PPDR**ONE**

5G Training & Experimentation Facility

One-of-a-kind facility for hands-on 5G trainings and experimentation, with specialised features for telcos, public safety and critical infrastructures

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Product Factsheet | Version 5.6.19

5G Training & Experimentation Facility
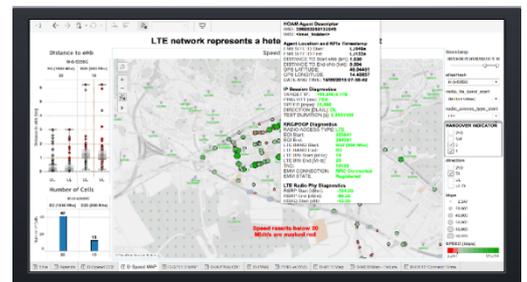
At a Glance

PPDRONE is a one-of-a-kind facility for hands-on 5G trainings and experimentation, with specialised features for telcos, public safety and critical infrastructures

WHAT'S IT FOR

- Get real-world & hands-on experience with 5G technologies
- Build basic and advanced 5G expertise
- Run 5G experiments
- Test and evaluate solutions and apps
- Try before you buy

WHO'S IT FOR

- Telcos
- Developers & Vendors
- Integrators & solution providers
- Critical infrastructure owners
- Public safety stakeholders

5G Training & Experimentation Facility

At a Glance

HANDS ON TRAININGS

- From basics to advanced 5G trainings
- Practical hands-on work with a 5G-enabled mobile system
- Includes live experimentation
- On-request custom trainings for mobile quality assurance and testing
- On-request custom trainings for 5G vertical industries (public safety, critical infrastructures, utility industries)

EXPERIMENTATION & INNOVATION ENVIRONMENT

- Indoor and outdoor experiments with an SDR-based mobile system
- Field experiments with in-a-box portable deployment
- Availability of licensed frequency bands 700 MHz (B28|n28) and 3.5GHz (B42|n72) in Ljubljana – Slovenia (5G pioneering bands); available channel bandwidth of up to 90 MHz
- Additional toolsets
    - iMON toolset for public safety demos and experiments
    - qMON toolset for network and service monitoring, testing and benchmarking
    - Sensors, user terminals, drones, and much more

5G Training & Experimentation Facility

Technical Specifications

5G mobile system (indoor/outdoor)

- SDR-based mobile system (Rel.14)
- Support for: LTE, LTE-Advanced, NB-IoT, LAA
- Mobile radio frequencies ranging from 70 MHz to 6.0 GHz
- Outdoor macro coverage on band B42|n78 (3.5 GHz) with available channel bandwidth up-to 90 MHz
- Up to 3 x carrier aggregation
- Support for EPC, eMBMS and VoLTE

OpenStack-based IaaS backend

- Virtualization: KVM-based
- Openstack-based IaaS
- Openstack networking: provider and self-service
- Container support: Docker, LXD/LXC

Compact portable (in-a-box) node

- Compact portable 5G-ready mobile radio, core and cloud node to be deployed in the field
- Includes all mobile system capabilities, with the supported frequencies from 70 MHz and up to 6.0 GHz
- Incorporates OpenStack-based IaaS backend capabilities, with internal storage
- Prepared for in-vehicle and field use

Devices and terminals

- Commercial and Ruggedized Android mobile phones with dual USIM capabilities
- Ruggedized industrial IoT platforms (Advantech ARK and Beagle board) with mobile radio support (LTE/LTE-A/LTE-A Pro, NB-IoT)
- Ready fordeployment of experimenters' docker containers
- Wearable cameras and vital signs sensors
- Drones
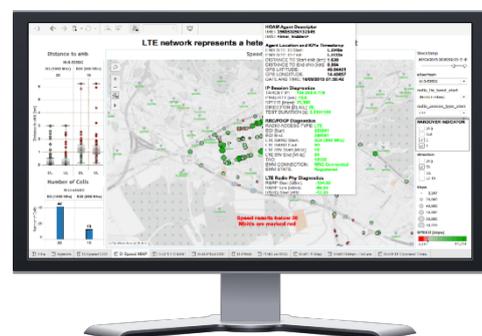- Environmental sensors (e.g. ultrasonic water level sensors)

5G Training & Experimentation Facility

Technical Specifications

qMON toolset

Telco-grade 5G-ready measurement automation system for mobile, fixed and cloud environments
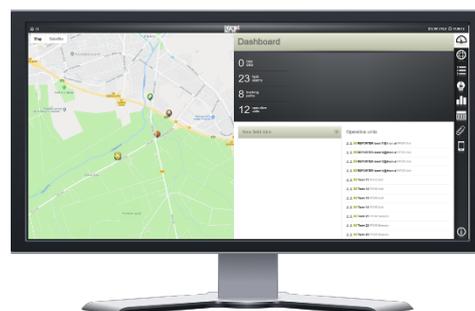- Probes, management backend and analytics tools
- Live network and service tests/troubleshooting
- Real-time performance and SLS/SLA monitoring
- Drive and benchmark testing for mobile networks (LTE/4G and 5G) including PPDR enabled
- PPDR network coverage and mission critical application performance assessment
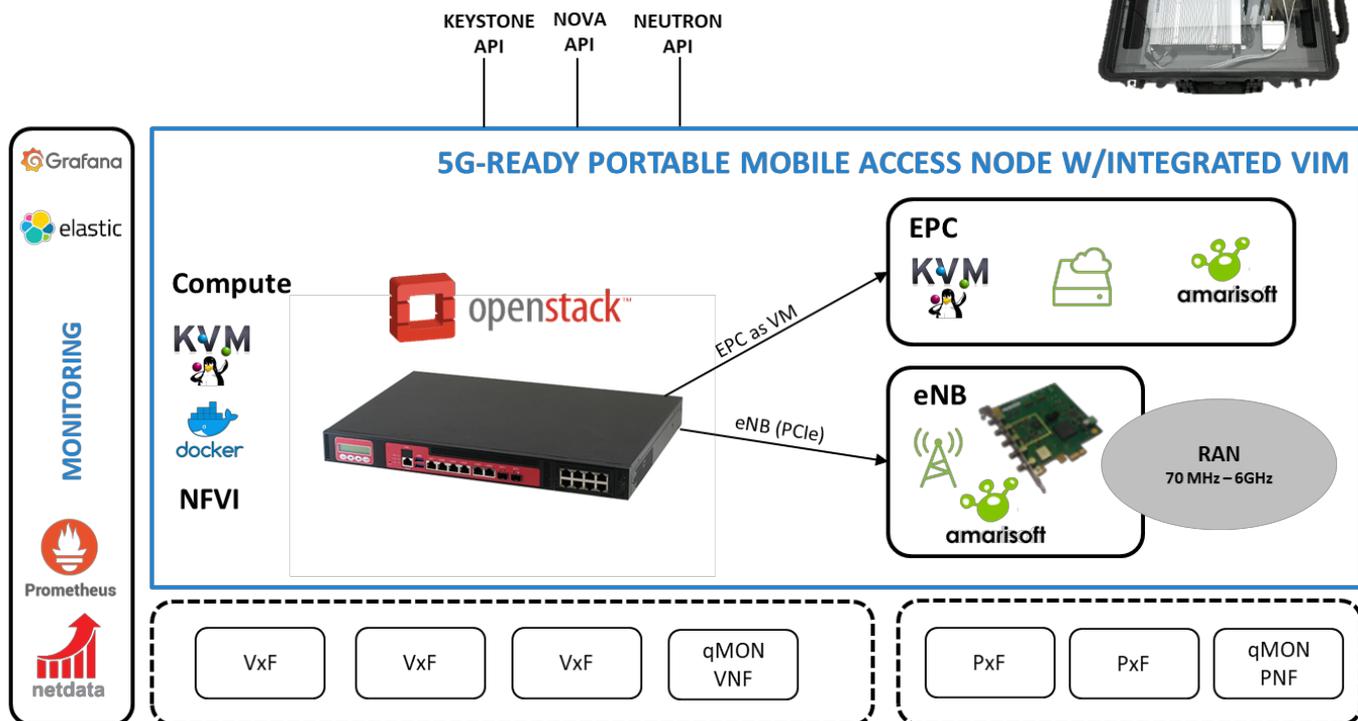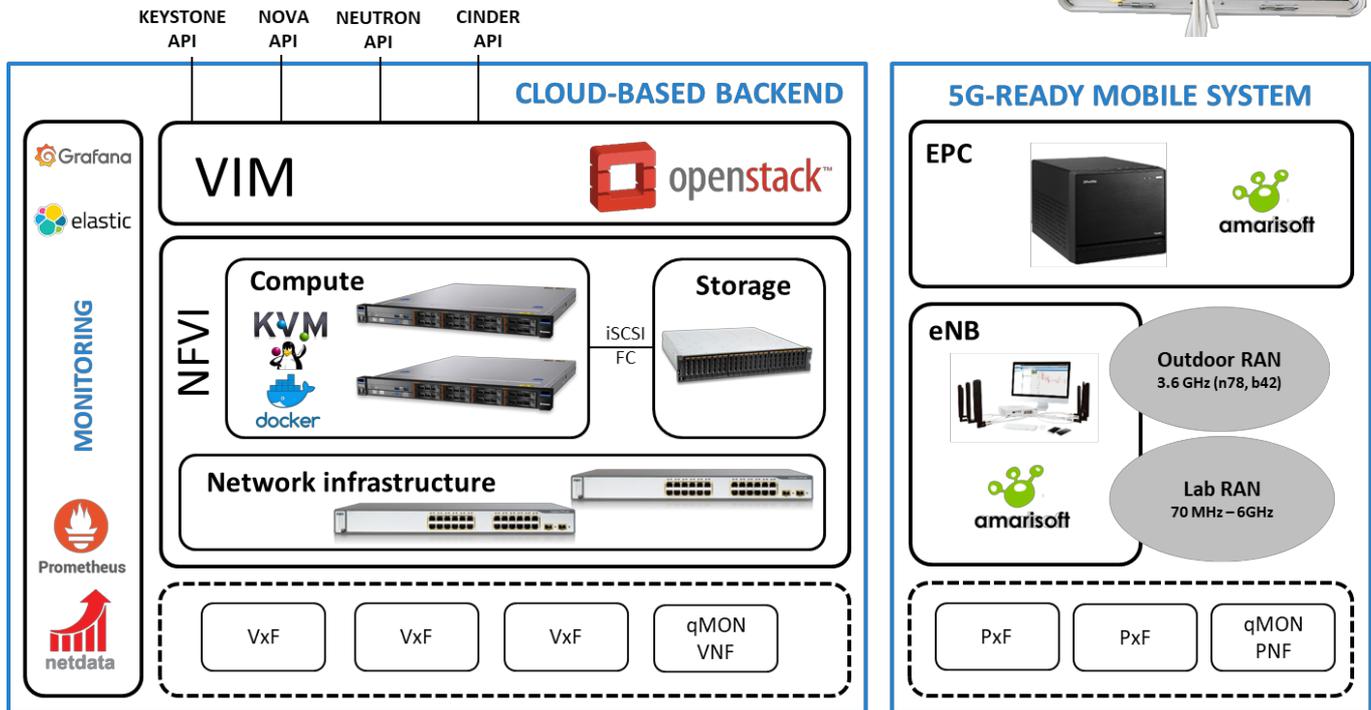- QoE/QoS prediction in live 4G|5G based PPDR networks

iMON toolset

Solution, devices and apps for intervention monitoring and filed operations; developed in tight cooperation with PPDR end-users
- Common operational picture
- Real-time video streaming from body worn cameras and drones
- Unit and asset tracking solution
- Environmental monitoring/sensing (ultrasonic water level sensors)
- Filed reporting app

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Technical Specifications

CLOUD-BASED BACKEND

KEYSTONE API   NOVA API   NEUTRON API   CINDER API

MONITORING
- Grafana
- elastic
- Prometheus
- netdata

VIM — openstack

NFVI
- **Compute** — KVM, docker
- **Storage** — iSCSI / FC
- **Network infrastructure**

VxF | VxF | VxF | qMON VNF

5G-READY MOBILE SYSTEM

EPC — amarisoft

eNB — amarisoft
- Outdoor RAN 3.6 GHz (n78, b42)
- Lab RAN 70 MHz – 6GHz

PxF | PxF | qMON PNF

5G-READY PORTABLE MOBILE ACCESS NODE W/INTEGRATED VIM

KEYSTONE API   NOVA API   NEUTRON API

MONITORING
- Grafana
- elastic
- Prometheus
- netdata

Compute — KVM, docker — openstack
NFVI

EPC as VM

EPC — KVM, amarisoft

eNB (PCIe)

eNB — amarisoft
- RAN 70 MHz – 6GHz

VxF | VxF | VxF | qMON VNF

PxF | PxF | qMON PNF

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