

The Oracle logo is displayed in red, uppercase letters. It is positioned in the upper left area of the slide, above the main title. The background of the slide features a silhouette of a person with arms outstretched against a bright sun, with decorative abstract shapes in the top left corner.

ORACLE

# Unlock Next Level

## Migration to Oracle AI Autonomous Database

Alex Zaballa  
Oracle Database Product Manager

# Alex Zaballa

CHRISTIAN, HUSBAND, FATHER, PM, DBA, WRITER, SPEAKER AND BLOGGER.



25 years – Oracle Technologies  
Oracle Developer: 2000 – 2007  
Oracle DBA: 2007 – 2023  
Oracle Cloud Architect: 2016 – 2023  
Oracle Database PM - 2024



<https://alexzaballa.com/>



<https://www.linkedin.com/in/alexzaballa>



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## Virtual Classroom Seminars

### Episode 16

(replaces Episode 1 from Feb 2021)

Oracle Database Release and Patching Strategy for 19c and 23c

115 minutes – May 10, 2023



### Episode 17

From SR to Patch – Insights into the Oracle Database Development process

55 minutes – June 22, 2023



### Episode 18

Cross Platform Migration – Transportable Tablespaces to the Extreme

145 min – February 22, 2024



### Episode 19

Move to Oracle Database 23ai – Everything you need to know about Multitenant PART 1

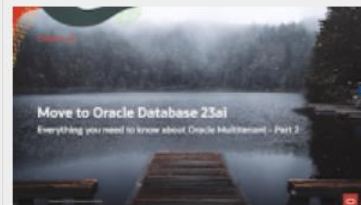
145 min – May 16, 2024



### Episode 20

Move to Oracle Database 23ai – Everything you need to know about Multitenant PART 2

100 min – June 28, 2024



## Recorded Web Seminars

<https://MikeDietrichDE.com/videos>

More than 40 hours of technical content,  
on-demand, anytime, anywhere





# Virtual Classroom Seminar Series #22 – #25



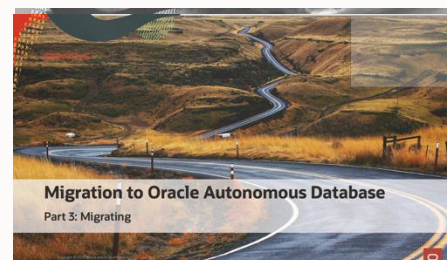
## 1 PLANNING

Watch [recording](#)  
Get [slides](#)



## 2 PREPARING

Watch [recording](#)  
Get [slides](#)



## 3 MIGRATING

Watch [recording](#)  
Get [slides](#)



## 4 OPERATING

Wach [recording](#)  
Get [slides](#)



# What's the story?



Flashback to October 2017



## The idea?

A mostly self-managed database environment,  
taking care on many tasks



# KEYNOTE PRESENTATION

Oracle OpenWorld San Francisco 2017





# ***Will the DBA's be fired?***

<https://www.complexsql.com/oracle-18c-impact-on-dbas/>

# Autonomous AI Database – Where?

## Public cloud

Autonomous AI Database



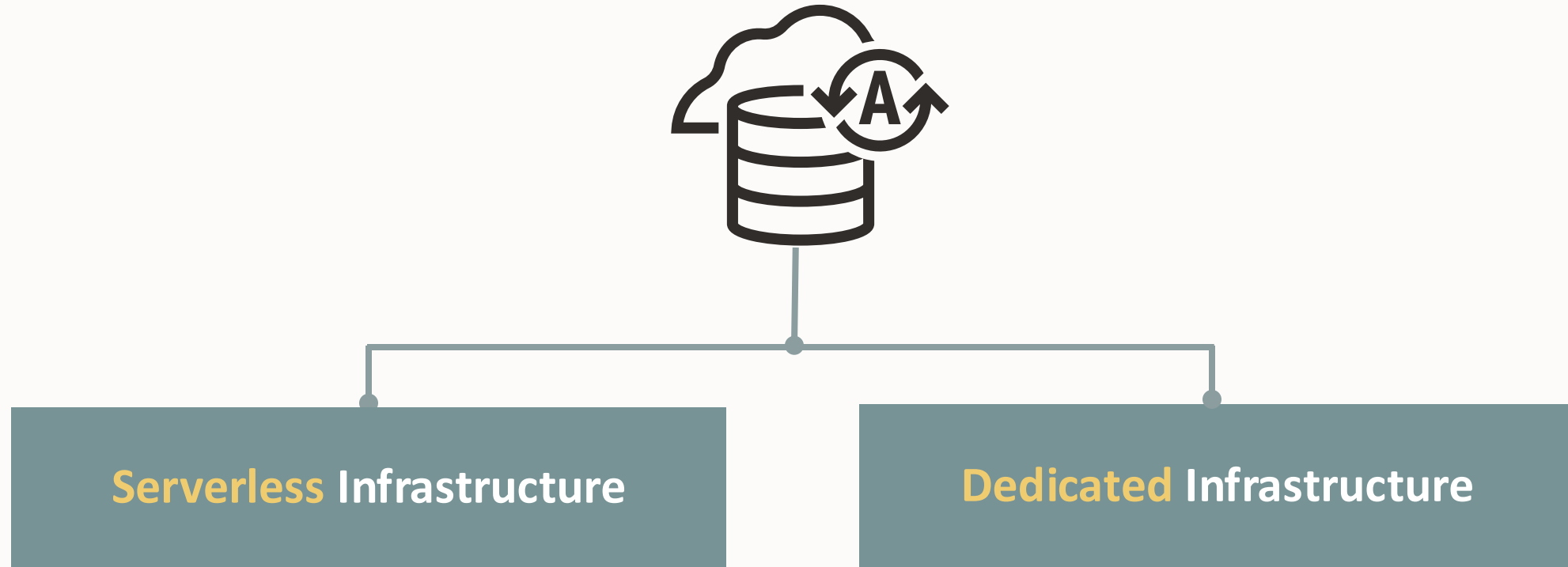
## Cloud@Customer

Autonomous AI Database in a VM environment

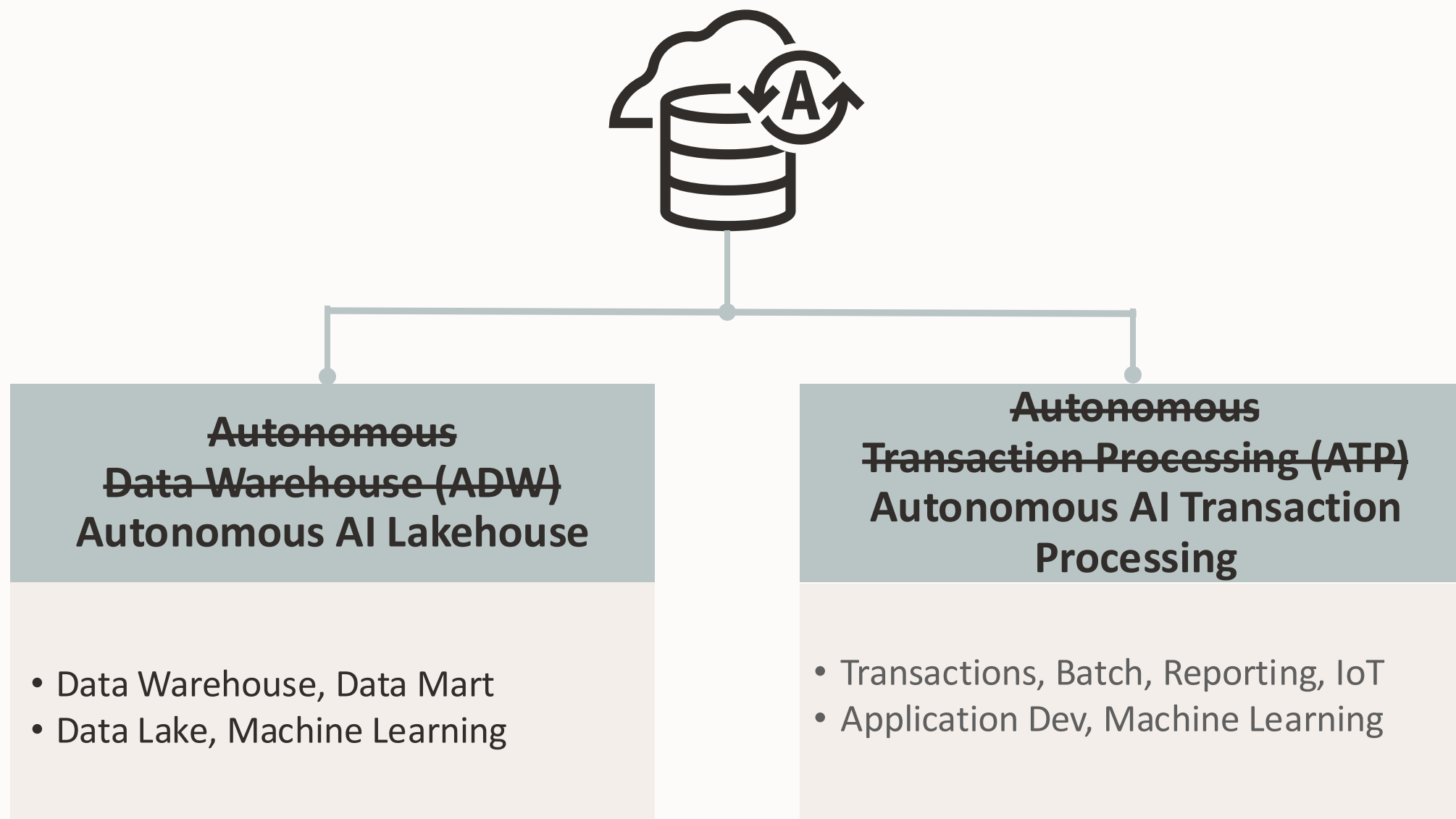




# One Autonomous AI Database – Two Deployment Choices



# One Autonomous AI Database – Workload Choices



# Migration Planning

---

No migration without a proper runbook



# Modernization and Migration

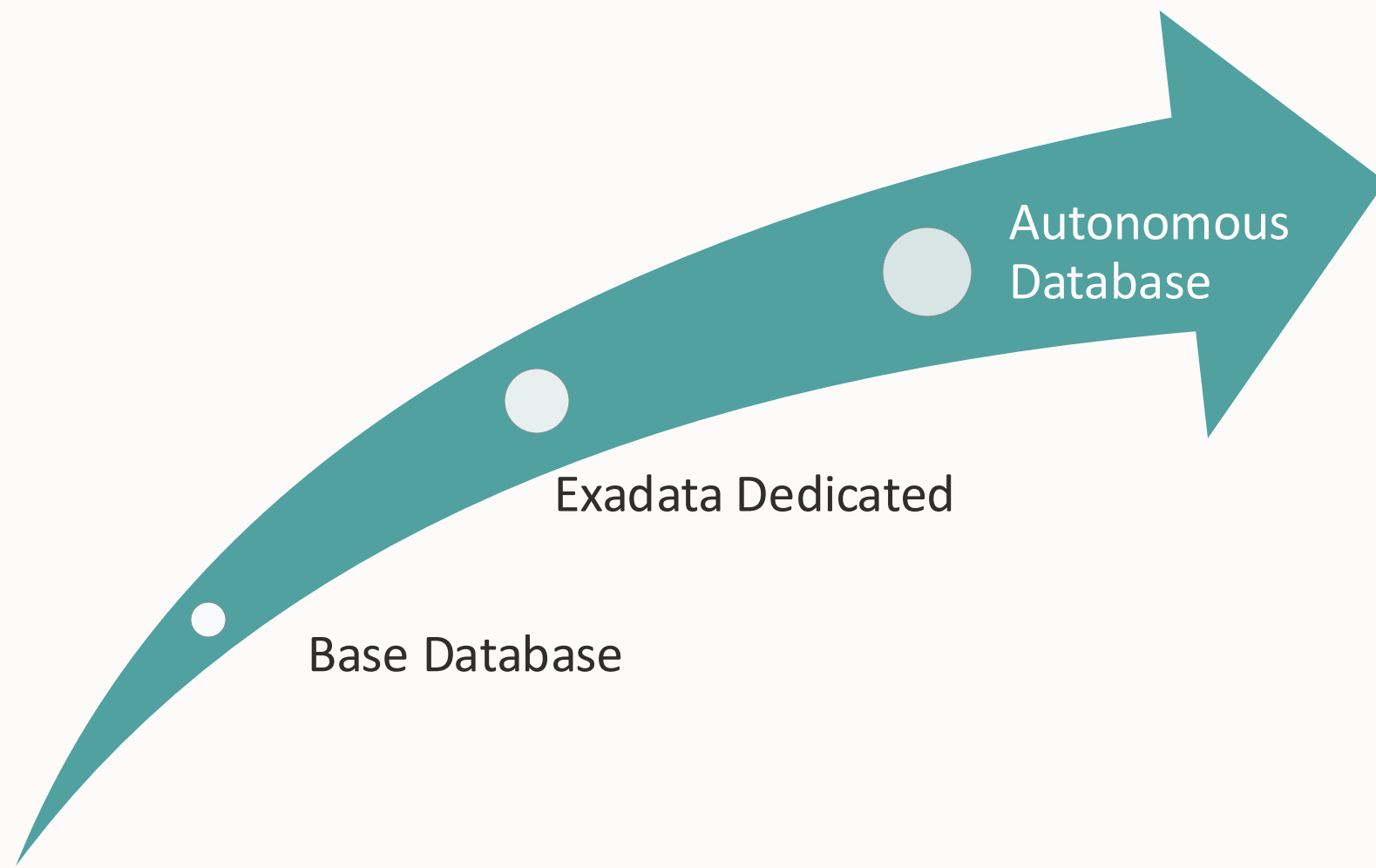


Photo by [bert b](#) on [Unsplash](#)

# Estate Modernization

But not every database is a great candidate for ADB



Migration to Autonomous AI Database is always a **logical** migration

- **Move the data,** not the database



# Tools out-of-the-box



## SQL Developer Web

Web-based Function rich,  
low code development env  
No client software needed



## Oracle REST Data Services

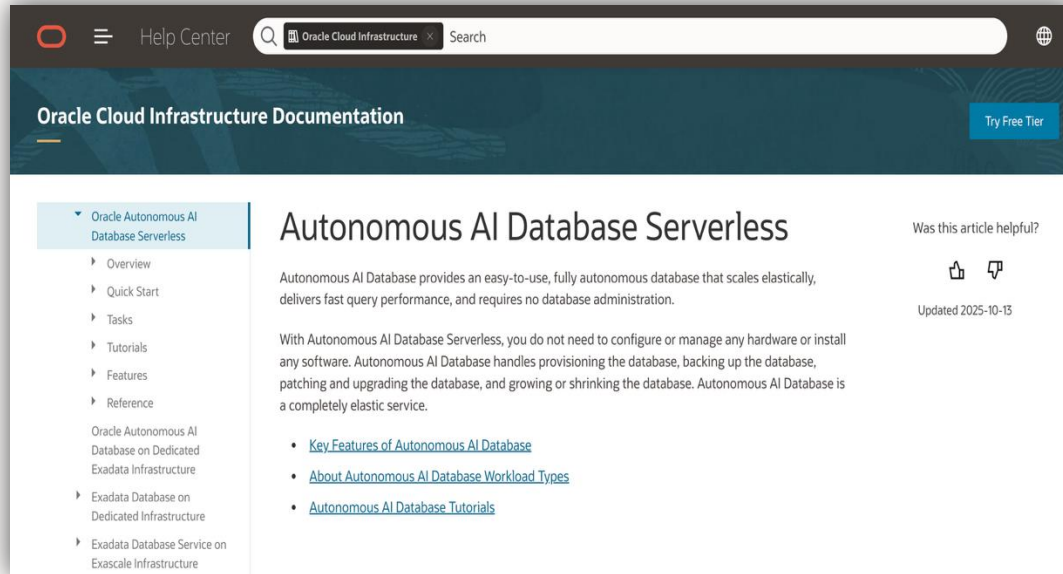
Ability to REST enable a  
schema and autogenerate REST  
endpoints for tables, views,  
and procedures



## APEX

Execute SQL and PL/SQL  
Build Data Models,  
generate DDL statements  
Monitor and manage the DB

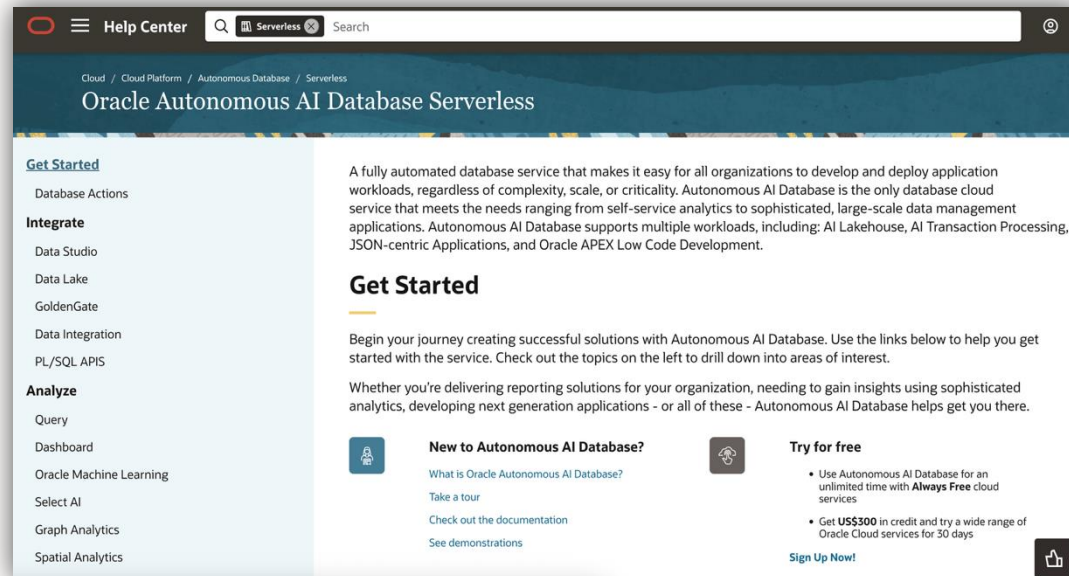
# Essentials



Outside the database,  
check [OCI Documentation](#)

Example: Deploy, start, stop, scale

# Essentials



Inside the database,  
check [Database Documentation](#)

Example: Schema, capabilities, connecting



# Planning





*How do we migrate our 500 databases  
to Oracle AI Autonomous Database?*

# Getting an Overview

1

Estate Explorer



2

Cloud Premigration  
Advisor Tool



3

Cloud Migration  
Advisor

# Getting an Overview

1

Estate Explorer



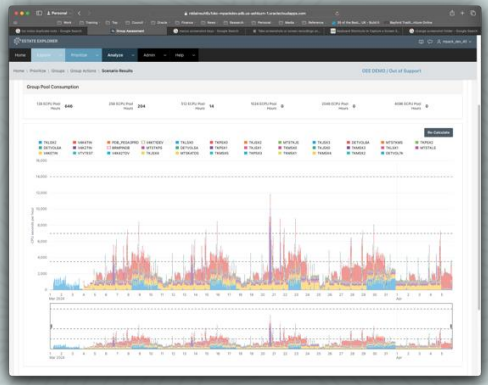
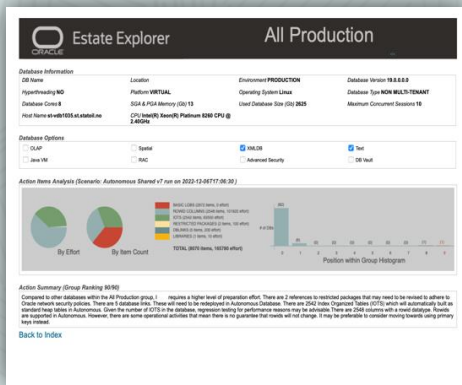
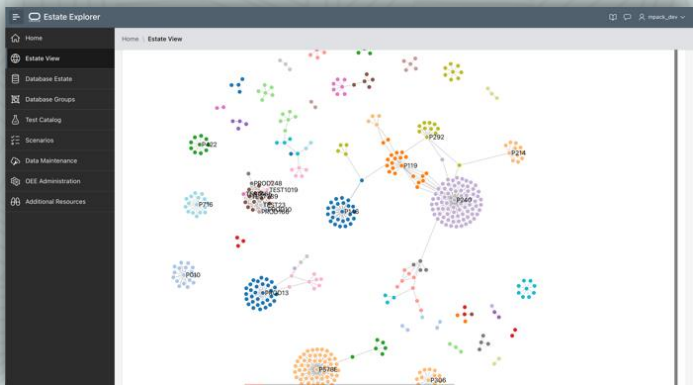
2

Cloud Premigration  
Advisor Tool



3

Cloud Migration  
Advisor





# Getting an Overview

1

Estate Explorer



2

Cloud Premigration  
Advisor Tool



3

Cloud Migration  
Advisor



Analyze 1000's of databases in just  
a few hours



Provide a detailed TCO to compare  
on-premises and cloud



View innovative visualizations  
and detailed reports



Optimize your Autonomous AI  
Databases using Elastic Pools



# Getting an Overview

1

Estate Explorer



2

Cloud Premigration  
Advisor Tool



3

Cloud Migration  
Advisor



# Getting an Overview

1

Estate Explorer



2

Cloud Premigration  
Advisor Tool



3

Cloud Migration  
Advisor

## ▼ Premigration Advisor Check Details List

### Source Database

Expand All

Close All

#### ▼ Action Required ( 2 checks )

##### ▼ OGG Minimal Supplemental Logging Not Enabled

**Description:** Minimal supplemental logging is not enabled on the Database.

**Action:** Make sure minimal supplemental logging data is enabled by using executing the SQL command ALTER DATABASE ADD SUPPLEMENTAL LOG DATA; This command can be done while the database is online and no restart is required.

More Details

##### > Relevant Objects ( 1 relevant object )

##### > OGG Replication Not Enabled

#### > Review Required ( 1 check )



# Getting an Overview

1

Estate Explorer



2

Cloud Premigration  
Advisor Tool



3

Cloud Migration  
Advisor





# Getting an Overview

1

Estate Explorer



2

Cloud Premigration  
Advisor Tool



3

Cloud Migration  
Advisor

Oracle Cloud Migration Advisor

mike.dietrich@oracle.com

Home

Guided Mode

Create Project

My Available Projects

Download Collectors

File Exchange with Custom...

REST Services

Help

## Oracle Cloud Migration Advisor

Welcome to the Cloud Migration Advisor (CMA)

Oracle Cloud Migration Advisor brings you the expert technical knowledge of Oracle Database upgrade and migration development teams, combined with more than a century of combined real-world experience with customer migrations, to give your customer the **best possible migration advice**.

With **Guided Mode**, CMA will quickly tell you

- Which databases can be **most easily migrated** to Oracle Autonomous Database, or
- What is the **best migration method** to move chosen databases to a desired Oracle Cloud platform?

For more options, you can

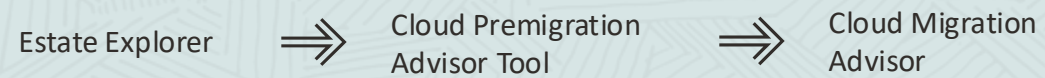
- Create and configure migration scenarios using **Create Project**, or
- Access your existing migration projects and scenarios with **My Available Projects**.

Now it is time to start - let's move to the Oracle Cloud!

**Guided Mode** **My Available Projects** **Create New Project**



# Getting an Overview



- OCI Database Migration Service
- Zero Downtime Migration
- Autonomous Migration Automation
- Data Pump
- GoldenGate
- O2O / OOO

# CPAT

---



## Evaluate an Oracle Database for compatibility with Autonomous AI Database

- Use Cloud Premigration Advisor Tool (CPAT)

# Overview



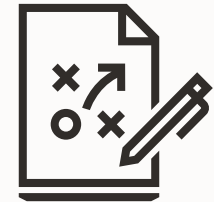
Connects



Checks



Reports



Fixes  
(optional)



# Download CPAT from MOS Note: 2758371.1



## Patch 32613591: Cloud Premigration Advisor Tool (CPAT) for version 11.2.0.4 and Higher

Last Updated 11-Feb-2025 17:31 (12 days ago)

Product Oracle Database Upgrade Assistant

Release Oracle 11.2.0.4.8

Platform Generic Platform

Size 8.6 MB

Download Access Software

Classification General

Patch Tag

Release Oracle 11.2.0.4.8

Platform Generic Platform

Language American English

Read Me

Download



Add to Plan



Analyze with OPatch...

All-time Downloads **50**

[View Trends](#)



Discuss this patch in the community

### Bugs Resolved by This Patch

List of bugs fixed is not available. Consult the Readme.

### View Related Knowledge to this Patch

```
# One or more report formats separated by spaces
# json html text
```

```
./premigration.sh \  
  --connectstring jdbc:oracle:thin:@<host>:<port>/<service> \  
  --username CPAT_CHECK \  
  --pdbname PDB_COMPLEX \  
  --schemas appuser,reportuser \  
  --outdir /home/oracle/cpat-db \  
  --targetcloud atps \  
  --migrationmethod goldengate \  
  --reportformat html
```

# Demo

- Install CPAT
- Run CPAT
- View report



```
alex.zaballa@alex ~ % ssh opc@150.136.178.248
```



That's a lot of options.  
Help me out, please!



# CPAT COMPOSER

<https://macsdata.com/oracle/cpat-composer>

- Free to use
- Available online
- Not an official Oracle tool
- Created by Marcus Doeringer  
Migration Specialist @Oracle





# CLOUD PREMIGRATION ADVISOR TOOL (CPAT) COMPOSER

Version: 25.2.0 (Default)

Template: SA: Recommended Settings

Reset

Search

About

Valid



## Input Form

★ Recommended    ◆ Default

### Operating System

Select the operating system to run CPAT



Linux

Use for Linux operating system



Windows

Use for Windows operating system

### CPAT Mode

Select the mode you want to run CPAT



Source Analysis

Run CPAT on the source database for analysis



Target Properties

Generate a properties file from the target database

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## Output



★ Set Recommended

👁 Use Placeholder

### Status Info

All required options set

★ Recommended Options have been applied

#### Recommended Options

Analysis Mode: SCHEMA

File Prefix

&gt;\_ Command

📄 Parameter File

### Command Line

```
./premigration.sh --connectstring 'jdbc:oracle:thin:@myhost:1521:ORCL' --
username sys --targetcloud ATPS --migrationmethod DATAPUMP --reportformat HTML
JSON TEXT --full --zip
```

# Cloud Premigration Advisor Tool (CPAT) Report

CPAT Version: 25.2.1-1  
Version Date: Feb 17, 2025  
Days Since Last CPAT Update: 38 days

## Table of Contents

- [Premigration Advisor Report Summary](#)
- [Report Details](#)
- [Report Analysis Notes](#)
- [Source Database Details](#)
- [Source Database Version Information](#)
- [Source Database Patch Information](#)
- [Source Database Redo Information](#)
- [Source Database Supplemental Information](#)
- [Source Database Schema Summary Information](#)
- [Premigration Advisor Check Details List](#)
- [Report Legend](#)

Expand All

Close All

Premigration Advisor Report Summary	
Report Result	Action Required
Number of schemas analyzed:	4
List of schemas analyzed:	[RDBUSER.CO_HR_MXAPP]

- Source Database General Summary Information
- Premigration Advisor Check Details List
- Report Legend

Expand All

Close All

▼ Premigration Advisor Report Summary

Report Result	Action Required
Number of schemas analyzed:	4
List of schemas analyzed:	[PDBUSER, CO, HR, MYAPP]

▼ Report Results Overview

Source Database		Target Database		Migration Method		Additional Tasks	
Action Required	2	Action Required	10	Action Required	1	Action Required	0
Review Required	1	Review Required	7	Review Required	2	Review Required	0
Review Suggested	2	Review Suggested	4	Review Suggested	1	Review Suggested	4
Passed	16	Passed	17	Passed	4	Passed	16

[Return to Table of Contents](#)

▼ Report Details



▼ **Report Details**

CPAT Application Version:	25.2.1-1
Report Generated On:	Sat Feb 22 20:59:44 UTC 2025
Analysis Property File:	premigration_advisor_analysis.properties
Analysis Mode:	FULL
Target Cloud Type:	ALL
Migration Method(s):	[DATAPUMP, DATAPUMP_DBLINK, GOLDENGATE]
Command Line Options:	--connectstring jdbc:oracle:thin:@dbssystemaz:1521/pdb_complex.sub07021512520.upgradeteam.oraclevcn.com --targetcloud ALL --username SYS --sysdba --analysisprops premigration_advisor_analysis.properties --outdir /home/oracle/cpat_22_feb_2025 --logginglevel FINE --migrationmethod ALL --reportformat JSON HTML TEXT --resultlevel R0 --zip --gatherdetails ALL
<div>More Details</div>	

> **Report Analysis Notes**

[More Details](#)

[Return to Table of Contents](#)

› **Report Analysis Notes**

› **Source Database Details**

› **Source Database Version Information**

› **Source Database Patch Information**

› **Source Database Redo Information**

› **Source Database Supplemental Information**

› **Source Database Schema Summary Information**

✓ **Premigration Advisor Check Details List**

**Source Database**

▼ **Source Database Details**

Source Cloud Vendor:	Oracle Cloud Infrastructure (Database)
Source Database Host Name:	dbssystemaz
Source Oracle SID:	ORCL
Source Database Created Date:	Fri Jan 24 22:23:51 UTC 2025
Source Database DBID:	1719058167
Source Database Unique Name:	ORCL_5tr_iad
Source Instance Name:	ORCL
Source Database Name:	ORCL
Source Database Username:	SYS
Source Database Port String:	x86_64/Linux 2.4.xx
Source Database Platform ID:	13
Source Database Container Name:	PDB_COMPLEX
Source DB Block Size in KB:	8
Source DB Combined Size of DATA, TEMP, LOG, and CONTROL File Usage in GB:	5.044
Source DB Size of DATA File Usage in GB:	1.856
Source DB Size of TEMP File Usage in GB:	0.17

[More Details](#)

[Return to Table of Contents](#)

› **Report Analysis Notes**

› **Source Database Details**

› **Source Database Version Information**

› **Source Database Patch Information**

› **Source Database Redo Information**

› **Source Database Supplemental Information**

› **Source Database Schema Summary Information**

✓ **Premigration Advisor Check Details List**

**Source Database**



✓ **Action Required ( 2 checks )**

✓ **OGG Minimal Supplemental Logging Not Enabled**

**Description:** Minimal supplemental logging is not enabled on the Database.

**Action:** Make sure minimal supplemental logging data is enabled by using executing the SQL command ALTER DATABASE ADD SUPPLEMENTAL LOG DATA; This command can be done while the database is online and no restart is required.

More Details

> **Relevant Objects ( 1 relevant object )**

✓ **OGG Replication Not Enabled**

**Description:** ENABLE\_GOLDENGATE\_REPLICATION init.ora parameter is not set.

**Action:** Make sure ENABLE\_GOLDENGATE\_REPLICATION is set to TRUE by using executing the SQL command: ALTER SYSTEM SET ENABLE\_GOLDENGATE\_REPLICATION=TRUE SCOPE=BOTH; This command can be done while the database is online and no restart is required.

More Details

> **Relevant Objects ( 1 relevant object )**



## ▼ **Source Database Schema Summary Information**

➤ **Application Schema Object Summary**

➤ **Object Type Distribution**

➤ **Column Type Distribution**

➤ **Invalid Object Summary**

➤ **Largest 50 Tables**

➤ **Largest 50 Objects**

➤ **Table Segments Summary**

➤ **Index Segments Summary**

➤ **LOB Segments Summary**

➤ **Reserved Tablespace Segments**

➤ **Secure Files Summary**

[Return to Table of Contents](#)

--gatherdetails ALL



The documentation has additional information  
on each CPAT check

[Utilities Guide, Oracle AI Database](#)

--Generates fixup scripts whenever possible  
--Stores the scripts on disk for review

`./premigration.sh ... --genfixups`



```
$ cat enable_javavm.sql

-- Check Name: has_java_source
-- Check Result: Action Required
--
-- Action:
--     Enable the JAVAVM feature on the target system by executing this SQL
--     and then restart your instance
--

BEGIN
DBMS_CLOUD_ADMIN.ENABLE_FEATURE( feature_name => 'JAVAVM' );
END;
/
```

# Target Properties File



We don't have all  
the details

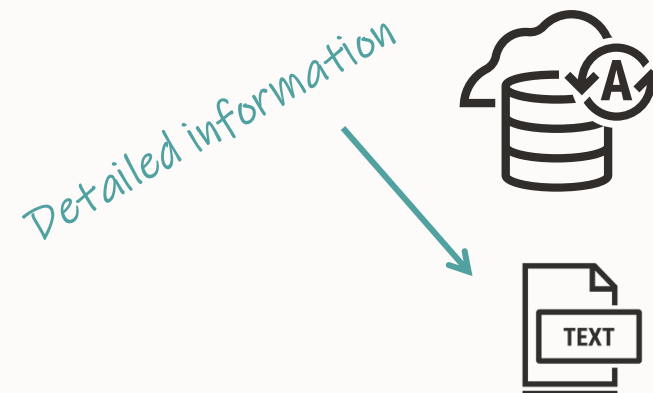


```
./premigration.sh ... --targetcloud ATPD
```

# Target Properties File



```
./premigration.sh ... --analysisprops <file>
```



```
./premigration.sh ... --gettargetprops
```



You can run CPAT on any live database.  
It is completely non-intrusive.



```
grant select any dictionary to cpat_check identified by ... ;  
grant create session to cpat_check;
```

```
--Only if character set conversions are needed  
--grant select on SYSTEM.DUM$COLUMNS to cpat_check;  
--grant select on SYSTEM.DUM$DATABASE to cpat_check;
```



## CPAT does not connect to the Internet

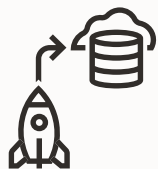
- Except for update check

- Always use the latest version of CPAT
- Verify that you are using the latest version
- Download latest version from Doc ID 2758371.1

```
./premigration.sh --updatecheck
```

There is no newer version available of the Cloud Premigration Advisor Tool.  
The version you are running, 24.11.1, is the latest available version.

# CPAT integration



Generate CPAT report

## ZERO DOWNTIME MIGRATION

Run as part of its migration assessment

## OCI DATABASE MIGRATION SERVICE

Run as part of its migration assessment

## ENTERPRISE MANAGER MIGRATION WORKBENCH

Run as part of its migration assessment

## SQL DEVELOPER / SQLcl

Through the MIGRATEADVISOR command



But we're on Oracle Database 10.2.0.1

- CPAT fully supports Oracle Database 11.2.0.4 and later
- Supports earlier releases on a *best-effort* basis






# Cloud Migration Advisor





# 42 different migration methods


But which one is the best?


# CMA knows the answer


 Oracle Cloud Migration Advisor


 Home


 Guided Mode


 Create Project


 My Available Projects

 Download Collectors >

 File Exchange with Custom...

 REST Services

 Help



## Oracle Cloud Migration Advisor

### Welcome to the Cloud Migration Advisor (CMA)

**Oracle Cloud Migration Advisor** brings you the expert technical knowledge of Oracle Database upgrade and migration development teams, combined with more than a century of combined real-world experience with customer migrations, to give your customer the **best possible migration advice**.

With **Guided Mode**, CMA will quickly tell you

- Which databases can be **most easily migrated** to Oracle Autonomous Database, or
- What is the **best migration method** to move chosen databases to a desired Oracle Cloud platform?


For more options, you can


- Create and configure migration scenarios using **Create Project**, or
- Access your existing migration projects and scenarios with **My Available Projects**.


Now it is time to start - let's move to the Oracle Cloud!


[Guided Mode](#) [My Available Projects](#) [Create New Project](#)


# Project Overview


 Loader


 Databases

 Source Hosts

 Target Environments

 Network Details

 Validation

 Scenarios

319

Databases

152

Source Hosts

1

Scenarios

1

Solutions

Landscape Details

Load Source Databases

Use this section to load source database details from CSV, CPAT or OEM.

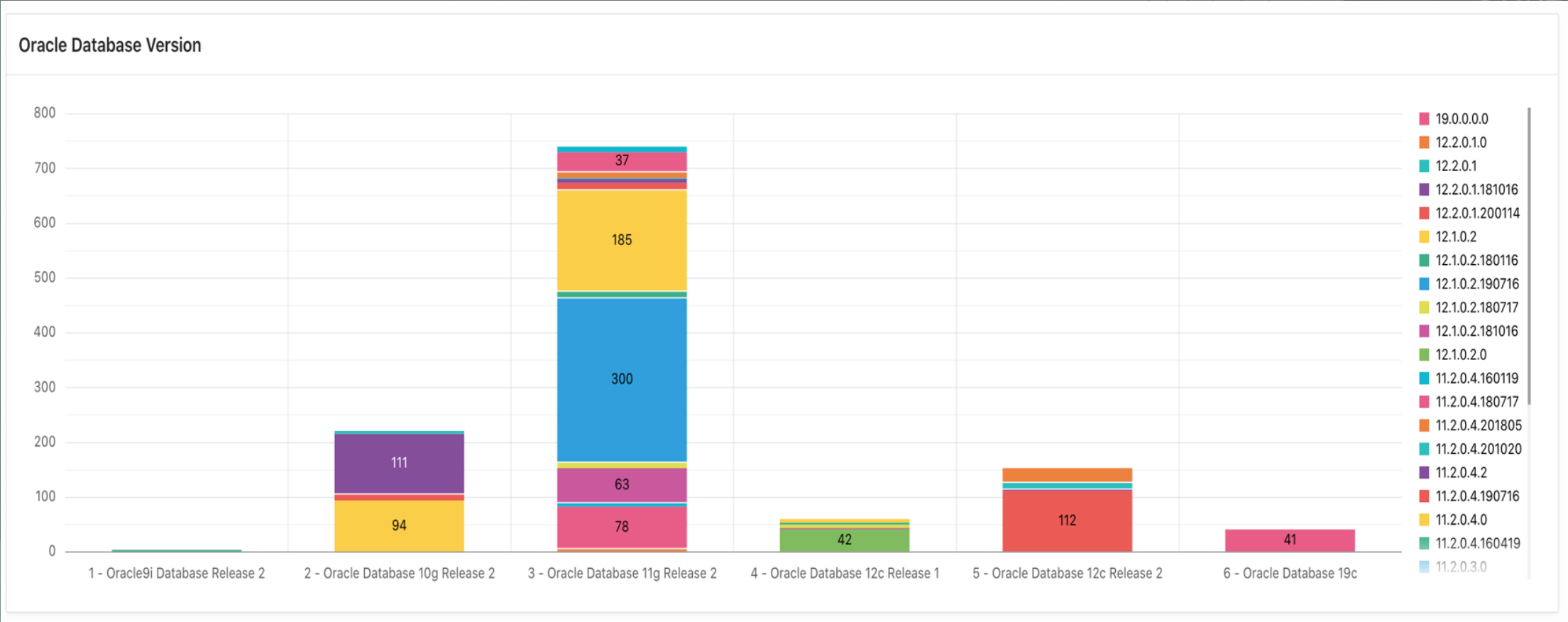
Load databases from CSV

Load databases from JSON

Generate OEM emcli Driving



# Cloud Migration Advisor | Landscape Example





# Project Overview

## Scenario Configuration

Select the **"Target Types"** and the **"Migration Methods"** you want to consider in this scenario.

Server types to advise

ADBD - Autonomous Database Dedicated  
ExaDB C@C - Exadata on Cloud@Customer  
ExaDB Dedicated - Exadata on Dedicated Infrastructure  
ExaDB XS - Exadata on Exascale Infrastructure  
Oracle Autonomous Database@GCP

>>  
>  
<  
<<

ADBS - Autonomous Database Serverless  
Oracle Autonomous Database@Azure

<  
<  
>  
>

Note: If there are more than two tied solutions, the server type with the higher priority (top) on this list will be selected.

Allowed migration technologies

☒ Enterprise Manager ☒ Golden Gate ☒ OCI Services

If you don't want one of the technologies above to be considered to perform the migrations, unselect it.

Migration methods to include

Classic Export and Import utilities  
Data Pump Conventional Export/Import  
Data Pump Full Transportable  
Data Pump Full Transportable + RMAN Convert  
Data Pump Import with DBLink

>>  
>  
<  
<<

ZDM Logical Online  
ZDM Logical Offline  
ZDM Physical Offline  
ZDM Physical Online

<  
<  
>  
>

Note: If there are more than two tied solutions, the migration method with the higher priority (top) on this list will be selected.



# Project Overview

Databases

Target Environment

Migration Methods

Checks Result

Q

Search: All Text Columns

Go

Actions

Reset

Target Name	Final Score (the higher the better)	Complexity Score (higher value = easier to migrate)	Target Accepted	Auto-Patching	Auto-Security	Administrator
ADBS - Autonomous Database Serverless	9.96	9.61	Yes	★★★★★	★★★★★	★☆☆☆☆
Oracle Autonomous Database@Azure	9.95	9.61	Yes	★★★★★	★★★★★	★☆☆☆☆

1 rows selected


Total 2

Note: The **green row** is the currently defined target environment. You can change it by **selecting another method** from another target.

Migration Methods

This section shows the possible migration methods for the selected **target type** and **database**. You can change the defined migration method and target by clicking on the **"Select"** button (✓).

You can also check the instructions or simply click on the card and read more details about it on the "Decision Log".



ZDM Logical Online


Complexity: Easy | Downtime: Low

Migration Score: 9.96

The Logical Online Migration Workflow in ZDM leverages Data Pump for initial load and on Oracle GoldenGate for synchronization purposes and to preserve the online portion of the migration process. Oracle ZDM will run on a separate node and connect to both Source and Target to perform the migration.

✓ Select

Read Instructions



ZDM Logical Offline

Complexity: Easy | Downtime: Medium

Migration Score: 8.97

The Logical Offline Migration Workflow in ZDM leverages Data Pump for data transfer and target instantiation. Some Zero Downtime Migration logical migration work flows involve placing Oracle Data Pump dump files on storage media for transfer to the target database.

✓ Select

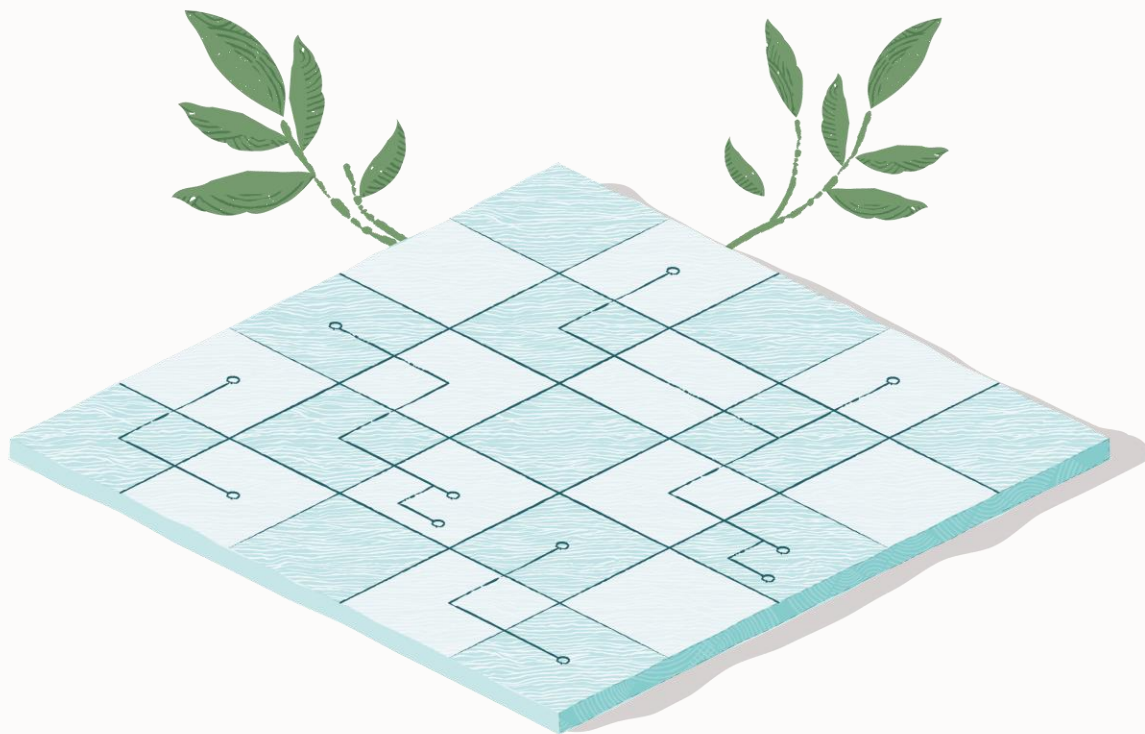
Read Instructions



# CMA – How to get the tool?

Send us an email – it is an APEX app

- Vagrant build
- Zip file ready to be installed into ADB-free
- Oracle internal: [cma.oraclecorp.com](https://cma.oraclecorp.com)



# Tablespaces

CPAT checks for tablespaces



# ADB-S vs ADB-D

## ADB Serverless

```
SQL> set role PDB_DBA;
```

Role set.

```
SQL> create tablespace users;  
create tablespace users
```

\*

ERROR at line 1:

ORA-01031: insufficient privileges

## ADB Dedicated

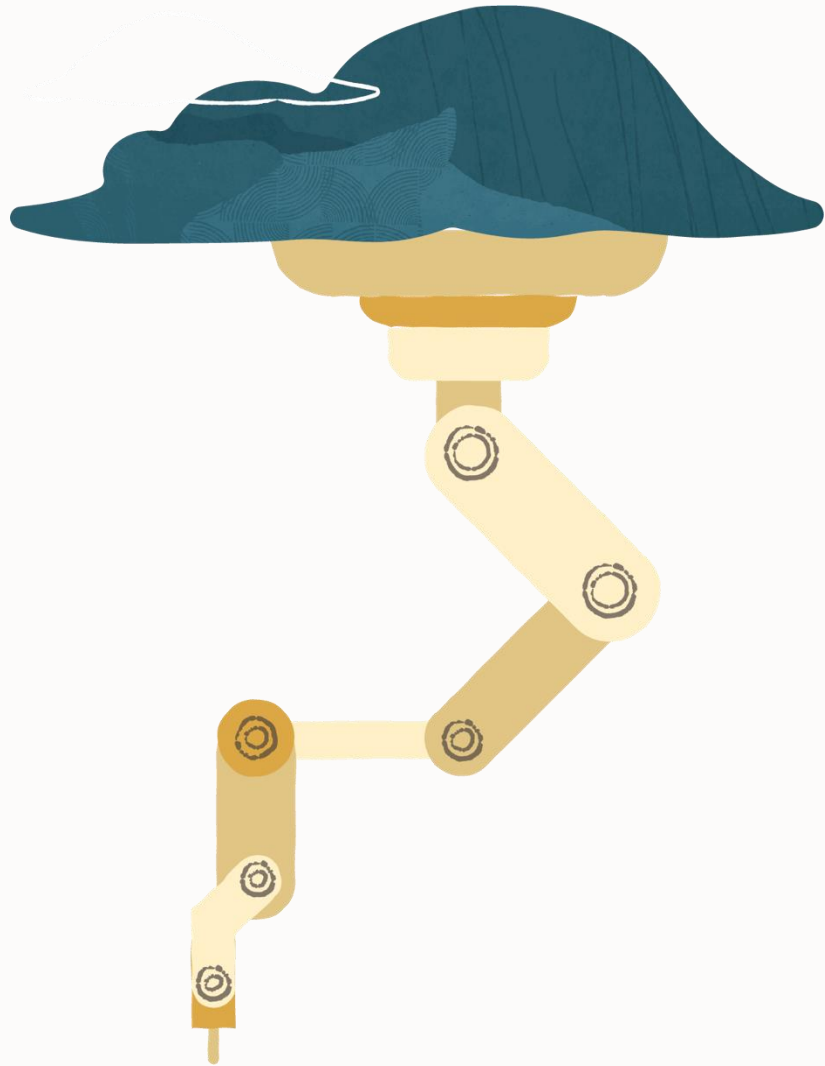
```
SQL> set role PDB_DBA;
```

Role set.

```
SQL> create tablespace users;
```

Tablespace USERS created.





# Java and more

Do you use Java or Libraries?

# CPAT | Java Sources and Objects

Java sources and objects are relatively easy to migrate

- You need to enable Java in ADB before migration

```
BEGIN
  DBMS_CLOUD_ADMIN.ENABLE_FEATURE( feature_name => 'JAVAVM' );
END;
/
```

# CPAT | Libraries

## Libraries can't be migrated to Oracle Autonomous Database

- Applications require update
- Dependencies on libraries must be removed
- Consider replacing library functionality with functions
  - <https://docs.oracle.com/en-us/iaas/Content/Functions/>
- Alternative would be EXTRPROC into an OCI Marketplace Image
  - <https://docs.oracle.com/en/cloud/paas/autonomous-database/serverless/adbsb/user-defined-functions-external.html#GUID-FB998DB9-82DC-455E-ACFA-CE06BAB6FC2B>



# External Tables

Different handling for ADB-D and ADB-S

```
SQL> CREATE TABLE ext_min (id NUMBER)
      ORGANIZATION EXTERNAL (
        TYPE ORACLE_LOADER
        DEFAULT DIRECTORY ext_dir
        ACCESS PARAMETERS ( FIELDS TERMINATED BY ',' (id) )
        LOCATION ('data.csv')
      );
```

Table created.



```
SQL> CREATE TABLE ext_min (id NUMBER)
ORGANIZATION EXTERNAL (
TYPE ORACLE_LOADER
DEFAULT DIRECTORY ext_dir
ACCESS PARAMETERS ( FIELDS TERMINATED BY ',' (id) )
LOCATION ('data.csv')
);
```

Table created.

```
SQL> select table_name, external from user_tables;
```

TABLE_NAME	EXT
------------	-----

-----	----
-------	------

EXT_MIN	
---------	--

	NO
--	----

*Created as heap table*

```
DBMS_CLOUD.CREATE_EXTERNAL_TABLE (  
    table_name          IN VARCHAR2,  
    credential_name     IN VARCHAR2 DEFAULT NULL,  
    file_uri_list       IN CLOB, ←  
    column_list         IN CLOB,  
    field_list          IN CLOB DEFAULT,  
    format              IN CLOB DEFAULT);
```

*Very customizable*



In ADB-D, the “**external**” clause is fully respected

- Created as External Tables





```
SQL> CREATE TABLE ext_min (id NUMBER)
      ORGANIZATION EXTERNAL (
        TYPE ORACLE_LOADER
        DEFAULT DIRECTORY ext_dir
        ACCESS PARAMETERS ( FIELDS TERMINATED BY ',' (id) )
        LOCATION ('data.csv')
      );
```

Table created.



```
SQL> select table_name, external from user_tables;
```

TABLE_NAME	EXT
-----	---
EXT_MIN	YES



# Database Links

How do you migrate them to ADB-D and ADB-S?

--You can't create database links in ADB-S using  
--CREATE DATABASE LINK statement

SQL> create database link ... ;

ORA-01031: insufficient privileges

```
exec dbms_cloud_admin.create_database_link(  
  db_link_name => 'SALESLINK',  
  hostname => 'my-host',  
  port => '1521',  
  service_name => 'my-service',  
  ssl_server_cert_dn => NULL,  
  credential_name => 'DB_LINK_CRED',  
  directory_name => NULL,  
  private_target => TRUE);
```

*Simple connect string*

*Safely store username/password in a credential*



--Autonomous Database Dedicated allows the use of  
--CREATE DATABASE LINK syntax

```
SQL> create database link saleslink  
      using 'host:port/service';
```

Database link SALESLINK created.





# Data Pump

The simple approach

# Predefined Database Service Names



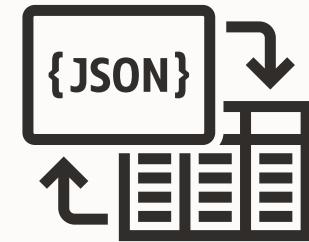
## Autonomous DWH

`dbname_high`  
`dbname_medium`  
`dbname_low`



## Autonomous TP

`dbname_tpurgent`  
`dbname_tp`  
`dbname_high`  
`dbname_medium`  
`dbname_low`



## Autonomous JSON

`dbname_tpurgent`  
`dbname_tp`  
`dbname_high`  
`dbname_medium`  
`dbname_low`

# Connections

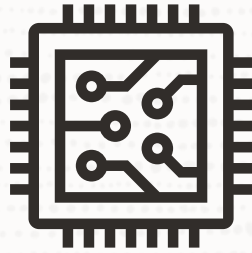
For migrations, clearly **TPURGENT** usually provides best results

- For Autonomous AI Lakehouse, you can request this service by creating a Service Request (SR)



## Data Pump Bundle Patch aren't yet applied in ADB Serverless *(November 2025)*

- You may request one-off fixes via an SR



## Allocate a sufficient number of ECPUs

- 32 should be the **minimum** when you import





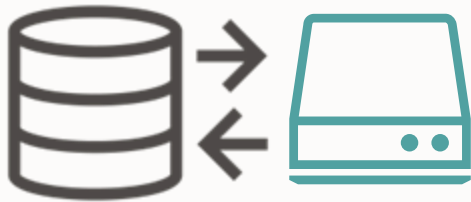
Export: PARALLEL 2x of physical cores



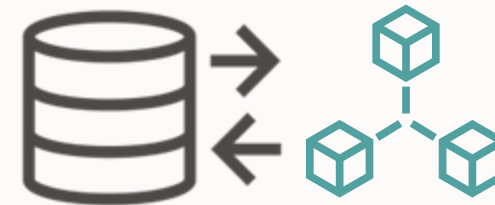
Import:  $PARALLEL=ECPU/4$ , or higher

- Scale up to the maximum for migrations

# Most simple method: Data Pump



**Datapump** with Files



**Datapump** with DB Links

# Datapump with Dump Files

- More control over parallelism
- Storage Overhead
- No source-target connection interoperability requirement
- Requires Object Storage / File Storage setup

# Datapump with DB Links

- Network throughput and latency dependency
- Faster for smaller databases
- Requires DB Link setup
- And there is more ...





## Be aware of network link import limitations

- May have a significant impact on performance



# ZDM

Zero Downtime Migration

# Oracle Zero Downtime Migration

## Oracle Zero Downtime Migration



[Watch on YouTube](#)



# DMS

Data Migration Service



# Automation


How AMA scripts ease migrations



# What is AMA?

## Autonomous AI Database Migration Automation (AMA)

- Simple migration solution for ADB Serverless
  - Script based
  - Single configuration file
  - Migrates in phases
  - Can act fully automated
- 
- Not a new product, just a **solution** to ease migrations



# An ADB-S migration is a bit like making a movie

You won't start with filming right away

*You need a script book*

*You need to cast actors*

*You need a film set*

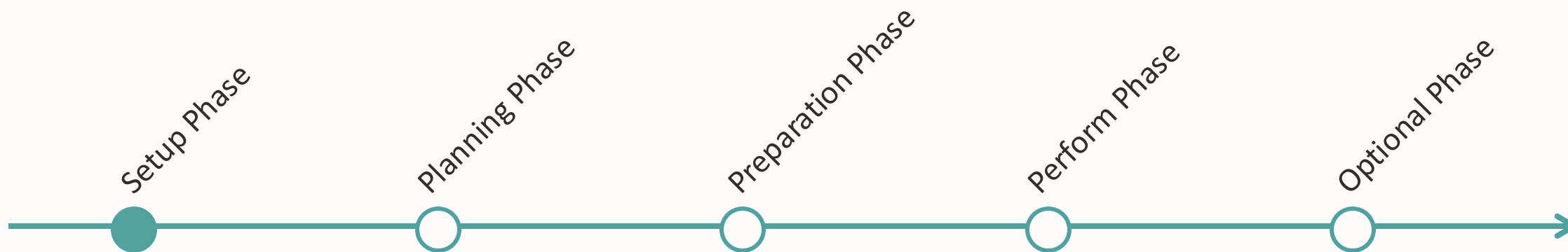
*You need ...*

## Now you can start filming your scenes

And then there's plenty of work  
on editing and cutting the movie



# AMA Workflow



- Examination of source database (CPAT)
- Create migration directories
- Configure AMA parameter file

# Parameter File

Adjust;

- Connect strings source and target
- Data Pump encryption
- Storage (FSS or Object Store)
- Format: TAB or SCRIPT

# Documentation


AMA Documentation is available at request

- Documents the entire flow and all options and parameters



Oracle Autonomous Database  
Migration Automation  
*For CPAT and stand-alone use*

May, 20255, Version 1.1  
Copyright © 2025, Oracle and/or its affiliates  
Public



ORACLE

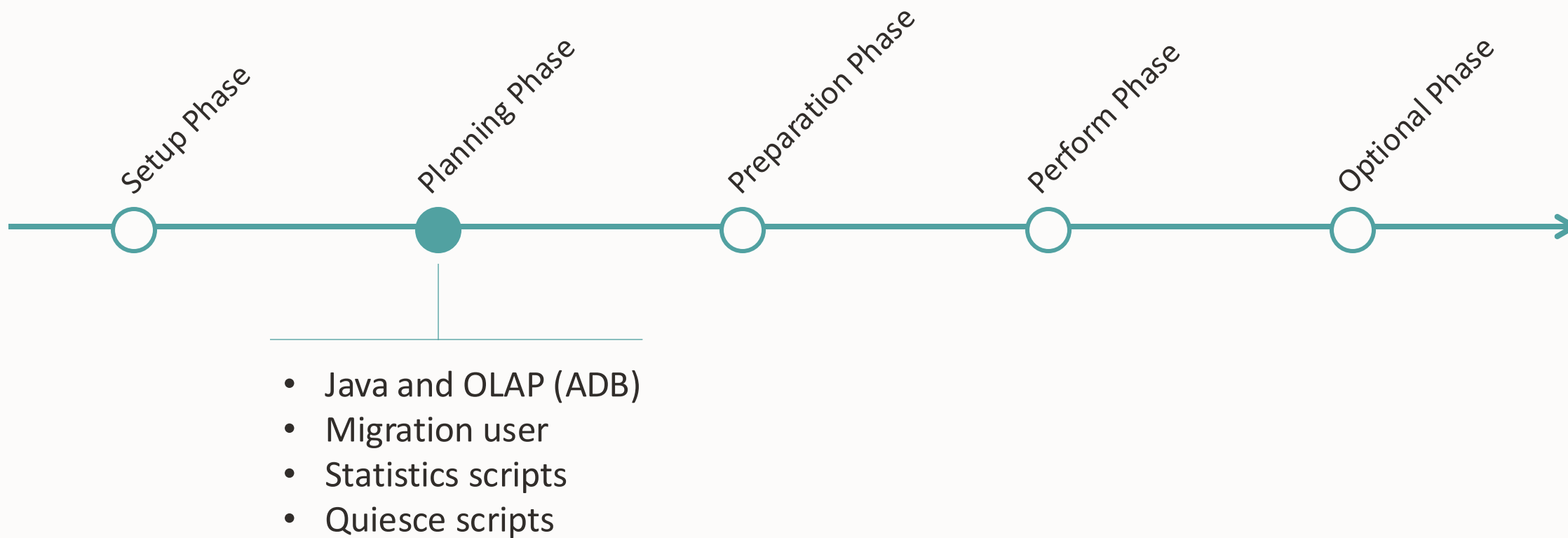
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# AMA Workflow



# AMA | Planning Phase

## On-Prem - Source

Gather stats for SYS / SYSTEM

Create Migration user

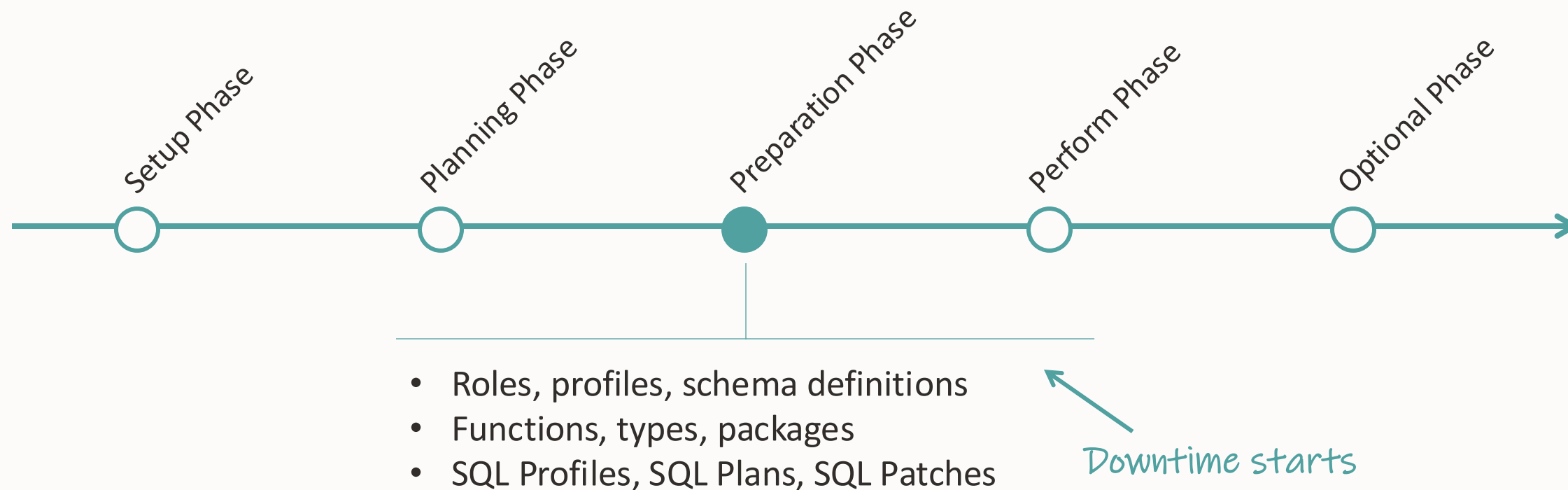
Enable restricted session

Set JOB\_QUEUE\_PROCESSES=0

## ADB-S - Target

Enable OLAP / JAVA in ADB-S

# AMA Workflow



# AMA | Preparation Phase

## On-Prem - Source

Collect allowed ROLES

Collect PROFILES

Export schema definition

Export FUNCTIONS, TYPES, PACKAGES

Collect SQL Profiles, SQL Plans, SQL Patches

## ADB-S - Target

Create ROLES

Create PROFILES

Create storage credential (NFS, Object Store)

Import schema definition

Import FUNCTIONS, TYPES, PACKAGES

Granting migration privileges

Alter user profiles

Create SQL Profiles, SQL Plans, SQL Patches

---

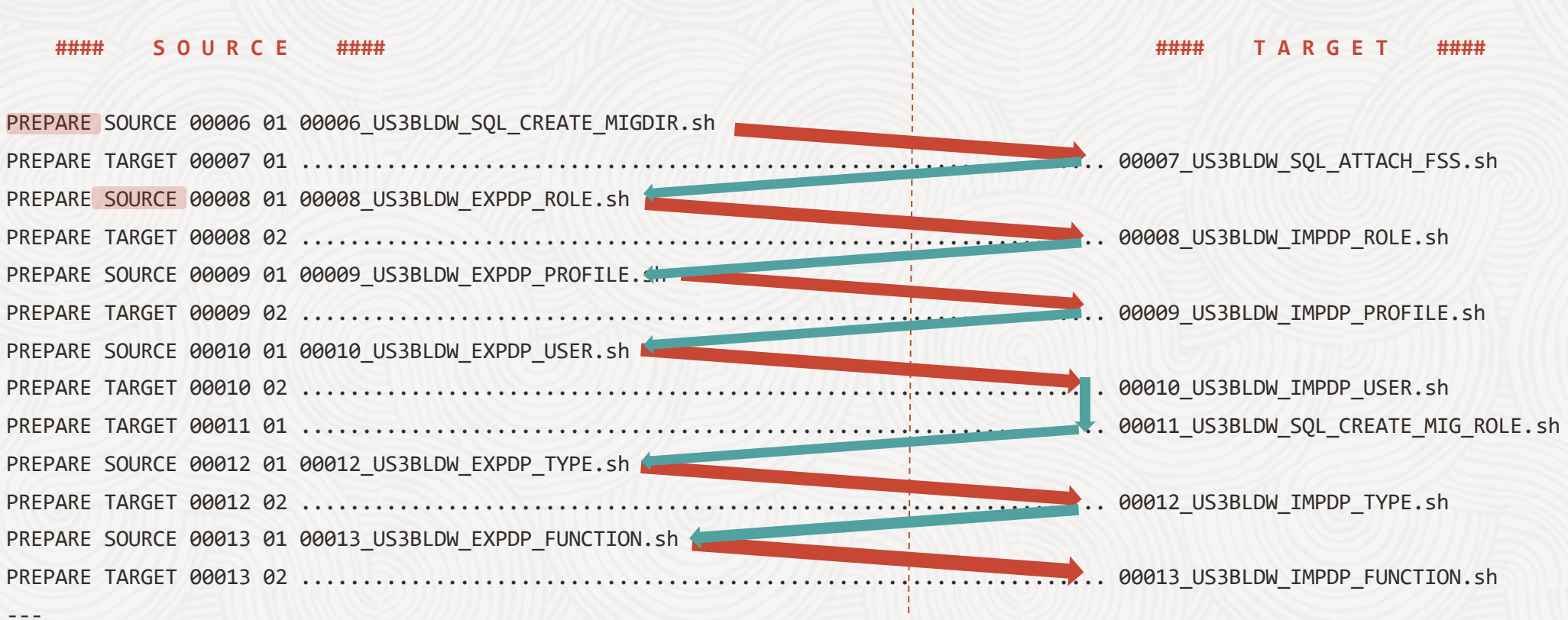
--- PREPARATION PHASE ---

--- All steps in this phase will prepare the source and target database ---

--- The scripts depend on each other, so execute in this phase one script after the other ---

---

---

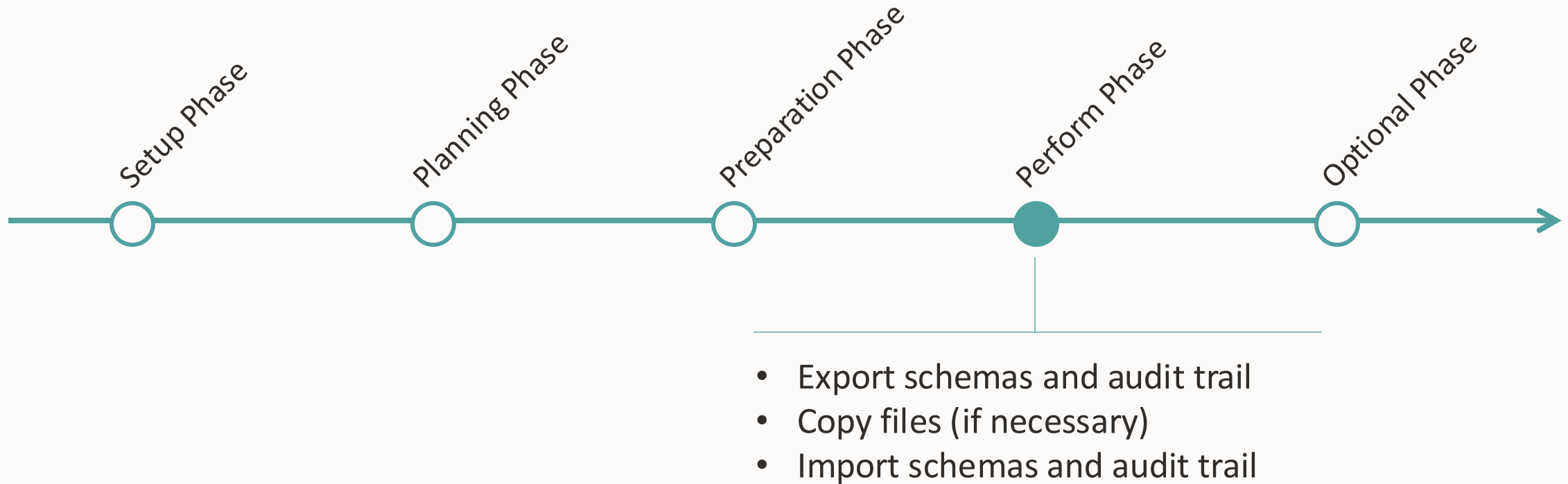


---





# AMA Workflow



# AMA | Perform Phase

On-Prem - Source

Export all schemas

Export audit trail



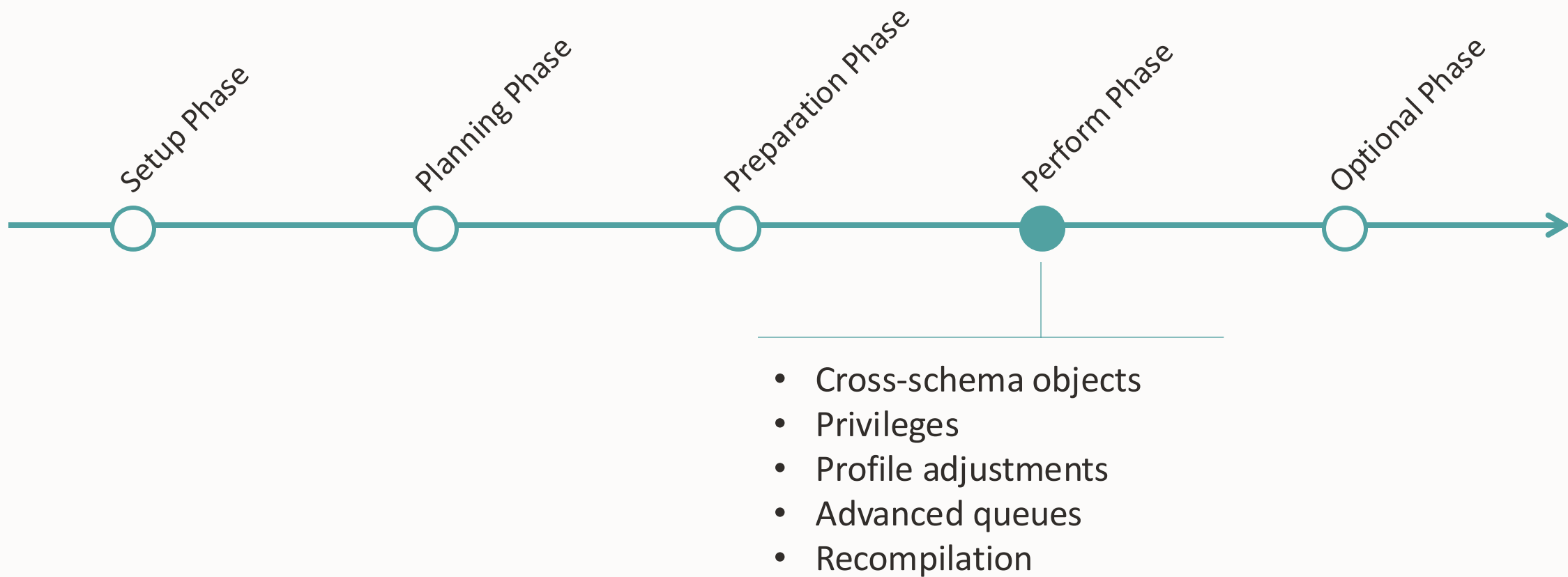
Copy files (if necessary)

ADB-S - Target

Import all schemas

Import audit trail

# AMA Workflow



---

--- **PERFORM PHASE** ---

--- Commonly in this phase nothing depends on each other (except you for example have objects that depend on objects stored in other schema) ---

--- So export jobs can be started in parallel and imports once the export finished ---

---

---

####	S	O	U	R	C	E	####	####	T	A	R	G	E	T	####
PERFORM	SOURCE	00014	01	00014_US3BLDW_EXPDP_AUDIT_TRAILS.sh											
PERFORM	TARGET	00014	02	.....					00014_US3BLDW_IMPDP_AUDIT_TRAILS.sh						
PERFORM	SOURCE	00015	01	00015_US3BLDW_SQL_GEN_SQL_PROFILE_STAGE_TAB.sh											
PERFORM	SOURCE	00015	02	00015_US3BLDW_EXPDP_SQL_PROFILES.sh											
PERFORM	TARGET	00015	03	.....					00015_US3BLDW_IMPDP_SQL_PROFILES.sh						
PERFORM	TARGET	00015	04	.....					00015_US3BLDW_SQL_APPL_SQL_PROFILE_STAGE_TAB.sh						
PERFORM	SOURCE	00016	01	00016_US3BLDW_SQL_GEN_SQL_PATCHES_STAGE_TAB.sh											
PERFORM	SOURCE	00016	02	00016_US3BLDW_EXPDP_SQL_PATCHES.sh											
PERFORM	TARGET	00016	03	.....					00016_US3BLDW_IMPDP_SQL_PATCHES.sh						
PERFORM	TARGET	00016	04	.....					00016_US3BLDW_SQL_APPL_SQL_PATCHES_STAGE_TAB.sh						
PERFORM	SOURCE	00017	01	00017_US3BLDW_EXPDP_SCHEMA_FUSION.sh											
PERFORM	TARGET	00017	02	.....					00017_US3BLDW_IMPDP_SCHEMA_FUSION.sh						
PERFORM	SOURCE	00018	01	00018_US3BLDW_EXPDP_SCHEMA_FUSION_OCSERVER11G.sh											
PERFORM	TARGET	00018	02	.....					00018_US3BLDW_IMPDP_SCHEMA_FUSION_OCSERVER11G.sh						
...															



# AMA | Perform Phase

On-Prem - Source

ADB-S - Target

FOREIGN KEYS cross-schemas

INDEXES cross-schemas

FUNCTIONAL INDEXES enableing

REVOKE transition privileges

GRANT privs SYS, SYSTEM, CTXSYS, objects

Restore final profiles

Set tablespace quotas

Export network ACLs

Import network ACLS

Enable Advanced Queues

Recompilation



---

--- POST PHASE ---

--- Here execute again all scripts one after the other as they might have dependencies again ---

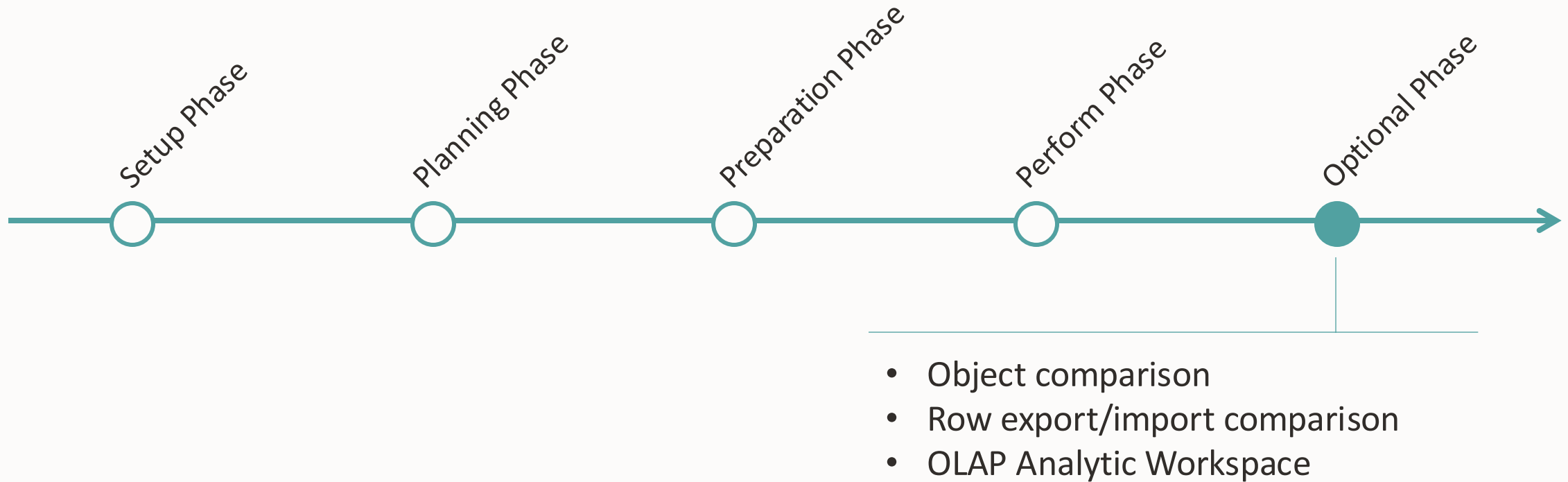
---

---

####	SOURCE	####	####	TARGET	####
POST TARGET	00082 01 .....			00082_US3BLDW_SQL_REMOVE_MIG_ROLE.sh	
POST TARGET	00083 01 .....			00083_US3BLDW_SQL_SYS_PRIVS.sh	
POST TARGET	00084 01 .....			00084_US3BLDW_SQL_CTXSYS_PRIVS.sh	
POST TARGET	00085 01 .....			00085_US3BLDW_SQL_DATAMINING_PRIVS.sh	
POST TARGET	00086 01 .....			00086_US3BLDW_SQL_OBJECT_PRIVS.sh	
POST TARGET	00087 01 .....			00087_US3BLDW_SQL_ROLE_PRIVS.sh	
POST TARGET	00088 01 .....			00088_US3BLDW_SQL_TBS_QUOTES.sh	
POST TARGET	00089 01 .....			00089_US3BLDW_SQL_DETACH_FSS.sh	
POST SOURCE	00090 01 00090_US3BLDW_EXPDP_NETWORK_ACL.sh				
POST TARGET	00090 02 .....			00090_US3BLDW_IMPDP_NETWORK_ACL.sh	
POST TARGET	00091 01 .....			00091_US3BLDW_SQL_SET_AQ_STATUS.sh	
POST TARGET	00092 01 .....			00092_US3BLDW_SQL_RECOMPILE.sh	
---					
---					
---	END OF MIGRATION				



# AMA Workflow





Done!!



AMA can run a migration **fully automated and completely unattended**



Works with MS Windows as source database





# Wrapping Up

# Key Learnings



- 1 Find the right candidates for ADB
- 2 Follow our migration approach
- 3 Ask us about your ADB migration project

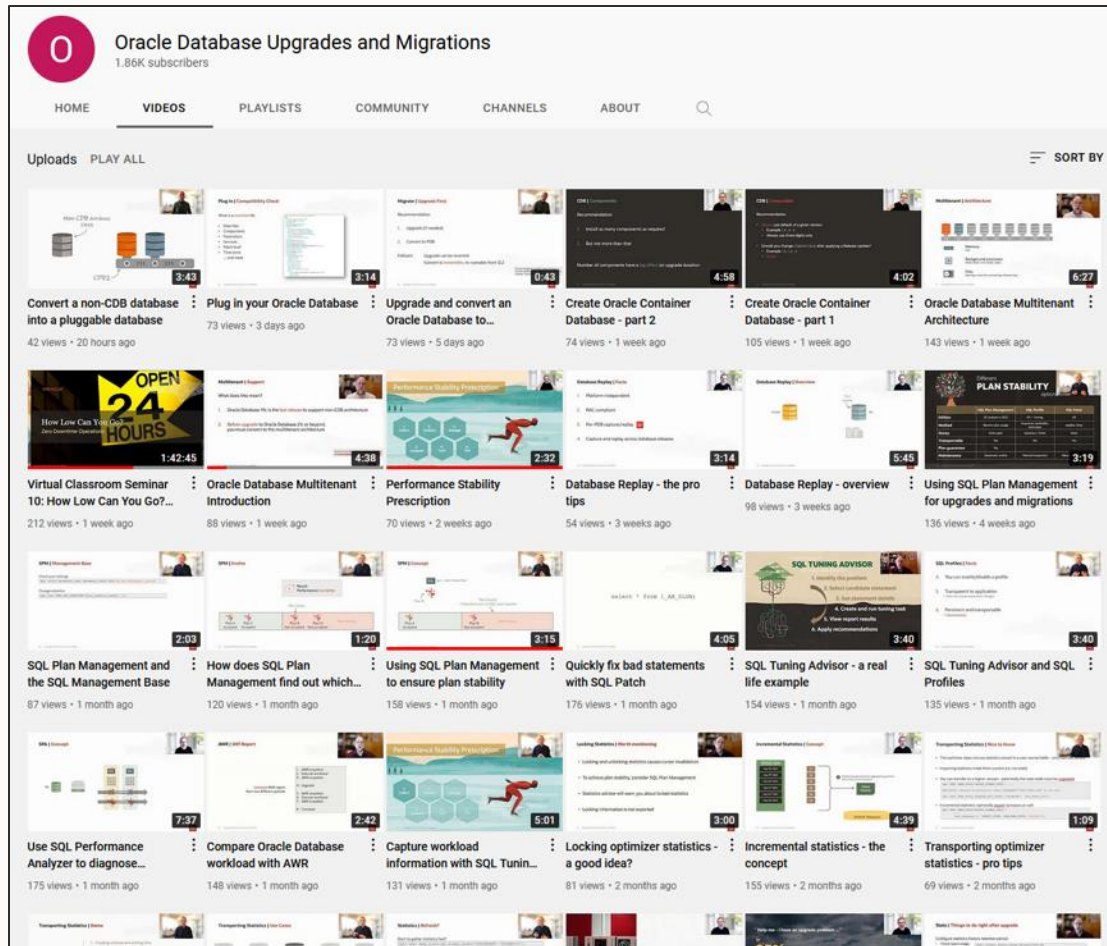




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- All tech



# Thank You

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