AMS BCP FAILOVER PROCEDURE

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Version History

Version	Approved Date	Author	Reviewer	Approver for Change	Description
1.0		Prem Mogi	Hemanth	WAISL SD Head	AMS BCP Failover Procedure

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1	Process Owner	Yes	Yes	Yes
2	Q & A	Yes	Yes	No
3	Personnel listed in the Target Group section	Yes	No	No

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1.0 PURPOSE

The purpose of this Standard Operating Procedure document is to establish a systematic and comprehensive approach for conducting a Failover of the AMS services between two data centres.

2.0 SCOPE

This procedure applies to all the support engineers involved in the AMS BCP failover process.

3.0 TARGET GROUP

WAISL, App support team and Infra support team.

4.0 AMS ARCHITECTURE OVERVIEW AT GHIAL

This section provides a high-level overview of the application deployed at GHIAL along with the details of architectural views of the AODB suite. It describes the various components that are required to support the AODB suite and how they interact to fulfill the design objectives.

At the application topology level, deployment is distributed along individual nodes of the system. NSX LB provided by VMWare will be used as a load balancer. AODB suite application nodes are operating in active/active and anti-affinity at the application level within the primary data centre. And all the application services in the secondary data centre will be in off state and can be switched on manually during any failure or disaster at the primary data centre.

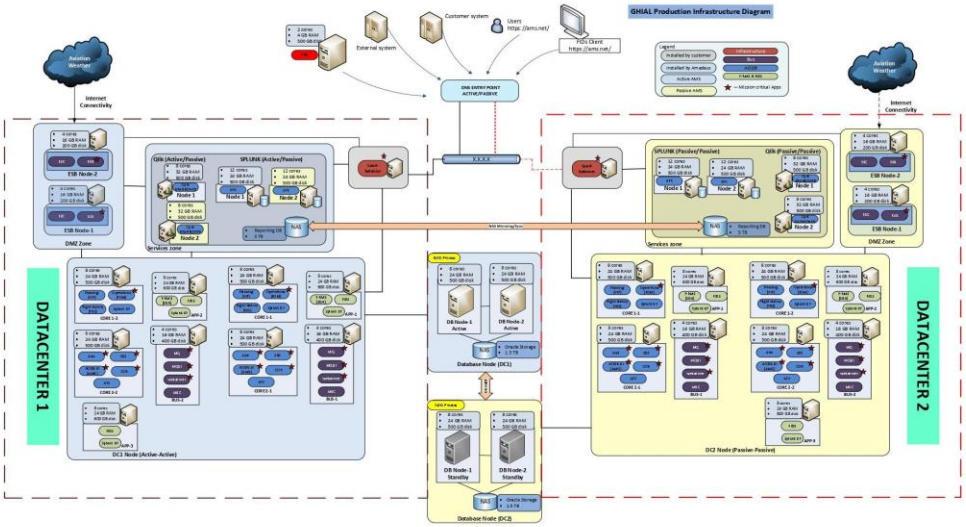


Figure 1:AMS Architecture Overview

Following is the procedure to move the application and load balancer services from the primary to a secondary data centre.

5.0 SCENARIO 1: FAILOVER TO TEST THE IT DR MANUALLY

Prior to executing the manual failover of the service from DC1 to DC2, ensure to shut down the Application services on the DC1 Servers.

AMS Check List.xlsx

Before proceeding with the below failover activities refer

5.1 AMS Application Services Shutdown

The Docker application delivery mechanism allows the AMS AODB applications to be launched from application containers in their respective VMs. The following table outlines the startup sequence and dependencies of application components:

Sequence	Application Component (Application Name)	VM name	Dependencies
1	Web server (httpd)	PRDBUS	
2	MQ Server (mb)	PRDBUS	
3	MQ Server UI (mbui)	PRDBUS	
3	Message Centre (msc)	PRDBUS	
4	Authentication server (aaa)	PRDCORE2	HTTPD/MB/MBUI
5	COR- Core services (cor)	PRDCORE2	AAA
6	MDM - Shared Data Services (sds)	PRDCORE2	AAA; SDS
7	Flight Operations Management (fom)	PRDCORE 1	COR
8	Flight Data Services (fds)	PRDCORE 1	FOM
9	Visit Planner (vip)	PRDCORE 1	FOM
10	Airport Manager UI (amg)	PRDCORE2	FOM/VIP
11	FRMS (sga)	PRDAPP	FOM
12	Airport Map (afv)	PRDCORE2	FOM
13	ESB (esb4)	PRDESB	FOM
14	Splunk (spk)	PRDSPK	
15	Splunk Universal Forwarder (splunkuf)	PRDCORE 1/ PRDAPP	FDS
16	Flight Information Display System (fids)	PRDAPP	

Table 1: Startup-Sequence and Application Dependencies

- Stop the HTTP component in both the BUS 1 and 2 application servers.

  Server 1: 10.102.115.21
  Hostname: cdc1aodbabus1.cdchial.in
  Command:
  ```
  $ cd /ama/implementation/latest_prd/topology/HYD/prd/
  $  ./compose.sh stop httpd
  ```

  Server 2: 10.102.115.22
  Hostname: cdc1aodbbus2.cdchial.in
  Command:
  ```
  $ cd /ama/implementation/latest_prd/topology/HYD/prd/
  $  ./compose.sh stop httpd
  ```

- Stop the MB component in the BUS1 application server.

  Server 1: 10.102.115.21
  Hostname: - cdc1aodbabus1.cdchial.in
  Command:
  ```
  $ cd /ama/implementation/latest_prd/topology/HYD/prd/
  $  ./compose.sh stop mb
  ```

- Stop the MBUI component in both the BUS 1 and 2 application servers.

  Server 1: 10.102.115.21
  Hostname: -cdc1aodbabus1.cdchial.in
  Command:
  ```
  $ cd /ama/implementation/latest_prd/topology/HYD/prd/
  $  ./compose.sh stop mbui
  ```

Server 2: 10.102.115.22
Hostname: -cdc1aodbbus2.cdchial.in
Command:
```
$ cd /ama/implementation/latest_prd/topology/HYD/prd/
$  ./compose.sh stop mbui
```

- Stop the MSC component in both the BUS 1 and 2 application servers.

Server 1: 10.102.115.21
Hostname: - cdc1aodbabus1.cdchial.in
Command:
```
$ cd /ama/implementation/latest_prd/topology/HYD/prd/
$  ./compose.sh stop msc
```

Server 2: 10.102.115.22
Hostname: - cdc1aodbbus2.cdchial.in
Command:
```
$ cd /ama/implementation/latest_prd/topology/HYD/prd/
$  ./compose.sh stop msc
```

- Stop the AAA component in both the CORE 3 and 4 application servers.

Server 1: 10.102.115.16
Hostname: - cdc1aodbcore3.cdchial.in
Command:
```
$ cd /ama/implementation/latest_prd/topology/HYD/prd/
$  ./compose.sh stop aaa
```

Server 2: 10.102.115.17
Hostname: - cdc1aodbcore4.cdchial.in
Command:
```
$ cd /ama/implementation/latest_prd/topology/HYD/prd/
$  ./compose.sh stop aaa
```

- Stop the COR component in both the CORE 3 and 4 application servers.

Server 1: 10.102.115.16
Hostname: - cdc1aodbcore3.cdchial.in
Command:
```
$ cd /ama/implementation/latest_prd/topology/HYD/prd/
$  ./compose.sh stop cor
```

Server 2: 10.102.115.17
Hostname: - cdc1aodbcore4.cdchial.in
Command:
```
$ cd /ama/implementation/latest_prd/topology/HYD/prd/
$  ./compose.sh stop cor
```

- Stop the SDS component in both the CORE 3 and 4 application servers.

Server 1: 10.102.115.16
Hostname: - cdc1aodbcore3.cdchial.in
Command:
```
$ cd /ama/implementation/latest_prd/topology/HYD/prd/
$  ./compose.sh stop sds
```

Server 2: 10.102.115.17
Hostname: - cdc1aodbcore4.cdchial.in
Command:
```
$ cd /ama/implementation/latest_prd/topology/HYD/prd/
$  ./compose.sh stop sds
```

- Stop the COR component in both the CORE 1 and 2 application servers.

  Server 1: 10.102.115.14
  Hostname: - cdc1aodbcore1.cdchial.in
  Command:
  ```
  $ cd /ama/implementation/latest_prd/topology/HYD/prd/
  $  ./compose.sh stop fom
  ```

  Server 2: 10.102.115.15
  Hostname: - cdc1aodbcore2.cdchial.in
  Command:
  ```
  $ cd /ama/implementation/latest_prd/topology/HYD/prd/
  $  ./compose.sh stop fom
  ```

- Stop the FDS component in both the CORE 1 and 2 application servers.

  Server 1: 10.102.115.14
  Hostname: - cdc1aodbcore1.cdchial.in
  Command:
  ```
  $ cd /ama/implementation/latest_prd/topology/HYD/prd/
  $  ./compose.sh stop fds
  ```

  Server 2: 10.102.115.15
  Hostname: - cdc1aodbcore2.cdchial.in
  Command:
  ```
  $ cd /ama/implementation/latest_prd/topology/HYD/prd/
  $  ./compose.sh stop fds
  ```

- Stop the VIP component in both the CORE 1 and 2 application servers.

  Server 1: 10.102.115.14
  Hostname: - cdc1aodbcore1.cdchial.in
  Command:
  ```
  $ cd /ama/implementation/latest_prd/topology/HYD/prd/
  $  ./compose.sh stop vip
  ```

  Server 2: 10.102.115.15
  Hostname: - cdc1aodbcore2.cdchial.in
  Command:
  ```
  $ cd /ama/implementation/latest_prd/topology/HYD/prd/
  $  ./compose.sh stop vip
  ```

- Stop the AMG component in both the CORE 3 and 4 application servers.

  Server 1: 10.102.115.16
  Hostname: - cdc1aodbcore3.cdchial.in
  Command:
  ```
  $ cd /ama/implementation/latest_prd/topology/HYD/prd/
  $  ./compose.sh stop amg
  ```

  Server 2: 10.102.115.17
  Hostname: - cdc1aodbcore4.cdchial.in
  Command:
  ```
  $ cd /ama/implementation/latest_prd/topology/HYD/prd/
  $  ./compose.sh stop amg
  ```

- Stop the SGA component in both the CORE3 and APP2 application servers.

  Server 1: 10.102.115.18
  Hostname: - cdc1aodbapp1.cdchial.in
  Command:
  ```
  $ cd /ama/implementation/latest_prd/topology/HYD/prd/
  $  ./compose.sh stop sga
  ```

Server 2: 10.102.115.19
Hostname: - cdc1aodbapp2.cdchial.in
Command:
```
$ cd /ama/implementation/latest_prd/topology/HYD/prd/
$  ./compose.sh stop sga
```

- Stop the VIP component in both the CORE 3 and 4 application servers.

Server 1: 10.102.115.16
Hostname: - cdc1aodbcore3.cdchial.in
Command:
```
$ cd /ama/implementation/latest_prd/topology/HYD/prd/
$  ./compose.sh stop afv
```

Server 2: 10.102.115.17
Hostname: - cdc1aodbcore4.cdchial.in
Command:
```
$ cd /ama/implementation/latest_prd/topology/HYD/prd/
$  ./compose.sh stop afv
```

- Stop the VIP component in both the ESB 1 and 2 application servers.

Server 1: 10.102.115.23
Hostname: - cdc1aodbesb1.cdchial.in
Command:
```
$ cd /ama/implementation/latest_prd/topology/HYD/prd/
$  ./compose.sh stop esb4
```

Server 2: 10.102.115.24
Hostname: - cdc1aodbesb1.cdchial.in
Command:
```
$ cd /ama/implementation/latest_prd/topology/HYD/prd/
$  ./compose.sh stop esb4
```

- Stop the FDS component in both the CORE 1 and 2 application servers.

Server 1: 10.102.115.14
Hostname: - cdc1aodbcore1.cdchial.in
Command:
```
$ cd /ama/implementation/latest_prd/topology/HYD/prd/
$  ./compose.sh stop fds
```

Server 2: 10.102.115.15
Hostname: - cdc1aodbcore2.cdchial.in
Command:
```
$ cd /ama/implementation/latest_prd/topology/HYD/prd/
$  ./compose.sh stop fds
```

- Stop the SPLUNKUF component in both the CORE 1 and 2, and APP 1, 2, and 3 application servers.

Server 1: 10.102.115.14
Hostname: - cdc1aodbcore1.cdchial.in
Command:
```
$ cd /ama/implementation/latest_prd/topology/HYD/prd/
 $  ./compose.sh stop splunkuf
```

Server 2: 10.102.115.15
Hostname: - cdc1aodbcore2.cdchial.in
Command:
```
$ cd /ama/implementation/latest_prd/topology/HYD/prd/
$  ./compose.sh stop splunkuf
```

Server 3: 10.102.115.18
Hostname: - cdc1aodbapp1.cdchial.in
Command:
```
$ cd /ama/implementation/latest_prd/topology/HYD/prd/
$  ./compose.sh stop splunkuf
```

Server 4: 10.102.115.19
Hostname: - cdc1aodbapp2.cdchial.in
Command:
```
$ cd /ama/implementation/latest_prd/topology/HYD/prd/
$  ./compose.sh stop splunkuf
```

Server 5: 10.102.115.20
Hostname: - cdc1aodbapp3.cdchial.in
Command:
```
$ cd /ama/implementation/latest_prd/topology/HYD/prd/
$  ./compose.sh stop splunkuf
```

- Stop the FIDS component in the three APP 1, 2, and 3 application servers.

Server 1: 10.102.115.18
Hostname: - cdc1aodbapp1.cdchial.in
Command:
```
$ cd /ama/implementation/latest_prd/topology/HYD/prd/
$  ./compose.sh stop fids
```
fids: - ./compose.sh up -d fids

Server 2: 10.102.115.19
Hostname: - cdc1aodbapp2.cdchial.in
Command:
```
$ cd /ama/implementation/latest_prd/topology/HYD/prd/
$  ./compose.sh stop fids
```

Server 3: 10.102.115.20
Hostname: - cdc1aodbapp3.cdchial.in
Command:
```
$ cd /ama/implementation/latest_prd/topology/HYD/prd/
$  ./compose.sh stop fids
```

5.2 AMS Database Failover

Manually switchover the roles of DB services between the datacenter servers without losing data involves transferring operational responsibilities from one cluster server to another cluster server while ensuring that no data is lost in the process. This is typically done in situations where maintenance or DB upgrades need to be performed on the primary server without disrupting service.

In this Scenario, we are planning to activate the secondary data centre (DC2) and shutdown the current Primary data centre (DC1).

Step 1: Access Readiness

- Ensure both DC1 and DC2 servers are operational and can communicate with each other.
- Confirm the Data Guard configuration is properly set up
  - show parameter log_archive_dest_1;
  - show parameter log_archive_dest_2;
  - Check FAL parameters, convert parameters, disk heartbeat and network heartbeat.

Step 2: Verify Replication

- Confirm that data replication between DC1 and DC2 servers are up-to-date and synchronized.

```
SELECT ARCH.THREAD# "Thread", ARCH.SEQUENCE# "Last Sequence Received",
APPL.SEQUENCE# "Last Sequence Applied", (ARCH.SEQUENCE# -
APPL.SEQUENCE#) "Difference"

FROM

(SELECT THREAD# ,SEQUENCE# FROM V$ARCHIVED_LOG WHERE (THREAD#,FIRST_TIME
) IN (SELECT THREAD#,MAX(FIRST_TIME) FROM V$ARCHIVED_LOG GROUP BY
THREAD#)) ARCH,

(SELECT THREAD# ,SEQUENCE# FROM V$LOG_HISTORY WHERE (THREAD#,FIRST_TIME
) IN (SELECT THREAD#,MAX(FIRST_TIME) FROM V$LOG_HISTORY GROUP BY
THREAD#)) APPL

WHERE

ARCH.THREAD# = APPL.THREAD#

ORDER BY 1;
```

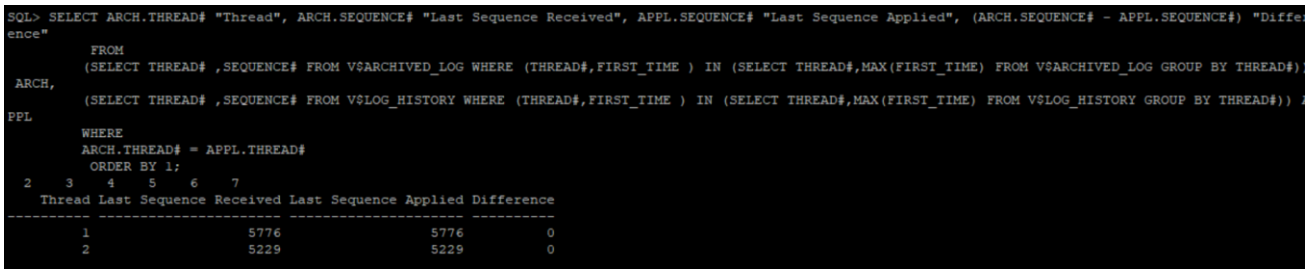


Figure 2: Verify Synchronization

Step 3: Notify Stakeholders

- Inform relevant stakeholders about the planned failover to minimize disruption.

Step 4: Stop Incoming Traffic

- Temporarily halt incoming traffic from AMS application to DC1 and DC2 server to prevent data inconsistency during failover.
- Use the command below to bring down the MRP on standby database.

```
alter database recover managed standby database cancel;
```

Step 5: Initiate Switchover Process:

- Trigger the switchover process from DC1 to DC2 server. This typically involves role change of the standby server and switching DNS records to point to DC2. This makes Primary server as new Standby Server.
- Execute the below command on the primary database to initiate the switchover:

```
SQL> ALTER SYSTEM SET JOB_QUEUE_PROCESSES=0 SCOPE=MEMORY SID='*';

SQL > ALTER DATABASE COMMIT TO SWITCHOVER TO PHYSICAL STANDBY WITH
SESSION SHUTDOWN;
```

Step 6: Monitor Progress

- Continuously monitor the switchover process by regularly tracking the alert logfiles and other status information. Make sure the transition goes smoothly with minimal downtime. If any issues arise, take appropriate action.

```
SQL > SELECT SWITCHOVER_STATUS FROM V$DATABASE;
```

Step 7: Verify Data Integrity

- After failover, validate that data integrity is maintained and no loss or corruption has occurred during the transition.

```
archive log list;

SELECT sequence#, first_time, next_time, applied FROM v$archived_log
ORDER BY sequence#;

SELECT file_name, checkpoint_time, checkpoint_change#,
checkpoint_cmt_scn FROM v$datafile;
```

- This above query retrieves the file name, checkpoint time, checkpoint change number, and checkpoint commit SCN (system change number) from the `v$datafile` view in Oracle.

Step 8: resume Traffic

- Once confirmed, resume incoming Application traffic to DC2 server and update stakeholders about the successful switchover.

Step 9: Perform Post-Switchover Checks

- Conduct post-failover checks by going through the alert logfiles and other traces to ensure all systems are functioning correctly with no issues.

```
select name, open_mode, database_role from v$database;

archive log list;
```

5.3 AMS Load Balancer DNS Mapping Instructions

Step 1: Log in to the CDC Production Domain server

- Log in to the CDC Production Domain server to modify DNS entries.
- AMS Load Balancer DNS Mapping details for CDC1:
  - **Alias Name:** ghialprdaodb
  - **FQDN:** ghialprdaodb.cdchial.in
  - **FQDN for Target Host**: prodaodbcdc.cdchial.in (10.102.116.5)

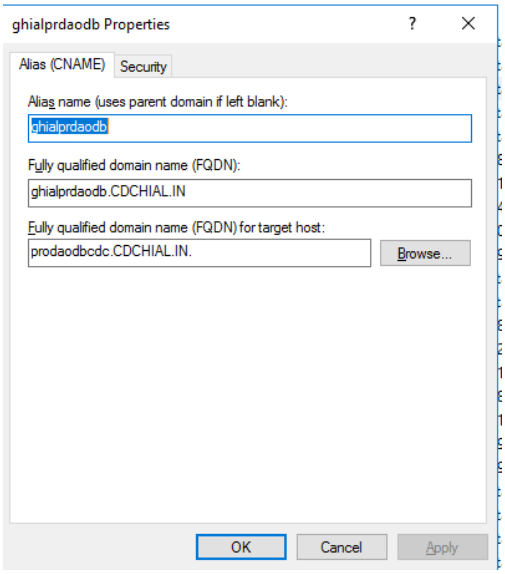


Figure 3: Modify DNS Entries.

- During the cutover to CDC2, the FQDN for the Target Host will be mapped to prodaodbcdc2 (10.102.216.5).

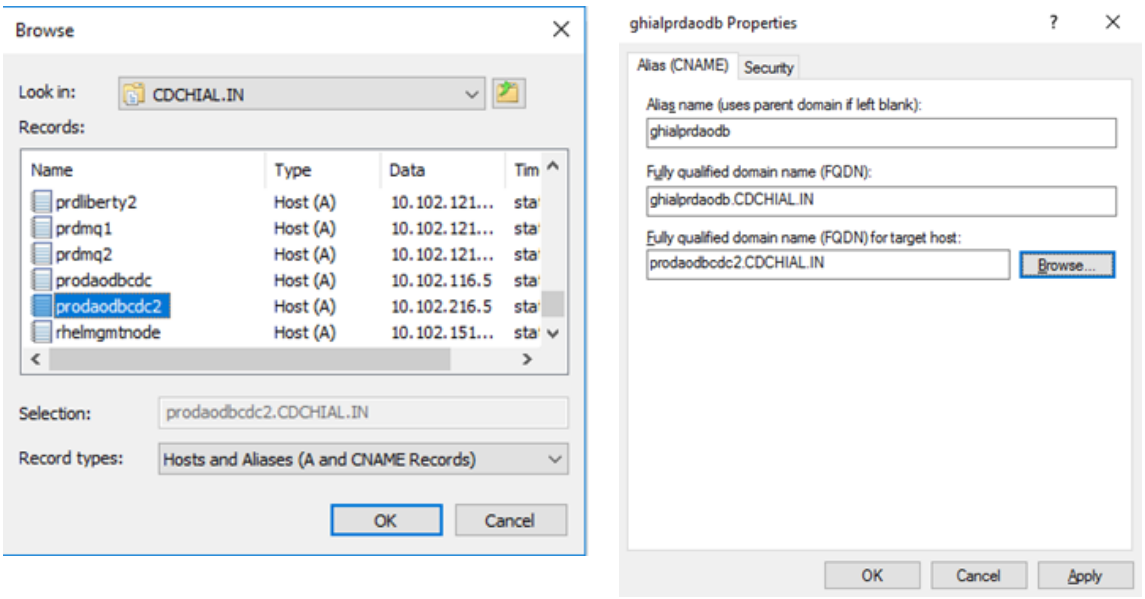


Figure 4: Server Properties

6.0 SCENARIO 2: DISASTER SCENARIO WHERE DC1 SERVERS ARE UNAVAILABLE

In a disaster scenario where DC1 servers are in shuts down or not reachable state, the top priority is to activate DC2. This involves following a clear procedure to ensure a smooth transition with minimal downtime. The steps to bring up DC2 typically include:

6.1 AMS Database Activation in DC2 environment

- Ensure that DC1 is completely shut down due to the disaster scenario.
- Access DC2's management interface to initiate the failover process.
- Verify that DC2 database is up and running.

```
select name,status,open_mode,database_role,switchover_status from
gv$database,gv$instance;

archive log list;
```

- Assess the network connectivity of DC2 to ensure it is capable of handling the increased workload.
- Transfer any necessary data or configurations from DC1 to DC2 to maintain continuity of services.
- Activate/Failover to current standby database running on DC2 and update the stakeholders.

```
select name, open_mode, database_role from v$database;

alter database open;
```

- Update DNS records or routing configurations to direct traffic to DC2.

```
alter database activate standby database;
```

- Monitor the performance of DC2 closely to ensure it can handle the load and any potential issues are addressed promptly.

```
select name, open_mode, database_role from v$database;
```

- Communicate with relevant stakeholders about the failover process and any impacts on services.

6.2 Starting AMS application services in DC2 environment

Once the AMS database in DC2 environment is in Active state, then application services need to be started.

- Start the HTTP component in both the BUS 1 and 2 application servers.

Server 1: 10.102.215.21
Hostname: cdc2aodbabus1.cdchial.in
Command:
```
$ cd /ama/implementation/latest_prd/topology/HYD/prd/
$  ./compose.sh up -d httpd
```

Server 2: 10.102.215.22
Hostname: cdc2aodbbus2.cdchial.in
Command:
```
$ cd /ama/implementation/latest_prd/topology/HYD/prd/
$  ./compose.sh up -d httpd
```

- Start the MB component in the BUS1 application server.

  Server 1: 10.102.215.21
  Hostname: - cdc2aodbabus1.cdchial.in
  Command:
  ```
  $ cd /ama/implementation/latest_prd/topology/HYD/prd/
  $  ./compose.sh up -d mb
  ```

- Start the MBUI component in both the BUS 1 and 2 application servers.

  Server 1: 10.102.215.21
  Hostname: -cdc2aodbabus1.cdchial.in
  Command:
  ```
  $ cd /ama/implementation/latest_prd/topology/HYD/prd/
  $  ./compose.sh up -d mbui
  ```

  Server 2: 10.102.215.22
  Hostname: -cdc2aodbbus2.cdchial.in
  Command:
  ```
  $ cd /ama/implementation/latest_prd/topology/HYD/prd/
  $  ./compose.sh up -d mbui
  ```

- Start the MSC component in both the BUS 1 and 2 application servers.

  Server 1: 10.102.215.21
  Hostname: - cdc2aodbabus1.cdchial.in
  Command:
  ```
  $ cd /ama/implementation/latest_prd/topology/HYD/prd/
  $  ./compose.sh up -d msc
  ```

  Server 2: 10.102.215.22
  Hostname: - cdc2aodbbus2.cdchial.in
  Command:
  ```
  $ cd /ama/implementation/latest_prd/topology/HYD/prd/
  $  ./compose.sh up -d msc
  ```

- Start the AAA component in both the CORE 3 and 4 application servers.

  Server 1: 10.102.215.16
  Hostname: - cdc2aodbcore3.cdchial.in
  Command:
  ```
  $ cd /ama/implementation/latest_prd/topology/HYD/prd/
  $  ./compose.sh up -d aaa
  ```

  Server 2: 10.102.215.17
  Hostname: - cdc2aodbcore4.cdchial.in
  Command:
  ```
  $ cd /ama/implementation/latest_prd/topology/HYD/prd/
  $  ./compose.sh up -d aaa
  ```

- Start the COR component in both the CORE 3 and 4 application servers.

  Server 1: 10.102.215.16
  Hostname: - cdc2aodbcore3.cdchial.in
  Command:
  ```
  $ cd /ama/implementation/latest_prd/topology/HYD/prd/
  $  ./compose.sh up -d cor
  ```

  Server 2: 10.102.215.17
  Hostname: - cdc2aodbcore4.cdchial.in
  Command:
  ```
  $ cd /ama/implementation/latest_prd/topology/HYD/prd/
  $  ./compose.sh up -d cor
  ```

- Start the SDS component in both the CORE 3 and 4 application servers.

  Server 1: 10.102.215.16
  Hostname: - cdc2aodbcore3.cdchial.in
  Command:
  ```
  $ cd /ama/implementation/latest_prd/topology/HYD/prd/
  $  ./compose.sh up -d sds
  ```
  Server 2: 10.102.215.17
  Hostname: - cdc2aodbcore4.cdchial.in
  Command:
  ```
  $ cd /ama/implementation/latest_prd/topology/HYD/prd/
  $  ./compose.sh up -d sds
  ```

- Start the COR component in both the CORE 1 and 2 application servers.

  Server 1: 10.102.215.14
  Hostname: - cdc2aodbcore1.cdchial.in
  Command:
  ```
  $ cd /ama/implementation/latest_prd/topology/HYD/prd/
  $  ./compose.sh up -d fom
  ```

  Server 2: 10.102.215.15
  Hostname: - cdc2aodbcore2.cdchial.in
  Command:
  ```
  $ cd /ama/implementation/latest_prd/topology/HYD/prd/
  $  ./compose.sh up -d fom
  ```

- Start the FDS component in both the CORE 1 and 2 application servers.

  Server 1: 10.102.215.14
  Hostname: - cdc2aodbcore1.cdchial.in
  Command:
  ```
  $ cd /ama/implementation/latest_prd/topology/HYD/prd/
  $  ./compose.sh up -d fds
  ```

  Server 2: 10.102.215.15
  Hostname: - cdc2aodbcore2.cdchial.in
  Command:
  ```
  $ cd /ama/implementation/latest_prd/topology/HYD/prd/
  $  ./compose.sh up -d fds
  ```

- Start the VIP component in both the CORE 1 and 2 application servers.

  Server 1: 10.102.215.14
  Hostname: - cdc2aodbcore1.cdchial.in
  Command:
  ```
  $ cd /ama/implementation/latest_prd/topology/HYD/prd/
  $  ./compose.sh up -d vip
  ```

  Server 2: 10.102.215.15
  Hostname: - cdc2aodbcore2.cdchial.in
  Command:
  ```
  $ cd /ama/implementation/latest_prd/topology/HYD/prd/
  $  ./compose.sh up -d vip
  ```

- Start the AMG component in both the CORE 3 and 4 application servers.

  Server 1: 10.102.215.16
  Hostname: - cdc2aodbcore3.cdchial.in
  Command:
  ```
  $ cd /ama/implementation/latest_prd/topology/HYD/prd/
  $  ./compose.sh up -d amg
  ```

Server 2: 10.102.215.17
Hostname: - cdc2aodbcore4.cdchial.in
Command:
```
$ cd /ama/implementation/latest_prd/topology/HYD/prd/
$  ./compose.sh up -d amg
```

- Start the SGA component in both the CORE3 and APP2 application servers.

Server 1: 10.102.215.18
Hostname: - cdc2aodbapp1.cdchial.in
Command:
```
$ cd /ama/implementation/latest_prd/topology/HYD/prd/
$  ./compose.sh up -d sga
```

Server 2: 10.102.215.19
Hostname: - cdc2aodbapp2.cdchial.in
Command:
```
$ cd /ama/implementation/latest_prd/topology/HYD/prd/
$  ./compose.sh up -d sga
```

- Start the VIP component in both the CORE 3 and 4 application servers.

Server 1: 10.102.215.16
Hostname: - cdc2aodbcore3.cdchial.in
Command:
```
$ cd /ama/implementation/latest_prd/topology/HYD/prd/
$  ./compose.sh up -d afv
```

Server 2: 10.102.215.17
Hostname: - cdc2aodbcore4.cdchial.in
Command:
```
$ cd /ama/implementation/latest_prd/topology/HYD/prd/
$  ./compose.sh up -d afv
```

- Start the VIP component in both the ESB 1 and 2 application servers.

Server 1: 10.102.215.23
Hostname: - cdc2aodbesb1.cdchial.in
Command:
```
$ cd /ama/implementation/latest_prd/topology/HYD/prd/
$  ./compose.sh up -d esb4
```

Server 2: 10.102.215.24
Hostname: - cdc2aodbesb1.cdchial.in
Command:
```
$ cd /ama/implementation/latest_prd/topology/HYD/prd/
$  ./compose.sh up -d esb4
```

- Start the FDS component in both the CORE 1 and 2 application servers.

Server 1: 10.102.215.14
Hostname: - cdc2aodbcore1.cdchial.in
Command:
```
$ cd /ama/implementation/latest_prd/topology/HYD/prd/
$  ./compose.sh up -d fds
```

Server 2: 10.102.215.15
Hostname: - cdc2aodbcore2.cdchial.in
Command:
```
$ cd /ama/implementation/latest_prd/topology/HYD/prd/
$  ./compose.sh up -d fds
```

- Start the SPLUNKUF component in both the CORE 1 and 2, and APP 1, 2, and 3 application servers.

  Server 1: 10.102.215.14
  Hostname: - cdc2aodbcore1.cdchial.in
  Command:
  ```
  $ cd /ama/implementation/latest_prd/topology/HYD/prd/
  $  ./compose.sh up -d splunkuf
  ```

  Server 2: 10.102.215.15
  Hostname: - cdc2aodbcore2.cdchial.in
  Command:
  ```
  $ cd /ama/implementation/latest_prd/topology/HYD/prd/
  $  ./compose.sh up -d splunkuf
  ```

  Server 3: 10.102.215.18
  Hostname: - cdc2aodbapp1.cdchial.in
  Command:
  ```
  $ cd /ama/implementation/latest_prd/topology/HYD/prd/
  $  ./compose.sh up -d splunkuf
  ```

  Server 4: 10.102.215.19
  Hostname: - cdc2aodbapp2.cdchial.in
  Command:
  ```
  $ cd /ama/implementation/latest_prd/topology/HYD/prd/
  $  ./compose.sh up -d splunkuf
  ```

  Server 5: 10.102.215.20
  Hostname: - cdc2aodbapp3.cdchial.in
  Command:
  ```
  $ cd /ama/implementation/latest_prd/topology/HYD/prd/
  $  ./compose.sh up -d splunkuf
  ```

- Start the FIDS component in the three APP 1, 2, and 3 application servers.

  Server 1: 10.102.215.18
  Hostname: - cdc2aodbapp1.cdchial.in
  Command:
  ```
  $ cd /ama/implementation/latest_prd/topology/HYD/prd/
  $  ./compose.sh up -d fids
  ```
  fids: - ./compose.sh up -d fids

  Server 2: 10.102.215.19
  Hostname: - cdc2aodbapp2.cdchial.in
  Command:
  ```
  $ cd /ama/implementation/latest_prd/topology/HYD/prd/
  $  ./compose.sh up -d fids
  ```

  Server 3: 10.102.215.20
  Hostname: - cdc2aodbapp3.cdchial.in
  Command:
  ```
  $ cd /ama/implementation/latest_prd/topology/HYD/prd/
  $  ./compose.sh up -d fids
  ```

6.3 AMS Load Balancer DNS Mapping Instructions

Step 1: Log in to the CDC Production Domain server

- Log in to the CDC Production Domain server to modify DNS entries.
- AMS Load Balancer DNS Mapping details for CDC1:

  - **Alias Name:** ghialprdaodb
  - **FQDN:** ghialprdaodb.cdchial.in
  - **FQDN for Target Host**: prodaodbcdc.cdchial.in (10.102.116.5)

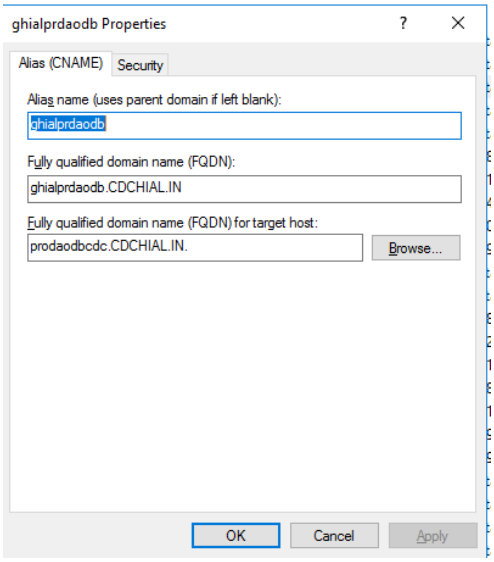


Figure 3: Modify DNS Entries.

- During the cutover to CDC2, the FQDN for the Target Host will be mapped to prodaodbcdc2 (10.102.216.5).

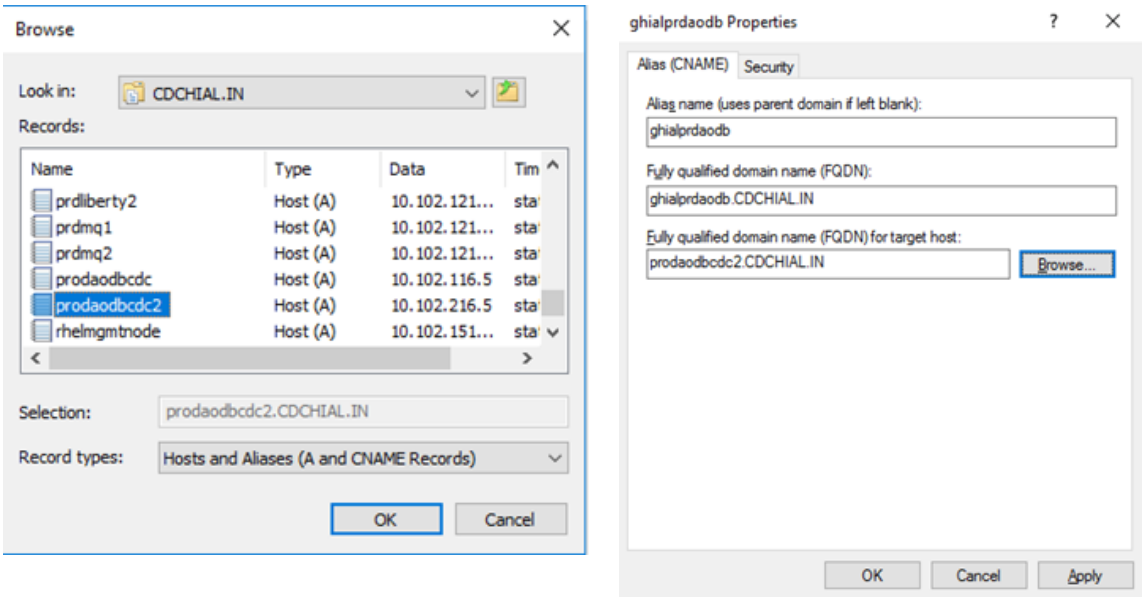


Figure 5: Server Properties

7.0 HEALTH CHECKS

7.1 Application Services

- The AMS application containers status can be observed from the command line.

```
$ sudo docker ps
```

- All the services should be running in a Healthy state in their respective VMs, refer to Figure 4.
- Similarly, the rest of the application services should be monitored in respective VMs as mentioned in **Error! Reference source not found.**.

```
[appadmin@cdclaodbbus1 ~]$ sudo docker ps
CONTAINER ID        IMAGE
COMMAND                  CREATED             STATUS                  PORTS
        NAMES
2124f436a526        stgaodbrepo.ghiacdctest.in:5000/mbui:HYD1-LHT-21.12-rev2
"/bin/sh -c /ama/b..."   3 months ago        Up 3 months (healthy)
        prd_mbui_1
e95d38377a6a        stgaodbrepo.ghiacdctest.in:5000/mb:HYD1-LHT-21.12-rev5
"/bin/sh -c /ama/b..."   5 months ago        Up 2 months (healthy)
        prd_mb_1
938980de5cf7        stgaodbrepo.ghiacdctest.in:5000/msc:HYD1-LHT-21.12-rev8
"/bin/sh -c /ama/b..."   5 months ago        Up 5 months (healthy)
        prd_msc_1
869f7ecb485c        stgaodbrepo.ghiacdctest.in:5000/httpd:HYD1-LHT-21.12-rev1
"httpd-foreground"       5 months ago        Up 5 months (healthy)
        prd_httpd_1
```

Figure 6: Application Health Status

7.2 Database Services

Step 1: Database Running Status

Command: `Srvctl status database -d AMSPRD`

```
[oracle@cdclaodbdb1 ~]$
[oracle@cdclaodbdb1 ~]$ srvctl status database -d AMSPRD
Instance AMSPRD1 is running on node cdclaodbdb1
Instance AMSPRD2 is running on node cdclaodbdb2
[oracle@cdclaodbdb1 ~]$
```

Figure 7: Node Status Output

Step 2: Services running status

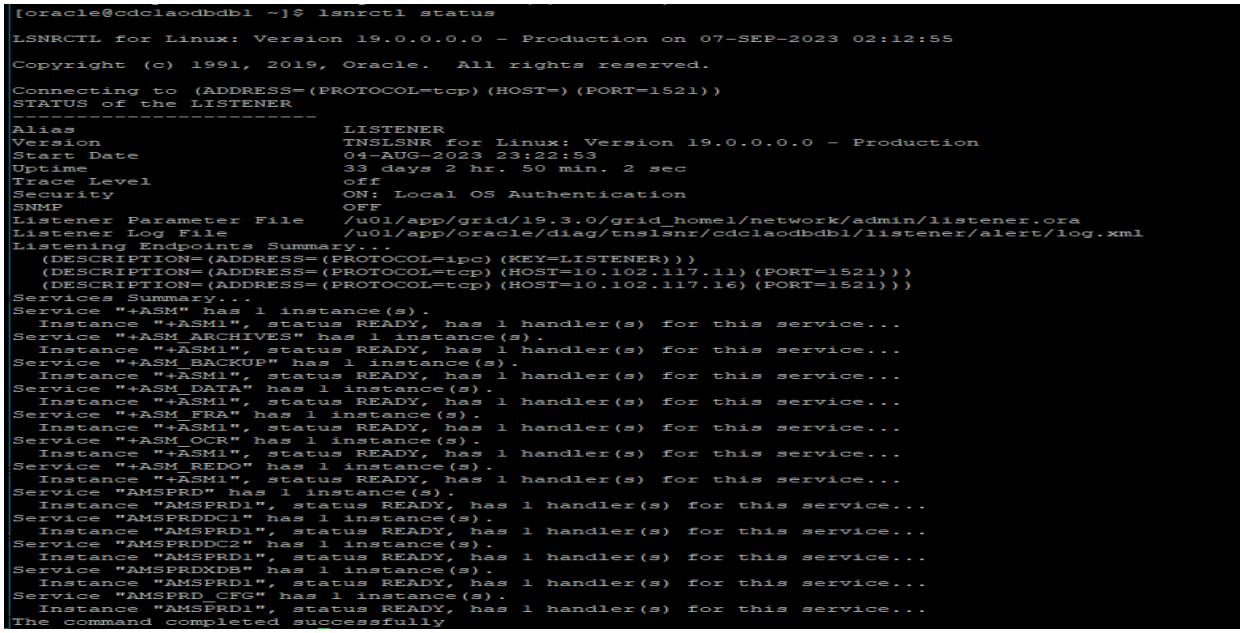
Command: `Srvctl status service –d AMSPRD (Database Name)`

```
[oracle@cdclaodbdb1 ~]$ srvctl status service -d AMSPRD
Service amsprddc1 is running on instance(s) AMSPRD1,AMSPRD2
Service amsprddc2 is running on instance(s) AMSPRD1,AMSPRD2
```

Figure 8: Services Status

Step 3: Listener running status check

Command: `lsnrctl status or lsnrctl status listener (By default name will be listener only)`

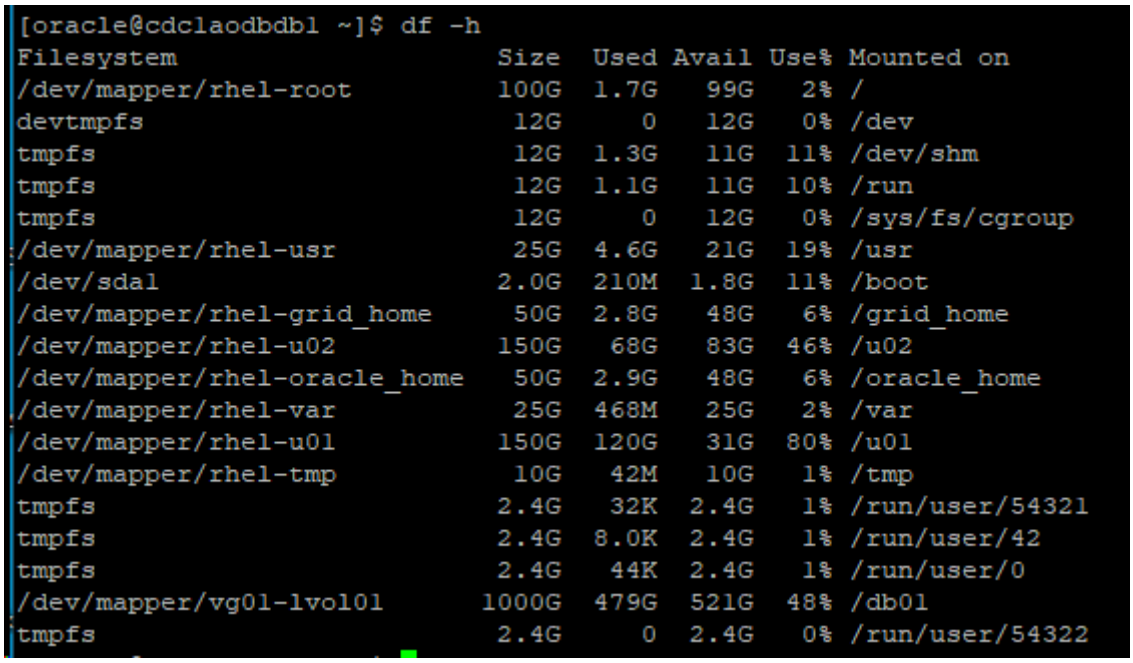


```
[oracle@cdclaodbdbl ~]$ lsnrctl status

LSNRCTL for Linux: Version 19.0.0.0.0 - Production on 07-SEP-2023 02:12:55

Copyright (c) 1991, 2019, Oracle.  All rights reserved.

Connecting to (ADDRESS=(PROTOCOL=tcp)(HOST=)(PORT=1521))
STATUS of the LISTENER
------------------------
Alias                     LISTENER
Version                   TNSLSNR for Linux: Version 19.0.0.0.0 - Production
Start Date                04-AUG-2023 23:22:53
Uptime                    33 days 2 hr. 50 min. 2 sec
Trace Level               off
Security                  ON: Local OS Authentication
SNMP                      OFF
Listener Parameter File   /u01/app/grid/19.3.0/grid_home1/network/admin/listener.ora
Listener Log File         /u01/app/oracle/diag/tnslsnr/cdclaodbdbl/listener/alert/log.xml
Listening Endpoints Summary...
  (DESCRIPTION=(ADDRESS=(PROTOCOL=ipc)(KEY=LISTENER)))
  (DESCRIPTION=(ADDRESS=(PROTOCOL=tcp)(HOST=10.102.117.11)(PORT=1521)))
  (DESCRIPTION=(ADDRESS=(PROTOCOL=tcp)(HOST=10.102.117.16)(PORT=1521)))
Services Summary...
Service "+ASM" has 1 instance(s).
  Instance "+ASM1", status READY, has 1 handler(s) for this service...
Service "+ASM_ARCHIVES" has 1 instance(s).
  Instance "+ASM1", status READY, has 1 handler(s) for this service...
Service "+ASM_BACKUP" has 1 instance(s).
  Instance "+ASM1", status READY, has 1 handler(s) for this service...
Service "+ASM_DATA" has 1 instance(s).
  Instance "+ASM1", status READY, has 1 handler(s) for this service...
Service "+ASM_FRA" has 1 instance(s).
  Instance "+ASM1", status READY, has 1 handler(s) for this service...
Service "+ASM_OCR" has 1 instance(s).
  Instance "+ASM1", status READY, has 1 handler(s) for this service...
Service "+ASM_REDO" has 1 instance(s).
  Instance "+ASM1", status READY, has 1 handler(s) for this service...
Service "AMSPRD" has 1 instance(s).
  Instance "AMSPRD1", status READY, has 1 handler(s) for this service...
Service "AMSPRDDC1" has 1 instance(s).
  Instance "AMSPRD1", status READY, has 1 handler(s) for this service...
Service "AMSPRDDC2" has 1 instance(s).
  Instance "AMSPRD1", status READY, has 1 handler(s) for this service...
Service "AMSPRDXDB" has 1 instance(s).
  Instance "AMSPRD1", status READY, has 1 handler(s) for this service...
Service "AMSPRD_CFG" has 1 instance(s).
  Instance "AMSPRD1", status READY, has 1 handler(s) for this service...
The command completed successfully
```

Figure 9: Listener Status Check

Step 4: Mount points check

Command: `df -h` (mount points should be under 75%)



```
[oracle@cdclaodbdbl ~]$ df -h
Filesystem                  Size  Used Avail Use% Mounted on
/dev/mapper/rhel-root       100G  1.7G   99G   2% /
devtmpfs                     12G     0   12G   0% /dev
tmpfs                        12G  1.3G   11G  11% /dev/shm
tmpfs                        12G  1.1G   11G  10% /run
tmpfs                        12G     0   12G   0% /sys/fs/cgroup
/dev/mapper/rhel-usr         25G  4.6G   21G  19% /usr
/dev/sda1                   2.0G  210M  1.8G  11% /boot
/dev/mapper/rhel-grid_home   50G  2.8G   48G   6% /grid_home
/dev/mapper/rhel-u02        150G   68G   83G  46% /u02
/dev/mapper/rhel-oracle_home 50G  2.9G   48G   6% /oracle_home
/dev/mapper/rhel-var         25G  468M   25G   2% /var
/dev/mapper/rhel-u01        150G  120G   31G  80% /u01
/dev/mapper/rhel-tmp         10G   42M   10G   1% /tmp
tmpfs                       2.4G   32K  2.4G   1% /run/user/54321
tmpfs                       2.4G  8.0K  2.4G   1% /run/user/42
tmpfs                       2.4G   44K  2.4G   1% /run/user/0
/dev/mapper/vg01-lvol01    1000G  479G  521G  48% /db01
tmpfs                       2.4G     0  2.4G   0% /run/user/54322
```

Figure 10: Mount Point Check

Step 5: Checking Alert Logs

Location - `/u02/app/oracle/diag/rdbms/amsprd/AMSPRD1`

```
cd /u02/app/oracle/diag/rdbms/amsprd/AMSPRD1
ls -lrt
cd trace
ls -lrt
```

```
tail -500f alert_AMSPRD1.log
```

```
[oracle@cdclaodbdbl AMSPRD1]$ cd /u02/app/oracle/diag/rdbms/amsprd/AMSPRD1
[oracle@cdclaodbdbl AMSPRD1]$ ls -lrt
total 736
drwxr-x---   2 oracle asmadmin      6 Mar 30  2022 metadata_pv
drwxr-x---   2 oracle asmadmin      6 Mar 30  2022 metadata_dgif
drwxr-x---   2 oracle asmadmin      6 Mar 30  2022 incpkg
drwxr-x---   2 oracle asmadmin      6 Mar 30  2022 hm
drwxr-x---   2 oracle asmadmin      6 Mar 30  2022 cdump
drwxr-x---   2 oracle asmadmin   4096 Mar 30  2022 metadata
drwxr-x---   8 oracle asmadmin    120 Aug 11  2022 log
drwxr-x---   2 oracle asmadmin     34 Aug 11  2022 ir
drwxr-x--- 499 oracle asmadmin  20480 Sep  6 00:48 incident
drwxr-x---   2 oracle asmadmin    146 Sep  6 00:48 sweep
drwxr-x---   2 oracle asmadmin  36864 Sep  6 00:48 stage
drwxr-x---   2 oracle asmadmin   4096 Sep  6 00:48 lck
drwxr-x---   2 oracle asmadmin   8192 Sep  6 17:52 alert
drwxr-x---   2 oracle asmadmin 606208 Sep  7 02:05 trace
[oracle@cdclaodbdbl AMSPRD1]$ cd trace
[oracle@cdclaodbdbl trace]$ ls -lrt
```

Figure 11: Alert Log check

Step 6: AMSCMD Check

Command: `asmcmd` →`lsdg`

```
[oracle@cdclaodbdbl trace]$ asmcmd
ASMCMD> lsdg
State    Type    Rebal  Sector  Logical_Sector  Block       AU  Total_MB  Free_MB  Req_mir_free_MB  Usable_file_MB  Offline_disks  Voting_files  Name
MOUNTED  EXTERN  N         512             512   4096  4194304    143360    76200                0           76200              0             N  ARCHIVES/
MOUNTED  EXTERN  N         512             512   4096  4194304    307200        0                0               0              0             N  BACKUP/
MOUNTED  EXTERN  N         512             512   4096  4194304    716800   300348                0          300348              0             N  DATA/
MOUNTED  EXTERN  N         512             512   4096  4194304    204800   200112                0          200112              0             N  FRA/
MOUNTED  HIGH    N         512             512   4096  4194304    102400   101088            40960           20042              0             Y  OCR/
MOUNTED  EXTERN  N         512             512   4096  4194304     61428    59228                0           59228              0             N  REDO/
ASMCMD>
```

Figure 12: AMSCMD Check

Step 7: Crosscheck Archive logs

- After clearing archives, we need to crosscheck the archive logs, if not the backup of database will not happen on the next day.

```
Export ORACLE_SID=AMSPRD!

Connect rman /

Crosscheck archivelog all;
```

```
[oracle@cdclaodbdb1 ~]$ export ORACLE_SID=AMSPRD1
[oracle@cdclaodbdb1 ~]$ rman target /

Recovery Manager: Release 19.0.0.0.0 - Production on Thu Sep 7 07:01:00 2023
Version 19.3.0.0.0

Copyright (c) 1982, 2019, Oracle and/or its affiliates.  All rights reserved.

connected to target database: AMSPRD (DBID=1778872599)

RMAN> crosscheck archive log all;
```

Figure 13: Crosscheck Archive logs

Step 8: Backup check

```
col STATUS format a9

col hrs format 999.99

 col start_time format A20

 col end_time format A20

 SET LINES 999 PAGES 999;

 select SESSION_KEY, INPUT_TYPE, STATUS, to_char(START_TIME,'mm/dd/yy
hh24:mi') start_time,

    to_char(END_TIME,'mm/dd/yyhh24:mi') end_time, elapsed_seconds/3600
hrs

    from V$RMAN_BACKUP_JOB_DETAILS where start_time > sysdate-4 order by
session_key;
```

```
SQL> col STATUS format a9
SQL> col hrs format 999.99
 col start_time format A20
SQL> SQL>  col end_time format A20
SQL>  SET LINES 999 PAGES 999;
 select SESSION_KEY, INPUT_TYPE, STATUS, to_char(START_TIME,'mm/dd/yy hh24:mi') start_time,
    to_char(END_TIME,'mm/dd/yyhh24:mi') end_time, elapsed_seconds/3600 hrs
    from V$RMAN_BACKUP_JOB_DETAILS where start_time > sysdate-4 order by session_key;
SQL>   2    3
SESSION_KEY INPUT_TYPE    STATUS    START_TIME          END_TIME                HRS
----------- ------------- --------- ------------------- ------------------- -------
       2424 DB INCR       COMPLETED 09/04/23 01:05      09/04/2301:11           .11
                          WITH WAR
                          NINGS

       2431 DB INCR       COMPLETED 09/05/23 01:05      09/05/2301:11           .11
                          WITH WAR
                          NINGS

       2438 DB INCR       COMPLETED 09/06/23 01:05      09/06/2301:12           .13
                          WITH WAR
                          NINGS

       2445 DB INCR       COMPLETED 09/07/23 01:05      09/07/2301:11           .11
                          WITH WAR
                          NINGS
```

Figure 14: Backup Check

Step 9: Blocking sessions check

```
Select
   blocking_session,
   sid,
   serial#,
   wait_class,
   seconds_in_wait
from
   gv$session
where
   blocking_session is not NULL
order by
   blocking_session;
```

```
SQL> select
   blocking_session,
   sid,
   serial#,
   wait_class,
   seconds_in_wait
from
   gv$session
where
   blocking_session is not NULL
order by
   blocking_session;  2    3    4    5    6    7    8    9   10   11   12

no rows selected

SQL> /

no rows selected
```

Figure 15: Blocking Session Check

Step 10: Inactive sessions check

```
select status,count(*) from gv$session group by status;
```

```
SQL> select status,count(*) from gv$session group by status;

STATUS      COUNT(*)
--------- ----------
INACTIVE         221
ACTIVE           218
```

Figure 16: Inactive sessions check

Step 11: Tablespace Usage Check

```
select  round(sum(bytes)/1024/1024/1024,2)
Gbytes_used,round(sum(MAXBYTES)/1024/1024/1024,2) Gbytes_alloc
, tablespace_name--,round((sum(bytes)/sum(maxbytes))*100,2) pct
from dba_data_files where tablespace_name not like '%UNDO%' group by
tablespace_name order by 1 desc;
```

```
SQL> select  round(sum(bytes)/1024/1024/1024,2) Gbytes_used,round(sum(MAXBYTES)/1024/1024/1024,2) Gbytes_alloc
, tablespace_name--,round((sum(bytes)/sum(maxbytes))*100,2) pct
from dba_data_files where tablespace_name not like '%UNDO%' group by  tablespace_name order by 1 desc;  2    3

GBYTES_USED GBYTES_ALLOC TABLESPACE_NAME
----------- ------------ ------------------------------
      21.57           32 SYSAUX
      20.01           32 MSCLHTT1
         10           32 DWHLHTI1
         10           32 NEW_TBS_TEST
         10           20 SGALHTI1
         10           32 DWHLHTT1
       9.39           22 SGALHTT1
       6.95           10 FOMLHTI1
          5        14.65 AAALHTT1
       2.65           10 FOMLHTT1
       2.54           31 SDSLHTT1
       2.01           42 SYSTEM
        .56           30 MSCLHTI1
        .35            5 VIPLHTT1
        .29           30 FIDLHTT1
        .26            5 VIPLHTI1
        .26            5 SDSLHTI1
        .06           15 AFVLHTI1
        .04           20 AFVLHTT1
        .02           32 CORLHTT1
        .02           15 AAALHTI1
        .01          .78 APTLHTT1
        .01           10 APTONCALLI1
        .01           10 FIDLHTI1
        .01           10 CORLHTI1
        .01           15 AMGLHTI1
        .01           10 FDSLHTI1
        .01          .78 APTONCALLT1
        .01           10 APTLHTI1
        .01           10 FDSLHTT1
        .01           10 AMGLHTT1
          0           15 USERS

32 rows selected.
```

Figure 17: Tablespace Usage Check

Step 12: Archive log list check

```
archive log list;
```

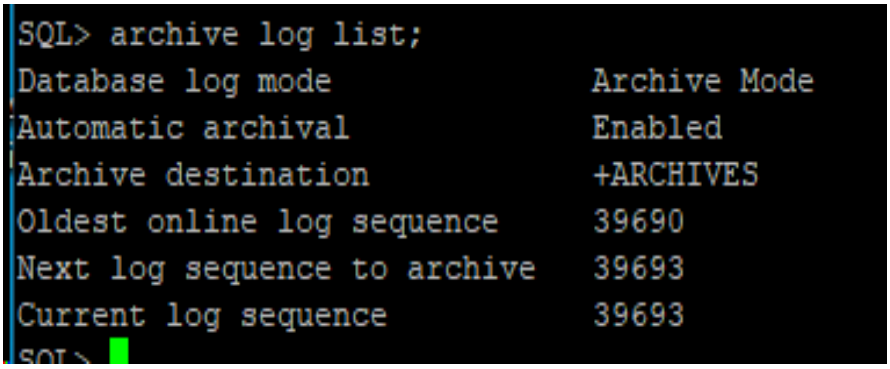


Figure 18: Archive log list check

8.0 RTO AND RPO

- The Recovery Point Objective (RPO) and Recovery Time Objective (RTO), along with a business impact analysis, provides the basis for identifying, analyzing, and explaining viable strategies for inclusion in the business continuity plan.
- RTO for the AMS package would be 90 to 120 mins and RPO would be 2 to 5 mins

10.0 APPENDIX

8.1 Incident reporting and it support

- Please connect with the SD team to raise the ticket and assign it to the app support team to resolve this issue.

  Email: itsupport@waisl.in
  Phone: 040-66607777

- Use the Amadeus Customer Service Point Portal to report an issue.

  Website: https://www.customerservicepoint.amadeus.com/acsp/start

8.2 References

S.no	Reference	Changes	Change Dependencies (Y/N)	Revision* / Remarks
1				
2				
3				
4				