

BV-110 Verifier

MULTIFUNCTIONAL CPE AND CELL SITE SERVICE ASSURANCE VERIFIER

- The essential quality-of-experience monitoring tool that provides the visibility and details network administrators need to quickly and easily troubleshoot performance issues.



KEY FEATURES

- Real-time performance measurement of IP and Ethernet services
- End-to-end service testing
- Network-to-application layer testing
- True multiplay capability to simultaneously assure data, voice, video and mobile services
- Advanced reflector and loopback capabilities
- Extensive QoE monitoring
- Operational simplicity for lights-out management
- IPv4 and IPv6 support
- Flexible, worldwide time-synchronization options
- Line rate standards-based service activation capability

BENEFITS

- Continuously monitor performance to identify service degradation before it impacts subscribers
- Effective monitoring of transport as well as of end-user QoE
- Simultaneous testing over wireline and wireless networks
- Optimize QoS and QoE while reducing churn and OPEX
- Perform full lifecycle from service delivery to assurance from a single platform

CRITICAL COMPONENT OF END-TO-END SERVICE TESTING

The BV-110 Verifier is a critical component of the EXFO Worx end-to-end service testing approach. It delivers the essential end-user quality of experience (QoE) monitoring as well as the visibility and detail network administrators need to easily activate Ethernet/IP services, troubleshoot performance problems and identify their root causes.

The BV-110 enables simultaneous end-user-to-end-user as well as end-user-to-core testing for effective service-level agreement (SLA) verification and QoE monitoring. By deploying the BV-110 Verifier at key locations in the network (i.e., customer premises and cell sites), network administrators can effectively segment and obtain the visibility they need of the enterprise, access, core and backhaul networks.

Tests can be performed to any other EXFO Verifier or on third-party equipment (e.g., aggregation or core routers) using industry standards, such as 802.1ag, Y.1731 or TWAMP for transport monitoring. With this vendor-agnostic approach, the BV-110 works seamlessly in heterogeneous network environments. It also leverages operators' existing equipment to reduce CAPEX and maximize operational efficiency.

Positioned at the very edge of the network, the BV-110 monitors quality of not only transport, but also applications and infrastructure services, such as HTTP, FTP, DNS, DHCP and email. This provides carriers with the tools and data they need to quickly resolve problems and reduce mean-time-to-repair, thus ensuring customer satisfaction and reducing customer churn.

ETHERNET/IP SERVICE ACTIVATION

The BV-110 is now available with a new orderable option (BV-110-T) which enables the BV-110 to perform line rate service activation tests. These capabilities are especially useful when delivering new Ethernet/IP circuits or implementing new quality of service definitions in the network. Using methodologies such as ITU-T Y.1564, the BV-110-T can perform validation of service rollouts as well as ensure QoS enforcement. Additionally, the BV-110-T supports IETF RFC-2544 for troubleshooting purposes and line-rate loopback for high throughput reflector capabilities.

Combined with the small form factor of the BV-110, the BV-110-T variant offers the best of both worlds for operators looking to deploy a high performance, full lifecycle device at the edge. From a single device, operators can activate transport pipes and periodically perform Ethernet/IP service pipe compliance to SLAs as well as assure delivered performance. As expected, the BV-110-T is fully compatible with other EXFO Verifier Series probes to provide complete end-to-end capabilities, both from a service activation and quality assurance perspective.

CUSTOMER PREMISES MONITORING

The BV-110 Verifier offers an extensive range of capabilities designed to monitor business services—whether for point-to-point services, managed triple-play services or direct Internet access. Regardless of the type or class of service, the BV-110 can precisely measure all relevant KPIs to ensure SLA compliance. It also measures the critical metrics that determine the quality of a subscriber's experience with respect to numerous applications and infrastructure services.

As a multipurpose device, the BV-110 allows service providers to perform direct end-to-end monitoring of SLAs and services as well as serve as a reflector and responder for centrally initiated monitoring and troubleshooting tests. This capability can provide full segmentation of the circuit path for quick troubleshooting as well as network performance tracking.

BEST-OF-BREED SERVICE MONITORING FOR MOBILE OPERATORS

The BV-110 Verifier is the ultimate tool for wireless operators to monitor QoS and QoE. It supports the monitoring of critical backhaul transport KPIs from the mobile switching center using a variety of industry-standard protocols, such as Y.1731, 802.1ag and TWAMP. It is also able to initiate monitoring tests at all layers (2 to 7), which allows operators to effectively monitor the quality of voice, video, data and infrastructure services that they offer to subscribers. They can also monitor the quality of service between cell towers directly—a requirement that is becoming increasingly critical as LTE deployments continue their exponential growth.

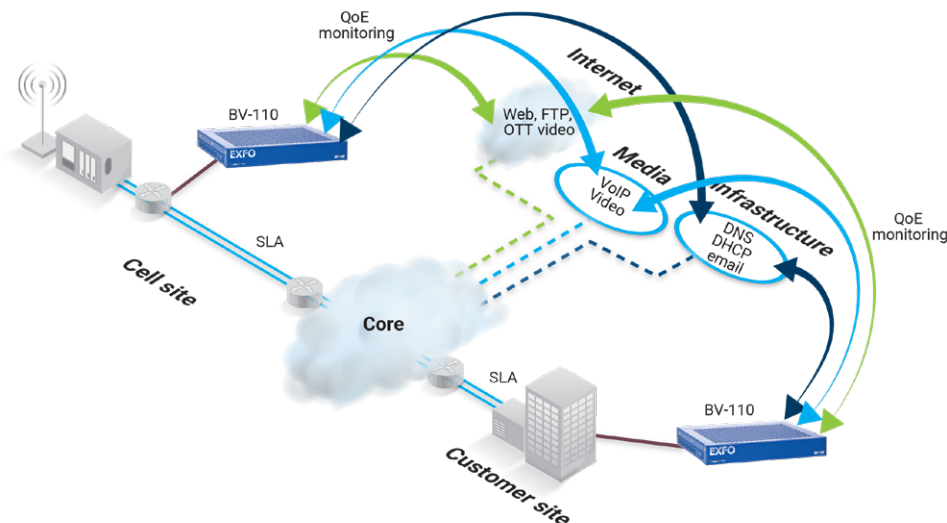


Figure 1. QoE and SLA Monitoring for business and mobile services

ADVANCED REFLECTOR

In addition to its wide variety of monitoring tests, the BV-110 Verifier comes with advanced stand-alone reflector capabilities. Operating as an advanced reflector, the BV-110 is able to respond to a variety of industry-standard protocols, such as 802.1ag, Y.1731, TWAMP, UDP Echo and Ping. It can also be deployed at customer premises or at cell sites as an advanced reflector, but without the ability to initiate monitoring tests. This enables operators to perform precise SLA monitoring up to the very edge of their network at layers 2 to 4, while minimizing their up-front CAPEX investment. If site-to-site testing or the ability to monitor application and infrastructure services up to layer 7 is ever required in the future, the BV-110 Verifier can be easily upgraded through EXFO Worx software—no technician required.

The BV-110-T variant delivers line rate loopback capabilities which enables the BV-110-T to act as a responder for test traffic originating from other sources. The BV-110-T Smart Loopback mode offers L2/L3/L4 loopback support with line rate address/port swaps. Additionally, filters at VLAN, IP and UDP layers can be implemented to allow only traffic of interest to be processed while allowing other sources to be untouched.

OPERATIONAL SIMPLICITY

The BV-110 Verifier combines the ease of complete lights-out operation with the reliability and management features required in carrier environments. To install, simply connect the Ethernet cables and the power source—the verifier does the rest. At power-up, the BV-110 Verifier performs system integrity checks, automatically discovers its EXFO Worx server and then downloads all system configurations, test modules and test schedules using a secure, encrypted connection with the server.

All EXFO Verifiers, including the BV-110, are centrally managed and provisioned using EXFO Worx, and all communications between the verifier and EXFO Worx are encrypted and secure. Since the BV-110 Verifier is designed to be deployed in remote locations, traffic management between the verifier and EXFO Worx can be handled in-band on the same interface as the test traffic. Alternatively, the second test interface can be dedicated to management, if test and management traffic separation is desired.

KEY DATA COLLECTED AND CORRELATED

Transport SLA verification
Application layer QoE (web, voice, video)
Infrastructure monitoring (DNS, DHCP, email)
Mobile user QoE monitoring and benchmarking

TRANSPORT-TO-APPLICATION LAYER PERFORMANCE MANAGEMENT

The BV-110 Verifier supports a comprehensive suite of more than 120 active tests. These tests support a wide range of network transport protocols and IP services, including Carrier Ethernet, IP, VoIP, video, VPN, wireless and web-based applications, as well as a number of infrastructure performance tests. The BV-110 calculates a deep set of performance statistics by measuring the transport quality and performance of transport- and application-specific protocols. These proactive tests accurately simulate network and user-level activity.

PATENTED TIMING ACCURACY FOR REAL-TIME SERVICES

In addition to industry-leading performance, the BV-110 offers an extremely accurate timing feature to support the sub-millisecond precision required for today's performance-sensitive services. All time measurements take advantage of the BV-110's patented hardware packet timestamp engine, eliminating the variations caused by user or kernel-level software-based timing schemes.

SIMPLE, INTUITIVE REPORTING

The BV-110 supports a wide array of monitoring and troubleshooting tests that provide operators with valuable network status data. EXFO Worx provides a number of customizable reports and dashboards that turn this data into accessible and actionable information. These web-based reporting tools make it easy for operators to quickly and intuitively understand the test results and therefore, eliminate the need for expensive training. Moreover, since the reports are all web-based, they can be easily presented to subscribers as proof that SLAs are being met.

SPECIFICATIONS

Unless specifically stated, these specifications are for the device only and exclude pluggable transceivers and the external power supply adapter.

SUPPORTED MONITORING TESTS	
Carrier Ethernet	802.1ag, Y.1731
IP transport	TCP, TWAMP, UDP
VoIP	H.323, MGCP, NCS, RTP, SCCP, SIP
Video	RTP, RTSP, IPTV, multicast testing
VPN	Full-mesh availability/performance
Network infrastructure	DHCP, DNS, SNMP, diameter
Applications	HTTP, Email ,FTP, NTP, SFTP, TFTP
Quality of service and VLAN support	
One-way performance, path analysis	
Service Activation	ITU-T Y.1564, IETF RFC-2544, Line Rate Smart Loopback, TCP Throughput (RFC-6349)

ADVANCED REFLECTOR CAPABILITIES	
Carrier Ethernet	802.1 ag, Y.1731
IP transport	TWAMP, UDP, ping
VoIP/Video	SIP responder, SIP media loop back, multicast server
Line Rate Loopback	Smart Loopback

INDICATORS AND INTERFACES	
Two Ethernet test ports	Each combo port includes: <ul style="list-style-type: none"> • 1 Gbit/s fiber SFP interface • 10/100/1000 bit/s RJ45 interface • Link and activity LEDs • In-band management
Console port	
AC or dual feed DC power	
Power status LED	
Reset button	

PHYSICAL	
Size (H x W x D)	35 mm x 205 mm x 192 mm (1 ³ / ₈ in x 8 ¹ / ₁₆ in x 7 ⁹ / ₁₆ in)
Weight	AC version: 1.35 kg (3 lb) DC version: 1.4 kg (3.1 lb)
Optional 19-inch rack mount kit	Supports 1 or 2 BV-110 side-by-side in a 1RU space

POWER	
AC power	AC adapter: ~ 100 – 240 V; 50/60 Hz; 2.5 A
DC power	Built-in –48 V dual feed --- –48 - –60 V; 0.75 A

ENVIRONMENTAL

Temperature	Operating Storage	0 °C to 50 °C (32 °F to 122 °F) -40 °C to 70 °C (-40 °F to 158 °F)
Relative humidity		5 to 90% non-condensing
Operating altitude		4000 m (13 000 ft)
External AC power adapter		
Temperature	Operating Storage	-20 °C to 70 °C (-4 °F to 158 °F) -20 °C to 80 °C (-4 °F to 176 °F)
Relative humidity	Operating Storage	20 to 80% 10 to 95%
Operating altitude		2000 m (6562 ft)

REGULATORY

EMC standards	IEC/EN-61326-1; (Title 47 CFR) FCC Part 15, Subpart B; ICES-003
Safety	IEC/EN CSA/UL 61010-1 Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use – Part 1: General Requirements
Certification marks	CE, c(Nemko)us
Compliance	RoHS

LASER SAFETY**SYSTEM AND SERVICE ASSURANCE**

EXFO's Systems and Service Assurance Division offers converged solutions that allow the world's largest service providers and enterprises to deliver reliable and high-quality experiences in voice, video, data and mobile services. The division brings a proven heritage of IP expertise unique to the service assurance marketplace, and collaborates closely with its customers and partners to assure the delivery of any IP-based service, over any network, to any endpoint.

EXFO's seamlessly integrated hardware and software products proactively monitor IP service and application quality. Network operators use these products to guarantee the successful launch and ongoing, profitable operation of their various IP services.

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