

nGeniusONE Platform for Manufacturing Environments

Service Assurance for Manufacturing IT

Digital transformation in manufacturing puts IT applications and services in the critical path for business success. On the factory floor, Manufacturing Execution Systems (MES) are the center of information to keep the manufacturing lines running efficiently and effectively. The MES ties together CAD/CAM, Supervisory Control and Data Acquisition (SCADA) systems with real-time information from sensors on the factory floor, Work in Progress (WIP) status, and more. Efficiency, flexibility, product quality and environmental compliance all suffer without access to these integrated systems. Information must be available through bi-directional communication over both wired and wireless networks with robots, sensors, employees with scanners, mobile devices, and workstations. Any degradation or failure impacts the workflow on the factory floor. Examples include not having the Bill of Materials (BOM) and instructions ready for a particular process, parts missing for assembly, or delays adjusting environmental conditions resulting in quality and environmental compliance issues.

Integration with additional applications and systems is required for the entire process to run efficiently. Enterprise Resource Planning (ERP) and Material Requirements Planning (MRP) application suites integrate with others to track inventory, forecast finished goods requirements, provide material forecasting and procurement, order fulfillment, billing, shipping, and more. Customer Relationship Management (CRM) software allows the business to track critical information to enhance the sales and marketing processes and must integrate with the other business applications. Web Services and Unified Communication & Collaboration (UC&C) are also important as these support customer/partner interaction and information flow. Any degradation in these systems leads to costly delays and customer dissatisfaction. NETSCOUT® solutions can help.

The nGeniusONE® Service Assurance platform provides real-time analysis and visibility of the application traffic flows the business depends on throughout the network. nGeniusONE is powered by Adaptive Service Intelligence™ (ASI) technology, a patented highly scalable deep packet inspection engine that leverages rich traffic-flow data for extracting key

performance metrics from across all service domains. Using ASI, nGeniusONE provides seamless top-down workflows to quickly triage performance issues impacting production as well as business services, thus providing significant reductions in Mean Time to Repair (MTTR) as well as in Mean Time to Innocence (MTTI) by providing proof of what is NOT the problem.

The nGeniusONE Platform Assures Service Delivery

The nGeniusONE Service Assurance platform analyzes network and application traffic to deliver end-to-end visibility into the availability and performance of the applications, network, service enablers and end-users to assure effective manufacturing IT systems. By understanding the relationships between the various applications, network, users & tools, service enablers such as DNS, DHCP and LDAP/AD, and databases, nGeniusONE assures availability and performance of the services the business relies on.

Examples of issues addressed by nGeniusONE in manufacturing include:

- **Server Load Issues** – nGeniusONE delivers visibility into the load to and from MES and SCADA application and database servers where information from many sensors is critical to maintain production quality and keep the lines operating smoothly.
- **Session Latencies** – nGeniusONE monitors session response times between clients and servers to determine the specific point on the data path where application slowdowns occur allowing a reduced MTTR and keeping assembly line timing issues to a minimum.
- **Connection Issues** – In many cases, design/build applications are used by engineers in distributed locations where connection issues to the data center can be costly. nGeniusONE reveals common issues like network switch misconfiguration and/or DHCP and Active Director privilege issues to triage connection issues reducing slowdowns and providing significant savings to the business.

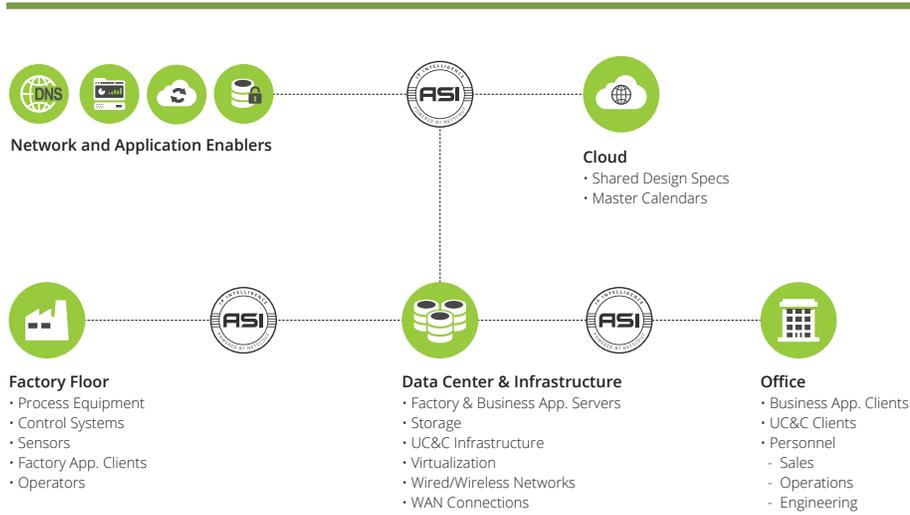


Figure 1: The nGeniusONE platform delivers business service assurance monitoring applications and services from factory floor to business enablement keeping the entire organization running effectively and efficiently to maximize competitiveness and profits.

- **Capacity Planning** – nGeniusONE reports show usage and performance of network links between remote locations and the data centers allowing the business to right-size services and bandwidth.
- **Impact** – nGeniusONE shows the service impact of degradations not only indicating which services are impacted and how, but also the location of the users and production equipment that is impacted.

Seamless Top-Down Workflows

The nGeniusONE platform leverages the power of ASI to help manufacturing IT teams address factory floor as well as both internal and customer facing business applications. The data is efficiently organized so it can be viewed by a range of keys, such as locations (i.e., community of users), local and cloud networks, Quality of Service (QoS), servers, applications, etc. This enables the nGeniusONE platform to offer a top-down workflow-based approach to problem identification, service triage, and resolution.

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.

nGeniusONE simplifies challenges for IT in delivering high quality, consistent user experience and machine communications for factory floor and business services by providing the following key analysis layers:

- **Service Dashboard** – The dashboard delivers real-time status conditions, 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 services such as MES, SCADA, MRP, CRM, and UC&C, including application server components, integrated web and cloud components, key middleware, backend databases, and service enablers in a single view.

- **Service Dependency Map** – The Service Dependency Map provides visibility into all the dependencies among various components that deliver a broad spectrum of plant, CAD/CAM and business IT services. This enables IT teams to analyze the service delivery environment and discover the client-server relationships and messaging performance.
- **Service Monitors** – Service monitors, including the Universal Monitor, enable IT teams to quickly triage and isolate the sources contributing to performance degradation within multitier environments, including web servers, Active Directory servers, application servers, backend databases, and virtualized components. Using these monitor views, IT teams get a consolidated view of application request workloads, traffic latencies, and authentication and DNS errors, providing holistic visibility into the performance of manufacturing services.
- **Session Analysis** – Session Analysis views help IT teams analyze transaction latencies, network-related information (e.g., average response time and QoS class assignments), as well as detailed session and application flow information for mission critical services such as design/build applications.
- **Packet Analysis** – Integrated nGeniusONE Packet Analysis enables IT teams to perform deep-dive protocol level analysis and forensic evidence collection of applications and services such as multiple vendor MES, MRP, ERP, and other business critical services.

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 Solution

- **Proactively Detect and Notify Administrators of Issues** – Reduce user impact to issues with proactive notifications when performance or availability suffers, even with machine to machine communication common on the factory floor where no human user reports the problem.
- **Automate Root Cause Analysis** – Situation Analysis finds root causes of various performance issues as well as the impact. Correlating seemingly disparate latency, failures and errors into situations to alert IT to problems and root cause allowing them to be addressed proactively even if the business is not yet impacted.
- **Triage Issues Quickly** – Decreases MTTR with end-to-end, comprehensive service visibility that enables IT teams to quickly research factory and business application performance issues and pinpoint the source of problems, including service enablers such as DNS, LDAP, DHCP or RADIUS, impacting the end-to-end processes.
- **Improve IT Team Collaboration** – The platform improves MTTR through enabling collaboration between network, application, server, and UC&C teams by providing a common ASI dataset and workflow across all tiers of manufacturing application services.
- **Single Solution Supporting All Application Layers** – Enables continuous monitoring of performance across the multi-vendor infrastructure and manufacturing application services environment with a single solution.
- **Passive, Agentless Architecture** – Allows end-to-end service assurance without the need to install agents on critical production networks where agents would add risk.



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