



# Oracle 12.2.0.1 Installation and Database Upgrade

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Customer Advice

**CAPITA**

## Revision History

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# 01 | Overview

## Purpose

As a result of Capita One technology change, the Oracle database software platform will be upgrading from Oracle 12.1.0.2 to 12.2.0.1. The main reason for the change is to be PSN compliant and carry on being on a supported version of Oracle.

Local Authorities that purchase their Oracle license from Capita One can contact the Service Desk to request the Oracle media. Authorities that purchase their Oracle license from another supplier will need to contact them to request the Oracle media or download the media via their Oracle support accounts.

## Overview and Scope

The upgrade is supported from the One Education Spring 2018 Release (3.65) and must be completed before (at time of writing) upgrading to the One Autumn 2018 Release (3.67).

Oracle 12.2.0.1 is a full installation of the Oracle database software; thus, a new Oracle home will be required for this installation.

This document has been created using the 'Oracle 12c Universal Installer' on a Windows 2012 server to guide in the installation of Oracle 12.2.0.1 Standard Edition 2 database software, and the upgrade of the One database from 12.1.0.2 to 12.2.0.1 using the 'Database Upgrade Assistant'.

All images in this document are examples only.

Please be aware that the Capita tested platform is Windows. UNIX installations may vary slightly but the installation procedure is very similar in content, please refer to the Oracle installation guide for your operating system. This installer should be run in GUI mode. On some UNIX servers you will be requested to run scripts as the **root** user pre and post the installation process.

Capita One Technical services are available to complete the Oracle 12.2 database upgrade, please contact your account manager for more information.

## Prerequisites

- Customer to ensure that they are adequately licensed for Oracle 12c.
- Administrator privileges on the database server for the user account that is being used for the process.

**IMPORTANT NOTE:** Oracle 12 'home user' account details (if used) for the 12.1 home – If you do not have these details you cannot use the DBUA to upgrade. If the 12.1 home does not have a 'home user' you can use DBUA to upgrade.

- Oracle 12.1.0.2 databases need to be on One v3.65 at a minimum.
- Oracle 12.2.0.1 for Windows 64bit software. (Windows is the Capita tested platform)
- Full tested backup solution in place before any work is carried out.
- It is strongly recommended to complete the migration on a TEST environment before application to LIVE.

## Overview

- Users should be advised a day's downtime will be required for the migration; the One system must not be used during this time. All application pools and services must be disabled for the duration of the process in the environment to be upgraded.
- Oracle DBA or suitably qualified administrator to complete the upgrade.

## Assumptions

For the purposes of this document the following assumptions are made:

- Windows is the Oracle server operating system.
- The same Oracle server is being used, already having 12.1.0.2 installed.
- TEST and LIVE are on the same server.
- Installation user is an administrator.
- Backup and recovery completed via cold backups.



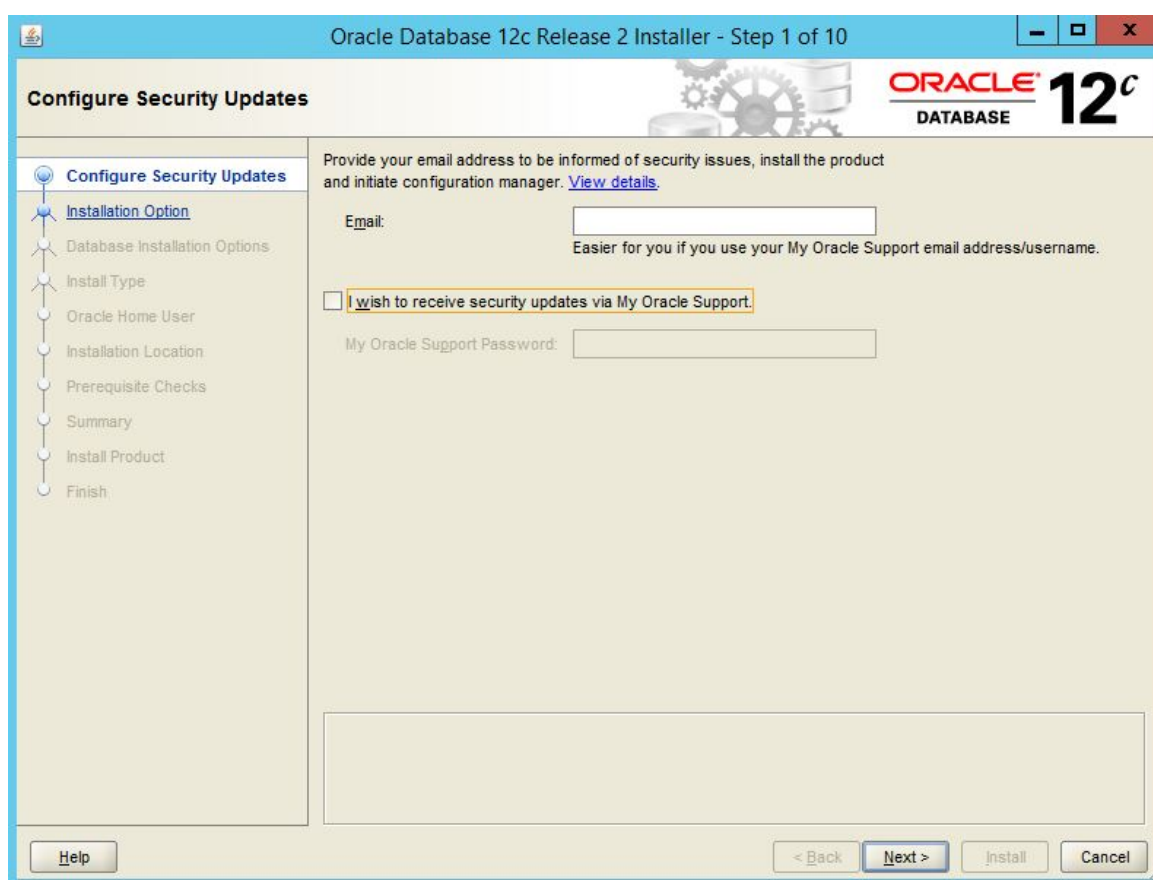
# 02 | Installation

## Oracle 12.2.0.1 Software Installation

This section details the installation of the Oracle 12.2.0.1 database software, and assumes the user logged in running the installation has administrator privileges.

**NOTE:** Depending on the previous setup of Oracle the 'Steps 1 of X' may differ from the following examples.

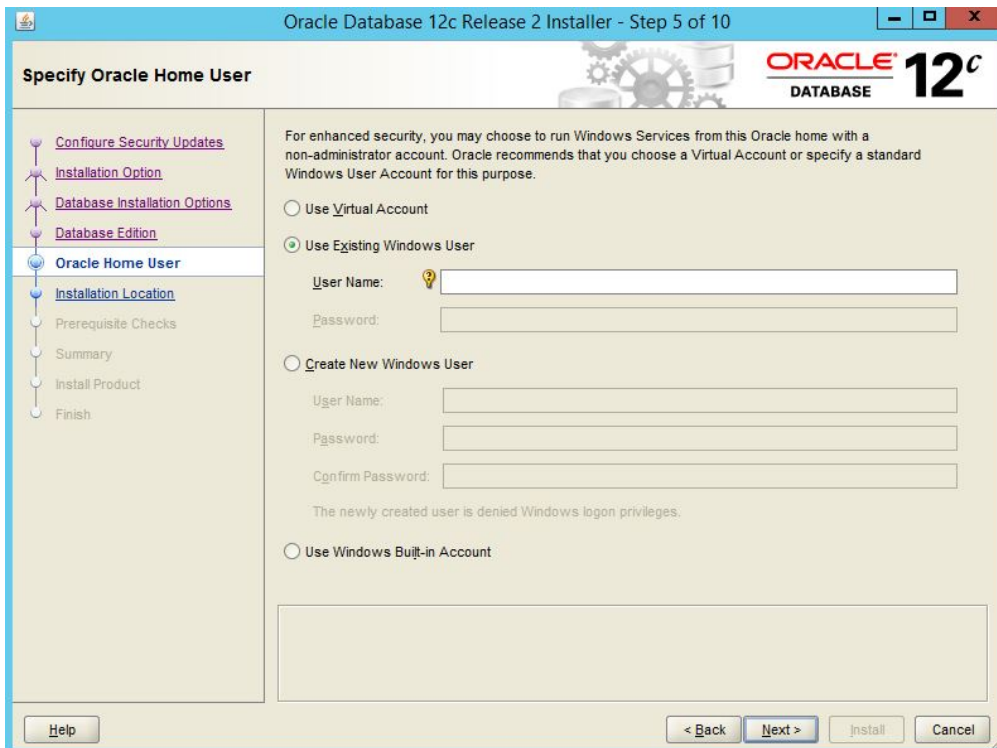
1. Unzip the zip file; the database software contains both SE2 and EE editions.
2. Double-click the setup.exe to display the **Installing database – Step 1 of 10** screen of the installation wizard.



If an Oracle Support account and access to the internet is available on the server, then information to receive security issue notifications can be entered here.

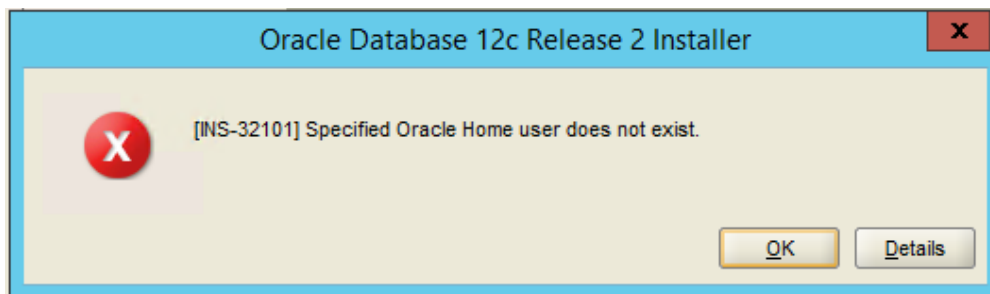
3. Select **Next**. If you have not entered an email address you will be asked to confirm that this is correct and to 'remain uninformed of critical security issues in your configuration', select **YES**.
4. At the **Installing database – Step 2 of 10** page, select the **Install Database Software Only** radio button and select **Next**.
5. At the **Installing database – Step 3 of 10** page, select the **Single Instance Database installation** radio button and select **Next**.
6. At the **Installing database – Step 4 of 10** page, select the **Standard Edition 2** radio button and select **Next**. Alternatively, if the customer purchases Enterprise Licensing you will need to install Enterprise edition.

7. At the **Installing database – Step 5 of 10** page, input the user details for the Oracle Home user (if there is one), this user would have been set when installing the 12c (12.1.0.2) software. You must input the same Oracle home user details as the user that owns the current Oracle home / services, otherwise you will not be able to use the 12.2 DBUA to upgrade the database.



8. Select **Next**.

**NOTE:** You will only need to put the username in for the home user. If you input an incorrect user name you will get an error.



Depending on the existing setup of Oracle there may be multiple home users, ensure that the correct home user for the database home you are upgrading is selected.

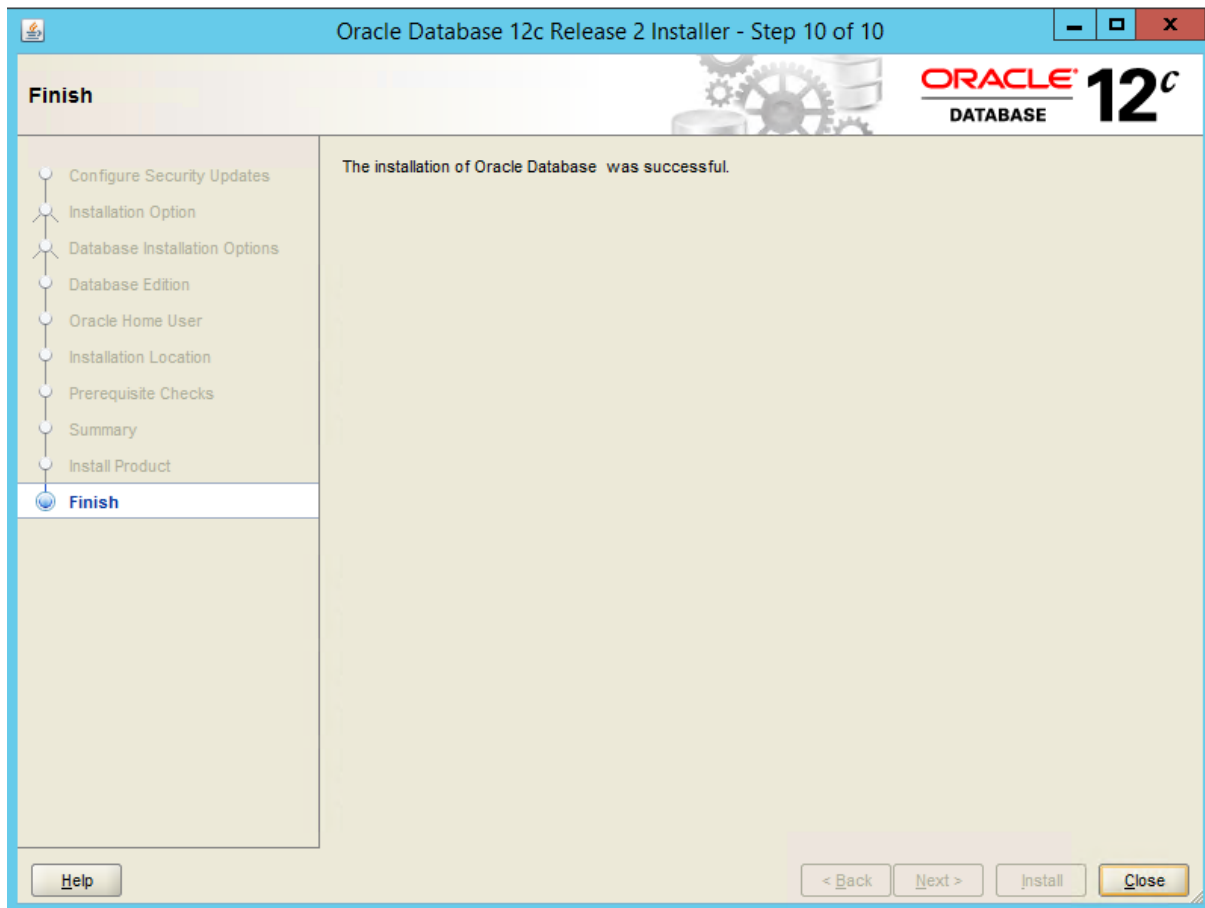
If you do not have an Oracle Home user, you can proceed using the built-in account or create a new account. Please review Oracle documentation on the home user account for more information.

9. At the **Installing database – Step 6 of 10** page, select an installation directory. This should be separate to any currently existing Oracle Home folders and named appropriately.
10. Select **Next**.
11. At the **Installing database – Step 7 of 10** page, ensure that all checks are correct and select **Next**.

12. At the **Installing database – Step 8 of 10** page, Oracle advises of the installer settings and what will be used by the software. These settings can be saved in a response file for batch installation. Select **Install** to install the software.
13. At the **Installing database – Step 9 of 10** page, you are advised of the progress of the software installation.

This step will take some time to complete.

14. The **Installing database – Step 10 of 10** page advises of the success or failure of the software installation.



If the above installation was successful Oracle 12.2.0.1 is now installed, select **Close**.



# 03 | Upgrade

## Pre-Upgrade Actions

Carry out the following before upgrading the instance to 12.2.0.1:

- Copy the tnsnames.ora, listener and sqlnet.ora files from 12.1 home and paste into the 12.2.0.1 home's relevant location (typically ORACLE\_HOME\NETWORK\ADMIN).
- Copy the SPFILE and Password file from the 12.1 home and paste into 12.2.0.1 home's relevant location (typically ORACLE\_HOME\database).
- Connect to the instance via SQLPlus as SYS.
- If the database has archiving switched on, put it in noarchivelog to speed up the upgrade process.

**NOTE:** Remember to switch archiving back on after upgrade.)

- Take a cold backup of the database.
- Take a backup of the Control and Pfile

**IMPORTANT NOTES:** You must have a tested backup and restore method in place before proceeding with the Oracle 12.2 upgrade. If you do not have a backup and the upgrade process fails, you may not be able to recover, and this could lead to complete data loss.

*If your backup and recovery strategy relies on RMAN / hot backups, do not disable archive logging*

- Ensure that the Time Zone version is set to version 18. If it is less than 18, this will need to be upgraded to 26 after the 12.2.0.1 upgrade. There is an option to upgrade this during the process using the DBUA, so it should do it automatically.
- Purge the dba\_recyclebin, this will speed up the upgrade process.
- Spool off database parameters to a file to help troubleshoot if any issues arise after upgrade.
- Make sure to record the location of the UTL\_FILE\_DIR and the B2BIMPORT\_ORACLE\_DIR as the DBUA may remove the UTL\_FILE\_DIR as this is a deprecated parameter, it will need to be re-added following the upgrade.
- SQL> Show parameter UTL\_FILE\_DIR
- SQL> select \* from all\_directories where directory\_name like '%B2B%';
- Make note of the existing invalid objects, attempt to resolve invalid objects before proceeding with the upgrade.

## Oracle 12.2.0.1 Database Upgrade

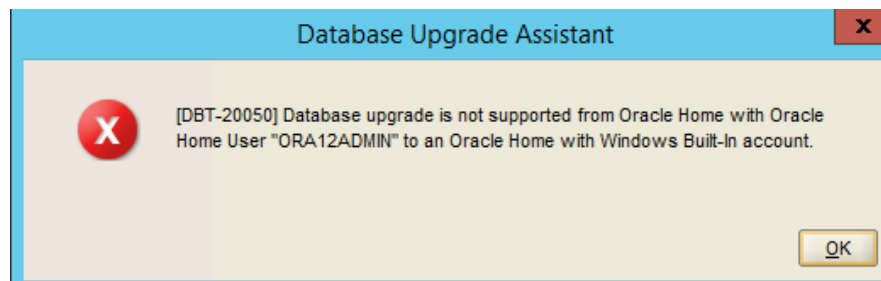
This section goes through the steps in upgrading the database using the 'Database Upgrade Assistant' (DBUA) in Oracle 12.2.0.1.

**NOTE:** Depending on the previous setup of Oracle the 'Steps 1 of X' may differ from the below examples.

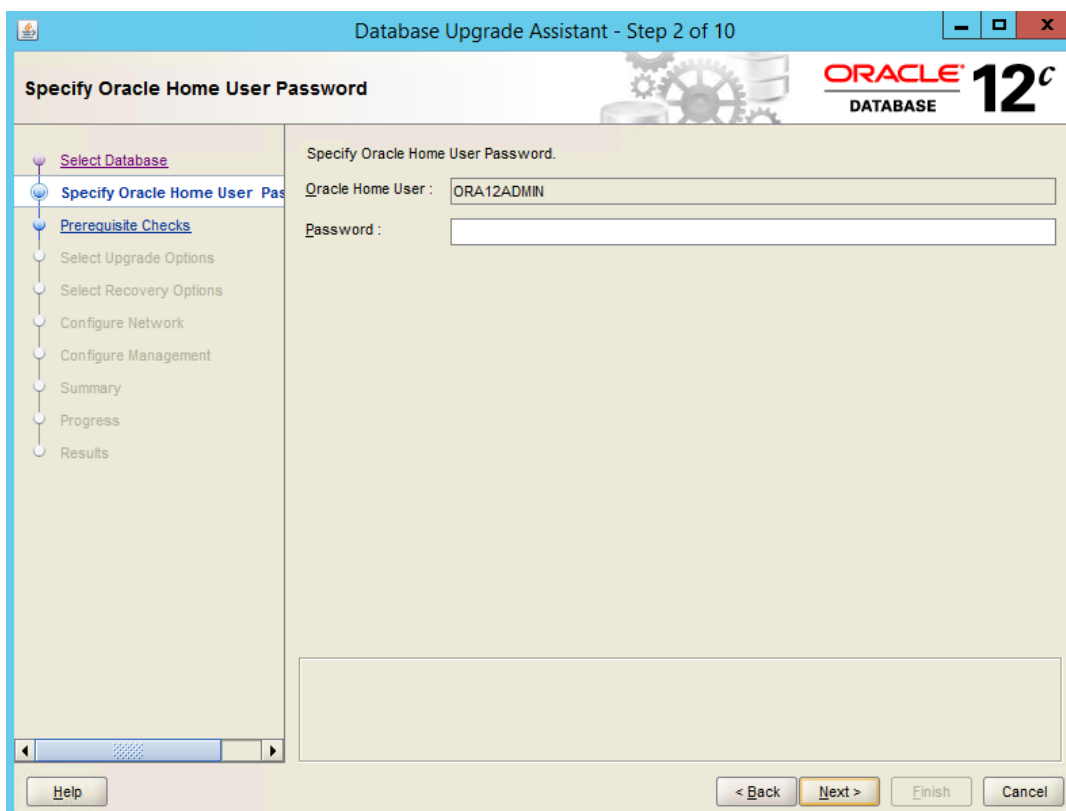
1. Start up the 12.2.0.1 DBUA.
2. At the **Step 1 of 9: Select Database** page, select the database and enter the SYSDBA credentials if needed:
3. Select **Next**.

4. If you have an Oracle home user read the following. If you do not have an Oracle home user, skip to Step 5 below (**2 of 9 Prerequisite Checks** of the upgrade wizard).

*NOTE: If you installed Oracle 12.2.0.1 and did not specify the same Oracle home user that 'owns' the selected database home/services in 12.1.0.2, you will not be able to use the DBUA, you will get the following error (example DB has Oracle home user but installed 12.2 using built-in account to force this error):*

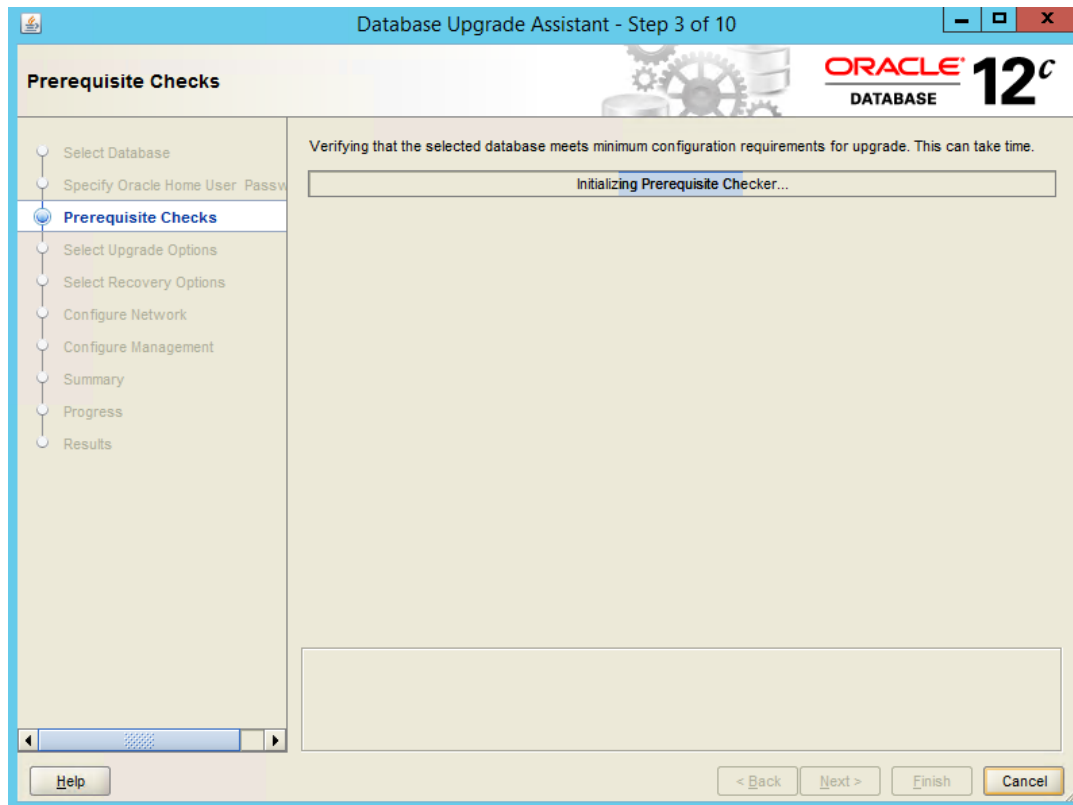


- If you installed 12.2.0.1 and specified the same Oracle 12 home user that is used for 12.2.0.1, you will then get this screen. Input the password for the user correctly and Select **Next**.



## Upgrade

- If the password for the Oracle 12 Home user is accepted, you will progress to this screen and then to 4 of 10 with the results of the checks:



5. At the **Step 2 of 9: Prerequisite Checks** page, you may need to perform some manual changes here such as purging the DBA recycle bin or validating invalid objects if you did not already resolve these issues during the manual pre-upgrade checks. Once this is done you can **Check Again** to ensure the options are clear. Select **Next**.
6. At the **Step 3 of 9: Upgrade Options** page, set defaults as below. The Timezone needs to be upgraded, statistics gathering should also be done and invalid object validation. Parallel upgrade can speed up the process. You can also specify any custom scripts to run at this stage. Select **Next**.
7. At the **Step 4 of 9: Recovery Options** page, select 'I have my own backup...' You must ensure you have a valid cold backup/valid alternative backup solution. Select **Next**.
8. At the **Step 5 of 9: Configure Network** page, select the listener to upgrade to 12.2.

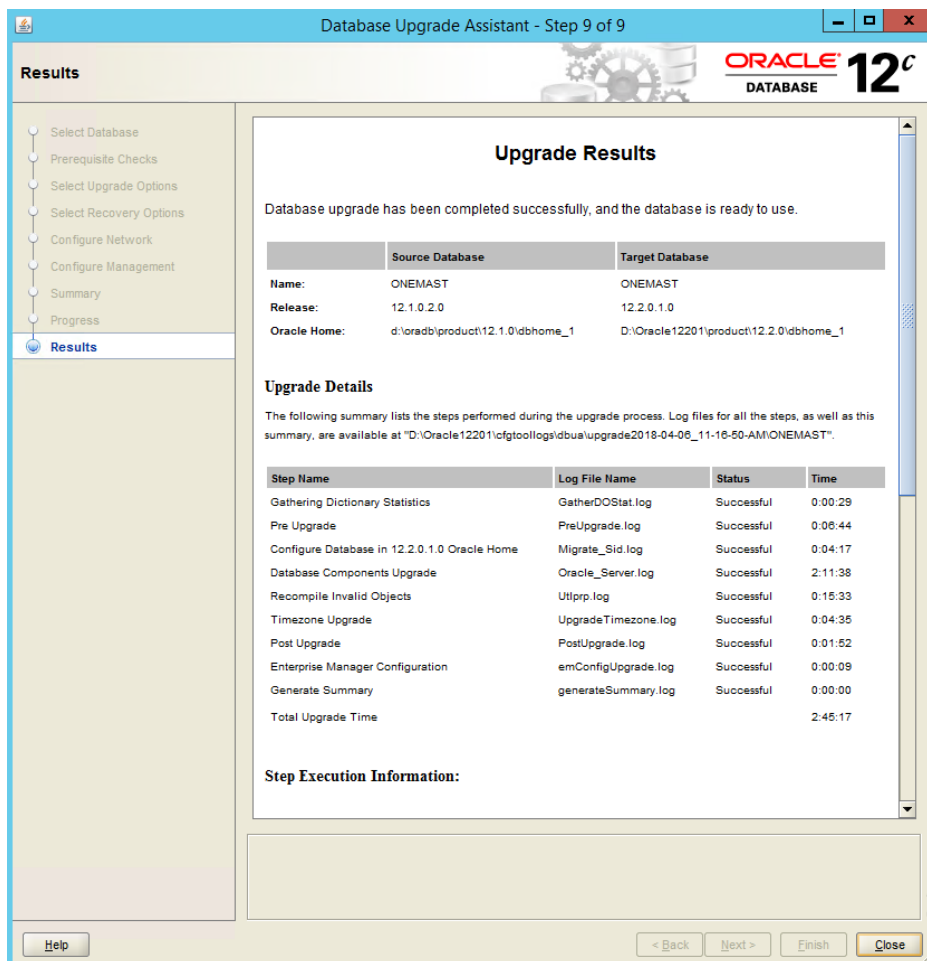
**IMPORTANT NOTES:** If you do not see a listener please review the 'known issues' section at the end of this document.

*You should only upgrade the listener when upgrading LIVE on a shared server, otherwise this may cause unintentional disruption to LIVE)*

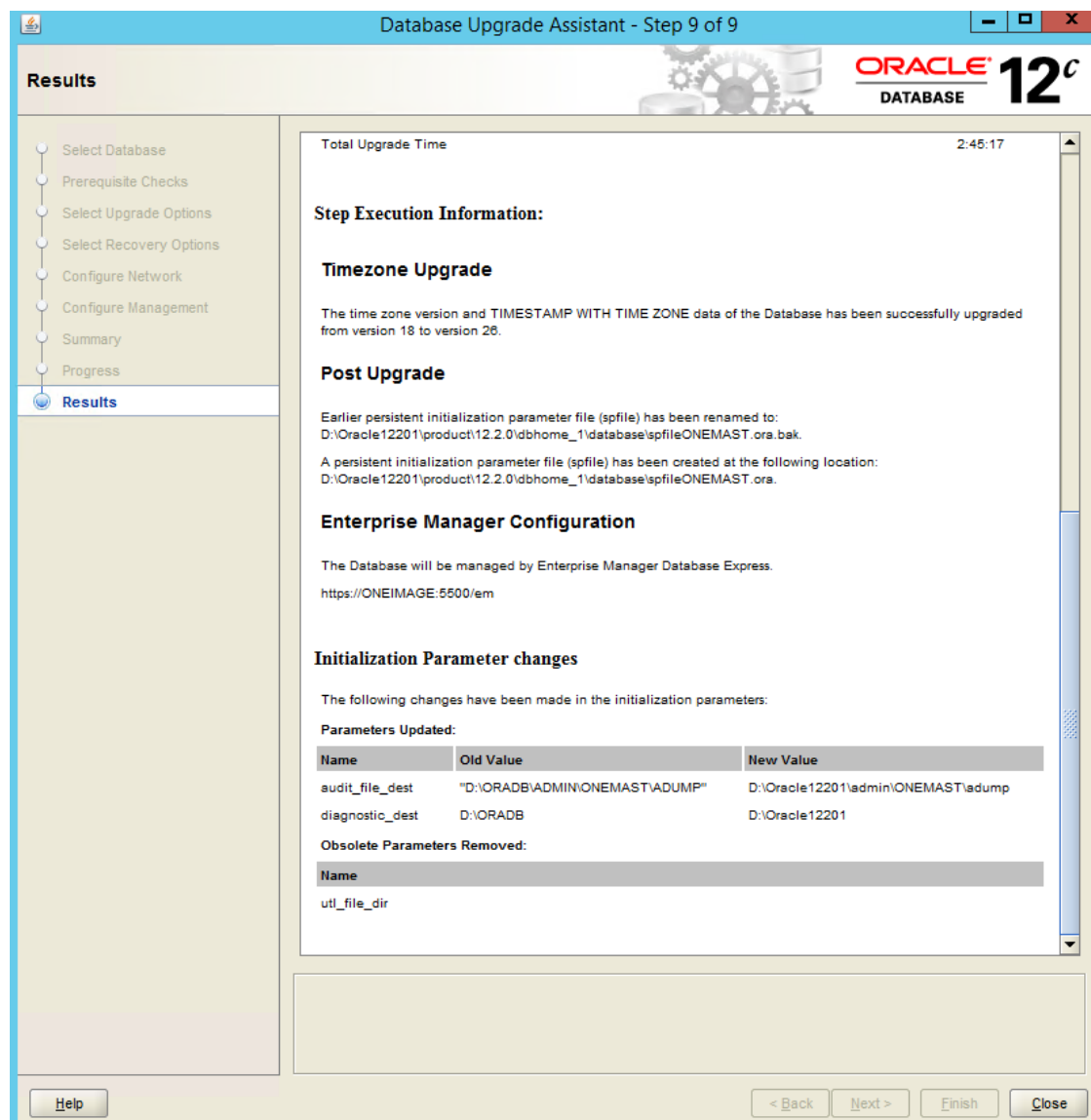
9. Select **Next**.
10. At the **Step 6 of 9: Configure Summary** page, set the EM Express port if needed. Select **Next**.
11. At the **Step 7 of 9 Summary** page, review the upgrade options and ensure they are correct: Select **Finish** to proceed to upgrade the database.

The progress of the upgrade will be displayed; this step will take some time to complete.

Once the upgrade is complete you will be presented with the below:



12. Once complete. make a note of where the log file is, this can be reviewed if required. Click **OK**.
13. Also check the additional changes made by scrolling down, this will state the timezone has upgraded and the parameters that have changed, also the obsolete parameters:



## Post-Upgrade Actions

Carry out the following after upgrading the TEST database to 12.2.0.1:

- In the listener.ora file under the Oracle 12.1.0.2 home, modify the ORACLE\_HOME path to the new 12.2.0.1 ORACLE\_HOME for the required database.
- Reload the listener.
- Under Services ensure the listener's startup type is set to 'Automatic'.
- When upgrading LIVE you should migrate the listener to 12.2.0.1.
- After this, you will need to check the entries in the Listener.ora file are correct and reference the correct Oracle home.
- Reconfigure the UTL\_FILE\_DIR parameter from the backup.
- Restart the database instance to apply the new parameter value.
- Check the B2B import directory is still valid and recreate this is required.
- Check and update database parameters as there may potentially be references to the older Oracle base / home.

- Verify the database system and dataset using the appropriate version of DBManager. NOTE: DBManager 3.64 does not work with Oracle 12.2, you must be on (at least) 3.65 using DBManager 3.65 (or later).
- Turn archivelog mode back on if it was disabled before the upgrade.
- Take cold backup of database for restore point after switching archivelog mode on. Also back up the control files and create a pfile backup.
- Update the Oracle database compatible parameter to 12.2.0.1.  
(<https://docs.oracle.com/en/database/oracle/oracle-database/12.2/upgrd/what-is-oracle-database-compatibility.html#GUID-7FCE8614-8163-4393-AE66-2ADD1F73934F>)
- Oracle 12.2.0.1 clients will need to be installed on the mid-tier and web servers. Ensure that both 32 and 64-bit Administrator clients are installed with the 64bit client first in the path.
- Contact the service desk to arrange for the webserver clients to be upgraded.
- Oracle 12.1 clients remain compatible with 12.2, typically clients will be updated when completing the Live migration.
- Do not remove Oracle 12.1.0.2 clients.



# 04 | Troubleshooting

## Upgrade failure

In the event of the upgrade process failing, you will need to roll back to the 12.1.0.2 instance.

There are multiple reasons for an upgrade to fail, normally Oracle may be able to recover and roll back its installation progress via the DBUA automatically, it will usually prompt the user that a failure has occurred and that changes have been rolled back (or prompt the user to roll back / restore).

In the event of a catastrophic failure, such as a mid-upgrade power failure (server suddenly shuts down, disk fails etc) you may need to manually recover the database if the upgrade assistant is unable to recover automatically. This could involve a cold clone using the pre-upgrade cold backup into the 12.1 home or using your existing backup solution to roll back.

## Known issues

- If you have forgotten the Oracle Home user account details, you will need to reset the account password and the details for the associated services. Please note that this is *not* an Oracle user account. Capita One Technical Services will only have records of the home user for authorities that had their 12c migrations completed by Technical Services. Customers would have been advised of the user account and its password following the migration by Technical Services. Technical Services would not have been involved in changing this password following the migration. Customers will need to refer to their own records to determine the password if they have previously changed it.

Refer to Oracle documentation for more information on this.

<https://docs.oracle.com/en/database/oracle/oracle-database/12.2/ntdbi/changing-the-oracle-home-user-password.html#GUID-11A86CEA-3ADD-4FBB-A28B-82BDA78CFE54>

- If you are unable to SQLPlus to the database following the installation of Oracle 12.2.0.1, ensure that you have copied over the appropriate configuration files from the 12.1 home to the 12.2 home such as the listener, tnsnames, spfile etc.
- If you do not see an Oracle Listener during the migration step 5 – 9 please ensure that you have copied the listener file to the 12.2 Oracle home. You only need to migrate the listener when completing the LIVE database migration on shared Oracle servers.
- The UTL\_FILE\_DIR Oracle parameter is deprecated in Oracle 12.2.0.1 and the upgrade process will remove it. At the time of writing this document, this parameter is still required for the One system for XML imports. You will need to recreate this parameter on the Oracle database following the upgrade as per the *Post-Upgrade Actions* section above. You will need to restart the database to apply the change to the spfile. If you do not recreate this parameter value, you will not be able to import XML files via V3 Data Exchange or V3 A&T Inter LA Transfer.
- DBManager 3.64 will not work with Oracle 12.2; you will receive an error message that the Oracle version is incorrect. This is expected, only version 3.65 and later of DBManager will be compatible.
- If the Oracle 12.2.0.1 clients are removed, errors for certain One services being unable to connect to the database may occur, the 12.1.0.2 clients should be left installed. Please see **KB-479158**.