

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 Wi-Fi 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® 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 manufacturing 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).

Performance Issues Solved by the nGeniusONE Platform

The nGeniusONE Service Assurance platform analyzes network and application traffic to provide 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 on which the business relies.

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 enabling 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.

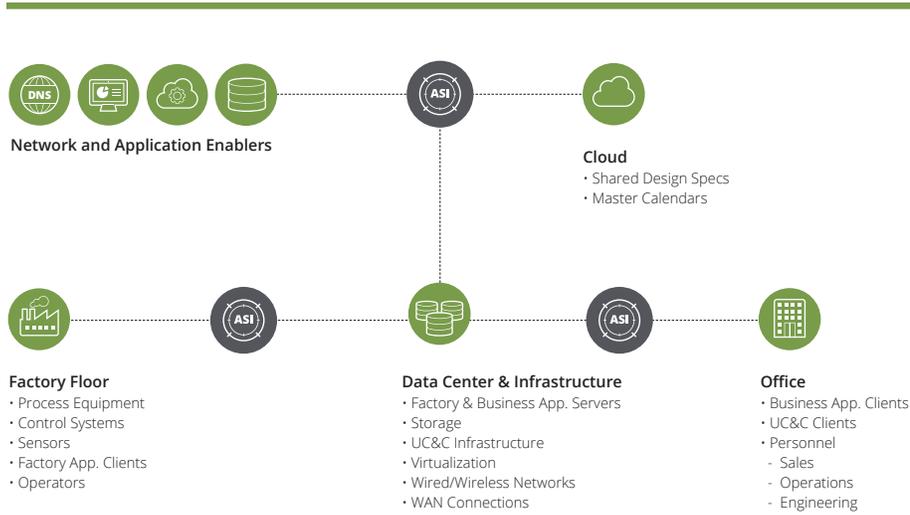


Figure 1: The nGeniusONE platform delivers multi-purpose, consistent, real-time visibility across any service, any platform, any time. From the factory floor to business enablement, keep the entire organization running effectively and efficiently.



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.

- **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 from 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 allows 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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