



Red Hat Enterprise Linux for SAP Solutions 9

Installing RHEL 9 for SAP Solutions

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Abstract

Perform a standard installation of Red Hat Enterprise Linux 9 on different architectures. First, you install RHEL. After installation, you assign a subscription, install additional packages, and then configure certain system settings to prepare the system for SAP software installation. You can perform the RHEL installation by using the graphical user interface, or you can perform a non-interactive installation. For the additional installation and configuration steps, the command line interface is described, but you can also use the Ansible Automation Platform GUI.

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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](#).

PROVIDING FEEDBACK ON RED HAT DOCUMENTATION

We appreciate your feedback on our documentation. Let us know how we can improve it.

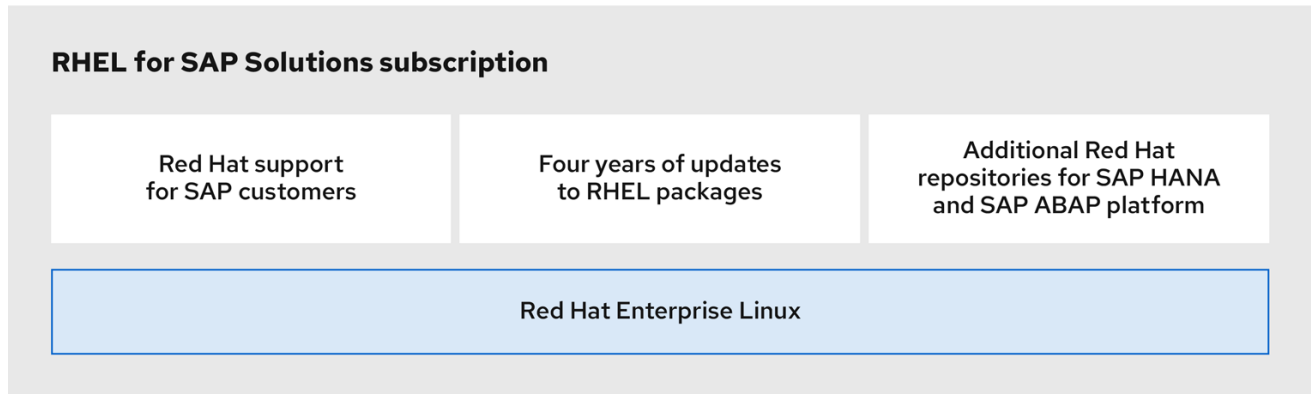
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1. Make sure you are logged in to the [Jira](#) website.
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6. Click **Create** at the bottom of the dialogue.

CHAPTER 1. INTRODUCTION

1.1. WHAT IS RHEL FOR SAP SOLUTIONS

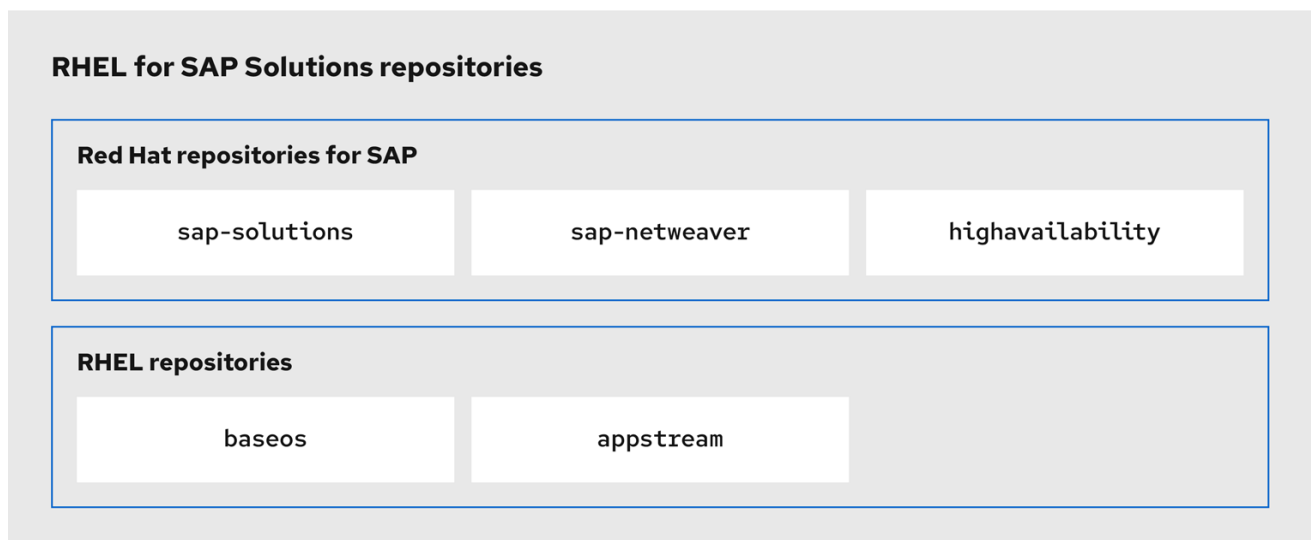
RHEL for SAP Solutions is a Red Hat subscription that consists of Red Hat Enterprise Linux and additional software repositories and services specifically designed for running SAP HANA and/or SAP ABAP Platform, including SAP S/4HANA, on Red Hat Enterprise Linux.



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For more information, refer to [Overview of Red Hat Enterprise Linux for SAP Solutions Subscription](#).

RHEL for SAP Solutions consists of the following repositories:



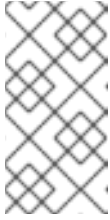
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1.2. OVERVIEW OF THE INSTALLATION STEPS

Installing Red Hat Enterprise Linux (RHEL) 9 for SAP Solutions consists of the following steps:

1. Install RHEL 9 using one of the standard Red Hat Enterprise Linux 9 installation ISO images.
2. Install additional packages needed for running SAP software, either
 - from another repository source, for example, a Red Hat Satellite system, or

- from the RHEL 9 for SAP Solutions image, which contains only a set of additional packages needed for SAP.



NOTE

There are also ISO images named Red Hat Enterprise Linux for SAP Solutions, but those only contain the additional software packages required to be installed on top of Red Hat Enterprise Linux. It is not possible to install RHEL for SAP Solutions from these ISO images.

The recommended and easiest way is to install Red Hat Enterprise Linux 9, attach it to a repository source, and then use the RHEL System Roles for SAP for:

- installing additional software packages and
- configuring the system according to the requirements of the SAP software.

CHAPTER 2. INSTALLING RHEL 9 FOR SAP SOLUTIONS

Before installing RHEL 9 for SAP Solutions, verify that the system fulfills the requirements of the SAP software, e.g., regarding the RAM size, the swap space, and the storage. For RHEL 9 systems running the SAP HANA database, you must use a RHEL 9 minor release for which the E4S repos are available and which is supported by SAP. For RHEL 9 systems running the SAP ABAP Platform, you can use any RHEL 9 minor release.

You can install RHEL 9 in [interactive mode](#) or you can perform an [unattended installation](#) using Kickstart. This document explains how to perform an interactive installation. Please take a look at the [product documentation for Red Hat Enterprise Linux 9](#) for further guidance on how to install RHEL 9.

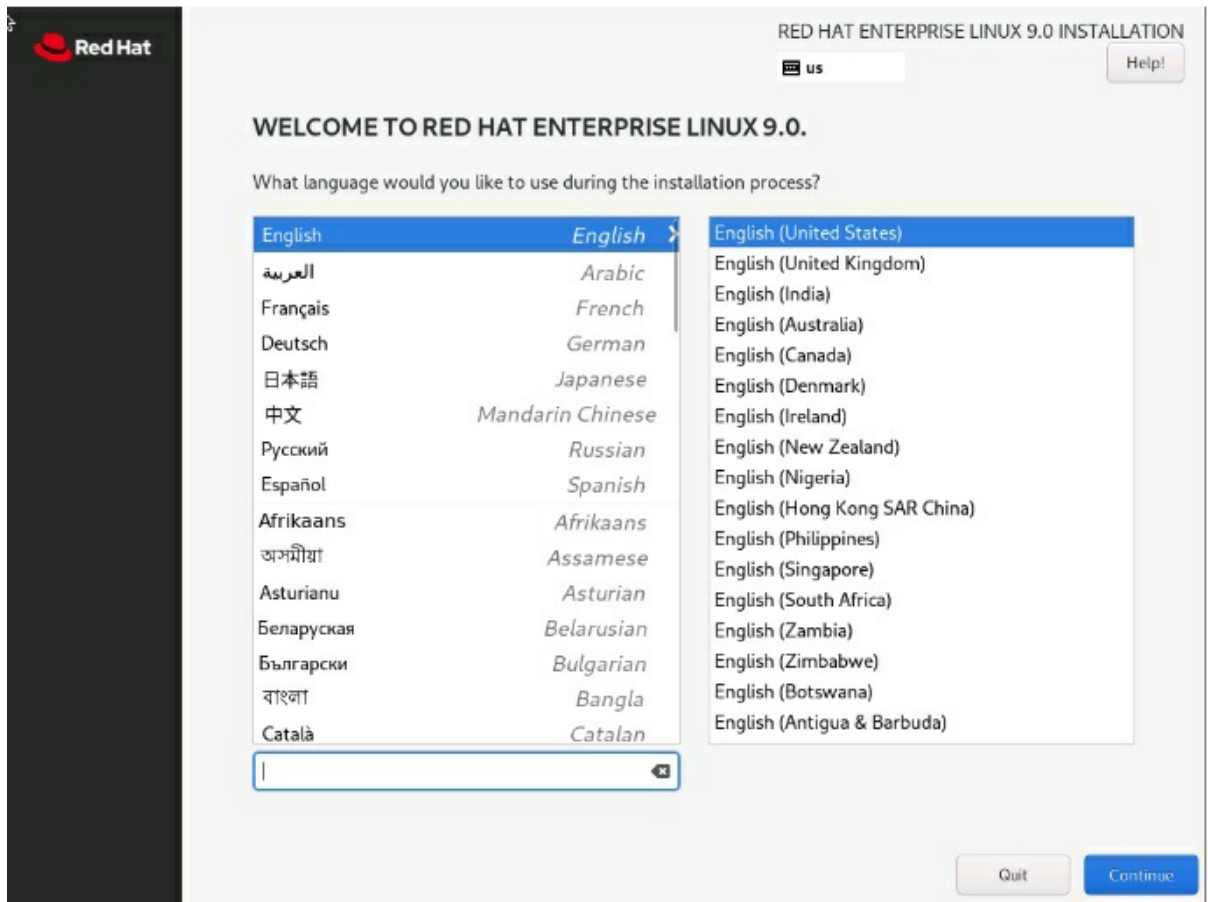
Prerequisites

- You have downloaded the installation image for the desired and supported RHEL 9 minor release from the Red Hat Customer Portal ([Red Hat Enterprise Linux for x86_64](#) and [Red Hat Enterprise Linux for Power](#)).
- You have verified that the desired hostname meets the requirements for [SAP HANA database system](#) or for [SAP ABAP Platform systems](#).
- Your server meets the hardware requirements or Infrastructure as a Service (IaaS) configurations.
For bare metal deployment, verify that your server type is mentioned in the [SAP Certified and Supported SAP HANA Hardware Directory](#) and that it matches the minimum hardware requirements in the [SAP HANA Server Installation and Update Guide](#).

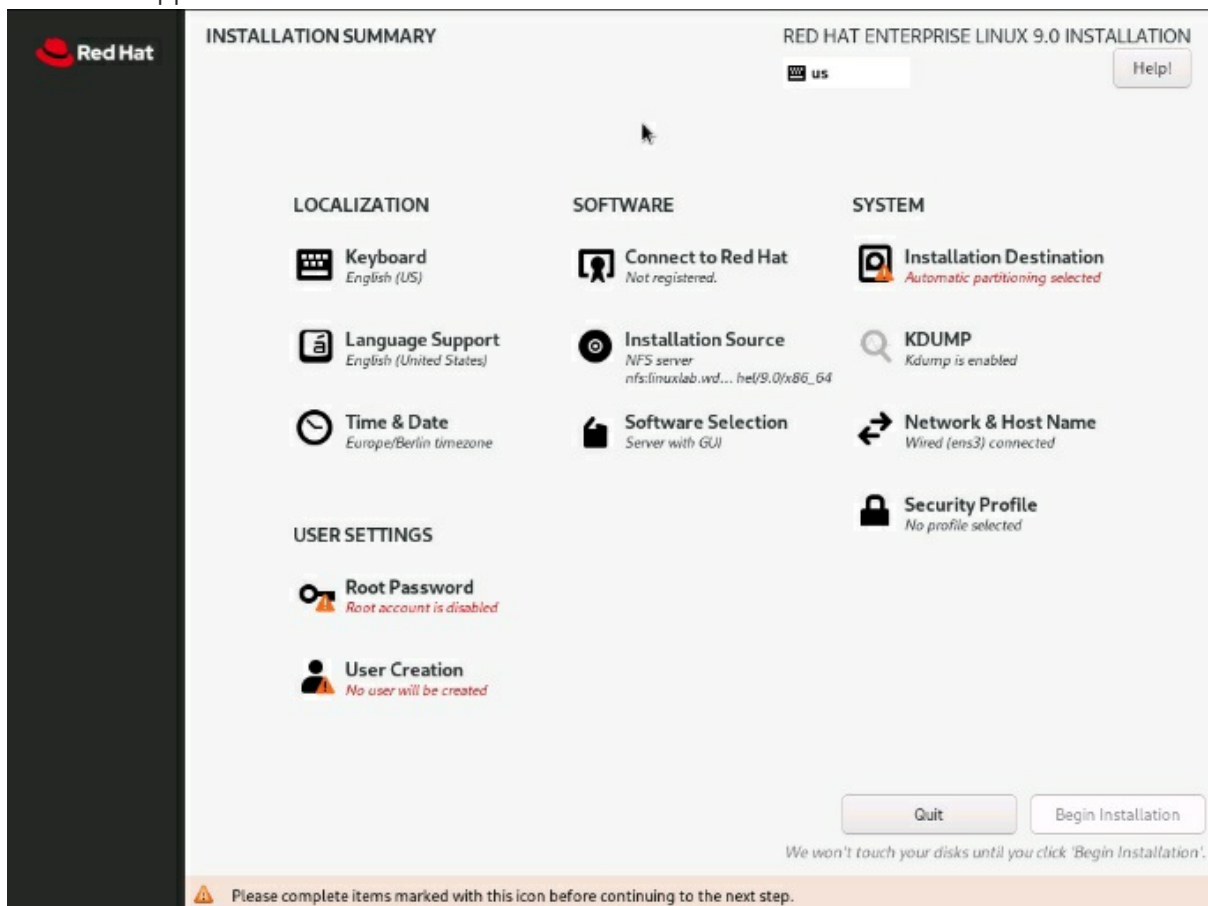
For certified IaaS Platforms, see the Certified IaaS Platforms on the [SAP Certified and Supported SAP HANA Hardware Directory](#).

Procedure

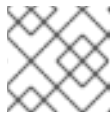
1. Boot your server from the RHEL 9 installation source. For more information on how to boot your server, see [Performing a standard RHEL 9 installation](#).
2. The following screen appears:



- Select the language to be used during the installation process and click **Continue**. The following screen will appear:



4. Under **LOCALIZATION**, select the desired keyboard layout, language(s) of the installed system, and time and date.
5. Under **SOFTWARE**, click **Software Selection**
 - In the **Software Selection** window, select **Server** as your **Base Environment** and click **Done**.

**NOTE**

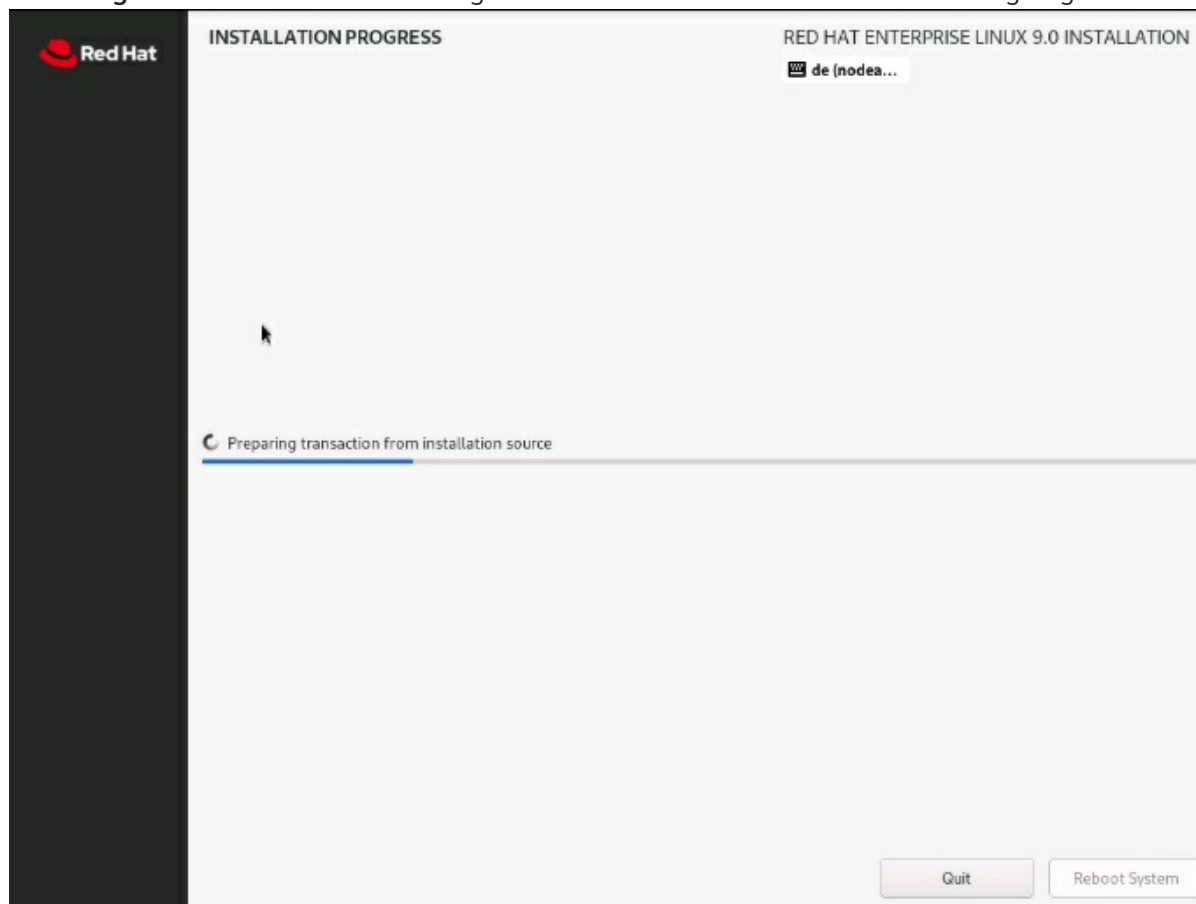
Do *not* select any additional software.

6. Under **SYSTEM**, click **Installation Destination**
 - In the **Installation Destination** window, select the storage configuration according to the requirements of the SAP software and according to your needs and click **Done**.

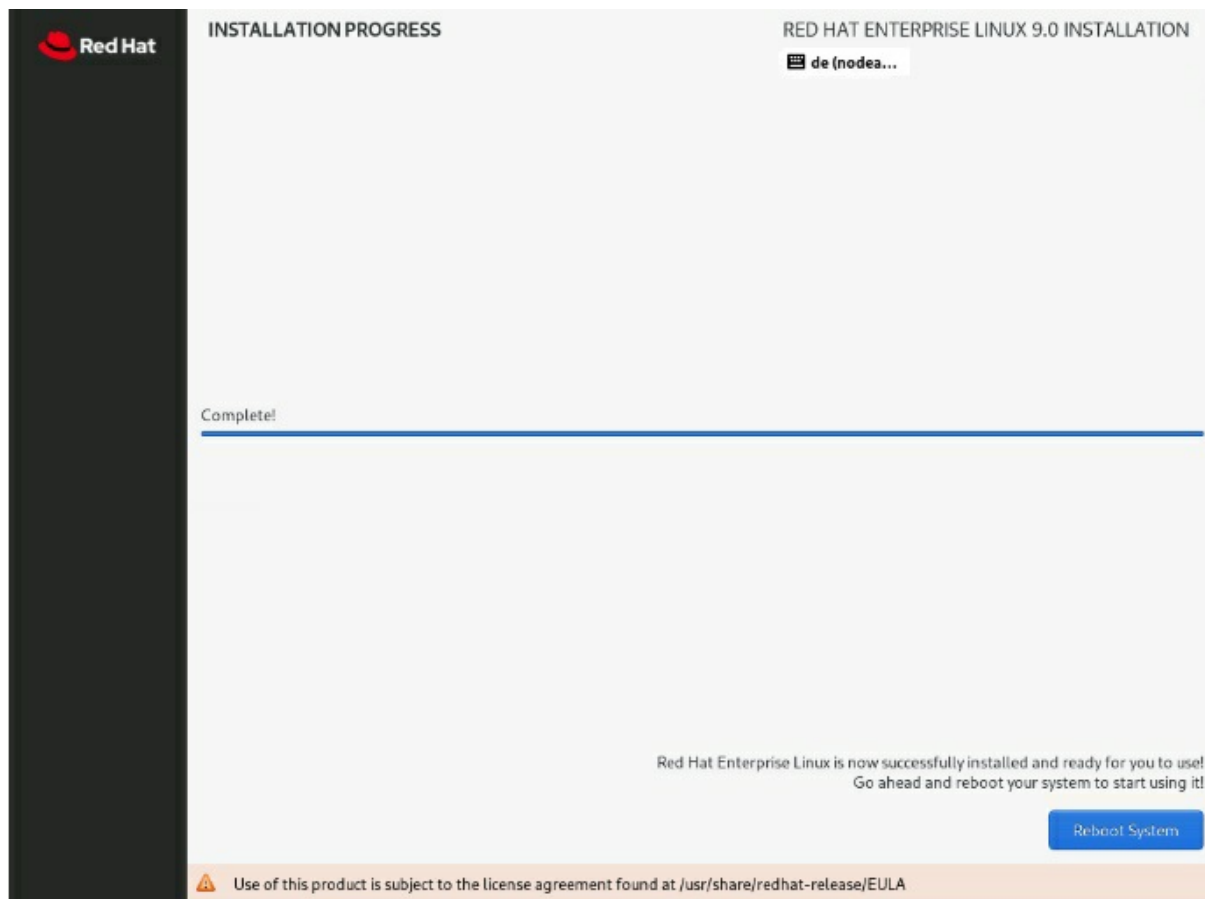
**NOTE**

For a test system, you can remove the default **/home** file system allocation and use a large root (/) file system.

7. Under **SYSTEM**, click **Network & Host Name** and configure your network connection.
8. Under **USER SETTINGS**, click **Root Password** and/or **User Creation** to configure the initial user(s) for your system. In the screens which show up, click **Done** once you have entered the necessary user information to return to the main installation screen again.
9. Click **Begin Installation**. The following screen confirms that the installation is ongoing:



Once RHEL 9 is successfully installed, the screen will look like this:



10. Click **Reboot System**.

Additional resources

- [SAP note 3108316 - Red Hat Enterprise Linux 9.x: Installation and Configuration](#)
- [SAP note 3108302 - SAP HANA DB: Recommended OS Settings for RHEL 9](#)
- [SAP HANA Server Installation and Update Guide](#)

CHAPTER 3. COMPLETING POST-INSTALLATION TASKS

This section describes how to complete the post-installation tasks.

3.1. REGISTERING YOUR SYSTEM

This section explains how to register your RHEL server to Red Hat Satellite.



NOTE

Different steps apply if your system is registered to the Red Hat Customer Portal or your Cloud provider.

Prerequisites

- You must have a valid [Red Hat Enterprise Linux for SAP Solutions](#) subscription so your server has access to required packages via a Red Hat Satellite server, the Red Hat Customer Portal, or your Cloud provider.
- You must have the following information provided to you by your Satellite administrator:
 - An activation key.
 - A string representing the name of the organization.
 - A URL for the Katello client package.
- You have system administrator access.

Procedure

1. Download the Katello client rpm package:

```
# wget https://sat.int.example.com/pub/katello-ca-consumer-latest.noarch.rpm
```

Replace the URL with the URL provided by your Satellite administrator.

2. Install the Katello client rpm package:

```
# dnf install -y katello-ca-consumer-latest.noarch.rpm
```

Replace the package name with the name of the package you downloaded.

3. Register your system:

```
# subscription-manager register --org="your-organization-name" \  
--activationkey="your-activation-key"
```

Replace ***your-organization-name*** with the string representing the name of the organization and replace ***your-activation-key*** with the activation key. Both are provided by your Satellite administrator.

3.2. APPLYING THE RHEL RELEASE LOCK

For RHEL systems running the SAP HANA database, it is essential that you set the RHEL release lock so that the system remains on the correct RHEL minor release even when doing package updates. Otherwise, the system might be updated to a RHEL release which is not supported by SAP. For RHEL systems not running the SAP HANA database, any RHEL 9 minor release can be used, so applying the RHEL release lock is not necessary in this case.

Prerequisites

- You have system administrator access.

Procedure

1. Clear the dnf cache:

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

2. Set the release lock:

```
# subscription-manager release --set=9.x
```

Replace **9.x** with the supported minor release of RHEL 9 (for example **9.4**).

Additional resources

- [How to tie a system to a specific update of RHEL](#)

3.3. ENABLING REQUIRED REPOSITORIES

You need to enable certain RHEL repositories to have access to packages required for the SAP HANA installation. For more information on which repositories to enable, see [RHEL for SAP Subscriptions and Repositories](#).

Prerequisites

- You have system administrator access.

Procedure

- Disable all repositories and enable the required ones.
 - For systems running the SAP HANA database, enable the e4s repos after ensuring that the RHEL release lock is set properly (example for RHEL 9.4):

```
# subscription-manager release  
Release: 9.4  
# subscription-manager repos \  
--disable=* \  
--enable="rhel-9-for-$(uname -m)-baseos-e4s-rpms" \  
--enable="rhel-9-for-$(uname -m)-appstream-e4s-rpms" \  
--enable="rhel-9-for-$(uname -m)-sap-solutions-e4s-rpms" \  
--enable="rhel-9-for-$(uname -m)-sap-netweaver-e4s-rpms"
```


**NOTE**

- If you intend to use the system for the SAP HANA database only, enabling the **sap-netweaver-e4s-rpms** repository is not required.
- For systems running the SAP Application Platform only, if you do not want to restrict your system to a specific RHEL minor release when updating packages, enable the normal repos. In this case, verify that no RHEL release lock is set.

Additional resources

- [How to Subscribe to Update Services for SAP Solutions on RHEL 8 and RHEL 9](#)

CHAPTER 4. RHEL SYSTEM ROLES FOR SAP

The RHEL System Roles for SAP provide a quick, easy, and consistent method for preparing your local system or any number of remote systems according to applicable SAP notes for SAP software. They include the Ansible roles **sap_general_preconfigure**, **sap_netweaver_preconfigure**, and **sap_hana_preconfigure** and require an Ansible execution system (e.g., Ansible Automation Platform, Ansible Core).

4.1. INSTALLING ANSIBLE CORE

Ansible Core is available in the RHEL 9 AppStream repository.

If you already have an Ansible Automation Platform or Ansible Core package installed, you can skip this step and proceed to [Installing RHEL System Roles for SAP](#).

Prerequisites

- You have system administrator access.

Procedure

- Install the ansible-core package:

```
# dnf install ansible-core
```

4.2. INSTALLING RHEL SYSTEM ROLES FOR SAP

RHEL System Roles for SAP is available in the RHEL for SAP Solutions repository. It requires certain functionality delivered in the RHEL System Roles, which are available in the AppStream repository.

Prerequisites

- You have system administrator access.
- You have installed the Ansible Core package or Ansible Automation Platform.

Procedure

- Install RHEL System Roles for SAP and RHEL System Roles:

```
# dnf install rhel-system-roles-sap rhel-system-roles
```

4.3. SYSTEM CONFIGURATION WITH RHEL SYSTEM ROLES FOR SAP

4.3.1. Preparing a local system

If the Ansible Engine is installed on the same system on which you want to install the SAP software, perform the steps outlined in this procedure to configure your local managed node.

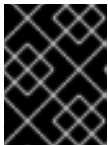
Prerequisites

- You have system administrator access.

Procedure

1. Make a backup of the system if you would like to preserve the original configuration of the server.
2. Create a file named **sap.yml** with the following content:

```
---
- hosts: localhost
  vars:
    ansible_connection: local
    sap_general_preconfigure_max_hostname_length: 64
    sap_general_preconfigure_reboot_ok: false
    sap_general_preconfigure_fail_if_reboot_required: false
    sap_hana_preconfigure_reboot_ok: false
    sap_hana_preconfigure_fail_if_reboot_required: false
    sap_hana_preconfigure_update: true
  roles:
    - sap_general_preconfigure
    - sap_netweaver_preconfigure
    - sap_hana_preconfigure
```



IMPORTANT

The correct indentation and the use of spaces instead of tabs is essential for YAML files.



NOTE

- The line **sap_general_preconfigure_max_hostname_length: 64** is only required if your hostname (**hostname -s**) is longer than 13 characters and if you are not using this system for an SAP ABAP Platform instance. Without this line, the role **sap_general_preconfigure** will fail its hostname check because a hostname with more than 13 characters is not allowed for an SAP ABAP Platform instance as per [SAP note 611361](#).
- The line **sap_netweaver_preconfigure** is used to perform specific installation and configuration steps for an SAP ABAP Platform. It can be removed or commented out for an SAP HANA database only system.
- The line **sap_hana_preconfigure** is used to perform specific installation and configuration steps for an SAP HANA database. It can be removed or commented out for an SAP ABAP Platform only system.

3. Run the **sap.yml** Ansible playbook:

```
# ansible-playbook sap.yml -e 'ansible_python_interpreter=/usr/libexec/platform-python'
```

This will configure this system according to the applicable SAP notes for SAP ABAP Platform and/or SAP HANA on RHEL 9.

4. After the **ansible-playbook** command has finished successfully, reboot the system:

```
# reboot
```

■

4.3.2. Preparing one or more remote systems

If the Ansible Engine is installed on the same system on which you want to install the SAP software, perform the steps outlined in this procedure to configure your local managed node.

Prerequisites

- You have system administrator access.

Procedure

1. Make a backup of the remote systems if you would like to preserve the original configuration of the server.
2. Create an inventory file or modify file `/etc/ansible/hosts` to contain the name of a group of hosts and each system which you intend to configure (=managed node) in a separate line (example for three hosts in a host group named **sap_hosts**):

```
[sap_hosts]
host01
host02
host03
```

3. Verify that you can log in to all three hosts using ssh without a password. Example:

```
# ssh host01 uname -a
# ssh host02 hostname
# ssh host03 echo test
```

4. Create a YAML file named `sap.yml` with the following content:

```
---
- hosts: sap_hosts
  vars:
    sap_general_preconfigure_max_hostname_length: 64
    sap_general_preconfigure_reboot_ok: false
    sap_general_preconfigure_fail_if_reboot_required: false
    sap_hana_preconfigure_reboot_ok: true
    sap_hana_preconfigure_fail_if_reboot_required: false
    sap_hana_preconfigure_update: true
  roles:
    - sap_general_preconfigure
    - sap_netweaver_preconfigure
    - sap_hana_preconfigure
```



NOTE

- The line **sap_general_preconfigure_max_hostname_length: 64** is only required if your hostname (**hostname -s**) is longer than 13 characters and if you are not using this system for an SAP ABAP Platform instance. Without this line, the role **sap_general_preconfigure** will fail its hostname check because a hostname with more than 13 characters is not allowed for an SAP ABAP Platform instance as per [SAP note 611361](#).
- The line **sap_netweaver_preconfigure** is used to perform specific installation and configuration steps for an SAP ABAP Platform. It can be removed or commented out for an SAP HANA database only system.
- The line **sap_hana_preconfigure** is used to perform specific installation and configuration steps for an SAP HANA database. It can be removed or commented out for an SAP ABAP Platform only system.

5. Run the **sap.yml** Ansible playbook:

```
# ansible-playbook sap.yml
```

This will configure all systems that are part of host group **sap_hosts** according to the applicable SAP notes for SAP ABAP Platform and/or SAP HANA on RHEL 9. Finally, if necessary, the systems are rebooted.

Additional resources

- [RHEL System Roles for SAP](#)