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Information technology — Fibre channel —

Part 246: Backbone — 6 (FC-BB-6)

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ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Fax: +41 22 749 09 47
Email: copyright@iso.org
Website: www.iso.org

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Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work.

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This document was prepared by INCITS (as INCITS 509-2014) 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".

A list of all parts in the ISO/IEC 14165 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

FC-BB-6 defines mappings for transporting Fibre Channel over different network technologies. FC-BB-6 defines four distinct Fibre Channel mappings:

a) FC over TCP/IP;

b) FC over GFPT;

c) FC over MPLS; and

d) FC over Ethernet.

The FC over ATM and FC over SONET backbone mappings are not specified in FC-BB-6. As such, FC-BB-6 is not a complete replacement of FC-BB-3 (i.e., see FC-BB-3 for the specification of the FC over ATM and FC over SONET backbone mappings).

Information technology — Fibre channel —

Part 246: Backbone — 6 (FC-BB-6)

1 Scope

This standard consists of distinct Fibre Channel mappings resulting in the following models:

- FC-BB_IP (FC over TCP/IP backbone network)
- Transparent FC-BB consisting of:
  - FC-BB_GFPT (FC over SONET/SDH/OTN/PDH backbone network using GFPT adaptation)
  - FC-BB_PW (FC over MPLS network using PW adaptation)
- FC-BB_E (FC over Ethernet)

Figure 1, Figure 2, Figure 3, and Figure 4 illustrate the scope and the major components of the FC-BB-6 models and its relationship to the IETF, ITU-T, and IEEE standards. Table 1 shows the organization of this standard. FC-BB_IP, Transparent FC-BB, and FC-BB_E do not interoperate in any manner and are independent models.

Table 1 – FC-BB-6 organization

Model Type	Applicable Clauses and Annexes
FC-BB_IP, FC-BB_GFPT, FC-BB_PW, FC-BB_E	1, 2, 3, 4
FC-BB_IP	5
Transparent FC-BB	
FC-BB_GFPT	6, Annex A
FC-BB_PW	6
FC-BB_E	7, Annex B, Annex C, Annex D, Annex E, Annex Annex F: , Annex G

The scope and components of the FC-BB_IP model is shown in Figure 1.

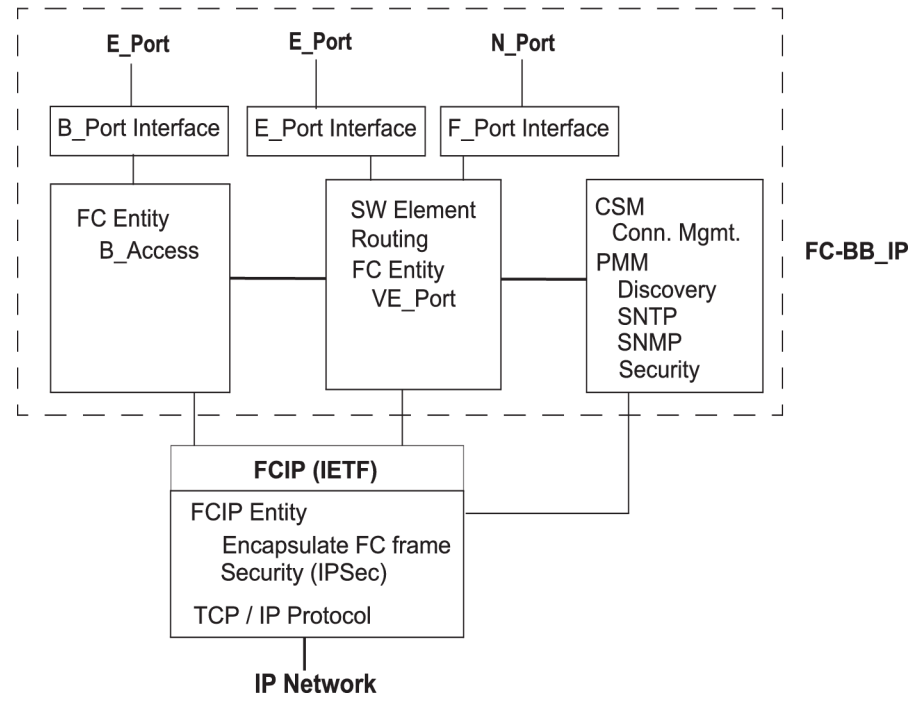

Figure 1 – Scope and components of FC-BB_IP model

The scope and components of the FC-BB_GFPT model is shown in Figure 2.

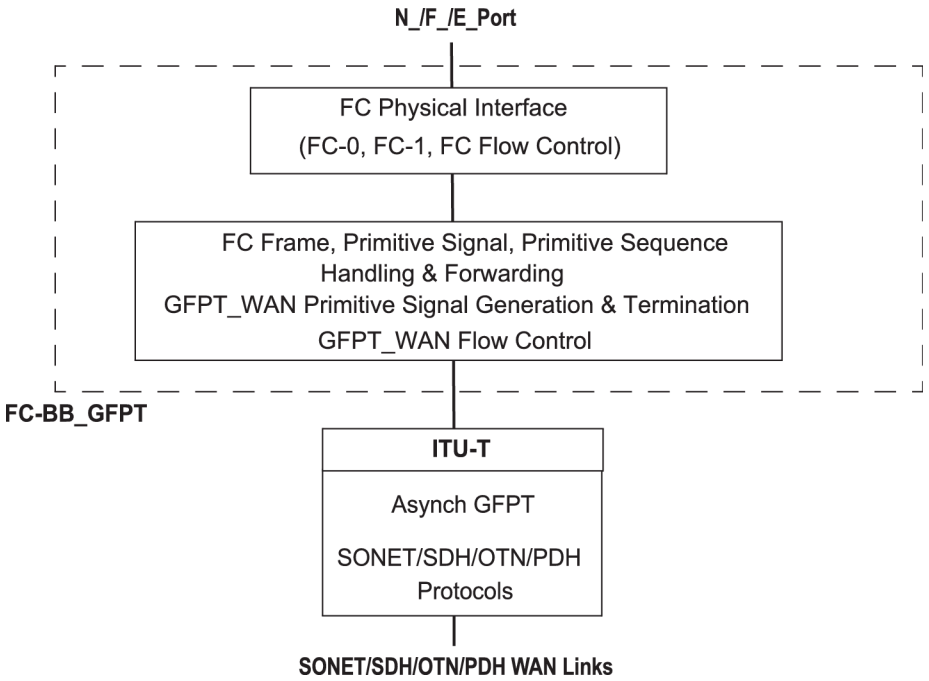

Figure 2 – Scope and components of FC-BB_GFPT model

The scope and components of the FC-BB_PW model is shown in Figure 3.

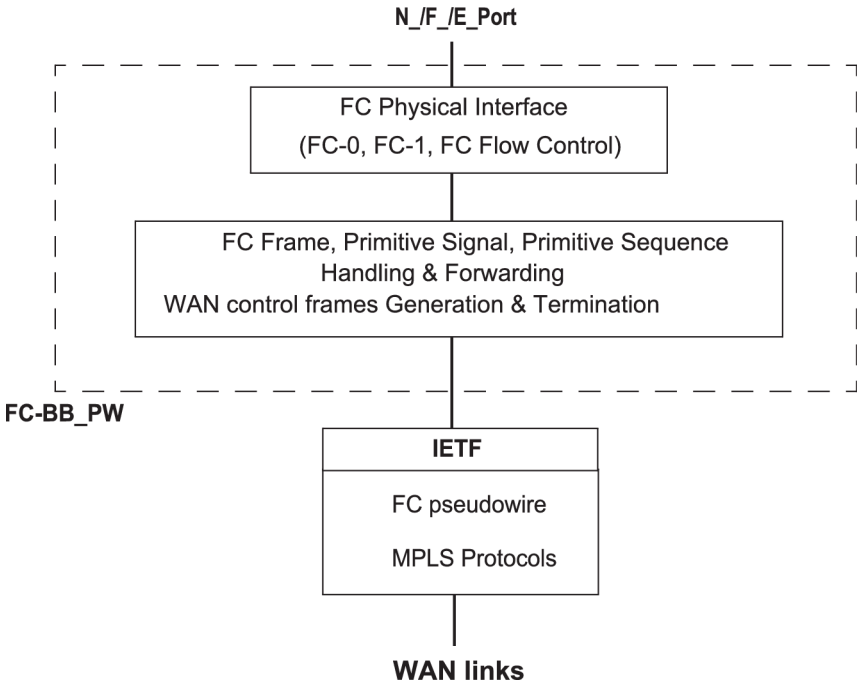

Figure 3 – Scope and components of FC-BB_PW model

The scope and components of the FC-BB_E model is shown in Figure 4.

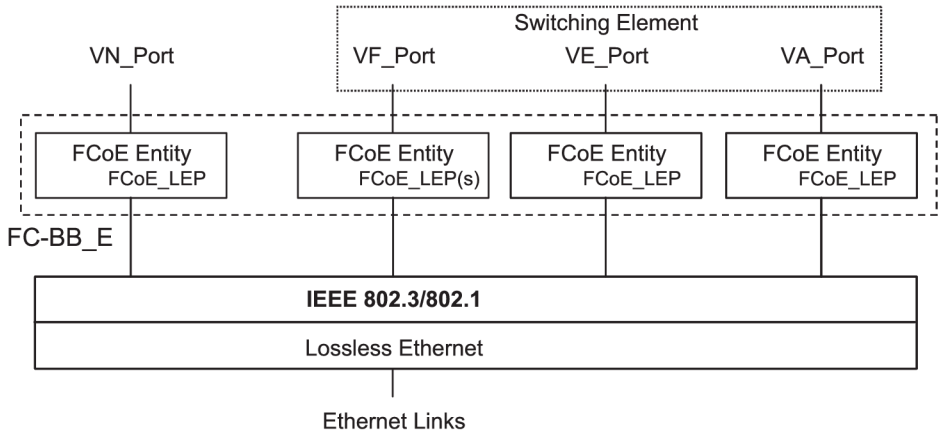

Figure 4 – Scope and components of FC-BB_E model

2 Normative References

2.1 Overview

The following standards contain provisions that, through reference in the text, constitute provisions of this standard. 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 below.

For electronic copies of ANSI and INCITS standards, visit ANSI's Electronic Standards Store (ESS) at http://www.ansi.org. For printed versions of most standards listed here, contact Global Engineering Documents, 15 Inverness Way East, Englewood, CO; 80112-5704, (800) 854-7179.

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Copies of the following documents may be obtained from ANSI, an ISO member organization:

a) approved ANSI standards;

b) approved and draft international and regional standards (ISO and IEC); and

c) approved foreign standards (JIS and DIN).

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or the InterNational Committee for Information Technology Standards (INCITS):

Phone 202-737-8888
Web: http://www.incits.org
E-mail: incits@itic.org

Additional availability contact information is provided below as needed.

2.2 Approved references

ANSI T1.105-2001, *Synchronous Optical Network (SONET) - Basic Description Including Multiplex Structures, Rates, and Formats*

ANSI INCITS 496-2012, *Fibre Channel - Security Protocols - 2 (FC-SP-2)*

ANSI INCITS 241-1994 (R1999), *Data Compression Method –Adaptive Coding with Sliding Window for Information Interchange*

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 documents, or regarding availability, contact the relevant standards body or other organization as indicated.

For electronic copies of references under development by INCITS T11, see www.t11.org

T11/Project 2238-D, *Fibre Channel - Framing and Signaling - 4 (FC-FS-4)*

T11/Project 2220-D, *Fibre Channel - Switch Fabric - 6 (FC-SW-6)*

T11/Project 2237-D, *Fibre Channel - Link Services - 3 (FC-LS-3)*

2.4 ITU-T references

Copies of the following approved ITU-T standards may be obtained through the ITU-T Publications department at http://www.itu.int.

ITU-T Rec. G.707/Y.1322, (2007), *Network node interface for the synchronous digital hierarchy (SDH)*

ITU-T Rec. G.7041/Y.1303, (2005), *Generic Framing Procedure (GFP)*

ITU-T Rec. G.783, (2006), *Characteristics of synchronous digital hierarchy (SDH) equipment functional blocks*

ITU-T Rec. G.806, (2006), *Characteristics of transport equipment - Description methodology and generic functionality*

ITU-T Rec. G.702, (1988), *Digital Hierarchy Bit Rates*

2.5 IETF references

Copies of the following approved IETF standards may be obtained through the Internet Engineering Task Force (IETF) at www.ietf.org.

RFC 5905, *Network Time Protocol Version 4: Protocol and Algorithms Specification,* June 2010

RFC 3246, *An Expedited Forwarding PHB (Per-Hop Behavior),* March 2002

RFC 3643, *Fibre Channel (FC) Frame Encapsulation,* December 2004

RFC 3821, *Fibre Channel Over TCP/IP (FCIP)*, July 2004

RFC 3822, *Finding Fibre Channel over TCP/IP (FCIP) Entities Using Service Location Protocol version 2 (SLPv2),* July 2004

RFC 3031, *Multiprotocol Label Switching (MPLS) Architecture,* January 2001

RFC 3985, *Pseudowire Emulation Edge-to-Edge (PWE3) Architecture,* March 2005

RFC 4385, *Multiprotocol Pseudowire Emulation Edge-to-Edge (PWE3) Control Word for Use over an MPLS PSN,* February 2006

RFC 4447, *Pseudowire Setup and Maintenance Using the Label Distribution Protocol (LDP),* April 2006

RFC 6307, *Encapsulation Methods for Transport of Fibre Channel frames Over MPLS Networks*, March 2012

2.6 IEEE references

Copies of the following approved IEEE standards may be obtained through the Institute of Electrical and Electronics Engineers (IEEE) at http://standards.ieee.org.

IEEE 802.3-2012: *IEEE Standard for Ethernet*

IEEE 802.1Q-2011: *Media Access Control (MAC) Bridges and*

Virtual Bridge Local Area Networks

IEEE 802.1Qbb-2011: *Media Access Control (MAC) Bridges and Virtual Bridged Local Area Network - Amendment 17: Priority-based Flow Control*

IEEE 802.1Qaz-2011: *Media Access Control (MAC) Bridges and Virtual Bridged Local Area Networks - Amendment 18: Enhanced Transmission Selection for Bandwidth Sharing Between Traffic Classes*

IEEE 1588-2008: *Precision Clock Synchronization Protocol for Networked Measurement and Control Systems*

IEEE 802.1AS-2011: *Timing and Synchronization for Time-Sensitive Applications in Bridged Local Area Networks*

