

CUDB VNF Lifecycle Management

USER GUIDE

Copyright

© Ericsson AB 2016-2018. All rights reserved. No part of this document may be reproduced in any form without the written permission of the copyright owner.

Disclaimer

The contents of this document are subject to revision without notice due to continued progress in methodology, design and manufacturing. Ericsson shall have no liability for any error or damage of any kind resulting from the use of this document.

Trademark List

All trademarks mentioned herein are the property of their respective owners. These are shown in the document Trademark Information.



Contents

1	Introduction	1
1.1	Purpose and Scope	1
1.2	Revision Information	1
1.3	Target Groups	2
1.4	Typographic Conventions	2
1.5	Prerequisites	2
1.5.1	Hardware and Software	3
1.5.2	Configuration Files	3
1.5.3	Other Requirements	4
2	Onboarding	5
3	Procedures	7
3.1	Instantiate vCUDb System	7
3.1.1	Preparation	7
3.1.2	Instantiate vCUDb VNF	10
3.2	Terminate vCUDb System	12
3.2.1	Terminate vCUDb VNF	13
4	Troubleshooting	15
	Glossary	17
	Reference List	19





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.

All manual preparation steps that must be executed by Ericsson personnel are out of the scope of this document. See Section 1.5 on page 2 for more information.

The Instantiate vCUDB system is not applicable 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 13: Updated Step 3.

Rev. C

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

- Section 1.1 on page 1: Updated description.
- Section 1.5 on page 2: Updated description.
- Section 1.5.1 on page 2: Updated the list of virtual and physical hardware and software.
- Section 1.5.2 on page 3: Added as a new section.
- Section 1.5.2.1 on page 3: Added as a new section.
- Section 1.5.3 on page 4: Added as a new section.
- Section 2 on page 5: Updated the CUDB Workflow pack installation step list with `/home/cloud-user` folder name.
- Section 3 on page 7: Added note.
- Section 3.1.1 on page 7: Removed reference and added note.

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 executing any of the workflows.

Ericsson personnel must execute all initial steps included in the manual procedures to provide system preparation and configuration files needed to run the workflow-based lifecycle management procedures.



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).

For example, in case of OSS-RC, to check the correct functioning of VNF-LCM, 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 has 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.

- VNF-LCM disk must be properly dimensioned and the available size must be sufficient to execute the workflows.
- Any extra file not mentioned in that document must be stored in VNF-LCM under `/vnflcm-ext/` directory to prevent the disk from getting full where workflows are executed.
- Virtual infrastructure must be prepared for vCUDB deployment, according to the manual installation instruction.

1.5.2 Configuration Files

1.5.2.1 Instantiate Configuration Files

Contact Ericsson personnel to obtain the following files, after all initial steps included in the installation instruction for vCUDB are executed:

- All schema files required
- License files named `license-key-file.xml`
- `sql` files
- `sqlList.txt` file
- `fixed-entries-pl.ldif` file



- `heat_template` file named `main.yaml`
- `environment_template` file named `env.yaml`
- `scaling_template` file named `DS_scaling.yaml`
- Initial configuration model file named `CudbOamModel_Instances_config_imm.xml`

1.5.3 Other Requirements

Contact Ericsson personnel regarding the following aspects:

- In the case of Instantiate, if the vCUDB system consists of more than 10 vCUDB VNFs, add multiple `SITE_VIP` IPs in a live vCUDB VNF.

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 /home/cloud-user folder by default.

```
# wfmgr bundle install --package=/home/cloud-user
/<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, Reference [5] 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.

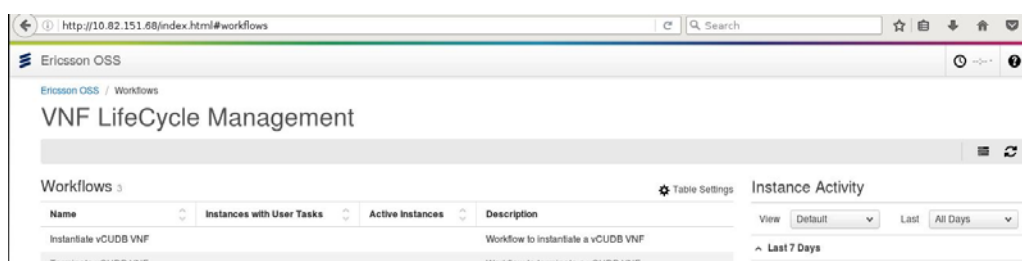


Figure 1 Workflow Overview

Note: If vCUIDB was instantiated without using workflows, a tag must be defined manually in the stack, executing the following steps:

- Select the appropriate stack for updating:

```
source <openrc>
heat stack-list
```
- Update the tag:

```
heat stack-update -x --tags "vCUIDB" <stack_name>
```

3.1 Instantiate vCUIDB System

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

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

Note: If a vCUIDB system consists of more than 10 vCUIDB VNFs, once the instantiations are finished, add multiple SITE_VIP IPs in a live CUIDB node.

3.1.1 Preparation

The following configuration files for one vCUIDB 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`

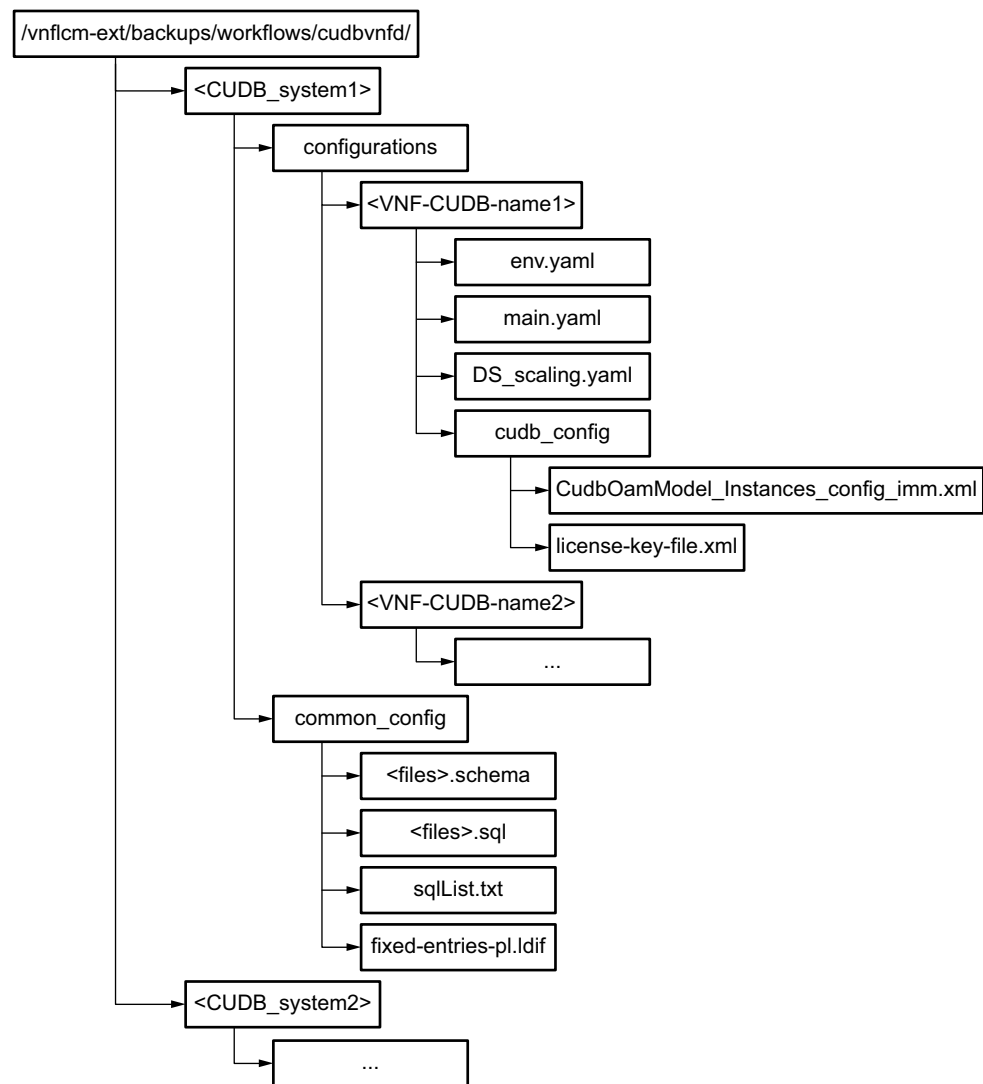
Note: This file must be placed into the `configurations/<VNF-CUDB-name>/cudb_config` directory.

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

Note: Remember that all files must have permission to be executed by `jboss` at least. If it is not the case, change it as follows:

```
cd /vnflcm-ext/backups/workflows/cudbvnfd
chown -R jboss_user:jboss *
```

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.

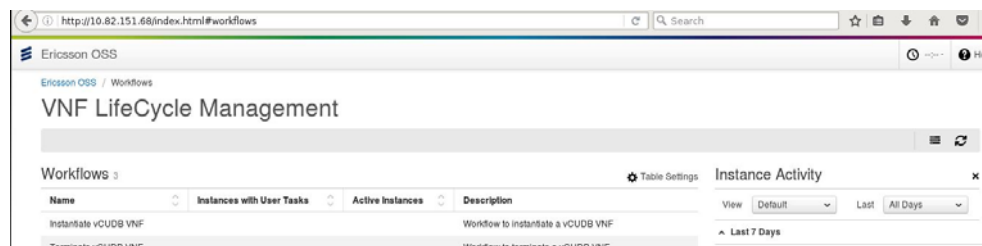
All configuration files must be placed manually in the corresponding directories.



3.1.2 Instantiate vCUDB VNF

3.1.2.1 Start a New Instance

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

The **Select Configuration for the VNF instance** field displays VNF configurations available for instantiation in the `/vnflcm-ext/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:

Submit Reset

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

Task

Select Tenant

Select Tenant

CUDB-VNF22

CUDB-VNF21

Submit Reset

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.

3.1.2.2

Execute Steps

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.

The screenshot shows the 'Workflow' page in the Ericsson OSS interface. The title is 'Workflow' and the subtitle is 'Terminate vCUDB VNF'. There is a 'Start a New Instance' button and a 'Refresh' button. The 'Workflow Definition' section shows the name 'Terminate vCUDB VNF' and the description 'Workflow to terminate a vCUDB VNF'. The 'Active Instances' section shows 1 instance, 1 task, 0 incidents, and 0 completed instances. Below this, there is a table with the following data:

Instance Name	Active Tasks	Progress	Status	Start Date	End Date
Terminate vCUDB VNF_1	1	Not Available	In Progress	2018-03-19 14:43:05	

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**.



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