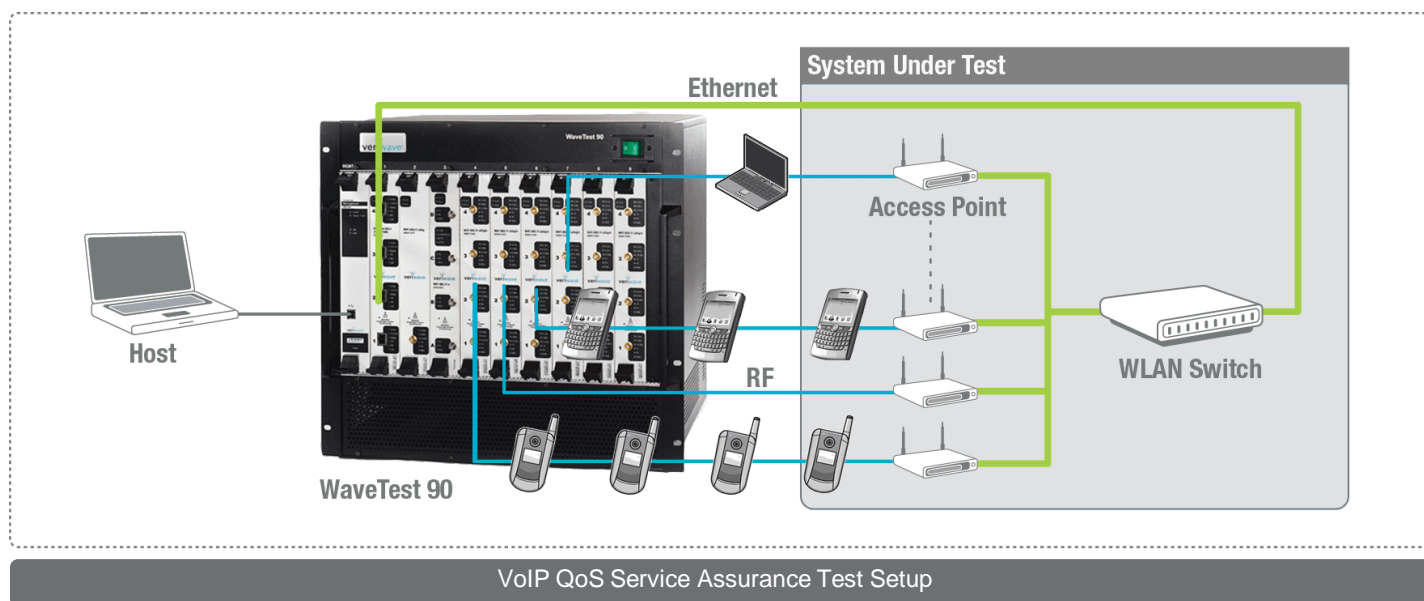


VoIP QoS Service Assurance Test

The VoIP QoS Service Assurance Test - is designed to validate and ensure maintenance of service level agreements (SLAs) in high performance Voice-over-WLAN (VoWLAN) networks. It offers an automated approach to determining a network's service level capacity, performance, call quality metrics, and service level assurance offered by infrastructure WLAN equipment in the presence of multiple VoIP calls and data traffic.

With the increasing popularity of real-time, delay sensitive, applications such as VoIP, Quality of Service (QoS) protocols are essential to enable high priority voice and video traffic to share the medium efficiently with lower priority data traffic. The VoIP QoS Service Assurance Test Suite quantifies and qualifies the VoIP Service Level and Service Capacity of a WLAN network supporting mixed traffic including voice, video and data. It offers a comprehensive functional test to validate the Service Differentiation capability of the WLAN, enables verification of adherence to the IEEE 802.11e standard (as well as WMM), regression testing and performance-envelope testing/analysis.

These tests are designed to identify bugs early in development and QA cycles, increase test coverage, and automate the test environment. The use of this test suite reduces time-to-market, increases test coverage and optimizes deployment of triple-play wireless networks.



Benefits

- Determine voice service level capacity of the WLAN network
- Characterize the Service Level Agreement (SLA) break-point of the WLAN infrastructure equipment handling a constant voice call load in the presence of changing Best Effort traffic load
- Measure VoIP call quality as overall R-value (MOS score) and real-time and historical (i.e., trend analysis) R-value variation
- Verify end-to-end throughput, latency and jitter of different traffic priorities throughout the network
- Ensure that the effects of security and QoS power-save protocols do not compromise voice quality
- Proactively identify QoS performance issues and address them before deployment
- Align expectations between marketing, development, QA, and customers with standard QoS benchmark metrics

Test Results

- The test suite provides both real-time results and final test results and metrics. These results can be exported in comma separated value (.CSV) file format or HTML to facilitate results analysis and reporting
- The automatically generated PDF test report provides an executive summary including comprehensive graphs, a description of the test and the significance of the results obtained, as well as drill-down detailed results
- Real-time counters track test progress and reflect failure conditions as they occur
- Integrated capture functionality provides for bidirectional traffic capture while the test is executing
- Categorization of test results per client and per QoS flow provides a comprehensive picture of the behavior of the system being tested

TEST AND METRICS:

- **Service Level Capacity Test** - This test determines the capacity of the WLAN infrastructure to support a specified level of high priority VoIP traffic for a given Service Level, by measuring the maximum number of voice calls supported for a given SLA (voice call R-value / MOS score) in the presence of a given low priority background and best-effort traffic load.
- **Service Level Assurance Test** - This test determines the Service Level Agreement (SLA) break-point of WLAN infrastructure equipment handling a constant VoIP call load in the presence of changing best effort traffic load, by measuring the achieved Service Level of high priority (voice and video) traffic as background and best-effort (low priority) traffic changes. This validates complex usage scenarios through changing traffic patterns
- **Service Differentiation Test** - This test determines the performance, capacity and call quality metrics offered by infrastructure WLAN equipment in the presence of multiple VoIP calls and data traffic, when utilizing the prioritization capabilities defined by the 802.11e standard.

TEST CONFIGURATION

- GUI interface is presented in a hierarchical tree format to enable quick navigation among tests
- Introduction screen per test describes the test in both graphical and text forms for easy test selection
- All tests follow tab-based scheme for Port, Client, Traffic and Test setups to maintain consistency and provide an easy-to-use interface

TEST CONTROL

- Duration in hours, minutes and seconds
- Number of trials, ports and clients
- DUT settling time, L3 learning parameters (ARP-IPv4, learning time, aging time)
- Real-time statistics update interval
- Client collision probability control to emulate hidden node issues, backoff-timer collisions etc.
- Varied client configurations with different security types, power save levels and distances from AP

CLIENT CONTROL

- Power level, frame error ratio, PHY data rate, security, power save, QoS power save (U-APSD)
- MAC and IP addresses, association rate, connection retries
- Media access parameters associated with the 4 different 802.11e QoS access categories

TRAFFIC CONTROL

- User priority level per 802.11e/802.1D
- VoIP calls (G.711, G.723, G.729)
- Traffic load: fixed or stepped
- Burst or constant ramp
- Data payload type (RTP, UDP, TCP, Raw IPv4), data payload content
- Unidirectional and bidirectional transfer

Minimum Requirements

VeriWave Test System	<ul style="list-style-type: none"> • 1 x VeriWave WT90 or WT20 system • 1 x WaveBlade WiFi (WBW1101) • 1 x WaveBlade Ethernet (WBE1101)
Host Computer	<ul style="list-style-type: none"> • x86 based PC running Microsoft Windows XP • SP1 or SP2 with 1GHz Processor and 256MB RAM