

SENKO[®]

Advanced Components

+

Fiber 
Broadband

LATIN AMERICA CHAPTER

Evaluating Duplex and Multi-fiber Connectivity in a Rapidly Evolving Network Landscape

July 25, 2024

Leading the Fiber Optic Revolution



Top 2 global share passive optical connectivity

1+ billion connectors deployed globally

\$300 million global sales/year

590 patents granted globally

90+ VSFF patents globally

Connectivity that spans entire network

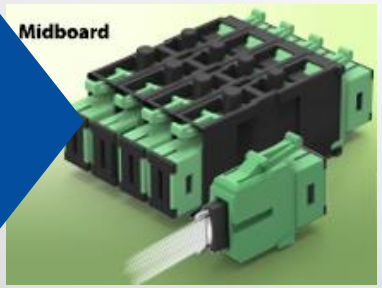
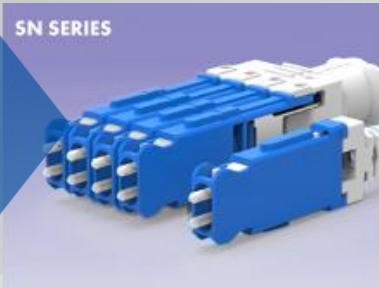
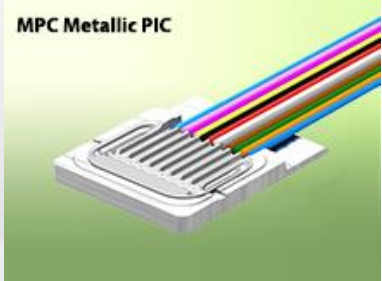
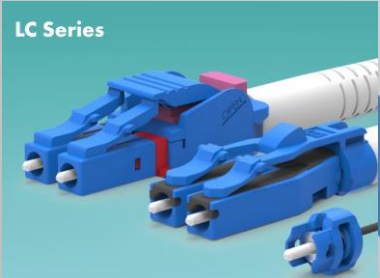
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Diverse Market Presence



TELECOM **Data Centers** SILICON PHOTONICS
WIRELESS INDUSTRIAL **Hyperscale** MEDICAL
On-Board Optics SECURITY **FTTx** AVIATION **and more...**

Connectivity Spanning the Network



Legacy

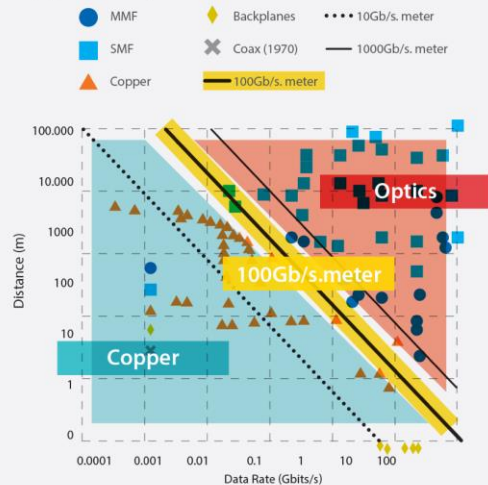
Evolution

Revolution

Current Market Status

Network congestion,
densification and complexity

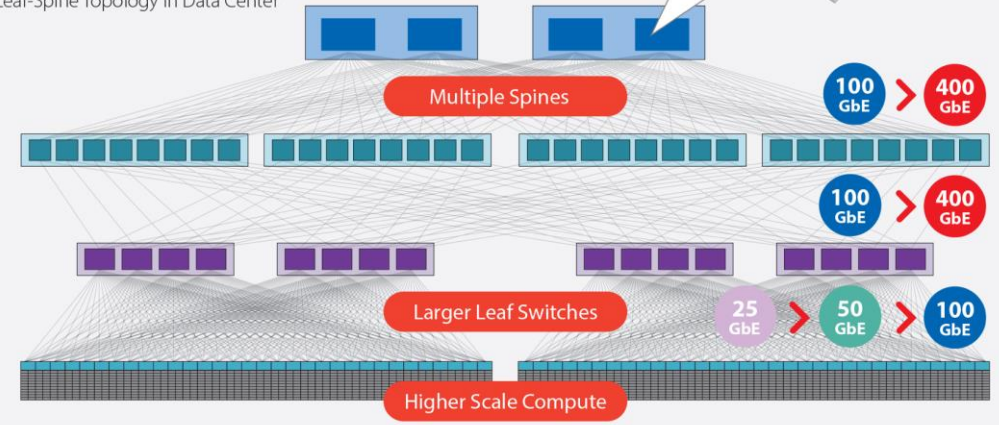
Copper vs. Optics



Network
Drive Toward
Sustainability



Distributed Data Center
Leaf-Spine Topology in Data Center



Data Rate Trends

800G is starting in 2024

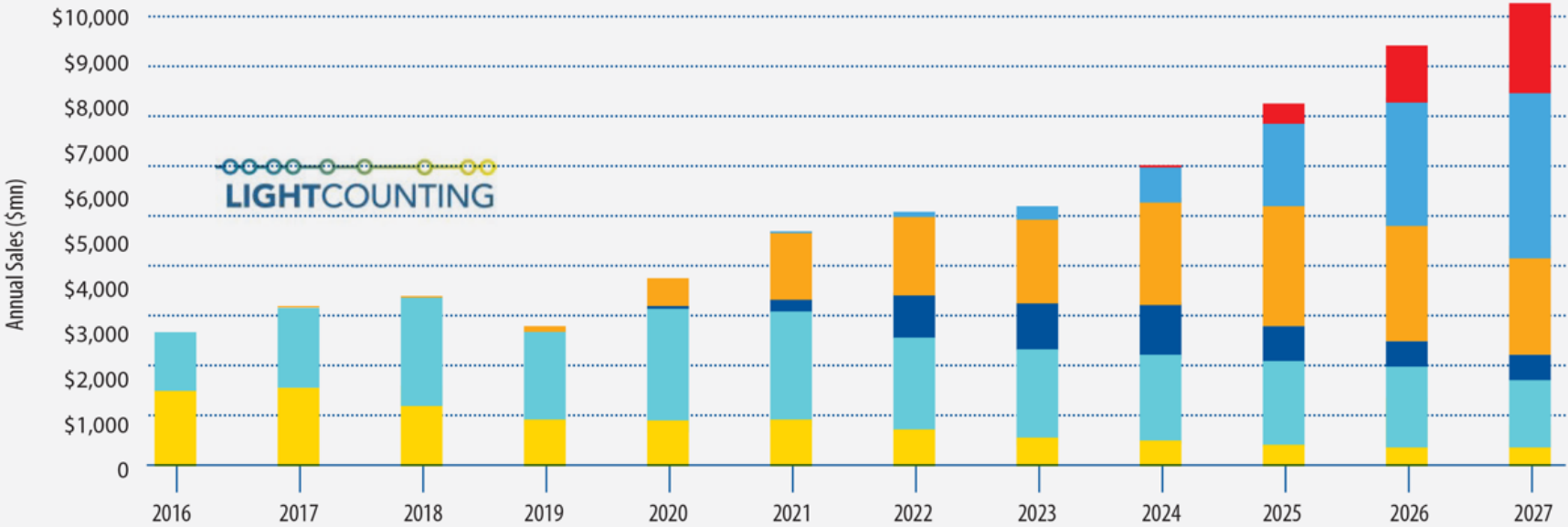
SENKO connectivity is driving next-generation applications that consume unparalleled amounts of data.



Network Data Rates



Sales of ethernet optical transceivers by Data Rate (historical data and forecast)

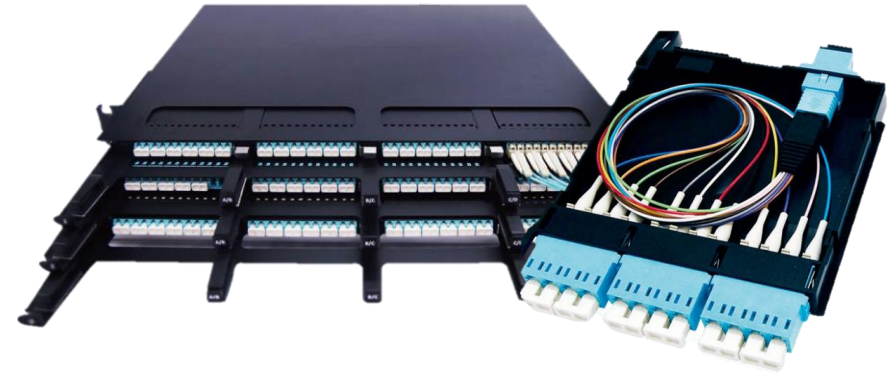


Source: September 2022 Ethernet Optics Report



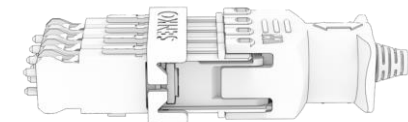
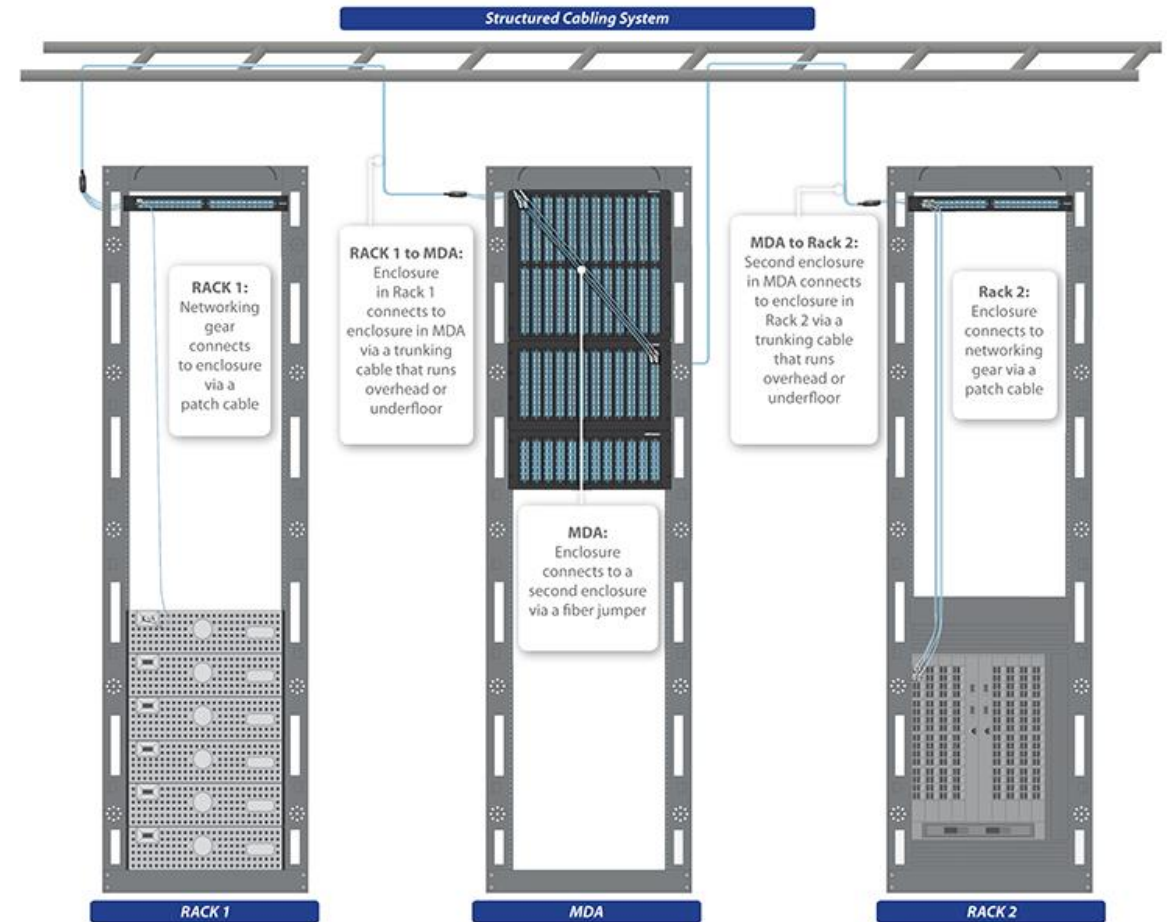
Traditional Solutions

- Chassis systems with a density of 144f per 1RU
- Cassette-based systems with MPO to LC transitions
- MPO backbone cabling with BASE8/BASE12
- LC patch panels to connect duplex servers
- Multiple connection points for network access



Centralized Cross Connects

- Fast 'splice-free' connections with MPO
- Flexibility to mix and match connector type
- Modular 'pay as you grow' approach
- High-density with up to 144 fibers per 1RU
- Factory tested and guaranteed



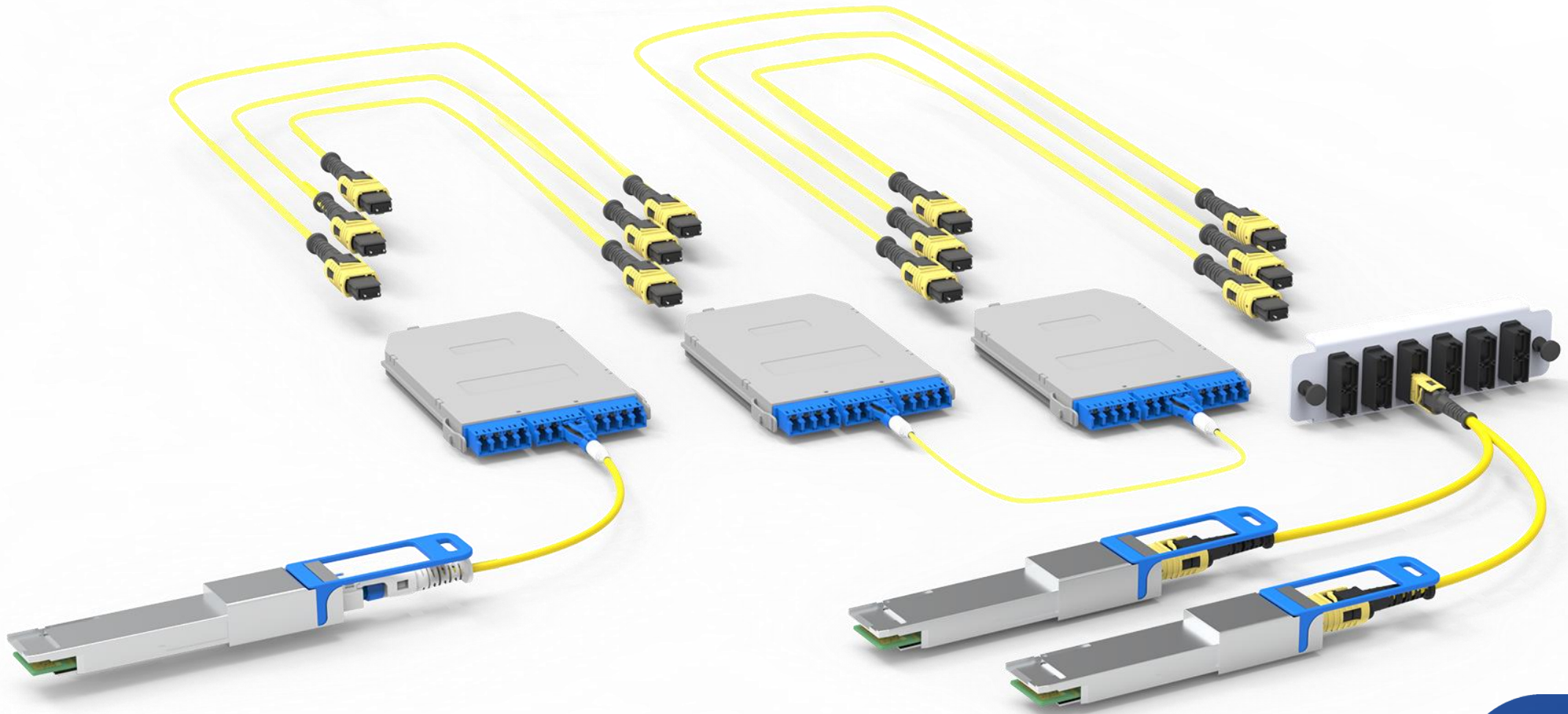
MPO-Based Applications



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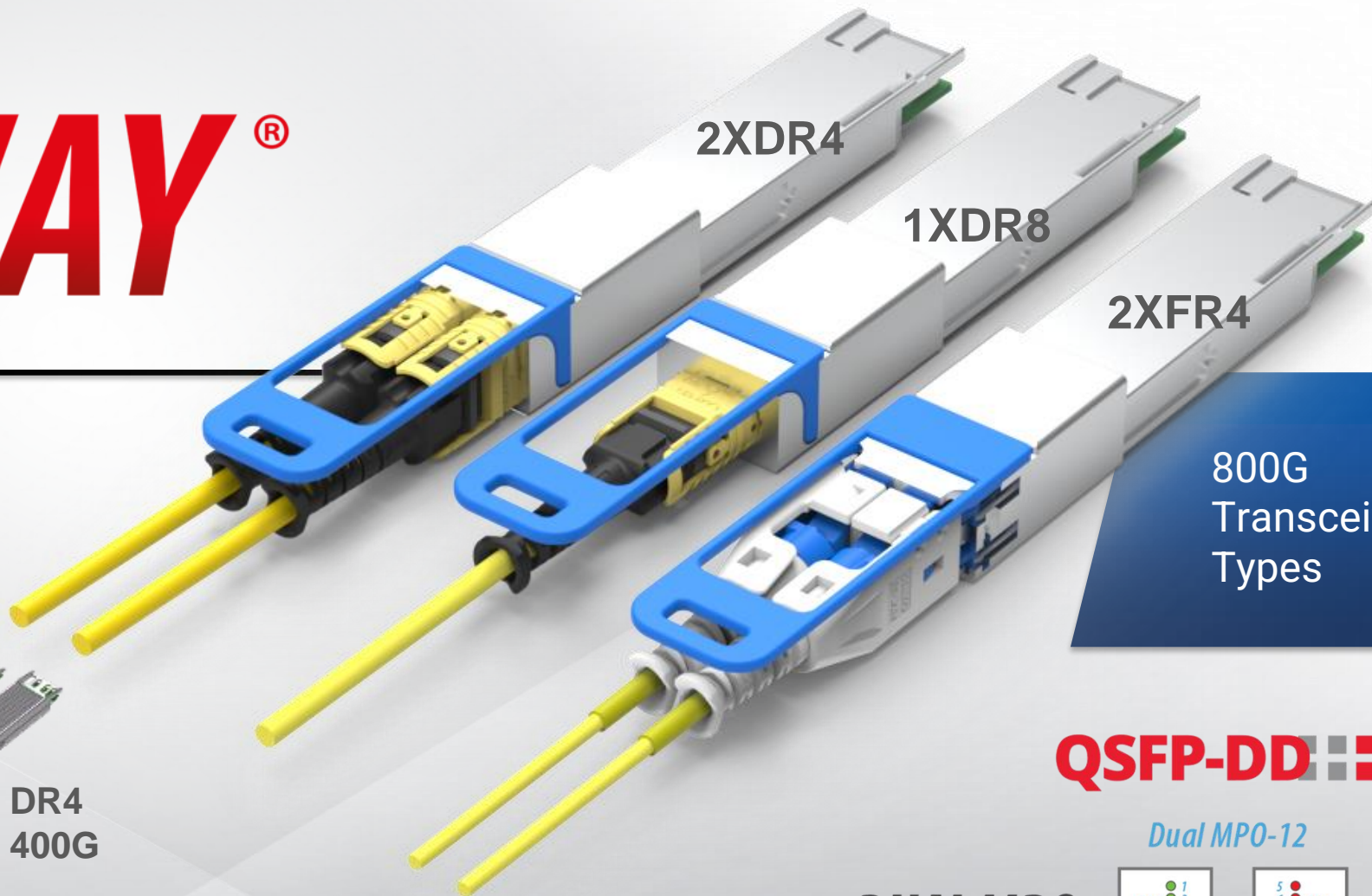
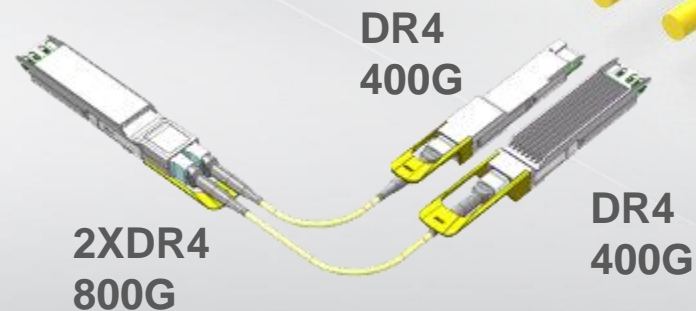
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MPO-Based Structured Cabling



EZ-WAY®

Series

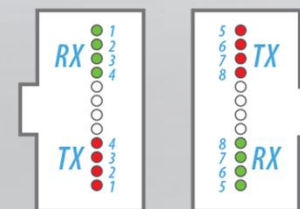


800G
Transceiver
Types

QSFP-DD

Dual MPO-12

**DUAL MPO
(DR4)**



Tailored for next-gen
800G / 1.6TB transceivers

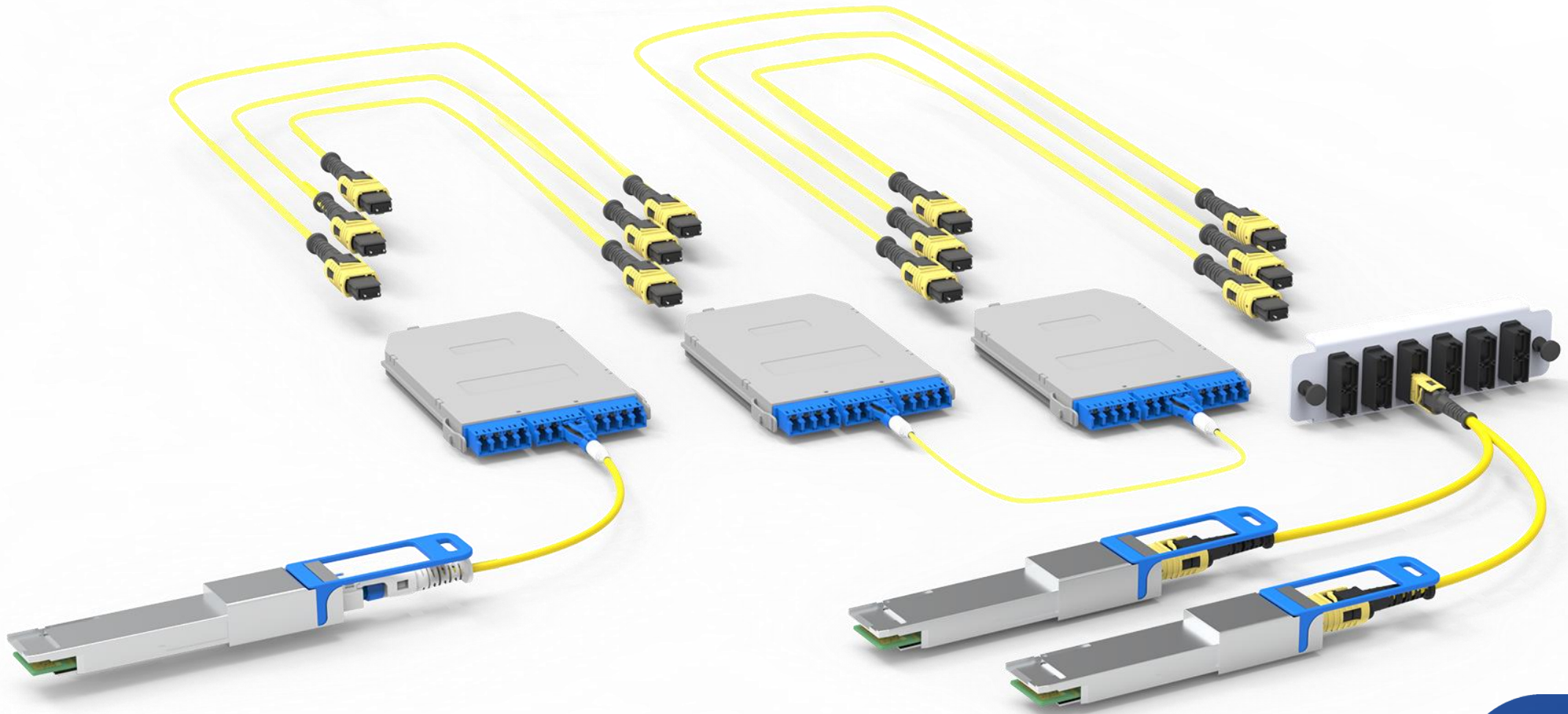
LC-Duplex Based Applications



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MPO-Based Structured Cabling



Poll Question 1

What do you consider to be the most important aspect in building a future-proofed network?

- Reducing unnecessary connections to optimise link performance
- Maintaining granularity at the duplex level (lane shuffling)
- Building a more sustainable network
- Achieving the highest possible density
- Simplified network design for faster and easier maintenance

VSFF Connectivity Overview

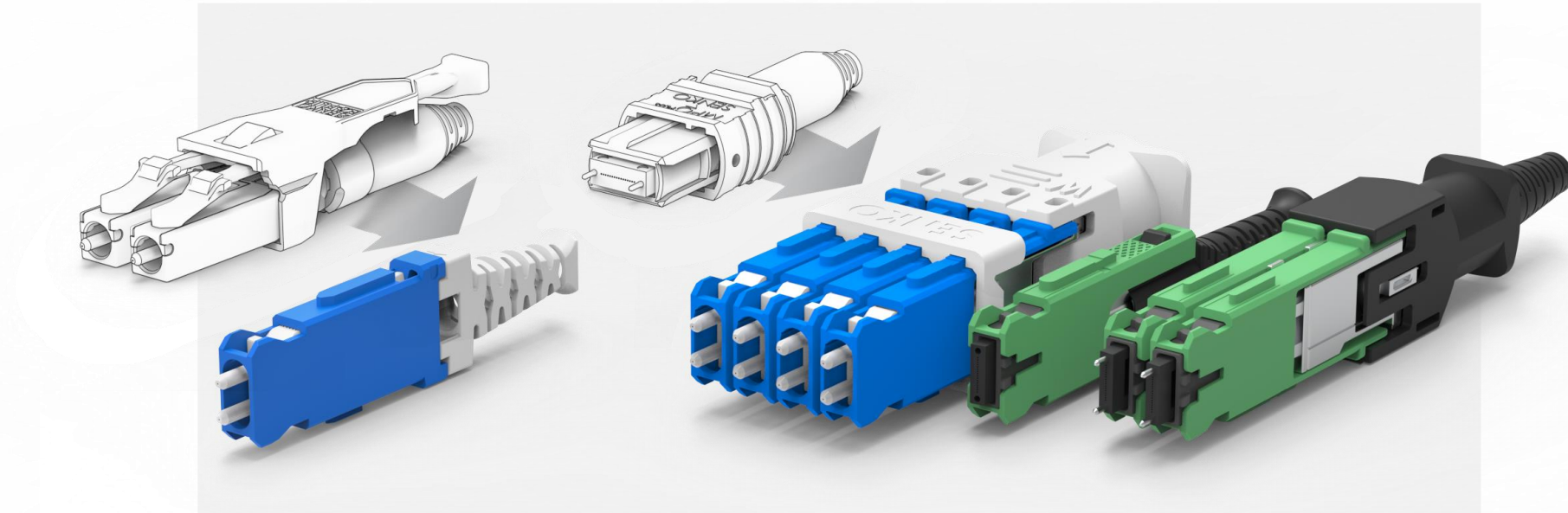


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VSFF Overview

Upgrade legacy
networks



SN[®]

- Transceiver Densification
- Direct Breakout Capability
- Transceiver Shuffling
- B2 Patch Panel Densification

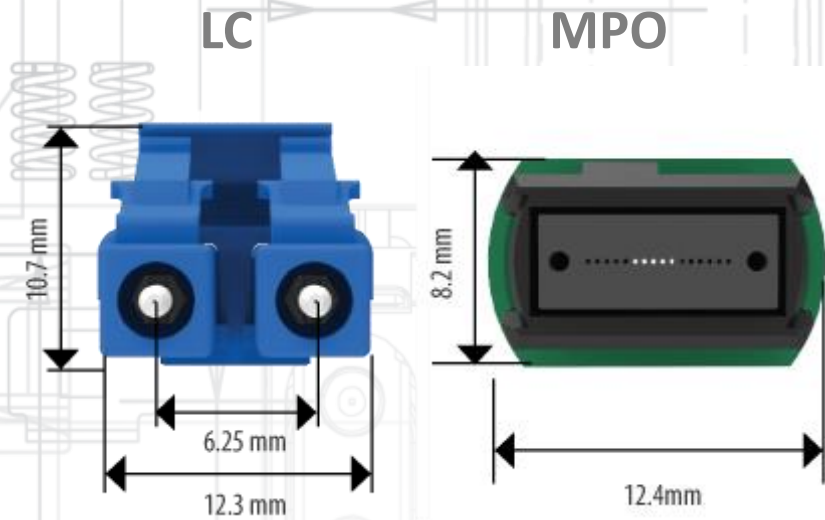
SN[®] Uniboot

- Backbone Trunk Optimization

SN[®]-MT

- Inter-DC Trunk Optimization
- Base-8/Base-16 Patch Panel Densification
- CPO Switch Density

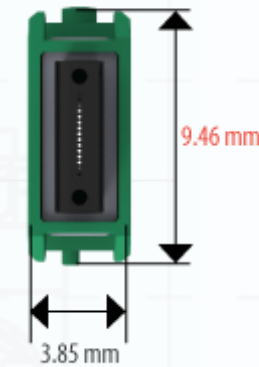
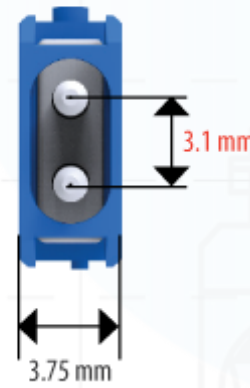
VSFF Size Comparison



VS

SN[®]

SN[®]-MT



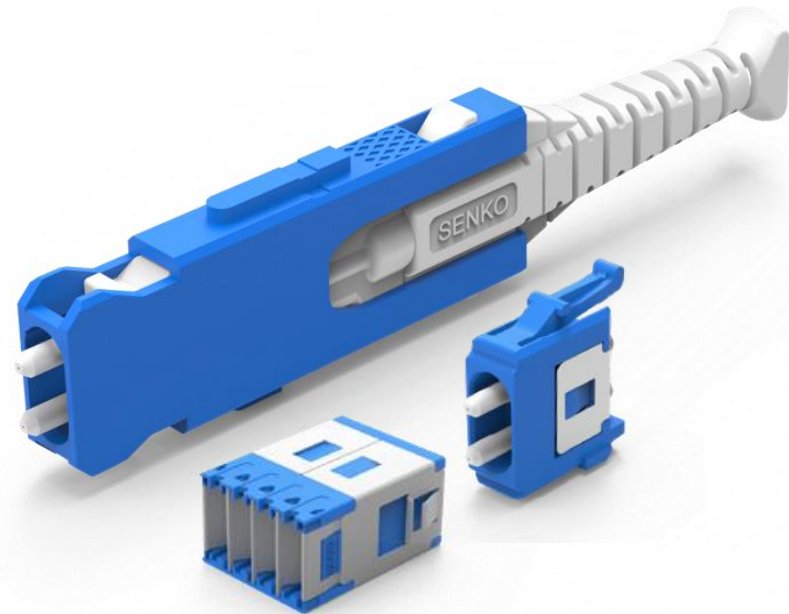
3x
Denser

27x
Denser

Up to 3x denser than legacy connectors

VSFF Connector

Duplex **SN[®]**



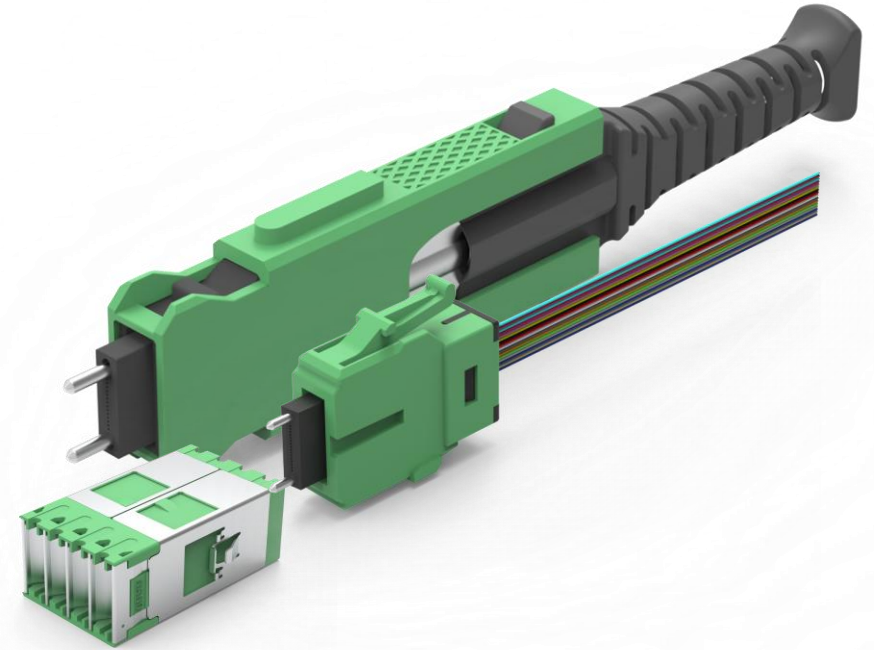
SN[®] 432F Maximum Base-2 Density
per 18U rack space

200% Density Increase

SENKO logo and icons for environmental and performance benefits.



SN[®] -MT16



SN[®]-MT 3,456F+ Maximum Density
per 18U rack space

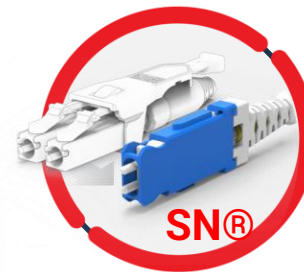
150% Density Upgrade

SENKO logo and icons for environmental and performance benefits.

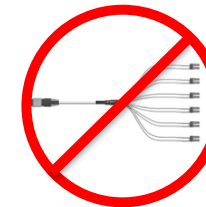
Transceiver Applications

- Transceiver Densification
- Direct Breakout Capability
- Transceiver Shuffling
- B2 Patch Panel Densification

BASE-2 Densification Upgrade



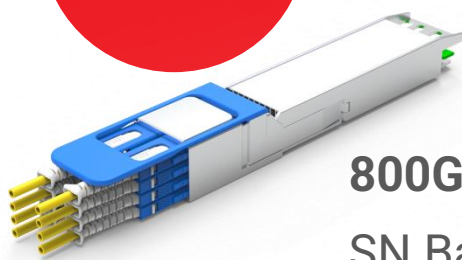
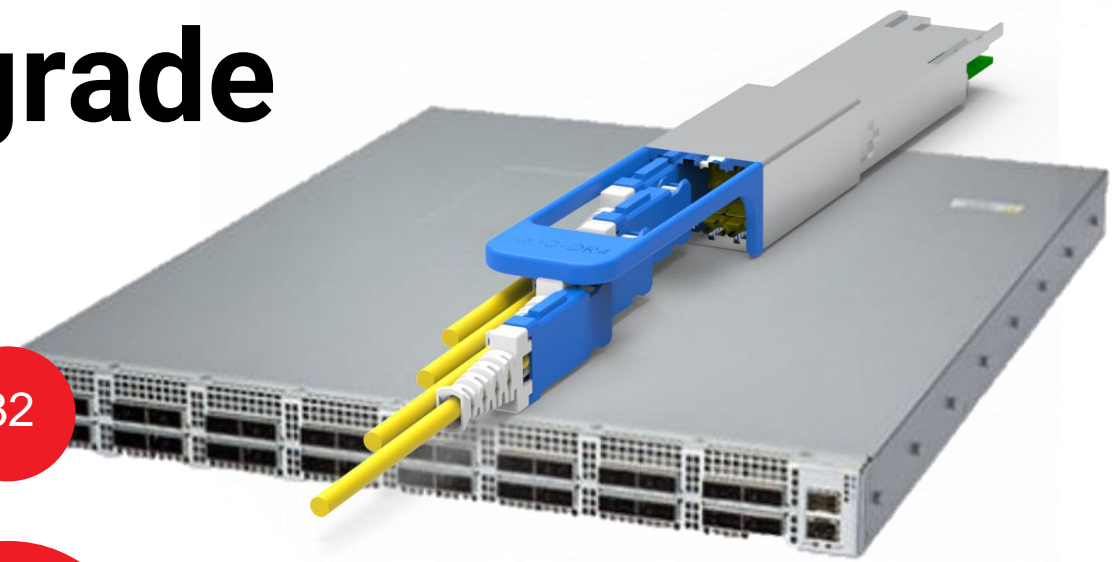
Eliminate Cassettes



Eliminate Fanouts

32

128



800G OSFP
SN Based Transceiver



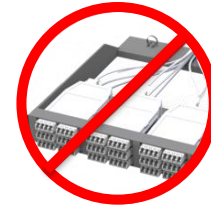
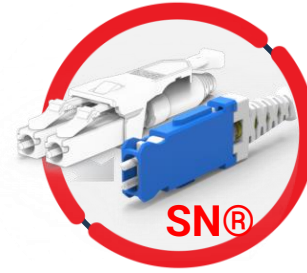
4 x 100G QSFP-DD with Quad SN **400G**

100G SFP with LC duplex

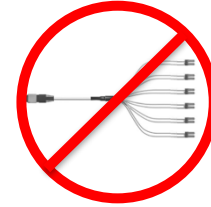


4 X 100G

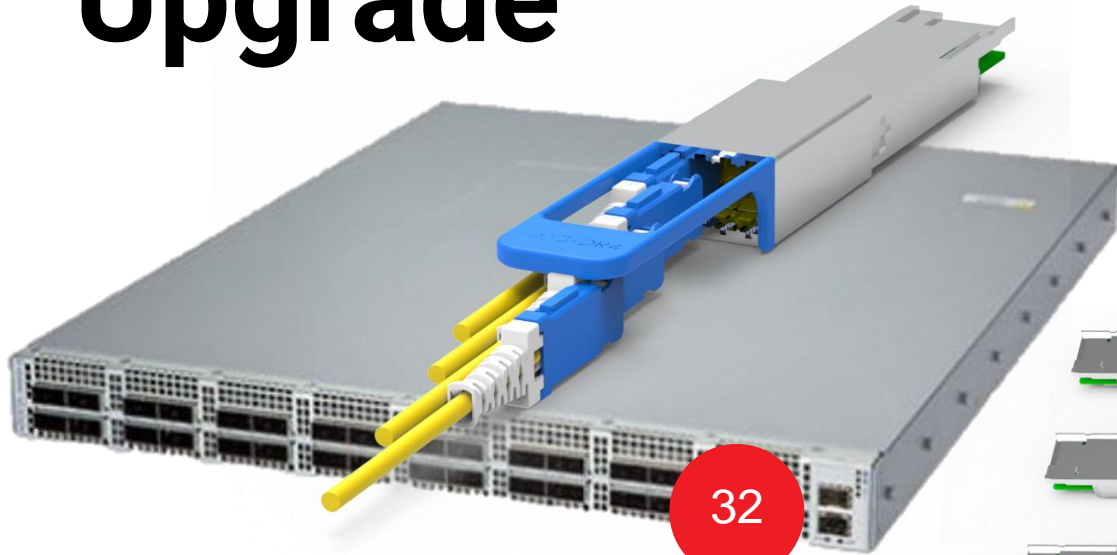
BASE-2 Densification Upgrade



Eliminate Cassettes

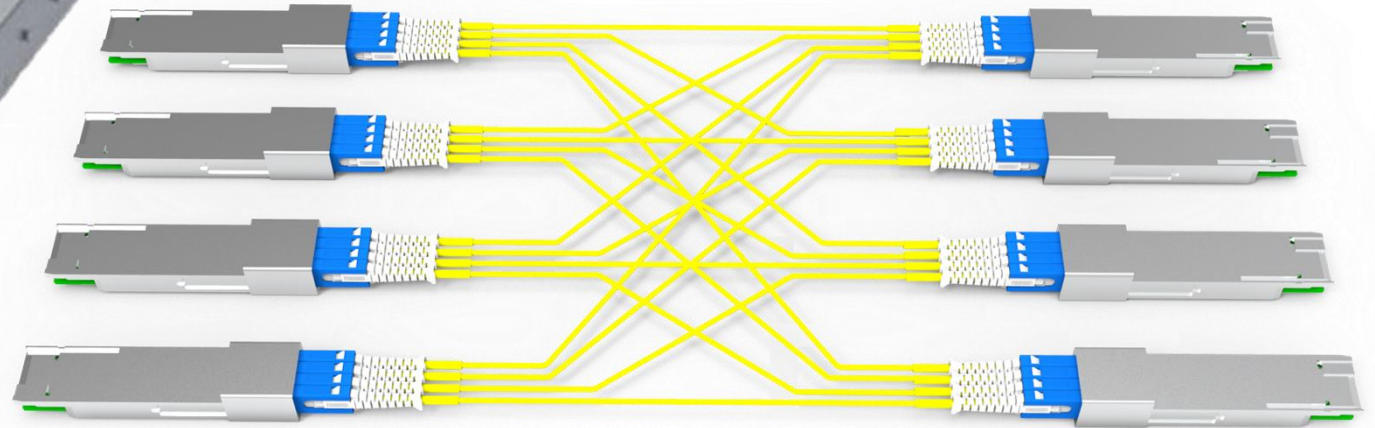


Eliminate Fanouts



32

128

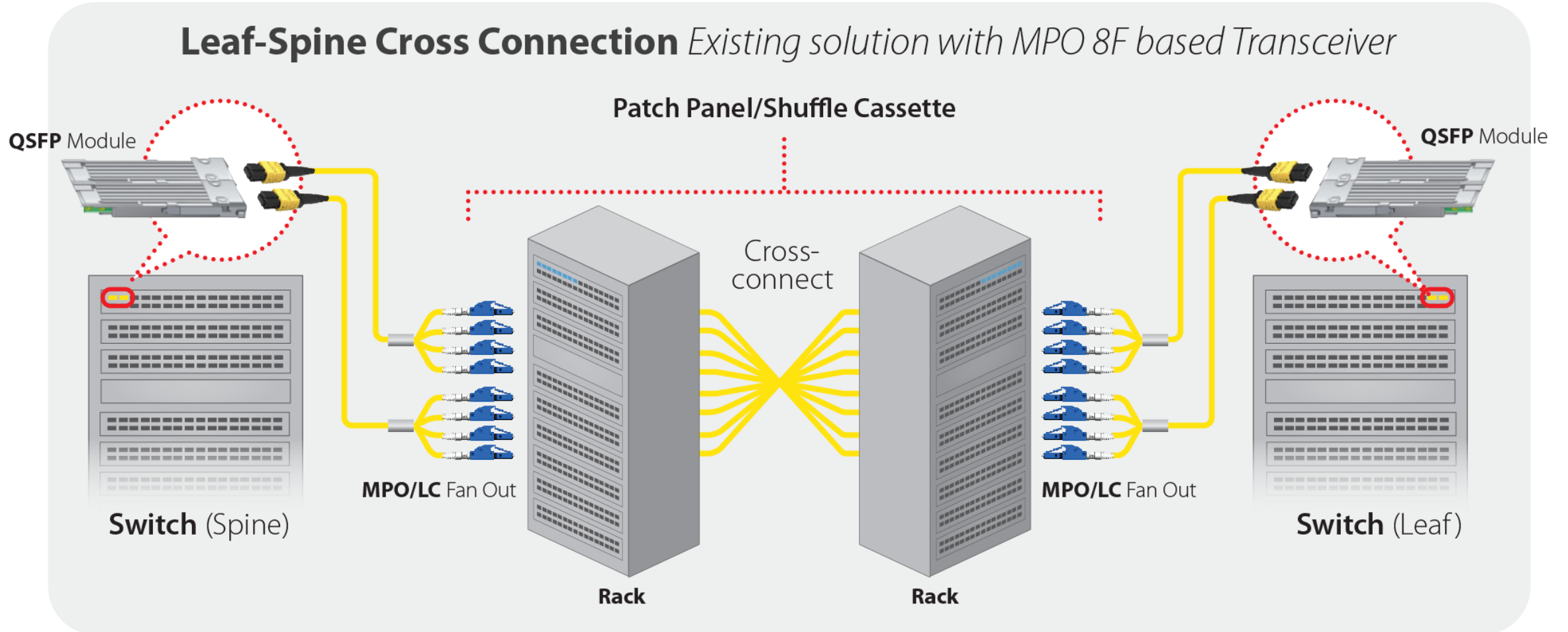


400G QSFP-DD with Quad SN

SHUFFLE

400G QSFP-DD with Quad SN

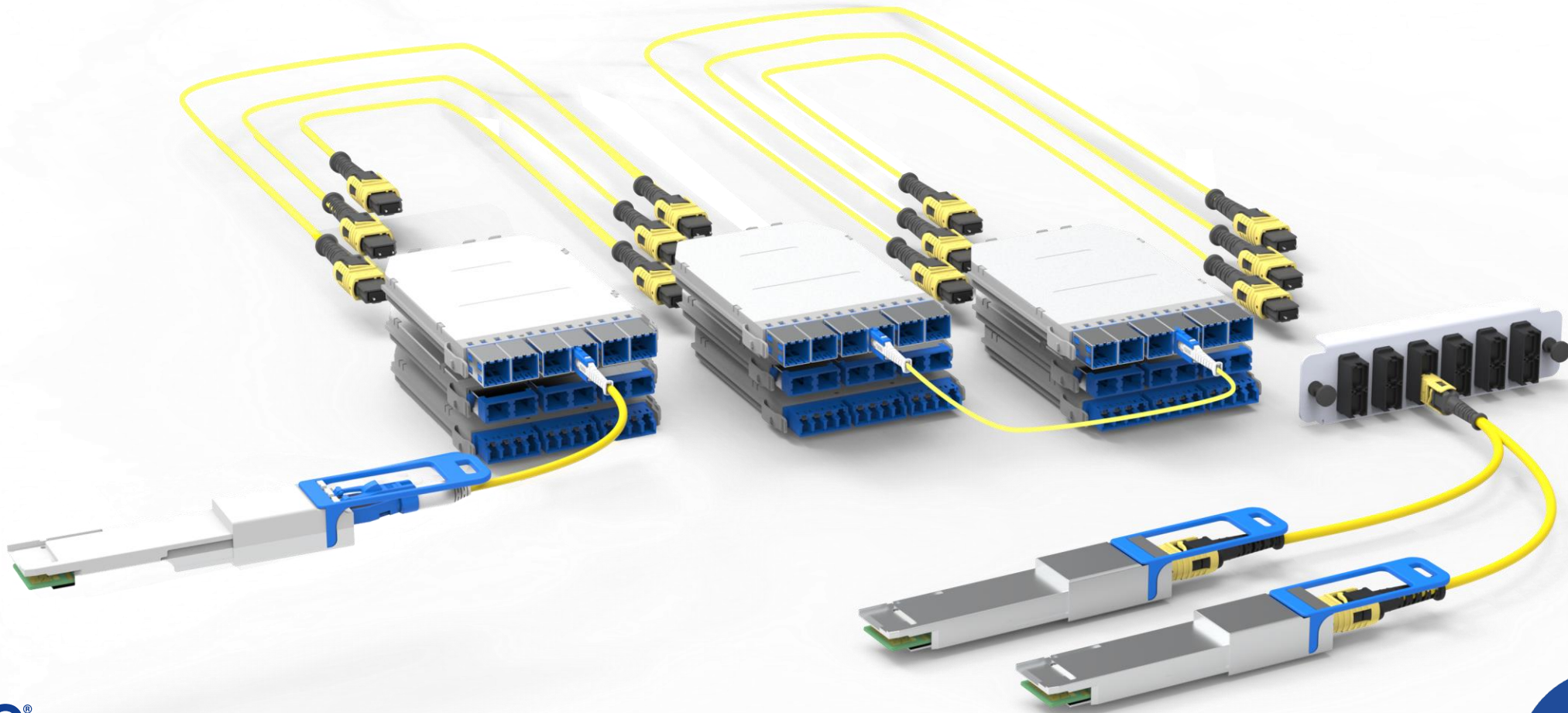
Centralized Shuffle Approach



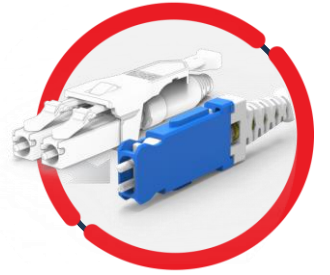
Hardware Densification

- B2 Patch Panel Densification

Typical MPO-Based Structured Cabling

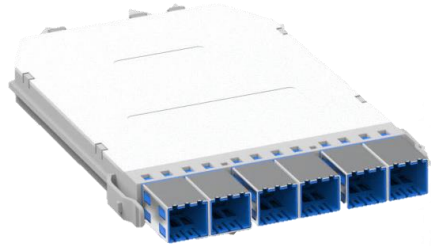


Base-2 Upgrade

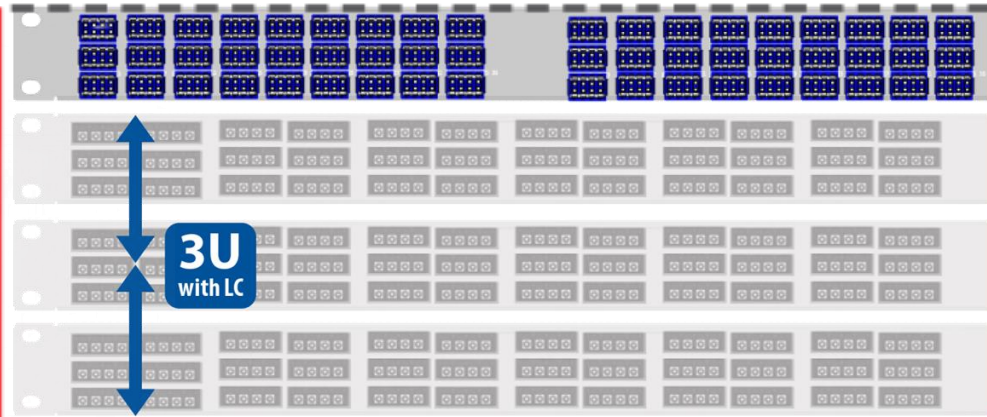


HYPER

432 fibers+



SN[®]



56 x SN[®]

Total Capacity

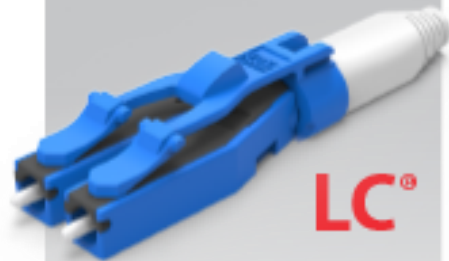
216 CH

432 F

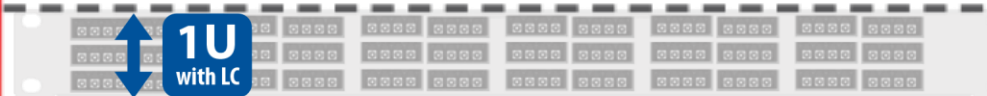
(1RU single sided rack/
cabinet)

ULTRA

<144 fibers



LC[®]



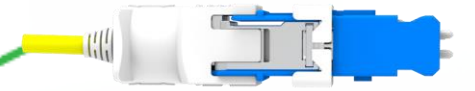
72 CH

144 F

(1RU single sided rack/
cabinet)

SN[®] UNIBOOT Sustainable Networks

Less plastic per connection and reduced hardware material



67%
Reduction in
plastic



Improve air flow to equipment and reduce energy consumption

Increase capacity and reduce the need for additional data centers

SN[®] connectors are less than half the size of an LC duplex connector



SN Uniboot Compliment To MPO

- Backbone Trunk Optimization

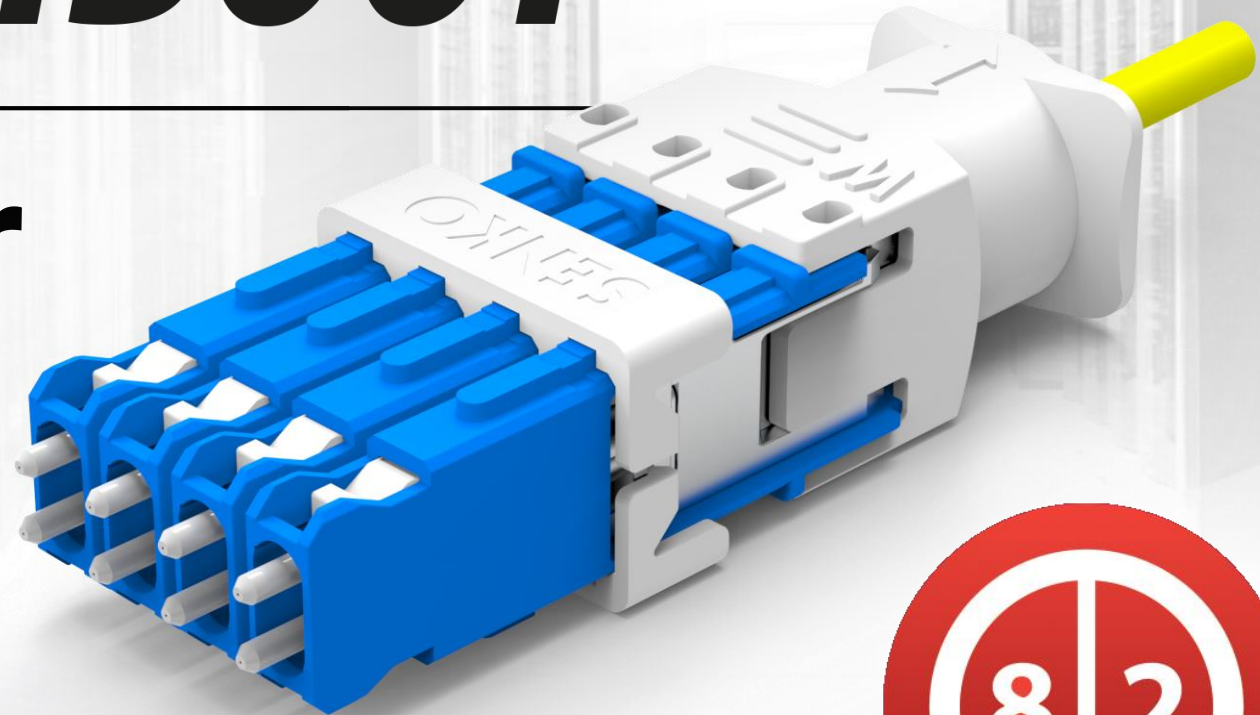
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SN[®] UNIBOOT

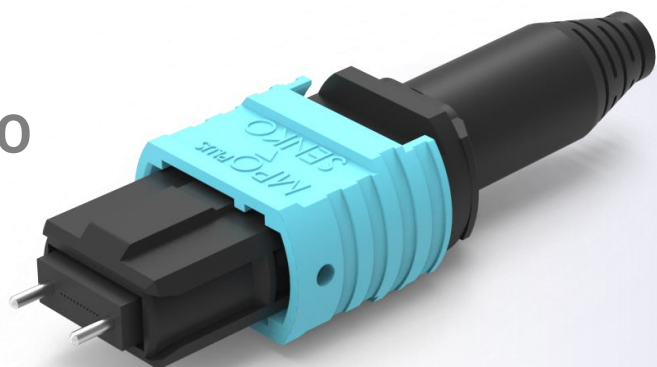
Connector

Backbone Trunk
Optimization

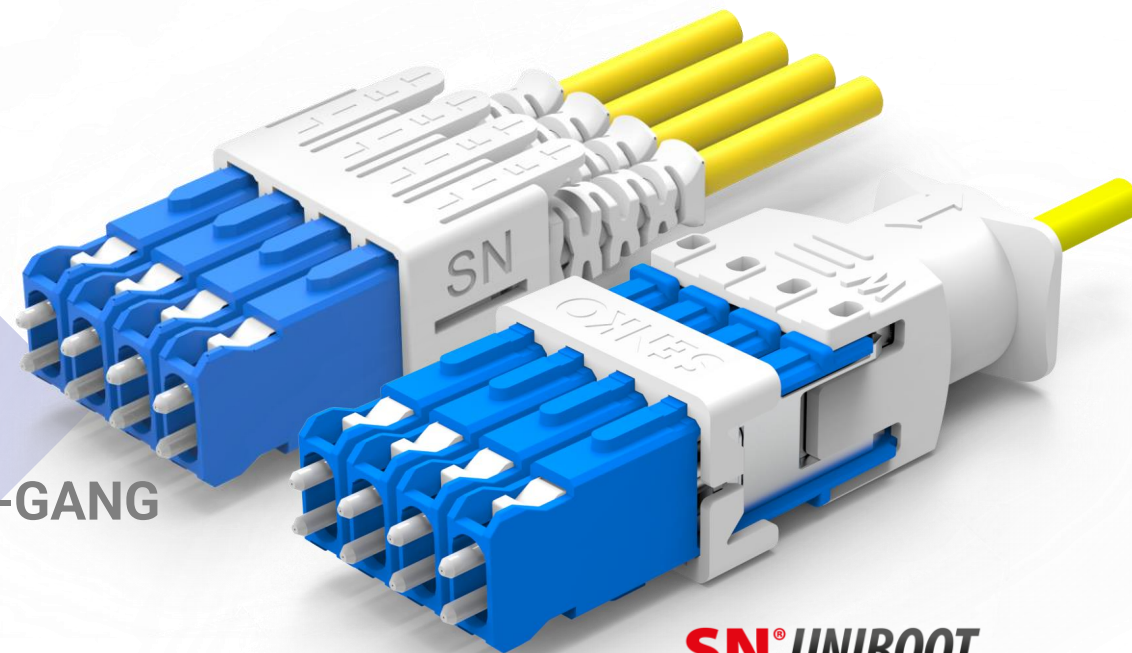


Legacy vs. **SN**[®]

MPO



SN[®] 4-GANG

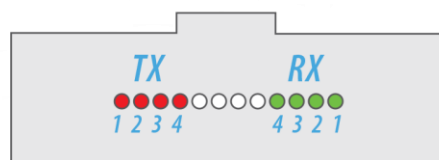
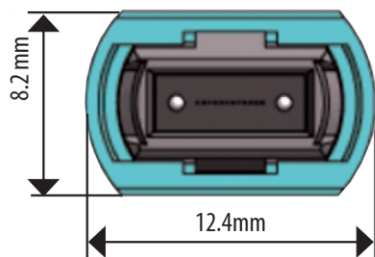


SN[®] UNIBOOT

BASE-8

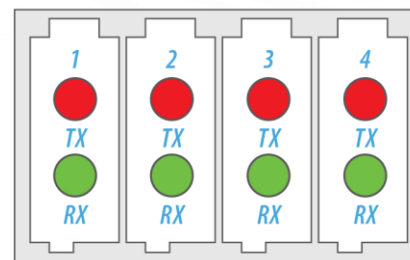
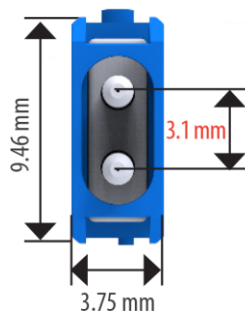
BASE-8/Base-2

MPO-12



MPO QSFPP-DD MDI

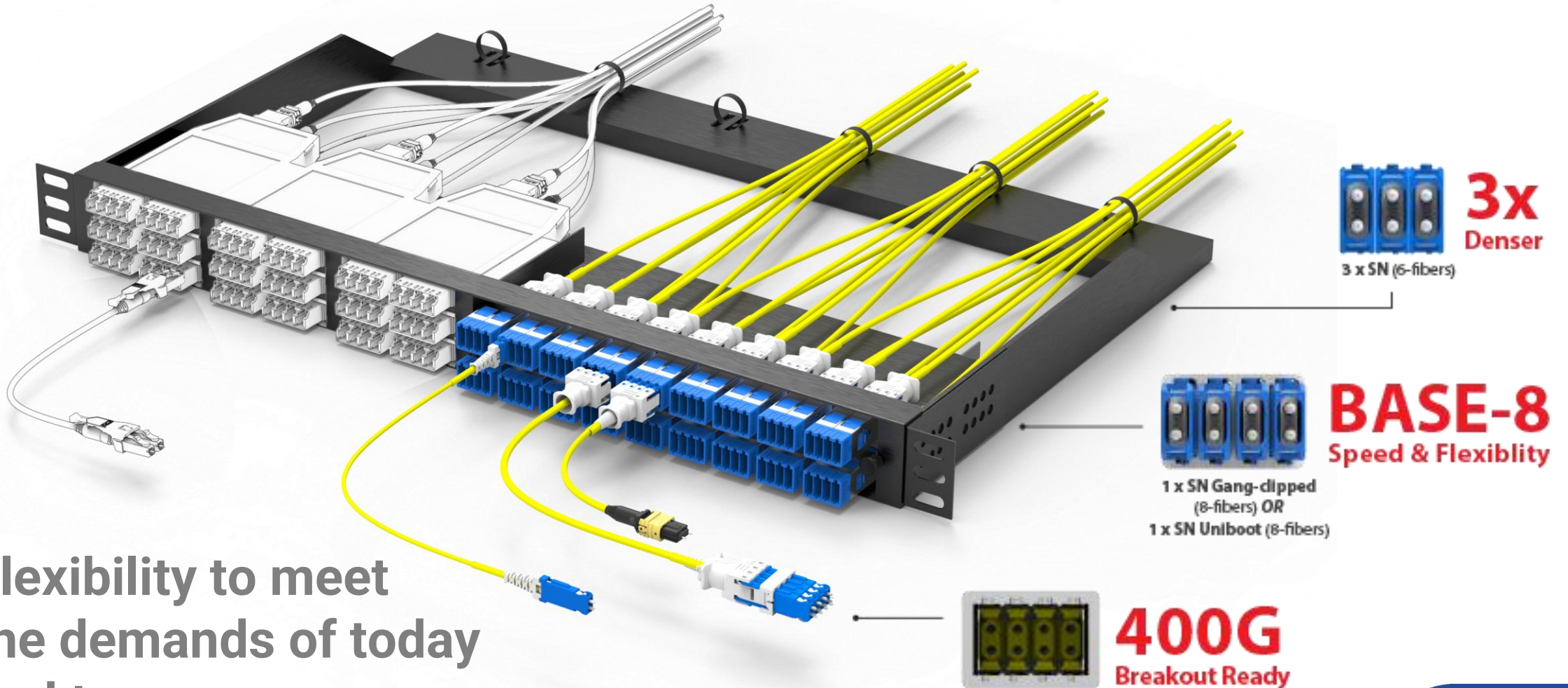
VS



SN QSFPP-DD MDI



SN[®] Base-8/2 Flexibility



Flexibility to meet
the demands of today
and tomorrow

Eliminate Cassettes

Triple the density, reduce cable clutter and accelerate network deployment

The SN-Uniboot is an 8-fiber, TELCO-Grade connector that enables 'Direct Breakout' capability at the front of patch panels without the need for cassettes or backbone MPO connectors. This unique functionality streamlines the network and delivers a higher degree of flexibility and performance.

MPO

EVOLUTION

SN Connectivity boosts the performance of legacy, cassette-based systems by increasing the density of the cassette by as much as three times.

SN[®] UNIBOOT

REVOLUTION

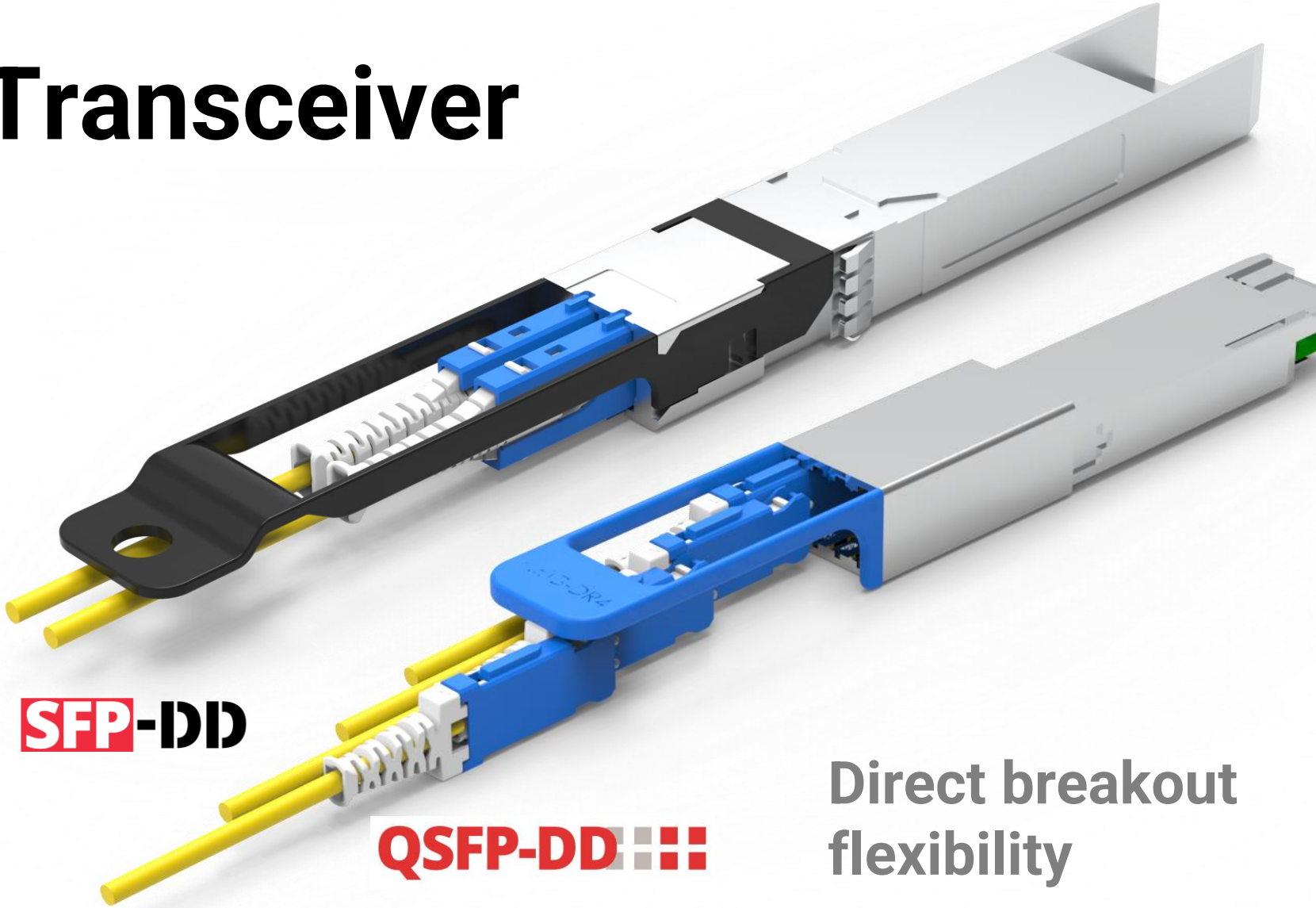
SN-Uniboot increases the density but eliminates unnecessary hardware and connectivity. This makes networks faster, denser, leaner and greener a higher degree of flexibility and performance.



Maximizing Transceiver Potential

Supporting higher data rate optics

200G
400G



SFP-DD

QSFP-DD

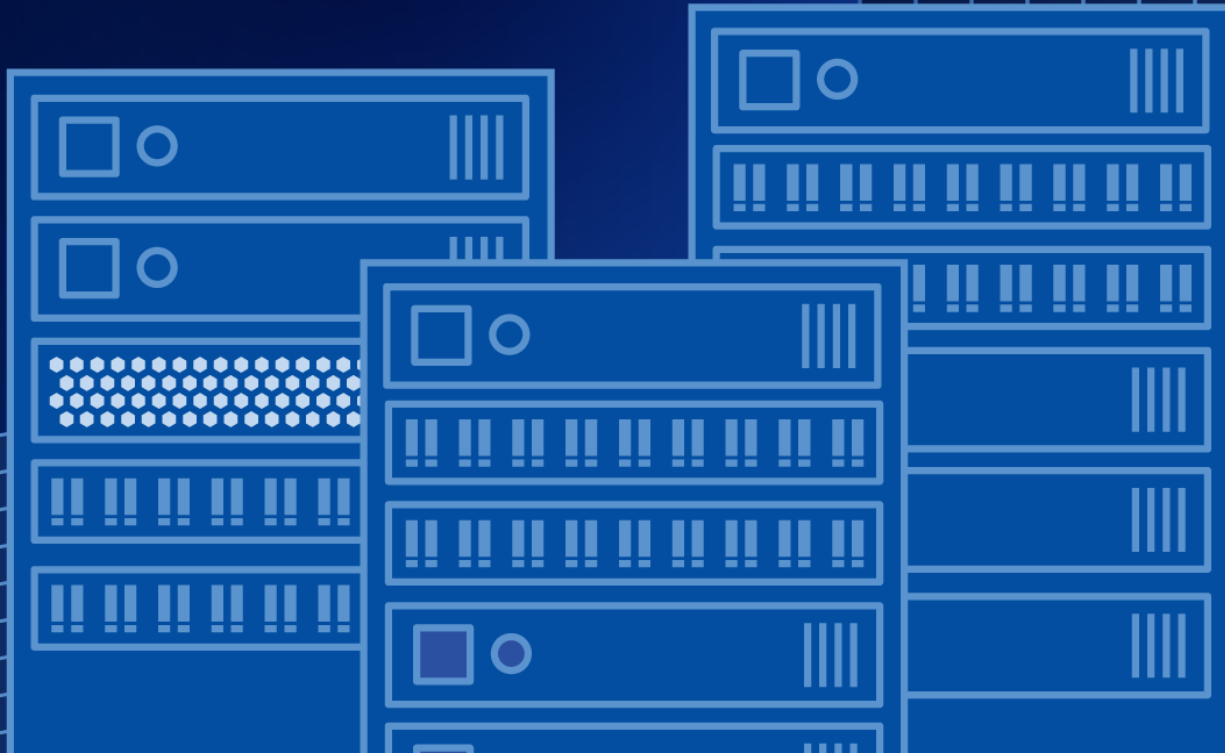
Direct breakout flexibility

Poll Question 2

What advantages do you see in deploying ceramic, duplex-based connectivity versus multi-fiber connectivity?

- Easier deployment and maintenance (polarity/gender)
- Lower loss
- Less impact of dust ingress on ferrule contact
- Increased flexibility with 2 fibers (smallest denominator)

SN-MT Compliment To MPO

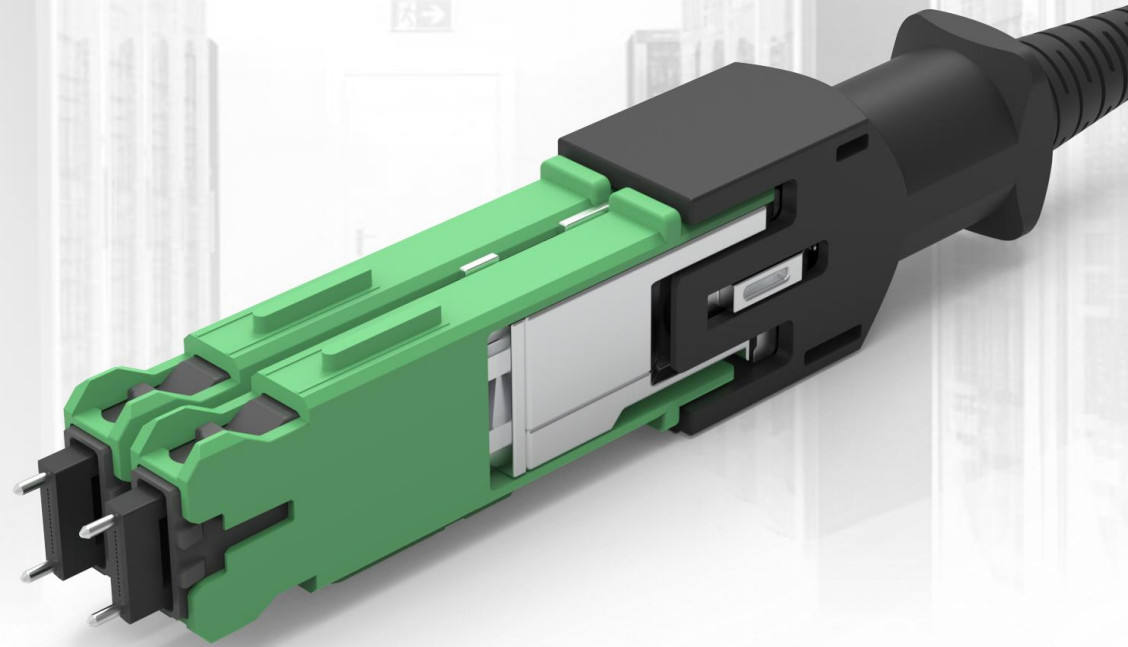


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SN[®]-MT

Uniboot Connectors



SENKO Products are
RoHS, Reach SVHC and
UL 94 V-0 compliant.



2024
LIGHTWAVE
INNOVATION
REVIEWS

Connecting AI Clusters

Unified Mesh



SN-MT[®]

FIBER COUNT QTY of CONNECTORS

1 x 16f Single	432
2 x 16f Uniboot	216
2 x 32f Uniboot	108

MPO-PLUS[®]

FIBER COUNT QTY of CONNECTORS

1 x 16f	432
1 x 24f	288

250µm pitch

2x
denser than
MPO

200µm pitch



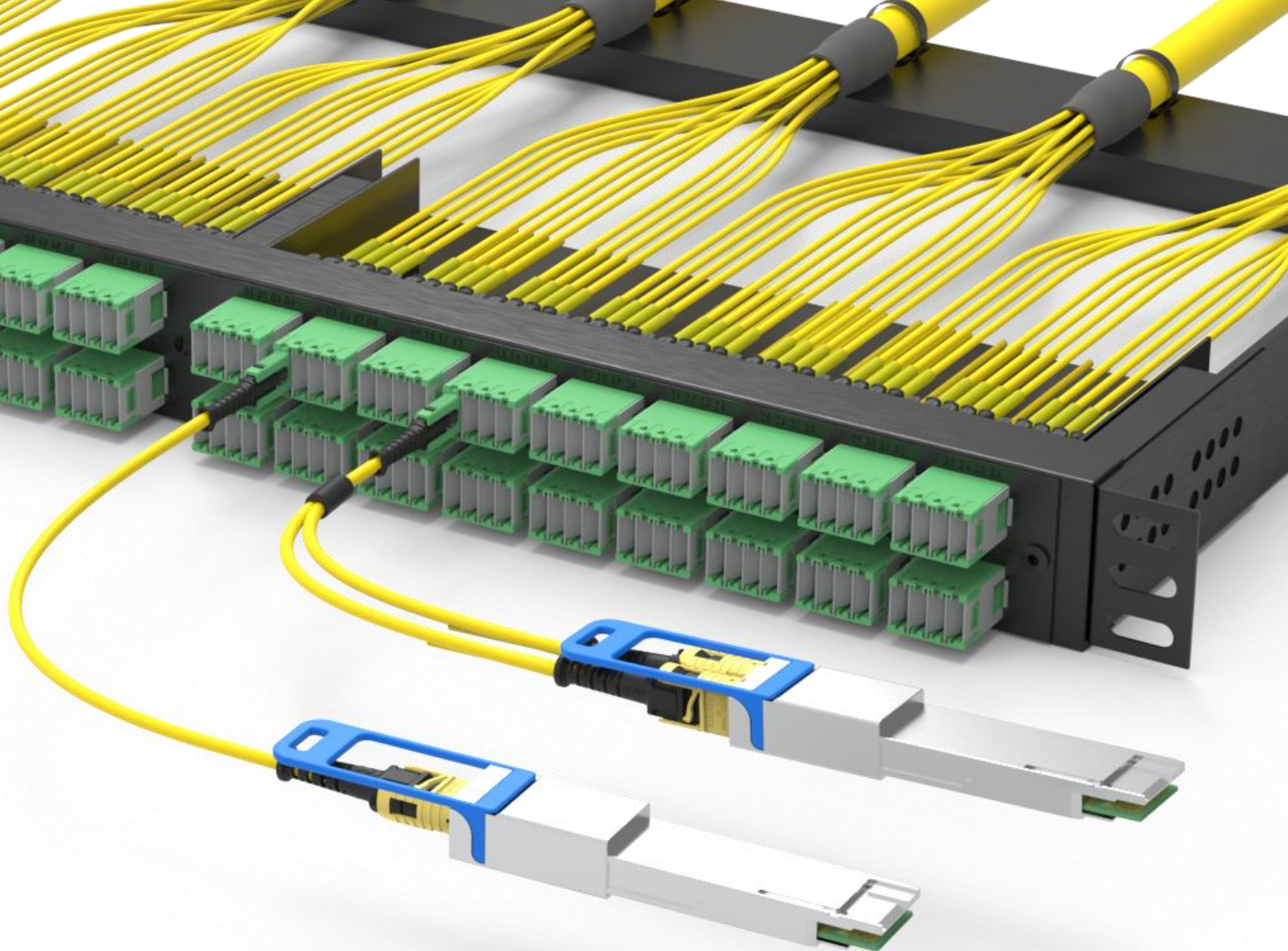
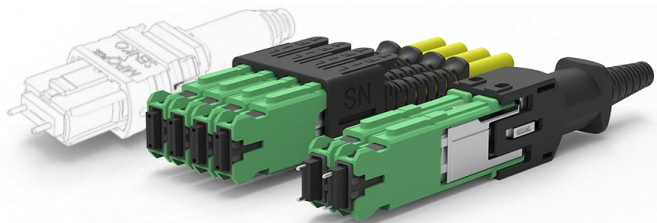
Less
Cable Bulk



Faster
Deployment
Times

Patching Options

Moving
from MPO
to **SN[®]-MT**



Poll Question 3

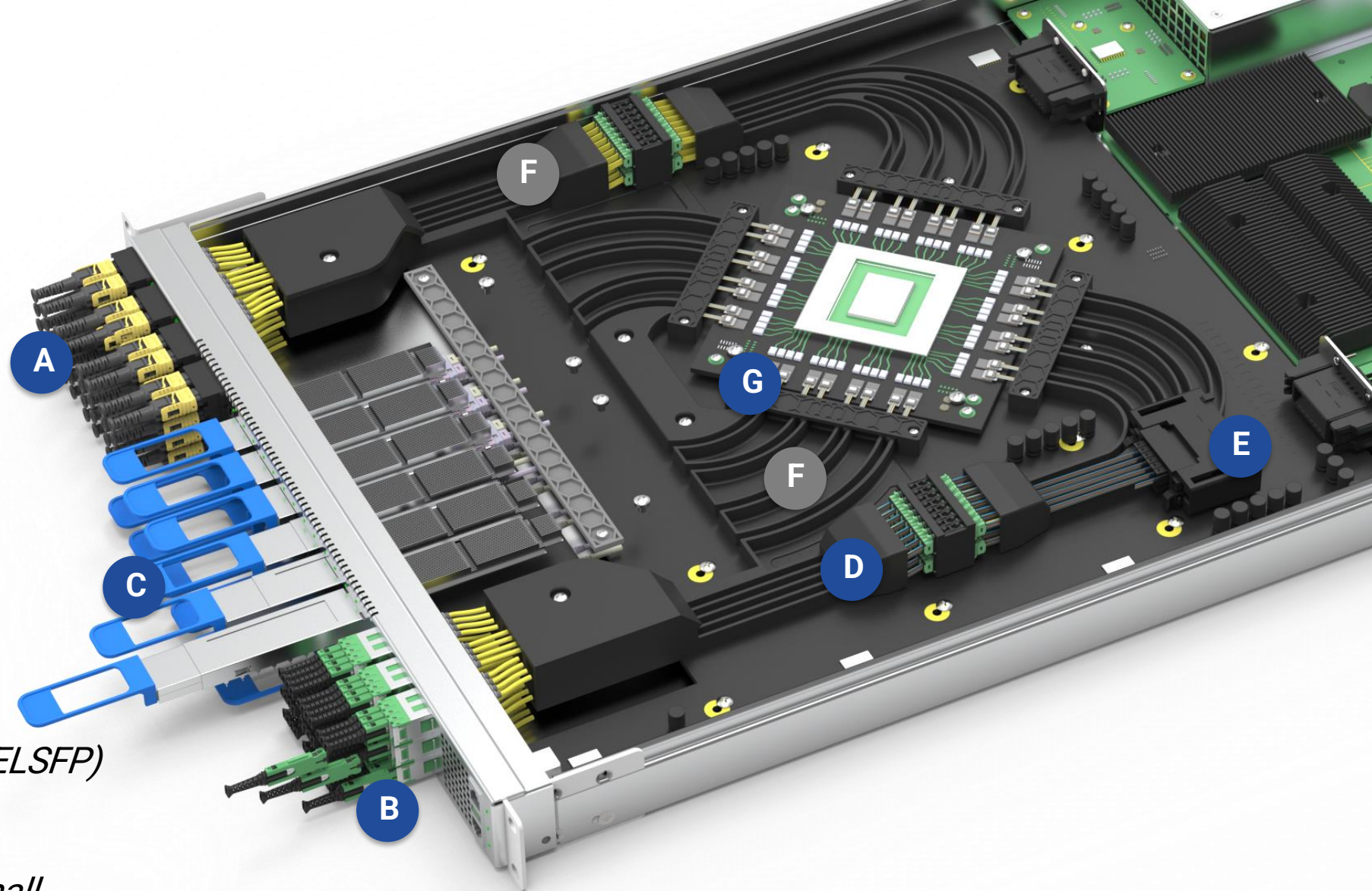
What factors do you feel would influence the use of duplex transceivers at the higher data rates of say 400G and 800G?

- Fewer fibers between the transceivers (e.g 2 not 8)
- Easier connector to manage and maintain
- High availability of duplex connectivity
- Lower cost infrastructure
- Simplified network architecture

On-board Overview

More fibers
needed per
switch ASIC

- A** MPO faceplate density
- B** VSFF faceplate density
- C** External Laser Source (*ELSFP*)
- D** Mid-board connectors
- E** Backplane connectors
- F** Specialty fiber (*PMF, small diameter, bend insensitive, etc*)
- G** MPC fiber-to-chip coupling (*PIC*)

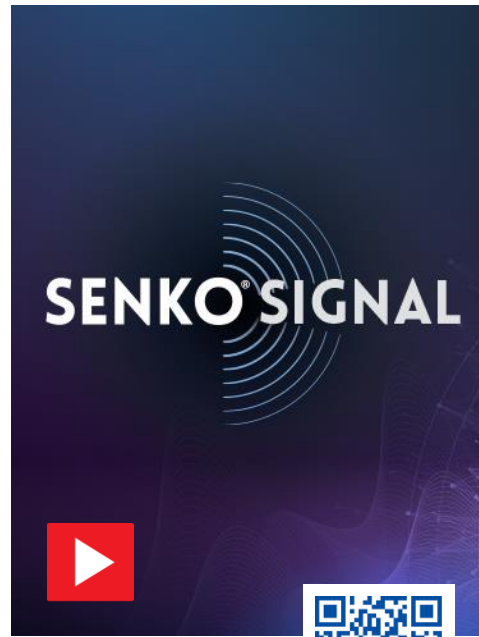


Learn More

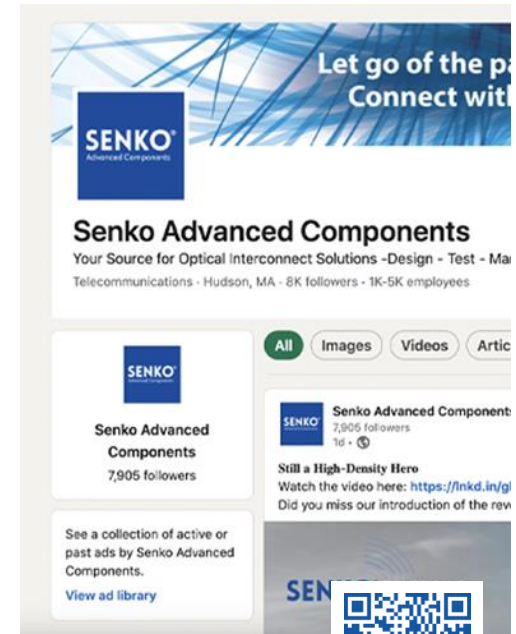
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Adriana Delgado

Senior Sales
Account Manager



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VSFF ECOSYSTEM



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