Introduction to Duranta

OpenAirInterface Summer Workshop 2026

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June 22, 2026

Outline

Linux Foundation and Linux Foundation Networking – Sridhar

Duranta – An LFN Project – Sagar

Features and Roadmap – Robert

Contribution Policies – Robert

About Linux Foundation

The Linux Foundation's goal is to create the greatest shared technology investment in history by enabling open collaboration across companies, developers and users.

We are the nonprofit organization of choice to build ecosystems that accelerate open source technology development and commercial adoption on a global scale.

…behind some of the most critical projects in the world

Duranta

OPEN AIR INTERFACE

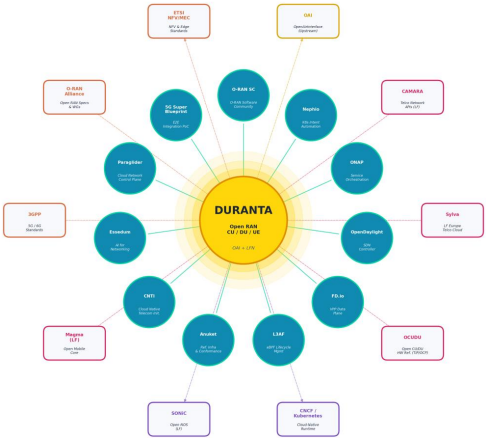
Linux Foundation Networking Projects

- Umbrella of specific networking Projects
- Each project operates autonomously
- Networking-related project hosted by LF is NOT an LFN Project by default
  - Not all want/need need the higher levels of cross-collaboration
  - Project community opts-in to joining LFN
- For clarity: networking projects outside of LFN are “Adjacent Projects”

Duranta OPEN AIR INTERFACE

Duranta

- Plurality and Synergy
- The project that can bring all LFN++ projects together



Overview Duranta

- Open source RAN&UE reference stack designed for research, testing, and early deployment
- LFN adds neutral governance, structured support, and a broader collaboration surface
- https://lfnetworking.org/projects/duranta/

Mission

- Develop reference RAN&UE stack
- Tooling, documentation, and validation for repeatable RAN research
- Progress toward deployment-ready software

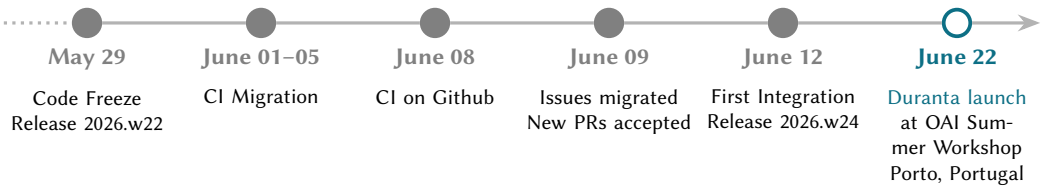
Scope

- First step: RAN&UE (“openairinterface5g”)
- Later: Core Network, Operations&Management

Duranta OPEN AIR INTERFACE

Recap of Timeline

- Seed code from OpenAirInterface
- Transition into LFN/Github achieved: Code migrated, CI functional, Duranta launched



Features of RAN/UE

Common Features

- FR1, FR2
- BWs 10-200MHz, up to 256-QAM
- Support for many USRPs
- NTN (SIB19, HARQ, SINR meas, RFsimulation)
- Interoperability with various UEs/gNBs/CNs
- In-line LDPC Accelerators: AAL, CUDA*

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RAN

- DL 1.4 Gbps, UL 400 Mbps
- Fronthaul: O-RAN 7.2 (multiple RUs)
- Midhaul: 3GPP F1, E1, SCF (n)FAPI
- Nvidia Aerial L1 Inline Accel.
- Support for 64 UEs

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UE

- Experimental MIMO 2 layers UL/DL
- DL up to 230 Mbps, UL up to 140 Mbps
- NTN: Doppler (pre-)comp., timing adjustments
- Uses FAPI-inspired L1/L2 interface (“UE FAPI”)
- IP/Ethernet PDU sessions

RAN Roadmap

Q2 2026

- GPU LDPC Accelerator
- NR-DC Support
- CN Paging procedures
- Support for 64 UEs
- Basic Cat-A OAI O-RU (simulated radio)

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- NR user plane protocol
- Support for 128 UEs with E2E throughput validation

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Q4 2026

- Cat-B Support for FHI 7.2 at RU/DU
- RAN Paging
- Support of 5G RAN Slicing

Q3 2026

- Xn Handover Support
- UL MU-MIMO
- Aperiodic UL channels (SRS/CSI reporting)
- NR user plane protocol
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Q1 2027

- Digital Beamforming Support
- DL MU-MIMO at L1

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UE Roadmap

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- Support for Handover Procedures
- Basic Sidelink Procedures (PSSCH, PSCCH)
- PUCCH formats 1&3

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- Support for 2 UL layers
- Support for 2 DL layers
- RU sharing

UE Roadmap

Q2 2026

- Support for Handover Procedures
- Basic Sidelink Procedures (PSSCH, PSCCH)
- PUCCH formats 1&3

Q4 2026

- Reduce feedback time
- AT command interface

Q3 2026

- Support for 2 UL layers
- Support for 2 DL layers
- RU sharing

Q1 2027

- Scan carrier
- Power control procedures for outdoor operation

Contribution Mechanism

- Existing openairinterface5g GitLab code migrated to Github: `https://github.com/duranta-project/openairinterface5g/`
- Contributors need to sign a new CLA using EasyCLA
- Mandatory signing of commits and Developer Certificate of Origin (DCO) check
- External contributions via forks
- More details in Contribution Guidelines

Project Maintenance

- “Integration branches” for weekly tagged version, suitable for developers&users
- Major release 2-3 times year, for users
- Preparations for initial Duranta v3.0 release ongoing
- CI/CD/CT still on Jenkins (enhanced with some Github Actions)
- Existing repositories continue function as mirrors
- The naming of the main branch will remain develop

Community Meetings

- Duranta community calls:
  - Bi-weekly TSC calls (odd Thursdays 17:00 CEST)
  - Developer calls for Asia/Americas at even/odd weeks
  - NTN calls, UE calls will be migrated soon
- Calendar: `https://zoom-lfx.platform.linuxfoundation.org/meetings/duranta`

Continuous Integration

Build & Simulators

- Build: x86, ARM (v8/v9)
- Unit tests
- Physical simulators (incl. sanitizers)
- Radio simulation (RFsim, vrtsim)
- Radio simulation OCUDU gNB vs. OAI UE

Hardware-based Tests

- USRP-based, COTS UE (4G/5G)
- O-RAN 7.2 FH with VVDN/Metanoia/Benetel/LITEON
- Multi-UE testing (5G)
- OAI-UE with OAI gNB OTA (4G, 5G)
- Nvidia Aerial Testbed with COTS and OAI UE

We welcome contributions to Duranta!

https://lfnetworking.org/projects/duranta/
https://www.openairinterface.org/