

## nGeniusONE Platform for IBM MQ Middleware

### Fast Triage for Managing Performance of Complex IBM MQ Applications

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.

IT teams need a highly structured and proactive process to quickly detect and understand the root cause of application performance issues. Fast triage of service issues is necessary to isolate root causes to the specific tier within a multi-tiered business application.

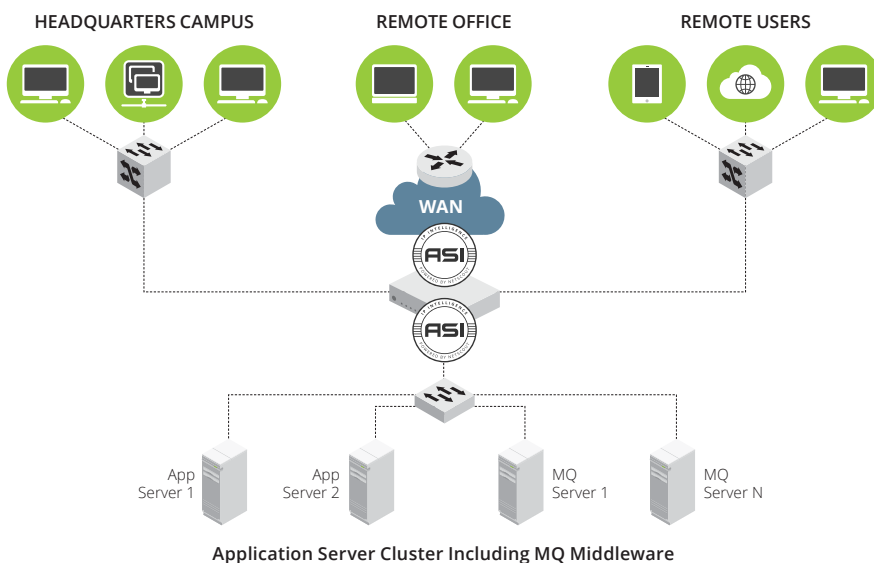
The nGeniusONE™ Service Assurance platform provides real-time visibility into the performance of multi-tiered application infrastructure components by analyzing application traffic flows over the network. nGeniusONE leverages rich traffic-flow data for extracting performance metrics rather than relying on server agents or vendor-specific metrics and a multitude of point tools which limit analysis to a single component. Powered by Adaptive Service Intelligence™ (ASI) technology, the highly scalable and patented deep-packet inspection engine, the nGeniusONE platform provides organizations with a comprehensive view of service performance across complex N-tier application environments. nGeniusONE enables IT teams to quickly triage

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.

### Application Performance Issues Solved by nGeniusONE

nGeniusONE delivers 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 application performance issues such as:

- **Load Balancing Across Different Queue Managers** – nGeniusONE enables IT teams to identify busy Servers and the sessions contributing to the load in order to rapidly isolate underperforming servers for all tiers in the 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 triage service delivery problems through the identification of error codes. By tracking MQ errors, application errors, and network induced 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, 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.



**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.**

- **Common network Issues** – such as 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.

## Support for MQ Implementations

Through continuous monitoring of all application, network, and MQ messaging traffic, ASI data enables the nGeniusONE solution to provide operational insights, situational analysis and holistic end-to-end visibility of complex n-tier application environments. The performance data within different tiers of the service is uniquely correlated and grouped by a range of keys such as the impacted Queue Manager Servers, DNS, LDAP servers, etc., and the location (community of users). This enables the nGeniusONE platform to offer seamless top-down workflows to facilitate IT teams to quickly identify service quality issues and reduce MTTR by:

- 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 streamlines service delivery management for applications. Using a consistent set of workflows, IT teams can seamlessly and contextually transition across multiple layers of analysis including:

- **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 load balancers in a single view.
- **Service Dependency Map** The service dependency map provides visibility into all the dependencies among various MQ server components. This 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 monitor views, IT teams get a consolidated view of application request workloads, traffic latencies, and application errors, providing holistic visibility into the performance of servers within all tiers.
- **Session Analysis** The 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. The session analysis 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.

A majority of performance issues can be efficiently triaged by using the Dashboard and the Service 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 Applications Built Using IBM MQ Services

- **Quickly and Efficiently Triage 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.
- **Identify Workload Distribution Issues across Different Servers** – IT teams can efficiently research load balancing performance issues through comprehensive view into the session load, number of active requests, Request timeouts, Latencies, Response times, and application errors, on a per server basis.
- **Detect Impacted Users** – Provides operational insights into which queue servers are being accessed by which users, allowing IT teams to ensure they are getting the best performance from their Messaging Infrastructure.
- **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.
- **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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