



Swordfish Property Guide

Version 1.2.2

ABSTRACT: The Property Guide provides a listing of the properties used in the Swordfish schema. It is intended primarily for end users and other consumers of Swordfish data to look up property definitions, without requiring a detailed knowledge of the schema as a whole.

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

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USAGE

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Current Revision

SNIA is actively engaged in expanding and refining the Swordfish documentation. The most current revision can be found on the SNIA web site at https://www.snia.org/tech_activities/standards/curr_standards/swordfish.

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Revision History

The evolution of this document is summarized in [Table 1](#).

Table 1: Revision History

Date	Revision	Notes
2 March 2021	Initial Version	Released as v1.2.2 to match bundle version

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 this work in progress, would like to recognize the significant contributions made by the following members listed in [Table 2](#).

Table 2: Contributors

Member	Representatives (* – prior employer)
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1 Introduction

1.1 Overview

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 to manage block storage, file systems, object storage, and storage network infrastructure, with a focus on common operational and business concerns of storage management.

The Swordfish API is defined using CSDL, JSON, and/or YAML schema. However, Swordfish is a REST-based API and can be used by clients without requiring an explicit knowledge of the underlying schema.

This document provides a comprehensive reference for the properties defined within the schema that can be provided by the Swordfish API.

1.2 Who should read this document?

This document is intended primarily for end users and other consumers of Swordfish data to look up property definitions, without requiring a detailed knowledge of the schema as a whole. Schema authors may also use this document to locate existing property definitions within the Swordfish Schema.

1.3 Using this guide

Every Redfish API response consists of a JSON payload containing properties that are strictly defined by a Schema for that Resource. The Schema defining a particular Resource can be determined from the value of the “@odata.type” property returned in every Redfish response. This guide details the definitions for every Redfish standard property defined in the DMTF-published Redfish Schemas.

The property-level details include:

Column	Purpose
Property Name	The name of the JSON property as it appears, case sensitive, in the JSON payload.
Defined in Schemas	The names of the Redfish Schemas where this property is defined, and therefore in which Resources it may appear. For properties that appear within embedded JSON objects, the object name appears in parentheses.
Type	The JSON data types for the property, which can include boolean, number, string, or object. String types that use defined enumerations state (enum). Number types state units, where used.
Description	The description of the property, as copied directly from the Schema <code>DESCRIPTION</code> definition, or, for properties that appear in multiple Schemas, a general description of its usage in any of the listed Schemas.

2 Property Index

Property Name	Defined In Schema(s)	Type	Description
AccessCapabilities	FileSystem	array	An array of supported IO access capabilities.
	DataStorageLineOfService	array	Required access capabilities.
	Volume	array	Supported IO access capabilities.
AccessCapability	StorageGroup (MappedVolumes)	string (enum)	Supported IO access capability.
AccessProtocols	IOConnectivityLineOfService	array	SupportedAccessProtocols.
AccessState	StorageGroup	string (enum)	AccessState for this storage group.

Property Name	Defined In Schema(s)	Type	Description
Actions	<i>various</i> (CapacitySource, ClassOfService ...)	object	The available actions for this resource.
AddDrives (Action)	StoragePool (Actions)	object	This action is used to add an additional drive, or set of drives, to a capacity source for the storage pool.
AllocatedBytes	CapacitySource (ProvidedCapacity > Data), CapacitySource (ProvidedCapacity > Metadata), CapacitySource (ProvidedCapacity > Snapshot)	integer (bytes)	The number of bytes currently allocated by the storage system in this data store for this data type.
AllocatedPools	StoragePool	object	A reference to the collection of storage pools allocated from this storage pool.
	Volume	object	An array of references to StoragePools allocated from this Volume.
AllocatedVolumes	StoragePool	object	A reference to the collection of volumes allocated from this storage pool.
AntivirusEngineProvider	DataSecurityLineOfService	string	AntiVirus provider.
AntivirusScanPolicies	DataSecurityLineOfService	array	Policy for triggering an AntiVirus scan.
AntiVirusScanTrigger	DataSecurityLineOfService (AntivirusScanPolicies), DataSecurityLoSCapabilities (SupportedAntivirusScanPolicies)	string (enum)	Types of antivirus scan triggers.
AssignReplicaTarget (Action)	ConsistencyGroup (Actions)	object	This action is used to establish a replication relationship by assigning an existing consistency group to serve as a target replica for an existing source consistency group.
	Volume (Actions)	object	This action is used to establish a replication relationship by assigning an existing volume to serve as a target replica for an existing source volume.
AssociatedDomains	NVMeDomain (Links)	array	An array of links to associated domains.
AssociatedFeaturesRegistry	Volume (Operations)	object	A reference to the task associated with the operation if any.
AuthenticationMethod	StorageGroup	string (enum)	The Authentication method used for the Endpoints involved in this StorageGroup.
AuthenticationType	DataSecurityLoSCapabilities (SupportedHostAuthenticationTypes), DataSecurityLoSCapabilities (SupportedUserAuthenticationTypes)	string (enum)	Enumeration of authentication algorithms.
AvailableFirmwareImages	NVMeDomain	array	A collection of available firmware images.
AverageIOBytes	IOPerformanceLoSCapabilities (SupportedIOWorkloads > Components)	integer (bytes)	Average I/O Size for this component.
AverageIOOperationLatencyMicroseconds	IOPerformanceLineOfService	integer (us)	Expected average IO latency.
BlockSizeBytes	FileSystem	integer (bytes)	Block size of the file system in bytes.
	StoragePool	integer (bytes)	Maximum Block size in bytes.
	Volume	integer (bytes)	The size of the smallest addressable unit (Block) of this volume in bytes.
CacheDataVolumes	Volume (Links)	array	A pointer to the data volumes this volume serves as a cache volume.
CacheVolumeSource	Volume (Links)	object	A pointer to the cache volume source for this volume.
Capacity	FileSystem	object	Capacity allocated to the file system.
	StoragePool, Volume	object	Capacity utilization.

Property Name	Defined In Schema(s)	Type	Description
CapacityBytes	Volume	integer (bytes)	The size in bytes of this Volume.
CapacitySource	StoragePool (Actions > AddDrives (Action))	object	The capacity source to be extended.
CapacitySources	FileSystem	array	An array of capacity sources for the file system.
	StoragePool	array	An array of space allocations to this store.
	Volume	array	An array of space allocations to this volume.
CasePreserved	FileSystem	boolean	The case of file names is preserved by the file system.
CaseSensitive	FileSystem	boolean	Case sensitive file names are supported by the file system.
CASupported	FileShare	boolean	Continuous Availability is supported. Client/Server mediated recovery from network and server failure with application transparency.
ChangeRAIDLAYOUT (Action)	Volume (Actions)	object	Request system change the RAID layout of the volume.
ChannelEncryptionStrength	DataSecurityLineOfService	string (enum)	Key size for transport channel encryption.
ChapInfo	StorageGroup	array	The credential information used to authenticate the endpoints in this StorageGroup.
CHAPPassword	StorageGroup (ChapInfo)	string	The password for CHAP authentication.
CHAPUser	StorageGroup (ChapInfo)	string	The username for CHAP authentication.
CharacterCodeSet	FileSystem	array	An array of the character sets or encodings supported by the file system.
	FileSystem (CharacterCodeSet)	string (enum)	Supported character code standards for different alphabets and languages.
CheckConsistency (Action)	Volume (Actions)	object	This action is used to force a check of the Volume's parity or redundant data to ensure it matches calculated values.
ChildStorageGroups	StorageGroup (Links)	array	Child StorageGroups.
ClassesOfService	StoragePool	object	The ClassesOfService supported by this storage pool.
	StorageService	object	The ClassesOfService that all storage in this StorageService can support.
ClassOfService	FileShare (Links)	object	A link to the ClassOfService for this file share.
	FileSystem (Links)	object	The ClassOfService of this file system.
	StorageGroup (Links)	object	The ClassOfService that all storage in this StorageGroup conforms to.
	Volume (Links)	object	The ClassOfService that this storage volume conforms to.
ClassOfServiceVersion	ClassOfService	string	The value identifies the current version of this class of service definition.
ClientEndpointGroups	StorageGroup	array	Groups of client endpoints in this storage group.
	StorageService	object	Client endpoint groups.
ClientEndpoints	Volume (Links)	array	An array of references to the client Endpoints associated with this volume.
ClusterSizeBytes	FileSystem	integer (bytes)	A value indicating the minimum file allocation size imposed by the file system.
Components	IOPerformanceLoSCapabilities (SupportedIOWorkloads)	array	An array of IO workload component descriptions.
Compressed	StoragePool	boolean	Indicator of whether or not the StoragePool has compression enabled.

Property Name	Defined In Schema(s)	Type	Description
	Volume	boolean	Indicator of whether or not the Volume has compression enabled.
CompressionEnabled	StoragePool	boolean	Indicates whether or not compression is enabled on the storage pool.
ConsistencyGroupName	ConsistencyGroup (Actions > CreateReplicaTarget (Action))	string	The Name for the new target consistency group.
ConsistencyGroups	Volume (Links)	array	An array of references to the ConsistencyGroups associated with this volume.
	StorageService	object	ConsistencyGroups.
ConsistencyMethod	ConsistencyGroup	string (enum)	The consistency method used by this group.
ConsistencyType	ConsistencyGroup	string (enum)	The consistency type used by this group.
ConsumedBytes	CapacitySource (ProvidedCapacity > Data), CapacitySource (ProvidedCapacity > Metadata), CapacitySource (ProvidedCapacity > Snapshot)	integer (bytes)	The number of bytes consumed in this data store for this data type.
CreateReplicas (Action)	DataProtectionLineOfService (Actions)	object	This action creates an on-demand replica.
CreateReplicaTarget (Action)	ConsistencyGroup (Actions)	object	This action is used to create a new consistency group resource to provide expanded data protection through a replica relationship with the specified source consistency group.
	Volume (Actions)	object	This action is used to create a new volume resource to provide expanded data protection through a replica relationship with the specified source volume.
Data	CapacitySource (ProvidedCapacity)	object	The capacity information relating to the user data.
DataProtectionLinesOfService	ClassOfService	array	A collection of DataProtection line of service elements.
DataProtectionLoSCapabilities	StorageService, StorageService (Links)	object	The data protection capabilities of this service.
DataSanitizationPolicy	DataSecurityLineOfService	string (enum)	Data sanitization policy.
	DataSecurityLoSCapabilities (SupportedDataSanitizationPolicies)	string (enum)	Types of data sanitization policies.
DataSecurityLinesOfService	ClassOfService	array	A collection of DataSecurity line of service elements.
DataSecurityLoSCapabilities	StorageService, StorageService (Links)	object	The data security capabilities of this service.
DataStorageLinesOfService	ClassOfService	array	A collection of DataStorage line of service elements.
DataStorageLoSCapabilities	StorageService, StorageService (Links)	object	The data storage capabilities of this service.
DataUnitsRead	StoragePool (NVMeEnduranceGroupProperties > EndGrpLifetime)	integer	The property contains the total number of data units read from this endurance group.
DataUnitsWritten	StoragePool (NVMeEnduranceGroupProperties > EndGrpLifetime)	integer	The property contains the total number of data units written from this endurance group.
DedicatedSpareDrives	StoragePool (Links)	array	An array of references to the drives which are dedicated spares for this StoragePool.
	Volume (Links)	array	An array of references to the drives which are dedicated spares for this volume.
Deduplicated	StoragePool	boolean	Indicator of whether or not the StoragePool has deduplication enabled.
	Volume	boolean	Indicator of whether or not the Volume has deduplication enabled.

Property Name	Defined In Schema(s)	Type	Description
DeduplicationEnabled	StoragePool	boolean	Indicates whether or not deduplication is enabled on the storage pool.
DefaultAccessCapabilities	FileShare	array	An array of default access capabilities for the file share. The types of default access can include Read, Write, and/or Execute.
DefaultClassOfService	StorageService, StorageService (Links)	object	The default class of service for entities allocated by this storage service.
	StoragePool, StoragePool (Links)	object	The default class of service for entities allocated from this storage pool.
DefaultCompressionBehavior	StoragePool	boolean	Indicates the default dedupe behavior applied to the child resource (E.g., volume or storage pool) created out of the storage pool if the 'Compressed' property is not set on the create request.
DefaultDeduplicationBehavior	StoragePool	boolean	Indicates the default deduplication behavior applied to the child resource (E.g., volume or storage pool) created out of the storage pool if the 'Deduplicated' property is not set on the create request.
DefaultEncryptionBehavior	StoragePool	boolean	Indicates the default dedupe behavior applied to the child resource (E.g., volume or storage pool) created out of the storage pool if the 'Encrypted' property is not set on the create request.
DeleteTargetConsistencyGroup	ConsistencyGroup (Actions > RemoveReplicaRelationship (Action))	boolean	Indicate whether or not to delete the target consistency group as part of the operation.
DeleteTargetVolume	Volume (Actions > RemoveReplicaRelationship (Action))	boolean	Indicate whether or not to delete the target volume as part of the operation.
DHChapInfo	StorageGroup	array	The credential information used to authenticate the endpoints in this StorageGroup for DHCHAP.
DisplayName	Volume	string	A user-configurable string to name the volume.
DomainMembers	NVMeDomain	array	The members of the domain.
Drives	Volume (Links)	array	An array of references to the drives which contain this volume. This will reference Drives that either wholly or only partly contain this volume.
	Volume (Actions > ChangeRAIDLAYOUT (Action))	array	An array of the drives to be used by the volume.
	StoragePool (Actions > AddDrives (Action))	array	The drive(s) to be added.
	StoragePool (Actions > RemoveDrives (Action))	array	The drive(s) to be removed.
	StorageService	object	The set of drives managed by this storage service.
Duration	IOPerformanceLoSCapabilities (SupportedIOWorkloads > Components)	string (seconds)	Duration that this component is active.
Enable	StoragePool (Actions > SetCompressionState (Action))	boolean	This property indicates the desired compression state of the storage pool.
	StoragePool (Actions > SetDeduplicationState (Action))	boolean	This property indicates the desired deduplication state of the storage pool.
	StoragePool (Actions > SetEncryptionState (Action))	boolean	This property indicates the desired encryption state of the storage pool.
Encrypted	StoragePool	boolean	Indicator of whether or not the StoragePool has encryption enabled.
	Volume	boolean	Is this Volume encrypted.

Property Name	Defined In Schema(s)	Type	Description
EncryptionEnabled	StoragePool	boolean	Indicates whether or not encryption is enabled on the storage pool.
EncryptionKey	StorageService (Actions > SetEncryptionKey (Action))	string	The encryption key to set on the storage subsystem.
EncryptionTypes	Volume	array	The types of encryption used by this Volume.
EndGrpLifetime	StoragePool (NVMeEnduranceGroupProperties)	object	This property contains the Endurance Group Lifetime properties.
EndpointGroups	StorageService	object	Client and Server endpoint groups.
Endpoints	StorageService	object	Endpoints.
EnduranceEstimate	StoragePool (NVMeEnduranceGroupProperties > EndGrpLifetime)	integer	This property contains an estimate of the total number of data bytes that may be written to the Endurance Group over the lifetime of the Endurance Group assuming a write amplification of 1.
EnduranceGroupIdentifier	StoragePool (NVMeSetProperties)	string	A 16-bit hex value that contains the endurance group identifier.
ErrorInformationLogEntryCount	StoragePool (NVMeEnduranceGroupProperties > EndGrpLifetime)	integer	This property contains the number of error information log entries over the life of the controller for the endurance group.
EthernetInterfaces	FileShare	object	A link to the collection of Ethernet interfaces that provide access to this file share.
ExecuteSupport	FileShare	boolean	Execute access is supported by the file share.
ExportedShares	FileSystem	object	An array of exported file shares of this file system.
ExposeVolumes (Action)	StorageGroup (Actions)	object	Expose the storage volumes of this group.
FailureDomainScope	DataProtectionLoSCapabilities (SupportedRecoveryGeographicObjectives)	string (enum)	Values of this enumeration represent a geographic scope of a failure domain.
Features	FeaturesRegistry	object	The pattern property indicates that a free-form string is the unique identifier for the feature within the registry.
FileProtocol	FileShare (FileSharingProtocols)	string (enum)	The file sharing protocols supported by the file system.
FileSharePath	FileShare	string	A path to an exported file or directory on the file system where this file share is hosted.
FileShareQuotaType	FileShare	string (enum)	Specifies the type of quota enforcement.
FileShareRemainingQuotaBytes	FileShare	integer (bytes)	The number of remaining bytes that may be used by this file share.
FileShareTotalQuotaBytes	FileShare	integer (bytes)	The maximum number of bytes that may be used by this file share.
FileSharingProtocols	FileShare	array	An array of file sharing protocols supported by this file share.
FileSystem	FileShare (Links)	object	A link to the file system containing the file share.
FileSystems	StorageService	object	FileSystems.
FirmwareVersion	NVMeFirmwareImage	string	The firmware version of the available NVMe firmware image.
ForceEnable (Action)	Volume (Actions)	object	Request system force the volume to an enabled state regardless of data loss.
FormattedLBASize	Volume (NVMeNamespaceProperties)	string	The LBA data size and metadata size combination that the namespace has been formatted with.

Property Name	Defined In Schema(s)	Type	Description
GuaranteedBytes	CapacitySource (ProvidedCapacity > Data), CapacitySource (ProvidedCapacity > Metadata), CapacitySource (ProvidedCapacity > Snapshot)	integer (bytes)	The number of bytes the storage system guarantees can be allocated in this data store for this data type.
HideVolumes (Action)	StorageGroup (Actions)	object	Hide the storage volumes of this group.
HostAuthenticationType	DataSecurityLineOfService	string (enum)	Authentication type for hosts (servers) or initiator endpoints.
HostingSystem	StorageService (Links)		The hosting system or storage controller hosting this storage service.
HostReadCommandCount	StoragePool (NVMeEnduranceGroupProperties > EndGrpLifetime)	integer	This property contains the number of read commands completed by all controllers in the NVM subsystem for the Endurance Group.
HostWriteCommandCount	StoragePool (NVMeEnduranceGroupProperties > EndGrpLifetime)	integer	This property contains the number of write commands completed by all controllers in the NVM subsystem for the Endurance Group.
Identifier	FileSystem (Identifiers), Volume (Identifiers)	object	Any additional identifiers for a resource.
	ClassOfService, DataProtectionLoSCapabilities, DataSecurityLoSCapabilities, DataStorageLoSCapabilities, IOConnectivityLoSCapabilities, IOPerformanceLoSCapabilities, StorageGroup, StoragePool, StorageService	object	The value identifies this resource.
Identifiers	Volume	array	The Durable names for the volume.
	FileSystem	array	The durable names for this file system.
ImportedShares	FileSystem	array	An array of imported file shares.
Initialize (Action)	Volume (Actions)	object	This action is used to prepare the contents of the volume for use by the system. If InitializeMethod is not specified in the request body, but the property InitializeMethod is specified, the property InitializeMethod value should be used. If neither is specified, the InitializeMethod should be Foreground.
InitializeMethod	Volume	string (enum)	Indicates the Initialization Method used for this volume. If InitializeMethod is not specified, the InitializeMethod should be Foreground.
	Volume (Actions > Initialize (Action))	string (enum)	The type of initialization to be performed.
InitializeType	Volume (Actions > Initialize (Action))	string (enum)	The type of initialization to be performed.
InitiatorCHAPPassword	StorageGroup (ChapInfo)	string	The shared secret for Mutual (2-way) CHAP authentication by the initiator.
InitiatorCHAPUser	StorageGroup (ChapInfo)	string	The Initiator username for Mutual (2-way) CHAP authentication by the initiator.
IOAccessPattern	IOPerformanceLoSCapabilities (SupportedIOWorkloads > Components)	string (enum)	Expected access pattern for this component.
IOConnectivityLinesOfService	ClassOfService	array	A collection of IOConnectivity line of service elements.
IOConnectivityLoSCapabilities	StorageService, StorageService (Links)	object	The IO connectivity capabilities of this service.
IOLimitingIsSupported	IOPerformanceLoSCapabilities	boolean	Limiting IOPS is supported.
IOOperationsPerSecondIsLimited	IOPerformanceLineOfService	boolean	Limit the IOPS.
IOPerfModeEnabled	Volume	boolean	Indicates the IO performance mode setting for the volume.
IOPerformanceLinesOfService	ClassOfService	array	A collection of IOPerformance line of service elements.

Property Name	Defined In Schema(s)	Type	Description
IOPerformanceLoSCapabilities	StorageService, StorageService (Links)	object	The IO performance capabilities of this service.
IOStatistics	FileSystem	object	Statistics for this FileSystem.
	StoragePool	object	Statistics for this StoragePool.
	StorageService	object	Statistics for this StorageService.
	Volume	object	Statistics for this volume.
IOWorkload	IOPerformanceLineOfService	object	A description of the expected workload.
IsConsistent	ConsistencyGroup	boolean	This value is true when the consistency group is in a consistent state.
IsIsolated	DataProtectionLineOfService	boolean	The replica is in a separate fault domain.
IsShareable	Volume (NVMeNamespaceProperties)	boolean	Indicates the namespace is shareable.
IsSpaceEfficient	DataStorageLineOfService	boolean	True implies compression or deduplication of storage.
IsThinProvisioned	CapacitySource (ProvidedCapacity)	boolean	Marks that the capacity is not necessarily fully allocated.
JournalingMedia	Volume (Links)		A pointer to the Resource that serves as a journaling media for this volume.
KeySize	DataSecurityLoSCapabilities (SupportedChannelEncryptionStrengths), DataSecurityLoSCapabilities (SupportedMediaEncryptionStrengths)	string (enum)	Enumeration of 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)).
Language	FeaturesRegistry	string	This is the RFC 5646 compliant language code for the registry.
LinesOfService	StorageService	array	The LinesOfService defined for this StorageService.
Links	ConsistencyGroup, DataProtectionLoSCapabilities, FileSystem, SpareResourceSet, StorageGroup, StorageService	object	Contains links to other resources that are related to this resource.
	Volume	object	Contains references to other resources that are related to this resource.
	FileShare, StoragePool	object	The links object contains the links to other resources that are related to this resource.
	NVMeDomain	object	The links to other resources that are related to this resource.
LocalDHCHAPAuthSecret	StorageGroup (DHChapInfo)	string	The local DHCHAP auth secret for DHCHAP authentication.
LogicalUnitNumber	Volume	integer	Indicates the host-visible LogicalUnitNumber assigned to this Volume.
	StorageGroup (MappedVolumes)	string	A SCSI Logical Unit Number for a Volume.
LowSpaceWarningThresholdPercents	FileShare	array (%)	An array of low space warning threshold percentages for the file share.
	FileSystem	array (%)	An array of low space warning threshold percentages for the file system.
	StoragePool	array (%)	Low space warning threshold specified in percents.
	Volume	array (%)	Low space warning.
Manufacturer	Volume	string	The manufacturer or OEM of this storage volume.
MappedVolumes	StorageGroup	array	Mapped Volumes in this storage group.
MaxBlockSizeBytes	Volume	integer (bytes)	Max Block size in bytes.
	StoragePool	integer (bytes)	Maximum Block size in bytes.

Property Name	Defined In Schema(s)	Type	Description
MaxBytesPerSecond	IOConnectivityLineOfService	integer (By/s)	The maximum Bandwidth in bytes per second that a connection can support.
MaxFileNameLengthBytes	FileSystem	integer (bytes)	A value indicating the maximum length of a file name within the file system.
MaximumCapacityPerEnduranceGroupBytes	NVMeDomain	integer (bytes)	The maximum capacity per endurance group in bytes of this NVMe Domain.
MaximumRecoverableCapacitySourceCount	DataStorageLoSCapabilities	integer	Maximum number of capacity source resources for the purpose of recovery from a failure.
MaxIOOperationsPerSecondPerTerabyte	IOPerformanceLineOfService	integer (1/s/TBy)	The amount of IOPS a volume of a given committed size can support.
MaxIOPS	IOConnectivityLineOfService	integer ([IO]/s)	The maximum supported IOs per second that the connection will support for the selected access protocol.
MaxSamplePeriod	IOPerformanceLoSCapabilities	string (seconds)	Maximum sampling period over which average values are calculated.
MaxSupportedBytesPerSecond	IOConnectivityLoSCapabilities	integer (By/s)	The maximum Bandwidth in bytes per second that a connection can support.
MaxSupportedIOPS	IOConnectivityLoSCapabilities	integer ([IO]/s)	The maximum IOPS that a connection can support.
MediaAndDataIntegrityErrorCount	StoragePool (NVMeEnduranceGroupProperties > EndGrpLifetime)	integer	This property contains the number of occurrences where the controller detected an unrecovered data integrity error for the Endurance Group.
MediaEncryptionStrength	DataSecurityLineOfService	string (enum)	Key size for media encryption.
MediaSpanCount	Volume	integer	Indicates the number of media elements used per span in the secondary RAID for a hierarchical RAID type.
	Volume (Actions > ChangeRAIDLAYOUT (Action))	integer	The requested number of media elements used per span in the secondary RAID for a hierarchical RAID type.
MediaUnitsWritten	StoragePool (NVMeEnduranceGroupProperties > EndGrpLifetime)	integer	The property contains the total number of data units written from this endurance group.
Members	HostedStorageServices	array	The value of each member references a StorageService resource.
Members@odata.nextLink	HostedStorageServices	string	The URI to the resource containing the next set of partial members.
MembersAreConsistent	StorageGroup	boolean	Members are kept in a consistent state.
Metadata	CapacitySource (ProvidedCapacity)	object	The capacity information relating to metadata.
MetadataTransferredAtEndOfDataLBA	Volume (NVMeNamespaceProperties)	boolean	This property indicates whether or not the metadata is transferred at the end of the LBA creating an extended data LBA.
MinLifetime	DataProtectionLineOfService	string	Minimum lifetime (seconds) that replica must be maintained.
MinSamplePeriod	IOPerformanceLoSCapabilities	string (seconds)	Minimum sampling period over which average values are calculated.
MinSupportedIoOperationLatencyMicroseconds	IOPerformanceLoSCapabilities	integer (us)	Minimum supported average IO latency.
Model	Volume	string	The model number for this storage volume.
NamespaceFeatures	Volume (NVMeNamespaceProperties)	object	This property contains a set of Namespace Features.
NamespaceId	Volume (NVMeNamespaceProperties)	string	The NVMe Namespace Identifier for this namespace.

Property Name	Defined In Schema(s)	Type	Description
NumberLBAFormats	Volume (NVMeNamespaceProperties)	integer (bytes)	The number of LBA data size and metadata size combinations supported by this namespace. The value of this property is between 0 and 16.
NVMeDeviceType	NVMeFirmwareImage	string (enum)	The type of NVMe Device this image is associated with.
NVMeEnduranceGroupProperties	StoragePool	object	This property contains properties to use when StoragePool is used to describe an NVMe Endurance Group.
NVMeNamespaceProperties	Volume	object	This property contains properties to use when Volume is used to describe an NVMe Namespace.
NVMePoolType	StoragePool (NVMeProperties)	string (enum)	Indicates whether the StoragePool is used as an EnduranceGroup or an NVMeSet.
NVMeProperties	StoragePool	object	NVMe properties for this storage pool.
NVMeSetProperties	StoragePool	object	This property contains properties to use when StoragePool is used to describe an NVMe Set.
NVMeVersion	Volume (NVMeNamespaceProperties)	string	The version of the NVMe Base Specification supported.
OnHandLocation	SpareResourceSet	object	Location where this set of spares is kept.
OnHandSpares	SpareResourceSet (Links)	array	The type of resources in the set.
OnLine	SpareResourceSet	boolean	This set is available online.
OperationName	Volume (Operations)	string	The name of the operation.
Operations	Volume	array	The operations currently running on the Volume.
OptimalWriteSizeBytes	StoragePool (NVMeSetProperties)	integer (bytes)	This property contains the Optimal Write Size in Bytes for this NVMe Set.
OptimumIOSizeBytes	Volume	integer (bytes)	The size in bytes of this Volume's optimum IO size.
OwningEntity	FeaturesRegistry	string	This is the organization or company that publishes this registry.
OwningStorageResource	StoragePool (Links)	object	A pointer to the Storage resource that owns or contains this StoragePool.
	Volume (Links)	object	A pointer to the Storage resource that owns or contains this volume.
OwningStorageService	Volume (Links)	object	A pointer to the StorageService that owns or contains this volume.
ParentStorageGroups	StorageGroup (Links)	array	Parent StorageGroups.
PeerDHCHAPAuthSecret	StorageGroup (DHChapInfo)	string	The peer DHCHAP auth secret for DHCHAP authentication.
PercentageComplete	Volume (Operations)	integer	The percentage of the operation that has been completed.
PercentOfData	IOPerformanceLoSCapabilities (SupportedIOWorkloads > Components)	integer (%)	Percent of data for this workload component.
PercentOfIOPS	IOPerformanceLoSCapabilities (SupportedIOWorkloads > Components)	integer (%)	Percent of total IOPS for this workload component.
PercentUsed	StoragePool (NVMeEnduranceGroupProperties > EndGrpLifetime)	integer	A vendor-specific estimate of the percent life used for the endurance group based on the actual usage and the manufacturer prediction of NVM life.
PoolType	StoragePool	array	Pool usage type for this storage pool.
PredictedMediaLifeLeftPercent	StoragePool (NVMeEnduranceGroupProperties)	number (%)	The percentage of reads and writes that are predicted to be available for the media.
ProvidedCapacity	CapacitySource	object	The amount of space that has been provided from the ProvidingDrives, ProvidingVolumes, ProvidingMemory or ProvidingPools.

Property Name	Defined In Schema(s)	Type	Description
ProvidedClassOfService	CapacitySource	object	The ClassOfService provided from the ProvidingDrives, ProvidingVolumes, ProvidingMemoryChunks, ProvidingMemory or ProvidingPools.
ProvidingDrives	CapacitySource	object	The drive or drives that provide this space.
ProvidingMemory	CapacitySource	object	The memory that provides this space.
ProvidingMemoryChunks	CapacitySource	object	The memory chunks that provide this space.
ProvidingPools	CapacitySource	object	The pool or pools that provide this space.
ProvidingVolumes	CapacitySource	object	The volume or volumes that provide this space.
ProvisionedBytes	CapacitySource (ProvidedCapacity > Data), CapacitySource (ProvidedCapacity > Metadata), CapacitySource (ProvidedCapacity > Snapshot)	integer (bytes)	The maximum number of bytes that can be allocated in this data store for this data type.
ProvisioningPolicy	DataStorageLineOfService	string (enum)	Provisioning policy for storage.
	DataStorageLoSCapabilities (SupportedProvisioningPolicies), StoragePool (SupportedProvisioningPolicies)	string (enum)	Space provisioning policy.
	Volume	string (enum)	This property specifies the volume's storage allocation, or provisioning policy.
RAIDType	Volume	string (enum)	The RAID type of this volume.
	Volume (Actions > ChangeRAIDLAYOUT (Action))	string (enum)	The requested RAID type for the volume.
Random4kReadTypicalNanoSeconds	StoragePool (NVMeSetProperties)	integer	Indicates the typical time to complete a 4k read in 100 nano-second units when the NVM Set is in a Predictable Latency Mode Deterministic Window and there is 1 outstanding command per NVM Set.
ReadCachePolicy	Volume	string (enum)	Indicates the read cache policy setting for the Volume.
RecoverableCapacitySourceCount	FileSystem, StoragePool, Volume	integer	Current number of capacity source resources that are available as replacements.
	DataStorageLineOfService	integer	Required minimum number of available capacity source resources.
RecoveryAccessScope	DataProtectionLoSCapabilities (SupportedRecoveryTimeObjectives), DataStorageLoSCapabilities (SupportedRecoveryTimeObjectives)	string (enum)	An enumeration that represents the relative time required to make a replica available as a source.
RecoveryGeographicObjective	DataProtectionLineOfService	string (enum)	Geographic distribution scopes.
RecoveryPointObjectiveTime	DataProtectionLineOfService	string	Time interval defining how much source data that can be lost on failure.
RecoveryTimeObjective	DataProtectionLineOfService	string (enum)	An enumeration value that indicates the expected time to access an alternate replica.
RecoveryTimeObjectives	DataStorageLineOfService	string (enum)	Expectations for time to access the primary store after disaster recover.
Redundancy	StorageService	array	Redundancy information for the storage subsystem.
RegistryPrefix	FeaturesRegistry	string	This is the single word prefix used to form a Feature ID structure.
RegistryVersion	FeaturesRegistry	string	This is the feature registry version which is used in the middle portion of a Feature ID.
RemainingCapacity	FileSystem	object	Remaining capacity allocated to the file system.

Property Name	Defined In Schema(s)	Type	Description
RemainingCapacityPercent	FileShare	integer	The percentage of the capacity remaining in the FileShare.
	FileSystem	integer	The percentage of the capacity remaining in the FileSystem.
	StoragePool	integer	The percentage of the capacity remaining in the StoragePool.
	Volume	integer	The percentage of the capacity remaining in the Volume.
RemoveDrives (Action)	StoragePool (Actions)	object	This action is used to remove drive(s) from the capacity source for the StoragePool.
RemoveReplicaRelationship (Action)	ConsistencyGroup (Actions)	object	This action is used to disable data synchronization between a source and target consistency group, remove the replication relationship, and optionally delete the target consistency group.
	Volume (Actions)	object	This action is used to disable data synchronization between a source and target volume, remove the replication relationship, and optionally delete the target volume.
ReplacementSpareSets	SpareResourceSet (Links)	array	Other spare sets that can be utilized to replenish this spare set.
ReplicaAccessLocation	DataProtectionLineOfService	object	Location that supplies data access to the replica.
ReplicaClassOfService	DataProtectionLineOfService	object	The replica's class of service.
ReplicaCollection	FileSystem (Links)	array	An array of links to replicas for this file system.
ReplicaInfo	ConsistencyGroup, StorageGroup	object	Describes this storage group in its role as a target for replication.
	Volume	object	Describes this storage volume in its role as a target replica.
	FileSystem	object	This value describes the replica attributes if this file system is a replica.
ReplicaLineOfService	DataProtectionLineOfService (Actions > CreateReplicas (Action))	object	The data protection line of service this action is bound to.
ReplicaName	DataProtectionLineOfService (Actions > CreateReplicas (Action) > ReplicaRequests)	string	The name of the new replica.
ReplicaRequests	DataProtectionLineOfService (Actions > CreateReplicas (Action))	array	Specifies the resources to replicate and a name for the replica.
ReplicaSource	DataProtectionLineOfService (Actions > CreateReplicas (Action) > ReplicaRequests)	object	A resource to be replicated.
ReplicaTargets	ConsistencyGroup, FileSystem, StorageGroup, Volume	array	The resources that are target replicas of this source.
ReplicaType	ConsistencyGroup (Actions > AssignReplicaTarget (Action)), ConsistencyGroup (Actions > CreateReplicaTarget (Action))	string (enum)	The type of replica relationship to be created (e.g., Clone, Mirror, Snap).
	Volume (Actions > AssignReplicaTarget (Action)), Volume (Actions > CreateReplicaTarget (Action))	string (enum)	The type of replica relationship to be created.
	DataProtectionLineOfService	string (enum)	Type of replica.
	DataProtectionLoSCapabilities (SupportedReplicaTypes)	string (enum)	Values of ReplicaType describe the intended outcome of the replication.

Property Name	Defined In Schema(s)	Type	Description
ReplicaUpdateMode	ConsistencyGroup (Actions > AssignReplicaTarget (Action)), ConsistencyGroup (Actions > CreateReplicaTarget (Action)), Volume (Actions > AssignReplicaTarget (Action)), Volume (Actions > CreateReplicaTarget (Action))	string (enum)	The replica update mode (synchronous vs asynchronous).
ResourceType	SpareResourceSet	string	The type of resources in the set.
ResumeReplication (Action)	ConsistencyGroup (Actions)	object	This action is used to resume the active data synchronization between a source and target consistency group, without otherwise altering the replication relationship.
	Volume (Actions)	object	This action is used to resume the active data synchronization between a source and target volume, without otherwise altering the replication relationship.
ReverseReplicationRelationship (Action)	ConsistencyGroup (Actions)	object	This action is used to reverse the replication relationship between a source and target consistency group.
	Volume (Actions)	object	This action is used to reverse the replication relationship between a source and target volume.
RootAccess	FileShare	boolean	Root access is allowed by the file share.
SamplePeriod	IOPerformanceLineOfService	string	Sampling period over which average values are calculated.
Schedule	DataProtectionLineOfService	object	A schedule for making periodic point in time replicas.
	IOPerformanceLoSCapabilities (SupportedIOWorkloads > Components)	object	Specifies when to apply this workload component.
SecureChannelProtocol	DataSecurityLineOfService	string (enum)	Protocol that provide encrypted communication.
	DataSecurityLoSCapabilities (SupportedSecureChannelProtocols)	string (enum)	Types of Secure channel protocols.
ServerEndpointGroups	StorageGroup	array	Groups of server endpoints in this storage group.
	StorageService	object	Server endpoint groups.
ServerEndpoints	Volume (Links)	array	An array of references to the server Endpoints associated with this volume.
SetCompressionState (Action)	StoragePool (Actions)	object	This action is used to set the compression state of the pool.
SetDeduplicationState (Action)	StoragePool (Actions)	object	This action is used to set the dedupe state of the pool.
SetEncryptionKey (Action)	StorageService (Actions)	object	This action is used to set the encryption key for the storage subsystem.
SetEncryptionState (Action)	StoragePool (Actions)	object	This action is used to set the encryption state of the pool.
SetIdentifier	StoragePool (NVMeSetProperties)	string	A 16-bit hex value that contains the NVMe Set group identifier.
Snapshot	CapacitySource (ProvidedCapacity)	object	The capacity information relating to snapshot or backup data.
SpareResourceSets	FileSystem (Links), StoragePool (Links), Volume (Links)	array	An array of references to SpareResourceSets.
	StorageService	array	An array of SpareResourceSets.

Property Name	Defined In Schema(s)	Type	Description
SplitReplication (Action)	ConsistencyGroup (Actions)	object	This action is used to split the replication relationship and suspend data synchronization between a source and target consistency group.
	Volume (Actions)	object	This action is used to split the replication relationship and suspend data synchronization between a source and target volume.
Status	FileShare	object	Indicates the status of the file share.
	ConsistencyGroup	object	The property contains the status of the ConsistencyGroup.
	StorageGroup	object	The property contains the status of the StorageGroup.
	StoragePool	object	The property contains the status of the StoragePool.
	StorageService	object	The property contains the status of the StorageService.
	Volume	object	The property contains the status of the Volume.
	NVMeDomain	object	The status and health of the resource and its subordinate or dependent resources.
StorageAccessCapability	DataStorageLineOfService (AccessCapabilities), DataStorageLoSCapabilities (SupportedAccessCapabilities), FileShare (DefaultAccessCapabilities), FileSystem (AccessCapabilities), Volume (AccessCapabilities)	string (enum)	Values of StorageAccessCapability describe abilities to read or write storage.
StorageGroups	Volume (Links)	array	An array of references to the StorageGroups associated with this volume.
	Volume	object	An array of references to Storage Groups that includes this volume.
	StorageService	object	StorageGroups.
StoragePools	StorageService	object	StoragePools.
StorageSubsystems	StorageService	object	A reference to storage subsystems managed by this storage service.
StripSizeBytes	Volume (Actions > ChangeRAIDLAYOUT (Action))	integer	The number of blocks (bytes) requested for new strip size.
	Volume	integer (bytes)	The number of blocks (bytes) in a strip in a disk array that uses striped data mapping.
SupportedAccessCapabilities	DataStorageLoSCapabilities	array	Supported access capabilities.
SupportedAccessProtocols	IOConnectivityLoSCapabilities	array	SupportedAccessProtocols.
SupportedAntivirusEngineProviders	DataSecurityLoSCapabilities	array	Supported AntiVirus providers.
SupportedAntivirusScanPolicies	DataSecurityLoSCapabilities	array	Supported policies that trigger an AntiVirus scan.
SupportedChannelEncryptionStrengths	DataSecurityLoSCapabilities	array	Supported key sizes for transport channel encryption.
SupportedDataSanitizationPolicies	DataSecurityLoSCapabilities	array	Supported data sanitization policies.
SupportedHostAuthenticationTypes	DataSecurityLoSCapabilities	array	Supported authentication types for hosts (servers) or initiator endpoints.
SupportedIOWorkloads	IOPerformanceLoSCapabilities	array	A collection of supported workloads.
SupportedLinesOfService	DataProtectionLoSCapabilities	array	Collection of known and supported DataProtectionLinesOfService.
	DataSecurityLoSCapabilities	array	Collection of known and supported DataSecurityLinesOfService.
	DataStorageLoSCapabilities	array	Collection of known and supported DataStorageLinesOfService.

Property Name	Defined In Schema(s)	Type	Description
	IOConnectivityLoSCapabilities	array	Collection of known and supported IOConnectivityLinesOfService.
	IOPerformanceLoSCapabilities	array	Collection of known and supported IOPerformanceLinesOfService.
SupportedMediaEncryptionStrengths	DataSecurityLoSCapabilities	array	Supported key sizes for media encryption.
SupportedMinLifetimes	DataProtectionLoSCapabilities	array	Supported minimum lifetime that replica must be maintained.
SupportedProvisioningPolicies	DataStorageLoSCapabilities	array	Thin allows over allocation of storage.
	StoragePool	array	This collection specifies all supported storage allocation properties for the Storage Pool.
SupportedRAIDTypes	StoragePool	array	A collection of the RAID Types supported by the storage pool.
SupportedRecoveryGeographicObjectives	DataProtectionLoSCapabilities	array	Supported types of failure domains.
SupportedRecoveryPointObjectiveTimes	DataProtectionLoSCapabilities	array	Supported time intervals defining how much source information can be lost on failure.
SupportedRecoveryTimeObjectives	DataProtectionLoSCapabilities	array	Supported expectations for time to access an alternate replica.
	DataStorageLoSCapabilities	array	Supported expectations for time to access the primary store after recovery.
SupportedReplicaOptions	DataProtectionLoSCapabilities (Links)	array	Collection of known and supported replica Classes of Service.
SupportedReplicaTypes	DataProtectionLoSCapabilities	array	Supported replica types.
SupportedSecureChannelProtocols	DataSecurityLoSCapabilities	array	Supported protocols that provide encrypted communication.
SupportedUserAuthenticationTypes	DataSecurityLoSCapabilities	array	Supported authentication types for users (or programs).
SupportsAtomicTransactionSize	Volume (NVMeNamespaceProperties > NamespaceFeatures)	boolean	Indicates that the NVM fields for Namespace preferred write granularity (NPWG), write alignment (NPWA), deallocate granularity (NPDG), deallocate alignment (NPDA) and optimal write size (NOWS) are defined for this namespace and should be used by the host for I/O optimization.
SupportsDeallocatedOrUnwrittenLBERror	Volume (NVMeNamespaceProperties > NamespaceFeatures)	boolean	This property indicates that the controller supports deallocated or unwritten logical block error for this namespace.
SupportsIOPerformanceHints	Volume (NVMeNamespaceProperties > NamespaceFeatures)	boolean	Indicates that the Namespace Atomic Write Unit Normal (NAWUN), Namespace Atomic Write Unit Power Fail (NAWUPF), and Namespace Atomic Compare and Write Unit (NACWU) fields are defined for this namespace and should be used by the host for this namespace instead of the controller-level properties AWUN, AWUPF, and ACWU.
SupportsIsolated	DataProtectionLoSCapabilities	boolean	Allocating a replica in a separate fault domain is supported.
SupportsNGUIDReuse	Volume (NVMeNamespaceProperties > NamespaceFeatures)	boolean	This property indicates that the namespace supports the use of an NGUID (namespace globally unique identifier) value.
SupportsSpaceEfficiency	DataStorageLoSCapabilities	boolean	Allows compression or deduplication of storage.
SupportsThinProvisioning	Volume (NVMeNamespaceProperties > NamespaceFeatures)	boolean	This property indicates whether or not the NVMe Namespace supports thin provisioning.
SuspendReplication (Action)	ConsistencyGroup (Actions)	object	This action is used to suspend active data synchronization between a source and target consistency group, without otherwise altering the replication relationship.

Property Name	Defined In Schema(s)	Type	Description
	Volume (Actions)	object	This action is used to suspend active data synchronization between a source and target volume, without otherwise altering the replication relationship.
TargetCHAPPassword	StorageGroup (ChapInfo)	string	The Target CHAP Secret for Mutual (2-way) CHAP authentication by the target.
TargetCHAPUser	StorageGroup (ChapInfo)	string	The Target CHAP Username for Mutual (2-way) CHAP authentication by the target.
TargetConsistencyGroup	ConsistencyGroup (Actions > AssignReplicaTarget (Action)), ConsistencyGroup (Actions > RemoveReplicaRelationship (Action)), ConsistencyGroup (Actions > ResumeReplication (Action)), ConsistencyGroup (Actions > ReverseReplicationRelationship (Action)), ConsistencyGroup (Actions > SplitReplication (Action)), ConsistencyGroup (Actions > SuspendReplication (Action))	string	The Uri to the existing target consistency group.
TargetPassword	StorageGroup (ChapInfo)	string	This property is deprecated in favor of TargetCHAPPassword.
TargetStoragePool	ConsistencyGroup (Actions > CreateReplicaTarget (Action)), Volume (Actions > CreateReplicaTarget (Action))	string	The Uri to the existing target Storage Pool.
TargetVolume	Volume (Actions > AssignReplicaTarget (Action)), Volume (Actions > RemoveReplicaRelationship (Action)), Volume (Actions > ResumeReplication (Action)), Volume (Actions > ReverseReplicationRelationship (Action)), Volume (Actions > SplitReplication (Action)), Volume (Actions > SuspendReplication (Action))	string	The Uri to the existing target volume.
TimeToProvision	SpareResourceSet	string	Amount of time needed to make an on-hand resource available as a spare.
TimeToReplenish	SpareResourceSet	string	Amount of time needed to get more on-hand resources.
TotalDomainCapacityBytes	NVMeDomain	integer (bytes)	The total capacity in bytes of this NVMe Domain.
UnallocatedDomainCapacityBytes	NVMeDomain	integer (bytes)	The total unallocated capacity in bytes of this NVMe Domain.
UnallocatedNVMeNamespaceCapacityBytes	StoragePool (NVMeSetProperties)	integer (bytes)	Indicates the unallocated capacity of the NVMe Set in bytes.
UserAuthenticationType	DataSecurityLineOfService	string (enum)	Authentication type for users (or programs).
Vendor	NVMeFirmwareImage	string	The vendor or manufacturer associated with this NVMe firmware image.
Volume	StorageGroup (MappedVolumes)	object	A mapped Volume.
VolumeName	Volume (Actions > CreateReplicaTarget (Action))	string	The Name for the new target volume.
Volumes	ConsistencyGroup, StorageGroup	array	Volumes in this storage group.
	StorageService	object	Volumes.
VolumesAreExposed	StorageGroup	boolean	Storage volumes are exposed to paths defined by the client and server endpoints.
VolumeType	Volume	string (enum)	The type of this volume.

Property Name	Defined In Schema(s)	Type	Description
VolumeUsage	Volume	string (enum)	Indicates the Volume usage type setting for the Volume.
WriteCachePolicy	Volume	string (enum)	Indicates the write cache policy setting for the Volume.
WriteCacheState	Volume	string (enum)	Indicates the WriteCacheState policy setting for the Volume.
WriteHoleProtectionPolicy	Volume	string (enum)	The policy that the RAID volume is using to address the write hole issue.
WritePolicy	FileShare	string (enum)	Defines how writes are replicated to the shared source.