

# IMS Monitoring & Testing

Analysis Suites for IMS Networks

**Application Note**

**Sunrise Telecom  
IMS monitoring  
Platform Solutions**



**STT-MSA**



**NeTracker  
&  
3GMaster**

**Technology Overview**

The IP Multimedia Subsystem (IMS) is a standardized Next Generation Networking (NGN) architecture for telecom operators that provide mobile and fixed multimedia services.

The impact on the network is the creation of a set of new entities dedicated to handling the signaling and user traffic flows related to these applications. The standard supports multiple access types including GSM, WCDMA, CDMA2000, Wireline broadband access and WLAN.

IMS allows operators to set-up a convergent paradigm for an NGN solution to build up enhanced multimedia services over IP such as presence, push to talk and combined circuit / packet services. Moreover, the aim of IMS is not only to provide new services but also to provide all of the current and future services that the Internet supports.

The key protocol to interconnect IMS users towards the core network capabilities is SIP, which is continuously

enhanced in order to extend protocol support to new services and network capabilities.

Moreover SIP, H.248, Diameter and COPS are used to interconnect the network nodes to each other.

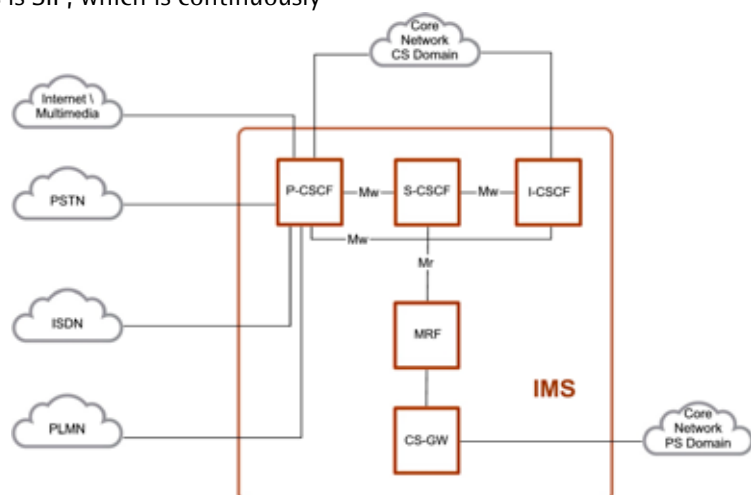
The success of NGN, and IMS in particular, strongly depends on the solution of interoperability issues that arise in the complex network scenario foreseen in the IMS architecture

**The Sunrise Telecom Solution**

Sunrise Telecom has developed a comprehensive set of non-intrusive analysis and monitoring packages for the different IMS protocols (SIP Mobile, MEGACO, COPS, Diameter), as well as a script-based simulator and bulk call generator for the SIP protocol.

The current hardware platforms that support IMS monitoring and testing are:

- NeTracker® 1000, 3000, 4000, and 6000
- 3GMaster® 1000, 3000, 4000, and 6000
- STT-MSA



## IMS Monitoring Protocols

### Supported Protocols

- SIP Mobile
- H.248 (MEGACO)
- COPS
- Diameter (DBP)

## SIP Simulation Package

### Simulation Modes

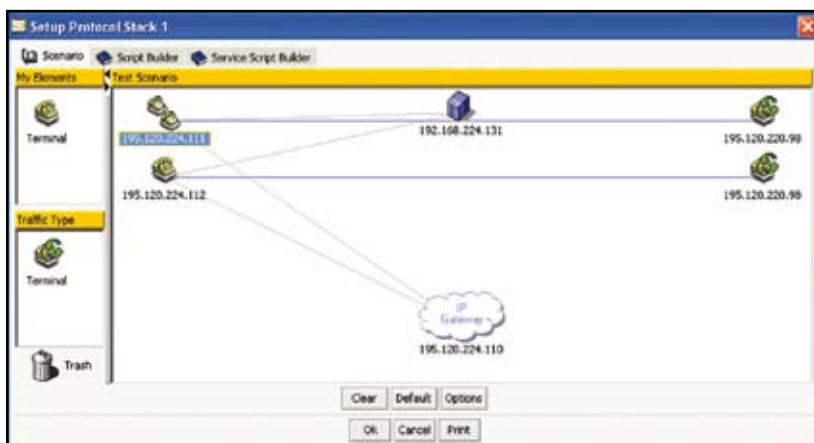
This package allows simulation of a range of terminals (User Agents). The following simulation modes are available:

- Registration only to proxy servers
- Call signaling generation only with or without proxy registration
- Call signaling and RTP/RTCP generation (transmission of Voice/Video files for path testing) with or without proxy registration
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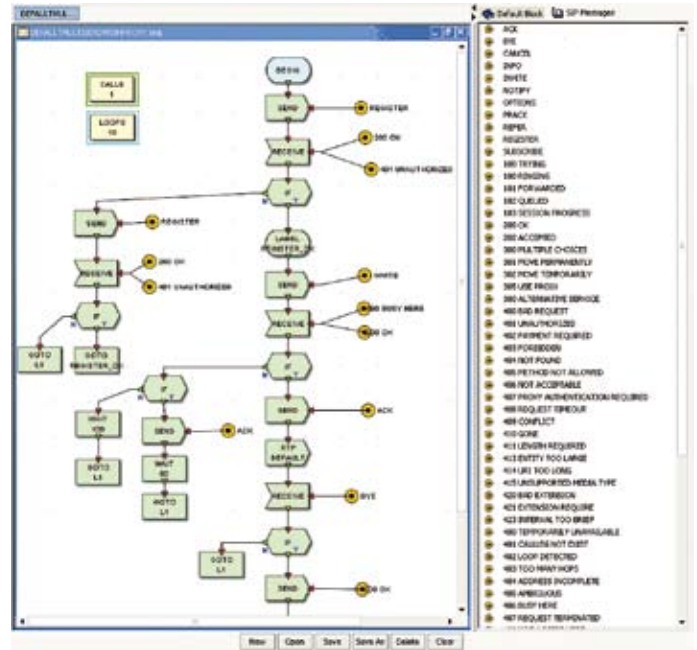
SIP simulation is script based and offers high call volume as well as a flexible level of control over message and test parameters, to fully simulate valid, invalid, and stress conditions. An automatic call generator function can be used to further simplify the simulation setup.

### Specification

The simulator is aligned to the following RFC: RFC 3261, RFC 3841, RFC 2327, RFC 2617, RFC 3311, RFC 3262, RFC 2976, RFC 3265, RFC 3892, and RFC 3428.



Example of a scenario (SIP Simulation)



Example of a script (SIP Simulation)

## Applications

The IMS packages have many applications for product designers, manufacturers and service providers:

- Network Traffic Analysis
- SLA Control
- Call Completion Analysis
- Network Performance Measurement
- Network Planning & Deployment Analysis
- Maintenance & Troubleshooting

## Main Features

The following features are available for all monitoring and simulation packages.

**User Friendly GUI:** An intuitive drag and drop interface makes configuration easy.

**Scalability:** All the protocols/interfaces are available as software and hardware options to allow maximum flexibility.

**Inter-networking Monitoring:** Users can perform simultaneous analysis on the VoIP, PSTN and NGN sides for complete inter-networking and inter-operability analysis.

**Data Recording and Off-line Analysis:** Data can be recorded in Binary Format and stored on the hard disk. The data can be analyzed in the same way as during real-time analysis.

**Multi-interface Correlation & Ladder Diagram:** CDRs/TDRs from up to 7 different interfaces and protocol stacks can be correlated simultaneously. The algorithms are based on combinations of matching keys such as Called/Calling numbers or Source/Destination IP addresses. A single CDR is generated with its own Arrow Diagram so that the user can see the devices involved and which signaling messages were exchanged.

### Results

The following features are available for all monitoring and simulation packages.

#### Protocol Trace

All protocol events are decoded in real time as easy-to-understand mnemonic messages. Frames can be viewed in Compact, Expanded and Hexadecimal mode, customized and viewed in a Graphical format (Arrow Diagram).

#### CDRs & CDR-to-Frames Correlation

Call Detail Records provide a complete call summary including information such as addressing, duration and reason for disconnection. CDRs are generated in real time for all the IMS supported protocols. The CDR-to-frame function recovers all of the related signaling frames and shows the entire call flow in graphical format; while the Frame-to-CDR function automatically recovers the CDR related to a selected signaling message.

#### Statistics

A complete set of statistics covers the main protocol events:

- **Signaling Messages:** A statistic is provided for every signaling protocol stack
- **Calls:** A statistic provides information on how many calls were originated, terminated, successful, etc.
- **Reasons for Disconnection:** Several statistics show why some calls or sessions were unsuccessful.

Statistics can be saved in HTML, XML and Text-ASCII format and exported to commercial applications.

#### Charts

Every statistic is provided with its own chart. These can be customized to change their format and exported to commercial applications.

## Analysis and Troubleshooting Tools

### Filters

Filters are available for both Trace and CDR. The user can filter the captured data based on any of the protocol elements.

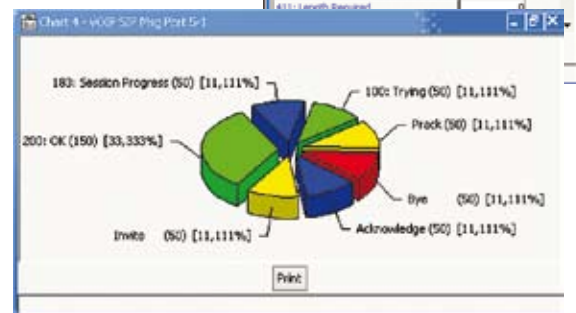
### Triggers

This feature creates an advanced traps system for the combination of protocol events, counters, and timers.

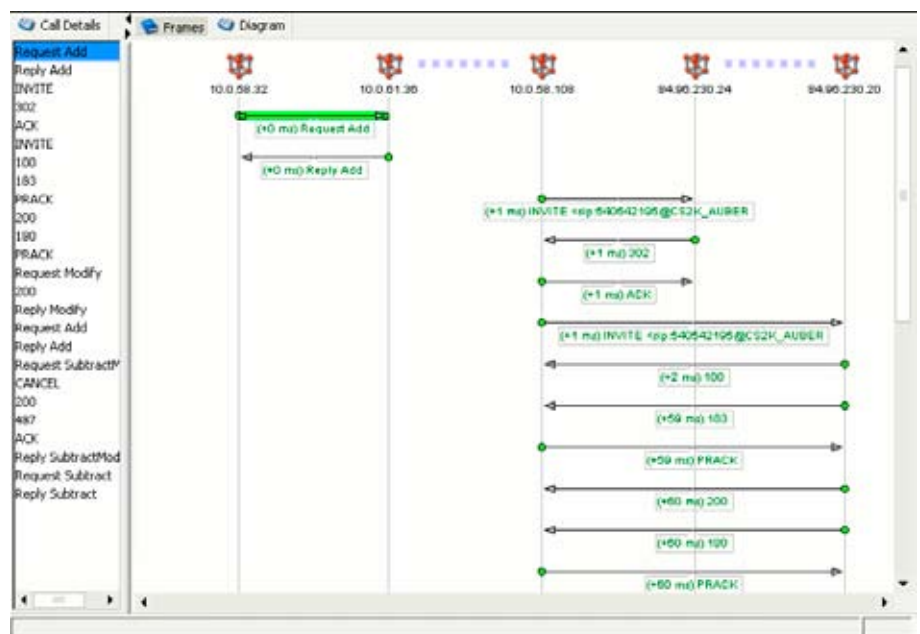
### Call Tracing

This feature allows messages related to a specific call to be seen just by setting the Called/Calling numbers or IP addresses. A dedicated real-time trace shows only the frames that match the call.

Message	Count
Invite	50
Acknowledge	50
Options	0
Bye	50
Cancel	0
Register	0
Notify	0
Refer	0
Subscribe	0
Info	0
Prack	50
Unknown	0
100: Trying	50
180: Ringing	0
181: Call Is Being Forwarded	0
182: OutOfService	0
183: Session Progress	50
200: OK	150
202: Accepted	0
200: Multiple Choices	0
301: Moved Permanently	0
302: Moved Temporarily	0
303: See Other	0
305: Use Proxy	0
380: Alternative Service	0
400: Bad Request	0
401: Unauthorized	0
402: Payment Required	0
403: Forbidden	0
404: Not Found	0
405: Method Not Allowed	0
406: Not Acceptable	0
407: Proxy Authentication Required	0
408: Request Timeout	0
409: Conflict	0
410: Gone	0
411: Length Required	0



Statistic & Chart



Ladder Diagram of a Correlated CDR (SIP - MEGACO)

## Ordering Information

### *Suites and Protocol Packages:*

Part number	Details
VoIP-IMS-Suite	Monitor and Statistics for VoIP and IMS Protocols including: RTP, H.323, SIP, SIP-M, SIP-T, MGCP, H.248/MEGACO, DIAMETER and COPS
OPT-SIP-SCRIPT	Script-based SIP Protocol Simulator. It includes the graphical service script environment to create interactive tones and audio files send and receive sequences
OPT-SIP-AUTOCALL	This features adds the automatic call generation capability to OPT-SIP-SCRIPT package

### *Options:*

Part number	Details
OPT-TRIGGER	Graphical Script System to create multiple Protocols Triggers
OPT-MULTI-TRACE	Multiple CDR Correlation System to show a call though different protocols and interfaces over a single screen

### **All other Suites, Protocol Packages, Options and Accessories:**

Please contact your local Distributor or Sales Representative.