



Network Assessments to Ensure VoIP Readiness

What you don't know about your network can hurt you when it comes to deploying VoIP. That's where network assessments come in.

By Tim Titus

When testing your network to see if it's ready for VoIP, it's easy to make a common mistake. Running simulated calls for 24 hours without problems does not necessarily mean your network is ready for prime time. Buying all-new equipment does not guarantee performance if there is a network misconfiguration, loose connection or frayed cord somewhere in the system.

What you don't know about your network can hurt you when it comes to deploying VoIP. If things go wrong, your

career may be in jeopardy, and a few organizations have even fired the entire IT staff after a bad mistake. So, you definitely want to know anything about your network that can affect VoIP operations.

The goal of a good network assessment is to detect and pre-troubleshoot problems that might affect VoIP. Here is a look at some of the key elements in that assessment.

Inventory your network equipment. Find out the manufacturer, OS version, age/manufacture date and

how the pieces are connected. Remember that older equipment will not have the capabilities you need to deliver high quality of service (QoS).

Understand your network resource limitations (both designed and actual performance). This includes gateway, firewall, SIP trunking and link bandwidth limitations.

Look at the limitations of the devices on your network (CPU, free RAM, buffer, internal bus speed, PoE capabilities). For instance, CPU spikes can cause latency and jitter on VoIP calls.

Draw a diagram of your network, and compare it with the original design. This can be a tremendous help in identifying potential trouble spots.

Never assume that you are ready for VoIP until you have re-validated the network. You need to be sure that the fixes have solved any performance problems without creating new issues.

Analyze the network configuration. Look for problematic QoS configurations, duplex mismatches, collisions, VLAN tagging issues and jumbo frame misconfigurations.

Pay attention to network stability. Your routing tables need to be stable, as do your devices. Is your network able to withstand cable faults, broadcast storms or spanning tree resets? Remember that network cables in an older building may have degraded with age, and an old printer spitting out AppleTalk broadcasts can negatively affect performance as well.

Look at your recent outage records. If the network has gone down once a week, for any reason, you need to fix that problem before even considering a VoIP deployment.

Review the network's external performance. Does your MPLS configuration protect enough bandwidth with DSCP tagging? Or does it only give protection when the circuit is congested? That's important because packet loss only happens when you run out of bandwidth. Your VLAN and SIP trunk performance should also be analyzed to see if latency, jitter and loss are within acceptable levels.

A variety of tools and reporting applications are available to help you collect information on the performance of devices and other network equipment. But you should also interview the network managers and administrators, and gather their insights and information. For example, you could ask if VoIP was previously working smoothly in this environment and, if so, for how long? You should also ask about the age of network components and when the last refresh occurred.

A call simulation (APM) can help with the assessment. For instance, you should test to each remote location and test to each gateway/SIP trunk endpoint. You should also test with and without DSCP to see if there is a difference in latency, jitter or packet loss.

Armed with this network information, you can begin the remediation process. This may involve upgrading older equipment, increasing bandwidth as required, implementing new QoS settings and fixing misconfigurations.

Finally, never assume that you are ready for VoIP until you have re-validated the network. You need to be sure that the fixes have solved any performance problems without creating new issues. That means building in time to remediate any new problems discovered after the initial fixes.

While there are no guarantees in life, using this methodology can go a long way toward assuring a successful VoIP deployment without a noticeable impact on your end users. ●



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