



PeopleSoft Application with Autonomous Database - Shared



Migration Guide with Oracle ZDM

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Due to the nature of the product architecture, it may not be possible to safely include all features described in this document without risking significant destabilization of the code.

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Figure 0 – Oracle PeopleSoft + ZDM + ADB Logo

INTRODUCTION

Oracle customers are moving Oracle workloads into the Oracle Cloud at a growingly rapid pace. However, migrating workloads has been a source of challenges for many years. Migrating database workloads from one system to another or into the Cloud is easier said than done.

Based on years of experience migrating Oracle workloads, Oracle has developed Zero Downtime Migration (ZDM). ZDM is Oracle's premier solution for a simplified and automated migration experience, providing zero to negligible downtime for the production system and depending on the migration scenario. ZDM allows you to directly and seamlessly migrate your Oracle Databases to and between any Oracle-owned infrastructure, including Exadata Database Machine On-Premises, Exadata Cloud at Customer (ExaC@C), and Oracle Cloud Infrastructure. Oracle ZDM supports a wide range of Oracle Database versions and, as the name implies, ensures minimal to no production database impact during the migration.

ZDM follows Oracle Maximum Availability Architecture (MAA) principles one and incorporates products such as GoldenGate and Data Guard to ensure High Availability and an online migration workflow that leverages technologies such as the Recovery Manager, Data Pump, and Database Links.

Oracle PeopleSoft customers who are migrating to the Oracle Cloud can benefit from ZDM and its automation, having then an easier, automated, Cloud Journey.

This Migration guide will walk you through all the requirements, steps, and best practices to Migrate your Database and have your PeopleSoft environment leverage Oracle Autonomous Database – Shared.

For more information on Oracle Zero Downtime Migration, please visit ZDM's product website.¹

For more information on Oracle PeopleSoft, please visit PeopleSoft's product website.²

For more information on Oracle Autonomous Database, please visit Oracle Autonomous Database's website.³

¹ <http://www.oracle.com/goto/zdm>

² <https://www.oracle.com/applications/peoplesoft/>

³ <https://www.oracle.com/autonomous-database/>

PEOPLESOFT APPLICATION WITH AUTONOMOUS DATABASE - SHARED

Architecture

This step-by-step guide starts with a full-tier source PeopleSoft HCM environment deployed on an Oracle Linux VM. The objective of this guide is to migrate the database to **Autonomous Database on Shared Exadata Infrastructure** (now on ADB-S)– configured for Autonomous Transaction Processing workloads. At a high level, during this procedure, we will use Oracle **Zero Downtime Migration** (now on ZDM). This document is based upon ZDM’s **Offline Logical** migration methodology for migrating on-premises Database to ADB-S leveraging Oracle Data Pump. The migrated database at ADB-S can be re-wired with the Mid-Tier of PeopleSoft provisioned at OCI Infrastructure.

- **Offline Migration with Data Pump and Backup Location**
 - ZDM logical offline migration with Data Pump and Backup Location offers customers a simple yet efficient method to migrate their databases to the Oracle Cloud. The backup location can be the Object Storage for OCI migrations and NFS for Exadata On-Premises and Exadata Cloud at Customer.

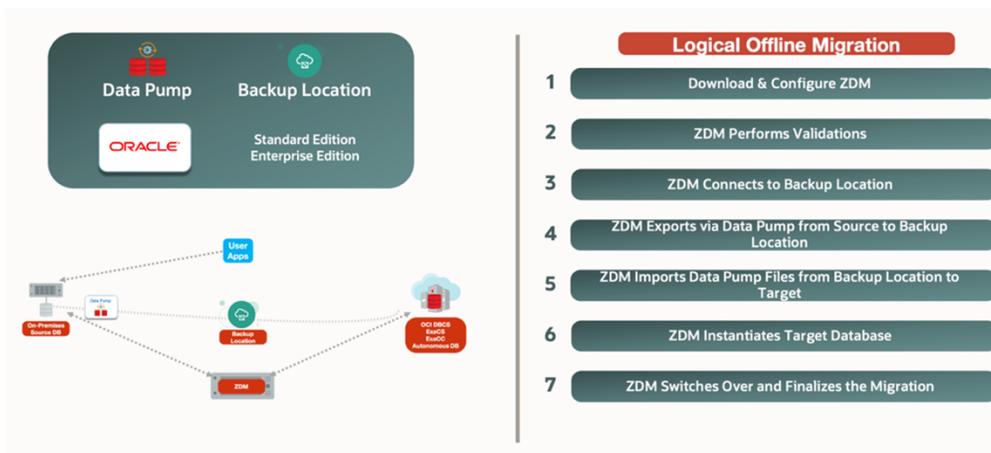


Figure 1 – Step-by-Step Logical Offline Migration with Data Pump and Backup Location

Step 1, Download and Configure ZDM. Step 2, ZDM Performs Validations. Step 3, ZDM Connects to Backup Location. Step 4, ZDM Exports Via Data Pump from Source to Backup Location. Step 5, ZDM Imports Data Dump Files from Backup Location to Target. Step 6, ZDM Instantiates Target Database. Step 7, ZDM Switches Over Finalizes the Migration Process.

Requirements for PeopleTools and Autonomous Database - Shared

- PeopleTools: For 8.57, it is 8.57.20 and above. For 8.58, it is 8.58.09 and above.
- Database Client: To obtain the required Oracle Client levels, the client needs to be updated by applying a Database Release Update (DBRU) patch on the middle tier. The minimum level required is 19.13 (October 2021) which can be found here:
 - Oracle Database 19c Release Update & Release Update Revision October 2021 Known Issues [NOTE: 19202110.9](#)
 - Supported Oracle Client version with TLS authentication without a wallet, based on: [Oracle Client version supporting TLS authentication](#)
 - Oracle Instant Client 19.13 - only on Linux x64
 - Oracle Instant Client 19.14 (or later) and 21.5 (or later) - all platforms
 - ◆ * It's always recommended to select the latest version available at the time of deployment.

Source Database

Source database for this step-by-step guide is configured on Oracle Linux 7 VM as a PUM Database with HRMS 9.2 Image 40 on PeopleTools 8.59.02. The Source database is running with Oracle Database Version 19.10.0.0 along with PSU Patch January 2021.

Source Database's stream pool must be configured with the initialization parameter STREAMS_POOL_SIZE:

```
SQL> alter system set streams_pool_size=512M scope=spfile sid='*';  
*Restart Database upon setting the parameter
```

Target Database

Target Database will be Autonomous Transaction Processing Database – Shared, referred as ADB-S in this document. This Database has been provisioned on OCI using the steps described below:

Database Provisioning

- a. Change the compartment of your choice and create Autonomous Database via menu option of Autonomous Transaction Processing:

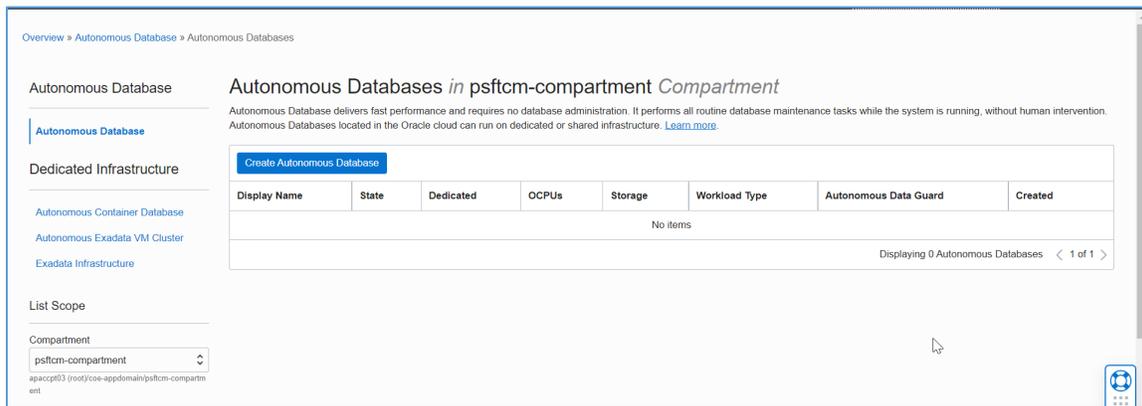


Figure 2 – Autonomous Database menu in Oracle Cloud Infrastructure

- b. Database Options required for provisioning:

- **Workload Type:** Transaction Processing
- **Deployment Type:** Shared Infrastructure
- **Network Access:** We can control and restrict access to ADB-S by specifying network access control lists (ACLs). On an existing Autonomous Database instance with a public endpoint, you can add, change, or remove ACLs, which can be defined with one of the below options:
 - i. **IP Address:** In the Values field enter values for the IP Address.
 - ii. **CIDR Block:** In the Values field enter values for the CIDR Block.
 - iii. **Virtual Cloud Network:** Use this option to specify the VCN for use with an Oracle Cloud Infrastructure Service Gateway.
 - iv. **Virtual Cloud Network (OCID):** Use this option to specify the VCN for use with an Oracle Cloud Infrastructure Service Gateway.

For more details, please refer [Configure access control lists with an Autonomous Database instance](#)

For this Demo, select as “Secure access from allowed IPs and VCNs only” and uncheck the box for “Require mutual TLS (mTLS) authentication”. [Find more information here regarding TLS Authentication](#)

Create Autonomous Database

Provide basic information for the Autonomous Database

Compartment
psftcm-compartment
apaccpl03 (root)/coe-appdomain/psftcm-compartment

Display name
PSFT-ON-ADB-S
A user-friendly name to help you easily identify the resource.

Database name
PDB19C
The name must contain only letters and numbers, starting with a letter. Maximum of 14 characters.

Choose a workload type

Data Warehouse Built for decision support and data warehouse workloads. Fast queries over large volumes of data.	Transaction Processing Built for transactional workloads. High concurrency for short-running queries and transactions.	JSON Built for JSON-centric application development. Developer-friendly document APIs and native JSON storage.	APEX Built for Oracle APEX application development. Creation and deployment of low-code applications, with database included.
--	--	--	---

Choose a deployment type

Shared Infrastructure Run Autonomous Database on shared Exadata infrastructure.	Dedicated Infrastructure Run Autonomous Database on dedicated Exadata infrastructure.
---	---

Figure 3 – Create Autonomous Database menu in Oracle Cloud Infrastructure

Configure the database

Always Free ⓘ
 Show only Always Free configuration options

Choose database version
19c

OCPU count
1
The number of OCPU cores to enable. Available cores are subject to your tenancy's service limits.

Storage (TB)
1
The amount of storage to allocate.

OCPU auto scaling
Allows system to use up to three times the number of cores specified by the OCPU count as the workload increases. [Learn more.](#)

Storage auto scaling
Allows system to expand up to three times the reserved storage.

Create administrator credentials ⓘ

Username *Read-Only*
ADMIN
ADMIN username cannot be edited.

Password
.....

Confirm password
.....

Figure 4 – Create Autonomous Database menu in Oracle Cloud Infrastructure

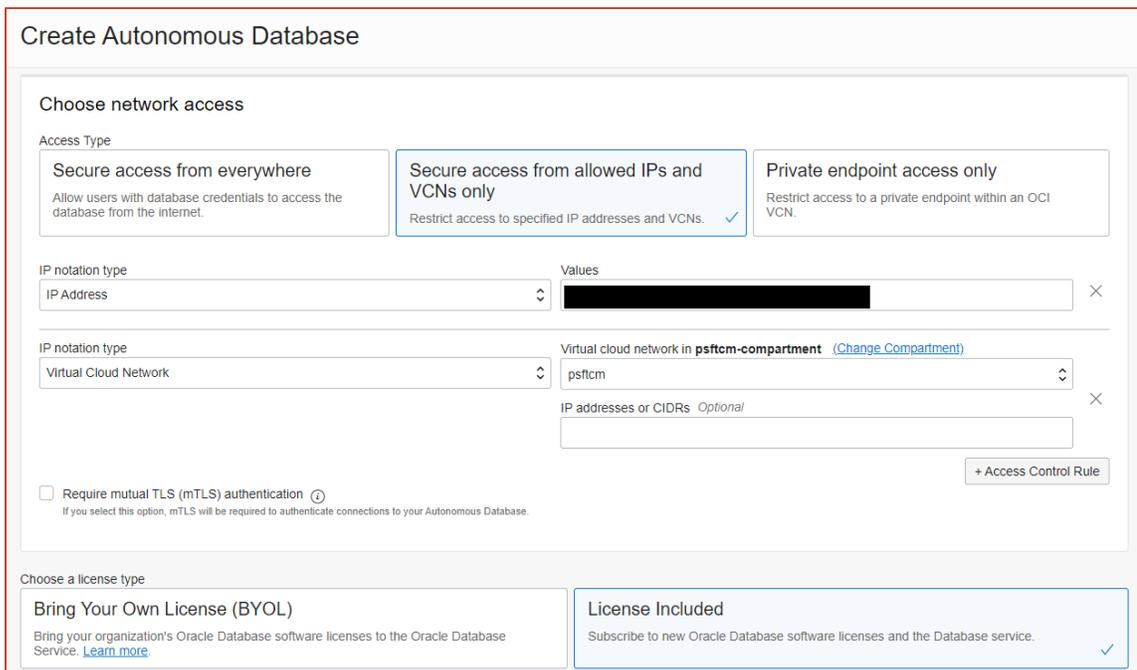


Figure 5 – Create Autonomous Database menu in Oracle Cloud Infrastructure

- c. Validate the Pluggable Database (PDB) from OCI Console after it gets provisioned:

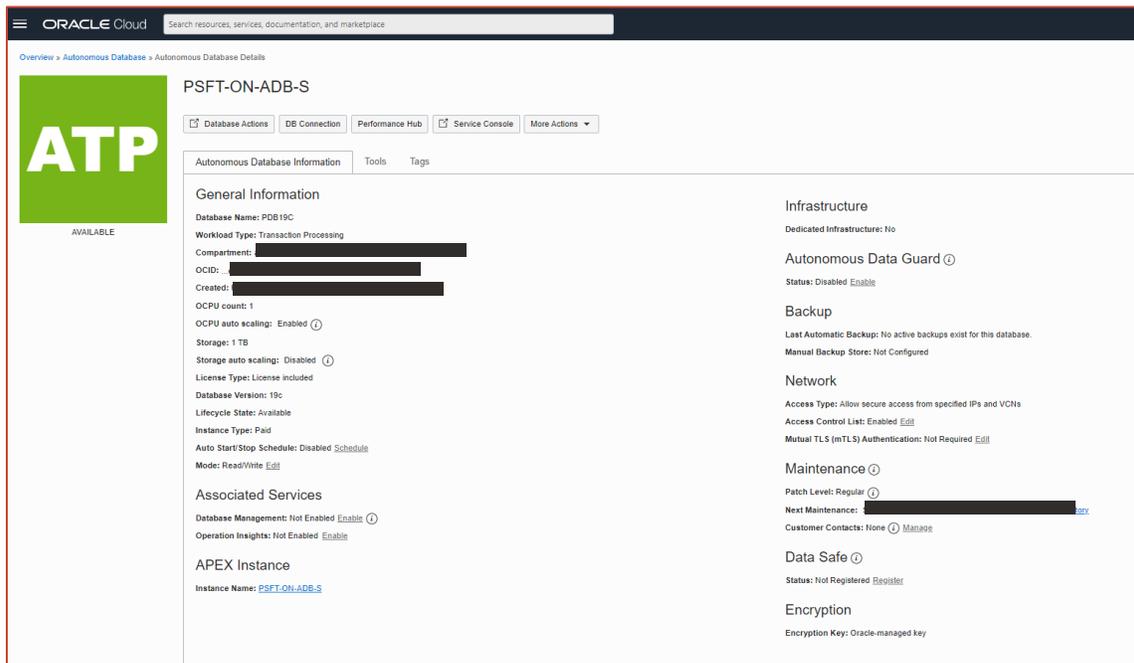


Figure 6 –Autonomous Database menu in Oracle Cloud Infrastructure

Click on the DB Connection button, copy and save the Connection Strings, please ensure 'TLS' is selected for 'TLS Authentication'.

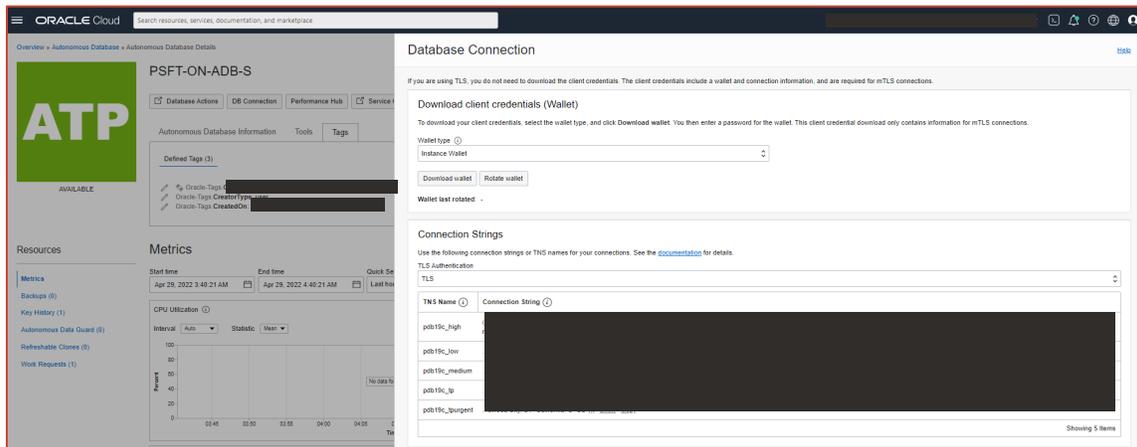


Figure 7 – Autonomous Database, Database Connection menu in Oracle Cloud Infrastructure

Summary of Source and Target Environments

Property	Source Database	Target Database
Hostname	hostname-Infxt-database.test	-
Operating System	OL 7.9	-
DB Version	19c	19c
Patch	19.10.0.0.210119	-
File System	Standard	-
CDB Name	CDBHCM	-
PDB Name	CM92PUM	PDB19C
NLS_CHARACTERSET	AL32UTF8	AL32UTF8
NLS_NCHAR_CHARACTERSET	UTF8	AL16UTF16

Architecture Changes with ADB-S

Database Character Set

The database character set for ADB-S is Unicode AL32UTF8.

Tablespace Remap

The default data and temporary tablespaces for the database are configured automatically for ADB-S. Adding, removing, or modifying tablespaces is not allowed. Autonomous Database creates one tablespace or multiple tablespaces automatically depending on the storage size. Because of this, the migration process remaps tablespaces accordingly.

Password Policy for Database Users

Autonomous Database requires strong passwords; the password you specify for a user must meet the following default password complexity rules:

- The password must be between 12 and 30 characters long and must include at least one uppercase letter, one lowercase letter, and one numeric character.
- The password cannot contain the username.
- The password cannot be one of the last four passwords used for the same username.
- The password cannot contain the double quote (") character.
- The password must not be the same password that is set less than 24 hours ago.

To change the password complexity rules and password parameter values user can alter the default profile or create a new profile and assign it to users.

<https://docs.oracle.com/en/cloud/paas/autonomous-database/adbsa/manage-users-create.html#GUID-72DFAF2A-C4C3-4FAC-A75B-846CC6EDBA3F>

Note: Users can create a Password Verify Function (PVF) and associate the PVF with a profile to manage the complexity of user passwords. For details, please refer: <https://docs.oracle.com/en/cloud/paas/autonomous-database/adbsa/manage-user-profiles.html#GUID-81E6B578-C942-4755-A693-33773350B0DA>

* Data Pump allows to import Database Users with weak password for migration ease. For security purposes, there is a 30 days' time window to reset the password, in compliance with ADB-S Password Policy.

Initialization Parameters

Please refer to the document below for a list of initialization parameters that can be modified:

<https://docs.oracle.com/en/cloud/paas/autonomous-database/adbsa/appendix-restrictions-database-initialization-parameters.html#GUID-7CF648C1-0822-4602-8ED1-6F5719D6779E>

To ensure the most optimal application performance, PeopleSoft customers using ADB-S should work with OCI Support to set an init.ora environment variable to a non-standard setting by logging a Service Request in My Oracle Support, detailing the following information:

PRODUCT: Autonomous Database on Shared Infrastructure

ABSTRACT/SUMMARY: PSFT on ADBS: please set PeopleSoft DB identifier

Details to be included in the Service Request:

1. Oracle Cloud Infrastructure Region
2. Tenancy name and OCID
3. Autonomous DB name and OCID
4. Request to set init.ora parameter: `_unnest_subquery=false`

Target Database Required Settings

The Target Database needs to be prepared accordingly before starting the migration process. Please follow the steps as described below.

Target Database Parameter

PeopleSoft Unicode databases require NLS_LENGTH_SEMANTICS=CHAR. Update the NLS_LENGTH_SEMANTICS parameter as recommended for PeopleSoft Database following these My Oracle Support notes:

- <https://support.oracle.com/epmos/faces/DocContentDisplay?id=1986664.1>
- <https://support.oracle.com/epmos/faces/DocContentDisplay?id=2626966.1>

```

SQL> show parameter nls_length_semantics

NAME                                TYPE                                VALUE
-----                                -
nls_length_semantics                 string                               BYTE
SQL> alter system set nls_length_semantics=CHAR;

System altered.

SQL> █

```

Figure 8 –Target Autonomous Database nls_length_semantics parameter update

```
SQL> alter system set nls_length_semantics=CHAR;
```

* This is to ensure that the length of CHAR and VARCHARs is measured in characters and not bytes, to address the multibyte characteristics of AL32UTF8. For more details, please refer [Oracle Documentation for NLS_LENGTH_SEMANTICS](#)

Map Tablespaces for Autonomous Database - Optional Step

This step is only relevant to use cases where a set of identified Tablespace needs to be migrated to ADB-S. Mapping the Tablespace is an optional step. This step can be ignored if the goal is to migrate all Tablespace to ADB-S. Data Pump will map the Source Tablespace with 'DATA' Tablespace by default.

* **SYSTEM, SYSAUX, UNDO** and **TEMP** Tablespaces will be used from the provisioned target ADB-S Pluggable Database (PDB). In case there are any PeopleSoft objects created there, those will be treated as customization and out of the scope for this document.

Permanent Tablespace – Optional Step

The SQL statements below provide the list of Permanent Tablespaces needed to map with 'DATA' Tablespace:

```

zdmuser@zdmhost:~
[zdmuser@zdmhost ~]$ sqlplus sysadm@CM92PUM

SQL*Plus: Release 19.0.0.0.0 - Production on Mon May 9 04:52:31 2022
Version 19.15.0.0.0

Copyright (c) 1982, 2021, Oracle. All rights reserved.

Enter password:
Last Successful login time: Mon May 09 2022 04:48:46 +00:00

Connected to:
Oracle Database 19c Enterprise Edition Release 19.0.0.0.0 - Production
Version 19.10.0.0.0

SQL> set heading off;
SQL> set echo off;
SQL> set pages 999;
SQL> set linesize 400;
SQL> set long 90000;
SQL> spool permanent_tablespace.txt;
SQL> SELECT 'DATAPUMPSETTINGS_METADATAREMAPS-1=type:REMAP_TABLESPACE,oldValue:' || TABLESPACE_NAME || ',newValue:DATA'
  2 FROM USER_TABLESPACES
  3 WHERE TABLESPACE_NAME not in ('SYSTEM','SYSAUX') and CONTENTS not in ('UNDO', 'TEMPORARY');

DATAPUMPSETTINGS_METADATAREMAPS-1=type:REMAP_TABLESPACE,oldValue:PSDEFAULT,newValue:DATA
DATAPUMPSETTINGS_METADATAREMAPS-1=type:REMAP_TABLESPACE,oldValue:AAAPP,newValue:DATA
DATAPUMPSETTINGS_METADATAREMAPS-1=type:REMAP_TABLESPACE,oldValue:AALARGE,newValue:DATA
DATAPUMPSETTINGS_METADATAREMAPS-1=type:REMAP_TABLESPACE,oldValue:ADAPP,newValue:DATA
DATAPUMPSETTINGS_METADATAREMAPS-1=type:REMAP_TABLESPACE,oldValue:AMAPP,newValue:DATA
DATAPUMPSETTINGS_METADATAREMAPS-1=type:REMAP_TABLESPACE,oldValue:AVAPP,newValue:DATA
DATAPUMPSETTINGS_METADATAREMAPS-1=type:REMAP_TABLESPACE,oldValue:BDAPP,newValue:DATA
DATAPUMPSETTINGS_METADATAREMAPS-1=type:REMAP_TABLESPACE,oldValue:BNAPP,newValue:DATA
DATAPUMPSETTINGS_METADATAREMAPS-1=type:REMAP_TABLESPACE,oldValue:BNLARGE,newValue:DATA
DATAPUMPSETTINGS_METADATAREMAPS-1=type:REMAP_TABLESPACE,oldValue:CCAPP,newValue:DATA
DATAPUMPSETTINGS_METADATAREMAPS-1=type:REMAP_TABLESPACE,oldValue:COAPP,newValue:DATA
DATAPUMPSETTINGS_METADATAREMAPS-1=type:REMAP_TABLESPACE,oldValue:CUAUDIT,newValue:DATA
DATAPUMPSETTINGS_METADATAREMAPS-1=type:REMAP_TABLESPACE,oldValue:CULARG1,newValue:DATA
DATAPUMPSETTINGS_METADATAREMAPS-1=type:REMAP_TABLESPACE,oldValue:CULARG2,newValue:DATA
DATAPUMPSETTINGS_METADATAREMAPS-1=type:REMAP_TABLESPACE,oldValue:CULARG3,newValue:DATA

```

Figure 9 –Target Autonomous Database list of Permanent Tablespaces to be mapped with 'DATA' Tablespace

```

set heading off;
set echo off;
set pages 999;
set linesize 400;
set long 90000;
spool permanent_tablespace.txt;
SELECT 'DATAPUMPSETTINGS_METADATAREMAPS-1=type:REMAP_TABLESPACE,oldValue:' || TABLESPACE_NAME ||
',newValue:DATA'
  FROM USER_TABLESPACES
  WHERE TABLESPACE_NAME not in ('SYSTEM','SYSaux') and CONTENTS not in ('UNDO', 'TEMPORARY');
spool off;

```

Temporary Tablespace – Optional Step

The SQL statements below provide the list of Temporary Tablespaces needed to map with 'TEMP' Tablespace:

```

zdmuser@zdmhost~
SQL> set heading off;
SQL> set echo off;
SQL> set pages 999;
SQL> set linesize 400;
SQL> set long 90000;
SQL> spool temporary_tablespace.txt;
SQL> SELECT 'DATAPUMPSETTINGS_METADATAREMAPS-1=type:REMAP_TABLESPACE,oldValue:' || TABLESPACE_NAME || ',newValue:TEMP'
  2  FROM USER_TABLESPACES
  3  WHERE CONTENTS in ('TEMPORARY');

DATAPUMPSETTINGS_METADATAREMAPS-1=type:REMAP_TABLESPACE,oldValue:TEMP,newValue:TEMP
DATAPUMPSETTINGS_METADATAREMAPS-1=type:REMAP_TABLESPACE,oldValue:PSTEMP,newValue:TEMP
DATAPUMPSETTINGS_METADATAREMAPS-1=type:REMAP_TABLESPACE,oldValue:PSGTT01,newValue:TEMP

SQL> spool off;
SQL>

```

Figure 10 –List of Temporary Tablespaces needed to map with 'TEMP' Tablespace

```

set heading off;
set echo off;
set pages 999;
set linesize 400;
set long 90000;
spool temporary_tablespace.txt;
SELECT 'DATAPUMPSETTINGS_METADATAREMAPS-1=type:REMAP_TABLESPACE,oldValue:' || TABLESPACE_NAME ||
',newValue:DATA'
  FROM USER_TABLESPACES
  WHERE CONTENTS in ('TEMPORARY');
spool off;

```

The Output of these 2 files, *permanent_tablespace.txt* and *temporary_tablespace.txt*, will be used for populating ZDM's response file, specifically the 'DATAPUMPSETTINGS_METADATAREMAPS-n' parameter. Save these files, as they will be required later in the migration process.

Creating PeopleSoft User at the Target Database

Oracle ZDM's migration workflow takes care of importing PeopleSoft's Schema along with users at the source database Level. For manual user creation, Password Policy for Database User mentioned above must be followed. This implies all additional tasks related to encrypting new password and update the PSOPRDEFN table as prerequisites which is an established and well known procedure for PeopleSoft Admin.

* Data Pump allows to import Database Users with weak password for migration ease. For security purposes, there is a 30 days' time window to reset the password, in compliance with ADB-S Password Policy.

Run 'psroles.sql' and 'psroles2.sql' for PSADMIN Role

Before running the import, it is important to create the PSADMIN role and grant required privileges to the role as 'ADMIN' user.

Copy 'psroles.sql' and 'psroles2.sql' from Mid-Tier

Proceed to copy 'psroles.sql' and 'psroles2.sql' from \$PS_HOME/script/unix/pdb folder of Mid-Tier and run at ADB-S as the 'ADMIN' user to generate the PSADMIN role.

Run 'psroles.sql' and 'psroles2.sql' script

Run these scripts as admin user on ADB-S.

Run 'psroles.sql':

```
zdmuser@zdmhost-
SQL> @psroles.sql
SQL> spool pspoles.log
SQL>
SQL> DROP ROLE PSADMIN;
DROP ROLE PSADMIN
*
ERROR at line 1:
ORA-01919: role 'PSADMIN' does not exist

SQL> CREATE ROLE PSADMIN;
Role created.

SQL> GRANT
 2 CREATE SESSION,
 3 CREATE TABLE,
 4 CREATE PROCEDURE,
 5 CREATE SYNONYM,
 6 CREATE VIEW,
 7 CREATE TRIGGER,
 8 CREATE DATABASE LINK,
 9 CREATE MATERIALIZED VIEW,
10 CREATE SEQUENCE
11 TO PSADMIN ;
Grant succeeded.

SQL> EXEC DBMS_RESOURCE_MANAGER_PRIVS.GRANT_SYSTEM_PRIVILEGE -
> (GRANTEE_NAME => 'PSADMIN', PRIVILEGE_NAME => 'ADMINISTER_RESOURCE_MANAGER', -
> ADMIN_OPTION => TRUE);
BEGIN DBMS_RESOURCE_MANAGER_PRIVS.GRANT_SYSTEM_PRIVILEGE (GRANTEE_NAME => 'PSADMIN', PRIVILEGE_NAME => 'ADMINISTER_RESOURCE_MANAGER', ADMIN_OPTION => TRUE); END;
*
ERROR at line 1:
ORA-06550: line 1, column 7:
PLS-00201: identifier 'DBMS_RESOURCE_MANAGER_PRIVS' must be declared
ORA-06550: line 1, column 7:
PL/SQL: Statement ignored

SQL> spool off
SQL>
```

Figure 11 –psroles.sql script execution

Error noticed while running the scripts:

- DBMS_RESOURCE_MANAGER_PRIVS.GRANT_SYSTEM_PRIVILEGE: IGNORE THIS ERROR as Autonomous Database comes with predefined CPU/IO shares assigned to different consumer groups with limited flexibility.

Run 'psroles2.sql':

Before running the script, update it as per below:

Comment the following lines:

- ALTER SESSION SET CONTAINER = <PDB_SERVICE_NAME>;
 - Reason: The connection is with PDB Service itself as 'admin' user.
- grant select,insert,update,delete on PS.PSDBOWNER to PSADMIN;
 - Reason: Schema and Object don't exist at ADB-S at this point of time.

```
zdmuser@zdmhost:~
set echo on
spool psroles2.log

REMARK -- Commented to run against ADB-S where connected to PDB
-- ALTER SESSION SET CONTAINER = <PDB SERVICE_NAME>;
GRANT SELECT ON SYS.V_$MYSTAT to PSADMIN;
GRANT SELECT ON USER_AUDIT_POLICIES to PSADMIN;
GRANT SELECT ON DBA_AUDIT_POLICY_COLUMNS to PSADMIN;
GRANT EXECUTE ON DBMS_FGA to PSADMIN;

REM -- If using 12c (12.1.0.2.0 or higher) with the IMDB feature,
REM -- the following two grants will be applied:
REM

SET SERVEROUTPUT ON
SET FEEDBACK ON

DECLARE
    vdollarversion VARCHAR2(17);
BEGIN
    SELECT version
    into vdollarversion
    FROM v$instance;
    DBMS_OUTPUT.PUT_LINE('Oracle Version: '|| vdollarversion);
    IF vdollarversion >= '12.1.0.2.0'
    THEN
        DBMS_OUTPUT.PUT_LINE('EXEC 12c IMDB specific GRANTS');
        EXECUTE IMMEDIATE ('GRANT SELECT ON SYS.V_$IM_COLUMN_LEVEL to PSADMIN');
        EXECUTE IMMEDIATE ('GRANT SELECT ON SYS.V_$IM_USER_SEGMENTS to PSADMIN');
    ELSE
        DBMS_OUTPUT.PUT_LINE('IMDB grants not executed. IMDB feature is not available in this Oracle version.');
```

Figure 12 –psroles2.sql script execution

```
zdmuser@zdmhost~
SQL> @psroles2.sql
SQL> -- *****
SQL> -- This software and related documentation are provided under a
SQL> -- license agreement containing restrictions on use and
SQL> -- disclosure and are protected by intellectual property
SQL> -- laws. Except as expressly permitted in your license agreement
SQL> -- or allowed by law, you may not use, copy, reproduce,
SQL> -- translate, broadcast, modify, license, transmit, distribute,
SQL> -- exhibit, perform, publish or display any part, in any form or
SQL> -- by any means. Reverse engineering, disassembly, or
SQL> -- decompilation of this software, unless required by law for
SQL> -- interoperability, is prohibited.
SQL> -- The information contained herein is subject to change without
SQL> -- notice and is not warranted to be error-free. If you find any
SQL> -- errors, please report them to us in writing.
SQL> --
SQL> -- Copyright (C) 1988, 2021, Oracle and/or its affiliates.
SQL> -- All Rights Reserved.
SQL> -- *****
SQL>
SQL>
SQL> --
SQL> -- *****
SQL> -- *****
SQL> --
SQL> --
SQL> --
SQL> --
SQL> -- *****
SQL> REMARK -- Replace <PDB_SERVICE_NAME> with your Pluggable database name.
SQL> REMARK -- This script has to run as "sqlplus / as sysdba" immediately after psroles.sql
SQL>
SQL> set echo on
SQL> spool psroles2.log
SQL>
SQL> REMARK -- Commented to run against ADB-S where connected to PDB
SQL> -- ALTER SESSION SET CONTAINER = <PDB_SERVICE_NAME>;
SQL> GRANT SELECT ON SYS.V_$MYSTAT to PSADMIN;

Grant succeeded.

SQL> GRANT SELECT ON USER_AUDIT_POLICIES to PSADMIN;

Grant succeeded.

SQL> GRANT SELECT ON DBA_AUDIT_POLICY_COLUMNS to PSADMIN;

Grant succeeded.

SQL> GRANT EXECUTE ON DBMS_FGA to PSADMIN;

Grant succeeded.

SQL>
```

Figure 13 –psroles2.sql script execution

ZERO DOWNTIME MIGRATION SERVICE HOST

Zero Downtime Migration Service Host Requirements

Oracle Zero Downtime Migration installation must take place on a separate host, which must fulfill the following requirements:

- Linux host running on Oracle 7 (must be this OS version).
- 100 GB of free storage space. This space is required for all the logs that ZDM will generate.
- A `zdm` group and a `zdmuser` as part of this group.
- Following packages must be installed:
 - `glibc-devel`
 - `expect`
 - `unzip`
 - `libaio`
 - `oraclelinux-developer-release-el7`
- All host names and IP addresses to be used must be present as entries in the `/etc/hosts` file.

For more information on the ZDM Service Host requirements, please refer to Oracle ZDM's product documentation, specifically the "Setting Up Zero Downtime Migration Software"⁴ section. <https://docs.oracle.com/en/database/oracle/zero-downtime-migration/21.1/zdmug/installing-zero-downtime-migration-software.html#GUID-A55FEDBA-236A-4006-91A5-6F28D100C5B2>

The ZDM software can be:

- Installed manually on-premises.
- Installed manually on OCI.

This Step-by-Step Guide will cover the manual installation of the ZDM Service Host, including a thorough description of all necessary instructions about the deployment and configuration. For this guide a VM in OCI has been provisioned with an attached block volume of 100 GB.

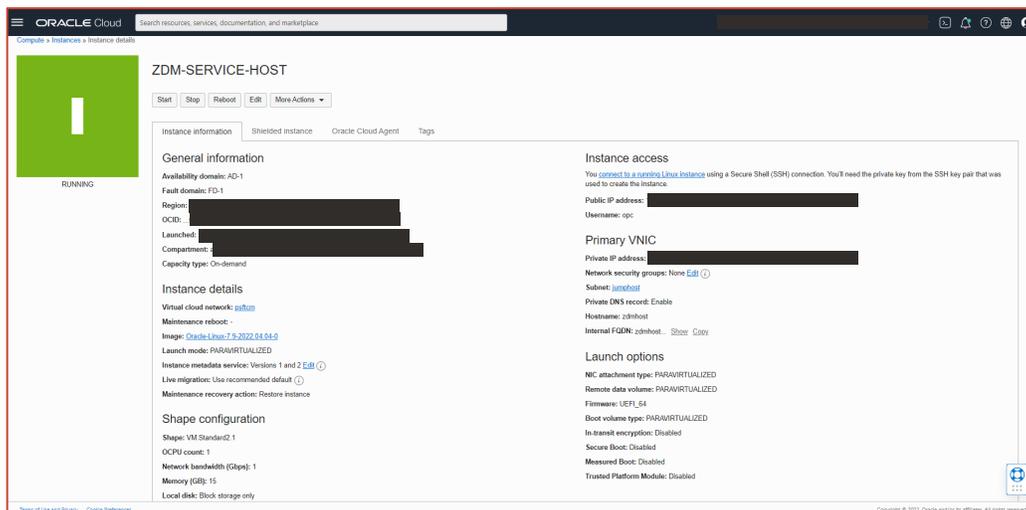


Figure 14 –ZDM Service-Host VM in Oracle Cloud Infrastructure

⁴ <https://docs.oracle.com/en/database/oracle/zero-downtime-migration/21.2/zdmug/installing-zero-downtime-migration-software.html#GUID-A55FEDBA-236A-4006-91A5-6F28D100C5B2>

ZDM Service Host Installation

Log in to the ZDM Service Host, via terminal, as root user:

- 1 Create a new group, user, and the needed directories. As root user:

```
[root@zdmhost]# groupadd zdm
[root@zdmhost]# useradd zdmuser -g zdm
[root@zdmhost]# mkdir -p /home/zdmuser/zdminstall
[root@zdmhost]# mkdir /home/zdmuser/zdmhome
[root@zdmhost]# mkdir /home/zdmuser/zdmbase
[root@zdmhost]# chown -R zdmuser:zdm /home/zdmuser/
```

- 2 Install the required software packages. As root user:

```
[root@zdmhost]# yum -y install \
glibc-devel \
expect \
unzip \
libaio \
oraclelinux-developer-release-el7

[root@zdmhost]# yum list installed glibc-devel expect unzip libaio oraclelinux-
developer-release-el7.

Installed Packages
expect.x86_64                               5.45-14.el7_1
@ol7_latest-x86_64
libaio.x86_64                               0.3.109-
13.el7                                     @anaconda/7.9
oraclelinux-developer-release-el7.x86_64  1.0-6.el7
@ol7_latest
unzip.x86_64                               6.0-21.el7
@anaconda77.9
```

- 3 Download ZDM binaries to /home/zdmuser/zdminstall from www.oracle.com/database/technologies/rac/zdm-downloads.html. Change the owner of the zip file to zdmuser. As root user:

```
[[root@zdmhost]# cd /home/zdmuser/zdminstall
[root@zdmhost zdminstall]# chown zdmuser:zdm /home/zdmuser/zdminstall/zdm21.3.zip
```

- 4 Install the ZDM software. As zdmuser:

```
root@zdmhost zdminstall]# su - zdmuser
[zdmuser@zdmhost ~]$ echo "ORACLE_HOME=/home/zdmuser/zdmhome; export ORACLE_HOME" >>
~/.bashrc
```

```

[zdmuser@zdmhost ~]$ echo "ORACLE_BASE=/home/zdmuser/zdmbase; export ORACLE_BASE" >>
~/bashrc
[zdmuser@zdmhost ~]$ echo "ZDM_BASE=\$ORACLE_BASE; export ZDM_BASE" >> ~/bashrc
[zdmuser@zdmhost ~]$ echo "ZDM_HOME=/home/zdmuser/zdmhome; export ZDM_HOME" >> ~/bashrc
[zdmuser@zdmhost ~]$ echo "ZDM_INSTALL_LOC=/home/zdmuser/zdminstall; export
ZDM_INSTALL_LOC" >> ~/bashrc
[zdmuser@zdmhost ~]$ cat ~/bashrc
ORACLE_HOME=/home/zdmuser/zdmhome; export ORACLE_HOME
ORACLE_BASE=/home/zdmuser/zdmbase; export ORACLE_BASE
ZDM_BASE=$ORACLE_BASE; export ZDM_BASE
ZDM_HOME=/home/zdmuser/zdmhome; export ZDM_HOME
ZDM_INSTALL_LOC=/home/zdmuser/zdminstall; export ZDM_INSTALL_LOC
[zdmuser@zdmhost ~]$ source ~/bashrc
[zdmuser@zdmhost ~]$ cd /home/zdmuser/zdminstall/
[zdmuser@zdmhost zdminstall]$ unzip zdm21.3.zip
[zdmuser@zdmhost zdminstall]$ cd zdm21.3
-- Proceed to execute ZDM's installation script zdmuser:
[zdmuser@zdmhost zdm21.3]$ ./zdminstall.sh setup \
oraclehome=$ZDM_HOME \
oraclebase=$ZDM_BASE \
ziploc=./zdm_home.zip -zdm

```

5 Start ZDM and check the status. As zdmuser:

```

[zdmuser@zdmhost zdm21.3]$ $ZDM_HOME/bin/zdmservice start
Return code is 0
Server started successfully.
[zdmuser@zdmhost zdm21.3]$ $ZDM_HOME/bin/zdmservice status
-----
                Service Status
-----

Running:          true
Transferport:
Conn String:      jdbc:mysql://localhost:8897/
RMI port:         8895
HTTP port:        8896
Wallet path:      /home/zdmuser/zdmbase/crsdata/zdmhost/security

```

6 Install the OCL CLI on the ZDM Service host, as 'root', execute the following:

```

[root@zdmhost ]# yum install python36-oci-cli

```

API Signing Public Key and Configuration File

- 1 Run as 'zdmuser' and copy the contents of the public key:

```
[zdmuser@zdmhost ]# mkdir zdmhome/.oci
[zdmuser@zdmhost ]# cd zdmhome/.oci
[zdmuser@zdmhost .oci]# openssl genrsa -out /home/zdmuser/zdmhome/.oci/oci_api_key.pem
2048
Generating RSA private key
---
[zdmuser@zdmhost .oci]# openssl rsa -pubout -in
/home/zdmuser/zdmhome/.oci/oci_api_key.pem -out
/home/zdmuser/zdmhome/.oci/oci_api_key_public.pem
Writing RSA key
[zdmuser@zdmhost .oci]#cat oci_api_key_public.pem
-----BEGIN PUBLIC KEY-----
XXXXXXXXXXXX
-----END PUBLIC KEY-----
[zdmuser@zdmhost .oci]#
```

- 2 Go to the OCI Dashboard, navigate to the top right, click on your user profile icon and select the top option representing your user. Select **API Keys** and **Add API Key**, copy the content of saved public key from step 1 above:

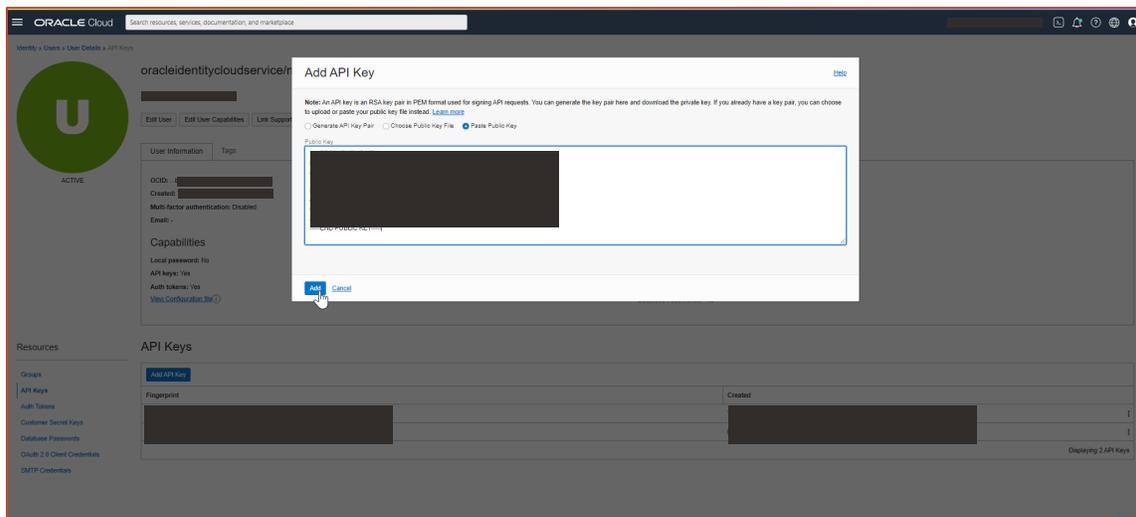


Figure 15 –Add API Key in Oracle Cloud Infrastructure

- 3 You will see a configuration file preview. Copy its contents, you will be using to populate your configuration file later:

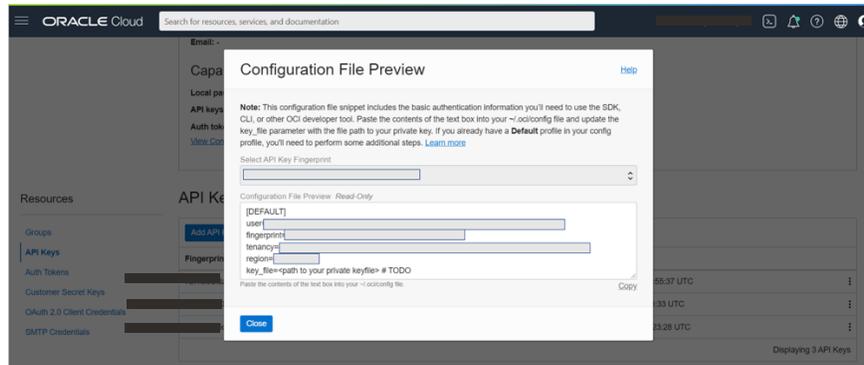


Figure 16 – Screenshot for “Configuration File Preview” window on Oracle Cloud.

- 4 As the zdmuser in the ZDM Service Host, in the command prompt, create a configuration file, you can use vi/vim or any editor of your preference. In the empty file, paste the configuration file contents copied from above. Replace < path to your private keyfile > # TODO with the line above, once done, save the file and quit the editor:

```
/u01/app/zdmhome/.oci/oci_api_key.pem
```

Install SQL Client

Autonomous Database by default supports Mutual TLS (mTLS) connections. Oracle provides the option to configure an Autonomous Database instance to support both mTLS and TLS connections. There are advantages for clients using TLS authentication with Autonomous Database, including the following:

- TLS connections do not require that you download a wallet.
- Since TLS connects are not dependent upon wallet, Clients connecting with TLS do not need to worry about wallet rotation.
- TLS connections can be faster (providing less connection latency).
- Using TLS authentication does not compromise the fully encrypted end-to-end communication between a client and Autonomous Database.

Based on these features and advantages, this document uses TLS connectivity. Oracle Call Interface (OCI) clients support TLS authentication without a wallet with using the following client versions:

- Oracle Instant Client 19.13 - only on Linux x64
- Oracle Instant Client 19.14 (or later) and 21.5 (or later) - all platforms

Oracle Client needs to be installed at ZDM Service Host and PeopleSoft Mid-Tier. The steps to achieve this are listed below as follows:

Download Oracle Instant Client

Download the RPM packages of Oracle Client for using the installer available at [Oracle Instant Client Downloads for Linux x86-64 \(64-bit\)](#)

- Basic Package (RPM)
- SQL*Plus Package (RPM)
- Tools Package (RPM)

https://www.oracle.com/database/technologies/instant-client/linux-x86-64-downloads.html

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Version 19.15.0.0.0 (Requires glibc 2.14)

Base - one of these packages is required

Name	Download	Description
Basic Package (ZIP)	instantclient-basic-linux.x64-19.15.0.0.odbru.zip	All files required to run OCI, OCCI, and JDBC-OCI applications (74,890,190 bytes) (cksum - 636833558)
Basic Package (RPM)	oracle-instantclient19.15-basic-19.15.0.0.0-1.x86_64.rpm	All files required to run OCI, OCCI, and JDBC-OCI applications (53,473,196 bytes) (cksum - 2660485748)
Basic Light Package (ZIP)	instantclient-basiclite-linux.x64-19.15.0.0.odbru.zip	Smaller version of the Basic package, with only English error messages and Unicode, ASCII, and Western European character set support (36,571,606 bytes) (cksum - 442801403)
Basic Light Package (RPM)	oracle-instantclient19.15-basiclite-19.15.0.0.0-1.x86_64.rpm	Smaller version of the Basic package, with only English error messages and Unicode, ASCII, and Western European character set support (27,357,320 bytes) (cksum - 2644383810)

Tools - optional packages

Name	Download	Description
SQL*Plus Package (ZIP)	instantclient-sqlplus-linux.x64-19.15.0.0.odbru.zip	The SQL*Plus command line tool for SQL and PL/SQL queries (911,675 bytes) (cksum - 564033284)
SQL*Plus Package (RPM)	oracle-instantclient19.15-sqlplus-19.15.0.0.0-1.x86_64.rpm	The SQL*Plus command line tool for SQL and PL/SQL queries (70,3356 bytes) (cksum - 2991993626)
Tools Package (ZIP)	instantclient-tools-linux.x64-19.15.0.0.odbru.zip	Includes Data Pump, SQL*Loader and Workload Replay Client (1,065,227 bytes) (cksum - 2130846729)
Tools Package (RPM)	oracle-instantclient19.15-tools-19.15.0.0.0-1.x86_64.rpm	Includes Data Pump, SQL*Loader and Workload Replay Client

Figure 17 – Screenshot for Oracle Client download page.

* At the time of creating this document, Oracle Client 19.15 version is the latest available.

Install Client Packages

As a 'root' user, install the packages in order. First Basic, followed by SQL*Plus and Tools Package to finish.

```

zdmuser@zdmhost:~
[root@zdmhost oracle]# ls -rlt
total 108044
-rw-r--r--. 1 root root 55616692 May  3 12:10 oracle-instantclient-basic-21.6.0.0.0-1.x86_64.rpm
-rw-r--r--. 1 root root 53473196 May  4 11:27 oracle-instantclient19.15-basic-19.15.0.0.0-1.x86_64.rpm
-rw-r--r--. 1 root root 709356 May  4 11:27 oracle-instantclient19.15-sqlplus-19.15.0.0.0-1.x86_64.rpm
-rw-r--r--. 1 root root  936529 May  4 11:27 oracle-instantclient19.15-tools-19.15.0.0.0-1.x86_64.rpm
[root@zdmhost oracle]# yum install oracle-instantclient19.15-basic-19.15.0.0.0-1.x86_64.rpm -y
Loaded plugins: langpacks, ulninfo
Examining oracle-instantclient19.15-basic-19.15.0.0.0-1.x86_64.rpm: oracle-instantclient19.15-basic-19.15.0.0.0-1.x86_64
Marking oracle-instantclient19.15-basic-19.15.0.0.0-1.x86_64.rpm to be installed
Resolving Dependencies
--> Running transaction check
--> Package oracle-instantclient19.15-basic.x86_64 0:19.15.0.0.0-1 will be installed
--> Finished Dependency Resolution

Dependencies Resolved

=====
Package                Arch          Version           Repository        Size
=====
Installing:
oracle-instantclient19.15-basic      x86_64        19.15.0.0.0-1    /oracle-instantclient19.15-basic-19.15.0.0.0-1.x86_64      226 M
Transaction Summary
-----
Install 1 Package

Total size: 226 M
Installed size: 226 M
Downloading packages:
Running transaction check
Running transaction test
Transaction test succeeded
Running transaction
  Installing : oracle-instantclient19.15-basic-19.15.0.0.0-1.x86_64      1/1
  Verifying  : oracle-instantclient19.15-basic-19.15.0.0.0-1.x86_64      1/1

Installed:
  oracle-instantclient19.15-basic.x86_64 0:19.15.0.0.0-1

Complete!
[root@zdmhost oracle]# yum install oracle-instantclient19.15-sqlplus-19.15.0.0.0-1.x86_64.rpm -y
Loaded plugins: langpacks, ulninfo

```

Figure 18 – Screenshot for package installation as zdmuser.

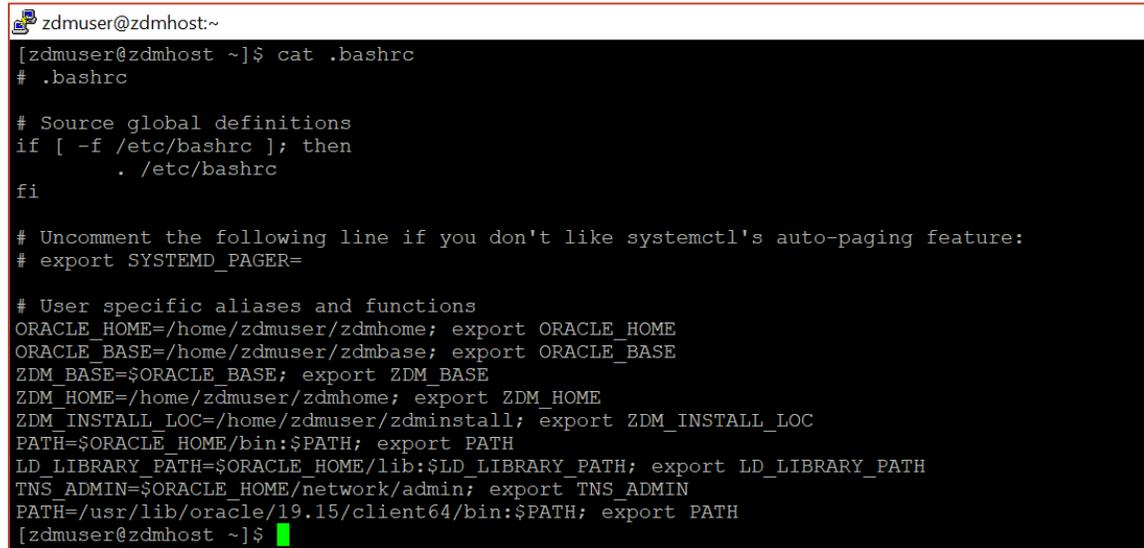
```

[root@zdmhost oracle]# yum install oracle-instantclient19.15-basic-19.15.0.0.0-1.x86_64.rpm -y
[root@zdmhost oracle]# yum install oracle-instantclient19.15-sqlplus-19.15.0.0.0-1.x86_64.rpm -y
[root@zdmhost oracle]# yum install oracle-instantclient19.15-tools-19.15.0.0.0-1.x86_64.rpm -y

```

Update Environment Variables

Update the environment variable for 'zdmuser' for TNS_ADMIN and PATH as shown below.



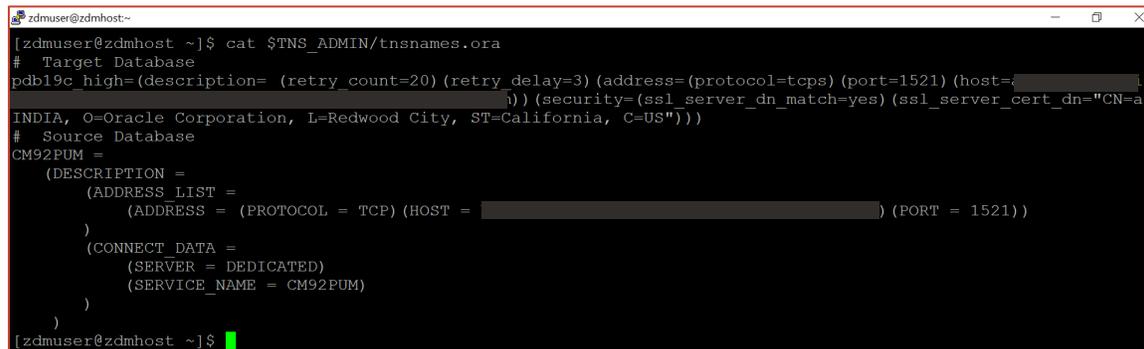
```
zdmuser@zdmhost:~  
[zdmuser@zdmhost ~]$ cat .bashrc  
# .bashrc  
  
# Source global definitions  
if [ -f /etc/bashrc ]; then  
    . /etc/bashrc  
fi  
  
# Uncomment the following line if you don't like systemctl's auto-paging feature:  
# export SYSTEMD_PAGER=  
  
# User specific aliases and functions  
ORACLE_HOME=/home/zdmuser/zdmhome; export ORACLE_HOME  
ORACLE_BASE=/home/zdmuser/zdmbase; export ORACLE_BASE  
ZDM_BASE=$ORACLE_BASE; export ZDM_BASE  
ZDM_HOME=/home/zdmuser/zdmhome; export ZDM_HOME  
ZDM_INSTALL_LOC=/home/zdmuser/zdminstall; export ZDM_INSTALL_LOC  
PATH=$ORACLE_HOME/bin:$PATH; export PATH  
LD_LIBRARY_PATH=$ORACLE_HOME/lib:$LD_LIBRARY_PATH; export LD_LIBRARY_PATH  
TNS_ADMIN=$ORACLE_HOME/network/admin; export TNS_ADMIN  
PATH=/usr/lib/oracle/19.15/client64/bin:$PATH; export PATH  
[zdmuser@zdmhost ~]$
```

Figure 19 – Screenshot for environment variables update as zdmuser.

```
TNS_ADMIN=$ORACLE_HOME/network/admin; export TNS_ADMIN  
PATH=/usr/lib/oracle/19.15/client64/bin:$PATH; export PATH
```

Update tnsnames.ora File

Using Source and Target Database details, update the tnsnames.ora file, available under the \$TNS_ADMIN folder. Refer to the connection string for ADB-S as shown earlier in this guide under the 'Database Provision' section.



```
zdmuser@zdmhost:~  
[zdmuser@zdmhost ~]$ cat $TNS_ADMIN/tnsnames.ora  
# Target Database  
pdb19c_high=(description= (retry_count=20) (retry_delay=3) (address=(protocol=tcps) (port=1521) (host=██████████) (service=(pdb19c_high) (security=(ssl_server_dn_match=yes) (ssl_server_cert_dn="CN=██████████) (INDIA, O=Oracle Corporation, L=Redwood City, ST=California, C=US))))  
# Source Database  
CM92PUM =  
  (DESCRIPTION =  
    (ADDRESS_LIST =  
      (ADDRESS = (PROTOCOL = TCP) (HOST = ██████████) (PORT = 1521))  
    )  
    (CONNECT_DATA =  
      (SERVER = DEDICATED)  
      (SERVICE_NAME = CM92PUM)  
    )  
  )  
[zdmuser@zdmhost ~]$
```

Figure 20 – Screenshot for tnsnames.ora file update.

SQL*Net Connectivity

Ensure required ports of both Source and Target Databases are open and accessible to allow SQL*Net connectivity from the ZDM Service Host. The Ingress Rules shown below are as follows: First rule allows access of Source Database from Mid-Tier and the second rule allows access of Target Database from Mid-Tier.

Ingress Rules								
Add Ingress Rules Edit Remove								
<input type="checkbox"/>	Stateless	Source	IP Protocol	Source Port Range	Destination Port Range	Type and Code	Allows	Description
<input type="checkbox"/>	No	[Redacted]	TCP	All	1521-1522		TCP traffic for ports: 1521-1522	
<input type="checkbox"/>	No	All BOM Services In Oracle Services Network	TCP	All	1521		TCP traffic for ports: 1521	ADB-S connectivity from p sftcm VCN

Figure 22 – Screenshot for Ingress Rules.

OSS Connectivity

Ensure that Source and Target Databases can connect to Oracle Object Storage on port 443.

Ingress Rules								
Add Ingress Rules Edit Remove								
<input type="checkbox"/>	Stateless	Source	IP Protocol	Source Port Range	Destination Port Range	Type and Code	Allows	Description
<input type="checkbox"/>	No	OCI BOM Object Storage	TCP	All	443		TCP traffic for ports: 443 HTTPS	Access for Source/Target Database Backup

Figure 23 – Screenshot for Ingress Rules.

Backup Location

Create a standard Object Storage Bucket named ZDMBucket for Database Backup.

ORACLE Cloud Search resources, services, documentation, and marketplace

Object Storage > Bucket Details

ZDMBucket

[Edit Visibility](#)
[Move Resource](#)
[Re-encrypt](#)
[Add Tags](#)
[Delete](#)

Bucket Information | Tags

General

Namespace: [Redacted]
 Compartment: [Redacted]
 Created: [Redacted]
 ETag: [Redacted]
 OCID: [Redacted]

Usage

Approximate Object Count: 22 objects ⓘ
 Approximate Size: 2.24 GiB ⓘ
 Uncommitted Multipart Uploads Count: 0 uploads ⓘ
 Uncommitted Multipart Uploads Approximate Size: 0 bytes ⓘ

Features

Default Storage Tier: Standard
 Visibility: Private
 Encryption Key: Oracle managed key [Assign](#)
 Auto-Tiering: ● Disabled [Edit](#) ⓘ
 Emit Object Events: ● Disabled [Edit](#) ⓘ
 Object Versioning: ● Disabled [Edit](#) ⓘ

Figure 24 – Screenshot for Object Storage.

Preparing the Response File

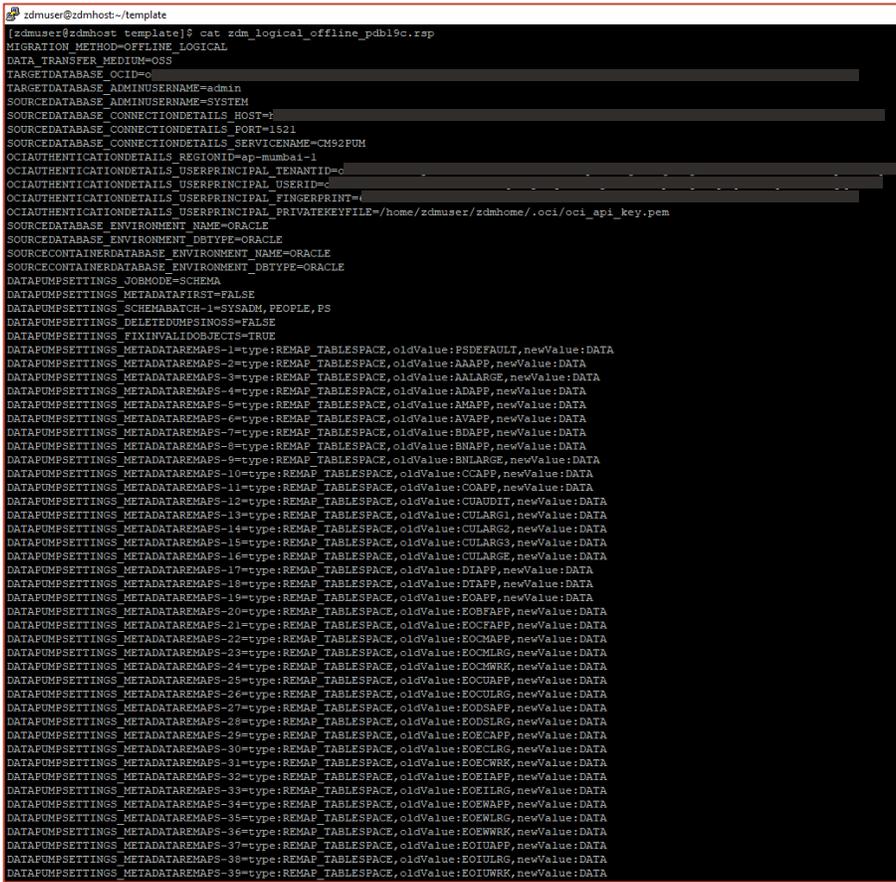
Oracle Zero Downtime Migration leverages a response file that is fully customizable by the customer. A wide array of parameters for the logical migration methodology allows the customer to configure the migration according to the appropriate use case. For more information on the complete set of response file parameters for logical migration, refer to ZDM's Product Documentation section **Zero Downtime Migration Logical Migration Response File Parameters Reference**⁵.

A response file template has been provided with each install. As a 'zdmuser', copy the template file to update parameters based on the environment:

```
[zdmuser@zdmhost ~]$ mkdir ~/template
[zdmuser@zdmhost ~]$ cp zdmhome/rhp/zdm/template/zdm_logical_template.rsp ~/template/
```

The template as is, contains parameters to handle all supported methodologies. For this step-by-step guide, **Offline Logical** migration methodology was selected, please proceed to update the response file based on this.

As discussed previously, for the purpose of this step-by-step guide, a Tablespace Map was generated to be used as an example only, where a set of identified Tablespace needs to be migrated to ADB-S. This can be skipped or, for the purpose of this guide use as shown below:



```
zdmuser@zdmhost:~/template
[zdmuser@zdmhost template]$ cat zdm_logical_offline_pdb19c.rsp
MIGRATION METHOD=OFFLINE_LOGICAL
DATA_TRANSFER_MEDIUM=OS
TARGETDATABASE_OCID=
TARGETDATABASE_ADMINUSERNAME=admin
SOURCEDATABASE_ADMINUSERNAME=SYSTEM
SOURCEDATABASE_CONNECTIONDETAILS_HOST=
SOURCEDATABASE_CONNECTIONDETAILS_PORT=1521
SOURCEDATABASE_CONNECTIONDETAILS_SERVICENAME=CM93PUM
OCIAUTHENTICATIONDETAILS_REGIONID=ap-mumbai-1
OCIAUTHENTICATIONDETAILS_USERPRINCIPAL_TENANTID=
OCIAUTHENTICATIONDETAILS_USERPRINCIPAL_USERNAME=
OCIAUTHENTICATIONDETAILS_USERPRINCIPAL_PASSWORD=
OCIAUTHENTICATIONDETAILS_USERPRINCIPAL_PRIVATEKEYFILE=/home/zdmuser/zdmhome/.oci/oci_api_key.pem
SOURCEDATABASE_ENVIRONMENT_NAME=ORACLE
SOURCEDATABASE_ENVIRONMENT_DBTYPE=ORACLE
SOURCECONTAINERDATABASE_ENVIRONMENT_NAME=ORACLE
SOURCECONTAINERDATABASE_ENVIRONMENT_DBTYPE=ORACLE
DATA PUMP SETTINGS
JOBMODE=SCHEMA
METADATABATCHES=FALSE
SCHEMABATCH=1=SYSADM, PEOPLE, PS
DELETEDUMPSINOS=FALSE
FIXINVALIDOBJECTS=TRUE
METADATAREMAPS-1=type:REMAP_TABLESPACE,oldValue:PSDEFAULT,newValue:DATA
METADATAREMAPS-2=type:REMAP_TABLESPACE,oldValue:AAAPP,newValue:DATA
METADATAREMAPS-3=type:REMAP_TABLESPACE,oldValue:AALARGE,newValue:DATA
METADATAREMAPS-4=type:REMAP_TABLESPACE,oldValue:ADAPP,newValue:DATA
METADATAREMAPS-5=type:REMAP_TABLESPACE,oldValue:AMAPP,newValue:DATA
METADATAREMAPS-6=type:REMAP_TABLESPACE,oldValue:AVAPP,newValue:DATA
METADATAREMAPS-7=type:REMAP_TABLESPACE,oldValue:BDAPP,newValue:DATA
METADATAREMAPS-8=type:REMAP_TABLESPACE,oldValue:BNAPP,newValue:DATA
METADATAREMAPS-9=type:REMAP_TABLESPACE,oldValue:BNLARGE,newValue:DATA
METADATAREMAPS-10=type:REMAP_TABLESPACE,oldValue:OCAPP,newValue:DATA
METADATAREMAPS-11=type:REMAP_TABLESPACE,oldValue:OCAPP,newValue:DATA
METADATAREMAPS-12=type:REMAP_TABLESPACE,oldValue:OAUDDIT,newValue:DATA
METADATAREMAPS-13=type:REMAP_TABLESPACE,oldValue:CULARG1,newValue:DATA
METADATAREMAPS-14=type:REMAP_TABLESPACE,oldValue:CULARG2,newValue:DATA
METADATAREMAPS-15=type:REMAP_TABLESPACE,oldValue:CULARG3,newValue:DATA
METADATAREMAPS-16=type:REMAP_TABLESPACE,oldValue:CULARGE,newValue:DATA
METADATAREMAPS-17=type:REMAP_TABLESPACE,oldValue:DIAPP,newValue:DATA
METADATAREMAPS-18=type:REMAP_TABLESPACE,oldValue:DIAPP,newValue:DATA
METADATAREMAPS-19=type:REMAP_TABLESPACE,oldValue:DOAPP,newValue:DATA
METADATAREMAPS-20=type:REMAP_TABLESPACE,oldValue:DOBFAPP,newValue:DATA
METADATAREMAPS-21=type:REMAP_TABLESPACE,oldValue:DOCFAPP,newValue:DATA
METADATAREMAPS-22=type:REMAP_TABLESPACE,oldValue:DOCMAPP,newValue:DATA
METADATAREMAPS-23=type:REMAP_TABLESPACE,oldValue:DOCMLRG,newValue:DATA
METADATAREMAPS-24=type:REMAP_TABLESPACE,oldValue:DOCMWRK,newValue:DATA
METADATAREMAPS-25=type:REMAP_TABLESPACE,oldValue:DOCUAPP,newValue:DATA
METADATAREMAPS-26=type:REMAP_TABLESPACE,oldValue:DOCLRG,newValue:DATA
METADATAREMAPS-27=type:REMAP_TABLESPACE,oldValue:DOBSAPP,newValue:DATA
METADATAREMAPS-28=type:REMAP_TABLESPACE,oldValue:FODSLGR,newValue:DATA
METADATAREMAPS-29=type:REMAP_TABLESPACE,oldValue:FOECAPP,newValue:DATA
METADATAREMAPS-30=type:REMAP_TABLESPACE,oldValue:FOECLRG,newValue:DATA
METADATAREMAPS-31=type:REMAP_TABLESPACE,oldValue:FOECWRK,newValue:DATA
METADATAREMAPS-32=type:REMAP_TABLESPACE,oldValue:FOEIAPP,newValue:DATA
METADATAREMAPS-33=type:REMAP_TABLESPACE,oldValue:FOELRG,newValue:DATA
METADATAREMAPS-34=type:REMAP_TABLESPACE,oldValue:FOEWAPP,newValue:DATA
METADATAREMAPS-35=type:REMAP_TABLESPACE,oldValue:FOEWLRG,newValue:DATA
METADATAREMAPS-36=type:REMAP_TABLESPACE,oldValue:FOEWWRK,newValue:DATA
METADATAREMAPS-37=type:REMAP_TABLESPACE,oldValue:FOIUAPP,newValue:DATA
METADATAREMAPS-38=type:REMAP_TABLESPACE,oldValue:FOIULRG,newValue:DATA
METADATAREMAPS-39=type:REMAP_TABLESPACE,oldValue:FOIUWRK,newValue:DATA
```

Figure 25 – Screenshot for Response File.

⁵ <https://docs.oracle.com/en/database/oracle/zero-downtime-migration/212/zdmug/zero-downtime-migration-logical-migration-response-file-parameters-reference.html#GUID-D580AD1C-C209-4F0F-A630-863D206FF0E5>

```

DAPUMPSETTINGS_METADATAREMAPS-40=type:REMAP_TABLESPACE,oldValue:EOLARGE,newValue:DATA
DAPUMPSETTINGS_METADATAREMAPS-41=type:REMAP_TABLESPACE,oldValue:EOLTAPP,newValue:DATA
DAPUMPSETTINGS_METADATAREMAPS-42=type:REMAP_TABLESPACE,oldValue:EOPFAPP,newValue:DATA
DAPUMPSETTINGS_METADATAREMAPS-43=type:REMAP_TABLESPACE,oldValue:EOPPLRG,newValue:DATA
DAPUMPSETTINGS_METADATAREMAPS-44=type:REMAP_TABLESPACE,oldValue:EOTFAPP,newValue:DATA
DAPUMPSETTINGS_METADATAREMAPS-45=type:REMAP_TABLESPACE,oldValue:EOTPLRG,newValue:DATA
DAPUMPSETTINGS_METADATAREMAPS-46=type:REMAP_TABLESPACE,oldValue:EPAPP,newValue:DATA
DAPUMPSETTINGS_METADATAREMAPS-47=type:REMAP_TABLESPACE,oldValue:EPLARGE,newValue:DATA
DAPUMPSETTINGS_METADATAREMAPS-48=type:REMAP_TABLESPACE,oldValue:ERAPP,newValue:DATA
DAPUMPSETTINGS_METADATAREMAPS-49=type:REMAP_TABLESPACE,oldValue:ERLARGE,newValue:DATA
DAPUMPSETTINGS_METADATAREMAPS-50=type:REMAP_TABLESPACE,oldValue:ERWORK,newValue:DATA
DAPUMPSETTINGS_METADATAREMAPS-51=type:REMAP_TABLESPACE,oldValue:FAAPP,newValue:DATA
DAPUMPSETTINGS_METADATAREMAPS-52=type:REMAP_TABLESPACE,oldValue:FALARGE,newValue:DATA
DAPUMPSETTINGS_METADATAREMAPS-53=type:REMAP_TABLESPACE,oldValue:FGAPP,newValue:DATA
DAPUMPSETTINGS_METADATAREMAPS-54=type:REMAP_TABLESPACE,oldValue:FGLARGE,newValue:DATA
DAPUMPSETTINGS_METADATAREMAPS-55=type:REMAP_TABLESPACE,oldValue:FSAPP,newValue:DATA
DAPUMPSETTINGS_METADATAREMAPS-56=type:REMAP_TABLESPACE,oldValue:GTAPP,newValue:DATA
DAPUMPSETTINGS_METADATAREMAPS-57=type:REMAP_TABLESPACE,oldValue:GPAPP,newValue:DATA
DAPUMPSETTINGS_METADATAREMAPS-58=type:REMAP_TABLESPACE,oldValue:GPDEAPP,newValue:DATA
DAPUMPSETTINGS_METADATAREMAPS-59=type:REMAP_TABLESPACE,oldValue:HPAPP,newValue:DATA
DAPUMPSETTINGS_METADATAREMAPS-60=type:REMAP_TABLESPACE,oldValue:HRAPP,newValue:DATA
DAPUMPSETTINGS_METADATAREMAPS-61=type:REMAP_TABLESPACE,oldValue:HRAPP1,newValue:DATA
DAPUMPSETTINGS_METADATAREMAPS-62=type:REMAP_TABLESPACE,oldValue:HRAPP2,newValue:DATA
DAPUMPSETTINGS_METADATAREMAPS-63=type:REMAP_TABLESPACE,oldValue:HRAPP3,newValue:DATA
DAPUMPSETTINGS_METADATAREMAPS-64=type:REMAP_TABLESPACE,oldValue:HRAPP4,newValue:DATA
DAPUMPSETTINGS_METADATAREMAPS-65=type:REMAP_TABLESPACE,oldValue:HRAPP5,newValue:DATA
DAPUMPSETTINGS_METADATAREMAPS-66=type:REMAP_TABLESPACE,oldValue:HRAPP6,newValue:DATA
DAPUMPSETTINGS_METADATAREMAPS-67=type:REMAP_TABLESPACE,oldValue:HRAPP7,newValue:DATA
DAPUMPSETTINGS_METADATAREMAPS-68=type:REMAP_TABLESPACE,oldValue:HRIMAGE,newValue:DATA
DAPUMPSETTINGS_METADATAREMAPS-69=type:REMAP_TABLESPACE,oldValue:HRLARGE,newValue:DATA
DAPUMPSETTINGS_METADATAREMAPS-70=type:REMAP_TABLESPACE,oldValue:HRLARGE,newValue:DATA
DAPUMPSETTINGS_METADATAREMAPS-71=type:REMAP_TABLESPACE,oldValue:HRSAFF,newValue:DATA
DAPUMPSETTINGS_METADATAREMAPS-72=type:REMAP_TABLESPACE,oldValue:HRSAFF,newValue:DATA
DAPUMPSETTINGS_METADATAREMAPS-73=type:REMAP_TABLESPACE,oldValue:HRSLARGE,newValue:DATA
DAPUMPSETTINGS_METADATAREMAPS-74=type:REMAP_TABLESPACE,oldValue:HRSWORK,newValue:DATA
DAPUMPSETTINGS_METADATAREMAPS-75=type:REMAP_TABLESPACE,oldValue:HRWORK,newValue:DATA
DAPUMPSETTINGS_METADATAREMAPS-76=type:REMAP_TABLESPACE,oldValue:HTAPP,newValue:DATA
DAPUMPSETTINGS_METADATAREMAPS-77=type:REMAP_TABLESPACE,oldValue:INAPP,newValue:DATA
DAPUMPSETTINGS_METADATAREMAPS-78=type:REMAP_TABLESPACE,oldValue:PAAPP,newValue:DATA
DAPUMPSETTINGS_METADATAREMAPS-79=type:REMAP_TABLESPACE,oldValue:PALARGE,newValue:DATA
DAPUMPSETTINGS_METADATAREMAPS-80=type:REMAP_TABLESPACE,oldValue:PCAPP,newValue:DATA
DAPUMPSETTINGS_METADATAREMAPS-81=type:REMAP_TABLESPACE,oldValue:PLARGE,newValue:DATA
DAPUMPSETTINGS_METADATAREMAPS-82=type:REMAP_TABLESPACE,oldValue:PIAPP,newValue:DATA
DAPUMPSETTINGS_METADATAREMAPS-83=type:REMAP_TABLESPACE,oldValue:PILARGE,newValue:DATA
DAPUMPSETTINGS_METADATAREMAPS-84=type:REMAP_TABLESPACE,oldValue:PIWORK,newValue:DATA
DAPUMPSETTINGS_METADATAREMAPS-85=type:REMAP_TABLESPACE,oldValue:POAPP,newValue:DATA
DAPUMPSETTINGS_METADATAREMAPS-86=type:REMAP_TABLESPACE,oldValue:PSIMAGE,newValue:DATA
DAPUMPSETTINGS_METADATAREMAPS-87=type:REMAP_TABLESPACE,oldValue:PSIMAGE2,newValue:DATA
DAPUMPSETTINGS_METADATAREMAPS-88=type:REMAP_TABLESPACE,oldValue:PSIMGR,newValue:DATA
DAPUMPSETTINGS_METADATAREMAPS-89=type:REMAP_TABLESPACE,oldValue:PSINDEX,newValue:DATA
DAPUMPSETTINGS_METADATAREMAPS-90=type:REMAP_TABLESPACE,oldValue:PTMMS,newValue:DATA
DAPUMPSETTINGS_METADATAREMAPS-91=type:REMAP_TABLESPACE,oldValue:PRAPP,newValue:DATA
DAPUMPSETTINGS_METADATAREMAPS-92=type:REMAP_TABLESPACE,oldValue:PTAPP,newValue:DATA
DAPUMPSETTINGS_METADATAREMAPS-93=type:REMAP_TABLESPACE,oldValue:PTAUDIT,newValue:DATA
DAPUMPSETTINGS_METADATAREMAPS-94=type:REMAP_TABLESPACE,oldValue:PTCMSTAR,newValue:DATA
DAPUMPSETTINGS_METADATAREMAPS-95=type:REMAP_TABLESPACE,oldValue:PTLOCK,newValue:DATA
DAPUMPSETTINGS_METADATAREMAPS-96=type:REMAP_TABLESPACE,oldValue:PTPRC,newValue:DATA
DAPUMPSETTINGS_METADATAREMAPS-97=type:REMAP_TABLESPACE,oldValue:PTPRJWK,newValue:DATA
DAPUMPSETTINGS_METADATAREMAPS-98=type:REMAP_TABLESPACE,oldValue:PTRFTS,newValue:DATA
DAPUMPSETTINGS_METADATAREMAPS-99=type:REMAP_TABLESPACE,oldValue:PSMATW,newValue:DATA
DAPUMPSETTINGS_METADATAREMAPS-100=type:REMAP_TABLESPACE,oldValue:FTTBL,newValue:DATA
DAPUMPSETTINGS_METADATAREMAPS-101=type:REMAP_TABLESPACE,oldValue:FTTLRG,newValue:DATA

```

Figure 26 – Screenshot for Response File.

```

DAPUMPSETTINGS_METADATAREMAPS-102=type:REMAP_TABLESPACE,oldValue:PTTREF,newValue:DATA
DAPUMPSETTINGS_METADATAREMAPS-103=type:REMAP_TABLESPACE,oldValue:PTWORK,newValue:DATA
DAPUMPSETTINGS_METADATAREMAPS-104=type:REMAP_TABLESPACE,oldValue:PVAPP,newValue:DATA
DAPUMPSETTINGS_METADATAREMAPS-105=type:REMAP_TABLESPACE,oldValue:PYOLRG,newValue:DATA
DAPUMPSETTINGS_METADATAREMAPS-106=type:REMAP_TABLESPACE,oldValue:PVAPP,newValue:DATA
DAPUMPSETTINGS_METADATAREMAPS-107=type:REMAP_TABLESPACE,oldValue:PVLARGE,newValue:DATA
DAPUMPSETTINGS_METADATAREMAPS-108=type:REMAP_TABLESPACE,oldValue:SWAPP,newValue:DATA
DAPUMPSETTINGS_METADATAREMAPS-109=type:REMAP_TABLESPACE,oldValue:SRAPP,newValue:DATA
DAPUMPSETTINGS_METADATAREMAPS-110=type:REMAP_TABLESPACE,oldValue:SACAPP,newValue:DATA
DAPUMPSETTINGS_METADATAREMAPS-111=type:REMAP_TABLESPACE,oldValue:SALARGE,newValue:DATA
DAPUMPSETTINGS_METADATAREMAPS-112=type:REMAP_TABLESPACE,oldValue:SRAPP,newValue:DATA
DAPUMPSETTINGS_METADATAREMAPS-113=type:REMAP_TABLESPACE,oldValue:STAPP,newValue:DATA
DAPUMPSETTINGS_METADATAREMAPS-114=type:REMAP_TABLESPACE,oldValue:STLARGE,newValue:DATA
DAPUMPSETTINGS_METADATAREMAPS-115=type:REMAP_TABLESPACE,oldValue:STWORK,newValue:DATA
DAPUMPSETTINGS_METADATAREMAPS-116=type:REMAP_TABLESPACE,oldValue:TLAPP,newValue:DATA
DAPUMPSETTINGS_METADATAREMAPS-117=type:REMAP_TABLESPACE,oldValue:TLLARGE,newValue:DATA
DAPUMPSETTINGS_METADATAREMAPS-118=type:REMAP_TABLESPACE,oldValue:TLWORK,newValue:DATA
DAPUMPSETTINGS_METADATAREMAPS-119=type:REMAP_TABLESPACE,oldValue:WAAPP,newValue:DATA
DAPUMPSETTINGS_METADATAREMAPS-120=type:REMAP_TABLESPACE,oldValue:TEMP,newValue:TEMP
DAPUMPSETTINGS_METADATAREMAPS-121=type:REMAP_TABLESPACE,oldValue:PSTEMP,newValue:TEMP
DAPUMPSETTINGS_METADATAREMAPS-122=type:REMAP_TABLESPACE,oldValue:PSGT01,newValue:TEMP
DAPUMPSETTINGS_CREATEAUTHORKEY=TRUE
DAPUMPSETTINGS_OMITENCRYPTIONCLAUSE=TRUE
DAPUMPSETTINGS_SECUREFILELOB=TRUE
DAPUMPSETTINGS_SKIPDFFAULTSTRANSFORM=FALSE
DAPUMPSETTINGS_DATAFMPPARAMETERS_NOCLUSTER=FALSE
DAPUMPSETTINGS_DATAFMPPARAMETERS_ESTIMATEBYSTATISTICS=FALSE
DAPUMPSETTINGS_DATAFMPPARAMETERS_RETAININDEX=FALSE
DAPUMPSETTINGS_DATABUCKET_NAME=ZMBucket03
DAPUMPSETTINGS_DATABUCKET_BUCKETNAME=ZMBucket
DAPUMPSETTINGS_EXPORTDIRECTOROBJECT_NAME=DATA_FMP_DIR
DAPUMPSETTINGS_EXPORTDIRECTOROBJECT_PATH=/u01/app/oracle/product/db/oracle-server/admin/CDBHCM/dpdump
GOLDENGATESETTINGS_ACCEPTABLELAG=30
GOLDENGATESETTINGS_EXTRACT_PERFORMANCEPROFILE=HIGH
GOLDENGATESETTINGS_REPLICAT_MAPPARALLELISM=4
GOLDENGATESETTINGS_REPLICAT_MINAPPLPARALLELISM=4
GOLDENGATESETTINGS_REPLICAT_MAXAPPLPARALLELISM=50
DUMPTRANSFERDETAILS_PARALLELCOUNT=3
DUMPTRANSFERDETAILS_RETRYCOUNT=3
DUMPTRANSFERDETAILS_RSYNCAVAILABLE=FALSE
DUMPTRANSFERDETAILS_SOURCE_USEOCI=FALSE
DUMPTRANSFERDETAILS_TARGET_USEOCI=FALSE
TABLESPACEDETAILS_AUTOCLUSTER=FALSE
TABLESPACEDETAILS_USEBIGFILE=FALSE
TABLESPACEDETAILS_EXTENDSIZE=512
TABLESPACEDETAILS_RMAPTARGET=DATA

```

Figure 27 – Screenshot for Response File.

SHUTDOWN PEOPLESFT DOMAIN GRACEFULLY

Before executing any database migration activity, as a best practice, shutdown PeopleSoft Application domain gracefully.

```
[psadm2@xxxxxxx ~]$ psadmin stop -d *all;

Shutting down Application Server domain APPDOM01...

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>
Shutting down server processes ...

Server Id = 250 Group Id = JREPGRP Machine = [REDACTED] shutdown succeeded
Server Id = 200 Group Id = JSLGRP Machine = [REDACTED] shutdown succeeded
Server Id = 20 Group Id = BASE Machine = [REDACTED] shutdown succeeded
Server Id = 1 Group Id = MONITOR Machine = [REDACTED] shutdown succeeded
Server Id = 300 Group Id = PUBSUB Machine = [REDACTED] shutdown succeeded
Server Id = 301 Group Id = PUBSUB Machine = [REDACTED] shutdown succeeded
Server Id = 200 Group Id = PUBSUB Machine = [REDACTED] shutdown succeeded
Server Id = 201 Group Id = PUBSUB Machine = [REDACTED] shutdown succeeded
Server Id = 100 Group Id = PUBSUB Machine = [REDACTED] shutdown succeeded
Server Id = 101 Group Id = PUBSUB Machine = [REDACTED] shutdown succeeded
Server Id = 100 Group Id = APPSRV Machine = [REDACTED] shutdown succeeded
Server Id = 2 Group Id = APPSRV Machine = [REDACTED] shutdown succeeded
Server Id = 1 Group Id = APPSRV Machine = [REDACTED] shutdown succeeded
Server Id = 100 Group Id = PPMGRP Machine = [REDACTED] shutdown succeeded
Server Id = 1 Group Id = WATCH Machine = [REDACTED] shutdown succeeded
Server Id = 59 Group Id = BASE Machine = [REDACTED] shutdown succeeded

16 processes stopped.

> Cleaning the bulletin board on machine [REDACTED]
>
Shutting down admin processes ...

Server Id = 0 Group Id = [REDACTED] Machine = [REDACTED]: shutdown succeeded
1 process stopped.

Complete system shutdown. Returning to boot mode.

>
All domain processes have stopped.

Shutting down Process Scheduler domain PRCS01...

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>
Shutting down server processes ...

Server Id = 1 Group Id = MONITOR Machine = [REDACTED]: shutdown succeeded
Server Id = 101 Group Id = BASE Machine = [REDACTED]: shutdown succeeded
Server Id = 104 Group Id = BASE Machine = [REDACTED]: shutdown succeeded
```

Figure 28 – Screenshot for Shutting Down PeopleSoft Application.

```
[psadm2@xxxxxxx ~]$ psadmin stop -d *all;
```

DATABASE MIGRATION

Performing a Test Database Migration on Evaluation Mode

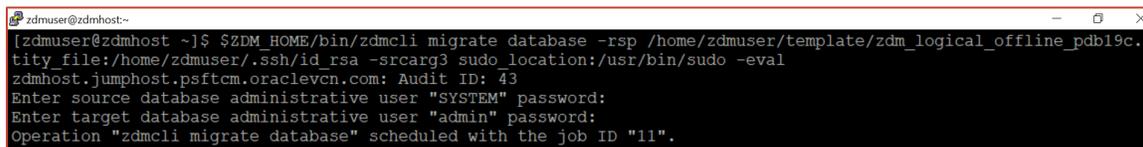
Oracle Zero Downtime Migration includes an evaluation mode that performs a dry run of the migration process; this is an optional step. It allows customers to ensure that the migration will run swiftly and will encounter no issues. When migrating with the evaluation flag on, ZDM evaluates all the different stages and will alert the user if there are any inconsistencies or potential issues; this way, customers can fix any problems beforehand. As a best practice, run a Test Database Migration before executing the migration.

ZDM also provides a tool (Cloud Premigration Advisor Tool, CPAT) that performs analysis of the source database, looking for uses of database features and constructs that are problematic when migrating to one of Oracle's Autonomous Cloud offerings before you run it against the production database.

In order to start the evaluation of the source database, do as follows:

Run the EVAL Job

Run the job as 'zdmuser' which needs the credentials for the Source and Target database. ZDM will then request the different required passwords and will generate a job id. The generated job id can be queried for progress using the `zdmcli query job -jobid job_id` command.



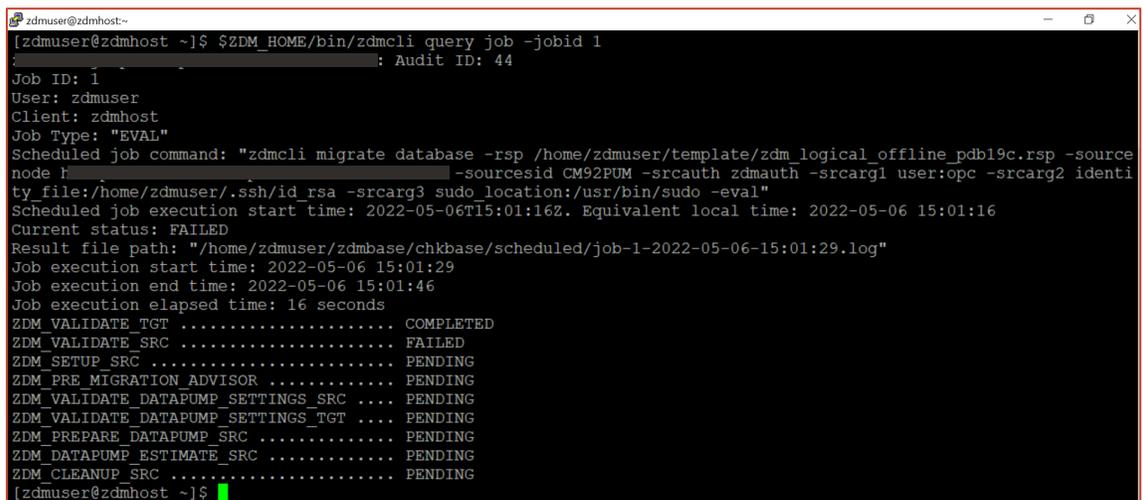
```
[zdmuser@zdmhost ~]$ $ZDM_HOME/bin/zdmcli migrate database -rsp /home/zdmuser/template/zdm_logical_offline_pdb19c.
tity_file:/home/zdmuser/.ssh/id_rsa -srcarg3 sudo_location:/usr/bin/sudo -eval
zdmhost.jumphost.psftcm.oraclevcn.com: Audit ID: 43
Enter source database administrative user "SYSTEM" password:
Enter target database administrative user "admin" password:
Operation "zdmcli migrate database" scheduled with the job ID "11".
```

Figure 29 – Screenshot of a ZDM Migration Job with evaluation mode

```
[zdmuser@zdmhost ~]$ $ZDM_HOME/bin/zdmcli migrate database -rsp
/home/zdmuser/template/zdm_logical_offline_pdb19c.rsp -sourcenode hostname-lnfxt-database.test -
sourcesid CM92PUM -srcauth zdmauth -srcarg1 user:opc -srcarg2
identity_file:/home/zdmuser/.ssh/id_rsa -srcarg3 sudo_location:/usr/bin/sudo -eval
```

Monitor the Job

Use the provided Job ID to find the run status of the job. You can do this by querying the ZDM server with the `zdmcli query job -jobid job_id` command.



```
[zdmuser@zdmhost ~]$ $ZDM_HOME/bin/zdmcli query job -jobid 1
Job ID: 1
User: zdmuser
Client: zdmhost
Job Type: "EVAL"
Scheduled job command: "zdmcli migrate database -rsp /home/zdmuser/template/zdm_logical_offline_pdb19c.rsp -source
node h... -sourcesid CM92PUM -srcauth zdmauth -srcarg1 user:opc -srcarg2 identi
ty file:/home/zdmuser/.ssh/id_rsa -srcarg3 sudo_location:/usr/bin/sudo -eval"
Scheduled job execution start time: 2022-05-06T15:01:16Z. Equivalent local time: 2022-05-06 15:01:16
Current status: FAILED
Result file path: "/home/zdmuser/zdmbase/chkbase/scheduled/job-1-2022-05-06-15:01:29.log"
Job execution start time: 2022-05-06 15:01:29
Job execution end time: 2022-05-06 15:01:46
Job execution elapsed time: 16 seconds
ZDM_VALIDATE_TGT ..... COMPLETED
ZDM_VALIDATE_SRC ..... FAILED
ZDM_SETUP_SRC ..... PENDING
ZDM_PRE MIGRATION ADVISOR ..... PENDING
ZDM_VALIDATE_DATAPUMP_SETTINGS_SRC .... PENDING
ZDM_VALIDATE_DATAPUMP_SETTINGS_TGT .... PENDING
ZDM_PREPARE_DATAPUMP_SRC ..... PENDING
ZDM_DATAPUMP_ESTIMATE_SRC ..... PENDING
ZDM_CLEANUP_SRC ..... PENDING
[zdmuser@zdmhost ~]$
```

Figure 30 – Screenshot of a failed ZDM Migration Job

```
[zdmuser@zdmhost ~]$ $ZDM_HOME/bin/zdmcli query job -jobid 1
```

```

zdmuser@zdmhost-
[zdmuser@zdmhost ~]$ $ZDM_HOME/bin/zdmcli query job --jobid 11
zdmcli : Audit ID: 45
Job ID: 11
User: zdmuser
Client: zdmhost
Job Type: "EVAL"
Scheduled job command: "zdmcli migrate database -rsp /home/zdmuser/template/zdm_logical_offline_pdb19c.rsp -source
node 1 CM92PUM -srcauth zdmauth -srcarg1 user:opc -srcarg2 identi
ty file:/home/zdmuser/.ssh/id_rsa -srcarg3 sudo location:/usr/bin/sudo -eval"
Scheduled job execution start time: 2022-05-10T07:34:27Z. Equivalent local time: 2022-05-10 07:34:27
Current status: SUCCEEDED
Result file path: "/home/zdmuser/zdmbase/chkbase/scheduled/job-11-2022-05-10-07:34:40.log"
Excluded objects file path: "/home/zdmuser/zdmbase/chkbase/scheduled/job-11-filtered-objects-2022-05-10T07:35:01.1
17.json"
Job execution start time: 2022-05-10 07:34:40
Job execution end time: 2022-05-10 07:39:11
Job execution elapsed time: 4 minutes 30 seconds
ZDM_VALIDATE_TGT ..... COMPLETED
ZDM_VALIDATE_SRC ..... COMPLETED
ZDM_SETUP_SRC ..... COMPLETED
ZDM_PRE_MIGRATION_ADVISOR ..... COMPLETED
ZDM_VALIDATE_DATAPUMP_SETTINGS_SRC .... COMPLETED
ZDM_VALIDATE_DATAPUMP_SETTINGS_TGT .... COMPLETED
ZDM_PREPARE_DATAPUMP_SRC ..... COMPLETED
ZDM_DATAPUMP_ESTIMATE_SRC ..... COMPLETED
ZDM_CLEANUP_SRC ..... COMPLETED
[zdmuser@zdmhost ~]$

```

Figure 31 – Screenshot of a successful ZDM Migration Job

Log File Review

Proceed to review the log file mentioned under “Result file path”. This log file contains any warnings or showstoppers for the migration. Each check successfully executed by the migration advisor tool (CPAT) will have a result of **PASS**, **INFORMATIONAL**, **WARNING**, or **BLOCKER**.

```

zdmuser@zdmhost- /zdmbase/chkbase/scheduled
Cloud Premigration Advisor Tool Version 22.5.2
Cloud Premigration Advisor Tool completed with overall result: WARNING
Cloud Premigration Advisor Tool generated report location: /u01/app/oracle/product/db/oracle-server/zdm/zdm_CDBHCM_11/out/premigration_advisor_report.json
Cloud Premigration Advisor Tool generated report location: /u01/app/oracle/product/db/oracle-server/zdm/zdm_CDBHCM_11/out/premigration_advisor_report.txt
CPAT exit code: 2
RESULT: WARNING
Schemas Analyzed (3): PEOPLE,PS,SYSADM
A total of 36 checks were performed
There were 0 checks with FATAL results
There were 0 checks with BLOCKER results
There were 1 checks with WARNING results: nls_national_character_set (1 relevant objects)
There were 1 checks with INFORMATIONAL results: has_default_tablespace_not_data (3 relevant objects) nls_national_character_set
RESULT: WARNING
DESCRIPTION: check for issues caused by the conversion of character data from the source to the target national character set, such as expansion of character value
s beyond data type limits or loss of invalid character codes.
ACTION: If possible, provision the target cloud database with the same national character set as the source database and enable extended data types in the target c
loud database.
zdmhost: 2022-05-10T07:36:14.964Z : Execution of phase ZDM_PRE_MIGRATION_ADVISOR completed
zdmhost: 2022-05-10T07:36:37.024Z : Executing phase ZDM_VALIDATE_DATAPUMP_SETTINGS_SRC
zdmhost: 2022-05-10T07:36:37.711Z : validating Oracle Data Pump dump directory /u01/app/oracle/product/db/oracle-server/admin/CDBHCM/dpdump/CA737DD03977063CE0536A01000AFA46
...
zdmhost: 2022-05-10T07:36:37.712Z : validating Data Pump dump directory path /u01/app/oracle/product/db/oracle-server/admin/CDBHCM/dpdump/CA737DD03977063CE0536A01000AFA46 o
n node hc92pum-lnxft-1.ft.psfctm.oraclevcn.com ...
zdmhost: 2022-05-10T07:36:38.153Z : validating data transfer medium OSS ...
zdmhost: 2022-05-10T07:36:38.154Z : executing transfer validation using provisional file zdm_validate_transfer_11651 ...
zdmhost: 2022-05-10T07:36:38.159Z : uploading Data Pump dump to object storage from directory path /u01/app/oracle/product/db/oracle-server/admin/CDBHCM/dpdump/CA737DD03977
063CE0536A01000AFA46 on node hc92pum-lnxft-1.ft.psfctm.oraclevcn.com ...
zdmhost: 2022-05-10T07:36:38.160Z : validating transfer medium OSS ...
zdmhost: 2022-05-10T07:36:38.161Z : validating transfer medium OSS ...
zdmhost: 2022-05-10T07:36:38.162Z : validating transfer medium OSS ...
zdmhost: 2022-05-10T07:36:38.163Z : validating transfer medium OSS ...
zdmhost: 2022-05-10T07:36:38.164Z : validating transfer medium OSS ...
zdmhost: 2022-05-10T07:36:38.165Z : validating transfer medium OSS ...
zdmhost: 2022-05-10T07:36:38.166Z : validating transfer medium OSS ...
zdmhost: 2022-05-10T07:36:38.167Z : validating transfer medium OSS ...
zdmhost: 2022-05-10T07:36:38.168Z : validating transfer medium OSS ...
zdmhost: 2022-05-10T07:36:38.169Z : validating transfer medium OSS ...
zdmhost: 2022-05-10T07:36:38.170Z : validating transfer medium OSS ...
zdmhost: 2022-05-10T07:36:38.171Z : validating transfer medium OSS ...
zdmhost: 2022-05-10T07:36:38.172Z : validating transfer medium OSS ...
zdmhost: 2022-05-10T07:36:38.173Z : validating transfer medium OSS ...
zdmhost: 2022-05-10T07:36:38.174Z : validating transfer medium OSS ...
zdmhost: 2022-05-10T07:36:38.175Z : validating transfer medium OSS ...
zdmhost: 2022-05-10T07:36:38.176Z : validating transfer medium OSS ...
zdmhost: 2022-05-10T07:36:38.177Z : validating transfer medium OSS ...
zdmhost: 2022-05-10T07:36:38.178Z : validating transfer medium OSS ...
zdmhost: 2022-05-10T07:36:38.179Z : validating transfer medium OSS ...
zdmhost: 2022-05-10T07:36:38.180Z : validating transfer medium OSS ...
zdmhost: 2022-05-10T07:36:38.181Z : validating transfer medium OSS ...
zdmhost: 2022-05-10T07:36:38.182Z : validating transfer medium OSS ...
zdmhost: 2022-05-10T07:36:38.183Z : validating transfer medium OSS ...
zdmhost: 2022-05-10T07:36:38.184Z : validating transfer medium OSS ...
zdmhost: 2022-05-10T07:36:38.185Z : validating transfer medium OSS ...
zdmhost: 2022-05-10T07:36:38.186Z : validating transfer medium OSS ...
zdmhost: 2022-05-10T07:36:38.187Z : validating transfer medium OSS ...
zdmhost: 2022-05-10T07:36:38.188Z : validating transfer medium OSS ...
zdmhost: 2022-05-10T07:36:38.189Z : validating transfer medium OSS ...
zdmhost: 2022-05-10T07:36:38.190Z : validating transfer medium OSS ...
zdmhost: 2022-05-10T07:36:38.191Z : validating transfer medium OSS ...
zdmhost: 2022-05-10T07:36:38.192Z : validating transfer medium OSS ...
zdmhost: 2022-05-10T07:36:38.193Z : validating transfer medium OSS ...
zdmhost: 2022-05-10T07:36:38.194Z : validating transfer medium OSS ...
zdmhost: 2022-05-10T07:36:38.195Z : validating transfer medium OSS ...
zdmhost: 2022-05-10T07:36:38.196Z : validating transfer medium OSS ...
zdmhost: 2022-05-10T07:36:38.197Z : validating transfer medium OSS ...
zdmhost: 2022-05-10T07:36:38.198Z : validating transfer medium OSS ...
zdmhost: 2022-05-10T07:36:38.199Z : validating transfer medium OSS ...
zdmhost: 2022-05-10T07:36:39.000Z : validating transfer medium OSS ...
zdmhost: 2022-05-10T07:36:40.391Z : deleting Data Pump dump in directory path /u01/app/oracle/product/db/oracle-server/admin/CDBHCM/dpdump/CA737DD03977063CE0536A01000AFA46
on node hc92pum-lnxft-1.ft.psfctm.oraclevcn.com ...
zdmhost: 2022-05-10T07:36:41.785Z : Execution of phase ZDM_VALIDATE_DATAPUMP_SETTINGS_SRC completed
zdmhost: 2022-05-10T07:36:42.150Z : Executing phase ZDM_VALIDATE_DATAPUMP_SETTINGS_TGT
zdmhost: 2022-05-10T07:36:47.762Z : Execution of phase ZDM_VALIDATE_DATAPUMP_SETTINGS_TGT completed
zdmhost: 2022-05-10T07:36:48.129Z : Executing phase ZDM_PREPARE_DATAPUMP_SRC
zdmhost: 2022-05-10T07:36:48.247Z : obtaining database CM92PUM Tablespace configuration details...

```

Figure 32 – Screenshot of a CPAT report

Sample report outcome:

```

Schemas Analyzed (3): PEOPLE,PS,SYSADM
A total of 36 checks were performed
There were 0 checks with FATAL results
There were 0 checks with BLOCKER results
There were 1 checks with WARNING results: nls_national_character_set (1 relevant objects)
There were 1 checks with INFORMATIONAL results: has_default_tablespace_not_data (3 relevant objects)
has_role_privileges

```

Some of the issues encountered and their resolution:

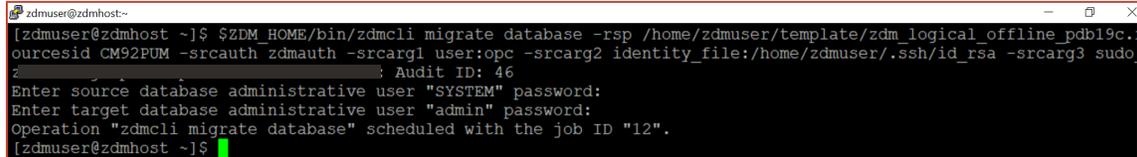
- PRGZ-1190 : OCI user "ocidl.user.ocl..xxxxxxxxxxxx" already has two OCI Auth Tokens.
 - o Process creates an Auth Token at OCI console for the User. Need to keep one placeholder available before initiating the process.
- PRGZ-1141 : failed to verify configuration and status of Oracle database "hostname-lnfxt-database.test:1521/CM92PUM"
 - o Connectivity issue because of Port for TNS Listener was not open.
- PRGZ-3593 : Cloud Premigration Advisor Tool (CPAT) execution found blockers.
<EXCEPTION>Cloud Premigration Advisor Tool Version 22.5.2Cloud Premigration Advisor Tool completed with overall result: BLOCKER
There were 1 checks with BLOCKER results: has_role_privileges (1 relevant objects)
 - o PSADMIN role at Target Database was missing.

For more information on the Cloud Pre-migration Advisor Tool please visit My Oracle Support and review Doc ID 2758371.1 <https://support.oracle.com/rs?type=doc&id=2758371.1>

Performing a Database Migration

Run the Migration Job

As the 'zdmuser', submit the migration job as described below:



```
zdmuser@zdmhost:~$ $ZDM_HOME/bin/zdmcli migrate database -rsp /home/zdmuser/template/zdm_logical_offline_pdb19c.rsp -sourcesid CM92PUM -srcauth zdmauth -srcarg1 user:opc -srcarg2 identity_file:/home/zdmuser/.ssh/id_rsa -srcarg3 sudo_location:/usr/bin/sudo : Audit ID: 46
Enter source database administrative user "SYSTEM" password:
Enter target database administrative user "admin" password:
Operation "zdmcli migrate database" scheduled with the job ID "12".
zdmuser@zdmhost ~]$
```

Figure 33 – Screenshot of a ZDM Migration job

```
[zdmuser@zdmhost ~]$ $ZDM_HOME/bin/zdmcli migrate database -rsp /home/zdmuser/template/zdm_logical_offline_pdb19c.rsp -sourcnode hostname-lnfxt-database.test -sourcesid CM92PUM -srcauth zdmauth -srcarg1 user:opc -srcarg2 identity_file:/home/zdmuser/.ssh/id_rsa -srcarg3 sudo_location:/usr/bin/sudo
```

Check the Migration Job Status

After submitting the migration job, ZDM will return a JOB ID which helps to track the job status with the zmdcli query job command.

```

zdmuser@zdmhost:~$ $ZDM_HOME/bin/zdmcli query job -jobid 12
zdmhost.jumphost.psftcm.oraclevcn.com: Audit ID: 51
Job ID: 12
User: zdmuser
Client: zdmhost
Job Type: "MIGRATE"
Scheduled job command: "zdmcli migrate database -rsp /home/zdmuser/template/zdm_logical_offline_pdb19c.rsp -sourcenode hc92pum-lnxft-1.ft.psftcm.oraclevcn.com -sourcesid CM92PUM -srcauth zdmauth -srcarg1 user:opc -srcarg2 identity file:/home/zdmuser/.ssh/id_rsa -srcarg3 sudo_location:/usr/bin/sudo"
Excluded objects file path: "/home/zdmuser/zdmbase/ckhbase/scheduled/job-12-2022-05-10-11:13:41.log"
Scheduled job execution start time: 2022-05-10T11:13:28Z. Equivalent local time: 2022-05-10 11:13:28
Current status: EXECUTING
Current Phase: "ZDM_PARALLEL_EXPORT_IMPORT"
Result file path: "/home/zdmuser/zdmbase/ckhbase/scheduled/job-12-2022-05-10-11:13:41.log"
Job execution start time: 2022-05-10 11:13:41
ZDM_VALIDATE_TGT ..... COMPLETED
ZDM_VALIDATE_SRC ..... COMPLETED
ZDM_SETUP_SRC ..... COMPLETED
ZDM_PRE_MIGRATION_ADVISOR ..... COMPLETED
ZDM_VALIDATE_DATAPUMP_SETTINGS_SRC ..... COMPLETED
ZDM_VALIDATE_DATAPUMP_SETTINGS_TGT ..... COMPLETED
ZDM_PREPARE_DATAPUMP_SRC ..... COMPLETED
ZDM_DATAPUMP_ESTIMATE_SRC ..... COMPLETED
ZDM_PREPARE_DATAPUMP_TGT ..... COMPLETED
ZDM_PARALLEL_EXPORT_IMPORT ..... STARTED
ZDM_POST_DATAPUMP_SRC ..... PENDING
ZDM_POST_DATAPUMP_TGT ..... PENDING
ZDM_POST_ACTIONS ..... PENDING
ZDM_CLEANUP_SRC ..... PENDING
zdmuser@zdmhost:~$

```

Figure 34 – Screenshot of a ZDM Migration job

```

[zdmuser@zdmhost ~]$ $ZDM_HOME/bin/zdmcli query job -jobid 12

```

POST MIGRATION DATABASE ACTIVITIES

After successful completion of the ZDM Migration Job, please follow these steps as part of the required post-migration activities. These steps are unique for the migration described in this step-by-step guide where there is a PeopleSoft environment present.

Execute required Grant Script

A grant statement part of 'psroles.sql' is required to be executed, bear in mind this statement could not be run before since before the migration the required user and objects were not present.

```

zdmuser@zdmhost:~
SQL> set heading off;
SQL> grant select,insert,update,delete on PS.PSDBOWNER to PSADMIN;
Grant succeeded.
SQL>

```

Figure 35 – Screenshot of a Grant Statement

```

set heading off;
grant select,insert,update,delete on PS.PSDBOWNER to PSADMIN;

```

Validate PSDBOWNER Table

Validate the PSDBOWNER Table for DB Name: If there is a change in DB Name from source to target, it is required to update the PSDBOWNER table.

```

zdmuser@zdmhost:~
SQL> col DBNAME format a30
SQL> col OWNERID format a20
SQL> SELECT * FROM PS.PSDBOWNER;

DBNAME                                OWNERID
-----                                -
CM92 PUM                               SYSADM
SQL>

```

Figure 36 – Screenshot of PSDBOWNER Validation

```

col DBNAME format a30
col OWNERID format a20
SELECT * FROM PS.PSDBOWNER;

```

Validation of PeopleSoft Schema Objects

Validate the object count of PeopleSoft Schemas by running the object count at Source and Target.

Source Database - Objects Count

```
oracle2@hc92pum-lnxft-1:~
SQL> col OWNER format a20
SQL> col OBJECT_TYPE format a40
SQL> SELECT OWNER, OBJECT_TYPE, COUNT(*)
 2 FROM ALL_OBJECTS
 3 WHERE OWNER IN ('PS','PEOPLE','SYSADM') GROUP BY OWNER, OBJECT_TYPE ORDER BY 1,2;

OWNER                OBJECT_TYPE                COUNT (*)
-----
PS                    INDEX                       1
PS                    TABLE                       1
SYSADM                INDEX                    38236
SYSADM                LOB                        2711
SYSADM                MATERIALIZED VIEW           5
SYSADM                TABLE                    33005
SYSADM                TRIGGER                     4
SYSADM                VIEW                       20113

8 rows selected.

SQL>
```

Figure 37 – Screenshot of Source Database – Object Count

```
col OWNER format a20
col OBJECT_TYPE format a40
SELECT OWNER, OBJECT_TYPE, COUNT(*)
FROM ALL_OBJECTS
WHERE OWNER IN ('PS','PEOPLE','SYSADM') GROUP BY OWNER, OBJECT_TYPE ORDER BY 1,2;
```

Target Database - Object Count

```
zdmuser@zdmhost:~
SQL> col OWNER format a20
SQL> col OBJECT_TYPE format a40
SQL> SELECT OWNER, OBJECT_TYPE, COUNT(*)
 2 FROM ALL_OBJECTS
 3 WHERE OWNER IN ('PS','PEOPLE','SYSADM') GROUP BY OWNER, OBJECT_TYPE ORDER BY 1,2;

OWNER                OBJECT_TYPE                COUNT (*)
-----
PS                    INDEX                       1
PS                    TABLE                       1
SYSADM                INDEX                    38236
SYSADM                MATERIALIZED VIEW           5
SYSADM                TABLE                    33005
SYSADM                TRIGGER                     4
SYSADM                VIEW                       20113

7 rows selected.

SQL>
```

Figure 38 – Screenshot of Target Database – Object Count

```
col OWNER format a20
col OBJECT_TYPE format a40
SELECT OWNER, OBJECT_TYPE, COUNT(*)
FROM ALL_OBJECTS
WHERE OWNER IN ('PS','PEOPLE','SYSADM') GROUP BY OWNER, OBJECT_TYPE ORDER BY 1,2;
```

MID-TIER CONFIGURATION AT OCI

Mid-Tier Instance at Oracle Cloud Infrastructure

There are multiple ways to migrate the mid-tier to OCI:

- Using a tar ball backup
- Provisioning a new mid-tier using PUM Images or PeopleSoft Cloud Manager

For this example, the existing Mid-Tier is being re-wired with ADB-S DataBase on OCI:

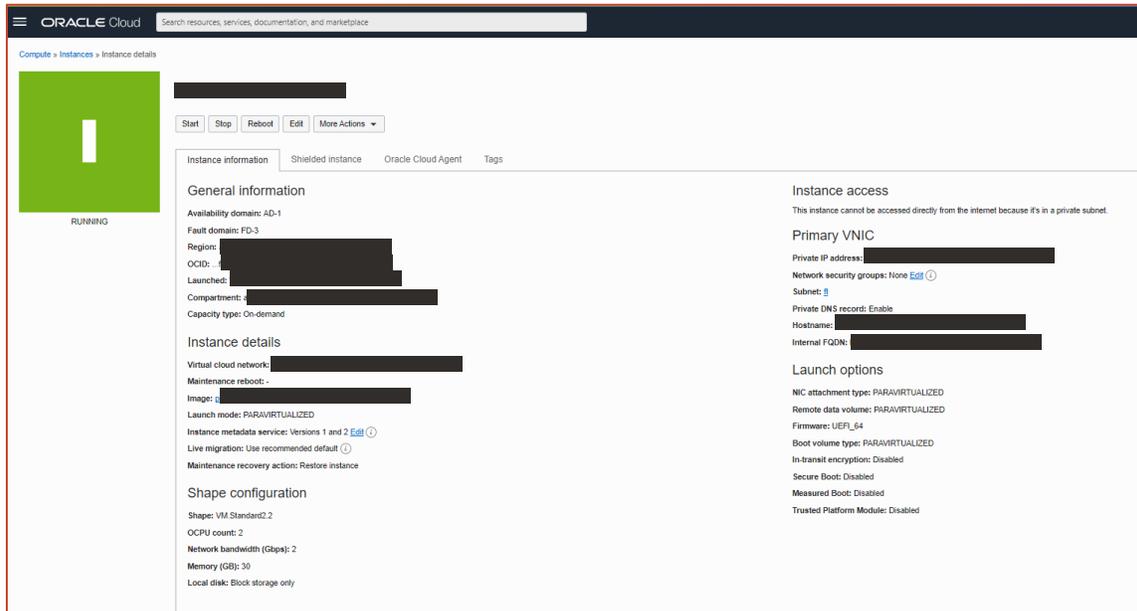


Figure 39 – Screenshot of OCI Instance

Install Oracle Client

To support Oracle Client version with TLS authentication without a wallet, install the latest available version of Oracle Client, in this guide, the version used was 19.15. Execute the following as 'root' user in the provided order:

```
[root@zdmhost oracle]# yum install oracle-instantclient19.15-basic-19.15.0.0.0-1.x86_64.rpm -y
[root@zdmhost oracle]# yum install oracle-instantclient19.15-sqlplus-19.15.0.0.0-1.x86_64.rpm -y
[root@zdmhost oracle]# yum install oracle-instantclient19.15-tools-19.15.0.0.0-1.x86_64.rpm -y
```

Update Environment Variables

Several environment variables for PeopleSoft and Oracle Database users such as oracle2, psadm1, psadm2 and psadm3 need to be updated.

```
echo "PATH=/usr/lib/oracle/19.15/client64/bin:$PATH; export PATH" >> ~/.bashrc
echo "LD_LIBRARY_PATH=/usr/lib/oracle/19.15/client64/lib:$LD_LIBRARY_PATH; export LD_LIBRARY_PATH" >> ~/.bashrc
```

Update TNS Entry and Test Database Connectivity

The tnsnames.ora file needs to be updated as the root user. Proceed to copy the connect string of service names <db_name>_low or <db_name>_tp and make another service name with 8 characters or shorter service name as per PeopleSoft App Server requirements. For instance, the service name 'CM92PUM' is the service that will be utilized for re-wiring the Mid-Tier with the Database.

Configure PeopleSoft Server

Configure App Server

Configure and start the Application Server Domain:

```
psadm2@hc92pum-lnxft-1:~
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> Prog Name      Queue Name      2ndQueue Name  Grp Name      ID RqDone Load Done Current Service
-----
BBL              201292          hc92pum+       0              155      7750 ( IDLE )
PSAPPSRV        APPQ            APPSRV         1              0        0 ( IDLE )
PSMONITORSRV    MONITOR        MONITOR        1              0        0 ( IDLE )
PSWATCHSRV      WATCH          WATCH          1              0        0 ( IDLE )
PSAPPSRV        APPQ            APPSRV         2              0        0 ( IDLE )
WSL             00001.00020    BASE           20             0        0 ( IDLE )
TMMETADATA      00094.00250    JREPGRP        250            0        0 ( IDLE )
PSBRKDSP        BRKQD_dflt     PUBSUB         100            0        0 ( IDLE )
PSSAMSRV        SAMQ           APPSRV         100            0        0 ( IDLE )
PSPPMRSRV       PPMQ2         PPMGRP         100            12       600 ( IDLE )
PSBRKHND        BRKHQ_dflt     PUBSUB         101            0        0 ( IDLE )
JSL             00095.00200    JSLGRP         200            0        0 ( IDLE )
PSPUBDSP        PUBDQ_dflt     PUBSUB         200            0        0 ( IDLE )
PSPUBHND        PUBHQ_dflt     PUBSUB         201            0        0 ( IDLE )
TMUSREVT        00001.00059    BASE           59             0        0 ( IDLE )
PSSUBDSP        SUBDQ_dflt     PUBSUB         300            0        0 ( IDLE )
PSSUBHND        SUBHQ_dflt     PUBSUB         301            0        0 ( IDLE )

>

-----
PeopleSoft Domain Status Menu
-----
Domain Name: APPDOM01

1) Server status
2) Client status
3) Queue status
q) Quit
```

Figure 40 – Screenshot of Application Server Domain Config and Start

Configure Process Scheduler

Configure Process Scheduler:

```
psadm2@hc92pum-lnxft-1:~
Command to execute (1-3, q) [q]: 1
tmadmin - Copyright (c) 1996-2016 Oracle.
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> Prog Name      Queue Name  2ndQueue Name  Grp Name      ID RqDone Load Done Current Service
-----
BBL              57947                hc92pum+      0    13    650 ( IDLE )
PSMONITORSRV    MONITOR                MONITOR        1     0     0 ( IDLE )
PSAESRV         00101.00001          AESRV          1     3    150 ( IDLE )
PSAESRV         00101.00002          AESRV          2     0     0 ( IDLE )
PSPMPSRV        PPMQ2                PPMGRP        100    6    300 ( IDLE )
PSPRCSRV        SCHEDQ                BASE          101    0     0 ( IDLE )
PSMSTPRC        MSTRSCHQ              BASE          102    0     0 ( IDLE )
PSDSTSRV        DSTQ                  BASE          103    1    50 ( IDLE )
PSDSTSRV        DSTQ                  BASE          104    0     0 ( IDLE )
PSRTISRV        00030.00030          RTI           30     0     0 ( IDLE )

>

-----
PeopleSoft Domain Status Menu
-----
      Domain Name: PRCS01

1) Server status
2) Client status
3) Queue status
q) Quit
```

Figure 41 – Screenshot of Process Scheduler Config

Configure Web Server

Configure and start a new Web Server Domain:

```
-----
PeopleSoft PIA Domain Administration
-----

PIA Home:      /u01/app/oracle/product/hc92pum-lnxft-1/ps_cfg_home
PIA Domain:    WEBSERVER01
Domain Status: started

1) Boot this domain
2) Shutdown this domain
3) Get the status of this domain
4) Configure this domain
5) Edit configuration files
6) View log files
7) Administer a site
8) Delete a site

q) Quit
```

Figure 42 – Screenshot of Web Server config

Configure PeopleSoft Components

Configure IB, Nodes, Report Repository, Printers, etc. as part of the post configuration of PeopleSoft Application.

VALIDATE PEOPLESOFT APPLICATION WITH ADB-S

Login via PIA of OCI Target Application and validate system health and performance.

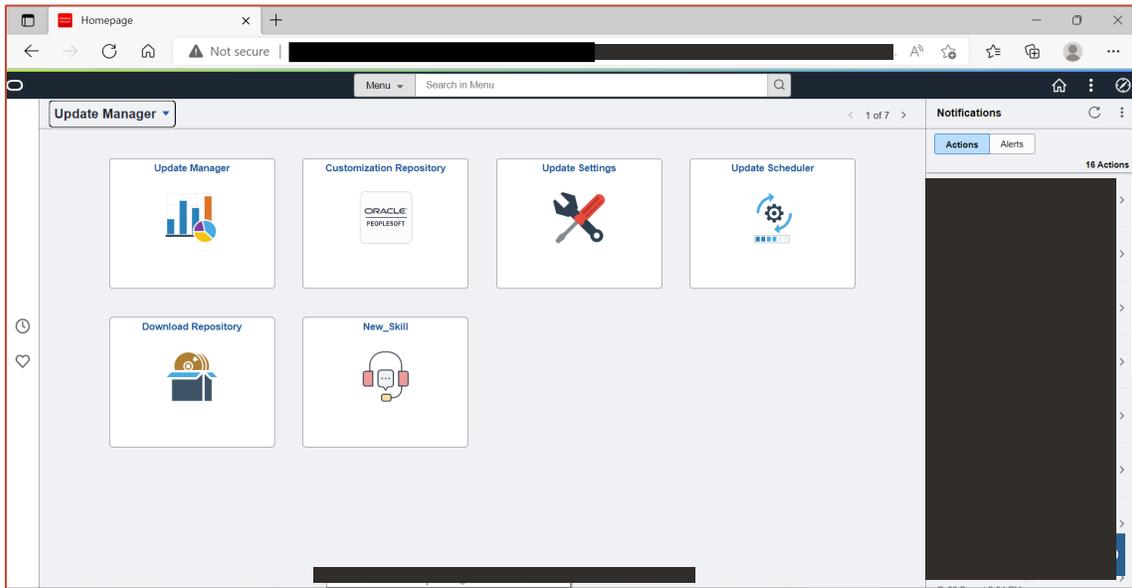


Figure 43 – Screenshot of OCI Target Application

Run the reports and validate the System Health:

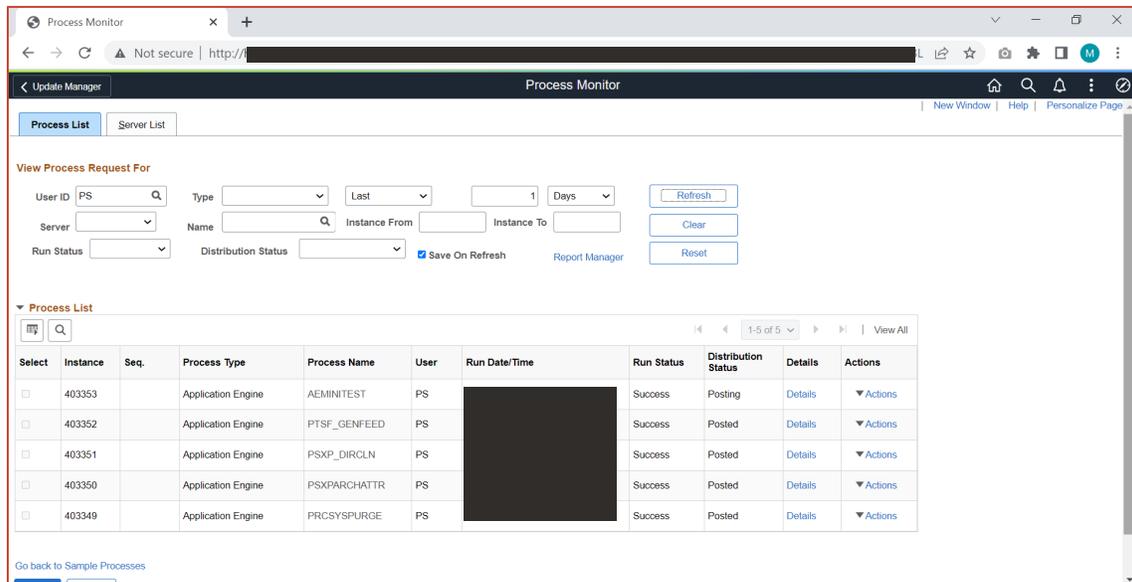


Figure 44 – Screenshot of Reports and System Health Validation

REFERENCES

My Oracle Support Articles

- DB RU: Oracle Database 19c Release Update & Release Update Revision October 2021 Known Issues (Doc ID 19202110.9)
- ZDM: MAA Practices for Cloud Migration Using ZDM (Doc ID 2562063.1)
- CPAT: Cloud Premigration Advisor Tool (CPAT) Analyzes Databases for Suitability of Cloud Migration (Doc ID 2758371.1)
- NLS_LENGTH_SEMANTICS: E-INST PPLTLS84CURML Project Copy Is Failing with ORA-12899: value too large for column on Unicode database (Doc ID 1986664.1)
- NLS_LENGTH_SEMANTICS: E-INST: Get the Following Failure When Running DataMover to Create a Unicode PeopleSoft Database: character length semantics (CLS) feature is not enabled (Doc ID 2626966.1)

OCI Documentation

- OCI Documentation: <https://docs.cloud.oracle.com/en-us/iaas/Content/services.htm>
- OCI CLI: <https://docs.cloud.oracle.com/en-us/iaas/Content/API/SDKDocs/cliinstall.htm>
- Compute: <https://docs.cloud.oracle.com/en-us/iaas/Content/Compute/Concepts/computeoverview.htm>
- Block Volume: <https://docs.cloud.oracle.com/en-us/iaas/Content/Block/Concepts/overview.htm>
- OCI Network: <https://docs.cloud.oracle.com/en-us/iaas/Content/Network/Concepts/overview.htm>
- ADB: <https://docs.cloud.oracle.com/en-us/iaas/Content/Database/Concepts/adboverview.htm>
- ADB-S: <https://docs.oracle.com/en/cloud/paas/autonomous-database/adbsa/getting-started.html#GUID-00645C09-4E76-44C6-8BBE-B433D501AADB>
- TLS vs mTLS: <https://docs.oracle.com/en/cloud/paas/autonomous-database/adbsa/support-tls-mtls-authentication.html>

ZDM Documentation

- ZDM for migration to ADB-S: <https://www.oracle.com/a/tech/docs/oracle-zdm-logical-migration-to-autonomous-guide.pdf>
- ZDM Response File: <https://docs.oracle.com/en/database/oracle/zero-downtime-migration/21.3/zdmug/preparing-logical-database-migration1.html#GUID-FCA7FEC2-D064-432F-A793-EF63419A924C>
- Oracle Data Pump Settings for ZDM: <https://docs.oracle.com/en/database/oracle/zero-downtime-migration/21.3/zdmug/preparing-logical-database-migration1.html#GUID-B723C1D5-DE14-4A2E-B5EB-61AF8AE9273C>

BLOG

- Connecting ADB-S using client authenticates server (one-way TLS or simply TLS): <https://blogs.oracle.com/datawarehousing/post/connecting-your-autonomous-database-has-never-been-easier>

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July, 2022
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