



Exadata Cloud at Customer

Patching Dom0, DomU, Cloud Tooling, Grid and Oracle Home

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Marcel Lamarca

- Father, Caipira , husband, Cooker and Corinthiano!
- Graduated in Business Administration (FMU-SP)
- **Oracle DBA**
 - 18 year dedicated to study and support Oracle Databases.
 - 7 years working with Exadata (On-prem, C@C and Cloud Services) .
 - About to complete 3 years at Oracle helping Customers and partners on the journey to Cloud.
- **Oracle Certified Professional (OCP)**
 - 10g, 11g and 12c.
- **Oracle Certified Specialist (OCE)**
 - 11g Grid/RAC Database Administrator.
 - OCI Foundation 2020 / 2022.
 - Oracle Autonomous Database 2019 Administrator.
 - Oracle Cloud Database Migration and integration 2021.





Alexandre Fagundes

- Father, Son, Husband, **Apps DBA**
- Graduated in Information Systems
- Applications & Database Administrator
- Certified OCI Architect Professional
- Certified Microsoft Azure Administrator
- **Oracle Apps DBA**
- Oracle E-Business Suite & Database Consultancy Services since 2002
- Oracle Latinoamérica Alliances & Channels since 2021





André Sousa

- Janes and Raul's father, Son, Husband 25 years, dba old school
- Graduated in Information Systems
- OCP Oracle 11g
- I live a little away from everything even before the world changes
- I'm working in Oracle for 21 with Oracle Database products adoption in South America, work mainly with ISVs and SIs helping them on different activities such as POCs, Application Validations, Tuning, he participated as advisor in more than 100 Migration and Upgrade projects.



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Agenda

For today and what's coming soon...



Today

- C@C Dom0 and DomU Responsibilities
- C@C Pré patching best practices
- C@C Patching Dom0
- C@C Patching domU
- C@C How to update dbasscli (Tooling)
- C@C Patching Grid / Oracle
- C@C Pathing a one-off patch
- C@C Out Of Place Patching

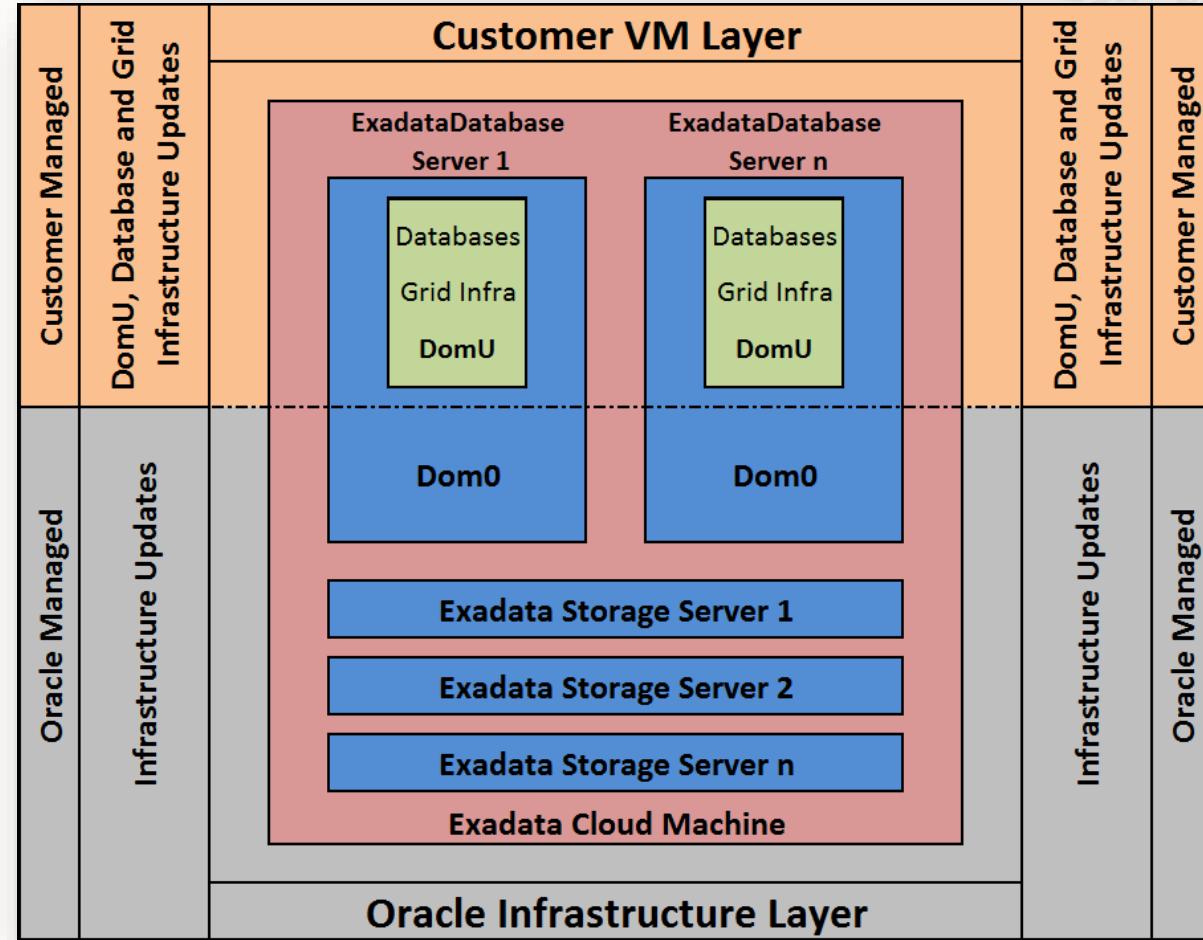
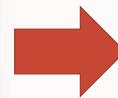
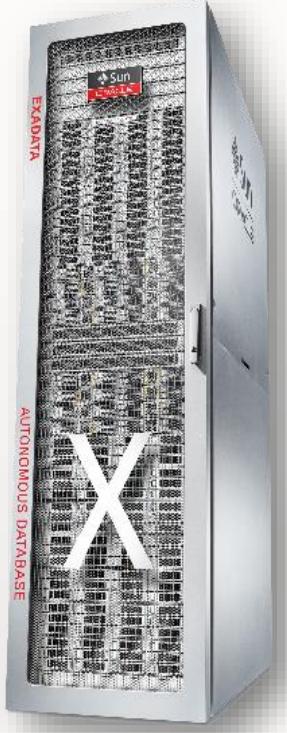


30th Ago

- C@C Backup Database Using rest API
- C@C Backup database using OCI console
- C@C Backup Database To a Object Storage
- Backup Database to a Diskgroup
- Restore Database from diferente Scenarios

Exadata Cloud at Customer - Dom0 and DomU

Remembering roles and responsibilities



Exadata Cloud at Customer - Exachk and proactive MOS SR

Understanding how to use Exachk and proactive SR

CRITICAL	Storage Server Check	System is exposed to Exadata Critical Issue EX51	All Storage Servers	View
PASS	Database Server Check	System is not exposed to Exadata Critical Issue EX50	All Database Servers	View

★ Exadata Critical Issues ([Doc ID 1270094.1](#))

EX51	Storage servers running Exadata version 18.1.10, 18.1.11, or 18.1.12 using IORM to manage flash cache	Bug 29288067 - When I/O Resource Management (IORM) is configured to manage flash cache on storage servers, the cellsrv process may crash with error ORA-600 [FCGroupDesc::decLocalCnt_underflow].	Fixed in Exadata 18.1.13. See Document 2511918.1 for details.
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Late-breaking issues - [MOS Alerts for Hot Topics](#) (See How To MOS 793436.2)

ORACLE

- Exachk is available for download on MOS note ([Doc ID 1070954.1](#))
- Download the most recent exachk version available to Exadata C@C

- How to request Attention on a SR with Oracle Support Services ([Doc ID 199389.1](#)).
- Run exachk at least 10 days before any patch activityOpen a proactive SR and attach Exachk result to Oracle support evaluate

- Even if no issue found, run exachk after patch activity
- Compare both results and let support know in case something changes
- Be sure you have configured scan_listener to avoid unavailability once you decide to apply any patch in rolling mode

Exadata Cloud at Customer

Patching Dom0

Exadata Cloud at Customer - Patching Dom0

Infrastructure Maintenance Contacts

- Maintenance contacts are required for events like patching and HW maintenances;
- Add a primary maintenance contact and optionally secondary contacts.

Manage Exadata Infrastructure Contacts [Help](#)

The accuracy of your information is important to us. Review and update as needed.

Exadata Infrastructure Contacts

Add Contact

Name	Email	Phone	Type
[REDACTED]	[REDACTED]	[REDACTED]	Primary Contact

Displaying 1 Contact

[Close](#)

ORACLE Cloud [Search resources, services, documentation, and marketplace](#) Brazil East (Sao Paulo)

Overview » Oracle Exadata Database Service on Cloud@Customer » Exadata Infrastructure » Infrastructure Details

Exacc236-01

Manage Contacts Scale Infrastructure Storage Edit Maintenance Preferences Deployment Assistant More Actions ▾

Infrastructure Information Tags

General Information

Compartment: algardb (root)/ExaCCAlgar
OCID: ...y3k6ca [Show](#) [Copy](#)
Created: Thu, Jan 27, 2022, 12:52:02 UTC
Time Zone: UTC
Shape: Quarter Rack
Exadata System Model: Exadata Cloud@Customer X9M-2
Lifecycle State: Active

Network

Control Plane Server 1 IP Address: 172.20.51.194
Control Plane Server 2 IP Address: 172.20.51.195
Netmask: 255.255.255.224
Gateway: 172.20.51.193
HTTP Proxy: --
DNS Servers: 10.32.8.172 [Show 2 more](#)
NTP Servers: 10.32.9.230 [Show 1 more](#)
Control Plane Server Offline Report: Disabled [Enable](#)

Exadata Resources

DB Servers: 2

Maintenance

Maintenance Method: Rolling

Exadata Cloud at Customer - Patching Dom0

Using the Console to Configure Oracle-Managed Infrastructure Updates

- Exadata C@C updates are released on a quarterly basis;
- You can set a maintenance window to determine the time your quarterly infrastructure maintenance will begin.;

Maintenance schedule options:

No preference: The system assigns a date and start time for infrastructure maintenance.

Specify a schedule: Choose your preferred month, week, weekday, start time, and lead time for infrastructure maintenance.

The screenshot shows the Oracle Cloud console interface. On the left, there's a sidebar with 'ACTIVE' status. In the center, under 'General Information', it shows 'Compartment: hriscm', 'OCID: exmo2ra...3bc', 'Created: Wed, Feb 16', 'Time Zone: UTC', 'Shape: Half Rack', 'Exadata System Model: Exadata Storage Server', and 'Lifecycle State: Active'. To the right, the main area is titled 'Edit Automatic Maintenance'. It says 'By default, the system assigns a date and time for Exadata Infrastructure maintenance. You can also create a custom maintenance schedule by providing your preference.' There are two radio button options: 'No preference' (selected) and 'Specify a schedule'. Below 'Specify a schedule', it says 'Choose your preferred month, week, weekday, and start time for maintenance.' At the bottom, there are 'Save Changes' and 'Cancel' buttons.

This screenshot shows the same 'Edit Automatic Maintenance' page as the previous one, but with more detailed configuration. Under 'Specify a schedule', the 'Month' section has checkboxes for February, March, April, May, June, July, August, September, October, November, December, and January, all of which are checked. Below that, 'Week of the month' is set to 'Any Week', 'Day of the week' is set to 'Any Day', 'Start hour (UTC)' is set to 'Any Hour', and 'Lead time' is set to '2 weeks in advance'. At the bottom, the 'Save Changes' button is highlighted with a cursor.

Exadata Cloud at Customer - Patching Dom0

Configure Maintenance Method

- For rolling update this option will force the maintenance run to wait for a custom action on each DB server;
- For non-rolling update this option will wait for a custom action before starting maintenance across all DB server;
- Maintenance pause may also be resumed prior to the timeout;
- Custom action timeout (in minutes):
 - Default: 30 minutes
 - Maximum: 120 minutes

Edit Maintenance Preferences

Configure Maintenance Method ⓘ

Rolling
The system updates the servers one at a time with no downtime.

Non-rolling
The system shuts down and updates the servers in parallel. This method minimizes maintenance time but incurs a full system downtime.

Enable custom action before performing maintenance on DB servers ⓘ

ⓘ Enable this option to perform custom actions outside of Oracle's purview before starting maintenance on the DB servers.

Custom action timeout (in minutes) ⓘ
30
Maximum 120 minutes

Maintenance Schedule

By default, the system assigns a date and time for Exadata Infrastructure maintenance. You can also create a custom maintenance schedule by providing your preference.

Configure the automatic maintenance schedule

No preference
The system assigns a date and start time for maintenance.

Specify a schedule
Choose your preferred month, week, weekday, and start time for maintenance.

Maintenance months ⓘ

Quarter 1	Quarter 2	Quarter 3	Quarter 4
<input checked="" type="checkbox"/> February	<input type="checkbox"/> May	<input checked="" type="checkbox"/> August	<input type="checkbox"/> November
<input checked="" type="checkbox"/> March	<input type="checkbox"/> June	<input checked="" type="checkbox"/> September	<input type="checkbox"/> December
<input type="checkbox"/> April	<input type="checkbox"/> July	<input type="checkbox"/> October	<input checked="" type="checkbox"/> January

Week of the month
Week 4

Day of the week
Thursday

Start hour (UTC) ⓘ
1:00 - 1:59 UTC × 2:00 - 2:59 UTC × 3:00 - 3:59 UTC × 5:00 - 5:59 UTC × 6:00 - 6:59 UTC ×

Lead time ⓘ
2 weeks in advance

Exadata Cloud at Customer - Patching DomU

Understanding how to patch DomU image via OCI Console

- You can reschedule the infrastructure maintenance to a date no more than 180 days from the prior infrastructure maintenance;
- You cannot reschedule the maintenance if the current time is within 2 hours of the scheduled maintenance start time;
- Oracle reserves certain dates each quarter for internal maintenance operations, and you cannot schedule your maintenance on these dates;

Edit Maintenance

Oracle manages Exadata Infrastructure maintenance. You can subscribe to granular events to track maintenance progress using the OCI notification service. [Learn more](#)

Configure Maintenance Method [i](#)

Rolling
The system updates the servers one at a time with no downtime.

Non-rolling
The system shuts down and updates the servers in parallel. This method minimizes maintenance time but incurs a full system downtime.

Enable custom action before performing maintenance on DB servers [i](#)

[i](#) Enable this option to perform custom actions outside of Oracle's purview before starting maintenance on the DB servers.

Custom action timeout (in minutes) [i](#)
30
Maximum 120 minutes

Scheduled Start Time
You can reschedule the next maintenance update. If the currently scheduled update has been superseded by a newer update at your chosen date, the newest patch is applied.

Scheduled Start Time

Exadata Cloud at Customer - Patching Dom0

Check Estimated Maintenance Time

- To view estimated maintenance time details for various components, click the View link is displayed in the Total Estimated Maintenance Time field.
- The View link is displayed in the Total Estimated Maintenance Time field only if the Maintenance Method is Rolling.

The screenshot shows the Oracle Cloud Infrastructure Maintenance page for an Exadata Infrastructure named 'scaqak03hr'. The page is titled 'Exadata Infrastructure Maintenance' and includes a sidebar with 'Maintenance' and 'Maintenance History' options. The main content area displays maintenance details for the selected infrastructure:

- Maintenance**: The patch contains ExaCC software update for Q2 2022.
- Status**: Scheduled (green dot)
- Type**: Quarterly
- OCID**: ...ltohqa ([Show](#) [Copy](#))
- Target DB Server Version**: 21.2.6.0.0 ([i](#))
- Target Storage Server Version**: 21.2.6.0.0 ([i](#))
- Maintenance Method**: Rolling
- Custom action timeout**: 0 ([i](#))
- Scheduled Start Time**: Sat, Jan 22, 2022, 16:37:06 UTC
- Total Estimated Maintenance Time**: 13 hours ([i](#)) [View](#)



Exadata Cloud at Customer - Patching Dom0 Gen1

Understanding the differences between Gen1 and Gen2

Exadata Cloud at Customer

Patching DomU

Exadata Cloud at Customer - Patching DomU

Understanding how to patch DomU image via OCI Console

- You can pre check and update DomU patch via console
- After patching you can check Update History.
- If the Exadata infrastructure containing this VM cluster is scheduled for maintenance that conflicts with the patching operation, the patch fails and the system displays a message explaining why. After the infrastructure maintenance is complete, run the patch operation again.

The screenshot shows two pages from the Oracle Cloud OCI Console:

- VM Cluster Details Page:** Shows a green "AVAILABLE" status for the VM cluster. It includes sections for General Information (Compartment: clestacio (root)/InstallExaCC, OCID: ..., 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), and 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). A red box highlights the "Updates Available: 5" link.
- Updates Page:** Shows a table of updates for the VM cluster. One row is highlighted with an orange border:

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

A red box highlights the "Precheck" button in the last column of the table. A red arrow points from the "Updates Available: 5" link on the VM Cluster Details page to this "Precheck" button.

The screenshot shows the "Updates in atpmgmt (root) Compartment" page for the VM cluster "scaqar01adm0304-clu7".

Updates in atpmgmt (root) Compartment

VM Cluster: scaqar01adm0304-clu7

Updates Table:

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

Action Buttons:

- Display Apply Exadata OS Image Update
- Copy OCID

Exadata Cloud at Customer - Patching DomU

Understanding how to patch DomU image through Rest Api

- Updating Oracle Linux image through Rest Api gives you more flexibility to manage your patch window;
- Once you decided to go ahead using black screen, there are two MOS Doc you must to follow :

Exadata Cloud Service Software Versions (Doc ID 2333222.1)

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

- Once you have NFS mount points on VM you must update the image version, it's highly recommended to comment entries in the fstab file before reboot the VM cluster;
- Update Linux image is a customer responsible but if customer decided to rollback for any reason, they will need Oracle support approval and it must to be done at the same proactive parent SR customer opened to follow patch activity

Exadata Cloud at Customer

Updating Dbaascli

Exadata Cloud at Customer - Patching Tooling

Understanding how to keep Dbaascli up to date

- All dbaascli commands must be executed by root user;
- To check current tooling installed and version available follow commands below :

```
# rpm -qa | grep -i dbaastools
```

- In case you need to keep dbaascli update automatically, run this command below :

```
# dbaascli rpmudp
```

```
# dbaascli patch tools list
```

- To update to the latest available cloud tooling release, run the following command :

```
# dbaascli admin updateStack --version LATEST
```

- Dont forget to reset backup configuration after any dbaascli update. You can use this command bellow :

```
# /var/opt/oracle/ocde/assistants/bkup/bkup
```

- If your current version is to old you need to upgrade it manually using official oracle Doc :

<https://docs.oracle.com/en/cloud/paas/database-dbaas-cloud/csdbi/problems-administering-deployments.html#GUID-14724B31-FE0B-4D8C-BE36-CEE81FC84A5B>

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

Exadata Cloud at Customer

How to parch an one-off patch

Exadata Cloud at Customer - How to Apply an One-off patch

Understanding when it's needed and how to apply in case Oracle support request

- Download the most recent Opatch from MOS using MOS ([Doc ID 2350471.1](#))
- Backup Grid and Oracle Home and inventory using MOS ([Doc ID 565017.1](#))
- Check the READ ME file before start Patching
- Execute previous compatibility check before one-off patching and once find issues make Oracle support knows on Proactive Parent SR . Like the command bellow:

```
# opatch prereq CheckConflictAgainstOHWithDetail -ph ./
```

- Check if there is any invalid object. Once the environment has, you must to take note to compare after patch activity
- Apply the patch through Opatch
- Check if there is any invalid object pos patching and make Oracle support knowns in case something changes
- If you need to rollback and Oracle support allow you to rollback, iy can do it using the command bellow

```
# opatch rollback -id 253xxxxx
```

Exadata Cloud at Customer

Pathing Grid and Oracle Home

Exadata Cloud at Customer - Pathing Oracle and Grid Home

Understanding how to patch Oracle Home and Grid home in out of place using OCI Console

You can update the version of a VM cluster database by moving it to a Database Home that is running the version of Oracle Database you are interested in.

- Click the VM cluster where the database you want to move is located;
- Under Resources, click Database Homes;
- Click the Database Home you are interested in;
- Click the database you are interested in;
- Click Move Database;
- Select the target Database Home;
- Click Move Database;

The screenshot shows two main pages from the OCI Console:

Database Homes Page: This page lists four database homes. The columns are: Display name, State, Database version, Number of Databases, and Created. The entries are:

Display name	State	Database version	Number of Databases	Created
texasdbhome	Available	19.16.0.0.0	1	Wed, Mar 9, 2022, 12:55:04 UTC
dbhome202201071329	Available	19.16.0.0.0	13	Fri, Jan 7, 2022, 16:31:24 UTC
OraHome103	Available	19.11.0.0.0	0	Sat, Aug 7, 2021, 21:54:00 UTC
Patched-OH	Available	19.16.0.0.0	1	Wed, Jun 30, 2021, 04:36:22 UTC

Database Details Page: This page shows details for a database named 'cdbcc01'. The main area has a large 'DB' icon and the word 'AVAILABLE'. Below it are tabs for 'Database Information' and 'Tags'. The 'Database Information' tab displays the following details:

General Information	Database version
Database name: cdbcc01	Oracle Grid Infrastructure version: 19.16.0.0.0
Workload type: Transaction Processing	Database Home: dbhome202201071329
Compartment: oscnas001 (root)/ExaCC/ExaCC6/Exacc6vm1	Database version: 19.16.0.0.0
OCID: ...plreq Show Copy	Last Updated on: Fri, Aug 12, 2022, 00:07:45 UTC
Created: Fri, Aug 19, 2022, 00:00:00 UTC	Data Guard (i)
Database unique name: cdbcc01	

Exadata Cloud at Customer - Patching Oracle and Grid Home

Patch Oracle Home and Grid home in out of place Using Rest Api – Step 1

```
[root@hostname1 ~]# dbaascli cswlib showImages
...
30.IMAGE_TAG=19.11.0.0.0
  VERSION=19.11.0.0.0
  DESCRIPTION=19c APR 2021 DB Image
  IMAGE_ALIASES=19000-191100,19000-APR2021
31.IMAGE_TAG=19.11.0.0.0-NC
  VERSION=19.11.0.0.0
  DESCRIPTION=19c APR 2021 Non CDB Image
  IMAGE_ALIASES=19000-NC191100,19000-NCAPR2021,NC19.11.0.0.0-NC
...
GI:
8.IMAGE_TAG=19.11.0.0.0
  VERSION=19.11.0.0.0
  DESCRIPTION=19c APR 2021 GI Image
  IMAGE_ALIASES=
```

Exadata Cloud at Customer - Pathing Oracle and Grid Home

Patch Oracle Home and Grid home in out of place Using Rest Api – Step 2

```
[root@hostname1 ~]# dbaascli dbhome create --version 19000
INFO: OSS details are not provided, Restoring from local acfs image
Please confirm yes/no: yes
...
Completed Plugin_cleanup job
----- START OF PLUGIN RESULT -----
{"ORACLE_HOME_NAME": "OraHome4", "ORACLE_HOME": "/u02/app/oracle/product/19.0.0.0/dbhome_12"}
----- END OF PLUGIN RESULT -----
```

Exadata Cloud at Customer - Patching Oracle and Grid Home

Patch Oracle Home and Grid home in out of place Using Rest Api – Step 3

```
[root@hostname1 ~]# dbaascli dbhome patch --oracleHome  
/u02/app/oracle/product/19.0.0.0/dbhome_12 --targetVersion 19.11.0.0.0 --executePrereqs  
Executing command dbhome patch --oracleHome /u02/app/oracle/product/19.0.0.0/dbhome_12 --  
targetVersion 19.11.0.0.0 --executePrereqs  
-----  
Setting up parameters...  
Patch Parameters setup successful.  
-----  
Validating Inputs.  
Successfully Validated Inputs.  
-----  
...  
Running check_patch_conflict job  
[WARNING] [DBAAS-60051] Conflicts were detected while validating the patch.  
CAUSE: Refer to log '/var/opt/oracle/log/dbHomePatch/patchAnalyzer_2021-07-10_11-33-11-AM.out'  
on node 'hostname1'.  
Completed check_patch_conflict job  
-----  
Running remove_unzip_loc job  
Completed remove_unzip_loc job  
DBHome Patching Prereqs Execution Successful.
```



Exadata Cloud at Customer - Patching Oracle and Grid Home

Patch Oracle Home and Grid home in out of place Using Rest Api – Step 4

```
[root@hostname1 ~]# dbhome patch --oracleHome /u02/app/oracle/product/19.0.0.0/dbhome_12 --
targetVersion 19.11.0.0.0 --skipDatapatch
...
DBAAS CLI version 21.2.1.2.0
Executing command dbhome patch --oracleHome /u02/app/oracle/product/19.0.0.0/dbhome_12 --
targetVersion 19.11.0.0.0
-----
Setting up parameters...
Patch Parameters setup successful.
-----
Validating Inputs.
Successfully Validated Inputs.
-----
...
-----
Running release_lock job
Completed release_lock job
Running backup_old_home job
Completed backup_old_home job
-----
```

Exadata Cloud at Customer - Pathing Oracle and Grid Home

Patch Oracle Home and Grid home in out of place Using Rest Api – Step 5

```
[oracle@hostname1 OPatch]$ pwd  
/u02/app/oracle/product/19.0.0.0/dbhome_12/OPatch  
  
[oracle@hostname1 OPatch]$ ./opatch lspatches  
30310195;DBSAT REPORTED DISABLED CONSTRAINTS FOR SHARDING STS_CHUNKS ON  
GSMADMIN_INTERNAL.SHARD_TS  
29780459;INCREASE _LM_RES_HASH_BUCKET AND BACK OUT CHANGES FROM THE BUG 29416368 FIX  
32327208;DSTV36 UPDATE - TZDATA2020E - NEED OJVM FIX  
32327201;RDBMS - DSTV36 UPDATE - TZDATA2020E  
31335037;RDBMS - DSTV35 UPDATE - TZDATA2020A  
30432118;MERGE REQUEST ON TOP OF 19.0.0.0.0 FOR BUGS 28852325 29997937  
31732095;UPDATE PERL IN 19C DATABASE ORACLE HOME TO V5.32  
32490416;JDK BUNDLE PATCH 19.0.0.0.210420  
32399816;OJVM RELEASE UPDATE: 19.11.0.0.210420 (32399816)  
32579761;OCW RELEASE UPDATE 19.11.0.0.0 (32579761)  
32545013;Database Release Update : 19.11.0.0.210420 (32545013)  
OPatch succeeded.
```

Exadata Cloud at Customer - Pathing Oracle and Grid Home

Patch Oracle Home and Grid home in out of place Using Rest Api – Step 6

```
[root@hostname1 ~]# dbaascli database move --dbname testdb01 --ohome
/u02/app/oracle/product/19.0.0.0/dbhome_12
DBAAS CLI version 21.2.1.2.0
Executing command database move --ohome /u02/app/oracle/product/19.0.0.0/dbhome_12
INFO : Source version is 19.11.0.0.0
INFO : Target version is 19.11.0.0.0
INFO : Review log file => /var/opt/oracle/log/testdb01/dbmigrate/dbmigrate_2021-10-
07_17:14:34.868404143693.log
INFO : Review log file for this node -
/var/opt/oracle/log/testdb01/dbmigrate_local/dbmigrate_local.log
INFO : Executing on node: hostname1
INFO : cmd: /var/opt/oracle/ocde/assistants/dbda/dbmigrate.pl -dbname testdb01 -ohome
/u02/app/oracle/product/19.0.0.0/dbhome_12 -prereq -local
INFO : dbmove precheck completed on node: hostname1
/u02/app/oracle/product/19.0.0.0/dbhome_12 -local
INFO : dbmove completed on node: hostname2
INFO : Checking testdb01 is up on hostname2...
INFO : dbmove completed successfully on all the nodes
```

Exadata Cloud at Customer - Pathing Oracle and Grid Home

Patch Oracle Home and Grid home in out of place Using Rest Api – Step 6

```
[oracle@hostname1 OPatch]$ $ORACLE_HOME/OPatch/datapatch -verbose
SQL Patching tool version 19.11.0.0.0 Production on Wed Apr 21 14:40:26 2021
Copyright (c) 2012, 2021, Oracle. All rights reserved.
Log file for this invocation:
/u01/app/oracle/cfgtoollogs/sqlpatch/sqlpatch_2302_2021_04_21_14_40_26/sqlpatch_invocation.log
Connecting to database...OK
Gathering database info...done
Note: Datapatch will only apply or rollback SQL fixes for PDBs
      that are in an open state, no patches will be applied to closed PDBs.
      Please refer to Note: Datapatch: Database 12c Post Patch SQL Automation
      (Doc ID 1585822.1)
Bootstrapping registry and package to current versions...done
Determining current state...done
Current state of interim SQL patches:
  No interim patches found
Current state of release update SQL patches:
  Binary registry:
    19.11.0.0.0 Release_Update 210413004009: Installed
  PDB CDB$ROOT:
/u01/app/oracle/cfgtoollogs/sqlpatch/32545013/24175065/32545013_apply_CDB2_PDBSEED_2021Apr21_14_
42_22.log (no errors)
Patch 32545013 apply (pdb PDB1): SUCCESS
  logfile:
/u01/app/oracle/cfgtoollogs/sqlpatch/32545013/24175065/32545013_apply_CDB2_PDB1_2021Apr21_14_42_
22.log (no errors)
SQL Patching tool complete on Wed Apr 21 14:43:47 2021
```



Exadata Cloud at Customer - MOS usefull patch doc's

Understanding when it's needed and how to apply in case Oracle support request

- Patch Set Updates for Oracle Products (**Doc ID 854428.1**)
- Primary Note for Database Proactive Patch Program (**Doc ID 888.1**)
- Updating Exadata Database Server Software using the DBNodeUpdate Utility and patchmgr (**Doc ID 1553103.1**)
- Exadata System Software Certification (**Doc ID 2075007.1**)
- Exadata Cloud Compute Node Backup and Restore Operations (**Doc ID 2809393.1**)
- How to boot Exadata database server with diagnostic ISO image (**Doc ID 1947114.1**)
- OPatch Error - Inventory load failed... OPatch cannot load inventory for the given Oracle Home (**Doc ID 2075765.1**)
- Steps to shut down or reboot an Exadata storage cell without affecting ASM (**Doc ID 1188080.1**)
- **Gen 1 - Patching Exadata Cloud at Customer:** <https://docs.oracle.com/en/cloud/cloud-at-customer/exadata-cloud-at-customer/exacc/patch.html>
- **Gen 1 - Rolling Back a Patch or Failed Patch:** <https://docs.oracle.com/en/cloud/cloud-at-customer/exadata-cloud-at-customer/exacc/roll-back-patch.html#GUID-0D1B9B1E-62E4-4A66-8D5D-6D1AC2B69A3F>
- **Atualização do cloud tooling sem utilizar dbaascli (necessário em versões antigas):**
<https://docs.oracle.com/en/cloud/paas/database-dbaas-cloud/csdbi/problems-administering-deployments.html#GUID-14724B31-FE0B-4D8C-BE36-CEE81FC84A5B>

Exadata Cloud at Customer - Patching

Things you must to avoid during any patching window

- Apply Grid and Oracle home Bundle patch using an old Dbaascli version;
- Run any patch job with no nohup mode
- Go to the Maintenance window without testing scan_listerer;
- Apply any Bundle patch using on-premises tools like Opatch;
- Don't open a proactive SR and share Oracle support and steps;
- Don't have a tested backup;



Thank You 😊

Questions / Feedback / Training Suggestions

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Ask for help 😊

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