Reducing Downtime While Patching Multi-OMS Environments

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Platform: UNIX

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1 Introduction

This whitepaper provides instructions on how you can patch your primary and standby multi-OMS systems with minimum downtime, on all UNIX-based systems. Considering that downtime is your major concern, this document has been written to provide step-by-step instructions on how you can apply a system patch for your multi-OMS primary environment, multi-OMS standby environment, or single standby environment with minimum downtime.

A system patch, also known as a bundle patch, is a patch that when applied upgrades your Management Repository, Oracle Management Service (OMS), software OMS, or OMS configuration file.

In this whitepaper, you will be introduced to two modes of deployment – rolling mode, and downtime mode. The rolling mode indicates that there is near zero downtime for the OMS system being patched. The downtime mode indicates a downtime for the OMS system being patched.

Do note that this whitepaper does not address pre-backup and post-backup of the Management Repository and the OMS file system before the patching process.

Oracle strongly recommends that a full backup must be taken before you apply any rolling or non-rolling patch. It is also recommended that you must take a complete environment backup after a successful patch completion. This backup should not replace the backup taken before patching. It is a supplemental backup creation of two restore points, one before and one after patching.

You can take both the backups without any downtime. For more details on backup, refer to the following URL: http://docs.oracle.com/cd/E24628_01/install.121/e24089/ha_backup_recover.htm#BGBCCIJC

2 How to Find Bundle Patches for Oracle Management Service (OMS)

To know your latest patches on top of Oracle Management Service (OMS) 12.1.0.3.0 and 12.1.0.4.0 , refer to the following My Oracle Support notes:

- Enterprise Manager 12.1.0.4.0 Master Bundle Patch List (Doc ID 1900943.1)
- Enterprise Manager 12.1.0.3.0 Bundle Patch Master (Doc ID1572022.1)
- Oracle Recommended Patches (PSU) for Enterprise Manager Base Platform (All Releases) (Doc ID 822485.1)

3 OPatchauto Prerequisites

Before you apply any patch, meet the following prerequisites:

1. Ensure that all OMS instances are up and running

2. Ensure that the latest version of OPatch 11.1 is on all Oracle Management Service (OMS), instance homes. To know what OPatch version you have and how to upgrade OPatch to the latest version available in My Oracle Support, refer to section Upgrading OPatch.

Note: *OPatch 11.2.0.x.0 version is not supported with Oracle Management Service (OMS) 12.1.0.3 and 12.1.0.4.*

3. Download the required patch from My Oracle Support and store the patch zip file on the Oracle Management Service (OMS) host or a shared location.
    Unzip the patch in the location. In the rest of the document, this location is referred to as `<PATCH_LOC>` (absolute path).

4. Ensure that the Oracle Management Service (OMS) install user has patch permissions for this download and for later usage of this downloaded patch.

5. Create a property file `(<PROPERTY_FILE>)` for Weblogic access on each OMS box.
    To know how to create a property file, refer to `<PROPERTY_FILE>.`
    It is recommended that you store the property file in a secure, shared location. This enables you to reuse the same credential file across all OMSes.

    Note: *If the Weblogic Admin server credentials do not change, you can also use the property file for subsequent patches.*
    The `property_file` *option is optional. It enables you to reuse the Weblogic Admin server credentials without specifying it every time. If this option is not provided, Opatchauto will prompt for credentials.*

6. Set `ORACLE_HOME` environment variable to `<PLATFORM_HOME>`.
    For example, if the Middleware home is `/aaps/oracle/middleware`, then, the Platform home will be `/aaps/oracle/middleware/oms`.

7. Run the following command on each of the OMS instances:
    ```
    $ <PLATFORM_HOME>/OPatch/opatchauto lspatches
    ```
    If the output of the above command lists all the patches applied on the OMS instance, then this ensures that the inventory of each OMS instance is not corrupted and is accessible.

8. Before you start the patching operation, it is recommended that you run opatchauto with the `-analyze` option on each OMS instance. The `apply -analyze` command simulates an OPatchauto apply session by running all prerequisite checks, when possible, without making changes to the system (either bits or configurations). This command does not apply the patch.

    If there any errors, you can rectify them and rerun the below command to verify if they have been resolved. This will also help you reduce your downtime.

    Note: *If you want to run the command on a standby OMS then use the* `-standby` *option.*

    Run the following command:
    ```
    $ORACLE_HOME/OPatch/opatchauto apply <PATCH_LOC> -analyze [ -property_file <PROPERTY_FILE> ]
    ```

4 Patching a Single OMS With Management Repository (Single or RAC)

This section describes how you can patch a single Oracle Management Service (OMS). To apply the patch, follow these steps:

1. Verify if the OMS is up or down by running the following command:
   ```
   $ORACLE_HOME/bin/emctl status oms
   ```
   If the OMS is already down, skip step 2.

2. (Downtime) Stop the OMS by running the following command:
   ```
   $ORACLE_HOME/bin/emctl stop oms -force
   ```
   This command should be executed on the host where the Admin server is running.

3. (Downtime) Apply the patch by running the following command:
   ```
   $ORACLE_HOME/OPatch/opatchauto apply <PATCH_LOC> -property_file
   <PROPERTY_FILE>
   ```

   Example:
   If the Middleware home is `/u01/app/Oracle/Middleware/`, then the Platform home location is
   `/u01/app/Oracle/Middleware/oms` and `PATCH_LOC` will be the patch unzipped location: `/u01/app/18945232`

   Set the `ORACLE_HOME` environment variable to the platform home location.

   Example:
   ```
   /u01/app/Oracle/Middleware/oms/OPatch/opatchauto apply /u01/app/18945232 -property_file
   /u01/app/Oracle/propertyfile
   ```

4. Verify if the patches applies are listed, by running the following command:
   ```
   $ORACLE_HOME/OPatch/opatchauto lspatches
   ```

5. Start the OMS by running the following command:
   ```
   $ORACLE_HOME/bin/emctl start oms
   ```

5 Patching Multiple OMSes With a Load Balancer

This section covers patching of multiple OMSes which have a load balancer with Management Repository (Single or RAC). Once you have identified the patch that you want to apply to your OMSes, then you need to find out if that patch is rolling or not.
Do note that not all OMS patches are rolling.
To find out if the patch is rolling or not, refer to the section, Detecting a Rolling or Non-Rolling Patch.

Based on if your patch is rolling or not, refer to the following usecases:

- Applying a Rolling Patch to Multi-OMS Environment
- Applying a Non–Rolling Patch to Multi-OMS Environment

5.1 Applying a Rolling Patch to a Multi-OMS Environment

A rolling patch is one that does not have any foot print in the Management Repository and just updates JAVA binaries. By default, rolling patches have zero downtime. For such patches, OPatchauto does not generate scripts but directly updates binaries on the Oracle Management Service (OMS).where it is invoked.

The patching steps in this section must be executed on each of the OMS instances in succession. There should always be at least one OMS running while applying a patch in rolling mode.
In rolling patching, you can follow the steps listed in this section, on any one OMS and then follow them for other OMSes in serial. There is no downtime while applying patches in the rolling method as there will be at least one OMS up and running.

To apply the patch, do the following for each of the OMS instances (in serial):

1. (No Downtime) Verify if the OMS is up or down by running the following command:
   `$ORACLE_HOME/bin/emctl status oms`
   If the OMS is already down, skip step 2.

2. (Downtime) Stop the OMS by running the following command:
   `$ORACLE_HOME/bin/emctl stop oms -force`

3. (No Downtime) Apply the patch by running the following command :
   `$ORACLE_HOME/OPatch/opatchauto apply <PATCH_LOC> -property_file <PROPERTY_FILE>`

   Example:
   If the Middleware home is `/u01/app/Oracle/Middleware/`, then the Platform home location is `/u01/app/Oracle/Middleware/oms` and `PATCH_LOC` is the patch unzipped location: `/u01/app/18945232`

   Set the `ORACLE_HOME` environment variable to platform home location.

   Example:
   `/u01/app/Oracle/Middleware/oms/OPatch/opatchauto apply /u01/app/18945232 -property_file /u01/app/Oracle/propertyfile`

4. (No Downtime) Verify the inventory on each OMS for successful patch application, by running the following command:
   `$ORACLE_HOME/OPatch/opatchauto lspatches`
   The applied patches must be displayed.

5. Start the OMS by running the following command:
   `$ORACLE_HOME/bin/emctl start oms`

5.2 Applying a Non-Rolling Patch to a Multi-OMS Environment

A non-rolling patch requires a downtime of the Oracle Management Service (OMS).
To apply the patch and minimize downtime, follow these steps:

1. (No Downtime) Execute the following command on the OMS instance where the Admin server is running:
   `$ORACLE_HOME/OPatch/opatchauto apply <PATCH_LOC>-[property_file <PROPERTY_FILE>]`

   In a multi-OMS environment, the above command generates scripts, one for each OMS instance. These scripts have a host name and a username embedded in the script name so that you can run the right script on the required OMS instances. These scripts include all the sub steps for the patch application and therefore they save time. In previous Enterprise Manager releases, without these scripts, the sub

steps had to be manually copied and pasted from the ReadMe to the command prompt. This created errors and was time consuming.

To view the output of the command and how scripts are displayed, refer to Generating the Script. You do not have to stop the OMS to run this command and generate scripts.

Note:
To determine which host maps to the admin server, refer to <u><PROPERTY_FILE>.</u>
This section contains details of figuring the Admin server URL.

If you have a shared location, add the following:
`OPatchAuto.OMS_SCRIPTS_DIR=<SHARED_SCRIPTS_DIR>`
If you are using a virtual host, add the following to the command line:
`add OPatchAuto.OMS_DISABLE_HOST_CHECK=true`

The above switch for virtual hosts can be used to bypass certificate errors from Weblogic. Virtual host customers are those who have weblogic host mapped to virtual host rather than real host addresses. In such cases, the above switch can be used to bypass certificate errors from weblogic)

Example:
You have OMS1, OM2 and OM3.
 OMS1 is where the Admin server running. It can also be referred to as primary OMS). OMS2 and OMS3 do not have Admin servers running on them. They are also referenced as secondary OMSes.
When you run the opatchauto command on OMS1, it will generate 3 scripts for each OMS. OMS2 and OMS3 are shut down so as to run the scripts on them in parallel. However, OMS1 is still up and running. The scripts that are generated for secondary OMSes (OMS2, OMS3) just updates the binary and hence we have OMS1 (primary OMS) up and running during this time. Now, you shutdown the primary OMS1 and run the required script. While running the script on the primary OMS all the other OMSes are also down. The script for primary OMS (with Admin server) does both binary and deployments (SQL, MRS artifacts) updates on the OMS. Hence, this is the actual downtime.

2. (No Downtime) By default the scripts generated in the above command are stored in the platform home.
   If your Platform home is `/scratch/abc/oms_install_dir/middleware/oms`, then the scripts will be stored in following location:
   `"/scratch/abc/oms_install_dir/middleware/oms/.opatchauto_patch_storage/oms_session/scripts_2014-05-02_11-05-17/run_script#1_on_host_xyz_example_com_as_user_abc"`

   It is recommended that you save these scripts in a location that is shared across your OMSes . This will save time by not individually copying the scripts on each OMS host.
   You can provide the parameter <SHARED_SCRIPTS_DIR> while running the opatchauto command so that the scripts are saved in the shared location.
   To copy the scripts, refer to Copying the Script to Other OMS Instances.

3. (No Downtime) Stop all the OMS instances which do not have the Admin server running on them, by running the following command:
   `$ORACLE_HOME/bin/emctl stop oms –force`

4. Run the respective scripts on these OMS instances in parallel, as described in section Running Binary Patch Script Only (Non-Admin server OMS).
    Running the scripts in parallel will save time and during this time the primary OMS instance which the Admin server has configured will be up and running. Hence, there is no downtime.
   The scripts just perform binary patching on the OMSes.

5. (No Downtime) Verify the inventory on each secondary OMS (non- Admin server OMS) for successful patch application , by running the following command:

```
$ORACLE_HOME/OPatch/opatchauto lspatches
```
The applied patches must be displayed.

6. (Downtime) Stop the Primary OMS (with Admin server) instance by running the following command:
   ```
   $ORACLE_HOME/bin/emctl stop oms -force
   ```
   Note: *Ensure that all the OMSes are down before moving to the next step.*

7. (Downtime) For Primary OMS (with admin server), run the required script as described in section [Running Binary Patch and Deployment Script (Admin server OMS).](#)
   The script does both binary and deployments (SQL, MRS artifacts) on the Primary OMS (with Admin server). All the OMSes are down during this script execution.

8. (Downtime) Verify the inventory for successful patch application on the Primary OMS (with Admin server) by running the following command:
   ```
   $ORACLE_HOME/OPatch/opatchauto lspatches
   ```
   The applied patches must be displayed.

9. (No Downtime) Start all OMSes by running the following command:
   ```
   $ORACLE_HOME/bin/emctl start oms
   ```
   This command must be executed on all OMS instances. It can be done in parallel. Starting the OMSes enables Enterprise Manager to be up for target monitoring.

6 Patching a Primary and a Standby OMS With a Load Balancer

This section covers patching steps for various primary and standby OMS configuration. In this use case, both the primary and the standby OMS hosts are updated in the load balancer. The Management Repository for this usecase is a common Management Repository for the primary OMS and the standby OMS.

This section consists of the following subsections:
- [How Was Your Standby OMS Configured?](#)
- [Patching a Primary OMS When the Standby OMS is Configured Using Storage Replication](#)
- [Patching a Primary OMS and a Standby OMS Configured Using Weblogic Domain Method](#)
- [Patching a Multi-OMS Primary and a Standby OMS Configured Using Weblogic Domain Method](#)

6.1 How Was Your Standby OMS Configured?

There are two methods that you to configure the standby OMS- storage replication method, and standby Weblogic domain method. Based on what method you have used, your patching process will differ.

To determine the standby OMS configuration type, run the following command on any one of the standby OMSes:
```
$ORACLE_HOME/bin/emctl status oms -details
```
Retrieve the domain name, and run the same command on any one of the primary OMSes. If the domain name is the same for both, then the standby OMS has been configured using the storage replication

method. If the domain name is different, then the standby OMS has been configured using the standby Weblogic domain method.

Standby OMS Configured Using Storage Replication
If the standby OMS has been configured by storage replication, there is no requirement to patch the standby OMS using the opatchauto command. This is because the patches that are applied on the primary OMS can be replicated to the file system for standby host either manually or using the automatic storage replication.
For more information on using the storage replication setup, refer to the following URL:
http://docs.oracle.com/cd/E24628_01/install.121/e24089/ha_disaster.htm#CHDCBDIH

If you have a primary and standby OMS environment setup, where the standby OMS was configured using storage replication method, then you need to first patch your primary OMS by following the steps outlined in section Patching Multiple Primary OMSes When the Standby OMS is Configured Using Storage Replication.

Standby OMS Configured Using Weblogic Domain Method
If the standby Oracle Management Service (OMS) has been configured using Standby Weblogic Domain, you will have to patch the standby OMS by following the steps outlined in the following usecases:
For more information on using the standby weblogic domain, refer to the following URL:
http://docs.oracle.com/cd/E24628_01/install.121/e24089/appdx_standby_oms.htm#CJAGFCAA

If you have a primary and standby OMS environment setup, where the standby OMS was configured using the Weblogic domain method, then you need to patch both the primary and standby OMSes by following the steps outlined in the following sections:

- Patching a Single Primary OMS and a Single Standby OMS Configured Using Weblogic Domain Method
- Patching Multiple Primary OMSes and Multiple Standby OMSes Configured Using Weblogic Domain Method

6.2 Patching Multiple Primary OMSes When the Standby OMS is Configured Using Storage Replication

This usecase describes how you can patch a primary OMS when the Standby OMS has been configured using storage replication. The standby OMS does not need to be patched. You can patch the primary OMS using a rolling or non-rolling patch.

This section consists of the following usecases:

- Applying a Rolling Patch to a Primary OMS

- Applying a Non-Rolling Patch to a Primary OMS

6.2.1 Applying a Rolling Patch to a Primary OMS

A rolling patch is one that does not have any foot print in the Management Repository and just updates JAVA binaries. By default, rolling patches have zero downtime. For such patches, OPatchauto does not generate scripts but directly updates binaries on the Oracle Management Service (OMS).where it is invoked.

The patching steps in this section must be executed on each OMS instance in succession. There should always be at least one primary OMS running while applying a patch in rolling mode.
In rolling patching, you can follow the steps in this section for any one OMS and then follow it for the other OMSes, in serial. There is no downtime while applying patches in the rolling method as there is at least one OMS up and running.

To apply the patch, do the following for each primary OMS instances (in serial):

1. (No Downtime) Verify if the primary OMS is up or down by running the following command:
   `$ORACLE_HOME/bin/emctl status oms`
   If the OMS is already down, skip Step (2).

2. (No Downtime) Stop the OMS by running the following command:
   `$ORACLE_HOME/bin/emctl stop oms -force`

3. (No Downtime) Apply the patch by running the following command :
   `$ORACLE_HOME/OPatch/opatchauto apply <PATCH_LOC> -property_file <PROPERTY_FILE>`

   Example:
   If the Middleware home is `u01/app/Oracle/Middleware/`, then the Platform home location is `u01/app/Oracle/Middleware/oms` and `PATCH_LOC` will be the patch unzipped location: `u01/app/18945232`

   Set the `ORACLE_HOME` environment variable to platform home location.

   Example:
   `/u01/app/Oracle/Middleware/oms/OPatch/opatchauto apply /u01/app/18945232 -property_file /u01/app/Oracle/propertyfile`

4. (No Downtime) Verify the inventory on each OMS for successful patch application , by running the following command:
   `$ORACLE_HOME/OPatch/opatchauto lspatches`
   The applied patches must be displayed.

5. Start the OMS by running the following command:
   `$ORACLE_HOME/bin/emctl start oms`

6.2.2 Applying a Non-Rolling Patch to a Primary OMS

A non-rolling patch requires a downtime of the Oracle Management Service (OMS).

To apply the patch and minimize downtime, follow these steps:

1. (No Downtime) Execute the following command on the OMS instance where the Admin server is running:
   `$ORACLE_HOME/OPatch/opatchauto apply <PATCH_LOC>-[property_file <PROPERTY_FILE>]`

   In a multi-OMS environment, the above command generates scripts, one for each OMS instance. These scripts have a host name and a username embedded in the script name so that you can run the right script on the required OMS instances. These scripts include all the sub steps for the patch application and therefore they save time. In previous Enterprise Manager releases, without these scripts, the sub

steps had to be manually copied and pasted from the ReadMe to the command prompt. This created errors and was time-consuming.

To view the output of the command and how scripts are displayed, refer to Generating the Script. You do not have to stop the OMS to run this command and generate scripts.

> **Note:**
> *To determine which host maps to the admin server, refer to* <PROPERTY_FILE>.
> *This section contains details of figuring the Admin server URL.*
>
> *If you have a shared location, add the following:*
> `OPatchAuto.OMS_SCRIPTS_DIR=<SHARED_SCRIPTS_DIR>`
> *If you are using a virtual host, add the following to the command line:*
> `add OPatchAuto.OMS_DISABLE_HOST_CHECK=true`
>
> *The above switch for virtual hosts can be used to bypass certificate errors from Weblogic. Virtual host customers are those who have weblogic host mapped to virtual host rather than real host addresses. In such cases, the above switch can be used to bypass certificate errors from weblogic)*

2. (No Downtime) By default the scripts generated in the Step 1 are stored in the platform home.

    > **Example:**
    > If your Platform home is `/scratch/abc/oms_install_dir/middleware/oms` , then the scripts will be stored in following location:
    > ```
    > "/scratch/abc/oms_install_dir/middleware/oms/.opatchauto_patch_storage/oms_session/scrip
    > ts_2014-05-02_11-05-17/run_script#1_on_host_xyz_example_com_as_user_abc" to
    > "xyz.example.com" and execute the script.
    > ```

    It is recommended that you save these scripts in a location that is shared across your OMSes . This will save time by not individually copying the scripts on each OMS host.
    You can provide the parameter <SHARED_SCRIPTS_DIR> while running the opatchauto command so that the scripts are saved in the shared location.
    To copy the scripts, refer to Copying the Script to Other OMS Instances.

3. (Downtime) Apply patches on the primary OMS. Stop the primary OMSes in serial, by running the following command on each OMS instance:
    `$ORACLE_HOME/bin/emctl stop oms –force`

4. (Downtime) For each primary OMS, run the appropriate script generated in Step 1. You can run these scripts on the primary OMSes in serial.

5. (Downtime) Verify the inventory on each primary OMS for successful patch application , by running the following command:
    `$ORACLE_HOME/OPatch/opatchauto lspatches`
    The applied patches must be displayed.

6.   (No Downtime) Start all primary OMSes by running the following command:
    `$ORACLE_HOME/bin/emctl start oms`

    This command must be executed on all OMS instances. It can be done in parallel. Starting the OMSes enables Enterprise Manager to be up for target monitoring.

    Note: *After you move to your standby on the replicated machine, ensure that all the applied patches are listed using* `$ORACLE_HOME/OPatch/opatchauto lspatches`.

6.3 Patching a Single Primary OMS and a Single Standby OMS Configured Using Weblogic Domain Method

This usecase describes how you can patch a single primary (with Admin server) Oracle Management Service (OMS) and a standby OMS with a load balancer. The patching steps in this use case are first executed on the primary OMS when it is in downtime. The next set of patching steps are executed on the standby OMS.

This section consists of the following usecases:
- Patching a Primary OMS
- Patching a Standby OMS

6.3.1 Patching a Primary OMS

To apply the patch to the primary OMS, follow these steps:

1. (No Downtime) Verify if the primary OMS is up or down by running the following command:
   `$ORACLE_HOME/bin/emctl status oms`
   If the OMS is already down, you can skip step 2.

2. (Downtime) Stop the primary OMS by running the following command:
   `$ORACLE_HOME/bin/emctl stop oms -force`

3. (Downtime) Apply the patch by running the following command:
   `$ORACLE_HOME/OPatch/opatchauto apply <PATCH_LOC> -property_file <PROPERTY_FILE>`

   Example:
   If the Middleware home is `u01/app/Oracle/Middleware/`, then the Platform home location is `u01/app/Oracle/Middleware/oms` and `PATCH_LOC` will be the patch unzipped location: `u01/app/18945232`.

   Set the `ORACLE_HOME` environment variable to platform home location.

   Example:
   `/u01/app/Oracle/Middleware/oms/OPatch/opatchauto apply /u01/app/18945232 -property_file /u01/app/Oracle/propertyfile`

4. Start the primary OMS by running the following command:
   `$ORACLE_HOME/bin/emctl start oms`
   No downtime is required while performing this step.

6.3.2 Patching a Standby OMS

To apply the patch to the standby OMS, follow these steps:

1. Ensure that the primary OMS is up and running. This would mean that there is no downtime in Enterprise Manager for standby OMS patching.

2. Ensure that the Admin server on the standby OMS is up and running. To verify this, run the following command:
    ```
    $ORACLE_HOME/bin/emctl start oms -admin_only
    ```

3. (No Downtime) Verify if the standby OMS is already down by running the following command:
    ```
    $ORACLE_HOME/bin/emctl status oms
    ```

4. (No Downtime) Stop the standby OMS by running the following command:
    ```
    $ORACLE_HOME/bin/emctl stop oms –force
    ```

5. (No Downtime) Run the following command on the standby OMS instance on which the Admin server is running :
    ```
    $ORACLE_HOME/OPatch/opatchauto apply <PATCH_LOC> [property_file
    <PROPERTY_FILE>] –standby
    ```

    Note:
    To determine which host maps to the Admin server, refer to <PROPERTY_FILE>.
    This section contains details of figuring the Admin server URL.

    If you are using a virtual host, add the following to the command line:
    add OPatchAuto.OMS_DISABLE_HOST_CHECK=true
    Virtual host customers are those who have Weblogic host mapped to virtual host rather than real host addresses. In such cases, the above switch can be used to bypass certificate errors from Weblogic.

6. (No Downtime) Verify the inventory for successful patch application on the primary OMS (Admin server) by running the following command:
    ```
     $ORACLE_HOME/OPatch/opatchauto lspatches
    ```
    The applied patches must be displayed.

6.4 Patching Multiple Primary OMSes and Multiple Standby OMSes Configured Using Weblogic Domain Method

The Management Repository for this usecase is an independent Management Repository for the primary OMS and the standby OMS.
To know more about standby OMSes using the Standby Weblogic Domain method, refer to the following URL:
http://docs.oracle.com/cd/E24628_01/install.121/e24089/appdx_standby_oms.htm#CJAGFCAA

There is no need to switchover to standby OMS while patching the primary OMS.

This section consists of the following usecases:
- Patching a Primary OMS
- Patching a Standby OMS

6.4.1 Patching a Primary OMS

You can apply rolling and non-rolling patches to your primary Oracle Management Service (OMS). Not all OMS patches are rolling.

To find out if the patch is rolling or not, refer to the section Detecting a Rolling or Non-Rolling Patch.

Based on if your patch is rolling or not, refer to the following usecases:

- Applying a Rolling Patch to a Primary OMS
- Applying a Non–Rolling Patch to a Primary OMS

6.4.1.1 Applying a Rolling Patch to a Primary OMS

A rolling patch is one that does not have any foot print in the Management Repository and just updates JAVA binaries. By default, rolling patches have zero downtime. For such patches, OPatchauto does not generate scripts but directly updates binaries on the Oracle Management Service (OMS) where it is invoked.

Note:

The patching steps in this section must be executed on each primary OMS instance in succession. There should always be at least one primary OMS running while applying a patch in rolling mode.

To apply the patch, do the following for each of the primary OMS instances (in serial):

1. (No Downtime) Verify if the primary OMS is up or down, by running the following command:
   `$ORACLE_HOME/bin/emctl status oms`
    If the OMS is already down, skip step 2.
   Run this step on the primary OMSes one after the other, so that you do not have to shut down all the primary OMSes at the same time.

2. (No Downtime) Stop the OMS, by running the following command:
   `$ORACLE_HOME/bin/emctl stop oms –force`

3. (No Downtime) Apply the patch, by running the following command :
   `$ORACLE_HOME/OPatch/opatchauto apply <PATCH_LOC> -property_file <PROPERTY_FILE>`

   Example:
   If the Middleware home is `/u01/app/Oracle/Middleware/,` then the Platform home location is `/u01/app/Oracle/Middleware/oms`, and `PATCH_LOC` will be the patch unzipped location: `/u01/app/18945232.`

   Set the `ORACLE_HOME` environment variable to platform home location.

   Example:
   `u01/app/Oracle/Middleware/oms/OPatch/opatchauto apply /u01/app/18945232 –property_file /u01/app/Oracle/propertyfile`

4. (No Downtime) Verify the inventory for successful patch application on the Primary OMSes, by running the following command:
    `$ORACLE_HOME/OPatch/opatchauto lspatches`
   The output of the command should display the patches applied.

5. (No Downtime) Start the OMS, by running the following command:

```
$ORACLE_HOME/bin/emctl start oms
```

6.4.1.2 Applying a Non-Rolling Patch to a Primary OMS

A non-rolling patch requires a downtime of the primary Oracle Management Service (OMS).
This section outlines the steps to apply a patch on primary OMSes when you have standby OMSes with a load balancer.

Note:
There is no sequence of which primary OMS needs to patch first. You can begin with any primary OMS.

To apply the patch, do the following on all primary OMSes instance, in serial:

1. (No Downtime) Execute the following command on any primary OMS instance :
    ```
    $ORACLE_HOME/OPatch/opatchauto apply <PATCH_LOC> -[property_file
    <PROPERTY_FILE>]
    ```

    In a multi-OMS environment, the above command generates scripts, one for each OMS instance. These scripts have a host name and a username embedded in the script name so that you can run the right script on the required OMS instances. These scripts include all the sub steps for the patch application and therefore they save time. In previous Enterprise Manager releases, without these scripts, the sub steps had to be manually copied and pasted from the ReadMe to the command prompt. This created errors and was time consuming.

    To view the output of the command and how scripts are displayed, refer to Generating the Script.
    You do not have to stop the OMS to run this command and generate scripts.

    Note:
    To determine which host maps to the admin server, refer to <PROPERTY_FILE>.
    This section contains details of figuring the Admin server URL.

    If you have a shared location, add the following:
    ```
    OPatchAuto.OMS_SCRIPTS_DIR=<SHARED_SCRIPTS_DIR>
    ```
    If you are using a virtual host, add the following to the command line:
    ```
    add OPatchAuto.OMS_DISABLE_HOST_CHECK=true
    ```

    The above switch for virtual hosts can be used to bypass certificate errors from Weblogic. Virtual host customers are those who have Weblogic host mapped to virtual host rather than real host addresses. In such cases, the above switch can be used to bypass certificate errors from Weblogic).

2. (No Downtime) By default the scripts generated in Step 1 are stored in the platform home.

    Example:
    If your Platform home is `/scratch/abc/oms_install_dir/middleware/oms,` then scripts will be stored in following location:
    ```
    "/scratch/abc/oms_install_dir/middleware/oms/.opatchauto_patch_storage/oms_session/scrip
    ts_2014-05-02_11-05-17/run_script#1_on_host_xyz_example_com_as_user_abc"
    ```

    It is recommended that you save these scripts in a location that is shared across your OMSes . This will save time by not individually copying the scripts on each OMS host.
     You can provide the parameter <SHARED_SCRIPTS_DIR> while running the opatchauto command so that the scripts are saved in the shared location.
    To copy the scripts, refer to Copying the Script to Other OMS Instances.

```

3. (Downtime when you patch first primary OMS) Stop all the primary OMSes together or one after the other, by running the following command:
   `$ORACLE_HOME/bin/emctl stop oms -force`

4. ( Downtime) Run the appropriate scripts generated from Step 1 on each primary OMS one after the other. To know how to run the scripts, refer to the section [Running Binary Patch and Deployment Script  (Admin server OMS)](#).

5. ( Downtime) Verify the inventory for each primary OMS  for successful patch application, by running the following command:
   `$ORACLE_HOME/OPatch/opatchauto lspatches`
   The patches that are applied must be displayed in the output.

6. (No Downtime) Start the primary OMSes by running the following command:
   `$ORACLE_HOME/bin/emctl start oms`

## 6.4.2  Patching a Standby OMS

You can apply rolling and non-rolling patches to your standby OMSes. Not all OMS patches are rolling. To determine if the patch is rolling or not, refer to the section [Detecting a Rolling or Non-Rolling Patch.](#)

Based on if your patch is rolling or not, refer to the following usecases:

- [Applying a Rolling Patch to a Standby OMS](#)
- [Applying a Non–Rolling Patch to a Standby OMS](#)

### 6.4.2.1 Applying a Rolling Patch to a Standby OMS

A rolling patch is one that does not have any foot print in the Management Repository and just updates JAVA binaries. By default, rolling patches have zero downtime.  For such patches, OPatchauto does not generate scripts but directly updates binaries on the Oracle Management Service (OMS) where it is invoked.

**Note:**
*The patching steps in this section must be executed on each standby OMS instance, in succession. There should always be at least one primary OMS running while applying a patch in rolling mode.*
*While executing the steps in this section, the primary OMSes are up and running. Therefore, there is no downtime.*

To apply the patch, do the following for each of the standby OMS instances (in serial):

1. (No Downtime) Verify if the Standby OMS is up or down, by running the following command:
   `$ORACLE_HOME/bin/emctl status oms`
    If the OMS is already down, skip step 2.
   Run this step on the standby OMSes one after the other, so that you do not have to shut down all standby OMSes at the same time.

2. (No Downtime) Stop the OMS, by running the following command:
   `$ORACLE_HOME/bin/emctl stop oms -force`

3. (No Downtime) Apply the patch, by running the following command :

```
$ORACLE_HOME/OPatch/opatchauto apply <PATCH LOC> -property_file
<PROPERTY FILE> –standby
```

**Example:**
If the Middleware home is `u01/app/Oracle/Middleware/`, then the Platform home location is
`u01/app/Oracle/Middleware/oms`, and PATCH_LOC is the patch unzipped location: `u01/app/18945232`

Set the `ORACLE_HOME` environment variable to the platform home location.

**Example:**
```
u01/app/Oracle/Middleware/oms/OPatch/opatchauto apply /u01/app/18945232 –
property_file /u01/app/Oracle/propertyfile
–standby
```

4. (No Downtime) Verify the inventory for successful patch application on the standby OMSes, by running the following command:
`$ORACLE_HOME/OPatch/opatchauto lspatches`

The output of the command should display the patches applied.

5. (No Downtime) Start the OMS, by running the following command:
`$ORACLE_HOME/bin/emctl start oms`


## 6.4.2.2 Applying a Non-Rolling Patch to a Standby OMS

This section outlines the steps to apply a patch on the standby OMSes when you have the primary OMSes with a load balancer. There will no downtime while applying patches to the standby OMSes as the primary OMSes are up and running while patching the standby OMSes.

**Note:**
*There is no sequence of which standby OMS you need to patch first.You can begin with any standby OMS.*

To apply the patch, do the following on all the standby OMSes instance (in serial):

1. ( No Downtime) Execute the following command on any standby OMS instance :
```
$ORACLE_HOME/OPatch/opatchauto apply <PATCH_LOC> -[property_file
<PROPERTY_FILE>] -standby
```

In a multi-OMS environment, the above command generates scripts, one for each OMS instance. These scripts have a host name and a username embedded in the script name so that you can run the right script on the required OMS instances. These scripts include all the sub steps for the patch application and therefore they save time. In previous Enterprise Manager releases, without these scripts, the sub steps had to be manually copied and pasted from the ReadMe to the command prompt. This created errors and was time consuming.

To view the output of the command and how scripts are displayed, refer to Generating the Script. You do not have to stop the OMS to run this command and generate scripts.

**Note:**
*To determine which host maps to the admin server, refer to <PROPERTY_FILE>. This section contains details of figuring the Admin server URL.*

*If you have a shared location, add the following:*
```
OPatchAuto.OMS_SCRIPTS_DIR=<SHARED_SCRIPTS_DIR>
```
*If you are using a virtual host, add the following to the command line:*
```
add OPatchAuto.OMS_DISABLE_HOST_CHECK=true
```

*The above switch for virtual hosts can be used to bypass certificate errors from Weblogic. Virtual host customers are those who have Weblogic host mapped to virtual host rather than real host addresses. In such cases, the above switch can be used to bypass certificate errors from Weblogic).*

2. ( No Downtime)  By default the scripts generated in Step 1 are stored in the platform home.

    **Example:**
    If your Platform home is `/scratch/abc/oms_install_dir/middleware/oms,` then the scripts will be stored in following location:
    ```
    "/scratch/abc/oms_install_dir/middleware/oms/.opatchauto_patch_storage/oms_session/scrip
    ts_2014-05-02_11-05-17/run_script#1_on_host_xyz_example_com_as_user_abc"
    ```

    It is recommended that you save these scripts in a location that is shared across your OMSes . This will save time by not individually copying the scripts on each OMS host.
    You can provide the parameter <SHARED_SCRIPTS_DIR> while running the opatchauto command so that the scripts are saved in the shared location.
    To copy the scripts, refer to Copying the Script to Other OMS Instances.

3. (No Downtime) You can shutdown all the standby OMSes together or one after the other. By running the following command:
    ```
    $ORACLE_HOME/bin/emctl stop oms –force
    ```

4. (No Downtime) Run the appropriate scripts generated from step 1 on each standby OMS in succession. There is no downtime in this step as the primary OMSes are up and running during this time. To know how to run the appropriate scripts, refer to the section Running Binary Patch Script Only (Non-Admin server OMS).

5. (No Downtime) Verify the inventory for each standby OMS  for successful patch application , by running the following command:
    ```
    $ORACLE_HOME/OPatch/opatchauto lspatches
    ```
    The patches that are applied must be displayed in the output.

6. (No Downtime) Start the standby OMSes, by running the following command:
    ```
    $ORACLE_HOME/bin/emctl start oms
    ```

# 7  Patching a Multi-OMS Environment With Enterprise Manager Upgrades

 If you have a single or multi primary- standby Oracle Management Service (OMS) setup and plan to do an Enterprise Manager upgrade, then it is recommended that post Enterprise Manager upgrade, you should apply the recommended patches on your primary OMS and recreate the standby OMS using storage replication. Creating a standby OMS using storage replication will save your time to apply patches on a standby OMS as the patches will be replicated to the new standby OMS through file system.

# 8  Troubleshooting

If you encounter an error, refer to the following URL:

# 9 Appendix

This section contains the following subsections:
- Nomenclature
- Detecting a Rolling or Non-Rolling Patch
- Upgrading OPatch
- Generating the Script
- Copying the Script to Other OMS Instances
- Automatically Downloading Patches Via Scripts
- Running Binary Patch Script Only (Non-Admin Server OMS)
- Running Binary Patch and Deployment Script  (Admin Server OMS)

## 9.1 Nomenclature

The following table contains descriptions and examples for terminologies present in this document:

| Terminology | Description | Example |
|---|---|---|
| `<PATCH_LOC>` | Patch directory location where the patch zip is extracted | `$ mkdir /scratch/patchdir`<br>`$ unzip /net/slc04kxa/scratch/hkumars/ps2_patches//patches/p18090046_121030_Generic.zip -d /scratch/patchdir`<br>`$`<br>`..........`<br>`..........`<br>`inflating: /scratch/patchdir/18090046/18090046/files/sysman/admin/emdrep/sql/core/latest/admin/admin_maintenance_pkgbody.sql`<br>`inflating: /scratch/patchdir/18090046/README.html`<br>`inflating: /scratch/patchdir/PatchSearch.xml`<br>`$ ls  /scratch/patchdir/18090046/`<br>`18090046  automation  bundle.xml README.html  README.txt`<br>`$`<br><br>The path of 18090046 (`/scratch/patchdir/18090046`) is referred to as `<PATCH_LOC>`. It must be mentioned as a complete file path. |
| `<PROPERTY_FILE>` | Property file that contains properties | **Creating configuration and key files:**<br>`$ cd $ORACLE_HOME/OPatch`<br>`$ cd wlskeys/` |

| | | |
|---|---|---|
| | such as WLS admin server URL, locations of admin key file, and configuration file. | ```
$ ls
createkeys.cmd  createkeys.sh
$ ./createkeys.sh -oh $ORACLE_HOME -
location /scratch
Please enter weblogic admin server
username: weblogic
Please enter weblogic admin server
password:
Creating the key file can reduce the
security of your system if it is not
kept in a secured location after it is
created. Creating new key...

Trying to get configuration and key
files for the given inputs...
This operation will take some time.
Please wait for updates...
User configuration file created:
/scratch/config
User key file created: /scratch/key
'createKeys' succeeded.
$
``` |

Execute the following command:
```
$ORACLE_HOME/bin/emctl status oms -
details
```
Get the values of the Admin Server Host, the Admin Server HTTPS Port, and construct the Admin server URL as follows:
```
t3s://<Admin Server Host>:<Admin Server
HTTPS Port>
```
(Example: `t3s://abc.example.com:1234`)

`Creating the property file:`
Create a property file (preferably in shared location so that it can be re-used) with the following contents:

```
AdminServerURL=<Admin Server URL>
AdminKeyFile=<Location of key file>
AdminConfigFile=<Location of config
file>

Example:

AdminServerURL=t3s://abc.example.com:12
34
   AdminKeyFile=/scratch/key
   AdminConfigFile=/scratch/config
```

The Admin server for primary and standby OMS will be different. It depends on the system where you execute the following command:
```
$ORACLE_HOME/bin/emctl status oms -
```

		details Ensure to create the property file for primary and standby OMSes Admin servers.
`<PLATFORM_HOME>`	The core home that is set as `ORACLE_HOME`	The following example displays the structure of a platform home. Set ORACLE_HOME as the platform home. ``` $ echo $ORACLE_HOME /scratch/user/multioms/middleware/oms $ ls $ORACLE_HOME/.. domain-registry.xml gc_inst jdk16 logs modules ocm.rsp oms oracle_common Oracle_WT patch_wls1036 plugins registry.dat registry.xml user_projects utils wlserver_10.3 $ ``` For example, if the Middleware home is /u01/app/Oracle/Middleware/, then the Platform home location is /u01/app/Oracle/Middleware/oms
`<SHARED_SCRIPTS _DIR>`	The directory where all scripts of all OMS hosts can be stored and executed	The following example displays how the shared directory can be provided to get all the scripts generated in one place: ``` $ ./opatchauto apply /scratch/patchdir/18090046/ opatchauto.OMS_SCRIPTS_DIR=/scratch OPatch Automation Tool Copyright (c) 2014, Oracle Corporation. All rights reserved. opatchauto version : 11.1.0.11.0 OUI version : 11.1.0.11.0 Running from : /scratch/user/multioms/middleware/oms Log file location : /scratch/user/multioms/middleware/oms/c fgtoollogs/opatch/opatch2014-06-17_01- 30-48AM_1.log opatchauto log file: /scratch/user/multioms/middleware/oms/c fgtoollogs/opatchauto/18090046/opatch_o ms_2014-06-17_01-30-50AM_deploy.log Please enter OMS weblogic admin server URL(t3s://abc.example.com:1234):> $ ./opatchauto apply /scratch/patchdir/18090046/ opatchauto.OMS_SCRIPTS_DIR=/scratch - property_file /scratch/property_file OPatch Automation Tool Copyright (c) 2014, Oracle Corporation. ```

```
All rights reserved.
opatchauto version : 11.1.0.11.0
OUI version        : 11.1.0.11.0
Running from       :
/scratch/user/multioms/middleware/oms
Log file location  :
/scratch/user/multioms/middleware/oms/c
fgtoollogs/opatch/opatch2014-06-17_01-
42-47AM_1.log
opatchauto log file:
/scratch/user/multioms/middleware/oms/c
fgtoollogs/opatchauto/18090046/opatch_o
ms_2014-06-17_01-42-49AM_deploy.log
Configuration Validation: Success
WARNING: You have a multi-OMS setup.
The patch application is not complete
until the following steps are executed
successfully.
Please perform the following steps to
complete patching operations.
--------------------------------------
---------------------------
        1. Please execute the script
"/scratch/scripts_2014-06-17_01-43-
11/run_script#1_on_host_abc_us_oracle_c
om_as_user_username.sh" on host
"abc.example.com".
        2. Please execute the script
"/scratch/scripts_2014-06-17_01-43-
11/run_script#2_on_host_xyz_us_oracle_c
om_as_user_username.sh" on local host.
--------------------------------------
--------------------------------------
--
The following warnings have occurred
during opatchauto execution:
1) You have a multi-OMS setup. The
patch application is not complete until
the following steps are executed
successfully.
--------------------------------------
--------------------------------------
--
opatchauto Session completed with
warnings.
Log file location:
/scratch/username/multioms/middleware/o
ms/cfgtoollogs/opatchauto/18090046/opat
ch_oms_2014-06-17_01-42-49AM_deploy.log
opatchauto completed with warnings.
$
```

9.2 Detecting a Rolling or Non-Rolling Patch

To detect if a patch is a rolling patch or a non-rolling patch, do the following:

1. Download the patch from My Oracle Support. Unzip the patch and retrieve the `<PATCH_LOC>` directory.

2. Refer to the patch ReadMe and check if the patch is designated as a rolling or a non-rolling patch. If the patch is defined as a non-rolling patch in the ReadMe, then it is a complete downtime patch.

The conditions under which a patch can be classified as rolling generally depend on the nature of the patch composition. As a general rule, if a patch contains both Management Repository side and Java side updates, is it not likely to be a candidate for application in a rolling mode. If the patch contains changes only to the Java side of the Enterprise Manager framework, it is a potential candidate for application in a rolling fashion.

Example:
The Readme for the patch 18945232 contains the following information:
Oracle® Management Service 12c Release 4 (12.1.0.4.0) System Patch
Patch for Bug# 18945232

Platform: Generic
Released: Apr 30, 2014

This document describes how you can install a System patch on your Oracle Management Service 12c Release 4 (12.1.0.4.0). A System patch allows you to patch complex systems (or) sub-systems in a more deterministic fashion with proper automation. Technically, a System patch consists of sub-patches for various sub-systems of a complex system. For OMS, the sub-systems are represented as core and plug-ins. Starting with Enterprise Manager 12c, you can use a single unified command called OPatchauto for automating the process of applying System patches on your OMS.
This System patch is classified as non-rolling patch.

9.3 Upgrading OPatch

 To know the latest released OPatch version, refer to the following My Oracle Support note:
https://support.oracle.com/CSP/main/article?cmd=show&type=NOT&id=224346.1
To check if you have the latest version of OPatch 11.1, run the following command for each OMS instance:
`<Platform Home>/OPatch/opatch version`

If the version is less than the latest, upgrade OPatch on all the OMS instance homes by following these steps:

1. Back up the existing OPatch `(<Platform home>/OPatch)`. It is recommended that you move the OPatch folder to a desired backup location.

2. Download the zip of OPatch from My Oracle Support, Patch 6880880, MOS Release Version 11.1.0.0.0, and the appropriate platform into each of the OMS instance boxes.

For example: The latest version of Opatch 11.1.0.11.0 is supported on both 12.1.0.3 and 12.1.0.4 OMS

6880880	OPatch patch of version 11.1.0.11.0 for Oracle software releases 11.1.0.x (JUL 2014) (Patch)	11.1.0.0.0	Linux x86-64 (American English)	General	Oracle Collaboration Suite	13 days ago	51.9 MB	Software

For more details on how to download, refer to the video present in the following My Oracle Support note:
https://support.oracle.com/CSP/main/article?cmd=show&type=NOT&id=224346.1

3.   Unzip the deliverable into `<Platform Home>`.

4.   Run the following command:
`<Platform Home>/OPatch/opatch version`
Verify that it matches the latest OPatch version available as mentioned in the My Oracle Support note.

9.4 Generating the Script

In a multi-OMS environment when you run the opatchauto command, it generates scripts for each OMS instance. In the below example, scripts details are highlighted in red rectangle. When you run this command, ensure that the OMS is up and running.


```
$ ./opatchauto apply /scratch/patchdir/18090046/ -property_file
/scratch/property_file
OPatch Automation Tool
Copyright (c) 2014, Oracle Corporation.  All rights reserved.

opatchauto version : 11.1.0.11.0
OUI version        : 11.1.0.11.0
Running from        : /scratch/username/multioms/middleware/oms
Log file location  :
/scratch/username/multioms/middleware/oms/cfgtoollogs/opatch/opatch2014-06-
17_01-46-35AM_1.log

opatchauto log file:
/scratch/username/multioms/middleware/oms/cfgtoollogs/opatchauto/18090046/opat
ch_oms_2014-06-17_01-46-37AM_deploy.log
```

```
Configuration Validation: Success

WARNING: You have a multi-OMS setup. The patch application is not complete
until the following steps are executed successfully.

Please perform the following steps to complete patching operations.
-----------------------------------------------------------------
        1. Please execute the script
"/scratch/username/multioms/middleware/oms/.opatchauto_patch_storage/oms_sessi
on/scripts_2014-06-17_01-46-
57/run_script#1_on_host_abc_us_oracle_com_as_user_username.sh" on host
"abc.example.com".
        2. Please execute the script
"/scratch/username/multioms/middleware/oms/.opatchauto_patch_storage/oms_sessi
on/scripts_2014-06-17_01-46-
57/run_script#2_on_host_xyz_us_oracle_com_as_user_username.sh" on local host.

--------------------------------------------------------------------------
--

The following warnings have occurred during opatchauto execution:
1) You have a multi-OMS setup. The patch application is not complete until the
following steps are executed successfully.

--------------------------------------------------------------------------
--
opatchauto Session completed with warnings.
Log file location:
/scratch/username/multioms/middleware/oms/cfgtoollogs/opatchauto/18090046/opat
ch_oms_2014-06-17_01-46-37AM_deploy.log
```

Note:

Add `OPatchAuto.OMS_SCRIPTS_DIR=<existing directory>` *(to the command line) if you want the scripts to be in shared place.*

For virtual host customers, add `OPatchAuto.OMS_DISABLE_HOST_CHECK=true` *to the command line. Virtual host customers are those who have Weblogic host mapped to virtual host rather than real host addresses. In such cases, the above switch can be used to bypass certificate errors from Weblogic.*

For standby OMS, the command is the same, except that you add `-standby` *option.*

9.5 Copying the Script to Other OMS Instances

This copies the script to other hosts by FTP (as one of the options).
To copy the script to other OMS instances, refer to the following example:

```
$ ftp abc.example.com
Connected to abc.example.com (10.100.100.00)
220 (vsFTPd 2.0.5)
Name (abc.example.com:username): username
331 Please specify the password.
Password:
230 Login successful.
```

```
Remote system type is UNIX.
Using binary mode to transfer files.
ftp> bin
200 Switching to Binary mode.
ftp> cd /scratch
250 Directory successfully changed.
ftp> lcd
/scratch/username/multioms/middleware/oms/.opatchauto_patch_storage/oms_sessio
n/scripts_2014-06-17_01-46-57
Local directory now
/scratch/username/multioms/middleware/oms/.opatchauto_patch_storage/oms_sessio
n/scripts_2014-06-17_01-46-57
ftp> mput run_script#1_on_host_abc_example_com_as_user_username.sh
mput run_script#1_on_host_abc_example_com_as_user_username.sh? y
227 Entering Passive Mode (10,100,100,10,100,10)
150 Ok to send data.
226 File receive OK.
25109 bytes sent in 0.0724 secs (3.4e+02 Kbytes/sec)
ftp>
```

9.6 Automatically Downloading Patches Via Scripts

The script downloads automatically on the second OMS if the patch is not in the shared location. If you do not have a shared location to store patches, the script will try to download it for you and use the downloaded patch as base to execute further.
To automatically download patches via scripts, refer to the following example:

```
$ /scratch/run_script#1_on_host_abc_example_com_as_user_username.sh
Verifying embedded script host-address "abc.example.com" against the network
interface for a match...
Trying for a match with:
fe80:0:0:0:216:3eff:fe38:bb28%3(fe80:0:0:0:216:3eff:fe38:bb28%3)
Trying for a match with: abc.example.com(10.100.100.10)
Script-host address matched with host network interface.
Executing command: mkdir -p /scratch/patchdir;scp -r
xyz.example.com:/scratch/patchdir/18090046 /scratch/patchdir
username@xyz.example.com's password:
```

9.7 Running Binary Patch Script Only (Non-Admin Server OMS)

To run the binary patch script only on non-Admin server OMSes, refer to the following example:

```
$ /scratch/run_script#1_on_host_abc_example_com_as_user_username.sh
Creating  master log file
/scratch/username/multioms/middleware/oms/.opatchauto_patch_storage/oms_sessio
n/oms_session_log_2014-06-17_02-25-42AM...
Verifying embedded script host-address "abc.example.com" against the network
interface for a match...
Trying for a match with:
fe80:0:0:0:216:3eff:fe38:bb28%3(fe80:0:0:0:216:3eff:fe38:bb28%3)
Trying for a match with: abc.example.com(10.100.100.10)
Script-host address matched with host network interface.
```

```
Creating  session file
/scratch/username/multioms/middleware/oms/.opatchauto_patch_storage/oms_sessio
n/oms_session_2014-06-17_02-25-42AM...
Copying your script to opatchauto defined path
/scratch/username/multioms/middleware/oms/.opatchauto_patch_storage/oms_sessio
n/scripts_2014-06-17_02-26-
03/run_script#1_on_host_abc_example_com_as_user_username.sh...
Executing command: mkdir -p /scratch/username/stagedir;scp -r
xyz.example.com:/scratch/username/stagedir/18090046 /scratch/username/stagedir
username@xyz.example.com's password:
Command to execute (Step 3):
/scratch/username/multioms/middleware/oms/OPatch/opatchauto checkApplicable -
ph /scratch/username/stagedir/18090046 -oh
/scratch/username/multioms/middleware/oms -invPtrLoc
/scratch/username/multioms/middleware/oms/oraInst.loc
OPatch Automation Tool
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opatchauto version : 11.1.0.11.0
OUI version        : 11.1.0.11.0
Running from        : /scratch/username/multioms/middleware/oms
Log file location  : /scratch/ username
/multioms/middleware/oms/cfgtoollogs/opatch/opatch2014-06-17_02-38-54AM_1.log

opatchauto log file: /scratch/ username
/multioms/middleware/oms/cfgtoollogs/opatchauto/18090046/opatch_oms_2014-06-
17_02-38-55AM_analyze.log



Running apply prerequisite checks for sub-patch(es) "18090046" and Oracle Home
"/scratch/ username /multioms/middleware/oms"...
Please monitor OPatch log file: /scratch/ username
/multioms/middleware/oms/cfgtoollogs/opatch/18090046_Jun_17_2014_02_38_54/Appl
yPrereq2014-06-17_02-38-57AM_2.log
Sub-patch(es) "18090046" are successfully analyzed for Oracle Home "/scratch/
username /multioms/middleware/oms"

Complete Summary
================


All log file names referenced below can be accessed from the directory
"/scratch/ username /multioms/middleware/oms/cfgtoollogs/opatch/2014-06-17_02-
38-54AM_SystemPatch_18090046_1"


Prerequisites analysis summary:
-------------------------------

The following sub-patch(es) are applicable:
```

```
  Oracle Home Name   Sub-patches                                            Log
file
  ---------------    -----------                                            -----
---
      OH519626016       18090046   18090046_ApplyPrereq2014-06-17_02-38-
57AM_2.log
```

Log file location: /scratch/ username
/multioms/middleware/oms/cfgtoollogs/opatchauto/18090046/opatch_oms_2014-06-
17_02-38-55AM_analyze.log

opatchauto succeeded.
Command to execute (Step 5): echo /scratch/ username
/stagedir/18090046/18090046 >> /scratch/ username
/multioms/middleware/oms/.phBaseFile2014-06-17_02-25-42AM.txt
Command to execute (Step 5): /scratch/ username
/multioms/middleware/oms/OPatch/opatch napply -phBaseFile /scratch/ username
/multioms/middleware/oms/.phBaseFile2014-06-17_02-25-42AM.txt -invPtrLoc
/scratch/ username /multioms/middleware/oms/oraInst.loc -oh /scratch/ username
/multioms/middleware/oms -silent
Command to execute (Step 5): rm /scratch/ username
/multioms/middleware/oms/.phBaseFile2014-06-17_02-25-42AM.txt
Oracle Interim Patch Installer version 11.1.0.11.0
Copyright (c) 2014, Oracle Corporation. All rights reserved.

Oracle Home   : /scratch/ username /multioms/middleware/oms
Central Inventory : /scratch/ username /oraInventory
   from   : /scratch/ username /multioms/middleware/oms/oraInst.loc
OPatch version   : 11.1.0.11.0
OUI version   : 11.1.0.11.0
Log file location : /scratch/ username
/multioms/middleware/oms/cfgtoollogs/opatch/opatch2014-06-17_02-39-01AM_1.log

OPatch detects the Middleware Home as "/scratch/ username
/multioms/middleware"

Verifying environment and performing prerequisite checks...
OPatch continues with these patches: 18090046

Do you want to proceed? [y|n]
Y (auto-answered by -silent)
User Responded with: Y
All checks passed.
Backing up files...
Applying interim patch '18090046' to OH '/scratch/ username
/multioms/middleware/oms'

Patching component oracle.sysman.oms.core, 12.1.0.3.0...

Verifying the update...

```
Creating  /scratch/ username
/multioms/middleware/oms/.remove_inventory_footprint.sh...
Adding rollback command for Patch ID 18090046...
Patch 18090046 successfully applied.
Log file location: /scratch/ username
/multioms/middleware/oms/cfgtoollogs/opatch/opatch2014-06-17_02-39-01AM_1.log


OPatch succeeded.
Command to execute (Step 8): /scratch/ username
/multioms/middleware/oms/OPatch/opatchauto commit -id 18090046 -oh /scratch/
username /multioms/middleware/oms -invPtrLoc /scratch/ username
/multioms/middleware/oms/oraInst.loc
OPatch Automation Tool
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opatchauto version : 11.1.0.11.0
OUI version        : 11.1.0.11.0
Running from       : /scratch/ username /multioms/middleware/oms
Log file location  : /scratch/ username
/multioms/middleware/oms/cfgtoollogs/opatch/opatch2014-06-17_02-39-17AM_1.log


opatchauto will now mark the patch "18090046" as auto-executed.
Log file location: /scratch/ username
/multioms/middleware/oms/cfgtoollogs/opatch/opatch2014-06-17_02-39-17AM_1.log

opatchauto succeeded.


All operations for this script are appended to log file: /scratch/ username
/multioms/middleware/oms/.opatchauto_patch_storage/oms_session/oms_session_log
_2014-06-17_02-25-42AM
$
```

9.8   Running Binary Patch and Deployment Script (Admin Server OMS)

To run the binary patch and deployment script, refer to the following example:

```
$ /scratch/ username
/multioms/middleware/oms/.opatchauto_patch_storage/oms_session/scripts_2014-
06-17_02-26-03/run_script#2_on_host_xyz_example_com_as_user_username.sh
Creating  master log file /scratch/ username
/multioms/middleware/oms/.opatchauto_patch_storage/oms_session/oms_session_log
_2014-06-17_02-25-42AM...
Verifying embedded script host-address "xyz.example.com" against the network
interface for a match...
Trying for a match with:
fe80:0:0:0:216:3eff:fe26:9ac5%2(fe80:0:0:0:216:3eff:fe26:9ac5%2)
Trying for a match with:
2606:b400:2010:4057:216:3eff:fe26:9ac5%2(2606:b400:2010:4057:216:3eff:fe26:9ac
5%2)
Trying for a match with: xyz.example.com(10.100.100.100)
```

Script-host address matched with host network interface.
Creating session file /scratch/ username
/multioms/middleware/oms/.opatchauto_patch_storage/oms_session/oms_session_201
4-06-17_02-25-42AM...

Please provide credential for OMS Management Repository SYSMAN user:
Command to execute (Step 2):
/scratch/username/multioms/middleware/oms/OPatch/opatchauto checkApplicable -
ph /scratch/ username /stagedir/18090046 -oh /scratch/ username
/multioms/middleware/oms -invPtrLoc /scratch/ username
/multioms/middleware/oms/oraInst.loc
OPatch Automation Tool
Copyright (c) 2014, Oracle Corporation. All rights reserved.

opatchauto version : 11.1.0.11.0
OUI version   : 11.1.0.11.0
Running from   : /scratch/ username /multioms/middleware/oms
Log file location : /scratch/ username
/multioms/middleware/oms/cfgtoollogs/opatch/opatch2014-06-17_02-26-39AM_1.log

opatchauto log file: /scratch/ username
/multioms/middleware/oms/cfgtoollogs/opatchauto/18090046/opatch_oms_2014-06-
17_02-26-40AM_analyze.log

Running apply prerequisite checks for sub-patch(es) "18090046" and Oracle Home
"/scratch/ username /multioms/middleware/oms"...
Please monitor OPatch log file: /scratch/ username
/multioms/middleware/oms/cfgtoollogs/opatch/18090046_Jun_17_2014_02_26_39/Appl
yPrereq2014-06-17_02-26-41AM_2.log

Sub-patch(es) "18090046" are successfully analyzed for Oracle Home "/scratch/
username /multioms/middleware/oms"

Complete Summary
================

All log file names referenced below can be accessed from the directory
"/scratch/ username /multioms/middleware/oms/cfgtoollogs/opatch/2014-06-17_02-
26-39AM_SystemPatch_18090046_1"

Prerequisites analysis summary:

The following sub-patch(es) are applicable:

  Oracle Home Name   Sub-patches   Log
file
  ---------------   -----------   -----
---

oms12c1   18090046   18090046_ApplyPrereq2014-06-17_02-26-
41AM_2.log

Log file location: /scratch/ username
/multioms/middleware/oms/cfgtoollogs/opatchauto/18090046/opatch_oms_2014-06-
17_02-26-40AM_analyze.log

opatchauto succeeded.
Command to execute (Step 4): echo /scratch/ username
/stagedir/18090046/18090046 >> /scratch/ username
/multioms/middleware/oms/.phBaseFile2014-06-17_02-25-42AM.txt
Command to execute (Step 4): /scratch/ username
/multioms/middleware/oms/OPatch/opatch napply -phBaseFile /scratch/ username
/multioms/middleware/oms/.phBaseFile2014-06-17_02-25-42AM.txt -invPtrLoc
/scratch/ username /multioms/middleware/oms/oraInst.loc -oh /scratch/ username
/multioms/middleware/oms -silent
Command to execute (Step 4): rm /scratch/ username
/multioms/middleware/oms/.phBaseFile2014-06-17_02-25-42AM.txt
Oracle Interim Patch Installer version 11.1.0.11.0
Copyright (c) 2014, Oracle Corporation. All rights reserved.

Oracle Home   : /scratch/ username /multioms/middleware/oms
Central Inventory : /scratch/username/db_homes/oraInventory
   from   : /scratch/username/multioms/middleware/oms/oraInst.loc
OPatch version   : 11.1.0.11.0
OUI version   : 11.1.0.11.0
Log file location :
/scratch/username/multioms/middleware/oms/cfgtoollogs/opatch/opatch2014-06-
17_02-26-45AM_1.log

OPatch detects the Middleware Home as "/scratch/username/multioms/middleware"

Verifying environment and performing prerequisite checks...
OPatch continues with these patches: 18090046

Do you want to proceed? [y|n]
Y (auto-answered by -silent)
User Responded with: Y
All checks passed.
Backing up files...
Applying interim patch '18090046' to OH
'/scratch/username/multioms/middleware/oms'

Patching component oracle.sysman.oms.core, 12.1.0.3.0...

Verifying the update...
Adding rollback command for Patch ID 18090046...
Patch 18090046 successfully applied.

```
Log file location:
/scratch/username/multioms/middleware/oms/cfgtoollogs/opatch/opatch2014-06-
17_02-26-45AM_1.log

OPatch succeeded.
Command to execute (Step 6):
/scratch/username/multioms/middleware/oms/bin/emctl register oms metadata -
service invSummary -debug -file
/scratch/username/multioms/middleware/oms/sysman/metadata/invSummary/tvmlei006
_inv_mrs_reg.xml -core -sysman_pwd %EM_REPOS_PASSWORD%
Oracle Enterprise Manager Cloud Control 12c Release 3
Copyright (c) 1996, 2013 Oracle Corporation.  All rights reserved.
Starting output for debug mode.
 Debug logs will be written to
/scratch/username/multioms/middleware/gc_inst/em/EMGC_OMS1/sysman/log/emctl.lo
g
Sql files are generated in directory: /tmp
Sql files names are:
     tvmlei006_inv_mrs_reg_post_creation_3.sql
Metadata registration successful
Command to execute (Step 7):
/scratch/username/multioms/middleware/oms/OPatch/opatchauto commit -id
18090046 -oh /scratch/username/multioms/middleware/oms -invPtrLoc
/scratch/username/multioms/middleware/oms/oraInst.loc
OPatch Automation Tool
Copyright (c) 2014, Oracle Corporation.  All rights reserved.


opatchauto version : 11.1.0.11.0
OUI version        : 11.1.0.11.0
Running from       : /scratch/username/multioms/middleware/oms
Log file location  :
/scratch/username/multioms/middleware/oms/cfgtoollogs/opatch/opatch2014-06-
17_02-27-06AM_1.log


opatchauto will now mark the patch "18090046" as auto-executed.
Log file location:
/scratch/username/multioms/middleware/oms/cfgtoollogs/opatch/opatch2014-06-
17_02-27-06AM_1.log

opatchauto succeeded.

All operations for this script are appended to log file:
/scratch/username/multioms/middleware/oms/.opatchauto_patch_storage/oms_sessio
n/oms_session_log_2014-06-17_02-25-42AM
[username@xyz OPatch]$
Sub-patch(es) "18090046" are successfully analyzed for Oracle Home
"/scratch/username/multioms/middleware/oms"

Complete Summary
================
```

All log file names referenced below can be accessed from the directory
"/scratch/username/multioms/middleware/oms/cfgtoollogs/opatch/2014-06-17_02-
26-39AM_SystemPatch_18090046_1"

Prerequisites analysis summary:

The following sub-patch(es) are applicable:

  Oracle Home Name   Sub-patches   Log
file
  ---------------   -----------   -----
---
         oms12c1   18090046   18090046_ApplyPrereq2014-06-17_02-26-
41AM_2.log

Log file location:
/scratch/username/multioms/middleware/oms/cfgtoollogs/opatchauto/18090046/opat
ch_oms_2014-06-17_02-26-40AM_analyze.log

opatchauto succeeded.
Command to execute (Step 4): echo /scratch/username/stagedir/18090046/18090046
>> /scratch/username/multioms/middleware/oms/.phBaseFile2014-06-17_02-25-
42AM.txt
Command to execute (Step 4):
/scratch/username/multioms/middleware/oms/OPatch/opatch napply -phBaseFile
/scratch/username/multioms/middleware/oms/.phBaseFile2014-06-17_02-25-42AM.txt
-invPtrLoc /scratch/username/multioms/middleware/oms/oraInst.loc -oh
/scratch/username/multioms/middleware/oms -silent
Command to execute (Step 4): rm
/scratch/username/multioms/middleware/oms/.phBaseFile2014-06-17_02-25-42AM.txt

Oracle Interim Patch Installer version 11.1.0.11.0
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Oracle Home   : /scratch/username/multioms/middleware/oms
Central Inventory : /scratch/username/db_homes/oraInventory
   from   : /scratch/username/multioms/middleware/oms/oraInst.loc
OPatch version   : 11.1.0.11.0
OUI version   : 11.1.0.11.0
Log file location :
/scratch/username/multioms/middleware/oms/cfgtoollogs/opatch/opatch2014-06-
17_02-26-45AM_1.log

OPatch detects the Middleware Home as "/scratch/username/multioms/middleware"

Verifying environment and performing prerequisite checks...
OPatch continues with these patches: 18090046

Do you want to proceed? [y|n]

```
Y (auto-answered by -silent)
User Responded with: Y
All checks passed.
Backing up files...
Applying interim patch '18090046' to OH
'/scratch/username/multioms/middleware/oms'

Patching component oracle.sysman.oms.core, 12.1.0.3.0...

Verifying the update...
Adding rollback command for Patch ID 18090046...
Patch 18090046 successfully applied.
Log file location:
/scratch/username/multioms/middleware/oms/cfgtoollogs/opatch/opatch2014-06-
17_02-26-45AM_1.log

OPatch succeeded.
Command to execute (Step 6):
/scratch/username/multioms/middleware/oms/bin/emctl register oms metadata -
service invSummary -debug -file
/scratch/username/multioms/middleware/oms/sysman/metadata/invSummary/tvmlei006
_inv_mrs_reg.xml -core -sysman_pwd %EM_REPOS_PASSWORD%
Oracle Enterprise Manager Cloud Control 12c Release 3
Copyright (c) 1996, 2013 Oracle Corporation.  All rights reserved.
Starting output for debug mode.
 Debug logs will be written to
/scratch/username/multioms/middleware/gc_inst/em/EMGC_OMS1/sysman/log/emctl.lo
g
Sql files are generated in directory: /tmp
Sql files names are:
     tvmlei006_inv_mrs_reg_post_creation_3.sql
Metadata registration successful
Command to execute (Step 7):
/scratch/username/multioms/middleware/oms/OPatch/opatchauto commit -id
18090046 -oh /scratch/username/multioms/middleware/oms -invPtrLoc
/scratch/username/multioms/middleware/oms/oraInst.loc
OPatch Automation Tool
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opatchauto version : 11.1.0.11.0
OUI version        : 11.1.0.11.0
Running from       : /scratch/username/multioms/middleware/oms
Log file location  :
/scratch/username/multioms/middleware/oms/cfgtoollogs/opatch/opatch2014-06-
17_02-27-06AM_1.log



opatchauto will now mark the patch "18090046" as auto-executed.
Log file location:
/scratch/username/multioms/middleware/oms/cfgtoollogs/opatch/opatch2014-06-
17_02-27-06AM_1.log
```

```
opatchauto succeeded.


All operations for this script are appended to log file:
/scratch/username/multioms/middleware/oms/.opatchauto_patch_storage/oms_sessio
n/oms_session_log_2014-06-17_02-25-42AM
$
```