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Managed Services for Real-Time Communications

by Ron Nicholson

The move to voice over IP (VoIP) and real-time communications is on the rise as companies realize the financial and productivity benefits of consolidating voice and data applications onto the same network. But the use of VoIP networking technology comes with its own set of technical hurdles and managing it requires a certain level of expertise and the right monitoring tools to ensure consistent high quality.

Unfortunately, traditional enterprise network management systems and tools are not designed to monitor specific factors that affect voice quality, which makes them insufficient for monitoring and managing today's VoIP network for a growing number of companies, the most logical choice for monitoring and managing a VoIP network is to employ a managed service provider.

Traditional SNMP-based monitoring systems often only look at whether a communications device is up or down at a given time. To ensure high-quality VoIP service, a monitoring tool must collect specific types of performance data over a period of time. A company's entire network could be up and running, but there might still be diminished voice quality that wouldn't be detected by an SNMP-based system.

Managing a VoIP network requires looking at those indicators that tell us specifically what's happening with the quality of voice communications. These include factors such as latency and jitter, which are reliable measures of voice quality. How low is the jitter and how low is the latency? Network and communications managers need a way to look at the network to get accurate performance measures and statistics.

There are a number of methods managed service providers use to measure, monitor and manage a VoIP network. While none of these is perfect from a technology perspective, network service providers have been able to greatly improve their ability to, for example, send an alarm when the voice quality dips below a certain level. And service providers have learned to be more proactive—rather than reactive—in the management of voice quality levels.

At the most basic level, a key function of managed service providers is to look at the voice devices to determine whether they are operating correctly. Managed service providers must also collect call data records to analyze the true performance of the device on the VoIP network. Service providers want to gather any performance statistics from the equipment itself.

Another function of the managed service provider is to obtain a per session or per call measure of latency and jitter, and trigger an alarm if these indicators go above certain thresholds. To accomplish this, providers place probes, or IP mediation tools, on the customer's network—or on the provider's own network in outsourcing cases—that sits and listens to session initiation and call-signaling traffic. Those packets contain measurements of the quality of the call. Network providers collect statistics and send alarms when there is a drop in service. This gives providers the ability to know on a call-by-call basis how well the voice network is performing.

A third function is to monitor how network gateways are performing. To do this, providers use a device that collects IP packets and turns them back into a stream to send voice out over the public telephone systems.

With these three elements—measuring the devices, the VoIP network and the network gateways—enterprises enjoy a complete end-to-end monitoring package to measure voice quality and availability. The managed service provider receives an alarm when service quality drops or any piece of the system fails.

A fourth element is the integration of VoIP monitoring with the monitoring of traditional time-division multiplexing (TDM) communications. A lot of companies now have mixed communications systems that include a TDM switch as well as IP support. Even though TDM voice communications has been rock solid over the years, it's important to be able to provide a full package of support.

The benefits of the managed services model for monitoring VoIP networks are clear. It truly provides end-to-end maintenance of these critical networks. In contrast with using any one particular network management system to measure certain aspects of performance, managed services measures all aspects of a VoIP network.

There are many products in the marketplace that monitor bits and pieces of the networks, but none provides companies with a complete picture. Some packages generate synthetic voice traffic and measure performance over a network. These are useful, but they are limited by the number of nodes supported. They are not measuring performance from every IP phone to every other point on the network.

Other tools are vendor-specific systems that only support SNMP or traditional monitoring products that are built into the equipment. These can lead to issues with polling intervals, where a particular IP phone has to collect a lot of data. That puts a load on phones, which are not powerful devices. There is also the potential for gathering duplicate data.

Then there are cost issues. These tools can be costly to purchase, install, maintain, and if necessary, replace. With managed services, on the other hand, the cost of network monitoring is spread among multiple customers.

The economies vary depending on the size of the network and types of service, but for many companies the chances are good that hiring outside expertise to monitor a VoIP network is more efficient than using internal precious resources from a cost standpoint.

Managed service providers should be able to offer their clients a mechanism for calculating both the total costs and the return on investment for these services. Undoubtedly managed services will be quite expensive for some companies, and senior managers want to know what the organization is getting for its money in these times of tight spending. These tools help companies quantify the value, whether it be in the form of ultimate cost savings, improved efficiencies, or increased business related to improved voice service.

Naturally there might be questions about network security. Anytime a company lets an external organization access its internal network there is a security risk. But this is minimized because managed service providers have the bulk of their monitoring gear inside a client's firewall. Also, there are strict security regulations and standards, and prospective customers should make sure an outsourcing partner is meeting these.

When selecting a managed services provider for VoIP, companies should consider the provider's experience in managing real-time voice communications networks and infrastructure to support it. The IP world is still relatively new to many companies and involves more complexity than traditional communication networks. Many have never dealt with some of the problems that might arise.

Companies would be wise to focus on their core competencies and allow service providers with VoIP expertise to handle network problems. If you produce bread, you want to focus on producing the best bread you can, not be bothered with keeping a VoIP network running.

In a business environment in which customers will not stand for less than perfect uptime and performance, it's critical to keep a well-maintained and operated VoIP network.

About the author

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