Common NFVI Telco Taskforce Paris Face-To-Face Sessions,

Walter Kozlowski, Telstra
Karine Sevilla, Orange
Pankaj Goyal, AT&T
Rabi Abdel, Vodafone

Reference Architecture Principles

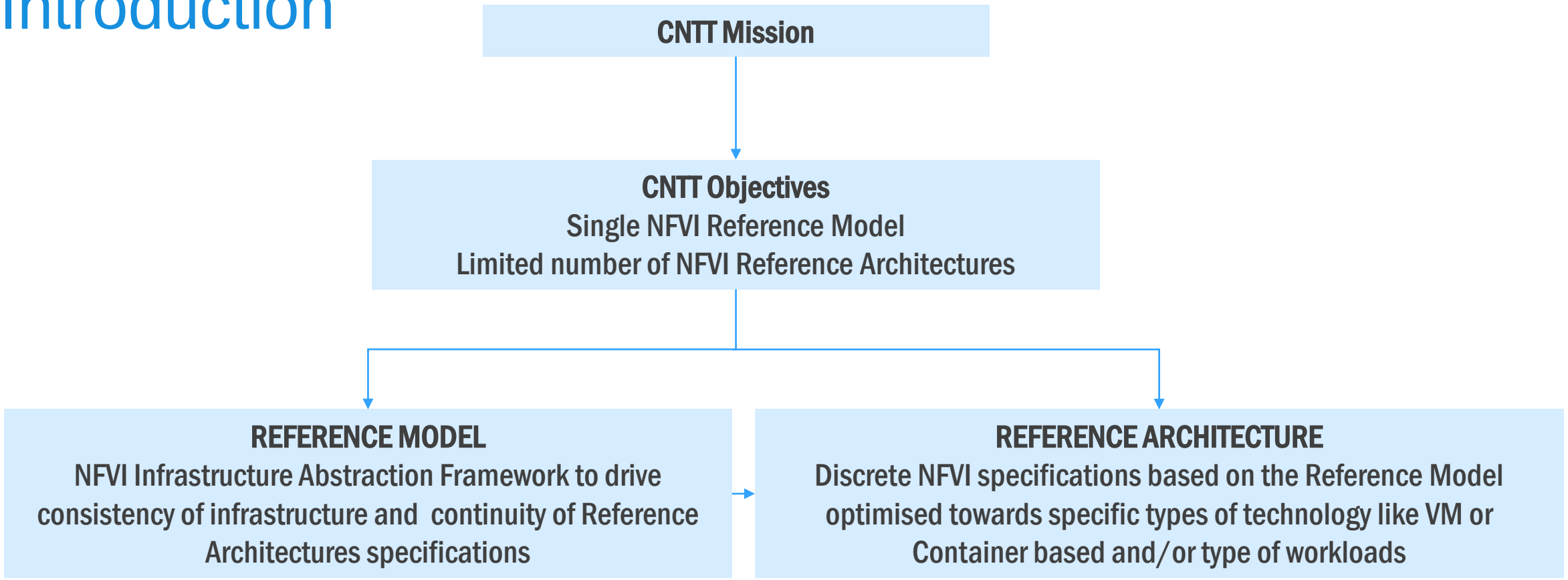
July 2019

Common NFVI for Telco Reference Architecture

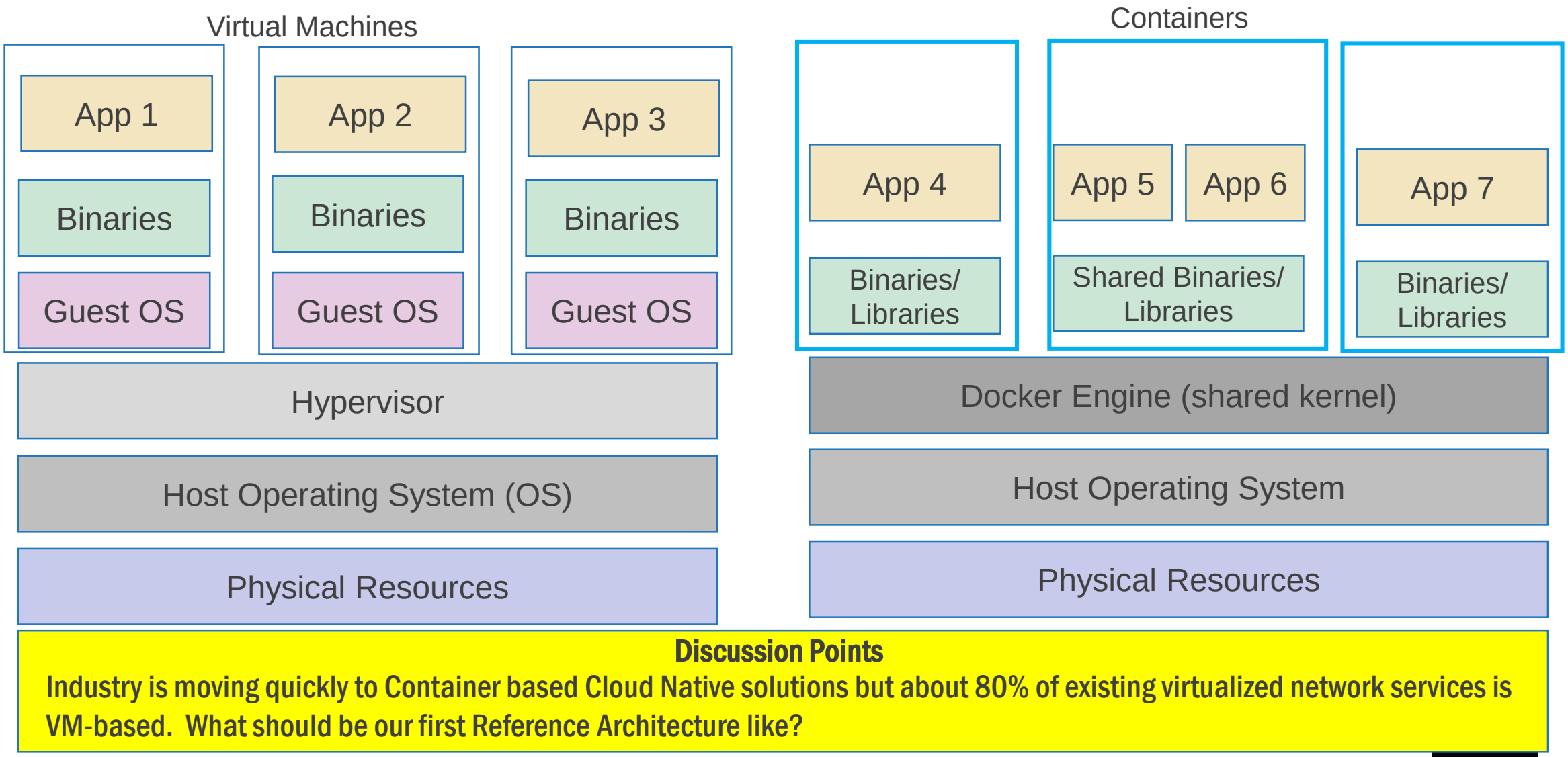
Agenda

- Introduction
- VMS or Containers?
- Open Source
- Published API
- Availability and Resilience
- Scalability and Immutability
- Automated Deployment and Life Cycle Management
- Operability and Maintainability
- Security
- Q&A
- Wrap-up

CNTT Reference Architecture Introduction



CNTT Reference Architecture



Discussion Points

Industry is moving quickly to Container based Cloud Native solutions but about 80% of existing virtualized network services is VM-based. What should be our first Reference Architecture like?

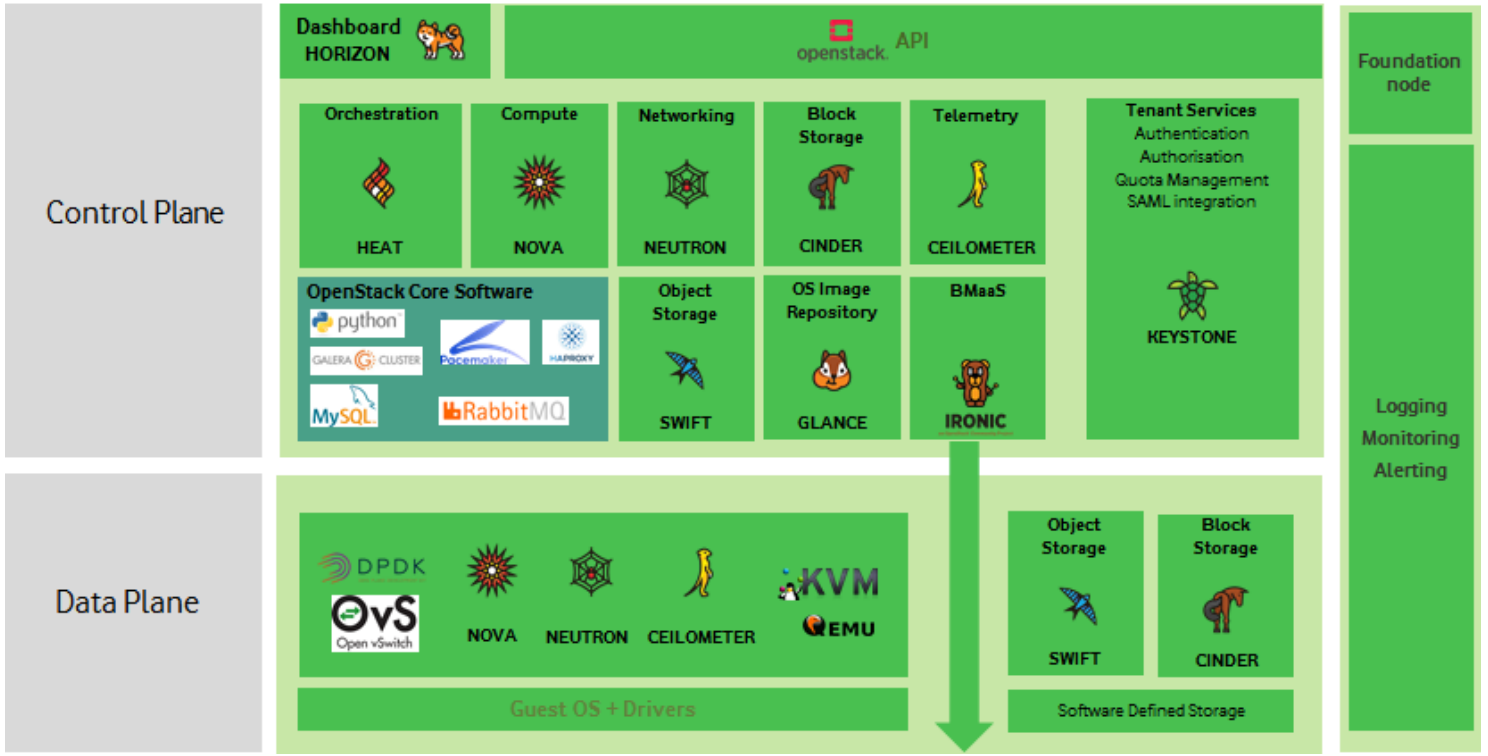
CNTT Reference Architecture Open Source

Principle 1

CNTT operator/supplier community must use open source and proactively influence open source activities.

Goal

Ensure that suppliers' and operators' investment have a tangible pathway towards a standard and production ready NFVI solution portfolio.



Discussion Points

Which communities and open source projects need to be engaged, used and influenced to accelerate convergence of the NFVI standardization process? Where are the main areas requiring our attention?

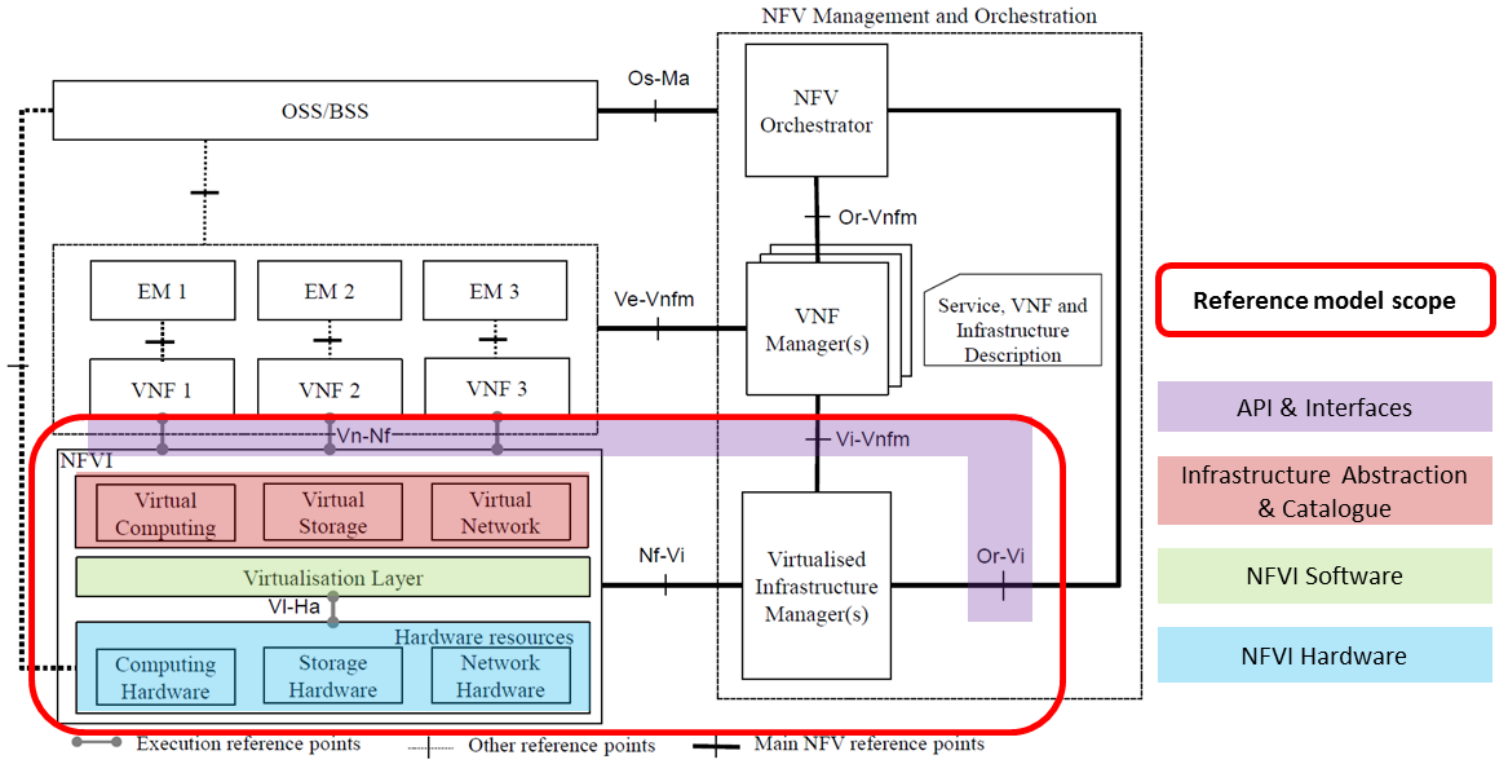
CNTT Reference Architecture Published APIs

Principle 2

Interaction between components of NFVI and with external systems like MANO must be implemented according to Open Published API specifications.

Goal

Minimize integration and interoperability efforts.



C2 General

Discussion Points

We need to define standard technology specific API specifications for ETSI defined Integration Points.
Also, we need to define standard APIs within NFVI itself. What is the current industry state? How to approach this? Where to start? Which API specs are critically needed as the first priority?

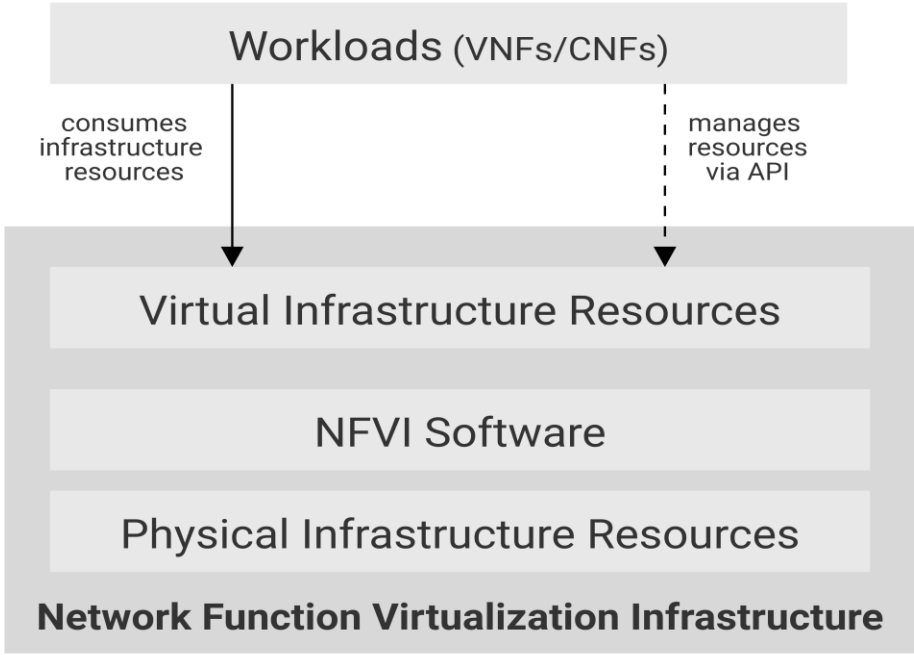
CNTT Reference Architecture Availability and Resilience

Principle 3

NFVI must be architected to allow High Availability and Resilience for hosted VNFs.

Goal

Network service resilience should come from the resilience in the application layer.



Discussion Points

While the software layer resilience is a long term goal (e.g. through cloud-nativeness of VNFs), how to get there? What are the main aspects of the NFVI Architecture that need to be standardized to accelerate this evolution? What NFVI platform resilience needs to be provided in the short term?

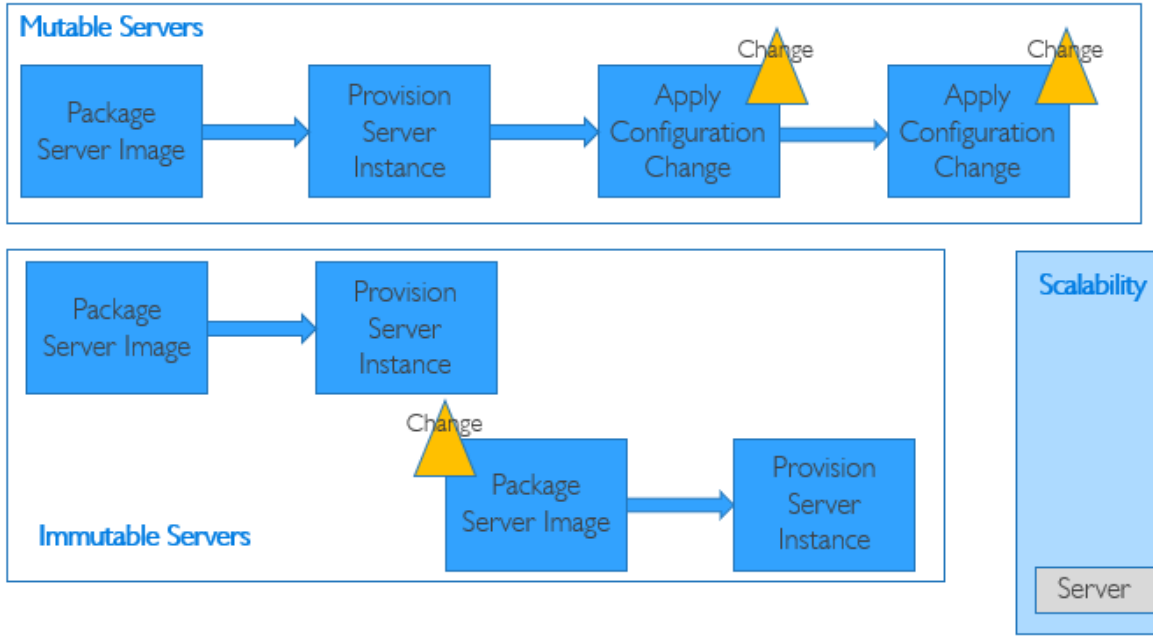
CNTT Reference Architecture Scalability and Immutability

Principle 4

NFVI Architecture must support fast and reliable horizontal scaling of workloads, enabled by immutable infrastructure.

Goal

Scaling cost and operational impact reduction.



Discussion Points

We need to provide practical reference architecture analysis how to enable scaling out of workloads to minimize costs and minimize operational impacts. How to use immutability to allow fast and reliable scaling?

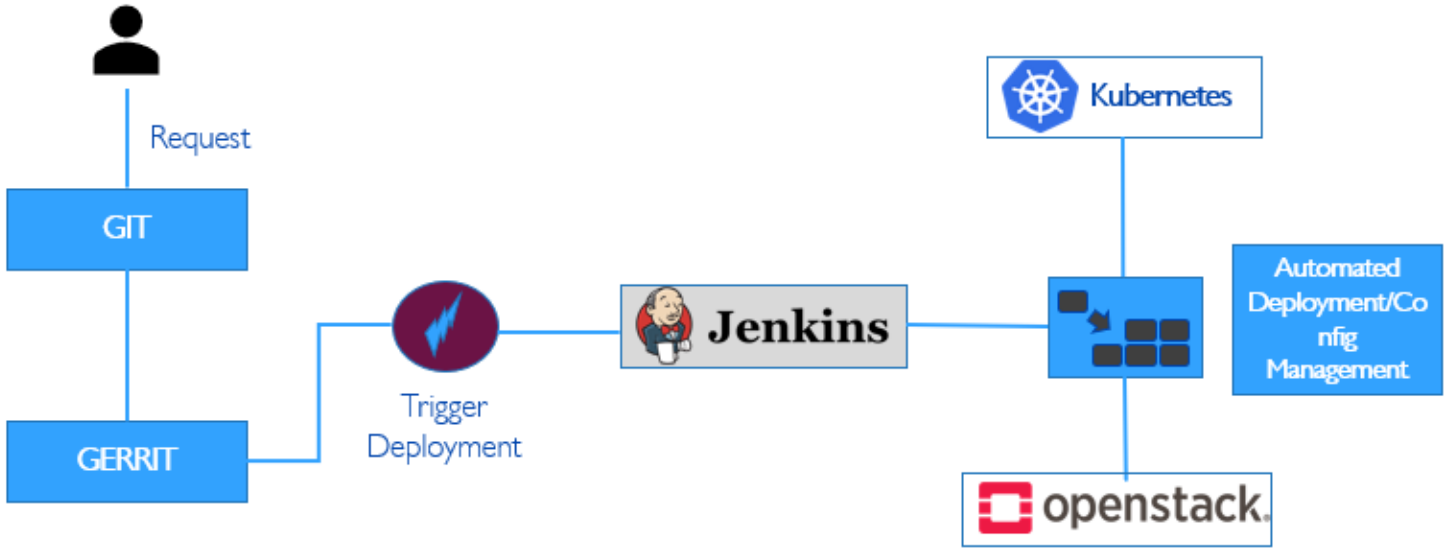
CNTT Reference Architecture
Automated Deployment and Life Cycle Management

Principle 5

Deployment and zero-touch lifecycle management of NFVI instances must be done via an automated process.

Goal

Minimise costs of deployment and non-disruptive LCM across multiple physical locations.



Discussion Points

Infrastructure as a Code – is it real or myth? What technology developments should be considered for Automation of deployment and non-disruptive, zero-touch LCM? Balance use of NFVI resources between Control and Management Planes and User Plane.

CNTT Reference Architecture
Operability and Maintainability

Principle 6

NFVI Platform Architecture must support automated assurance and minimize complexity of operations and maintenance.

Goal

Minimise operational costs and simplify operations.

Discussion Points

How to minimise complexity of operations? What tooling is available for automation and Assurance across multiple layers of NFVI Architecture? How to deploy NFVI to optimise maintenance (availability zones, host aggregations,...)?

CNTT Reference Architecture
Security

Principle 7

NFVI platform must at all levels comply with industry/regional security regulations, as well as with the industry security best practice.

Goal

Ensure security and compliance.

- Security certification using ISO27k suite of standards, higher on case-by-case basis
- 2FA authentication
- Encryption for all external and control comms
- Encryption for all data in motion and at rest
- Strong separation between tenants
- Strong RBAC schema
- Change control enforced
- Separation of control and execution zones
- IP filtering between zones

Discussion Points

What international security standards should be considered from the security perspective (e.g. ISO, NIST)? How to balance security versus performance and ease of use/operability (e.g. use of firewalls and encryption)?

Q&A
Wrap Up