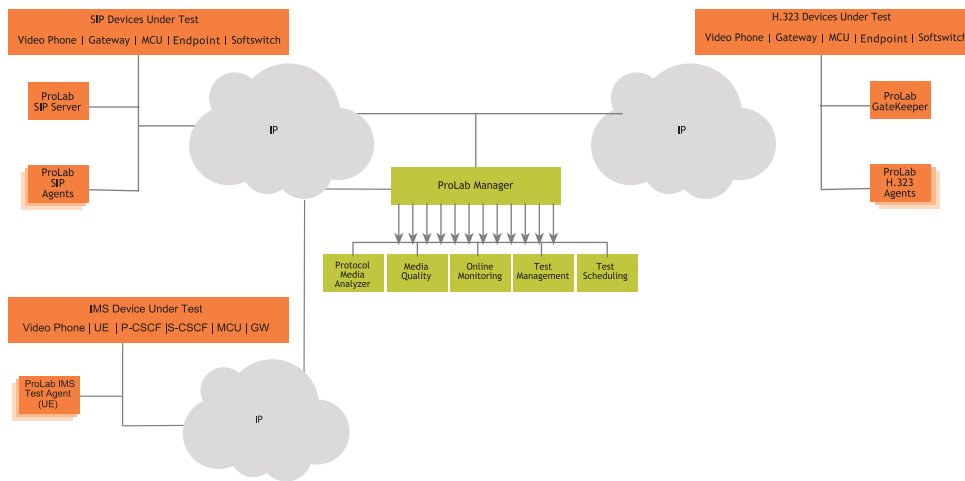


ProLab™

IMS Test Solution



RADVISION's ProLab IMS is part of RADVISION's ProLab Test Management Suite, providing IMS, SIP, H.323 and 3G-324M testing in a single, easy-to-use product. ProLab IMS is designed to play a critical and vital role in the product development cycle. With hundreds of built-in plug-and-play scripts, test case media files, full IMS simulation testing, and online analysis, ProLab IMS provides a testing platform for performing exhaustive UE testing. The ProLab IMS Test Solution was developed based on the expertise and know-how acquired developing RADVISION's award-winning, complete suite of protocol toolkits. In keeping with RADVISION's commitment to industry leadership, the ProLab IMS Test Solution is fully compliant with IETF and 3GPP standards.



IMS Functions that can be tested with ProLab IMS:

- S-CSCF - Serving Call Session Control Function
- I-CSCF - Interrogating Call Session Control Function
- P-CSCF - Proxy Call Session Control Function
- AS - Application Servers
- UE - User Equipment (3G cellular phones and devices) and wireline endpoints
- MRFC - Media Resource Function Controller
- MGCF - Media Gateway Control Function
- BGCF - Breaking Gateway Control Function

ProLab IMS Advantages:

- UE simulation signaling & media
- High performance and scalability
- Test plan management
- Reduced testing time
- Cost-effective testing
- Hundreds of built-in scripts
- Built in media files from different vendors
- Simultaneous protocol testing: 3G-324M, SIP, IMS

ProLab IMS includes the following essential tests:

- Error (typical and atypical)
- Unit & Functional
- Load and stress
- Regression
- Performance
- Feature verification
- Interoperability
- Media Testing

ProLab IMS Architecture

ProLab IMS is a complete testing platform that includes multiple transport interfaces and the ability to conduct simultaneous multi-protocol testing. ProLab IMS comes with an array of capabilities for setting up innumerable test cases, along with powerful tools to analyze these tests and monitor network and DUT performance.



ProLab IMS Architecture Components

IMS

SigComp: The ProLab IMS Test Agent implements mandatory SigComp (Signaling Compression). SigComp allows the compression of messages generated by application protocols, such as SIP, for messages that have not been optimized in terms of size. For example, typical SIP messages range from a few hundred to two thousand or more bytes (RFC3261). With the planned usage of SIP in wireless and cellular handsets and as part of 3GPP requirements for the IP Multimedia Subsystem (IMS), the large message size is problematic making message compression mandatory. SigComp provides a means to eliminate this problem by offering the compression of application messages. Supports Lzss and Null Algorithms.

AKA-MD5: IMS defines its own authentication scheme termed AKA (Authentication and Key Agreement). The AKA scheme and functionality is defined in several specifications (RFC3310, TS24.229, TS.33.203). The AKA scheme provides mutual authentication between mobile terminals and the IMS network. In addition, AKA provides the distribution of Ck and Ik cryptographic and integrity keys. These keys are used in the IPsec association establishment process. The AKA feature is useful for developers of IMS terminals, and IMS servers (S-CSCF). The ProLab IMS Test Agent implements AKA-MD5 with the option of sending multiple registrations using AKA-MD5, multiple login and password, etc.

Full P-Header Implementation: IMS SIP messages are composed of several headers plus the message body. In addition to standard headers, the 3GPP has defined additional headers targeted at solving specific IMS network problems. The latter introduces a new IMS capability because each phone can have multiple identities on an IMS network, such as one identity for work and one for home.

RFC 3455 and SIP extensions for the 3rd-Generation Partnership Project (3GPP):

- | | |
|-------------------------------|----------------------|
| P-Associated-URI | P-Preferred-Identity |
| P-Called-Party-ID | RFC 3603: |
| P-Visited-Network-ID | P-DCS-Trace-Party-ID |
| P-Access-Network-Info | P-DCS-OSPS |
| P-Charging-Function-Addresses | P-DCS-Billing-Info |
| P-Charging-Vector | P-DCS-LAES |
| RFC 3325: | P-DCS-Redirect |
| P-Asserted-Identity | |

Service Route: The 3GPP has defined a mechanism for both UE and S-CSCF to know where to send SIP messages in case the user endpoint is located on a visited network. The information is transmitted in the initial REGISTER (or after roaming), using Path and Service-Route headers. The ProLab IMS Test Agent enables encoding and decoding of the Path and Service-Route headers. It can send a REGISTER message with Path and Service-Route headers, and waits for the Service-Route header from the SIP Server, which it will use for the INVITE message.

Presence: Presence and Event packages support with subscribe-notify mechanism and capability to simulate Multiple Subscribe/Notify.

Media Authorization: RFC 3313: Private SIP Extensions for Media Authorization (P-Media-Authorization)

SDP/IMS: IMS defines some SDP (Session Description Protocol) extensions in the media negotiation process. The ProLab IMS Test Agent implements the following SDP extensions: grouping of media lines; mapping of media streams to resource reservation flows; bandwidth modification; MSRP media lines. These SDP extensions are useful for developers of IMS terminals and IMS servers (P-CSCF, S-CSCF).

SIP

Stress and Performance: Generating and receiving thousands of calls using constant, burst, Poisson call distribution, random call duration and high capacity and volume

Extensions: SIP extension testing, including PRACK and REFER, auto-provisional response and multipart MIME body

Advanced Presence (to test Presence Server applications): Subscribe, Notify, Unsubscribe, Subscribe refresh, Subscribe with a call

SIP Server: The ProLab SIP Server Agent simulates SIP Server functionality, and it can behave as a registrar, proxy, or re-direct server. The ProLab SIP Server Agent is fully configurable, and provides high performance. Full compliance with the latest drafts of SIP (RFC 3261) and subsequent SIP RFCs and supports all SIP Server high-level and low-level functionality.

RTP/RTCP: Generates hundreds of calls using voice and video media streams.

Advanced Signaling:

- Multiple Transport TCP, UDP and TLS
- UAC/UAS emulation
- INVITE, Re-INVITE
- BYE, CANCEL
- Multiple IP simulation
- Torture testing
- Info
- Notify
- Options
- Trying
- Ringing
- Reject messages
- Registration & Authentication Testing
- Authentication multiple login and password
- Redirect
- Header manipulation
- Generic method
- Session Timer
- Compact Header
- Calls to multiple sources and destinations
- SIP compliance testing, including Columbia test messages and non-standard messages

Test Management

Built-in Test Cases: ProLab IMS comes pre-packaged with an abundance of plug-and-play scripts and media files. This rich collection of ready-to-use prepared files represents a wealth of expertise and know-how for performing comprehensive and exhaustive test case scenarios. The built-in scripts perform a wide variety of test case simulations including IMS, SIP, media and more.

Built-in Media: The built-in media simulates different media from various vendors, as well as different types of codecs. ProLab IMS comes with a variety of voice and video codecs.

Quick Test: Provides a wizard utility to quickly generate basic test scripts. With full plug-and-play capabilities, this utility enables registering

and performing calls without the need to know or learn script language programming.

Advanced Script Language: ProLab IMS comes with an advanced script language for developing complex and special case test scenarios with the ability to interact in sophisticated network topologies. Advanced scripting provides a vast range of testing capabilities.

Open Interface: While the ProLab Test Manager was designed to be controlled directly by users, it can also be controlled by third-party applications through the use of an open interface, enabling fully automated testing without user intervention. Communication between the ProLab Test Manager and third-party applications is over XML/SOAP (Simple Object Access Protocol).

3G-324M

Provides a 3G-324M complete testing platform that is fully compliant with the latest industry standards. This solution provides an automated testing and validation solution for 3G handsets, terminal applications and mobile devices, for 3G network equipment vendors and service providers. ProLab 3G-324M enables simulation of a vast range of real-

life 3G network conditions, monitoring of network component performance and validation of 3G application quality. DUTs, gateways, video-on-demand, video mail, advanced multimedia advertising, and 3G-network validation.

Protocol and Media Analysis

Media analysis: ProLab IMS enables advanced analysis of incoming and outgoing media streams, including packet distribution, packet loss, bandwidth, errors, and synchronization errors. Call Performance and Setup Time Metrics monitors calls in progress (incoming and outgoing), and reviews test summary statistics. Supplies advanced setup time measurements and round-trip delay time measurements.

Video Quality: The new perceptual Video Quality measurement uses different video metrics. It intrusively analyzes received video streams and perceptually scores relevant degradations on a 5-point MOS scale. Additional key performance indicators (KPIs), like PSNR and blockiness, are output to allow experts to make a more detailed analysis. Video Quality measurement can be used for IMS, SIP, H.323 and 3G-324M.

Voice Quality: ProLab IMS analyzes Voice Quality, measured by digitized voice lines. MOS is based on the subjective opinions of actual users rating the quality of the voice line on a scale from 1-5. The model provides measurements based on packet loss, jitter, and round trip delay.

Media Key indicators: ProLab IMS enables advanced analysis of incoming and outgoing media streams, including packet distribution, packet loss, bandwidth utilization, video key indicators, and more.

Network Error Simulation for IMS: This module enables simulating RTP network problems for all calls or for a specific RTP session. Various types of network problems can be simulated for each RTP stream. Statistics are available for the following: packet loss, delay, corrupted payload, corrupted SSRC, duplicate packets and packets ordering.

Standards Supported

IMS

- RFC 3320 (SIGCOMP)
- RFC 3313 (Media Authorization)
- RFC 3608 (Service Route)
- RFC 2806 (TEL URI)
- RFC 3680 (Reg Event)
- RFC 3603, RFC 3325 , 3455 (P-Headers)

SIP

- RFC 3261 (SIP)
- RFC 3262 (Reliability of Provisional Responses in SIP)
- RFC 3265 (SIP Specific Event Notification)
- RFC 2327 (SDP)
- RFC 2617 (HTTP Digest Scheme Authentication)
- RFC 3515 (REFER)
- RFC 3372 (SIP-T)
- RFC 2833 (DTMF signaling above RTP packets)
- RFC 2246 (TLS v1.0)
- RFC 3546 (TLS Extensions)
- RFC 4028 (Session Timer)
- RFC 3311 (UPDATE)
- RFC 3263 (locating SIP Servers)

3G-324M

- 3GPP 3G-324M recommendations
- 3GPP TS 26.110
- 3GPP TS 26.111
- 3GPP TS 27.007
- 3GPP TR 26.911
- ITU-T H.324
- ITU-T H.324 Annex A
- ITU-T H.324 Annex C - Mobile Requirements
- ITU-T H.245 Version 11 - Advanced Call Control
- ITU-T H.223
- ITU-T H.223 Annex A - Error handling level 1
- ITU-T H.223 Annex B - Error handling level 2

About RADVISION

RADVISION (NASDAQ: RVSN) is the industry's leading provider of high quality, scalable and easy-to-use products and technologies for videoconferencing, video telephony, and the development of converged voice, video and data over IP and 3G networks. For more information please visit our website at www.radvision.com.

USA/Americas
T +1 201 689 6300
F +1 201 689 6301
infoUSA@radvision.com

APAC
T +852 3472 4388
F +852 2801 4071
infoAPAC@radvision.com

EMEA
T +44 (0) 20 8757 8817
F +44 (0) 20 8757 8818
infoUK@radvision.com

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