IP Telephony Networks: Laying the Groundwork for Success

IP telephony is growing in popularity over traditional PBX systems for many reasons. By utilizing the Internet to exchange voice, email and other forms of information, enterprises can take advantage of considerable cost savings, productivity gains and business innovation. IP telephony can also serve as a transition for businesses who move their voice service to the cloud when the time is right.

When done correctly, IP telephony is reliable, easily scalable and simple to manage. It also offers the enterprise an array of added features not available through a legacy phone configuration, including find-me and presence applications, call identification integration with Microsoft Outlook and video conferencing options — just to name a few.

Delivering a high-quality IP telephony service to an enterprise takes more than just buying the latest IP telephony equipment. A business also must ensure the appropriate network infrastructure is in place to serve as the system’s foundation. This is accomplished by working with IP telephony experts to determine business requirements, assess the organization’s current network technologies and understand connectivity options.

Determine Business Requirements

The first step an enterprise must make is determining what it needs its IP telephone system to do. Among the questions that should be answered are:

- How will the system be used?
- What will be the frequency of calls over the network?
- What applications—voice, video, web-based applications, enterprise applications, email, backups and web browsing—will be used, and how much bandwidth does each application consume?
- How many sites will be supported and how?
- What is the organization’s growth plan?
Assess the Current Enterprise Network

The fundamental requirement for achieving quality voice calls and reliable application support is to deploy IP telephony over a properly architected network infrastructure. The LAN/WAN infrastructure must deliver sufficient throughput and meet requirements needed to avoid latency, jitter and packet loss. When assessing an enterprise network in advance of deploying a new IP telephony system, experts need to do the following:

- **Ensure WAN has sufficient bandwidth to meet enterprise needs**
- **Have Layer 3 network support of Quality of Service (QoS) on the LAN/WAN**
- **Confirm quality network performance standards for latency, jitter and packet loss**
- **Check for duplex mismatches** — full duplex on one end of an Ethernet connection and half duplex on the other end are a major cause of IP telephony performance problems
- **Have the ability to limit or eliminate** broadcast or chatty protocols such as IPX, which add considerable unnecessary traffic

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- **Take an inventory of all network equipment**
- **Develop an accurate architectural diagram** that includes Local Area Network (LAN) and Wide Area Network (WAN) protocols
- **Develop an IP address database** of the current infrastructure; Adding new IP endpoints required to deploy IP telephony may require renumbering
- **Ensure the local network uses Virtual LANs (VLANs) for voice traffic** — setting up voice traffic to run in separate VLANs allows IT managers to separate voice traffic from data traffic on the IP phones all the way through the network, providing improved security and protecting conversation content
- **Understand how much bandwidth exists** between sites and the manner in how it is delivered
- **Ensure the local network is switched Ethernet** — quality voice requires a switched Ethernet network, whether 100 Mbps or Gigabit Ethernet

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Plan for Connectivity

IP telephony can be deployed over shared or dedicated WAN circuits, as well as over IP managed services. When connecting small offices or home offices, DSL can be used alongside a VPN tunnel, often times created by the IP PBX itself. Dedicated WAN circuits, such as T1, will deliver the highest quality service. However, if an enterprise prefers IP connectivity over a traditional TDM solution, it must not rely on the public Internet to deliver an enterprise-quality voice service to remote users because of the variations in Internet performance. One popular alternative to traditional dedicated circuits is using a Managed Service Provider (MSP) that is able to offer IP connectivity over a private backbone rather than over the public Internet.

Get a Professional Network Assessment

A Network Assessment Service from IP telephony experts will provide detailed network readiness information about an enterprise’s network performance, utilization and capacity to support IP telephony. This will allow organizations to better understand network behavior without the time, expense and security concerns of deploying physical resources or installing client software.

A detailed assessment of an enterprise’s current network environment should include:

- Recommended corrective actions to get the network ready for an IP telephony deployment
- Known issues that could cause delays or quality concerns
- Short-term and long-term network infrastructure recommendations
Choose the Right IP Telephony Partner

While eventual savings can be substantial, the costs of deploying an IP telephony solution depend on a number of variables, including the size of the enterprise and the choice of vendor. For this and other reasons, an organization must ensure it chooses the right solution and works with an experienced systems integrator. Among the questions to ask a prospective IP telephony partner are:

- Do they provide a comprehensive Network Assessment Service?
- Are they able to help calculate the return on investment timeline for different IP telephony system options?
- Are they able to provide a single-view interface, which enables a global IP network to be easily managed from a Web-based browser at any location?
- Do they provide a Service Level Agreement (SLA) with guarantees of throughput, availability, latency, jitter and packet loss?
- Does their SLA also encompass call completion rate, delay time from when the last digit is dialed until a user hears a ringing or busy signal, fax performance and a voice mean opinion score to measure voice quality?
- Do they have the ability to support your remote offices?
- Do their systems fully interoperate with leading switches and routers, easily scale and integrate with existing legacy phone equipment, such as PBXs and voicemail?
- Do they offer a wide range of products from leading manufacturers complemented by a depth and breadth of services, giving you the option of having a single point of contact for all your business communications needs?

Conclusion

With a company like Windstream as your IP telephony partner, you can rest assured that your business — no matter what its size — will have a trusted advisor at your side each step of the way to help you transition from your old legacy systems to your new solution. As a leading single-source provider of enterprise-class data, voice, network and cloud services, Windstream has the skilled experts who can assess your needs and design a solution tailored to your business. And because Windstream is vendor-agnostic, its engineers work with whatever existing hardware and systems you have, and optimize them with cutting-edge solutions from top manufacturers. Your business also will be protected by Windstream’s National Solution Center with its state-of-the-art monitoring and call management tools that seamlessly delivers exceptional support and service to customers from coast to coast.