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The bridge to possible

Telco Cloud Evolution

To Support 5G, Edge Computing & Open RAN

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BRKSPG-2035

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Learning Objectives

At the end of this session, you should be able to understand:

- The Requirement & Drivers for the Telco Cloud Distribution towards the Edge and its transition to Cloud Native Virtualization Technology
- The key capabilities the Telco Cloud Infrastructure needs to deliver in order to support 5G, MEC and ORAN use cases.
- How such Telco Cloud Infrastructure could be implemented using Cisco's portfolio

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Agenda

- Requirements & Drivers for Telco Cloud Evolution
- Cloud Native Virtualization Platform
- Telco Cloud Architecture Wrap-up
- Summary & Take-Aways

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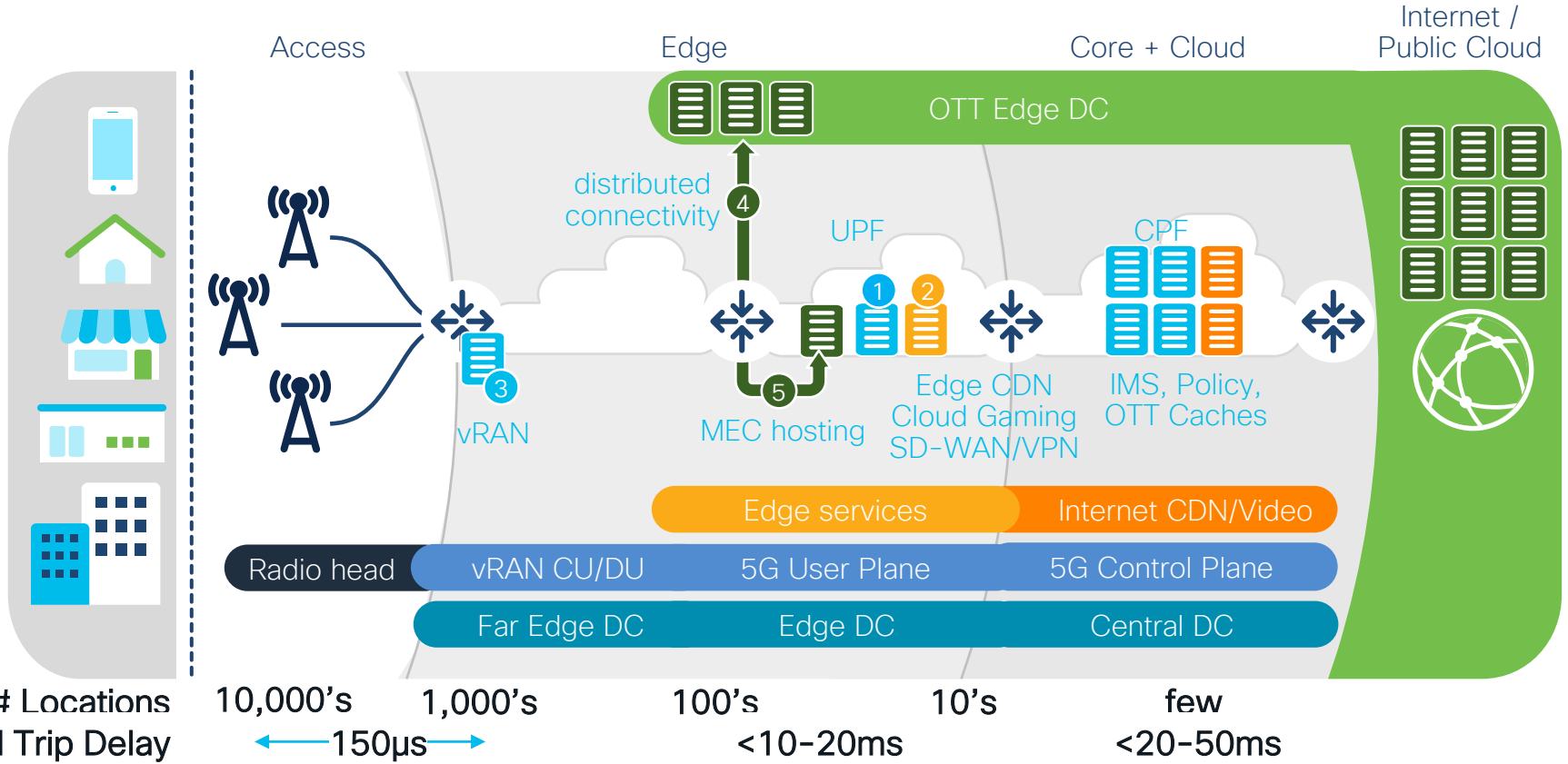
Requirements & Drivers

Telco cloud is expanding towards the Edge



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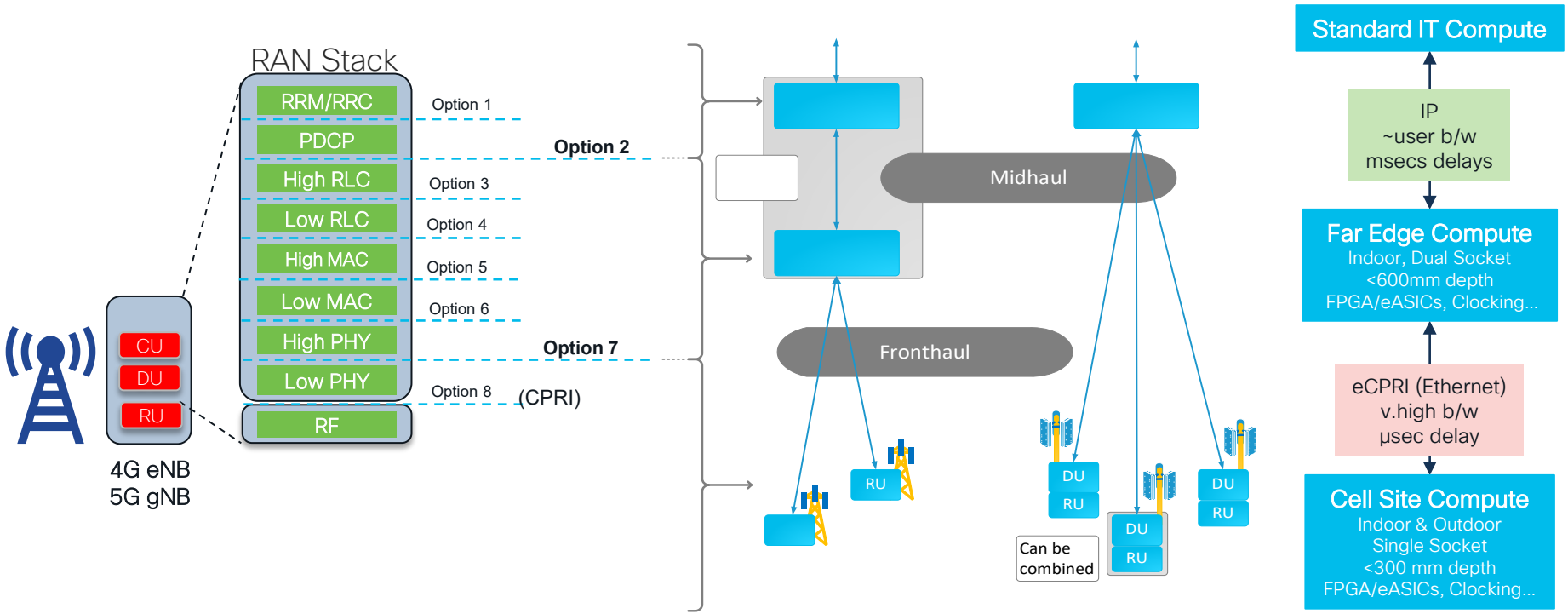
ORAN virtualization pushing DC to far Edge



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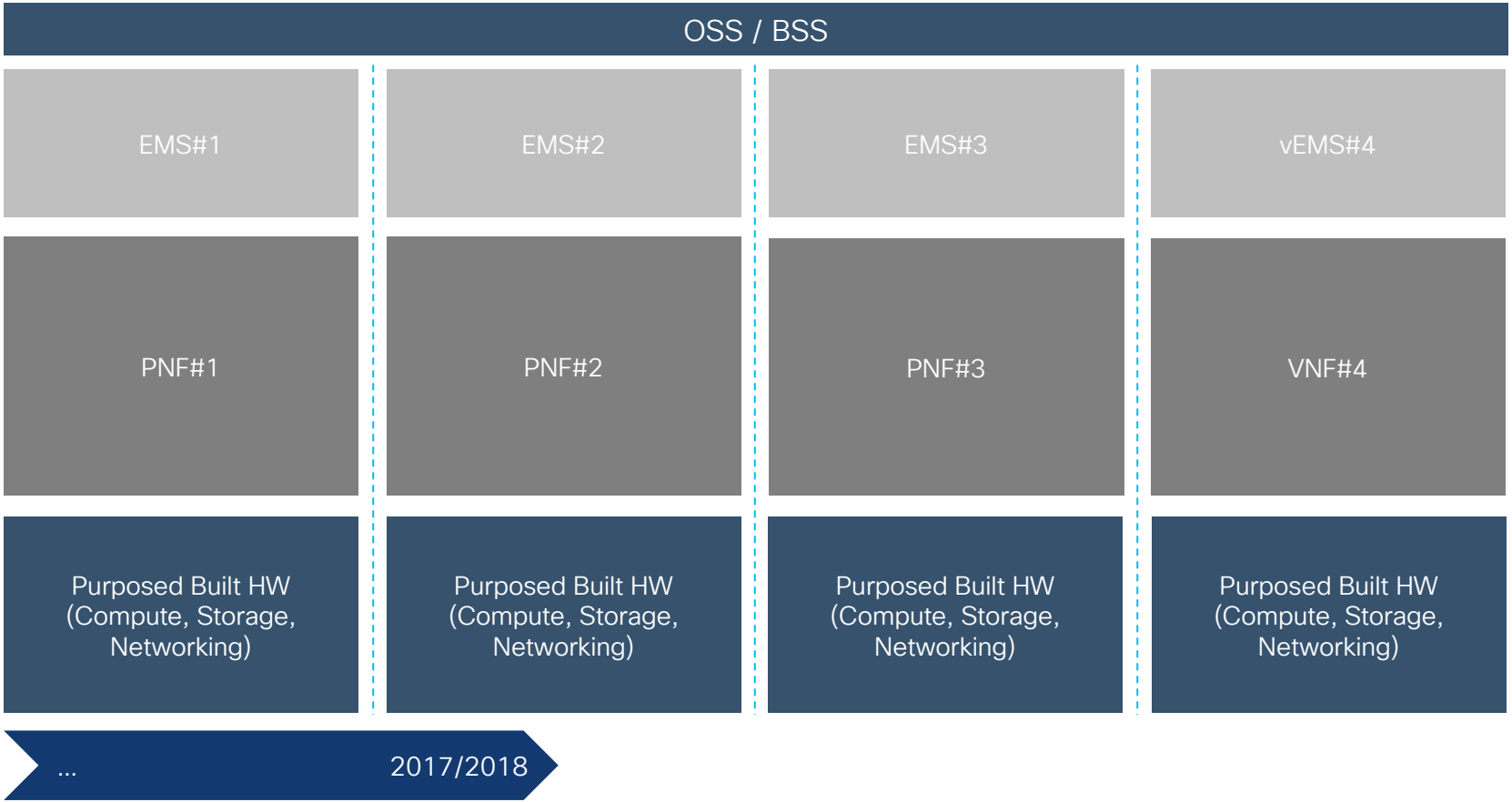
Service Provider Infrastructure Transformation Journey



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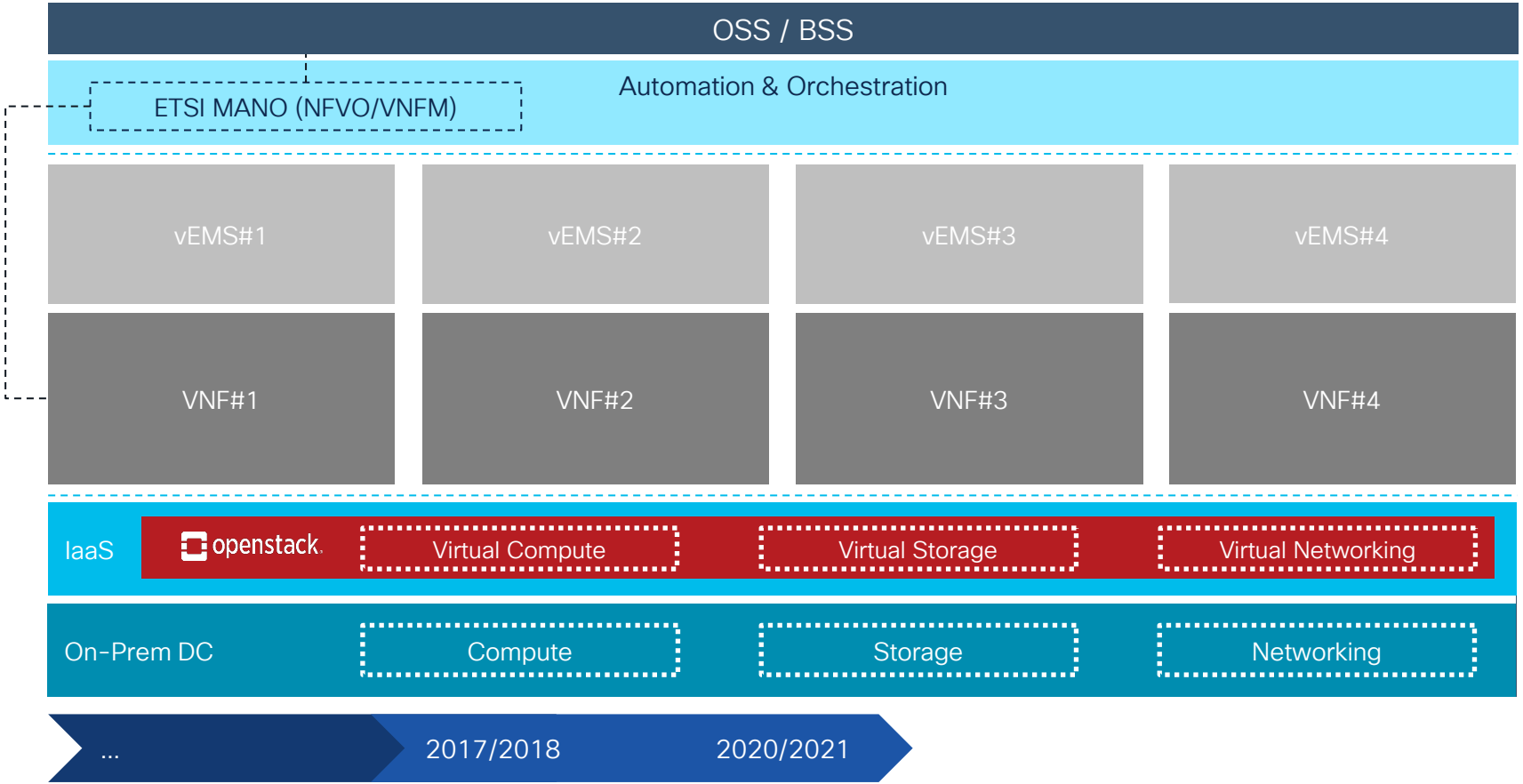
Service Provider Infrastructure Transformation Journey



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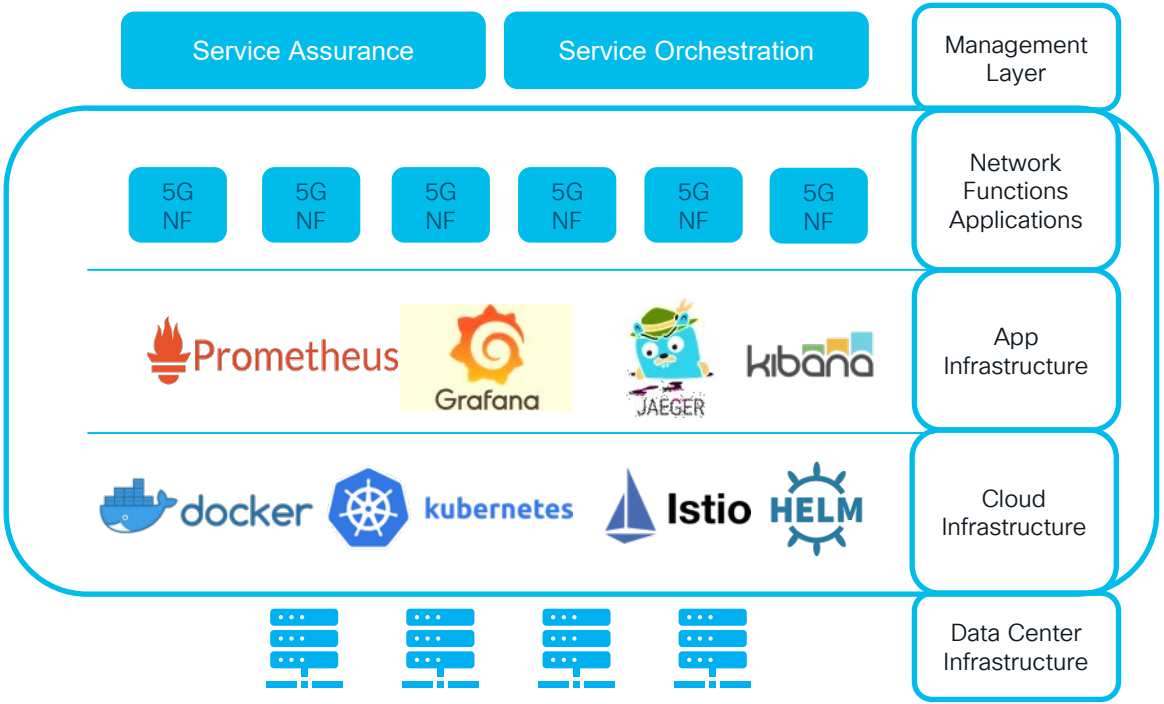
VNF Evolution to Cloud Native

Containers

Virtualization and lifecycle management of Micro services
Optimal Resource Utilization

- Lightweight and Fast
- Portable
- Faster bring-up
- Lower infrastructure restriction
- Observability and Monitoring



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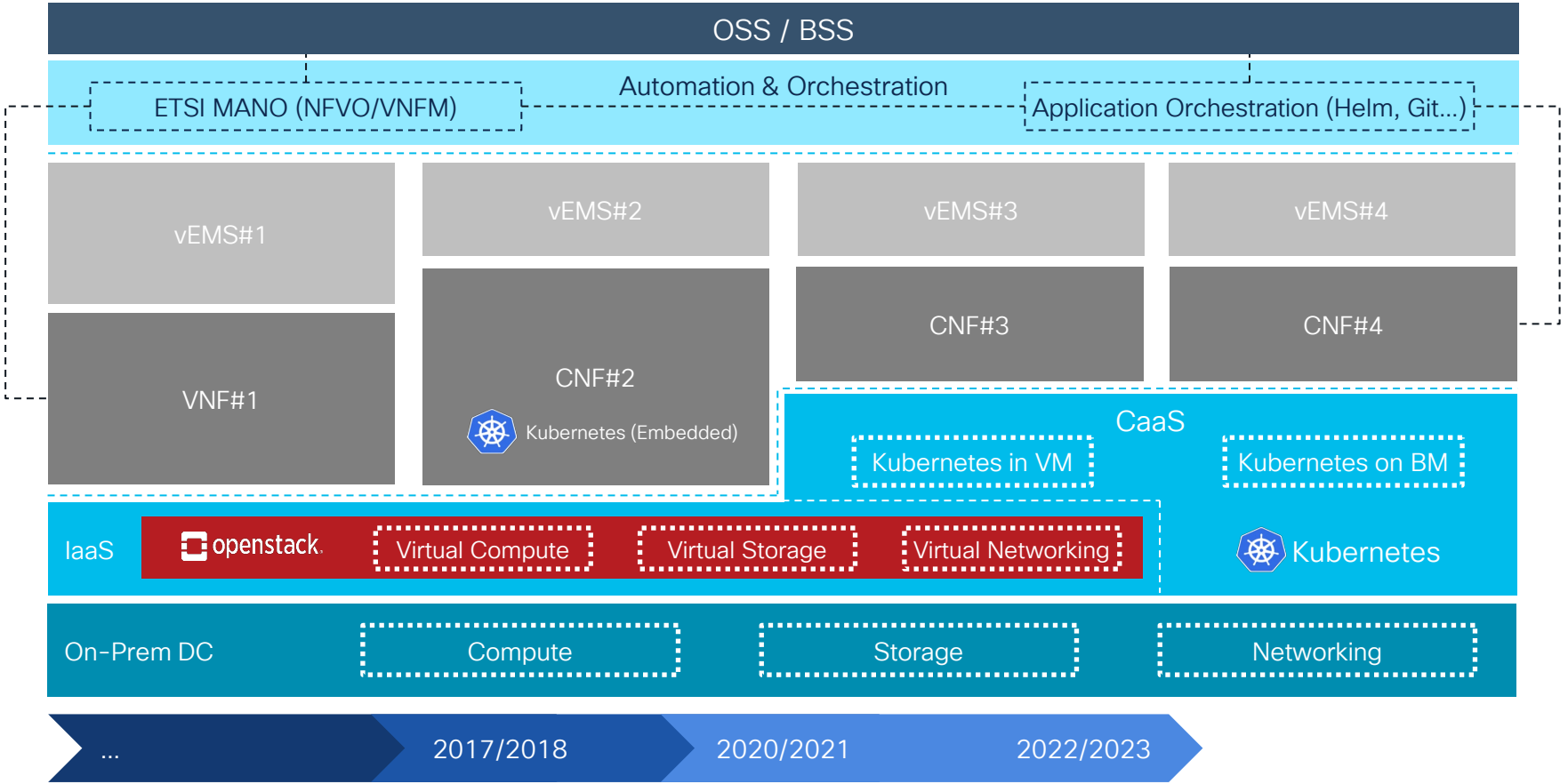
Service Provider Infrastructure Transformation Journey



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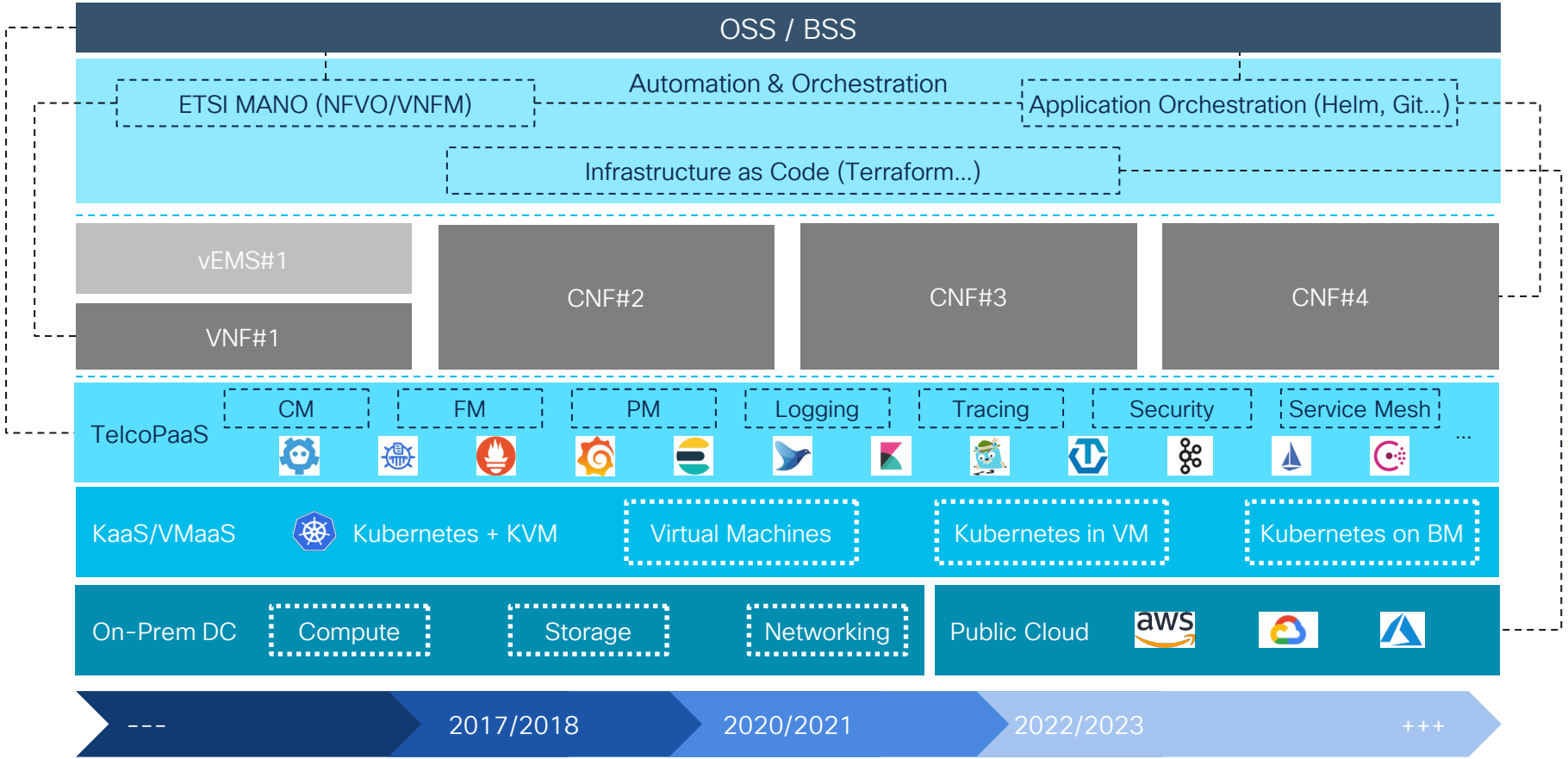
Service Provider Infrastructure Transformation Journey



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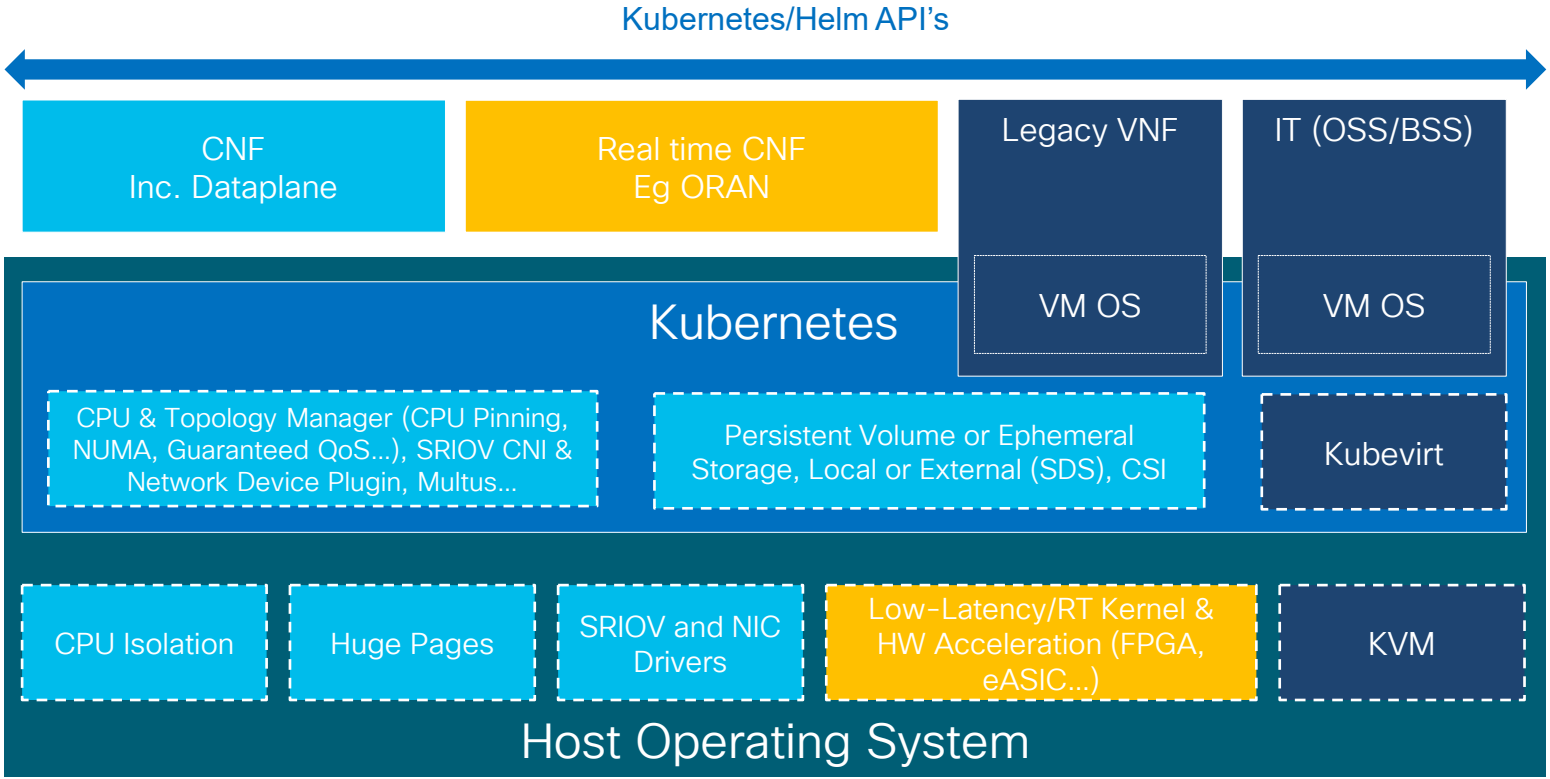
Telecom Enhancements for Kubernetes



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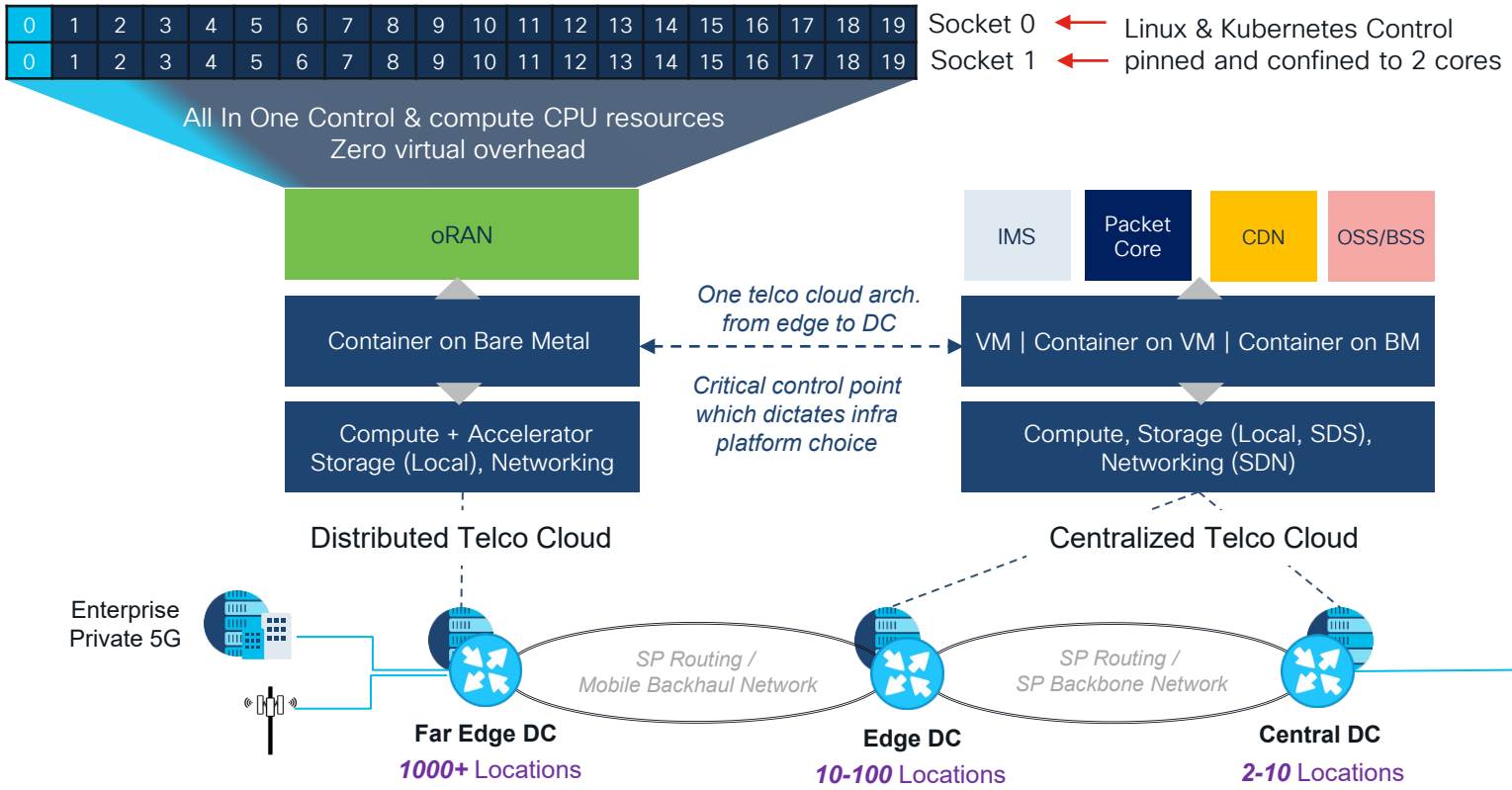
Horizontal Telco Cloud Architecture



Acronym Decoder
oRAN – Open Radio Access Network
CDN – Content Distribution Network
IMS – Mobile IP Multimedia Subsystem

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Cloud Native Virtualization Platform

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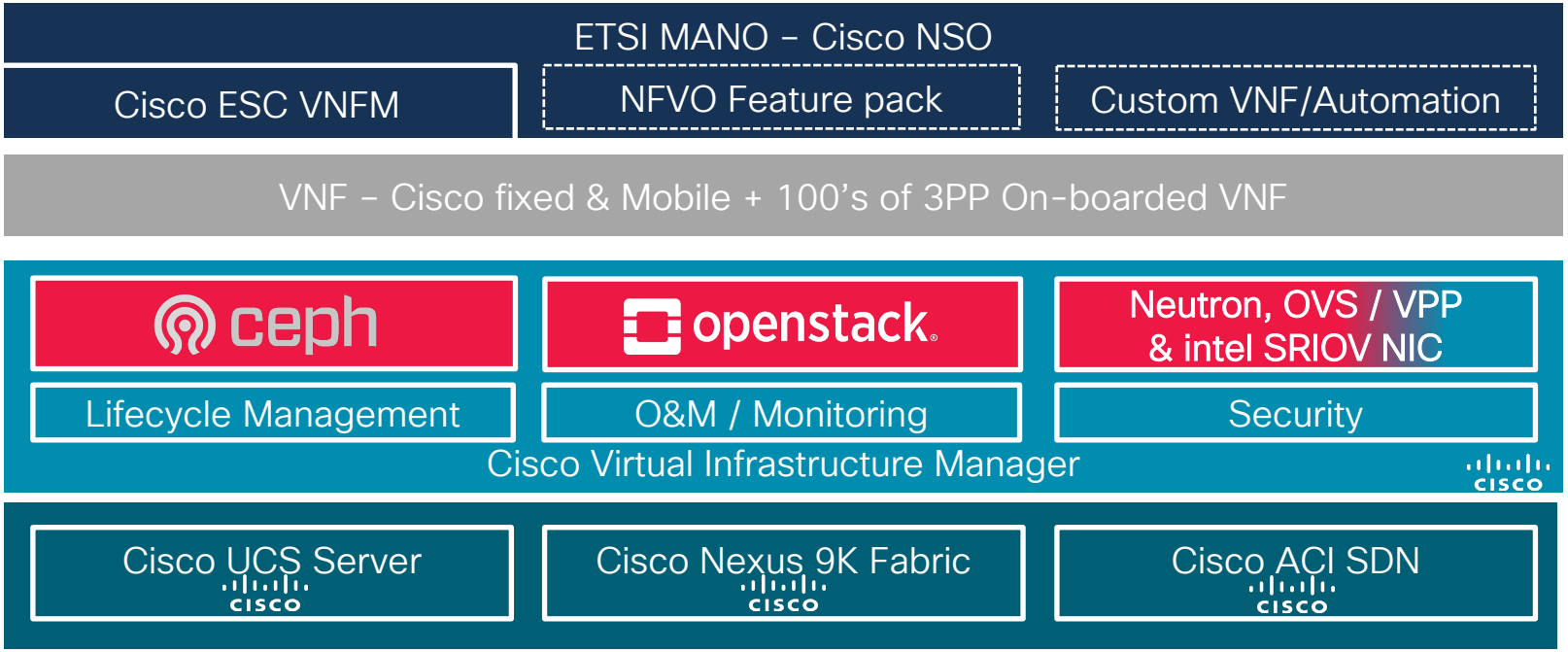
Cisco Cloud Services Stack & VIM at glance



Open, Standard, Reliable
Ease VNF on-boarding

Optimized operations
LCM, CVIM-Mon, Network insights

High performance
Optimized settings, ACI+SRIOV

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Introducing

Intersight as a Kubernetes-as-a-Service Solution

Cloud Operations Platform

Intersight SaaS or On-prem based management of infra and containers across edge and core datacenters

Turnkey

Integrated platform for production grade cloud native applications

Economic

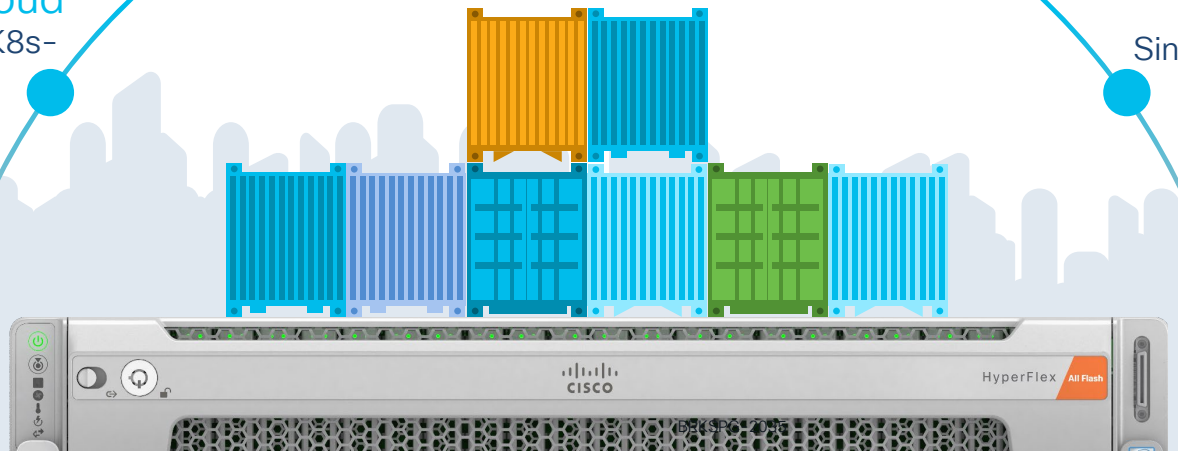
Eliminate penalties of 3rd party hypervisor tax

Kubernetes cloud

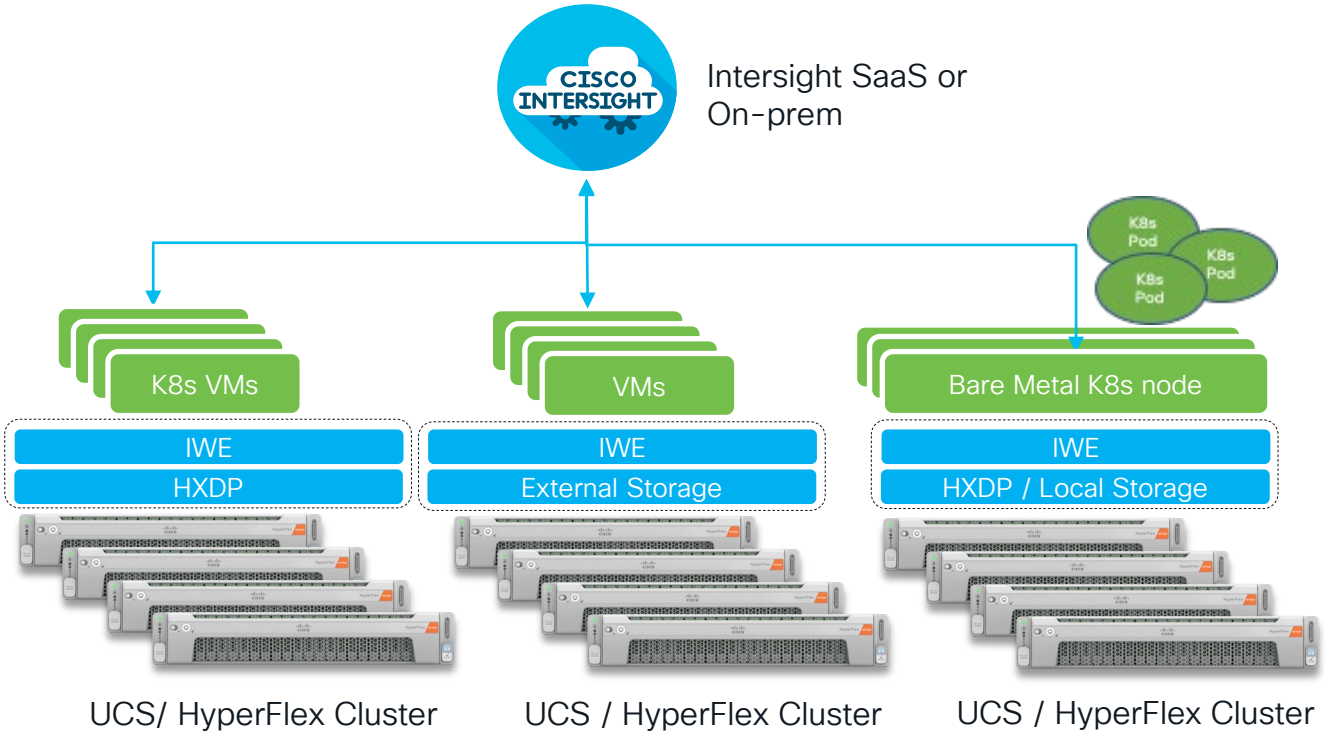
Enables IT to deliver K8s-as-a-service to developers

Future proof

Single platform for current and future apps



Intersight Workload Engine (IWE)



- New SW platform Designed to run VMs or Containers side-by-side
- K8s based platform capable of running VMs and bare metal containers simultaneously
- Modern & Distributed, with scale from small to large cluster node size
- Supports VM/Workload Scheduling, VM HA and VM Live Migration
- HX Data Platform based distributed persistent storage for data resiliency (FCS)
- Intersight (Virtualization) for Configuration, Monitoring & Telemetry and cloud services

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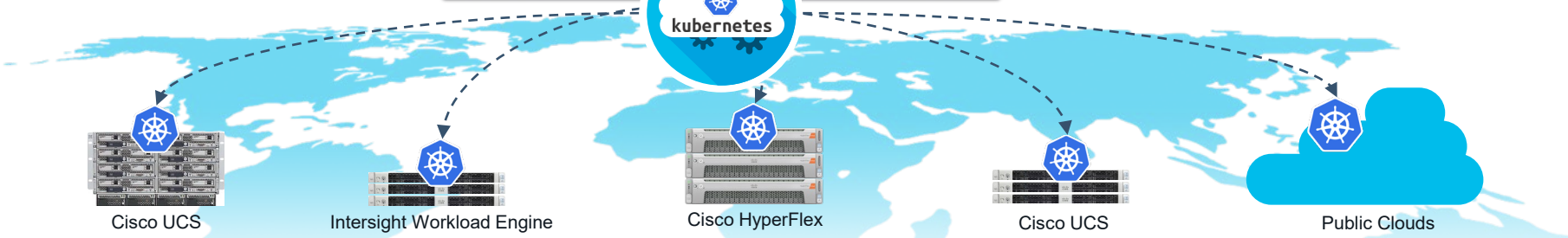
Intersight Kubernetes Service (IKS)

Cloud / Connected / Air-gapped

Deploy
enterprise-ready Kubernetes clusters from the cloud in minutes

Manage
the life-cycle of Kubernetes clusters across the globe from a single cloud portal



✓ Bare Metal Support

✓ Multi-Hypervisor Support

✓ Data Center | Edge | Cloud

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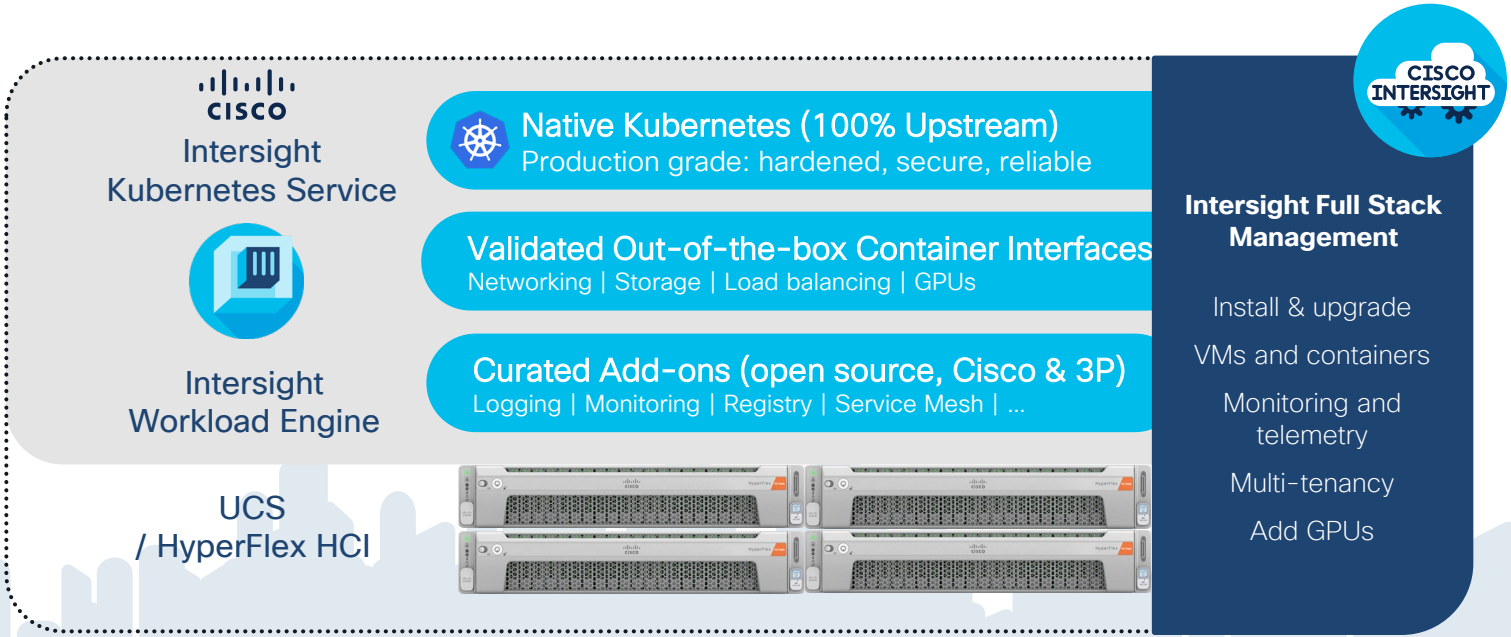
Intersight Solution for Kubernetes

Turnkey app modernization platform



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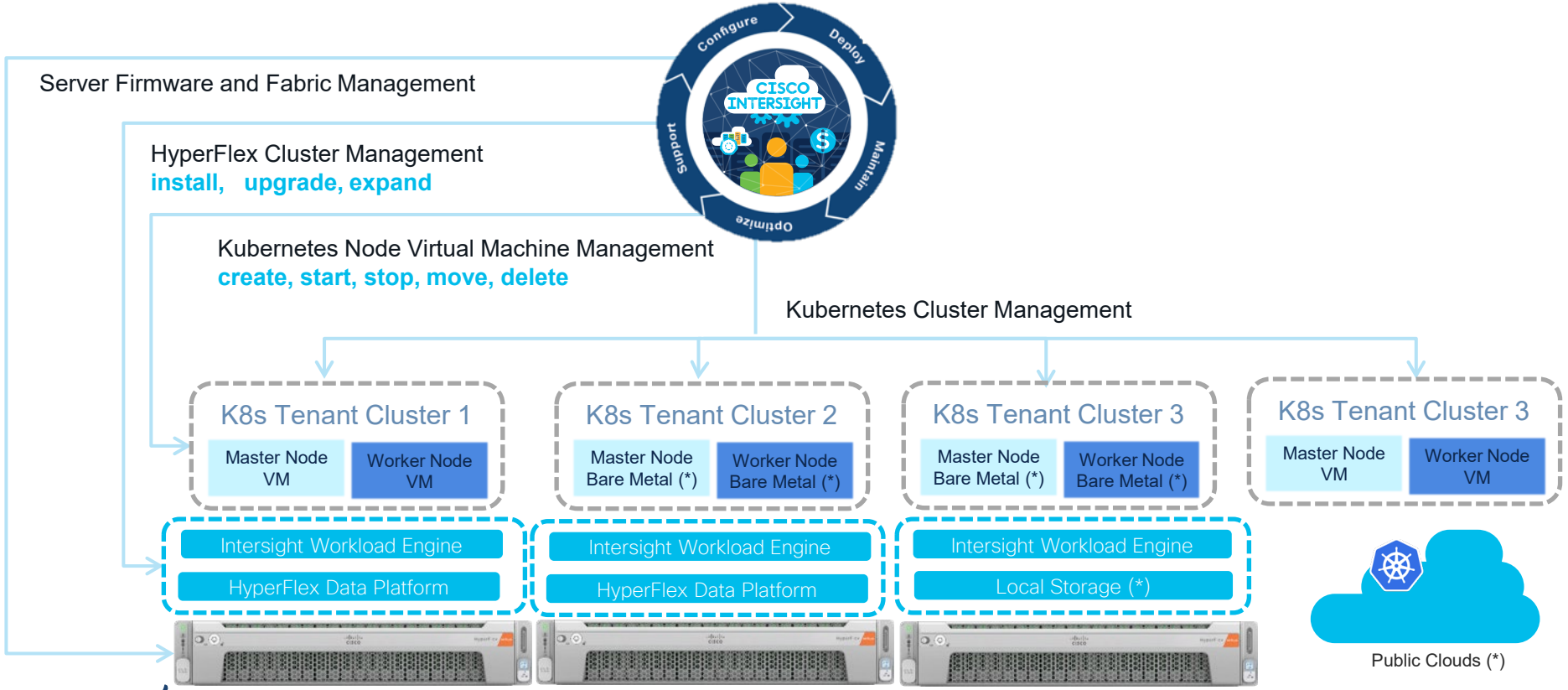
End to End Life Cycle Management



* Roadmap

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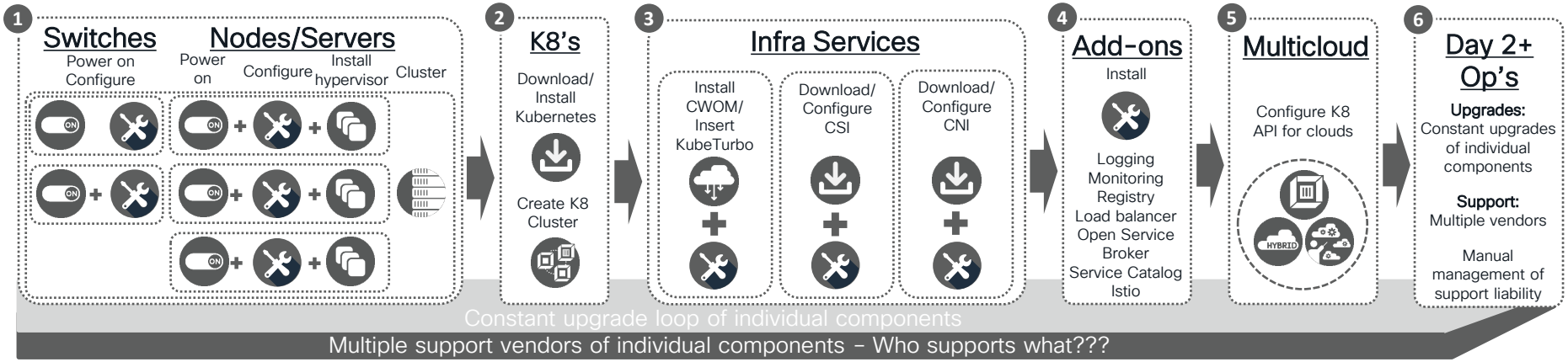
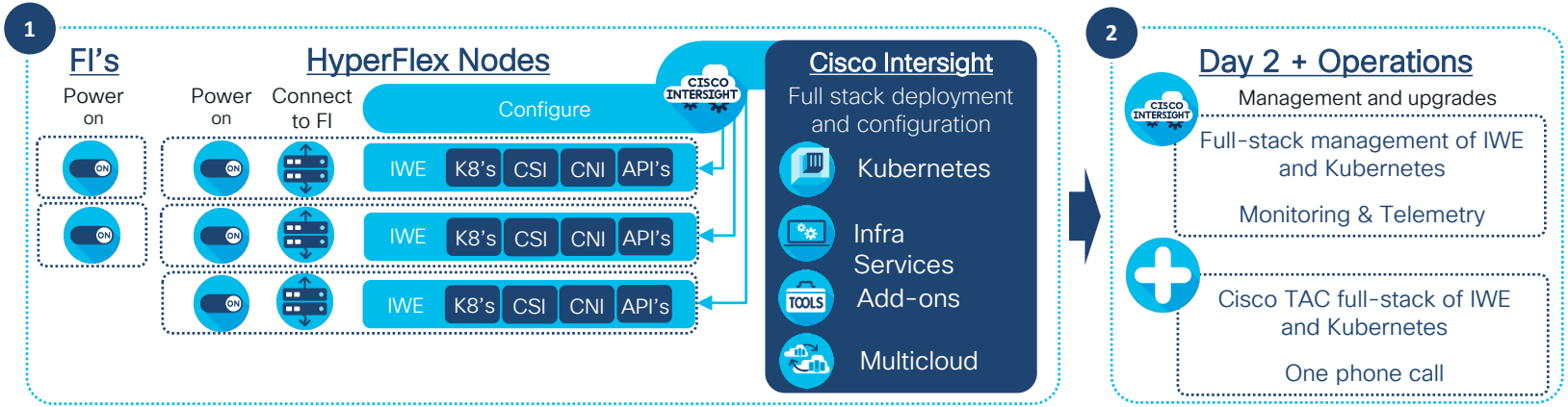
DIY vs. Intersight





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Cisco Intersight Kubernetes Service

For Your Reference

Setup

- Deployment options: VMware ESXi, IWE*, IWE bare metal*, AWS*, Azure*, Google Cloud*
- Adopt 3rd party Kubernetes clusters*
- Serverless support*
- Container Network Interface
- Persistent storage / Container Storage Interface (VMware, HXDP, 3rd party)
- L4 / L7 Load Balancing
- Service mesh*
- Container Registry*
- Blue/green multi-cluster application deployment*

Consume

- GUI, API, Terraform
- AD authentication / RBAC / user management
- Resource-based node pools with multiple cluster and storage*
- Multi-GPU-as-a-Service*
- Kubeflow*
- Integrations: Intersight Workload Optimizer, AppDynamics*, Tetration* add-on agents
- Multi-cluster configuration
- Policy engine*
- Security (policies, encryption)
- Auto-deploy and manage application helm-charts*

Manage

- Add/remove/update Kubernetes nodes and add-ons
- Lifecycle management (OS updates, Kubernetes upgrades, add-ons)
- Prometheus/Grafana monitoring
- EFK logging
- Kubernetes dashboard
- Multi-cluster operations
- Self-healing clusters
- Multi-master nodes with multiple cluster and storage*
- Application backup/restore, protection
- IKS cloud shell*

certified kubernetes

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Telco Cloud Architecture Wrap-up

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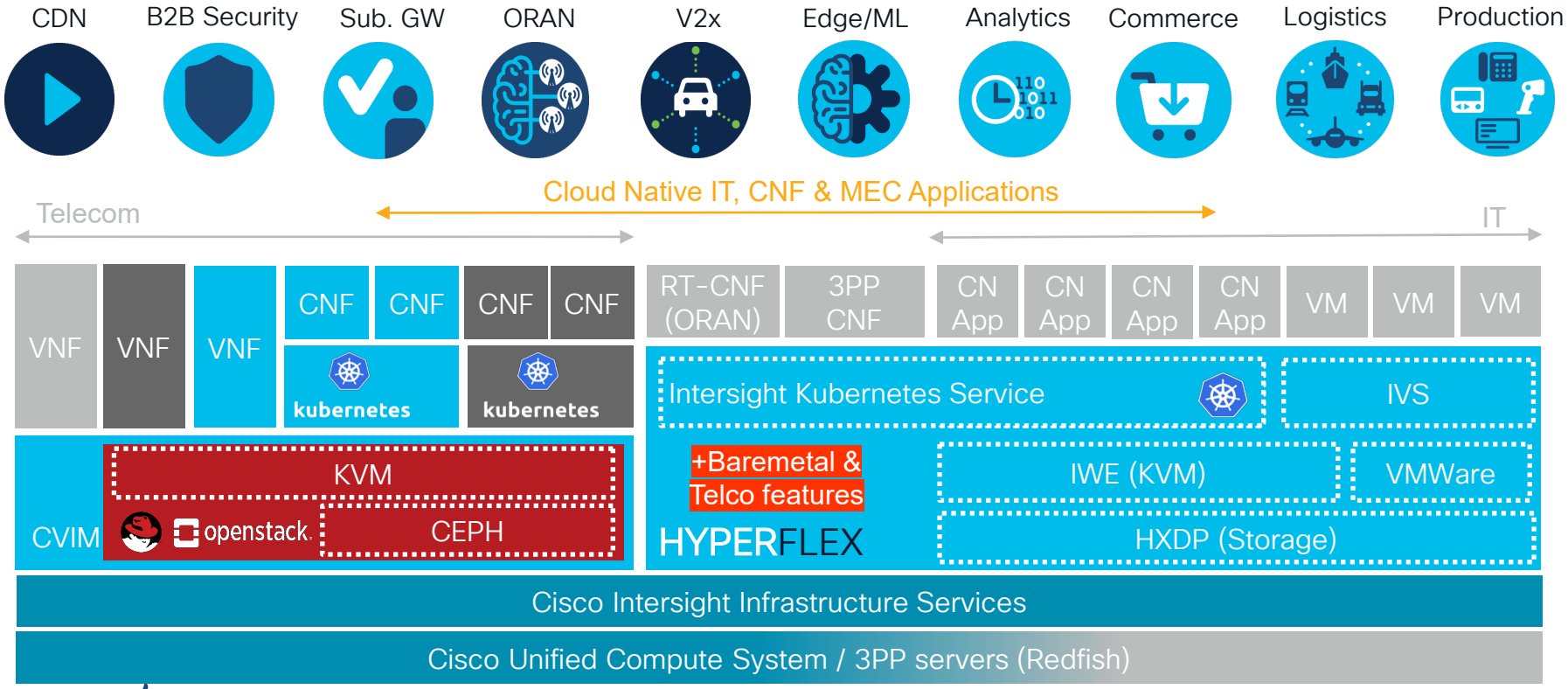
The opportunity: Telco/IT/MEC Converged Solution



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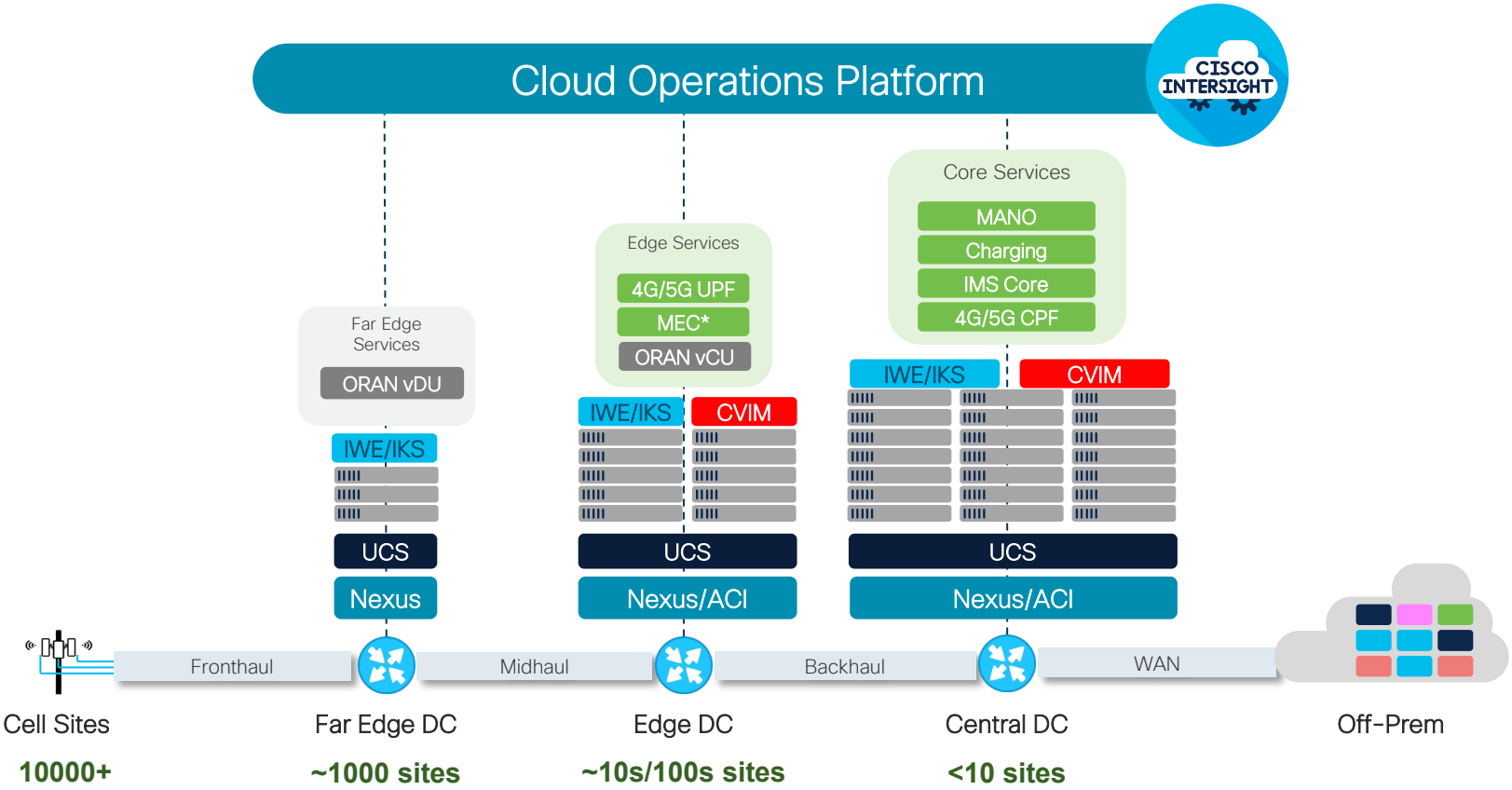
Cloud Native Virtualization Platform for 5G – Case Study



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Take Aways

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Continue the Learning Journey

- Intersight

  http://www.cisco.com/go/intersight

- Cisco VIM

  https://www.cisco.com/c/en/us/products/cloud-systems-management/virtualized-infrastructure-manager/index.html

- Intersight Workload Engine (f.k.a HXAP)

  Introducing the HyperFlex Application Platform
  https://cscoblogs-prod-17bj.appspot.com/datacenter/introducing-the-hyperflex-application-platform

  Cisco HXAP for Containers Solution Overview:
  https://www.cisco.com/c/en/us/products/collateral/hyperconverged-infrastructure/hyperflex-edge/solution-overview-c22-744635.html

- IKS

  Introduction to Intersight Kubernetes Service
  https://blogs.cisco.com/cloud/saas-based-kubernetes-lifecycle-management-an-introduction-to-intersight-kubernetes-service

  Cisco Intersight Kubernetes Service At-a-Glance
  https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/intersight/at-a-glance-c45-744332.html

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Session ID	Session Title	Presenter
BRKSPG-2036	Realize Seamless End to End, Application Centric Network Slicing with Distributed DC Fabric & SR/MPLS WAN Integration	Hector Fernandez Sonu Kumar Khandelwal
BRKSPG-2037	Reap the Benefits and Avoid the Pitfalls. Successfully Deploy Multi-Cloud and Cloud-Native Services in the SP	William Van Nieuwenhove
BRKSPG-2025	Fixed Line Broadband Services - A Cloud Native Approach	Gurpreet Dhaliwal Raja Kolagatla
BRKSPG-2026	Cloud Native 5G Packet Core	Tomasz Maslewski
BRKSPG-2027	4G and 5G for Private Networks	Mark Rankin
BRKSPG-2018	Orchestrating 5G End-to-End	Laurent Desaunay Arghya Mukherjee
BRKSPM-2002	5G Core Evolution	David Perez Gil
BRKSPM-2000	RAN Transformation and DC Edge	Virginia Teixeira
BRKSEC-2237	Securing your 5G infrastructure to the edge and beyond	Pramod Nair

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Attend our Demos @ Service Provider Showcase

Showcase Demos, in priority order	Presenter
Optimize with Routed Optical Networking	Phil Bedard, Francesca Scarpinati
Automating Operations in the Transport SDN	Stefano Novello
Automated 5G Ultra Cloud Core Deployment	Christian Falckenberg
Mass-Scale Multi-Haul Transport	Matteo Pierpaoli, Stefano Colombo
UltraScale Slicing with SRv6 Micro-SIDs	Loic Roque
Cloud Native BNG Control Plane Operation	Alexander Yakhnych
Crosswork Cloud: Traffic Analysis as a Service	Dan Backman
End-to-End Network Slicing with AC1-SR	Tiziano Trabattoni
Cloud-Native Application Experience	William Van Nieuwenhove
Monitoring UPF VNF with Nexus Insights	Hector Fernandez

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Thank you


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