

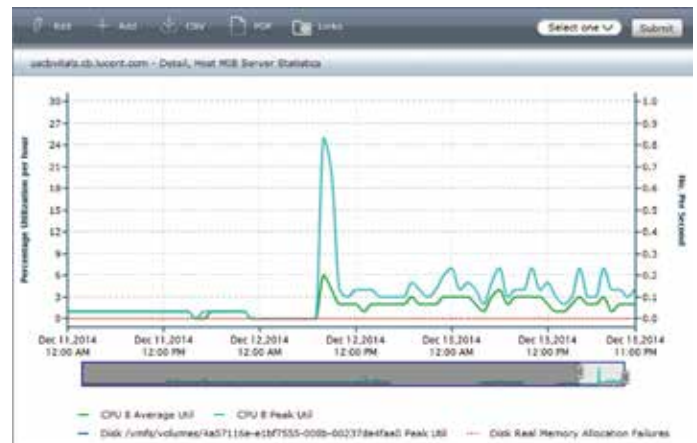
## Nokia VitalSuite® Software for VoIP Performance Management

Release 14.2

Voice over IP (VoIP) deployments require careful performance monitoring to ensure that end users experience Quality of Service (QoS) that meets or exceeds service requirements. This performance monitoring should include both audio and signaling quality, the ability to monitor actual end-user calls, and the ability to generate and monitor synthetic test VoIP calls. Nokia VitalSuite® Performance Management software provides the critical network information you need to monitor VoIP QoS, preempt problems, optimize resources, and plan ahead for maximum return on network and service investments. VitalSuite provides end-to-end visibility of many kinds of VoIP networks —multivendor, multi-technology, and geographically dispersed. It enables network managers to monitor, analyze, manage and predict VoIP QoS from a single powerful easy-to-use Web 2.0 Graphical User Interface (GUI).

Nokia VitalSuite® Network Performance Management software (VitalSuite Net) can both generate tests and measure VoIP performance indicators within a network carrying VoIP traffic to baseline performance and obtain real-time troubleshooting diagnostics and performance alarms. VitalSuite Net provides end-to-end visibility into geographically dispersed, multivendor, multi-technology converged networks.

All VitalSuite components are designed with a powerful but easy-to-use Web 2.0 Graphical User Interface (GUI) to make users productive quickly.



## Features

**VitalSuite Net** – collects and analyzes VoIP call records from leading VoIP platforms such as Cisco CUCM and Alcatel-Lucent OmniPCX™

- VoIP agent feature generates synthetic VoIP calls and monitors detailed QoS, including SIP server call setup
- Comprehensive data collection and analysis for Genesys Contact Centers, including GVP, SCS, T-Server, and platforms
- Multivendor VoIP data collection including Cisco IP SLA VoIP, Brix, Broadworks, and Alcatel-Lucent OpenTouch
- Unique MyServices displays – high level displays that are ideal for contact centers and other VoIP environments show problems at a glance, both from network and VoIP devices as well as applications, with easy drill down to detailed reports

**VitalSuite Realtime** – advanced thresholds and alarms applied to data collected by VitalSuite Net, VitalSuite Flow, or VitalSuite Apps

- Topology maps feature can highlight VoIP performance on specific devices

**VitalSuite Flow** – collection and analysis of Netflow records directly from flow-enabled network routers

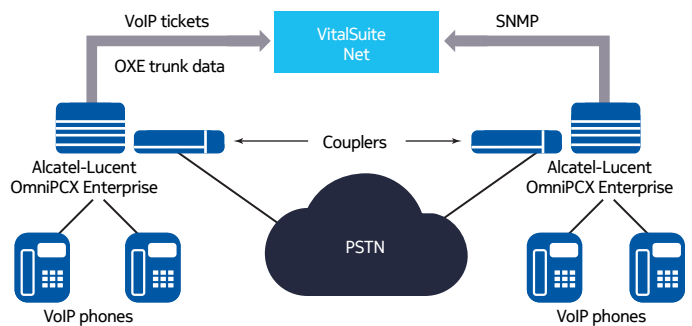
- Netflow ,sFlow, or cFlow reports by QoS can highlight VoIP traffic utilization

**VitalSuite Apps** – performance monitoring based on agent software deployed on end-user desktops and servers

- Monitors SIP server performance and contact center applications



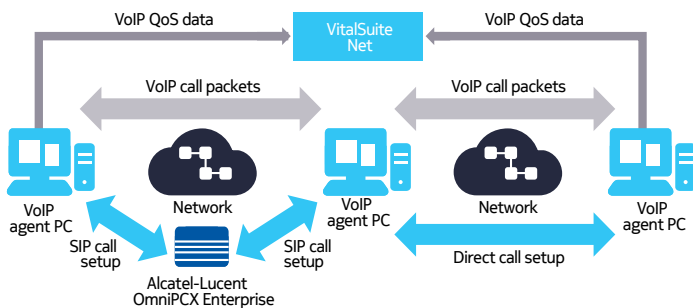
Figure 1. VitalSuite monitoring Alcatel-Lucent OmniPCX Enterprise



## Benefits

- Network-wide visibility – monitor VoIP and performance across the entire IT infrastructure
- Works out of the box – fast and easy deployment, with automatic network discovery and default configurations and a rich set of built-in data collectors
- Immediate return on investment (ROI) – quickly identify overutilized and underutilized network resources
- Cost effective – implement carrier-class management capabilities at a price that suits enterprise IT budgets
- Protects your investment – extensive configuration options and customizability so it easily integrates with existing management systems and emerging technologies
- Enhanced end-user satisfaction – resolve VoIP and network problems before they impact users
- Proactive monitoring – identify problems quickly in real time, reduce time needed to manage the network
- Lower operations and ownership costs – minimize help desk calls and trouble tickets, and reduce the need for expensive hardware upgrades

Figure 2. VitalSuite VoIP Agent with Direct Call Setup or with SIP Call Setup via OmniPCX



## Operations and specifications

### VoIP service management

- Personalized web portal monitors quality of services being delivered
- Powerful VoIP Dashboards with at-a-glance performance summary data and drill-downs for key VoIP devices
- Services summary charts quickly expose network and application trouble spots, based on specific Quality Index settings
- Summary 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 (KPIs)
- MOS, ICPIF and 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

## VoIP network performance

- Aggregated call statistics for a range of views on baseline call volume, and voice service metrics
- 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

## Voice quality versus network performance

- Integrated call/data monitoring on a common platform
- Voice and data comparison reports indicate impact of network performance on voice quality
- Voice Quality Index versus Network Quality Index
- VoIP Quality versus Network Utilization
- VoIP Call Success versus Network Utilization
- VoIP QoS details versus Network Utilization
- VoIP Traffic Volume versus Network Volume

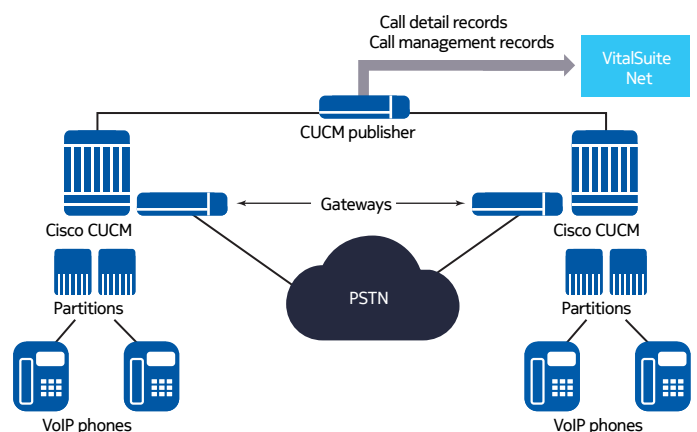
## VitalSuite Net VoIP Agent feature

- Software probe that provides active, peer-to-peer testing for VoIP service quality measurements
- Uses SIP server 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 KPIs
- Speech clarity (MOS, R factor, one-way and round-trip jitter distributions, CODEC quality)
- Conversational quality (round-trip and one-way latency, end-to-end jitter)
- Call setup metrics (call setup and tear down time, service delay)

## Alcatel-Lucent OmniPCX™ Enterprise

- Integrated monitoring for VoIP and platform health
- Resources — OmniPCX device, coupler (Gateway), IP phones, server platform performance
- Supports both FTP and streaming VoIP ticket data collection
- VoIP statistics ticket key performance indicators
- Rfactor and MOS: Average and minimum
- Call legs per hour: Peak and average
- Call duration: Peak and average
- Packet loss: Peak and average
- Jitter and delay: Peak and average
- System level KPIs
- System processes: Maximum/Minimum/Current process counts, CPU/memory usage
- System memory: Peak/Average utilization for swap, total, buffer and cached memory
- System disk: Peak/Average utilization, percent inodes
- System general: Peak/Average load, swap in/out, I/O send/receive, peak/average CPU utilization
- Trunk Groups: Trunks incoming/outgoing/total, Calls, Call Duration, Failures, Overflows, Busy
- Trunks: Trunks Busy/Out of service, AIS

Figure 3. VitalSuite Monitoring Cisco CUCM



## Cisco Unified Communications Manager (CUCM)

- Integrated monitoring for VoIP calls and data network
- 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
- Average voice QoS per call leg
- Packet loss ratio: Average and peak
- Delay/Jitter: Average and peak
- MOS scores
- Cause code reports

## Cisco SAA IP SLA support

- Probe auto-discovery to simplify SAA test configuration
- Ability to configure test packet length
- SAA probe types – TCP, UDP, DLSw, DHCP, DNS, FTP, HTTP, jitter, VoIP jitter, ping and VRF parameters

## Juniper RPM Probe Support

- Probe auto-discovery
- Support for HT probe type (Round Trip Time, Lost Packets)
- Support for IU Timestamp probe type (Latency, Forward Delay, Backward Delay, Lost Packets, detailed Jitter metrics)

## VoIP RTCP-XR Records

- Collect streaming RTCP-XR records either directly, or via SIP Publish interface
- Key Performance Indicators:
  - VoIP Stream Device: Call Legs, Call Duration, QoS, Rfactor, MOS, Packet Loss, Discard, Jitter, Burst Ration, Gap Duration, Delay
  - VoIP Stream Endpoint: same KPIs as VoIP Stream Device, but focused on an individual VoIP Phone or similar endpoint

## Brix Networks – VoIP hardware probe

- Brix test suites are designed for active VoIP network tests, simulating calls and media transmissions, and measuring resulting performance of the network and call signaling paths
- VitalSuite Net supports H.323, SCCP, and RTP test suites:
  - Measures latency, lost packets, jitter, out of-order packets

## BroadWorks VoIP server monitoring

- Monitors application server/call setup, media server/conferencing, and network server (authentication and SIP proxy)

Figure 4. VitalSuite monitoring Cisco IP SLA and Juniper RPM

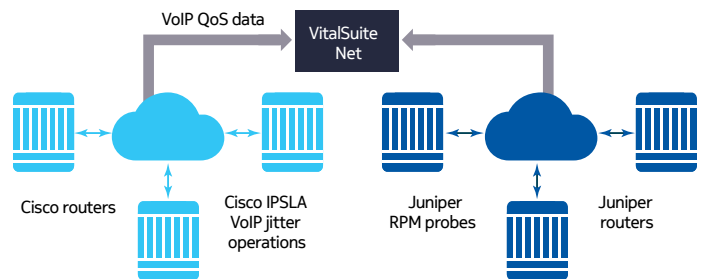
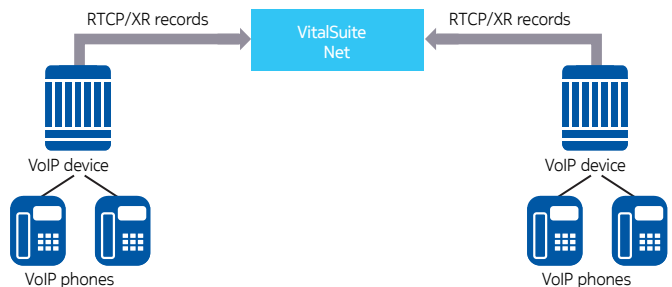


Figure 5. VitalSuite Monitoring RTCP/XR device



## Specifications

### User/Administrator interface requirements

- Microsoft Internet Explorer® 10, 11 or Firefox 43 or Firefox ESR 38.2.0

### System requirements

- Red Hat Linux 7.x (7.1 or later) / Oracle 12.1
- Red Hat Linux 6.x / Oracle 11.gR2 or Oracle 12.1
- Windows Server 2012 R2 / SQL Server 2014 64-bit
- Windows Server 2012 or 2012 R2 / SQL Server 2008 R2 64-bit
- Windows Server 2012 or 2012 R2 / SQL Server 2012
- Windows Server 2008 R2 64-bit / SQL Server 2008 R2 64-bit or SQL Server 2008 64-bit
- Windows Server 2008 R2 64-bit / SQL Server 2012
- Note that VitalSuite Flow servers require SQL Server Enterprise Edition

### VitalNet VoIP Agent requirements

- Microsoft® Windows® 7 OS
- FTP server

### The VitalSuite Performance Management software portfolio— Designed to Optimize network, application, and business performance

The VitalSuite Performance Management portfolio is used today by medium and large enterprises and service providers worldwide. The portfolio leverages key innovations from Bell Labs and experience and expertise from Nokia Worldwide Services to provide robust and scalable solutions that increase IT staff productivity, ensure optimal network and applications performance, and improved service availability. The VitalSuite product team partners with world-class business partners to deliver proven solutions that maximize the return on IT investments.

**VitalSuite Network Performance Management software (VitalSuite Net)** provides on-demand access to the critical network performance information necessary to preempt problems, optimize resources and plan for maximum return on investment (ROI). This market-leading tool gives end-to-end, Web-based visibility into geographically dispersed, multivendor networks, including routers, switches, servers, virtualization platforms, and VoIP. It provides a single centralized location to monitor, analyze, manage and predict performance.

**VitalSuite Applications Performance Management software (VitalSuite Apps)** provides detailed application performance analysis using agent software deployed on user desktops or servers in the network. It captures actual end-user experience and monitors individual applications for response time and number of transactions.

**VitalSuite Real-time Event Analysis software (VitalSuite Realtime)** helps optimize multivendor packet data and voice networks with powerful real-time and topology mapping capabilities that traditional management products cannot match.

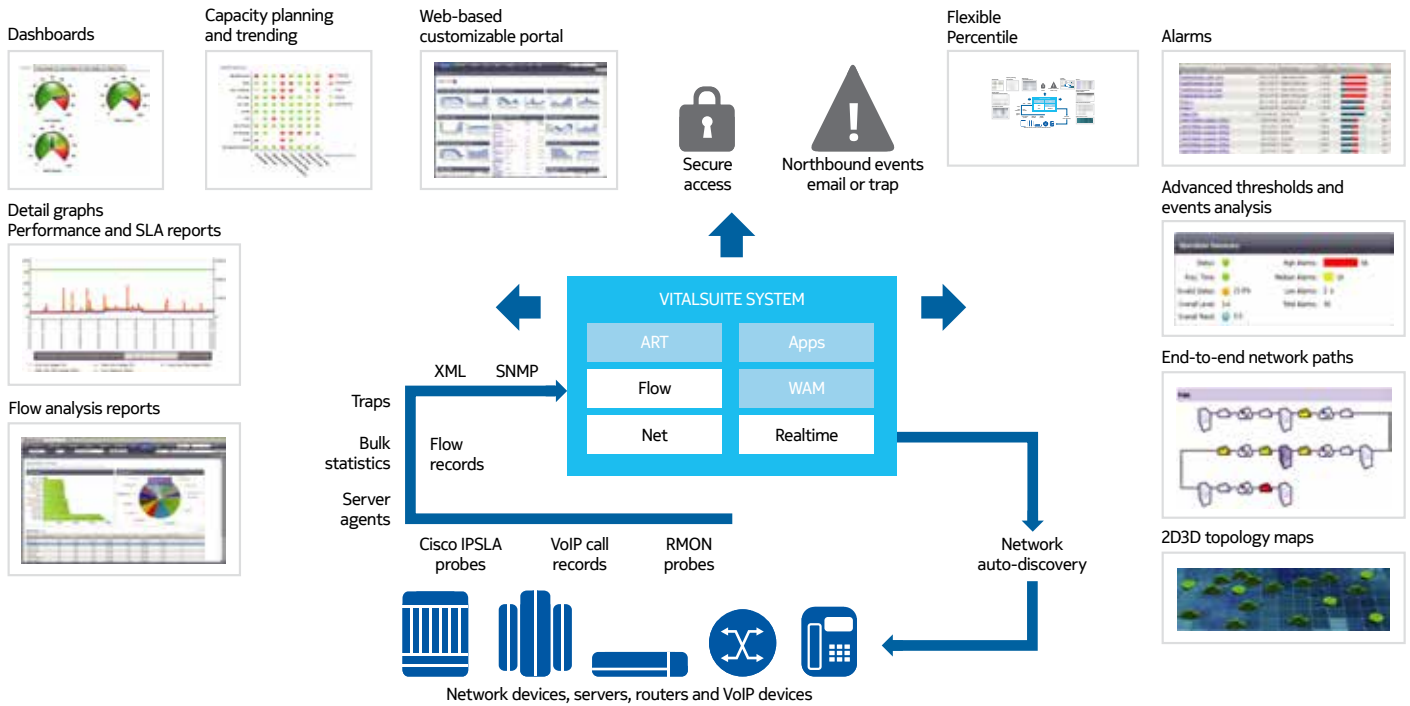
It offers technically advanced tools to monitor, measure, analyze and visualize performance data and immediately identify network resources that have exceeded defined network service levels.

**VitalSuite Flow Analysis software (VitalSuite Flow)** provides direct collection of network flow records, and powerful flow analysis reports that reveal which endpoints, applications, and protocols

To learn more about these and other management solutions, contact your Nokia sales representative, authorized reseller or sales agent, or [visit our website](#).



Figure 6. Input and Output of VitalSuite Net and related modules



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