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**Information technology — Swordfish  
Scalable Storage Management API  
Specification**



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## Foreword

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This document was prepared by SNIA (as Swordfish Scalable Storage Management API Specification, Version 1.1.0c) and drafted in accordance with its editorial rules. It was adopted, under the JTC 1 PAS procedure, by Joint Technical Committee ISO/IEC JTC 1, *Information technology*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at [www.iso.org/members.html](http://www.iso.org/members.html) and [www.iec.ch/national-committees](http://www.iec.ch/national-committees).



## Table of Contents

Table of Contents	9
1 Abstract	11
2 Scope	12
2.1 Audience Assumptions	13
3 Normative References	14
3.1 Overview	14
3.2 Approved references	14
3.3 References under development	16
3.4 Other references	16
4 Terms and Definitions	17
4.1 Overview	17
4.2 Swordfish-specific Terms	17
4.3 Reference to Redfish terms	18
4.4 Keywords (normative language terms)	19
5 Swordfish Overview	20
5.1 Introduction	20
5.2 Relation to Redfish	20
5.3 Storage System Models	21
5.4 The ServiceRoot and ServiceContainer entities	24
5.5 Swordfish model overview	25
6 Features and Profiles	28
6.1 Overview	28
6.2 Requirement for SupportedFeatures	28
6.3 EnergyStar for Storage Feature	28
6.4 Class of Service Feature	29
7 Schema Considerations	37
7.1 Schema Introduction	37
7.2 Default values and NULLABLE attributes	37
7.3 Common schema annotations	38
7.4 Property implementation requirements	39
7.5 Schema repository	40
7.6 Referencing other schemas	40
8 Implementation requirements	41
8.1 Security	41
8.2 General constraints	41
8.3 Discovering Swordfish resources	42
8.4 ClassOfService requirements	43
8.5 StorageSystems requirements	43
8.6 Entity Sets	43
8.7 Addressing entities within a collection	43
8.8 Addressing members of a ResourceCollection	44
8.9 HTTP status codes	44
9 Swordfish type definitions	48
9.1 Overview	48
9.2 Common properties	48

9.3 Complex Types	55
9.4 CapacitySource 1.1.2	56
9.5 ClassOfServiceCollection	63
9.6 ConsistencyGroup 1.0.1	64
9.7 ConsistencyGroupCollection	76
9.8 DataProtectionLoSCapabilities 1.1.3	78
9.9 DataSecurityLoSCapabilities 1.1.3	83
9.10 DataStorageLoSCapabilities 1.2.1	91
9.11 DriveCollection	95
9.12 EndpointGroup 1.2.0	97
9.13 EndpointGroupCollection	101
9.14 FeaturesRegistry 1.0.0	102
9.15 FileShare 1.1.3	105
9.16 FileShareCollection	111
9.17 FileSystem 1.2.2	112
9.18 FileSystemCollection	120
9.19 HostedStorageServices	121
9.20 IOConnectivityLoSCapabilities 1.1.3	122
9.21 IOPerformanceLoSCapabilities 1.1.3	126
9.22 LineOfService 1.0.0	130
9.23 LineOfServiceCollection	132
9.24 SpareResourceSet 1.0.1	133
9.25 StorageGroup 1.2.1	136
9.26 StorageGroupCollection	145
9.27 StoragePool 1.3.1	147
9.28 StoragePoolCollection	156
9.29 StorageReplicaInfo 1.3.0	157
9.30 StorageService 1.4.0	159
9.31 StorageServiceCollection	168
9.32 StorageSystemCollection	169
9.33 Volume 1.4.1	170
9.34 VolumeCollection	202
<b>Annex A: Bibliography</b>	<b>205</b>
A.1 Overview	205
A.2 Informational references	205

# 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, as defined by [ISO 30115](#). It defines 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 specification also defines points at which OEM (system vendor) extensions can be provided by a given implementation. The specification specifies normative requirements for Redfish Services and associated materials, such as Redfish Schema files. The Redfish specification 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.



## 2.1 Audience Assumptions

As Swordfish is designed as an extension of the Redfish specification, this document is written with the presumption that the reader has a detailed understanding of [ISO 30115](#) and any updates or clarifications introduced by the DMTF. This document cannot be fully understood without that context.

## 3 Normative References

### 3.1 Overview

The documents listed in [Table 3](#) is 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 3: Approved normative references

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	<a href="http://www.iso.org/iso/home/store/catalogue_ics/catalogue_detail_ics.htm?csnumber=70907">http://www.iso.org/iso/home/store/catalogue_ics/catalogue_detail_ics.htm?csnumber=70907</a>

Table 3: Approved normative references, cont.

Tag	Title (Version)	Author	URL
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	<a href="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_documents-2016%287th_edition%29-_PDF.pdf?nodeid=17667902&amp;vernum=-2">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_documents-2016%287th_edition%29-_PDF.pdf?nodeid=17667902&amp;vernum=-2</a>
OData	Open Data Protocol (v. 4.0)	OASIS	<a href="https://www.oasis-open.org/standards#odatav4.0">https://www.oasis-open.org/standards#odatav4.0</a>
RFC3986	Uniform Resource Identifier (URI): Generic Syntax (2005)	The Internet Society	<a href="http://www.rfc-base.org/txt/rfc-3986.txt">http://www.rfc-base.org/txt/rfc-3986.txt</a>
CSDL	Common Schema Definition Language (4.0)	OASIS	<a href="http://docs.oasis-open.org/odata/odata/v4.0/odata-v4.0-part3-csdl.html">http://docs.oasis-open.org/odata/odata/v4.0/odata-v4.0-part3-csdl.html</a>
ITIL	ITIL Glossary (2011)	ITIL	<a href="https://www.axelos.com/Corporate/media/Files/Glossaries/ITIL_2011_Glossary_GB-v1-0.pdf">https://www.axelos.com/Corporate/media/Files/Glossaries/ITIL_2011_Glossary_GB-v1-0.pdf</a>
Units	The Unified Code for Units of Measure (v2.0.1)	Regenstrief Institute, Inc. and the UCUM Organization	<a href="http://unitsofmeasure.org/trac">http://unitsofmeasure.org/trac</a>
SPC-4	SCSI Primary Commands - 4 (SPC-4) INCITS 513-2015	T10	<a href="http://www.techstreet.com/cgi-bin/joint.cgi/incits">http://www.techstreet.com/cgi-bin/joint.cgi/incits</a>
Features	Swordfish Features Registry, version 1.0.1	SNIA	<a href="https://redfish.dmtf.org/registries/swordfish/v1/SwordfishFeatureRegistry.1.0.1.json">https://redfish.dmtf.org/registries/swordfish/v1/SwordfishFeatureRegistry.1.0.1.json</a>

Table 3: Approved normative references, cont.

Tag	Title (Version)	Author	URL
Messages	Swordfish Message Registry, version 1.0.2	SNIA	<a href="https://redfish.dmtf.org/registries/swordfish/v1/Swordfish.1.0.2.json">https://redfish.dmtf.org/registries/swordfish/v1/Swordfish.1.0.2.json</a>
EnergyStar	ENERGY STAR Data Center Storage Version 1.1 Updated Program Requirements – April 1, 2019	EPA	<a href="https://www.energystar.gov/sites/default/files/ENERGY STAR Data Center Storage Final Version 1.1 Specification Rev. April 2019.pdf">https://www.energystar.gov/sites/default/files/ENERGY STAR Data Center Storage Final Version 1.1 Specification Rev. April 2019.pdf</a>
ISO-20648	Information technology – TLS specification for storage systemsi	ISO/IEC	<a href="https://www.iso.org/standard/68622.html">https://www.iso.org/standard/68622.html</a>
ISO-30115	ISO/IEC 30115(en) Information technology – Redfish scalable platforms management API specification	ISO/IEC	<a href="https://www.iso.org/standard/53235.html">https://www.iso.org/standard/53235.html</a>

### 3.3 References under development

None defined in this document.

### 3.4 Other references

None defined in this document.