

**T10/97-264r0**

**Project Proposal  
For a New  
NCITS Technical Report**

**SCSI Enclosure Profile**

**November 6, 1997**

## 1. IDENTIFICATION OF PROPOSED PROJECT

1.1 **TITLE:** SCSI Enclosure Profile.

1.2 **PROPOSER:** T10.

1.3 **DATE SUBMITTED:** November 6, 1997

1.4 **PROJECT TYPE:** DT - Development of a technical report within an NCITS Technical Committee.

## 2. JUSTIFICATION OF PROPOSED TECHNICAL REPORT

### 2.1 NEEDS:

With the near completion of SES (SCSI Enclosure Services) and SCC-2 (SCSI Controller Commands -2) standards, product developers need guidance for cost-effective engineering of RAID (Redundant Arrays of Independent Disks) products based on these new standards. It is important that both host software and RAID controller firmware be developed at minimum time and cost so that initial industry acceptance of these new standards can be achieved. A usage profile describing a minimum usage definition based on the standards and agreed to using the NCITS consensus process is proposed to meet these needs.

### 2.2 RECOMMENDED SCOPE OF TECHNICAL REPORT:

Candidates for inclusion in the Enclosure Profile technical report are:

- a) Device model concepts for RAID subsystems using SCC-2 and SES;
- b) Lists of recommended options from SES, SCC-2, SPC-2 (SCSI Primary Commands -2), and SBC (SCSI-3 Block Commands);
- c) Recommendations for device discovery procedures, including but not limited to: world-wide name usage, controller discovery (initial and after hot swaps), volume set discovery (initial and after hot swaps), and usage of the Report LUNs command;
- d) Usage of the LUN\_Z, including but not limited to: basic principles, reservations, and LUN\_Z embedded in a volume set LUN;
- e) Recommendations for usage of SCC-2 volume set configuration commands;
- f) Recommendations for usage of SCC-2 and SES commands for volume set monitoring;
- g) Recommendations for usage of SCC-2 and SES commands for RAID controller configuration;
- h) Recommendations for usage of SCC-2 and SES commands for RAID controller monitoring;
- i) Recommendations for usage of SES commands for management and monitoring of the enclosure or enclosures associated with one or more RAID controllers;
- j) Relationships between SCSI transport protocol layers and RAID controllers, if any; and
- k) Other concepts or recommendations that address the needs described above that may be identified by participants during the development of the technical report.

### 2.3 EXISTING PRACTICE IN AREA OF PROPOSED TECHNICAL REPORT:

Current industry practice relies on vendor-specific firmware, software, and interchange protocols to manage RAID products. The proposed technical report will describe a minimally equivalent capability based on the SES and SCC-2 standards, thus promoting the use of those standards.

### 2.4 EXPECTED STABILITY OF PROPOSED TECHNICAL REPORT WITH RESPECT TO CURRENT AND POTENTIAL TECHNOLOGICAL ADVANCE:

The nature of the proposed project is to promote and enhance compatibility among RAID hardware and software products from different vendors. This should insure greater future interoperability and stability in the face of technological developments.

### **3. DESCRIPTION OF PROPOSED PROJECT:**

#### **3.1 TYPE OF DOCUMENT:** Technical Report.

#### **3.2 DEFINITION OF CONCEPTS AND SPECIAL TERMS:**

LUN\_Z - The name SCC-2 gives to the LUN within an array controller device to which an application client directs commands that manage volume sets, component devices, and other constituents of a storage array subsystem.

RAID - (Redundant Array of Independent Disks) a collection of disk drives managed by a controller (or equivalent device) such that several disks appear to applications programs as a single disk. In most cases, the several disks are managed in ways that improve either performance or data availability or both.

#### **3.3 EXPECTED RELATIONSHIP WITH APPROVED NCITS REFERENCE MODELS:**

The SCSI Enclosure Profile technical report is intended for use in closed systems.

#### **3.4 RECOMMENDED PROGRAM OF WORK:**

The following program of work is planned for the SCSI Enclosure Profile technical report:

- 1) Solicit continuing participation by the current membership of T10 through NCITS procedures. Invite comments and proposals from organizations that may have a contribution to the SCSI Enclosure Profile technical report.
- 2) Prepare a draft technical report based on proposals submitted and other information gathered during the initial investigation.
- 3) Consider the results of SCSI Enclosure Profile testing as may be available to the committee through the voluntary efforts of the T10 membership.
- 4) Submit the draft technical report to NCITS for further processing.

#### **3.5 RESOURCES - INDIVIDUALS AND ORGANIZATIONS COMPETENT IN THE SUBJECT MATTER:**

The current membership of T10 includes representatives from all parts of the computer industry, from semiconductor chip manufacturers to large mainframe system manufacturers. When appropriate, government agencies have participated in T10 activities in the past and can be expected to do so in the future. The current members of T10 have expressed their desire to participate and cooperate in the development of this proposed technical report.

There are sufficient resources to complete the development of this technical report without delaying work on other projects.

#### **3.6 RECOMMENDED NCITS DEVELOPMENT TECHNICAL COMMITTEE:**

It is recommended that the development work be done in Technical Committee T10 which is responsible for developing the family of SCSI standards.

#### **3.7 ANTICIPATED FREQUENCY AND DURATION OF MEETINGS:**

Technical Committee T10 meets bimonthly, except January. Specific task ad hoc groups are called as may be required for one to three days between the regular meetings but their results are not binding.

#### **3.8 TARGET DATE FOR DRAFT TR TO NCITS: May 1999.**

#### **3.9 ESTIMATED USEFUL LIFE OF TECHNICAL REPORT:**

It is anticipated that this technical report will have a useful life of 5 years.

## 4. IMPLEMENTATION IMPACTS

### 4.1 IMPACT ON EXISTING USER PRACTICES AND INVESTMENTS:

The proposed SCSI Enclosure Profile technical report will provide guidelines for typical RAID subsystems, which should facilitate an evolutionary growth away from costly and inefficient vendor-specific product implementations. Since the recommendations in the proposed technical report are in no way binding, the impact on existing user practices and investments is limited to whatever impact the product development community decides to allow.

### 4.2 IMPACT ON SUPPLIER PRODUCTS AND SUPPORT:

Not applicable.

### 4.3 TECHNIQUES AND COSTS FOR COMPLIANCE VERIFICATION:

Not applicable.

### 4.4 LEGAL CONSIDERATIONS:

There are no known legal considerations. A Call for Patents will be made.

## 5. CLOSELY RELATED STANDARDS ACTIVITIES

### 5.1 EXISTING STANDARDS:

BSR Number	Title
ANSI X3.270-1996	SCSI-3 Architecture Model
ANSI X3-301-1997	SCSI-3 Primary Commands
ANSI X3.276-1997	SCSI-3 Controller Commands
ANSI X3.292-1997	SCSI-3 Interlocked Protocol
ANSI X3.269-1996	SCSI-3 Fibre Channel Protocol
ANSI X3.294-1996	Serial Storage Architecture SCSI-2 Protocol

### 5.2 NCITS STANDARDS DEVELOPMENT PROJECTS:

BSR Number	Title	Project
	SCSI Architecture Model - 2	T10/1157-D
	SCSI Primary Commands - 2	T10/1236-D
	SCSI Controller Commands - 2	T10/1225-D
ANSI NCITS.305-199x	SCSI Enclosure Services	T10/1212-D
ANSI NCITS.306-199x	SCSI-3 Block Commands	T10/0996-D
ANSI NCITS.309-199x	Serial Storage Architecture SCSI-3 Protocol	T10/1051-D
	Serial Bus Protocol - 2	T10/1155-D
	SCSI-3 Fibre Channel Protocol - 2	T10/1144-D
ANSI X3.302-199x	SCSI-3 Parallel Interface - 2	T10/1142-D

**5.3 NCITS STUDY GROUPS:** None.

**5.4 OTHER RELATED DOMESTIC STANDARDS EFFORTS:** None.

**5.5 ISO/IEC JTC 1 STANDARDS DEVELOPMENT PROJECTS:** All standards listed in 5.1 and 5.2 have been or are being processed as a NWI at JTC1/SC25/WG4..

**5.6 OTHER RELATED INTERNATIONAL STANDARDS DEVELOPMENT PROJECTS:** None.

**5.7 RECOMMENDATIONS FOR COORDINATING LIAISON:** The RAID Advisory Board should be notified of the completion of key milestones in development of this technical report.

**5.8 RECOMMENDATIONS FOR CLOSE LIAISON:** None.