

**Working Draft Project Proposal  
for a  
New INCITS Standard**

**Storage Management Host Bus Adapter  
Application Programming Interface  
2nd Generation  
(SM-HBA-2)**

## 1 Source of the Proposed Project

### 1.1 Title

Storage Management Host Bus Adapter Application Programming Interface 2nd Generation (SM-HBA-2)

### 1.2 Date Submitted

whenever

### 1.3 Proposer(s)

INCITS Technical Committee T11

## 2 Process Description for the Proposed Project

### 2.1 Project Type

D – Development

### 2.2 Type of Document

Standard

### 2.3 Definitions of Concepts and Special Terms

None

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

None. It is expected that this standard will be used in closed systems.

### 2.5 Recommended INCITS Development Technical Committee

T11

### 2.6 Anticipated Frequency and Duration of Meetings

Technical Committee T11 meets on a regularly scheduled basis (see <http://www.t11.org> for the current meeting schedule). Specific task ad hoc groups are called as required between the regular meetings but their results are not binding.

## 2.7 Target Date for Initial Public Review (Milestone 4)

June 2008

## 2.8 Estimated Useful Life of Standard or Technical Report

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 also support applications other than storage, such as delivery of Internet Protocol (IP) packets.

The Storage Management Host Bus Adapter Application Programming Interface (SM-HBA) standard defines an API for Fibre Channel and SAS HBAs. The Storage Management Host Bus Adapter Application Programming Interface 2nd generation (SM-HBA-2) project proposal recommends the development of additions and enhancements to SM-HBA to support new features of Fibre Channel and SAS that have matured during the development of SM-HBA. The following capabilities should be included in the SM-HBA standard:

- a) Administration and operation of Fibre Channel additional N\_Port\_IDs, also known as N\_Port ID Virtualization (NPIV);
- b) Administration and operation of Fibre Channel Virtual Fabric connectivity;
- c) Administration of fabric security features specified for storage networking media supported by the standard;
- d) Consider opportunities for administration and operation of HBA virtualization models being developed in other standards;
- e) Consider opportunities to extend consistent administration and operation to other storage networking media;
- f) Other capabilities that may fit within the general scope of this project; and
- g) Binary compatibility with applications written for one or more predecessor specifications of the standard.

## 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). It has been widely adopted by vendors of SAN management software and HBAs, and has since become the basis for definition of new FC-GS-4 Generic Services as well. Industry feedback on implementation and use of the HBA API specified in FC-MI directed development of ANSI/INCITS 386-2004 (FC-HBA).

INCITS Project 1695-D (SM-HBA) is now in the approval process. It specifies structural extensions to FC-HBA that allow uniform support of FC-HBA functionality on multiple storage network infrastructures, and specifically instan-

tiates APIs for Fibre Channel and SAS. It defines compliance profiles that allow an implementaton that is binary compatible with FC-HBA.

During the development of SM-HBA other new Fibre Channel and SAS standards have stabilized, including those for fabric security, device and fabric virtualization, and advanced SAS features. Additional experience has been gained by users of the FC-MI and FC-HBA specifications and early implementers of SM-HBA. These have exposed additional oportunities for standard HBA APIs beyond SM-HBA.

### **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 Task Committee members. No significant development costs are anticipated.

#### **3.3.2 Impact on Existing or Potential Markets**

#### **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. 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**

ROI information is considered proprietary data by the member organizations, but the proposed technology proposes incremental change to existing implementatons of current standards and may require only narrowly targeted new development.

### **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 aware of patent assertions that have been made and letters indicating compliance with INCITS policies have been received by T11.

#### **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 and Technical Reports**

INCITS TR-30-2002, *Fibre Channel - Methodologies for Interconnects Technical Report (FC-MI)*

ANSI/INCITS 386-2004, *Fibre Channel Host Bus Adapter Application Programming Interface (FC-HBA)*

ANSI/INCITS 376-2003, *Serial Access SCSI - 1.1 (SAS-1.1)*

## **4.2 Related Standards Activity**

Project T11/1570-D, *Fibre Channel Security Protocols (FC-SP)*

Project T11/1619-D, *Fibre Channel Framing and Signalling - 2 (FC-FS-2)*

Project T11/1620-D, *Fibre Channel Link Services (FC-LS)*

Project T11/1695-D, *Storage Management HBA API (SM-HBA)*

Project T10/1760-D, *Serial Access SCSI - 2 (SAS-2)*

## **4.3 Recommendations for Close Liaison**

INCITS Technical Committee T10

INCITS Technical Committee T13

## **5 Units of Measurement used in the Standard**

Système Internationale d'Unités (International System of Units).