SOLUTION BRIEF

Hawkeye: Helping Carriers Monetize and Manage SD-WAN

The shift to cloud and hybrid-based networks has not been particularly easy for Internet Service Providers (ISPs) and network carriers. Transitioning from Multi-Protocol Label Switching (MPLS) and lease line-based networks / services has brought a host of new challenges for network managers and integrators.

While SD-WAN offers significant cost savings for their clients, it also jeopardizes the carriers' primary revenue streams. In response, many ISPs have begun offering turnkey SD-WAN services of their own. However, as with any managed service, performance monitoring is an essential and often overlooked part of the equation. Otherwise, monitoring and validating pre-established Service Level Agreements (SLAs) would be impossible.

Keysight's Hawkeye provides carriers and integrators alike with a cost-effective way to manage, monitor, and monetize their SD-WAN deployments. An active network monitoring platform built to monitor the network edge, Hawkeye offers an array of capabilities to streamline deployment before rolling out, troubleshoot faster after going live, and recoup lost revenue streams with service assurance — including:

Key Benefits

- Verify network design and performance at turn up.
- Qualify end to end connectivity and verify network SLAs.
- Proactively identify service and network degradation.
- Deploy new services with confidence.
- Expand managed service offerings.
- Boost revenues with verified service assurance offerings.

KEYSIGHT TECHNOLOGIES

- architecture and design verification
- service level agreement (SLA) analysis
- quality of experience (QoE) metrics
- active performance analysis
- 24/7 link and circuit validation
- turnkey integrations with leading UC, VoIP, and video applications such as Microsoft Office 365, Zoom, MS Teams, and more

The Challenge: Validating Quality of Service Before and After Going Live

Carriers large and small are implementing SD-WAN across a broad range of account verticals, environments, and scopes. However, a tangled web of shared infrastructure between ISPs, clients, and partners creates budget-busting challenges that threaten a successful deployment. Since multiple communication service providers and partners are often involved in delivering SD-WAN services, it is paramount that SD-WAN deployments are pre-validated before release. This deployment process ensures all parties can deliver and support the infrastructure after going live.

Deployment methodologies

Carriers are primarily using one of three methods to transition to SD-WAN. No single approach is superior to another, but each offers a unique combination of advantages and disadvantages regarding cost, schedule, and downstream impact.

Rip and replace: A forklift overhaul of the core network from dedicated connectivity (MPLS or leased line) to a fully integrated SD-WAN environment.

- **Pros:** Clients' network management teams get a "ground up" deployment for connectivity and application deployment. Carriers lose leased-line revenue but have a new opportunity to win significant revenue through SD-WAN deployment and managed services.
- **Cons:** Clients and carriers require implementation and verification test strategies spanning program design to deployment.

Hybrid: During SD-WAN deployment, the MPLS network supports access as part of a hybrid integration. It creates an SD-WAN overlay network partially supported by the legacy underlay.

- **Pros:** Clients' network management teams can leverage existing "known" network components while deploying and investigating SD-WAN performance benefits — ensuring application performance and cost savings. Carriers maintain continued revenue from the leased line / MPLS core network.
- **Cons:** Clients lose end-to-end SLA guarantee from the network provider. Carriers must share backhaul with regional / local access providers — making it challenging to verify and maintain stated SLAs.

Parallel deployment: IT continues to support the traditional legacy network. At the same time, an SD-WAN environment is deployed in parallel to support specific locations / applications — enabling the entire network to evolve away from the MPLS core gradually.

- **Pros:** Clients keep the embedded MPLS core intact while building opportunities to expand lower-cost service access to remote or branch office locations. Carriers maintain existing network revenue while implementing new SD-WAN deployment services.
- **Cons:** Clients have to manage two network solutions. Carriers risk losing network revenue to competitive SD-WAN integrators.

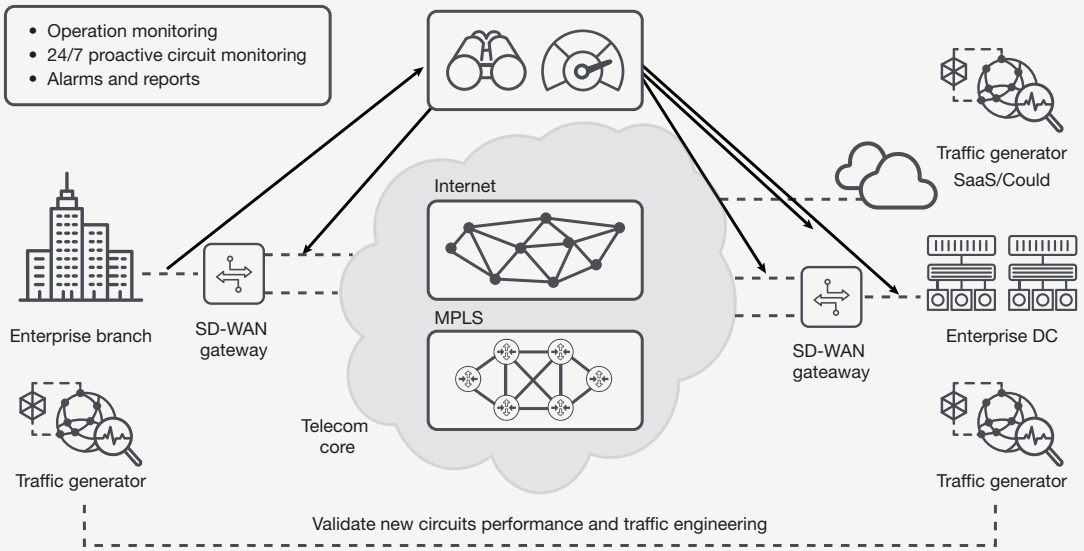
Validating SD-WAN Deployments with Hawkeye

Boasting a full edge monitoring solution set, Hawkeye offers ultimate flexibility for streamlining SD-WAN deployments. A range of advanced capabilities make it easy to monitor performance, troubleshoot issues, and offer tiered service assurance to clients — including:

Synthetic traffic generation – Emulate and measure network traffic with hundreds of supported applications and traffic profiles, providing detailed information on all aspects of your network and applications' performance.

- **SD-WAN advantage:** With the ability to select, define, and generate "known traffic models," you no longer need to rely on production traffic when deploying or troubleshooting. With Hawkeye, you can offer lucrative service assurance by proactively minimizing client downtime, service interruptions, and network outages.

SD-WAN: Design verification, turn up, end-to-end visibility



Link verification – Get real-time link analysis while running diagnostic tests on your network. Hawkeye enables you to do both at the same time.

- **SD-WAN advantage:** Your network operations team gains a "first alert" capability — providing immediate link statuses, link up / down notifications, and bandwidth utilization metrics on a continuous basis. Moreover, inline monitoring with Keysight IxProbe delivers visibility to branch offices and remote sites, along with embedded test capabilities for deployment, turn up, and troubleshooting.

Production traffic analysis – Deploy network tools that support active / synthetic performance monitoring to actively analyze production traffic, user experience, traffic analysis, application utilization, top applications, top talkers, and more.

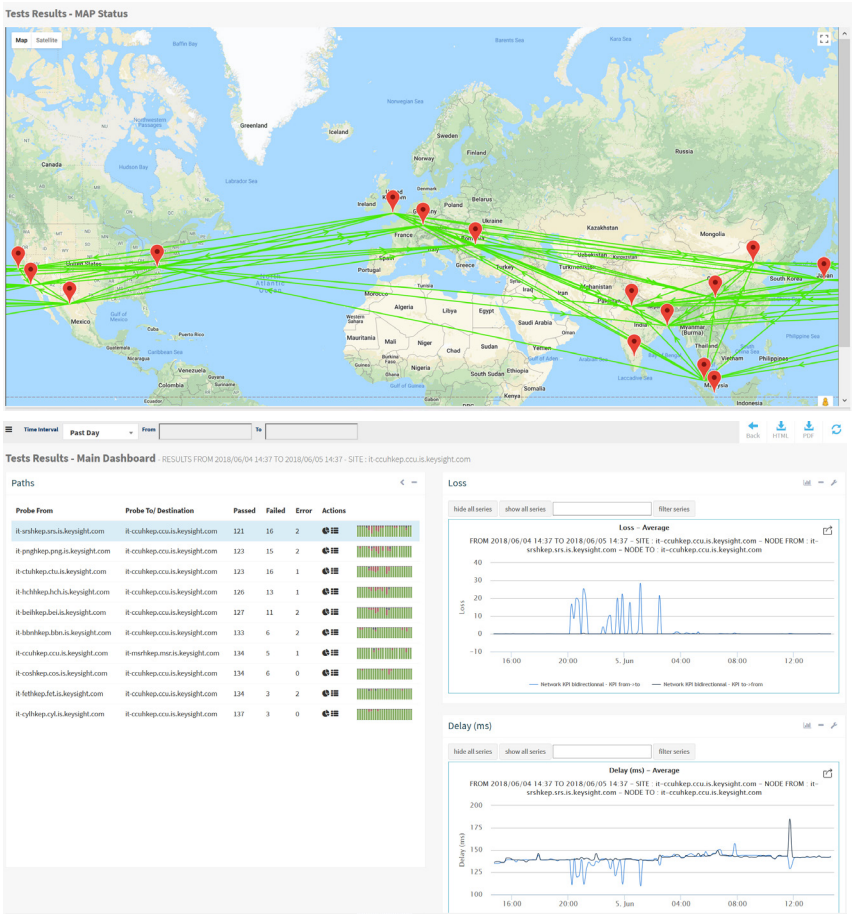
- **SD-WAN advantage:** Test and evaluate production traffic remotely to evaluate user trends, application performance, and core user statistics.

Advanced network analysis – Bolster synthetic traffic analysis with in-depth packet data analysis and branch-site service assurance. Deploy Keysight IxProbes and edge-optimized Network Packet Brokers (NPBs), such as Keysight Vision E1S, as part of an integrated solution set.

- **SD-WAN advantage:** Aggregate, load balance, and route traffic to third-party toolsets or use as an endpoint for synthetic traffic tests — all from one NPB.

Five Key Recommendations

1. Determine critical focal points throughout the network and deploy a combination of software- and hardware-based agents to facilitate real-time, ongoing analysis.
2. Select Key Performance Indicators (KPIs) and utilize machine learning to baseline your network and define alarm / trigger thresholds — spanning from the core network to the customer edge.
3. Define active performance verification sequences to qualify video, voice, and data services on a continuous basis.
4. Actively verify network connectivity and link status.
5. Set up alarms that alert network operations at the first sign of network degradation.



Why You Win with Keysight Hawkeye

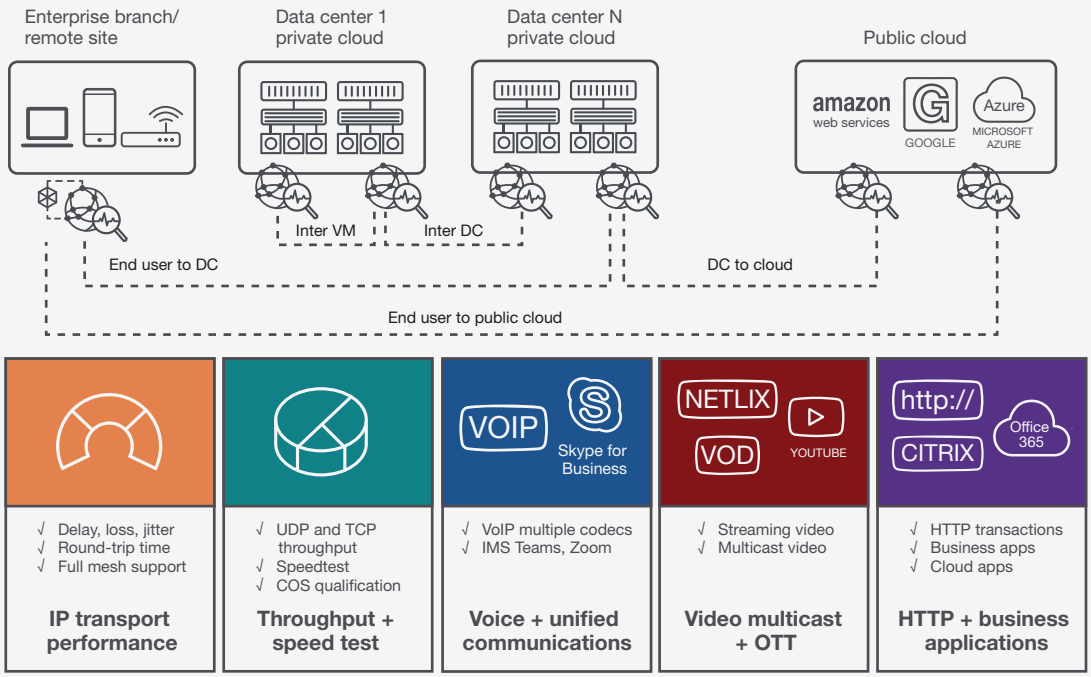
Hawkeye's proactive SD-WAN verification adds a powerful tool to your network operations team. With active network monitoring, you can save money, minimize delays, and monetize your SD-WAN deployment with advanced QoS metrics and faster, business-oriented SLAs.

Pre-deployment

- Verify network design performance before network sign-off.
- Qualify application and user experience while building out the network.
- Transition seamlessly from pre-production to deployment with known performance expectations.
- Integrate active link verification and monitoring with production network analysis from a single control point.
- Create user profiles to proactively test user experience before sign-off.

Hawkeye — Multi-Level Test and Analysis

Proactive, predictive issue resolution, and experience management



Post-deployment

- Increase revenue with new offerings such as service assurance, reporting formats, and data management.
- Ensure you are always meeting SLA commitments.
- Verify network and application performance on a continuous basis.
- Eliminate time-consuming analysis by quickly identifying the root cause of issues.
- Create specific user profiles to monitor end-user experience accurately.

Beyond SD-WAN: Single Pane of Glass Visibility and Monitoring

Although many SD-WAN integrators offer built-in performance metrics, they often fail to tell the whole story. Due to the various parties involved across implementations, most metrics are incomplete and lead to more questions than answers. That's why so many carriers and enterprises rely on Hawkeye as their source of truth. With visibility into network performance and user experience, Hawkeye enables you to monitor your network holistically — including the ability to:

- Consolidate network monitoring under a single tool.
- Define end user profiles and verify the quality of experience on any network (LAN / WAN / LTE / 5G).
- Eliminate the need to rely on production traffic to determine network performance.
- Resolve issues faster by troubleshooting network topologies for SD-WAN with hop-by-hop analysis.

Learn more

Want to learn more about Hawkeye and SD-WAN? No matter what you're looking for, Keysight's in-depth resources deliver the content you need to make the most informed decision possible.

- Keysight Edge Monitoring Solutions
- White Paper – SD-WAN 101: Ensuring Peak Network Performance and Service QoE
- Solution Brief – IxProbe + Hawkeye: Helping Service Providers Take Control of Last-Mile Delivery
- Data Sheet – Hawkeye
- Solution Brief – Hawkeye: Monitor Voice Over IP (VoIP) Quality
- Solution Brief – Hawkeye: Continuous Proactive Bandwidth Monitoring
- Solution Brief – Hawkeye: Ensure Your Network is Ready for Microsoft Teams and Skype for Business

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