# NQDI Classic
# Transform data into insights to support business decisions

**ROHDE & SCHWARZ**
Mobile Network Testing

# NQDI Classic
# Transform data into insights to support business decisions

Today's increasing network complexity requires an increased level of intelligence in order to evaluate network and service performance and take action to improve it. Data collected during measurements campaigns represent a mine of information, but without a proper analysis layer the potential of such information remains unexploited. While evaluating the collected data is imperative, critical decisions should be made based on automatically validated data that is in accordance with the highest quality standards.

SwissQual's Network Quality Data Investigator NQDI Classic is a post processing system that maximizes the potential of data collected by QualiPoc and Diversity products for network and service optimization and benchmarking. Based on data from all radio technologies, NQDI Classic provides automated data validation, detailed quality analysis and troubleshooting, and long-term reporting for voice and data services.

# Key Use Case
# Go beyond basic post processing

NQDI Classic combines the benefits of insight generated by high-level key performance indicator (KPI) summaries with the investigative power of detailed drilldowns. This allows for the generation of comprehensive reports and maps to benchmark networks and easily identify critical areas with underperformance. In addition to traditional network related analysis – from layer 1 and layer 3 – and service related analysis based on IP and application layers, NQDI provides KPIs representing user perception for voice and video services, e.g. Mean Opinion Score (MOS). In case of low MOS values, industry unique quality codes can directly point to the underlying causes in the network.

## At a glance

❙ NQDI Classic stores all gathered information in a scalable database. Flexible data selection and filtering can be performed for detailed troubleshooting and long-term trend analysis.

❙ A smart adapting GUI, which is sensitive to contextual information, enables users to focus on relevant information; time synchronization and correlation of numerous data layers help automate fault categorization. The quality of voice, video, messaging, and data services can be investigated using primary RF measurements, network trace events, call control parameters, IP and application level events, and voice and video quality indicators.

❙ NQDI Classic presents such information in time-synchronized views using maps, message monitors, grids, line graphs, bar graphs, pie charts, tables, or hierarchical lists. Thanks to its powerful report generator, NQDI features multiple options for reporting from predefined packages to guided KPI-based creation of Excel reports.

# NQDI Classic
# Insights you
# can trust

# Product Highlights
## Powerful and scalable

NQDI Classic is fully scalable: from a stand-alone laptop to a large client/server enterprise solution. The NQDI Classic database can handle millions of measurement files over any period of time and offers a wide range of filtering and data selection features to enable flexible and user-defined KPI reports and map plots.

## Unique speech and video quality analysis

NQDI Classic has special reporting capabilities to automate the analysis of voice and data calls; failure causes are categorized by using information from layer 3 and layer 1. NQDI also provides comprehensive and unique quality of service (QoS) and QoE analysis. It makes quality codes available to interpret the reasons for unsatisfactory customer experiences, which are identified by low MOS values.

## Smartly designed user interface

A context-sensitive user interface allows for comprehensive analysis and data correlation from application layer down to RF level covering a full range of technologies (GSM, GPRS, EDGE, WCDMA, HSPA+, HSDPA DC, CDMA, EVDO, LTE, LTE-A, iDEN, IS-136, TDMA, PSTN, ISDN, Wi-Fi, WiMAX).

# Key Product Features

## Scalable client server architecture
ı server-powered Microsoft® SQL Server® database engine.
ı fully scalable system from a stand-alone laptop solution to a large client/server enterprise.
ı 32-bit and 64-bit Windows® platforms.
ı named, floating, and multi-user licensing.

## Scalable data storage
ı detailed information is stored in the database to avoid compromising the flexibility and analysis depth.
ı an intelligent collection files design allows import into the database at an extremely high speed.

## Context-sensitive user interface
ı context-sensitive user interface that automatically adapts the presentation of content and technology.
ı no need to change between workspaces or manually rearrange windows.
ı customizable and detachable windows.
ı drilldown and visualization of information from service and application layers down to RF.

## Flexible data selection
ı flexible and customizable data selection and filtering capabilities, including time and data, network technology, operator, provider, device type, map polygon regions, service quality thresholds, call markers, layer 3 messages, and more.
ı the most frequently used selection parameters can be saved in a favorites list and easily reused.
ı automated analysis of CS and PS calls with failure cause categorization to assist the user in finding the top most quality-degrading network problems.
ı in-depth voice and video analysis using the unique SQuad, VMon, and VQuad content-based objective quality algorithms.

## Easy database management
ı NQDI databases are easily managed with an integrated data management tool.

## Full range of technologies supported
ı GSM, GPRS, EDGE, WCDMA, HSPA+, HSDPA, DC, LTE, LTE-A.
ı CDMA, EVDO, iDEN, IS-136, TDMA.
ı PSTN, ISDN, Wi-Fi, WiMAX.

## Speech quality analysis
ı ITU-T P.863 (POLQA) full reference voice MOS (narrow and wideband).
ı ITU-T P.862/P.862.1 (PESQ) full reference voice MOS (narrowband).
ı SQuad full reference voice MOS (narrow and wideband), echo, noise suppression, and RTT assessment.

## IP layer analysis
ı dedicated protocol and throughput analysis of IP traces.
ı PCAP files can be automatically loaded into Wireshark® with NQDI time synchronization.

## Video service analysis
ı full support for video service analysis and visual quality assessment.
ı "time to first picture", long-term freezing, IP statistics, and degradation cause values.
ı VQuad full reference visual quality MOS.
ı VMon no reference visual quality MOS.
ı video streaming (YouTube) including video MOS using ITU J.343.1

## Map plotting
ı more than 500 predefined map plot items in a powerful and fully configurable plot engine that supports MapInfo® and Google Earth.
ı supports configurable binning on grid or latitude/longitude precision.
ı BTS lists for GSM, UMTS, CDMA, and LTE can be loaded.
ı serving sector lines and coverage functions.
ı smart window splitting for easy analysis of multiple networks and parameters.

## Wide range of data service analysis
ı voice telephony: CS and VoIP speech MOS, audio delay, noise suppression, echo, RTT, DTMF.
ı data: Ping, FTP, UDP, HTTP, data capacity, Iperf.
ı browsing: WAP, HTTPS/HTTP, IE.
ı messaging: SMS, MMS, e-mail.
ı video over IP: video streaming portals including YouTube.
ı app services: Dropbox, Facebook, Ookla speed test, WhatsApp, Line.

## Enterprise reporting
ı fully compatible with the NQDI II platform for company-wide distributed presentation and reporting.
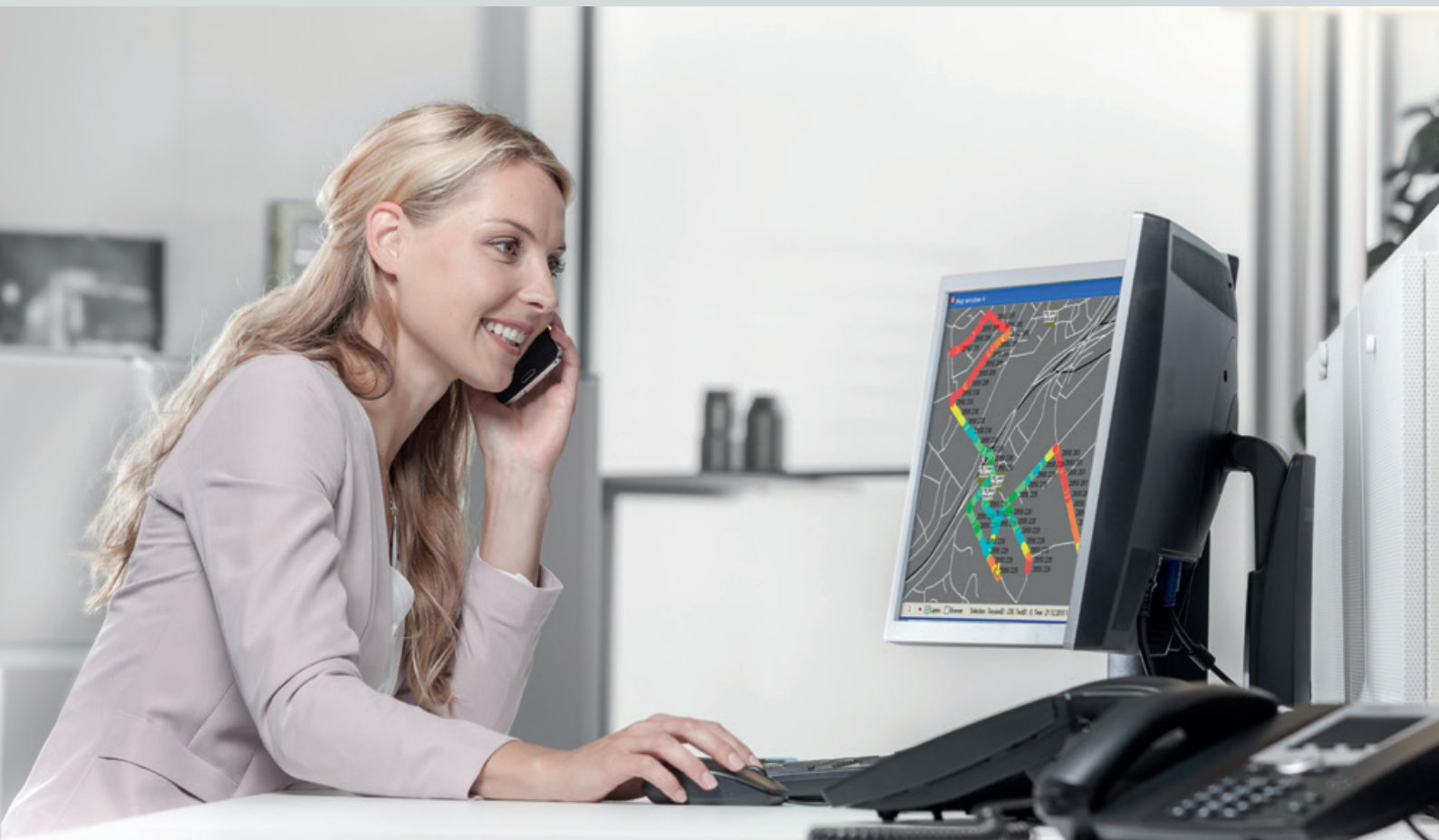
**Powerful reporting**

ɪ more than 200 KPIs available for service and network performance reporting and trending.

ɪ extensive set of standard reports, including voice, video, data, messaging, GSM, WCDMA, CDMA, GPRS/EDGE, HSPA+, HSPA DC, and LTE reports as well as the capability to embed map plots.

ɪ KPI report generator allows users to create their own custom KPI reports.

ɪ report configurator enables users to create very advanced reports via SQL and Visual Basic scripting.

**Key benefits**

**Using NQDI Classic will reward you with long-term values, including:**

ɪ data quality validation for accurate business decisions.

ɪ faster root cause analysis with quality codes unique to NQDI Classic.

ɪ future-proof investment thanks to system stability complemented by flexibility.

# Technical Specifications
# Software specifications

## Post Processing Platform
NQDI Classic with in-depth data analysis, network trouble-shooting, report generation, and historical performance trending. Flexible and customizable data selection and filtering capabilities including time and data, network technology, operator, device type, map polygon regions, service quality threshold, layer 3 messages, and more. Customizable Excel reports based on KPIs with a powerful report generator.

## Technologies
Extensive technology test support including: GSM, GPRS, EDGE, WCDMA, LTE, LTE-A, CDMA/EVDO, WiMAX, HSPA+, HSDPA DC, iDEN, IS-136, TDMA, PSTN, ISDN, and IP.

## System Architecture
Microsoft® SQL Server® database engine fully scalable from a standalone laptop solution to large client/server enterprise systems with terminal server. Supported on Windows server and desktop operating system to ensure that users can find the optimal balance between price and performance. Available with named and floating licensing. NQDI Classic runs independent of Windows regional settings.

## Data Storage
Detailed information is stored in the database to avoid compromising the flexibility and detailed analysis filtering. Due to the intelligent design of the data files produced by the SwissQual probes, the import speed into the NQDI database is the highest in the industry.

## User Interface
Context-sensitive user interface automatically adopts the presentation to the content and technology; there is no need to change between workspaces or manually rearrange any windows. Customizable and detachable windows: drilldown and visualization of information from service and application layers down to RF in time-synchronized views using maps, grids, line graphs, bar graphs, pie charts, tables, and hierarchical lists.

## Data Selection
Flexible and customizable data selection and filtering capabilities, including time and data, network technology, operator, provider, device type, map polygon regions, service quality thresholds, call markers, layer 3 messages, and more. User can save and easily reuse the most used selection parameters from a favorites list.

## Automated Analysis
Automated analysis of CS and PS calls with failure causes categorization to immediately find the top most quality degrading network problems detected in the measurement data.

## Voice and Video Analysis
Post processing provides in-depth voice and video analysis using the unique SQuad, VMon, and VQuad quality algorithms and data analysis based on the correlation of information from service and application layers down to RF.

## Services Analysis
Analysis of a wide range of services:
ı Voice telephony: CS and VoIP speech MOS, audio delay, noise suppression, echo, RTT, DTMF
ı Data: Ping, FTP, UDP, HTTP, data capacity, Iperf
ı Browsing: WAP, HTTPS/HTTP, IE
ı Messaging: SMS, MMS, e-mail
ı Video over IP: video streaming portals including YouTube supporting MPEG4, H.263 and H.264 streams with resolutions from QCIF up to 4k

## Speech Quality Analysis
Detailed and accurate analysis of all measurement values captured with SwissQual and ITU voice MOS algorithms:
ı ITU-T P.863 (POLQA) full reference voice MOS (narrow and wideband)
ı ITU-T P.862/P.862.1 (PESQ) full reference voice MOS (narrowband)
ı SQuad full reference voice MOS (narrow and wideband), echo, noise suppression, and RTT assessments
ı Full support for video service analysis and visual quality assessment
ı Video service evaluation with success,completion and drop rates; "time to first picture", long-term freezing, IP statistics, and degradation causes values

## IP Analysis
Dedicated protocol and IP throughput analysis of Diversity and QualiPoc probes IP trace data including DNS resolver details. Files including PCAP IP trace can be automatically loaded into Wireshark® with NQDI time synchronization.

**Reporting**

More than 200 KPIs available for network and service performance, reporting and trending with several possible sorting parameters, including operator, technology, and map region. The extensive set of standard reports includes voice, video, data, messaging, app services, GSM, WCDMA, CDMA, GPRS/EDGE, HSPA+, HSPA DC, and LTE. It is also possible to embed map plots.

**Report Generator**

KPI report generator allows users to create their own custom KPI reports that are saved in the database and can be easily shared. The Excel reports can contain success rate and average pivot tables with PDF, CDF, and pie charts. A trending sort function can group the data into time bins ranging from hour up to year.

**Map Plotting**

More than 500 predefined map plot items in a powerful and fully configurable plot engine which supports MapInfo® and Google Earth. Supports configurable binning on grid or latitude-longitude precision. User can save and easily reuse the most used plots from a favorites list. BTS lists for GSM, UMTS, CDMA, and LTE can be loaded. Serving sector line indicates serving BTS; BTS coverage function displays BTS sectors coverage for all points in a "spider web". Smart window splitting and map layer offsetting makes the analysis of multiple networks and multiple parameters easy. The map window is time-synchronized with analysis charts and tables.

**Database Management**

NQDI databases are easily managed with the integrated data management tool, without the need for specific SQL server or database knowledge. NQDI can create and build historical databases to provide a global overview and trending over time.

**Compatibility**

Fully compatible with the NQDI II platform for corporate-wide distributed presentation and reporting.

## Service that adds value

▪ Worldwide
▪ Local and personalized
▪ Customized and flexible
▪ Uncompromising quality
▪ Long-term dependability

## About Rohde & Schwarz

The Rohde & Schwarz electronics group offers innovative solutions in the following business fields: test and measurement, broadcast and media, secure communications, cybersecurity, radiomonitoring and radiolocation. Founded more than 80 years ago, the independent company which is headquartered in Munich, Germany, has an extensive sales and service network with locations in more than 70 countries.

## Mobile network testing

The company's broad and diverse product portfolio for mobile network testing addresses every test scenario in the network lifecycle – from base station installation to network acceptance and network benchmarking, from optimization and troubleshooting to interference hunting and spectrum analysis, from IP application awareness to QoS and QoE of voice, data, video and app-based services.

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www.rohde-schwarz.com

## Rohde & Schwarz mobile network testing

www.rohde-schwarz.com/mobile-network-testing

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