

Swordfish Work in Progress Notice

Version 1.0.2

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>.

SNIA Work in Progress

November 1, 2016

**The following files are included in this Work in Progress Release
(Swordfish_v1.0.2.zip):**

- **Swordfish_v1.0.2_WorkInProgressNotice.pdf (this file)**
- **Swordfish_v1.0.2_Mockups.zip**
- **Swordfish_v1.0.2_MockupOverview.pdf**
- **Swordfish_v1.0.2_Schema.zip**
- **Swordfish_v1.0.2_MockupHowToInstall.pdf**
- **Swordfish_v1.0.2_Specification.pdf**
- **Swordfish_v1.0.2_UserGuide.pdf**

USAGE

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, sell any or this entire document, 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 SNIA 2016 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 of this specification.

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

Copyright © 2016 Storage Networking Industry Association.

Revision History

Revision	Date	Changes
V0.5	3/16/16	Initial work in progress release
V0.6	5/24/16	Updated to include content including replication for block services
V0.8	7/28/16	Updated to include content including filesystem schema, json schema
V0.9	8/30/16	<p>First draft of <i>Swordfish Scalable Storage Management API User's Guide</i>. First draft of <i>Swordfish Scalable Storage Management API Specification</i>. Changes to schema:</p> <ul style="list-style-type: none"> • Clarifications to use of Collections vs ResourceCollections and appropriate notation of Read/Write on Collections • Some updates to how LineOfService is represented in ClassOfService (to simplify hierarchy) • Clarifications in File System schemas
V1.0	9/19/16	<p>First Release of <i>Swordfish Scalable Storage Management API User's Guide</i>. First Release of <i>Swordfish Scalable Storage Management API Specification</i>. Schema changes:</p> <ul style="list-style-type: none"> • Simplified StorageServices • Updated descriptions and long descriptions • Changed GeographicScope to FailureDomainScope
V1.0.1	10/12/16	<p>Errata release v1.0.1. Mockup Overview document updated for clarity. Mockups updated to reflect changes in schema. Spec and schema updates:</p> <ul style="list-style-type: none"> • General clean up and formatting consistency • Clarify use of StorageGroup • Detail interactions between DefaultValue and Nullable in schema attributes • Set default values for Boolean attributes • Clarify appropriate EntitySet referencing • Improve descriptions for many schema attributes • Replace IsDefault with reference to ClassOfService in StoragePool and StorageService • Align Location with Redfish model • Change time values to conform to ISO 8601 • Collapse TargetEndpointGroup and InitiatorEndpointGroup into EndpointGroup • Property and enumeration deleted from StorageReplicaInfo to remove redundancy with ReplicaSyncType • Add DefaultClassOfService link to StoragePool and StorageVolume in lieu of ClassOfService.IsDefault • Remove invalid measurement annotation from DataProtectionLoSCapabilities • Moved schedule to Redfish <p>User's Guide:</p> <ul style="list-style-type: none"> • General clean up and formatting consistency • A discussion of unused CoS and LoS entries in ServiceCatalog • Improve purpose for many use cases

Revision	Date	Changes
1.0.2	11/1/16	<p>Errata release v1.0.2</p> <p>Specification and user's guide minor formatting fixes.</p> <p>Clarifications to specification language.</p> <p>Mockups updated to reflect changes in schema.</p> <p>Spec and schema updates:</p> <ul style="list-style-type: none"> • Change multiple collections' types from collections (arrays) to ResourceCollections to conform to Redfish usage guidelines: <ul style="list-style-type: none"> ○ Capacity.CapacitySource ProvidingVolumes, ProvidingPools and ProvidingDrives ○ StorageService.StorageService StorageGroups, ClientEndpointGroups and ServerEndpointGroups • Change multiple collections' types from collections (arrays) to ResourceCollections to conform to Redfish usage guidelines and move NavigationProperties from Links section: <ul style="list-style-type: none"> ○ EndpointGroup Endpoints ○ FileShare EthernetInterfaces ○ StoragePool ClassesOfService ○ StorageService ClassesOfService

Suggestion for changes or modifications to this document should be sent to the SNIA Scalable Storage Management (SSM) Technical Working Group at <http://www.snia.org/feedback/>.

CONTACTING SNIA

SNIA Web Site

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

SNIA Address

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.

CHANGES TO THE SPECIFICATION

Each publication of this specification is uniquely identified by a one- to three-level identifier, comprised of a version number, a release number and an optional update number. Future publications of this specification are subject to specific constraints on the scope of change that is permissible from one publication to the next and the degree of interoperability and backward compatibility that should be assumed between products designed to different publications of this standard. There are four levels of change to the specification:

- 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 specification are subject to specific constraints on the scope of change that is permissible from one specification 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 specifications that have the same version number “r”. There is no assurance of interoperability or backward compatibility between revisions with different version numbers.
- Release Number: Versioned material having version number “v” and release number “r” shall be backwards compatible with previous minor versions. A minor revision represents a technical change to existing content or an adjustment to the scope of the versioned material.
- Errata Number: Versioned material having version number “v” and release number “r” and errata number “e” should be backwards compatible with previous 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 necessary for correct operation of implementations of the versioned material.

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:

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