

AN ALCATEL-LUCENT REPORT

Convergence without Complexity: Insights and Lessons Learned from the Trenches



Strategies/Lessons Learned for Convergence Success

1. Focus on Voice Excellence
2. Simplify, Simplify, Simplify
3. Think Beyond Bandwidth
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What is an Application Fluent Network?

The problem with traditional converged networks is that the cost savings generated by a unified infrastructure can quickly be outweighed by the negative business impact of garbled calls, jittery video transmissions, network downtime, or a security breach.

To provide consistent high quality real-time application delivery as well as economic advantages, application fluent networks build on convergence to optimize performance for each application by dynamically adapting to its unique requirements. This means the network must automatically deliver the adaptability, resiliency, simplicity, and security individual applications require.

Remember the server infrastructure of ten or even five years ago?

Organizations grappled with server sprawl, increased complexity, and massive costs. Virtualization emerged as the solution to these issues — with the added benefits of greater flexibility and business agility.

Compare that to today's network situation. Many enterprises have different network infrastructures that have grown and evolved over time — each one developed to support specific applications such as voice, data, and storage. All these disparate, purpose-built networks mean network sprawl, complexity, and high costs. Sound familiar?

Once again, a solution has emerged — a converged network that is application fluent. A converged network is a single network supporting voice and data protocols as well as video and storage. A simple converged network, however, cannot address the specific needs of all the new and emerging protocols and applications. What's needed is a new methodology — an application fluent network — a specialized, resilient, low latency converged network designed for high quality real-time application delivery providing the right user experience. This network optimizes performance for each application by dynamically adapting to its unique requirements. The result is reduced complexity and cost with the flexibility and performance needed to support critical business needs like collaboration, video conferencing, mobile workers, and more.

In order to reap the full benefits of an application fluent network, enterprises must make wise decisions when deploying a new converged infrastructure. The most obvious choices may not be the right ones for your needs — both now and in the long term.

This report looks at the convergence trend and sheds light on strategies and lessons learned for ensuring the success of deploying a converged network. You'll gain insight into real-world network infrastructure implementations that provide high quality real-time application delivery and how the technology choices these organizations made helped guarantee their project's success.

Immense Pressure on Today's Networks – and IT Decision Makers

The network has never been more important or played a bigger role in the competitive advantage and long-term success of the enterprise than is the case today. That's why the pressure to deliver quality bandwidth, performance, and availability is enormous. At the same time, it's more difficult than ever for IT to deliver on these expectations given current trends such as:

- **Real-time applications:** Demand for video, voice, images, and other data-intensive applications is on the increase. For instance, Gartner predicts that more than 200 million workers worldwide will run corporate-supplied videoconferencing from their desktops by 2015.
- **Collaboration:** Collaboration is a competitive differentiator and enabler for global success. Teams from inside and external to the organization increasingly rely on tools like Microsoft SharePoint or Alcatel-Lucent OmniTouch My Teamwork.
- **Mobility:** The number of mobile workers needing access to mission-critical applications continues to grow. IDC predicts the number of mobile workers worldwide will be more than one billion by the end of 2010.
- **Devices:** New devices such as smart phones, point-of-sale devices, and other non-computing devices are migrating connections and traffic to the network.
- **Virtualization:** Whether it's the consolidation of servers and applications or the migration towards cloud-based services, new network architectures are needed to meet the unique needs of these business models.

In response to these increasing demands and strains on the network, IT organizations are now faced with continuing to upgrade and extend their costly and complex networks. At the same time, they are also being asked to reduce both staffing and operational expenses. The solution? An application fluent network can deliver excellent economic advantages while ensuring high performance, resiliency, and availability for today's data-intensive applications and communications requirements.

While deploying an application converged network can address the pressures and demands on the network, these same pressures can make it difficult for IT decision makers to make the best decisions when it comes to looking for the right solution for convergence.



The Obvious Solution May Not Be the Best One

Think of the warning you hear during the safety announcements on an airplane: "In the event of an emergency, your closest exit may not be in front of you." You need to look around to make sure you're picking the exit that will get you out the fastest.

Likewise, with all the budget woes, network worries, end user demands, and other daily fire fighting IT is tasked with, it can be easy to just keep inching forward without looking around for a better alternative. Simply going with the flow can mean potentially missing out on the opportunity to evaluate all the alternatives and select the one that delivers the greatest benefits.

Making the decision to move to an application converged network is a great first step. But to avoid some of the pitfalls that can occur, IT decision makers must begin to look at all the alternatives for technology and vendor choices and apply best practices and lessons learned to their evaluations and decisions.

CUSTOMER EXAMPLE:

Innovative Network Takes Hotel Experience to New Levels

Whether it's business travelers reporting back to the office or leisure guests keeping in touch with family at home, today's hotel guests depend on access to reliable communication when they travel. Four Seasons Mumbai in India was looking for a single converged network for high performance voice, data, and video that would go beyond high speed Internet. The hotel wanted to offer more sophisticated services like enhanced guest mobility, personal voicemail, direct numbers, multilingual voice guides, WiFi access, and more.

The sophisticated, converged solution for the Four Seasons Mumbai uses Alcatel-Lucent technology to improve hotel operations as well as the guest experience. For instance, guests are able to connect to wireless access points and use IP Touch phones that provide an XML-based application that enables guest personalization, guest services, and room service.

“Four Seasons was looking for a sophisticated end-to-end solution for its guests and to be the best in India...Alcatel-Lucent has developed a very strong reputation in voice, data, security, and wireless. With Alcatel-Lucent's solutions, we could offer a good value proposition for the Four Seasons Hotel and a rich and unique solution to guests.”

— Dr. Vinay Sindigi,
Marketing Manager of ABS India

Lessons Learned for Converged Network Success

Companies considering a move to an application fluent network face technology and vendor decisions that influence the successful outcome of such a move. Make the wrong decision and the converged network may not deliver the performance, availability, security, and scalability you need to support your critical business strategies.

The following lessons learned are gleaned from real-world situations — Alcatel-Lucent customers around the world and across industries who have successfully converged their networks to enable economic and competitive advantages for their organizations.

1 Focus on Voice Excellence

One of the main areas where converged networks fail to meet an organization's expectations is the quality of the voice experience. Companies have been greatly disappointed when deploying voice over IP from vendors unfamiliar with enterprise voice deployment.

Data LAN-focused network vendors simply don't understand what it takes to deliver true voice-grade solutions. Beware of vendors proposing the integration of data and voice networks without the functionality and resiliency needed for high quality voice and video. This is a recipe for disaster, as some of the early adopters of converged networks have learned.

Savvy organizations will insist on voice network excellence and experience when seeking out a technology partner for an application fluent network. In looking for voice network excellence, keep the following in mind:

- **Resiliency:** A resilient network needs rapid recovery capabilities, constructed with high availability switches and architected for highly available operation. If a failure occurs in a switch component, in many cases the switch can continue to operate. If a failure causes a switch to become inoperable or a link to become unavailable, the network must automatically reconfigure itself so rapidly that the recovery is transparent to voice, video, and other applications.
- **Specialized Quality of Service (QoS):** Voice, video, data, and virtualized applications all put different demands on the network infrastructure. Consequently, effective policy evaluation and management are crucial for maintaining the best quality of experience for users. These capabilities allow application converged networks to instantaneously recognize each type of application and meet its performance requirements. As a result, voice and video applications automatically benefit from QoS levels needed for high-quality voice and picture transmissions, proactively preventing quality problems or distortions that can disrupt business calls and videoconferences.



CUSTOMER EXAMPLE: Simplicity Brings Savings

- **High Availability:** To provide seamless and secure application access and telephony and video communications, your application converged network must be robust and highly available. Look for capabilities such as traffic prioritization for real-time applications, a comprehensive fault management system, and quick recovery from link failures.

[Learn more](#)

2 Simplify, Simplify, Simplify

A key benefit of convergence is to simplify the network. Unfortunately, sometimes the opposite can be the result. Reducing complexity and management effort means not only eliminating multiple network overlays, but deploying a network that provides a high degree of automation.

Look for technology that reduces network complexity, not just the number of networks. For instance, seek out solutions that can be configured, expanded, and deployed in minutes instead of months. The network needs to be simple to deploy and manage, and the only way to ensure this is to choose technology known to be easy to use, with automation and other time-saving features such as:

- **Self-provisioning:** Allows edge switches and end-user devices, such as VoIP phones, to simply be plugged into the network — configuration then happens automatically. These capabilities allow network growth and reconfiguration to be achieved instantly, with significant savings in operational and maintenance costs.
- **Elimination of layers.** Enables a network architecture where no aggregation layer is required, which provides tangible reductions in complexity and cost.
- **Converged management.** Look for an integrated solution that provides centralized management of the application converged network infrastructure and applications. Cobbling together individual tools adds complexity and cost.

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Headquartered in Braunschweig, Germany, Kosatec Computer GmbH has been a successful player in the IT market for 15 years. The company decided to implement a radio-based, universal infrastructure to automate its data recording system using bar-code scanners and converge its telephony network into the new infrastructure. A single network for data and voice communications would mean significant cost savings in constructing and operating the infrastructure.

With the new network, Kosatec's logistics workflows are significantly enhanced. Using mobile bar-code scanners, all relevant data is recorded and forwarded to the server immediately. Prior to the introduction of the new Alcatel-Lucent solution, a large number of staff were tied up all day on the inventory. Now with the new technology they were able to reduce inventory times by half. The new telephony solution has also delivered other benefits: staff can be reached using VoWLAN at any time and can call each other free of charge, irrespective of location.

"We're a very technology-minded firm. Alcatel-Lucent's portfolio of products met our requirements very nicely here, and NextiraOne as our partner was quickly able to implement those requirements."

— Andreas Kappel,
Head of System Building, Kosatec



CUSTOMER EXAMPLE:

A Highly Connected Campus

Abilene Christian University (ACU) is the first university in the United States to provide an Apple® iPhone™ or iPod touch® to incoming freshmen, as a part of a program using innovative technology to enhance the learning experience. The students use this media device as part of the learning process, inside and outside the classroom, over a fully meshed wired LAN and WiFi network. The WiFi network has more than five hundred access points deployed across ACU's campus.

“The Alcatel-Lucent wireless network portfolio extended our existing network infrastructure and empowered Abilene Christian University (ACU) to successfully redefine what constitutes a classroom.”

– Arthur Brant,
Director of Networking Services, ACU

3 Think Beyond Bandwidth

Network architecture planning is often focused on bandwidth, which is understandable given the advent of data-intensive applications like video streaming. But if bandwidth was all that was needed to ensure performance, then early converged networks wouldn't have failed because of garbled calls and stop-and-go video transmission. To ensure the proper performance of critical applications, the network needs more than the appropriate capacity. Network architects need to focus beyond bandwidth and connectivity and consider things like users, locations, applications, devices, and activity.

That's why an application fluent network is so important. Look for technology that delivers performance, adaptability, resiliency, and security based on the requirements of individual applications. Two things to keep in mind:

- **Centralized management of QoS:** Ensure your network technology provides the ability to program QoS behavior of the network from a central management system. This allows comprehensive user and device QoS and security profiles to be configured and pushed throughout the entire network.
- **Application adaptability:** An application fluent network delivers dynamic adaptation to user and application context. Your solution should include effective policy evaluation and management to maintain the best quality of experience for users regardless of the application.

[Learn More about communication solutions](#)

4 The Future Is Now

Data, data, and more data. Terabytes are yesterday's measurements — now it's exabytes, zettabytes, or even yottabytes. Simply put, there's more data traversing your network than ever before and there's no sign of it leveling off. That means it's critical to plan for continued extremely high growth levels. So, while you shouldn't concentrate only on bandwidth and speed, it is an issue that is important in future-proofing your network.

Convergence is a driver for more widespread 10Gb Ethernet adoption. You should plan for 10GbE for current needs, and keep in mind that the 40Gb and 100Gb Ethernet standards were recently ratified. While adoption of 10GbE is now just taking off, the availability of the next speeds provide you with investment protection and a path for continued growth.

Speaking of future proofing the network, the other key criteria to keep in mind is openness. Some network technology providers rely on proprietary technology that can lock an organization into that vendor's product line. Insist on networking solutions that support all relevant open standards to ensure interoperability and future expandability of the network.

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CUSTOMER EXAMPLE:

Supporting Extreme Requirements

Deutsche Post World Net, including DHL, is the world's largest logistics provider. DHL maintains a network of branch offices in 220 countries worldwide. To service these markets, DHL operates three large air hubs: Cincinnati (Ohio/USA), Hong Kong, and now Leipzig, Germany which has replaced Brussels as the central gateway to the East.

For the new facility in Leipzig, DHL required the communications infrastructure to be highly redundant, ensuring reliability as well as scalability for addressing immediate future capacity requirements that could increase by 50 percent. Currently, 1,000 tons of DHL freight is sorted in a normal working day in Leipzig; the 4,100 meters long sorting facility can process 60,000 packages per hour.

The network infrastructure supports up to 2,000 users at DHL, with a network backbone of 10Gb Ethernet. The converged voice and data network operates under extreme weather conditions and in an area with steel construction.

“This NextiraOne solution with Alcatel-Lucent products works flawlessly under extreme weather conditions and in temperatures that can be as low as minus 20°C. No other competitor could match that.”

— Camille Janssens,
IT Field Support Services Manager, DHL





Conclusion

In a world of constantly increasing network demands, application converged networks can deliver greater agility, simplicity, cost savings, and productivity. To achieve these benefits, however, companies must make informed choices about technology. The best solution may not be the most obvious one.

Unlike vendors that offer proprietary features and complexity in provisioning, management, and maintenance, an Alcatel-Lucent application fluent network supports open standards and interfaces to deliver quality bandwidth with a significant reduction in network complexity.

Organizations like DHL, Abilene Christian University, Kosatec, Four Seasons Mumbai, and many others chose wisely for their network architecture. Making the most informed choice can assure success for your application fluent network, letting your organization respond quickly to business opportunities and competition by delivering quality voice, data, and video applications with no interruption.

For more information on application converged networks, go to <http://enterprise.alcatel-lucent.com/convergence>

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