NETIMIZER PM-12

Dec. 2015

Applied intelligence.

System Configuration

Proposed system configuration

NETIMIZER DML + PM12
- Controlled by RCS, or driver
- Real-time report to RCS
- Log file upload to RCS
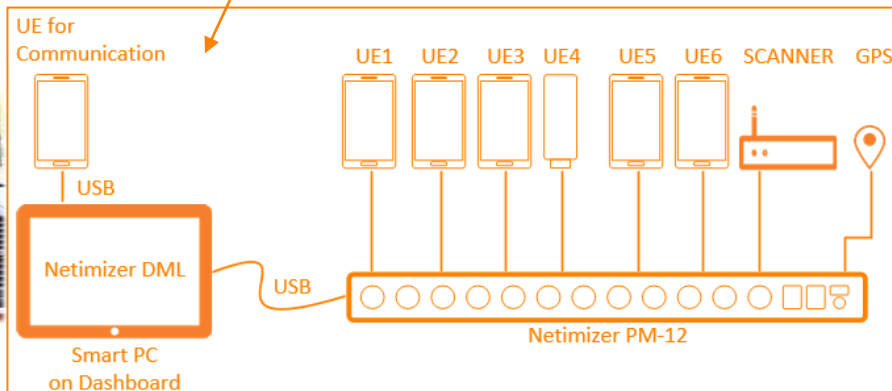
DT team #1

DT team #2

DT team #100

1 car + 1 driver + 1 system

NETIMIZER RCS
- Remote Control Server
- Control DMLs by remote
- Receive KPIs and events from DMLs
- Monitor multiple DMLs by remote
  UIs: Map, Chart, Table, Time Graph, Dashboard, etc.
- Manage uploaded log files from DMLs

Log files from DT teams

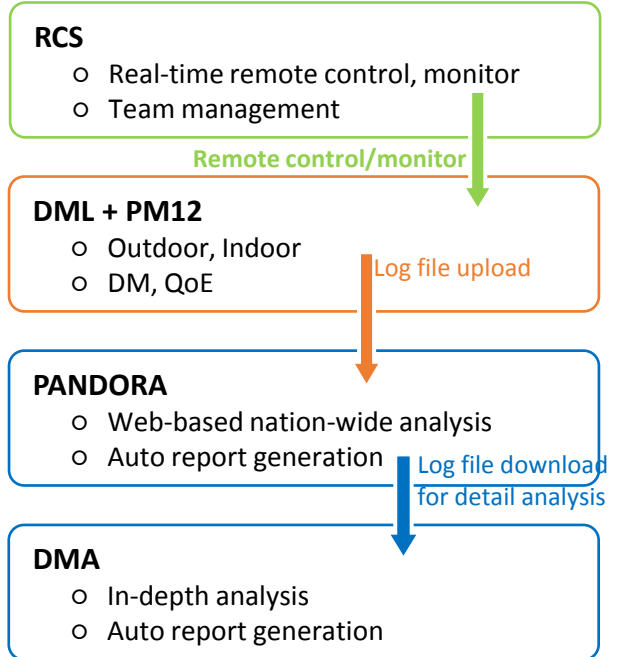**DRIVE TEST & BENCHMARKING DATA** → **ANALYSIS** → **REPORTS** → **OPTIMISE & ADMIN**

NETIMIZER DMA
- In-detail log analysis for troubleshooting
- Auto report generation
- Customized report generation for Nokia

UE for Communication

UE1 UE2 UE3 UE4 UE5 UE6 SCANNER GPS

USB

Netimizer DML

USB

Netimizer PM-12

Smart PC on Dashboard

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Solution

Solutions — LTE Field Test, Remote Control/Monitoring, Server-based Data Analysis, Auto Report Generation, In-Detail Analysis for Troubleshooting, etc.

Proposed Products and Features

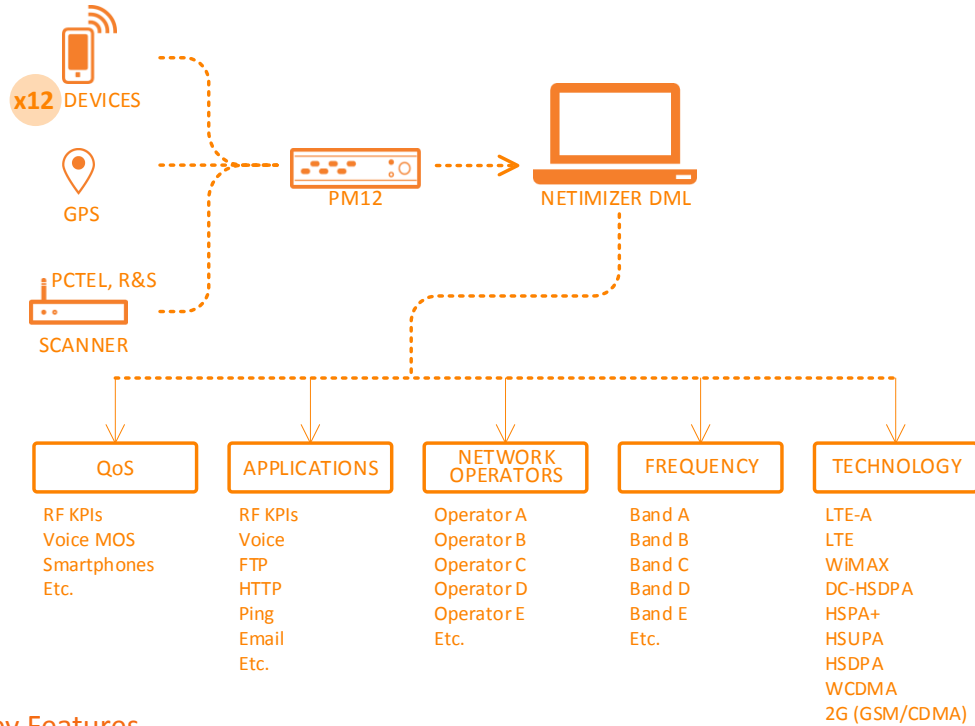|			
	NETIMIZER DML	Drive Test Tool (max 12 UEs) Use commercial phones as it is	Outdoor, Indoor(with indoor backpack) No rooted device required MOS test (1 POLQA license for multiple mobiles), Data test
	NETIMIZER PM12	Voice call QoE test device for 12 mobiles Easy multiple device management Drive-test and indoor test	For benchmark test For simultaneous test with multiple service types Any mobiles in the market
	NETIMIZER RCS	Remote Control & Monitoring Server Works with DML Automatic report generation	For remote control/monitor
	NETIMIZER DMA	Analysis tool In-depth analysis One-click report generation	For detail analysis
	PANDORA	Web-based nation-wide analysis server Pandora-Enterprise - Overview Pandora-DV – Detail view	Automatic 1st level parsing, KPI calculation Automatic report generation Detail analysis with Netimizer DMA

Workflow

RCS
- Real-time remote control, monitor
- Team management

Remote control/monitor

DML + PM12
- Outdoor, Indoor
- DM, QoE

Log file upload

PANDORA
- Web-based nation-wide analysis
- Auto report generation

Log file download for detail analysis

DMA
- In-depth analysis
- Auto report generation

Netimizer DML + Netimizer PM12

The world's smallest benchmark tool

| | QoS | | APPLICATIONS | | NETWORK OPERATORS | | FREQUENCY | | TECHNOLOGY |

RF KPIs
Voice MOS
Smartphones
Etc.

RF KPIs
Voice
FTP
HTTP
Ping
Email
Etc.

Operator A
Operator B
Operator C
Operator D
Operator E
Etc.

Band A
Band B
Band C
Band D
Band E
Etc.

LTE-A
LTE
WiMAX
DC-HSDPA
HSPA+
HSUPA
HSDPA
WCDMA
2G (GSM/CDMA)

Key Features

- 12 mobiles support
- Comprehensive drive-test and in-building features
- Real-time UE measurement, logging and display
- Simple measurement plan (Data, Voice, MOS)
- Compatible with all technologies, from 2G to LTE and LTE-A
- In-depth diagnostic user-interface for experienced users
- Straightforward and stable device connection
- Full Log Mask
- Layer 1/2/3 message logging / display / parsing / analysis
- ITU-certified voice quality analysis ITU P.862, P.862.1 and P.863 (POLQA)

NETIMIZER PM12 specification

Item	Specifications
PM12	322(W) x 145 (D) x 36(H) mm, 700 g
Cable	110 cm, 110 g, USB 2.0 or USB 3.0
Input power	DC 12V, 5A (AC/DC adaptor, or battery) L.P.S (Limited Power Source)
Port	x12 ports for mobile (x8 USB 2.0, x4 USB 3.0), x1 extra USB 2.0 port
PC interface	x1 USB 2.0, x1 USB 3.0
Laptop spec.	Intel Core i7-4720HQ @ 2.60GHz or higher, 8GB RAM or more, SSD, Windows 7/8/10

Benefits

- Battery pack operates for five hours, fully loaded
- A scalable platform that supports up to twelve (x12) test mobiles simultaneously
- When PM12 is combined with PANDORA QoS, it can assess and audit network performance
- This results in:
  - Seamless network application testing
  - Reduced costs, with a single, scalable platform
  - Improved test detail and precision
  - Easy management of significant live services
  - Enhanced time-to-market for new services
  - Smartphone-friendly
  - Upload KPIs and test results in real time
  - Conduct standards-based Voice MOS tests
- Supports HSUPA, EVDO Rev.A, Rev.B, CDMA2000, GSM, EDGE, GPRS, WCDMA, HSDPA, HSUPA, HSPA+, DC-HSDPA, WiMax, LTE (TDD and FDD) and LTE-A
- Bluetooth/MOS cable-friendly
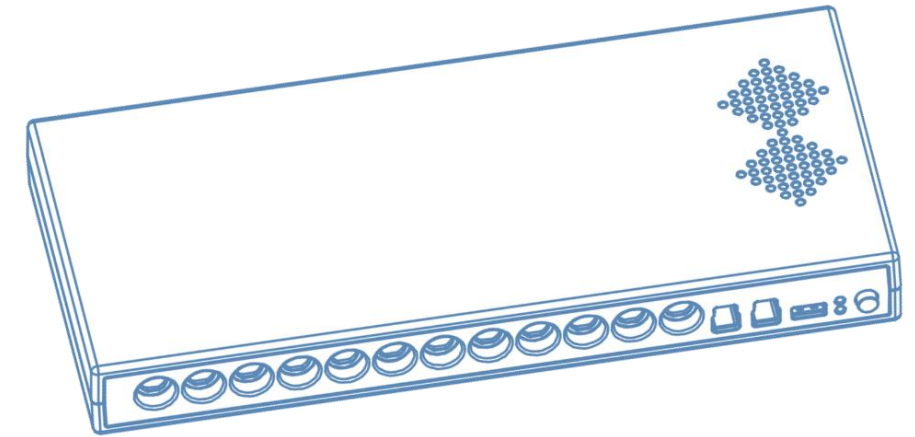- Compatible with a variety of handsets

Netimizer DML + PM12

PM12 – most efficient benchmarking device – up to 12 mobiles

NETIMIZER PM12 Hardware Specification

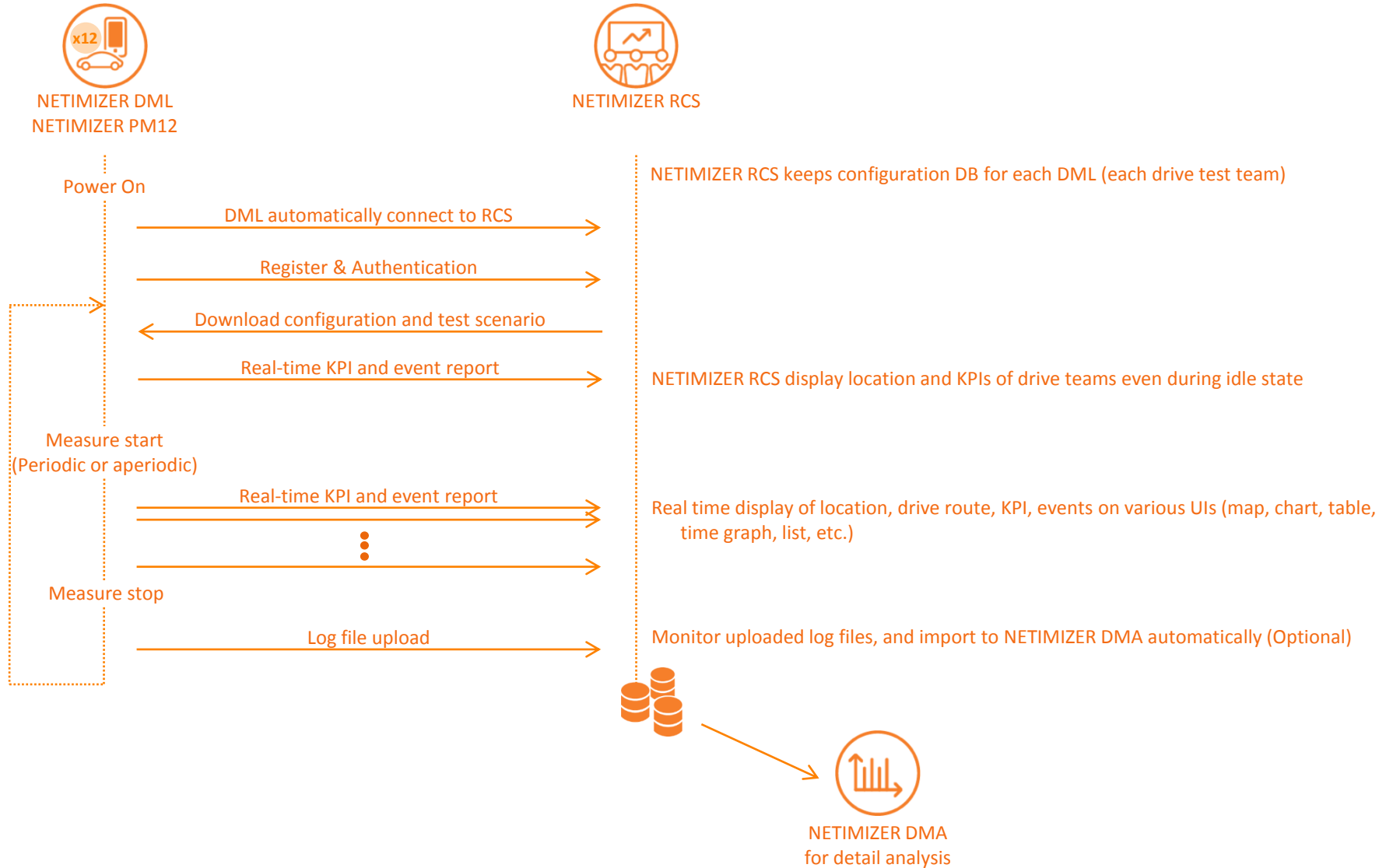| Item	Specifications
PM12	322(W) x 145 (D) x 36(H) mm, 700g
Cable	110 cm, 110 g, USB 2.0 or USB 3.0
Input power	DC 12V, 6A (AC/DC adaptor, or battery) L.P.S (Limited Power Source)
Port	x12 ports for mobile (x8 USB 2.0, x4 USB 3.0), x1 extra USB 2.0 port
PC interface	x1 USB 2.0, x1 USB 3.0
Laptop spec.	Intel Core i7-4720HQ @ 2.60GHz or higher, 8GB RAM or more, SSD, Windows 7/8/10

NETIMIZER DML System Requirements

Item	Minimum Requirements	Recommended Requirements
CPU	Intel Core i7-4710MQ @ 2.50GHz or higher	Intel Core i7-4720HQ @ 2.60GHz or higher
RAM	8GB or more	8GB or more
Storage	7,200 RPM HDD or faster (write speed 80MB/s or faster)	SSD (write speed 300MB/s or faster)
LCD	1920 x 1080	1920 x 1080 or higher
Operating System	Windows 7, 8, or 10	Windows 7, 8, or 10
Interface	x1 USB 2.0, x1 USB 3.0	x1 USB 2.0, x1 USB 3.0
PM12 receives DM and TCP/IP data from 12 mobiles, thus high speed storage (SSD) is recommended		

NETIMIZER DML
NETIMIZER PM12

NETIMIZER RCS

Power On

NETIMIZER RCS keeps configuration DB for each DML (each drive test team)

DML automatically connect to RCS

Register & Authentication

Download configuration and test scenario

Real-time KPI and event report

NETIMIZER RCS display location and KPIs of drive teams even during idle state

Measure start
(Periodic or aperiodic)

Real-time KPI and event report

Real time display of location, drive route, KPI, events on various UIs (map, chart, table, time graph, list, etc.)

Measure stop

Log file upload

Monitor uploaded log files, and import to NETIMIZER DMA automatically (Optional)

NETIMIZER DMA
for detail analysis

Netimizer DMA – In-detail Analysis Tool for Engineer

In-detail Analysis Tool for Engineer

DRIVE TEST & BENCHMARKING DATA → **ANALYSIS** → **REPORTS** → **OPTIMISE & ADMIN**

Key features

- Per-TTI analysis
- VoLTE analysis (RRC, NAS, SIP, RTP, POLQA, Durations, etc.)
- Missing neighbor, PCI pollution, etc.
- LTE, LTE-CA, CSFB, SRVCC, … — all features you need
- Auto report generation

Key Features

- Offers user-configurable reports with one-click
- Ensures the post-processing of shorts and overs and compares data between scanner and handset
- If numerous windows are open and an area of data is allocated in a single window, other windows display the same time zone. This enables multidimensional post-processing of data
- Replays data in the same manner as it was logged – in tables, message windows, maps and graphs
- Abstracts data that meets specific conditions
- Imports data via CSV file for post-processing. Exports data to Google Maps, CSV, MIF, Excel or text formats
- Pilot Pollution post-processing: Abstracts polluted areas
- TTI level in-detail analysis for optimization engineers

Benefits

- Make swift decisions thanks to automated reports
- Technology-agnostic
- Easily manage and extract huge amounts of drive-test data via a robust data-management system
- Compatible with all established wireless technology: GSM, EDGE, EVDO Rev.0, Rev.A, Rev.B, GPRS, WiMAX, CDMA2000, TD-SCDMA, WCDMA, HSDPA, HSUPA, HSPA+, DC-HSDPA, LTE and LTE-A
- Rely on a platform that's both stable and scalable
- Modifications are welcomed and realized via yearly maintenance
- Intuitive and economical
- Flexible and robust

Use Cases

- Get a view of service and network performance geospatially
- Create and provide KPI reports enterprise-wide
- Analyze trends and complex statistics
- Assess huge amounts of drive-test data to get to the heart of issues affecting service performance
- Gauge radio / application-level metrics
- Deliver in-depth reports
- Basically, Devices are controlled by ADB App which is phone based.
- If device user using does not support "ADB" app, user can use one of "Bluetooth" instead of "ADB".

Innovations

- Multi-dimensional KPI visibility – key statistics for accessibility, retainability, mobility, quality and packet-switched data performance
- Swift, thorough and configurable one-click reporting
- Analyze ESP packet messages, which is essential for optimization of VoLTE
- Google Earth is supported along with numerous other map formats
- Share in-depth reports on service-specific and general network performance
- Measure radio / application-level metrics
- Create and present KPI reports enterprise-wide
- Scrutinize trends and conduct statistical analysis
- Easily manage and extract huge volumes of data

spire

Safety Symbols

⚠ *Warning*

- When encountering this symbol in the manual, you must follow these recommendations to avoid irreparable damage to your car, system or connected devices or to avoid accidents with injuries or death.

IC Information

> This device complies with industry Canada licence-exempt RSS standard(s).
>
> Operation is subject to the following two conditions:
> (1) this device may not cause interference, and
> (2) this device must accept any interference, including interference

Le present appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence.

L'exploitation est autorisee aux deux conditions suivantes:

(1) l'appareil ne doit pas produire de brouillage, et

(2) l'utilisateur de l'appareil doit accepter tout brouillage radioelectrique subi, meme si le brouillage est susceptible d'en compromettre le fonctionnement.

The antenna(s) used for this device must be installed to provide a separation distance of at least 20cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

FCC ID : 2AH34NetimizerPM-12

FCC Information

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

Caution:

Any changes or modifications to the equipment not expressly approved by the party responsible for compliance could void user's authority to operate the equipment.

This appliance and its antenna must not be co-located or operation in conjunction with any other antenna or transmitter.

A minimum separation distance of 20 ㎝ must be maintained between the antenna and the person for this appliance to satisfy the RF exposure requirements.

FCC notification to users

This equipment has been tested and found to comply with the limits for a CLASS B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the Instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment dose cause harmful interference, the user is encouraged to try to correct the interference by consulting with a dealer or an experienced technician for technical assistance.

Any changes or modifications to the equipment not expressly approved by the party responsible for compliance could void user's authority to operate the equipment.

Thank You

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