



Containerized Service Delivery Architecture (CSDA) for Open RAN

Enabling Softwarization, Disaggregation
and Containerization of RAN

July 2021

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Who is Robin

Robin.io Accelerates
Deployment and Automates
Lifecycle Management of **5G**
RAN, Core and **Edge**
Applications on Kubernetes



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

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

Marquee customers

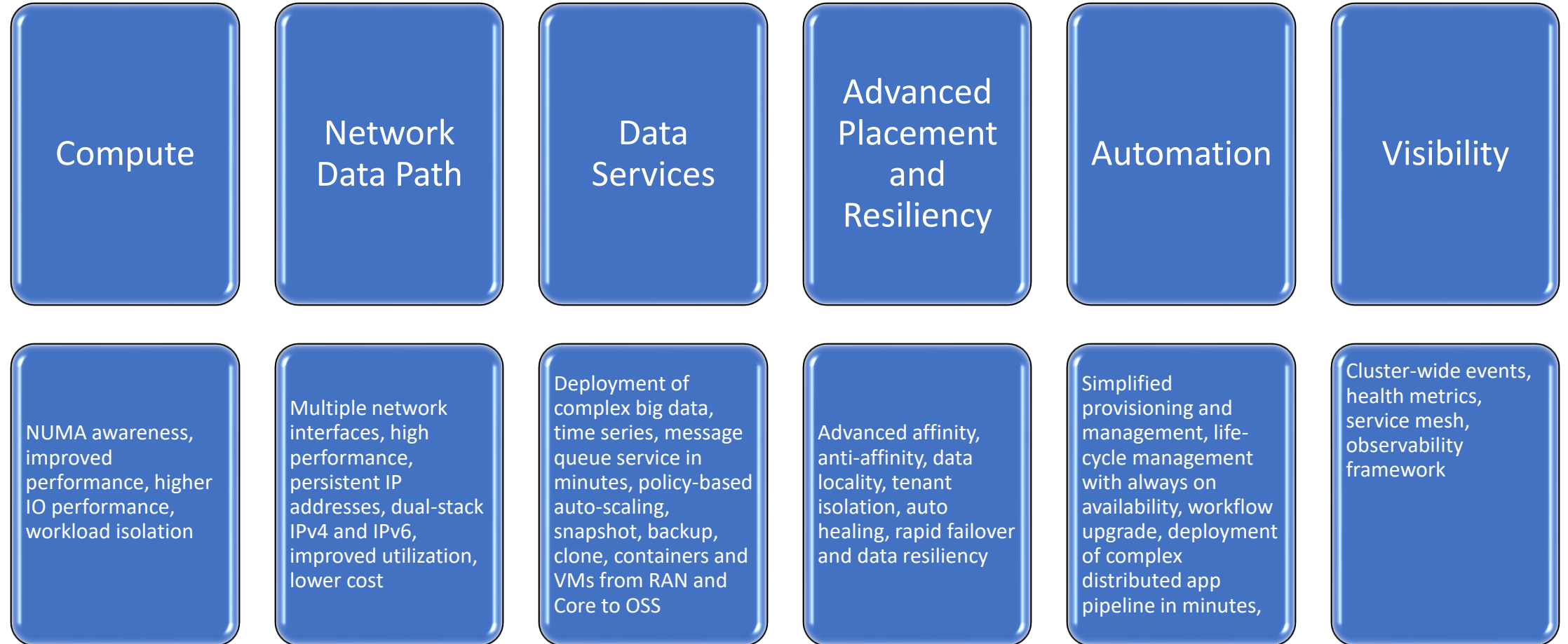


Strong partnerships

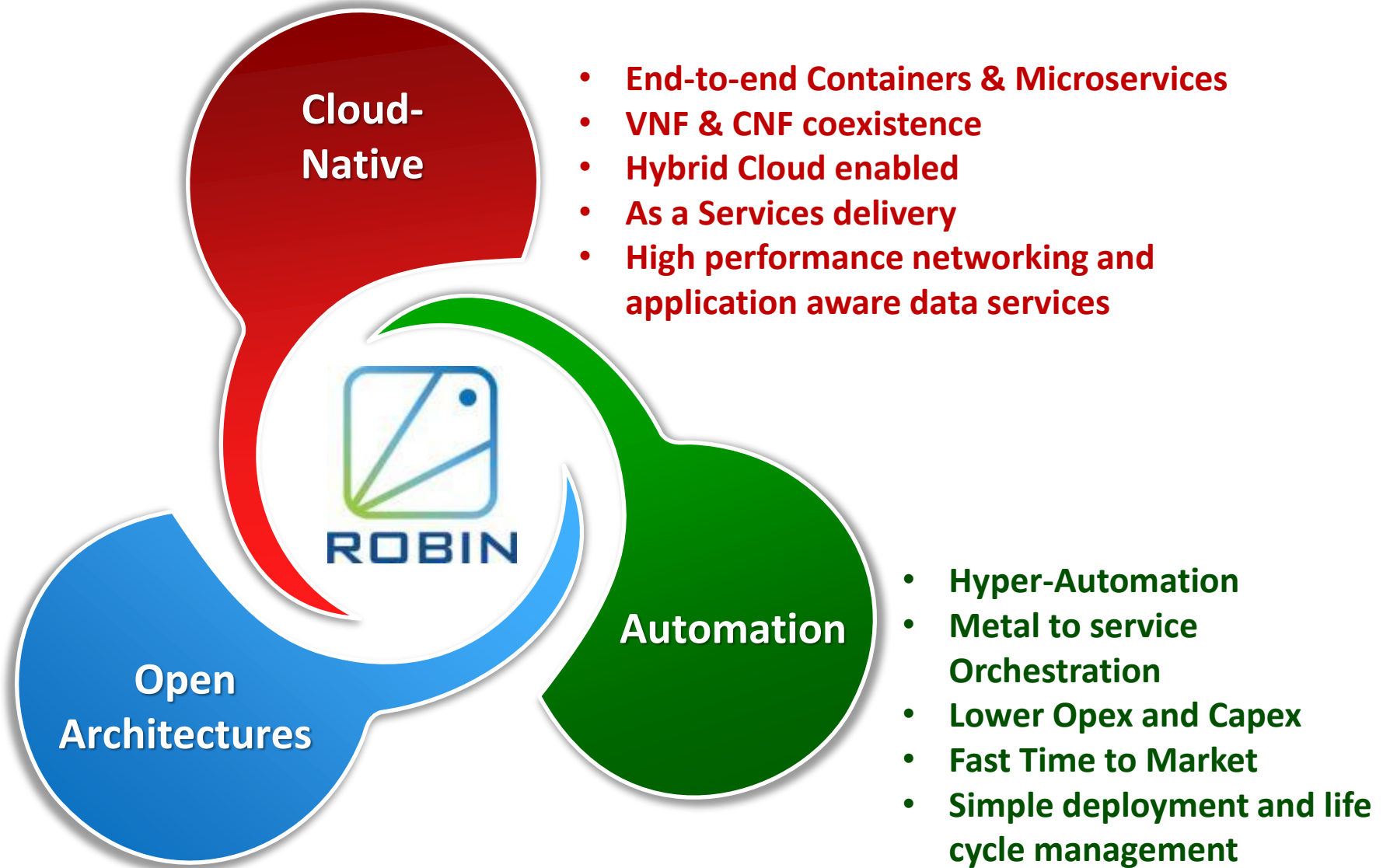


- ✓ World's first deployment of end-to-end cloud-native 5G in production
- ✓ Trusted by F1000 companies for their mission critical Storage and Network applications

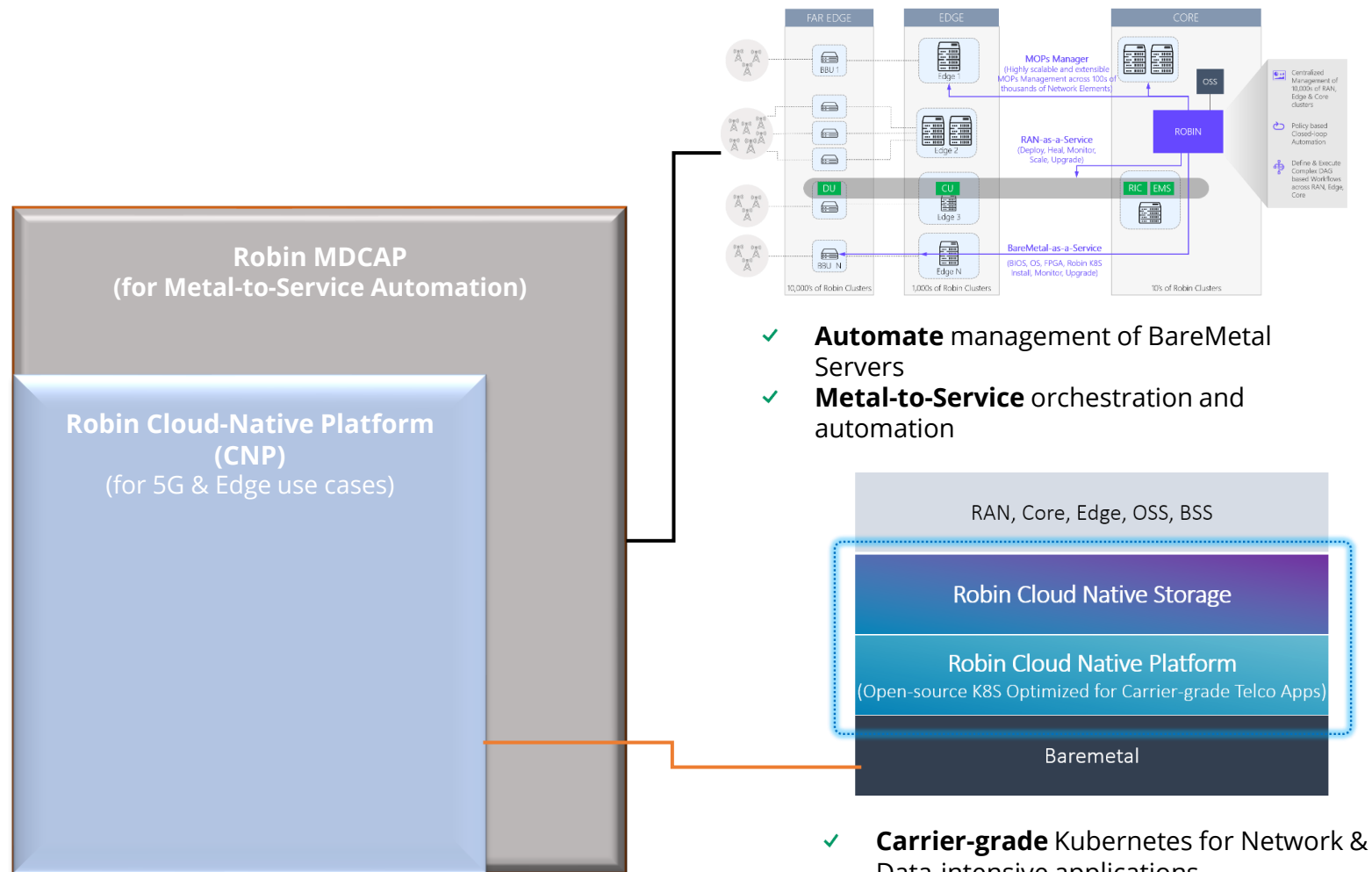
Requirements for Enabling Softwarization, and Containerization of Open RAN



CSDA Strategy



Containerization and Automation



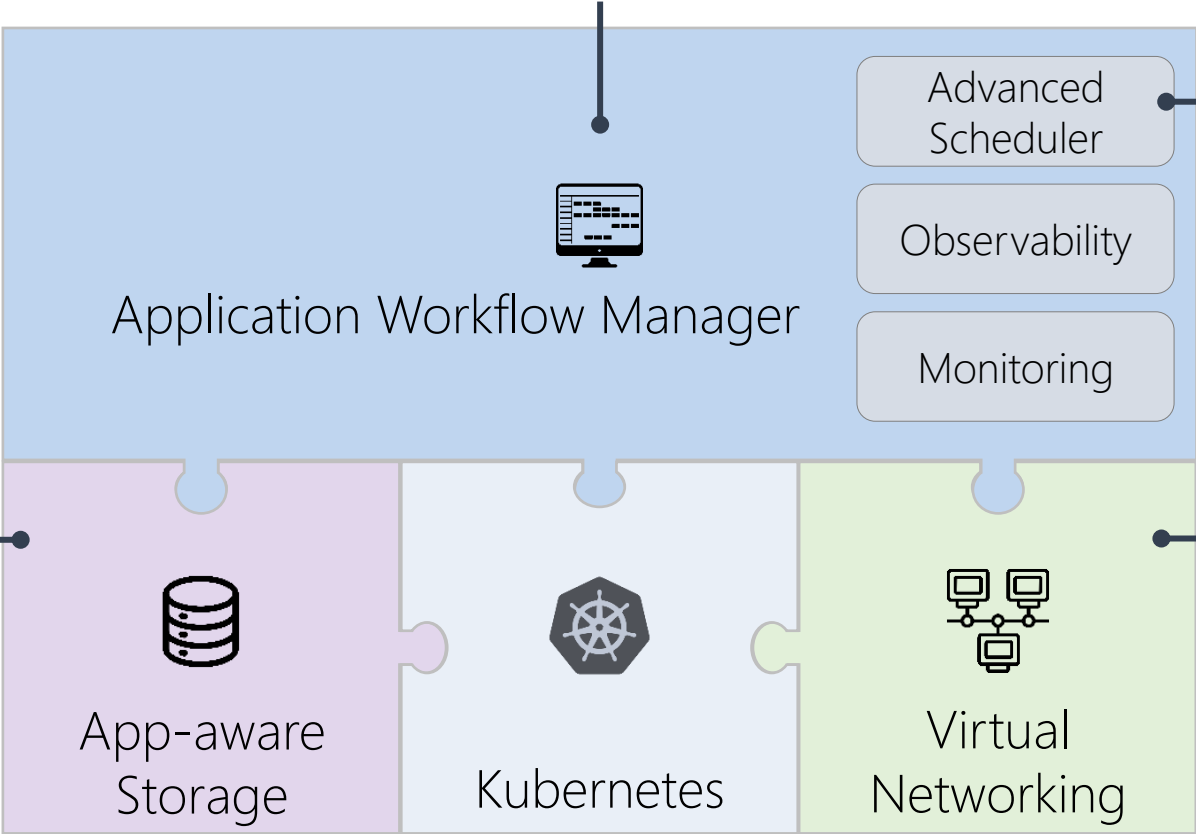
- ✓ **Automate** management of BareMetal Servers
- ✓ **Metal-to-Service** orchestration and automation

- ✓ **Carrier-grade** Kubernetes for Network & Data-intensive applications
- ✓ **Optimized to run RAN, Core, Edge** applications
- ✓ Provides **policy-driven** end-to-end automation from cell-sites to edge to core datacenters

Containerized ORAN, Technology Requirements

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)

Carrier-grade networking

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

Robin's built-in enterprise-grade storage stack

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



Works any where

Application Pipeline as a Service

ROBIN

Deploy Application Pipeline as a service

APP NAME * RESOURCE POOL IP SUBNET

CONFIGURE COMPONENTS

- ambari_server
- atlas
- datanode
- edgenode
- hive
- kafka
- kdcserver
- knox
- mysql
- namenode
- nodemanager
- oozie
- ranger
- resourcemanager
- spark
- zookeeper

INSTANCES: 48 containers each with below configuration will be created

CPU CORES: 16 MEMORY: 64 GB

STORAGE

- log: 1 volumes, 500 GB, HDD, /var/log/
- data: 12 volumes, 2 TB, HDD, /hadoop

ENVIRONMENT VARIABLES

- Enable SSH
- Ambari Hostname:
- HDP Cluster Name:

PLACEMENT RULES

- Round-robin placement of datanode containers across different nodes within different rack
- Prevent placing more than one datanode container on the same node
- Enforce Storage and Compute for datanode to be on same node
- Do not place datanode on a node which is also running kafka, namenode, zookeeper
- Always place datanode on a node which is also running these services (click to select)

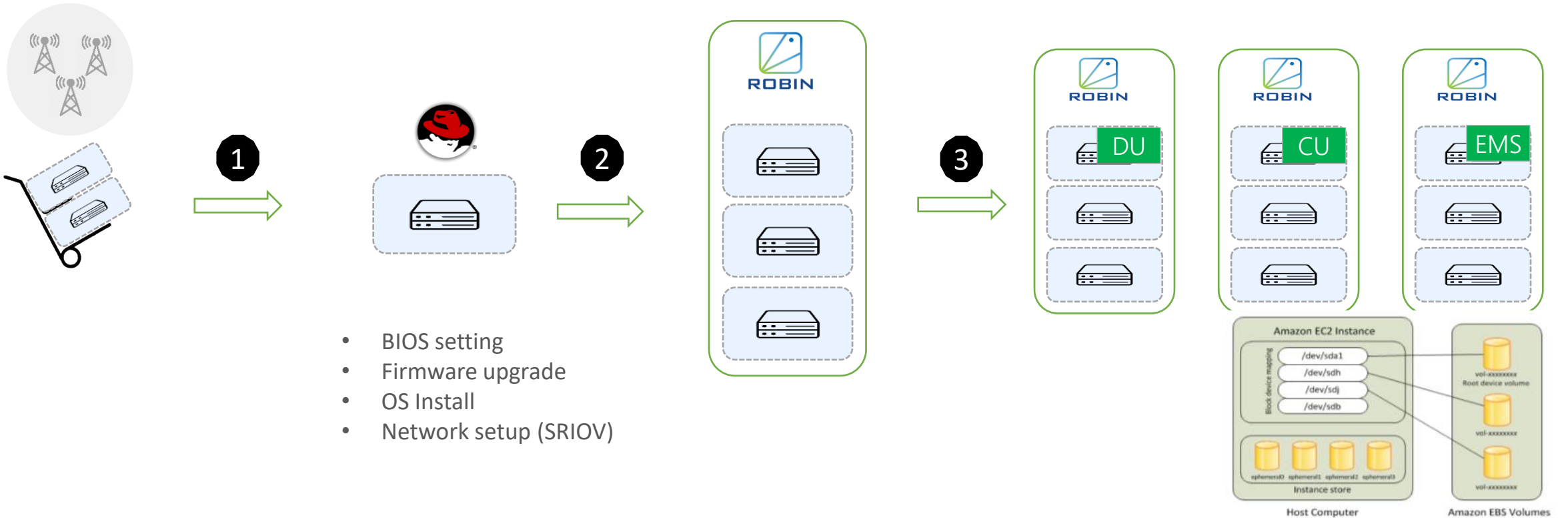


Open RAN as a Service

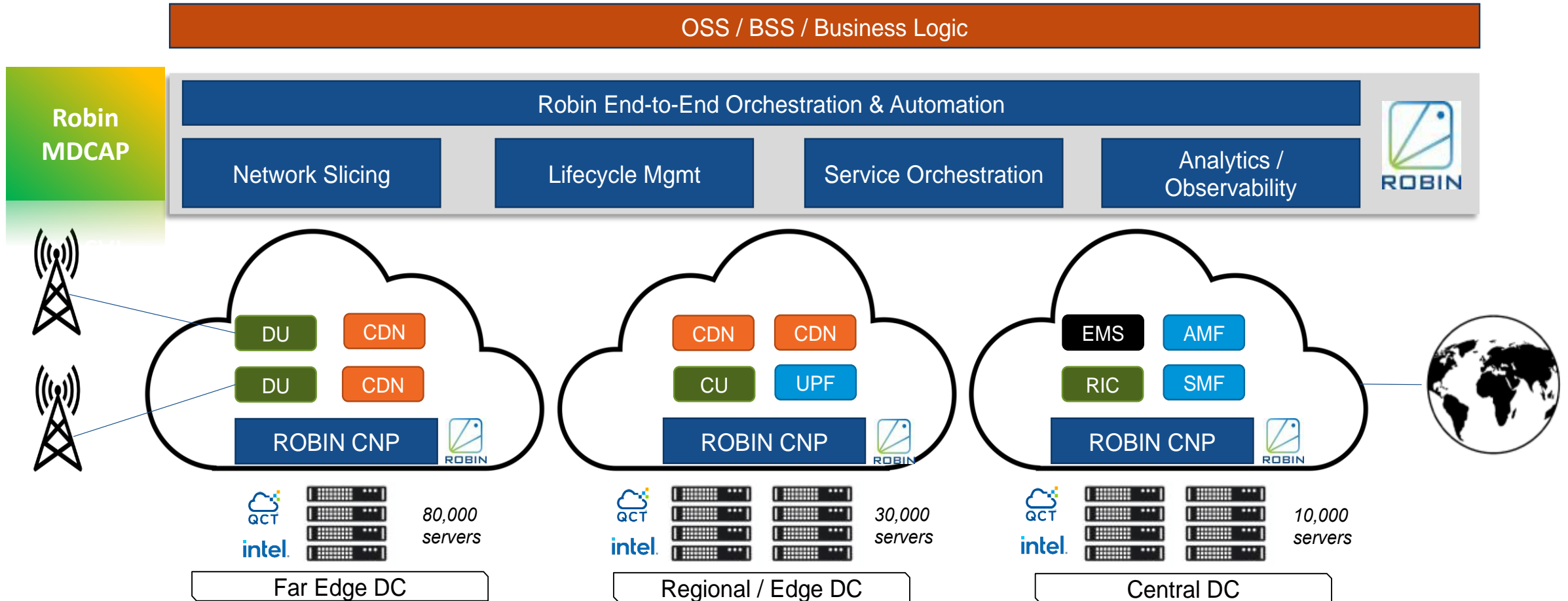
- Server SKU discovery
- Connectivity checks
- Hardware health
- Inventory Management

- ROBIN Cluster Install
- Bundle / Helm repo add
- Back repo (S3/GCS) add

- RAN-as-a-Service
- Application-as-a-Service
- Closed loop Automation
- Monitoring
- Multi-Cluster Management



Three Tier ORAN Architecture



Proven efficiencies of Containerized Service Delivery Architecture

- **40% reduction in OpEx** scalable orchestration & automation for RAN and Core
- **50% reduction in CapEx** by enabling OpenRAN and Core on commercial hardware
- **80% reduction in deployment time**: from 10 days to minutes
- **30% Faster** for running VNF & CNFs
- **Production containerized 5G stack** with millions of subscribers

