

5G

QCT | ROBIN

Cloud

Hyper-automation for Disaggregated Open RAN in Cloud Native 5G Evolution

QCT & Robin.io

IT

AI

Agenda



Pain Point &
Challenge for
5G vRAN Deploying



How Robin CNP &
MDCAP offer
streamline
deployment of vRAN



How QCT Select Best Fit
Server for 5G NFVI and
enhanced the hardware
management with
NFVI platform



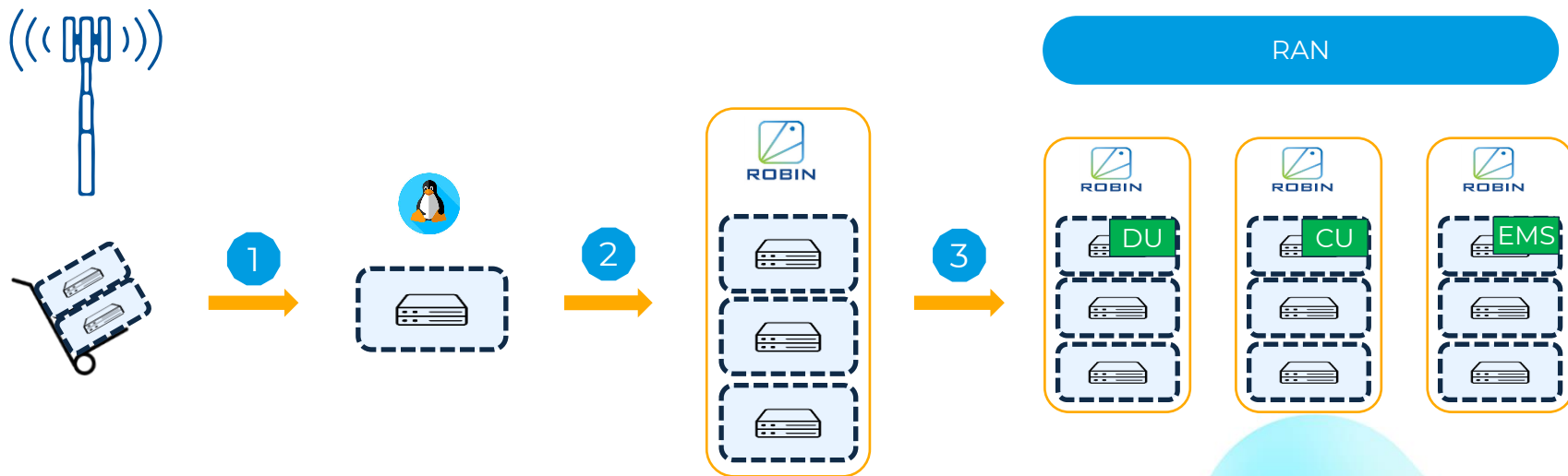
HW Management
Tool :
QCT Baremetal SDK



Value Proposition

Problem statement

A very well understood problem statement



Lots of small problems .. in different domains .. across distributed sites .. at scale

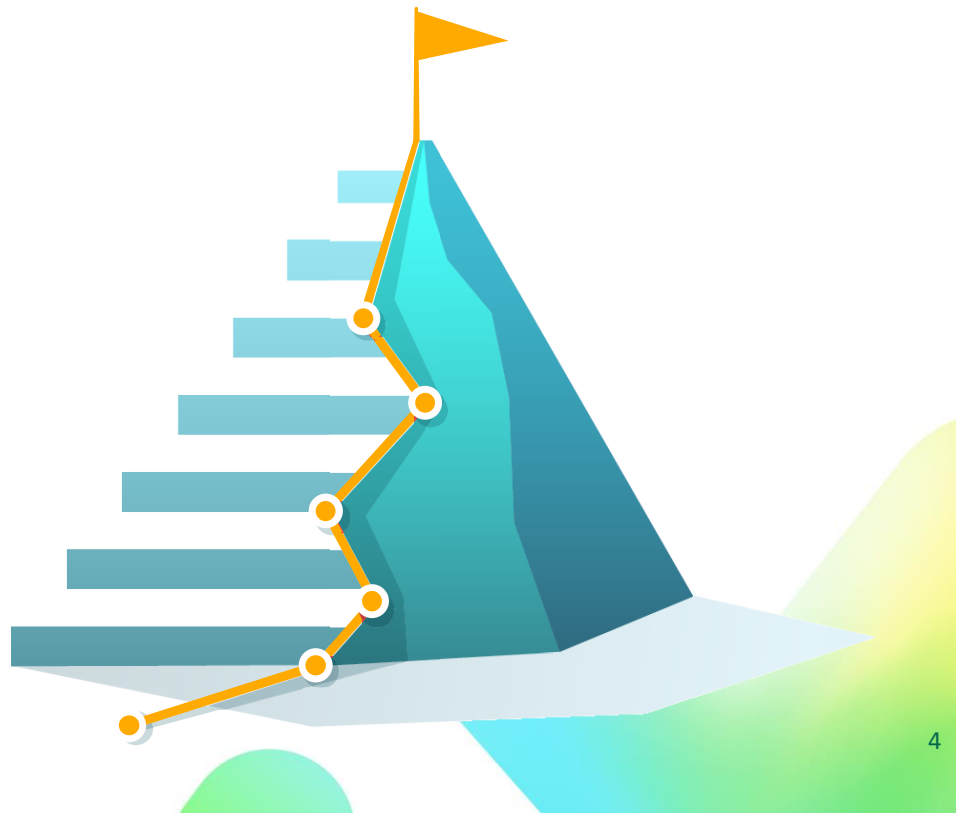
Challenges

- **Orchestration** challenges

- Infrastructure Management
 - Baremetal server management
- Cluster Orchestration
 - Kubernetes Cluster management
- Network Function Management
 - Network Function Package (Helm Charts)
 - Network Function
 - Network Service

- **Edge Platform** challenges

- Compute orchestration
- Network orchestration
- Storage orchestration
- Observability





Robin.io Accelerates
Deployment and Automates
Lifecycle Management of
Stateful, 4G/5G and Edge
Applications on Kubernetes



- ✓ World's first deployment of cloud-native 5G Stack in production
- ✓ Trusted by F1000 companies for their mission critical Storage and Network applications



- **Headquartered in San Jose**

Experienced team, with deep domain expertise who have built mission critical software used at the core of our economy today

- **Built highly differentiated technology with at least 2 years+ head start over competition**

72+ patents (50+% awarded) in key areas, live production deployments

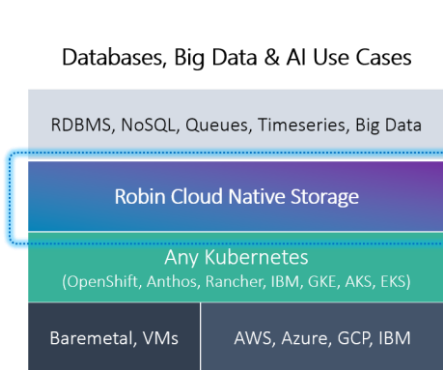
- **Marquee customers**



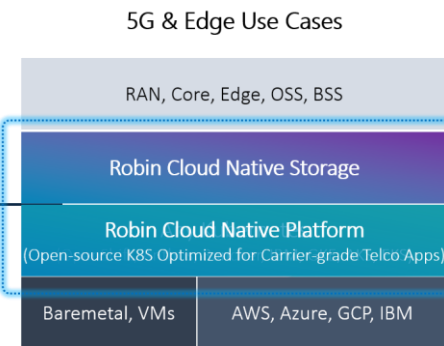
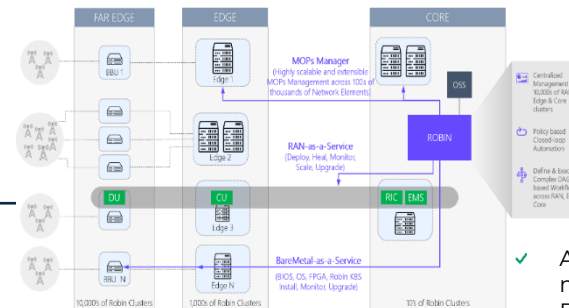
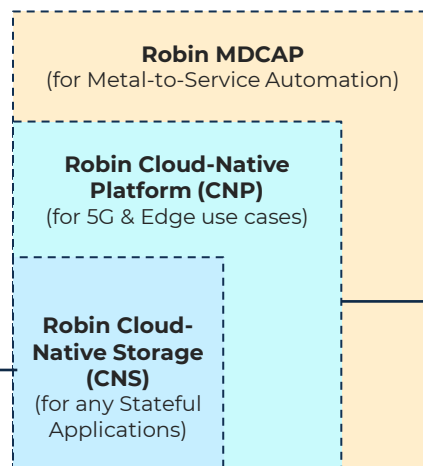
- **Strong partnerships**



Robin.io Solution Offerings



- ✓ Provides Storage & Data Management for Database, Big Data, Message Queue, & Altype Data-intensive applications
- ✓ Runs on any Kubernetes and in any on-premises or public-cloud environments
- ✓ Zero-friction insertion



- ✓ Carrier-grade Kubernetes for Network & Data-intensive applications
- ✓ Optimized to run RAN, Core, Edge applications

- ✓ Automate management of Baremetal Servers
- ✓ Metal-to-Service orchestration and automation

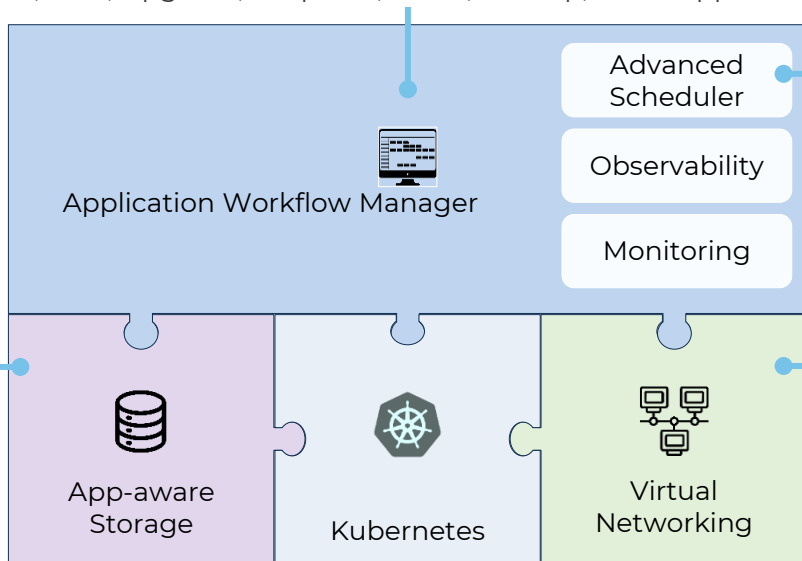
Platform (CNP)



Robin cloud-native platform architecture

1-Click or API-driven end-to-end Automation

Deploy, Scale, Heal, Upgrade, Snapshot, Clone, Backup, entire application pipelines



Advanced Placement

NUMA-aware, CPU Pinning, HugePages, Policy-based, Multi-Service Affinity+Anti-affinity, Multi-CRIs (Containers, VMs)

Robin's built-in Application-Aware Storage

Snapshots, Clones, QoS, Replication, Backup, Data rebalancing, Tiering, Thin-provisioning, Encryption, Compression

Carrier-grade networking

OVS, Calico, VLAN, Overlay networking, Persistent IPs, Multiple NICs SR-IOV, DPDK, Dual-stack IPv4/IPv6



Works any where

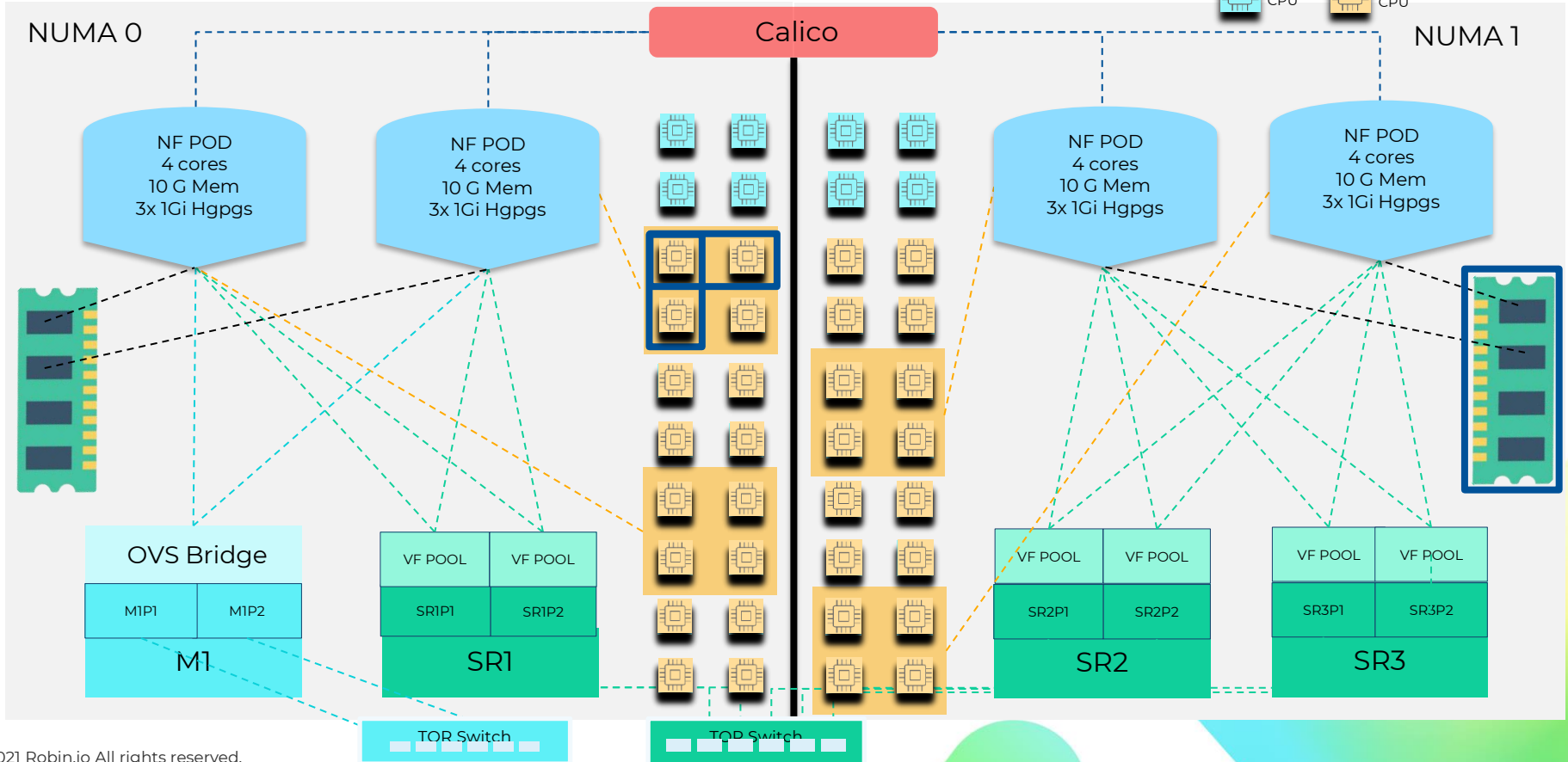
Challenges in hosting RAN Applications



OS CPU



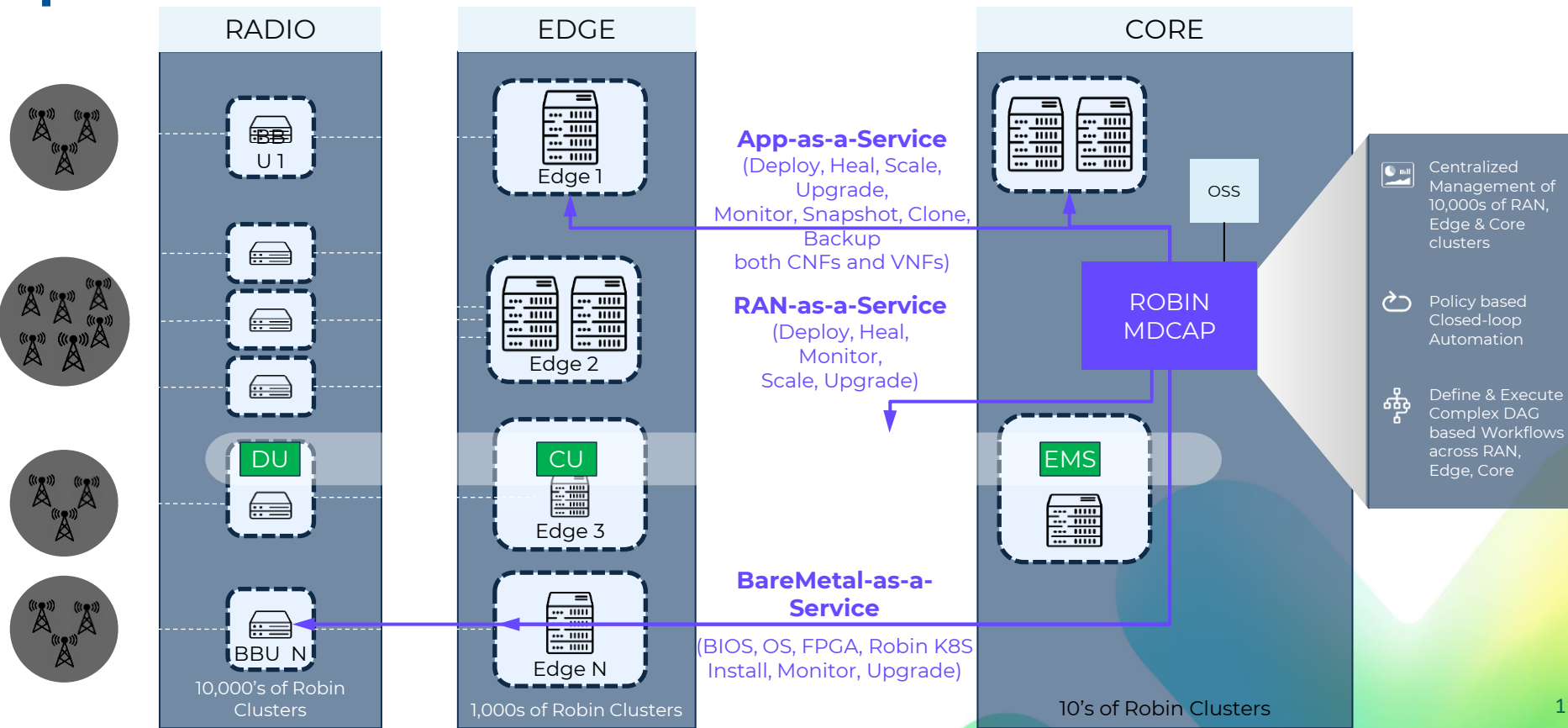
Isol CPU



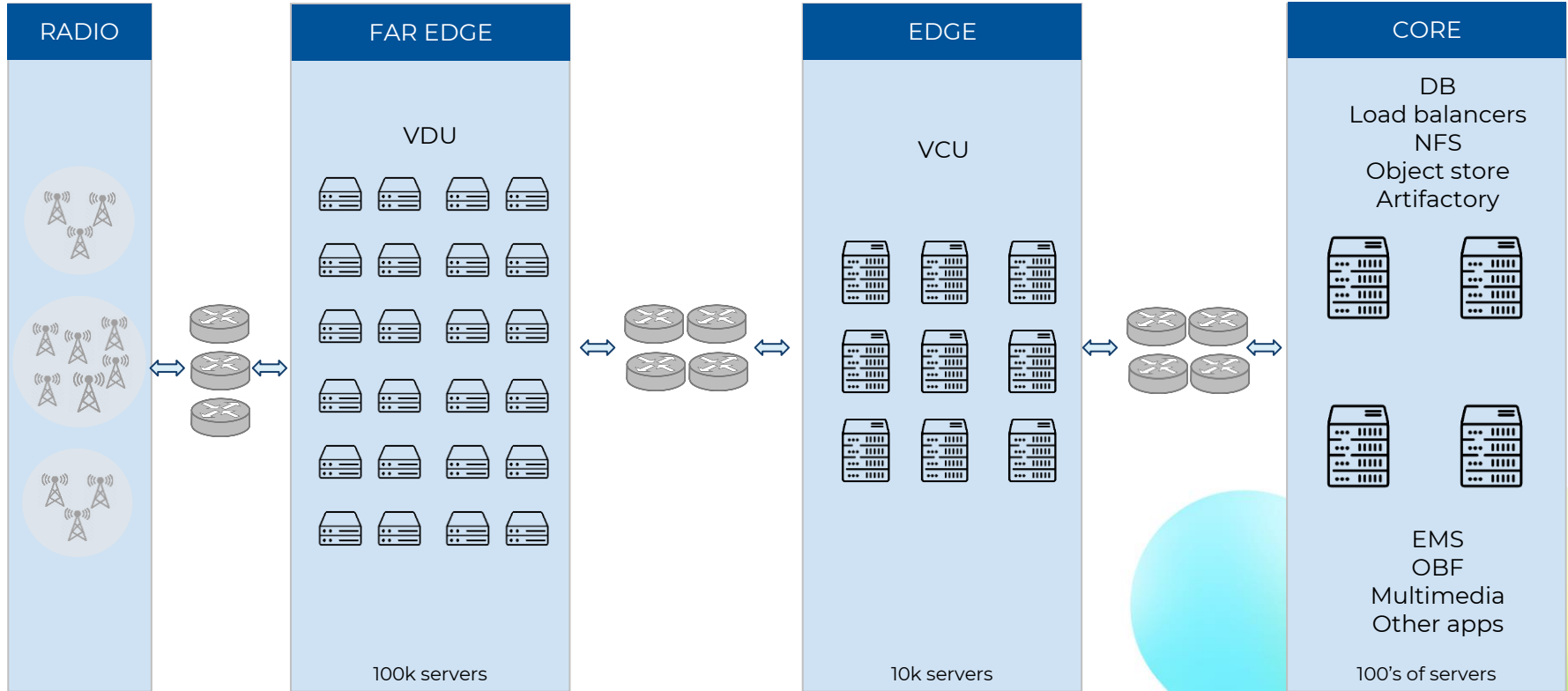
Orchestrator (MDCAP)



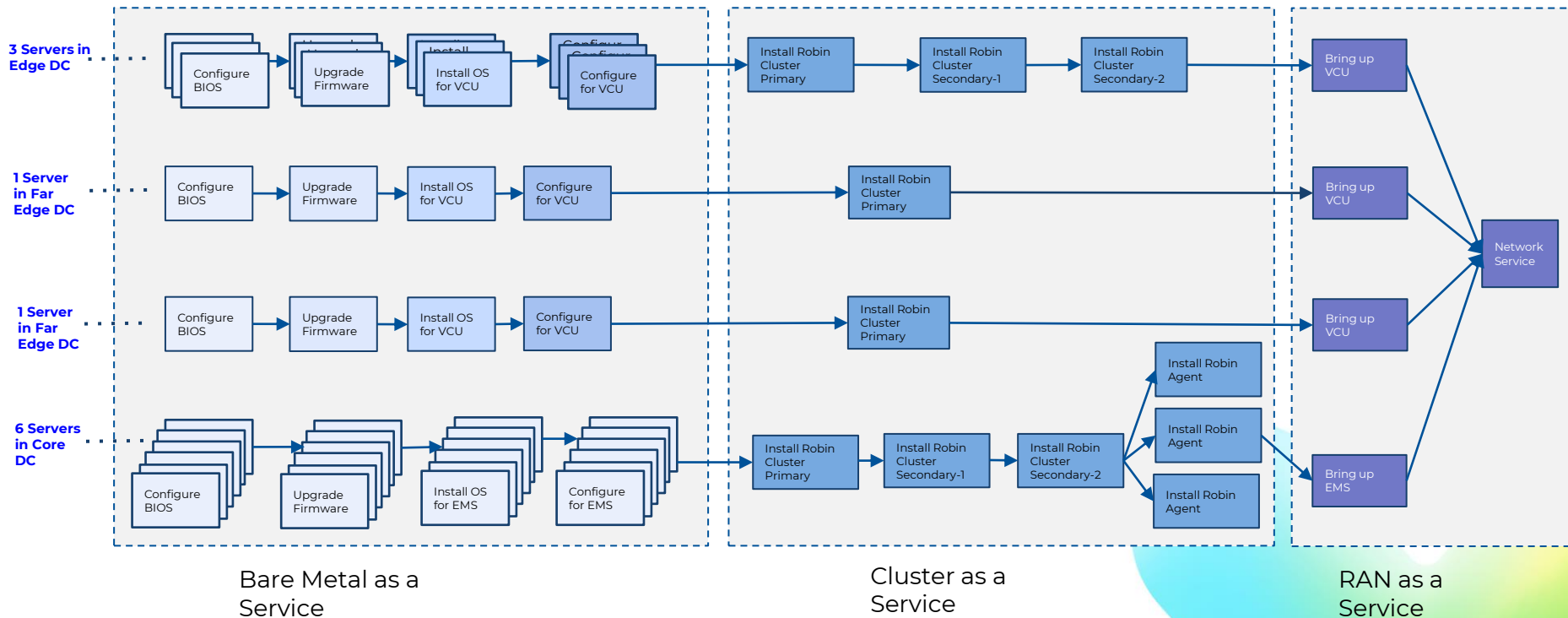
Robin's multi-cluster automation platform



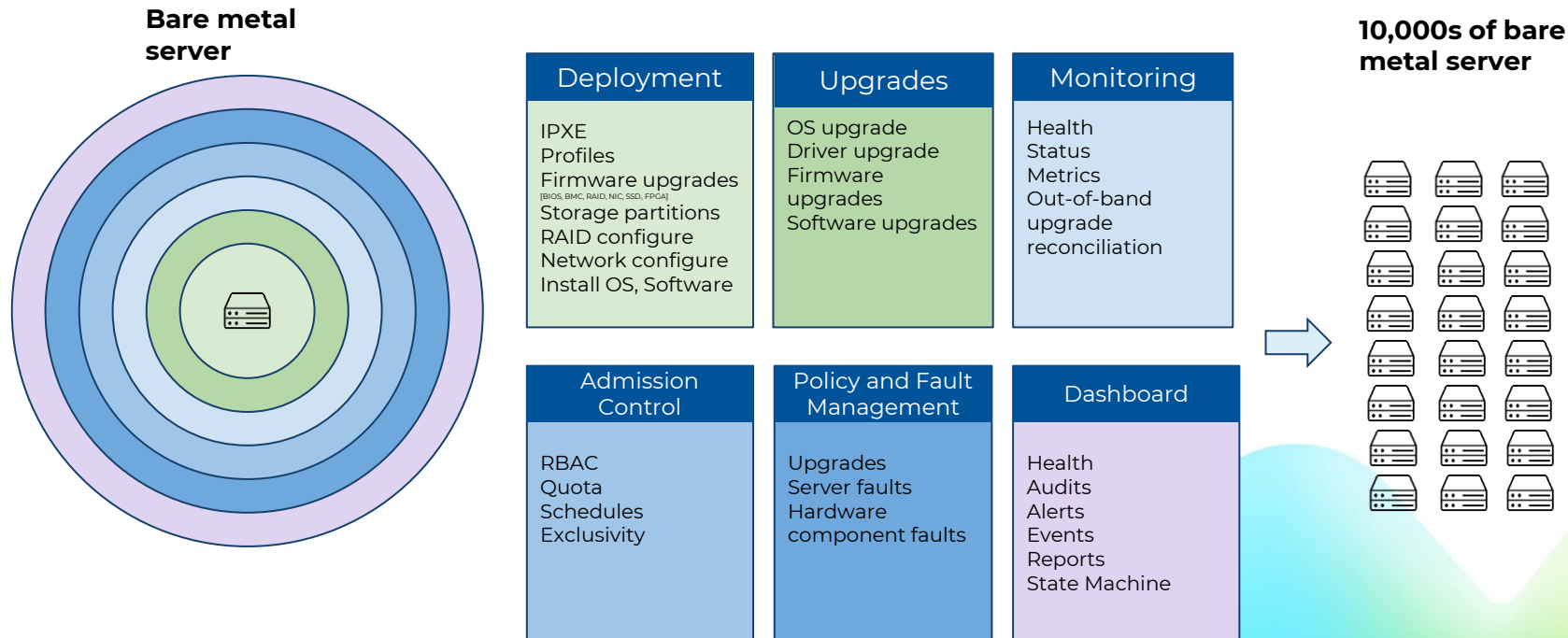
5G Disaggregated Data Center Layout



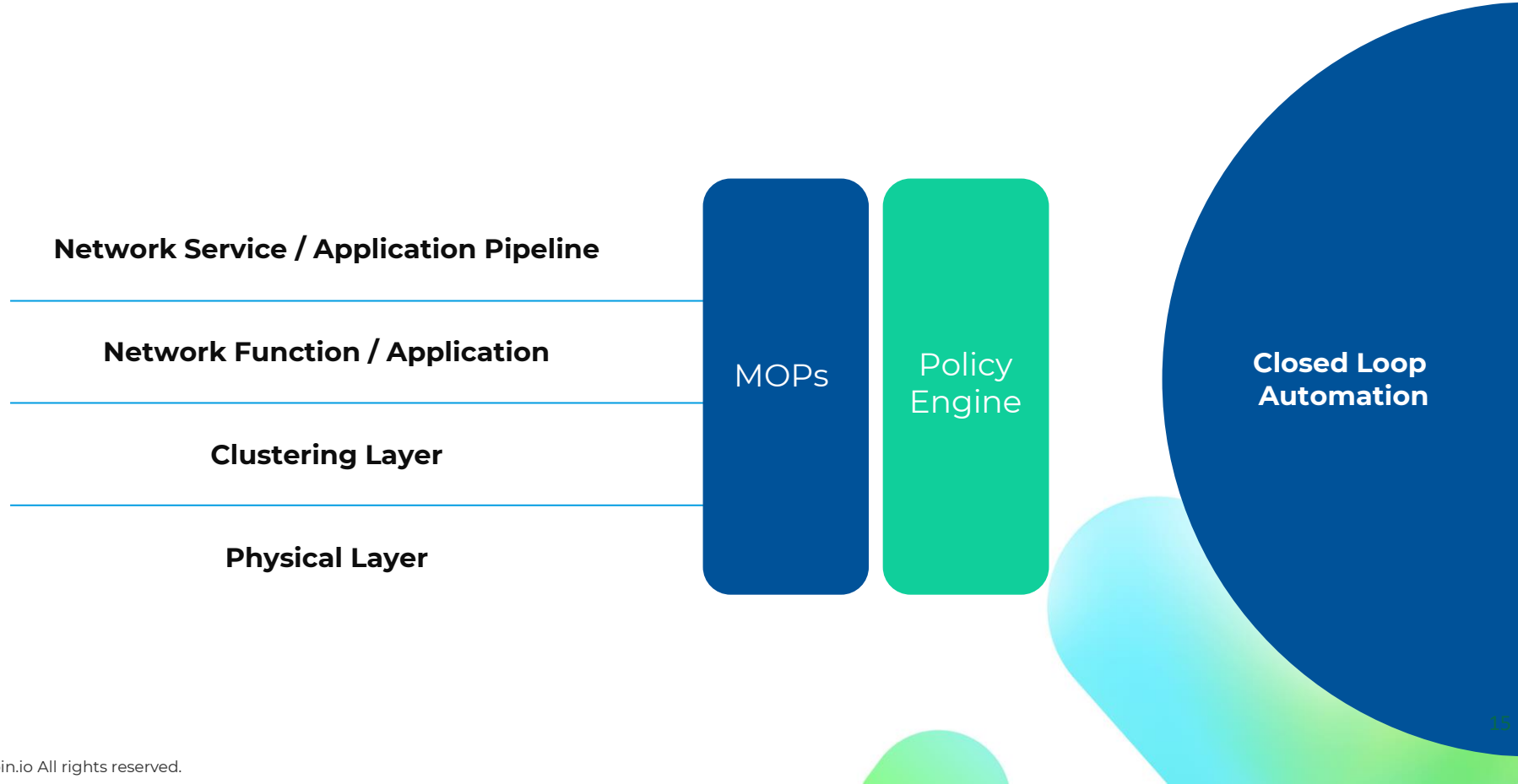
Workflow driven life cycle management



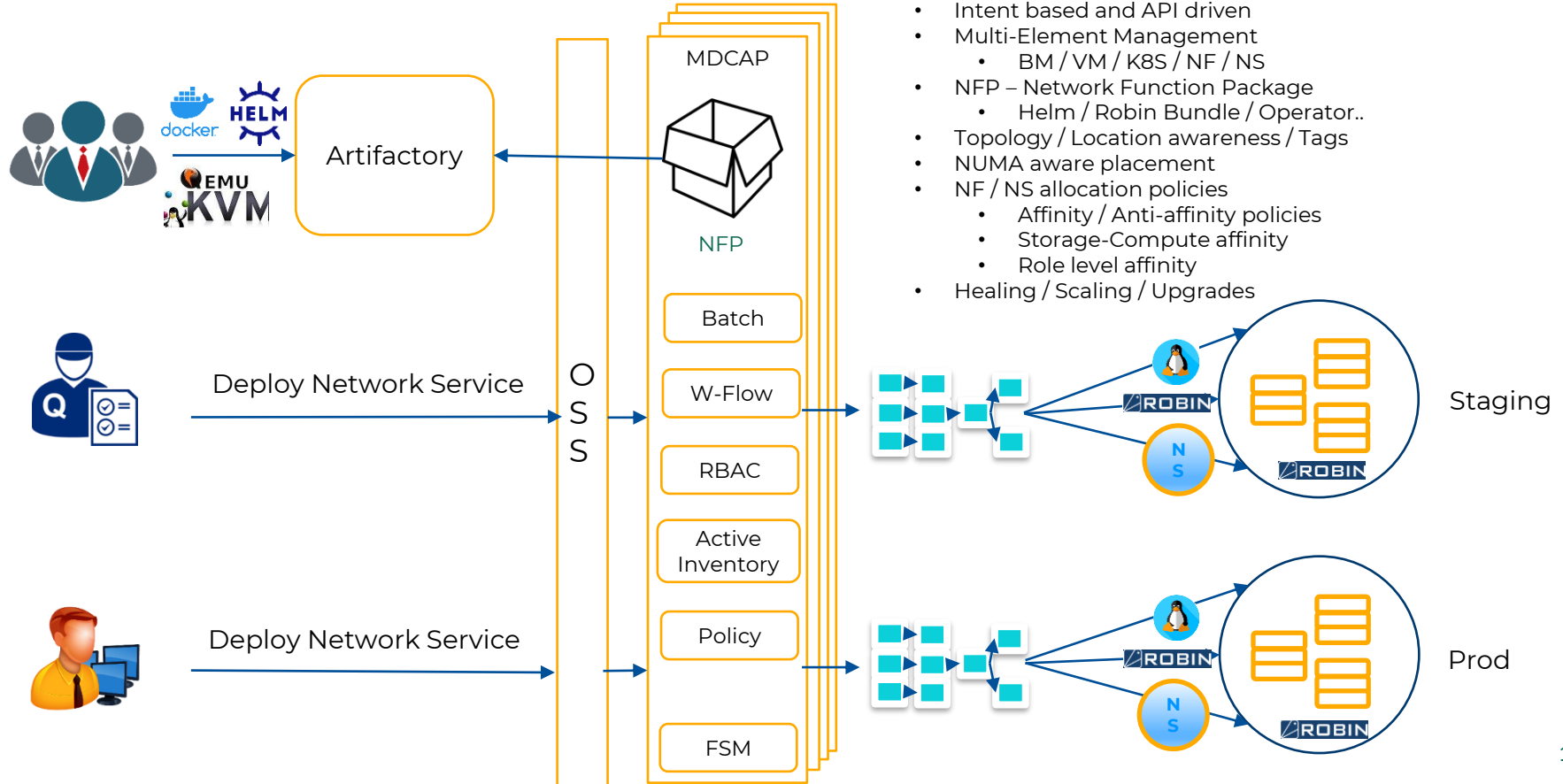
MDCAP - Bare metal server life cycle management



End-to-End Life Cycle Management



Service Orchestration

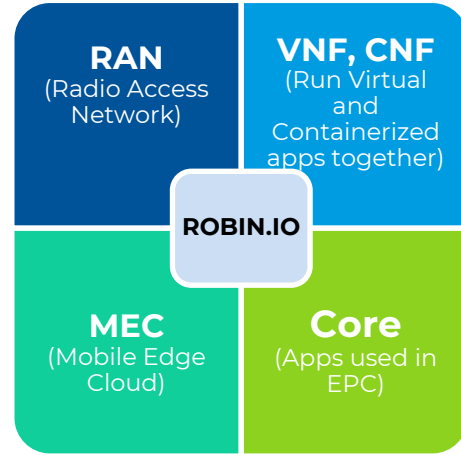


- Intent based and API driven
- Multi-Element Management
 - BM / VM / K8S / NF / NS
- NFP – Network Function Package
 - Helm / Robin Bundle / Operator..
- Topology / Location awareness / Tags
- NUMA aware placement
- NF / NS allocation policies
 - Affinity / Anti-affinity policies
 - Storage-Compute affinity
 - Role level affinity
- Healing / Scaling / Upgrades

Robin offers a comprehensive solution for 5G use cases

Use Case	Deploy vRAN components (DU, CU, EMS) on x86 servers
Capabilities Unlocked	Push-button deploy RAN-as-a-service directly to Baremetal. Manage lifecycle, auto healing, upgrades, Monitoring
Robin value over Kubernetes	NUMA-aware scheduling, SR-IOV, DPDK, Multi-NIC, Persistent IP Management, RT-Kernel, Hugepages, BareMetal Management

Use Case	Rapid instantiation of new services in Mobile Edge Cloud (from days to minutes)
Capabilities Unlocked	Create a multi-tenant App-Store like service portal to simplify delivery and distribution of new Apps to MEC
Robin value over Kubernetes	Built-in Monitoring, Observability (end-to-end visibility from an App to network and storage), Multi-tenant (logical and physical isolation of apps across resources, with consumption reports)



Use Case	Provide smooth transition of telco apps from Virtual to Cloud-Native architecture
Capabilities Unlocked	Define a Service-chain combining VNFs and CNFs and automate their deployment and lifecycle management
Robin value over Kubernetes	Run Containers and VMs on the same Kubernetes platform. One common Robin automation platform for both

Use Case	Deploy stateless and complex stateful workloads used in Core (EPC)
Capabilities Unlocked	Manage entire application stacks (cloud-native or non-cloud-native on Kubernetes)
Robin value over Kubernetes	With Robin SuperOperator framework run any application, incl. complex apps like Oracle RAC, Splunk, Elastic, Mongo, on K8S. Perform application-aware Snapshots, Clones, Backups (Data Management) for any app. Automate upgrades of entire app pipeline through complex workflows.

robin.io

About Quanta Cloud Technology



Quanta Computer

Parent Company

ODM | ENGINEERING | SUPPLY CHAIN

- Established in 1988
- The world's largest laptop ODM manufacturer
- One out of every three laptop PCs in the world is manufactured by QUANTA
- Named one of the Derwent Top 100 Global Innovators in 2019, 2020, and 2021



Quanta Cloud Technology

Subsidiary **ENTERPRISE | CSP | TELCO**

- No.1 vendor for CSPs

Switch



Server



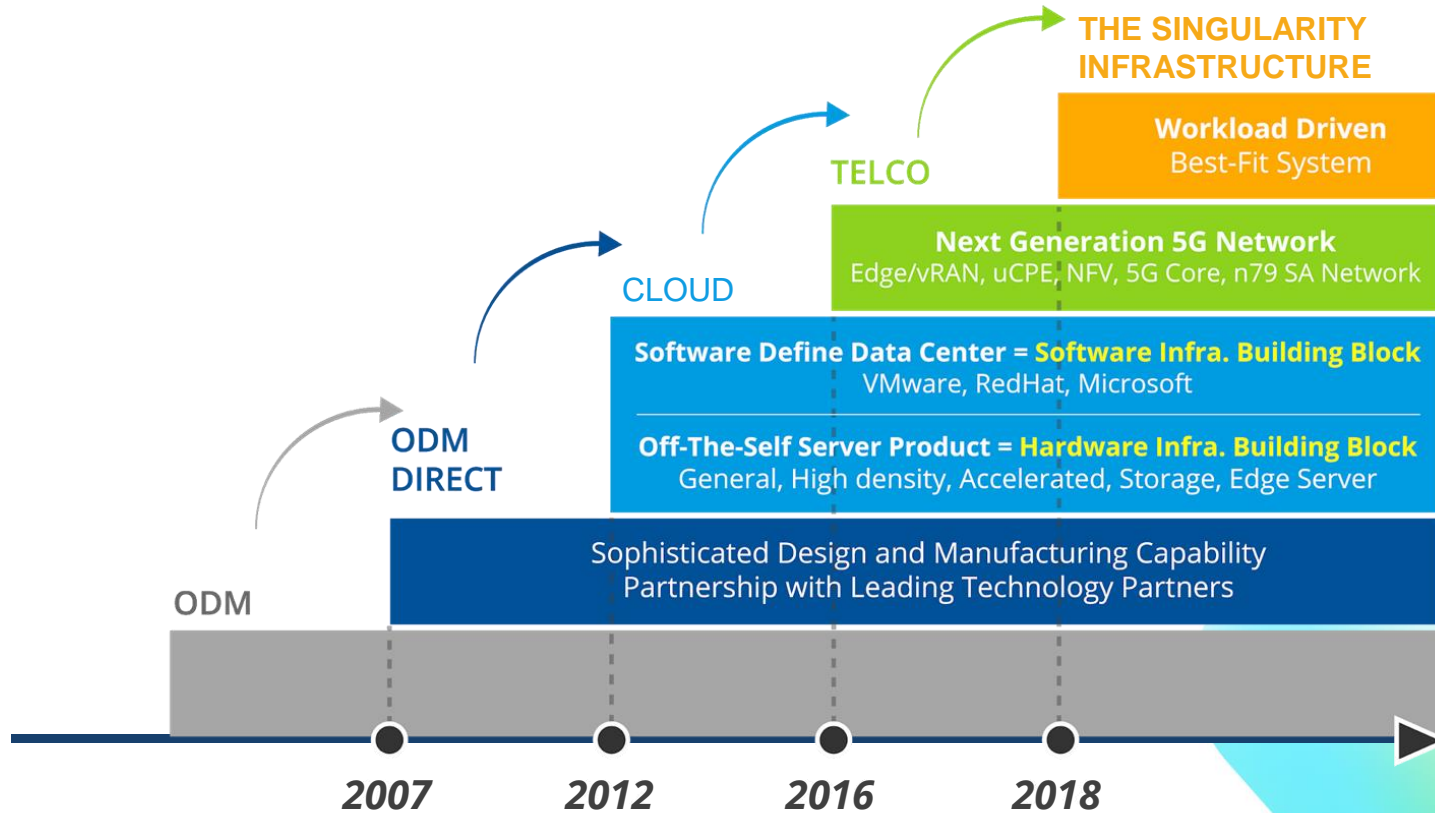
Storage



Integrated
Rack



QCT Cloud Native Journey



QCT Global Footprints



○ Established Offices:

- USA: San Jose, Seattle
- Taiwan: Tao Yuan
- China: Beijing, Hangzhou, Chongqing
- Japan: Tokyo
- Korea: Seoul
- APAC: Singapore
- Germany: Düsseldorf

QCT Telco E2E Product Portfolio

IronInfra Solutions for Public Network

IronBox



IronEdge



IronCloud



End-to-End Virtualization



uCPE



QuantaEdge EGT23D-DT



Edge Server



QuantaEdge EGD21L-WT

QuantaEdge EGX66Y-2U



QuantaEdge EGX63IS-1U

QuantaGrid D52Y-2U

NFV / Cloud-Native Infrastructure



QuantaGrid D52BQ-2U



QuantaGrid D53XQ-2U

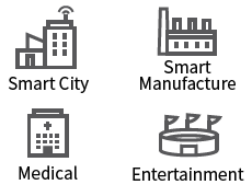


QuantaGrid D52B-1U

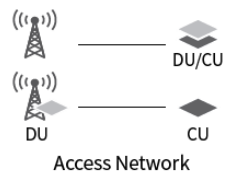


QuantaGrid D53X-1U

EndPoints



Access



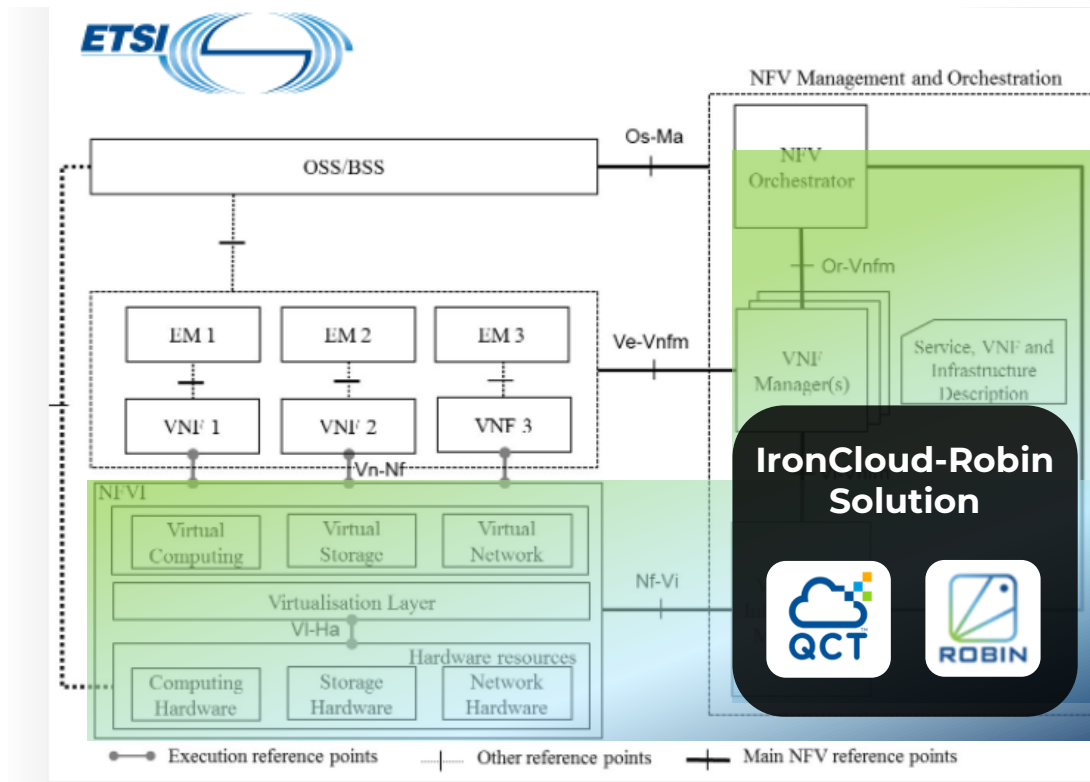
Core



Data Center



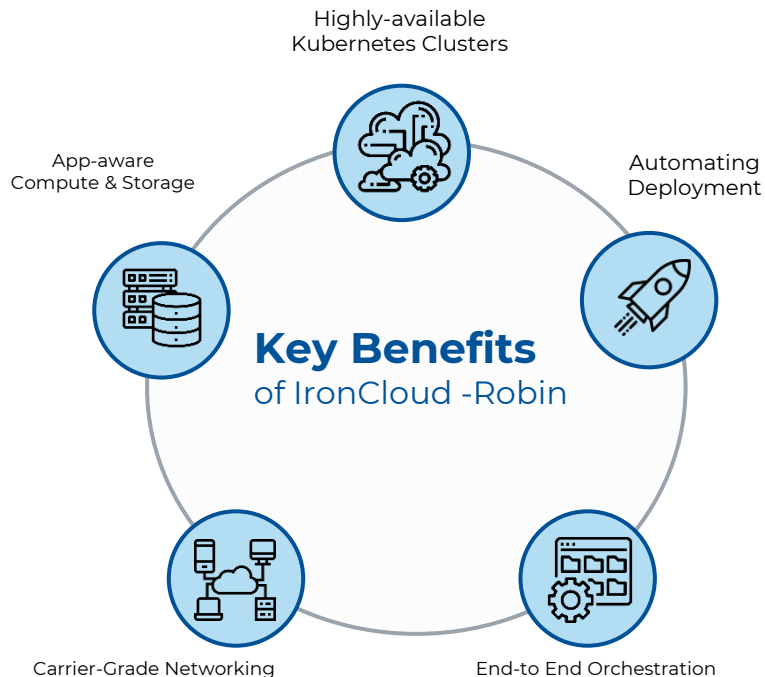
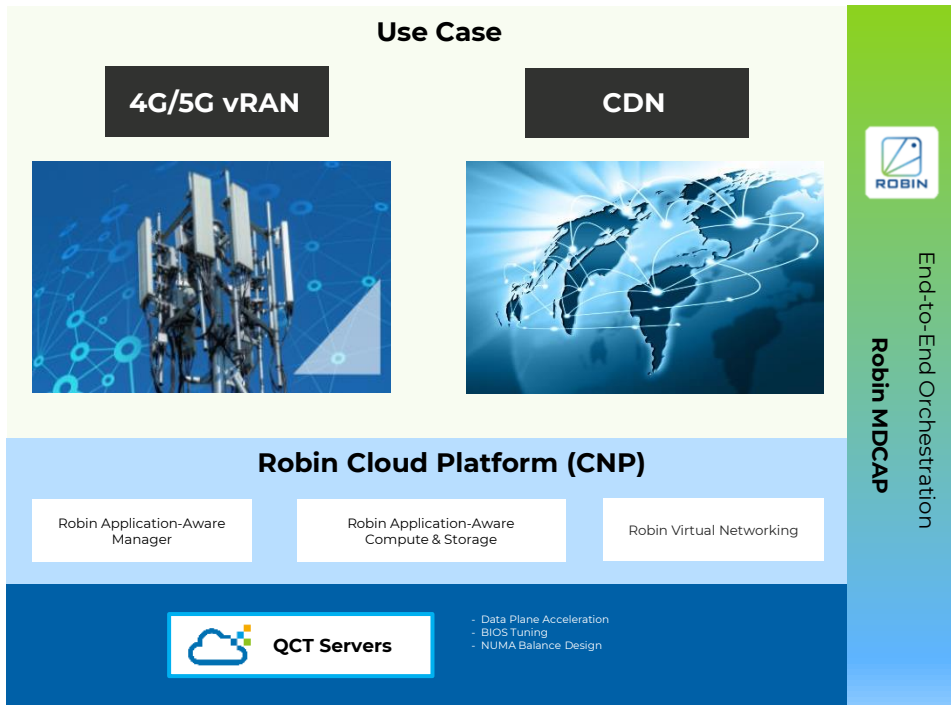
IronCloud Robin Solution Introduction



IronCloud Robin Solution Introduction



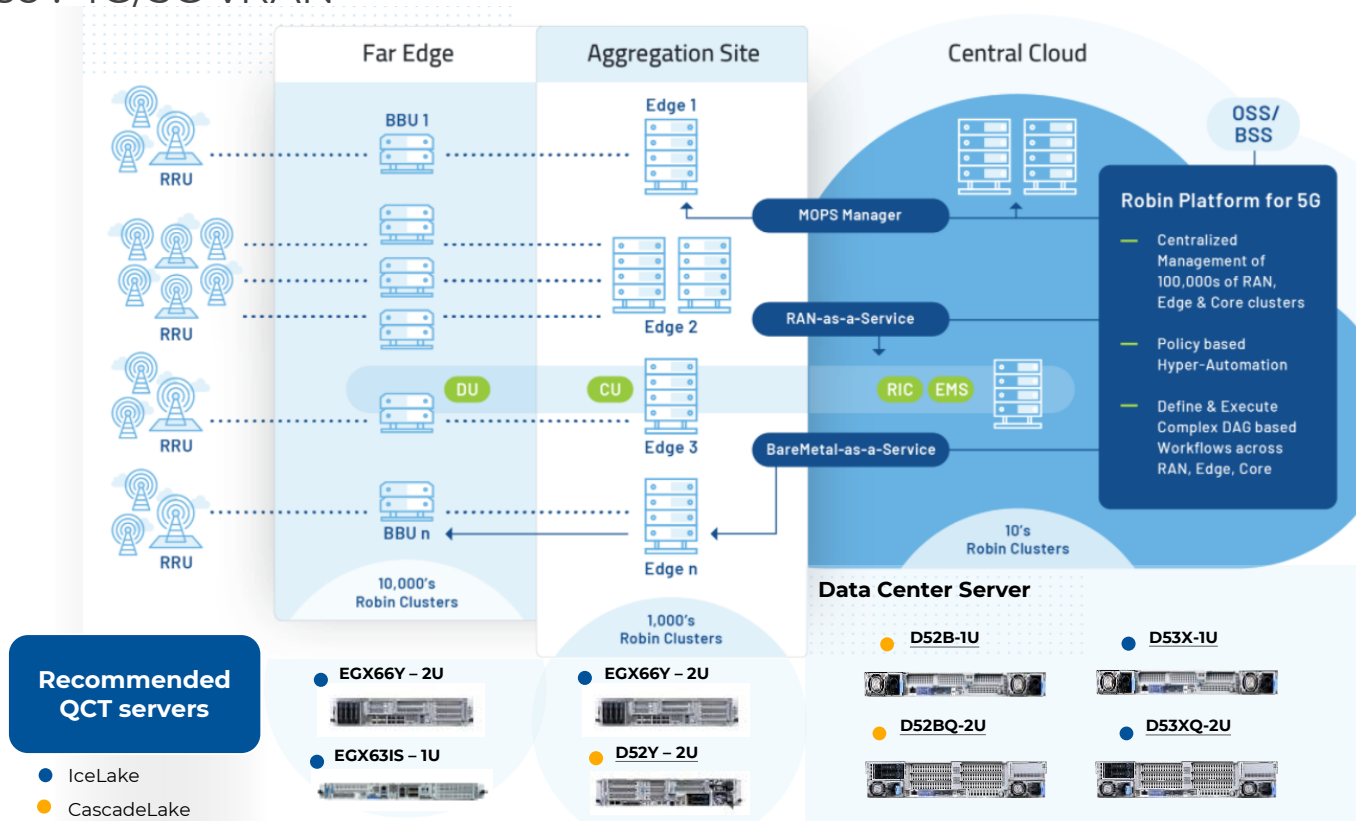
- Use Case & Key Benefits



IronCloud Robin Solution Introduction



- Use case : 4G/5G vRAN



Indoor CU/DU Server

EGX63IS-1U



D52Y-2U



Outdoor DU Server



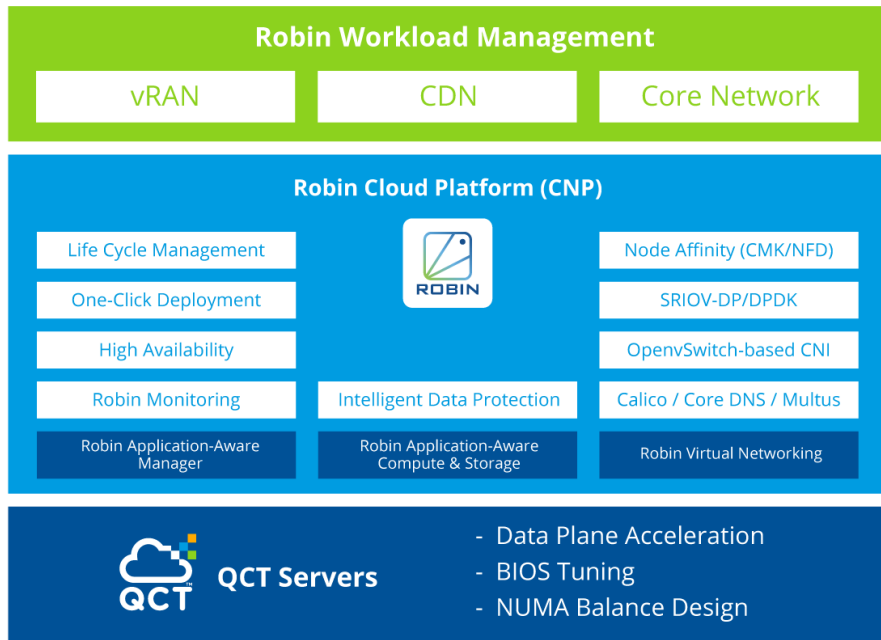
QuantaEdge EGD21L-WT

- Adopt Intel 2nd generation Xeon D SoC platform
- Flexible expansion slot supports 2x PCIe 3.0 x16 FH3/4 L for FEC accelerator and NIC cards
- Support I/O port 4x 10GbE SFP+ ports
- Support 2x NVMe/ SATA3 M.2 2280
- Energy Efficiency, System Power Consumption less than 300W
- Fanless Design
- Operation temp -40~55 °C, including solar load
- Dimension 415mm x 450mm x 180mm

IronCloud Robin Solution Introduction



- Solution Architecture



QCT 3rd Gen Intel® Xeon SP servers

Master Node D53X-1U






- 3rd Gen Intel® Xeon Scalable Processor
- Support up to 200GbE with PCIe x16 Networking bandwidth


Worker Node D53XQ-2U



- 3rd Gen Intel® Xeon Scalable Processor
- Ultimate resilience and scalability with up to 10x PCIe 4.0 expansions
- Support All 24x NVMe flash drives as hot tier storage, targeting HPC and enterprise workloads.

QCT D53X-1U & D53XQ-2U features

-  Enhanced serviceability with tool-less, hot-swap designs (HDD, SSD, fan, PSU, PCIe riser bracket)
-  Chassis intrusion mechanism implemented to alter and log abnormal chassis open events
-  OCP 3.0 SFF Mezz card optimized for Pull-Tab, Ejector and Internal lock types



Robin MDCAP



End-to-End Orchestration

IronCloud Robin Solution Introduction



- Server Specification : QCT IceLake Server & CascadeLake Server





3rd Gen Intel Xeon Scalable Processor PCIe Gen 4 | 2nd Gen Intel Xeon Scalable Processor PCIe Gen 3

<p>Master Node</p>  <p>QuantaGrid D53X – 1U</p>	<p>Node Qty : 3</p> <ul style="list-style-type: none">• CPU : (2) Intel Cascade Lake-SP 6330N (28 cores, 2.2GHz)• Memory : (16) 32GB DDR4 2933MHz• M.2 : (1) Intel 1TB PCIe Gen3 X4, 110mm• SSD : (6) Intel S4610 SATAIII, 1.92TB• NIC : (2) 25Gb NIC card, 2 ports ; (1) 100Gb NIC card, 1 port
<p>Worker Node</p>  <p>QuantaGrid D53XQ – 2U</p>	<p>Node Qty : 3</p> <ul style="list-style-type: none">• CPU : (2) Intel Cascade Lake-SP 6330N (28 cores, 2.2GHz)• Memory : (16) 32GB DDR4 2933MHz• M.2 : (1) Intel 1TB PCIe Gen3 X4, 110mm• SSD : (6) Intel S4610 SATAIII, 3.84TB• NIC : (2) 25Gb NIC card, 2 ports ; (1) 100Gb NIC card, 1 port
<p>Management Switch</p>  <p>QuantaMesh T1048-LB9</p>	<p>Node Qty : 1</p> <ul style="list-style-type: none">• (48) 10/100/1000BAE – T ports• (4) 1/10Gbe SFP+ ports
<p>Data Switch</p>  <p>QuantaMesh T4048-IX8D</p>	<p>Node Qty : 2</p> <ul style="list-style-type: none">• (48) 25G SFP28 ports• (8) 100G QSFP28 ports

IronCloud Robin Solution Introduction



- Server Specification : QCT IceLake Server & CascadeLake Server

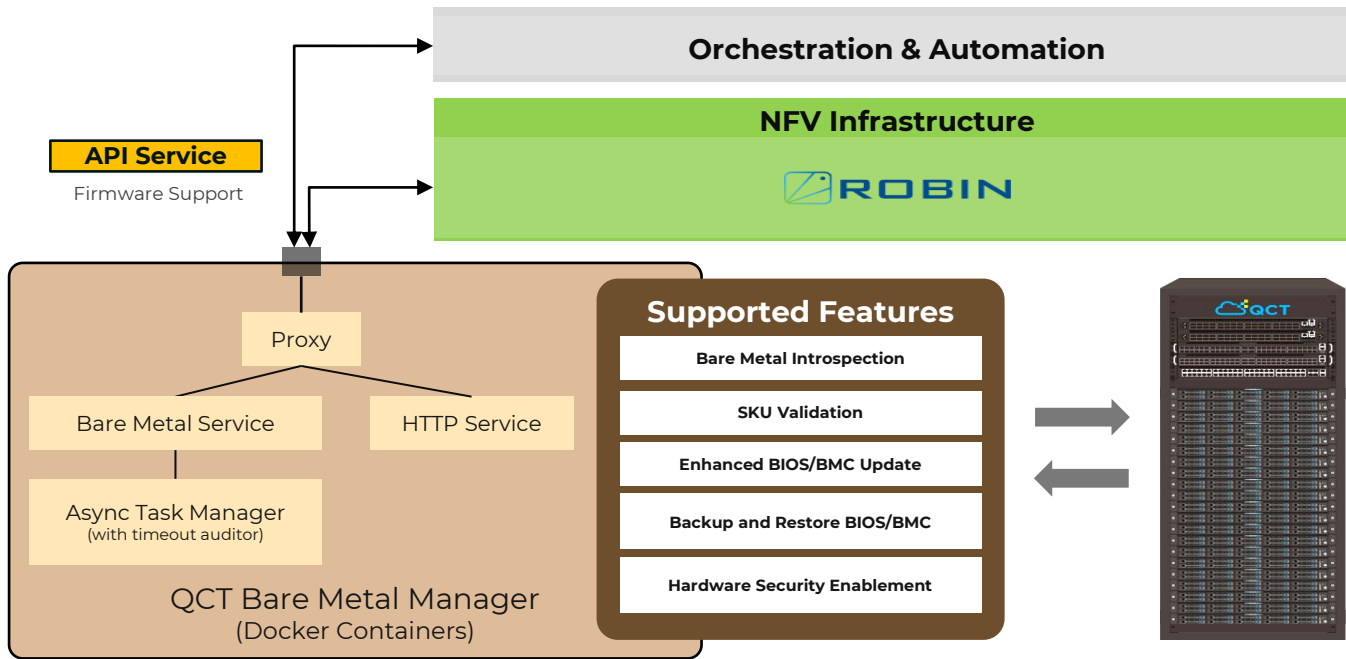
3 rd Gen Intel Xeon Scalable Processor PCIe Gen 4		2 nd Gen Intel Xeon Scalable Processor PCIe Gen 3	
Master Node  QuantaGrid D52B - 1U	Node Qty : 3 <ul style="list-style-type: none">• CPU : (2) Intel Cascade Lake-SP 6252N (24 cores, 2.3GHz)• Memory : (6) 32GB DDR4 2666MHz• SSD : (1) SATAIII SSD, 480GB (1) SATAIII SSD, 960GB• NIC : (1) Intel XXV710 PCIe 25Gbe, 2 ports	Master Node  QuantaGrid D52B - 1U	Node Qty : 3 <ul style="list-style-type: none">• CPU : (2) Intel Cascade Lake-SP 6252N (24 cores, 2.3GHz)• Memory : (12) 32GB DDR4 2666MHz• SSD : (1) SATAIII SSD, 480GB (1) SATAIII SSD, 960GB• NIC : (2) Intel XXV710 PCIe 25Gbe, 2 ports
Management Switch  QuantaMesh T1048-LB9	Node Qty : 1 <ul style="list-style-type: none">• (48) 10/100/1000BAE - T ports• (4) 1/10Gbe SFP+ ports	Data Switch  QuantaMesh T4048-IX8D	Node Qty : 2 <ul style="list-style-type: none">• (48) 25G SFP28 ports• (8) 100G QSFP28 ports

IronCloud Robin Solution Introduction



- HW Management Tool (under-developing) : QCT Baremetal SDK

Release on
2021 End



Value Proposition : IronCloud-Robin Platform



Complicated

Lack of expertise to build configuration for cloud native platform

Pre-Validation

QCT servers + Robin Cloud Native Platform with high availability

Normal Network Performance

Efforts need to familiar with workload optimization on cloud native platform

Optimization

Configure optimized parameters and select best-fit specification

Out of Date

Not frequently update latest version of cloud native platform

State of Art

Align with commercialized Robin Cloud Native Platform with shorten time to value

Take Long Time For Deployment

Need to spend more time to deploy multiple clusters at different edge sites

Increase Productivity

Significant reduction clusters and entire application pipelines deployment from days/hours to minutes

Dispersed Cloud Management

Operators have multiple cloud management tools to manage clusters from data center to edge

Centralized Orchestration

Reduce operational overhead with one-click management and lifecycle management

Complicated Hardware Management

Operators need to spend a lots of time and complicated work processes for server introspection and firmware update

Hardware Management

Operators could do server introspection and firmware update with QCT Baremetal SDK which bundled with Robin MDCAP

Download Solution Brief to Learn More



 Solution Brief

Length: 4 Pages  

Robin, QCT Aid MNOs in Cloud Native 5G Evolution

Last Updated: August 26, 2021

Robin's Cloud Native Platform (CNP) and Multi-Data Center Automation Platform (MDCAP), running on QCT servers powered by 3rd Gen Intel® Xeon® Scalable processors, introduce hyper automation of cloud native 5G systems. One Tier 1 MNO built its 4G/5G network leveraging open vRAN software and QCT servers with Robin's CNP and MDCAP. The network uses the Robin platforms to create a cloud native deployment model that is optimized with Robin's innovative application-aware storage and carrier-grade networking.

Published By:



Categories: Categories - Hardware Platforms, Software Platforms | Intel Technologies and Platforms - 3rd gen Intel Xeon Scalable processor | Network Location - Radio Access Network (RAN), Device Edge | Network Technologies - Containers/Kubernetes, Cloud Native/NFV, AI and Automation, 5G, vRAN, Network Edge, Multi-Access Edge Computing (MEC) | Optimizations - Intel Smart Edge Open, Kubernetes | Verticals/Industries - Telecommunications | VNFS and CNFs - Virtualized Radio Access Network (vRAN)

[Robin, QCT Aid MNOs in Cloud Native 5G Evolution \(intel.com\)](#)

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Telco Business Dev Team, QCT

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