

Upgrade Guide

Virtual Multimedia Resource Function

User Guide

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1 About This Document

This document describes the manual vMRF upgrade and rollback process on a cloud service. During the manual upgrade process, the user must perform the upgrade-related tasks manually, using application scripts and the deployment-related functions in the cloud environment. The manual upgrade process must be used until the Ericsson Network Manager (ENM) becomes available. In the ENM, the upgrade process, which involves deployment of a new VNF and migrating the configuration, will be offered as a fully automated solution.

This document is written for vMRF operator personnel who are responsible for upgrading vMRF. The vMRF operator is assumed to be a cloud service consumer, that is, an end user on a cloud service. The end user is also referred to as a tenant.



2 Manual Upgrade Methods for vMRF

The network-redundant upgrade process can be performed when two VNFs are available in parallel during normal operation, as described in [Network-Redundant Upgrade](#) on page 2.

Alternatively, manual in-service upgrade process, as described in [vMRF In-Service Upgrade](#) on page 5, requires that temporarily two VNFs are running in parallel, and there is no traffic impact during the upgrade process.

2.1 Network-Redundant Upgrade

This procedure describes how to upgrade vMRF with network redundancy available. This procedure can be performed when two VNFs are available in parallel during normal operation. [Figure 1](#) shows the network-redundant upgrade process.

1. Export data

Configuration data is exported from the vMRF.

2. The vMRF is locked. After lock, the vMRF does not handle sessions, so it stops processing traffic.
3. The vMRF is scaled-in and removed.
4. A new version of vMRF is deployed.

The configuration data exported previously is imported into the new version. After that, the new version of vMRF already starts processing traffic.

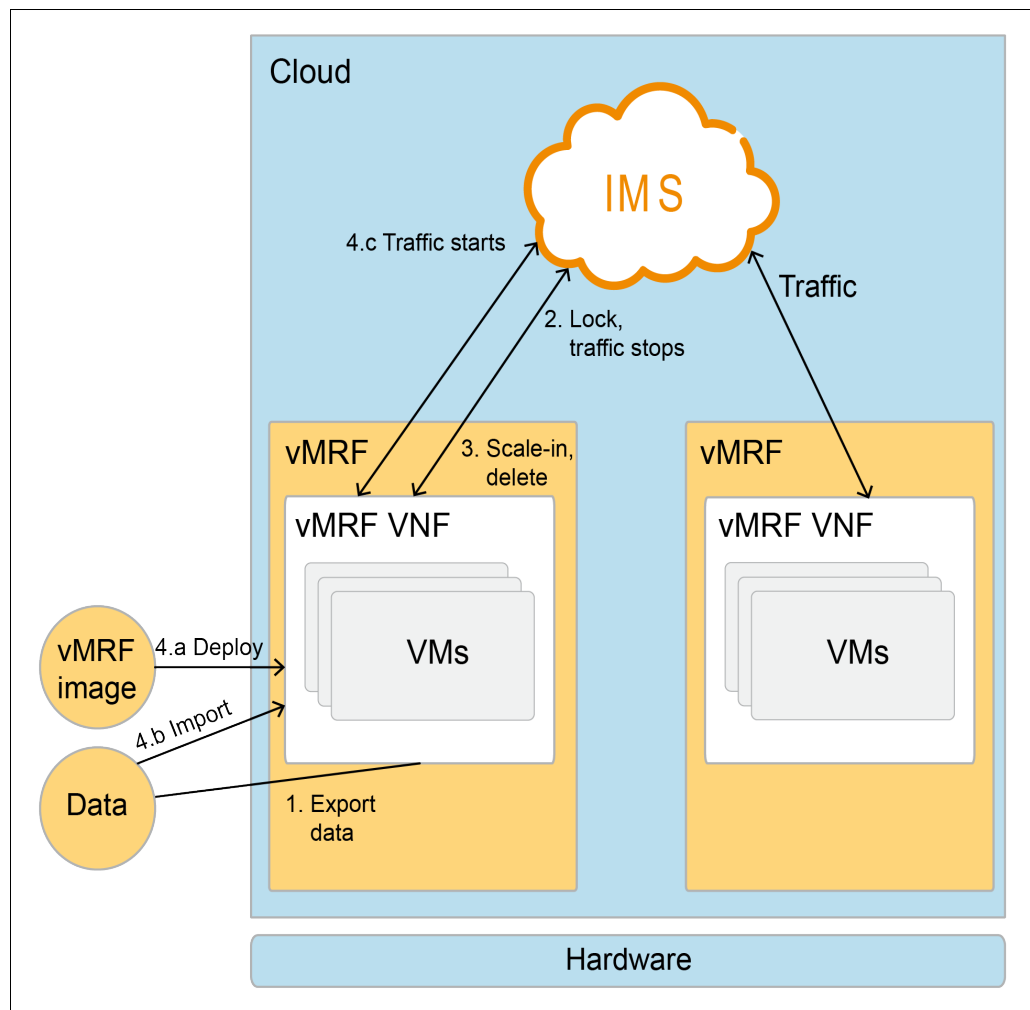


Figure 1 vMRF Network-Redundant Upgrade

2.1.1 Export Configuration Data from the Old Version

Steps

1. Open an SSH connection to the O&M IP address of the old version of the vMRF VNF instance using the following command:

```
ssh <user ID>@<O&M IP address>
```

2. Run the following command:

```
/opt/mrf_director/mrf_export_conf.py /home/<user ID>/  
<output file without extension>
```

**Result**

The configuration data is exported into a specified `.tar.gz` archive file (the default and recommended format).

3. Copy the exported configuration file out of the file system of the VNF using, for example, `scp`:

```
scp <user ID>@<O&M IP address>:/home/<user ID>/
mrf_conf.tar.gz .
```

Result

The configuration file `mrf_conf.tar.gz` is copied from the `/home/<user ID>/` folder in the file system of the vMRF VNF to the current directory.

2.1.2 Lock and Scale-in VMs

Steps

1. Lock all the deployed VMs in the old version of the vMRF VNF instance, by performing the following steps:

- a. Open an SSH connection to the O&M IP address of the vMRF VNF using the following command:

```
ssh <user ID>@<O&M IP address>
```

- b. Start a session by issuing the `cliss` command.
- c. Navigate to the *MrfInstance* MO that represents the VM and enter configure mode:

```
>ManagedElement=1,MediaResourceFunction=1,MrfResource=1,MrfInstance=<mrfInstanceId>
```

```
(MrfInstance=<mrfInstanceId>)>configure
```

- d. Modify the value of the `administrativeState` attribute:

```
(config-
MrfInstance=<mrfInstanceId>)>administrativeState
=<LOCKED>
```

- e. Commit the changes:

```
(config-MrfInstance=<mrfInstanceId>)>commit
```

- f. Repeat steps from [Step 1.b](#) to [Step 1.e](#) for all VMs.

Result

The VM is locked immediately.



2. Scale in all the deployed VMs of the instance, as described in *vMRF Configuration Management*.

2.1.3

Deploy the New Version

1. Using the proper *deployment instructions*, deploy the new version of vMRF with **one or two VMs**, and check that it is running properly. Ensure that the new version connects to the same external networks as the old version. It is recommended to import the configuration data during deployment.
2. If you have imported configuration data during deployment, continue with [Step 6](#). Otherwise, continue with the next step.
3. Open an SSH connection to the O&M IP address of the new version of the vMRF VNF instance using the following command:

```
ssh <user ID>@<O&M IP address>
```

4. Copy the configuration data file exported from the **old** version to the file system of the **new** version using, for example, `scp`:

```
scp mrf_conf.tar.gz <user ID>@<O&M IP address>:/home/  
<user ID>
```

Result

The configuration file `mrf_conf.tar.gz` is copied from the current directory to the `/home/<user ID>/` folder in the file system of the vMRF VNF.

5. Run the following command:

```
/opt/mrf_director/mrf_import_conf.py /home/<user ID>/  
mrf_conf.tar.gz
```

6. Check that traffic processing in the new version of the vMRF VNF instance is working properly.

The new version starts processing traffic. If there are problems with the new version that cannot be solved and that are considered unacceptable, continue with [Rollback Procedure](#) on page 10.

2.2

vMRF In-Service Upgrade

The vMRF in-service manual upgrade process involves deployment of a new VNF and migrating the configuration. This method requires that temporarily two VNFs are running in parallel.

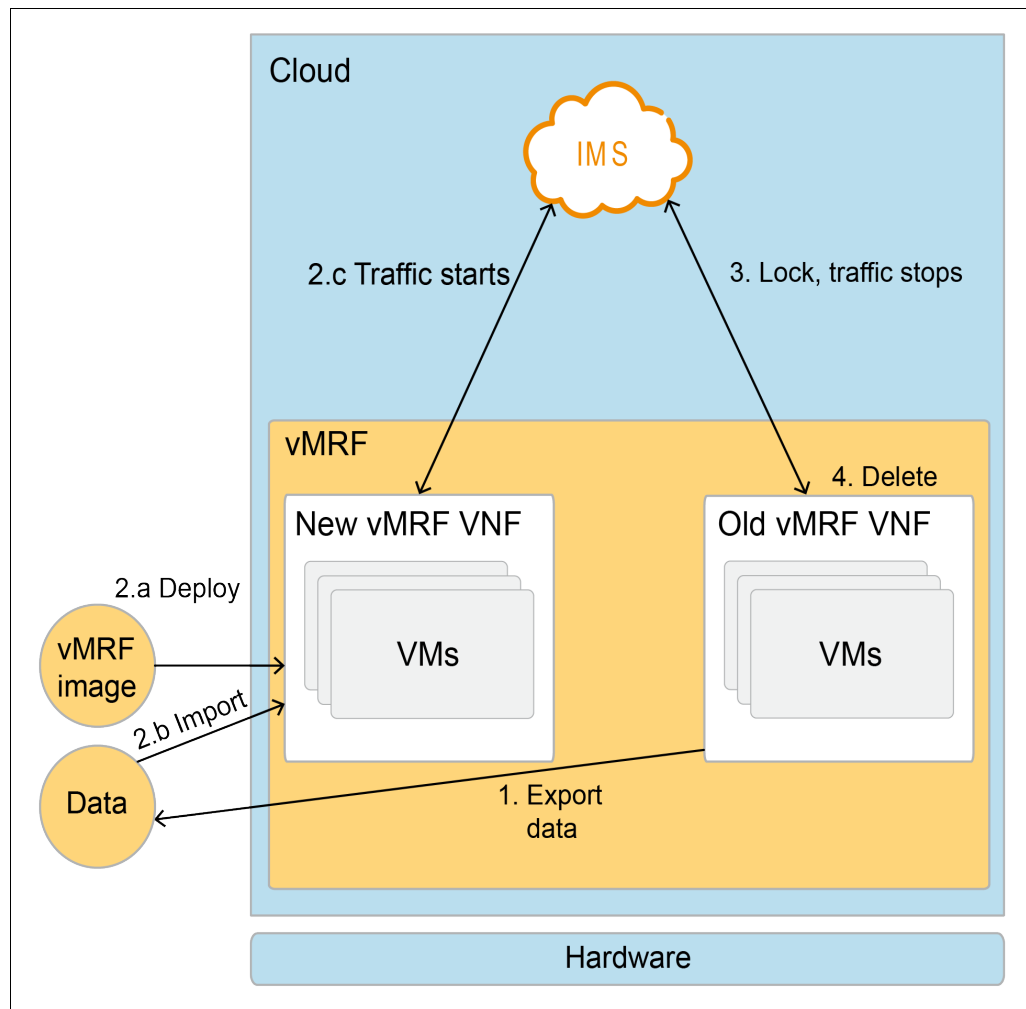


Figure 2 vMRF In-Service Upgrade

1. Export data

Configuration data is exported from the old version of vMRF.

2. Deploy the new version of vMRF

The new version is deployed with only a few VMs to minimize the potential impact on traffic of a software fault in the new version. The configuration data exported from the old version is imported into the new version. After that, the new version of vMRF already starts processing traffic.

It is recommended to monitor the new version of vMRF. If the new version has any severe problems, the upgrade must be rolled back.

3. Commit to using the new version of vMRF



The new version is scaled out to the actual number of VMs and the old version is locked. After the lock, the old version of vMRF does not handle sessions, so it stops processing traffic.

It is recommended to monitor the new version of vMRF until it has fully taken over the traffic. If any severe problems are found, the upgrade must be rolled back.

4. Remove the old version of vMRF

If the new version is considered to be operating on a sufficient level, the old version can be removed. It is also possible to keep the old version and run the old and new versions in parallel if, for example, there is a requirement to have a longer testing period for the new version.

2.2.1 Export Configuration Data from the Old Version

Steps

1. Open an SSH connection to the O&M IP address of the old version of the vMRF VNF instance using the following command:

```
ssh <user ID>@<O&M IP address>
```

2. Run the following command:

```
/opt/mrf_director/mrf_export_conf.py /home/<user ID>/  
<output file without extension>
```

Result

The configuration data is exported into a specified `.tar.gz` archive file (the default and recommended format).

3. Copy the exported configuration file out of the file system of the VNF using, for example, `scp`:

```
scp <user ID>@<O&M IP address>:/home/<user ID>/  
mrf_conf.tar.gz .
```

Result

The configuration file `mrf_conf.tar.gz` is copied from the `/home/<user ID>/` folder in the file system of the vMRF VNF to the current directory.

2.2.2 Deploy the New Version



Steps

1. Using the proper *deployment instructions*, deploy the new version of vMRF with **one or two VMs**, and check that it is running properly. Ensure that the new version connects to the same external networks as the old version. It is recommended to import the configuration data during deployment.

Note: In OSS-RC, make sure to create a new VNF as well, due to the different O&M IP addresses used for the old and the new VNFs.

2. If you have imported configuration data during deployment, continue with [Step 6](#). Otherwise, continue with the next step.
3. Open an SSH connection to the O&M IP address of the new version of the vMRF VNF instance using the following command:

```
ssh <user ID>@<O&M IP address>
```

4. Copy the configuration data file exported from the **old** version to the file system of the **new** version using, for example, `scp`:

```
scp mrf_conf.tar.gz <user ID>@<O&M IP address>:/home/  
<user ID>
```

Result

The configuration file `mrf_conf.tar.gz` is copied from the current directory to the `/home/<user ID>/` folder in the file system of the vMRF VNF.

5. Run the following command:

```
/opt/mrf_director/mrf_import_conf.py /home/<user ID>/  
mrf_conf.tar.gz
```

6. Check that traffic processing in the new version of the vMRF VNF instance is working properly.
7. If the operation of the new version is considered acceptable, continue with [Commit to Using the New Version](#) on page 8.

If there are problems with the new version that cannot be solved and that are considered unacceptable, do not proceed with the upgrade, continue with [Rollback Procedure](#) on page 10.

2.2.3

Commit to Using the New Version

Steps

1. Scale out the new version of the VNF by increasing the number of VMs to the full capacity of the VNF.



Note: If there are not enough resources to scale out the new instance while the old instance still exists, scale in the old instance, as described in *vMRF Configuration Management*. Always keep one VM in the old VNF.

If there are problems with the new version during or after scaling out that cannot be solved and that are considered unacceptable, do not proceed with the upgrade, continue with [Rollback Procedure](#) on page 10 to roll back the upgrade.

2. Lock all the deployed VMs in the old version of the vMRF VNF instance, by performing the following steps:
 - a. Open an SSH connection to the O&M IP address of the vMRF VNF using the following command:


```
ssh <user ID>@<O&M IP address>
```
 - b. Start a session by issuing the `cliss` command.
 - c. Navigate to the *MrfInstance* MO that represents the VM and enter configure mode:


```
>ManagedElement=1,MediaResourceFunction=1,MrfResource=1,MrfInstance=<mrfInstanceId>

(MrfInstance=<mrfInstanceId>)>configure
```
 - d. Modify the value of the `administrativeState` attribute:


```
(config-
MrfInstance=<mrfInstanceId>)>administrativeState
=<LOCKED>
```
 - e. Commit the changes:


```
(config-MrfInstance=<mrfInstanceId>)>commit
```
 - f. Repeat steps from [Step 2.c](#) to [Step 2.e](#) for all VMs.

Result

The VM is locked immediately.

2.2.4 Remove the Old Version

It is possible to keep the old version and run the old and new version in parallel if, for example, there is a requirement to have a longer testing period for the new version. If the old version is no longer needed, remove it.



3 Rollback Procedure

If there are problems with the new version that cannot be solved and that are considered unacceptable, the latest upgrade must be rolled back.

Steps

1. If any severe problems are found in the new vMRF VNF instance while the old VNF still exists, lock the new version by locking all the deployed VMs.

- a. Open an SSH connection to the O&M IP address of the vMRF VNF using the following command:

```
ssh <user ID>@<O&M IP address>
```

- b. Start a session by issuing the `cliss` command.
- c. Navigate to the *MrfInstance* MO that represents the VM and enter configure mode:

```
>ManagedElement=1,MediaResourceFunction=1,MrfResource=1,MrfInstance=<mrfInstanceId>
```

```
(MrfInstance=<mrfInstanceId>)>configure
```

- d. Modify the value of the `administrativeState` attribute:

```
(config-MrfInstance=<mrfInstanceId>)>administrativeState=  
=<LOCKED>
```

- e. Commit the changes:

```
(config-MrfInstance=<mrfInstanceId>)>commit
```

2. Create a report, and attach troubleshooting data according to the *Data Collection Guideline for vMRF*. Send the report to the Ericsson support organization.
3. If required by the Ericsson support organization, keep the new version of vMRF for debugging purposes. Otherwise, remove the new version.

Result

The upgrade is rolled back, you can exit this procedure.