Top 5 Critical Steps to an Easy and Complete Network Assessment

With the advancement of IT infrastructure, the critical services organizations rely on are now a complex collection of new and legacy hardware and software. The dynamic nature of your IT Infrastructure makes it increasingly difficult to support and maintain; its complexity also makes it fragile.

You may be surprised to discover that networks don't always work the way you expect — or even as designed. Unfortunately, these network performance problems will significantly impact the quality of your business application deployments (i.e. VoIP, Video conferencing, VDI, cloud services)!

Analysts and experts alike agree a pre-deployment network assessment is the crucial first step.

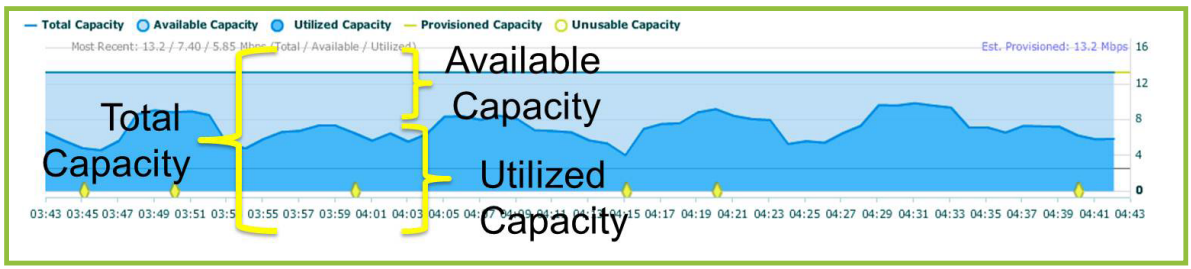
What are the key steps to conducting a network assessment and assuring performance of your critical business services?

Step 1. Baseline Your Network Environment and Infrastructure

A baseline assessment will show you the overall health of the network. This should be a comprehensive summary of all network paths that deliver your key applications and services, even ones that are not experiencing network problems. The test will show each path's readiness for performance sensitive applications, observed performance impediments and key performance metrics. These key performance indicators should include capacity, utilization, data loss, jitter, route analysis, and Quality of Service (QoS) configuration. Get the first performance analysis for the point in time you ran the test, but make sure the assessment continues to run so you can come back to it for a highly detailed examination that encompasses an extended timeframe.

Step 2. Assess Specific Aspects of Your Network That are Critical to Performance

You need to find out how much bandwidth your company is paying for and how you are holding the provider to their service level agreement (SLA). Review your WAN provider SLAs in detail - How are you assuring adherence to these? Run your own discovery and see exactly how much bandwidth the carrier is actually providing. This test needs to include the total, available and utilized capacity readings.



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Step 3. Identify Which Critical Applications Your Network Supports

Every application comes with bandwidth requirements. If you are considering implementing or expanding a current application, it is necessary to know the requirements and behavior of the other applications that are already dependent on the network. Continuous monitoring of all applications including VoIP, Video conferencing, cloud services, hosted web-apps, and virtualization help you to measure key metrics such as QoS settings, asymmetric measurements, codec utilized, MOS score, voice throughput (for VoIP) and packet statistics against what your network can handle. For example, below are the recommended minimum performance requirements specific to VoIP call load testing. Quality of Service (QoS) is also recommended by most leading VoIP and Video conferencing providers and should be audited on the network.

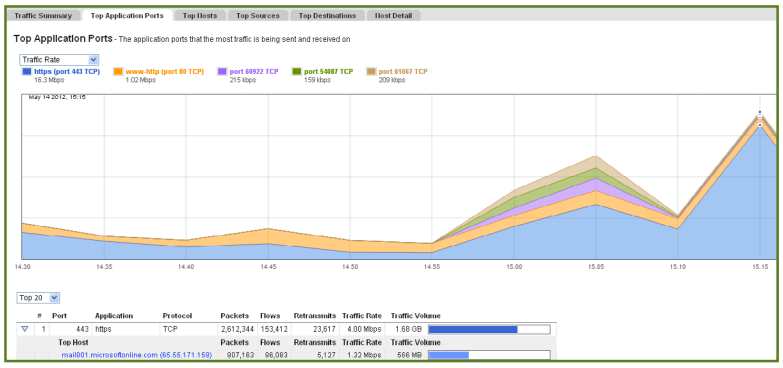
Recommended Minimum Performance Requirements

	VoIP 1 Calls (MOS 4.1)*	VoIP 10 Calls (MOS 4.1)*	VoIP 25 Calls (MOS 4.1)*	Video Conf (Polycom) 15 FPS (4CIF - 720x480)	Video Conf (Polycom) 30 FPS (4CIF - 720x480)	HD Video Conferencing 15 FPS (720p - 1280x720)	Virtual Desktop Infrastructure
Bandwidth **	87.2kbps	880.72kbps	2.5mbps	615kbps	922kbps	1.2mbps	64kbps-1mbps
Latency	<150ms	<150ms	<150ms	<60ms	<30ms	<60ms	<150ms
Data Jitter	<40ms	<40ms	<40ms	<40ms	<40ms	<40ms	<2ms
Data Loss	<2%	<2%	<2%	<1%	<1%	<1%	<1%

Calls using Cisco recommended settings:G.711 (PCM) 64kbps uncompressed, 20 ms packet duration* MOS calculation confirmed with modified E-model calculator ITU G.107 and G.113 Appendix I* One directional bandwidth**

Step 4. Assess How Your Network Usage Is Impacting Performance

Even with a highly robust network infrastructure and top quality applications, a network engineer cannot rule out the impact employee activity and behavior can have on the network. In your assessment, you need to drill down to see bandwidth consumption by physical site, application and host by time of day. Is actual utilization nearing total capacity at any sites with existing business normal behavior? Are LAN and WAN elements and the applications using them behaving properly at peak traffic utilization levels?



Identify top talkers and points of bandwidth consumption.

Step 5. Present Assessment Results In an Easy-to-Understand Format for Technical and Non-technical Users Alike

When delivering the network assessment report to management it is important to present the content in a way that easily conveys the key findings to the audience. If the report is going to a technical user you can present the most meaningful results in that technical context. However, as IT and business merge more every day, a report that is delivered to non-technical team members needs to look completely different. All aspects of the report need to show the value proposition within the assessment so decision makers can understand how to proceed. Your hard work and important findings should be recognized so make sure you present in a format that communicates this!