



# Cloud at Customer Academy 3.0

Exadata Cloud - Patching

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LAD Partner Enablement Knowledge Team

July, 2023



# Nossos Valores

Integridade

Compliance

Trabalho em  
Equipe

Satisfação do  
Cliente

Qualidade

Ética

Inovação

Respeito  
Mútuo

Justiça

Comunicação

Como empresa líder em tecnologia, abraçamos a **diversidade** em todas as suas formas. Acreditamos realmente que a **inovação** começa com a **inclusão**. E isso só pode ser alcançado com a cooperação de nossos **parceiros**. Afirmamos nosso **compromisso** em manter um **ambiente respeitoso e livre de discriminação** e esperamos isso dos nossos **parceiros de negócios**.

A Oracle espera que seus **parceiros** conduzam os negócios de forma **justa** e **ética**, para cumprir as leis anticorrupção em todo o mundo, para cooperar com os pedidos de informação da Oracle e evitar envolver-se em qualquer atividade que envolva até mesmo a aparência de impropriedade.

É vital que os nossos parceiros sejam aderentes aos valores do **Código de Ética e Conduta Empresarial da Oracle**, que baseia-se e implementa os valores que são essenciais para o nosso sucesso como empresa. Nossos valores são a base de tudo o que fazemos e todos nós devemos viver esses valores todos os dias.



Utilize o QR code para acessar o Código de  
Ética e Conduta Empresarial da Oracle.



# SQL> select \* from person where name = 'Marcel Lamarca'

Father, husband, Cooker and son!



## Oracle DBA

21 Years dedicated to study and support Oracle Databases.  
12 Years working with Exadata (On-prem, C@C and Cloud Services) .  
4 Year working for Oracle do Brasil  
1 Year on Alliances LAD knowledge Team

## Oracle Cloud Specialist (OCS)

Exadata Database Machine X9M Certified Specialist  
OCI Foundation 2020 / 2023  
Oracle Autonomous Database Administrator  
Oracle Cloud Database Migration and Integration  
OCI Cloud Certified Architect Associate 2022  
OCI Cloud Certified Architect Professional 2022

## Oracle Certified Professional (OCP)

10g, 11g and 12c.

## Oracle Certified Specialist (OCE)

Grid/RAC Database Administrator 11g



**SQL> select \* from person where name = 'Alexandre Fagundes'**



Father, Son, Husband, Cloud Architect

**Bachelor of Information Systems**

Oracle Applications & Databases Administrator

Certified Cloud Architect

Autonomous Database Cloud Certified Professional

Oracle Cloud Operations Certified Professional

Oracle Cloud Security Certified Professional

Oracle Database Migration/Integration Certified Professional

Last book: **“Database Reliability Engineering: Designing and Operating Resilient Database Systems”** Charity Majors

Oracle E-Business Suite & Database Consultancy Services since 2002



Scan here to download  
This presentation!



# Agenda

ExaC@C – Patching *Dom0*

ExaC@C – Why patch my database?

ExaC@C - Pre Patching best practices

ExaC@C - Patching Grid Home

ExaC@C - Patching Oracle Home

ExaC@C - Patching DomU (Linux Image)

Demo – Grid Home – Prechk *Dbaascli*

Demo – DomU (Linux) Prechk *Patchmgr*

# Exadata Academy 3.0 | Register Now



SCAN ME

## Oracle Exadata Cloud at Customer Academy

Visando capacitar nossos parceiros em OCI Services, criamos a Academia Oracle Exadata Cloud at Customer ou Academia Oracle ExaC@C.

A academia contará com **10 sessões de treinamentos**, a partir de **10 de julho**, que permitirá aos participantes conhecer os principais recursos e funcionalidades do Oracle ExaC@C. Também será uma excelente oportunidade para você esclarecer todas as suas dúvidas para obter a sua certificação!

Participe conosco dessa academia e descubra por que o Oracle ExaC@C é a maneira mais simples de migrar as cargas de trabalho críticas do Oracle Database de uma organização para a nuvem.

Confira a agenda a seguir e inscreva-se. Contamos com a sua participação!

## Agenda

### Troubleshooting tools – Demo Session

21 de agosto

10h às 11h30h (horário de Brasília)

[Inscreve-se](#)

### Monitoring – Demo Session

28 de agosto

10h às 11h (horário de Brasília)

[Inscreve-se](#)

### Smart Scan, HCC compression & In-Memory – Demo Session

11 de setembro

10h às 12h (horário de Brasília)

[Inscreve-se](#)

### A&Q for Certification

18 de setembro

10h às 12h (horário de Brasília)

[Inscreve-se](#)

### New Features - Demo Session

25 de setembro

10h às 12h (horário de Brasília)

[Inscreve-se](#)

### PCA - Private Cloud Appliance

17 de julho

10h às 12h (horário de Brasília)

[Inscreve-se](#)

### Patching – Demo Session

24 de julho

10h às 12h (horário de Brasília)

[Inscreve-se](#)

### Backup & Restore – Demo Session

31 de julho

10h às 11h30h (horário de Brasília)

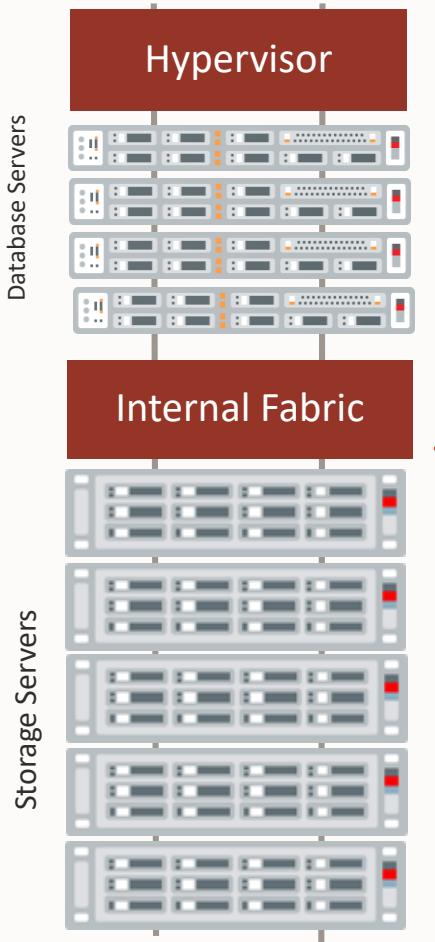
[Inscreve-se](#)

[Click Here](#)

# Patching Exadata Cloud Domo



# Exadata Dom0 characteristics and responsibilities



## Exadata Cloud at Customer Dom0 Quarterly Patch

- Customer must provide at least **4 maintenance windows** per year
- Customer can choose between **rolling** and **no rolling** upgrade mode
- Patch starts on **Database Nodes** and can take up to **120 min** per server to be completed
- Partial or total unavailability is not expected during the **Storage Cell** upgrade

[Click here Exadata Maintenance Details](#)

## Exadata Cloud at Customer Dom0 Monthly Security patch

- Executed in months when important security updates are needed and includes fixes for vulnerabilities
- CPU scaling and VM startup/shutdown are the only operations supported during monthly infrastructure maintenance.
- Oracle, recommends scheduling quarterly and monthly maintenance at the same time

[Click here Security Maintenance Details](#)

# Dom0 and Monthly Security patch agendas

## Exacc Infra Maintenance

The patch contains ExaCC software update for Q3 2023.

**Status:** ● Scheduled

**Type:** Quarterly

**OCID:** ...ozriyiq [Show](#) [Copy](#)

**Exadata Infrastructure:** [REDACTED]

**Target DB Server Version:** LATEST ⓘ

**Target Storage Server Version:** LATEST ⓘ

**Maintenance Method:** Rolling

**Custom action timeout:** 0 ⓘ

**Scheduled Start Time:** Sat, Aug 26, 2023, 13:00:00 UTC

**Total Estimated Maintenance Time:** 7 hours ⓘ [View](#)

## Exadata Infrastructure Security Maintenance

Your Exadata Infrastructure is scheduled for security maintenance at 2023-08-06 05:00.

**Status:** ● Scheduled

**Type:** Monthly Security Maintenance

**OCID:** ...m44gcq [Show](#) [Copy](#)

**Exadata Infrastructure:** [REDACTED]

**Target DB Server Version:** 22.1.10.0.0.230422 (230704) ⓘ

**Target Storage Server Version:** 22.1.11.0.0.230516 ⓘ

**Maintenance Method:** Online

**Scheduled Start Time:** Sun, Aug 6, 2023, 05:00:00 UTC ⓘ

**Total Estimated Maintenance Time:** 3 hours 15 minutes ⓘ



# Dom0 maintenance time history through OCI Console

## Exadata Infrastructure Maintenance

### Maintenance

### Maintenance History

#### Estimated Maintenance Time Details

Total Estimated Maintenance Time: 7 hours ⓘ

Database Servers Estimated Maintenance Time: 3 hours

Order	Display name	Status	Estimated Time	Custom action timeout ⓘ	Number of VMs impacted ⓘ	Number of AVMS impacted ⓘ
1	dbServer-1	Scheduled	1 hour 30 minutes	0 minutes	3 <a>Show Details</a>	1 <a>Show Details</a>
2	dbServer-2	Scheduled	1 hour 30 minutes	0 minutes	3 <a>Show Details</a>	1 <a>Show Details</a>

Showing 2 Items

Storage Servers Estimated Maintenance Time: 3 hours ⓘ

Network Switches Estimated Maintenance Time: 1 hour

## Maintenance History

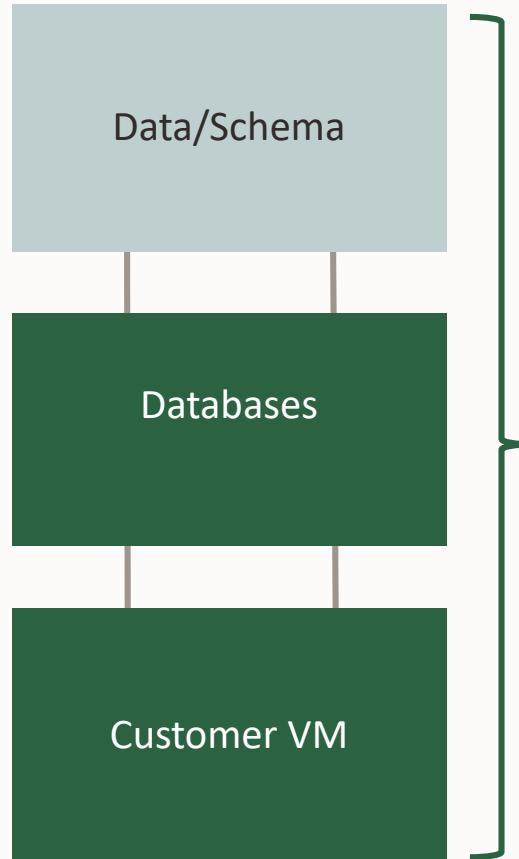
### Exadata Infrastructure:

Title	State	Target Database Server Version ⓘ	Target Storage Server Version ⓘ	Start Time	End Time	Type	Scheduling
Exadata Infrastructure Security Maintenance	<span>● Succeeded</span>	230607	22.1.11.0.0.230516	Tue, Jul 4, 2023, 05:00:14 UTC	Tue, Jul 4, 2023, 07:32:25 UTC	Monthly	Planned
Exacc Infra Maintenance	<span>● Succeeded</span>	22.1.10.0.0.230422	22.1.10.0.0.230422	Sat, May 27, 2023, 13:00:24 UTC	Sat, May 27, 2023, 16:12:26 UTC	Quarterly	Planned
Exadata Infrastructure Security Maintenance	<span>● Succeeded</span>	230508	22.1.10.0.0.230422	Thu, May 25, 2023, 10:16:39 UTC	Thu, May 25, 2023, 10:29:37 UTC	Monthly	Planned

# Pathing Exadata Cloud DomU



# DomU patch characteristics and responsibilities



## Customer is responsible for any DomU patch

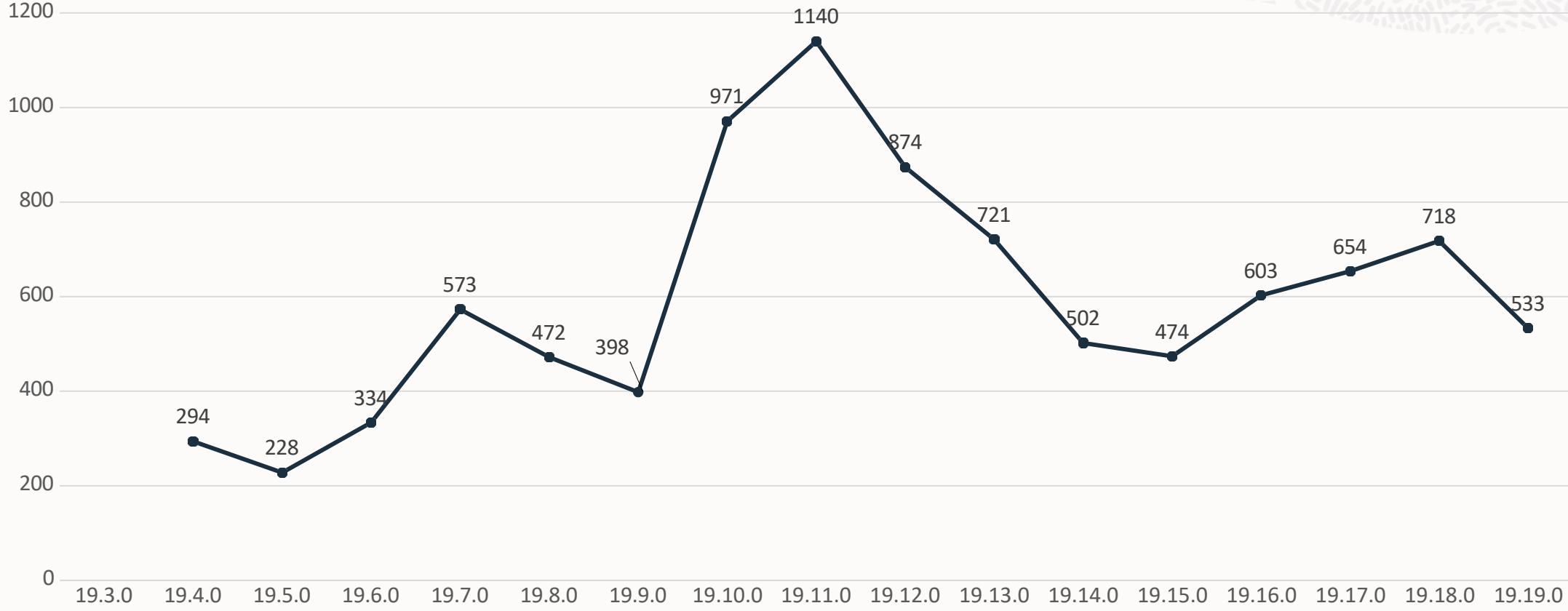
- Oracle ***dbaascli*** (tooling) upgrade and can be configured automatically
- Oracle Linux ***DomU*** Image using ***patchmgr*** or ***OCI Console***
- ***Oracle Home*** can be updated through ***Dbaascli*** or ***OCI Console***
- ***Grid Home*** can be updated through ***OCI Console*** or ***Dbaascli***
- ***One-off Patching*** may be required in case any specific issue is not fixed on bundle patch's



# Why do I have to patch my Database ?



# Oracle 19c Release update contents



[Database 19 Release Updates and Revisions Bugs Fixed Lists \(Doc ID 2523220.1\)](#)



## • Exadata Critical Issues

## MOS DOC 1270094.1

#	Applies to	Issue	Fix or Workaround	Date
IB9	Sun Datacenter InfiniBand Switch 36 software 2.2.15-1 and lower	Bug 30303098 - Excessive network traffic on the management network, such as that caused by a broadcast storm, can lead to simultaneous reset of all InfiniBand switches, causing an InfiniBand network outage and/or database node evictions.	Fixed in 2.2.16. See <a href="#">Document 2773989.1</a> for details.  Review issue DB49 before updating InfiniBand Switch software.	2021-May-04
IB8	Sun Datacenter InfiniBand Switch 36 software 2.2.6, 2.2.7, and 2.2.8 with network partitioning configured.	<a href="#">Bug 27611791</a> - When InfiniBand network partitioning is in use and the Primary subnet manager (SM) receives a constant flood of P_Key violation traps, the current partition policy may be reset to the default partition policy, which causes connection failure amongst servers communicating in the non-default partition(s). This can lead to dismounted ASM disk groups and node evictions.	Fixed in 2.2.9. See <a href="#">Document 2413649.1</a> for details.  Review issue EX38 below for additional detail.	2018-Jun-29
IB7	Sun Datacenter InfiniBand Switch 36 software 2.1.5 and earlier.	<a href="#">Bug 17482244</a> - If the Primary subnet manager (SM) on an InfiniBand switch becomes overloaded one of the standby SMs will become a second Primary SM. After the original Primary SM becomes active again and the switches negotiate to return back to having a single Primary SM, some database servers and/or storage servers may no longer be able to communicate on the InfiniBand network, which can lead to node eviction or cluster outage.	Fixed in 2.1.6. See <a href="#">Document 2400204.1</a> for details.	2018-Jun-14
IB6	Sun Datacenter InfiniBand Switch 36 software 2.1.x through 2.2.7.	<a href="#">Bug 26678971</a> - The real time clock (RTC) on an InfiniBand switch may become corrupt, which may cause the switch to become unbootable when attempting to upgrade.	Fixed in 2.2.8. See <a href="#">Document 2309926.1</a> for details.	2017-Sep-27
IB5	Sun Datacenter InfiniBand Switch 36 software 2.1.8 and earlier	<a href="#">Bug 23528420</a> - InfiniBand switches may experience high CPU utilization after receiving a malformed POST request via HTTP or HTTPS, which may result in subnet manager unable to get CPU to respond to network management duties, which can lead to database server or storage server eviction. Such requests are often initiated by a security scan tool.	Fixed in 2.2.2. See <a href="#">Document 2169026.1</a> for details.	2016-Aug-11
IB4	Sun Datacenter InfiniBand Switch 36 software 2.1.3-4 (supplied with Exadata 11.2.3.3.0) when connected to Exalogic Virtual environment over the InfiniBand network.	Bug 17936962 - Invalid pkey values in partition definitions in Exalogic Virtual environments prevents add or delete members of a partition.  Note: From Exadata perspective, this issue <u>only</u> applies when an Exalogic Virtual environment is connected to Exadata via the InfiniBand network.	Apply April PSU to Exalogic prior to Exadata InfiniBand switch upgrade to 2.1.3-4. Review <a href="#">Document 1301247.1</a> for additional details about Exalogic April PSU.  <span style="background-color: #ffffcc; border: 1px solid black; padding: 5px;">Prior to Exalogic April PSU availability, the recommendation was to apply patch 18034691. Details are available in <a href="#">Document 1630396.1</a>. Note that patch 18034691 is not compatible with patch 18175326, which may be applied to address guest vServers connectivity issues (see <a href="#">Document 1615444.1</a>). Both issues are fixed in Exalogic April PSU.[This section is not visible to customers.]</span>	2013-Dec-16

# Before upgrading, apply the most important patches

- In addition, use Patches to consider for 19c : MOS Note: [2781612.2](#)

 **Oracle Database Patches to Consider for 19c (Doc ID 2781612.2)**

Visibility: EXTERNAL (4)

Getting Started Performance GoldenGate Oracle Text Platform Specific HA DNFS Data Pump

Search This Document

When applying Database patches, Oracle recommends that you take a 3-tiered step-by-step approach.

**LEVEL 1: Apply latest quarterly patches:**

- Apply latest quarterly updates using [Master Note for Database Proactive Patch Program \(Doc ID 888.1\)](#)

**LEVEL 2: Apply Critical/Recommended patches:**

- For Exadata environments: [Exadata Critical Issues \(Doc ID 1270094.1\)](#)
- For Database environments:
  - Customers on Linux x86-64 - Apply the latest [Monthly Recommended Patches - MRP \(Doc ID 2898740.1\)](#) for the specific RU
  - For customers on other platforms, apply critical patches using [Oracle Database 19c Important Recommended One-off Patches \(Doc ID 555.1\)](#)

**LEVEL 3: Apply additional patches based on features or focus areas:**

- Use the tabs in this document for quick access to additional feature based patches

## Basic Facts | What's Installed



### What is installed in my Oracle Home?

OPatch

```
$ opatch lsinventory  
$ opatch lspatches
```

DBMS\_QOPATCH

```
SQL> select xmltransform(dbms_qopatch.get_opatch_lsinventory,  
dbms_qopatch.get_opatch_xslt) from dual;
```

[Oracle Database 12.1 : FAQ on Queryable Patch Inventory \(Doc ID 1530108.1\)](#)

### What is installed in my database?

```
SQL> select * from dba_registry_sqlpatch; SQL> select * from  
cdb_registry_sqlpatch;
```

# Exadata Cloud Management Tools



# Exadata Cloud Automation on OCI Console

## Oracle Cloud Web base UI, REST APIs, SDK, CLI, Terraform

- Scale OCPUs
- Create Database Homes and Databases
- Schedule Infrastructure Maintenance
- Update Operating System, Grid Infrastructure, and Databases
- Backup and recovery
- Enable Data Guard

The image shows two overlapping dialog boxes from the Oracle Cloud Console:

- Create Database**:
  - Database name: X8MDB1
  - Database version: 19c
  - PDB name (Optional):
  - Database Home:
    - Select an existing Database Home (radio button)
    - Create a new Database Home (radio button, selected)
  - This DB system has no Database Homes for your selected database version. A new Database Home will be created.
  - Database Home display name: X8MDBHome1
  - Create administrator credentials:
    - Create Database
    - Cancel
- Scale VM Cluster**:
  - Configure the VM cluster
    - Specify OCPU count per virtual machine: 10
    - Requested OCPU count for the Exadata VM cluster: 40
    - Current allocation: 10. Minimum allocation: 0. Available OCPUs (including the current allocation): 50.
    - Current Exadata storage: 150.528 TB
  - Update
  - Cancel

**Create Backup**

Name:

If you previously used RMAN or dbcli to configure backups and then you switch to using the Console or the API for backups, a new backup configuration is created and associated with your database. This means that you can no longer rely on your previously configured unmanaged backups to work.

**Create Backup** **Cancel**

**Enable Data Guard**

**Data Guard association details**

Protection mode: Maximum Performance

Transport type: Read-Only

Asynchronous (Async)

**Select Peer VM Cluster**

Peer region: Read-Only

US East (Ashburn)

# Exadata Cloud Command Line Interface (*dbaascli*)

How to upgrade DBAAS Cloud Tooling using dbaascli (Doc ID 2350471.1)



## Database Commands

- *dbaascli* database create
- *dbaascli* pdb create
- *dbaascli* pdb relocate



## Backup Commands

- *dbaascli* database backup
- *dbaascli* database recover
- *dbaascli* create-dbstorage



## Database Home Patch

- *dbaascli* database upgrade
- *dbaascli* db home patch
- *dbaascli* grid patch
- *dbaascli* update-dbhomedir



[Click Here](#)

# Pre Patch Best Practices





- Upgrade your **Dbaascli** and **Exachk** to the most recent version
- Open a proactive SR **Serv 3** on MOS at least 5 days before the maintenance window
- Generate **Exachk** report and attach to parent SR
- Backup your **Grid Home**, **Oracle Home**, and **Inventory files**
- Backup your entire Database including **Redo Logs**, **Control Files**, **Archive Log Files** and **Data Files**
- If you have a Oracle **Data Guard**, Oracle strongly recommend apply patch on **Data Guard** first
- 2 hours before the maintenance starts, change SR severity level to **Serv 1** and inform support that patch maintenance is about to begin

# *Oracle Home Monthly Patch*



## Time Line | Release update

2021				2022				2023				2024			
	January	April	July	October	January	April	July	October	January	April	July	October	January	April	July
19c	19.10.0	19.11.0	19.12.0	19.13.0	19.14.0	19.15.0	19.16.0	19.17.0	19.18.0	19.19.0	19.20.0	19.21.0	19.22.0	19.23.0	19.24.0
21c		21.3.0	21.4.0	21.5.0	21.6.0	21.7.0	21.8.0	21.9.0	21.10.0	21.11.0	21.12.0	21.13.0	21.14.0	21.15.0	

# Monthly Recommended Patches | Timeline

2022												2023				
	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December	January
19.17.0	19.17.0	MRP1	MRP2	MRP3	MRP4	MRP5	MRP6									
19.18.0				19.18.0	MRP1	MRP2	MRP3	MRP4	MRP5	MRP6						
19.19.0					19.19.0	MRP1	MRP2	MRP3	MRP4	MRP5	MRP6					
19.20.0						19.20.0	MRP1	MRP2	MRP3	MRP4	MRP5	MRP6				
19.21.0							19.21.0	MRP1								



# Monthly Recommended Patches | Step-by-step

2022		2023											
October	November	December	January	February	March	April	May	June	July	August	September	October	November
19.17.0	19.17.0	MRP1											

A red arrow points from the 'MRP1' label in the 2023 row to the third column of the table below.

Bug	Fixed in RU	Fixed in MRP	Description	Patches	NON ROLLING	Added
<a href="#">33896423</a>		DBMRP 19.17.0.0.221115	Flush Out Stale Antilocks and Convert kclcls_2 and kclantilock_17 to Soft Assert	<a href="#">[list-patches]</a>		01-SEP-2022
<a href="#">34333986</a>		DBMRP 19.17.0.0.221115	ORA-600 [KTUSCV1:CV Buf Too Big]/ [Kdbblkcheckerror] Block Corruption With Check Code 6127 After Migrating From Solaris to Linux	<a href="#">[list-patches]</a>		28-JUL-2022
<a href="#">30691454</a>		DBMRP 19.17.0.0.221115	DBHOME patching completely hung with kpdbhashtable_find multiple instance hang	<a href="#">[list-patches]</a>		22-JUL-2022

# Monthly Recommended Patches | Step-by-step

2022

2023

October   November   December   January   February   March   April   May   June   July   August   September   October   November

19.17.0

19.17.0

MRP1

MRP2



Bug	Fixed in RU	Fixed in MRP	Description	Patches	NON ROLLING	Added
<a href="#">34649727</a>			Linux: ORA-800 / Set Priority / DB Performance Merge Patch for 19.17 - 34286265 34318125	<a href="#">[list-patches]</a>		18-OCT-2022
<a href="#">33896423</a>		DBMRP 19.17.0.0.221115	Flush Out Stale Antilocks and Convert kccls_2 and kclantilock_17 to Soft Assert	<a href="#">[list-patches]</a>		01-SEP-2022
<a href="#">34333986</a>		DBMRP 19.17.0.0.221115	ORA-600 [KTUSCV1:CV Buf Too Big]/ [Kdbblkcheckerror] Block Corruption With Check Code 6127 After Migrating From Solaris to Linux	<a href="#">[list-patches]</a>		28-JUL-2022
<a href="#">30691454</a>		DBMRP 19.17.0.0.221115	DBHOME patching completely hung with kdphashable_find multiple instance hang	<a href="#">[list-patches]</a>		22-JUL-2022

# Monthly Recommended Patches | Step-by-step

2022					2023								
October	November	December	January	February	March	April	May	June	July	August	September	October	November
19.17.0	19.17.0	MRP1	MRP2	MRP3									
19.18.0			19.18.0										



# Monthly Recommended Patches | Step-by-step

2022						2023							
October	November	December	January	February	March	April	May	June	July	August	September	October	November
19.17.0	19.17.0	MRP1	MRP2	MRP3	MRP4								
19.18.0			19.18.0	MRP1									



# Monthly Recommended Patches | Step-by-step

2022		2023											
October	November	December	January	February	March	April	May	June	July	August	September	October	November
19.17.0	19.17.0	MRP1	MRP2	MRP3	MRP4	MRP5							
19.18.0			19.18.0	MRP1	MRP2								



# Monthly Recommended Patches | Step-by-step

2022		2023													
		October	November	December	January	February	March	April	May	June	July	August	September	October	November
19.17.0	19.17.0	MRP1	MRP2	MRP3	MRP4	MRP5	MRP6								
19.18.0				19.18.0	MRP1	MRP2	MRP3								
19.19.0						19.19.0									



# Mothly Recommended Patches | Step-by-step

2022		2023													
		October	November	December	January	February	March	April	May	June	July	August	September	October	November
19.17.0	19.17.0	MRP1	MRP2	MRP3	MRP4	MRP5	MRP6								
19.18.0			19.18.0	MRP1	MRP2	MRP3	MRP4								
19.19.0					19.19.0	MRP1									



# Monthly Recommended Patches | Step-by-step

2022		2023													
		October	November	December	January	February	March	April	May	June	July	August	September	October	November
19.17.0	19.17.0	MRP1	MRP2	MRP3	MRP4	MRP5	MRP6								
19.18.0			19.18.0	MRP1	MRP2	MRP3	MRP4	MRP5	MRP6						
19.19.0				19.19.0	MRP1	MRP2	MRP3	MRP4	MRP5	MRP6					
19.20.0					19.20.0	MRP1	MRP2	MRP3	MRP4	MRP5	MRP6				
19.21.0						19.21.0	MRP1								



# Exadata Cloud at Customer - Patching DomU

Understanding how to patch DomU image through Rest Api



## VM Cluster: ExaCC6-CLU3

Update description	State	Component	Type	Version	Last Successful Precheck	Release Date	
Grid Infrastructure Release Update : 19.19.0.0.230427 (Apr 2023)	Available	Grid Infrastructure	Patch	19.19.0.0.0	-	Precheck  Apply Grid Infrastructure Patch  Copy OCID	⋮

### Confirm precheck

Are you sure you want to perform a precheck operation on VM cluster?

**Run Precheck**

[Cancel](#)

# Exadata Cloud Dbaascli tooling



## ★ How to upgrade DBAAS Cloud Tooling using dbaascli (Doc ID 2350471.1)

### In this Document

[Goal](#)

[Solution](#)

[Steps to Upgrade the Cloud Tooling using dbaascli](#)

[References](#)

### APPLIES TO:

Oracle Database Cloud Service - Version N/A to N/A [Release 1.0]

Information in this document applies to any platform.

### GOAL

This document covers the steps to upgrade dbaas cloud tooling using dbaascli

### SOLUTION

Cloud tooling include the fixes for existing issues and new features so it is highly recommended to upgrade the cloud tooling once new version or release is available. Steps given below help to upgrade it to the higher version.

Note: When updating the cloud tooling on database deployments hosting a Data Guard configuration, you must perform the following steps on both nodes; that is, on the one hosting the primary database and on the one hosting the standby database.

#### Steps to Upgrade the Cloud Tooling using dbaascli

1. Connect as the opc user to the compute node. Check [Connecting to a Compute Node Through Secure Shell \(SSH\)](#)
2. Start a root user command shell

```
sudo -s  
#
```

# *Oracle Home* in and Out-of-Place



# Pathing Concepts | In-Place Patching

Oracle Home, 19.18.0



# Pathing Concepts | Out-Of-Place Patching



Oracle Home, 19.18.0



```
SQL> SHUTDOWN IMMEDIATE
```



```
# DATAPATCH
```

New Oracle Home, 19.19.0

# Exadata Patching Oracle Home



## ★ How to Apply Database Quarterly Patch on Exadata Cloud Service and Exadata Cloud at Customer Gen 2 (Doc ID 2701789.1)

### In this Document

[Goal](#)

[Solution](#)

[Prerequisites](#)

[Option 1 - Patching Individual Databases - Out of Place Patching](#)

[Option 2 - Patching a Database Home - Image Based Patching](#)

[Troubleshooting](#)

[References](#)

### APPLIES TO:

Oracle Database Cloud Exadata Service - Version N/A to N/A [Release 1.0]

Information in this document applies to any platform.

### GOAL

Patch an Exadata Cloud Services or Exadata Cloud at Customer Gen 2 Database

### SOLUTION

This document should be used to apply a higher quarterly Release Update to the databases and database homes of either an Exadata Cloud@Customer Gen 2 (ExaC@C) service or Exadata Cloud Service (ExaCS) service.

For Data Guard configurations, the primary and standby database must be patched separately and the standby database patching should be completed before patching the primary.

See Document [1265700.1](#) Oracle Patch Assurance - Data Guard Standby-First Patch Apply for full details on standby first patching.

It is supported to run with the standby database at a higher patch level for up to a month.

# Patchin Oracle Home using OCI Console

Database Home: dbhome\_19c\_demo

Oracle Provided Database Software Images

Custom Database Software Images

Patch Description	State	Version	Release Date	Precheck	⋮
Database Release Update : 19.19.0.0.230427 (Apr 2023)	● Available	19.19.0.0.0	Sun, May 7, 2023, 01:43:59 UTC		

Displaying 1 Database Home patch

Copy OCID

## Confirm precheck

Are you sure you want to perform a precheck operation on the Database Home?

**Run Precheck**

[Cancel](#)

# Patching Oracle Home Using OCI Console

### Precheck DbHome Patch

Work request information

Precheck DbHome Patch

In progress

15% complete

**Operation:** Precheck DbHome Patch

**OCID:** ...qkztaa [Show](#) [Copy](#)

**Accepted:** Mon, Jul 10, 2023, 20:06:12 UTC

**Started:** Mon, Jul 10, 2023, 20:06:34 UTC



**WR**

IN PROGRESS

### Precheck DbHome Patch

Work request information

Precheck DbHome Patch

Succeeded

100% complete

**Operation:** Precheck DbHome Patch

**OCID:** ...qkztaa [Show](#) [Copy](#)

**Compartment:** 

**Accepted:** Mon, Jul 10, 2023, 20:06:12 UTC

**Started:** Mon, Jul 10, 2023, 20:06:34 UTC

**Finished:** Mon, Jul 10, 2023, 20:13:12 UTC



**WR**

SUCCEEDED

# Patching Oracle Home Using OCI Console

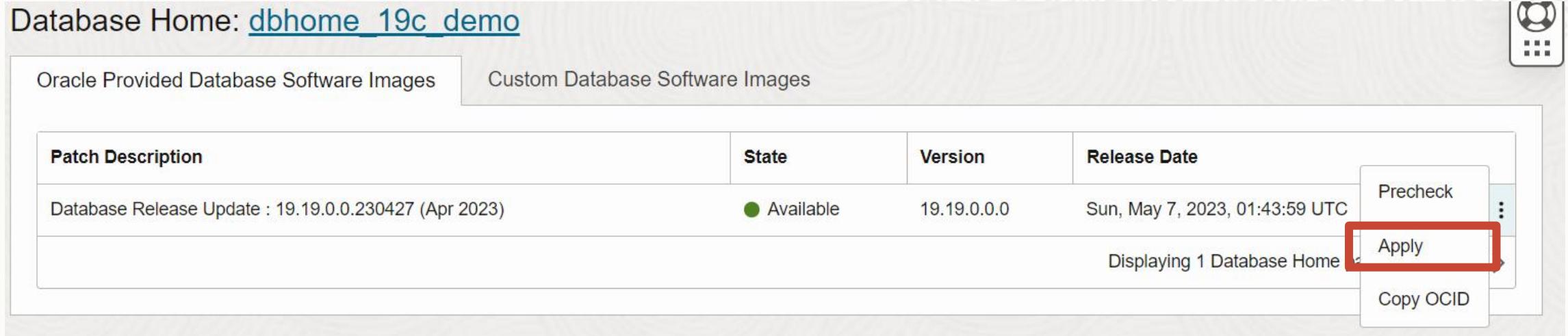
Database Home: dbhome\_19c\_demo

Oracle Provided Database Software Images      Custom Database Software Images

Patch Description	State	Version	Release Date
Database Release Update : 19.19.0.0.230427 (Apr 2023)	● Available	19.19.0.0.0	Sun, May 7, 2023, 01:43:59 UTC

Displaying 1 Database Home

Precheck    ...    Apply    Copy OCID



## Apply Database Home Patch

This operation patches the Database Home on the nodes of the VM cluster, one node at a time.

The instances for following databases may be restarted on the nodes as they get patched:  
Demo19c

Are you sure you want to patch this Database Home?



Last successful precheck was run at Sun, Jul 23, 2023, 16:31:49 UTC.

Apply Patch

[Cancel](#)

# Exadata Patching Grid Home



## Patching Oracle Grid Infrastructure and Oracle Databases Using dbaascli

Learn to use the `dbaascli` utility to perform patching operations for Oracle Grid Infrastructure and Oracle Database on an Exadata Cloud Infrastructure system.

- [Patching Databases using dbaascli](#)

Using `dbaascli`, you can choose to patch a database by patching Oracle home, or by moving the database to an Oracle home with the desired patch level.

- [Patching Oracle Grid Infrastructure](#)

To apply a patch to Oracle Grid Infrastructure, use the `grid patch` command.

- [Listing Available Software Images and Versions for Database and Grid Infrastructure](#)

To produce a list of available supported versions for patching, use the `dbaascli cswlib showImages` command.

- [Performing a Precheck Before Patching Databases and Grid Infrastructure](#)

You can perform a prerequisites-checking operation (also called a "precheck") for the commands in this topic using the applicable precheck flag.

# Pathing Grid Home using Patching DomU

VM Cluster: [REDACTED]						
Update description	State	Component	Type	Version	Last Successful Precheck	Release Date
Grid Infrastructure Release Update : 19.19.0.0.230427 (Apr 2023)	Available	Grid Infrastructure	Patch	19.19.0.0.0	-	<div><p>Precheck</p><p>Apply Grid Infrastructure Patch</p><p>Copy OCID</p></div>

## Confirm precheck

Are you sure you want to perform a precheck operation on VM cluster?

[Run Precheck](#)

[Cancel](#)



# Oracle Home Prechk via OCIU Console

The image displays two screenshots of the Oracle Cloud Infrastructure User (OCIU) console, illustrating the status of a work request for a VM Cluster GI Patch.

**Top Screenshot:** Shows a work request in progress. The status bar indicates "In progress" with a progress bar at 0% complete. The background features a large orange "WR" logo and the text "IN PROGRE".

Work Request Information	Status
Precheck VM Cluster GI Patch	In progress

**Bottom Screenshot:** Shows a work request that has succeeded. The status bar indicates "Succeeded" with a progress bar at 100% complete. The background features a large green "WR" logo and the text "SUCCEEDED".

Work Request Information	Status
Precheck VM Cluster GI Patch	Succeeded

**Details for the succeeded work request:**

- Operation:** Precheck VM Cluster GI Patch
- Accepted:** Sun, Jul 23, 2023, 17:03:58 UTC
- Started:** Sun, Jul 23, 2023, 17:04:15 UTC
- Finished:** Sun, Jul 23, 2023, 17:08:40 UTC
- OCID:** ...2ldqya [Show](#) [Copy](#)
- Compartment:** [Redacted]



# Pathing Grid Home using OCI Console

VM Cluster: [REDACTED]

Update description	State	Component	Type	Version	Last Successful Precheck	Release Date	
Grid Infrastructure Release Update : 19.19.0.0.230427 (Apr 2023)	<span>● Available</span>	Grid Infrastructure	Patch	19.19.0.0.0	Sun, Jul 23, 2023, 17:15:39	Precheck	<span>⋮</span>
Grid Infrastructure Release Update : 19.18.0.0.230117 (Jan 2023)	<span>● Available</span>	Grid Infrastructure	Patch	19.18.0.0.0	-	<span>Apply Grid Infrastructure Patch</span>	<span>⋮</span>

## Apply VM Cluster Patch

During patching, lifecycle operations on the VM cluster and its resources are temporarily unavailable.

Are you sure you want to patch VM cluster [REDACTED] running version 19.10.0.0.0 with version 19.19.0.0.0?



Last successful precheck was run at Sun, Jul 23, 2023, 17:10:49 UTC.

[Apply Patch](#)

[Cancel](#)

# Patching Linux Image



# Updating Exadata Database Server Software using the patchmgr

Doc ID 1553103.1

The screenshot shows the Oracle Support interface for patch management. The top navigation bar includes links for Knowledge, RCA, Customer Exceptions, CMS, Service Requests, Patches & Updates (which is selected), Certifications, Systems, Collector, Settings, and XNS. A search bar and advanced search link are also present.

The main content area displays a patch search result for Patch 21634633. The patch name is "DBSERVER.PATCH.ZIP ORCHESTRATOR PLUS DBNU - ARU PLACEHOLDER". Key details shown include:

- Last Updated: 16-Jun-2023 07:30 (1+ month ago)
- Product: Oracle Exadata Storage Server Software (More...)
- Release: Oracle Exadata Storage Server 23.1.3.0.0
- Platform: Linux x86-64
- Size: 536.4 MB
- Download Access: Software
- Classification: General
- Patch Tag
- Release: Oracle Exadata Storage Server 23.1.3.0.0
- Platform: Linux x86-64
- Language: American English

Action buttons include Read Me, Download, Add to Plan, Analyze with OPatch..., All-time Downloads (366), View Trends, and Discuss this patch in the community.

## Step – 1 Download the most recent *patchmgr* version



## DETAILS

## Current Software Versions for Exadata Cloud Deployments

The versions in the table below represent the latest certified and available VM software for updating Exadata and Grid Infrastructure/Database software on systems already provisioned. Customers may update systems already provisioned to the latest certified version as desired. Certified versions for new provisioning revise less frequently, hence **systems newly provisioned may deploy with an earlier certified release** than what is shown in the table.

Note: Date code fields in version numbers (e.g. 180717) are in YYMMDD format.

Cloud Platform	Latest Certified Exadata Version	Latest Certified GI/DB Version
Exadata Database Service on Dedicated Infrastructure	22.1.11.0.0.230516	19.19.0.0.230418 18.22.0.0.230418 12.2.0.1.230418 12.1.0.2.230418 11.2.0.4.230418
Exadata Database Service on Cloud@Customer <sup>1</sup>	22.1.11.0.0.230516	19.19.0.0.230418 18.22.0.0.230418 12.2.0.1.230418 12.1.0.2.230418 11.2.0.4.230418
Gen 1 Exadata Cloud at Customer <sup>1</sup> (Oracle Exadata Database Cloud Machine)	22.1.11.0.0.230516	19.19.0.0.230418 <sup>2</sup> 18.22.0.0.230418 12.2.0.1.230418 12.1.0.2.230418 11.2.0.4.230418

## Step 2 – Download the Image /iso version you chose for the upgrade



## ★ How to update the Exadata Image (OS) in Exadata Cloud at Customer (Doc ID 2391164.1)

### In this Document

[Goal](#)

[Solution](#)

[Gather Requirements](#)

[Decide and Configure the Driving System](#)

[Prechecking the Environments](#)

[Backing Up the OS](#)

[Patching the OS](#)

[Rolling back the Update](#)

[References](#)

### APPLIES TO:

Oracle Exadata Storage Server Software - Version 12.1.2.3.4 and later

Oracle Database Exadata Cloud Machine - Version N/A and later

Information in this document applies to any platform.

### GOAL

The goal of this document is to guide a user of the Exadata Cloud at Customer in the patching of the Exadata Image (OS)

### SOLUTION

Exadata Cloud:

Updating the Database Compute Nodes

Introduction

Updating the Exadata Database Compute nodes is a process that entails patching the entire OS rather than just updating single packages. Updating the OS does not use a traditional "yum update" command but uses a cli tool called patchmgr. Through patchmgr, you can update the Exadata Database Compute nodes with an ISO image staged locally on the database compute node or on a separate infrastructure instance.

Update Steps

The following steps will go through updating the Exadata Database Compute nodes from 12.x.x.x to 18.1.4.

## Step 3 - Follow the steps described on this MOS note



# Patching DomU Linux Image via OCI Console

VM Cluster Details Overview - Exadata Cloud@Customer - VM Clusters - VM Cluster Details

VM Cluster Information

General Information

Compartments: cletstacio (root)/InstallExaCC

OCID: ... Show Copy

Created: Sun, Dec 13, 2020, 09:16:20 UTC

Time Zone: UTC

License Type: License Included

Status: Available

VM Cluster Resource Allocation

OCpus: 52

Memory (GB): 1024

Local Storage (GB): 800

Exadata Storage (TB): 80

Storage for Exadata Snapshots: Not Enabled

Storage for Local Backups: Not Enabled

Updates

Update History

VM Cluster & Database Patches

Updates

VM Cluster: [scaqr01adm0304-clu7](#)

Update description	State	Component	Type	Version	Last Successful Precheck	Release Date
Virtual Machine OS Update to 21.2.0.0.0.210524	Available	Exadata Image	Update	21.2.0.0.0.210524	-	Precheck

Display Apply Exadata OS Image Update >

Copy OCID

Network

VM Cluster Network:

Version

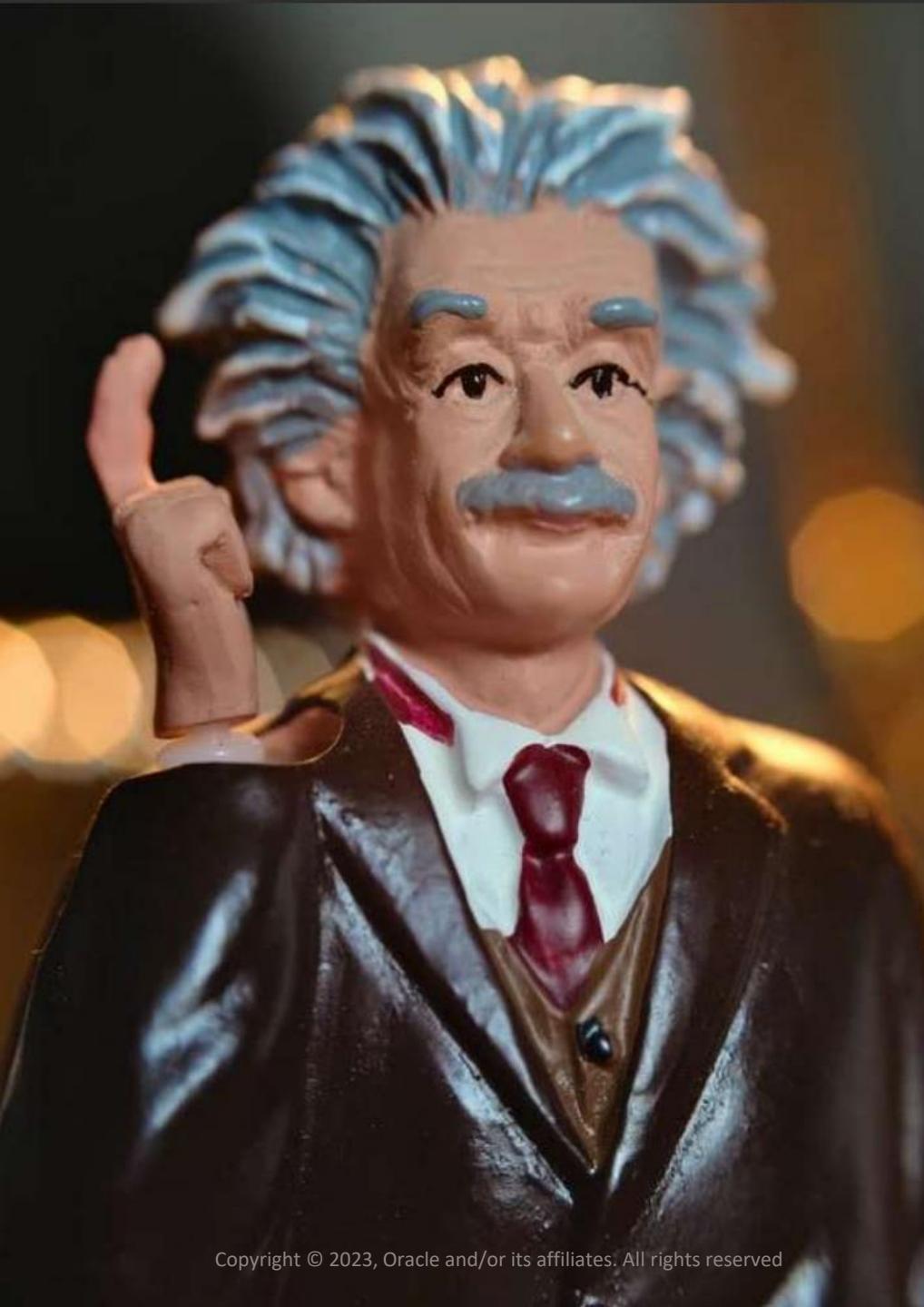
Exadata Image Version: 20.1.2.0.0.200930

Grid Infrastructure Version: 19.9.0.0.0

Updates Available: 5 [View Updates](#)

# Demo Time





## Demo 1 – Pre Check Grid Upgrade

- ***Grid Home*** Version 19.10.0.0
- Check ***Grid Home*** staged patch using ***Dbasscli***
- Prechk Grid Home to 19.18.0.0 using ***Dbaascli***



## Demo 2 – Pre check (Exadata Linux Image)

- Download and unzip the patch manager
- Check Linux Image current version
- Prechk image from node one to node two

## DomU (Oracle Linux Exadata Image) upgrade next steps



Step 1. # ./patchmgr -dbnodes /root/patch/dbs\_group **precheck** -iso\_repo  
/root/patch/p35129585\_221000\_Linux-x86-64.zip -target\_version **22.1.10.0.0.230422** -nomodify\_at\_prereq

Step 2. #./patchmgr -dbnodes /root/patch/dbs\_group -**backup** -iso\_repo  
/root/patch/p35129585\_221000\_Linux-x86-64.zip -target\_version **22.1.10.0.0.230422** -  
**allow\_active\_network\_mounts**

Step 3. #/patchmgr -dbnodes /root/patch/dbs\_group -**upgrade** -iso\_repo  
/root/patch/p35129585\_221000\_Linux-x86-64.zip -target\_version **22.1.10.0.0.230422** -  
**allow\_active\_network\_mounts** -nobackup [-rolling]

You can only start a rollback process under supervision of Oracle Support

Step 4.#/patchmgr -dbnodes /root/patch/dbs\_group -**rollback** -target\_version **21.2.13.0.0.220602**

# Resources





Upgrade your Database - NOW! | [Twitter](#) [LinkedIn](#) [X](#) Mike Dietrich's Blog About Oracle Database Upgrades... Mostly [Q](#)

Blog Slides Hands-On Lab ▾ Events Videos Scripts Links Oracle Documentation Privacy ▾ About

Patching my environments with the January 2023 Bundle Patches

Photo by [karokrasinska](#)

Rolling back or removing all patch SQL changes

[Click Here](#)



## The background of the slide features a scenic view of mountains and forests. In the upper left area, there is a circular profile picture of a man with short brown hair, wearing a green sweater over a blue shirt. The main title "Databases Are Fun" is displayed in large, bold, white font.

dohdatabase.com

## Slides

[Main slide deck](#)



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SCAN ME

The screenshot shows the homepage of the website. At the top, there is a navigation bar with links for Home, About, OCM Preparation, Developed Tools, Upgrade Team, Database changelog, and a language selector for English. Below the navigation bar is a large blue banner with the word "Webinars" in white. To the right of the banner is a small "ABOUT" section featuring a cartoon illustration of a person with blonde hair. The main content area contains a post titled "Generate APEX application checksum in PL/SQL". The post includes a snippet of code and a note that it is also available in Portuguese. Below the post, there is a table of contents for a web seminar.

**DBA - Rodrigo Jorge - Oracle Tips and Guides**  
Blog about Databases, Security and High Availability

Home | About | OCM Preparation | Developed Tools | Upgrade Team | Database changelog | English

ABOUT

Webinars

Generate APEX application checksum in PL/SQL This post is also available in: Português

In Oracle APEX, generating the application checksum is useful to compare if the application you exact copy of the application running somewhere else. To create this checksum, you ...

Web Seminar	Duration	Released	Slides
Episode 1 Release and Patching Strategy	105 minutes	Feb 4, 2021	

[Click Here](#)

# Exadata Cloud Oracle on Architecture Center



The screenshot shows the Oracle Architecture Center homepage with a search bar containing the query "exadata cloud at customer". The results page displays several cards:

- Architecture Center content:** Reference Architectures, Solution Playbooks, Built & Deployed. [Learn more](#)
- Tharseo IT: Migrate Ellucian Banner ERP to Oracle Cloud using FastConnect and Rackware** (Automation Available)
- Reference Architecture**: Deploy a containerized Jenkins CI/CD pipeline by using Terraform on Oracle Cloud Infrastructure. Understand the architecture underlying the successful deployment of a dockerized Jenkin...

[Click here](#)



# Exadata Cloud on Oracle Live Labs



SCAN ME

## Oracle Autonomous Database Dedicated for Fleet Administrators



As fleet administrator, set up your dedicated ADB platform in the OCI and on Exadata Cloud@Customer.

⌚ 7 hrs

5463 Views

## Oracle Exadata Platform Performance Features



Get hands-on with Oracle Exadata, Exadata Database Service on Cloud@Customer, and Exadata Database (..)

⌚ 1 hr, 20 mins

717 Views

## Get Started with Oracle Exadata Database Service on Cloud@Customer



Explore getting started with Oracle Exadata Database Service on Cloud@Customer.

⌚ 1 hr

[Click Here](#)





SCAN ME

# Exadata Cloud at Customer on Up to August, 31th 2023

The screenshot shows a video player interface. At the top, there's a navigation bar with 'MyLearn | Oracle University' and a search bar 'What do you want to learn?'. Below the navigation is a breadcrumb 'Course : Oracle Base Database Services Professional Workshop'. The main area features a video thumbnail with the text 'Mission-critical cloud database capabilities where you need them' and an 'Oracle.com/exadata' link. The video player displays a progress bar at 28:56 / 30:20. To the right of the video, a slide titled 'Exceptional Performance, Availability, and Security' lists three bullet points: 'Superior architecture with unique software optimizations', 'Full-stack redundancy and integrated disaster recovery', and 'Defense in-depth security'. The slide number '1' is visible in the top left corner.

## Database Services Oracle Base Database Services Professional (2023)

Data Architect

[Click Here](#)

The screenshot shows the 'Playlist' section of the Oracle MyLearn platform. At the top, there are tabs for 'Playlist', 'Student Guides', and 'About'. A progress bar indicates the course is 7h 41m long, with a completion rate of 2%. Below the progress bar are buttons for 'SEARCH', 'SKILL CHECKS' (disabled), and 'AUTOPLAY' (enabled). The main area displays a list of video lessons under the heading '2 : Exadata Database Service'. The lessons are:

- Exadata Database Service Overview (30m) - marked with a green dot
- Exadata: Network, Infrastructure, VM Cluster Overview (28m)
- Exadata Infrastructure and VM Cluster Management (28m)
- Database Lifecycle Management (38m) - marked with a 'New' badge
- Management Tools (21m) - marked with a 'New' badge



# OPN Web Page

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In the Community, you will find all the information that we communicate to our ecosystem by email.

- Explore [\*\*Categories\*\*](#): organized by grouping publications on a same topic;
- Access the [\*\*Recent Discussions\*\*](#) tab to check the latest posts published;
- Take part in [\*\*Groups\*\*](#) and interact with Oracle Experts and other partners;
- Recordings.

**Important:** An Oracle SSO account is required to access the Community and other OPN resources. If you don't have this account yet, access [this link](#) or the QR code below.

Access the Community:



Create your SSO account:





Thank You 😊

**Questions / Feedback / Training Suggestions**

[alexandre.af.fagundes@oracle.com](mailto:alexandre.af.fagundes@oracle.com)

[marcel.lamarca@oracle.com](mailto:marcel.lamarca@oracle.com)

**Ask for help 😊**

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