Enterprises need to proactively adapt to reliably delivering applications and services across the internet, regardless of whether they’re web-based transactions, software-as-a-service (SaaS) applications, or latency-sensitive video or unified communications applications.

**Optimizing Application Delivery in an Internet and Multicloud World**

*May 2019*

**Questions posed by:** Citrix  
**Answers by:** Brad Casemore, Research Vice President, Datacenter Networks

**Q.** To what degree do the internet and its state affect hybrid and multicloud application delivery and user experience for web, SaaS, and video applications?

**A.** Applications today increasingly traverse the internet. That is certainly true of SaaS applications, as well as infrastructure-as-a-service (IaaS)—based cloud applications, and it’s also true for enterprise applications consumed over the internet. As organizations increasingly embrace hybrid IT and multicloud — and IDC data suggests the vast majority of enterprises have taken that posture — application performance and user experience will depend on internet state, which comprises characteristics such as availability, latency, and reachability from a user’s internet service provider (SP) to various content delivery networks (CDNs), datacenters (cloud or otherwise), and points of presence (PoPs). As you can imagine, all these variables are in a constant state of dynamic change.

As an enterprise, you can’t prevent or even control that change, but you can find ways to account for it and proactively adapt to it so that you can reliably deliver your applications and services, regardless of whether they’re web-based transactions (finance, healthcare, retail, ecommerce, etc.), SaaS applications (Office 365, Salesforce, Workday, etc.), or latency-sensitive video or unified communications applications.

**Q.** The internet is vast, a connection of far-flung and disparate networks. Given its size and complexity, what kinds of rich visibility are required?

**A.** Yes, it’s a daunting challenge. You need to have historical (for forensics and playback), real-time, and pervasive insight into availability, network latency, and reachability, the latter extending from the user and his or her internet SP to the CDNs, datacenters, and PoPs that host and deliver the applications. This involves potentially tens of billions of data points, encompassing extensive real-user monitoring (RUM) as well as rich network visibility, that span — depending on the use case — the entire globe, including all cloud providers (SaaS and IaaS), tens of thousands of networks, internet SPs, and
CDNs. It’s not just about data; it’s also about intuitive dashboards with the ability to drill down into details to understand this vast data.

**Q. Why is it beneficial for application delivery infrastructure, including application delivery controllers (ADCs) and global server load balancers (GSLBs), to have rich internet visibility?**

**A.** Within the datacenter, ADCs already provide pervasive and real-time visibility by monitoring server utilization (CPU and connections) and availability. ADCs use a range of algorithms to select the best available server at any given time with, for example, the lowest number of active connections. That said, the ADC’s visibility pertains only to servers within the datacenter. It cannot detect whether the destination PoP presents unacceptable latency in relation to the user’s endpoint or Internet SP.

Beyond the confines of the datacenter, Internet traffic monitoring can supercharge GSLB with real-time, user-centric insights into the state of the Internet, including visibility into latency, throughput, and reachability for every user.

The real payoff, however, comes when you integrate the intra-datacenter visibility of the ADC with the Internet visibility and intelligent traffic management of GSLB. This results in a complete line of sight, if you will, and you’re able to select the destination that will deliver the best user experience for each individual user, selecting not only the server with the best current availability but also an optimal PoP or datacenter across the Internet that ensures low latency and high throughput.

**Q. Given the inherently distributed application profile of multicloud, how can organizations redesign their networks to enhance application delivery? How can they use insights from improved internet visibility to select optimal PoPs, CDNs, and service providers?**

**A.** Migrating applications to the cloud is already a complicated proposition without having to estimate where best to host your content and applications. Besides, it can be a moving target depending on user location and other factors. The best approach is to use accurate data on Internet state to simulate the end-to-end user experience, factoring in the location of the overall user base and the location of applications or content to evaluate different placement scenarios. Your organization can then make an informed business decision about application- and content-hosting locations to provide the best user experiences, even as you move into new markets or migrate additional workloads to the cloud. You should be able to simulate user experience performance of your potential target network designs before deploying an application to the cloud so that you can choose the right content or application hosting location to meet your business and user experience goals.
Q. What are intelligent traffic management and "GSLB as service"? How do they fit together, and what capabilities are essential for organizations seeking assured application delivery and optimal user experience in a hybrid and multicloud world?

A. Well, we have had ADCs in the datacenter for local traffic management, and we have had GSLB for global traffic management. They have even been used in conjunction with one another, but hybrid IT and multicloud demand more. What you need — and what hasn’t been offered traditionally — is real-time, crowdsourced internet visibility data as well as a machine learning engine to turn the data into actionable insights that result in intelligent traffic management. GSLB as a service is a cloud-based subscription service with nothing to install or maintain on-premises for simplicity and agility.

On top of that, you should have a connector to your application performance management tools as well as public cloud performance monitoring tools to enrich internet state data further. ADC with datacenter server insights and GSLB with internet insights should work together to choose the optimal servers and optimal PoPs to deliver the optimal user experience to every user. IDC foresees considerable demand for these solutions, and we’ve identified a total addressable market of nearly $4.9 billion in 2023, expanding at a compound annual growth rate (CAGR) of 8.4% from 2018 through 2023.

About the Analyst

Brad Casemore, Research Vice President, Datacenter Networks

Brad Casemore is IDC’s Research Vice President, Datacenter Networks. He covers networking products and related technologies and platforms typically deployed in the datacenter. Mr. Casemore also works closely with IDC’s Enterprise Networking, Server, Storage, Cloud, and Security programs to assess the impact of emerging IT and converged and hyperconverged infrastructure.
MESSAGE FROM THE SPONSOR

About Citrix

Customer experience drives brand loyalty. Customer experience is synonymous with application experience. The response time for applications and web impacts customer engagement and business growth. Citrix software-centric, feature rich application delivery solutions help customers to provide high-quality user experience for web, traditional, and cloud-native applications regardless of where they are hosted.

Citrix Intelligent Traffic Management collects up to 15 billion data points across 50,000 networks around the globe every day to understand Internet conditions in real time. Customers can make data-driven business and investment decisions about where to host their workloads or content for optimum delivery to specific audiences with Citrix ITM Performance Visualizer - a scenario simulation tool. Customers can also deliver best user experience through Citrix GSLB as a service which combines the deep and live visibility of internet conditions (latency, throughput, reachability) and real-time visibility and knowledge of server usage (CPU, connections).