VIAVI

LASER COMPONENTS

SAMComplete

ITU-T Y.1564 Service Activation and IETF RFC 6349 TCP Verification for T-BERD®/MTS

SamComplete, part of the Viavi Solutions J-Complete suite of automated test tools, can quickly and easily verify service-level agreement (SLA) key performance indicators (KPIs), including committed information rate (CIR), committed burst size (CBS), frame delay, frame-delay variation, and frame loss rate, independently for up to 10 simultaneous traffic streams. Adding the Viavi RFC 6349-compliant TrueSpeed™ test helps verify TCP performance using the new industry-standard KPIs: TCP efficiency and buffer delay percentage. Viavi has led the industry in transitioning this testing methodology with enhanced RFC 2544 testing, and now it incorporates the newly released ITU-T Y.1564 and IETF RFC 6349 standards requirements.

SamComplete enables easy Ethernet service-activation testing to industry standards by guiding users through three easy test steps. Also, its integrated J-QuickCheck tool helps users quickly verify link parameters, such as correct auto-negotiation settings and successful remote-end connectivity, to quickly and smoothly execute tests. One button push can configure a data service to carry live TCP traffic and test it per RFC 6349. During service configuration, it also automatically calculates optimal CIR and frame size based on the number of VoIP and IPTV channels giving providers an effortless, complete solution for validating SLAs and carrier Ethernet-based services.

Use Case

Automated SLA validation for carrier Ethernet-based services

- verifies bandwidth profile
- verifies KPIs.

Ordering Information

Included free of charge with any unit with multiple-stream COS-enabled (RFC 6349 sold separately)

Key Benefits

SAMComplete, the industry's only integrated Layer 2/3 (Y.1564) and Layer 4 (RFC 6349) solution delivers the only comprehensive cloud-ready Ethernet service installation. This integration of turn-up tests lets operators:

- close the "gap" and install multiservice networks with easy pass/fail test results to meet customer SLAs
- realistically verify QoS by testing the effects of TCP-based applications, such as web browsing and e-mail on VoIP and video, and vice versa
- boost customer satisfaction and network quality with reliable and repeatable service activation regardless of technicians' skill level
- reduce OpEx for new services with faster and more complete test execution

Intended Audience

- Field groups (including backhaul technicians) and special services/central office technicians who install and troubleshoot Ethernet/IP service
- Professional services and managed services engineers responsible for the maintenance, troubleshooting, and evolution of end-customer SLAs
- Users currently performing RFC 2544 and class-of-service (CoS) testing

Applications

- Automated turn-up testing and troubleshooting of end-to-end circuits that carry multiple services and/or multiple bandwidth profiles against KPIs set in SLAs
- Verification of end-customer data service using live TCP traffic per RFC 6349 methodology providing definitive "proof" that end-customer applications will perform as expected

Product Brief

Feature/Benefit Summary

Feature	Description	Advantage	Benefit
ITU-T Y.1564–based service activation	Test sequence to ensure multiple services meet their SLA. Testing each service individually and then all services in parallel ensures that they meet KPIs, even in loaded network conditions.	• Fully compliant with ITU-T Y.1564 • Faster test execution with enhanced testing algorithm • Ability to save operator-specific SLA parameters and KPIs	• Free enhancement to JDSU multiple-streams CoS offering • Faster test execution saves OpEx for new service turn-up • Enhanced quality and consistency with the ability to centrally define test parameters • Lets end customers compare performance of multiple vendors
Test data service with live TCP traffic per RFC 6349 in parallel with UDP-based services, using JDSU TrueSpeed technology	Y.1564 only specifies Layer 2 traffic to test services; however, end-customer applica-tions, such as web browsing and e-mail, ride on TCP (Layer 4). SAMComplete can test live TCP data services with up to 64 user sessions at speeds up to 10 GE.	• Realistically verify QoS by testing the effects of UDP data services, such as VoIP and video, on business TCP applications like FTP and others and vice versa	• Adhering to the structured approach and TCP KPIs specified in RFC 6349 lets providers "experience the network as their customers do," removing the turn-up gap by testing end-customer data service the way end customers do
Easy three-step workflow	Users are guided through the test using an easy-to-follow, three-step workflow: 1. Load profile 2. Run test 3. Create report	• Clear, guided test process • Ensures availability of all key parameters	• Effortless test execution • Reliable and repeatable results • Helps avoid configuration or execution errors
J-QuickCheck	Quick, 1-minute pre-test to ensure end-to-end connectivity, including correct auto-negotiation settings and successful remote loop-up.	• Ensures readiness of test setup and circuits for successful test • Takes ~1 min to run but saves ~10 min compared to manual setup • Clear graphical progress and pass/fail indicator	• Reduces overall test time compared to manual setup • Avoids unnecessary testing due to basic link problems
Triple-play setup	When emulating specific voice, video, and data traffic, SAMComplete offers customized testing, such as the number of calls to be emulated and the related codec. SAMCompete then automatically creates the right bandwidth profile for the traffic stream.	• Realistically simulates real-world traffic during turn-up and troubleshooting • Users do not need to know the characteristics of specific services, such as frame size used in a VoIP call	• Ensures end-customer satisfaction by verifying that SLAs are met under real network conditions • Reduces the need for specialists in the field to troubleshoot
CBS testing	Test circuit CBS configuration, includes detecting when buffers have not been configured.	• Ensures configuration of ingress policers to the correct CBS KPI	• Improve Ethernet-circuit frame loss by supporting ingress burst buffers
Bidirectional operation	Use a pair of test sets to concurrently or sequentially terminate traffic remotely.	• Helps find problems in the ingress policer for traffic sent in either direction • Improves troubleshooting over loopback-only testing	• Discover misconfigured circuit directions reducing time to repair • Improve service activation completeness
Integration into J-Complete	Viavi offers the broadest portfolio of automated test solutions for the field, including RFC 2544, TCP TrueSpeed, and J-Proof.	• Full application-aware test workflow	• CapEx and OpEx savings through single field tool for all turn-up and troubleshooting needs

Use Case: End-to-End Service Turn-up, Verification

Turning up new services in a wireless backhaul or business solution environment requires testing, multiple services in parallel despite having different bandwidth profiles (also called information rates) and KPIs. This test method verifies proper configuration of the network so it can handle and prioritize multiple traffic types, based on VLAN or TOS/DSCP priorities.
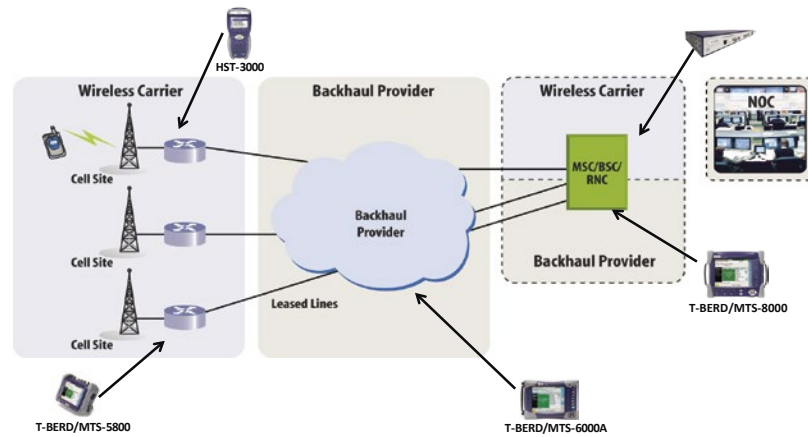
Technicians in the field can get a fast, clear pass/fail result following these three easy steps:

1. Load profile

Users define the load profile once with all the relevant information, including network settings and the SLA criteria for the services under test.

2. Run test

First, users run J-QuickCheck to verify that the basic test setup and network settings of the circuit are in line for successful test completion. This step also includes verifying that a valid loop is set at the far end. Then users perform the actual Y.1564 test.

Testing data service with live TCP traffic using the TrueSpeed option lets users configure the TCP throughput and execute the test per RFC 6349. Then they can view pass/fail test results, eliminating the need to interpret complex TCP test results.
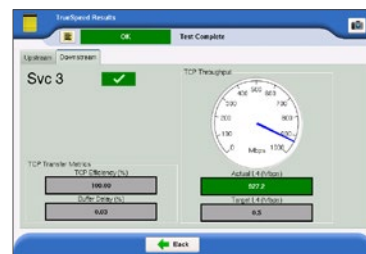
3. Create report

Finally, users can save the test results in a user-configurable report to document SLA compliance.

Detailed statistics for the Service Configuration test
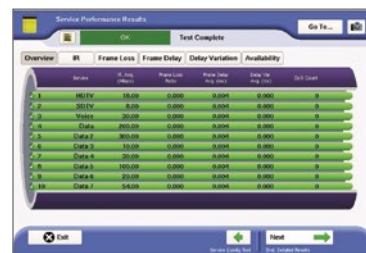
Simple to understand pass/fail per Service Performance results

Simple green-light results for TCP service and TCP KPIs per RFC 6349

FAQ

Q: Can you explain the terminology used in Y.1564, such as CIR and EIR?

A: The terminology used in the ITU-T standard is aligned with the terminology used in the Metro Ethernet Forum (MEF).

ITU-T / MEF Terminology	Explanation
Committed information rate (CIR)	Guaranteed throughput
Committed burst size (CBS)	Guaranteed largest number of continuous Ethernet bytes across multiple frames, without frame loss
Extended information rate (EIR)	Best effort throughput over and above the guaranteed level
Maximum information rate (MIR)	Maximum throughput per service
Frame loss rate	Ratio of number of frames dropped/lost over the number of frames received
Frame Delay	Latency/round-trip delay
Frame delay variation	Packet jitter

Q: Does SAMComplete comply with ITU-T Y.1564?

A: Yes, SAMComplete is fully compliant with the ITU-T standard, but it offers additional value over and above what is defined by the ITU-T through the easy-to-use three-step workflow, the Triple-Play setup, J-QuickCheck, and proven Viavi zeroing-in algorithms.

Q: What loop type is required at the far end?

A: SamComplete supports different types of loop mechanisms:

- Viavi active loop that allows the scrip to automatically loop-up and loop-down the far-end unit
- Permanent loop from any type of loop device
- Hardware loop (depending on network configuration)

Q: Is SAMComplete a payable test option, and are there prerequisites for this feature?

A: SAMComplete is a free-of-charge enhancement currently available for the T-BERD/MTS-8000 Transport Module V3, T-BERD/MTS-8000/6000A MSAM, and T-BERD/MTS-5800 testers.

Q: What is RFC 6349?

A: RFC 6349 is the new IETF TCP throughput test methodology that Viavi, Bell Canada, and Deutsche Telekom co-authored.