Alcatel·Lucent

The Enterprise Network Partner – Management and Transformation

Enterprises are increasingly outsourcing voice and data network management and transformation to equipment vendors, systems integrators, and managed service providers.

A knowledgeable global communications solution provider can offer the managed services needed to efficiently and cost effectively administer the enterprise network from end to end.

This same managed services team, given its alignment with the company's CIO, and its familiarity with the design and everyday operation of the network, can also lead the enterprise into the next generation of data and communications networks.

Transforming a data network to accelerate traffic to centralized data centers, or a legacy voice network into a converged and unified communications network, involves new technologies, tight integration, solid security, and far more efficient use of internal and external transport networks.

This paper addresses the benefits of working with a managed service provider with the right experience to handle the management and transformation of enterprise voice and data networks and bring powerful strategic advantages to today's businesses.

Table of Contents

Introduction – Your Business and Your Network

Businesses and large enterprises realize that their voice and data networks are a critical asset in meeting the challenge of growing revenues, satisfying customers, and keeping operational expenses in check. Providing an adequate focus on these networks in the context of the company's overall IT operations can be daunting. Transforming, evolving and maintaining today's networks to meet demanding enterprise functional needs and expense reduction mandates requires considerable attention and an expert team. Although it supports the tactical and strategic objectives of the enterprise, network operations runs the risk of diverting resources and focus from the core business. For this reason – like the financial assets of an enterprise that are typically supported by outside entities such as banks, investors, auditors and accountants – the IT network is a prime candidate for outsourcing.

The enterprise network is the backbone of the IT infrastructure. It is the critical link between customers and suppliers and the enterprise. In particular, these networks have become one of the company's primary means to contact and respond to its customers. Both the web and the enterprise's contact centers are used to promote, sell, and deliver goods and services to customers. These two communications channels also allow customers to seek and obtain help and service for the products they have purchased.

Extranets linking the enterprise to its partners and suppliers facilitate joint efforts and the maintenance and servicing of joint accounts. These same voice and data networks support employee communication and promote productivity. Overall, the network is a prime element in the enterprise's engine for growth.

While the prices of a variety of voice and data services continue to fall[1] as many of the traditional services become commoditized, telecommunications expenses are rising for most enterprises. A recent CIO blog from Aberdeen Group[2] states that telecom and network services expenses now amount to 3.6% of revenue or 12-18% of all expenses for Fortune 500 companies. This seeming contradiction can be explained by several factors. Enterprises are finding that adding intelligent IT and network functionality to its business processes does indeed improve employee productivity, and so are willing to make the additional expenditures. Also, part of the expense is a result of the increased complexity created by integrating people, networks and communications across multiple locations. In addition, the challenges and costs associated with enterprise network and data security are constantly growing.

Maximizing the effectiveness of the enterprise network while keeping costs under control is a key objective for every business that wants to remain competitive in today's marketplace.

Focus on the Network

Growth and productivity initiatives within the enterprise require solid network support. Business initiatives such as globalization, branch automation, workforce virtualization, and post-merger integration all hinge on the effective deployment and management of a secure and responsive network supporting communications and network applications.

---

[1] John Romagnoli, "Growth in Private IP Networking Nudges US Wholesale IP Market Past the $3 Billion Mark," *Yankee Group DecisionNote[SM] Forecast Analysis*, August 25, 2006.

[2] Telecom Spending Is Out of Control. And CIOs Still Refuse to Care. Posted by Thomas Wailgum (http://advice.cio.com/telecom-spending-is-out-of-control-and-cios-still-refuse-to-care)

Within the IT infrastructure, the network represents a unique challenge. Business applications, servers, and desktop equipment are typically fully contained within the enterprise realm. Corporate data may also be contained within the enterprise or distributed between the enterprise and outsourced data warehouses to support disaster avoidance and recovery. However, the network functions as a part of a significantly larger entity that spans the globe – it is fully intertwined and interoperates with carrier and partner networks world-wide. Components of enterprise and third party networks reach out to both stationary and mobile customers, partners, suppliers, and associates, whether they are on-site, at remote locations or off site.

Figure 1: Today's Complex Enterprise Network
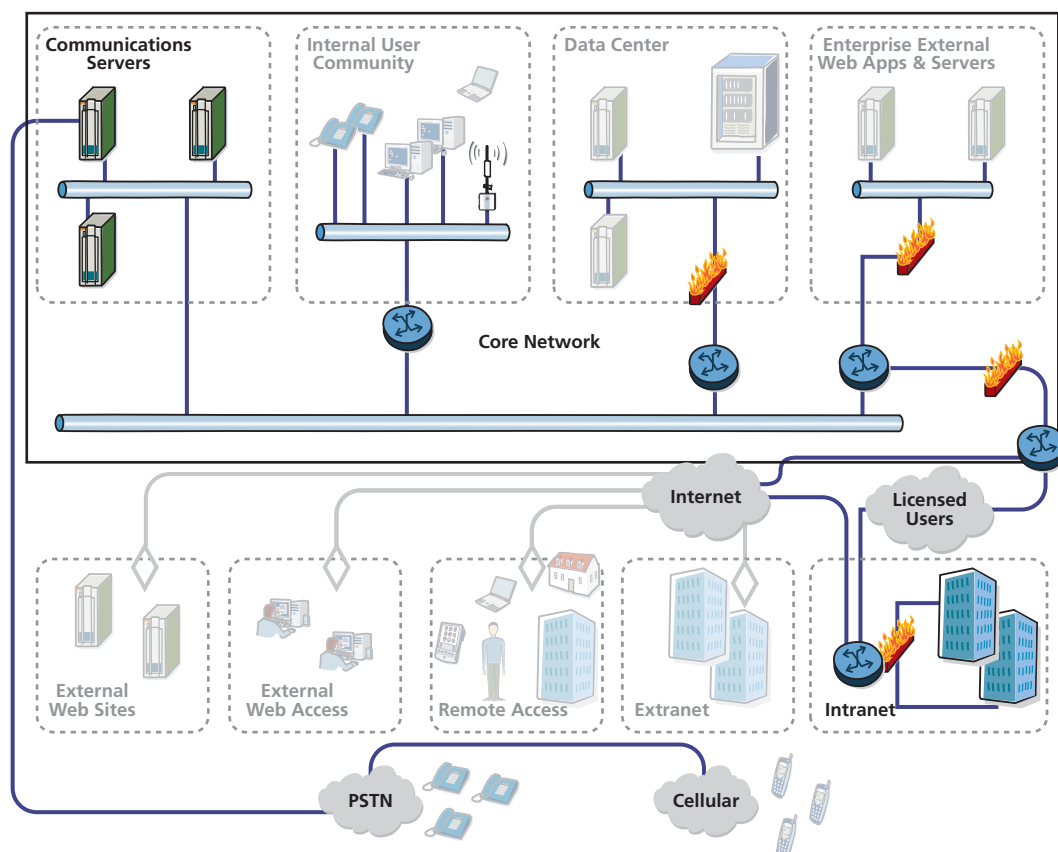
This interdependence of the enterprise network with the evolving networks of other parties provides both its strengths and risks. The capacity and response time of the combined networks supports the database retrieval, business applications, web access, email, file downloads, conferencing, and voice telephony constantly needed to keep an enterprise operational. At the same time, the network and its extensive connectivity also invites unwanted intruders interested only in disrupting operations or destroying or stealing information assets.

The team that designs and maintains the enterprise network must fully understand the needs and operation of its constituents, applications, and the other networks to which it connects. That understanding must include performance, capacity, quality of service, communications protocols, and vulnerability. Another unique network challenge is that the functionality of the network is only part of the issue – the structure of the network is also critical in meeting the performance, security and reliability required within the IT complex.

Because of all the factors mentioned above, the extended enterprise network demands constant specialized attention from experienced technology and business experts.

Manage, Maintain and Evolve

The enterprise network has changed dramatically over the past 15 years. These trends have begun to accelerate in the last several years due to a number of factors. For example, the Internet has altered the entire business landscape. Mobile and wireless voice and data have become primary staples of successful enterprises. For both the enterprise and service providers, independent voice and data networks are converging. Also, a variety of messaging technologies are simplifying person to person communications.

ENTERPRISE IT TRANSFORMATIONS

Competitive enterprises need to be prepared to continually evolve their networks to take advantage of very beneficial capabilities being introduced and supported around the globe. Network transformation can lead to altered network topologies that align with the structure of the applications, services and business processes that are also evolving within the enterprise. The impact of these transformations typically spans significant improvements in costs, reliability, security, manageability, and performance.
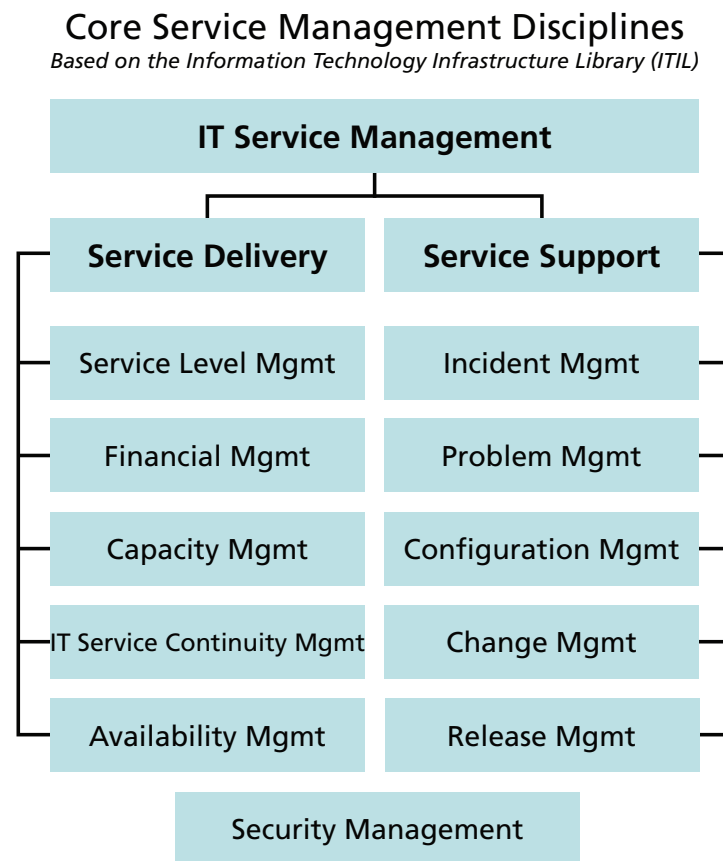
The unification of all forms of communication is now feasible and can provide dramatic increases in productivity. Several of today's key enterprise IT transformations are described below:

- **WAN Optimization** - Combines the label switching of MPLS and application acceleration equipment to dramatically reduce transport capacity, add quality of service to communication applications, and lower transport delay. WAN Optimization not only significantly reduces transport services expenses; it also facilitates the introduction of important new end-user services.

- **VoIP and unified communications** - Paves the way to network convergence while integrating the communication services needed by enterprise associates to be as productive and collaborative as possible. It brings together both real-time communication media with unified messaging using a single sign-on and an integrated presence capability fully utilizing enterprise IP network resources.

- **Enterprise security refresh** – Provides a comprehensive expert assessment of enterprise security implementation and practices. The refresh drives a cost-effective, more secure and more manageable design and implementation of the network infrastructure.

- **Contact center update** - Delivers an integrated customer/client interface and service delivery solution that makes the most efficient use of multiple communication media, intelligent routing and business work flow in a converged network environment.

- **Wireless Enterprise** - Overhauls and expands network support for mobility within the enterprise campuses. Enhanced flexibility, security, manageability and cost structure can result from the transformation.

The team that monitors and manages the day-to-day operation of the enterprise network should be tightly linked to the strategic growth plans of the enterprise. This team is then in the best position to recognize the need for and design, engineer, deploy, integrate, and evaluate the enterprise's network transformation.

Managing the evolution of enterprise networks is critical for enhanced functionality and lower cost – not only the cost of the network itself, but also the applications, content and databases that they support. In addition, the day-to-day operation and maintenance of an enterprise network is critical to keep business moving forward. Performance demands can peak, network elements can malfunction, access rights and routing tables can change, and unwanted access of people and software viruses, worms, and other attacks can disrupt operations and compromise privacy and intellectual property. Managing all aspects of an operational voice and data network requires sound discipline, rigorous tools, and sharp personnel. The full scope of IT network management is illustrated in the breakout of management functions within the IT Infrastructure Library (ITIL®)[3] framework in the diagram below.

Figure 2: Core Service Management Disciplines

Core Service Management Disciplines
Based on the Information Technology Infrastructure Library (ITIL)

IT Service Management	
Service Delivery	**Service Support**
Service Level Mgmt	Incident Mgmt
Financial Mgmt	Problem Mgmt
Capacity Mgmt	Configuration Mgmt
IT Service Continuity Mgmt	Change Mgmt
Availability Mgmt	Release Mgmt

Security Management

Constant monitoring of an operating network is indispensable to predict and recognize problems. This monitoring should address both immediate and long term needs. As the enterprise grows in terms of revenue, locations, employees, applications, and complexity, the capabilities and structure of the network must evolve and grow as well to support these changes. In addition, the enterprise's Internet, network and applications service providers, as well as its partners and vendors, also have evolving communications networks. The enterprise must make corresponding changes to its network in order to stay competitive, ensure security, and operate cost effectively. For example, this may involve a transformation to a next generation IP-based network.

---

[3] ITIL® is maintained and documented by the Office of Government Commerce (OCG) at http://www.itil-officialsite.com/home/home.asp

Maintaining a network includes more than updating software and tables, watching and predicting performance, and monitoring alarms. Network usage can also drive the expense stream. The enterprise must understand not only how network usage – both voice and data – is affecting costs, but also how the network service provider landscape is changing with respect to the cost of transport. In light of that evolving landscape, the enterprise must be prepared to renegotiate transport costs and restructure its network to best take advantage of the service provider's shifting technologies, capabilities, and prices.

Addressing changing corporate needs and the changing external network macrocosm that the enterprise network must live within requires a very close relationship with enterprise executives who are charting corporate directions and those who are providing network transport services.

Choosing The Right Partner

With the significant challenge presented by maintaining a secure, productive and cost-effective network, it makes good business sense to consider an outsourcing partner that can address all the aspects of enterprise network management and transformation. The ideal partner will run and evolve the network better than the enterprise itself and do it at lower cost to the enterprise. An outsourcing team should become part of the enterprise team. They should report to the enterprise CIO and keep a focused management team on premises with direct access to the other IT functional teams.

Some of the characteristics of the right partner include:
• Works directly with the CIO
• Manages external IT partners and suppliers
• Understands enterprise network technology
• Understand enterprise communications
• Understand voice and data carriers, both fixed and mobile
• Understands carrier equipment and networks of the carriers
• Experienced working in a multi-vendor environment
• No vested interest in the enterprise's other expense streams
• Experienced in management
• Experienced in transformation.

This team should take over the governance of the network including managing the service, the network team, finances, and vendors supporting the network. Regular reports to enterprise management should detail the state of the network, updates, revisions, incidents, and performance. Regular meetings with enterprise management should provide the team with insight regarding company directions, upcoming IT and personnel changes, exceptional needs, and constituent satisfaction.

An outsourcing partner must have extensive background as a Network Integrator including design and operations of network and IT environments. The partner must understand network technology, network topology and enterprise communications, both voice and messaging. In addition to familiarity with enterprise networks and communications, knowledge of the carrier network is also crucial in order to maximize enterprise design and operation. Today's networks are no longer just fiber and copper – the network partner must have an excellent background in mobile and wireless networks as well.
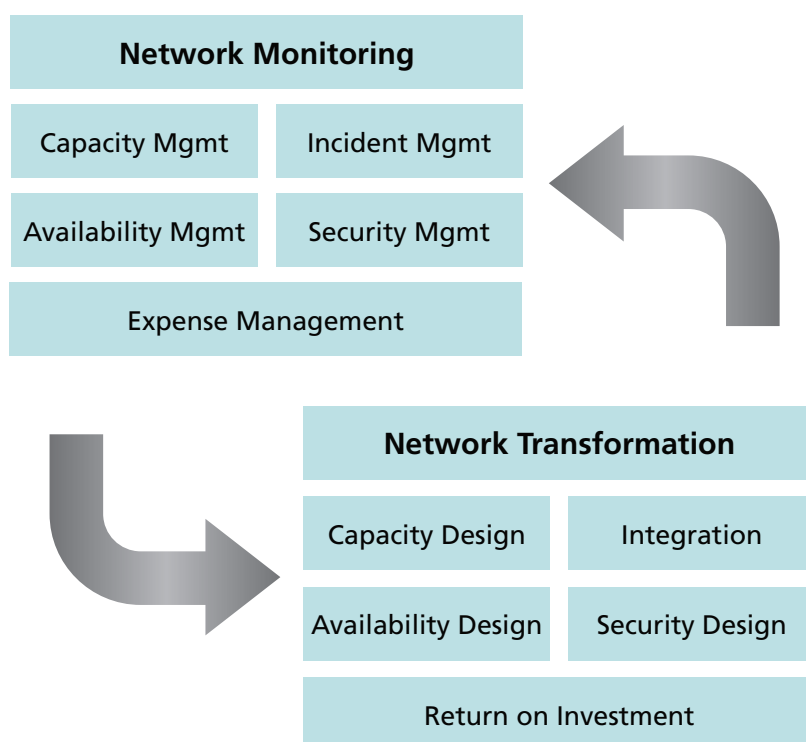
Just as enterprises are often built from the integration of multiple locations as a result of mergers and acquisitions, networks too are often composed of a variety of legacy architectures using equipment from multiple vendors. A networking partner must be experienced and fully prepared to integrate, monitor, and maintain equipment from a variety of vendors. This allows the partner to provide the best equipment and software necessary to support legacy network elements and design network transformations that meet the enterprise's functional, performance, security, and cost requirements.

One Vendor or Two

An enterprise might consider using one vendor to manage the network and another to transform it due to the significant range in skills needed for each effort. However, this strategy suffers from some critical problems.

The important linkage between day-to-day network monitoring and longer term transformation is illustrated clearly in Figure 3.

Figure 3. Links Between Network Monitoring and Network Transformation

Network Monitoring

Capacity Mgmt	Incident Mgmt
Availability Mgmt	Security Mgmt
Expense Management	

Network Transformation

Capacity Design	Integration
Availability Design	Security Design
Return on Investment	

The network management team is constantly in touch with the enterprise in order to understand its needs and the way it operates. The team also understands all network functions and how they perform – they have observed the strengths and weaknesses of the network and are completely familiar with its traffic, applications, and the users it serves. Based on its monitoring and managing of the network, this team is in an excellent position to deliver recommendations on transformation as they track and deal with incidents, availability, capacity, security, and costs. As the network is being enhanced or redesigned, the team is aware of its expected interaction with the content it delivers and the users and customers it needs to satisfy, and can apply that knowledge to the network transformation.

As the transformation is being designed and implemented, integration with the existing infrastructure is critical. The single team approach enhances recognition and resolution of any issues that arise. Another primary advantage of the single team approach is the subsequent monitoring and assessment, which provide important insights regarding the impact and success of the transformation.

The single team that can provide the breadth, depth and follow through for all of an enterprise's network needs is essential for success.

Making the Choice

Potential outsourcing partners include system integrators (SI), network service providers (NSP) and network equipment manufacturers (NEM). Making the best selection from these many candidates requires an examination of the potential partner's experience, references and position in the marketplace, the completeness of the offer and, of course, the costs involved.

Also important is the depth of support the vendor will provide to back up the team that will monitor and transform the network. Support for an outsourcing team charged with transforming and managing critical enterprise networks should include vendor experts who thoroughly understand network design and the elements from which networks are built. Knowledge of both service provider and enterprise networks is highly valuable in this environment since both networks must integrate and interoperate smoothly to deliver the functionality, performance, capacity, and security needed by the enterprise.

Additionally, knowledge of both voice and data networks – including the traditional Time Division Multiplexed (TDM) and modern Internet Protocol (IP) networks – is necessary as the team upgrades legacy voice networks and converges voice and data networks. This depth is typically not available from SIs or NSPs. Network equipment manufacturers that deliver products and services to both service providers and enterprises can provide the needed technical and business depth.

When engaging a network outsourcing provider, it is very important to take into consideration the primary interests of the company behind the network management team. While the NSP offers comprehensive managed service programs for voice and data network equipment, the same company derives the bulk of its revenue from transport service contracts that benefit from high traffic demands on their networks. There are many network transformations today including Voice over IP (VoIP), Multi-Protocol Label Switching (MPLS), and Application Acceleration that can help an enterprise reduce costs and traffic between locations. Similarly some NEMs tend to focus on selling the equipment they design rather than look at the enterprise's overall network requirements.

The ideal partner will focus on creating business value for the enterprise and will have a broad range of network, services and the multi-vendor equipment experience needed to create a complete management solution.

Conclusion

With a single network outsourcing partner, the enterprise can build a powerful relationship that will reduce costs and improve service while allowing it to concentrate on products and customers. That single partner is in the perfect position to understand the role of the current enterprise network, maintain its integrity, and guide its evolution in the directions that will continue to add value to the enterprise.

About the Author

Bruce Rowland is a consultant with Alcatel-Lucent developing new services offers integrating management and transformation of enterprise voice and data networks. Bruce came from PCTEL where he was the Director of Product Management and Business Development in the Mobility Solutions Group. He had responsibility for products that enhance mobility for PCs and mobile handsets among diverse networks while keeping voice and data connections and sessions alive for end users. Previously, in Lucent Technologies, he set direction and realized solutions in fixed/mobile convergence and high speed wireless data. He has focused on technologies that bring enhanced voice, data and Internet access services to the telecommunications industry. He spent 15 years with AT&T's Bell Laboratories managing systems software development and computer systems design and integration and 5 years with NCR in fault tolerant computers and Internet strategy. As an Adjunct Professor at the Kellogg School of Management at Northwestern University, Bruce helped to develop new courses in Information Management. He has a Ph.D. in Computer Science from the University of Wisconsin – Madison and a Masters of Management from the Kellogg School of Management.

Alcatel·Lucent