

CUDB VNF Lifecycle Management

USER GUIDE

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1 Introduction

This document describes system administration tasks performed in the Virtualized Network Function (VNF) Lifecycle Manager (VNF-LCM). The VNF-LCM provides a workflow execution environment and a web-based application for managing VNF lifecycle procedures.

The workflows are ordered sequences of steps for automating common use cases of the VNFs. A workflow provides a means to orchestrate simple and complex sequences of manual or automated tasks.

1.1 Purpose and Scope

This document covers the following workflow-based lifecycle management procedures:

- Instantiate vCUDB system.
- Terminate vCUDB system.

This workflow is only suitable for Virtualized CUDB (vCUDB) system maiden installations but not for vCUDB system expansions.

Note: A Virtualized CUDB node is referred to as a vCUDB VNF instance throughout the document.

1.2 Revision Information

Rev. A

Initial release.

Rev. B

Other than editorial changes, this document has been updated as follows:

- Updated vCUDB terminology throughout the document.
- Section 1.5.1 on page 2: Updated description.
- Section 3 on page 7: Updated Figure 1.
- Section 3.1 on page 7: Updated note.
- Section 3.1.1 on page 7: Updated license file name, directory structure, and description. Updated Figure 2.



- Section 3.1.2 on page 9: Removed Substep 8 in Step 7. Updated Step 2.
- Section 3.2.1 on page 12: Updated Step 3.

1.3 Target Groups

This document is intended for system administrators operating vCUDB systems.

1.4 Typographic Conventions

Typographic conventions can be found in the following document:

- *Typographic Conventions*

1.5 Prerequisites

This section describes the prerequisites that must be fulfilled before the CUDB is installed.

Before starting this procedure, ensure that *CUDB Release Notes* and the documents listed in Reference List are available.

1.5.1 Hardware and Software

The following virtual and physical hardware and software are required:

- Software delivery package (CUDB Workflow pack).
- VNF-LCM release is 17.14, or higher.
- VNF-LCM up and running using Ericsson Network Management System (NMS), either Operations Support System for Radio and Core (OSS-RC) or Ericsson Network Manager (ENM).

If the correct functioning of VNF-LCM must be checked, if, for example, OSS-RC is used, follow the steps defined in the *Post Installation Verification* section of *VNF-LCM CEE/Openstack Installation Instructions*, Reference [4], in the OSS-RC documentation.

Note: The Virtualized Infrastructure Manager (VIM) connection information in VNF-LCM framework have to be configured. This information is used by the workflows to connect to VIM and perform operations. Add as many VIMs as needed to VNF-LCM framework and add as many tenants as needed to the previously added VIM. Refer to the *VNF-LCM CLI Admin* section of *VNF-Lifecycle Manager System Administration Guide*, Reference [5], in the OSS-RC documentation.



- The required schemas and license files must be available.
- Contact Ericsson personnel regarding the following aspects of the workflow-based lifecycle management procedures:
 - to prepare CUDB Virtual Infrastructure Deployment. It means that preparation for cloud administrators, such as flavors and host aggregates, must be performed. All the required images, such as vCUDB CONTROLLER and vCUDB PAYLOAD, must be downloaded, and later uploaded in Virtual Infrastructure Manager (Atlas GUI). The stack must be launched during the Instantiate vCUDB Node procedure.
 - to ensure that the disk is properly dimensioned and the available size is sufficient to execute the workflows.
 - to provide system administrators with the required files to instantiate vCUDB VNF, for example, `sql` files, `sqlList.txt`, `fixed-entries-pl.ldif`, `env.yaml`, `main.yaml`, `DS_scaling.yaml` and `CudbOamModel_Instances_config_imm.xml`. For more information, see Section 3.1.1 on page 7.
 - to add multiple `SITE_VIP` IPs in a live vCUDB VNF, once the instantiations are finished, if the vCUDB system consists of more than 10 vCUDB VNFs.

Any temporal file must be stored under `/vnflcm-ext/` directory to use the right partition for this purpose.



2 Onboarding

This section describes how to prepare for workflow-based VNF operations using VNF-LCM. Performing this procedure is a prerequisite for lifecycle operations.

Execute the following commands on the VNF-LCM Services Virtual Machine (VM):

1. Connect to VNF-LCM:

```
ssh cloud-user@<VNFLAF-services_ip>
```

2. Copy the CUDB Workflow pack CUDB_VNFLCM_WORKFLOWS-CXP9040847.tar file into /home/cloud-user directory.

3. Decompress the CUDB Workflow pack CUDB_VNFLCM_WORKFLOWS-CXP9040847.tar

```
[cloud-user@vnflaf-services ~]$ tar -xvf CUDB_VNFLCM_WORKFLOWS-CXP9040847.tar
```

4. Install the CUDB Workflow pack:

- a. Switch to root user on vnflaf-services VM:

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

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

- b. Verify that the pack is not installed, by running the list command:

```
rpm -qa |grep ERICvCUDB
```

- c. Uninstall the previous version, if there is one, and take the input data from the previous printout:

```
# wfmgr bundle uninstall --package=<Name>
--version=<Version>
```

- d. To install the Workflow pack, run the **install** command. The rpm file is located in the /tmp folder by default.

```
# wfmgr bundle install --package=/tmp/<workflow_bundle_rpm_file>
```

The expected output must be similar to the below example:

```
-----
package_name | pre_install | install | post_install | message |
-----
```



```
| ERICvCUDb_CXP9035445-1.9.20-1.noarch.rpm | success | success | success | package installation successful
```

For more information on the output of the command, go to
`/var/log/wfmgr-cli-log/logfile.log`.

For more information on installing workflows, refer
to the *Workflow Bundle Administration* section of
VNF-Lifecycle Manager System Administration Guide document in the OSS-RC
documentation.



3 Procedures

This section describes how to perform LCM operations. VNF-LCM procedures use workflow instances.

Launch VNF-LCM from web browser:

`http://<vnflaf-services_ip>/index.html#workflows`

Figure 1 shows the example of VNF Lifecycle Management, where the workflow is shown.

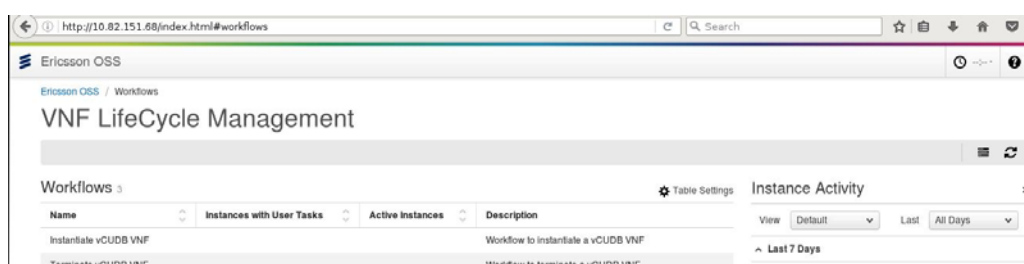


Figure 1 Workflow Overview

3.1 Instantiate vCUDB System

This section describes how to instantiate a VNF using VNF-LCM.

This workflow can be used to install a vCUDB node. To install a vCUDB system, this workflow must be executed several times, one for each VNF comprising the vCUDB system. Instantiations must be launched consecutively without waiting for one to finish before launching the next one.

Note: If a vCUDB system consists of more than 10 vCUDB VNFs, once the instantiations are finished, add multiple SITE_VIP IPs in a live CUDB node. See Section 1.5.1 on page 2 for more information.

3.1.1 Preparation

The following configuration files for one vCUDB system must be available:

- Per vCUDB system:
 - CUDB and application schemas: `<Schema1>` `<Schema2>`, ..., and `<SchemaN>`
 - SQLs: `<SQL1>` `<SQL2>`, ..., `<SQLN>`, `sqlList.txt` and `fixed-entries-pl.ldif`

Note: These files must be placed into the `common_config` directory.



- Per vCUDB VNF:
 - env.yaml: Use the default values supplied in environment_template or populate with customized parameters. Rename the file to env.yaml. Contains the required parameters.
 - main.yaml: HOT file. Rename heat_template file.
 - DS_scaling.yaml: Rename scaling_template, scaling out and scaling in template.

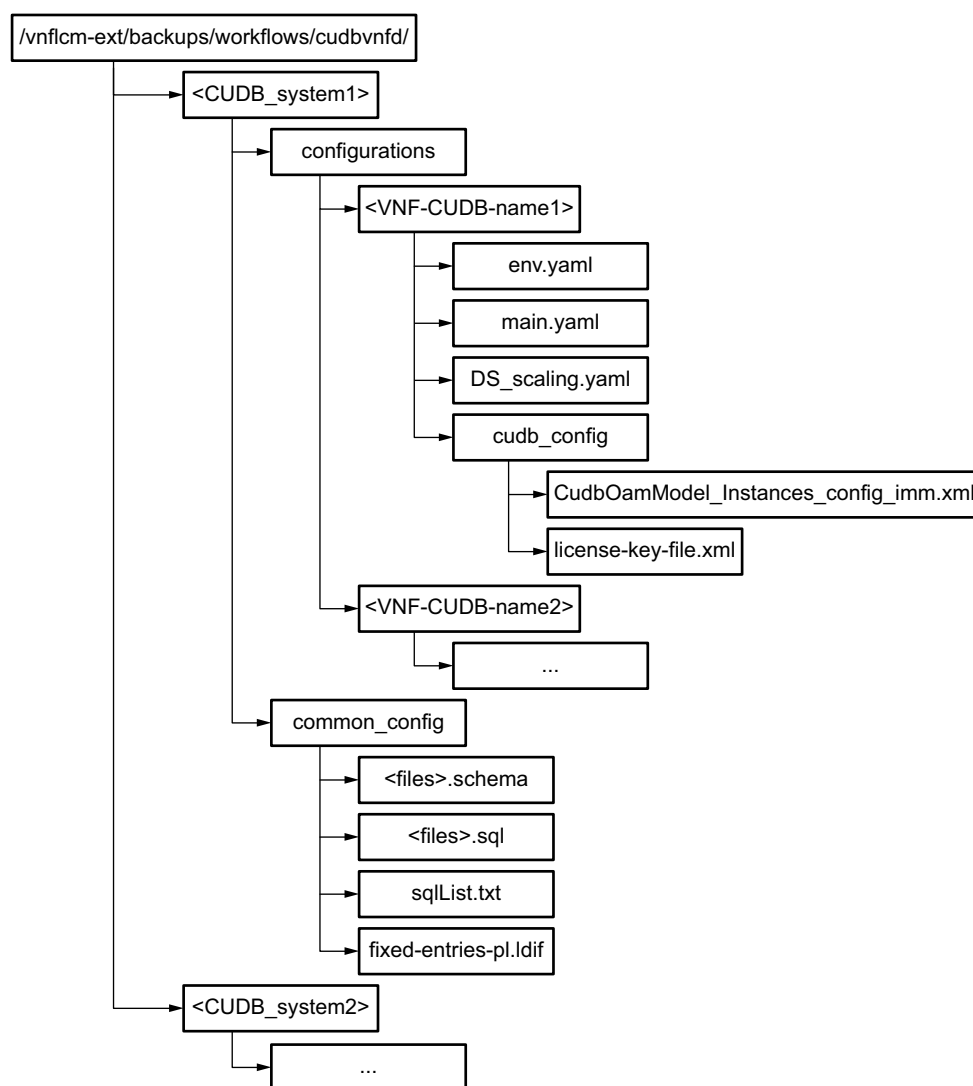
Note: This file must be placed into the configurations/<VNF-CUDB-name> directory.

- Rename licenses files to license-key-file.xml
- Rename initial configuration model to CudbOamModel_Instances_config_imm.xml

Note: This file must be placed into the configurations/<VNF-CUDB-name>/cudb_config directory.

All the previous files must go under /vnflcm-ext/backups/workflows/cudbvnf directory.

The final structure directory is created manually as shown in Figure 2.



... - Structure is repeated both in <VNF-CUDB-nameX> and in <CUDB_systemX>.

Figure 2 Final Structure Directory

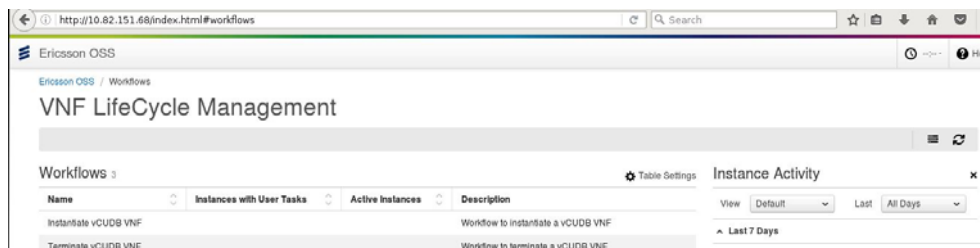
:

Note: Different vCUDB systems can be defined. Select one during instantiation of a VNF. Moreover, one vCUDB system consists of one or several VNFs, that is, CUDB nodes.

All configuration files must be placed manually in the corresponding directories. To find the necessary files, see Section 1.5.1 on page 2.

3.1.2 Instantiate vCUDB VNF

1. In the VNF-LCM Workflows screen, select **Instantiate vCUDB VNF** and click **Start a New Instance**.
2. **Instance Name** field is filled out, click **Submit**.



3. Select the newly-created workflow from the **Instance with User Tasks** panel, and click on the man icon.
4. On the **Workflow Instance** screen, add VNF Name, select VNF descriptor ID to instantiate, and click **Submit**.

The Select VNF descriptor ID field displays VNF configurations available for instantiation in the `/vnflcm-ext/backups/workflows/cudbvnf/d/` directory.

5. On the **Get Instance Configuration** screen, select a VNF configuration to instantiate, and click **Submit**.

Task

Get Instance Configuration Data

Get Instance Configuration

Select Configuration for the VNF instance*

cudb_2_1plus1
cudb_1_standalone
VNF_21
cudb_1_1plus1

Submit Reset

The **Select Configuration for the VNF instance** field displays VNF configurations available for instantiation in the `/vnflcmext/backups/workflows/cudbvnf/vCUDB_1/configurations` directory.

Refresh the web page.

6. On the **Select VIM** screen, select a VIM, and click **Submit**.



Task

Select VIM

Select VIM:

7. On the **Select Tenant** screen, select a Tenant, and click **Submit**.

Task

Select Tenant

Select Tenant

Result: On the **Workflow Instance** screen, click on **Workflow Diagram** and **Workflow Log** to see the progress.

Note: Refresh the web page from time to time.

The workflow log shows the ongoing execution steps. The expected progress information output must be similar to the below example:

1. Select VIM Info.
2. Authenticate Cloud.
3. Create Stack.
4. Wait for LDE nodes.
5. Wait for LDE nodes.
6. Wait for CMW status OK.
7. Regenerate `cluster.conf`.
8. Execute `PartTool`.
9. Copy runtime.
10. `CudbInstall`, first step.



11. Reconfigure `Evip`.
12. `CudbInstall`, second step.
13. Configure `SnmpV3`.
14. Configure `dscp`.
15. `CudbInstall`, third step.
16. Configure `SNMPV2`.
17. Restart services.
18. Set environment variables.
19. Check state.
20. Get `CudbSdpInfo`.
21. Initialize Database (DB).
22. Order maintenance.
23. `PrepareStore` in DB.
24. Order ready in DB.
25. Restart `LdapFes`.
26. `ApplyInitialConfig`.
27. `ApplyInitialConfigC2L`.
28. Check status.
29. Run `CudbSwBackup`.
30. Wait for remote node installation.
31. Run `CudbRemoteTrust`.
32. Start DB replication.
33. Add fixed entries.

3.2 Terminate vCUDB System

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

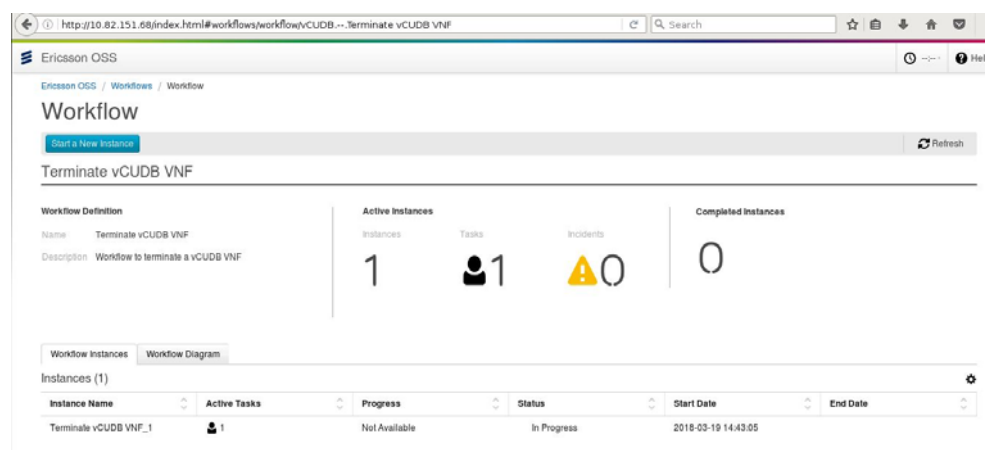
This workflow can be used to decommission a vCUDB system and free the resources by executing it consecutively on each VNF comprising the vCUDB system.



3.2.1 Terminate vCUDB VNF

Continue with this procedure only if the VNF to be terminated is instantiated using the VNF-LCM:

1. In the **VNF-LCM Workflows** screen, select **Terminate vCUDB VNF**, and click **Start a New Instance**.
2. **Instance Name** field is filled out, click **Submit**.
3. Select the newly-created workflow from the **Active Instances** panel and click on the man icon.



Result: Traffic stops after VNF is terminated. On the **Workflow Instances** screen, click on **Workflow Diagram** and **Workflow Log** to see the progress.

Note: Refresh the web page.

4. On the **Select VIM** screen, select a VIM, and click **Submit**.



Task

Select VIM

Select VIM:

Submit

Reset

5. On the **Select Tenant** screen, select a Tenant, and click **Submit**.



Task

Select Tenant

Select Tenant

CUDB-VNF22
CUDB-VNF21

6. On the **Workflow Instances** screen, select the VNF to terminate, and click **Submit**.

Task

Collect user data for Terminate

Terminate VNF instance

Termination Data

Select VNF instance*

Forceful termination: If VNF is forcefully terminated, all ongoing traffic will be lost. This option must be confirmed on the next screen.

Result: The VNF instance is terminated. On the **Workflow Instances** screen, click on **Workflow Diagram** and **Workflow Log** to see the progress.

Note: Refresh the web page.



4 Troubleshooting

If the workflow execution is unsuccessful, see the following options for more information on the cause of failure:

- Workflow Log view.
- Jboss Server log.

```
# tail -f /ericsson/3pp/jboss/standalone/log/server.log
```

Contact Ericsson personnel if support is needed.

- vCUDb, in the case of Instantiate VNF workflow, connect through either sysmgmt or oam vip, and check the automatedInstall.log file in SC_2_1:

```
ssh <cudb_user>@<vip> cd /home/coremw_appdata/incoming/c  
udb-install-temp/automatedInstall.log
```





Glossary

For the terms, definitions, acronyms and abbreviations used in this document, refer to *CUDB Glossary of Terms and Acronyms*, Reference [1].





Reference List

CUDB Documents

- [1] *CUDB Glossary of Terms and Acronyms*, 0033-HDA 104 03/10

ENM CPI Library References

- [2] *VNF-LCM Installation Instructions*, 1/1531-CNA 403 3313
- [3] *ENM Configuration System Administration Guide*, 1/1543-AOM 901 151-1

OSS-RC CPI Library References

- [4] *VNF-LCM CEE/Openstack Installation Instructions*, 1/153 72-APR 901 0578
- [5] *VNF-Lifecycle Manager System Administration Guide*, 1543-APR 901 0578