



CORNING

Behind the Base

Understanding the Numbers of Connectivity



Have you ever wondered about the **differences between Base-2, Base-24**, and all the numbers in between? This overview will introduce you to the **basics of cabling solutions** — and where each is most applicable.

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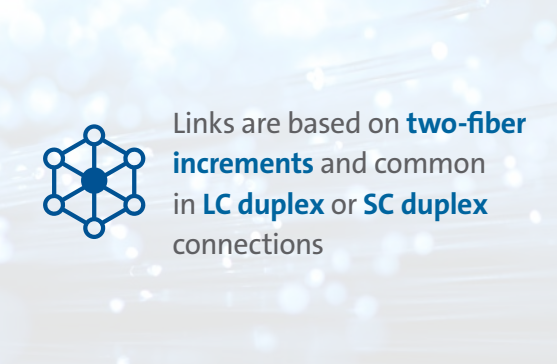
Base-2 Backbone



Terminated with splice boxes, breakout boxes, or preterminated **low-fiber-count solutions**



LC duplex is the dominant interface up to 10G and still widely used to breakout from higher-fiber-count transceivers



Links are based on **two-fiber increments** and common in **LC duplex** or **SC duplex** connections



Used in **LAN environments** or **entry-level data center** applications supporting 10G to 100G applications



SAMPLE LINK COMPONENTS



Transceiver with LC Duplex Interface



LC Duplex Patch Cord



Fiber Optic Housing with LC Duplex Adapters



Preterminated LC Duplex to LC Duplex Backbone Trunk



Fiber Optic Housing with LC Duplex Adapters



LC Duplex Patch Cord



Transceiver with LC Duplex Interface

Base-8 Backbone



Using **preterminated trunks** and **high-density patch panels** infrastructures

Capable to integrate 8F MPO-12, MPO-16 (one row), 24F MPO-12 DD, SN, MDC, CS, LC duplex



Dominant for 40G supporting 10G to 1.6T applications and is widely believed to be the **most flexible option** to accommodate **future industry trends**



Links are based on **8-fiber increments**, with 8-fiber MPO-MTP® connectors supporting port breakout without changing the installed backbone and full fiber utilization



Allows **data centers to migrate** to new transceiver technologies **with minimal to no change** in existing cabling infrastructure



SAMPLE LINK COMPONENTS



Transceiver with 8F MPO-12 Interface



MPO-8 Patch Cord



MPO-8 Adapter Panel



MPO-8 Trunk



MPO-8 to LC Module

Option 1



LC Duplex Patch Cord

Transceiver with VSFF Interface



Option 2

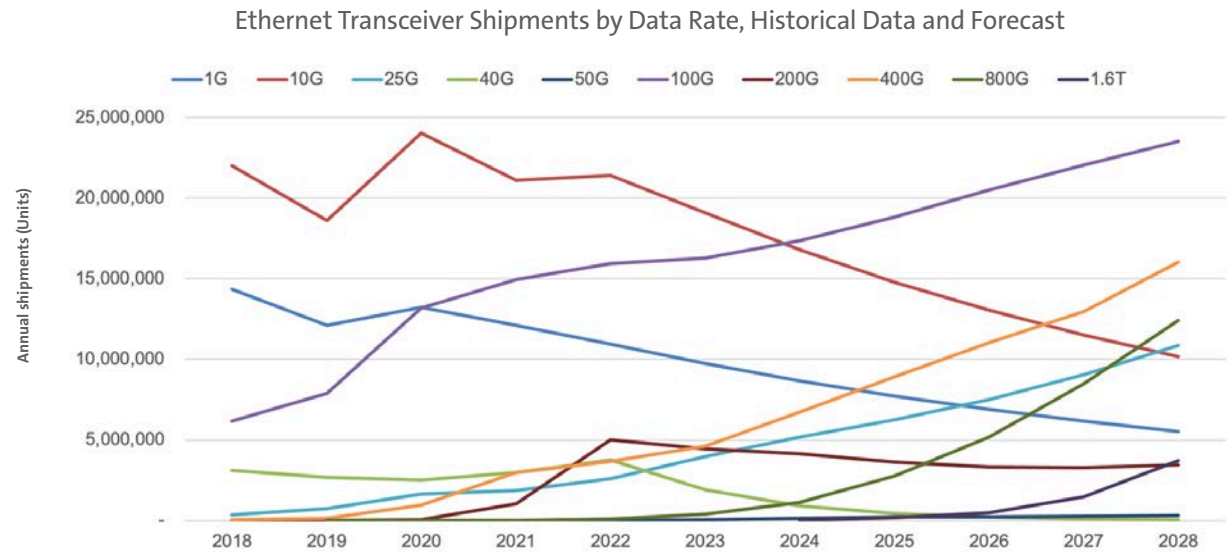


Transceiver with LC Duplex Interface

BASE-8 is widely believed to be the most flexible and most granular option to accommodate future trends and connectivity needs



Major equipment manufacturers assert **Base-8** and **Base-2** transceiver types will be used for Ethernet transmission ranging from **40G** to **1.6T** speed.



Source: Lightcounting High-Speed Ethernet Optics – March 2023

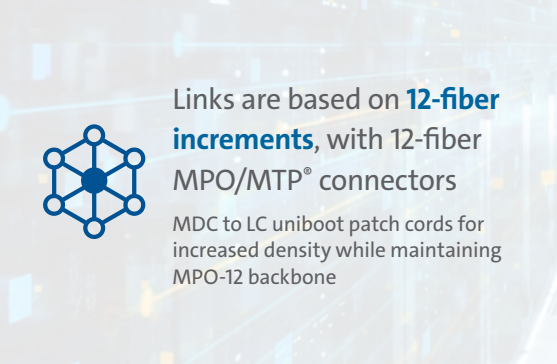
Base-12 Backbone



Trunk cables are used in the **network backbone** and **two-fiber cables** are used for connectivity to server, switch, and storage unit ports



Used by **small-to-large data centers and MTDCs** using duplex transceivers in a high-density infrastructure supporting 10G to 1.6T



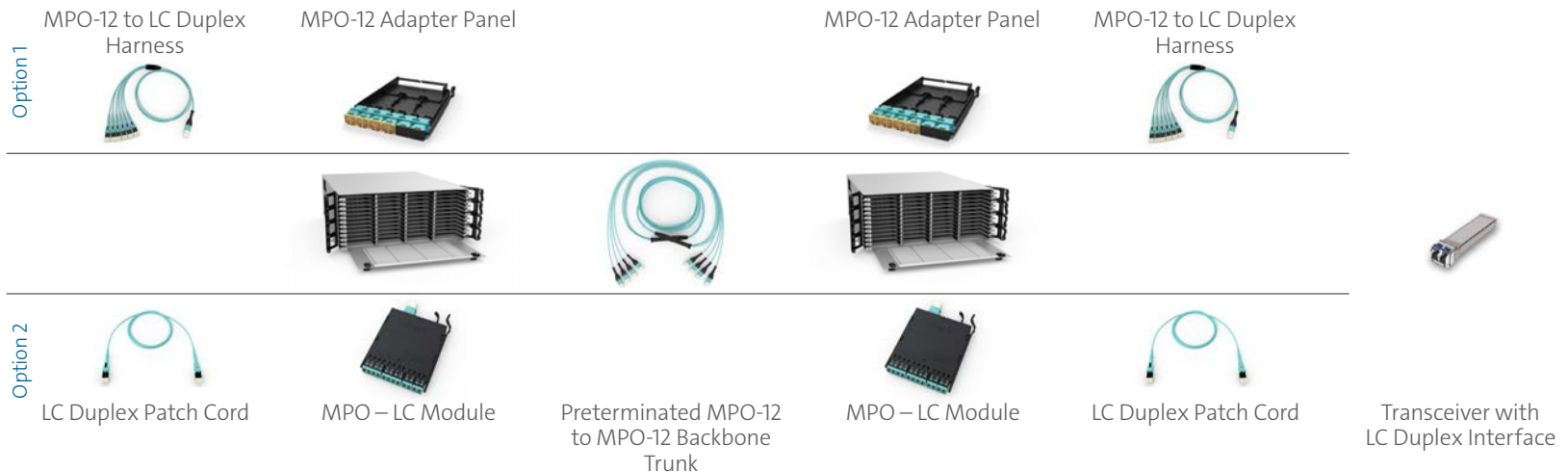
Links are based on **12-fiber increments**, with 12-fiber MPO/MTP® connectors
MDC to LC uniboot patch cords for increased density while maintaining MPO-12 backbone



Provides fast, easy installation with preterminated multifiber solutions and traditional telecom compatibility
Compatibility with 8-fiber transceivers by using conversion modules



SAMPLE LINK COMPONENTS




Base-16 Backbone



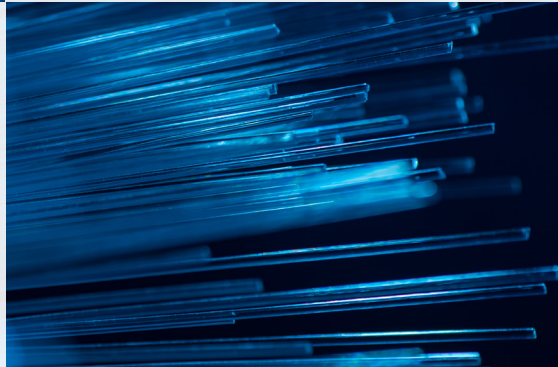
Suitable for greenfield applications, as it offers a **limited backward compatibility** with existing Base-8 and Base-12 backbones (conversion required)



Using **preterminated trunks** and **high-density patch panels**, port breakout to lower speeds must be supported with 2-fiber LC duplex or 8-fiber MPO-12 components



Links are based on **16-fiber increments**, with 16-fiber MPO/MTP® (one-row) connectors, not typical in MM applications



Suitable for **medium to large data centers** planning to standardize MPO-16 APC (one-row) connectors (e.g., 400G-SR8), supporting 10G to 1.6T speed



SAMPLE LINK COMPONENTS



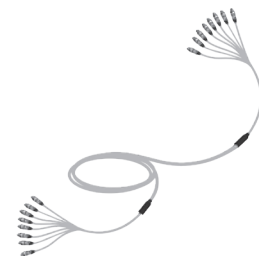
Transceiver with MPO-16 APC Interface



MPO-16 Patch Cord



MPO-16 Adapter Panel



MPO-16 Trunk



MPO-16 Adapter Panel



MPO-16 Patch Cord



Transceiver with MPO-16 APC Interface

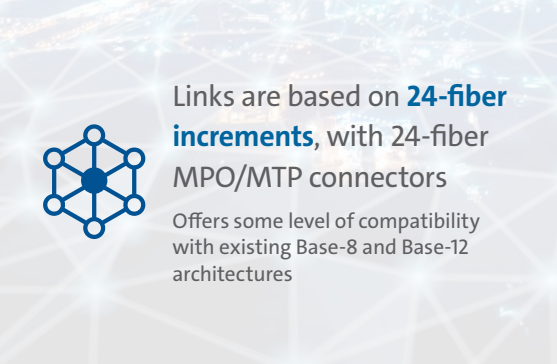
Base-24 Backbone



Base-24 backbone will require MPO/MTP® transition modules or conversion harnesses to **make it suitable** with MPO-8 and LC duplex connectivity footprints



Developed for 100GBASE-SR10 applications (20-fiber MPO-12 DD), however **LC duplex and MPO-8** at the switch are the most common connector interfaces used with **Base-24 backbone**



Links are based on **24-fiber increments**, with 24-fiber MPO/MTP connectors
Offers some level of compatibility with existing Base-8 and Base-12 architectures



Used in **small to medium data centers** to help reduce the number of connector pairs on transmission channels, supporting **10G to 100G applications**



SAMPLE LINK COMPONENTS



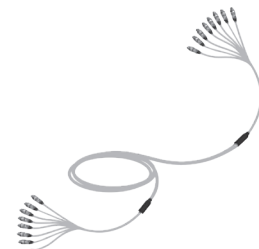
SR10 Transceiver



MPO-12 DD Patch Cord



MPO-12 Adapter Panel



Preterminated MPO-12 DD to MPO-12 DD Backbone Trunk



MPO-12 Adapter Panel



MPO-12 DD Patch Cord



SR10 Transceiver

OPTICAL TRANSCEIVER ROAD MAP & STRUCTURED CABLING

Transceiver Speed	10G	25G	40G		50G	100G			200G			400G				800G				1.6T	
Pluggable Module	SFP	SFP	SFP / QSFP		SFP / QSFP	SFP / SFP-DD / QSFP / QSFP-DD / OSFP			QSFP / QSFP-DD / SFP-DD			QSFP / QSFP-DD / OSFP				QSFP / QSFP-DD / OSFP				QSFP / QSFP-DD / OSFP / OSFP-XD	
SMF	LR	LR	LR4, FR4	PLR4	LR, FR	LR, FR, DR LR4, CWDM4	N/A	PSM4	LR4, FR4, FR, DR	N/A	DR4	LR8, FR8, FR4, LR4-6, LR4-10	2FR4	DR4, DR2, DR4-2	N/A	LR8, FR8	2L42 2FR4, FR4	DR4, DR4-2	2DR4, 2PLR4 8FR, DR8, DR8-2	DR8 DR8-2	
MMF	SR	SR	BiDiS, WDM4	SR4, eSR4	SR	BiDi, SWDM4, VR, SR	SR2	SR4	N/A	VR2, SR2	SR4	N/A	N/A	SR4.2, VR4, SR4	SR8	N/A	N/A	VR4.2, SR4.2	SR8, VR8 2VR4, 2SR4	VR8.2 SR8.2	
Fibers per transceiver	2	2	2	8	2	2	4 (2x2)	8	2	4 (2x2)	8	2	4 (2x2)	8	16 (16x1)	2	4 (2x2)	8	16 (8x2 or 16x1)	16 (8x2 or 16x1)	
Base-2	●	●	●	○	●	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Base-8	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Base-12	●	●	●	○	●	●	●	○	●	●	○	●	●	○	○	●	●	○	○	○	○
Base-16	○	○	○	○	○	○	○	○	○	○	○	○	○	○	●	○	○	○	○	●	●
Base-24	●	●	●	○	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○

● Allow full scalability, 100% fiber utilization and migration

○ Scalability and migration complexity in some degree (base conversion components, partial fiber utilization)

○ Allow scalability and migration. Limited backward compatibility with existing Base-8 and Base-12 backbones / installations

- Not recommended due to scalability limitations and high complexity

HOW TO PLAN FOR MIGRATION



The path to higher speeds will always depend on your unique needs. You may be happy with 40G now but planning to **upgrade to 100G** four years from now. Or maybe you're working with 400G and have your **eyes set on 800G** in five years. Migration will always vary based on your timeline and the available technologies in the market. But in most cases, **Base-8 will provide the ideal level of flexibility to meet your needs throughout your transition transition all the way to 1.6T.**

CORNING

Need help choosing the right solution for your data center?

Whether you need help with your current implementation or planning for the future, we can help.

Visit www.corning.com/emea/en/data-centre

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