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FLASHWAVE 4100

FLASHWAVE 7120 Optical Edge Platform
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FLASHWAVE 7500 Reconfigurable Optical Add/Drop Multiplexer (ROADM)
The FLASHWAVE 7500 optical transport system offers the most advanced DWDM, optical hubbing, ROADM, and network design capabilities to deliver and manage growing metro and regional networks.

Skinny Wire

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Broadband Adoption

Studies have found that broadband adoption is largely immune to the effects of the current economic recession. Broadband consumers are finding other ways to reduce household costs by scaling back on cable television services, advanced cell phone services, and some are cutting out land line service all together relying solely on cell phone services. Consumers are discovering the internet to be the most useful technology in order to stay connected with friends and family, pay bills, stay informed of local and world news, watch movies, play games, educational resource, as well as serving multiple other functions.

Jennifer Beck
Sr. Product Marketing Mgr.
Walker and Associates, Inc.

The broadband stimulus Notice of Funds Availability (NoFA) document recently released by the U.S. Government outlines available grants, loans, and grant/loans for the purpose of stimulating the economy in rural, "unserved", and "underserved" markets. Trends show that take-rates for broadband services are far less in the following demographics: low income families, education levels at or below high school graduate, or with aged adults.

Broadband Adoption Trends (%)

Groups	2006	2009
All Adults	42	63
Age 18-29	55	77
Age 30-49	50	72
Age 50-64	38	61
Age 65+	13	30
Homes w/Minors	51	77
< High School Ed.	17	30
High School Grad	31	52
Some College	47	71
College +	62	83
Rural	25	46
Urban	45	67
< 20k Income	18	35
50k - 75k Income	48	80
75k + Income	67	82

Center for Rural Affairs

Estimates state that small telcos servicing rural America are most likely to benefit from the financial stimulus plan. As of 2008 (latest estimates) the rural population makes up 50.1M of the total 304M (19.7%). That leaves 253.9M of the population in urban territories, which already have a broadband adoption rate of 67%.

Service providers applying for stimulus funding need to target rural markets that are demanding broadband services, not just "unserved" or "underserved" territories. Networks need to be expanded to areas where consumers can afford to pay the monthly service fees, enabling service providers to remain viable companies after the stimulus funds are used up. Hence, the purpose of the stimulus plan!

Broadband Stimulus Solutions

By Rodney Wise

As Director of Engineering Services for Walker and Associates, Rodney Wise confronts a variety of technical questions on a daily basis. His broad background provides him a real-world perspective of challenges and opportunities telecom engineers and project planners face in the field. This experience, along with continual training from the manufacturing community and a staff of equally talented Sales Engineers provide customers with a wealth of pre and post-sales engineering support. The Wise Guy is a regular feature in The Skinny Wire and on our website, www.skinnywire.net.

Telecommunications has seen many technological advances and changes over the last twenty (20) years. Many of us have the ability to subscribe to high speed data services at our homes that twenty years ago would have offered enough bandwidth for an entire community. We have grown accustomed to these high speed connections and tend to get anxious when we aren't getting our normal speeds. The broadband stimulus plan will hopefully encourage more people to take advantage of high speed connections and provide more accessible broadband. The broadband stimulus plan should help expose the options, opportunities, network designs, and delivery technologies to a much wider audience than previously tuned in to our industry.

Broadband solutions today cover a diverse range of mediums and technologies. The most common technologies include DSL, Cable Modem, GPON, Active Ethernet traversing fiber copper and wireless mediums, WiMAX, and satellite. There are also some groups involved with broadband over power lines (BPL). Due to the power distribution network design in the U.S., BPL is more complex and costlier than in other countries and has not been widely deployed. The other broadband solutions have been provisioned with DSL being the most widely deployed.

Digital Subscriber Line (DSL) technology provides digital data transmission over copper pairs. DSL is currently the main broadband offering from carriers, because the dedicated phone lines needed for deployment already exist. DSL in its current most common form, ADSL2+, provides up to twenty-four Megabits per second. For higher date rates, ADSL2+ allows port bonding. If two 24 Megabits per second ports are available, the result would be a 48 Megabits per second connection. The highest DSL rates available are through the use of Very High Bitrate DSL or VDSL2. VDSL2 provides data transmission rates up to 200 Megabits per second. The data rates provided by all DSL technologies are very dependent on loop lengths so the closer you are to the DSL Access Multiplexer the higher the data rate.

Cable modems provide data transmission using radio frequency channels over the cable television infrastructure. The data rate provided through the use of cable modems is similar to DSL. Cable modems are currently the second most popular technology in delivering broadband. Cable modems are connected to a Cable Modem Termination System (CMTS) at the cable operator's headend. The connection can be through a coax cable infrastructure or more commonly through a hybrid fiber coax infrastructure where fiber extends from the headend to a hub site near a neighborhood and coax cable connects the hub site to the home.

GPON or Gigabit Passive Optical Network is a fiber to the premise network architecture in which passive optical splitters are used to enable a single optical fiber to serve multiple premises. The GPON network typically utilizes splitters that have a one to thirty-two split. GPON consists of an Optical Line Terminal (OLT) at the service provider's central office and Optical Network Units (ONUs) at the premise. GPON provides 2.488 gigabits per second of downstream bandwidth and 1.244 gigabits per second of upstream bandwidth. The advantage GPON has over other broadband deployments is that less equipment is required in the network and the equipment that is required between the OLT and ONU does not require power.

Active Ethernet requires a point to point architecture where fiber connects an active switch with an Ethernet gateway at the premise. Active Ethernet provides higher bandwidths (up to 10 Gbps currently) and a larger serving area up to 120 km (versus 60 km with GPON). Since every home has a dedicated circuit, bandwidths can continue to climb with every advance in Ethernet switch capability. Active Ethernet is gaining momentum in FTTx deployments.

WiMAX is a wireless standard designed to provide broadband access. This IP based, wireless broadband technology can be implemented as a fixed network or a mobile network. Data rates on fixed WiMAX networks can be as high as forty-five megabits per second and as high as four megabits per second on mobile WiMAX networks. The advantage WiMAX has over similar Wi-Fi technology is the coverage area of the WiMAX base station. WiMAX can provide broadband wireless access up to thirty miles for fixed stations and up to ten miles for mobile stations.

Satellite broadband access is most useful in rural areas, where other broadband technologies are cost prohibitive. Many rural roads having a house or two per mile does not provide the economic return that most carriers need to deploy remote DSLAMs or fiber to the home infrastructure. Data rates offered by satellite are two Megabits per second. Satellite broadband is available across the country and is usually only limited by obstructions to the satellites. Companies offering satellite broadband are making it easier to get started with on line ordering and self installation of the CPE equipment. The advantage satellite provides over other broadband technologies is availability. The disadvantages are higher monthly rates, weather can affect the signal and is a more complex set up.

These solutions along with current mobile broadband offerings provide many options for addressing the broadband stimulus plan. The deployment of these solutions to underserved areas along with the systems to support the content provided through broadband and e-business commerce generated through bandwidth will provide many opportunities to a lot of people. It is going to take time for applications, design, planning, procurement and implementation, but in the end we will all benefit from the broadband stimulus plan.

"Broadband solutions today cover a diverse range of mediums and technologies."

Satellite
GPON
Cable Modems
WiMAX
DSL
Active Ethernet
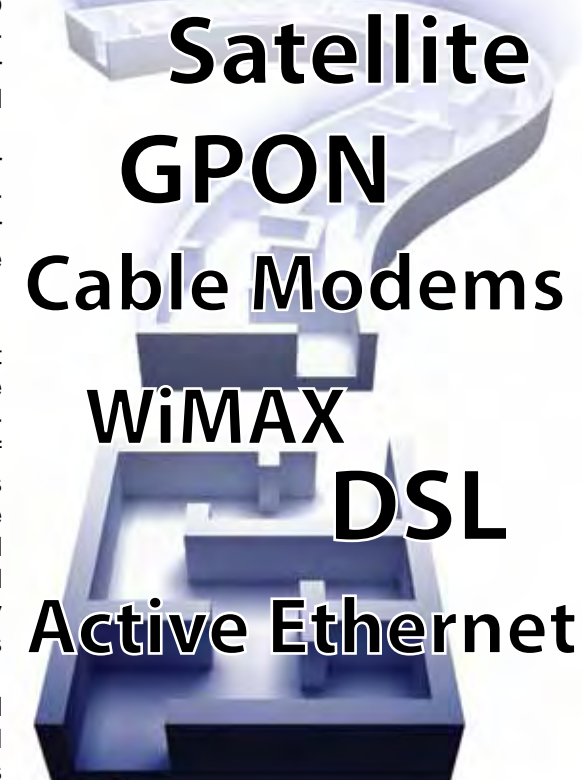
. . . And Broadband for All

By Randy Turner
Marketing Communications Manager
Walker and Associates

Shortly after they were married my parents moved to Chicago, where my dad was a student at DeVry Technical Institute. They each left behind parents who lived in very rural areas of South Carolina. By Chicago standards, they would have been considered remote. When I was born in winter of 1956, my dad called one of his sisters to give her the news and ask her if she would let his parents know they were new grandparents. She later loaded her own family into their car and made the 20 mile trip on barely paved roads to announce my arrival. You guessed it – my grandparents had no phone. And yes, I am old.

My grandmother passed away two years ago at age 101. The party line she originally subscribed to had gone the way of the dinosaur years earlier, and she even had cordless phones in her home. While she was never a subscriber to wireless services, satellite beamed in her television reception while the huge TV antenna on top of the house rusted away. She never used the Internet, or even a computer for that matter, although broadband service was available. What a difference 50 years had made!

Flash forward to 2009. After months of meetings, debates, forums, position appointments, and closed door sessions, we finally have in hand the details on the broadband stimulus programs funded through the American Reinvestment and Recovery Act of 2009. Few have reacted with surprise after reading the full Notification of Funds Availability (NOFA) that spelled out the specifics. There were certainly expressions of disappointment by some, who spoke out earlier in favor of a more ambitious definition of broadband speeds and others who voiced concerns over net neutrality issues. As was expected by everyone, however, was a final NOFA that represented a series of compromises intended to put in motion the awarding of billions in taxpayer dollars.

Understanding exactly how broadband stimulus programs will impact our industry and the citizens they are intended to benefit will require years of implementation, measurement, and increased investment. For now, however, the focus is clearly on the prize of grants and loans currently available through USDA and the Department of Commerce.

The centerpieces of all this legislation are the people who, like my grandparents in 1956, still live without broadband connection in their homes and businesses. Long and passionate debate went into final definitions of "unserved" and "underserved," and they have been basically defined as the citizens of our country who have little or no access to broadband services and/or choices in providers. In the 21st century, broadband services reach well beyond simply providing access to chat rooms and email services. Our world now relies on interconnectivity. Educational facilities, healthcare services, financial institutions, public safety programs, civic and government entities, news media and entertainment options are available to us via our choice of a broadband carrier. For most reading this, it is difficult to imagine life without broadband access, let alone the ability to weigh options between multiple carriers.

Certainly there are those who live their lives just fine without broadband. They made choices to live remotely with limited outside interaction. Still others, like my parents-in-law, who have multiple options of broadband carriers at their home, are content with dial up and a digital converter box for their local television reception. Regardless, we all know that some people are perfectly content to maintain their lives void of technologies of no perceived value to them. Even if fiber were dropped to their doors, they'd most likely decline the most lucrative introductory offers for enhanced services.

Others, however, are the real targets of this program. They are the population pools at the fringes of established networks. They are the rural citizens who, due to the lack of a carrier, have yet to experience the full value of broadband intertwined in their homes, their businesses, their schools and their communities. Their isolation is something that crept up on them while technology multiplied over the past ten years.

How rapidly has it all changed? Consider the fact that in 1972 it was estimated that in all the world there were only 150,000 computers. The first digital electronic central office switch was installed in 1976, In 2009, it is perhaps hard to remember that in 1996 major US telecom carriers were actively attempting to ban VoIP and that only as recently as 2004 was VoIP commercially marketed for the first time. Who could have predicted in 1995, for example, how important interconnectedness would become when the Internet was merely viewed as a novelty by most of us who owned computers that only offered an RJ jack for connectivity to dial up services?

What a different landscape today. And as we even attempt a glance at what the next ten years might hold in technological advancement, one thing is very clear: interconnectivity is the glue that holds together our future. The absence of broadband creates islands removed from opportunity and relevance. More and more these will become the places and the people left behind in cultures across our country and around the world.

As we all work together to deliver broadband solutions to new demographics, whether through government stimulus programs or through private investment, we must remember that first and foremost these are prospective customers. Regardless of how we feel about the politics involved, the debt we're incurring as a nation, or the perceived strings attached, this program really amounts to the value of the people who will ultimately benefit from what most of us already take for granted- broadband services at increasingly higher speeds offered at competitive prices.

Building Broadband Infrastructure With A Flexible, Connectorized Network

By Jaxon Lang, Vice President,
Global Connectivity Solutions – Amercias, ADC

The 2009 American Recovery and Reinvestment Act (ARRA) calls for more than $7 billion in expenditures on rural broadband infrastructure. This is a huge opportunity for service providers to extend broadband services to customers in rural areas. To make the most of this opportunity, carriers will need a broad range of network solutions that optimize broadband service delivery while minimizing costs.

When building next generation fiber networks, service providers must balance construction-cost considerations with the need to install flexible networks. For more than 20 years, they have benefited from the advantages provided by pre-connectorized interface points inside the central office (CO), such as easy testing and re-configuring of the network and simplified service turn-up. In addition, there is a greatly reduced need for highly-skilled technicians to perform those tasks.

Now, more service providers are achieving the same advantages throughout the network as they use connectors not only in the CO, but also in the outside plant (OSP) and customer premises.

By adopting a connectorization or "plug-and-play" strategy across the network, service providers can:
- deploy flexible fiber infrastructures
- reduce the splices technicians require for installation and maintenance
- reduce operating expenditures (OPEX)
- turn up services quickly
- deliver bandwidth cost-effectively and
- accelerate their return on investment

Throughout the Outside Plant
If carriers expect to maintain adequate return-on-capital ratios and reduce capital expenditures (CAPEX) required to make the network subscriber-ready, they need to build an efficient fiber distribution plant. Providers have typically created the distribution segment by splicing drop cables at drop points during the construction phase.

However, the emergence of hardened connectors and adapters enables service providers to expedite construction of their distribution plants. By dramatically reducing the number of splicing hours, these solutions also help save on labor costs during network construction.

ADC integrates hardened adapters into environmentally sealed, OmniReach® multiport service terminals (MSTs). The company also pre-terminates the MSTs at the factory, using 50 feet-2,000 feet of OSP cable. With this capability, splicing crews need much less time than before to make the same number of splices.

ADC's OmniReach® Multiport Service Terminal (MST) incorporates hardened connector technology that is factory-terminated and environmentally sealed for use in drop cable deployments in optical access networks.

Connectorized solutions can deliver operational savings as well. Technicians install OmniReach drop cables without splice labor by simply inserting factory-connectorized cables into adapter ports at the MST and at ADC's optical network terminal (ONT) on the customer premise.

Into Multiple Dwelling Units
Nowhere is the speed-of-installation advantage more evident than in multiple dwelling units (MDUs), where a building owner is more likely to choose a FTTP architecture if the fiber installers can be in and out of the building as quickly as the construction workers.

Within a mid- or high-rise building, a service provider deploys on the lower level an indoor OmniReach fiber distribution hub (FDH) with a couple of 144-fiber stubs. Residing on each floor of the building is an OmniReach fiber distribution terminal (FDT) that routes 12 or 24 fibers down to the indoor FDH where technicians splice them in. In this scenario, technicians splice 288 fibers between the FDH and the FDTs and then run fiber drop cables from the FDTs to the ONTs. This creates another splice point, because it is impossible to predict the exact length of each drop.

Compare that scenario with using a plug-and-play solution within the same MDU. Again, a FDT resides on each floor, but in this case, a multifiber push on (MPO) connector is mounted on the stub of each one. Installers deploy the fiber from each FDT to the indoor FDH, which also has built-in 12-fiber MPO connectors. Installers can plug each connection into the FDH from every floor. Installing fiber in a MDU is a simple matter of mounting the enclosures and making the connections. And by adding a built-in fiber spool on the FDT, which holds up to 500 feet of cable, installers can easily spool the cable out to the FDH and plug it in.

Connectorization enables installers to get into and out of the building quickly. A technician typically takes about an hour to splice 12 fibers with a labor cost that may be as high as $100 per hour. The provider also has CAPEX costs of splicing--including the splice

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Walker and Associates - Connected With Industry Leadership

Your network infrastructure's integrity is critical to your ability to meet your customers' growing needs for speed, reliability and future expansion. Compliance with industry standards remains important as innovative products enter our ever-changing marketplace.

Walker and Associates proudly supports associations that are focused on setting and maintaining industry standards, participating in lobbying efforts that promote telecommunications interests among lawmakers, and providing educational opportunities for telecom professionals.

Likewise, we support regional association conferences, expos and golf outings, through sponsorships, directory advertising, and promotion on our web site. We're privileged to be associated with these organizations.

In addition to local associations, we enjoy active relationships with national organizations such as AFCEA, FTTH Council, NTCA, RCA, SCTE, TIA, and UTC. Their newsletters, lobbyists and educational programs result in increased awareness among lawmakers who make critical decisions about our industry. As technology continues to change it becomes even more important that organizations like these retain their influence and significance.

Throughout the events of recent months, these organizations presented comprehensive responses to requests for comments regarding the broadband spending issues. Their input, along with many others, assisted in shaping the final NOFA released July 1. Their investment in this process has not gone unnoticed and will continue influencing outcomes for the telecommunications industry.

America's Broadband Stimulus Plan

Reaching America's Unserved and Underserved Populations

By Mark Ogden
Director/SP Channel Distribution
ADTRAN

Shortly after President Obama took office, he began an effort to expand the penetration of broadband throughout our country. In February, the president signed the American Recovery and Reinvestment Act (ARRA) of 2009 into law. The **Broadband Technology Opportunities Program (BTOP)** is that portion of stimulus monies identified in the ARRA for the advancement of broadband services in unserved and underserved communities, as well as for improved access to broadband by public safety agencies. The **Broadband Initiatives Program (BIP)** is that portion to be used to fund applications proposing to exclusively serve remote, unserved, rural areas. The BTOP provides $4.7 billion to be distributed by the National Telecommunications and Information Administration (NTIA) and the BIP provides $2.5 billion to be administered by the United States Department of Agriculture's – Rural Utilities Service (RUS.)

In public meetings, speeches, and industry gatherings we continue to hear that the BTOP is meant to be a **"jump start"** to the administration's broadband vision. The $7.2 billion is intended to fund projects from both the public and private sectors that will advance the administration's goal of every citizen having access to broadband services. While $7.2 billion sounds enormous, experts agree that this is just the beginning of what is needed, in terms of funding, to bring America once again to the forefront in the information age. Speeches from the FCC, NTIA and RUS often resonate with the phrase, **"this is only a down-payment"**; implying there will be more in the future.

Clearly our less densely populated areas in rural America provide a challenge to our nation's broadband service providers. In May 2009, then Acting Chairman of the FCC, Michael Copps issued a report (Bringing Broadband to Rural America) wherein he opens:

"For many Americans, a world without broadband is unimaginable. For them, broadband Internet access has transformed the way they live their lives. But we have not succeeded in bringing broadband to everyone. For years, large parts of rural America have languished on the sidelines of the digital revolution. Home to the homesteaders, pioneers, and the rich and diverse Native American cultures that contribute so much to our national identity, rural America has for most of our history been deemed too remote, too sparsely populated, or too inaccessible to be fully connected with our nation's infrastructures. As many of their fellow citizens in more densely populated parts of the country go online for work, education, entertainment, healthcare, civic participation, and much more, too many rural Americans are being left behind. Even in rural areas where broadband is available, infrastructure deployment has not kept pace with the growing need for faster and more reliable connectivity".

With this emphasis, RUS funding will focus entirely on projects targeting rural America. Yet we know that the need for readily available, affordable broadband is not only prevalent in rural America, but this need exists for consumers and small businesses in areas both large and small throughout our country.

As such, the NTIA's monies will target any sector deemed as being unserved or underserved. Whether it's in rural areas or large metropolitan areas, the benefits of access to high-speed and highly reliable, yet affordable, broadband to small businesses are often overlooked. The larger businesses often have multiple carriers clambering for the revenues associated with lucrative broadband connections. Small businesses, however, do not often get the same attention.

Yet it is America's small businesses that are so often the primary engine for job growth in our economy. Broadband can be a great leveler for all types of competitive small businesses, whether they operate in plush offices located in large metropolitan areas or from a home office, in rural America.

BIP and BTOP Rules….

The BIP and BTOP Notice of Funds Availability (NOFA) rules and definitions were released July 1, 2009. Applications for the use of the funds will be accepted between July 14, 2009 and August 14, 2009. These rules apply to the first of an expected three rounds of funding and deal with the allocation of $4 billion ($2.4 BIP and $1.6 BTOP) of the total $7.2 billion identified in the ARRA.

Evaluation Criteria	BIP Points Available	BTOP Points Available
Project Purpose	25	30
Project Benefits	25	25
Project Viability	25	25
Project Budget and Sustainability	25	20

Both RUS and NTIA will employ a two-phase application process. An initial screening process will "weed out" non-conforming applications. Then the first phase will include a "scoring" by a review panel, comprised of at least three peer/expert reviewers.

Each application will be reviewed against these criteria and independently scored. The most highly qualified applications will advance to phase two, for "due diligence" review. During the "due diligence" review applicants will be asked to submit additional, more detailed, information. Interestingly, each state will have the opportunity to make recommendations concerning the allocation of funds for any project affecting its state territory. The state will have 20 calendar days from that notification to submit their recommendations.

Broadband infrastructure manufacturers like ADTRAN are excited about the opportunities for service providers of all types to examine ways to increase both the availability and adoption of broadband services in those areas without adequate access. Given the significance and complexity of these programs, ADTRAN is actively working with our industry associations, state and federal agencies, and members of congress to advocate for best practices that will benefit service providers and the customers they serve.

To help provide the latest information related to broadband stimulus, ADTRAN has established the ADTRAN Broadband Stimulus Advisor Website www.adtran.com/bbs. This site is filled with the latest information related to broadband stimulus activities including information on ADTRAN's broadband stimulus webinar series.

Next Gen
NETWORKS

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The foundation on which voice, video and data services exist is the key to network effectiveness. ADC provides network infrastructure products that are innovative, flexible and cost-effective. Walker and Associates carries the complete line of ADC's field-proven solutions. Supercharge your network today. Visit walkerfirst.com or call 800.WALKER.1

Walker and Associates carries the complete portfolio of ADC's industry-leading connectivity products

Optical Distribution Frames and Fiber Optic Panels
ADC Optical Distribution Frames provide a centralized point for termination, splicing, slack storage and housing passive optical components, featuring industry-leading density and fiber management. Fiber Optic Panels provide fiber termination, splice and/or slack storage and excellent cable management in a high-density, discrete panel solution for network element, OSP, RNC and distribution network applications.
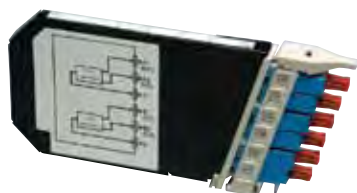
Coarse Wave Division Multiplexing (CWDM) Solutions
ADC Coarse Wave Division Multiplexing (CWDM) Solutions, part of the ADC's Value-Added Module (VAM) family, separate light, or wavelengths, allowing multiple signals to be transmitted simultaneously over a single fiber. The benefits of this are easily translated to your bottom line by installing easily, maximizing the existing fiber network and enabling out-of-band testing

FlexDSX® and RZX-3 Digital Signal Cross Connect Systems
ADC's FlexDSX and RZX-3 systems allow technicians to patch, terminate and rearrange DS1 and DS3 circuits. FlexDSX's modular chassis accommodate four-port cards with dual monitor ports that enable bi-directional monitoring. The rear crossconnecting RZX-3 features mid-size jacks and BNC connectors, and accommodates 24, 32, or 36 circuits per chassis in 19" or 23" racks.

LoopStar® SONET Access and Transport Solutions
ADC's LoopStar SONET Access and Transport product family allows service providers to cost effectively provide TDM and Ethernet business services to enterprise customers from a single platform. The LoopStar 800 SONET solution is ideally suited for all network deployment applications. The compact design and ability to scale from an OC-3 to OC-192 network, make the LoopStar 1600 and 3600 low-cost, high-growth solutions for adding services at the central office or at the edge of the network.

OmniReach® Solutions for Multiple Dwelling Units
ADC's OmniReach solutions for Multiple Dwelling Unit (MDU) applications provide high performance interconnection of fiber cables and equipment at MDUs (apartments, condominiums, universities). These solutions support both low and high fiber count applications and include environmentally protective enclosures and high performance cable assemblies and connectivity components. With ADC's pre-terminated enclosures, distribution nodes can be added to the network with greatly reduced installation times and improved system reliability.

OmniReach RealFlex™ Drop Cables
ADC's OmniReach RealFlex™ Drop Cables are an ideal solution for the unique challenges encountered when deploying FTTX networks in today's Multiple Dwelling Unit (MDU) or Multi-Tenant Units (MTU) buildings. RealFlex Drops allow for a bend radius as small as 7.5 mm without changing attenuation characteristics of the cable and improve insertion loss (IL) performance for 90 degree bend locations. With the average MDU or MTU installation including as many as seven 90 degree turns, this new fiber greatly reduces the risk to bend induced IL during installation. In addition to the improved bend radius performance, the rugged cable construction provides the flexibility and durability to withstand the most demanding applications.

OmniReach Fiber Distribution Hubs
ADC's OmniReach Fiber Distribution Hub (FDH) solutions provide for rapid connection between fiber optic cables and passive optical splitters in the outside plant segment of Fiber-to-the-Premises (FTTP) networks, facilitating fast service connection and reconfiguration, simplified network installations and improved installation efficiencies in the field.

machines, which cost as much as $30,000, plus cleaving and stripping equipment.

A Connectorization Strategy Delivers Competitive Advantages

After comparing these approaches, carriers clearly see the benefits of connectorization. And as next-generation fiber solutions prove their value for service providers throughout fiber networks, connectorization is rapidly becoming an essential component for long-term success in an increasingly competitive market. Today, carriers must not only upgrade their networks to deliver on customers' demands, but to set the stage to meet their increasing demands for dynamic broadband applications and services in the future.

ADC offers hundreds of RD Telecommunications Program-Listed products to service providers in the United States seeking funding under the ARRA. In addition to its comprehensive portfolio, the company is offering educational information to support its current customers and prospects as they seek stimulus funding.

For more information, visit ADC's Broadband Stimulus Resource Center at www.adc.com/rus or call 1.800.366.3891.

# The Essential Ingredients for Ubiquitous Ethernet

By Ken Morris
Market Development Director
Fujitsu

Service providers are completing the Ethernet revolution with Connection-Oriented Ethernet (COE) technology becoming widely deployed in metro networks. But, what does a real-world Ethernet first-mile deployment look like, and what are its key components?

The simple answer is that first-mile services are highly diverse, with traditional TDM-based services now co-existing with COE services in Outside Plant (OSP) or Indoor Wall-Mount (IWM) cabinets. The resulting equipment for this environment must be compact, flexible and durable.

Next-Generation Equipment, Durable OSP Cabinets

Packet Optical Networking Platforms (Packet ONPs), such as the Fujitsu FLASHWAVE® CDS, represent a unique class of networking platform ideally suited for access COE services. This system incorporates advanced rate shaping, traffic management, and aggregation capabilities to provide guaranteed connection-oriented Ethernet delivery, while supporting existing revenue-bearing services. For more diverse environments with a mix of TDM and Ethernet services, the FLASHWAVE 4100 Multiservice Provisioning Platform (MSPP) gives carriers a smooth migration to Ethernet services by leveraging their embedded SONET infrastructure investment and converging Ethernet mapping capabilities over SONET (Ethernet over SONET – EoS). When housed in an environmentally hardened OSP or IWM cabinet, these platforms are enabling ubiquitous metro Ethernet deployment. In addition, compact-sized solutions that deliver a mix of TDM and Ethernet service are ideal for backhaul applications.
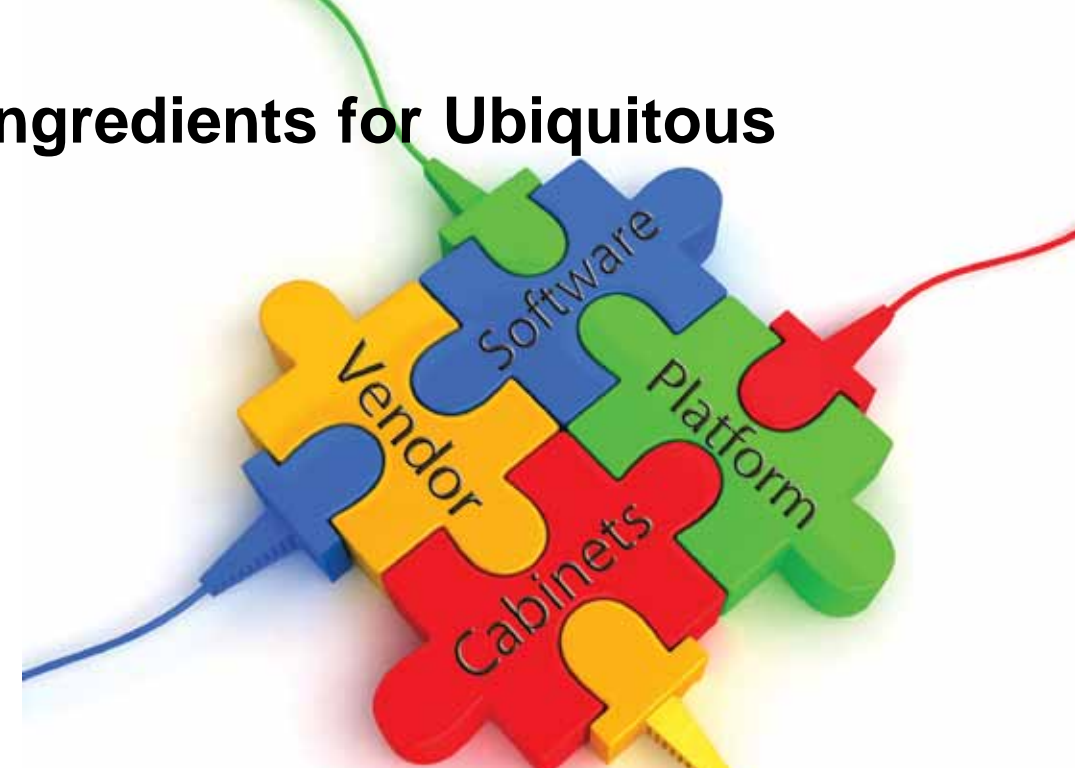
Assembling the Right Solutions

There is a vast range of choices available in both cabinets and service delivery platforms. For example, most of the solutions that Fujitsu has developed for metro Ethernet deployment are available in either OSP or IWM configurations, for in-premises business access as well as for deployment at outside plant fiber aggregation points or cell sites. Cabinet-based access solutions are available in DC-powered or AC-powered versions with battery backup, supporting service reliability and continuity.

Assembling and configuring OSP or IWM cabinet solutions requires attention to detail and consideration of individual business and technical situations: no two customers are alike. Professional services, therefore, are an essential part of successful OSP selection and deployment. These services assist customers in the planning, placement and construction of the cabinets themselves, as well as prequalification and testing of the fiber plant. Once the installation process is complete, network operations support and maintenance contracts help keep things running smoothly.
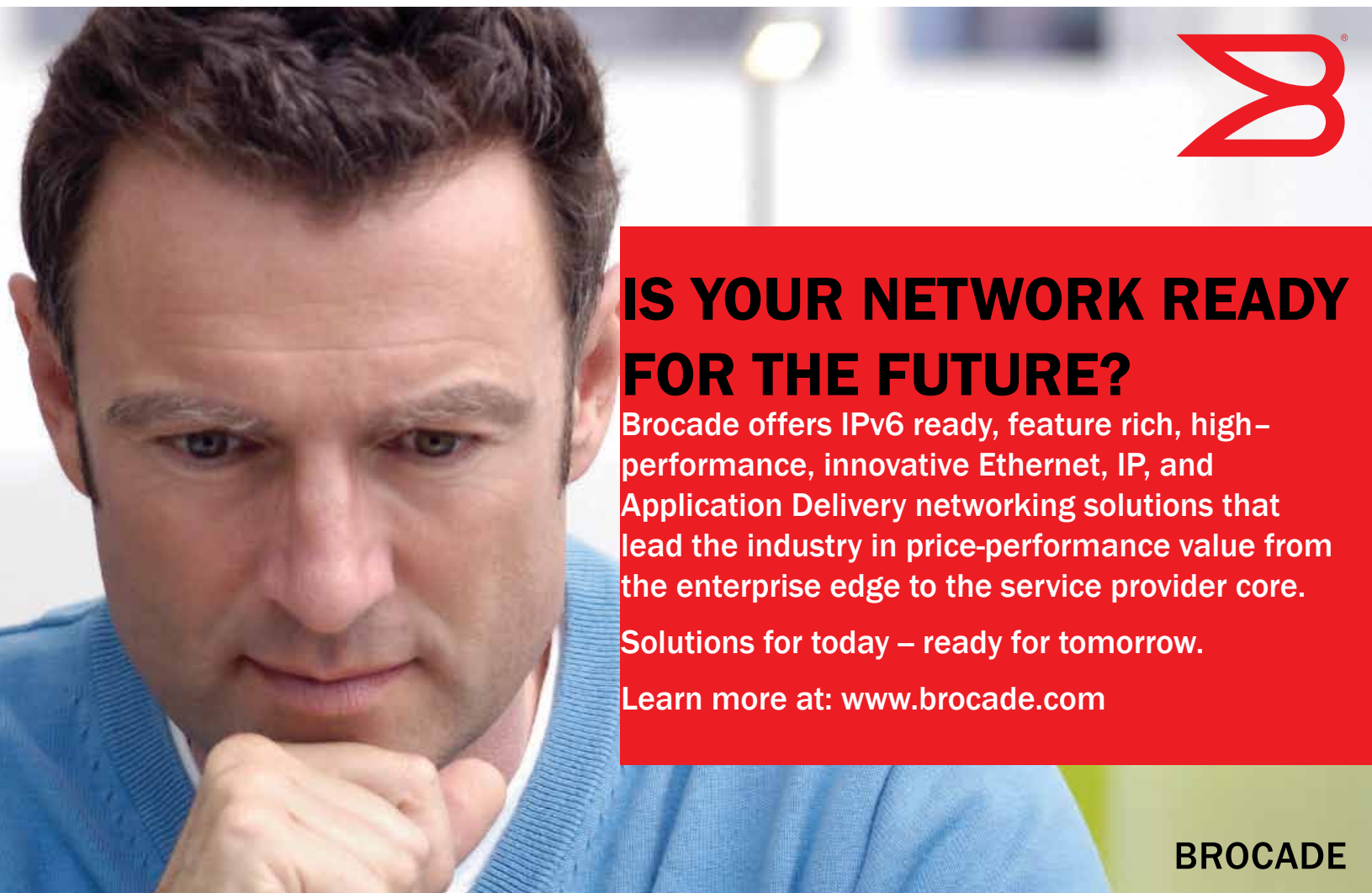
Cabinets intended for outdoor deployment need to be engineered to tolerate harsh conditions and a variety of settings, especially if they are to be deployed into remote locations where maintenance can be costly. Whether installed on a pole, a pad or on an H-Frame mount, a secure, closed environment with a heat exchanger will prolong equipment life significantly. The closed air-cycle in the cabinet seals out external air and protects equipment from dirt, humidity, or corrosive substances, ensuring many years of trouble-free operation and an optimal return on investment.

Software-Simple Networking

Network monitoring and management software is also a critical consideration in realizing the opportunities of a single Ethernet-based access infrastructure. One of the benefits of COE is that it is easier to manage and provision than other router-based connectionless approaches. Service providers who deploy COE can use the same overall OSS approach to manage all of their services, including TDM, SONET, OTN, wavelength and Ethernet services.

Service providers who take care to consider all of the components of Ethernet first-mile deployment stand to benefit the most from its advantages. Bringing it all together means selecting all the right ingredients – service-delivery platforms, cabinets, management software and a collaborative vendor partner.

Bringing More Options to the Table
Introducing New Manufacturer Relationships

By Lisa Smiley
VP/Marketing
Walker and Associates

Walker and Associates always pursues opportunities to introduce "Best of Breed" manufacturers to support our customers' service delivery needs and requirements. As a result, new relationships with these manufacturers have been announced so far in 2009. As Walker's VP of Marketing, it is my pleasure to present these additional partnerships to our customers.

For over 30 years **Aastra** has been delivering high value telephony products built on open industry standards. Aastra develops and markets Internet Protocol (IP)-based, as well as traditional communications networking products and systems. Their products include a full range of VoIP solutions including communications servers, gateways, telephone terminals and advanced software applications for business and residential markets. Whether it's a small business needing only two phones, or a multinational conglomerate requiring hundreds of thousands of lines Aastra has a solution.

ADVA Optical Networking's Fiber Service Platform (FSP) is a portfolio of Optical+Ethernet networking products designed specifically for the delivery of high-speed services and network infrastructure rollout. Their modular design and flexible architecture options enable the most comprehensive and cost-effective solutions for customer premises, access, metro core and regional deployment.

Alloptic delivers proven, standards-based passive optical network access equipment that operates at gigabit speeds. A complete suite of central office and customer premise equipment simplifies deployment for both Fiber-to-the-Business and Fiber-to-the-Home applications. Alloptic uses a pure Gigabit Ethernet Passive Optical Network (GEPON) architecture; i.e., no active components in the field.

Brocade is an industry leader in data center networking solutions and services that enable organizations to manage their most vital information assets. Brocade develops the highest-performance, most cost-effective, and most reliable networking solutions that enable today's complex, data-intensive organizations to optimize information connectivity and maximize the business value of their data. The Brocade family of data center networking solutions includes data center backbones and SAN products such as industry-leading directors, switches, fabric extenders, server connectivity products, fabric-based applications, fabric management software, and file management software.

Edgewater Networks develops products that ensure the secure and reliable delivery of IP based voice and video for service providers and enterprises. Edgewater's products offer proven network and operational savings from the customer premises to the core of the network. EdgeMarc Series routers provide a VoIP aware NAT/Firewall, VoIP survivability, passive call quality monitoring and powerful, but easy-to-use traffic management that ensures high quality voice and video. EdgeConnect managed Power over Ethernet switches provide simplified administration, remote configuration and QoS for converged voice, video and data networks. The EdgeView VoIP Support Tool offers proactive call quality monitoring (including VoIP MOS), Plug & Dial IP phone configuration, and remote management and monitoring of VoIP endpoints.

EXFO is a leading provider of test and monitoring solutions for network service providers and equipment manu-

facturers in the global telecommunications industry. The Telecom Division offers a wide range of innovative solutions extending across the full technology lifecycle - from design to technology deployment and onto service assurance - and covering all layers on a network infrastructure to enable triple-play services and next-generation, converged IP networking. The Life Sciences and Industrial Division offers solutions in medical device and opto-electronics assembly, fluorescence microscopy and other life science sectors.

Force10 Networks is a technology leader that provides the reliable infrastructure required to build and secure intelligent services networks. Force10's products deliver the scalability, reliability and application awareness to cost-effectively deliver content from the enterprise or converged network to the mobile business user or consumer. Through its merger with Turin Networks in March 2009, Force10 is uniquely positioned to leverage intelligent Ethernet that creates and drives application-aware networks for wireless backhaul, metro transport, and data center environments.

Companies choose **Polycom** for solutions that enable their geographically dispersed workforces to communicate and collaborate more effectively and productively over distances. Using Polycom telepresence, video, and voice solutions and services, people connect and collaborate from their desktops, meeting rooms, class rooms, and mobile settings. Organizations from a wide variety of industries and the private sector work with Polycom standards-based solutions to:

- Gain a fast return on their investment as their teams easily collaborate "face to face" wherever they are,
- Cut the time, cost, and carbon emissions associated with gathering the right people in one place to solve problems,
- Apply saved resources, time, and energy to primary business and organizational challenges.

Walker and Associates

Walker and Associates has been actively involved in the telecommunications industry for nearly 40 years. Well before divestiture in the 1980s and the Telecom Act of 1996, Walker has worked alongside telecom professionals as they designed and grew network solutions. Through the decades we've carefully positioned ourselves with trusted manufacturing partners that represent the most current products and technologies in the marketplace.

As our industry positions itself as a key player in the current economic recovery, Walker has once again risen to the challenge, implementing key elements to assist you as you plan for opportunities within the American Reinvestment and Recovery Act (ARRA) of 2009.

RUS Approved Products
Strategic relationships with manufacturers is always important. With such a high emphasis on grants and loans available through NTIA and USDA, however, those relationships become even more important. On our website, WalkerFirst.com, you'll find lists of already approved equipment for easy reference, making it easy for you to include these items in your applications and network designs. Working closely with manufacturer partners, we make sure you get the latest information about new approvals and status changes.

In addition, you'll find that we maintain on hand inventories of many of these RUS approved products. As you prepare your organiztion for shovel ready projects, this is an important point to consider. Partnering with a distributor who actually has the equipment you need is critical.

Dedicated Resource
Walker and Associates has designated Sherri Martin (sherri.martin@walkerfirst.com) as our Inside Sales Executive for New Market Development for IOCs with Broadband Deployment. Sherri has worked in sales at Walker for over seven years, and has fourteen years of experience in telecom.

Sherri's main focus is keeping customers informed of the broadband stimulus program, and alert them of targeted products available from Walker that will benefit them when applying for loans and grants. She is your primary point of contact on all broadband stimulus program questions, although you can still count on your established Walker sales contacts for support.

Strategic Manufacturer Relationships
As previously mentioned, Walker is passionate about its manufacturer relationships. These are our lifeblood, as they represent the opportunities to provide solutions to our customers. Through mergers, acquisitions, the addition of new players in the marketplace, product change notifications and new product announcements, you can always count on Walker and Associates for current, timely and strategic information.

One of the significant advantages available to you as a benefit of these strong OEM relationships is the quality of training provided to our engineering and sales associates. Manufacturers provide product specific, hands on training, which represents an investment they are willing to make in only their most strategic channels. This translates into dependable, quality responses from your key contacts at Walker.

WalkerFirst.com
The news about the telecommunications industry is always abuzz with news, and that is even more true now with the activity around broadband stimulus programs. Walker now has a dedicated section on WalkerFirst. com, providing timely information about this important legislation. You'll find key dates, press releases, terms and definitions, deadlines, resources, etc. that allow you and your team to stay current without having to invest hours of time searching for the same information.

In addition, WalkerFirst.com unveiled a new look in July, providing enhanced features and expanded web content specific to your product searches. This online catalog of product content will continue growing in the coming months before an entirely new set of features are unleashed this fall. If you haven't recently visited WalkerFirst. com, you really need to check it out!

Letters of Support
As a trusted business partner, Walker is ready to provide you a letter of support as part of your application for projects. You can contact Sherri Martin or your sales contact to discuss this request. If you've been through this process before, you know the value of a complete application and that even the slightest oversight can be costly. This important element further established the viability of your project and demonstrates strategic resource relationships that are key to your project's success.

As always, Walker and Associates stands ready to assist you as you work toward your organizational goals. We understand that your networks provide you the opportunity to meet your customers' expectations. We understand how important it is to take care of customers - it's what we do each day of the year. Call us today at 1.800.WALKER1, email us at info@walkerfirst.com, or visit us at www.walkerfirst.com to learn more about our Broadband Stimulus Readiness Programs.

Navigating Government Markets

By Jane Brightwell
VP/Strategic Business Development
Walker and Associates

Tracking Federal spending is all in a day's work for Walker's Government Solutions group. As part of the Strategic Business Development area, Walker has a focus team to develop and maintain business within the Federal Government market. Starting with 3 people, the group has grown over the past year to include 8 people.

Patti Brammer, Senior Inside Sales Executive, Rick Walker, Director, Business Development and Jane Brightwell, VP, Strategic Business Development were the first committed resources to pursue federal business. Four new people have joined the group this year to give a diverse experience base.

Marie Russell, is the most recent addition to the Federal Team. Marie covers the Washington Beltway, North Virginia and selected strategic key accounts. Prior to joining Walker, she was the VP of Channels for Actelis Networks as well as ALCATEL-Lucent. She recently founded, developed, financed and launched Executive Pie, a high caliber professional women's Web 2.0 Internet site. She has held various management positions with Sideware, Newbridge, Federal Technology/Microdyne and WANG. Marie has her MBA from George Washington University, DC and her BS in Marketing from Penn State. She is a Board Member for Women

in Technology and on their Membership and Leadership Teams. She also is a member of Armed Forces Communications & Electronics Association (AFCEA) and is a new member of their Small Business Committee. Marie has over 20 years experience in the Telecommunications Market.

Another new member to the team, Jerry Kerr, joined Walker from ADC. Jerry is responsible for "south of the Mason Dixon line" essentially over to California. He also is the lead for any Federal inquiries for ADC product specifically, coaching team members in engineering and positioning the product line. Jerry brings over 30 years of Federal selling experience to Walker. He previously was with ADC's Federal team for over 14 years. His additional experience includes PESA Switching Systems and 3M. He also served in the Navy. Jerry too is an active AFCEA member.

While not a new team member, Mike Shoemaker is focused on covering North and South Carolina to expand our current business. Mike brings an enterprise skill set to Walker from his many years with IBM before he retired. He serves on the Board of the North Carolina (Ft. Bragg) Chapter of AFCEA.

With theses additions, Rick Walker's focus includes Strategic Accounts and developing a deeper relationship with the Virginia Tidewater area of the military.

Supporting our outside Federal team, is John Lackey, Senior Sales executive, Patti Brammer, Senior Sales Executive and Seth Custer, Customer Service Representative. Patti is responsible for our Major Federal Accounts and DOD. John covers all other Prime Contractors, Federal Agencies as well as State/Local/Muni's and RBOC's. Seth also handles International activity.

While chasing the new Federal Broadband Stimulus dollars might be new to many companies, it's business as usual for Walker. We daily review the Federal Acquisition Regulations (FAR's) and prepare documentation to meet specific federally mandated requirements. Our Proposal Manager, Becky Wynn assists in reviewing and preparing all necessary proposals and bids to meet a complex market's rules.

Navigating the Federal market can be a hard task that requires patience and determination. Walker is committed to serving this market well and using this experience to help understand the pending Broadband Stimulus package.

Take a break to complete the puzzles below and check your answers on www.skinnywire.net/solutions

BRAIN FREEZE

Can you tell which is different? To find out visit www.skinnywire.net/solutions.
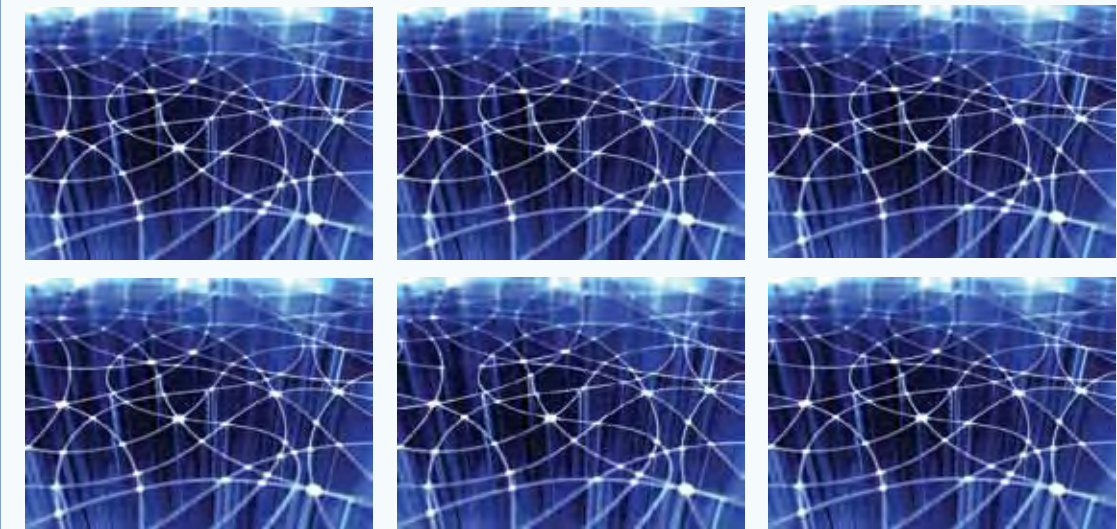
SUDOKU

Sudoku (sūdoku) is a logic based number placement puzzle. The objective is to fill a 9x9 grid so that each column, each row, and each of the nine 3x3 boxes contains the digits from 1 to 9. The puzzle setter provides a partially completed grid. Try your luck and check your answers at www.skinnywire.net/solutions.

8			7					
	3	2						
		5	8		9	6		
5	8			7				4
6	1							8
				3			9	5
		1	9		7	4		
						8	1	
					5			3

Innovative Solutions for Broadband Stimulus Projects

Total Access® 5000
Multi-service Access Platform

- More flexible service deployment
- Greater network interface options
- Increased bandwidth
- Centralized network management
- Voice and data convergence
- Single-vendor support and training
- Easier technology migration
- RUS accepted

Dramatically Lowering the Total Cost of Deployment

The Challenge:
Wireline carriers are faced with the difficult challenge of transforming their existing networks to provide next-generation services, enabling not only voice and simple broadband connections to the Internet, but newer services like IPTV. The dynamics of these new services are constantly evolving, making it difficult to identify the right network architecture. Fiber access technologies provide the ultimate solution for addressing consumer access bandwidth, especially in greenfield deployments using GPON technology for Fiber to the Home (FTTH) applications. Also, the fact remains that there is a massive embedded base of copper infrastructure.

The Solution:
The ADTRAN solutions using GPON technology for fiber access provide the perfect fit for bandwidth challenged services. In addition, VDSL2 and bonded ADSL2+ are enabling ultra-broadband speeds over copper, provided that loop lengths are reduced. The innovative Fiber to the Home (FTTH) and Fiber to the Node (FTTN) broadband access systems from ADTRAN® dramatically lower the total cost of deployment for broadband services.

Advanced Broadband for Ethernet Delivery

The Challenge:
Networks are undergoing a fundamental shift from voice-centric technologies to data-centric technologies. Networks are being constructed for the sole purpose of providing broadband delivery for end-users as specified in the Broadband Stimulus legislation. The dominant traffic type has become data but the ability to transport voice, video, and data remain the challenge for integrated architectures.

The Solution:
The multiservice capabilities of the ADTRAN Total Access 5000, coupled with the NetVanta products, allow the deployment of an advanced packet network infrastructure that is capable of delivering a host of services including POTS, DSL, and PON across a pure Ethernet core. This scalable architecture allows carriers to use the ADTRAN solutions to economically address both legacy and next-generation services while providing a seamless path toward a converged network.

Call today to find out how ADTRAN and Walker can help you develop smarter, more efficient networks.

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Total Access 351/352
GPON ONTs

Total Access 1100 Series
Outside Plant DSLAMs

OPTI Series
OC-3/OC-12/OC-48
SONET Multiplexers

IP Communication Platform with IP Phones
NetVanta 7100, 7060

NetVanta® 800 Series

IP Business Gateways for Business Trunking
Total Access 900/900e Series

NetVanta Routers

NetVanta Switches

Smart Solutions for a Connected World.

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Since 1970

RECOVERY.GOV

Historic Opportunities Require Significant Responses

For nearly 40 years Walker and Associates has assisted telecommunications professionals as they engineered, installed, maintained and expanded their networks. Through significant industry shifts brought on by divestiture and the Telecommunications Act of 1996, Walker has been there along with strategic manufacturer partners. During times of explosive growth and telecom winters, Walker offered expertise, steadiness and promise.

**Experience. Quality. Innovation.
Significant Responses for
Historic Opportunities.**

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