ORS Aurora: Radio Processing Platform for Open RAN

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Application

ORS Aurora is a fully programmable radio processing platform for 5G NR virtual RAN (vRAN) servers in Open RAN Split 7.2 and 8 configuration. It offers hardware acceleration for various RAN functions at the Distributed Unit (DU). Radio Units (RUs) can connect to its four SFP28 ports. It provides RAN developers with an API and integrates with DPDK as well as with open-source vRAN stacks.

Performance

Outstanding hardware acceleration of the heaviest RAN functions for 5G and beyond.
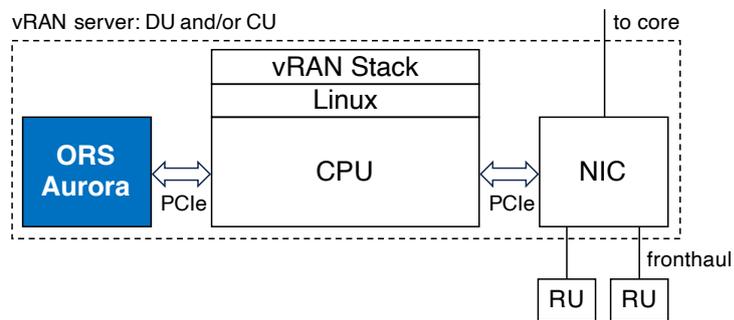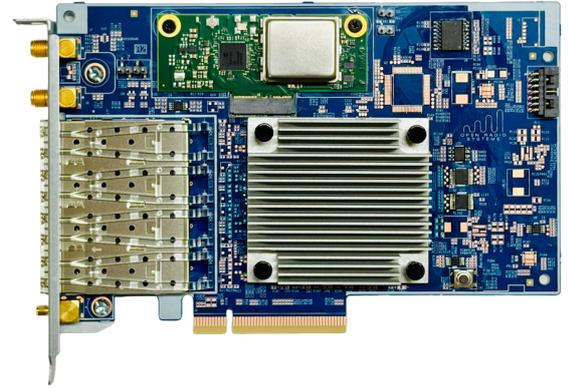
Cost saving

Reducing the CPU load by 45% at a maximum of 20 W saves CPU cost, power, and heat.

Future-proof

Firmware updates will turn ORS Aurora into an inline accelerator and fronthaul bus controller for 6G in Split 7 and Split 8 configurations.

Offloaded RAN functions

- FEC: 4 LDPC hardware decoders, 1 LDPC hardware encoder
- Scrambling and descrambling
- Precoding for 4x4 MIMO
- Rate matching
- HARQ timers

Left plot: With the open-source 5G stack srsRAN, ORS Aurora reduces the CPU load for processing the Physical Uplink Shared Channel (PUSCH) by 45%.
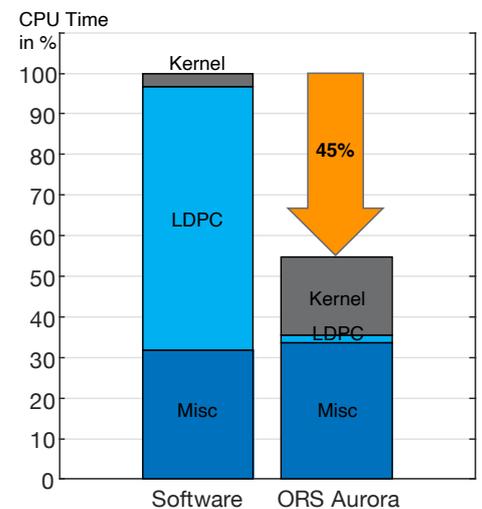
Specifications

Dimensions	PCIe full height, half length (FHHL)
Operating Temperature	-5 to 55°C (NEBS 3)
Power supply	PCIe connector or ATX 6-pts connector, max. 20 W
Hardware	FPGA-based Radio Processing Unit (RPU) DDR4 2 GB onboard RAM PCIe Gen. 3x16 interface to host (128 Gbit/s) 4xSFP28: 25 Gbit/s Ethernet per port
Software Support	Linux high-performance driver DPDK/BBDEV and native interface to open-source vRAN stacks: OCUDU, srsRAN, and OpenAirInterface VM and bare metal
Compatibility	5G NR 3GPP Release 17+ SA/NSA Open RAN Split 7.2 and Split 8 x86, Intel and AMD
Performance	5G NR throughput: 21 Gbit/s encode, 8 Gbit/s decode

Product roadmap

Systematic transformation of the physical layer to a **full software** RAN!

ASIC   FPGA

DU low

PHY high

FH 7.2

PHY low

FH 8

RU   PHY low   RF

RF

Look-aside RPU (O-RAN Split 7.2) ready by Q1, 2026

Inline RPU (Split 7.2) ready by Q3, 2026

Inline RPU (Split 8) by Q2, 2027

FH Bus Master by Q1, 2028

Radio Unit (Split 8) by Q3, 2028