Red Hat User Group India

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Leapp-Introduction and Overview

- RHEL Developer membership and No-cost Red Hat Enterprise Linux Individual Developer Subscription.
- Convert2rhel (CentOs 7 to RHEL 7 Conversion)
- Leapp (RHEL 7 to RHEL 8 Upgrade)

RED HAT DEVELOPER MEMBERSHIP

A Red Hat Developer membership comes with a ton of benefits, including no-cost access to products such as Red Hat Enterprise Linux (RHEL), Red Hat OpenShift, and Red Hat Ansible Automation Platform.

- 1 year of access to all Red Hat products
- Developer learning resources
- Virtual and in-person tech events
- Red Hat Customer Portal access
- Exclusive content
- Access to the Developer Sandbox for Red Hat OpenShift, a shared OpenShift and Kubernetes cluster for practicing your skills

To Join Red Hat Developer Program:

https://developers.redhat.com/register?intcmp=701f2000001OMHaAAO

BENEFITS OF NO COST RED HAT DEVELOPER SUBSCRIPTION

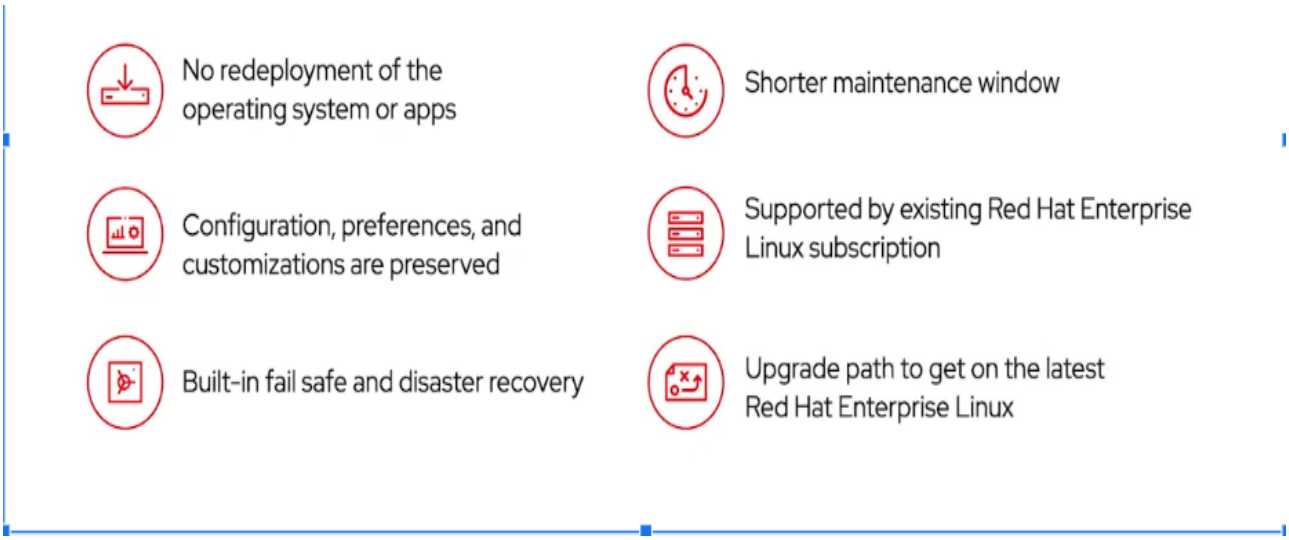
The no-cost Red Hat Developer Subscription for Individuals is self-supported. It includes:

- An entitlement to register 16 physical or virtual nodes running Red Hat Enterprise Linux.
- Complete access to Red Hat Enterprise Linux releases, updates, and errata.
- Self-service support through the Red Hat Customer Portal.

- Access to knowledge base articles, portal discussion groups, and magazines on the Red Hat Customer Portal.
- This subscription does not include support on any operating system-related issue. Users may look for the resolution in our knowledgebase articles or can discuss it over portal groups with respective domain experts. Note: there is no service level agreement for discussing issues over portal groups.

WHAT IS CONVER2RHEL?

Convert2RHEL is an officially supported component of RHEL that enables the conversion of select RHEL derivative distributions into a supportable RHEL state, retaining existing applications and configurations.

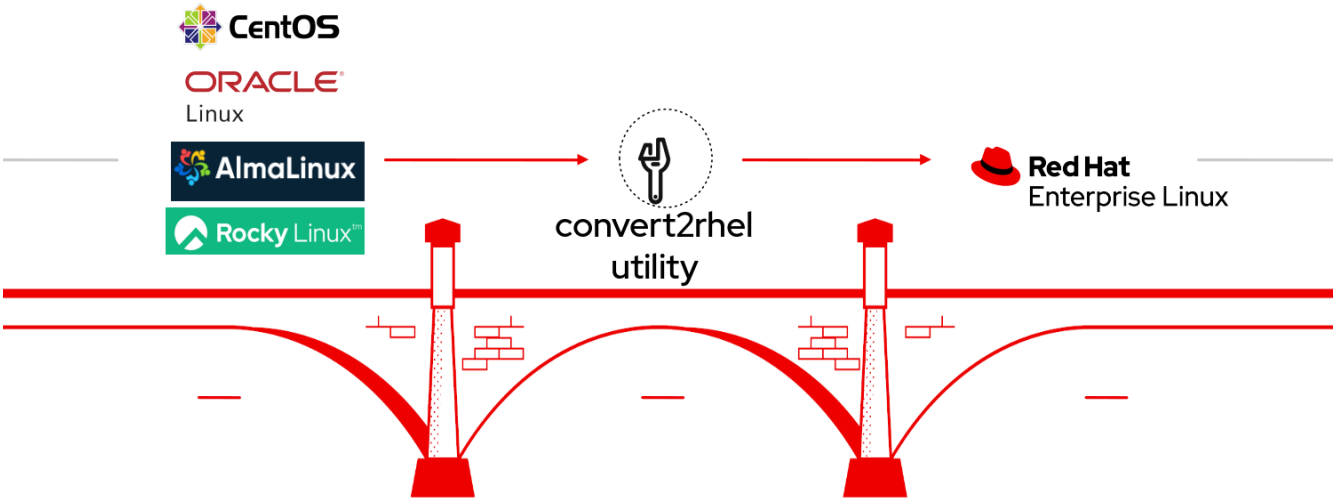


WHY CONVERT2RHEL?

The CentOS Project will discontinue updates and releases of CentOS Linux® 7 on June 30, 2024. This means current CentOS Linux users will need to choose a migration path to continue receiving security patches and updates.

Migrating to Red Hat® Enterprise Linux® is a direct migration path for CentOS Linux users. Red Hat Enterprise Linux is a fully supported production-grade OS available on premises and in the cloud. It's the best long-term migration option for production use.

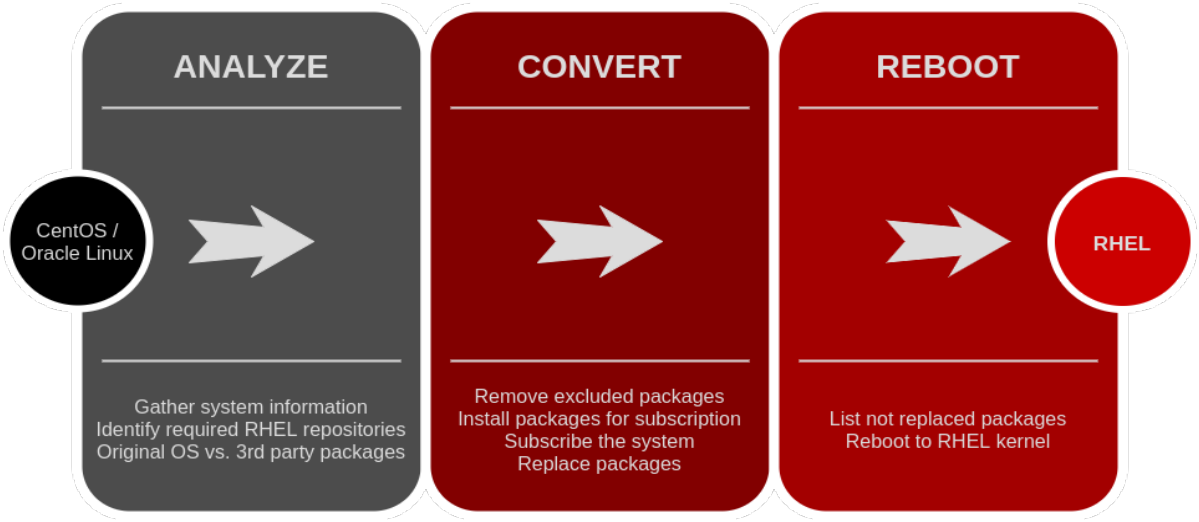
Migration from different Linux distributions to RHEL



Supported conversion paths

Source OS	Source version	Target OS and version
Alma Linux	8.9	RHEL 8.9
	8.8	RHEL 8.8 EUS
	8.6	RHEL 8.6 EUS
CentOS Linux	8.5	RHEL 8.5
	7.9	RHEL 7.9
Oracle Linux	8.9	RHEL 8.9
	7.9	RHEL 7.9
Rocky Linux	8.9	RHEL 8.9
	8.8	RHEL 8.8 EUS
	8.6	RHEL 8.6 EUS

MIGRATION STEPS



Step 1: Validate CentOS

To check whether you have a valid CentOS release version, enter the following:

#cat /etc/centos-release

The following output shows that this is a valid version:

CentOS Linux release 7.9.2009 (Core)

Step 2: Update your system

#yum update -y

Step 3: Secure the packages

Download the signing keys to ensure that we are pulling in only Red Hat created and vetted packages.

curl -o /etc/pki/rpm-gpg/RPM-GPG-KEY-redhat-release https://www.redhat.com/security/data/fd431d51.txt

Copy the SSL certificates from Red Hat Subscription Management, which will allow us to pull packages over a secure channel.

curl --create-dirs -o /etc/rhsm/ca/redhat-uep.pem https://ftp.redhat.com/redhat/convert2rhel/redhat-uep.pem

Step 4: Download the repository definition

Download a repository definition to our /etc/yum.repos.d/directory.

#curl -o /etc/yum.repos.d/convert2rhel.repo https://cdn-public.redhat.com/content/public/repofiles/convert2rhel-for-rhel-7-x86_64.repo

Step 5: Install convert2rhel

#yum install -y convert2rhel

If you are converting by using RHSM and have not yet registered the system, update the /etc/convert2rhel.ini file to include the following data:

[subscription_manager]

org = <organization_ID>

activation_key = <activation_key>

Step 6: Reviewing the pre-conversion analysis report

#convert2rhel analyze

Each test results in one of the following statuses:

Success - The test was successful and there are no issues for this component.
Error - The test encountered an issue that would cause the conversion to fail because it is very likely to result in a deteriorated system state. This issue must be resolved before converting.
Overridable - The test encountered an issue that would cause the conversion to fail because it is very likely to result in a deteriorated system state. This issue must be either resolved or manually overridden before converting.
Warning - The test encountered an issue that might cause system and application issues after the conversion. However, this issue would not cause the conversion to fail.
Skip - Could not run this test because of a prerequisite test failing. Could cause the conversion to fail.
Info - Informational with no expected impact to the system or applications.

Step 7: Convert to RHEL

#convert2rhel –debug

Step 8: . Reboot

#reboot

TROUBLESHOOTING HELP

- By default, only info, warning, error, and critical log level messages are printed to the console output by the Convert2RHEL utility. To also print debug messages, use the **--debug** option with the ***convert2rhel*** command.
- The whole output of convert2rhel is stored in the log file ***/var/log/convert2rhel/convert2rhel.log***

KNOWN LIMITATIONS

- The conversion stops if any files are mounted directly to the ***/mnt/*** directory or if the ***/sys/*** directory is mounted as read-only.
- UEFI systems with Secure Boot enabled are not supported for conversion. To work around this issue, disable Secure Boot before the conversion and then re-enable after the conversion is complete.
- Systems that connect to the Internet using an HTTP proxy server cannot convert using Red Hat CDN or Satellite through RHSM. To work around this problem, enable HTTP proxy for yum and then configure the HTTP proxy for RHSM How to enable Proxy Settings for Yum Command on RHEL?

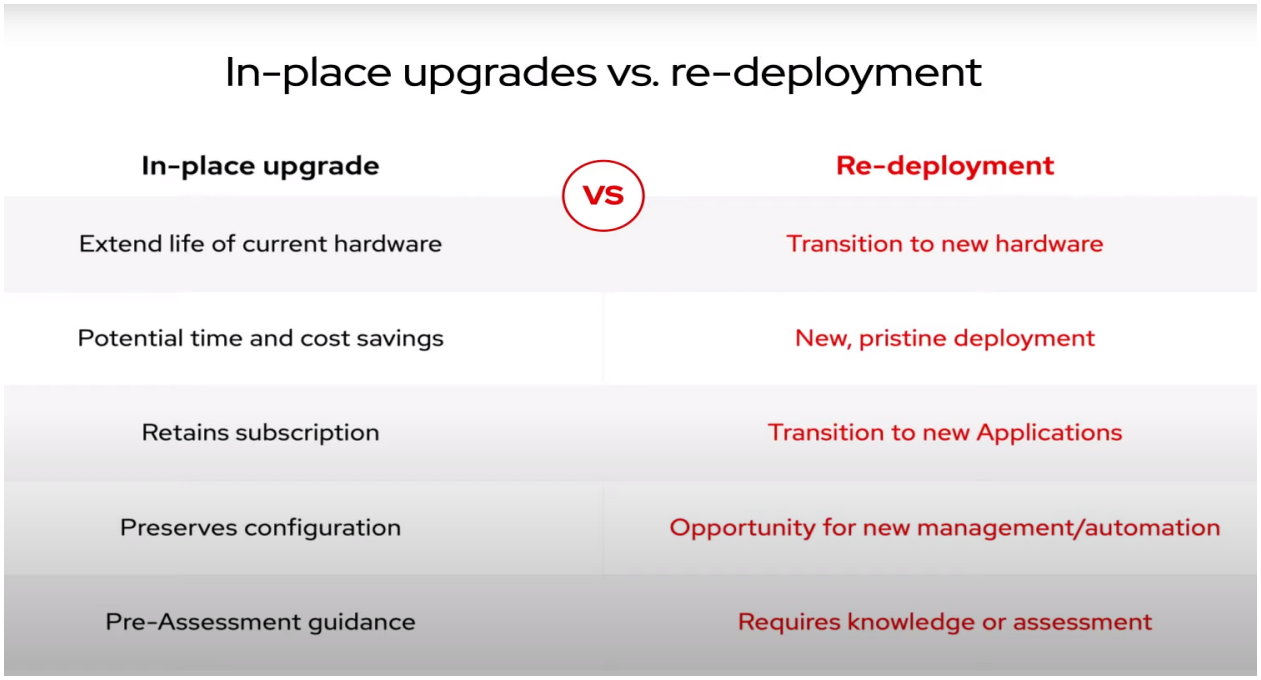
Leapp

Introduction and Overview

What is Leapp & Supported upgrade paths?

- Leapp is a CLI tool that helps users with the porting and installation process for Red Hat Enterprise Linux, making your in-place upgrade easier.
- First Leapp package was published on 2018-11-07
- (leapp-0.7.0-2.el7_6.noarch.rpm)
- Leapp currently supports the upgrades:
- Red Hat Enterprise Linux 7 to Red Hat Enterprise Linux 8
- Red Hat Enterprise Linux 8 to Red Hat Enterprise Linux 9

Why Leapp ?



Supported upgrade paths From RHEL 7 to RHEL 8

System configuration	Source OS version	Target OS version	End of Support
64-bit Intel, IBM POWER 8 (little endian), and 64-bit IBM Z	RHEL 7.9	RHEL 8.6	May 31, 2024 (EUS)
		RHEL 8.8	May 31, 2025 (EUS)
		RHEL 8.9 (default)	May 31, 2024
RHEL with SAP HANA	RHEL 7.9	RHEL 8.6 (default)	May 31, 2024 (EUS)
		RHEL 8.8	May 31, 2025 (EUS)

System configuration	Source OS version	Target OS version	End of Support
RHEL	RHEL 8.6	RHEL 9.0	May 31, 2024 (EUS)
	RHEL 8.8	RHEL 9.2	May 31, 2025 (EUS)
	RHEL 8.9	RHEL 9.3	May 31, 2024
RHEL with SAP HANA	RHEL 8.6	RHEL 9.0	May 31, 2024 (EUS)
	RHEL 8.8	RHEL 9.2	May 31, 2025 (EUS)

How Leapp upgrade works?

Install the 'leapp' packages & run the `leapp preupgrade` command.

Analyze the Leapp pre-upgrade report and resolve inhibitors.

Upgrade the system using 'leapp upgrade' command and finally `reboot` the system.

RHEL 7 Upgrade Using Leapp

1] Register & subscribe the system using subscription-manager to customer portal , also verify the status.

```
# subscription-manager register --username <username> --password <password> --auto-attach
# subscription-manager status
```

2] Enable the base and extras repositories.

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

3] Update the RHEL 7.9 system to the latest version of the packages and boot the system with the latest version.

```
# yum update
# reboot
```

4] Install the leapp packages.

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

5] On your RHEL 7 system, perform the pre-upgrade phase which will generate the `/var/log/leapp/leapp-report.txt` file

```
#leapp preupgrade --target <target_os_version>
```

6] Reviewing the report in the `/var/log/leapp/leapp-report.txt` file and manually resolve all the reported problems. Some reported problems contain remediation suggestions. Inhibitor problems prevent you from upgrading until you have resolved them.

The report contains the following risk factor levels:

High: Very likely to result in a deteriorated system state.

Medium: Can impact both the system and applications.

Low: Should not impact the system but can have an impact on applications.

Info: Informational with no expected impact to the system or applications.

7] In certain system configurations, the Leapp utility generates true or false questions that you must answer manually. If the pre-upgrade report contains a Missing required answers in the answer file message, complete the following steps:

a] Open the `/var/log/leapp/answerfile` file and review the true or false questions.

b] 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

```
#leapp answer --section <question_section>.<field_name>=<answer>
```

8] On your RHEL 7 system, start the upgrade process:

```
# leapp upgrade --target <target_os_version>
# reboot
```

9] Perform the post upgrade tasks post successfull completion of leapp upgrade phase

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

```
# (OVERRIDABLE) IS_LOADED_KERNEL_LATEST::INVALID_KERNEL_VERSION - Invalid kernel
version detected
cat /etc/redhat-release
# uname -r
```

b] Verify that the correct product is installed:

```
# subscription-manager list --installed
# subscription-manager release
```

c] To remove all packages from the exclude list:

```
# yum config-manager --save --setopt exclude=''
```

d] Remove remaining RHEL 7 packages, including remaining Leapp packages.

- Determine old kernel versions:

```
#cd /lib/modules && ls -d *.el7*
```

- Remove weak modules from the old kernel. If you have multiple old kernels, repeat the following step for each kernel:

```
#[ -x /usr/sbin/weak-modules ] && /usr/sbin/weak-modules --remove-kernel <version>
```

- Remove the old kernel from the boot loader entry. If you have multiple old kernels, repeat this step for each kernel:

```
#/bin/kernel-install remove <version> /lib/modules/<version>/vmlinuz
```

- Locate remaining RHEL 7 packages:

```
#rpm -qa | grep -e '\.el[67]' | grep -vE '^(gpg-pubkey|libmodulemd|katello-ca-consumer)' | sort
```

- Remove remaining RHEL 7 packages, including old kernel packages, and the kernel-workaround package from your RHEL 8 system.

```
#yum remove $(rpm -qa | grep -e '\.el[67]' | grep -vE '^(gpg-pubkey|libmodulemd|katello-ca-consumer)'
| sort)
```

- Remove remaining Leapp dependency packages:

```
#yum remove leapp-deps-el8 leapp-repository-deps-el8
```

- Remove any remaining empty directories:

```
#rm -r /lib/modules/*el7*
```

9] Verification Steps:

- Verify that the old kernels have been removed from the bootloader entry:

```
grubby --info=ALL | grep "\.el7" || echo "Old kernels are not present in the bootloader."
```

- Verify that the previously removed rescue kernel and rescue initial RAM disk files have been created for the current kernel:

```
ls /boot/vmlinuz-*rescue* /boot/initramfs-*rescue*
lsinitrd /boot/initramfs-*rescue*.img | grep -qm1 "$(uname -r)/kernel/" && echo "OK" || echo "FAIL"
```

- Verify the rescue boot entry refers to the existing rescue files. See the grubby output:

```
grubby --info $(ls /boot/vmlinuz-*rescue*)
```

IMPORTANT LINKS

- Join Red Hat developer Program
- No-cost Red Hat Enterprise Linux Individual Developer Subscription: FAQs | Red Hat Developer
- Convert2rhel official document
- In Place Upgrade RHEL7 to RHEL 8 Labs
- In Place Upgrade RHEL8 to RHEL 9 Labs
- Migration from RHEL Enterprise Linux from Centos Linux
- Migrate from CentOS Linux to Red Hat Enterprise Linux
- 5 reasons to convert from CentOS Linux to RHEL
- What is Red Hat Enterprise Linux for Third Party Linux Migration?