Cisco Patch Panel Breakout Connectivity



Cisco is introducing a family of fiber management solutions with a debut of SMF and MMF patch panels. The panels will enable Cisco's customers to facilitate breakout connectivity agnostic of the data rate.

The Cisco® solution of panel and cable assemblies offers versatile solution for any breakout from 4x10 Gbs to 400 Gbs native. The panels are compatible for Top of Rack (ToR), Middle of Rack (MoR), and End of Row (EoR) layouts.

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Figure 1. Cisco's 1RU, 2RU, and 4RU SMF and MMF panels

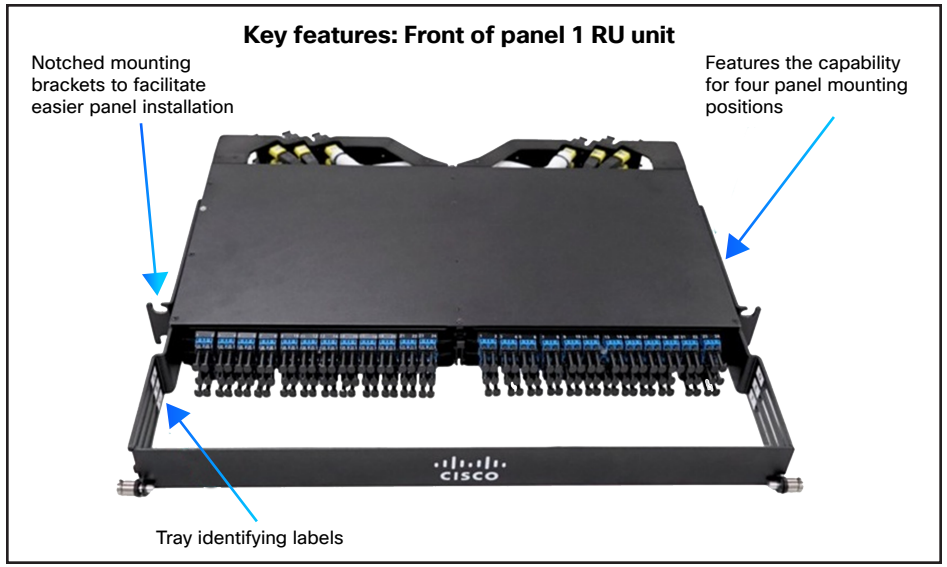


Figure 2. Cisco's 1RU front-facing view

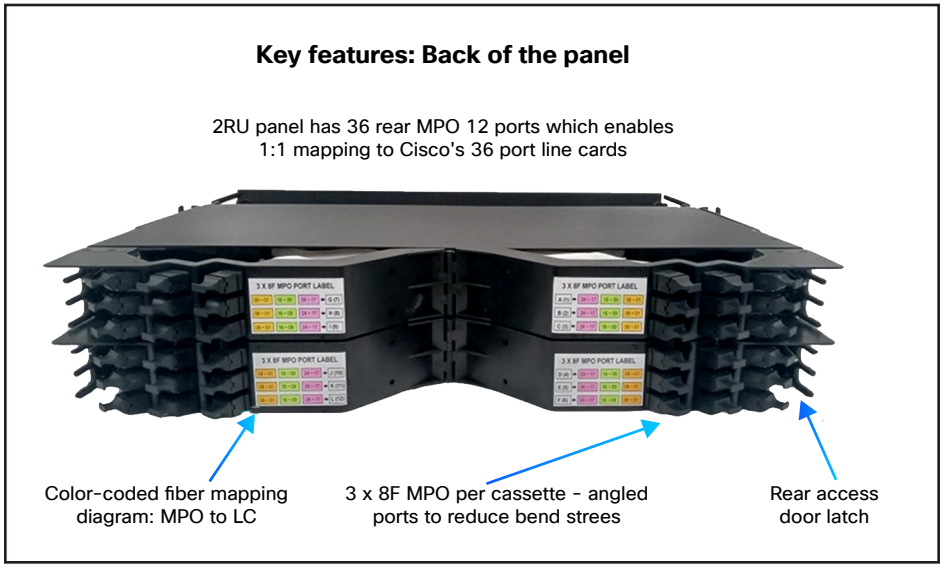


Figure 3. Cisco's 2RU rear-facing view

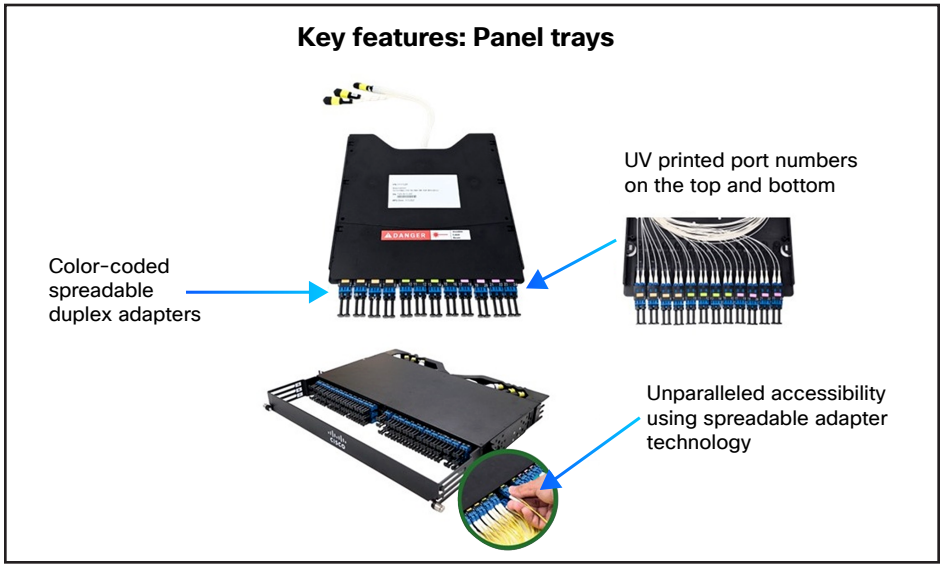


Figure 4. Cisco's patch panel cassette

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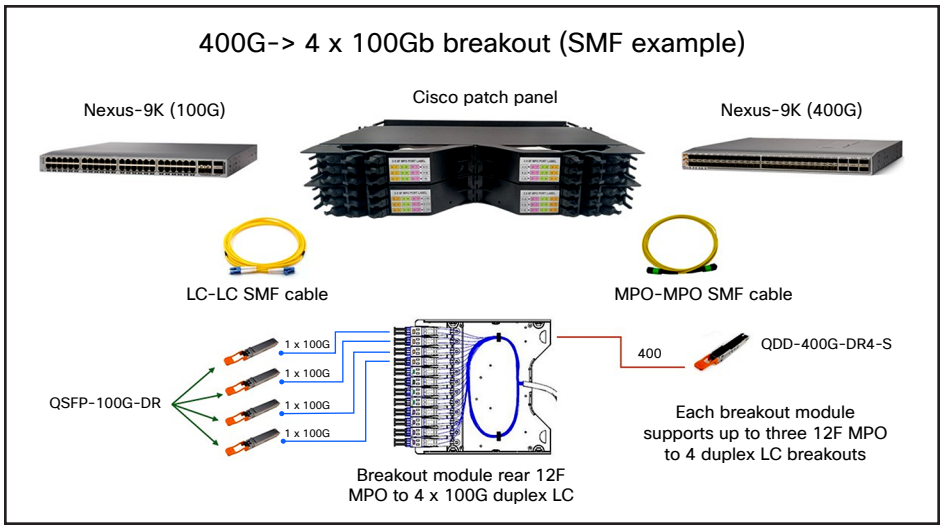


Figure 5. An example of Cisco's panel enabling 400G breakout connectivity

* Cisco's QDD-400G is connected to the rear of the panel via an MPO12 trunk cable. The panel provides breakout function via LC ports to Cisco's QSFP-100G.

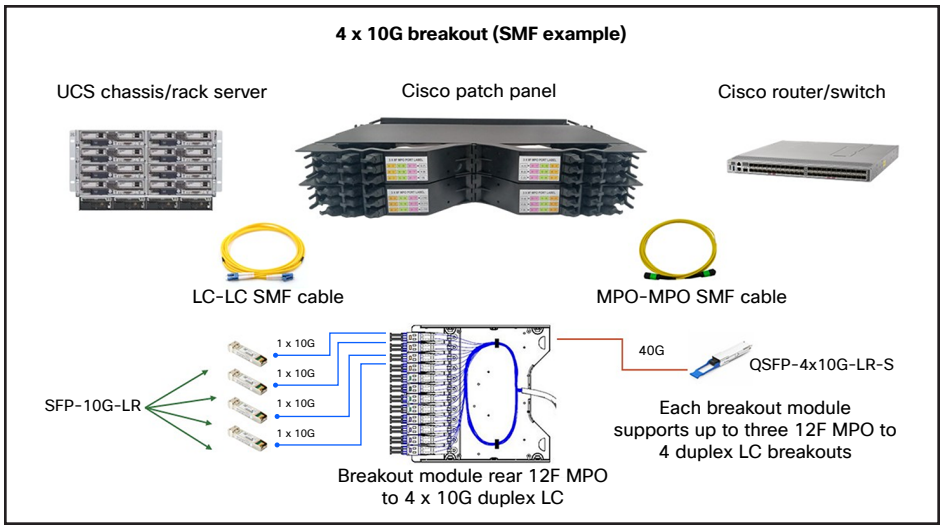


Figure 6. An example of Cisco's panel enabling 40G breakout connectivity for single-mode configurations.

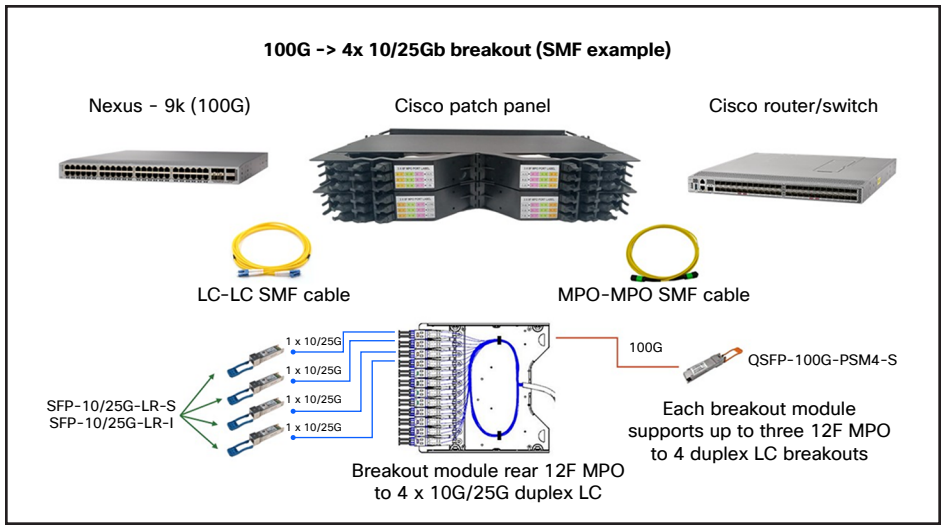


Figure 7. An example of Cisco's panel enabling 100G breakout connectivity for single-mode configurations.

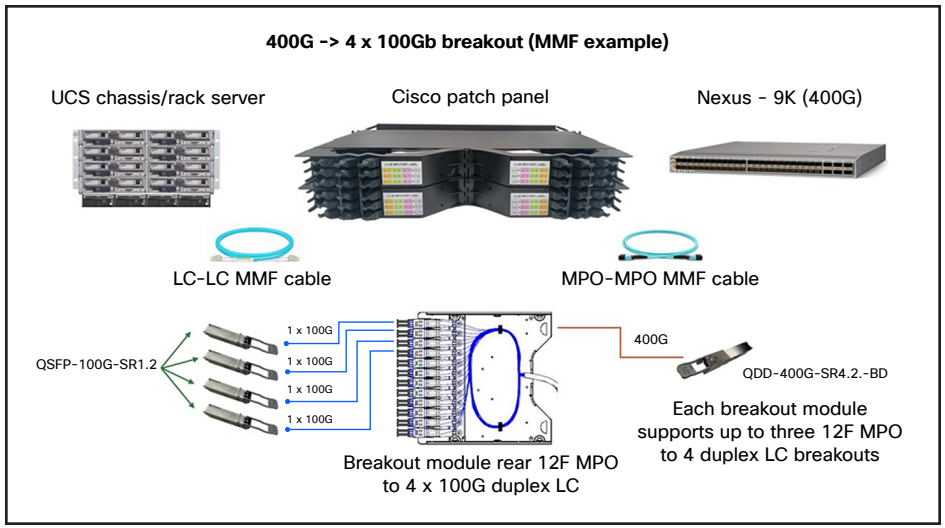


Figure 8. An example of Cisco's panel enabling 400G breakout connectivity for multi-mode configurations.

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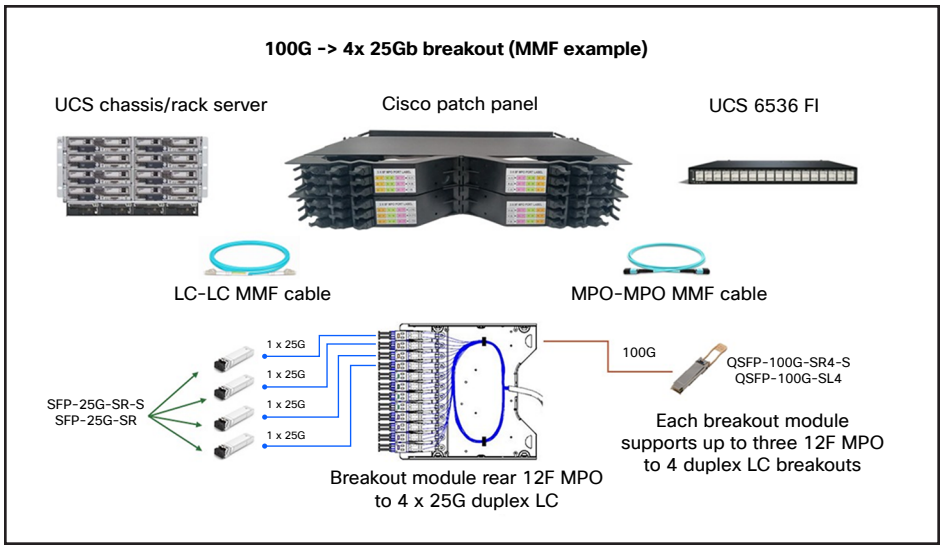


Figure 9. An example of Cisco's panel enabling 100G breakout connectivity for multi-mode configurations.

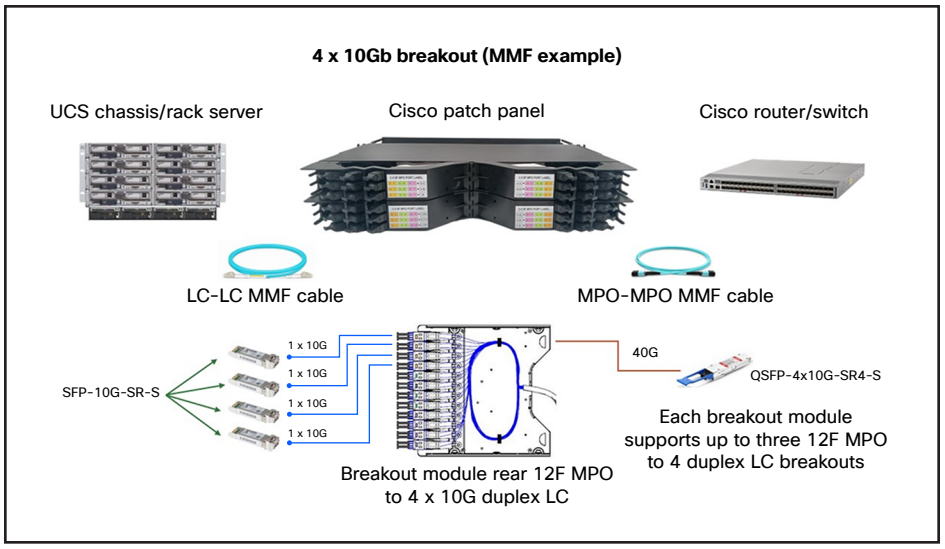


Figure 10. An example of Cisco's panel enabling 40G breakout connectivity for multi-mode configurations.

Cisco's patch panel and specialty cables: your day 1 connectivity and fiber management solution

Cisco simplifies optical connectivity management, overcoming limitations of high-density fiber connectivity.

- The Cisco patch panel enables tool-less access to 72 LC duplex connectors in just 1RU of rack space, which can be bundled in 2RU and 4RU sizes for even higher fiber count applications.
- This high-density solution improves access to small form factor connectors and creates unobstructed handling space, providing greater flexibility and efficient management of fiber connections for SMF and MMF fiber deployments.
- The patch panel reduces rack count by up to 75% when compared to LGX configurations.

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Overview

Fiber optic panels and cable assemblies are vital components in data center networks, serving multiple functions to ensure efficient and reliable connectivity. They establish the backbone infrastructure, linking core switches, distribution switches, and routers to facilitate high-speed data transmission across the network. Fiber optic patch panels offer effective solutions to address various challenges in data centers. The scalability of fiber optic patch panels allows for easy additions and removal of connections, facilitating network flexibility to accommodate changing requirements without causing significant disruptions.

Using Cisco patch panels and cable assemblies ensures high signal quality and minimizes data transmission errors, thereby enhancing network reliability. Additionally, patch panels enable flexibility and interconnectivity, allowing for efficient communication between different network components and supporting complex network architectures. The centralized access point provided by patch panels simplifies troubleshooting processes, as technicians can quickly identify and address connectivity issues. Overall, fiber optic patch panels streamline cable management, offer scalability, maintain signal integrity, enhance network flexibility, and simplify troubleshooting, contributing to the optimal performance and reliability of data center networks.

Benefits

- Cisco's patch panel and specialty cables enable Day 1 connectivity and a fiber management solution.
- The patch panel is a long-term solution that can provide high-density port connectivity solutions for 4x10G, 100G, 2x100G, 4x100G, 400G, 2x400G, and 4x400G breakout requirements.
- The patch panel enforces good cable management and labelling standards.
- This solution is supported on any high-density LC/fixed chassis solution in a multivendor network environment.
- It also offers consistent LC/UPC client ports for demarcation.

Trends and challenges

The growing demand for high-speed data transmission, complex networks, and advancements like cloud computing and virtualization are fueling the need for efficient fiber optic connectivity solutions. Fiber optic patch panels and cable assemblies play a vital role in this scenario.

As data traffic continues to surge and networks become more intricate, the use of fiber optic patch panels and cable assemblies simplifies cable management and ensures organized connectivity within data centers. Cisco solutions offer scalability and easy integration of new devices without disrupting the network. They also address the challenges faced by customers in managing an increasing number of fiber optic cables while maintaining efficient operations.

The current trend in data centers is a transition from 10G to higher-speed connections like 100G and 400G. This shift is driven by the rising demand for increased bandwidth and faster data transmission rates, which are essential to support emerging technologies and applications.

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The adoption of 100G, a tenfold increase in bandwidth compared to 10G, enables data centers to handle larger traffic volumes and support bandwidth-intensive applications such as video streaming, cloud computing, and big data analytics. An emerging trend is the 400G platform, a fourfold increase in bandwidth over 100G is gaining popularity in data centers as well. With their enhanced capacity, faster data transfers, and improved network performance, 400G connections meet the requirements of high-demand applications and accommodate future growth.

Cisco fiber optic patch panels and cable assemblies are essential components in modern networks, allowing for efficient and organized connectivity. The shift from 10G to higher-speed connections like 100G and 400G addresses the growing need for faster data transmission rates and greater bandwidth to support emerging technologies and applications. Cisco patch panels and cables provide the port density to accommodate the large number of fibers in the network, simultaneously enabling breakout connectivity to support seamless transition to higher bandwidth speeds in a sustainable network solution. They are also compatible with different generations of fiber optic equipment.

How it works

Cisco patch panels are a revolutionary technology platform that transforms the way data center operators manage the increasingly complex world of optical connectivity. It is the only high-density solution that provides easy access to both the front and back side connectors at the same time from the same side of the rack.

Patch panel

- Increased port density saves space by reducing the need for additional racks.
- Reduces rack count by up to 75% when compared to LGX configurations.
- Long-term connectivity solution for 4x10G, 100G, 2x100G, 4x100G, 400G, 2x400G, and 4x400G breakout requirements.
- Telcordia GR-449 and GR-63 compliant.

Spreadable adapter technology

- Provides generous access to all connectors without affecting insertion loss.
- Eliminates pressure on adjacent connections and fibers found on rigid bulkhead panels, thereby preventing adjacent circuit interruption.
- Allows technician finger access to firmly grip the connector base.
- Reduces the chances of an accidental disconnect.

Cassettes

- UV Printed port numbering.
- Color-coded adapters are matched to rear MPO input ports.
- Rear MPO ports are angled to reduce fiber bending stresses.

Cisco fiber optic cable assemblies

- Essential components of data center networks, facilitating high-speed data transmission, ensuring reliable connectivity, offering flexibility and scalability, maintaining signal integrity, and enabling rapid network deployment.
- Telcordia GR-1435 compliant.

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Use cases

Table 1. Customer type and corresponding use case descriptions

Industry name	Use case description
Service Provider/ Web space	• Data Center greenfield/brownfield deployments supporting 400G and 100G ports breakout, promoting scalability and network sustainability. • Core and Backbone upgrades supporting 400G transport growth while providing breakout for slower speed connectivity. • Support ability to scale to 2x400G, 4x400G and beyond.
Enterprise/ Commercial	• Day 1 fiber connectivity and management for Data Center, Core and Edge applications. • Support 400G to 4x100G or 2x100G breakout requirements. • Support 100G to 4x25G or 4x10G breakouts to network clients.
Telco	• Day 1 fiber connectivity and management for Data Center and Central Office. • Support 400G to 4x100G or 2x100G breakout requirements. • Support 100G to 4x25G or 4x10G breakouts to network clients.

The Cisco advantage

Cisco fiber optic patch panels and cable assemblies are essential components in modern networks, allowing for efficient and organized connectivity. The shift from 10G to higher-speed connections like 100G and 400G addresses the growing need for faster data transmission rates and greater bandwidth to support emerging technologies and applications.

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“The scalability of fiber optic patch panels allows for easy additions and removal of connections, facilitating network flexibility and sustainability without causing significant disruptions.”

“Cisco fiber optic patch panels streamline cable management, enable scalability, maintain signal integrity, enhance network flexibility, and simplify troubleshooting, all contributing to the optimal performance and reliability of the network infrastructure.”

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Learn more

Enable your fiber connected network optimization today.

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Then reach out to your Cisco Sales representative or Cisco authorized channel partner for further assistance. https://www.cisco.com/c/en/us/products/collateral/interfaces-modules/transceiver-modules/high-density-fiber-patch-mpo-ds.html.



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