

IPWorks VNF Life Cycle Management (Workflow) - Full Stack

User Guide

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1 Introduction

This document describes the system administration tasks performed in the EO (Ericsson Orchestrator - Cloud Manager). The EO provides a workflow execution environment and a web-based application for managing VNF life cycle procedures.

VNF life cycle procedure can be performed in two types:

- **Small stack:** VNF life cycle procedure without EO. For detailed information, refer to *IPWorks VNF Life Cycle Management (Workflow) - Small Stack*.
- **Full stack:**
 - VNF life cycle procedure trigger from EO.
 - VNF life cycle procedure trigger from LCM with EO involved.

The following use cases are supported for IPWorks:

- Instantiate VNF
- Scale VNF
- Terminate VNF

Table 1 Functions Supported by Full Stack

Function	Trigger from EO	Trigger from ENM
Instantiation	Supported	Not supported
Scale-out	Not supported	Supported
Scale in	Not supported	Supported
Termination	Supported	Supported





2 Prerequisites

This section describes the prerequisites that must be fulfilled to manage the IPWorks VNF life cycle by EO.

2.1 Hardware and Software

The following hardware (virtual and physical) and software are required:

- The software delivery package including IPWorks workflows and the VNF-LCM scripts is available.
- CEE as Virtual Infrastructure Managers (VIMs) is used.
- VNF-LCM (with version 18.16 IP1, media version 4.9.22 or above) is available using either Operations Support System for Radio and Core (OSS-RC), or Ericsson Network Manager (ENM).
- EO (version 18.0.0.1)
- Integration of EO/LCM/CEE is complete.

2.2 User Access

During the execution of the procedures described in this guide, the following user roles should be pre-created:

- EO admin user and tenant credentials user

For detailed information about system administration users and roles at in VNF-LCM, refer to VNF-Lifecycle Manager System Administration Guide, Reference [2], in the OSS-RC documentation.





3 Onboarding

This section describes how to prepare for VNF operations triggered by EO.

3.1 Setup Environment in VNF-LCM

1. Install IPWorks workflows package.

- a. Log on to VNF-LCM services VM as cloud-user and switch to root user.

```
$ssh cloud-user@<VNF-LCM services VM>
```

```
[cloud-user@vnflaf-services ~]$ su -
```

- b. Uninstall the existing workflow. (Optional)

```
[root@vnflaf-services ~]# wfmgr bundle uninstall
--name=<Name> --version=<Version>
```

Use command "**wfmgr bundle list**" to view the package name and version.

Note: Before the uninstallation, make sure the configuration files under `/vnflcm-ext/current/vnf_package_repo/` have been backed up.

- c. Install package.

```
[root@vnflaf-services ~]# wfmgr bundle install
--package=<The path of the workflow package name>
```

- d. Verify that the installation is successful.

```
[root@vnflaf-services ~]# wfmgr bundle list
```

For example:

Name	Version	Package
vIPWorks	3.1.2	ERICvIPWorks_CXP9040851-3.1.2-1.noarch.rpm

2. Check SSH key pair.

- a. Check if the key pair `id_rsa` and `id_rsa.pub` exist.

```
[root@vnflaf-services ~]# ls /home/jboss_user/.ssh/
```

If it exists, skip step b.



- b. Generate SSH key pair.

```
[root@vnflaf-services ~]# su jboss_user

[jboss_user@vnflaf-services root]$ ssh-keygen -t rsa

# Generating public/private rsa key pair.
# Enter file in which to save the key (/home/jboss_user/.ssh/id_rsa)
# Enter passphrase (empty for no passphrase): [Press enter]
# Enter same passphrase again: [Press enter]
Your identification has been saved in /home/jboss_user/.ssh/id_rsa.
Your public key has been saved in /home/jboss_user/.ssh/id_rsa.pub.

[jboss_user@vnflaf-services root]$ exit
```

Note: Encrypted private keys are not supported, that is, keep passphrase empty.

3. Edit the template `nfvoconfig.json` in `/ericsson/vnflcm/data`, fulfill all the parameters according to the environment settings, and make sure the values of the following parameters are set as below:

```
"isGrantSupported": "true",
"isNotificationSupported": "true",
"nfvoInUse": "Y"
```

4. Configure nfvo.

- a. Check the existing nfvo configuration.

```
[root@vnflaf-services ~]# vnflcm nfvo list
```

- b. If the nfvo configuration doesn't exist, create it and add configuration file.

```
[root@vnflaf-services ~]# vnflcm nfvo add --file
<nfvoconfig file>
```

For example:

```
[root@vnflaf-services ~]# vnflcm nfvo add --file
template_nfvoconfig.json
```

5. Set the environment variables.

If you don't want to add IPWorks to ENM, skip this step.

Add `ossUserName` and `ossPassword` in environment.

```
[root@vnflaf-services ~]# /ericsson/pib-scripts/etc/config.py
update --app_server_address localhost:8080 --name=<variable_na
me> --value=<variable_value>
```



For example:

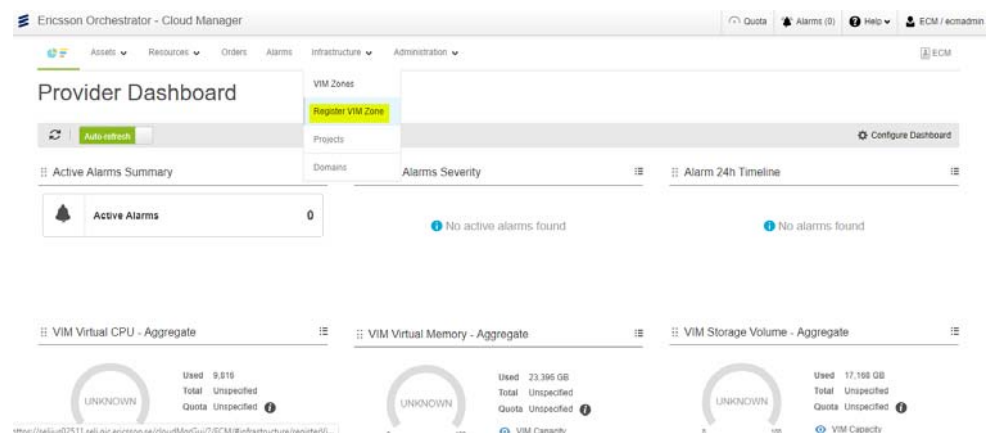
```
[root@vnflaf-services ~]#/ericsson/pib-scripts/etc/config.py
update --app_server_address localhost:8080 --name=ossUserName
--value=ipwuser
```

```
[root@vnflaf-services ~]#/ericsson/pib-scripts/etc/config.py
update --app_server_address localhost:8080 --name=ossPassword
--value=aXBXdXNlc1Bhc3N3MHJk
```

Note: Password must be encoded by Base64.

3.2 Register New VIM Zone in EO

1. Log on to EO as admin user.
2. Choose **Infrastructure > Register VIM Zone**.



3. Fill all the attributes on **Enter Attributes** page, including **General Information** and **VIM Zone Credential**. Then click **Next**.

- Default Project Name: use **admin**.
- Administrator Name: the name of Atlas admin user.
- Administrator Password: the password of the Atlas admin user.



The screenshot shows the 'Register VIM Zone' page in the 'Enter Attributes' step. The page has a progress bar at the top with four steps: 'Enter Attributes' (active), 'Enter Capacity & Characteristics', 'Register Availability Zone', and 'Set Connectivity'. Below the progress bar, the 'Enter Attributes' section is highlighted. It contains a 'General Information' section with fields for Name (ipworks), Type (CEE), Site (GIC_Linking), Time Zone (Eastern European Time (EET +02:00)), Locale (English - United States), and Version. There are also fields for Vendor and Description. Below this is a 'VIM Zone Credentials' section with fields for Default Project Name (admin), Administrator Name (admin), Administrator Password (masked), and Re-enter Password (masked). At the bottom right, there are 'Cancel' and 'Next' buttons.

4. On the **Enter Capacity & Characteristics** page, define the capacity of the zone, and click **Next**.

The screenshot shows the 'Register VIM Zone' page in the 'Enter Capacity & Characteristics' step. The progress bar at the top shows 'Enter Attributes' as completed and 'Enter Capacity & Characteristics' as the current step. The page is divided into two main sections: 'VIM Zone Capacity' and 'VIM Zone Characteristics'. The 'VIM Zone Capacity' section has a table with columns 'Metrics' and 'Total'. It lists 'Virtual CPU', 'Virtual Memory (GB)', and 'Storage Volume (GB)', all with 'Unlimited' values. The 'VIM Zone Characteristics' section has two sub-sections: 'Available (0)' and 'Supported (0)', each with a 'Refine Results' button. Below these, there are checkboxes for 'Characteristics' and buttons for 'No Available Characteristics' and 'No Supported Characteristics'. At the bottom right, there are 'Cancel', 'Previous', and 'Next' buttons.

5. On the **Register Availability Zone** page, fill the name of the Availability zone and Availability Zone Capacity. Then click **Next**.



Register VIM Zone

Enter Attributes | Enter Capacity & Characteristics | **Register Availability Zone** | Set Connectivity

Register Availability Zone

General Information

Name* Description

Availability Zone Capacity

Metrics Total*

Availability Zone Characteristics

Available (0) Supported (0)

Refine Results Refine Results

☐ Characteristics ☐ Characteristics

No Available Characteristics No Supported Characteristics

Cancel Previous Next

6. On the **Set Connectivity** page, fill in all the required fields.

Set Connectivity

Changing the Security type might affect the connection types and activation.

Security Type*

Select

End Point Configuration

Name* Version* IP Address* Port* Test URL* Keystone Default Domain*

KeyStone Version IP Address Port Test URL

Select Version Port Test URL

HDS Correlated Alarm Attributes

Physical Network Virtual POD VIM Controller ID

External Network VIM ID

Cancel Previous Register

- Choose a **Security Type**. "https" is recommended.
- Fill **End Point Configuration** information, adding **Cinder, Glance, Nova, Ceilometer, Neutron** and **Heatstack**, which can be found in Atlas:

Note: Use "heat" in Atlas to find the information of **Heatstack**.

```
# ssh <atlas admin user>@<atlas server>
```

```
# openstack endpoint list
```

```
# openstack endpoint show <Service Name/endpoint name>
```

For example:



```
atlasadm@atlas:~ # openstack endpoint list
```

ID	Region	Service Name	Se
9f1683f958824f659ecbadf79948885a	RegionOne	heat	or
4f1b7d0183974359b56e0ebc4a862b91	RegionOne	ceilometer	me
5e0c59479a554d948a7e571870f26115	RegionOne	nova	co
1f5253cf8b61407b9a413f9fd059f0d0	RegionOne	cinder	vo
8000c08564b64cab915002199939b145	RegionOne	glare	ar
54d6238e840f4006853cf413bb5a0c1e	RegionOne	glance	im
08ec83cc777f4b75af0d2a431f7c9c02	RegionOne	keystone	id
361f5b72213346ef984dd0fe8c639602	RegionOne	neutron	ne

```
atlasadm@atlas:~$ openstack endpoint show keystone
```

Field	Value
adminurl	https://ctrlpodu.seli.gic.ericsson.se:35357/v2.0
enabled	True
id	4b01ddc866dd4968a8ce9ddb7372ee72
internalurl	http://192.168.2.72:5000/v2.0
publicurl	https://ctrlpodu.seli.gic.ericsson.se:5000/v2.0
region	RegionOne
service_id	4f11ecd654ff496a8deb7a11d2d8dd81
service_name	keystone
service_type	identity

Fill in the fields according to the output information. For example:

Endpoint Name	IP Address	Port	Version	Test URL
KeystoneAdmin	ctrlpodu.seli.gic.ericsson.se	35357	2.0	/v2.0
Keystone	ctrlpodu.seli.gic.ericsson.se	5000	2.0	/v2.0

- Click **Register** to finish VIM Zone register.

3.3 Generate Tenant Credentials User in EO

Tenant user is created for operating CEE projects which belong to the specific tenant.

- Log on to EO as admin user. Choose **Administration > Tenants**, and click **Create**.



Ericsson Orchestrator - Cloud Manager

Assets Resources Orders Alarms Infrastructure Administration

Tenants

Create Delete Activate Deactivate Manage Characteristics

Tenants (34)

Refine Results Show Additional Filters

Tenant Name	Subscriptions	Alarms	Project Type	Business Administrator
5G_WF_TENANT	Active Unknown	0	Shared	
aurora_tenant	Active Unknown	0	Dedicated	
CUDB-VNF21	Active Unknown	0	Dedicated	
ECM	Active Unknown	0	Shared	
HSS_PODS_VNF19	Active Unknown	0	Dedicated	ecemamb

- On the **Create Tenant** page, fill in the fields under **Tenant Information**, **Quota Assignment**, and **User Information**. **Tenant Log URL** can be generated according to **Tenant Name**.

Ericsson Orchestrator - Cloud Manager

General Information Characteristics

Tenant Information

Tenant Name* Project Type*

Business Administrator Technical Administrator

Quota Assignment

Virtual CPU Virtual Memory Storage Volume

Total Unlimited Total Unlimited Total Unlimited

User Information

Login* Password* Confirm Password*

First Name* Last Name* Email Address

Mobile Phone User Roles* Additional User Contacts

Tenant Login URL (copy the URL or email it using the icon at the end of the field)

<https://selius02511.seli.gic.ericsson.se/cloudMgrGui/?/ipworks/>

**Note:**

- The **Tenant Name** is a part of the EO Tenant URL. It can be modified, but it's **NOT** recommended.
- **User Information** is the EO credentials to log on to EO Tenant URL.
- When log on to EO as tenant user, use the **Tenant Log URL** and username / password.

3. Click **Save** button to finish creating Tenant.

3.4 Create Project

1. Log on to EO as admin user. Choose **Infrastructure > Projects**, and click **Create**.

Project Name	Provisioning Status	Project Status	Type	Tenants
vUDC5G	Active	Enabled	Shared	2
PODQ_project5	Active	Enabled	Shared	PODQ_tenant_project5
PODQ_project4	Active	Enabled	Shared	PODQ_tenant_project4
PODQ_project3	Active	Enabled	Shared	POD_Q_Tenant
PODG-HLR-VNF06	Active	Enabled	Dedicated	PODG_HLR_VNF06
PODG-HLR-VNF02	Active	Enabled	Dedicated	PODG_HLR_VNF02
POD_L-HSS-VNF02	Active	Enabled	Dedicated	POD_L_HSS_VNF02
POD_L-HLR-VNF05	Active	Enabled	Dedicated	POD_L_HLR_VNF05
HSS-VNF31	Active	Enabled	Dedicated	HSS_VNF31_POD_B_new
HSS-VNF30	Active	Enabled	Dedicated	PODY_HSS-VNF30
HSS-VNF26	Active	Enabled	Dedicated	hss_vnf26_tenant_2
HSS-VNF24	Active	Enabled	Dedicated	PODB_HSS_VNF24

2. Fill all the parameters on **Project Information**.



Assets Resources Orders Alarms Infrastructure Administration

Create Project

View Project List

Project Information VIM Zone Connections

Project Information

Project Name:

Description:

Project Type:

☐ Shared among tenants

☐ Dedicated to a tenant

Tenants:

Project Status: Creating

KeyStone Context:

VIM Project Credentials

Username:

User Password: Confirm User Password:

User Roles: [Grant Roles](#)

Admin Username:

Admin Password: Confirm Admin Password:

Admin Roles: [Grant Roles](#)

- Go to **VIM Zone Connections**, and click **Connect VIM Zone**.

Assets Resources Orders Alarms Infrastructure Administration

Create Project

View Project List

[Connect VIM Zones](#) [Save](#)

Project Information VIM Zone Connections

VIM Zone Connections (0)

All Refine Results

VIM Zone Name	VIM Zone Type	VIM Zone Site	System ID
No VIM Zones Assigned			

[Click here to Connect VIM Zones](#)

- Select the VIM zone from the list to connect, and click **Connect**.



Connect VIM Zones

Available (19)

Refine Results

<input type="checkbox"/>	VIM Zone
<input type="checkbox"/>	CEE_POD_A_Cella (CEE) Site: GIC_Linkoping
<input type="checkbox"/>	CEE_POD_B (CEE) Site: GIC_Linkoping
<input type="checkbox"/>	CEE_POD_B_VNF24 (CEE) Site: GIC_Linkoping
<input type="checkbox"/>	CEE_POD_B_VNF26 (CEE) Site: GIC_Linkoping
<input type="checkbox"/>	CEE_POD_B_VNF27 (CEE) Site: GIC_Linkoping
<input type="checkbox"/>	CEE_POD_L_HSS_VNF02 (CEE) Site: GIC_Linkoping
<input type="checkbox"/>	CEE_POD_Q (CEE) Site: GIC_Linkoping
<input type="checkbox"/>	CEE_POD_S (CEE) Site: GIC_Linkoping
<input type="checkbox"/>	CEE_POD_Y (CEE) Site: GIC_Linkoping
<input type="checkbox"/>	CEE_POD_Y_VNF31 (CEE) Site: GIC_Linkoping
<input type="checkbox"/>	CEE_PODL_VNF01_NEW (CEE) Site: GIC_Linkoping
<input type="checkbox"/>	POD_B_VNF18 (CEE) Site: GIC_Linkoping

To Connect (1)

Refine Results

<input checked="" type="checkbox"/>	VIM Zone
<input checked="" type="checkbox"/>	CEE_POD_U (CEE) Site: GIC_Linkoping

→

←

Connect

Cancel

3.5 Create Virtual Data Center (VDC) in EO

1. Log on to EO as tenant user. Choose **Assets > Virtual Data Centers**.

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Assets Resources Orders Alarms Infrastructure Administration

Virtual Data Centers (VDC)

Services

Virtual Applications

Virtual Machines

Virtual Networks

Block Storage Volumes

Shared Assets

Recently Visited

Create New Asset

Filters

Provision Status

Act

Per

User Groups

Assign

Unassign

VIM Zone

0 Selected

Results

Hide Filters

Name	Provis Status	VIM Zone	VIM Zone Type	User Groups	System ID
Your search did not return any results					

2. On the **Virtual Data Centers** page, click **Create**.
3. On the **Search for Offers** page, choose an **Asset Type**, and click **Next**.



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Quota Alarms (0) Help ECM / ecadmin

Assets Resources Orders Alarms Infrastructure Administration CUDB-VNF21

Create Virtual Data Center (VDC)

Search for Offers Choose Offer Enter Attributes

Search for Offers

Tenant
CUDB-VNF21

Asset Type*
Virtual Data Center

VIM Zone Type
CEE

Cancel Next →

4. On the **Choose Offer** page, choose a VDC Offer, and click **Next**.

Assets Resources Performance Orders Alarms Infrastructure Administration ECM

Create Virtual Data Center (VDC)

Search for Offers Choose Offer Choose VIM Zone Enter Attributes

Choose Offer

VDC Offers (2)

Refine Results

Offer Name	Description
SAMPLE_VDC_OFFER2	Sample Standalone VDC Offer
SAMPLE_VDC_OFFER3	Sample Standalone VDC Offer with Custom Order Parameters

SAMPLE_VDC_OFFER2

Virtual Data Center: DataCenter_002

Cancel Previous Next →

5. On the **Choose VIM Zone** page, select the VIM zone that is registered. For detailed information, see Section 3.2 Register New VIM Zone in EO on page 7.



Create Virtual Data Center (VDC)

Search for Offers Choose Offer **Choose VIM Zone** Enter Attributes

Choose VIM Zone

Name	Site	Used Virtual CPU	Used Virtual Memory (GB)	Used Storage Volume (GB)	Used SR
<input checked="" type="checkbox"/> IPW-HDS	N21 Data Center	0 / Unspecified	0 / Unspecified	0 / Unspecified	None Re
<input type="checkbox"/> N18a-DSS-VHA-UDC	N18a-SDU-ROB Data Center	0 / Unspecified	0 / Unspecified	0 / Unspecified	None Re
<input type="checkbox"/> N18a-DSS-VHA-vEPC	N18a-SDU-ROB Data Center	0 / Unspecified	0 / Unspecified	0 / Unspecified	None Re
<input type="checkbox"/> N18a-DSS-VHA-vIMS	N18a-SDU-ROB Data Center	0 / Unspecified	0 / Unspecified	0 / Unspecified	None Re

Cancel ← Previous **Next →**

6. On the **Enter Attributes** page, modify the **Virtual Data Center Name**, input the description, then click **Submit Order** to finish VDC creation.

Create Virtual Data Center (VDC)

Search for Offers Choose Offer Choose VIM Zone **Enter Attributes**

Enter Attributes

SAMPLE_VDC_OFFER2 for selected VIM Zone ⓘ

Order: Virtual Data Center

Virtual Data Center: DataCenter_002

Attributes

Virtual Data Center Name *

DataCenter_002

VIM Zone Names / Sites

IPW-HDS / N21 Data Center

Description

User Groups (0 Selected)

Cancel ← Previous **Submit Order**

3.6 Create Image

Make sure the image name is same as it is in `ipwvnf.conf`, which is prepared in Section Configuring IPWorks VNF Parameters in IPWorks Deployment Guide.

There are 2 ways to create the image:

- Section 3.6.1 Creating Image from File on page 16
- Section 3.6.2 Creating Image from VIM Zone on page 17

3.6.1 Creating Image from File

1. Log on to Atlas server.



```
$ ssh atlasadm@<Atlas_addr>
```

```
$ cd /home/atlasadm/ipworks/images
```

2. Copy the following image files to a directory that can be accessed from EO.

```
— ipw-sc-22.qcow2
```

```
— pxeboot.qcow2
```

3. Start creating the image.

Refer to section Create Image from File in Cloud Manager User Guide.

3.6.2 Creating Image from VIM Zone

1. Log on to Atlas server.

```
$ ssh atlasadm@<Atlas_addr>
```

2. Create SC and PL images on VIM.

```
$ glance image-create --name <SC_IMAGE_NAME> --disk-format qcow2 --container-format bare --file <SC_IMAGE_FILE>
```

```
$ glance image-create --name <PL_IMAGE_NAME> --disk-format qcow2 --container-format bare --file <PL_IMAGE_FILE>
```

For example:

```
$ glance image-create --name IPW_SC_IMAGE --disk-format qcow2 --container-format bare --file /home/atlasadm/ipworks/images/ipw-sc-22.qcow2
```

```
$ glance image-create --name IPW_PL_IMAGE --disk-format qcow2 --container-format bare --file /home/atlasadm/ipworks/images/pxeboot.qcow2
```

3. Check the result and get VIM Image Object ID.

```
$ glance image-list
```

4. Start creating the image from VIM.

Refer to section Create an Image from a VIM Zone in Cloud Manager User Guide.

3.7 Create Flavor

Make sure the flavor name is same as it is in `ipwvnf.conf`, which is prepared in Section Configuring IPWorks VNF Parameters in IPWorks Deployment Guide, Reference [3].



1. Log on to EO as admin user.
2. Select **Resources > Server Resource Templates**.
3. Select **Create** on **Server Resource Templates**, and fill the fields of **Name**, **Virtual Memory (MB)**, **Disk Size**, and **Extra Specifications**. Then click **Create**.

Create Server Resource Template

Basic Information

Name*

Type

Accessibility

☒ Tenant ECM Only ☐ All Tenants

Number of Virtual CPUs* Virtual Memory (MB)* Disk Size (GB)*

Swap Disk Size (MB) Ephemeral Disk Size (GB) Receive/Transmit Factor

Description

Extra Specifications

Key	Value
hw:cpu_threads	1
hw:cpu_cores	1
hw:cpu_sockets	2
hw:cpu_policy	dedicated
hw:mem_page_size	1048576

Create Cancel

— The required fields information can be found in configuration file.

— **Extra Specifications** must be added as below:

Key	Value
hw:cpu_threads	1
hw:cpu_cores	1
hw:cpu_sockets	2
hw:cpu_policy	dedicated
hw:mem_page_size	1048576

4. Select the SC flavor that you want to transfer to VIM. Then click **Transfer to VIM**.



Transfer to VIM

Server Resource Templates (8)

Hide Filters All Refine Results

	Name	Provisioning Status	Virtual CPUs	Virtual Memory (MB)	Disk Size (GB)	Ephemeral Disk Size (GB)	Swap Disk Size (MB)
<input type="checkbox"/>	apg.vipstp.eph	Active	4	6,144	86	137	0
<input type="checkbox"/>	cp.vipstp	Active	6	10,240	0		0
<input type="checkbox"/>	ipw05_PL_new_0929	Awaiting Delete	2	6,144	0		0
<input type="checkbox"/>	ipw05_PL_new_1102	Active	2	6,144	0		0
<input checked="" type="checkbox"/>	ipw05_SC_new_0929	Awaiting Delete	2	4,096	75		0
<input type="checkbox"/>	ipw05_SC_new_1102	Active	2	4,096	75		0
<input type="checkbox"/>	univ_vhss_flavor_pl	Active	16	12,288	0		0
<input type="checkbox"/>	univ_vhss_flavor_sc	Active	16	12,288	200		0

5. Select the VIM Zone which was registered according to IPWorks VNF Life Cycle Management (Workflow) - Full Stack, and click **Transfer**.

Transfer Template: CM-SRT2

Transfer Server Resource Template to the selected VIM Zones

Candidate VIM Zones (1)

Refine Results

<input type="checkbox"/>	VIM Zone
<input type="checkbox"/>	CEE_POD_U CEE

Selected VIM Zones (0)

Refine Results

<input type="checkbox"/>	VIM Zone
--------------------------	----------

No Selected VIM Zones

Transfer Cancel

6. Select the PL flavor that you want to transfer to VIM. Then click **Transfer to VIM**.
7. Select the VIM Zone which was registered in IPWorks VNF Life Cycle Management (Workflow) - Full Stack, and click **Transfer**.

Note: After the transfer, EO will add a prefix "CM-" to the names of the flavors that are on CEE. For example:

```
"SC_FLAVOR_NAME": "CM-ipw05_SC_new_0929",
"PL_FLAVOR_NAME": "CM-ipw05_PL_new_0929",
```



3.8 Generate VNF Package

VNF package is used in EO procedure. This package contains all the VNF configuration information which will be upload onto EO for VNF deployment.

1. Generate the wrapper file VNFD_Wrapper_vIPWorks.json.

- a. Copy the HOT files (env.yaml, main.yaml, and ipw_scaling_group.yaml) and id_rsa.pub to the folders that under /vnflcm-ext/current/vnf_package_repo/vIPWorks__<Version>.

HOT files are generated in Atlas, refer to section Deploying IPWorks By EO in IPWorks Deployment Guide.

```
# cp <path to store the HOT Files>/env.yaml
/vnflcm-ext/current/vnf_package_repo/vIPWorks__<Version>/configurations/<Instance configuration folder>
```

```
# cp <path to store the HOT Files>/main.yaml /vnflcm-ext/
/current/vnf_package_repo/vIPWorks__<Version>/
```

```
# cp <path to store the HOT Files>/ipw_scaling_group.ya
ml /vnflcm-ext/current/vnf_package_repo/vIPWorks__<Ver
sion>/Resources/HotFiles/
```

```
# cp /home/jboss_user/.ssh/id_rsa.pub /vnflcm-ext/curren
t/vnf_package_repo/vIPWorks__<Version>/configurations/<I
nstance configuration folder>
```

```
# cp /home/jboss_user/.ssh/id_rsa.pub /vnflcm-ext/curren
t/vnf_package_repo/vIPWorks__<Version>/Resources/UserCon
figurationFiles
```

- b. Log on to LCM, and go to /vnflcm-ext/current/vnf_package_repo/vIPWorks__<Version>/Resources/LcmScripts.
- c. Run the script yaml2json.py.

```
> python yaml2json.py -i ../../configurations/instance1
_config/env.yaml -o ../VnfdWrapperFiles/VNFD_Wrapper_v
IPWorks.json
```

VNFD_Wrapper_vIPWorks.json will be generated in
/vnflcm-ext/current/vnf_package_repo/vIPWorks__<Version>/Resources/VnfdWrapperFiles/.

2. Verify the structure of the vnflcm-ext/current/vnf_package_repo/vIPWorks__<Version> directory is as follow:

```
<vnfId>
├── configurations
└── instance1_config
```




```

├── env.yaml
├── id_rsa.pub
├── Resources
│   ├── EnvironmentFiles
│   │   └── config.yaml
│   ├── HotFiles
│   │   └── ipw_scaling_group.yaml
│   ├── LcmScripts
│   │   ├── post_instantiation.py
│   │   ├── pre_instantiation.py
│   │   ├── pre_termination.py
│   │   ├── ipwcommon.py
│   │   ├── pre_scale.py
│   │   ├── post_scale.py
│   │   └── yaml2json.py
│   ├── UserConfigurationFiles
│   │   └── id_rsa.pub
│   ├── VnfdWrapperFiles/
│   │   └── VNFD_Wrapper_vIPWorks.json
└── main.yaml

```

3. Modify the file `VNFD_Wrapper_vIPWorks.json`, add the prefix "CM-" in front of `SC_FLAVOR_NAME` and `PL_FLAVOR_NAME`.

```

"instantiateVnfOpConfig":{
  "SC1_HYPERVISOR_HOSTNAME":"N211-vPOD:compute-103-2.domain.tld",
  "IPW_SIG_SP1_VRID":"2319",
  "NTP_SERVER0":"10.221.16.10",
  "IPW_OM_SP1_SC1_IP":"10.137.32.68",
  "IPW_SIG_SP1_FEE1_IP":"192.169.45.4",
  "IPW_SIG_SP1_VID":"2319",
  "IPW_OM_SP2_NW":"10.137.33.64/29",
  "MIP_OAM_IP":"10.137.32.70",
  "IPW_OM_SP2_VID":"2305",
  "SC_IMAGE":"ipw_vnf05c_sc_1030",
  "MIP_PROV_IP":"10.137.33.70",
  "IPW_DATA_SP1_VID":"2313",
  "SC_FLAVOR_NAME":"CM-ipw05 SC new 0929",
  "VNF_NAME":"Crux_vnf05",
  "SC2_HYPERVISOR_HOSTNAME":"N211-vPOD:compute-102-2.domain.tld",
  "EMERGENCY_USER":"emergency",
  "IPW_OM_SP2_SC2_IP":"10.137.33.69",
  "PL_FLAVOR_NAME":"CM-ipw05 PL new 0929",
  "SC_VOLUME_SIZE":"75",

```

4. Log on to LCM, go to `/vnflcm-ext/current/vnf_package_repo/`, and create a zip file with all the files in `vIPWorks__<Version>`.

```
# zip -r vIPWorks__<Version>.zip vIPWorks__<Version>
```

Then a `vIPWorks__<Version>.zip` file is created.

5. Copy this zip file `vIPWorks__<Version>.zip` and the wrapper file `VNFD_Wrapper_vIPWorks.json` to any storage where user can upload them to EO.





4 Procedures - Triggered from EO

These sections describe how to perform full stack triggered from EO.

4.1 Deploy Network Stack

Network stack contains the network functions that are used for IPWorks. It can be detached from IPWorks stack and deployed/terminated independently.

1. Log on to Atlas server.

```
$ ssh atlasadm@<Atlas_addr>
```

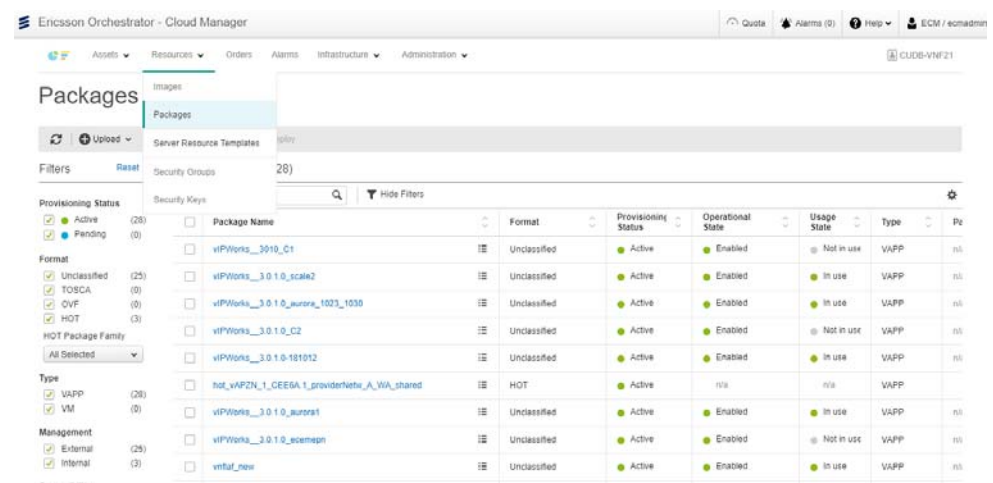
2. Put the following files to a directory that can be accessed from EO.

— /home/atlasadm/ipworks/cee_deployment/tmp/<VNF_Name>/<VNF_Name>-network-env.yaml

— /home/atlasadm/ipworks/temp/mode22/ipw-network.yaml (for HDS environment)

— /home/atlasadm/ipworks/temp/mode22/ipw-network-eo.yaml (for BSP environment)

3. Log on to EO with tenant credentials, and select **Resources > Packages**.



4. On the **Packages** page, select **Upload > HOT Package**.



Ericsson Orchestrator - Cloud Manager

Assets Resources Orders Alarms Infrastructure Administration

Packages

Upload Delete Resume Deploy

Filters VNF/VAPP x

Unclassified

Provisioner

- ☒ TOSCA (5)
- ☒ OVF (0)
- ☒ HOT (4)

Format

- ☒ Unclassified (22)
- ☒ TOSCA (0)
- ☒ OVF (0)
- ☒ HOT (4)

HOT Package Family

All Selected

Type

- ☒ VAPP (26)
- ☒ VM (0)

Management

- ☒ External (22)
- ☒ Internal (4)

Accessibility

- ☒ Tenant (14)
- ☒ All Tenants (12)

Packages (1 - 20 of 26)

Hide Filters All Refine Results

<input type="checkbox"/>	Package Name	Format	Provisioning Status	Operational State
<input type="checkbox"/>	vnflat_FODL_VNF05	Unclassified	Active	Enabled
<input type="checkbox"/>	vnflat_new	Unclassified	Active	Enabled
<input type="checkbox"/>	vnflat_Demo	Unclassified	Active	Enabled
<input type="checkbox"/>	viPWorks_CXP9040851_R4A01_1121	Unclassified	Active	Enabled
<input type="checkbox"/>	viPWorks_CXP9040851_R3C01_1119	Unclassified	Active	Enabled
<input type="checkbox"/>	viPWorks_CXP9040851_R3C01_1117_1445	Unclassified	Active	Enabled
<input type="checkbox"/>	viPWorks_CXP9040851_R3C01_1117	Unclassified	Active	Enabled
<input type="checkbox"/>	viPWorks_CXP9040851_R3C01_1116	Unclassified	Active	Enabled
<input type="checkbox"/>	viPWorks_3010_C1	Unclassified	Active	Enabled
<input type="checkbox"/>	viPWorks_3.0.1.0-1012	Unclassified	Active	Enabled
<input type="checkbox"/>	viPWorks_3.0.1.0_test	Unclassified	Active	Enabled
<input type="checkbox"/>	viPWorks_3.0.1.0_scale2	Unclassified	Active	Enabled

- On the **Upload HOT Package**, select the template hot file. For example: `ipw-network.yaml`. Then click **Start**.

Upload VNF HOT Package

Select File *Select a file or drag one and drop it anywhere on this page*

New Package Name*

Package Family ⓘ

Type value or select...

Description

Start Pause Stop

- Back to the **Packages** page, select the template hot file, and click **Deploy** to start installing Network VNF.



Packages

Upload
 Delete
 Resume
 Deploy

Filters [Reset](#) x Packages (17)

Provisioning Status

☒ Active (17)
☒ Pending

Format

☒ HOT (4)
☒ OVF
☒ VNF (13)

Accessibility

☒ Tenant (5)
☒ All Tenants (12)

Package Name	Format	Provisioning Status
<input type="checkbox"/> Compact_MSC_N600_Provider_ECMADMIN	HOT	Active
<input type="checkbox"/> ipw_env_test1	HOT	Active
<input checked="" type="checkbox"/> ipw-network	HOT	Active
<input type="checkbox"/> ipw-vnf-22-zone-persistent-storage	HOT	Active
<input type="checkbox"/> viPWorks__3.0.1.0	VNF	Active
<input type="checkbox"/> viPWorks__3.0.1.0_test1	VNF	Active
<input type="checkbox"/> viPWorks__3.0.1.0_test10	VNF	Active

7. On the **Create Virtual Application** page, make sure the information is correct, and click **Next**.

Create Virtual Application (VAPP)

Search for Offers

Smart

IPW

Asset Type*

Virtual Application

Offer Source*

Package Offer

VDC Name*

DataCenter_002 (CEE)

[Cancel](#)
[Next](#)

8. Confirm the HOT Package name, and click **Next**.

Create Virtual Application (VAPP)

Choose Offer

VAPP Offers in VDC DataCenter_002 (17)

Refine Results

Offer Name	Offer Source	Description
Compact_MSC_N600_Provider_ECMADMIN	HOT Package	uploaded with ecadmin for testing purpose
ipw_env_test1	HOT Package	
ipw-network	HOT Package	
ipw-vnf-22-zone-persistent-storage	HOT Package	
viPWorks__3.0.1.0	VNF Package	
viPWorks__3.0.1.0_test1	VNF Package	
viPWorks__3.0.1.0_test10	VNF Package	
viPWorks__3.0.1.0_test11	VNF Package	

ipw-network

The structure cannot be displayed for this package

[Cancel](#)
[Previous](#)
[Next](#)

9. Leave **Set VIM Criteria** blank, click **Next**.



Create Virtual Application (VAPP)

The screenshot shows the 'Set VIM Criteria' step in the 'Create Virtual Application (VAPP)' workflow. The progress bar at the top indicates the current step. Below the progress bar, there are two sections: 'Available (0)' and 'Required (0)'. Each section has a 'Refine Results' button and a 'Characteristics' dropdown menu. Below these sections, there are two status indicators: 'No available characteristics' and 'No required characteristics'. At the bottom right, there are 'Cancel', 'Previous', and 'Next' buttons.

10. Choose a VIM Zone, and click **Next**.

Create Virtual Application (VAPP)

The screenshot shows the 'Choose VIM Zone' step in the 'Create Virtual Application (VAPP)' workflow. The progress bar at the top indicates the current step. Below the progress bar, there is a table titled 'CEE VIM Zones (1)'. The table has columns for Name, Site, Used Virtual CPU, Used Virtual Memory (GB), Used Storage Volume (GB), Used SRIOV VLAN, and Used SRIOV FI. The table contains one row with the following data: Name: IPW-HDS, Site: N21 Data Center, Used Virtual CPU: 184 / Unspecified, Used Virtual Memory (GB): 400 / Unspecified, Used Storage Volume (GB): 4,270 / Unspecified, Used SRIOV VLAN: None Registered, Used SRIOV FI: None Registered. At the bottom right, there are 'Cancel', 'Previous', and 'Next' buttons.

11. On the **Attributes** page, fill in the required fields.

- Under **Basic Information** tab, **Virtual Application Name**. For example:

Create Virtual Application (VAPP)

The screenshot shows the 'Enter Attributes' step in the 'Create Virtual Application (VAPP)' workflow. The progress bar at the top indicates the current step. Below the progress bar, there is a form titled 'Attributes'. The form has two tabs: 'Basic Information' and 'Files'. The 'Basic Information' tab is active. It contains fields for 'Virtual Application Name', 'VAPP Version', 'VAPP Vendor', 'VAPP Type', and 'Description'. The 'Files' tab is also visible. At the bottom right, there are 'Cancel', 'Previous', and 'Next' buttons.

- Under **Files** tab, click **Add More Files** to add environment files. For example:

<VNF_Name>-network-env.yaml



Create Virtual Application (VAPP)

12. Click **Submit Order**, result is as follows.

13. Click **Orders**. Check the **Status** of the submitted order. **Completed** means the deployment succeeded.

Status	Description
Completed	Succeeded.
In Progress	Not yet finish.
Warning	Finished with defects.
Failed	Instantiation failed.



Order ID	Status	Submitted Date	Completion Date	Submitted By
253472	In Progress	10/25/2018 17:04:21		ProviderAdmin
253136	In Progress	10/25/2018 16:55:20		ProviderAdmin
253005	In Progress	10/25/2018 16:53:27		ProviderAdmin
252737	Failed	10/25/2018 15:50:05	10/25/2018 15:50:35	ProviderAdmin
252466	Failed	10/25/2018 14:09:59	10/25/2018 14:10:28	ProviderAdmin
252198	Failed	10/25/2018 13:51:09	10/25/2018 13:51:39	ProviderAdmin
251930	Failed	10/25/2018 13:46:54	10/25/2018 13:47:24	ProviderAdmin
247928	In Progress	10/25/2018 09:52:55		ProviderAdmin
247677	Failed	10/25/2018 09:40:16	10/25/2018 09:40:47	ProviderAdmin

14. If HDS platform with SDN is used, configure the L2 gateway connections. Refer to section SDN Network Configuration for IPWorks VNF in IPWorks Deployment Guide, Reference [3].

4.2 Instantiate VNF

1. Log on to EO with tenant credentials, and select **Resources > Packages**.

Package Name	Format	Provisioning Status	Operational State	Usage State	Type	Pz
viPWorks_3019_C1	Unclassified	Active	Enabled	Not in use	VAPP	n/s
viPWorks_3.0.1.0_scale2	Unclassified	Active	Enabled	In use	VAPP	n/s
viPWorks_3.0.1.0_aurora_1003_1030	Unclassified	Active	Enabled	In use	VAPP	n/s
viPWorks_3.0.1.0_C2	Unclassified	Active	Enabled	Not in use	VAPP	n/s
viPWorks_3.0.1.0-101012	Unclassified	Active	Enabled	In use	VAPP	n/s
hot_vaf2N_1_CEE6A_1_providerfctc_A_WA_shared	HOT	Active	n/a	n/a	VAPP	
viPWorks_3.0.1.0_aurora1	Unclassified	Active	Enabled	In use	VAPP	n/s
viPWorks_3.0.1.0_esemepn	Unclassified	Active	Enabled	Not in use	VAPP	n/s
vnfuf_new	Unclassified	Active	Enabled	In use	VAPP	n/s

2. On the **Packages** page, select **Upload > Unclassified**.



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Assets Resources Orders Alarms Infrastructure Administration

Packages

Upload Delete Resume Deploy

Filters VNF/VAPP

Unclassified

Provisioning TOSCA (28) OVF (1) HOT (1)

Format

Unclassified (25) TOSCA (0) OVF (0) HOT (3)

HOT Package Family All Selected

Type VAPP (28)

Packages (1 - 20 of 28)

Package Name	Format	Provisioning Status
viPWorks__3010_C1	Unclassified	Active
viPWorks__3.0.1.0_scale2	Unclassified	Active
viPWorks__3.0.1.0_aurora_1023_1030	Unclassified	Active
viPWorks__3.0.1.0_C2	Unclassified	Active
viPWorks__3.0.1.0-181012	Unclassified	Active
hot_vAPZN_1_CEE6A_1_providerNetw_A_WA_shared	HOT	Active

3. On the **Upload VNF Unclassified Package** page, fill in all the required fields.

Upload VNF Unclassified Package

New Package File*

Select File Select a Package file or drag one and drop it into this area

New Configuration File

Select File Select a Configuration file or drag one and drop it into this area

New Schema File

Select File Select a Schema file or drag one and drop it into this area

Package Version* Package Vendor

Software Version* Package Category

Description

Managers*

Name VNF Type Vendor Site

At least 1 Manager must be assigned to this package

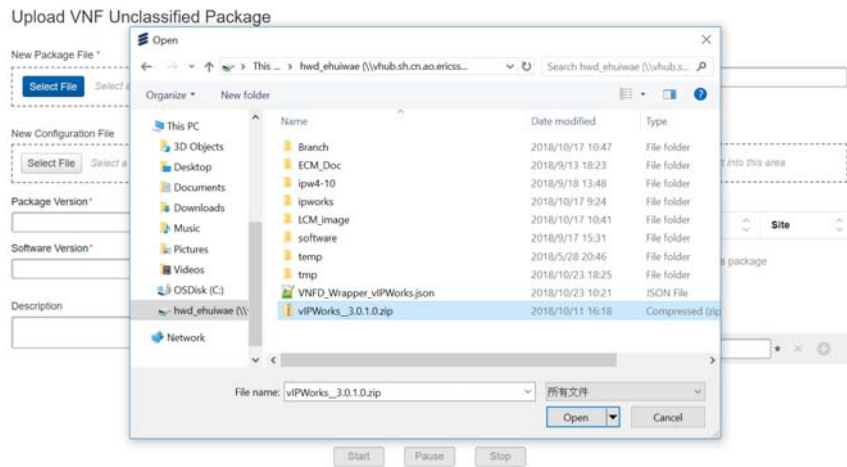
Assign Managers

Package Resource Groups

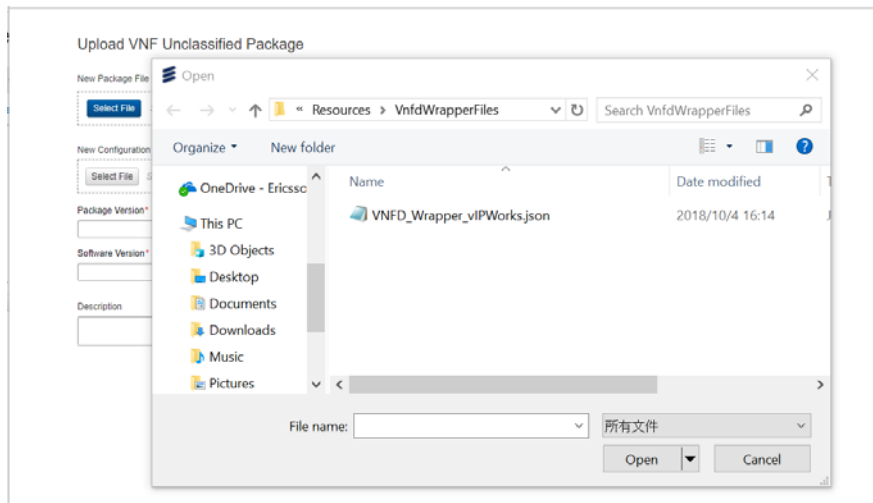
Enter Resource Group Name

Start Pause Stop

- a. Select `viPWorks__<Version>.zip` that was created in Section 3.8 Generate VNF Package on page 20 as **New Package File**. The package name must be the same as the folder where the `main.yaml` is located. That is, the folder where all workflow files are stored. For example: `viPWorks__<Version>`.



- b. Select the corresponding wrapper file in vIPWorks__<Version>/Resources/VnfdWrapperFiles/ as **New Configuration File**.



- c. Fill in **Package Version** and **Software Version**. This parameter must be the same as the parameter vnfdId of the VNFD_Wrapper_vIPWorks.json. For example:

```
"dataVNFDspecific": {
  "vnfdId": "vIPWorks__<Version>",
  "vnfdVersion": "<Version>",
  "vnfProvider": "Ericsson",
  "vnfProductName": "vIPWorks",
  "vnfSoftwareVersion": "<Version>",
  "flavourId": ["default"],
}
```

Take the value of vnfdVersion as **Package Version**; take the value of vnfSoftwareVersion as **Software Version**.



- d. Rename the package in **New Package Name**. The package name cannot be same as other existing ones.
- e. Click **Assign Managers**, select the corresponding manager, add it to **Managers for this Package**, then click **Assign**.

Assign Managers

Candidate Managers (20)

Refine Results

- ☐ External Version 2 / Ericsson / <no site>
- ☐ vnfm42244
External Version 2 / Ericsson / <no site>
- ☒ vnfm3
External Version 2 / <no vendor> / <no site>
- ☐ vnfm-PODS
External Version 2 / Ericsson / <no site>
- ☐ VNFM_VNF09_POD_0
External Version 2 / Ericsson / <no site>

Managers for this Package (1)

Refine Results

- ☒ Manager (Name, VNFM Type, Vendor, Site)
- ☒ vnfm49134
External Version 2 / Ericsson / <no site>

Assign Cancel

- f. On the **Upload VNF Unclassified Package** page, click **Start**. Wait until package uploading succeeded.

Upload VNF Unclassified Package

New Package File *

Select File Select a Package file or drag one and drop it into this area

New Package Name

viPWorks__3.0.1.0

Package File Name *

viPWorks__3.0.1.0.zip (36.99 KB)

New Configuration File

Select File Select a Configuration file or drag one and drop it into this area

New Schema File

Select File Select a Schema file or drag one and drop it into this area

New Configuration File Content

```

1 {
2   "data999999999999": {
3     "vnfmId": "viPWorks__3.0.1.0",
4     "vnfmVersion": "3.0.1.0",
5     "vnfmProvider": "Ericsson",
6     "vnfmProductName": "viPWorks",
7     "vnfmSoftwareVersion": "3.0.1.0",
8     "flavorId": {
9       "default":
10    }
11  }

```

Managers *

Name	VNFM Type	Vendor	Site
vnfm49134	External Version 2	Ericsson	

Package Resource Groups

Enter Resource Group Name

Package Version

3.0.1.0

Package Vendor

Software Version

3.0.1.0

Package Category

Description

Start Pause Stop

4. Select **Resources > Packages**. Check the available package, and click **Deploy**. Or click the hyperlink of the package, go to the package information page, and click **Deploy**.

Packages

| Upload ▾ | Delete | Resume | Deploy

Filters

[Reset](#) ×

Provisioning Status

- ☒ ● Active (1)
- ☒ ● Pending (0)

Format

- ☒ Unclassified (1)
- ☒ TOSCA (0)
- ☒ OVF (0)
- ☒ HOT (0)

HOT Package Family

All Selected ▾

Type

- ☒ VAPP (1)
- ☒ VM (0)

Management

- ☒ External (1)
- ☒ Internal (0)

Accessibility

- ☒ Tenant (1)
- ☒ All Tenants (0)

Packages (1)

All ▾
vIPWorks__3.0.1.0_test x 🔍
 Hide Filters

	Package Name
<input checked="" type="checkbox"/>	vIPWorks__3.0.1.0_test

5. Following pages show the configuration parameters. Click **Next** to process.

Create Virtual Application (VAPP)

Search for Offers

Choose Offer

Enter Attributes

Search for Offers

Tenant:
CUCB-VMF21

Asset Type:

Offer Source:

VDC Name:

Cancel

Create



Create Virtual Application (VAPP)

Search for Offers Choose Offer Set VM Criteria Choose VM Zone Enter Attributes

Choose Offer

Offer Name	Package	Status
vPaaS_ensemble_vnf2_2	Unclassified Package	
vPaaS_3.0.1.0	Unclassified Package	
vPaaS_3.0.1.0_aurora	Unclassified Package	
vPaaS_3.0.1.0_aurora1	Unclassified Package	
vPaaS_3.0.1.0_8	Unclassified Package	
vPaaS_3.0.1.0_C2	Unclassified Package	
vPaaS_3.0.1.0_ensemble	Unclassified Package	
vPaaS_3.0.1.0_ensemble1	Unclassified Package	
vPaaS_3.0.1.0_ensemble2	Unclassified Package	
vPaaS_3.0.1.0_ensemble3	Unclassified Package	
vPaaS_3.0.1.0_ensemble4	Unclassified Package	
vPaaS_3.0.1.0_ensemble5	Unclassified Package	
vPaaS_3.0.1.0_ensemble6	Unclassified Package	
vPaaS_3.0.1.0_ensemble7	Unclassified Package	
vPaaS_3.0.1.0_ensemble8	Unclassified Package	
vPaaS_3.0.1.0_ensemble9	Unclassified Package	
vPaaS_3.0.1.0_ensemble10	Unclassified Package	
vPaaS_3.0.1.0_ensemble11	Unclassified Package	
vPaaS_3.0.1.0_ensemble12	Unclassified Package	
vPaaS_3.0.1.0_ensemble13	Unclassified Package	
vPaaS_3.0.1.0_ensemble14	Unclassified Package	
vPaaS_3.0.1.0_ensemble15	Unclassified Package	
vPaaS_3.0.1.0_ensemble16	Unclassified Package	
vPaaS_3.0.1.0_ensemble17	Unclassified Package	
vPaaS_3.0.1.0_ensemble18	Unclassified Package	
vPaaS_3.0.1.0_ensemble19	Unclassified Package	
vPaaS_3.0.1.0_ensemble20	Unclassified Package	

vPaaS_3.0.1.0_test

Virtual Application: vPaaS_3.0.1.0_test

Package Version: 3.0.1.0

Software Version: 3.0.1.0

VNF Manager Name: vnfmanager

Package Category: None

Package Vendor: Ericsson

Cancel Previous Next

Create Virtual Application (VAPP)

Search for Offers Choose Offer Set VM Criteria Choose VM Zone Enter Attributes

Set VM Criteria

Optionally Select additional VM Characteristics. Users can view and select additional characteristics at the Resource Group level.

Characteristics Level

VM Level

Available (0)

Required (0)

No available characteristics

No required characteristics

Cancel Previous Next

Create Virtual Application (VAPP)

Search for Offers Choose Offer Set VM Criteria Choose VM Zone Enter Attributes

Choose VM Zone

New vnf will be created in this VM Zone

CEE VM Zones (1)

Name	Site	Used Virtual CPU	Used Virtual Memory (GB)	Used Storage Volume (GB)	Used SD-WAN VLAN	Used SD-WAN IP	Characteristics
* CEE_P00_1	GC_1/1/1/1	136 / Unspecified	1.362 / Unspecified	0 / Unspecified	None Registered	None Registered	

Cancel Previous Next

- On the **Enter Attributes** page, rename **Virtual Application Name** to avoid conflict with other application name. Select **VNF manager** if it is empty. Click **Submit Order** to start instantiation.



Create Virtual Application (VAPP)

Search for Offers Choose Offer Set VIM Criteria Choose VIM Zone Enter Attributes

Enter Attributes

viPWorks__3.0.1.0_test8 in VDC DataCenter_N21

Package Name	Accessibility
viPWorks__3.0.1.0_test8	All Tenants
Package Version	Package Vendor
3.0.1.0	Ericsson
Package Category	Software Version
None	3.0.1.0

Package Managers (5)

Name	VNFM Type	Vendor
vnfm-UNIV-noa...	External Version 2	Ericsson
vnfm1-IPW-noa...	External Version 2	Ericsson

Attributes

VAPP Attributes Configuration

Virtual Application Name*

viPWorks__3.0.1.0_test8

VNF Manager*

VNFM-IPW-noauth5214 (External Version 2)

VAPP Version

3.0.1.0

VAPP Vendor

Ericsson

VAPP Type

Type value or select.

Flavor*

default

Description

Cancel Previous Submit Order

If you want to connect viPWorks to ENM, click the tag **Configuration**, and add the following parameters in the end of configuration.

```
"workflow_OSS_NETWORK_ELEMENT_TYPE": "viPWorks",  
"workflow_OSS_NETWORK_ELEMENT_USER_NAME": "root",  
"workflow_OSS_NETWORK_ELEMENT_PASSWORD": "rootroot", "workflow_OSS_ADDVNFT00
```

For example:



Attributes

VAPP Attributes

Configuration

Configuration Parameters

Select File

Select a Configuration file or drag one and drop it into th

Configuration Parameters "instantiateVnfOpConfig" section

```

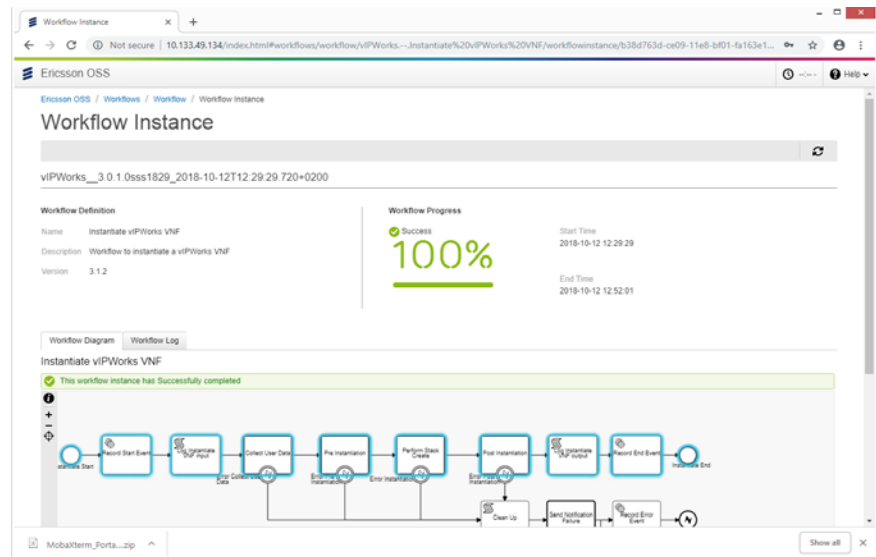
58  "PL_IMAGE": "IPW_PL_VNF21_aurora",
59  "VIP_TRF_IP2": "10.135.62.116",
60  "VIP_TRF_IP1": "10.135.61.116",
61  "SC2_MAC_ADDRESS_ETH0": "02:10:20:01:02:00",
62  "workflow_OSS_NETWORK_ELEMENT_TYPE": "vIPWorks",
63  "workflow_OSS_NETWORK_ELEMENT_USER_NAME": "root",
64  "workflow_OSS_NETWORK_ELEMENT_PASSWORD": "rootroot",
65  "workflow_OSS_ADDVNFTOOSS": "true"
66 }

```

Parameter	Type	Description
workflow_OSS_NETWORK_ELEMENT_TYPE	string	The Network element type.
workflow_OSS_NETWORK_ELEMENT_USER_NAME	string	Username to access the VNF.
workflow_OSS_NETWORK_ELEMENT_PASSWORD	string	Password of the username to access the VNF.
workflow_OSS_ADDVNFTOOSS	bool	Whether add the VNF to OSS. <ul style="list-style-type: none"> • true: add it to OSS • false: don't add it to OSS

7. Verify the instantiation.

- a. Log on to workflow. The instantiation triggered from EO will also be displayed in workflow.



- b. Log on to EO, click **Orders**. Check the **Status** of the submitted order. **Completed** means the instantiation succeeded.

Status	Description
Completed	Succeeded.
In Progress	Not yet finish.
Warning	Finished with defects.
Failed	Instantiation failed.

Orders

Filters

Order Status

Completed (15)

In Progress (26)

Warning

Failed (55)

Submitted Date

From: 10/11/2018

To: MM/DD/YYYY

Orders (1 - 20 of 96)

Order ID	Status	Submitted Date	Completion Date	Submitted By
253472	In Progress	10/25/2018 17:04:21		ProviderAdmin
253136	In Progress	10/25/2018 16:55:20		ProviderAdmin
253005	In Progress	10/25/2018 16:53:27		ProviderAdmin
252737	Failed	10/25/2018 15:50:05	10/25/2018 15:50:35	ProviderAdmin
252466	Failed	10/25/2018 14:09:59	10/25/2018 14:10:28	ProviderAdmin
252198	Failed	10/25/2018 13:51:09	10/25/2018 13:51:39	ProviderAdmin
251930	Failed	10/25/2018 13:46:54	10/25/2018 13:47:24	ProviderAdmin
247928	In Progress	10/25/2018 09:52:55		ProviderAdmin
247677	Failed	10/25/2018 09:40:16	10/25/2018 09:40:47	ProviderAdmin

8. Change the password for the <EMERGENCY_USER> user.

```
$ssh <EMERGENCY_USER>@<SC-1_IP_Address>
```




This <EMERGENCY_USER> user is used for graceful termination and scale operations. The default value of <EMERGENCY_USER> is **emergency**. The default password is **emergency**.

After logging on the system for the first time, there is a prompt to have the user change the password.

For more information about the parameter <EMERGENCY_USER>, refer to the table "IPWorks VNF Deployment Parameter for HEAT Stack" in IPWorks Deployment Guide, Reference [3].

4.3 Scale VNF

This section describes how to scale-in and scale-out a VNF using EO.

Scale is **NOT** supported in this LCM version (18.16 IP1, media version 4.9.22).

4.4 Terminate VNF

This section describes how to terminate a VNF using EO.

1. Log on to EO with tenant credentials and select **Assets > Virtual Applications**.
2. Check the VAPP you want to delete, and click **Delete** to implement termination operation.

The screenshot displays the 'Virtual Applications (VAPPs)' management page. At the top, there are navigation tabs: Assets, Resources, Performance, Orders, Alarms, Infrastructure, and Administration. Below the tabs, the page title 'Virtual Applications (VAPPs)' is shown. A toolbar contains buttons for 'Create VAPP', 'Delete', 'Start', 'Stop', 'Pause', 'Suspend', 'Resume', and 'Other Actions'. A 'Filters' section on the left allows filtering by 'Provisioning Status' (Active: 34, Pending: 17), 'VIM Zone' (All Selected), and 'Virtual Data Center' (All Selected). The main table, titled 'VAPPs (1 - 20 of 51)', lists the following VAPPs:

VAPP Name	Provisioning Status	Virtual Data Center	VAPP Type
Compact_MSC_N600_Provider_ECMADMIN	Active	DataCenter_N42_MSCadmin	
HSS-FE_nonpersistent_CXP9035062-6_R21G	Active	DataCenter_N21	
HSS-FE_nonpersistent_CXP9035062-6_R21G-test	Active	DataCenter_N21	
HSS-FE_nonpersistent_CXP9035062-6_R22H	Active	DataCenter_N21	
viPWorks_3.0.1.0_test10150940	Active	DataCenter_N21	
viPWorks_3.0.1.0_test10150952	Pending	DataCenter_N21	
viPWorks_3.0.1.0_test10191107	Pending	DataCenter_N21	
viPWorks_3.0.1.0_test10221012	Active	DataCenter_N21	



Terminate VAPP

Termination Type*

☐ Forceful ☒ Graceful

Graceful Termination Timeout (Sec)*

Configuration Parameters File

Select a Configuration file or drag one and drop it into this area

Configuration Parameters

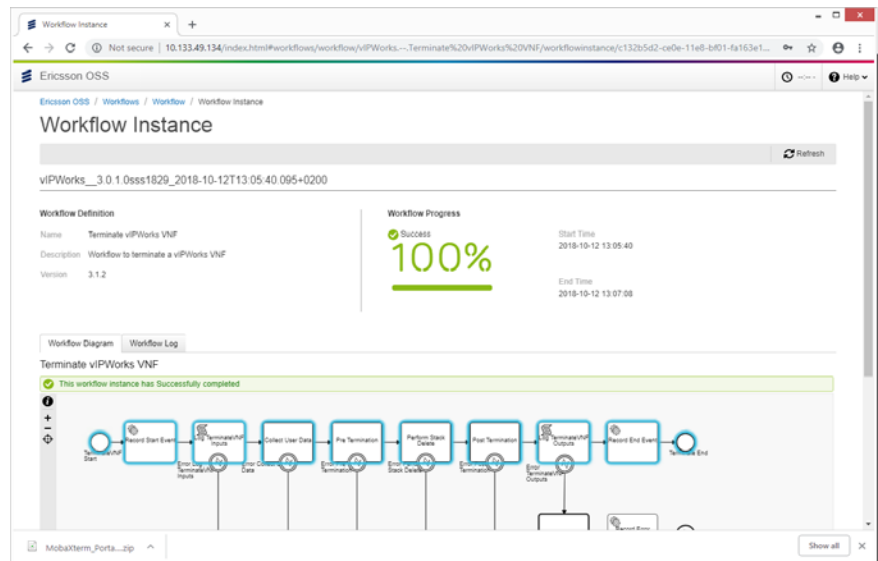
```
{
  "dataVNFDSpecific": {
    "vnfdId": "viPWorks_3.0.1.0",
    "vnfdVersion": "3.0.1.0",
    "vnfdProvider": "Ericsson",
    "vnfdProductName": "viPWorks",
    "vnfdSoftwareVersion": "3.0.1.0",
    "flavourId": {
      "default"
    }
  },
  "vnfdLcmOperationsConfiguration": {
    "scale": {
      "scalingByMoreThanOneStepSupported": true
    }
  }
}
```

The following options are available as termination types:

Graceful	The VMs in the cluster are gracefully locked: the VAPP instance gradually stops processing traffic, but there still might be a minor traffic loss. The VAPP is terminated after the expiration of the graceful termination period.
Forceful	The VAPP is terminated immediately, all ongoing traffic is lost. This option must be confirmed on the next screen, as it stops all traffic.
Graceful termination timeout (sec)	The graceful termination timeout value defines the time length from applying graceful termination to the termination of the VAPP. Ongoing traffic still happens during this period. 120 seconds is the recommended value.

3. Verify the termination.

- a. Log on to workflow. The instantiation triggered from EO is also displayed in the workflow.



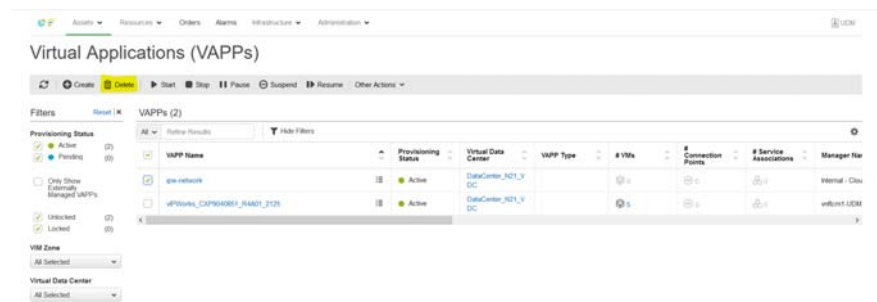
- b. Log on to EO, click **Orders**. Check the **Status** of the submitted order. **Completed** means the termination succeeded.

Status	Description
Completed	Succeeded.
In Progress	Not yet finish.
Warning	Finished with defects.
Failed	Termination failed.

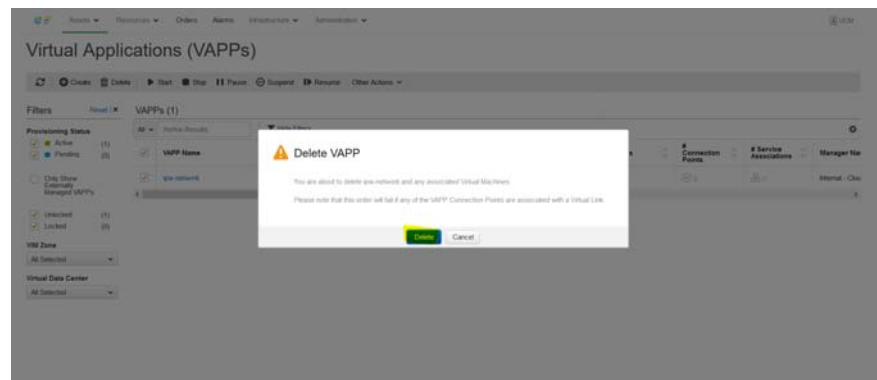
Order ID	Status	Submitted Date	Completion Date	Submitted By
253472	In Progress	10/25/2018 17:04:21		ProviderAdmin
253136	In Progress	10/25/2018 16:55:20		ProviderAdmin
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247928	In Progress	10/25/2018 09:52:55		ProviderAdmin
247677	Failed	10/25/2018 09:40:16	10/25/2018 09:40:47	ProviderAdmin

4. Terminate the corresponding network stack.

- a. Select the network stack from **VAPPs** list and click **Delete**.



- b. Click Delete on the warning window to complete the operation.



- c. Verify the operation. Back to **VAPPs** list and check if the network stack is removed.



5 Procedures - Trigger from LCM with EO Involved

These sections describe how to perform full stack triggered from LCM but with EO involved.

5.1 Instantiate VNF

Instantiation is NOT supported in this LCM version (18.16 IP1, media version 4.9.22).

5.2 Scale VNF

This section describes how to scale-in and scale-out a VNF using EO.

Continue with this procedure only when the VNF is already instantiated by EO.

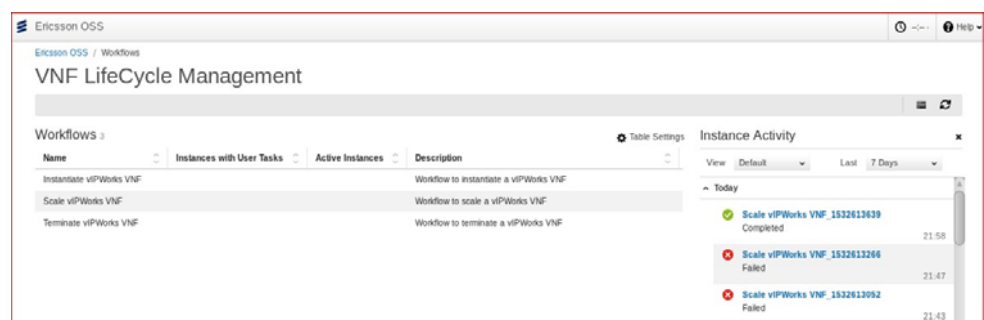
For how to do scale, refer to section *Scale VNF* in *IPWorks VNF Life Cycle Management (Workflow) - Small Stack*.

5.3 Terminate VNF

This section describes how to terminate a VNF using VNF-LCM with EO involved.

Continue with this procedure only when VNF is already instantiated by EO.


1. On the VNF-LCM **Workflows** page, select **Terminate VNF**, and click **Start a New Instance**.



2. On the **Start a Workflow** page, fill out the **Instance Name** field, and click **Submit**.
3. Select the newly created workflow from the **Instance Activity** panel.



4. On the **Workflow Instance** page, select the VNF that is to be terminated, select **termination type**, and click **Submit**.

 Task

Collect user data for Terminate

Terminate VNF instance

Termination data

Select VNF instance *

ipw47 (a2df5f2b-af78-40... ▼

Termination type:

☒ Graceful ☐

Graceful termination timeout (sec)

Note: It will take a few minutes to complete. You can click **Refresh** to check the status of the task.

The following options are available as termination types:



Table 2 Termination Types

Graceful	The VMs in the cluster are gracefully locked: the VNF instance gradually stops processing traffic, but there still might be a minor traffic loss. The VNF is terminated after the expiration of the graceful termination period.
Forceful	The VNF is terminated immediately, all ongoing traffic is lost. This option must be confirmed on the next screen, as it stops all traffic.
Graceful termination timeout (sec)	The graceful termination timeout value defines the time length from applying graceful termination to the termination of the VNF. Ongoing traffic still happens during this period. The default value is -1, which means the VNF is terminated only after all VMs stopped processing traffic.





6 Troubleshooting

If the workflow execution is unsuccessful, refer to the section [IPWorks Workflows Problems in IPWorks Troubleshooting Guideline](#) to investigate and resolve the possible issues.

The log from VNF-LCM is located in VNF-LCM: `/ericsson/3pp/jboss/standalone/log/server.log`.





Reference List

Documents

- [1] VNF-LCM CEE/Openstack Installation Instructions, 1/153 72-APR 901 0578
- [2] VNF-Lifecycle Manager System Administration Guide, 1543-APR 901 0578 Uen
- [3] IPWorks Deployment Guide, 21/1553-AVA 901 33/3 Uen
- [4] IPWorks Upgrade Instruction, 1/153 72-AVA 901 33/3 Uen
- [5] IPWorks Troubleshooting Guideline