BigFix Patch
Patches for Oracle Linux - User's Guide

Special notice

Before using this information and the product it supports, read the information in Notices *(on page 26)*.

Edition notice

This edition applies to version 9.5 of BigFix and to all subsequent releases and modifications until otherwise indicated in new editions.

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Chapter 1. Overview

BigFix® Patches for Oracle Linux keeps your Linux™ clients current with the latest updates and service packs.

Patch management is available through the Patches for Oracle Linux sites from BigFix. For each new patch or update that becomes available, BigFix releases a Fixlet that can identify and remediate all the computers in your enterprise that need it. With a few keystrokes, the BigFix Console Operator can apply the patch to all the relevant computers and visualize its progress as it deploys throughout the network.

The BigFix agent checks the operating system version, file versions, the language of the system and other relevant factors to determine when and if a patch is necessary.

Fixlets allow you to manage large numbers of updates and patches with comparative ease, enabling automated, highly targeted deployment on any schedule that you want. Large downloads can be phased to optimize network bandwidth and the entire deployment process can be monitored, graphed, and recorded for inventory or audit control. Fixlets often have extra notes that allow the Console Operator to work around issues. Once you have subscribed to the Patches for Oracle Linux sites, you can do the following:

- Patch using Fixlets
- Identify available YUM packages through a task.
- Roll back, undo, and redo transactions in your deployment through the YUM Transaction History dashboard.
- Register, add, unregister, or import custom repositories through the Oracle Linux Custom Repository Management dashboard.

 **Note:** Local repositories must be set up separately.

New Features

Patches for Oracle Linux has expanded coverage to support Oracle Linux 6. Users of Oracle Linux 6 can now enjoy features such as the custom repository and use of the YUM History dashboard.

Supported architecture, erratas, and repositories

The various features of Patches for Oracle Linux apply differently for each Oracle Linux site.

BigFix Patches for Oracle Linux supports security, bug fix, and enhancement erratas of Oracle Linux. An errata is an individual package update that Oracle releases for important changes to Oracle Linux. Errata packages can contain security, bug fix, and feature enhancement advisories. To learn more about Oracle Linux erratas, see https://docs.oracle.com/cd/E37670_01/E37355/html/ch03s03.html. BigFix Patches for Oracle Linux supports erratas that are released for the following Oracle Linux repositories.

Table 1. Applicable features for each Patches for Oracle Linux site

Patches for Oracle Linux site	Supported architecture	Supported repositories
Patches for Oracle Linux 6	X86-64, i386	• Latest • UEK Release 4 • UEK Release 3 • UEK Release 2 • Add-ons • OFED (UEK Release 4) • OFED 2.0 • OpenStack 1.0 • Ceph 1.0 • Spacewalk 2.4 Server • Spacewalk 2.2 Server • Spacewalk 2.0 Server • Spacewalk 2.4 Client • Spacewalk 2.2 Client • Spacewalk 2.0 Client • Software Collection 1.2 • MySQL 5.7

Table 1. Applicable features for each Patches for Oracle Linux site (continued)

Patches for Oracle Linux site	Supported architecture	Supported repositories
		• MySQL 5.6 • MySQL 5.5 • GDM Multiseat
Patches for Oracle Linux 7	X86-64	• Latest • UEK Release 6 • UEK Release 5 • UEK Release 4 • UEK Release 3 • Optional Latest • OFED (UEK Release 4) • OFED 2.0 • Add-ons • OpenStack 2.0 • Ceph 1.0 • Spacewalk 2.2 Client • Software Collection 1.2 • MySQL 5.7 • MySQL 5.6 • MySQL 5.5
Patches for Oracle Linux 8	x86-64	• Latest • Appstream • Addons • Codeready-builder • BaseOS GA • 8.1 BaseOS • 8.2 BaseOS

Table 1. Applicable features for each Patches for Oracle Linux site (continued)

Patches for Oracle Linux site	Supported architecture	Supported repositories
		• Spacewalk Client 2.10 • UEK Release 6

To browse the list of available Oracle Linux packages, see the following references.

- Oracle Linux 6 package repositories: see http://yum.oracle.com/oracle-linux-6.html.
- Oracle Linux 7 package repositories, see http://public-yum.oracle.com/oracle-linux-7.html.
- Oracle Linux 8 package repositories, see https://public-yum.oracle.com/oracle-linux-8.html

Note: You must use BigFix version 9.5 and later to use BigFix Patch for Oracle Linux.

BigFix Patch uses the BigFix RHEL agent version 9.5.2.

BigFix supports both the Red Hat Compatible kernel and Unbreakable Enterprise Kernel (UEK) that Oracle Linux offers.

Note: Some repositories are not enabled by default since they might break Oracle Enterprise Linux upstream compatibility. Users might encounter errors regarding missing packages. For more information, see Frequently Asked Questions *(on page 22)*.

Site applicability matrix

The various features of Patches for Oracle Linux apply differently for each Oracle Linux site.

The following matrix shows the Patches for Oracle Linux features that apply for each Oracle Linux site.

Table 2. Applicable features for each Patches for Oracle Linux site

BigFix site	Custom Repository Management dashboard	YUM Transaction History dashboard
Patches for Oracle Linux 6	Applicable	Applicable
Patches for Oracle Linux 7	Applicable	Applicable
Patches for Oracle Linux 8	Applicable	Applicable

Fixlet fields

Fixlets contain fields of metadata that provide specific details. Some Fixlet fields are common across all domains, that is, categories of BigFix sites. Other fields are common to only one domain or product, such as Patch Management.

The following table lists the Fixlet fields and their descriptions.

Table 3. Fixlet fields and descriptions

Fixlet fields	Description	BigFix domain
ID	A numerical ID assigned to the Fixlet by the author.	All
Name	The name assigned to the Fixlet by the author.	All
Applicable Computer Count	The number of BigFix clients in the network currently affected by the Fixlet.	All
Category	The type of Fixlet, such as a Security Patch or Update.	All
Download Size	The size of the remedial file or patch that the action downloads.	All

Table 3. Fixlet fields and descriptions

(continued)

Fixlet fields	Description	BigFix domain
Source	The name of the source vendor that provides the Fixlet information.	All
Source ID	A numerical ID assigned to the Fixlet to relate it back to its source.	All
Source Release Date	The date when an upstream vendor releases the patch.	All
Source Severity	A measure of how critical a Fixlet is, assigned by the Fixlet author. Typical values are Critical, Important, Moderate, or Low.	All
Site	The name of the site that is generating the relevant Fixlet.	All
Unlocked Computer Count	The number of unlocked computers that are affected by the Fixlet.	All
Open Action Count	The number of distinct actions that are open for the given Fixlet.	All
X-Fixlet-product-family	The product family that the patch belongs to.	Windows Patching (Relates to BigFix Patch Management)
X-Fixlet-product	The product that the patch belongs to under a certain product family.	Windows Patching (Relates to BigFix Patch Management)

Table 3. Fixlet fields and descriptions

(continued)

Fixlet fields	Description	BigFix domain
X-Fixlet-component	A component that the patch targets under a certain product family.	Windows Patching (Relates to BigFix Patch Management)
Modification Time	The time when a given Fixlet was last modified.	All
X-Fixlet-first-propagation	The Fixlet release date.	All

Chapter 2. Setup

Set up your environment for patch management.

Site subscription

Sites are collections of Fixlet messages that are created internally by you, by HCL, or by vendors.

Subscribe to a site to access the Fixlet messages to patch systems in your deployment.

You can add a site subscription by acquiring a Masthead file from a vendor or from HCL or by using the Licensing Dashboard. For more information about subscribing to Fixlet sites, see the *BigFix Installation Guide*.

For more information about sites, see the *BigFix Console Operator's Guide*.

Subscribing to the BigFix Patches for Oracle Linux site

Subscribe to the Patches for Oracle Linux sites through the License Overview dashboard.

1. From the **BigFix Management** domain, click **License Overview** dashboard.
2. Scroll down to the applicable Patches for Oracle Linux site and click **Enable**.
3. Open the **Manage Sites** node and select the applicable Patches for Oracle site. For example, Patches for Oracle Linux 7.
4. From the site dialog, click the **Computer Subscriptions** tab to assign the site to the appropriate computers.
5. From the **Operator Permissions** tab, select the operators that you want to associate with the site and their level of permission.
6. Click **Save Changes**.

You are now subscribed to a Patches for Oracle Linux site.

Setting up a local repository

Manage custom repositories through the Oracle Linux Custom Repository Management dashboard.

BigFix Patch for Oracle Linux supports the use of custom repositories. You can manage custom repositories through the Oracle Linux Custom Repository Management dashboard. However, the dashboard does not support the creation and maintenance of local repositories. You must create local repositories separately.

To learn more about creating local repositories, see http://www.oracle.com/technetwork/articles/servers-storage-admin/yum-repo-setup-1659167.html.

Chapter 3. Using Patches for Oracle Linux

Patch using Fixlets

You can deploy patches from the BigFix Console. In the Patch Management domain in the console navigation tree, click OS Vendors and click Oracle Linux. Double-click the Fixlet that you want to deploy. Click the tabs at the top of the Fixlet window to review additional details, and then click the appropriate link in the Actions box to start deployment. Click **OK**.

Patch by using the YUM utility

Yellow dog Updater, Modified (YUM) is a package management tool that updates, installs, and removes Red Hat Package Manager (RPM) packages. YUM uses a command-line interface and simplifies the process of installing, uninstalling, and updating packages, provided that there is access to the YUM repository.

YUM utility configuration settings

The Patches for Oracle Linux site use YUM utility settings in the Fixlet settings `in /etc/yum.conf.` The following YUM configuration settings are not used in the Fixlet setting.

- cachedir
- keepcache
- plugins
- reposdir
- pluginpath
- pluginconfpath
- metadata_expire
- installonlypkgs

Supersedence

Please refer to Supersedence in Non-Windows to know more about the supersedence.

Chapter 4. Manage YUM transactions

View YUM transaction history and manage transactions through the YUM Transaction History dashboard.

The dashboard displays the YUM transaction history and can be used to roll back, undo, and redo transactions in your deployment.

Rollback

The rollback feature undoes all transactions up to the point of the specified transaction.

Undo

The undo feature reverts a selected transaction only.

Redo

The redo feature repeats the recent transaction action.

Note: Active kernel cannot be rolled back for a kernel update.

Requirements

To use the YUM Transaction History dashboard, ensure that you have the following requirements.

- Use BigFix version 9.5 and later.
- Use Oracle Linux 6 and later versions.
- Use YUM version 3.2.28 and later.

Note: The rollback functionality is supported for the YUM versions 3.2.29 and later.

Note: In the dashboard, if the YUM version of a selected endpoint is earlier than version 3.2.29.22, a warning sign next to the YUM version will indicate

that the version does not support the rollback action. The **Rollback** button is disabled for all transactions if the version is not supported.

- Subscribe to the Patching Support site.
- Activate the YUM Transaction History analysis.

YUM transaction actions

The **Actions** column identify the YUM transaction actions in the dashboard. The following table give details of the actions for every transaction.

Table 4. Description of transaction actions

Action	Abbreviation	Description
Downgrade	D	At least one package has been downgraded to an older version.
Erase	E	At least one package has been removed.
Install	I	At least one new package has been installed.
Obsoleting	O	At least one package has been marked as obsolete.
Reinstall	R	At least one package has been reinstalled.
Update	U	At least one package has been updated to a newer version.

For more information about YUM history, go to Red Hat Product Documentation site.

YUM transaction analyses

The dashboard uses the following analyses:

YUM Transaction History analysis

BigFix Patches for Oracle Linux generates a log which records the results of the actions that are taken in the YUM Transaction History dashboard.

The YUM History Transaction analysis retrieves the content of the action log `yum_history.log`. The log is located in `/var/opt/BESClient/EDRDeployData/yum_history.log`.

YUM Logs analysis

YUM log is the official log that YUM generates by default in `/var/log/yum.log`. To change the default location, modify the log file settings in `/etc/yum.conf`. The YUM log analysis is very useful for troubleshooting purposes.

The analysis has 2 properties.

YUM Log property

Logs all the operations that are performed and identifies the transactions that are modified. This log retrieves the last 40 lines of the YUM log file.

YUM History Dashboard action log

This log lists the action logs for the redo, undo, and rollback operations from the action. The actions write the logs to `/var/opt/BESClient/EDRDeployData/yum_history.log`. The YUM History Dashboard action records the latest 5 actions.

Troubleshooting

To perform troubleshooting for the YUM Transaction History dashboard, you can check the `yum_history.log` file in `var/opt/BESClient/EDRDeployData`.

Rolling back a YUM transaction

Learn how to rollback YUM transactions.

Ensure that you meet the following requirements:

- Use BigFix version 9.5 and later.
- Use Oracle Linux 6 and later versions.

- Use YUM version 3.2.28 and later. The rollback functionality is supported for YUM version 3.2.29 and later.

  Note: In the dashboard, if the YUM version of a selected endpoint is earlier than version 3.2.29.22, a warning sign next to the YUM version will indicate that the version does not support the rollback action. The **Rollback** button is disabled for all transactions if the version is not supported.

- Subscribe to the Patching Support site.
- Activate the YUM Transaction History analysis.

1. Using the BigFix console, go to **External Sites > Patching Support > Dashboards > YUM Transaction History**.
2. Select the endpoint whose YUM history you want to view.

   Note: If the YUM version of a selected endpoint is earlier than version 3.2.29.22, a tooltip will indicate that the version is not supported.

3. Select the transaction that you want to roll back to.
4. Click **Rollback**.
5. The **Rollback Up To Transaction** window opens. OPTION: You can add flags in the field. Click **Apply**.
6. From the **Take Action** window, select the computer and click **OK** to run the action.

Undoing a YUM transaction

Use this feature to revert to a single, specific transaction.

Ensure that you meet the following requirements:

- Use BigFix version 9.5 and later.
- Use Oracle Linux 6 and later versions.
- Use YUM version 3.2.28 and later.

Note: The rollback functionality is supported for YUM version 3.2.29 and later.

Note: In the dashboard, if the YUM version of a selected endpoint is earlier than version 3.2.29.22, a warning sign next to the YUM version will indicate that the version does not support the rollback action. The **Undo** button is disabled for all transactions if the version is not supported.

- Subscribe to the Patching Support site.
- Activate the YUM Transaction History analysis.

1. Using the BigFix console, go to **External Sites > Patching Support > Dashboards > YUM Transaction History**.
2. Select the endpoint whose YUM history you want to view.
3. Select the transaction whose rollback that you want to undo.
4. Click **Undo**.
5. In the **Undo Transaction** window, click **Apply**.
6. From the **Take Action** window, select the computer and click **OK** to run the action.

Redo a YUM transaction

Use this feature to repeat the recent transaction action.

Ensure that you meet the following requirements:

- Use BigFix version 9.5 and later.
- Use Oracle Linux 6 and later versions.
- Use YUM version 3.2.28 and later.

Note: In the dashboard, if the YUM version of a selected endpoint is earlier than version 3.2.29.22, a warning sign next to the YUM version will indicate that the version does not support the rollback action. The **Redo** button is disabled for all transactions if the version is not supported.

- Subscribe to the Patching Support site.
- Activate the YUM Transaction History analysis.

 **Note:** Active kernel cannot be rolled back for a kernel update.

1. Using the BigFix console, go to **External Sites > Patching Support > Dashboards > YUM Transaction History**.
2. Select the endpoint whose YUM history you want to view.
3. Select the transaction that you want to redo.
4. Click **Redo**.
5. In the **Redo Transaction** window, click **Apply**.
6. From the **Take Action** window, select the computer and click **OK** to run the action.

Checking for YUM package updates

You can use a task to identify YUM package updates that you must install in your deployment.

You can refer to a list that details the YUM package updates that are applicable to your Oracle Linux endpoints.

When you run the ID 39: YUM: Check Available Package Updates task, the YUM Logs analysis shows the results in a new column. The task uses the yum check-update to determine which updates are available for your installed packages. The task uses the repository in your deployment. Ensure that the YUM packages are available in your repository when you run the task.

Using the YUM: Check Available Package Updates task

- Subscribe to the Patching Support site.
- Ensure that the YUM Logs analysis is activated.
- Ensure that your endpoint uses a repository and that the YUM packages are available in the repository.

1. From the console, go to **Patching Support** site, select the following task: ID 39: YUM: Check Available Package Updates.
2. Click **Take Action** to run the task.
3. Click **OK**.
4. When the action completes, go to **Patching Support > Analyses > Analysis: YUM Logs** and select the **Results** tab.

The YUM check-update output column is added and you can check if your endpoints have updates that must be installed.

Chapter 5. Manage custom repositories

Use the Oracle Linux Custom Repository Management dashboard to register and manage repositories.

Using custom repositories can give you the flexibility to control what can be deployed to the endpoints in your deployment. For example, you can deploy custom software that you are hosting in your custom repositories. Use the Oracle Linux Custom Repository Management dashboard to register and manage standard repositories and satellite repositories. Users of BigFix Patch for Oracle Linux can use the dashboard to do the following actions.

- Register, unregister, add, delete, and import custom repositories.
- Deliver custom software through BigFix. Support for custom repositories leverages on existing local repositories to save bandwidth and improve performance.

Instead of following the current BigFix infrastructure which allows Fixlets in the Patch for Oracle Linux site to directly download the patches from the Oracle Linux servers, the Fixlets now allow YUM to download from local repositories.

Ensure that you have met the following requirements.

- BigFix version 9.5 and later.
- Minimum YUM version: YUM 3.2.19-18
- Subscribe to the Patching Support site.
- Activate the Repository Configuration - Oracle Linux analysis from the Patching Support site to access the dashboard.

Note: The dashboard does not support the creation and maintenance of local repositories. You must create local repositories separately.

Use the Install packages by using the YUM task from the Patching Support site to install custom software that are in your custom repositories.

Registering a repository

Using the dashboard, you can register and connect your existing repositories to endpoints.

Activate the Repository Configuration - Oracle Linux analysis.

1. From the All Content domain, go to **Sites > External Sites > Patching Support > Dashboards > Oracle Linux Custom Repository Management**.
2. Click the **Endpoints** tab and select an endpoint. The repositories of the selected endpoints are listed in the lower part of the window. When a repository is named as unspecified, it means that it is not listed in the Repository list.
3. Click **Register a new repository**.
4. From the Register a New Repository window, select the repository, then click **Next**. The next window shows the name and the URL of the repository that you are registering.
5. This step is optional. You can also add more configuration information in **Additional Fields**. This information is saved in the YUM configuration files.

   Note: Users who have custom repositories that are not just mirrors of the vendor sites must add `gpgcheck=0` in **Additional Fields**. When the gpg signature files are excluded, the rpm files are not checked for authenticity and might cause the installation to fail.

6. Click **Save**.
7. From the **Take Action** window, select the computer and click **OK** to run the action.

Unregistering a repository from an endpoint

Using the dashboard, you can unregister a repository from an endpoint.

When you unregister a repository, the dashboard removes the system ID file from the computer you selected. You must log in to the satellite server and delete the computer manually.

1. From the All Content domain, go to **Sites > External Sites > Patching Support > Dashboards > Oracle Linux Custom Repository Management**.
2. Click the Endpoints tab and click **Unregister a new repository**.
3. From the **Unegister a New Repository** window, select the repository and click **Save**.
4. From the Take Action window, select the computer and click **OK**.

Note: When you unregister a repository, the YUM configuration file is not deleted, but just disabled.

Adding repositories

You can add repositories with the Oracle Linux Custom Repository Management dashboard.

1. From the All Content domain, go to **Sites > External Sites > Patching Support > Dashboards > Oracle Linux Custom Repository Management**.
2. From the **Repositories** tab, select the repository that you want to add and click **Add**.
3. From the Add a New Repository window, enter values for the Name and Repository URL fields. **Note:** When you enter the satellite URL, the bootstrap URL is entered automatically. Bootstraps are created on the satellite server.
4. Click **Save**.

You added a repository to the dashboard. To have an endpoint use the repository that you added, go to the **Endpoints** tab and register the repository.

Importing a repository

Users can import their existing repositories using this feature.

Activate the Repository Configuration - Oracle Linux analysis to populate the dashboard with endpoint and repository information.

When importing existing repositories, ensure that the following entries are entered in the following order in the .repo files.

```
name=
baseurl=
enabled=
gpgcheck=
```

1. From the All Content domain, go to **Sites > External Sites > Patching Support > Dashboards > Oracle Linux Custom Repository Management**.
2. Click the Repositories tab and click **Import**.
3. From the **Import Existing Repositories** window, select and name the repository.
4. Click **Save**.

The repository is now imported and added to the list of repositories in the dashboard.

Chapter 6. Frequently Asked Questions

Learn the answers to frequently asked questions about Patch for Oracle Enterprise Linux.

Why are my Oracle Linux patch updates failing deployment?

Some repositories are not enabled by default because they might break Oracle Enterprise Linux upstream compatibility. This might cause patches to fail deployment and users might get the following similar error shown in the EDRDeployData.log file:

```
No package kernel-devel-3.10.0-514.26.1.0.1.el7.x86_64 available
.
 No package kernel-headers-3.10.0-514.26.1.0.1.el7.x86_64 availa
ble.
 No package kernel-tools-3.10.0-514.26.1.0.1.el7.x86_64 availabl
e.
 No package kernel-tools-libs-3.10.0-514.26.1.0.1.el7.x86_64 ava
ilable.
 No package perf-3.10.0-514.26.1.0.1.el7.x86_64 available.
 No package python-perf-3.10.0-514.26.1.0.1.el7.x86_64 available
.
 Error: Nothing to do
```

Users would need to decide if upstream compatibility is necessary.

Follow these steps to enable the missing repository:

1. Go to /etc/yum.repos.d/public-yum-ol7.repo and look for the OL7 repository file.
2. If the entry for If the entry for the repository, in this case, [ol7_MODRHCK] exists, ensure that it is enabled.
3. If the repository entry does not exist, add the following entry:

```
[ol7_MODRHCK]
name=Latest RHCK with fixes from Oracle for Oracle Linux $r
eleasever ($basearch)
baseurl=http://yum.oracle.com/repo/OracleLinux/OL7/MODRHCK
/$basearch/
ggpgkey=file:///etc/pki/rpm-gpg/RPM-GPG-KEY-oracle
gpgcheck=1
priority=20
enabled=1
```

4. Save your changes.

How to identify the packages belonging to a Oracle Linux repository?

Some repositories are not enabled by default and this might cause patches to fail deployment. There might be chance when the patches deployment failed for a package but users are not aware as which repository that package belongs to. In that case, use yum commands to identify the repository.

There are some basic commands available in yum, if the repository is added and enabled in `/etc/yum.repos.d/<somename>.repo`. Then using yum info `<pkgname>` will list the available packages. For example:

```
yum info cri-o-1.20.7-1.el8
Available Packages
Name         : cri-o
Version      : 1.20.7
Release      : 1.el8
Arch         : src
Size         : 9.6 M
Source       : None
Repo         : ol8_cloud_native_1.3
Summary      : Kubernetes Container Runtime Interface for OCI-ba
sed containers
```

```
URL          : https://github.com/cri-o/cri-o
License      : ASL 2.0
Description  : CRI-O is meant to provide an integration path bet
ween OCI conformant runtimes and the kubelet.
               Specifically, it implements the Kubelet Container
 Runtime Interface (CRI) using OCI conformant runtimes.

Name         : cri-o
Version      : 1.20.7
Release      : 1.el8
Arch         : x86_64
Size         : 19 M
Source       : cri-o-1.20.7-1.el8.src.rpm
Repo         : ol8_cloud_native_1.3
Summary      : Kubernetes Container Runtime Interface for OCI-ba
sed containers
URL          : https://github.com/cri-o/cri-o
License      : ASL 2.0
Description  : CRI-O is meant to provide an integration path bet
ween OCI conformant runtimes and the kubelet.
               Specifically, it implements the Kubelet.
```

What to do when Fixlets fail to install with the following message in the EDR log? "Warning: Nothing to install. Please check if you are using the latest kernel."

This message appears only in case of Fixlets that deploy kernel packages. A kernel Fixlet becomes relevant if the endpoint does not have the target kernel package installed or if the endpoint's active kernel is at a lower version than the target kernel package. An endpoint is still considered subject to kernel vulnerabilities even if it has the latest kernel installed but not using it actively.

To remediate the issue, restart the endpoint and ensure it is using the latest kernel available.

Appendix A. Support

For more information about this product, see the following resources:

- Knowledge Center
- BigFix Support Center
- BigFix Support Portal
- BigFix Developer
- BigFix Wiki
- HCL BigFix Forum

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