

# nGeniusONE Platform for Load Balancer Environments

## Fast Triage for Managing Load Balancer Performance

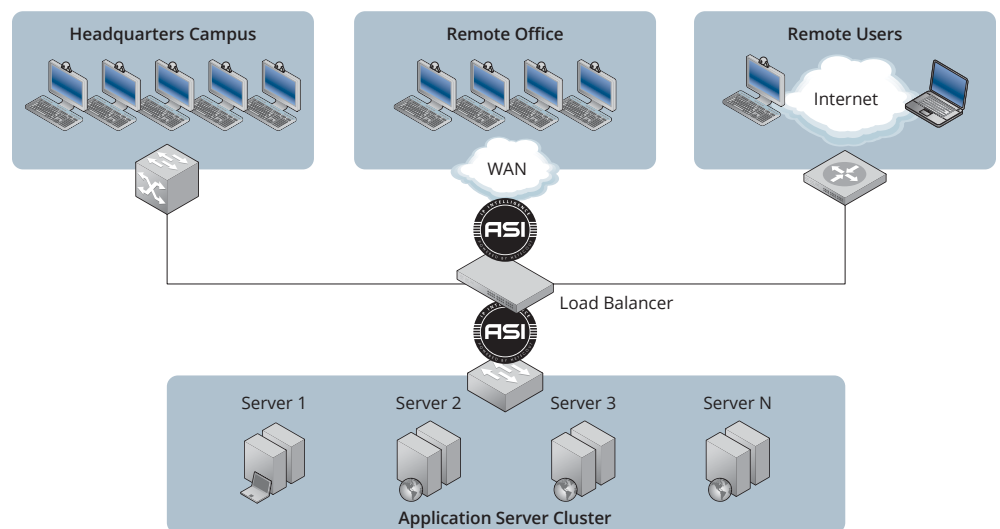
Load balancers are a critical component for IT organizations. These devices distribute user connections across different servers to enable IT teams to achieve application scalability, improve application performance, and protect the business from application outage. Load balancers distribute user and application requests to individual servers using a variety of methods such as “round robin” or “least busy.” When load balancers perform poorly or operate incorrectly, users may experience slow application response times or may even suffer service disruption. Such unplanned service interruptions are costly leading to a range of negative business outcomes including reduced employee productivity, lost sales, or tarnished reputation with partners and investors among others.

The nGeniusONE™ Service Assurance platform provides visibility into the performance of load balancers by leveraging the performance metrics extracted directly from data packets for observed sessions. This is in direct contrast to solutions relying on server agents or vendor-specific point tools. Powered by Adaptive Service Intelligence (ASI)™ technology, the highly scalable and patented deep packet inspection engine, the nGeniusONE platform provides IT with a comprehensive view of service performance across complex N-tier application environment. nGeniusONE enables IT teams to quickly triage load balance performance issues by correlating ASI data across different tiers and by providing seamless top-down workflows. With the help of these workflows and the structured ASI data, IT teams can collaborate to quickly troubleshoot performance issues linked to load balancers and reduce Mean Time to Repair (MTTR).

## Load Balancer Performance Issues Solved by nGeniusONE

nGeniusONE delivers end-to-end visibility into the performance of an integrated application environment including end users, proxy servers such as load balancers, service enablers, backend database servers, the application and web tiers, and the network. As a result, nGeniusONE uncovers service anomalies contributing to slow application response times and poor user experience including:

- **Load Balancing Issues Across a Server Pool or Cluster** – IT teams gain visibility into the “load” on each application server within a pool including the number of transactions, active sessions, and new sessions. These metrics enable IT teams to verify if the load balancers are operating and functioning as architected.



**Figure 1: The nGeniusONE platform delivers cross-application and cross-network tier application performance analytics to ensure high availability of all resources on the LAN and WAN including Clusters and load balancers.**

- **Network Induced Errors** – By tracking network-related problems such as application and network latencies, data retransmissions, and packet drops, nGeniusONE enables IT teams to quickly identify the operational issues and the root cause that is preventing data traffic from reaching certain application servers such as load balancer misconfiguration and network congestion.
- **Application Errors** – nGeniusONE provides visibility into the application errors to help IT teams get deeper insight into how workload distribution caused by faulty load balancing affects the overall application performance.
- **Community of Users Most Impacted** – IT teams can identify if application performance issues linked to load balancers are global in nature or isolated to a specific community, location, or a workgroup.

## Support for Load Balancer Services

nGeniusONE relies on the power of ASI to help IT teams quickly triage application performance issues. Through continuous monitoring of all application traffic, ASI data enables the nGeniusONE solution to provide a holistic view into the performance of every component that could potentially degrade application performance. This highly structured data facilitates nGeniusONE to provide IT teams with operational insights and visibility into the status of critical load balancing issues including: effective utilization of all servers in a pool; network and application server latencies; generated application errors; data transmission and traffic distribution bottlenecks; and the user communities (locations and sites) experiencing service degradation.

The nGeniusONE platform delivers IT teams with an efficient top-down approach to problem identification, service triage, and resolution. Using a consistent set of service-oriented workflows, the nGeniusONE enables seamless, contextual transitioning across multiple layers of analysis. These workflows allow the nGeniusONE platform to facilitate efficient and informed hand-off of incident response tasks across

different IT groups which fosters IT team collaboration, improving the ability of IT teams to quickly identify service quality issues and reduce MTTR.

In order to help IT troubleshoot load balancer performance issues faster, the nGeniusONE platform provides the following key analysis layers:

- **Service Dashboard** – The dashboard delivers real-time health status, metrics, alarms, and intelligent early warning of application performance problems. IT teams can use the dashboard to quickly spot performance issues related to a composite service including the web components, key middleware and service enablers, backend databases, and the load balancing servers in a single view.
- **Service Dependency Map** – The service dependency map provides visibility into all the dependencies among various components. This feature enables IT teams to analyze the service delivery environment and discover the client-server relationships and their performance.
- **Universal Monitor** – Enables IT teams to quickly triage and isolate the sources contributing to application performance degradation across load balancers and across different servers within a large server pool. Using this monitor view, IT teams get a consolidated view of application request workloads, number of new and existing sessions for each server, application and network latencies, and network errors, providing holistic visibility into the performance of all servers within the pool as well as the performance of load balancing servers. Furthermore, IT teams can also verify if application requests from users within a location are reaching the right load balancing server.
- **Session Analysis** – 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 such as the client IP addresses receiving service from the load balancer, error codes, and server host and client information. The session analysis delivers application details

in a ladder diagram with hop-by-hop message exchanges between clients, load balancers, and application servers.

- **Packet Analysis** – Enables IT teams to perform deep-dive protocol level analysis and forensic evidence collection. Packet analysis provides application-specific details as well as a list of IP addresses pertaining to the clients and any proxy servers through which the application request has passed including the load balancing server.

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

## Benefits of nGeniusONE for Load Balancers

- **Quickly and Efficiently Triage Issues** – Reduce MTTR with visibility into the entire infrastructure health enabling IT teams to adapt quickly when load balancers become unavailable or when configuration errors cause load balancers to drop traffic.
- **Identify Workload Distribution Issues Across Different Servers** – IT teams can efficiently research load balancing performance issues through comprehensive view into the session load, new and active sessions, application errors, and latencies on a per server basis.
- **Detect Users Impacted** – Provides operational insights into which load balancers are being accessed by which users, allowing IT teams to ensure they are getting the best performance from the load balancers.
- **Improve IT Team Collaboration** – The platform improves time to knowledge by enabling collaboration between network, application, and database teams by providing a common set of workflows across all application tiers.
- **Monitor Data, Voice, and Video Performance within a Single Solution** – Combined visibility of data, voice, and video helps organizations optimize the performance over a converged IP network.

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