

Testing Ethernet over SONET/SDH (NG SONET/SDH) with the T-BERD®/MTS-6000A Multi-Service Application Module



Ordering information:

- **CTLSNG:** Low-Speed NG SONET/SDH 155M/622M/2.5G
- **CT10GNG:** 10G NG SONET/SDH

Use Cases:

- Troubleshooting Ethernet over SONET/SDH Transport
- Verifying MSPP operation

Intended Audience:

- Technicians who install and maintain Ethernet over SONET/SDH circuits.
- Engineers who perform system verification of Multi-Service Provisioning Platforms (MSPPs).

Applications:

- Testing Ethernet/IP over SONET/SDH interfaces
- Verifying Virtual Concatenation (VCAT), Generic Framing Procedure (GFP), and Link Capacity Adjustment Scheme (LCAS) in MSPPs.

Solution Description:

- Next-Generation (NG) SONET/SDH is a software option for the T-BERD/MTS-6000A Multi-Service Application Module (MSAM) that verifies the proper transport of Ethernet services over SONET/SDH circuits.

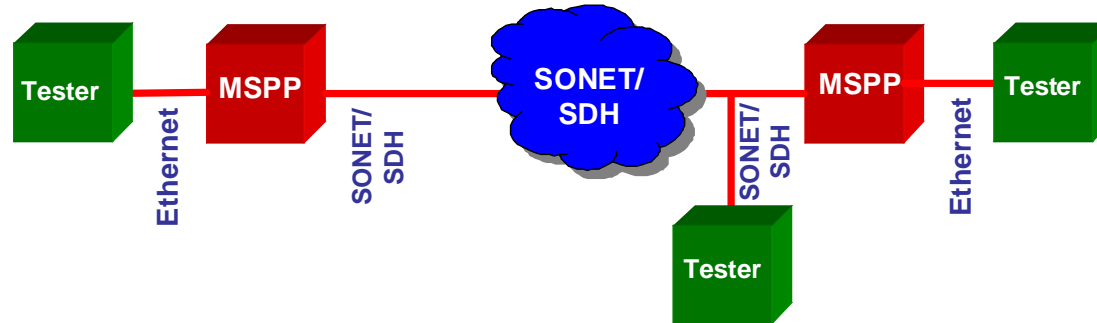
Value Proposition:

For technicians who turn up and troubleshoot Ethernet circuits over SONET/SDH networks, NG SONET/SDH testing helps verify proper operation of GFP, VCAT, and LCAS in NG SONET/SDH networks.

Unlike conventional end-to-end testing of Ethernet services, NG SONET/SDH testing enables the verification and troubleshooting for Ethernet service level agreements (SLAs) within SONET/SDH networks, which improves SLAs and reduces troubleshooting time.

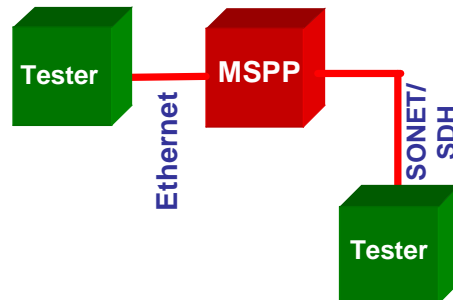
Use Case: Troubleshooting Service Problems in Ethernet over SONET/SDH

Provisioning an Ethernet point-to-point service involves testing Ethernet connectivity, throughput, delay, and frame loss measurements. Problems in MSPPs or within the SONET/SDH network can cause Ethernet delivery problems. Conducting measurements at the MSPP with an NG SONET/SDH tester enables technicians to isolate Ethernet service problems.



Use Case: Verification of MSPP

Before MSPP network deployment, technicians conduct tests to verify its function and configuration by generating traffic at an Ethernet interface and taking measurements at a network SONET/SDH interface. The NG SONET/SDH follows the configuration of a Virtual Concatenation Group (VCG) and the mapping procedure to verify Ethernet throughput and frame loss against those created at the Ethernet interface. The test can also include a basic functional test of the LCAS that verifies the status of VCG members.

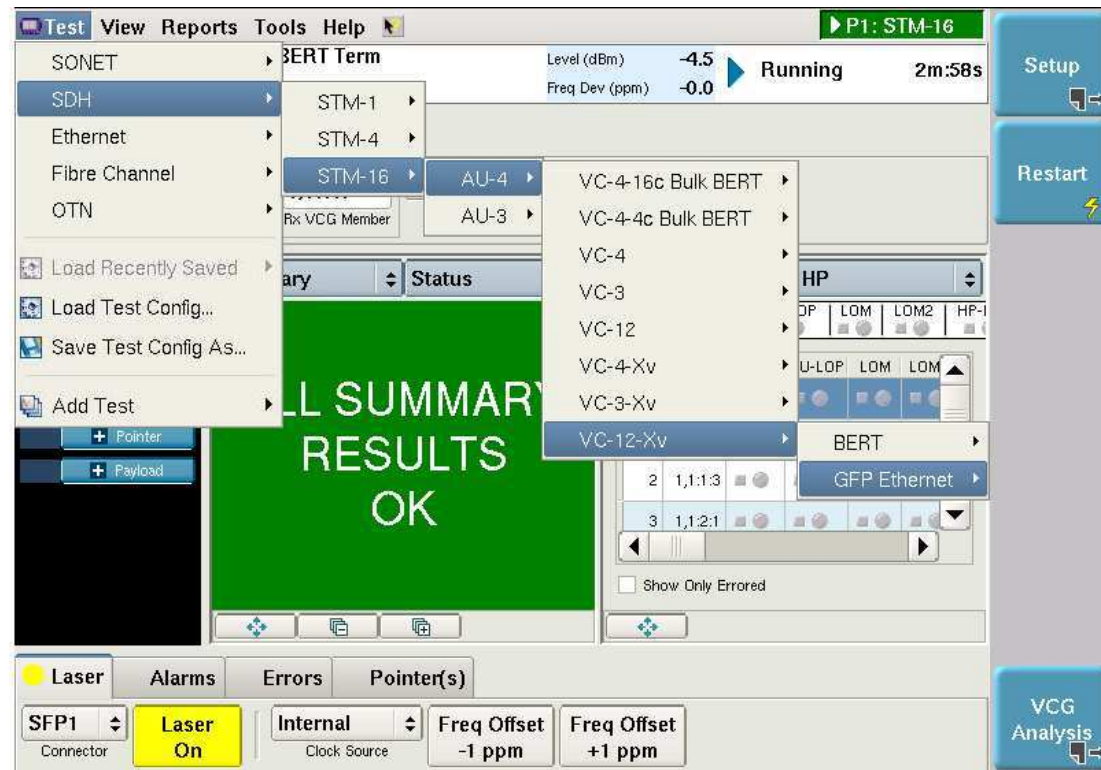


Quick Demo Setup

To set up an NG SONET/SDH demo:

1. Select the SONET (or SDH) High Order (VC4_nv/STS1_nv) or Low Order (VC12_nv/VT1.5_nv) GFP-F Terminate application.
2. Press the appropriate button at the right of the screen to create a VCG in the setup page.
3. For a quick demo, select VC4_nv (STS3_nv). Enter "2" for the number of VCG members (this equals a bandwidth of 300 M).
4. Select TX -> RX.

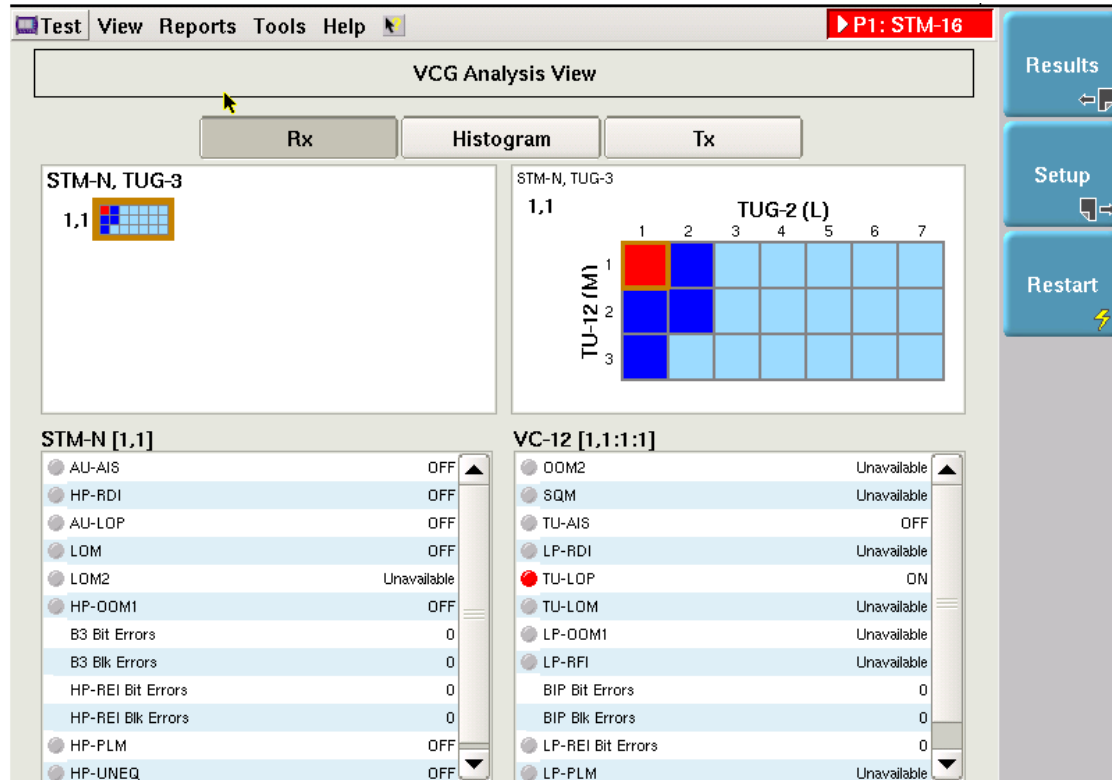
Return to the main (result) screen, and restart the test.



The screenshot displays the JDSU test software interface. The main menu is open, showing a path: **Test** > **SONET** > **SDH** > **STM-16** > **AU-4** > **VC-4-16c Bulk BERT**. The status window in the center shows "ALL SUMMARY RESULTS OK". The bottom control panel includes a "Laser On" button, "Alarms", "Errors", and "Pointer(s)" tabs, and a "VCG Analysis" button on the right. The top right corner shows "P1: STM-16" and "Running 2m:58s".

VCG Analysis

This innovative graphical user interface (GUI) element lets users verify the health of the Virtual Concatenation Group (VCG) by checking the status of each member in a graphical screen. Selecting an individual member displays detailed results about that member.



The screenshot displays the 'VCG Analysis View' window. At the top, there are menu options: Test, View, Reports, Tools, Help. A red status bar on the right indicates 'P1: STM-16'. Below the menu is a 'VCG Analysis View' title bar. Three tabs are visible: 'Rx', 'Histogram', and 'Tx'. The main area is divided into two columns. The left column shows 'STM-N, TUG-3' with a small grid icon labeled '1,1'. The right column shows 'STM-N, TUG-3' with a larger grid labeled 'TUG-2 (L)'. This grid has 3 rows (TU-12 (M) 1, 2, 3) and 7 columns (1-7). The top-left cell (1,1) is red, and the cells (1,2), (2,1), and (3,1) are blue. Below the grids are two detailed status panels. The left panel is for 'STM-N [1,1]' and the right panel is for 'VC-12 [1,1:1:1]'. Both panels list various error indicators with their current status.

Indicator	Status
AU-AIS	OFF
HP-RDI	OFF
AU-LOP	OFF
LOM	OFF
LOM2	Unavailable
HP-OOM1	OFF
B3 Bit Errors	0
B3 Blk Errors	0
HP-REI Bit Errors	0
HP-REI Blk Errors	0
HP-PLM	OFF
HP-UNEQ	OFF

Indicator	Status
OOM2	Unavailable
SQM	Unavailable
TU-AIS	OFF
LP-RDI	Unavailable
TU-LOP	ON
TU-LOM	Unavailable
LP-OOM1	Unavailable
LP-RFI	Unavailable
BIP Bit Errors	0
BIP Blk Errors	0
LP-REI Bit Errors	0
LP-PLM	Unavailable

FAQ

Q: Do our competitors offer this feature?

A: Yes, but in they are integrated into much larger platforms.

Q: What are the pre-requisites for this feature?

A: This feature requires a dual-port MSAM chassis, such as C0404 or C1004. To operate the NG SONET/SDH option, users must purchase the *classic* SONET/SDH options at respective rates, such as 155M, 622M, 2.5G, or 10G. Users with single-port chassis (C0400/1000) must upgrade to a dual-port chassis. Part numbers for this upgrade are available.

Q: Will there be further NG SONET/SDH features for the T-BERD/MTS-6000A?

A: Yes, a second release for NG SONET/SDH will be available in Q4 CY09/Q1 CY10 that will add advanced testing capabilities, such as the Differential Delay and LCAS Terminate tests. The first release supports the LCAS test feature for monitoring applications.

Q: Is there a plan to add NG SONET/SDH for the T-BERD/MTS-8000 Transport Module?

A: No, we are working on an alternative product plan for support of NG SONET/SDH testing for users of the T-BERD/MTS-8000 mainframes. This product plan will be disclosed in the respective product launch phase.