

NetHawk EAST® Testing Voice over IP

NetHawk EAST

Overview

version 01.05

VoIP Testing

INTRODUCTION

Dynamic network conditions and various blends of vendor equipment for carrying Voice over IP (VoIP) create challenges to developing and deploying reliable communications systems. Predicting the performance of these systems in live applications becomes dependent on test tools that can simulate the dynamics and complexity of real world conditions.

The NetHawk EAST® platform, with its extensive protocol features and flexibility, make meeting these challenges and others an achievable goal. NetHawk EAST® can provide a virtual network that consists of VoIP, SS7 and/or wireless elements. Test cases can be created to simulate any network condition imaginable, including Local Number Portability (LNP), STP simulation, multiple MG simulation and more.

Technologies

The platform for NetHawk EAST® is a versatile diagnostic test suite that can emulate multiple elements of a network by generating the appropriate signaling to the node under test. The major VoIP technologies in most widespread applications may include:

- > SIP and SIP-t



Figure 1 - EAST® User Interface

- > RTP and RTCP
- > Megaco (H.248)

Additionally, NetHawk EAST® maintains a wide variety of VoIP supporting technologies not limited to the Sigtran Suite, MGCP, H.323, COPS & DQoS, IPsec and TLS.

With NetHawk EAST® acting as a “virtual network” the user can execute a test case controlling multiple interfaces. Testing types include function, simulation, regression, automation, conformance and bulk call load generation.

SIP TESTING

Session Initiation Protocol (SIP) is one of the most widespread presence-capable VoIP technologies in use today. SIP is a simple signaling protocol that was developed for Internet conferencing and telephony. A peer-to-peer protocol, SIP is an application layer protocol which can establish, modify and terminate sessions with one or more participants.

EAST® in brief

1. **Powerful:** NetHawk EAST® is scalable for virtually unlimited traffic load.
2. **Easy to Use:** The GUI is simple and effective; standard settings get you going quick.
3. **Expert Services:** Nethawk services are available with over 5,000 custom test cases delivered to meet customer's extended test coverage needs.
4. **Flexible:** Easy to configure testing scenarios can span multiple protocols and technologies.
5. **Tier 1 Customer List:** NetHawk EAST® has been serving market leading vendors and service providers since the 1999 product launch.

Specifications for SIP include the most recent IETF (Internet Engineering Task Force) specification RFC 3261. The test environment can be used to validate the performance of end-end calls through the controlling interface.

RTP & RTCP TESTING

RTP in the NetHawk EAST® VoIP test suite enables end-end network testing of transport functions suitable for applications transmitting real-time data such as audio, video or simulated data over multicast or unicast network services. The data transport is augmented by a control protocol (RTCP) to allow monitoring of the data delivery in a manner scalable to large multicast networks, and to provide minimal control and identification functionality.

RTP and RTCP are designed to be independent of the underlying transport network layers. Through the test interface, incoming packets can be recorded to a file and replayed. With NetHawk EAST®, it is also possible to perform industry standard RTP/RTCP testing and voice quality analysis with PESQ. Analysis tools include traceability via RTP statistics and estimated MOS and R quality scores for every stream with Telchemy VQmon®.

To create heavy load conditions across RTP interfaces, NetHawk EAST® offers the RTP *HYPERstream* feature. *HYPERstream* testing enables an incredible scaling from 4,000 to 20,000 simultaneous RTP streams. RTP *HYPERstream* is incorporated into all relevant VoIP simulated test nodes.

MEGACO (H.248) TESTING

Megaco protocol capabilities of NetHawk EAST® can be used to test Media

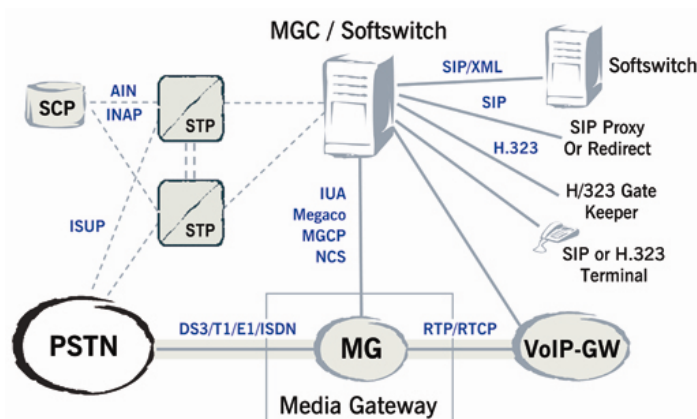


Figure 2 - Typical VoIP Network Elements

Gateways, Media Gateway Controllers and other devices which utilize Megaco.

Protocol specifications for Megaco include the most recent IETF specification for RFC 3015/ITU-T H.248, Megaco version 1.0 including all features for basic commands, events, packages, Class V features, call flow timers, and error conditions. NetHawk EAST® supports both ASCII and Binary versions.

ADDITIONAL VOIP TECHNOLOGIES

The supported technologies include a long list of VoIP related protocols including Sigtran Suite, H.323, MGCP, COPS & DQoS, IPsec and TLS.

The Sigtran series of transport protocols makes provisions for seamless transport of SS7 and ISDN signaling between traditional circuit switched networks and the IP domain. Nodes can be simulated or emulated with Sigtran protocol stacks and test cases for SCTP, and the User Adaptation Layer protocols including IUA, SUA, M2PA, M2UA and M3UA.

H.323 is an alternate protocol to SIP for establishing call control parameters

between endpoint VoIP devices. To establish signaling links between a Media Gateway and Media Gateway Controller, MGCP message templates and test cases are available.

COPS and DQoS are often deployed simultaneously for policy establishment and dynamic bandwidth adjustment, respectively. IPsec is a hop by hop security protocol. TLS, Transport Layer Security, is widely used for secure transport in SIP and HTTP applications. NetHawk supports the latest security protocols and applications to test VoIP.

Conclusions

EAST® is a Next generation testing tool from NetHawk that bridges multi-technology environments from a single test case. A simple yet powerful GUI environment provides the testing environment necessary to achieve performance and interoperability objectives for today's NGN equipment and networks.

Nethawk offers a full suite of VoIP protocols that includes VoIP testing on wireline and wireless networks.