



# Performance Analysis of Cable Modem Networks

## SmartCableModem Test™

### Product Overview

You are about to deploy your cable modem network, you have just completed the design of your new cable modem plant, and you want to verify the performance of your fully loaded system.

How will you tell if the performance and stability of your cable modem plant is as expected? The solution is the SmartBits® SmartCableModem Test (SCMT) application. SCMT allows SmartBits users to stress a cable modem installation to its full capacity. Also, by minimizing the time required to configure tests and analyze test results, you can more efficiently verify the performance of your equipment.

SCMT measures latency, latency variation, and out-of-sequence frames for cable modem plants using the unique capabilities of the SmartMetrics™ 10/100/1000 Ethernet, USB, and Packet Over SONET SmartCards/modules (ML-5710A, ML-7710, LAN-3101A, LAN-3102A, LAN-3201B, LAN-3310A, LAN-3311A, POS-3500B/Bs, and POS-3504As/AR).

### Ideal SCMT Applications

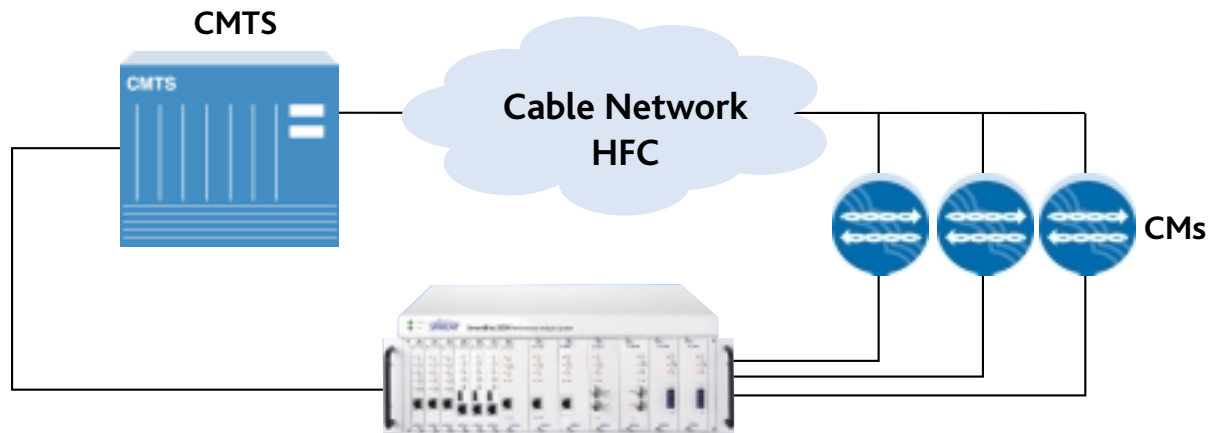
SCMT is designed for cable modem manufacturers, CMTS (Head End) manufacturers, MSOs, and system integrators.

The application is ideally suited:

- To evaluate real-life key performance parameters of cable modems, head ends, and cable plants under typical or extreme traffic load conditions.
- To perform comparative analysis of cable modems and cable plants.
- To re-qualify cable plants after firmware upgrades.

### Key Features

- Operates with Layer 2 or Layer 3 CMTSs.
- DOCSIS 1.1 Service Flow-based (QoS) performance analysis.
- Scalable to hundreds of ports.
- Supports IP, TCP, UDP, ICMP, or custom protocols.
- Supports dynamic IP address assignment via DHCP.
- Gateway MAC address resolution via ARP protocol.
- Runs multiple test cases unattended with a Test Schedules.
- Operates in a multi-user environment.
- Multi-chassis support with GPS synchronization.
- Test results presented in spreadsheet or graphical format.
- Analyzes upstream, downstream, or bi-directional traffic.
- Supports automatic step load and step frame size testing.
- Provides real-time port statistics, counters, and events.



Test environment using SCMT

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### Histogram Results

- **Sequence Tracking.** Sequence tracking is on a per stream (end-user device) basis. Received data is monitored and a record is kept of the following: transmitting port number, transmitting stream number, total number of frames received, number of frames received in sequence, duplicate frames received, and the number of frames expected, but not received.
- **Latency per Stream.** The test records the minimum latency and maximum latency and calculates the average latency for each traffic stream.
- **Latency over Time.** Every 10 ms, the test records for each port: the number of frames received, minimum latency, and maximum latency. The test also calculates the average latency for each stream. Measurements are stored in up to 50,000 data collectors.
- **Sequence plus Latency.** The Sequence plus Latency test combines the Sequence Tracking and Latency per Stream tests with Latency Distribution histograms. Results are gathered for each traffic stream and include latency distribution using 16 latency intervals.

- **Raw Tags.** In the Raw Tags test, frames are stored and then sent to SCMT without any calculations or filtering performed on the stream tags received. Up to 130,000 records are stored. SmartCard/module transmit time, receive time, and delta (in uSec) are recorded for each tag.

### Requirements

- An SMB-200/2000 or SMB-600/6000B with the appropriate SmartCards/modules for the test.
- The proper cabling for the test (for example, category 5, straight-through or crossover, depending on the DUT).
- An IBM or compatible Pentium™ PC running Windows® 98/2000/NT, with mouse and color monitor.

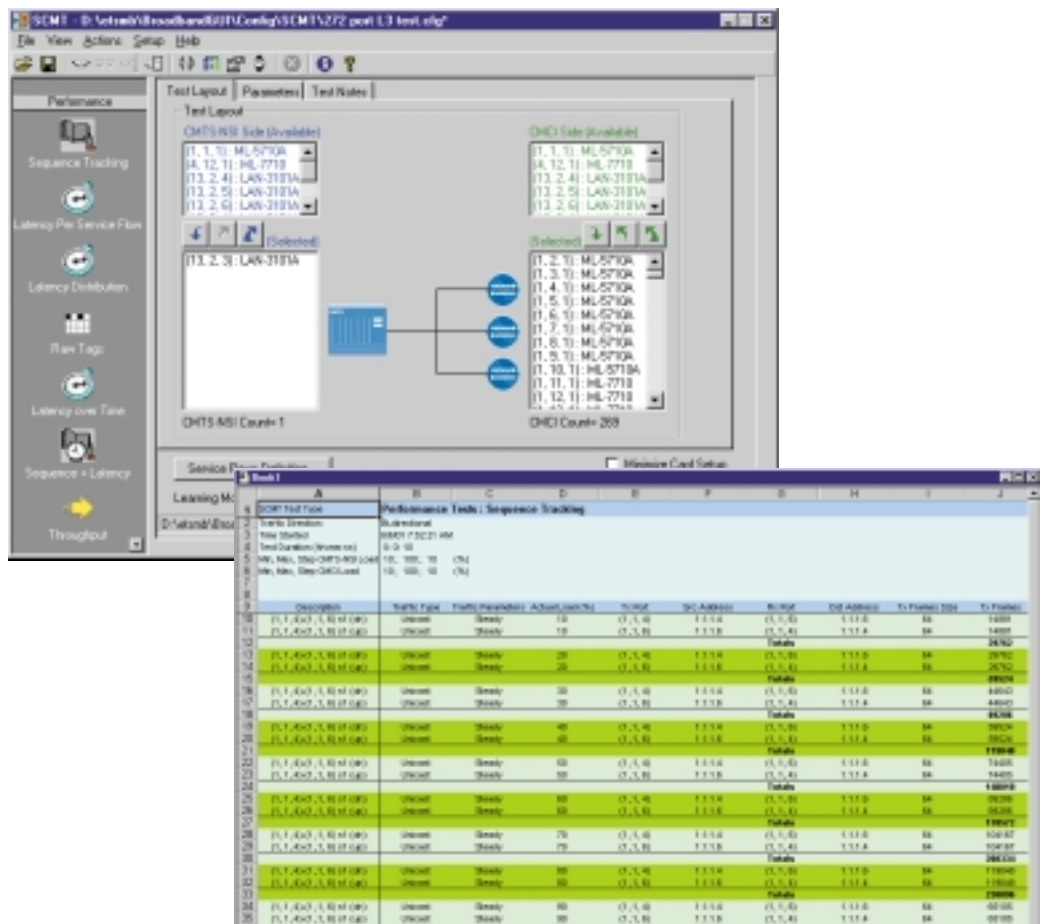
### Ordering Information

#### SWF-1211A

SmartCableModem Test

#### SMB-SUS

12-month Software Update Support Service



SCMT setup and results windows

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