

Kotura Unveils Low-Power 100 Gb-s Optical Engine

At OFC/NFOEC 2012, Kotura, Inc. will demonstrate its low-power 100 gigabits per second (Gb/s) optical engine to support the interconnect fabric for next generation data centers and high performance computers (HPC). The new optical engine chips are based on Kotura's micron scale manufacturing platform currently in mass production and deployed in live networks around the world since 2006. With three of the five largest telecommunication OEMs already using Kotura products in their 10, 40 and 100 Gb/s networks, the company is approaching a million channels per year currently in production.

Kotura's silicon photonics platform supports optical engines using Wave Division Multiplexing (WDM), in which different signals can share the same path. As the only silicon photonics provider to offer WDM, Kotura's optical engine provides distinct advantages, including reducing the cost of fiber and associated connectors within the interconnect fabric for 4x25 GHz solutions by a factor of four, as well as readily expanding from four channels to eight, 16 or even 40 channels over a single strand of optical fiber. Additionally, Kotura's silicon photonics platform also supports optical engines using parallel fiber channels.

"The optical engine provides our customers with an inexpensive, small form factor that reduces power consumption and provides a high level of integration," said Mehdi Asghari, CTO of Kotura. "Moreover, we are addressing the need for green solutions that will alleviate some of the strain associated with power hogs such as data centers and high performance computers. Since our inception, we have been focused on developing a platform that enables innovative solutions based on silicon photonics that can take us to the next generation of connectivity. This is an important milestone, and we look forward to being a part of new computing solutions that outperform what is possible today."

Because Kotura's platform is capable of high yield manufacturing, attractive price volume curves can be achieved. Kotura has integrated important functionalities – such as flip chip attached lasers, high performance WDM de/multiplexers, fast low power modulators and high-speed detectors – into a single pair of silicon chips eliminating the need for hundreds of piece parts and dozens of assembly steps. The Kotura optical engine is so small that a 100 Gb/s transceiver will easily fit inside a QSFP package, the smallest 40G package on the market today, greatly increasing the panel density of 100 Gb/s transceivers.

"We are in the early stages of a market with huge potential," said Brad Smith, senior vice president at Lightcounting, a market research analyst firm tracking high-speed interconnects. "100G in a QSFP package over a single strand of single-mode fiber is exactly what the HPC, traditional data center and switch/routing infrastructure is looking for to support next generation systems and to gear up for

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the 'exa-flood' of data coming."

Finding fast enough interconnects has become the limiting factor for the entire industry. With 10 core microprocessors, four per server, virtualization and 48-60 servers per rack, the aggregate bandwidth at the top-of-rack switch will hit 480-600G. This will require four to five 100G up links per rack and large data centers using 200-500 racks.

According to Smith, the advantages of silicon photonics are enormous, enabling long-haul optical WDM to move to the server and switch rack. Silicon photonics and WDM allow modulation speed to bump up to 40G/50G and more channels in the future without having to upgrade the entire fiber plant.

As part of Kotura's optical engine demo at OFC, Anritsu Company will be using its bit error rate tester, the MP1800A, to support 100 Gb/s networking applications. A world leader in high-speed test instrumentation, Anritsu was selected for the demonstration because the MP1800A is a modular BERT with a built-in Pulse Pattern Generator (PPG) that supports output of high-quality, low intrinsic jitter signals, as well as a built-in Error Detector (ED) with high input sensitivity of 10 mV. The MP1800A also supports signal analyses, including bathtub and Q measurements.

As a leader in silicon photonics, Kotura devices have reliably logged more than one billion channel hours of operation. The company has 140 issued and applied patents. At OFC, the chips for the optical engine will be on display at Kotura's booth #1951, while the demo will be shown privately.

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