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## VoIP: Is your architecture ready?

A recent study taken from a worldwide sample of individuals considering VoIP for their business concluded that the biggest infrastructure challenge was in the WAN segment. Many felt that their company's cable plant and LAN were ready to handle the requirements of a VoIP deployment. But 26% of respondents in the U.S. and Canada, and 20% of those in Europe felt that their WAN needed a major upgrade before it could manage the bandwidth requirements of VoIP. This is indicative of the nature of VoIP in general. VoIP puts the biggest drain on LAN/WAN links as it moves across a network, and this is the infrastructure upgrade that many companies must address before moving to VoIP.

### So how much bandwidth is needed across a WAN?

In order to achieve optimal voice quality across your WAN, you must ask yourself some key questions: How many users will my network be supporting? And what is the average call length and volume per user? The VoIP vendor you select should be able to aid you in making this determination. Once you've determined the amount of traffic traveling across your LAN/WAN boundary, you must determine if this traffic is moving across at optimum efficiency.

An IP environment allows users to consume all available bandwidth. So you must have a proper traffic management strategy in place to make sure bandwidth is going where it's needed. Otherwise, adding bandwidth to your WAN may just add more traffic and accomplish nothing else. You must have visibility into your network environment to ensure you are maximizing performance and value.

### My carrier offers an MPLS Service. Will that help?

Your carrier may offer MPLS (Multiprotocol label switching) as a solution to eliminate traffic congestions across your network. But the problem is that the benefits of MPLS do not always extend to the LAN/WAN boundary. Your carrier may try to manage to the edge of your network using conventional routers, but they still will not have visibility into application traffic and they will not have the ability to apply the necessary traffic controls. You will still need to shape the traffic coming across the LAN/WAN boundary in order to optimize performance across your entire network infrastructure.

This is why it's necessary to put in place a sound application traffic management system to minimize voice and data traffic congestion and to protect end-to-end performance. This system will automatically discover all application traffic running across your WAN links. You will then have the ability to monitor and control recreational traffic (casual web surfing, music downloads, etc). An application traffic management system can automatically control or block this traffic, protecting bandwidth for business-critical applications.



## What are some other network considerations?

One of the biggest overall challenges in implementing a VoIP architecture is ensuring that voice packets move from source to destination within an acceptable amount of time (usually 150 milliseconds) and with a minimal amount of jitter (the variation of delay from packet to packet). This is how you can make sure that the end user hears a continuous flow of speech. Most companies use high-speed Ethernet switches to connect endpoints on their LAN to deal with this challenge. Another common tactic is to configure Virtual LANs (VLANs) to segment voice endpoints from data endpoints, thereby minimizing the potential for data packets to adversely impact voice packet delivery.

You will also need to analyze the amount of bandwidth available to all locations and users and the total amount of traffic moving across the network as a whole. These are all factors that can impact your overall Quality of Service (QoS).

When selecting a VoIP vendor, you should take into account their level of expertise with all of the issues we've discussed. They must understand that your company is unique, and that a VoIP infrastructure needs to be developed that is unique to your organization. A qualified VoIP vendor will be able to assist you in analyzing network traffic patterns, be familiar with all of the factors we've discussed, and be able to aid you in building a deployment strategy that makes the most of the resources you have available.