



Software Agents

Monitor End-to-End Network Performance to the Desktop

KEY BENEFITS

- Evaluate QoS from Customers' Viewpoint
- Monitor Content and Network Impairments and CPE Failures
- Real-time Monitoring for Troubleshooting
- An Agile Client Suitable for Many Types of CPEs
- Easy to Integrate with OSS

Software agents from Symmetricom can be easily downloaded and installed on customer premise equipment (CPE) such as a set top box (STB), PC or mobile devices to monitor and troubleshoot network performance and/or content quality for that customer. Under the control of Symmetricom's centralized NOC Management and Reporting solution and software agents perform a comprehensive suite of real-time tests to help identify network bottlenecks, equipment failures, and other issues.

In combination with Symmetricom's NOC software and hardware-based network probes, software agents are part of a total solution to monitor and analyze quality of service on virtually any network, media, topology, and service end-to-end all the way from the Video Head-end Office (VHO) to the customer's premises equipment.

A COMPREHENSIVE VIEW

Use Symmetricom software agents whenever you wish to assess end-to-end network performance to a remote CPE — whether you are a service provider or carrier, or operate a corporate network. To initiate testing, a remote user can either execute the agent if it's pre-installed or choose to install a software agent off the network operator's website onto the CPE, then the operator will remotely instruct the agent to execute tests. The tests are run between the CPE and a test server located on any Symmetricom hardware-based network probe at the network's edge or central site. A Symmetricom software agent also reports the presence of any firewall or network address translation that may limit the ability of tests to reach all the way to the CPE. One NOC software instance can manage multiple software agents and test servers simultaneously.

CAPABILITIES INCLUDE:

End-to-end monitoring: An essential part for end-to-end monitoring that assesses and identifies trouble spots

Remote deployment: Customers can download software agents directly from the web — there's no need for customer service personnel to visit the remote site

Remote management: Symmetricom's web-based management system enables network operations personnel to manage multiple software agents remotely

Active monitoring: It's your choice — install agents permanently on CPE for continuous monitoring of real-time network performance or download agents on-demand for one-time measurement of how well the network handles test traffic generated by test servers

Robust testing in a small footprint: A software agent takes less than 5MB of memory and less than 1% of CPU utilization

TESTING TAILORED TO YOUR NETWORK

For maximum flexibility, Symmetricom software agents can be deployed in any of two configurations and three test suites.

The two agent configurations are:

Resident: A software agent is installed permanently on CPE entirely transparent to the customer, and monitors performance continuously.

On-demand: Software agents are downloaded and run as needed from inside the web browser of the customer's computer.

TYPICAL DEPLOYMENT AND USAGE

Real time diagnostics and troubleshooting

- Reduce diagnostic time from 40 minutes to 3 to 5 minutes
- Easily integrate with third party customer-centric OSS and packaged or custom trouble ticket systems such as Remedy

Performance monitoring

- Monitor QoE as perceived by customer 24X7 with Q-Mon software robots and Q-Gauge.
- Q-Mon can be pre-installed in CPE, in a Q-Probe, or even downloaded

The three test suites are:

Q-Gauge

Monitors bandwidth and delays as it highlights network bottlenecks and shows which issues are LAN or WAN related. *(Both resident and on-demand tests).*

Q-Diag

In addition to all Q-Gauge tests, Q-Diag also records packet route (with per-hop performance indicators) for in-depth troubleshooting of network performance issues. *(On-demand only).*

Q-Mon

Monitors whether a service (FTP, TELNET, IMAP, POP3, SMTP, HTTP, etc.) is up and running. Records packet route with per-hop metrics to dissociate network issues from server issues. *(Resident only).*

What Gets Tested		
<p>By Q-Gauge</p> <ul style="list-style-type: none"> • Software Agent Test Server test port • TCP test port • TCP payload size, TTL, TOS, test duration • OS type and version of the machine • Slowest link speed detected between the agent machine and the agent test server <p>TCP parameters of the machine under test:</p> <ul style="list-style-type: none"> • Selective Acknowledgment (RFC2018) • Window scaling (RFC1323) 	<ul style="list-style-type: none"> • Default MTU • Maximum TCP window size • TCP roundtrip delay • TCP one way latency - both directions • TCP bandwidth in each direction • Percentage of retransmitted packets • Percentage of out-of-order packets • TCP slow start activation • TCP connection idle time <p>By Q-Diag</p> <p>All Q-Gauge tests plus:</p> <ul style="list-style-type: none"> • Route trace between Q-Diag and the test server • Roundtrip delay for each hop in the route 	<p>By Q-Mon</p> <p>Determines accessibility and performance of any:</p> <ul style="list-style-type: none"> • FTP service • Web/HTTP service • POP3 service • SMTP service • IMAP service • NTP service • Telnet service • SSH service • Custom services using the UDP or TCP protocol and a specific port.

CONTACT SYMMETRICOM

For detailed technical information about Symmetricom's Software Agents, please contact us via our Web site:

<http://qoe.symmetricom.com/company/contact.asp>



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