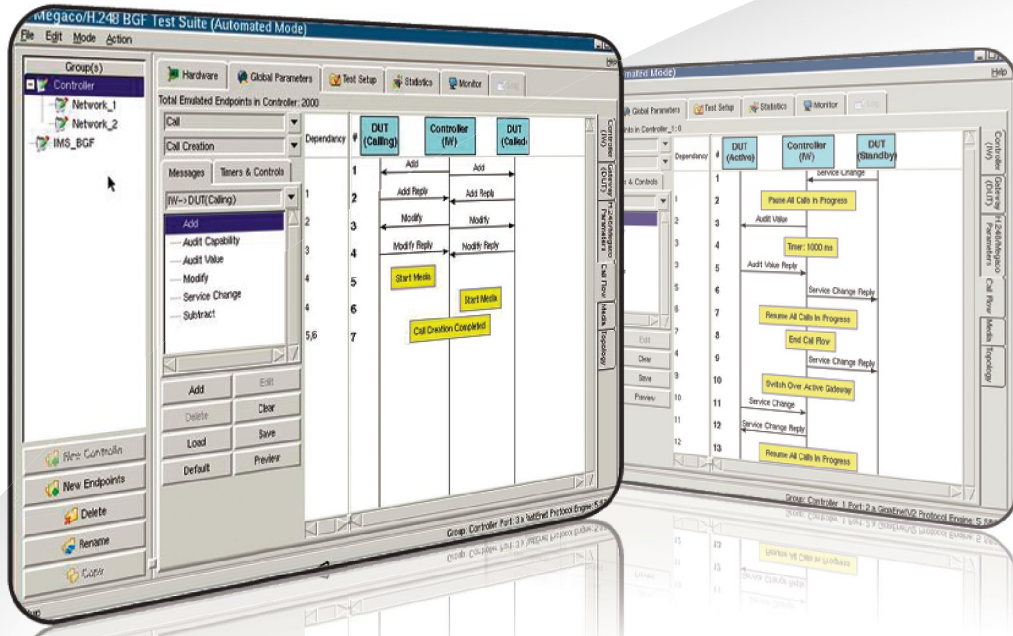


# IMS Border Gateway Test Suite



This application was purpose-built to test the border gateway; it integrates the subscribers and the controller into a single flexible but easy-to-use GUI driven test bed

## KEY FEATURES

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

Subscribers and controller emulation in a single application

Flexible and easy-to-use message and call flow editor

Negative and proprietary messages and call flow definition

Standard or proprietary packages

Controller and gateway failover testing

Large-scale and high-performance solution

Comprehensive media test capabilities

Decomposed session border controller and IMS border gateway testing

Thousands of registrations per second

Thousands of calls per second (signaling and media)

## OVERVIEW

The IMS Border Gateway Test Suite interacts with the SIP subscribers via the media plane and with the controller (SPDF/P-CSCF) with H.248/Megaco protocol based on the TISpan extensions. In a deployed network, the media, SIP and Megaco signaling are synchronized. Simulating and troubleshooting this environment in a lab to test the IMS border gateway before deployment can be a daunting task if multiple independent test boxes/applications are used to emulate the subscribers and the controller.

The IMS Border Gateway Test Suite was purposed-built to test the border gateway. The application integrates the subscribers and the controller into a single flexible but easy-to-use GUI driven test bed to enable test engineers to easily perform feature, negative, load, regression, interoperability and scalability testing of IMS border gateway functions.

## KEY TEST FEATURES

### Message and Call Flow Manipulation

- › Defines any H.248/Megaco message (valid, invalid and proprietary) using a GUI or text-based editor
- › Creates any call flow (valid, invalid and proprietary); manipulates protocol state machine using a ladder diagram
- › Defines proprietary variables with rules for incrementing and inserting the variables anywhere into any H.248/Megaco message

### 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 verify 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 quality of service (QoS) for delay, loss, inter arrival jitter, mean opinion score (MOS) and perceptual evaluation of speech quality (PESQ) with user-defined thresholds
- › Provides records for each call that fails 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 in SIP info and RFC 2833
- › Messaging using MSRP

### 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 codec
- › RTP DTMF and signaling DTMF sessions active or failed and the reason for failure
- › Validates MSRP message transmission and reception

## Signaling Statistics

- › Summary and detailed signaling statistics per group of endpoints
- › Service change and corresponding response messages
- › Calls: successful and unsuccessful calls with and without media
- › Terminations: active, added, subtracted successful and unsuccessful terminations
- › Contexts: active, created and deleted
- › Messages: incoming, outgoing and retransmitted
- › Errors: incoming, outgoing and error code counts
- › TCP connections: active, attempted, successful, unsuccessful and retransmitted

## Automation and Troubleshooting

- › TCL command line interface
- › Built-in Ethereal monitor for each Ethernet port
- › Detailed call records for user defined threshold violations

## PROTOCOL SPECIFICATIONS

### Transport

- › TCP, UDP, SCTP

### Network

- › IPv4, IPv6
- › DHCP

### MSRP

- › RFC 4975
- › H.248.69

### H.248/Megaco

- › ITU-T H.248.1 v3
- › ETSI ES 283 018 v.1.1.1
- › ETSI TS 102 333 v.1.1.2

### 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.728
- › ITU-T G.729
- › AMR
- › AMR-WB
- › GSM-EFR, GSM-FR, GSM-HR
- › EVRC, EVRC-B
- › ILBC
- › H.264
- › H.263

### DTMF

- › RFC 2833, H.248 notify

### Voice and Video Quality Analysis

- › ITU-T G.107 E-model
- › ITU-T P.800.1 mean opinion score (MOS) terminology
- › ITU-T rec. P.862 (PESQ)

## ORDERING INFORMATION

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