Exadata Cloud at Customer Technical Deep Dive

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VALE

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Exadata Cloud at Customer Adoption Across Regions

25% Of Fortune Global 100 Companies have adopted Exadata Cloud

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Exadata Cloud at Customer – Best Of Both Worlds

- Benefits Of Cloud
  - Eliminate the upfront cost
  - Eliminates the need to develop infrastructure expertise
  - Zero Core Minimums, yes really!
  - All DB Options included
  - No yearly support/maintenance fee
  - Compute Elasticity

- Benefits Of On-Prem
  - Your data in your data center
  - No latency or throughput issues
  - Regulations, Corporate Policies, Network latency
  - No cloud expertise needed, Oracle builds it for you
  - Use existing skills, retain talent
  - Maintain control of your environment
  - Reduce cost using on-prem licenses (BYOL)
  - Best database (Oracle) on best platform (Exadata)

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Exadata – Continuous Innovation

Dramatically Better Performance and Cost

- **Exadata Cloud at Customer**
- **In-Memory OLTP Acceleration**
- In-Memory Columnar in Flash
- Exadata Cloud Service
- Smart Fusion Block Transfer
- In-Memory Fault Tolerance
- Direct-to-wire Protocol
- JSON and XML offload
- Instant failure detection
- Hot Swappable Flash
- 25 GigE Client Network
- Network Resource Management
- Multitenant Aware Resource Mgmt
- Prioritized File Recovery
- 3D V-NAND Flash
- Software-in-Silicon
- IO Priorities
- Data Mining Offload
- Offload Decrypt on Scans
- Tiered Disk/ Flash
- PCIe NVMe Flash
- Database Aware Flash Cache
- Storage Indexes
- Columnar Compression
- Unified InfiniBand
- Smart Scan
- InfiniBand Scale-Out
- DB Processors in Storage
- Scale-Out Storage
- Scale-Out Servers

Smart Software

Smart Hardware

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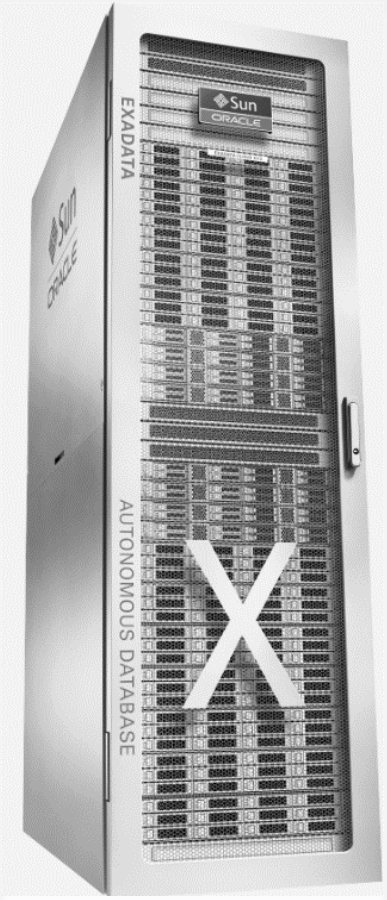
Exadata – Oracle’s Strategic Cloud Platform



- Oracle Public Cloud runs on Exadata
- Autonomous Database run **exclusively** on Exadata
- Autonomous DW and TP to be available on Cloud at Customer

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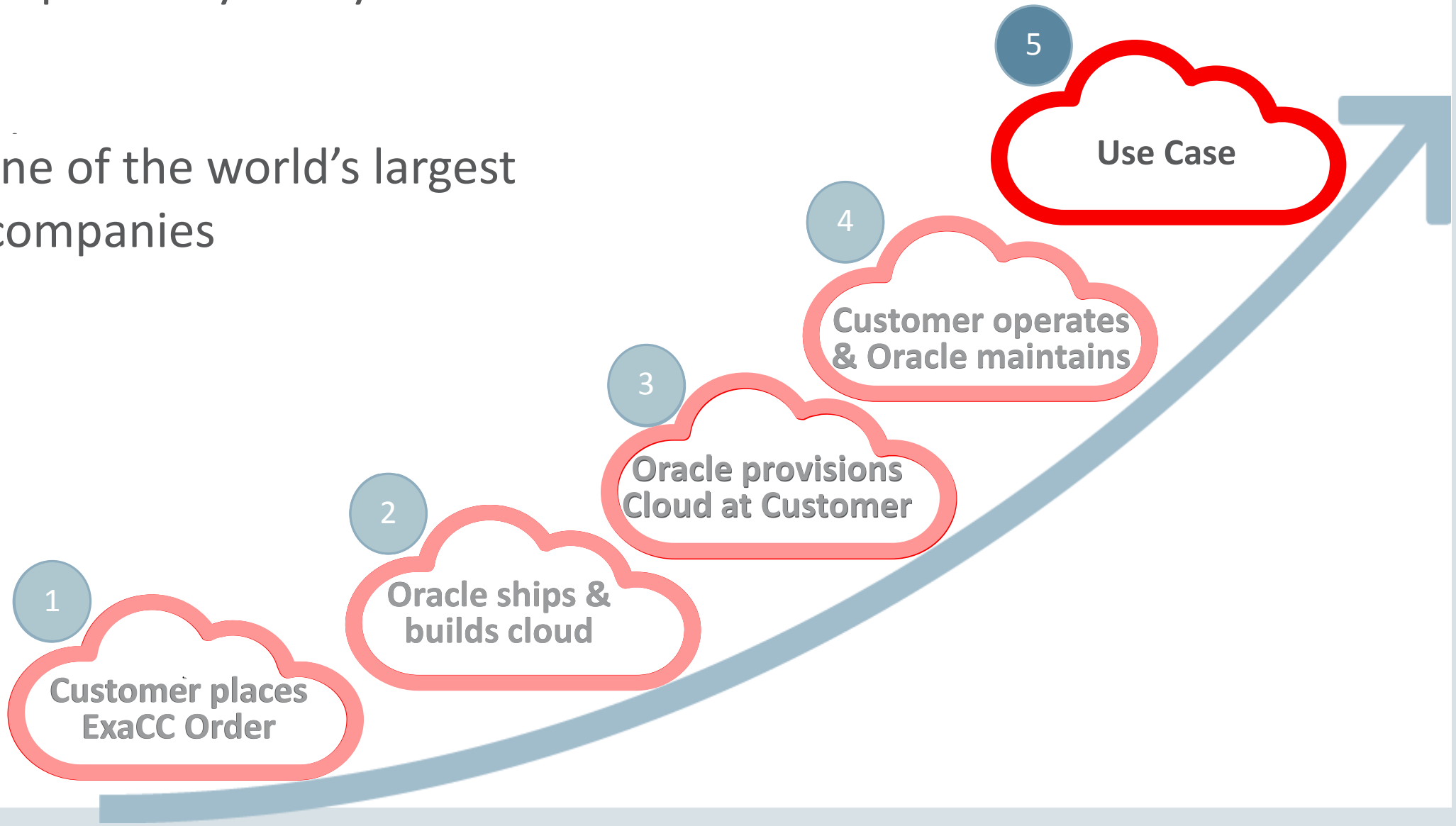
Journey to Exadata Cloud at Customer

Technical Deep Dive By Lifecycle Phase

- Vale – One of the world's largest mining companies



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Journey To Exadata Cloud at Customer

1. Customer Places ExaCC Order
2. Oracle Ships and Builds Cloud
3. Oracle Provisions Cloud at Customer
4. Customer Operates and Oracle Maintains
5. Use Case - Vale

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Step 1: Customer Places ExaCC Order

- High level deployment model
- Purchase Options, Configurations and Sizing

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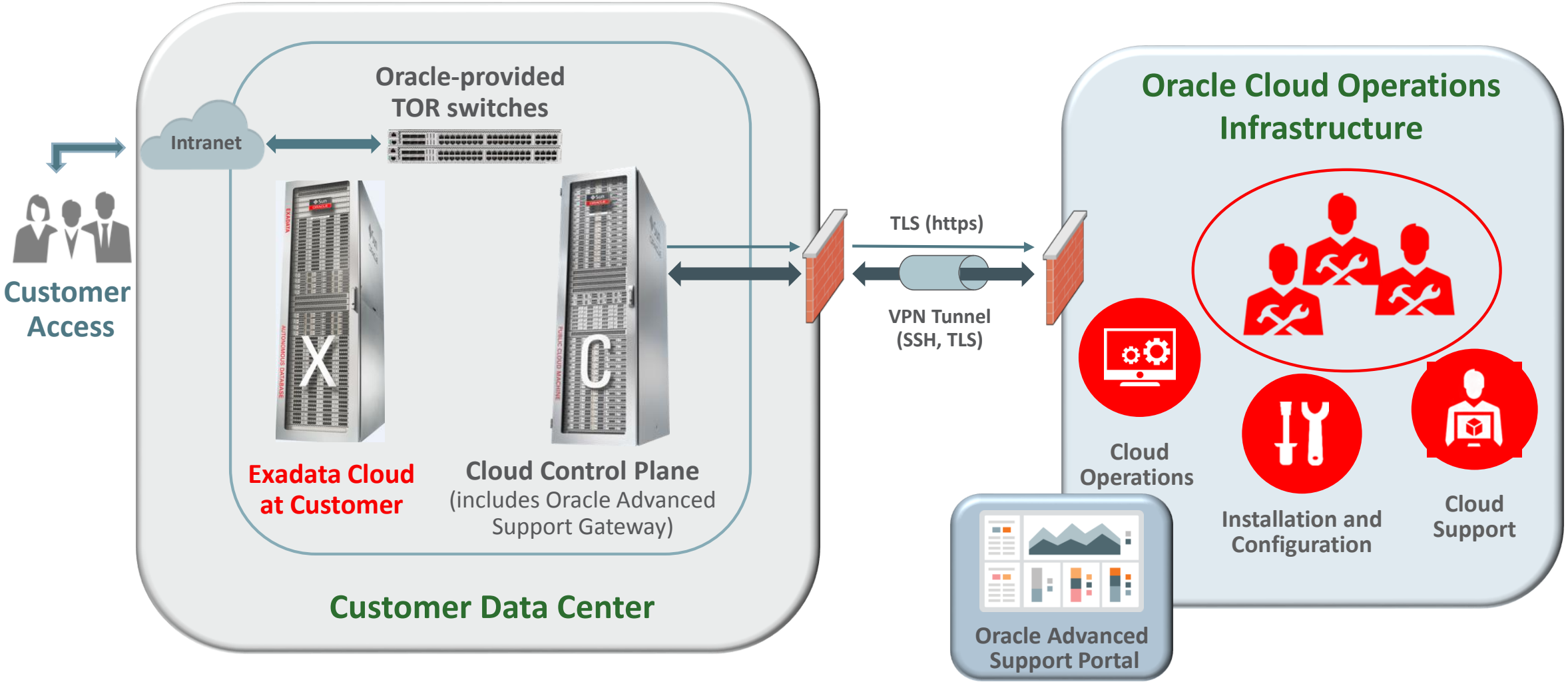
Oracle Cloud Deployed at Customer Data Center



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Pricing

- Total Subscription Cost made up of following components
  - Fixed Infrastructure Price per month for Base System, Quarter, Half or Full Rack
  - OCPUs are billed at actual usage (no minimum, hourly granularity)
    - OCPU pricing can be License Included (PaaS)
    - or BYOL (~20% of PaaS pricing)
  - Subscription must include 1 Control Plane per Data Center and Readiness Service

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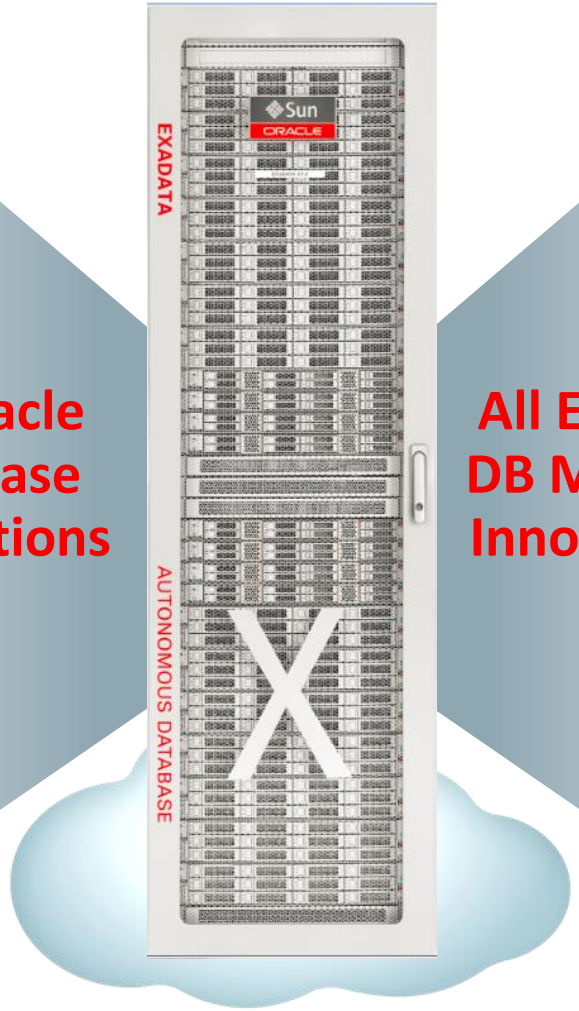
Licenses Included With PaaS

	Multitenant
	In-Memory DB
	Real Application Clusters
	Active Data Guard
	Partitioning
	Advanced Compression
	Advanced Security, Label Security, DB Vault
	Real Application Testing
	Advanced Analytics, Spatial and Graph
	Management Packs for Oracle Database

All Oracle Database Innovations



All Exadata DB Machine Innovations

Offload SQL to Storage	
InfiniBand Fabric	40 Gb/s
Smart Flash Cache, Log	PCI Flash
Storage Indexes	
Columnar Flash Cache	
Hybrid Columnar Compression	HCC 10:1
I/O Resource Management	I/O I/O I/O
Network Resource Management	PRIORITY LANE
In-Memory Fault Tolerance	
Exafusion Direct-to-Wire Protocol	

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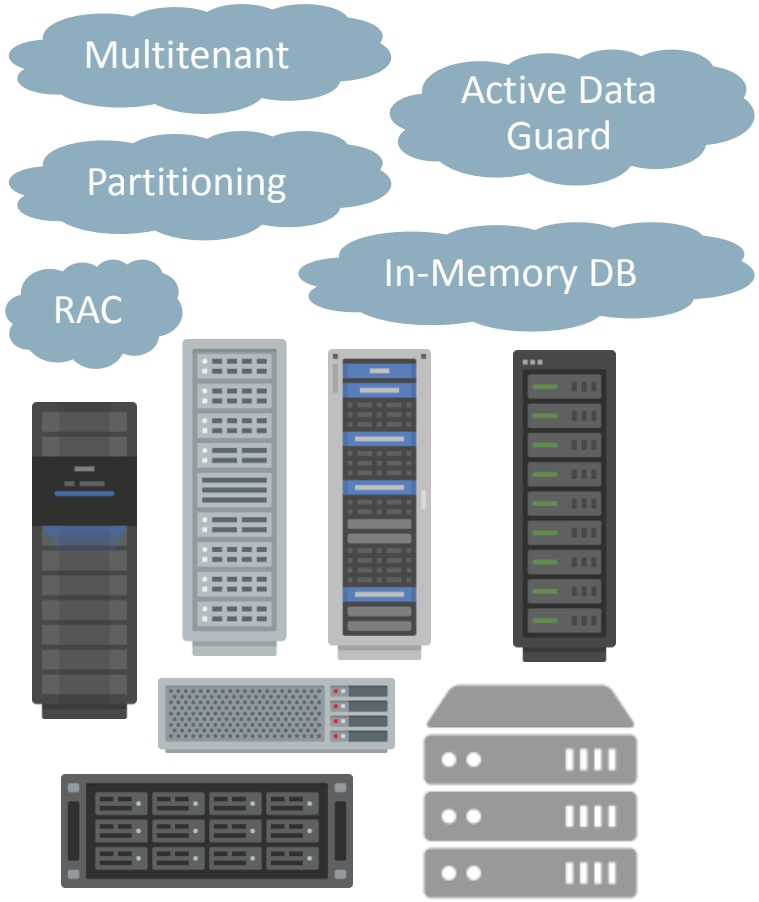
BYOL: Leverage On-Premises Licenses with Exadata Cloud



Legacy On-Premises Infrastructure

Free!

Transparent Data Encryption (TDE)
Diagnostics and Tuning Pack
Data Masking and Subsetting Pack
Real Application Testing

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Exadata Cloud at Customer X7 Hardware Infrastructure

	Base System*	Quarter Rack	Half Rack	Full Rack
Number of DB Servers	2	2	4	8
Max Number of OCPUs	44	92	184	368
Total Memory	480 GB	1,440 GB	2,880 GB	5,760 GB
No. of Storage Servers	3	3	6	12
Total Usable Disk Capacity	42 TB	106 TB	212 TB	424 TB

** Base System represents a hardware-version agnostic entry-level SKU for Exadata Cloud*

ExaCC X7 also includes 8x 600GB drives for local drive capacity

- Approx. 1.1TB of local capacity is available for Oracle Homes, per database server

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Sizing

- Compute
  - Identify typical and peak OCPU requirements based on workload
  - Take advantage of cloud elasticity for OCPU expansion and contraction
- Storage
  - Identify capacity, IO and throughput requirements
  - Map to one best fit starting size

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Sizing Example

- Example
  - 72 OCPUs steady-state, 136 OCPUs maximum
  - 140 TB storage capacity
  - ExaCC Half Rack
    - Based on OCPUs and storage capacity
    - Subscribe only the steady-state OCPUs, burst when needed to peak and burst down

	Base System*	Quarter Rack	Half Rack	Full Rack
Number of DB Servers	2	2	4	8
Max Number of OCPUs	44	92	184	368
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Step 2: Oracle Ships and Builds Cloud

- Data Center requirements
- Network Requirements

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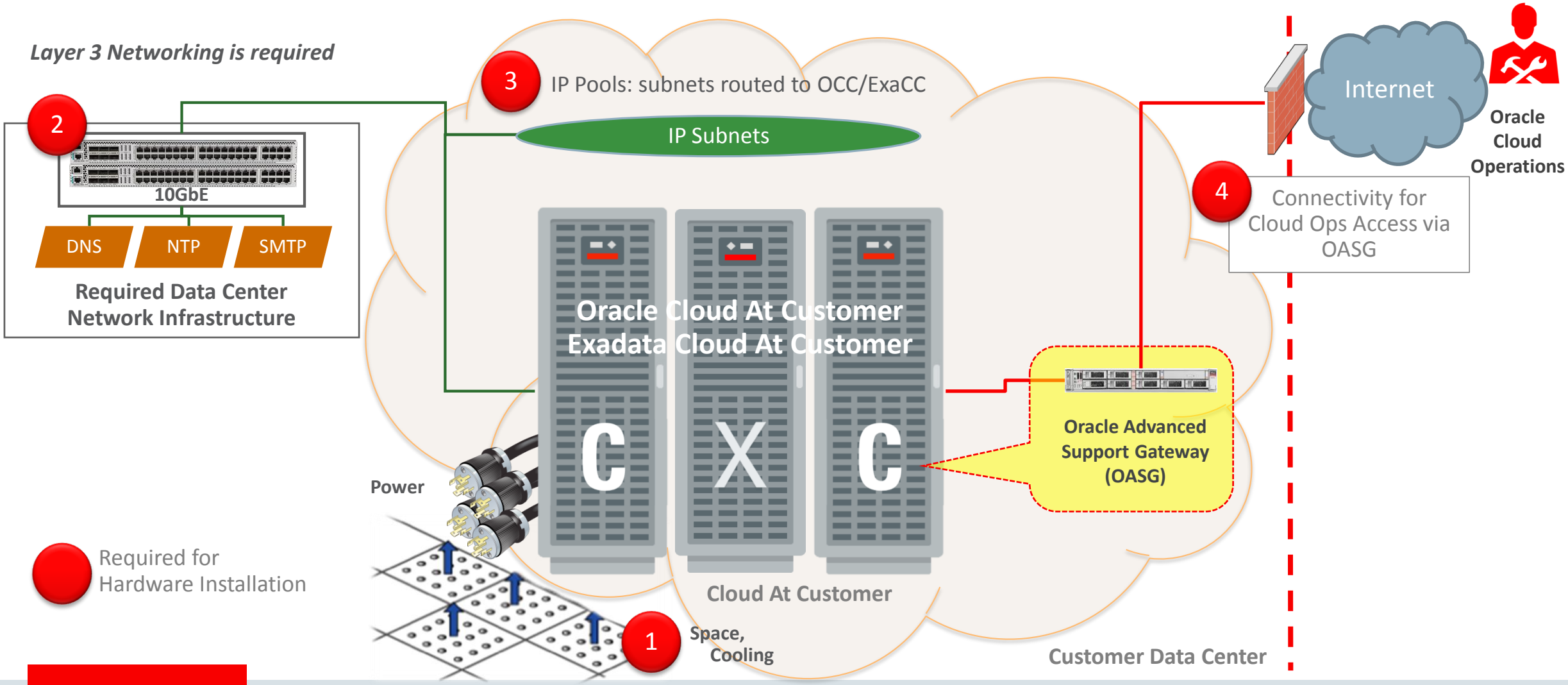
Default:
Connected Mode

Oracle Cloud At Customer – Data Center Requirements



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Networking Considerations for Cloud At Customer

IP Subnet Requirements

- How many Applications to be deployed?
- How many VM clusters, how many routers connecting to Oracle cloud

Bandwidth Provisioning

- What throughput is required?
- Planning to provision for peak usage?

Physical Connectivity

- 10Gb/40Gb ports availability
- Cable Length, patch panel, access switch

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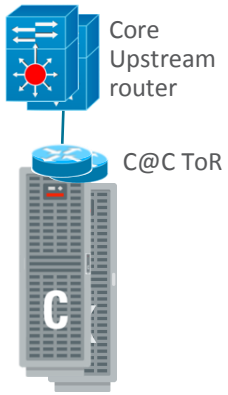
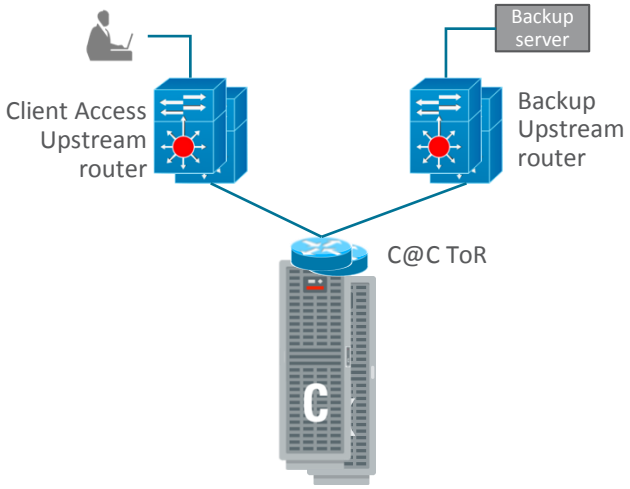
Multiple upstream routers





- One pair of upstream routers:
  - The most common deployment is to use the same upstream routers for all the network traffic
- Two or multiple pairs of upstream routers:
  - This relates to the separation of network paths, typically this would be the case for access to Exadata Cloud at Customer (ExaCC) databases vs database backup traffic from ExaCC. This requires to provide ports on another pair of upstream routers
    - ToR Uplinks are either connected to the router for Client Access or the router for Backup
    - The Client access router is the default egress route for C@C ToR and a subnet for the backup network have to be provided to set up routes accordingly on C@C ToR

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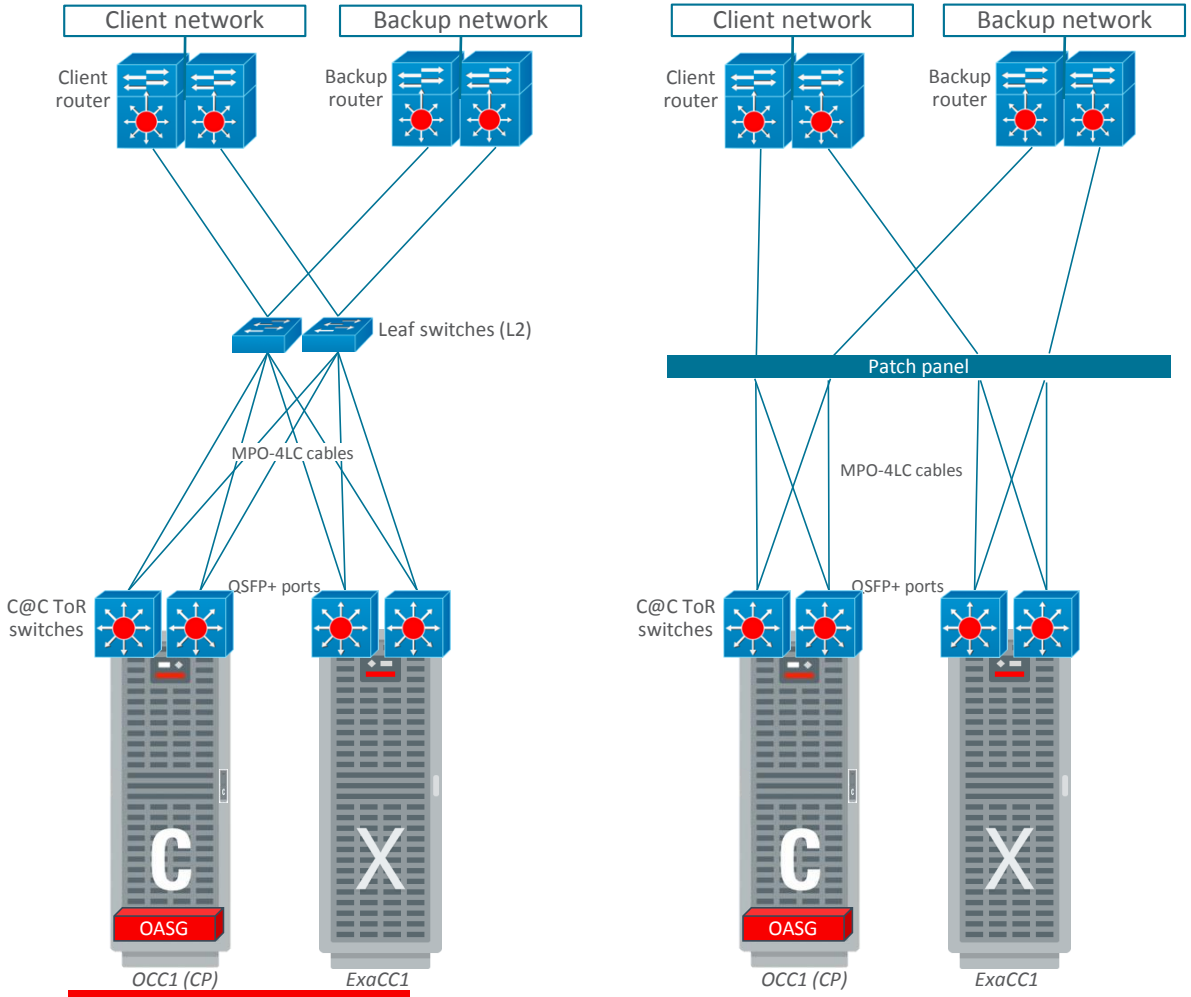
Connecting to multiple upstream router pairs



- Connecting to multiple upstream routers requires MPO-4LC connected to a patch panel or L2 switches before reaching the routers
- LC cables from each MPO-4LC are connected to each routers through L2 switches or patch panel
  - The split is determined by the required throughput
  - example: each MPO-4LC have 3 LC cables connected to Client router and 1 LC cable connected to backup
- This can be achieved with MPO-MPO cables with L2 switches where the QSFP+ ports are channelized into 4x 10Gbps ports
- Max 4 upstream routers or VRF can be connected to Cloud At Customer

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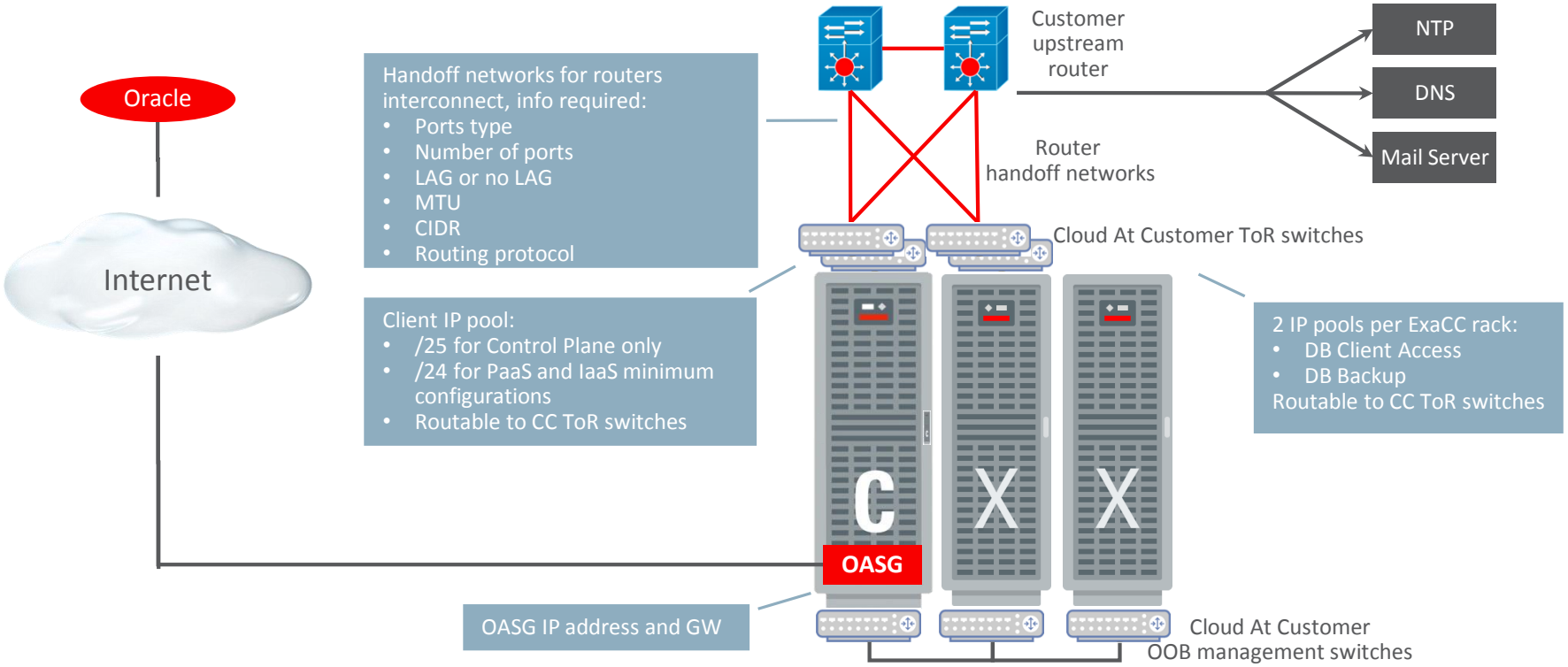
OCC/ExaCC Datacenter Network Integration Summary



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Step 3: Oracle Provisions Cloud at Customer

- Under the Hood Hardware and Software Architecture
- Database Administration Using Cloud Automation
- Security, Backup / Recovery, MAA

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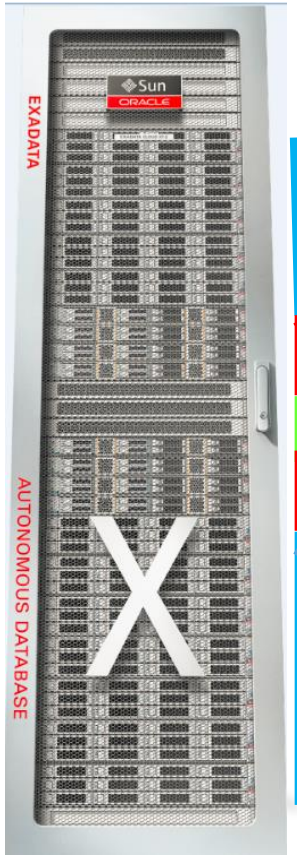
ExaCC Hardware Architecture

Complete | Optimized | Standardized | Hardened Database Platform



Fully Redundant

Database Servers

- 2-socket x86 server
- 2 Servers for *Base/Qtr, 4 Servers for Half, 8 Servers for Full Rack

Unified Ultra-Fast Network

- 40 Gb InfiniBand internal connectivity

Storage Servers

- High Capacity Storage Server
- 3 Servers for *Base/Qtr, 6 Servers for Half, 12 Servers for Full Rack

** Refer to Exadata Cloud at Customer Data Sheet for difference between Base and Qtr Rack*

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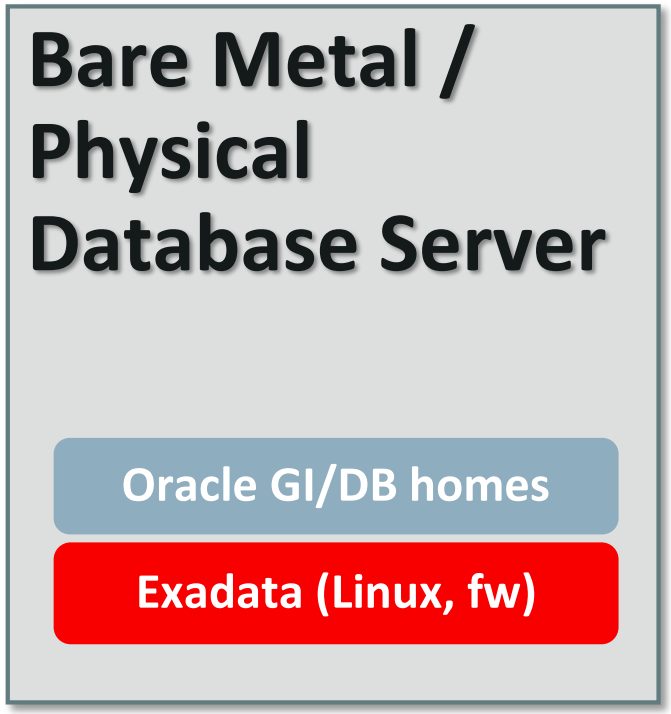
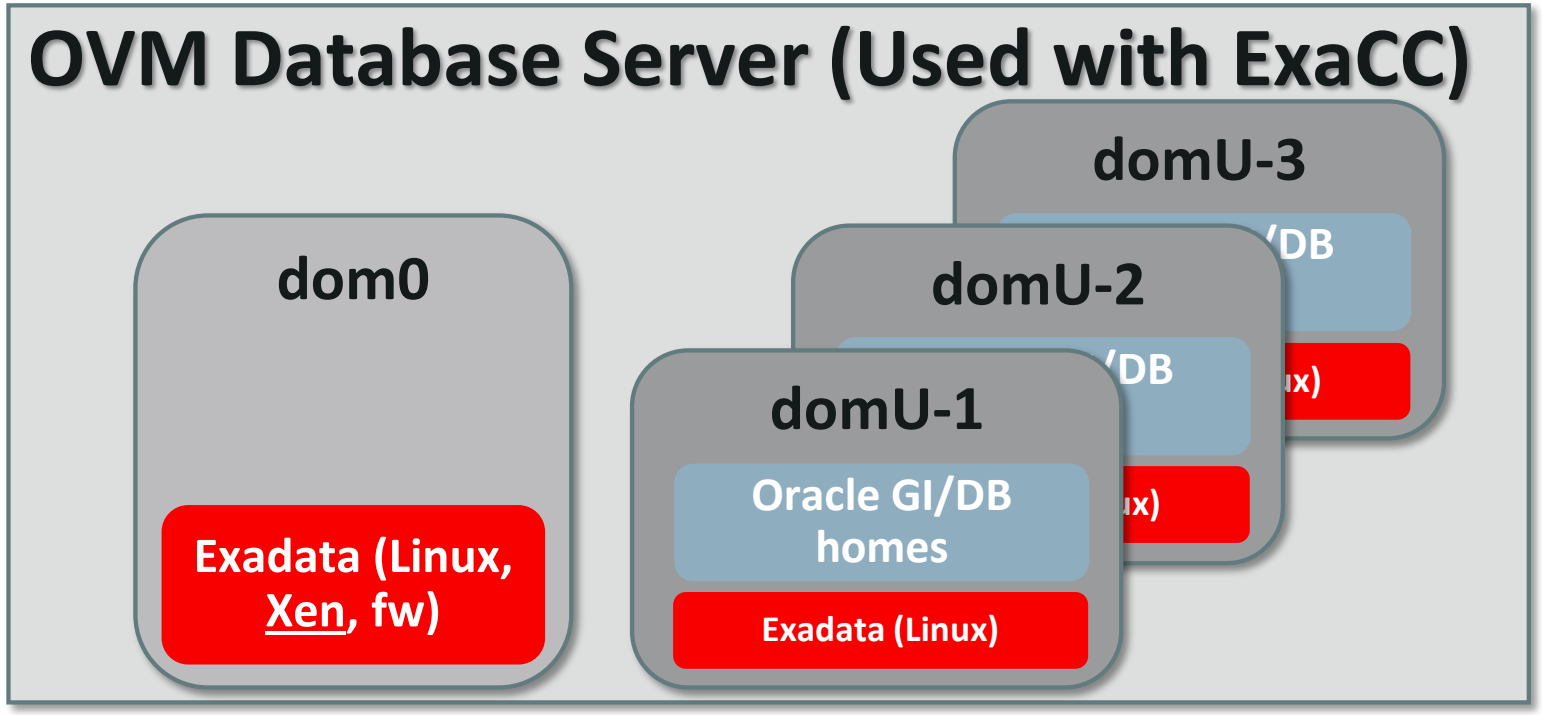
Software Architecture Comparison

Database Server: Bare Metal / Physical versus OVM





No change to **Storage Grid**, **Networking**, or **Other**

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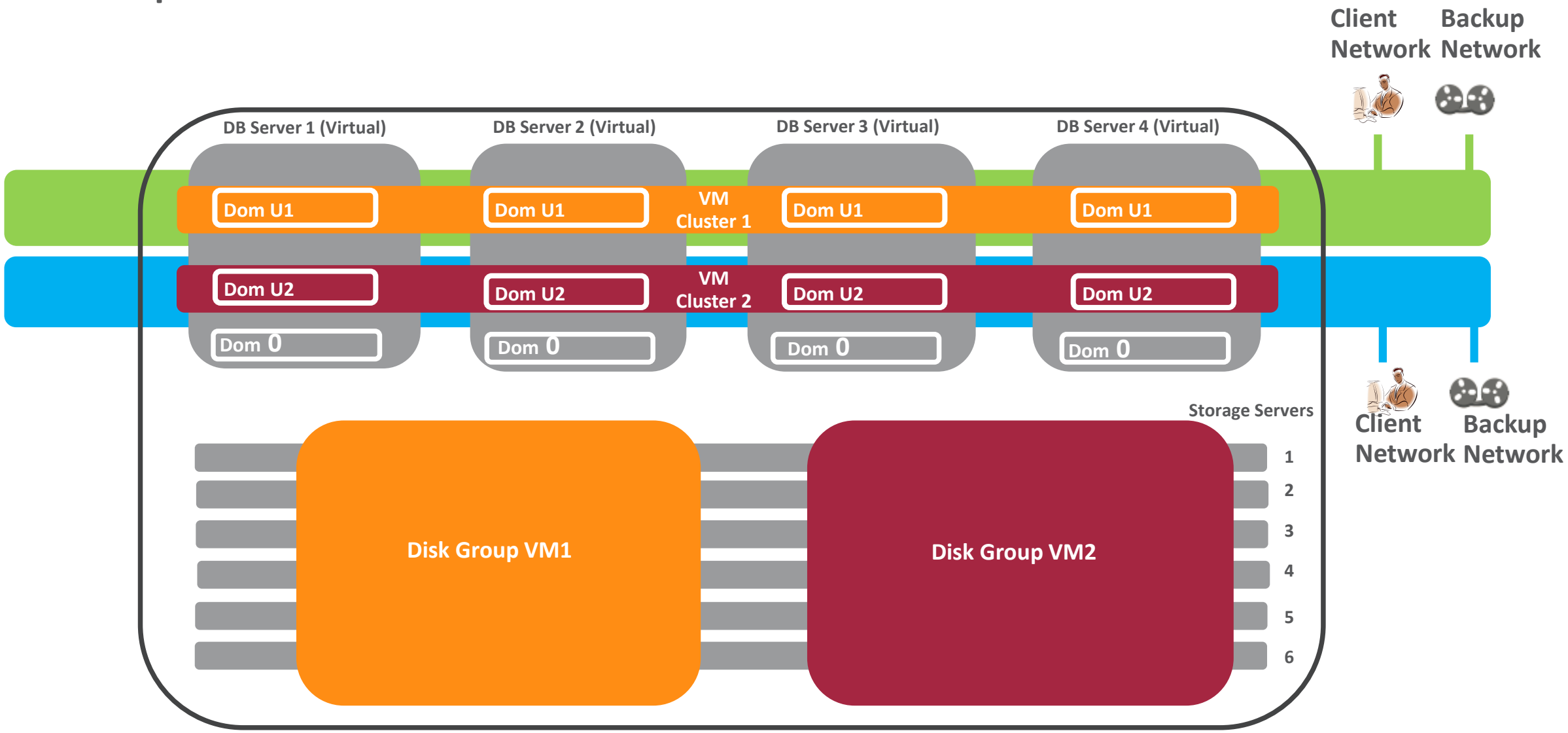
Example Of ExaCC Half Rack with two VM Clusters



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Fresh Install Of ExaCC

What will customer see?

- Up to 8 VM Clusters completely isolated from each other
  - Each VM Cluster has dedicated memory, OCPUs, ASM disks, client network, and backup network
  - Each VM Cluster is a dedicated VM RAC with listener, Grid Infrastructure, and InfiniBand Pkeys
- Choice of Grid Infrastructure 18c or 12.2.0.1 in each cluster
- Database Bundle Patch July 2018
- Exadata System Software 18.1.7
- OCC (Control Plane) Software 18.1.4

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Cloud Automation

Easy to Use Database Administration Experience

- ExaCC Service Management
  - Create service and delete service
  - Modify burst and subscription OCPUs
- ExaCC VM Cluster Management
  - Create and delete VM cluster
  - Modify VM cluster configuration
    - OCPU
    - Memory
    - Exadata Storage

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Cloud Automation (Continued..)

Easy to Use Database Administration Experience

- Database Service Management
  - Automatic TDE configuration
  - Create and delete
  - Start and stop
  - Patch and patch rollback
  - Backup and restore
  - Create snapshot master and clone
  - Stop and start compute node VMs
  - Add SSH keys to compute node VMs
  - View database deployment details

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User Experience
Create Database

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Oracle Database Cloud Service

Welcome!

Instances Activity SSH Access

As of May 21, 20

Click Create Instance button to create a database

Summary

2	16	180 GB	9,216 GB	4
Instances	OCPUs	Memory	Storage	Public IPs

Instances

Search by instance name or tags

Create Instance

db2-sujathac

Version:	12.1.0.2	**Created On:**	May 18, 2018 1:04:46 AM UTC	**OCPUs:**	8.0
Edition:	Enterprise Edition - Extr...	**Exadata System:**	sujathac	**Memory:**	60 GB
		Cluster:	qatest-dg	**Storage:**	3 TB

zhengtest

Version:	12.1.0.2	**Created On:**	Apr 20, 2018 11:53:31 PM UTC	**OCPUs:**	8.0
Edition:	Enterprise Edition - Extr...	**Exadata System:**	qatest1	**Memory:**	120 GB
		Cluster:	qatest1	**Storage:**	6 TB

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Create Instance

Cancel

Instance Details Confirm

Next

Instance

Provide basic service instance information.

* Instance Name: DBATEST
Description: Test datasbase
Notification Email: Radha.Srinivasan@oracle.com
* Exadata System: qatest1 - Quarter Rack (2 nodes)
Tags

* Service Level: Oracle Database Exadata Cloud Service
* Software Release: Oracle Database 18c
nterprise Edition - Extreme Performance
* Database Type: Database Clustering with RAC

Select Exadata system for this service instance.

- ✓ qatest1 - Quarter Rack (2 nodes)
- sujathac - Quarter Rack (2 nodes)
- V0304-vlan - Quarter Rack (2 nodes) (reg01 DC1 / Dev Zone)

Select an Exadata Service Instance to deploy the database on

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Create Instance

Cancel

Instance Details Confirm

Next

Instance

Provide basic service instance information.

* Instance Name: DBATEST
Description: Test datasbase
Notification Email: Radha.Srinivasan@oracle.com
* Exadata System: qatest1 - Quarter Rack (2 nodes)
Tags

* Service Level: Oracle Database Exadata Cloud Service
* Software Release: Oracle Database 18c
* Software Edition
* Database Type

Oracle Database 11g Release 2
Oracle Database 12c Release 1
Oracle Database 12c Release 2
✓ Oracle Database 18c

Select a database version to deploy

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Create Instance

Previous | Cancel

Instance — Details — Confirm

Next

Configure Backup

Instance Details

Provide details for this Oracle Database Cloud Service instance.

Selection Summary

Database Configuration

Hostnames	All
* DB Name	DBATEST
* PDB Name	PDBTEST1
* Administration Password	•••••••••
* Confirm Password	•••••••••
* SSH Public Key	id_rsa.pub (Edit)

Advanced Settings

Backup and Recovery Configuration

* Backup Destination	Cloud Storage Only
* Cloud Storage Container	:orp.com/v1/Storage-dbcsqa/QA
* Username	Storageadmin
* Password	••••••••
Create Cloud Storage Container	☐

Standby Database

* Exadata System	
Hostnames	

Configure Data Guard Standby

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Create Instance

Previous | Cancel | Instance | Details | Confirm | Create

Click Create!

Confirmation

Confirm your responses and create service instance.

Instance

Instance Name:	DBATEST
Description:	Test datasbase
Bring Your Own License:	No
Service Level:	Oracle Database Exadata Cloud Service
Metering Frequency:	Monthly
Software Release:	Oracle Database 18c
Software Edition:	Enterprise Edition - Extreme Performance
Exadata System:	qatest1 - Quarter Rack (2 nodes)
Cluster:	qatest1
Hostnames:	scaqag01dv0705m.us.ora...
Application Type:	Transactional (OLTP)
SSH Public Key:	id_rsa.pub
Use High Performance Storage:	No

Backup and Recovery Configuration

Backup Destination:	Cloud Storage Only
Cloud Storage Container:	https://storage.oraclecor...
Username:	Storageadmin

Database Configuration

DB Name:	DBATEST
PDB Name:	PDBTEST1
Character Set:	AL32UTF8 - Unicode Univer...
National Character Set:	AL16UTF16 - Unicode UTF-1...
Include GoldenGate:	No
Database Clustering with RAC:	Yes

Standby Database Configuration

Standby Database with Data Guard:	Yes
Disaster Recovery:	No
Exadata System:	V0304-vlan - Quarter Rack (2 nodes) (reg01 DC1 / Dev Zone)
Cluster:	v0304-2
Hostnames:	scaqag01dv0305m.us.ora...

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User Experience
Manage VM Cluster

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Service Instances

Create Service Instance | Show: Active

qatest1

Open Service Console

- Delete
- Modify
- Create Like
- Manage Clusters

Service Type	ExadataCM	Administrator	Radha.Srinivasan@oracle.com
Instance Id	500024549	Requested By	Radha.Srinivasan@oracle.com
Status	Active	REST Endpoint	https://psm.cloud.lab01.ocmlab.oc9qadev.com
Plan	Exadata Cloud Service - Custom		
Additional number of OCPUs (Cores)	-120		
Exadata System Name	qatest1		

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Service: Oracle Database Exadata Cloud Service

Open Service Console

Overview | Billing Metrics | Resource Quotas | Business Metrics | Documents | Status

VM Clusters

Instance Name: qatest1 **Instance Id:** 500024549

Create VM Cluster

Cluster Name	CPU Cores	Memory (GB)	Exadata Storage (TB)	Local Storage (GB)	Client Network	Backup Network	Exadata Database Backups	Sparse Disk Group	Status	Action
qatest1	8	90	6	60			N		Provisioned	
qatest2-sdg	8	60	3	60			N	Y	Provisioned	

Resource Overview

	CPU Cores	Memory (GB)	Exadata Storage (TB)	Local Storage (GB)
Allocated	16	150	9	120
Unallocated	8	1290	75	
Total	24	1440	84	

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Service: Oracle Database Exadata Cloud Service

Open Service Console

Overview | Billing Metrics | Resource Quotas | Business Metrics | Documents | Status

VM Clusters

Instance Name: qatest1 **Instance Id:** 500024549

Create VM Cluster

Cluster Name	CPU Cores	Memory (GB)	Exadata Storag	Local	Client	Backup	Exadata Database	Sparse Disk Group	Status	Action
qatest1	8	90	6						Provisioned	
qatest2-sdg	8	60	3					Y	Provisioned	

Resource Overview

	CPU Cores	Memory (GB)	
Allocated	16	150	
Unallocated	8	1290	
Total	24	1440	

Create VM Cluster

* Cluster Name: dbatest

Shape: Small

* CPU Cores: 8

* Memory (GB): 60

* Exadata Storage (TB): 3

* Local Storage (GB): 60

Database backups on Exadata Storage ☑

Create sparse disk group? ☑

Cancel | Create

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User Experience
Sparse Clone and Create DB From Backup

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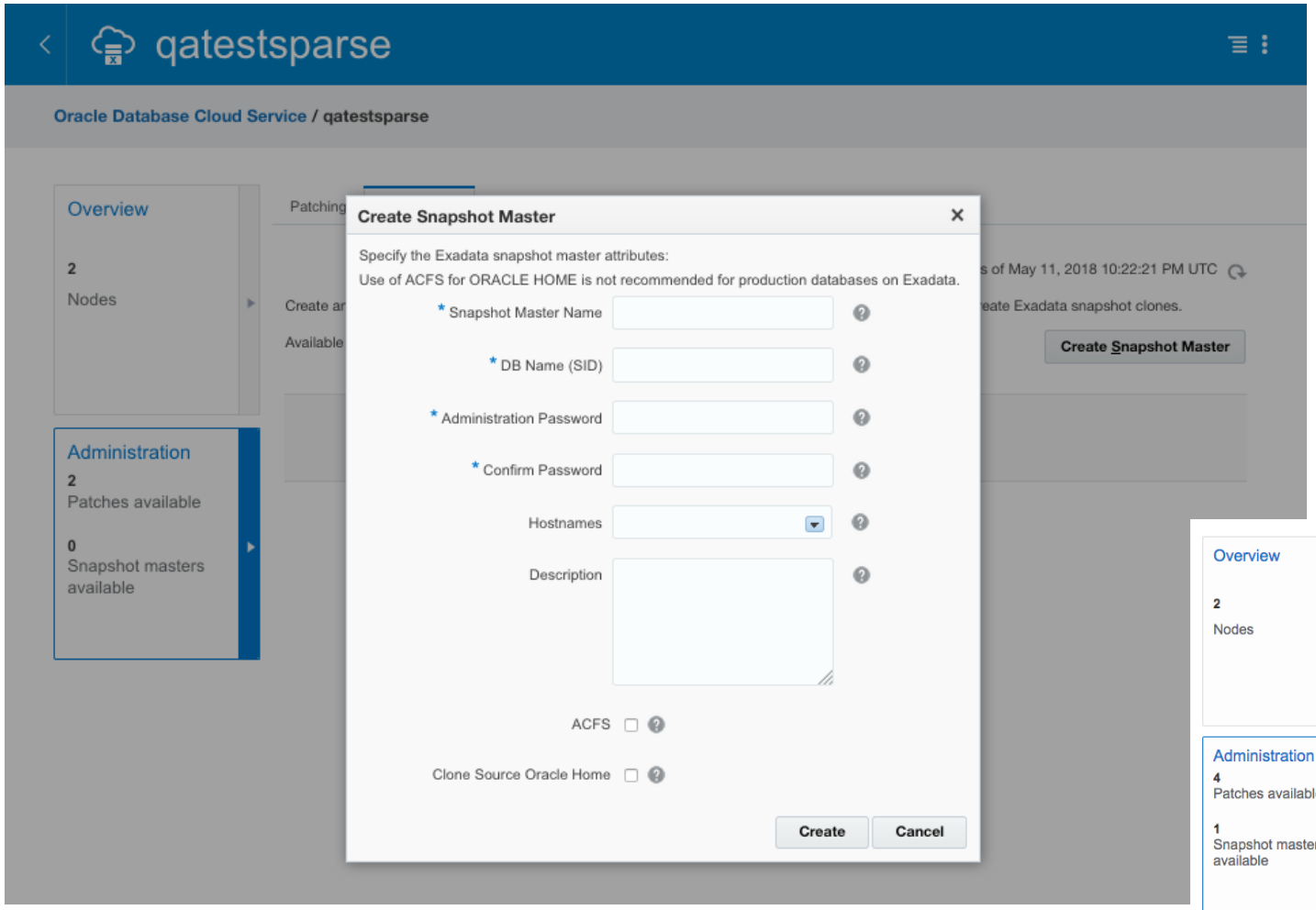
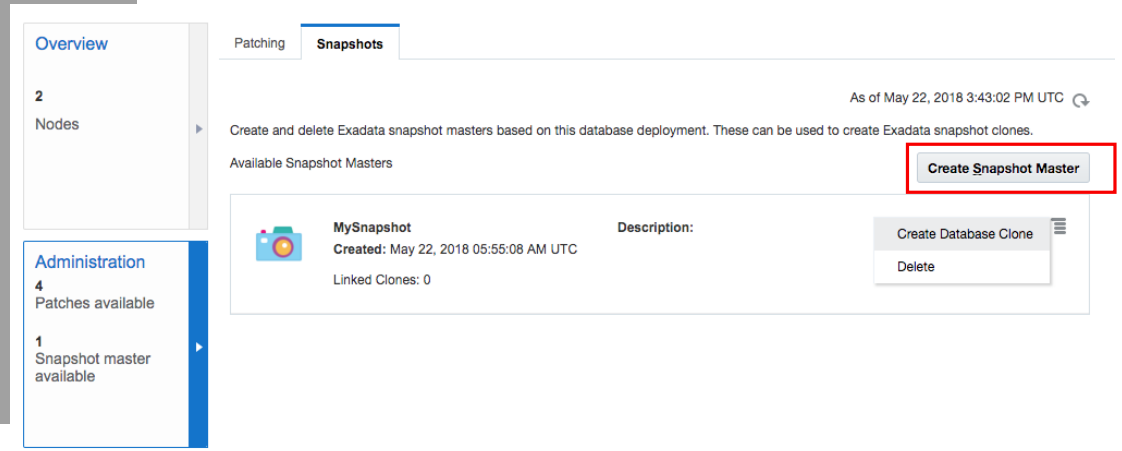
Snapshots and Sparse Clones



- Consolidation platform for test/dev environments
  - Create one Snapshot Master (full read-only copy)
  - Create many sparse clones for individual developers and tester
    - Each clone takes very little disk space—changes only
  - 12.1.0.2 and later databases



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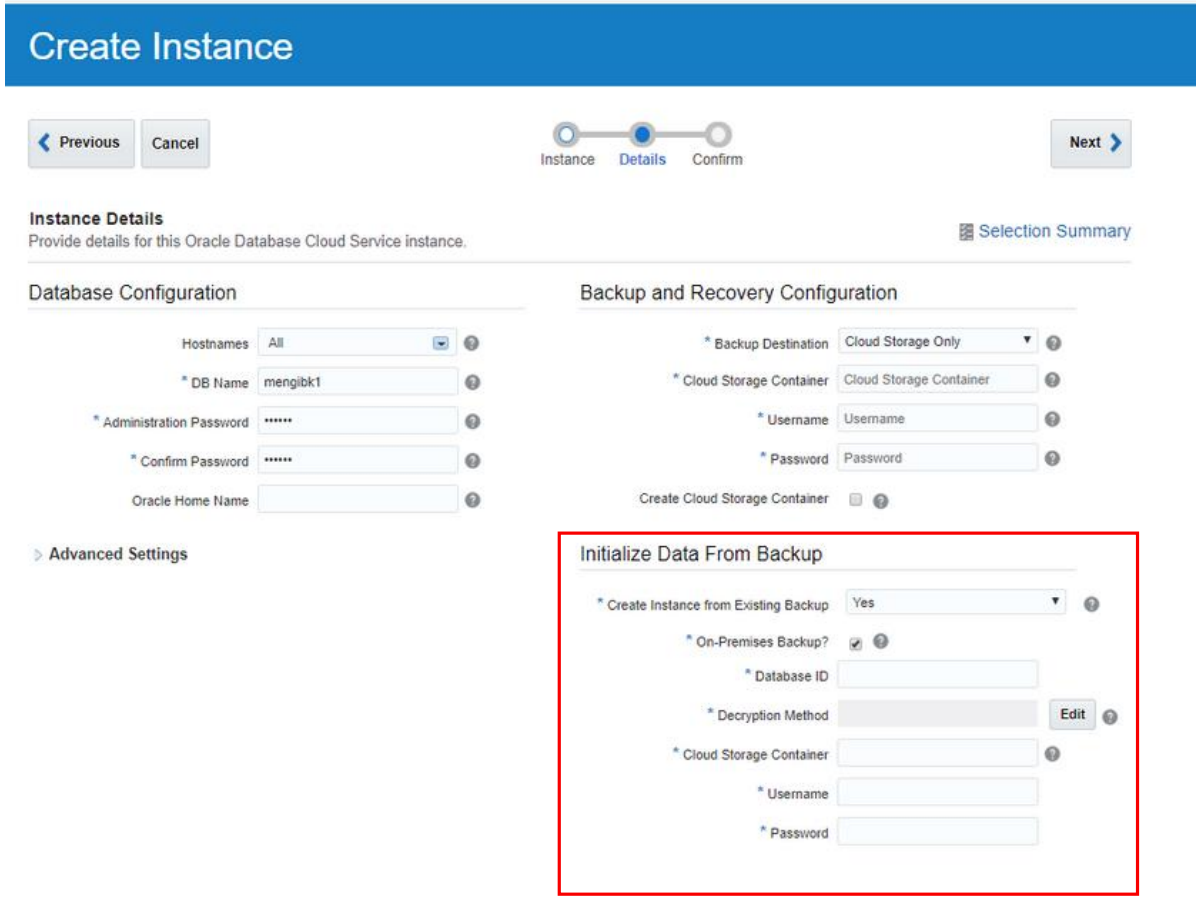
Create Database from Backup



- Instantiate or replace a database from a Cloud backup (local and remote)
- Easy to move a database from on-premise into ExaCC
- Easy to refresh a database with a backup
- Supports backups of database versions 18c, 12.2.0.1, 12.1.0.2 or 11.2.0.4

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User Experience
Data Guard, Backup and Recovery

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Cloud Automation for Active Data Guard

ORACLE CLOUD My Services

jeff.wright@oracle.com

Oracle Database Cloud Service

Create Service

Previous | Cancel

Service — Details — Confirm

Next

Service Details

Provide details for this Oracle Database Cloud Service instance.

Selection Summary

Database Configuration

Hostnames	All
* DB Name	JEFFDB
* PDB Name	JEFFPDB1
* Administration Password	••••••
* Confirm Password	••••••

Advanced Settings

* Character Set	AL32UTF8 - Unicode Universal cl
* National Character Set	AL16UTF16 - Unicode UTF-16 Ur

Backup and Recovery Configuration

* Backup Destination	ZDLRA Storage Only
* Zdlra Storage Container	scaz15inges-scan1:1521/zdlra9:
* Username	bkupapivpc
* Password	••••••

Standby Database

* Exadata System	exacc1 - Quarter Rack (2 nodes)
Hostnames	All

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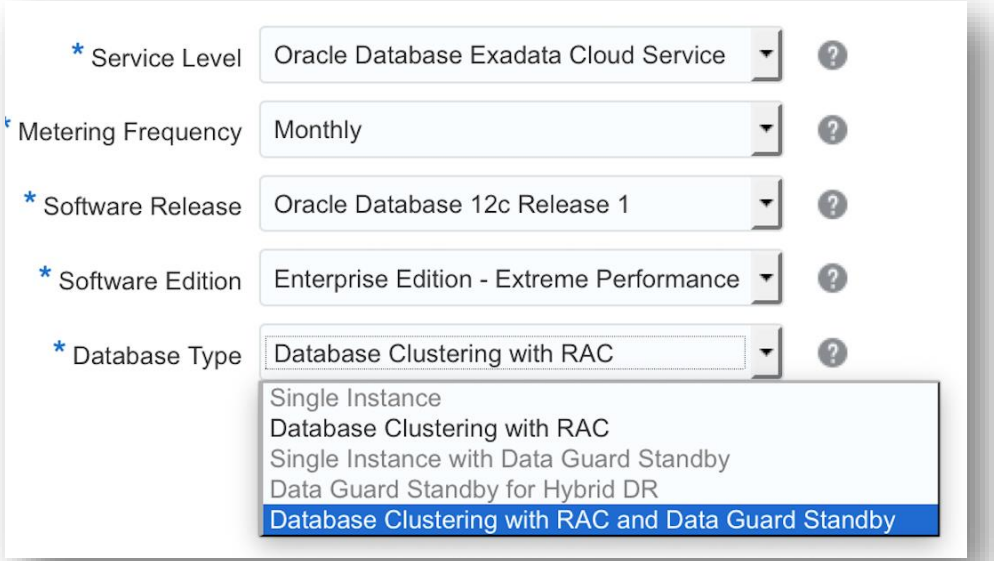
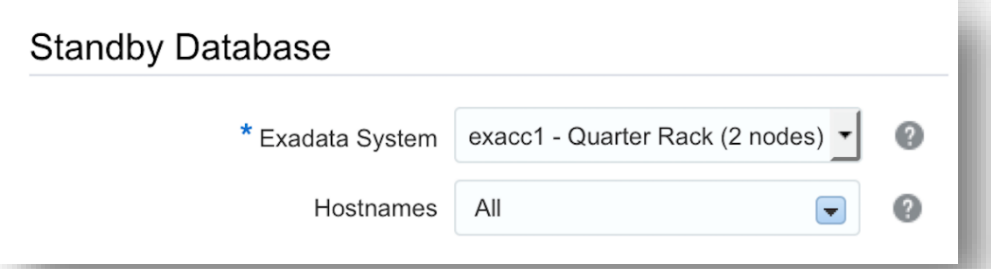
Cloud Automation for Active Data Guard

Register ExaCCs that are to be configured with Active Data Guard with the **same Control Plane**

- During database creation (Primary) :
  - Choose *RAC + Data Guard Standby* option
  - Choose the Standby Exadata System
  - Select nodes (*sub-setting*) where the standby runs
- Primary and Standby databases will be created with Active Data Guard
- Automated lifecycle management enabled via Cloud Automation
  - Failover, Switchover, Reinstate





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Database Backup Options with ExaCC

- Cloud Automation
  - Options available
    - Object Storage
    - Object Storage and Local Exadata Storage (FRA)
    - Zero Data Loss Recovery Appliance
  - Object Storage can be Cloud at Customer Object Storage, or Public Cloud Object Storage
  - Object Storage referred to as “Cloud Storage” in UI
- Manual configuration to existing on-premises backup infrastructure
  - Customer must install backup agents in DomU and configure RMAN

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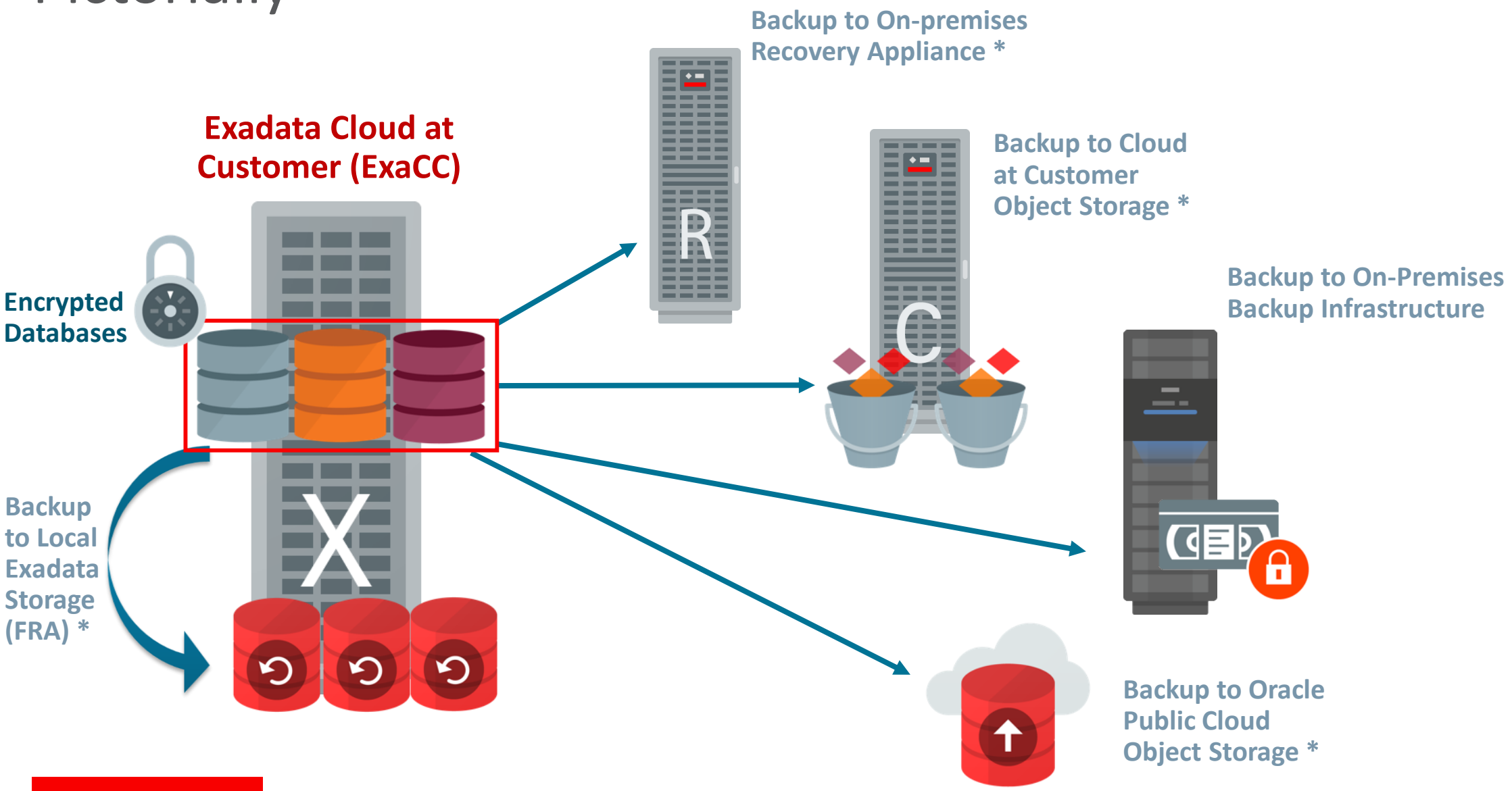
Pictorially

** Cloud Automation Provided*



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Reinforced Security for Cloud at Customer

Exadata

- ✓ Globally deployed at 1000s of secure sites
- ✓ Scrutinized by Oracle and industry security experts around the world
- ✓ Vendor signed firmware
- ✓ Minimum package distribution
- ✓ Dedicated networks for client traffic

Database

- ✓ Connections secured by Oracle Net Encryption
- ✓ Database files encrypted by TDE
- ✓ Protection from privileged users through Database Vault
- ✓ Sensitive data secured by Label Security, Data Masking and Subsetting

Exadata Cloud at Customer enforces high security standards at every deployment component

Infrastructure → Network → Platform → Database → Automation

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Journey To Exadata Cloud at Customer

1. Customer Places ExaCC Order
2. Oracle Ships and Builds Cloud
3. Oracle Provisions Cloud at Customer
4. Customer Operates and Oracle Maintains
5. Use Case - Vale

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Step 4: Customer Operates and Oracle Maintains

- Oracle v/s Customer Roles & Responsibility Split
- Updates and Maintenance
- Manageability

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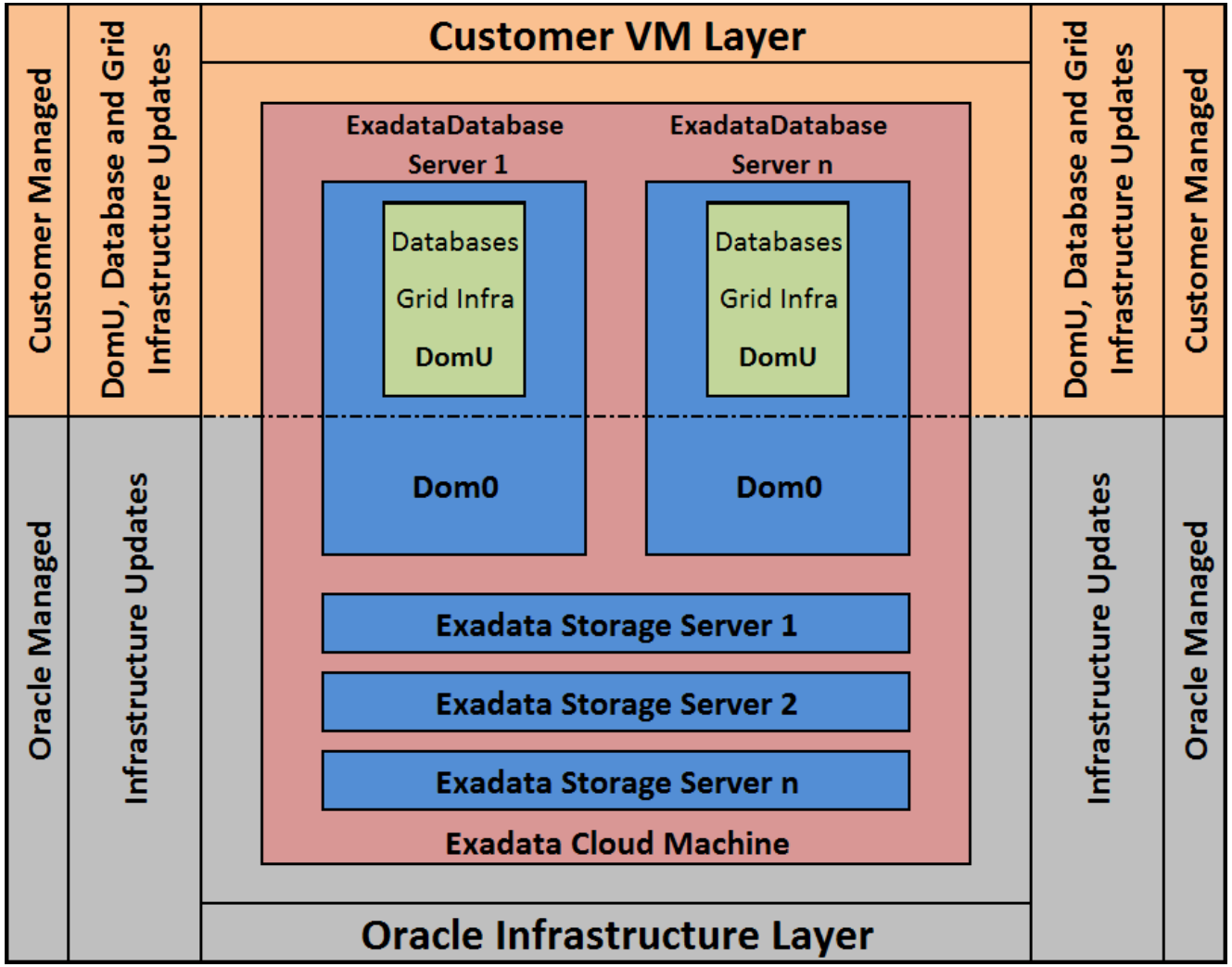
Exadata Cloud at Customer: Roles and Responsibilities Customer and Oracle



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Exadata Cloud at Customer: Roles and Responsibilities

- Pre Install
- Install & Configuration
- Monitor, Manage and Support
- Lifecycle Management

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Exadata Cloud at Customer: Roles and Responsibilities

Pre-Install

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- Conduct Orientation Session
- Perform Datacenter site survey
- Analyze customer network configuration requirements
- Identify maintenance windows

CUSTOMER

- Identify cloud contacts within org
- Agree on project plan with Oracle Cloud Services
- Perform site readiness
- Work with Oracle Cloud Services to complete Pre-install tasks

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Exadata Cloud at Customer: Roles and Responsibilities

Install and Configuration

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- Deploy OCC, OASG, ExaCC
- Connect to necessary data center networks and firewalls
- Configure ExaCC
- Validate the configuration
- Create one DomU in each ExaCC DB server
- Service handover and training to customer

CUSTOMER

- Obtain network/security approvals
- Set up required data center facilities (e.g. power, space, cooling, etc.)
- Set up data center network

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Exadata Cloud at Customer: Roles and Responsibilities

Monitor, Manage and Support

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- Monitor ExaCC infrastructure layer & Control Plane usage, fault, availability
- Monitor Control Plane performance
- ExaCC infrastructure layer incident monitoring and resolution / management / root cause analysis, threshold performance analysis

CUSTOMER

- Database administration, incident management and remediation
- Create and submit Support SRs related to cloud databases
- Backup/recovery & disaster recovery of DBs

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Exadata Cloud at Customer: Roles and Responsibilities

Lifecycle Management

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- Implement updates inside Dom0
- Implement Exadata Storage Server Software updates / upgrades
- Implement firmware updates and upgrade / repairs to various hardware components
- Advanced notification of planned update maintenance windows
- Implement Cloud Stack updates / Implement Infrastructure Upgrades
- Stage Database / Grid Infrastructure updates for subsequent deployment

CUSTOMER

- Identify & apply DB / GI / OS updates inside DomU
- Plan and design changes to infrastructure (e.g. upgrades / upsize) by collaborating with Oracle Cloud Services

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ExaCC Update Automation Demo

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Enterprise Manager for Exadata Cloud

- Single pane of glass for all database administration
- Uses standard agents on Exadata Cloud at Customer compute nodes
  - Just like any other RAC database
- Augment Oracle Cloud Automation with technology you are used to
- Reference paper
  - http://www.oracle.com/technetwork/database/exadata/em-exadata-cloud-3959023.pdf

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EXCSPOC2-009 (Cluster) - Or

https://oraclecloudem.com:7802/em/faces/cluster-home?target=EXCSPOC2-009&type=cluster

ORACLE Enterprise Manager Cloud Control 13c

Enterprise | Targets | Favorites | History | Setup | SYSMAN

Enterprise Manager sees Exadata Cloud at Customer as a cluster

EXCSPOC2-009

cfcldv0420m.us2.oraclecloud.com

Cluster | Administration

Page Refreshed Sep 9, 2016 4:45:24 PM GMT

Summary

Status	Up
Cluster Name	EXCSPOC2-009
Hosts Status	2
Clusterware Status	2
Cluster Mode	Regular Cluster
Reconfiguration Activities	Happened

Configuration Changes

Configuration Changes 8

Patch Recommendations

View by Classification Target Type

Patch recommendations are not available.

My Oracle Support preferred credential is not set for any super user. Either set the preferred credentials or change the connection setting to offline and manually upload the metadata required for generating patch recommendations.

No recommendations to report Learn More

Job Activity

Summary of jobs whose start date is within the last 7 days.

Show Latest Run Search Job Name

Show Jobs

Clusterware

View Clusterware

View | Detach

Name	Status	Incidents				Compliance Score(%)	Host
has_cfcldv0420m.us2.oraclecloud....		0	0	0	0		cfcldv0420m.us2.oraclecloud.com
has_cfcldv0421m.us2.oraclecloud....		0	0	0	0		cfcldv0421m.us2.oraclecloud.com

Cluster Managed Resources

View Cluster Databases

View | Detach

Database Name	Sta	Incidents				Compliance Score(%)	Version
BICSDB ExaCS		0	0	0	0		11.2.0.4.0
CRM ExaCS		0	0	0	0		12.1.0.2.0
DG2 ExaCS		0	0	0	0		12.1.0.2.0
SALES ExaCS		0	0	0	0		12.1.0.2.0

Server Pools

View | Detach

Name	Minimum Size	Maximum Size	Importan	Active Servers
Free	0	Entire Cluster	0	
Generic	0	Entire Cluster	0	cfcldv0420m cfcldv0421m
ora.BICSDB	0	Entire Cluster	1	cfcldv0420m cfcldv0421m
ora.CRM	0	Entire Cluster	1	cfcldv0420m cfcldv0421m
ora.DG2	0	Entire Cluster	1	cfcldv0420m cfcldv0421m
ora.ORCL	0	Entire Cluster	1	cfcldv0420m cfcldv0421m

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5. Use Case - Vale

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VALE

ABOUT THE PRESENTERS

Daniel Pedrozo is a **Technology Transformation Leader** with +15 years of experience delivering Global Digital initiatives with Agile and Problem Solving methodologies. Strong believer that combined technologies is the way to meet society needs.

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Marcio Rodrigues is an **IT Technical Leader** with more than 30 years of database experience. He is an Oracle Cloud@Customer certified.

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We are one of the world's largest mining companies, working with passion to transform natural resources into prosperity.

VALE

GET TO KNOW US

1st Place

Global production
Iron Ore, Pellets &
Nickel

348.8 million

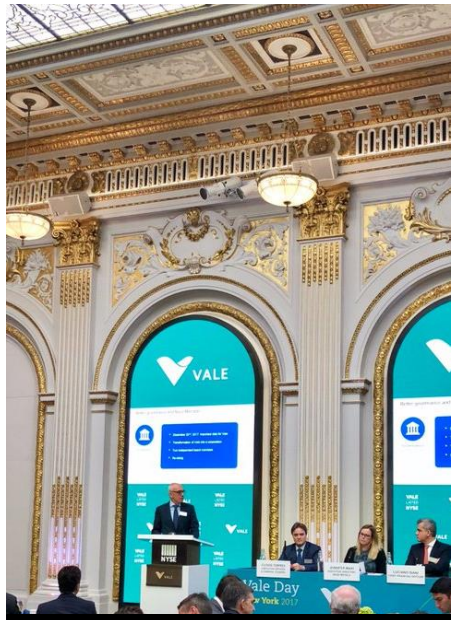
Metric tons of iron ore
produced
+331,000 metric tons of Nickel

Industry 4.0

Digital Transformation,
Automation, Cost
accountability

26 Countries

~120 thousands
Collaborators



US$ 116 Bi

of investment in 10
years

VALE

Oracle Cloud Migration Project

Our goal is to create value by improving Applications performances and provide better customer experience to both business and IT users through speed, scope and scale from Cloud Capabilities and Agile implementations

MIGRATION

~300 Databases from 3 different DCs in Brazil

CONSOLIDATION

Optimize workload's Memory, OCPU and Storage consumption through Multitenant and Advanced Compression solutions

UPGRADE

Validate, Test and Upgrade workloads to 12.2c version in Container Database

CLOUD

Enable exponential increase of speed and harness the benefit of innovative technologies

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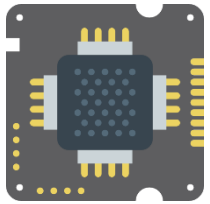
Main challenges & Opportunities

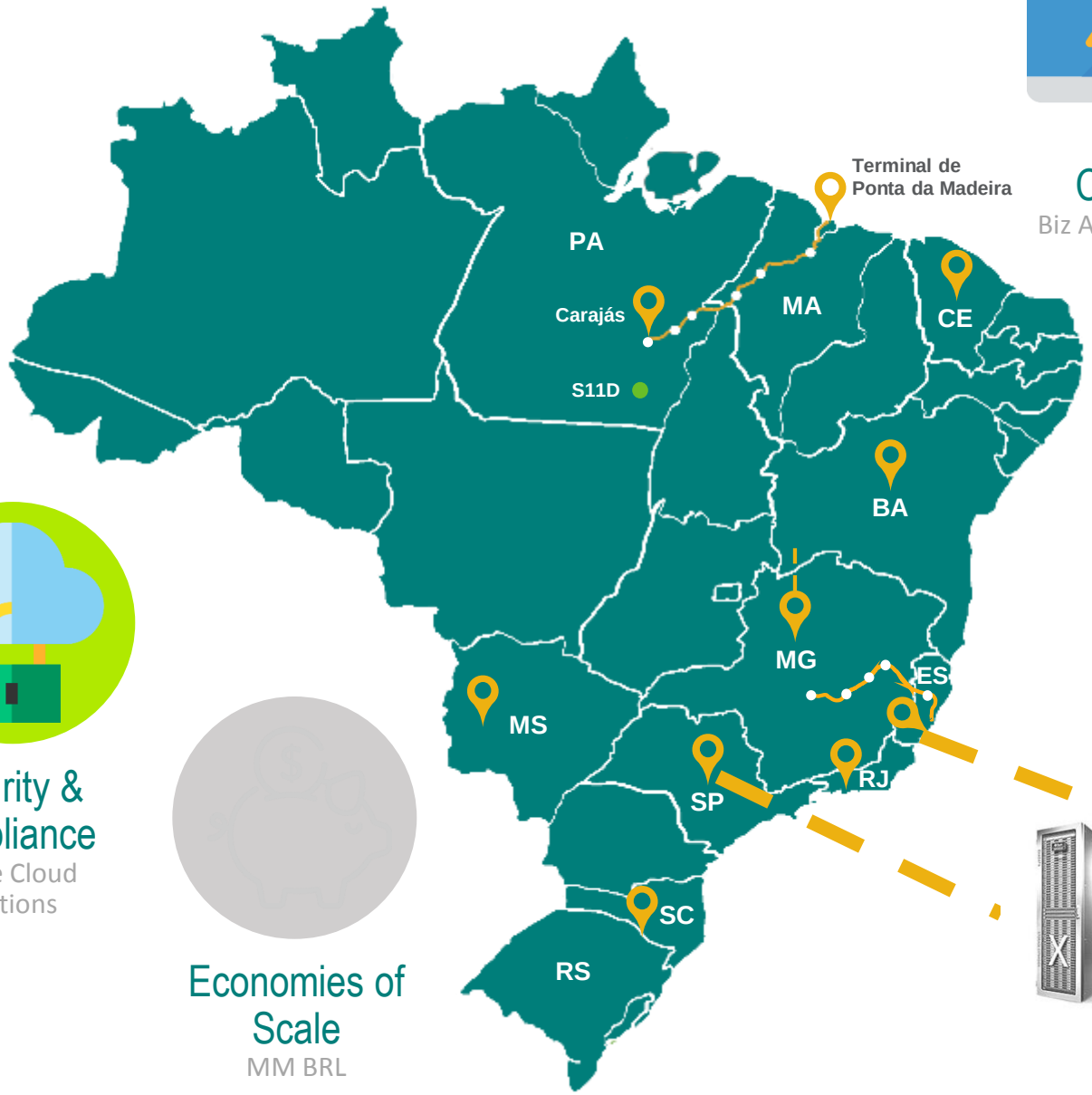
Cloud
Private



~77%
Cores optimization

Security & Compliance
Oracle Cloud Solutions

Economies of Scale
MM BRL



Critical
Biz Applications

+600
Integrations

+250
Applications

~70%
Enterprise

8
Cloud@Custmoer

~90%
Footptring reduct

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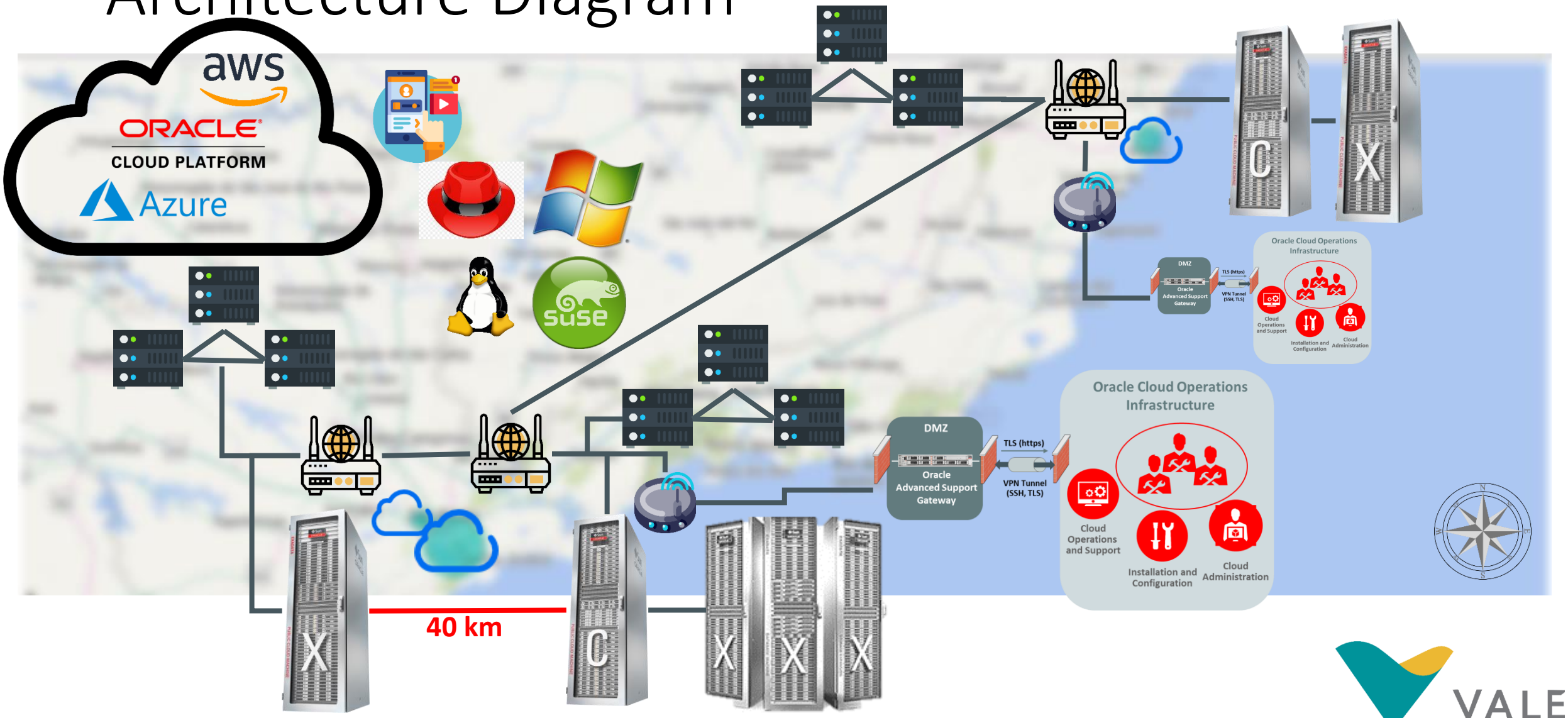
Architecture Diagram



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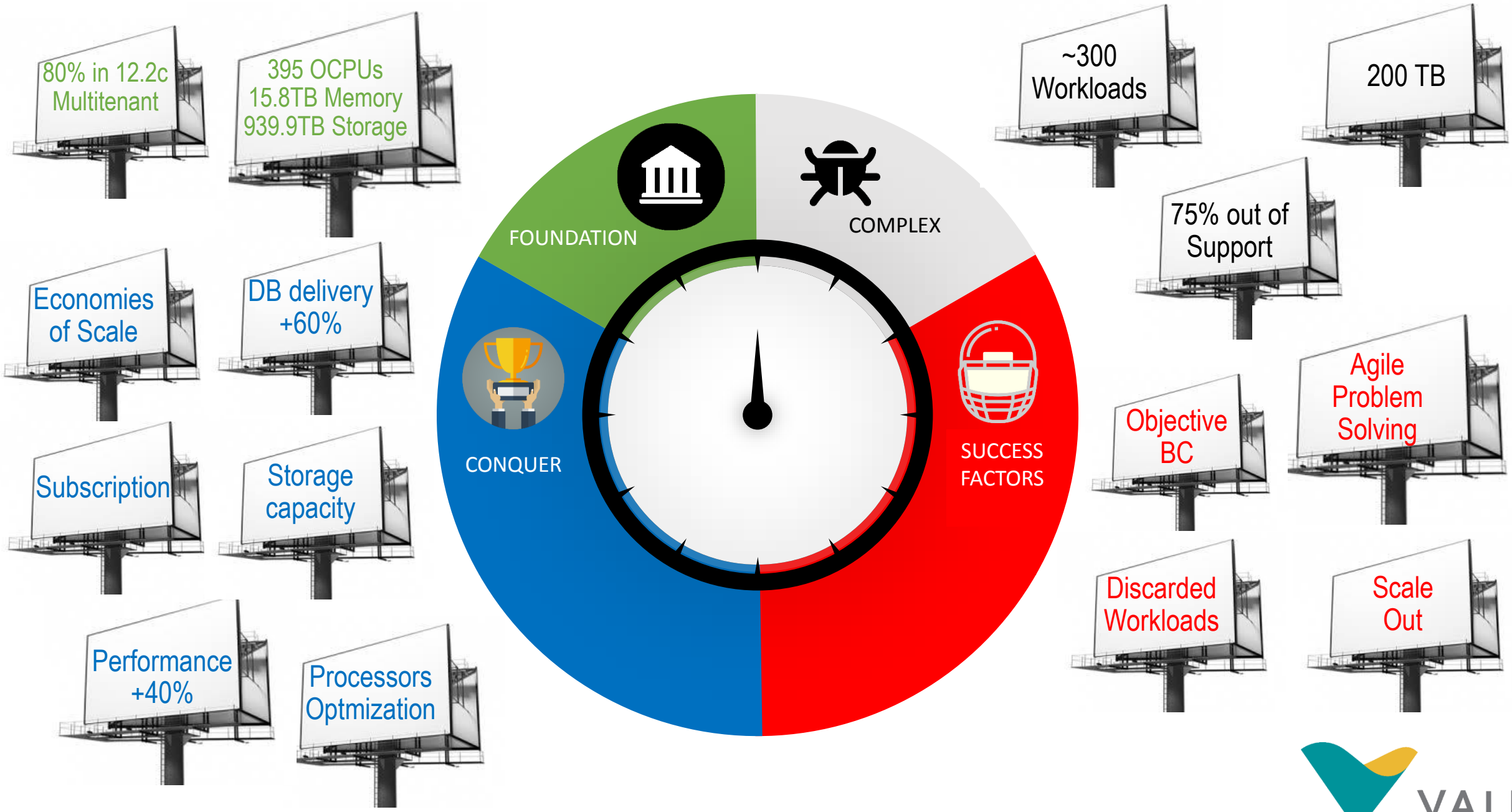
80% in 12.2c Multitenant
395 OCPUs 15.8TB Memory 939.9TB Storage
Economies of Scale
DB delivery +60%
Subscription
Storage capacity
Performance +40%
Processors Optmization
FOUNDATION
COMPLEX
CONQUER
SUCCESS FACTORS
~300 Workloads
200 TB
75% out of Support
Objective BC
Agile Problem Solving
Discarded Workloads
Scale Out
VALE

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