Oracle® Communications

SDS BareMetal to Cloud Migration Guide

Release 9.0.1.0.0
F88068-01
October 2023

Oracle Communications SDS BareMetal to Cloud Migration Guide, Release 9.0.1.0.0

F88068-01

Contents

My Oracle Support

My Oracle Support

MOS (https://support.oracle.com) is your initial point of contact for all the product support and training needs. A representative at Customer Access Support (CAS) can assist you with MOS registration.

Call the CAS main number at 1-800-223-1711 (toll-free in the US), or call the Oracle Support hotline for your local country from the list at http://www.oracle.com/us/support/contact/index.html. When calling, make the selections in the sequence shown on the Support telephone menu:

1. Select 2 for New Service Request.
2. Select 3 for Hardware, Networking and Solaris Operating System Support.
3. Select one of the following options:

For technical issues such as creating a new Service Request (SR), select 1.

For non-technical issues such as registration or assistance with MOS, select 2.

You are connected to a live agent who can assist you with MOS registration and opening a support ticket. MOS is available 24 hours a day, 7 days a week, and 365 days a year.

Emergency Response

In the event of a critical service situation, the users can avail emergency response by calling the CAS main number at 1-800-223-1711 (toll-free in the US), or the Oracle Support hotline for your local country from the list at http://www.oracle.com/us/support/contact/index.html. The emergency response provides immediate coverage, automatic escalation, and other features to ensure that the critical situation is resolved as rapidly as possible.

A critical situation is defined as a problem with the installed equipment that severely affects service, traffic, or maintenance capabilities, and requires immediate corrective action. Critical situations affect service and/or system operation resulting in one or several of these situations:

- A total system failure that results in loss of all transaction processing capability
- Significant reduction in system capacity or traffic handling capability
- Loss of the system's ability to perform automatic system reconfiguration
- Inability to restart a processor or the system
- Corruption of system databases that requires service affecting corrective actions
- Loss of access for maintenance or recovery operations
- Loss of the system ability to provide any required critical or major trouble notification

Any other problem severely affecting service, capacity/traffic, billing, and maintenance capabilities may be defined as critical by prior discussion and agreement with Oracle.

Locate Product Documentation on the Oracle Help Center

Oracle Communications' customer documentation is available on the web at the Oracle Help Center (OHC) site, http://docs.oracle.com. You do not have to register to access these documents. Viewing these files requires Adobe Acrobat Reader, which can be downloaded at http://www.adobe.com.

1. Access the Oracle Help Center site at http://docs.oracle.com.
2. Click Industries.
3. Under the Oracle Communications subhead, click the Oracle Communications documentation link. The Communications Documentation page appears. You can see most products covered by these documentation sets under the headings Network Session Delivery and Control Infrastructure or "Platforms."
4. Click your Product and then the Release Number. A list of the entire documentation set for the selected product and release appears. To download a file to your location, right-click the PDF link, select Save target as (or similar command based on your browser) and save to a local folder.

Acronyms

An alphabetized list of acronyms used in the document is listed below:

Table Acronyms and Terminology

Acronym	Description
BM	BareMetal
CD-ROM	Compact Disc Read-only Media
CPA	Charging Proxy Agent
CSV	Comma-separated Values
DA	Diameter Agent
DAMP	Diameter Agent Message Processor
DB	Database
DCA	Diameter Custom Application
DIU	Dual Image Upgrade
DP	Data Processor
DR	Disaster Recovery
DSR	Diameter Signaling Router
DR NOAM	Disaster Recovery DSR NOAM
EIR	Equipment Identity Register
FABR	Full Address Based Resolution
FOA	First Office Application
GA	General Availability
GPS	Global Product Solutions
GUI	Graphical User Interface
HA	High Availability
IDIH	Integrated Diameter Intelligence Hub
IMI	Internal Management Interface
IP	Internet Protocol
IPM	Initial Product Manufacture
IPFE	IP Front End
ISO	ISO 9660 File System (when used in the context of this document)
LA	Limited Availability
MOP	Method of Procedure
MP	Message Processing or Message Processor
MW	Maintenance Window
NE	Network Element
NOAM	Network OAM
OAM	Operations, Administration, and Maintenance
OFCS	Offline Charging Solution
PCA	Policy and Charging Agent (formerly known as PDRA)
PDRA	Policy Diameter Routing Agent
RBAR	Range Based Address Resolution
SBR	Session Binding Repository

Table (Cont.) Acronyms and Terminology

Acronym	Description
SDS	Subscriber Database Server
SOAM	System OAM
VIP	Virtual IP
VM	Virtual Machine
XMI	XML Metadata Interchange

1
Introduction

This document provides detailed information to migrate SDS from BareMetal (BM) to Virtual Machine (VM). This document outlines different methods to migrate SDS.

1.1 References

Following are the reference documents:

- *Oracle Communications SDS Cloud Upgrade Document*
- *Oracle Communication SDS Cloud Installation Guide*

2
Overview

Oracle Communications Subscriber Database Server (SDS) provides the central provisioning of the Full-Address Based Resolution (FABR) data. The SDS, which is deployed geo-redundantly at a Primary and Disaster Recovery site, connects with the Query server and the Data Processor Site Operation Administration and Maintenance (DP SOAM) servers at each diameter routing site or a standalone DP site to replicate and recover provisioned data to the associated components.

This section provides information about SDS Migration from release 8.6.x BM to 9.0.1 VM and later.

You can migrate SDS from release 8.6.x BM to 9.0.1 VM and later using following methods:

- Method 1: By reusing the existing hardware and IP addresses of NOAM, SOAM, Query Server (QS), and DP. Using this method, you can shut down the SDS 8.6.x applications on BM and deploy them on VM using existing IP addresses.
- Method 2: By reusing the existing hardware and new IP addresses of NOAM, SOAM, QS, and DP. Using this method, you can shut down the SDS 8.6.x applications on BM and deploy them on VM using new IP addresses.
- Method 3: By using new hardware and the new IP addresses of NOAM, SOAM, QS, and DP. Using this method, you can shut down the SDS 8.6.x applications on BM and deploy new NOAM, SOAM, QS, and DP, on VM using existing IP addresses.

> **Note:**
>
> From SDS 9.0.1 and later, there is no support for the BM environment. Therefore, to upgrade from SDS 8.6.x to SDS 9.0.1, you must perform the migration process outlined in this document.

2.1 Prerequisites

You must perform the following tasks to set up the migration environment:

- Verify if the mated site has the capacity to handle the traffic. For information, contact My Oracle Support.
- Run the following command on the Host hardware to check the IP connectivity between BM and VM host hardware.

  ```
  ping (baremetal SDS NOAM IP)
  ```

- Divert all the traffic to the mated site.
- Take a backup of all the servers from the SDS GUI as described in *SDS Software Upgrade Guide*.
- Export SDS 8.6.x configuration data from NOAM and SOAM as described in Exporting Data on SDS 8.6.X.

- Run the following commands on Active and Standby NOAM and SOAM one after another:

```
iset -fvalue=1 IdbParamDef where "param='IdbDisableUpgBarrier'"
sudo init 6
```

- Run the following commands on QS and DP servers one after another:

```
iset -fvalue=1 IdbParamDef where "param='IdbDisableUpgBarrier'"
sudo init 6
```

> **Note:**
>
> Store the backed up data on a remote server. This data is required while performing backout.

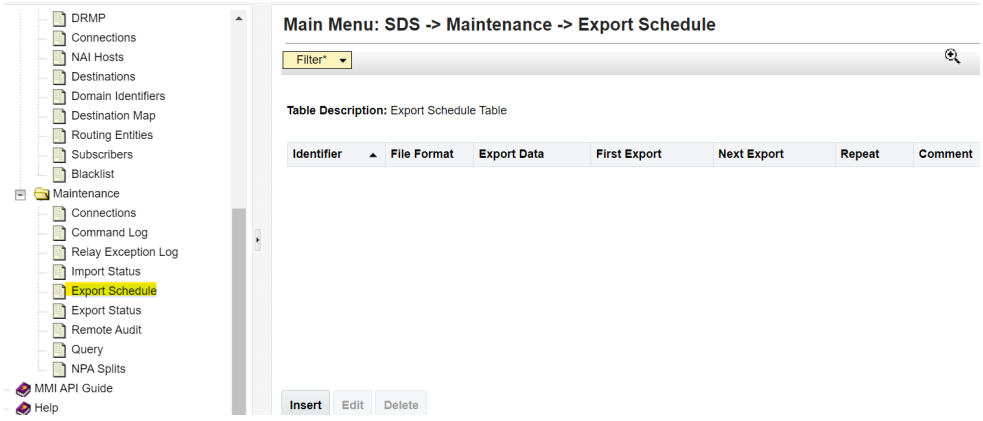
2.2 Exporting Data on SDS 8.6.X

This section provides information on exporting all the data that is currently present on NOAM of 8.6.x SDS system.

Perform the following procedure to export data from SDS NOAM.

1. Log in to SDS 8.6.X Active NOAM GUI.
2. Navigate to **Maintenance** from **Main Menu [SDS]**, then select **Export Schedule**.

Figure 2-1 Scheduling Export



3
Migration Checklist

This section describes migration tasks that are required to migrate from BM to VM.

Perform migration in the following sequence.

Table 3-1 Migration Sequence

Sequence	Task	Reference
1	Prerequisite	Prerequisites
2	Task - Standby DR NOAM	Shutting Down Standby BM NOAM
3	Task - Active DR NOAM	Migrating Standby BM NOAM to VM NOAM
4	Task - Standby NOAM	Shutting Down Standby BM NOAM
3	Task - Active NOAM	Migrating Standby BM NOAM to VM NOAM
4	Task - Standby SOAM	Migrating BM Standby SOAM to VM
5	Task - QS	Shutting Down Query Server
6	Task - Active SOAM	Migrating BM Standby SOAM to VM
7	20% of the DP in the first cycle.	Shutting Down 20% of DP Server

3.1 Limitations

In case of failure or any issues in VM deployments while reusing hardware, user cannot backout to 8.6.X release.

4
Migration

SDS 8.6.x BM can be migrated to vSDS 9.0.1 or later by using one of the following methods:

- Reuse of the Existing Hardware and Existing IP Address
- Reuse of the Existing Hardware and New IP Address
- New Hardware and New IP Address

4.1 Reuse of the Existing Hardware and Existing IP Addresses

This section describes migration process by shutting down existing NOAM, SOAM, QS, and DP on BM and deploying these applications on VM using the existing IP addresses.

4.1.1 Shutting Down Query Server

Perform the following procedure to shut down Query Server (QS):

1. Remove QS from topology.
   a. Log in to Active SDS NOAM GUI.
   b. Navigate to **Status & Manage** from **Main Menu**, then select **HA**.
   c. To change HA state of QS to OOS, perform the following steps:
      i. Navigate to **Status & Manage** from **Main Menu**, then select **HA**.
      ii. Click **Edit** and change **Max Allowed HA Role** of QS to `OOS`.
   d. To remove the QS from NOAM Server group, perform the following steps:
      i. Navigate to **Configuration** from **Main Menu**, then select **Server Groups**.
      ii. Select **NOAM (Level A)** Server Group and click **Edit**.
      iii. Uncheck QS from Server Group and click **OK**.
   e. Navigate to **Configuration** from **Main Menu**, then select **Servers** and select QS and click **Delete**.
2. Shutdown QS by running the following command:

   ```
   sudo shutdown -h now
   ```

3. Install OL8 and KVM on the shutdown BM server.

   > **Note:**
   >
   > For information on installing OL8 and KVM, refer to *SDS Installation on OL8 and KVM* section in *SDS Cloud Installation Guide*.

4. Create vSDS 9.0.1 VM.

5. Assign XMI IP to new vSDS 9.0.1.
   - To configure netmask and XMI IP address values, run the following command:

     ```
     sudo /usr/TKLC/plat/bin/netAdm set --onboot=yes --
     netmask=<netmask> --device=eth0 --address=<IP address>
     ```

6. Log in to SDS Active vSDS 9.0.1 NOAM using XMI.
7. Navigate to **Configuration** from **Main Menu**, then select **Servers**.
8. Click **Insert**.
9. Add the following details for QS:
   - Enter QS hostname
   - Update Role as Query Server
   - Hardware Profile as SDS Cloud Guest
   - Select NOAM Network element name
10. Click **Ok**.
11. Export and run `TKLCConfigData.sh` on SDS 9.0.X VM.
    a. Navigate to **Configuration** from **Main Menu**, then select **Servers**.
    b. Select newly created vSDS QS.
    c. Click **Export**, to export server configuration file to the file management folder on the Active NOAM.
    d. SSH to Active SDS 9.0.X NOAM and copy `TKLCConfigData.<hostname>.sh` to the newly created vSDS 9.0.1 QS. After copying, wait for 5 minutes.

       ```
       cd $FILE_MGMT_AREA


       sudo scp TKLCConfigData.<hostname>.sh admusr@<XMI IP of newly
       created vSDS 9.0.x QS>:/var/tmp/TKLCConfigData.sh
       ```

    e. Verify the `/var/TKLC/appw/logs/Process/install.log` file for successfully running `TKLCConfigData.sh` file. To verify the logs, run following command:

       ```
       sudo tail -f /var/TKLC/appw/logs/Process/install.log
       ```

    f. Wait for 10 minutes for server to configure with the IP configuration, then reboot the VM using `sudo init 6` command on CLI.
12. Add the QS in the server group again on SDS Active NOAM.
    a. Log in to Active SDS NOAM GUI using VIP.
    b. Navigate to **Configuration** from **Main Menu**, then select **Server Groups**.
    c. Select NOAM server group and click **Edit**.
    d. Select the QS to add to the NOAM Server group.
    e. Click **Ok** to save the changes and wait for 5 minutes.

f. If HA state is not Observer, then navigate to **Status & Manage** from **Main Menu**, then select **HA**, to change HA state of QS to Observer.

g. SSH to newly created vSDS Query Server.

h. Run the following commands:

```
iset -fvalue=1 IdbParamDef where "param='IdbDisableUpgBarrier'"
```

```
sudo init 6
```

i. Log in to Active SDS NOAM GUI using VIP.

j. Navigate to **Status & Manage** from **Main Menu**, then select **Query Server** and click **Restart** to restart the application.

4.1.2 Shutting Down Standby BM NOAM

Perform the following procedure to remove the standby NOAM from topology and shut down the standby NOAM on the SDS 8.6.x BM.

1. Remove standby NOAM from topology.
   a. Log in to SDS GUI.
   b. To change standby NOAM HA state to OOS, perform the following steps:
      i. Navigate to **Status & Manage** from **Main Menu**, then select **HA**.
      ii. Click **Edit** and change **Max Allowed HA Role** of Standby NOAM to `OOS`.
   c. To remove the standby NOAM from NOAM Server group, perform the following steps:
      i. Navigate to **Configuration** from **Main Menu**, then select **Server Groups**.
      ii. Select **Noam (Level A)** Server Group and click **Edit**.
      iii. Uncheck **Standby Noam** from Server Group and click **OK**.
   d. Navigate to **Configuration** from **Main Menu**, then select **Servers** and select **Standby Noam**. Click **Delete.**
2. Shut down standby NOAM by running the following command:

```
sudo shutdown -h now
```

4.1.3 Accessing XMI IP of SDS

Perform the following procedure to access and configure XMI IP of new vSDS 9.0.1 VM.

1. Install OL8 and KVM/OpenStack on the shutdown BM server.
2. Create SDS 9.0.1 VM.
3. Assign XMI IP to new vSDS 9.0.1 VM.
   - To configure netmask and XMI IP address values, run the following command:

```
sudo /usr/TKLC/plat/bin/netAdm set --onboot=yes --netmask=<netmask> --
device=eth0 --address=<IP address>
```

where, `<netmask>` indicates vSDS 9.0.1
`<IP Address>` indicates the IP address of vSDS 9.0.1

> **Note:**
>
> For further information on accessing XMI IP, refer to *SDS Installation on OL8 and KVM* and *Software Installation Procedure* sections in *SDS Cloud Installation Guide*.

4.1.4 Configuring Network Element

Perform the following procedure to configuring network element:

1. Log in to SDS 8.6.x Active NOAM GUI using VIP.
2. Export the network element configurations.
   a. Navigate to **Configuration** from **Main Menu**, then select **Networking** and click **Networks**.
   b. Select the required NOAM Network Element for configuration.
   c. Click **Export** and save the configuration.
3. Log in to newly created 9.0.X vSDS GUI using XMI IP.
4. Configure Network Element for NOAM server on the vSDS 9.0.1.
   a. Navigate to **Configuration** from **Main Menu**, then select **Networking** and click **Networks**.
   b. Click **Browse** and select the file exported from the SDS 8.6.X server, to import the Network element configuration.
   c. Click **Upload File**.
5. Configure server details on vSDS 9.0.1.
   a. Log in to newly created vSDS 9.0.X GUI using XMI IP.
   b. Navigate to **Configuration** from **Main Menu**, then select **Servers**.
   c. Click **Insert**.
   d. On **Insert** page, update the following server details:
      - Enter the standby NOAM hostname
      - Role as Network OAM&P
      - Hardware Profile as SDS Cloud guest
      - Select the Noam Network element name
      - Configure XMI and IMI IP's and NTP server IP
   e. Click **Ok.**
6. Export and run `TKLCConfigData.sh` file on vSDS 9.0.1 NOAM.
   a. Log in to NOAM vSDS 9.0.X GUI using XMI IP.
   b. Navigate to **Configuration** from **Main Menu**, then select **Servers**.
   c. Select the required NOAM server, which was added in the previous step.

d. Click **Export**, to export server configuration file to the file management folder on the NOAM.

e. Perform `ssh` to XMI IP of the newly created vSDS 9.0.X VM.

f. Run the `cd $FILE_MGMT_AREA/` command to access the file management area.

g. Copy the `TKLCConfigData.sh` file to `/var/tmp` folder, by running the following command:

```
cp TKLCConfigData.<hostname>.sh /var/tmp/TKLCConfigData.sh
```

h. Verify the `/var/TKLC/appw/logs/Process/install.log` log file for successfully running of `TKLCCOnfigData.sh` file. You can run following command to check logs.

```
sudo tail -f /var/TKLC/appw/logs/Process/install.log
```

Output:

```
+ sed -i s/WALLET_KEY_TO_BE_REPLACED_DURING_SERVER_EXPORT/
bc332acff044aa6bcc7871c0742b0b89abd658efc23549acc70d857279a1ee3bb31e04
f2e85fcc50fe2fad0c6aa69d3596ecb68f84983b44d7805d98a994ad96/g /usr/
TKLC/appworks/prod/maint/loaders/install/postInstall/
load.AppworksSecConfig
+ /usr/sbin/chpasswd
++ aw.wallet credential get tpdProvd tpdProvd
+ /usr/TKLC/appworks/sbin/updateMylogincnf
Imysql: [Warning] Using a password on the command line interface can
be insecure.
Imysql: [Warning] Using a password on the command line interface can
be insecure.
+ pm.kill apwSoapServer cmsoapa
+ /bin/touch /var/TKLC/appw/TKLCinitcfg
+ /bin/sleep 1
[SUCCESS] script completed successfully! '
```

i. Use following command to update the `/etc/resolv.conf` file:

```
sudo vim /etc/resolv.conf
```

j. Add **IMI IP** of the **Active 8.6.X SDS NOAM** at the end of file. Select **Save** and then click **Close**.
Sample `/etc/resolv.conf` file:

```
[admusr@901noam00 ~]$ cat /etc/resolv.conf
domain platform.cgbu.us.oracle.com
nameserver 127.0.0.1
nameserver 192.168.0.20     ; IMI IP of NOAM
```

7. Copy the `/var/named/db.platform.cgbu.us.oracle.com` from Active NOAM to Standby NOAM, by running the following commands on SDS 9.0.1 VM.

```
cd $FILE_MGMT_AREA/


sudo ssh admusr@<XMI ip of Active 8.6.X SDS NOAM> "sudo cat /var/
named/db.platform.cgbu.us.oracle.com " >
db.platform.cgbu.us.oracle.com


sudo mv db.platform.cgbu.us.oracle.com /var/named/


sudo chown root:named /var/named/db.platform.cgbu.us.oracle.com


sudo chmod 640 /var/named/db.platform.cgbu.us.oracle.com
```

8. Wait for 10 minutes for server to configure with the IP configuration, then reboot the VM using `sudo init 6` command on CLI.

4.1.5 Adding and Switching Over Standby NOAM Server

Perform the following procedure to add and switch over Standby NOAM server.

1. Add Standby NOAM server in the server group again on SDS 8.6.X Active NOAM, by performing the following steps:
   a. Log in to the VIP of the SDS 8.6.X Active NOAM server.
   b. Navigate to **Configuration** from **Main Menu**, then select **Servers**.
   c. Click **Insert**.
   d. Add the following details for NOAM server:
      - Enter NOAM hostname
      - Update Role as Network OAM&P
      - Hardware Profile as SDS Cloud Guest
      - Select the Noam Network element name
      - Configure XMI and IMI IP's and NTP server IP
   e. Click **Ok**.
   f. Navigate to **Configuration** from **Main Menu**, then select **Server Groups**.
   g. Select the NOAM server group and click **Edit**.
   h. Select the newly added vSDS 9.0.X NOAM to add to the NOAM Server group, then click **Ok** to save the changes and wait for 5 minutes.
2. If the Max Allowed HA role for new 9.0.X vSDS NOAM is not Active then navigate to **Status & Manage** from **Main Menu**, then select **HA**. Then, select the new VSDS 9.0.X NOAM and change Max Allowed HA role to Active by clicking **Edit**.

a. SSH to new vSDS 9.0.X NOAM and run the following commands to disable the upgrade barrier feature:

```
iset -fvalue=1 IdbParamDef where "param='IdbDisableUpgBarrier'"
sudo init 6
```

b. Log in to Active NOAM GUI.

c. Navigate to **Status & Manage** from **Main Menu**, then select **Server**.

d. Select Standby NOAM server and click **Restart**.

3. To verify servers, perform the following steps:

a. Log in to the new vSDS 9.0.X GUI using XMI IP.

b. Navigate to **Configuration** from **Main Menu**, then select **Servers**.

c. Verify if the screen displays data for all the servers in the topology.

> **Note:**
>
> If this verification step fails, do not proceed further. For further help, contact My Oracle Support (MOS).

4. ssh to Standby vSDS 9.0.1 Noam and run the following command to check the HA state of the server:

```
ha.mystate -i
```

Output:

```
resourceId      role       node  DC           subResources     lastUpdate
-------------------------------------------------------------------------------
-----
DbReplication   Act/Stb  BMtoVM-Migtest-DNO01         0
231003:055749.923
          VIP   Act/Stb  BMtoVM-Migtest-DNO01         0
231003:055749.925
CacdProcessRes  Act/Stb  BMtoVM-Migtest-DNO01         0
231003:055948.583
CAPM_HELP_Proc  Act/OOS  BMtoVM-Migtest-DNO01         0
231003:055742.740
SDSOAM_Proc     Act/Stb  BMtoVM-Migtest-DNO01         0
231003:055948.585
CAPM_PSFS_Proc  Act/Stb  BMtoVM-Migtest-DNO01         0
231003:055818.826
VSTPOAM_Proc    Act/Stb  BMtoVM-Migtest-DNO01         0
231003:055948.584
VSTPSERVICE_Proc Act/OOS  BMtoVM-Migtest-DNO01        0
231003:055742.741
```

5. To switchover the role of Active NOAM to standby NOAM and standby NOAM to Active NOAM, perform the following steps:

a. Log in to SDS 8.6.X BM Server using XMI.

b. Navigate to **Status & Manage** from **Main Menu**, then select **HA** and change **Max Allowed HA Role** of Active Noam to Standby.

4.1.6 Migrating Standby BM NOAM to VM NOAM

Perform the following procedure to migrate Standby BM NOAM to VM NOAM.

1. Remove standby NOAM from topology.
   a. Log in to Active SDS NOAM GUI.
   b. Navigate to **Status & Manage** from **Main Menu**, then select **HA**.
   c. To change standby NOAM HA state to OOS, perform the following steps:
      i. Navigate to **Status & Manage** from **Main Menu**, then select **HA**.
      ii. Click **Edit** and change **Max Allowed HA Role** of Standby NOAM to `OOS`.
   d. To remove the standby NOAM from NOAM Server group, perform the following steps:
      i. Navigate to **Configuration** from **Main Menu**, then select **Server Groups**.
      ii. Select **Noam (Level A)** Server Group and click **Edit**.
      iii. Uncheck **Standby Noam** from Server Group and click **OK**.
   e. Navigate to **Configuration** from **Main Menu**, then select **Servers** and select **Standby NOAM** and click **Delete**.
2. Shutdown standby NOAM by running the following command:

   ```
   sudo shutdown -h now
   ```

3. Install OL8 and KVM on the shutdown BM server.
4. Create vSDS 9.0.1 VM.
5. Assign XMI IP to new vSDS 9.0.1.
   - To configure netmask and XMI IP address values, run the following command:

     ```
     sudo /usr/TKLC/plat/bin/netAdm set --onboot=yes --
     netmask=<netmask> --device=eth0 --address=<IP address>
     ```

6. Add Standby NOAM server in the server group again on vSDS 9.0.1 Active NOAM, by performing the following steps:
   a. Log in to the XMI IP of the Active vSDS 9.0.1 VM server.
   b. Navigate to **Configuration** from **Main Menu**, then select **Servers**.
   c. Click **Insert**.
   d. Add the following details for NOAM server:
      - Enter NOAM hostname
      - Update Role as Network OAM&P
      - Hardware Profile as SDS Guest
      - Configure XMI and IMI IP's and NTP server IP

e. Click **Ok**.

f. Navigate to **Configuration** from **Main Menu**, then select **Servers**.

g. Select new Standby NOAM server, which was added in the previous step.

h. Click **Export** to export server configuration file to filemgmt folder on the Active vSDS NOAM.

i. Now ssh to Active SDS 9.0.X NOAM and follow the below steps to copy `TKLCConfigData.<hostname>.sh` to newly created Standby vSDS 9.0.1 NOAM. After copying the file wait for 5 minutes.

```
cd $FILE_MGMT_AREA


sudo scp TKLCConfigData.<hostname>.sh admusr@<XMI IP of newly added
9.0.X vSDS NOAM>:/var/tmp/TKLCConfigData.sh
```

j. Verify the `/var/TKLC/appw/logs/Process/install.log` log file on Standby Noam for successfully running of TKLCConfigData.sh file. You can run following command to check logs.

```
sudo tail -f /var/TKLC/appw/logs/Process/install.log
```

Output:

```
+ sed -i s/WALLET_KEY_TO_BE_REPLACED_DURING_SERVER_EXPORT/
bc332acff044aa6bcc7871c0742b0b89abd658efc23549acc70d857279a1ee3bb31e04
f2e85fcc50fe2fad0c6aa69d3596ecb68f84983b44d7805d98a994ad96/g/usr/TKLC/
appworks/prod/maint/loaders/install/postInstall/load.AppworksSecConfig
+ /usr/sbin/chpasswd
++ aw.wallet credential get tpdProvd tpdProvd
+ /usr/TKLC/appworks/sbin/updateMylogincnf
Imysql: [Warning] Using a password on the command line interface can
be insecure.
Imysql: [Warning] Using a password on the command line interface can
be insecure.
+ pm.kill apwSoapServer cmsoapa
+ /bin/touch /var/TKLC/appw/TKLCinitcfg
+ /bin/sleep 1
[SUCCESS] script completed successfully!
```

k. Navigate to **Configuration** from **Main Menu**, then select **Server Groups**.

l. Select the **NOAM(Level A)** Server group and click **Edit**.

m. Select the newly added vSDS 9.0.X NOAM to add to the NOAM Server group, then click **Ok** to save the changes and wait for 5 minutes.

n. If the Max Allowed HA Role of newly added vSDS 9.0.X NOAM is not Active then navigate to **Status & Manage** from **Main Menu**, then select **HA** and change Max Allowed HA Role of that server to Active by clicking **Edit**.

o. SSH to Standby SDS 9.0.X NOAM.

p. Run the following commands to disable the upgrade barrier feature:

```
iset -fvalue=1 IdbParamDef where "param='IdbDisableUpgBarrier'"
sudo init 6
```

q. Log in to Active vSDS Noam GUI.

r. Navigate to **Status & Manage** from **Main Menu**, then select **Server** and select Standby NOAM and click **Restart**.

7. To verify servers, perform the following steps:

a. Log in to the VIP of the SDS 9.0.X NOAM VM.

b. Navigate to **Status & Manage** from **Main Menu**, then select **Servers** and verify if the screen displays data for all the servers in the topology.

> **Note:**
>
> - If this verification fails, contact My Oracle Support.
> - The `TKLCConfigData.sh` file must be copied using SCP from Active vSDS 9.0.1 NOAM server to the new vSDS 9.0.1 that is required to be configured as standby NOAM.

4.1.7 Changing Standby NOAM HA State to Active

Perform the following procedure to update Max Allowed HA role of Standby NOAM to Active.
If Max Allowed HA Role of Standby NOAM is not active, then perform this procedure.

1. Login to the XMI IP of the Active NOAM vSDS 9.0.1.
2. Navigate to **Status & Manage** from **Main Menu**, then select **HA**.
3. Change Max Allowed HA Role of Standby Server to Active by clicking **Edit**.

4.1.8 Migrating BM Standby SOAM to VM

Perform the following procedure to migrate BM Standby SOAM to VM.

1. Remove standby SOAM from topology.

a. Login to Active SDS NOAM GUI.

b. Navigate to **Status & Manage** from **Main Menu**, then select **HA**.

c. To change standby SOAM HA state to OOS, perform the following steps:

i. Navigate to **Status & Manage** from **Main Menu**, then select **HA**.

ii. Click **Edit** and change **Max Allowed HA Role** of Standby SOAM to `OOS`.

d. To remove the standby SOAM from SOAM Server group, perform the following steps:

i. Navigate to **Configuration** from **Main Menu**, then select **Server Groups**.

ii. Select **Soam (Level B)** Server Group and click **Edit**.

iii. Uncheck **Standby Soam** from Server Group and click **OK**.

e. Navigate to **Configuration** from **Main Menu**, then select **Servers** and select **Standby SOAM** and click **Delete**.

2. Shutdown standby SOAM by running the following command:

```
sudo shutdown -h now
```

3. Install OL8 and KVM on the shutdown BM server.

> **Note:**
>
> For information on installing OL8 and KVM, refer to *SDS Installation on OL8 and KVM* section in *SDS Cloud Installation Guide*.

4. Create vSDS 9.0.1 VM.

> **Note:**
>
> Create SOAM VM where Active NOAM VM is created.

5. Assign XMI IP to new vSDS 9.0.1.
   - To configure netmask and XMI IP address values, run the following command:

```
sudo /usr/TKLC/plat/bin/netAdm set --onboot=yes --netmask=<netmask> --
device=eth0 --address=<IP address>
```

6. Export and run `TKLCConfigData.sh` file of Standby SOAM.
   a. Login to VIP IP of the SDS 9.0.X Active NOAM VM.
   b. Navigate to **Configuration** from **Main Menu**, then select **Servers**.
   c. Click **Insert**.
   d. Add the following details for SOAM server:
      - Enter SOAM hostname
      - Update Role as System OAM
      - Hardware Profile as SDS Cloud Guest
      - Configure XMI and IMI IP's and NTP server IP
   e. Click **Ok**.
   f. Select the required newly created 9.0.X vSDS SOAM VM server, which was created in the previous step.
   g. Click **Export**, to export server configuration file to the file management folder on the Active NOAM.

h. Now ssh to Active SDS 9.0.X NOAM and copy `TKLCConfigData.<hostname>.sh` file to newly created vSDS 9.0.X SOAM. After copying the file wait for 5 minutes.

```
cd $FILE_MGMT_AREA


sudo scp TKLCConfigData.<hostname>.sh admusr@<XMI IP of newly
added vSDS 9.0.X SOAM>:/var/tmp/TKLCConfigData.sh
```

i. SSH to newly added vSDS 9.0.X SOAM IP and verify the `/var/TKLC/appw/logs/Process/install.log` log file for successfully running of `TKLCConfigData.sh` file. You can run following command to check logs.

```
sudo tail -f /var/TKLC/appw/logs/Process/install.log
```

Output:

```
+ sed -i s/WALLET_KEY_TO_BE_REPLACED_DURING_SERVER_EXPORT/
bc332acff044aa6bcc7871c0742b0b89abd658efc23549acc70d857279a1ee3bb
31e04f2e85fcc50fe2fad0c6aa69d3596ecb68f84983b44d7805d98a994ad96/g
/usr/TKLC/appworks/prod/maint/loaders/install/postInstall/
load.AppworksSecConfig
+ /usr/sbin/chpasswd
++ aw.wallet credential get tpdProvd tpdProvd
+ /usr/TKLC/appworks/sbin/updateMylogincnf
Imysql: [Warning] Using a password on the command line interface
can be insecure.
Imysql: [Warning] Using a password on the command line interface
can be insecure.
+ pm.kill apwSoapServer cmsoapa
+ /bin/touch /var/TKLC/appw/TKLCinitcfg
+ /bin/sleep 1
[SUCCESS] script completed successfully!
```

j. Wait for 10 minutes for server to configure with the IP configuration, then reboot the VM using `sudo init 6` command on CLI.

k. Navigate to **Configuration** from **Main Menu**, then select **Server Groups**.

l. Select the **SOAM(Level B)** Server group and click **Edit**.

m. Select the newly added vSDS 9.0.X SOAM to add to the SOAM Server group, then click **Ok** to save the changes and wait for 5 minutes.

n. If the Max Allowed HA Role of newly added vSDS 9.0.X Soam is not Active then navigate to **Status & Manage** from **Main Menu**, then select **HA** and change Max Allowed HA Role of that server to Active by clicking **Edit**.

o. SSH to Standby SDS 9.0.X SOAM.

p. Run the following commands to disable the upgrade barrier feature:

```
iset -fvalue=1 IdbParamDef where "param='IdbDisableUpgBarrier'"
sudo init 6
```

q. Login to Active vSDS Noam GUI.

r. Navigate to **Status & Manage** from **Main Menu**, then select **Server** and select Standby SOAM and click **Restart**.

After switching over, the Standby vSDS 9.0.X VM will be Active and 8.6.X SDS BM NOAM will be Standby. Repeat the steps in Migrating BM Standby SOAM to VM to migrate the 8.6.X BM standby SOAM to 9.0.X.

4.1.9 Shutting Down 20% of DP Server

Perform the following procedure to shutdown 20% of DP Server.

1. Remove DP from topology.
   a. Login to Active NOAM SDS GUI.
   b. Navigate to **Status & Manage** from **Main Menu**, then select **HA**.
   c. To change HA state of DP to Out of Service (OOS), perform the following steps:
      i. To change DP HA state to OOS, perform the following steps:
         i. Navigate to **Status & Manage** from **Main Menu**, then select **HA**.
         ii. Click **Edit** and change **Max Allowed HA Role** of DP to `OOS`.
      ii. To remove the DP from DP Server group, perform the following steps:
         i. Navigate to **Configuration** from **Main Menu**, then select **Server Groups**.
         ii. Select **DP (Level C)** Server Group and click **Edit**.
         iii. Uncheck **DP** from Server Group and click **OK**.
      iii. Navigate to **Configuration** from **Main Menu**, then select **Servers** and select **DP**. Click **Delete**.
2. Shutdown DP by running the following command:

   ```
   sudo shutdown -h now
   ```

3. Install OL8 and KVM on the shutdown BM server.
4. Create vSDS 9.0.X.

   > **Note:**
   >
   > Create DP on the same host where NOAM, SOAM VM was created.

5. Assign XMI IP to new vSDS 9.0.X.

   To configure netmask and XMI IP address values, run the following command:

   ```
   sudo /usr/TKLC/plat/bin/netAdm set --onboot=yes --netmask=<netmask> --
   device=eth0 --address=<IP address>
   ```

6. Login to SDS Active vSDS 9.0.1 NOAM using XMI.
7. Navigate to **Configuration** from **Main Menu**, then select **Servers**.
8. Click **Insert**.
9. Add the following details for DP server:

- Enter DP hostname
- Update Role as MP
- Hardware Profile as SDS Cloud Guest
- Configure XMI and IMI, XSI IP's and NTP server IP

10. Click **Ok**.
11. Select the required DP server (which was created in the previous step).
12. Click **Export**, to export server configuration file to the file management folder on the Active NOAM.
13. Now ssh to Active SDS 9.0.X NOAM and copy the `TKLCConfigData.<hostname>.sh` file to the newly created vSDS 9.0.X DP. After copying the file wait for 5 minutes.

    ```
    cd $FILE_MGMT_AREA


    sudo scp TKLCConfigData.<hostname>.sh admusr@<XMI IP of newly
    created vSDS 9.0.X DP>:/var/tmp/TKLCConfigData.sh
    ```

14. SSH to newly created vSDS 9.0.X DP XMI IP and verify the `/var/TKLC/appw/logs/Process/install.log` log file for successfully running of `TKLCConfigData.sh` file. You can run following command to check logs.

    ```
    sudo tail -f /var/TKLC/appw/logs/Process/install.log
    ```

    Output:

    ```
    + sed -i s/WALLET_KEY_TO_BE_REPLACED_DURING_SERVER_EXPORT/
    bc332acff044aa6bcc7871c0742b0b89abd658efc23549acc70d857279a1ee3bb31e
    04f2e85fcc50fe2fad0c6aa69d3596ecb68f84983b44d7805d98a994ad96/g/usr/
    TKLC/appworks/prod/maint/loaders/install/postInstall/
    load.AppworksSecConfig
    + /usr/sbin/chpasswd
    ++ aw.wallet credential get tpdProvd tpdProvd
    + /usr/TKLC/appworks/sbin/updateMylogincnf
    Imysql: [Warning] Using a password on the command line interface
    can be insecure.
    Imysql: [Warning] Using a password on the command line interface
    can be insecure.
    + pm.kill apwSoapServer cmsoapa
    + /bin/touch /var/TKLC/appw/TKLCinitcfg
    + /bin/sleep 1
    [SUCCESS] script completed successfully!
    ```

15. Wait for 10 minutes for server to configure with the IP configuration, then reboot the VM using `sudo init 6` command on CLI.
16. Login to Active vSDS NOAM GUI.
17. Navigate to **Configuration** from **Main Menu**, then select **Server Groups**.
18. Select the **DP (Level C)** Server group and click **Edit**.

19. Select the newly added vSDS 9.0.X DP to add to the DP Server group, then click **Ok** to save the changes and wait for 5 minutes.
20. If the Max Allowed HA Role of new 9.0.X vSDS DP is not Active then navigate to **Status & Manage** from **Main Menu**, then select **HA** and change Max Allowed HA Role of that server to Active by clicking **Edit**.
21. SSH to new vSDS 9.0.X DP.
22. Run the following commands to disable the upgrade barrier feature:

    ```
    iset -fvalue=1 IdbParamDef where "param='IdbDisableUpgBarrier'"
    sudo init 6
    ```

23. Login to Active vSDS NOAM GUI.
24. Navigate to **Status & Manage** from **Main Menu**, then select **Server** and select the newly added vSDS 9.0.X DP. Click **Restart**.

> **Note:**
>
> - To configure remaining DPs, repeat procedure Shutting Down 20% of DP Server for each 20% of DP until you reach 100% of DP server.
> - DP leader must be migrated last.

4.2 Reuse of the Existing Hardware and New IP Addresses

This section describes migration process by shutting down existing NOAM, SOAM, QS, and DP on BM and deploying these new NOAM, SOAM, QS, and DP, on VM using new IP addresses.

> **Note:**
>
> For method 2, use the new IP addresses for existing hardware and perform the procedure mentioned in Reuse of the Existing Hardware and Existing IP Addresses.

4.3 New Hardware and New IP Address

This section describes migration process by shutting down existing NOAM, SOAM, QS, and DP on BM and deploying these new NOAM, SOAM, QS, and DP, on VM using new IP addresses.

1. Create a new Topology using SDS 9.0.1.
2. Disable global provisioning on the SDS 8.6.X Active NOAM GUI, by performing the following steps:
   a. Log in to XMI of SDS NOAM.
   b. Navigate to **Status & Manage** from **Main Menu**, then select **Database**.
   c. Click **Disable Provisioning**.

3. Export data from the existing SDS 8.6.X server.
   a. Log in to Active 8.6.X SDS NOAM GUI using XMI IP.
   b. Navigate to **Maintenance** from **Main Menu: SDS**, then select **Export Schedule**.
   c. Click **Insert**.
   d. On **Export Schedule [Insert]** screen, set the following attributes:
      - Set Identifier Name as `Subscriber`.
      - Select File Format as `csv`.
      - Set the Current Date and time.
      - Select Export Data as `Subscriber`.
      - Select Repeat as `None`.
   e. Click **OK**.

> **Note:**
>
> Repeat Step 2 for all the remaining export data type such as MSISDN, IMSI.

4. Log in to Active SDS 9.0.1 NOAM GUI using XMI IP.
5. Navigate to **Configurations** from **Main Menu: SDS**, then select **Options**, update the fields as below:
   - Check **Remote Import Enabled**
   - In **Remote Import Host IP Address**, enter the required IP address of remote host server
   - In **Remote Import User**, enter the username of the required remote host server
   - In **Remote Import Password**, enter the password to login to the required remote host server
   - In **Remote Import Directory**, enter the required path of the remote host server

> **Note:**
>
> Before copying the exported files to the remote host server, follow the naming conventions provided in following table.

Table 4-1 CSV Import Format

Import Type	Filename
Destination	import_X_destination.csv
IMSI	import_X_imsi.csv
MSISDN	import_X_msisdn.csv

Table 4-1 (Cont.) CSV Import Format

Import Type	Filename
NAI User	import_X_naiuser.csv
Wildcard NAI User	import_X_wcnaiuser.csv
NAI Host	import_X_naihost.csv
Domain Identifier	import_X_domainIdentifier.csv
External Identifier	import_X_externalIdentifier.csv
IMSI Prefix	import_X_imsiprefix.csv
MSISDN Prefix	import_X_msisdnprefix.csv
IMSI Blacklist	import_X_imsiblacklist.csv
MSISDN Blacklist	import_X_msisdnblacklist.csv
Subscriber	import_X_subscriber.csv

6. Copy the export files from Active NOAM SDS 8.6.x server to the remote host server path configured in the previous step and wait for 5 minutes.
   a. Copy the destination csv exported data first.

      Note:

      Wait for destination data to be imported.

   b. Imported status can be tracked by navigating to **Maintenance** from **Main Menu: SDS**, then select **Import Status**.
   c. On **Import Status** screen on SDS 9.0.1 system, after the destination data is imported, the remaining files must be copied to remote host server path configured in the previous step.
7. After all data import is completed, configure the ComAgent connection of SDS DAMP servers.
   a. Log in to Active SDS 9.0.1 NOAM GUI using XMI IP.
   b. Navigate to **Configuration** from **Main Menu: Communication Agent**, then select **Remote Servers**.
   c. Click **Insert** and configure the SDS DAMP IP address.
   d. Click **Ok**.
8. Enable the ComAgent Connection.
   a. Log in to Active SDS 9.0.1 NOAM GUI using XMI IP.
   b. Navigate to **Maintenance** from **Main Menu: Communication Agent**, then select **Connection Status**.
   c. Select the DAMP server and enable the connection.

      Note:

      For further information on configuing ComAgent, see *Oracle Communications Diameter Signaling Router Communication Agent User Guide*.