Thinking About

Network-Based IP Communications

The Time Is Now

Executive Summary

Voice over Internet Protocol (VoIP) is no longer a "fringe" technology used only by a relative few early adopters. It is a technology whose time has come, having passed from the early adoption phase into an era of widespread deployment. VoIP is moving into the mainstream largely due to the cost savings and the flexibility provided through IP-based communications.

Premises-based VoIP solutions have gained momentum recently, as enterprises realize the productivity enhancements and cost savings that they provide. While the IP PBX has given enterprises a premises-based VoIP solution, the enterprise must manage the integration of multiple technologies and multiple vendors. Additionally, new IP applications that address messaging, conferencing and collaboration are emerging adding to the complexity that enterprises face when trying to integrate multiple services.

The emergence of next-generation network-based IP communications services, now give enterprises robust features and advanced applications through a single provider which alleviates the challenges associated with managing VoIP deployment and integration.

Network-based IP communications provides more than voice over IP, it is the foundation for delivering new applications that help enterprises achieve their goals.

This paper explores network-based IP communications and the key business issues, such as integration, interoperability, management and cost implications, that should be examined before choosing a VoIP solution.

Introduction
The adoption of VoIP technology by enterprises worldwide is causing a major transformation in business communications. Using VoIP solutions, companies are streamlining their telephony and messaging, enabling them to increase workforce productivity and operational efficiency, while reducing expenses.

With network-based IP communications, employees enterprise-wide (regardless of location) can leverage next-generation applications such as unified messaging, voice conferencing, visual voice mail and collaboration to better respond to customers, business partners and co-workers. The technology also supports easy portability of features and phone numbers, enabling road warriors and remote workers to use their IP phones wherever they go. And, because VoIP technology is highly flexible and manageable, activities such as moves, adds, changes and disconnects (MACDs) are much easier, faster and cost-effective. Accounts and IP phones can be managed quickly and easily via Web-based tools over the Internet.

Network-Based IP Communications
Network-based IP communications shift the technology risk from the enterprise to the carrier, eliminating the challenges associated with deploying premises-based configurations. With a network-based solution, equipment performing call control and service logic remains on the service provider's premises. The service provider is responsible for ensuring seamless interoperability and streamlined management, as well as monitoring of peak performance, Quality of Service (QoS), security and availability.

Network-based IP communications provide a host of key benefits, including: lower costs, improved QoS, scalability, higher availability, enhanced security and protected investment.

Lower Costs
The solution requires minimal capital outlay, because all network equipment and applications are the responsibility of the service provider. This enables small organizations to deploy services with all the features, functionality and applications that a large enterprise experiences. With a minimal need for capital expense, an organization of any size can justify immediate VoIP deployment rather than delaying the decision for financial reasons.

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Improved QoS

Service providers manage QoS within the network, unlike equipment vendors, who can only manage quality until handing off calls to a carrier's network. Even the largest enterprise networks cannot provide the consistently high voice quality offered by a carrier, which has the capacity, equipment and human resources necessary to engineer and maintain the highest possible voice quality.

Scalability

Solutions easily scale up or down, enabling organizations to support periods of peak demand and seasonal and growing workforces. Services can be deployed incrementally to one department or location at a time, with virtually no disruption in service. Enterprises can deploy services in phased migration, allowing them to add converged voice and data services according to their own pace and budget requirements.

Higher Availability

A carrier-class network provides higher reliability and is more broadly accessible than a single enterprise's own network due to built in redundancies and security safeguards, as well as the higher number of circuits available for re-routing traffic in the event of failures and outages. This provides enterprises with the assurance that their business remains operational 24 hours a day, 365 days a year.

Enhanced Security

Network-based IP communications solutions provide a superior protection for all connected users. For example, Denial of Service (DoS) attacks cannot cripple enterprise infrastructure due to the extreme protection provided by high capacity carrier networks. In addition, large service providers maintain the resources to proactively monitor the network and stop potential problems before they occur.

Protected Investment

Network-based IP communication solutions utilize open standards, ensuring compatibility with existing PBX systems, as well as legacy and next-generation IP phones, gateways and switches. Enterprises can therefore utilize the premises equipment they already own and the IP phones and endpoints that best fit their needs. They have a choice of off-the-shelf devices, rather than suffer the limitations of one vendor's equipment product line.

Key Benefits for a Network Approach

- **Less expensive to emplement**
- **Higher quality of service**
- **More reliable**
- **More secure**
- **Scalable and flexible**
- **Easier to integrate with current technology**
- **Simpler to manage**

Choosing the Right Solution

Decision makers in the process of evaluating VoIP and IP communications solutions must carefully weigh all their options in order to choose the solution that best fits their business and budget requirements, while delivering maximum functionality, control and flexibility. Options include premises-based systems such as IP-PBXs or IP-based call servers. Or a network-based IP communication solution delivered by a service provider who hosts the solution on their IP network.

Network-Based IP Communications: Equipment Resides on the Service Provider Network
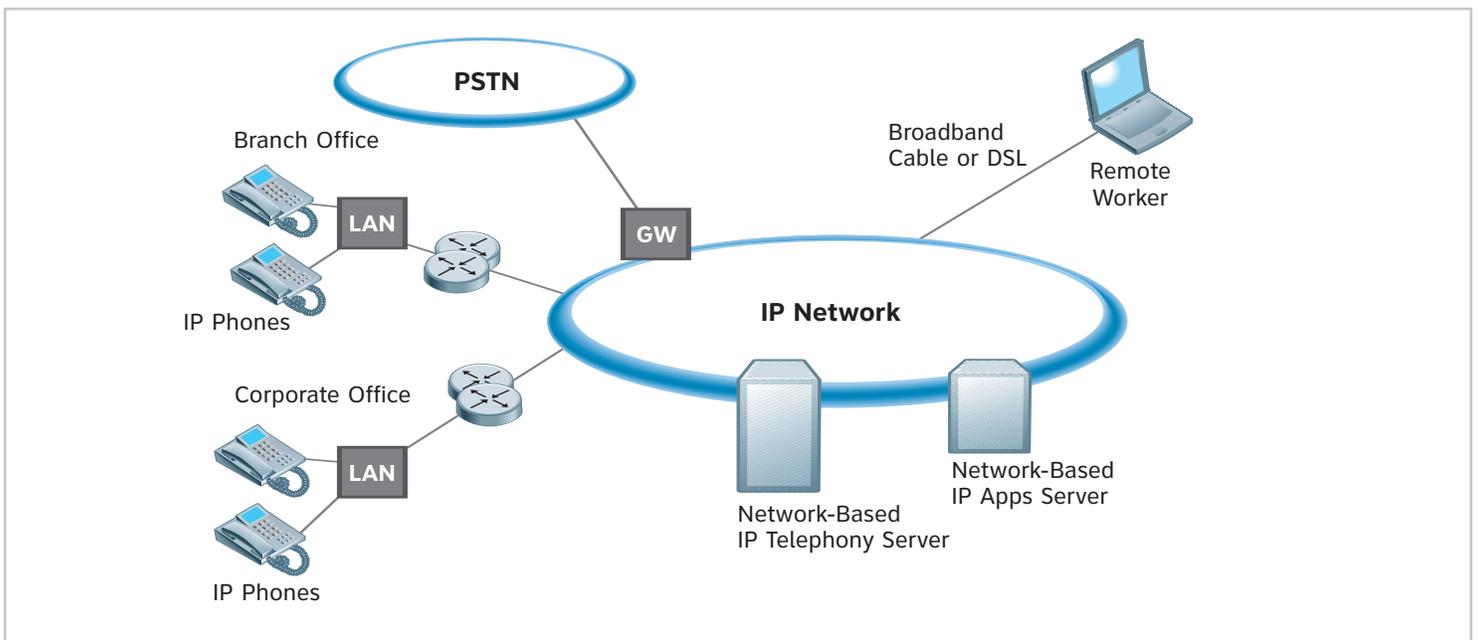
Premises-based services often attract enterprises that want to retain ownership and operational control of their voice network. They require large capital investment and on-going expenditures for upgrades and maintenance. Network-based solutions deliver equivalent functionality without the up-front capital investment, because the carrier provides the equipment and manages the ongoing operational headaches. To decide which solution to adopt, businesses should examine quality, interoperability, management, security and availability.

"Users say that hosted solutions better meet their needs for lower capital costs, technology refresh, remote and multisite networking, and scalability."

Tara Howard, Yankee Group

Quality

Recent improvements in VoIP technology have made it possible to ensure high voice quality. However, the process of maintaining peak QoS in large enterprise voice networks remains a challenge. Doing so requires continual monitoring and maintenance of IP network performance to reduce latency, packet loss and jitter, three factors that can significantly impact voice quality. Moreover, IP voice networks often utilize complex routing schemes that send voice packets for a given call across different paths that each has a separate bandwidth constraint. This compounds the task of maintaining voice quality for even the savviest voice network manager, and makes it difficult, if not impossible, to ensure the same high QoS that a carrier with a cohesive, tightly managed infrastructure can provide.

Interoperability

Though standards exist to ensure interoperability of equipment and applications, it's rare when a product claiming plug-and-play compatibility works as smoothly as advertised with all elements in a hybrid network. Moreover, a standards compliance stamp of approval provides no assurance that a specific vendor's protocol implementation will interoperate with every router, switch and gateway, particularly in network environments composed of legacy and next-generation equipment.

These challenges can be overcome with the help of special equipment and interfaces; and customization often solves the problem. However, such customization often comes with a high price tag, not to mention the time it takes to ensure smooth interoperation.

Given the complexity of today's voice networks, enterprise IT managers face significant challenges ensuring that all platforms, equipment, systems and collection of protocols work together. However, a communications carrier performs interoperability testing and certification before providing services to enterprises, eliminating the cost and need for complex integration.

Management

Though IP technology supports embedded tools to facilitate management, embedded functionality is typically deployed at the edge of the network and thus requires more, not less, configuration

and monitoring. This can also add considerably to the expense of operating a converged voice and data network, a cost that can exceed initial equipment expense within a few months. Moreover, creating an integrated management system that interfaces with existing systems is not a simple task. Because it must interoperate with a diverse array of equipment and applications, such management solutions must be customized and are therefore expensive. In a network-based environment the service provider takes over management, eliminating the need for ongoing maintenance and front-end customization, while providing interfaces that allow customers to control services themselves.

Users Understand the Basic Value Proposition of Hosted IPT/IP Centrex

For each attribute and feature listed below, please indicate which type of system you feel better meets your needs.
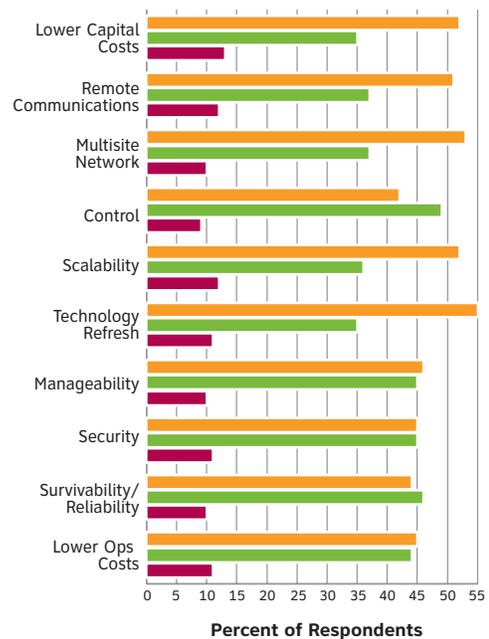
Source: Yankee Group 2004 IPT Deployment Strategies Survey

Security

Because IP phone calls travel over the public Internet, providing high security for VoIP services is essential. Companies must not only deploy the proper equipment to ensure strong internal and perimeter defense, they must monitor their networks in real-time to prevent attacks. To do so, companies must allocate the manpower necessary to ensure fast response to intrusions. This may not be a problem for some large enterprises; however, other businesses face certain budget constraints. By contrast, a carrier maintains the resources and personnel to closely monitor the network and ensure security at no additional expense to the enterprise customer.

Availability

Organizations must make sure communications are available when they need them. This requires the addition of redundant equipment and alternative transport to guarantee the phone system remains operational in the event of a system failure or outage. Companies must also engineer their networks to ensure fast failover with no interruption in service. The expense of providing high availability cannot be understated. However, network-based services can minimize this cost.

Additional Considerations

In today's economic climate in which real estate often commands a premium, physical space requirements can place an undue burden on an enterprise attempting to deploy new infrastructure. With a network-based solution, equipment such as switches, routers and gateways are located on the carrier's premises. Therefore, requirements for floor space and physical or logical security are eliminated. In addition, there is no need for incremental power, environmental control or fire suppression systems, not to mention the required insurance, maintenance and upgrades.

The AT&T Advantage

AT&T heard our customer's concerns and took a look at future technologies, driving us to develop an integrated portfolio of network-based IP services – AT&T Dynamic Network Applications℠ (DNA). DNA supports the next generation of business communications – from voice to on-demand conferencing and unified messaging, all intended to drive business productivity through increased collaboration with customers, employees and partners.

AT&T's Voice Dynamic Network Applications℠ (Voice DNA), the first service to be delivered within the portfolio, is a cost-effective network-based VoIP solution that provides all the features and benefits of a premises-based IP telephony system without the high capital expense. AT&T Voice DNA relieves enterprises of the burden of costly and complicated deployment and ongoing maintenance. The solution gives organizations flexibility and control over their own voice applications, and also provides the advantage of a carrier-class service with superior performance and voice quality.

AT&T's Voice DNA solution leverages the software-driven, AT&T Global Multiprotocol Label Switching (MPLS) Network, and IP VPN services, which helps customers converge voice and data applications onto a single reliable, secure, high-performance and scalable infrastructure. This unique solution also utilizes AT&T's 125-year expertise in providing reliable, high quality communications, as well as AT&T Labs' pioneering work in the area of interoperability.

With the AT&T Voice DNA solution, organizations benefit from the advanced communications and collaboration technologies they need to improve productivity, enhance customer relations, build stronger partnerships and grow increasingly competitive.

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