



Data Center Cabling Solutions for NVIDIA GB200/GB300 NVL72 AI Architectures

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Introduction

Structured to support the most advanced AI architectures

The breakneck evolution of AI capabilities has quickened the cadence of next-generation chip architectures. Leading AI data center operators now have access to the latest generation of Blackwell GPUs in an NVL72 platform from NVIDIA, which represents a quantum leap forward for AI training, contextualization and inference applications.

While NVL72 platform means greater compute power and speed, its higher density versus previous generations of AI compute also comes with steeper power requirements and tighter spaces inside the cabinet. More than ever, it takes the right cabling infrastructure to unlock the full potential of the NVL72 platform and maximize ROI—and that's what CommScope delivers for AI data centers all over the world.

This guide will help you select the optimal cabling solutions for your NVL72 architecture.

Confident connectivity—at scale, at speed

CommScope builds our data center infrastructure solutions to meet the many challenges AI networks face, with intuitive fiber management solutions like our stackable Rapid Fiber Connect™ panels that facilitate easy, accurate connectivity

across 72 GPUs packed into a single rack, as well as the Ultra Low Loss (ULL) MPO cabling assemblies that deliver reliably high performance suitable for the most advanced AI applications.

Just as importantly, CommScope's global manufacturing footprint means that we can deliver our most advanced data center infrastructure solutions—in volume—with short lead times. We deliver fast, and our modular, plug-and-play designs deploy fast. When you're trying to keep pace with the rapid innovation in AI technology, nothing less will do.

We support your AI data networking evolution

Regardless of your network environment, CommScope offers the infrastructure solutions to empower your AI applications. This ordering guide features end-to-end fiber and copper solutions for both Ethernet and InfiniBand™, as well as innovative design and distribution strategies to help you leverage the full potential of your AI investment.

Need to know more? Let's talk.

If you have a question about the technology, strategy or logistics of deploying your NVL72 AI network, [we're ready to help.](#)

Ethernet and InfiniBand— Optical Applications

The following pages outline the current Ethernet and InfiniBand transmission standards; both protocols are commonly found in AI networks. Structured cabling can support both Ethernet and InfiniBand protocols.

Data Rate	Multimode		Reach	# of Fibers	Multi-wavelengths		Lane Rate	IEEE project / MSA	Publication
	PMD	Media			# of Wavelengths				
1,600G	SR8.2	8-pair MM	100 m	16	2	100G	Terabit BiDi MSA	2023	
	VR8.2	8-pair MM	50 m	16	2	100G	Terabit BiDi MSA	2023	
	DR8	8-pair SM	500 m	16	1	200G	802.3dj	2026	
	DR8-2	8-pair SM	2,000 m	16	1	200G	802.3dj	2026	
800G	SR8	8-pair MM	100 m	16	1	100G	802.3df	2024	
	VR8	8-pair MM	50 m	16	1	100G	802.3df	2024	
	SR4.2	4-pair MM	100 m	8	2	100G	Terabit BiDi MSA	2023	
	VR4.2	4-pair MM	50 m	8	2	100G	Terabit BiDi MSA	2023	
	DR8	8-pair SM	500 m	16	1	100G	802.3df	2024	
	DR8-2	8-pair SM	2,000 m	16	1	100G	802.3df	2024	
	FR4	1-pair SM	2,000 m	2	4	200G	802.3dj	2026	
	DR4	4-pair SM	500 m	8	1	200G	802.3dj	2026	
400G	SR8	8-pair MM	100 m	16	1	50G	802.3cm	2019	
	SR4.2	4-pair MM	100 m	8	2	50G	802.3cm	2019	
	SR4	4-pair MM	100 m	8	1	100G	802.3db	2022	
	VR4	4-pair MM	50 m	8	1	100G	802.3db	2022	
	DR4	4-pair SM	500 m	8	1	100G	802.3cm	2019	
	FR4	4-pair SM	2,000 m	2	4	100G	802.3cm	2019	
	DR2	2-pair SM	500 m	4	1	200G	802.3dj	2026	
200G	SR4	4-pair MM	100 m	8	1	50G	802.3bs	2017	
	SR2	2-pair MM	100 m	4	1	100G	802.3db	2022	
	DR4	4-pair SM	500 m	8	1	50G	802.3bs	2017	
	FR4	1-pair SM	2,000 m	2	4	50G	802.3bs	2017	
	DR1	1-pair SM	500 m	2	1	200G	802.3dj	2026	
	FR1	1-pair SM	2,000 m	2	4	200G	802.3dj	2026	
100G	SR4	4-pair MM	100 m	8	1	25G	802.3bm	2015	
	SR2	2-pair MM	100 m	4	1	50G	802.3cd	2018	
	SR1	1-pair MM	100 m	2	1	100G	802.3db	2022	
	VR1	1-pair MM	50 m	2	1	100G	802.3db	2022	
	DR1	1-pair SM	500 m	2	1	100G	802.3cd	2018	
	CWDM4	1-pair SM	2,000 m	2	4	25G	CWDM4 MSA	2014	
	PSM4	4-pair SM	500 m	8	1	25G	PSM4 MSA	2014	

■ Multimode Fiber OM4/OM5 for multi-wavelength multimode applications
 ■ Singlemode Fiber OS2

Interactive Content Menu												
Ethernet and InfiniBand Applications	Gen AI Key Solutions	Direct Connect Cabling	800G/400G Parallel Applications	800G/400G Serial Applications	800G - 4x 200G 200G - 200G Parallel Applications	400G - 2x 200G Parallel Applications	Shuffle Architectures	Fiber Polarity Schemes	CommScope Rapid Fiber Connect™	CommScope Propel Solutions	SYSTIMAX Copper Solutions	CommScope FiberGuide

Reference Design Menu					
NVIDIA NVL72 GB200/GB300 288 GPU POD Reference Design			NVIDIA NVL72 GB200/GB300 1,152 GPU Scalable Unit Reference Design		
Compute Cabinet	Compute to Management Cabinets	Admin Network	Compute Cabinet	Compute to Management Cabinets	Admin Network

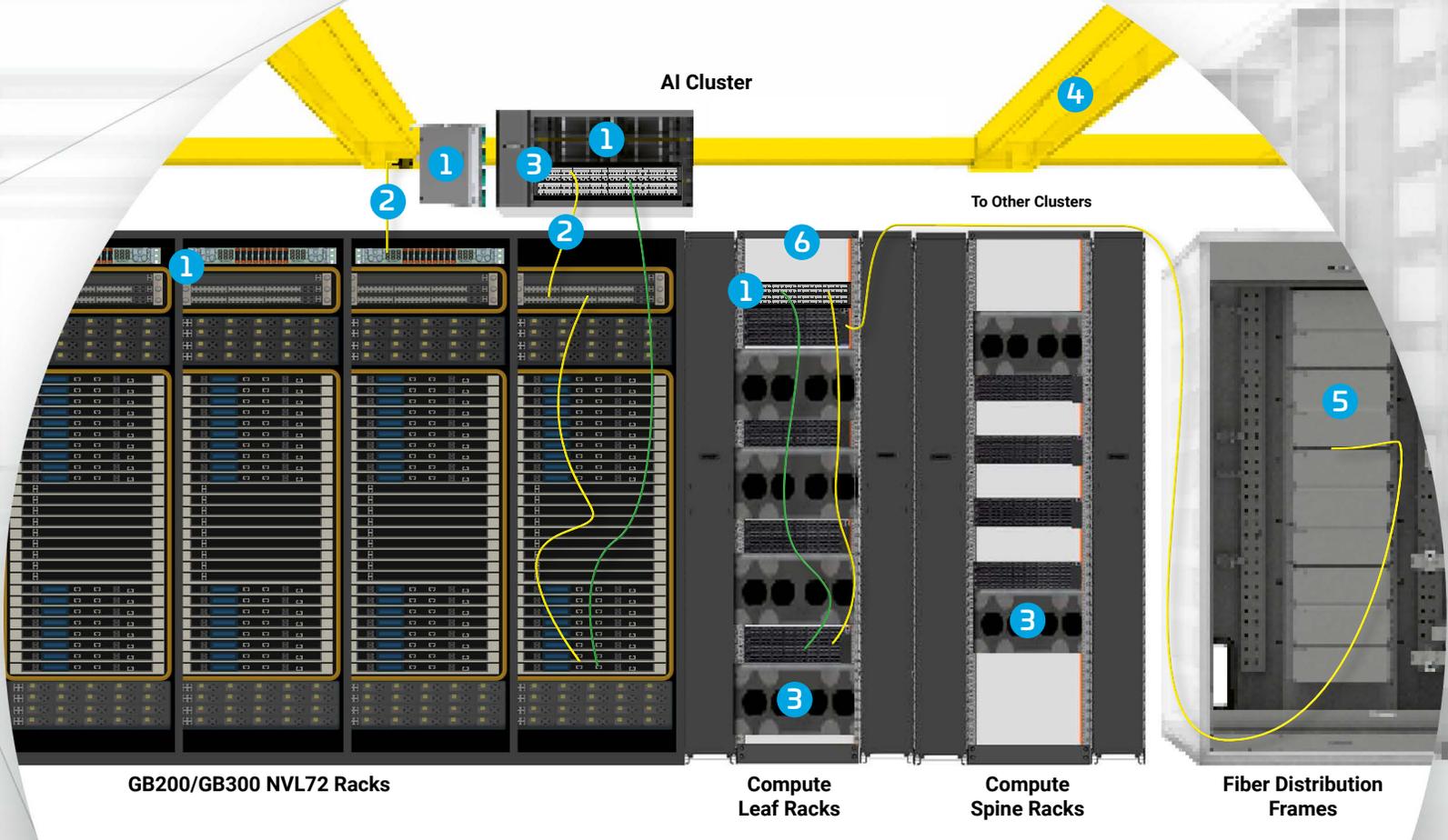
Data Rate	Multimode		Reach	# of Fibers	Multi-wavelengths		Lane Rate	ITA Spec
	PMD	Media			# of Wavelengths			
800G	SR8	8-pair MM	50 m	16	1	200G	XDR	
	DR8	8-pair SM	500 m	16	1	200G	XDR	
	FR4	1-pair SM	2,000 m	2	4	200G	XDR	
800G (2 x 400G-DR4)	SR8	2 x 4-pair MM	50 m	16 (2x8)	1	100G	NDR	
	DR8	2 x 4-pair SM	500 m	16 (2x8)	1	100G	NDR	
800G	2 x FR4	2 x 1-pair SM	2,000 m	4 (2x2)	4	100G	NDR	
400G	SR4	4-pair MM	50 m	8	1	100G	NDR	
	DR4	4-pair SM	500 m	8	1	100G	NDR	
200G	SR4	4-pair MM	100 m	8	1	50G	HDR	
	FR4	1-pair SM	2,000 m	2	4	50G	HDR	
100G	SR4	4-pair MM	100 m	8	1	25G	EDR	
	CWDM4	1-pair SM	2,000 m	2	4	25G	EDR	
	PSM4	4-pair SM	500 m	8	1	25G	EDR	

■ Multimode Fiber OM4
■ Singlemode Fiber OS2

Interactive Content Menu												
Ethernet and InfiniBand Applications	Gen AI Key Solutions	Direct Connect Cabling	800G/400G Parallel Applications	800G/400G Serial Applications	800G - 4x 200G Parallel Applications	400G - 2x 200G Parallel Applications	Shuffle Architectures	Fiber Polarity Schemes	CommScope Rapid Fiber Connect™	CommScope Propel Solutions	SYSTIMAX Copper Solutions	CommScope FiberGuide

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Key Solution Set for Generative AI



GB200/GB300 NVL72 Racks

Compute Leaf Racks

Compute Spine Racks

Fiber Distribution Frames

1
Fiber Panels

2
MPO/VSFF Cable Assemblies

3
Cable Management Solutions

4
Fiber Raceway Systems

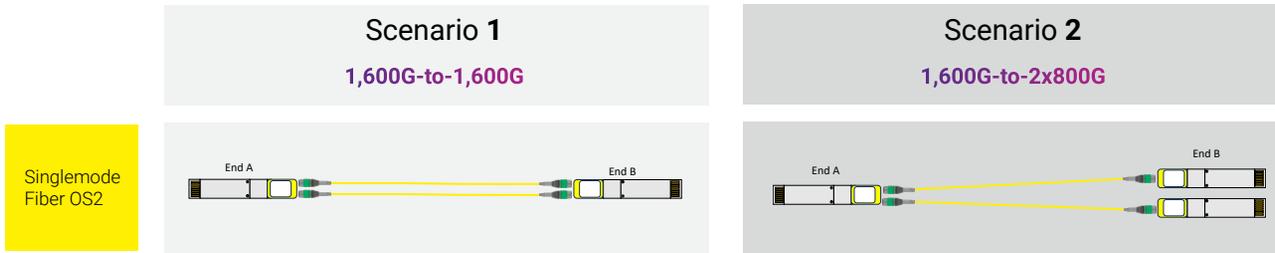
5
Fiber Distribution Frames

6
Copper Cabling Systems

Interactive Content Menu												
Ethernet and InfiniBand Applications	Gen AI Key Solutions	Direct Connect Cabling	800G/400G Parallel Applications	800G/400G Serial Applications	800G - 4x 200G Parallel Applications	400G - 2x 200G Parallel Applications	Shuffle Architectures	Fiber Polarity Schemes	CommScope Rapid Fiber Connect™	CommScope Propel Solutions	SYSTIMAX Copper Solutions	CommScope FiberGuide

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NVIDIA Fiber Optic Transceivers— Direct MPO and LC Cable Connections

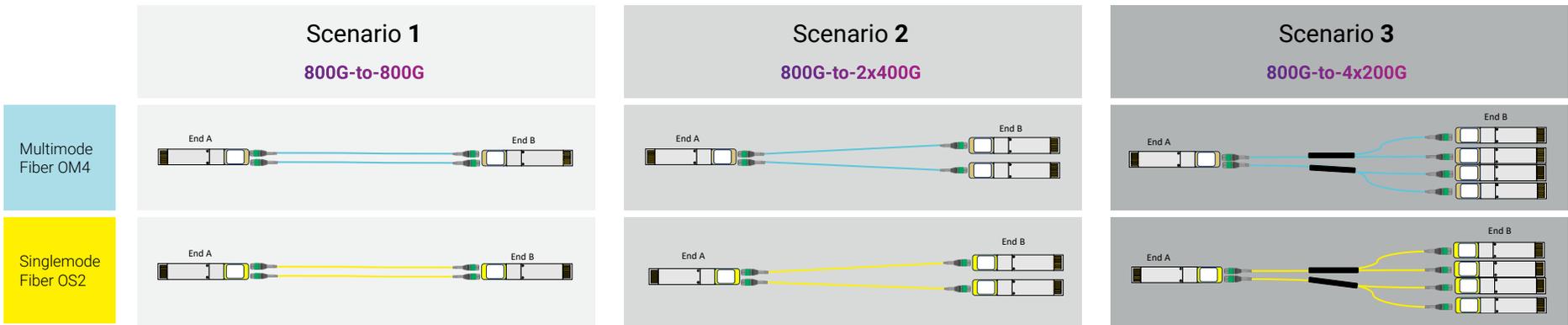


End A					CommScope® Products	End B		
Scenario	NVIDIA Transceiver	Bandwidth	Fiber Type	Reach	CommScope Direct Connect MPO12/8 cable	NVIDIA cable part number	NVIDIA Transceiver	Bandwidth
1	MMS4A00	2 x 800G DR4	OS2	500 m	LSZH/Riser Cable: URGQPQPF8 (2x) Plenum Cable: UQGQPQPF8 (2x)	MFP7E30-NXXX	MMS4A00	2 x 800G DR4
2	MMS4A00	2 x 800G DR4	OS2	500 m	LSZH/Riser Cable: URGQPQPF8 (2x) Plenum Cable: UQGQPQPF8 (2x)	MFP7E30-NXXX	MMS4A20 (2x)	2 x 800G DR4

■ Singlemode Fiber OS2

Interactive Content Menu												
Ethernet and Infraband Applications	Gen AI Key Solutions	Direct Connect Cabling	800G/400G Parallel Applications	800G/400G Serial Applications	800G - 4x 200G Parallel Applications	400G - 2x 200G Parallel Applications	Shuffle Architectures	Fiber Polarity Schemes	CommScope Rapid Fiber Connect™	CommScope Propel Solutions	SYSTIMAX Copper Solutions	CommScope FiberGuide

Reference Design Menu					
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Compute Cabinet	Compute to Management Cabinets	Admin Network	Compute Cabinet	Compute to Management Cabinets	Admin Network

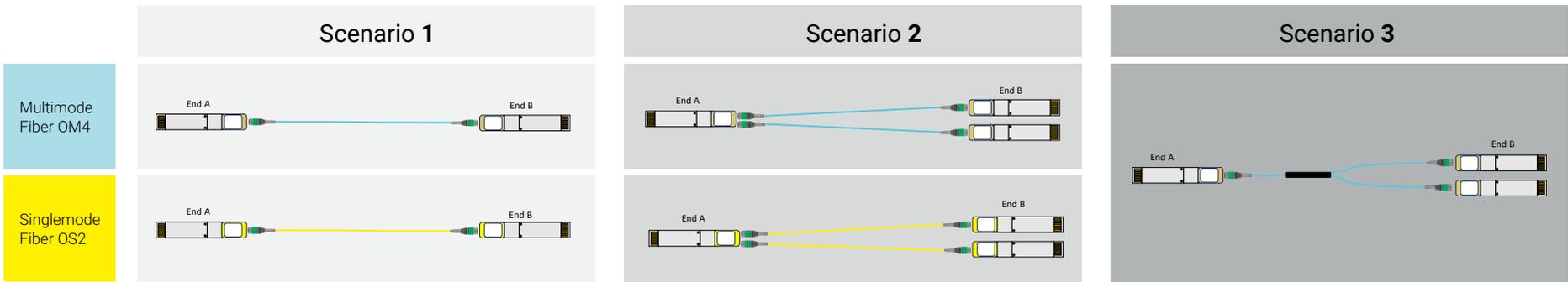


Scenario	End A				CommScope® Products		End B		
	NVIDIA Transceiver	Bandwidth	Fiber Type	Reach	CommScope Direct Connect MPO12/8 Cable		NVIDIA Cable Part Number	NVIDIA Transceiver	Bandwidth
1	MMA4Z00-NS or MMA4Z00-NS-FLT	2 x 400G SR4	OM4	50 m	LSZH/Riser cable: URXQVQVF8 (2x) Plenum cable: UQXQVQVF8 (2x)	MFP7E10-N0XX	MMA4Z00-NS or MMA4Z00-NS-FLT	2 x 400G SR4	
2	MMA4Z00-NS	2 x 400G SR4	OM4	50 m	LSZH/Riser cable: URXQVQVF8 (2x) Plenum cable: UQXQVQVF8 (2x)	MFP7E10-N0XX	MMA4Z00-NS400 (2x)	2 x 400G SR4	
2	MMA4Z00-NS	2 x 400G SR4	OM4	50 m	LSZH/Riser cable: JRXQVQVF8 (2x) Plenum cable: UQXQVQVF8 (2x)	MFP7E10-N0XX	MMA1Z00-NS400 (2x)	2 x 400G SR4	
3	MMA4Z00-NS	2 x 400G SR4	OM4	50 m	LSZH/Riser cable: URXQVBVF8 (2x)	MFP7E20-N0XX	MMA4Z00-NS400 (4x)	4 x 200G SR2	
3	MMA4Z00-NS	2 x 400G SR4	OM4	50 m	LSZH/Riser cable: URXQVBVF8 (2x)	MFP7E20-N0XX	MMA1Z00-NS400 (4x)	4 x 200G SR2	
1	MMS4X00-NS or MMS4X00-NS-FLT	2 x 400G DR4	OS2	100 m	LSZH/Riser cable: JRGQPQPF8 (2x) Plenum cable: UQGQPQPF8 (2x)	MFP7E30-NXXX	MMS4X00-NS or MMS4X00-NS-FLT	2 x 400G DR4	
1	MMS4X00-NM or MMS4X00-NM-FLT	2 x 400G DR4	OS2	500 m	LSZH/Riser cable: JRGQPQPF8 (2x) Plenum cable: UQGQPQPF8 (2x)	MFP7E30-NXXX	MMS4X00-NM or MMS4X00-NM-FLT	2 x 400G DR4	
2	MMS4X00-NS	2 x 400G DR4	OS2	100 m	LSZH/Riser cable: JRGQPQPF8 (2x) Plenum cable: UQGQPQPF8 (2x)	MFP7E30-NXXX	MMS4X00-NS400 (2x)	2 x 400G DR4	
2	MMS4X00-NS	2 x 400G DR4	OS2	100 m	LSZH/Riser cable: JRGQPQPF8 (2x) Plenum cable: UQGQPQPF8 (2x)	MFP7E30-NXXX	MMS1X00-NS400 (2x)	2 x 400G DR4	
3	MMS4X00-NS	2 x 400G DR4	OS2	100 m	LSZH/Riser cable: JRGQBPBF8 (2x)	MFP7E40-NXXX	MMS4X00-NS400 (4x)	4 x 200G DR2	
3	MMS4X00-NS	2 x 400G DR4	OS2	100 m	LSZH/Riser cable: JRGQBPBF8 (2x)	MFP7E40-NXXX	MMS1X00-NS400 (4x)	4 x 200G DR2	

■ Multimode Fiber OM4
■ Singlemode Fiber OS2

Interactive Content Menu												
Ethernet and Infraband Applications	Gen AI Key Solutions	Direct Connect Cabling	800G/400G Parallel Applications	800G/400G Serial Applications	800G - 4x200G Parallel Applications	400G - 2x200G Parallel Applications	Shuffle Architectures	Fiber Polarity Schemes	CommScope Rapid Fiber Connect™	CommScope Propeel Solutions	SYSTIMAX Copper Solutions	CommScope FiberGuide

Reference Design Menu					
NVIDIA NVL72 GB200/GB300 288 GPU POD Reference Design			NVIDIA NVL72 GB200/GB300 1,152 GPU Scalable Unit Reference Design		
Compute Cabinet	Compute to Management Cabinets	Admin Network	Compute Cabinet	Compute to Management Cabinets	Admin Network



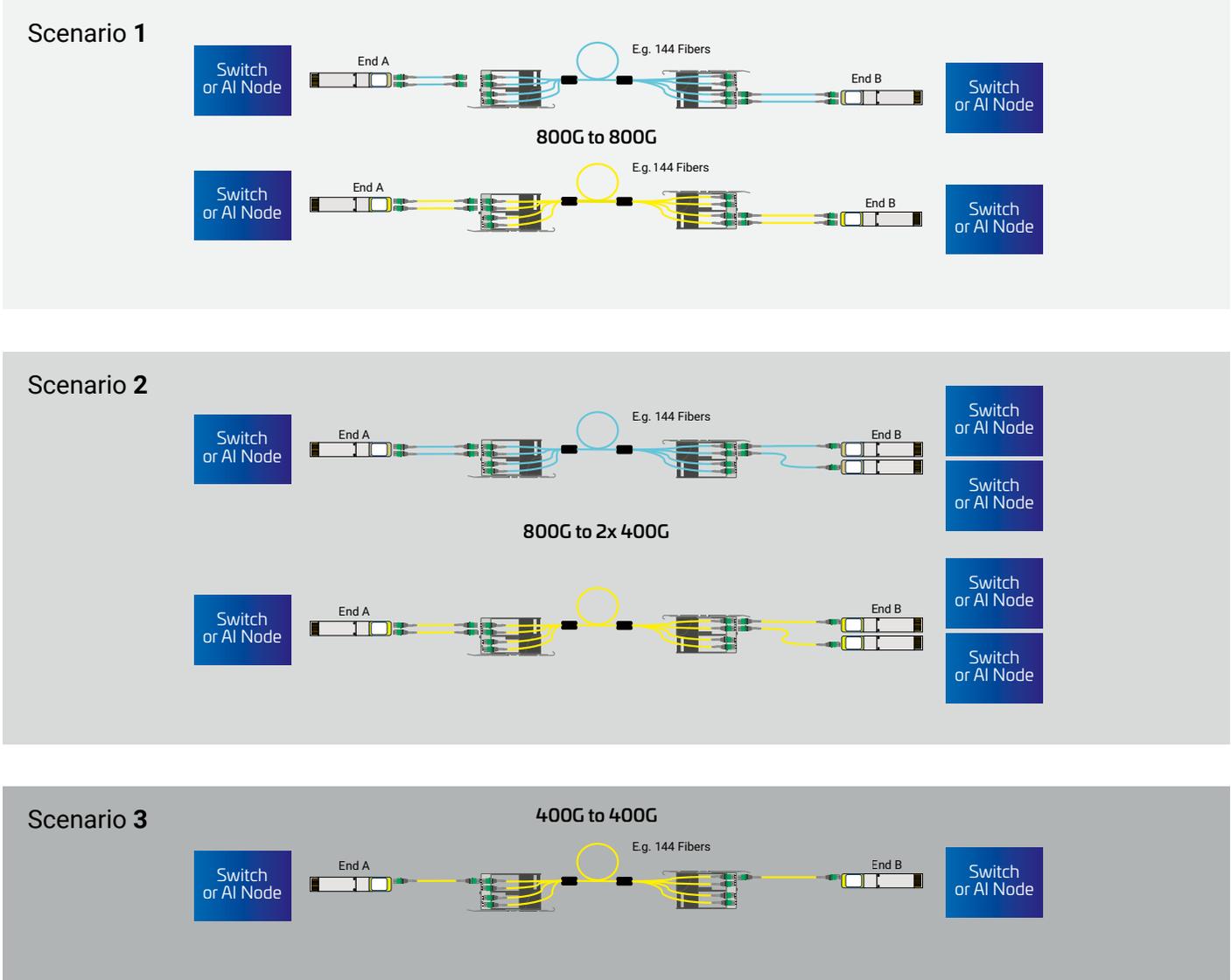
Scenario	End A				CommScope® Products		End B	
	NVIDIA Transceiver	Bandwidth	Fiber Type	Reach	CommScope Direct Connect MPO12/8 cable		NVIDIA Transceiver	Bandwidth
1	T-DQ8FNS-N00-M	1 x 400G SR8	OM4	100 m	LSZH/Riser cable: URXRVRV7R Plenum cable: UQXRVRV7R		T-DQ8FNS-N00-M	1 x 400G SR8
1	MMA1T00-VS or MMA1T00-HS	1 x 200G SR4	OM4	100 m	LSZH/Riser cable (UPC): URXQPQPF8 Plenum cable (UPC): UQXQPQPF8		MMA1T00-VS or MMA1T00-HS	1 x 200G SR4
3	T-DQ8FNS-N00-M	1 x 400G SR8	OM4	100 m	LSZH/Riser cable: URXQVBVF8		MMA1T00-VS (2x)	2 x 200G SR4
1	MMS1V00-WM	1 x 400G DR4	OS2	500 m	LSZH/Riser cable: URGQPQPF8 Plenum cable: UQGQPQPF8		MMS1V00-WM	1 x 400G DR4
1	MMS1V50-WM	1 x 400G FR4	OS2	2,000 m	LSZH/Riser cable: UFGLLULK2 Plenum cable: UDGLLULK2		MMS1V50-WM	1 x 400G FR4
1	MMS1V90-WM	1 x 400G LR4	OS2	10,000 m	LSZH/Riser cable: UFGLLULK2 Plenum cable: UDGLLULK2		MMS1V90-WM	1 x 400G LR4
1	MMS1V00-WM	1 x 400G DR4	OS2	100 m	LSZH/Riser cable: URGQPQPF8 Plenum cable: UQGQPQPF8		MMS4X00-NS400	1 x 400G DR4
1	MMS1W50-HM	1 x 200G FR4	OS2	2,000 m	LSZH/Riser cable: UFGLLULK2 Plenum cable: UDGLLULK2		MMS1W50-HM	1 x 200G FR4
2	MMS4X00-NS (FLT) (100 m) or MMS4X00-NM (500 m)	2 x 400G DR4	OS2	100 m or 500 m	LSZH/Riser cable: URGQPQPF8 (2x) Plenum cable: UQGQPQPF8 (2x)		MMS1V00-WM (2x)	2 x 400G DR4

■ Multi-mode Fiber OM4
■ Single-mode Fiber OS2

Interactive Content Menu												
Ethernet and InfiniBand Applications	Gen AI Key Solutions	Direct Connect Cabling	800G/400G Parallel Applications	800G/400G Serial Applications	800G - 4x 200G Parallel Applications	400G - 2x 200G Parallel Applications	Shuffle Architectures	Fiber Polarity Schemes	CommScope Rapid Fiber Connect™	CommScope Propel Solutions	SYSTIMAX Copper Solutions	CommScope FiberGuide

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NVIDIA Fiber Optic Transceivers— Structured Cabling Solutions



Adapter packs are mounted in Propel panels, see page 39 of this guide.

Interactive Content Menu												
Ethernet and Infraband Applications	Gen AI Key Solutions	Direct Connect Cabling	800G/400G Parallel Applications	800G/400G Serial Applications	800G – 4x 200G 200G – 200G Parallel Applications	400G – 2x 200G Parallel Applications	Shuffle Architectures	Fiber Polarity Schemes	CommScope Rapid Fiber Connect™	CommScope Propel Solutions	SYSTIMAX Copper Solutions	CommScope FiberGuide

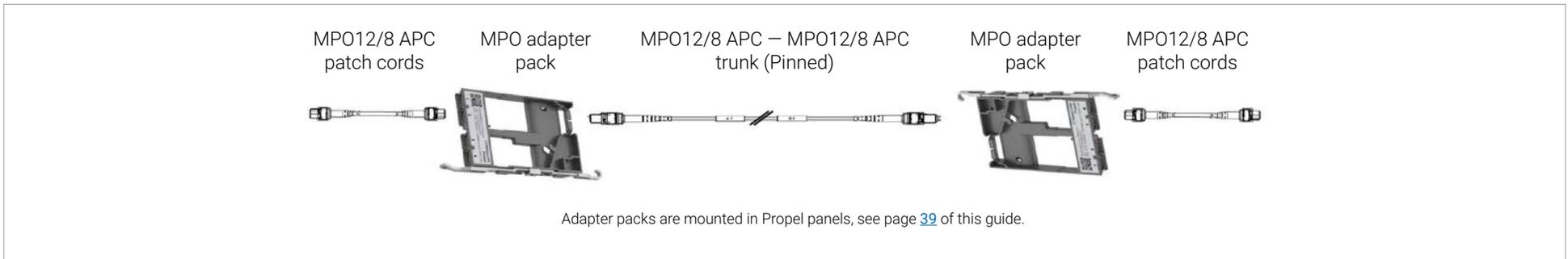
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NVIDIA NVL72 GB200/GB300 288 GPU POD Reference Design			NVIDIA NVL72 GB200/GB300 1,152 GPU Scalable Unit Reference Design		
Compute Cabinet	Compute to Management Cabinets	Admin Network	Compute Cabinet	Compute to Management Cabinets	Admin Network

End A						CommScope® Products					End B		
Scenario	NVIDIA Transceiver	Bandwidth	Fiber Type	Transceiver Interface	Reach	Array Base Code	Adapter Pack	Trunk*	Adapter Pack	Array Base Code	Transceiver Interface	NVIDIA Transceiver	Bandwidth
1	MMA4Z00-NS	2x 400G SR8	OM4	2x MPO12 APC	50 m	Plenum OM4 - UQXQVQVF8	PPL-AP-y-MPO-ALL-B	Plenum OM4 - UGXQZQZTn	PPL-AP-y-MPO-ALL-B	Plenum OM4 - UQXQVQVF8	2x MPO12 APC	MMA4Z00-NS	2x 400G SR8
												MMA4Z00-NS-FLT	
2	MMA4Z00-NS	2x 400G SR8	OM4	2x MPO12 APC	50 m	Dual-Rated (ORNR/LSZH) OM4 - URXQVQVF8	PPL-AP-y-MPO-ALL-B	CPR B2 _{CA} OM4 - U3XQZQZTn	PPL-AP-y-MPO-ALL-B	Dual-Rated (ORNR/LSZH) OM4 - URXQVQVF8	1x MPO12 APC	2x MMA4Z00-NS400	1x 400G SR4
												2x MMA1Z00-NS400	
1	MMS4X00-NS	2x 400G DR4	OS2	2x MPO12 APC	100 m	Plenum UQGQPQPF8	PPL-AP-y-MPO-ALL-B	Plenum UGGQXQXTn	PPL-AP-y-MPO-ALL-B	Plenum UQGQPQPF8	2x MPO12 APC	MMS4X00-NM	2x 400G
	MMS4X00-NS-FLT											MMS4X00-NS-FLT	
	MMS1V00-WM	1x 400G		1x MPO12 APC	500 m						MMS1V00-WM	1x 400G	
2	MMS4X00-NS	2x 400G	OS2	2x MPO12 APC	100 m	Dual-Rated (ORNR/LSZH) URGQPQPF8	PPL-AP-y-MPO-ALL-B	CPR B2 _{CA} U3GQXQXTn	PPL-AP-y-MPO-ALL-B	Dual-Rated (ORNR/LSZH) URGQPQPF8	1x MPO12 APC	2x MMS4X00-NS400	1x 400G
	MMS4X00-NM											2x MMS1V00-WM	
	MMS4X00-NS-FLT											2x MMS1V00-WM	
3	2x MMS1V00-WM	1x 400G	OS2	1x MPO12 APC	500 m	Dual-Rated (ORNR/LSZH) URGQPQPF8	PPL-AP-y-MPO-ALL-B	CPR B2 _{CA} U3GQXQXTn	PPL-AP-y-MPO-ALL-B	Dual-Rated (ORNR/LSZH) URGQPQPF8	1x MPO12 APC	2x MMS1V00-WM	1x 400G
												2x MMS1X00-NS400	

* Trunk cables have a ruggedized sheath with a larger o/d, protecting the cables when dressed into pathways. Due to the number of cables required, network cabinets should be selected with sufficient vertical space to support AI builds (see reference design).

■ Multimode Fiber OM4
■ Singlemode Fiber OS2

y = Number of MPO ports per module - Select 4, 8, or 12
n = Number of fibers in trunk - Select 8=8, R=16, F=24, S=32, H=48, U=64, K=72, L=96, M=144, N=192



* Detailed information about Propel polarity schemes can be found [here](#).

Regarding MPO12/4, MPO12/8 and MPO12 Form Factors

CommScope MPO connectors designated as MPO12/4 and MPO12/8 in the fiber cable assemblies and modules solutions are identical connectors to the MPO12 connectors.

The global industry standard MPO12 connector houses 12 fibers within a single body. The 12 fibers are presented as a single row, with fibers separated on 250µm centerlines, with number assignments from 1 to 12, sequentially left to right. As network technologies have progressed with high-speed applications utilizing parallel optics, the MPO12 form factor has been used as the common interface for network connectivity at transceivers.

Multi-pair applications at the transceivers typically use the outer pairs to separate transmit from receive. This provides separate electrical paths on the network equipment when the transceivers connect to the end device.

Most common are 4-pair or 8-pair applications. Whether 40G (4x10G), 100G (4x25G), 400G (4x100G) or other variations, the common layout is to pair 4 transmit (Tx) fibers with 4 receive (Rx) from the outside in. For instance, fibers 1&12, 2&11, 3&10, 4&9 are paired as Tx/Rx to deliver the above 4-pair parallel applications.

While the standard connector is the MPO12, applications using 8 fibers as the above 4-pairs referenced, are referred to as MPO12/8 since they use the 12-fiber connector interface but are physically providing 8 optical connections. The center 4 fiber locations are not used, typically filled with fiber stub to prevent dust ingress.

In practice, this reduces waste; 1/3 of the fibers would not be accessible for applications once connected, and it also reduces cable mass in pathways.

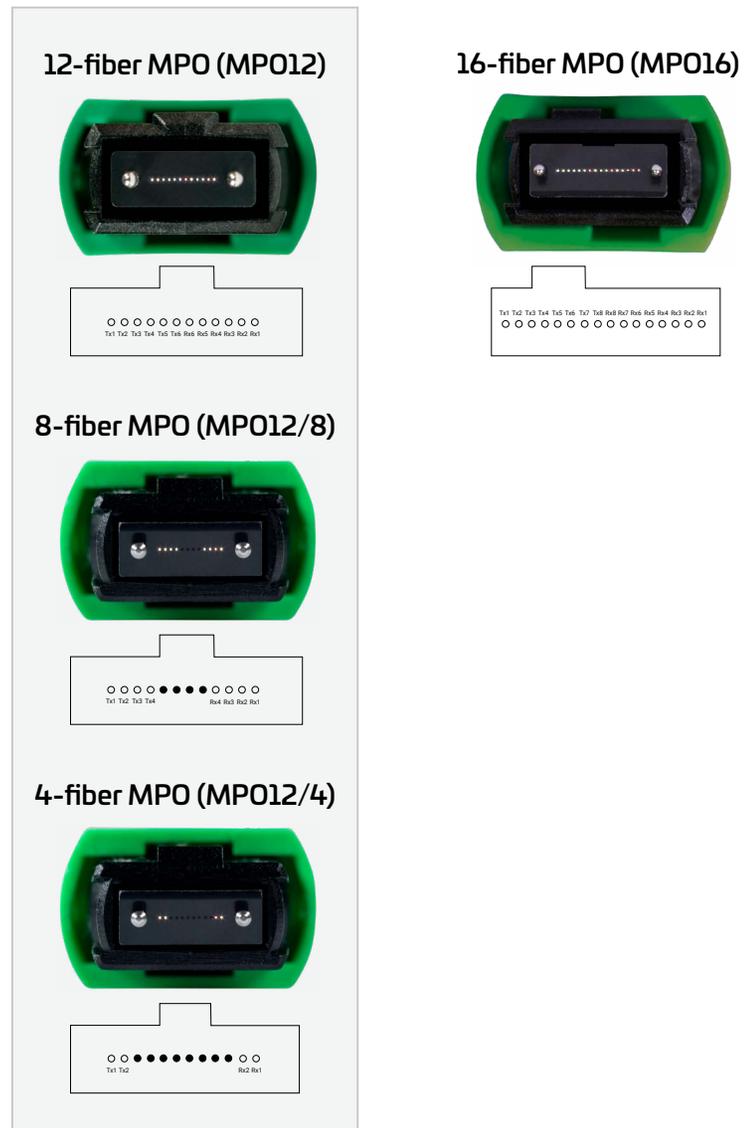
Applications such as 200G have also emerged using the outer 2 pairs (4 fibers total) for commonality and breakout simplicity using 2 100G lanes in each direction. Those connectors are referred to as MPO12/4 to designate the use of the MPO12 connector and the fiber count for the application.

8-pair applications use either the industry standard MPO16 or 2 of the MPO12/8 for twin port transceivers using the outside in Tx/Rx pairings referenced.

The numeric digits (e.g., 4 and 8) are CommScope’s unique naming convention which refers to the number of fibers terminated in an MPO12 connector. For example, MPO12/8 equates to an MPO12 connector terminated with only 8 fibers, and MPO12/4 equates to an MPO12 connector terminated with 4 fibers.

Applicability

This note applies to CommScope’s fiber cable assemblies and modules with MPO connectors at one or both ends.



Interactive Content Menu												
Ethernet and Infraband Applications	Gen AI Key Solutions	Direct Connect Cabling	800G/400G Parallel Applications	800G/400G Serial Applications	800G – 4x 200G Parallel Applications	400G – 2x 200G Parallel Applications	Shuffle Architectures	Fiber Polarity Schemes	CommScope Rapid Fiber Connect™	CommScope Propel Solutions	SYSTIMAX Copper Solutions	CommScope FiberGuide

Reference Design Menu					
NVIDIA NVL72 GB200/GB300 288 GPU POD Reference Design			NVIDIA NVL72 GB200/GB300 1,152 GPU Scalable Unit Reference Design		
Compute Cabinet	Compute to Management Cabinets	Admin Network	Compute Cabinet	Compute to Management Cabinets	Admin Network

Many of the transceiver interface options today are MPO12 or MPO12/8 based, which has proven to be an adequate presentation of fibers to support duplex and parallel optical transmission protocols.

The data center environment is constantly changing, especially with the advent of Generative AI. Data rates and the number of fibers required in this environment are increasing, whilst the demand for improved efficiency is being asked of every installed system.

Looking at the future of Ethernet optical standards, there is a mixture of 8- and 16-fiber interfaces up to 800G, and currently, 16-fiber interfaces are the only option available for both multi-mode and single-mode fibers above this speed. When compared side by side with the roadmap of Gen AI hardware manufacturers, it's apparent that these higher speeds are going to be required sooner than the industry first expected.

MPO12/8 is sufficient to support many parallel data rates and can be used to aggregate 4x duplex data rates (e.g., 10G, 25G), whereas MPO16 can support native 16-fiber applications, 2x 8-fiber applications, and 8x duplex-based transmission standards all over a single MPO16 fiber trunk cable, making it a dense fiber connector option.

When the request for a 16-fiber transmission standard is required for higher speeds (i.e., 8 Tx fibers and 8 Rx fibers), using an MPO12/8 cabling system can make the management and installation of the backbone complex.

When using MPO12/8 connectivity to support a 16-fiber application, 2x MPO12/8 trunks will need to be ordered, shipped, stored onsite, installed, inspected, and correctly audited. Each of these steps can add time and additional effort to the data center installation, whilst the request of the industry is to build faster and respond to change more quickly.

Importantly, a single MPO16 trunk cable can bring space savings to pathways and conduits when compared to deploying two MPO12/8 trunk cables. (See the diagram opposite).

Finally, looking back at the Ethernet optical roadmap, it's clear that there will be a continuous migration of connectivity required, from duplex to MPO12/8 to MPO16, and a toggling between those interfaces to achieve the optimum balance between performance and cost.

An MPO16 structured cabling system is a solution to seamlessly support these migrations.

8-fiber MPO (MPO12/8)



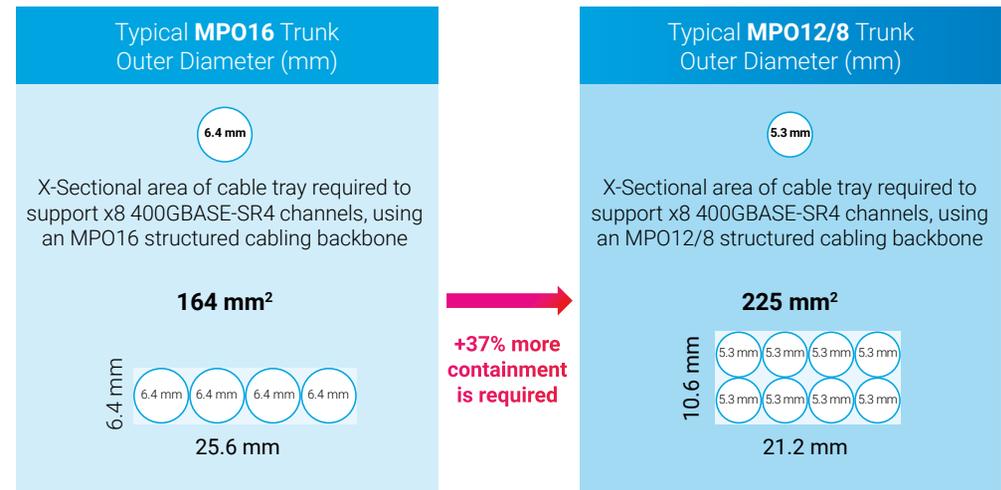
16-fiber MPO (MPO16)



MPO16 and MPO12/8—a single cable backbone comparison

	MPO12/8 Backbone	MPO16 Backbone
Channel densities	1x 8F MPO / 4x LC Duplex	1x 16F MPO / 2x 8F MPO / 8x LC Duplex
Matches to mainstream Ethernet and InfiniBand optical interface standards between 100G and 1,600G	No	Yes
Project complexity in high cable count channels: (Supply chain / cable installation / system audit / on-going operational management)	Higher Complexity	Lower Complexity
Pathway and conduit efficiency in high cable count channels	Uses 37% more space than MPO16 at higher data rates	Better suited

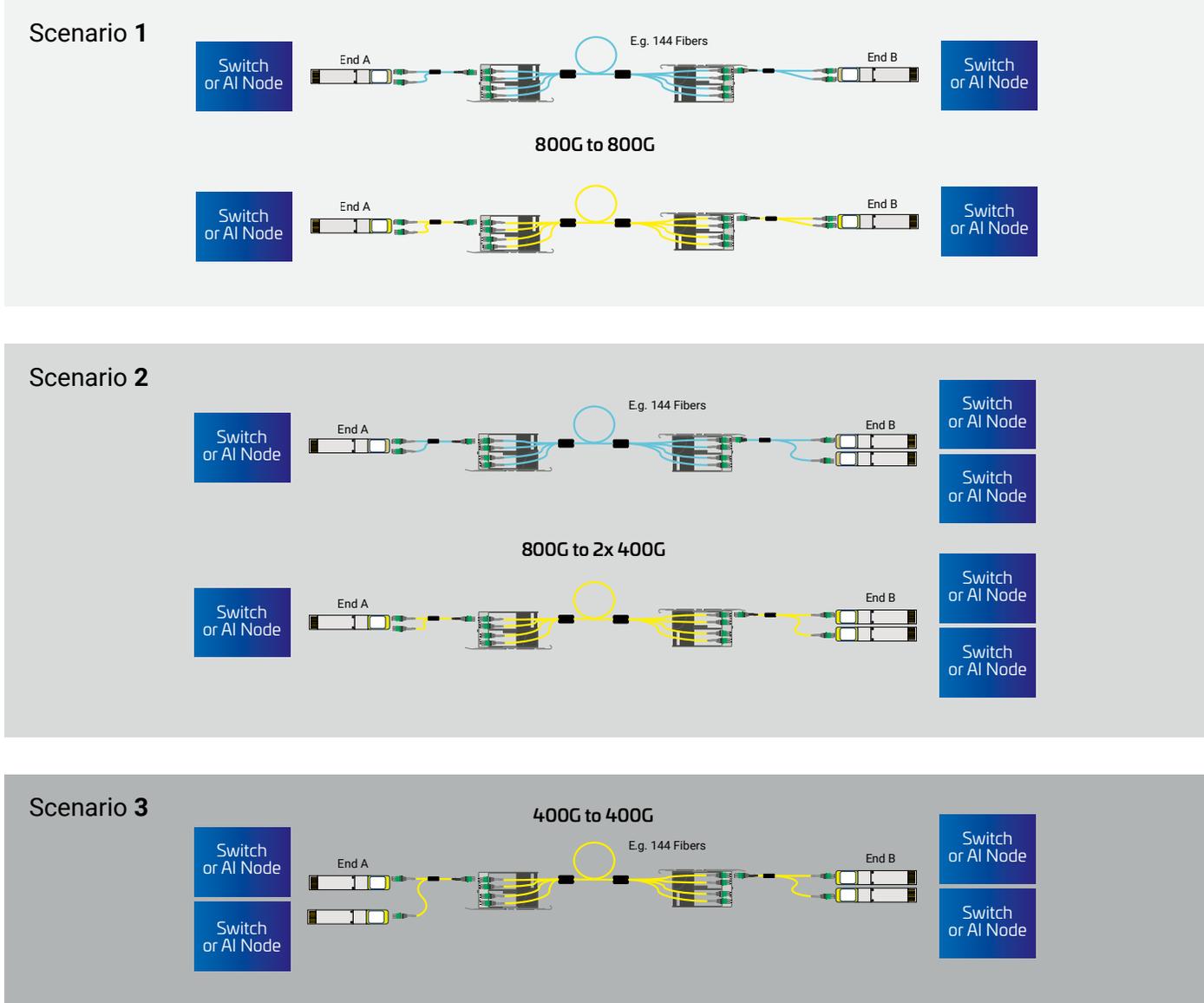
MPO16 and MPO12/8 containment comparison



What 400GBASE-SR16 can teach us about higher-speed migration [blog](#).

Interactive Content Menu												
Ethernet and InfiniBand Applications	Gen AI Key Solutions	Direct Connect Cabling	800G/400G Parallel Applications	800G/400G Serial Applications	800G – 4x 200G 200G – 200G Parallel Applications	400G – 2x 200G Parallel Applications	Shuffle Architectures	Fiber Polarity Schemes	CommScope Rapid Fiber Connect™	CommScope Propel Solutions	SYSTIMAX Copper Solutions	CommScope FiberGuide

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Adapter packs are mounted in Propel panels, see page 39 of this guide.

Interactive Content Menu												
Ethernet and Infraband Applications	Gen AI Key Solutions	Direct Connect Cabling	800G/400G Parallel Applications	800G/400G Serial Applications	800G – 4x 200G Parallel Applications	400G – 2x 200G Parallel Applications	Shuffle Architectures	Fiber Polarity Schemes	CommScope Rapid Fiber Connect™	CommScope Propel Solutions	SYSTIMAX Copper Solutions	CommScope FiberGuide

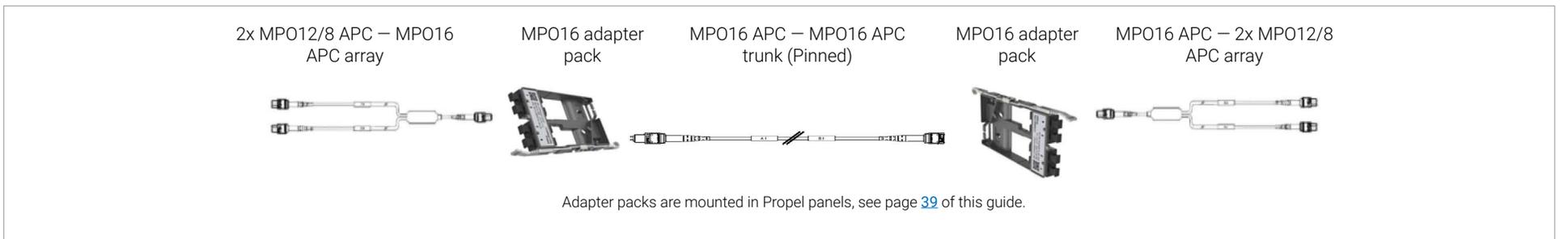
Reference Design Menu					
NVIDIA NVL72 GB200/GB300 288 GPU POD Reference Design			NVIDIA NVL72 GB200/GB300 1,152 GPU Scalable Unit Reference Design		
Compute Cabinet	Compute to Management Cabinets	Admin Network	Compute Cabinet	Compute to Management Cabinets	Admin Network

End A						CommScope® Products					End B		
Scenario	NVIDIA Transceiver	Bandwidth	Fiber Type	Transceiver Interface	Reach	Array Base Code	Adapter Pack	Trunk*	Adapter Pack	Array Base Code	Transceiver Interface	NVIDIA Transceiver	Bandwidth
1		MMA4Z00-NS 2x 400G SR8 OM4 2x MPO12 APC 50m				Plenum OM4 - UQXRQV7R	PPL-AP-y-MPO16-ALL-B	Plenum OM4 - U3XRZR8n	PPL-AP-y-MPO16-ALL-B	Plenum OM4 - UQXRQV7R	2x MPO12 APC	MMA4Z00-NS	2x 400G SR8
						Dual-Rated (OFNR/LSZH) OM4 - URXRQV7R		CPR B2 _{CA} OM4 - U3XRZR8n		Dual-Rated (OFNR/LSZH) OM4 - URXRQV7R		MMA4Z00-NS-FLT	
2		MMA4Z00-NS 2x 400G SR8 OM4 2x MPO12 APC 50m				Dual-Rated (OFNR/LSZH) OM4 - URXRQV7R	PPL-AP-y-MPO16-ALL-B	Dual-Rated OM4 - UJXRZR8n	PPL-AP-y-MPO16-ALL-B	Dual-Rated (OFNR/LSZH) OM4 - URXRQV7R	1x MPO12 APC	2x MMA4Z00-NS400 2x MMA1Z00-NS400	1x 400G SR4
1	MMS4X00-NS	2x 400G DR4	OS2	2x MPO12 APC	100 m	Plenum UQGRQP7R	PPL-AP-y-MPO16-ALL-B	Plenum UGGRXR8n	PPL-AP-y-MPO16-ALL-B	Plenum UQGRQP7R	2x MPO12 APC	MMS4X00-NS	2x 400G
	MMS4X00-NS-FLT											MMS4X00-NS-FLT	
	MMS1V00-WM	1x 400G										1x MPO12 APC	
2	MMS4X00-NS	2x 400G	OS2	2x MPO12 APC	100 m	Dual-Rated (OFNR/LSZH) URGRQP7R	PPL-AP-y-MPO16-ALL-B	CPR B2 _{CA} U3GRXR8n	PPL-AP-y-MPO16-ALL-B	Dual-Rated (OFNR/LSZH) URGRQP7R	1x MPO12 APC	2x MMS4X00-NS400	1x 400G
	500 m				MMS4X00-NM								
	100 m				MMS1V00-WM								
3	2x MMS1V00-WM	1x 400G	OS2	1x MPO12 APC	500 m	Dual-Rated (OFNR/LSZH) URGRQP7R	PPL-AP-y-MPO16-ALL-B	Dual-Rated (OFNR/LSZH) UJGRXR8n	PPL-AP-y-MPO16-ALL-B	Dual-Rated (OFNR/LSZH) URGRQP7R	1x MPO12 APC	2x MMS1V00-WM	1x 400G
					100 m							MMS1X00-NS400	

* Trunk cables have a ruggedized sheath with a larger o/d, protecting the cables when dressed into pathways. Due to the number of cables required, network cabinets should be selected with sufficient vertical space to support AI builds (see reference design).

■ Multimode Fiber OM4
■ Singlemode Fiber OS2

y = Number of MPO ports per module - Select 4, 8, or 12
n = Number of fibers in trunk - Select R=16, S=32, U=64, L=96, Q=128, M=144, N=192



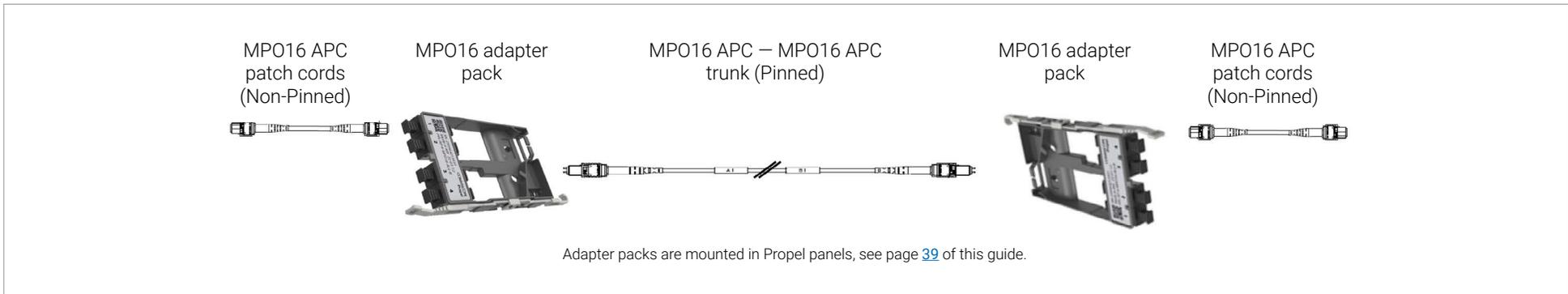
* Detailed information about Propel polarity schemes can be found [here](#).

					CommScope® Products					End B		
NVIDIA Transceiver	Bandwidth	Fiber Type	Transceiver Interface	Reach	Array Base Code	Adapter Pack	Trunk*	Adapter Pack	Array Base Code	Transceiver Interface	NVIDIA Transceiver	Bandwidth
T-DQ8FNS-N00-M	1x 400G SR8	OM4	1x MPO16 APC	100 m	Plenum OM4 - UQXRVRV7R Dual-Rated(OFNR/LSZH) OM4 - URXRVRV7R	PPL-AP-y-MPO16-ALL-B	Plenum OM4 - UGXRZRZ8n CPR B2_{CA} OM4 - U3XRZRZ8n Dual-Rated OM4 - UJXRZRZ8n	PPL-AP-y-MPO16-ALL-B	Plenum OM4 - UQXRVRV7R Dual-Rated(OFNR/LSZH) OM4 - URXRVRV7R	1x MPO16 APC	T-DQ8FNS-N00-M	1x 400G SR8

* Trunk cables have a ruggedized sheath with a larger o/d, protecting the cables when dressed into pathways. Due to the number of cables required, network cabinets should be selected with sufficient vertical space to support AI builds (see reference design).

■ Multimode Fiber OM4

y = Number of MPO ports per module – Select 4, 8, or 12
n = Number of fibers in trunk - Select R=16, S=32, U=64, L=96, Q=128, M=144, N=192



* Detailed information about Propel polarity schemes can be found [here](#).

Interactive Content Menu												
Ethernet and Infraband Applications	Gen AI Key Solutions	Direct Connect Cabling	800G/400G Parallel Applications	800G/400G Serial Applications	800G – 4x 200G Parallel Applications	400G – 2x 200G Parallel Applications	Shuffle Architectures	Fiber Polarity Schemes	CommScope Rapid Fiber Connect™	CommScope Propel Solutions	SYSTIMAX Copper Solutions	CommScope FiberGuide

Reference Design Menu					
NVIDIA NVL72 GB200/GB300 288 GPU POD Reference Design			NVIDIA NVL72 GB200/GB300 1,152 GPU Scalable Unit Reference Design		
Compute Cabinet	Compute to Management Cabinets	Admin Network	Compute Cabinet	Compute to Management Cabinets	Admin Network

Parallel-to-Parallel Optical Ports

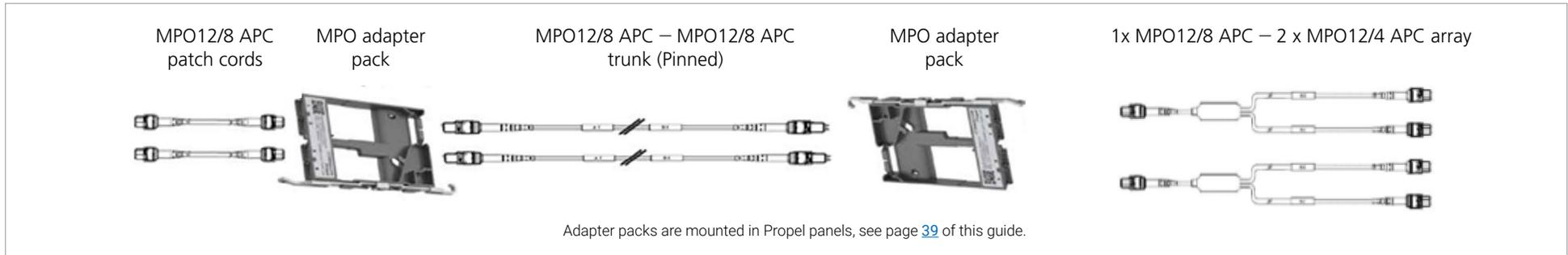
800G Switch to 4 x 200G Switch or Node (2x400G to 4x200G)

End A					CommScope® Products					End B		
NVIDIA Transceiver	Bandwidth	Fiber Type	Transceiver Interface	Reach	Array Base Code	Adapter Pack	Trunk*	Adapter Pack	Array Base Code	Transceiver Interface	NVIDIA Transceiver	Bandwidth
MMA4Z00-NS	2x 400G SR4	OM4	2x MPO12 APC	50 m	Plenum OM4 - UQXQVQVF8 Dual-Rated (OFNR/LSZH) OM4 - URXQVQVF8	PPL-AP-4-MPO-ALL-B	Plenum OM4 - UGXQZQZTn CPR B2_{CA} OM4 - U3XQZQZTn Dual-Rated (OFNR/LSZH) OM4 - UJXQZQZTn	PPL-AP-4-MPO-ALL-B	Plenum OM4 UQXQVBVF8 Dual-Rated (OFNR/LSZH) OM4 URXQVBVF8	1x MPO12 APC	4x MMA1Z00-NS400	1x 200G SR2
MMS4X00-NS	2x 400G DR4	OS2	2x MPO12 APC	100 m	Plenum UQGQPQPF8 Dual-Rated (OFNR/LSZH) URGQPQPF8	PPL-AP-4-MPO-ALL-B	Plenum UGGQXQXTn CPR B2_{CA} U3GQXQXTn Dual-Rated (OFNR/LSZH) UJGQXQXTn	PPL-AP-4-MPO-ALL-B	Plenum UQGQBPBF8 Dual-Rated (OFNR/LSZH) URGQBPBF8	1x MPO12 APC	4x MMS1V-00	1x 200G DR2

* Trunk cables have a ruggedized sheath with a larger o/d, protecting the cables when dressed into pathways.
 Due to the number of cables required, network cabinets should be selected with sufficient vertical space to support AI builds (see reference design).

■ Multimode Fiber OM4
■ Singlemode Fiber OS2

For 8-fiber systems n = Number of fibers in trunk - Select 8=8, R=16, F=24, S=32, H=48, U=64, K=72, L=96, M=144, N=192



* Detailed information about Propel polarity schemes can be found [here](#).

Interactive Content Menu												
Ethernet and InfiniBand Applications	Gen AI Key Solutions	Direct Connect Cabling	800G/400G Parallel Applications	800G/400G Serial Applications	800G - 4x 200G Parallel Applications	400G - 2x 200G Parallel Applications	Shuffle Architectures	Fiber Polarity Schemes	CommScope Rapid Fiber Connect™	CommScope Propel Solutions	SYSTIMAX Copper Solutions	CommScope FiberGuide

Reference Design Menu					
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Compute Cabinet	Compute to Management Cabinets	Admin Network	Compute Cabinet	Compute to Management Cabinets	Admin Network

Parallel-to-Parallel Optical Ports

200G Switch to 200G Switch or Node

End A					CommScope® Products					End B		
NVIDIA Transceiver	Bandwidth	Fiber Type	Transceiver Interface	Reach	Array Base Code	Adapter Pack	Trunk*	Adapter Pack	Array Base Code	Transceiver Interface	NVIDIA Transceiver	Bandwidth
MMA1T00-VS (Ethernet) MMA1T00-HS (InfiniBand)	1x 200G SR4	OM4	1x MPO12 UPC	100 m	Plenum OM4 - UQXQVQPF8 Dual-Rated (ORNR/LSZH) - OM4 - URXQVQPF8	PPL-AP-4-MPO-ALL-B	Plenum OM4 - UGXQZQZTn CPR B2 _{CA} OM4 - U3XQZQZTn Dual-Rated (ORNR/LSZH) - OM4 - UJXQZQZTn	PPL-AP-4-MPO-ALL-B	Plenum OM4 - UQXQVQPF8 Dual-Rated (ORNR/LSZH) - OM4 - URXQVQPF8	1x MPO12 UPC	MMA1T00-VS (Ethernet) MMA1T00-HS (InfiniBand)	1x 200G SR4

* Trunk cables have a ruggedized sheath with a larger o/d, protecting the cables when dressed into pathways. Due to the number of cables required, network cabinets should be selected with sufficient vertical space to support AI builds (see reference design).

■ Multimode Fiber OM4

For 8-fiber systems n = Number of fibers in trunk - Select 8=8, R=16, F=24, S=32, H=48, U=64, K=72, L=96, M=144, N=192



* Detailed information about Propel polarity schemes can be found [here](#).

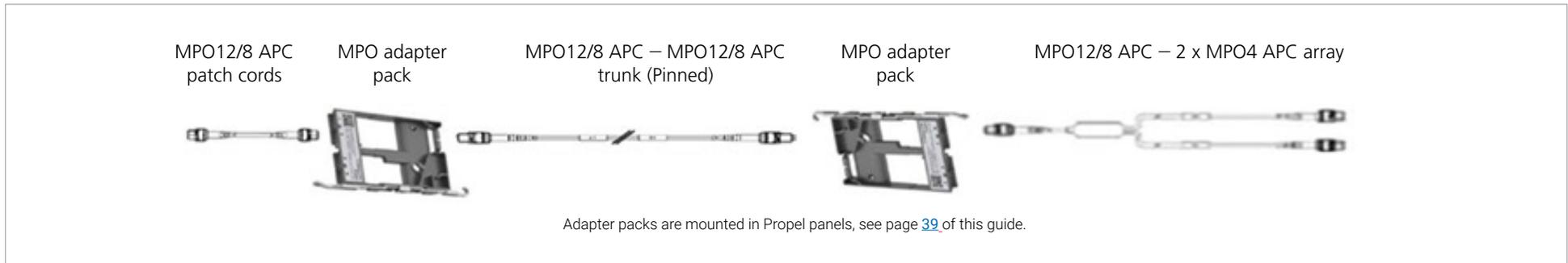
Parallel-to-Parallel Optical Ports

End A					CommScope® Products					End B		
NVIDIA Transceiver	Bandwidth	Fiber Type	Transceiver Interface	Reach	Array Base Code	Adapter Pack	Trunk*	Adapter Pack	Array Base Code	Transceiver Interface	NVIDIA Transceiver	Bandwidth
MMA1Z00-NS400	400G - 2x 200G	OM4	1x MPO12 APC	50 m	Plenum OM4 - UQXQVQPF8 Dual-Rated (OFNR/LSZH) OM4 - URXQVQPF8	PPL-AP-4-MPO-ALL-B	Plenum OM4 - UGXQZQZT8 CPR B2_{CA} OM4 - U3XQZQZTM Dual-Rated (OFNR/LSZH) OM4 - UJXQZQZT8	PPL-AP-4-MPO-ALL-B	Plenum OM4 - UQXQVBVF8 Dual-Rated (OFNR/LSZH) OM4 - URXQVBVF8	1x MPO12/4 APC	2x MMA1Z00-NS400	2x 200G SR2
MMS4X00-NS	400G - 2x200G	OS2	1x MPO12 APC	100 m	Plenum UQGQPQPF8 Dual-Rated URGQPQPF8	PPL-AP-4-MPO-ALL-B	Plenum UGGQXQXTn CPR B2_{CA} U3GQXQXTn Dual-Rated (OFNR/LSZH) UJGQXQXTn	PPL-AP-4-MPO-ALL-B	Plenum UQGQBPBF8 Dual-Rated URGQBPBF8	2x MPO12/4 UPC	MMA1T00-VS (ENET only)	2x 200G DR2

* Trunk cables have a ruggedized sheath with a larger o/d, protecting the cables when dressed into pathways. Due to the number of cables required, network cabinets should be selected with sufficient vertical space to support AI builds (see reference design).

■ Multimode Fiber OM4
 ■ Singlemode Fiber OS2

For 8-fiber systems n = Number of fibers in trunk - Select 8=8, R=16, F=24, S=32, H=48, U=64, K=72, L=96, M=144, N=192



* Detailed information about Propel polarity schemes can be found [here](#).

Interactive Content Menu												
Ethernet and Infraband Applications	Gen AI Key Solutions	Direct Connect Cabling	800G/400G Parallel Applications	800G/400G Serial Applications	800G - 4x 200G Parallel Applications	400G - 2x 200G Parallel Applications	Shuffle Architectures	Fiber Polarity Schemes	CommScope Rapid Fiber Connect™	CommScope Propel Solutions	SYSTIMAX Copper Solutions	CommScope FiberGuide

Reference Design Menu					
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Shuffle Architectures

In today's high-density AI data centers, shuffling optical fibers between GPUs and the leaf layer is a foundational technique for building large-scale, high-performance AI clusters. Instead of connecting each GPU to a single switch fabric plane, optical lane shuffling deliberately distributes lanes across switches and multiple planes, unlocking scale, resiliency and performance—meaning that higher GPU clusters can be enabled with just 2 tiers of switching.

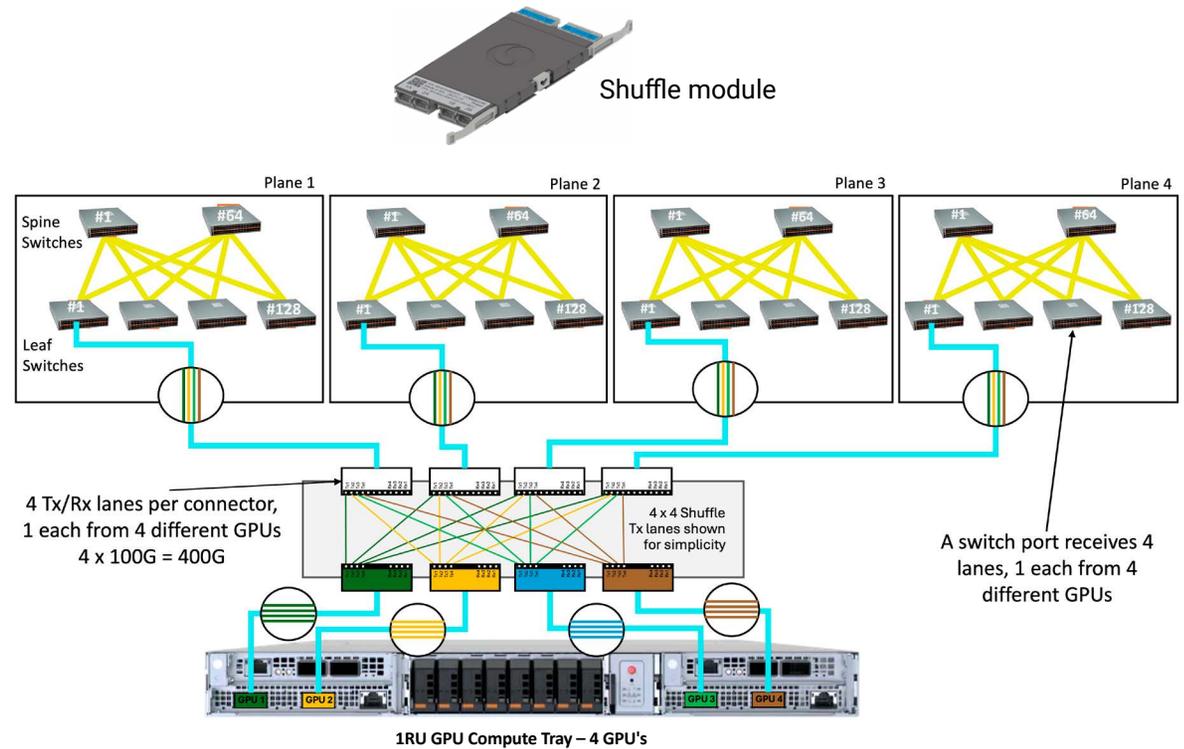
Shuffle architecture provides full capacity between network layers by evenly distributing it across multiple physical paths.

The reference graphic shows 400G using 4 x 100G lanes. Each leaf switch receives 400G from the GPUs with 100G from each of the GPUs (shown with color coding).

Distributing optical lanes from each GPU across multiple switch ports creates true multi-pathing from one GPU to another, enabling improved load balancing as traffic can now be spread across multiple planes and switch ports. Shuffling supports higher and sustained throughput of larger AI workloads, since there is no longer dependence on a single fiber channel or switch port. Also, if there is a switch or port failure, the network stays up. Three quarters of the workload is rerouted to the optimal physical path; only the affected ports operate at a slightly reduced throughput.

Optical shuffling can be achieved via a number of different solutions, including shuffle modules, shuffle panels or shuffle cables. The choice of solution is driven by the architectural requirements of the AI network being deployed. More information is available by contacting your local CommScope® technical team.

Shuffle Architecture – Compute Ports



Interactive Content Menu												
Ethernet and InfiniBand Applications	Gen AI Key Solutions	Direct Connect Cabling	800G/400G Parallel Applications	800G/400G Serial Applications	800G – 4x 200G 200G – 200G Parallel Applications	400G – 2x 200G Parallel Applications	Shuffle Architectures	Fiber Polarity Schemes	CommScope Rapid Fiber Connect™	CommScope Propel Solutions	SYSTIMAX Copper Solutions	CommScope FiberGuide

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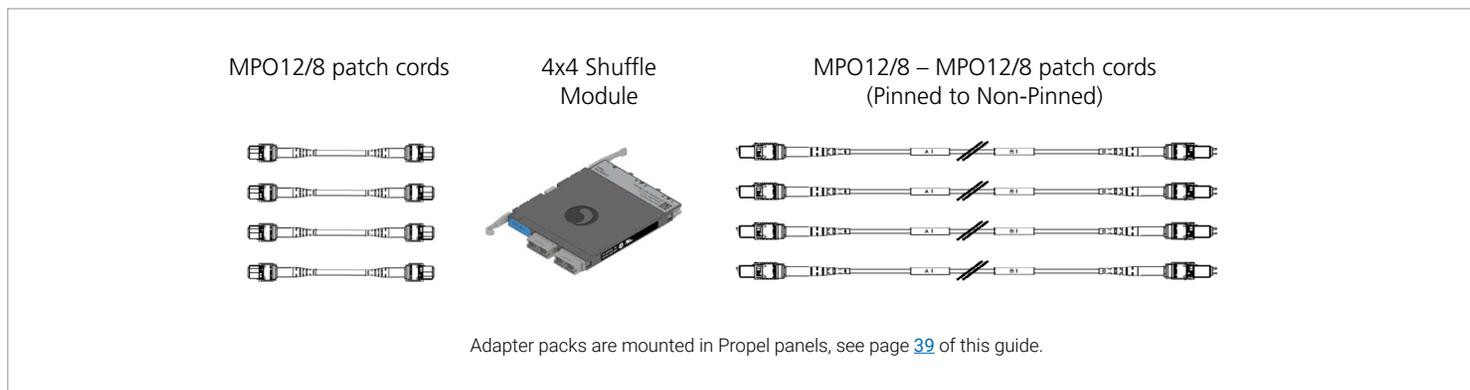
End A					CommScope® Products			End B		
NVIDIA Transceiver	Bandwidth	Fiber Type	Transceiver Interface	Reach	Array Base Code	4x4 Mesh Module	Array Base Code	Transceiver Interface	NVIDIA Transceiver	Bandwidth
MMS1V00-WM	1x 400G DR4	OS2	1x MPO12 APC	500 m	Plenum UQGQPQPF8 Dual-Rated (ORNR/LSZH) URGQPQPF8	PPL-MM-8AU-8AP-SM-BEU	Plenum UQGQXPQF8 Dual-Rated (OFNR/LSZH) UQGQXPQF8	1x MPO12 APC	MMS1V00-WM (500 m)	1x 400G DR4
								1x MPO12 APC	MMS4X00-NS400 (100 m)	1x 400G DR4
								1x MPO12 APC	MMS1X00-NS400 (100 m)	1x 400G DR4

* Trunk cables have a ruggedized sheath with a larger o/d, protecting the cables when dressed into pathways. Due to the number of cables required, network cabinets should be selected with sufficient vertical space to support AI builds (see reference design).

■ Singlemode OS2

y = Number of MPO ports per module - Select 4, 8, or 12
 n = Number of fibers in trunk - Select 8=8, R=16, F=24, S=32, H=48, U=64, K=72, L=96, M=144, N=192

Note: Adapter packs and mesh modules are mounted in Propel panels, see page 39 of this guide



* Detailed information about Propel polarity schemes can be found [here](#).

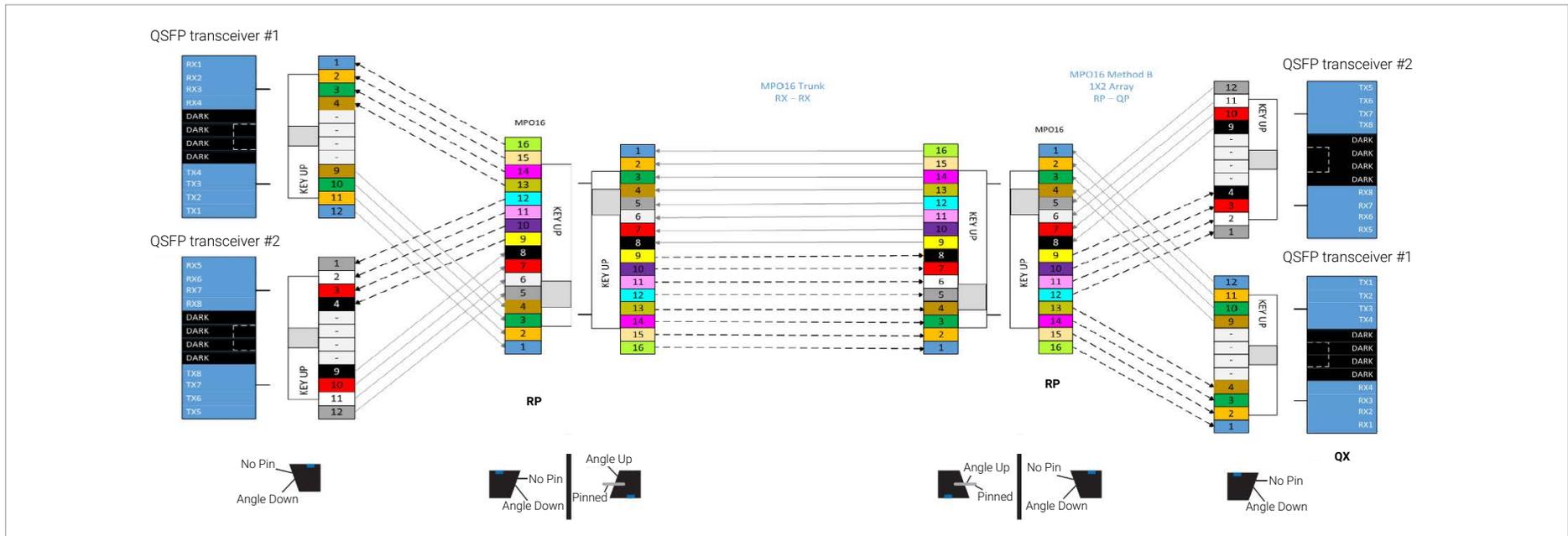
Note: There are many different approaches and solutions to support a shuffle architecture, contact your CommScope representative for advice and available solutions.

Interactive Content Menu												
Ethernet and InfriniBand Applications	Gen AI Key Solutions	Direct Connect Cabling	800G/400G Parallel Applications	800G/400G Serial Applications	800G - 4x 200G 200G - 200G Parallel Applications	400G - 2x 200G Parallel Applications	Shuffle Architectures	Fiber Polarity Schemes	CommScope Rapid Fiber Connect™	CommScope Propel Solutions	SYSTIMAX Copper Solutions	CommScope FiberGuide

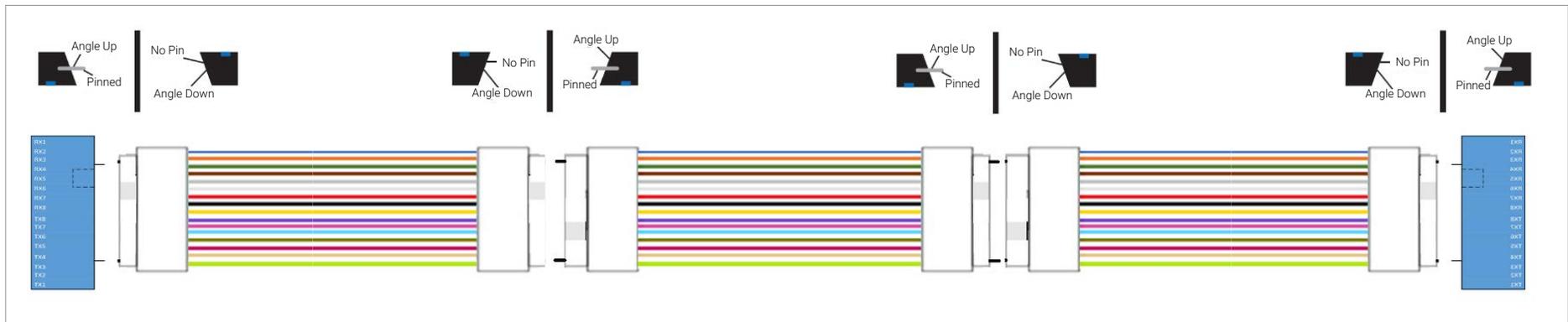
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Fiber Polarity Schemes

2x MPO12/8 APC to 2x MPO12/8 APC, using an MPO16 APC backbone trunk cable (See Page 19 for cabling and transceiver information).



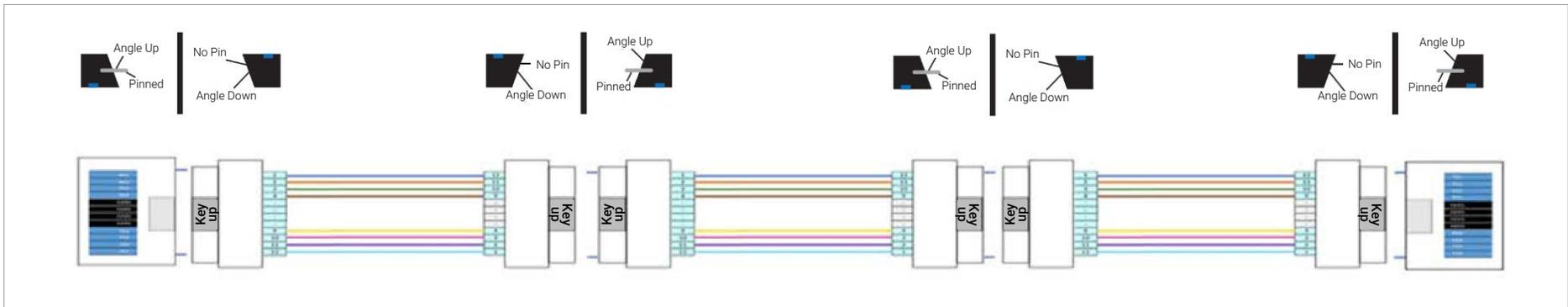
1x MPO16 APC to 1x MPO16 APC, using an MPO16 APC backbone trunk cable (See Page 20 for cabling and transceiver information).



Interactive Content Menu												
Ethernet and Infraband Applications	Gen AI Key Solutions	Direct Connect Cabling	800G/400G Parallel Applications	800G/400G Serial Applications	800G - 4x 200G Parallel Applications	400G - 2x 200G Parallel Applications	Shuffle Architectures	Fiber Polarity Schemes	CommScope Rapid Fiber Connect™	CommScope Propel Solutions	SYSTIMAX Copper Solutions	CommScope FiberGuide

Reference Design Menu					
NVIDIA NVL72 GB200/GB300 288 GPU POD Reference Design			NVIDIA NVL72 GB200/GB300 1,152 GPU Scalable Unit Reference Design		
Compute Cabinet	Compute to Management Cabinets	Admin Network	Compute Cabinet	Compute to Management Cabinets	Admin Network

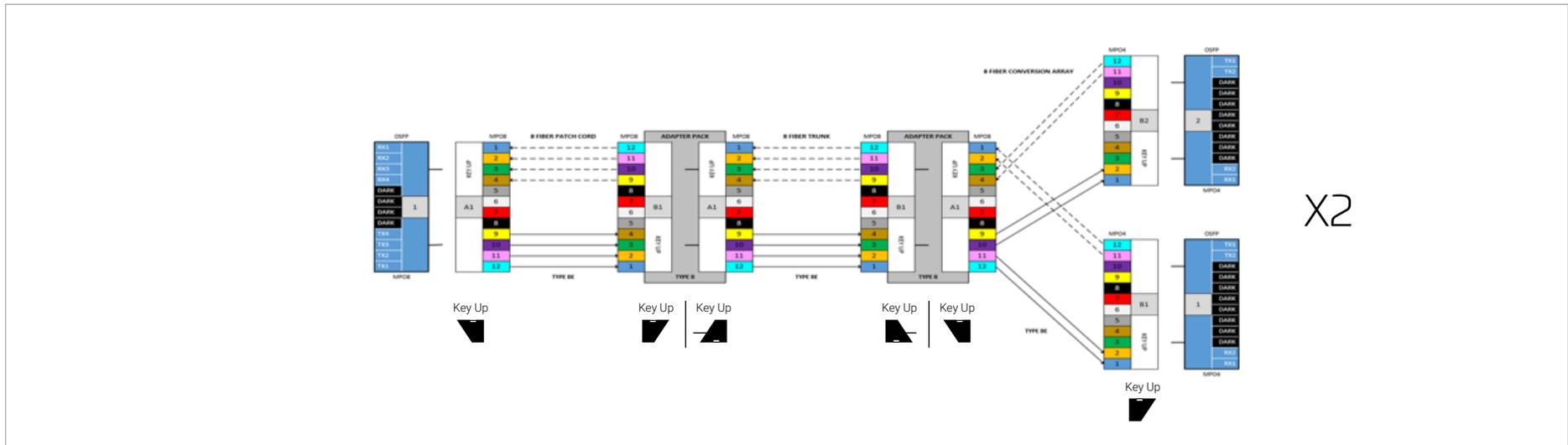
1x MPO12/8 APC to 1x MPO12/8 APC, using an MPO12/8 APC backbone trunk cable (See Page 15 for cabling and transceiver information).



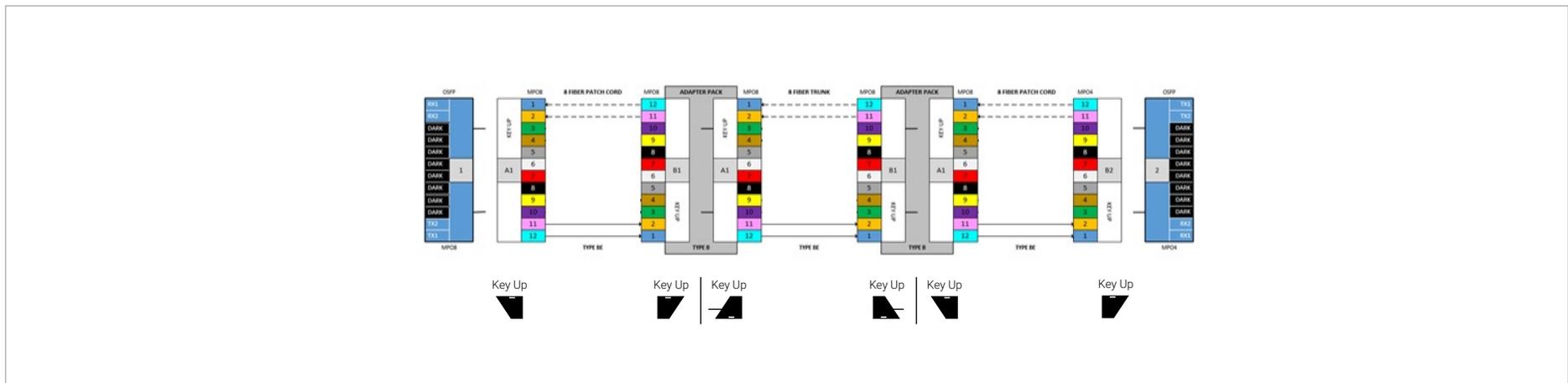
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Ethernet and Infraband Applications	Gen AI Key Solutions	Direct Connect Cabling	800G/400G Parallel Applications	800G/400G Serial Applications	800G - 4x 200G 200G - 200G Parallel Applications	400G - 2x 200G Parallel Applications	Shuffle Architectures	Fiber Polarity Schemes	CommScope Rapid Fiber Connect™	CommScope Propel Solutions	SYSTIMAX Copper Solutions	CommScope FiberGuide

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Compute Cabinet	Compute to Management Cabinets	Admin Network	Compute Cabinet	Compute to Management Cabinets	Admin Network

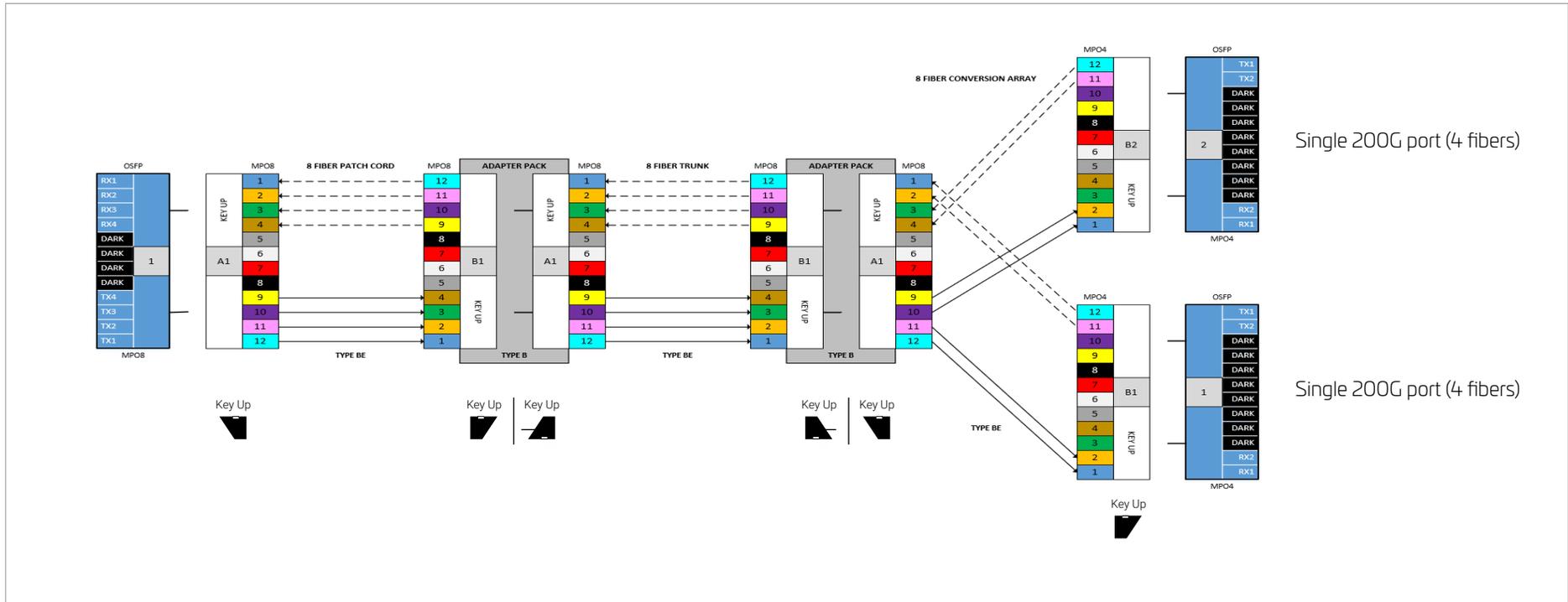
2x MPO12/8 APC to 4x MPO12/8 UPC, using 2x MPO12/8 APC backbone trunk cables (See Page 21 for cabling and transceiver information).



1x MPO12/8 UPC to 1x MPO12/8 UPC, using an MPO12/8 APC backbone trunk cable (See Page 22 for cabling and transceiver information).



1x MPO12/8 APC to 2x MPO12/4 UPC, using an MPO12/8 APC backbone trunk cable (See Page 23 for cabling and transceiver information).



Interactive Content Menu												
Ethernet and InfiniBand Applications	Gen AI Key Solutions	Direct Connect Cabling	800G/400G Parallel Applications	800G/400G Serial Applications	800G - 4x 200G Parallel Applications	400G - 2x 200G Parallel Applications	Shuffle Architectures	Fiber Polarity Schemes	CommScope Rapid Fiber Connect™	CommScope Propel Solutions	SYSTIMAX Copper Solutions	CommScope FiberGuide

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Fiber System Performance

Why is ultra-low loss important for AI networks?

Throughout this guide, you will find a variety of options for cabling implementation. In common, across each pre-terminated design, is CommScope® ULL connector end-face and system performance. Regardless of your organization’s data center needs, ULL assists migration to higher data-rate applications as needed. This level of performance provides longer distance support, additional connection flexibility, or both, in multi-mode OM4, and single-mode. As your data center speeds grow beyond 10G to 100G, 400G and beyond, applications are more sensitive and fiber connector performance is critical. CommScope ULL delivers!

CommScope’s ULL High Speed Migration portfolio uses industry standard Method B polarity, the simplest method for migration between duplex and parallel fiber cabling applications, along with CommScope Method B Enhanced polarity within the modules to simplify design, installation, and testing further.

ULL - Ultra Low Loss Features

Method B Enhanced modules

- 24-, 16-, 12-, or 8-fiber MPO rear connectors with duplex or MPO front
- No mixing or flipping of components needed to achieve polarity (Tx-Rx)
- Same module on each end of link—simplifies bill of material and designs
- Patch panel options to provide manageable high density for your environment

Pinned (male) MPO trunk cables

- Enable unpinned (female-female) patch cords throughout
- Simplifies installation and connections to active equipment

Singlemode and multimode cable options

- Support multi-wavelength and traditional applications
- Flexibility for your network architecture, TCO model, and network electronics choices

Multimedia Resources

- [Ultra low-loss fiber connectivity solutions: the best way to support higher speeds in your DC](#)
- [CommScope Method B Enhanced fiber polarity simplifies High-Speed Migration](#)
- [High-Speed Migration – Bandwidth without boundaries](#)

Brochure

- [Data Center High-Speed Migration: Infrastructure issues, trends, drivers, and recommendations](#)

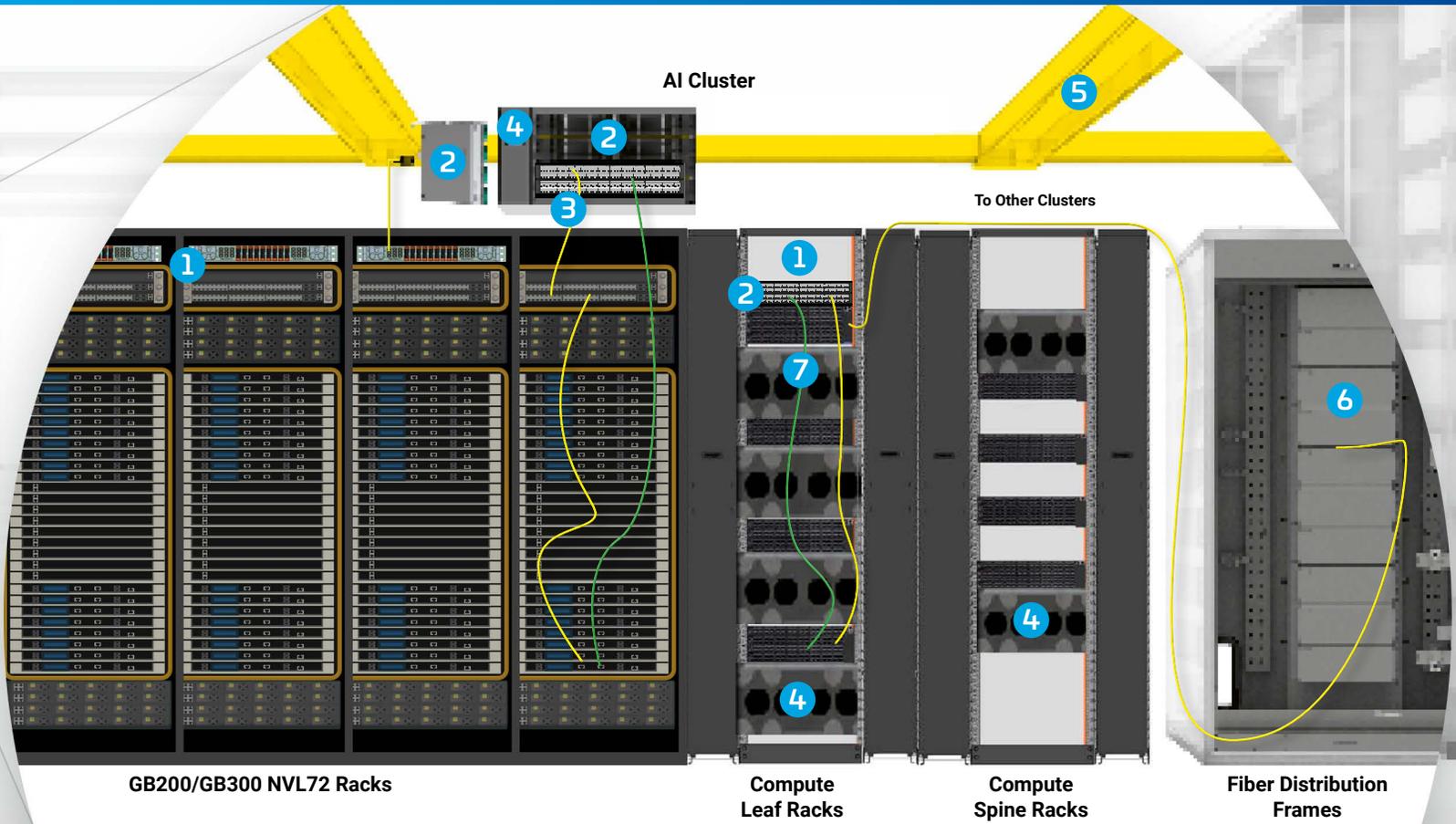
Tools and Calculators

- [Ultra Low Loss Fiber Performance Calculator](#)

Interactive Content Menu												
Ethernet and InfiniBand Applications	Gen AI Key Solutions	Direct Connect Cabling	800G/400G Parallel Applications	800G/400G Serial Applications	800G – 4x 200G 200G – 200G Parallel Applications	400G – 2x 200G Parallel Applications	Shuffle Architectures	Fiber Polarity Schemes	CommScope Rapid Fiber Connect™	CommScope Propel Solutions	SYSTIMAX Copper Solutions	CommScope FiberGuide

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CommScope Key Solution Set for Gen AI



GB200/GB300 NVL72 Racks

Compute Leaf Racks

Compute Spine Racks

Fiber Distribution Frames



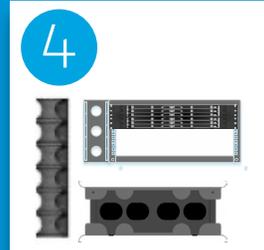
Rapid Fiber Connect™ Solution



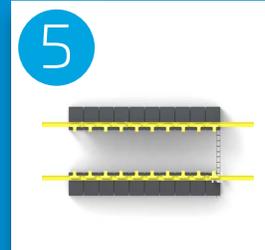
Propel Fiber Panels



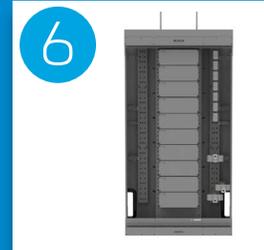
Propel Cable Assemblies



CommScope Cable Management Solutions



CommScope FiberGuide



CommScope Fiber Distribution Frames



SYSTIMAX Copper Cabling Solutions

Interactive Content Menu

Ethernet and Infraband Applications	Gen AI Key Solutions	Direct Connect Cabling	800G/400G Parallel Applications	800G/400G Serial Applications	800G - 4x 200G 200G - 200G Parallel Applications	400G - 2x 200G Parallel Applications	Shuffle Architectures	Fiber Polarity Schemes	CommScope Rapid Fiber Connect™	CommScope Propel Solutions	SYSTIMAX Copper Solutions	CommScope FiberGuide
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Rapid Fiber Connect™ Platform

Engineered for AI. Built for Scale.

CommScope's stackable, plug-and-play, high-density Rapid Fiber Connect™ platform accelerates deployment and scale-out of GPU rack-scale systems and AI network fabrics. It simplifies integration, reduces risk and supports the exponential growth of fiber connections in AI data centers.

The Rapid Fiber Connect™ platform includes:

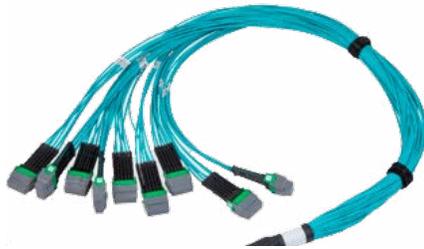
Rapid Fiber Connect™ panel for GPU cabinets



Rapid Fiber Connect™ panel for switch cabinets



Trunk cable to connect panels



For AI data centers, the Rapid Fiber Connect™ platform accelerates deployments by enabling:

- Offsite integration and testing of rack-scale systems
- Connecting GPU cabinet to leaf switches inside a POD
- Connecting AI PODs to build out a large AI cluster

Optimized for common GPU rack-scale systems such as NVL72 cabinets, the Rapid Fiber Connect™ platform enables pre-cabling during the assembly stage. Mass Insert trunks enable fast and efficient connections between racks on the data center site—from GPU racks to leaf switch cabinets within a POD, and outside the POD to spine or core switches.

The Rapid Fiber Connect™ platform is built to support thousands of GPU servers by facilitating faster turn-up, reducing labor skill requirements, delivering reliable offsite-tested operation and providing seamless day 2 refresh cycles that enable the reuse of trunk cables.

Rapid Fiber Connect™ panels key features		
Feature	Rapid Fiber Connect™ panel for GPU cabinets	Rapid Fiber Connect™ panel for switch cabinets
Optimized for	NVL72	Switch cabinets (leaf/spine/core)
Fiber type	MM	MM (within POD) and SM (between PODs)
Rack space	1RU	1RU (can be stacked)
Maximum fiber capacity	960 fibers	1,728 fibers
Access type	Front access only	Front and rear access
Front connections	MPO pigtails for GPU, CPU, spares Mass Insert MMC connectors for trunk cable	MPO pigtails into switches, spares
Rear connections	None	Mass Insert MMC connectors for trunk cable

Trunk cable constructed with Mass Insert MMC connectors to make connection in between racks: available in SM and MM, in different lengths and fiber counts matching the specific application.

For more details contact a CommScope representative.

Interactive Content Menu												
Ethernet and Infraband Applications	Gen AI Key Solutions	Direct Connect Cabling	800G/400G Parallel Applications	800G/400G Serial Applications	800G – 4x 200G Parallel Applications	400G – 2x 200G Parallel Applications	Shuffle Architectures	Fiber Polarity Schemes	CommScope Rapid Fiber Connect™	CommScope Propel Solutions	SYSTIMAX Copper Solutions	CommScope FiberGuide

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Propel™ Fiber Cabling Platform

Propel high-density panels are designed to adapt and grow as your needs change. Like all Propel components, the panels are completely modular and interchangeable. They support 16-fiber connectivity and up to 144 LC-connected fibers per RU—giving you the flexibility and density to smoothly advance to 400Gb, 800Gb, and beyond.

Propel panels incorporate unique design features that make them faster to deploy and easier to manage than older-generation panels. For example, panel blades can be removed with one hand for easier maintenance and changes by a single technician. When inserted, the blades lock in place on both sides to provide more secure patching. A re-designed rear cable management system allows more cable to be securely stored and attached.

At the same time, each panel is highly versatile. Module and adapter pack sizes can be scaled or mixed in each panel or blade.

Material ID	Product Number	Description	Height (in/mm)	Width (in/mm)	Depth (in/mm)	Weight (lbs/kg)	Density
760252002	PPL-1U	Propel 1RU sliding panel	1.75/44	19/483	18.52/470	11.7/5.3	72 duplex LC, 72 MPO, 144 SN
760252003	PPL-2U	Propel 2RU sliding panel	3.50/89	19/483	18.52/470	17.3/7.9	144 duplex LC, 144 MPO, 288 SN
760252004	PPL-4U	Propel 4RU sliding panel	7.00/178	19/483	18.52/470	30.5/13.8	288 duplex LC, 288 MPO, 576 SN
760255953	PPL-1U-W	PPL-1U Propel 1RU white sliding panel	1.75/44	19/483	18.52/470	11.7/5.3	72 duplex LC, 72 MPO, 144 SN
760255954	PPL-2U-W	PPL-2U Propel 2RU white sliding panel	3.50/89	19/483	18.52/470	17.3/7.9	144 duplex LC, 144 MPO, 288 SN
760255955	PPL-4U-W	PPL-4U Propel 4RU white sliding panel	7.00/178	19/483	18.52/470	30.5/13.8	288 duplex LC, 288 MPO, 576 SN



Modules and adapter packs per blade

Product Number	8-fiber modules/adapter packs	12-fiber modules/adapter packs	16-fiber modules/adapter packs	24-fiber modules/adapter packs
PPL-1U	Up to 6 per blade/18 per panel	Up to 4 per blade/12 per panel	Up to 3 per blade/9 per panel	Up to 2 per blade/6 per panel
PPL-2U	Up to 6 per blade/36 per panel	Up to 4 per blade/24 per panel	Up to 3 per blade/18 per panel	Up to 2 per blade/12 per panel
PPL-4U	Up to 6 per blade/72 per panel	Up to 4 per blade/48 per panel	Up to 3 per blade/36 per panel	Up to 2 per blade/24 per panel



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Ethernet and InfiniBand Applications	Gen AI Key Solutions	Direct Connect Cabling	800G/400G Parallel Applications	800G/400G Serial Applications	800G - 4x 200G Parallel Applications	400G - 2x 200G Parallel Applications	Shuffle Architectures	Fiber Polarity Schemes	CommScope Rapid Fiber Connect™	CommScope Propel Solutions	SYSTIMAX Copper Solutions	CommScope FiberGuide

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Propel ULL Trunk Cables

Propel trunk cables are supplied with a fastening clip for panel mounting

Propel pulling elements (pulling grip) enable a pulling force of up to 100 lbs (45 kg)

Pre-assembled and tested with test protocol

Polarity method: Method B Enhanced



MPO12/8 Trunk Cables

1 U	2 G	3 X	4 Q	5 X	6 Q	7 X	8 T	9 8	10 -	11 M	12 K	13 F	14-16 O10
Construction type U Ultra-Low Loss	Cable family 3 Trunk, LSZH CPR B2ca G Trunk, Plenum J Trunk, Dual-Rated (OFNR/LSZH)	Fiber type X OM4 multi-mode G Single-mode (A2)	Connector 1 QX 8f MM UPC MPO (Pinned) QZ 8f MPO MM APC (Pinned) QX 8f MPO SM APC (Pinned)	Connector 2 QX 8f MM UPC MPO (Pinned) QZ 8f MPO MM APC (Pinned) QX 8f MPO SM APC (Pinned)	Cordage size T 8f PmP Trunk, 2.0mm SU	Fiber count 8 8-fiber R 16-fiber S 32-fiber H 48-fiber U 64-fiber L 96-fiber Q 128-fiber M 144-fiber N 192-fiber	Color M OM4 Aqua J Yellow OS2	Breakout length J 22" Break Propel No Pull Grip K 22" Break Propel Pull Grip	UOM F Feet M Meter	Length 010-999 ft 003-305 m			

Propel ULL Array Cables

MPO/LC Uniboot breakout cable with 2 mm breakout construction for mechanical strength

Pre-assembled and tested with test protocol



MPO12/8 MPO/LC Array Cords

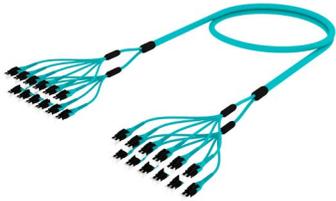
1 U	2 Q	3 X	4 Q	5 P	6 L	7 U	8 F	9 8	10 -	11 M	12 D	13 F	14-16 003
Construction type U Ultra-Low Loss	Cable family Q Plenum Array R Dual-Rated (OFNR/LSZH)	Fiber type X OM4 multi-mode G Single-mode (A2)	Connector 1 QP 8f MPO MM UPC (Non-Pinned) QX 8f MPO MM UPC (Pinned) QV 8f MPO MM APC (Non-Pinned) QZ 8f MPO MM APC (Pinned) QP 8f MPO MM APC (Non-Pinned) QX 8f MPO SM APC (Pinned)	Connector 2 LU LC Uniboot	Cordage size F 8f PmP Array Cord, 2mm	Fiber count 8 8-fiber	Color M OM4 Aqua J Yellow OS2	Breakout length D 12" E 24" H 48" L 72"	UOM F Feet M Meter	Length 12 in 3-999 ft 24 in 4-999 ft 48 in 6-999 ft 72 in 8-999 ft 12 in 1-305 m 24-48 in 2-305 m 72 in 3-305 m			

Interactive Content Menu

Ethernet and Infraband Applications	Gen AI Key Solutions	Direct Connect Cabling	800G/400G Parallel Applications	800G/400G Serial Applications	800G - 4x 200G Parallel Applications	400G - 2x 200G Parallel Applications	Shuffle Architectures	Fiber Polarity Schemes	CommScope Rapid Fiber Connect™	CommScope Propel Solutions	SYSTIMAX Copper Solutions	CommScope FiberGuide
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Compute Cabinet	Compute to Management Cabinets	Admin Network	Compute Cabinet	Compute to Management Cabinets	Admin Network



MPO12/8 Patch Cords

1 U	2 Q	3 X	4 Q	5 P	6 Q	7 P	8 F	9 8	10 -	11 M	12 A	13 F	14-16 010
Construction type U Ultra-Low Loss	Cable family Q Plenum Array R Dual-Rated (OFNR/LSZH)	Fiber type X OM4 multi-mode G Single-mode (A2)	Connector 1 QP 8f MM UPC MPO (Non-Pinned) QV 8f MPO MM APC (Non-Pinned) QP 8f MPO SM APC (Non-Pinned)		Connector 2 QP 8f MM UPC MPO (Non-Pinned) QV 8f MPO MM APC (Non-Pinned) QP 8f MPO SM APC (Non-Pinned)		Cordage size F 8f PmP Array Cord, 2mm	Fiber count 8 8-fiber	Color M OM4 Aqua J Yellow OS2		Breakout length A No gland	UOM F Feet M Meter	Length 003-999 ft 001-305 m

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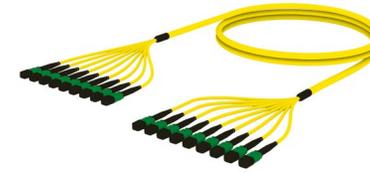
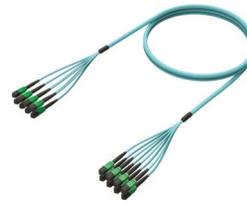
Propel ULL Trunk Cables

Propel trunk cables are supplied with a fastening clip for panel mounting

Propel pulling elements (pulling grip) enable a pulling force of up to 100 lbs (45 kg)

Pre-assembled and tested with test protocol

Polarity method: Method B Enhanced



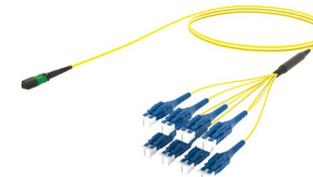
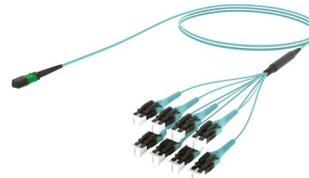
MPO16 APC Trunk Cables

1 U	2 G	3 X	4 R	5 Z	6 R	7 Z	8 8	9 R	10 -	11 M	12 J	13 F	14-16 010
Construction type U Ultra-Low Loss	Cable family 3 Trunk, BZ _{CA} Trunk, Plenum G Trunk, Dual-Rated (OFNR/LSZH) J	Fiber type X OM4 multi-mode G Single-mode (A2)	Connector 1 RZ 16f MPO MM APC (Pinned) RX 16f MPO SM APC (Pinned)	Connector 2 RZ 16f MPO MM APC (Pinned) UC unconnectorized (Stub) RX 16f MPO SM APC (Pinned)	Cordage size 8 16f PmP Trunk, 3.0mm SU	Fiber count R 16-fiber S 32-fiber H 48-fiber U 64-fiber L 96-fiber Q 128-fiber M 144-fiber N 192-fiber	Color M OM4 Aqua J SM Yellow	Breakout length J 22" Break Propel No Pull Grip K 22" Break Propel Pull Grip	UOM F Feet M Meter	Length 010-999 ft 003-305 m			

Propel ULL Array Cables

MPO/LC Uniboot breakout cable with 2 mm breakout construction for mechanical strength

Pre-assembled and tested with test protocol



MPO16 APC/LC Duplex UPC Array Cords

1 U	2 Q	3 X	4 R	5 V	6 L	7 U	8 7	9 R	10 -	11 M	12 D	13 F	14-16 003
Construction type U Ultra-Low Loss	Cable family Q Plenum Array R Dual-Rated (OFNR/LSZH)	Fiber type X OM4 multi-mode G Single-mode (A2)	Connector 1 RV 16f MPO MM APC (Non-Pinned) RZ 16f MPO MM APC (Pinned) RP 16f MPO SM APC (Non-Pinned) RX 16f MPO SM APC (Pinned)	Connector 2 LU LC Uniboot	Cordage size 7 16f PmP Array Cord, 3mm	Fiber count R 16-fiber	Color M OM4 Aqua J Yellow	Breakout length D 12" E 24" H 48" L 72"	UOM F Feet M Meter	Length 12 in 3-999 ft 24 in 4-999 ft 48 in 6-999 ft 72 in 8-999 ft 12 in 1-305 m 24-48 in 2-305 m 72 in 3-305 m			

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Ethernet and Infraband Applications	Gen AI Key Solutions	Direct Connect Cabling	800G/400G Parallel Applications	800G/400G Serial Applications	800G - 4x 200G Parallel Applications	400G - 2x 200G Parallel Applications	Shuffle Architectures	Fiber Polarity Schemes	CommScope Rapid Fiber Connect™	CommScope Propel Solutions	SYSTIMAX Copper Solutions	CommScope FiberGuide
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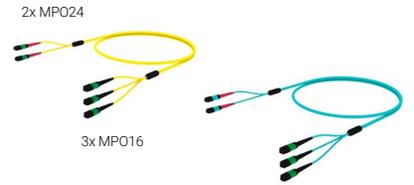
MPO16 1x2 Conversion Array Cords

1 U	2 Q	3 X	4 R	5 V	6 Q	7 P	8 7	9 R	10 -	11 M	12 D	13 F	14-16 003
Construction type U Ultra-Low Loss	Cable family R Dual-Rated (OFNR/LSZH) Q Plenum Array	Fiber type X OM4 multi-mode G Single-mode (A2)	Connector 1 RV 16f MPO MM APC (Non-Pinned) RP 16f MPO SM APC (Non-Pinned)	Connector 2 QP 8f MPO MM UPC (Non-Pinned) QV 8f MPO MM APC (Non-Pinned) QP 8f MPO SM APC (Non-Pinned)	Cordage size 7 16f PmP Array Cord, 3mm	Fiber count R 16-fiber	Color M OM4 Aqua J Yellow OS2	Breakout length D 12' E 24' H 48' L 72'	UOM F Feet M Meter	Length 12 in 3-999 ft 24 in 4-999 ft 48 in 6-999 ft 72 in 8-999 ft 12 in 1-305 m 24-48 in 2-305 m 72 in 3-305 m			



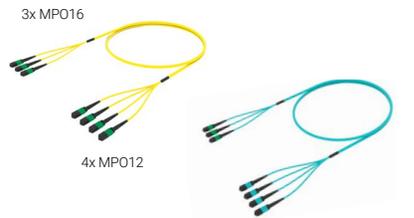
MPO16 2x3 Conversion Array Cords

1 U	2 Q	3 X	4 2	5 P	6 R	7 V	8 B	9 H	10 -	11 M	12 D	13 F	14-16 003
Construction type U Ultra-Low Loss	Cable family R Dual-Rated (OFNR/LSZH) Q Plenum Array	Fiber type X OM4 multi-mode G TeraSpeed SM 6.657 A2	Connector 1 2P 24f MPO MM (Non-Pinned) 2X 24f MPO MM (Pinned)	Connector 2 RV 16f MPO APC (Non-Pinned)	Cordage size B 24f PmP Array Cord, 3.6mm	Fiber count H 48-fiber	Color M Aqua J Yellow	Breakout length D 12' No Gland E 24' No Gland H 48' No Gland L 72' No Gland	UOM F Feet M Meter	Length 004-999 ft 002-305 m			



MPO16 3x4 Conversion Array Cords

1 U	2 Q	3 X	4 R	5 V	6 M	7 P	8 A	9 H	10 -	11 M	12 D	13 F	14-16 003
Construction type U Ultra-Low Loss	Cable family R Dual-Rated (OFNR/LSZH) Q Plenum Array	Fiber type X OM4 multi-mode G TeraSpeed SM 6.657 A2	Connector 1 RV 16f MPO MM APC (Non-Pinned) RP 16f MPO SM APC (Non-Pinned)	Connector 2 MP 12f MPO MM UPC (Non-Pinned) MX 12f MPO (Pinned)	Cordage size A 12f PmP Array Cord, 3mm	Fiber count H 48-fiber	Color M Aqua	Breakout length D 12' No Gland E 24' No Gland H 48' No Gland L 72' No Gland	UOM F Feet M Meter	Length 004-999 ft 002-305 m			



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Ethernet and Infraband Applications	Gen AI Key Solutions	Direct Connect Cabling	800G/400G Parallel Applications	800G/400G Serial Applications	800G - 4x 200G 200G - 200G Parallel Applications	400G - 2x 200G Parallel Applications	Shuffle Architectures	Fiber Polarity Schemes	CommScope Rapid Fiber Connect™	CommScope Propel Solutions	SYSTIMAX Copper Solutions	CommScope FiberGuide

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Cable Management

Cable Management	Description Code	Part Number
Overlength storage, 5U		1671711-1
Horizontal cable trough, 2U, single sided	HKT-19-SS-2U	760072959
Horizontal cable trough, 3U, single sided	HKT-19-SS-3U	760072967
Cable Manager 1U		1671495-1
Cable Manager 2U		1671495-2
Cable Manager 4U		1671495-4
Cable Manager 6U		1671495-6
Cable Manager 15U		1-1671495-5
Filler/Blank Panel, 1U x 19 in, Solid, Black	FPANEL-19-1U	760162065
1U Patch cord Management – D ring style	HCM-19-SS-1U	760038240
2U Patch cord Management – D ring Style	HCM-19-SS-2U	760038257
Horizontal Trough Kit, 1 RU, 19 in, single sided	HTK-19-SS-1U	760072942
Horizontal Trough Kit, 2 RU, 19 in, single sided	HTK-19-SS-2U	760072959
Horizontal Trough Kit, 3 RU, 19 in, single sided	HTK-19-SS-3U	760072967



Blanking Panels	Description Code	Part Number
Blanking Panel, 1U, Black	CPP-FPANEL-19-1U	760162065
Blanking Panel, 2U, Black	CPP-FPANEL-19-2U	760162073
Blanking Panel, 3U, Black	CPP-FPANEL-19-3U	760162081

Vertical Cable Managers (VCM) Overhead

Material ID	Catalog number	Description
760158592	OVRHDRACKVCM	3 in (76 mm) Channel x 9.4 in (239 mm) H – 19 in (482.6 mm) Overhead Patch Panel Rack (4U) 3/8 Sq Punch, with Mini Vertical Cable Management, Black
760169599	OVRHDRACKVCM6	3 in (76 mm) Channel x 12.9 in (327.66 mm) H – 19 in (482.6 mm) Overhead Patch Panel Rack (6U) 3/8 Sq Punch, with Mini Vertical Cable Management, Black
760169607	OVRHDVCM6U	Mini Vertical Cable Management for Overhead Patch Panel Rack, 6U, black
760164061	OVRHDVCM4U	Mini Vertical Cable Management for Overhead Patch Panel Rack, 4U, black
760169581	OVRHDRACK6U	3 in (76 mm) Channel x 9.5 in (239 mm) H – 19 in (482.6 mm) Overhead Patch Panel Rack (6U) 3/8 Sq Punch, Black
760157800	OVRHDRACK4U	3 in (76 mm) Channel x 9.4 in (239 mm) H – 19 in (482.6 mm) Overhead Patch Panel Rack (4U) 3/8 Sq Punch, Black



Interactive Content Menu												
Ethernet and Infraband Applications	Gen AI Key Solutions	Direct Connect Cabling	800G/400G Parallel Applications	800G/400G Serial Applications	800G – 4x 200G 200G – 200G Parallel Applications	400G – 2x 200G Parallel Applications	Shuffle Architectures	Fiber Polarity Schemes	CommScope Rapid Fiber Connect™	CommScope Propel Solutions	SYSTIMAX Copper Solutions	CommScope FiberGuide

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NVIDIA NVL72 GB200/GB300 288 GPU POD Reference Design			NVIDIA NVL72 GB200/GB300 1,152 GPU Scalable Unit Reference Design		
Compute Cabinet	Compute to Management Cabinets	Admin Network	Compute Cabinet	Compute to Management Cabinets	Admin Network

SYSTIMAX[®] Copper Cabling Solutions

Description	Part Number		
M2400 1U Modular Panel, 24 port (MGS600 / MGS400 / UNJ10GT / UNJ10G / UNJ600 / UNJ500), Black	760118323 M2400-1U-GS		
M4800 1U Modular Panel, 48 port (MGS600 / MGS400 / UNJ10GT / UNJ10G / UNJ600 / UNJ500), Black	760105429 M4800-1U-GS		
M4800 Blank Kit, Black (50 ea/pkg)	760193409 M4800 Blank Kit		
GigaSPEED X10D® MGS600 to MGS600 on 1091B Cable Pre-terminated Cord Solid	White – CPCUUM2-88Mxxx Gray – CPCUUM2-3CMxxx Light Blue – CPCUUM2-2ZMxxx		Additional Color and Configuration options available with InstaPATCH® Cu connectivity system
GigaSPEED X10D MGS600 to MGS600 on 2091B Plenum Cable Pre-terminated Cord Solid	White – CPCUU02-88Mxxx Gray – CPCUU02-3CMxxx Light Blue – CPCUU02-2ZMxxx		
GigaSPEED X10D MGS600 to MGS600 on 3091B Low Smoke Zero Halogen Cable Pre-terminated Cord Solid	White – CPCUW2-88Mxxx Gray – CPCUW2-3CMxxx Light Blue – CPCUW2-2ZMxxx		
MiNo6A Cat 6A U/UTP Reduced Diameter RJ45 Patch Cord, LS-CM Dual Rated	White – C0199K2-08Mxxx Gray – C0199K2-03Mxxx Light Blue – C0199K2-02Mxxx		

Interactive Content Menu												
Ethernet and InfiniBand Applications	Gen AI Key Solutions	Direct Connect Cabling	800G/400G Parallel Applications	800G/400G Serial Applications	800G – 4x 200G Parallel Applications	400G – 2x 200G Parallel Applications	Shuffle Architectures	Fiber Polarity Schemes	CommScope Rapid Fiber Connect™	CommScope Propel Solutions	SYSTIMAX Copper Solutions	CommScope FiberGuide

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FiberGuide[®] System

A FiberGuide system in a Gen AI enabled data center is an essential system. Why? Because the power required by Generative AI operations does not match the sq meter/sq foot power and cooling systems that are supplied by a traditional data center, thus leading to highly distributed switching layers. Plus, today AI nodes are installed into cabinets that are constructed offsite, meaning that they are built separately to the data center (DC) backbone, and then simply rack-and-rolled into the required position on the DC floor.

The FiberGuide system offers a number of benefits to support this shift in DC design thinking. Firstly, in a complex build environment, it offers a dedicated pathway for high-speed optical fiber cabling. Secondly, it offers physical protection to the optical fiber as it transitions between the now highly disaggregated switch layers located in different areas of the DC (Figure 1). Finally, the FiberGuide system offers a perfect point to handoff backbone cabling to a demarcation point for the backbone cabling, in readiness for the rack-and-roll cabinets to quickly and simply be patched (Figure 2).

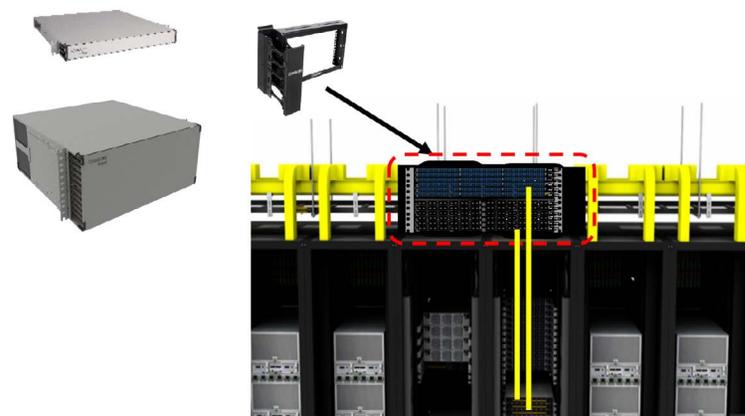


Figure 2: A 4U Propel panel with LC and MPO presentation housed in XTRA-U Aerial Holder.



Figure 1: Example Gen DC AI layout using the FiberGuide system. The switching layers have more physical separation than traditional designs, allowing for the power and cooling constraints of a traditional data center construction.

FiberGuide Design Pro is a software tool allowing DC Engineers to configure raceway architectures and visualize how alternative build options can support a specific network layout.

FiberGuide Design Pro Configurator Tool

CommScope® Technical Assistance Center (TAC) can answer FiberGuide and design tool questions.

Interactive Content Menu												
Ethernet and Infraband Applications	Gen AI Key Solutions	Direct Connect Cabling	800G/400G Parallel Applications	800G/400G Serial Applications	800G - 4x 200G 200G - 200G Parallel Applications	400G - 2x 200G Parallel Applications	Shuffle Architectures	Fiber Polarity Schemes	CommScope Rapid Fiber Connect™	CommScope Propel Solutions	SYSTIMAX Copper Solutions	CommScope FiberGuide

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The industry’s most comprehensive optical raceway system

The FiberGuide fiber management systems offer the greatest breadth of optical raceway products in the industry. FiberGuide systems add greater flexibility and drive down installation time to assist with a smooth deployment.

The FiberGuide raceway system is designed to protect and route fiber-optic patch cords, multi-fiber cable assemblies and intrafacility fiber cable (IFC) to and from fiber splice enclosures, fiber distribution frames and fiber-optic terminal devices. The FiberGuide raceway system is designed to maintain a two-inch minimum bend radius throughout the system. Tool-less, Snap-Fit junction options can significantly reduce the amount of time required for installation.

The FiberGuide system is a complete set of products designed and manufactured to support total off-frame protection and ease of use. Basic components include horizontal and vertical straight sections, horizontal and vertical elbows, downspouts, junctions and numerous support hardware and flex vertical kits.

Available in a variety of sizes:

- **4x6** – Features the same benefits of the 4-inch system and a maximum trough capacity of 2,400, 2 mm patch cords.
- **4x12** – The 12-inch-wide trough has a maximum capacity to support nearly 5,000, 2 mm patch cords. Perfect for runs over fiber-frame lineups and perimeter routes.
- **4x24** – The 4x24-inch system is the ultimate raceway solution to securely route and protect patch cords over high-density optical distribution frames including CommScope® Next Generation Frame (NGF) and Next Generation 3 Frame (NG3®). Designed for maximum capacity, this robust system provides the same support and flexibility as the traditional 4x12-inch system while doubling capacity.



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4"x6" FiberGuide System

Description	Part Number	
4x6 Horizontal Straight Section, 6' long, yellow	FGS-MSHS-B	
4x6 Horizontal Stack Storage Section, yellow	FGS-MSHS-STOR-B	
4x6 Horizontal T, yellow	FGS-MHRT-B	
4x6 Horizontal Cross, yellow	FGS-MHXP-B	
4x6 Horizontal Elbow 90°, yellow	FGS-MH9E-B	
4x6 Down Spout, yellow	FGS-MDSP-B	
4x6 Trumpet Flare, yellow	FGS-MTRM-B	
4x6 Down Elbow 45°, yellow	FGS-MD4E-B	
4x6 Up Elbow 45°, yellow	FGS-MU4E-B	
4x6 Junction	FGS-MFAW-B	
4x6 End Cap, black	FGS-HMEC-B	

4"x6" Supports

Description	Part Number	
L Bay Support Bracket	FGS-HLBK	
Center Support Bracket Kit (xx = size: 1/2", 5/8", 12 mm, 14 mm, 16 mm)	FGS-HTUB-XX	
Unistrut Kit; 10 Quick Knob T-Bolt	FGS-ACC532	

Express Exit®

Description	Part Number	
4" Express Exit with 4x4 exit opening, yellow	FGS-MEXP-E-A/B/F	
2x2 Trumpet Flare for 2" Express Exit, yellow	FGS-MTRM-C	
Single 2" Flex Tube Attachment 2" flex tube and 2x2 junction to attach to Express Exit		
5' length	FGS-MEX1-C-5F	
10' length	FGS-MEX1-C-10F	
15' length	FGS-MEX1-C-15F	

Note: For additional FiberGuide products, see online catalog available [here](#).

Interactive Content Menu												
Ethernet and Infraband Applications	Gen AI Key Solutions	Direct Connect Cabling	800G/400G Parallel Applications	800G/400G Serial Applications	800G - 4x 200G Parallel Applications	400G - 2x 200G Parallel Applications	Shuffle Architectures	Fiber Polarity Schemes	CommScope Rapid Fiber Connect™	CommScope Propel Solutions	SYSTIMAX Copper Solutions	CommScope FiberGuide

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4"x 12" FiberGuide System

Description	Part Number	
4x12 Horizontal Straight Section, 6' long, yellow	FGS-MSHS-F	
4x12 Horizontal Slack Storage Section, yellow	FGS-MSHS-STOR-F	
4x12 Horizontal T, yellow	FGS-MHRT-F	
4x12 Horizontal Cross, yellow	FGS-MHXP-F	
4x12 Horizontal Elbow 90°, yellow	FGS-MH9E-F	
4x12 Down Spout, yellow	FGS-MDSP-F	
4x12 Trumpet Flare, yellow	FGS-MTRM-F	
4x12 Horizontal Cross with two 6" exit, yellow	FGS-MHXP-F	
4x12 Down Elbow 45°, yellow	FGS-MD4E-F	
4x12 Up Elbow 45°, yellow	FGS-MU4E-F	
4x12 Junction	FGS-MFAW-F	
4x12 End Cap	FGS-HMEC-F	
Trapeze Bracket Kit (xx = size: 1/2", 5/8", 12 mm, 14 mm, 16 mm)	FGS-HNTP-F-XX	

4"x 24" FiberGuide System

Description	Part Number	
4x24 Horizontal Straight Section, 6" long, yellow	FGS-MSHS-H	
4x24 Horizontal T, with single 12" exit, yellow	FGS-MHRT-H/F	
4x24 Horizontal T with three 24" exits, yellow	FGS-MHRT-H	
4x24 Horizontal Cross, yellow	FGS-MHXP-H	
4x24 Horizontal Cross with dual 12" exits	FGS-MHXP-F/H	
4x24 Horizontal Elbow 45°, yellow	FGS-MH4E-H	
4x24 Down Elbow 45°, yellow	FGS-MD4E-H	
4x24 Up Elbow 45°, yellow	FGS-MU4E-H	
4x24 Junction	FGS-MFAW-H	
4x24 End Cap	FGS-HMEC-H	
Threaded Rod Trapeze Bracket Kit for New, 5/8"	FGS-HNTP-H-5/8	

Note: For additional FiberGuide products, see online catalog available [here](#).

Interactive Content Menu												
Ethernet and Infraband Applications	Gen AI Key Solutions	Direct Connect Cabling	800G/400G Parallel Applications	800G/400G Serial Applications	800G - 4x 200G 200G - 200G Parallel Applications	400G - 2x 200G Parallel Applications	Shuffle Architectures	Fiber Polarity Schemes	CommScope Rapid Fiber Connect™	CommScope Propel Solutions	SYSTIMAX Copper Solutions	CommScope FiberGuide

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Custom Cable Assembly Services

Customized infrastructure, built to order

As racks become more crowded, and cooling becomes more expensive, large AI data centers need support to successfully deploy high-density compute clusters on schedule and on budget. For these large data centers, CommScope offers customized cable assembly services that deliver exactly what the customer needs—all done to their specifications, and at the scale they require.

CommScope can supply customized, preterminated and meshed cable assemblies measured to suit the application, clearly color-coded and labeled to speed up deployment, reduce the opportunity for error, and reduce or eliminate the need for jacket cutting or modification.

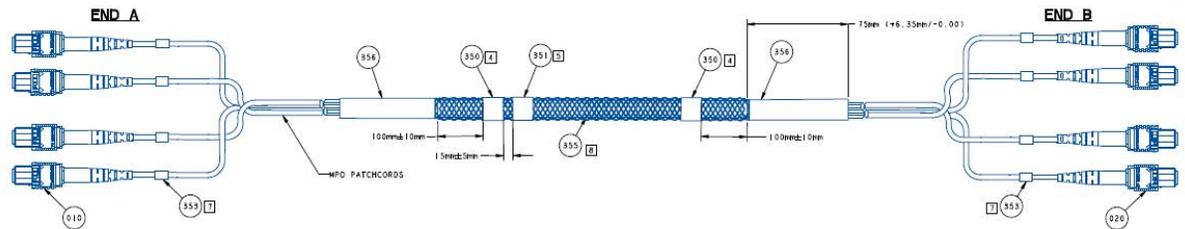
The high-value option for high-density environments

New high-density GPU platforms leave less space than ever, so customized cable assemblies from CommScope can improve organization and airflow, which in turn can reduce operating costs—and when every moment of uptime counts, CommScope’s customized cable assemblies can help prevent degraded performance due to installation errors.

In the largest AI data centers, architectures are evolving quickly, and CommScope builds the cabling infrastructure that can keep up with these rapid changes. With our global manufacturing footprint, we’re able to deliver these customized cable assemblies quickly, and at scale—so your data center can deploy quickly and confidently.

Custom Cable Assembly Capabilities

- Measured to specified length
- Range of preterminated and meshed cables in a range of fiber counts
- Individual labelling and color coding available
- Combinations of MPO-8, MPO-16, and MMC-16 connectors
- Multimode or singlemode
- Flexible, slim form factors suited to the densest environments



Customized bundled MPO cable

Interactive Content Menu												
Ethernet and Infraband Applications	Gen AI Key Solutions	Direct Connect Cabling	800G/400G Parallel Applications	800G/400G Serial Applications	800G – 4x 200G 200G – 200G Parallel Applications	400G – 2x 200G Parallel Applications	Shuffle Architectures	Fiber Polarity Schemes	CommScope Rapid Fiber Connect™	CommScope Propel Solutions	SYSTIMAX Copper Solutions	CommScope FiberGuide

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Cabling Reference Designs

CommScope solutions for each NVL72 system

The GB200 NVL72 system represents NVIDIA's first-generation rack-scale AI platform, integrating 72 GPUs and leveraging 400G InfiniBand networking between NVL72 racks and the leaf/spine switching fabric. This configuration supports high-throughput GPU-to-GPU communication, which is essential for large-scale model training and inference.

In contrast, the GB300 NVL72 system introduces significant upgrades tailored for next-generation AI workloads. It employs 800G InfiniBand networking across the GPU compute fabric, doubling interconnect bandwidth and reducing latency for multi-trillion parameter models. Another point of distinction to consider when expanding the reference architectures is that the storage and in-band ports used in the GB300 system have been upgraded to 400G Ethernet, aligning with the increased data throughput demands.

An assumption is made in these designs that the architectures are based around the use of twin-port transceivers to maintain high switch port densities, and to enable higher data rates through an aggregation of ports. Node ports will utilize single port transceivers. However, it is important to confirm this assumption, as well as the final transceiver/port speeds, with the customers' design authority to ensure full alignment and expedite any necessary changes to the architecture.

The following pages will show architectures for both 288-GPU and 1,152-GPU systems.

For all the designs shown in the following pages, detailed BoMs can be provided by your CommScope Salesperson.

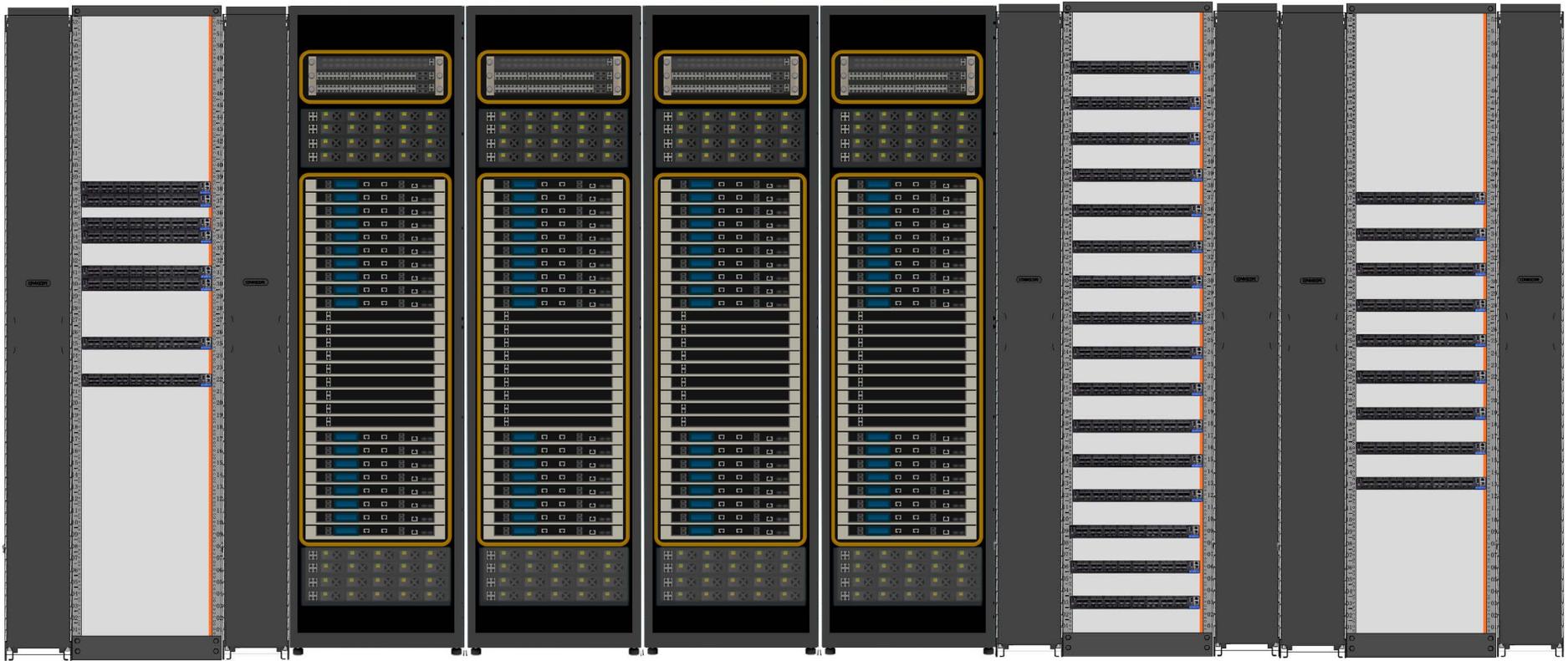


Interactive Content Menu												
Ethernet and InfiniBand Applications	Gen AI Key Solutions	Direct Connect Cabling	800G/400G Parallel Applications	800G/400G Serial Applications	800G - 4x 200G 200G - 200G Parallel Applications	400G - 2x 200G Parallel Applications	Shuffle Architectures	Fiber Polarity Schemes	CommScope Rapid Fiber Connect™	CommScope Propel Solutions	SYSTIMAX Copper Solutions	CommScope FiberGuide

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NVIDIA NVL72 GB200/GB300 288 GPU POD Reference Design

MP012/8 APC Backbone



CPU Leaf/Spine/OOB Cabinet

NVL72 RSS

NVL72 RSS

NVL72 RSS

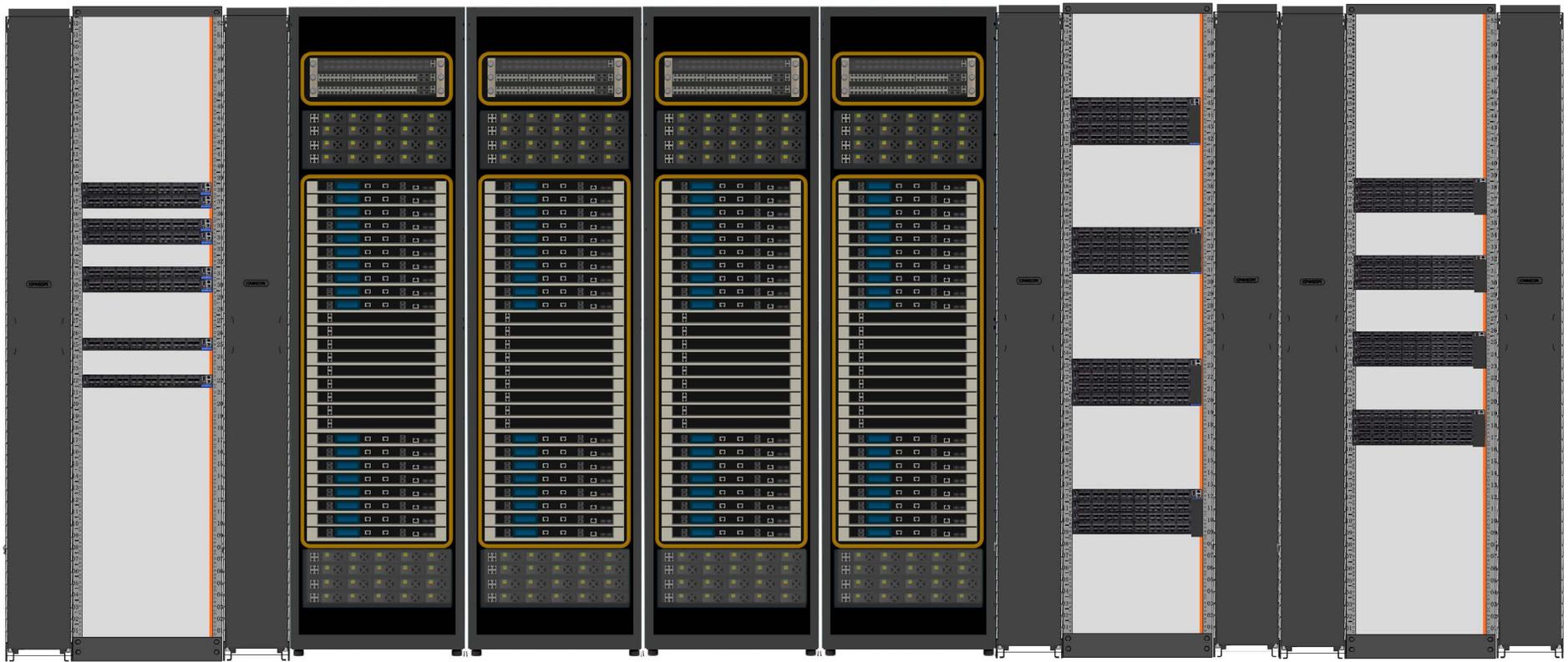
NVL72 RSS

GPU Leaf Cabinet

GPU Spine Cabinet

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Ethernet and InfiniBand Applications	Gen AI Key Solutions	Direct Connect Cabling	800G/400G Parallel Applications	800G/400G Serial Applications	800G - 4x 200G 200G - 200G Parallel Applications	400G - 2x 200G Parallel Applications	Shuffle Architectures	Fiber Polarity Schemes	CommScope Rapid Fiber Connect™	CommScope Propel Solutions	SYSTIMAX Copper Solutions	CommScope FiberGuide

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CPU Leaf/Spine/OOB Cabinet

NVL72 RSS

NVL72 RSS

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NVL72 RSS

GPU Leaf Cabinet

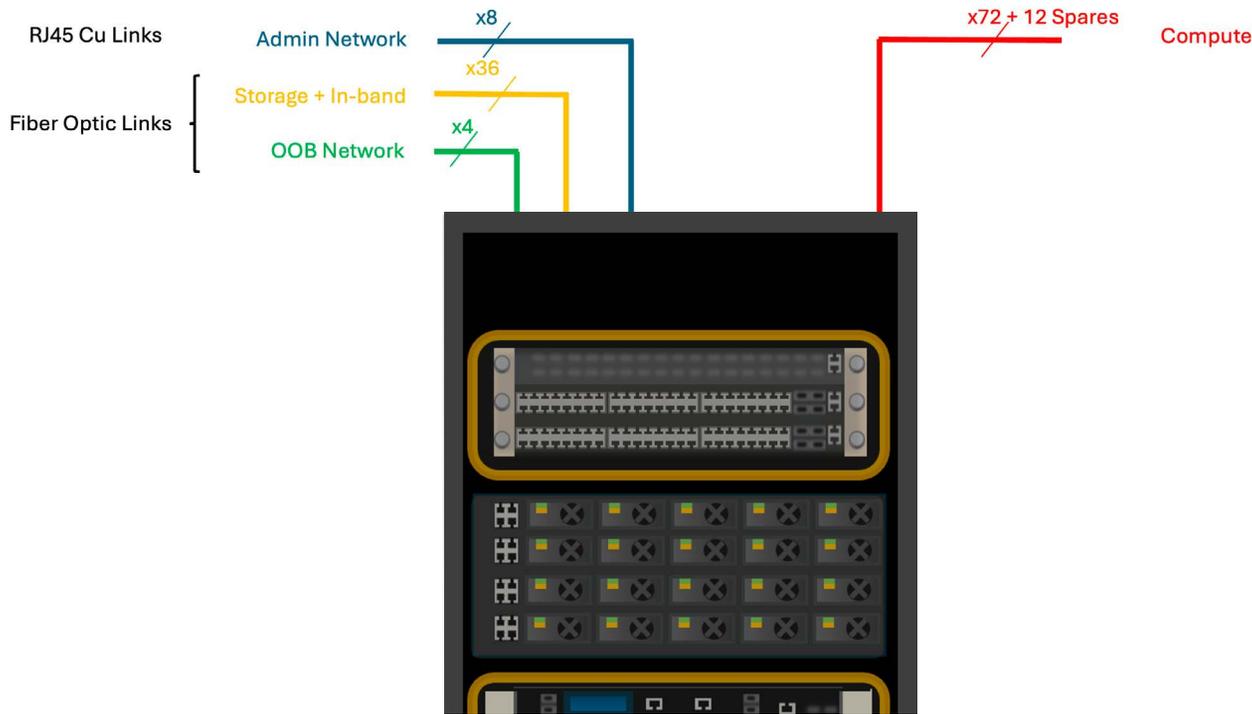
GPU Spine Cabinet

Interactive Content Menu

Ethernet and InfiniBand Applications	Gen AI Key Solutions	Direct Connect Cabling	800G/400G Parallel Applications	800G/400G Serial Applications	800G - 4x 200G 200G - 200G Parallel Applications	400G - 2x 200G Parallel Applications	Shuffle Architectures	Fiber Polarity Schemes	CommScope Rapid Fiber Connect™	CommScope Propel Solutions	SYSTIMAX Copper Solutions	CommScope FiberGuide
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Note: 12 MPO Spares are suggested for the Compute Fabric. It's recommended that the customer defines their spares strategy for this fabric, and the Storage+Inband Fabric, and adjust the BoM to reflect this strategy.

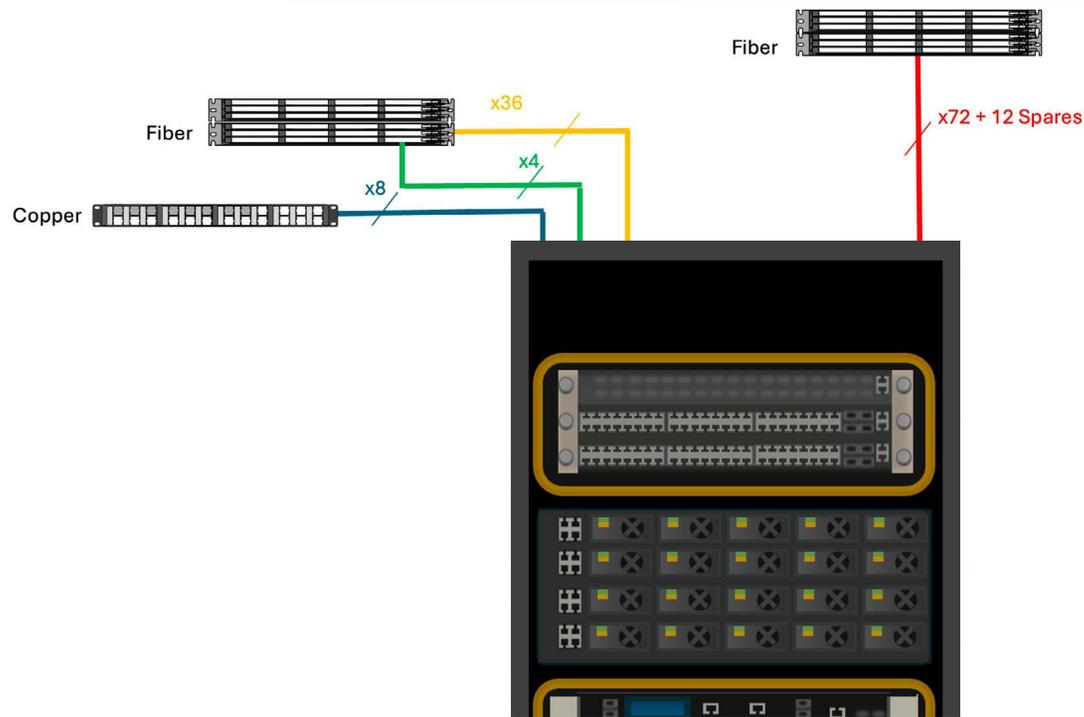
Note: Graphic represents connectivity per NVL72 RSS

NVL72 Network Types

- Compute – GPU Fabric
- Storage + In-band – CPU Fabric
- OOB Network
- Admin Network

Interactive Content Menu												
Ethernet and InfrinBand Applications	Gen AI Key Solutions	Direct Connect Cabling	800G/400G Parallel Applications	800G/400G Serial Applications	800G – 4x 200G Parallel Applications	400G – 2x 200G Parallel Applications	Shuffle Architectures	Fiber Polarity Schemes	CommScope Rapid Fiber Connect™	CommScope Propel Solutions	SYSTIMAX Copper Solutions	CommScope FiberGuide

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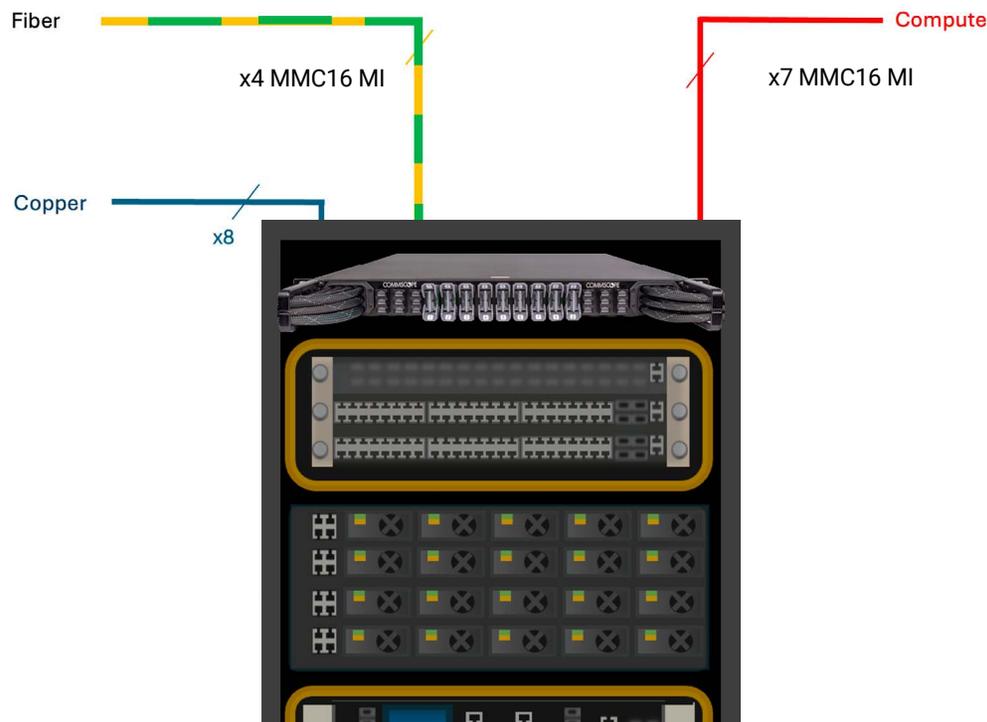
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NVL72 Network Types

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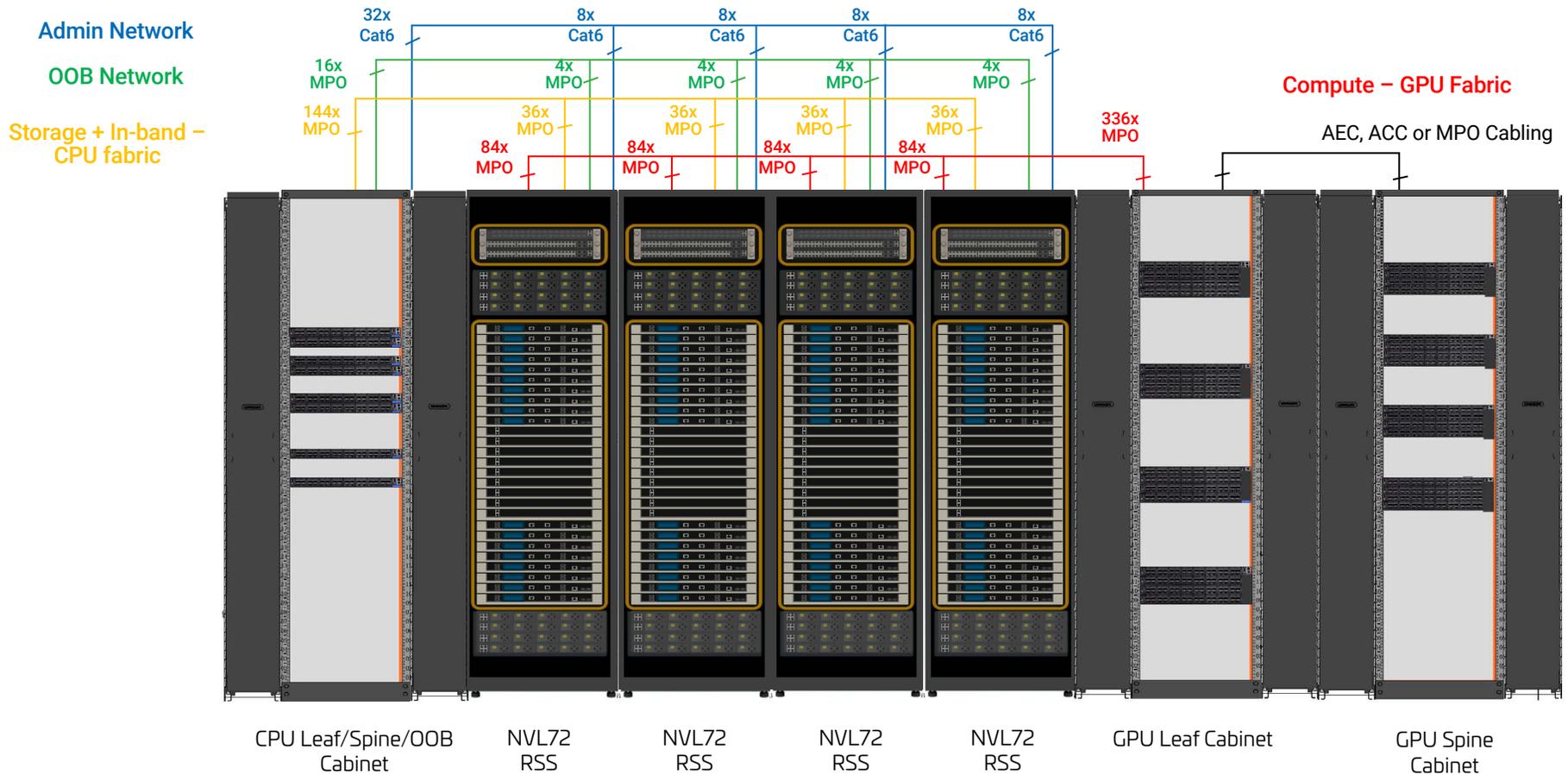
Note: Graphic represents connectivity per NVL72 RSS

NVL72 Network Types

- Compute – GPU Fabric
- Storage + In-band – CPU Fabric
- Admin Network

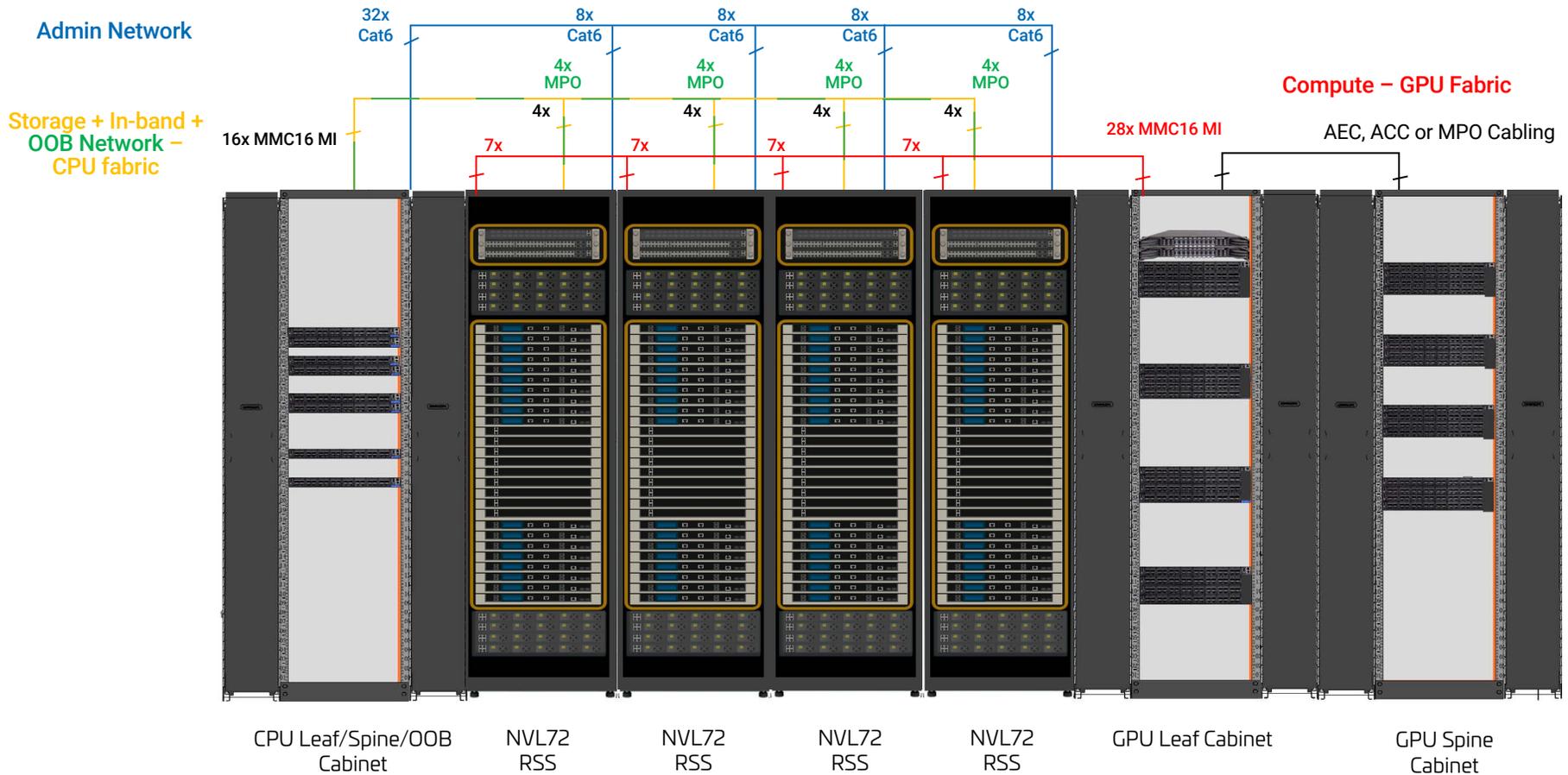
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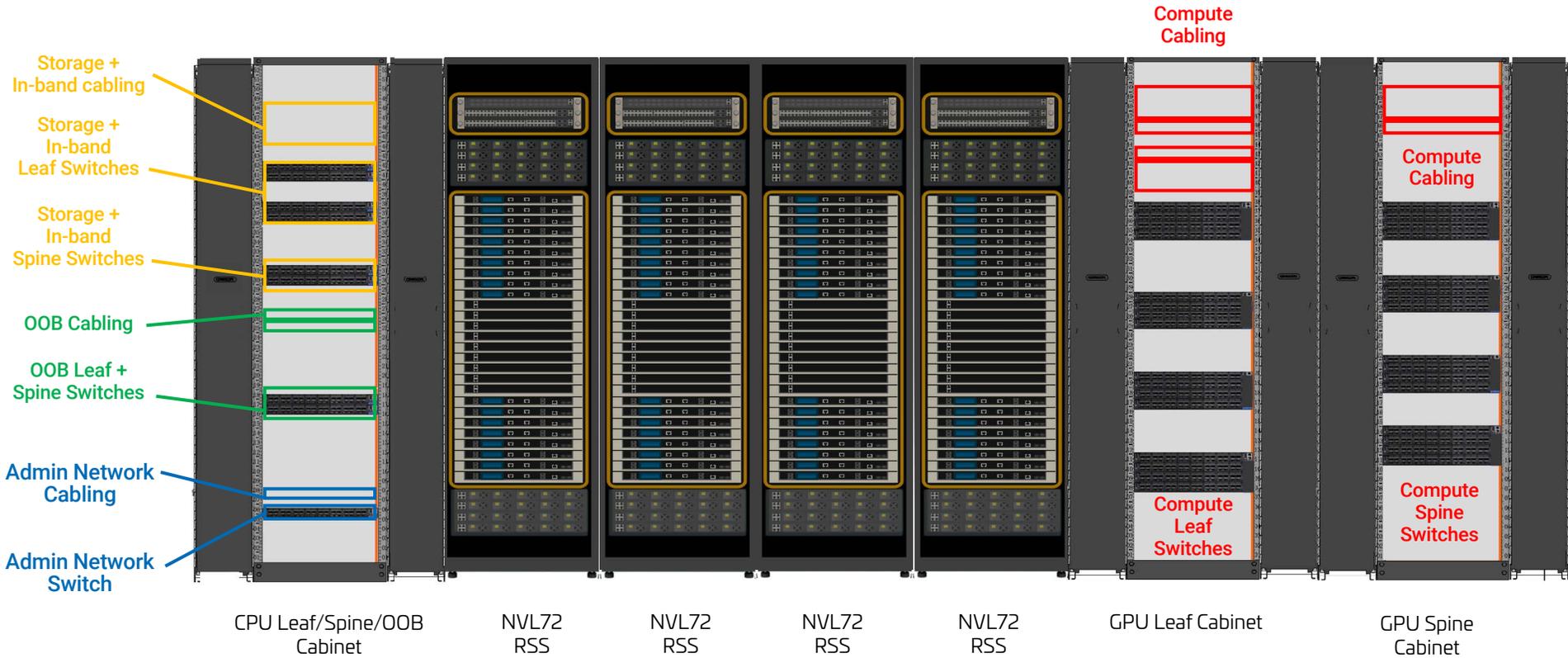
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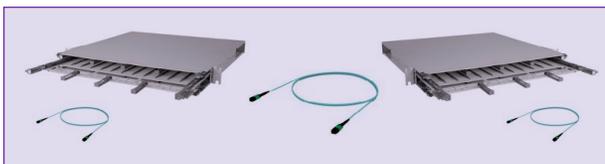


Suggested Passive Infrastructure Panel Locations

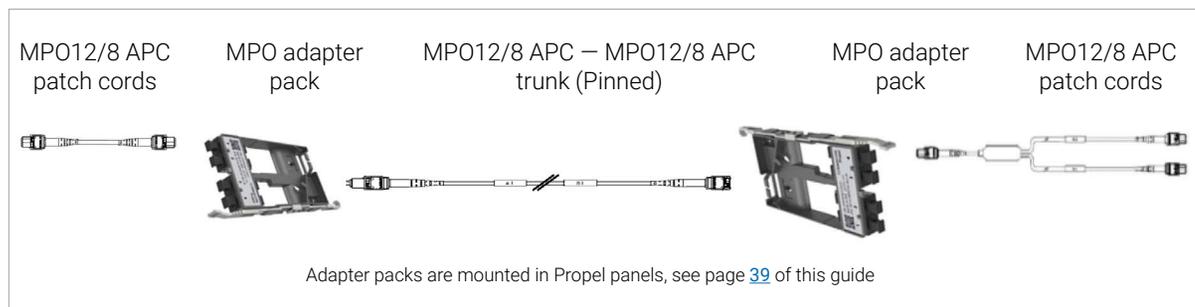
- Compute – GPU Fabric
- Storage + In-band – CPU Fabric
- OOB Network
- Admin Network

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Ethernet and Infraband Applications	Gen AI Key Solutions	Direct Connect Cabling	800G/400G Parallel Applications	800G/400G Serial Applications	800G – 4x 200G Parallel Applications	400G – 2x 200G Parallel Applications	Shuffle Architectures	Fiber Polarity Schemes	CommScope Rapid Fiber Connect™	CommScope Propeel Solutions	SYSTIMAX Copper Solutions	CommScope FiberGuide

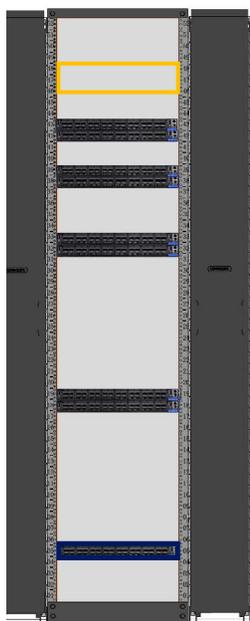
Reference Design Menu					
NVIDIA NVL72 GB200/GB300 288 GPU POD Reference Design			NVIDIA NVL72 GB200/GB300 1,152 GPU Scalable Unit Reference Design		
Compute Cabinet	Compute to Management Cabinets	Admin Network	Compute Cabinet	Compute to Management Cabinets	Admin Network



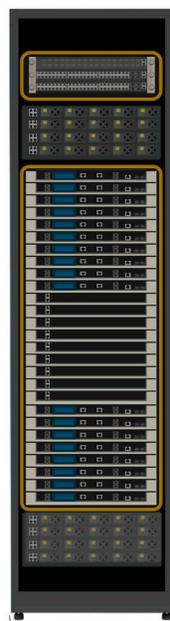
Cabling Channel



Note: The structured cabling backbone is built with MPO12/8 APC connectors to be ready for 400G + applications.



CPU Leaf Cabinet

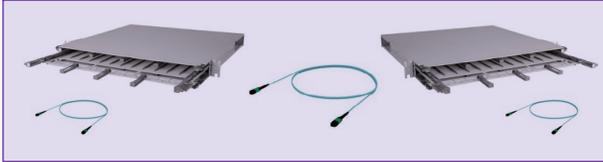


4 Compute Cabinets

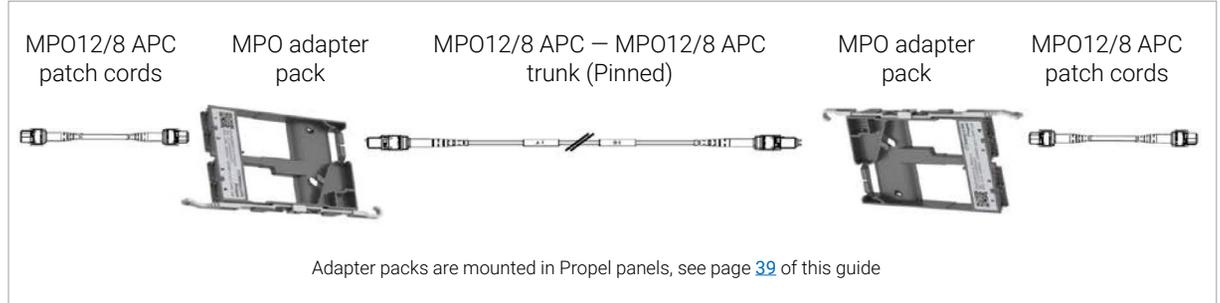
Product Family	CommScope Description	CommScope MID
Fiber Adapter Pack	Propel pass-through adapter pack, 4 MPO12/8-12-24 ports, Type B	760252371
Fiber Panels	Propel 2RU sliding tray fiber panel, accepts Propel ULL modules or adapter packs, providing up to 144 duplex LC ports, 144 MPO ports or 288 SN ports (576f)	760252003
Fiber Panels	Propel 4RU sliding tray fiber panel, accepts Propel ULL modules or adapter packs, providing up to 288 duplex LC ports, 288 MPO ports or 576 SN ports (1152f)	760252004
MPO Cable Assemblies	Ultra Low Loss (ULL) OM4 MPO12/8 APC (Pinned) to MPO12/8 APC (Pinned), Fiber Trunk Cable Assembly, 144-Fiber, Plenum	U3XQZQZTM
MPO Cable Assemblies	Ultra Low Loss (ULL) OM4 MPO APC (Non-Pinned) to MPO (Non-Pinned), Fiber Trunk Cable Assembly, 8-Fiber, Dual Rated (OFNR/LSZH)	URXQVQPF8

Interactive Content Menu												
Ethernet and Infraband Applications	Gen AI Key Solutions	Direct Connect Cabling	800G/400G Parallel Applications	800G/400G Serial Applications	800G - 4x 200G 200G - 4x 200G Parallel Applications	400G - 2x 200G Parallel Applications	Shuffle Architectures	Fiber Polarity Schemes	CommScope Rapid Fiber Connect™	CommScope Propel Solutions	SYSTIMAX Copper Solutions	CommScope FiberGuide

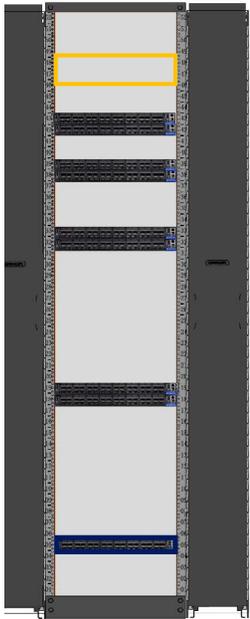
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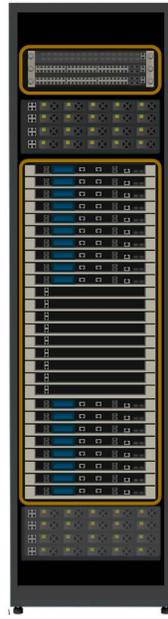
Cabling Channel



Note: The structured cabling backbone is built with MPO12/8 APC connectors to be ready for 400G + applications.



CPU Leaf Cabinet

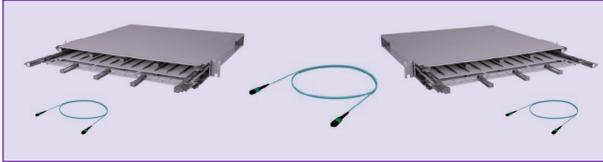


4 Compute Cabinets

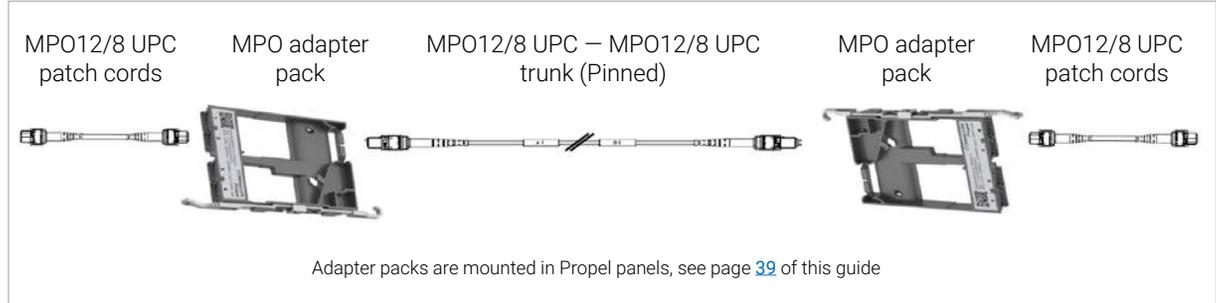
Product Family	CommScope Description	CommScope MID
Fiber Adapter Pack	Propel pass-through adapter pack, 4 MPO12/8-12-24 ports, Type B	760252371
Fiber Panels	Propel 2RU sliding tray fiber panel, accepts Propel ULL modules or adapter packs, providing up to 144 duplex LC ports, 144 MPO ports or 288 SN ports (576f)	760252003
Fiber Panels	Propel 4RU sliding tray fiber panel, accepts Propel ULL modules or adapter packs, providing up to 288 duplex LC ports, 288 MPO ports or 576 SN ports (1152f)	760252004
MPO Cable Assemblies	Ultra Low Loss (ULL) OM4 MPO12/8 APC (Pinned) to MPO12/8 APC (Pinned), Fiber Trunk Cable Assembly, 144-Fiber, Plenum	U3XQZQZTM
MPO Cable Assemblies	Ultra Low Loss (ULL) OM4 MPO12/8 APC (Non-Pinned) to MPO12/8 APC (Non-Pinned), Fiber Trunk Cable Assembly, 8-Fiber, Dual Rated (OFNR/LSZH)	URXQVQVF8

Interactive Content Menu												
Ethernet and Infraband Applications	Gen AI Key Solutions	Direct Connect Cabling	800G/400G Parallel Applications	800G/400G Serial Applications	800G – 4x 200G 200G – 200G Parallel Applications	400G – 2x 200G Parallel Applications	Shuffle Architectures	Fiber Polarity Schemes	CommScope Rapid Fiber Connect™	CommScope Propel Solutions	SYSTIMAX Copper Solutions	CommScope FiberGuide

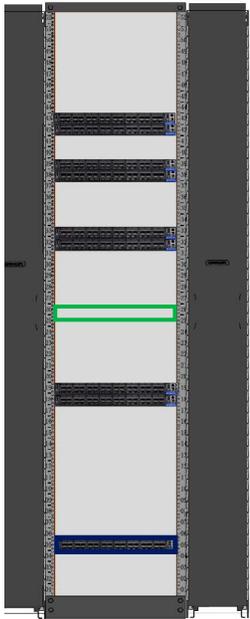
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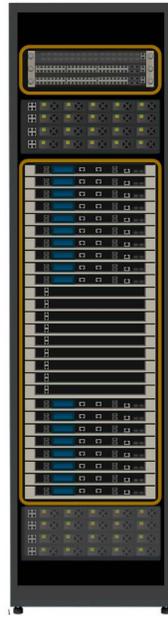
Cabling Channel



Note: The structured cabling backbone is built with MPO12/8 APC connectors to be ready for 400G + applications.



CPU Leaf Cabinet

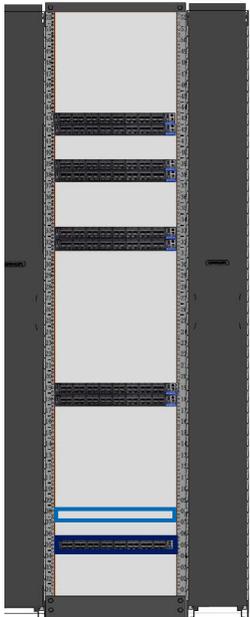


4 Compute Cabinets

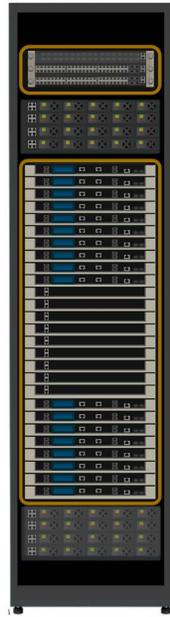
Product Family	CommScope Description	CommScope MID
Fiber Adapter Pack	Propel pass-through adapter pack, 4 MPO12/8-12-24 ports, Type B	760252371
Fiber Panels	Propel 1RU sliding tray fiber panel, accepts Propel ULL modules or adapter packs, providing up to 72 duplex LC ports, 72 MPO ports or 144 SN ports (288f)	760252002
Fiber Panels	Propel 2RU sliding tray fiber panel, accepts Propel ULL modules or adapter packs, providing up to 144 duplex LC ports, 144 MPO ports or 288 SN ports (576f)	760252003
MPO Cable Assemblies	Ultra Low Loss (ULL) OM4 MPO12/8 (Pinned) to MPO12/8 (Pinned), Fiber Trunk Cable Assembly, 32-Fiber, Plenum	UGXQXQXTS
MPO Cable Assemblies	Ultra Low Loss (ULL) OM4 MPO12/8 APC (Non-Pinned) to MPO12/8 APC (Non-Pinned), Fiber Trunk Cable Assembly, 8-Fiber, Dual Rated (OFNR/LSZH)	URXQPQPF8

Interactive Content Menu												
Ethernet and Infraband Applications	Gen AI Key Solutions	Direct Connect Cabling	800G/400G Parallel Applications	800G/400G Serial Applications	800G - 4x 200G 200G - 200G Parallel Applications	400G - 2x 200G Parallel Applications	Shuffle Architectures	Fiber Polarity Schemes	CommScope Rapid Fiber Connect™	CommScope Propel Solutions	SYSTIMAX Copper Solutions	CommScope FiberGuide

Reference Design Menu					
NVIDIA NVL72 GB200/GB300 288 GPU POD Reference Design			NVIDIA NVL72 GB200/GB300 1,152 GPU Scalable Unit Reference Design		
Compute Cabinet	Compute to Management Cabinets	Admin Network	Compute Cabinet	Compute to Management Cabinets	Admin Network



CPU Leaf Cabinet



4 Compute Cabinets

Product Family	CommScope Description	CommScope MID
Twisted Pair Patch Cords	GigaSPEED X10D® MGS600 to MGS600 on 2091B Plenum Cable Pre-terminated Cord	CPCUU02
Twisted Pair Patch Cords	MiNo6A Cat 6A U/UTP Reduced Diameter RJ45 Patch Cord, LS-CM Dual Rated	CO199K2
Copper Panels	M4800 1U Modular Panel, 48 port (MGS600 / MGS400 / MPS100 / UNJ10GT / UNJ600T / UNJ10G / UNJ600 / UNJ500), Black	760105429
Copper Panels	M2400 1U Modular Panel, 24 port (MGS600 / MGS400 / MPS100 / UNJ10GT / UNJ600T / UNJ10G / UNJ600 / UNJ500), Black	760118323

Interactive Content Menu												
Ethernet and InfiniBand Applications	Gen AI Key Solutions	Direct Connect Cabling	800G/400G Parallel Applications	800G/400G Serial Applications	800G - 4x 200G 200G - 200G Parallel Applications	400G - 2x 200G Parallel Applications	Shuffle Architectures	Fiber Polarity Schemes	CommScope Rapid Fiber Connect™	CommScope Propel Solutions	SYSTIMAX Copper Solutions	CommScope FiberGuide

Reference Design Menu					
NVIDIA NVL72 GB200/GB300 288 GPU POD Reference Design			NVIDIA NVL72 GB200/GB300 1,152 GPU Scalable Unit Reference Design		
Compute Cabinet	Compute to Management Cabinets	Admin Network	Compute Cabinet	Compute to Management Cabinets	Admin Network

NVIDIA NVL72 GB200/GB300 1,152 GPU Scalable Unit Reference Design

MP012/8 APC Backbone

NVIDIA offers a reference design for a POD using NVL72 RSS Cabinets that can support 1,152 GPUs in a scalable unit building block design. The design of the 1,152 GPU POD is based on the original 288 GPU POD and utilizes much of the same cabling design, but with 16 NVL72 RSS Cabinets instead of 4. The biggest difference between the 288 GPU POD and the 1,152 GPU POD is in the configuration of the Leaf (Rail) Switches. In the 288 GPU POD, all the switches are located in a single rack. This means that all cabling from the GPUs in an NVL72 RSS Cabinet route to a single Cabinet.

In the 1,152 GPU POD, Nvidia introduces the concept of Rail Groups, having 4 Leaf Switch Cabinets within the POD. Each Leaf Switch Cabinet, containing multiple Switches, is allocated to a specific Rail (1 – 4). In this design, cabling from the GPUs in an NVL72 RSS Cabinet route to 4 different Leaf Switch Cabinets. All GPU 1s route to the Rail 1 Switch Cabinet, and so on for GPUs 2, 3 and 4 to Rail 2, 3 and 4 Switch Cabinets. This makes the cabling between the NVL72 RSS Cabinets and the Leaf Switch Cabinets more complicated than what was shown in the 288 GPU POD designs. The total number of GPU connections leaving the NVL72 RSS Cabinet to connect to the Compute Leaf Switches does not change, just the number of cables that are required to make those connections.

Note the cabling to support the CPU and OOB management networks does not change between 288 and 1,152 GPU PODs, though lengths may differ based on actual layout.

For all the designs shown in the following pages, detailed BoMs can be provided by your CommScope Salesperson.



Interactive Content Menu												
Ethernet and InfiniBand Applications	Gen AI Key Solutions	Direct Connect Cabling	800G/400G Parallel Applications	800G/400G Serial Applications	800G – 4x 200G 200G – 200G Parallel Applications	400G – 2x 200G Parallel Applications	Shuffle Architectures	Fiber Polarity Schemes	CommScope Rapid Fiber Connect™	CommScope Propel Solutions	SYSTIMAX Copper Solutions	CommScope FiberGuide

Reference Design Menu					
NVIDIA NVL72 GB200/GB300 288 GPU POD Reference Design			NVIDIA NVL72 GB200/GB300 1,152 GPU Scalable Unit Reference Design		
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1,152 GPU PODs are being deployed in dual and single row configurations based on customer's application needs and design strategy. From a cabling perspective, customers need to ensure that proper routing pathways exist to route cabling from each NVL72 RSS Cabinet to the associated Leaf Switch Cabinets within the POD. In dual row configurations, cross-aisle routing solutions like CommScope's FiberGuide system will be needed.

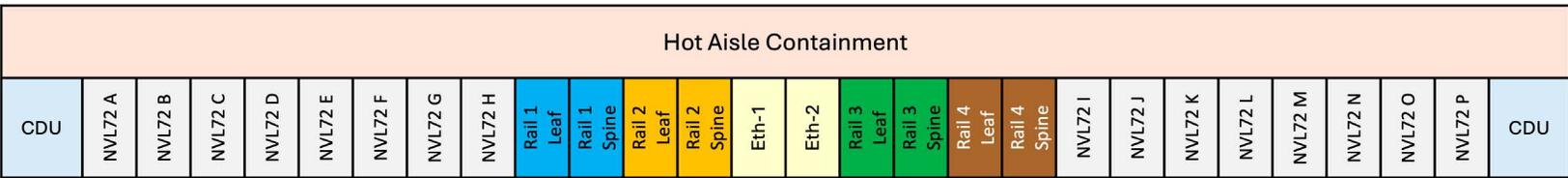
NVL72 RSS 1,152 GPU POD Dual Row Configuration



For illustrative purposes in diagrams and cabling diagrams, we will color code the GPU's and Rails to show the relationship.



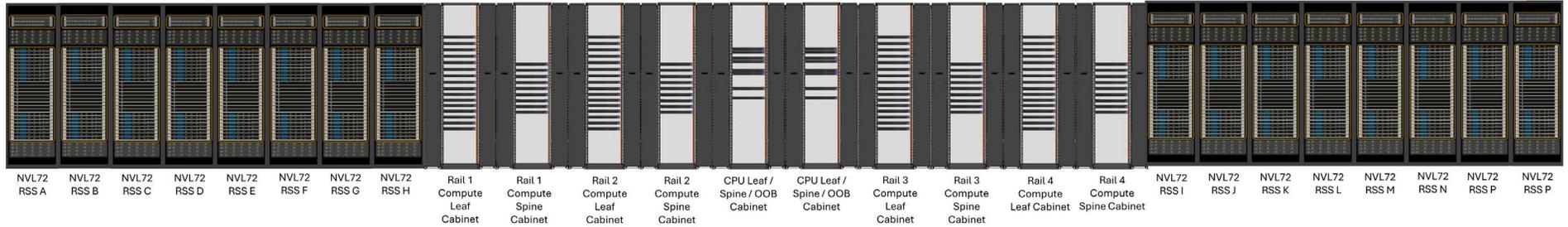
NVL72 RSS 1,152 GPU POD Single Row Configuration



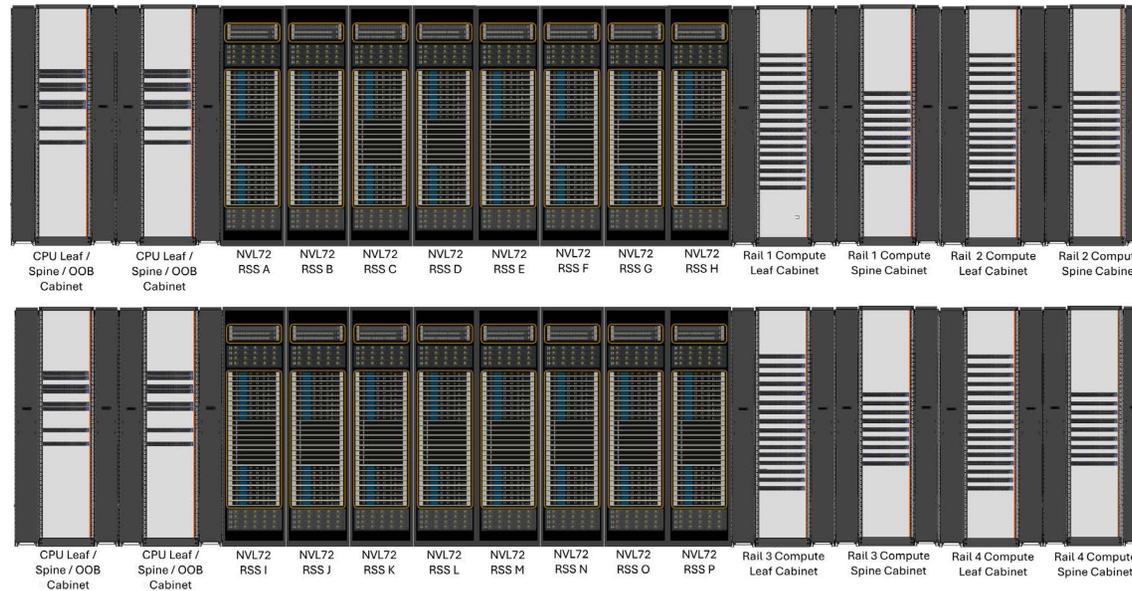
Interactive Content Menu												
Ethernet and InfiniBand Applications	Gen AI Key Solutions	Direct Connect Cabling	800G/400G Parallel Applications	800G/400G Serial Applications	800G - 4x 200G Parallel Applications	400G - 2x 200G Parallel Applications	Shuffle Architectures	Fiber Polarity Schemes	CommScope Rapid Fiber Connect™	CommScope Propel Solutions	SYSTIMAX Copper Solutions	CommScope FiberGuide

Reference Design Menu					
NVIDIA NVL72 GB200/GB300 288 GPU POD Reference Design			NVIDIA NVL72 GB200/GB300 1,152 GPU Scalable Unit Reference Design		
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NVL72 GB200 1,152 GPU POD Single Row Layout *



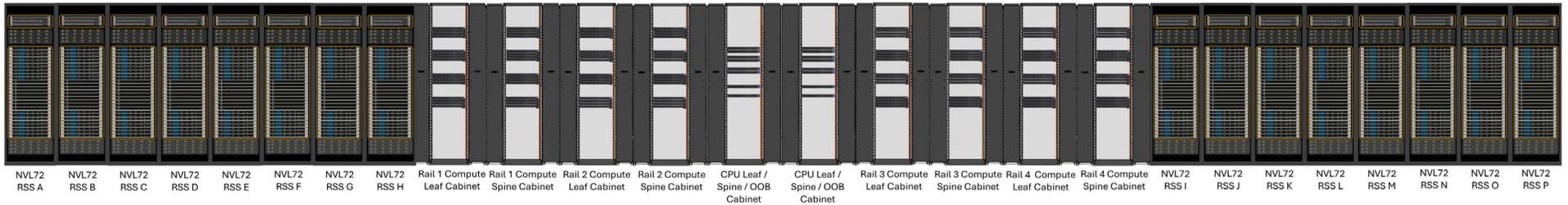
NVL72 GB200 1,152 GPU POD Dual Row Layout*



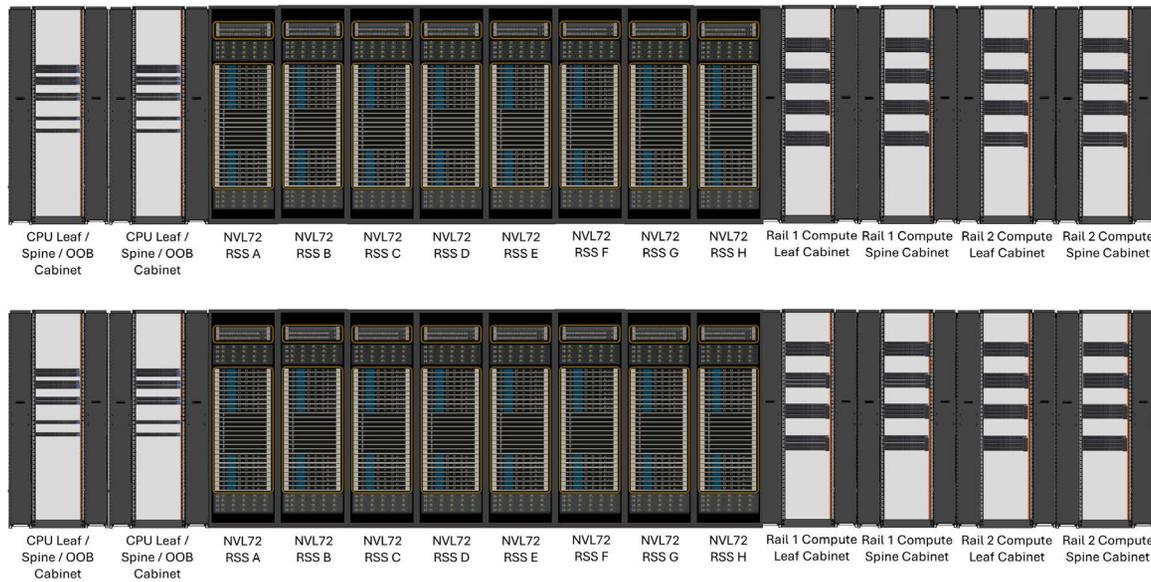
Interactive Content Menu												
Ethernet and InfiniBand Applications	Gen AI Key Solutions	Direct Connect Cabling	800G/400G Parallel Applications	800G/400G Serial Applications	800G - 4x 200G Parallel Applications	400G - 2x 200G Parallel Applications	Shuffle Architectures	Fiber Polarity Schemes	CommScope Rapid Fiber Connect™	CommScope Propel Solutions	SYSTMIX Copper Solutions	CommScope FiberGuide

Reference Design Menu					
NVIDIA NVL72 GB200/GB300 288 GPU POD Reference Design			NVIDIA NVL72 GB200/GB300 1,152 GPU Scalable Unit Reference Design		
Compute Cabinet	Compute to Management Cabinets	Admin Network	Compute Cabinet	Compute to Management Cabinets	Admin Network

NVL72 GB300 1,152 GPU POD Single Row Layout*



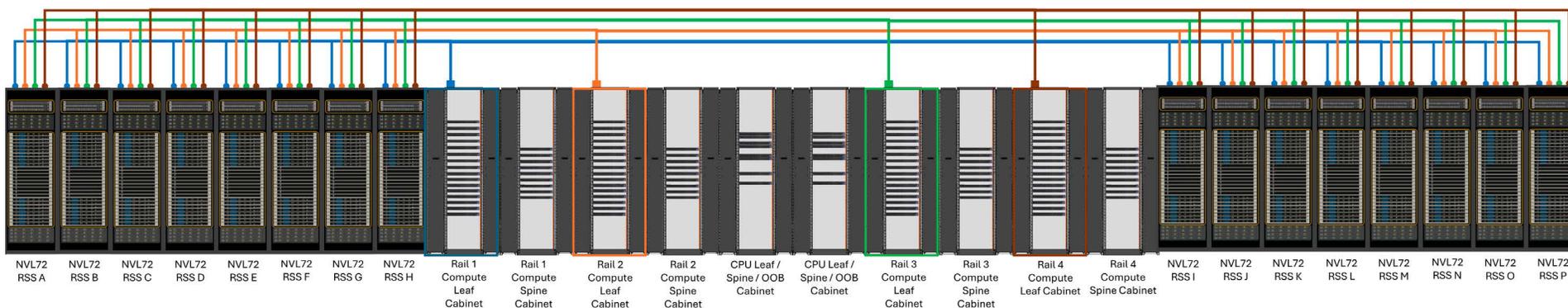
NVL72 GB300 1,152 GPU POD Dual Row Layout*



Interactive Content Menu												
Ethernet and InfiniBand Applications	Gen AI Key Solutions	Direct Connect Cabling	800G/400G Parallel Applications	800G/400G Serial Applications	800G - 4x 200G Parallel Applications	400G - 2x 200G Parallel Applications	Shuffle Architectures	Fiber Polarity Schemes	CommScope Rapid Fiber Connect™	CommScope Propel Solutions	SYSTIMAX Copper Solutions	CommScope FiberGuide

Reference Design Menu					
NVIDIA NVL72 GB200/GB300 288 GPU POD Reference Design			NVIDIA NVL72 GB200/GB300 1,152 GPU Scalable Unit Reference Design		
Compute Cabinet	Compute to Management Cabinets	Admin Network	Compute Cabinet	Compute to Management Cabinets	Admin Network

18 x 8f per from each NVL72 RSS to each Leaf Cabinet based on Rail

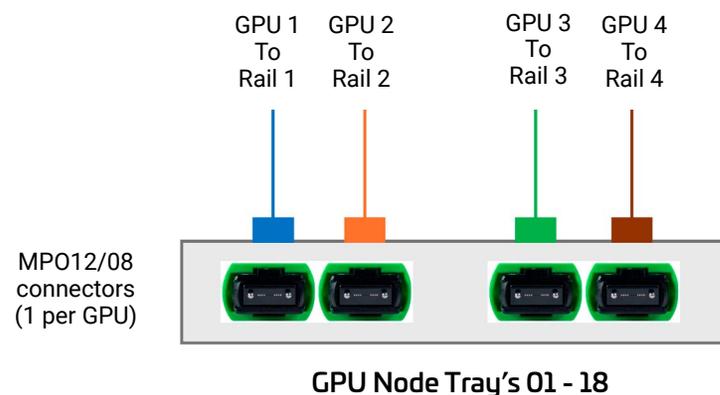


In the NVL72 RSS 1,152 GPU POD reference architecture, Nvidia introduces the concept of Rail Groups, having four Leaf Switch Cabinets within the POD. Each Leaf Switch Cabinet, containing multiple Switches, is allocated to a specific Rail (1-4). In this design, cabling from the GPU's in an NVL72 RSS Cabinet route to 4 different Leaf Switch Cabinets. All GPU 1's route to the Rail 1 Switch Cabinet and so on for GPU's 2, 3 and 4 to Rail 2, 3 and 4 Switch Cabinets.

This makes the cabling between the NVL72 RSS Cabinets and the Leaf Switch Cabinets a little more complicated than what was show in the 288 GPU POD designs. The total number of GPU connections leaving the NVL72 RSS Cabinet to connect to the Compute Leaf Switches does not change, just the number of cables that are required to make those connections. In a 288 POD, there can be a single cable or bundle routing from the NVL72 RSS to the Compute Leaf Switch Cabinet. In the 1,152 POD architecture, there would need to be separate cables or bundles routing for the NVL72 RSS to each of the 4 Compute Leaf Switch Cabinets as shown above. Each of these cables or bundles would include 18 GPUs of the associated Rail number along with any Spares.

In a 3 Tier Switching architecture, the Spine switches are also Rail Optimized and part of the Rail Group.

Note: For CPU and Out of Band management, the cabling strategy and quantities per NVL72RSS Cabinet to support the does not change between 288 and 1,152 GPU PODs (lengths may differ based on actual POD layout).



Interactive Content Menu												
Ethernet and InfriniBand Applications	Gen AI Key Solutions	Direct Connect Cabling	800G/400G Parallel Applications	800G/400G Serial Applications	800G - 4x 200G 200G - 200G Parallel Applications	400G - 2x 200G Parallel Applications	Shuffle Architectures	Fiber Polarity Schemes	CommScope Rapid Fiber Connect™	CommScope Propel Solutions	SYSTIMAX Copper Solutions	CommScope FiberGuide

Reference Design Menu					
NVIDIA NVL72 GB200/GB300 288 GPU POD Reference Design			NVIDIA NVL72 GB200/GB300 1,152 GPU Scalable Unit Reference Design		
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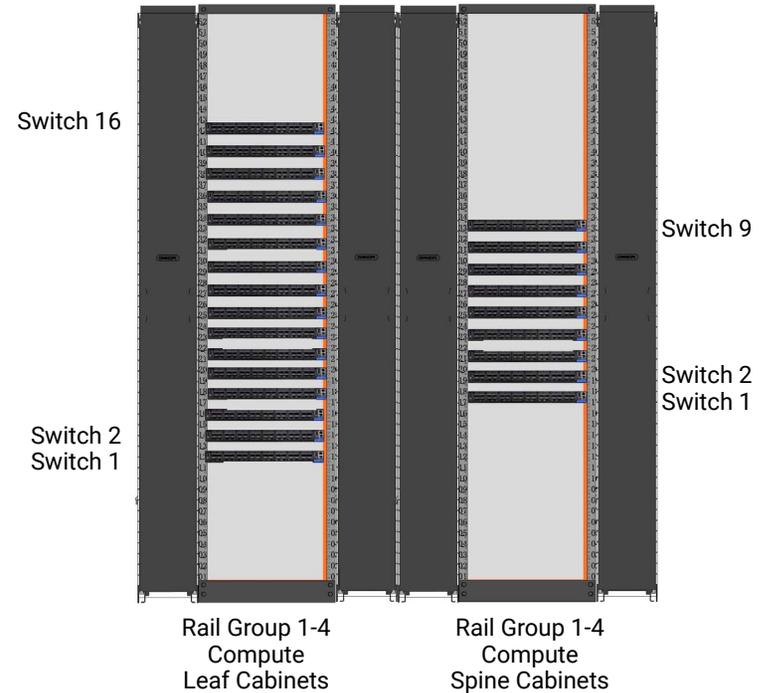
In an 1,152 GPU POD using 1RU Leaf Switches, the Leaf Switch Cabinets will contain 16 x 1RU switches accommodating 64 MPO connections using Twin Port Transceivers, just as we see with the 288 GPU POD design. In the case of the 1,152 GPU POD, each 1RU Switch will be allocated to a single NVL72 RSS Cabinet (16 NVL72 RSS Cabinets in a POD = 16 Switches).

All GPUs of the associated number will be routed to that Leaf Switch Cabinet.

- GPU1 -> Rail 1
- GPU2 -> Rail 2
- GPU 3 -> Rail 3
- GPU 4 -> Rail 4

Using Twin Port Transceivers, this will take up 16 of the available 64 ports on a 1RU switch.

Connecting the Leaf Switches to the Spine Switches in this application will be done just as it was in the 288 GPU PODs were in the 1,152 GPU POD the Spine Switches will continue the Rail Optimized approach.



GPU Facing Ports:
NVL72RSS Cabinet (A-P) –
GPU Compute Tray (1-18)

Open Ports

Spine Facing Ports:
Rail Group Number (1-4) –
Switch Chassis (1-9)

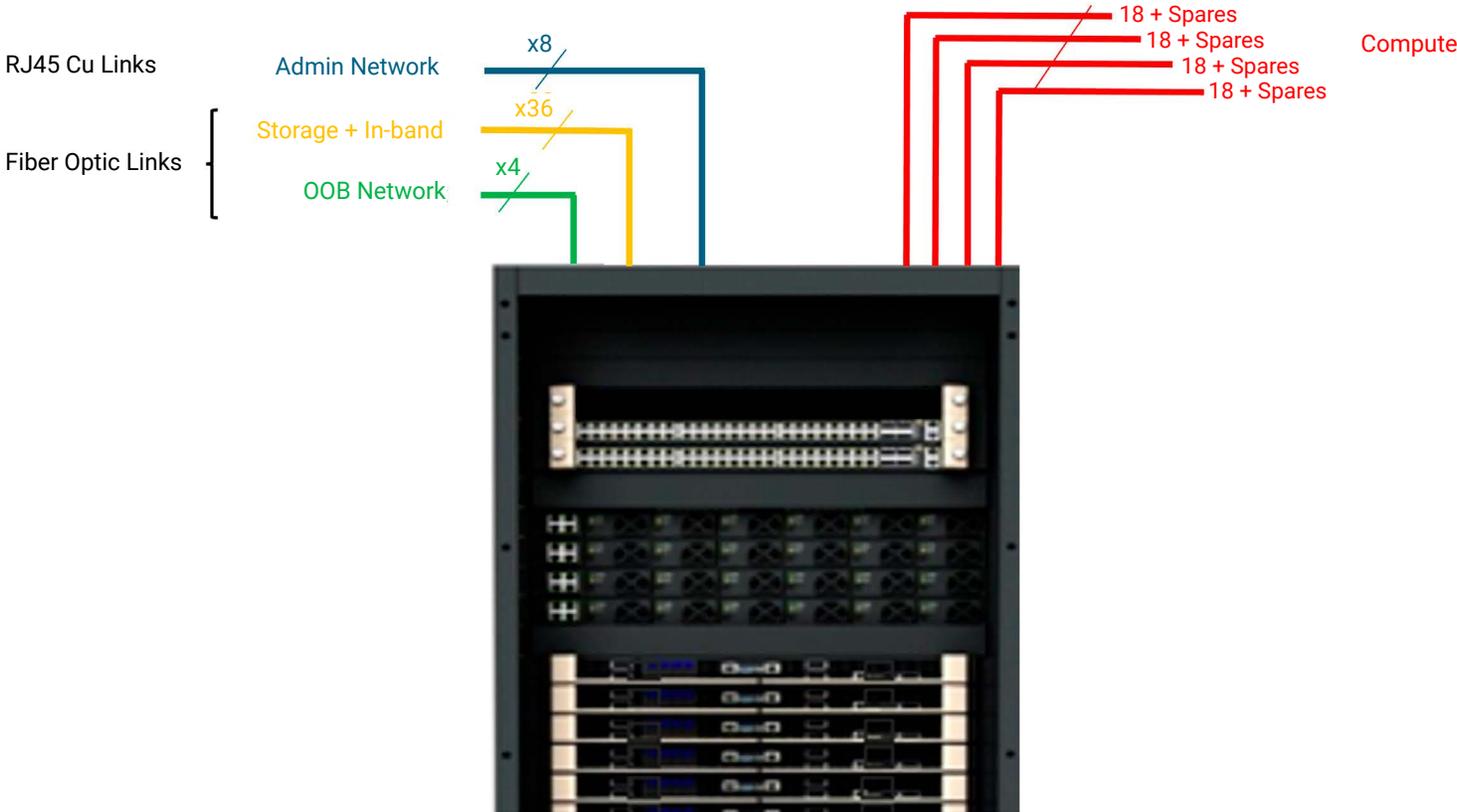
Open Ports

A-T1	A-T2	A-T3	A-T4	A-T5	A-T6	A-T7	A-T8	A-T9	A-T10							R1.1	R1.1	R1.2	R1.2	R1.3	R1.3	R1.4	R1.4	R1.5	R1.5						
A-T11	A-T12	A-T13	A-T14	A-T15	A-T16	A-T17	A-T18									R1.6	R1.6	R1.7	R1.7	R1.8	R1.8	R1.9	R1.9								

1RU Leaf Switch Port Configuration
Rail 1 – Switch 1 using Twin Port Transceivers

Interactive Content Menu												
Ethernet and Infraband Applications	Gen AI Key Solutions	Direct Connect Cabling	800G/400G Parallel Applications	800G/400G Serial Applications	800G – 4x 200G 200G – 200G Parallel Applications	400G – 2x 200G Parallel Applications	Shuffle Architectures	Fiber Polarity Schemes	CommScope Rapid Fiber Connect™	CommScope Propel Solutions	SYSTIMAX Copper Solutions	CommScope FiberGuide

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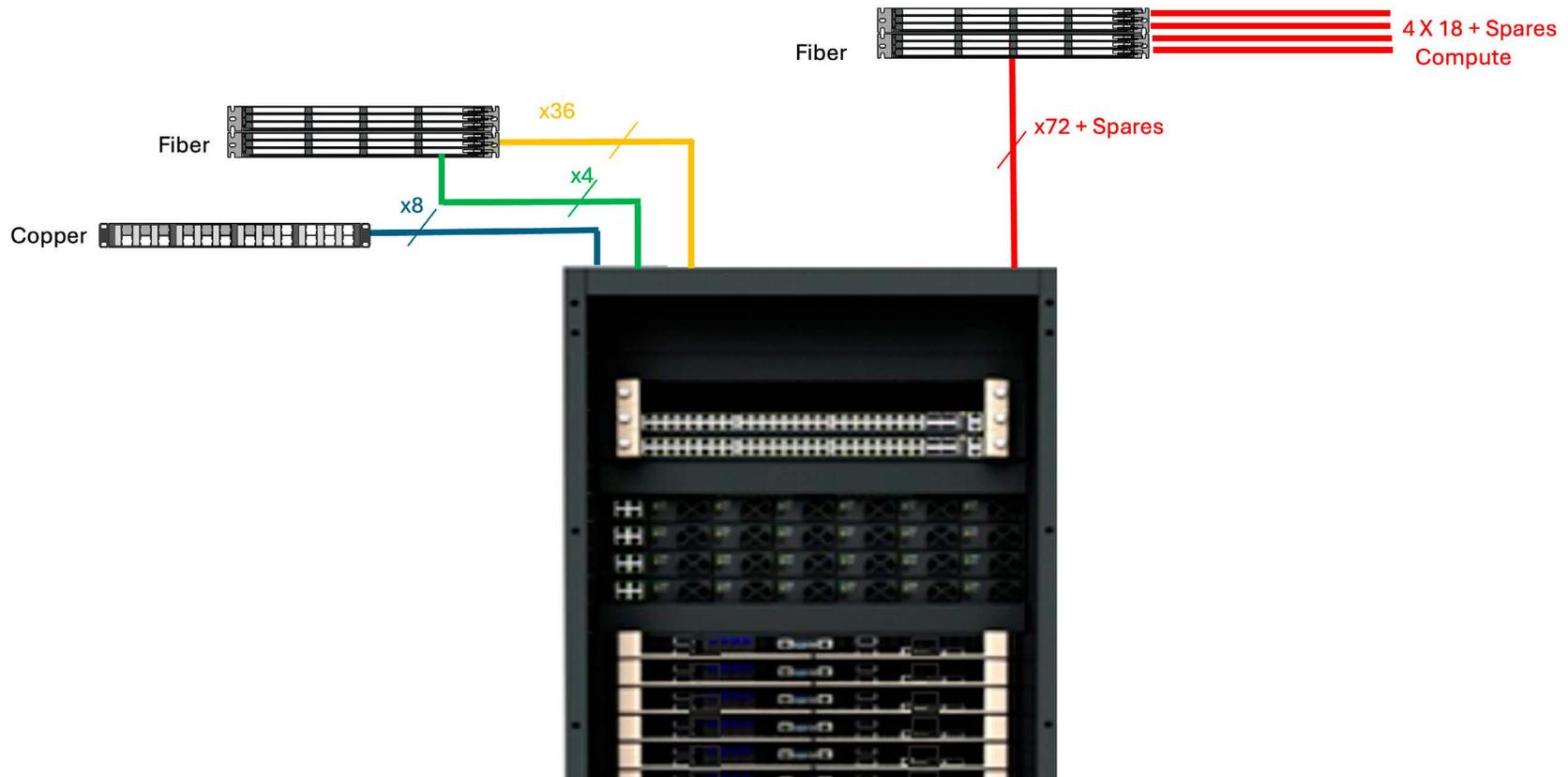


NVL72 Network Types

- Compute – GPU Fabric
- Storage + In-band – CPU Fabric
- OOB Network
- Admin Network

Interactive Content Menu												
Ethernet and InfiniBand Applications	Gen AI Key Solutions	Direct Connect Cabling	800G/400G Parallel Applications	800G/400G Serial Applications	800G – 4x 200G Parallel Applications	400G – 2x 200G Parallel Applications	Shuffle Architectures	Fiber Polarity Schemes	CommScope Rapid Fiber Connect™	CommScope Propel Solutions	SYSTIMAX Copper Solutions	CommScope FiberGuide

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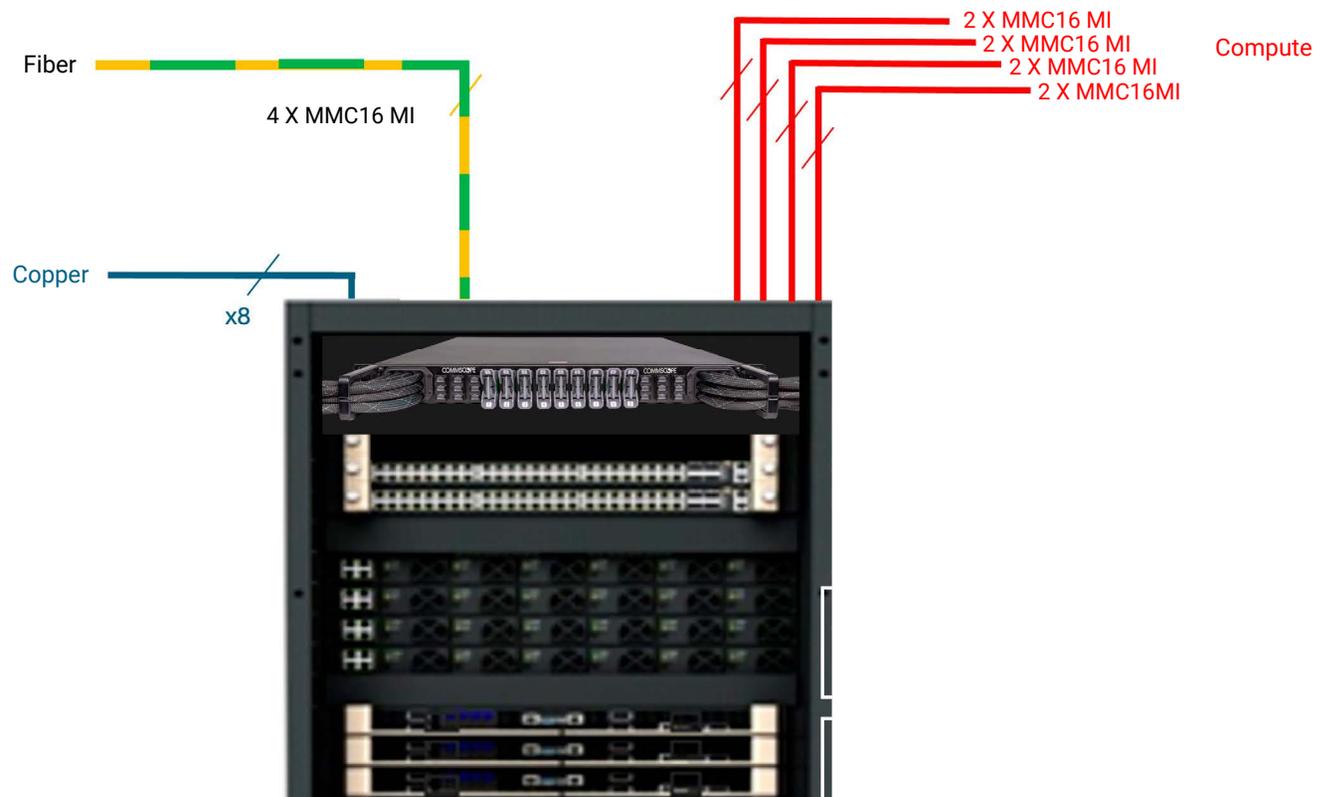
Note: 12 MPO Spares are suggested for the Compute Fabric. It's recommended that the customer defines their spares strategy for this fabric, and the Storage+ Inband Fabric, and adjust the BoM to reflect this strategy

NVL72 Network Types

- Compute – GPU Fabric
- Storage + In-band – CPU Fabric
- OOB Network
- Admin Network

Interactive Content Menu												
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NVL72 Network Types

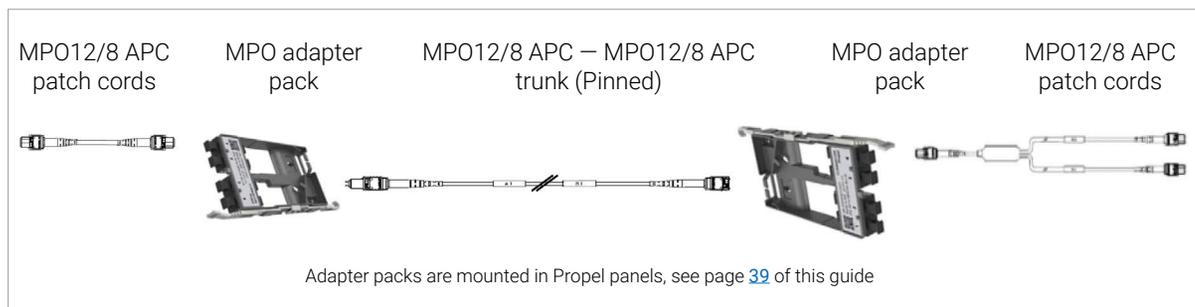
- Compute – GPU Fabric
- Storage + In-band, OOB – GPU + CPU Fabric
- Admin Network

Interactive Content Menu												
Ethernet and InfiniBand Applications	Gen AI Key Solutions	Direct Connect Cabling	800G/400G Parallel Applications	800G/400G Serial Applications	800G – 4x 200G Parallel Applications	400G – 2x 200G Parallel Applications	Shuffle Architectures	Fiber Polarity Schemes	CommScope Rapid Fiber Connect™	CommScope Propel Solutions	SYSTIMAX Copper Solutions	CommScope FiberGuide

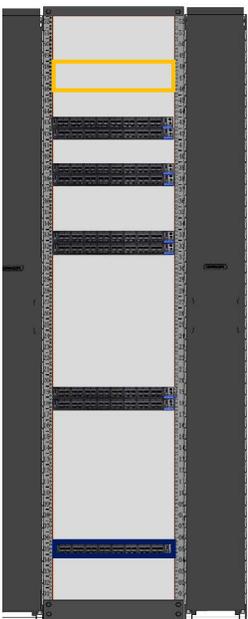
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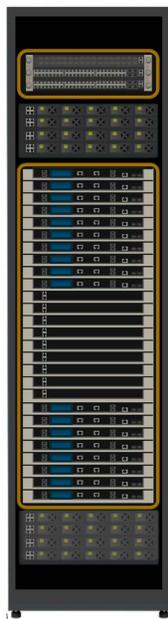
Cabling Channel



Note: The structured cabling backbone is built with MPO12/8 APC connectors to be ready for 400G + applications.



CPU Leaf Cabinet

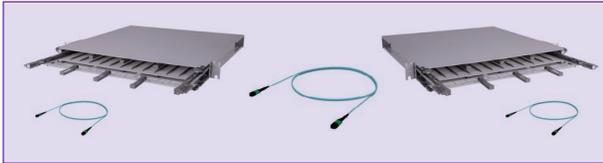


4 Compute Cabinets

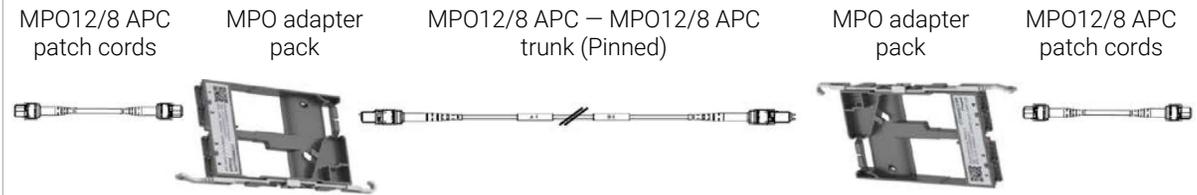
Product Family	CommScope Description	CommScope MID
Fiber Adapter Pack	Propel pass-through adapter pack, 4 MPO12/8-12-24 ports, Type B	760252371
Fiber Panels	Propel 2RU sliding tray fiber panel, accepts Propel ULL modules or adapter packs, providing up to 144 duplex LC ports, 144 MPO ports or 288 SN ports (576f)	760252003
Fiber Panels	Propel 4RU sliding tray fiber panel, accepts Propel ULL modules or adapter packs, providing up to 288 duplex LC ports, 288 MPO ports or 576 SN ports (1152f)	760252004
MPO Cable Assemblies	Ultra Low Loss (ULL) OM4 MPO12/8 APC (Pinned) to MPO12/8 APC (Pinned), Fiber Trunk Cable Assembly, 144-Fiber, Plenum	U3XQZQZTM
MPO Cable Assemblies	Ultra Low Loss (ULL) OM4 MPO APC (Non-Pinned) to MPO (Non-Pinned), Fiber Trunk Cable Assembly, 8-Fiber, Dual Rated (OFNR/LSZH)	URXQVQPF8

Interactive Content Menu												
Ethernet and Infraband Applications	Gen AI Key Solutions	Direct Connect Cabling	800G/400G Parallel Applications	800G/400G Serial Applications	800G - 4x 200G 200G - 200G Parallel Applications	400G - 2x 200G Parallel Applications	Shuffle Architectures	Fiber Polarity Schemes	CommScope Rapid Fiber Connect™	CommScope Propel Solutions	SYSTIMAX Copper Solutions	CommScope FiberGuide

Reference Design Menu					
NVIDIA NVL72 GB200/GB300 288 GPU POD Reference Design			NVIDIA NVL72 GB200/GB300 1,152 GPU Scalable Unit Reference Design		
Compute Cabinet	Compute to Management Cabinets	Admin Network	Compute Cabinet	Compute to Management Cabinets	Admin Network

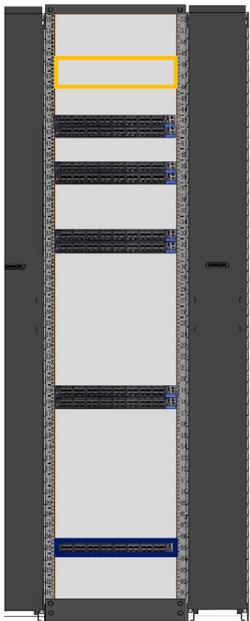


Cabling Channel

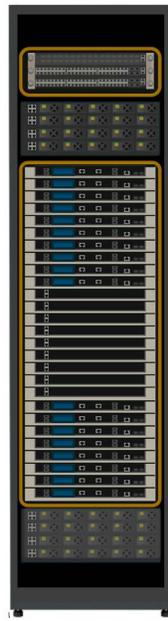


Adapter packs are mounted in Propel panels, see page 39 of this guide

Note: The structured cabling backbone is built with MPO12/8 APC connectors to be ready for 400G + applications.



CPU Leaf Cabinet

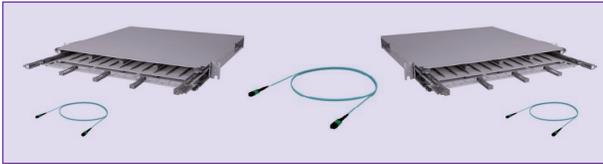


4 Compute Cabinets

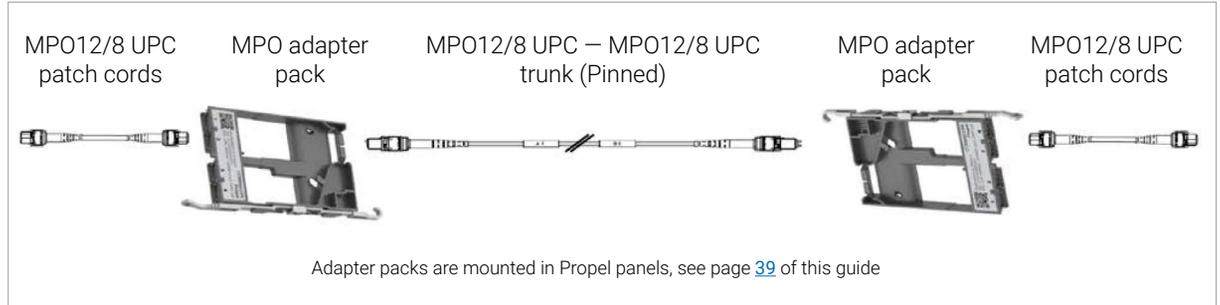
Product Family	CommScope Description	CommScope MID
Fiber Adapter Pack	Propel pass-through adapter pack, 4 MPO12/8-12-24 ports, Type B	760252371
Fiber Panels	Propel 2RU sliding tray fiber panel, accepts Propel ULL modules or adapter packs, providing up to 144 duplex LC ports, 144 MPO ports or 288 SN ports (576f)	760252003
Fiber Panels	Propel 4RU sliding tray fiber panel, accepts Propel ULL modules or adapter packs, providing up to 288 duplex LC ports, 288 MPO ports or 576 SN ports (1152f)	760252004
MPO Cable Assemblies	Ultra Low Loss (ULL) OM4 MPO12/8 APC (Pinned) to MPO12/8 APC (Pinned), Fiber Trunk Cable Assembly, 144-Fiber, Plenum	U3XQZQZTM
MPO Cable Assemblies	Ultra Low Loss (ULL) OM4 MPO12/8 APC (Non-Pinned) to MPO12/8 APC (Non-Pinned), Fiber Trunk Cable Assembly, 8-Fiber, Dual Rated (OFNR/LSZH)	URXQVQVF8

Interactive Content Menu												
Ethernet and Infraband Applications	Gen AI Key Solutions	Direct Connect Cabling	800G/400G Parallel Applications	800G/400G Serial Applications	800G – 4x 200G 200G – 200G Parallel Applications	400G – 2x 200G Parallel Applications	Shuffle Architectures	Fiber Polarity Schemes	CommScope Rapid Fiber Connect™	CommScope Propel Solutions	SYSTIMAX Copper Solutions	CommScope FiberGuide

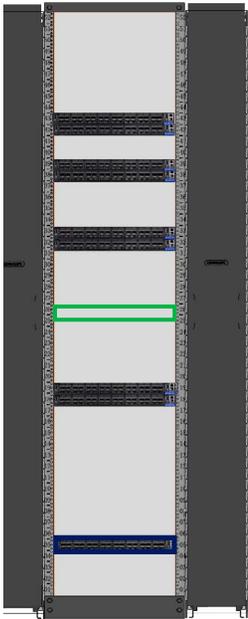
Reference Design Menu					
NVIDIA NVL72 GB200/GB300 288 GPU POD Reference Design			NVIDIA NVL72 GB200/GB300 1,152 GPU Scalable Unit Reference Design		
Compute Cabinet	Compute to Management Cabinets	Admin Network	Compute Cabinet	Compute to Management Cabinets	Admin Network



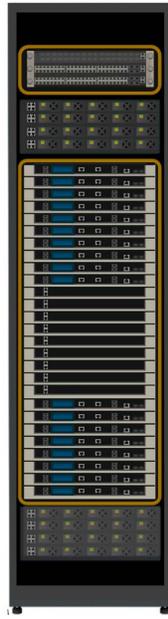
Cabling Channel



Note: The structured cabling backbone is built with MPO12/8 APC connectors to be ready for 400G + applications.



CPU Leaf Cabinet

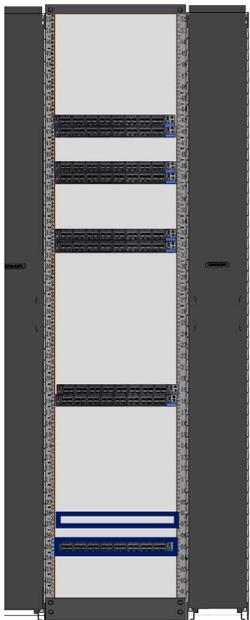


4 Compute Cabinets

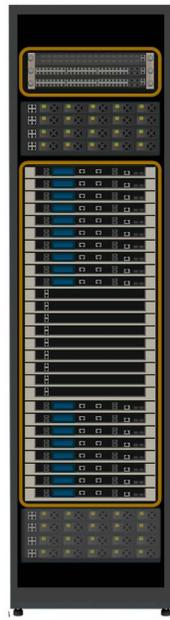
Product Family	CommScope Description	CommScope MID
Fiber Adapter Pack	Propel pass-through adapter pack, 4 MPO12/8-12-24 ports, Type B	760252371
Fiber Panels	Propel 1RU sliding tray fiber panel, accepts Propel ULL modules or adapter packs, providing up to 72 duplex LC ports, 72 MPO ports or 144 SN ports (288f)	760252002
Fiber Panels	Propel 2RU sliding tray fiber panel, accepts Propel ULL modules or adapter packs, providing up to 144 duplex LC ports, 144 MPO ports or 288 SN ports (576f)	760252003
MPO Cable Assemblies	Ultra Low Loss (ULL) OM4 MPO12/8 (Pinned) to MPO12/8 (Pinned), Fiber Trunk Cable Assembly, 32-Fiber, Plenum	UGXQXQXTS
MPO Cable Assemblies	Ultra Low Loss (ULL) OM4 MPO12/8 APC (Non-Pinned) to MPO12/8 APC (Non-Pinned), Fiber Trunk Cable Assembly, 8-Fiber, Dual Rated (OFNR/LSZH)	URXQPQPF8

Interactive Content Menu												
Ethernet and Infraband Applications	Gen AI Key Solutions	Direct Connect Cabling	800G/400G Parallel Applications	800G/400G Serial Applications	800G - 4x 200G 200G - 200G Parallel Applications	400G - 2x 200G Parallel Applications	Shuffle Architectures	Fiber Polarity Schemes	CommScope Rapid Fiber Connect™	CommScope Propel Solutions	SYSTIMAX Copper Solutions	CommScope FiberGuide

Reference Design Menu					
NVIDIA NVL72 GB200/GB300 288 GPU POD Reference Design			NVIDIA NVL72 GB200/GB300 1,152 GPU Scalable Unit Reference Design		
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CPU Leaf Cabinet



16 NVL72 RSS Compute Cabinets

Product Family	CommScope Description	CommScope MID
Twisted Pair Patch Cords	GigaSPEED X10D® MGS600 to MGS600 on 2091B Plenum Cable Pre-terminated Cord	CPCUU02
Twisted Pair Patch Cords	MiNo6A Cat 6A U/UTP Reduced Diameter RJ45 Patch Cord, LS-CM Dual Rated	CO199K2
Copper Panels	M4800 1U Modular Panel, 48 port (MGS600 / MGS400 / MPS100 / UNJ10GT / UNJ600T / UNJ10G / UNJ600 / UNJ500), Black	760105429
Copper Panels	M2400 1U Modular Panel, 24 port (MGS600 / MGS400 / MPS100 / UNJ10GT / UNJ600T / UNJ10G / UNJ600 / UNJ500), Black	760118323

Note: A Full BoM for this network is available from your CommScope Sales Person

Interactive Content Menu												
Ethernet and InfiniBand Applications	Gen AI Key Solutions	Direct Connect Cabling	800G/400G Parallel Applications	800G/400G Serial Applications	800G - 4x 200G 200G - 200G Parallel Applications	400G - 2x 200G Parallel Applications	Shuffle Architectures	Fiber Polarity Schemes	CommScope Rapid Fiber Connect™	CommScope Propel Solutions	SYSTIMAX Copper Solutions	CommScope FiberGuide

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CommScope Data Center Support

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Ethernet and InfiniBand Applications	Gen AI Key Solutions	Direct Connect Cabling	800G/400G Parallel Applications	800G/400G Serial Applications	800G – 4x 200G 200G – 200G Parallel Applications	400G – 2x 200G Parallel Applications	Shuffle Architectures	Fiber Polarity Schemes	CommScope Rapid Fiber Connect™	CommScope Propel Solutions	SYSTIMAX Copper Solutions	CommScope FiberGuide

Reference Design Menu					
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Ethernet and InfriniBand Applications	Gen AI Key Solutions	Direct Connect Cabling	800G/400G Parallel Applications	800G/400G Serial Applications	800G – 4x 200G 200G – 200G Parallel Applications	400G – 2x 200G Parallel Applications	Shuffle Architectures	Fiber Polarity Schemes	CommScope Rapid Fiber Connect™	CommScope Propel Solutions	SYSTIMAX Copper Solutions	CommScope FiberGuide

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