



ORACLE

# Patching is for everyone - and can be very simple

AOUG, June 2025

Oracle

**DBAs**

run the world





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## DANIEL OVERBY HANSEN

Distinguished Product Manager  
Database Upgrade, Migrations & Patching



dohdatabase



@dohdatabase.com



<https://dohdatabase.com>

## Web Seminar

### Episode 16

(replaces Episode 1 from Feb 2021)

Oracle Database Release and Patching Strategy for 19c and 23c

115 minutes – May 10, 2023

## Slides



### Episode 17

From SR to Patch – Insights into the Oracle Database Development process

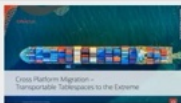
55 minutes – June 22, 2023



### \*NEW\* Episode 18

Cross Platform Migration – Transportable Tablespaces to the Extreme

145 min – February 22, 2024



### Episode 2

AutoUpgrade to Oracle Database 19c

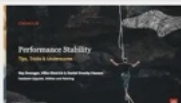
115 minutes – Feb 20, 2021



### Episode 3

Performance Stability, Tips and Tricks and Underscores

120 minutes – Mar 4, 2021



### Episode 4

Migration to Oracle Multitenant



# Recorded Web Seminars

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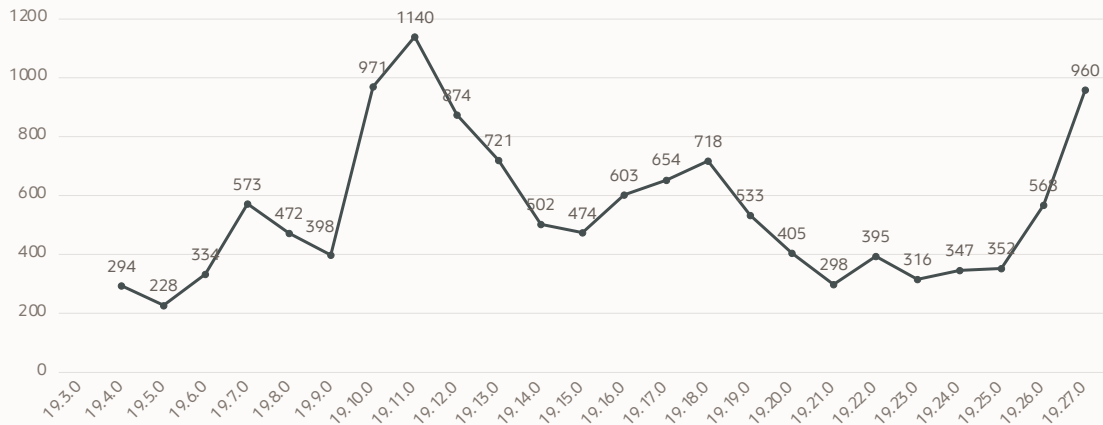


# Patching

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How often do you patch your Oracle Database?

# Release Update Contents



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



If you don't apply a recent Release Update, you will miss **thousands** of fixes

- More than 13k fixes with 19.27.0
- Almost 700 security fixes



# Just as easy as patching your smart phone

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AutoUpgrade's mission for patching Oracle Database

# AutoUpgrade and Patching



## Download

- Find the right patch numbers
- For the right platform
- Get latest OPatch



## Install

- Install brand-new Oracle home
- Update OPatch
- Apply all patches



## Patch

- Datapatch Sanity Check
- Move instances and files
- Datapatch
- Recompilation
- Post-tasks

```
$ cat just_patch.cfg
```

```
patch1.source_home=/u01/app/oracle/product/19/dbhome_19_26_0  
patch1.target_home=/u01/app/oracle/product/19/dbhome_19_27_0  
patch1.sid=DB19
```

# AutoUpgrade and Patching



## Download

- Find the right patch numbers
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## Install

- Install brand-new Oracle home
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## Patch

- Datapatch Sanity Check
- Move instances and files
- Datapatch
- Recompilation
- Post-tasks

```
$ cat do_it_all.cfg
```

```
global.keystore=/home/oracle/autoupgrade-patching/keystore  
patch1.source_home=/u01/app/oracle/product/19/dbhome_19_26_0  
patch1.target_home=/u01/app/oracle/product/19/dbhome_19_27_0  
patch1.sid=DB19  
patch1.folder=/home/oracle/autoupgrade-patching/patch  
patch1.patch=RU,OPATCH,OJVM,DPBP
```

```
$ cat do_it_all.cfg
```

```
global.keystore=/home/oracle/autoupgrade-patching/keystore  
patch1.source_home=/u01/app/oracle/product/19/dbhome_19_26_0  
patch1.target_home=/u01/app/oracle/product/19/dbhome_19_27_0  
patch1.sid=DB19  
patch1.folder=/home/oracle/autoupgrade-patching/patch  
patch1.patch=RU,OPATCH,OJVM,DPBP
```

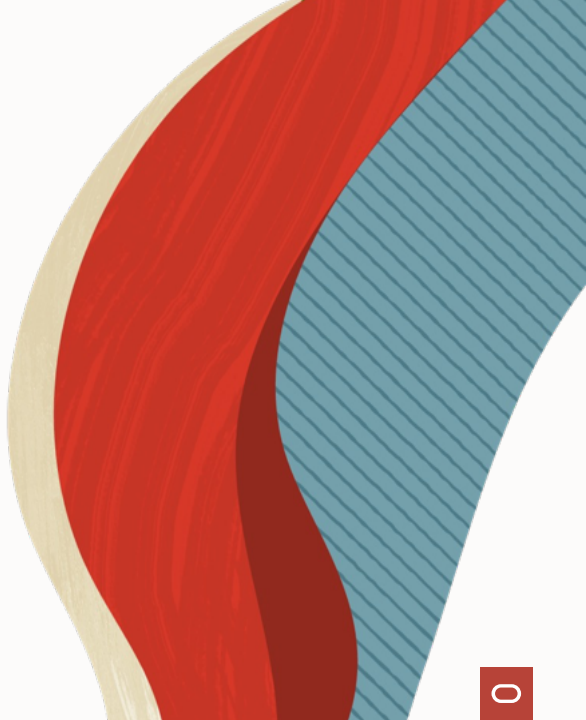
```
$ java -jar autoupgrade.jar -config do_it_all.cfg -patch -mode deploy
```

# Demo

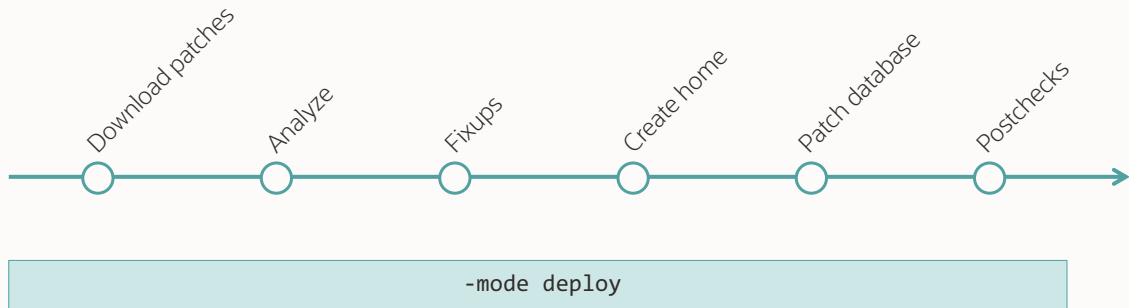
## One-Button Patching

- Download patches
- Install Oracle home
- Patch database

Watch on [YouTube](#)

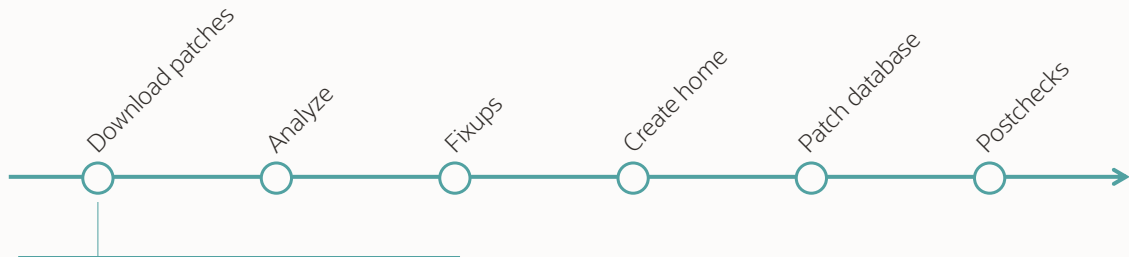


# AutoUpgrade Patching



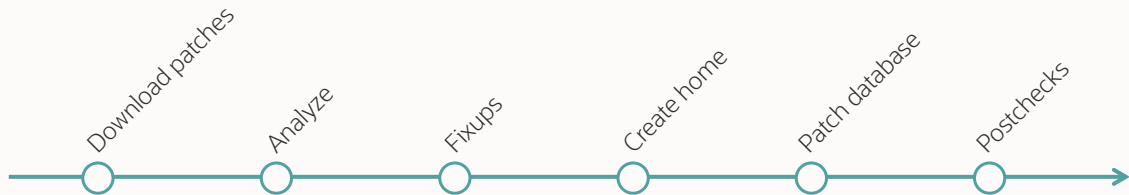


# AutoUpgrade Patching



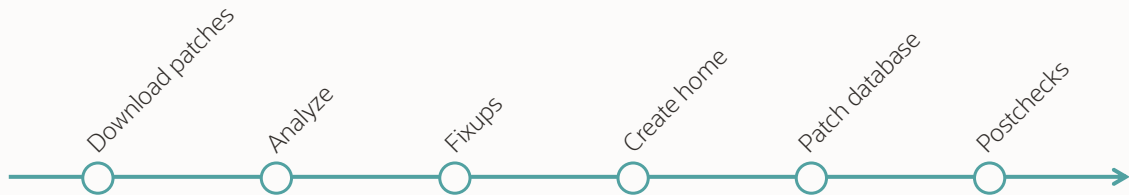
- Finds and downloads patches
- Uses your MOS credentials
- Chooses the right platform
- Stores patches in local repository

# AutoUpgrade Patching



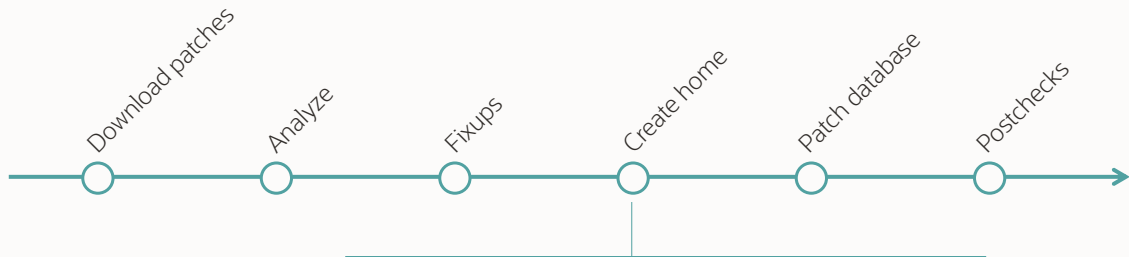
- Analyzes database for patch readiness
- Datapatch Sanity Checks
- Lightweight
- Non-intrusive
- Recommended, not required

# AutoUpgrade Patching



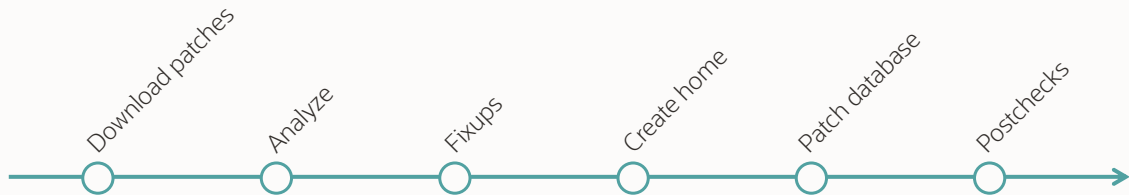
- Gathers dictionary statistics if needed
- Recompiles Oracle-maintained objects if needed
- Executes checks - see Doc ID [2380601.1](#)

# AutoUpgrade Patching



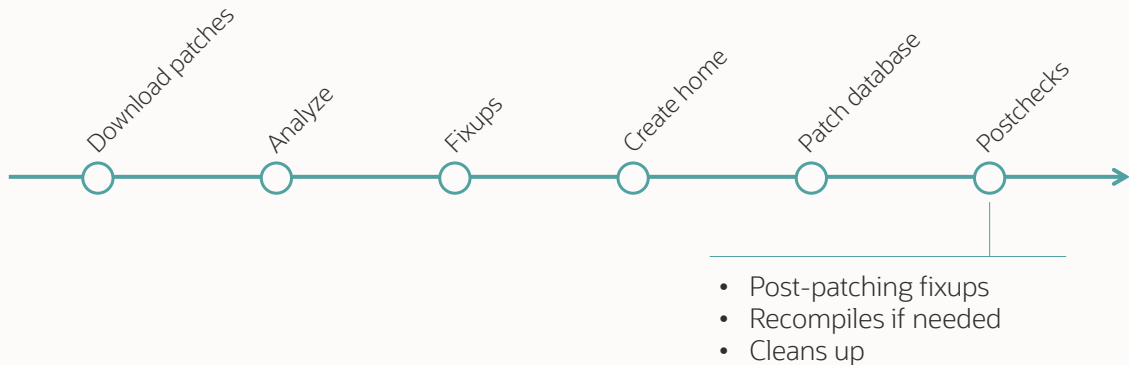
- Out-of-place patching
- Creates a brand-new Oracle home
- Uses *runInstaller settings* and binary options from source Oracle home
- Execute **root.sh** via sudo or stored credentials

# AutoUpgrade Patching

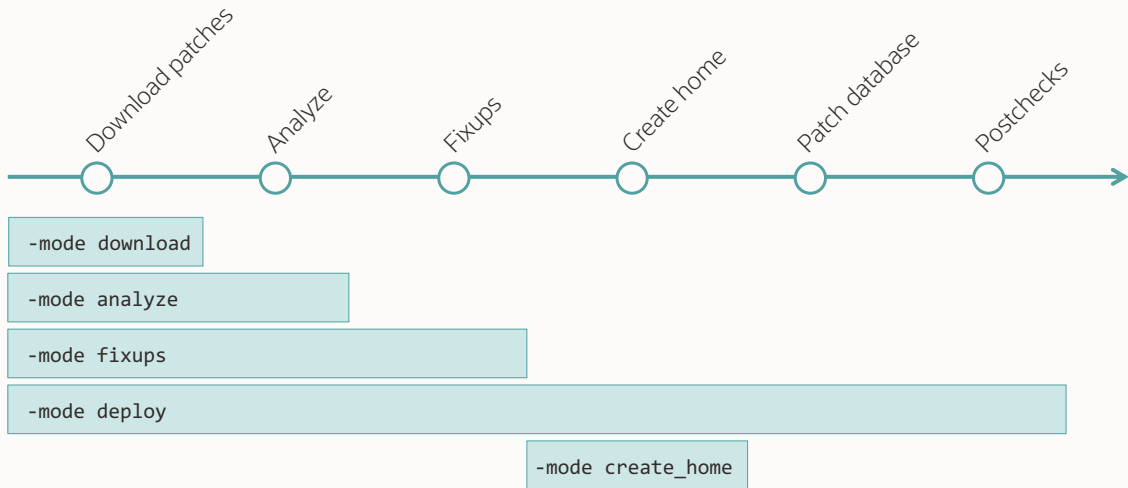


- Moves database instance to new Oracle home
- Moves configuration files
- Executes Datapatch
- Updates system directories (`utlfixdirs.sql`)
- Updates `/etc/oratab`
- Supports read-only Oracle home

# AutoUpgrade Patching



# Patching Modes





# Requirements



# Current Requirements



Single instance



Oracle Database 19c



Always download  
the latest version of AutoUpgrade

- My Oracle Support Doc ID [24854571](#)

--Download the latest version of AutoUpgrade directly from oracle.com  
--No authentication needed

```
wget https://download.oracle.com/otn-pub/otn_software/autoupgrade.jar
```



# Patching

# In-Place Patching

Oracle Home, 19.26.0



```
$ORACLE_HOME/OPatch/opatch rollback -id ...
```

# Out-of-Place Patching

Oracle Home, 19.24.0



```
SQL> SHUTDOWN IMMEDIATE
```



```
[oracle]$ $ORACLE_HOME/OPatch/datapatch
```

New Oracle Home  
Oracle Home, 19.25.0



Tim Hall 🇺🇸 +00 📱  
@oraclebase

...

When patching your production Oracle GI/DB installations, which method do you use?

In-Place = Current ORACLE\_HOME

Out-Of-Place = New ORACLE\_HOME

If you don't look after have production kit, then don't answer.

In-Place

55.4%

Out-Of-Place

44.6%



AutoUpgrade patches out-of-place





Which patches should you install?

```
global.keystore=/home/oracle/autoupgrade-patching/keystore  
patch1.source_home=/u01/app/oracle/product/19/dbhome_19_26_0  
patch1.target_home=/u01/app/oracle/product/19/dbhome_19_27_0  
patch1.sid=DB19  
patch1.folder=/home/oracle/autoupgrade-patching/patch  
patch1.patch=RECOMMENDED
```



# Recommended Patches

patch1.patch=RECOMMENDED

OPATCH

The latest OPatch

RU

The latest Release Update

OJVM

OJVM bundle matching Release Update

DPBP

Data Pump bundle patch matching RU



You can also add MRPs

- Get patch number from Primary Note for Database Quarterly Release Updates (Doc ID [888.1](#))



## Primary Note for Database Quarterly Release Updates (Doc ID 888.1)

### APPLIES TO:

Oracle Database - Standard Edition - Version 11.2.0.4 and later  
Oracle Cloud Infrastructure - Exadata Cloud Service  
Gen 1 Exadata Cloud at Customer (Oracle Exadata Database Cloud Machine)  
Gen 2 Exadata Cloud at Customer  
Oracle Database Cloud Exadata Service  
Information in this document applies to any platform.

### PURPOSE

The purpose of this document is to list Database patches for both proactive and reactive maintenance.

### SCOPE

This document will be of interest to the DBA and to those responsible for proactive and reactive maintenance of the Oracle Database.

### DETAILS

Please note that this document is maintained outside of the standard KM authoring system. Changes made directly to this document may be inadvertently overwritten when the document is next refreshed from outside of the standard KM authoring system. Rather than implementing changes to this document using the standard KM authoring system, please enter a comment as usual, and notify the document owner.[This section is not visible to customers.]

```
$ cat DB19.cfg
```

```
global.keystore=/home/oracle/autoupgrade-patching/keystore  
patch1.source_home=/u01/app/oracle/product/19/dbhome_19_26_0  
patch1.target_home=/u01/app/oracle/product/19/dbhome_19_27_0  
patch1.sid=DB19  
patch1.folder=/home/oracle/autoupgrade-patching/patch  
patch1.patch=RECOMMENDED,37546431
```

```
$ cat DB19.cfg
```

```
global.keystore=/home/oracle/autoupgrade-patching/keystore  
patch1.source_home=/u01/app/oracle/product/19/dbhome_19_25_0  
patch1.target_home=/u01/app/oracle/product/19/dbhome_19_26_0  
patch1.sid=DB19  
patch1.folder=/home/oracle/autoupgrade-patching/patch  
patch1.patch=RECOMMENDED,37546431  
patch1.patch=RECOMMENDED,MRP
```



You can also add specific one-off fixes

- Get patches from Oracle Database 19c Important Recommended One-off Patches (Doc ID [555.1](#))



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

**NOTE:** This document will be updated once a week on Tuesdays at 9AM EST if any new patch is identified.

Through our review of service requests, we often find that issues encountered are the result of customers being on an older Release Update (RU) or Release Update Revision (RUR). Many issues will have been fixed in the latest updates, which we always recommend.

As noted in the update-specific tables below, fixes for known issues are targeted for inclusion in the first available RU or RUR. You can always find the latest RUs, RURs, other patches, lists of fixed bugs and known issues in [Primary Note for Database Proactive Patch Program\(Doc ID 888.1\)](#). Identifying and installing the latest updates (patches) helps ensure you are using the most current content for security, functional, regression and bug fixes, as well as minor enhancements and any emergency one-offs.

### Note:

Beginning with the October 2022 patching cycle, 19c RURs will no longer be provided for 19.17.0 and above. No additional RURs will be delivered on any platform after the delivery of Oracle Database 19c RUR 19.16.2 in January, 2023.

Refer to [Sunsetting of 19c RURs and FAQ \(Doc ID 2898381.1\)](#) for further details.

To provide customers more frequent access to recommended and well-tested collections of patches, Oracle is pleased to introduce Monthly Recommended Patches (MRPs) starting Nov 2022. MRPs are supported only on Linux x86-64 platform.

Refer to [Introducing Monthly Recommended Patches \(MRPs\) and FAQ \(Doc ID 2898740.1\)](#) for further details.

In addition to the relevant patches listed below, you should apply patches based on the specific RU after reviewing the following My Oracle Support knowledge documents:

1. [Database PSU/BP/Update/Revision - Known Issues Primary Note\(Doc ID 1227443.1\)](#)
2. [Oracle Database Patches to Consider for 19c \(Doc ID 2781612.2\)](#) which contains patches to consider for specific areas such as Data Pump, Golden gate etc.

**NOTE:** Bug 32781163 is no longer recommended and this note will be updated when a replacement becomes available in the future

**NOTE:** Bug 31061145 was previously listed in this note but the fix was included in 19.21 in a disabled state. To enable the fix see Note 31061145.8 for instructions.

**NOTE:** If you are an Applications Unlimited (for example, EBS) customer, you should follow any directions given in your product-specific documentation on applicability of Release Updates (RUs) and Release Update Revisions (RURs).

The information below lists any additional patches (both rolling and non-rolling) that are recommended for installation on top of each RU. Click the relevant link for details

```
$ cat DB19.cfg
```

```
global.keystore=/home/oracle/autoupgrade-patching/keystore  
patch1.source_home=/u01/app/oracle/product/19/dbhome_19_26_0  
patch1.target_home=/u01/app/oracle/product/19/dbhome_19_27_0  
patch1.sid=DB19  
patch1.folder=/home/oracle/autoupgrade-patching/patch  
patch1.patch=RECOMMENDED,36006910,36908826,35398148,36916250,  
36273767,34672698,34774667,29213893
```

```
$ cat DB19.cfg
```

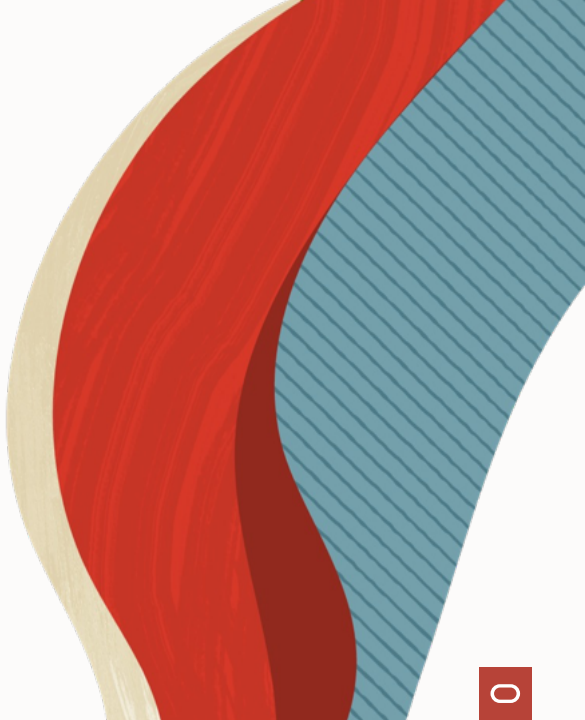
```
global.keystore=/home/oracle/autoupgrade-patching/keystore  
patch1.source_home=/u01/app/oracle/product/19/dbhome_19_26_0  
patch1.target_home=/u01/app/oracle/product/19/dbhome_19_27_0  
patch1.sid=DB19  
patch1.folder=/home/oracle/autoupgrade-patching/patch  
patch1.patch=RECOMMENDED,OCW
```

# Demo

## Applying recommended patches

- Specifying patches
- Patch database

Watch on [YouTube](#)





## How to download patches

# Network Connectivity

The download stage requires:

1. Internet access
2. My Oracle Support credentials

# Internet Access

AutoUpgrade connects to:

- `https://updates.oracle.com`
- `https://login-ext.identity.oraclecloud.com`
- `https://aru-akam.oracle.com`

URLs are part of a CDN, so expect changing IP addresses

- Use DNS names instead of IP addresses in your firewall

For connections via proxy use environment variables

- `https_proxy`

# MOS Credentials

## You must have:

- A valid My Oracle Support credential
- Connected to a Customer Support Identifier (CSI)
- Privilege to download patches using that CSI

## Failure to meet the requirements:

- `*Connection Failed - You entered an incorrect user name or password.*`



# Keystore

AutoUpgrade stores MOS credentials in a keystore

- Config file parameter: `global.keystore`
- Governs directory of AutoUpgrade keystore
- Password protected software keystore
- Optionally, an auto-open keystore
- No additional license needed

```
$ java -jar autoupgrade.jar ... -patch -load_password
```

```
$ java -jar autoupgrade.jar ... -patch -load_password
```

...

```
MOS> add -user <MOS username>
```

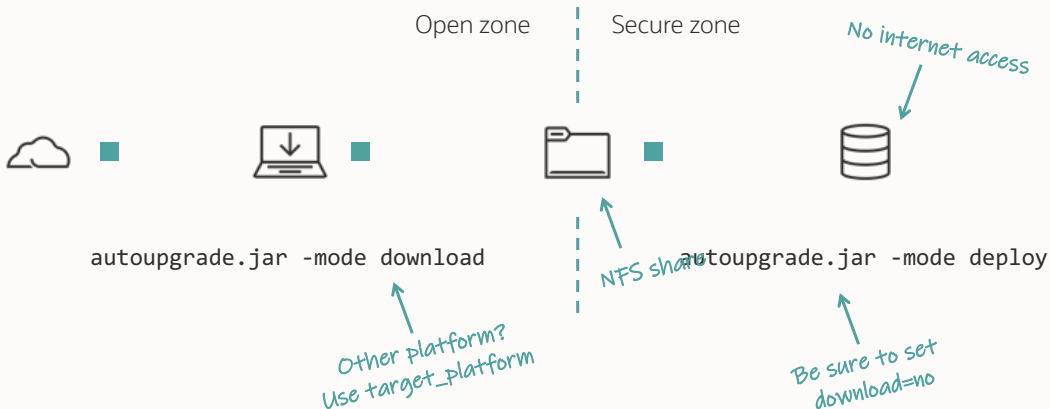
```
Enter your secret/Password:
```

```
Re-enter your secret/Password:
```



Your database host  
doesn't have internet access?

# Using Download Mode





## Upgrading and patching on Windows

# Windows

- The Oracle Database instance runs as a Windows service
- Upgrading and out-of-place patching requires recreation of the Windows service using `oradim.exe`
- Windows supports passing the credentials via a *credential file*

```
$ cat patch_on_win.cfg
```

```
global.keystore=c:\oracle\autoupgrade\keystore  
patch1.source_home=c:\oracle\product\dbhome_19_26_0  
patch1.target_home=c:\oracle\product\dbhome_19_27_0  
patch1.sid=DB19  
patch1.folder=c:\oracle\patches  
patch1.patch=RECOMMENDED  
patch1.wincredential=c:\oracle\autoupgrade\credential
```

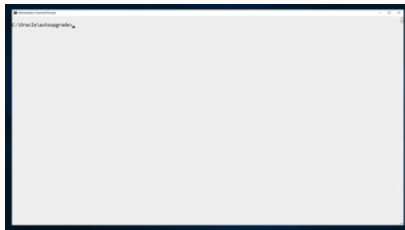


```
C:\> java -jar autoupgrade.jar  
-config patch_on_win.cfg  
-patch  
-loadwincredential "DB19"
```

```
C:\> java -jar autoupgrade.jar  
-config patch_on_win.cfg  
-patch  
-loadwincredential "patch1"
```

```
C:\> java -jar autoupgrade.jar  
-config patch_on_win.cfg  
-patch  
-mode deploy
```

# Windows



--AutoUpgrade deletes the credential file after use for security reasons  
--For automation it is desirable to keep the credential file

patch1.delete\_credential\_file=false



The easiest way to download patches

```
$ cat download.cfg
```

```
global.keystore=c:\oracle\autoupgrade\keystore
```

```
global.patch=RU:19.27,OPATCH,OJVM,DPBP,OCW
```

```
$ cat download.cfg
```

```
global.keystore=c:\oracle\autoupgrade\keystore
```

```
global.patch=RU:19.27,OPATCH,OJVM,DPBP,OCW
```

```
patch1.platform=LINUX.X64
```

```
patch1.folder=f:\nfs\oracle\patches
```

```
patch1.target_home=c:\tmp\dummy_patch1
```



```
$ cat download.cfg
```

```
global.keystore=c:\oracle\autoupgrade\keystore  
global.patch=RU:19.27,OPATCH,OJVM,DPBP,OCW
```

```
patch1.platform=LINUX.X64  
patch1.folder=f:\nfs\oracle\patches  
patch1.target_home=c:\tmp\dummy_patch1
```

```
patch2.platform=SPARC.x64  
patch2.folder=f:\nfs\oracle\patches  
patch2.target_home=c:\tmp\dummy_patch2
```



# In The Plans



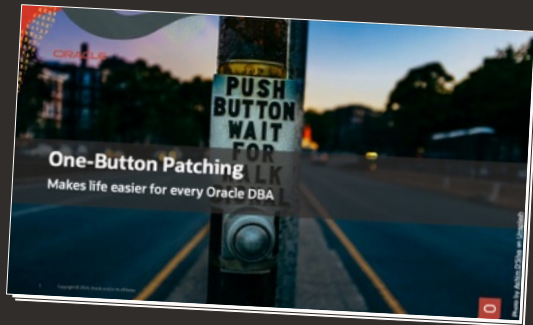
We're working to support

- Oracle Database 23ai
- Cloning Oracle homes
- Gold images
- RAC databases

## One-Button Patching

*Makes life easier for every Oracle DBA*

Recording on [YouTube](#)  
Get the [slides](#)



# Hands-on Lab

## Patch Me If You Can

*It's better to fail in our lab, than in production*



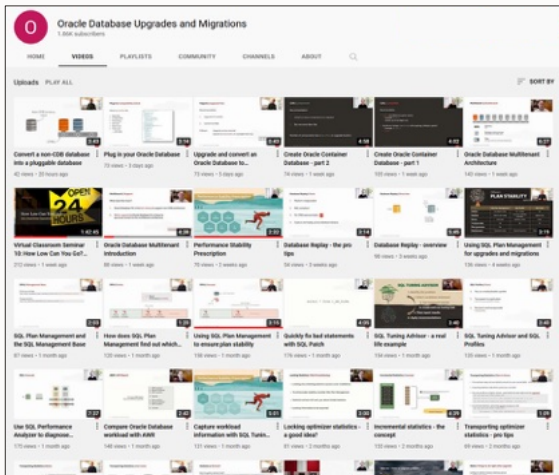
[Access lab on Oracle Live Labs](#)

# Share Your Experiences



- 1 Patch your Oracle Database regularly
- 2 Use the latest version of AutoUpgrade
- 3 Tell us what we should improve

# YouTube | Oracle Database Upgrades and Migrations



<https://www.youtube.com/@upgradenow>

- 300+ videos
- New videos every week
- No marketing
- No buzzword
- All tech



# Thank You

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