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Lab Testing Summary Report

November 2006
Report 061117

Product Category:
VoIP Analysis Tool

Vendors Tested:
ClearSight Networks™

Product Tested:
ClearSight Analyzer v5.1

Miercom RATED BEST™

VoIP Analysis Tool 2006

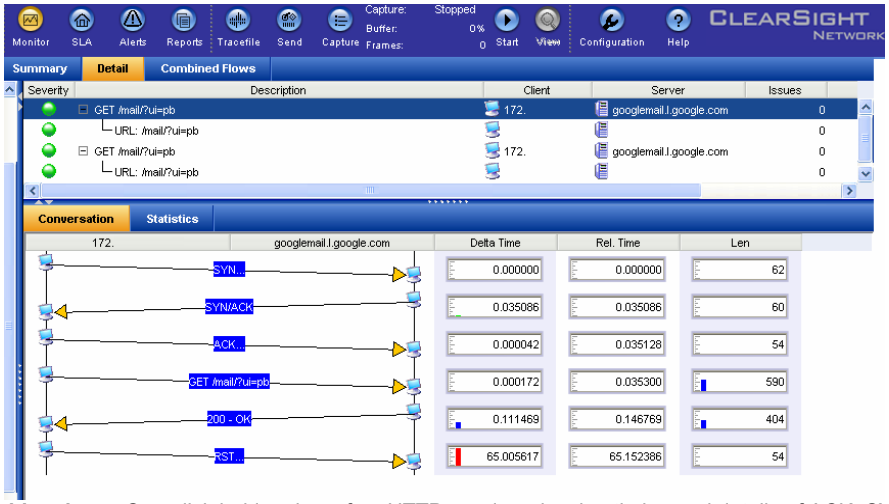
Key findings and conclusions:

- **ClearSight Analyzer (CSA) v5.1 software captures and analyzes more network activity in one place, including VoIP, than other products tested by Miercom in the last year**
- **Analyzer's interface is unique, intuitive, and easy to use and provides a ladder view of VoIP connection that is easy to navigate to further detail of both sides of a session**
- **Customizable easy to configure triggers for starting and stopping of network captures can be set**
- **Advanced features include MOS score calculations with "What If" parameters, a Boolean traffic filter - with both accessible via a flow chart view with real-time audio and video play, and exportable playback files for video and voice captures**
- **Allows for custom protocol creation for real-time monitoring of proprietary and customer focused traffic**

ClearSight Networks submitted ClearSight Analyzer v5.1 VoIP analysis tool to Miercom as part of a Network World public review of VoIP analysis tools for September 2006. Analyzer emerged as the best product for the second year for monitoring live VoIP traffic and analyzing real time and captured network data.

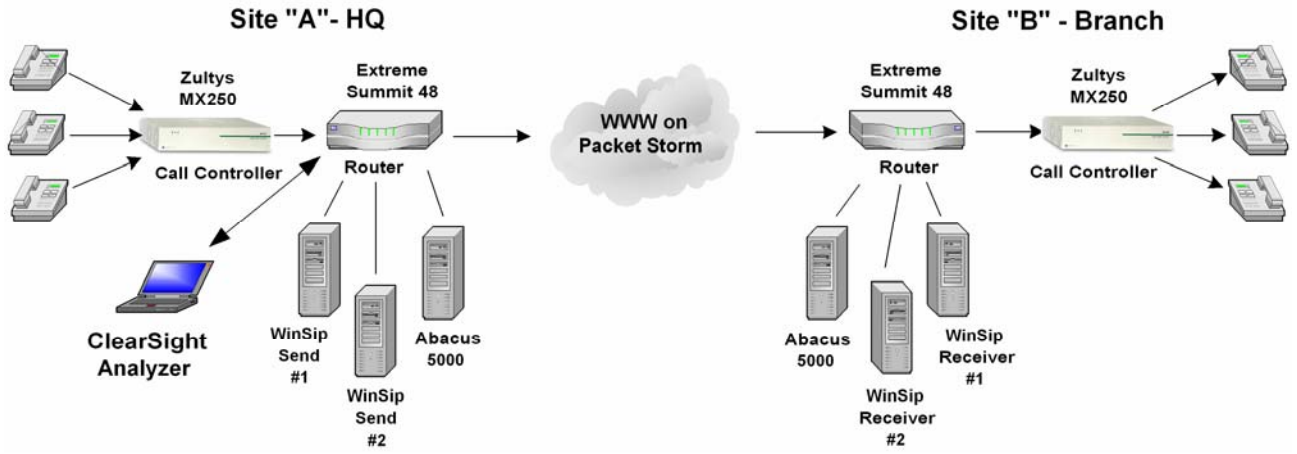
VoIP Analysis Tools (VATs) were evaluated during this review according to a detailed methodology covering six categories: configuration/deployment, display/interface, traffic capture & real-time features, diagnostics, reporting and advanced features. CSA v5.1 achieved the highest overall average weighted score in tests that included hands-on demonstration of tool usage in capturing and displaying generated VoIP traffic over an impaired WAN network through the LAN interface.

The capabilities of Analyzer v5.1 go beyond its demonstrated VoIP traffic network monitoring. The summary screen, by default, displays 20+ network activity categories, spanning protocols to applications.



Ladder view – One-click ladder view of an HTTP session showing timing and details of ACK, SYN, GET, and POST events. Ladder views are exportable to a .pdf format, print and/or image files.

Test-bed Setup



Test Bed. ClearSight Analyzer v5.1 was tested and configured with two subnets simulating a headquarters and a branch location. The network infrastructure at both sites consist ed of Extreme Networks Summit48 L2/L3 switch/routers. The two sites, "A" and "B", were powered by Zultys MX250 IP PBX systems, connected by a IP WAN link.

Tools tested were configured and inserted, one at a time, into the test bed. The WAN connection was simulated using a Hurricane IP Network Emulator from PacketStorm Communi cations. The PacketStorm Emulator allows varying the network environment, simulating various impairments that included latency, jitter and packet loss scenarios. A mirrored port was configured on the headquarter subnet for the vendor to insert their respective analysis tool.

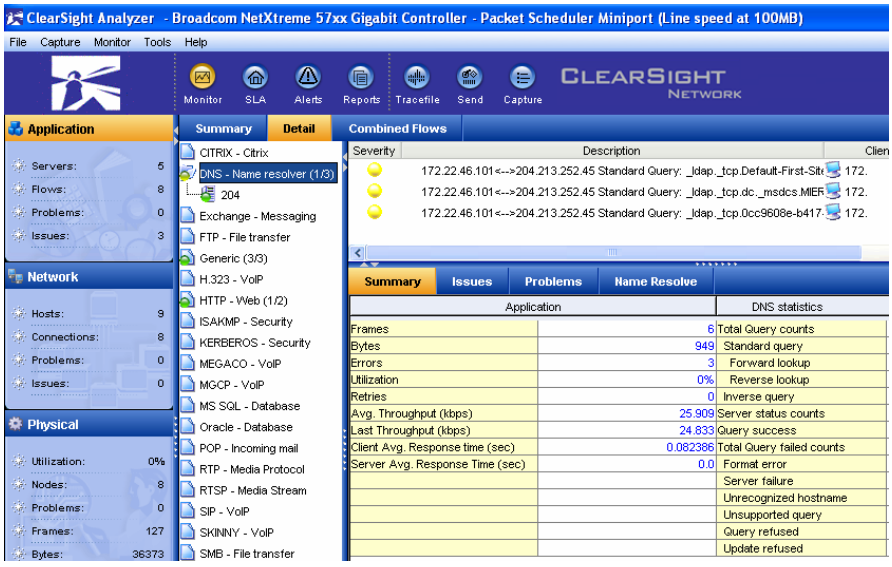
An average of 5000 channels of simulated SIP traffic wa s generated and delivered from the side "A" by Touchstone Industries WinSIP (2.4.0) Generator. An average of 128 channels of simulated SIP traffic was also generated from a Spirent Abacus 5000 (v3.2) SIP traffic generator from side "A ". These side "A" calls were terminated at respective matching endpoints across the WAN link, at the side "B" site.

Results

The VoIP protocols tracked in real time by ClearSight include Session Initiation Protocol (SIP), Skinny Call Control Protocol (SCCP), H.323, Megaco, Media Gateway Control Protocol (MGCP). Additional non-VoIP protocols and applications include Citrix, DNS, Exchange, FTP, HTTP, ISAKMP and Kerberos, MS SQL, Oracle, POP, SMB, SMTP, and Telnet. Analyzer excelled in its ability to monitor the test network and was able to perform all the diagnostic tasks, as detailed below. What distinguished the performance of Analyzer was its ability to provide the administrator with top-level information and then to drill down into and allow a fix to a reported problem. For example, in a summary view, RTP traffic report can be used to display the detail of the RTP stream, playback any captured file, codec and/or call-quality detail without losing the visual or logical context of the tool navigation. ClearSight Analyzer is strong in the scope of audio and video codecs it can recognize and parse, and also in the ability to assess mean scores from generated, simulated traffic and/or by monitoring actual user traffic. In addition, ClearSight's Real Time ladder-view with TCP/IP and application-anomaly detection makes it easy to make changes and immediately see the effect of the change. Following are summaries of the individual test category results for Analyzer v5.1.

Configuration/Deployment: CSA, a software tool, is available as a stand-alone portable solution, or as a distributed version for monitoring remote network nodes individually or in aggregate. The OS platform currently supported is Windows 2000/2003 and X P, although a Linux version is planned for 2Q '07. The stand-alone version of Analyzer was installed easily and quickly through a Windows GUI that required no specialized knowledge other than the license key fo r activation. Interfaces supported include Ethernet, Fast Ethernet (half and full-duplex), Gigabit Ethernet (hal f and full-duplex), 10 Gigabit Ethernet (full-duplex), and OC-3/12/48 POS. Independent of any other manufacturer's hardware or protocol, Analyzer can send traps to ICMP stations as well as allow a MIB to be imported.

Display/Interface: With an electronic user guide that is clear and informative, CSA provides reports that are graphical in format (can toggle to data table format) with real-time and post-capture versions that are granular from year, month, week, down to the minute. Below is an example server screen that exemplifies Analyzer's ease of navigation and wealth of detail. By clicking on the upper and left outer border of the screen, Analyzer can be traversed easily while maintaining visual anchors to your logical location in the tool. The upper navigation bar contains buttons to change the display subject area – monitor, SLA, Alerts, and Reports. The far left blue column displays persistent real-time system statistics such as number of servers, hosts, connections, problems, issues, nodes, and more. The column to the right contains the master protocol/server list that can be selected for quick navigation. The remaining panels contain further detail and analysis



Analyzer Detail Screen – Example detail screen showing server details with highlighted performance issues (yellow buttons) clickable for session ladder view.

points of the current subject area. With continued one-click access, additional tables and ladder charts of indicated detail can be displayed. The overall navigation remains intuitive and easily traversable for quickly scanning current network conditions and driving down to further detail as necessary, on the fly.

Traffic Capture and Real-Time Monitoring: The Analyzer performed well in the hands-on tests on a variety of tasks. In identifying key network nodes by IP address and role, it could differentiate and display H.323, MGCP, Megaco, SIP and Skinny servers. Calls were identified for their subnet, or whether remote or PSTN, with the caller and callee identified in real-time. For awareness of network conditions, Analyzer can detect the loss of an IP WAN link to a destination, in both the portable and distributed versions, and report whether the call controller or the VoIP gateway have gone down either through constantly reported stats or configured alarms. Excessive latency along with current, minimum and maximum values of packet loss, or jitter are reported through real-time statistics, along with dropped, out of sequence, or duplicate frames. Analyzer can indirectly assist the administrator to pinpoint excessive impairments to a link, a subnet, or a specific endpoint. Thresholds for network conditions can be set to initiate SNMP traps and issue an email or beeper message, and even execute user-defined Javascripts for further control.

Diagnostics: ClearSight Analyzer was able to detect and identify VoIP network problems such as *intermittent* loss of a call controller or gateway. The detection of an intermittent loss for a specific IP point is also possible. The maximum available bandwidth between sites can be determined using subnet and protocol filtering. To get reports on VoIP between specific sites, traffic results can be filtered into a separate trace file and reports run off the resulting data.

Reporting: For the test tasks, Analyzer reported IP QoS conditions on a clock basis, IP call activity by station, aggregate call activity numbers by local versus remote or WAN. This data can be exported to .csv files or SQLlite. Trace files created from other sources (e.g. pcap, cap, enc, etc.) can be imported and reported through Analyzer's graphical interface. Preformatted customizable report include Aggregate Overview, Call Status, Call Distribution, Top Caller, MOS reports for H.323, Megaco, MGCP, SIP and Skinny. Per call VoIP QOS Index reports are available for protocols H.323, Megaco, MGCP, SIP and Skinny.

Advanced Features: Features include real-time conversation play and .wav file playback, identification of every major audio and video codec and endpoint-to-endpoint MOS scoring. The real-time TCP/IP and anomaly detection and alerting is an excellent and unique feature that displays the details of both sides of VoIP and other network sessions that can be easily drilled into for more detail.

Miercom Performance Report

Based on testing of the ClearSight v5.1 software and review of its configuration, deployment and operation as described herein – Miercom finds:

- ClearSight Analyzer (CSA) v5.1 software captures and analyzes more network activity in one place, including VoIP, than other products tested by Miercom in the last year
- Analyzer's interface is unique, intuitive, and easy to use and provides a ladder view of VoIP connection that is easy to navigate to further detail of both sides of a session
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REAL TIME. REAL CLEAR.

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