

Prepared for



# Modern Enterprises Must Boost Observability with Internet Performance Monitoring

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# Executive Summary

This white paper explores how digital operations have become more challenging as IT infrastructure has hybridized with adoption of cloud services and internet connectivity. Internet performance monitoring tools have become just as important as application performance management, if not more so.

## Modern Architectures Demand a New Approach to Observability

### APM Excels at Legacy Digital Observability

In the pre-cloud era, IT organizations had a degree of control and predictability that simply doesn't exist anymore. Applications resided on dedicated infrastructure in data centers. IT organizations right-sized their infrastructure to the needs of these applications. They delivered connectivity via wide-area networks (WAN) that were based on private connectivity and multi-protocol label switching (MPLS) overlays. This WAN connectivity came with an SLA that ensured predictable network performance.

In these legacy environments, APM tools excelled at providing application observability. Application health was one of the biggest variables for digital experience. APM tools could provide code-level monitoring of application transactions and track overall utilization. Unfortunately, things have changed.

### The Internet is Now Your Network

For a variety of reasons, today's IT organizations have adopted hybrid networks that rely heavily on internet connectivity. In fact, 99% of enterprises are expanding their use of the internet as a primary connectivity option for corporate sites. The leading drivers of these hybridized WANs are cloud services connectivity (46%), network flexibility (46%), and higher bandwidth requirements (38%).<sup>1</sup>

<sup>1</sup> EMA, "WAN Transformation with SD-WAN: Establishing a Mature Foundation for SASE Success," April 2023.

These hybrid environments introduce much more variability to application performance because the internet is a shared, best effort network. IT organizations have no control over the paths that application traffic takes over the internet and service providers do not offer service-level agreements (SLAs) on internet performance. If the internet backbone routes application traffic inefficiently, IT organizations have very little recourse. Even worse, traditional monitoring tools have limited visibility into internet performance. Network performance management tools traditionally rely on administrative access to infrastructure for collecting telemetry via SNMP MIBs and traps and network flow records. IT teams have no access to ISP infrastructure.

In fact, IT organizations that operate internet-based WANs reported that the following are major sources of pain:

1. Poor internet performance monitoring tools
2. Overall application performance issues
3. Inconsistent global performance across geographies
4. A lack of traditional SLAs<sup>2</sup>

Many IT organizations adopted software-defined WAN (SD-WAN) technology to integrate and optimize the internet. While SD-WAN helps, its optimization capabilities are usually limited to the first and last mile of the internet. It can steer traffic across multiple local connections at the network edge based on observed internet health and performance conditions. However, it cannot steer traffic across the middle mile of the network, also known as the internet backbone. Once traffic hits this part of the internet, service provider routing policies and peering agreements can introduce significant packet loss, latency, and jitter that impact application performance.

## Applications are More Distributed with Multi-Cloud

Application infrastructure has also changed. By the end of 2024, nine out of 10 enterprises will have multi-cloud architectures.<sup>3</sup> The internet is the primary onramp for accessing cloud-based applications, which makes internet performance even more important. Moreover, many organizations also use the internet to interconnect cloud regions, cloud providers, and data centers. Control and visibility with this cloud connectivity are very limited.

<sup>2</sup> EMA, "WAN Transformation with SD-WAN: Establishing a Mature Foundation for SASE Success," April 2023.

<sup>3</sup> EMA, "Network Management Megatrends," April 2022.

Furthermore, visibility into public cloud infrastructure is also poor compared to visibility that IT organizations traditionally have into their private data center infrastructure. Many organizations rely on native monitoring and reporting from their individual cloud providers to understand cloud network and application performance, but these tools are rarely as comprehensive as traditional monitoring tools. They are also siloed to individual cloud providers, preventing IT teams from establishing an end-to-end view of performance. Only 24% of IT organizations with multi-cloud environments are completely satisfied with their ability to monitor and troubleshoot multi-cloud networks. In fact, 68% of multi-cloud organizations say their network teams are acquiring new tools specifically to address cloud network performance monitoring.<sup>4</sup>

## Remote Work Pushes the Network Edge Into Homes

The edge of a digital infrastructure extends into the homes of remote workers. The COVID-19 pandemic permanently expanded the remote workforce in 94% of companies. In the average company, 18% of workers were remote at least part-time before the pandemic. Today, that average has increased to 43%. By 2025, it will expand to 49% of employees.<sup>5</sup> Many corporate leaders have issued return to office mandates, but those directives have largely failed, meaning that IT teams must support the user experience of remote employees for the foreseeable future.

Every remote worker relies on their consumer internet service provider to connect to applications and access corporate data, making these internet connections essential to business success. EMA research found that 87% of IT operations teams are allocating budget specifically to improve their ability to monitor the user experience of workers who are connecting from their homes. Also, half of IT teams told EMA that they need better visibility into loss, latency, and jitter for these remote internet connections.<sup>6</sup> The ability to monitor internet performance and user experience for remote workers has become a critical challenge.

<sup>4</sup> EMA, “Multi-Cloud Networking: Connecting and Securing the Future,” January 2023.

<sup>5</sup> EMA, “Modernizing Network Engineering and Operations in the Era of Hybrid and Remote Work,” August 2023.

<sup>6</sup> Ibid.

# Internet Performance Monitoring Restores Digital Observability

IT organizations need an internet performance monitoring solution to account for today's hybrid digital architecture. Whether an IT operations team is trying to understand their hybrid WAN, their multi-cloud network, or the user experience of remote workers and even customers, they need a tool that can review how the internet impacts application performance and experience.

An internet performance monitoring solution tracks the internet from multiple vantage points to deliver this visibility. These solutions deploy probes in the networks of backbone providers, regional service providers, wireless carriers, cloud providers, and colocation providers to track internet performance. These probes generate and analyze synthetic traffic to understand hop-by-hop loss, latency, and jitter across the global internet.

Internet performance monitoring tools can also install agents on client devices to track user experience from the user's perspective. These agents can augment synthetic tests and real-user monitoring data. With this granular visibility into individual user experience, IT operations teams can accelerate the mean time to resolve (MTTR) end-user complaints from employees and customers regardless of their location.

## How to Choose an Internet Performance Monitoring Solution

### Adopt a Platform

The typical IT operations team has four to 15 tools just for network monitoring and troubleshooting. These fragmented toolsets introduce complexity, with IT administrators often forced to correlate data and insights across multiple tools. This complexity slows down MTTR and leads to mistakes. For instance, EMA finds that larger, more fragmented network management toolsets correlate with more downtime than manual administrative errors cause.<sup>7</sup>

<sup>7</sup> "Network Management Megatrends," April 2022.

Any effort to add an internet performance monitoring capability should focus on a platform approach. IT teams should adopt a unified, multifunction solution that can monitor the internet from multiple vantage points while also monitoring end-user experience from the edge of the network. IT teams should also look for opportunities to displace older tools that have become obsolete with the rise of hybrid, internet-based networks.

## Hybrid WAN Observability

Given the criticality of internet connectivity to modern WAN architectures, IT operations teams need a tool that can collect and analyze telemetry that is essential to understanding hybrid WAN performance. Network managers told EMA that their top priorities for measuring internet performance in their hybrid WANs are:

1. **End-to-end loss, latency, and jitter across internet paths.** This allows them to understand how an overall internet path impacts performance and digital experience.
2. **Internet and ISP outage reporting.** This insight helps network teams understand how ISP outages might impact different regions and groups of users.
3. **DNS availability and resolution time.** With this information, they can understand how global DNS services impact performance, and they can identify inefficiencies in global load balancing.
4. **Hop-by-hop loss, latency, and jitter across internet paths.** With this granular visibility, IT teams can isolate problems and work with ISPs to resolve issues and speed MTTR for solving end-user complaints.<sup>8</sup>

## Multi-Cloud Observability

Given the way IT organizations are embracing multi-cloud architecture, an internet performance monitoring solution must reveal how multi-cloud networks are performing across the internet. IT professionals told EMA they have three primary requirements for multi-cloud network performance monitoring:

1. Cloud-to-data center interconnections
2. Cloud-to-cloud interconnection
3. Site-to-cloud connections or end-user experience

<sup>8</sup> EMA, "Multi-Cloud Networking: Connecting and Securing the Future," January 2023.

IT decision-makers should look for internet performance monitoring tools that can monitor the internet paths that enable such connections into and between cloud providers. These tools should also present all these insights within a single pane of glass.

## Work-from-Home Observability

Observability of user experience from anywhere is essential in an internet performance monitoring tool. IT teams need to accelerate MTTR workflows when responding to complaints from employees who work from home – and customers, too. The solution should reveal user experience levels and isolate experience problems to various domains, including the cloud, the internet, and the local Wi-Fi network. IT teams who are trying to manage remote employee user experience told EMA that they have three critical feature requirements for such observability:

1. **Improved integration with ticketing and IT service management (ITSM) solutions.** An internet performance monitoring tool sends alerts to ITSM platforms that generate tickets to help IT teams proactively resolve issues that impact user experience.
2. **Reporting by remote users.** Tools should have dashboards and reports that allow IT teams to review user experience and network metrics by individual remote users. This will allow them to prioritize incidents that are impacting the end-user experience.
3. **Connectivity state from client device perspectives.** Reporting that shows the state of a network connection from the client device perspective will allow IT teams to answer important questions, such as whether a remote employee's complaint is related to a service provider issue or a local Wi-Fi problem.<sup>9</sup>

## Look for Advanced Analytics and AIOps

Finally, IT teams should look for solutions that offer advanced features based on artificial intelligence and machine learning (AI/ML). With the right training, AI/ML technology can transform internet performance metrics and reporting into actionable insights. They can baseline internet performance and detect and analyze anomalies. They can correlate multiple alerts and tickets into larger events to reduce noise and allow IT teams to focus on critical incidents.

<sup>9</sup> EMA, "Multi-Cloud Networking: Connecting and Securing the Future," January 2023.



Also, AI/ML technology can correlate a variety of metrics and telemetry to generate user experience scores that help IT teams understand whether service-level objectives are met. IT teams who applied AI/ML technology to network management told EMA that it enabled network optimization, automated troubleshooting, and intelligent alerting.<sup>10</sup>

## EMA Perspective

The internet is now pervasive in modern digital architectures. It is essential for connecting all aspects of a business, from delivering applications to connecting users, sites, and cloud.

Legacy APM tools do not account for the variability and instability that the internet introduces to digital architecture. Instead, it excels at revealing the health and performance of application environments. The internet is invisible to these tools.

Internet performance monitoring solutions close the modern observability gap by providing visibility into global internet performance and reporting on how that performance impacts application performance and end-user experience. Adopting a comprehensive internet performance monitoring solution will complement an existing observability tool stack and empower IT operations teams to partner with DevOps and cloud teams to support digital transformation.

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<sup>10</sup> EMA, “AI-Driven Networks: Leveling Up Network Management,” April 2023.

## About Catchpoint

Catchpoint is the Internet Resilience Company™. Trusted by leading online retailers, Global 2000 companies, CDNs, cloud service providers, and various service providers, Catchpoint is dedicated to increasing resilience by catching issues in the Internet stack before they impact businesses. The Catchpoint platform offers a comprehensive suite of monitoring solutions, including synthetics, RUM, performance optimization, and advanced analytics, all supported by high-fidelity data and flexible visualizations. Leveraging thousands of global vantage points across wireless networks, BGP, backbone, last mile, endpoint, enterprise, ISPs, and more, Catchpoint provides unparalleled observability into factors affecting customer experiences, workforce efficiency, network performance, websites, applications, and APIs.



#### About Enterprise Management Associates, Inc.

Founded in 1996, Enterprise Management Associates (EMA) is a leading IT analyst research firm that specializes in going “beyond the surface” to provide deep insight across the full spectrum of IT management technologies. EMA analysts leverage a unique combination of practical experience, insight into industry best practices, and in-depth knowledge of current and planned vendor solutions to help its clients achieve their goals. Learn more about EMA research, analysis, and consulting services at [www.enterprisemanagement.com](http://www.enterprisemanagement.com). You can also follow EMA on [X](#) or [LinkedIn](#).

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