

nGeniusONE Platform for Payment Processing

Credit and debit card transactions drive trillions of dollars in sales around the world every year. Each time a buyer swipes their card at a point-of-sale (POS) terminal or an ATM, it triggers a sequence of transactions across multiple providers all with a vested interest in ensuring that good charges are accepted, and that fraudulent or over-limit charges are declined. Organizations at every step in the ISO 8583 transaction flow, including merchant acquirers, payment processors, issuing banks, card networks and even the retailers, need to be able to monitor the success of each transaction to secure the transaction, protect from fraud, manage risk, and validate service level agreements (SLA) with their vendors in the transaction process.

Besides the ISO 8583 service itself, network infrastructure, web servers, application servers, and service enablers (such as DNS, LDAP, RADIUS and Active Directory) are also important components that together deliver payment authorization services to customers. With so many potential areas that could be

the source of performance degradations, IT teams need a robust triage and performance management solution focused on isolating faults across multiple domains very quickly.

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 application 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).

Payment Processing Performance Issues Solved by nGeniusONE

nGeniusONE delivers end-to-end visibility into the performance of the integrated ISO 8583 application environment including policy, application, database & web servers, service enablers, end users, and the network. As a result, nGeniusONE uncovers the full context of service anomalies contributing to slow application response times and poor user experience including:

- **Authorization Slowdown Issues** – Gain visibility into response times for authorization requests to validate responses are sent and received within appropriate SLA windows and pinpoint the source of slowdowns or timeouts across the network.
- **Transaction Errors and Messages** – nGeniusONE automatically discovers and tracks ISO 8583 transaction errors and messages so IT teams can proactively monitor and research root causes of transaction declines and/or failures. Errors and messages are categorized into Authorization, Financial Transaction, Reversal, Administration & Management and others. For example, a spike in “Incorrect PIN” errors could indicate a stolen card someone is trying to guess the PIN for.
- **Server Load** – IT teams get visibility into the load on each server and the message types that are contributing to the workload on each server.
- **Load Balancing Issues** – IT teams can verify that the performance and workloads are evenly distributed across different nodes in a server cluster.
- **Scope and Impact of Impairment** – IT teams gain visibility into which community of users is affected, or which location is the source of the problem. Decline rates can be isolated to a specific type of transaction or even a particular vendor submitting transactions for payment.

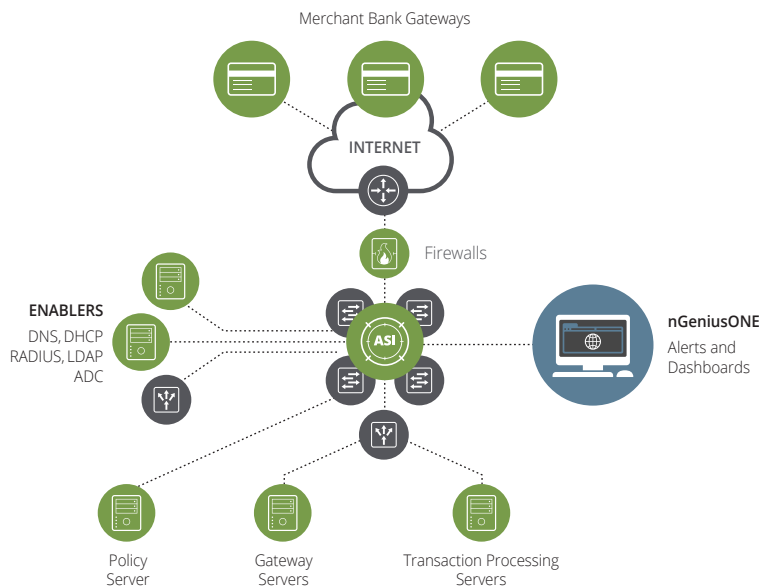


Figure 1: The nGeniusONE platform delivers visibility into the network, server, and application components which make up the ISO 8583 service and deliver performance analytics to support end-to-end service assurance.

Too many businesses look at the different components of their service delivery chain in a vacuum. IT organizations can successfully use nGeniusONE to analyze performance metrics in context with the other service components to rapidly identify problems and determine the root cause.

nGeniusONE Support for Payment Processing Services

In order to help IT resolve poor user experience issues, nGeniusONE relies on the power of ASI. Through continuous monitoring of ISO 8583 transactions formatted for many of the world's largest card networks, ASI data enables the nGeniusONE solution to provide a holistic view into the performance of these transactions. nGeniusONE helps reduce the "noise" of ancillary data so IT teams can focus on the key metrics throughout the overall environment and quickly pinpoint the true source of the impairment to the ISO 8583 services including: transaction latency; transaction accept/decline rates; servers that have heavier traffic load than others; and errors and messages generated. In addition to application performance, nGeniusONE also provides advanced TCP analysis to help identify any network level issues.

The nGeniusONE platform provides IT teams with an efficient top-down approach to situational analysis, problem identification, troubleshooting, and resolution. This ultimately speeds fault isolation and reduces MTTR by allowing IT to:

- Validate the speed of acceptance or decline of the attempted payment transaction.
- Illustrate rate of accepted and declined transactions, broken out by transaction type, along with associated reasons for the decline.
- Pinpoint the transaction types experiencing the most problems.
- Discover which users, sites, locations, and communities most impacted by service degradations.

The nGeniusONE platform provides a consistent set of service-oriented workflows to enable seamless, contextual transitioning across multiple layers of analysis. This facilitates efficient and informed hand-off of incident response tasks across different groups fostering cross-team collaboration.

To simplify the challenges for IT in delivering high quality, consistent user experience for card processing services, the nGeniusONE platform provides the following key analysis layers:

Service Dashboard –Delivers real-time health status, metrics, alarms, and intelligent early warning of problems with credit, debit, or ATM transaction processing. IT teams can use it to quickly spot any performance issues related to a composite service including the web components, key middleware and service enablers, and policy, application and database servers in a single view.

Service Dependency Map –Provides visibility into all the dependencies among various components. IT teams can analyze the underlying client-server relationships and their performance with this map.

Card Processing Monitor – This specialized service monitor provides IT teams with a single, consolidated view of session workload affecting the servers processing ISO 8583 transactions for each user community. This view enables IT teams to triage and isolate the sources contributing to performance degradation issues. The view provides visibility into the latency, number of requests, and failures related to ISO 8583 transactions including message types such as card authorizations, financial transactions, reversals, network management and others.

Session Analysis – Delivers session-level analysis including ladder diagrams with hop-by-hop analysis for message exchanges between clients and servers. This view helps IT teams analyze transaction latencies, network statistics such as Average Round Trip time, number of TCP retransmissions,

timeouts; as well as detailed session and flow information such as transaction date and time, system trace audit number, POS entry mode, ID for the issuer, acquiring, and forwarding institutions, approval code, retrieval reference number, and failure type including error code and explanation of error.

Packet Analysis – Enables deep-dive database protocol level analysis and forensic evidence collection.

Most performance issues can be efficiently investigated by using the Dashboard and the Card Processing Monitor views alone. However, should deep dive troubleshooting be needed, IT teams can further drill down to the Session and Packet Analysis layers.

Benefits of nGeniusONE for Payment Processing

- **Efficiently Investigate and Troubleshoot Payment Processing Issues** – Comprehensive visibility into the health of the entire infrastructure enables IT teams to respond quickly and efficiently when transaction rates drop or errors spike up.
- **Validate SLA requirements** – Manage transaction latency to meet service level requirements between card networks, payment processors, and issuing banks.
- **Manage Payment Accept and Decline Rates** – Understand the ratio of payment acceptances and declines, and the reasons why specific transactions have been declined.
- **Improve IT Team Collaboration** – The platform improves time to knowledge with collaboration between network, application, and database teams by providing a common set of workflows across all application tiers.
- **Reduce MTTR** – Faster identification of the root cause of service degradations dramatically speeds time to resolution.



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