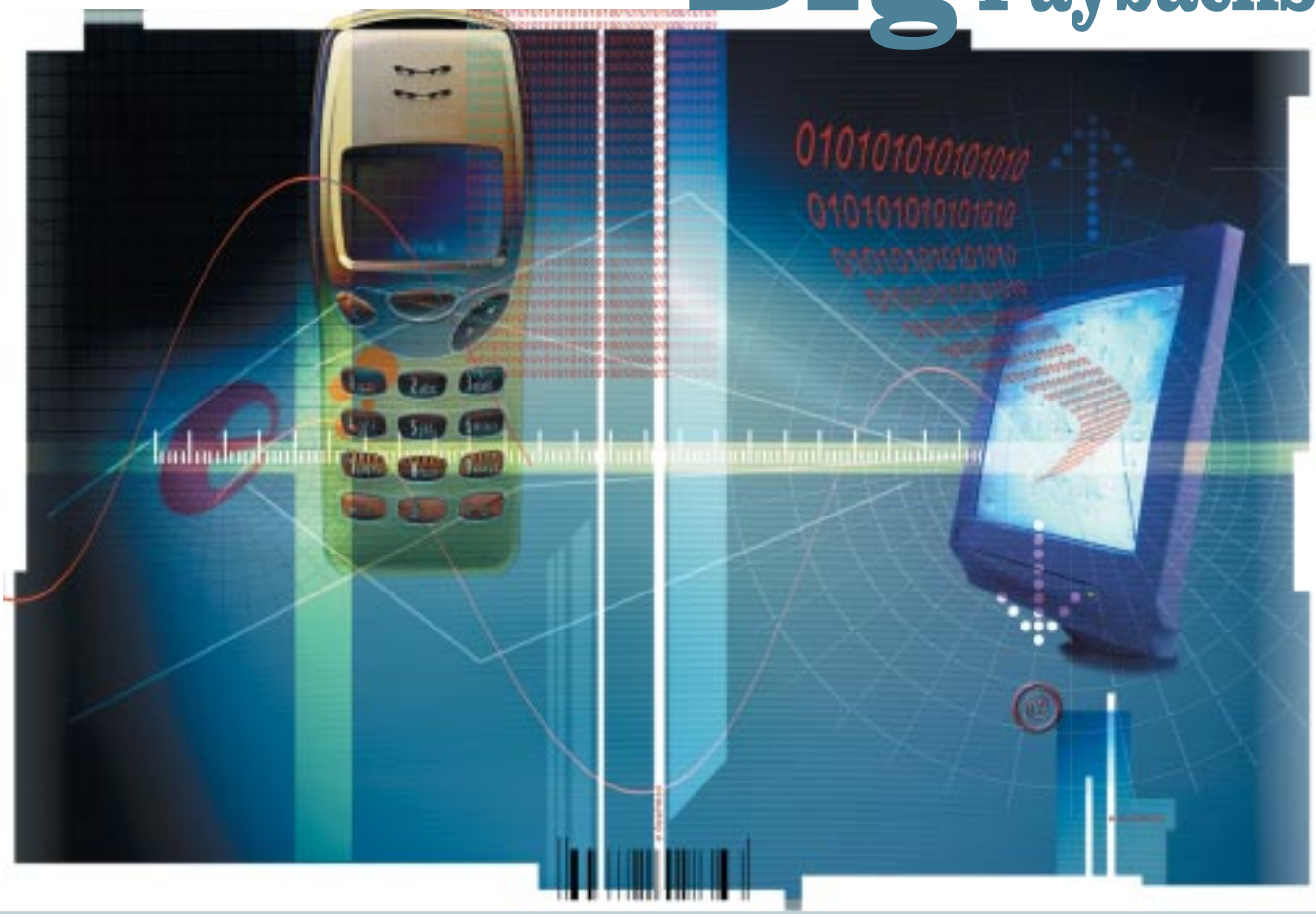
IT DECISION SERIES

Choosing the Right IP Voice Strategy

Converged Networks Ready to Reap Big Paybacks



Multiservice Networks Deliver New Applications Without Breaking the IT Budget

special advertising section for Network Computing

Converged Networks

Ready to Reap Big Paybacks

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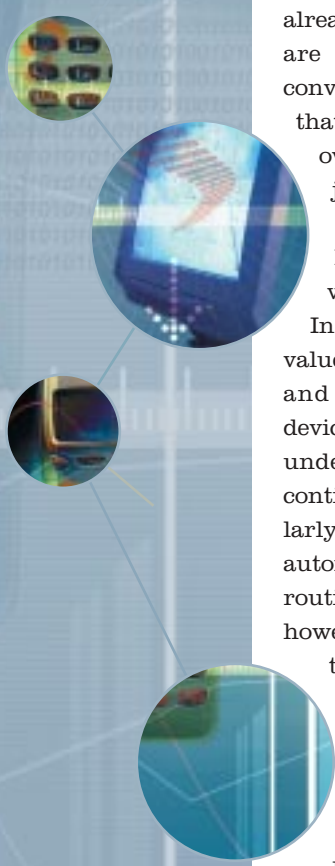


Even in the face of years of hype, most businesses have taken a "wait and see" approach toward dumping their analog phone system and creating a truly converged network infrastructure. With the impressive failure of the dot-com revolution fresh in the IT architect's mind, it isn't too surprising that businesses remain skeptical about removing functioning voice solutions already in place. But businesses of all sizes are re-examining the promise of the converged network, and many are finding that benefits—in terms of both lower cost of ownership and greater utility—now easily justify the capital outlay.

So what's changed? Certainly, the list of promised efficiencies for converged voice and data networks hasn't changed. In terms of the cost of ownership, the value of maintaining a single cabling plant and vastly improved manageability of devices such as next-generation IP PBXes is undeniable. Initial purchase prices also continue to become more attractive, particularly for layered applications like voicemail, automated attendants and automated call routing. What has changed significantly, however, is the ability of the technology to deliver on those promises. Availability, reliability and manageability of both the underlying infrastructure and the application platform are vastly improved and ready for prime time.

What's also changed is the view of what a converged network needs to do. What originally started as an image of taking phone calls on your computer has come full circle. Instead of viewing the desktop or laptop computer as the nexus for functions of the network, most industry observers now expect that such general-purpose computers will be the minority of devices on the network. The majority of devices will have a single purpose and may be wired or wireless. Examples run the gamut from phones to ID badges, and from environmental and security devices to inventory control tags.

Achieving this vision of the converged multiservice network still requires the right infrastructure, and most organizations are not there yet. Affordable bandwidth is the key enabling technology, but along with it must come rock-solid reliability, powerful management and end-to-end monitoring capabilities. Vendors are bringing products to market with exactly these capabilities. But there are still important differentiators for businesses of all sizes.

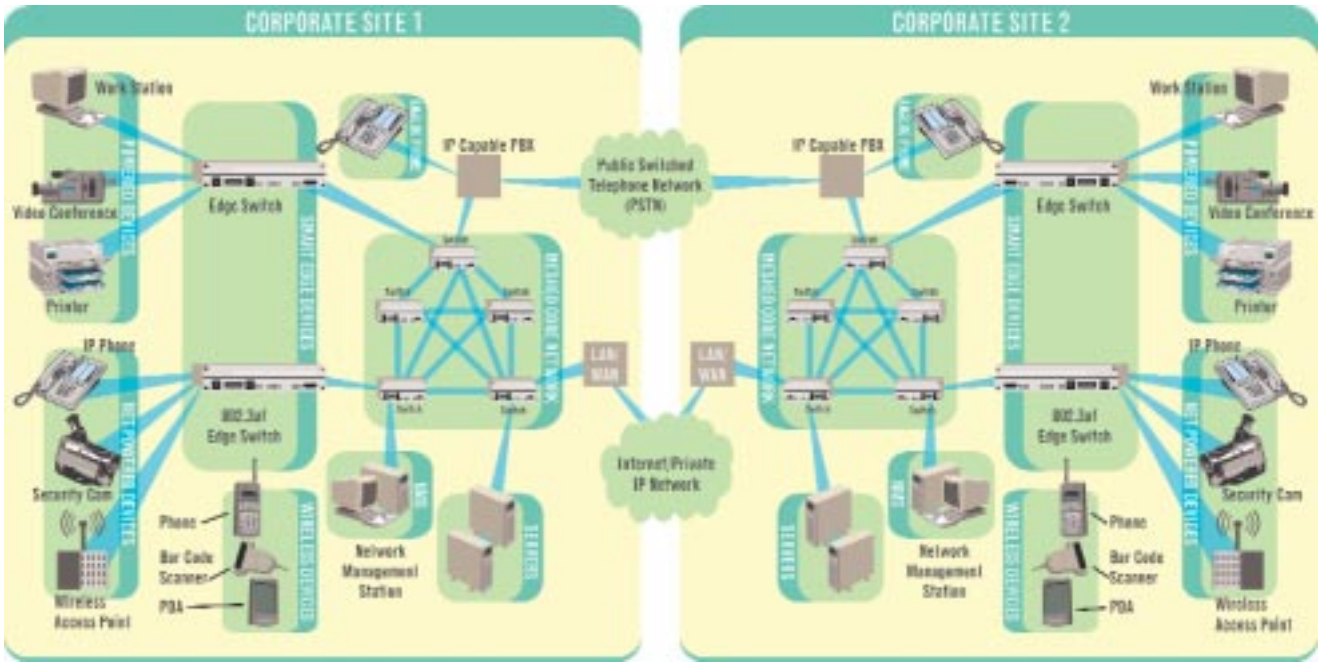
Striking a Balance for the SMB

While it is tempting to talk about convergence as a monolithic concept, the truth of the matter is that small and medium businesses have immensely different concerns from those of their enterprise brethren. Perhaps the most important distinction is the set of responsibilities that fall to a small group of workers (sometimes just one) in nontech-centric SMBs. Companies with a few hundred employees aren't interested in new IT capabilities if it means having to add IT staff. The mantra here is as it has always been—keep it simple. Vendors know the mantra well and have responded with equipment that is not only simple to install and manage, but also increasingly simple to cost justify.

In the spirit of the "keep it simple" philosophy, many small businesses are taking the convergence rewards where they are most obvious. For example, some are taking a lead from their enterprise counterparts and using IP telephony for their internal site-to-site calling needs. In the enterprise, it has been common to converge voice, data and often video on wide-area frame relay networks. The cost savings have been such

Converged Multiservice Network

A multiservice network infrastructure supports new and existing applications by providing high bandwidth and low latency along with end-to-end management and monitoring. New network devices are supported by edge switches that supply power. IP-capable PBXes support analog phones and traditional PSTN connections as well as local and wide area VoIP (voice over IP) applications.



that enterprise buyers have found the solution to be a no-brainer. To make it a no-brainer decision for SMBs, vendors needed to create systems that are particularly designed for the SMB market. Craft Diston Industries is a case in point.

Choosing the Right Partner

Craft Diston is a shower door, tub enclosure and mirror closet door manufacturer with five manufacturing plants located across the United States. The company also has three distribution centers and owns two subsidiaries. The company created a frame relay network to link all of its sites and found itself in the market for a phone system that could save money and provide new features by using the frame relay system to support internal calling needs. Today, that's exactly what the company has: IP PBXes that, by using the existing frame relay network, save the company some $20,000 per month in long distance charges. However, there were some significant bumps on the road to its new phone system.

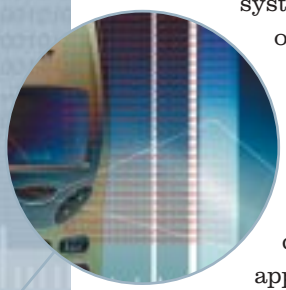
"We were initially sold a system designed for the enterprise, and that's where the problems started," says Jesse Santana, Craft Diston's director of IT. The costly system was so complex that after eight months it still was not serving all of Craft Diston's sites. The vendor was forced to remove the system, and Craft Diston sharpened its product requirements to ensure that its next system would be more appropriate for the company's needs. The company decided that it needed to focus on reducing long distance calling charges between its sites as well as look for a system that was cost-effective and easy to manage—in other words, keep it simple. Santana ended up choosing a system from AltiGen Communications. A pioneer in the market, AltiGen offered server-based IP PBX systems. The AltiGen system was installed and working at all Craft Diston locations in less than a month.

The AltiGen solution includes a number of redundant systems, such as power supplies and hard drives, to provide superior uptime.

The company also offers centralized management of distributed systems through its Distributed Intelligence Network Architecture (DINA). Applications like voicemail and basic call center functionality are run directly on the PBX. Advanced applications, like AltiGen's AltiContact Manager, run on dedicated turnkey hardware. These features make AltiGen's products highly flexible, affordable and scalable, allowing SMB customers to choose just how much of a converged network they need to run—with the option of converging other parts of the network as the need arises.

Getting Enterprise Infrastructure Right

For larger customers, next generation multiservice networks require thinking about not only voice, video and data, but a myriad of other applications as well—each with its own requirements for bandwidth, latency and jitter. The idea is that every system that once required its own cabling plant—like phones, security scanners and cameras, and environmental monitors—will now all use the data network. This is by no means a complete list of the new applications that will find their way onto the network of corporations, government agencies and service providers. These applications will oftentimes be enabled by the plummeting price of both wired and wireless data interfaces.



Two standards in particular are enabling convergence for all manner of devices. The first is POE or Power over Ethernet (802.3af). This standard calls for edge devices to supply up to 15 watts of power to devices such as digital cameras, IP phones and wireless access points. Two methods are used for supplying POE. For existing installations, a "midspan" device can be introduced to supply power on legacy switch ports. Companies like Extreme Networks and Foundry Networks are also building POE support right into their latest edge switches. The second standard of recent note is the sFlow (RFC-3176). This standard specifies methods for monitoring traffic flows from one edge of the network to another. It is vitally important for finding

BEST PRACTICES

Richard De Soto
Sr. Vice President and Chief Marketing Officer

AltiGen Communications

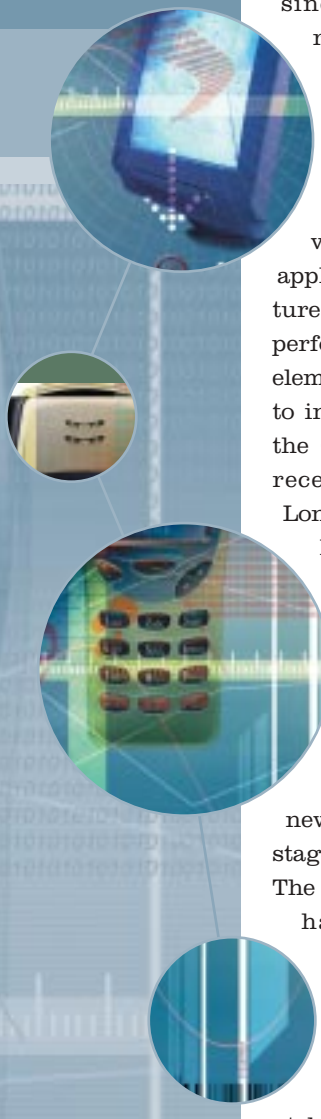
For small and medium businesses, the cost savings expected from implementing an IP Telephony solution are all too often eaten up by the complexity of solutions intended for large enterprises. "Customers with fewer than 1000 seats have told us horror stories about their attempts to install and manage systems made for far larger businesses," says Richard De Soto, senior vice president and chief marketing officer for AltiGen Communications. "These customers need solutions developed with their needs in mind. ROI break-even should occur in less than a year."

www.altigen.com

De Soto also strongly recommends selecting systems that allow for a best-of-breed underlying network infrastructure. "IP PBXes that work only with that vendor's infrastructure gear should be questioned, since they may lock you into equipment that does not fit your specific needs. The data network and the telephony system that uses it should be two different decisions. Both vendors, however, should offer interoperability with each other's solution."

Finally, DeSoto urges buyers to look at system security and add-on applications. "Both the infrastructure design and the IP telephony products should consider security. Support for VLANs, firewalls and VPNs is critical—particularly in multisite installations. Buyers should also look for reasonably priced add-on applications like basic call center functionality. Oftentimes, this is where the really big payback comes."

ALTIGEN COMMUNICATIONS



and correcting network or application faults, since standalone traffic analyzers are relatively useless in today's edge-to-edge switched networks.

Forklift Upgrade or Constant Evolution

But even as these new standards are vital to enabling certain new network applications, a solid converged infrastructure basically comes down to reliability, performance, manageability and cost. These elements are critical, but they are also open to interpretation. Examples in contrast are the Great London Authority (GLA), which recently completed a new city hall in London, and Phonoscope, which runs a large metropolitan area network in the greater Houston area.

GLA's IT staff had a full plate with its move to a new building. Along with a new network, the IT staff chose to upgrade to Windows 2000 on servers and Windows XP on workstations. That, along with an entirely new network, led to the decision to take a staged approach to adopting IP telephony. The goal was to create a network capable of handling any application reliably. Essentially, GLA was looking for a future-proof network. To meet its needs, the company chose Foundry Networks for its infrastructure vendor and also implemented some Mitel IP telephony gear for such applications as speech-enabled auto attendants and call center functionality.

Foundry was chosen in part because GLA appreciated Foundry's upgradable architecture and modular design. Foundry also promised to vastly improve network reliability. GLA purchased two BigIron 8000 Layer 3 switches populated with gigabit Ethernet ports to form the core of its network. It also purchased 15 FastIron Layer 2/3 switches to provide 10/100 connectivity to edge devices. Since modules are interchangeable within the BigIron and FastIron lines, upgrading and maintaining spare parts is greatly simplified with the Foundry gear. GLA is confident that it will be able to upgrade to 10 Gbps Ethernet if the need should arise. With its new network, GLA expects 99.99 percent uptime.

BEST PRACTICES

Anthony James
Product Marketing Manager for Enterprise Applications

Foundry Networks

Everyone has heard horror stories about failed attempts to implement a converged multiservice network, and that doesn't come as much of a surprise to Anthony James, product marketing manager for enterprise applications at Foundry Networks. "Much of the planning that's been done around the purchase of converged networks assumes that voice, video or data applications will always behave as expected. When that 'perfect world' assumption turns out to be wrong, IT professionals often find they don't have the tools to figure out what happened and where in the network problems are occurring," says James. "Historically, users at the edge of the network have exchanged data with servers in the data center. New applications on the multiservice network, like voice or video, imply far more edge-to-edge connections. The network has to provide new facilities for monitoring and troubleshooting those connections."

www.foundrynetworks.com

As part of his four critical purchasing criteria, James recommends that customers look for systems that provide RFC 3176 or sFlow application monitoring in hardware. "To get a truly dependable multiservice network, you absolutely must look for these four items: sufficient bandwidth, five nines reliability, end-to-end traffic management and hardware-based monitoring. Networks need to be robust, self-healing and self-configuring, but without monitoring you're invariably asking for trouble."

FOUNDRY® NETWORKS

Keep It Simple

Phonoscope, on the other hand, has evolved its multiservice network over time. As a MAN (metropolitan area network) provider, it must

meet the diverse needs of the oil, energy and medical community that it primarily serves in the Houston area. In 1998 the company was running a complicated ATM network that it found far too costly to run. The company began working with Extreme Networks to replace its ATM gear with high-performance Ethernet switches. "Initial trials were so successful that we began the move to an all-Ethernet network and have never looked back," says Robert Jacobs, data systems director at Phonoscope. "Currently 99 percent of our network runs on Extreme gear."

Jacobs goes on to explain that simplicity of design is Phonoscope's key to success. "We are lucky to have a lot of fiber resources at our disposal, so rather than create a bandwidth-constrained network that requires extensive monitoring and tuning, we've created an overprovisioned layer two network. Customers buy VLANs from us, not IP subnets."

For management, Phonoscope uses Extreme's EPICenter policy manager. "We can provision VLANs more or less on the fly, usually requiring fifteen minutes or less," says Jacobs. While Phonoscope has been able to produce a contention-free environment, Extreme realizes that this is not always possible. In fact, on its latest line of switches, along with POE support, the company has increased the possible number of QoS queues from eight to 64. This gives network architects the ability to precisely control the bandwidth allocated to certain applications.

Whether small business or enterprise, the time has come to implement elements of a converged network. Infrastructure and application equipment vendors offer mature products well-suited to the task, and the benefits of doing so are more clear and plentiful than ever. But as always, the challenge is to build the right environment from the network foundation on up.*

BEST PRACTICES

Duncan Potter
Vice President of Marketing

Extreme Networks

IT architects are beginning to realize that next generation networks are going to have to do a lot more than simply carry voice, video and data. What's less obvious is what really allows convergence to work appropriately in the enterprise. "Customers used to shopping for network solutions have heard the pitch that deploying VoIP is merely a matter of seamlessly tying together a similarly branded IP phone with a network switch and flipping the button," says Duncan Potter, vice president of marketing for Extreme Networks. "That advice is shallow. Remember, VoIP technologies have already been around for years, but implementing the right foundation to handle them has been rare."

www.extremenetworks.com

"Building converged infrastructure means taking a new look at several key requirements," Potter continues. "These include millisecond or hitless failover to maintain the most sensitive connections, highly granular QoS capable of creating guaranteed throughput and scalable bandwidth to allow all converged applications to coexist. But above all, keep the infrastructure as simple and consistent as possible to ensure that the total cost-of-ownership (TCO) benefits of converged infrastructure are not submerged in the cost of the complexity of managing it."

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