



Highlights

- Multi-tier views into complex service delivery environments enables real-time understanding of user experience
- Intelligent early warning automatically identifies changes in service delivery performance, providing predictive notification of emerging performance issues to help prevent service meltdowns and user impact
- Flexible service views enable contextual visibility into the end-to-end service delivery environment allowing the IT organization to manage services based upon how they are hosted, delivered and consumed
- Comprehensive analysis and view into how well service levels are being maintained
- Service-centric workflows facilitate a precise view of the factors that impact service delivery to aid "next step" decision making for proper triage of service-impacting issues

nGENIUS | SERVICE DELIVERY MANAGER

A real-time service dashboard providing unified visibility into end-to-end service delivery in context with how services are delivered and consumed to effectively assure the user experience

nGenius Service Delivery Manager for Today's Complex IP Networks

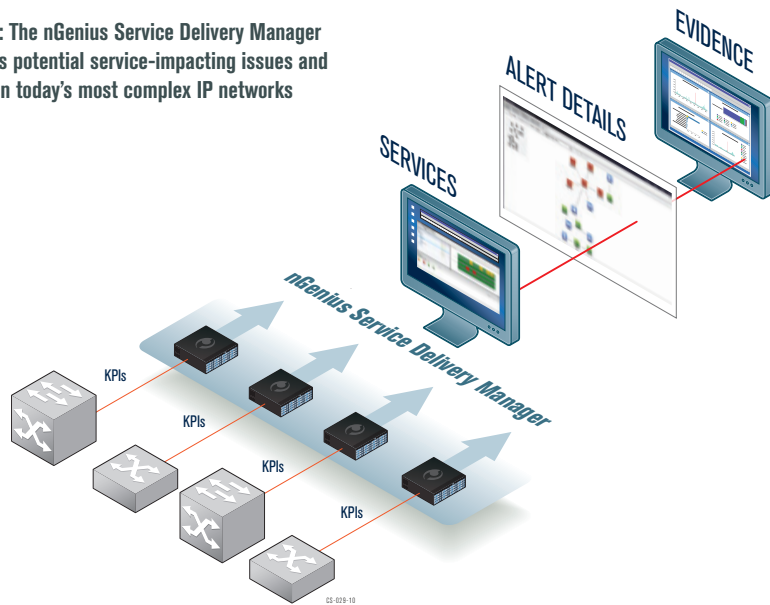
Services delivered to the end-user in today's modern IP network are a complex collection of applications, application servers, enablers, network links and users working in concert across the entire physical network infrastructure, the cloud, the WAN and virtualized environments. This complexity increases the need for an advanced solution that empowers today's most agile IT organizations to assure exceptional and consistent user experience. In order to meet the demands of these more complex networks that deliver application data faster than ever before, organizations need to transition from a siloed, technology-focused approach to a unified service-oriented methodology of managing service delivery.

As the cornerstone of the nGenius Service Assurance Solution, the nGenius® Service Delivery Manager module provides a vital services dashboard that enables end-to-end user experience visibility in context with how services are delivered and consumed. It delivers comprehensive intelligent early warning of emerging performance issues and leverages flexible service view, and service-centric workflows in order to provide an understanding of service level performance, maintain a consistent user experience and improve operational productivity and collaboration.

The nGenius Service Delivery Manager enables IT staff to:

- Adopt a proactive service management strategy through intelligent early warning identification of changes in service, application and network behavior
- View end-to-end service delivery by application, application servers, enablers, network links and user, and group these services in a way that aligns to specific operations, geographical location, departmental and business initiatives
- Gain multi-tier visibility into complex service delivery environments with the ability to look at all services, a sub-set of services or individual services to quickly understand where service delivery has been impacted
- View service delivery performance metrics in real-time along with over time historical views enabling IT staff to rapidly interpret anomalies in context with expected performance levels
- Leverage a contextual workflow with other nGenius Service Assurance Solution components for a comprehensive approach to managing service delivery, streamlining how potential performance issues and threats are addressed

Figure 1: The nGenius Service Delivery Manager identifies potential service-impacting issues and threats in today's most complex IP networks



Overview

Combining the intelligent early warning, flexible service views and service-centric workflow of nGenius Service Delivery Manager, the IT organization can more effectively assure a high-quality user experience by adopting a unified service-oriented approach that facilitates predictive anomaly identification in service delivery, recognizes which services are impacted and enables visibility to details of the root cause of the condition.

Service health is determined by monitoring key metrics, including key performance indicators (KPIs) and other quality of experience measurement on application and protocol performance along with intelligence into the performance of the elements and links that make up the overall service delivery supply chain. nGenius Service Delivery Manager combines these service health KPIs in real time to automatically identify anomalous service behavior and provide intelligent early-warning. By automatically identifying changes in service delivery, nGenius Service Delivery Manager enables the IT organization to quickly spot emerging user experience problems, performance problems, and other threats and risks that can impact the overall service delivery environment.

nGenius Service Delivery Manager offers a high degree of flexibility in defining services, allowing IT staff to establish a monitored service based upon a single

application or protocol, or for more complex environments, as a combination or group of applications, protocols, monitored elements and virtual links. The ability to flexibly define services to accurately represent their constituent applications, service enablers, physical and virtual interfaces, network elements and servers/hosts, provides IT organizations with the ability to manage service delivery in a unified manner, based upon all service elements, rather than tracking on a single component of the service.

nGenius Service Delivery Manager elevates the proficiency and effectiveness of operations personnel by delivering a clear summary of key metrics that are associated with specific services or alerts. This detailed and precise information enables operations to quickly decide to diagnose the problem themselves, escalate the incident or forward the alert to other cross-team members for faster and effective problem triage.

The nGenius Service Delivery Manager leverages intelligent data sources such as nGenius InfiniStream® appliances, nGenius Probes, nGenius Virtual Agent software, nGenius Integrated Agent software and nGenius Collectors, supporting Cisco® NetFlow, strategically deployed from the datacenter, through the enterprise campus and to the branch to provide end-to-end visibility of service delivery.

Key Capabilities

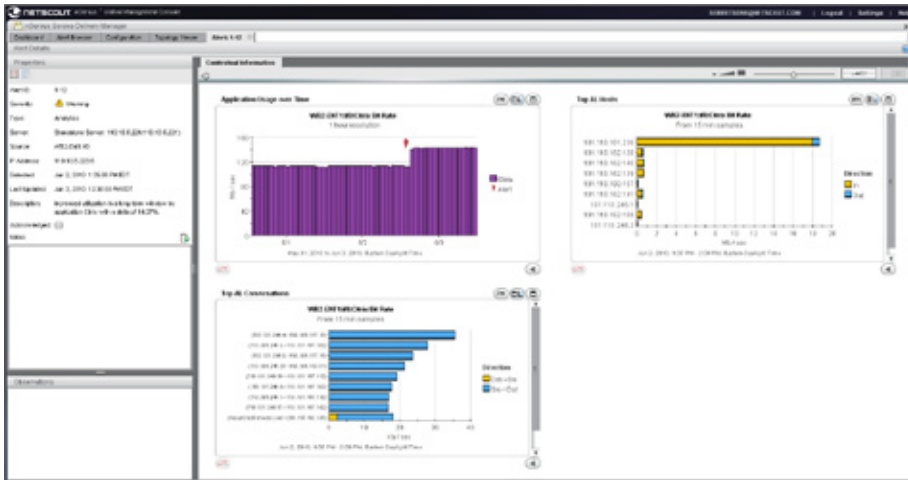
Intelligent Early Warning

Intelligent early-warning indications are generated by leveraging threshold-based and automated behavior analysis alerting methodologies that identify changes in application and network performance, threats and risks, and user and server problems for a cumulative view of the varying conditions that have an impact on how well services are delivered to the end-user. nGenius Service Delivery Manager enables a centralized view of all alert types provided by the nGenius Service Assurance Solution, including:

- **Analytics Alerts** that identify changes in behavior of monitored metrics / KPIs changes over a period of time
- **Power Alerts** that recognize when a monitored metric or KPIs exceeds a defined threshold
- **Discovery Alerts** that automatically identify changes in an application serve behavior or new app-server comes online
- **Error Code Alerts** that recognize the presence of specific client or server error codes
- **Traffic Violation Alerts** that identify the presence of traffic against a defined rule in nGenius Service Delivery Manager
- **Device Alerts** that identify issues with nGenius Service Assurance Solution devices

Through automated behavior-based anomaly detection, nGenius Service Delivery Manager enables a more proactive view into service, application and network performance levels eliminating the need to constantly readjust thresholds and reduces the chance of missing emerging performance problems. This automated behavior analysis also enables nGenius Service Delivery Manager to identify potential threats that could be missed by signature-based security solutions. Intelligent early warning delivers the ability to:

- Protect the user experience and deliver consistent and reliable service levels by predicting and preventing performance issues before users are affected
- Achieve end-to-end visibility into potential service delivery threats and risks not seen by traditional security solutions



The nGenius Service Delivery Manager contextual evidence view provides an immediate understanding of key metrics associated with anomalous conditions in order to rapidly triage events.

click on any chart within nGenius Service Delivery Manager launches the same view in nGenius Performance Manager for additional analysis that focuses on the application, conversation and other packet-flow metrics to provide the details needed for a true understanding of how service are being used with the environment. The flow-level analysis of nGenius Performance Manager commonly provides enough insight to understand where service impacting issues originated allowing IT staff to quickly address the issue and return service performance to normal operating levels without needing to dive into deep packet details.

If needed, focused packet-level details can be launched within nGenius Performance Manager for packet mining and decode analysis. If the nGenius Service Assurance Solution contains nGenius InfiniStream appliances IT members can leverage intelligent Deep Packet Analysis (iDPA) and take advantage of Sniffer® Intelligence decodes and analysis to resolve today's most difficult and intermittent service impacting issues. Using the KPI-to-Flow-to-Packet workflow alleviates the need to sift through large amounts of packets because when investigation leads to the packet level, the packets being used are focused on the specific problem. Resulting in faster diagnosis and reducing the time required to resolve service impacting issues.

The easy-to-use, intuitive service-centric workflow of nGenius Service Assurance Solution extends visibility across the IT organization, allowing members of several

areas of IT to access critical data needed to resolve service impacting issues. IT members can leverage a common set of metrics to promote cross-team collaboration, reduce tool clutter and minimize operating expenses. The contextual service-centric workflows of nGenius Service Delivery Manager, enables:

- Seamless drill down to evidence and contextual information directly related to a particular service or alert
- Automated service impact analysis and isolation to identify what factors are contributing to service delivery issues to facilitate expedient triage of the issue
- Contextual linkage into performance and packet-level details through the nGenius Service Assurance Solution, facilitating streamlined movement between different depths of analysis.
- A common set of data metrics that extend across the IT organization and minimizes tool clutter by reducing the need to align data from disparate solutions prior to investigation

Anyplace, Anytime visibility

nGenius mNOC Mobility extends the always-on visibility of the nGenius solution to enable anytime, anyplace access to real-time service delivery management data on browser-based mobile devices. With mNOC Mobility, users receive immediate event notification with single-click access into critical management views and reports showing the status of service health from most web-enabled mobile devices for faster triage.

Self-Management

In addition to assuring the service delivery environment, the nGenius Service Delivery Manager provides continuous oversight and management capabilities for the complete nGenius solution. Service status views include visibility and alerts on problems within the nGenius solution environment itself. The nPN icon displays current conditions for nGenius intelligent instrumentation and their associated processes and the indicating the health of the nGenius server or data source and provides the information necessary to proactively identify and resolve any issues with the nGenius Service Assurance Solution System itself.

Key Features

Service Dashboard

The Service Status Dashboard provides early warning of problems with comprehensive graphical views of the current real-time status and historical performance of the services delivered to end users.

- At-a-glance hierarchal view of services by service domain or service; historical service member status in both tabular and icon views
- User selectable time ranges: Last hour, last 6 hours, last 12 hours, today, last 24 hours, yesterday, last 7 days, and last week
- Start and pause feature for continuous updates or pausing to keep current state
- Service Hierarchy Pane
 - Service hierarchy model aligns with how organizations manage the delivery of services to the end user
 - Status by region, site, department, business unit, function or other; indicates the number of critical and warning alarms for specified time frame
- Service Member Pane
 - Tabular or icon view of service and actionable service member details with filtering and sorting capabilities, service status and alarm severity and event counts
 - Tabular distribution of critical and warning alarms by network, server and application for the last hour, current day and previous day

- Alert list detailing the severity, response status, type, source time detected and description
- Application summary views include KPIs, worst performing servers, application usage over time, worst performing locations, response counts, response time distribution, service domain status and KPI error code distribution
- Monitored Element Summary views include link usage, top applications, top hosts, top conversations, worst performing applications and response time
- History Pane
 - Over time view of service performance for selected time range for a specific service domain or service level

Alert Browser

The alert list can be launched contextually from several points within the nGenius Service Delivery Manager. The list provides a summary panel that displays information on KPI threshold crossings, link alarms, application server anomalies, error code alarms and anomalous service behavior.

- Alarm information includes:
 - Alert ID
 - Severity
 - Acknowledgement status
 - Alarm type: oower, device, analytics, basic, traffic violation, discovery
 - Time detected
 - Alarm source
 - Problem description that includes information about the application affected, rising or falling pattern, and detection window
- Interactive filter options
 - Selectable time range: last hour, last 6 hours, last 12 hours, current day, last 24 hours, previous day, last 7 days, previous week, last 31 days, last month, user defined
 - Severity
 - Acknowledgement status
 - Alarm type
 - Source
 - Description
- Alarm grouping by application
- Actionable launch into alert details

Service Configuration

The flexible Service Configuration Editor allows users to define services and assign them to domains in a manner that best aligns with how services are deployed and organized. In addition, the service configuration editor allows users to easily define services based on applications, service enablers, monitored elements and virtual links that are used to deliver a particular service to the end-user.

- Physical interface
- Virtual interface
- Monitored element group
- Applications
- Application groups

Topology Viewer

The Topology Viewer graphically shows the service hierarchy and associated service domains. It provides a visual map that identifies the underlying elements, virtuals, service enablers and applications that make up a service and also shows the relationship between a service and its related domain.

- Green, yellow and red indicators pinpoint the service domain, service or service element where anomalous conditions occurred
- Overview map, search feature, toggle option to expand or contract hierarchical view and flexible pan/zoom controls allow easy navigation of domains, services and service elements
- Layout options include hierarchical, circular, organic and orthogonal
- From the service domain or service icon:
 - View a list of alerts for the application and interface
 - Directed contextual launch to the nGenius Performance Manager console
 - View map of service components for a given service or services for a given domain
 - Summary page for application, service enabler and interface: includes KPIs, application usage over time, worst performing servers, worst performing locations, number of responses, response distribution, service domain status, error code distribution

Alert Details

Extensive details are available on a per-alert basis that includes event properties, background information that gives context to the alarm under review, and alert evidence with xDR-based, session-oriented information. This information is presented in an intuitive manner that guides the user to identify the root cause more efficiently and quickly. Consequently, a broader number of users across the IT organization can leverage power of the nGenius Service Delivery Manager console to gain relevant insight into service delivery metrics based upon their needs and level of technical skills. Intelligent drill-downs are available for users that need to move more deeply into the packets for more granular analysis activities.

- Alert properties based on alarm type including information on severity, type, logging server, monitoring interface the event was detected on, IP address, time detected, event threshold and triggered value, event interval, description and user editable notes
- Alert evidence:
 - Tabular information on applications affected, total responses, availability, service level, server and user events, packet loss and alarm time
 - Error details including per-session error code, description, server/client name and IP address, and error count
- Contextual information
 - Contextual information includes alert type and application-dependent graphical views of KPIs over time, response time distribution, application usage, failed and successful responses, number of client errors and server error code distribution over time
 - Interactive, graphical views with intelligent launches into the nGenius Performance Manager console
- Automated observations based on alarm type and application

Error Code-Based Evidence

- Identify top servers/hosts impacting service delivery
- Identify which errors are causing the impact
- Identify which clients, servers and conversations are experiencing specific errors

Anomalous Behavior Alerts

The nGenius Service Delivery Manager analyzes and automatically generates alerts for anomalous behavior based upon:

- Link utilization for monitored physical and virtual interfaces
- Application utilization, including changes in undefined traffic
- TCP connect time
- VoIP jitter
- KPIs: packet loss, VoIP jitter, slow application responsiveness, application timeouts, user events, server events
- Changes in pre-existing application server behavior
- Discover new applications and hosts
- Violations against pre-defined policies within the nGenius Service Delivery Manager
- Issues alerts automatically when anomalies are detected
- Color codes and prioritizes alerts by severity
- Displays alert details and charts
- Ability to fine-tune alarm presentation with disable or suppress alerts options

Performance Metrics Profiled

- Volume
 - Client-server, server-client bytes, packets and peak conversation rate
- Responsiveness
 - Average response time
 - Number of timeouts
- Connections
 - New connections to servers
 - Terminated connections to server
 - Number of end points
- TCP measures
 - Server-client, client-server resets
 - Retransmissions
- Errors
 - Server and client errors
- KPIs
 - Slow responses—An application response that exceeds a preset threshold for acceptable responsiveness
 - Timeouts—An application response that exceeds a predefined timeout limit
 - Distribution of User Events—Application-specific client errors displayed by type
 - Distribution Server Events—Application-specific server errors displayed by type
 - Packet Loss—Dropped packets in VoIP protocols and IP Multicast applications

The nGenius Performance Network

Continuously monitors the health of the nGenius Service Assurance solution itself to deliver self-management capabilities to assure peak performance of the overall solution. Monitored elements include:

- nGenius InfiniStream appliances
- nGenius Probes
- nGenius Collectors
- nGenius Performance Manager servers
- nGenius Performance Manager processes, such as FlowLogger, Analytics, Watchdog, PresentServer, Warehouse, Logger, and Database

mNOC Mobility

- Thin-client support for Web-enabled mobile devices
- Real-time alerting to events and anomalies
- Anytime, anyplace access to event notification and historical or on-demand reports
- Single-click access into detailed summary incident views

Third-Party Integration

The nGenius Service Assurance Solution enables organizations to forward all supported alerts with evidentiary details and contextual linkage to third-party solutions enabling a fully integrated workflow that streamlines operations. The nGenius Solution integrates with:

- HP® Network Node Manager i-series (NNMi)
- HP Business Availability Center (BAC)
- IBM® Tivoli® Netcool/OMNIBus
- EMC® Ionix™ (formerly Smarts)

Ordering Information

The nGenius Service Delivery Manager is an add-on module to the nGenius Service Assurance Solution. The module is resident with nGenius Performance Manager but requires activation and a separate license. The number of licenses associated with nGenius Service Delivery Manager must match the number of licenses installed for nGenius Performance Manager for each server instance.

Part Number	Description
9502-ENT	nGenius Service Delivery Manager Enterprise License
9502-INC	nGenius Service Delivery Manager Incremental License
9502-STB	nGenius Service Delivery Manager Stand-by Server License
9502-WG	nGenius Service Delivery Manager Workgroup License



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