



New Avago Technologies Optical Modules Bridge Compatibility Gap in Data Centers to Increase Bandwidth

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Offer Interoperability between 40 Gigabit QSFP+ Applications and 10 Gigabit SFP+ Components Verified to 400 Meters, Enabling Higher-Density Network Switches

SAN JOSE, Calif. & SINGAPORE--(BUSINESS WIRE)--Feb. 28, 2012-- Avago Technologies (Nasdaq:[AVGO](#)), a leading supplier of analog interface components for communications, industrial and consumer applications, today announced [fiber optic](#) module solutions that enable more efficient switching and greater bandwidth in data centers. The new pluggable, parallel optical QSFP+ eSR4 transceiver is the first module that can address both 40 Gigabit (40G) and 10 Gigabit (10G) Ethernet applications with a verified link distance of 400 meters. This gives data center operators the flexibility to reuse the current 10G wired infrastructure when upgrading to 40G, providing a major cost savings. The Avago QSFP+ eSR4 modules integrate four 10G lanes in each direction to increase bandwidth within a line card by more than three times while using 50 percent less power than that of a one-lane SFP+ module.

The growth of server virtualization and cloud computing, as well as the trend toward network convergence, has increased demand for faster and more efficient [data center networks](#). As of today, 10G switches consist of 48 10G-channels per line card, constrained by the physical size of the SFP+ form factor. To accommodate the need for more bandwidth, customers can use Avago QSFP+ eSR4 modules to develop top-of-rack, blade and modular switches with up to 44 QSFP+ ports per line card. This provides 176 10G-channels with QSFP+ instead of the 48 SFP+ channels available today. QSFP+ eSR4 modules can be used for both high-density 10G and 40G aggregated Ethernet applications, providing more flexibility to connect to different levels of switches, reducing latency, and increasing port density with lower power consumption per lane.

Avago also today announced production of its [QSFP+ iSR4](#) modules, which enable interoperability to 10G SFP+ links up to 100 meters using OM3 multimode fiber (MMF) and 150 meters using OM4 MMF. The QSFP+ eSR4 version extends this reach to 300 meters with OM3 MMF and 400 meters using OM4 MMF. Avago expects to sample the QSFP+ eSR4 modules by this summer.

"Avago is the leader in data center optical communications because of its long history of collaborating with our customers and partners to develop technology solutions that address design challenges and the need for greater bandwidth," said Philip Gadd, Vice President and General Manager of the Fiber Optics Product Division at Avago. "Avago introduced the industry's first 40G Ethernet SR4 module last year, and our new QSFP+ iSR4 and eSR4 modules provide a simpler migration path for data centers to upgrade from 10G to 40G Ethernet and span longer reaches."

"We have worked closely with Avago to test a wide array of Corning Cable Systems' fiber optic cables that contained Corning® ClearCurve® OM3 and OM4 multimode fibers with their parallel optic transceivers, giving designers the flexibility to develop innovative data center applications," said Doug Coleman, Manager, Technology and Standards at Corning Cable Systems. "Together we verified that the interoperability of the Avago QSFP+ eSR4 modules meets link distance specifications for both 10 and 40 Gigabit Ethernet applications."

Legacy 10G Ethernet switches are based on 10GBASE-SR specifications, using form factors such as SFP+, XFP and X2, which are not reliably interoperable with standard QSFP+ module 40GBASE-SR specifications. The Avago QSFP+ iSR4 and eSR4 modules are both interoperable with all of these form factors. Additionally, the modules both incorporate the unparalleled reliability of Avago 850-nm Vertical-Cavity Surface Emitting Laser (VCSEL) technology and PIN detector technology, providing an effective 10 Gigabit port count of up to 176 ports within one rack.

Avago will demonstrate the QSFP+ iSR4 and eSR4 modules, along with its broad portfolio of high-speed optical fiber solutions, in Corporate Village booth #1357 at the 2012 OFC/NFOEC exposition at the Los Angeles Convention Center from March 6-8. Interested parties can contact their [local Avago sales office](#) to arrange an appointment. Mitchell Fields, director of advanced technology solutions for fiber optics products at Avago, will be participating in two panel discussions at the show:

- [Market Watch Panel IV on Advanced Integrated Photonics](#) on March 8 from 10:15am-12:15pm
- The workshop entitled "[Optics in the Data Center: How Can We Efficiently Move and Control Large Amounts of Data?](#)" on March 5 from 8:00am-11:00am.

U.S. Pricing and Availability

The AFBR-79EIDZ QSFP+ iSR4 module is priced at \$800 each in 10 piece quantities. Samples and production quantities are available now through the Avago direct sales channel and via worldwide distribution partners.

About Avago Technologies

Avago Technologies is a leading supplier of analog interface components for communications, industrial and consumer applications. By leveraging its core competencies in III-V compound and silicon semiconductor design and processing, the company provides an extensive range of analog, mixed signal and optoelectronics components and subsystems to approximately 40,000 end customers. Backed by strong customer service support, the company's products serve four diverse end markets: wireless communications, wired infrastructure, industrial and automotive electronics, and consumer and computing peripherals. Avago has a global employee presence and heritage of technical innovation dating back 50 years to its Hewlett-Packard roots. Information about Avago is available on the Web at www.avagotech.com.

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Avago Technologies
Samer Bahou, +1-408-435-6910
Press Relations Manager
press.relations@avagotech.com