

Project Proposal For New INCITS Standard
Host Bus Adapter Application Programming Interface
(SM-HBA)

1 Source of the Proposed Project

1.1 Title

Storage Management - Host Bus Adapter Application
Programming Interface (SM-HBA)

1.2 Date

April 6, 2004

1.3 Proposer

INCITS TC T11, with a current membership of 53.

2 Process Description for Proposed Project

2.1 Project Type (Development or Revision)

Type D (Development done within INCITS T11)

2.2 Type of Document

Standard

2.3 Definition of Concepts and Special Terms

None

2.4 Expected Relationship with Approved Reference Models, Frameworks, Architectures, etc.

All Fibre Channel (FC) standards are intended for use in closed systems.

2.5 Recommended INCITS Development Technical Committee (Existing or New)

It is recommended that this project be assigned to TC T11, in order that the project be coordinated with work on other FC and storage management standards.

2.6 Anticipated Frequency and Duration of Meetings

This project will make use of the regularly-scheduled bimonthly T11 plenary meetings. Informal meetings will be organized on an ad-hoc basis to discuss specific subjects where appropriate.

2.7 Target Date for T11 Letter Ballot

October 2005

2.8 Estimated Useful Life of Document

It is anticipated that this standard will have a useful life of over 10 years.

3 Business Case for Developing the Proposed Standard or Technical Report

3.1 Description

A standard application programming interface (API) defines a programming language by which control can be specified for certain features of a computing system, independently of vendor-specific infrastructure behavior.

A host bus adapter (HBA) is a piece of hardware,

typically on a host system and sometimes embedded on a RAID controller or other storage device that interfaces between a system and a storage access medium. An HBA and the medium to which it provides access may support applications other than storage; however, this project will focus on management of storage aspects of an HBA.

The existing Fibre Channel Host Bus Adapter Application Programming Interface (FC-HBA) project is defining an API for Fibre Channel HBAs. This project proposal recommends the development of additions and enhancements to FC-HBA primarily to provide a consistent API for both Fibre Channel and Serial-Attached SCSI (SAS) HBAs. This will enlarge the scope within which it is possible to write application software without attention to vendor-specific infrastructure behavior. The following capabilities should be included in the SM-HBA standard:

- a) A generalization of the structures defined in FC-HBAs to address multiple SCSI Transport Protocols (see INCITS.***:2004, SCSI Architecture Model - 3 (SAM-3))
- b) An interface for administration of SAS HBAs that is as consistent as practical with the interfaces defined in FC-HBA for Fibre Channel HBAs;
- c) Other capabilities that may fit within the general scope of this project;

Experience with applications written for the predecessor specifications (FC-MI and FC-HBA, see below) has demonstrated that some of the definitions contained in those documents need to be further restricted in order to ensure consistency of operation across implementations. Those further restrictions will be addressed in this project, even if by doing so the creation of some incompatibilities with the predecessor specifications is unavoidable.

3.2 Existing Practice and the Need for a Standard

An initial specification for a common Fibre Channel HBA

API was published as an informative annex to INCITS TR-30-2002 (FC-MI). This definition was based on earlier work performed within the Storage Networking Industry Association (SNIA). It has been widely adopted by vendors of Storage Area Network (SAN) management software and HBAs, and as well has since become the basis for definition of new FC-GS-4 Fabric Services definition.

INCITS Project 1568-D (FC-HBA) is now near completion. It adds features to the HBA API specified in FC-MI and resolves issues discovered since the publication of FC-MI. It is fully compatible with the earlier specification.

During the development of FC-HBA other SCSI Transport Protocol definitions have stabilized, particularly that for SAS. The storage interfaces provided by Fibre Channel and SAS HBAs are in many ways similar, and providing a common API for their management is expected to greatly facilitate both the development and use of storage management applications common to both media.

3.3 Implementation Impacts of the Proposed Standard

3.3.1 Development Costs

This standard will be developed through the voluntary and cooperative efforts of T11 Technical Committee members. No significant development costs are anticipated.

3.3.2 Impact on Existing or Potential Markets

The proposed standard will provide a framework assuring easy integration of Serial Access SCSI (SAS) into established management applications. This will accelerate availability of advanced storage management facilities for SAS, and reduce the learning cost for use of such facilities.

3.3.3 Costs and Methods for Conformity Assessment

The committee will consider the results of testing provided to the committee through the voluntary efforts of the participants in T11 and related Storage Area Networking industry organizations. With this method all costs are borne by the organizations of the various

participants and have for the most part been mainly an adjunct of their normal development costs.

3.3.4 Return on Investment

The return on investment for this development is expected to be high, due to the commonality of effort directed to a single method of providing the services covered by the proposed standard. Additionally, the extension of functionality defined in past standards and technical reports that is incorporated in SM-HBA will prolong the value of investment made in early products developed under FC-HBA and FC-MI.

3.4 Legal Considerations

3.4.1 Patent Assertions

Calls will be made to identify assertions of patent rights in accordance with the relevant INCITS, ANSI and ISO/IEC policies and procedures. T11 is not aware of any patent assertions that may be made.

3.4.2 Dissemination of the Standard or Technical Report

Drafts of this document will be disseminated electronically. Dissemination of the final standard will be restricted as the document becomes the property of INCITS, ANSI, or ISO/IEC.

4 Related Standards Activities

4.1 Existing Standards

- a) INCITS 376:2000, Serial Access SCSI (SAS)
- b) INCITS TR-30-2002, Fibre Channel - Methodologies for Interconnects Technical Report (FC-MI)

4.2 Related Standards Activity

- a) Project 1568-D, Fibre Channel Host Bus Adapter Application Programming Interface (FC-HBA), assigned to TC T11
- b) Project 1601-D, Serial Access SCSI - 1.1 (SAS-1.1),

assigned to TC T10

4.3 Recommendations for Coordinating Liaison

None

4.4 Recommendations for Close Liaison

- a) Technical Committee T10
- b) The Storage Networking Industry Association (SNIA)

5 Units of Measurement used in the Standard

The units of measurement used in the standard shall be the International System of Units (SI).