

Hawkeye – Active Network Monitoring Platform

Problem: The Real Deal on Network Diagnostics

Delivering innovative services such as Voice over IP (VoIP), unified communications (e.g. Skype for Business), cloud migration of business services, and streaming video is critical to an organization's survival in today's highly competitive environment. However, bottlenecks, latency, Wi-Fi issues, and other hard-to-pinpoint network snafus can seriously compromise a company's network performance and brand reputation. Network managers and operators need a simple, reliable way to verify continuously the performance of their networks and ensure hassle-free application delivery.

Solution: Improve Application Reliability on First Delivery and Ongoing Active Monitoring

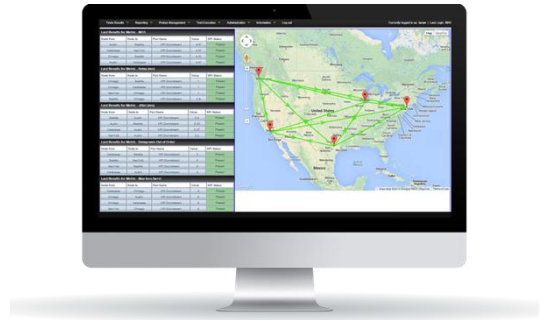
Hawkeye quickly and effectively validates network performance, isolates problems, and proactively detects issues by running scheduled verification tests on any site using wireline or wireless connections. Using a combination of hardware and software agents called Performance Endpoints, Hawkeye simulates application traffic and sends key performance metrics to a central console for fast action. The agents provide remote site end users perspectives on network performance and empower network managers with proactive ways to detect, diagnose, and fix issues. Measurements range from network quality to user experience and Wi-Fi monitoring, enabling administrators to improve overall network uptime and detect network performance issues before they impact end users. Easy to deploy and simple to use, Hawkeye lets IT get straight to assessing networks and applications.

Highlights

- Get superior visibility into your live networks with Hawkeye's advanced network and application testing technology
- Monitor your Wi-Fi network from consumer perspective with advanced Wi-Fi monitoring tools
- Save IT staff time by leveraging industry-leading library with 100's of application tests that enable assessment of network throughput, class of service, unified communications, WI-FI connectivity tests, and much more
- Understand the performance of your entire network and services with cost-effective endpoint probe distribution that delivers expansive network coverage
- Green light your service with pre-launch assessments by emulating real application traffic up to line rate for any network scenario over wired and wireless devices to see how it performs
- Be a troubleshooting wonder by firing off quick validation tests with clear demarcation points and advanced WI-FI expert tools to almost instantly find network and application issues
- Proactively detect problems with continuous monitoring of QoE and QoS, so you always know that your network is meeting SLA and quality standards

Key Features

- Web-based platform for multi-user access, test scheduling, data storage, and real-time analysis
- Deploy endpoints with turnkey hardware or software endpoints
- Verify your virtual infrastructure with software and VM endpoints
- Automatically install endpoints within complex network topologies that include network address translation (NAT) and firewalls
- Verify, monitor, and diagnose your user experience on Wi-Fi networks with Wi-Fi inspect features
- Inject real traffic into the network continuously based on schedules, between nodes or in a mesh
- Conduct distributed tests with on-premises or off-premises (i.e., cloud servers)
- Verify fixes put in place in your network in real-time with Pass/Fail
- Find network or application faults quicker with interval testing throughout the day, the week, the month
- Track services and network trends proactively based on time-of-day, day-of-week of services



Hawkeye Console



- Provided as a virtual appliance (Linux Operating System)
- Web-based, deployed in NOC, data center, or cloud
- North-bound interfaces, APIs for easy integration

Hardware Endpoints



- Completely turn-key, light weight, transportable
- Autodiscovery & registration, automatic upgrade
- Dual-band Wi-Fi monitoring on XRPi with advanced Wi-Fi connectivity test and scanning capabilities

Software Endpoints

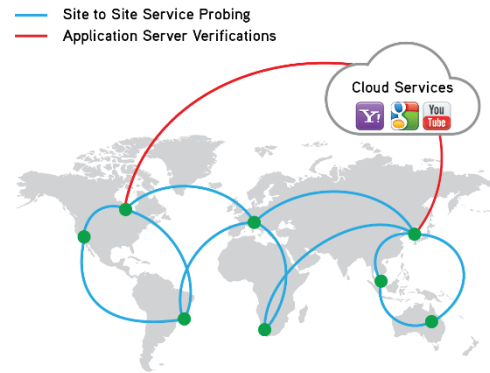


- Low-footprint software, load into any device
- Fully compatible with virtual environments
- Ethernet or Wi-Fi and mobile

Hawkeye Solution Components

Deploy Hawkeye Solution

- Register to Hawkeye Express on line – create an account to your server
or
- Deploy Hawkeye on premise web server in central location (NOC, data center, etc.)
- Strategically-deploy software and hardware endpoints to cost-effectively reach any network location:
 - o Customer premises
 - o Mobile devices – Wi-Fi or Cellular
 - o Remote sites and head offices
 - o Network aggregation points (PEs)
 - o Core network, MPLS routers
 - o Data centers
 - o Virtual machines and servers
 - o In cloud locations (Amazon, Azure...)



Hawkeye Deployment

Feature Differences Between Hawkeye Express and Hawkeye

	Hawkeye Express	Hawkeye
Delivery Model	Cloud based, Software-as-a-Service subscription model for a single user	On-premises, perpetual license model that allows multiple users
Supported Endpoints	Any software or hardware endpoints + ixia cloud hosted endpoints	Any software or hardware endpoints
Node-to-Node	✓	✓
Mesh		✓
Real Service	✓	✓
Application Library	Essential library support	Full library support
Path Discovery	✓	✓
Scheduling Options	Every 5 min or every hour	Full support
Basic KPIs	✓	✓
Advanced KPIs		✓

Reports	Essential reports support	Full support
Alarms		SNMP and Email
API Control		SOAP API
Retention Period	1 month	Customizable
User Access	1 user only	Multiple users, role based supported

Plan and Design Your Active Test Scenarios

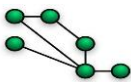
- Define test topology with node-to-node or mesh with hub and spoke
- Build large topology test (full mesh) with one click



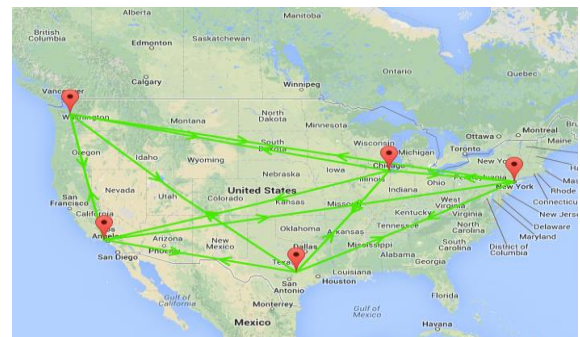
Hub and Spokes



Full Mesh Topology



Custom Topology



Select Test Types Among Pre-Calibrated Tests in Hawkeye Library

Hawkeye supports a variety of service level agreement (SLA) and quality of experience (QoE) objectives, that include:

For both Hawkeye Express and Hawkeye

- Speed test from site to site with advanced configuration on traffic profiling
- Bandwidth availability or verification with TCP-based testing
- IP network SLA verification (one-way delay, jitter, loss)
- Unified communications tests (Skype for Business) – Microsoft Certified
- Voice over IP calls (G711, G729...) with MOS score
- Ping (ICMP) and path discovery to any interface on the web
- User Experience downloading web pages
- DNS response time

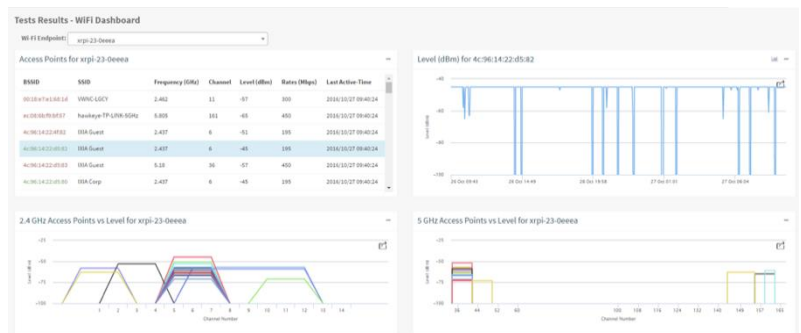
Advanced test types and metrics on Hawkeye

- Advanced Bandwidth availability or verification with bit blasting or TCP-based testing
- Class of service (COS) implementation validation with oversubscription scenarios
- IP network SLA verification (one-way delay, jitter, loss) with COS verification

- Real-time streaming verification
 - Mean opinion score (MOS) for voice
 - Media delivery index (MDI) for video streaming
- Server response time for transactional applications emulating user profile
- Unified communications tests (Skype for Business) – Microsoft Certified – volume calls verification
- Voice over IP calls (G711, G729...) with MOS score – volume calls verification
- Access to any HTTP/HTTPS servers using one arm test to any URL
- Netflix, YouTube, and any Dash/Adaptive streaming test
- Video Streaming
- Multicast video
- TCP, UDP echo tests
- Quality of Experience for email, torrent, YouTube, Dropbox, etc.
- Remote destination port opening verification
- Wi-Fi network advanced metrics

Monitor Distributed Wi-Fi Networks from End-User Perspective

- Connect XRPI to Wi-Fi in key locations and software agents in smartphones for ad hoc verifications
- Collect Wi-Fi signal strength information while running Hawkeye tests
- Prove your Wi-Fi connectivity to different SSIDs with recurrent connectivity tests, diagnose any issues connecting to the Wi-Fi and quickly identify issues (authentication, DHCP, Layer 3 connectivity, etc.)
- Collect and display Wi-Fi coverage dashboards and understand Wi-Fi environment
- Build Floor Plans with real-time Wi-Fi coverage



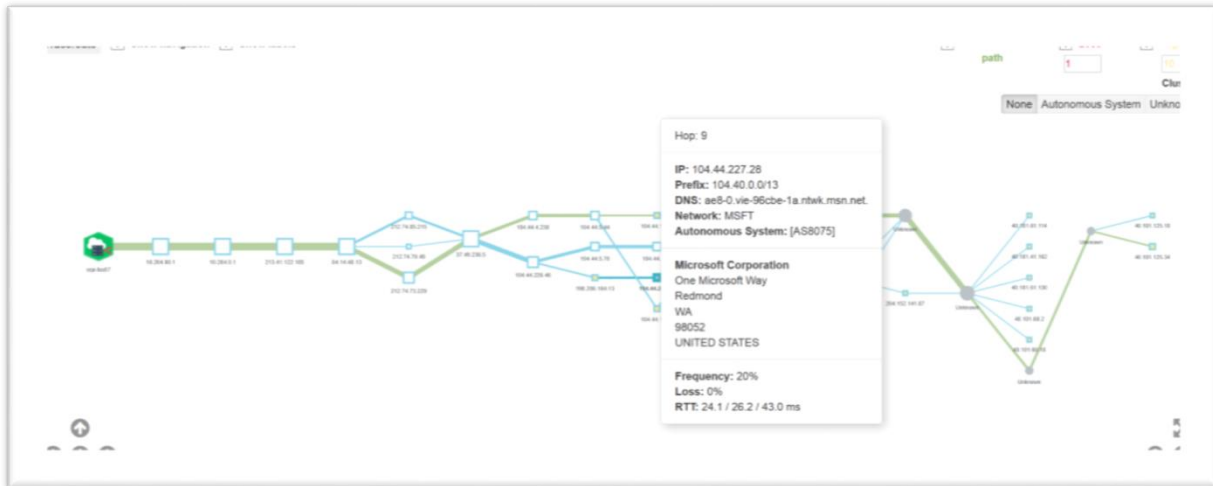
Wi-Fi monitoring

Create Target Thresholds for Different Tests

- Adjust applications, test variables, and thresholds based on trial data to match expectations of the network and its performance
- Thresholds are the baseline to decide if tests are passing or failing
- Setting up correct thresholds is essential for understanding the test results and making sure that the right level of information is in the database
- Default test thresholds are pre-configured in the system

Leverage Path Discovery for Troubleshooting

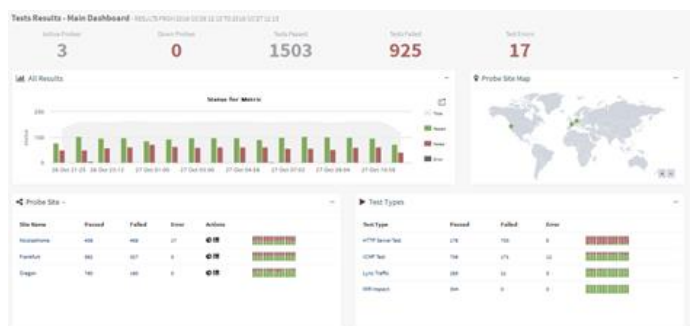
- Advanced Topology discovery from Ixia endpoints to any remote location
- Hop-by-hop discovery
- Path discovered based on specific application settings
- Powerful and intuitive result display
- Quick troubleshooting tools – identify nodes with loss or long delay
- Geolocation on each identified public node



Path discovery

Analyze Results

- Use different result levels and granularity to get quick and efficient results and understanding
- Ensure every team member can get to the data required with simple Pass/Fail or detailed test reports
- See results in real time in geographic dashboard
- Run your test and look at single instance results or group of tests results
- Quickly identify problematic links
- Look at specific tests and get understanding of results
- Run trend reports on historical data and analyze network behaviors
- Export and send reports via email to share results between teams



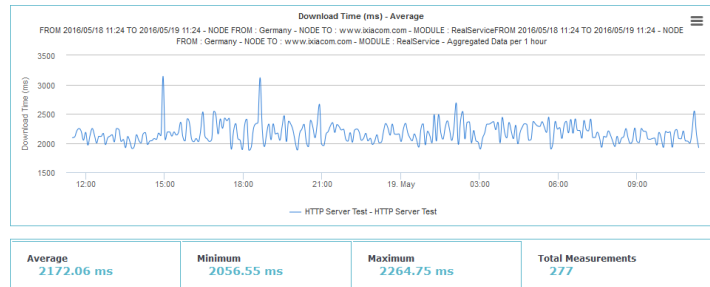
Main Hawkeye dashboard

Monitor Pass/Fail for Trouble Spots

- Activate alarms on critical paths
- Get notified by email, SNMP traps, customized notifications







Run Reports

- Reporting engine allows creation of reports and dashboards based on the results stored in the database
- Schedule daily automatic reports to follow critical networks
- Receive automatic emails with comprehensive reports



Historical report

Hawkeye Endpoints

	XRPI	XR2000	Virtual Endpoints	Android	IOS	Windows	LINUX
			 XR cloud		iOS		
Network Monitoring	✓	✓	✓		✓	✓	✓
Application & Web Monitoring	✓	✓	✓				✓
Wi-Fi Monitoring	✓						✓
Specification Details							
Hardware	✓	✓					
Software			OVA, KVM, Docker, Public cloud 1CPU, 1G RAM	✓	✓	✓	✓
Interfaces	1*FE, 1 Wi-Fi 2,4Ghz, 5Ghz, AC	2 GE active by default (up to 6)	Ethernet, Virtual	Ethernet, Wi-Fi, Virtual, Mobile, Wireless			

XRPI

- Field-ready: robust and fan-less, lightweight and highly portable
- Proven platform – powered by Raspberry Pi
- Wi-Fi interface, dual band
- Automatic and remote management out of the box with Hawkeye
- Wi-Fi scanning and connectivity tests



Feature	Description
CPU Type	Quad core 900Mhz ARM processor
RAM	1GB
Storage	8GB micro SD with operating system and data
LAN	One (1) 10/100Mbps Fast Ethernet port
Wi-Fi	One (1) Wi-Fi dongle with dual band 2.4/5Ghz, 802.11a/b/g/n
Power	On-board DC +5V 2A Micro USB ~650 mA, (3.0 W)
International Use	Power unit ships with various country-specific adaptors
Console Access	HDMI port for video, USB for keyboard
Remote Access	Enabled with secure telnet (ssh)
Size and Weight	92mm x 29mm x 67mm 3.63" x 1.13" x 2.63" 100g
Performance	
TCP Throughput	Up to available line rate with built-in 10/100 Ethernet or Wi-Fi dongle
UDP Throughput	Up to available line rate with built-in 10/100 Ethernet or Wi-Fi dongle
Voice Calls	Up to 100 simultaneous calls
Streaming Traffic (UC)	Up to 100 simultaneous mixed voice/video calls
Streaming Traffic (Video)	Up to 85Mbps video traffic (best case)

XR2000

- Field ready: robust and fan-less, lightweight
- VGA output and console-ports output for easy management
- Automatic boot
- Advanced routing support (VLAN, source-based routing)
- Up to line-rate generation
- Active traffic generation supporting 150+ applications
- Endpoint-to-endpoint tests: UDP, TCP traffic, voice, video, traffic mixes
- One-arm testing against web servers (HTTP/HTTPS), DNS, and cloud services (YouTube, Dropbox)
- Remote management and configuration from Hawkeye
- In-band or out-of-band management support



Feature	Description
CPU Type	Intel Atom D525 1.8 Hz (dual core processor)
DRAM	2G
Storage	8G flash
I/O Interfaces	2 USB, 1 VGA, 1 COM
LAN	6 x 10 / 100 / 1000 Mbps
Power	On-board DC +12V ± 5% converts to +3.3V/+5V/+12V for system – max 60W
Dimension	200mm x 42mm x 144mm - 7.9" x 1.65" x 5.67" – 1U
Weight	1.2 Kg
Operation Temperature	0 ~ 40 °C - Storage: -20°C~70°C
Operation Humidity	5 ~ 95%, non-condensing
Performance	
TCP Throughput	Up to line rate (1G)
UDP Throughput	Up to line rate (1G)
Voice Calls	Up to 300 simultaneous calls

Streaming Traffic (Lync, Unified Communications)	Up to 200 simultaneous mixed voice/video calls
Streaming Traffic (Video)	Up to 700Mbps of video traffic

Ordering Information

Hardware

940-0008

XR2000 Active Hardware Endpoint; integrated hardware endpoint for IxChariot OR Hawkeye; Licensed for 2 active test ports; AC unit. requires adjunct or previous purchase of IxChariot Floating Bundle (920-0055 through 920-0064) OR Hawkeye Bundle (920-2401 through 920-2406)

940-0040

XRPI Active Hardware Endpoint; integrated hardware endpoint powered by Raspberry Pi (940-0040), for use with either IxChariot OR Hawkeye. Includes 10/100 LAN interface and Wi-Fi Dongle with dual band (2,4/5Ghz). 5V AC unit. Requires adjunct or previous purchase of IxChariot OR Hawkeye software licenses.

Software licenses

Hawkeye Express

Visit our Hawkeye product page at <https://www.ixiacom.com/products/hawkeye> for free trial registration.

920-2401

Hawkeye, 10 Endpoint Solution Bundle Includes: Hawkeye central management system (920-2410), 10 endpoint (sw or hw) registration & use (920-2421), 30 pairs node to node test license (920-2429), and 1 user seat license (920-2411)

920-2402

Hawkeye, 25 Endpoint Solution Bundle Includes: Hawkeye central management system (920-2410), 25 endpoint (sw or hw) registration & use (920-2422), 75 pairs node to node tests license (920-2430), 5 real services tests (requires XR2000 or XRPI) 920-2451, and 2 concurrent user seat licenses (920-2412)

920-2403

Hawkeye, 50 Endpoint Solution Bundle Includes: Hawkeye central management system (920-2410), 50 endpoint (sw or hw) registration and use (2x 920-2422) 150 pairs node to node test license (2x 920-2430) 10 real services tests (requires XR2000 or XRPI) (2x 920-2451), and 2 concurrent user license (920- 2412)

920-2404

Hawkeye, 100 Endpoint Solution Bundle Includes: Hawkeye central management system (920-2410), 100 endpoint (sw or hw) registration & use (920-2423), 300 pairs node to node tests license (920-2431), 25 real services tests (requires XR2000 or XRPi) (920-2453) and 5 concurrent user licenses (920-2413)

920-2405

Hawkeye, 200 Endpoint Solution Bundle Includes: Hawkeye central management system (2x 920-2410), 200 endpoint (sw or hw) registration & use (920-2424), 1200 pairs node to node tests license (2x 920-2431), 50 real services tests (requires XR2000 or XRPi) (920-2454) and 5 Concurrent user license (920-2413)

Learn more at: www.keysight.com

For more information on Keysight Technologies' products, applications or services, please contact your local Keysight office. The complete list is available at: www.keysight.com/find/contactus

