

# NETWORKING

## Other Firms Working on High-Speed Token Ring

BY MARK STEPHENS

LAS VEGAS — Now that IBM has brought a new performance standard to the Token Ring market, most of its traditional competitors say they will follow suit with 16-mbps Token Ring adapters and hubs of their own, though don't look for products in volume from these vendors for several months.

Other than IBM, the only major chip manufacturer to have a 16-mbps Token Ring chip set near production is Texas Instruments, which is hatching deals right now to supply a number of vendors with its as yet unannounced chip.

Immediately following the IBM announcement here, Proteon Inc. of Westborough, Massachusetts, announced its own 16-mbps MCA adapter board based on the TI chip set. Prototype boards were on display and in operation in the Proteon booth. "Performance seems to be about the same as our own Pro-10 [10-mbps proprietary Token Ring adapter]," said Nate Kalowski, Proteon's vice president of sales and marketing. "We expect the 16-mbps boards to be used mainly in high-speed backbones, rather than in workstations."

Kalowski said that the Proteon board is an MCA bus master, which the IBM board is not. He also said that Proteon's board will be available in mid-1989, when the Texas Instrument chip set will be available in quantity, and that his company's prices would be competitive with those of IBM.

3Com Corp. of Santa Clara, California, the second-largest maker of Token Ring boards after IBM and also a longtime TI customer, said that it, too, would have a 16-mbps board available next year, along with a range of support products. No prices or specific delivery schedules were revealed.

Lantana Technologies of San Diego, California, a relative newcomer to the Token Ring business, said that it also would have a 16-mbps Token Ring product next year. "TI is only now going to get us some sample chips to build our prototypes with, so it will probably be three to four months before we have a product and maybe a year before TI has enough production to satisfy demand," said Yamil Chenali, head of engineering for Lantana.

## IBM Unveils Long-Awaited 16-MBPS Token Ring

BY MARK STEPHENS

LAS VEGAS — Clearly the most important networking announcement of Comdex was that of IBM's long-expected 16-mbps Token Ring LAN.

Big Blue announced a broad line of network adapters that can run at either 4 or 16 mbps, bridges, and supporting software, as well as improvements and new prices for its existing

line of 4-mbps products.

According to IBM spokesman Frank Elliott, the announcement had been delayed several times, not because of technical problems, but to allow production to ramp up and for there to be an adequate supply to begin volume delivery on November 30.

The new 16-mbps product line does more than just run four times as fast as IBM's earlier

product, the company said. The new adapter cards have 64K of on-board RAM — compared with 8K in most earlier IBM offerings — allowing larger frame sizes and more concurrent sessions to be established when the adapter is used in a server. The new adapters support frame sizes of up to 18K on 16-mbps rings and up to 4.5K on 4-mbps rings, compared to the previous limit of 2K.

The larger frame sizes are intended to accommodate high-volume RAM-to-RAM transmissions, such as images, which explains why the IBM's four external beta sites included engineering workstation manufacturers Apollo Computer and Sun Microsystems, in addition to Novell and Banyan Systems, according to IBM.

In addition to adapters for midrange and mainframe computers, IBM announced its Token Ring Network 16/4 Adapter and 16/4 Adapter/A for AT-class computers and MCA computers respectively. The only difference between the two products, other than form factor, is that the AT-bus card must be physically switched between 4-mbps and 16-mbps operation, while the same alteration can be made to the MCA card through software.

The MCA adapter is not a bus master, Elliott said.

While the cards can operate at both speeds, IBM made it clear that they cannot do so simultaneously, nor will users be able to operate 4-mbps and 16-mbps devices on the same Token Ring.

Token Ring networks operating at different speeds may be interconnected, however, through a gateway equipped with adapter cards for both speeds and running software like IBM's new Token Ring Network Bridge Program, Version 2.0, which forms multiple rings of varying speeds into a single logical ring.

The two IBM 16/4 adapters will be available at the end of November for \$895, while an upgraded 4-mbps MCA adapter with 16K of RAM is available now for \$750 and a similar adapter for the AT-bus is available for \$650, according to IBM.

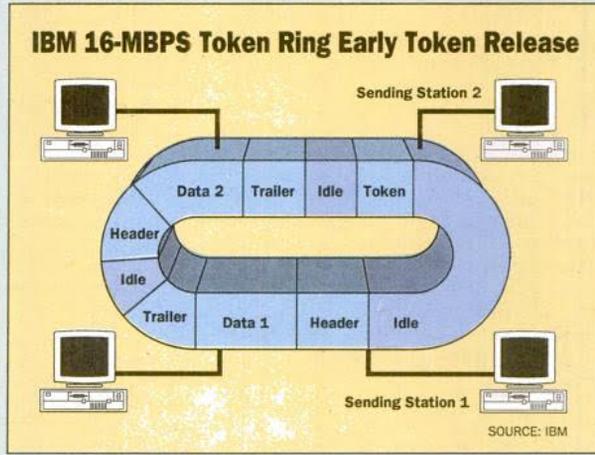
### 16-MBPS Technology Encompasses More Than Speed

There is more to the 16-mbps Token Ring than just upping the network clock speed, according to the engineers at IBM. The entire network has been reengineered and tuned for high-speed data transmission.

Speed comes at a price, though, which means that the days of the twisted-pair Token Ring are limited, IBM said. Unlike the 4-megabit-per-second Token Ring, which could operate on IBM Type 3 unshielded twisted-pair wire, the new 16-mbps networks are limited to IBM Type 1, 2, and 9 cabling — all higher-cost shielded cables.

But the idea is that higher performance is supposed to more than compensate for higher cabling costs. That higher performance comes from three sources, IBM said — the higher clock speed of the network, a nine-fold increase in allowable frame sizes, and a technology called early token release.

Early token release lets multiple frames, or units of data, be on the ring at once. A workstation on a 16-mbps Token Ring can transmit a token immediately after sending a frame of data, rather than waiting for its frame to return, which has caused lag times and efficiency reductions in larger 4-mbps LANs, according to



IBM's new 16-mbps Token Ring transmits a token immediately.

IBM.

One result of early token release is more than one token running at a time on the network and more efficient use of the network, with efficiencies of more than 95 percent claimed by IBM for frames larger than 128 bytes.

The cost of this improvement is that the Token Ring is no longer 100 percent deterministic but only "mostly" deterministic, which should have little effect on data integrity, IBM claimed.

— Mark Stephens

## Novell Shows SNA LAN-Mainframe Gateways at Comdex

BY ROBERT SNOWDON JONES

LAS VEGAS — Novell Inc. emphasized the need for greater reliability in reporting for network designs as it unveiled at Comdex last week its new Systems Network Architecture (SNA) LAN-to-mainframe gateways and Macintosh Ethernet adapters.

"Networks simply won't grow without these reliability underpinnings," said Michael Durr, Novell's director of corporate marketing, explaining the release by Novell of its System Reliability Report.

The System Reliability Report, prepared independently for Novell by IIT Research Institute, is designed to be used by company MIS departments,

systems integrators, and LAN supervisors, Durr said. The report permits them to predict the number of failures that can be expected for a given LAN configuration and to perform "what-if" calculations.

**HIGH RISK FACTOR.** "The more components you add to a network, the higher the risk factor," Durr said. The reliability model contained in the report will aid LAN designers in determining a cost-benefit analysis of the configuration, he said.

Step-by-step calculations are explained in the report, which Novell is providing free. But Novell will also sell, beginning in January, Netware Netrel, a \$99 program that automates the reliability model.

Beginning next month, Novell plans to hold reliability seminars in 35 cities, according to Durr.

**SIMULTANEOUS TERMINAL SESSIONS.** In other announcements, Novell demonstrated its Netware SNA Gateway and SNA Gateway ELS. These SNA products are boards that fit in a gateway PC and provide IBM 3270 terminal sessions for as many as 97 LAN workstations simultaneously.

The \$2,995 Netware SNA Gateway can run on Token Ring, Ethernet, or Arcnet LANs, or through remote and remote-assist SDLC at up to 56 kilobits per second over coax multiplier and coax configurations.

The \$595 SNA Gateway ELS product is an entry-level version that provides the same features for up to five workstations or 16 remote terminals running under remote SDLC up to 19.2 kilobits per second and coax.

Both products will be available beginning in December, said Darrell Miller, vice president and general manager of Novell's communications products division.

**FREEZE UP IMMUNITY.** Miller said the gateways aren't susceptible to freeze ups when more than 50 workstations are attached to the network. The gateways were engineered to take into account the timing inconsistencies on some clones and the additional

See Novell, Page 12