Cloud Database Migrations the Easy Way

An Introduction to OCI Database Migration

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Director, Product Management
Oracle
Safe harbor statement

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Resources to learn more

Video demonstration

Do a LiveLab online migration

Step-by-step guide and tutorial

Documentation

More information on Oracle.com
Oracle Cloud is built for Oracle Databases

What’s the best way to get there?

OCI Databases

Mandated migration
Missing Skillset
Downtime
Data Loss
Complexity
Cost
Latency
Incompatibility

Autonomous Database
Base Database Cloud Service
Exadata Cloud Service

Converged Database
Auto-Repair
Fast Time to Market
Self-Tuning
Cost Savings
Scalability
Self-Securing
High Availability
OCI Database Migration
Fully managed, easy-to-use 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 Databases, Data Marts and Data Warehouses into Oracle Cloud

Differentiated use cases
- Simplifies underlying technologies and resources
- Logical offline and online migrations
- Schema/metadata migration
- Uses enterprise-strength Oracle tools: Data Pump, Zero Downtime Migration, and GoldenGate

UI-led experience
Expert use
Move to Autonomous
Flexible Fleet-level

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Different migration types

**Offline Migration**
- One-time copy of the database
- Requires applications to be offline during migration

**Physical Migration (Currently not available)**
- Blockwise copy of database files
- Requires database vendors and versions to be same on source and target
- No filtering or transformation
- Tools: RMAN, DataGuard

**Online Migration**
- Initial copy of database followed by change data capture during migration
- Applications can stay online during migration

**Logical Migration**
- Logically interpret database contents and copy to database in target format
- Source and target can be different
- Tools: Datapump, GoldenGate

**Direct Connection**
- Source database can be accessed directly from target network
- Requires VPN/FastConnect for on-premises

**Indirect Connection**
- Source database cannot be accessed directly, behind firewall
- Requires migration tool with agent
Tools for all steps of the migration process

**Decision**
Which Oracle Cloud Solution should I use?

**Planning**
Is my data supported for migration?

**Database Migration**
How to move my Databases?

**Application Migration**
How to move applications and VMs to the cloud?

**Validation**
Was my data completely migrated?

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Oracle.com
Cloud Services Navigator
Migration Method Advisor

Cloud Premigration Advisor Tool (CPAT)

OCI Database Migration

OCI Application Migration

GoldenGate Veridata
Supported database versions and targets

**Oracle sources**
- Database 11g
- Database 12c
- Database 18c
- Oracle Database 19c

**Source platforms**
- Offline and Online
- **Offline and Online**
  - x86-64 server
  - Amazon RDS
  - IBM AIX

**Target OCI services**
- Cross version
- Migration
  - Non-CDB or PDB source
  - Autonomous Database
  - Base Database Cloud Service
  - Exadata Cloud Service

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Migration steps

1. **Prerequisites:**
   - Setup VPN or FastConnect
   - Provision Target DB
   - Provision OGG VM, Object Store, and Vault
   - Configure source and targets replication (only online)

2. **Setup migration**

3. **Validate Migration with CPAT help**

4. **Start Migration:**
   - Export source DB to target DB using Datapump.
   - Create and start OGG replication from source DB to target DB after initial load.

5. **Complete Migration**
   - Switch operations to new database.
How it works
Pricing: **FREE** for all common use cases

**Included:**
- Cloud service/software that operates the migration
- On-premises agent, ZDM for optional use cases
- OCI managed infrastructure that Database Migration runs on
- Oracle GoldenGate Marketplace license for Database Migration migration

**Not included:**
- Customer managed OCI resources used for database migration operations
  - Compute used for OCI GoldenGate, OCI Object Storage, OCI Streaming
- 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
A walkthrough
Step 1: Select Database Migration on the OCI Console
Step 2: Register Source and Target databases

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 4: Validate Migration

Confirm all prerequisites, permissions, and connectivity to source and target
Step 5: Start Migration

Initiate the migration job to move database into the cloud
Start Migration – Export Initial Load

Current DB state is exported to files using datapump

<table>
<thead>
<tr>
<th>Phases</th>
<th>Status</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Validate</td>
<td>Completed</td>
<td>1 m 11 s</td>
</tr>
<tr>
<td>Prepare</td>
<td>Completed</td>
<td>2 m 43 s</td>
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<tr>
<td>Export Initial Load</td>
<td>Started</td>
<td>66%</td>
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<tr>
<td></td>
<td></td>
<td>3 m 38 s</td>
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<td>Upload Data</td>
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<tr>
<td>Import Initial Load</td>
<td>Pending</td>
<td></td>
</tr>
<tr>
<td>Post Initial Load</td>
<td>Pending</td>
<td></td>
</tr>
<tr>
<td>Prepare Replication Target</td>
<td>Pending</td>
<td></td>
</tr>
<tr>
<td>Monitor Replication Lag</td>
<td>Pending</td>
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<tr>
<td>Switchover</td>
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<td></td>
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<tr>
<td>Cleanup</td>
<td>Pending</td>
<td></td>
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Start Migration – Upload Data
Datapump export is uploaded to Object Store

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<td>Completed</td>
<td>2m 43s</td>
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<tr>
<td>Export Initial Load</td>
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<td>9m 30s</td>
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<tr>
<td>Upload Data</td>
<td>Started</td>
<td>26s</td>
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<tr>
<td>Import Initial Load</td>
<td>Pending</td>
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<td>Post Initial Load</td>
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<td>Prepare Replication Target</td>
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<td>Pending</td>
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Start Migration – Import Initial Load

Exported dump files are imported to ADB

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<tr>
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<td>1 m 13 s</td>
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<td>Post Initial Load</td>
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<td>Prepare Replication Target</td>
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<tr>
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Start Migration – Replication

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

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<td>5 m 33 s</td>
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<td>Post Initial Load</td>
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<tr>
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<td>Switchover</td>
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</tr>
<tr>
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Start Migration – Switchover

Wait until last transaction is replicated to let user switch over applications

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<tr>
<td>Monitor Replication Lag</td>
<td>Completed</td>
<td>2 s</td>
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<tr>
<td>Switchover</td>
<td>Completed</td>
<td>1 m 26 s</td>
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<tr>
<td>Cleanup</td>
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Showing 10 Items 1 of 1
Migration Succeeded
Thank You!