

# Common NFVI Telco Taskforce

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## Infrastructure Description (Manifests) Validation

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The 'Manifest Validation' is a novel process – reference work or tools do not exist in public.

It has a major role to play in 'automation'.

# Infrastructure Description

## Goal

Create automated means to do a manifest validation / or audit of actual delivery and installation of the OpenStack deployment

## Approach

- › Machine-Readable Definition/Description of the infrastructure – Hardware and Software – using a specific schema (preferably standardized?).
- › The Infrastructure: Environment In/On which ‘ANY’/’Targeted’ VNFs (CNFs) runs.

## Scope

- › NFVI + SDN
- › MANO
- › Underlay/Fabric

## Consumers

- › Primary: Installers.
- › Secondary: Test and Verification Framework, Application designers, Management/Operations.

# What really user can 'Describe'?

These are organized by Installer-Specific Schema

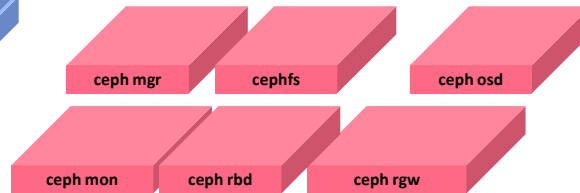
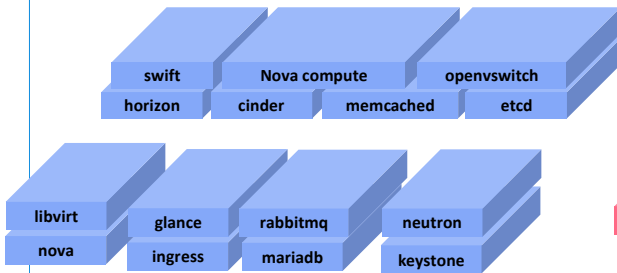
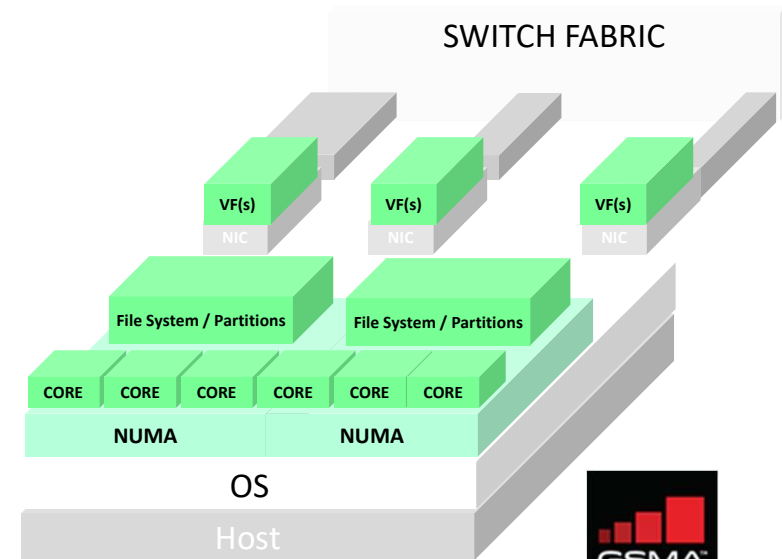
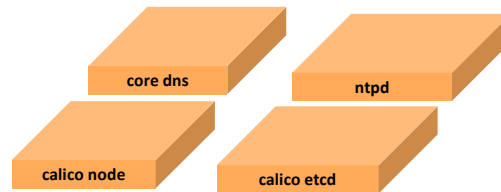
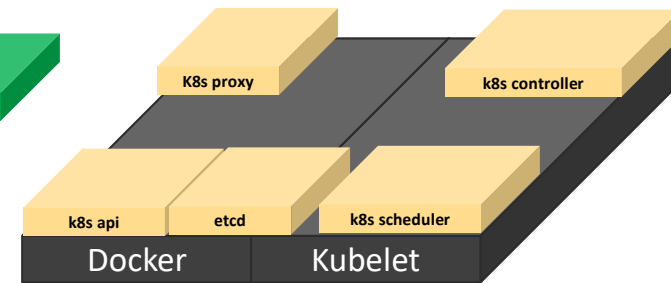
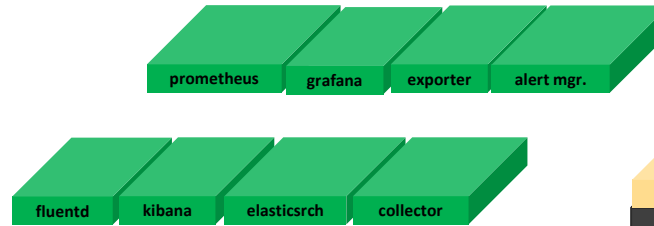
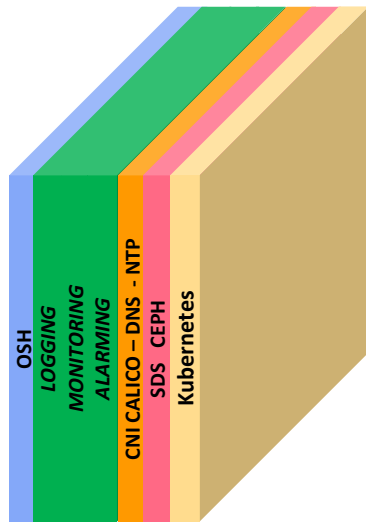
<b>GENERIC</b> Management (location, owner, etc.), Strategy, Globals, Tooling, Versioning,	<b>HARDWARE</b> Vendor, Gen., BIOS, CPUs, Memory, Disks, NICs (PCI, MAC), etc.	<b>PROFILES (HOST)</b> Name, Disks & Partitions, N/W->NIC Mapping, OS,
<b>NETWORK</b> Names, vlans, cidr, routes, ip, g/w, speed, mtu, bonding, etc. cidrs for diff. n/ws, container n/w, SRIOV, etc.	<b>NODES</b> Profile-Mapping, Networks & address, metadata.	<b>SECRETS</b> Certificates, passphrases, public keys, etc.
<b>SOFTWARE</b> Software and nodes mapping, versions, registry,	<b>ACTIONS</b> Boot actions - custom scripts, drivers, etc.	<b>OTHERS</b> Jump Hosts-Definition, Network Services (NTP, DNS, etc)

# Infrastructure Description

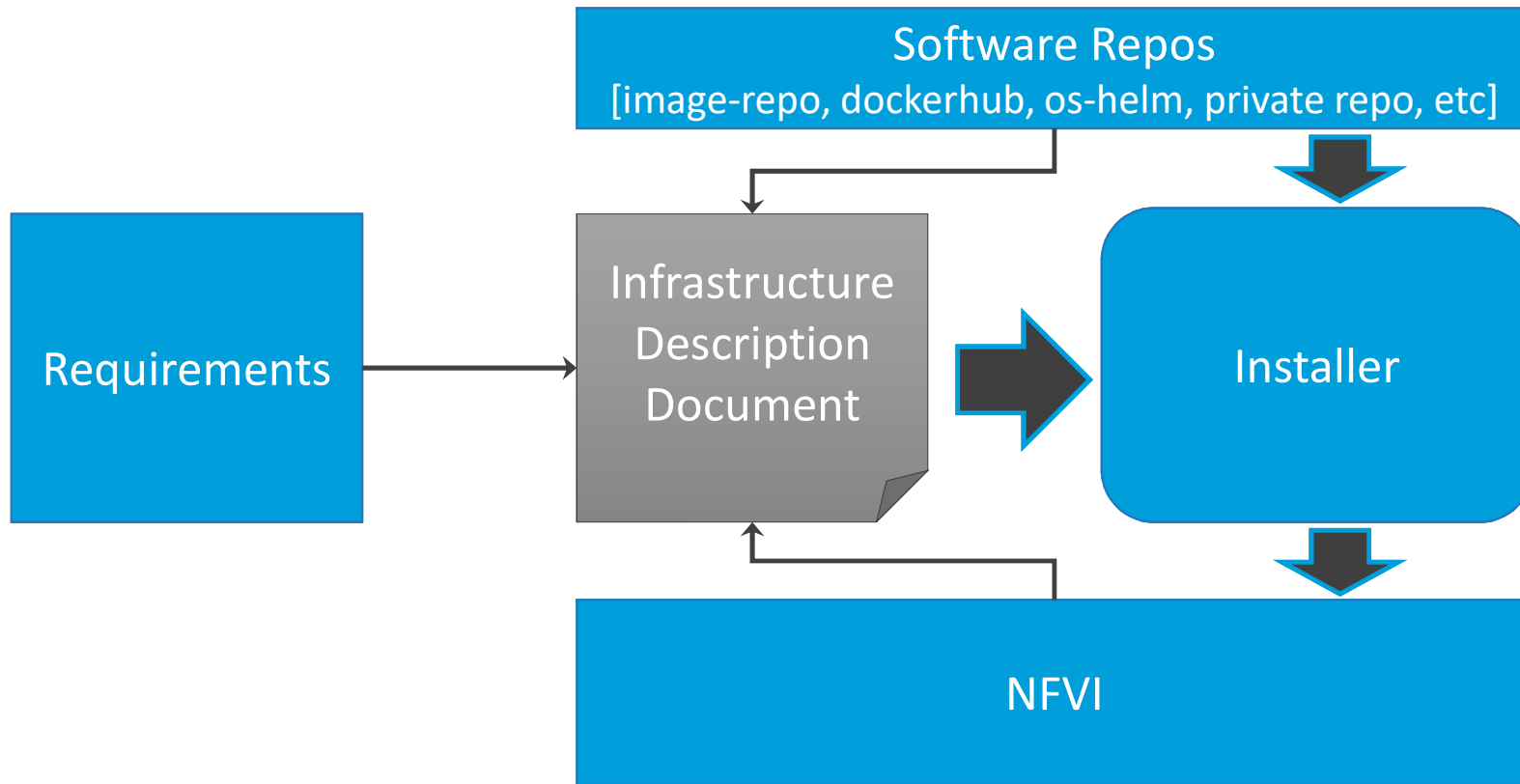
## Example Works

- › Airship Treasuremap Manifests
- › OPNFV PDF/IDF
- › TripleO Heat Templates
- › Kayobe's YAML files.
- › Fuel Configuration in OPNFV-IDF.
- › GUI-Based configuration in compass.
- › OPNFV Apex's - inventory, network and deploy settings.
- › Kubernetes CRDs

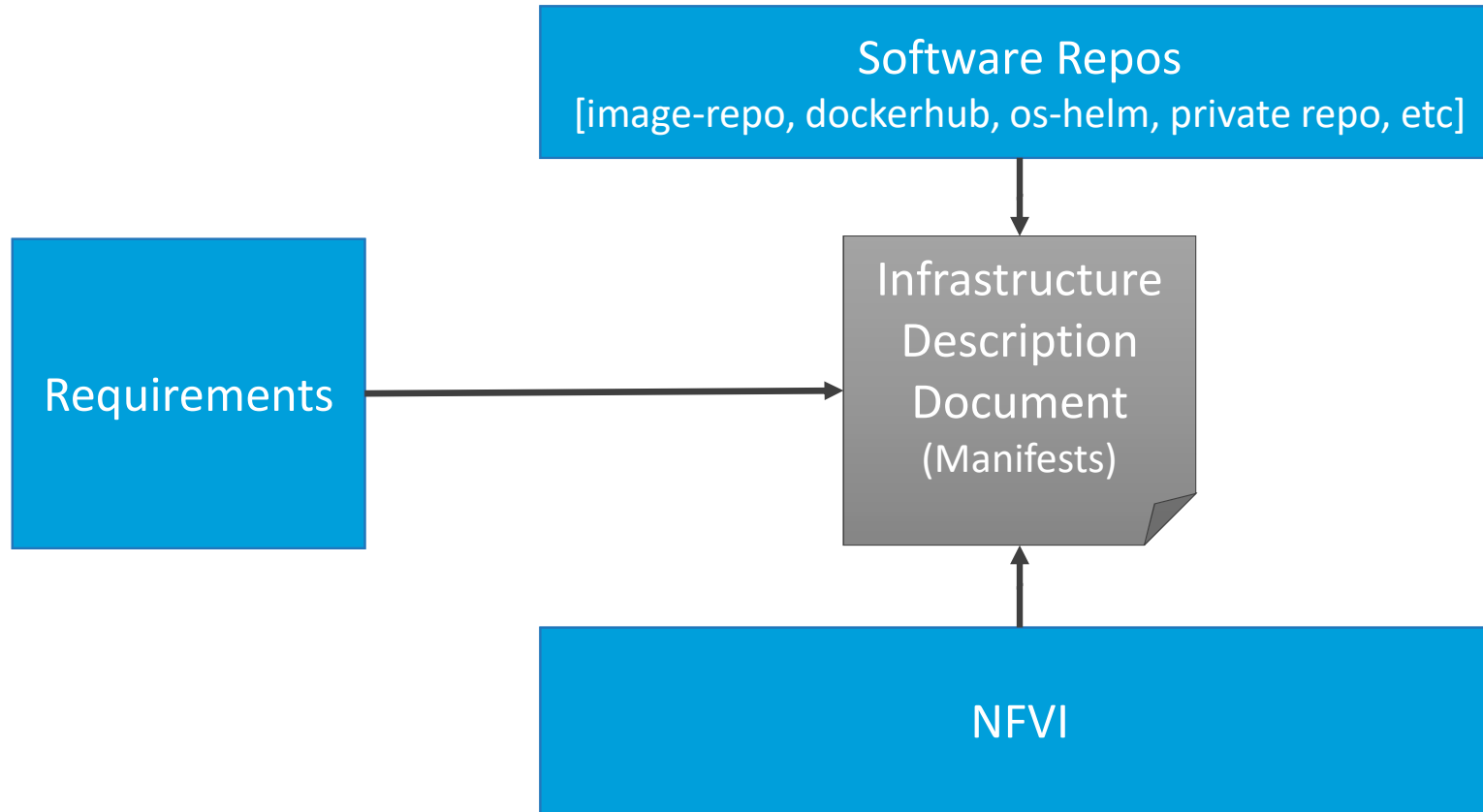
# Infrastructure Description: Example (Airship)



# Infrastructure Description: Manifests



# Validating Manifests: What are we validating against?





# Validating Manifests Vs Validating Deployment

Overlaps does exist....

Category	Manifest Validation	Deployment Validation
Scope	Applies to only a subset of requirement	Validation covers all the requirements
Source	Documents	Physical Systems
Phase	Pre-Deployment [Cloud and Application]	Post-Deployment
Approach	Manual/Scripts	Test-Frameworks, Automation Scripts
Stakeholders	Cloud Architect, Application designers and Testers	

# Validating Manifests: Why and How

## Why

- › Pre-Installation Checks for RM/RA
- › Minimize/Eliminate deployment failures.
- › Drive test-automation
- › Consistency Check for efficient automation
- › 'Handoff' to RC

## How & When (2020)?

- › **Manual:** Requirements Mapping (Jan), Software/Config Validations (Feb)
- › **Automated:** Script Creation and PoC (Mar), Implementation (Apr)

## Who - Script Development Supporting Skill

- › Meta-Data file interpretation (PDF/SDF/IDF), knows way around a command-line, system admin for data comparison between systems

# Example: Considering CNTT Requirements

## Requirements (Chapter 5)

Requirement	Basic	NI	CI	POD-10
Number of CPU (Sockets)	2	2	2	2
Number of Cores per CPU	20	20	20	22
NUMA	N	Y	Y	Y
Simultaneous Multithreading / Hyperthreading (SMT/HT)	Y	Y	Y	Y
GPU	N	N	Y	Y (glxinfo   grep "direct rendering")
Local Storage HDD				
Local Storage SSD	Y	Y	Y	Y
NIC Ports	4	4	4	4
Port Speed	10	25	25	10
PCIe slots	8	8	8	8 (dmidecode -t slot)
PCIe speed	Gen3	Gen3	Gen3	Gen3
PCIe Lanes	8	8	8	8
Cryptographic Acceleration	N	O	O	N
SmartNIC	N	O	O	N
Compression				

# Requirements (Chapter 2)

## Categories

- › Opensource
- › Cloudnativeness
- › Scalability
- › Resilience
- › Availability
- › Compute
- › Storage
- › Network
- › Acceleration
- › General
- › API
- › Automated Deployment
- › CI/CD<sup>+</sup>
- › Integration<sup>+</sup>
- › Monitoring
- › Zoning
- › Compliance
- › Networking\*

## Requirement-Level

- › Must
- › Should
- › May



- › Pod-10 (ex. Validation)
- › [separate excel sheet]

# Validation Approach & Classification of Requirements

Validation Approach	Requirement Type
Testing Framework	APIs, OpenStack-Features, Operations,
Automation Scripts	Configurations & Settings, System Capabilities,
Manual	Rest..

Thanks