UPGRADING RHEL 7 to RHEL 8

During the upgrade process, the Leapp utility sets SELinux mode to permissive.

Ensure your system has been successfully registered to the Red Hat Content Delivery Network (CDN) or Red Hat Satellite using the Red Hat Subscription Manager.

If your system is registered to Satellite Server, ensure that Satellite meets the following conditions:

Satellite is on a version in full or maintenance support. For more information, see Red Hat Satellite Product Life Cycle.

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If your system is registered to Satellite Server, ensure that Satellite meets the following conditions:

Satellite is on a version in full or maintenance support. For more information, see Red Hat Satellite Product Life Cycle.

Satellite has a subscription manifest with RHEL 8 repositories imported. For more information, see the Managing Subscriptions chapter in the Content Management Guide for the particular version of Red Hat Satellite, for example, for version 6.8.

All required repositories are enabled and synchronized with the latest updates and published on Satellite. For example, for the Intel architecture without an Extended Update Support (EUS) subscription, enable at minimum the following repositories:

Red Hat Enterprise Linux 7 Server (RPMs)

rhel-7-server-rpms

x86\_64 7Server or x86\_64 7.9

Red Hat Enterprise Linux 7 Server - Extras (RPMs)

rhel-7-server-extras-rpms

x86\_64

Red Hat Enterprise Linux 8 for x86\_64 - AppStream (RPMs)

rhel-8-for-x86\_64-appstream-rpms

x86\_64 8.2

Red Hat Enterprise Linux 8 for x86\_64 - BaseOS (RPMs)

rhel-8-for-x86\_64-baseos-rpms

x86\_64 8.2

For more information, see the Importing Red Hat Content chapter in the Content Management Guide for the particular version of Red Hat Satellite, for example, for version 6.8.

The content host belongs to one of the following:

A Content View containing the above RHEL 7 and RHEL 8 repositories.

The Default Organization View Content View and the Library life cycle environment.

For more information, see the Managing Content Views chapter in the Content Management Guide for the particular version of Red Hat Satellite, for example, for version 6.8.a subscription manifest with RHEL 8 repositories imported. For more information, see the Managing Subscriptions chapter in the Content Management Guide for the particular version of Red Hat Satellite, for example, for version 6.8.

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x86\_64

Red Hat Enterprise Linux 8 for x86\_64 - AppStream (RPMs)

rhel-8-for-x86\_64-appstream-rpms

x86\_64 8.2

Red Hat Enterprise Linux 8 for x86\_64 - BaseOS (RPMs)

rhel-8-for-x86\_64-baseos-rpms

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For more information, see the Importing Red Hat Content chapter in the Content Management Guide for the particular version of Red Hat Satellite, for example, for version 6.8.

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For more information, see the Managing Content Views chapter in the Content Management Guide for the particular version of Red Hat Satellite, for example, for version 6.8.

Verify that you have the Red Hat Enterprise Linux Server subscription attached:

**subscription-manager list --installed**

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Installed Product Status

+-------------------------------------------+

Product Name: Red Hat Enterprise Linux Server

Product ID: 69

Version: 7.9

Arch: x86\_64

Status: Subscribed

You should see *Server* in the product name and Subscribed as the status.

Ensure you have appropriate repositories enabled. The following commands list repositories for the 64-bit Intel architecture; for other architectures, see RHEL 7 repositories.

Enable the Base repository:

# **subscription-manager repos --enable rhel-7-server-rpms**

Enable the Extras repository where Leapp and its dependencies are available:

# **subscription-manager repos --enable rhel-7-server-extras-rpms**

Set the Red Hat Subscription Manager to consume the latest RHEL 7 content:

#**subscription-manager release --unset**

If you use the yum-plugin-versionlock plug-in to lock packages to a specific version, clear the lock by running:

**# yum versionlock clear**

Ensure you have the system locale set to en\_US.UTF-8:

# **cat /etc/locale.conf**

**If you manage containers in Docker, recreate those containers with the appropriate container images using Podman and then attach any in-use volumes.**

Update all packages to the latest RHEL 7 version:

# **yum update**

Reboot the system:

# **reboot**

Install the Leapp utility:

# **yum install leapp leapp-repository**

**Temporarily disable antivirus software to prevent the upgrade from failing.**

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Ensure you have any configuration management (such as Salt, Chef, Puppet, Ansible) disabled or adequately reconfigured to not attempt to restore the original RHEL 7 system.

Ensure your system does not use more than one Network Interface Card (NIC) with a name based on the prefix used by the kernel (eth).

Ensure you have a full system backup or a virtual machine snapshot. You should be able to get your system to the pre-upgrade state if you follow standard disaster recovery procedures within your environment.

If you are upgrading with Red Hat Subscription Manager and have disabled the subscription-manager plug-in in yum or yum4, re-enable the plug-in.

# **yum 2>&1 | grep "^Loaded plugins"**

# **Reviewing the pre-upgrade report**

To assess upgradability of your system, start the pre-upgrade process by the leapp preupgrade command. During this phase, the Leapp utility collects data about the system, assesses upgradability, and generates a pre-upgrade report.

The pre-upgrade report is available both in the **/var/log/leapp/leapp-report.txt** file and in the web console. The report summarizes potential problems and proposes recommended solutions. The report also helps you decide whether it is possible or advisable to proceed with the upgrade.

In certain configurations, Leapp generates true/false questions to determine how to proceed. All questions are stored in **/var/log/leapp/answerfile** and in the pre-upgrade report in the Missing required answers in the answer file message. Leapp inhibits the upgrade if you do not provide answers to all the questions.

**Assessing upgradability from the command line**

On your RHEL 7 system, perform the pre-upgrade phase:

# **leapp preupgrade**

**NOTE**

If you are going to use custom repositories from the /etc/yum.repos.d/ directory for the upgrade, enable the selected repositories as follows:

# **leapp preupgrade --enablerepo repository\_id1 --enablerepo repository\_id2**

Provide answers to each question required by Leapp by either of the following methods:

Execute the leapp answer command, specifying the question you are responding to and your confirmed answer.

# **leapp answer --section question\_section.confirm=answer**

For example, to confirm a True response to the question Disable pam\_pkcs11 module in PAM configuration?, execute the following command:

# **leapp answer --section remove\_pam\_krb5\_module\_check.confirm=True**

Manually edit the /var/log/leapp/answerfile file, uncomment the confirm line of the file by deleting the # symbol, and confirm your answer as True or False; see Leapp answerfile.

Examine the report in the /var/log/leapp/leapp-report.txt file, and manually resolve all the reported problems before proceeding with the in-place upgrade

## **Assessing upgradability and applying automated remediations through the web console**

Install the cockpit-leapp plug-in:

# **yum install cockpit-leapp**

**Navigate to the web console in your browser and log in as root or as a user configured in the /etc/sudoers file.**

On your RHEL 7 system, perform the pre-upgrade phase either from the command-line interface or from the web console terminal:

# **leapp preupgrade**

# **Performing the upgrade from RHEL 7 to RHEL 8**

On your RHEL 7 system, start the upgrade process:

# **leapp upgrade**

Manually reboot the system:

# **reboot**

# **Verifying the post-upgrade state of the RHEL 8 system**

Verify that the current OS version is Red Hat Enterprise Linux 8:

# **cat /etc/redhat-release**

-----> Red Hat Enterprise Linux release 8.2 (Ootpa)

Check the OS kernel version:

# **uname -r**

------> 4.18.0-193.el8.x86\_64

**Note that .el8 is important.**

Verify that the correct product is installed:

# **subscription-manager list --installed**

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Installed Product Status

+-----------------------------------------+

Product Name: Red Hat Enterprise Linux for x86\_64

Product ID: 479

Version: 8.2

Arch: x86\_64

Status: Subscribed

Verify that the release version is set to 8.2 immediately after the upgrade:

# **subscription-manager release**

-----> Release: 8.2

# **Performing post-upgrade tasks**

Ensure your system remains supported after the in-place upgrade. With the general availability of RHEL 8.3, update your system either to RHEL 8.3 or to RHEL 8.2 Extended Update Support (EUS).

Unset Red Hat Subscription Manager to consume the latest RHEL 8.3 content:

# **subscription-manager release --unset**

Update your system to the latest RHEL 8.3 version:

#  **yum update**

Update the system to RHEL 8.2 EUS:

Enable RHEL 8 EUS repositories:

# **subscription-manager repos --enable repository\_id1 --enable repository\_id2**

Replace repository\_id\* with IDs of EUS repositories available with your subscription. Enable at least the BaseOS and AppStream repositories. For example, on the Intel 64 architecture:

# **subscription-manager repos --enable rhel-8-for-x86\_64-baseos-eus-rpms --enable rhel-8-for-x86\_64-appstream-eus-rpms**

Update your system to the latest RHEL 8.2.EUS version

# **yum update**

Re-evaluate and re-apply your security policies. Especially, change the SELinux mode to enforcing.

Update the system to RHEL 8.2 EUS:

# **subscription-manager repos --enable repository\_id1 --enable repository\_id2**

## **Changing SELinux mode to enforcing**

During the in-place upgrade process, the Leapp utility sets SELinux mode to permissive. When the system is successfully upgraded, you have to manually change SELinux mode to enforcing.

Ensure that there are no SELinux denials, for example, by using the ausearch utility:

# **ausearch -m AVC,USER\_AVC -ts boot**

Open the /etc/selinux/config file in a text editor of your choice, for example:

# **vi /etc/selinux/config**

Configure the SELINUX=enforcing option:

Save the change, and restart the system:

# **reboot**

After the system restarts, confirm that the getenforce command returns Enforcing:

# **getenforce**

-----> Enforcing