

nGeniusONE Platform for Citrix Service Assurance

Citrix solutions are used in enterprise environments to deploy essential business services, including virtualization, anytime / anywhere access to corporate business applications, collaboration services as well as security control. This additional layer or set of layers in the service delivery chain can increase complexity in triaging and troubleshooting problems when they occur. With Citrix services part of a broader enterprise infrastructure that includes the network and applications, IT teams find it harder to distinguish the true root cause of performance issues. The difference between playing offense as opposed to defense is being able to understand if performance problems are due to the Citrix environment or some other part of the overall enterprise environment.

Citrix service elements such as the StoreFront, XenApp, XenDesktop, and NetScaler, are important parts of delivering a complete service to end users. Other essential components include network infrastructure, application servers, backend

Databases, and service enablers such as DNS, LDAP, RADIUS and Active Directory. With so many possible areas that could contribute to performance degradations, IT teams need a robust triage, situation analysis, performance management and service assurance solution capable of isolating faults rapidly across multiple domains.

The nGeniusONE™ Service Assurance platform provides real-time analysis for visibility of all application traffic flows over the network. Rather than relying on incomplete server agents or point tools, nGeniusONE is powered by Adaptive Service Intelligence™ (ASI) technology, a patented highly scalable deep packet inspection engine that leverages rich packet-flow data for extracting key performance metrics from across all the service domains. This enables nGeniusONE to provide IT staff with a comprehensive view of service performance across complex N-tier application environments. IT organizations benefit from significant reductions in Mean Time to Repair (MTTR) using nGeniusONE to quickly troubleshoot performance issues

impacting Citrix-based services. This is accomplished by correlating ASI data across different tiers and by providing seamless top-down service-oriented workflows.

Citrix Performance Issues Solved by nGeniusONE

nGeniusONE delivers end-to-end visibility into the performance of an integrated, Citrix-enabled, application environment including XenApp, XenDesktop, NetScaler, StoreFront, server activity, service enablers, the application and the enterprise network. As a result, nGeniusONE uncovers the full context of service anomalies across all layers which may be contributing to slow application response times and poor user experience including:

- **Reduce time to isolate slow logins** with metrics that include response times, bandwidth availability, DNS activity and user Authentication to evaluate the source of the delay
- **Triage disconnected sessions rapidly** with analysis of client to server network connectivity to determine if it is part of the Citrix service, a network component or an application server causing the problem
- **Improve analysis of application slowness** by tracking session details and response times for application servers, XenApp/ XenDesktop resources, and storage
- **Speed time to knowledge** with efficient triage and visibility into the community of users or particular locations most affected by a given problem

nGeniusONE Support for Citrix Services

In order to help IT teams resolve poor user experience issues, nGeniusONE relies on the power of ASI. Through continuous monitoring of all application traffic, including the protocols used by Citrix such as ICA/ CGP, TLS/SSL, and HTTP, ASI data enables nGeniusONE to provide a holistic view into the performance of traffic between components that could potentially cause Citrix performance problems. This highly structured data provides operational

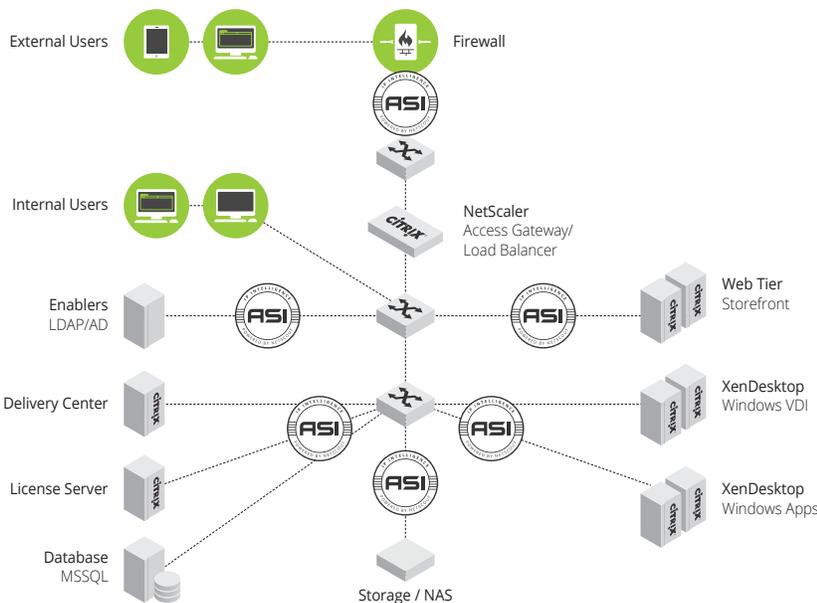


Figure 1: The nGeniusONE platform delivers Citrix NetScaler, Storefront Web Tier, XenApp Application tier, Database MS SQL, Service Enablers, and Network tier performance analytics to support end-to-end service delivery assurance and management.



insights, situational analysis, and visibility into the potential sources for Citrix service degradation including which servers are delivering services to which users; if servers are over-burdened; what the responsiveness is for servers; which communities of users are most impacted by an issue; and what errors are being generated.

The nGeniusONE platform ultimately improves triage and reduces MTTR with the ability to:

- Identify the cause of failed logins due to Active Directory misconfiguration
- Isolate a widespread slowdown in Citrix-based services caused by problems with the NetScaler load balancer or due to incorrect DNS configuration
- Discover if the source of keyboard lag and application freezes are due to underpowered Xen App or Virtual Desktop Servers
- Pinpoint if a Citrix service degradation in a regional office is the result of network congestion over the remote WAN links or incorrect QoS Settings
- Discover if the source of a slow Citrix application has nothing to do with Citrix and is actually due to a component in back-end tier such as slow Database Server or Application Server

With a consistent set of service-oriented workflows, the nGeniusONE platform enables seamless, contextual transitioning across multiple layers of analysis. This facilitates efficient and informed hand-off of incident response tasks across the different IT groups involved in delivery of an application from one end to the other.

The nGeniusONE platform streamlines service delivery management for Citrix by providing the following key analysis layers:

- **Service Dashboard** The dashboard delivers health status, metrics, alarms, and intelligent early warning of Citrix-based services. IT teams can use it to quickly spot

performance issues related to a the variety of elements necessary to deliver a holistic service including the Citrix Netscalers, Xen desktop servers, XenApp services, Citrix licensing servers, StoreFront servers, as well as service enablers and backend database servers in a single view.

- **Service Dependency Map** The service dependency map visualizes the current state of the Citrix service and application environment with automatic discovery and mapping of client - server relationships to provides visibility into all the dependencies among various components.
- **Service Monitor** The service monitor enables comprehensive analysis of Citrix transactions, successes and failures, latency, retransmissions, and response times to identify the root cause of Citrix impacting performance issues. The service monitor also provides holistic visibility of packet flow traffic to Citrix Storefront, XenApp, and License servers, as well as ability to focus analysis on the affected user communities. This view enables IT teams to triage and isolate the sources contributing to performance degradation issues.
- **Session Analysis** Using session analysis delivers session-level analysis, ladder diagrams, with hop-by-hop session analysis for message exchanges between clients and Citrix servers. The session analysis helps IT teams analyze transaction latencies, network statistics such as Average Round Trip time, number of TCP retransmissions, timeouts; as well as detailed session and flow information.
- **Packet Analysis** Using packet analysis, IT teams gain deep-dive visibility into Citrix services for protocol level analysis and forensic evidence collection.

A majority of Citrix impacting performance issues can be efficiently triaged by using the Dashboard and the Service Monitor screens specifically. However, should deep dive troubleshooting be needed, IT teams can further drill down to the Session and the Packet Analysis layers.

Benefits of nGeniusONE for Citrix

- **Quickly and Efficiently Triage Citrix XenApp, Xen Desktop, and NetScaler Issues** – Comprehensive service delivery platform covers the multi-layer Citrix environment including the hardware, access, resource and control layers enabling IT teams to efficiently research performance issues and quickly identify the root cause to reduce MTTR.
- **Protect User Experience** – The passive packet-flow monitoring methodology helps IT teams rapidly troubleshoot problems with Citrix-enabled applications to quickly restore quality performance of customer facing services.
- **Optimize Available Bandwidth** – nGeniusONE's visibility of network bandwidth usage provides valuable information to attribute slowdowns to the network capacity available versus network component problems e.g. issues with NetScaler load balancing performance or configurations.
- **Improve IT Team Collaboration** – Using the common nGeniusONE workflows across all application tiers, the platform improves time to knowledge by enabling collaboration between network, application, and server teams and gives the Citrix team the ability to play offense rather defense when discovering root cause of issues.
- **Reduce Monitoring and Vendor Management Complexities and Costs** – Combined visibility of data, voice, and video for service assurance in the single nGeniusONE platform helps organizations optimize the performance over a converged IP network while simultaneously reducing OPEX and CAPEX costs with a complete solution.

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