ORACLE

Migrating WebLogic applications to Cloud

Options and techniques to migrate your Application databases

November 16th , 2021

Jan Leemans

Sid Joshi

Introduction of WebLogic on OCI

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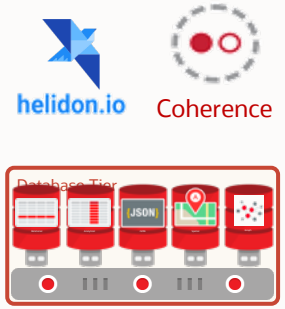
The WebLogic Product Roadmap

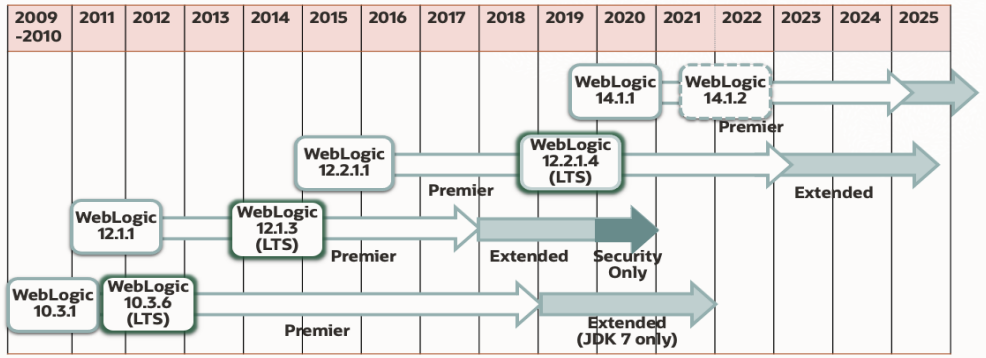
- **Embrace Cloud Native**
  - Key trend in Application Development
  - Modernize your existing applications without code changes
  - Large toolset to embrace modern development automation (CI/CD)
  - Enable Modern Monitoring and Logging tooling

- **Ongoing evolution in 14.1.x**
  - WebLogic Java EE 8 and Jakarta EE 8 Support
  - Coherence, Tracing, GraalVM polyglot
  - Java SE 8 and Java SE 11 Support
  - Generic, slim and quick installers



- **Micro Service Ready**
  - Easy adoption of Java Microservices with Helidon
  - Hybrid applications: WebLogic + Helidon combined
  - Coherence: interaction between microservices
- **Converged Database**
  - Relational, Columnar, JSON, Spatial, …

- **Extensive (long-term) Support Roadmap**



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Oracle WebLogic Server for Oracle Cloud Infrastructure

Deployment Models:

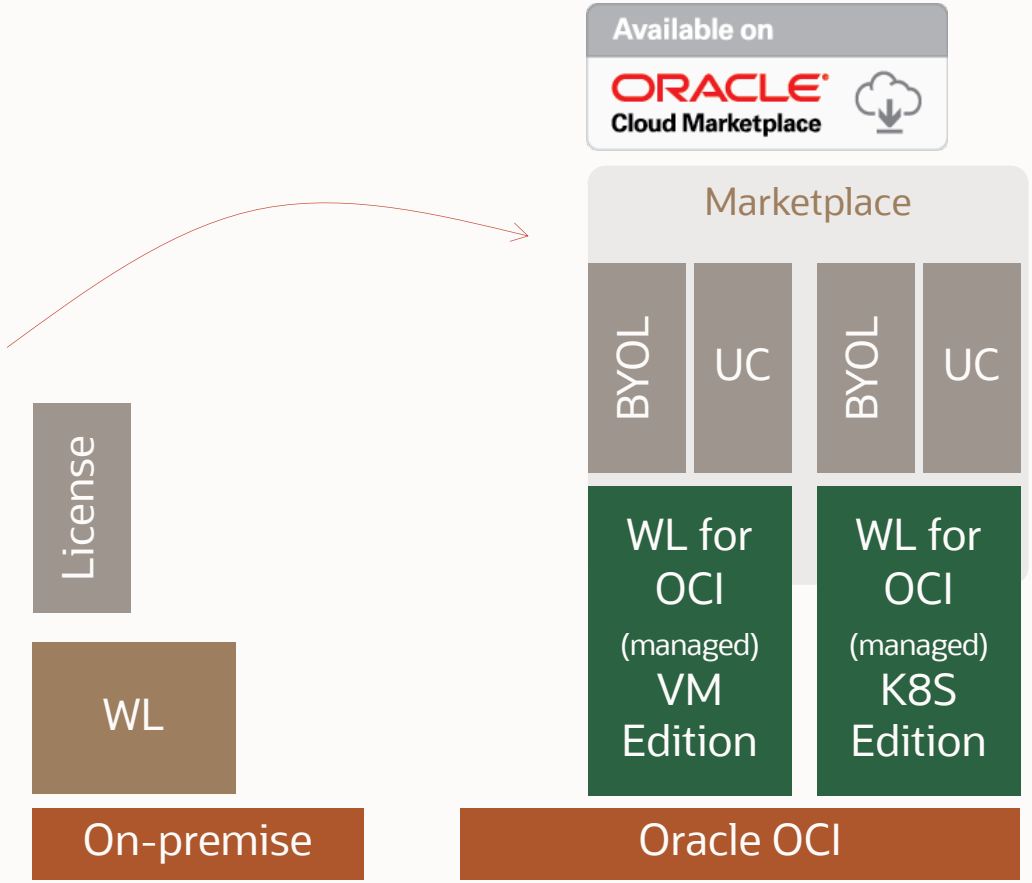
- WLS on Virtual Machines (Classic)
- WLS on Kubernetes (Cloud Native)

Commercial Models:

- Bring Your Own License (BYOL)
- Universal Credit (UC)

Supports

- WebLogic Server **11g** and **12c**
- Supports JRF and Non-JRF domains
- Supports ATP DB and OCI DB as infra DB



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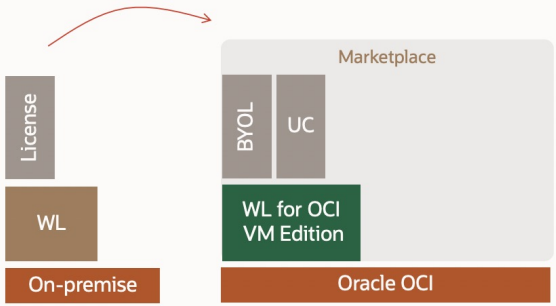
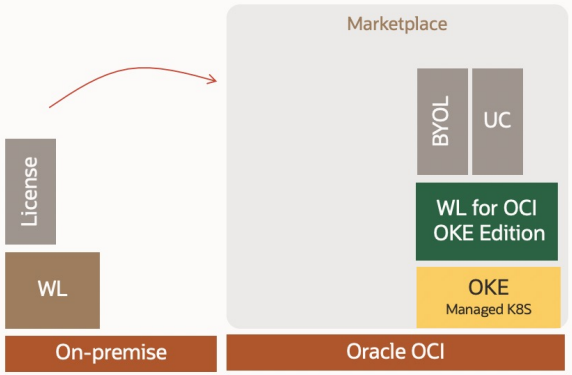
WebLogic Use-Cases



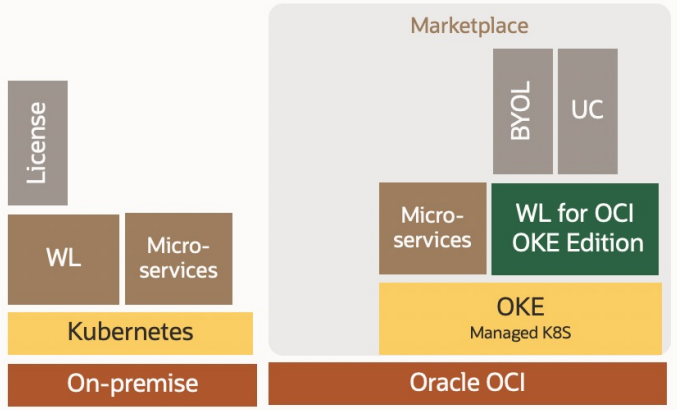
Lift & Shift

- Move on-premise Applications to OCI
- DB and WLS platform services
- Use the WLS on OCI VM flavor
- Same architecture as on-premise



Modernize with Containers

- Containerize Application Landscape
- Use DB as a PaaS service
- Run WLS for OKE flavor
- Incorporate modern DevOps



Hybrid Architectures

- Combine on-premise and Cloud
- Combine classic Java EE and Microservices
- Test & Dev / DR topologies

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Move your Databases to the Cloud

Jan Leemans
Technology Director

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Oracle Database in the Cloud

- Security by default
- 100% Compatible with On-prem
- Advanced Network Architecture
- Flexible Subscription Options
- High Availability and Redundancy
- Choice of VM, Bare Metal, Exadata and Autonomous
- AI- and ML-based Automation

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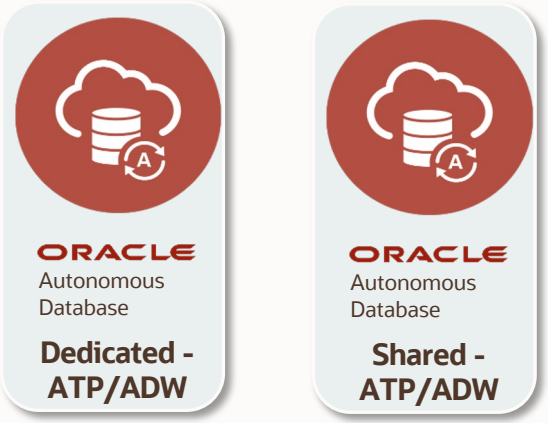
Oracle Cloud Database Services

Autonomous



Co-Managed

User Managed

The Right Cloud Database for Every Use Case

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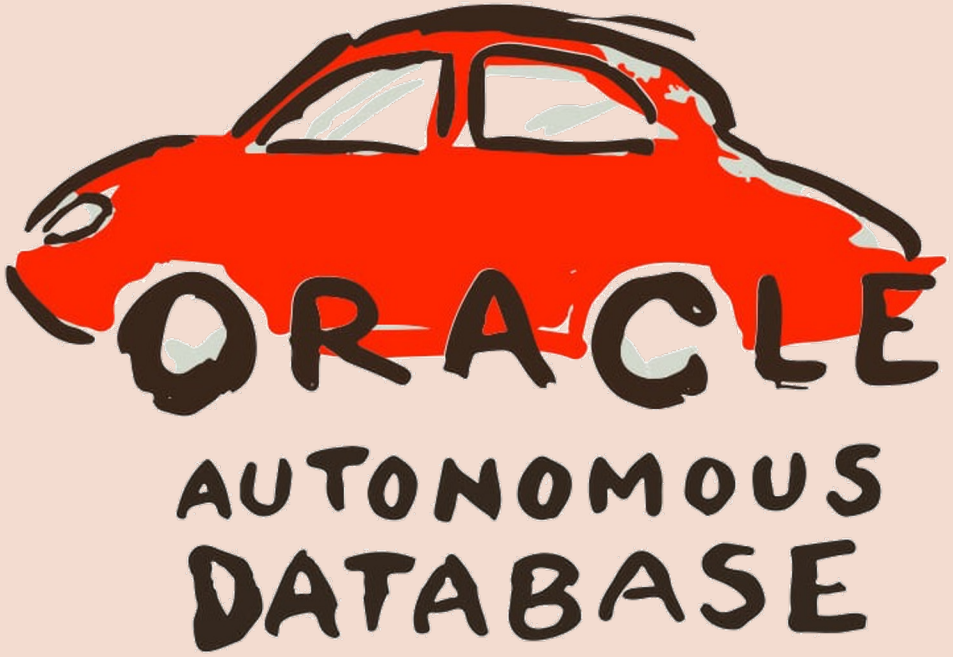

Autonomous Database

How to Move Your Data into an Autonomous Database

”

When it comes to migration, Autonomous Database differs because you will be migrating data, not databases

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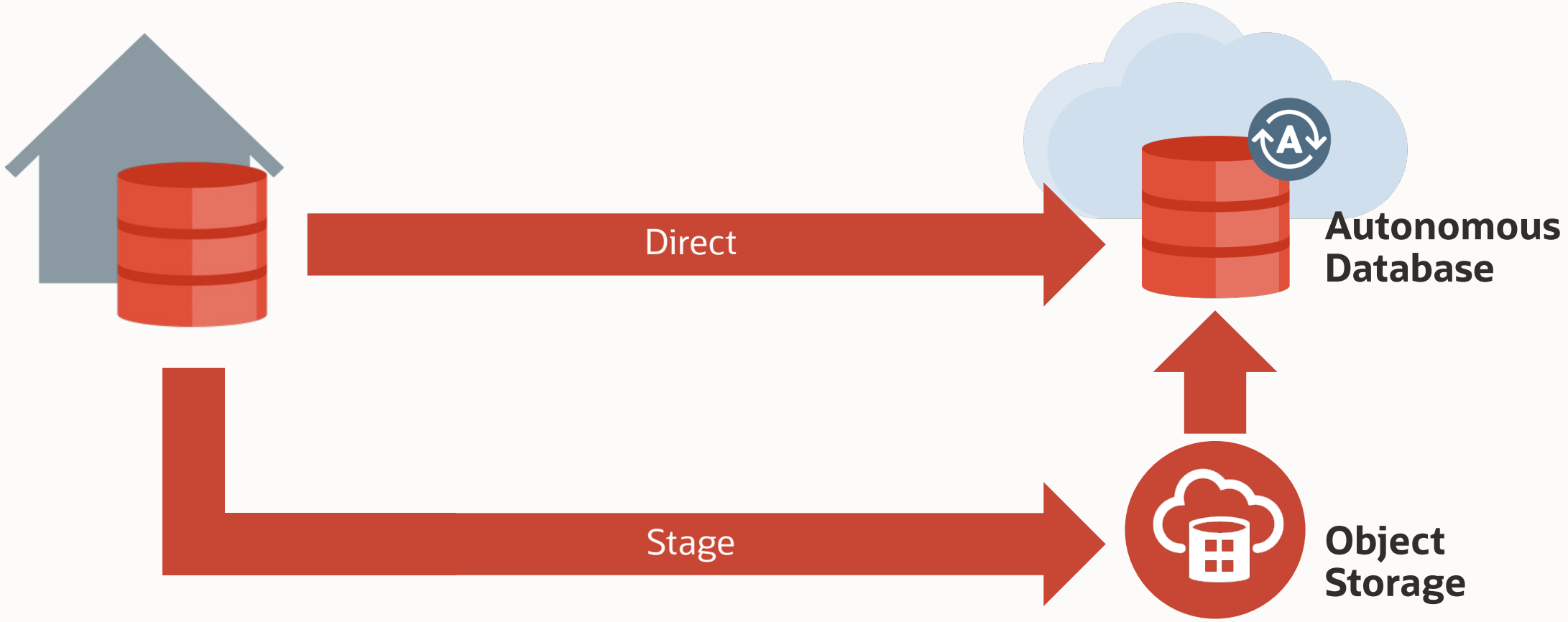
Autonomous Database | Migration Techniques



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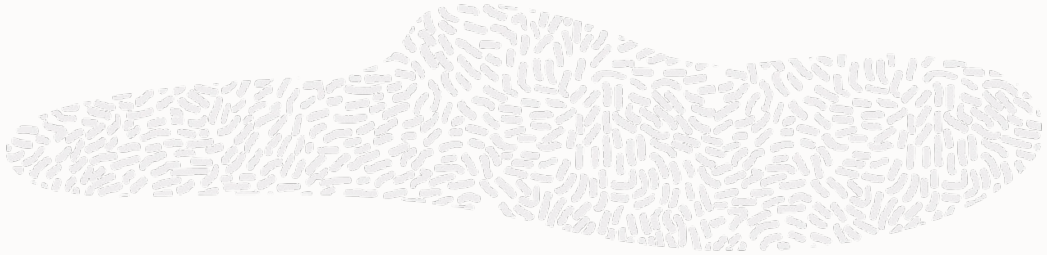
Options | Overview



1. SQL Developer Web	**2.** **SQL Developer**	3. SQL*Loader	4. Data Pump	5. DBMS_CLOUD	6. MV2ADB

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Options | SQL Developer

Local installation

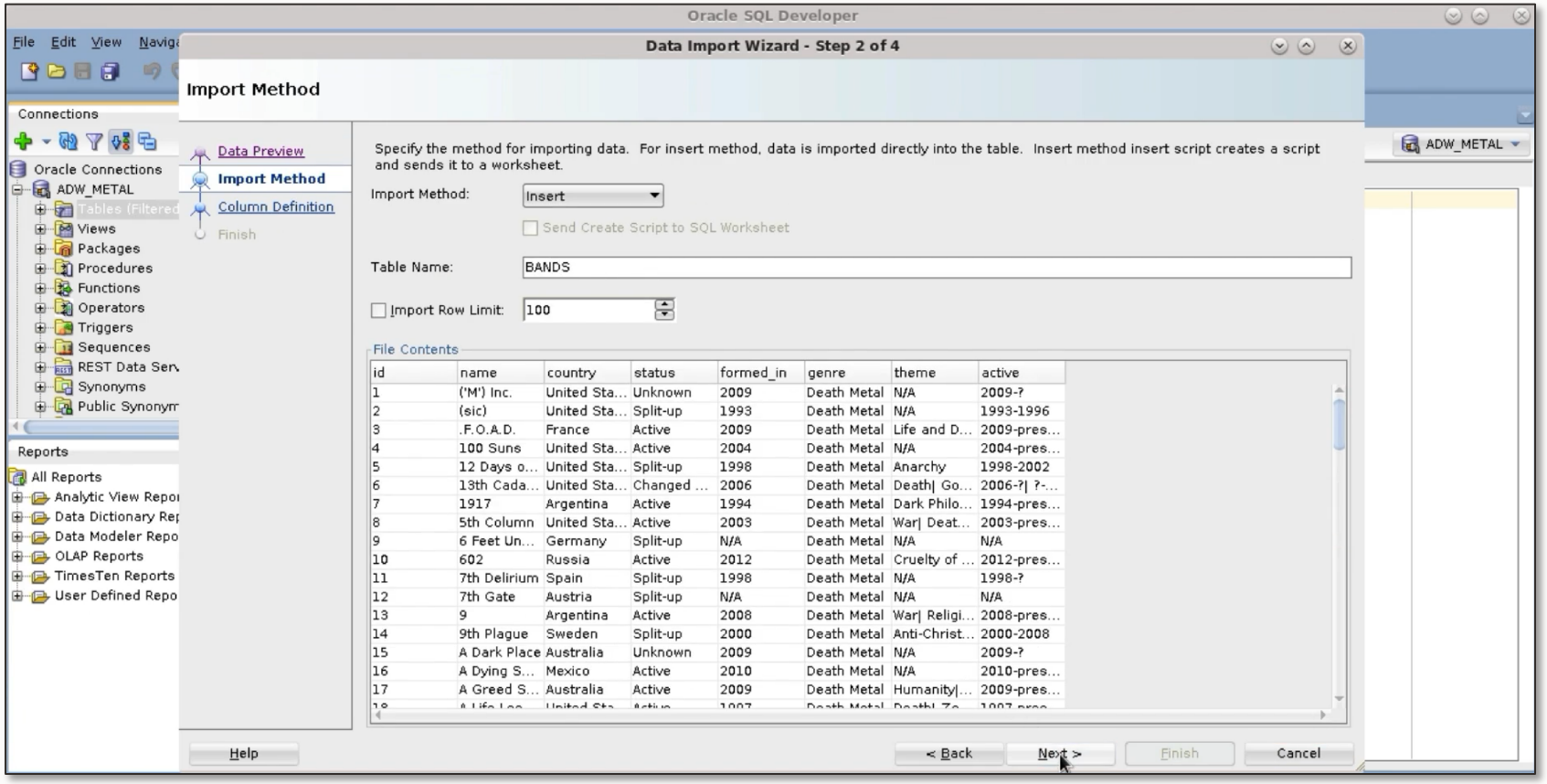
Quick and simple

Works on:

- CSV
- XML
- JSON
- XLS/XLSX
- Avro

Loads from:

- Local file
- OCI object stage



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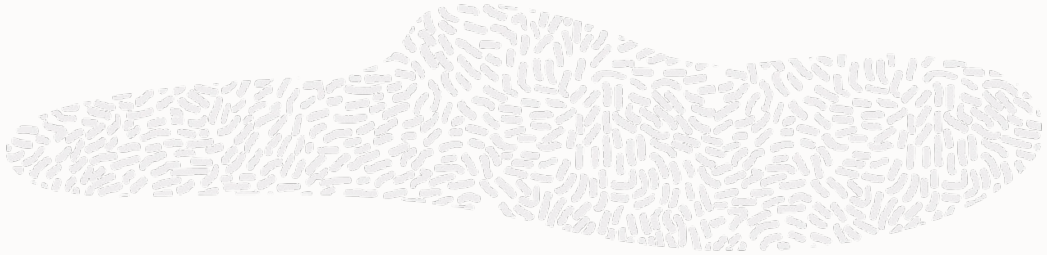
Options | Overview



1. SQL Developer Web	2. SQL Developer	**3.** **SQL*Loader**	4. Data Pump	5. DBMS_CLOUD	6. MV2ADB

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Options | SQL*Loader

Highly configurable

Can transform data

Loads from:

- Local file

Works on:

- CSV
- Text

```
Disconnected from Oracle Database 19c Enterprise Edition Release 19.0.0.0.0 - Production
Version 19.5.0.0.0
[oracle@hol ~]$ sqlldr admin@metal_high \
>    table=albums \
>    data=albums.csv \
>    external_table=not_used \
>    field_names=all
Password:

SQL*Loader: Release 19.0.0.0.0 - Production on Sun Oct 11 12:05:13 2020
Version 19.7.0.0.0

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Express Mode Load, Table: ALBUMS
Path used:      Conventional
Commit point reached - logical record count 123
Commit point reached - logical record count 246
Commit point reached - logical record count 369
Commit point reached - logical record count 492
Commit point reached - logical record count 615
Commit point reached - logical record count 738
```


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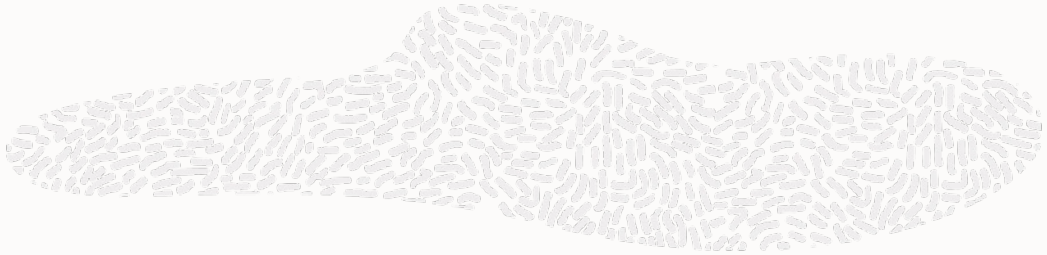
Options | Overview



1. SQL Developer Web	2. SQL Developer	3. SQL*Loader	**4.** **Data Pump**	5. DBMS_CLOUD	6. MV2ADB

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Options | Data Pump

Fast unload and load

All or selected data

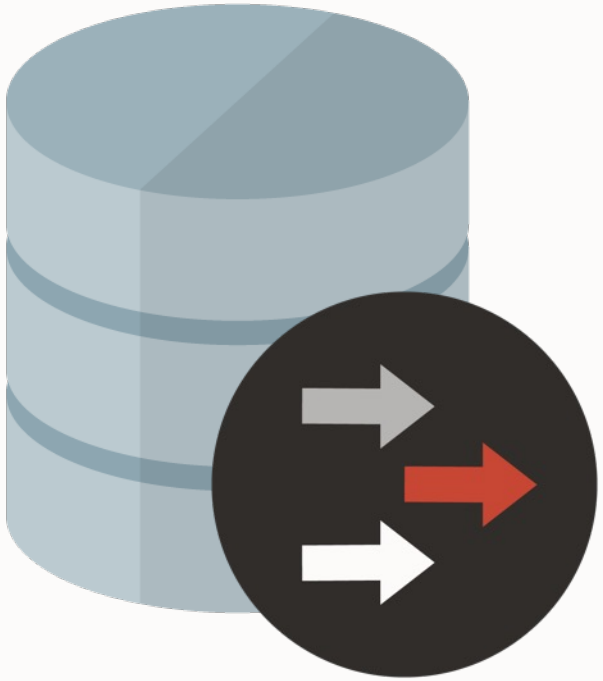
Best option for big data

Can transform metadata

Loads from:

- Oracle Database (database link)
- OCI Object Storage

Pro tip: Use SQL Developer



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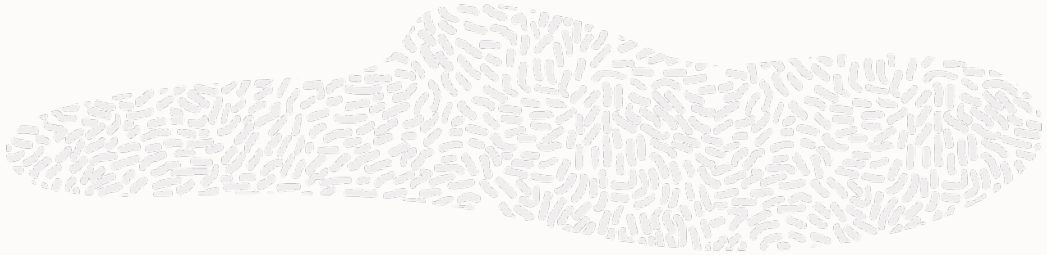
Options | Overview



1. **SQL Developer Web**	2. SQL Developer	3. SQL*Loader	4. Data Pump	5. DBMS_CLOUD	**6.** **MV2ADB**

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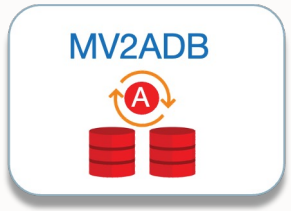
Options | MV2ADB



"One button approach"

Uses Data Pump

Loads from:

- Oracle Database

Documentation: Doc ID 2463574.1

Runs on Linux / Solaris

```
[oracle@hol ~]$ more mv2adb_metal.cfg
#------------------------------------------------#
# DB Parameters #
#------------------------------------------------#
DB_CONSTRING=//localhost/DB19.localdomain
SYSTEM_DB_PASSWORD=
SCHEMAS=METAL
DUMP_NAME=metal.dmp
DUMP_PATH=/tmp
OHOME=/u01/app/oracle/product/19
ICHOME=/u01/app/oracle/product/19
#------------------------------------
# ADB Properties #
#------------------------------------
ADB_NAME=METAL
ADB_TARGET=ADW
ADB_PASSWORD=
ADB_CFILE=/home/oracle/Wallet_METAL/Wa
#------------------------------------
# Object Store Properties #
#------------------------------------
OCI_REGION=eu-frankfurt-1
OCI_NAMESPACE=oradbclouducm
OCI_BUCKET=METAL
OCI_ID=daniel.overby.hansen@oracle.com
OCI_PASSWORD=
[oracle@hol ~]$
```

```
INFO: 2020-10-02 12:19:33: Reading the configuration file 'mv2adb_metal.cfg'
INFO: 2020-10-02 12:19:34: Checking schemas on source DB
INFO: 2020-10-02 12:19:35: Performing schema expdp for 'METAL' from source DB..
INFO: 2020-10-02 12:19:35: Step 1 - ...getting ADB parallelism
INFO: 2020-10-02 12:19:36: Step 2 - ...getting source DB version
INFO: 2020-10-02 12:19:37: Step 3 - ...creating expdp directory 'MV2ADB_EXPDP_D
INFO: 2020-10-02 12:19:38: Step 4 - ...getting latest SCN
INFO: 2020-10-02 12:19:39: Step 5 - ...checking Cloud Service Type
INFO: 2020-10-02 12:19:41: Step 6 - ...executing export datapump as jobname 'MV
INFO: 2020-10-02 12:19:41: Expdp log location available at the end of the proce
expdp_5444.log'

Starting "SYSTEM"."MV2ADB_JOB":  system/********@//localhost/DB19.localdomain S
CHEMAS=METAL VERSION=19.0.0 DIRECTORY=MV2ADB_EXPDP_DIR DUMPFILE=metal_%u.dmp PA
E=index,cluster,indextype,materialized_view,materialized_view_log,materialized_
dp_5444.log FLASHBACK_SCN=4010150 FILESIZE=5GB
Processing object type SCHEMA_EXPORT/DEFAULT_ROLE
Processing object type SCHEMA_EXPORT/SYSTEM_GRANT
Processing object type SCHEMA_EXPORT/ROLE_GRANT
Processing object type SCHEMA_EXPORT/USER
Processing object type SCHEMA_EXPORT/TABLESPACE_QUOTA
Processing object type SCHEMA_EXPORT/TABLE/STATISTICS/TABLE_STATISTICS
Processing object type SCHEMA_EXPORT/PRE_SCHEMA/PROCACT_SCHEMA
Processing object type SCHEMA_EXPORT/TABLE/TABLE_DATA
. . exported "METAL"."ALBUMS"                            988.8 KB   28069 rows
. . exported "METAL"."BANDS"                             3.444 MB   37723 rows
. . exported "METAL"."REVIEWS"                           66.47 MB   21510 rows
```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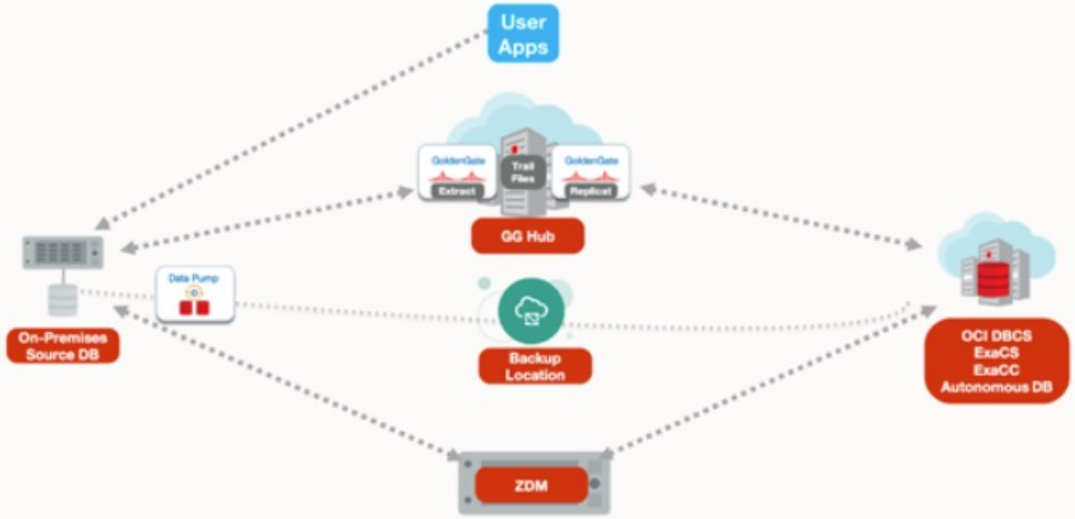
Database Cloud Service

Zero Downtime Migration

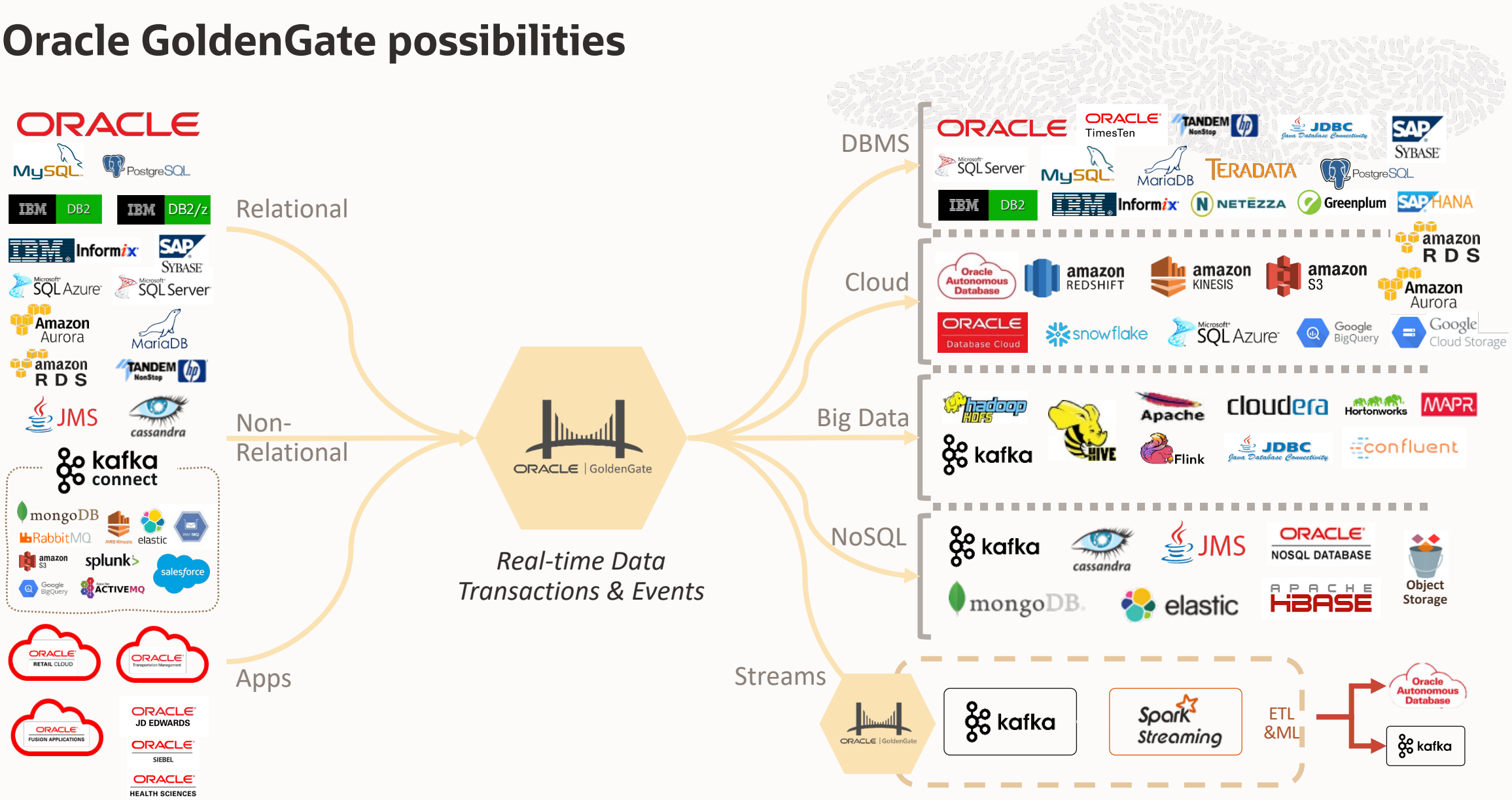


Backup Location: Object Storage, NFS or ZDLRA

Logical Online Migration

1. Download & Configure ZDM
2. ZDM Starts Database Migration
3. ZDM Connects to Source, Target and Backup Location
4. ZDM Configures GG and Captures Source Transactions
5. ZDM Exports via Data Pump from Source to Backup Location
6. ZDM Imports Data Pump Files from Backup Location to Target
7. ZDM Configures GG and Starts Applying changes
8. ZDM Switches Over and Finalizes the Migration Process

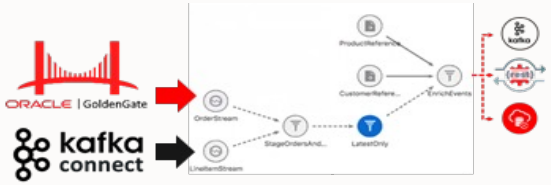
Oracle GoldenGate possibilities



GoldenGate Platform Solution Capabilities

Expansionary Patterns:
Stream Processing

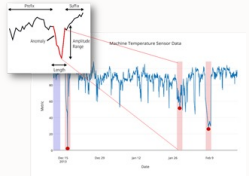
Data Pipelines



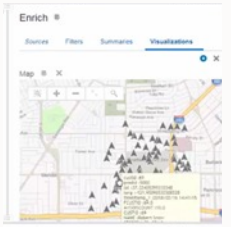
Data Transformation

GoldenGate Integrations

Time Series Analysis



Geo-Fencing



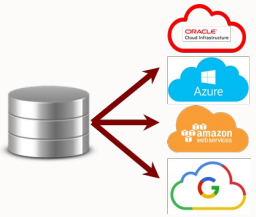
Predictive Analytics

High Growth Patterns:
Replication in/out for Non-Relational

Data Lake Ingest

Streaming Ingest

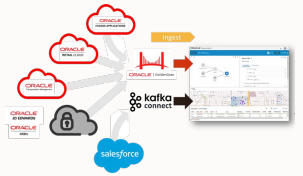
Cloud Ingest



Messaging Replication

NoSQL Replication

SaaS Replication



Foundation Patterns:
Database Replication

Unidirectional

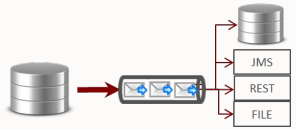
Bi-Directional

Peer-to-Peer

Broadcast

Consolidation

Distribution



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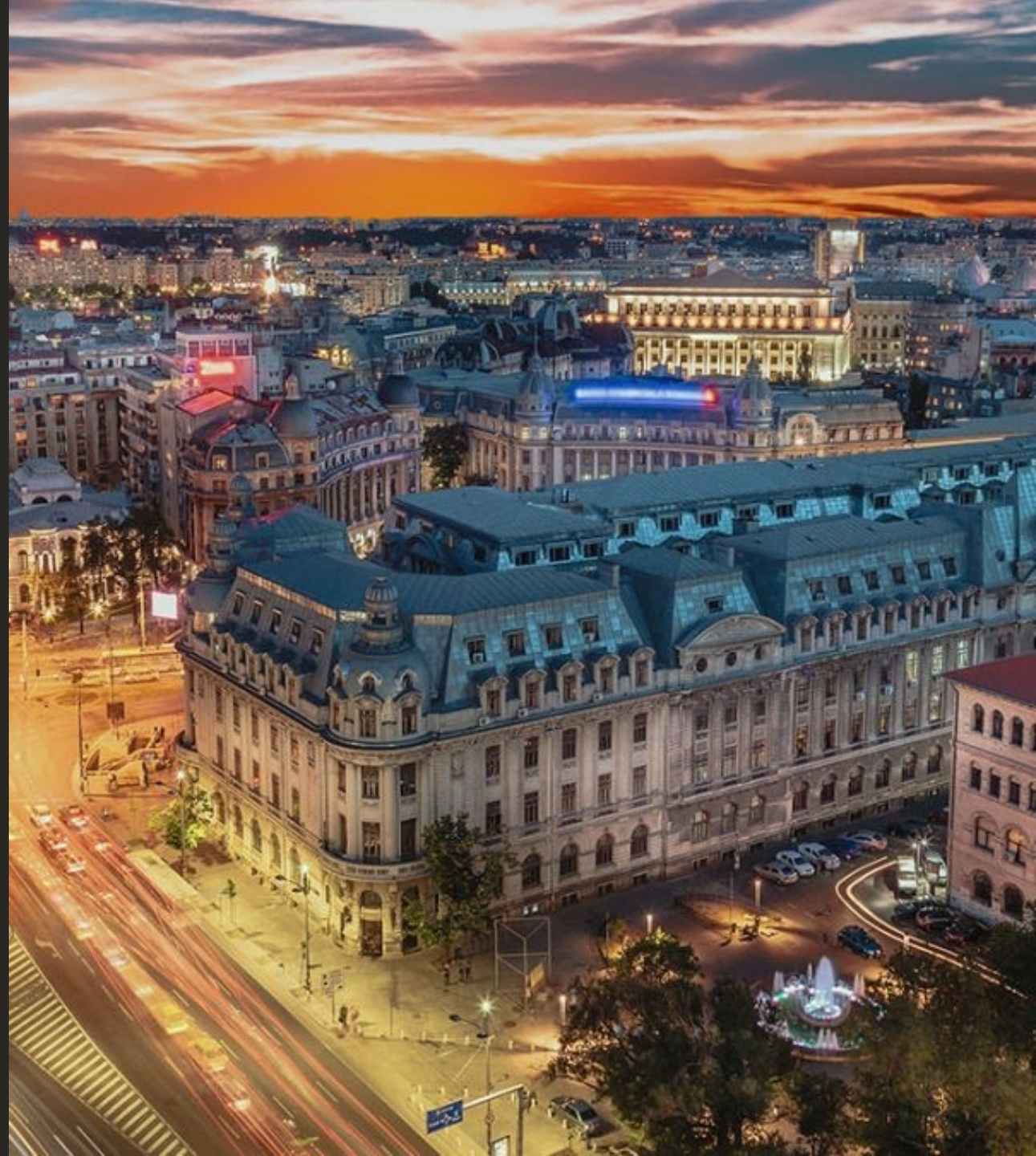
Thank you

Q&A

The Oracle Team

Learn More OCI Security White Paper



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