TECHNOLOGY

SNIA Technical Work

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Self-contained Information Retention Format™(SIRF) Use Cases and Functional Requirements
This document describes SIRF and the motivation for it along with its use cases and requirements. The use case model is used to derive the desired functional requirements of the SIRF format and the system that implements and uses it. The model uses graphical symbols and text to specify how users or applications in specific roles use SIRF. The document describes the use cases from a usage point of view: it doesn't describe how systems implement SIRF internally, nor does it describe SIRF internal structures or mechanisms.

Self-Contained Information Retention Format™(SIRF) Specification
A specification that defines a logical container format appropriate for the long-term storage of digital information.

Solid State Storage Performance Test Suite Specification
This specification defines a suite of tests and test procedures necessary to enable comparative testing and reporting of Solid State Storage device performance.

SNIA Emerald™Power Efficiency Measurement Specification
The SNIA Emerald Power Measurement Specification identifies metrics by which energy consumption and efficiency of storage networking products can be measured for the purposes of new product development, end-user customer evaluation, and regulatory standards development.

Storage Management Initiative Specification (SMI-S)
SMI-S defines a method for the interoperable management of a heterogeneous storage area network, and describes the information available to a WBEM Client from an SMI-S compliant CIM Server using an object-oriented, XML-based messaging interface designed to support the specific requirements of managing devices in storage area networks.

SOFTWARE

CDMI™Reference Implementation
The CDMI™Reference Implementation is a SNIA Software development project that implements the Cloud Data Management Interface.

Network Data Management Protocol (NDMP) V4 Software
The NDMP V4 Software is a SNIA Software development project that implements version 4 of the NDMP standard, including extensions to the standard.

eXtensible Access Method (XAM) Software Development Kit
The XAM Software Development Kit (XAM SDK) is a SNIA Software development project that implements the XAM Specification, an industry standard for fixed content storage.

OTHER TECHNICAL ACTIVITES

I/O Traces & Tools and Analysis™(IOTTA) Repository
The I/O Traces, Tools and Analysis (IOTTA) Repository is a repository of I/O traces of various workloads, I/O trace collection and analysis tools, and related best practices. The repository is located at http://iotta.snia.org. The IOTTA Repository actively seeks I/O traces and tools and makes them available to developers, researchers, and other interested parties world-wide.

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SNIA™
Advancing storage &
information technology

The SNIA develops a wide range of standards to enhance the interoperability of various storage systems. Under the guidance of the SNIA Technical Council, the SNIA Technical Work Groups (TWGs) deliver information and standards that accelerate the adoption of storage networking. They support the SNIA mission charting a course for the storage networking industry.

There are several key benefits in actively participating in the technical activities of SNIA Technical Work Groups.
• Ensure revisions of SNIA standards meet the technical requirements of your company
• Gain in-depth knowledge of the details in the standard being developed and as a result develop expertise on the standard
• Become an expert through participation, not just reading
• Work with and get assistance from the other experts on the standard as you develop an implementation

The following list provides an overview of technical work done by SNIA Technical Work Groups.
For additional information on SNIA's TWGs, contact the SNIA Technical Council Managing Director at tcmd@snia.org.

SPECIFICATIONS, STANDARDS, & DOCUMENTS

Cloud Data Management Interface™(CDMI)
The Cloud Data Management Interface defines the functional interface that applications can use to create, retrieve, update and delete data elements from the Cloud. As part of this interface the client is able to discover the capabilities of the cloud storage offering and use this interface to manage containers and the data that is placed in them. In addition, metadata can be set on containers and their contained data elements through this interface.

This interface can also be used by administrative and management applications to manage containers, accounts, security access and monitoring/billing information, even for storage that is accessible by other protocols. The capabilities of the underlying storage and data services are exposed so that clients can understand the offering.

Common RAID Disk Data Format (DDF) Specification
The Common RAID Disk Data Format specification defines a standard data structure describing how data is formatted across the disks in a RAID group. The Disk Data Format (DDF) structure allows a basic level of interoperability between different suppliers of RAID technology. The Common RAID DDF structure benefits storage users by enabling data-in-place migration among systems from different vendors.

Common Trace Format Specification
The Common Trace Format Specification defines standard formats for different types of I/O traces. Standardized I/O trace formats enable the development and use of common I/O trace collection and analysis tools as well as facilitate the sharing of the I/O traces themselves.

Common Trace Semantics Specification
The Common Trace Semantics Specification defines common, recommended semantics for data in I/O traces. Standardized I/O trace semantics enable the development and use of common I/O trace collection and analysis tools as well as facilitate the sharing of the I/O traces themselves.

Data Integrity Specification
The Data Integrity Specification defines a standardized means of providing end to end data integrity between an application and storage devices.

eXtensible Access Method (XAM) Specification
The XAM standard is an application to storage interface which empowers meta-data to instrument the automation of information-based management. This interface gives applications a standard interface and metadata to communicate with object storage devices such as those characterized as "Fixed Content Aware Storage" to achieve interoperability, storage transparency, and automation for ILM-based practices, long term records retention, and information assurance (security).

Hypervisor Storage Interfaces for Storage Optimization White Paper
To assist with the management and operation of Hypervisor Storage, this whitepaper clarifies the use of, extending, and/or developing standard Hypervisor Storage Interfaces for storage interactions with hypervisors. These interfaces enable the hypervisor to offload certain storage intensive tasks to the underlying storage systems to achieve performance and functional improvements.

The purpose of the whitepaper is to describe use cases where it is desirable to have the storage array perform offload operations and/or have some visibility into virtual disk constructs while maintaining the necessary and appropriate abstractions and isolation. The first revision of the whitepaper focuses on optimizing copy operations and space reclamation operations in block storage environments.

iSCSI Management API (IMA)
The iSCSI Management API defines a standard interface that applications can use to perform iSCSI management independent of the vendor of the iSCSI HBA. The IMA was designed to be implemented using a combination of a library and plugins.

Linear Tape File System (LTFS) Format Specification
The LTFS Format Specification defines an open, flexible and easy-to-understand on-tape format for hierarchical file system data that is platform and technology independent. The LTFS on-tape format was originally defined by IBM and has been brought to the SNIA for further development and standardization.

Multipath Management API (MMA)
The Multipath Management API allows a management application to discover the multipath devices on the current system and to discover the associated local and device ports. An implementation of the API may optionally include active management (failover, load balancing, manual path overrides). The API uses an architecture that allows multiple multipath drivers installed on a system to each provide plugins to a common library. The plugins can support multipath drivers bundled with an OS, or drivers associated with an HBA, target device, or volume manager. This API can be used by host-based management applications and will also be included in the SMI-S Host Discovered Resources Profile for enterprise-wide multipath discovery and management. A client of the API should be able to move between platforms by simply recompiling.

Non-Volatile Memory (NVM) Programming Models
The NVM Programming TWG is working on programming model specifications for NVM interfaces between operating system software components. It is also working on a programming model specification for NVM interfaces between applications and operating system software components. These specifications address semantics for accessing NVM, and address different ways of using NVM, including as block storage and as system memory.

Object-Based Storage Device (OSD) Specification
The OSD specification defines low-level storage device functions that enable accessing a storage device through a standard object interface rather than a traditional block-based interface such as SCSI or IDE. The OSD specification is published through INCITS T10 as part of the SCSI standard.