

# Increase Capacity with Heat Orchestration

## OPERATING INSTRUCTIONS

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Increase Capacity with Heat Orchestration



# 1 Description

This instruction describes how to increase the capacity of the Call Session Control Function (CSCF) cluster, that is, to scale out, by adding a Virtual Machine (VM) to it.

This document always refers to horizontal scaling, where the scalability of the system is provided by multiple instances to distribute the load in parallel for having the capacity needed. Vertical scaling is not considered in this document.

The scaling function does not require a license.

**Note:** Even though the PL-3 and PL-4 Virtual Machines (VMs) are considered to be part of the scaling domain, they cannot be scaled in.

## 2 Procedure

### 2.1 Increase Capacity with Heat Orchestration

#### Prerequisites

- This instruction references the following documents:
  - [CSCF Health Check](#)
  - [Ericsson Command-Line Interface User Guide](#)
- No tools are required.
- The following conditions must apply:
  - The procedure must only be performed by support personnel with experience of Cloud and the CSCF.
  - No other upgrade or maintenance activity must be performed during the procedure.
  - Before starting these procedures, the user performing the operations must have access to the System Controller (SC) nodes.
  - Signaling Manager Command-Line Interface (CLI) or Graphical User Interface (GUI) must be closed before the start of the Scaling Operations. Manual updates of the configurations during Scaling Operations are not allowed.
  - A Virtual Infrastructure Manager (VIM) is available.



- An Ericsson Command-Line Interface (ECLI) session in Exec mode is in progress.

### Steps

1. Prepare for scaling, see Section 2.2 Prepare for Scaling on page 2.
2. Increase capacity, see Section 2.3 Configure Scale-Out on page 2.

## 2.2 Prepare for Scaling

### Steps

1. Connect to one of the SC nodes:

```
ssh <user>@<system management IP address>
```

2. Check the operational state of the scaling feature:

```
SC-1: ~ # cmw-configuration --status SCALING
```

The following is an example output:

```
Disable
```

3. If the result is Enable, scaling is prepared. Exit this procedure.
4. If the result is Disable, enable scaling functionality:  

```
SC-1: ~ # cmw-configuration --enable SCALING
```
5. Before any scaling-related activities are performed, create a system backup.  
See [Create Backup](#).
6. Check that the cluster is in a healthy state, see [CSCF Health Check](#).

## 2.3 Configure Scale-Out

### Steps

1. Make sure that the scaling feature is enabled and a system backup is created, see Section 2.2 Prepare for Scaling on page 2.
2. Check that the cluster is in a healthy state, see [CSCF Health Check](#).
3. Check that the status of the CSCF stack is CREATE\_COMPLETE or UPDATE\_COMPLETE:

```
openstack stack list
```

If the status of the stack is not CREATE\_COMPLETE or UPDATE\_COMPLETE, stop the scaling procedure. For information on how to identify and correct the stack status, see the VIM documentation.



4. Check the value of parameter `number_of_scaled_out_PL_VMs`.

```
openstack stack show <CSCF stack name> | \
grep number_of_scaled_out_PL_VMs
```

5. Increase the value of parameter `number_of_scaled_out_PL_VMs` by the number of VMs to be scaled out.

For example: The current value of the parameter `number_of_scaled_out_PL_VMs` is 1 (meaning: beyond the initial size of 2+2; the cluster contains an extra VM/PL, so the size of the VNF is actually 2+3). To increase the size of the cluster to 2+5, that is, scale out by 2 VMs, the new value of the parameter is 3.

6. Update the stack:

```
openstack stack update -t vcscf_hot.yaml -e
vcscf_env.yaml <CSCF stack name> --parameter \
number_of_scaled_out_PL_VMs=<number_of_scaled_out_PL_VMs>
```

7. Monitor the progress of the stack-update until the stack status is `UPDATE_COMPLETE`:

```
openstack stack list
```

8. If the stack status is not `UPDATE_COMPLETE`, check the reason and Troubleshoot the issue as described in [CSCF Troubleshooting Guideline](#) and then repeat Step 6:

```
openstack stack show <CSCF stack name>
```

9. Navigate to the CrM MO, for example:

```
>dn ManagedElement=1,SystemFunctions=1,\
SysM=1,CrM=1
```

10. Verify that the new VMs are added and enabled, for example:

```
(CrM=1)>show -r
```

**Note:** It takes a few minutes until the VMs added in the stack shows up in the CrM MO.

```
CrM=1
autoRoleAssignment=ENABLED
ComputeResourceRole=PL-5
adminState=UNLOCKED
instantiationState=INSTANTIATED
operationalState=ENABLED
provides="ManagedElement=1,SystemFunctions=1,SysM=1,CrM=1,Role=PLs"
uses="ManagedElement=1,Equipment=1,ComputeResource=PL-5"
```

11. Perform a health check, see [CSCF Health Check](#).