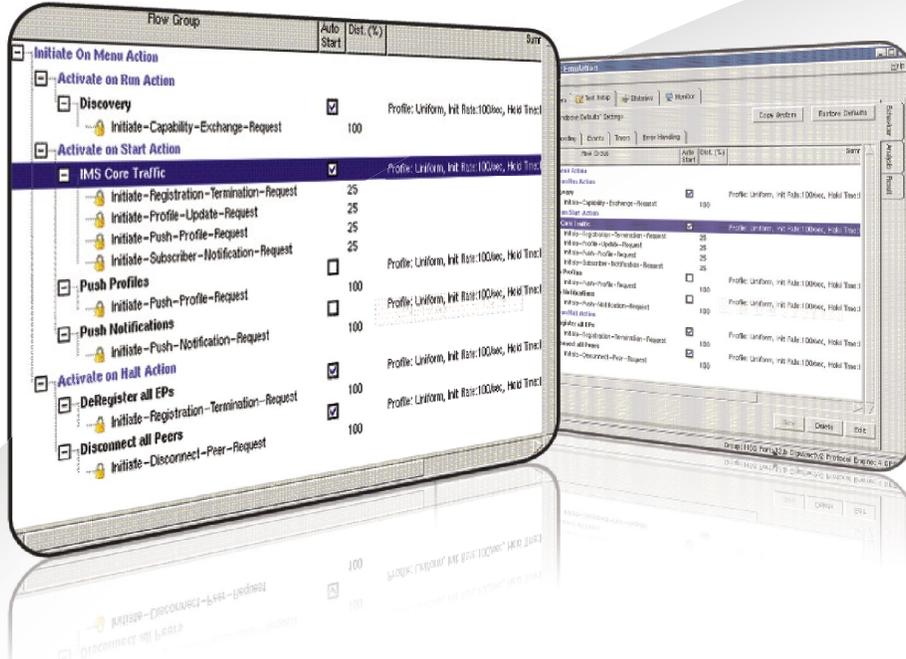


hssFlex Test Suite

HSS EMULATION WITH TEST FUNCTIONALITY



Combining flexibility in message and signaling flow definition with ease of test-case creation, the hssFlex Test Suite provides a comprehensive IMS test bed for complete device and end-to-end testing using a combination of the industry-leading HSS test emulator and IMS subscribers in a single test application.

KEY FEATURES

Tightly coupled interfaces (Cx, Dx, Sh, Dh, Ph) with real-time data and protocol synchronization across all interfaces

Out-of-the-box and standard-compliant, with the flexibility to modify protocol state machines, messages and flows

Prebuilt test cases for testing IMS devices and interfaces
IMS core
P/I/S-CSCF
Application server (AS)

Real-time IMS network and device response latency measurement

Integrated subscriber locator function (SLF) features

Intuitive and very easy to use

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

Over two million subscribers per chassis (256 000 per port)

Integrated with IMS subscriber emulation in one platform and GUI

OVERVIEW

The essential components of the IMS architecture are the P/I/S-CSCFs and the home subscriber server (HSS). The call session control functions (CSCFs) are responsible for call control of multimedia sessions, while the HSS acts as the master database that manages subscriber profiles and their authentication and authorization. Without being authenticated and authorized, IMS subscribers will not be able to access IMS services. As a result, the HSS plays a critical role in enabling successful deployment of IMS networks and services.

For network equipment manufacturers (NEMs) and network service providers (NSPs) developing and deploying IMS networks, it is very important to understand the interactions between the IMS core and the HSS. Improper or insufficient validation of the HSS to IMS core interfaces could result in significant network downtime, dissatisfied customers and costly deployment mistakes.

EXFO's hssFlex Test Suite provides a comprehensive IMS test bed allowing NEMs and NSPs to perform complete device and end-to-end testing using a combination of the industry-leading HSS test emulator and IMS subscribers in a single test application.

KEY TEST FEATURES

Interface and Device Testing

- › Cx/Dx/Sh/Dh interface testing
 - › Example: Test authorization and authentication, processing and downloading of user profiles, and Diameter testing
- › P/I/S-CSCF and AS device testing
 - › Authorization and authentication test cases against the S-CSCF
 - › User profile downloads to the S-CSCF
 - › S-CSCF assignment by the I-CSCF
 - › AS interactions with the HSS; repository data upload and subscription/notifications to data changes

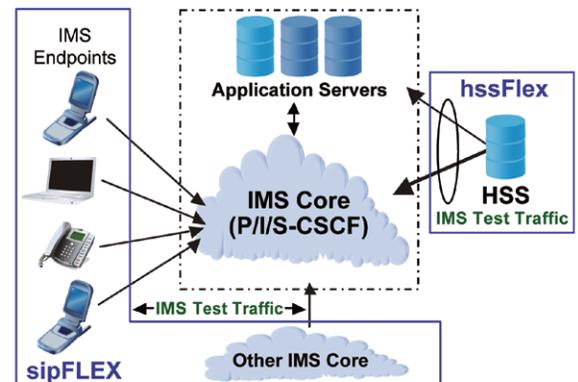
Registration Testing

- › Test the end-to-end registration process with the HSS using AKA or SIP digest
- › Test the impact of registration floods on the network or device under test
- › Test with invalid vectors from the user equipment (UE)
- › Test the various registration states

Prebuilt Test Cases

Various prebuilt test actions to simulate real-world scenarios for testing user interactions such as:

- › User-denied services
 - › Nonpayment of bills
 - › Credit expiry on the pay-as-you-go account
 - › User registration being terminated, resulting in RTA/RTR
- › Configuration of new services, resulting in new profiles pushed for users in scenarios such as:
 - › Addition or deletion of service
- › Changes in provisioning from the operators, resulting in changes to the user profile
 - › Assignment of new S-CSCF, AS, etc.
- › Message avalanche/floods generated by the HSS toward the I-CSCF, S-CSCF and AS
 - › Could lead to denial of service for legitimate users



IMS Core Testing

Traffic profiles that consists of a mixture of signaling flows generated toward the IMS core to simulate real-world HSS behavior:

- › Example: 10 % of subscribers registering, 10 % of subscribers reregistering, 10 % of subscribers deregistering, 10 % of users changing their services, 10 % of users getting their services cut for nonpayment, 25 % of users affected due to changes in the AS, etc.
- › Example: 50 % of users responding correctly to incoming registrations, with the remaining 50 % not responding to some parts of the registration process

Simplified Configuration and Management of IMS Subscribers and Profiles

- › Intuitive and easy-to-use IMS subscription configuration
 - › Definition of IMS subscriptions with any combination of private and public IDs with implicit set and shared public ID
- › Intuitive and easy-to-use GUI-driven profile editor
 - › Creation of service point triggers, trigger points, initial filter criteria and service profiles
 - › Creation of the charging and Sh profile

State Machine, Signaling Flow, Messages and AVP Manipulation

- › Easy-to-manipulate state machines, messages, attribute value pairs (AVPs) and flows
 - › Flexible message editor, including direct hex editing support
 - › Simulation of proprietary implementations and evolving standards
 - › Performance of negative/abnormal scenarios
 - › Replication of field scenarios

Message Floods

- › Simulation of any Diameter message floods consisting of one or more Diameter messages
- › Mixing of several stream-of-message floods simultaneously
- › Analysis of the impact of message floods on registration and network/device response latency

Key Performance Indicator Measurements

- › Measurement of user-defined interval within each call flow
- › Measurement of network and device response latency under load
- › Hardware-based time stamping allows for accurate measurements, even under load
- › Collection and presentation of real-time response latency

Default Protocol Behavior Customization

- › Customizable default (spec-defined) protocol behavior
 - › Example: Handling incoming registrations, subscriber notification handling between AS and HSS, protocol errors, etc.

Protocol Timer Customization

- › User-configurable timer values for all protocol timers
- › Customizable application behavior once the timer has expired
 - › Example: Once the registration timer has expired, sends out a registration/termination request (RTR)

Automation and Troubleshooting

- › TCL interface
- › Built-in Wireshark for each Ethernet port
- › Detailed call records for signaling errors

Real-Time Signaling Statistics

- › User-defined customizable statistics view; displays focused statistics from any category in a convenient single view
- › Creation of user-defined statistics by mixing and matching statistics from across applications
 - › Example: Combination of statistics from the endpoint emulation (sipFlex) and HSS emulation (hssFlex), as well as pass/fail criteria definition
- › Displays of results in tabular and graphical formats
- › Summary and detail statistics per the entire system or per group of subscribers
- › Signaling statistics per flow
- › Incoming, outgoing and retransmitted messages
- › Incoming and outgoing error count
- › Active, attempted, successful, unsuccessful and retransmitted SCTP/TCP connections
- › Detailed Diameter statistics

Performance and Scale per Platform

- › Over two million subscribers
- › Tens of thousands of database transactions per second

Protocol Specifications

- › Diameter over TCP and SCTP
- › IPv4 and IPv6
- › Cx, Dx, Sh, Dh, Ph interfaces
- › RFC 3588
- › IMS
 - › 3GPP TS 23.228
 - › 3GPP TS 29.228
 - › 3GPP TS 29.229
 - › 3GPP TS 29.328
 - › 3GPP TS 29.329

ORDERING INFORMATION

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