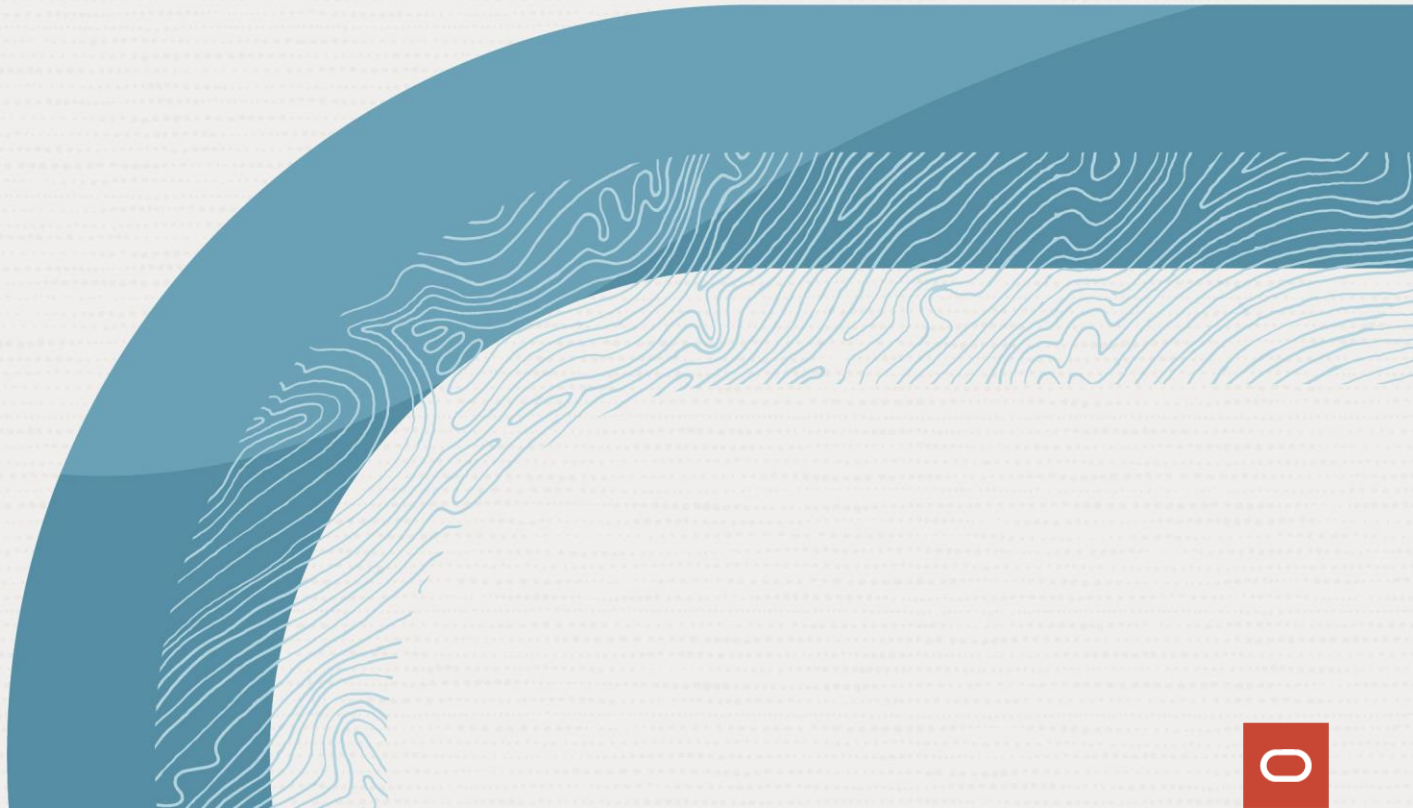
Cloud Database Migrations the Easy Way

Introduction to OCI Database Migration for Oracle Databases

for Oracle Databases



Safe harbor statement

The following is intended to outline our general product direction. It is intended for information purposes only, and may not be incorporated into any contract. It is not a commitment to deliver any material, code, or functionality, and should not be relied upon in making purchasing decisions. The development, release, timing, and pricing of any features or functionality described for Oracle's products may change and remains at the sole discretion of Oracle Corporation.

Resources to learn more

Video demonstration	Click here
Do a LiveLab online migration	Click here
Step-by-step guide and tutorial	Click here
Oracle migration documentation	Click here
MySQL migration documentation	Click here
More information on Oracle.com	Click here

OCI Database Migration migrates to the following OCI targets:

An easy to use fully managed service

OCI Database Migration

Fully managed, easy-to-use homogeneous Oracle and MySQL database migrations

Database migrations

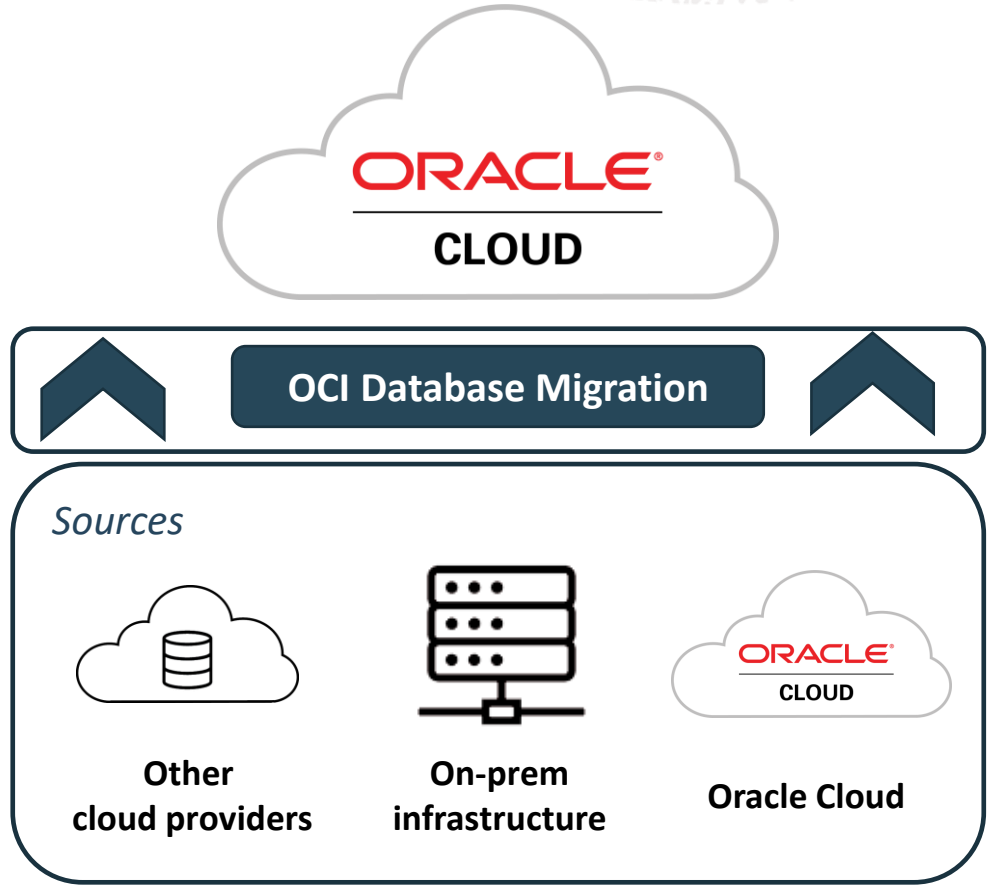
- Reduce cost and improve performance in Oracle Cloud
- Migrate databases, free for 6 months per migration

Core use cases

- Machine-assisted migrations for Oracle and MySQL Databases, Data Marts and Data Warehouses into Oracle Cloud Infrastructure

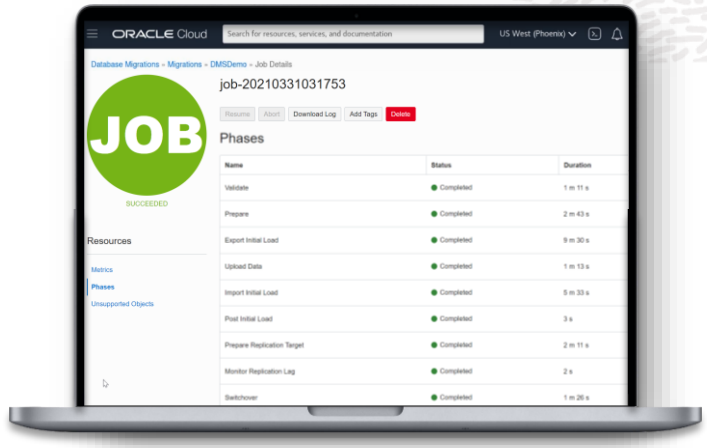
Differentiated use cases

- Simplifies underlying technologies and resources
- Logical *offline* and *online* migrations
- Schema/metadata migration



OCI Database Migration based on enterprise-strength tools

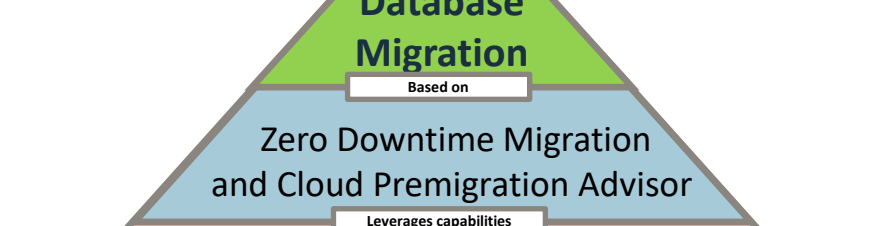
Single Workflow



Simple Online Experience

Oracle Databases

Move to Autonomous



Flexible Fleet-level

UI-led experience

Expert use

MySQL Databases

Move to Heatwave MySQL

Flexible Fleet-level

Different migration types

Offline Migration	***Online Migration***
• One-time copy of the database • Requires applications to be offline during migration	• Initial copy of database followed by change data capture during migration • Applications can stay online during migration
Physical Migration (Not available in OCI DM)	***Logical Migration***
• Blockwise copy of database files • Requires database vendors and versions to be same on source and target • No filtering or transformation • Oracle DB Tools: RMAN, DataGuard, ZDM	• Logically interpret database contents and copy to database in target format • Source and target can be different • Oracle DB Tools: Datapump, GoldenGate, ZDM • MySQL Tools: MySQL Shell, GoldenGate
Direct Connection	***Indirect Connection***
• Source database can be accessed directly from target network • Requires VPN/FastConnect for on-premises	• Source database cannot be accessed directly, behind firewall • Requires migration tool with agent

Oracle Database migration process and tools

Profile Estate

Review and prioritize by least effort and ongoing TCO

- Oracle Estate Explorer*
- Cloud Services Advisor

Methods

Select the simplest migration method

- Migration Method Advisor
- Cloud Migration Advisor*

Preparation

Ensure source compatibility with target

Cloud Premigration Advisor Tool (CPAT)
- Embedded in OCI DM

Execution

Choose zero downtime or offline migrations

- OCI Database Migration

Validation

Ensure synchronization for ongoing online migrations

- GoldenGate Veridata

*Requires Oracle for access

Visit *Database Migration to OCI* for links to all planning tools

OCI Database Migration – Native OCI Cloud Service

Supported sources, database versions, and targets

O/S sources

- ORACLE SOLARIS
- IBM AIX
- x86-64 server

Oracle sources

- On Premises
- ORACLE
- amazon web services
- Microsoft Azure
- Google Cloud

Migration

- ✓ CDB or Non-CDB
- ✓ Cross-version (11.2.0.4 → 21c)
- ✓ Cross-endian

Oracle Cloud targets

ORACLE

- Autonomous Database
- Base Database Cloud Service
- Exadata Cloud Service

Autonomous and co-managed databases on OCI

Latest sources and targets

Migration steps

1

Prerequisites:

- Setup VPN or FastConnect
- Provision Target DB, Object Store, and Vault
- Configure source and target

Optional for online:

- OGG Marketplace

2

Setup

3

Validate

- Use CPAT interactively to discover and respond to issues

4

Start

- Fully automated

Optional controls

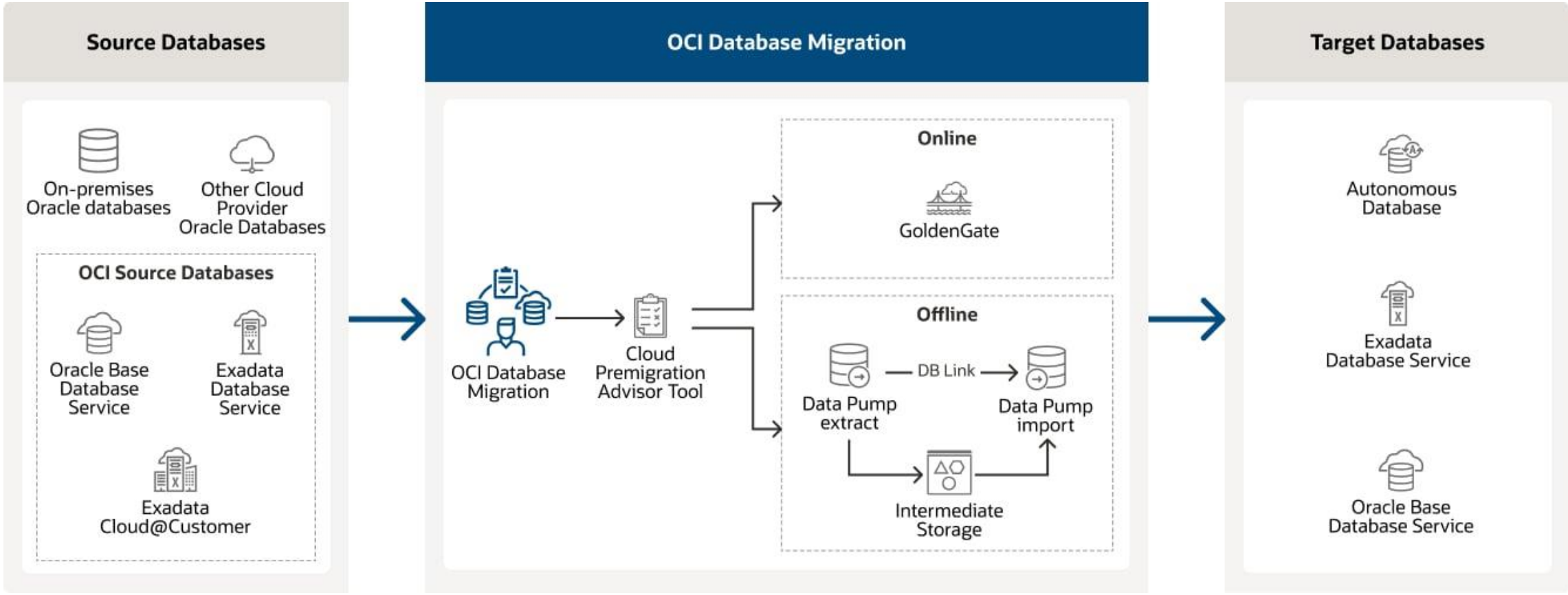
- Initial load
- Online replication
- Restarts

5

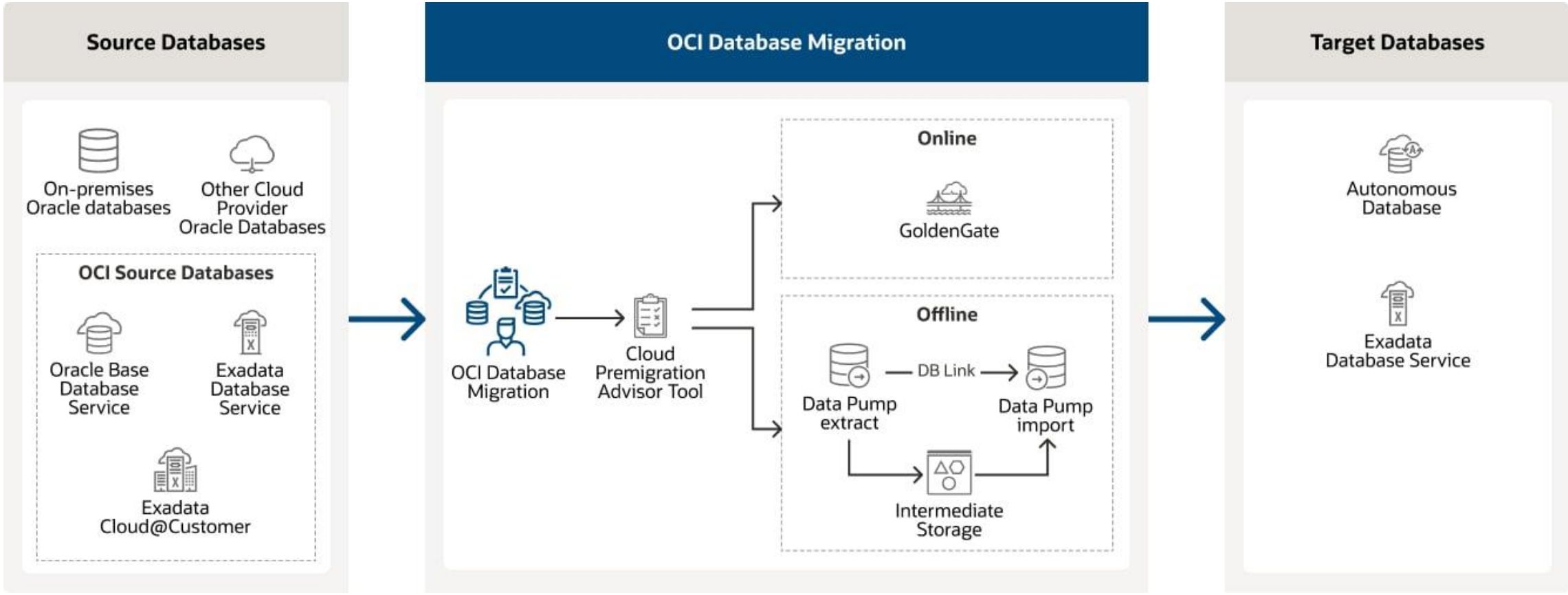
Complete

- Switch operations to new database

How it works for Oracle Cloud migrations



How it works for Oracle Database@Azure migrations



Pricing: **FREE** for all common Oracle use cases

Included:

- OCI Database Migration service operations and supporting infrastructure
- On-premises software agent for specific use cases
- OCI GoldenGate usage for online migrations
- *Oracle GoldenGate Marketplace for Database Migrations* license

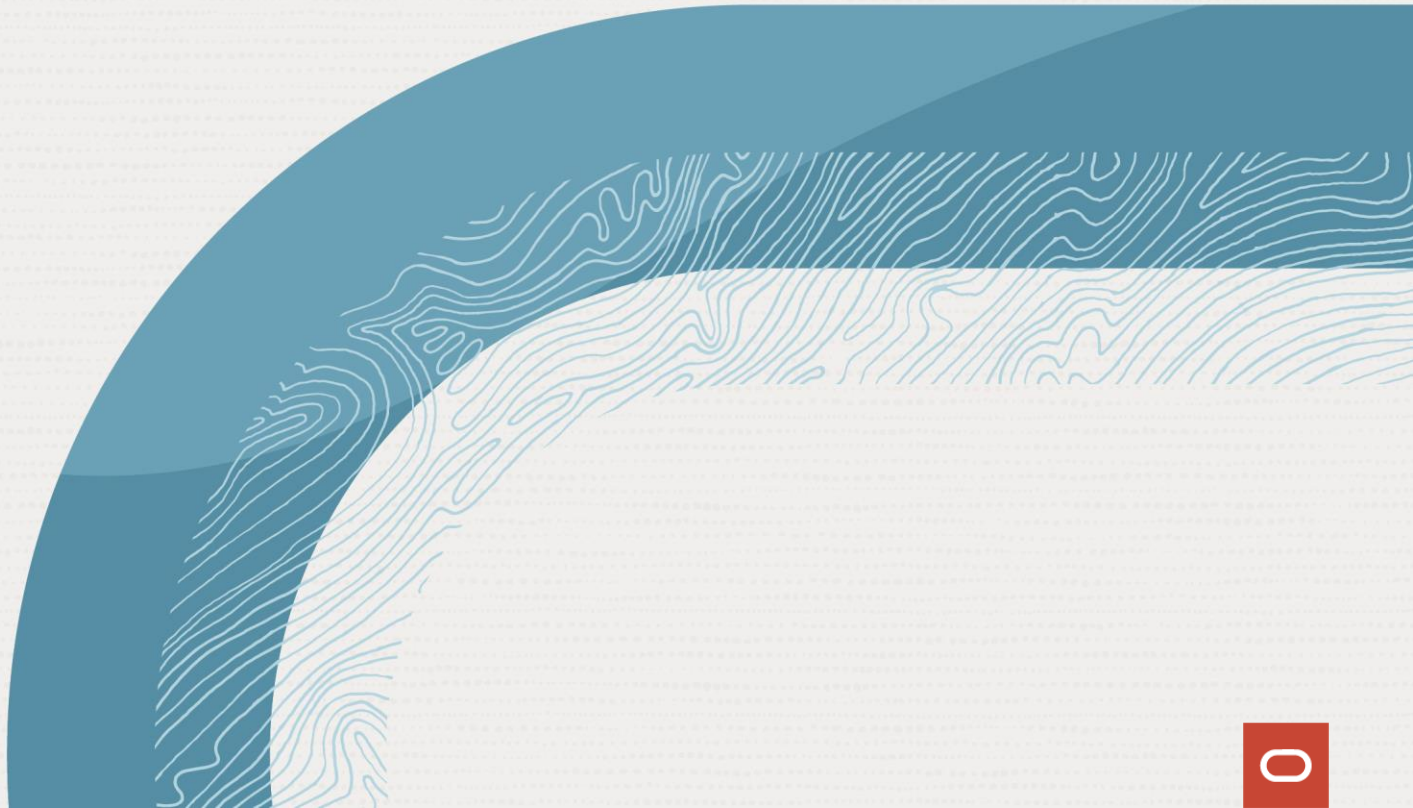
Not included:

- Customer managed OCI resources used for database migration operations
  - Compute used for OCI GoldenGate, OCI Object Storage, File Storage Service, OCI Streaming, etc.
- FastConnect or other on-premise-to-cloud network connectivity
- Source or target database service costs

Exceptions:

- Migrations that run more than 183 days (6 months) after they have been created
- Migrations running for more than 60 days idle (no data transferred)
- Billing starts after time limits have been exceeded with $0.20 / hour per migration

Initiate the service from Oracle@Azure



Azure requirements

1. Azure permissions to accept private offers on the Marketplace

2. Azure Virtual Network with a delegated subnet to the Oracle Database@Azure service: (Oracle.Database/networkAttachments)

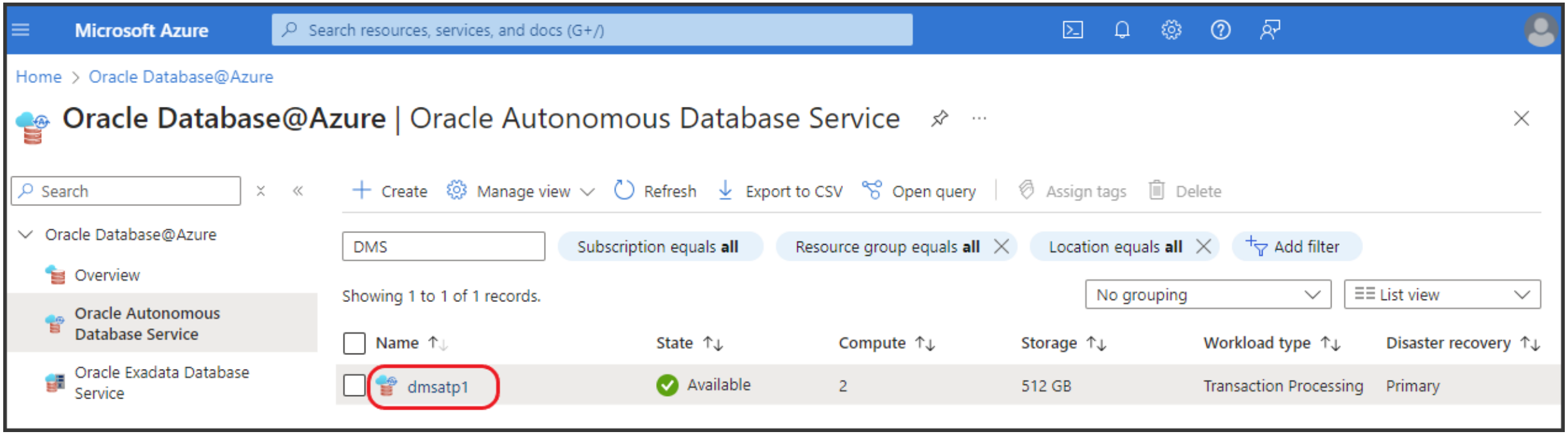
3. Azure groups and roles:
   a) Odbaa-exa-infra-administrators to provision Exadata infrastructure
   b) Odbaa-vm-cluster-administrators to provision VM cluster
4. A deployed Oracle@Azure database

5. Federated SSO user to sign in into OCI

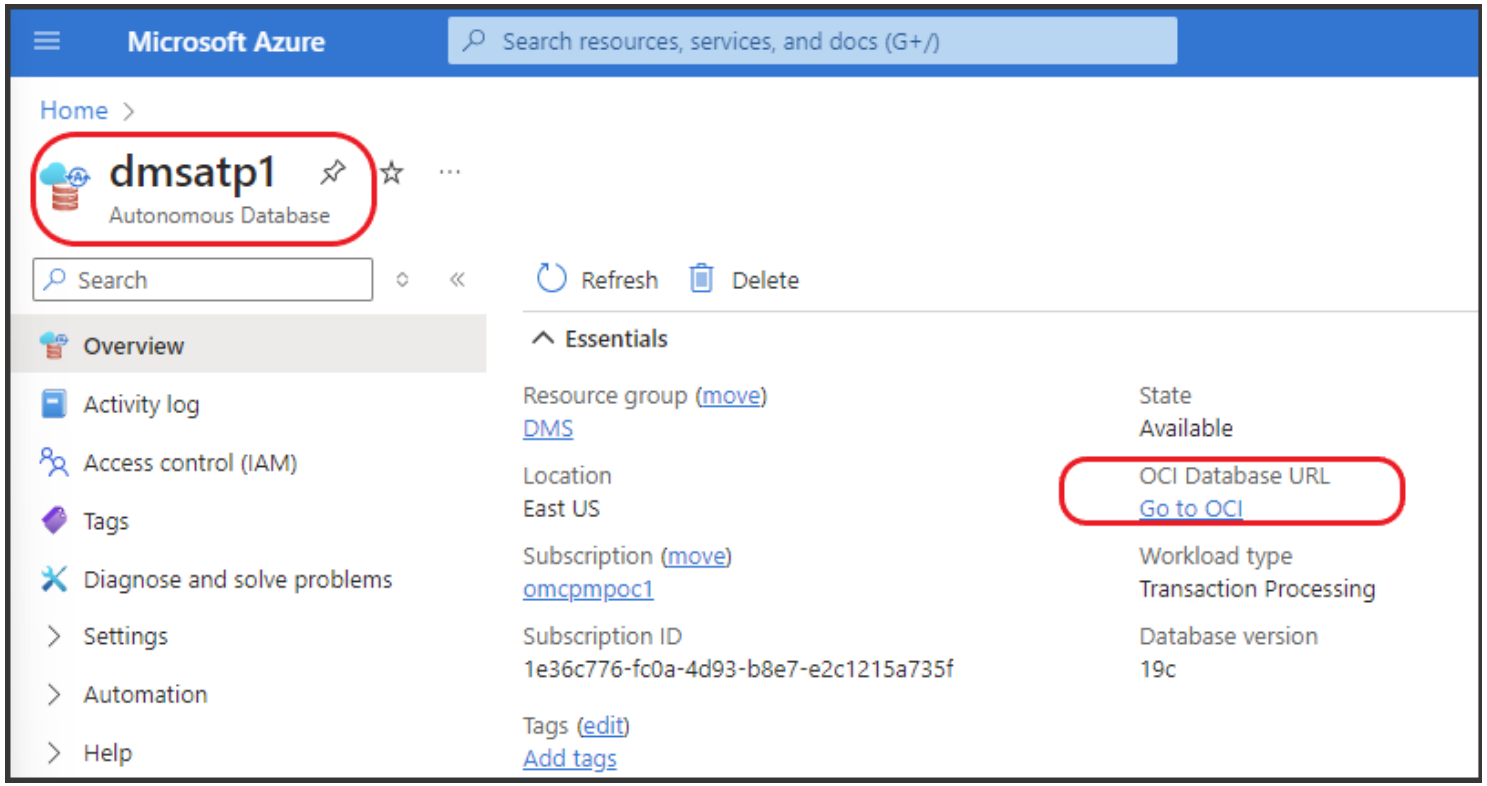
OCI requirements

1. Review the required policies in the following documentation link.

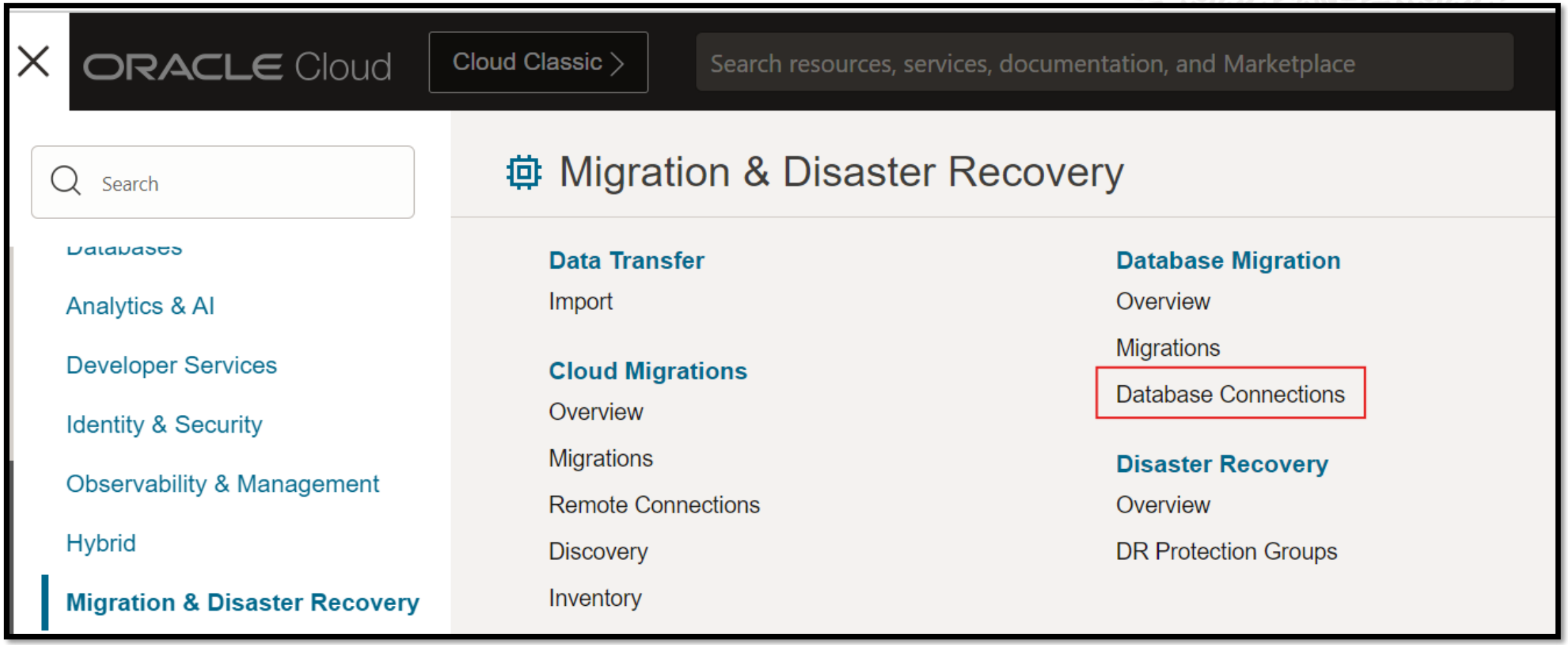
Step 1: Identify your Oracle@Azure database deployment



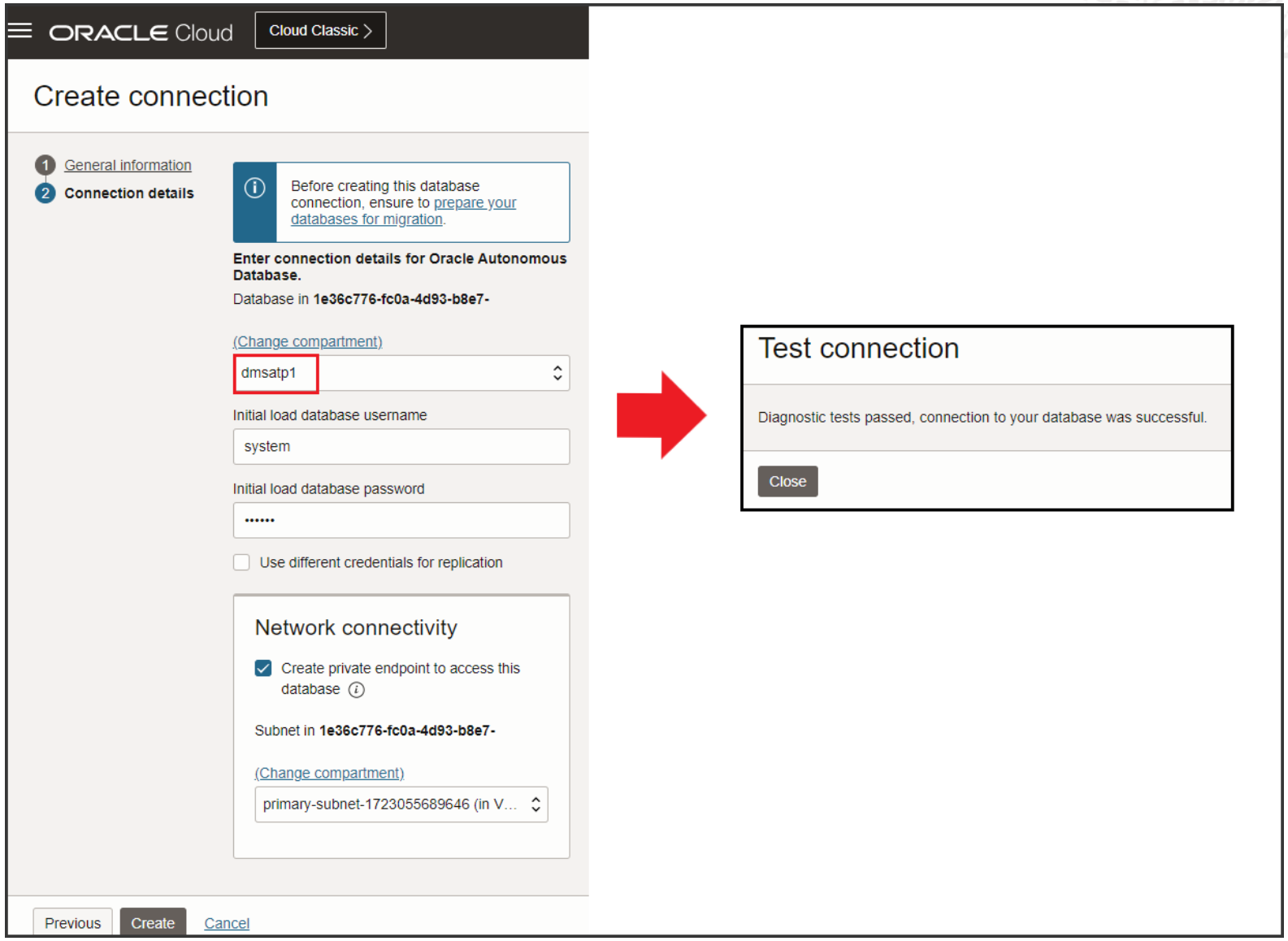
Step 2: Identify the OCI Database URL and click it



Step 3: Navigate to the service using the OCI menu

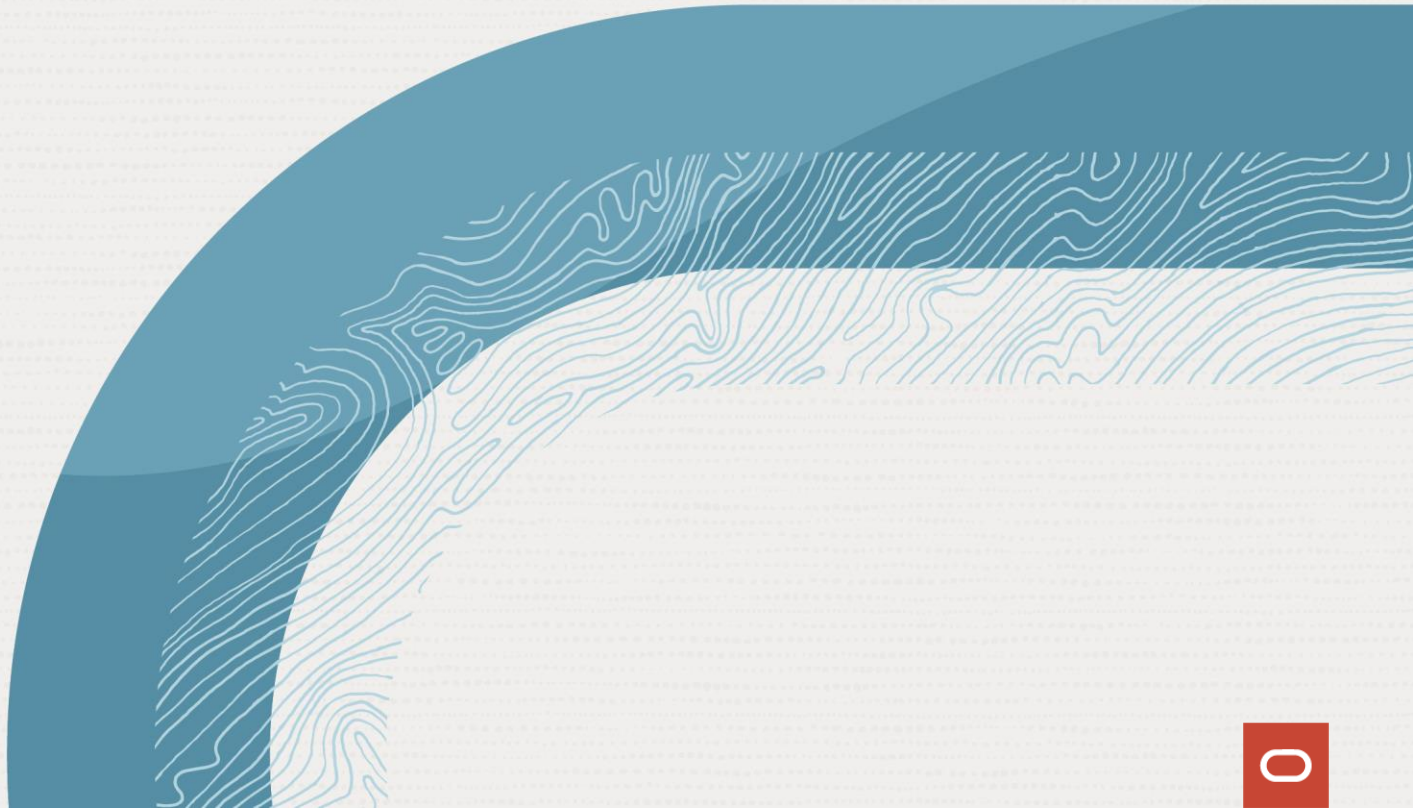


Step 4: The Database connection creation for your Oracle@Azure database should be transparent, use it as target.



You can now start your migration. Follow the next "Migration Walkthrough" section for the complete details.

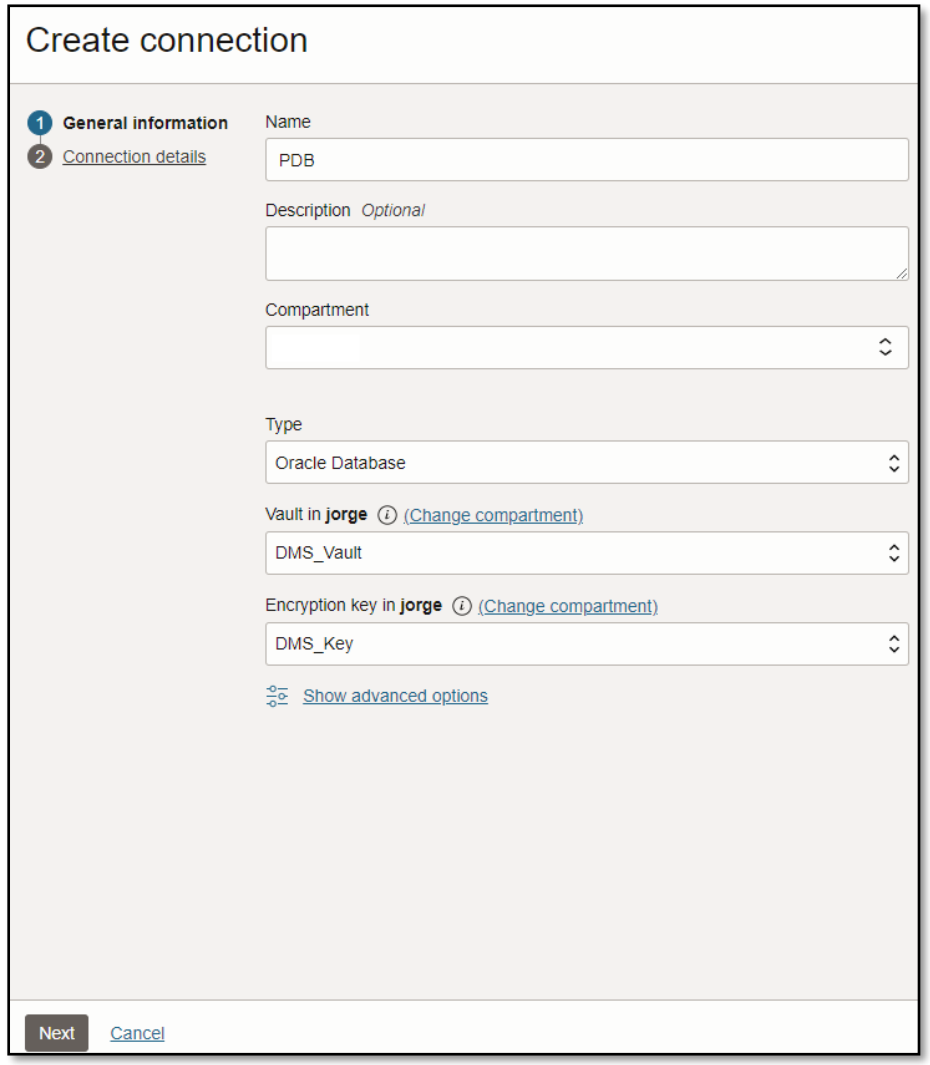
A walkthrough

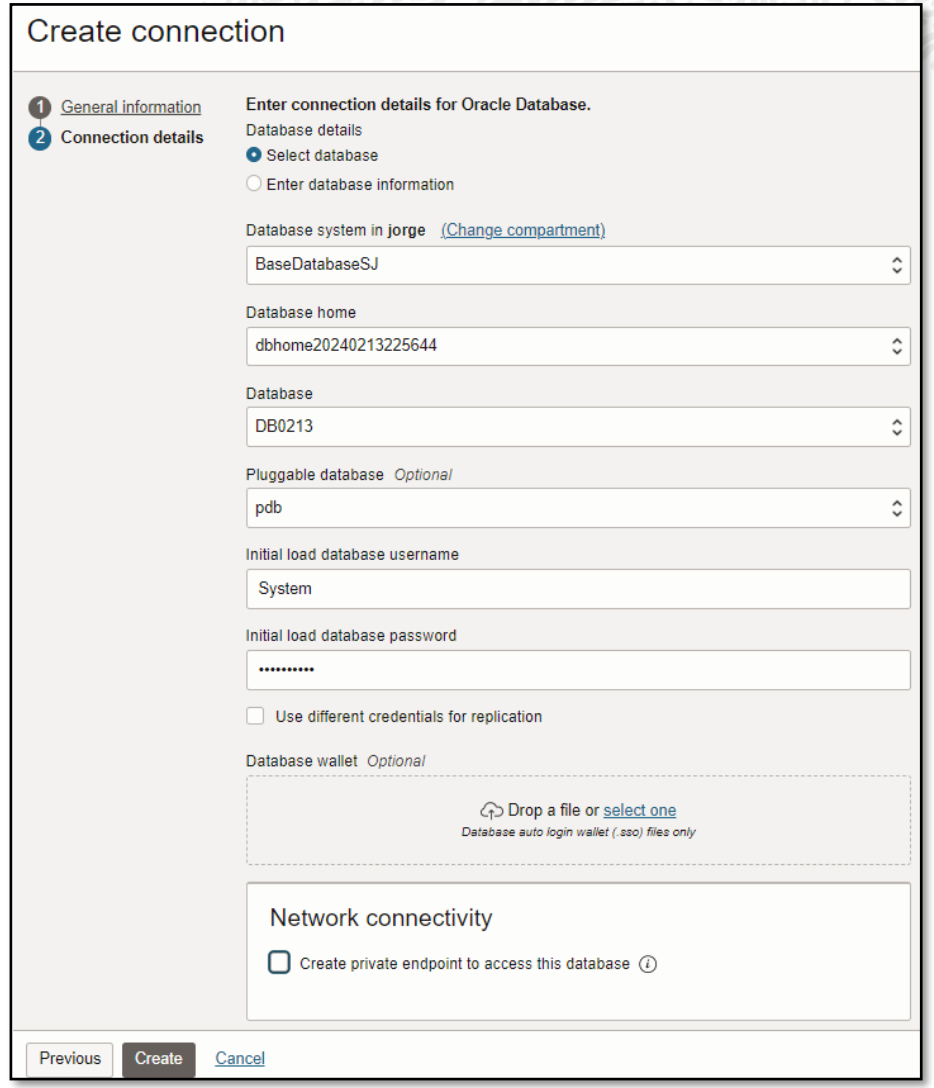


Step 1: *Select* Database Migration menu on the OCI Console

Step 2: Create Connections for source and target

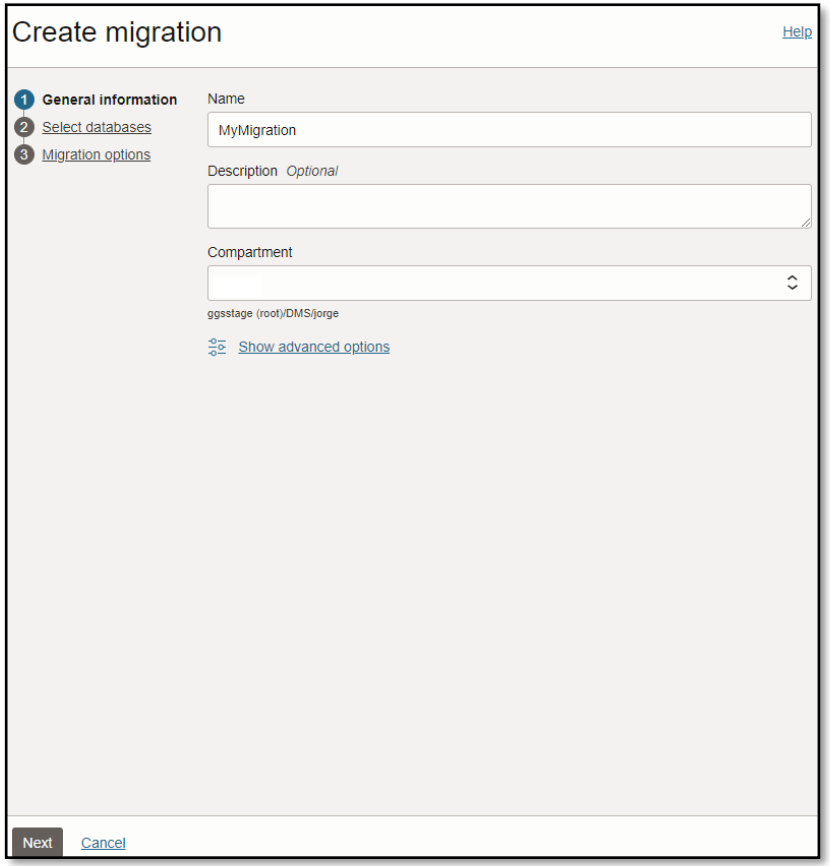
Provide reusable connection information and credentials for databases

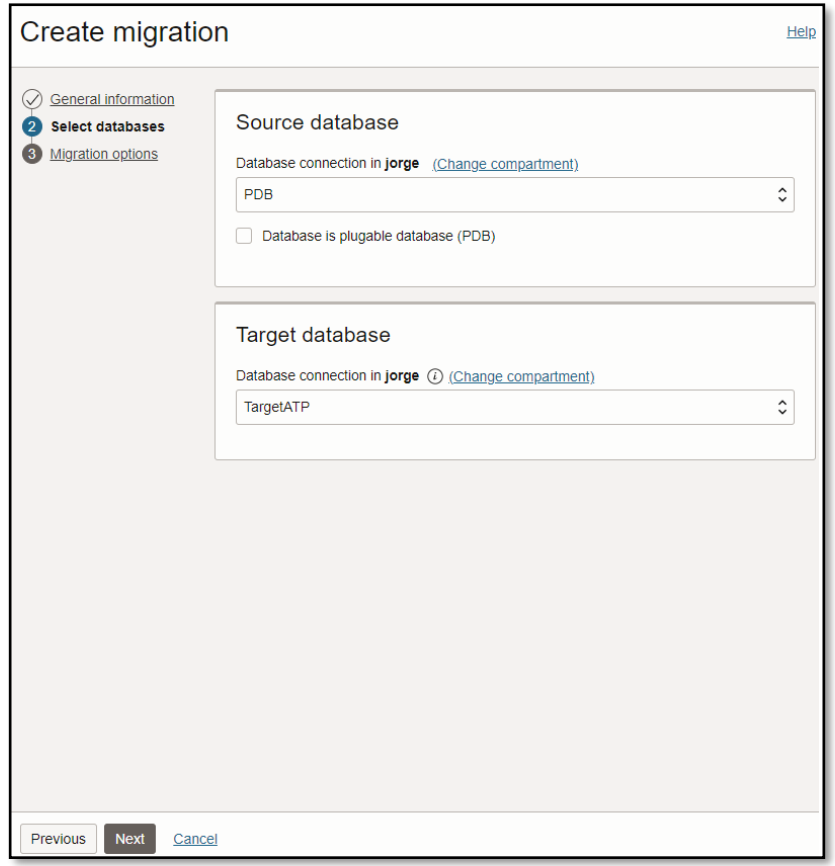


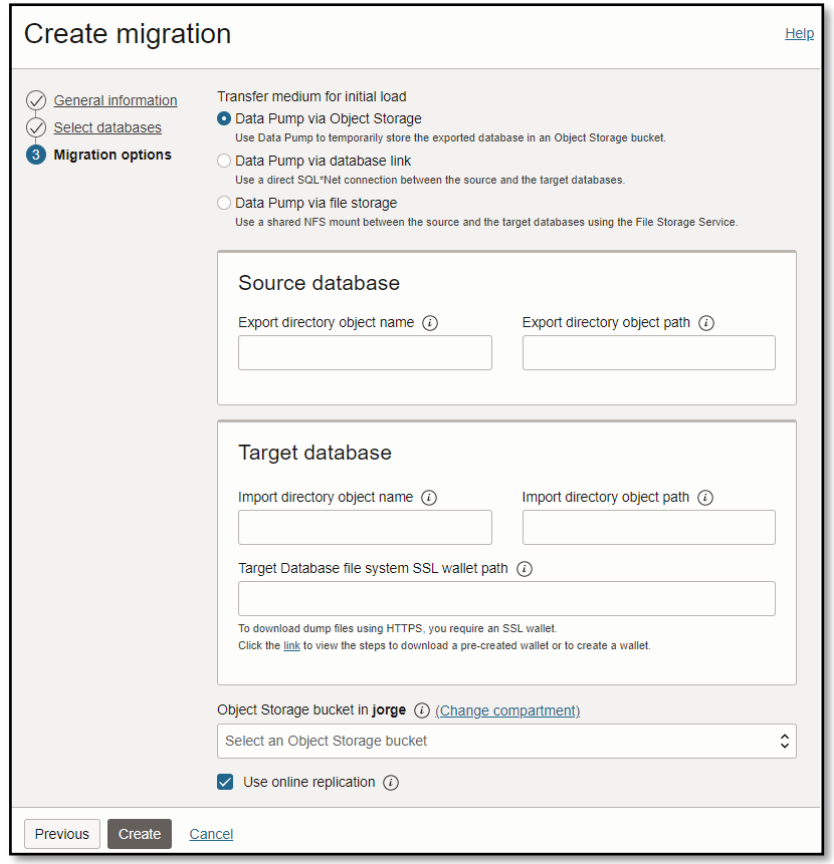


Step 3: Create Migration

Select migration method and other settings to move a database to the cloud

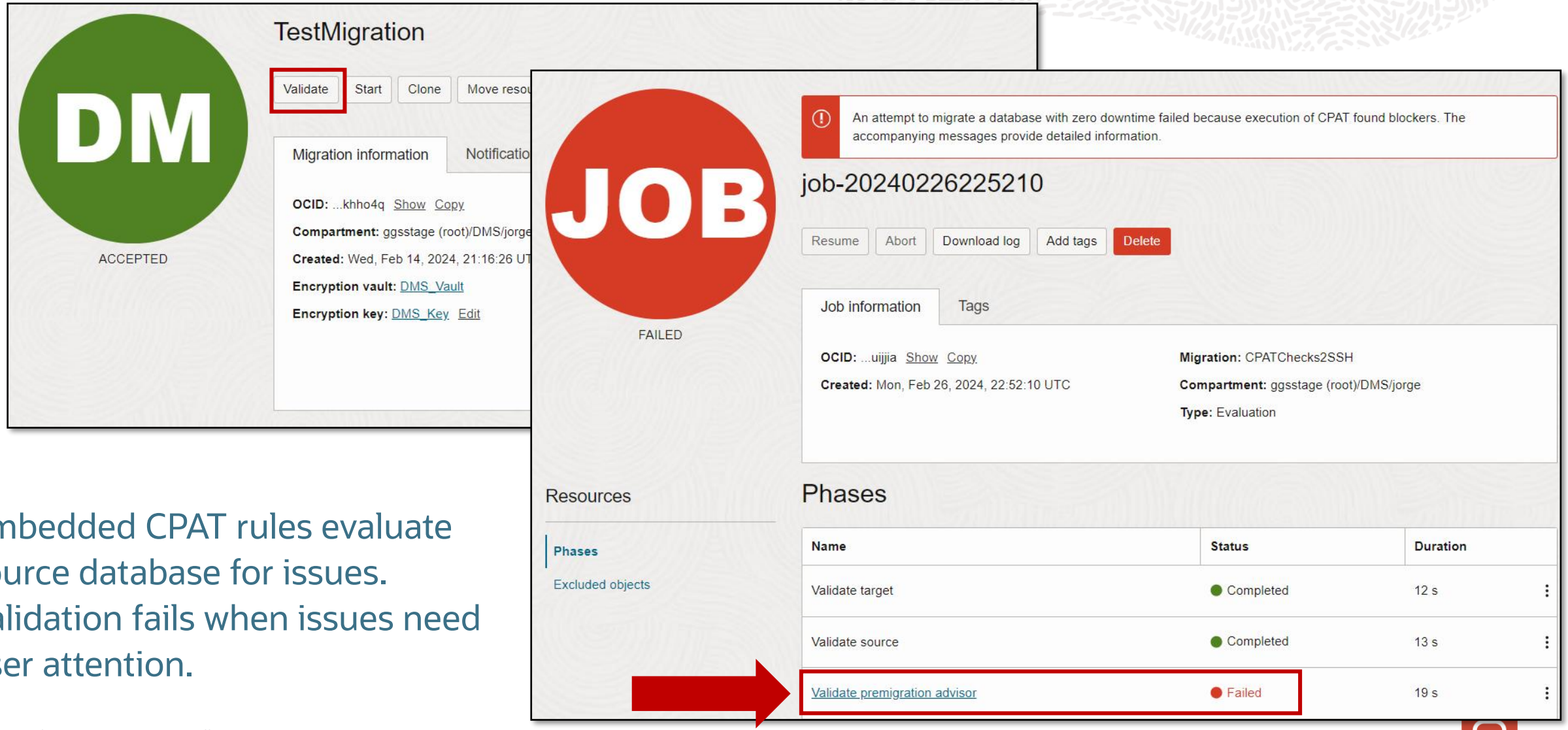






Step 4a: Validate Migration

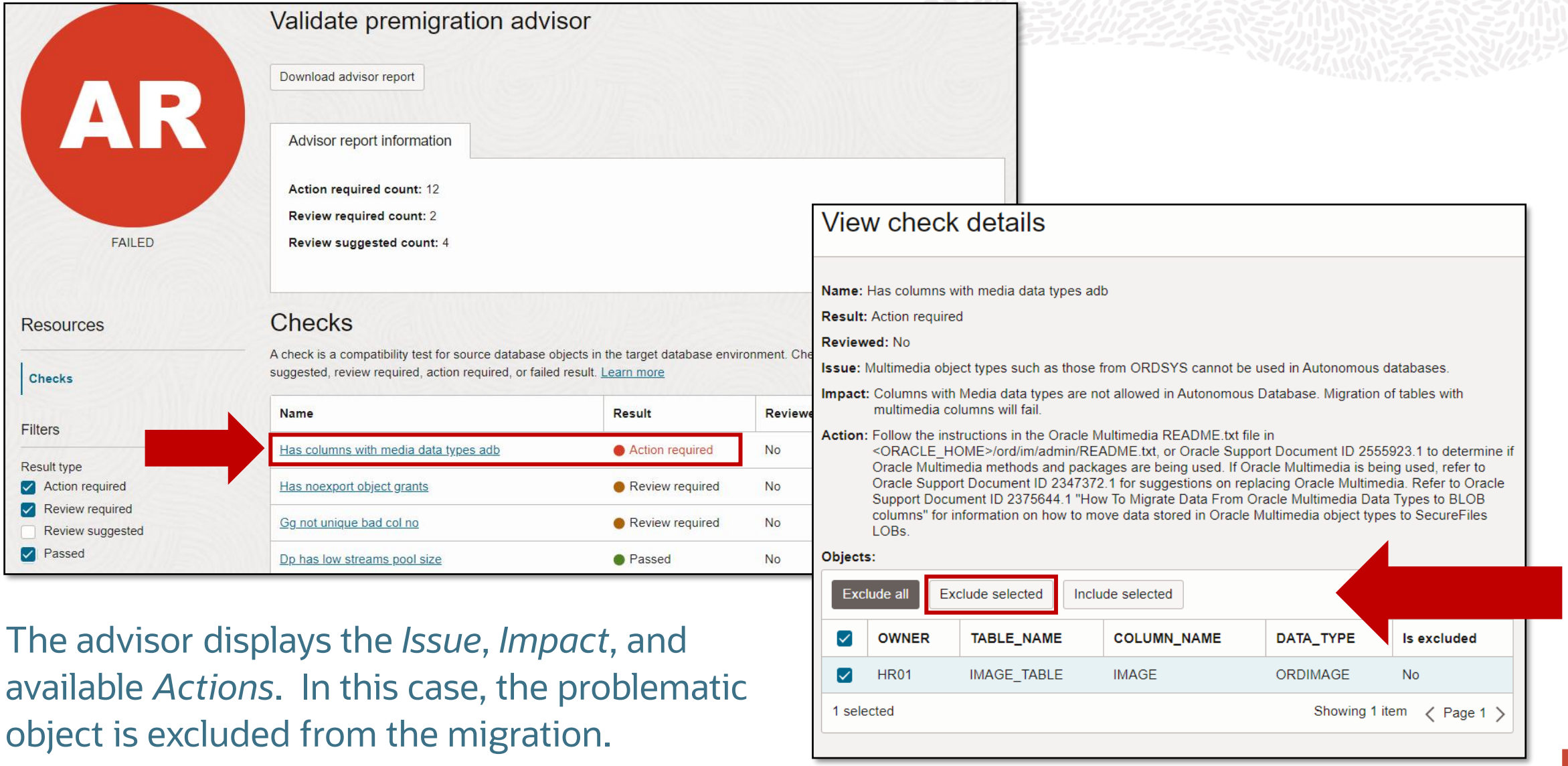
Confirm all prerequisites and permissions. CPAT identifies incompatible objects.



Embedded CPAT rules evaluate source database for issues. Validation fails when issues need user attention.

Step 4b: Validate Migration

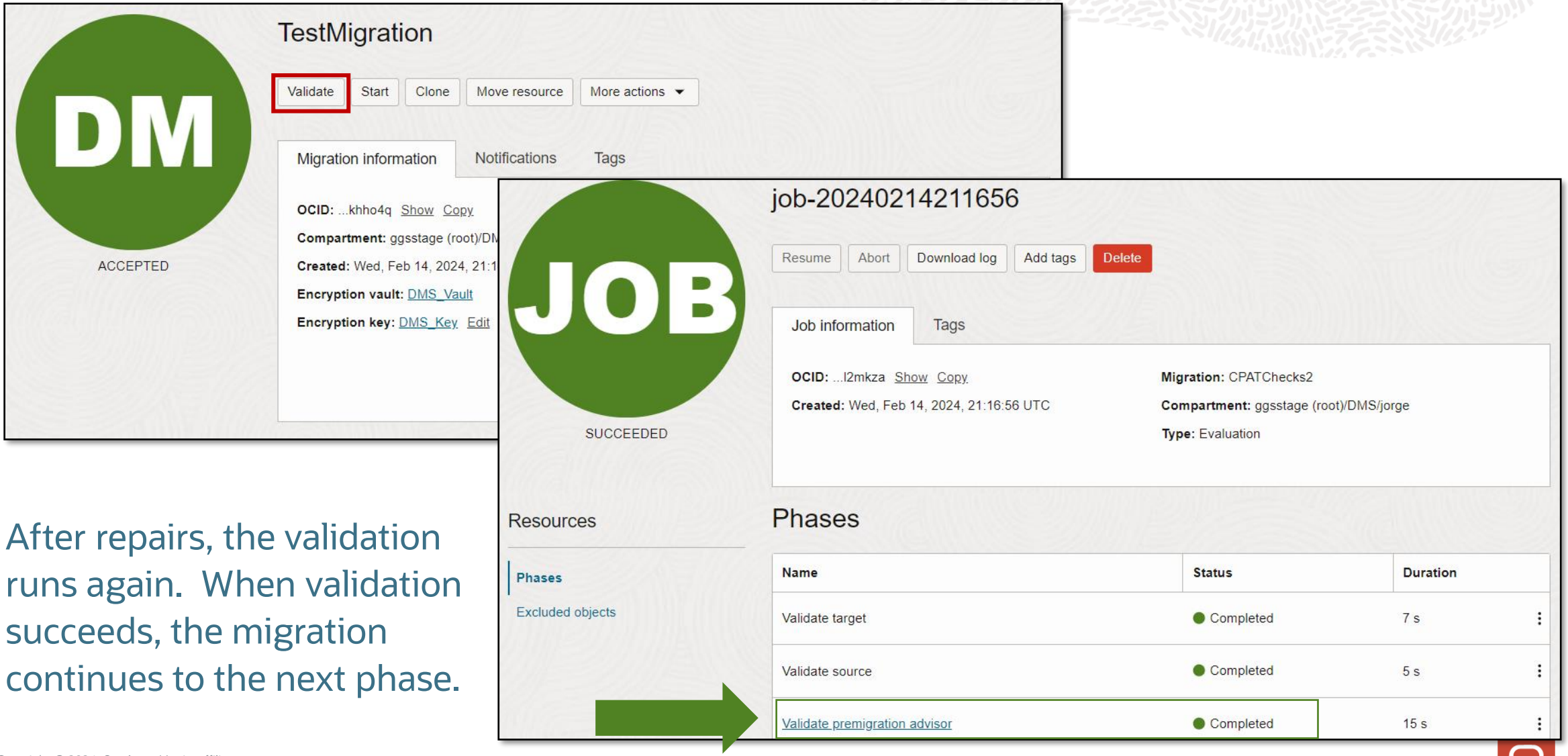
Resolve CPAT findings



The advisor displays the *Issue*, *Impact*, and available *Actions*. In this case, the problematic object is excluded from the migration.

Step 4c: Validate Migration

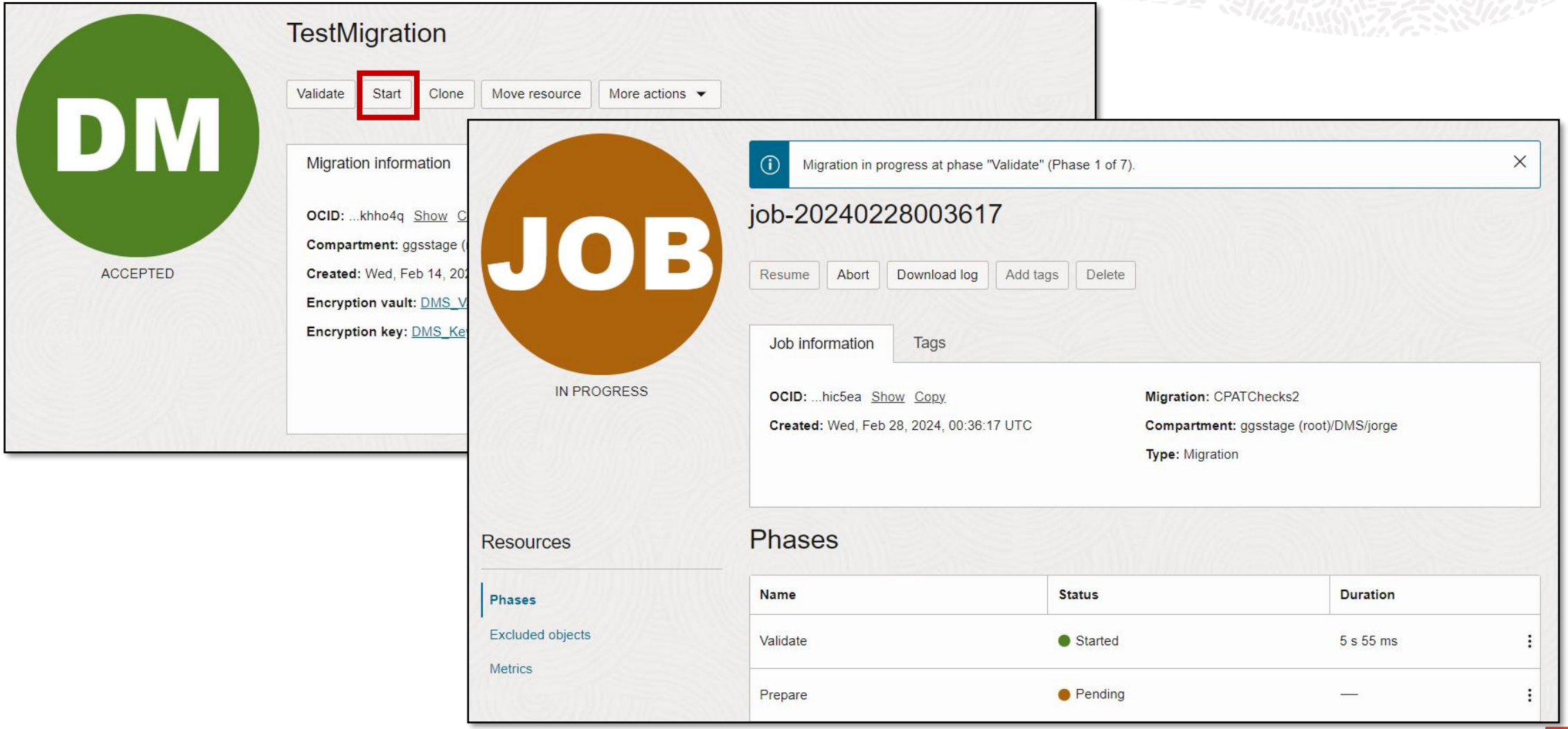
Validation success!



After repairs, the validation runs again. When validation succeeds, the migration continues to the next phase.

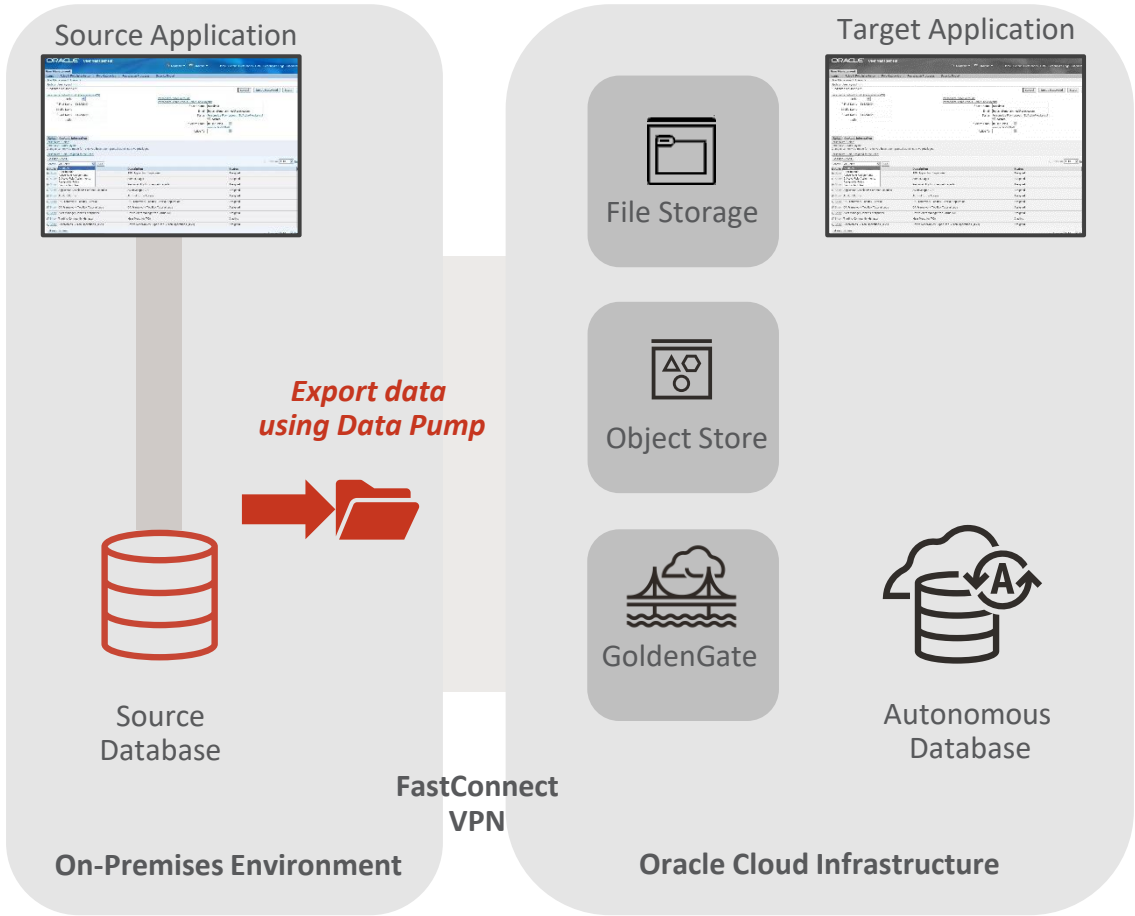
Step 5: Start Migration

Initiate the migration job to migrate the database to the cloud



Start Migration – Export Initial Load

Current DB state is exported to files using Oracle Data Pump



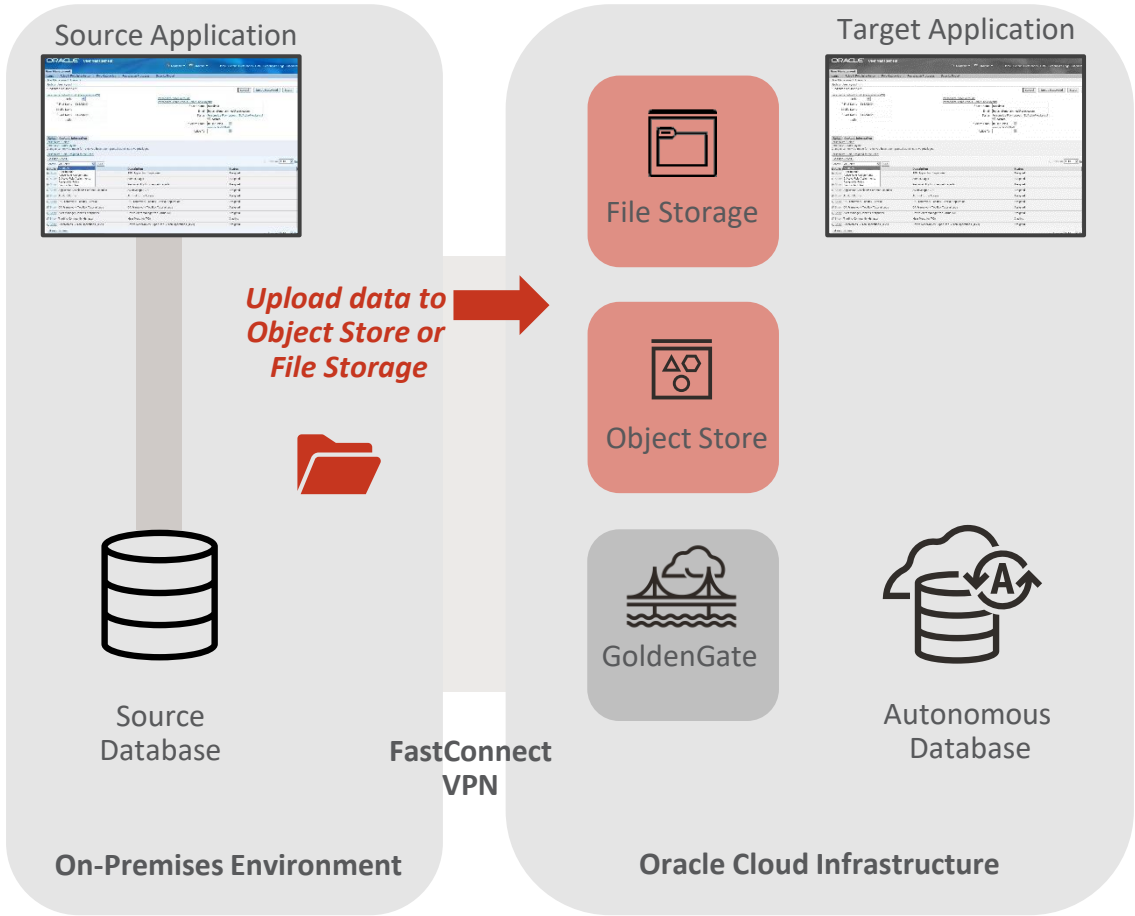
Phases

Name	Status	Duration
Validate	Completed	1 m 11 s
Prepare	Completed	2 m 43 s
Export Initial Load	Started 66%	3 m 38 s
Upload Data	Pending	—
Import Initial Load	Pending	—
Post Initial Load	Pending	—
Prepare Replication Target	Pending	—
Monitor Replication Lag	Pending	—
Switchover	Pending	—
Cleanup	Pending	—

Showing 10 Items 1 of 1

Start Migration – Upload Data

Data Pump export is uploaded to the intermediate storage



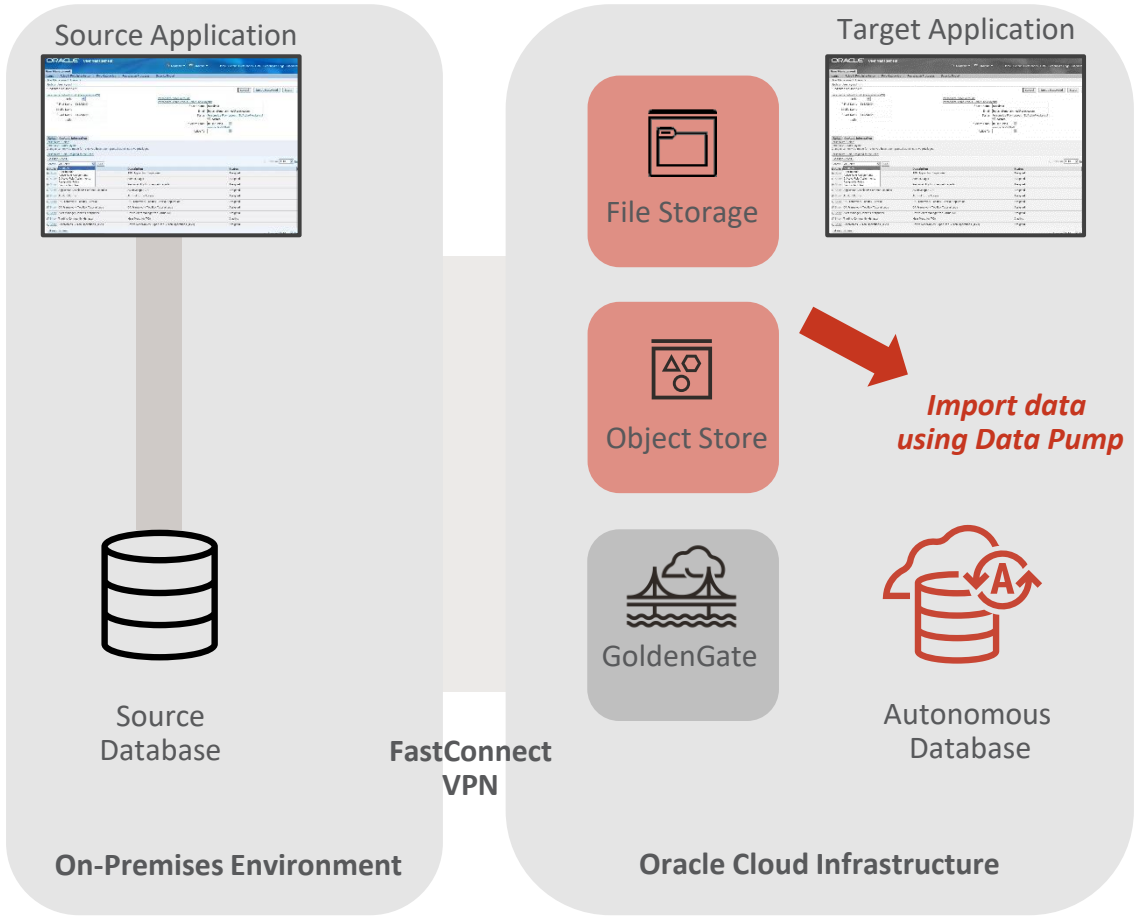
Phases

Name	Status	Duration
Validate	Completed	1 m 11 s
Prepare	Completed	2 m 43 s
Export Initial Load	Completed	9 m 30 s
Upload Data	Started	26 s
Import Initial Load	Pending	—
Post Initial Load	Pending	—
Prepare Replication Target	Pending	—
Monitor Replication Lag	Pending	—
Switchover	Pending	—
Cleanup	Pending	—

Showing 10 Items 1 of 1

Start Migration – Import Initial Load

Exported dump files are imported to ADB



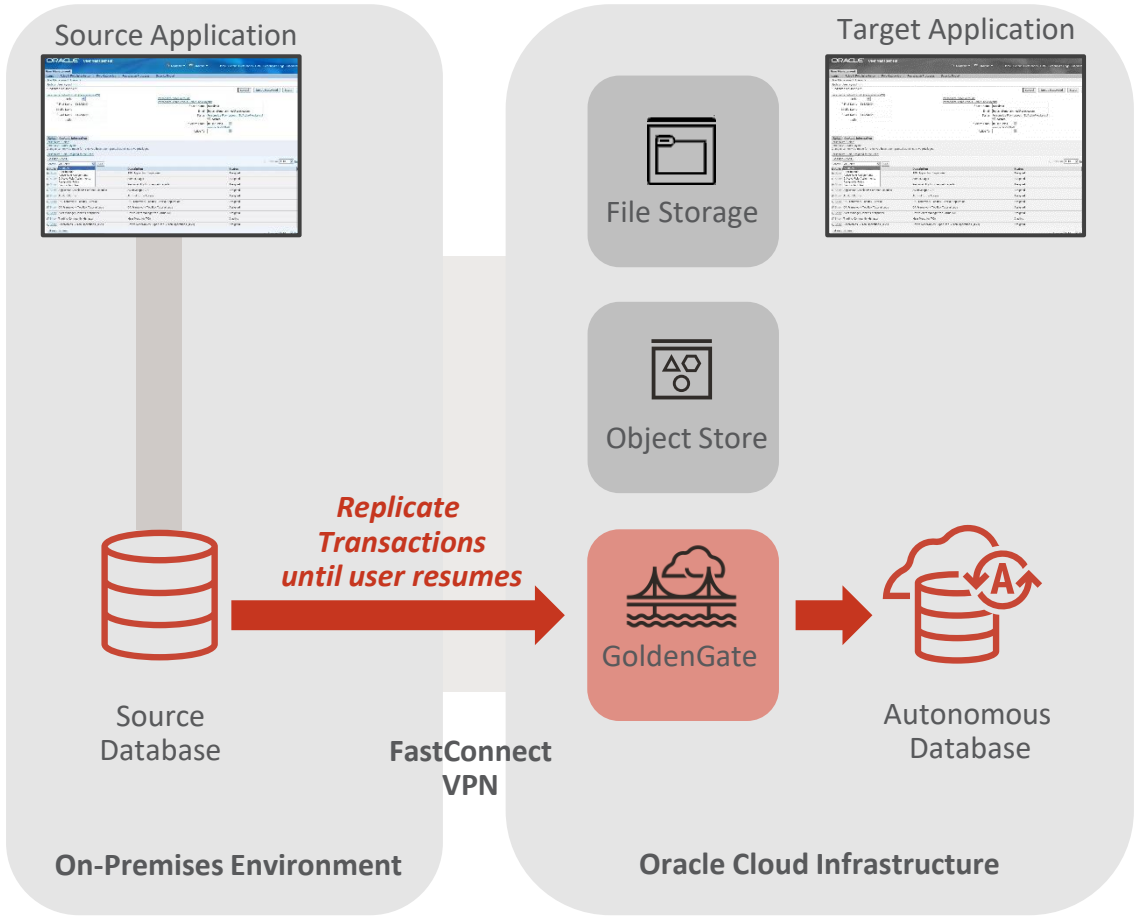
Phases

Name	Status	Duration
Validate	Completed	1 m 11 s
Prepare	Completed	2 m 43 s
Export Initial Load	Completed	9 m 30 s
Upload Data	Completed	1 m 13 s
Import Initial Load	Started 50%	3 m 30 s
Post Initial Load	Pending	—
Prepare Replication Target	Pending	—
Monitor Replication Lag	Pending	—
Switchover	Pending	—
Cleanup	Pending	—

Showing 10 Items 1 of 1

Start Migration – Replication

DB transactions are replicated using GoldenGate until user resumes the next phase



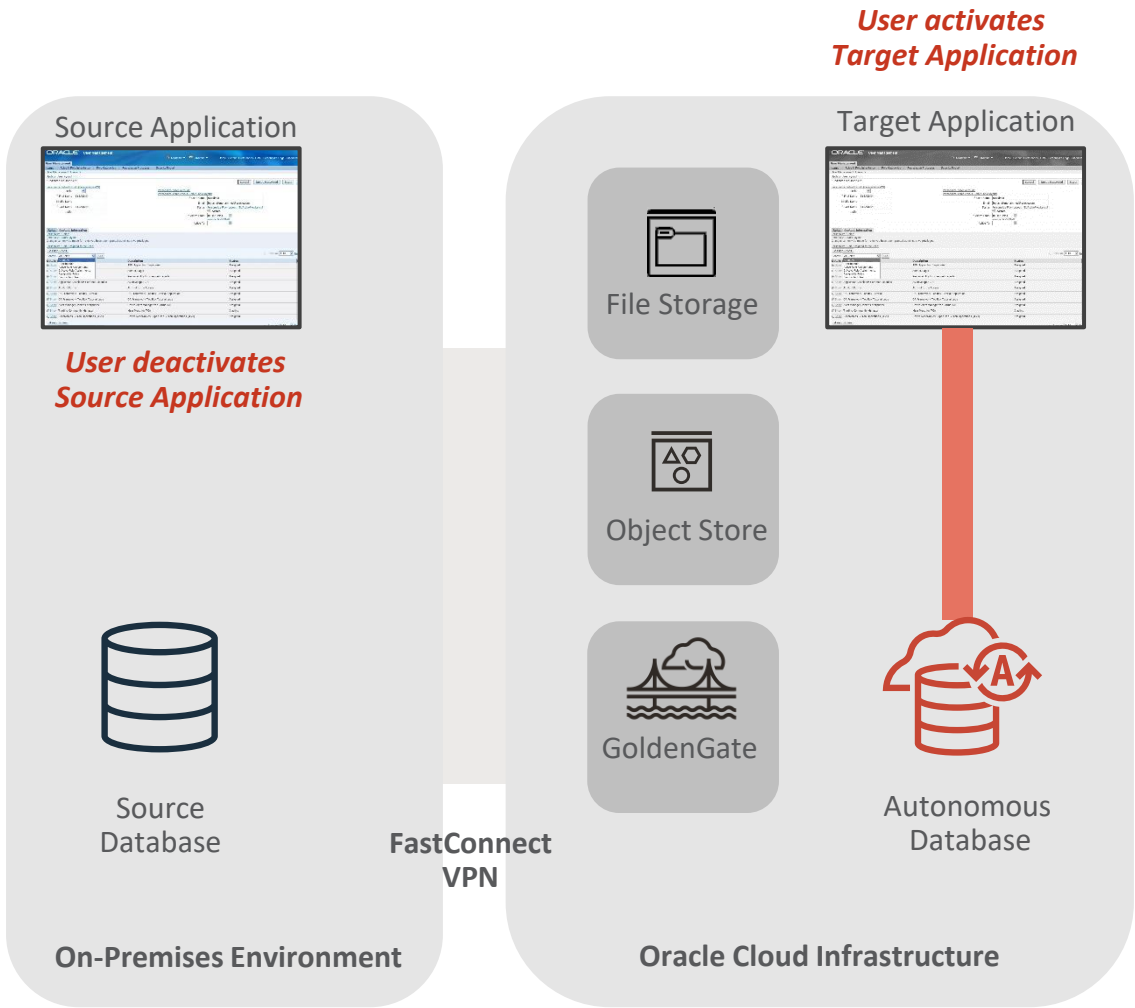
Phases

Name	Status	Duration
Validate	Completed	1 m 11 s
Prepare	Completed	2 m 43 s
Export Initial Load	Completed	9 m 30 s
Upload Data	Completed	1 m 13 s
Import Initial Load	Completed	5 m 33 s
Post Initial Load	Completed	3 s
Prepare Replication Target	Completed	2 m 11 s
Monitor Replication Lag	Completed	2 s
Switchover	Pending	—
Cleanup	Pending	—

Showing 10 Items 1 of 1

Start Migration – Switchover

Wait until last transaction is replicated to switch over applications

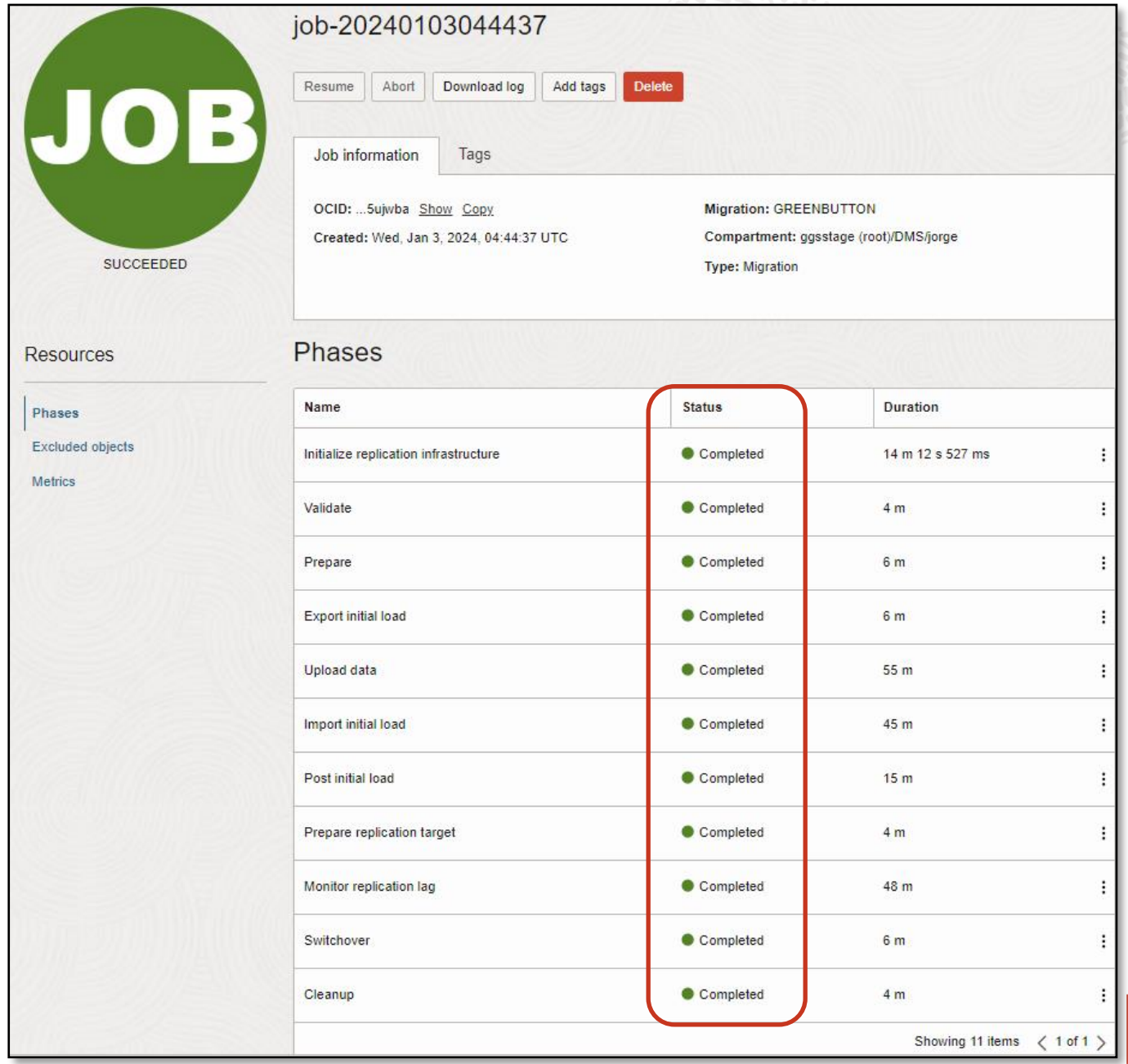


Phases

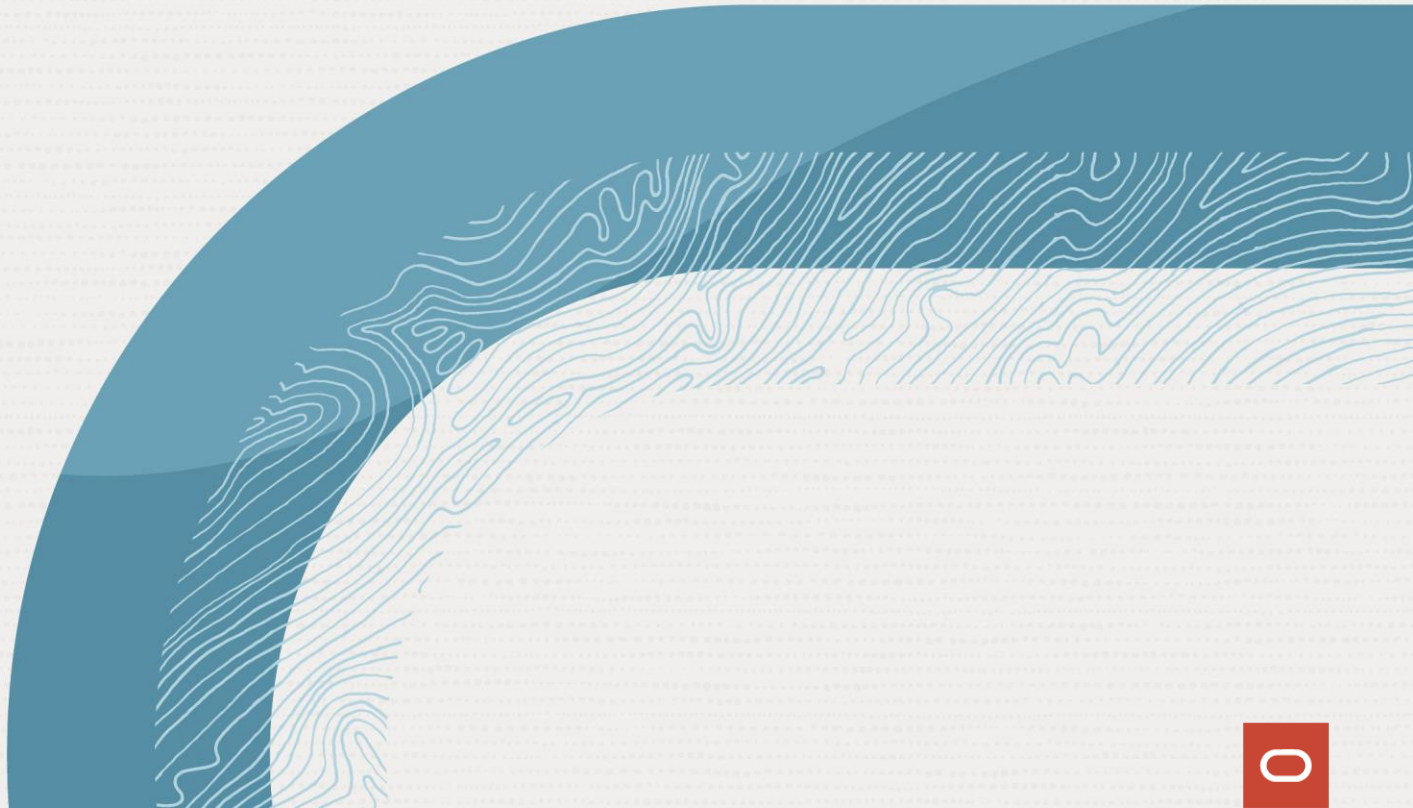
Name	Status	Duration
Validate	Completed	1 m 11 s
Prepare	Completed	2 m 43 s
Export Initial Load	Completed	9 m 30 s
Upload Data	Completed	1 m 13 s
Import Initial Load	Completed	5 m 33 s
Post Initial Load	Completed	3 s
Prepare Replication Target	Completed	2 m 11 s
Monitor Replication Lag	Completed	2 s
Switchover	Completed	1 m 26 s
Cleanup	Pending	—

Showing 10 Items 1 of 1

Migration Succeeded!



Thank You!




ORACLE