Now is the Time to Future-Proof Your Fiber Infrastructure
Why now?

The need for speed

• The demand for greater bandwidth and its adoption are growing faster than ever

• Data traffic demands have shifted from server-to-end-user to server-to-server

• Virtual LANs and servers now require higher-capacity, low-latency, intra-data center links
Bandwidth growth
The introduction of new data rates is accelerating

- 2001: 1Gb SX (Duplex MMF)
- 2008: 10Gb SR (Duplex MMF)
- 2012: 40Gb SR4 (Parallel MMF)
- 2014: 100Gb SR10 (Parallel MMF)
Bandwidth growth
A practical look

Yesterday
Most traffic flowed between servers and end users. 10Gb, and even 1Gb, were usually enough for connections between network gear.

Today
Current architectures such as leaf-spine, with a multitude of high speed links (> 10Gb) between Ethernet switches, are needed to support cloud-based applications.
The challenge

How do you support increasing intra-DC bandwidth needs without rip-and-replace upgrades every few years?
The solution

Invest in a solution that enables a flexible and cost-efficient upgrade path while supporting future bandwidth realities—10Gbps to 100Gbps and beyond.
The partners you need to future proof your network

Cisco and Panduit
Together, we enable you to

Avoid rip-and-replace upgrades over time

Cost-effectively scale bandwidth as your needs evolve via a flexible upgrade path

Maximize your ROI
Our solution

Panduit Signature Core™ Fiber Optic Cabling System

Cisco BiDi 40/100G Dual-Rate Transceivers

Cisco Nexus 9000 and 3000 Switches
Why Cisco and Panduit?

Enable a serial cable plant for greater cost effectiveness

• Move beyond 10G without requiring a switch to costly parallel cabling

• Use (and re-use) cost-effective, LC-based fiber cable plant from 10 to 100G
Why Cisco and Panduit?

Prevent cable replacement as throughput increases

- Leverage Panduit Signature Core cabling that’s performance-optimized with Cisco BiDi transceivers to help your connectivity go farther
- Support greater distances so you can keep using your existing cable plant as your data rate needs increase
Why Cisco and Panduit?

Enable more connections across your cable plant

- Cisco BiDi transceivers use LC connectors
- LC connectors support more fiber interfaces per link than MPO
- Operational costs are lower for LC than MPO
- Panduit Signature Core fiber extends the reach of BiDi transceivers
Why Cisco and Panduit?

Leverage dual-rate functionality for an easier and more flexible upgrade path

- Dual-rate Cisco BiDi transceivers provide operational flexibility by supporting 40G and 100G rates in a single module
- Incrementally upgrade your fiber infrastructure without a complete overhaul
- Only Cisco offers the dual-rate 40/100G BiDi transceiver which enables this upgrade path
Why Cisco and Panduit?

Leverage dual-rate functionality for an easier and more flexible upgrade path

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The right fit for your reach requirements

Only 10% of all enterprise data center channels need over 100-meter reach: multi-mode will support most distance requirements

Leveraging Cisco BiDi and Panduit Signature Core extends the reach capabilities of serial duplex multi-mode cable plants
Why keep serial duplex?

**From 10G serial duplex to 40G or 100G serial duplex**

Serial duplex infrastructure using six 10G SR ports

<table>
<thead>
<tr>
<th>Transceivers</th>
<th>LC Jumpers</th>
<th>12 Fiber MPO Trunk</th>
<th>LC Cassette</th>
<th>Transceivers</th>
<th>LC Jumpers</th>
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Why keep serial duplex?
From 10G serial duplex to 40G or 100G serial duplex

Only transceivers need to be replaced when upgrading

Keep LC jumpers/cable plant in place; only transceiver need to be swapped out

Avoid business interruptions
Why avoid parallel wiring?

From 10G serial duplex to 40G or 100G parallel

Serial duplex infrastructure using six 10G SR ports
Why avoid parallel wiring?
From 10G serial duplex to 40G or 100G parallel

Move to parallel requires replacing transceivers and cable plant

<table>
<thead>
<tr>
<th>Cisco 40/100G SFP4 Transceivers</th>
<th>12 Fiber MPO Jumper</th>
<th>MPO Panel</th>
<th>5 new 12 Fiber MPO Trunks</th>
<th>MPO Panel</th>
<th>12 Fiber MPO Jumper</th>
<th>Cisco 40/100G SFP4 Transceivers</th>
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How you save
Avoid the investment in new MPO cabling/panels, as well as the operational cost of using a technology that’s less familiar to data center technicians
Cost savings in action
Greenfield

<table>
<thead>
<tr>
<th>Cabling element</th>
<th>Total (US$)</th>
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<tbody>
<tr>
<td>Parallel SR4</td>
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<tr>
<td>90m, 12-fiber MPO-MPO trunk cable (1 SR4 link per cable)</td>
<td>$384,000</td>
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<tr>
<td>12-fiber MPO adapter panels (6-port, both ends)</td>
<td>$12,800</td>
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<tr>
<td>12-fiber MPO jumper (1 per link, both ends)</td>
<td>$192,000</td>
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<tr>
<td><strong>Parallel SR4 total</strong></td>
<td><strong>$588,800</strong></td>
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<tr>
<td>Serial BiDi</td>
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<tr>
<td>90m 12-fiber MPO-MPO trunk cable (6 BiDi links per cable)</td>
<td>$64,000</td>
</tr>
<tr>
<td>12-fiber MPO-LC trunk module (6 BiDi links/module, both ends)</td>
<td>$38,400</td>
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<tr>
<td>12-fiber LC jumper (1 per link, both ends)</td>
<td>$19,200</td>
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<tr>
<td><strong>Serial BiDi total</strong></td>
<td><strong>$121,600</strong></td>
</tr>
<tr>
<td><strong>Total cable infrastructure savings</strong></td>
<td><strong>$467,200</strong></td>
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<td><strong>Percentage savings</strong></td>
<td><strong>79%</strong></td>
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Intra-data-center traffic is driving higher bandwidth requirements in the data center
Conclusion

1. Intra-data-center traffic is driving higher bandwidth requirements in the data center.

2. These bandwidth requirements will continue to grow: the wrong approach could lead to costly, disruptive, repeat rip-and-replace upgrades.
Conclusion

1. Intra-data-center traffic is driving higher bandwidth requirements in the data center.

2. These bandwidth requirements will continue to grow: the wrong approach could lead to costly, disruptive, repeat rip-and-replace upgrades.

3. Cisco and Panduit can help make your upgrade path easier and more affordable, whether in a greenfield or brownfield data center scenario.
See Cisco Transceiver Module white papers at:
http://cs.co/9009EaWPP

View Panduit solutions for an efficient data center at: