only       Identifier       See the http://redfish.dmtf.org/schemas/v1/Resource.json#/definitions/Identifier schema for details.		read-	
Identifier       See the http://redfish.dmtf.org/schemas/v1/Resource.json#/definitions/Identifier schema for details.		only	
mad	Identifier		See the http://redfish.dmtf.org/schemas/v1/Resource.json#/definitions/Identifier schema for details.
mad			
reau-		read-	
write		write	
(null)		(null)	

Links {	object	This structure shall contain references to resources that are not contained within this resource.
	_	
	read-	
	only	
<b>Oem</b> {}	object	This object represents the Oem property. All values for resources described by this schema shall comply to the
		requirements as described in the Redfish specification. See the Resource schema for details on this property.
	read-	
	write	
}		
Name	string	This object represents the Name property. All values for resources described by this schema shall comply to the
		requirements as described in the Redfish specification. The value of this string shall be of the format for the
	read-	reserved word Name.
	only	
<b>Oem</b> {}	object	The value of this string shall be of the format for the reserved word Oem. See the Resource schema for details on
		this property.
	read-	
	write	
Preferred	boolean	A value of True in this property shall indicate that access to the associated resource through the endpoints in this
		endpoint group is preferred over access through other endpoints. The default value for this property is false.
	read-	
	write	
	(null)	
TargetEndpointGroupIdentifier	number	If this endpoint group represents a SCSI target group, the value of this property shall contain a SCSI defined
		identifier for this group, which corresponds to the TARGET PORT GROUP field in the REPORT TARGET PORT
	read-	GROUPS response and the TARGET PORT GROUP field in an INQUIRY VPD page 85 response, type 5h
	write	identifier. See the INCITS SAM-5 specification.
	(null)	

## 9.15.1 Property Details

### 9.15.1.1 AccessState:

Access to all associated resources through all aggregated endpoints shall share this access state.

string	Description
NonOptimized	In the context of this enumeration literal, each endpoint shall be in an Active/NonOptimized state.
Optimized	In the context of this enumeration literal, each endpoint shall be in an Active/Optimized state.
Standby	In the context of this enumeration literal, each endpoint shall be in a Standby state.
Transitioning	In the context of this enumeration literal, at least one endpoint shall be transitioning to a new AccesState.
Unavailable	In the context of this enumeration literal, each endpoint shall be in an unavailable state.

### 9.15.1.2 GroupType:

The group contains only endpoints of a given type Client/Initiator or Server/Target. If this endpoint group represents a SCSI target group, the value of GroupType shall be Server.

string	Description
Client	The group contains the client (initiator) endpoints.
Server	The group contains the server (target) endpoints.

## 9.16 EndpointGroupCollection

Description	string	This object represents the Description property. All values for resources described by this schema shall comply to the requirements as
	road	described in the Rednish specification.
	onhi	
	(mull)	
	(null)	
Members [ {	array	I ne value of each member entry shall reference an endpoint group resource.
	read-	
	onhi	
e dete id		Links - Endering Commence and the Links and the Endering Comments of the deside
@odata.id	string	Link to a EndpointGroup resource. See the Links section and the <i>EndpointGroup</i> schema for details.
	read-	
	onhi	
11	onig	
}]		
Name	string	This object represents the Name property. All values for resources described by this schema shall comply to the requirements as
		described in the Redfish specification. The value of this string shall be of the format for the reserved word Name.
	read-	
	only	
<b>Oem</b> {}	object	The value of this string shall be of the format for the reserved word Oem. See the Resource schema for details on this property.
	read-	
	write	

# 9.17 FileShare 1.1.1

This resource shall be used to represent a shared set of files with a common directory structure.

Actions (v1.1+) {}	object	The Actions property shall contain the available actions for this resource.
	read-	
	write	
CASupported	boolean	The value of this property shall indicate that Continuous Availability is supported. Client/Server mediated
		recovery from network and server failure with application transparency. This property shall be NULL
	read-	unless the FileSharingProtocols property includes SMB. The default value for this property is false.
	write	
	(null)	
DefaultAccessCapabilities [ {	array	The value of this property shall be an array containing entries for the default access capabilities for the file
		share. Each entry shall specify a defaul access privilege. The types of default access can include Read,
	read-	Write, and/or Execute.
	only	
StorageAccessCapability	string	StorageAccessCapability enumeration literals may be used to describe abilities to read or write storage.
	(enum)	See StorageAccessCapability in Property Details, below, for the possible values of this property.
	read-	
	write	
	(null)	
}]		
Description	string	This object represents the Description property. All values for resources described by this schema shall
		comply to the requirements as described in the Redfish specification.
	read-	
	only	
	(null)	
EthernetInterfaces {	object	The value shall be a link to an EthernetInterfaceCollection with members that provide access to the file
		share.
	read-	
	only	
	5	

@odata.id	string	The value of this property shall be the unique identifier for the resource and it shall be of the form defined
	read-	in the Kednsh specification.
	only	
}		
EvecuteSunnort	boolean	The value of this property shall indicate whether Execute access is supported by the file share. The default
ExecuteSupport	boolean	value for this property is false.
	read-	
	only	
	(null)	
FileSharePath	string	The value of this property shall be a path (relative to the file system root) to the exported file or directory on the file system where this file share is hosted
	read-	on the ne system where this ne share is noted.
	only	
	(null)	
FileShareQuotaType	string	If FileShareQuotaType is present, a value of Soft shall specify that quotas are not enforced, and a value of
	(enum)	Hard shall specify that writes shall fail if the space consumed would exceed the value of the
		$\label{eq:FileShareTotalQuotaBytes property} . See \ FileShareQuotaType \ in \ Property \ Details, \ below, for \ the \ possible \$
	read-	values of this property.
	(mull)	
FileSharePerainingQuotaBytes	number	If present the value of this property shall indicate the remaining number of bytes that may be consumed
ThesharekemanningQuotabytes	(Bv)	by this file share.
	read-	
	write	
	(null)	
FileShareTotalQuotaBytes	number	If present, the value of this property shall indicate the maximum number of bytes that may be consumed
	(By)	by this file share.
	read-	
	write	
	(null)	
FileSharingProtocols [ {	array	This property shall be an array containing entries for the file sharing protocols supported by this file share.
		Each entry shall specify a file sharing protocol supported by the file system.
	read-	
51 5 · 1	, .	
FileProtocol	(enum)	I ne values shall indicate the file sharing protocols supported by the file system. At least one value shall be present See FileProtocol in Property Details below for the possible values of this property.
	(enum)	
	read-	
	write	
	(null)	
}]		
Id	string	This property represents an identifier for the resource. All values for resources described by this schema
		shall comply to the requirements as described in the Redfish specification.
	onhi	
Links {	object	This property shall contain links to other resources that are related to this resource
	object	The property shan contain mike to other resources that are related to this resource.
	read-	
	only	
ClassOfService {	object	This value shall be a link to the ClassOfService for this file share. See the ClassOfService schema for details
		on this property.
	read-	
	write	
	(11111)	

@odata.id	string	Link to a ClassOfService resource. See the Links section and the ClassOfService schema for details.
	read-	
	only	
}		
FileSystem {	object	The value shall be a link to the file system containing the file share. See the <i>FileSystem</i> schema for details on this property.
	read-	
	only (mull)	
@adata id	(nuil)	Link to a FileSystem resource. See the Links section and the FileSystem scheme for details
Countering	String	Link to a racoystem resource, see the Links section and the racoystem schema for details.
	read-	
	only	
} 	abject	This chiest represents the Oam property. All values for recording described by this scheme shall comply to
Uem {}	object	I has object represents the Oem property. All values for resources described by this schema shall comply to the requirements as described in the Redfish specification. See the <i>Resource</i> schema for details on this
	write	property.
}		
LowSpaceWarningThresholdPercents	array	This property shall be an array containing entries for the percentages of file share capacity at which low
[]	(%)	space warning events are be issued. A LOW_SPACE_THRESHOLD_WARNING event shall be triggered
	(number, null)	each time the remaining file share capacity value becomes less than one of the values in the array. The following shall be true: Across all CapacitySources entries, percent = (SUM(AllocatedBytes) -
		SUM(ConsumedBytes))/SUM(AllocatedBytes)
	read- write	
Name	string	This object represents the Name property. All values for resources described by this schema shall comply
		to the requirements as described in the Redfish specification. The value of this string shall be of the format
	read- onlu	for the reserved word Name.
<b>Oem</b> {}	object	The value of this string shall be of the format for the reserved word Oem. See the Resource schema for
		details on this property.
	read- write	
RemainingCapacityPercent (v1.1+)	number	If present, this value shall return {[(SUM(AllocatedBytes) -
		SUM(ConsumedBytes)]/SUM(AllocatedBytes)}*100 represented as an integer value.
	read-	
	(null)	
RootAccess	boolean	The value of this property shall indicate whether Root access is allowed by the file share. The default value
	mad	for this property is false.
	only	
	(null)	
Status {}	object	This value of this property shall indicate the status of the file share. See the <i>Resource</i> schema for details on this property.
	read-	
	only (mull)	
WritePolicy	string	The value of this property shall define how writes are replicated to the shared source. See WritePolicu in
,	(enum)	Property Details, below, for the possible values of this property.
	read-	
	only	
	(nuii)	

9.17.1 Property Details

### 9.17.1.1 FileProtocol:

The values shall indicate the file sharing protocols supported by the file system. At least one value shall be present.

string	Description
NFSv3	This value shall indicate that NFSv3, as defined in RFC 1813, is supported by the file system.
NFSv4_0	This value shall indicate that NFSv4, as defined in RFC 7530, is supported by the file system.
NFSv4_1	This value shall indicate that NFSv4.1, as defined in RFC 5661, is supported by the file system.
SMBv2_0	This value shall indicate that Server Message Block version 2.0 is supported by the file system.
SMBv2_1	This value shall indicate that Server Message Block version 2.1 is supported by the file system.
SMBv3_0	This value shall indicate that Server Message Block version 3.0 is supported by the file system.
SMBv3_0_2	This value shall indicate that Server Message Block version 3.0.2 is supported by the file system.
SMBv3_1_1	This value shall indicate that Server Message Block version 3.1.1 is supported by the file system.

#### 9.17.1.2 FileShareQuotaType:

If FileShareQuotaType is present, a value of Soft shall specify that quotas are not enforced, and a value of Hard shall specify that writes shall fail if the space consumed would exceed the value of the FileShareTotalQuotaBytes property.

string	Description
Hard	This value shall indicate that quotas are enabled and enforced.
Soft	This value shall indicate that quotas are enabled but not enforced.

#### 9.17.1.3 StorageAccessCapability:

StorageAccessCapability enumeration literals may be used to describe abilities to read or write storage.

string	Description
Append	This enumeration literal shall indicate that the storage may be written only to append.
Execute	This value shall indicate that Execute access is allowed by the file share.
Read	This enumeration literal shall indicate that the storage may be read.
Streaming	This enumeration literal shall indicate that the storage may be read sequentially.
Write	This enumeration literal shall indicate that the storage may be written multiple times.
WriteOnce	This enumeration literal shall indicate that the storage may be written only once.

#### 9.17.1.4 WritePolicy:

The value of this property shall define how writes are replicated to the shared source.

string	Description
Active	This enumeration literal shall indicate Active-Active (i.e. bidirectional) synchronous updates.
Adaptive	This enumeration literal shall indicate that an implementation may switch between synchronous and asynchronous modes.
Asynchronous	This enumeration literal shall indicate Asynchronous updates.
Synchronous	This enumeration literal shall indicate Synchronous updates.

## 9.18 FileShareCollection

Description	string	This object represents the Description property. All values for resources described by this schema shall comply to the requirements as
		described in the Redfish specification.
	read-	
	only	
	(null)	
1	1	

Members [ {	array	This property shall contain references to the members of this FileSystem collection.
	read-	
@odata id	string	Link to a FileShare resource. See the Links section and the FileShare schema for details
(e) ouurunu	buing	
	read-	
	only	
}]		
Name	string	This object represents the Name property. All values for resources described by this schema shall comply to the requirements as
		described in the Redfish specification. The value of this string shall be of the format for the reserved word Name.
	read-	
	only	
<b>Oem</b> {}	object	The value of this string shall be of the format for the reserved word Oem. See the Resource schema for details on this property.
	read-	
	write	

# 9.19 FileSystem 1.1.2

This resource shall be used to represent an instance of a hierarchical namespace of files.

AccessCapabilities [ { StorageAccessCapability	array read- write string (enum) read- write	This property shall be an array containing entries for the supported IO access capabilities. Each entry shall specify a current storage access capability. StorageAccessCapability enumeration literals may be used to describe abilities to read or write storage. See StorageAccessCapability in Property Details, below, for the possible values of this property.
}]	(11111)	
Actions (v1.1+) {}	object read- write	The Actions property shall contain the available actions for this resource.
BlockSizeBytes	number (By) read- only (null)	The value of this property shall be the block size of the file system in bytes.
Capacity {	object read- write (null)	The value of this property shall be the capacity allocated to the file system in bytes. See the <i>Capacity</i> schema for details on this property.
@odata.id	string read- only	Link to a Capacity resource. See the Links section and the <i>Capacity</i> schema for details.
}		
CapacitySources [ {	array read- write	This property shall be an array containing entries for all the capacity sources for the file system. Each entry shall provide capacity allocation information from a named resource.

@odata.id	string	Link to a CapacitySource resource. See the Links section and the Capacity schema for details.
	read-	
	only	
}]		
CasePreserved	boolean	This property shall indicate that the case of file names is preserved by the file system. A value of True shall indicate that case of file names shall be preserved.
	read-	
	write	
	(11111)	
CaseSensitive	boolean	This property shall indicate that case sensitive file names are supported by the file system. A value of True shall indicate that file names are case sensitive.
	reaa-	
	(mull)	
CharacterCodeSet [ {	077037	This property shall be an array containing ontries for the character sate or anappings supported by the file
CharacterCodeSet [ {	array	system. Each entry shall specify a character set encoding supported by the file system.
	read-	
	write	
CharacterCodeSet	string	The values shall indicate the character code standards supported by the file system. See
	(enum)	CharacterCodeSet in Property Details, below, for the possible values of this property.
	read-	
	write	
	(null)	
}]		
ClusterSizeBytes	number	This value shall specify the minimum file allocation size imposed by the file system. This minimum
	(By)	allocation size shall be the smallest amount of storage allocated to a file by the file system. Under stress conditions, the file system may allocate storage in amounts smaller than this value.
	read-	
	write	
	(null)	
Description	string	This object represents the Description property. All values for resources described by this schema shall comply to the requirements as described in the Redfish specification.
	read-	
	only (mull)	
F 101 (	(11111)	
ExportedShares {	object	This property shall be an array of exported file shares of this file system. Each entry shall define an exported file share of this file system. Contains a link to a resource.
	onhi	
	(null)	
@odata.id	string	Link to Collection of <i>FileShare</i> . See the FileShare schema for details.
	read-	
	onhi	
}		
14	atring	This property represents on identifian for the recourse All values for account of the this of
10	string	shall comply to the requirements as described in the Redfish specification.
	reaa- onlu	
<b>Identifiers</b> ( <i>v</i> 1.1.1+) [ {	array	This property shall contain a list of all known durable names for this file system.
	road-	
	onlu	
		See the http://redfish.dmtf.org/schemae/111/Pasourae ison#/definitions/Identifier scheme for details
		oce the neep.//requisitantifiory/senemias/01/Resource.json#/nejutitions/fuentifier schema for details.
	read-	
	write	
	1	

}]		
ImportedShares (v1.0.1+) [ {	array	The value shall be an array of imported file shares.
	read-	
Padata id	onuy	Link to a EileChara recourse. See the Links section and the <i>EileCharg</i> scheme for details
@odata.iu	string	LINK TO a FlieShare resource. See the Links section and the <i>rueshure</i> schema for details.
	read-	
	only	
}]		
Links {	object	This property shall contain links to other resources that are related to this resource.
	mad-	
	only	
ClassOfService {	object	This value shall be a link to the ClassOfService for this file system. See the <i>ClassOfService</i> schema for
		details on this property.
	read-	
	onty (mill)	
@odata.id	string	Link to a ClassOfService resource. See the Links section and the <i>ClassOfService</i> schema for details.
	U. U	
	read-	
	only	
}		
<b>Oem</b> {}	object	This object represents the Oem property. All values for resources described by this schema shall comply to
	read-	property.
	write	
ReplicaCollection [ {	array	This property shall be an array of links to replicas for this file system. Each entry shall be a link to a replica
	7	for this file system.
	read- onlu	
@odata.id	string	Link to another FileSvstem resource.
	read-	
	only	
}]		
ReplicaCollection@odata.count	number	The value of this property shall be an integer representing the number of items in a collection.
	read-	
	only	
}		
LowSpaceWarningThresholdPercents	array	This property shall be an array containing entries for the percentages of file system capacity at which low
[]	(%)	space warning events are be issued. A LOW_SPACE_THRESHOLD_WARNING event shall be triggered
	(number,	each time the remaining file system capacity value becomes less than one of the values in the array. I ne following shall be true: Across all CapacitySources entries, percent = (SUM(AllocatedBytes) -
	nun)	SUM(ConsumedBytes))/SUM(AllocatedBytes)
	read-	
	write	
MaxFileNameLengthBytes	number	If specified, this value shall specify the maximum length of a file name within the file system.
	(By)	
	read-	
	write	
	(null)	

Name	string	This object represents the Name property. All values for resources described by this schema shall comply
		to the requirements as described in the Redfish specification. The value of this string shall be of the format
	read-	for the reserved word <i>Name</i> .
	only	
<b>Oem</b> {}	obiect	The value of this string shall be of the format for the reserved word <i>Oem</i> . See the <i>Resource</i> schema for
		details on this property.
	read-	
	write	
RemainingCapacity {	object	The value of this property shall be the remaining capacity allocated to the file system in bytes. See the
		Capacity schema for details on this property.
	read-	
	only	
	(null)	
@odata.id	string	Link to a Capacity resource. See the Links section and the <i>Capacity</i> schema for details.
	read-	
	only	
}		
<b>RemainingCapacityPercent</b> (v1.1+)	number	If present, this value shall return {[(SUM(AllocatedBytes) -
		SUM(ConsumedBytes)]/SUM(AllocatedBytes)}*100 represented as an integer value.
	read-	
	only	
	(null)	
ReplicaInfo		See the
		$http://redfish.dmtf.org/schemas/swordfish/v1/StorageReplicaInfo.json {\it \#/definitions/ReplicaInfo.pdf} and {\it http://redfish.dmtf.org/schemas/swordfish/v1/StorageReplicaInfo.pdf} and {\it http://redfish.dmtf} and {\it http://red$
	read-	schema for details.
	write	
	(null)	

## 9.19.1 Property Details

### 9.19.1.1 CharacterCodeSet:

The values shall indicate the character code standards supported by the file system.

string	Description
ASCII	This value shall indicate that the ASCII character encoding is supported by the file system.
ExtendedUNIXCode	This value shall indicate that Extended Unix Code character encoding is supported by the file system.
ISO2022	This value shall indicate that ISO-2022 character encoding is supported by the file system.
ISO8859_1	This value shall indicate that ISO-8859-1 character encoding is supported by the file system.
UCS_2	This value shall indicate that the UCS-2 character encoding is supported by the file system.
UTF_16	This value shall indicate that the UTF-16 character encoding is supported by the file system.
UTF_8	This value shall indicate that the UTF-8 character encoding is supported by the file system.
Unicode	This value shall indicate that Unicode characer encoding is supported by the file system.

### 9.19.1.2 StorageAccessCapability:

StorageAccessCapability enumeration literals may be used to describe abilities to read or write storage.

string	Description
Append	This enumeration literal shall indicate that the storage may be written only to append.
Execute	This value shall indicate that Execute access is allowed by the file share.
Read	This enumeration literal shall indicate that the storage may be read.
Streaming	This enumeration literal shall indicate that the storage may be read sequentially.
Write	This enumeration literal shall indicate that the storage may be written multiple times.
WriteOnce	This enumeration literal shall indicate that the storage may be written only once.

## 9.20 FileSystemCollection

Description	string	This object represents the Description property. All values for resources described by this schema shall comply to the requirements as
		described in the Redfish specification.
	read-	
	only	
	(null)	
Members [ {	array	This property shall contain references to the members of this FileSystem collection.
	read-	
	only	
@odata.id	string	Link to a FileSystem resource. See the Links section and the FileSystem schema for details.
	read-	
	only	
}]		
Name	string	This object represents the Name property. All values for resources described by this schema shall comply to the requirements as
		described in the Redfish specification. The value of this string shall be of the format for the reserved word Name.
	read-	
	only	
<b>Oem</b> {}	object	The value of this string shall be of the format for the reserved word Oem. See the Resource schema for details on this property.
	read-	
	write	

# 9.21 HostedStorageServices

Description	string	This object represents the Description property. All values for resources described by this schema shall comply to the requirements as
		described in the Redfish specification.
	read-	
	only	
	(null)	
Members [ {	array	The value of each member entry shall reference a StorageService resource.
	read-	
	write	
@odata.id	string	Link to a StorageService resource. See the Links section and the StorageService schema for details.
	read-	
	only	
}]		
Name	string	This object represents the Name property. All values for resources described by this schema shall comply to the requirements as
		described in the Redfish specification. The value of this string shall be of the format for the reserved word Name.
	read-	
	only	
Oem {}	object	The value of this string shall be of the format for the reserved word <i>Oem</i> . See the <i>Resource</i> schema for details on this property.
oem ()	object	
	read-	
	write	

## 9.22 IOConnectivityLineOfService 1.1.0

An IO connectivity service option may be used to specify the characteristics of storage connectivity.

AccessProtocols [ {	array read- write	The Enumeration Literal shall specify the Access protocol for this service option. NOTE: If multiple protocols are specified, the corresponding MaxSupportedIOPS governs the max achieved across all protocol uses. This may be less than the sum of the individual max values, which may be specified by individual Line of Service entries.
Protocol	string (enum)	See Protocol in Property Details, below, for the possible values of this property.
	read- write (null)	
}]		
Description	string read- only	This object represents the Description property. All values for resources described by this schema shall comply to the requirements as described in the Redfish specification.
* 1	(null)	
Id	string	This property represents an identifier for the resource. All values for resources described by this schema shall comply to the requirements as described in the Redfish specification.
	read- only	
MaxBytesPerSecond	number	The value shall be the maximum bytes per second that a connection can support.
(v1.1+)	(By/s)	
	read- write (null)	
MaxIOPS (v1.1+)	number ([IO]/s)	The value shall be the maximum IOs per second that the connection shall allow for the selected access protocol.
	read- write (null)	
Name	string	This object represents the Name property. All values for resources described by this schema shall comply to the requirements as
	7	described in the Redfish specification. The value of this string shall be of the format for the reserved word Name.
	read- only	
<b>Oem</b> {}	object	The value of this string shall be of the format for the reserved word <i>Oem</i> . See the <i>Resource</i> schema for details on this property.
	read- write	

## 9.22.1 Property Details

### 9.22.1.1 Protocol:

string	Description
AHCI	This value shall mean that this device conforms to the Intel Advanced Host Controller Interface Specification.
FC	This value shall mean that this device conforms to the T11 Fibre Channel Physical and Signaling Interface Specification.
FCP	This enumeration literal shall indicate the INCITS 481: Information technology - Fibre Channel Protocol for SCSI. The Fibre Channel SCSI Protocol.
FCoE	This value shall mean that this device conforms to the T11 FC-BB-5 Specification.
FICON	This enumeration literal shall indicate the (ANSI FC-SB-3 Single-Byte Command Code Sets-3 Mapping Protocol for the Fibre Channel(FC) protocol. FICON (FIbre CONnection) is the IBM proprietary name for this protocol.
FTP	This value shall mean that this device conforms to the File Transfer protocol as defined by RFC 114.
HTTP	This value shall mean that this device conforms to the Hypertext Transfer protocol as defined by RFC 2068 or RFC 2616.
HTTPS	This value shall mean that this device conforms to the Hypertext Transfer protocol as defined by RFC 2068 or RFC 2616 utilizing Transport Layer Security as specified by RFC 5246 or RFC 6176.

string	Description
NFSv3	This value shall mean that this device conforms to the Network File System protocol as defined by RFC 1813.
NFSv4	This value shall mean that this device conforms to the Network File System protocol as defined by RFC 3010 or RFC 5661.
NVMe	This value shall mean that this device conforms to the Non-Volatile Memory Host Controller Interface Specification Specification.
NVMeOverFabrics	This value shall mean that this device conforms to the NVM Express over Fabrics Specification.
PCIe	This value shall mean that this device conforms to the PCI-SIG PCI Express Base Specification only beyond that is uses some vendor proprietary mechanism to communicate.
RoCE	This value shall mean that this device conforms to the RDMA over Converged Ethernet protocol as defined by the Infiniband Architecture Specification.
RoCEv2	This value shall mean that this device conforms to the RDMA over Converged Ethernet version 2 protocol as defined by the Infiniband Architecture Specification.
SAS	This value shall mean that this device conforms to the T10 SAS Protocol Layer Specification.
SATA	This value shall mean that this device conforms to the Serial ATA International Organization Serial ATA Specification.
SFTP	This value shall mean that this device conforms to the File Transfer protocol as defined by RFC 114 utilizing Transport Layer Security as specified by RFC 5246 or RFC 6176.
SMB	This value shall mean that this device conforms to the Microsoft Server Message Block Protocol.
UHCI	This value shall mean that this device conforms to the Intel Universal Host Controller Interface Specification, Enhanced Host Controller Interface Specification, or the Extensible Host Controller Interface specification.
USB	This value shall mean that this device conforms to the USB Implementers Forum Universal Serial Bus Specification.
iSCSI	This value shall mean that this device conforms to the IETF Internet Small Computer Systems Interface (iSCSI) Specification.
iWARP	This value shall mean that this device conforms to the iWARP protocol as defined by RFC 5042 utilizing Transport Layer mechanisms as specified by RFC 5043 or RFC 5044.

# 9.23 IOConnectivityLoSCapabilities 1.1.1

Each instance of IOConnectivityLoSCapabilities describes capabilities of the system to support various IO Connectivity service options.

<b>Actions</b> ( <i>v</i> 1.1+) {}	object	The Actions property shall contain the available actions for this resource.
	read- write	
Description	string read- only (null)	This object represents the Description property. All values for resources described by this schema shall comply to the requirements as described in the Redfish specification.
Id	string read- only	This property represents an identifier for the resource. All values for resources described by this schema shall comply to the requirements as described in the Redfish specification.
Identifier	read- write (null)	See the http://redfish.dmtf.org/schemas/v1/Resource_json#/definitions/Identifier schema for details.
MaxSupportedBytesPerSecond	number (By/s) read- write (null)	The value shall be the maximum bytes per second that a connection can support.

MaxSupportedIOPS (v1.1+)	number	The value shall be the maximum IOPS that a connection can support.
	([IO]/s)	
	read-	
	write	
	(null)	
Name	string	This object represents the Name property. All values for resources described by this schema shall comply to the
		requirements as described in the Redfish specification. The value of this string shall be of the format for the reserved
	read-	word Name.
0	0 nuy	
Oem {}	object	The value of this string shall be of the format for the reserved word <i>Gem</i> . See the <i>Resource</i> schema for details on this property.
	read-	
	write	
SupportedAccessProtocols [ {	array	Access protocols supported by this service option. NOTE: SMB+NFS* requires that SMB and at least one of NFSv3
		or NFXv4 are also selected, (i.e. {'SMB', 'NFSv4', 'SMB+NFS*'}).
	read-	
	write	
Protocol	string	See Protocol in Property Details, below, for the possible values of this property.
	(enum)	
	read-	
	write	
	(null)	
}]		
SupportedLinesOfService [ {	array	The collection shall contain known and supported IOConnectivityLinesOfService.
	read-	
	write	
@odata.1d	string	LINK TO a IOCONNECTIVITYLINEOISERVICE resource. See the LINKS section and the <i>IOConnectivityLineOfService</i>
	read-	Selena foi details.
	only	
}]		

## 9.23.1 Property Details

### 9.23.1.1 Protocol:

string	Description
AHCI	This value shall mean that this device conforms to the Intel Advanced Host Controller Interface Specification.
FC	This value shall mean that this device conforms to the T11 Fibre Channel Physical and Signaling Interface Specification.
FCP	This enumeration literal shall indicate the INCITS 481: Information technology - Fibre Channel Protocol for SCSI. The Fibre Channel SCSI Protocol.
FCoE	This value shall mean that this device conforms to the T11 FC-BB-5 Specification.
FICON	This enumeration literal shall indicate the (ANSI FC-SB-3 Single-Byte Command Code Sets-3 Mapping Protocol for the Fibre Channel(FC) protocol. FICON (FIbre CONnection) is the IBM proprietary name for this protocol.
FTP	This value shall mean that this device conforms to the File Transfer protocol as defined by RFC 114.
НТТР	This value shall mean that this device conforms to the Hypertext Transfer protocol as defined by RFC 2068 or RFC 2616.
HTTPS	This value shall mean that this device conforms to the Hypertext Transfer protocol as defined by RFC 2068 or RFC 2616 utilizing Transport Layer Security as specified by RFC 5246 or RFC 6176.
NFSv3	This value shall mean that this device conforms to the Network File System protocol as defined by RFC 1813.
NFSv4	This value shall mean that this device conforms to the Network File System protocol as defined by RFC 3010 or RFC 5661.
NVMe	This value shall mean that this device conforms to the Non-Volatile Memory Host Controller Interface Specification Specification.
NVMeOverFabrics	This value shall mean that this device conforms to the NVM Express over Fabrics Specification.

string	Description
PCIe	This value shall mean that this device conforms to the PCI-SIG PCI Express Base Specification only beyond that is uses some vendor proprietary
	mechanism to communicate.
RoCE	This value shall mean that this device conforms to the RDMA over Converged Ethernet protocol as defined by the Infiniband Architecture
	Specification.
RoCEv2	This value shall mean that this device conforms to the RDMA over Converged Ethernet version 2 protocol as defined by the Infiniband
	Architecture Specification.
SAS	This value shall mean that this device conforms to the T10 SAS Protocol Layer Specification.
SATA	This value shall mean that this device conforms to the Serial ATA International Organization Serial ATA Specification.
SFTP	This value shall mean that this device conforms to the File Transfer protocol as defined by RFC 114 utilizing Transport Layer Security as specified
	by RFC 5246 or RFC 6176.
SMB	This value shall mean that this device conforms to the Microsoft Server Message Block Protocol.
UHCI	This value shall mean that this device conforms to the Intel Universal Host Controller Interface Specification, Enhanced Host Controller Interface
	Specification, or the Extensible Host Controller Interface specification.
USB	This value shall mean that this device conforms to the USB Implementers Forum Universal Serial Bus Specification.
iSCSI	This value shall mean that this device conforms to the IETF Internet Small Computer Systems Interface (iSCSI) Specification.
iWARP	This value shall mean that this device conforms to the iWARP protocol as defined by RFC 5042 utilizing Transport Layer mechanisms as specified
	by RFC 5043 or RFC 5044.

# 9.24 IOPerformanceLineOfService 1.0.1

This structure may be used to define a service option related to IO performance.

AverageIOOperationLatencyMicroseconds	number (us)	The value shall be the expected average IO latency in microseconds calculated over sample periods (see SamplePeriodSeconds).
	read- write (null)	
Description	string read-only (null)	This object represents the Description property. All values for resources described by this schema shall comply to the requirements as described in the Redfish specification.
IOOperationsPerSecondIsLimited	boolean read- write (null)	If true, the system should not allow IOPS to exceed MaxIoOperationsPerSecondPerTerabyte * VolumeSize. Otherwise, the system shall not enforce a limit. The default value for this property is false.
IOWorkload {	object read- write (null)	The value shall be a description of the expected workload. The workload provides the context in which the values of MaxIOOperationsPerSecondPerTerabyte and AverageIOOperationLatencyMicroseconds are expected to be achieveable. See the <i>IOPerformanceLoSCapabilities</i> schema for details on this property.
@odata.id	string read-only	Link to a IOWorkload resource. See the Links section and the <i>IOPerformanceLoSCapabilities</i> schema for details.
}		
Id	string read-only	This property represents an identifier for the resource. All values for resources described by this schema shall comply to the requirements as described in the Redfish specification.
MaxIOOperationsPerSecondPerTerabyte	number (1/s/TBy) read- write (null)	The value shall be the amount of IOPS a volume of a given committed size in Terabytes can support. This IOPS density value is useful as a metric that is independent of capacity. Cost is a function of this value and the AverageIOOperationLatencyMicroseconds.

Name	string read-only	This object represents the Name property. All values for resources described by this schema shall comply to the requirements as described in the Redfish specification. The value of this string shall be of the format for the reserved word <i>Name</i> .
<b>Oem</b> {}	object read- write	The value of this string shall be of the format for the reserved word <i>Oem</i> . See the <i>Resource</i> schema for details on this property.
SamplePeriod	string read- write (null)	The value shall be an ISO 8601 duration specifying the sampling period over which average values are calculated.

# 9.25 IOPerformanceLoSCapabilities 1.1.1

Each instance of IOPerformanceLoSCapabilities shall describe the capabilities of the system to support various IO performance service options.

Actions (v1.1+) {}	object	The Actions property shall contain the available actions for this resource.
	mad	
	write	
Description	string	This chiese represents the Description property. All values for resources described by this
Description	string	schema shall comply to the requirements as described in the Redfish specification.
	read-	souona onan comply to the requirements as described in the requirements
	only	
	(null)	
IOLimitingIsSupported	boolean	If true, the system should limit IOPS to MaxIOOperationsPerSecondPerTerabyte * (Volume
		Size in Terabytes). Otherwise, the system shall not inforce a limit. The default value for this
	read-	property is false.
	write	
	(null)	
Id	string	This property represents an identifier for the resource. All values for resources described by
	_	this schema shall comply to the requirements as described in the Redfish specification.
	read-	
	only	
Identifier		See the http://redfish.dmtf.org/schemas/v1/Resource.json#/definitions/Identifier schema
		for details.
	reaa-	
	(mull)	
MaySamplePeriod	string	The value shall be an ISO 8601 duration specifying the maximum sampling period over which
Maxbuilipier eriou	(s)	average values are calculated.
	(3)	
	read-	
	write	
	(null)	
MinSamplePeriod	string	The value shall be an ISO 8601 duration specifying the minimum sampling period over which
	(s)	average values are calculated.
	read-	
	write	
	(null)	
MinSupportedIoOperationLatencyMicroseconds	number	The value shall be the minimum supported average IO latency in microseconds calculated over
	(us)	the sampler eriod
	read-	
	write	
	(null)	
	I	

Name	string	This object represents the Name property. All values for resources described by this schema
	0	shall comply to the requirements as described in the Redfish specification. The value of this
	read-	string shall be of the format for the reserved word Name.
	only	
0em {}	object	The value of this string shall be of the format for the reserved word Oem. See the Resource
		schema for details on this property.
	read-	
	write	
SupportedIOWorkloads [ {	array	The value shall be a collection of supported workloads.
	read-	
	write	
Components [ {	array	The value shall be an array of IO workload component descriptions.
	read-	
	write	
AverageIOBytes	number	The value shall be the expected average I/O size.
	(By)	
	road	
	write	
	(null)	
Duration	etring	The value of each entry shall be an ISO 8601 duration that shall specify the expected length of
Duration	(s)	time that this component is applied to the workload. This attribute shall be specified if a
	(5)	schedule is specified and otherwise shall not be specified.
	read-	
	write	
	(null)	
IOAccessPattern	string	The enumeration literal shall be the expected access pattern. See IOAccessPattern in Property
	(enum)	Details, below, for the possible values of this property.
	read-	
	write	
	(null)	
PercentOfData	number	The value shall be the expected percent of the data referenced by the workload that is covered
	(%)	by this component.
	mad	
	write	
	(null)	
PercentOfIOPS	number	The value shall be the expected percent of the total IOPS for this workload that is covered by
Teremonor 5	(%)	this component
	read-	
	write	
	(null)	
Schedule		$See \ the \ http://red fish.dmtf.org/schemas/sword fish/v1/Schedule.json \#/definitions/Schedule.json \#/definitio$
		schema for details.
	read-	
	write	
	(null)	
}]		
Name	string	The value shall be a name of the workload. It should be constructed as OrgID:WorkloadID.
		Examples: ACME:DSS, ACME:DSS-REP, ACME:Exchange, ACME:OLTP, ACME:OLTP-REPA.
	read-	An organization may define a set of well known workloads.
	write	
	(null)	
}]		

SupportedLinesOfService [ {	array	The value shall be a collection supported IO performance service options.
	read-	
	write	
@odata.id	string	Link to a IOPerformanceLineOfService resource. See the Links section and the
		IOPerformanceLineOfService schema for details.
	read-	
	only	
}]		

## 9.25.1 Property Details

### 9.25.1.1 IOAccessPattern:

The enumeration literal shall be the expected access pattern.

string	Description
RandomReadAgain	Use of this enumeration literal shall indicate an access pattern of random reads of cached data.
RandomReadNew	Use of this enumeration literal shall indicate an access pattern of random reads of uncached data.
ReadWrite	Use of this enumeration literal shall indicate a Uniform distribution of reads and writes.
SequentialRead	Use of this enumeration literal shall indicate a sequential read pattern of access.
SequentialWrite	Use of this enumeration literal shall indicate a sequential write pattern of access.

## 9.26 StorageGroup 1.0.1

The primary purposes of the collection shall be to govern access to the storage by clients or to add service requirements for the members of the collection. Access to the collected storage by a specified set of hosts shall be made available or unavailable atomically. Requirements specified by the class of service shall be satisfied by each collected element to which they apply. The storage group may contain: block, file, or object storage; local storage system access points through which the collection is made available; and hosts, or host access points to which the collection is made available.

AccessState	string (enum) read- write	The value of this property shall describe the access characteristics of this storage group. All associated logical units through all aggregated ports shall share this access state. <i>See AccessState in Property Details, below, for the possible values of this property.</i>
Actions {	(null) object	The Actions property shall contain the available actions for this resource.
	read- only	
#StorageGroup.ExposeVolumes {}	object read- write	Exposes the storage of this group via the target endpoints named in the ServerEndpointGroups to the initiator endpoints named in the ClientEndpointGroups. The property VolumesAreExposed shall be set to true when this action is completed. <i>For more information, see the Action Details section below</i> .
#StorageGroup.HideVolumes {}	object read- write	Hide the storage of this group from the initiator endpoints named in the ClientEndpointGroups. The property VolumesAreExposed shall be set to false when this action is completed. <i>For more information, see the Action Details section below</i> .
}		
ClientEndpointGroups [ {	array read- write	An array of references to groups of client-side endpoints that may be used to make requests to the storage exposed by this StorageGroup. If null, the implementation may allow access to the storage via any client-side endpoint. If empty, the implementation shall not allow access to the storage via any client-side endpoint.
@odata.id	string read- only	Link to a EndpointGroup resource. See the Links section and the <i>EndpointGroup</i> schema for details.

	1	
}]		
Description	string	This object represents the Description property. All values for resources described by this schema shall comply to the requirements as described in the Redfish specification.
	read-	
	only	
	(null)	
Id	string	This property represents an identifier for the resource. All values for resources described by this schema shall comply to the requirements as described in the Redfish specification.
	onhi	
Identifier	onug	See the <i>http://redfish.dmtf.org/schemas/v1/Resource.json#/definitions/Identifier</i> schema for details.
	read- write (null)	
Links {	object	This structure shall contain references to resources that are not contained within this resource.
	read- only	
ChildStorageGroups [ {	array	An array of references to StorageGroups are incorporated into this StorageGroup
	read- write	
@odata.id	string	Link to another StorageGroup resource.
	read-	
	only	
}]		
ChildStorageGroups@odata.count	number	The value of this property shall be an integer representing the number of items in a collection.
	read-	
	only	
ClassOfService {	object	The ClassOfService that all storage in this StorageGroup conforms to. See the <i>ClassOfService</i> schema for details on this property.
	read-	
	write	
@odata.id	(null) string	Link to a ClassOfService resource. See the Links section and the <i>ClassOfService</i> schema for details.
	read-	
	only	
}		
Oem 8	object	This object represents the Oem property. All values for recourses described by this scheme shall comply to
Oem /	object	the requirements as described in the Redfish specification. See the <i>Resource</i> schema for details on this
	read-	property.
	write	
ParentStorageGroups [ {	array	An array of references to StorageGroups that incorporate this StorageGroup
	read- only	
@odata.id	string	Link to another StorageGroup resource.
	read-	
	only	

}]		
ParentStorageGroups@odata.count	number	The value of this property shall be an integer representing the number of items in a collection.
	read-	
1	onig	
}	haalaan	The value of this property shall be get to true if all members are in a consistent state. The default value for
MembersAreConsistent	boolean	The value of this property shall be set to true if all members are in a consistent state. The default value for
	read-	
	write	
	(null)	
Name	string	This object represents the Name property. All values for resources described by this schema shall comply
	read-	to the requirements as described in the Redfish specification. The value of this string shall be of the format
	only	ioi the reserved word hume.
<b>Oem</b> {}	obiect	The value of this string shall be of the format for the reserved word <i>Oem</i> . See the <i>Resource</i> schema for
	~~j	details on this property.
	read-	
	write	
ReplicaInfos [ {	array	This property shall describe the replication relationship between this storage group and a corresponding
	read-	source and/or target storage group.
	write	
		See the
		http://redfish.dmtf.org/schemas/swordfish/v1/StorageReplicaInfo.json#/definitions/ReplicaInfo.pdf
	read-	schema for details.
	write	
11	(11111)	
{]	0 8 8 0 17	An array of references to groups of correct side endpoints that may be used to make requests to the storage
ServerEnupointGroups [ {	array	exposed by this storage group. If null, the implementation may allow access to the storage via any server-
	read-	side endpoint. If empty, the implementation shall not allow access to the storage via any server-side
	write	endpoint.
@odata.id	string	$\label{eq:link} {\rm Link} \ {\rm to} \ {\rm a} \ {\rm Endpoint} {\rm Group} \ {\rm schema} \ {\rm for} \ {\rm details}.$
	reaa- onlu	
}]		
Status {}	obiect	This type shall contain any status or health properties of a resource. See the <i>Resource</i> schema for details on
	05,000	this property.
	read-	
	write	
	(null)	
Volumes [ {	array	An array of references to volumes managed by this storage group.
	read-	
	write	
@odata.id	string	Link to a Volume resource. See the Links section and the Volume schema for details.
	_	
	read-	
	onuy	
7.1 Mahamatan Francas 1	h l	
volumesAreExposed	boolean	I ne value of this property shall be set to true if storage volumes are exposed to the paths defined by the client and server endpoints. The default value for this property is false
	read-	
	write	
	(null)	

### 9.26.1 Action Details

#### 9.26.1.0.0.1 ExposeVolumes

Exposes the storage of this group via the target endpoints named in the ServerEndpointGroups to the initiator endpoints named in the ClientEndpointGroups. The property VolumesAreExposed shall be set to true when this action is completed.

(This action takes no parameters.)

#### 9.26.1.0.0.2 HideVolumes

Hide the storage of this group from the initiator endpoints named in the ClientEndpointGroups. The property VolumesAreExposed shall be set to false when this action is completed.

(This action takes no parameters.)

## 9.26.2 Property Details

#### 9.26.2.1 AccessState:

The value of this property shall describe the access characteristics of this storage group. All associated logical units through all aggregated ports shall share this access state.

string	Description
NonOptimized	In the context of this enumeration literal, each endpoint shall be in an Active/NonOptimized state.
Optimized	In the context of this enumeration literal, each endpoint shall be in an Active/Optimized state.
Standby	In the context of this enumeration literal, each endpoint shall be in a Standby state.
Transitioning	In the context of this enumeration literal, at least one endpoint shall be transitioning to a new AccesState.
Unavailable	In the context of this enumeration literal, each endpoint shall be in an unavailable state.

## 9.27 StorageGroupCollection

Description	string	This object represents the Description property. All values for resources described by this schema shall comply to the requirements as
Description	btring	described in the Redfish specification
	read-	described in the redust specification.
	onhi	
	(mull)	
	(nuu)	
Members [ {	array	The value of each member entry shall reference a StorageGroup resource.
	_	
	read-	
	only	
@odata.id	string	Link to a StorageGroup resource. See the Links section and the StorageGroup schema for details.
	read-	
	only	
}]		
Name	string	This object represents the Name property. All values for resources described by this schema shall comply to the requirements as
		described in the Redfish specification. The value of this string shall be of the format for the reserved word Name.
	read-	
	only	
<b>Oem</b> {}	object	The value of this string shall be of the format for the reserved word Oem. See the Resource schema for details on this property.
	read-	
	write	

## 9.28 StoragePool 1.1.1

A container of data storage capable of providing capacity conforming to one of its supported classes of service. The storage pool does not support IO to its data storage.

AllocatedPools {	object	The value of this property shall contain a reference to the collection of storage pools allocated from this
		storage pool. Contains a link to a resource.
	read-	
	only	
	(null)	
@odata.id	string	Link to Collection of <i>StoragePool</i> . See the StoragePool schema for details.
	_	
	read-	
	onlu	
}		
AllocatedVolumes {	object	The value of this property shall contain a reference to the collection of volumes allocated from this storage
		pool. Contains a link to a resource.
	read-	
	only	
	(null)	
@odata.id	string	Link to Collection of <i>Volume</i> . See the Volume schema for details.
-	0	
	read-	
	onlu	
}		
BlockSizeBytes (deprecated v1.1)	number	Maximum size in bytes of the blocks which form this Volume. If the block size is variable, then the
	(By)	maximum block size in bytes should be specified. If the block size is unknown or if a block concept is not
		valid (for example, with Memory), enter a 1. Deprecated v1.1+. This property has been Deprecated in
	read-	$favor\ of\ StoragePool.v1\_1\_1.StoragePool.MaxBlockSizeBytes$
	only	
	(null)	
Capacity {	object	The value of this property shall provide an information about the actual utilization of the capacity within
- ·· <u>F</u> ·································		this storage pool. See the <i>Capacitu</i> schema for details on this property.
	read-	the storage poor oce the capacity belong to actual of the property.
	onhi	
	(mill)	
	(//////	
@odata.id	string	Link to a Capacity resource. See the Links section and the <i>Capacity</i> schema for details.
	read-	
	only	
}		
CapacitySources [ {	array	Fully or partially consumed storage from a source resource. Each entry shall provide capacity allocation
		data from a named source resource.
	read-	
	only	
@odata id	string	Link to a Canacity Source resource See the Links section and the Connective scheme for details
@ouata.iu	string	Link to a Capacity source resource. See the Links section and the <i>Capacity</i> schema for details.
	no - J	
	read-	
	only	
}]		
ClassesOfService {	object	This property shall contain references to all classes of service supported by this storage pool. Capacity
		allocated from this storage pool shall conform to one of the referenced classes of service. Contains a link to a
	read-	resource.
	write	
	(null)	
Codata id	atning	Link to Collection of Class Offermian Son the Class Offermian scheme for details
@ouata.iu	string	Link to conection of ClassOfService. See the ClassOfService schema for details.
	,	
	read-	
	only	
}		

Description		This ships the second state of the Description measure All second for an example of the data ships a barren shall
	string	I his object represents the Description property. All values for resources described by this schema shall comply to the requirements as described in the Pedfich specification
	read-	comply to the requirements as described in the kednish specification.
	onlu	
	(null)	
Id	string	This property represents an identifier for the resource. All values for resources described by this schema
	7	shall comply to the requirements as described in the Redfish specification.
	read-	
	onuy	
Identifier		See the <i>http://redfish.dmtf.org/schemas/v1/Resource.json#/definitions/Identifier</i> schema for details.
	read-	
	write	
	(null)	
Links {	object	This structure shall contain references to resources that are not contained within this resource.
	read-	
	only	
DefaultClassOfService {	object	If present, this property shall reference the default class of service for entities allocated from this storage
		pool. If the ClassesOfService collection is not empty, then the value of this property shall be one of its
	read-	entries. If not present, the default class of service of the containing StorageService entity shall be used. See
	write	the <i>ClassOfService</i> schema for details on this property.
	(null)	
@odata.id	string	Link to a ClassOfService resource. See the Links section and the <i>ClassOfService</i> schema for details.
	read-	
	only	
}		
Oem {}	object	This object represents the Oem property. All values for resources described by this schema shall comply to
		the requirements as described in the Redfish specification. See the Resource schema for details on this
	read-	property.
	write	
}		
LowSpaceWarningThresholdPercents	array	Each time the following value is less than one of the values in the array the
[]	(%)	LOW_SPACE_THRESHOLD_WARNING event shall be triggered: Across all CapacitySources entries,
	( 1	percent = (SUM(A)]ocatedBytes) - SUM(ConsumedBytes))/SUM(A)]ocatedBytes)
	(number,	percent - (behr(imocatedbytes)) behr(behstanedbytes)) behr(imocatedbytes).
	(number, null)	
	(number, null)	percent - (ben/(mouleuby co)) ben/(condunceuby co)), ben/(mouleuby co).
	(number, null) <i>read-</i>	percent - (beni(inicially co)) beni(conbunction (constanticutly co))
	(number, null) read- write	percent - (ben/(mouleuby les) - ben/(consumedby les))/ ben/(mouleuby les).
MaxBlockSizeBytes (v1.1.1+)	(number, null) <i>read- write</i> number (By)	If present, the value is the maximum block size of an allocated resource. If the block size is unknown or if a block concept is not valid (for example, with Memory), this property shall be NULL.
MaxBlockSizeBytes (v1.1.1+)	(number, null) <i>read- write</i> number (By)	If present, the value is the maximum block size of an allocated resource. If the block size is unknown or if a block concept is not valid (for example, with Memory), this property shall be NULL.
MaxBlockSizeBytes (v1.1.1+)	(number, null) read- write number (By) read- orb;	If present, the value is the maximum block size of an allocated resource. If the block size is unknown or if a block concept is not valid (for example, with Memory), this property shall be NULL.
MaxBlockSizeBytes (v1.1.1+)	(number, null) read- write number (By) read- only (null)	If present, the value is the maximum block size of an allocated resource. If the block size is unknown or if a block concept is not valid (for example, with Memory), this property shall be NULL.
MaxBlockSizeBytes (v1.1.1+)	(number, null) read- write number (By) read- only (null)	If present, the value is the maximum block size of an allocated resource. If the block size is unknown or if a block concept is not valid (for example, with Memory), this property shall be NULL.
MaxBlockSizeBytes (v1.1.1+) Name	(number, null) read- write number (By) read- only (null) string	If present, the value is the maximum block size of an allocated resource. If the block size is unknown or if a block concept is not valid (for example, with Memory), this property shall be NULL.
MaxBlockSizeBytes (v1.1.1+) Name	(number, null) read- write number (By) read- only (null) string read-	If present, the value is the maximum block size of an allocated resource. If the block size is unknown or if a block concept is not valid (for example, with Memory), this property shall be NULL. This object represents the Name property. All values for resources described by this schema shall comply to the requirements as described in the Redfish specification. The value of this string shall be of the format for the reserved word <i>Name</i> .
MaxBlockSizeBytes (v1.1.1+) Name	(number, null) read- write number (By) read- only (null) string read- only	If present, the value is the maximum block size of an allocated resource. If the block size is unknown or if a block concept is not valid (for example, with Memory), this property shall be NULL. This object represents the Name property. All values for resources described by this schema shall comply to the requirements as described in the Redfish specification. The value of this string shall be of the format for the reserved word <i>Name</i> .
MaxBlockSizeBytes (v1.1.1+) Name Oem {}	(number, null) read- write number (By) read- only (null) string read- only object	If present, the value is the maximum block size of an allocated resource. If the block size is unknown or if a block concept is not valid (for example, with Memory), this property shall be NULL. This object represents the Name property. All values for resources described by this schema shall comply to the requirements as described in the Redfish specification. The value of this string shall be of the format for the reserved word <i>Name</i> . The value of this string shall be of the format for the reserved word <i>Oem</i> . See the <i>Resource</i> schema for
MaxBlockSizeBytes (v1.1.1+) Name Oem {}	(number, null) read- write number (By) read- only (null) string read- only object	If present, the value is the maximum block size of an allocated resource. If the block size is unknown or if a block concept is not valid (for example, with Memory), this property shall be NULL. This object represents the Name property. All values for resources described by this schema shall comply to the requirements as described in the Redfish specification. The value of this string shall be of the format for the reserved word <i>Name</i> . The value of this string shall be of the format for the reserved word <i>Oem</i> . See the <i>Resource</i> schema for details on this property.
MaxBlockSizeBytes (v1.1.1+) Name Oem {}	(number, null) read- write number (By) read- only (null) string read- only object read- uwic	If present, the value is the maximum block size of an allocated resource. If the block size is unknown or if a block concept is not valid (for example, with Memory), this property shall be NULL. This object represents the Name property. All values for resources described by this schema shall comply to the requirements as described in the Redfish specification. The value of this string shall be of the format for the reserved word <i>Oem</i> . See the <i>Resource</i> schema for details on this property.
MaxBlockSizeBytes (v1.1.1+) Name Oem {}	(number, null) read- write number (By) read- only (null) string read- only object read- write	If present, the value is the maximum block size of an allocated resource. If the block size is unknown or if a block concept is not valid (for example, with Memory), this property shall be NULL. This object represents the Name property. All values for resources described by this schema shall comply to the requirements as described in the Redfish specification. The value of this string shall be of the format for the reserved word <i>Name</i> . The value of this string shall be of the format for the reserved word <i>Oem</i> . See the <i>Resource</i> schema for details on this property.
MaxBlockSizeBytes (v1.1.1+) Name Oem {} RemainingCapacityPercent (v1.1+)	(number, null) read- write number (By) read- only (null) string read- only object read- write number	If present, the value is the maximum block size of an allocated resource. If the block size is unknown or if a block concept is not valid (for example, with Memory), this property shall be NULL.         This object represents the Name property. All values for resources described by this schema shall comply to the requirements as described in the Redfish specification. The value of this string shall be of the format for the reserved word Name.         The value of this string shall be of the format for the reserved word Oem. See the Resource schema for details on this property.         If present, this value shall return {[(SUM(AllocatedBytes) - SUM(ComparedDytes)] - SUM(ComparedDytes)] (SUM(AllocatedBytes) - SUM(ComparedDytes)] (SUM(AllocatedBytes) - SUM(ComparedDytes)] (SUM(AllocatedDytes)] - SUM(ComparedDytes)] - SUM(Compar
MaxBlockSizeBytes (v1.1.1+) Name Oem {} RemainingCapacityPercent (v1.1+)	(number, null) read- write number (By) read- only (null) string read- only object read- write number	If present, the value is the maximum block size of an allocated resource. If the block size is unknown or if a block concept is not valid (for example, with Memory), this property shall be NULL.         This object represents the Name property. All values for resources described by this schema shall comply to the requirements as described in the Redfish specification. The value of this string shall be of the format for the reserved word <i>Name</i> .         The value of this string shall be of the format for the reserved word <i>Oem</i> . See the <i>Resource</i> schema for details on this property.         If present, this value shall return {[(SUM(AllocatedBytes) - SUM(ConsumedBytes)]/SUM(AllocatedBytes)]*100 represented as an integer value.
MaxBlockSizeBytes (v1.1.1+) Name Oem {} RemainingCapacityPercent (v1.1+)	(number, null) read- write number (By) read- only (null) string read- only object read- write number read- only	If present, the value is the maximum block size of an allocated resource. If the block size is unknown or if a block concept is not valid (for example, with Memory), this property shall be NULL.         This object represents the Name property. All values for resources described by this schema shall comply to the requirements as described in the Redfish specification. The value of this string shall be of the format for the reserved word Name.         The value of this string shall be of the format for the reserved word Oem. See the Resource schema for details on this property.         If present, this value shall return {[(SUM(AllocatedBytes) - SUM(ConsumedBytes)]/SUM(AllocatedBytes)]*100 represented as an integer value.
MaxBlockSizeBytes (v1.1.1+) Name Oem {} RemainingCapacityPercent (v1.1+)	(number, null) read- write number (By) read- only (null) string read- only object read- write number read- only (null)	If present, the value is the maximum block size of an allocated resource. If the block size is unknown or if a block concept is not valid (for example, with Memory), this property shall be NULL.         This object represents the Name property. All values for resources described by this schema shall comply to the requirements as described in the Redfish specification. The value of this string shall be of the format for the reserved word Name.         The value of this string shall be of the format for the reserved word Oem. See the Resource schema for details on this property.         If present, this value shall return {[[(SUM(AllocatedBytes) - SUM(ConsumedBytes)]/SUM(AllocatedBytes)]*100 represented as an integer value.

Status {}	object	This type shall contain any status or health properties of a resource. See the <i>Resource</i> schema for details on this property.
	read-	
	write	
	(null)	

## 9.29 StoragePoolCollection

Description	string	This object represents the Description property. All values for resources described by this schema shall comply to the requirements as
		described in the Redfish specification.
	read-	
	only	
	(null)	
Members [ {	array	The value of each member entry shall reference a StoragePool resource.
	read-	
	only	
@odata.id	string	Link to a StoragePool resource. See the Links section and the <i>StoragePool</i> schema for details.
	_	
	read-	
	only	
}]		
Name	string	This object represents the Name property. All values for resources described by this schema shall comply to the requirements as
		described in the Redfish specification. The value of this string shall be of the format for the reserved word Name.
	read-	
	only	
<b>Oem</b> {}	object	The value of this string shall be of the format for the reserved word Oem. See the Resource schema for details on this property.
	read-	
	write	

## 9.30 StorageService 1.1.0

Collection of resources that the system can make available to one or more host systems. The collection can contain: block, file, or object storage; local system access points through which the collection is made available; hosts, or host access points to which the collection is made available.

Actions {	object	The Actions property shall contain the available actions for this resource.
	read-	
	only	
#StorageService.SetEncryptionKey	object	This defines the name of the custom action supported on this resource. For more information, see the Action
8		Details section below.
	read-	
	write	
}		
ClassesOfService {	object	The value of each enty in the array shall reference a ClassOfService supported by this service. Contains a link
		to a resource.
	read-	
	write	
	(null)	
@odata.id	string	Link to Collection of <i>ClassOfService</i> . See the ClassOfService schema for details.
	read-	
	only	
}		

ClientEndpointGroups {	object	The value of each entry in the array shall reference an EndpointGroup. Contains a link to a resource.
	5	
	read-	
	write	
	(null)	
@odata.id	string	Link to Collection of <i>EndpointGroup</i> . See the EndpointGroup schema for details.
	mad	
	onlu	
}		
Description	string	This chiest represents the Decemption property. All values for recourses described by this scheme shall comply
Description	string	to the requirements as described in the Redfish specification.
	read-	
	only (null)	
Duixog (	chiaat	A collection that indicates all the drives managed by this storage convice. Contains a link to a resource
Drives	object	A conection that indicates an the drives managed by this storage service. Contains a link to a resource.
	read-	
	only	
@odata.id	string	Link to Collection of <i>Drive</i> . See the Drive schema for details.
	read-	
	only	
}		
EndpointGroups {	object	The value of each entry in the array shall reference an EndpointGroup. Contains a link to a resource.
	read-	
	write (null)	
@odata id	string	Link to Collection of <i>EndpointGroup</i> . See the EndpointGroup schema for details
eouuunu	String	Link to concertain of Endpoint of oup, see the Endpoint of oup schema for details.
	read-	
	only	
}		
Endpoints {	object	The value of each enty in the array shall reference an Endpoint managed by this service. Contains a link to a
		resource.
	read-	
	(null)	
@odata.id	string	Link to Collection of <i>Endpoint</i> . See the Endpoint schema for details.
	0	r r
	read-	
	only	
}		
FileSystems {	object	An array of references to FileSystems managed by this storage service. Contains a link to a resource.
	read-	
	write	
@odata.id	string	Link to Collection of <i>FileSystem</i> . See the FileSystem schema for details.
	read-	
	only	
}		
Id	string	This property represents an identifier for the resource. All values for resources described by this schema shall
		comply to the requirements as described in the Redfish specification.
	read-	
l	only	
Identifier		See the http://redfish.dmtf.org/schemas/v1/Resource.json#/definitions/Identifier schema for details.
------------------------------------	--------	--
	_	
	read-	
	write	
	(nuu)	
Links {	object	Contains links to other resources that are related to this resource.
	road-	
	onhu	
Data Protoction Los Canabilities (	object	The value shall reference the data protection canabilities of this convice. See the
Datar rotectionLosCapabilities {	object	DataProtection I oSCanabilities scheme for details on this property
	read-	Data recent holo capacitates scienta for actails on this property.
	write	
	(null)	
@odata.id	string	Link to a DataProtectionLoSCapabilities resource. See the Links section and the
	_	DataProtectionLoSCapabilities schema for details.
	read-	
	only	
}		
DataSecurityLoSCapabilities {	object	The value shall reference the data security capabilities of this service. See the DataSecurityLoSCapabilities
		schema for details on this property.
	read-	
	write	
	(null)	
@odata.id	string	Link to a DataSecurityLoSCapabilities resource. See the Links section and the DataSecurityLoSCapabilities
		schema for details.
	read-	
	oniy	
}		
DataStorageLoSCapabilities {	object	The value shall reference the data storage capabilities of this service. See the <i>DataStorageLoSCapabilities</i>
	read-	schema for details on this property.
	write	
	(null)	
@odata.id	string	Link to a DataStorageLoSCapabilities resource. See the Links section and the DataStorageLoSCapabilities
	0	schema for details.
	read-	
	only	
}		
DefaultClassOfService {	object	If present, this property shall reference the default class of service for entities allocated by this storage service.
		This default may be overridden by the DefaultClassOfService property values within contained StoragePools.
	read-	See the <i>ClassOfService</i> schema for details on this property.
	write	
	(null)	
@odata.id	string	Link to a ClassOfService resource. See the Links section and the <i>ClassOfService</i> schema for details.
	read-	
	onlu	
}		
HostingSystem		The value shall reference the ComputerSystem or StorageController that hosts this service
nostingoystem		The state shan reference the computersystem of storage controller that hosts this service.
	read-	
	write	
	(null)	
IOConnectivityLoSCapabilities {	object	The value shall reference the IO connectivity capabilities of this service. See the
		IOConnectivityLoSCapabilities schema for details on this property.
	read-	
	write	
	(null)	

@odata.id	string	Link to a IOConnectivityLoSCapabilities resource. See the Links section and the
		IOConnectivityLoSCapabilities schema for details.
	read-	
3	onug	
J	object	The value shall reference the IO performance capabilities of this service. See the
for enormaliceLoseapabilities (	object	IOPerformanceLoSCapabilities schema for details on this property.
	read-	
	write	
Codata id	(nuu)	Link to a IOParformance I of Canabilities resource. See the Links section and the
@odata.iu	string	IOPerformanceLoSCapabilities schema for details.
	read-	
	only	
}		
<b>Oem</b> {}	object	This object represents the Oem property. All values for resources described by this schema shall comply to the requirements as described in the Redfish specification. See the <i>Resource</i> schema for details on this property.
	read-	
	write	
}		
Name	string	This object represents the Name property. All values for resources described by this schema shall comply to the requirements as described in the Redfish specification. The value of this string shall be of the format for the
	read-	reserved word Name.
	only	
<b>Oem</b> {}	object	The value of this string shall be of the format for the reserved word <i>Oem</i> . See the <i>Resource</i> schema for details on this property.
	read-	
	write	
Redundancy [ {	array	Redundancy information for the storage subsystem
	read-	
	only	
@odata.id	string	The value of this property shall be the unique identifier for the resource and it shall be of the form defined in the Redfish specification.
	read-	
	only	
	-his at	The such as four houses in the survey of all as forecases a Radia interface on the contained high to a measure
ServerEndpointGroups {	object	i ne value of each entry in the array shall reference a EndpointGroup. Contains a link to a resource.
	read-	
	write	
Rodata id	(null)	Link to Collection of Endroint Channe Soc the Endroint Channe scheme for details
@odata.iu	string	Link to Conection of <i>EnapointGroup</i> , see the EnapointGroup schema for details.
	read-	
	only	
}		
Status {}	object	This type shall contain any status or health properties of a resource. See the <i>Resource</i> schema for details on this property.
	read-	
	write (mull)	
StorageGroups {	object	The value of each enty in the array shall reference a StorageGroup. Contains a link to a resource.
	read-	
	(null)	

@odata.id	string	Link to Collection of StorageGroup. See the StorageGroup schema for details.
	read-	
	oniy	
}		
StoragePools {	object	An array of references to StoragePools. Contains a link to a resource.
	road-	
	onlu	
@odata id	string	Link to Collection of Storage Pool. See the Storage Pool schema for details
eouunu	oung	
	read-	
	only	
}		
StorageSubsystems {	object	The value shall be a link to a collection of type StorageCollection having members that represent storage
		subsystems managed by this storage service.
	read-	
	only	
@odata.id	string	The value of this property shall be the unique identifier for the resource and it shall be of the form defined in
		the Redfish specification.
	onhu	
1	onig	
S Volumos (	object	An away of references to Valumas managed by this storage service. Contains a link to a reserves
vorumes {	object	An array of references to volumes managed by this storage service. Contains a link to a resource.
	read-	
	write	
@odata.id	string	Link to Collection of Volume. See the Volume schema for details.
	read-	
	only	
}		

## 9.30.1 Action Details

#### 9.30.1.0.0.1 SetEncryptionKey

This defines the name of the custom action supported on this resource.

The following table shows the parameters for the action which are included in the POST body to the URI shown in the "Target" property of the Action.

{		
EncryptionKey	string	This defines the property name for the action.
	read-write	
}		

## 9.31 StorageServiceCollection

Description	string	This object represents the Description property. All values for resources described by this schema shall comply to the requirements as
		described in the Redfish specification.
	read-	
	only	
	(null)	
1	1	

Members [ {	array	The value of each member entry shall reference a StorageService resource.
	noad	
	only	
@odata.id	string	Link to a StorageService resource. See the Links section and the <i>StorageService</i> schema for details.
	read-	
	only	
}]		
Name	string	This object represents the Name property. All values for resources described by this schema shall comply to the requirements as
		described in the Redfish specification. The value of this string shall be of the format for the reserved word Name.
	read-	
	only	
<b>Oem</b> {}	object	The value of this string shall be of the format for the reserved word Oem. See the Resource schema for details on this property.
	read-	
	write	

## 9.32 StorageSystemCollection

Description	string	This object represents the Description property. All values for resources described by this schema shall comply to the requirements as
		described in the Redfish specification.
	read-	
	only	
	(null)	
Members [ {	array	The value of each member entry shall reference a ComputerSystem resource that shall have a HostingRoles entry with a value of
		'StorageServer'.
	read-	
	only	
@odata.id	string	The value of this property shall be the unique identifier for the resource and it shall be of the form defined in the Redfish specification.
	read-	
	only	
}]		
Name	string	This object represents the Name property. All values for resources described by this schema shall comply to the requirements as
		described in the Redfish specification. The value of this string shall be of the format for the reserved word Name.
	read-	
	only	
<b>Oem</b> {}	object	The value of this string shall be of the format for the reserved word Oem. See the Resource schema for details on this property.
	read-	
	write	

## 9.33 Volume 1.2.1

This resource shall be used to represent a volume, virtual disk, logical disk, LUN, or other logical storage for a Redfish implementation.

AccessCapabilities (v1.1+) [ {

array

readwrite Each entry shall specify a current storage access capability.

StorageAccessCapability	string	StorageAccessCapability enumeration literals may be used to describe abilities to read or write storage.
	(enum)	See StorageAccessCapability in Property Details, below, for the possible values of this property.
	read-	
	write	
	(null)	
}]		
Actions {	object	The Actions property shall contain the available actions for this resource
Actions (	object	The factors property shall contain the available actions for this resource.
	read-	
	write	
	1	
#Volume.CheckConsistency {}	object	This defines the name of the custom action supported on this resource. For more information, see the
	7	Action Details section below.
	reaa-	
	write	
#Volume.Initialize {}	object	This defines the name of the custom action supported on this resource. If InitializeType is not specified in
		the request body, the InitializeType should be Fast. For more information, see the Action Details section
	read-	below.
	write	
}		
AllocatedPools {	object	The value of this property shall contain references to all storage pools allocated from this volume.
		Contains a link to a resource.
	read-	
	only	
	(null)	
@odata.id	string	Link to Collection of <i>StoragePool</i> . See the StoragePool schema for details
eounna	511118	
	read-	
	only	
}		
Dll_0!D_+		
biockSizeBytes	(Pw)	This property shall contain size of the smallest addressable unit of the associated volume.
	(By)	
	read-	
	onhi	
	(mull)	
~	(1111)	
Capacity {	object	Information about the utilization of capacity allocated to this storage volume. See the <i>Capacity</i> schema
		for details on this property.
	reaa-	
	write	
	(nuu)	
@odata.id	string	Link to a Capacity resource. See the Links section and the <i>Capacity</i> schema for details.
	read-	
	only	
}		
CapacityBytes	number	This property shall contain the size in bytes of the associated volume.
	(By)	
	read-	
	only	
	(null)	
CapacitySources (v1.1+) [ {	array	Fully or partially consumed storage from a source resource. Each entry provides capacity allocation
		information from a named source resource.
	read-	
	write	
	I	

@odata.id	string	Link to a CapacitySource resource. See the Links section and the Capacity schema for details.
	_	
	read-	
11	onig	
[] Description	atning	This chiest represents the Decemintion property. All values for requires described by this scheme shall
Description	string	omply to the requirements as described in the Redfish specification.
	read-	
	(null)	
Encrypted	boolean	This property shall contain a boolean indicator if the Volume is currently utilizing encryption or not.
	,	
	read-	
	(null)	
EncryptionTypes [ {	arrav	This property shall contain the types of encryption used by this Volume.
JF JF L (		First states of the states of
	read-	
	write	
EncryptionTypes	string (enum)	See EncryptionTypes in Property Details, below, for the possible values of this property.
	read-	
	write	
}]		
IOStatistics		See the http://redfish.dmtf.org/schemas/swordfish/v1/IOStatistics.json#/definitions/IOStatistics
		schema for details.
	read-	
	write	
1	(nuu)	
Iu	string	shall comply to the requirements as described in the Redfish specification.
	read-	
	only	
Identifiers [ {	array	This property shall contain a list of all known durable names for the associated volume.
	read-	
	write	
		See the http://redfish.dmtf.org/schemas/v1/Resource_json#/definitions/Identifier schema for details.
	read-	
	write	
}]		
Links {	object	The Links property, as described by the Redfish Specification, shall contain references to resources that are related to, but not contained by (subordinate to), this resource.
	read-	
	write	
ClassOfService (v1.1+) {	object	This property shall contain a reference to the ClassOfService that this storage volume conforms to. See the <i>ClassOfService</i> schema for details on this property.
	read-	
	only	
	(null)	
@odata.id	string	Link to a ClassOfService resource. See the Links section and the <i>ClassOfService</i> schema for details.
	read-	
	only	
}		

DedicatedSpareDrives (v1.2+) [ {	array	The value of this property shall be a reference to the resources that this volume is associated with and shall reference resources of type Drive. This property shall only contain references to Drive entities which
	read- only	are currently assigned as a dedicated spare and are able to support this Volume.
@odata.id	string	The value of this property shall be the unique identifier for the resource and it shall be of the form defined in the Redfish specification.
	read- only	
3.1	5	
DedicatedSpareDrives@odata.count (v1.2+)	number	The value of this property shall be an integer representing the number of items in a collection.
	read- only	
Drives [ {	array	The value of this property shall be a reference to the resources that this volume is associated with and shall reference resources of type Drive. This property shall only contain references to Drive entities which
	read-	are currently members of the Volume, not hot spare Drives which are not currently a member of the
	only	volume.
@odata.id	string	The value of this property shall be the unique identifier for the resource and it shall be of the form defined in the Redfish specification.
	read-	
	only	
}]		
Drives@odata.count	number	The value of this property shall be an integer representing the number of items in a collection.
	road-	
	onhi	
<b>O</b> om ()	ohioat	This shipst represents the Oom property. All values for resources described by this scheme shall comply
Uem {}	object	I his object represents the Oem property. All values for resources described by this schema shall comply to the requirements as described in the Redfish specification. See the <i>Resource</i> schema for details on this
	read-	to the requirements as described in the Redush specification, see the Resource schema for details on this property
	write	property.
	wrae	
}		
LowSpaceWarningThresholdPercents	array	Each time the following value is less than one of the values in the array the
( <i>v</i> 1.1+)[]	(%) (	LOW_SPACE_THRESHOLD_WARNING event shall be triggered: Across all Capacity Sources entries,
	(number,	percent = (SUM(Anocatedbytes) - SUM(Consumedbytes))/SUM(Anocatedbytes).
	iiuii)	
	read-	
	write	
Manufacturer (v1.1+)	string	This property shall contain a value that represents the manufacturer or implementer of the storage
		volume.
	orhu	
	(null)	
MaxBlockSizeBytes (n1 1+)	number	This property shall contain size of the largest addressable unit of this storage volume
	(By)	The property shall contain one of the largest addressable and of this storage volume.
	read-	
	onhu	
	(null)	
Model (v1.1+)	string	The value is assigned by the manufacturer and shall represents a specific storage volume implementation.
	read-	
	only	
	(null)	
Name	string	This object represents the Name property. All values for resources described by this schema shall comply to the requirements as described in the Redfish specification. The value of this string shall be of the
	read-	format for the reserved word Name.
	only	

0em {}	object	The value of this string shall be of the format for the reserved word Oem. See the Resource schema for
	_	details on this property.
	read-	
Operations [ {	array	This property shall contain a list of all currently running on the Volume
	array	This property shall contain a list of all currently running on the volume.
	read-	
	write	
AssociatedTask {	object	This resource shall be used to represent a task for a Redfish implementation.
	read-	
	only	
@odata.id	string	The value of this property shall be the unique identifier for the resource and it shall be of the form
	7	defined in the Redfish specification.
	reaa- onlu	
}	- Lug	
OperationName	string	The name of the operation.
-	_	
	read-	
	only (mill)	
PercentageComplete	number	The percentage of the operation that has been completed.
	read-	
	only	
11	(11111)	
) ] OntimumIOSizeButes	number	This property shall contain the optimum IO size to use when performing IO on this volume. For logical
optimumosizeBytes	(By)	disks, this is the stripe size. For physical disks, this describes the physical sector size.
	-	
	read-	
	only (mull)	
RemainingCapacityPercent (v1.2+)	number	If present, this value shall return {[(SUM(AllocatedBytes) -
		SUM(ConsumedBytes)]/SUM(AllocatedBytes)}*100 represented as an integer value.
	read-	
	only (mill)	
<b>ReplicaInfos</b> $(v_{1,1+})$ [ {	arrav	This property shall describe the replica relationship between this storage volume and a corresponding
	J	source and/or target volume.
	read-	
	only	
		see the http://redfish.dmtf.ora/schemas/swordfish/v1/StoraaeRenlicaInfo ison#/definitions/RenlicaInfo
	read-	schema for details.
	write	
	(null)	
}]	1	
Status {}	object	This type shall contain any status or health properties of a resource. See the <i>Resource</i> schema for details on this property
	read-	on the property.
	write	
StorageGroups {	object	The value of this property shall contain references to all storage groups that include this volume. Contains a link to a resource.
	read-	
	only	
	(null)	

@odata.id	string read- only	Link to Collection of <i>StorageGroup</i> . See the StorageGroup schema for details.
}		
VolumeType	string (enum) read- only (null)	This property shall contain the type of the associated Volume. <i>See VolumeType in Property Details, below, for the possible values of this property.</i>

### 9.33.1 Action Details

#### 9.33.1.0.0.1 CheckConsistency

This defines the name of the custom action supported on this resource.

(This action takes no parameters.)

#### 9.33.1.0.0.2 Initialize

This defines the name of the custom action supported on this resource. If InitializeType is not specified in the request body, the InitializeType should be Fast.

The following table shows the parameters for the action which are included in the POST body to the URI shown in the "Target" property of the Action.

string	This defines the property name for the action. See InitializeType in Property Details, below, for the possible values of this
(enum)	property.
read-	
write	
	string (enum) read- write

### 9.33.2 Property Details

#### 9.33.2.1 EncryptionTypes:

string	Description
ControllerAssisted	The volume is being encrypted by the storage controller entity.
NativeDriveEncryption	The volume is utilizing the native drive encryption capabilities of the drive hardware.
SoftwareAssisted	The volume is being encrypted by software running on the system or the operating system.

#### 9.33.2.2 InitializeType:

This defines the property name for the action.

string	Description
Fast	The volume is prepared for use quickly, typically by erasing just the beginning and end of the space so that partitioning can be performed.
Slow	The volume is prepared for use slowly, typically by completely erasing the volume.

#### 9.33.2.3 StorageAccessCapability:

StorageAccessCapability enumeration literals may be used to describe abilities to read or write storage.

string	Description
Append	This enumeration literal shall indicate that the storage may be written only to append.
Execute	This value shall indicate that Execute access is allowed by the file share.

string	Description
Read	This enumeration literal shall indicate that the storage may be read.
Streaming	This enumeration literal shall indicate that the storage may be read sequentially.
Write	This enumeration literal shall indicate that the storage may be written multiple times.
WriteOnce	This enumeration literal shall indicate that the storage may be written only once.

### 9.33.2.4 VolumeType:

This property shall contain the type of the associated Volume.

string	Description
Mirrored	The volume is a mirrored device.
NonRedundant	The volume is a non-redundant storage device.
RawDevice	The volume is a raw physical device without any RAID or other virtualization applied.
SpannedMirrors	The volume is a spanned set of mirrored devices.
SpannedStripesWithParity	The volume is a spanned set of devices which uses parity to retain redundant information.
StripedWithParity	The volume is a device which uses parity to retain redundant information.

# 9.34 VolumeCollection

Description	string	This object represents the Description property. All values for resources described by this schema shall comply to the requirements as
		described in the Redfish specification.
	read-	
	only	
	(null)	
Members [ {	array	The value of each member entry shall reference a Volume resource.
	read-	
	write	
@odata.id	string	Link to a Volume resource. See the Links section and the <i>Volume</i> schema for details.
	_	
	read-	
	only	
}]		
Name	string	This object represents the Name property. All values for resources described by this schema shall comply to the requirements as
		described in the Redfish specification. The value of this string shall be of the format for the reserved word Name.
	read-	
	only	
<b>Oem</b> {}	object	The value of this string shall be of the format for the reserved word Oem. See the Resource schema for details on this property.
	read-	
	write	