FIBRE CHANNEL INDUSTRY ASSOCIATION

FCIA OFFICIAL SPEEDMAP V23

04-30-2020

Roadmap Subcommittee

T11-2020-00104-v001.pdf

UPDATES

- **Changed 128GFC to 112.2 (56.1)**
- **Parallel FC Speeds moved to ISL only**
- **Other corrections to speeds and dates**

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FIBRE CHANNEL SPEEDS

Product Naming	Throughput (Mbytes/s)*	Line Rate (Gbaud)	T11 Specification Technically Complete (Year) †	Market Availability (Year) †
8GFC	1,600	8.5 NRZ	2006	2008
16GFC	3,200	14.025 NRZ	2009	2011
32GFC	6,400	28.05 NRZ	2013	2016
64GFC	12,800	28.9 PAM-4	2017	2020
128GFC	24,850	56.1 PAM-4	2021	2024
256GFC	TBD	TBD	2025	Market Demand
512GFC	TBD	TBD	2029	Market Demand
1TFC	TBD	TBD	2033	Market Demand

FC

"FC" used throughout all applications for Fibre Channel infrastructure and devices, including edge and ISL interconnects. Each speed maintains backward compatibility at least two previous generations (I.e., 32GFC backward compatible to 16GFC and 8GFC)

*These numbers are representative throughput values for the line rate and are payload dependent

† Dates: Future dates estimated

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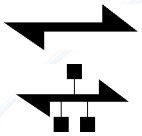
ISL SPEEDS

ISL
(Inter-Switch Link)



Product Naming	Throughput (MBytes/s)*	Line Rate (Gbaud)†	Standard Technically Complete (Year)‡§	Market Availability (Year)‡
10GFC	2,400	10.52 NRZ	2003	2009
40GFCoE	9,600	4X10.3125 NRZ	2010	2013
100GFCoE	24,000	4X25.78125 NRZ	2010	2017
128GFC	25,600	4X28.05 NRZ	2014	2016
200GFCoE	48,000	4X26.5625 PAM-4	2018	2020
256GFC	51,200	4X28.9 PAM-4	2018	2020
400GFCoE	96,000	8X26.5625 PAM-4	2020	Market Demand
1TFCoE	TBD	TBD	TBD	Market Demand

ISLs are usually multi-lane interconnects used for non-edge, core connections, and other high speed applications demanding maximum bandwidth.
ISL's utilize high bit-rates to accommodate the funneling of edge connections. Some ISL solutions are vendor-proprietary.

*These numbers are representative throughput values for the line rate and are payload dependent
† Equivalent Line Rate: Rates listed are equivalent data rates for serial stream methodologies.
‡ Dates: Future dates estimated
§ FCoE standard completion date is the completion of the Ethernet standard

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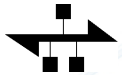
FCOE SPEEDS

FCoE



Product Naming	Throughput (MBytes/s)*	Line Rate (Gbaud)†	IEEE Standard Complete (Year)‡	Market Availability (Year)‡
10GFCoE	2,400	10.3125 NRZ	2002	2008
25GFCoE	6,000	25.78125 NRZ	2016	Market Demand
40GFCoE	9,600	4X10.3125 NRZ	2010	2013
50GFC0E	12,000	2x25.78125 NRZ	2016	Market Demand
50GFCoE	12,000	26.5625 PAM-4	2018	Market Demand
100GFCoE	24,000	4X25.78125 NRZ	2010	2017
200GFCoE	48,000	4X26.5625 PAM-4	2018	Market Demand
400GFCoE	96,000	8X26.5625 PAM-4	2020	Market Demand

Fibre Channel over Ethernet tunnels FC through Ethernet. 10GFCoE was not available until after FC-BB-5, the FCoE protocol standard, was completed in 2007. For compatibility, all 10GFCoE FCFs and CNAs are expected to use SFP+ devices, allowing the use of all standard and non-standard optical technologies and additionally allowing the use of direct connect cables using the SFP+ electrical interface. FCoE ports otherwise follow Ethernet standards and compatibility guidelines.

*These numbers are representative throughput values for the line rate and are payload dependent

† Equivalent Line Rate: Rates listed are equivalent data rates for serial stream methodologies.

‡ Dates: Future dates estimated

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Approved by Roadmap Subcommittee on 04/24/20