



ALM Octane

Software Version: 16.1.100

Upgrade Guide for Linux

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Contents

Upgrade	4
Upgrade paths	4
Prepare for upgrade	5
Prepare for Elasticsearch re-indexing (ES version 8.x)	7
Step 1: Deploy the new version and start ALM Octane	9
Step 2: Upgrade cluster nodes	10
Step 3: Upgrade spaces in ALM Octane	10
Step 4: Verify that spaces upgraded successfully	11
Post-upgrade (optional)	12
Rollback	13
After the upgrade's setup validation phase	13
After a site schema has been upgraded	13
After space schema has been upgraded	14
After upgrade completed	15
After upgrading cluster nodes	15
Upgrade ALM Octane in Docker	16
Get default configuration files from the ALM Octane docker image	16
Upgrade ALM Octane in Docker	16
Install a patch	18
Send Us Feedback	19

Upgrade

This document describes how to upgrade an existing installation of an on-premises ALM Octane server on Linux.

In this topic:

- ["Upgrade paths" below](#)
- ["Prepare for upgrade" on the next page](#)
- ["Step 1: Deploy the new version and start ALM Octane" on page 9](#)
- ["Step 2: Upgrade cluster nodes" on page 10](#)
- ["Step 3: Upgrade spaces in ALM Octane" on page 10](#)
- ["Step 4: Verify that spaces upgraded successfully" on page 11](#)
- ["Post-upgrade \(optional\)" on page 12](#)

Upgrade paths

ALM Octane allows you to choose between two upgrade paths:

- **Short-term path (STP)**. Upgrade to each new service pack (for example, from 16.0.400 to 16.1.100). If you choose this path, you will need to go through all the interim service packs in order to upgrade to the following release.
- **Long-term path (LTP)**. Upgrade directly from one release to the next (for example from 16.0.100 to 16.1.100, to the next LTP release), without having to upgrade to each of the interim service packs.

The current version is a **long term path release**, meaning that you can upgrade to ALM Octane 16.1.100 either directly from 16.0.100, or from 16.0.400.

Prepare for upgrade

Before upgrading, review the following:

1. Check that all spaces are up to date, first in **Settings > Site > Spaces**, and then in **Settings > Site > POST UPGRADE JOBS**. Delete any spaces that you do not want to upgrade to prevent problems in future upgrades.
2. Verify that your server machine, and if relevant, all cluster nodes, meet all prerequisites.
This includes checking the supported versions for all third party tools and upgrading accordingly. For details, see "Prerequisites" in the [ALM Octane Installation Guide for Linux](#).
3. Stop the **octane** service on the server, and if relevant, on all cluster nodes.
4. Create backups of:
 - The repository
 - Existing ALM Octane configuration files, including **octane.conf**
 - Your database
 - Elasticsearch
 - If you are using ALM Octane Synchronizer, back up :
 - **C:\octane\wrapper\wrapper.conf**
 - **service.locator.properties (C:\octane\webapps)**
5. Take note of any special aspects of your configuration, such as:

Special configuration	Recommendation
Did you use a different user, other than the octane user, to install?	If you did, the user is set in the OCTANE_USER environment variable. Use this user to upgrade.
Did you install ALM Octane to a location other than /opt/octane ?	Refer to the location you used while upgrading.
What sudoer user did you use to install?	Use the same sudoer user that was used for installation to upgrade.

Special configuration	Recommendation
Did your organization's DBA make changes to database schemas, such as the addition of tables or columns?	Define an exception file. The exception file instructs ALM Octane to ignore manual changes to the database schemas during installation. For details, see "Using exception files for manual database changes" in the ALM Octane Installation Guide for Linux .

6. Before upgrading, remove all patches or hotfixes at **WEB-INF/lib** and **WEB-INF/classes**.

Prepare for Elasticsearch re-indexing (ES version 8.x)

ALM Octane will re-index old indexes in preparation for moving to Elasticsearch 8.x.

In addition, the event-store, run-history, and search indexes will be re-indexed to provide new functionality. Re-index will also occur if an index is very large and its number of shards needs to be extended.

Note: The mechanism for Elasticsearch re-index has been changed to significantly minimize downtime.

When a space's post-upgrader is running, its Elasticsearch features are not all disabled during the entire process. Instead, features are in downtime only when an index they are dependent on is in the downtime phase of its reindexing.

- **Site index.** Site index is now re-indexed by a post-upgrade job triggered during the site upgrade. This appears in the Post Upgrade Jobs tab in the Site module. Its space ID is -1.
- **Space indexes.** As mentioned above, during re-index some functionalities might be disabled for short time periods. This includes search, trend and analytics graphs, pipelines, and audit. For more details, see ["Re-indexing during space upgrade" on page 11](#).
- Re-indexing is mandatory. You will not be able to upgrade Elasticsearch to 8.x if you still have indexes created in an Elasticsearch version lower than 7.x. In the next version of ALM Octane, you will not be able to proceed with space upgraders unless all spaces are re-indexed.
- The Elasticsearch server must have ~60% free space to enable re-indexing. The ALM Octane server will not start if there are old indexes in Elasticsearch and the space condition is not fulfilled.

If you do not have sufficient space on the Elasticsearch server, allocate space before proceeding with the upgrade. You can run the following command from Kibana to check:

```
GET /_cat/allocation?v
```

Or the following CURL command:

```
CURL -XGET "http://{elastic host}:9200/_cat/allocation?v"
```

- Set the value for the **ELASTIC_MAINTENANCE_MAX_WORKERS_PER_NODE**

based on the number of cluster nodes for ALM Octane. For details, see [Configuration parameters](#) in the ALM Octane Help Center.

Note: Indexes must be open and not in read-only mode.

Step 1: Deploy the new version and start ALM Octane

1. Download the ALM Octane RPM package:
<https://www.microfocus.com/en-us/products/application-lifecycle-management-octane-on-prem/download>
2. Deploy the rpm package for the new version of ALM Octane using:

```
rpm -U <name of the RPM file>
```

3. Update the `hazelcast.xml` configuration file:
ALM Octane 16.1.100 uses Hazelcast v.5.1, which requires changes to `hazelcast.xml`. In the **REPO/conf** folder you will now have two files: **hazelcast.xml**, and **hazelcast.xml.new**.
 - a. Rename **hazelcast.xml** to **hazelcast.xml.old**.
 - b. Rename **hazelcast.xml.new** to **hazelcast.xml**.
 - c. If you made any manual customizations to the **hazelcast.xml** file in the past, copy those customizations now from **hazelcast.xml.old** to **hazelcast.xml**.
4. Start the ALM Octane server.

```
systemctl start octane
```

5. Check the `/opt/octane/log/wrapper.log` file. If you encounter a recoverable error in the **wrapper.log** or **upgrade.log** files, fix the problem and restart the server to resume upgrade.
 - If the log file contains the error message “The value `https://<server URL>` is invalid URL”, refer to the section [Upgrading non-standard top-level domains](#).
 - The following is required if you configured trust on the ALM Octane server, when connecting to a remote location such as the database server. If your Java trust store (`<java_home>/jre/lib/security/cacerts`) uses a non-default password, enter this password in **octane.conf** in the **java-default-trust-store-password** parameter.

Caution: Do not use ALM Octane until you have completed ["Step 3: Upgrade spaces in ALM Octane"](#) on the next page.

Step 2: Upgrade cluster nodes

After the upgrade on the first node has completed successfully, you can upgrade the remaining nodes in a cluster.

To upgrade cluster nodes:

1. Deploy the new version of ALM Octane to each node.
2. On each node, start the ALM Octane server.

```
systemctl start octane
```

3. Check the **/opt/octane/log/wrapper.log** file. If you do not see the "Server is ready!" message, correct the errors shown in the log.

If you encounter a recoverable error in the **wrapper.log** or **upgrade.log** files, fix the problem and restart the server to resume upgrade.



Caution: Do not use ALM Octane until you have completed "[Step 3: Upgrade spaces in ALM Octane](#)" below.

Step 3: Upgrade spaces in ALM Octane

After upgrading, log into ALM Octane as the site admin to upgrade each space.

To upgrade spaces in ALM Octane:

1. In a browser, navigate to **<ServerURL>:<port>/ui?site**.
2. Log in with the user name and password defined in the **octane.conf** file.
To upgrade all spaces at once, log in as the site admin.
3. Click **Site** and then click the **Spaces** tab.
4. Select one or more spaces and click **Upgrade**.
Upgrade is available only if the space needs to be upgraded.
5. Individual workspaces are upgraded in the background.



Note: Until all of the post-upgrade jobs have completed, some data may be unavailable in trend graphs and other Elasticsearch-related features.

Step 4: Verify that spaces upgraded successfully

Verify that all spaces were upgraded successfully from the previous version. To verify that a space has been upgraded, check that:

- The space status is **Active** (or Inactive if it was previously deactivated).
- The space version is updated to the current version.

In addition, check that all post-upgrade jobs were completed in **Settings > Site > POST UPGRADE JOBS**.

Note: If Elasticsearch maintenance post-upgrader(s) are taking long, you can stop them as described in the following section. After stopping them, restart the server as described below, and then re-run the post-upgraders after the server is up.

Re-indexing during space upgrade

The space upgrade step includes Elasticsearch re-index as described in "[Prepare for Elasticsearch re-indexing \(ES version 8.x\)](#)" on page 7.

- Space indexes are automatically re-indexed as part of a post-upgrader job that is triggered after the space is upgraded. (If a space's indexes are all up-to-date, the post-upgrader will immediately complete successfully.)
- As mentioned above, during re-index, some functionalities might be disabled for short time periods. This includes search, trend and analytics graphs, pipelines, and audit. A message to this effect will be displayed at the top of users' screens.
- You can set the **ELASTIC_STOP_EXECUTE_REINDEX_POST_UPGRADERS** site parameter to **true** in order to stop the re-index from running (either for the site or per space). The post-upgrader will complete as FAILED when the parameter is on.
- This can be helpful if you want to schedule re-indexing at a time that has the lowest impact on your users, or if you started the re-index and need to suspend it. In this case, when you are ready to re-index set the parameter to false, and re-run the post-upgrader.
- Post-upgrader jobs can be viewed and managed in **Settings > Site > POST UPGRADE JOBS**.

Note: In the list of post-upgraders you will see **Elasticsearch site indexes reindex** whose shared space is -1. After run_history reindex, you will see a post-upgrader described as **Inject tests into the run_history index to**

! **support data visibility.** This is expected behavior.

- Re-index must be completed. You will not be able to use ALM Octane in the next release if re-index was not completed successfully.

Troubleshooting the re-index:

- Some Elasticsearch failures might be due to momentary load on the Elasticsearch cluster. You can try re-running the post-upgrader to see if this solves the problem.
- If a post-upgrader fails, collect logs for support. The status in **Settings > Site > POST UPGRADE JOBS** will display FAILED. Check the error message, fix the indicated problem, and re-run the upgrader. The Elasticsearch features will be enabled again until you re-run the post-upgrader.
- If a post-upgrader fails, we recommend to fix and re-run the reindex as soon as possible. Leaving failed jobs for a long time may impact system performance.

Post-upgrade (optional)

ALM Octane 16.0.400 and later supports the HTTP/2 protocol. For details, refer to the *ALM Octane Installation Guide*, in the section **Public URL and Server Ports**.

To implement HTTP/2:

1. In **octane.conf**, set the **force-disable-http2** parameter to **false**.
2. Configure HTTPS using the **key-store** fields.
3. If you are using a load balancer or proxy server, make sure that they support HTTP/2.
4. Restart the ALM Octane server.

Rollback

This section describes how to roll back after upgrading an on-premises ALM Octane server. This may be necessary if for some reason the upgrade fails or performance is slow.

Depending on when you want to roll back, there are different steps to perform.

Note: To roll back you need the pre-upgrade backups of all configuration files including **octane.conf** from each node.

In this topic:

- ["After the upgrade's setup validation phase" below](#)
- ["After a site schema has been upgraded" below](#)
- ["After space schema has been upgraded" on the next page](#)
- ["After upgrade completed" on page 15](#)
- ["After upgrading cluster nodes" on page 15](#)

After the upgrade's setup validation phase

You can roll back after the upgrade's setup validation phase, whether it passed or failed.

If the upgrade reached setup validation, the following have been modified:

- Previously-deployed files
- ALM Octane configuration files, including **octane.conf**

To roll back the deployed files, including **octane.conf**

1. Revert to the previous rpm file: `rpm -Uvh --oldpackage <filename>`
2. Revert to backups of ALM Octane configuration files, including **octane.conf**.
3. Start the ALM Octane server (the octane service).

After a site schema has been upgraded

You can roll back after the site schema has been upgraded.

If the upgrade upgraded the site schema, the following has been modified:

- The site schema (database)
- Elasticsearch indexes
- ALM Octane configuration files, including **octane.conf**

To roll back the site schema

1. Stop the ALM Octane server (the octane service).
2. Revert to a backup of the site schema.
3. Revert to a backup of Elasticsearch indexes.
4. Revert to the previous rpm file: `rpm -Uvh --oldpackage <filename>`
5. Revert to backups of ALM Octane configuration files, including **octane.conf**.
6. Start the ALM Octane server (the octane service).

After space schema has been upgraded

If the upgrade upgraded the space schema, the following have been modified:

- Previously-deployed files
- Elasticsearch indexes
- ALM Octane configuration files, including **octane.conf**
- The site schema
- The space schema

Rolling back a single space is relevant after upgrade of a space failed. In this case, fixes are required depending on the cause of the failure, as seen in the logs and in the UI.

Note: This is only relevant if the space upgrade failed with **CORRUPTED** status. If it ended in **SUSPENDED** status, implement the fixes as instructed in the logs and in the UI, and then resume upgrade. No rollback actions are required.

To roll back changes to the space schema:

1. Revert to the backup of the space schema.
2. Revert to the backups of Elasticsearch indexes related to the specific space.
Space-specific indexes can be identified by the space logical name embedded in their name, using the pattern **mqm_{space logical name}_***.
Note: There are multiple Elasticsearch indexes for each space. Make sure to roll back all of them.
3. Revert to the repository backup of this specific space.
4. Fix what caused the upgrade to fail.
5. Run the following API to repair the space:
`POST {octane server}/admin/shared_spaces/repair?ids={space_id}`

Tip: To repair multiple spaces, provide the **space_ids** separated by commas.

6. Upgrade again.

After upgrade completed

If the upgrade completed successfully, the following have been modified:

- ALM Octane configuration files, including **octane.conf**
- The site schema
- The space schema(s)
- Elasticsearch indexes
- ALM Octane repository files

To roll back the entire upgrade

1. Follow the procedure ["To roll back the site schema" on the previous page.](#)
2. Revert to backups of all space schemas.
3. Revert to backups of all Elasticsearch indexes.
4. Revert to backup of the previous repository.

After upgrading cluster nodes

If you upgraded additional cluster nodes, the following has been modified on the cluster nodes:

- Previously-deployed files
- ALM Octane configuration files, including **octane.conf**

To roll back to the rpm package

1. Revert to the previous **rpm** file on each cluster node: `rpm -Uvh --oldpackage <filename>`
2. Revert to backups of ALM Octane configuration files, including **octane.conf**.
3. Start the ALM Octane server (the octane service) on each cluster node.

Upgrade ALM Octane in Docker

This section describes how to upgrade ALM Octane in Docker.

In this topic:

- ["Get default configuration files from the ALM Octane docker image" below](#)
- ["Upgrade ALM Octane in Docker" below](#)

Get default configuration files from the ALM Octane docker image

Before upgrading, make sure you have default configuration files from the new ALM Octane Docker image.

1. Download the new ALM Octane Docker image.
2. Run the ALM Octane Docker image using the following command:

```
docker run -d -p 8080:8080 -v /opt/octane_docker_config_files/conf:/opt/octane/conf -v /opt/octane_docker_config_files/log:/opt/octane/log -v /opt/octane_docker_config_files/repo:/opt/octane/repo --name alm_octane_config_files lifecyclemanagement/octane:<version_number>
```

The first run should fail with errors because ALM Octane has not been configured.

3. Go to **/opt/octane_docker_config_files/repo**. In the **conf-discover** folder you will find the default ALM Octane configuration files. Copy them to a backup location.

Upgrade ALM Octane in Docker

This section describes how to start a new ALM Octane container using the configuration from a previous version, and upgrade the data.

1. Stop your ALM Octane container.
2. Back up your Oracle or MSSQL database.
3. Back up Elasticsearch.
4. Back up the conf and log folders (if mapped).
5. Back up the REPO folder, which includes the **conf-discover** and **storage** folders.
6. Download the new ALM Octane Docker image.

Note that only on-premises versions of ALM Octane are supported.

7. Overwrite the .xml files in the folder **conf-discover** (in the REPO folder) with the .xml files from the default configuration files for the new version. For details see ["Get default configuration files from the ALM Octane docker image" on the previous page](#).
8. Run the Docker image with the following command, using the identical container configuration:

```
docker run -d -p 8080:8080 -p 8443:8443 -v [your-path-to-CONF-  
folder]:/opt/octane/conf -v [your-path-to-LOG-  
folder]:/opt/octane/log -v [your-path-to-REPO-  
folder]:/opt/octane/repo --name alm_octane_<version_number>  
lifecyclemangement/octane:<version_number>
```

This means that the ports, and the mapping of the conf, log, and repo mount folders should be the same in the new container as your current container.

9. Validate that the container works by checking the container's Log tab, or the wrapper.log and octane.log files in the mapped log folder.
10. Continue with the regular space upgrade procedure, as described in ["Step 3: Upgrade spaces in ALM Octane" on page 10](#).

Note: If you need to roll back the upgrade:

- If the new ALM Octane container failed to run, restore configuration files in the conf-discover folder (in the REPO folder), and run the previous version of the ALM Octane container.
- If the new ALM Octane container successfully upgraded the site, restore backups (database, Elasticsearch, and REPO folder), and run the previous version of the ALM Octane container.

Install a patch

This section describes how to install a hotfix patch, without upgrading ALM Octane.

1. Stop the ALM Octane service.
2. Create backups of:
 - The repository
 - Existing ALM Octane configuration files, including **octane.conf**
 - Your database
 - Elasticsearch
3. Run the installer file containing the fix as you would do for a regular upgrade.
4. Start the ALM Octane service and validate that the issue is fixed.
There is no need to upgrade the spaces.

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