Getting started with the GNOME desktop environment on Red Hat Enterprise Linux 9

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Abstract

This document describes how to use GNOME, which is the only desktop environment available in RHEL 9. It explains the basics of using GNOME Shell and certain GNOME applications.
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You can switch between several user interfaces and graphics back ends in GNOME.

1.1. GNOME ENVIRONMENTS, BACK ENDS, AND DISPLAY PROTOCOLS

This sections provides information on two available GNOME environments:

- GNOME Standard
- GNOME Classic

Both environments can use two different protocols as their graphical back ends:

- The Wayland protocol, which uses GNOME Shell as the Wayland compositor and display server.
  This solution of display server is further referred as GNOME Shell on Wayland
- The X11 protocol, which uses X.Org as the display server.

The default combination in RHEL 9 is the GNOME Standard environment using GNOME Shell on Wayland as the display server. However, due to certain Wayland limitations, you might want to switch the graphics protocol stack to X11. You can also switch from GNOME Standard to GNOME Classic.

Thus, you can select from the following combinations of back ends and environments when logging in:

- GNOME Shell on Wayland (the default combination in RHEL 9)
- GNOME Shell on X11
- GNOME Classic on Wayland
- GNOME Classic on X11

Additional resources

- For information on how to switch the environments, see Selecting GNOME environment and display protocol.

1.2. GNOME STANDARD

The GNOME Standard user interface includes these major components:

Top bar

The horizontal bar at the top of the screen provides access to some of the basic functions of GNOME Standard, such as the Activities Overview, clock and calendar, system status icons, and the system menu.

System menu

The system menu is located in the upper-right corner, and provides the following functionality:

- Updating settings
- Controlling the sound volume
Activities Overview

The Activities Overview features windows and applications views that let you run applications and windows and switch between them.

The search entry at the top allows for searching various items available on the desktop, including applications, documents, files, and configuration tools.

The horizontal bar on the bottom contains a list of favorite and running applications. You can add or remove applications from the default list of favorites.

Message tray

The message tray provides access to pending notifications. The message tray shows when you press Super+M.

The GNOME Standard desktop

1.3. GNOME CLASSIC
GNOME Classic represents a mode for users who prefer a more traditional desktop experience that is similar to the GNOME 2 environment used with RHEL 6. It is based on GNOME 3 technologies, and at the same time it includes multiple features similar to GNOME 2.

The GNOME Classic user interface consists of these major components:

Applications and Places
The Applications menu is displayed at the upper-left corner of the screen. It gives you access to applications organized into categories. If you enable window overview, you can also open the Activities Overview from that menu.
The Places menu is displayed next to the Applications menu on the top bar. It gives you quick access to important folders, for example Downloads or Pictures.

Taskbar
The taskbar is displayed at the bottom of the screen, and features:
- A window list
- A notification icon displayed next to the window list
- A short identifier for the current workspace and total number of available workspaces displayed next to the notification icon

Four available workspaces
In GNOME Classic, the number of available workspaces is set to 4 by default.

Minimize and maximize buttons
Window title bars in GNOME Classic feature the minimize and maximize buttons that let you quickly minimize the windows to the window list, or maximize them to take up all of the space on the desktop.

A traditional Super+Tab window switcher
In GNOME Classic, windows in the Super+Tab window switcher are not grouped by application.

System menu
The system menu is located in the upper-right corner, and enables the following actions:
- Updating settings
- Controlling the sound volume
- Accessing your Wi-Fi connection
- Switching the user
- Logging out
- Turning off the computer

The GNOME Classic desktop with the Favorites submenu of the Applications menu
1.4. ENABLING WINDOW OVERVIEW IN GNOME CLASSIC

In GNOME Classic, the overview of open windows is not available by default. This procedure enables the window overview for all users on the system.

**IMPORTANT**

Enabling the window overview by this procedure is not a permanent change. Each update of the `gnome-classic-session` package overwrites the configuration file to the default settings, which disable the window overview.

To keep the window overview enabled, apply the procedure after each update of `gnome-classic-session`.

**Procedure**

1. Open the `/usr/share/gnome-shell/modes/classic.json` file as the root user.

2. Find the following line in the file:

   ```json
   "hasOverview": false
   ```

3. Change the line to the following:

   ```json
   "hasOverview": true
   ```
4. Save changes, and close the /usr/share/gnome-shell/modes/classic.json file.

5. Restart the user session.

**Verification steps**

1. In your GNOME Classic session, open multiple windows.

2. Press the **Super** key to open the window overview.

3. In the overview, check that:
   - The **Dash** (the horizontal panel on the bottom of the screen) is displayed.
   - The bottom panel is not displayed.

**Window overview with "hasOverview": true**

With the default settings ("hasOverview": false), the overview has the following features:

- The **Dash** is not displayed.
- The bottom panel is displayed. It includes the **Window picker** button in its left part and the workspace switcher in its right part.

**Window overview with "hasOverview": false**
1.5. GRAPHICS BACK ENDS IN RHEL 9

In RHEL 9, you can choose between two protocols to build a graphical user interface:

Wayland

The Wayland protocol uses GNOME Shell as its compositor and display server, which is further referred to as GNOME Shell on Wayland.

X11

The X11 protocol uses X.Org as the display server. Displaying graphics based on this protocol works the same way as in RHEL 7, where this was the only option.

New installations of RHEL 9 automatically select GNOME Shell on Wayland. However, you can switch to X.Org, or select the required combination of GNOME environment and display server.

X11 applications

Client applications need to be ported to the Wayland protocol or use a graphical toolkit that has a Wayland backend, such as GTK, to be able to work natively with the compositor and display server based on Wayland.

Legacy X11 applications that cannot be ported to Wayland automatically use Xwayland as a proxy between the X11 legacy clients and the Wayland compositor. Xwayland functions both as an X11 server and a Wayland client. The role of Xwayland is to translate the X11 protocol into the Wayland protocol and reversely, so that X11 legacy applications can work with the display server based on Wayland.

On GNOME Shell on Wayland, Xwayland starts automatically at login, which ensures that most X11 legacy applications work as expected when using GNOME Shell on Wayland. However, the X11 and Wayland protocols are different, and certain clients that rely on features specific to X11 might behave differently under Xwayland. For such specific clients, you can switch to the X.Org display server.
Input devices

RHEL 9 uses a unified input stack, libinput, which manages all common device types, such as mice, touchpads, touchscreens, tablets, trackballs and pointing sticks. This unified stack is used both by the X.Org and by the GNOME Shell on Wayland compositor.

 GNOME Shell on Wayland uses libinput directly for all devices, and no switchable driver support is available. Under X.Org, libinput is implemented as the X.Org libinput driver, and you can optionally enable the legacy X.Org evdev driver if libinput does not support your input device.

Additional resources

- You can find the current list of environments for which Wayland is not available in the /usr/lib/udev/rules.d/61-gdm.rules file.
- For additional information on the Wayland project, see Wayland documentation.

1.6. SELECTING GNOME ENVIRONMENT AND DISPLAY PROTOCOL

The default desktop environment for RHEL 9 is GNOME Standard with GNOME Shell on Wayland as the display server. However, due to certain limitations of Wayland, you might want to switch the graphics protocol stack. You might also want to switch from GNOME Standard to GNOME Classic.

The change of GNOME environment and graphics protocol stack is persistent across user logouts, and also when powering off or rebooting the computer.

Procedure

1. From the login screen (GDM), click the cogwheel in the right bottom corner of the screen.

NOTE

You cannot access this option from the lock screen. The login screen appears when you first start RHEL or when you log out of your current session.
2. From the drop-down menu that appears, select the option that you prefer. In the menu, the `X.Org` display server is also marked as `X11`.

1.7. DISABLING WAYLAND FOR ALL USERS

You can disable the Wayland session for all users on the system, so that they always log in with the X11 session.

**Procedure**

1. Open the `/etc/gdm/custom.conf` file as the `root` user.

2. Locate the following line in the `[daemon]` section of the file:

   ```
   #WaylandEnable=false
   ```

3. Uncomment the line by remove the `#` character. As a result, the line says:

   ```
   WaylandEnable=false
   ```

4. Reboot the system.
CHAPTER 2. LAUNCHING APPLICATIONS IN Gnome

You can launch installed applications using several different methods in the GNOME desktop environment.

2.1. LAUNCHING AN APPLICATION IN THE STANDARD Gnome SESSION

This procedure launches a graphical application in the GNOME desktop environment.

Prerequisites

- You are using the standard GNOME session.

Procedure

1. Open the Activities Overview screen using either of the following ways:
   - Click Activities in the top panel.
   - Press the Super key, which is usually labeled with the Windows logo, ⌘, or .

2. Find the application using either of the following ways:
   - Click the Show Applications icon in the bottom horizontal bar.
   - Type the name of the required application in the search entry.

3. Click the application in the displayed list.

2.2. LAUNCHING AN APPLICATION IN Gnome CLASSIC

This procedure launches a graphical application in the GNOME Classic desktop environment.

Prerequisites
You are using the GNOME Classic session.

Procedure

1. Open the **Applications** menu in the top panel.

2. Choose the required application from the available categories, which can include:
   - Favorites
   - Accessories
   - Graphics
   - Internet
   - Office
   - Sound & Video
   - System Tools
   - Utilities

### 2.3. LAUNCHING AN APPLICATION IN GNOME USING A COMMAND

This procedure launches a graphical application in GNOME by entering a command.

**Prerequisites**

- You know the command that starts the application.

**Procedure**

1. Open a command prompt using either of the following ways:
   - Open a terminal.
   - Press the **Alt+F2** shortcut to open the **Enter a Command** screen.
2. Type the application command in the command prompt.

3. Confirm the command by pressing Enter.

2.4. LAUNCHING AN APPLICATION AUTOMATICALLY ON LOGIN

You can set applications to launch automatically on login using the Tweaks tool. Tweaks is a tool to customize the GNOME Shell environment for a particular user.

**Prerequisites**

- You have installed `gnome-tweaks` on your system. For more details, see [Installing software in GNOME](#).
- You have installed the application that you want to launch at login.

**Procedure**

1. Open Tweaks. For more details see [Launching applications in GNOME](#).

2. Select Startup Applications in the left side bar.
3. Click the plus sign button (+).

4. Select an application from the list of available applications and click Add.
Verification

1. Open **Tweaks**.

2. Select **Startup Applications** in the left side bar.

3. List of applications launched at start will be present in the center section.

Additional resources

- For more information on launching applications, see [Launching applications in GNOME](#)
CHAPTER 3. CONFIGURING SOUND IN GNOME

You can configure sound volume and other sound options in GNOME.

3.1. SOUND CONFIGURATION TOOLS IN GNOME

In RHEL 9, the PipeWire sound server handles sound output and input. PipeWire lets programs output the audio using the pipewire daemon.

To configure sound, you can use one of the following graphical applications in GNOME:

System menu
The system menu is located in the top-right screen corner. It enables you only to set the intensity of the sound output or sound input through the sound bar. The sound bar for input sound is available only if you are running an application that is using an internal microphone (built-in audio), such as some teleconference tools.

Settings
Settings provides other general options to configure sound.

Tweaks
The Tweaks application enables you to configure only volume over-amplification.
3.2. ACCESSING SOUND CONFIGURATION IN SETTINGS

This procedure opens the sound configuration screen in the Settings.

Procedure

1. Launch Settings.
   You can use one of the approaches described in Launching applications in GNOME. Alternatively, you can also launch it from the system menu by clicking on its icon.

Additional resources

- For more information on PipeWire, see the pipewire man page.
2. In Settings, choose Sound from the left vertical bar.

### 3.3. SOUND OPTIONS IN SETTINGS

Through the Sound menu in Settings, you can configure the following sound options:

**Volume Levels**

The Volume levels section shows all currently running applications that can process sound, and allows you to amplify or lower the sound of a particular application.

**Output and Input**

The Output and Input sections show all built-in audio devices and external audio devices that are currently connected.

**Alert sound**

The Alert sound section shows different themes of system audio alerts.

The Output section on the sound configuration screen
CHAPTER 4. DISABLING THE HOT CORNER FUNCTIONALITY ON GNOOME SHELL

The GNOME environment provides the hot corner functionality, which is enabled by default. This means that when you move the cursor to the area of the upper-left corner and push the cursor to the screen corner, the Activities Overview menu opens automatically.

However, you may want to disable this feature to not open Activities Overview unintentionally.

4.1. DISABLING HOT CORNER USING SETTINGS

To disable the hot corner functionality using the Settings application, follow this procedure.

**NOTE**

This procedure disables the hot corner functionality for a single user.

Procedure

1. Open the Settings application by clicking the cogwheel icon.
2. In the Settings application, go to Multitasking.
3. In the General section, disable the Hot Corner button.

Disabling hot corner using the Settings application

![Settings application screenshot showing the Hot Corner setting disabled]

4.2. DISABLING HOT CORNER USING GSETTINGS
To disable the hot corner functionality using the `gsettings` command-line utility, follow this procedure.

### Procedure

- Disable the hot corner feature:

  ```shell
gsettings set org.gnome.desktop.interface enable-hot-corners false
  ```

### Verification steps

- Optionally, verify that the hot corner feature is disabled:

  ```shell
gsettings get org.gnome.desktop.interface enable-hot-corners
  false
  ```

### 4.3. DISABLING THE HOT CORNER FUNCTIONALITY FOR ALL USERS

To disable the hot corner functionality for all users, you need to create a `dconf` profile.

### Procedure

1. Create the user profile in the `/etc/dconf/profile/user` file.

   ```
   user-db:user
   system-db:local
   ```

2. Create the `/etc/dconf/db/local.d/locks/00-interface` file with the following content.

   ```
   # Specify the dconf path
   [org/gnome/desktop/interface]

   # GSettings key names and their corresponding values
   enable-hot-corners='FALSE'
   ```

3. Create a file in the `/etc/dconf/db/local.d/locks` directory, for example `/etc/dconf/db/local.d/locks/00-interface`, with the following content.

   ```
   # Prevent users from changing values for the following keys:
   /org/gnome/desktop/interface/enable-hot-corners
   ```

   The configuration file locks down the `/org/gnome/desktop/interface/enable-hot-corners` key for all users. This key controls whether the hot corner is enabled.

4. Update the system databases for the changes to take effect.

   ```
   # dconf update
   ```

5. Ensure that all users log out. The changes take effect when users log back in.
CHAPTER 5. TYPING EMOJI CHARACTERS

You can type emoji characters using several different methods in GNOME, depending on the type of the application.

5.1. TYPING EMOJI CHARACTERS IN GTK APPLICATIONS

This procedure inserts an emoji character in an application that uses the GTK graphical toolkit, such as in native GNOME applications.

Prerequisites

- Make sure that the application is built on the GTK toolkit.

Procedure

1. Open a GTK application.
2. Make sure that a text field is active.
3. Press Ctrl+;.
   The emoji selection menu opens.
4. Browse the emoji characters or type a keyword that identifies the emoji character that you want to insert, such as smile.
   For the full list of keywords associated with emoji characters, see the Other Keywords column on the Emoji List page.
5. Click the selected character, or navigate to it using the cursor keys and press Enter.

Verification

- Check that the intended emoji character now appears at your cursor.

5.2. TYPING EMOJI CHARACTERS IN ANY APPLICATIONS

This procedure inserts an emoji character in any application, regardless of the graphical toolkit that the application uses.

Procedure

1. Open an application.
2. Make sure that a text field is active.
3. Press Ctrl+.
   The underscored letter e appears at your cursor.
4. Type a keyword that identifies the emoji character that you want to insert, such as smile.
   For the full list of keywords associated with emoji characters, see the Other Keywords column on the Emoji List page.
5. Repeatedly press Space to browse the emoji characters that match your keyword.
6. Confirm the selected emoji character by pressing **Enter**.

**Verification**

- Check that the intended emoji character now appears at your cursor.
CHAPTER 6. ENABLING CHINESE, JAPANESE, OR KOREAN TEXT INPUT

If you write with Chinese, Japanese, or Korean characters, you can configure RHEL to input text in your language.

6.1. INPUT METHODS

Certain scripts, such as Chinese, Japanese, or Korean, require keyboard input to go through an Input Method Engine (IME) to enter native text.

An input method is a set of conversion rules between the text input and the selected script. An IME is a software that performs the input conversion specified by the input method.

To input text in these scripts, you must set up an IME. If you installed the system in your native language and selected your language at the GNOME Initial Setup screen, the input method for your language is enabled by default.

6.2. AVAILABLE INPUT METHOD ENGINES

The following input method engines (IMEs) are available on RHEL from the listed packages:

<table>
<thead>
<tr>
<th>Languages</th>
<th>Scripts</th>
<th>IME name</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chinese</td>
<td>Simplified Chinese</td>
<td>Intelligent Pinyin</td>
<td>ibus-libpinyin</td>
</tr>
<tr>
<td>Chinese</td>
<td>Traditional Chinese</td>
<td>New Zhuyin</td>
<td>ibus-libzhuyin</td>
</tr>
<tr>
<td>Japanese</td>
<td>Kanji, Hiragana, Katakana</td>
<td>Anthy</td>
<td>ibus-anthy</td>
</tr>
<tr>
<td>Korean</td>
<td>Hangul</td>
<td>Hangul</td>
<td>ibus-hangul</td>
</tr>
<tr>
<td>Other</td>
<td>Various</td>
<td>M17N</td>
<td>ibus-m17n</td>
</tr>
</tbody>
</table>

6.3. INSTALLING INPUT METHOD ENGINES

This procedure installs input method engines (IMEs) that you can use to input Chinese, Japanese, and Korean text.

Procedure

- Install all available input method packages:

  # dnf install @input-methods

6.4. SWITCHING THE INPUT METHOD IN GNOME
This procedure sets up the input method for your script, such as for Chinese, Japanese, or Korean scripts.

Prerequisites

- The input method packages are installed.

Procedure

1. Go to the system menu, which is accessible from the top-right screen corner, and click the Settings icon.

2. Select the Keyboard section.

3. In the Input Sources list, review the currently enabled input methods.

4. If your input method is missing:
   a. Click the + button under the Input Sources list.
b. Select your language.

NOTE
If you cannot find your language in the menu, click the three dots icon (More...) at the end of the menu.

c. Select the input method that you want to use. A cog wheel icon marks all input methods to distinguish them from simple keyboard layouts.
d. Confirm your selection by clicking Add.

5. Switch the active input method using one of the following ways:

- Click the input method indicator on the right side of the top panel and select your input method.

- Switch between the enabled input methods using the Super+Space keyboard shortcut.

Verification

1. Open a text editor.
2. Type text in your language.
3. Verify that the text appears in your native script.