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REMOTE ACCESS GETS SUPER-CONCENTRATED

BY SALVATORE SALAMONE

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LUCENT IS PUTTING SOME BIG-TIME capacity into its newest remote access concentrator, and enterprise users could be the ultimate beneficiaries.

By most accounts, the vendor has overbuilt its carrier-class PortMaster 4 concentrator, which features an 800-plus port capacity, a 5-Gbps ATM backplane and the requisite software to permit easy integration into telcos' back-office systems.

Those capabilities should prove attractive to competitive carriers anxious to offer advanced remote access services such as digital subscriber line (DSL) and virtual private network (VPN) services to corporate users. Smaller service providers could lease or resell ports on a box deployed by a carrier or a large Internet service provider.

With the PortMaster 4, "a carrier can give ISPs connections in multiple area codes," said Marty Likier, a product manager at Lucent's remote access business unit.

By using this approach, a regional ISP would not need points of presence in every location where it wished to offer service. Therefore, IT departments would be able to support users in a large geographical area via the same local access to one ISP.

The PortMaster 4 achieves its wide reach through the Layer 2 Tunneling Protocol (L2TP), terminating a user's call into the carrier network, then tunneling the call to the ISP, where the normal login process is initiated.

In addition, the PortMaster 4 supports IP Security (IPsec), which lets a smaller ISP offer VPN services in a large geographical area. The new unit also could be used by ISPs to offer IP telephony services, such as voice and fax, and to support DSL session aggregation, Lucent officials said.

With DSL aggregation, a carrier could sup-

ply DSL service to an ISP's customers. User traffic would then be carried over either an L2TP or IPsec tunnel back to the ISP's operation center. From there, the ISP could use a Remote Authentication Dial-In User Service (RADIUS) server to screen users before giving them access to the Internet.

Lucent said competitors such as Ascend and Cisco might be able to deliver some of the same hardware features as the PortMaster 4. But Lucent plans to leverage its carrier services expertise, such as its experience with Signaling System 7 and Advanced Intelligent Networking (AIN), to help integrate the new access concentrator into a carrier or ISP network. Ascend and Cisco both are relying primarily on acquisitions to round out their offerings in this area, Lucent officials said.

Leveraging integrated SS7 and AIN features "enables a provider to offer an integrated voice solution," said Kevin Dundon, vice president of voice network development at service provider Level 3 Communications Inc. "For someone who wants to build IP-based voice services, these integrated capabilities are a positive."

Northern Telecom has comparable expertise in the SS7 and AIN areas, but Lucent believes its other products—such as the RADIUS Authentication Billing Manager, which links usage to billing systems—will let ISPs or carriers more quickly develop and roll out new services.

Lucent, like other access concentrator vendors, will use SS7 between the PortMaster 4 and a telco's central office. This makes it possible for service providers to do "data off-load," where an ISP takes a data call coming into the PortMaster 4 and sends it directly to the ISP's main facilities and hosting site. Without data off-load, data calls must be carried over the public switched telephone network to reach the ISP.

By using SS7 to facilitate data off-load, an ISP can save money by keeping the calls off the PSTN, Lucent said. These savings would os-

tensibly be passed along to the user in the form of lower service rates.

The PortMaster 4 will make it easier for carriers to resell ports or VPNs, which typically require a combination of intelligent software and high-port density hardware, Lucent officials said.

"Demand for ports is growing tremendously," said Steve Willens, president of Lucent's remote access business unit. The number of users and applications that require dial access, as well as the connect time they demand, is increasing, he said. These new demands greatly increase the need for ports among ISPs, Willens said. "If the average user spends 30 minutes connected to the service provider and then that [connect time] doubles, the number of ports needs to double, too," he said.

Physically, the PortMaster 4 is a 10-slot chassis that features a 5-Gbps ATM switching fabric in the backplane. This high-capacity backplane is capable of providing a dedicated 155-Mbps line to nine slots and a 622-Mbps line to one slot simultaneously, company officials said.

This is enough bandwidth per slot to support as many as three individual T3 lines, Lucent officials said. The PortMaster 4 modules—a quad T1 modem and a T3 WAN module—plug into the slots and require far less bandwidth than the unit's maximum output, helping to reduce performance degradation under heavy loads.

A single PortMaster 4 can support up to 864 simultaneous modem sessions and more than 4,000 simultaneous modem sessions when stacked in standard seven-foot telco racks.

The product will be available by Oct. 1, with a base price of \$4,495. Modules vary in price and include a system manager module for \$10,995; the quad T1/PRI modem module for \$47,995; a tri E1/PRI modem module for \$47,995; a quad T1/PRI module for \$16,495; and a channelized T3 multiplexer module for \$18,995. •

Lucent's PortMaster 4 Concentrates On Remote Access

BY WAYNE RASH
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LUCENT TECHNOLOGIES bills its PortMaster 4 as the highest capacity remote access concentrator in the business. Considering the device's 864-connection capacity and 5-Gbps ATM backplane, that claim appears to be accurate.

This carrier-class remote access solution is aimed at ISPs and companies that need to support a significant number of dial-in analog and ISDN access users, and concentrate their traffic on to a 45-Mbps T3 line.

To accomplish its aims, Lucent's Remote Access Business Unit (formerly Livingston Enterprises) has designed a product that has more in common with the high-end ATM and Gigabit Ethernet switches we usually test than it does with other remote access products. These similarities include the ATM backplane, which can provide a full OC-3 (155-Mbps) pathway to each concentrator module, with an OC-12 (622-Mbps) link to a single card. Other key features include fault-tolerant designs for the power supplies, support for redundant management units, complete environmental instrumentation and support for enterprise management systems.

Redundancy support includes hot-swap management and communications modules and power supply units, meaning that you can simply pull out a nonfunctional module and replace it without having to take the entire unit off line. In many cases, however, the PortMaster 4 will warn you before trouble arrives. Lucent includes a Java-based management and configuration tool that can help you keep an eye on the health of your PortMaster 4. But even if you for-

get to check on the device, it can selectively shut down individual modules if necessary, rather than simply refusing to operate if something goes wrong.

The PortMaster 4 supports a variety of Ethernet and T1 connections. The T1 boards will support four connections each, as well as the T3 connection. Most access protocol re-



quirements, including IP and IPX, work with the PortMaster 4. Likewise, callers can use Serial Line IP, Point-to-Point Protocol, Multilink PPP (single and multiple chassis) and dynamic addressing.

We tested the PortMaster 4 at Lucent's facility here because of the highly specialized test equipment required. The test environment included a pair of Madge/Teles switch simulators set for AT&T 5E emulation, and

an Abacus line simulator. We used a pair of Sun Microsystems Ultra 5 computers running a "perf" utility to simulate the required number of sessions.

Once we got the test environment running, we found that the PortMaster 4 easily managed a sustained level of operation required to fill a T3 line. While the testing was in progress, we also pulled out power supplies, unhooked fans and otherwise attempted to toast the product. We weren't able to accomplish that, although when we disabled all the fans, the PortMaster 4 began shutting down access modules as they began to overheat. This was the appropriate response to ensure that damage to the product would be avoided.

Included in the package is Lucent's Java-based configuration and monitoring tool, which makes the PortMaster 4 easy to use and manage. The product has an intelligently designed user interface that updates in real time and has such features as the ability to indicate alerts in flashing red, for example. Lucent also has dedicated MIB-II support for enterprise management systems, such as HP OpenView. We were unable to test the EMS support.

Overall, Lucent's PortMaster 4 is an impressive product indeed. The connection density is much higher than anything else in the industry and its speed and capacity surpass anything else that's out there. Combined with its next-generation design and its manager-friendly reliability and redundancy, it's clearly the class leader. In fact, the PortMaster 4 may define an entirely new class. •

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PortMaster 4 Integrated Access Concentrator
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List prices: \$4,495 (base 10-slot chassis); \$10,995 (system mgm't module); \$600 (hot-swap power supply); \$47,995 (quad T1/PRI module); \$16,495 (quad T1/PRI ISDN module); \$18,995 (channelized T3 multiplexer module)

