EXpert Test Tools

PLATFORM SOFTWARE TOOLS FOR TESTING IP-BASED SERVICES

■ Comprehensive triple play test suite for FTTx/FTTH and commercial deployments.

EXpert IPTV TEST TOOLS

- Powerful solution for IPTV quality assessment
- Set-top-box emulation and passive monitoring of IPTV streams
- Real-time video preview
- Analyzes up to 10 video streams
- Comprehensive QoS and QoE metrics, including MOS score

EXpert IP TEST TOOLS

- Combines six of the most common IP test tools into one: ping, traceroute, HTTP availability, VLAN scan, FTP performance and LAN discovery
- Tests connectivity, throughput and response time
- Automatically detects up to 100 VLANs on a link

EXpert VoIP TEST TOOLS

- Generates VoIP calls
- Fast verification of voice quality, thanks to an intuitive user interface
- Configurable pass/fail thresholds for simplified testing
- Supports most common signaling protocols: SIP, H.323, H.248, SCCP
- Supports MOS, R-factor and RTP metrics

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COMBINE ALL TOOLS FOR FULL TRIPLE PLAY TESTING, OR GET THEM INDIVIDUALLY

With the EXpert IP, EXpert VoIP and EXpert IPTV Test Tools, all the FTB platforms [a] are now equipped with triple play testing capabilities. This allows technicians to test their voice, video and data services at residential and business premises with one test unit.

The combination of EXpert test applications and EXFO's FTB-1 OTDR test modules brings to the industry the most comprehensive and powerful triple play solution in a portable device designed for the growing number of FTTH deployments worldwide.

EXpert **IPTV** TEST TOOLS

EXpert **IP** TEST TOOLS

EXpert **VoIP** TEST TOOLS

PLATFORM APPLICATIONS THAT SPEED UP NETWORK DEPLOYMENTS, AVAILABLE THROUGH THE FTB ECOSYSTEM

EXFO's FTB Ecosystem [b] is software-scalable. What this means is that from the moment you purchase your solution, you know that its productivity will always be improved with apps, software upgrades and updates—a truly future-proof approach. EXpert Test Tools are merely one of the many applications provided through the FTB Ecosystem.

TIMED TRIAL

TRY ANY OF THE EXPERT TOOLS FOR FREE ON YOUR FTB PLATFORM

EXFO gives you the opportunity to download the latest EXpert Tools and try them for free for a limited time. Simply log on to www.EXFO.com/EXFO-Store and download the applications to find out just how easy it is to add new functions and upgrades to your FTB platform.

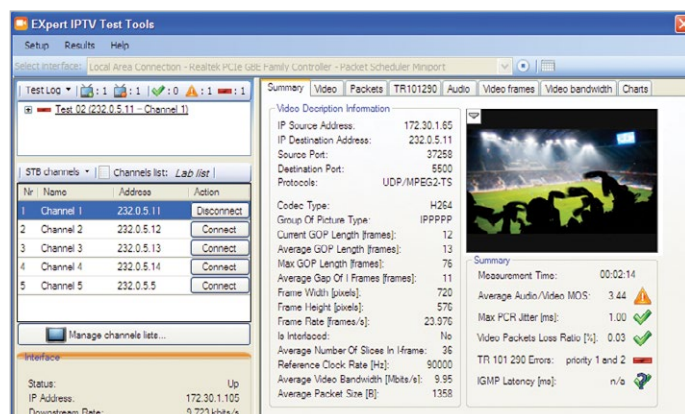a. Not available on the FTB-500 platform.
b. The FTB Ecosystem encompasses EXFO's family of portable platforms and modules, the EXFO Connect cloud-based test management environment and a growing offering of software applications.

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EXpert IPTV TEST TOOLS

POWERFUL IPTV ANALYZER

The EXpert IPTV application enables FTB platform users to quickly and easily perform pass/fail verification of IPTV installations. It also reduces the amount of service calls by detecting and clearly identifying through simple pass/fail indications any degrading conditions during service turn-up, thereby ensuring subscribers' quality of experience. EXpert IPTV can emulate a set-top box and display a real-time video preview, allowing the technician to determine video and audio quality before any other equipment is installed.

Set-top-box emulation

The EXpert IPTV Test Tools allow technicians to emulate an actual set-top box. When operating in that mode, the application can join and leave live IPTV channels. The user can connect and view one or several standard-definition or high-definition videos simultaneously, or request a specific one.

Passive or Promiscuous mode

The Passive mode allows the Expert IPTV Test Tools application to seamlessly discover, view and provide metrics for any IPTV stream available on a specific link. No application configuration is required and the user can run the test without being familiar with the application.

Multiple video streams analysis

The EXpert IPTV application can analyze up to 10 video streams simultaneously. It also makes it possible to join (so the user can view the stream) and leave the discovered and selected streams simultaneously. This time-saving feature can be used for STB emulation as well as in Passive mode.

Video-on-demand (VoD)

The VoD feature of the EXpert IPTV Test Tools allows the user to request a specific video channel and connect to it. Valuable video metrics and analysis are then provided as well as a live view of the stream.

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EXpert IP TEST TOOLS

SIX TOOLS, ONE APPLICATION

EXpert IP Test Tools is an EXFO platform-based software application that brings together six commonly used test tools into one application to help field technicians deal with the complex testing environments of today's networks. As any technician knows, being prepared for the unexpected is key to successfully getting through the day and solving customer issues.

Whether it is to verify IP connectivity to a router or customer endpoint using the Ping tool, debugging VLAN issues with VLAN Scan or verifying a file transfer protocol (FTP) service using the FTP performance tool, EXpert IP Test Tools has you covered. Supported on the FTB test platforms [a], it is an indispensable test kit that is always available for use anywhere and anytime you are using EXFO's test platforms—regardless of the specific module in use.

PRODUCT HIGHLIGHTS

LAN Discovery

LAN Discovery actively interrogates network devices to learn about attached hosts, servers, switches and routers. The discovered devices connected to the network are listed and additional details about each device are provided such as IP address, domain name, services provided, administrator, location, etc. Metrics provided include the IP address of the discovered hosts along with the network address, MAC address and SNMP information.

VLAN Scan

VLAN Scan detects and lists all the VLANs present on the IP network the test set is connected to. It can support the detection of nested VLANs on up to three layers. Results include the VLAN number, priority and frame count. This tool is useful for discovering configured VLANs on a port and bandwidth utilization per VLAN as well as providing the ability to detect VLAN configuration errors.

Ping

The Ping tool validates if there is IP connectivity to another IP-enabled device (host) by sending control message protocol (ICMP) echo request packets to the destination device and waiting for an ICMP response to validate the end-to-end connection. In addition, it also provides a round-trip time (latency) for packets sent by the local device to the destination far-end device. Other metrics include sent and lost packets.

Traceroute

The Traceroute test is a troubleshooting tool that discovers the path taken by IP packets across an IP network. It identifies the nodes or "hops" that the packet traversed on its way to the destination. The information provided by the tool includes the IP address of the nodes and the number of hops to that node and the total hops to reach the destination node. An example of how the traceroute tool can be used is to identify the routers along a data path to discover routing problems or to highlight firewall issues that may be blocking ICMP packets.

FTP performance test

FTP allows the transfer of files between a local PC and a remote FTP server. Using FTP, you can connect to an FTP server and transfer files in either direction by uploading a file to or downloading a file from an FTP server. File transfer involves two types of connections: a control connection and a data connection.

A typical use of the FTP performance test tool is to measure the availability and response time of an FTP server. This test can be configured to upload a file to the server, download a file from the server or perform both tasks. The file is generated by the test and transferred to the specified location.

HTTP availability

The HTTP availability test measures the availability and response time of a hypertext transfer protocol (HTTP) server by downloading a web page. Results include the TCP connection time, the total page download time, the number of redirects and the redirect time.

Not available on the FTB-500 platform.

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EXpert VoIP TEST TOOLS

VoIP SERVICE PERFORMANCE VALIDATION

EXpert VoIP Test Tools is an EXFO platform-based software application that provides voice-over-internet protocol (VoIP) performance validation for service turn-up and troubleshooting in enterprise and service provider networks. Supported on the FTB platforms, the application generates a single VoIP call from an EXpert VoIP-enabled platform to another EXFO platform supporting the application or any IP phone. The test calls can either be "live" or use a predefined audio file for test traffic. EXpert VoIP supports several signaling technologies including SIP, SCCP, H.323 and H.248 to ensure compatibility with the majority of VoIP environments currently used in the industry.

EXpert VoIP boasts a highly configurable test interface to maximize control over the test parameters yet maintains a strong emphasis on usability. The intuitive user interface features EXFO's latest generation framework that provides even the uninitiated user with the ability to quickly set up and run tests. All tests support a uniform set of quality metrics that include opinion score (MOS), R-factor and a full range of real-time protocol (RTP) loss metrics, which combine with configurable thresholds to simplify service validation or accelerate troubleshooting.

Tests are executed between two EXpert VoIP-enabled platforms or to a VoIP endpoint (such as a SIP proxy server, soft phone or telephone, i.e., ATA). The platform that launches the test initiates a call, sets up a media channel, transmits media and reports statistics. Depending on the endpoint, it answers the call, transmits media and gathers statistics. Service tests can query the endpoint to determine availability or to set up a call.

PRODUCT HIGHLIGHTS

RTP Network test

The VoIP RTP Network test is the base test of the EXpert VoIP Test Tools application. This peer-to-peer test measures VoIP-related parameters by streaming RTP packets between two endpoints. All supported functionality for this test conforms to RFC 1889. The RTP Network test simulates VoIP traffic by streaming RTP packets between a controller test set, which initiates the packet stream, and a responder endpoint that initiates its own stream to the controller test set.

Signaling protocols

EXpert VoIP has been designed to support a wide variety of VoIP environments to ensure the maximum utility of the tools. As such, the application can be configured to use some of the most frequently used VoIP call signaling protocols including SIP, SCCP, H.248/Megaco and H.32

Voice quality Mmetrics

The EXpert VoIP Test Tools base application includes a full set of voice quality metrics including MOS, R-factor and degradation factors based on codec, latency and packet loss to help pinpoint the source of any voice quality issues. EXFO's voice quality measurement agent calculates R-factor (another standardized transmission quality rating) for a call based on the G.107 E-model extensions. These model extension factors, such as packet loss, burst to more accurately predict the subjective score a listener would assign that call. The R-factor is then converted to an EXFO MOS score. The EXpert VoIP tests report the raw R-factor and EXFO's MOS voice quality results for conversational call quality.

The EXFO MOS algorithm used in the application is based on the ITU-T P.800 recommendation, which provides an objective measurement to subjective testing. EXFO has invested significant resources into developing and refining the EXFO MOS algorithm and it has been successfully benchmarked against leading commercially available algorithms.

TECHNICAL SPECIFICATIONS

Interface	10/100/1000 Ethernet
Platforms	FTB-1v2/Pro, FTB-2/Pro and FTB-4 Pro
EXpert IPTV Test Tools	• Live video preview [a] • Up to 10 simultaneous streams [a] • STB emulation – IPoE (DHCP) and PPPoE [b] support • IGMP versions 2 and 3 • MPEG2, MPEG4 part 2&10 (H.264), H.265 [b], AVS+ [b], Mediaroom/MS-IPTV • Transport packet metrics • RTP packet metrics • Video perceptual quality metrics including Transport Quality Index (TQI) [b] • Audio description information • MPEG2-TS TR101290 Priority 1, 2 and 3 [b]
EXpert IP Test Tools	• Ping • Traceroute • FTP performance • HTTP availability • VLAN scan • LAN discovery
EXpert VoIP Test Tools	• SIP, H.323, SCCP, H.248/Megaco • MOS and R-factor • RTP metrics • G.711, G.722, G.723, G.728 G.729 (A and B)

a. Not available with H.265 and AVS+ encoders

b. Available only on the FTB-1v2

ORDERING INFORMATION

EXpert IPTV =	IPTV test tool suite Single software to support all IPTV features on the FTB-1v2/Pro, FTB-2/Pro and FTB-4 Pro platforms
EXpert IP =	IP/Ethernet test tool suite Includes: FTP performance, HTTP availability, VLAN scan, LAN discovery, ping, traceroute, IP/Ethernet port statistics Single license for the FTB-1v2/Pro, FTB-2/Pro and FTB-4 Pro platforms
EXpert VoIP =	RTP base call testing software application including packet loss analysis, jitter measurement and complete voice quality metrics
Options EXpert SIP = EXpert SCCP = EXpert H.323 = EXpert H.248 =	 SIP call signaling support for EXpert VoIP SCCP call signaling support for EXpert VoIP H.323 call signaling support for EXpert VoIP H.248/Megaco call signaling support for EXpert VoIP
EXpert TPP Bundle =	Triple play bundle for voice, video and data testing on the FTB-1v2/Pro, FTB-2/Pro and FTB-4 Pro platforms Includes: EXpert IP Test Tools, EXpert IPTV Test Tools, EXpert VoIP Test Tools and EXpert SIP

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