

Common NFVI Telco Taskforce

*Reference Model Chapter 7:
APIs*

Pankaj Goyal, AT&T

Mark Shostak, AT&T

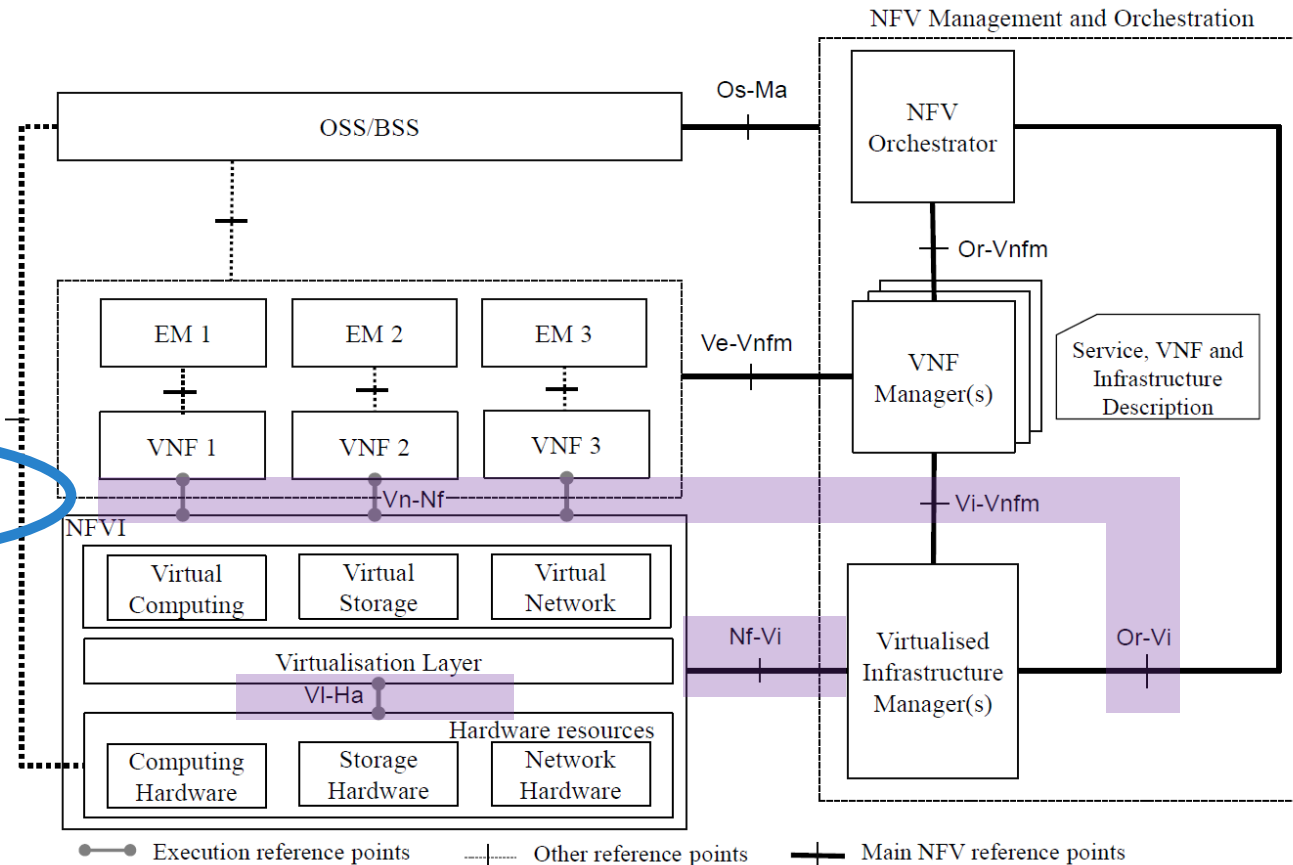
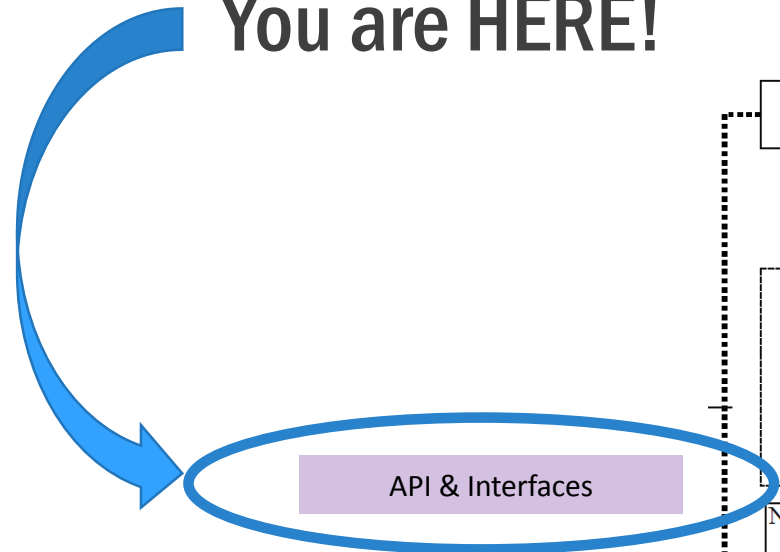
23 July 2019

 THE **LINUX** FOUNDATION



Application Programming Interfaces (API)

You are HERE!

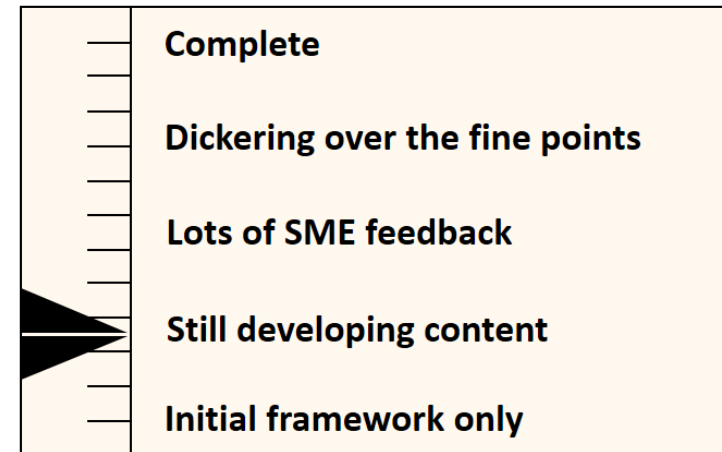


APIs: Outline and Maturity

Table of Contents

- 7.1 Infra related APIs.
- 7.2 NFVI APIs.
 - 7.2.1 Tenant Level APIs.
- 7.3 Supporting Enabler Service APIs (not-MVP).
 - 7.3.1 NTP, DNS, etc.
 - 7.3.2 Licensing and imaging connectivity.
- 7.4 Acceleration Interfaces and APIs (not-MVP).
- 7.5 Tool functionalities needed (not-MVP).
 - 7.5.1 Categorized (not specifically named).
 - 7.5.2 Policies and Security related primarily.
 - 7.5.3 If embedded in VM.
- 7.6 Cloud agnostic (not-MVP).
- 7.7 IPL (Reference Model component only) (not-MVP).

Bogo-Meter rating



Key Tenet

From Sections 1.3 - Principles

*All APIs utilised must be standard and open
to facilitate interoperability and
component substitution*

Key Terminology

API: Typically refers to a conduit for control of an object(s) or resource(s). In some cases it may also be used for consumption of resources.

Interface: Typically refers to a conduit for the consumption of resources. For Example, Storage, Network, etc.

API Chapter Purpose

Ease on-boarding challenges by

- Centralizing and cataloguing the APIs
- Ensuring consistent, open, non-proprietary APIs, over Reference Architectures
- Providing a 1-stop-shop for VNF developers to find relevant APIs
- Providing references to concrete APIs

Purpose is NOT to reprint APIs

- Prefer to incorporate by reference
- Identify relevant objects and methods of relevant APIs

API Categories

- Intra-Infrastructure APIs
- NFVI APIs // to VNFs
- Enabler Services APIs

7.1 - Infra-Related APIs

- Typically connects a VIM to its agents within the Overcloud (e.g. Nf-Vi)
- Frequently “bookended” (e.g. OpenStack to agent)
- To be catalogued as the Reference Architectures take shape
- Technically not Nf-Vi, but can include Bare Metal APIs (IPMI, Redfish, etc.)

7.2 – NFVI API: ETSI

Interface Point	NFVI Exposure	Interface Between	Description
Vi-Ha	Internal NFVI	Software Layer and Hardware Resources	<ol style="list-style-type: none"> 1. Discover/collect resources and their configuration information 2. Create execution environment (e.g., VM) for workloads (VNF)
Vn-Nf	External	NFVI and VM (VNF)	Represents the execution environment. There is no protocol or interface defined between these layers. Advantage is that the workloads can be made NFVI independent except for performance
NF-Vi	External	NFVI and VIM	<ol style="list-style-type: none"> 1. Discover/collect physical/virtual resources and their configuration information 2. Manage (create, resize, (un) suspend, reboot, etc.) physical/virtualized resources 3. Physical/Virtual resources configuration changes 4. Physical/Virtual resource configuration.
Or-Vi	External	VNF Orchestrator and VIM	Software Image Management; Virtualized Resources (Capacity, Change, Reservations, Performance and Fault) Management; Policy Management; Network Forwarding Path (NFP) Management (only VNF Orchestrator and VIM (Or-Vi))
Vi-Vnfm	External	VNF Manager and VIM	Software Image Management; Virtualized Resources (Capacity, Change, Reservations, Performance and Fault) Management; Policy Management; Network Forwarding Path (NFP) Management (only VNF Orchestrator and VIM (Or-Vi))

7.2 – NFVI API: Abstraction

Resource	Create	List	Attach	Detach	Delete
Flavour	+	+			+
Image	+	+			+
Key pairs	+	+			+
Privileges					
Role	+	+			+
Security Groups	+	+			+
Stack	+	+			+
Virtual Storage	+	+	+	+	+
User	+	+		+	+
Tenant	+	+		+	+
Virtual compute	+	+		+	+
Virtual network	+	+	+	+	+

7.3 - Enabler Service APIs

- Common services provided to the workload layer, such as:
 - DHCP
 - DNS
 - NTP
 - IAM/AAA
 - etc.
- Typically has analogs in the Control Plane, but are NOT provided by CP
- May be provided in the Data Plane or may be provided external to the NFVI

This section is not MVP for CNTT Release 1

Areas to be Developed and Q&A

- 7.3 Enabler Service APIs
- General cleanup & alignment w/ other chapters
- Other?

Thank You!