

# Notes for Installing RedHawk™ Linux® 9.6 with Red Hat® Enterprise Linux® 9.6

## Installation Notes

October 28, 2025



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# 1. Introduction

RedHawk Linux is supplied with Rocky Linux™ discs, however installing RedHawk with Red Hat Enterprise Linux (RHEL) discs is also fully supported by Concurrent Real-Time.

This document assists the user in installing the RedHawk 9.6 operating system onto a RHEL 9.6 distribution. Both RHEL 9.6 Workstation and RHEL 9.6 Server installations are supported, but for brevity this document will generally refer to them both as simply RHEL 9.6.

The directions in this document supersede all others – they are specific to installing the software on Concurrent Real-Time's RedHawk systems. Other information provided as part of this release, when it may contradict Concurrent Real-Time's directions, should be ignored and Concurrent Real-Time's directions in this document should prevail.

## NOTE

*“Red Hat,” and “Red Hat Enterprise Linux” are trademarks or registered trademarks of Red Hat, Inc. in the US, and other countries. “Rocky Linux” is a registered trademark of the Rocky Enterprise Software Foundation. “RedHawk” is a registered trademark of Concurrent Real-Time. “Linux” is a registered trademark of Linus Torvalds. Red Hat, Inc., Rocky Enterprise Software Foundation and Linus Torvalds are in no way connected with or associated with Concurrent Real-Time.*

# 2. Requirements

You will need these resources to install RedHawk 9.6 onto a RHEL 9.6 distribution:

- A RHEL 9.6 installation disc or ISO
- A RedHawk Linux 9.6 installation disc
- The *RedHawk Release Notes* document for RedHawk 9.6
- The `required-pkgs.txt` file that matches your RHEL 9.6 product

If you do not already have a RHEL 9.6 installation disc or ISO, you will also need:

- A current and valid Red Hat account login ID and password
- A system with an external Internet connection

Optionally, once you have completed the basic installation of the RedHawk system, if you wish to update all the Red Hat provided RPM packages on the RedHawk system to their latest available versions, you will also need:

- A valid and unattached Red Hat subscription
- An external Internet connection on the RedHawk system you wish to update

## NOTE

*Upgrades from earlier versions of RedHawk to version 9.6 are not supported. If you already have a RHEL 9.6 installation disc or ISO, you can skip directly to Section 4, “Install RHEL 9.6,” below to begin the RHEL 9.6 installation.*

## 3. Download the RHEL 9.6 installation ISO


This section outlines several manual steps that you will need to perform over the Internet to download a RHEL 9.6 ISO image from the Red Hat Network.

### 3.1. Establish a Red Hat account

If you do not already have a Red Hat account login you will need to create one via the Red Hat customer portal website. Navigate a web browser to the following URL:

<http://access.redhat.com>



Click the *little person* login icon (  ) at the upper right of the page and then click the Register link. Follow the registration instructions and enter all the required information to successfully establish your new account.

#### NOTE

*If you already have a Red Hat account with at least one active subscription you can click the Log In link, enter your existing login information, and skip directly to Section 3.3, "Download the RHEL 9.6 installation ISO," below.*

### 3.2. Purchase a Red Hat support subscription


After initially creating your account, you will be required to confirm the supplied email address and then log back into the customer portal. At this point you will see the main page of the customer portal.

The appearance of the main page changes frequently as it is mostly used as an online billboard for promoting a variety of Red Hat features and products, however you should always see these buttons at the top left of the page:



Click on the Subscriptions button and you will be presented with a page like the following:

Subscriptions
Downloads
Red Hat Console
Get Support


**Red Hat Customer Portal**

Menu

Ask Red Hat

Search
English
All Red Hat

Overview
Subscriptions
Cloud Access
Subscription Allocations
RHSM API Tokens

## Red Hat Subscription Management

### What's new?

Red Hat has migrated many of its subscription services to the Hybrid Cloud Console. This move unifies the system and subscription management experiences and adds new capabilities. [Learn how to manage your subscriptions and systems.](#)

[Red Hat Hybrid Cloud Console](#)  
[Learn more](#)

### Subscriptions

View your purchased Red Hat subscriptions and review your usage, capacity, and utilization over time.

**Subscriptions Inventory**  
[Subscriptions Usage](#)

### Systems

Create and manage keys to register systems and view your registered systems.

[Activation Keys](#)  
[Systems Inventory](#)

Once the *Red Hat Subscription Management* page is shown, click on the Subscriptions Inventory link (highlighted above) and a page similar to the following will appear:

Subscriptions Inventory

Purchase subscriptions

Getting started resources

Activate a subscription

Activate a subscription purchased from a third party.

[Subscription Activation](#)

[Activate a Dell Service Tag](#)

[Contact Red Hat Customer Service](#)

Explore subscription benefits

Explore the benefits of your Red Hat subscription.

[Benefits of a Red Hat subscription](#)

[Red Hat subscription model FAQs](#)

[Talk to a Red Hatter](#)

Manage users

Grant and manage access permissions for individuals.

[How To Create and Manage Users](#)

[Add a Single User](#)

[Add Multiple Users](#)

[View all Roles and Permissions](#)

Learning Subscriptions

Looking for learning content and subscriptions?

[Go to your learning content](#)

[Contact Red Hat Training](#)

[View all Training & Certification](#)

Active

0

Expiring soon

0

Expired

0

Future dated

0

Subscriptions for account 000000

The above page shows that no subscriptions are available. To purchase a subscription, navigate a web browser to the following URL:

<http://redhat.com/store>

You should see a page with the following feature products shown:

## Featured products

|   |   |  |
|---|---|--|
| <p><b>Red Hat Enterprise Linux Server</b></p> <p>The world's leading enterprise Linux platform. Deploy it on physical systems, as a guest on the most widely available hypervisors, or in the cloud.</p> <p>Starting at<br/><b>US\$383.90</b></p> <p><a href="#">Buy and download</a></p> | <p><b>Red Hat JBoss Enterprise Application Platform</b></p> <p>A fully certified Java™ EE container that includes everything needed to build, run, and manage Java-based services.</p> <p>Starting at<br/><b>US\$8,800.00</b></p> <p><a href="#">Buy and download</a></p> | <p><b>Red Hat Enterprise Linux Workstation</b></p> <p>A Linux platform for more powerful systems or systems optimized for high-performance activities like graphics, animation, and scientific computing.</p> <p>Starting at<br/><b>US\$328.90</b></p> <p><a href="#">Buy and download</a></p> |
|---|---|--|

After clicking on Buy and download for the desired product, you will be offered different support options (e.g., self-support vs. standard) and then you will be prompted to enter credit card information, etc. until the purchase process is complete.

Once your account has at least one active subscription, you will be able to download ISO images as described in the next section.

### 3.3. Download the RHEL 9.6 installation ISO

Before you can install RedHawk 9.6, you must first install RHEL 9.6 on the system, which requires that you download an appropriate RHEL installation ISO from the Red Hat customer portal. Log in to your Red Hat account and return to the customer portal, and click on the Downloads link that you will see at the top of the main page:

[Subscriptions](#) [Downloads](#) [Red Hat Console](#) [Get Support](#)

You will be taken to the Product Downloads page, where you can scroll down until you see the Red Hat Enterprise Linux product link:

[Red Hat Enterprise Linux](#)

Click on the Red Hat Enterprise Linux product link, and on the resulting page scroll down until you see the All Red Hat Enterprise Linux Downloads link:

[All Red Hat Enterprise Linux Downloads →](#)

Click on the All Red Hat Enterprise Linux Downloads link, and on the resulting page choose the product variant, version, and architecture that you wish to download. For example, choose the following settings to select the 64-bit RHEL 9.6 product.

|                                       |                 |                        |
|---------------------------------------|-----------------|------------------------|
| <b>Product Variant:</b> ⓘ             | <b>Version:</b> | <b>Architecture:</b> ⓘ |
| Red Hat Enterprise Linux for x86_64 ▼ | 9.6 ▼           | x86_64                 |

#### NOTE

*Be careful to select the 9.6 version instead of the default version.  
Over time the default version will move beyond version 9.6.*

Once the RHEL 9.6 product has been correctly selected, scroll the page down to see the Binary DVD link that is associated with this product. In this example, press the Download Now button to begin downloading the RHEL 9.6 64-bit Installation ISO.

**Red Hat Enterprise Linux 9.6 Binary DVD** **Recommended**

Run the installation program and complete installation without requiring any additional package repositories. Use this image if the system you are installing will not have network access, as it contains all of the required packages to complete an installation of Red Hat Enterprise Linux.

[Download Now](#) ↗

11.9 GB

Last modified: 2025-04-22   SHA-256 Checksum:  
febcc1359fd68faceff82d7eed8d21016e022a17e9c74e0e3f9dc3a78816b2bb

#### NOTE

*With RHEL 9 there are no longer separate Workstation and Server discs;  
a single large ISO image can install both Server and Workstation.*

#### NOTE

*Red Hat erroneously displays the ISO as a DVD ISO, but it's too large for a DVD;  
the downloaded ISO must be written to an optical Blu-ray disc using a Blu-ray writer.*

Once the ISO has been downloaded successfully you should be ready to proceed with the next section. However, it is always recommended to use the `sha256sum` command on Linux to verify that the installation ISO checksum matches the checksum displayed above before continuing.

#### NOTE

*Microsoft ® Windows ® operating system users can download and install the  
CoreUtils package from the [gnuwin32.sourceforge.net](https://gnuwin32.sourceforge.net) project to get a native version  
of `shasum` which can be used to verify the installation ISO checksum.*

## 4. Install RHEL 9.6

Once the desired RHEL 9.6 installation ISO has downloaded, burn the ISO to a physical Blu-ray disc using your preferred ISO burning software, and then complete section 5.2 in the *RedHawk Release Notes* to perform a RHEL installation.

## NOTE

*The RHEL 9.6 installation ISO is 11.9 GB in size and will only fit on a Blu-ray disc. Contact your system administrator if you need help burning Blu-ray discs.*

## NOTE

*The screens shown in the RedHawk Release Notes are from Rocky Linux 9.6; the RHEL 9.6 screens will all have a different color scheme; however, the contents of each screen will be mostly identical to the Rocky Linux 9.6 screens.*

## NOTE

*Concurrent Real-Time does not recommend registering with the Red Hat Network during the RHEL installation. If you wish to install RHEL updates after you have completed the RedHawk 9.6 installation, you can register the system and attach a subscription at that time. See section 7, “(Optional) Update Installed RHEL Packages,” below for more information.*

Once the RHEL 9.6 installation is finished, proceed to the next section.

## 5. Install required packages

This section details the steps to install the RHEL packages that are required for RedHawk.

### 5.1. Download the `required-pkgs.txt` file

Concurrent Real-Time publishes *required packages* lists for customers supplying their own Red Hat software. Installing all the required packages will ensure that RedHawk can be installed correctly.

If you do not already have a `required-pkgs.txt` file, you will need to download one from Concurrent Real-Time's Software Documentation Library. Use a web browser to surf to this URL:

<http://redhawk.concurrent-rt.com/docs/>

You should see a page like the following displayed:





## Concurrent Software Library

All manuals are provided in PDF format.

Concurrent manuals are organized into trees rooted at the base operating system category.

Select your base operating system category from the list below, or use the "find" feature to locate a specific document.

Type in a regular expression to locate a document **title** or **publication number**.

- [Linux](#)
  - [RedHawk Linux](#)
  - [NightStar](#)
  - [Architect](#)
  - [Simulation WorkBench](#)
  - [Compilers](#)
  - [PCI/PCle Cards](#)
  - [RedHawk KVM-RT](#)
  - [Signal Workbench](#)
  - [Legacy Items](#)

Click on RedHawk Linux and then RedHawk Linux 9.6. The page displayed will look like the following:

- [Linux](#)
  - [RedHawk Linux](#)
    - [RedHawk Linux 9.6](#)
      -  [Redhawk Linux 9.6 Release Notes](#)
      -  [Redhawk Linux 9.6 User's Guide](#)
      - [Installing on RHEL](#)
    - [RedHawk Linux 9.4](#)
    - [RedHawk Linux 9.2](#)
    - [RedHawk Linux 8.4](#)
    - [RedHawk Linux 8.2](#)

Next, click on the Installing on RHEL link that is listed under RedHawk Linux 9.6 and the following files will appear for download:

- [Installing on RHEL](#)
  -  [RedHawk 9.6 with RHEL Installation Notes](#)
  - [rhel-9.6-svr-x86\\_64-required-pkgs](#)
  - [rhel-9.6-ws-x86\\_64-required-pkgs](#)

The first link under Installing on RHEL is a link to the latest version of this document that you are currently reading. The other links are the `required-pkgs.txt` files that are appropriate for the various versions of RHEL.

Download the `required-pkgs.txt` file that matches the version of RHEL you are installing.

## 5.2. Transfer the RHEL 9.6 installation disc (if necessary)

You should already have downloaded the RHEL 9.6 installation ISO image, however if you only have access to a physical RHEL 9.6 installation disc you will need to temporarily transfer the disc to your system's hard drive in order to follow these procedures.

Insert the RHEL 9.6 installation disc into the system's Blu-ray optical media tray and issue the following command to temporarily create a copy of the RHEL 9.6 installation disc on the hard drive.

```
-- as root --  
dd if=/dev/cdrom of=/root/rhel9.6-disc.iso
```

After this command completes, remove the RHEL 9.6 installation disc from the optical media drive as it will no longer be needed during the rest of this procedure.

If you have access to the original RHEL 9.6 installation ISO image that was downloaded from Red Hat, simply ensure that it is placed in `/root` with the name `rhel9.6-disc.iso` before continuing.

## 5.3. Loopback mount the RHEL 9.6 installation ISO image

Issue the following commands to loopback mount the copy of the RHEL 9.6 installation ISO image.

```
-- as root --  
# yum clean all  
# mkdir -p /mnt/rhel9.6-disc  
# mount -o loop,ro /root/rhel9.6-disc.iso /mnt/rhel9.6-disc
```

After these commands are complete, the contents of the RHEL 9.6 installation ISO will be accessible under the `/mnt/rhel9.6-disc` mount point.

### NOTE

*The upcoming steps will require the RHEL installation ISO image to be continuously loopback mounted. You may wish to put the above mount command into `/etc/rc.local` to ensure that the ISO will be automatically re-mounted each time the system is rebooted.*

## 5.4. Create a repository to access the RHEL 9.6 image

Using your preferred text editor, create a file named `/etc/yum.repos.d/rhel9.6-disc.repo` with the following contents:

```
[rhel9.6-disc-AppStream]
name=rhel9.6-disc-AppStream
baseurl=file:///mnt/rhel9.6-disc/AppStream
enabled=1
gpgcheck=0

[rhel9.6-disc-BaseOS]
name=rhel9.6-disc-BaseOS
baseurl=file:///mnt/rhel9.6-disc/BaseOS
enabled=1
gpgcheck=0
```

Once this yum repo file is in place, RPM dependencies should automatically be satisfied from the mounted RHEL 9.6 installation ISO image.

To verify that the RHEL installation disc repository is now set up correctly, issue the following command:

```
-- as root --
# yum repolist -v --noplugins
```

You should see output like the following displayed:

```
# yum repolist -v --noplugins
YUM version: 4.14.0
cachedir: /var/cache/dnf
Last metadata expiration check: 0:07:56 ago on Thu 16 Oct 2025 03:48:27 PM EDT.
Repo-id           : rhel9.6-disc-AppStream
Repo-name         : rhel9.6-disc-AppStream
Repo-revision     : 1744153785
Repo-updated      : Tue 08 Apr 2025 07:09:45 PM EDT
Repo-pkgs         : 6,262
Repo-available-pkgs: 5,907
Repo-size         : 9.3 G
Repo-baseurl      : file:///mnt/rhel9.6-disc/AppStream
Repo-expire       : 172,800 second(s) (last: Thu 16 Oct 2025 03:48:27 PM EDT)
Repo-filename     : /etc/yum.repos.d/rhel9.6-disc.repo

Repo-id           : rhel9.6-disc-BaseOS
Repo-name         : rhel9.6-disc-BaseOS
Repo-revision     : 1744153810
Repo-updated      : Tue 08 Apr 2025 07:10:10 PM EDT
Repo-pkgs         : 1,173
Repo-available-pkgs: 1,173
Repo-size         : 1.4 G
Repo-baseurl      : file:///mnt/rhel9.6-disc/BaseOS
Repo-expire       : 172,800 second(s) (last: Thu 16 Oct 2025 03:48:27 PM EDT)
Repo-filename     : /etc/yum.repos.d/rhel9.6-disc.repo
Total packages: 7,435
#
```

If you do not see a similar output, review the above steps to make sure that everything is mounted and configured correctly.

## 5.5. Install required base packages

To install the required packages on a freshly installed RHEL 9.6 system, issue the following command as root on your system (this example assumes that you are using 64-bit RHEL Workstation and that the `required-pkgs.txt` file is in the current directory):

```
# yum -y --noplugins install $(<rhel-9.6-ws-x86_64-required-pkgs.txt)
```

Refer to section 5.1 above if you do not yet have an appropriate `required-pkgs.txt` file. This command will produce many lines of output and may run for several minutes depending on the performance of the current system.

### NOTE

*After installation completes, do not reboot the system. Proceed to the next step.*

## 6. Install RedHawk Linux

The system is now ready for RedHawk and subsequent software to be installed. Continue following section 5.4 of the *RedHawk Release Notes* to complete the installation.

### NOTE

*The required packages installed in Section 5.5 above should adequately satisfy the dependencies of RedHawk™ and NightStar™ software. However, the installation of additional software packages may require other RHEL 9.6 base packages that have not yet been installed. During the installation of additional software packages ensure that the RHEL 9.6 installation ISO is loopback mounted to have dependencies pulled in automatically as necessary. Be sure to delete the RHEL 9.6 installation ISO file after all software installation has completed and remove or disable the `/etc/yum.repos.d/rhel9.6-disc.repo` file.*

## 7. (Optional) Update installed RHEL packages

Once a RedHawk system is fully installed using the approach detailed above, you may optionally choose to install all the latest RHEL package updates that have been released to date by Red Hat. The following sections detail the steps required to register the system with the Red Hat Network, attach a subscription and update all installed RHEL packages to their latest available versions.

### 7.1. Invoke the Red Hat Subscription Manager

First, log into the system in graphical mode as the root user and invoke the Red Hat Subscription Manager tool. You can start the tool by selecting Activities, searching for `subscription`, and then clicking on the Red Hat Subscription Manager icon. Alternately, if you are using the classic desktop, use the Applications menu and navigate to System Tools ⇒ Red Hat Subscription Manager. After invocation, a window like the following will appear on the screen:

The image shows a window titled "Subscriptions" with a close button (X) in the top right corner. The window is divided into three main sections:

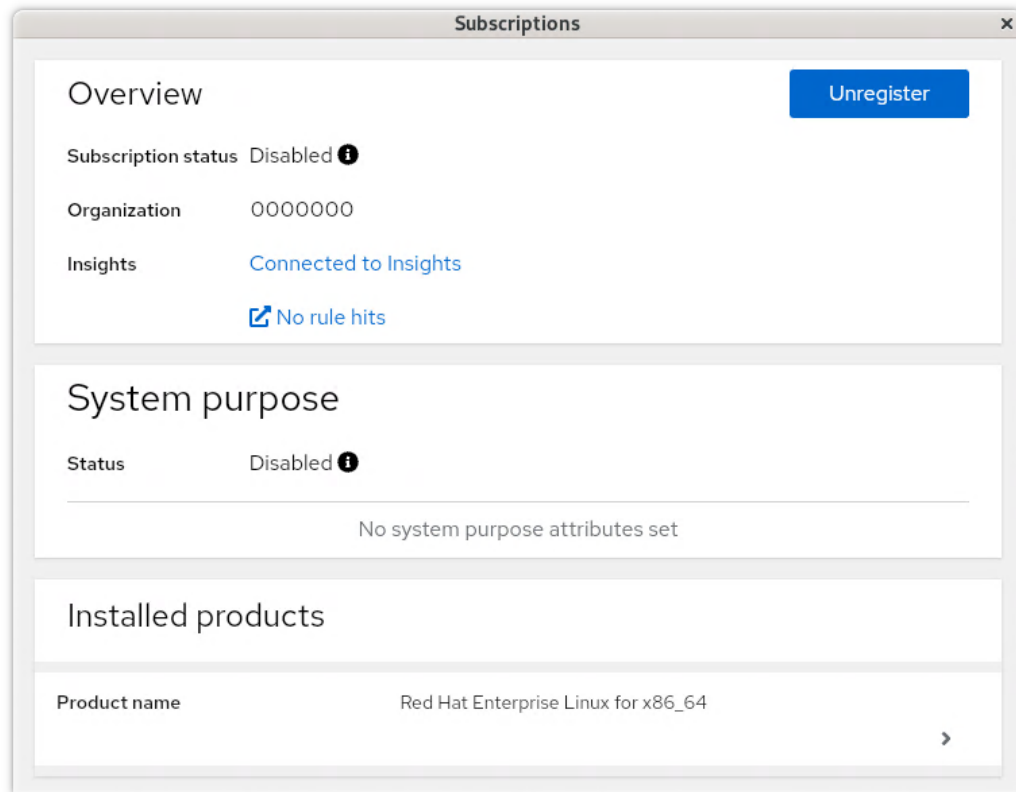
- Overview:** Contains the text "Subscription status Not registered" and a blue "Register" button.
- System purpose:** Contains the text "Status Unknown" and "No system purpose attributes set".
- Installed products:** Contains a table with one row: "Product name" is "Red Hat Enterprise Linux for x86\_64" and "Status" is "Unknown status" (highlighted in a red rounded rectangle). To the right of the table is a grey "Auto-attach" button and a right-pointing arrow.

Click the Register button to register the system within the Red Hat Network, and a window like the following will next appear on the screen:

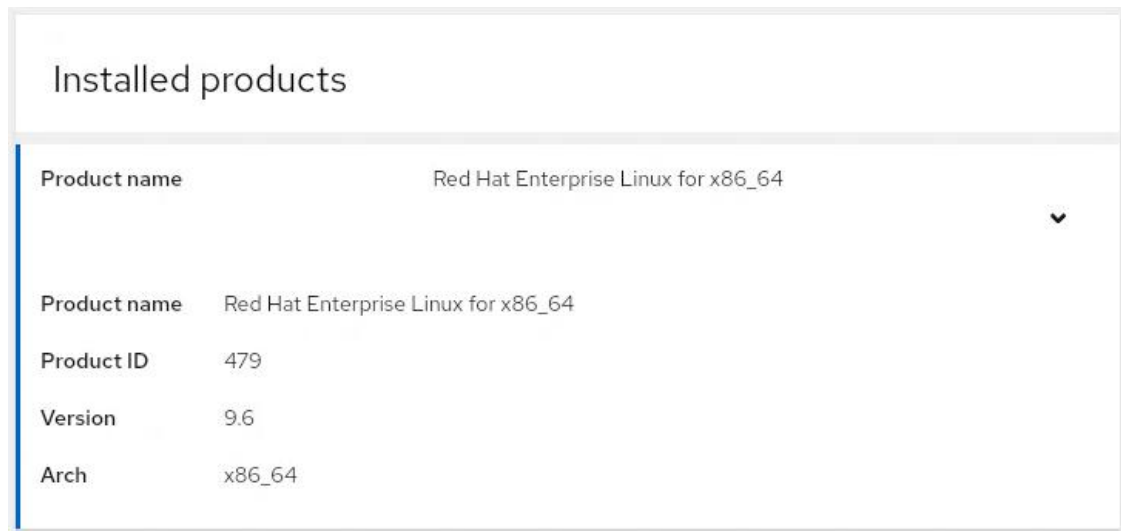
The image shows a dialog box titled "Register System" with a close button (X) in the top right corner. The dialog box contains the following fields and options:

- URL:** A dropdown menu with "Default" selected.
- Use proxy server:** An unchecked checkbox.
- Method:** Two radio buttons: "Account" (selected) and "Activation key".
- Username:** A text input field.
- Password:** A text input field.
- Organization:** A text input field.
- Buttons:** A blue "Register" button and a grey "Cancel" button.

Enter your Red Hat account Username and Password and press the Register button. (*Usage of a Red Hat Activation Keys is not covered in this document*). The system will register with Red Hat and automatically attach a matching subscription, and you will see a confirmation window like the following displayed:



Click on the Red Hat Enterprise Linux for x86\_64 text under Installed products to see the details of the subscription attachment and you should see details like the following displayed:



This window confirms that the system has been properly registered and subscribed, and you can now close the Red Hat Subscription Manager tool.

## 7.2. Update Installed RHEL Packages

Finally, issue the following command as the root user to download and install the latest versions of the RHEL packages that you have installed on your system:

```
-- as root --  
# yum -y update
```

You can also run this command without the “-y” option if you just wish to see which updates are available; without the “-y” option, the command will prompt you to continue, and you can choose to continue or exit out if you wish. This command may take quite a while to complete, depending on how many updates are available at the time of invocation.

Please contact Concurrent Real-Time Technical Support if you have any problems during any stage of this installation ([support@concurrent-rt.com](mailto:support@concurrent-rt.com) or 1-800-245-6453).