ORACLE

AutoUpgrade

Now Also For Patching

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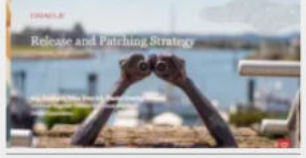
NEW Episode 1

Release and Patching Strategy

105 minutes – Feb 4, 2021



NEW Episode 2

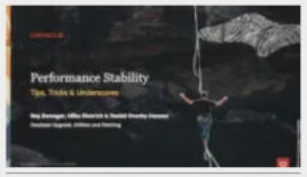
AutoUpgrade to Oracle Database 19c

115 minutes – Feb 20, 2021

NEW Episode 3

Performance Stability, Tips and Tricks and Underscores

120 minutes – Mar 4, 2021



NEW Episode 4

Migration to Oracle Multitenant

120 minutes – Mar 16. 2021

NEW Seminar 5

Migration Strategies – Insights, Tips and Secrets

120 minutes – Mar 25, 2021

NEW Seminar 6

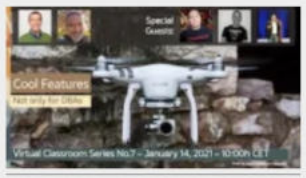
Move to the Cloud – Not only for techies

115 minutes – Apr 8, 2021

NEW Episode 7

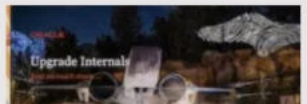
Cool Features – Not only for DBAs

110 minutes – Jan 14, 2021



NEW Episode 8

Database Upgrade Internals – and so much more



Recorded Web Seminars

https://MikeDietrichDE.com/videos/

More than 30 hours of technical content – on-demand, anytime, anywhere

ORACLE

CloudWorld

October 17-20 Las Vegas

#OCW22

oracle.com/cloudworld

Always use the latest version of AutoUpgrade

Download from My Oracle Support (2485457.1)

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```
$ java -jar autoupgrade.jar -version

build.version 22.4.220712
build.date 2022/07/12 11:27:00 -0400
build.hash 161fde38
build.hash_date 2022/07/12 06:09:51 -0400
build.supported_target_versions 12.2,18,19,21
build.type production
```


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We made upgrading easy.
Now we make patching just as easy.

AutoUpgrade functionality extended to patching

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Patching

1

Install Oracle Home including Release Update and additional patches (MOS Doc ID 555.1)

2

Create a simple configuration file

3

Start AutoUpgrade in deploy mode

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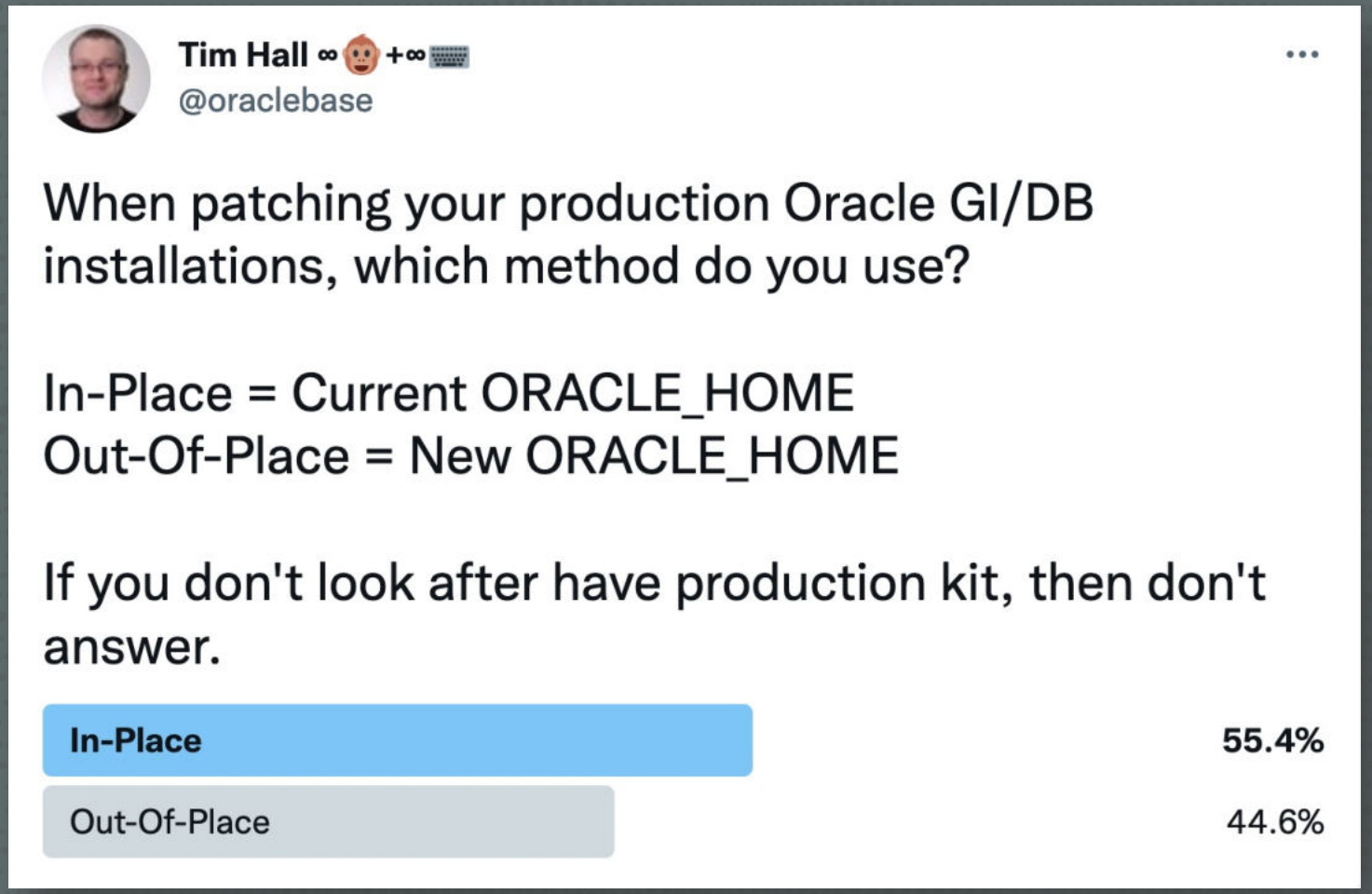

Twitter

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Always patch out-of-place

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```
$ cat DB19.cfg

patch1.source_home=/u01/app/oracle/product/19.0.0.0/dbhome_19_15_0
patch1.target_home=/u01/app/oracle/product/19.0.0.0/dbhome_19_16_0
patch1.sid=DB19


$ java -jar autoupgrade.jar -config DB19.cfg -mode deploy
```


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Patching

USE

Familiar interface

Console

Logging

ANALYZE

Prechecks

Summary report

PROTECT

Resumable

Restoration

Restore point

Fallback

AUTOMATE

`srvctl`

`/etc/oratab`

Files

Datapatch

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Patching

Encryption

Hot clone

Refreshable clone

RAC

Proactive fixups

Distributed upgrade

...

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Patching

What's missing

Windows

RAC rolling

Data Guard standby-first

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Patching

AutoUpgrade

Automate your patching process and benefit from the familiar AutoUpgrade

Fleet Patching and Provisioning

Go fleet scale with FPP and benefit from additional functionality like deployment of Oracle Home

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DEMO

Patching from 19.14.0 to 19.16.0

Watch on YouTube

Distributed upgrade uses all nodes resulting in faster patching of CDBs

Applies to RAC and multitenant architecture only

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Distributed Patching

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Distributed Patching

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Distributed Patching

To enable distributed patching

```
$ cat RACCDB.cfg

upg1.source_home=/u01/app/oracle/product/19/dbhome_19_15
upg1.target_home=/u01/app/oracle/product/19/dbhome_19_16
upg1.sid=RACCDB
upg1.tune_setting=distributed_upgrade=true


$ java -jar autoupgrade.jar -config RACCDB.cfg -mode deploy
```


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By default,
AutoUpgrade uses two nodes

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Distributed Upgrade

To enable more nodes

```
$ cat RACDB.cfg

global.autoupg_log_dir=/u01/app/oracle/cfgtoollogs/autoupgrade
upg1.log_dir=/u01/app/oracle/cfgtoollogs/autoupgrade/RACDB
upg1.source_home=/u01/app/oracle/product/12.2.0.1
upg1.target_home=/u01/app/oracle/product/19
upg1.sid=RACDB
upg1.tune_setting=distributed_upgrade=true,active_nodes_limit=n


$ java -jar autoupgrade.jar -config RACDB.cfg -mode deploy
```


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Some PDBs are more important

Control the order of patching

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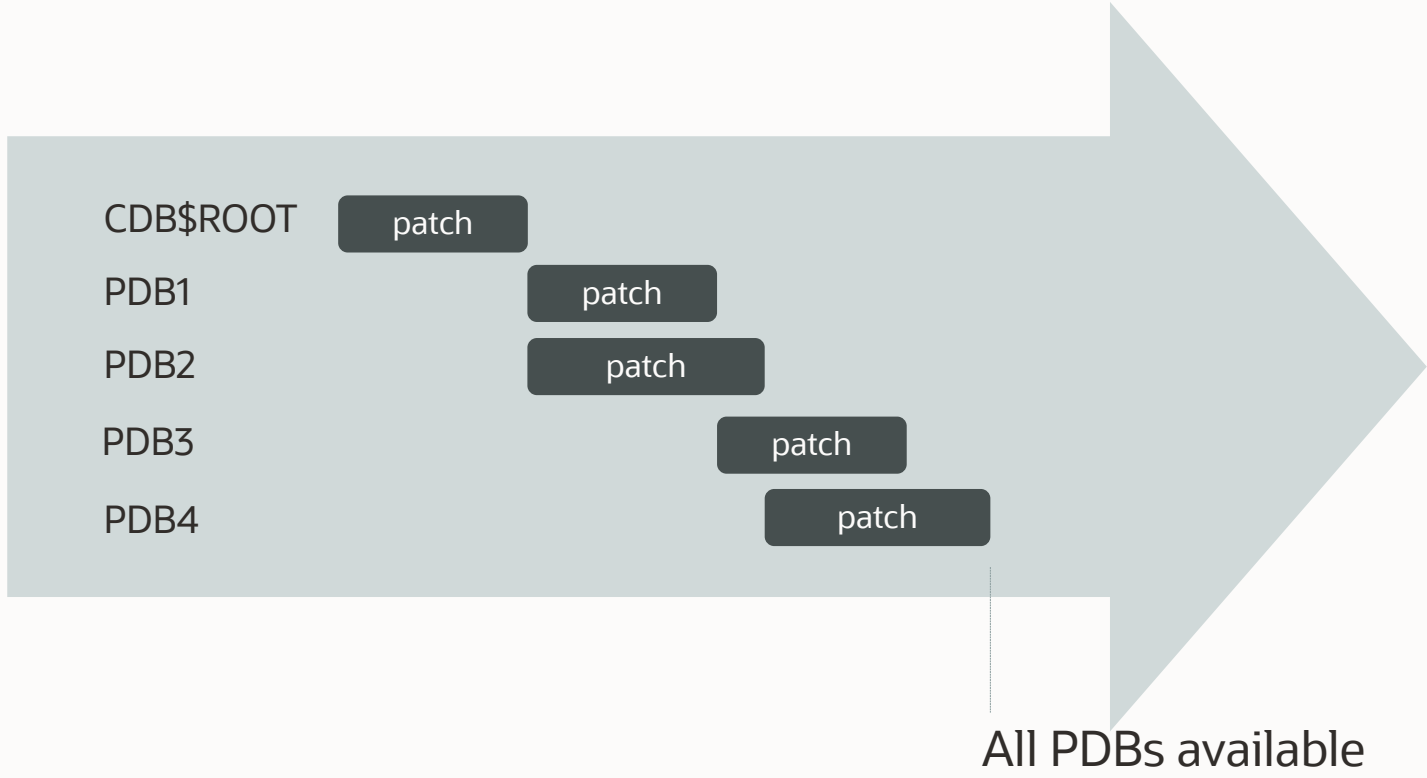
PDB Availability

DEFAULT

```
make_pdbs_available=false
```



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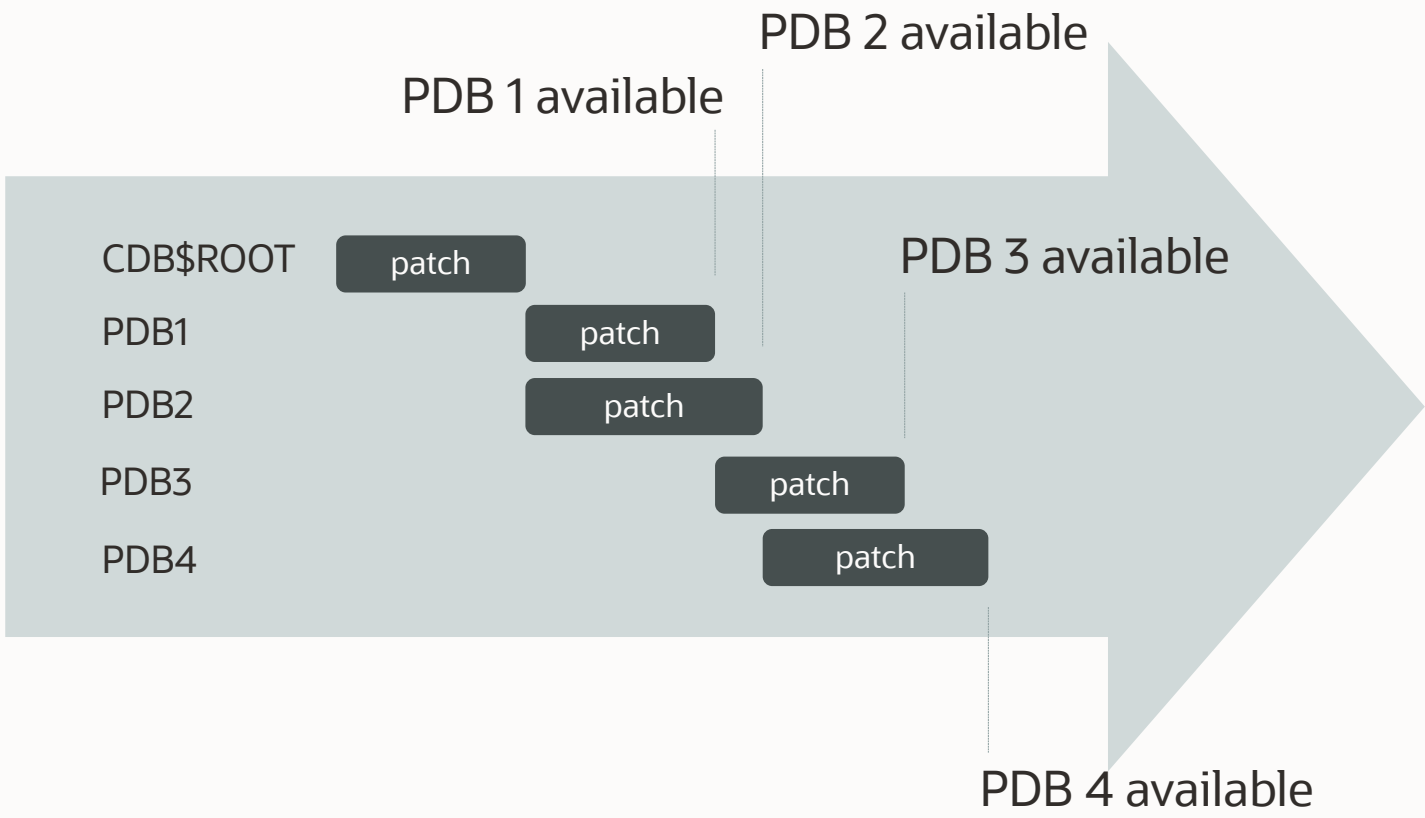
PDB Availability

IMMEDIATELY AVAILABLE

`make_pdbs_available=true`



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```
alter pluggable database SALESPROD priority 1;

alter pluggable database SALESDEV priority 2;

alter pluggable database SALESUAT priority 2;

alter pluggable database SALESTEST priority 3;
```


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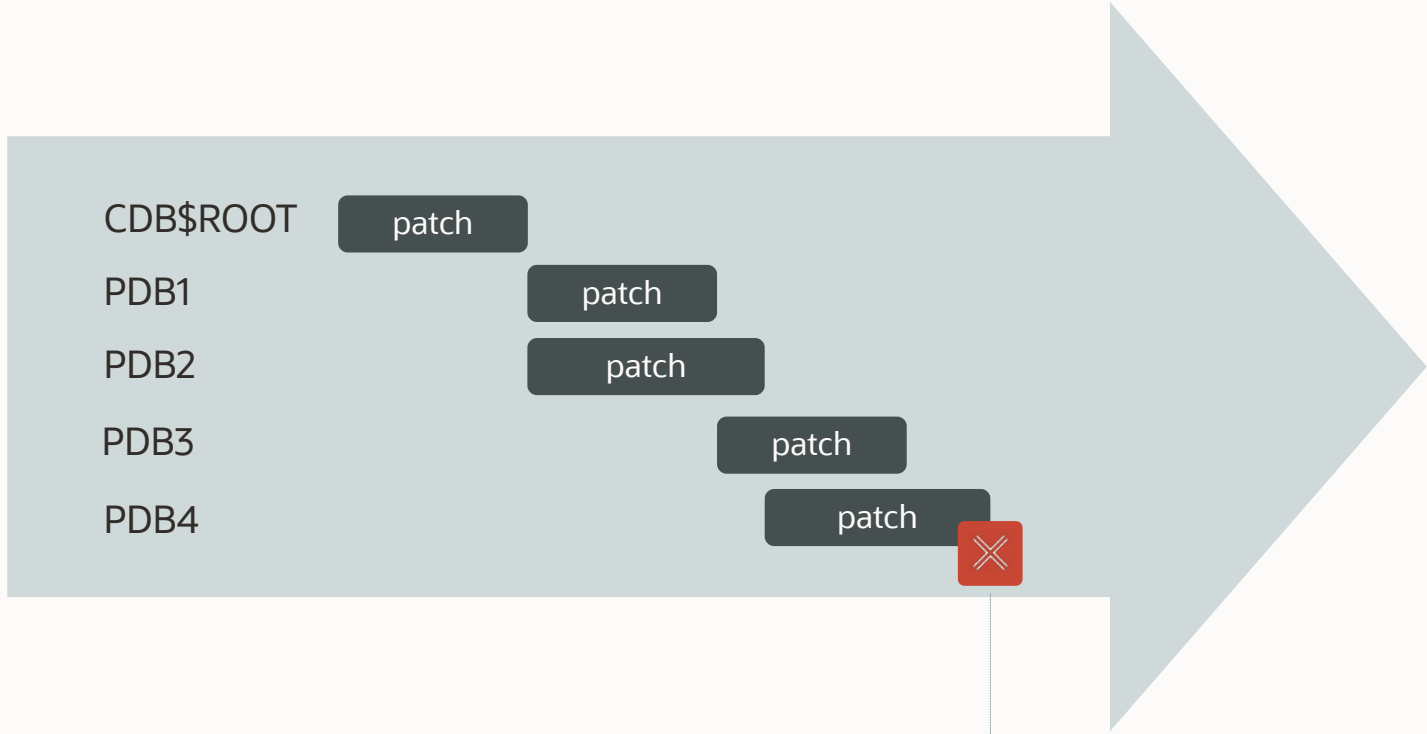
PDB Availability

IMMEDIATELY AVAILABLE

`make_pdbs_available=true`



PDB 4 crash ...

Flashback entire CDB?

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Patching news

Upcoming changes

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Timeline | 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	

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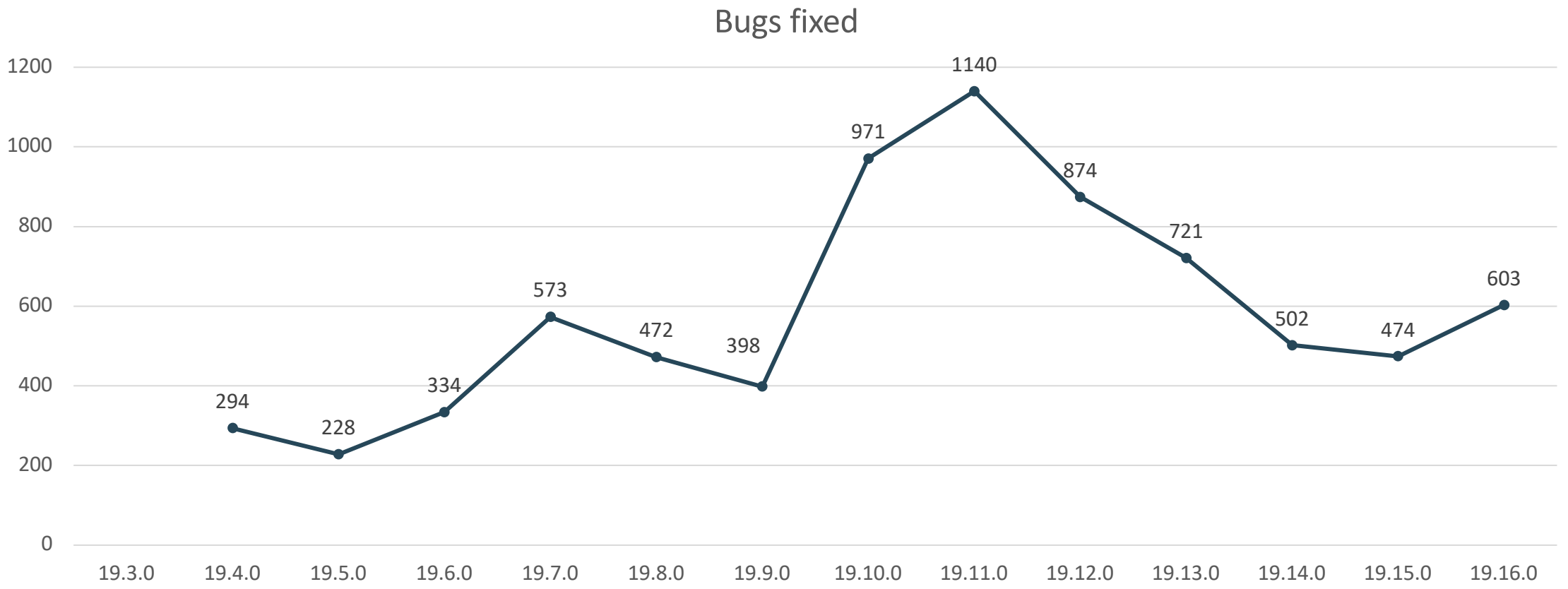
Release Update Contents



Database 19 Release Updates and Revisions Bugs Fixed Lists (Doc ID 2523220.1)

Release Update

Recommended MOS notes

- Assistant: Download Reference for Oracle Database/GI Update, Revision, PSU, SPU(CPU), Bundle Patches, Patchsets and Base Releases (Doc ID 2118136.2)

- Oracle Database 19c Important Recommended One-off Patches (Doc ID 555.1)

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Apply latest Release Update including Monthly Recommended Patches

- Monthly Recommended Patches (MRP)

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Monthly Recommended Patches

For each Release Update, we will

- Provide one merge patch with all patches from MOS note 555.1
- Ship six MRPs
- Start with 19.17.0

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Timeline | Monthly Recommended Patches

	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
19.21.0													19.21.0	MRP1

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Patching details

Insights into datapatch

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```
SQL> select action_time, action, status, description from dba_registry_sqlpatch order by 1;

ACTION_TIME                          ACTION      STATUS     DESCRIPTION
____________________________________ ___________ __________ ____________________________________________________________
19-JAN-22 11.18.57.849200000 PM      APPLY       SUCCESS    Database Release Update : 19.14.0.0.220118 (33515361)
19-JAN-22 11.18.57.854738000 PM      APPLY       SUCCESS    OJVM RELEASE UPDATE: 19.14.0.0.220118 (33561310)
30-SEP-22 02.45.32.192781000 PM      ROLLBACK    SUCCESS    OJVM RELEASE UPDATE: 19.14.0.0.220118 (33561310)
30-SEP-22 02.45.34.057111000 PM      APPLY       SUCCESS    Database Release Update : 19.16.0.0.220719 (34133642)
30-SEP-22 02.45.34.069656000 PM      APPLY       SUCCESS    OJVM RELEASE UPDATE: 19.16.0.0.220719 (34086870)
```


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Datapatch | Patch Apply Sequence

`datapatch`

1 Java patches

2 Bundle patches

3 One-off patches

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Datapatch | Patch Rollback and Apply Queue

Binary Registry after `opatch`:

- Patch 444 – Java Patch
- Patch 555 – Bundle Patch
- Patch 666 – One-off Patch

SQL Registry before `datapatch`:

- Patch 111 – Java Patch
- Patch 222 – Bundle Patch
- Patch 333 – One-off Patch

```
$ ./datapatch
```

datapatch queue

Rollback:

Apply:

Rollback:

Cumulative: Patch 222 to 555 – Bundle Patch

Apply:

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Datapatch | Rollback Script

Apply/rollback scripts:

```
$ORACLE_HOME/sqlpatch/.../nnn_apply.sql
$ORACLE_HOME/sqlpatch/.../nnn_rollback.sql
```

Rollback scripts (zipped as BLOB):

```
SELECT  PATCH_DIRECTORY
FROM    REGISTRY$SQLPATCH
```


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