Upgrade Red Hat Enterprise Linux with Red Hat Satellite and Leapp

Leapp is the in-place upgrade tool for Red Hat® Enterprise Linux® and allows you to upgrade to the next major version of Red Hat Enterprise Linux while keeping your existing configurations and without having to do a full re-installation.

Red Hat Satellite (Satellite) is a system management solution giving you the ability to provision, monitor, and perform life cycle management of your Red Hat Enterprise Linux systems. Life cycle management includes updating and upgrading your systems.

Upgrading your systems individually can be time-consuming and tedious, but Red Hat Satellite can upgrade your systems at scale using the Leapp plug-in.

Using a Satellite, you are able to:

▸ Deploy the Leapp package and metadata file.

▸ Perform a preupgrade assessment.

▸ View the preupgrade report to review any upgrade considerations.

▸ Deliver remediations using the remote execution feature of Satellite.

▸ Execute the upgrade using Leapp.

Satellite has a powerful feature called remote execution, which delivers automation and centralized, scalable management to your systems using shell commands and scripts; Ansible® automation using ad hoc commands, playbooks, and roles; and Puppet.

Supported upgrade paths include upgrading from:

▸ Red Hat Enterprise Linux 7.9 to Red Hat Enterprise Linux 8*

▸ Red Hat Enterprise Linux 8 to Red Hat Enterprise Linux 9**

▸ Preparing Satellite

Ensure that the needed artifacts and tools are available to upgrade Red Hat Enterprise Linux using the Leapp plug-in for Red Hat Satellite.

Several repositories are required to be enabled and synchronized to Satellite:

▸ rhel-7-server-rpms

▸ rhel-7-server-extras-rpms

▸ rhel-8-for-x86_64-baseos-rpms*

▸ rhel-8-for-x86_64-appstream-rpms*

▸ rhel-9-for-x86_64-baseos-rpms**

▸ rhel-9-for-x86_64-appstream-rpms**

* *Leapp supports upgrading from Red Hat Enterprise Linux 7.9 to the latest Red Hat Enterprise Linux 8 Extended Update Service (EUS) release and it is important to ensure that the repositories for that release are enabled and synchronized.*

** *Leapp supports upgrading from Red Hat Enterprise Linux 8 to Red Hat Enterprise Linux 9 and it is important to ensure that the repositories for Red Hat Enterprise Linux 8 are enabled and synchronized.*

The repositories must be added to the Content View associated with the Content Hosts (clients of Satellite) for the appropriate upgrade path.

The Leapp plug-in for Red Hat Satellite is required and can be installed using:

```
satellite-installer --enable-foreman-plugin-leapp
```

The Leapp metadata file is ordinarily downloaded from cloud.redhat.com by the system being upgraded, but in Satellite environments the metadata file needs to be distributed to your Content Hosts. Satellite can host this file in a custom repository and it can then be distributed to your Content Hosts at scale using the remote execution feature of Satellite and an Ansible Playbook (example included).

```
- name: Upgrade with Leapp
  hosts: all
  vars:
    my_source: https://satellite.example.com/pulp/content/example/
Library/custom/Custom_data/Custom_files/leapp-data16.tar.gz
    my_dest: /etc/leapp/files/
  tasks:
    - name: Ensure leapp is deployed
      yum:
        name: leapp
        state: latest
    - name: Ensure file is unarchived
      unarchive:
        src: "{{ my_source }}"
        dest: "{{ my_dest }}"
        remote_src: true
```

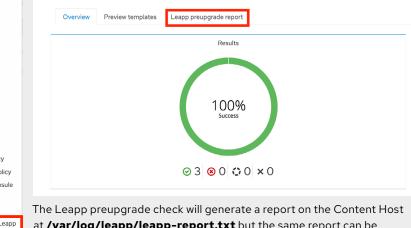Figure 1. Ansible Playbook example of the remote execution feature of Satellite

Preparing to upgrade

Red Hat Enterprise Linux 7 servers need to be updated to Red Hat Enterprise Linux 7.9 to be upgraded to Red Hat Enterprise Linux 8. Red Hat Enterprise Linux 8.6 servers can be upgraded to Red Hat Enterprise Linux 9. The remote execution feature can be used to manage this at scale. See Supported in-place upgrade paths for more details.

The above shows that all applicable and installable updates have been applied. Select the hosts to be upgraded and run the Leapp preupgrade check using the Leapp plug-in for Red Hat Satellite.

The Leapp preupgrade check will generate a report on the Content Host at **/var/log/leapp/leapp-report.txt** but the same report can be viewed from a Satellite server web console.

Figure 2. Content Hosts manage content and subscriptions

Review the Leapp preupgrade report and address the actionable items. Inhibitors are blocking items that need to be resolved before an upgrade can proceed. The report may provide suggested remediations for the items that can be resolved by using the Satellite remote execution feature.

```
- name: Ensure pam_pkcs11 module is removed in Leapp answerfile
  ini_file:
    path: "{{ my_answerfile }}"
    section: remove_pam_pkcs11_module_check
    option: confirm
    value: true
```

Figure 3. Ansible Playbook snippet

Above is an Ansible Playbook snippet that ensures that an upgrade inhibitor is addressed by editing the Leapp answer file on the server being upgraded. Other actionable items can be addressed using Ansible automation.

After applying remediations, it is recommended to re-run the Leapp preupgrade check to verify that you have addressed the reported upgrade considerations.

Performing the upgrade

Before proceeding with the upgrade, have a validated backup of your data to ensure that you have the means to recover the system if necessary.

Once you are ready to begin the upgrade, select the **Upgrade with Leapp** option from the **Select Action** menu.

Figure 4. Leapp preupgrade check snapshot

The upgrade process automatically reboots your servers to ensure that you have planned for this downtime.

Once your systems have rebooted, you will see that Red Hat Enterprise Linux 8.6 is being used.

Name	Recommendations	Operating system
⊘ rhel-79a.example.com		🎩 RedHat 8.6
⊘ rhel-79b.example.com		🎩 RedHat 8.6
⊘ rhel-79c.example.com		🎩 RedHat 8.6

If you are upgrading from Red Hat Enterprise Linux 8.6, you will see Red Hat 9.0 listed below Operating System for your servers.

Name	Recommendations	Operating system
⊘ rhel-86a.example.com		🎩 RedHat 9.0
⊘ rhel-86b.example.com		🎩 RedHat 9.0
⊘ rhel-86c.example.com		🎩 RedHat 9.0

About Red Hat

Red Hat is the world's leading provider of enterprise open source software solutions, using a community-powered approach to deliver reliable and high-performing Linux, hybrid cloud, container, and Kubernetes technologies. Red Hat helps customers develop cloud-native applications, integrate existing and new IT applications, and automate and manage complex environments. A trusted adviser to the Fortune 500, Red Hat provides award-winning support, training, and consulting services that bring the benefits of open innovation to any industry. Red Hat is a connective hub in a global network of enterprises, partners, and communities, helping organizations grow, transform, and prepare for the digital future.

f facebook.com/redhatinc
🐦 @RedHat
in linkedin.com/company/red-hat

North America
1 888 REDHAT1

Europe, Middle East, and Africa
00800 7334 2835
europe@redhat.com

Asia Pacific
+65 6490 4200
apac@redhat.com

Latin America
+54 11 4329 7300
info-latam@redhat.com

redhat.com
#F31717_0822