NETSCOUT™

nGeniusONE Platform for Database Performance Management

Fast Triage for Managing Database Performance

Enterprise organizations depend on the successful delivery of services to end users to support their business today. These services include a number of different elements, but one of the most important and often least considered is the database. If the database becomes impaired, the business can suffer from downtime, lost data, service degradation and more, causing delays, lost revenue, and user irritation. However, proving when it is NOT the database causing the problem is equally important. The Mean Time to Innocence (MTTI) is a valuable step in reducing finger-pointing and rapidly discovering the true source of a performance degradation.

In addition to the backend database service, network infrastructure, web servers, application servers, and service enablers (such as DNS, LDAP, RADIUS and Active Directory) there are also important components that together deliver service to end users. With so many possible areas

that could contribute to performance degradation, IT teams need a robust triage and performance management solution capable of isolating faults across multiple domains very quickly.

The nGeniusONE™ Service Assurance platform provides real-time visibility by analyzing all application traffic flows over the network. nGeniusONE leverages rich traffic flow data for extracting performance metrics rather than relying on server agents or vendor-specific metrics and a multitude of point tools which require a specific skillset to operate. 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 environments. nGeniusONE enables IT teams to quickly triage database-related performance issues faster which ultimately reduces Mean Time to Repair (MTTR). It does this by correlating ASI data across different tiers and by providing seamless top-down workflows.

Performance Issues Solved by nGeniusONE

nGeniusONE delivers end-to-end visibility into the performance of an integrated application environment including database server activity, service enablers, end users, the application and web tiers, and the network. As a result, nGeniusONE uncovers the full context of service anomalies contributing to slow application response times and poor user experience including:

- **Server Load Issues** – IT teams get visibility into the load to and from each database server and into which database commands are contributing to that workload for each server.
- **Session Latencies** – nGeniusONE tracks database performance by monitoring session response times between clients and servers. The platform is able to differentiate between different message types, and independently report on the performance characteristics of connects, queries and other modifications to the database. With the information provided, IT teams are able to identify the root cause of database slowness, including possibly database connect times, database writes, or database search times.
- **Database Errors and Messages** – Errors and messages are automatically discovered to allow IT teams to proactively monitor and research root causes of database performance issues. Causes could include failures, bottlenecked performance, out of memory conditions, out of resource conditions and more.
- **Load Balancing Issues within Database Server Clusters** – nGeniusONE can help IT teams verify that the performance and workloads are evenly distributed across different nodes in a database server cluster.
- **User Impact** – IT teams get visibility into which community of users is affected, or which particular location is affected by the problem. nGeniusONE enables IT teams to understand quickly which users or locations are affected by a performance degradation and how their service is impaired.
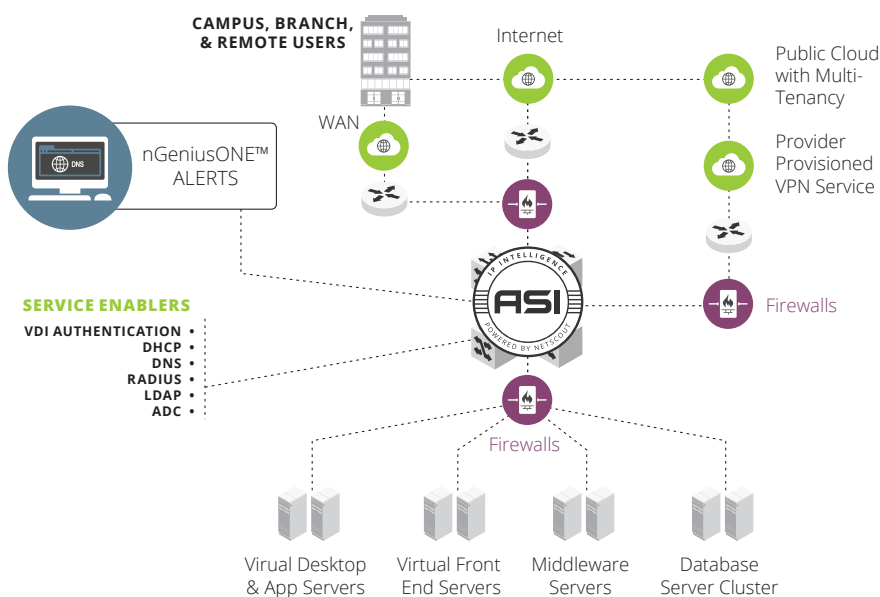

Figure 1: The nGeniusONE platform delivers database, application, web servers, service enablers, and network performance analytics to support end-to-end unified service delivery management.

Too many businesses look at the different components of their service delivery chain in a vacuum. Successful IT organizations use nGeniusONE to look at database performance metrics in context with the other service components to rapidly identify problems and determine the root cause.

Support for Database Services

In order to help IT resolve poor user experience issues, nGeniusONE relies on the power of ASI. Through continuous monitoring of all application traffic, including Oracle, MySQL, MS SQL, and DB2, ASI data enables nGeniusONE solution to provide a holistic view into the performance of every component that could potentially cause database performance problems. This highly structured data provides operational insights and visibility into the potential sources for database degradation including: which servers are delivering database services to which users; which of these servers are heavily loaded; what their latencies are; and what errors and messages are generated. In addition to application performance, nGeniusONE also provides advanced TCP analysis to help identify any network level issues.

nGeniusONE platform provides IT teams with an efficient top-down approach to problem identification, service triage, and resolution. This ultimately improves service triage and reduces MTTR by allowing IT to:

- Identify errors and messages generated by the database application during transaction processing.
- Isolate the specific database instance generating the error when several databases are running on the same database management system.
- Pinpoint which database commands are causing the most problems.
- Discover which users, sites, locations, and communities are experiencing the most service degradation.

The nGeniusONE platform provides a consistent set of service-oriented workflows to enable seamless, contextual transitioning across multiple layers of analysis. This allows the platform to facilitate efficient and informed hand-off of incident response tasks across different groups fostering IT team collaboration.

This platform simplifies the challenge for IT in delivering high quality, consistent user experience for database services by providing the following key analysis layers:

- **Service Dashboard** – The dashboard delivers real-time health status, metrics, alarms, and intelligent early warning of problems with database instances. IT teams can use it to quickly spot any performance issues related to a composite service including the web components, key middleware and service enablers, and the database servers in a single view.
- **Service Dependency Map** – The service dependency map feature provides visibility into all the dependencies among various components. This map enables IT teams to analyze the underlying client-server relationships and their performance.
- **Database Monitor** – Provides a single, consolidated view of session workload affecting the database servers for every user community. This view enables IT teams to triage and isolate the sources contributing to performance degradation issues. This view provides visibility into the latency, number of database requests, and informational messages/errors related to database transactions such as DB Connect and DB Open, and SQL commands such as INSERT, UPDATE, COMMIT, ROLLBACK, and DELETE.

A majority of database performance issues can be efficiently triaged by using the dashboard and the database monitor screens alone. However, should deep dive troubleshooting be needed, IT teams can further drill down to the session and the packet analysis layers:

- **Session Analysis** – Delivers session-level analysis including ladder diagrams with hop-by-hop analysis for message exchanges between clients and database

servers. This view helps IT teams analyze transaction latencies, network statistics such as average round trip time (RTT), number of TCP retransmissions and timeouts, as well as detailed session and flow information such as the user name accessing the database, the name of the database instance, error codes, and server host and client information.
- **Packet Analysis** – Enables deep-dive database protocol level analysis and forensic evidence collection. Using packet analysis, IT teams get visibility into SQL query string and table names accessed.

Benefits of nGeniusONE for Database

- **Quickly and Efficiently Triage Database Issues** – Comprehensive service delivery platform covers all tiers including the web, application, and the Oracle Database tiers, enabling IT teams to efficiently research performance issues and quickly identify the root cause and reduce MTTR.
- **Get Visibility into Production Database without Deploying Agents** – The non-intrusive data capture and analysis methodology helps IT teams monitor the performance of production environment without the need for logging into the database itself or making changes to the database, user accounts, or application logic.
- **Isolate Specific Database among Several Instances that are Having Issues** – Provides visibility into the specific database instance name and the user impacted. This information helps IT teams troubleshoot problems quickly when multiple database instances are used concurrently to increase IT team productivity.
- **Improve IT Team Collaboration** – Using common workflows across all application tiers, the platform improves time to knowledge by enabling collaboration between network, application, and database teams.
- **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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