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This document was prepared by INCITS (as INCITS 544-2018) and drafted in accordance with its editorial rules. It was assigned to Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 25, *Interconnection of information technology equipment*, and adopted under the "fast-track procedure".

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Foreword (This foreword is not part of American National Standard INCITS 544-2018.)

The Fibre Channel Single-Byte Command Code Sets - 6 (FC-SB-6) standard describes the Fibre Channel mapping protocol associated with the Single-Byte Command Code Sets.

This standard was developed by the INCITS Fibre Channel T11 Technical Committee (FC-TC) of Accredited Standards Committee during 2015-2016. The standards approval process started in 2016. This document includes annexes which are informative and are not considered part of the standard.

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Introduction

FC-SB-6 describes the Fibre Channel protocol mapping for the Single-Byte Command Code Sets. FC-SB-6 is one of a number of Fibre Channel protocol mappings, referred to as FC-4s.

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Fibre Channel – Single-Byte Command Code Sets Mapping Protocol - 6 (FC-SB-6)

1 Scope

This standard describes a communication interface between a channel and I/O control units that utilize the Single-Byte Command Code Sets (SBCCS) as implemented in a wide range of data processing systems. It employs information formats and signaling protocols that provide a uniform means for communicating with various types of I/O control units, facilitating a high bandwidth, high performance, and long distance information exchange environment. The signaling protocols and information exchanges are defined at a layer (FC-4) to compatibly utilize the link services and other functions provided by the INCITS Fibre Channel Framing and Signaling (FC-FS-4) and the INCITS Fibre Channel Link Services (FC-LS-3) specifications. This FC-4 Upper Level Protocol is referred to as the Fibre Channel-Single-Byte-6 Command Code Sets Mapping Protocol (FC-SB-6).

This standard modifies the FC-SB-5 standard to specify enhancements and clarifications to the command-mode and transport-mode protocols to increase the efficiency and expand the capabilities of operations.

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2 Normative References

2.1 Qualification and availability of references

The references listed in this clause contain provisions that, through reference in this text, constitute provisions of this document. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards listed in this clause.

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E-mail: incits@itic.org

IETF Request for Comments (RFCs) may be obtained directly from the IETF web site at http://www.ietf.org/rfc.html.

2.2 Approved References

FC-PI-2:INCITS 404-2006, *Fibre Channel Physical Interfaces - 2 (FC-PI-2)*

FC-PI-5:INCITS 479-2011, *Fibre Channel Physical Interfaces - 5 (FC-PI-5)*

FC-PI-6:INCITS 512-2015, *Fibre Channel - Physical Interface - 6 (FC-PI-6)*

FC-PI-6P:INCITS 533-201x, *Fibre Channel - Physical Interface - 6 (FC-PI-6P)*

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SBCON:ANSI X3.296-1997, *Single-Byte Command Code Sets Connection Architecture (SBCON)*

FC-SB-5:INCITS 485-2014, *Fibre Channel - Single Byte Command Code Sets - 5 (FC-SB-5)*

FCP-4:INCITS 481-2012, *Fibre Channel - Protocol - 4 (FCP-4)*

FDDI-MAC:ISO/IEC 9314-2:1989, *Fibre Distributed Data Interface - Media Access Control (FDDI-MAC)*

2.3 References Under Development

At the time of publication, the following referenced standards were still under development. For information on the current status of the document, or regarding availability, contact the relevant standards body or other organization as indicated.

FC-FS-4:INCITS Project 2238-D, *Fibre Channel - Framing and Signaling - 4 (FC-FS-4)*

FC-LS-3:INCITS Project 2237-D, *Fibre Channel - Link Services - 3 (FC-LS-3)*

FC-SW-6:INCITS Project 2220-D, *Fibre Channel - Switch Fabric - 6 (FC-SW-6)*

FC-PI-7:INCITS 543-201X, *Fibre Channel - Physical Interface - 6 (FC-PI-7)*

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3 Definitions and Conventions

3.1 Overview

For this standard, the following definitions and conventions apply.

3.2 Definitions

3.2.1 channel
entity, typically of a host computer, which consists of one N_Port and elements which performs the functions specified by this standard to provide access to I/O devices by means of control units or emulated control units

3.2.2 channel-command word (CCW)
a) control block which contains a request to perform an I/O operation in command mode; or b) structure of a specific system architecture which specifies the command to be executed along with parameters

3.2.3 CCW channel program
single channel-command word or sequence of channel-command words executed sequentially that control a specific sequence of channel operations

3.2.4 CCW I/O operation
decoding, accepting, and executing a CCW by an I/O device

3.2.5 channel image
single ULP instance of a channel having the logical appearance of a channel

3.2.6 channel-path identifier (CHPID*)*
system-unique 8-bit value assigned to each installed channel path of a system

3.2.7 channel program
a) CCW channel program; or b) TCW channel program

3.2.8 channel-to-channel connection
association between two channels, one of which provides an emulated control unit, which allows those two channels to exchange IUs on an exchange pair

3.2.9 command mode
mode of operation that is used to perform SB-6 device-level functions that are performed using an exchange pair and to perform all FC-SB-6 link-control functions

3.2.10 connection
association between a channel and control unit established: a) after the successful transfer of IUs that constitute an exchange pair resulting in two open exchanges, one inbound and the other outbound, and both occurring between the channel and the control unit in command mode; or b) after transfer of an IU by a channel to a control unit that opens an exchange in transport mode

3.2.11 control unit
physical or emulated entity, consisting of at least one N_Port and elements which adapt the characteristics of one or more I/O devices to allow their attachment to the N_Port of a channel

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