



Multi-Gb/s Optical Transceivers for Data Communication

by John F. Ewen

The growth in bandwidth of fiber optic communication links continues at a rapid pace. For data communication, 1-gigabit-per-second (Gb/s) Ethernet fiber optic links are well established, and 2-Gb/s links are emerging in Fiber Channel applications.

The IEEE Standards Board ratified the 10-Gb/s Ethernet standard (IEEE 802.3ae) in June 2002. The convergence of datacom and telecom data rates at 10 Gb/s has blurred the traditional distinction between LAN (Local Area Network) and WAN (Wide Area Network) applications, with native Ethernet being defined over distances greater than 40km and telecommunications providers concerned with Very Short Reach (VSR) links of 600m or less.

This presentation will describe the evolution and current state of the art of high-speed optical transceivers and transponders from 1Gb/s to 10Gb/s. The influence of technology on the standards process, and vice versa, will be discussed, along with some of the challenges facing the next generation of optical links.

Engineers Receive Mixed News on Employment

WASHINGTON (10/14/02) While the unemployment rate for engineers fell for the first time since early 2001, the number of engineering jobs also dropped below 2 million for the first time in five years.

The unemployment rate for all engineers declined from 4.0 percent in the second quarter of 2002 to 3.4 percent in the third quarter, according to figures released last week by the U.S. Department of Labor, Bureau of Labor Statistics. The good news was offset by a substantial drop in engineering jobs, which fell from 2,027,000 to 1,923,000.

Of the major engineering disciplines, mechanical engineers were the hardest hit, losing 49,000 jobs. Aerospace engineers lost 26,000 jobs.

"The very significant decline in the number of engineering jobs is a major concern for all of us," IEEE-USA President LeEarl Bryant said. "We're not sure if these jobs will return when the economy turns up, or if they've been exported to lower-cost overseas locations."

For electrical and electronics engineers, the jobless rate fell from an all-time high of 4.8 percent in the second quarter to 4.0 in the third.

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IEEE Section Meeting

James F. Ewen, Ph.D.
Distinguished Technical Staff

JDS Uniphase, Inc.

Multi-Gb/s Optical Transceivers

Monday, November 18, 6:30 pm
Mayo Medical Sciences Building
(321 3rd Avenue SW, Rochester)

⇒ Pizza at 6:30; Meeting at 7:00 ⇐

John Ewen received bachelor's, master's, and doctoral degrees in electrical engineering from Purdue University, in 1976, 1977, and 1981, respectively. His graduate work dealt with surface acoustic wave devices and nonlinear acoustic wave propagation in lithium niobate and ZnO/Si material systems.

In 1981, he joined the Fiber Optic Technologies group at IBM's T.J. Watson Research Center, where he was involved in the design, modeling, and fabrication of communication IC's for high-speed optical links, using Si and GaAs technologies. He managed the Mixed-Signal IC Design Group from 1991 through 1997. He then joined the Optical Interconnect Solutions group at IBM Rochester and worked on parallel optical links.

Since 1999 he has been involved with high-speed optical links for LAN applications, and he has contributed to the IEEE 802.3ae Standard (for 10-Gb/s Ethernet). In January 2002 the IBM Optical Interconnect Group was sold to JDS Uniphase.

At JDS Uniphase, Dr. Ewen continues to develop multi-gigabit optical data links. His areas of work include design and modeling of high-performance fiber optic communication links, as well as analog and mixed-signal IC design in Si bipolar, CMOS, and GaAs technologies.

Dr. Ewen was a member of the International Solid-State Circuits Conference (ISSCC) Program Committee from 1995 to 1997, and he was a Guest Editor of the Journal of Solid-State Circuits issue of December 1996. He is a member of the IEEE, and participates in the IEEE 802.3 Working Group.

Section Election – Proxy

(continued from page 1)

IEEE Southern Minnesota Section officers will be elected for the 2003 term at our November section meeting. The following four candidates have been nominated:

- | | <u>Candidate</u> | <u>Write-in</u> |
|--------------------------|------------------------------|-----------------|
| <input type="checkbox"/> | Chair: Rob Harveland | _____ |
| <input type="checkbox"/> | Vice Chair: Jason Clegg | _____ |
| <input type="checkbox"/> | Secretary: Bill Gorder | _____ |
| <input type="checkbox"/> | Treasurer: Steve Kerchberger | _____ |

You may vote by attending the November meeting, or by completing the above form and returning the entire newsletter to Bill Gorder (6751 Country Club Road SW, Rochester, MN 55902) before November 15.

Check a box to vote for the nominated candidate, or write in the name of any eligible section member. *Sign your name* below the mailing label. Your ballot is confidential.

Although the rate improved, it is still more than three times as high as it was for the same quarter of 2000 (1.3 percent). Engineering jobs totaled 2,164,000 at that time. The overall unemployment rate decreased by one-tenth to 5.3 percent.

The number of jobless computer scientists and systems analysts also declined, from 95,000 (5.3 percent) in the second quarter to 84,000 (4.6 percent) in the third. At the same time, the number of employed workers in these fields increased by 35,000 to 1,717,000.

IEEE-USA's Bryant is unsure if the lower unemployment rate is an aberration or a trend. "Despite the hopeful talk about the recession being over, U.S. engineers and computer scientists aren't out of the woods yet, not by a long shot," she said. "The fourth quarter is always a prime time for job cuts, and outplacement firms are already reporting a lot of corporate calls about their fall layoff plans."



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Southern Minnesota Section**

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