

Common NFVI Telco Taskforce

Technical F2F Work Shop – January 13-16, 2020

Infrastructure Description (Manifests) Validation

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 THE **LINUX** FOUNDATION



The 'Manifest Validation' is a novel process – there does not exist any reference work or tools 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

GENERIC:

Management (location, owner, etc.), Strategy, Globals, Tooling, Versioning,

HARDWARE:

Vendor, Gen., BIOS, CPUs, Memory, Disks, NICs (PCI, MAC), etc.

PROFILES (HOST)

Name, Disks & Partitions, N/W->NIC Mapping, OS,

NETWORK

Names, vlans, cidr, routes, ip, g/w, speed, mtu, bonding, etc. cidrs for diff. n/ws, container n/w, SRIOV, etc.

NODES

profile-mapping, Networks and address, metadata.

SECRETS

Certificates, passphrases, publickeys, etc.

SOFTWARE

Software and nodes mapping, versions, registry,

ACTIONS

Bootactions- custom scripts, drivers, etc.

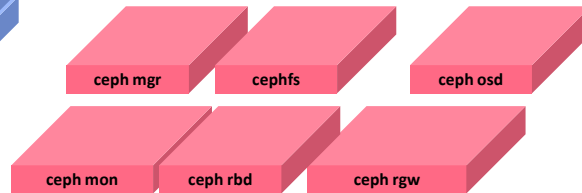
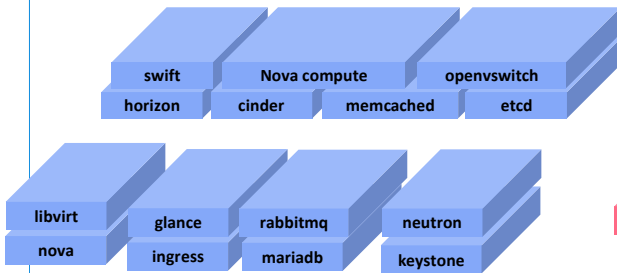
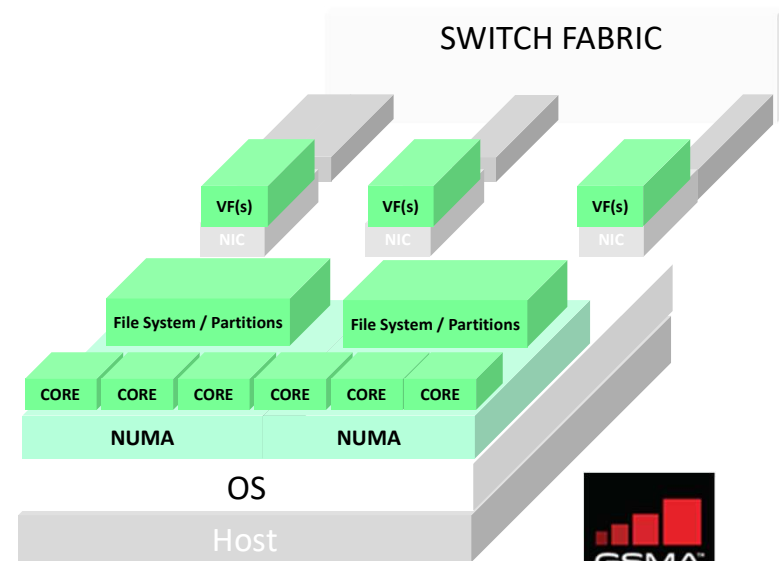
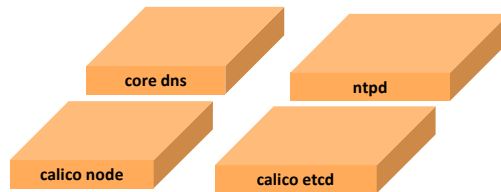
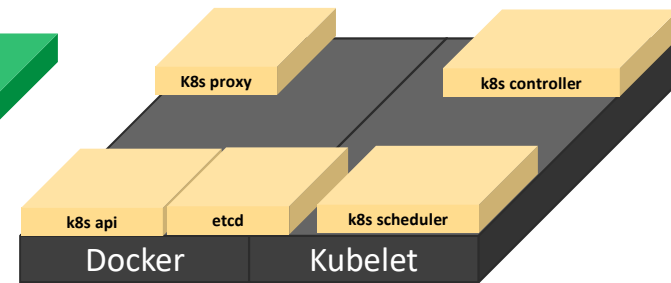
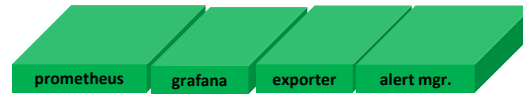
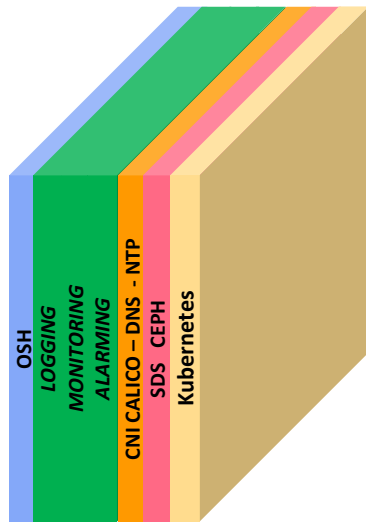
OTHERS

Jumphosts-Defn., Network Services (NTP, DNS, etc)

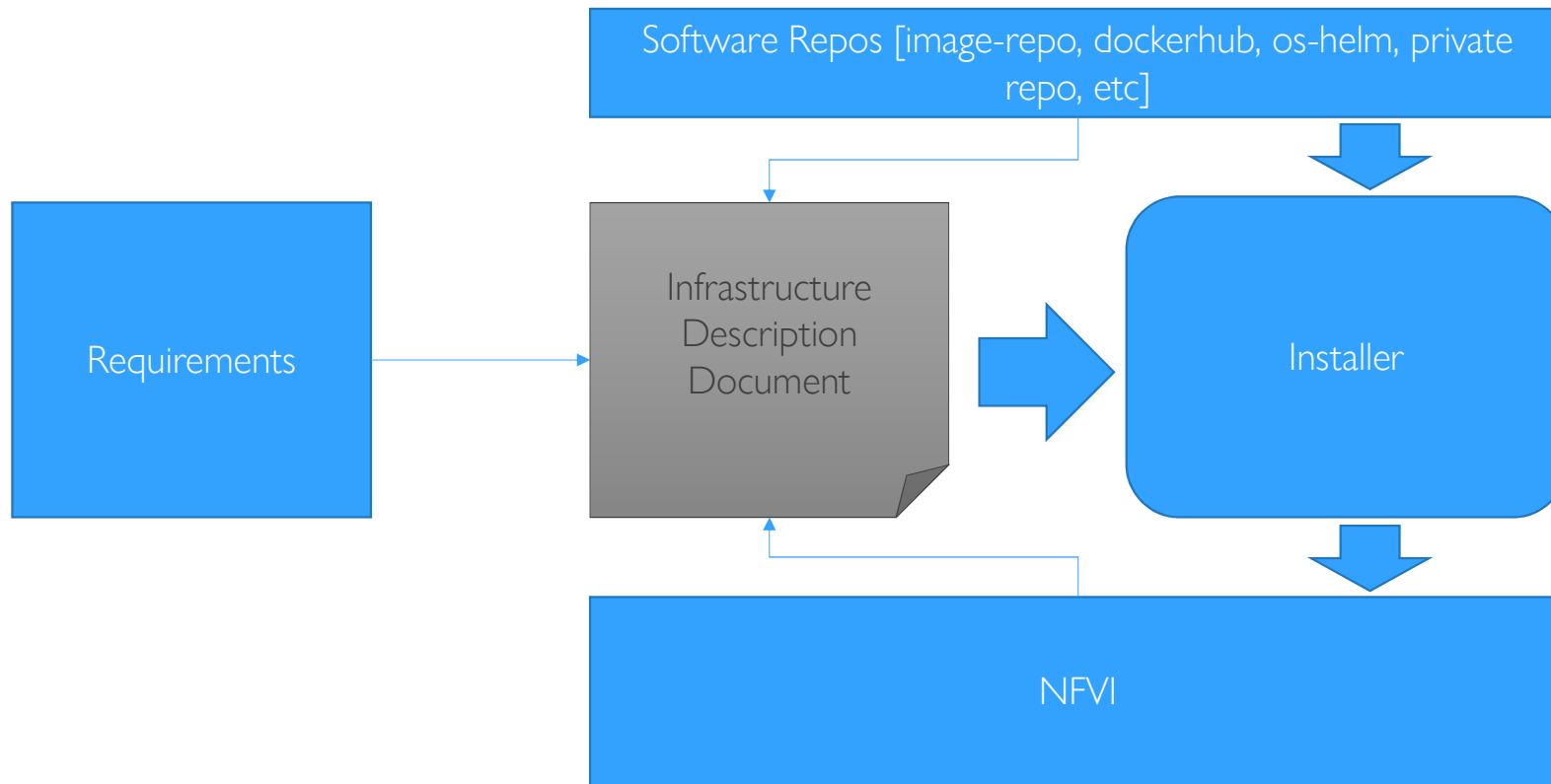
Infrastructure Description

- › 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

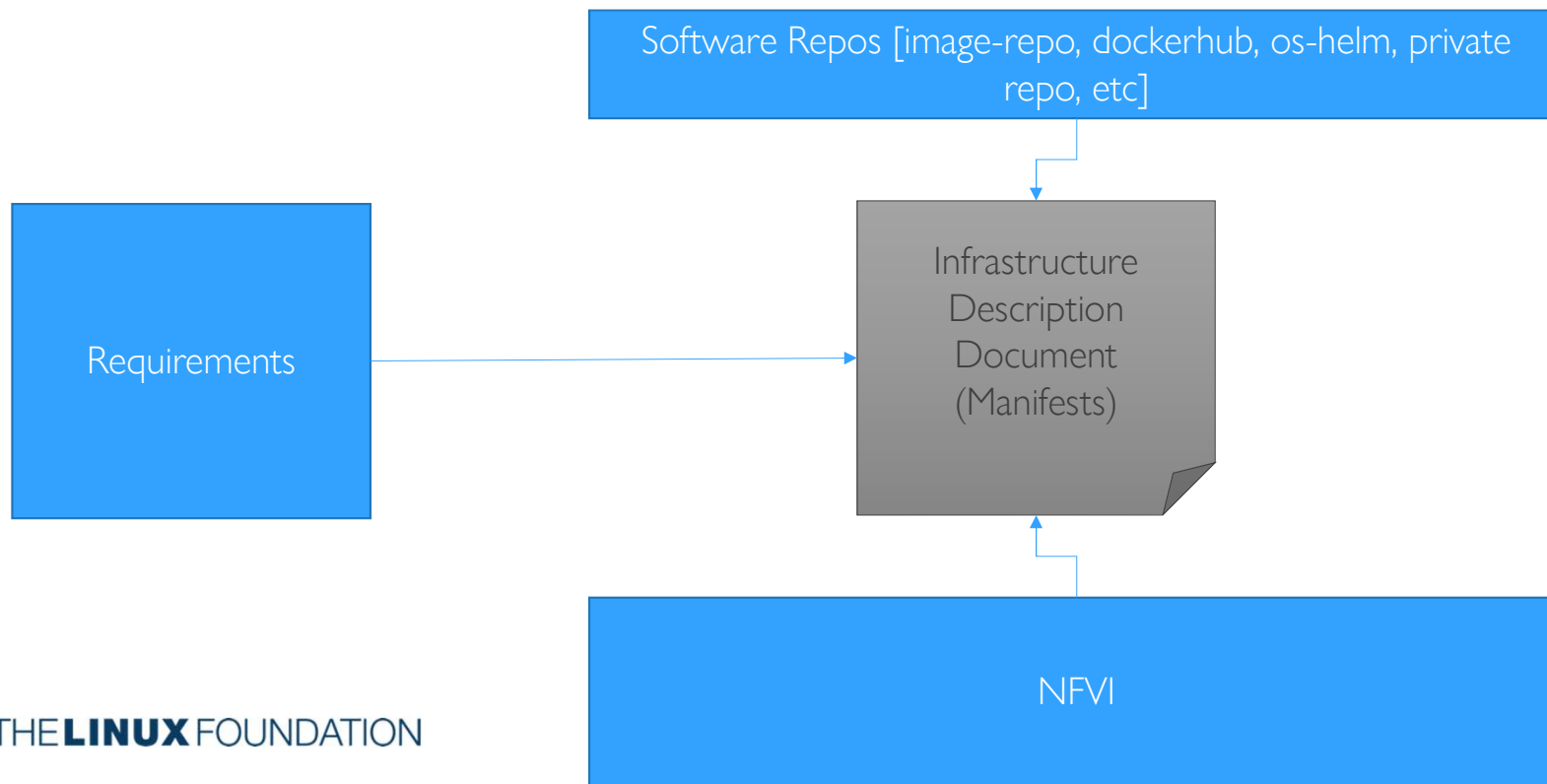
Infrastructure Description: Example (Airship)



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

Ex: Considering CNTT Requirements

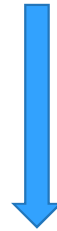
Requirements (chapter-5)

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⁺
 - › Integration⁺
 - › Monitoring
 - › Zoning
 - › Compliance
 - › Networking*

- › Requirement-Level
 - › Must
 - › Should
 - › May



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

Validation Approach & Classification of Requirements

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

Thanks