

SFP+ Interface Overview

Ethernet Alliance
SC09



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But first off...

What is the Ethernet Alliance?

- We represent the spectrum of IEEE 802 Ethernet standard developments
- We support activities that span from incubation of new Ethernet technologies to interoperability demonstrations certification and education
- 80+ Member Companies & Consulting Organizations



What do we demonstrate?

“THE Converged Ethernet Network“

shows a lossless, high-performance, enterprise data center infrastructure while converging client messaging, storage and server application communications over a unified network.



10Gigabit Ethernet Interface Evolution

**MSA
Form
Factors**

XENPAK
Transceiver



X2
Transceiver



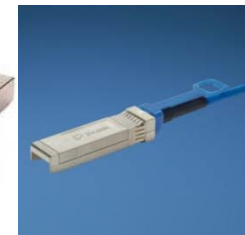
XFP
Transceiver



SFP+
Transceiver



SFP+ direct
attach



**10GBE
Standards**

IEEE 802.3ae
SR/LR/ER/LX4

IEEE 802.3ak
CX4

IEEE 802.3an
10GBASE-T

IEEE 802.3aq
LRM

SFF-8431
SFP+

2002

2004

2006

2008

2010



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SFP+ Interface Benefits

Feature

Detail

Interchangeable Module Types

Direct Attach Copper
Passive Cable: 7m
Active Cable: 15m
850nm Optical SR OM1 MMF: 26m
OM2 MMF: 82m
OM3 MMF: 300m
1310nm Optical LRM OM1/OM2: 220m
1310nm Optical LR SMF 10km

High density capable

Up to 48 ports in 1RU

Low power per port

Host Port < 1 W
+ 0 W: passive copper
+ 0.5 W: active copper
+ 1 W: 850 nm optical

Flexible interface

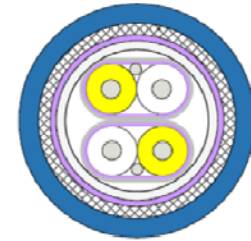
Enables 10GBE and FCoE with SFP+ Cu server interconnect and SFP+ SR for ISL

Proven interoperability

SR plugfest: April 2008
Direct Attach Cable (Cu) plugfest: October 2009

10G Direct Attach Cable Copper Assembly

- Parallel shielded 2-pair cable (twin-axial)
- Up to 7m reach
- Factory terminated SFP+ connector modules on each end
- Defined in SFF-8431 specification
- Low power
- Low latency

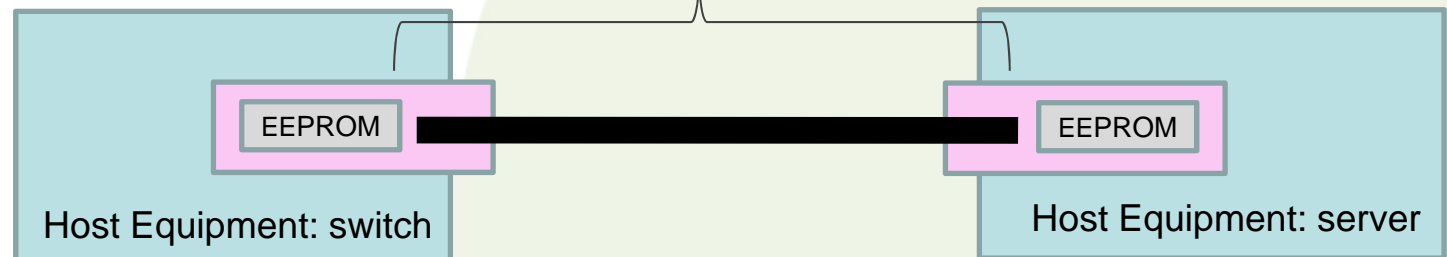


Twin-axial cable

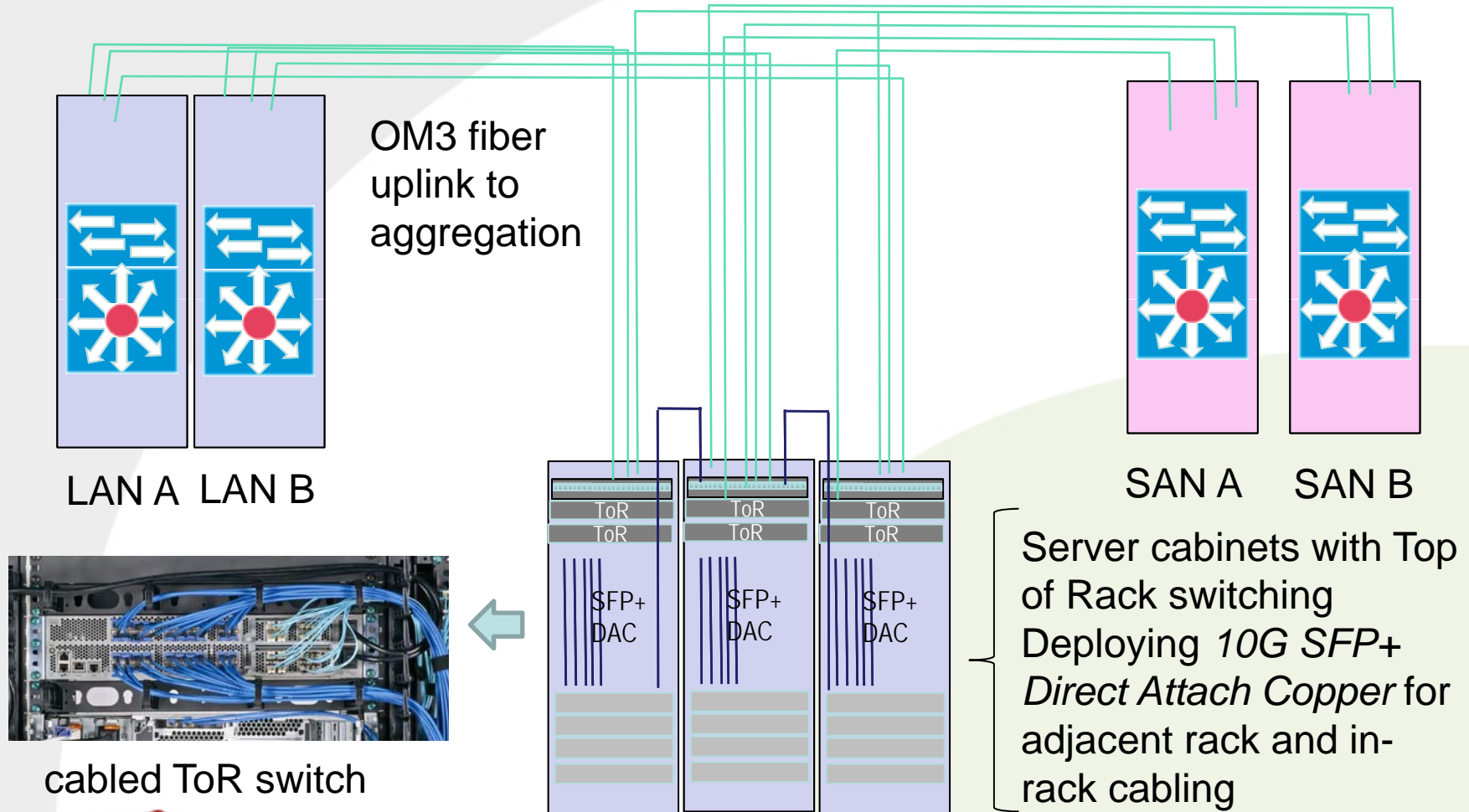


Modular SFP+ connectors

Direct attach copper cable assembly



Basic Converged Network Physical Topology



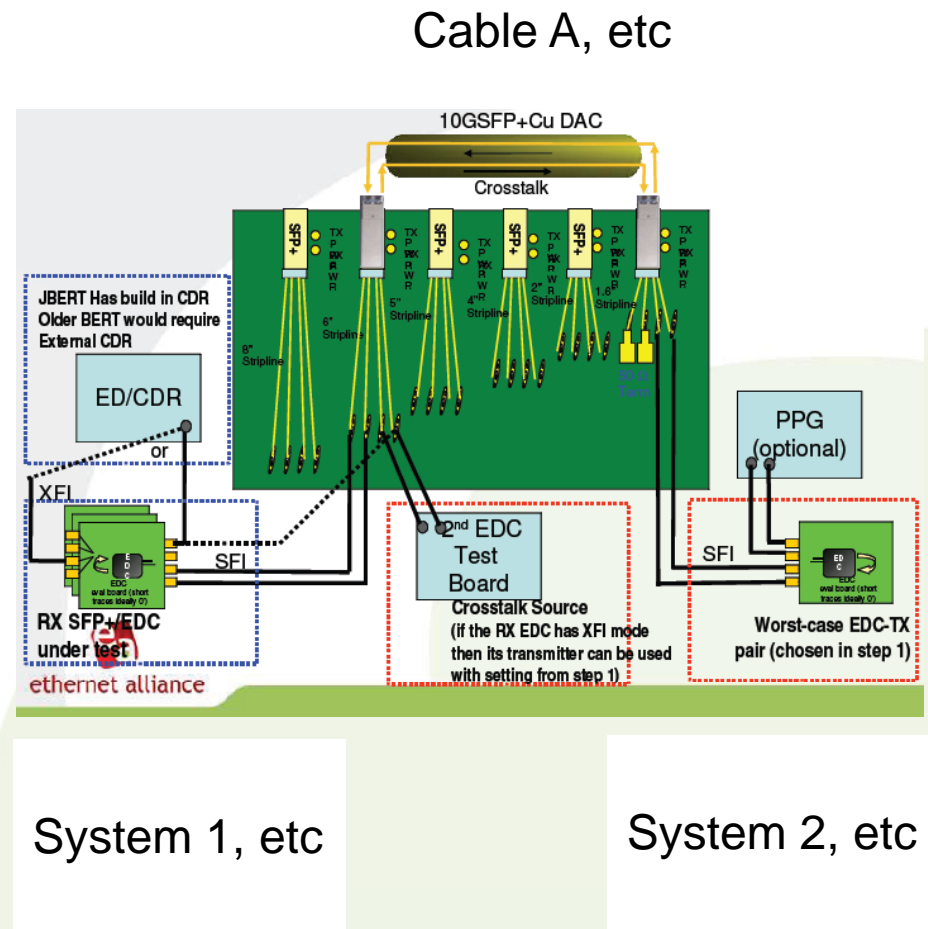
Ethernet Alliance SFP+ Plugfest

SFP+ Direct Attach Ccable is market ready through proven interoperability

- Held week of October 19th at UNH-IOL
- 6 cable and 6 PHY vendors participated
- Validated SFF-8431 specification
- Demonstrated error-free 10GBE over all link combinations of PHY Systems with each cable
- SFP+ Direct Attach Cables are market ready and shipping today



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