

FC Fibre Channel Frame Structure



Overview

The Fibre Channel (FC) Frame Structure is the fundamental unit of data transmission in a Fibre Channel network.

Key Takeaways

A Fibre Channel (FC) frame is the fundamental unit of data transmission in an FC network, consisting of a header, payload, CRC, and delimiters to ensure reliable delivery.

Overview

A Fibre Channel frame is the basic building block of an FC connection, carrying data, addressing information, and control signals between source and destination ports . Frames are used for both data transfer and link control, with data frames carrying payloads and link control frames managing acknowledgments and flow control . The FC-2 layer is responsible for segmenting data into frames and reassembling them at the destination .

Frame Components

An FC frame typically has a total size of up to 2148 bytes, including the following key components :

- Start of Frame (SOF) Delimiter: Marks the beginning of the frame and helps with synchronization.
- Frame Header: Contains essential control and routing information:
- Destination ID (D_ID): Identifies the recipient port.

- Source ID (S_ID): Identifies the sender port.
 - Type Field: Specifies the frame type (data, control, etc.).
 - Sequence ID and Exchange ID: Manage data ordering and flow control.
 - Optional Headers: May include additional link control information.
 - Payload: The actual data being transmitted, with a maximum size of 2048 bytes. This can be smaller depending on the application .
 - Cyclic Redundancy Check (CRC): A 4-byte field used to detect transmission errors and ensure data integrity .
 - End of Frame (EOF) Delimiter: Marks the end of the frame and indicates its validity.
- Frame Functionality
- Reliable Delivery: FC frames use acknowledgments (ACK) and flow control to ensure data is delivered correctly .
 - Multiple Classes of Service: Supports Class 1 (dedicated), Class 2 (connectionless), and Class 3 (best-effort) to manage different types of traffic .
 - Error Detection: The CRC field allows the receiving port to detect corrupted frames and request retransmission if necessary .
 - Routing and Sequencing: The frame header ensures correct routing through the fabric and maintains the order of frames in a sequence .
- Summary

Fibre Channel frames are structured to provide efficient, reliable, and ordered data transmission in high-speed storage networks. Each frame encapsulates control information, payload data, and error-checking mechanisms, making FC a robust protocol for connecting servers and storage devices in SAN environments .

Article Content

Fibre Channel frame

The basic building blocks of an FC connection are the frames. They contain the information to be transmitted (payload), the address

Fibre Channel (FC) Frame Structure

The Fibre Channel (FC) Frame Structure is the fundamental unit of data transmission in a Fibre Channel network. It consists of

Inside a Modern Fibre Channel Architecture – Part 1

FC physically consists of a minimum of two PN_Ports, each associated with a Platform, interconnected by a pair of

Fibre Channel Overview

The intention of the Fibre Channel (FC) is to develop practical, inexpensive, yet expendable means of quickly transferring data

Fibre Channel Layers

In summary, the FC-2 layer is responsible for the routing and switching of data frames in a Fibre Channel network, and

Fibre Channel frame — Grokipedia

The Fibre Channel frame format was initially defined in the FC-PH standard (ANSI X3.230-1994), establishing a core structure with a

Fibre Channel Standard

The Fibre Channel standards define two basic frame types: frame type 0 (FT-0) and frame type 1 (FT-1). The frame type is identified

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Measuring Fibre Channel Frame Transit Time To comply with FC-FS , an FC Fabric must specify and limit the lifetime of a frame.

Fibre Channel Protocol

Logically, Fibre Channel is structured as a set of hierarchical levels. The levels are labeled Fibre Channel level 0 (FC

Storage Networking 101: Understanding the Fibre Channel Protocol

FC generally refers to the FC-PHY layers: FC0-FC2, which were briefly discussed in our last installment. The term

Fibre Channel

What is Fibre Channel? FC (Fibre Channel) is a network technology, predominantly used within storage area networks,

Fibre Channel over Ethernet

Fibre Channel over Ethernet (FCoE) is a computer network technology that encapsulates Fibre Channel frames over Ethernet

Explain fiber channel architecture in detail.

The Fibre Channel environment uses two types of WWNs: World Wide Node Name (WWNN) and World Wide Port Name (WWPN).

Fibre Channel

This chapter gives an overview of Fibre Channel at a fairly detailed level, including definitions of N_Ports, E_Ports, and

Chapter 3.6

The Fiber Channel frame is preceded and concluded by idle frames to provide margin between frames. The structure of the FC frame

Fibre Channel Standard

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Fiber Channel Network

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Fibre Channel Protocol

Fibre Channel consists of the following layers: FC-0 -- The interface to the physical media FC-1 -- The encoding and decoding of data

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