

# Change Geographical Redundancy to Active-Active

Ericsson Service-Aware Policy Controller

## OPERATING INSTRUCTION

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Change Geographical Redundancy to Active-Active



# 1 Change Geographical Redundancy to Active-Active Description

This document describes how to change a live SAPC Geographical Redundancy from Active-Standby to Active-Active.

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## Warning!

Only Physical Network Function (PNF) deployments support this procedure to change to Active-Active Geographical Redundancy.

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## 1.1 Change Geographical Redundancy to Active-Active Prerequisites

The following sections describe the documents, conditions, and tools required for the procedure.

### Active-Standby Geographical Redundancy configuration in SAPC1 and SAPC2

The procedure assumes:

- SAPC1 is configured as Preferred Node and acting as **Active**
- SAPC2 is configured as Non Preferred Node and acting as **Standby**

**Note:** To identify if the SAPC is acting as **Active** or **Standby**, follow the instructions of section **Monitor Geographical Redundancy State** in *Active-Standby Geographical Redundancy* on both SAPC peers. Also, to check if the SAPC acting as **Active** is configured as **Preferred**, follow the instructions of section **Check Geographical Redundancy Configuration** in *Active-Standby Geographical Redundancy*.

If the SAPC acting as **Active** is configured as **Non Preferred**, follow the instructions of section **Configure Active SAPC as Preferred** in *Change Preferred Role in Active-Standby Geographical Redundancy* to change its configuration to Preferred.

### Network connection and routing for SAPC1 and SAPC2

- See *Active-Active Geographical Redundancy Network Configuration Guide* for the new infrastructure requirements.



To change from Active-Standby to Active-Active Geographical Redundancy, perform IP Addressing modifications in SAPC1 and SAPC2, agreed with the customer before configuring the SAPC nodes.

Table 1 IP Address Changes

IP Address (Suggested Value)	Usage in Active-Standby Mode	Usage in Active-Active Mode
<VIP-OAM> SAPC1	OAM IP Address for the first SAPC	Same as in Active-Standby mode.
<VIP-OAM> SAPC2	OAM IP Address for the second SAPC	Same as in Active-Standby mode.
<VIP-Provisioning>	Provisioning IP Address shared between two nodes	Provisioning IP address for the first SAPC. This additional VIP is accessible from the External Network through the same FEEs as VIP-OAM.
<VIP-Traffic> (1)	Traffic IP address shared between two nodes	Traffic IP address for the first SAPC. It is also the VIP address that the SAPC exposes for the Application Channel to the second SAPC.
<VIP-Replication> SAPC1	Replication IP address for the first SAPC	Same as in Active-Standby mode.
<VIP-Replication> SAPC2	Replication IP address for the second SAPC	Same as in Active-Standby mode.
<VIP-Provisioning> SAPC2	N/A	New Provisioning IP address for the second SAPC. This additional VIP is accessible from the External Network through the same FEEs as VIP-OAM.
<VIP-Traffic> SAPC2 (1)	N/A	New Traffic IP address for the second SAPC. It is also the VIP address that the SAPC exposes for the Application Channel to the first SAPC.

(1) Several Traffic VIPs can be configured.

For Active-Standby Geographical Redundancy scenarios, Open Shortest Path First (OSPF) in the External network is mandatory, as there is only one connection point to the redundant SAPC pair from the external network independently of the node



that is handling traffic and provisioning. However, for Active-Active Geographical Redundancy deployments, static routes are recommended to interoperate with the External networks. Therefore, consider some routing changes in the External Network.

### **Documents**

Before starting this procedure, read the following documents:

- Personal Health and Safety Information
- System Safety Information
- Active-Active Geographical Redundancy
- Application-specific documents describing the configuration to be used in the new SAPC







## 2 Change Geographical Redundancy to Active-Active Procedure

This section describes the change procedure for Geographical Redundancy to Active-Active mode. Some steps require coordination between the two SAPCs, while others can be performed independently. If coordination is required, it is clearly stated in the relevant step.

### 2.1 Procedure in Non Preferred SAPC (SAPC2)

1. To stop SAPC2 acting as **Standby**, follow the instructions of section **Disable Active-Standby Geographical Redundancy** in *Temporarily Disable Active-Standby Geographical Redundancy*. This procedure stops replication and changes the state to **Halted**.
2. Modify templates in the BSP 8100 to adapt for Active-Active Geographical Redundancy deployments by following the instructions of the **BSP 8100 Installation and Configuration** section in *SAPC PNF Deployment Instruction*.

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#### Attention!

At this stage, Step 2 applies only to BSP.

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3. Access the physical blade where the SC-1 virtual machine (VM) is hosted.

```
InstallationServer:# ssh root@Host_1
```

4. Modify the `/mnt/images/adapt_cluster.cfg` as follows:

- a. Modify provisioning and traffic VIPs in the **[Network]** section. For further details, refer to *Adapt Cluster Tool*:

#### **[Network]**

**PROV\_VIP =<VIP-Provisioning SAPC2>**

Change to the new VIP address for provisioning in SAPC2. For further information, refer to *Active-Active Geographical Redundancy Network Configuration Guide*.

**<TRAFFIC>\_VIP =<VIP-Traffic SAPC2>**

Change to the new VIP address for traffic in SAPC2. For further information, refer to *Active-Active Geographical Redundancy*



Network Configuration Guide. The number of traffic VIPs to be modified depends on the Traffic Solution implemented.

- b. Modify the **[GeoRed]** section to add specific configuration for Active-Active Geographical Redundancy. For further details, refer to Adapt Cluster Tool:

#### **[GeoRed]**

**LOCAL\_APP\_VIP = <VIP-Traffic SAPC2> <ALB for Traffic>**

Set VIP address and ALB in the local cluster for geographical redundancy supervision and control in the Traffic Channel link. For further information, refer to Active-Active Geographical Redundancy Network Configuration Guide.

**PEER\_APP\_IP = <VIP-Traffic SAPC1>**

Set VIP address in the remote cluster for geographical redundancy supervision and control in the Traffic Channel link. For further information, refer to Active-Active Geographical Redundancy Network Configuration Guide.

**ACT\_ACT = true**

Select the Active-Active Geographical redundancy solution.

5. Generate the `adapt_cluster.iso` file with the following command:

```
Host_1:# genisoimage -r -joliet-long -o /mnt/images/adapt_cluster.iso /mnt/images/adapt_cluster.cfg /mnt/images/PL_interfaces
```

The resulting ISO file (`/mnt/images/adapt_cluster.iso`) already contains the configured `adapt_cluster.cfg` file and the generated `PL_interfaces` file. The ISO file is ready to be injected to the SAPC SC-1 VM during its boot. No additional intervention is needed to perform this injection.

6. Copy the following files from the blade hosting SC-1 to the blade hosting SC-2 to create a backup.

```
Host_1:# scp /mnt/images/adapt_cluster.cfg root@Host_2:/mnt/images/
```

```
Host_1:# scp /mnt/images/adapt_cluster.iso root@Host_2:/mnt/images/
```

```
Host_1:# scp /mnt/images/PL_interfaces root@Host_2:/mnt/images/
```

7. Reboot all VMs:

```
Host_1:# /mnt/store/SAPC/host-config/scripts/management/sapc_vm-manager_cxp9030138.sh -c restart -x
```



8. Check if the **adapt\_cluster** script finishes correctly as explained in [Adapt Cluster Tool](#).
9. Modify routing configuration in the External Network to allow static routing to new traffic and provisioning VIPs for SAPC2.

Once the configuration is applied, the SAPC2 continues in **Halted** state. It is ready to be started after configuring the SAPC1 as Active-Active Geographical Redundancy SAPC.

## 2.2 Procedure in Preferred SAPC (SAPC1)

1. Modify templates in the BSP 8100 to adapt for Active-Active Geographical Redundancy deployments by following the **BSP 8100 Installation and Configuration** section in [SAPC PNF Deployment Instruction](#).

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### Attention!

At this stage, Step 1 applies only to BSP.

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2. Access the <OAM-VIP> and then the SC-1 VM.

```
InstallationServer:# ssh root@<OAM-VIP>
```

```
SC-<X>:# ssh root@SC-1
```

3. Copy the following file:

```
SC-1:# cp /cluster/storage/no-backup/adapt/adapt_cluster.cfg.p  
rocessed /cluster/storage/no-backup/adapt/adapt_cluster.cfg
```

4. Update write permissions:

```
SC-1:# chmod u+w /cluster/storage/no-backup/adapt/adapt_clust  
er.cfg
```

5. Modify the **adapt\_cluster.cfg** as follows:

- a. Modify the **[GeoRed]** section to add specific configuration for Active-Active Geographical Redundancy. For further details, refer to [Adapt Cluster Tool](#):

**[GeoRed]**

**LOCAL\_APP\_VIP = <VIP-Traffic SAPC1> <ALB for Traffic>**

Set VIP address and ALB in the local cluster for geographical redundancy supervision and control in the Traffic Channel link. For



further information, refer to [Active-Active Geographical Redundancy Network Configuration Guide](#).

**PEER\_APP\_IP = <VIP-Traffic SAPC2>**

Set VIP address in the remote cluster for geographical redundancy supervision and control in the Traffic Channel link. For further information, refer to [Active-Active Geographical Redundancy Network Configuration Guide](#).

**ACT\_ACT = true**

Select the Active-Active Geographical redundancy solution.

6. Execute the customizing tool command.

```
— SC-1:# adapt_cluster -f /cluster/storage/no-backup/adapt/adapt_cluster.cfg geored
```

Once the tool finishes, the Geographical Redundancy configuration is applied.

7. Verify that the following file contains the same information as found in the `adapt_cluster.cfg` file.

```
— SC-1:# cat /cluster/storage/no-backup/adapt/adapt_cluster.cfg.processed_expansion
```

8. Once the configuration is applied, the SAPC1 is working as preferred SAPC in Active state. Consider that SAPC1 raises several DBS, NR, Synchronization Needed alarms and DBS, NR, Connection Lost alarms until the SAPC2 starts as non-preferred SAPC.

## 2.3 Start Mated SAPC (SAPC2) in Active-Active Geographical Redundancy

1. To start SAPC2, follow the instructions of the [Start Active-Active Geographical Redundancy](#) procedure.
2. Once SAPC2 is fully replicated and ready to process traffic, update the configuration of the neighbor peers with the new SAPC2 VIP addresses for traffic management and provisioning.