



LFN Developer & Testing Forum

# ODIM Refresher

**TSC Member - Jonas Arndt**

**TSC Member – Muthukkumaran Ramalingam**

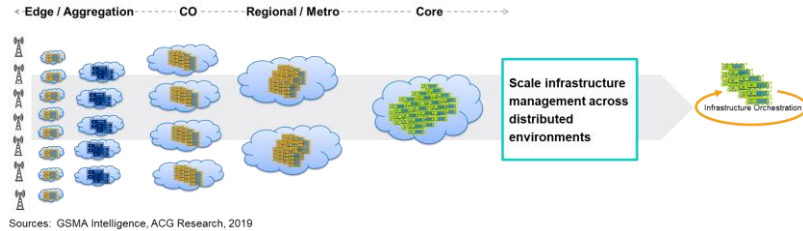
**TSC Member – Daniel Nilsson**

# Agenda

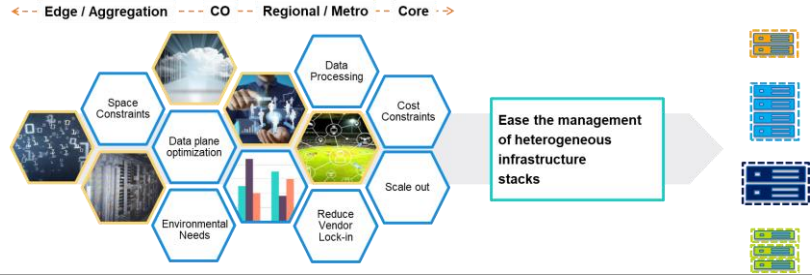
- Short Intro to ODIM
- ODIM Updates
- Composition Service
- ODIM's Role in the 5G Super Blueprint
- Q&A

# ODIM – Telco Infra MGMT Problem Statement

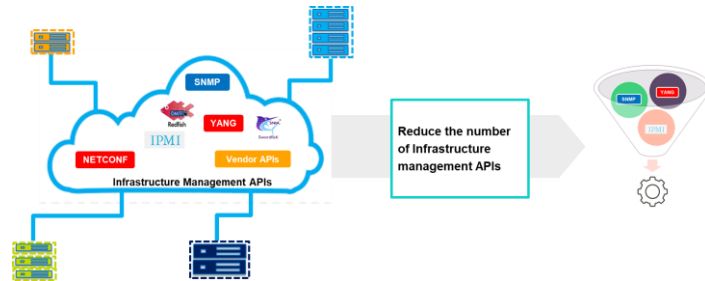
Increasing numbers of distributed data centers as Telcos move to the Edge



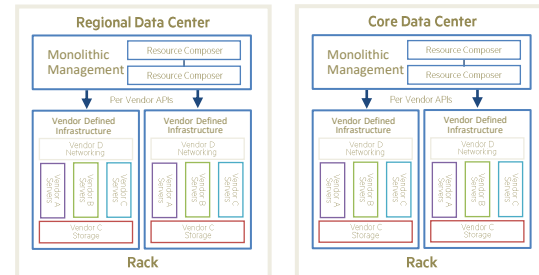
Increasing numbers of multivendor heterogeneous platforms as Telcos move to the Edge



Minimal alignment across compute, storage, networking and vendor implementations

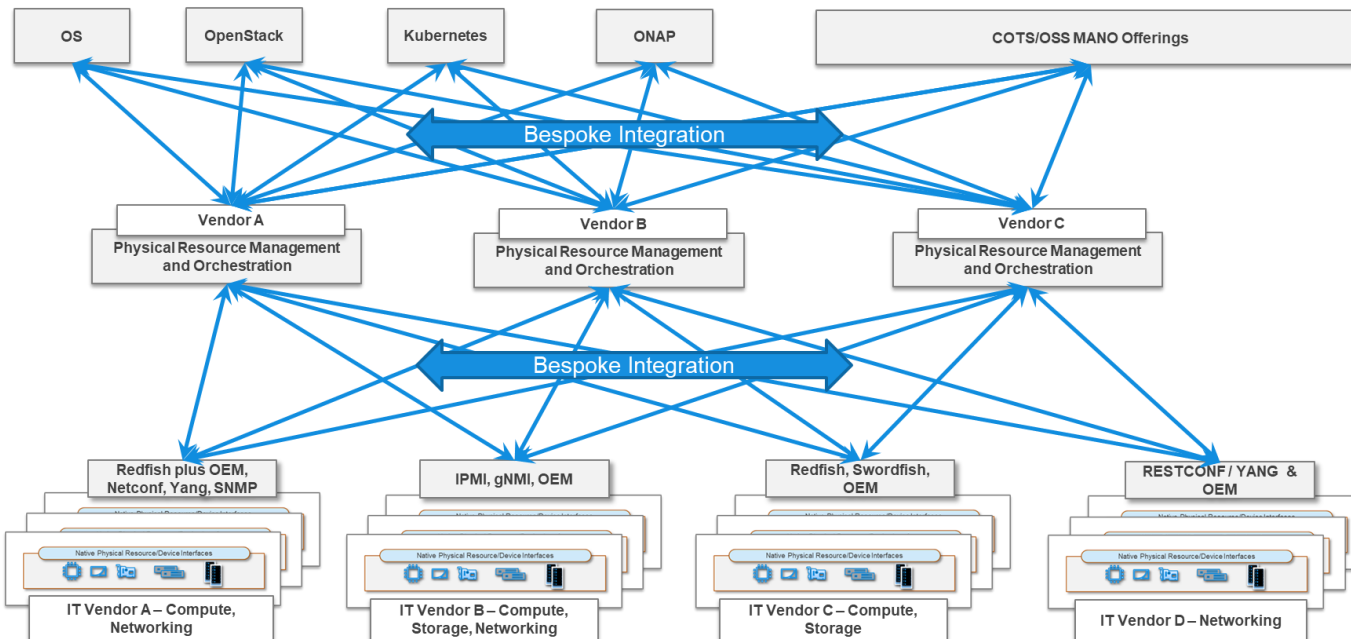


Closed solutions



# Lack of Physical Infrastructure Management Consistency

Upstream  
COTS/OSS  
service/resource  
MANO stacks



Physical  
Infrastructure  
Management

Physical  
Infrastructure  
Resources

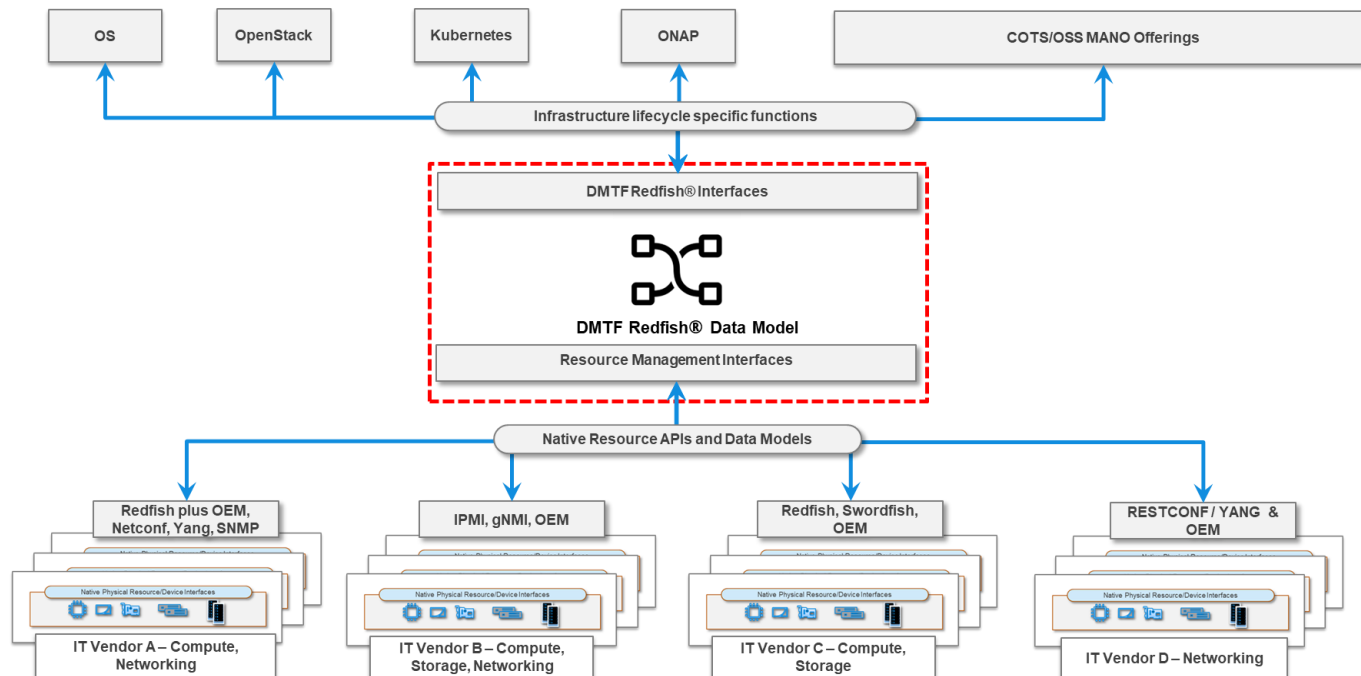
Too many integration points, rigid, brittle architectures

# ODIM intends to simplify and scale open infrastructure management

Upstream  
COTS/OSS  
service/resource  
MANO stacks

**ODIM**  
Presents consistent  
on/off-premises  
**HWaaS** interfaces  
for  
Physical  
Infrastructure  
management

Physical  
Infrastructure  
Resources



Reduce the number of disparate, reinvented shims, adaptors and plug-ins

# ODIM's Core Functions



- **Abstraction/Translation** – Abstraction layer and ODIM Redfish profiles enable vendor neutral northbound APIs.



- **Aggregation** – ODIM aggregates all resources across the datacenter. No knowledge of IP addresses or credentials needed. It also allows for bulk operations on aggregated resources.



- **Proxy** – ODIM can be multi-homed so clients don't need to be on the management network. Enables centralization of higher-level functions.

- Moved to LFN in March
- Added Plugins
  - Dell – community driven
  - Lenovo – community driven, just started
  - Cisco AFC – community driven, ongoing
- Redfish Composition Service
- BMC Simulator
- K8s driven installation and CI/CD



NETWORKING

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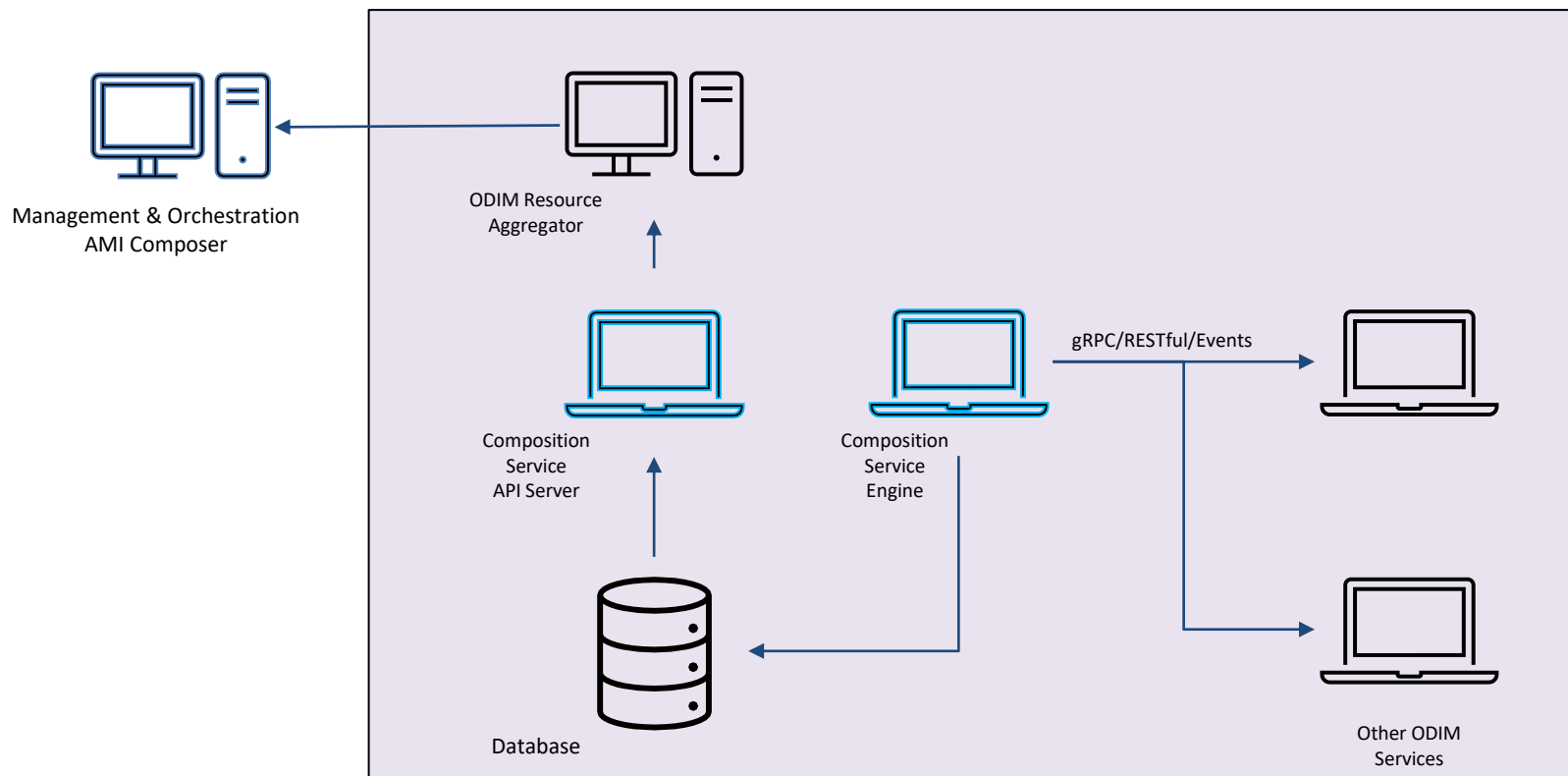
# Composition Service





- Implements Redfish Composition Service Specification
- Redfish Release 2021.1 (v1.13)
- Developed in Python 3.x
- IPC using gRPC/RESTful/Events
- Exposes APIs through Resource Aggregator

# Architecture



# List of APIs

API	URI	Schema Version	HTTP Methods
Composition Service	/redfish/v1/CompositionService	V1.2	GET
Resource Blocks	/redfish/v1/CompositionService/ResourceBlocks	V1.4.0	GET, POST
Resource Zones	/redfish/v1/CompositionService/ResourceZones	V1.6.1	GET, POST
Active Pools	/redfish/v1/CompositionService/ActivePool	Resource Blocks V1.4.0	GET
Free Pools	/redfish/v1/CompositionService/FreePool	Resource Blocks V1.4.0	GET
Compose Action	/redfish/v1/CompositionService/Actions/CompositionService.Compose	Composition Service V1.2	POST



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# 5G Super Blueprint

Daniel Nilsson

## 5G Infrastructure Challenges

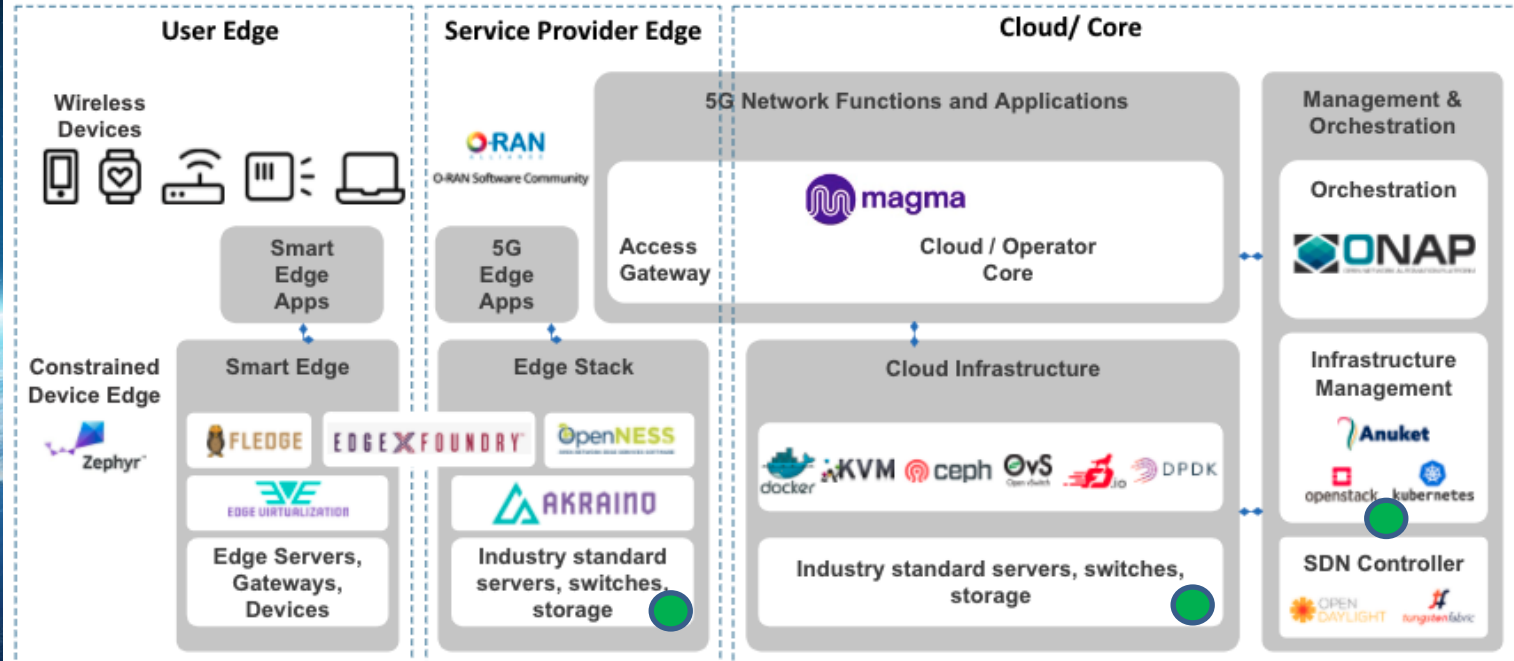
- Multi-vendor, heterogeneous HW platforms with a wide variety of management APIs
- Increasing number of distributed data centers (Geographical redundancy, country wide low latency coverage, Edge compute system)
- Specific deployment requirements including scale up needs, edge deployments, closed solutions and Live deployment scenarios
- Disaggregation with management of physical infrastructure components and virtual infrastructure

## ODIM Solution

- Abstraction to a vendor neutral northbound API to enable one HWaaS interface to infrastructure management solution
- Aggregation of resources
- Operations on Aggregated resources
- Works together with Open Source virtual infrastructure management
- Handles the interfaces to physical resources (Open and Vendor specific solutions)
- Open & Expandable (Plug-in, Apache 2.0)

# ODIM in the 5G Super Blueprint

## LF Open Source Component Projects for 5G



Vendor specific solutions

Management & Orchestration

Orchestration



Infrastructure Management



Control  
Policy

Exposure  
Visibility



Native physical interfaces (Redfish, IPMI, Netconf etc.)

Industry standard Servers, Switches, Storage  
Edge Servers

Industry standard Servers, Switches, Storage

The background of the slide is a high-resolution satellite or space photograph of the Earth. It shows a vast expanse of blue oceans, green and brown landmasses, and white cloud formations. The horizon of the planet is visible on the right side, with a thin layer of atmosphere glowing against the blackness of space, which is filled with numerous small, distant stars.

**OLF**  
NETWORKING

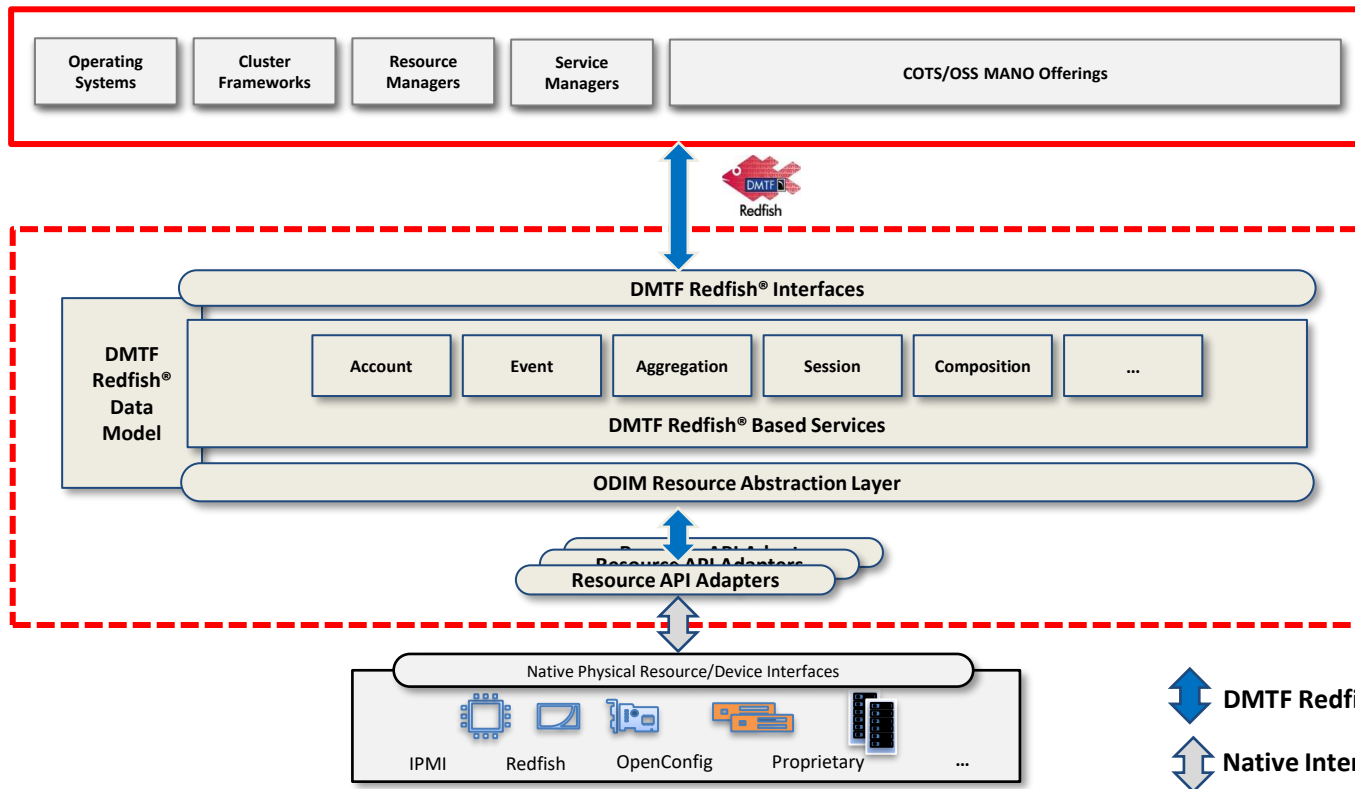
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**Backup**



# ODIM Architecture

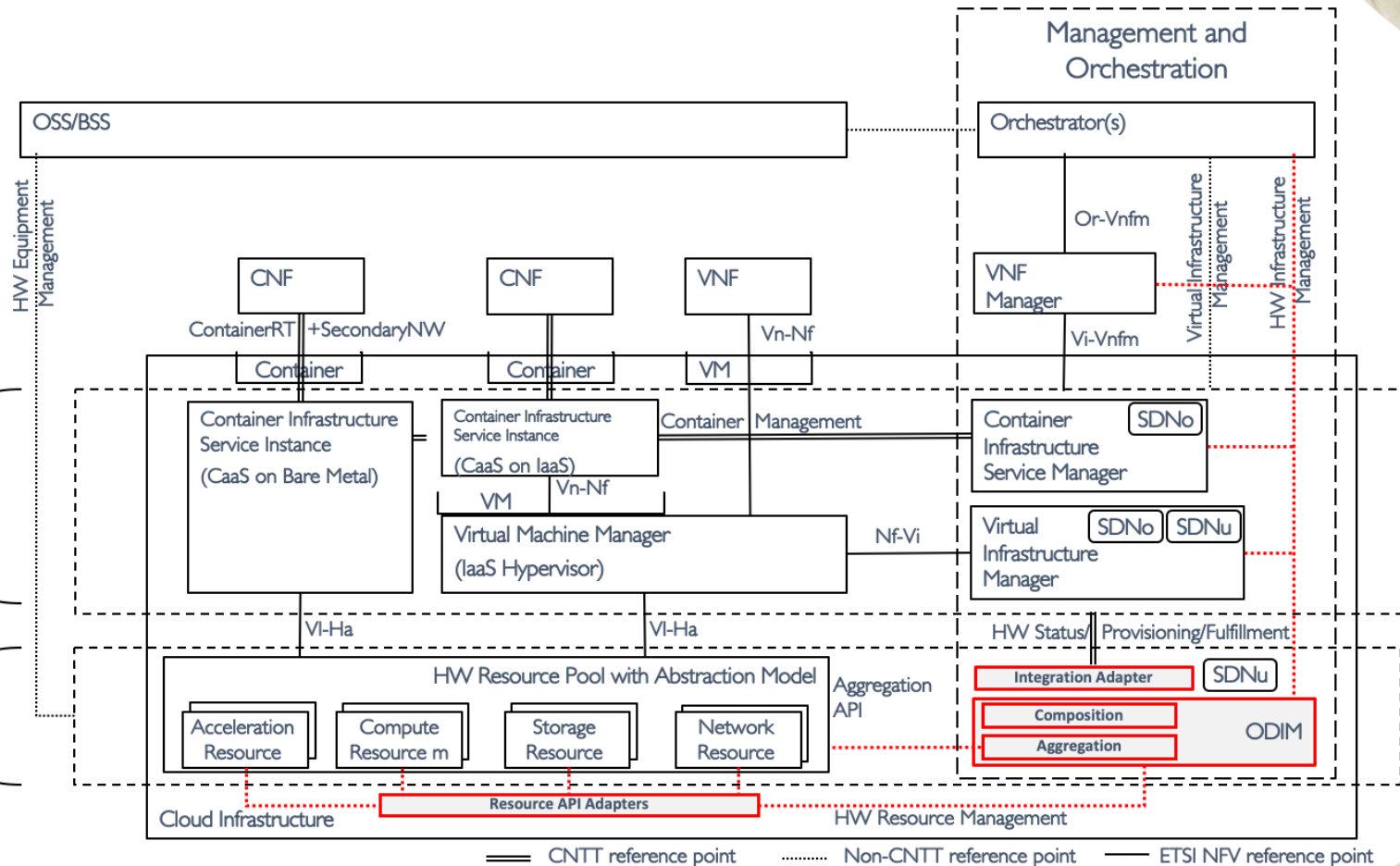
Upstream  
COTS/OSS  
Management  
Clients/ Users



**ODIM**  
Consistent  
HWaaS  
interfaces  
for  
physical  
infrastructure  
management

Virtual Infrastructure Layer

Hardware Infrastructure Layer



— CNTT reference point    ..... Non-CNTT reference point    — ETSI NFV reference point