SNIA | SFF

OIF 448G AI WORKSHOP

SFF Status of Ethernet Focused Specs

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OIF 448Gbps Signaling for AI Workshop
April 15-16, 2025

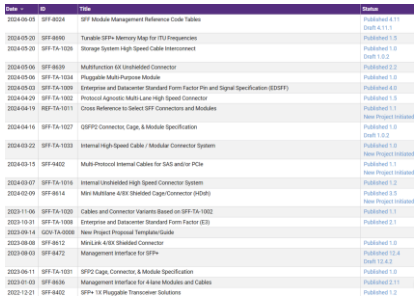
A Quick Note on SFF

- SFF specifications complement existing industry standards work and encompass, Cables, Connectors and cages, Form factors, Management interfaces, Copper and Optical Transceiver modules, Electrical interfaces

72 member companies

150+ published specs

Specifications used everywhere



In the last 12 months, we:

Published 4 new specifications and Revised 9 existing specifications

Ethernet focused Specifications in SFF

- Transceivers (SFP+/QSFP+)
  - Module Cage, Connector, Transceiver
  - General Electricals (low speed, power, etc.)
  - Recipe for matching specs to speeds
- Module Management Reference Codes
- Management
- Cross Reference Documents

State of 224Gb in SFF

SFF manages two families of specifications: SFP and QSFP

QSFP: 224G updates in process

- SFF-8665: QSFP Transceivers
  - Draft 1.9.8 released. Close to publication.
- SFF-TA-1027: Connector, Cage, Pluggable Module
  - Draft 1.0.5 released. Working through changes before starting approval process
- SFF-8679: General Electrical
  - Published 1.9 to cover 224G

SFP: Updates not started

- SFF-8402: SFP Transceivers
  - R1.2 included 112G. 224G timeline TBD
- SFF-TA-1031: Connector, Cage, Pluggable Module
  - R1.0 supports 112G. 224G timeline TBD
- SFF-8419: General Electrical
  - 112 updates in process. 224G timeline TBD
- SFF-8472: Management Interface
  - Draft 12.4.3. Close to publication.

New: 448Gb work started within SFF

- Scope: **Storage/compute/backplane focus**
  - 448G
    - Introduce 448G capable channels
    - Establish 448G COM parameters
    - Define package IL, ERL etc characteristics
    - Investigate optimal PAM modulation for backplane/copper channels
    - Identify additional link training requirements (if needed)
  - Investigate the use of 448G technology to increase the reach of 112G and 224G interconnects
  - Connector Mechanical specifications are out of scope for this project
    - Separate project at later date
- For more details, see SFF-TA-1043: https://members.snia.org/document/dl/55858

Proposed working plan with other organizations on 448G

- In General: SNIA/SFF project will have a Storage/compute/backplane focus vs networking/front panel focus of other groups.
- IEEE
  - Initiate 448G copper work ahead of an IEEE project
  - Liaison between SNIA/SFF and NEA AI group
- OIF
  - Get connector and channel requirements from OIF high density connector project
  - Provide feedback based on channel simulations
- OCP
- UEC/UALink
  - Request channel requirements
  - Provide copper interconnect information

Other Unrelated Items:

Doc number	Title	Draft	Status:
SFF-TA-1042	Enterprise and Datacenter 2U Form Factor (E2)	0.0.1	New EDSFF form factor for 64 placements
SFF-TA-1041	ULP Gen 7 PCIe Connector	0.0.0	Low profile PCIe cable connector for 128Gbs+
SFF-TA-1040	Internal Low-Profile High-Speed Cable Interconnect	0.0.0	Low profile PCIe cable connector for 128Gbs+
SFF-TA-1039	PCIe FPP Hardware and Electrical Specification	0.0.1	Electrical, power, ESD, thermal for PCIe FPP cable
SFF-TA-1038	Low Profile High Density Flexible Cable Connector	0.0.0	Low profile PCIe cable connector for 64/128Gbs+
SFF-TA-1037	Connectors For Pluggable Multi-Purpose Module	1.0 Update	Errata fixes
SFF-TA-1036	Cable Optimized Boot Peripheral Connector	0.0.1	Multi-pitch cable connector for board to board
SFF-TA-1026	Storage System High Speed Cable Interconnect	1.1 update	Adding protection for pin insertion
SFF-TA-1002	Protocol Agnostic Multi-Lane High Speed Connector	1.5.2	2nd ortho height, burst currents, labels, errata fix
SFF-9639	Multifunction 6X Unshielded Connector Pinouts	2.1.1	Errata fixes
SFF-9402	Multi-Protocol Internal Cables for SAS and/or PCIe	1.1.0	Reference spec update for various cable pinouts
SFF-8614	Mini Multilane 4/8X Shielded Cage/Connector (HDsh)	3.5.1	Updates for PCIe 5.0, other fixes
SFF-8613	Mini Multilane 4/8X Unshielded Connector (HDun)	3.5.4	Adding SMT footprint, other errata
SFF-8024	SFF Module Management Reference Code Tables	4.12.1	Adding new codes, newer device descriptors
REF-TA-1011	Cross Reference to Select SFF Connectors and Modules	1.1.3	Reference spec update for 112/224

SFF TWG Participation

- We are solving problems around higher speed Ethernet and PCIe interconnects to solve AI bottleneck problems while improving existing interconnects and form factors.
- Our members include participants involved in ASICs/CPUs, Data centers, interconnects, networking, research, server systems, storage devices, test equipment, and transceivers.
- Benefits:
  - Participation into development of SFF specifications, information documents, and reference guides
  - Ability to open new projects
  - Access to all presentations, all drafts, prior publications, and supplemental material relevant to all SFF projects
- Resources:
  - Public Site: https://www.snia.org/sff
  - Specifications: https://www.snia.org/sff/specifications
  - Additional questions? Please send mail to sfftwgchair@snia.org