A Publication of

NETWORK SYSTEMS

## **Satellite Network Keeps Florida Communicating During Emergencies**



Florida Department of Emergency Management harnesses power of VSATs

he eye of Hurricane Andrew crossed the Florida peninsula in just four hours on August 24, 1992, cutting a 30-mile-wide path of destruction through treasured natural areas, killing 15 people, injuring thousands, and leaving more than 180,000 homeless. For the Florida Division of Emergency Management (FDEM), Hurricane Andrew also left behind the realization that they would have to reevaluate their communications system to ensure that the critical missions required of FDEM during a disaster as devastating as this could be accomplished.

When Andrew had finished its journey across South Florida, most areas in the storm's path had no telephone service. Much of the cellular network was inoperable or overloaded and high winds had knocked down radio towers, eliminating the use

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Networld + INTEROP

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DirecPC® Makes High-Speed Internet Access Possible for Millions of Students in Rural Communities



New product meets specialized browsing needs of K-12 teachers and students

chool districts across the country have made Internetenhanced learning a top priority in nearly every K-12 environment, with administrators looking for cost-effective ways to provide high-speed, classroomappropriate access to this unprecedented educational tool. In more densely populated urban and suburban areas, high-speed T1 landlines are fast becoming the norm. But for millions of students in remote rural communities, high-speed solutions are simply not available. That is, until a recent partnership between HNS and JDL

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SPRING 1999

AGE

Satellite Network Keeps Florida Communicating

DirecPC® Makes
High-Speed
Internet Access
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Students



HNS and
Partners Supply
Equipment
and Services
to India

► HNS' Radiant™ Technology Serves Caracas Stock Exchange

Fourth-Generation DIRECTV® System Available

New TRES
System Offers
Satellite Data
Connectivity
Solution

► AlReach™ Office: Anywhere, Anytime Communications

Coming Events

JACK SHAW, CHAIRMAN AND CEO

#### What's in a Name?

ughes. It's certainly a name that evokes a vision of all that is right about the American entrepreneurial spirit. From its beginnings as the Hughes Tool Company, Hughes has always striven to stay ahead and reinvent itself as times and technologies have changed. We have just

completed our first year as a company dedicated to staying on the forefront of commercial telecommunications. From manufacturing to services, Hughes Electronics is a substantial player in providing satellite communications around the globe and a world leader in its wireless communications outreach. No country remains untouched by products from Hughes and

here at HNS we are proud to be part of the communications revolution.

How did we become the company that we are today? In 1932, Howard Hughes, son of the company's founder, formed an aircraft division within the Hughes Tool Company that eventually became one of the world's leading aerospace enterprises —

continued on page 2

#### **DirecPC**

continued from page 1
Technologies helped level
the educational playing field
by offering HNS' DirecPC\*
Turbo Internet technology in a
customized format that meets the special
needs of elementary and secondary school
students — no matter where they happen
to be located.

Available since the end of 1998, the K-12WORLD satellite server comes complete with all the necessary hardware and software for on-demand browsing at speeds several times faster than even T1 lines. Further, it is configured with education-friendly features such as a SmartFilter that disables access to inappropriate sites, and a unique robot-enabled capability to quickly download and cache complete sites for immediate off-line access during lessons. The latter feature enables a teacher to incorporate large files, even a complete site such as www.nationalgeographic.com, into a lesson plan without fear that the site will be slow loading or unavailable during actual class time. Supplementary material can then be "surfed" live at satellite speeds.

"We saw an opportunity to help millions of kids enhance their education, while creating a new niche market for DirecPC," explained Scott Cress, DirecPC director of business marketing. "In working with JDL, a recognized leader in the K-12 technology environment, we created a whole new way to use the

product — an innovative way to meet specialized classroom needs. In addition, we address for the first time the need for high-speed, cost-effective Internet access for rural communities and others hungry for connectivity solutions. It's a win for everyone."

According to Cress, the product will continue to develop as the partners assess the ways customers make use of this new technology.

"Along with our third strategic partner,

NEC Computers, we can custom configure the server to meet many needs," he explained. "We can readily add DIRECTV to the package, providing the school with a new palette of educational programming. Thanks to our new turbo Webcast service, we're also able to 'broadcast' popular educational sites directly to school servers across the country, saving time and bandwidth. We look forward to providing K-12 students and teachers with more and better solutions in the future."



#### **Executive Corner**

continued from page 1
Hughes Aircraft Company. In the late forties, Hughes became increasingly involved in the field of electronics and by the fifties was among the leading manufacturers of missiles and missile systems. These accomplishments laid the groundwork for a whole new industry (geosynchronous communications satellites) as we saw the introduction of the Hughes Syncom and Early Bird satellites in the 1960's. The following

stand on the threshold of the new millennium, we are continuing our tradition of reinvention. We want to reaffirm our commitment to what it is that Hughes does best. For more than 35 years we have been the pioneers and leaders in the field of communications.

of today).

We have led the way in satellite systems, developed state-of-the-art satellite and wireless services, and revolutionized digital satellite television with the introduction of DIRECTV. To this end, we here at Hughes are reintroducing you to the new Hughes — a familiar name with a new focus — dedicating ourselves to the future

decades have seen innovation upon

engineers of Hughes as the company

aerospace and military weapons to

Who is that company? As we

telecommunications (the Hughes

innovation from the scientists and

focus has shifted from tools to

generation of telecommunications.

You may have noticed over the past few months that we have changed the Hughes logo and corporate identification. Our newly designed logo captures the vigor and energy of the new Hughes Electronics Corporation. Of course, it always helps to start as the world leader and we are proud that the companies that make up Hughes Electronics Corporation are also industry leaders in their own right.

We Make it Happen. No other company can deliver the breadth and range of satellite and wireless communications that Hughes Electronics offers and no other telecommunications company has the proven experience and ability in the areas of wireless communications. So when someone mentions the name "Hughes" in the future, you will think not only of our innovative past, but also of the dynamic and creative future where "We Make it Happen."

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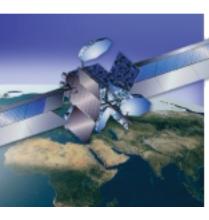
Hughes Network Systems 11717 Exploration Lane Germantown, MD 20876 Telephone: 301-428-5500 Fax: 301-428-1868

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#### NETWORK SYSTEMS

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## **HNS and Partners Provide Equipment and Services as India's Largest Private Sector Telecommunications Carrier**

# Hughes Ispat Limited Puts World's First ATM Class 5 Switch into Operation

n a move that marks its entry as a partner in a public telephone carrier, as well as one of the largest suppliers of telecommunications equipment to India, HNS joined forces with ALLTEL Corporation and the Ispat Group to form Hughes Ispat, Limited (HIL), India's largest private-sector telecommunications company. As part of the Indian government's efforts to encourage competition and reduce the backlog for telecommunications services, HIL was awarded a license to provide basic telephone and value-added services to corporate subscribers, public call offices (PCO), and residential customers in the Indian states of Maharashtra and Goa-the Maharashtra Telecom Circle (MTC).

"Our mission as the premier private service provider in the MTC is to ensure that people of Maharashtra and Goa receive world-class service supported by the best in customer care," said Raju Patel, president and CEO of HIL. "We offer a combination of state-of-the-art wireless and fiber access, modern high-capacity digital switching, and a world-class support system that includes a 24-hour customer service center."



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Service was launched in the MTC from the initial exchange in Navi Mumbai in October 1998, followed by the second in Pune in December 1998, and the third in Mumbai in February 1999. Additional exchanges will be launched in Mumbai throughout 1999. Already, thousands of

customers are using the HIL network, including some of India's largest corporate customers such as Arthur Andersen, Merck, Owens Corning, Pennzoil, and Proctor and Gamble. HIL expects to commission more than half a million lines within the next three years, increasing to over three million

Already, thousands of increasing to over th



#### **Fun Web Sites**

http://www.wfu.edu/albatross/

Check out how one American university is educating young people about the power of satellites by engaging them directly with a scientific project checking the flight patterns of tagged albatrosses.

in the next 15 years.

In keeping with the goal of providing MTC subscribers with the latest available technology, HIL has just completed an upgrade of its wireless local loop (WLL) network by cutting into service an NEC NEAX 61 Sigma switch, the world's first ATM-based Class 5 switch. With this cutover, HIL is now operating its entire WLL network with ATM Class 5 switches.

According to HIL Chief Technical Officer, Vinod Jain, "We are very pleased with both the smooth launch of the service in October of last year and now with this upgrade to the most advanced switching in the world. HIL is planning to grow rapidly and will add additional radio cells as needed to provide the high-quality service that our customers demand."

At the heart of the HIL network is the AIReach™ Wireless Local Loop system provided by HNS. This system employs TDMA technologies based on the IS-136 standard and is optimized to provide wireless access, basic telephone service. The optimization addresses the stringent requirements in fixed telephony for high quality, high availability and reliability. The higher capacity of this network supports the longer call durations typical with fixed telephone service. The AIReach system is designed to be a transparent alternative to traditional wire, which is in short supply in many areas of India.

"Our wireless local loop service is just the first step in wireless access," stated Patel. "Later this year we plan to add new services for the business community including HNS' newest fixed wireless access product, AIReach Broadband. This high-capacity, point-to-multipoint service will allow HIL to provide the latest capabilities for high-speed data access to the business community."



### HNS' Radiant™ Technology Enables Online Trading On the Caracas Stock Exchange

Venezuelans choose HNS technology for Internet and intranet access

enezuelan stockbrokers at the Bolsa de Valores de Caracas (BVC), the stock exchange of Caracas, now have intranet and Internet capability thanks to HNS' Radiant™ products. Using CANTV, the nationwide public network, access to BVC's network will allow brokers to increase the number of remote area office locations, thus expanding the reach and promoting the growth of the Venezuelan stock market.

"Today's businesses are relying more and more on the Internet as an effective and important business tool," said Carlos Caro, marketing director, Latin America, for HNS' Enterprise Network Systems group. "HNS is pleased to provide BVC with the technology



that will enable it to grow its national presence."

Subscribing brokers can use BVC's corporate intranet for pricing and trading information and access the Internet

for Web browsing and email. HNS' IP multicast feature allows BVC to broadcast real-time updates and information to brokers. As part of the subscription fee, stockbrokers are provided with equipment as well as installation, configuration and connectivity.

"Today's businesses are

relying more and more

on the Internet as an

business tool."

effective and important

"Radiant's WAN-compatible edge devices along with internetworking and backbone switches are helping us build the infrastructure necessary for interconnecting with CANTV, as well as for connectivity to current transaction applications," said Eduardo Vidal, systems manager for BVC. "It's important that we provide this access to our brokers since they work remotely rather than on our premises."

Aditel, a Venezuela telecommunications integration company whose mission is to offer its customers a complete solution including voice, video, and data will implement, monitor, and manage the stock-exchange network. BVC's future plans include the addition of voice services over the frame relay network. In addition, BVC will allow the Venezuela Central Bank to connect to its network to trade Titles for Currency Stabilization online through subscribing stockbrokers.

### Fourth-Generation DIRECTV® System Soon to be Available

Hughes Now Taking Orders for Fourth-Generation Product

n January of this year, HNS shipped its one-millionth set-top box for DIRECTV® direct-to-home (DTH) satellite TV service to become one of the largest manufacturers of set-top boxes for DTH systems. The Hughesbrand DIRECTV system enables satellite television customers to easily navigate through the more than 200 television channels available from DIRECTV, USSB®, and the recently acquired PrimeStar services. Introduced in March 1996, HNS is already taking orders for its highly anticipated fourth-generation product line, which is expected to feature full Dolby Digital compatibility in the top-of-the-line Platinum model.

All Hughes fourth-generation systems will feature the company's exclusive Turbo Video Accelerator — a technology that leapfrogs over conventional chip set design to maximize the speed and efficiency of Hughes on-screen display functions. The Platinum edition receiver — when combined with the Hughesbrand digital VHS VCR — provides the only system on the market capable of recording



and playing back Dolby Digital (AC-3) programming broadcast by DIRECTV.

"This milestone clearly demonstrates the strong consumer desire for our products and technology. Our success proves that ease of use and superior design — backed by the best warranty on the market — are what consumers look for when purchasing a DIRECTV system," said Paul Gaske, senior vice president and general manager of HNS' Broadcast Products Division. "When you combine HNS' world-class products with DIRECTV's world-class service, you have an unbeatable combination. Our ability to achieve this level in such a short time

highlights the consumer demand for both."

Key features of all Hughesbrand DIRECTV systems include:

- OneLine™ Guide presents on-screen program information without obstructing the channel being watched, enabling users to "channel surf" while watching their favorite program. Channel surfing is easier with advanced channel list filtering.
- TurboTune<sup>™</sup> capability allows users to pre-select their nine favorite channels for quick channel access
- StarSight® One-Button Record enables users to use Hughes' exclusive Preselect™ Programming feature to select programs for recording in advance, with the touch of a single button on their remote control
- WatchWord™ Search enables users to choose up to eight catch words or names to identify programming of interest





Complete systems approach provides new optimal solution for data and video connectivity needs

hen looking to invest in satellite systems to provide reliable twoway data connectivity among different locations, enterprises no longer have to choose between high speed and low cost. They can now have both, thanks to the new Trunking Earth Station (TRES) system from HNS.

"Economic concerns have forced many organizations to do without the high-speed, two-way connectivity that could give them a competitive edge," said Shekhar Bhandari, HNS TRES product line manager. "The TRES system provides high-speed, point-to-point and point-to-

"Economic concerns have forced many organizations to do without the high-speed, two-way connectivity that could give them a competitive edge."

multipoint connectivity at a saving of up to 30 percent less than any other comparable solution. HNS is, and always has been, a network solutions company," said Bhandari. "As such, TRES is an overall, turnkey system providing high-data rate, two-way connectivity at a lower price than alternative multichannel per carrier (MCPC) systems."

Customers from the China
Tobacco company to AAPT
Sat-Tel in Australia, are all
discovering that the satellite
connectivity provided by TRES
offers tremendous advantages
because it offers service that is
distance insensitive and ubiquitous. Now even the most remote
of enterprise locations can be
connected instantly and continually with others for data, voice,
fax, and real-time videoconferencing applications.

Indeed, TRES is a complete, low-cost earth station. The TRES modem provides data rates from 32 Kbps to 2.048 Mbps and the earth station is available in both C-band and Ku-band configurations. The modem is connected

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## TECHNICAL Q&A

## Where can I obtain the latest information on my VSAT products?

The HNS Web site at www.hns.com is a wealth of information, both technical and otherwise. From the latest news releases to trade shows that we'll be attending to information on Y2K, hns.com can provide you with a wide variety of information.

However, it is also a place where current customers can go to get the latest VSAT information on software upgrades and enhancements, print out installation and operators manuals, register online for a number of customer service requests, look up FAQs, check on the latest VSAT products and specifications and much more.

So, how do you get there? Simple.

Just type in http://www.hns.com/ pescac/pescac.htm and it will take you straight to the "satellite network technical assistance center" page! To the left of your screen should be



a number of choices based on our satellite network product lines. Locate the product that you are seeking information on and just click on the button.

If you are already registered with CAC, enter your assigned user name and password in the dialog box that appears. If you haven't already registered, then go to the register button and complete the online form. A user name and password will then be generated and sent to you via email.

Do you have any technical questions? If so, just send me an email at qarmstrong@hns. com or fax it to Gayle Armstrong at +1 301-601-4071.

#### **Satellite**

continued from page 1 of radio communications. FDEM, the agency responsible for responding to statewide emergencies, found itself without adequate voice and data communications to carry vital information in and out of the disaster area.

This provided the impetus to conduct a search for a system that would keep on working when others couldn't. For the FDEM, the answer was satellite communications.

"We considered hardwiring T-1 lines statewide, but the cost was prohibitive and this didn't really solve the problem, because the system would still rely heavily on terrestrial lines," says John Fleming, senior management analyst at the division's Tallahassee headquarters. "We also considered HF (high frequency) and 800 Megahertz UHF (ultra high frequency) radio, but eliminated them because HF needs big antennas, a very high skill level

on the part of the operator, and is affected by weather and atmospheric noise." UHF systems were eliminated because they require extensive technical expertise and are expensive to implement.

With the decision made to go with a satellite communications solution, the agency began a search for the vendor who could



best meet its needs. FDEM selected HNS over two other vendors because HNS VSATs provided the right combination of sophisticated features, ease of use, expandability, low cost, and flexibility to meet the state's emergency communications needs.



According to Fleming, the decision has proven to be a good one. "The system works even better than we expected to the point that we use it day-to-day pretty much as we use the telephone system," he says.

Today, Florida's satellite communications system, ESATCOM (emergency satellite communications), is operating statewide. Each site using the system has an HNS PES™ system consisting of a VSAT antenna, a digital indoor unit, handsets, and a computer.

"We've deployed the system at key warning points — 911 systems, law enforcement agencies and emergency operation centers in each of the state's 67 counties," Fleming explains. "HNS equipment is also deployed in Emergency Alert System control stations throughout the state, in the seven National Weather Service offices serving Florida, at Florida National Guard head-quarters, and at the Water Management District control center."

"We've divided the state into four geographical sections, each with a separate channel," Fleming explains. "That way we can communicate information to a specific area without having to bother all the regions." When a situation calls for statewide notification, the four regions can be patched together to allow simultaneous alerts to all sites.

FDEM hasn't had to worry that the high winds and tornadoes associated with hurricanes will knock out HNS systems because the equipment is designed to handle wind speeds up to 125 miles per hour. In the four South Florida counties with the highest annual probability of experiencing hurricane-force winds, the system can withstand 200 mile per hour blasts. "We've never lost a dish to wind," says Fleming.

## Today, Florida's satellite communications system is operating statewide.

Even so, to ensure that system availability is never an issue, FDEM maintains two trailermounted HNS systems that are kept at the ready for quick relocation in an emergency. These systems are also used as local field headquarters during major disasters.

There's no question in Fleming's mind that HNS' VSAT system is living up to the expectations of FDEM. He sums up the value of the system to the state of Florida and its place in the FDEM by saying, "We count on ESATCOM to be there when our other communications systems aren't. It hasn't failed us yet."

#### **Hear These HNS Executives**

#### **SPEAKING**

#### April 25

Frank Safertal, vice president, Wireless Networks Division, will speak on the security of European telecommunications, in Prague, organized by the Civic Institute.

#### **April 27-30**

Bahram Pourmand, executive vice president, will speak on "The Future Direction of VSAT Technology in the Rapidly Changing Telecommunications Market" at the VSAT '99 Global Industry Conference, Renaissance Prague Hotel, Prague, Czech Republic. He will also participate on the concluding "Future Visionary Panel".



BAHRAM POURMAND

#### May 27 and 28

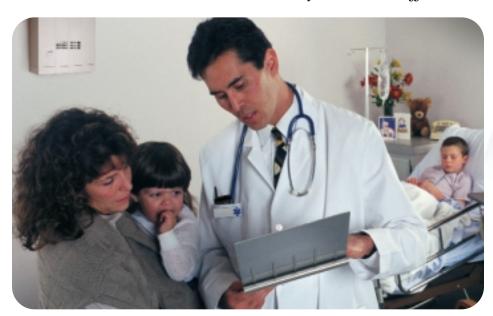
Dennis Conti, vice president, Satellite Networks Division, will speak on "Leveraging the Multicast Capabilities of Satellite Networks to Achieve Competitive Market Positioning" and Paul Gaske, senior vice president and general manager of the Broadcast Consumer Products Group, will examine "DirecPC's Strategy to Achieve Increased Penetration in the Market for Broadband Internet Satellite Services". These talks take place at the Satellite Internet Conference at the London Kensington Hilton Hotel, UK.

#### **June 10 and 11**

Mike Cook, managing director of HOT: Telecom will speak on "providing a complete multimedia service solution via satellite" and Paul Gaske, senior vice president and general manager of the Broadcast Consumer Products Group, will address the "economics of delivering multiple IP services on a global basis" at IPSat '99, Waldorf Meridien in London.

**AIReach™ Office: Anywhere, Anytime Communications.** 

Wireless service on one number, whether you're in the office or on the road



fficient and reliable communication is a cornerstone of today's progressive enterprise. Whether it's a doctor maintaining contact with patients and medical case personnel; or management staying in touch throughout a large manufacturing facility; or faculty and operations staff communicating across multiple buildings on a sprawling campus. Anywhere, anytime communications is an essential element of business success.

Solving the riddle of seamless communications anywhere, anytime has resulted in a patchwork quilt of different generations of networks and devices. Now let's conceive of a network of networks, with total blanket coverage, including wired and wireless, accessible using a single wireless handset. Assume, furthermore, that such a network provides both high-quality voice and data messaging services, allowing for access to computers,

**Solving the riddle of seamless** communications anywhere, anytime has resulted in a patchwork quilt of different generations of networks and devices.

PBX telephones and other communications subsystems throughout a company's operating environment. These include headquarters office buildings, remote monitoring sites, campus style office complexes, and the miles of communications corridors in-between. Picture this and the "Office Anywhere"

solution becomes reality.

At the heart of the "Office Anywhere" is an AIReach™ Office system. AIReach Office interconnects on industry-standard digital ISDN trunks with most office PBXs and Ethernet LANs. It provides complete wireless coverage by using low-powered picocells operating throughout the workplace. The radio interface is the IS-136 TDMA digital cellular standard, operating in either the 800 MHz cellular and/or 1900 MHz PCS frequency bands. An IS-41 intersystem link connects AIReach Office and the external macrocellular system, which results in universal access using a single digital handset. This handset is addressable by either its regular cellular phone number or the four-digit number linked to the wired PBX phone. The result is universal wireless service, both voice and data, available anywhere, anytime within the combined footprint of the macrocellular network.

AIReach Office is simple to install and operate, having only two types of components - controllers and picocells. The controller is continued on page 8

## Coming EVENTS

#### May 11-15 Networld + INTEROP

Las Vegas, NV Booth 7929

## May 11-15

SVIAZ/Expocomm Moscow Booth 2147

#### **June 7-9**

Retail Systems Chicago, IL, Booth 1411

#### June 8-10

SUPERCOMM '99 Atlanta, GA Booth 7754

#### July 19-21

Satellite Business Communications Association Booth 341

#### Sept. 13-17

Networld + INTEROP Atlanta, GA Booth 2228

#### Sept. 22-24

PCS '99 New Orleans, LA

#### Oct. 10-17

ITU Telecoms Geneva, Switzerland Booth 4020

#### Nov. 1-3

Food Service/ Technology (F/S Tech) Dallas, TX Booth 563

#### Nov. 3-5

TeleCon '99 Anaheim, CA, Booth 1295

#### Nov. 15-19

COMDEX Las Vegas, NV Booth L361

#### TRES.

continued from page 1
to a distribution system, the
PDS-M, that multiplexes all
signals on a single cable to the
outdoor unit on the antenna. The
latter is available in a variety of
frequency bands and station size
configurations. Multiple modems
can be used with each PDS-M
to enable multicarrier operations.

Of better value than other satellite modems, TRES supports a variety of applications for MCPC voice and data applications using external multiplexers, dedicated circuit connections and videoconferencing. TRES supports these applications with a high level of satellite bandwidth and power efficiency, making it one of the most economical MCPC solutions in the

TRES meets many enterprise network needs including:

market.

- Quick and efficient installation of point-to-point as well as point-to- multipoint data circuits where no cost-effective terrestrial networks exist;
- Low-cost connectivity between branch offices and headquarters of organizations that operate across regions;
- Implementation of bandwidthmanagement applications to save time and money;
- Reliable and cost-effective



alternative for disaster recovery, back-up, and overload circuits for organizations with terrestrial networks;

High-speed data connections for organizations that need them on a temporary basis for applications such as LAN-to-LAN connectivity and transfers of large data, audio, or video files.

TRES is designed to interoperate with the versatile HNS Universal Modem, which offers features such as compliance with The satellite connectivity provided by TRES offers tremendous advantages because it offers service that is distance insensitive and ubiquitous.

IBS/IDR standards and an efficient redundancy scheme that makes it an ideal gateway station for point-to-multipoint networks. Both of these modems can be managed by the same network management system. ■

#### **AIReach**

continued from page 7 a PC-based subsystem, which functions like a desktop mobile switching center (MSC) and is installed adjacent to the PBX. It controls operation of the picocells and manages network configuration, provisioning, maintenance and customer billing information. Diagnostics and file maintenance are simple and easy to understand and navigate using a powerful graphical user interface. Operations training is self-paced on a CD-ROM and is targeted for IT support staff who need not be cellular or even telephony experts. The AIReach Office system provides superior coverage and because of its low power requirement, extends the standby and talk time of conventional cellular handsets by as much as a factor of 10. This yields a true highquality cordless capability to the mobile handset.

Whether it's transmitting critical information about the transport of excess power, the relaying of up-to-date inventory status, the enabling of timely preparation in a hospital emergency room, or simply reaching the employee when you need to, AIReach Office brings instant connections anywhere, anytime to today's progressive companies. Harnessing this power of universal wireless can indeed yield the competitive edge.

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