Connections

NEWS AND INFORMATION FROM ASCEND COMMUNICATIONS, INC. MARCH 1998

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There's a new voice on the horizon that dramatically changes the way companies do business. This technology lets them run voice and fax applications over packet-based private and public data networks as opposed to the traditional voice services that run over the circuit-oriented Public Switched Telephone Network (PSTN).

So why would anyone want to make this change when everyone knows that the PSTN is one of the most robust networks in the world? The answer is simple–economics. Packet-based voice and fax applications can offer companies the same high quality with considerable cost-savings. This reason alone is compelling enough to send many vendors scrambling to develop the "Voice over anything" products that will help companies realize these economies. As vendors vie for a piece of this emerging market, one company has all the ingredients necessary for true toll quality voice and fax applications–Ascend Communications.

Ascend is uniquely positioned to bring packet-based voice to the next level with their MultiVoice™ for IP, Frame Relay and ATM solutions. With MultiVoice, Ascend is the only company to deliver a totally integrated solution for voice, fax and data services over a single network.

"Ascend's strategy is simple," says David Misunas, Vice President of Business Development. "We offer a complete and transparent solution for voice and fax applications that is comparable to the user's experience on the PSTN."

MultiVoice: From Access to the Core

Recognizing that the PSTN will continue to co-exist with the emerging public data network, Ascend's MultiVoice solutions integrate with current PSTN services. Ascend does this by providing complete interoperability between the two networks and "toll quality" voice and fax services. From the access to the core of the data network, Ascend can deliver integrated and managed services all with Absolute Quality of Service (QoS).

"Ascend offers something no other vendor can offer– end-to-end network management and QoS," says Misunas.

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ASCEND

PRESIDENT'S LETTER



Welcome to the first 1998 edition of our quarterly newsletter, *Connections*. We are pleased to give you this look at some of the exciting product innovations and networking solutions from Ascend.

Year in Transition

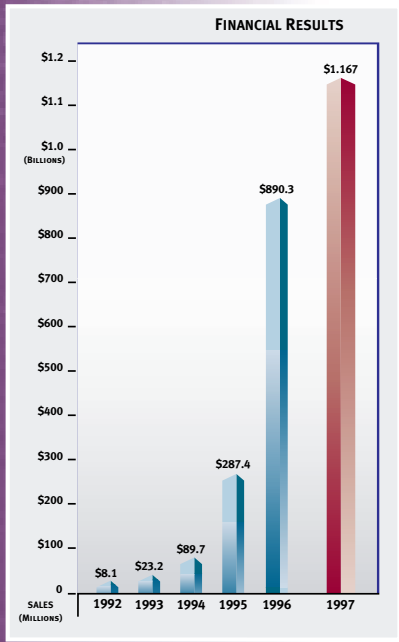
1997 was clearly a year in transition for Ascend—we began the year as a leading provider of remote access products and we now enter 1998 as a broad based supplier of Wide Area Network (WAN) solutions. Ascend expanded this reach into the networking industry through a series of planned mergers and acquisitions and by continually examining as well as augmenting our product line.

Much of our success in 1997 can be attributed to our renewed focus on product quality and performance. This is best demonstrated by looking at the progress made in various markets around the world: a continued strength of our carrier, enterprise and ISP markets in North America, a solid growth in our access products in Europe and a strong showing in China despite some of the financial concerns in many of the Asian markets.

All of our solutions played well in these markets but we exhibited particularly strong growth in our core systems products. We saw an acceleration in our ATM business, driven by demand from both new and existing customers. We expect to see ATM continue to emerge as the backbone technology of choice as we approach the upcoming year.

Ascend has stayed on top of industry by bringing leading-edge products to the forefront. Our GX 550 has received rapid market acceptance as the first "Smart Core" switch. In the WAN access market place, the MAX TNT™ continues to be the only product in its class to be produced in volume. Additionally, we have also shipped over two million 56 Kbps ports worldwide for both the MAX TNT and the MAX™ product lines. We are confident that our recently-announced, high-performance MAX 6000 will be another leading product in the access market.

Whether Ascend develops these products for the access, edge or core layer of the network, you can be assured that they provide high quality connectivity for our corporate customers and for the carriers and ISPs who service them.



1997 Financial Results

We are pleased to report a very solid fourth quarter earnings report. Ascend was able to achieve these results in spite of weak growth in key Asia Pacific markets. Fourth quarter net sales were $292.5 million and net income was $47.6 million. When compared to the third quarter 1997 results, Ascend realized a sequential growth in net sales and income of 8% and 19% respectively. This when compared to fourth quarter 1996 results, represents a 2% increase over net sales of $287.8 and a 26% decrease with a net income of $64.5.

We were just as happy with our year end results. For 1997, net sales were $1.167 billion, a 31% increase over net sales of $890.3 in 1996. Net income for 1997 was $211.2 million or $1.06 per share before the effect of one-time charges related to purchased research and development as well as the cost of mergers. Excluding these one-time charges, results from 1997 represent an 8% increase over net income of $195.1 million or $.99 per share before the tax charges related to the costs of mergers in 1996.

1998 Vision

This year we strive to deliver strategies and solutions that continue to highlight Ascend as the leading provider in the Wide Area Networking market. Our MultiVoice™ initiative establishes Ascend's dominant presence in the public network with strategies and products that enable corporations and service providers to partner to utilize the full strength of the public data network for transmitting voice, fax, data and video. As the public network continues to emerge as the network of choice for global communications, Ascend will be there with the solutions that maximize connectivity.

Keep watching Ascend in 1998—we promise even more exciting announcements demonstrating Ascend's strong presence in the wide area market.

We welcome your suggestions for making *Connections* even more informative. If you see something that provokes any thoughts or comments, please let us know by dropping us a line at info@ascend.com.



Mory Ejabat
President and Chief Executive Officer

L.A. Cellular

Ascend Enables L.A. Cellular's Standout Service

L.A. Cellular Telephone Company is Southern California's premier telecommunications provider and a leader in the burgeoning industry of wireless communications. As one of the most innovative service providers, L.A. Cellular provides a variety of features, such as caller ID, voicemail, short messaging service and increased voice privacy—services that enable its customers to get the most from their cell phones. With a service area covering more than 32,000 square miles, L.A. Cellular must offer top-notch customer service. Using solutions from Ascend Communications, L.A. Cellular makes sure its staff is always equipped to support their customers—from remote locations and from headquarters.

Extending the Reach of the Corporate Network

L.A. Cellular's original corporate network used a terminal server-based system, which lacked performance and scalability. As the company grew, it needed to extend the reach of its network to give its staff access to business applications and improve corporate communication. They also needed a reliable remote solution to give sales and technical staff dial-up access to the corporate network from remote locations and to let them access e-mail or the Internet locally or remotely. Information on the corporate network was sensitive, so the platform would need to support robust RADIUS-compatible security for controlled access.

Since L.A. Cellular is growing fast, its infrastructure equipment needed to be scalable and versatile enough to accommodate future needs such as remote videoconferencing. Ascend solutions fit the bill, offering L.A. Cellular plenty of potential for expansion and development. For example, L.A. Cellular is considering using its MAX™ remote access concentrators for videoconferencing applications over ISDN PRI dialout lines. And, to provide added security for its dialup workers, the organization is also considering upgrading its RADIUS server software to Ascend's Secure Access™ Firewall application. This dynamic technology can protect the corporate network from all but legitimately authorized traffic.

"We needed a product that could grow to fit our needs and support a wide range of protocols and provide high modem density," explains Ali Gilani, Manager of Network Development.

Networking on the Move

L.A. Cellular purchased Ascend's MAX products to accommodate both its remote access and central site requirements. Although other solutions offered some needed individual features, the MAX was the only solution to offer the combination of flexibility and modem density.

L.A. Cellular installed seven MAX 4004 WAN access concentrators, each of which was custom-tailored for specific applications. Three are used mainly for remote access, providing dial-in PPP access to the organization's RADIUS server. This setup lets the sales staff keep in touch whether at home or on the road. To keep sensitive data secure, the corporate server's RADIUS-based software provides token-based authentication to the network.

For its mobile sales force, L.A. Cellular has reserved a fourth MAX unit specifically for wireless demonstrations. "With just laptop machines and cell phones, our sales people can dial in to the MAX and have immediate access to applications on the corporate LAN, plus the World Wide Web," explains Gilani.

L.A. Cellular's efforts aren't just for remote users. For staff back at headquarters, the organization has configured another MAX unit to provide users on the corporate LAN with high-speed connections to the Internet.

Two more MAX units are being configured to offer dial-out IP capabilities direct from users' desktops and for IP-based internal demonstrations.

Since their installation earlier this year, Gilani has been pleased with the MAX units' performance and ease of use. "The Ascend box was straightforward to set up and operate. Service and response from Ascend have been excellent," says Gilani.

Ascend's solution gives L.A. Cellular the access they need to offer unmatched service all over the Southland, and the ease to expand in the future. "



L.A. Cellular

L.A. Cellular is owned through a partnership between AT&T Wireless Services, the nation's leading cellular entity and BellSouth Cellular Corp., a global telecommunications company. Southern California's premier wireless telecommunications service provider, L.A. Cellular offers more than 32,000 square miles of calling area and some of the most innovative wireless products and services available for corporate and private customers.

Analyst's Corner

Dataquest's John Coons: The Impact of the Public Data Network

Connections: **What are some of the most noticeable trends in terms of enterprise use of the Public Data Network?**

John Coons: Certainly the most successful trend has been the adoption of Frame Relay, primarily for LAN connections for corporate enterprises. The number of Frame Relay ports in the U.S. is nearly doubling every year. More and more enterprises are being drawn away from their old private leased line networks towards the public network, primarily for cost savings. They get nearly the same performance, in some cases better performance, for less cost. Now, most of the Network Service Providers are looking at enterprise networking as an additional source of higher margin revenue than small dial-up accounts for consumers.

Connections: **What are some of the factors contributing to the adoption of the Internet now?**

JC: About a year ago, I worked on a short piece exploring what it would take for service providers to lure corporate enterprises toward the Internet as their prime method of internetworking. There are still some hurdles ahead. The first one is privacy. We feel the privacy issue is well addressed with current Virtual Private Network technology. Applying encryption, authentication and digital certificates makes VPNs on the Internet more secure than the same internetworks were on Frame Relay and leased lines, which weren't encrypted.

Ubiquity is another factor, because the Internet is available in many more cities worldwide than even Frame Relay ports. If just one or two cities in an organization's network aren't covered by a Frame Relay provider, the enterprise has to maintain and manage leased lines or something else in those areas, rather than outsourcing the entire network. The cost of dealing with various providers can also be high, especially on an international basis. If you have to keep an international private line network up and there's a problem on the line, you're dealing with two different countries' phone companies on each end. It can take a long time to resolve these kind of problems. Another department affected is accounting, which might be getting twenty or thirty bills a month in different languages, currencies and with different tax implications. A one-stop provider can give you one bill in one currency at one point in the world.



"More and more enterprises are being drawn away from their old private leased line networks towards the public network..."

John Coons, Principal Analyst, Internet Infrastructure Networking Worldwide Program, Telecommunications Group—Dataquest

Connections: **What are some enterprise applications for which the Internet is best suited?**

JC: The Internet is extremely well suited for mobile users, who can call in securely from anywhere. It's also good for e-mail, which is not usually mission-critical in terms of time and for faxing and other types of one way traffic.

Connections: **Could the Public Data Network ultimately be used even for mission critical applications?**

JC: At some point, practically everything could be handled by the Internet. There's no inherent reason why an IP network couldn't be as reliable as a Frame Relay network. Issues like availability, reliability and consistency of throughput are being addressed by service providers that own and control their own network.

Connections: **Are more service providers beginning to offer access services specifically for the enterprise?**

JC: A few service providers have bundled enterprise access solutions. For example, we run a small access server for our associates traveling around the world. These folks need to make long distance calls in to our local access server and we'd need someone here to maintain the server on a 24 x 7 basis for us to do that reliably. If our Network Service Provider is handling dialup on our behalf, they could simply hand calls off to us in either IP or Frame Relay format. A lot of enterprises say dialup is their biggest headache for support. If they can outsource it, they'd love to get that monkey off their back.

Mr. Coons is principal analyst for the new Dataquest Internet Infrastructure program, tracking the networking equipment and architectures used by Internet Service Providers (ISPs) and backbone operators within their service provisioning infrastructures. Mr. Coons joined Dataquest in 1994 and brings with him over 20 years of experience in the computer industry, with over 15 years in data communications.

Ascend's Global Service Strategy

Providing World-Class Service for the Life of Your Solution

Ascend knows that a top-notch networking solution means more than just hardware and software. A world-class vendor will ensure that customers can get the most out of their network investment throughout the network lifecycle. And that means being there not only now, but throughout each stage of the product life. That's why Ascend has made a significant investment in building a worldwide, service and support organization offering a complete portfolio of services today, and an infrastructure for innovative new services in the future.

"Ascend offers a comprehensive service solution, from traditional maintenance product offerings to services such as consultation and training," said John Pohl, director of service marketing at Ascend. "But to truly meet the needs of our customers going forward, we must assume greater responsibility for their success. This means global availability of services, seamless delivery, and an evolving portfolio."

Support That's Right for You

Strategically, Ascend is committed to the premise that support needs to meet customer requirements no matter where they're purchasing their products. Ascend's Advantage Services are offered for customers who obtain their products directly from Ascend. Customers who purchase their products through resellers can also benefit from these service solutions.

Through Ascend's Authorized Service Provider program, Advantage Services can be combined with a reseller's own service offerings, enabling resellers to create custom-tailored support programs that best meet their customers needs. To address the support needs of customers who purchase their products through distribution, Ascend's Advantage Pak services provide a complete service program in a box for Ascend MAX and Pipeline Products.

> **"All of our services are based on a consistent framework to offer fully intergrated service solutions on a global basis"**
>
> John Pohl, Director of Service Marketing

"The bottom line is that Ascend will deliver a consistent set of service offerings to all of its global customers. It's a strategy that everyone benefits from," said Pohl. "And these services will continue to expand and evolve to meet the changing requirements of our customers."

A Global Strategy for Global Customers

Ascend's service offerings are designed to be not only comprehensive, but international in scope. Realizing its customers aren't limited to a few geographic areas, Ascend has developed a global support strategy to accommodate its global customer base.

"All of our services are based on a consistent framework to offer fully integrated service solutions on a global basis," explains Pohl.

By providing a variety of options to choose from, Ascend ensures you'll find exactly the service you need at a price you can afford.

To sign up, or for more information, please call 1-800-272-3634 in the USA and Canada or visit the Ascend Web site at www.ascend.com. In Europe, please call +33-492-46-5609. All other international locations should contact their local Ascend representative.



MAX 6000: The Next Generation

More Ports, More Performance, Same Price



In an industry fueled by change, even the highly successful MAX™ 4002 and 4004 WAN access switches can be expected to make way for something better. But how can you possibly improve the most scalable, cost-effective remote networking solutions available? By introducing a whole new generation of WAN access switches with more speed, higher performance and new capabilities—the MAX 6000 series.

"Ascend created the MAX 6000 to address the need for even greater performance, reliability and scalability, and to make new services such as Voice-over-IP not only possible, but practical," says Dana Harrison, MAX Product Line Director. "The demands on Internet access equipment are growing faster than ever. It was important that the successor to the MAX 4002 and 4004 have a highly flexible and expandable architecture that could keep pace with growing networks and changing business requirements."

Like the MAX 4000 series WAN access switches, the MAX 6000 eliminates the need for separate modem banks, terminal servers, routers, data compressors and line adapters. In short, the MAX 6000 does everything the MAX 4000 series does. But thanks to the latest hardware and software technologies, the MAX 6000 can offer even faster performance.

Performance Galore

At the heart of the MAX 6000 is the Intel i960 processor, which gives this WAN access switch over three times the throughput of the MAX 4000 series. The i960 is supported by other new and upgraded chips and an enhanced bus architecture. A host of new capabilities result, including high-speed multiprotocol routing and bridging, a full duplex autosensing 10/100 Mbps Ethernet port that maintains high throughput in single and multi-unit MAX configurations, and high-speed modem and ISDN performance that remains consistent up through the maximum 120 sessions.

"The MAX 6000 brings all this horsepower to the edge of the public network to build real Quality of Service (QoS) applications when teamed with Ascend's core switching products and IP Navigator," Harrison says.

> **"The MAX 6000 brings all this horsepower to the edge of the public network to build real QoS applications..."**
>
> Dana Harrison, Director of MAX Products

Expandable Memory

Shared and private memory pools in the MAX 6000 have been expanded for greater storage capacity and improved performance. Two custom slots allow up to four times more shared DRAM than available on the MAX 4000 series. Another slot for FLASH memory enables the MAX 6000 to store up to 10 MB of configuration data.

Beyond Traditional Networking

The MAX 6000's considerable processing power and memory handle up to 120 digital modem, ISDN and Frame Relay sessions—more than any other product in its class. Virtually every type of analog modem access is supported, as well as the speedy K56flex digital modem standard (MAX 6000 digital modems will soon be software upgradable to the V.90 56K ITU standard). The MAX 6000 even accepts modems from Hayes, Mega-hertz, Practical Peripherals and Xircom.

With IMUX, V.110 and PHS cards installed, the MAX 6000 accommodates videoconferencing, GSM cellular and Personal Handy-Phone System connections, respectively.

"It takes networking beyond traditional IP-based applications to a realm where images, voice and data are handled equally well," continues Harrison.

Industrial Strength

Version 6.0 of the True Access™ Operating System (TAOS) gives the MAX 6000 all of the features that have made the 4000 series so successful. These include Intragy™ enterprise



functionality; Virtual Private Networking; security features such as dynamic firewall protection, encryption and user authentication; software options such as Hybrid Access™ 6000 and MAX Stack; extensive management capability and more. And because the MAX 6000 accepts MAX 4000 series cards, MAX 4002 and 4004 owners have an easy and economical way to migrate their networks to the MAX 6000 platform.

The MAX 6000 complies with Level-3 of the stringent Network Equipment Building System (NEBS).

"With even greater power capacity and superior heat dissipation, the MAX 6000 is built to outlast every product in its class as well as outperform them," Harrison said.

It is truly a product designed to leave a lasting impression in an industry that changes daily.

MultiVoice for the MAX: The Future of Telephony

One of the most exciting applications the MAX 6000 makes possible is Voice-over-IP (VoIP), which allows service providers and enterprise customers to add real-time voice transport services to their existing IP backbone networks.

"Until the MAX 6000 with MultiVoice™ was introduced, VoIP was almost a novelty," says Jose Garcia, Ascend Product Manager. "The computational power of the MAX 6000 makes VoIP a practical and affordable reality for corporations, ISPs, CLECs and their customers—everybody wins."

VoIP enables a customer to make a long distance call for the price of a local call. End-to-end QoS measures keep all phone conversations low distortion, echo-free and delay free—even during peak Internet traffic.

"Because the MAX 6000 is the actual gateway between the PSTN and the IP-based network, the MultiVoice solution for the MAX is vastly superior to PC-based VoIP systems" says Garcia. "It also has the advantage of being much more compact, integrated and scalable than competing products. This makes the MAX 6000 with MultiVoice ideal for large scale networks that anticipate even more growth as VoIP catches on."

VoIP will not only create new services, but will make billing for those services more fair and efficient. ISPs will be able to establish a transaction-based billing system that scales with network usage. And carriers will be able to offer customers a two-tiered pricing structure with one price for circuit switched calls and another price for packet switched calls.

Private corporations with PBX systems and IP networks already in place are poised for savings as well. With VoIP, employees at company headquarters will converse with their remote office counterparts through their local PBX systems and over the company IP network. Thus VoIP will save corporations money on voice transmissions the same way e-mail saves money on written communications.

USER PROFILE

Richardson Electronics

Ascend Keeps Staff Plugged In



A major challenge to any growing organization is providing employees with effective connectivity on a limited budget. Like many mid-sized corporations, Richardson Electronics Ltd., a leading international distributor of electronic equipment, faced potential growing pains when it recently decided to upgrade its network. Richardson needed to replace the low-speed leased line network with a new network built on public digital services, TCP/IP routing protocols and state-of-the-art access equipment. The company's new network infrastructure—powered by Ascend solutions including the MAX™ and Pipeline® products—has met the challenge by keeping users at more than three dozen offices connected to its corporate headquarters.

More For Less

Richardson Electronics required a remote access platform that incorporates support for a wide range of access methods. Richardson's solution had to support everything from digital dial-up to Frame Relay and analog technologies. At the same time, because of a limited MIS staff, the solution needed to be easy to configure and manage.

"We had planned to implement a routed network but we changed our minds after we saw a demonstration of the MAX and Pipeline units," explains Mark Wolf, Richardson's communications manager. "Ascend's equipment provided all the connectivity capabilities Richardson needed, but required less management overhead."

Scaling for Success

Richardson selected the MAX family of remote access concentrators, along with Pipeline bridges/routers for remote access. The company was impressed by the robust connectivity options, scalability and cost-effective management capabilities Ascend products offered.

The Ascend solution gives Richardson's network users end-to-end digital connectivity. The company's new network infrastructure connects users throughout North America to corporate headquarters. It also links mobile workers and telecommuters to the corporate LAN.

An Ascend MAX 4000 at Richardson's headquarters aggregates incoming calls onto four T1 circuits. Since the MAX supports digital, Frame Relay and analog protocols, Richardson can choose the most cost-effective network services that fit their users' bandwidth requirements.

"With the Ascend MAX, we can begin migrating to an all-digital network while continuing to support our analog users at the same time," explains Wolf.

Fully-loaded, a MAX supports up to 96 simultaneous connections, which allows Richardson's network room to grow. In addition to support for ISDN and Frame Relay, the MAX also can be configured with different interface cards to support switched or leased line connections at a variety of speeds.

In Charge with Simplified Management

Since Wolf manages his company's network single-handedly, he also appreciates how easy the MAX is to configure and maintain.

"Compared to large network routers, it's very user-friendly," he says. "You don't have to go to a class to get it to work, you just do it." Since the MAX consolidates all of the calls coming into the network onto a single piece of access equipment, it simplifies Wolf's network management responsibilities.

Ascend is providing Richardson's Electronics with high-speed, standards-based Pipeline solutions at its remote sites too. Pipeline units are used to shuttle network traffic back and forth from branch offices and telecommuters' homes.

"It's a beautiful product for setting up virtual offices," says Wolf. "It gives you a high-speed digital connection along with two regular phone jacks so you can run a computer, a fax machine and a regular phone through it. You don't have to buy anything special like a digital phone and you only need one ISDN line."

According to Wolf, the company's management is delighted with their new network, which saves them thousands of dollars each year in access line charges and equipment costs.

"The Ascend solution has saved the company $30,000 right up front," explains Wolf.

Branch office users and telecommuters are happy because the access equipment they're using delivers high-speed digital connectivity and is easy to use. As Wolf adds more users to the network in the coming year, it's a safe bet that Richardson Electronics will continue to realize increased productivity and cost savings.

Richardson Electronics

Richardson Electronics is a leading international distributor of electronic tubes and power semiconductors with revenues of more than $200 million. The company's new network infrastructure, based on ISDN and Frame Relay, connects users at its 37 sales and distribution centers in North America with its network at corporate headquarters in Lafox, Illinois.

Ascend Facility Gets ISO Mark of Quality

Ascend's facility in Boxborough, MA has been recertified to the ISO 9001 international quality standard with no deficiencies. The facility has also ranked in the top 10 percent in GTE's Supplier Quality Evaluation for the third year in a row. The Boxborough facility designs, tests and manufactures WAN multiservice Frame Relay and ATM switches. ISO 9001 is an internationally-recognized quality assurance model used by companies that design, produce, inspect, test, install and service items.



Tolly Report Highlights GRF Multigigabit Router Performance

Recent performance tests by the Tolly Group illustrate the superior performance of Ascend's GRF® MultiGigabit router. The tests demonstrated that the GRF 1600 with OC-12c media cards forwarded data from 16 simultaneous ATM OC-12c modules, each filling 100 percent of usable OC-12c. The GRF 400 demonstrated virtually identical throughput from each of its four media cards. The Tolly Group is a strategic consulting firm that provides Fortune 1000 companies vendor-independent assessments of critical corporate technologies.

Ascend Backs ITU Moves Toward 56K Modem Standard

Ascend has announced that it supports the declaration of consensus on a 56 Kbps modem standard reached by a committee of the International Telecommunications Union (ITU). Ascend, longtime supporter of the 56K technology developed by Rockwell Semiconductor and Lucent Technologies, is the leader by a two-to-one margin in deployment of 56K ports at Network Service Providers worldwide. The ITU endorsed the draft recommendation at a meeting in Geneva, Switzerland and will ratify a standard in September 1998.

Dataquest Says Ascend Tops Frame Relay Market

Dataquest, a market research firm, has released the year-end statistics for the 1996 WAN networking market, which shows that Ascend has taken the number one spot in Frame Relay sales worldwide. Ascend ended 1996 as the leader in the Frame Relay market with a 27.4 percent share of the market. "Ascend offers carriers a complete ATM and Frame Relay product line with the potential to provide end to end Quality of Service," said George Hunt, Director and Principal Analyst at Dataquest.

Intragy Provides Network Access for Corporate Customers

Corporate managers can simplify access for their diverse end-user population with Ascend's Intragy™ network access solution. The solution includes IntragyCentral™, which provides multiprotocol remote access on the MAX™ and MAX TNT™ and IntragyAccess™ software for the desktop. IntragyAccess is the first suite of remote access software with the same look-and-feel for every platform, from Windows and Windows NT to Macintosh OS. The unified solution reduces training and support overhead for MIS departments.

Ascend and Infonet Team to Provide "Virtual Enterprise" Remote Access

Infonet Services corporation, a leading international network service provider, is launching the industry's first "Virtual Enterprise" remote access service for multinational enterprises, based on Ascend MAX WAN access switches. The offering lets companies set up two-way dial access for remote offices, mobile professionals or temporary operations, without the time and expense of leased lines. Organizations can start with a low-priced entry point, then migrate to higher speed transmission technologies as their access needs evolve.

Ascend Teams with Microsoft's NetOp Partner Solutions Center

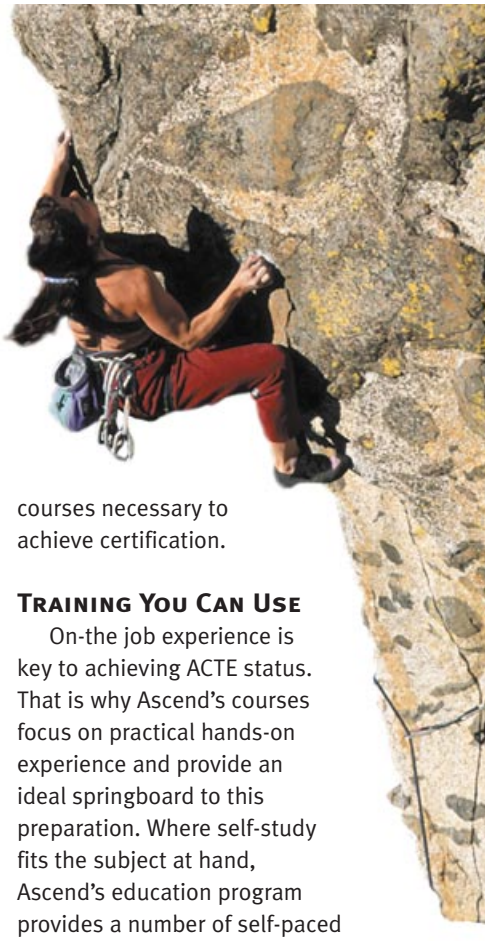
Ascend has announced it is a partner in the new Microsoft NetOp Partner Solutions Center (NPSC). The NPSC provides a multiple-vendor environment that facilitates development and rapid deployment of turnkey large-scale public network solutions for network operators. Experts from each strategic partner, including Ascend, can work with customers to create fully integrated systems designed to meet their specific needs.

MAX 4048 WAN Access Switch Beats USR Rival

In a recent study by The Tolly Group, an independent testing organization, Ascend's MAX 4048 WAN access switch outperformed the US Robotics Total Control Enterprise Network Hub. The tests set the MAX 4048 WAN access switch and Total Control Hub up as dial-up remote-access concentrators and used them to deliver data via FTP over one to 46 simultaneous client connections. When 56 Kbps modems were used, the MAX 4048 demonstrated better throughput in each test, regardless of the number of connections and type of transmitted data-regular text or compressed. Testing with 33.6 Kbps modems produced similar results.

ACTEs Lead Companies to the Top

Ascend Takes Professionals to a Higher Level



Keeping pace with the latest technological innovations is a growing challenge. Practical, hands-on experience and technical grounding can prove invaluable for handling increasingly complex networks. Many organizations and individuals are discovering that technical certification can give them the edge they need.

According to a 1997 survey sponsored by IBM, Microsoft, Novell, Sybase and Sylvan Prometric, certification offers substantial benefits for employees and their organizations. Ascend's Certified Technical Expert (ACTE) program can offer the same advantages to you and your organization.

Value for the Enterprise and the Individual

The 1997 Gartner Group Training and Certification Study reveals some significant rewards for certification. Of corporate managers surveyed, 77 percent said that certification provides extra value for their organization. What's more, most managers believe that certified professionals provide higher levels of service and show greater productivity. They also demonstrate impressive leadership skills.

The survey showed that certification can also provide major professional benefits for individuals. More than 52 percent of IT certification candidates responded that they were seeking certification for personal advancement in their industry. When they were asked about specific benefits of certification, 78 percent of the candidates answered that it could offer them additional respect in their profession. And 49 percent said that certification would help them improve their problem solving skills.

With these compelling reasons, it's no surprise that many organizations find certification a valuable investment. More than half the corporations surveyed were willing to invest between $1,000 and $5,000 per employee in certification training. Since Ascend's training programs are competitively priced, an ACTE candidate can take the courses necessary to achieve certification.

Training You Can Use

On-the job experience is key to achieving ACTE status. That is why Ascend's courses focus on practical hands-on experience and provide an ideal springboard to this preparation. Where self-study fits the subject at hand, Ascend's education program provides a number of self-paced study options.

The results are in and there's no question that technical certification can tap into enormous potential, for individuals and organizations alike. To learn more about Ascend's ACTE program, call 1-888-322-ACTE. Or visit Ascend's Web site at http://www.ascend.com.

Tech Briefs



Q: Will I be able to upgrade my Ascend MAX™ and MAX TNT™ WAN Access switches to the new ITU standard? How much will this cost?
A: In the near future, Series56™ modems, based on Rockwell's K56flex technology, will be upgraded via the new V.90 standard with a no-cost, software upgrade.

Q: What is the modem capacity of the MAX 4048 and 4060 WAN access solutions?
A: The MAX 4048 is a two-T1 chassis with 48 K56flex-compatible digital modems. The MAX 4060 is a two-E1 system with 60 digital modems.

Q: What does the Navis™ Network Management family consist of?
A: Navis includes the NavisCore™, NavisXtend™ and NavisAccess™ applications. Each application delivers network management for service provider and Enterprise networks.

Q: Can Ascend's Intragy™ solution help me with my Ethernet bridging needs?
A: With IntragyCentral's™ bridging option, corporations can run existing legacy protocols and non-routable protocols (such as DEC LAT and SNA) natively without reconfiguring the network. Network managers can use bridging to easily connect small-scale Ethernet segments to the corporate site.

continued from cover

"With Ascend's Navis™ network management and IP Navigator, all voice and fax calls are transmitted over the data network with high service guarantees."

Additionally Ascend's installed base strength can offer enterprise customers the assurance they need for both current and future applications.

"Ascend's equipment has been working in the field to power the most reliable network in the world—the public network," says Misunas. "Whether you are talking about the MAX™ in the access area or the GX 550 in the core, customers can be assured that voice and fax applications will be handled from start to finish by the most robust equipment in the world."

Phase 1: MultiVoice for the MAX

Ascend will roll out this solution on several multiservice platforms, beginning with the MAX, the most award-winning, field-tested WAN access switch available. With over 50,000 units installed, the MAX has proven its strength in a variety of networking environments.

MultiVoice for the MAX lets enterprise customers or network service providers add real-time voice transport services to their existing IP or Frame Relay backbone network. This solution includes both a MultiVoice Gateway that allows ordinary telephone calls to "hop-on" or "hop-off" the IP packet network and a MultiVoice Access Manager (an H.23-compliant gatekeeper that per forms call routing within the packet-based telephone network).

"MultiVoice for the MAX is ideal for Voice over IP or Voice over Frame Relay deployment because it is highly scalable, integrated, based on international standards and very competitively priced," says Jose Garcia, product manager for MultiVoice for the MAX.

MultiVoice for the MAX solutions offers enterprise customers a cost-savings by: acting as a backup for existing voice trunks; supporting the voice and data needs of a small or branch office over a single network, functioning as a local gateway on a private basis or part of a service provider-managed offering and by allowing companies to use the same hardware for both data and voice remote access.

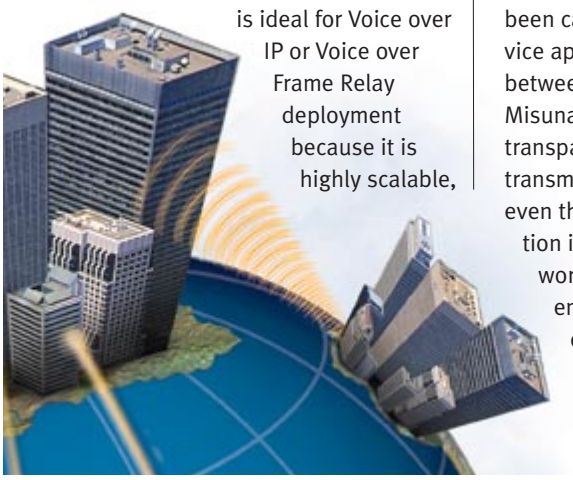
"The best way for a company to use MultiVoice for the MAX is in conjunction with a managed public or private network using Ascend's core products," says Garcia. "This way, companies can be assured of end-to-end QoS which results in higher quality voice calls."

More in Store For Ascend's MultiVoice

After MultiVoice over IP and Frame Relay, Ascend will roll out additional voice capabilities throughout the year. The next phase, MultiVoice over ATM, will provide compressed voice over ATM with Ascend's SA 100 and 600 products. This offering enhances Ascend's ability to support voice, fax and video over ATM-based networks.

A subsequent phase will provide a platform that delivers interoperability between IP, Frame Relay and ATM MultiVoice platforms in addition to SS7 carrier signaling services. This enables service providers to offer enterprise customers the most high-quality and cost-effective voice and fax services available to date.

"Ascend's MultiVoice solutions have been carefully designed with a multiservice approach to provide interoperability between any network architecture," says Misunas. "Our goal is for the end user to transparently make a call, send a fax or transmit mission-critical data without even thinking about how that information is communicated over the network. With MultiVoice and a network engineered by Ascend, this goal can become a reality."



Awards



Data Communications Applauds MAX TNT

Ascend's MAX TNT™ carrier-class WAN access switch has earned the Tester's Choice award from Data Communications magazine. "With 720 ports per [system], Ascend's MAX TNT is one of the biggest and best RASs available," said evaluators. Also tested in the December, 1997 issue were products from Bay Networks Inc., Cisco Systems Inc., Multi-Tech Systems Inc., RAScom Inc., Shiva Corp. and 3Com Corp. Editors praised the MAX TNT's high performance, ease of use and management.

Secure Access Firewall is PC Magazine Editor's Choice

Secure Access™ Firewall has received an "Editor's Choice" award from PC Magazine after withstanding a barrage of assaults from the magazine's testing lab. The award, was announced in the magazine's October 7, 1997 edition. Editors tested three products and concluded, "Of the products we reviewed, we found Ascend Communications' Secure Access Firewall, which can be added to most of Ascend's Pipeline® and MAX series products, to be the best."

MAX TNT and DSLTNT NEBS-Certified for CO Operation

The MAX TNT and DSLTNT™ passed rigorous certification requirements to become certified NEBS-compliant Level 3 for central office connectivity. Network Equipment Building System (NEBS) certification indicates that a product is able to provide the maximum assurance of equipment operability in a demanding global carrier network.

EVENTS CALENDAR

Be sure to visit us at the following exhibitions and trade shows—learn about our latest product releases, see our products in action and watch live demonstrations.

DATE	EXHIBITION	LOCATION
April 1-2	NetCom	Ft. Lauderdale, FL
April 1-3	Networld + Interop	Singapore
April 20-23	Comdex	Chicago, IL
April 26-28	ACTA	Colorado Springs, CO
April 28-30	DVC	Santa Clara, CA
April 28-30	Gartner Group Remote Access	Lake Buena Vista, FL
May 4-6	NCTA Cable '98	Atlanta, GA
May 5-7	Networld + Interop	Las Vegas, NV
May 13-15	Government Technology Conference	Sacramento, CA
June 3-4	ATM	San Jose, CA
June 9-11	Supercomm	Atlanta, GA
June 30-July 1	UTC	Boston, MA

Extending the Internet to Meet Your Needs

The Internet is changing. Learn where it is going and how each new direction can benefit you or your business by attending *Extending the Internet to Meet Your Needs*. This free three-hour educational seminar explores current and future uses of the Internet. Basic Internet and remote networking topics are discussed as well as all new material covering public network offerings, virtual private networks, voice on the Internet and security.

Reserve your space now. Seating is limited.

Visit the Web site at www.ascend.com for additional seminar schedules.

For more information, call 1-800-366-4058.



DATE	*LOCATION*
April 2	Orlando, FL
April 7	Seattle, WA
April 9	Phoenix, AZ
April 14	Detroit, MI
April 16	Cleveland, OH
April 21	Denver, CO
April 23	San Antonio, TX
April 28	Philadelphia, PA
April 30	Baltimore, MD

Connections

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NL-07

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