

VIAVI

MAP-2100

Rack-mounted test unit for running remote BER tests

The MAP-2100 rack-mounted network tester is the one tool that data center operators need to remotely test the transmission quality of the network connecting its data centers, central offices, or head ends.

Securing the integrity of data stored in data centers and telecom exchanges is critical. It's so important that most data center operators back up data to other data centers via high-performance network links. To maintain the performance of those connections and to verify SLAs, a data center or operator must frequently perform bit-error-rate (BER) tests on Ethernet line rates up to 100G and beyond, as well as OTN, CWDM, or DWDM circuits. The problem is that many data centers or operators have very few, if any, technicians to run tests ensuring the quality of connections.

Secure Remote Access

The MAP-2100 was designed to enable data center operators to securely run high-performance tests in unmanned data centers. In larger networks test points in remote locations, either virtual or physical such as MAP-2100, can be controlled via the highly scalable centralized Fusion controller. However, in many cases, the MAP-2100 simply uses its built-in T-BERD/MTS UI which can be controlled via these tools:

VNC: Virtual Network Computing (VNC) lets users remotely control a VIAVI test device from another computer. That communication can be secured using VNC with encryption.

Smart Access Anywhere: A VIAVI application that enables remote control from a PC browser or smartphone/tablet app, for launching tests or providing support to techs on site or transfer files. Supports encryption.

SCPI: A common automation command structure specifically for controlling instruments. It provides users with a means to build an automation layer on top of the test function, so users can build repeatable and fast executing scripts.

Key Benefits

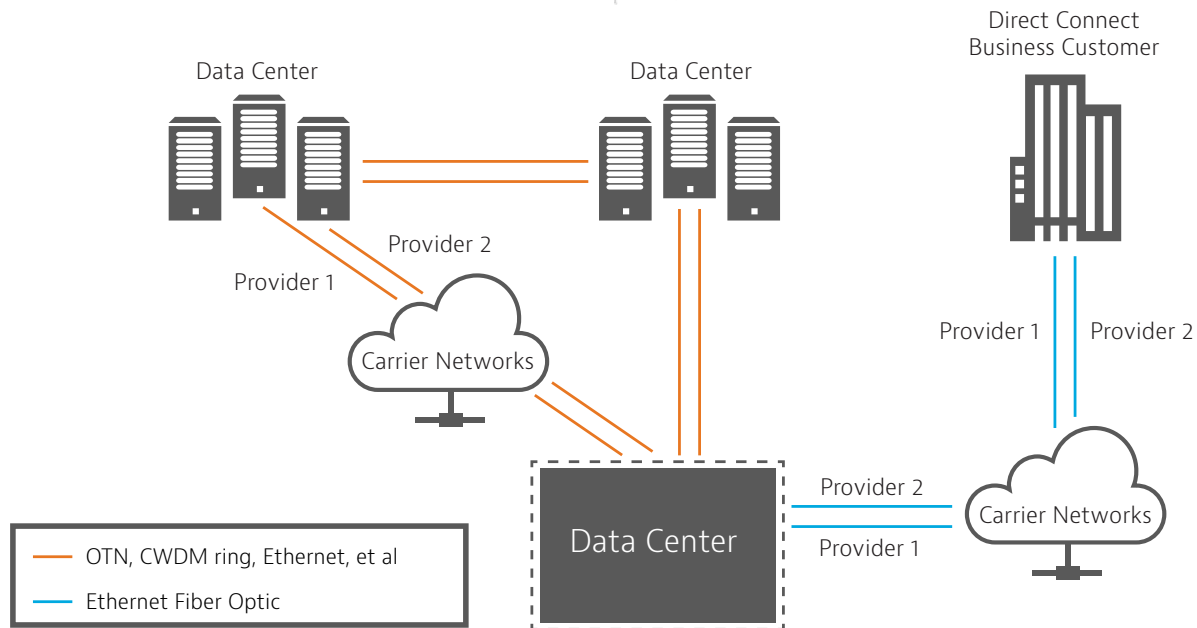
- Optimized for remote, un-manned testing with a rack-mounted design and remote management functionality
- Ethernet testing, 1G through 100G line rates (1G, 10G, 25G, 40G, 100G)
- Complete support of protocols including Ethernet, OTN, SONET/SDH, PDH, Fibre Channel up to 32G, CPRI, OBSAI, eCPRI

Key Features

- Rack mounted, 1U 19" wide, kits available for 21", 23"
- The industry's fastest RFC 2544 and Y.1564 SAMComplete™ Ethernet service activation test including nanosecond accurate latency measurements. Also supports RFC 6349 TrueSpeed
- Ensures SFP+/SFP28, QSFP+/QSFP28, and CFP4 modules run error-free with Optics Self-Test
- Test OTN service activation with the OTN Check workflow automated script
- Test synchronization and timing using built-in GNSS
- Fibre Channel up to 32G
- SONET SDH/PDH
- Ethernet One-Way Delay with built-in GNSS

Applications

- Remotely test the transmission quality of the network links connecting data centers or central offices/head-ends
- Converged Ethernet/IP network testing and troubleshooting at 10 Mbps to 112G interfaces for data centers and core / metro networks
- Installation and maintenance of OTN and legacy SONET/SDH and DSx/PDH networks



Four Key MAP-2100 Use Cases

1. Office (fixed)-to-office (fixed) (data center interconnect)

- Scenario: Need to test the network between sites, but neither site has a technician to run tests via portable, hand-held testers
- Solution: MAP-2100 at both sites, run tests remotely via secure communications
- Encryption up to 256 bits
- Additional security and encryption through SSH (port 22)

2. Portable-to-office (fixed)

- Scenario: Two sites, but only one with a portable tester and a technician present – typically, this is a two-person test
- Solution: Use a portable T-BERD/MTS-5800 on one site and test against a rack-mounted MAP-2100 in the other
- Only one technician is required to run the test saving expense, man hours
- Either test unit can be controlled by the other using Smart Access Anywhere

3. Submarine

- Scenario: Multiple plants with a mix of terrestrial, dry, and wet. Need to test between plants to ensure the network is performing to capacity.
- Solution: Deploy MAP-2100 units at multiple dry plant sites to provide efficient, high-capacity testing with minimal technician intervention.

4. Centralized Test (Fusion)

- Scenario: A “hybrid” network with a mix of physical and virtual circuits has multiple test points; portable, rack-mounted, and virtual, with a need to control them all from a central location via a northbound Netconf/YANG interface
- Solution: VIAVI Fusion provides a highly scalable system to control standardized tests over multiple test points, both physical and virtual, an LMAP-compliant architecture.

Troubleshooting with Optics Self-Test and Cable Test

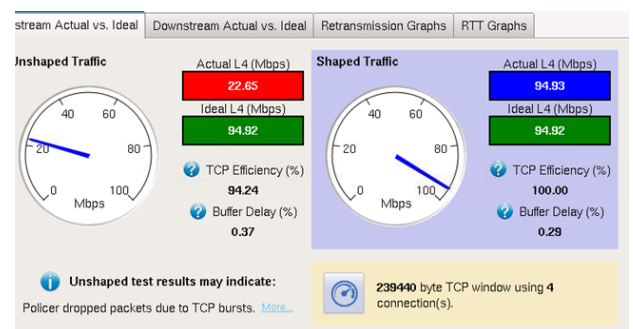
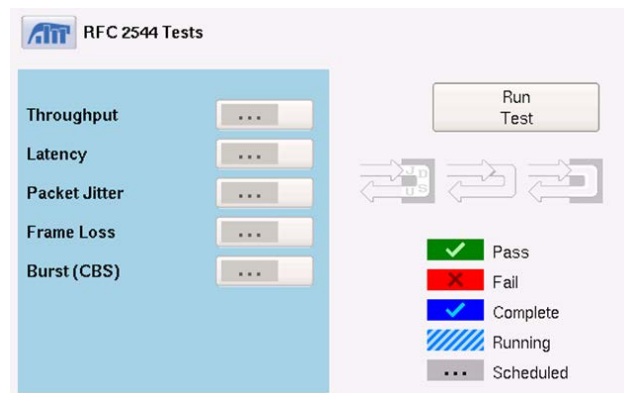
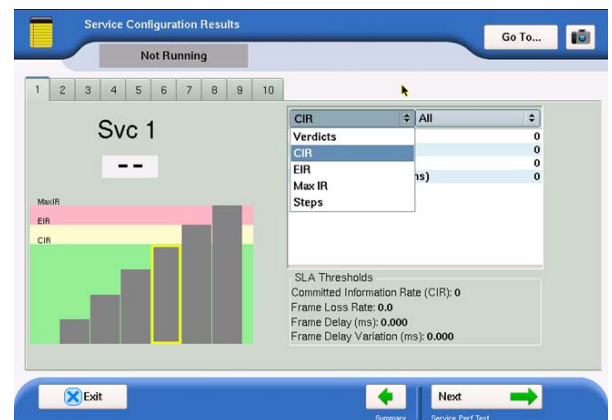
Optics Self-Test is a workflow tool to verify and troubleshoot performance issues related to high-speed optics. It is especially well suited to field environments and helps isolate pluggable optics issues. This easy-to-use test integrates items such as a bit error theory algorithm, clock offset verification, and per-lambda power monitoring. Coupled with RS-FEC, it offers pre-FEC and post-FEC testing. Cable Test enables the testing of AOC (Active Optical Cable), DAC (Direct Attach Copper) and breakout cables.



Efficient Ethernet Testing

Test more quickly and efficiently using automated tests combined into one integrated module covering electrical, Gigabit optical, 10 Gbps, 40 Gbps, and 100 Gbps Ethernet:

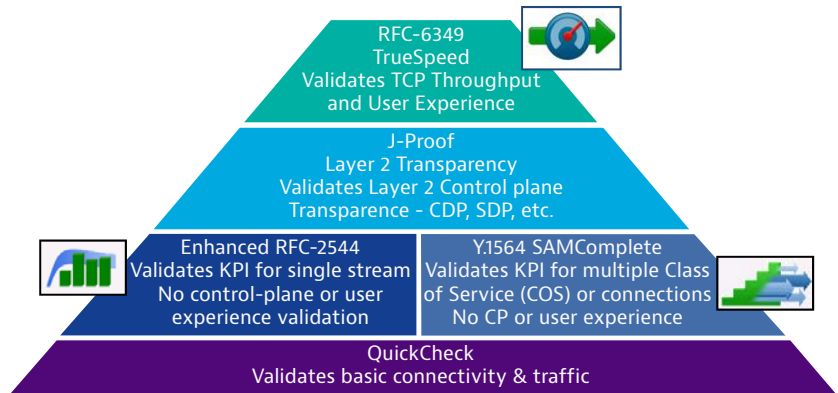
- QuickCheck — quick pre-check test before RFC 2544 or Y.1564 or as a stand-alone test
- Enhanced RFC 2544 — an automated test with built-in time efficiency for validating key performance indicators (KPIs)
- Y.1564 SAMComplete™ — An automated service verification test that speeds the verification of multiple classes of service (COS)
- RS-FEC testing for interfaces such as IEEE 802.3 SR4. Required for data center and short reach testing
- Capture and decode — available at all Ethernet rates
- IPv4 and IPv6 support including RFC 2544 and Y.1564 SAMComplete
- Layer 2 transparency testing with J-Proof — confirms end-to-end transparency between two endpoints anywhere in a network using control plane protocol data unit (PDU) information
- Operator lab evaluation tools — includes functionality such as skew injection, and per-lane alarms/errors injection, and reporting



OTN Testing

The MAP-2100 provides comprehensive OTN test functionality. Functionality includes the following:

- RFC 2544 for Ethernet clients in OTN
- Complete ODU multiplexing mappings with nested ODU functionality including ODU0, ODU1, ODU2/2e, ODU3, and ODUFLEX
- FEC testing for correctable and uncorrectable errors
- All 6 TCMs concurrently
- Service disruption with numerous triggers
- GCC transparency testing
- OTN monitor/thru mode



Management Tools

The MAP-2100 comes with two key management tools, Job Manager and StrataSync.

Job Manager:

Eliminate the need for technicians to remember which tests to run or how to run them. Users can set up a test plan in a website, download it the test units, and work through a prompted, step-by-step checklist to ensure all tests are executed properly. A single summary report provides an easy to read indication of test results.

StrataSync: Empower Your Assets

StrataSync is a hosted, cloud-enabled solution for managing assets, configurations, and test data on VIAVI instruments. It ensures that all instrument software is current and the latest options are installed. StrataSync enables inventory management, test result consolidation, and performance data distribution anywhere with browser-based ease. It also improves technician and instrument efficiency. StrataSync manages and tracks test instruments, collects and analyzes results from the entire network, and helps train and inform the workforce.

