

CSCF VNF Lifecycle Management

Call Session Control Function

DESCRIPTION

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1 Understanding VNF Life Cycle Management

The Virtual Network Function Life Cycle Management (VNF-LCM) provides a workflow execution environment and a web-based application for managing VNF life cycle procedures. The procedures are realized by executing ordered sequences of steps, called workflows, installed in the VNF-LCM. The workflows can be executed through the Or-Vnfm interface that is a REST API provided by VNF-LCM. Each workflow must be provided with VNF-specific input parameters during execution. For more information on the Or-Vnfm interface, see [ETSI GS NFV-IFA 007](#).

For small stack operation, the workflow manages virtual resources for the VNF by communicating with the Virtual Infrastructure Manager (VIM) API. For example, if Ericsson CEE is used, the HOT API is used at the Vi-Vnfm reference point.

The workflow calls Life Cycle Manager (LCM) scripts to interact with the VNF for VNF-specific operations, such as configuration importing. The LCM scripts access the VNF using the Secure Shell (SSH) or the NETCONF Northbound Interface (NBI).

For full stack operation, the workflow manages virtual resources for the VNF by communicating with the Network Functions Virtualization Orchestrator (NFVO).

Figure 1 shows an overview of a full Ericsson Stack and also the difference to a small stack.

Full Stack and Small Stack

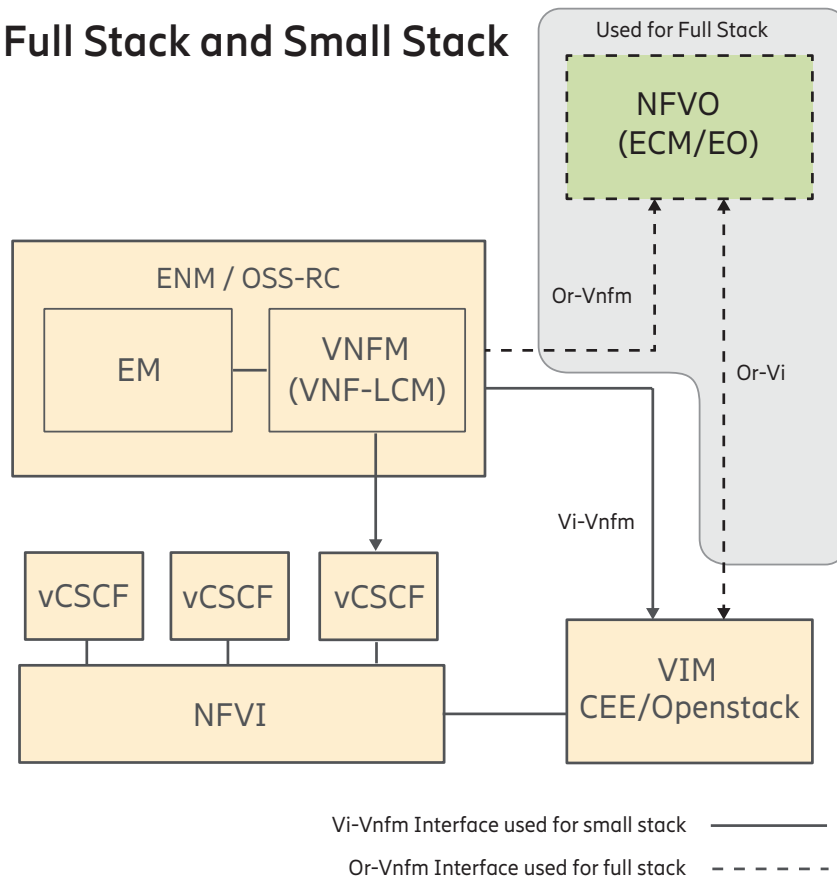


Figure 1 VNF-LCM Overview for Full and Small Stack Deployment Scenarios

The workflows can be executed through the following:

- Ericsson Orchestrator (EO)

For a Full Ericsson Stack, EO can be used to trigger workflows on VNF-LCM through the Or-Vnfm interface.

Note: EO is the only supported NFVO. It can be used only for instantiating and terminating VNFs on OpenStack® VIM.

- VNF-LCM

For a Small Ericsson Stack, VNF-LCM is the only option.

To manage VNF life cycle, it is required to install an Operations Support System for Radio and Core (OSS-RC) on the network. An OSS-RC is the Ericsson product acting as Element Management System (EMS) and specific Virtual Network Function Manager (VNFM) for the VNFs. VNF-LCM is the feature name in OSS-RC that fulfills specific VNFM functionality. For more information about EMS and VNFM, see Network Functions Virtualization (NFV); Architectural Framework, ETSI GS NFV 002, <http://www.etsi.org/standards>.



2 VNF Life Cycle Management Procedures

A VNF life cycle is managed using VNF-LCM, Ericsson Network Manager (ENM), or EO.

The following procedures can be performed:

— Instantiate a VNF

A VNF is selected to be instantiated. The VNF starts handling traffic after the instantiation is finished and all manual post-installation steps are completed.

The procedure [Instantiate OpenStack VNF Using VNF-LCM](#) can be used for instantiating VNFs on OpenStack VIM and [Instantiate VMware VNF Using VNF-LCM](#) for VNFs on VMware VIM.

The procedure [Instantiate OpenStack VNF Using EO](#) can only be used for instantiating VNFs on OpenStack VIM.

— Scale out a VNF

Managed scaling adjusts the size of the VNF. The reason for this can be to adjust the size of the VNF according to the dimensioned Virtual Call Session Control Function (vCSCF) cluster size. Scaling is also used after instantiation to scale out the node to the dimensioned size.

The procedure [Scale out OpenStack VNF Using VNF-LCM](#) can be used for scaling out VNFs on OpenStack VIM and [Scale out VMware VNF Using VNF-LCM](#) for VNFs on VMware VIM.

— Scale in a VNF

Managed scale-in reduces the size of the VNF. It is also possible to point out which Virtual Machine (VM) to scale in. The following is supported:

- Graceful scale-in is used for minimizing the traffic disturbance.
- Forceful scale-in is used when traffic disturbance is acceptable.

The procedure [Scale in OpenStack VNF Using VNF-LCM](#) can be used for scaling in VNFs on OpenStack VIM and [Scale in VMware VNF Using VNF-LCM](#) for VNFs on VMware VIM.

— Automated time-based scaling

Time-based scaling is an automated operation to add or remove one or more computer resources from the scaling domain of the cluster. The VNF-LCM triggers the scale-out and scale-in workflows automatically based on the CSCF Time Based Scaling SNMP alert that raises on the VNF at a predefined time of a day.

For more information on time-based scaling, see [Configure Time-Based Scaling and CSCF Scaling Management](#).

The procedure [Configure Time-Based Scaling](#) can be used for configuring time-based scaling in VNFs on OpenStack and VMware VIMs.

— Terminate a VNF

Terminating a VNF instance means that the VNF is taken out of service and the stack is deleted. The following is supported:

- Graceful termination means the VMs in the cluster are gracefully locked and the VNF instance gradually stops processing traffic. The VNF terminates after the expiration of a specified graceful termination period.

It is possible not to set a graceful termination period, in which case the VNF terminates only when all ongoing traffic stops.

- Forceful termination means that the VNF terminates immediately. All ongoing traffic is lost.

The procedure [Terminate OpenStack VNF Using VNF-LCM](#) can be used for terminating VNFs on OpenStack VIM and [Terminate VMware VNF Using VNF-LCM](#) for VNFs on VMware VIM.

The procedure [Terminate OpenStack VNF Using EO](#) can only be used for terminating VNFs on OpenStack VIM.

— Heal a VNF

Healing a VNF is supported as follows:

- Automatic healing

Automatic healing is set up in autostart-rule when a VNF is onboard. It is triggered when the CLM `Cluster Node Unavailable` alarm is raised from the VNF.

Automatic Healing cannot be triggered by the users. It happens automatically. The users can only check the progress of the Heal VNF workflow.

- Manual healing

Manual healing is triggered by users.

The procedure [Heal OpenStack VNF Using VNF-LCM](#) can only be used for healing VNFs on OpenStack VIM.