As bandwidth demand continues to surge around the globe, communication service providers are accelerating deployment of high-speed access networks.

According to GigabitMonitor.com, there is growing momentum in gigabit internet rollouts, using FTTH, DOCSIS 3.1, Gfast and even LTE. The increase in speed at the edge of the network is driving corresponding upgrades into the metro, transport and core segments, as well as in data center interconnect. While 25GE and 40GE connections continue to be installed at a rapid pace, the industry is aggressively shifting to 100GE – just a few short years after that technology was standardized in the core.

Network operators therefore need to equip their technicians and contractors with portable, sophisticated, reliable and user-friendly instruments capable of testing up to 100G. Working with our worldwide customer base, VIAVI introduced the smallest handheld, dual-port 100G test solution in the industry: the 5800-100G.

This instrument can test throughout the life cycle of a network service, including fiber testing, service activation, troubleshooting, and maintenance. With advanced test features such as Optics Self-Test, Ethernet Line Rate Capture/Decode, and OTN Check, technicians can now test their networks faster and more accurately than ever before.

The exceptional design and execution of the 5800-100G has been validated by widespread customer acceptance.

Following are just a few case studies from customers using this testing solution.
This customer is one of the elite hyperscale companies revolutionizing commerce and communications globally. They are already using the VIAVI high-speed Optical Network Tester (ONT) with CFP2 transceiver for new technology validation in their central labs.

One of the world’s largest e-commerce companies

Based on their positive experience, they adopted the 5800-100G for service activation and maintenance testing for data center interconnect and intra-data center, as well as AOC test, primarily using this solution for 25GE and 100GE testing.

With dual-port coverage of 10GE, 25GE, 40GE and 100GE, the 5800-100G enables them to conduct a wide variety of tests and identify root causes quickly in one portable platform to address the challenge of deploying new technology, optimize testing workflow, and increase maintenance testing efficiency.

Regional and long distance telecommunications carrier

One of Canada’s regional telecommunications operators is challenged by a huge land mass, rough terrain, and low population density. They needed to test their transport network at 100G in order to deliver a secure, reliable service.

As a Bell affiliate, the operator had been using test equipment standardized by the parent company. However, after a review of features and specs, the operator decided to invest in the VIAVI 5800-100G due to technical advantages such as:

- Dual-port support for 100GE and OTU4 – feed dual 100G clients to verify the cross-channel impact in DWDM
- Availability of the OTN Check test suite to test OTN service activation
- Flexibility with OTDR modules – the customer selected the MP OTDR with the 5800-100G to keep the unit compact.

The 5800-100G is now not only being used by this operator, but is also approved for ordering across the entire Bell group.

Tier-1 consumer electronics and cloud provider

The company is reputed for products and services that have the lowest failure rate in the industry. Operating data centers worldwide, network uptime is a paramount objective for this customer.

Standard data center testing procedure is to conduct end-to-end tests (with two units) once the rack is cabled, testing 10G and 100G over either Active Optical Cable (AOC) or Direct Attach Copper (DAC) transceiver assemblies. The 5800-100G provides these capabilities in a single handheld, dual-port unit.

The solution allows the customer to efficiently determine root cause, such as pinpointing a specific cable issue or a more significant problem. In addition to saving time, this allows them to realize significant savings by not throwing away good cables suspected of being bad.

Australian national telecommunications and information services company

As the demand for more data and higher speeds has continued to increase, this service provider has focused on network enhancements to enable the best possible subscriber experience, including a new solution for 100G test capabilities throughout the network.

The service provider needed a small, portable platform that could test 100G while offering the flexibility to test other bitrates. An additional requirement was a dual-port solution that could easily migrate to the quad small form-factor pluggable (QSFP28) transceiver for cost-effective equipment upgrades as the network continues to evolve with technological advances.

The customer opted for the flexibility and future-ready capabilities of the 5800-100G solution because a future-proof testing solution allows them to test legacy network equipment in the field while making a smooth evolution to 100G technology throughout the entire network, enabling higher speeds and an enhanced quality of experience for customers. Key factors in the decision included the small form factor of the 5800-100G solution as well as its versatility and intuitive user interface.

Infrastructure management division of global carrier

This operator, with network and operating companies in multiple global regions, has established a separate group to manage network assets and infrastructure globally.

In a demonstration of the versatility of the 5800-100G platform, the customer selected it to test 100 GE submarine circuits across its portfolio of undersea cables, seeking rate and protocol integration to test at each submarine landing station at all Ethernet rates, OTN, and SDH.

“Network operators therefore need to equip their technicians and contractors with portable, sophisticated, reliable and user-friendly instruments capable of testing up to 100G.”
This company has the daunting task of keeping multiple networks running at peak performance for radio and video service delivery, throughout one of the most populous nations in Europe.

Parts of the networks are leased by outside sources, but must meet the high-quality testing requirements demanded by video and broadcast transmissions. To further complicate this task, the company must also test several different technologies including fiber with WDM, PDH, SDH, OTN, Ethernet, IP, MPLS, as well as wireless, while dealing with service-related quality issues including MPEG, audio coding, as well as camera, sound and display technologies.

While the current networks have a 10G backbone, the broadcaster is installing 40G and has bids out for a 100G backbone for its main network. Due to the complexities of the technologies and network speeds that must be maintained, they were looking for one solution that could test multiple technologies and be ready for the faster network speeds.

Network synchronization plays a key role in the quality of broadcast content, especially during live events. The 5800-100G tester’s Timing Expansion Module (TEM) performs Precision Time Protocol (PTP) measurements delivered in nanosecond-accurate time increments, allowing accurate testing of more precise synchronization methods used by advanced networks to provide reliable service, and future-proof networks for the IoT.

Visit GigabitMonitor.com

Find out more about the state-of-play of gigabit internet provision across the world, based on publicly available data

viavisolutions.com
VIAVI T-BERD®/MTS 5800-100G

The 5800-100G handheld network tester is the all-in-one tool that technicians and engineers need to install and maintain their networks more quickly and efficiently, contributing to overall OpEx savings in terms of technician time, additional truck rolls, and customer experience.

**Applications**

- Converged Ethernet/IP network testing and troubleshooting at 10 Mbps to 100G interfaces for data centers and core/metro networks
- Fiber link characterization and troubleshooting
- Installation and maintenance of OTN and legacy networks
- 5G-ready mobile and backhaul characterization, validation, and troubleshooting including synchronization

**Key Functions**

- Supports comprehensive rate testing ranging from DSx PDH (1.5M/2M) through to 112G OTU4
- Saves time with 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 QSFP+/QSFP28 and CFP4 modules run error-free with the field optimized Optics Self Test
- Provides speed and efficiency in testing OTN service activation
- Tests synchronization and timing using the TEM (Timing Expansion Module)

**Differentiators**

<table>
<thead>
<tr>
<th>Dual-Port (100G) Use Cases</th>
<th>Feed client traffic for either 2 neighboring 100G WDM channels or a full 200G WDM channel. Fully monitor both directions of a 100G link independently. Load 100GE ports on routers and Ethernet switches from 1 units (requires 2 ports).</th>
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<tbody>
<tr>
<td>Optics Self-Test</td>
<td>Easy-to-use optics performance testing in field for multiple optics form factors: Optics Self-Test.</td>
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<tr>
<td>Active Optical Cable and Direct Attach Copper Testing</td>
<td>Using dual SFP or QSFP ports, Cable Test workflow to test cables at 10GE, 25GE, 40GE and 100GE.</td>
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<td>Built-In GNSS</td>
<td>Can provide sky plot and be used as a source for timing, sync, wander measurements and One Way Delay.</td>
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<td>OTDR</td>
<td>Supporting multiple wavelengths and applications including PON, Mobility backhaul, Metro access, Long haul, CWDM, and DWDM.</td>
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<td>25GE Including RS-FEC</td>
<td>Dual-port support.</td>
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<tr>
<td>100GE With or Without RS-FEC</td>
<td>Dual-port support of SR4, SWDM4, PSM4, CWDM4 interfaces (in addition to LR4).</td>
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<tr>
<td>Unique OTN Check Workflow</td>
<td>For service activation, integrates concurrent RTD, GCC and bulk/payload BERT with report generation.</td>
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