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Radio Cloud OpenEdge Server design



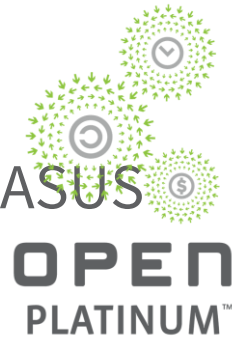
NOVEMBER 9-10, 2021

Radio Cloud OpenEdge Server design

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Abstract



EDGE

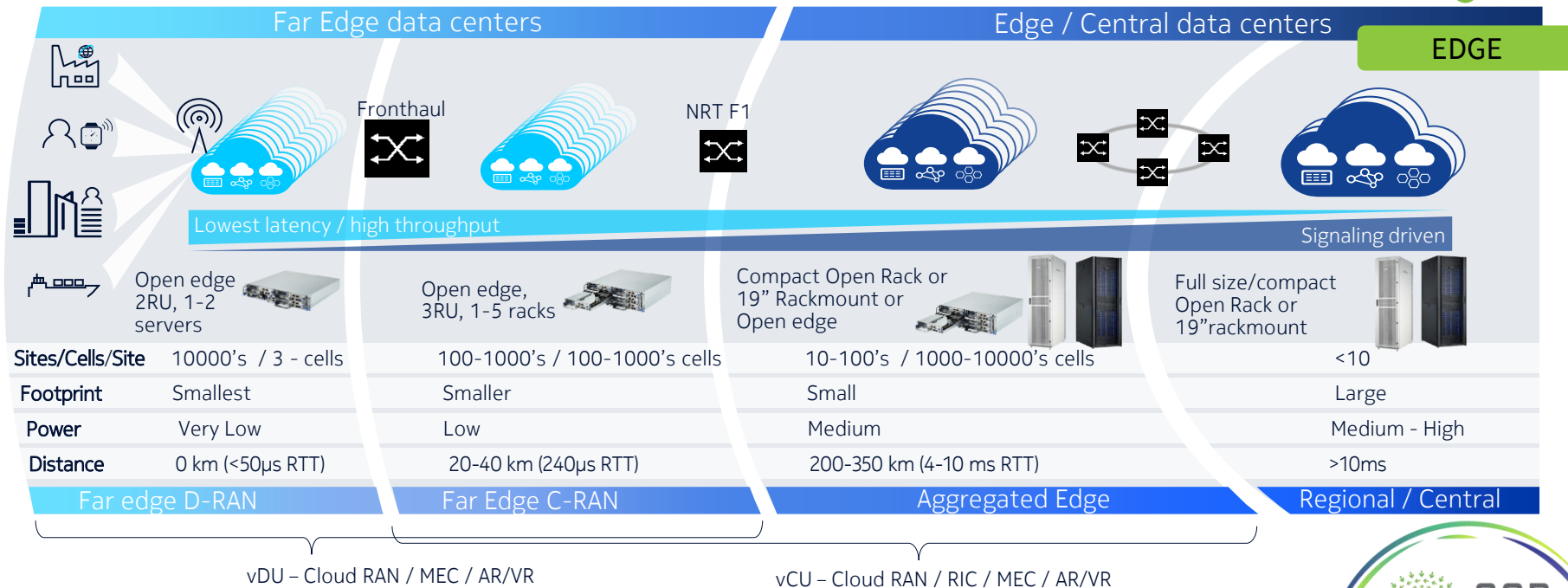
Nokia and ASUS have jointly developed a new 2nd generation Open Edge server sled featuring support for 3rd Generation Intel® Xeon® Scalable Processors. This presentation highlights the main technical specifications of this server. The 2nd generation Open Edge server is a major advancement over the initial Open Edge server release of 2018.

The main enhancement is the introduction of support for 3rd Generation Intel® Xeon® Scalable Processor family CPUs and EDSFF E1.S with forward-looking SSD technology. The new CPU generation and several other improvements bring significant benefits in running various real-time applications at the edge. Improved system cooling will enable simultaneous use of higher TDP CPUs and various accelerator cards.

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Workloads are moving closer to the edge of the network



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Edge cloud use cases & motivation for design update



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- Cloudification of telco applications
 - VRAN (Virtualized Radio Access Network) workloads, e.g. processing of data to/from 5G mMIMO antenna arrays, are compute intensive
 - higher core-count enables more dense, lower cost solutions
 - Increasing user data rates call for high-performance networking and HW acceleration
- Other applications: MEC, RIC, vCU, retail, IoT, enterprise, etc.
 - such as video transcoding, AI, ML, etc.

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Technology enhancements



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Latest Intel XEON scalable gen3 support

- Significant increase in core count
- Platform improvements in supporting real-time applications
- Increased number of memory buses: 6 -> 8
- Increased memory bus speed: DDR4 2993 MT/s -> 3200 MT/s
- Support for new PCIe generation: Gen3 -> Gen4
- Increased number of PCIe lanes: 48 -> 64

Support for OCP 3.0 SFF

- Hot-swappable
- Higher TDP and performance
- Support for dual-QSFPxx in front panel for increased throughput

Enhanced thermal performance

- Increased sled TDP: 400 W -> 500 W
- Support for 230 W CPU TDP in 1U sled

Enhanced storage solution

- Support for dense EDSFF E1.S
- Enhanced cooling using heat sink solution
- Modern SSD technology

Environmental and regulatory compliance

- Compliant with Open edge specifications, including full NEBS level 3 (EMC, safety, Zone-4, acoustics, etc.), extended operating temperature range

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Open Edge Server Sled, 1U



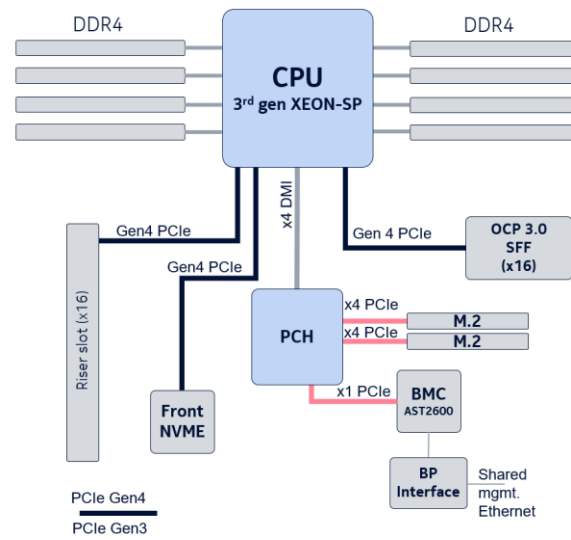
1U Sled, half width
215 x 41 x 423 mm
(W x H x D)



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Key Specifications

- **Power feed capacity up to 500W, for high performance applications**
- **Single 3rd Gen Intel® Xeon® Scalable Processor (Up to 230W)**
- **PCH : Intel® C621A**
- **Memory : 8 x DDR4 3200 (1 DPC), support Intel® Optane™ Persistent Memory 200 series technology**
- **Extension slots**
 - PCIe Gen4 x16, FHHL, 75 W
 - OCP v3.0, PCIe Gen4 x16, 80 W
- **Storage**
 - 2 x EDSFF E1.S new NVMe for high performance, density and cooling, supports VROC
 - 2 x M.2 SSD, SATA/NVMe, 22110/2280



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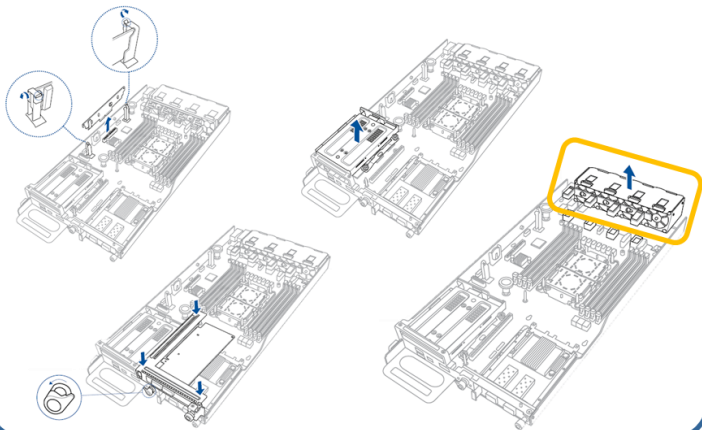
Mechanical design for useability

- Full Front Access : cabling, tool-less serviceability
- Modular Design Concept: fan module, SSD assembly, riser assembly, EDSFFs, M2s
- Flexible Fan Module Design : options for front-to-rear/ rear-to-front airflow direction
- Hot Swap Storage for High Availability

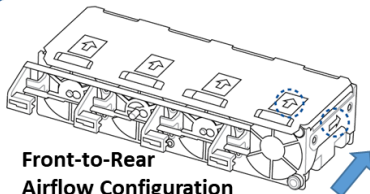


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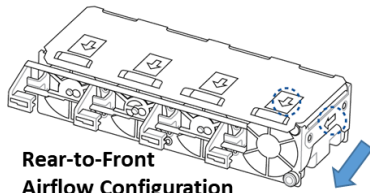
The Concept of Modular Design



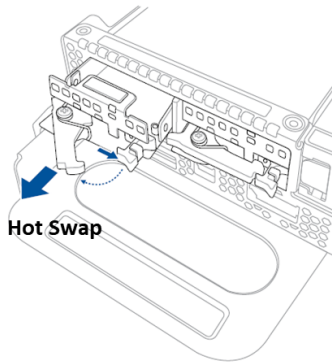
Front-to-Rear
Airflow Configuration



Rear-to-Front
Airflow Configuration

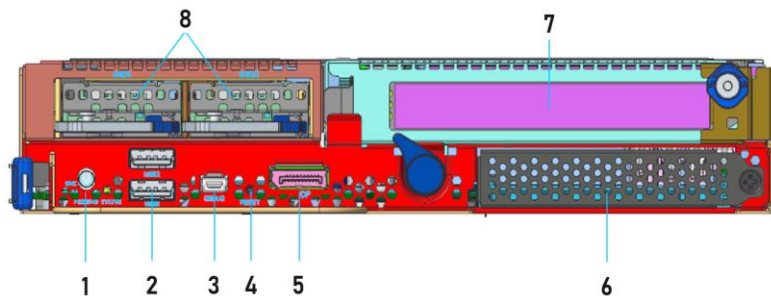


Hot Swap

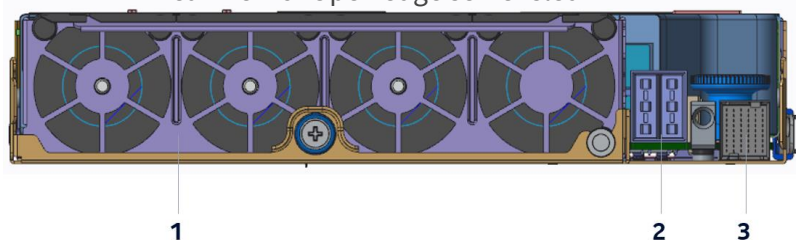


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1U Sled Interfaces - Front and Rear



Front view of Open edge server sled



Rear view of Open edge server sled

Item	Description
1	Power button (with identifier LED)
2	2 x USB3.2 Gen 1 connector
3	Mini-USB Type UART debug
4	Reset button
5	Display port connector
6	OCP 3.0 (Gen4 x16 link) slot (small form-factor)
7	FHHL PCI-E x16 (Gen4 x16 link) expansion slot
8	2 x EDSFF E1.S, NVMe, hot swap

Item	Description
1	Fan module, front to rear & rear to front options
2	Backplane power connector
3	Backplane signal connector

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Product Info



OPEN
ACCEPTED™



OPEN
INSPIRED™



OPEN
Compute Project
SOLUTION PROVIDER®

Nokia: <https://www.nokia.com/networks/products/airframe-open-edge-server/>

ASUS: <https://servers.asus.com>

Open edge server specification: <http://files.opencompute.org/oc/public.php?service=files&t=c2dc2bee9f5228eb84104b3662497263&download>

OCP Marketplace: <https://www.opencompute.org/products>

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Call to Action

- Join regular Edge sub-project calls (under Telco project)
- Edge sub-project Wiki page containing latest specifications:
<https://www.opencompute.org/wiki/Telcos/Edge>
- Edge sub-project mailing list:
<https://ocp-all.groups.io/g/OCP-Edge>

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Thank you!



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