# CiTRIX®

Deliver apps to your employees, contractors and partners with high reliability, deep visibility, and security across any network and cloud

Citrix Networking solution brief

As many enterprises are now delivering applications from on-premises data centers as well as private and public clouds, they must make sure that their users — whether in offices, branches, and any remote business locations — have uninterrupted access to all their applications from any device. SaaS, web, and virtualized applications need to be globally available and perform well over any network with high reliability.

72.3%

of cloud users have a mix of on-prem/off-prem clouds

Source:
IDC CloudView Research
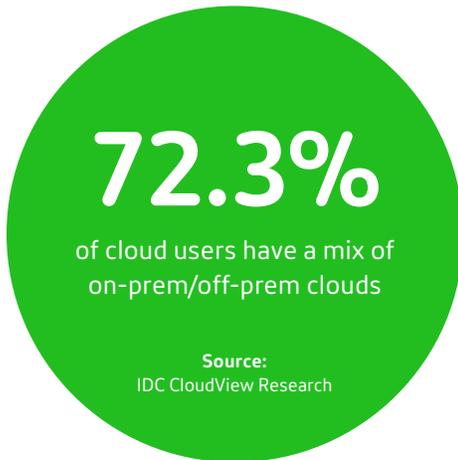
Traditional networking and infrastructure solutions continue to pose challenges, as they may lack the necessary automation, present availability issues, and are limited in scalability. Server failures both in the data center or in the public cloud, network outages, and poor-performing applications negatively impact user productivity and can potentially result in significant revenue loss. Provisioning more infrastructure or bandwidth isn't the answer — this only increases CAPEX spend on too-often underutilized resources that don't solve for the quality and reliability issues.

Enterprises actively pursuing solutions to address application delivery in a SaaS, multi-device, hybrid, and multi-cloud world should consider that a holistic strategy innately reduces complexities that otherwise would prohibit visibility and control in distributed architectures. A high-performing, scalable, reliable, and secure application delivery strategy needs to align the application with its underlying delivery network while also ensuring a world-class end-user experience regardless of when, where, and how users connect to their applications.
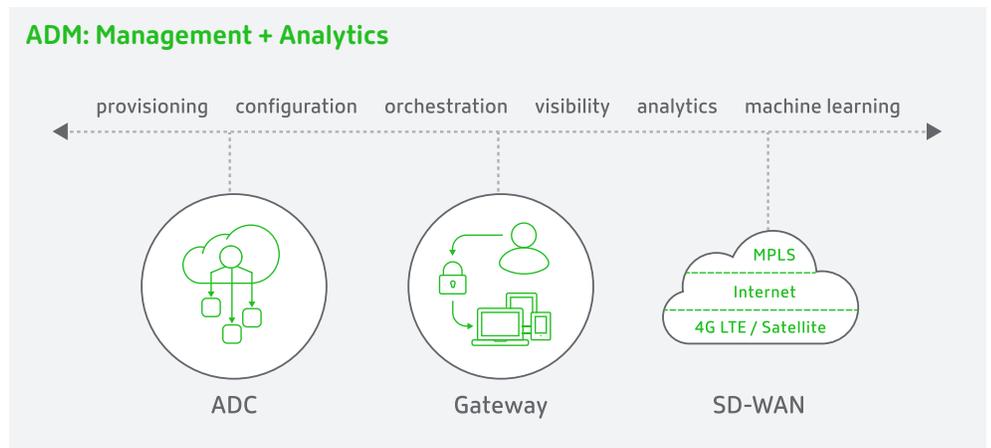
The Citrix approach to delivering reliability and a high-quality experience

Citrix can provide enterprise IT with highly available, reliable, and secure application delivery over different networks to enterprise users working from anywhere, including branch and off-site locations, using an integrated solutions approach that includes:

- **Citrix ADC** secures, distributes, and optimizes traffic to applications and provides identical functionality in any environ-ment: on appliances, hypervisors, containers, or any cloud.

- **Citrix Application Delivery Management** (ADM) provides centralized visibility to monitor and troubleshoot the entire global application delivery infrastructure.

- **Citrix SD-WAN** provides a comprehensive solution for enterprise application delivery, whether it is from the data center, public clouds, or SaaS.

Enterprises are embracing multi-cloud to accommodate existing and new applications, to gain organizational agility, to ensure applications reside in optimized environments, and to protect against cloud lock-in.

- **SD-WAN Center**, which is included with Citrix SD-WAN, provides visibility into the WAN network and application performance by allowing IT admins to generate reports and statistics across multiple Citrix SD-WAN appliances

- **Citrix Gateway** consolidates remote access infrastructure and provides users with access to any app, from any device, securely. It allows IT to eliminate point solutions such as VPNs, moni-tors, and single-purpose gateways that drive up costs and complicate IT management. Citrix Gateway offers a single, secure front end that provides single sign-on (SSO) across all internal apps, web apps, and multiple cloud resources. Security features such as multi-factor authentication to any app-lication and granular, contextual security policies ensure IT can achieve a balance between productivity, experience, and security.

ADM: Management + Analytics

provisioning   configuration   orchestration   visibility   analytics   machine learning

ADC   Gateway   SD-WAN

Together, Citrix Networking solutions help enterprise IT and networking professionals:

- **Ensure global availability** of applications with high performance and a high-quality user experience, whether the user is on campus, at a branch, or at any off-site business location.

- **Consolidate network infrastructure** by reducing the number of ADC and WAN devices, plus the URLs users need to access their applications. This helps lower costs and provides improved visibility and control over application delivery.

- **Deliver enhanced security** with single sign-on (SSO) to all applications, encryption, and a stateful firewall across the WAN.

- **Support SaaS, hybrid, and multi-cloud scenarios** with secure access from anywhere, including directly from the branch locations, coupled with gran-ular, contextual policies for SaaS and web application access.

- **Visibility and insight** into users, applications, data, and networks provide improved root cause analysis and reduced SLAs.

Use cases

Use case 1:   *Deliver apps to enterprise workers in any location with a high-quality user experience and ensure global availability with business continuity and disaster recovery.*

Citrix ADC ensures high availability and business continuity for applications delivered by enterprise IT by mitigating the causes of business disruptions, including server, network, and cloud outages, and application performance issues. Citrix Gateway provides secure remote access to VDI, web, and SaaS applications for users working on any device outside the corporate network.

High availability

A rich set of DNS-based global server load balancing (GSLB) functionality ensures users will always be able to access any application they need wherever they are located. It redirects traffic to a failover data center in the case of an outage or overloading.

For site-level disruptions and outages, Citrix ADC ensures that users get to the best-performing source by providing load balancing across geo locations to optimize availability and performance, and ensure business continuity. In addition, GSLB can further enhance performance for remote users by routing their sessions to the closest or best-performing data center, as well as balance and optimize resource utilization on an enterprise-wide basis. Citrix ADC supports GSLB in the cloud for active failover or load sharing across multiple regions, and even an on-premises data center. When server outages occur in the cloud, Citrix ADC can fail-over workloads to any alternate cloud provider or on premises.

Traffic steering

Citrix ADC employs one of the most fundamental elements of traffic management, basic L4 load balancing. As TCP/UDP requests arrive, they are forwarded to the server with best availability, including ones with the fewest current sessions, lowest CPU load, fastest response times, etc. When user sessions, such as within a video application, require the that session be directed to the same server, Citrix ADC ensures the persistence session-maintenance. To make sure traffic is not sent to an offline server and thus impact response rates, numerous health check methods are used to monitor the server farm. IT can use simple ICMP pings to scriptable checks where data is requested to ensure availability.

High performance

Citrix ADC ensures high performance for applications by reducing the burden of work-intensive tasks from the servers. Server offload takes the SSL processing burden off of the servers and puts the task on the ADC. Integrated static and dynamic caching provide in-memory storage on the ADC and serves web content to users without requiring a round trip to an origin server. Compression of the HTTP responses sent from servers to compression-aware browsers reduces latency and download time.

Citrix provides additional benefits, including:

- **GSLB in the cloud:** As applications move to the cloud, enterprises expect always-on availability. Outages remain a real possibility and happen. The Citrix ADC (VPX) virtual appliance in the cloud can support multiple IP addresses and Ethernet connections (NICs). Citrix ADC VPX can also enable an enterprise's hybrid cloud strategy allowing timely failback to an on-premises data center.

- **GSLB-powered zone preference:** Provides access to the most optimized data center for virtual applications and desktops based on the client location.

Use case 2:   *Deliver a reliable, high-quality application experience to users at branch and remote business locations while keeping costs low.*

What keeps enterprises running smoothly is the assurance of continuous access to applications, where no single outage or poor link quality can disrupt that access, even when a network link is broken or having issues. Commonly used MPLS links for the WAN between branch locations and the data center are known for reliability but are significantly higher in cost to operate versus lower-cost broadband internet links that are used globally. Given the lower cost and easy availability, businesses are turning to broadband links to connect their branch office to the internet. However, the cloud connections using broadband are known for lower reliability and result in poor user experience for remote branch or campus users.

High reliability

Citrix SD-WAN logically bonds multiple, diverse WAN connections into one virtual WAN path with dynamically applied application-aware network policies and continuous monitoring to deliver the app and data over the best-quality path in real time. This allows IT to increase application reliability and bandwidth utilization. Citrix SD-WAN appliances can detect link outages after just two or three missing packets, allowing seamless sub-second failover of traffic to the next-best WAN path.

High performance

Link outages and errors are mitigated by Citrix SD-WAN's ability to move traffic off poor-performing links without impacting the applications, resulting in predictable and consistent application performance. Traffic from high-bandwidth applications can be balanced across multiple links to provide high performance for large file transfers, an optimal user experience, and maximum bandwidth utilization. Real-time intelligent path selection continuously measures and monitors network conditions to select the best-performing paths for applications. Citrix SD-WAN also optimizes video delivery in Citrix Virtual Desktops environments, for popular websites such as YouTube and Vimeo, as well as to internal video content repositories.

Traffic steering

No matter where the enterprise is in its cloud journey, it can rely on Citrix SD-WAN to create secure, high-quality connections to web, SaaS, and cloud applications. The application identification engine can identify over 4,000 applications and apply policies accordingly to intelligently steer application traffic based on business rules to the best service. It will direct the branch traffic to the internet or SaaS or via Citrix Secure Web Gateway), through the tunnel to the data center, and also to a partner site.

Lower cost of branch networking

SD-WAN enables branch consolidation with the ability to replace routers, WAN optimizers, and even firewalls with a single appliance at the branch. Citrix SD-WAN is an integrated WAN Edge with WAN optimization, routing and a stateful firewall, all configured through a single centralized policy management system.
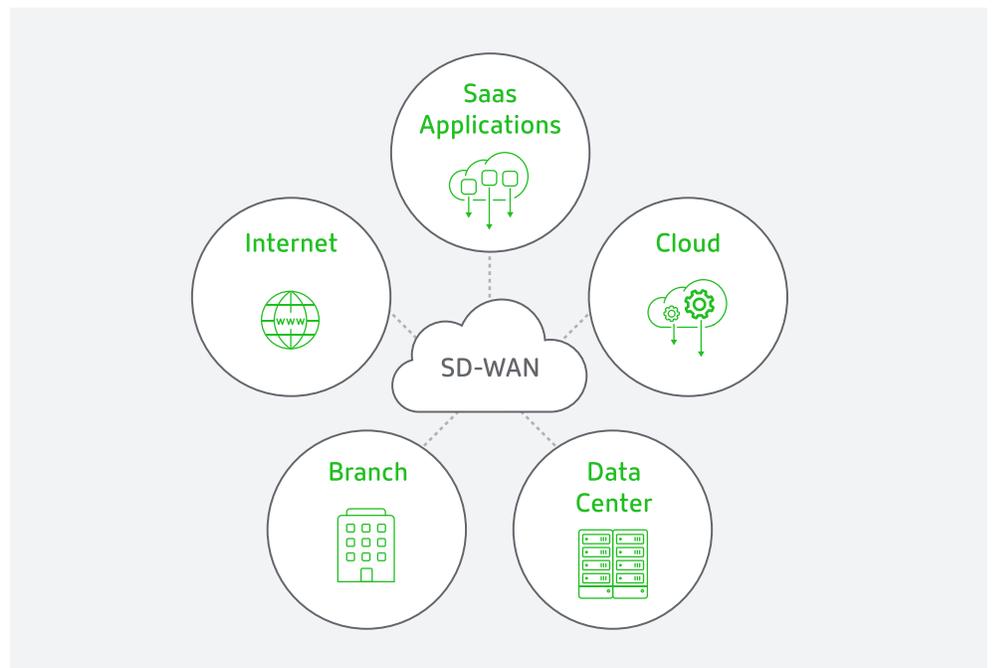

Citrix provides additional benefits, including:

- **Dual-ended application QoS:** Ensures delivery and efficiency by identifying applications using the WAN and applies default or user-defined rules to ensure that critical application receive priority and are routed across the highest-quality link. Lower-quality links are used only as much as necessary and then only for applications that can tolerate higher latency. Packet reordering and packet loss mitigation features reduce jitter and packet loss.

- **Packet duplication:** Provides the option to duplicate packets for applications that don't use a lot of bandwidth but are sensitive to loss (such as voice traffic or HDX Thinwire) across two different diverse links, ensuring no loss and that each packet takes the fastest-possible path.

Use case 3: *Provide full visibility and analytics into the network, the application, the user, and the data to empower IT to deliver a world-class user-experience.*

IT admins often struggle to identify the source of performance issues that generate user complaints. Having full visibility into the app delivery environment to predict the one or more sources of problems impacting users saves trouble-shooting time and provides the business a competitive advantage. To improve application performance in a hybrid or multi-cloud environment, IT needs deep visibility into the app delivery infrastructure and the traffic flows. Citrix ADM provides an application-centric, single-pane-of-glass view across all Citrix ADC and Gateway appliances from the endpoint to the application server in the data center or in the cloud for centralized management and analytics. It performs periodic health checks to keep tabs on the state of applications and the appliances — both virtual and hardware.

Citrix ADM provides the following capabilities and insights:

- **Web Insight:** Easily identifies errors, segments by application, and provides visibility into transaction performance.

- **SSL Insight:** Provides transaction visibility to easily identify incorrect ciphers and segments by application, rollups for SSL metadata, and reports on performance.

- **Anomaly Detection:** Scans for anomalies in log and counter data across all configured applications and automatically highlights errant configurations.

- **HDX Insight:** Collects, correlates, and displays highly informative network usage and performance data for Citrix Virtual Apps and Desktops, both in aggregate and down to individual user sessions. HDX Insight provides visibility to HDX traffic over multiple hops, which would include traffic through Citrix Gateway and Citrix SD-WAN. Citrix Gateway provides ICA session data, and Citrix SD-WAN provides the L4 template to elaborate on the HDX performance. View both real-time and historical data for users, sessions, and sites, with drill-down capabilities to determine the source of ongoing, imminent, or potential future performance issues.

- **Gateway Insight:** Provides visibility into the failures that users encounter when logging on, regardless of the access mode.

- **Security Insight:** Provides full visibility into the threat environment associated with applications.
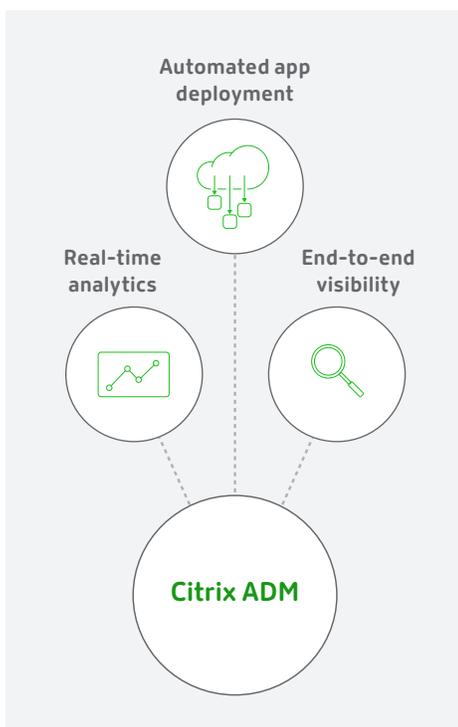
Citrix SD-WAN Center provides the following:

Automated app deployment

Real-time analytics

End-to-end visibility

Citrix ADM

- Management and reporting via SD-WAN Center to monitor network conditions that affect how applications are being delivered to users in the branch. By leveraging AppFlow data reporting, Citrix SD-WAN can also export data to third-party applications that provide network and application intelligence.

- Deep visibility into the network connecting Citrix Virtual Apps and Desktops users to the data center or cloud. IT can drill down into user-level statistics and get a deeper understanding of end-to-end latencies impacting the experience. IT gets a view into the quality of experience (QoE) for each branch location and can identify the ones performing poorly.
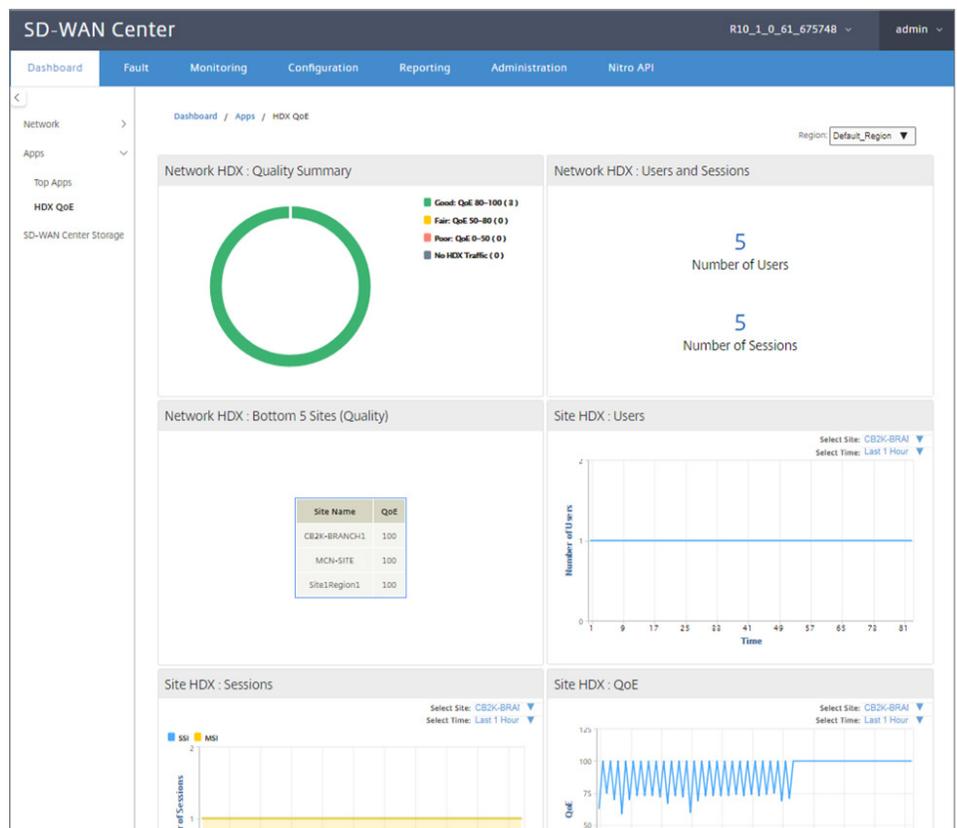
Citrix Networking solutions help IT ensure the enterprise employees, contractors, and partners have reliable, secure, and consistent access to all the applications they need to be productive, from wherever they are.

Learn more at citrix.com/networking.

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