Radionect™

RADIO-CENTRIC NETWORKED
COMMUNICATION PLATFORM

Solution presentation

2022

Features and use cases

Reliable recording of radio voice calls, data messages and events

Voice radio dispatch

Radio text messaging

Real-time location tracking of personnel, vehicles and assets

Emergency management

Telemetry and automation

Analysis and monitoring of radio networks

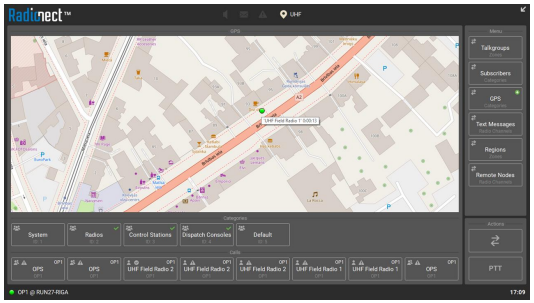
Linking disparate radio networks

Main components

Radionect Universal Nodes, RUNs

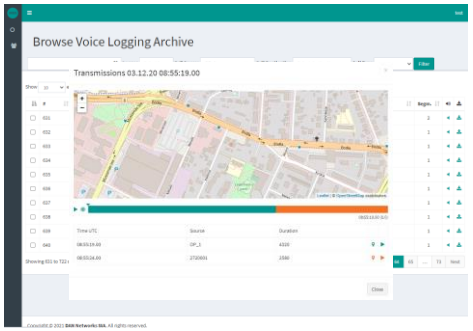
- Networked devices
- Interface with radios
- Control of connected radios (MOTOTRBO™ DM4000e)
- Switching core: decentralized and centralized architecture
- Logging of voice, data and events
- Interface to Archiving Server

Dispatch Consoles



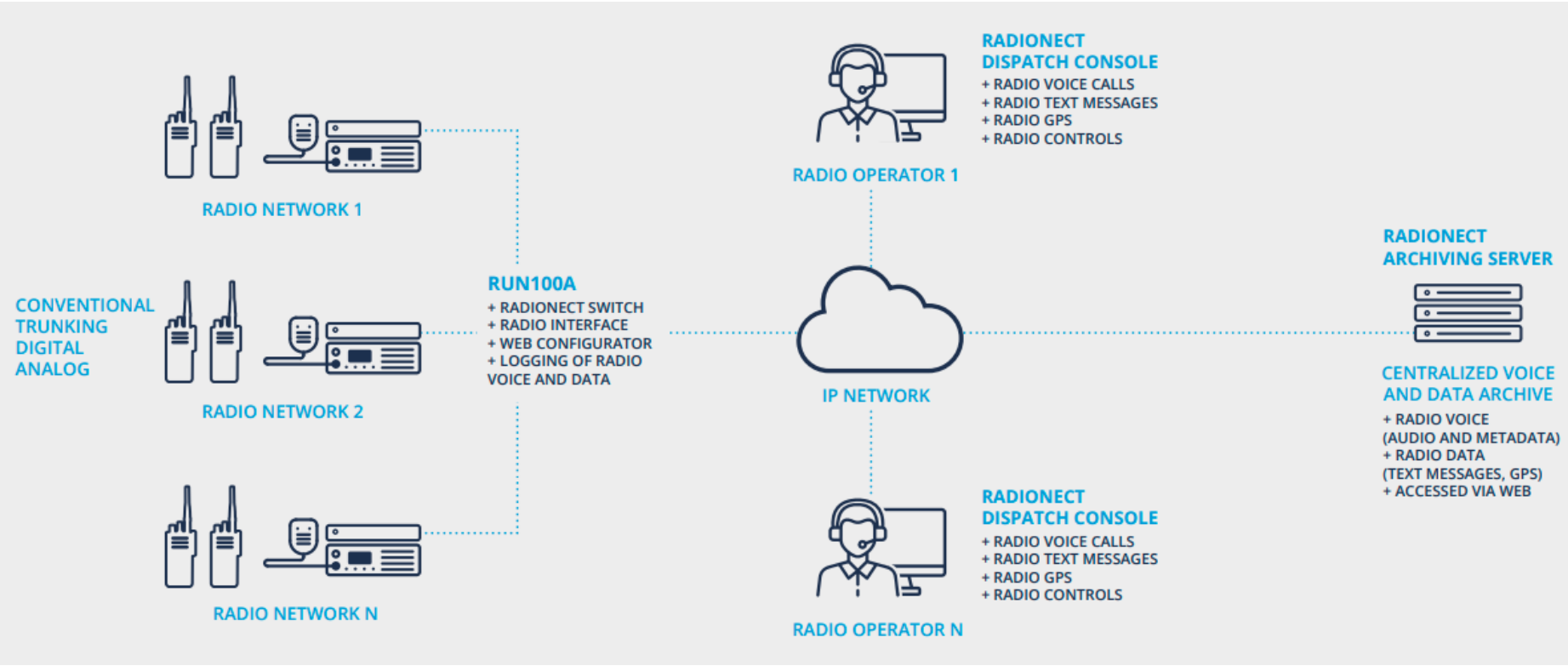
- Software or custom-made devices
- For real-time communications
- Simple user interface
- Voice calls
- Text messages
- GPS tracking

Archiving Server



- Centralized vault for historic voice calls and data messages
- Filtering of information
- Embedded web-player with display of last known talkers' GPS coordinates
- Deployed with LAMP environment

Typical deployment diagram



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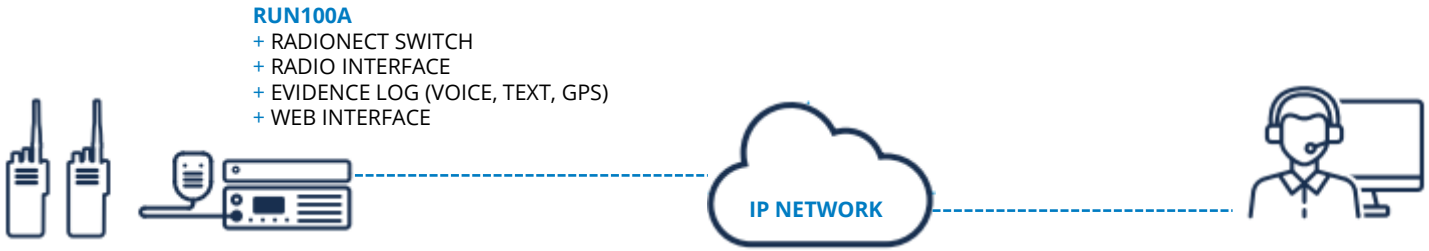
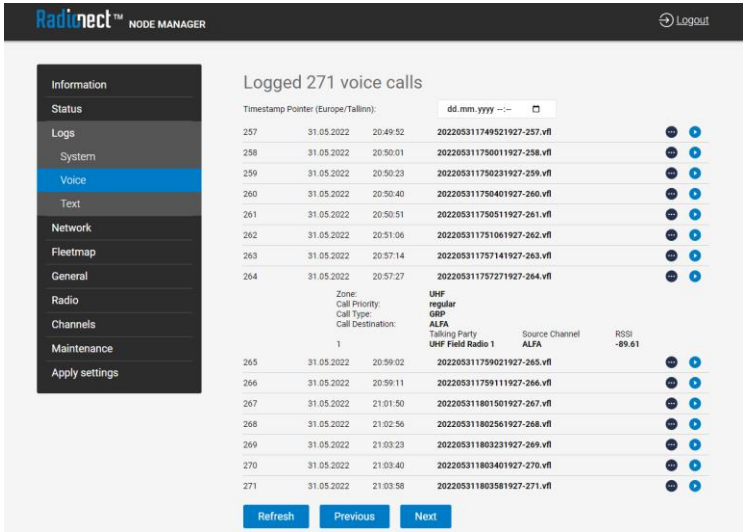
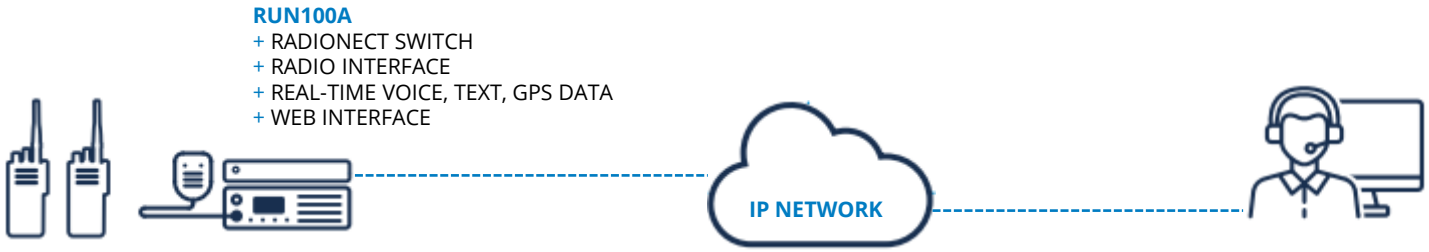
Use case: recording (logging)



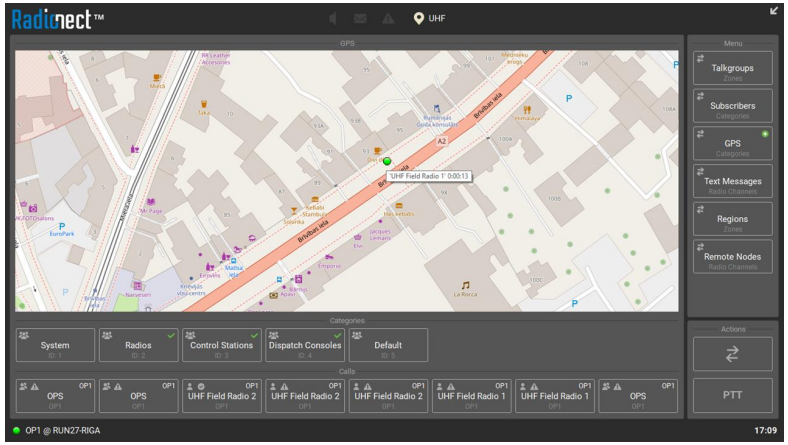
- Reliably documented voice, text and GPS evidence logs, recording is performed near radios
- Routine analysis or debriefing of incidents
- Proactive performance monitoring (RSSI)
- Standalone and networked scenarios, Archiving Server for keeping and accessing records in a centralized way



Use case: radio dispatch



- Improved productivity and cost savings via controlling operations at remote sites
- Improved situational awareness through knowing locations of personnel and asset in real time
- Improved safety via alarm management and rapid emergency response
- Standalone and networked scenarios



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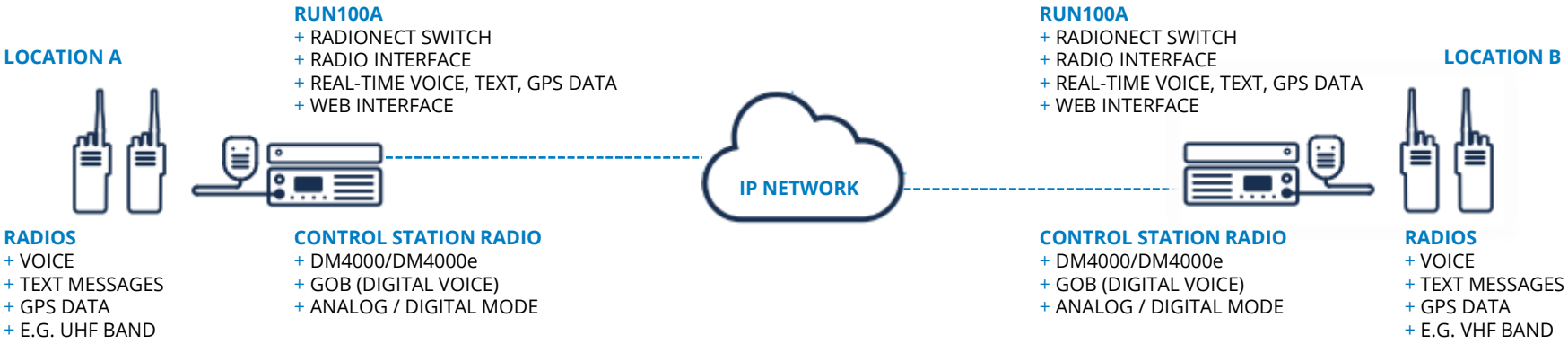
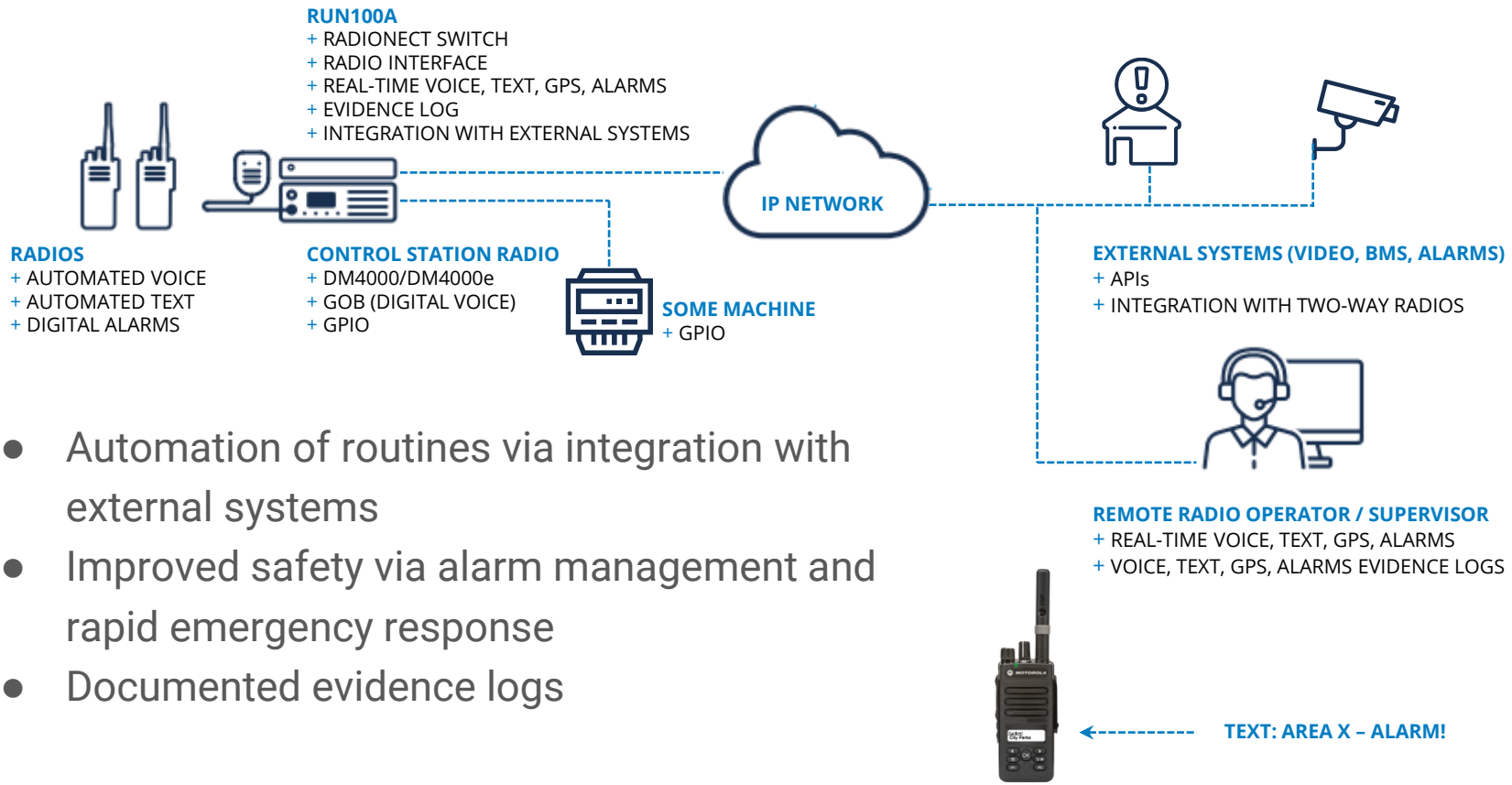
Use case: linking disparate networks



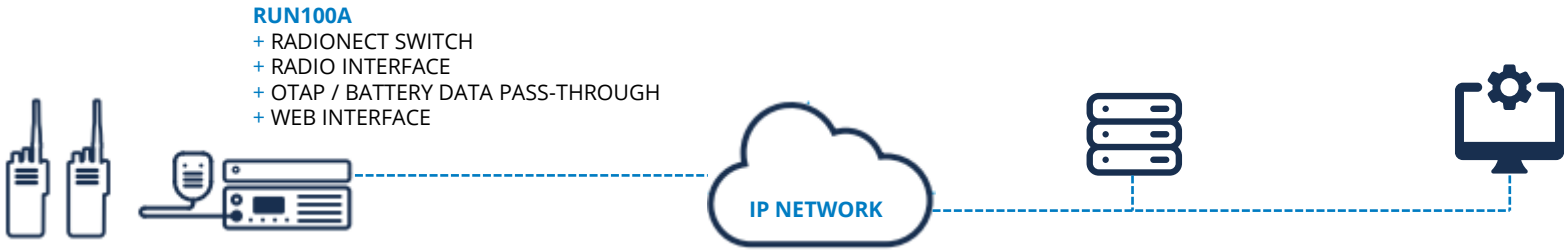
- Common communication space across multiple locations, analog and digital radio channels, frequency bands
- Improved situational awareness and rapid emergency response

Use case: telemetry and automation

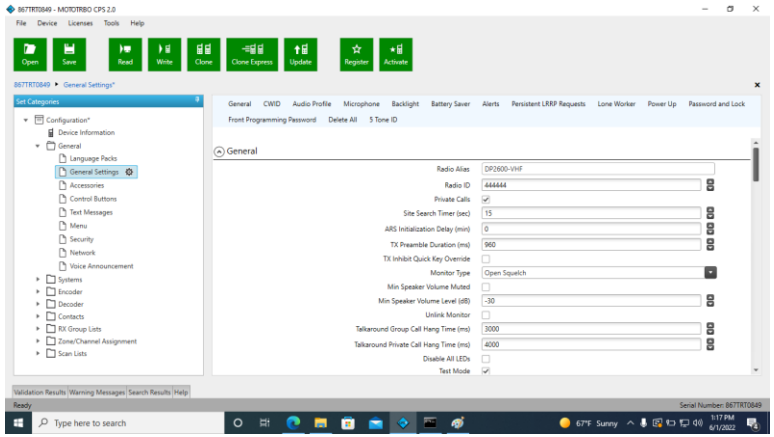


- Automation of routines via integration with external systems
- Improved safety via alarm management and rapid emergency response
- Documented evidence logs

Use case: remote radio programming



- Improved productivity and cost savings via remote programming of radios
- Improved situational awareness and proactive maintenance through knowing service conditions of batteries in fielded radios

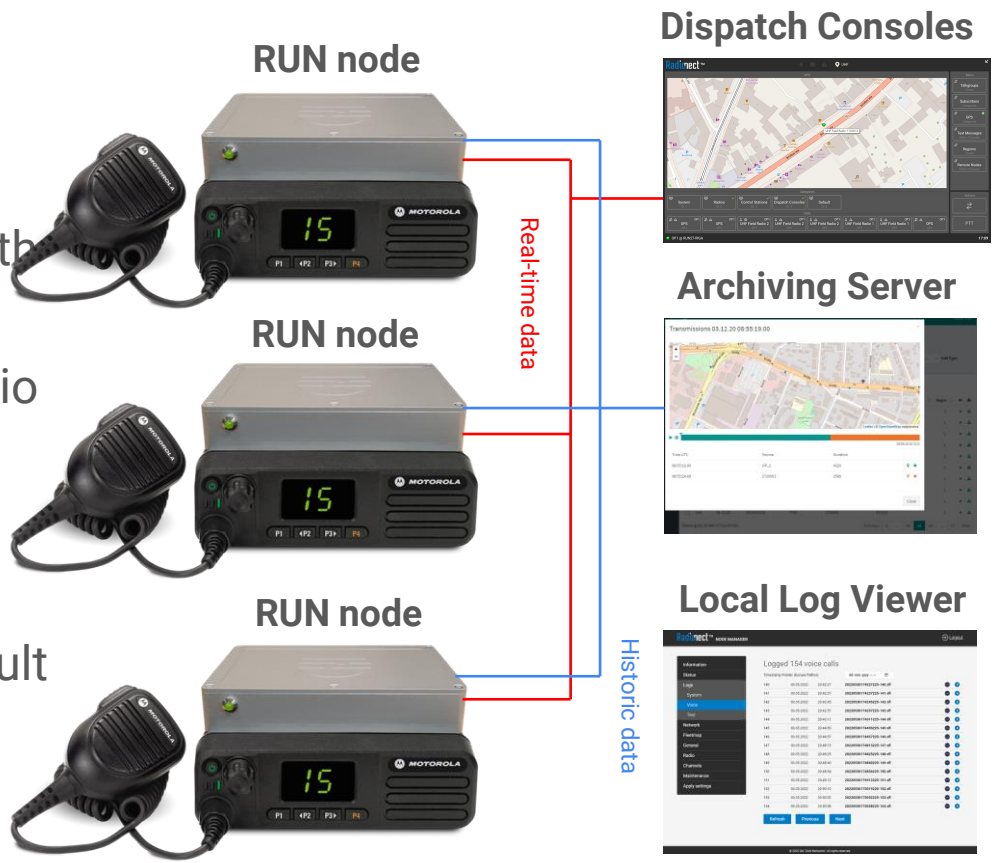


Simplest variant – a standalone RUN100

- All-in-one box, server-less appliance
- Digital interface with Motorola Solutions MOTOTRBO™ radios via GOB
- 2 x Ethernet
- Voice logging
- Data logging (TMS, GPS, Alarms)
- Logging of system events
- Connection of remote Dispatch Consoles via IP for communication and control of the connected radio
- Web-interface for administration and access to logged information

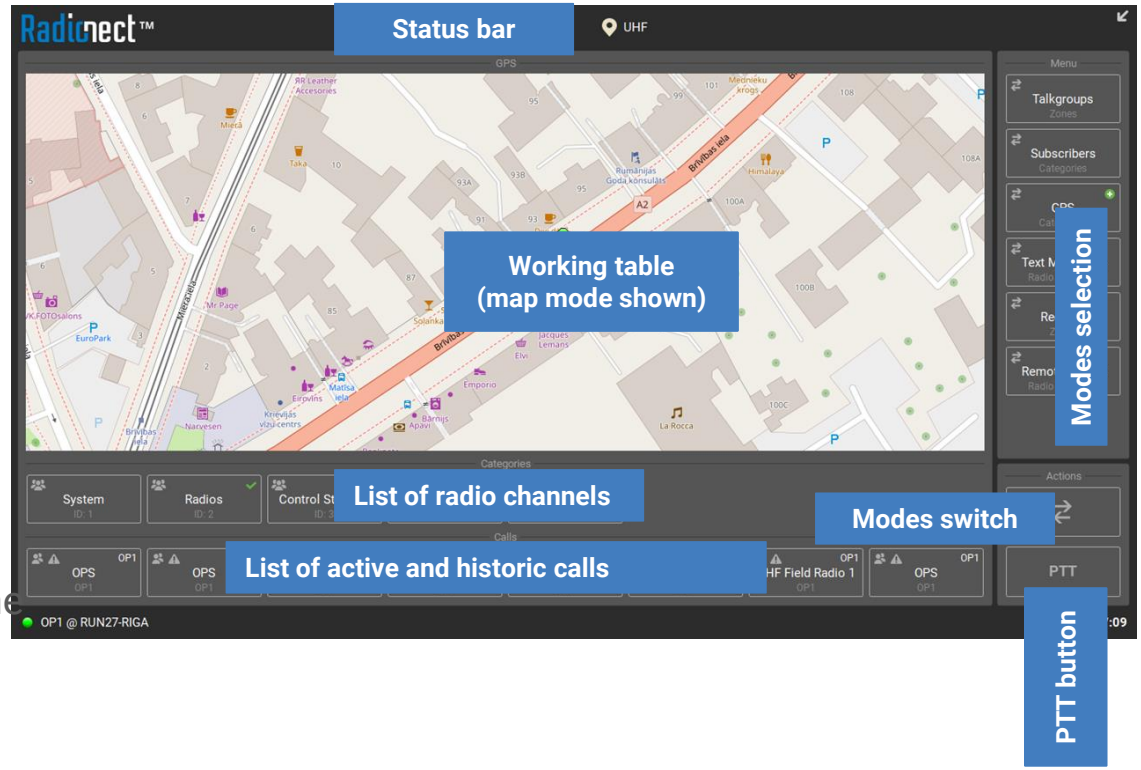
Network of RUN nodes

- Fully distributed architecture, no single point of failure
- Suitable for smaller scenarios with few radio channels as well as for bigger scenarios with tens of radio channels
- Local logging of radio voice and data
- Optional centralized archiving vault
- Remote radio dispatch and centralization of works



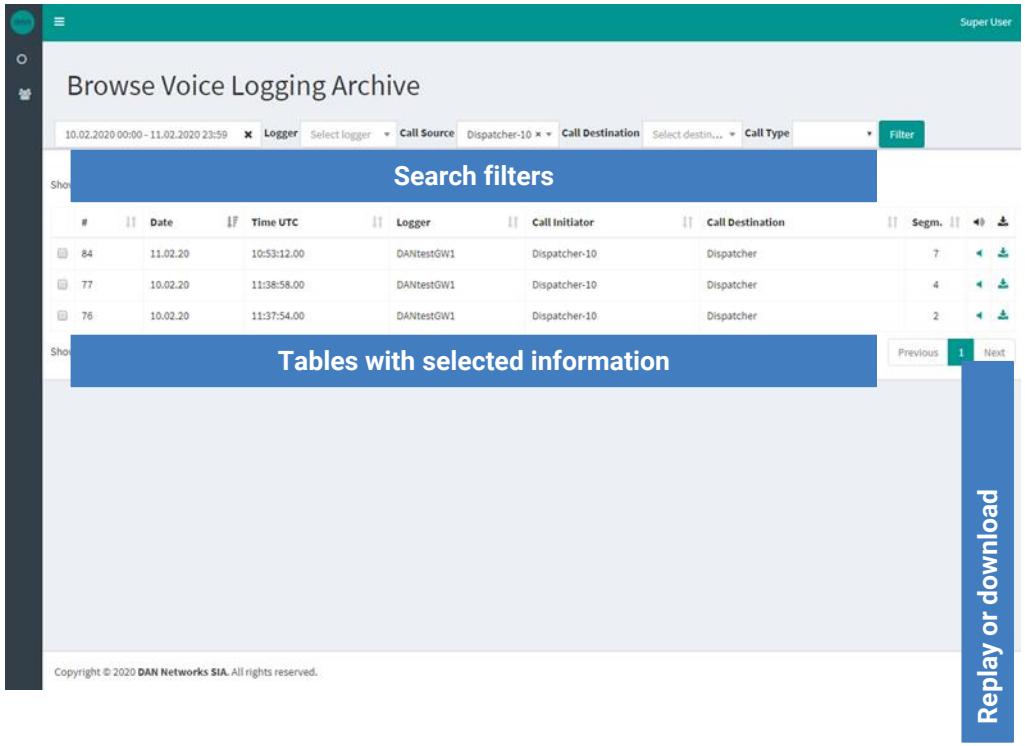
Dispatch Console

- Windows, Linux
- Zero-install for Windows
  - All parameters configured in RUN nodes
- Voice communications
  - Group radio calls
  - Individual radio calls
  - Intercom voice calls
  - Display of radio IDs and aliases
- Text messaging (TMS)
  - Group text messages
  - Individual text messages
- Display of radio locations at online maps (Google, OpenStreetMap)
  - GPS
- Control of base radios
  - Display of actual radio channel
  - Switching of radio channels



Archiving Server

- Web-interface
  - HTTPS security
  - User accounts
  - User privileges (admin, ordinary user, power user)
- Information search filters
  - Period of time
  - Device (where information physically logged)
  - Source of calls (messages)
  - Destination of calls (messages)
- Actions with selected information
  - Replay call
  - Download single audio file (in WAV format)
  - Download multiple audio files (in a ZIP archive)
  - Download text messages (in a CSV file)

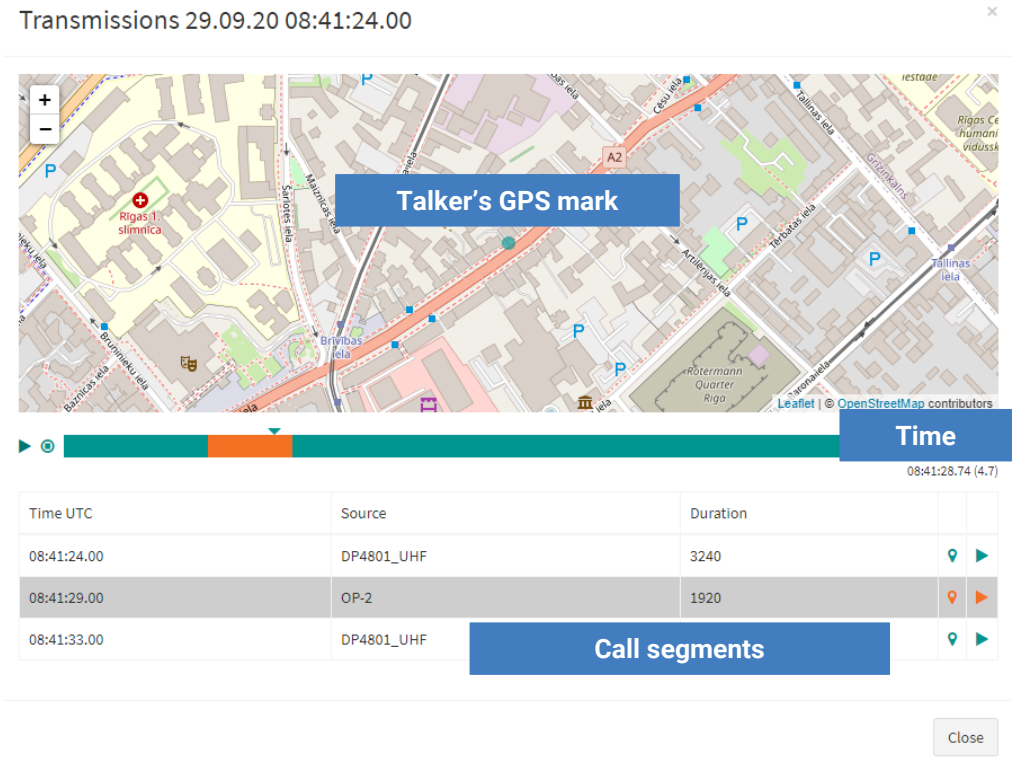


Embedded replay through web

- Opens in a pop-up window
- Display of call details
  - Date and time of call's beginning
  - Call segments
  - Call duration and call's current (absolute) time
  - IDs and aliases of talkers*
  - Last known GPS coordinates of talkers*
  - Visual identification of talkers by colors*

*) *at digital radio channels*

- Controls
  - Map zoom-in and zoom-out
  - Replay and pause
  - Moving replay mark to an arbitrary place of a call being replayed



Concept of local recording

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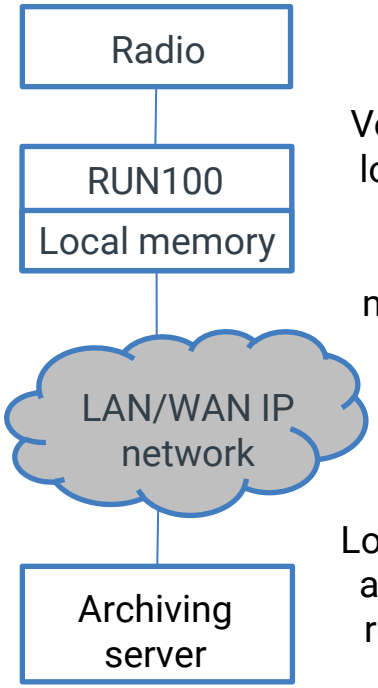
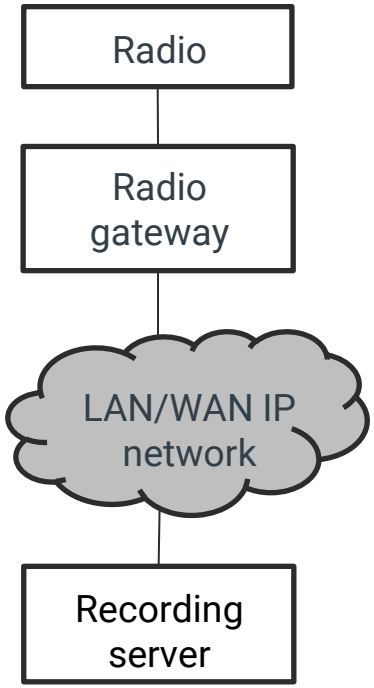


Voice and data information is logged in real time just near to a radio. Embedded memory can incorporate many months of radio talks.

Logged files are uploaded to an archiving server in near real-time mode if network connection is available.

Other solutions



Voice is converted into RTP stream.

RTP stream is forwarded to a recording device in real time.

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Advantage – fault tolerance

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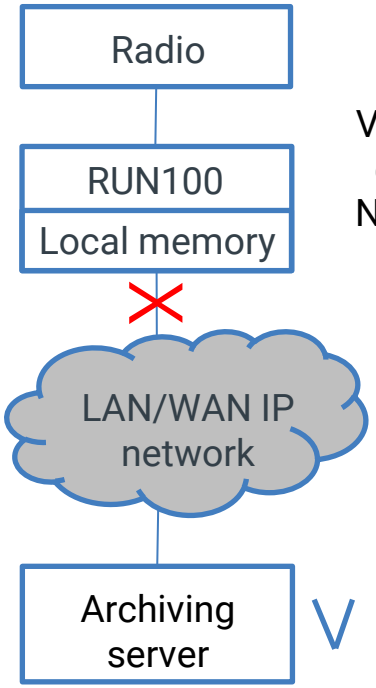
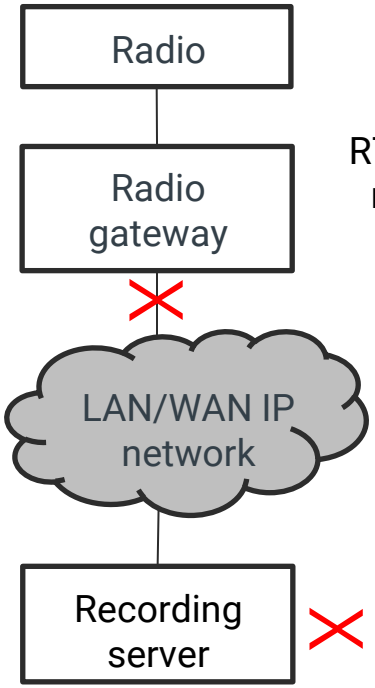


Voice and data records are cached and stored in the Node's embedded memory and uploaded to the archiving server when network connection is restored.

Records are NOT LOST due to network problems.

Other solutions



RTP stream can not reach a recording device due to a network problem.

Records are LOST due to network problems!

Advantage – recording of base radio TX

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- One (1) radio
- One (1) antenna
- One (1) power supply

Same base radio can be used for communication and recording purposes

Other solutions

+$$$

- Two (2) radios
- Two (2) antennas
- Two (2) power supplies

One radio is to be used by operator*, another – for recording

**) radio does not send its TX audio to its output when transmitting to the air, therefore operator's speech can't be logged*

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Advantage – recording of base radio TX

Radionect

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Same base radio can be used for communication and recording purposes

Other solutions

+$$$

- One (1) radio, antenna, power supply
- Additional computer or specialized desktop terminal with a Dispatch Console software

Radio operator works with a console, need to change working routines

**) radio does not send its TX audio to its output when transmitting to the air, therefore operator's speech can't be logged*

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Summary message

- Three major features in one system
  - Logging (recording) for evidence proofs
  - Remote radio dispatch (centralization of works, savings on personnel)
  - Disparate radio networks united
- The product was born with a project for a railway
  - Proven reliability, over 2 years in operation
- Development in the EU (Estonia and Latvia)
  - Security and availability of support from within EU
  - Flexible approach to development of features
- Suites for analog and digital radio networks
  - Analog mode – interoperability with virtually any kind of radios
  - Digital mode – interoperability with Motorola Solutions MOTOTRBO™
- Long system life, Radionect software can be adapted to various hardware platforms
- Probably the best dispatch and logging system for conventional radio networks

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