

# Empirix Hammer IP

Prevent issues from damaging customer experience and confidently manage implementations with end-to-end, pre-deployment testing

Today's contact center and Unified Communications solutions are extremely complex. Neglecting to validate any proposed change – whether it is a new solution or routine software update — prior to deployment can adversely impact customer experience and performance. Only complete, end-to-end testing under real world conditions can prevent costly problems.

## MASTER COMPLEXITIES WITH REALISTIC RESULTS

Empirix Hammer IP fully validates IP-based solutions via a complete set of load, regression, and interoperability tests, as well as customer experience and media quality assessments. Tests are done on the actual network under anticipated traffic conditions to provide a complete understanding of expected performance.

Empirix Hammer IP is the most flexible test solution available, capable of emulating multiple network technologies, real world customer scenarios, and types of services in a single test plan. It is highly scalable for both enterprise and carrier-grade deployments.

With methodical, end-to-end testing, Empirix accurately pinpoints the source of problems and provides a final go/no analysis for software updates, system upgrades, and new solutions. Now, companies can quickly and confidently leverage the latest IP technologies to gain an enduring competitive advantage and loyal customer base.

## Benefits

- ▶ Proactively assure optimal performance and a great user experience
- ▶ Easily identify the source of problems and eliminate finger pointing
- ▶ Keep projects on time and on budget to maximize ROI
- ▶ Confidently release enhancements knowing they will perform as designed
- ▶ Prevent costly correction of postdeployment issues
- ▶ Realize the full value of technology investments

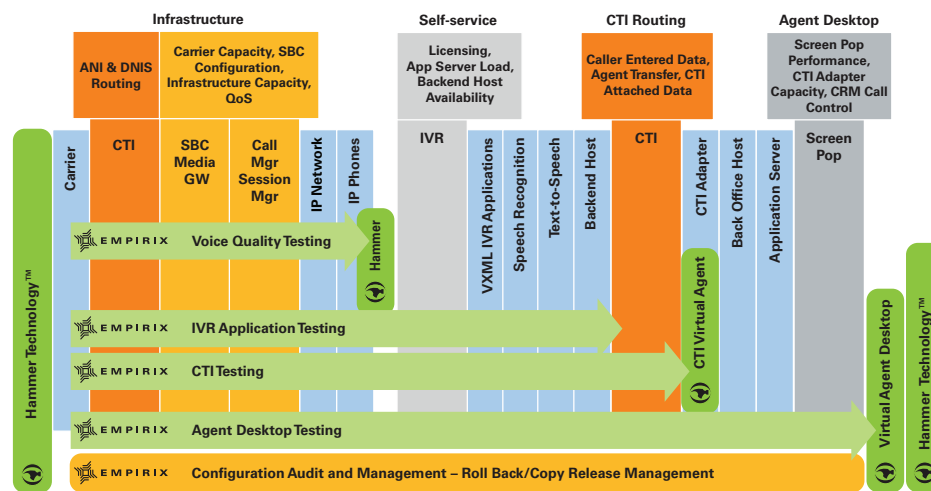


FIGURE 1. SAMPLE CONTACT CENTER TEST PLAN

## FEATURES AND SPECIFICATIONS

### Signaling Protocols

- ▶ Supports SIP UA, IMS SIP UE, SIP I+T, SIPs, SIGTRAN, MGCP, NCS, H.248/Megaco, H.323, Avaya's H.323, Cisco's SCCP (Skinny), QSIG
- ▶ Transport over UDP and TCP, IPv4 and IPv6, and TLS for secure transport
- ▶ Unique endpoint emulation using IP address, MAC address, and VLAN tagging
- ▶ Mixed protocol configurations supported
- ▶ Highly configurable message content and sequence

### Media Capability

- ▶ G.711 A/μ-law, G.722, G.722.2 (AMR-WB), G.723.1\*\*\*, G.726, G.729A, GSM-AMR (AMRNB), GSM-EFR/FR, EVRC0, iLBC, Speex, RFC 2833, and user-defined codecs for voice and tones
- ▶ H.263/H.263+, H.264 (MPEG-4 pt. 10) including HD (720p and 1080p resolution), and MPEG-4 pt.2 codecs for video
- ▶ T.38 Fax
- ▶ T.30 Fax pass-thru
- ▶ Silence suppression detection using RFC 3389, G.723.1A, and G.729B
- ▶ Multiple true voice and video clips
- ▶ Unique DTMF string validation on every channel
- ▶ Reference-based voice quality using ITU-T P862.2 (PESQ\*) and MOS (MOS-LQO)
- ▶ Non-reference-based voice quality using E-model (R-factor) and MOS (MOS-LQE) with up to 5 mapping scales
- ▶ Non-reference-based video quality with MOS-V
- ▶ Advanced speech recognition\*\*
- ▶ Dynamic Text-To-Speech
- ▶ Full RTP, Secure RTP (SRTP), and RTCP metrics for every call
- ▶ Narrowband and Wideband codecs for media with VQ Scales to around 300,000 endpoints with use of Master/Mega-Controller for single point of control

### Empirix Hammer User Interface

- ▶ Easy to use TestBuilder User Interface allows for test scripts to be created by a ladder diagram — all scripts are protocol-independent
- ▶ Advanced scripting can be developed and executed using the Empirix Hammer Visual Basic User Interface
- ▶ Multiple test scripts can be run from the TestBuilder or Test

### Profiler User Interface

- ▶ Real-time test information is displayed per channel, as summary test metrics for each call, and as aggregated real-time graphs for visualizing results over time
- ▶ Configuration, test script, and profile files can be saved and opened on a different system
- ▶ Powerful Command Line Interface (CLI) and scripting interface for automation, remote control, and feature testing

## Benefits

- ▶ **Integrated:** Provides feature, load, voice and video quality, signaling, and media are all in one platform controlled by a common user interface
- ▶ **Flexible:** Enables users to graphically develop simple call flow scenarios or easily modify signaling messages and protocol behavior for even the most complex call scenarios
- ▶ **Scalable:** Scales from a single developer's solution with a few end points and expands up to hundreds of thousands of calls, as required throughout the test lifecycle
- ▶ **Multi-protocol:** Can run multiple protocols simultaneously using the same tests and scripts to evaluate complex VoIP, NGN, IMS, contact center and Unified Communications environments
- ▶ **Multi-media:** Supports many different narrowband and wideband codecs for wireline and mobile communications as well as various real media types, such as voice (DTMF and speech), video and fax

### **Signaling Editor**

- ▶ Customize state machine behavior and message content
- ▶ Customize SIP headers to emulate CTI data or proprietary customizations
- ▶ Flexible state based architecture provides comprehensive state machine customization capability
- ▶ Develop state machines to handle call flows specific to your applications and device under test
- ▶ Create your own message or call flows, or customize existing ones
- ▶ Create Subscribe/Notify/Info call flows for call center agent and mobility test needs
- ▶ Import messages from Empirix Hammer Call Analyzer or third-party protocol analyzers

### **Monitoring and Reporting**

- ▶ Real-time monitoring and reporting of registration and call statistics
- ▶ Statistics can be viewed on any pair of endpoints
- ▶ Export data to other applications for customized user report

### **Customer Supplied Hardware and Operating System Requirements**

#### *For systems with up to 120 feature endpoints:*

- ▶ Intel Xeon, Pentium 4 520, or Pentium M 745 CPU
- ▶ 40 GB hard drive
- ▶ 4 GB RAM
- ▶ Windows 2008/2012 Server Standard Edition R2
- ▶ 100/1000 Ethernet NIC (1 GB dedicated NIC for HD video)

#### *For systems with 120 to 500 feature endpoints:*

- ▶ 2.0 GHz Quad Core Dual Xeon processor with 1.33 GHz front-side bus
- ▶ 8 GB RAM
- ▶ 250 GB hard drive
- ▶ Windows 2008/2012 Server Standard Edition R2
- ▶ 100/1000 Ethernet NIC (1 GB dedicated NIC form HD video)

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