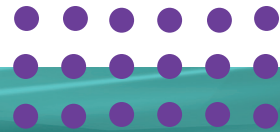


VitalSuite™ Network Performance Management VoIP Software

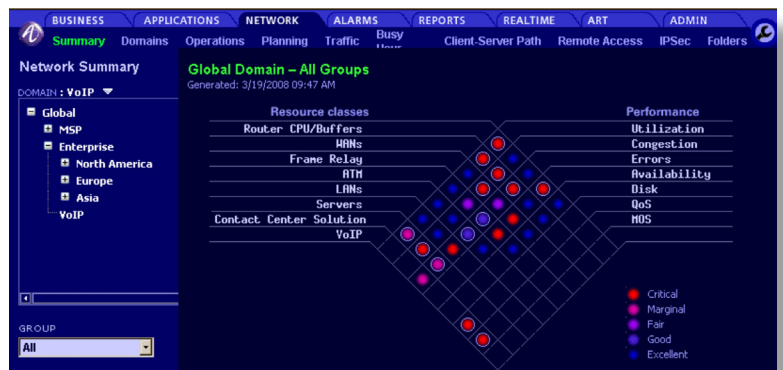
Release 10.2



True “lifecycle” testing technology is essential to ensure a successful VoIP implementation

To achieve a level of visibility that VoIP deployments require it is necessary to monitor both audio and signaling quality performance indicators that impact call quality before, during, and after a VoIP deployment. Analysis technology must be able to capture VoIP vendor generated performance statistics and generate test calls between all desired VoIP call paths. It must collect, measure, analyze and correlate results from vendor independent VoIP call detail records including embedded quality indicators and network performance indicators from both VoIP and network infrastructure equipment.

Alcatel-Lucent VitalSuite Network Performance Management software can both generate tests and measure VoIP performance indicators within a network carrying VoIP traffic to baseline performance, obtain real-time troubleshooting diagnostics and alarm on problems. VitalSuite software provides the critical network information necessary to plan for a VoIP deployment, to pre-empt post deployment problems and to optimize resources to maximize return on the Voice over IP network investments (ROI). The tool provides end-to-end, web-based visibility into geographically dispersed, multi-vendor, multi-technology converged networks. It enables IT and VoIP managers to monitor, analyze, manage and predict performance from a single centralized location.



Voice over IP service level management requires a solution that addresses the complete deployment cycle, from readiness assessment, to pre-production testing, to production roll out and tuning.

FEATURES

- Flexible, multi-vendor and multi-technology support - monitors diverse resource types and more than 640 devices from more than 50 different vendors including Alcatel-Lucent, Cisco & Avaya IP-PBX deployments & BroadSoft
- Versatile reporting - provides real-time statistics for efficient, on-target troubleshooting, continuous operations data for monitoring service quality, high-level summaries and long-term trends for capacity planning
- Out-of-the-box and configurable executive reports - shortens time-to-results with rapid analysis
- Unique graphical multi-level domain “heat charts” - pinpoints performance problems at-a-glance
- Web-based administration interface - allows for user account administration, domain and group definition, policy creation, scheduling data collection and reporting and specifying privileges for multiple user classes
- Fully automated monitoring - continuously gathers network-wide performance criteria for data and VoIP converged networks including VoIP leading quality indicators

BENEFITS

- Unsurpassed investment protection - use built-in toolkit to speed integration with existing management systems and emerging technologies
- Fast, easy deployment - helps data and VoIP network managers identify potential trouble spots, verify service level agreement (SLA) compliance and optimize resource utilization
- Immediate ROI - quickly identify opportunities for consolidation and/or elimination of expensive operational resources based on utilization data
- Network-wide visibility - monitor network data and VoIP performance across an entire IT infrastructure
- Low cost of ownership - reduce CapEx and OpEx outlays with a simple, economical licensing model, cut training time and expense with an easy to use web-based management interface
- Enhanced end-user experiences - access real-time data to identify performance issues and trends before they affect users

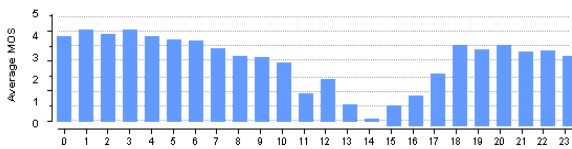


OPERATIONS AND SPECIFICATIONS

VoIP Service Management

- Personalized web portal monitors quality of services being delivered
- Services heat charts quickly expose network and application trouble spots, based on specific Quality Index settings
 - Heat Charts provide unified intuitive, at-a-glance indicators of performance problems, with efficient drill downs to additional performance details
 - Voice Quality Index tracks aggregate voice quality over time
 - Key Performance Indicators
 - MOS, ICPIF & R factor score by hour
 - VoIP call quality index by hour
 - Jitter, latency, delay and packet loss quality index by hour
 - Call success quality index by hour
 - Call minutes, calls by hour
 - VoIP quality exception leaders
 - Response time

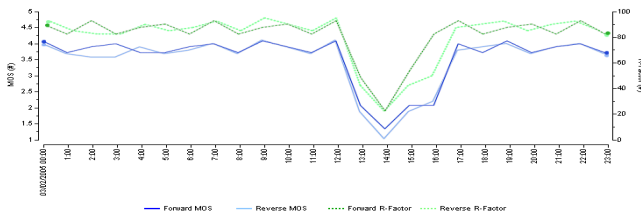
Average MOS by Hour



VoIP Network Performance

- Aggregated call statistics for a range of views baseline call volume, and voice service metrics
- Flexible auto-discovery to import a device information file, specify a list of devices or initiate controlled device discovery
- Integration toolkits allow rapid incorporation of legacy and emerging technologies
- Stores performance data in a commercial relational database management system allowing SQL access
- Operations view summarizes key statistic details
- Detailed view presents monitored metrics for devices
- Detailed graphs offer extensive visibility into the performance of individual managed resources

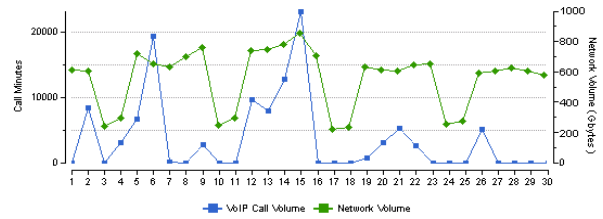
100.140.51.42_100.140.51.57
Detail, VoIP Agent Statistics
03/02/2005 00:00 to 03/02/2005 23:00



Voice Quality vs. Network Performance

- Integrated call/data monitoring in a common platform
- Voice and Data Comparison Reports indicate impact of network performance on voice quality
 - Voice Quality Index vs. Network Quality Index
 - VoIP Quality vs. Network Utilization
 - VoIP Call Success vs. Network Utilization
 - VoIP QoS Details vs. Network Utilization
 - VoIP Traffic Volume vs. Network Volume

VoIP and Network Volume by Day

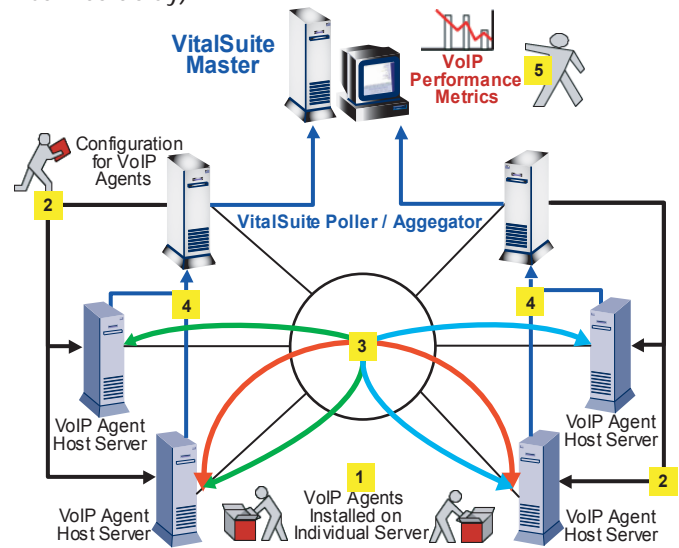


Voice Call Quality

- Five levels of quality thresholds
- Thresholds for Jitter, Delay and Packet Loss

VoIP Agent

- Software probe that provides active, peer-to-peer testing for VoIP service quality measurements
 - Uses SIP to set up VoIP test calls
 - Generates RTP streams corresponding to each successful SIP call
- Incorporates Bell Labs-developed technology
- Integrated centralized control and end-to-end results
- Unattended / Remote agent management
- Enables the scheduled collection of user level performance metrics as well as on-demand tests
- Customizable Key Performance Indicators
 - Speech Clarity (MOS, R factor, one-way and round trip jitter distributions, CODEC quality)
 - Conversational Quality (round trip & one-way latency, end-to-end jitter)
 - Call Setup Metrics (call setup time, tear down time, service delay)



VitalSuite VoIP Agent five easy implementation steps to VoIP performance management.

Cisco SAA IP SLA Support

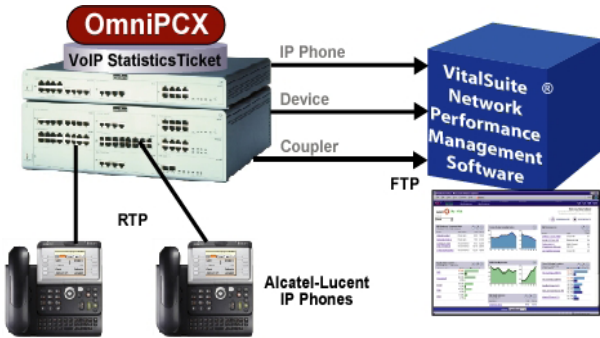
- Probe discovery to simplify SAA test configuration
- Ability to vary the packet length
- SAA Probe Types - TCP, UDP, DLSw, DHCP, DNS, FTP, HTTP, Jitter, VoIP Jitter, Ping and VRF parameters

OPERATIONS AND SPECIFICATIONS

OEM Support

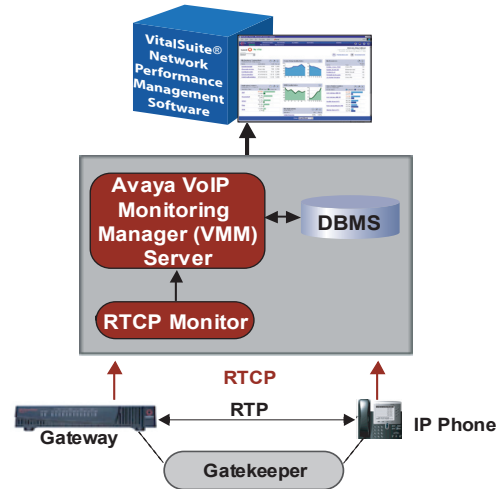
Alcatel-Lucent OmniPCX Enterprise

- Integrated call and system monitoring
- Resources - OmniPCX Device, Coupler (Gateway), IP Phones, Server/System parameters
- VoIP Statistics Ticket key performance indicators
 - RFactor and MOS: Avg and Min
 - Call Legs per hour: Peak and Avg
 - Call duration: Peak and Avg
 - Packet Loss: Peak and Avg
 - Jitter and Delay: Peak and Avg
- System Level key performance indicators
 - System Processes: Max/Min/Current process counts, CPU/Memory usage
 - System Memory: Peak/Avg Util for Swap, Total, Buffer and Cached memory
 - System Disk: Peak/Avg Util, % inodes
 - System General: Peak/Avg Load, Swap In/Out, I/O send/rec, Peak/Avg CPU Util



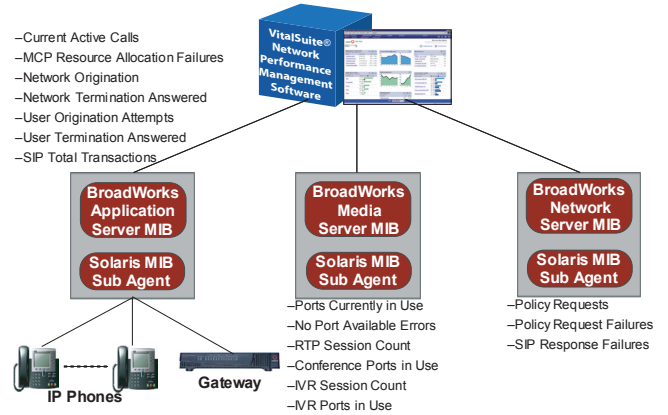
Avaya VoIP Monitoring Manager (VMM)

- Resources – VMM, Gatekeeper, VoIP Gateway, IP Phones
- Key performance indicators
 - Number of Calls & Call Minutes
 - Avg Call Duration
 - Delay / Jitter: Avg and Peak
 - Round Trip Time (RTT): Avg and Peak
 - % Packets Lost: Avg and Peak
 - Call QoS
 - MOS Scores



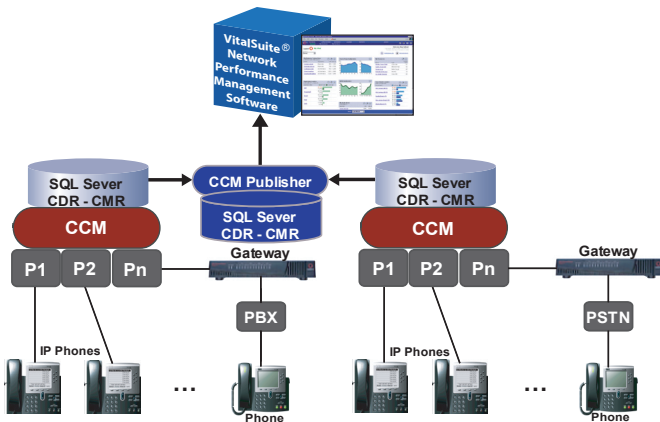
BroadWorks VoIP Server Monitoring

- Resources – Application Server / Call Setup, Media Server / Conferencing etc., Network Server / Authentication, SIP Proxy



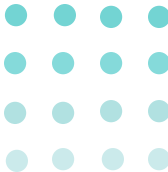
Cisco Call Manager (CCM)

- Integrated call & data monitoring in a common platform
- Resources - IP Phones, Partition, Partition Pairs, Call Manager, Call Manager Pairs
- Key performance indicators
 - Total calls successful and unsuccessful
 - Total failed calls
 - Total calls succeeded
 - Total call minutes
 - Average duration of a call
 - Avg Voice QoS per Call Legs
 - Packet loss ratio: Avg and Peak
 - Delay / Jitter: Avg and Peak
 - MOS scores
 - Cause Code Reports



Brix Networks – VoIP Hardware Probe Solution

- Brix test suites specifically designed for VoIP networks actively test networks by simulating calls and media transmissions and by measuring the performance of the network and call signaling paths
- Test suite supported - H.323, SCCP, RTP - Measures one-way stats for latency, lost packets, jitter & out-of-order packets between two probes



OPERATIONS AND SPECIFICATIONS

Monitored Devices/Resource Types

- VoIP:
 - Alcatel-Lucent VoIP OmniPCX Enterprise
 - Cisco VoIP CCM (ver 4.0, 4.1 & 4.2)
 - Avaya VoIP Monitoring Manager (VMM- ver 3.1)
 - BroadWorks Application, Media, Network servers
 - Brix Networks SCCP, RTP, H323 Active Test Suites
 - Kagoor VF series - direct via KBOX-STATS-MIB
- Routers: Cisco (including Cisco NetFlow 5.0, WAN Manager, CAR and SAA / IP SLA Agents), Nortel, 3Com, Juniper™ (JUNOS 6.2), Alcatel-Lucent 7x50 Service Switch & Router family, Redback™
- WANs: Circuits, Frame Relay PVCs, ATM PVCs, ATM trunks, logical ports on WAN switches, RMON2 ATM Probes and routers
- LANs: Ethernet, Token Ring, switches/hubs, SMON VLAN
- Servers: Microsoft™ WMI, NT/2000, Exchange, Linux, UNIX™, Novell™, Compaq, SNMP Research, BMC, Cisco, CNT, Brocade, Nishan & McData SANs, Alcatel-Lucent VitalQIP DNS & DHCP and VitalSuite AAA
- Firewalls: Alcatel-Lucent Brick devices: LSMS 7.2, Cisco, Checkpoint and Juniper
- Alcatel-Lucent PSAX, OmniSwitch, OmniAccess WLAN, OmniStack, ISAM/ASAM (DSL) and Genesys Contact Center solution resources
- Alcatel-Lucent VoIP Agent: Speech Clarity, Conversational Quality, Call Setup Metrics
- Wireless: Comprehensive Wireless Coverage 2.5 and 3G MSC/Wireless Routers, CDMA, CDMA 2000 UMTS, GPRS, UTStarcom and Cisco PDSN
- Wireless LANs (802.11 MAC MIB), WiMax Alvarion BreezeMax, WMAN - WiMax
- Over 50 Vendors supported plus free GUI based MIB toolkit to custom build or add new data collectors
- Over 640 devices certified

Executive Reports

- Reports may be generated for the entire network, particular resource types (routers, servers, WANs, Frame Relay, ATM, Wireless, VoIP, RMON2 probes or LANs), or specific functional or regional groups either on the web, or via csv, PDF or txt format
- Network Overview reports summarize network-wide performance
- Group Comparison reports contrast performance by functional or regional group
- Custom reports enable tailored performance reporting for individual users
- Best/Worst charts identify resource exceptions
- Historical alarm reports provide detailed and summary views of alarm information
- Report scheduler provides the ability to schedule report execution and send reports to email aliases
- Busy Hour reports for viewing statistics from multiple specific user definable periods of the day

Capacity Planning

- Summaries project usage trends
- Planning view projects future utilization based on past performance for upgrade planning
- Trend Graphs indicate predicted utilization for a single resource based on a configurable period of historical usage (six months by default)

Scalability

- N-tier architecture for unsurpassed scalability
- Up to 10 million polled objects

VoIP Agent Requirements

- VoIP Agent PC - Windows® 2000/2003
- FTP Server

System Requirements

- Windows® 2000/2003 or Sun® Solaris system platform sized appropriately for deployment

VitalSuite Performance Management software portfolio

Optimize network, application and business performance

Alcatel-Lucent's award-winning VitalSuite Network and Service Management portfolio is used today by more than 1500 enterprises world-wide, including over 75% of the Fortune 100.

Alcatel-Lucent leverages innovations from Bell Labs and experience and expertise from Alcatel-Lucent Worldwide Services to provide high performing and highly scalable solutions that increases IT staff productivity by enabling user technology and ensures network and applications performance for improved service availability.

VitalSuite Real-time Event Analysis software helps optimize multi-vendor packet data and voice networks with powerful real-time capabilities that traditional management products cannot match. It offers technically advanced tools to monitor, measure, analyze and visualize performance data and immediately identify network resources that have exceeded defined network service levels.

VitalSuite Application Performance Management software monitors the performance of network-based applications, presenting real-time views of each user transaction from the desktop, across the network or Internet, to the servers, and back again. IT managers get a complete picture of the overall application performance across the network since the software continuously collects data from all ongoing applications activity.

VitalSuite Advanced Reporting Toolkit is a comprehensive Web-based tool that generates custom presentation-quality reports and graphs by extracting monitored data from VitalSuite Network Performance Management software. The flexible formatting power enables easy transformation of network performance data to dynamic, custom reports and quickly determine the status of network infrastructure.

To learn more about these and other management solutions, contact your Alcatel-Lucent sales representative, authorized reseller or sales agent. You can also visit our web site at <http://www.alcatel-lucent.com/vital>.

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