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Nokia open edge server

Summary for OCP project calls

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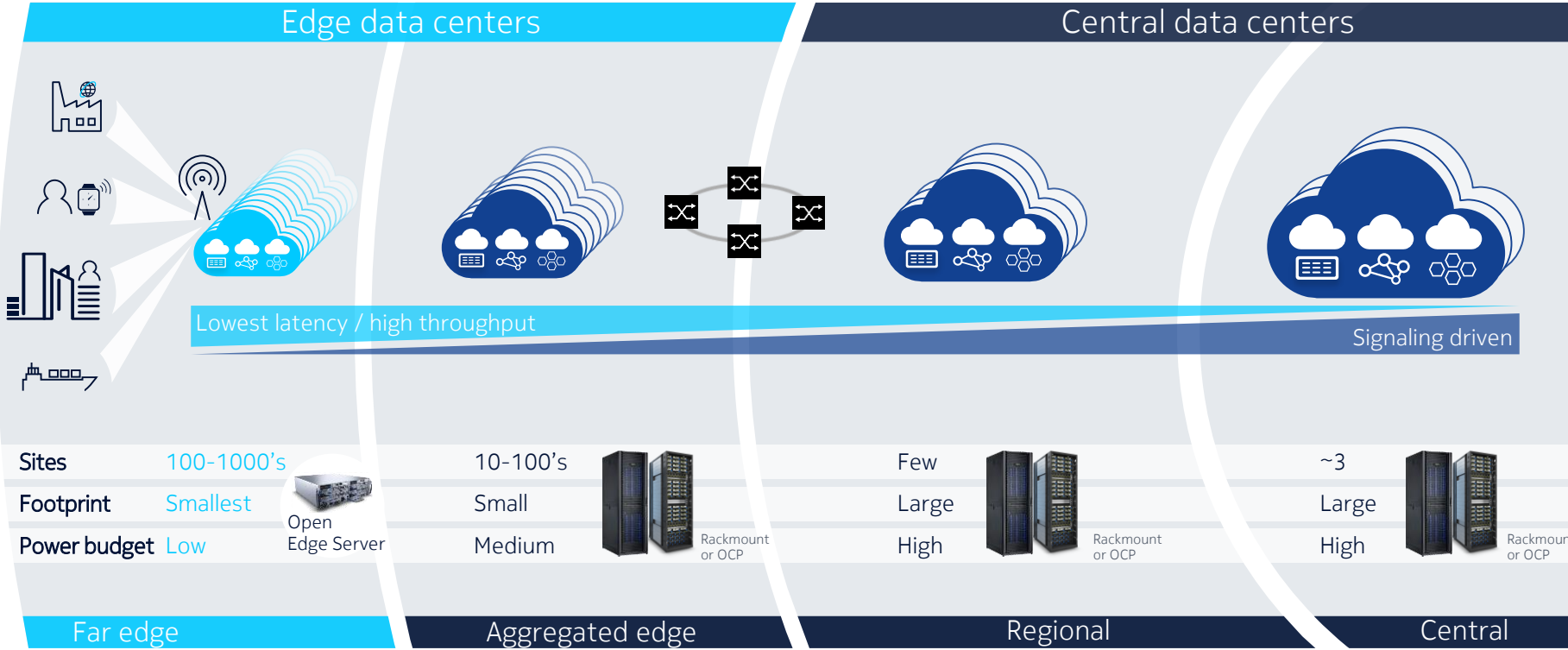
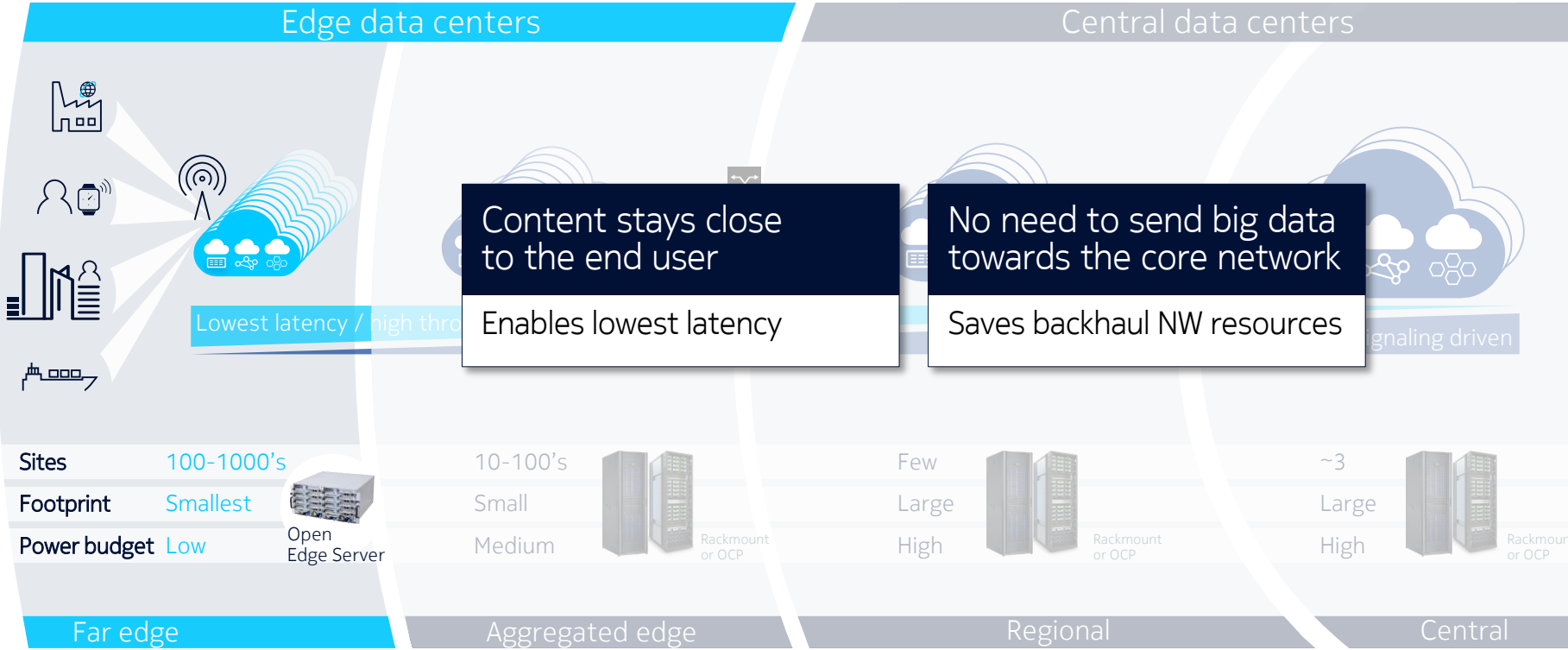
Managing the lowest latency/cost trade off with a layered architecture
Data center solution for the edge - Motivation



Managing the lowest latency/cost trade off with a layered architecture

Data center solution for the edge - Motivation



Why new hardware form factor is needed for edge data centers?

Edge site limitations and new requirements

- Edge sites are often existing telco sites.
- Traditional data center gear is too heavy and large for edge sites - equipment needs to be more compact in terms of depth, height and weight.
- NEBS compliance is mandatory in terms of thermal requirements, seismic tolerance, humidity tolerance, etc.
- Power budgets are limited and support for variety of power feed options for all continents and locations is needed.
- Network functions virtualization (NFV) is driving cloudification of all services also in network edge. General purpose CPU servers are preferred for the virtualization platform.
- New telco 5G and mobile edge computing applications can benefit from acceleration capabilities for processing and networking.

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Open edge server deployments

Requirements

- Fits into standard EIA 19'' rack, 600 mm deep, max 42RU
- Single socket servers – mainly due to mentioned size and power requirements
- Front cabling, full front serviceability
- Support for high end accelerators (FHFL PCIe)
- Typically 100 GbE connectivity per server needed (OCP mezz + PCIe x8/16 slots on server)
- NEBS requirements are mandatory, thermal, humidity, altitude, seismic zone-4, acoustics
- AC (several options) and -48V DC power feed options needed
- Scalability from small (few servers) to full rack configurations needed (>50 servers/rack)
- 400W power budget per 1RU server
- Redundant hot swappable power supply, redundant fans, redundant connectivity, …
- Hot swappable storage, RAID support
- BMC management for the servers

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Design target: Taking OCP benefits to the edge

Fit to edge physical limitations

- Open
- Modular
- Ecosystem
- Energy efficient
- Vanity free
- Toolless
- Dense

Preserve OpenRack benefits

Fully front operated

Open rack like tool-less serviceability

Vanity free design

Centralized power supply

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Nokia proposal: Open edge server
x86 solution designed to fully support edge / far-edge cloud deployments

ARCHITECTURE
- 19” compatible: fits in any 600mm deep cabinet
- Compact form factor: ranging from 2RU to 7RU 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: redundant fans, hot swappable storage
- Air flow configurable front to rear/rear to front

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], short term range: -5..+55C [NEBS]

DIMENSIONS
- 130.55 (3RU) x 440 x 430 mm (H x W x D)
- Ca. 12.0 kg / 46.5 lbs. (Chassis with PSU’s and RMC)

POWER
- 2N redundant AC & DC power supplies
- Power fed to sleds through backplane
- 400W per 1U sled
- 700W per 2U sled

MANAGEMENT
- RMC manages chassis power feed.
- All sleds managed through single interface in RMC unit (acts as an ethernet switch connecting the server slots)
- On board BMC in server sleds (RMC does not manage servers)

COMMODITY
Supports standard commodities like DIMMs, NICs, HBA cards, HDD/SSD/NVMe disks, M.2 disks, GPGPU cards, etc.

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Nokia open edge solution – OCP contribution plan

OCP Accepted contributions planned

a. Open edge chassis
b. Server mechanics (location and types of rear connectors including pin-out data)

OCP Inspired contribution planned

a. Server motherboard
b. Chassis RMC

Contribution process is starting now and target for completion is end of 2018.

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Invitation to the community

We invite the OCP community (suppliers and adopters) to work with us on edge data center solutions.

Our target is not a Nokia solution but an open OCP solution for the edge.

This is just the beginning of long journey to the far edge…

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