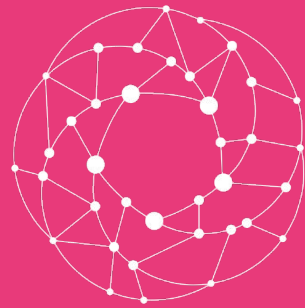


# Open Source MANO

## OSM Hackfest – Session 9.1 VNF Onboarding Walkthrough

Gianpietro Lavado (Whitestack)

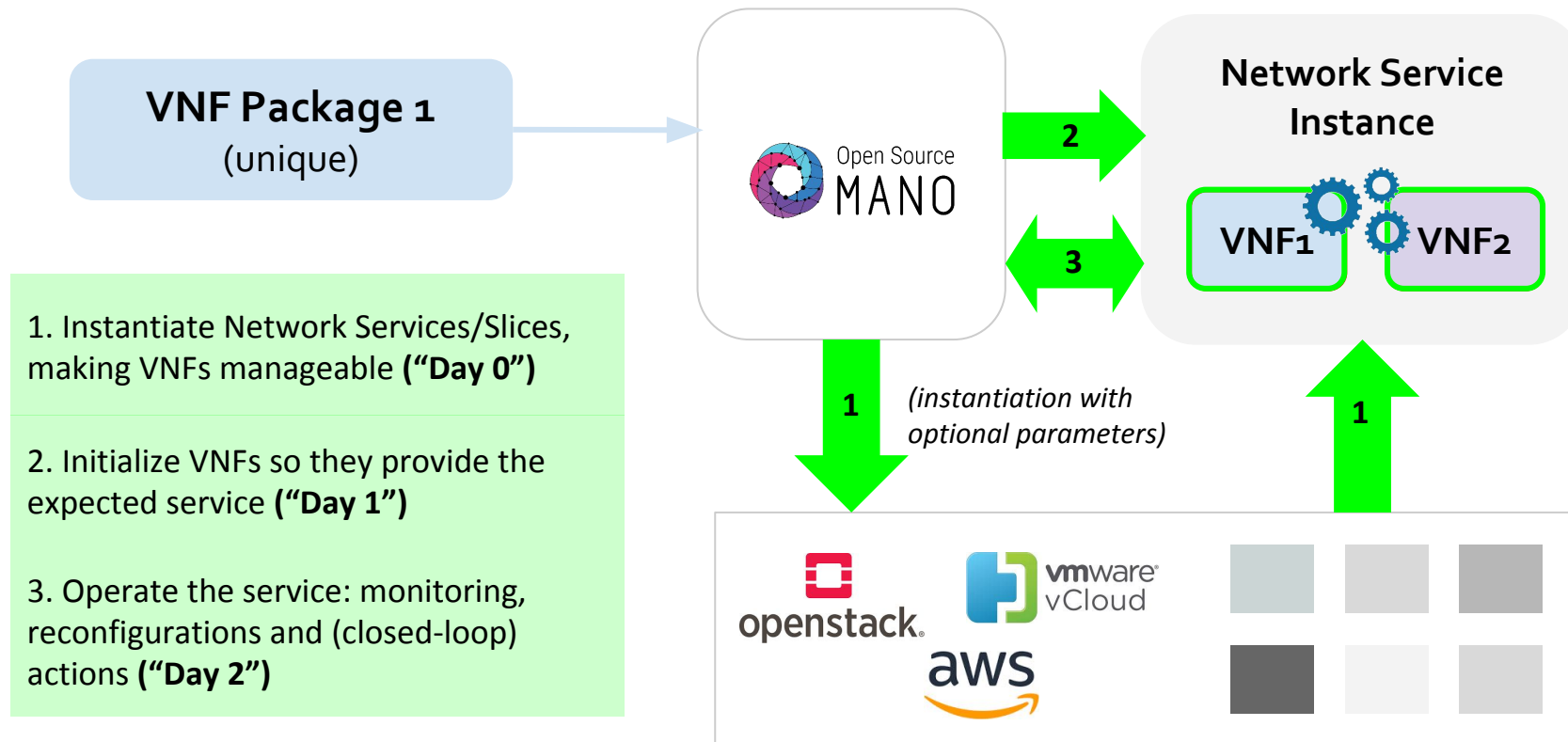


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# The VNF Onboarding Task Force

# A need for real VNF Onboarding



We need to achieve **completely onboarded VNFs**, with **unique packages** that **fulfill the NFV vision by providing value to CSPs**.



# Introducing the VNF Onboarding TF

Beginning 2019, the OSM Leadership Group proposed to the community the creation of the VNF Onboarding Task Force, a group in charge of the **coordination and support of activities related to VNF onboarding in OSM.**

- As first action, a Chair was elected for 2 years.
- The task force is expected to be permanent.

OSM(19) 000003

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Title: Terms of Reference for VNF Onboarding Task Force

From source\*: OSM Leadership Group (Telefónica, Telenor, British Telecom)  
Francisco-Javier Ramón Salguero ([javier.ramon@telefonica.com](mailto:javier.ramon@telefonica.com))

Contact(s): Pål Grønsund ([Pål.Gronsund@telenor.com](mailto:Pål.Gronsund@telenor.com))  
Andy Reid ([andy.bd.reid@bt.com](mailto:andy.bd.reid@bt.com))

Input for OSG: OSM

Contribution for\*: 

Decision	X
Discussion	
Information	

Submission date\*: 28/01/2019

Meeting Allocation:

Decision/Action requested: Review and approve

Abstract:

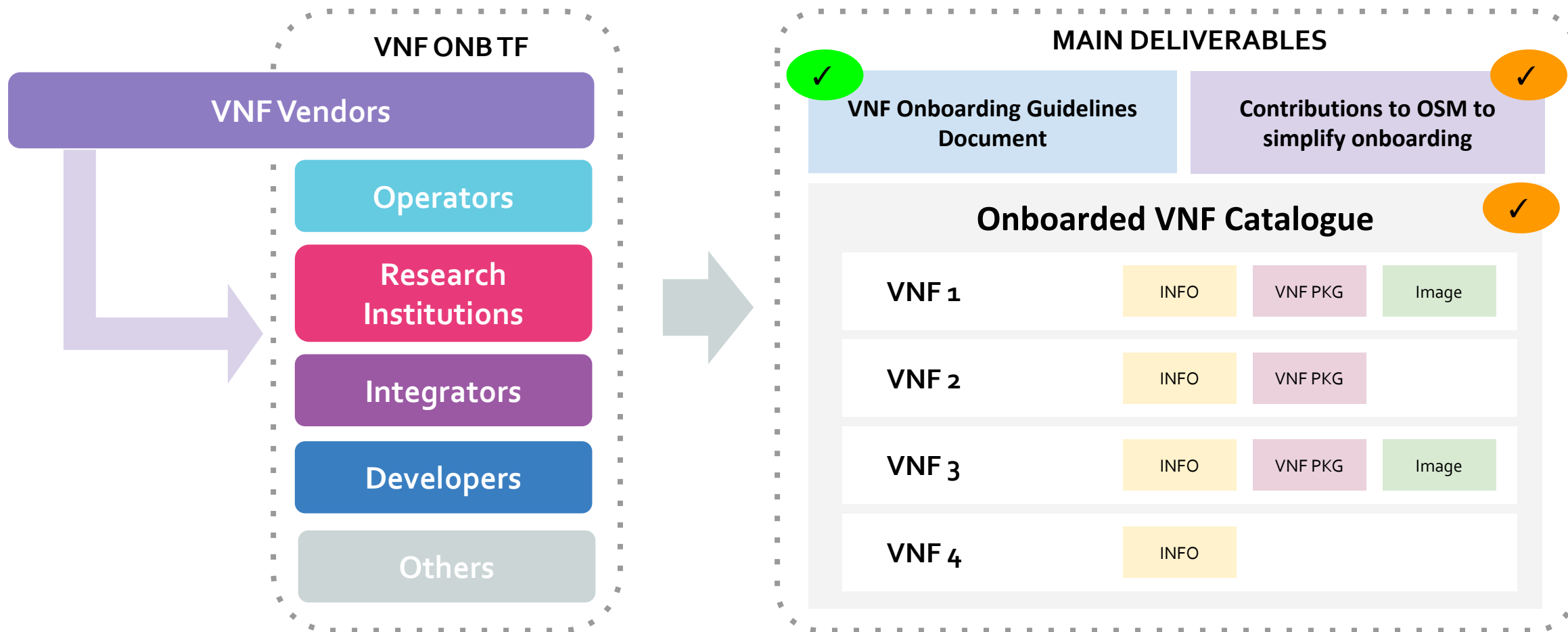
The VNF Onboarding Task Force will be in charge of the coordination and support of activities related to VNF onboarding in OSM. In particular, the following activities are envisaged:

- Define success criteria and requirements (with support from EUAG)
- Consolidate best practices and produce related documentation
- Creation of common/reusable components to simplify new onboardings. In particular, the TF will aim to identify common types of interactions: SOL002, REST, Netconf/YANG, CLI/expect, etc.
- Guidelines about how to create and/or extend VNF artifacts (e.g. charms)
- Early identification of new features and user experience improvements. Produce feedback to TSC
- Collect and publicise actively a catalogue of VNFs successfully onboarded

Duration: Permanent

# VNF Onboarding TF Goals

We are shaping the Open Source MANO VNF Onboarding Task Force team!



[VNFs in OSM Ecosystem](#) are expected to be first!




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**Documentation!**

# Onboarding Guidelines Document

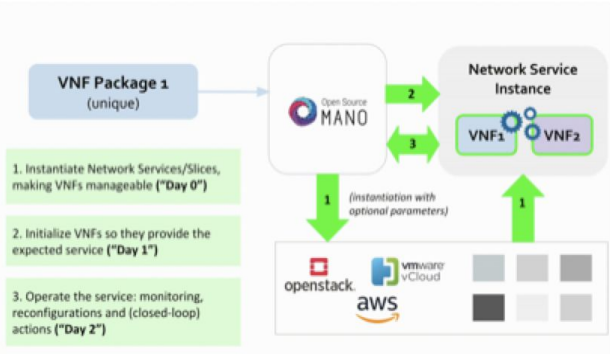
The first version of the VNF Onboarding Guidelines Document was published right after the OSM#7 event.



### Introduction

The complete onboarding process implies producing a VNF Package that will be part of the OSM catalogue for its inclusion in a Network Service.

The onboarded VNF should aim to fulfill the lifecycle stages it requires to function properly, which then, the NFV MANO layer should be able to automate. Hence, the resulting package, should include all the requirements, instructions and elements to achieve these lifecycle stages, which are: basic instantiation (a.k.a. "Day-0"), service initialization (a.k.a. "Day-1") and runtime operations (a.k.a. "Day-2").



1. Instantiate Network Services/Slices, making VNFs manageable ("Day 0")


2. Initialize VNFs so they provide the expected service ("Day 1")

3. Operate the service: monitoring, reconfigurations and (closed-loop) actions ("Day 2")

More information on the delimitation of these stages can be found in the [OSM Scope and Functionality](#) document.

As such, the document is structured in the following parts, providing guidelines for building the VNF Package to achieve each lifecycle stage successfully.

1. Onboarding Requirements



To achieve the onboarding of each lifecycle stage successfully, the following specific requirements of the VNF must be collected.

### Day 0 requirements

The main objective of Day 0 is to instantiate the VNF and establish management access so it can be configured. To achieve this, the main requirements are:

### Description of each VNF component

The main function of every VNF component (VDU) should be clearly described in order to ease the understanding of the VNF. For example:

VDU	Description
vLB	External frontend and load balancer
uMgmt	Universal VNF Manager (EM)
sBE	Service Backend of the platform

### Defining NFVI requirements

These requirements refer to properties like the number of vCPUs, RAM GBs and disk GBs per component, as well as any other resource that the VNF components need from the physical infrastructure. For example:

VDU	vCPU	RAM (GB)	Storage (GB)	External volume?
vLB	2	4	10	N
uMgmt	1	1	2	N
sBE	2	8	10	Y

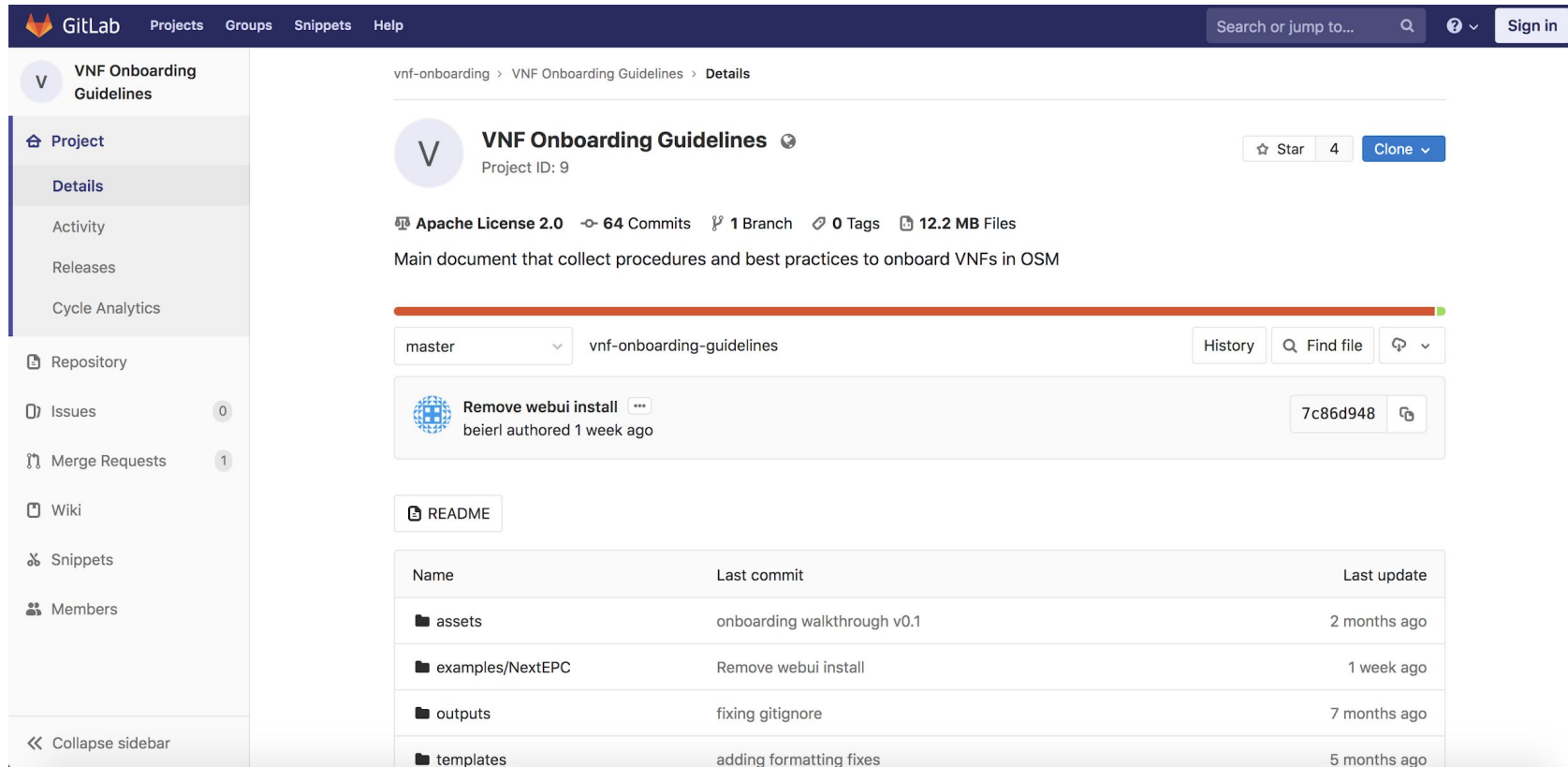
For some VNFs, Enhanced Platform Awareness (EPA) characteristics need to be defined when VNF requires 'higher than default' performance capabilities or any particular hardware architecture from the NFVI. Popular EPA attributes include:

- Compute performance attributes:
  - CPU Pinning

<http://osm-download.etsi.org/ftp/Documentation/vnf-onboarding-guidelines/#!/index.md>

# Anyone can contribute!

We have a GitLab repository hosted by ETSI to develop the guidelines documentation, you can contribute!



The screenshot shows the GitLab interface for the 'vnf-onboarding' project. The left sidebar contains navigation links: Project, Details, Activity, Releases, Cycle Analytics, Repository, Issues (0), Merge Requests (1), Wiki, Snippets, and Members. The main content area displays the project details for 'VNF Onboarding Guidelines' (Project ID: 9). It includes a star button (4 stars), a clone button, and a description: 'Main document that collect procedures and best practices to onboard VNFs in OSM'. Below this, there's a commit history section showing a commit titled 'Remove webui install' by 'beierl' 1 week ago. At the bottom, a table lists the project's files and their last commit details.

Name	Last commit	Last update
assets	onboarding walkthrough v0.1	2 months ago
examples/NextEPC	Remove webui install	1 week ago
outputs	fixing gitignore	7 months ago
templates	adding formatting fixes	5 months ago

<https://osm.etsi.org/gitlab/vnf-onboarding/vnf-onboarding-guidelines>



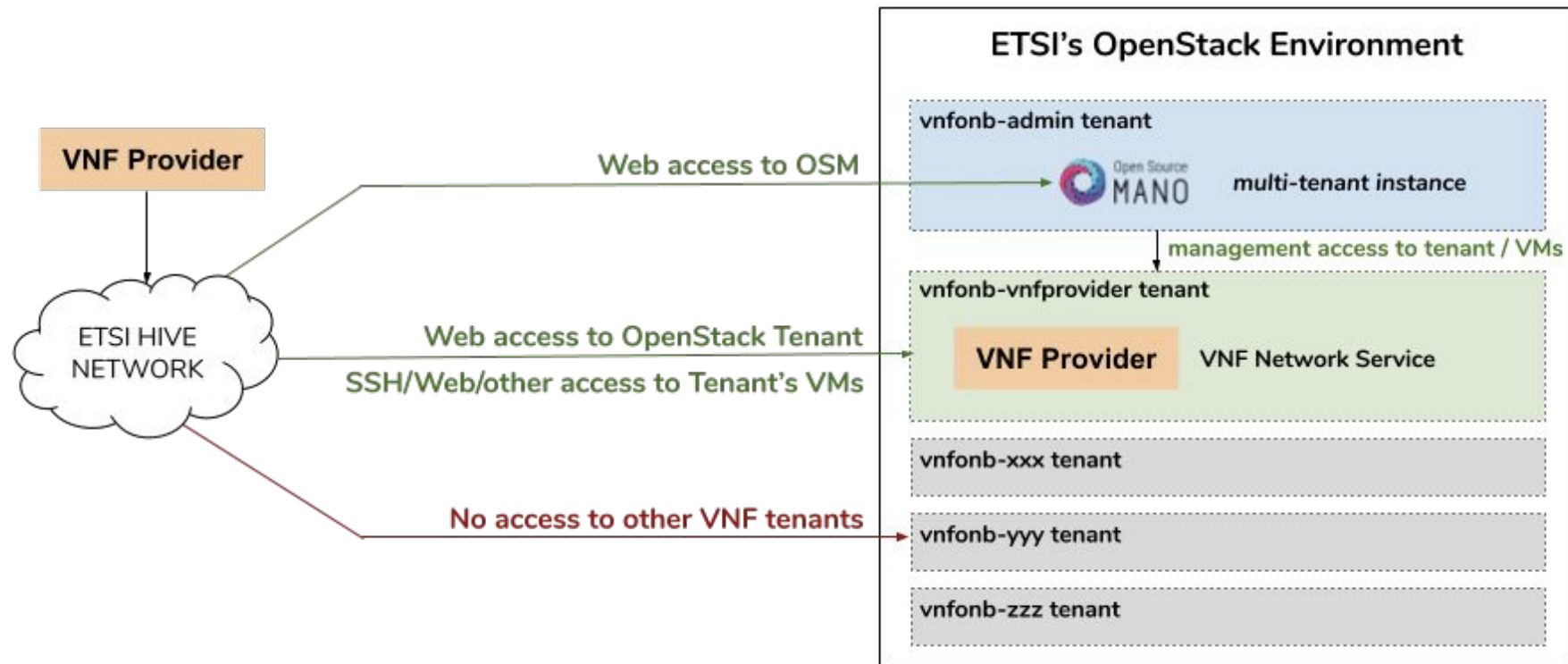


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Labs!

# ETSI VNF Onboarding Labs

VNF Provider? Get your free environment to create your OSM VNF Package!



[https://osm.etsi.org/wiki/index.php/VNF\\_TF](https://osm.etsi.org/wiki/index.php/VNF_TF)




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# VNF Onboarding Walkthroughs!

# VNF Onboarding Walkthroughs

These are special documents that will walk you through real-world scenarios to build VNF Packages from scratch.

 Home Introduction Onboarding Requirements Day 0: VNF Instantiation & Management setup Day 1: VNF Services Initialization Day 2: VNF Runtime Operations Known Issues

VNF Onboarding Walkthrough

## VNF Onboarding Walkthrough

Introduction

VNF Requirements

Building the VNF Package for Day-0

Building the VNF Package for Day-1

Building the VNF Package for Day-2

Testing the VNF Package

### Introduction

This section uses NextEPC (an open-source implementation of a 4G/5G packet core) to go through most of the steps described in the onboarding guidelines, in order to provide a concrete example on how to build a complete VNF Package from scratch.

The example is meant to be used for educational purposes and not for a real-life implementation of an EPC. It may change over time to cover more use cases. A Linux machine is required to follow the complete procedure. In addition to the procedure, here you can find some resources related to it:

- Resulting packages
- Images
- Video presentation

### VNF Requirements

#### Day-0 Requirements

The following table describes the components description and associated images.

VDU	Description	Image name

1st Walkthrough (EPC) → <http://osm-download.etsi.org/ftp/Documentation/vnf-onboarding-guidelines/#!06-walkthrough.md>

# VNF Onboarding Walkthroughs

The second walkthrough is ready! and will be soon merged into our documentation

## Introduction

This section uses Canvas SMS (An SMS Service whose licence belongs to Telenity Inc.) to go through most of the steps described in the onboarding guidelines, in order to provide a concrete example on how to build a complete VNF Package from scratch.

The example is meant to be used for educational purposes and not for a real-life implementation of an Canvas SMS. It may change over time to cover more use cases. A Linux machine is required to follow the complete procedure.

In addition to the procedure, here you can find some resources related to it:

[Product Details](#)  
[Resulting packages](#)  
[Images](#)  
[Video presentation](#)

## VNF Requirements

### Day-0 Requirements

The following table describes the components description and associated images which will be distributed over 3 separate VNFs.

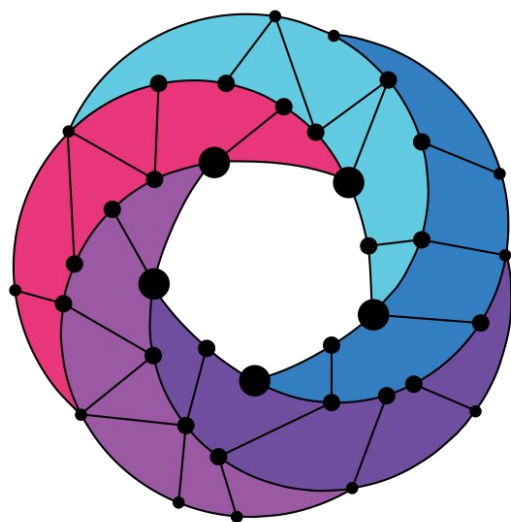
#### Canvas OPS VNF

VDU	Description	Image name
VDU_WS_PORTALS	Apache HTTP Server for Admin/Customers/Partner Portals.	<a href="#">ops-ws-portals</a>
VDU_AS_REPORTING	Pentaho Reporting Server for rendering Operations & Marketing Reports.	<a href="#">Ops-as-reporting</a>
VDU_DB_ANALYTICS	Elasticsearch cluster to store Product/Service EDRs for online Troubleshooting at Admin Portal and Subscriber Activity History at Customer Care Portal.	<a href="#">Ops-db-analytics</a>
VDU_DB_STATS	MongoDB for storing Product/Service statistics as a datasource for Operations & Marketing Reports.	<a href="#">Ops-db-stats</a>

#### Canvas PROV VNF

VDU	Description	Image name
VDU_DB_OAM	Relational DB for storing VNF (PROV)'s configuration. VNFC (AS-CMPF) and VNFC (AS-SCRMNGR) reads their configuration from VNFC (DB-OAM) at start-up and listens for configuration updates to behave accordingly at run-time. Configuration is stored as MOs (Managed Objects) in a proprietary DB Schema and made available to clients via MO Framework. Supports both Oracle and MySQL RDBMSs. VNFC (DB-OAM) supports both Oracle and MySQL RDBMSs.	<a href="#">Prov-db-oam</a>
VDU_DB_SCRM	NoSQL MongoDB for storing screening data.	<a href="#">Prov-db-scrmngr</a>
VDU_DB_CMPF	Relational DB for storing common provisional data. Provisional data is stored in a proprietary DB Schema. VNFC (DB-CMPF) supports both Oracle and MySQL RDBMSs.	<a href="#">Prov-db-cmpf</a>
VDU_AS_CMPF	CMPF Application itself. VNFC (AS-CMPF) exposes CRUD and complex query interfaces to other VNFs for common provisional data stored in VNFC (DB-CMPF). Common provisioning data, including but not limited to, Organization, Service, Subscriber,	<a href="#">Prov-as-cmpf</a>

- Documentation created by Tolga Gölelçin from Telenity.
- Canvas is a commercial SMS provided by Telenity
- 2nd Walkthrough →  
[https://drive.google.com/file/d/1n\\_tqXIXaPxhrfOvrEAhOpiw1YBGVDSqD/view](https://drive.google.com/file/d/1n_tqXIXaPxhrfOvrEAhOpiw1YBGVDSqD/view) (temp location)



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Find us at:

[osm.etsi.org](https://osm.etsi.org)  
[osm.etsi.org/wikipub](https://osm.etsi.org/wikipub)