Oracle® Grid Infrastructure

Upgrading Oracle Restart

19c for Linux and Unix-Based Operating Systems

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Oracle Grid Infrastructure Upgrading Oracle Restart, 19c for Linux and Unix-Based Operating Systems

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Contents

Preface

This scenario document explains how to upgrade Oracle Grid Infrastructure for a standalone server (Oracle Restart) to a later release.

Use Case Scenario for this Document

Oracle Grid Infrastructure for a standalone server upgrade consists of upgrading Oracle Restart and Oracle Automatic Storage Management (Oracle ASM). Oracle Restart supports only out-of-place upgrades.

Prerequisites for this Scenario

- Before you start the Oracle Restart upgrade, ensure that you have administrative privileges.
- Download the Oracle Grid Infrastructure image file for the release to which you want to upgrade.

Outline for this Scenario

1. **Preparing Oracle Restart for Upgrade**. Identify the upgrade path for your installation and complete the required preupgrade checks.
2. **Upgrading and Patching Oracle Restart**. Use the Oracle Grid Infrastructure installer to upgrade and OPatchAuto to patch Oracle Restart.
3. **Downgrade Oracle Restart**. Downgrade Oracle Restart to an earlier release after a successful or a failed upgrade.

These steps correspond to the chapters in this scenario document.

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1

Preparing to Upgrade Oracle Restart

Before you upgrade Oracle Restart, determine the best upgrade path, and run the procedures that are described here to prepare for the upgrade.

Oracle recommends that you test the upgrade process and prepare a backup strategy.

- Options and Restrictions for Oracle Restart Upgrades
  Review these upgrade options and restrictions when you upgrade to Oracle Grid Infrastructure for a standalone server (Oracle Restart) 19c.
- Checks to Complete Before Upgrading Oracle Restart
  Complete these preupgrade checks to avoid issues during the Oracle Restart upgrade process.
- Installing the Oracle Database Preinstallation RPM Using ULN
  Use this procedure to subscribe to Unbreakable Linux Network (ULN) Oracle Linux channels for your Oracle software.
- Creating a Copy of the Preinstallation Configuration File for the grid User
  Create a copy of the preinstallation configuration file for the `grid` user to set hard and soft limits for the operating system parameters.
- Shutting Down the Database
  If your Oracle Database uses Oracle Automatic Storage Management (Oracle ASM) for storage, then shut down the database before upgrading Oracle Restart.
- Upgrading Operating System for an Oracle Restart Server
  Complete this procedure on your Oracle Restart server to upgrade the operating system.

Options and Restrictions for Oracle Restart Upgrades

Review these upgrade options and restrictions when you upgrade to Oracle Grid Infrastructure for a standalone server (Oracle Restart) 19c.

Supported upgrade paths for Oracle Restart for this release are:

- Oracle Restart upgrade from 11g Release 2 (11.2.0.4) to Oracle Restart 19c.
- Oracle Restart upgrade from 12c Release 1 (12.1.0.2) to Oracle Restart 19c.
- Oracle Restart upgrade from 12c Release 2 (12.2) to Oracle Restart 19c.
- Oracle Restart upgrade from 18c to Oracle Restart 19c.

Restrictions for Oracle Restart Upgrades

- Oracle Restart upgrades are always out-of-place upgrades. You cannot perform an in-place upgrade of Oracle Restart to an existing Grid home.
- The same user that owned the earlier release of the Oracle Restart software must perform the Oracle Restart 19c upgrade.
- Do not delete directories in the Grid home. For example, do not delete the directory `Grid_home/OPatch`. If you delete the directory, then the Oracle Restart installation owner

cannot use the OPatch utility to patch the Grid home, and OPatch displays the error message "'checkdir' error: cannot create Grid_home/OPatch".

- The software in the 19c Oracle Restart home is not fully functional until the upgrade is complete. Running `srvctl`, `crsctl`, and other commands from the new Grid home are not supported until the `rootupgrade.sh` script is run and the upgrade is complete.
- To manage databases in an existing earlier release database home during the Oracle Restart upgrade, use the `srvctl` utility from the existing database home.

Checks to Complete Before Upgrading Oracle Restart

Complete these preupgrade checks to avoid issues during the Oracle Restart upgrade process.

1. Review the new features for the Oracle Restart release to which you want to upgrade.
2. Ensure that you have all of the information you need for the upgrade. For example:
   - An Oracle base location for Oracle Restart.
   - An Oracle Restart home location that is different from your existing Oracle Restart home.
   - Privileged user operating system groups.
   - `root` user access, to run scripts as the `root` user during the upgrade.
3. Unset the `$ORACLE_HOME`, `$ORACLE_BASE`, and `$ORACLE_SID` environment variables because these environment variables are used during the upgrade. For example, as the `grid` user, run the following commands:

   For bash shell:

   ```
   $ unset ORACLE_HOME
   $ unset ORACLE_BASE
   $ unset ORACLE_SID
   ```

   For C shell:

   ```
   $ unsetenv ORACLE_HOME
   $ unsetenv ORACLE_BASE
   $ unsetenv ORACLE_SID
   ```

4. Ensure that the installation owner user profile, such as `.profile` or `.cshrc`, does not set any of these environment variables.
5. Unset any environment variables, such as `ORA_NLS10` and `TNS_ADMIN`, set for the installation owner user that is connected with the Oracle software homes.
6. Ensure that the `$ORACLE_HOME/bin` path is removed from your PATH environment variable.

Related Topics

- *Oracle Database New Features Guide*

Installing the Oracle Database Preinstallation RPM Using ULN

Use this procedure to subscribe to Unbreakable Linux Network (ULN) Oracle Linux channels for your Oracle software.

To obtain Unbreakable Linux Network (ULN) support, subscribe to Oracle Linux channels, and to add the Oracle Linux channel that distributes the Oracle Database Preinstallation RPM:

1. Download the Oracle Linux ISO from one of the following websites:
   - Oracle yum

     https://yum.oracle.com/oracle-linux-isos.html
   - Oracle Software Delivery Cloud website:

     https://edelivery.oracle.com/linux

   > **Note:**
   >
   > Ensure that you use the latest available update release for Oracle Linux.

2. Register your server with Unbreakable Linux Network (ULN). By default, you are registered for the Oracle Linux Latest channel for your operating system and hardware.
   - Oracle Linux 7
     https://docs.oracle.com/en/operating-systems/oracle-linux/uln-user/
   - Oracle Linux 8 and Oracle Linux 9
     https://docs.oracle.com/en/operating-systems/oracle-linux/software-management/
3. Log in to Unbreakable Linux Network:

   https://linux.oracle.com

4. Start a terminal session and enter the following command as `root`, depending on your platform. For example:
   - Oracle Linux 7

     ```
     # yum install oracle-database-preinstall-19c
     ```

     > **Note:**
     >
     > Use the `-y` option if you want `yum` to skip the package confirmation prompt.

   - Oracle Linux 8 and Oracle Linux 9

     ```
     # dnf install oracle-database-preinstall-19c
     ```

   You should see output indicating that you have subscribed to the Oracle Linux channel, and that packages are being installed.

The Oracle Database Preinstallation RPM automatically creates a standard (not role-allocated) Oracle installation owner and groups, and sets up other kernel configuration settings as required for Oracle installations.

5. Check the RPM log file to review the system configuration changes. For example:

```
/var/log/oracle-database-preinstall-19c/backup/timestamp/orakernel.log
```

6. Repeat steps 1 through 4 on all other servers in your cluster.

If you have a premier support subscription, you can enable Ksplice to provide zero downtime patching. Refer to the Ksplice User's Guide for installation instructions:

https://docs.oracle.com/en/operating-systems/oracle-linux/ksplice-user/

Creating a Copy of the Preinstallation Configuration File for the grid User

Create a copy of the preinstallation configuration file for the `grid` user to set hard and soft limits for the operating system parameters.

1. As the `root` user, go to the `/etc/security/limits.d` directory.

```
# cd /etc/security/limits.d
```

2. Create a copy of the preinstallation configuration file for the `grid` user by replacing the `oracle` user with the `grid` user.

```
# cat oracle-database-preinstall-19c.conf | sed 's/oracle /grid /g' >
oracle-grid-user-preinstall-19c.conf
```

3. Delete the preinstallation configuration files for the earlier release.

```
# rm -r -f oracle-database-preinstall-18c.conf oracle-grid-user-
preinstall-18c.conf
```

Shutting Down the Database

If your Oracle Database uses Oracle Automatic Storage Management (Oracle ASM) for storage, then shut down the database before upgrading Oracle Restart.

1. Log in as the `oracle` user.
2. Shut down the Oracle Database instance.

```
$ Grid_home/bin/srvctl stop database -d database_unique_name
```

3. Ensure that your Oracle Database instance is shut down.

```
$ Grid_home/bin/srvctl status database -d database_unique_name
Database is not running.
```

Upgrading Operating System for an Oracle Restart Server

Complete this procedure on your Oracle Restart server to upgrade the operating system.

1. As the `root` user, disable the automatic startup of Oracle High Availability Services, when the server reboots.

   ```
   # cd Grid_home/bin
   # ./crsctl disable has
   ```

2. Shut down the Oracle Restart stack on the server.

   ```
   # ./crsctl stop has
   ```

3. Verify all services are stopped before the operating system upgrade.

   ```
   # ./crsctl check has
   ```

4. Upgrade the operating system to a version that is supported for your Oracle Restart release.

   Refer to your operating system documentation for more information about upgrading the operating system.

5. Reboot your Oracle Restart server after the operating system upgrade is complete.
6. As the `root` user, add the Oracle Database libraries and lock the Oracle Restart installation.

   ```
   # cd Grid_home/rdbms/install/
   # ./rootadd_rdbms.sh
   # cd Grid_home/crs/install
   # roothas.sh -lock
   ```

7. As the `root` user, enable the automatic startup of Oracle High Availability Services, when the server reboots.

   ```
   # cd Grid_home/bin
   # ./crsctl enable has
   ```

8. Start the Oracle Restart stack on the server.

   ```
   # ./crsctl start has
   ```

9. Connect to an SQL*Plus session and open the Pluggable Database (PDB).

   ```
   SQL> CONNECT / AS SYSDBA
   SQL> ALTER PLUGGABLE DATABASE pdb_name OPEN;
   ```

10. As the `grid` user, list all registered resources on your Oracle Restart server.

    ```
    $ Grid_home/bin/crsctl stat res -t
    ```

2

Upgrading and Patching Oracle Restart

Learn how to upgrade Oracle Restart to a later release using the out-of-place upgrade mode and install the patches.

- Steps to Upgrade Oracle Restart
  Complete this procedure to upgrade Oracle Grid Infrastructure for a standalone server (Oracle Restart) from an earlier release.
- Verifying the Oracle Restart Software Version After Upgrade
  Check the software release version of Oracle Restart after the upgrade.
- Downloading Release Update Patches
  Download and install Release Updates (RU) and Monthly Recommended Patches (MRPs) patches for your Oracle software after you complete installation.
- Patching Oracle Restart
  After you have upgraded to Oracle Grid Infrastructure for a standalone server (Oracle Restart) 19c, you can install individual software patches by downloading them from My Oracle Support.
- Patching and Switching Oracle Grid Infrastructure Homes
  Perform an out-of-place Oracle Restart patching by switching from the current Oracle Grid Infrastructure home to a patched Oracle Grid Infrastructure home.
- Unlocking and Deinstalling the Previous Release Grid Home
  After upgrading from previous releases, if you want to deinstall the previous release Grid home, then you must first change the permission and ownership of the previous release Grid home.

Steps to Upgrade Oracle Restart

Complete this procedure to upgrade Oracle Grid Infrastructure for a standalone server (Oracle Restart) from an earlier release.

Be prepared to run root scripts before you start the upgrade.

1. As the `grid` user, download the Oracle Grid Infrastructure image files and extract the files to the Grid home.

   For example:

   ```
   mkdir -p /u01/app/grid/product/19.0.0/grid
   chown grid:oinstall /u01/app/grid/product/19.0.0/grid
   cd /u01/app/grid/product/19.0.0/grid
   unzip -q download_location/grid_home.zip
   ```

   download_location/grid_home.zip is the path of the downloaded Oracle Grid Infrastructure image file.

> **Note:**
>
> - You must extract the image software into the directory where you want your new Grid home to be located.

2. Start the Oracle Grid Infrastructure wizard:

```
$ /u01/app/grid/product/19.0.0/grid/gridSetup.sh
```

3. Select the **Upgrade Oracle Grid Infrastructure** option to upgrade Oracle Grid Infrastructure for a standalone server.
4. Select the installation options as prompted.
5. You can run `root` scripts, either automatically or manually. Oracle recommends that you configure `root` script automation, so that the `rootupgrade.sh` script can run automatically during the upgrade.

   At any time during the upgrade, if you have a question about what you are being asked to do, or what input you are required to provide during the upgrade, then click the **Help** button on the installer window.

Verifying the Oracle Restart Software Version After Upgrade

Check the software release version of Oracle Restart after the upgrade.

1. Log in as the `grid` user.
2. Verify that Oracle Restart 19c is in use after the upgrade.

```
$ Grid_home/bin/crsctl query has releaseversion
Oracle High Availability Services version on the local node is [19.0.0.0.0]
```

Downloading Release Update Patches

Download and install Release Updates (RU) and Monthly Recommended Patches (MRPs) patches for your Oracle software after you complete installation.

Oracle provides quarterly updates in the form of Release Updates (RU) and Monthly Recommended Patches (MRPs). Oracle no longer releases patch sets. For more information, see My Oracle Support Note 2285040.1.

Check the My Oracle Support website for required updates for your installation.

1. Use a web browser to view the My Oracle Support website:

   https://support.oracle.com
2. Log in to My Oracle Support website.

> **Note:**
>
> If you are not a My Oracle Support registered user, then click **Register for My Oracle Support** and register.

3. On the main My Oracle Support page, click **Patches & Updates**.
4. In the **Patch Search** region, select **Product or Family (Advanced)**.
5. On the **Product or Family (Advanced)** display, provide information about the product, release, and platform for which you want to obtain patches, and click **Search**.

   The Patch Search pane opens, displaying the results of your search.
6. Select the patch number and click **ReadMe**.

   The README page is displayed. It contains information about the patch and how to apply the patches to your installation.
7. Uncompress the Oracle patch updates that you downloaded from My Oracle Support.

Related Topics

- My Oracle Support note 888.1
- Patch Delivery Methods for Oracle Database

Patching Oracle Restart

After you have upgraded to Oracle Grid Infrastructure for a standalone server (Oracle Restart) 19c, you can install individual software patches by downloading them from My Oracle Support.

1. Download the patches that you want to apply from My Oracle Support:

   https://support.oracle.com

   Select the **Patches and Updates** tab to locate the patch.

   Oracle recommends that you select **Recommended Patch Advisor**, and enter the product group, release, and platform for your software.

   Place the patches in a shared directory that is accessible to all users.
2. Review the README file for the patch that you want to apply, and complete all of the required steps before installing the patch.
3. As the `root` user, go to the `/OPatch` directory in the Grid home.

   ```
   # cd /u01/app/grid/product/19.0.0/grid/OPatch
   ```
4. Install the version of the OPatch utility that is recommended in the README file for the patch.
5. Follow the instructions in the README file for the patch to apply the patch.

   ```
   # opatchauto apply patch_directory_location/patch_ID
   ```
6. As the `grid` user, verify the release patch number for your Oracle Restart.

   ```
   $ Grid_home/bin/crsctl query has releasepatch
   ```

   The release patch number changes only for Release Update (RU) and Release Update Revision (RUR) patches.

Patching and Switching Oracle Grid Infrastructure Homes

Perform an out-of-place Oracle Restart patching by switching from the current Oracle Grid Infrastructure home to a patched Oracle Grid Infrastructure home.

1. Download the 19.3 Oracle Grid Infrastructure base release image files.

   https://www.oracle.com/database/technologies/oracle-database-software-downloads.html#19c

2. As the `grid` user, extract the downloaded image files into a new Oracle Grid Infrastructure home directory.

   ```
   $ mkdir -p /u01/app/oracle/product/19.17.0/grid
   $ chown grid:oinstall /u01/app/oracle/product/19.17.0/grid
   $ cd /u01/app/oracle/product/19.17.0/grid
   $ unzip -q download_location/grid.zip
   ```

   Here:

   - `/u01/app/oracle/product/19.17.0/grid` is the new Grid home.
   - `/u01/app/oracle/product/19.16.0/grid` is the old Grid home.

3. As the `grid` user, download and install the latest version of the OPatch utility in the new Grid home.

   https://updates.oracle.com/download/6880880.html

   ```
   $ mv /u01/app/oracle/product/19.17.0/grid/OPatch /u01/app/oracle/product/
   19.17.0/grid/bak_OPatch
   $ unzip latest_Opatch.zip -d /u01/app/oracle/product/19.17.0/grid/
   ```

4. Download the Oracle Database RU version that you want to apply from My Oracle Support. In this example, Oracle Database 19.17 RU.

   For more information, see, Downloading Release Update Patches

5. Start the Oracle Grid Infrastructure installer to perform a software-only Oracle Restart installation. You can apply the optional `-applyRU` or `-applyOneOff` flags to apply Release Updates (RUs) during the installation.

   ```
    $ /u01/app/oracle/product/19.17.0/grid/gridSetup.sh [-applyRU
   patch_directory_location]
   [-applyOneOffs comma_separated_list_of_patch_directory_locations]
   ```

6. Follow the steps in the configuration wizard to complete the Oracle Grid Infrastructure installation.

7. As the `root` user, run the following command to prepare the new home for the out-of-place patching:

   ```
   # /u01/app/oracle/product/19.17.0/grid/crs/install/roothas.sh -prepatch -
   dstcrshome
   /u01/app/oracle/product/19.17.0/grid
   ```

   This command does not shut down any services.

8. Run the following command to switch to the new Oracle Grid Infrastructure home and perform the out of place patching:

```
# /u01/app/oracle/product/19.17.0/grid/crs/install/roothas.sh -postpatch -
dstcrshome
/u01/app/oracle/product/19.17.0/grid
```

This command shuts down the old Oracle Grid Infrastructure home and starts resources from the new Oracle Grid Infrastructure home. All Oracle Grid Infrastructure services start running from the new Grid home.

9. Update the Oracle central inventory (oraInventory).

```
$ /u01/app/oracle/product/19.17.0/grid/oui/bin/runInstaller -
updateNodeList ORACLE_HOME=/u01/app/oracle/product/19.17.0/grid CRS=TRUE
$ /u01/app/oracle/product/19.16.0/grid/oui/bin/runInstaller -
updateNodeList ORACLE_HOME=/u01/app/oracle/product/19.16.0/grid CRS=FALSE
```

10. To switch back to the old Grid home:

    a. As the `root` user, run the `prepatch` script.

    ```
    # Old_GI_Home/crs/install/roothas.sh -prepatch -dstcrshome Old_GI_Home
    ```

    b. As the `grid` user, run the `postpatch` script.

    ```
    # Old_GI_Home/crs/install/roothas.sh -postpatch -dstcrshome Old_GI_Home
    ```

    c. Update the Oracle central inventory (oraInventory).

    ```
    $ /u01/app/oracle/product/19.16.0/grid/oui/bin/runInstaller -
    updateNodeList ORACLE_HOME=/u01/app/oracle/product/19.16.0/grid CRS=TRUE
    $ /u01/app/oracle/product/19.17.0/grid/oui/bin/runInstaller -
    updateNodeList ORACLE_HOME=/u01/app/oracle/product/19.17.0/grid
    CRS=FALSE
    ```

Unlocking and Deinstalling the Previous Release Grid Home

After upgrading from previous releases, if you want to deinstall the previous release Grid home, then you must first change the permission and ownership of the previous release Grid home.

1. As the `root` user, unlock the previous release Grid home.

```
# /u01/app/oracle/product/18.0.0/grid/crs/install/roothas.sh -unlock -
dstcrshome previous_release_Grid_home
```

2. After you change the permissions and ownership of the previous release Grid home, log in as the Oracle Grid Infrastructure installation owner (`grid`, in the preceding example), and use the `deinstall` command from the previous release Grid home `$ORACLE_HOME/deinstall` directory.

Caution:

You must use the `deinstall` command from the same release to remove Oracle software. Do not run the `deinstall` command from a later release to remove Oracle software from an earlier release. For example, do not run the `deinstall` command from the 19.0.0.0.0 Grid home to remove Oracle software from an existing 18.0.0.0.0 Grid home.

3
Downgrading Oracle Restart

You can restore Oracle Grid Infrastructure for a standalone server (Oracle Restart) to the previous release after a successful or a failed upgrade.

- Options and Restrictions for Oracle Restart Downgrades
  Review these downgrade options and restrictions when you downgrade Oracle Restart to an earlier release after a successful or a failed upgrade.
- Downgrading Oracle Restart
  Use this procedure to deconfigure and downgrade Oracle Restart, or to troubleshoot Oracle Restart installation errors.

Options and Restrictions for Oracle Restart Downgrades

Review these downgrade options and restrictions when you downgrade Oracle Restart to an earlier release after a successful or a failed upgrade.

Downgrade options include the following earlier releases:

- Oracle Restart downgrade to Oracle Restart 18c.
- Oracle Restart downgrade to Oracle Restart 12c Release 2 (12.2).
- Oracle Restart downgrade to Oracle Restart 12c Release 1 (12.1.0.2).
- Oracle Restart downgrade to Oracle Restart 11g Release 2 (11.2.0.4).

Restrictions for Oracle Restart Downgrades

- You can downgrade Oracle Restart to an earlier release only if you did not make any configuration changes after the upgrade.
- You can only downgrade to the Oracle Restart release you upgraded from. For example, if you upgraded from Oracle Restart 18c to Oracle Restart 19c, then you can only downgrade to Oracle Restart 18c.

Downgrading Oracle Restart

Use this procedure to deconfigure and downgrade Oracle Restart, or to troubleshoot Oracle Restart installation errors.

Running `roothas.sh` with the command flags `-deconfig -force` enables you to deconfigure Oracle Restart without removing the installed binaries. This feature is useful if you encounter an error during an Oracle Grid Infrastructure for a standalone server installation. For example, when you run the `root.sh` command, and find a missing operating system package. By running `roothas.sh -deconfig -force`, you can deconfigure Oracle Restart, correct the cause of the error, and then run `root.sh` again.

1. As the `oracle` user, create a backup of the SPFILE to a PFILE.

   ```
   CREATE PFILE='/u01/app/oracle/product/19.0.0/dbhome_1/dbs/test_init.ora'
   FROM SPFILE='/u01/oracle/dbs/test_spfile.ora';
   ```

2. List all the Oracle Databases on the server with their version, unique name of the database, and Oracle home information.

   ```
   $ srvctl config database -home
   ```

3. Downgrade Oracle Database. Refer to *Oracle Database Upgrade Guide* for more information about required pre-downgrade tasks, downgrade tasks, post-downgrade tasks, and compatibility information.

   > **Note:**
   >
   > Downgrade Oracle Database only if the Oracle Database version is higher than the Oracle Restart version to which you are downgrading Oracle Restart.

4. As the `oracle` user, downgrade the Oracle Restart resources corresponding to the Oracle Database, only if you have downgraded your Oracle Database.

   ```
   $ srvctl downgrade database -d db_unique_name -oraclehome $ORACLE_HOME -t
   to_version
   ```

5. Inspect the Oracle Restart configuration of each database, service, and listener.

   ```
   $ srvctl config database -db db_unique_name
   $ srvctl config service -db db_unique_name
   $ srvctl config listener -listener listener_name
   ```

   Make a note of the configuration information and use this information when adding the components back to Oracle Restart.

6. Stop all databases and listeners that are running before you deconfigure or downgrade Oracle Restart.

   ```
   $ srvctl stop database -db db_unique_name
   $ srvctl stop listener [-listener listener_name]
   ```

7. As the `root` user, run `roothas.sh` with the `-deconfig -force` flags to deconfigure Oracle Restart.

   ```
   # /u01/app/oracle/product/19.0.0/grid/crs/install/roothas.sh -deconfig -
   force
   ```

8. As the `grid` user, update the Oracle central inventory (`oraInventory`).

   ```
   $ /u01/app/oracle/product/19.0.0/grid/oui/bin/runInstaller -updateNodeList
   -silent ORACLE_HOME=upgraded_Grid_home -local CRS=false
   ```

9. As the `root` user, run `roothas.sh` with the `-unlock` flag to unlock the previous release Oracle Restart home.

   ```
   # /u01/app/oracle/product/18.0.0/grid/crs/install/roothas.sh -unlock -
   dstcrshome previous_release_Grid_home
   ```

10. As the `grid` user, reconfigure the previous release Oracle Restart home using the `gridSetup.sh` command.

    ```
    $ /u01/app/oracle/product/18.0.0/grid/gridSetup.sh
    ```

11. As the `oracle` user, add the components back to Oracle Restart with the same attributes that you noted down before deconfiguring Oracle Restart.

    a. Add Oracle Database to the Oracle Restart configuration.

       ```
       $ srvctl add database -db db_unique_name -oraclehome Oracle_home
       ```

    b. Add the listener to the Oracle Restart configuration.

       ```
       $ srvctl add listener -listener listener_name -oraclehome Oracle_home
       ```

       For the `-oraclehome` parameter, provide the Oracle home path from which the listener was running before the downgrade.

    c. Add each service to the database, using the `srvctl add service` command.

       ```
       $ srvctl add service -db db_unique_name -service service_name_list
       ```

Related Topics

- *Oracle Database Upgrade Guide*