

nGeniusONE Platform for Load Balancer Environments

Load balancers are a critical component for any IT organization. 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 even suffer service disruption. Such unplanned service interruptions can be costly, leading to a range of negative business outcomes including reduced employee productivity, lost sales, or tarnished reputation with partners and investors among others.

nGeniusONE™ platform provides real-time visibility into the performance of 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 IT organizations with a comprehensive view of application 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).

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, load balancers, service enablers, backend database servers, application and web tiers, as well as the underlying network infrastructure. 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 intended.
- **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 or network congestion.
- **Application Errors** – nGeniusONE provides visibility into application errors to help IT teams get deeper insight into how workload distribution caused by faulty load balancing affects 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.

nGeniusONE Support for Load Balancer Services

The nGeniusONE platform relies on the power of ASI to help IT teams quickly troubleshoot service degradations potentially impacting application performance. Through continuous monitoring of all application traffic, ASI data enables the nGeniusONE solution to provide a holistic view into the performance across every component that could potentially impair 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

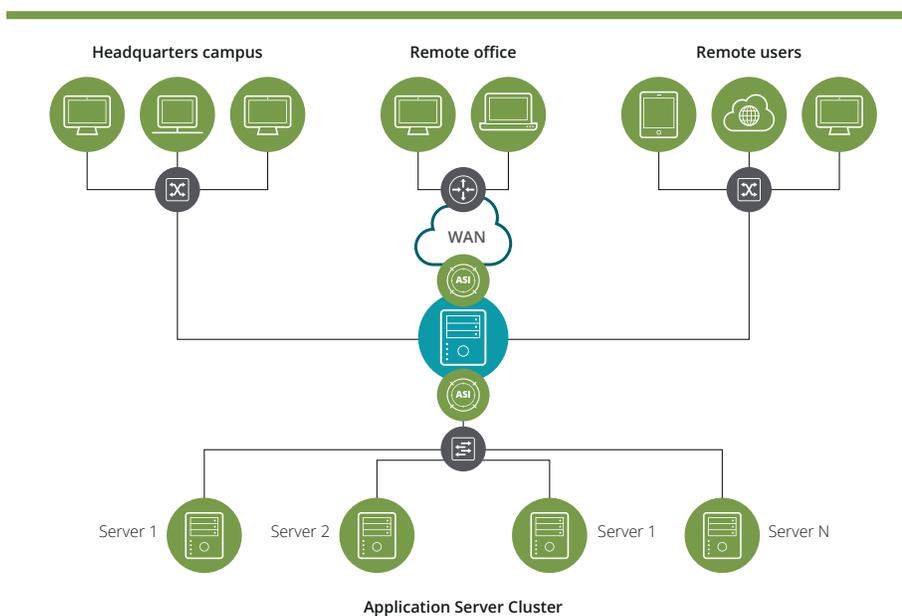


Figure 1: The nGeniusONE platform delivers cross-application and cross-network tier application performance analytics to ensure high availability of all resources on the LAN and WAN including Clusters and load balancers.

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 provides a consistent set of service-oriented workflows and situational analysis to enable seamless, contextual transitioning across multiple layers of analysis. This allows the nGeniusONE platform to facilitate 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.

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

- **Service 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 balancers in a single view.
- **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 service monitor, IT teams get a consolidated view of application request workloads, number of new and existing sessions for each server, network errors, and application and network latencies, 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 correct load balancing server.
- **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. This view delivers application transaction 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.

Most performance issues can be efficiently triaged by using the Dashboard, Service Dependency Map, and/or the Universal Monitor views alone. However, should deep dive troubleshooting be needed, IT teams can contextually drill down to the Session and Packet Analysis layers.

Benefits of nGeniusONE for Load Balancers

- **Quickly and Efficiently Triage Issues** – Reduce MTTR with visibility into the health of the entire infrastructure enabling IT teams to respond 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 issues impacting load balancing performance through comprehensive views 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 with collaboration between network, application, and database teams by providing a common set of workflows across all application tiers.



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