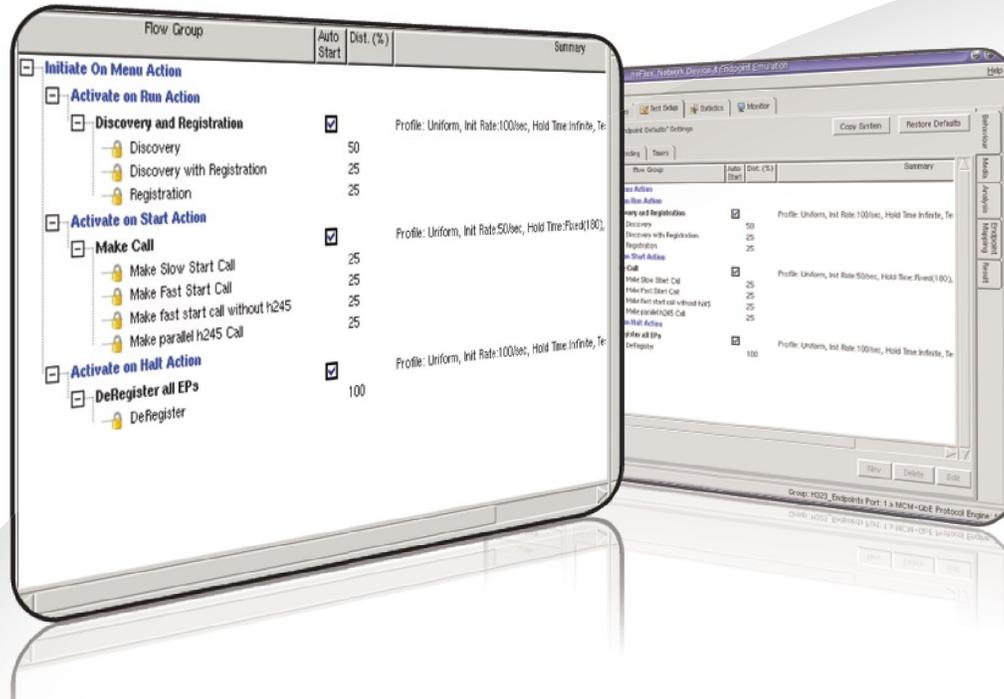# h323Flex Test Suite

H.323 TERMINAL AND GATEWAY EMULATION

This easy-to-use application provides comprehensive testing capabilities, covering the entire H.323 network lifecycle at the various stages of development and deployment

KEY FEATURES

Feature, negative, load, regression, interoperability and scalability testing

Large scale emulation of H.323 terminals and gateways

Slow Start, Fast start calls with or without tunneling and H.245

Real-time device response latency measurements

Purpose-built testing of SIP to H.323 interworking devices such as session border controllers (SBC)

SIP and H.323 interworking testing through a single platform and graphical user interface (GUI)

Detailed signaling and media statistics with call records for threshold violation

Real-time protocol (RTP) streams line-rate generation and analysis

Thousands of registrations, discovery and calls per second (signaling and media)

320 000 emulated terminals per platform

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OVERVIEW

Voice-over-Internet protocol (VoIP) next-generation networks have matured. Most network service providers (NSPs) have already replaced, or are in the process of replacing TDM infrastructures with VoIP. H.323 being the most dominant technology in legacy VoIP networks and with the advent of newer technologies such as SIP, there is a growing need to interwork SIP with H.323. Although service providers are moving to SIP architecture, networks must interoperate with H.323 architectures. Similarly, enterprises that have invested heavily in H.323-based VoIP need to be connected to service providers' networks, which are moving toward a SIP architecture. Devices such as SBCs play an important role in bridging the existing H.323 network with newer SIP and IMS networks. In the foreseeable future, H.323 will co-exist with SIP until there is a major upgrade of the entire H.323 VoIP network.

The interworking of SIP and H.323 presents significant challenges for network equipment manufacturers (NEMs), system integrators and NSPs especially under high load and capacity. Although H.323 and SIP provide the same functionality such as call control, media negotiation and location of users, the actual procedure of how they achieve this is different. Interworking devices such as SBC need to perform protocol translation between SIP and H.323 networks.

EXFO's h323Flex Test Suite is designed to assist NEMs and NSPs to perform H.323 to SIP interwork testing, using real-world traffic load in lab environments. This easy-to-use application provides comprehensive testing capabilities, covering the entire H.323 network lifecycle at the various stages of development and deployment.

Combined with the sipFlex Test Suite, h323Flex can generate real-world SIP and H.323 traffic toward the device under test (e.g., SBC) to perform SIP to H.323 interwork testing. As both applications reside under the same GUI, statistics from the SIP and H.323 domain can be easily correlated.

The h323Flex Test Suite is available on EXFO's VoIP and IMS high-performance systems such as the QualityAssurer QA-604 and the InterWatch R14. It is also supported on the Gigabit Ethernet, MCM-GbE and the SCM-GbE modules.

InterWatch R14
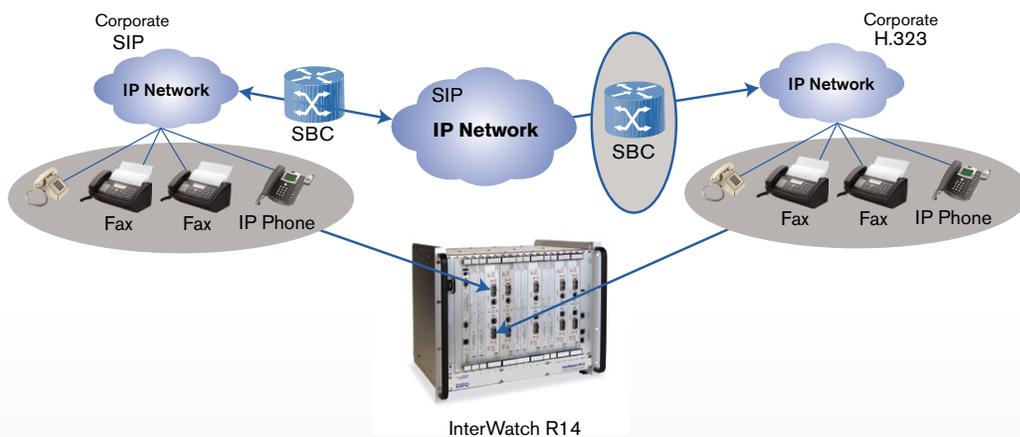
KEY TEST FEATURES

H.323 Terminal and Gateway Emulation

› Emulates H.323 terminals and gateways

H.323 Call Flow Mix Testing

› Initiates various call types such as Slow Start and Fast Start with or without tunneling and H.245

› Creates traffic consisting of a mixture of call types to simulate real-world subscriber behavior

    › Example: Generation of thousands of calls per second with the following mix of services: 30 % Slow Start, 20 % call with Fast Start, 20 % Fast start with tunneling, 30 % Basic Call with tunneling

Call Completion Rates and Causes of Failure Simulation

› Simulates call completion rates by reproducing user response behavior

    › Example: 20 % of calls are answered normally, 30 % of calls are responded to with Fast start, 20 % of users are busy, 30 % of calls with tunneling

Key Performance Indicators Measurements

› Measures network/device response latency under load

› Hardware-based time stamping allows for accurate measurements even under load

› Collects and presents response latency in real-time

Protocol Timers Customization

› User-configurable timer values for all protocol timers

COMPREHENSIVE MEDIA TEST CAPABILITIES

› Negotiates and transmits several codecs simultaneously

› Negotiates one codec but generates another type with higher bandwidth to test the theft-of-service-protection function of the device under test

› Detects in real-time and at line speed whether the device under test is penalizing RTP streams that do not conform to their negotiated codecs/bandwidth

› Verifies path for every established stream to check whether:

    › Media was detected

    › Media packets were misrouted

    › RTP codec received was not as negotiated

    › ToS/DSCP value for received packets was not as expected

› Measures QoS for delay, loss, interarrival jitter, mean opinion score (MOS) with user-defined thresholds and perceptual evaluation of speech quality (PESQ)

› Provides records for each call that fail the path verification test or exceed the QoS thresholds

› Up to 15 statistics views for 15 combinations of codec, VLAN and ToS values

› User-defined wave files and packetization intervals

› Tests rogue media

› DTMF and RFC 2833

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Automation and Troubleshooting

> TCL command line interface

> Built-in Ethereal monitor for each Ethernet port

> Detailed call records for user-defined thresholds violation

Real-Time Signaling Statistics

> Provides results in tabular and graphical formats

> Summary and detail statistics per entire system or per group of endpoints

> Signaling statistics per group of endpoints or per flow

> Registrations: successful and unsuccessful registrations

> Calls: successful and unsuccessful calls with and without media

> Messages: incoming, outgoing and retransmitted

> Errors: incoming and outgoing errors count

> TCP connections: active, attempted, successful, unsuccessful and retransmitted

Real-Time Media Statistics

> Analyzes performance for each individual media/codec type

> Measures packet loss, delay, jitter, R-factor, MOS and PESQ

> Validates path of RTP and RTCP packet, detecting teardown time, misrouted, unexpected or multiple codecs

> RTP DTMF and signaling DTMF sessions active or failed and the reason for failure

PERFORMANCE AND SCALE PER PLATFORM		
Platform	QualityAssurer QA-604	InterWatch R14
Unique endpoints/IP addresses	256 000	320 000
RTP streams	128 000	320 000
Unique MAC addresses	256 000	320 000
Registrations per second	5600	7000
Calls per second	2400	3000

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PROTOCOL SPECIFICATIONS

Transport
- TCP, UDP

Network
- IPv4
- IPv6

H.323
- H.225.0 Registration, Admission and Status (RAS)
- H.225.0 Call Signaling
- H.245

RTP/RTCP
- RFC 1889
- RFC 1890
- RFC 2190
- RFC 3388
- RFC 3551
- RFC 3267

Audio/Video
- ITU-T G.711 (PCMU, PCMA)
- ITU-T G.721
- ITU-T G.722
- ITU-T G.723
- ITU-T G.726
- ITU-T G.729
- ITU-T G.728
- AMR
- AMR-WB
- ILBC
- GSM-EFR, GSM-FR, GSM-HR
- H.264
- H.263
- EVRC, EVRC-B

DTMF
- RFC 2833

Voice and Video Quality Analysis
- ITU-T G.107 E-model
- ITU-T P.800.1 MOS

ORDERING INFORMATION

For ordering information, please contact isales@EXFO.com

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