DBRE

Database Reliability Engineering

Designing and operating resilient database systems

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Safe Harbor Statement

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About Our Live Sessions

- What is DBRE?
- IaC
  - Basics
  - 1st Deploy – Compute Instances
  - 2nd Deploy – DB with DG
- Performance ADB
  - Basics
  - Benchmarks

What is DBRE?

Database Reliability Engineering is a subfield of SRE.

The way SRE holistically deals with the reliability of all the systems for a company, DBRE deals with all the systems of the data infrastructure of a company.

- Service-Level Management
- Risk Management
- Operational Visibility
- Infrastructure Engineering
- Infrastructure Management
- Backup & Recovery
- Release Management
- Security
- Data Storage, Indexing, Replication

IaC

Infastructure-as-code

Infrastructure-as-Code → Terraform

- **Terraform**
  - **Open Source**
  - **Cloud Agnostic Tool**
  - **Build versioned Infra**
  - **Declarative Configuration**
  - **Deploy Faster**
  - **Ideal for repetitive tasks**
- **OCI Resource Manager**
- **OCI Cloud Shell**

- **Provision of OCI Resources**

Example:

- Networks
- Compute instances
- Databases

Terraform Basics

init - command is used to initialize a working directory containing Terraform configuration files. This is the first command that should be run after writing a new Terraform configuration or cloning an existing one from version control. It is safe to run this command multiple times.

plan - The terraform plan command is used to create an execution plan. Terraform performs a refresh, unless explicitly disabled, and then determines what actions are necessary to achieve the desired state specified in the configuration files.

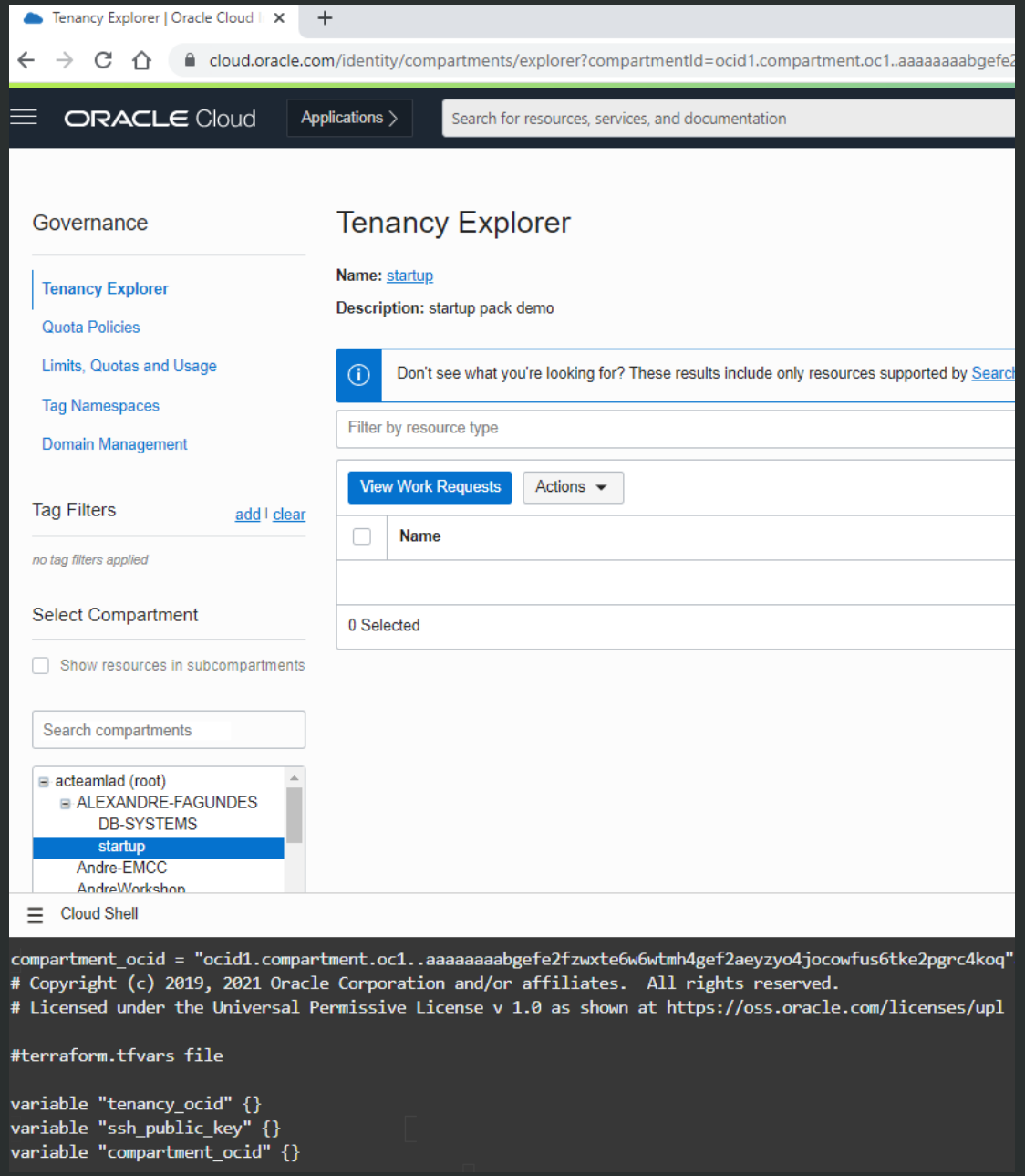
apply - The terraform apply command is used to apply the changes required to reach the desired state of the configuration, or the pre-determined set of actions generated by a terraform plan execution plan.

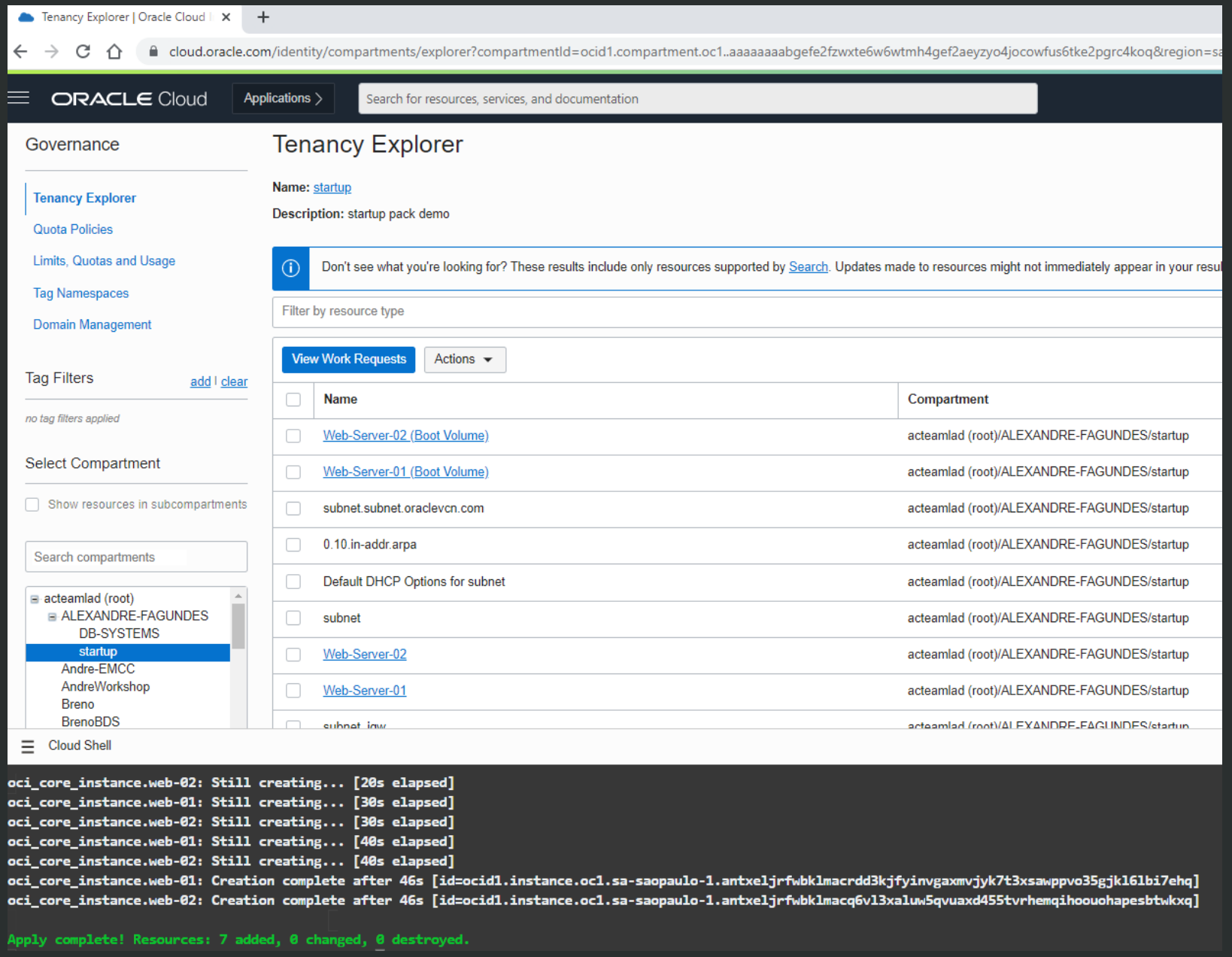
destroy - The terraform destroy command is used to destroy the Terraform-managed infrastructure.

https://www.terraform.io/docs/commands/

How can we do that?

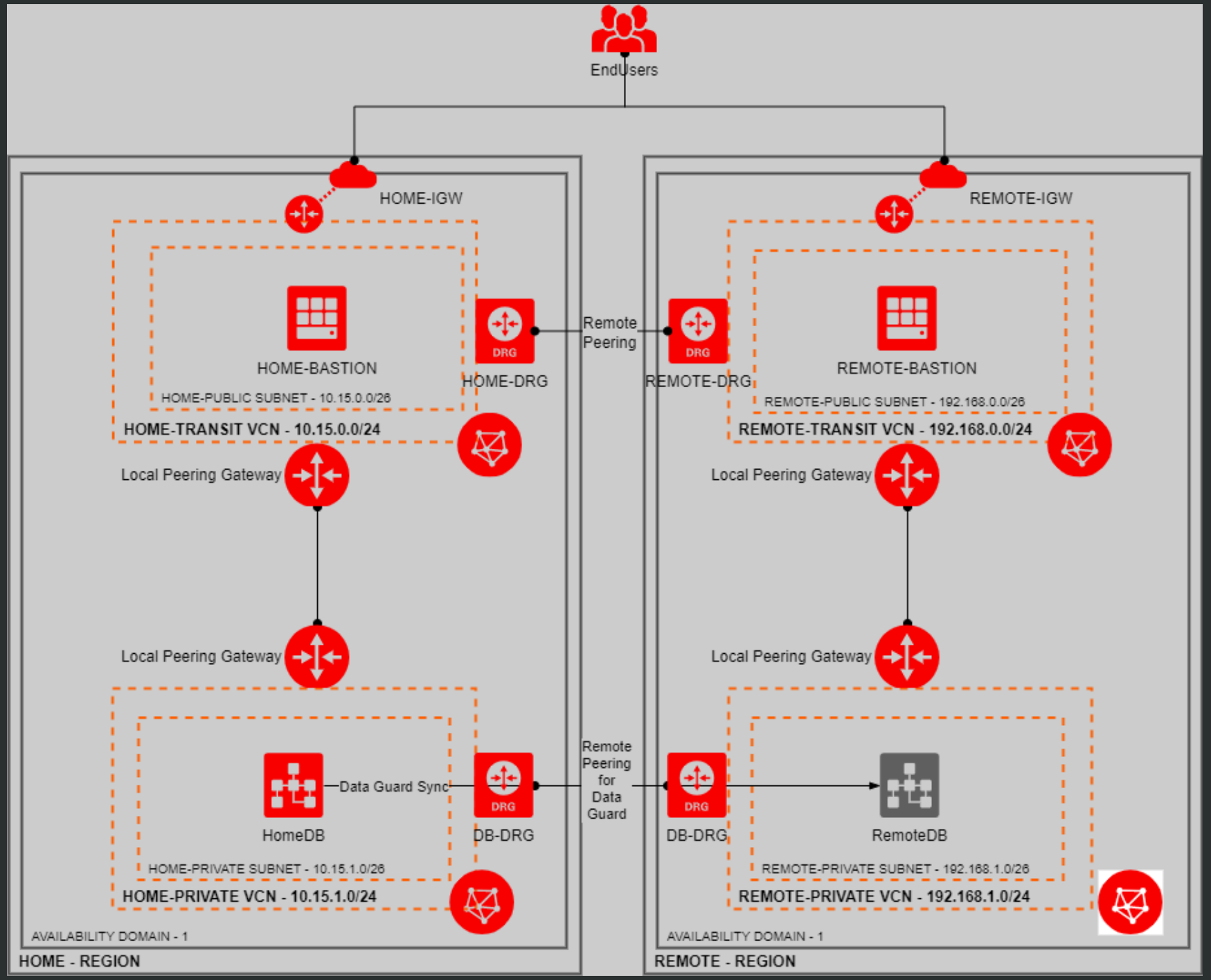
DEMO





1st sample Deployment

VCN
Subnet
Security List
Route Table
Internet Gateway
Boot Volumes
vNICs
Compute instances



DB with DG Association

2nd Deployment

2 VCNs
2 Subnets
2 Security Lists
2 Route Table
2 Internet Gateway
2 Boot Volumes
4 vNICs
2 Compute instances
1 Primary DB
1 Stand-by DB (Different Region)
Dataguard Association

Wrap Up – Deploying Resources

Using IaC & Cloud Shell

Rapidly
Easily
If necessary, repeatedly

1st deploy
https://github.com/alefagun/code

2nd deploy
https://github.com/alefagun/startup

Performance

Performance

Oracle Autonomous Database through good Database Design

Benchmarks

- The total transactions per second achieved (TPS)
- The average elapsed time in seconds across the 8 benchmark sessions (ELA)
- A cumulative breakdown of where the 8 sessions utilized the elapsed time

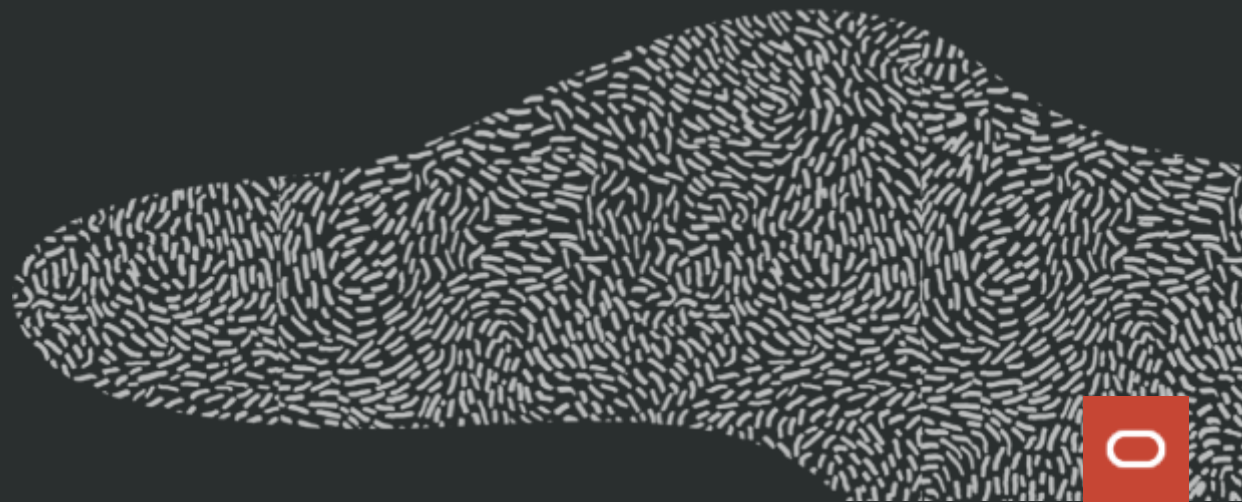
Performance Benchmarks

Benchmark 1: Launches 8 parallel sessions

Benchmark 2: 1 + Reduces DML triggers (table creation with DEFAULT ON NULL)

Benchmark 3: 2 + Improve sequences CACHE, drop few indexes

Benchmark 4: 3 + Partitioning



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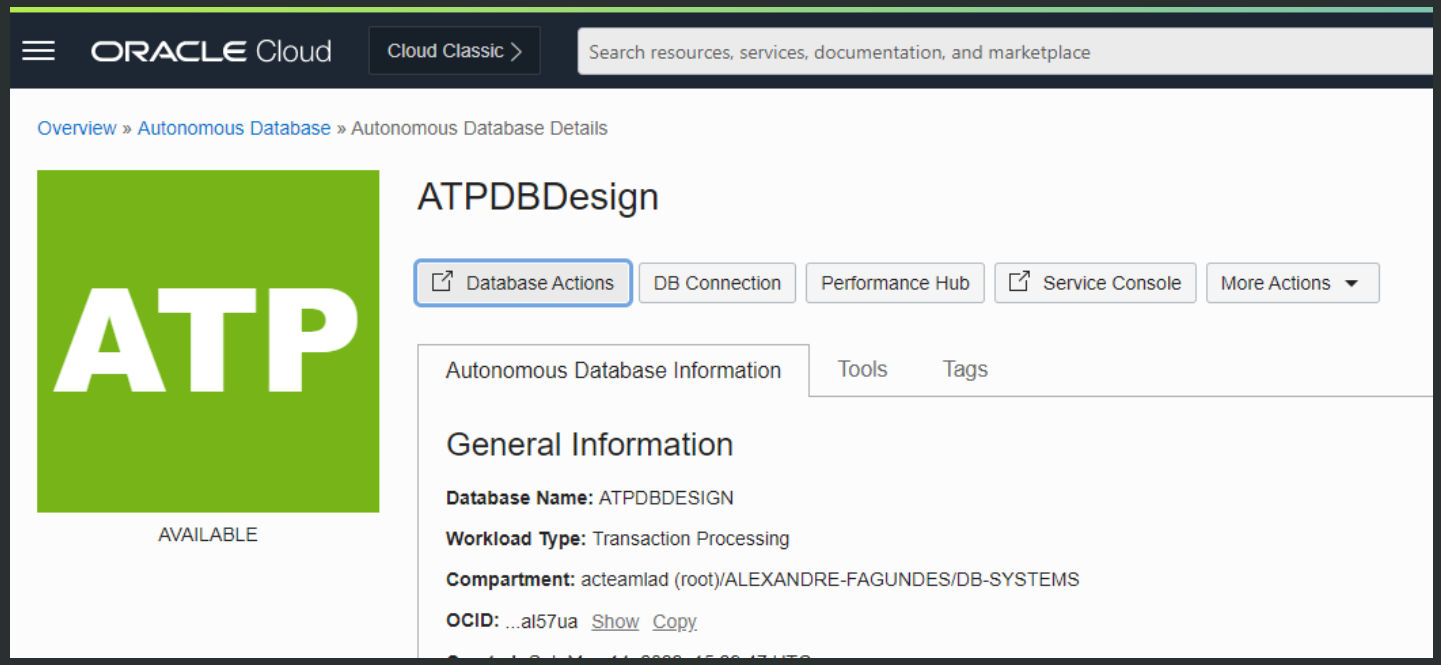

DEMO

Thank you

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