

# American National Standard

INCITS 553-2020

*for Information Technology –  
Fibre Channel –  
Link Services - 4 (FC-LS-4)*

**Developed by**



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**INCITS 553-2020**

American National Standard  
for Information Technology –

Fibre Channel –  
Link Services - 4 (FC-LS-4)

Secretariat

**Information Technology Industry Council**

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### **Abstract**

This standard describes the Link Services requirements. The Physical Interface requirements are described in Fibre Channel-Physical Interfaces - 6 (FC-PI-6) and Fibre Channel-Physical Interfaces - 6P (FC-PI-6P). The Framing and Signaling requirements are described in Fibre Channel-Physical Framing and Signaling - 5 (FC-FS-5). This standard is recommended for new implementations but does not obsolete the existing Fibre Channel standards.

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## Foreword

(This foreword is not part of American National Standard INCITS 553.)

The Fibre Channel Link Services (FC-LS-4) standard describes in detail the Fibre Channel Link Services introduced in FC-FS-4. In addition, this document describes any ancillary functions and services required to support the Fibre Channel Link Services.

This standard was developed by the INCITS Fibre Channel T11 Technical Committee of Accredited Standards Committee INCITS. The standards approval process started in 2018. This document includes annexes which are informative and are not considered part of the standard.

Requests for interpretation, suggestions for improvements or addenda, or defect reports are welcome. They should be sent to the INCITS Secretariat, Information Technology Industry Council, 700 K Street, NW, Suite 600, Washington, DC 20001.

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CommScope .....	Sunny Xu Gary Gibbs (Alt.) Gary Irwin (Alt.) Paul Kolesar (Alt.)
Corning, Inc. .....	Doug Coleman Steven Swanson (Alt.)
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<i>Organization Represented</i>	<i>Name of Representative</i>
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Teledyne LeCroy Corporation .....	
Viavi Solutions, Inc. ....	

Task Group T11.3 on Fibre Channel Protocols, which developed and reviewed this standard, had the following voting members:

Craig W. Carlson, Chair  
Roger Hathorn, Vice-Chair  
Patty Driever, Secretary

<i>Organization Represented</i>	<i>Name of Representative</i>
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Broadcom, Inc.....	David Baldwin Ben Chu (Alt.)
	Mark Jones (Alt.)
	David Peterson (Alt.)
	James Smart (Alt.)
	Steven Wilson (Alt.)
Cisco Systems, Inc. .....	Mike Blair Mark Allen (Alt.)
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	Fabio Maino (Alt.)
	J. Metz (Alt.)
	Joe Pelissier (Alt.)
	Xiaohong Wu (Alt.)
CommScope .....	Sunny Xu Gary Gibbs (Alt.)
	Paul Kolesar (Alt.)
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	David Brown (Alt.)
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	Rakesh Kathiresan Natarajan (Alt.)
	Douglas Lee (Alt.)
	Henry Poelstra (Alt.)

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Viavi Solutions, Inc. ....	Jason Rusch Scott Baxter (Alt.) George Bullis (Alt.) Paul Gentieu (Alt.)

## **Introduction**

FC-LS-4 is one of the Fibre Channel family of standards. This family includes INCITS 545-2018, FC-FS-5, which specifies the Framing and Signaling Interface. INCITS 511-2016, FC-SW-6, is related to Fabric requirements.

FC-LS-4 defines requests and replies that comprise the set of Fibre Channel Extended Link Services (ELSs).

American National Standard  
for Information Technology —

Fibre Channel -  
Link Services - 4 (FC-LS-4)

## 1 Scope

FC-LS-4 describes in detail the Fibre Channel Extended Link Services.

## 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.

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

Approved ANSI standards; approved international and regional standards (ISO and IEC); and approved foreign standards (including JIS and DIN).

For further information, contact the ANSI Customer Service Department:

Phone +1 212-642-4900  
Fax: +1 212-302-1286  
Web: <http://www.ansi.org>  
E-mail: [ansionline@ansi.org](mailto:ansionline@ansi.org)

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

Phone 202-737-8888  
Web: <http://www.incits.org>  
E-mail: [incits@itic.org](mailto:incits@itic.org)

Additional availability contact information is provided below as needed.

### 2.2 Approved references

INCITS 332:1999, *Fibre Channel - Arbitrated Loop-2 (FC-AL-2)*

INCITS 332:1999/AM1-2003, *Fibre Channel - Arbitrated Loop-2 (FC-AL-2), Amendment 1*

INCITS 545:2019, *Fibre Channel - Framing and Signaling - 5 (FC-FS-5)*