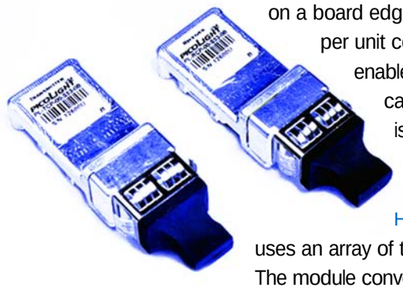
Parallel arrays of diode lasers, called vertical-cavity surface-emitting lasers (VCSELs), enable communications system designers to break slower copper-interconnect bottlenecks. These devices significantly boost backplane speed in short-distance applications. However, early implementations had difficulty ramping up to the needed volume. Here is a product that reliably and cost-effectively improves backplane speed.

Magnus™



How It Helps: The Magnus Parallel Optical Interconnect allows communications system designers to cost-effectively and reliably improve backplane speed in short-distance applications. The device delivers huge improvements in the most critical of today's datacom metrics: more gigabits per linear inch on a board edge; more gigabits per Watt of power consumed; more gigabits per unit cost. In addition, its pluggable, connector-based design enables manufacturers to provide bandwidth on demand, upgrading cards in the field with the snap-on optics. The device's footprint is only twice the size of the industry-standard 1 Gb/s small form factor transceiver.

How It Works: The Magnus Parallel Optical Interconnect uses an array of twelve 850-nm VCSELs capable of 40 Gb/s transmission. The module converts 12 electronic signals of up to 3.125 Gb/s each into optical signals, and launches them into a fiber ribbon cable 1 cm wide. Since the transceiver is based on multimode fiber, it is intended for transmission lengths of up to 1,000 feet. In the transmitter module, digital electrical signals flow through the electrical connector, through a circuit board, and into a laser driver integrated circuit. The circuit translates the digital data into small current pulses to drive the VCSEL array. The light beams from the VCSEL array are aligned into the fiber ribbon, which guides them to the receiver module. At the receiver, the functions of the transmitter take place in reverse order.

How Much It Will Cost: Prices for the interconnect modules start at $1,000 per transmitter/receiver pair in low manufacturing volumes. The product ultimately will sell for much less than that in high volume.

When It Will Be Ready: The product is available now. It works well for very short distance data transfer as well as for metropolitan area access applications. Vendors of routers and telecommunications switches have purchased it.

Who Is Working On It: The innovator is Picolight Corporation. Founded in 1995 by technical officer Jack Jewell and chief executive Stan Swirhun, the company makes VCSEL-based fiber-optic transceiver components and subsystems for telecommunications switches, storage area networks, and enterprise networks. In mid-2002, it completed its fourth round of funding, raising $27 million from institutional investors. Investment in Picolight now totals $80 million. The company employs 100 people and occupies space in Boulder and Louisville, Colorado. The Boulder facility, which serves as the company's headquarters, totals 37,000 square feet. The Louisville facility is 30,000 square feet and can be expanded. For more information, contact Jack Jewell of Picolight at (303) 530-3189 or jack.jewell@picolight.com. The company Web site is www.picolight.com.

MDA Origins

BMDO played a major role in helping Picolight develop the base technology used in this product and others. From 1996 to 1998, Picolight won seven SBIR Phase I and four Phase II contracts to research VCSEL-based laser technology, the same technology used in the parallel optical interconnect module. BMDO was interested in advancing the development and manufacturing of this technology because it could significantly improve the quality and speed of fiber communications systems used in missile defense.