

Solve the Application Visibility Challenge with NetScaler Insight Center

The ability to monitor, diagnose, and subsequently improve the performance of business-critical applications is essential to ensuring a positive user experience and maintaining the highest levels of employee productivity and customer satisfaction. The challenge of establishing an effective application visibility and control function is only growing, as trends such as mobility, virtualization, and cloud computing fundamentally alter datacenter and application architectures.

NetScaler Insight Center™ from Citrix® solves this dilemma. With NetScaler Insight Center, enterprises leverage their existing footprint of market-leading NetScaler App Delivery Controllers™ (ADCs) for both instrumentation and policy enforcement, thereby avoiding the need to invest in costly and cumbersome agent or network tap infrastructure. NetScaler® appliances are the control point in the enterprise network datacenter with visibility into all applications.

Combined with a rich set of analysis, correlation, and data presentation capabilities, the result is a next-generation application visibility solution that efficiently and economically delivers unprecedented insight into virtual desktops, mobile and cloud services.

The Application Visibility Challenge

The primary factor leading to the visibility challenge is a lack of correlation of the network to applications.

In response to major industry trends such as mobility and virtualization, applications are increasingly in a dynamic and distributed- yet-interwoven computing environment—think mobile devices, mobile apps, hosted virtual desktops, and hybrid clouds. This poses a challenge from the perspective of achieving effective application visibility since users coming in from a variety of media have to be accounted for. Another issue with traditional solutions, for example, is the inability to deploy taps or agents in public clouds—a limitation that could very well constrain organizations from taking full advantage of highly advantageous public and hybrid cloud architectures.

Additionally, lack of suitable instrumentation choices is a challenge. For most organizations, the idea of having to deploy and maintain a fleet of distributed agents is a non-starter. Such an endeavor is simply too costly and too invasive, especially when coupled with silos that exist in most IT departments. Establishing effective application visibility requires investment and support across each of the departments, which is often not a simple task.

Thus, constrained by a lack of application visibility and actionable information, most enterprises are stuck in a situation characterized by long support SLAs, persistent performance issues, and the inability to reliably deliver a truly exceptional user experience. All too common is the scenario where a user's complaint that a given app is slow gets endlessly bounced among an array of different support personnel—from general help desk staff to client/desktop, app, and network specialists, and perhaps even vendor support teams. Resolving the issue takes an inordinate amount of time and the user suffers from a poor experience.

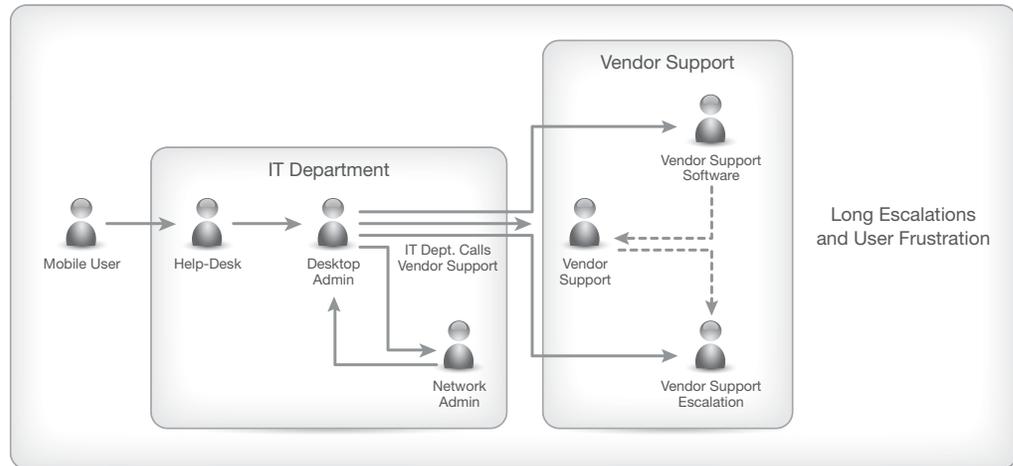


Figure 1: Distributed Apps cause finger pointing

Introducing NetScaler Insight Center

A next-generation application visibility solution from Citrix, NetScaler Insight Center overcomes the limitations of traditional methods and technologies to fully address the application visibility challenges facing today's enterprises. Featuring an approach that leverages NetScaler ADCs, Insight Center combines network-based instrumentation—that is both network and application-aware—with an efficient and powerful management system capable of transforming raw data into actionable information. The result is a solution that delivers big data analytics, while avoiding the need for extensive, specialized and expensive data collection networks, storage infrastructure, and analytics tools.

As depicted in Figure 2, the primary components of the solution are an organization's NetScaler ADCs, Citrix AppFlow®, and Insight Center.

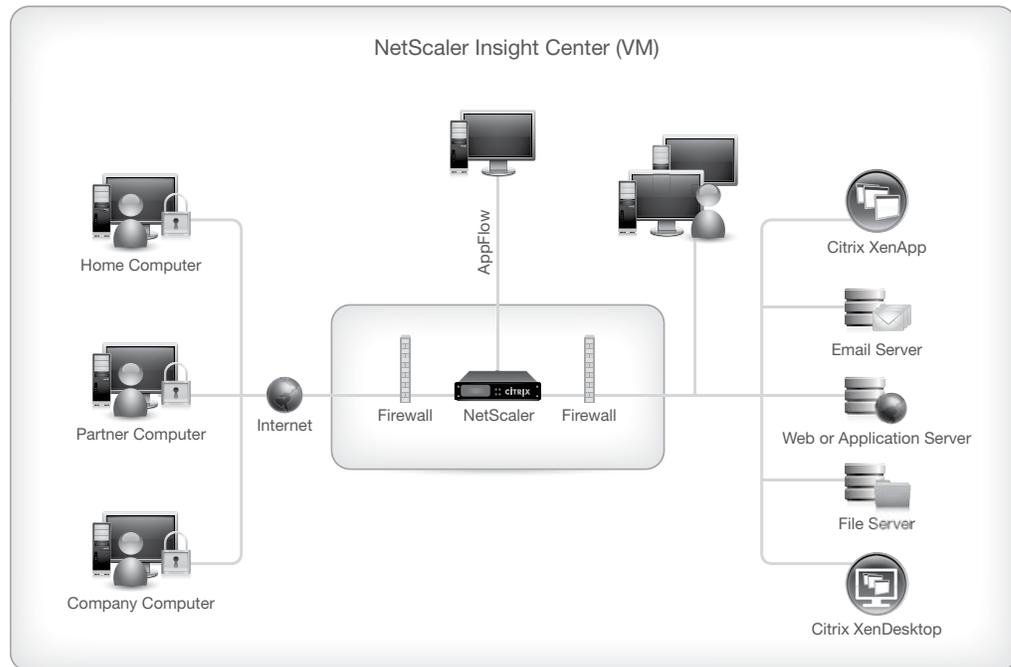


Figure 2: NetScaler Insight Center Architecture Diagram

NetScaler ADCs are deployed in thousands of networks around the globe to optimize, secure and control the delivery of all enterprise and cloud services, NetScaler ADCs combine secure and remote access to any application from any device and location, centralized application policy management, end point analysis of end user devices, high-speed load balancing and content switching, http compression, content caching, SSL acceleration and a powerful application firewall into a single, easy-to-use platform. NetScaler ADCs are also ideally positioned to deliver application flow visibility, because all the application traffic flows through it. This capability to monitor and provide visibility is enabled by NetScaler's support for AppFlow.

Citrix AppFlow. An innovative and open standards-based technology, AppFlow extends the TCP-level information already captured by IPFIX—the IETF standard for NetFlow—to include per flow application-layer data records. AppFlow has recently been extended to include support for the ICA® protocol. The result is an extensible instrumentation technology that conveys both network and application level data not only for enterprise web applications and cloud services, but also for the Citrix XenDesktop® and XenApp® desktop and application virtualization solutions.

NetScaler Insight Center is deployed as a virtual appliance and is a high-speed AppFlow collector combined with a management suite for monitoring, analyzing, and reporting application performance metrics and related data. Insight Center includes embedded correlation capabilities that automatically organize collected records by resource (e.g., by user, application, and NetScaler instance). Administrators can then view reports of summary level statistics from a variety of corresponding entry points, subsequently exploiting multi-level drill-down capabilities to examine underlying data and reveal the actual source of any ongoing, imminent, or potential future application performance issues.

Comprehensive Application Visibility and Control

Affordability and ease of deployment are clearly major advantages for NetScaler Insight Center, which inherently avoids many of the obstacles that plague traditional application performance monitoring and management solutions.

With Insight Center, there is no need for cumbersome and disruptive agents or network taps, and there is no need to modify individual applications in any way. Because the solution is deployed as a virtual appliance, there is no need for specialized hardware. Unlike other solutions that require complex configuration at multiple touch points, NetScaler Insight Center seamlessly integrates with NetScaler ADCs and enterprise applications, thereby greatly simplifying the solution.

Even more compelling than its affordability and ease of deployment, however, is the comprehensive coverage NetScaler Insight Center provides, as it thoroughly addresses all dimensions of the application visibility problem.

End-to-end visibility for Citrix XenApp and Citrix XenDesktop with HDX Insight

Complete understanding of the ICA protocol used by Citrix XenApp and Citrix XenDesktop allows Citrix to provide the only solution in the industry that provides complete visibility of the application and the underlying network traffic. The solution is not limited to an individual piece of the application performance picture. NetScaler appliances are located at strategic locations in the network, giving them the depth of intelligence to gather and calculate data applicable to the entire end-to-end chain—from the client device, client network, and NetScaler appliance itself, to the downstream (i.e., server-side) network and individual application servers. Moreover, integral correlation capabilities ensure that related data remains “linked,” thereby enabling individual pieces of information (such as top users for a given application) to readily be viewed in the context of all other relevant data (such as the browsers being used, the URLs/desktops being accessed, and the specific servers that are responding).

An integral component of the NetScaler Insight Center, HDX Insight™, allows IT administrators to quickly and easily obtain answers to countless operational and strategic questions leveraging the rich underlying data combined with extremely flexible data presentation capabilities, particularly for web and XenApp/XenDesktop applications.

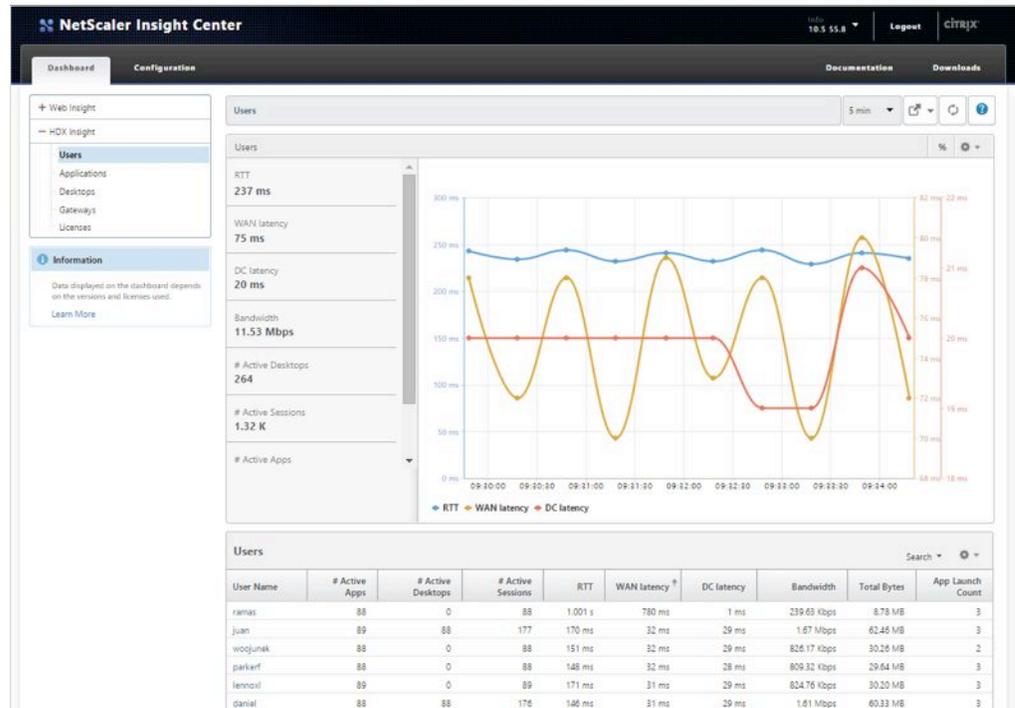


Figure 3: ICA RTT, WAN and Datacenter Latency distribution

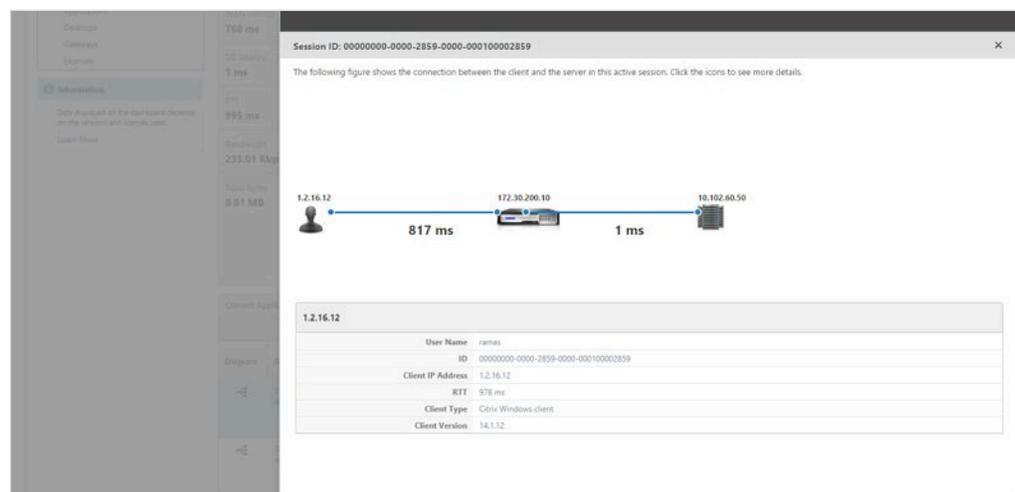


Figure 4: WAN & Datacenter Latency Reports

Top-to-bottom visibility

The ability to uniquely marry network and application-level data conveys a distinct advantage to the Insight Center solution, particularly when it comes to troubleshooting individual performance issues. For example:

- If a user is experiencing delays in accessing a particular application, but the client and server round trip times are acceptable, this would imply a problem with the associated application server; server; and,
- A group of users that experience poor performance and high round trip times between NetScaler and the corresponding servers would suggest a congestion problem with the intervening switches.

Application support

The solution covers virtual desktop/application solutions that leverage the ICA protocol, along with enterprise, web, mobile, Cloud and SaaS applications.

Virtual desktop visibility with HDX Insight. As enterprises increasingly deploy hosted virtual desktops and virtual applications to capitalize on inherent security, manageability, and TCO benefits, they must not lose sight of the need to ensure the end user experience. Success of hosted virtualized approach is heavily dependent on the performance of the network and datacenter infrastructure serving the associated desktops and applications.

HDX Insight

HDX Insight provides visibility into the ICA protocol used by the Citrix XenDesktop and Citrix XenApp — desktop and application virtualization solutions respectively. NetScaler appliances are uniquely able to parse and decrypt ICA traffic passing through them—down to the level of individual virtual channels—and then create corresponding AppFlow records based on what they're seeing. In comparison, alternative solutions are typically limited to simply acknowledging the presence of ICA traffic.

NetScaler Insight Center subsequently compiles and presents the HDX Insight data obtained from NetScaler, providing IT administrators with unparalleled visibility into their virtual desktop/application environment. Indeed, the following are just a small sample of the types of questions that can readily be answered by leveraging HDX Insight:

- Which XenDesktop/XenApp users are consuming the most bandwidth over a given time period (e.g., daily, weekly, or monthly)?
- Which virtual channels are consuming the most bandwidth over a given time period?
- What are the top applications across all XenApp users, by up-time and total number of launches over a given time period?

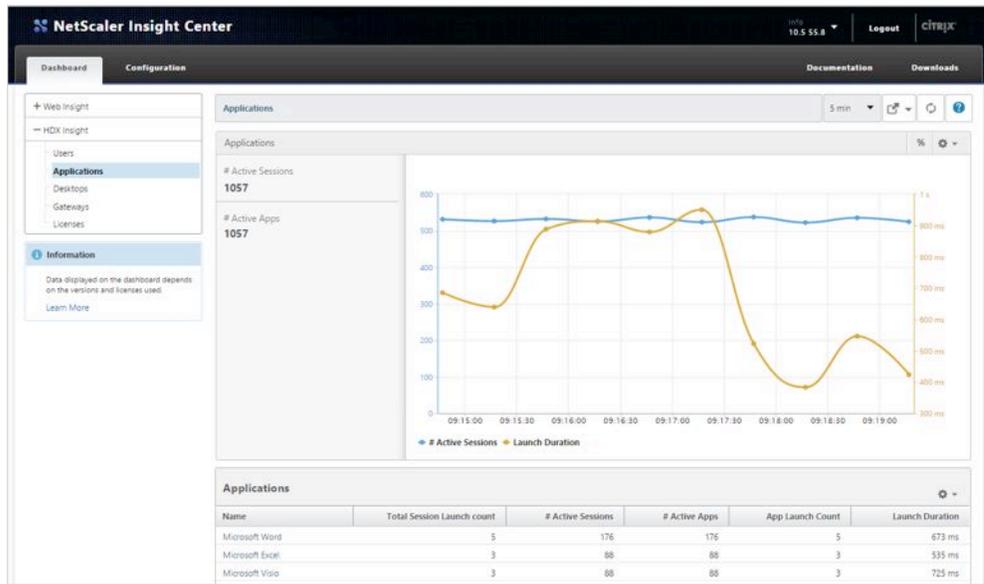


Figure 5: Number of Active session trends across applications

Web and cloud services visibility with Web Insight. Today's web and cloud services go well beyond the simple publishing apps of the past, with complex multi-tier designs and dynamic provisioning across both enterprise and service provider environments. Once again, visibility is critical to ensuring success.

Web Insight does for web and cloud services what HDX Insight does for virtual desktops. Specifically, Web Insight not only arms NetScaler with the intelligence it needs to “plumb the depths” of the web traffic it sees using AppFlow records, but also, present the results as actionable information for IT operations staff, application stakeholders, and network planners.

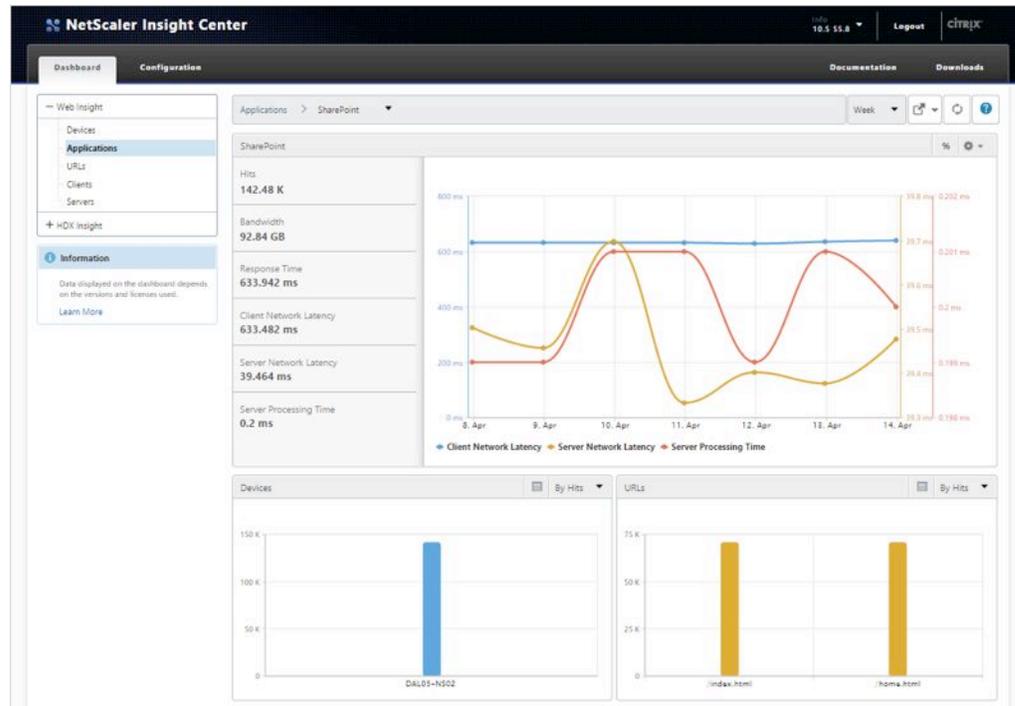


Figure 6a: Response time segregation over Client Network Latency, Server Network Latency and Server Processing Time

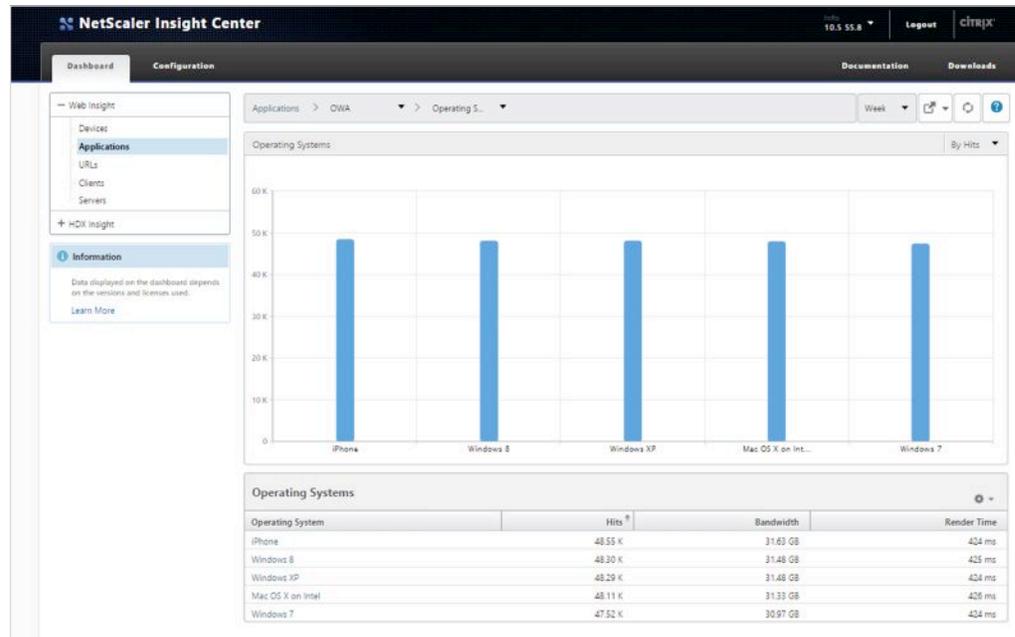


Figure 6b: Application usage across Mobile User versus Laptop User

Web Insight provides visibility into HTTP request methods, HTTP response status, client operating system, and user agent (i.e., browser type). This enables IT to quickly and easily answer the following:

- For SharePoint (or any other application), which clients are experiencing high latency?
- For any application (or individual client), how does response time breakdown in terms of client network latency, server-side network latency, and server processing time?
- In the past hour, which applications (and individual servers) have had the most hits?
- For any given client, what are the applications (and URLs) that have been accessed?
- What operating system and browser is a given client using?
- Which applications/servers are sending the most error-related responses (HTTP 5xx)?

Use cases

Availability of both real-time and historical visibility data enables NetScaler Insight Center to support a wide variety of use cases.

Proactive performance management. Real-time, continuous monitoring allows IT operations to discover and react to application performance issues before hearing about them from users. Having insight into ongoing conditions also provides greater assurance that applicable SLAs will be achieved.

Reactive performance management. The rich, highly accessible data delivered by Insight Center enables administrators to quickly and easily troubleshoot reported user experience issues. Providing all of the information needed to assess a situation in a single place accelerates such efforts, removes confusion amongst the support staff and reduces time to resolve an issue. With Insight Center, getting to the root cause of a given issue is greatly simplified.

Preventive performance management. Analysis of historical data supports capacity planning for everything from network bandwidth and back-end server resources to the NetScaler ADCs themselves. Detailed analysis of application usage patterns and user tendencies can also shed light on where and how to invest in both existing and future applications and services.

Integral control capabilities

NetScaler administrators can elect to take advantage of NetScaler Action Analytics, an embedded feature set that enables fully customizable load balancing and optimization policies to be automatically triggered in response to monitored conditions.

Conclusion: Optimizing IT operations and the user experience

NetScaler Insight Center from Citrix affordably and effectively addresses the application visibility requirement. By leveraging strategically placed NetScaler ADCs and armed with HDX Insight and Web Insight technology, Insight Center avoids need for cumbersome and costly agents or network tap infrastructure, while delivering unparalleled visibility into virtual desktop, virtual apps, web, enterprise legacy, mobile Cloud and SaaS applications. Correlation of network and application level data combined with extensive analytics and presentation capabilities transform extensive flow data into actionable information that administrators can apply to efficiently troubleshoot existing performance problems and proactively avoid future ones.

With NetScaler Insight Center enterprises get:

- Unparalleled application visibility and invaluable operational intelligence;
- Increased operational efficiency, as troubleshooting and capacity planning efforts are greatly simplified;
- An optimized user experience that drives greater employee productivity and customer satisfaction;
- Increased assurance that governing SLAs will always be met; and,
- Reduced total cost of ownership, based on having a low-cost, low-impact solution—particularly compared to traditional alternatives.

Learn more: [Visit the NetScaler Insight Center website](#)

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