AirFrame open edge server: 5G performance in compact size
First x86 solution designed to fully support edge / far-edge cloud deployments

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

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)

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)

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

Environmental
- Full NEBS compliancy, seismic zone 4 [GR-63-Core, GR-1089-Core]
- Extended operating temperature range: -5C..+45C [ETSI EN300 019-T-3 Class 3.2]
AirFrame open edge server – 1U sled
Intel Xeon® SP next gen

Processor (single socket)
- Intel® Xeon® SP, up to 24 cores, 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

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

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

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

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

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

Security
- TPM 1.2/ 2.0

**) Server node with CPU and heatsink
AirFrame open edge server – 2U sled

Intel Xeon® SP next gen

Processor (single socket)
- Intel® Xeon® SP, up to 24 cores, 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

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

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

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

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

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

** Server node with CPU and heatsink

© 2018 Nokia
Open Edge Chassis building blocks
Open Edge server storage options

Solid State Disks (SATA)
- Form factor: 2.5", 7/9 mm
- Interface: SATA
- hot-plug

Solid State Disks (NVMe)
- Form factor: 2.5", 7mm /15mm
- Interface: PCIe
- hot-plug

Flash device on-board
- Form factor: M.2 (2280/22110)
- Interface: SATA / PCIe
- Dual M.2 riser on motherboard
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)
**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

![Diagram of RMC with interfaces](attachment:image.png)
Key environmental and regulatory compliance

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 Amsterdam
Thank you