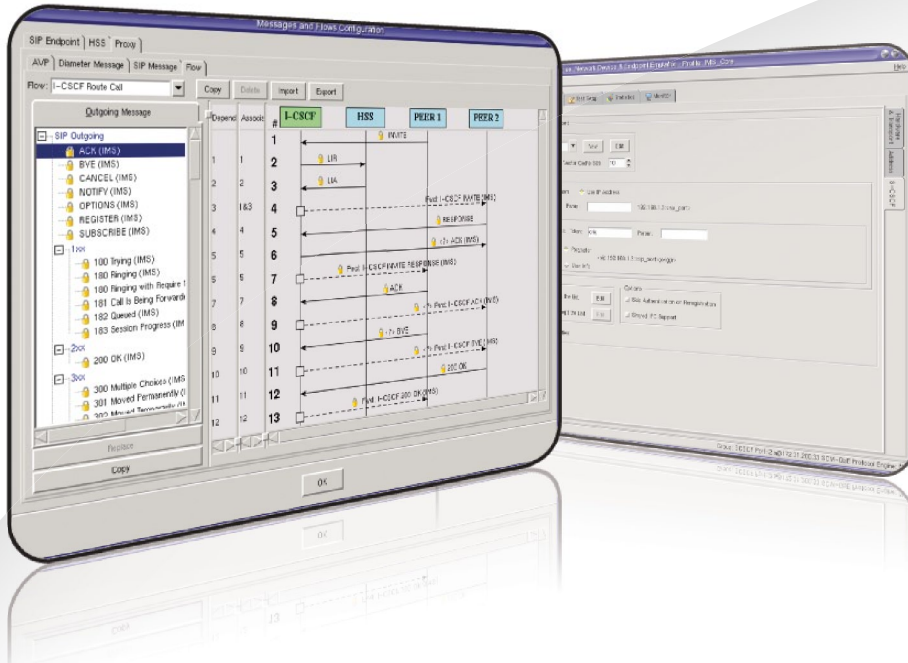# proxyFlex Test Suite

IMS NETWORK ELEMENT AND SERVICE TESTING

Housed in the InterWatch R14 and QualityAssurer QA-604 platforms, proxyFlex can be combined with the sipFlex and hssFlex test suites to emulate the entire IMS core and the subscriber in a single application.

KEY FEATURES

Stateful emulation of the IMS call-session control functions
- P-CSCF
- I-CSCF
- S-CSCF

Out-of-the-box standards-compliant solution with the flexibility to modify the forwarding rules of various proxies

Tests various IMS network elements, such as IMS UE, HSS and CSCF when surrounded by the rest of the network

SIP and Diameter integrated into the same call flow

IMS AKA with IPSec support

DNS NAPTR and SRV lookups

Large-scale and high-performance solution

Device response latency measurements in real time

Complete IMS core and subscribers emulation in a single application with one platform

Ten million subscribers per platform

Thousands of registrations and calls per second

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OVERVIEW

IP multimedia subsystems (IMS) are quickly becoming the *de facto* architecture of choice for wireless and wireline operators deploying services over an all-IP core. This architecture offers them a faster way to deploy new differentiated services, thereby enabling fixed/mobile convergence and deployment of converged multimedia services across any access.

The call-session control function is central to the IMS architecture as it provides core session control in the IMS network and is subdivided into the P-CSCF, S-CSCF and I-CSCF. It is very important for network equipment manufacturers (NEMs) and network service providers (NSPs) who are developing and deploying IMS networks to understand the interactions between the CSCF and the rest of the IMS network. In addition, testing the different IMS elements under various topologies and real-world scenarios is critical. By simulating real-life networks, NEMs and NSPs can ensure that the deployed network is able to deliver the benefits of a converged network, such as IMS Failure. Simulation also enables them to verify whether these scenarios could lead to significant network downtime, dissatisfied customers and costly deployment mistakes.

EXFO's proxyFlex Test Suite emulates the IMS P-CSCF, I-CSCF and the S-CSCF in a stateful manner, enabling NEMs and NSPs to perform comprehensive device and end-to-end testing of various IMS network components. For example, elements such as the HSS, AS and CSCF can be surrounded by the rest of the network to perform testing under real-life conditions. The application supports various call flows for registration, call processing and session, making it possible to test any service deployed over an IMS core.

When combined with the sipFlex and hssFlex test suites, proxyFlex can emulate the entire IMS core and the subscriber using the same application—providing a unique test solution for IMS network and service testing at the development and deployment phases.

Key Test Features

IMS Service Testing

› Test real-world IMS services such as basic calls, class-5 features, presence and messaging services through the IMS core

› Test services deployed over a third-party application server with initial Filter Criteria (iFC) either shared or downloaded via the HSS

Stateful IMS Core Emulation

› Emulates P-CSCF, I-CSCF and S-CSCF under the same application and GUI

› Emulates the entire IMS core and subscribers with sipFlex and hssFlex

› Surrounds the device under test to perform functional, performance and capacity testing

   › Test cases: IMS HSS/SLF, IMS UE, IMS P/I/S-CSCF

Flexible Call-Forwarding Support

› Customizable (or specification-defined) call forwarding of IMS P-CSCF, I-CSCF and S-CSCF

› Add, Remove, Append headers and parameters to emulate various implementations and real-world architectures

Registration and Security Testing

› Tests end-to-end registration with AKA and SIP Digest

   › Customizable IPSec/AKA parameters

› Supports large-scale IPSec connection with the PCSCF toward the UE

   › 256 000 IPSec tunnels per port

Key Performance Indicator 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

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Protocol Timers Customization

> User-configurable timer values for all protocol timers

Automation and Troubleshooting

> TCL command line interface

> Built-in Ethereal monitor for each Ethernet port

Real-Time Signaling Statistics

> Provides results in tabular and graphical formats

> Summary and detail statistics per system or per proxy

> Signaling statistics per proxy

> Registrations: successful and unsuccessful registrations with and without authentications

> Calls: successful and unsuccessful calls

> Messages: incoming, outgoing and retransmitted

> Errors: incoming and outgoing errors count

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

> DNS

> IPSec security associations: active, added, deleted and expired

Performance and Scale per Platform

> 10 million subscribers

> Thousands of registrations and calls per second

PROTOCOL SPECIFICATIONS

Transport

> TCP, UDP, SCTP

Network

> IPv4, IPv6

SIP

> RFC 3261, RFC 3262, RFC 3265, RFC 2976, RFC 3515, RFC 4028, RFC 3311, RFC 3325, RFC 3891, RFC 3903, RFC 3608, RFC 3428

Diameter

> RFC 3588

> Cx/Dx, Sh/Dh interfaces

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IMS

› 3GPP TS 22.228

› 3GPP TS 22.328

› 3GPP TS 22.329

› 3GPP TS 23.228

› 3GPP TS 24.229

› 3GPP TS 29.228

› 3GPP TS 29.229

› 3GPP TS 33.203

› 3GPP TS 33.210

› Gm, Mw, Mr, Mg, ISC, Cx/Dx, Sh/Dh interfaces

Security Protocols

› IPSec

› AKA

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