

A server room with blue light trails and people working. The scene is dimly lit with blue light trails emanating from the server racks. Two people are visible: one in the foreground looking at a server rack, and another in the background. The overall atmosphere is futuristic and high-tech.

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# Terabit Ethernet on the Horizon

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2022Q4

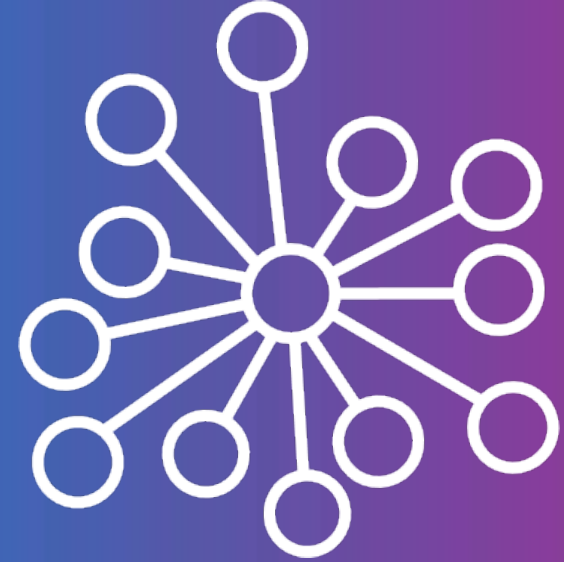
# Agenda

Datacenter speed trends

Flattening the network

Connectivity types

Prepare for the future



Networks are shifting from 2 fiber  
over 8 to 16 fiber applications



Hyperscales



Cloud

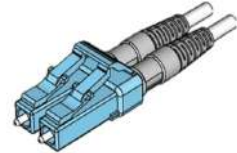


MTDC



Enterprise

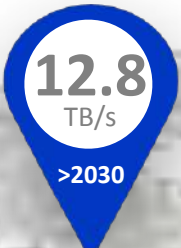
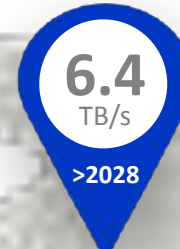
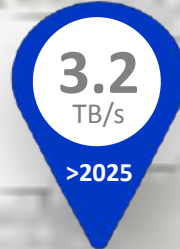
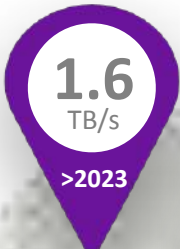
## Capacity Crunch Drives Network Speed Investment








 Ethernet Speed

 Speed in Development

 Possible Future Speed



First Deployed	Electrical I/O [Gb/lane]	Switching Bandwidth	TOR/Leaf Data Center Switch Configuration	
~2010	10G	1.28T	 32xQSFP+ (40G)	Legacy technology
~2015	25G	3.2T	 32xQSFP28 (100G)	128 Electrical I/Os
~2019	25G	6.4T	 32 ports of 200G	256 Electrical I/Os
2021	50G	12.8T	 32 ports of 400G	
2022	100G	25.6T	 32 ports of 800G	512 Electrical I/Os coming soon?

# Rapid succession of technology

NVIDIA announced the SPECTRUM-4  
a 2U switch with 128 ports of 400G  
51.2T = 1024 I/Os  
expected power savings = 40%



# QSFP-DD and OSFP Modules

- 8 electrical I/Os (8 transmit / 8 receive)
- The only way to use ASIC capacity
- 50G and 100G electrical I/Os up to 800G (today)
- New options for
  - Up to 8-way breakouts, 4-way popular for brownfield
  - New optical connectors to enable these breakouts
  - Multimode fiber and singlemode fiber options



**QSFP-DD** 



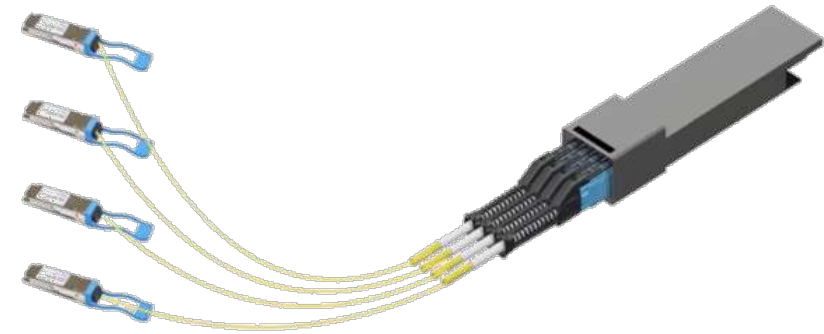
**OSFP** 

# 400G MDIs

Media dependent interface (MDI)

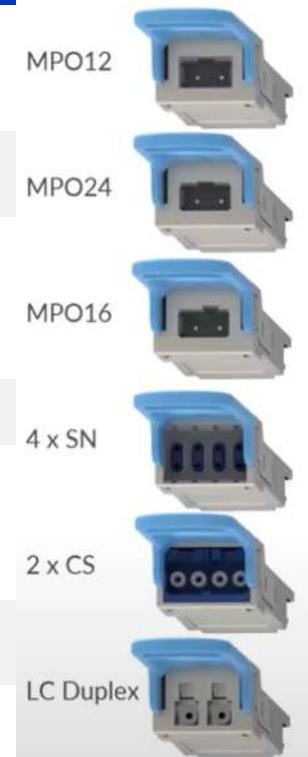
400G capacity QSFP-DD connectors

400G DR4  
with 4  
duplex  
100G-DR  
fibers



New SN/MDC connector avoids MPO-MTP Splitter cable

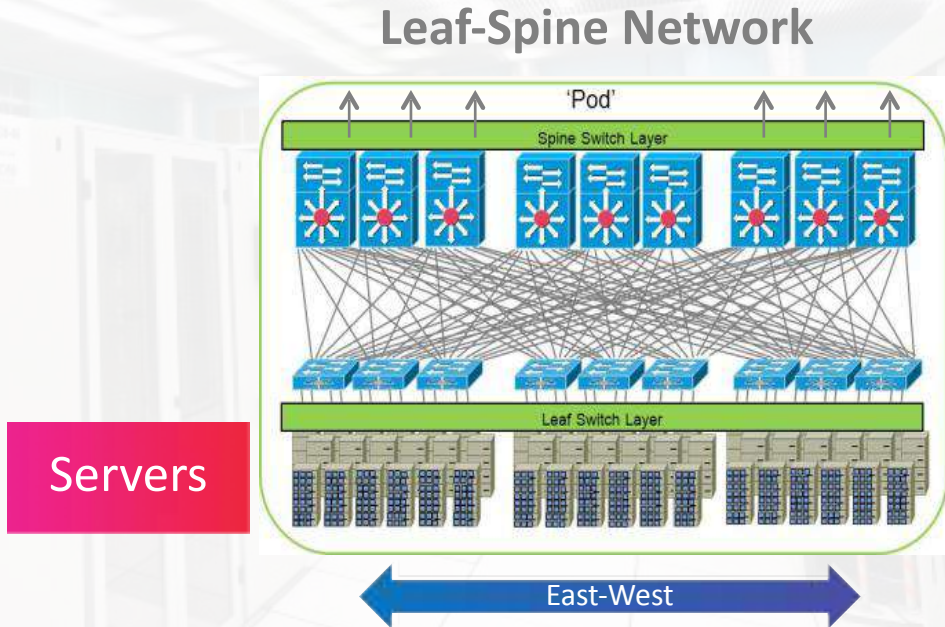
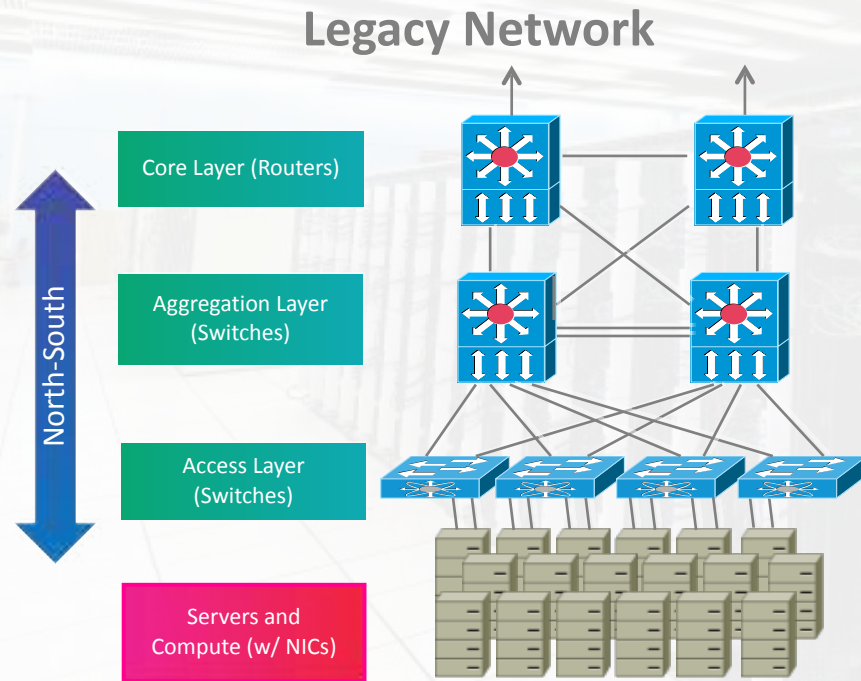
Reach	Name Scheme A	Scheme B	Scheme C	Connector
SR (50-70m)	QDD-400G-SR4.2	400G-BiDi		MPO12
	QDD-400G-SR8	400G-SR8		MPO16/MPO24
	QDD-400G-SR4	400G-SR4		MPO12
DR (500m)	QDD-2x200G-DR4	400G-DR8		MPO16/MPO24
	QDD-400G-DR4	400G-DR4		MPO12
FR (2km)	QDD-4x100G-FR1	400G-4xFR1	400G-DR4+	MPO12/4xSN
	QDD-2x200G-FR4	400G-2xFR4		2xCS/(2xSN)
	QDD-400G-FR8	400G-FR8		LC Duplex
	QDD-400G-FR4	400G-FR4		LC Duplex
LR (6km)	QDD-400G-LR4-6	400G-LR4-6		LC Duplex
LR (10km)	QDD-4x100G-LR1	400G-4xLR1	400G-DR4++	MPO12/4xSN
	QDD-2x200G-LR4	400G-2xLR4		2xCS/(2xSN)
	QDD-400G-LR8	400G-LR8		LC Duplex
	QDD-400G-LR4-10	400G-LR4-10		LC Duplex
ER (30-40km)	QDD-400G-ER8	400G-ER8		LC Duplex
	QDD-400ZR	400ZR		LC Duplex
ZR (80-120km)	QDD-400ZR	400ZR		LC Duplex
	QDD-400G-ZR	400G-ZR		LC Duplex





# Cloud compute is different

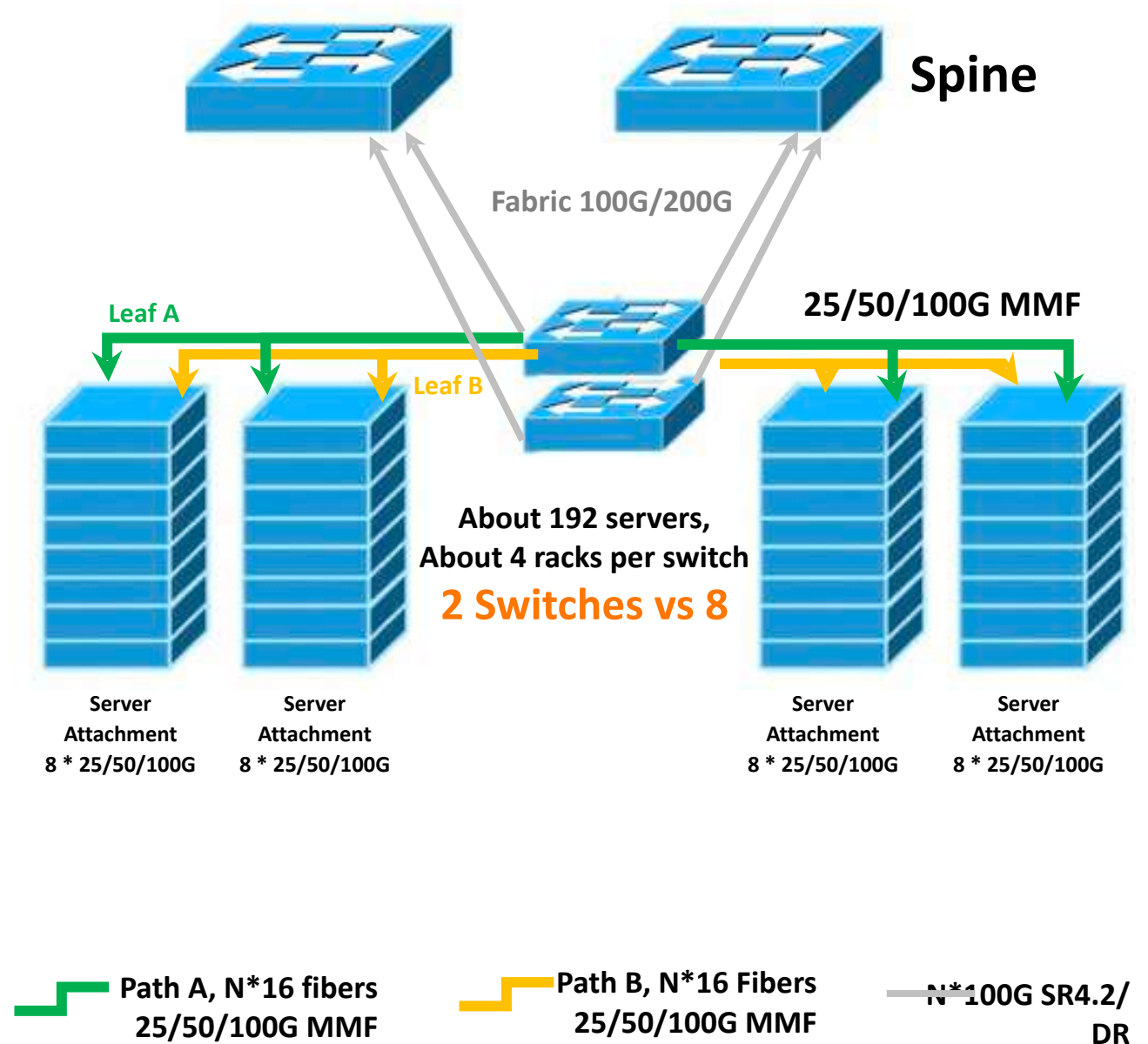
- Change/Risk to upgrade strategies
- Higher speed support when?
- Can I support new network topologies?



DC network topologies continue to evolve

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# Efficient network architectures

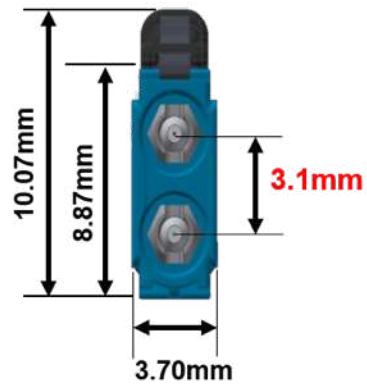


# Optical connectors comparison

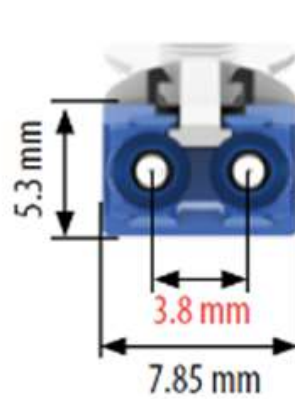
SN®



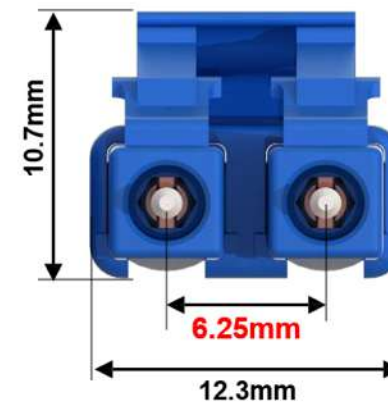
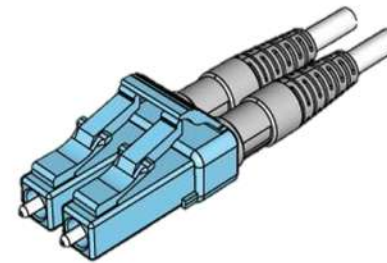
MDC



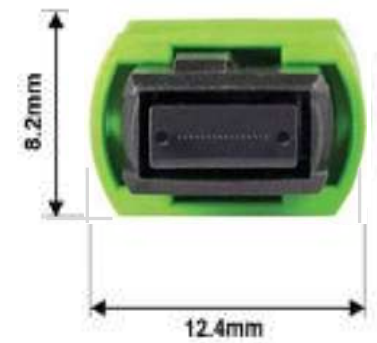
CS



LC Duplex



MPO



## Why MPO16

Enables 2, 8 & 16-fiber applications  
without wasting fibers

Simplifies design and installation

Backward compatible to legacy  
and migration aligned to 400G/800G + applications

16 fiber applications provide 8:1 vs 4:1 breakouts: Enabling the  
lowest cost and energy per bit with improved latency

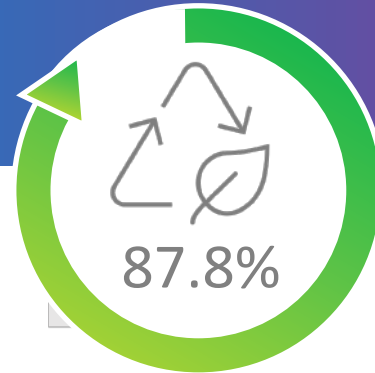




CommScope  
Manufacturing Facilities  
**ISO 14001:2015**  
Environmental  
Management Systems

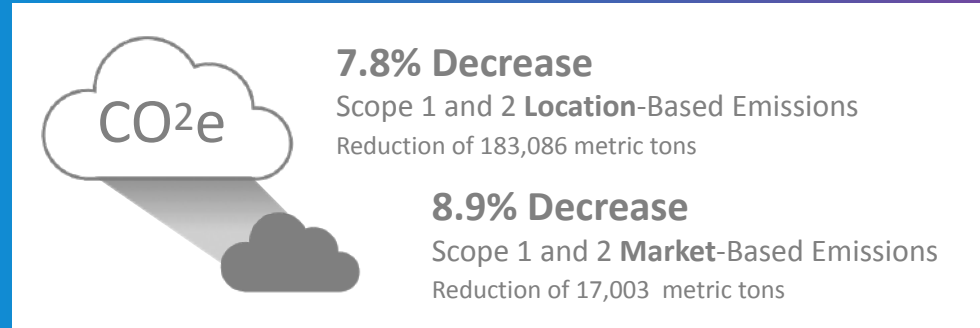


CommScope  
Manufacturing Facilities  
**ISO 45001:2018**  
Health & Safety  
Management Systems



of nonhazardous waste diverted  
from landfills globally in 2021.  
*Achieved by reducing waste generation  
via product design and manufacturing  
processes by converting waste to energy  
and reusing and recycling waste.*

*Conducted 268 sustainability assessments and audits in our supply chain.*



# Panels

- **Adapt and grow** as needs change
- **Modular and interchangeable**
- **Blade-based** layout
- Minimum **size/weight**
- **Ergonomic & easy access**
- **One person** install
- Module **interchangeability**
- Support 8-12-16 and 24-fiber connectivity and **up to 288** connected fibers per **RU**
- **Method B Enhanced polarity**



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8LC

12LC

16LC

24LC





Leading with 16-  
fibers in the  
enterprise

Most efficient multipair building block  
for trunk applications

End-to-end APC multimode or singlemode provides application  
insurance benefits compared to UPC

Enable cost effective  
backbone switch/breakouts

Supports migrations whether duplex or multipair 4, 8, or 16  
fibers; multimode & singlemode

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