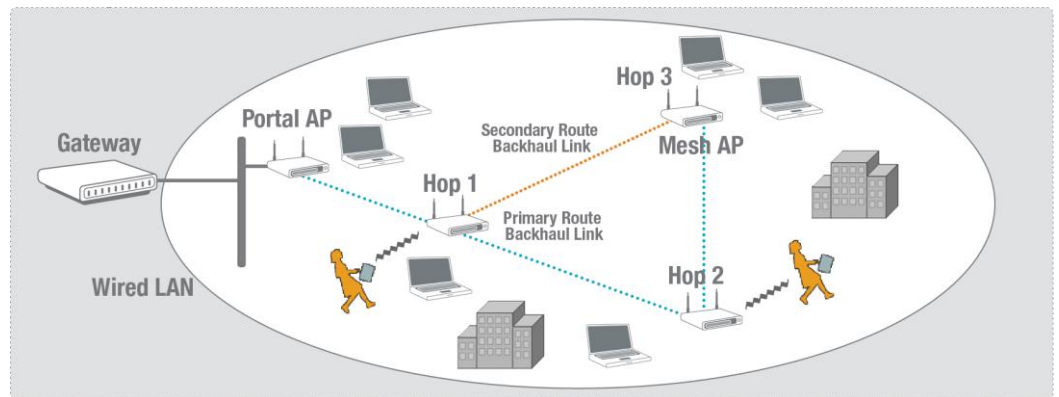
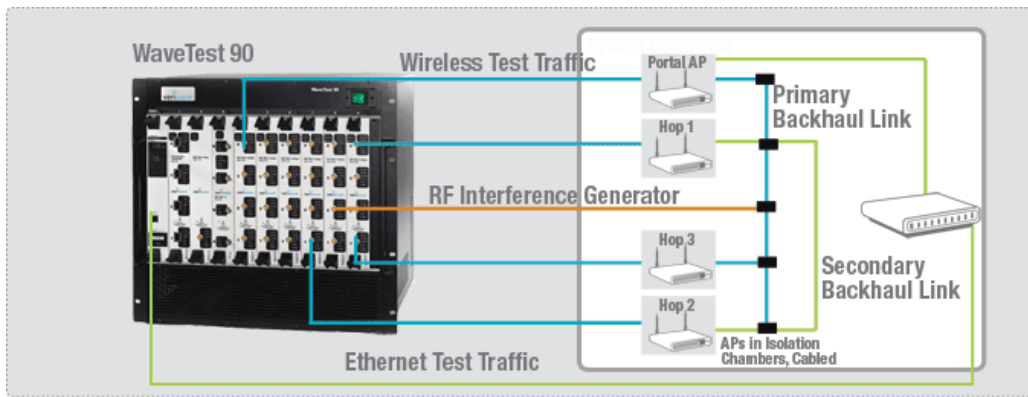


## Wireless Mesh Test Suite

**The Wireless Mesh Test Suite** - provides mesh network equipment designers, deployment engineers, service providers and carriers with an essential test tool designed to analyze the mesh infrastructure's ability to forward and route metro-scale client traffic, including voice, video and data, under different RF conditions. The tests confirm performance to a guaranteed service level required to support mission-critical applications on a Metro Area Network (MAN).



Typical Mesh Test Setup

Wireless Mesh Networking is experiencing explosive growth, becoming the primary driver of metro wide distribution for broadband multimedia services. The Wireless Mesh Test Suite provides a comprehensive set of tests that determines traffic re-route efficiency under controlled RF interference conditions, quantifies client capacity, and characterizes the multi-hop throughput and latency of a mesh network during development, QA, and prior to deployment. The test suite is ideal for regression testing and stress testing.

This test is designed to provide an automated and repeatable test solution for a variety of topologies. It increases test coverage and identifies bugs prior to deployment, thus increasing quality and reducing time-to-market.

## Benefits

- Determines the network's ability to self-heal and recover from RF interference effects or outages
- Benchmarks performance metrics of Wireless Mesh Network equipment over different topologies
- Quantifies the network's ability to support delay sensitive applications like VoIP
- Determines how well the network can handle traffic on multiple mesh nodes simultaneously
- Scales from a single hop to multiple hops for testing real world conditions
- Simplifies set-up and minimizes configuration

## Test Results

- Provides both real-time results as well as final test results and metrics; results can be exported in comma separated value (CSV) file format or HTML to facilitate results analysis and reporting
- Automatically generated PDF test reports provide an executive summary including comprehensive graphs, methodology, configured parameters, graphs, typical expected results, and drill-down details
- Integrated capture functionality provides bidirectional traffic capture while the test is executing
- Categorization of test results per mesh hop and per traffic flow provides a comprehensive picture of the behavior of the system being tested

### TEST AND METRICS:

- **Mesh Client Capacity** - Determines the maximum number of clients for which the mesh network can support a given SLA (Service Level Agreement). The SLA is defined by three parameters: maximum packet loss, guaranteed throughput, and the maximum acceptable latency
- **Mesh Fail-over and Recovery** - Determines the speed and efficiency of the mesh network re-route protocols when identifying and using an alternate backhaul path. Re-route may be needed due to clients moving between mesh APs, degradation of the primary backhaul link, or a failure of an AP
- **Mesh Throughput by Hop & Mesh Aggregate Throughput** - Identifies the maximum rate at which the mesh network can forward packets without loss. This measurement can be conducted on a per-hop basis and also as an aggregate for the entire mesh network
- **Mesh Latency by Hop & Mesh Aggregate Latency** - Measures the time it takes for frames to be forwarded through the mesh network at a specific intended load on a per hop basis, or as an aggregate for the entire mesh network
- **VoIP QoS Service Assurance Test** - Characterizes the mesh network's service level capacity, service level guarantees, and service differentiation efficiency for VoIP calls. Determines end-to-end VoIP call quality (R-value and MOS scores) for different QoS schemes
- **WLAN Roaming Test** - Determines the end-to-end connection re-establishment time and packet loss experienced by mobile VoIP and data clients on a mesh network. Test scales from one to hundreds of mobile clients and dozens of APs

### CLIENT CONTROL

- Client transmit power level, frame error rate, PHY data rate, security schemes
- MAC and IP addresses, connection rate, connection retries

### TRAFFIC CONTROL

- Traffic load: fixed or stepped
- Data payload type (RTP, UDP, TCP, Raw IPv4), data payload Content
- Unidirectional and bidirectional transfer

### TEST CONTROL

- Duration in hours, minutes and seconds
- Number of trials, mesh nodes and clients
- DUT settle time, layer 3 learning parameters (ARP-IPv4, learning time, aging time)
- Backhaul link RF interference level
- AP failure (on/off)
- Backhaul intended load
- Client contention: real-world client contention environment facilitates controlled client collisions
- Client configuration parameters: enables various configurations of clients with different security types, distances from APs, power levels and security settings

### MESH BACKHAUL RE-ROUTING

Mesh backhaul re-routing can be triggered due to a variety of factors. The Wireless Mesh Test Suite addresses all causes of backhaul re-route by:

- Turning APs on/off
- Varying client power levels to emulate their movement between APs
- Creating RF interference. RF interference is generated by the interference Generator (IG) software running on a dedicated WiFi WaveBlade. The IG selectively destroys frames on the desired backhaul link to precisely model the interference seen in a real world environment

## Minimum Requirements

<b>VeriWave Test System</b>	<ul style="list-style-type: none"> <li>• 1 x VeriWave WT90</li> <li>• 1 x 4-port WaveBlade WiFi (WBW1104) or 3 x 1-port WaveBlade WiFi (WBW1101)</li> <li>• 1 x WaveBlade Ethernet (WBE1101)</li> </ul>
<b>VeriWave Software</b>	Interference Generator™ (optional)
<b>Host Computer</b>	<ul style="list-style-type: none"> <li>• x86 based PC running Microsoft Windows XP</li> <li>• SP1 or SP2 with 1 GHz Processor and 256 Mb RAM</li> <li>• Monitor supporting 1024x768 screen resolution, Mouse and Keyboard</li> </ul>