



# Another Big Bang for Telecom?

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The Skinny Wire is a bi-annual publication of Walker and Associates, Inc.  
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## Editor's Letter

For some time now we've been hearing the term "next generation network," representing some notion of a future-proofed network that would satisfy any imaginable demand placed on it. Turns out, that is the science fiction part of the ICT story – that at some point we might really be able to know what's ahead for the industry of telecommunications, and as a result, satisfy anything the markets might require of a network and the gear that will make it work. Instead, we know the truth; there's not only a curve ahead in our industry's path, but also likely a fork and a figure eight in it as well.

Increasing bandwidth demands by business and residential consumers alike are driving exponential changes in our industry. Connected cars offer as commonplace what seemed futuristic fewer than five years ago. The M2M phenomenon seems to be the tipping point in pushing us to IPv6 as we face running out of IP addresses. Federal and state governments are pushing for more bandwidth and higher speeds needed for efficiency in education and healthcare. There are more active mobile devices in the US than there are people. And to top it off, a Nielson study released in June, 2013 cites that smartphones account for 61% of the mobile subscriber market. A new advancement in WiFi capabilities, now dubbed as "802.11ac," offers speeds of up to 1.3 Gigabits per second.

Now, more than ever, innovation in our industry is the order of the day.

For this issue of Skinny Wire we turned to thought leaders across the country to get their insight into what's beyond the "next generation network." Manufacturers who are now talking about terabyte transport weighed in alongside those making the case for still squeezing more bandwidth and speed from existing infrastructure as part of telecom's next big bang. They recognize that while new technology will always push the envelope, there are pricing constraints that require incremental changes in network infrastructure rather than forklift upgrades.

We also heard from industry association leaders who increasingly put responsibility for straightening the path to better broadband on the shoulders of elected leaders in Washington. Legislative limbo in recent years has been labeled a deterrent to innovation by some and a mandate without muscle by others. Their decisions will impact network advancements for years to come, and there is concern that the prospect of a big bang for telecom could amount to a mere fizzle depending on the outcomes of political wrangling.

Everyone is questioning how factors of fear, slow growth and the unknown will eventually impact issues of competition and affordability. How do these changes impact local communities and business owners who provide jobs, tax revenues and support of local events and non-profits? The advice from our contributors: Buckle up! You're in for the ride of your life!

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# Balancing the Network

By Rodney Wise  
Director of Technology Selection  
Walker and Associates

It seems to me that our network balance travels in a cycle. For many years, the core of the network contained all the authority and intelligence. As technologies advanced and service requirements changed, intelligence migrated through the network near the edge. I guess there can be much debate about which design is the most effective but it seems now that we are entering a new cycle of bringing the intelligence back into the core. Regardless of where you stand, improving end user quality of experience (QoE) and increased network efficiency are our goals. Increasing bandwidth has been an ongoing theme to improve QoE. However, working harder for bandwidth may not be the quickest way to QoE improvement.

video data consumption at 1.3 zettabytes by 2016. That's 1.3 billion terabytes or roughly the estimate of storage contained in the World Wide Web today. At some point, you realize that the cost to continually increase bandwidth has to be supplemented by other technologies used to make the network work smarter.

Caching technology is being utilized more in the network as a means to reduce transport costs and improve consumer QoE. By installing cache devices, service providers are eliminating some bandwidth requirements through their connections to content providers. This also reduces content delivery time by intercepting customer requests and redirecting clients to cached content. Service providers can go a step further by geographically dispersing cache devices out in the network. In this scenario, customer requests can be intercepted and redirected to the content located in the closest cache thereby eliminating some backhaul costs, improving content access time and improving consumer QoE.

Backhaul costs are continuously being evaluated in the mobile network, so what a great place to deploy caching devices. Some skeptics say that adding cache to the mobile network is much too complex. I tend to believe it is one of the best places to utilize caching. Fully 75% of mobile data is used inside buildings today with projections of 85% of mobile data being used inside buildings within the next five years. How many times have we been in our work environments when a video goes viral across our colleagues' mobile devices? I am sure we have all experienced this phenomenon. Now just imagine how much time and backhaul network can be saved by caching that video at the wireless site either serving that location remotely or within the building! Think about the enhancement to the quality of experience in that scenario as we all relate to waiting to see the latest viral video while our current mobile device and network retrieves the video all the way through the network from the content provider.

There are many definitions for balancing the network. I have discussed only two types of balance in this short read. Balancing increased technology with tried and true bandwidth increases and balancing core components with edge components are just two ways that our network engineers spend their time. With Software Defined Networks (SDN) traveling down the tracks at a high rate of speed, I see many more ways coming for these engineers to spend their time balancing the network.



## The Wise Guy



*As Director of Technology 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. The Wise Guy is a regular feature in The Skinny Wire.*

Bandwidth gains through DWDM may be the exception. Service providers are adding customer connections to their existing infrastructure with relative ease using passive filters. These customers range from small enterprise customers needing 10 Meg service to large enterprises and wireless carriers requesting multiple 1 Gig connections. Active DWDM projects continue to permeate through all aspects of the network as well. Regardless of the service provider type or market, bandwidth requirements are pushing DWDM deployments. The additional network bandwidth throughout the industry is certainly a help in assuring QoE but I do not believe it is going to solve our efforts to enhance QoE. Current predictions put



# LTE Infrastructure: Three Things a Service Provider Should Know

By Gared Casey  
Channel Account Manager  
Juniper Networks

In the six short years since the introduction of the smartphone, the mobile industry has tipped on its head. It took three years for mobile data to surpass voice traffic, and by 2015, data will be 95% of global mobile traffic(1). Both a symptom and the cure for this growth, LTE is more than just a new radio bolted on to a cell tower. Like the telephone networks of old, LTE represents an architectural shift from circuit-based to IP and packet-based networks, with all the associated opportunities and challenges. It's not business as usual. As you transition to LTE, here are three things you need to know about LTE access network infrastructure.

## **The best way to optimize is virtualize.**

"If you build it, they will come". When it comes to mobile broadband, truer words have never been spoken. Throughout the evolution of smartphones and mobile networks, better apps and bigger pipes resulted in more people consuming more data on their mobile phones. LTE is no exception. According to a new report from the GSMA, a global wireless trade association, one in five US cellphone users will have a 4G LTE smartphone by the end of 2013. The same report shows an impressive data volume growth rate as more and more people connect to the internet via a mobile device(2).

Dramatic data growth creates two challenges for mobile operators: how to quickly add capacity as needed, while simultaneously squeezing the cost per bit of traffic. Fortunately, virtualization offers a solution to both. Network virtualization expands service and signaling capacity using virtual machines rather than physical appliances, making it possible to add capacity quickly without adding provisioning complexity. The really exciting opportunity is in service virtualization, which allows different services to run concurrently on a single platform (which could be any combination of network infrastructure). Virtualizing services on a single platform—including subscriber management, operational functions, and traffic services—makes efficient use of computing resources and stops the 'one service, one box' proliferation in networks. Ideally, the virtualization platform uses open standards that let service

providers add custom or differentiated services by quickly incorporating existing or third party software. Virtualization lets operators make the most of every available resource while reducing the complexity of provisioning and operating an ever-expanding network.

## **You need far more security than you think.**

The way LTE networks are rolling out is a hacker's dream come true. LTE operators are embracing small cell site deployments as an efficient way to conserve precious spectrum while providing widespread, high-capacity cell coverage. Yet unlike macrocells, small cell sites have limited or no physical security, and will be in publicly accessible locations. And unlike 2G or 3G, which effectively tunnels traffic across access networks, LTE transports traffic over open IP networks. While 3GPP prescribes IPSec as an option, a majority of mobile operators with LTE have yet to deploy it. Combining the lack of security with the ubiquity of IP networks means that hackers with a laptop and an Ethernet hub have all the tools they need to infiltrate the network.

Small cell sites are not the only risk. More than a billion people are walking around with little computers in their pockets, connecting to all-IP LTE networks. While consumers use their smartphones to watch TV, hackers could be using theirs to launch Denial Of Service (DoS) attacks on key elements of mobile networks.

The bottom line is that it gets more difficult to secure an IP network the further away you get from the packet core. Deploying a centralized IPSec solution that can expand to terminate hundreds of thousands of access points is a good start. But with so many smartphones, access points, and applications, mobile operators will have to start adopting a layered approach to security, incorporating threat detection and policy enforcement, as well as physical security where practical.

## **Plan your LTE backhaul for the long haul.**

In the future, most people will access the Internet using smartphones. In-

*"The way LTE networks are rolling out is a hacker's dream come true."*

vesting in the transition to all-IP LTE networks will reap long-term dividends in capacity, service flexibility, and reduced cost per bit. All-IP networks offer mobile operators the opportunity to shift to a flatter architecture that reduces latency and efficiently separates the data and control plane. Planning for the long haul means a deploying an IP-based framework that supports different traffic types, including 2G and 3G services delivered over TDM and ATM. Seamless MPLS not only supports multiple traffic types efficiently, it greatly simplifies provisioning, a boon for operators that will deploy tens of thousands of small cell sites. Paired with embedded network synchronization technology and service performance monitoring tools, seamless MPLS access networks offer the most cost-effective, efficient and scalable access network to meet future demands.

While LTE—and IP networks—offer great advantages, there are some hurdles to overcome during the transition. To learn more about how Juniper Networks can help you meet the challenges and exploit the opportunities of virtualization, security, and LTE backhaul, visit [www.juniper.net/us/en/dm/mobile-lte](http://www.juniper.net/us/en/dm/mobile-lte).

## **About Juniper Networks**

*Juniper Networks is in the business of network innovation. From devices to data centers, from consumers to cloud providers, Juniper Networks delivers the software, silicon and systems that transform the experience and economics of networking. The company serves customers and partners worldwide. Additional information can be found at [www.juniper.net](http://www.juniper.net).*

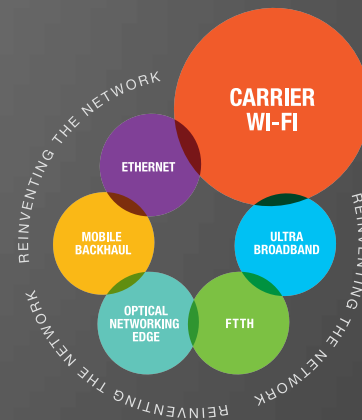
(1)Chetan Sharma, 2012, Global Mobile Market Update

(2) 2012 2GSMA Mobile Economy 2013

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# Speaking With One Voice

By Shirley Bloomfield  
CEO

NTCA—The Rural Broadband Association

Earlier this year, two organizations with similar visions for rural America joined forces to become one, sending a clear message to the telecommunications industry and the world that they are stronger and more effective as a single entity. I'm talking, of course, about the National Telecommunications Cooperative Association (NTCA) and the Organization for the Promotion and Advancement of Small Telecommunication Companies (OPASTCO). The culmination of this two-year unification happened on March 1, when we launched as the new, unified organization, NTCA—The Rural Broadband Association.

In addition to serving our members with a single policy message in Washington, our unification with OPASTCO also provided the perfect opportunity to rebrand our organization to more accurately reflect today's rural telecommunications industry and the community-based companies working hard every day to deliver advanced services. It gave us a chance to show how serious we are about building the broadband future for rural America by prominently featuring the word "broadband" in our name, and it provided a platform for a fresh look with a new logo that draws from the storied histories of both organizations.

So far, the feedback has been overwhelmingly positive—among our members, our industry partners and policymakers on Capitol Hill and at the FCC. Thanks to the commitment and vision of rural telecommunications providers, NTCA now represents nearly 900 community-based telecom companies that are leading innovation in rural and small-town America. And our unified message is already getting traction, as we continue to demonstrate to policymakers the tremendous entrepreneurial spirit that has driven these companies to evolve over time.

For example, engagement by NTCA members recently led to the introduction of bipartisan legislation and a successful congressional letter calling for more oversight and evaluation of federal broadband policies, including the FCC's 2011 Universal Service Fund (USF) reforms. Given the serious concerns associated with the commission's changes to this vital cost-recovery system, this congressional effort gives a welcome boost to

our fight for smart policies that support reliable and affordable advanced telecommunications for rural Americans.

The commission also is beginning to respond to our call for smart regulation and support for rural networks. Drawing from a proposal NTCA presented late last year, the commission recently initiated a proceeding to explore ways to provide rural carriers with more options to deliver both voice and broadband services to reflect today's marketplace—something NTCA and our allies have been seeking for more than two years.

That effort follows the release of a sixth order on reconsideration of the 2011 USF/intercarrier compensation reform order making several changes that, among



other things, reduced the number of telcos affected by the caps on USF support this year to approximately 60 companies, with an anticipated combined net loss to all rural carriers of about \$10 million. Now, that may not sound like progress to some, but consider this: Under the FCC's original plan, the caps were going to hit 280 carriers, with a combined net loss to rural carriers of \$55 million per year.

Though NTCA may not agree with every aspect of the commission's reconsideration order and rural broadband proposal, we view them as welcome steps toward addressing certain concerns that rural telcos have voiced regarding the USF reforms, and we will continue to work with the agency to address other outstanding issues.

Finally, in yet another sign of our continued momentum on key policy issues, 12 senators backed a resolution recognizing the negative effects rampant call completion problems are having on rural consumers and businesses. I personally commended these senators, led by Amy Klobuchar (D-Minn.), Tim Johnson (D-S.D.) and Deb Fischer (R-Neb.), for recognizing that completed calls are not a luxury, but essential for public safety,

education, health care and commerce. Their initiative has elevated this issue to a new level, and my hope is the commission will see fit to do what they've asked and move forward with clear, comprehensive and enforceable actions against those responsible.

NTCA, like our members, is using this new era for rural telecommunications as an opening to rethink the way we operate and refresh the way we present ourselves to the world. As rural telecommunications companies evolve and progress, so must their industry representation. And that's where we come in. With our new name and new brand, we are better positioned to continue providing a strong voice for rural telecommunications.



*Shirley Bloomfield is chief executive officer of NTCA—The Rural Broadband Association, the premier association representing nearly 900 independent, community-based telecommunications companies that are leading innovation in rural and small-town America. Under Bloomfield's leadership, in March 2013 NTCA (previously the National Telecommunications Cooperative Association) launched as a unified organization representing both commercial and cooperative telecommunications providers, initiating a new era for rural telecommunications.*

# 10

# Questions for Advancing

By Grant Seiffert  
President  
Telecommunications Industry Association (TIA)



*As president of DC-based TIA, Grant Seiffert oversees all facets of the leading international association representing the manufacturers and suppliers of global networks.*

*Seiffert joined TIA in 1996 as director of government relations. His main priority was the representation of the equipment industry's interests, particularly regarding competitive issues during implementation of the Telecommunications Act of 1996 by the Federal Communications Commission (FCC). He was promoted to vice president in 1998, directing domestic and global policy to help the association's supplier members gain marketing opportunities around the world. In that role, he oversaw policy, including interaction with the U.S. Congress, the FCC and the Administration, as well as with international regulatory bodies and government leaders and fulfilling the senior management role for association membership and TIA tradeshows.*

*Seiffert serves on the Executive Committee of Connected Nation, the American National Standards Institute's (ANSI) CEO Advisory Committee, and the Board of Directors of the Sustainable Technology Environments Program (STEP).*

*He holds a Bachelor of Science degree in political science from Radford University. He and his wife, daughter and two sons reside in Mt. Vernon, Virginia.*

Technology is often seen as a shining star that compels progress and instills confidence in our future. And for good reason: information and communications technology offers solutions to some of society's great challenges.

To combat violent crime and respond to disasters, the patchwork of local, regional and state public safety systems is evolving. As health costs rise and hospitals age, innovations in healthcare IT are reducing human error, increasing productivity, and saving lives. In the face of intense global competition, businesses are employing advanced automation and Machine to Machine (M2M) technologies to dramatically improve operational efficiencies.

And increasingly, as environmental concerns grow, communications technology has become one of the most significant tools for reducing costs and meeting intensifying sustainability demands. It is for this reason that the Telecommunications Industry Association (TIA) will make Green ICT a central focus of its upcoming annual conference on the Future of the Network this October.

With the exponential growth of applications, services and devices, total Internet traffic, and especially mobile traffic, is predicted to grow over the next decade by at least a factor of 50 compared to today, placing increased emphasis on network power consumption, product ends-of-life, and associated operational expenses. A central industry challenge is supporting the predicted traffic in a sustainable and economically viable way.

Technologies, such as super high-speed networks, network function virtualization, the cloud, software defined networks, smart buildings, and alternative energy sources, hold enormous power to drive energy efficiency in this fast-growth environment.

But along with progress comes challenges, even chaos, in the marketplace. As the industry looks to the future of sustainability in the network, there are critical questions that must be addressed:

1. Consumers, carriers and public officials are taking a hard look

at the sustainability, consumption and corporate policies of all industry. How will the ICT industry respond to address the initiatives, legislation and public demands for good corporate citizenship?

2. Can service providers make a case for removing aging equipment and re-invigorating their networks with new, low power equipment?
3. Where and how can decades-old legacy network equipment be safely disposed of; and if the plan is to refurbish equipment, how will it perform in tandem with new technology?
4. Global supply chains rely on sourcing metals, components and parts from numerous places – yet increasingly stringent environmental regulations vary vastly on a local, state and national basis. How does a supplier ensure compliance without breaking the bank?
5. Smart buildings are a necessity for improving energy efficiency, productivity and connectivity – what are the best practices and lessons learned for systems integrators, architects, building owners and contractors?
6. The energy required to power all this technology is growing at similar rates. What are the emerging innovations (e.g., self-regenerating hydrogen fuel cells) that have the potential to save the day?
7. How should a lifecycle analysis be made for sustainable product design, manufacturing, packaging and reuse?
8. With the proliferation of data centers, how can IT managers handle the many new demands, such as reporting on energy and environmental attributes to corporate leadership, customers and the community, as well as performing environmental audits and managing permitting and reporting?



# ing ICT Sustainability

9. While still being challenged, the Securities and Exchange Commission's Conflict Minerals regulations are already impacting a wide spectrum of manufacturers and their suppliers, creating a ripple effect throughout product supply chains. What are the requirements, who is affected and what tools are available to facilitate supply chain communications and due diligence?
10. EPEAT – the Electronic Product Environmental Assessment Tool, a rating system for electronics and office equipment – is unfamiliar to many, but has already expanded into two new product categories – mobile phones and data servers – that directly impact the ICT industry. With EPEAT certification now a prerequisite for doing business with the U.S. and other governments, how can ICT companies better understand and work with the system?

An important way that ICT companies are tackling these questions is by joining together for both business-level and technology-level discussions, and collaborating to advance the development of solutions.

These collaborations will swing into full gear in October in Washington, D.C., during TIA 2013: The Future of the Network. An entire educational track devoted to Sustainability and ICT will involve a broad group of influencers, including government representatives, company executives, technologists, policymakers, and analysts. This 360-degree approach enables a practical, real-world view with actionable outcomes that can quickly be implemented.

By directly addressing these sustainability issues, as well as other key challenges that will be discussed at TIA 2013, the ICT industry can continue to deliver on the great promise of technology – to be a business and societal force that encourages progress, opportunity and sustainability.

More information about TIA 2013 is available at [www.tia2013.org](http://www.tia2013.org).



**Broadband Capacity: Are We Ready?**  
*From Gigabit Cities to National Broadband Networks, innovators continue to move the needle towards new broadband technologies. But has the discussion moved away from the long awaited voluntary incentive auctions of spectrum and more towards cutting edge technologies that one day could make our communications systems move faster than the speed of light?*

Use your smartphone to scan the QR code above to watch now, or go to <http://tia2013.org/future-network-documentary>

***“A central industry challenge is supporting the predicted traffic in a sustainable and economically viable way.”***





# Building Better Connectivity, Together

By Steven K. Berry  
President & CEO  
CCA – The Competitive Carriers Association



Steven K. Berry serves as President and CEO of the Competitive Carriers Association (CCA), the voice of competitive wireless telecommunications providers. With over 100 carrier and over 160 vendor/supplier members serving more than 95 percent of the U.S. and its territories, CCA speaks with a strong, united voice on issues that impact those providing wireless communications in regional, remote, and hard-to-reach areas and the communities they serve.

Berry began his government career as Associate Counsel on the House Agriculture Committee, and later became Chief of Staff to the Ranking Member of the Agriculture Committee. He went on to serve in many key positions - both on and off Capitol Hill - during his government career, including as Republican Counsel for the House Permanent Select Committee on Intelligence, Republican Chief of Staff for the House Foreign Affairs Committee, Assistant Secretary of State for Legislative Affairs for the U.S. Department of State, and Chief Counsel and Director of International Operations and European Affairs for the Senate Foreign Relations Committee.

Berry, a member of the Virginia bar, holds a bachelor's degree from Emory and Henry College, and a juris doctorate from George Mason University Law School.

You can reach Steve at (800) 722-1872 or [president@cca-usa.org](mailto:president@cca-usa.org).

Providing consumers with access to a seamless, robust, nationwide network is the primary focus of network operators, yet many smaller rural and regional carriers face significant challenges when trying to achieve this important goal. A combination of the lack of interoperability in the Lower 700 MHz spectrum, an absence of competitively reasonable data roaming requirements, spectrum challenges and the continued domination of two national carriers has made it difficult for competitive carriers to build out their networks and find a pathway to 4G/LTE services for their customers.

Representing more than 100 competitive carriers across the United States, CCA (Competitive Carriers Association) recently announced a new program – the CCA Data Access Hub – designed to help competitive carriers meet these very challenges. Because roaming connectivity continues to be a problem for many carriers, especially those in rural and regional areas, CCA created the Hub to make connectivity much easier. CCA issued a formal request for proposal for organizations interested in hosting the Data Access Hub, and TNS was selected by CCA's Business Innovation Group's steering committee, made up of carrier members of various sizes and geographies.

The Data Access Hub will provide carriers a "one stop shopping" opportunity for roaming and better still - connectivity. While rates are negotiated separately, rather than negotiating several different roaming agreements, through the Hub, carriers will be able to sign one

agreement and connect immediately to all other participating operators' networks. As they say, there is strength in numbers, and the goal of CCA's Data Access Hub is to provide the most robust open network possible to meet consumers' ever-growing network demands.

For competitive carriers to continue to compete and survive in the marketplace, they must have practical solutions. While our focus at CCA is advocacy, we often pursue business opportunities to meet our members' most immediate needs. The migration to next generation platforms such as 4G/LTE represents one of the most important shifts our industry has ever faced, and the Data Access Hub will provide a unique opportunity for CCA member operators to innovate and create next generation services that are flexible, standards-based and enhance the end-user experience.

The CCA Data Services Hub will support scale, will help provide interoperability across multiple vendor variants including LTE, and will preserve the flexibility of operator choice for consumers. This innovative and exciting solution for carriers could not come at a more crucial time. As the industry continues to move to 4G/LTE services, competitive carriers must have a pathway to these next generation services, interoperable spectrum and iconic devices. The more competitors there are in the industry, the better for consumers, innovation and the economy, and it is solutions like the CCA Data Services Hub that will ensure that these important goals are achieved.

**BE WHERE THE CARRIERS ARE!**  
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# Preparing for the Coming Deluge of Big Data

By Steve Smith, Fujitsu  
Principal Solutions Architect  
Fujitsu Network Communications, Inc

As file sizes grow, it becomes more difficult to push them through the network due to limited throughput. However, throughput is not just about link speed. Latency, errors, and window size can also reduce throughput.

If you consider Layer 1 aspects of latency such links speed, delays due to the speed of light in a fiber, and spurious errors, these are not easily changeable. However, other aspects of latency such as the protocol used, the queuing latency, and packets dropped due to congestion or layer 2 and above, can be changed with the right kind of network.

A network that is a set of routers connected together over fiber imparts high flexibility, but might not allow maximum throughput. On the other hand, a network that provides switchable Layer 1 functionality, such as OTN, would approach the ideal network as there are neither queuing delays nor packet losses. However, a pure OTN network may not provide the flexibility needed for transporting packet traffic.

A good compromise that provides flexibility and low latency would be a hybrid of both. Packet networks are superior at converging flows into aggregate flows. OTN networks are superior at transporting the aggregate flows over wide networks with minimal latency. Combining both technologies offers flexible edge-based aggregation through packet net-

working and low latency using OTN as its backhaul/transport mechanism.

Typically an edge network involves relatively few destinations. For example, traffic might be broadband Internet traffic destined for an Internet PoP, or VoIP traffic destined for a VoIP gateway or cellular traffic destined an MTSO. The edge packet aggregation can group traffic heading for a given destination. Once the flows are established, they are mapped into OTN containers and then steered to their proper destination with OTN switching.

In a network that mostly transmits small files, throughput may not be an issue; it is largely irrelevant to the end users if it takes a file 10 or 50 ms to traverse a network. However, the advent of big data is set to test the limits of people's patience and efficiencies by imposing transmission times of hours or even days. This is when throughput will become critically important.

Throughput without flexibility, as might be the case with a pure OTN network, may not provide the needed aggregation capabilities. Conversely, flexibility without throughput, which might be the case with a pure packet network, may not support cost-effective or efficient transport of big data. The solution is to have both: an edge packet network with a switchable core OTN network. This will provide the flexibility and the throughput needed for the coming "big data" storm.

*"... the advent of big data is set to test the limits of people's patience and efficiencies ..."*

## Consider This . . .

Data will account for nearly 75 percent of overall wireless services spending in 2016. The growth of the data segment is being driven by the explosion in the number of smartphones, whose owners generate more than 10 times the data traffic of standard cellphone owners.

According to estimates from the FCC, the average demand for mobile data will exceed capacity by nearly 300MHz by 2014 - an increase of 3,506 percent relative to 2009.

Source: TIA 2013 Playbook, [tiaonline.org](http://tiaonline.org)





# Palmer Wireless Takes Wireless for a Ride

## Rural Carrier Outfits Wi-Fi on School Buses, Creates Surveillance Solutions

By Cami Zimmer  
Director of Marketing and Sales  
NewCore Wireless



We live in a world where we are accustomed to being connected to the Internet at all times. It's almost impossible to go out without wanting to have Internet access. Between email, social networks, working, studying, reading and chatting with friends, we all feel like the Internet is not optional at this point.

It is hard to think of any tool, instrument or object in history that we have developed such a close relationship to so quickly as our phones and tablets. Only money comes close with the concept of "don't leave home without it". But most of us don't take a purse or wallet to bed with us, don't reach for it and check it every few minutes like we do our wireless devices.

And there is no better example of the importance of this than with the younger generation. Students of all ages, especially those now attending K-12 schools, consider their wireless devices to be integral and an essential part of their lives. They want to be able to communicate whenever they want and wherever they happen to be. Outside. Inside. On-the-go.

Palmer Wireless, a rural carrier in Cen-

tral Minnesota, sees this as an opportunity. Partnering with NewCore Wireless, a leading full-service hosted wireless technology provider, and local municipalities like school districts, Palmer Wireless is expanding its business model for future success by providing needed services and creating revenue opportunities.

### Wi-Fi on School Buses – A Win for All

Knowing that students feel the same way about learning as they do about staying connected, Palmer Wireless began outfitting school buses with Wi-Fi and GPS tracking solutions in October 2012. They saw great opportunity in students' wanting to be able to do their homework, access the school's network, talk with teachers and communicate with other students at all times.

"Students living in rural areas can be on a school bus for 45-60 minutes one way. That can easily add up to 5-10 hours a week traveling to and from school. And for students involved in extracurricular activities that involves travel for competitions, that number can be even higher. That is a lot of down time. And down time for children, as any parent or teacher knows, means restlessness," says Laura Kangas of Palmer Wireless.

Giving children a "rolling study hall" means they are not bothering each other or the driver as much. A busy child is not throwing things out the window, yelling at others or causing problems. The result is a quieter and calmer ride, extending learning beyond classroom walls and providing an opportunity for more family time once the child is at home because they will have been able to address some of their homework while on the bus. All this adds up to safer, more productive time for the students and their schools. Palmer Wireless installed a wireless router just above the driver's seat and another just above the front windshield. The little black box creates an instant internet hotspot, transforming a bus ride into a rolling study hall.

And not to worry; the in-bus Wi-Fi solution has both a filter that blocks children from content that is inappropriate, as well as a solution that allows the district to monitor and filter what can be viewed by students over the Internet, just as it would on a school campus.

Palmer Wireless also is providing GPS tracking on the buses, allowing the district to track the exact location, speed, location history and idle time of their buses



*Wi-Fi and GPS tracking solutions being installed on local school buses by Palmer Wireless in October, 2012*



- in real time - by simply viewing a map on their computer.

This wireless solution provides a great benefit to the school district, parents and children, as well as a new source of revenue for Palmer Wireless. Even more, these devices can be outfitted on more than just school buses. Carriers can offer wireless solutions to governmental agencies that are continually searching for ways to create greater efficiencies. Solutions include: snow removal operations, GPS tracking capability on maintenance trucks, parking meter revenue opportu-

nities and digital signage solutions for public transportation.

Wireless technologies are also poised to transform mobile office applications for law enforcement officers, field maintenance workers and any other user who needs to connect with backend applications from a vehicle.

#### **Providing Surveillance Solutions and More**

Palmer Wireless is also assisting local municipalities in providing wireless surveillance and monitoring solutions. With the

theft of copper on the rise at telecommunication towers, emergency service generators and rural utilities, Palmer Wireless is developing wireless monitoring systems for local authorities to subside this theft.

Another area of success they have developed is with agricultural monitoring. Palmer Wireless is unveiling solutions to monitor local farmers' remote assets using video. Other areas ripe to explore include monitoring equipment (tractors, harvesters, combines, conveyors), stationary equipment (liquid fertilizer, feedstock, water, generators and irrigation pumps), as well as weather, soil conditions, water levels and agricultural buildings.

As consumers become more demanding of their wireless devices - including robust Internet access and real-time multimedia communications - it is imperative that rural carriers seek to provide cutting edge services to compete. Without question, there is great opportunity for rural carriers to generate new revenue opportunities in wireless. And Palmer Wireless is leading the way with the support of NewCore Wireless and its network partners.



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# The More Things Change, The More They Remain the Same

## Last Mile Access and Interconnection Remain a Constant Requirement with Next-Generation Networks

By Jerry James  
CEO  
COMPTTEL

For more than a century, a single provider – Ma Bell – was tasked with building our nation's telephone network, which was comprised of copper wire, to carry our telephone calls. Much has changed in the last century. Most significant is the emergence of competition, which has sparked innovation and brought greater choice to businesses and consumers. While providers are installing fiber to accommodate demands for faster speeds and increased bandwidth, technological advances also make it possible to use the nation's copper infrastructure to offer high-speed Internet and advanced services. At the same time, the public switched telephone network (PSTN) is in transition, moving from the historical circuit-switched (time division multiplexing, or TDM) to Internet protocol (IP) technology.

Regardless of the underlying network, or the technology used to move voice calls and data across those networks, certain fundamental rules addressing interconnection and access to last mile facilities continue to be necessary to ensure that consumers, small businesses and large enterprises can continue to benefit from competition.

Today, though, these issues have become a flashpoint as incumbent telcos seek to avoid their obligations for interconnection of IP networks and last mile access to fiber, under the guise that these “new” networks are not subject to “old” regulations. But changes in technology – regardless of how revolutionary they may be – do not change the fact that interconnection and last mile access are still needed to promote and protect consumers and their choice of competitors.

The transition of the PSTN to IP technology is just one of the many evolutions that have occurred in our nation's core communications infrastructure over the years. These so-called “new” networks are anything but. Competitive carriers have been at the forefront of transitioning to IP networks for more than a decade, using both fiber and copper to deliver their services. In addition, many

incumbent telcos are using their existing copper facilities to deploy IP technologies – not actually replacing the legacy network wires with something new.

Legally speaking, the FCC has found that a change in technology does not change the basic interconnection obligations of providers. But because technology is evolving at such a rapid pace, the agency has created an internal Task Force to explore the impact of changes on the network and the services on which consumers rely. Recently the Task Force issued a public notice seeking comment on three possible trials, which would focus on IP interconnection, next-generation 911, and the transition of residential consumers from wireline to wireless services. As the FCC explores these issues, it is important for the agency to ensure that resulting policies continue to promote effective wholesale competition, consistent with the goals of the 1996 Telecommunications Act, because with a robust competitive environment, consumers are best served by all providers continuing to innovate in the services they offer and the prices they charge.

Last mile access continues to be a hot-button issue, too. Competitive providers are utilizing the copper network to offer Ethernet over Copper (EoC) services, which is one of few ways that many small and mid-sized businesses can afford vital high-speed broadband services. Some large incumbents, however, are beginning to remove existing copper facilities over which the EoC services are provided. These actions leave no competitive alternatives, since the FCC has permitted incumbents to deny competitors access to alternative facilities, such as fiber, in a manner that enables the delivery of high-speed broadband services. Competitive providers face significant barriers to build their own last mile facilities. Despite the billions of dollars competitive providers have invested in infrastructure, they simply cannot replicate the scale of the large telcos, which have the advantages of incumbency to achieve cost savings unavailable to competitors.

To ensure that all consumers, small and mid-sized businesses, and even the largest enterprises can benefit from competitive next-generation technologies and services, it is vital that the FCC also develop modern, pro-competitive last-mile access policies that take into account the various methods by which communications providers can reach end users.

Even with the most advanced technologies, the lack of effective policies governing interconnection and last mile access will result in our nation facing a harmful reduction in competition and the benefits it makes possible. If so, we won't be looking ahead for the latest, greatest innovations. Instead, we'll go back to a time where there is very limited choice of providers, and consumers and businesses will see dramatically higher communications costs and fewer innovative new services, as well as the many other benefits that result from competition.



### About the Author

Jerry James has more than 40 years experience in the communications industry. He started his career at Southwestern Bell and then worked as a management consultant for Coopers and Lybrand until he co-founded the telecommunications consulting firm The Warner Whitney Group Inc. in 1979. Then, as a senior executive of network operations at ClayDesta Communications, James supervised the building of the first all-digital network in Texas in mid-1980s. He held other executive positions at other well-known communications companies until 2000, when he co-founded and served as president of Grande Communications, which constructed Texas' first fiber-to-the-home network offering voice, data and video services via “triple-play” bundle. During his career, James has been active in policy advocacy at the local, state and federal levels. He helped found state associations for the competitive communications industry in several states, served on the boards of national trade associations and served as vice chairman and chairman of COMPTTEL. James has served as CEO of COMPTTEL since June 2007.

# Using vWLAN to Deliver Profitable Managed and Hosted Enterprise WLAN Services

By Kevin Morgan  
Director of Marketing  
ADTRAN

Wi-Fi has become the preferred method of wireless access to the network. Many businesses lack the internal resources and know-how to design, deploy and manage a secure, reliable, high-performance wireless Local Area Network (WLAN). At the same time, mobile network operators are under tremendous pressure to meet the exponential growth in subscriber demand for mobile data. They must also explore implementing cost-effective, complementary technologies such as Wi-Fi, which eliminate the lead times, licenses, and complexity associated with spectrum acquisition.

Solution providers currently offering a managed WLAN service utilize a design with a single-tenant, premises-based hardware controller architecture. The data and the control planes are bonded to a traditional hardware controller resulting in many cost and operational constraints. An easier and more profitable solution exists with virtualized WLAN (vWLAN).

ADTRAN introduced the industry's first vWLAN solution. With this solution, control and management planes are separated from the data plane, freeing them from the LAN. The control and management planes for multiple tenants can be centralized anywhere in the world using a virtual server architecture rather than a hardware controller. This provides a number of benefits including:

- Elimination of Controller Hardware
- Seamless, Simplified, Massive Scaling
- Security at the Edge
- Optimized Performance
- Greater Flexibility
- Sustainable Solution
- Unified Access
- Inherent Reliability, High Availability and Fault-Tolerant Environments
- Wireless IDS (Intrusion Detection System)
- Zero-Touch AP Provisioning

- Dynamic RF
- Class of Service and Airtime Fairness
- Guest Access
- Tight Integration with Complementary Systems
- Seamless User Experience

Managed and hosted WLAN represents a significant opportunity for service providers. Those utilizing ADTRAN's Bluesocket vWLAN technology have the opportunity to bundle managed and hosted enterprise WLAN services with existing broadband access and managed services. This enables new sources of recurring revenue, while providing added customer benefits. Applications include:

#### **Multi-Tenant Support**

A mobile network operator can configure, control and manage users and APs for multiple customers on a single vWLAN software instance.

#### **3G/4G Offload**

Wi-Fi networks can easily complement cellular networks, enabling operators to offload congested cellular networks. Operators can use Wi-Fi to reduce traffic congestion on the main network and cost-effectively increase network capacity at specific locations.

#### **Small Cells**

With the growing demand for mobile data, operators are increasingly turning to small cells to handle the capacity crunch in dense urban areas and to add coverage in areas with low cell signal levels. The Bluesocket vWLAN solution allows operators to leverage Wi-Fi to bridge the gap to LTE.

#### **Managed and Hosted Hotspots/ Broadband Access**

vWLAN technology can be leveraged to deliver traditional hotspot offerings extending branded broadband services to public venues, retail outlets, hotels, stadiums, airports, schools and libraries.

*"... vWLAN technology ... enables new sources of recurring revenue, while providing added customer benefits."*

*To learn more about how carriers can use ADTRAN Bluesocket vWLAN solutions to increase their revenue potential, access our white paper from Jennifer Beck at Walker and Associates ([jennifer.beck@walkerfirst.com](mailto:jennifer.beck@walkerfirst.com)).*



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- Reduce cable congestion and slack storage issues
- Simplify product selection and ordering
- Shorten product lead time
- Reduce installation and engineering time

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# The Evolving Development of Cybersecurity Framework

By Nadya Bartol, CISSP, CGEIT  
Senior Cybersecurity Strategist  
Utilities Telecom Council



The Executive Order (EO) 13636 issued February 12, 2013, Improving Critical Infrastructure Cybersecurity, tasks the National Institute of Standards and Technology (NIST) to develop a voluntary cybersecurity framework. The Framework would apply across the critical infrastructure sectors and provide a "prioritized, repeatable, performance-based, and cost-effective including security measures and controls, to help owners and operators of critical infrastructure identify, assess, and manage cyber risk." Because US and Canada electric grids are interconnected, the Framework will have an impact on Canadian utilities cybersecurity practices as well.

The Framework is to be developed in collaboration with the industry and is required to incorporate voluntary industry standards and best practices, as well appropriate voluntary international standards. NIST has an ambitious schedule defined by the EO, to publish the Framework in draft for public comments 240 days after the release of the EO (October 2013) and to publish the final framework one year after (February 2014). NIST is then required to review the Framework annually and revise it based on the evolving risks, standards, and best practices.

Since the EO release, NIST has engaged in an active dialog with the industry, issued a Request for Information seeking input, received 243 inputs, and has held numerous conversations and meetings with industry stakeholders including UTC Cybersecurity Experts. The Framework is being developed in a series of workshops conducted throughout the country. To quote one NIST official speaking at the first workshop, "put on your overalls" (forget rolling up your sleeves) and get to work at the workshops.

The first workshop was held on April 3rd to seek input from stakeholders, discuss industry perspectives and current practices, and to review the path forward.

The second workshop held May 29-31 began the real work on the framework. Attended by close to 400 participants from across the critical infrastructure sectors, the workshop was held at the Carnegie

Mellon University in Pittsburgh. The participants were organized into four different tracks, which were defined based on the RFI responses: the business of cyber risk, threat management, cybersecurity dependencies and resiliency, and progressive cybersecurity: from basic to advanced cybersecurity.

From this initial work, NIST developed a Preliminary Cybersecurity Framework and posted it on [www.csrc.nist.gov](http://www.csrc.nist.gov) in anticipation of the 3rd workshop, held July 10-12 at the University of California in San Diego. At the workshop, the participants worked on organizing the categories and subcategories, as well as the role-based viewpoints of the framework. The desired outcome was to provide three views into the Framework: senior executive, business process managers, and operational managers. NIST will use the results of the third workshop to develop the draft Framework and share it with the community at the last (4th) workshop in September.

The Preliminary Framework includes executive summary, implementation guidance, and risk management approach. The Framework risk management approach provides a top-down way to look at cybersecurity. It starts with the top level cybersecurity functions: know, prevent, detect, respond, and recover. Each of these functions is further broken down to categories, subcategories, and informative references, of standards, practices, and guidelines.

Categories include well-known cybersecurity concepts, such as identity and access management or vulnerability management with the subcategories further breaking down the categories. Informative references of standards, practices, and guidelines are presented in a spreadsheet with over 300 lines that list a variety of national and international standards. The users of the framework are not required to use any of the standards. Rather, they are advised to select appropriate references based on their organization's risk appetite and desired risk posture. The Framework also provides three implementation levels that reflect organizational cybersecurity maturity.

The EO also tasks the Department of Homeland Security (DHS) to expand threat information sharing to include all critical infrastructure sectors, and to expedite granting of clearances to critical infrastructure entities staff. DHS is to collaborate with the Director of National Intelligence, Department of Justice, and individual Sector Specific Agencies (SSA) charged with leading public/private partnership with the critical infrastructure sectors on various aspects of the program. DHS, in consultation with the SSAs is also required to identify critical infrastructure entities that are at greatest risk, defined as "catastrophic regional or national effects on public health or safety, economic security, or national security."

DHS is also tasked with establishing a program to facilitate voluntary adoption of the Framework, and the participation in the program is voluntary, as is the conformance with the Framework. However, agencies responsible for regulating the security of critical infrastructure are required to engage in a consultative process with DHS, Office of Management and Budget (OMB), and the National Security Staff to review the preliminary Framework and determine whether the current regulatory requirements are sufficient and report to the President on their findings. Furthermore, the independent regulatory agencies that are not subject to the EO are encouraged to engage in a similar consultative process to determine whether further regulation is needed.

Cybersecurity is a core issue facing our critical infrastructure and these workshops have established a robust industry dialogue. UTC Members receive continuous updates, and have opportunities to share knowledge via established communication channels including Security Committee conference calls, open technical and security conference calls, UTC Journal articles, electronic newsletters, and in-person updates at several regional and national events.

*For more information on UTC's efforts, or opportunities to participate in this, or any of UTC's programs, please contact us at [membership@utc.org](mailto:membership@utc.org). For more information on the Framework, or cybersecurity issues, contact Nadya Bartol at [Nadya.Bartol@utc.org](mailto:Nadya.Bartol@utc.org).*

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# Upgrading Mobile Networks for Better Backhaul and Flexibility

By Erik Gronvall  
Manager of Business Development  
TE Connectivity

Today's wireless networks are highly complex. Systems constantly have to evolve to keep pace with the high bandwidth service requirements of 3G and 4G wireless networking. What happens when 5G or 6G are on the horizon? Quick and efficient upgrades are critical to mobile network operators for realizing the additional revenue streams that new services create. The outside plant backhaul portion of the network faces significant complexities and challenges for providing the necessary flexibility to adapt quickly to these new service requirements.

The relentless need for higher capacity and wider coverage areas is forcing mobile operators to find solutions to upgrade their installed backhaul infrastructure. They must incorporate cell site improvements for maintaining speeds necessary for supporting new bandwidth-consuming 4G services. And fierce competition is creating an urgency to be the first provider able to provide high bandwidth 4G services to its wireless customers.



## What's driving the need for upgrades?

- 5 Billion mobile phones currently in use worldwide
- Projected 24 Billion devices in use by 2020 - half of which will be on wireless networks
- In fact, all expectations for increased mobile data traffic and predicted video applications by 2014 are on track to either be met or exceeded

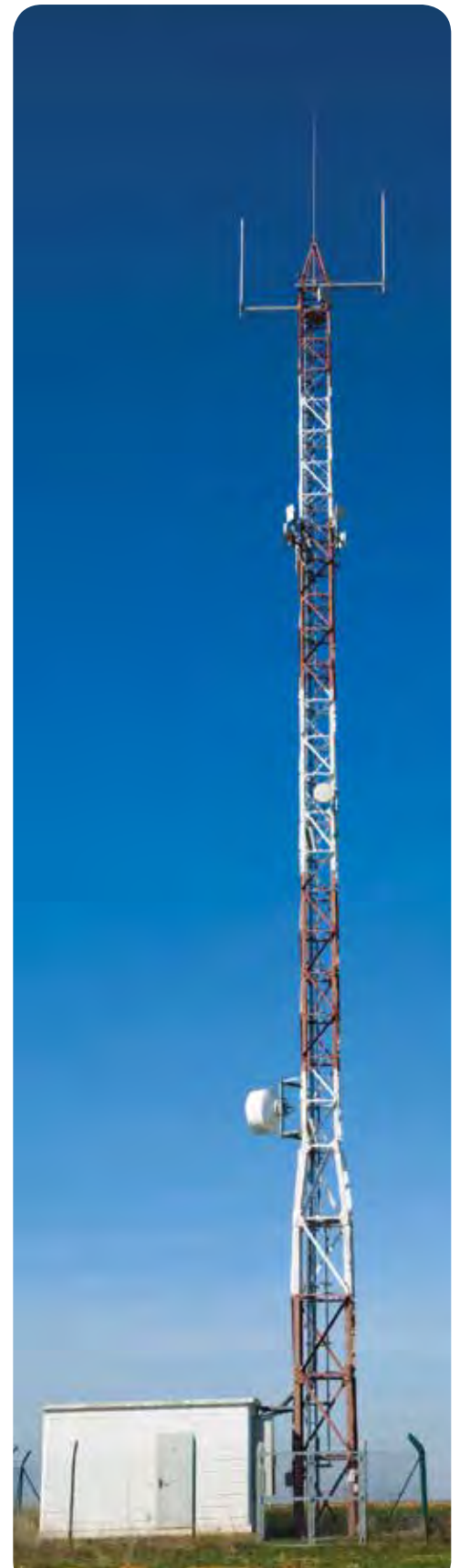
## How can Bandwidth and Flexibility Be Achieved Without Sacrificing Reliability?

Consumers are demanding the same advanced data services that generate the highest revenues for providers. The challenge is creating enough bandwidth over a higher-capacity network to bring these advanced services to consumers quickly. That means upgrading to 3G, LTE, 4G and beyond is a time-critical issue. Providers need to begin upgrading their backhaul infrastructure and existing cell site infrastructure, including building new cell sites, to extend and improve coverage. Deploying fiber into the edge of the network provides the most flexibility and bandwidth. Although fiber is generally the solution of choice for increasing bandwidth availability for backhaul, different cell site environments dictate how the fiber is deployed. Solutions must be adaptable to every deployment challenge while also providing revenue to the mobile network operator, be able to be reconfigured for future upgrades and provide the reliability and assurance that customers need. Mobile networks are often "life lines" for customers and security and reliability of the network is essential.

## Any Cell, Any Technology, Anywhere - Ready for Anything

Mobile providers are continually challenged to meet greater consumer demands for bandwidth as new data and video applications hit the market. They must build new networks and upgrade legacy networks that are flexible and easily expandable to enable faster adjustments and changes without interrupting services. At the same time, the pressure has never been greater to increase efficiency and profits by staying out in front with the latest and greatest application offerings.

In short, mobile network operators need solutions that fit any cell, any technology, and are deployable anywhere. Preparing now and incorporating flexible technologies is the key to meeting the next generation of bandwidth demands.



# Create the Life of Your Dreams . . . Using Very Practical Methods

By Brenda Abdilla  
Founder, President  
Management Momentum

Imagine for a moment that it's six months from today and you are having a beverage with a good friend. You are telling your friend that you are the best you have been in years—physically, financially, mentally and in your relationships as well. Your numbers at work are off the charts (in a good way) and your team is collaborating and coming up with ideas that are truly inspiring. You just got an amazing offer for a promotion within the company and you finally feel like you have your arms around your in-box and your time management system is actually working. Life is great.

## So what does YOUR perfect day look like?

If you want to create a reality that is different from the one you are currently experiencing, you must teach yourself to zero-in on what you want vs. what you have. The ability to focus on what you want vs. what you have is an effective strategy but most people have trouble doing it for long. Others, when asked to do this exercise, will mistake the meaning and go into fantasy mode—like having a superpower or winning the lottery. Having a superpower is a fantasy—detailing your perfect day is a form of discovering the achievable, yet hidden, vision you have for your life. Big difference.

So what would one, perfect day look like in your world? Assume you are working (so not retired in the Bahamas—just yet) and most of the foundational elements of your life are the same—but a lot better. Start the process now by writing down ten aspects of a perfect work day for you—if things were more ideal. Write it in first-person and make it as specific to YOU as possible.

Here are a few examples to get you started:

1. I bask in the glory of my new office and leadership role at work.
2. I check my bank balance after all of my bills are paid and it's higher than ever.
3. I just made vacation reservations at the resort we have dreamed of going to since our honeymoon.
4. I have a great workout and weigh myself and celebrate the fantastic number I see on the scale.

Once you have a list of ten or so aspects, go to the next level and write it out like it's happening—describe going to the mailbox and finding the bonus checks from work, the reminder popping up on your computer at work that it's 16 days until Fiji, a call from your son that he is thriving in his life and appreciates all that you have done for him—you get the idea.

And don't worry about how it sounds or reads—no one will see it except you.

## Why this works

From a coaching perspective there are easily ten great reasons why this exercise works—but I will give you two. The first is a concept called "inattention blindness" or (also known as perceptual blindness) and it is defined as:

*"The failure to notice an unexpected stimulus that is in one's field of vision when other attention-demanding tasks are being performed. It is categorized as an attentional error and is not associated with any vision deficits. This typically happens because humans are overloaded with stimuli, and it is impossible to pay attention to all stimuli in one's environment. This is due to the fact that they are unaware of the unattended stimuli. Inattention blindness also has an effect on people's perception. There have been multiple experiments performed that demonstrate this phenomenon."*

Perceptual blindness can mean that we cannot see opportunities for significant improvement in our lives even though they are right in front of our eyes. (for more information on this google the term "inattention blindness" and test yourself—it's amazing!)

The second reason this works has to do with your brain chemistry. When you make the list you have "good" feelings and those feelings create a chemical reaction in your brain. A few minutes of feeling better can ignite the problem-solving, solution-oriented aspect your brain and literally change the course of your life. Try it.

*What to do when you are really stuck in life. Sometimes in life we are stuck in spite of having tried everything to move forward. When that happens—try one of these:*

1. *Go to a therapist. There is no shame in needing some help with quite possibly the most important, long term aspect of your overall health—your mental health. If you have a persistent issue, memory or are stuck-stuck-stuck... find a good therapist and get to work.*



2. De-clutter your life. Hire a professional commercial and/or residential organizer or give your family the heads-up that it is time to de-clutter and get to it. Clean your desk, your files, your car, your garage, the basement. Yes it will be much harder than you think and once you are in—you are in—but it will change your life instantly...as soon as it's done.

3. Read one self-help book. Pick one in the category of the most pressing need in your life (e.g. relationship, nutrition, health, depression, career, etc.) and read the reviews or get recommendations from people you trust. Then set an alarm for an hour a day and read it—or clear your schedule Saturday—you need your reading time because bed time is not going to work for this type of book.

4. Hire a coach or trainer or expert. Hey I am not just saying this because I am a coach. We all need help from time to time. When I was struggling to finish my

book I hired a publishing coach. I have also had a personal trainer and business coach for the better part of 15 years. It works!

5. Forgive someone. You know the thing....the thing that does not deserve your forgiveness. Yep that's the one. It sounds trite but it's true that forgiveness is a gift you give to yourself. If you need help with this item see #'s 1-4 above.



Brenda Abdilla is a certified, professional coach and the founder of Management Momentum LLC. Momentum's mission is to help clients gain career confidence and clarity in a way that empowers every aspect of their lives. Brenda likes results-oriented action so much she founded her company on the principle of moving people and organizations forward. Brenda is a skilled professional mentor using her business experience and advanced tools like the Enneagram, The DiSC and Emotional Intelligence Testing and 360 assessments to help motivated professionals reach their desired outcomes sooner rather than later. Brenda's new book, *What's Your Lane? Career clarity for moms who want to work a little, a lot or not at all* is now available for moms in career-question mode. You can sign up for Brenda's newsletter at [ManagementMomentum.net](http://ManagementMomentum.net).

## Maintaining Quality Standards Walker's Audit Successfully Completed

By Randy Turner  
Director, Marketing Communications  
Walker and Associates

Walker and Associates, Inc. successfully completed its 2013 quality audit, maintaining TL9000 and ISO 9001:2008 certifications. While TL certification is a quality certification specific to the communications industry, ISO is an internationally recognized quality management system standard developed by the International Organization for Standardization (ISO). The certifications apply to Walker's Welcome, NC headquarters, its Winston-Salem, NC warehousing facility and installation and integration operations, as well as the sales and marketing branch office in Alpharetta, GA.

ISO 9001:2008 applies to organizations involved in the design and development, manufacturing, installation, and servicing of products. To be certified to the standard, companies must implement a comprehensive quality management system that addresses all areas of operation - from internal staff training practices to product design, manufacturing, delivery, and service.

Hal Sveum, General Manager and VP of Operations at Walker and Associates, commented that "TL9000 certification is

held now by most of our key manufacturers. The industry's customer base has been gradually requiring this certification in order to do business with them." As a result, Walker and Associates has determined it part of its strategy to retain this important level of certification, ensuring customers of measures taken to reach its quality statement:

**"Walker will fulfill customer requirements by providing a complementary mix of products and services with timely and accurate deliveries."**

External auditors with Orion Registrar, the world's leading quality management systems registrar, visited Walker and Associates headquarters in May, 2013 and spent several days conducting a comprehensive audit. The auditor examined all of Walker's business and quality systems, including organizational processes, materials documentation practices, and measurement systems for tracking customer satisfaction and supplier performance.

Walker originally successfully completed an audit and was officially ISO-certified

**TL9000**  
**ISO 9001:2008**

in August, 2008. The ISO certification process ensures ongoing compliance because, once certified, companies are externally audited annually.

Throughout its 43 years in the telecommunications industry, Walker has always fundamentally operated to ensure customer requirements are met while maintaining a focus on process improvement among its associates. Recent decisions demonstrate an even stronger commitment to quality initiatives, including the promotion of Chrystie Walker-Brown to Vice President of Quality and Contracts. Her department regularly reviews submissions of preventative and corrective actions relative to quality performance, conducts root cause analyses, manages creation of corrective action plans, prepares for audits, updates associates on process improvement initiatives, and apprises the board and senior management of quality programs and outcomes. This additional focus ensures customers and manufacturers of Walker's commitment to measurable results through industry recognized certifications.

# Distribution and the Value of

By Rick Walker  
Director of Services Development  
Walker and Associates



As a major distributor to all types of communication service providers, Walker and Associates understands that products alone are not the sole requirement demanded by customers. For that reason, Walker offers a full suite of both Logistic Services and Professional Services. Constant evolution of technology and products requires our Service Provider partners to depend on distribution to help them choose the best products and integration solutions they need to competitively operate the most technically advanced and future proofed networks possible. Time to market and market penetration are keys to their success. Time to market is where Professional Services are extremely valuable to our customers. Product engineering, integration, kitting, and installation services, to name a few, can dramatically cut the

time our customers provide service to their customers. These services contribute to a quicker return on investment and lower internal costs so the provider can focus on strategic initiatives, attracting new customers, and retaining customer loyalty required for their success. Our constantly expanding Professional Service platform is created by looking forward in the direction that technology is moving, understanding our customer's challenges, and understanding what it takes to attract and support the best manufacturers and products in the industry.

## **Network Design and Configuration**

**Services:** The services we provide begin with helping to engineer the network. With the help of trusted partnerships and our own staff we can help a customer design a configuration for the network elements needed to build the best solutions for their network. Walker's engineers and partners have years of experience in all aspects of the network. We offer a variety of services such as design and architecture, provisioning, systems verification and integration, traffic migration, and training. Our services include: Optical Network Design and Integration, Network Architecture, Design, Implementation for MPLS and GMPLS covering IPV6 and IP Routing, Network Product Design, Security Architecture and Design, IP Address Management, and Peering / Interconnection including the negotiation and implementation of interconnection between IP networks for exchange traffic.

Additionally, in Walker's state of the art lab we can rack up hardware like Multi-Services Aggregation Products, DWDM products, Routers. Etc. which can be pre-provisioned prior to field installation, saving time and money once the products are onsite.

**Integration:** Integration wears a couple of hats at Walker. This is where we engineer customized solutions for integrated equipment bays or cabinets used in CO, CPE, or OSP applications, equipped to our customer's specifications. We also provide pre-configured products like IP PBX, IP Phones, Integrated Access Devices or Business Gateways, Routers, and Switches. With an established API or spreadsheet we can load customer provided Basic Configurations like WAN,

LAN, Default Gateway, and IP DNS or we can load Advanced Routing Protocols (OSPF, BGP, EIGRP) or Voice, Frame-Relay, NAT, VPN, Access-Lists or any other type of customer specific requirement. These products are then scanned to retrieve the MAC addresses and serial numbers for our customer and re-packaged with any custom labeling, if desired, ready for shipment to the service provider or their customer for turn up. Our installation team can arrive to install turn-up and test all the elements for seamless zero touch customer order fulfillment, saving our customer staffing and truck rolls to get the job done.

**Kitting:** Another great service offering we provide are Kits we build from off the shelf products or custom integrated products combined to provide a multi-vendor solutions in box, on a pallet, or an entire truck load under one part number. We can ship the Kit just in time to a desired location or put it in our customer's private virtual warehouse as part of our CAMP (Customer Asset Management Program), to be shipped as required. This can save valuable shelf space in the customer facility as well the cost of man power to inventory and manage the orders.

**Installation:** When products arrive at our customer's location we can be there to receive and install them with trained and certified technicians following TL9000 certified practices. We can provide a multi-vendor custom solution for the central office, collocation, and OSP cabinets and shelters. We also offer customer premise installation for wireline and wireless applications. This broad scalable service can really help a provider who might be expanding their central office or collocation sites where they require quick turn-around and may not have the manpower or technical capability. Our installation expertise includes: FTTX, Broadband Enabling Solutions, Carrier Ethernet, Switching and Routing, IPV6 Solutions, Optical Transport, Network Timing and Upgrades, Mobil Backhaul, VoIP, as well as DAS, WIFI, Point to Point and Point to Multipoint wireless installations. This is a great service for a provider whose market is quickly expanding or may have a requirement to upgrade their technology to meet today's demand for more bandwidth and growth.



# Professional Services

**Managed Services:** Monitoring your network requires 24x7x365 support with highly skilled engineers. Our customers may not have their own NOC / SOC or if they do they might be too costly to staff after hours and weekends. It might be that our customer needs to put their focus on strategic business initiatives and wishes to outsource security, monitoring, break/fix, moves, adds, changes, or provisioning. Maybe our customer only requires short term SME support or they have immediate staffing needs. Whatever their monitoring requirements might be we can help them achieve their goals.

**Advanced RF Planning Services:** Mobile communications is now more than a convenient way to communicate. It is the way to communicate and it is what is driving our industry now more than ever. Our provider partners are expanding their wireless networks to offer greater bandwidth at faster speeds with microwave and fixed wireless radio technolo-

gies. These technologies can lower the cost of customer penetration and cut out costly leased lines from other providers. We not only provide the products, but we have trained staff and the latest software to provide RF Planning, Propagation Modeling, and Engineering services. Our advanced radio network planning software gives us the ability to plan, deploy, and optimize virtually any wireless network from Public Safety, Transportation, Cellular and Broadband to Smart Grid and beyond. This allows Walker to lower a providers planning and engineering cost when considering Walker for purchasing equipment for their network. Our products include Towers, Antennas, Radios, Cabling, and Installation.

The size of your organization, infrastructure, technology requirements, and engineering capabilities can certainly impact how effectively you grow and maintain your network. In today's fast paced communications marketplace you have to look for distributors and resellers that do

more than just provide products. Walker has been solid player in the industry for 43 years and we proudly serve over 1800 service providers and represent over two hundred manufacturers. Our value added services platform is what can make building and maintaining a state of the art network a lot easier and more cost effective for our customers. We represent the best products our industry has to offer and we want our customers to have the highest quality purchasing experience in the industry. Our offering must include a full line of services to provide as close to a turnkey experience as possible. As networks continue to evolve our service offering will also evolve as we stay abreast of industry trends. We are committed to investing in a comprehensive services platform to provide the highest quality customer experience.

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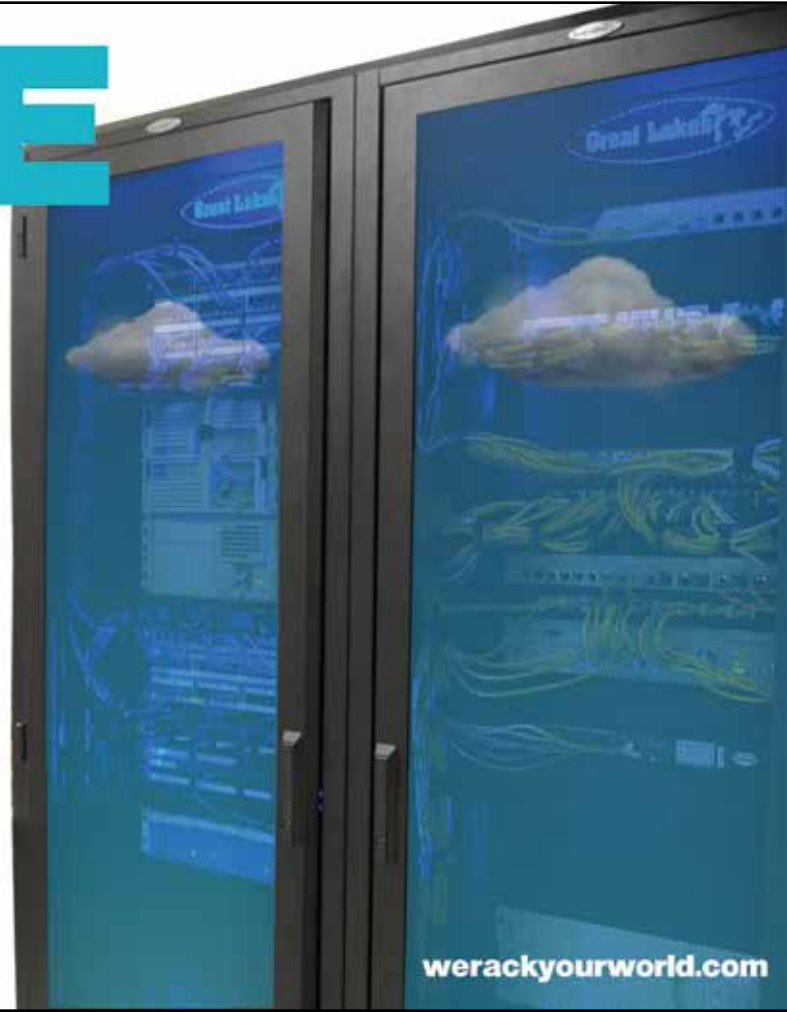
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# In the Spotlight

By Randy Turner  
Director, Marketing Communications  
Walker and Associates



Dave Armentrout has joined Walker and Associates as Vice President of Wireless Business Development. Dave brings 15 years' experience in the telecommunications industry. He served as President and COO of

FiberNet, a WV based CLEC, and was responsible for \$80 million in revenue. He accomplished many of the major milestones in the company's history, and was instrumental in planning, negotiating and acquiring various components of the facilities based company to expand its fiber network across six states. He also has 12 years' experience in the oil and gas industry.



**Brendan Mihalek** has joined Walker and Associates as a Field Systems Engineer. He began working in telecom in 1997 as a tech support agent at Info Avenue, where he obtained his CCNA and CCNP. His work there included helping them build an IP NOC for both their internal network and customers.

As a Jr. Engineer he was responsible for the IP network and the new MPLS/QOS enabled network where he gained exposure to Cisco, Alcatel-Lucent, Juniper and, at the time, Foundry products. Upon

leaving Info Avenue, Brendan worked for an ILEC in South Carolina named Home Telecom. Home wanted the same type of network that Spirit had built, a 10Gig MPLS QoS enabled core. Foundry, now known as Brocade, was selected for deployment as they built their network. Brendan's work with Brocade staff offered extensive technical support. He is now certified through Brocade with BCNP, BCSPNE, and BCND. He offers customers engineering support to assist with network design, product selection and deployment support services.



**Chrystie Walker-Brown** was recently named VP of Quality and Contracts at Walker and Associates. Chrystie, daughter of Walker co-founders Chris and Virginia Walker, has literally grown up in the telecommunications business. Since her parents started the business in Chester, Virginia in 1970, she has closely witnessed the growth and development of the company.

She earned a Bachelor of Arts in English from Longwood University in Virginia in 1984. Chrystie has served on the Board of Walker and Associates since 2001.

Since 2011, she has served as a Board's liaison to Walker's quality management effort, working on the Walker TL9000 quality program. Now, as the Vice President of Quality and Contracts, reporting to Virginia Walker, CEO, she plays an even more strategic role with quality initiatives important to Walker's customers.

After these many years of acquainting herself with different aspects of the business, Chrystie is very proud to be critical part of Walker and Associates senior leadership.

In a recent note to the associate base regarding the importance of quality in our business, she said "Our success has always come out of our commitment to integrity, outstanding customer service and continuous improvement." She intends

for Walker to keep that commitment as they continually pursue growth in their market share.

Chrystie resides in Kansas City, MO with her husband and two children.

Frank Soos has joined Walker and Associates as regional account manager for Texas, New Mexico and Louisiana. Frank brings over 30 years of experience in the IP networking and telecommunications industry for a wide range of products and technologies. Recently, Frank worked as a regional sales director for BTI systems and was one of the first sales people at Occam Networks where he opened up territories all throughout the Western United States for over 7 years. Prior to that, he held executive positions at Hydraweb, Ericsson, ACC, Whittaker Systems and Armon Networks. Frank has a long history of developing international and domestic markets for a range of suppliers working in indirect and direct sales worldwide. He is based out of Austin, Texas with his wife and has two adult daughters living and working in California.



Walker and Associates honored two associates during its annual awards presentations. The "Al Stokes Customer Care Award" went to **Bill Lowery**, Production Manager

for Walker's Integration Department. The "Chris Walker Award", awarded in memory of company co-founder Chris Walker, went to **Todd Kruegler**, Regional Account Manager for the Southeast, pictured above. These two prestigious awards recognize exceptional leadership, innovation and customer-focused results generated through collaboration, skill and experience. Congratulations to Bill and Todd!

# Grow Your Business by Delivering New Services with the On-Demand Data Center

By Michael Schiff  
Product Marketing Manager  
Data Center Switching and Routing  
Brocade

It is estimated that Over the Top (OTT) services will grow by an incredible 60% this year, and this is happening on your network. While OTT services are certainly a threat to your business, ultimately these new types of services that customers are demanding present opportunities as well.

Consumers and enterprises are demanding high-value communication, content, and cloud-based services. Innovative and new data center architectures and technologies are available for traditional service providers to compete and deliver new services rapidly and efficiently.

***“The demands on today’s networks are changing at an unprecedented rate . . . ”***

There are four key imperatives that must be addressed by service providers when building the next-generation data center: multi-tenancy, resource flexibility, auto-

mation, and scalability. Multi-tenancy is critical for operators to support the maximum number of customers on a shared infrastructure while maintaining fault isolation and security. This is fundamental to their ability to minimize cost while maximizing revenue. Data center assets also need to be flexibly deployed and fully utilized, with the ability to quickly redeploy data center resources when customer consumption changes. The data center must be automated to save on operational costs and to reduce the time in which new customers can be turned on. Finally, many service providers are dealing with the challenges of hyper-growth in bandwidth demands, so resources in the data center need to scale in real-time, without having to re-architect the environment.

Brocade’s vision is to empower the On-Demand Data Center, which combines aspects of physical and virtual networking to increase business agility, reduce complexity and scale virtualization to new levels. Brocade provides the building blocks today for this new data center model which will help operators provision the capacity required to deliver high-value services faster and easier compared to legacy data center networks. With industry-leading Brocade VCS Fabric technology serving as the physical network foundation, customers can simplify

and automate their networks, as well as dramatically improve network efficiency, utilization and performance. The On-Demand Data Center also provides a path towards Software-Defined Networking (SDN) and Network Function Virtualization (NFV). NFV is an industry movement driven by the Tier 1 carriers towards software or VM-based form factors for common data center services, such as the Brocade Vyatta vRouter which includes Layer 3, Firewall and VPN functionality and the Brocade Virtual ADX Application Delivery Switch which provides Layer 4-7 application aware services. Finally, Brocade carrier-class routers such as the MLX Series and NetIron CER series provide a highly scalable and economical way to extend the reach out from the data center to the network edge for an end-to-end solution that enables rapid deployment of new services.

The demands on today’s networks are changing at an unprecedented rate as consumers and businesses are looking for new ways to communicate quicker, easier, and more efficiently. The On-Demand Data Center will enable rapid deployment of new services through highly flexible and simplified network architecture, and ultimately provide the rich benefits of virtualization and cloud computing.

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# Powering the Network

## AC-DC

### Voltage/Power Range:

120/240 VAC Input 12, 24, 48, or 110 VDC Output 150 Watts - 14 kW

**Components:** Rectifiers, Battery Chargers, Power Modules, Power Supplies, Power Management, Rack Mount, Wall Mount, Desktop

**Systems:** Hot Swap Rectifiers Shelves with Distribution and Monitoring

**Power Plants:** Rack Mount Systems with Batteries

## DC-DC

### Voltage/Power Range:

12, 24, 48, 72, 110 VDC Input 12, 24, 48 VDC Output

### Configurations:

Isolated/Non-Isolated, Step-Up, Step-Down, Stabilizers, Battery Charger, Rack Mount, Mobile, Wall Mount, Desktop

## DC-AC

### Voltage/Power Range:

12, 24, or 48 VDC Input 120/240 VAC Output 1000 - 5000 Watts

**Configurations:** Rack Mount, Wall Mount, Mobile

## DC Power Distribution

### Voltage/Power Range:

12, 24, or 48 VDC Input 200 - 900 Amp VDC Output

**Configurations:** Rack Mount

## DC UPS

### Voltage/Power Range

12,24 VDC Input / Output 5-20 amps

**Configurations:** Mobile Mount

## Battery Chargers

### Voltage/Power Range

120/240 VAC Input, 12,24,110 VDC Output

**Configurations:** Wall Mount, Mobile Mount

## Monitoring/Control

Remote and Local Monitoring; DC Voltage, AC Voltage, Alarms, Batteries, Security, Cameras

Remote Control of DC and AC Equipment



Hot Swap Rectifiers



Power Modules



Power Management



DC-DC Converters



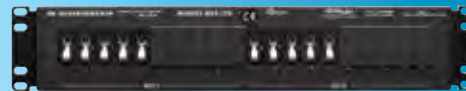
Power Plants



Inverters



Inverter-Chargers



DC Distribution Panels



Battery Chargers



DC UPS



Site Monitor & Control

For more information, contact your Walker and Associates representative or visit [walkerfirst.com](http://walkerfirst.com)

# 5 WLAN Design and Management Principles

By Duncan Freeman  
WiFi Project Manager

Over the years our partner, Network Utility Force, has designed and built a variety of wireless networks across a number of industries, from high-demand manufacturing and warehousing to secure, private healthcare deployments. Most recently, they built one of the largest municipal outdoor WiFi networks in the Southeast, and one of the first in the United States with native IPv6 (<http://bit.ly/19t5t8K>).

Along the way, some important design principles for building a scalable and reliable wireless network have been noted. Below are five design principles network administrators preparing to deploy or upgrade a WLAN should apply:

## 1. Identify client device types:

One of the first steps in designing a WLAN network is understanding the client device requirements for the network. For example, what kind of client devices will be in use over the network, what radio types are in the devices, what channels do the devices support, what is their transmit power, their maximum data rate, and channel width, among other factors.

## 2. Identify applications and throughput requirements:

Each network will have users with different needs, so administrators should identify the applications that will be in use, and the throughput required for these applications, as well as the estimated number of users, including simultaneous users, and upstream requirement, if applicable, to support these users and applications.

## 3. Perform Site Surveys:

Once device types, applications and users are understood, a site survey should be conducted to understand the physical aspects of where the network will be deployed, the RF characteristics of the environment, as well as map the coverage areas and AP placements, and understand any power, cabling or mounting requirements. A post-deployment survey, as well as testing should always be conducted to validate the design, and determine if any adjustments should be made, including, but not limited to power, channel, QoS or AP placement.

## 4. Implement Network Monitoring and Configuration Best Practices:

Your production WLAN network is dynamic and should always be monitored to ensure critical events are responded to and resolved quickly.

Additionally, appropriate security and network optimization best practices, including band steering, load balancing and dynamic airtime scheduling, among others, should be incorporated, when applicable. We also recommend implementing native IPv6, if possible to meet present and future network demands.

## 5. Create Detailed Documentation:

An often overlooked, but critical principle is creating documentation detailing the WLAN topology, cabling, addressing, configuration, and management, among other aspects, such that the network is readily understood and managed by another administrator.

While there are many important WLAN design principles, following at least these five will help in designing, building and managing a network that minimizes interference, which may lead to latency and dropped packets, and creating one with sufficient and reliable WiFi coverage for users.

*You may contact Duncan Freeman at [duncan.freeman@walkerfirst.com](mailto:duncan.freeman@walkerfirst.com) for additional information, questions, etc.*



## AFCEA International Presents Medal of Merit Award

By Randy Turner  
Director, Marketing Communications  
Walker and Associates

Dave Landry was presented the 2013 AFCEA International Medal of Merit at the AFCEA International Awards Banquet in Virginia Beach, VA. This award is presented to only a handful of AFCEA's 32,000 members. The medal recognizes David's contribution to his AFCEA chapter, going above and beyond his position's routine duties. This national recognition identifies the cream of the crop performers in the organization and the ones to watch from a leadership perspective.

"We are proud to honor Dave with the Medal of Merit," said Kent Schneider, President and CEO of AFCEA International. "Dave has served in the Atlanta Chapter leadership since 2006, and has brought success to every position he's held, from assistant vice president of corporate membership to executive vice president. In addition to being a valuable member of the Atlanta Chapter's board, he has also affiliated himself with the other two Georgia Chapters to exchange fresh ideas and learn additional operational methods for the Atlanta Chapter.

He is most deserving of this award to recognize his dedicated service to AFCEA."

David was previously recognized by AFCEA International with the AFCEA of the Month award in December, 2011, and with the AFCEA International Meritorious Service Award in May 2012.

Dave works as an independent sales agent for Walker and Associates, reporting to Jane Brightwell, VP/Government and International Sales.



# UPCOMING EVENTS



As an active member of multiple state, regional and national industry associations, Walker and Associates is strategically engaged with organizations supporting telecommunications markets. We demonstrate our commitment through event sponsorships, exhibiting at conferences and expos, and directory advertising.

Look for us at the events listed here, and refer to our Upcoming Events section of our website, [www.walkerfirst.com](http://www.walkerfirst.com), for additional details.

We look forward to seeing you at these events!

## Proud Member of:



<b>August</b>	
MTIA Summer Conference	Branson, MO
ACTA Cable Show	Orange Beach, AL
TTA Convention and Product Showcase	San Antonio, TX
<b>September</b>	
COMPTEL PLUS Fall 2013	Orlando, FL
CCA Annual Convention	Las Vegas, NV
ITA Fall Vendors' Showcase	East Peoria, IL
UTC Combined Region 1 & 2 Meeting	Atlantic City, NJ
OTA Central Office and IT Seminar	Newport, OR
NFOC/NETS Communications Conference	Verona, NY
<b>October</b>	
OSP Expo	Dallas, TX
TIA 2013	Washington, DC
TelcoVision	Las Vegas, NV
Midwest Telecom Expo	Indianapolis, IN
UTC Region 3 Fall Meeting and Expo	Chattanooga, TN
WSTA Fall Conference & Exhibits	Wisconsin Dells, WI
PTA Technical Showcase & Conference	TBD
MATSS	Kansas City, MO
KTA-TTA 19th Fall Conference	Bowling Green, KY
ATA Associate Member Showcase	Anchorage, AK
TANE Fall Symposium	Portsmouth, NH
<b>November</b>	
ITA Annual Convention	Des Moines, IA
TASE Annual Convention	Point Clear, AL
Great Lakes Technology Showcase	Detroit, MI
SCTA Fall Conference and Showcase	Columbia, SC
NCTIA What's New Expo	Raleigh, NC
<b>December</b>	
MTA 32nd Annual Showcase	Billings, MT

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