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NOKIA

OCP
CHINA DAY

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Beijing

OPEN EDGE

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AirFrame open edge server: 5G performance in compact size

First x86 solution designed to fully support edge / far-edge cloud deployments



Ultra-small footprint

ARCHITECTURE

- 19" compatible: fits in any 600mm deep cabinet
- Compact form factor: 3RU high chassis
- Sleds either 1RU or 2RU high
- Fully front-operated (cabling, open rack-like tool less serviceability)
- Support for high end accelerators
- High availability: No SPOFs, redundant fans, hot swap storage
- Redundant fans; air flow configurable front to rear/rear to front

DIMENSIONS

- 130.6 (3RU) x 440 x 430 mm (H x W x D)
- Ca. 12.0 kg / 26.5 lbs. (Chassis with PSU's and RMC)

POWER

- 2N redundant AC & DC power supplies
- Power fed to sleds through backplane
- 400W per 1U sled

MANAGEMENT

- All sleds managed through single interface in RMC unit
- On board BMC (in server sleds)

Environmental

- Full NEBS compliancy, seismic zone 4 [GR-63-Core, GR-1089-Core]
- Extended operating temperature range: -5C..+45C [ETSI EN300 019-1-3 Class 3.2]

COMMODITY

- support on server sleds
- Memories, disks and NICs from common AirFrame portfolio

AirFrame open edge server – 1U sled

Intel Xeon® SP next gen



Dimensions, weight

- 41 x 215x 427mm (H x W x D)
- 3.4 kg / 7.5 lbs.**

***) Server node with CPU and heatsink

Memory

- DIMM slots: 6 typical (8 max)
- DIMM type: 16GB / 32GB / 64GB - DDR4 RDIMM 2933 MHz

Management

- Redfish, IPMI v2.0 Compliant, on board BMC
- Access through RMC unit

Storage

- 2x 2.5" Hot-plug bays for 7/9.5 mm SATA / NVMe drives
- 2x internal M.2 2280 or 22110 devices

Security

- TPM 1.2/ 2.0

Expansion Slots

- 1x PCIe Gen3 x16 OCP mezzanine slot
- 1x PCIe Gen3 x16 FHHL PCIe slot

Processor (single socket)

- Intel® Xeon® SP, up to 24cores, 2.4GHz

Chipset

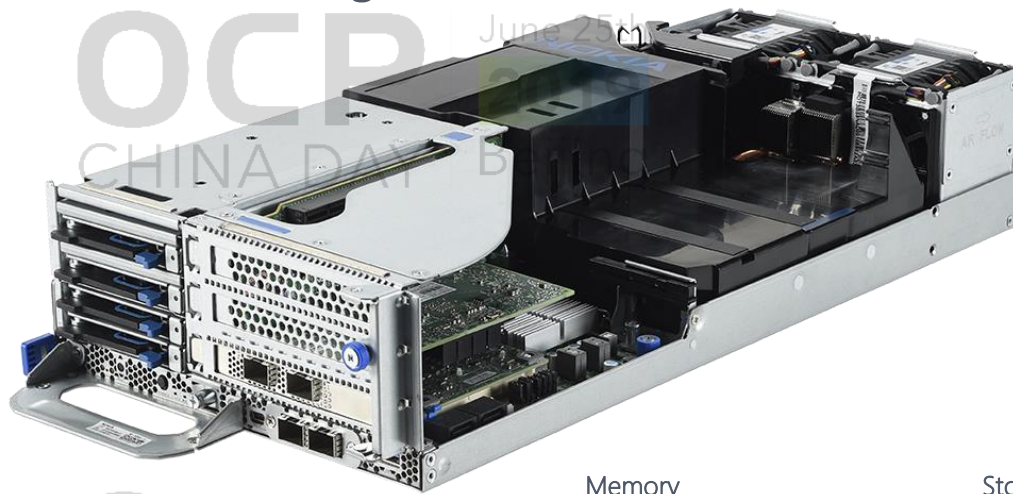
- Intel® C621/C627

Thermal

- Max. CPU TDP support: 205W
- Four redundant fans per node; air flow front to rear/rear to front

AirFrame open edge server – 2U sled

Intel Xeon® SP next gen



Dimensions, weight

- 83 x 215x 427mm (H x W x D)
- 4.7 kg / 10.4 lbs.**

Memory

- DIMM slots: 6 typical (8 max)
- DIMM type: 16GB / 32GB / 64GB - DDR4 RDIMM 2933 MHz

Management

- Redfish, IPMI v2.0 Compliant, on board BMC
- Access through RMC unit

Processor (single socket)

- Intel® Xeon® SP, up to 24cores, 2.4GHz

Chipset

- Intel® C621/C627

Thermal

- Max. CPU TDP support: 250W
- Two redundant dual rotor fans per node; air flow front to rear/rear to front

Storage

- 2x 2,5" Hot-plug bays for 7/9.5/15 mm SATA / NVMe drives
- 2x 2,5" Hot-plug bays for 7/9.5 mm SATA / NVMe drives
- 2x internal M.2 2280 or 22110 devices

Security

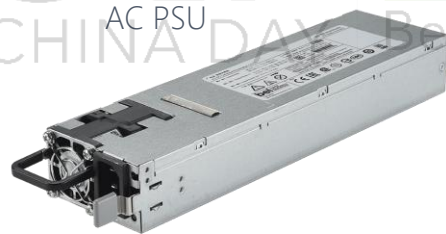
- TPM 1.2/ 2.0

Expansion Slots

- 1x PCIe Gen3 x16 OCP mezzanine slot
- 1-2x PCIe Gen3 x8/x16 FHHL slot
- 1x PCIe Gen3 x16 FHFL double wide slot

***) Server node with CPU and heatsink

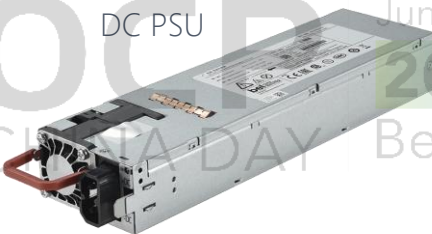
Open Edge Chassis building blocks



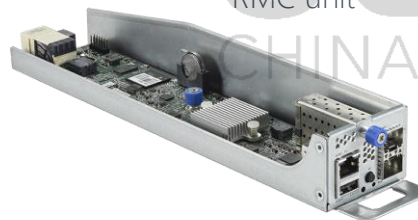
AC PSU



Chassis (3RU)



DC PSU



RMC unit

Open Edge server storage options

Solid State Disks (SATA)

- Form factor:
- Interface:
- hot-plug

2.5", 7/9 mm
SATA

Solid State Disks (NVMe)

- Form factor:
- Interface:
- hot-plug

2,5", 7mm /15mm
PCIe

Flash device on-board

- Form factor:
- Interface:
- Dual M.2 riser on motherboard

M.2 (2280/22110)
SATA / PCIe



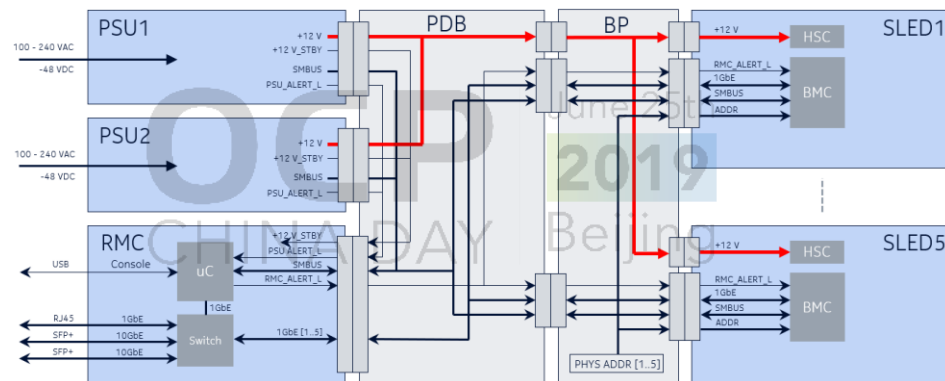
HW details



Open edge chassis overview

Key specifications

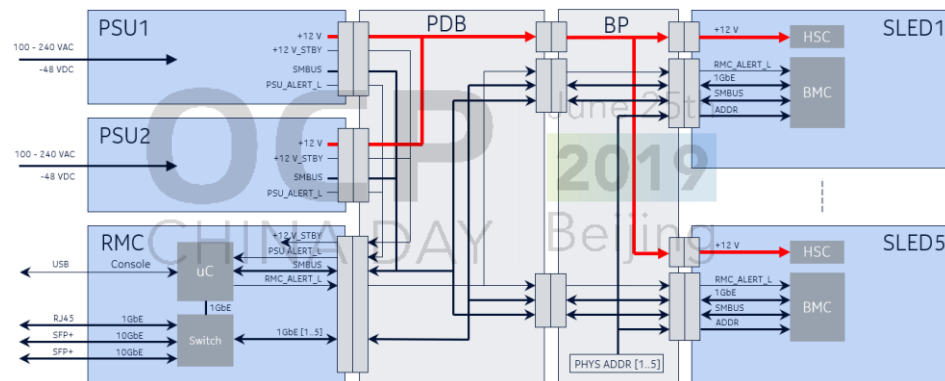
- 3U, 19" mountable (EIA-310 compatible)
- 130.6 x 440 x 430 mm (H x W x D)
- 1U and 2U, half width sleds are supported
- Redundant, centralized power supply
 - 2000 W max power feed capacity, 80+ Platinum
 - AC (100..127/ 200..240 VAC) and DC (-48 VDC) options
- Sled power feed capacity 400 W (1U sled), 700 W (2U sled), 12 VDC



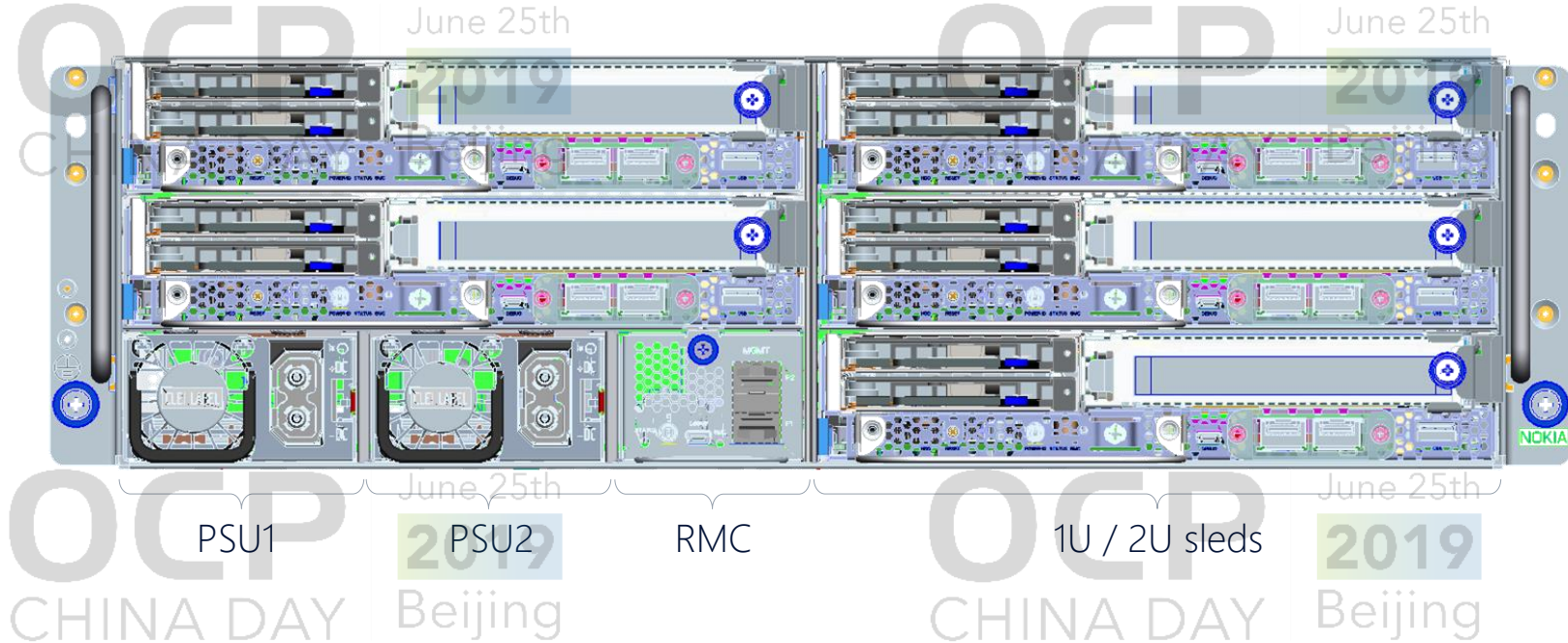
Open edge chassis overview

Key specifications

- Cooling: Fan units are part of sled solution
 - Air flow direction configurable: front to rear/rear to front
- Chassis management controller (RMC)
 - PSU management (control, sensors, ..)
 - Management Ethernet interface to sleds
 - 1 GE to all sleds via backplane
 - 1x 1 GE (RJ45) + 2x 10 GE (SFP+) front panel interface for external connectivity and chaining of multiple chassis
- Power distribution board and chassis backplane provide connectivity between RMC, sleds and PDUs



Open edge chassis front view



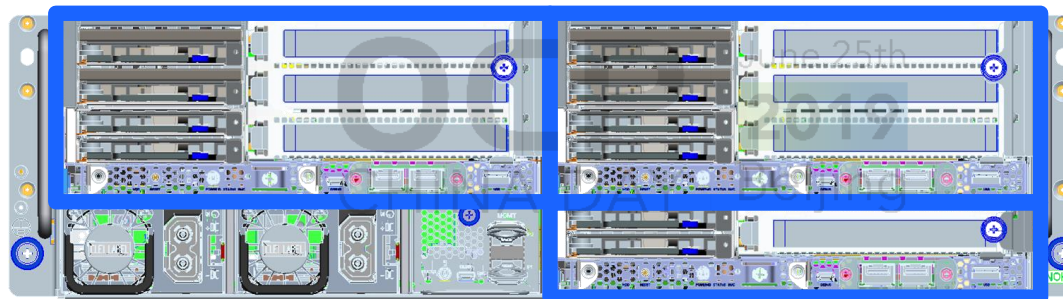
1U and 2U sleds are supported

- Open edge chassis allows flexible installation of both 1U and 2U sleds
- Supported configurations are
 - 5x 1U
 - 3x 1U + 1x 2U
 - 1x 1U + 2x 2U
- A support bracket for 1U sled is removed when installing a 2U sled (tool-less)

5x 1U



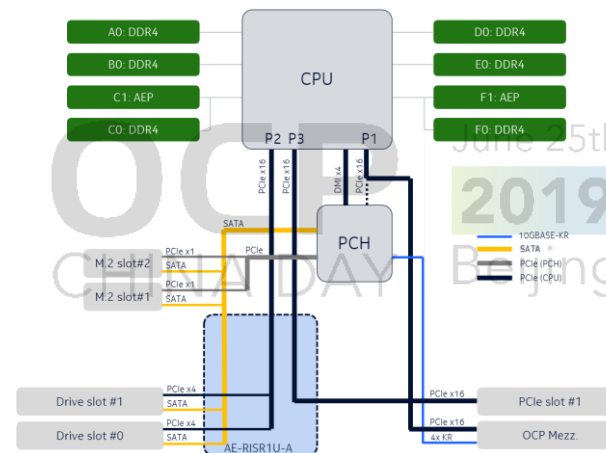
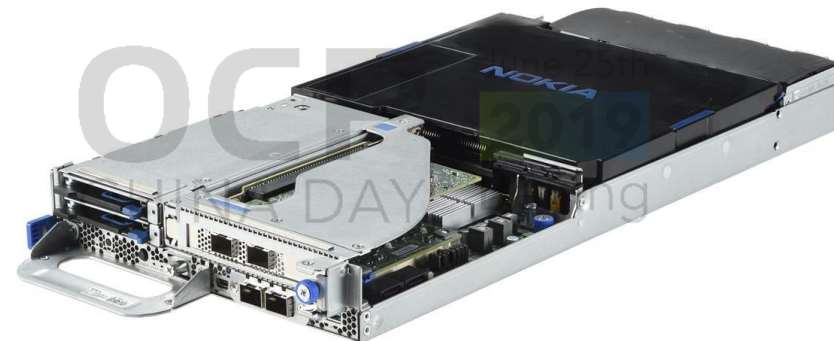
1x 1U + 2x 2U



Server sled, 1U

Key specifications

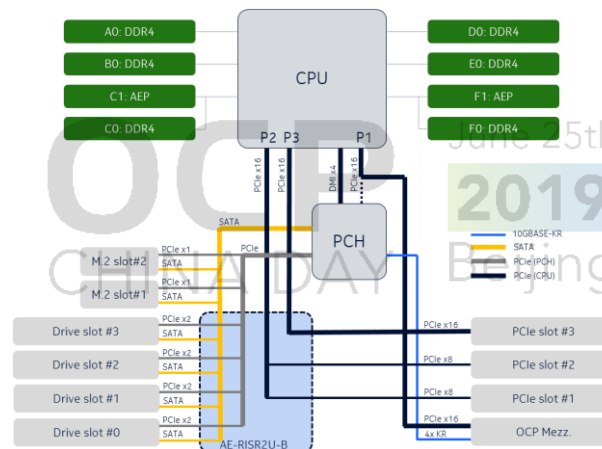
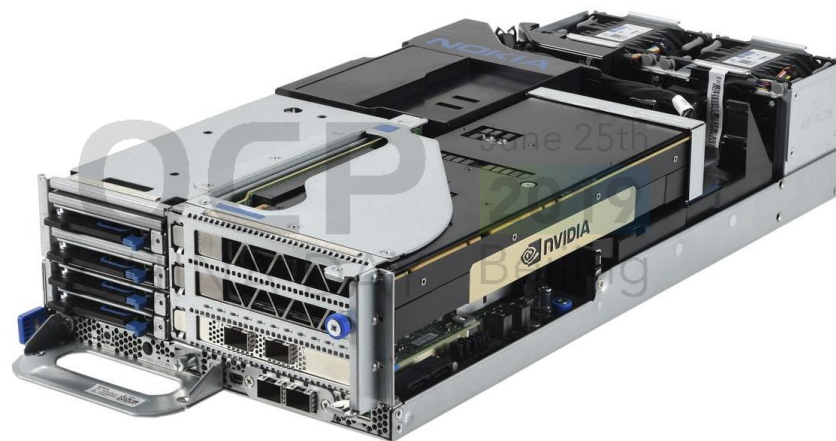
- 1U, half width
- 215 mm x 41 mm x 423 mm (W x H x D)
- Power consumption 400 W, max
- Single-socket CPU, Intel® Xeon® Scalable Family, Thermal Design Power (TDP): max. 205 W
- PCH options: Intel C621, C627 (with QAT)
- Memory: 6 x DDR4-2933 + 2 x Intel Optane PMM
- Single riser for disks and add-in cards
- Extension slots
 - PCIe x16, FHHL, 75 W
 - OCP Mezzanine 2.0, PCIe x16
- Storage
 - 2 x hot-plug SSD, SATA/NVMe, 2.5", 7/9.5 mm
 - 2 x M.2 SSD, SATA/NVMe, 2280/22110



Server sled, 2U

Key specifications

- 2U, half width
- 215 mm x 83.6 mm x 423 mm (W x H x D)
- Power consumption 700 W, max
- Single-socket CPU, Intel® Xeon® Scalable Family, Thermal Design Power (TDP): max. 250 W
- PCH options: Intel C621, C627 (with QAT)
- Memory: 6 x DDR4-2933 + 2 x Intel Optane PMM
- Single riser for disks and add-in cards
- Extension slots (depending on riser option)
 - 1 x PCIe x16, FHFL, dual-wide, 300 W max
 - 1-2 x PCIe x8/x16, FHHL, 75 W max
 - OCP Mezzanine 2.0, PCIe x16
- Storage
 - 2 x hot-plug SSD, SATA/NVMe, 2.5 ", 7/9.5 mm
 - 2 x hot-plug SSD, SATA/NVMe, 2.5 ", 7/9.5/15 mm
 - 2 x M.2 SSD, SATA/NVMe, 2280/22110

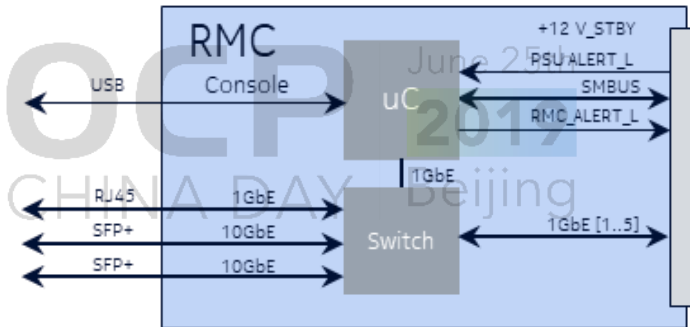


RMC

Management unit

Chassis management controller (RMC)

- PSU management (control, sensors, ...)
 - Control and supervision of PSUs
 - Access to sensor data (voltages, currents, power consumption)
- RMC controller from AST2500 family
 - USB debug port in front panel
- On-board unmanaged Ethernet switch simplifies HW management connectivity
 - Single management interface for entire chassis
 - 1 GE management Ethernet interface to all sleds via backplane (1000BASE-T)
 - 1x 1 GE (RJ45, 1000BASE-T)
 - 2x 10 GE (SFP+) front panel interface for external connectivity and chaining of multiple chassis



Key environmental and regulatory compliancy

Operating conditions

- Operating temperature range: -5 C ...+45 C [ETSI EN300 019-1-3 Class 3.2]
- Short term operating temperature: -5 C to +55 C [GR-63-CORE]
- Operating humidity: 5 % to 95 %

EMC

- EN300386 (v1.6.1)
- FCC CFR47 15 (class A), CISPR 22/32 (class A) CISPR 24
- TEC/EMI/TEL-001/01/FEB-09 and TEC/IR/SWN-2MB/07/MAR-10
- GR-1089-CORE

Safety

- IEC 62368-1:2014
- GR-1089-CORE (electrical safety, grounding and bonding)

Seismic tolerance

- GR-63-CORE (Zone 4)

Acoustic noise

- GR-63-CORE (equipment room criteria)

Fire resistance

- GR-63-CORE (shelf level criteria)

Nokia contribution to OCP

- Nokia has contributed Open edge server chassis specification and design files and applied for OCP accepted™ recognition.
- The contribution has been accepted by the Open Compute Telco/openEdge workgroup and OCP incubation committee in March 2019.

- Telcos/openEdge Wiki page:

<http://www.opencompute.org/wiki/Telcos/openEDGE>

Please join the open edge ecosystem development
- Dial-in into regular Open edge project calls

Visit Nokia booth at coming Regional OCP Summit in
Amsderdam

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Thank you