

The background of the cover is a photograph of a data center aisle. Rows of server racks with glass doors and colorful indicator lights stretch into the distance under a blue sky with white clouds. The floor is highly reflective, mirroring the racks and the sky.

The Data Center Evolution

- » Enabling Cloud Connectivity
- » Injecting IQ Into 10G Ethernet
- » Storm Clouds Brewing
- » How Standards Boost Uptime

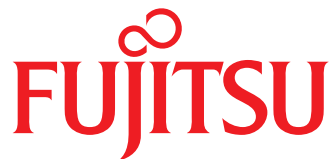


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Editor's Letter

Charles Darwin, the noted English naturalist, stated "It is not the strongest of the species that survives, nor the most intelligent, but the one most responsive to change."

Everyone agrees our industry is swarming with change and challenge. We would also agree that this is really nothing new, and one would think we should have just gotten used to it by now. Due to disruptive technologies, new policies, increasing customer expectations, failing economies and natural disasters, the ICT (Information and Communications Technology) industry understands firsthand how pervasive change is. In fact, we may have made peace with the notion that there will be more change and not less going forward. But consider the other side of the coin.

We are primary drivers of change in our culture. Businesses small and large are responding to the innovations we deliver to the marketplace every day. Our children receive an education differently because of us. Healthcare practices are in the throes of massive reorganization as technology moves to the front of their thinking. Utilities are delivering power, water and gas with an entirely new mindset focused on technology. The entertainment industry is facing incredible challenges as they respond to OTT applications and shifts in revenue streams. Even the daily commute in today's smart cars is being changed by what we do. Let's face it, our industry is a big deal and we are rocking the boat for everyone else!

All of which brings us to the topic of the editorial focus for this issue of Skinny Wire, The Data Center. These are the warehouses of all the data our world generates, providing both the capacity for storing it and the required security to ensure it survives and is protected from unauthorized access. The resulting product, cloud services, is the new darling everyone is figuring out how to monetize and market.

Some have asserted we are in a post-computer era, simply meaning we rely less and less on the traditional fixed station computer to get our work done and access the data required for daily living. In place instead (though technically still a computer) are our mobile devices – smart phones and tablets – that connect us with our world anywhere we go. Data generation is no longer limited to the workplace or the home, or even the traditional place of business. We create data nearly continuously as we swipe debit cards, text family and friends, scan QR codes, blog, make purchases on the mobile device, drive our cars through the easy pass lane, post on our social media sites, make our stock transfers, check our bank account balances, engage with our children's school, read the daily news, check our horoscope, make flight reservations, create and submit expense reports, purchase books and music, pay our taxes and more. It just doesn't stop.

And all of us in the ICT industry, we just stop and smile.

Data is big business. Collecting it, storing it, turning it into intelligence, monetizing it, all the order of the day. Let's not only respond to the change around us, let's lead it!

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Data Center Heat and Highways

By Rodney Wise
Director of Technology
Walker and Associates

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.

“ . . . two percent of the national power grid goes into powering existing data centers.”

Data centers are not a new concept. Many companies have had internal data centers for decades. These central depositories and control points were the nerve centers for company IT organizations. They consisted of servers and storage for all aspects of their business from human resources to customer billing. The exponential demand for Internet connectivity during the dot com bubble created a boom for public or cloud data centers. Smaller dot com companies could not afford to build their own fast, reliable Internet presence. They contracted services to data centers to quickly get their product, creativity and/or services to the Internet market place. The data center market continues to grow as demand for services increase.

The number of data centers is expected to grow by 20,000 over the next five years to support increasing cloud services demand. These facilities along with the existing 28,000 data centers in North America require a tremendous amount of power. It is estimated that currently two percent of the national power grid goes into powering existing data centers. Roughly seventy-five percent of that usage is going to the HVAC systems. As you can imagine, there is a tremendous amount of research going into heat exchanger technology to help offset the expense of running the HVAC systems. As a nation, we have been slow to adopt alternative energy sources. It is refreshing to see data centers driving some level of research into alternative cooling sources. More, however can be done to improve the carbon footprint of our data centers.

Until recently, little thought was put into the carbon footprint of the data centers. Locations of data centers were dictated by the availability of traditional grid power. Often the location of surplus grid power was not the ideal location for other necessary data center components such as connectivity and qualified personnel. Also, these locations were not usually optimal for exploring alternative energy. Alternative energy sources may in the future eliminate the need to locate near existing surplus energy, and data centers can be located in areas more suited to other critical requirements. There have been some instances of notable data center deployments near rivers for using

water cooling. This served the purpose well, but the resulting costs to provision a means to cool the water before reintroducing it into the river system was cost prohibitive. Without investing into these costs, the environmental impact of increased water temperature in the river system continues to be unacceptable. Tradeoffs on reaching power requirements will always consume resources. Finding the right balance between environmental concerns and cost is paramount to finding the right alternative power and subsequent cooling solution. The technology exists for a number of solutions such as solar, wind, water, tidal, and geothermal. These are all great solution options to improve the efficiency of the overall network.

Another consideration on network efficiency is in the paths to the data centers. In the past, a great deal of time and energy was invested in discussing backhaul strategies. Most thinking has been in terms of finding alternative methods and procedures to reduce all aspects of cost. The high capital costs of equipment and fiber deployments, or the high recurring costs of leased facilities, substantiate the time and energy spent on the subject. I contend there are certain contradictions within our industry surrounding past efforts of cost balancing backhaul and our progression toward all things cloud and the large data center engines supporting the cloud.

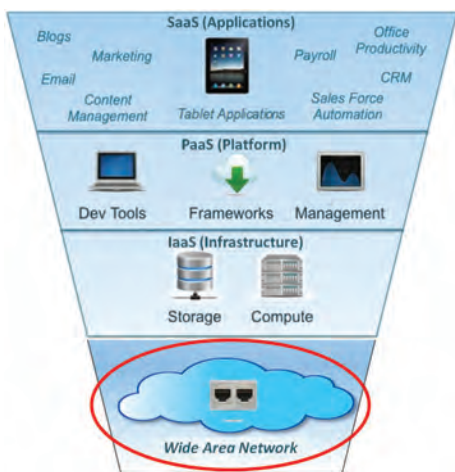
Some areas of the network have been optimized while centralizing more and more commerce in data centers. One may be accurate in predicting that the highways going into these commerce points are going to get awfully congested. Caching closer to the consumer is an avenue worth exploring in efforts to relieve congestion on the highway. Improving cache technology and increasing cache points will increase network efficiency. Smarter connectivity and higher bandwidth pipes, i.e. 100Gbps between data centers and other components of the cloud, will also help to increase efficiency.

As cloud computing grows, so will the need to increase network efficiency. The balancing of environmental concerns, network efficiencies, and increasing demand for data is a significant task for our industry. Let's get started!

Carrier Ethernet for Private Cloud Service Delivery

By Ralph Santitoro
 Director of Carrier Ethernet Market Development
 Fujitsu

Today, the Internet is the predominant wide area network (WAN) used to deliver cloud services. Interestingly, little attention has been paid to the WAN by the cloud community. Their main focus has been on cloud infrastructure and services (IaaS, PaaS, SaaS) and networking within the data center. However, large enterprises are hesitant to move their mission-critical applications to the cloud when delivered over the Internet.



Challenges and factors limiting enterprise cloud service delivery over the Internet include:

- Security
- Network Performance (SLA)
- Data Governance
- Regulatory Compliance

When enterprises consider moving their applications to the cloud, the WAN becomes an important part of that decision process. They need to consider the WAN's availability, consistency of QoS performance and security vulnerabilities – all of which could impact business continuity. Furthermore, in order to meet regulatory compliance and data governance requirements, the enterprise's cloud-based data may need to reside physically within a specific country. This is difficult to achieve using the public Internet.

With public cloud services, anyone with an Internet connection can purchase and use the service. This makes it very difficult for the enterprise's IT department to manage data leakage or conform to governmental information privacy requirements such as

“Carrier Ethernet continues to be one of the fastest growing WAN services for enterprise business connectivity . . . ”

those defined in the Health Insurance Portability and Accounting Act (HIPAA) or the Gramm-Leach-Bliley Act (GLB) in the United States.

To meet their requirements, enterprises often look to stand up their cloud environment in their own data centers or outsourced to a third party private cloud service provider (often referred to as virtual private cloud). A private or virtual private WAN is the preferred choice to interconnect the enterprise locations with the data center housing their cloud infrastructure.

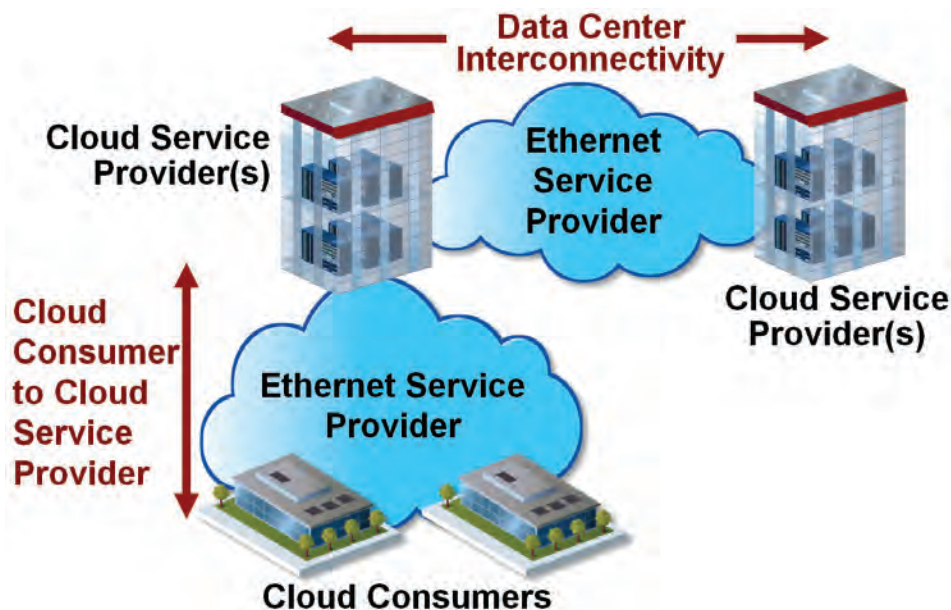
Carrier Ethernet continues to be one of the fastest growing WAN services for enterprise business connectivity and is a natural fit for delivery of private cloud services. Carrier Ethernet enables new and more flexible ways to interconnect data centers and interconnect enterprise cloud consumers to

their cloud service providers. MEF-defined Carrier Ethernet service types, namely, E-Line, E-LAN, E-Tree and E-Access, provide a broad range of connectivity options that provide flexibility to meet different deployment scenarios.

Carrier Ethernet provides different benefits for each stakeholder in the cloud service ecosystem. Carrier Ethernet enables Cloud Service Providers to deliver private cloud services that can differentiate their public cloud offerings which are becoming commoditized due to the dominant position of Amazon Web Services (AWS) or Amazon Elastic Compute Cloud (EC2).

Ethernet service providers can position their Carrier Ethernet services to focus more on the end-user applications instead of simply generic connectivity services. Ethernet service providers can leverage their well-established, trusted relationship with their enterprise subscribers to deliver private cloud solutions through internal offerings or partnerships with 3rd-party cloud service providers.

Finally, Carrier Ethernet puts the enterprise IT department in control of users accessing the private cloud services enabling them to meet the organization's security policies, data governance and regulatory requirement while meeting the application requirements for QoS performance and high availability.



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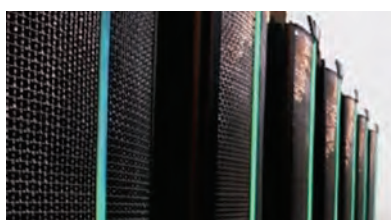
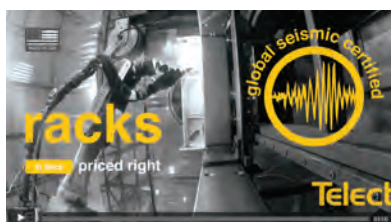


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How Ethernet Enables Cloud Connectivity



By Rosemary Cochran
Principal and Co-Founder,
Vertical Systems Group

Enterprise IT managers cite cloud computing as among their most important initiatives this year. Nearly two-thirds of them have already begun transitioning their business-critical applications to the cloud. A driving force is the exponential rise of big data that requires massive storage, virtualized computing and ready accessibility from anywhere in the world.

Carrier Ethernet has emerged as a strategic technology for enabling cloud connectivity in this environment. Worldwide demand for business Ethernet services will reach \$45.1 billion by 2016, based on Vertical Systems Group's projections. An evolving market driver is the migration of legacy wide area network architectures to a new generation of public, private and hybrid cloud computing models.

Ethernet is the service of choice for higher bandwidth applications due to lower costs per bit as compared to legacy services, plus scalable connectivity to multi-gigabit speeds. Global business Ethernet bandwidth has surged beyond bandwidth for legacy data services and will continue to climb during the next several years. The U.S. market was slightly ahead on this trend, with the Ethernet vs. legacy bandwidth crossover occurring in 2011.

Cloud models map to application and connectivity requirements. The most common cloud offerings are SaaS (Software as a Service), PaaS (Platform as a Service) and IaaS (Infrastructure as a Service). Public cloud services (e.g., AWS, Google, etc.) support shared applications, accommodate distributed users and are generally accessible via the Internet. Private clouds are designed for use by a single entity and accommodate business-critical applications with specific security or performance requirements. Private clouds reside at enterprise data centers, off-site data centers or collocation facilities, or are managed by a cloud service provider (e.g., AT&T, CenturyLink Savvis, Verizon Terremark, etc.). Connectivity for private clouds is deterministic, so deployments primarily rely on Ethernet or other dedicated network services. Some private cloud designs integrate wireless access to selected applications.

The reality is that many enterprises have a mix of applications, requiring the use of multiple public or private clouds. Hybrid implementations that incorporate both public and private cloud functionality are also gaining traction, with advanced deployments integrating resources and cross-domain data sharing.

Ethernet enables cloud connectivity through several service types:

- Ethernet Private Lines (EPLs) and Ethernet Virtual Private Lines (EVPLs) are the top services for private cloud and inter-data center connectivity. EPLs provide point-to-point connections, while EVPLs also support point-to-multipoint connectivity using EVCs (Ethernet Virtual Connections). Traffic prioritization is provided through CoS (Class of Service) features.
- Ethernet DIA (Dedicated Internet Access) services are used primarily for connectivity to public cloud offerings.

- E-Access to IP/MPLS VPN implementations are increasing for hybrid Ethernet/IP VPNs that link to public services or to private clouds.
- E-LAN services are used for private cloud connectivity between on-net enterprise sites and data centers. Metro LAN services connect sites within a metro area, and WAN VPLS services support wide area topologies.

Ethernet-based cloud connectivity is also heating up for collocation companies (e.g., Equinix, Telx, etc.). Exchange services offer vendor-neutral connections among cloud providers, content/media providers, network service operators and enterprises. Ethernet simplifies physical connections for exchange participants and enables virtual interconnectivity. These capabilities facilitate new business models that disrupt the economics of traditional wide area networks. Look for exchange ecosystems to expand their cloud offerings during 2013.

Standards for Ethernet-based cloud connectivity continue to advance. The MEF's Carrier Ethernet 2.0 (CE 2.0) initiative provides guidelines for cloud-ready Ethernet services and equipment. Developments are focused on multi-network Interconnectivity, end-to-end SLAs (Service Level Agreements), application-aware QoS (Quality of Service) and dynamic bandwidth provisioning. A new CE 2.0 certification process aims to ensure standards adherence.

There is also strong momentum for Software Defined Networking (SDN). Ethernet providers are evaluating the benefits of SDN to support their IP networks, data centers and cloud services as well as to facilitate the delivery of enhanced capabilities like on-demand service provisioning.

What's really clear about the shift to cloud computing is that network connectivity is essential, and increasingly more complex. Cloud users want high speed, reliable, secure, manageable access to their applications. Monetization opportunities abound for Ethernet providers that can successfully deliver innovative cloud services and flexible connectivity solutions.

Rosemary Cochran is the principal and co-founder of [Vertical Systems Group](#), a market research firm located in Norwood, Mass.

Injecting IQ Into

By: Dana Kaplan
Technical Marketing Editor
RAD Data Communications

Public and private cloud connectivity, real-time trading, and data center hosting have been driving the adoption of 10GbE transport for quite some time, mostly as Layer 1 wavelength division multiplexing (WDM). In recent years, however, a sharp increase in data traffic -- particularly for data center interconnectivity, cloud access, and zero-latency financial trading -- has fostered its adoption as a Carrier Ethernet connectivity solution and brought it closer to the customer premises.

In 4G/LTE mobile backhaul and wholesale services, it is available right off the cell tower, while 10G Ethernet rings are deployed in the access network. 10G Ethernet now dominates the service hand-off points for certain applications and provides a natural evolutionary path to 40G and 100G Ethernet, which set the new standard for pipe capacity in upcoming years.

Capacity Follows an Evolutionary Path

10G Ethernet represents the fastest growing capacity segment in enterprise services: According to market research firm Ovum, service revenues are expected to grow from \$1.3 billion in 2012 to \$4.5 billion (metro) or even \$5 billion (national) in 2016 worldwide.¹ (See Figure 1.)

However, extending high capacity into the customer premises is not sufficient where premium SLA-based services and mission critical applications are involved. Today

there is a real need for high capacity access combined with service management and SLA assurance and, as a result, the "large pipe" must also be accompanied by intelligent demarcation in relevant locations.

Indeed, a majority of carriers and service providers responding to Heavy Reading's May 2012 Ethernet Executive Council Survey indicated that 10G Ethernet intelligent (network interface devices (NIDs) are among the next-gen technologies that appear of greatest interest to them, with nearly 60 percent either deploying or testing 10G Ethernet Intelligent demarcation platforms.²

IQ Definitions Vary by Segment

Another interesting development in 10G Ethernet relates to carrier-to-carrier connectivity. Where service providers lease Ethernet connections from local or wholesale carriers in order to reach out-of-footprint customers, a 10 GbE NID is required to delineate the hand-off point and mark the respective service and network maintenance domains. This is especially relevant to services involving super-platinum SLAs -- such as for the financial sector -- where tight control, end-to-end visibility, and extreme resiliency must be coupled with high-capacity connections.

10 GbE platforms that are installed at carrier hotels or between provider networks must therefore be equipped with a set

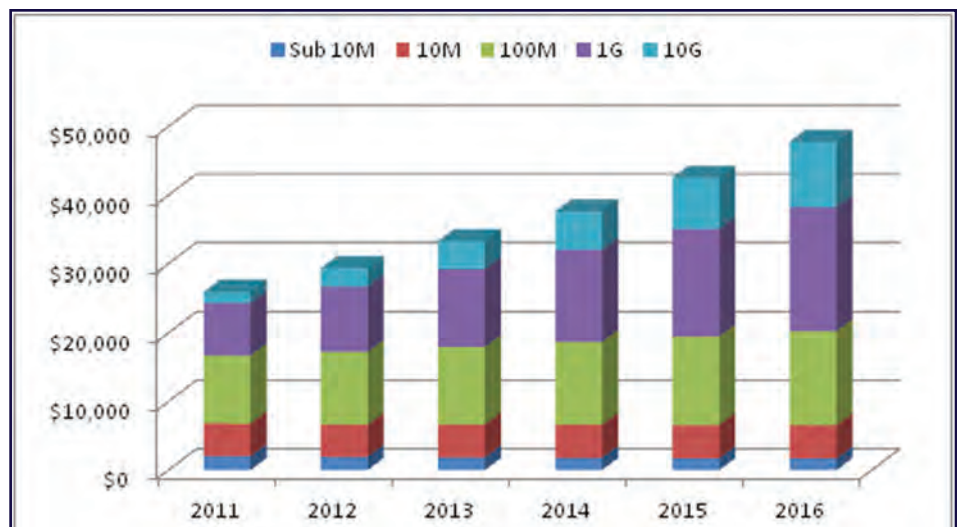


Figure 1. Enterprise Ethernet services by capacity segmentation by revenue.

“ . . . the need for intelligent high-capacity Ethernet NTUs increases with the rise in data traffic from mobile broadband applications . . . ”

10G Ethernet

of relevant capabilities, some of which they share with customer premises 10GbE NIDs. The following capabilities are needed to enable wholesalers and carriers to meet 4 service requirements:

- **Metro Ethernet Forum (MEF) CE 2.0 Compliance** - To deliver standardized E-Line, E-LAN and E-Access (E-NNI) services. This ensures consistency in service definition, handling and, ultimately, in user experience.
- **Hard QoS and Sophisticated Traffic Management** - To meet tight SLAs by appropriately handling multi-priority traffic while ensuring latency, jitter, and packet delivery performance on a per-flow basis.
- **OAM, Testing, and Performance Monitoring Capabilities** - A comprehensive toolset of hardware-based mechanisms for managing the service life cycle seamlessly end-to-end, even across third-party networks. These include service turn-up validation, on-going monitoring of specific SLA KPIs, fault management and throughput testing.
- **Resiliency** - To ensure the highest possible service availability with system, power supplies, port, and service path redundancy, including Ethernet Ring protection Switching (ITU-T G.8032 ERPS).

Scale is the main difference between 10 GbE NIDs installed at enterprise headquarters or data centers and the platforms deployed in PoPs to extend service reach and ensure end-to-end SLA performance for services spanning multiple provider networks. While a CPE may need to support a relatively small number of services and no more than a couple of hundreds of flows, an inter-carrier NID should support thousands of services concurrently, as well as perform high capacity grooming of Ethernet OAM and performance monitoring sessions.

Combining all of the capabilities mentioned above in a single, small form-factor device can significantly lower carrier total cost of ownership (TCO) in more than one

perspective. First, by combining various functionalities typically requiring multiple devices in a single box, carriers can reduce the number of elements they need in their access network and lower their inventories. Second, by optimizing capacity-to-size ratio, such platforms require smaller rack space and allow service providers to reduce real estate, cabling and rental costs at the PoP.

In 3G and LTE mobile backhaul networks, the need for intelligent high-capacity Ethernet NTUs increases with the rise in data traffic from mobile broadband applications, and with operators' expectation of strict SLA guarantees per class of service from their transport providers. These smart NID capabilities are required at the transport aggregation points, where traffic from multiple cell sites is collected onto 10 GbE links.

Here, too, equipment requirements include standard service definition, flow-based traffic management, extensive service lifecycle and performance management capabilities, resiliency, and capacity. The exacting nature of mobile backhaul networks adds a need for timing and synchronization over packet mechanisms to be integrated into such platforms to mitigate the risk of impaired cell hand-offs and dropped calls. The addition of Timing over Packet attributes -- such as 1588 Grandmaster capabilities (the root timing reference in networks using IEEE 1588 Precision Timing Protocol for synchronization) -- to 10 GbE mobile demarcation/aggregation devices satisfies carriers' needs for lowering costs when delivering top-notch performance. Once again, combining multiple functionalities in a single device eliminates the need for costly stand-alone equipment.

Intelligence Outlook

Public and private cloud connectivity, real-time trading, and data center hosting are some of the business applications driving the adoption of 10 GbE connectivity at the service hand-off points and the evolution of the smart NIDs. Developments in wholesale and mobile backhaul networks are also impacting advancements in high capacity demarcation and aggregation; however while different segments may pose different requirements from 10G Ethernet NIDs, they

all follow a common principle: Deliver better, highly sophisticated performance while reducing capital and operational costs.

Anticipated trends in business, wholesale and mobile communications are likely to place even higher demands on such devices. Uplink capacity in certain service points will soon reach the 40G and 100G mark, while next-generation value-added service capabilities will be required to accommodate carriers' and service providers' need to offset commoditization and price erosions.

Security, for example, is likely to turn into a specialized offering for distributed networks with critical applications, using tools that are already available from Carrier Ethernet technology today.

As the industry moves from technical SLAs - defined by quality of service parameters - to application-driven SLAs - defined by quality of experience (QoE) of the user-smart high-capacity Ethernet NIDs will have to feature relevant capabilities accordingly. And, as carriers cost pressures are unlikely to disappear, these devices will also have to be extra-smart to introduce TCO savings through innovation.

Endnotes

1. Ovum, Enterprise Ethernet Service Forecast Report: 2011-16
2. Heavy Reading, Ethernet Executive Council State of the Industry Survey Report, Q2 2012



Dana Kaplan is Technical Marketing Editor for RAD Data Communications, a global provider of Ethernet systems and other network access equipment. She has extensive experience in Ethernet issues,

and has authored numerous white papers on Carrier Ethernet tools, services, and best practices. For more information, please email dana_k@rad.com or visit www.radusa.com.

Your Mobile Device, Is It Secure?

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

Today, it seems like everyone is using mobile devices to make life easier --whether texting, posting to Facebook, tweeting, sharing photos, or making the occasional phone call! Half of U.S. mobile subscribers now carry a smartphone. Mobile devices have become such an integral part of our lives that we've developed a term for people who are afraid of being without their phone – "Nomophobia." With an increasing ability to access information, so too comes a greater threat of experiencing a personal cyber-attack or downloading malicious software (malware). As was the case in the early desktop days, mobile is the next frontier for hackers, cyber-spies, and anyone looking access to your personal information.

There are many innovative ways we are using our devices, including using the camera to deposit a check at a bank. Financial institutions will now accept deposits from a photo taken right from our devices. Many banks automatically log customers out after a short period of time so if the device is lost or stolen, sensitive banking information is safe. But this protection is not enough. Consumers are using devices more each day to complete tasks formerly done on desktop computers; but this is not without a price. Similar to the threat online, identity theft is a big risk if your device is not password-protected and is lost or stolen.

One of the biggest concerns for consumers is trustworthiness of applications. 57% of app users have uninstalled or not installed an app due to security concerns. To specifically address this consumer concern, CCA designed and developed a Carrier-Branded Android App store. Apps are pre-screened and approved, and carriers utilizing the CCA App Store can give their

customers the assurance that their apps are safe. As opposed to other app stores that boast having 700,000 apps, we offer subscribers a more predictable, genuine, and reliable experience using a "quality vs. quantity" approach. We feel that having a few thousand pre-approved popular apps will help consumers in the long-run and will help mitigate potential security threats.

Another way consumers are being targeted by security threats is through text messaging SPAM campaigns. Over the last couple of years, the number of mobile messaging threats in the U.S has risen significantly. 78% of all SPAM threats in 2012 were attempts at financial fraud. CCA is working to provide a reporting tool for consumers which would allow them to forward suspicious messages back to their carrier. These messages can then be tracked, filtered and destroyed. Cyber-attackers are targeting the least defended networks, and spammers are causing subscriber frustration, complaints, and ultimately customer churn. Giving consumers a way to help report and stop these attacks makes for a happy customer and a happy carrier.

In addition to providing tools for consumers to protect themselves from cyber-attacks, CCA is working closely with Members of Congress and the FCC to ensure consumers are aware that cyber-attacks are real. We are working to make sure consumers have the tools they need to help defend themselves and their information. Sound cybersecurity practices will be a market differentiator for consumers in the months ahead. Every competitive carrier must review their security procedures, and CCA will continue our work to ensure carriers can easily and effectively protect network data.



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.

A seasoned lawyer, Berry has held positions as Senior Vice President of Government Relations for the National Cable & Telecommunications Association (NCTA), Senior Vice President of Government Affairs for CTIA-The Wireless Association, and partner of the law firm of Holland & Knight, LLP.

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.

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Closer to the Customer- Extending the Data Center across the WAN

By: Pam Dodge
Sr. Manager, Product Marketing
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I heard an interesting data point from a key industry analyst, who spends a great deal of time with Service providers. "By 2015 over 90% of all profitable traffic will travel 40 miles or less across the network to the end user" This trend is as a result of the mobile applications and content that consumers are accessing for delivery to their phones, tablets, PCs and all other media devices. Since much of this data is being carried to mobile devices there is extreme economical pressure to deliver as close to the customer as possible. Service providers

"... there is extreme economical pressure to deliver as close to the customer as possible."

growth rates have failed to keep pace with this increased traffic growth, and the result is a profit squeeze that is forcing service providers to rethink their business models and network designs. As a result service providers are in the process of transforming their networks to be able to handle large data within the metro and provide the service velocity that is needed to satisfy their customers

This network transformation spans across the data center as well. The adoption of cloud computing by service providers will give them the agility they need for efficient data delivery. Cloud computing is essentially internet based computing which will allow their customers access to a number of virtual services and resources that can be exchanged between devices on demand. The "internet cloud" as it is known gets rid of the need for any storage hardware thereby allowing for a business's infrastructure and devices to be smaller, faster, and more energy efficient. Since CPU and storage costs are falling much faster than WAN network and routing costs, a topology shift is occurring that will extend the data center across the WAN.

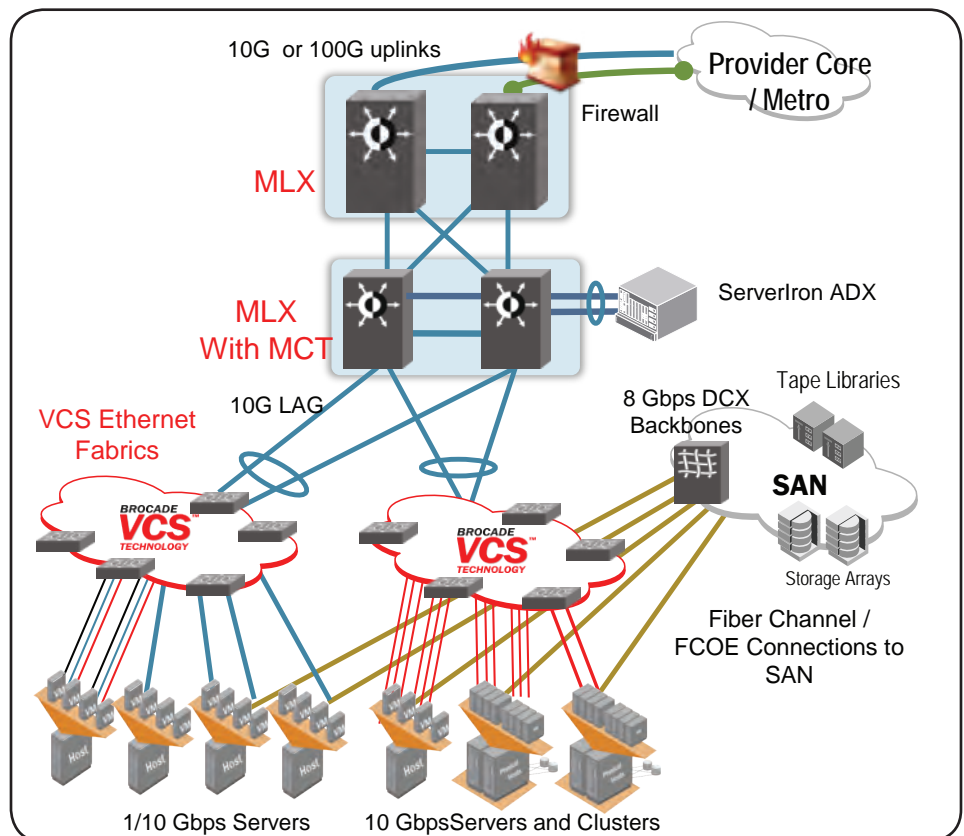
The metro will function as the network hub where the network will serve as the distribution point to deliver the services to the end user and as such the data center is extended across the wide area network to provide the large amounts of data that are delivered via cloud services applications.

The combination of WAN Infrastructure and virtual appliances form the foundation of a computing environment in which resources are pooled across local datacenters and remote compute clouds interchangeably, fluidly, and safely shared, tracked, and charged-back to the user. The addition of SDN technology will provide the orchestration to automate processes and resources creating more efficient use of resources in a dynamic way.

Brocade has also taken the lead in driving technology innovation by providing service provider data center architectures through its VCS Ethernet Switching products which serve as an enabler of cloud computing. This architecture provides a simpler net-

work design within the data center and 100G connectivity. The Brocade MLXe product family provides high speed Layer 2/3 transport across the network to the customer. These high speed connections ensure reliable, scalable delivery of cloud applications to the edge. This solution provides key benefits within a Service Provider data center which include, rapid and consistent provisioning, disaster recovery, business continuity, migration, fault tolerance, high availability, multi-tenancy, security, and data analytics between data stores. As an industry leader in SDN technology, Brocade provides SDN support through these products. With the deployment of SDN, service providers will be able to automate many of these network processes and develop differentiated offerings to remain competitive and cost effective.

The transformation within the network and data center will enable service providers to position themselves closer to the customer, achieve network profitability and maintain leadership.



CUSTOMER SATISFACTION BEGINS AT THE EDGE

Juniper Networks can help exceed your customers' expectations, provide a superior user experience, and build a profitable business.

Managing Density In The Data Center

These Steps Can Show You How

By Joshua Simer
Business Development Manager
TE Connectivity

Increasing capacity and network applications create new challenges for both the planners who design and the operations personnel who maintain the network. A managed density approach that takes a long-term view of the data center design is the key to ensuring maximum density and growth without disrupting operations that can cause a huge drain on productivity, profits and service availability. Successful network managers should always take the importance of planning and maintaining data centers into account, to maximize density and minimize maintenance headaches.

How can this be accomplished?

The five key elements of maintaining managed density in the data center are:

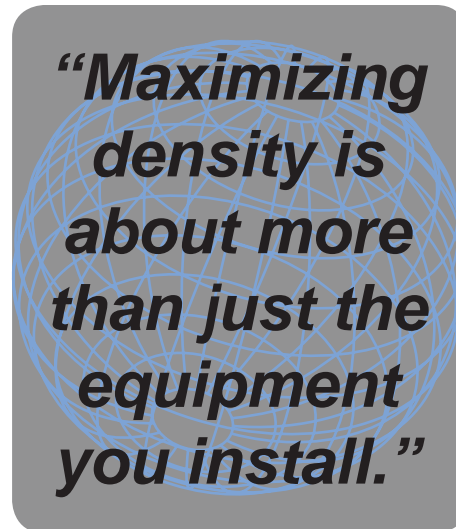
1. Planning
2. Installation
3. Cable Management
4. Accessibility
5. Reliability

Planning - Understanding how space and layout affect manageability makes the planning process more efficient. Physical space, layout, cable fill rates, vertical and horizontal cable ways and complete utilization of your equipment ensures maximum density and a fully deployed system.

Installation - Installing cabling using a centralized distribution system in a cross-connect scenario where all cables are brought to one area for maintenance, patching and servicing. This provides maximum flexibility when it is time to add, change or reconfigure network elements.

Cable Management - The key to cable management is to understand that the cable system is permanent and generic. Use some planning to employ some principles to ensure your data center network is highly reliable and resilient. Bend radius protection, separated cable types, an ample and intuitive cable routing system, rack management and slack storage as well as common rack frames are all good options for proper cable management.

Accessibility - Can you get to your cables? It is critical that you can easily access each component within your data center. From the cable in the pathway or ports in the rack



or cabinet – to defining routing paths that make accessing individual cables much easier, quicker and safer. Keep these three points in mind. First, look for fiber optic components that promote access to individual adapters and connectors without affecting adjacent components. Second, selecting angled patch panels and cable managers enables easy connector access while reducing cable strain. Third, components that offer rear access make field termination or splicing fast and efficient while also providing a high-density termination/splice solution for maximizing rack space.

Reliability - Your network is a business imperative and must be always on and always up. Service disruptions affect revenue. Your cabling must constantly support the flow of data without errors that cause retransmission and delays. How do you ensure 24/7 reliability? Use products backed by a reputable vendor with guaranteed error-free performance. The current cabling should support present bandwidth requirements and be ready for higher network speeds as technology evolves.

Maximizing density is about more than just the equipment you install. It includes a comprehensive strategy in design, layout and execution and begins with proper planning to address today's needs and those of the future. Understanding and following proper philosophies for installation, cable management, accessibility and reliability will ultimately help in maintenance and performance of your high-density network.

For more information about the five key elements for data center strategy and design as well as more information about managing the density in your network visit: www.te.com/telecom.





Standards Boost Uptime for Cloud Service Providers, Enterprise and End-Users

By Jeff Hannah
Manager, Standards Development
Telecommunications Industry Association (TIA)

In recent years, the adoption of cloud computing for both personal and enterprise use has been dramatic. Gartner now estimates that “by 2013, 60 percent of all enterprises will have adopted some form of cloud computing.” TIA’s 2013 Market Review & Forecast estimates that U.S. spending on cloud computing will reach \$86 billion by 2016, nearly double the 2012 spending figure of \$47 billion.


Clearly, when coupling enterprise cloud trends and individuals’ cloud-based e-mail accounts and video on-demand services, such as Gmail or Netflix, cloud computing is an integral part of everyone’s daily lives. For cloud service providers and IT departments, providing the 24/7, on-the-go, on-demand convenience of cloud computing is essential to their business models. In order to deliver the level of service expected by users of cloud services, the proper design, construction and administration of data centers is critical. To aid in ensuring uptime, and to maintain redundancy of data and scalability for future services, implementing standards-based approaches to data center design can mean significant cost savings and prevent potential fall-out from service outages. Recent events, such as Netflix’s service outage – a result of a power outage at Amazon Web Services Virginia data center – or the flooding of several servers located in Manhattan during Hurricane Sandy, highlight the loss of business, quality of service, and customer satisfaction when proven, standards-based approaches to the design of data centers are not implemented.

While these concerns are on the minds of users of cloud computing, the adoption of standards-based approaches to the design, construction and administration of data centers is limited. Many cloud service providers continue to develop their own proprietary solutions to data center layout, cable administration and energy efficiency – often at a high cost. Additionally, as cloud adoption grows within the enterprise, IT departments are racing to co-locate their data centers or upgrade their existing, single-tenant data centers to scale to company demands and reliably deliver services in a private or hybrid cloud model. At a recent National Institute of Technology (NIST) Cloud Computing & Big Data Workshop, it was mentioned that

the biggest interoperability challenge for cloud computing is not developing cloud brokerages or APIs, but rather ensuring that a cloud service provider does not go down. Obviously, data center uptime is critical to cloud computing.

To drive industry adoption of standards-based approaches to data center design, construction and administration the Telecommunications Industry Association (TIA) and its engineering committee, TR-42 Telecommunications Cabling Systems are actively engaged in developing and revising the ANSI/TIA-942-A, Telecommunications Infrastructure Standard for Data Centers standard. First published in 2005, the document has grown from addressing the design, installation and maintenance of structured telecommunications cabling within data centers to include requirements related to the electrical, mechanical and architectural design of data centers as well as recommendations on the implementation of security, fire protection and energy efficiency systems. Applicable to both single-tenant and multi-tenant data centers, the TIA-942-A standard can be scaled to meet the needs of both large cloud service providers and small enterprise IT departments.

By deploying a standards-based approach such as TIA-942-A for data center design and construction, companies can address concerns regarding troubleshooting, administration, physical scalability and support of future high speed networking protocols. TIA-942-A enables users and designers to more easily design their physical infrastructure to meet current and future networking needs. Further, the commonality in nomenclature, design considerations and media selection will improve flexibility for enterprises seeking to procure hosting facilities or to migrate to a cloud search provider. This is important, given the increased adoption of hybrid cloud models. As Gartner notes, “the extent that the enterprise continues to build its own data centers, they will be influenced by the implementation models used by cloud services providers.” By using standards-based approaches, cloud service providers and their clients can more easily “talk” to one another based upon common networking protocols.



“ . . . implementing standards-based approaches to data center design can mean significant cost savings and prevent potential fall-out from service outages.”

Hosted Voice Provider?

Why Not Hosted Wireless LAN Too?

By Brandi Wheeler
Service Provider Marketing Manager
ADTRAN

Once standards-based approaches to data center design and construction are implemented, the administrative challenge of ensuring uptime is incorporated into the TIA-942-A standard. The document provides a common checklist of considerations and accommodations that enhance the reliability of data center operation, and also provides a general scorecard to use when evaluating different data centers and their ability to continue operations – a consideration when delivering interconnected data center services. By adhering to the structured cabling requirements within TIA-942-A, a data center administrator can more readily troubleshoot problems. Additionally, by following a standards-based approach to data center design and administration it is easier for new employees or outside contractors to work on a data center.

Currently, the TR-42 committee is in the process of creating an addendum to the 942-A standard which will include data center design, construction and administration for flat, or multi-switch, data center topography. This form of data center topography improves data center performance while reducing the complexity of the traditional three-tier data center networks. For information on the Telecommunications Industry Association (TIA) and the TR-42 Engineering Committee, please contact Jeff Hannah at jhannah@tiaonline.org.

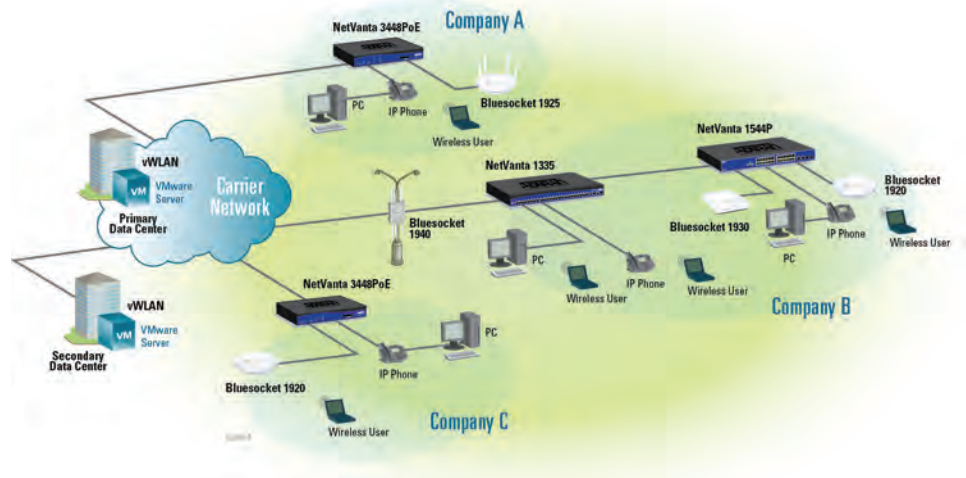
Jeff Hannah is Standards & Technology Development Manager with the Telecommunications Industry Association (TIA), overseeing the operations of engineering committees focused on Machine-to-Machine, Smart Grid, Satellite Communications and Healthcare ICT. Prior to his role within TIA, Jeff managed an environmental regulatory service for electronic device suppliers, EIATRACK, and has held business development and marketing positions within various information technology companies focused on telecommunications, data analytics and e911 services. He can be contacted at jhannah@tiaonline.org or via Twitter at [Jeff_Hannah00](https://twitter.com/Jeff_Hannah00).

Service providers who are delivering hosted voice services to their customers today are in a perfect position to strengthen their services portfolio with the addition of hosted wireless LAN. Seamless wireless access to a company's network resources via any WiFi®-enabled device across a campus or multi-site environment is clearly a need for the efficient business environment demanded today. For customers who are presently utilizing hosted voice, the addition of hosted wireless LAN is a simple and logical next step to integrating business efficiency with the latest technology.

Utilizing ADTRAN's virtual wireless LAN (vWLAN®) architecture where the control plane can be centralized anywhere, including the network operations center

the vWLAN architecture seamlessly allows for transitioning between service models of hosted, managed, and resale—without service interruption for the customer.

Intrigued? Take a look at your current customer base, particularly those already subscribing to hosted voice. Do they have multiple sites, a campus environment, or a distributed workforce? Are they seeking a solution for the demand of utilizing “pure wireless” devices (e.g. smartphones and iPads) to conduct business or integrate into the education environment? For businesses that already have a wireless LAN, ask if they are looking to upgrade their WLAN to 802.11n technology. The opportunity exists to bring a service solution of hosted vWLAN to market, allowing



(NOC), and leveraging the multi-tenant management features from a vWLAN instance, service providers can offer a hosted vWLAN product that becomes a new reoccurring revenue opportunity that is much more scalable – and profitable – than traditional WiFi® service offerings. With a software-based controller solution, vWLAN can leverage existing data center infrastructure by running on a hypervisor such as VMware® or a virtual appliance. This virtualized control offers unparalleled scalability, ground breaking flexibility, simplified administration, and substantially lower OPEX, CAPEX, and Total Cost of Ownership (TCO) for a wireless LAN solution. Additionally, vWLAN takes advantage of intelligent access points that operate a stateful firewall to enforce security at the edge, never allowing potential security risks to enter the network. By the way,

service providers to become more closely tied to customers, solving a current market demand at an affordable price, and creating a new and profitable revenue source.

With Walker and Associates' Managed Wireless Service and ADTRAN's Bluesocket vWLAN products, service providers can begin offering a hosted vWLAN service immediately. Contact Walker or ADTRAN today to learn how.



Storm Clouds

By Jerry James
CEO
COMPTEL

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 COMPTEL. James has served as CEO of COMPTEL since June 2007.

Several factors are creating a perfect storm that is spurring growth of the cloud market. These include more ubiquitous Internet and Wi-Fi access that enables individuals to access what they want whenever and wherever, as well as enterprises seeking to reduce capex, simplify IT and make their employees more productive. But becoming a cloud provider isn't as easy as opening a data center or offering infrastructure or software as a service to your customers. You need to consider the impact of cloud services on your organization, as well as the bandwidth demands on your network. In addition, there are an increasing number of legal and regulatory concerns – such as security and privacy – of which you need to be aware as you go to market with your cloud offerings.

“With New Opportunities Come Legal and Regulatory Concerns over Data Security and Privacy in the Cloud”

The cloud as we know it today has evolved from the early days of communications industry competition when providers – many of them COMPTEL members – began offering innovative solutions that included managed data services, hosting and data centers to provide network redundancy, IT infrastructure and storage for their enterprise customers. Competitive

providers continue to play a vital role in the cloud ecosystem, offering the underlying data storage, connectivity, bandwidth and enhanced cloud services for enterprises of all sizes.

Today the cloud encompasses all forms of outsourced data or information technology – from traditional infrastructure and software to platforms, applications and business processes – delivered via public, private, virtual or hybrid models. And what resides in the cloud continues to grow exponentially each day. Gartner Inc. recently reported that the public cloud services market alone was expected to grow 19.6 percent to total \$109 billion worldwide by the end of 2012, and is projected to grow to over \$206 billion by 2016. As for what resides in the cloud, Mashable recently estimated that the cloud now hosts 1 Exabyte of data, which is the equivalent of 268.4 million 4GB flash drives.

If you are poised to enter the cloud market, or are planning to expand the types of cloud solutions your company offers, you also must keep in mind that legal and regulatory requirements that apply to enterprises, or specific industry sectors, are imposed on cloud providers as well.

At our COMPTEL PLUS Spring 2012 Convention in San Francisco, we hosted a half-day workshop called “Cloud Computing: Exploring the Opportunities and Overcoming the Challenges,” led by the law firm Edwards Wildman Palmer LLP. Part of that workshop focused on the many challenges cloud providers face in terms of legal and regulatory issues, with emphasis on data security and privacy.

As a cloud provider, you are the custodian of your clients' data, including personal and sensitive data that is subject to data protection laws. In most U.S. states, these laws

Brewing

impose data security and breach notice obligations not only on the data owner, but those companies – such as cloud providers – that maintain the data as well. Some states go even further. Massachusetts, for example, requires companies that possess certain personal data on its residents to comply with its more stringent requirements.

In addition to these more generic laws, there are a patchwork of laws that apply to cloud providers covering treatment of personal information in various sectors. These include the Gramm-Leach-Bliley Act (GLBA) for the financial industry, Health Insurance Portability and Accountability Act (HIPAA) and Health Information Technology for Economic and Clinical Health (HITECH) in the healthcare sector, and the Children's Online Privacy Protection Act (COPPA), which governs the collection of online personal information of children under age 13.

As a cloud provider in our global economy, you also must consider foreign laws. For example in January 2012, the European Commission unveiled a draft European Data Protection Regulation. This proposed regulation is more stringent than the European Union's existing Data Protection Directive, extending the scope of that law to all foreign companies processing data of EU residents and exacting severe penalties for non-compliance. Other countries, such as Argentina, Canada, Japan and Mexico, have their own laws regarding protection of personal information, should you be working with customers or hosting data about residents living in those areas.

Cloud providers have a duty to protect corporate data by providing appropriate and reasonable administrative, technical and physical controls, and ensuring confidentiality, integrity, availability and authenticity of corporate data. And cloud providers have a duty to warn affected stakeholders and appropriate government agencies about data security breaches and material data security risks.

Because of these legal and regulatory concerns, when entering – expanding into or partnering with others – the cloud market, providers should develop a comprehensive information security program, which is risk-based; contains administrative, technical and physical safeguards; and is expressed in writing for all to see. Full details from the workshop can be found in the session archives for Spring 2012 on the COMPTTEL PLUS website (www.comptelplus.org), and even more discussion of the topic will be taking place at the COMPTTEL PLUS Spring 2013 Convention in Las Vegas, March 10-13.

The cloud market is very dynamic, with innovations extending the types of services you can offer and greater demand pushing ever more data into the cloud. As a result, data privacy and security will continue to be scrutinized. Not only will you have to be concerned with the fast-moving technological changes that enable new cloud solutions, you'll have to keep pace with legal precedents and regulations developed to adapt to this evolving market, which could have a significant impact on your business as well. As the saying goes, "With great opportunity, comes great responsibility."

*Walker and Associates is
a member of COMPTTEL
and an exhibitor at
COMPTTEL PLUS Spring
2013*



Booth 307



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

The Data Center Challenge

By Jim Deasy
Senior Marketing Manager
Juniper Networks



Although nearly everything in the data center (applications, storage and servers) has evolved over time, the network architecture itself has not. The data center network has become extremely complex, preventing the network from scaling properly, restricting available resources and limiting the ability to virtualize the data center.

The Juniper Networks 3-2-1 Data Center Network Architecture

Juniper's strategy for simplifying the data center network is called the 3-2-1 Data Center Network Architecture, which eliminates layers of switching to "flatten" and

collapse the network from today's typical three-tier tree structure to two layers, and in the future just one. A key enabler of this simplification is achieved by deploying Juniper's Virtual Chassis fabric technology, which interconnects multiple physical switches to create a single, logical device that combines the performance and simplicity of a switch with the connectivity and resiliency of a network. Organizations can migrate from a three-tier to a two-tier data center network.

The steps to migrate from an existing three-tier network to a flatter design, as articulated by the Juniper Networks 3-2-1 Data Center Network Architecture, is built on four core principles—simplify, share, secure, and automate. Creating a simplified infrastructure with shared resources and secure services delivers significant advantages over other designs. It lowers costs, increases efficiency, and keeps the data center agile enough to accommodate any future business changes or technology infrastructure requirements.

- **Simplify the architecture:** Consolidating legacy siloed systems and collapsing inefficient tiers results in fewer devices, a smaller operational footprint, and simplified management.
- **Share the resources:** Segmenting the network into simple, logical, and scalable partitions with privacy, flexibility, high performance, and quality of service (QoS) enables network agility to rapidly adapt to an increasing number of users, applications, and services.
- **Secure the data flows:** Integrating scalable, virtualized security services into the network core provides benefits to all users and applications. Comprehensive protection not only

secures data flows into, within, and between data centers, it also provides centralized management and the distributed dynamic enforcement of application- and identity-aware policies.

- **Automate network operations at each step:** An open, extensible software platform reduces operational costs and complexity, enables rapid scaling, minimizes operator errors, and increases reliability through a single network operating system. A powerful network orchestration platform with innovative applications like Juniper Space enables network operators to leverage Juniper or third-party applications for simplifying operations and scaling application infrastructure to improve operational efficiency.

Juniper's data center LAN architecture embodies these principles and enables organizations of all sizes to build next-generation, data centers.

Juniper Solution Components

Migrating towards a simplified data center design would involve one or more of the following Juniper platform solutions:

- Juniper Networks EX Series Ethernet Switches
- Juniper Networks MX Series 3D Universal Edge Routers
- Juniper Networks SRX Series Services Gateways
- Juniper Networks Junos operating system
- Juniper Networks Network and Security Manager, and Junos Space network management solutions

The role of your network is rapidly changing. This will have many implications, including:

- Network planning moving from the IT level to the CIO level.
- The network evolving into a strategic component of IT.
- Data centers going from supporting the company mission to driving it.

The new network requires new equipment and new thinking. The data center in most organization isn't ready for this new dynamic.

CIO's report, "The Role of the Network Has Changed. Are You Ready?" explores this trend, and what you can do about it. Using your smartphone, scan the QR code at the right to register now for your free copy.



Walker Awarded Elite Status By Juniper Networks

By Tyson Philyaw
OEM Development Manager
Walker and Associates

Earlier this year Walker and Associates announced that the company earned Elite status in Juniper Networks' Partner Advantage program for the company's outstanding leadership in sales, customer service, technology expertise, and service specialization.

Elite Status is the highest level of recognition in the partner ecosphere and represents partners who have made a strategic investment in Juniper. Walker and Associates' commitment to excellence in the Service Provider marketplace is shown through the investment in Juniper sales and advanced technical certifications. These investments empower associates to exceed customers' long term expectations.

Tyson Philyaw, an OEM Development Manager at Walker and Associates states "Walker is very pleased to be recognized as an Elite partner of Juniper Networks. We look forward to continuing our support of customers with industry leading manufacturers such as Juniper Networks."

Lisa Smiley, Vice President of Marketing at Walker and Associates also states "Due to Juniper's market presence and quality of product offering for our service provider customers, Walker views Juniper as key to its success and growth in the future. To support attaining their Elite status, we have made investments into Juniper from a technical, sales, marketing, and professional services standpoint."

Regional spokesperson Frank Vitagliano, senior vice president of partners, Americas for Juniper Networks commented "We congratulate Walker and Associates for their ongoing commitment to their customers and technical leadership in driving innovative solutions. Juniper's robust relationship with Walker and Associates continues to deliver innovative networking solutions for customers. We remain committed to developing an increasingly integrated portfolio of networking and security solutions allowing our partners to differentiate their services and offer greater value to customers."

Walker and Associates Announces Reseller Agreement with Cambium Networks

By Randy Turner
Director, Marketing Communications
Walker and Associates

Walker and Associates has announced a new product reseller agreement with Cambium Networks™, a provider of wireless broadband access network solutions. Under the terms of the agreement, Walker will offer its carrier and government customers business-critical network solutions and services utilizing Cambium Networks' point-to-point (PTP) and point-to-multipoint (PMP) wireless broadband radio platforms. The Cambium solutions will provide Walker's customers with the tools necessary for optimal network design and performance.

Lisa Smiley, Vice President of Marketing, Walker and Associates comments, "Walker is excited to have Cambium Networks in our portfolio of products to bring desirable solutions to our service provider customers. It is important to provide broadband service out to those most rural customers, and point-to-multipoint radios are a very cost effective solution."

Cambium's PTP and PMP solutions provide highly reliable connectivity and backhaul solutions in the most challenging conditions and non-line-of-sight environments. Available in either licensed or unlicensed spectrums, these products provide a full suite of access solutions that have allowed customers to provide high speed broadband to millions of end users well beyond the technical and economic limits of fiber and DSL. The recently released PMP 450 system can deliver over a gigabit of bandwidth from a single tower location and offers dramatically improved performance over prior generations of PMP products.

"We are excited to team with Walker and Associates to introduce our products to

the service provider community. We believe that rural customers represent the largest revenue generating opportunity for wireline and wireless service providers. Our fixed wireless solutions offer a proven technology to deliver broadband service to unserved or underserved subscribers, and are much more cost effective than fiber or DSL. Cambium's products offer a cost model that is a fraction of fiber and DSL and delivers the bandwidth and latency performance to offer the complete triple play (voice, video and data) while easily meeting the bandwidth requirements of CAF (Connect America Fund). We are pleased to partner with Walker to offer service providers a new generation of wireless technology to generate substantial new revenue streams," said Troy Conley, Vice President of Global Business Development, Cambium Networks.

About Cambium Networks

Cambium Networks, formerly part of Motorola Solutions, provides world-class wireless broadband and microwave solutions for carriers, service providers, enterprise customers, military, government and municipal networks around the world. It currently has more than four million products deployed in thousands of networks in over 150 countries, with its innovative technologies providing reliable, secure, cost-effective connectivity that is easy to deploy and proven to deliver outstanding metrics. Cambium's ecosystem of partners, development engineers, and support teams work together to design and deliver innovative, forward-looking solutions that provide data, voice and video connectivity when and where it is needed. For more information, visit: www.cambiumnetworks.com.





Network Virtualization for Wi-Fi®

Something New for Hosted Service

Already a service provider delivering hosted services? Why not offer a hosted Wireless LAN service too? By virtualizing the management and control of the wireless network, ADTRAN's Bluesocket® virtual Wireless LAN (vWLAN®) solution removes all hardware controllers, vastly reducing capital costs and total cost of ownership (TCO).

This, in conjunction with the other benefits virtualization provides like speedy deployments, infinite scale, and virtual consolidation across an organization, makes Bluesocket vWLAN on VMware® the most powerful choice for an efficient, secure, high-performing and cost-effective hosted wireless LAN solution.

adtran.com/hostedblue



Helping Your Team Embrace BIG Change



By: Brenda Abdilla
President, Management Momentum

Why do people seemingly “lose their minds” when it comes to big change? If you have ever led a team through a big change like a merger and acquisition, a leadership upheaval, or even a software change you may have noticed that people become a bit unhinged by it. Wouldn't it be great if people just accepted the inevitability of change and even expected it? Embraced it?

Three Essentials for Rolling Out Big Change:

ONE

Be extremely deliberate about how you package the change

Every team leader in America can take a lesson from our politicians on how NOT to package change. The worst possible way to roll-out change is to try and make something that is essentially difficult or bad look like something that is easy or “good for you.” Even if the change is 100% necessary and you do a great job of justifying the change to your team, if you misrepresent what is really going on when you package it, people will see through that and may resist you in ways that you never imagined. Here's why: each person in your organization has access to the most sophisticated lie-detector available—the Amygdala. This

part of the human brain is hard-wired to scan the atmosphere for threats to survival—and in today's world, information is a big part of survival.

The impulse in organizations is to protect their people from the ugly truth of change, but this denies the team the opportunity to be resourceful and actually embrace the change. Inconsistencies, cover-ups, sugar-coating the facts or omitting key information will only hinder your success in the long run. Give some serious thought to how you package your information, and give your people some credit; err on the side of telling them too much (obviously without breaking the law or breaching ethical responsibility) instead of too little. “The world as we have created it is a process of our thinking. It cannot be changed without changing our thinking.” — Albert Einstein

TWO

Know what you are up against

During the stress of initiating change it can be easy to assume that everyone affected will react in a certain way. But if you look more closely you will see that there are a few different ways in which people deal with change.

The Panickers: Some people are resistant to all change and will generally be the first to panic. Often this type of person has many good qualities, like a passion for structure, accuracy or follow-through, but their down-side is a resistance to change. They cannot help it. Ideally, you would clue-in these people first to give them time to accept the change. But when that isn't feasible, try to give them less access to the rest of the team for awhile so they don't “recruit” more Panickers.

The Passive Resisters: These people may be the most difficult type to deal with during change. They will agree and accept change on the surface while actually resisting the change in subtle ways below the surface. Passive Resisters may quietly sabotage the progress made on change in small ways that can have a big impact, such as missing key meetings, claiming to not understand some key aspect of the change, subtly alerting customers to the change or “forgetting” to take key steps in the process. It's very important that organizations don't tolerate this passive form of resistance. Once the intention behind the behavior is exposed it has much less power to derail your change.

The “Union” Leaders: Anyone on your team could suddenly take on the role of defending the workers and organize resistance to your change. While most companies do feel threatened by this individual (and they can be irritating!) it's best to give the Union Leader in your organization a chance to impact your leadership, and if possible, to have some of their concerns addressed on behalf of the team—or at least heard.

The Silent Majority: Whether you are dealing with your customers, your team or your constituents, the vocal types tend to command all of the attention during times of change, and can make you feel as if everyone is resisting the change. But if you look closer it is more likely that the true resistance comes from a vocal minority, while the statistical majority of your people will go along with the changes and do their best to comply with your requests. Make sure the silent majority is receiving positive attention and is acknowledged for their acceptance of the change.

THREE

Check your own resistance to change

Many leaders rant about how much resistance they are getting to change when, ironically, they are doing a poor job of launching the change because they have their own issues with it. No judgment here; anyone who has had a career in the past thirty years has dealt with a roller coaster of change, uncertainty and instability.

Many leaders are experiencing change burn-out, and this can impact the packaging, delivery and ultimately the way people hear the information about the change. If this is true in your case, don't worry too much—the most important step is realizing it. Ultimately, to be a leader who is a little bit burned out on change can be a good thing because it can make you more empathetic to what your team is going through, and empathy is a key competency present in the most effective leaders.

Use your past experiences with change to help the team learn to accept and adapt to change themselves. Take time to see the change from various perspectives and prepare your answers and solutions from those vantage points. In preparing your approach for your team, reflect on some of your past experiences with change and consider sharing those stories with your people. It may help them switch perspectives and develop more of a "big picture" mentality than they might have without your empathy and understanding.

Change is infinitely easier when organizations are straight with their people about the inevitability of the change and explain the real reasons for it. Have realistic expectations about the various reactions from the team and respond accordingly. Also, look closely at the issues higher-ups may have developed from dealing with so much change.



Brenda Abdilla is passionate about momentum. She 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 experience and advanced tools to help motivated professionals reach their desired outcomes. Those outcomes include promotions, career-changes, higher productivity, better internal relations—most anything that moves a person's career or business forward.

Learn more or inquire about hiring Brenda's Management Momentum at ManagementMomentum.net.

Dataleco—The New Merger

By Stephen Baker, Communications and Brand Manager
and Katie Morman, Voice of Telect
Telect

The data and telecom sectors—heretofore akin to distant cousins, connecting briefly for Thanksgiving—now look more like brothers sitting next to each other at the family's weekly Sunday dinner.

Data is the dish they both want.

We're calling it dataleco (duh-tel-eh-koh)—the merging of the data and telecom sectors' network infrastructure objectives and requirements in today's dynamic network.

The global push for more and more data is melding the two sectors. The network is moving data across the platforms like never before. Video. Voice. Mobile devices. The list goes on. As massive as the data stream is today, we can only guess what the next ten years will bring.

The optical network supports massive storage and throughput already, and it's fated to grow like crazy. Data centers process unprecedented amounts of data, with a vista wide-open for exponential growth, and telcos are moving to IP-based networks, diving into the data stream revenue.

As data requirements burgeon, network engineers call on powerful core routers, servers, and disk arrays to process and protect crucial data. In turn, the equipment demands more power, and engineers seek smarter solutions to facilitate the power re-

quirements while fully utilizing rack space. When the cloud is the only limit on data growth, and powerful routers use eight feeds, network engineers need distributed power architecture at the rack.

With distributed architecture, engineers avoid under-utilized rack space and push distribution closer and closer to the equipment for increased power distribution and simplified installation and maintenance.

Installing a powerful panel at the rack lineup saves positions in the power board and facilitates convenient and timely equipment wiring. Depending on load size, four 750MCM cables will feed an entire rack or lineup of gear. Even with running more cables further, and in different locations, distributed architecture saves money. In a historical BDFB (Battery Distribution Frame Bay) architecture, when networks are powering big routers and servers and are only able to use 6 to 12 positions (out of 36 available), the stranded assets and rack space potentially cost network providers 40 to 60% more to feed power.

Distributed architecture empowers engineers to harness the potential rack space and distribute greater power—two crucial elements in your network's healthy physical and financial ecosystem. Go ahead and push the distribution further out, at the rack level, with distributed architecture, and help

yourself to the next serving of data.

Meanwhile, all of these servers and routers, processing this raging river of data, are heating up the room. Equipment is processing data like never before, and it's generating the heat to match. The industry continually seeks the ideal temperature ranges for on-rack and data center room temperatures, delving into debates on hot aisle/cold aisle efficiencies, cooling techniques, and temperature monitoring and/or mapping tools. It's big money.

With data centers lined with racks and filled with all types of network equipment, on-rack airflow is more important than ever. Engineers seek to optimize HVAC efficiencies, protect equipment, and maximize equipment capabilities. Keeping million dollar servers at the optimal temperature matters.

On your next project, choose robust racks, engineered with the industry's leading airflow capabilities, including mesh doors (with over 20% greater airflow than racks with perforated doors.) For your power requirements, look to distributed power architecture to feed your crucial equipment in a minimal footprint.

Dataleco, you're going to process big-time data. See you at the table.

Industry Recognition for Walker Sales

By Randy Turner
Director, Marketing Communications
Walker and Associates

In January, Walker and Associates honored sales and marketing top performers at its annual meeting, held at Grandover Resort and Conference Center in Greensboro, NC. Joining Walker were numbers of manufacturer attendees and sponsors who also presented awards for outstanding sales results in 2012.

Walker awardees **Lynn Soldano**, **Ben Dierker** and **Eddie Lester** were recognized for leadership in revenue metric performance. Success in their respective sales territories resulted in account growth, customer loyalty and generation of new business opportunities. Collectively, these three sales leaders represent over 50 years of industry experience, providing customers a reliable resource for business solutions. **Tom Kane**, Walker's VP of Sales, was accompanied by Regional Sales Directors **Derek Granger** and **Pete Thomas** in presenting the awards.

Awards for leadership and performance in Inside Sales were presented to **Lee Ann Gilley**, **Brandi Greene** and **Patti Brammer**. Their commitments to customer satisfaction, ongoing product and technology training, and innovation earned the respect of colleagues and customers, resulting in exceptional sales performance. All are highly respected seasoned professionals.

The Inside Salesperson of the Year award was presented to **Annette Bittner**. Recognized by Inside Sales Managers **Scott Stoll** and **Nicholle Britt**, Annette's performance is marked by quality, resourcefulness and high levels of professionalism. She is a true sales leader, known by customers to exceed expectations.



The Outside Salesperson of the Year award is always the most prestigious award presented each year. It is based on numbers of criteria, including sales results, profitability, account diversity, customer satisfaction and adherence to best practices. The 2012 winner was **Todd Kruegler**, Regional Account Manager for the "Dixie" sales territory, which covers the states of Georgia, Florida, Alabama and Mississippi. Todd's performance as a sales leader is highlighted by longstanding customer relationships built on trust and integrity. His partnership with counterparts within Inside Sales and other departments is one that generates respect and admiration. Manufacturers who work with him in his territory recognize him for his technical expertise, industry experi-

ence and personable commitment to consultative sales skills. He is a proven sales leader and respected by his peers.

Todd was presented his red sport coat as part of his award, officially inducting him into an elite group of sales performers at Walker. This iconic symbol is a tribute to Chris Walker, co-founder of the company, who wore his trademark red sport coat on sales calls in the early 1970's. Previous winners Ben Dierker, Derek Granger, Eddie Lester and Tom Kane all congratulated Todd on his award.

Walker was also presented the Service Provider Distributor of the Year Award from ADTRAN. **Mark Ogden**, ADTRAN's



Tom Kane and Derek Granger present Ben Dierker with his sales award for outstanding sales performance in 2012



Nicholle Britt and Scott Stoll, Inside Sales Manager, along with Tom Kane congratulate Lee Ann Gilley for leading sales results in 2012



Derek Granger, Tom Kane, and Pete Thomas welcome Todd Kruegler into the Red Jacket ranks

and Marketing Performance

Director of CSP Channel Sales, acknowledged the longstanding partnership between the two companies, and Walker's solid leadership in ADTRAN sales and service. Walker has earned this award each year since 2003. **Jennifer Beck**, OEM Development Manager at Walker for the ADTRAN account, accepted the award.

Jeanna Cunningham and **Trey Hall**, from Fujitsu, presented Walker an award for outstanding marketing program. The partnership between Walker and Fujitsu represents a solid commitment that benefits customers. Comments from the presenters highlighted Walker's integrity, their commitment to quality, leadership through innovation and a relationship built on trust. **Lisa Smiley**, VP of Marketing at Walker, accepted the award on Walker's behalf, expressing appreciation for the partnership with Fujitsu.

The President's Citation award for outstanding marketing performance was presented to **Todd Mathes**, Marketing Development Manager for Walker. He achieved 105% of his goal in 2012. Todd manages a broad mix of manufacturers as well as focuses on developing Walker's penetration into established markets through product and manufacturer expansion. His years of industry experience are a true asset for the company.

Lisa Smiley presented the annual Hank Ford Award to **Toby Bent**, Channel Manager for TE Connectivity. This award recognizes a manufacturer's channel manager who exemplifies the commitment to channel relationships modeled by the late Hank Ford. Hank was Walker's Symmetricom channel manager in the 1990's, and estab-

lished himself as the litmus test of all channel managers. After he succumbed to cancer in 2002, Walker established the award as a means of honoring his memory. Toby Bent has consistently demonstrated his commitment to maintaining effective communication between TE Connectivity and Walker, and is available to resolve issues in a timely manner. Accompanying his charm and wit are skills and experience that everyone can depend on, and he now stands alongside Hank Ford as one of the best.

Additional awards from manufacturers were presented to inside and outside sales and marketing. These included awards from ADTRAN, Brocade, Corning Cable, Emerson Network Power, Fujitsu, Juniper, Symmetricom, TE Connectivity and Telect. Presenter comments all reflected the bevy of talent, skill and experience Walker offers customers through its sales and marketing associates. Vince Lombardi, famed professional football coach, observed that "Leaders are made, they are not born. They are made by hard effort, which is the price which all of us must pay to achieve any goal that is worthwhile." It is with great pride, appreciation and admiration that Walker presents these award winners and all our sales and marketing associates to customers each day. They are all sales leaders, committed to both the goal and the work required to earn customers' respect, trust and business.



Lisa Smiley (L) and Mark Ogilvy (R), accept Fujitsu's channel partner award from Fujitsu attendees Trey Hall and Jeanna Cunningham



TE Connectivity's Toby Bent receives the Hank Ford Memorial Award from Lisa Smiley, Walker VP of Marketing



Lisa Smiley presents the President's Citation Award to Todd Mathes, Marketing Development Manager at Walker

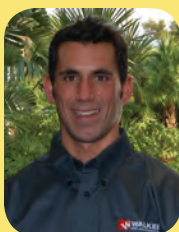
In the Spotlight

By Randy Turner
Director, Marketing Communications
Walker and Associates



Pete Thomas is the new Director of East Region Sales for Walker and Associates. He manages all Regional Account Managers covering commercial accounts in the eastern US.

Prior to joining Walker in Sept of 2012, Pete spent 32 years in the telecommunications industry. Pete has held various roles at Allied Telephone, Alltel and most recently Windstream. His experience has covered many areas including sales, operations, procurement, logistics, fleet, real estate and facilities. Pete resides in the metro Atlanta area, and can be reached at pete.thomas@walkerfirst.com.



Joe Bigler has joined Walker and Associates as the Regional Account Manager for a five state territory that includes OH, MI, IN, KY and TN. He is based in the Cleveland, OH area and states to his new customers,

"I'm anxious to learn about your business and future network requirements. Please view me as a single point of contact within the Walker organization who can assist with delivering products, services and solutions for your company's infrastructure."

Joe joined the Walker team with nearly 15 years of experience in the telecommunications industry with areas of specific focus in DC power, outside plant, installation services, fiber connectivity and FTTx with service providers ranging from wireless carriers to CATV companies, CLECs and IOCs. He can be reached on his mobile phone at 440-429-2320, and by email at joe.bigler@walkerfirst.com.



Bill Locke joined Walker and Associates as an Inside Sales Executive, managing channel partner customer accounts. He comes to Walker with over 10 years of sales and account management experience. During the past five years Bill

worked with resellers for a software manufacturer in Atlanta. Bill states "It was a great transition for me to move from working directly with customers, to working more with other sales reps. With joining Walker, I am moving along the resale chain from Manufacturer to Distributor. It is a welcome challenge for me and one that I was ready to face."

Bill resides in Atlanta, GA, and works in Walker's Alpharetta sales and marketing office. He can be reached by phone at 336-731-5382, or by email at bill.locke@walkerfirst.com.

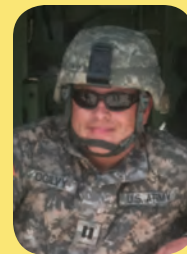


Matt Blackburn has joined Walker and Associates as an OEM Development Manager for Brocade Communication Systems. His primary focus is retaining current business and growing Brocade's portfolio of

products and services for Walker. Brocade is an industry leader in the data center networking solutions and services space, and Matt works as the liason between Brocade and Walker. He is tasked with responsibilities ranging from quarterly reporting to project development and execution. Daily activities include encouraging collaboration

between Brocade and Walker, harmoniously engaging the sales force for both organizations and positioning Walker for future growth in the overall data center environment.

Matt is the proud father of twins and also a dog lover. He enjoys boats/wakeboarding, cars, sports and the great outdoors.



Mark Ogilvy, OEM Development Manager for Walker has been promoted to the rank of Major (O-4) in the US Army Reserves. Previous positions include Battalion Intelligence Officer, Scout Company Commander, and assistant

Battalion Planning Officer as a Captain. As a Major, Mark will be responsible for Air Defense operations before moving to Planning Officer and then Executive Office. He has been deployed to Iraq twice; once in 2004-2005 as a Scout Platoon Leader and 2010 as Scout Company Commander. Mark has 17 years of service with the reserves. Congratulations Mark, and thanks for your service to our country!



Emily Markey has been promoted as an Inside Sales Executive, managing named accounts for Walker and Associates. Emily began working at Walker in 2012 as a Customer Service Representative, providing a variety

of support services for salesteam members. She has a sales and management background, having experience in administrative and management roles for companies she worked for prior to Walker.

Emily is a graduate of NC State University, and lives in Winston-Salem, NC. She works in the Welcome, NC sales office, and can be reached by phone at 336.731.5251, or by email at emily.markey@walkerfirst.com.

Network Automation with Software Defined Networking

By Duncan Freeman and Brandon Ross
Network Architects
Walker and Associates

“OpenFlow . . . allows the path of network packets to be determined at the software layer instead of the hardware layer.”

There's a significant amount of discussion around Software Defined Networking (SDN). However, according to InformationWeek's survey last summer (July 2012), only 4% of respondents had SDN operating in their production network, while just 21% planned to have it in production within a year.

Seemingly, 2013 and 2014 will be breakout years for SDN planning, and production deployments, from enterprise data centers to service providers, as SDN promises increased flexibility, scalability and decreased OPEX, among other key benefits.

One of the aspects we are working on is network automation via OpenFlow, a layer two enabling protocol for SDN which allows the path of network packets to be determined at the software layer instead of the hardware layer.

For example, if a service provider would like to assign specific Quality of Service (QoS) policies for particular traffic across their network, OpenFlow enables us to create detailed policies within the programmable framework of SDN without having to manually configure each device.

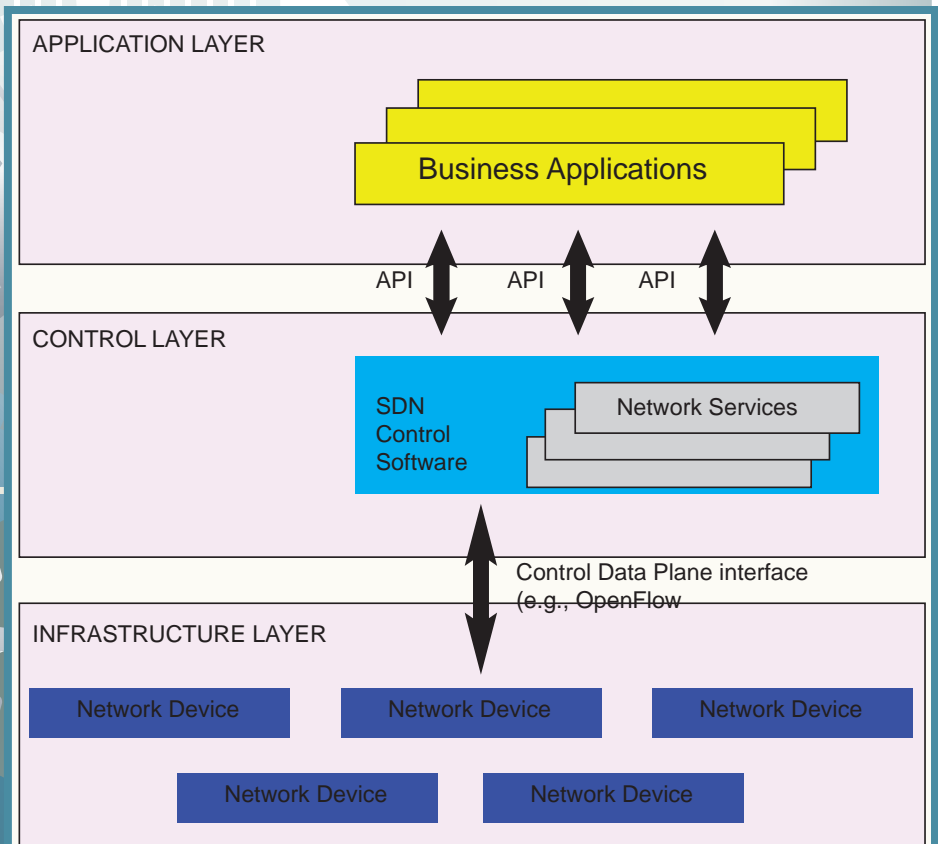
Not only does this save us time, but it decreases the chance for misconfiguration, and allows for further ease-of-modification, both of which are important aspects for dynamic data centers and high-demand service provider networks.

While the above example represents only one of the many benefits, the below image from the Open Networking Foundation helps illustrate the programmable framework within the SDN architecture:

SDN is still maturing as InformationWeek's survey indicates. However, Brocade, Cisco, Extreme, Juniper and most others are incorporating support for SDN, and new companies such as Big Switch Networks are building entire product suites for managing SDN deployments.

If you would like to learn more about SDN, or discuss applicable strategies for your network, please feel free to send us an email:

duncan.freeman@walkerfirst.com; brandon.ross@walkerfirst.com.



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, for additional details.

We look forward to seeing you at these events!

Proud Member of:



February	
UTC Region 8, 9, 10 Forum	Reno, NV
GTA 16th Annual Vendor Showcase	Macon, GA
CalCom Showcase & Tech Expo	Sacramento, CA
March	
COMPTTEL PLUS Spring 2013	Las Vegas, NV
RIITA Annual Conference & Expo	Des Moines, IA
UTC Region 3 Meeting	Gainesville, FL
ITA Showcase Northwest	Portland, OR
NCTIA Technology Conference	Winston-Salem, NC
MTIA Show-Me Expo	Columbia, MO
MTA Annual Convention & Trade Show	Minneapolis, MN
April	
CCA Global Expo	New Orleans, LA
SCTA Spring Convention	Charleston, SC
TANE Technology Symposium	Portland, ME
Texas Communications Expo, Inc.	Belton, TX
May	
UTC Telecom 2013	Houston, TX
CTIA Wireless 2013	Las Vegas, NV
TTA Spring Meeting	Franklin, TN
NDTA TOC Conference and Showcase	Fargo, ND
WSTA 103rd Annual Convention	Lake Geneva, WI
TANE/TAM Annual Meeting	Rockland, ME
KTA Annual Meeting	Lexington, KY
ANMTA Spring Conference	Albuquerque, NM
June	
NYSTA 91st Annual Conference	Lake Placid, NY
ITA Annual Convention	French Lick, IN
OTA/WITA Joint Annual Meeting	Sunriver, OR
ITA 108th Annual Convention	St. Louis, MO
TCI Tri-State Conference	Chantilly, VA
July	
PTA 111th Annual Convention	Hershey, PA
Tri-State Telecommunications Conference	Sun Valley, ID



Walker and Associates Launches New Website

By Randy Turner
Director, Marketing Communications
Walker and Associates

Walker and Associates launched the newest release of its website on January 21, 2013. The updated site offers several improvements over the earlier release, including enhanced search features, responsive technology, and a more intuitive design. Additional new features are found in Walker's eBusiness suite of online customer tools.

Walker's eBusiness customers now have a new 'dashboard' when logging into their account, providing a convenient overview of the range of online services available. From the dashboard page, users can build their own quotes and orders, review past orders, check on open orders and track shipments. Once logged in, the user has immediate access to pricing and availability on thousands of items available from Walker. The eBusiness suite makes it easy for customers to access their data from any location

they have Internet service, and expands business hours to match customer requirements. Walker eBusiness accounts are free to Walker customers.

Responsive technology enables better access to the website when visitors use mobile devices, such as smartphones and tablets. Research indicates Walker's site visitors are aligning with national trends of accessing the Internet via mobile devices in increasing numbers. Adding the responsive technology provides improved viewing of content without pinching and zooming, and enables all the other dynamic features of the site. This feature makes it especially easy for customers who work remotely using their mobile devices while logged into their eBusiness account.

Another enhanced feature of the website is its new search field, which now returns results on not only part numbers, but also a growing library of resources such as data-sheets, white papers, application notes and more. This additional resource provides site

visitors more complete access to important information that assists with engineering considerations, network design, and best practices. And, with Walker's growing list of manufacturers, the online library continues to expand, providing customers a one stop shop for equipment and important reference resources.

These improvements are in addition to custom designed solutions that certain customers require. For example, many of today's ERPs are offering various methods of "punch-out" catalogs. This allows a customer to browse, build and order in Walker's catalog directly from within the customer's own ERP. This helps facilitate timely and accurate purchase order builds. When combined with an automated order submission method, like EDI, customers have a complete ordering solution from within their ERP system.

Learn more about Walker eBusiness, customized solutions and more at www.walkerfirst.com.



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babdilla@managementmomentum.net

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Brenda Abdilla



THAT'S WHY SERVICE PROVIDERS COUNT ON TE CONNECTIVITY.

Meeting the demands of a data-driven world requires a smarter approach to connectivity. That's why telecommunications networks count on TE Connectivity, the world leader in fiber connectivity. Building critical connections that make fiber deployment faster, capacity greater, installation simpler and network reliability better. All while providing end-to-end support and lower total cost. Our partner Walker and Associates provides supply chain expertise, ensuring that the material you need arrives on time. Together, we make every connection count.

TE's Rapid Fiber panel reduces installation cost up to 25%



Utilizing TE's unique RapidReel fiber cable spool, the Rapid Fiber panel deploys indoor/outdoor cable in 100' increments (up to 1000'). Installers simply pay-out the precise length of cable they need the first time, every time. No longer do service providers have to pay for and store excess cable, nor engineer upfront the precise cable length they need. The Rapid Fiber panel helps:

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

te.com/rapid

To learn more about TE Solutions, contact Walker and Associates:
1-800-WALKER1 | walkerfirst.com.

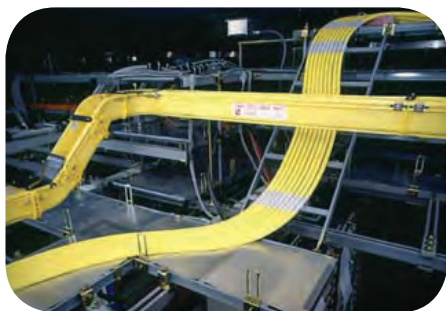




BUILDING THE RAPID NETWORK

New Approaches to Fiber Deployment

Service providers today find themselves squeezed between two conflicting pressures. To attract and retain customers, they must invest in the fiber-based network infrastructure essential to support bandwidth-intensive video, data and multimedia applications. At the same time, they must turn-up new services and customers faster than before while also reducing costs.



Cable routing through a ladder racking system in a traditional installation process.

Connectivity Challenges Across the Network

From the central office, head end, data center and mobile switching office to the outside plant, cell site and customer premises, one of the biggest challenges confronting service providers is connecting the optical distribution frame (ODF) and the active equipment. Until now, they had to use either individual patch cords in a fiber raceway system or a multi-fiber intra-facility cable (IFC), with a connectorized breakout on each end, over ladder racking.

Whichever method they use, the process of measuring, ordering and waiting for the cabling to arrive can take weeks. If mistakes are made in the measurement process, the cycle may have to be repeated. The process to install the fiber adds even more time to the overall timeline, not to mention labor to store or lace excess cable.

Advanced Solution for Faster Connectivity

TE Connectivity (TE) now offers the Rapid Fiber panel, an innovative connectivity solution designed to tackle these issues. The solution combines TE's industry-leading fiber cable management and MPO connector technology with innovative micro cable technology and the RapidReel fiber cable spool to dramatically change how fiber is deployed.

Incorporating the intermediate distribution panel and the micro cable into a single product using the RapidReel fiber cable spool, allows installers to pull out just the length of cable required and leave any slack stored on the internal spool. The RapidReel fiber cable spool enables the panel to be ordered in 100' increments up to 1,000' dramatically simplifying product selection and ordering.



The Rapid fiber panel, with its innovative RapidReel fiber cable spool, greatly accelerates fiber installation.

By utilizing the innovative 3 mm diameter 12 fiber micro cable, the Rapid Fiber panel can accommodate long lengths of cable in a small amount of space. The micro cables' small size also reduces overhead congestion when replacing single fiber patch cords or multi fiber IFC type cables. The use of an MPO connector to replace 12 single-fiber connectors also reduces installation time and risk by minimizing the number of cables and connectors the technicians have to handle.



The Rapid fiber panels' MPO connector can be connected to properly equipped NGF and LSX optical distribution frames, or FPX panels to rapidly deploy fiber in any environment.

Many Competitive Advantages in a Single Panel

By enabling service providers to install new fiber faster than before and by providing the flexibility to deliver more bandwidth as needed, the Rapid Fiber panel reduces the cost of expanding fiber capacity. In fact, when compared with traditional installation methods, the Rapid Fiber panel can reduce the total cost per installation by as much as 25 percent. This cost savings, together with the ability to turn-up service faster than ever before, helps service providers attract and retain customers and drive improved profitability.

For more information:
www.te.com/RAPID

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Welcome, NC 27374



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