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INTERNATIONAL STANDARD

ISO/IEC 14165-141

First edition
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**Information technology –
Fibre Channel –**

**Part 141:
Fabric Generic Requirements (FC-FG)**

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Contents

	Page
FOREWORD	v
INTRODUCTION	vi
1 Scope	1
2 Normative references	1
3 Definitions and conventions	2
3.1 Definitions	2
3.2 Editorial conventions	5
3.3 Abbreviations and acronyms	5
4 Fabric concepts	6
4.1 Fabric and Fabric Elements	6
4.1.1 Sub-Fabric	6
4.1.2 Region	8
4.1.3 Translator	8
4.1.4 Extended Region	8
4.1.5 Zone	8
4.2 Typical Fabric topologies	8
4.2.1 Switch topology	9
4.2.1.1 Dedicated Connections	9
4.2.1.2 Connectionless service	9
4.2.1.3 Connection-oriented service	10
4.2.2 Distributed Fabric Element topology (DFE)	10
4.2.3 Other topologies	10
4.3 Fabric frame	10
4.4 Fabric_Ports	11
4.5 Fabric Service Parameters	11
4.6 Fabric addressing	11
4.6.1 Address identifiers	11
4.6.2 Address space partitioning	12
4.7 Fabric addressable service elements	12
4.7.1 Broadcast Alias_ID	12
4.7.2 Fabric F_Port/Login server	12
4.7.3 Fabric Controller	13
4.7.4 Directory server	13
4.7.5 Time server	13
4.7.6 Management server	13

	Page
4.7.7 Quality of Service Facilitator - Class 4 (QoSf)	13
4.7.8 Alias Server	13
5 Fabric entity requirements and characteristics	13
5.1 General requirements	13
5.2 Link_Control response	14
5.3 Frame validity checking	14
5.4 Connection independence	14
5.5 Class 1 bandwidth & frame jitter	14
5.6 Fabric Controller	14
5.7 Login Server	14
5.8 Service Parameter extent	14
5.9 E_D_TOV, R_A_TOV enforcement	14
5.10 Non-duplication of frames	15
5.11 Phase discontinuities	15
6 Fabric_Port requirements and characteristics	15
6.1 General requirements	15
6.2 Class 1 service - Dedicated Connection	15
6.3 Buffered Class 1 service	16
6.4 Dedicated Simplex service	16
6.5 Class 2 service - Multiplex	16
6.6 Class 3 service - Datagram	17
6.7 Class 4 service - Fractional	17
6.8 Intermix service	17
6.9 Class F service - Fabric signaling	17
6.9.1 Class F Frame formats	17
6.9.2 Class F function	17
6.9.3 Class F rules	18
6.9.4 Class F delimiters	19
6.9.4.1 Class F frame size	19
6.9.4.2 Class F flow control	19
6.9.5 Link Control	19
6.10 Fabric Login	19
7 Initialization and configuration control	20
7.1 Initialization	20

	Page
7.1.1 Power On	20
7.1.2 Link Initialization Protocol	20
7.1.3 Link Attachment Protocol	20
7.1.4 Addressing and Configuration Determination	21
7.1.5 F_Port Activation	21
7.1.6 N_Port Login with Fabric	21
7.2 Configuration Changes	21
8 Fabric inter-operation	22

Annex

A Address Space Partitioning	23
A.1 Address partitioning	23
A.1.1 Port Identifier partition	23
A.1.2 Fabric-Assisted functions	23
A.1.3 Vendor Unique partitions	23

Table

1 Well-known Address Identifiers	12
2 Address Partitioning	24

Figures

1 Document relationship	vii
2 Fabric model	6
3 Fabric with Sub-Fabric illustrations	7
4 Class 2 Sub-Fabrics and an extended region	8
5 Example of Switch topology	9
6 Example of Distributed Fabric Element topology	10
7 The Class F frame format	18

INFORMATION TECHNOLOGY – FIBRE CHANNEL –

Part 141: Fabric Generic Requirements (FC-FG)

FOREWORD

- 1) ISO (International Organization for Standardization) and IEC (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.
- 2) In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC1. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.
- 3) Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights.

International Standard ISO/IEC 14165-141 was prepared by subcommittee 25: Interconnection of information technology equipment, of ISO/IEC joint technical committee 1: Information technology.

ISO/IEC 14165 consists of the following parts, under the general title *Information technology – Fibre Channel*:

- *Part 111: Physical and Signaling Interface (FC-PH)* ¹⁾
- *Part 112: Physical and Signaling Interface - 2 (FC-PH-2)* ¹⁾
- *Part 113: Physical and Signaling Interface - 3 (FC-PH-3)* ¹⁾
- *Part 122: Arbitrated Loop-2 (FC-AL-2)* ¹⁾
- *Part 131: Switch Fabric Requirements (FC-SW)*
- *Part 141: Fabric Generic Requirements (FC-FG)*
- *Part 211: Mapping to HIPPI-FP (FC-FP)*
- *Part 222: Mapping of Single-Byte Command Code Sets-2 (FC-SB-2)* ¹⁾
- *Part 321: Audio Video (FC-AV)* ¹⁾
- *Part 412: Generic Services (FC-GS-2)* ¹⁾

Annex A is for information only.

¹⁾ Under consideration.

INTRODUCTION

This part of ISO/IEC 14165 defines requirements for Fabrics supporting the Fibre Channel Physical and Signaling Interface (FC-PH) that are independent of specific Fabric topologies. FC-PH, together with second generation (FC-PH-2) and third generation (FC-PH-3), describes the point-to-point physical interface transmission protocol and signaling protocol of a high-performance serial link for support of higher level protocols.

The term Fibre Channel generally refers to: ISO/IEC 14165, part 111, FC-PH; part 112, FC-PH-2; and part 113, FC-PH-3. Fibre Channel provides a general data transport vehicle for Upper Level Protocols (ULPs) such as Intelligent Peripheral Interface (IPI) and Small Computer System Interface (SCSI) command sets, the High-Performance Parallel Interface (HIPPI) data framing, IP (Internet Protocol), ANSI/IEEE 802.2, and others. Proprietary and other command sets may also use and share Fibre Channel, but such use is not defined as part of Fibre Channel.

This part of ISO/IEC 14165 is organized as follows:

- a) FC-0 defines the physical portions of Fibre channel including the fibre, connectors, and optical and electrical parameters for a variety of data rates and physical media. Coax and twisted pair versions are defined for limited distance applications. FC-0 provides the point-to-point physical portion of Fibre Channel. A variety of physical media is supported to address variations in cable plants.
- b) FC-1 defines the transmission protocol which includes the serial encoding, decoding, and error control.
- c) FC-2 defines the signaling protocol which includes the frame structure and byte sequences.
- d) FC-3 defines a set of services which are common across multiple ports of a node.
- e) FC-4 is the highest level in Fibre Channel. It defines the mapping between the lower levels of Fibre Channel and the IPI and SCSI command sets, the HIPPI data framing, IP, and other Upper Level Protocols (ULPs).

Of these levels, FC-0, FC-1, and FC-2 are integrated into the ISO/IEC 14165-111, FC-PH document. The Fibre Channel protocol provides a range of implementation possibilities extending from minimum cost to maximum performance. The transmission medium is isolated from the control protocol so that each implementation may use a technology best suited to the environment of use.

Figure 1 shows the relationship of this part of ISO/IEC 14165 (the highlighted rectangle) with other Fibre Channel documents. Part 112, FC-PH-2 and part 113, FC-PH-3 specify enhanced functions added to part 111, FC-PH. Part 141, FC-FG and part 131, FC-SW are related to Fabric requirements. Part 121, FC-AL specifies the arbitrated loop topology. Part 412, FC-GS-2 is related to Generic fibre Channel Services. Part 221, FC-SB; part 211, FC-FP; part 311, FC-AE, part 321, FC-AV, IPI-3 Disk revision, IPI-3 Tape revision and SCSI-FCP are FC-4 standards. Parts 122, Arbitrated loop-2 (FC-AL-2), and 222, Mapping of single-byte command code sets-2 (FC-SB-2), are under consideration.

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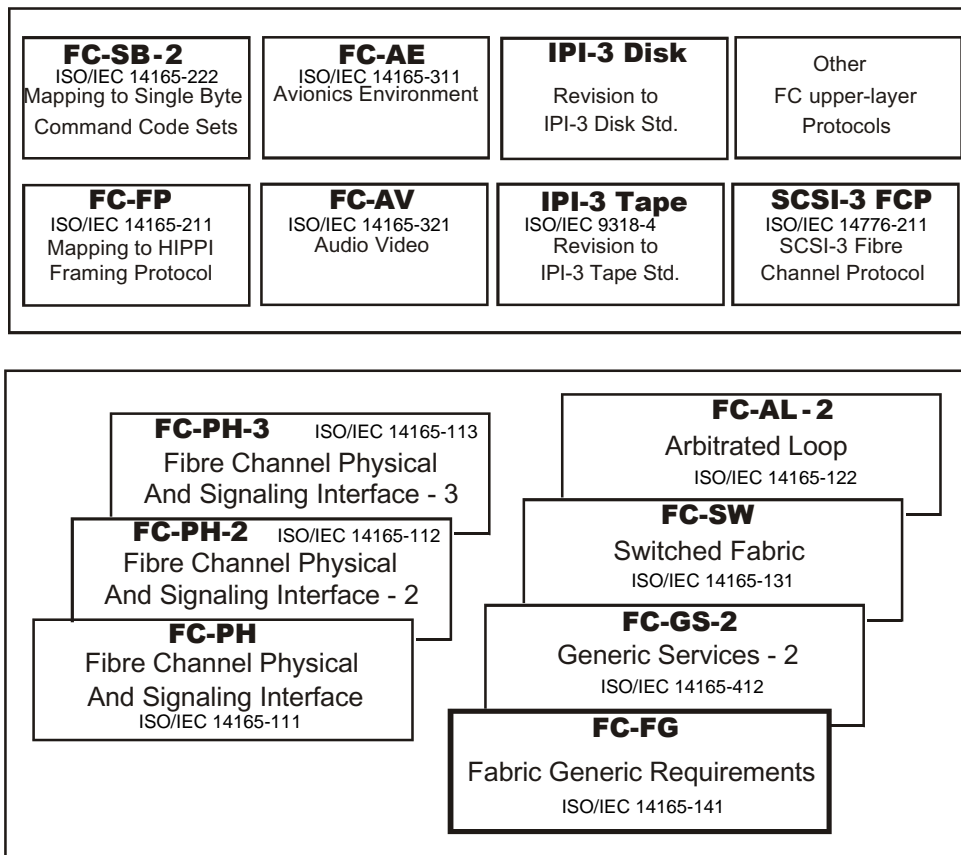


Figure 1 – Document relationship

Information technology — Fibre Channel —

Part 141: Fabric Generic Requirements (FC-FG)

1 Scope

This part of ISO/IEC 14165 describes generic requirements for a communications transport medium called the Fabric, an entity that provides switched interconnect between pairs of user attachment points. Fabrics may be implemented using one or more topologies and this document describes requirements that are generic across all topologies.

A companion document, ISO/IEC 14165-111, *Fibre Channel - Physical and Signaling Interface (FC-PH)*, describes the physical interface, transmission protocol, and signaling protocol of high-performance serial links which attach user nodes to the Fabric. The Fabric serves to extend these serial links between pairs of attachment points. ISO/IEC 14165-111, FC-PH also describes features and behaviors of the Fabric required by user nodes.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO/IEC 14165. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO/IEC 14165 are encouraged to investigate the possibility of applying the most recent editions of the standards listed below. Members of IEC and ISO maintain registers of currently valid International Standards (see foreword).

ISO/IEC 14165-111, *Information Technology - Fibre Channel - Physical and Signaling Interface (FC-PH)*

ISO/IEC 14165-112, *Information Technology - Fibre Channel - Physical and Signaling Interface-2 (FC-PH-2)*

ISO/IEC 14165-122, *Information Technology - Fibre Channel - Arbitrated Loop-2 (FC-AL-2)*

ISO/IEC 14165-412, *Information Technology - Fibre Channel - Fabric Generic Services-2 (FC-GS-2)*