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nGeniusONE Platform for Citrix in Retail Banking Organizations

Citrix solutions are used in retail banking environments to deploy essential business services, including desktop virtualization, anytime / anywhere access to financial and 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 troubleshooting problems when they occur. Additionally, Citrix Virtual Desktop technology is highly sensitive to network latency. With the addition of Citrix services to an already complex array of infrastructure and networking technologies, IT teams find it harder to distinguish the true root cause of performance issues, whether they are due to the Citrix environment or something else.

Citrix service elements such as the Virtual Apps and Desktops, StoreFront, Desktop Delivery Controller (DDC) and Application Delivery Controller (ADC), are important parts of delivering a complete service to end users in a financial services environment. Other essential components include network infrastructure, application servers, backend databases such as MS SQL, and service enablers such as DNS, LDAP, RADIUS and Active Directory. With so many possible areas contributing to performance degradations, operations teams at financial institutions need a robust triage, situation analysis, performance management, and service assurance solution capable of isolating faults rapidly across multiple domains.

nGeniusONE® platform provides real-time visibility into the performance of financial and business application services by analyzing packet data across the network, on premises or in the cloud. Powered by Adaptive Service Intelligence™ (ASI) technology, the highly scalable and patented deep packet inspection engine, the nGeniusONE platform provides retail banking organizations with a comprehensive view of Citrix-based service performance across the service delivery environment. nGeniusONE leverages high-value packet data to generate "smart data" for smarter analytics to assure performance, manage risk, and facilitate superior decision-making regarding application and network services. With these smarter analytics, IT teams can quickly triage performance issues even in complex multivendor environments, ultimately reducing Mean Time to Repair (MTTR).

Citrix Issues Solved by nGeniusONE in Retail Banking

Many large retail banking organizations rely on nGeniusONE to deliver end-to-end visibility into the performance of an integrated, Citrix-enabled, application environment including Virtual Apps and Desktops, ADC, DDC, StoreFront servers' activity, service enablers, the application and the enterprise network. nGeniusONE uncovers service anomalies contributing to slow application response times and poor user experience with financial and business services 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.
- **Troubleshoot disconnected sessions** 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 CRM, banking, or contact center application slowness** by tracking session details and response times for application servers, Virtual App and Desktop resources, and storage.
- **Speed identification of login and access issues** with efficient triage and visibility into the community of users or branch office locations most affected by a given problem. Rapidly isolate the causes of login or access issues interfering with the ability of banking tellers or contact center associates to access critical applications or services with breakdowns and views into poorly performing DNS, LDAP, or RADIUS servers including associated error codes and responsiveness metrics.
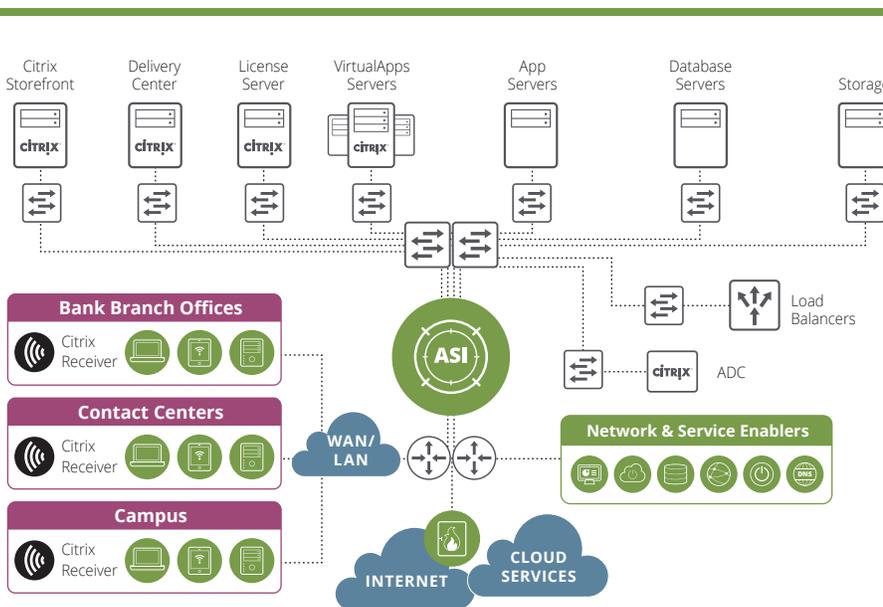

Figure 1: The nGeniusONE platform supports retail banking services that depend on Citrix ADC, Storefront, Virtual Apps, database, service enablers, and network tier performance analytics for end-to-end service delivery, assurance, and management.

Support for Citrix Services in a Retail Banking Environment

To help NetOps at retail banking organizations resolve poor user experience issues, nGeniusONE relies on the power of ASI. Through continuous monitoring of application traffic, including the protocols used by Citrix such as ICA/ CGP, TLS/ SSL, UCC, and HTTP, ASI data enables nGeniusONE to provide a holistic view into the performance of traffic between service components that could potentially cause Citrix performance problems. This highly structured data provides operational 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 banking locations are most impacted by an issue; and what errors are being generated.

The nGeniusONE platform ultimately connects the dots across a holistic view of services, speeds up troubleshooting 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 ADC and load balancer or due to incorrect DNS configuration.
- Discover if the source of keyboard lag and application freezes are due to underpowered Virtual App or Desktop servers.
- Pinpoint if a Citrix service degradation in a branch office or contact center is the result of network congestion over the remote WAN links or incorrect QoS Settings.
- Discover if the source of a slow Citrix application is due to a component in the back-end tier such as slow database or application server vs. a Citrix problem.

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 end-to-end application delivery.

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

- **Service Dashboard** – Delivers health status, key metrics, alarms, and intelligent early warning of Citrix-based services including CRM, financial services, contact center management, and other banking services. IT teams can use it to quickly spot performance issues related to the variety of elements necessary to deliver a holistic service including the Citrix ADC, Virtual Apps and Desktops, Citrix licensing servers, StoreFront servers, as well as service enablers and backend database servers in a single view.
- **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 throughout the retail banking environment.
- **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 Virtual App and Desktop servers including their supporting components. This view enables IT teams to investigate and isolate the sources contributing to performance degradation issues.
- **Session Analysis** – Delivers session-level analysis with hop-by-hop ladder diagrams illustrating message exchanges between clients and Citrix servers. This view helps NetOps 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** – Enables deep-dive visibility into Citrix services for protocol level analysis and forensic evidence collection.

For many retail banking organizations, most Citrix-impacting performance issues can be efficiently identified by using the Dashboard, Service Dependency Map, and the Service Monitor screens specifically. However, should deep dive troubleshooting be needed, NetOps can further drill down to the Session and Packet Analysis layers.

Benefits of nGeniusONE for Citrix in Retail Banking Environments

- **Quickly and efficiently troubleshoot Citrix Virtual App and Desktop, and Citrix ADC Issues impairing banking and financial services** – Comprehensive service delivery platform covers the multi-layer Citrix environment including the hardware, access, resource and control layers enabling IT teams to efficiently pinpoint root cause of performance issues and reduce MTTR.
- **Protect customer experience** – A packet-based monitoring methodology helps retail banking IT teams rapidly research problems that impact Citrix-based applications to quickly restore 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 ADC performance or configurations.
- **Reduce monitoring and vendor management complexities and costs** – Combined visibility of data, voice, and video for service assurance in the single nGeniusONE platform helps retail banking organizations optimize the performance of a converged IP network while simultaneously reducing OPEX and CAPEX costs with a complete solution.

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