NETSCOUT.

nGeniusONE for the Pharmaceutical Application Performance Management

Today's pharmaceutical leaders are transforming how they approach critical business activities by deploying digital applications that streamline research & development (R&D), regulatory and clinical testing, document management, compliance, manufacturing, quality control, customer relations, and marketing & sales. These digital transformation examples for pharma include:

- Applications driving the collection of clinical trial data and providing analysis and reporting of that data, some of which must be reported to the FDA on a regularly scheduled basis
- Electronic laboratory notebooks automating data collection, as well as auditing of human access to that data
- Industrial Internet of Things (IIoT) apps providing real-time monitoring of manufacturing processes (e.g., ensuring proper refrigeration temperatures) to help reduce instances of bad drug batches

In using digital applications to automate many processes that were frequently tedious and difficult to manage, this transformation has:

- Improved accuracy, safety, and time-to-market
- Reduced labor costs and errors
- Eased evidentiary compliance with FDA, HIPAA, PII, and EPA requirements, as well as the HL7 healthcare information standard

This digital transformation also provides improved visibility for patients and companies into treatment impacts and successes.

At the same time, the more pharma companies depend on these new apps, the more they let go of old manual processes, and the availability and performance of digital applications become all-the-more critical. Without manual processes available as a ready form of backup, everything stops if the application is down.

For the information technology (IT) teams tasked with testing, deploying, and running these new applications, there are additional security concerns – with more pharma data now in digital form (and therefore subject to potential hacking attempts), there is increased need to protect the company's intellectual property (IP), as well as patient's personal data and financial information.

With NETSCOUT®, pharmas now have a single solution for taking on these new digital application performance management (APM) challenges. The nGeniusONE® Service Assurance platform uses NETSCOUT smart data generated by our Adaptive Service Intelligence™ (ASI) technology for real-time monitoring of pharmaceutical business applications, whether deployed in traditional data centers or in hybrid cloud or virtual environments.

Pharma Application Performance Management Issues Solved by nGeniusONE

In the pharma business, when hours of downtime have proven to translate into millions of lost dollars, it is mission-critical for IT teams to have end-to-end visibility and single-pane real-time monitoring to manage their increasingly complex application environments. The nGeniusONE information platform enables IT teams to identify the root cause of performance issues adversely impacting pharma application service delivery. As a result, IT teams can quickly triage performance issues, even in complex multi-vendor pharma networks, ultimately reducing mean-time-to-repair (MTTR) cycles. For today's pharma IT teams, nGeniusONE provides continuous monitoring of the following application environments:

- **Commercial-off-the-shelf Pharma and Business Applications:** nGeniusONE provides out-of-the-box support for 1,000 business data, voice, video, mobile, and Web-based business applications, with the solution also monitoring common platform protocols, (e.g., DNS, DHCP, etc.).

- **Custom Applications:** Flexible nGeniusONE configuration options allow for the definition of dynamic or static applications, which provides the flexibility needed for custom app monitoring.
- **Cloud and Virtual Applications:** When deployed in combination with the NETSCOUT vSTREAM™ virtual appliance technology, nGeniusONE identifies performance issues in pharma applications running in multi-tier cloud and virtualized networks.
- **Unified Communications & Collaboration Applications:** nGeniusONE provides real-time converged monitoring of voice, video, and collaboration platforms critical to high-quality pharma Contact Center communications with patients and healthcare providers, as well as voice/video conferencing with collaborators.
- **Healthcare Communications Layer 7 (HL7) Applications:** The dedicated nGeniusONE HL7 Service Monitor allows pharma IT teams to track the HL7 standard protocol used for communications interoperability between pharma apps like Laboratory Information Systems (LIS) and healthcare information systems (e.g., Electronical Medical Records, Electronic Health Record, and e-prescription services), which also eases evidentiary compliance.
- **Internet of Things, IIoT, Blockchain Applications:** In delivering real-time monitoring for IIoT manufacturing processes nGeniusONE provides complete visibility into, and analysis of, multi-vendor business services, traversing the factory floor, back-office, front-office, lab, as well as those cloud services used to collaborate with partners. nGeniusONE also provides a real-time Internet of Things (IoT) management solution to manage performance of wearable devices used by "connected" patients in pharma research projects.

nGeniusONE Support for Pharma Application Performance Management Services

nGeniusONE improves IT's ability to assure high-quality pharma service delivery by providing the following integrated analysis layers:

- **Service Dashboard:** Provides single-pane views needed for converged real-time monitoring of pharma applications, network and UC&C performance, and all interdepending technology services involved in delivering app services across the business.
- **Universal and HL7 Service Monitors:** Service monitors enable IT teams to quickly triage and isolate the sources contributing to performance degradation within multi-tier environments, including Web servers, Active Directory servers, application servers, backend databases, load balancers and enabling services to provide holistic visibility into the performance of pharma services. The dedicated HL7 Monitor provides comprehensive analysis of HL7 activity, tracking successes, failures, latency, retransmissions and response times for HL7 message types (e.g., Administrative, Scheduling, Documentation and Other) to pinpoint root cause of interoperability issues.
- **Service Dependency Mapping:** Provides visibility into all issues truly relating to an application or, instead, another service delivery dependency, which improves IT collaboration and reduces troubleshooting cycles.

- **Session Analysis:** Provides contextual session-level analysis, ladder diagrams, and hop-by-hop transaction analysis, which help IT evaluate transaction latencies, average round-trip time, and timeouts.
- **Packet Analysis:** Enables IT teams to perform deep-dive, protocol-level analysis and forensic evidence collection of pharma applications and services, such as LIS.

Benefits of the nGeniusONE APM for Pharma Services

nGeniusONE provides a network-aware, vendor-neutral APM approach that supports existing pharma IT investments without the need for modification of those systems. nGeniusONE allows today's pharma businesses to:

- **Optimize application availability to the business, increase internal efficiencies:** Always-on monitoring, leveraging end-to-end visibility reduces instances of downtime and increases productivity of pharma subject matter experts and business resources.
- **Migrate Pharma Business Applications to Hybrid Cloud, Virtual platforms, or Co-location facilities with Confidence:** Assures accurate planning ahead of migration, as well as business continuity, for pharma business by providing single-pane views of application performance "before, during, and after" migration to next-generation platforms. Pharmas benefit by using service dependency mapping and utilization trend information during the pre-production phase and onto production-level deployment.
- **Address compliance concerns:** Provides reporting and packet-based forensics evidence required for R&D and manufacturing compliance management, with NETSCOUT smart data assisting ongoing data governance activities.

- **Improve security of intellectual property, sensitive patient information, and confidential payment data:** Leverages NETSCOUT smart data generated from continuous monitoring of the service delivery environment to support nGeniusONE smart analytics for identifying performance issues and security threats in pharma networks.
- **Enhance voice, video, and collaboration services to patients and researchers:** Continuously monitors UC&C platforms for application, network, and underlying service performance to reduce downtime, while improving patient satisfaction and maximizing pharma R&D efficiencies.
- **Reduce vendor toolsets, Allow IT teams to "Do More with Less":** Vendor-neutral APM approach provides IT with quantifiable MTTR reductions and improves team collaboration necessary to enhance efficiencies in pharma organizations with finite staffing profiles.
- **Capitalize on IoT, IIoT, Blockchain Applications:** NETSCOUT APM enables more efficient manufacturing with higher-quality products and the ability to track issues to specific batches. The nGeniusONE solution also allows monitoring of wearable devices for connected patients involved in next-generation R&D studies.
- **Provide always-on patient availability to Web platforms and mobile applications:** Multi-tier application performance monitoring maximizes uptime of Web-based front-ends and mobile apps implemented for patient communications, increasing satisfaction for end-users.

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