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Accredited Standards Committee* NCITS, Information Technology

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Ms. Deborah Donovan
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Dear Deborah,

Please find attached a draft Project Proposal for a Fibre Channel SINGLE-BYTE COMMAND CODE SETS-2 (FC-SB-2) standard (PDF Format). T11 forwarded this draft Project Proposal for further processing at its December 17, 1999 Plenary at Tucson, AZ by a vote of 44 for, 0 opposed and 31 not voting. On December 17, 1999, T11 had 75 members, therefore this vote met the two-thirds rule.

Thank you for your assistance in this matter.

Regards,

Kumar Malavalli
Chair, TC T11

FIBRE CHANNEL (FC)
SINGLE-BYTE COMMAND CODE SETS-2
(FC-SB-2)

DECEMBER 15, 1998

1 SOURCE OF THE PROPOSED PROJECT

1.1 TITLE: SINGLE-BYTE COMMAND CODE SETS-2 (FC-SB-2)

1.2 DATE SUBMITTED: DECEMBER 15, 1998

1.3 PROPOSER: T11

2 PROCESS DESCRIPTION FOR THE PROPOSED PROJECT

2.1 PROJECT TYPE: D - Development done within NCITS TC

2.2 TYPE OF DOCUMENT (STANDARD OR TECHNICAL REPORT): NCITS Standard

2.3 DEFINITIONS OF CONCEPTS AND SPECIAL TERMS: None

2.4 EXPECTED RELATIONSHIP WITH APPROVED REFERENCE MODELS, FRAMEWORKS, ARCHITECTURES, etc.

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

2.5 RECOMMENDED NCITS 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 Fibre Channel standards and projects.

2.6 ANTICIPATED FREQUENCY AND DURATION OF MEETINGS:

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

2.7 TARGET DATE FOR INITIAL PUBLIC REVIEW (MILESTONE 4):

April, 2000.

2.8 ESTIMATED USEFUL LIFE OF STANDARD:

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

This proposal recommends the development of a Fibre Channel Single-Byte Command Sets-2 (FC-SB-2) protocol mapping (FC-4) standard that defines an efficient mechanism for the transport of the SBCON command protocol via Fibre Channel. The goal of FC-SB-2 is to provide improved functionality and data integrity, higher I/O throughput, efficient operation over greater distances, and increased I/O connectivity when compared with existing interface offerings such as SBCON and FC-SB.

Included within the recommended scope of this project:

A) Definition of a more efficient mapping for the transport of the SBCON command protocol over Fibre Channel.

B) Providing significantly improved performance when using the full distance capabilities provided by Fibre Channel.

C) Providing enhanced data integrity and error detection capabilities.

D) Providing support for the transport of the SBCON command protocol over all appropriate classes of service provided by Fibre Channel

E) Other enhancements or capabilities as may be deemed appropriate by the Technical Committee.

3.2 EXISTING PRACTICE AND THE NEED FOR A STANDARD

There is an existing FC-4 protocol mapping (FC-SB) within the suite of the Fibre Channel standards that addresses the transport of the SBCON command protocol which was intended for the users of this proposed standard. However, from a performance, data integrity, and industry support point of view, the existing FC-SB standard does not provide an adequate solution.

The computing industry is witnessing a dramatic growth in the processing capabilities of computing systems, driven not only by the needs of current applications, but also by the emergence of new data intensive applications requiring vast amounts of data and much higher transfer rates. Additionally, the industry is facing the need to make data available across a range of platforms using different command protocols. In recognition of these needs, Technical Committee X3T11 undertook the development of a number of standards activities.

In 1997 standard X3.296:1997, Single Byte Connection architecture (SBCON), was approved which defined a command protocol and physical interface based on a preexisting industry command protocol and physical interface. Prior to this, standard X3.271:1996, Fibre Channel Single Byte Command Code Sets (FC-SB), had been approved defining a mapping of how that preexisting command protocol could be transported over the standardized facilities provided by Fibre Channel.

During the development of the SBCON draft, the knowledge base regarding the protocol increased significantly and as a result the text used in SBCON contained details and clarifications beyond those provided in FC-SB. There was a project proposed to incorporate those additional details and clarifications into a Revised Fibre Channel Single-Byte Command Code Sets Mapping Protocol (FC-SBR); however, this proposal was subsequently withdrawn.

A significant factor in the withdrawal of the FC-SBR project was the lack of industry adoption of the mapping of the SBCON protocol to Fibre Channel as defined by the FC-SB standard. While FC-SB provided a functional mapping, it did not fully exploit the capabilities of the Fibre Channel interface and as a result was unable to demonstrate a significant improvement when compared to the SBCON standard which was, and continues to be, in widespread use.

The need for an efficient mapping of the SBCON command protocol to Fibre Channel is even more acute now than it was when FC-SB was approved due to business applications such as internet commerce, database replication, and tape vaulting which are stressing the computer industry's ability to meet future needs for moving data rapidly throughout the network of systems and attached peripherals. A very short response time is critical to the success of internet commerce applications; however, this type of application also deals with large data types which can exacerbate the situation. With database replication there is a need to keep replicas located at different servers well coordinated even though they may be separated by very large distances. The granularity of this coordination is directly related to the efficiency and the speed at which the information flows between the servers.

The Fibre Channel Physical and Signaling standard provides the necessary infrastructure for successfully handling the demands of today's applications requiring high data rates, long distances, and increased connectivity while also providing a path for scalability as the requirements on I/O processing continue to increase. However, the industry requires an efficient mapping of the SBCON command protocol to make these capabilities available to a significant portion of the market.

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 the T11 Task Committee members. No significant development costs are anticipated.

3.3.2 Impact on Existing or Potential Markets

The proposed standard will provide an upward growth path that complements and enhances existing supplier products and support schemes. The proposed standard will result in expanded applications for existing and conceived products in enterprise systems market. It is likely that isolated adverse

effects in the marketplace could occur through a evolutionary and non-standard deployment of this interface proposal.

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

The return on investment for this development is expected to be high based upon current investments made in products conforming to the existing Fibre Channel infrastructure.

3.4 LEGAL CONSIDERATIONS

3.4.1 Patent Assertions

Calls will be made to identify assertions of patent rights in accordance with the relevant NCITS, ANSI, and ISO/IEC policies and procedures. It is anticipated that patent assertions will be made during the course of developing this standard and, when made, T11 will be advised.

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 NCITS, ANSI, or ISO/IEC.

4 RELATED STANDARDS ACTIVITIES

4.1 Existing Standards

- (1) X3.230:1994, Fibre Channel Physical and Signaling Interface (FC-PH), with amendment X3.230/AM1:1996, and Project 755-M (X3.230/DAM2): 1996;
- (2) X3.296:1997, Single-Byte Command Code Sets Connection (SBCON);
- (3) X3.271:1996, Mapping of Single-Byte Command Code Sets (FC-SB);
- (4) X3.297:1997, Fibre Channel-Physical and Signaling Interface-2 (FC-PH-2)

4.2 Related Standards Activities

- (1) Project 1119-D for Fibre Channel-Physical and Signaling Interface-3 (NCITS X3.303:199x, FC-PH-3), which is at OMC pending management review
- (2) Project 1331-D for Fibre Channel- Framing and Signaling (FC-FS), which is under development
- (3) Project 1134-D for Fibre Channel 2nd Generation Generic Services (FC-GS-2), which is under development

4.3 RECOMMENDATION FOR COORDINATING LIAISON: Via industry consortium

4.4 RECOMMENDATION FOR CLOSE LIAISON: None