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Information technology — Swordfish Scalable Storage Management API Specification

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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*.

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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.

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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 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.

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.

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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	http://www.iso.org/iso/home/store/catalogue_ics/catalogue_detail_ics.htm?csnumber=70907

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	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&vernum=-2
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
SPC-4	SCSI Primary Commands - 4 (SPC-4) INCITS 513-2015	T10	http://www.techstreet.com/cgi-bin/joint.cgi/incits
Features	Swordfish Features Registry, version 1.0.1	SNIA	https://redfish.dmtf.org/registries/swordfish/v1/SwordfishFeatureRegistry.1.0.1.json

Table 3: Approved normative references, cont.

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

3.3 References under development

None defined in this document.

3.4 Other references

None defined in this document.