

nGenius Voice | Video Manager

Assuring User Experience in Unified Communications Environments

Highlights

- Proactive performance management of video and voice services
- Comprehensive service visibility across UC services with real-time network, application and call set-up views
- Real-time dashboard with business-relevant Quality of Experience (QoE)-based service-level alerting
- Automated troubleshooting workflow with guided drilldown to individual user sessions and calls
- Deep visibility into end-to-end call quality and session performance across all user devices
- Historical analysis reporting by service, fault, location or device
- Innovative service desk capabilities to enable IT Staff to interrogate by extension, phone number, user ID or IP address
- Leverages nGenius InfiniStream appliance as a common intelligent data source for analyzing and generating performance metrics for voice, video and data applications
- Deploy standalone or integrate with nGeniusONE platform

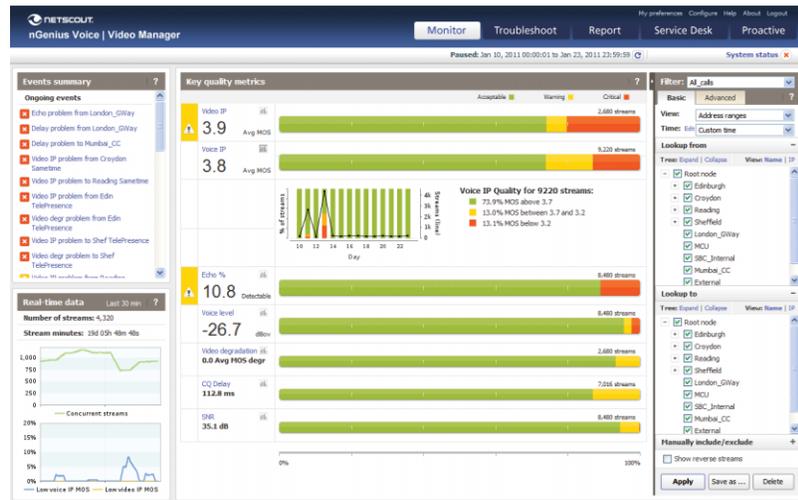


Figure 1: nGenius Voice | Video Manager Real-time Dashboard.

Enterprise organizations invest significantly in Unified Communications (UC) technologies with the expectation of improving collaboration and business productivity across their organizations. This adoption of UC services to enable better collaboration assumes that service quality will be sufficient for end users to interact effectively. Today's UC deployments, however, are very complex, require uncompromising interoperability between multi-vendor products and traverse a number of different network domains. While traditional performance monitoring approaches have focused on the network-related performance of these services, there are a myriad of issues that can impair video and voice quality. IT organizations must assess the performance of all components involved in the call across the entire network from end-point to end-point which includes call signaling and evaluate call quality from the perspective of the user. To achieve a true representation of voice and video quality, IT organizations must look inside the packet payload and analyze the media waveform to understand how echo, signal-to-noise ratio, and other environmental artifacts are affecting the end-user quality of experience in addition to the network affects such as latency, jitter and packet loss.

Product Overview

nGenius® Voice | Video Manager is a UC performance management and analysis solution that enables comprehensive real-time service management for UC services. It can be deployed as a standalone UC Performance management solution or in conjunction with the nGeniusONE™ unified performance management platform for comprehensive service delivery management capabilities encompassing voice, video and data services.

nGenius Voice | Video Manager delivers granular application-specific metrics for IP-based Telepresence, Video and Voice session transmission and conversation quality to characterize real-time service performance and the true user experience. This enables IT organizations to obtain actionable visibility into the end-to-end behavior and quality of UC applications and services. Supporting a broad complement of UC technologies, vendors and services, nGenius Voice | Video Manager combines proactive service management, intelligent troubleshooting, automated diagnostics, flexible reporting and innovative service desk support to reveal UC application-level behavior on a per-user, per-call basis.

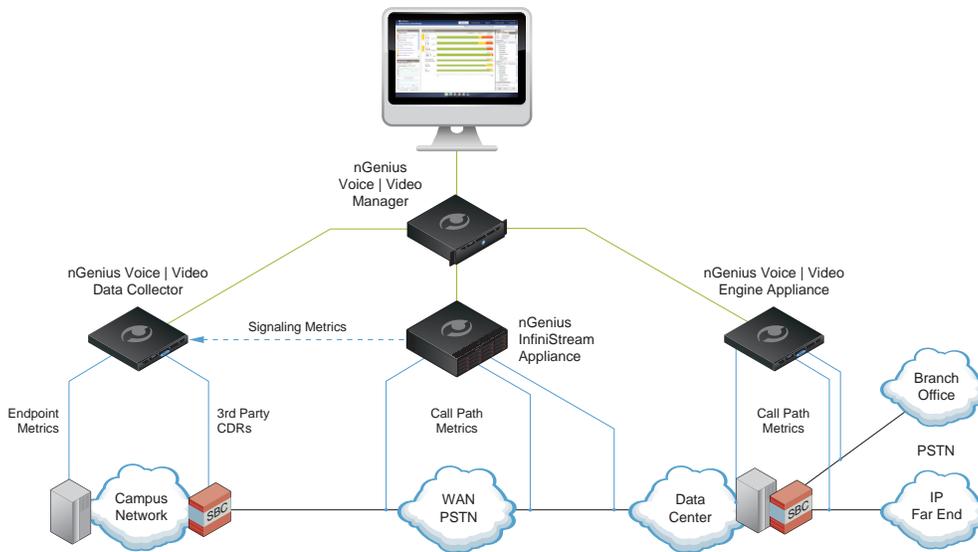


Figure 2: Collecting user experience metrics end-to-end.

nGenius Voice | Video Manager collects and analyzes in real time UC application stream data (RTP) and call signaling (SIP, SCCP, H.323) messages from strategic visibility points along the call path, from endpoints, and from data collected from VoIP call controllers, call manager and Session Border Controllers (SBCs).

nGenius Voice | Video Manager enables the IT organization to understand network, application and call signaling behavior and its impact on user experience to quickly isolate the source and identify the location of what is impacting service quality. Powerful data search filters enable quick analysis by traffic type, location, geography, function and specific user groups. Rich quality measurements for voice services include echo, speech level, noise level, speech distortion, and listening and conversational quality. Video-related measurements identify the impact of IP impairments and application issues. Signaling measurements for call set-up include phone number, user ID, Post Dial Delay (PDD), call success, Answer/Seizure Ratio (ASR) and Network Effectiveness Ratio (NER). Phone and extension numbers are correlated with media streams for a comprehensive view of call performance.

Supporting UC Vendors

nGenius Voice | Video Manager supports highly complex multi-location, multi-vendor environments. Quality measurements and assessments are agnostic of any particular

vendor platform and can assess virtually any UC technology vendor environment. Whether the service is voice or video, desktop or room-based, soft-client or fixed phone, assessment methods are applied in a consistent manner. Measurements can be made across service types and for complex multi-vendor deployments. Measuring Real Time Protocol (RTP) streams and signaling protocols such as ITU Session Connection Control Part (SCCP), IETF-defined Session Initiation Protocol (SIP) and ITU H.323, nGenius Voice | Video Manager can assess UC service performance across a wide range of VoIP platforms including Cisco®, Avaya®, Nortel®, ShoreTel®, Siemens®, Mitel®, NEC® and many others. Video systems are supported from vendors including Cisco, Tandberg®, Polycom® and LifeSize®. Most unified desktop solutions are supported, including Microsoft® Lync® and IBM® Sametime®.

Real-Time UC Session and Call Measurements

nGenius Voice | Video Manager collects UC performance metrics in real-time along call paths using high definition packet flow analysis from intelligent data sources and appliances deployed along the call path, and endpoints to deliver a highly accurate assessment of UC media stream quality and performance.

nGenius Voice | Video Manager also dynamically measures in real-time and

extracts granular call and session quality, user experience and call signaling metrics from active UC media streams. Granular per-user, per-session QoE assessments and call signaling performance is collected from appliances deployed along the call path, at traffic aggregation points, at the points of network demarcation, from soft-clients or from physical desktop devices and other endpoints.

Call Data Records (CDRs) from call or session managers can also be collected to identify called and calling party information. CDR data is matched with call/session media stream metrics and combined into a single call/session record.

Utilizing a wide range of measurement points to fully assess the quality and performance of UC services, nGenius Voice | Video Manager leverages the following for measurements:

- nGenius InfiniStream® appliance – combined measurement of data, UC signaling and UC traffic from a single device
- nGenius Voice | Video Data Collector - voice and video performance measurements from IBM and Microsoft UC endpoints as well as the CDR data leveraged from IPT session managers and SBCs
- nGenius Voice | Video Engine Appliances - dedicated UC traffic deep packet analysis appliances

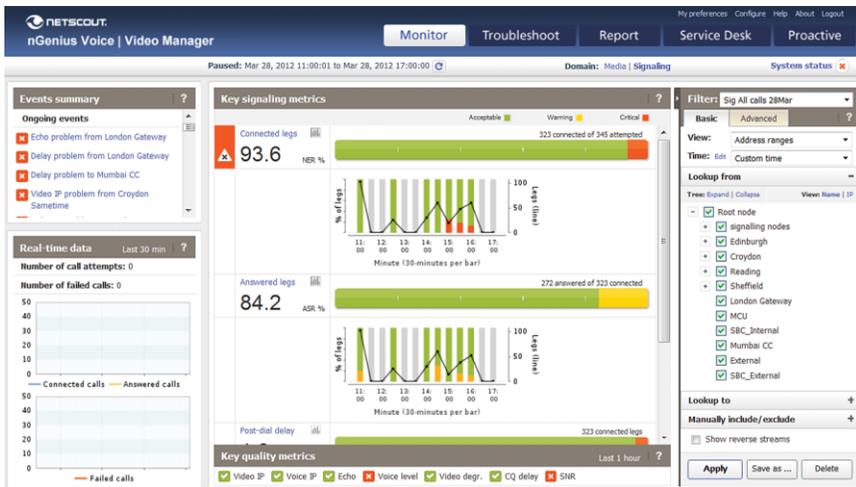


Figure 3: Displaying real-time signaling metrics in nGenius Voice | Video Manager.

Comprehensive Performance Management with Seamless Integrated Workflows

nGenius Voice | Video Manager supports a wide range of UC service performance management and analysis tasks. The intuitive, integrated dashboard provides real-time proactive service-level alerting and quality indicators for all video and voice sessions. Alarms from nGenius Voice | Video Manager can also be viewed by category in the dashboard of nGeniusONE Real-Time Service Dashboard. nGenius Voice | Video Manager proactively analyzes all UC service traffic to identify emerging quality affecting issues. When service performance degradations are identified, alarms and QoE events are generated, prompting further investigation. The event is paired with links to the calls that are affected by the issue, source devices of the problems and targeted service characterization reports. Although events are used to resolve issues proactively in real-time, they are also stored for historical reporting and performance trending.

IT staff can seamlessly progress from a high level status view in the nGenius Voice | Video dashboard into specific user call/session analysis based upon measurements correlated from all data sources and assessment points. Streamlined and flexible workflows enable powerful analysis and troubleshooting activities that support a wide range

of proactive and reactive service management tasks. Consequently, IT staff can quickly assess large call volumes, with guided diagnostics, drilling into a specific user call to quickly identify quality problems, triage impact and isolate the root cause of degradations. For less technical IT staff, automated diagnostics enable a guided troubleshooting workflow with plain English explanations, which simplify and accelerate problem resolution. These views range from high-level service summaries down to individual users session and stream analysis.

nGenius Voice | Video Manager offers five cross-integrated views that provide progressive, meaningful and relevant metrics that allow IT staff to quickly retrieve the precise information needed to resolve problems with video and voice sessions as they occur.

Monitor

The primary Monitor View delivers a powerful at-a-glance, real-time summary of overall UC service health and performance levels. IT staff can progress from this dashboard to underlying data for more detailed analysis to quickly identify problems affecting users. IT staff has a unified view of enterprise-wide video and voice application performance with up-to-the-minute insight into QoE events, service degradations, call counts, active alarms/alerts and call success along with a breakdown of video and voice Key Performance Indicators (KPIs). Each

identified event provides contextual linkage to underlying metrics needed to triage and resolve problems as they occur. The Monitor View is updated in real time, including updates for calls in progress, at user definable increments while IT staff can define relevant alarms and alerts to meet their particular operating environment requirements.

Troubleshoot

The Troubleshoot View provides IT operations staff with a contextual analysis path into network, payload and call set-up details for UC sessions. This view enables more technically skilled users the ability to drill down into a range of detailed performance metrics to quickly identify problem areas and pinpoint the source of UC service degradation. Sessions and calls can be organized by grouped endpoints, by grouped conference calls and by a per user session with detailed call-level performance metrics and powerful filters, enabling flexible analysis based upon traffic type, location, geography, function and user groups. Calls or sessions that have been assessed across multiple locations are presented in an easy-to-view, network-oriented visualization that displays correlated metrics from along the service delivery chain. Consequently, IT staff can quickly identify which users are experiencing video and voice quality problems and can rapidly identify and triage performance problems and assign issues to the correct service teams.

Type	Description	Streams affected	% streams affected	Start time	End time	Duration	Hide
•	Echo problem from London Gateway	726	80%	13 Jan 11 09:00	Ongoing	467d 12h	<input type="checkbox"/>
•	Delay problem from London Gateway	726	80%	13 Jan 11 09:00	Ongoing	467d 12h	<input type="checkbox"/>
•	Video IP problem from Croydon Sametime	80	33%	13 Jan 11 09:00	Ongoing	465d 12h	<input type="checkbox"/>
•	Video IP problem from Edin TelePresence	42	100%	23 Jan 11 22:00	Ongoing	454d 23h	<input type="checkbox"/>
•	Video degr problem from Edin TelePresence	42	100%	23 Jan 11 22:00	Ongoing	454d 23h	<input type="checkbox"/>
•	Video IP problem from Reading Sametime	40	17%	13 Jan 11 09:00	Ongoing	465d 12h	<input type="checkbox"/>
•	Low voice level problem from Croydon Sametime	40	33%	13 Jan 11 09:00	Ongoing	465d 12h	<input type="checkbox"/>
•	Voice IP problem from Edinburgh VC Room	200	48%	13 Jan 11 09:00	13 Jan 11 23:00	14h	<input type="checkbox"/>
•	Voice IP problem from Sheffield VC Room	200	48%	13 Jan 11 09:00	13 Jan 11 23:00	14h	<input type="checkbox"/>
•	Video IP problem from Edinburgh VC Room	200	48%	13 Jan 11 09:00	13 Jan 11 23:00	14h	<input type="checkbox"/>
•	Video IP problem from Sheffield VC Room	200	48%	13 Jan 11 09:00	13 Jan 11 23:00	14h	<input type="checkbox"/>
•	Low voice level problem from Croydon	128	21%	11 Jan 11 09:00	13 Jan 11 11:00	2d 2h	<input type="checkbox"/>
•	Low voice level problem from Edinburgh 3FT	240	52%	11 Jan 11 09:00	13 Jan 11 09:00	2d 0h	<input type="checkbox"/>

Figure 4: Proactive View with Alerts.

Proactive

Building on the Troubleshoot View, the Proactive View is specifically designed to provide a more automated troubleshooting workflow. Optimized to empower the less technical IT staff, the Proactive View displays critical video and voice service events, with a guided workflow to help quickly pinpoint and isolate service problems. To simplify the troubleshooting process, plain English contextual help is available as the IT user progresses through the workflow. This simplified and automated view enables much broader use across IT organizations while promoting better cross-team collaboration as the entire IT organization will be working from the same data and metrics.

Service Desk

The Service Desk View enables integrated service desk support for reactive customer complaints and is specifically targeted for use by first-level support, help desk and staff. The Service Desk View enables the support staff to make informed, accurate and factual decisions based on the problem the user may be having, enabling the quick escalation of the user's issue to the right IT team member for decisive resolution. With the Service Desk View, a specific voice or video session can be accessed based upon the user's name, extension or IP address. Upon query, support staff will see a historical list of all calls or sessions for a given user with session-specific details along with identified problems and

diagnosis. This enables the immediate identification of service-affecting issues as well as recurring faults for any endpoint. As with the Proactive View, the Service Desk View provides IT staff with a guided workflow that delivers simple, non-technical assessments with suggested actions. Context-sensitive help with simple English explanations is also available to speed diagnosis and enable support staff to raise trouble tickets with the correct resolution teams for immediate resolution.

Report

The Report View provides a comprehensive range of reporting capabilities that enable the on-demand or scheduled generation of business-relevant reports. IT staff can generate custom reports based upon a wide range of metrics or leverage a number of pre-defined report templates for profiling of common performance metrics, service summaries, trending and detailed service characterization and service-level reports. IT staff can automate reports to generate regular snapshots or leverage the view to create reports on demand.

Granular Bi-Directional Session Visibility

nGenius Voice | Video Manager provides granular visibility into the bi-directional stream of a specific user video and voice sessions. The granular visibility into bi-directional session streams enables

the assessment of each direction of a user session to quickly determine where performance impairments may have been introduced. For video and Telepresence environments, nGenius Voice | Video Manager can assess dual-party and multi-party conferences, providing a combined view into the multi-party conference session as well as visibility into each individual user session.

Unique End-Device Calibration

Innovative device-specific calibration enables the adaptation of quality measurements to match the unique characteristics of specific endpoints. This ensures that quality measurements and the resulting metrics provide a true representation of a particular device's performance and compensate for error recovery methods and a specific firmware release.

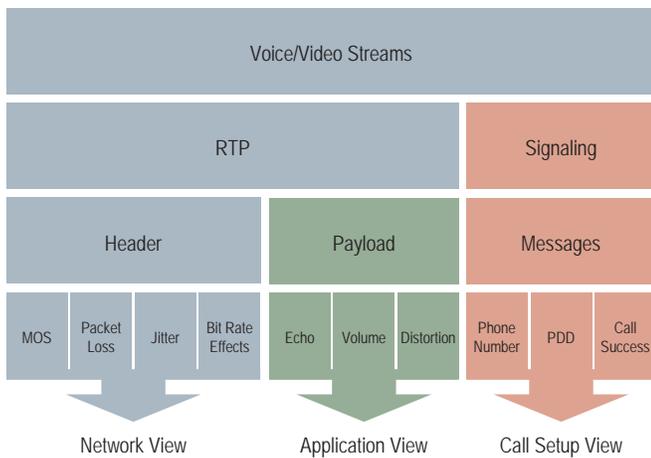


Figure 5: Standards-based UC user experience measurements.

Standards-Based Measurements

nGenius Voice | Video Manager quality assessment measurements are based upon a number of International Telecommunications Union (ITU) standards for real-time video and voice quality assessment, including ITU P.564 for IP network impairments and ITU P.561, P.562 and P.563 for packet payload condition. In addition, measurements and quality assessment ratings performed by nGenius Voice | Video Manager are verified against more than 500,000 subjective tests of user perception of quality for video and voice communications. These measurements will help to identify common quality impacting issues such as acoustic echo, delay, noise, signal-to-noise ratios, speech level and speech distortion.

Audio Performance Assessments

For voice sessions, nGenius Voice | Video Manager assesses network, application, and call set up performance to reveal session quality and identify the impact of any IP impairments and application performance issues. Assessments are calibrated to specific endpoint characteristics and measurements include: payload analysis, listening quality and conversation quality. These measurements will help to identify common quality impacting issues such as acoustic echo, delay, noise, signal-to-noise ratios, speech level and speech distortion.

Video Performance Assessments

For video sessions, nGenius Voice | Video Manager assesses network, video application and call set-up performance to reveal session quality and identify the impact of any IP impairments and application performance issues. Assessments are calibrated to specific endpoint profiles and measurements include video application analysis, video compression artefacts, frame-rate, bit-rate and mid-call coding changes. Measurements will help to identify issues with video codec performance and errors, video payload application behavior and platform-driven bandwidth throttling. Measurements will assess audio and video together and identify specific video frames (I/P/B) that may be affected.

Complements Vendor-Specific Management Tools

nGenius Voice | Video Manager empowers the IT organization to effectively and decisively manage the delivery of UC services with a unified, independent view of application, network and call set-up performance characteristics. This approach complements UC vendor platform management tools by allowing the assessment of the end-to-end performance of UC services across multi-vendor environments independent of a specific UC vendor platform. This independent oversight enables the IT organization to readily identify performance and QoE-related issues missed by platform-specific management tools such as multi-vendor interoperability, gateway issues as well as network performance, carrier issues and outside environmental factors.

OSS Integration

nGenius Voice | Video Manager can deliver a wide range of performance and service-level metrics to third-party management systems that enables customized reporting and real-time alert access. Integration is available for many industry-leading platforms including those from HP, IBM, Microsoft and Cisco.

Supported Codecs and Protocols

Protocols Supported	SIP, SCCP, H.323, RTP, MPEG-2 TS, MSB, RTCP, RTSP
Voice Codecs Supported	AMR-NB, GSM-EFR, GSM-FR (06.10), GSM-HR, EVRC, EVRC-B/SMV, OCELP, G.711, G.726 16kbps, G.726 24kbps, G.726 32kbps, G.726 40kbps, G.728, G.729, G.729D, G.729E, G.723.1, RTAudio NB, iLBC, SMV, Speex NB, AMR-WB, EVRC-WB, G.711.1, G.722, G.722.1, iPCM-WB, iSAC, RTAudio WB, Siren 16kbps, Speex WB, G.722.1C, Speex SWB, AAC-LC, AAC-LD, G.719
Video Codecs Supported	H.264, MPEG-1 Video, MPEG-2 Video, MPEG-4 Visual, VC-1, WMV9, H.261, H.263, H.263+, H.264, MPEG-2 Video, MPEG-4 Visual, RTVideo, VC-1

Assessments are based on ITU-T recommendations : P.561, P.562, P.563 and P.564

Deployment Specifications	Supported Data Sources
<ul style="list-style-type: none"> • Appliances Per Server: 20 • Interfaces per Manager: 50 • Concurrent Streams across solution: 100,000 	<ul style="list-style-type: none"> • nGenius InfiniStream Appliance – media and signaling • nGenius Voice Video Engine Appliance • nGenius Voice Video Data Collector <ul style="list-style-type: none"> – Microsoft® Lync® (endpoint voice quality via Microsoft Lync Server) – IBM® Sametime (endpoint video and voice quality via client plugin) – Cisco® Call Data Records – Acme Packet SBC Call Data Records – Custom (integrate custom data types using the Data Access Module API)

Minimum System Requirements

Client	Server
<ul style="list-style-type: none"> • Category Requirement • CPU <ul style="list-style-type: none"> – Minimum: 1.8 GHz Intel Pentium M processor, or equivalent – Recommended: 2.0 GHz Intel Pentium M processor, or higher • RAM <ul style="list-style-type: none"> – Minimum: 512 MB – Recommended: 1GB • Monitor with 1280x1024 resolution • Link Bandwidth: 1.5 Mbit/s • Web Browser <ul style="list-style-type: none"> – Minimum: Microsoft Internet Explorer v7; Firefox v3.0 – Recommended: Microsoft Internet Explorer v9, Firefox v11 	<ul style="list-style-type: none"> • Operating System Software-only options are supported with RedHat®/Centos 5.6, 64-bit • Storage 200 GB • RAM 8 GB • Processor 2.33 GHz, single quad-core or higher <p>(Virtual machines that fully meet the hardware and operating system specification are supported)</p>



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