Hewlett Packard Enterprise

HPE APPROACH TO O-RAN

～INFRASTRUCTURE MANAGEMENT SOLUTION FOR 5G O-RAN ROLL OUT～

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October 7, 2022

AGENDA

1. HPE APPROACH TO O-RAN

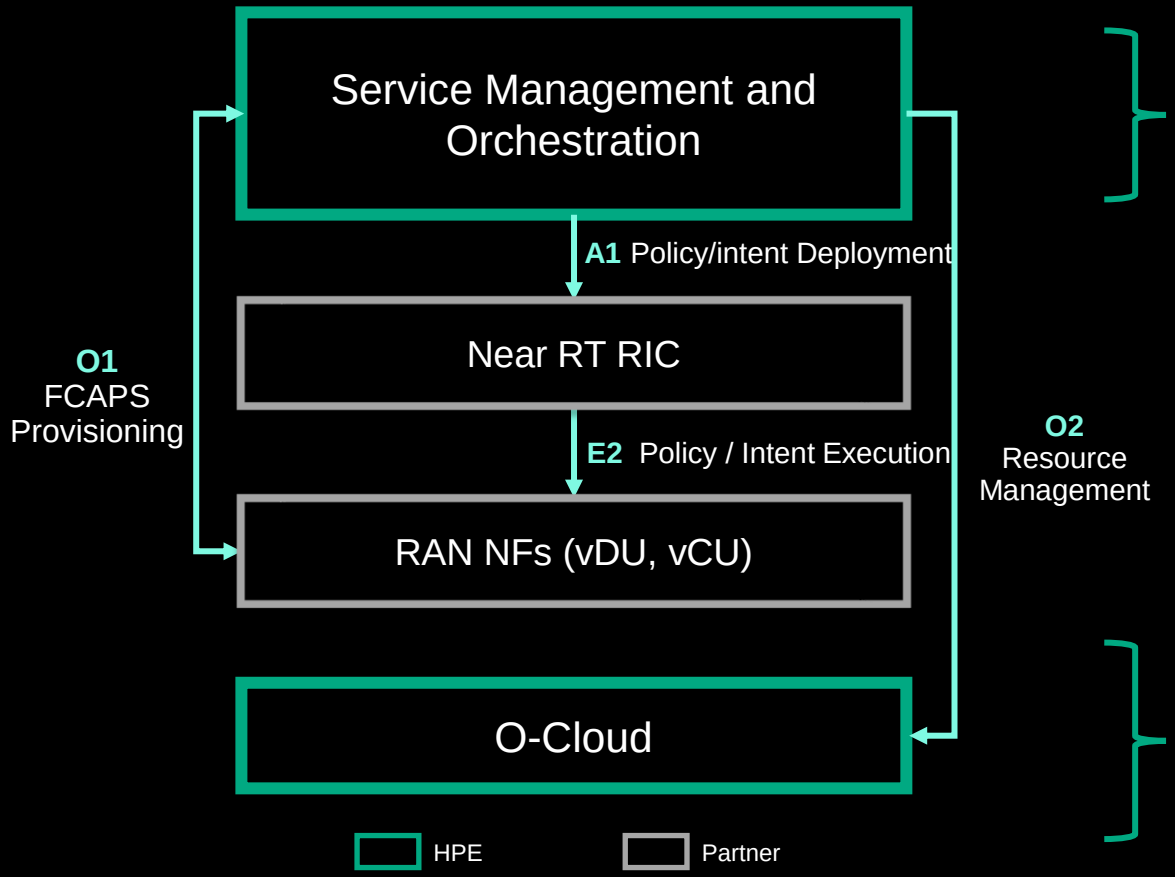
2. RAN DISAGGREGATION CHALLENGE

3. APPROACH FOR CHALLENGE AT O-RAN ROLL OUT

4. SUMMARY

HPE APPROACH TO O-RAN

O-RAN SMO and O-RAN Optimized Infrastructure



HPE RAN Automation

HPE ProLiant DL110 Gen 10 Plus

HPE ProLiant DL360 Gen10 Plus

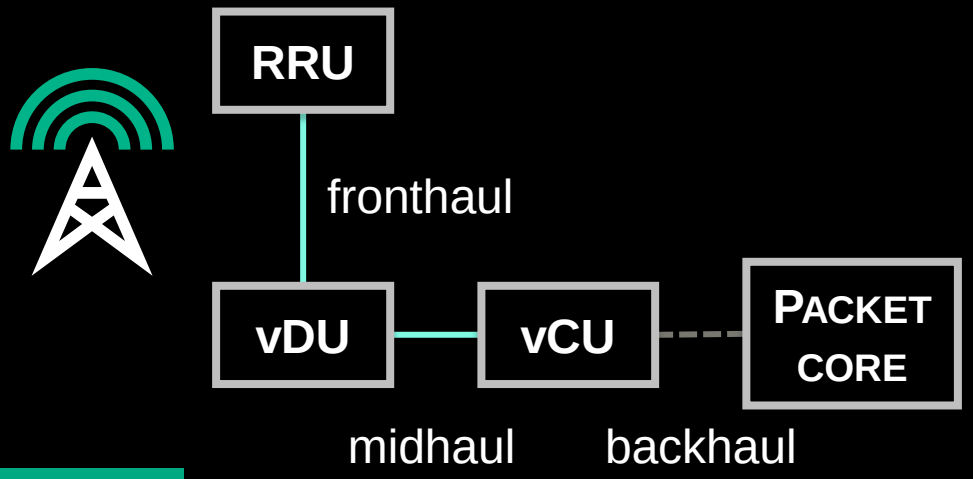
HPE ProLiant DL380 Gen10 Plus

WHY VRAN / ORAN INITIATIVE IS IMPORTANT TO CSPS?

Expecting benefit by disaggregating RAN

RAN Disaggregation

- Disaggregate RRU from rest of the network, functional split gNB to DU and CU
- Virtual functions (vDU, vCU) on COTS hardware
- Multi-vendor configuration, operation automation by Open Interface



Reduce TCO with workload-optimized servers and RAN software

Embrace end-to-end automation to deploy, configure, and manage RAN

Open RAN to new opportunities for innovation avoiding vendor lock-in at all layers

RAN DISAGGREGATION CHALLENGE

RAN roll out and life cycle management

Volume & Time

- Deploy a large scale of RAN sites and servers
- Lifecycle management and orchestration for large number of software（vDU/vCU, CaaS, OS, firmware, UEFI）

Complexity & Technology

- Wide variety of setting parameters combination across multi-vendor RAN NF, CaaS, and hardware
- Various configuration pattern by DU/CU multiple deployments scenario
- Convergence of Network and IT architecture（Virtualization, Cloudification)

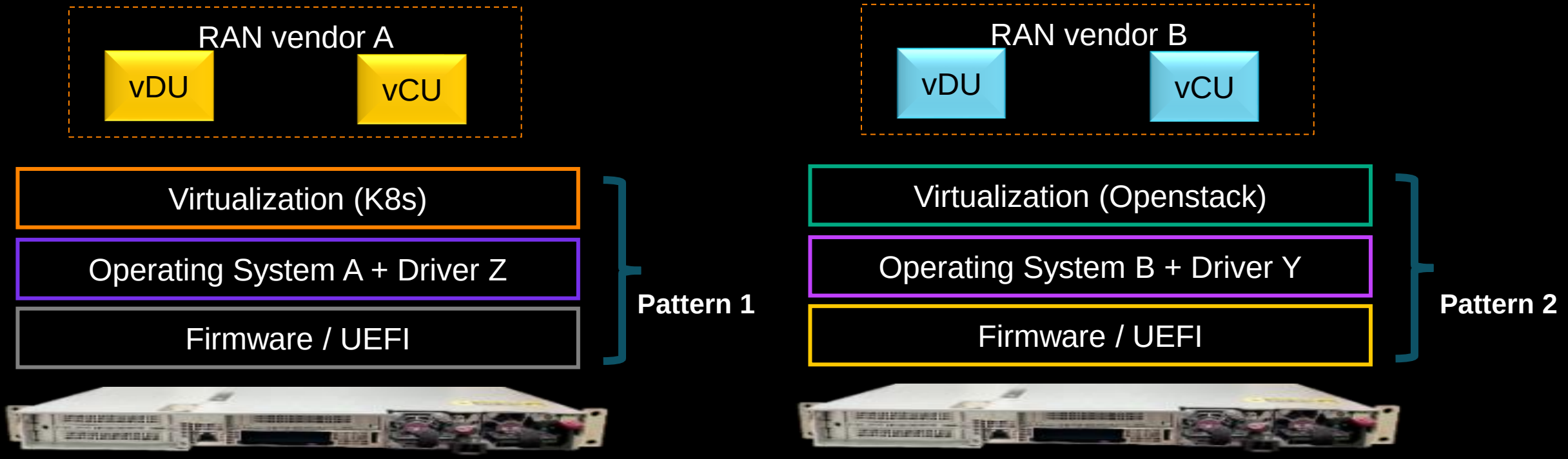
People & Processes

- New operation skill
- New operational process
- Security concerns

INFRA MGMT CHALLENGE AT MULTI-VENDOR DEPLOYMENT

Wide variety of pattern for setting parameters combination and procedure

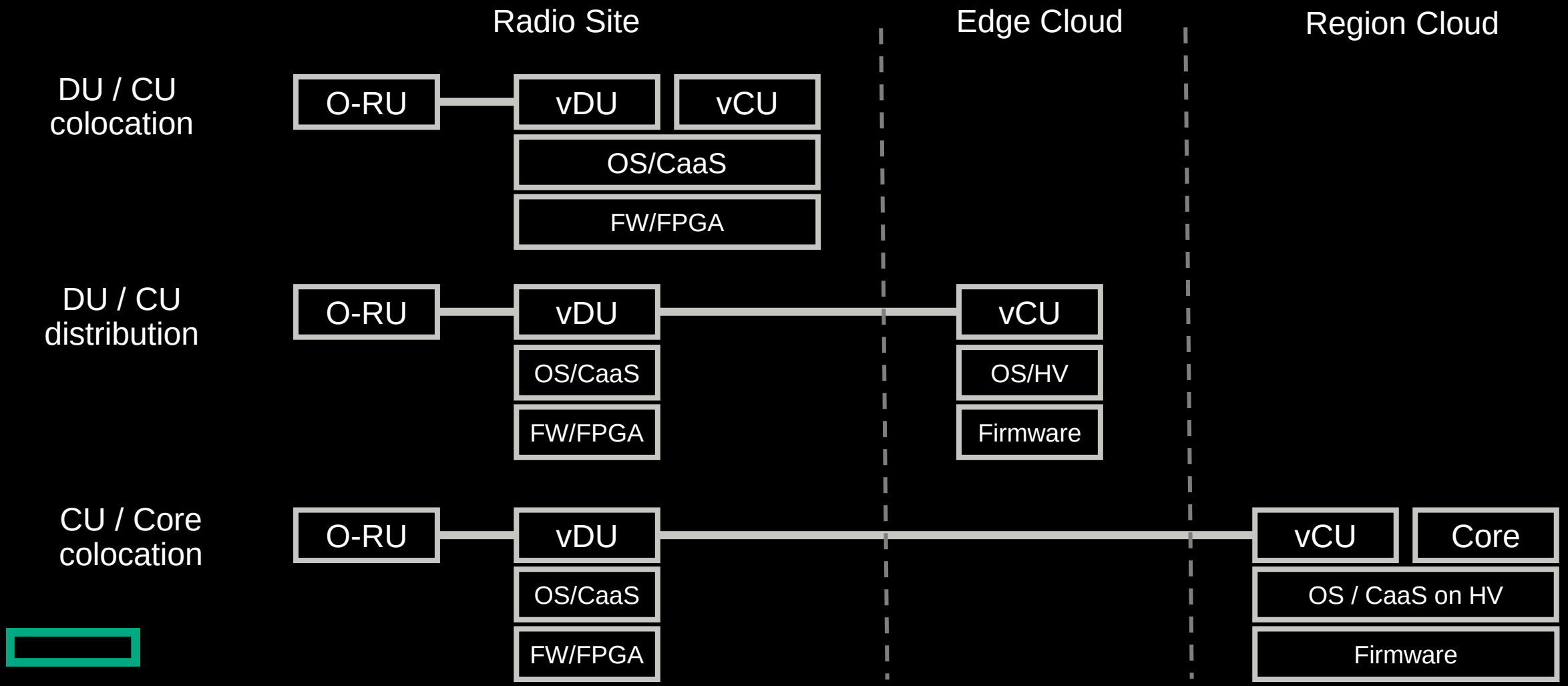
- Infra configuration parameter and procedure are specified by RAN vendor as vCU / vDU requirement
  - Software version of Firmware, UEFI, OS, Driver, virtualization platform, etc
  - Configuration parameters for OS, Driver, virtualization platform



INFRA MGMT CHALLENGE AT VDU/VCU DEPLOYMENT SCENARIO

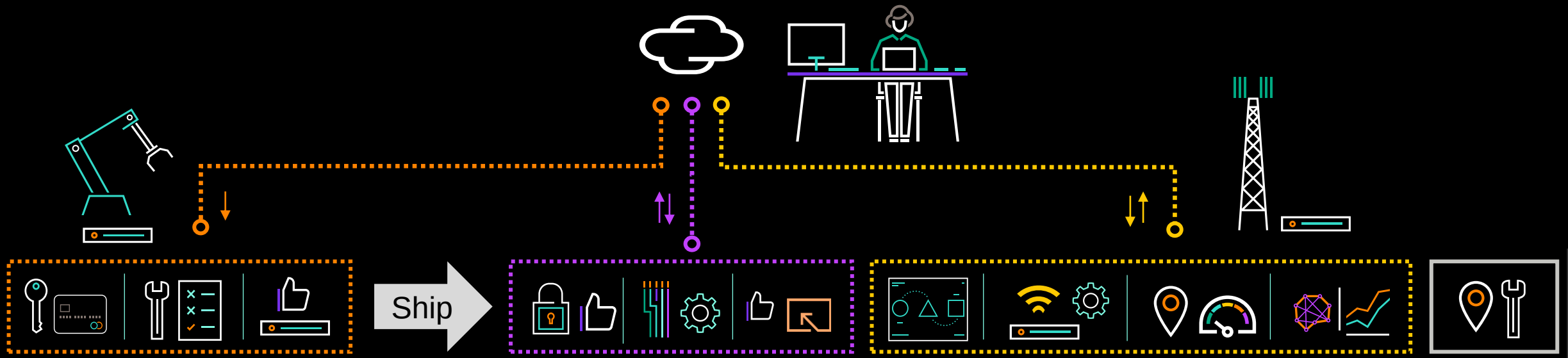
Various configuration pattern by vDU / vCU multiple deployment scenario

- Infrastructure configuration and the parameters will be vary corresponding to vDU / vCU deployment patterns



INFRA MGMT CHALLENGE AT RAN ROLLOUT AND MAINTENANCE

Remote infra management at initial deployment and version up



Server pre-configuration (Firmware, UEFI, OS, etc)

Finalize infra set up (update driver / lib virtualization PF, configuration, etc)

RAN NF configuration, optimize radio parameters, service monitoring

Firmware, UEFI, OS update corresponding to NF version up

APPROACH FOR CHALLENGE AT O-RAN ROLL OUT

SMO to automate RAN Infrastructure and Application lifecycle management

Challenge

- Large number of site and server roll out, various configuration under multi deployment scenario
- Rapid deployment and operation efficiency in a multivendor configuration
- Leverage IT technology like as virtualization, cloud

HPE Solution

HPE RAN Automation (O-RAN SMO)

HW / CaaS / RAN NF lifecycle management

Pre-defined configuration profile template

Closed-Loop for RAN provisioning and assurance

Benefit

- Enable RAN deploy, configure, optimize and SW version up remotely
- Easy and rapid RAN deployment using pre-defined configuration profile template
- Reduce operational load by automating closed – loop process of RAN provisioning and assurance

HPE APPROACH FOR O-RAN INFRASTRUCTURE MANAGEMENT

O-RAN SMO solution for multi-vendor management and automation in disaggregated RAN

Enable RAN site deployment easy and efficient by providing pre-defined configuration profile template

Staging Site

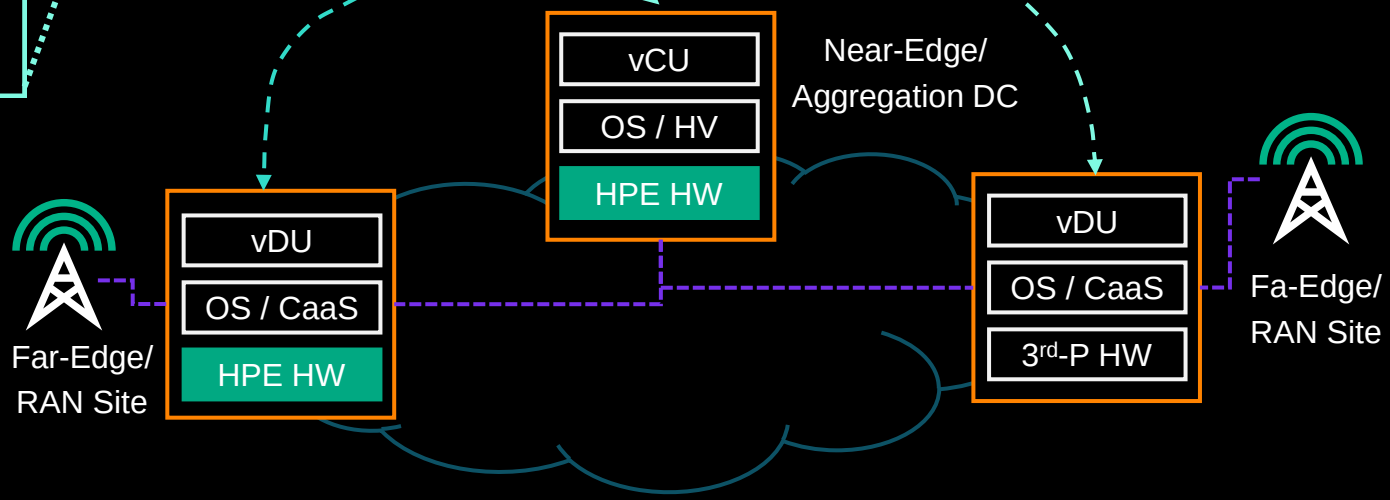
- Server identification and authorization
- **Template-based hardware setup**
  - Server (BIOS, firmware)
  - Storage
  - Cards (FPGA, NIC)
- OS/Hypervisor installation and configuration

RAN Site

- Register hardware inventory
- Infrastructure security
- OS patching, firmware / BIOS update, package mgmt
- Server assurance (metrics monitoring)

HPE RAN Automation (O-RAN SMO)

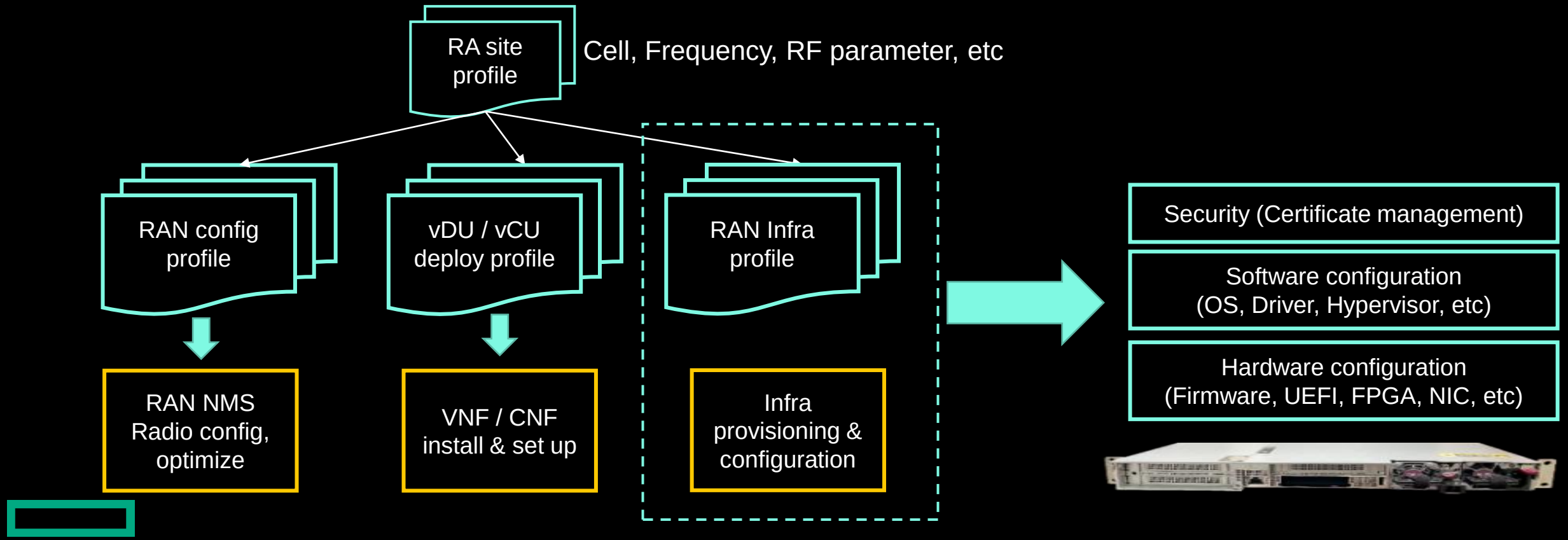
RAN Infra Management + RAN xNF lifecycle Management + RAN Configure & Optimize



HPE APPROACH FOR O-RAN INFRASTRUCTURE MANAGEMENT

Manage RAN site configuration with pre-defined configuration profile template

- Provide profile template for installation & configuration of RAN site, RAN Software, RAN Infrastructure and manage these centrally
- Automate E2E provisioning with pre-certified combination of hardware and software
- RAN Infra profile template has HW & SW install procedure flow and configuration the parameters



SUMMARY

CSP's expectation to O-RAN	Challenge	HPE Solution
Reduce TCO with workload-optimized servers and RAN software	Large number of site and server roll out, various configuration under multi deployment scenario	Remote RAN deploy, configure, optimize and SW version up remotely Easy and rapid RAN deployment using pre-defined configuration profile template Reduce operational load by automating closed-loop process of RAN provisioning and assurance
Embrace end-to-end automation to deploy, configure, and manage RAN	Rapid deployment and operation efficiency in a multivendor configuration	
Open RAN to new opportunities for innovation avoiding vendor lock-in at all layers	Leverage IT technology like as virtualization, cloud	

THANK YOU