

## 1. Identification of Proposed Project

1.1 Title: SCSI-3 Packetized Protocol

### 1.2 Proposer

This project is proposed by the X3T9 Technical Committee. For additional information, please contact John B. Lohmeyer, X3T9.2 Chairman, at NCR Corporation, 3718 N. Rock Rd., Wichita, KS 67226 (Phone: 316-636-8703 FAX: 316-636-8889) or Dal Allan, X3T9.2 Vice-Chairman at ENDL, 14426 Black Walnut Ct, Saratoga, CA 95070 (Phone: 408-867-6630 Fax: 408-867-2115).

1.3 Date Submitted: October 15, 1990

1.4 Project Type: Development

## 2. Justification of Proposed Standard or Technical Report

### 2.1 Needs

X3.131-1986 for SCSI and X3.131-1990 for SCSI-2 have proven to be extremely successful standards for the attachment of a wide range of peripherals to computer systems. As the popularity of the interface has increased, its application area has grown outside the originally intended small systems to encompass larger systems and other diverse environments.

The Fiber Channel project (755-D) of X3T9.3 provides a transport vehicle for a number of interfaces, and is well-suited for the migration of SCSI software and applications to environments where higher performance and longer cable distances are desired.

By defining a protocol to use the SCSI command set on a serial channel, X3T9.2 can provide the benefits of serialized transfer and a packetized protocol to enhance performance and broaden the application area of SCSI implementations.

### 2.2 Recommended Scope of Standard or Technical Report

The proposed SCSI-3 Packetized Protocol standard should maintain a high degree of compatibility with SCSI-2 command sets while providing documentation for new capabilities including the following candidates:

- a) Document a packetized protocol. This permits serial transmission which is employed in the Fiber Channel project and it lowers bus overhead when using longer cable lengths.
- b) Provide a serialized transfer path with smaller cables and connectors.
- c) Define a method for multiport operations. This will provide means for systems which require continuous operations to provide redundant transfer paths to the same data. The SCSI-2 standard does not provide this facility.

- e) Define other capabilities which fit within the general application scope of implementing SCSI on a serial physical-level attachment that may be proposed during the development phase by the participants in the project.

This proposed standard is not intended to address areas above the physical level (such as command sets). It is intended that this proposed standard would be used in conjunction with the command sets defined in SCSI-2 or the SCSI-3 Command Set.

This proposed standard is intended to be an alternative to the proposed SCSI-3 Parallel Protocol standard, which supports the SCSI-3 Parallel Interface.

### 2.3 Existing Practice in Area of Proposed Standard or Technical Report

The proposed project principally involves defining how to packetize the SCSI-2 commands and messages so that they can be employed over a packetized interface such as that provided by the Fiber Channel Interface.

### 2.4 Expected Stability of Proposed Standard or Technical Report with Respect to Current and Potential Technological Advance

The nature of the proposed project is to insure that SCSI has a growth path to the Fiber Channel Interface. This will protect current investments in SCSI by providing a means to migrate to new technology.

## 3. Description of Proposed Project

3.1 Type of Document (Standard or Technical Report): Standard

3.2 Definition of Concepts and Special Terms (if any): none

3.3 Expected Relationship with Approved X3 Reference Models (e.g., DBMS, OSI)

The SCSI-3 Packetized Protocol is for use in closed systems.

### 3.4 Recommended Program of Work

The following program of work is planned for the SCSI-3 Packetized Protocol standard:

- Solicit continuing participation by the present SCSI-2 participants through X3T9.2 procedures and new participants through press releases. Invite comments by end-user organizations and invite proposals from SCSI development organizations and other organizations that may have a contribution to a viable SCSI-3 Packetized Protocol standard.
- Establish functional requirements for SCSI functional additions along with downward compatibility requirements.
- Prepare a draft standard based on proposals submitted and other information gathered during the initial investigation.
- Consider the results of SCSI-3 Packetized Protocol testing as may be available to the committee through the voluntary efforts of the various participants in X3T9 and its assigned task group.
- Submit the draft proposed standard to X3 for further processing.

### 3.5 Resources - Individuals and Organizations Competent in Subject Matter

The current membership of X3T9.2 includes representatives from all parts of the computer industry from semiconductor chip manufacturers to large mainframe system manufacturers as well as Government agencies. The members of X3T9.2 have expressed their desire to participate and cooperate in the development of this proposed standard.

There are sufficient resources to complete the development of this standard without delaying work on other standards.

### 3.6 Recommended X3 Development Technical Committees (Existing or New)

It is recommended that the development work be done in task group X3T9.2 which was responsible for developing the SCSI-1 and SCSI-2 standards.

### 3.7 Anticipated Frequency and Duration of Meetings

Task group X3T9.2 meets for two days bi-monthly. 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 dpANS to X3 (Milestone 10): December 1992

### 3.9 Estimated Useful Life of Standard or Technical Report

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

## 4. Implementation Impacts

### 4.1 Impact on Existing User Practices and Investments

The proposed SCSI-3 Packetized Protocol standard will provide an alternative growth path complementary to the existing practices and investments. It is likely that any isolated negative impacts would occur in any case through non-standard evolution or revolution.

### 4.2 Impact on Supplier Products and Support

The proposed SCSI-3 Packetized Protocol standard will provide an alternative growth path complementary to the existing practices and investments. It is likely that any isolated negative impacts would occur in any case through non-standard evolution or revolution.

### 4.3 Techniques and Costs for Compliance Verification

The committee will consider the results of SCSI-3 Packetized Protocol testing as may be available to the committee through the voluntary efforts of the various participants in X3T9 and its assigned task group. 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.

4.4 Legal Considerations

No new legal considerations are expected that are not already attendant with SCSI and in accordance with accepted X3 patent policies.

5. Closely Related Standards Activities

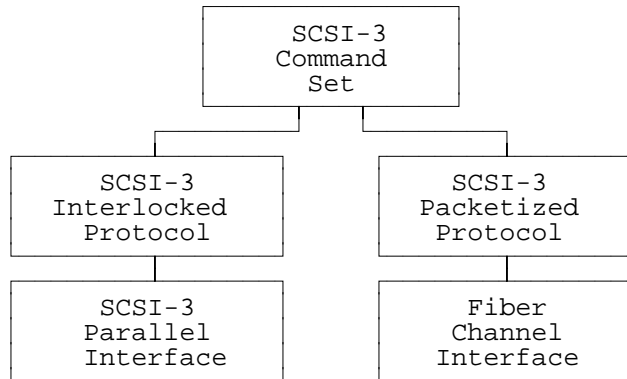
5.1 Existing Standards

- X3.131-1986 Small Computer System Interface (SCSI)
- X3.131-1990 Small Computer System Interface (SCSI-2)

5.2 X3 Standards Development Projects

The Fiber Channel Project (755-D) is under way in X3T9.3. This standard will define the physical interface and transmission protocols, but does not include command sets. An objective of the Fiber Channel Interface is to provide a fiber-optic physical level for IPI, HIPPI, and SCSI. The SCSI Packetized Protocol project would define how to map the SCSI command sets onto a Fiber Channel Protocol.

Project proposals have been prepared for the SCSI-3 Parallel Interface, the SCSI-3 Parallel Protocol, and the SCSI-3 Command Set. Pictorially, the relationship of these projects is as follows:



5.3 X3/SPARC Study Groups: none

5.4 Other Related Domestic Standards Efforts: none

5.5 ISO Standards Development Projects

IS 9316 (SCSI-1) has been published. DP 10288 (SCSI-2) is in development in ISO JTC1/SC25 WG4.

5.6 Other Related International Standards Development Projects

ECMA SCSI (ECMA-111:1985). This is partly equivalent to ANSI SCSI-1 (X3.131-1986). There are no current development activities within ECMA on SCSI.

5.7 Recommendations for Coordinating Liaison: none

5.8 Recommendations for Close Liaison: none