



VoIP Pre-Assessment Testing With Vivinet Assessor

[Abstract](#)

VoIP is particularly sensitive to packet delay and loss. Pre-Assessment testing allows you to understand the effect of adding voice traffic to your existing infrastructure, and the voice quality you can expect prior to cutting over.

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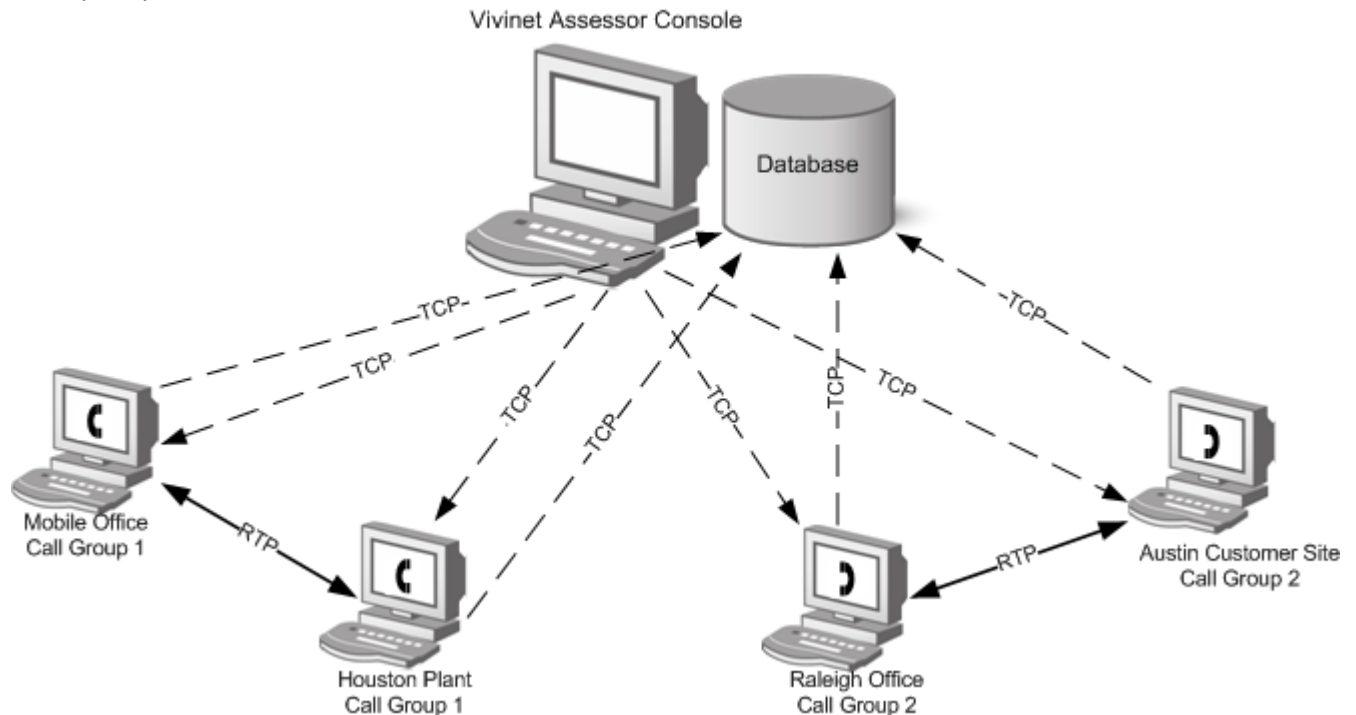
Telnet Networks – VoIP Pre-Assessment Test

Introduction

While VoIP is hardly considered a new technology, IT departments are wise to have concerns about call quality and the network's ability to handle the VoIP traffic effectively. Many networks work efficiently with current TCP infrastructure, but will react differently when UDP traffic, primarily VoIP, is applied to it. Voice is sensitive to delays, loss, and packet intervals and becomes very noticeable when any of these parameters exceeds standards. Pre-assessment testing enables you to make informed decisions about your VoIP deployment by emulating VoIP traffic on the network, collecting key call quality metrics, and analyzing the results. By performing a test prior to roll-out you can easily determine a network's VoIP readiness to cut-over of VoIP. Once your IP phones are in production it becomes far more difficult to find issues without affecting users. Telnet Networks has been a distributor and user of the Vivinet Assessor software for close to 20 years, and it is our tool of choice.

Understanding how Voice Quality is assessed using Vivinet Assessor:

To assess VoIP quality, Vivinet Assessor sends realistic traffic across your network and measures the resulting flows. You set up an assessment of VoIP Quality by selecting the type of traffic to send, including the codec used and some other VoIP-specific parameters, and creating call groups to act as senders and recipients of this traffic. A call group consists of two endpoints connected by a VoIP connector, which defines the type and number of calls to be sent between the endpoints on a specified schedule. The following diagram illustrates how Vivinet Assessor and the endpoints work to measure VoIP quality:





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In the diagram above, endpoints that belong to call groups are designated by a telephone receiver symbol. All assessment parameters, including, for example, the codec to be emulated, are saved to an assessment within the Assessor SQL database. This database also contains any results from an assessment after it is run.

When you run an assessment, the Console contacts all the endpoints in each call group. The Console sends the endpoints a call script to use, along with the schedule configured for the assessment that is stored in the database. In the drawing above, dashed lines indicate these setup flows. The endpoints then send the information to their partner endpoints within each call group.

As the assessment runs (solid lines in the drawing), the endpoints take measurements and periodically return results to the Console, which stores them in the database (dashed lines, with arrows pointing back to the Console, indicate reporting flows in the drawing). The endpoints always report results using the connection-oriented TCP protocol so that results are not lost. Simulated VoIP traffic uses the RTP protocol.

Key Differentiators

- **Offers high-precision, one-way delay measurements** – uses a patented technology for calculating one-way network delay so you get the precision you need without the hassle and expense of deploying hardware probes. The one-way network delay is then combined with the delay introduced by packetization and defined jitter buffers to create a complete end-to-end delay measurement for the call.
- **Delivers advanced call quality measurements** - predicts call quality by calculating a Mean Opinion Score (MOS) based on the industry standard E-model specified in the ITU recommendation G.107. NetIQ Vivinet Assessor improves on that base standard by taking into account additional network factors that can impact call quality, such as jitter and consecutive lost datagrams. You can quickly define a schedule in which VoIP calls are generated and evaluated periodically.
- **Ability to generate non-VoIP traffic** – provides the ability to test one-way link capacity. Using this feature it's possible to max out a link with background traffic, while applying QoS priority tags to voice traffic to ensure tagged packets are being handled correctly.



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Results Reporting:

The status and the preliminary results are continually updated after every call iteration in the following status screen and indicate how the assessment is proceeding. Large assessments—that is, assessments with many call groups that are collecting timing records—take longer to process than smaller ones. When an assessment collects many timing records, even after all calls have completed, the Running indicator may still be spinning and the Status may still read “Calls running...” until results have been processed and entered into the database.

The screenshot shows the 'Assess VoIP Quality - Run' window in the NetIQ Vivinet Assessor. The status is 'Assessment complete'. The start time is Wednesday, October 19, 2005 11:15:00 AM, and the end time is Friday, October 21, 2005 11:14:00 AM. A progress bar indicates 100% completion. A pie chart shows the distribution of results: Good (43%), Acceptable (33%), Poor (22%), and Unavailable (2%). Below the chart, there is a 'Call Groups -- MOS Summary of All Calls' table. The table has columns for Errors, Diagnoses, Endpoint 1, Endpoint 2, Call Script, # Concurrent Calls, Total Calls Simulated, % Good, % Acceptable, % Poor, and % Unavailable. The table shows data for several call groups, including SanJose, Raleigh_Bldg1, and Raleigh_Bldg2.

Errors	Diagnoses	Endpoint 1	Endpoint 2	Call Script	# Concurrent Calls	Total Calls Simulated	% Good	% Acceptable	% Poor	% Unavailable
x 4		SanJose	Bellevue	G.723.1-ACELP (5.3 kbps)	4	192 of 192	0	22	76	2
x 5		Raleigh_Bldg1	SanJose	G.723.1-ACELP (5.3 kbps)	2	96 of 96	0	0	95	5
x 7		Raleigh_Bldg1	SanJose	G.711u (64 kbps)	2	96 of 96	40	45	8	7
		Raleigh_Bldg1	Raleigh_Bldg2	G.723.1-ACELP (5.3 kbps)	6	288 of 288	0	100	0	0
		Raleigh_Bldg1	Raleigh_Bldg2	G.711u (64 kbps)	6	288 of 288	100	0	0	0
x 10		SanJose	Bellevue	G.711u (64 kbps)	4	192 of 192	91	3	2	5

When a test has completed detailed reports can be configured to include the desired data and generated in a pleasing and editable WORD format. Statistics are collected in 5 second increments providing a very granular dataset which is accessible through the Analysis Console, or by normal SQL query.