T10/04-174r0

Project Proposal
for a new
INCITS Standard

SCSI / ATA Translation
(SAT)

15 July 2004

1 Source of Proposed Project

1.1 Title: SCSI / ATA Translation.

1.2 Date Submitted: 15 July 2004.

1.3 Proposing Group: T10.

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: T10.

2.6 Anticipated Frequency and Duration of Meetings

Technical Committee T10 meets on a regularly scheduled basis (see http://www.t10.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. It is anticipated several interim working group meetings will be scheduled to align with T13 meetings.

2.7 Target Date for Initial Public Review (Milestone 4): December 2005.

2.8 Estimated Useful Life of Standard or Technical Report: 5 Years.

3 Business Case for Developing the Proposed Standard or Technical Report

3.1 Description

The SCSI / ATA Translation defines standard mappings and behaviors among implementations that effect the behavior of SCSI devices as viewed by a host driver where the physical devices are ATA class devices presented to the host by applying a translation layer between the ATA device and the SCSI interface.

The following items should be considered for inclusion in SCSI / ATA Translation.

1) Define translation of selected SCSI commands implemented using ATA devices:
2) Specification of sense data reporting;
3) Define Mode and Log pages applicable to SCSI devices emulated using ATA devices;
4) Define usage of Task Management functions for SCSI emulation using ATA devices;
5) Define elements to provide consistent mapping of ATAPI devcies as SCSI devices;
6) Other capabilities that my fit within the scope of this project.

3.2 Existing Practice and the Need for a Standard

There are many exisiting solutions that use SCSI to ATA command translations. These solutions have been designed independently of each other and typically vary only slightly in the command translations. However, inconsistencies in the interpretation of both ATA and SCSI standards, and differing views on how to effect a mapping between the two results in varying behavior between implementatoins. This limits the ability of a SCSI application client to expect deterministic behavior of SCSI devices emulated using ATA devices. The variability in implementation prevents the use of the full richness of SCSI protocol with these devices because some of the more powerful elements of SCSI protocol (e.g. persistent reserve/release) are the elements with greater variation in how they are emulated using ATA devices.

Standardizing the translation between SCSI and ATA protocol would provide a stable baseline of function that both application clients and SCSI/ATA translation units can rely on for consistent and deterministic behavior across implementations. A standard can also provide the reporting mechanisms to identify optional capabilites implemented in the translation layer; thereby providing the means for the application client to determine the capabilities of the emulated SCSI target devices during initialization.

Perhaps one of the areas of greatest variation between existing implementations is in error reporting. A primary focus of the standardization effort would be to establish common error reporting methods.

3.3 Implementation Impacts of the Proposed Standard

3.3.1 Development Costs

Members of T10 will provide the necessary resources. The T10 members will host the required meetings for development, provide for the necessary lab experiments, and provide the Technical Editor for the project.

3.3.2 Impact on Existing or Potential Markets

TThis proposed project is intended to provide a more consistent mapping of SCSI to ATA. This ensures that investments in such mappings have a stable managed migration path in the face of technological development.

3.3.3 Costs and Methods for Conformity Assessment

The committee will consider the results of testing as may be available to the committee through the voluntary efforts of the various participants in T10. 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 members have stated that the ROI is expected to be large.

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.

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 property of INCITS, ANSI, and/or ISO/IEC.

4 Related Standards Activities

4.1 Existing Standards:

ID Number	Title
X3.270:1996	SCSI-3 Architecture Model (SAM)
X3.301-1997	SCSI-3 Primary Commands (SPC)
T10/1157-D	SCSI Architecture Model - 2 (SAM-2)
T10/1236-D	SCSI Primary Commands - 2 (SPC-2)
T10/1240-M	Reduced Block Commands (RBC)
T10/1240-M	RBC Amendment-1

4.2 Related Standards Activity

ID Number	Title
T13/1532D	AT Attachment - 7 with Packet Interface (ATA/ATAPI - 7)
T10/1561-D	SCSI Architecture Model - 3 (SAM-3)
T10/1416-D	SCSI Primary Commands - 3 (SPC-3)

4.3 Corresponding ISO projects

ID Number	Title
ISO/IEC 14776	Multipart SCSI standard
ISO/IEC 14776-411	SCSI-3 Architecture Model (SAM)
ISO/IEC 14776-311	SCSI-3 Primary Commands (SPC)

4.4 Recommendations for Close Liaison

Technical Committee T13.

5 Units of Measurement used in the Standard

Not measurement sensitive.