

# nGeniusONE Platform for IBM MQ Middleware

Many large-scale enterprise applications span organizational boundaries. These distributed systems, either homegrown or acquired through mergers and acquisitions, communicate using middleware systems, such as IBM® MQ, to share data across multiple business applications. MQ service is highly mission-critical because it is used to unite business transaction processing across different applications, frequently running on converged IP network environments. As a result, any problems in the communications path, including MQ components such as Queue manager servers and multi-tiered applications require rapid problem resolution. Additionally, just responding to MQ service disruption alone is not sufficient. Enterprise applications also depend on other service entities such as load balancers, firewalls, web servers, application servers, DNS, LDAP/ AD, and backend databases to

successfully complete a service session. As a result of these highly complex cross-platform dependencies, IT teams face many challenges in finding the root causes for application performance issues impacting overall performance in MQ environments.

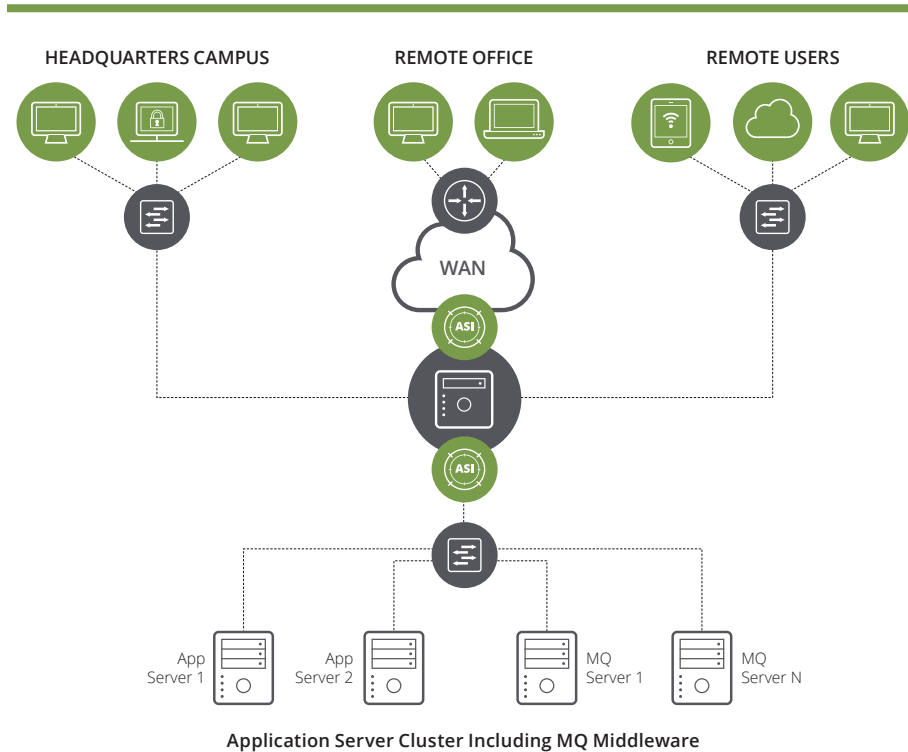
nGeniusONE® platform provides real-time visibility into the performance of application services by analyzing packet data across the network, on premises or in the cloud. Powered by Adaptive Service Intelligence™ (ASI) technology, the highly scalable and patented deep-packet inspection engine, the nGeniusONE platform provides IT organizations with a comprehensive view of application 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 investigate performance issues even in complex multivendor environments, ultimately reducing Mean Time to Repair (MTTR).

## Middleware Performance Issues Solved by nGeniusONE

nGeniusONE delivers end-to-end visibility into the performance of an integrated application environment including MQ servers, load balancers, service enablers (e.g., DHCP, LDAP/ AD, RADIUS, and DNS), backend database servers, the application and web tiers, the network, and the end users. As a result, nGeniusONE uncovers root causes for service anomalies contributing to service degradation such as:

- **Load Balancing Across Different Queue Managers** - nGeniusONE enables IT teams to identify busy servers and the sessions contributing to their load in order to rapidly isolate underperforming servers for all tiers in an N-tier architecture. Additionally, by providing visibility into MQ server usage, IT teams can quickly determine which queues and queue managers are causing bottlenecks in order to take proactive measures to improve application performance.
- **Queue Message Delivery Problems** - IT teams can quickly troubleshoot service delivery problems through the identification of error codes. By tracking MQ errors, application errors, and network-related errors such as retransmissions and packet drops, nGeniusONE enables IT teams to quickly identify operational issues and the root cause that is preventing MQ messages from being delivered to applications.
- **Multi-tier Application Failures** - With easy-to-interpret performance indicators (KPIs) and error code displays, common causes for performance issues that impact application services such as failure of distributed transactions across multiple MQ resources, network problems, database errors, message queue full,



**Figure 1: The nGeniusONE platform delivers cross-application and cross-network tier application performance analytics for N-tier application services including middleware messaging platforms such as IBM MQ Servers.**

wrong servers accessed, or other infrastructure issues such as DNS server lookup failures, LDAP/AD authentication failures can be easily identified and assigned to the right team for resolution.

- **Common network Issues** – Network latencies, number of MQ service transactions to identify the messaging load, QoS class misconfigurations, and other network problems signifying a need to reconfigure traffic distribution or upgrade network capacity.
- **Community of Users Most Impacted** – IT resources can be effectively prioritized by identifying application performance issues that are global in nature or isolated to a specific community, location, or a workgroup.

## nGeniusONE Support for MQ Implementations

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 MQ server performance. This highly structured data facilitates nGeniusONE to provide IT teams with operational insights and visibility into the status of critical middleware issues including:

- Isolating servers that are over or under utilized
- Pinpointing application servers and queue manager servers experiencing errors
- Understand the usage of queues and the queue managers
- Monitor queues between different queue managers
- Identifying segments in the network with excessive latencies, data re-transmission, or experiencing traffic distribution bottlenecks
- Discovering client communities experiencing the worst 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 MQ server 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 load balancers in a single view.
- **Service Dependency Map** - Provides visibility into all the dependencies among various MQ server components. This feature enables IT teams to analyze the service delivery environment and discover the client-server relationships and messaging performance.
- **Service Monitors (MQ Monitor, DNS Monitor, etc)** - Service monitors enable IT teams to quickly triage and isolate the sources contributing to application performance degradation across different areas of the communications path such as MQ servers, DNS servers, front and backend servers, and load balancers. Using these service monitor views, IT teams get a consolidated view of application request workloads, traffic latencies, and application errors, providing end-to-end visibility into the performance of servers within all tiers.
- **Session Analysis** - Helps IT teams analyze transaction latencies, network-related information such as Average Response time and QoS class assignments, as well as detailed session and flow information. For example, in the case of MQ middleware, session details include queue manager name, client addresses receiving service from the MQ Server, and error codes.

This view delivers application details in a ladder diagram with hop-by-hop message exchanges between clients, MQ server, 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, the Service Dependency Map, and the Service 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 Applications Built Using IBM MQ Services

- **Quickly and Efficiently Troubleshoot Application Performance Issues** – Reduce MTTR with visibility into the entire infrastructure health enabling IT teams to research service performance across multi-tier, multi-vendor, multi-location business application services including the MQ middleware infrastructure.
- **Manage Scope of Outage** – Provides operational insights into which queue servers are being accessed by which users, allowing IT teams to understand the scope and impact on end-users of service degradations and outages.
- **Improve IT Team Collaboration** – The platform improves MTTR by enabling collaboration between network, application, database, and middleware administrator teams by providing a common set of workflows across all application tiers.

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