ERICSSON

VNF-LCM External REST Northbound Interface

Interwork Description

1/15519-CNA 403 3313 Uen H

Contents

1 VNF-LCM External REST Northbound Interface

> This document describes the external RESTful web service interface (HTTP) provided by the VNF Lifecycle Manager NBI application.

The VNF-LCM NBI application is deployed in ENM to provide operations so that external systems, such as NFV Orchestrator (NFVO) and Element Manager (EM), can execute VNF's lifecycle management use cases.

Functionality Overview

The ENM VNF-LCM application acts as a Specific VNF Lifecycle Manager (S-VNFM) which supports execution of lifecycle management operations for Ericsson Virtual Network Functions (VNFs).

The set of lifecycle management operations to be supported by the VNFM is specified by ETSI NFV Industry Specification Group (ISG). The VNF Lifecycle Manager also exposes those lifecycle operations via an integration reference point towards other management entities.

VNF Lifecycle Manager (VNF-LCM) NBI provides a machine-to-machine interface to external systems, such as Network Functions Virtualization (NFV) Orchestrator (NFVO) and Element Manager (EM), to execute a VNF's lifecycle management use cases.

VNF-LCM NBI provides two sets of external interface endpoints:

1. Ericsson implementation of ETSI NFV MANO Or-Vnfm Reference Point Standard Interface, offering the following operations:
    a. VNF Lifecycle Management interface (VNFM exposed interfaces)
        - Create VNF Identifier
        - Delete VNF Identifier
        - Query VNF
        - Instantiate VNF
        - Get Operation Status
        - Scale VNF
        - Operate VNF
        - Modify VNF

- Heal VNF
- Change current VNF Package
- Terminate VNF

b. VNF Lifecycle Change Notification interface
   - Notifications towards NFVO

c. VNF Lifecycle Operation Granting interface
   - Grant towards NFVO

Refer to Appendix A for details on this interface.

2. Ericsson implementation of ETSI NFV MANO Ve-Vnfm-em Reference Point Standard Interface, offering the following operations.

   a. **VNF Lifecycle Management interface (VNFM exposed interfaces)**
      - Create VNF Identifier
      - Delete VNF Identifier
      - Query VNF
      - Instantiate VNF
      - Terminate VNF
      - Get Operation Status
      - Scale VNF
      - Operate VNF
      - Modify VNF
      - Heal VNF
      - Change current VNF package

   b. **VNF Lifecycle Change Notification interface**
      - Notifications towards EM

Refer to Appendix A for details on this interface.

Prerequisites

- A valid license for VNF-LCM is installed.

- To support secure communication from the external northbound system, a certificate must be installed in the northbound system.
- External system's (NFVO) certificate is installed on VNF-LCM.
- NFVO configuration is added in the nfvoconfig.json file under `/vnflcm-ext/` current directory.
- The VNF package is on-boarded to `/vnflcm-ext/current/vnf_package_repo/${vnfdId}` directory and VNFD wrapper JSON file is on-boarded under it.
- A valid Username and Password, to access the ENM System.
- A fully deployed ENM System.

Changes from Previous Release

- Change current VNF package api is added in this version.

Glossary of Terms

Refer to the ENM Glossary of Terms for description of the terms used in this document.

2 Using the VNF-LCM Northbound Interface

Basic REST Concepts

All services are accessible through the standard HTTP interface. The interface is designed along RESTful principles:

- Client-server communication is stateless.

  The information is stored and managed at the client side, and has to be resent with every request concerned.

- REST resources may be addressed using URIs.
- Standard HTTP methods (GET / POST / PUT / DELETE) can be used to manipulate these resources unless otherwise indicated.
- Error reporting is through standard HTTP response codes and messages.
- Expected input parameter encoding is:
  - Standard GET query strings attached to the base URL in GET request. Example:

    ```
    ?param1=value1&param2=value2
    ```

  - Standard POST form encoding in POST requests with MIME type application/hal+json.
  - Standard RESPONSE form encoding in GET responses with MIME type application/hal+json
- Responses are encoded in JavaScript Object Notation (JSON) format. Refer to RFC 3986 specification for additional information about the JSON format.

For additional information about the standards, refer to VNF-LCM NBI References RFC 2616, RFC 3986, and RFC 4627.

Base URL

The RESTful services are accessible from `https://<customer-domain>/vnflcm`

Note: The exact root context is subject to change.

Hypermedia (HAL)

HAL is included in this interface: a "_links" keyword is available where it is possible to specify links.

Note: In accordance to the HAL specifications, a "self" link is mandatory.

In the context of an endpoint related to a resource, HAL describes other resources having an association with it.

In the context of root endpoints, HAL describes the endpoints for the supported services (for example: /bulk points to import and export services) without a specific reference to a resource.

2.1 Authentication

Establish a session with the ENM system. The session is required to call the VNF-LCM NBI operations.

Refer to *Export ENM PKI Root CA Certificate* section in *ENM Public Key Infrastructure System Administrator Guide*, 2/1543-AOM 901 151-3 for details, and to *Establish a User Session over REST*, and *Curl examples for Identity and Access Management* sections in the ENM Identity and Access Management Programmer's Guide for details.

2.2 Usage of the Ericsson Implementation of ETSI Or-Vnfm Interface APIs

Establish a session using the procedure mentioned in the Authentication section to invoke any of the APIs.

Use the cookie created in the authentication section while invoking the APIs listed in the Appendix A.

Example on how to create a VNF Identifier API:

```
curl -v -H "Content-Type: application/json" --cacert <certificate.pem> -b cookie →
.txt -d '{"vnfdId":"vnflaf","vnfInstanceName":"vnf-1","vnfInstanceDescription":" →
vnf-1-Desc","additionalParams":{"onboardedVnfPkgInfoId":"vnflaf_cee"}}' -X POST →
 https://<customer-domain>/vnflcm/v1/vnf_instances
```

3 Appendix A - VNF-LCM External REST Northbound Interface

Refer to appropriate html file for VNF-LCM External REST Northbound Interface specification:

— For VNF-LCM ETSI NFV MANO Or-Vnfm external interface specification see OrVnfm_Ericsson.html, 190 89-LZN 708 0882-2, [6] file.

— For VNF-LCMETSI NFV MANO Ve-Vnfm-em external interface specification see VeVnfmem_Ericsson.html, 190 89-LZN 708 0882-4, [7] file.

Reference List

[1] *ENM Glossary of Terms*, 1/0033-AOM 901 151

[2] RFC 2616, *Hypertext Transfer Protocol – HTTP/1.1*, Available on ietf.org website, section Protocol Parameters

[3] RFC 3986, (plus errata) - the current generic URI syntax specification, Available on ietf.org website, section Protocol Parameters

[4] RFC4627, The application/json Media Type for JavaScript Object Notation (JSON), Available on ietf.org website, section Protocol Parameters

[5] *VNF-Lifecycle Manager System Administration Guide*, 1543-APR 901 0578 Uen

[6] OrVnfm_Ericsson.html, 190 89-LZN 708 0882-2

[7] VeVnfmem_Ericsson.html, 190 89-LZN 708 0882-4

[8] *ENM Identity and Access Management Programmer's Guide*, 19817-CNA 403 3016