



# Red Hat Enterprise Linux for SAP Solutions 8

Upgrading SAP environments from RHEL 7 to  
RHEL 8



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## Abstract

This document provides instructions on how to perform an in-place upgrade of SAP environments from Red Hat Enterprise Linux 7 to Red Hat Enterprise Linux 8 using the Leapp utility. During the in-place upgrade, the existing RHEL 7 operating system is replaced by a RHEL 8 version.

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## MAKING OPEN SOURCE MORE INCLUSIVE

Red Hat is committed to replacing problematic language in our code and documentation. We are beginning with these four terms: master, slave, blacklist, and whitelist. Due to the enormity of this endeavor, these changes will be gradually implemented over upcoming releases. For more details on making our language more inclusive, see our [CTO Chris Wright's message](#).

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## CHAPTER 1. SUPPORTED UPGRADE PATHS

Currently, it is possible to perform an in-place upgrade from RHEL 7 to the following target RHEL 8 minor versions:

System configuration	Source OS version	Target OS version
SAP HANA	RHEL 7.9	RHEL 8.8 (default)
		RHEL 8.10
SAP NetWeaver and other SAP Applications	RHEL 7.9	RHEL 8.8
		RHEL 8.10 (default)

**SAP HANA** is validated by SAP for RHEL minor versions, which are getting package updates for longer than 6 months. Therefore, for the SAP HANA hosts, the upgrade paths include only EUS/E4S releases plus the last minor release for a given major release. [Upgrading SAP HANA System](#) describes restrictions and detailed steps for upgrading a SAP HANA system.

**SAP NetWeaver** is validated by SAP for each major RHEL version. The supported in-place upgrade path for this scenario is from RHEL 7.9 to the RHEL 8.x minor version, which is supported by Leapp for non-HANA systems as per the [Upgrading from RHEL 7 to RHEL 8](#) document. Exceptionally for Cloud Providers, the upgrade of SAP NetWeaver systems is supported by two latest EUS/E4S releases. [Upgrading SAP NetWeaver System](#) describes certain deviations from the default upgrade procedure. For systems on which both SAP HANA and SAP NetWeaver are installed, the SAP HANA restrictions apply. For more information about supported upgrade paths, see [Supported in-place upgrade paths for Red Hat Enterprise Linux](#).

## CHAPTER 2. PLANNING AN UPGRADE

An in-place upgrade is the recommended and supported way to upgrade your SAP HANA system to the next major version of RHEL.

You should consider the following before upgrading to RHEL 8:

- **Operating system:**
  - SAP HANA is installed with a version that is supported on both the source and target RHEL minor versions.
  - SAP HANA is installed using the default installation path of **/hana/shared**.
- **Public clouds:**
  - The in-place upgrade is supported for on-demand Pay-As-You-Go (PAYG) instances on Amazon Web Services (AWS), Microsoft Azure, and Google Cloud Platform with [Red Hat Update Infrastructure \(RHUI\)](#). The in-place upgrade is also supported for Bring Your Own Subscription instances on all public clouds that use Red Hat Subscription Manager (RHSM) for a RHEL subscription.
- **Additional Information:**
  - SAP HANA hosts must meet all of the following criteria:
    - Running on x86\_64 architecture that is certified by the hardware partner or CCSP for SAP HANA on the source and target OS versions.
    - Running on physical infrastructure or in a virtual environment.
    - Using the Red Hat Enterprise Linux for SAP Solutions subscription.
    - Not using Red Hat HA Solutions for SAP HANA.
  - SAP NetWeaver hosts must meet the following criteria:
    - Using the Red Hat Enterprise Linux for SAP Solutions or Red Hat Enterprise Linux for SAP Applications subscription
- **High Availability:** If you are using the High Availability add-on, follow the [Recommended Practices for Applying Software Updates to a RHEL High Availability or Resilient Storage Cluster KBA](#).

Please also refer to Chapter 2 and particularly the known limitations mentioned there in the [Upgrading from RHEL 7 to RHEL 8](#) document, as these also apply to the upgrade procedure for SAP HANA and SAP NetWeaver hosts.

## CHAPTER 3. UPGRADING SAP HANA SYSTEM

An SAP HANA system running on RHEL 7.7 or earlier must be updated to RHEL 7.9 first. For special instructions on how to upgrade from RHEL 7.7 or earlier to RHEL 7.9 on cloud providers, refer to [How to Perform Update of RHEL for SAP with HA from 7.\\* to 7.9 on Cloud Providers](#).

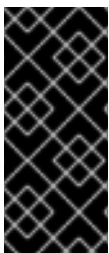
If the installed SAP HANA version is not on the minimum revision, which is supported on both the source and target RHEL minor versions, your SAP HANA software must be upgraded to this level first. SAP HANA must have been installed using **/hana/shared** as the installation path.

Never perform more than one update or upgrade (e.g., HANA to 2.0 SPS05 rev 59.04 and RHEL from 7.7 to 7.9) without sufficient testing and verification after each step. Otherwise, solving any problem might get very complex and take a long time.

Prepare for the verification of your SAP HANA system so that you can quickly check and confirm if your SAP HANA system is fully operational again after the upgrade to RHEL 8.6 or RHEL 8.8. This should include functional as well as performance testing of your most important business transactions.

As always on production systems, run all the steps below, including the preparation and pre-upgrade steps, on a test system first until you have verified that the upgrade can be performed successfully in your environment.

### 3.1. STEP 1: PREPARING FOR THE UPGRADE



#### IMPORTANT

The instructions in this chapter correspond to the topic [Preparing for the upgrade](#).

At any time before you perform the actual in-place upgrade, create a full system backup or virtual machine snapshot and perform a restore test to ensure that you can get back to a working system quickly.

To prepare the system, complete the following steps.

#### Prerequisites

- Ensure that your system has access to the required repositories and completes a system-specific setup.

#### Procedure

1. Complete system-specific setup.
  - a. Preparing non-cloud or BYOS cloud systems
    - i. Register and subscribe the system to a Red Hat repository source. If you are using Red Hat Satellite, make sure that both RHEL 7 and RHEL 8 e4s repositories are available and synchronized with the latest updates. Enable the following repos for the activation key:

```
rhel-7-server-rpms
rhel-sap-for-rhel-7-server-rpms
rhel-sap-hana-for-rhel-7-server-rpms
rhel-7-server-extras-rpms
```

```

rhel-8-for-x86_64-baseos-e4s-rpms
rhel-8-for-x86_64-appstream-e4s-rpms
rhel-8-for-x86_64-sap-netweaver-e4s-rpms
rhel-8-for-x86_64-sap-solutions-e4s-rpms

```

- ii. Check and confirm that your RHEL 7.9 system has the normal repositories enabled. Also enable the **rhel-7-server-extras-rpms** repository, which contains required upgrade tools:

```

# subscription-manager repos --disable='*' \
--enable="rhel-7-server-rpms" \
--enable="rhel-sap-hana-for-rhel-7-server-rpms" \
--enable="rhel-7-server-extras-rpms"

```

If you are also using the SAP NetWeaver repository (**rhel-sap-for-rhel-7-server-rpms**), enable that one as well:

```

# subscription-manager repos --disable='*' \
--enable="rhel-7-server-rpms" \
--enable="rhel-sap-for-rhel-7-server-rpms" \
--enable="rhel-sap-hana-for-rhel-7-server-rpms" \
--enable="rhel-7-server-extras-rpms"

```



#### NOTE

There are no e4s or eus repositories available for RHEL 7.9. Those are only required and available for RHEL minor versions prior to the final RHEL minor version. For more information, refer to [this section](#) in the Red Hat Enterprise Linux Life Cycle web page.

- iii. Remove all files cached by yum/dnf:

```
# rm -rf /var/cache/yum
```

- iv. Make sure no RHEL release lock is set:

```
# subscription-manager release --unset
```

Release preference has been unset.



#### NOTE

A release lock instructs yum to access packages from e4s or eus repositories, which fails on RHEL 7.9 because there are no such repositories on RHEL 7.9.

- b. Preparing PAYG cloud instances on AWS

- i. Install the **leapp-rhui-aws-sap-e4s** package:

```
# yum install leapp-rhui-aws-sap-e4s
```

- ii. Enable the **rhel-7-server-rhui-extras-rpms** repository:

```
# yum-config-manager --enable rhel-7-server-rhui-extras-rpms
```

- c. Preparing PAYG cloud instances on Google Cloud

- i. Download and install the **leapp-rhui-google-v1-rhel7-sap** package, as instructed in [Leapp RHUI packages for Google Cloud Platform \(GCP\)](#).
- ii. Enable the **rhui-rhel-7-server-rhui-extras-rpms** repository:

```
# yum-config-manager --enable rhui-rhel-7-server-rhui-extras-rpms
```

- d. Preparing PAYG cloud instances on Microsoft Azure

- i. Install the **leapp-rhui-azure-sap** package:

```
# yum install leapp-rhui-azure-sap
```

- ii. Enable the **rhui-rhel-7-server-rhui-extras-rpms** repository:

```
# yum-config-manager --enable rhui-rhel-7-server-rhui-extras-rpms
```

- 2. Completing the non-system-specific setup

After completing the above steps, perform the remaining steps on all systems, no matter if your system is a non-cloud, BYOS cloud, or PAYG cloud system on AWS, Google Cloud or Microsoft Azure.

- a. Stop the SAP HANA system(s) and stop all SAP processes.



### IMPORTANT

Do **not** unmount the SAP HANA file systems, as these are required for detecting if SAP HANA is installed and the version of the installed system.

- b. If your system is configured to start SAP processes automatically at boot time, disable the automatic start of SAP processes.
- c. Configure RHEL settings for SAP HANA:
  - i. The SAP HANA installer in SAP HANA 2.0 SPS05 configures kernel settings in file **/etc/sysctl.conf**. Leave these settings in place.
  - ii. Additional settings recommended for SAP HANA as per SAP notes [2382421](#) and [2292690](#) are configured using files **sap.conf** and **sap\_hana.conf** in directory **/etc/sysctl.d**. Settings in **sap\_hana.conf** are valid for both RHEL 7 and RHEL 8, whereas the value for **kernel.sem** in **sap.conf** on RHEL 7 is lower than the default value on RHEL 8. Because of this, remove the line that sets **kernel.sem** to **1250 256000 100 1024** from **/etc/sysctl.d/sap.conf**. The value for **vm.max\_map\_count** is again valid for both RHEL 7 and RHEL 8, so leave this setting in place.
- d. Update your RHEL 7.9 system to the latest RHEL 7 package levels:

```
# yum update
```

- e. Reboot the system:

```
# reboot
```

- f. After the system is up and running, check and confirm that no SAP HANA systems and no SAP processes are running on the system.
- g. Make sure the SAP HANA file systems are available.
- h. Install the leapp utility:

```
# yum install leapp-upgrade
```

- i. Ensure there is no configuration management system (such as Salt, Chef, Puppet, Ansible) enabled or configured to attempt to restore the original RHEL 7 system.
- j. Ensure your system does not use any Network Interface Card (NIC) with a name based on the prefix 'eth'.
- k. Make sure that you have a full backup or a virtual machine snapshot of your system.
- l. If not done already, perform a restore test of the backup to another system, to make sure that the backup can be used for a successful restore. A restore test is also useful for getting used to the required restore activities so that you can get a working system back as quickly as possible, if necessary.

## 3.2. STEP 2: REVIEWING THE PRE-UPGRADE REPORT



### NOTE

The instructions in this chapter correspond to the topic [chapter 4 - Reviewing the pre-upgrade report](#) (Upgrading from RHEL 7 to RHEL 8 guide).

The pre-upgrade process (the **leapp preupgrade** command) assesses your system for any potential problems you might encounter with the RHEL 7 to RHEL 8 upgrade before any changes to your system are made. This will help you determine your chances of successfully upgrading to RHEL 8.8 or RHEL 8.10 before the actual upgrade process begins.



### NOTE

You can (and should) run the **leapp preupgrade** command multiple times if necessary to address anything that could cause problems before running the actual upgrade. The **leapp preupgrade** command will not perform any changes to your installed system. However, once you perform an in-place upgrade on your system, the only way to get the previous system back is from a backup or snapshot that was performed before the upgrade.

### Procedure

1. Perform the pre-upgrade assessment:
  - On a non-cloud or BYOS cloud system, run:

```
# leapp preupgrade --channel e4s [--target <target_os_version>]
```

■

Replace `<target_os_version>` with the target OS version, for example, 8.8. If no target OS version is defined, Leapp uses the default target OS version specified in the table 1.1 in [Supported upgrade paths](#). For example, for an in-place upgrade from RHEL 7.9 to RHEL 8.8, replace `<target_os_version>` by 8.8 as in:

```
# leapp preupgrade --channel e4s --target 8.8
```

- On a PAYG cloud instance on AWS, Google Cloud or Microsoft Azure, run:

```
# leapp preupgrade --no-rhsm --channel e4s [--target <target_os_version>]
```

Replace `<target_os_version>` with the target OS version, for example, 8.8. If no target OS version is defined, Leapp uses the default target OS version specified in the table 1.1 in [Supported upgrade paths](#).



## NOTE

Do not use **--channel** option if you upgrade to RHEL 8.10, as it is the final minor release of RHEL 8, it is not E4S release, and its support cycle differs. For more information, see [Red Hat Enterprise Linux Life Cycle](#) .

1. In many cases, the following inhibitors will be reported:
  - Inhibitor: Detected loaded kernel drivers that have been removed in RHEL 8. Upgrade cannot proceed.
  - Inhibitor: Possible problems with remote login using a root account.
  - Inhibitor: Missing required answers in the answer file.  
The report in file `/var/log/leapp/leapp-report.txt` contains all necessary information, including remediation steps, to resolve these inhibitors.
2. In the case of non-cloud or BYOS cloud systems, if the message **Unable to use yum successfully** is reported in step `target_userspace_creator` and the preupgrade is aborted, this typically indicates that not all required RHEL 7 and RHEL 8 repositories are available with your activation key. To solve this problem, configure your activation key to enable all required repos as per step 1.1.a.i or re-register your system to use an activation key that has all required repos enabled.
3. Manually resolve all the reported problems before proceeding with the in-place upgrade. As mentioned before, you can repeat this step as often as necessary until no more inhibitors are reported.

## 3.3. STEP 3: PERFORMING THE UPGRADE

Start the upgrade process by running **leapp upgrade**.



## NOTE

The instructions in this chapter correspond to the topic [chapter 5 - Performing the upgrade from RHEL 7 to RHEL 8](#).

With the Preupgrade Assistant assessment completed and all issues addressed, the next step is to perform the actual system upgrade.

Perform the following steps:

## Procedure

1. Before performing the upgrade, back up all of your data to avoid potential data loss if you have not already done so.
2. Perform a restore test to verify that the last backup was successful.
3. Check and confirm again that no SAP HANA system and no SAP processes are running on the system.
4. Check and confirm that your SAP HANA system will not be started automatically at boot time. For more information, please refer to SAP note [2315907](#) - Starting HANA automatically after Host has been started.
5. Check and confirm that the SAP HANA file systems are mounted, as a certain file located below this path is used by Leapp to detect whether the upgraded system is running SAP HANA or not, to assert related inhibitors.
6. Run the upgrade process:

- On a non-cloud or BYOS cloud system, run:

```
# leapp upgrade --channel e4s [--target <target_os_version>]
```

Replace <target\_os\_version> with the target OS version, for example, 8.8. If no target OS version is defined, Leapp uses the default target OS version specified in the table 1.1 in [Supported upgrade paths](#).

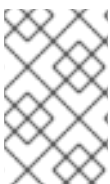
For example, for an in-place upgrade from RHEL 7.9 to RHEL 8.8, replace <target\_os\_version> by 8.8 as in:

```
# leapp upgrade --channel e4s --target 8.8
```

- On a PAYG cloud instance on AWS, Google Cloud or Microsoft Azure, run:

```
# leapp upgrade --no-rhsm --channel e4s [--target <target_os_version>]
```

Replace <target\_os\_version> with the target OS version, for example, 8.8. If no target OS version is defined, Leapp uses the default target OS version specified in the table 1.1 in [Supported upgrade paths](#).



## NOTE

Do not use **--channel** option if you upgrade to RHEL 8.10, as it is the final minor release of RHEL 8, it is not E4S release, and its support cycle differs. For more information, see [Red Hat Enterprise Linux Life Cycle](#) .

1. After this command has completed, a message is shown that asks you to reboot the system. Reboot the system now so that it can finish the upgrade:

```
# reboot
```



- 2. The system boots into a RHEL 8-based initial RAM disk image (initramfs), upgrades all packages, and reboots again. This might take some time. Once all packages have been upgraded, the system automatically reboots into the RHEL 8 system.

### 3.4. STEP 4: VERIFYING THE POST-UPGRADE STATE

Verify that the upgrade was successful.



#### NOTE

The instructions in this chapter correspond to the topic [chapter 6 - Verifying the post-upgrade state of the RHEL 8 system](#).

Perform the following steps:

#### Procedure

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

```
# cat /etc/redhat-release
Red Hat Enterprise Linux release <target_os_version> (Ootpa)
```

2. Check the OS kernel version. Note that `.el8` is important. For example, for RHEL 8.8, it will be **4.18.0-477.10.1.el8** or later:

```
# uname -r
4.18.0-477.10.1.el8
```

See also [Red Hat Enterprise Linux Release Dates](#) .

3. Verify that the RHEL release lock is set to the desired target OS version chosen in step 3:

- On a non-cloud or BYOS cloud system, run:

```
# subscription-manager release
Release: <target_os_version>
```

- On a PAYG cloud instance on AWS, Google Cloud or Azure, run:

```
# cat /etc/yum/vars/releasever
<target_os_version>
```

4. Verify that the system has all necessary repos enabled:

```
# yum repolist
```

- On a non-cloud or BYOS cloud system, the output should contain:

```
rhel-8-for-x86_64-appstream-e4s-rpms
rhel-8-for-x86_64-baseos-e4s-rpms
rhel-8-for-x86_64-sap-netweaver-e4s-rpms
rhel-8-for-x86_64-sap-solutions-e4s-rpms
```

- On a PAYG cloud instance on AWS, the output should contain:

```
rhel-8-for-x86_64-appstream-e4s-rhui-rpms
rhel-8-for-x86_64-baseos-e4s-rhui-rpms
rhel-8-for-x86_64-highavailability-e4s-rhui-rpms
rhel-8-for-x86_64-sap-netweaver-e4s-rhui-rpms
rhel-8-for-x86_64-sap-solutions-e4s-rhui-rpms
```

- On a PAYG cloud instance on Google Cloud, the output should contain:

```
rhui-rhel-8-for-x86_64-appstream-e4s-rhui-rpms
rhui-rhel-8-for-x86_64-baseos-e4s-rhui-rpms
rhui-rhel-8-for-x86_64-highavailability-e4s-rhui-rpms
rhui-rhel-8-for-x86_64-sap-netweaver-e4s-rhui-rpms
rhui-rhel-8-for-x86_64-sap-solutions-e4s-rhui-rpms
```



#### NOTE

Google Cloud RHEL7 images have the EPEL repo included. RHEL8 images don't. Therefore, after the upgrade, there can be an error message as follows:

```
$ yum repolist
Invalid configuration value: failovermethod=priority in
/etc/yum.repos.d/epel.repo; Configuration: OptionBinding with id
"failovermethod" does not exist
```

In this case, remove the EPEL repo(s):

```
$ rm -f /etc/yum.repos.d/epel*.repo
```

- On a PAYG cloud instance on Microsoft Azure, the output should contain:

```
rhel-8-for-x86_64-appstream-e4s-rhui-rpms
rhel-8-for-x86_64-baseos-e4s-rhui-rpms
rhel-8-for-x86_64-highavailability-e4s-rhui-rpms
rhel-8-for-x86_64-sap-netweaver-e4s-rhui-rpms
rhel-8-for-x86_64-sap-solutions-e4s-rhui-rpms
```



#### NOTE

On Cloud Providers, the repolist may contain other non-Red Hat repositories, for example, custom repositories for RHUI configuration.

5. Verify that network services are operational. For example, try to connect to the system using **ssh**.

## 3.5. STEP 5: PERFORMING POST-UPGRADE TASKS

Perform additional steps after you have verified the upgrade. Follow the instructions in [Chapter 7. Performing post-upgrade tasks](#).

## 3.6. STEP 6: CONFIGURING THE SYSTEM FOR SAP HANA

Configure your upgraded system according to applicable SAP notes for SAP HANA on RHEL 8.

After you have verified that the upgrade was successful, you must configure the system for SAP HANA according to the applicable SAP notes for RHEL 8.

### Procedure

1. If you have configured your RHEL 7.9 system for SAP HANA using the RHEL System Roles for SAP (package **rhel-system-roles-sap**, roles **sap\_general\_preconfigure** and **sap\_hana\_preconfigure**) and if you have not made any additional modifications to your system configuration afterwards, you can configure your system with the RHEL System Roles for SAP again.



#### NOTE

To verify that your system is configured according to the applicable SAP notes, you can run RHEL system roles **sap\_general\_preconfigure** and **sap\_hana\_preconfigure** in assert mode.

2. If you want or need to configure your system manually, the following steps will be required:

- a. SAP note 2772999: Install package group server:

```
# dnf group install server
```

- b. SAP note 2772999: Install package **libibverbs**:

```
# dnf install libibverbs
```

- c. SAP note 2777782: Disable service **abrt-ccpp**:

```
# systemctl disable abrt-ccpp --now
```



#### NOTE

SAP note 2772999 version 17 and SAP note 2777782 version 23 recommend setting **kernel.pid\_max** in file **/etc/sysctl.d/sap.conf** to 4194304. As the default for this kernel parameter in RHEL 8.2 and later is already 4194304, there is no need to set this kernel parameter again.

After modifying your system configuration as described, reboot your system.

## 3.7. STEP 7: APPLYING SECURITY POLICIES

If your RHEL 7.9 system had certain security policies configured, you should apply these or similar security policies again after the upgrade. A RHEL 7.9 system with SELinux set to disabled will remain on this status after the upgrade to RHEL 8.8 or RHEL 8.10. A RHEL 7.9 system with SELinux set to enforcing will be set to permissive during the upgrade, and you have to manually change it to enforcing after the upgrade.

For these topics, refer to the topic [chapter 8 - Applying security policies](#).

## 3.8. STEP 8: VERIFYING YOUR SAP HANA SYSTEM

Verify that your SAP HANA system is operational again.

After you have configured your RHEL 8.8 or RHEL 8.10 system for SAP HANA, you can start your SAP HANA software and run any necessary verification steps to ensure that your SAP HANA system is fully operational again. As mentioned before, this should include functional as well as performance testing of your most important business transactions.

## CHAPTER 4. UPGRADING SAP NETWEAVER SYSTEM

### 4.1. UPGRADING AN SAP NETWEAVER NON-CLOUD OR BYOS CLOUD RHEL SYSTEM

Follow the [Upgrading from RHEL 7 to RHEL 8](#) guide to upgrade your SAP NetWeaver non-cloud or BYOS cloud RHEL 7.9 system to RHEL 8 minor versions, with the following additional steps:

1. At the end of chapter [3.1. Preparing a RHEL 7 system for the upgrade](#), remove the line containing **kernel.sem** from file `/etc/sysctl.d/sap.conf`.
2. At the end of chapter [6. Verifying the post-upgrade state of the RHEL 8 system](#), verify that the value of **kernel.pid\_max** is 4194304 according to SAP note [2772999](#):

```
# sysctl kernel.pid_max
```

If this is not the case, add the following line to file `/etc/sysctl.d/sap.conf`: **kernel.pid\_max = 4194304** and then reload the file with:

```
# sysctl -p /etc/sysctl.d/sap.conf
```

You can run the **sap\_general\_preconfigure** and **sap\_netweaver\_preconfigure** roles in assert mode to verify if your system is compliant with the SAP notes requirements. These roles are part of the RHEL package **RHEL System Roles for SAP** or the Ansible collection **redhat.sap\_install**.

### 4.2. UPGRADING AN SAP NETWEAVER CLOUD PAYG RHEL SYSTEM

The upgrade of SAP NetWeaver or other SAP application systems hosted on cloud provider PAYG instances is very similar to the upgrade of SAP HANA systems hosted on cloud provider PAYG instances. All non-HANA specific steps listed earlier in the SAP HANA systems upgrade on cloud provider PAYG instances procedure should be applied to complete the upgrade of SAP NetWeaver or other SAP application systems hosted on cloud provider PAYG instances.

The only differences are:

1. The upgrade paths, as the [Supported In-place Upgrade Paths](#) section states. The desired target release version is defined by the **--target** option. For SAP HANA systems, it is either 8.8 or 8.10. For SAP applications, there are two latest **EUS/E4S** RHEL 8.x minor versions (even numbers usually), which are supported by Leapp for non-HANA systems as per the [Upgrading from RHEL 7 to RHEL 8](#) document. Please use the **--target** option according to your preferences. For more information, please see **leapp --help**.
2. The repo channel for standalone SAP NetWeaver hosts on Microsoft Azure PAYG instances. When upgrading RHEL for SAP Applications virtual machine on Microsoft Azure PAYG instances, use **--channel eus** instead of **--channel e4s**. In other cases, **--channel e4s** is always used. After the upgrade with **--channel eus**, the system will have the following Red Hat repositories:

```
$ yum repolist
rhel-8-for-x86_64-appstream-eus-rhui-rpms
rhel-8-for-x86_64-baseos-eus-rhui-rpms
rhel-8-for-x86_64-sap-netweaver-eus-rhui-rpms
```

The repolist may contain other non-Red Hat repositories, namely custom repositories of cloud providers for RHUI configuration.



#### NOTE

Do not use **--channel** option if you upgrade to RHEL 8.10, as it is the final minor release of RHEL 8, it is not E4S release, and its support cycle differs. For more information, see [Red Hat Enterprise Linux Life Cycle](#) .

Please keep in mind that the **rhel-8-for-x86\_64-sap-solutions-eus-rhui-rpms** repository should not be present on RHEL for SAP Applications instances, as per [Red Hat Enterprise Linux for SAP Offerings on Microsoft Azure FAQ](#). At some point, it will be removed by Microsoft Azure via the [RHUI client rpm automatic update](#) and does not require any action from users. If the automatic RHUI client rpm update has been disabled on your system, for example, by removing the corresponding cron job, the RHUI client rpm can be updated by **yum update <package\_name>**.

The in-place upgrade of RHEL 7 with SAP NetWeaver or other SAP applications hosted on cloud providers and using the Red Hat Enterprise Linux for SAP Solutions or Red Hat Enterprise Linux for SAP Applications subscription can be performed only from RHEL 7.9 with normal (non-e4s/eus/...) repos. RHEL 7.7 or earlier must be updated to RHEL 7.9 first. For special instructions on how to upgrade from RHEL 7.7 or earlier to RHEL 7.9 on cloud providers, refer to [How to Perform Update of RHEL for SAP with HA from 7.\\* to 7.9 on Cloud Providers](#) .

As always, run all the upgrade steps, including the preparation and pre-upgrade steps, on a test system first until you have verified that the upgrade can be performed successfully in your production environment.

## CHAPTER 5. KNOWN ISSUES

If you upgrade VMs on Azure cloud launched from the "RHEL for SAP" (a discontinued offer) image of "gen1", and see an error similar to below, please ensure that `/etc/hosts` doesn't contain a line `X.X.X.X rhui*.microsoft.com`. This is an artifact IP address of Azure RHUI Content Distribution Server (CDS) instance to fetch the content from.

Error:

```
Stderr: Host and machine ids are equal (hash): refusing to link journals
        Failed to synchronize cache for repo 'rhel-8-for-x86_64-appstream-eus-rhui-rpms', ignoring
this repo.
        Failed to synchronize cache for repo 'microsoft-azure-rhel8-sapapps', ignoring this repo.
Error: Unable to find a match: rhui-azure-rhel8-sapapps
```

or

```
Stderr: Host and machine ids are equal (hash): refusing to link journals
        Failed to synchronize cache for repo 'rhel-8-for-x86_64-appstream-e4s-rhui-rpms', ignoring
this repo.
        Failed to synchronize cache for repo 'microsoft-azure-rhel8-sap-ha', ignoring this repo.
Error: Unable to find a match: rhui-azure-rhel8-sap-ha
```