Notes for Installing RedHawk™ Linux® 8.0 with Red Hat® Enterprise Linux® 8.0

Installation Notes

February 28, 2020

READ ME BEFORE INSTALLING THIS PRODUCT

concurrent
REAL-TIME

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1. Introduction

RedHawk Linux is supplied with CentOS® Linux® DVDs, however installing RedHawk with Red Hat Enterprise Linux (RHEL) DVDs is also fully supported by Concurrent Real-Time.

This document assists the user in installing the RedHawk 8.0 operating system onto a RHEL 8.0 distribution. Both RHEL 8.0 Workstation and RHEL 8.0 Server products are supported, but for brevity this document will generally refer to them both as simply RHEL 8.0.

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," "Red Hat Enterprise Linux" and "CentOS" are trademarks or registered trademarks of Red Hat, Inc. in the US and other countries. "RedHawk" is a registered trademark of Concurrent Real-Time. "Linux" is a registered trademark of Linus Torvalds. Red Hat, Inc. 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 8.0 onto a RHEL 8.0 distribution:

- A RHEL 8.0 Installation DVD or ISO
- A RedHawk 8.0 Installation DVD
- The *RedHawk Release Notes* document for RedHawk 8.0
- The `required-pkgs.txt` file that matches your RHEL 8.0 product

If you do not already have a RHEL 8.0 Installation DVD 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 of 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 8.0 are not supported.

NOTE

If you already have a RHEL 8.0 Installation DVD or ISO, you can skip directly to Section 4, "Install RHEL 8.0," below to begin the RHEL 8.0 installation.

3. Download the RHEL 8.0 Installation ISO

This section outlines several manual steps that you will need to perform over the Internet in order to download a RHEL 8.0 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* icon (👤) at the upper right of the page and then click the Register link. Follow the registration instructions and enter all of the required information to successfully establish your new account.

NOTE

If you already have a Red Hat account with at least one active subscription then you can click the Log In link, enter your existing login information, and then skip directly to Section 3.3, "Download the RHEL 8.0 DVD 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:

SUBSCRIPTIONS	DOWNLOADS	CONTAINERS	SUPPORT CASES
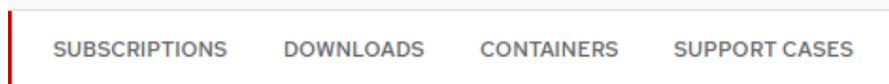
Click on the Subscriptions button and you will be presented with a page like the following:

The above example page indicates that the account has 0 active subscriptions. Thus, before you can download the RHEL 8.0 DVD ISO you will need to purchase a subscription by clicking on the Purchase subscriptions online link at the bottom of the page.

After clicking on Purchase subscriptions online, you will be taken to the Featured Products page. You should click on the See All Products link, as shown below, to see all the possible products that you can purchase subscriptions for.

On the resulting All Products page there are many products listed, however customers installing RedHawk should generally choose among the various subscription support levels of these two main products:

- Red Hat Enterprise Linux Server
- Red Hat Enterprise Linux Workstation

For example, to purchase a Red Hat Enterprise Linux Workstation Self-support Subscription, click on the first Buy button in the Red Hat Enterprise Linux Workstation subscription list, as shown below:


This will display the Choose your subscription page where you can confirm your choice and then click Add to cart. Once the chosen product subscription has been added, your shopping cart will appear and you can click the Continue to checkout button to enter your payment information. You will be given a summary of the transaction and options to add various additional products and services, etc. but eventually you will be able to press the Submit Your Order button to complete your product subscription purchase.

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

3.3.　　Download the RHEL 8.0 DVD ISO

Before you can install RedHawk 8.0, you must first install RHEL 8.0 on the system, which requires that you download an appropriate RHEL installation DVD 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　　CONTAINERS　　SUPPORT CASES
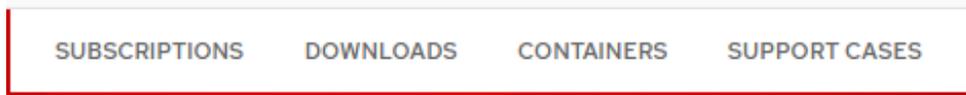
You will be taken to the Product Downloads page, where you can scroll down until you see the Red Hat Enterprise Linux 8 product link:

Red Hat Enterprise Linux 8

Click on Red Hat Enterprise Linux 8 product link, and choose the product variant, version and architecture that you wish to download. For example, choose the following settings to select the RHEL 8.0 Workstation 64-bit product.

Product Variant: ⓘ　　　　　　　　Version:　　　Architecture: ⓘ

Red Hat Enterprise Linux for x86_64　▼　　8.0　▼　x86_64

NOTE

Be careful to select the 8.0 version instead of the default version.
At the time of this writing, 8.1 was the latest and default version.
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Once the RHEL 8.0 product has been correctly selected, scroll the page down see the Binary DVD link that is associated with this product. In this example, press the Download Now button to begin downloading the RHEL 8.0 64-bit Installation DVD.

Red Hat Enterprise Linux 8.0 Binary DVD

Last modified: 2019-04-11　　SHA-256 Checksum:
005d4f88fff6d63b0fc01a10822380ef52570edd8834321de7be63002cc6cc43

Download Now 🗗

6.62 GB

NOTE

With RHEL 8 there are no longer separate Workstation and Server DVDs;
a single large DVD ISO image can install both Server and Workstation.

Once the DVD ISO has downloaded successfully you should now be ready to proceed with the next section. However, it is always recommended to use the `sha256sum` command on Linux to verify that the DVD 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 project to get a native version of `shasum` which can be used to verify the DVD ISO checksum.

4. Install RHEL 8.0

Once the desired RHEL 8.0 DVD ISO is fully downloaded, burn the ISO to a physical dual-layer DVD using your preferred DVD burning software, and then complete section 5.1.1 in the *RedHawk Release Notes* to perform a RHEL installation.

NOTE

The RHEL 8.0 DVD ISO is 6.62 GB in size and will only fit on a dual-layer DVD. Contact your system administrator if you need help burning dual-layer DVDs.

NOTE

The screens shown in the RedHawk Release Notes are from CentOS 8.0; the RHEL 8.0 screens will all have a different color scheme; however, the contents of each screen will be mostly identical to the CentOS 8.0 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 8.0 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 8.0 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:

Click on RedHawk Linux and then RedHawk Linux 8.0. The page will look similar to the following:

Next, click on the Installing on RHEL link that is listed under RedHawk Linux 8.0 and the following files will appear for download:

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 8.0 DVD (if necessary)

You should already have downloaded the RHEL 8.0 ISO image, however if you only have access to a physical RHEL 8.0 DVD you will need to temporarily transfer the DVD to your system's hard drive in order to follow these procedures.

Insert the RHEL 8.0 DVD into the system's optical media tray and issue the following command to temporarily create a copy of the RHEL 8.0 DVD on the hard drive.

```
-- as root --
dd if=/dev/cdrom of=/tmp/rhel8.0-dvd.iso
```

After this command completes, remove the RHEL 8.0 DVD 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 DVD ISO image that was downloaded from Red Hat, simply ensure that it is placed in `/tmp` with the name `rhel8.0-dvd.iso` before continuing.

5.3. Loopback Mount the RHEL 8.0 DVD ISO Image

Issue the following commands to loopback mount the copy of the RHEL 8.0 DVD ISO image.

```
-- as root --
# yum clean all
# mkdir -p /mnt/rhel8.0-dvd
# mount -o loop,ro /tmp/rhel8.0-dvd.iso /mnt/rhel8.0-dvd
```

After these commands complete, the contents of the RHEL 8.0 DVD ISO will be accessible under the `/mnt/rhel8.0-dvd` mount point.

NOTE

The software installation in upcoming steps will require the RHEL DVD 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 8.0 Image

Using your preferred text editor, create a file named `/etc/yum.repos.d/rhel8.0-dvd.repo` with the following contents:

```
[rhel8.0-dvd-AppStream]
name=rhel8.0-dvd-AppStream
baseurl=file:///mnt/rhel8.0-dvd/AppStream
enabled=1
gpgcheck=0

[rhel8.0-dvd-BaseOS]
name=rhel8.0-dvd-BaseOS
baseurl=file:///mnt/rhel8.0-dvd/BaseOS
enabled=1
gpgcheck=0
```

Once this yum repo file is in place, RPM dependencies should automatically be satisfied from the mounted RHEL 8.0 DVD ISO image.

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

```
-- as root --
# yum repolist
```

You should see output similar to the following displayed:

```
[root@ihawk ~]# yum repolist
Updating Subscription Management repositories.
Unable to read consumer identity
This system is not registered to Red Hat Subscription Management. You can use
subscription-manager to register.
rhel8.0-dvd-AppStream                             1.7 MB/s | 3.2 kB     00:00
rhel8.0-dvd-BaseOS                                2.7 MB/s | 2.7 kB     00:00
repo id                           repo name                              status
rhel8.0-dvd-AppStream             rhel8.0-dvd-AppStream                   4,672
rhel8.0-dvd-BaseOS                rhel8.0-dvd-BaseOS                       1,658
[root@ihawk ~]#
```

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 8.0 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 install $(<rhel-8.0-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 5.2 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 8.0 base packages that have not yet been installed. During the installation of additional software packages ensure that the RHEL 8.0 DVD ISO is loopback mounted to have dependencies pulled in automatically as necessary. Be sure to delete the RHEL 8.0 DVD ISO file after all software installation has completed and remove or disable the `/etc/yum.repos.d/rhel8.0-dvd.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 of 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 via the Applications menu by navigating to System Tools ⇨ Red Hat Subscription Manager. After invocation, a window like the following will appear on the screen:
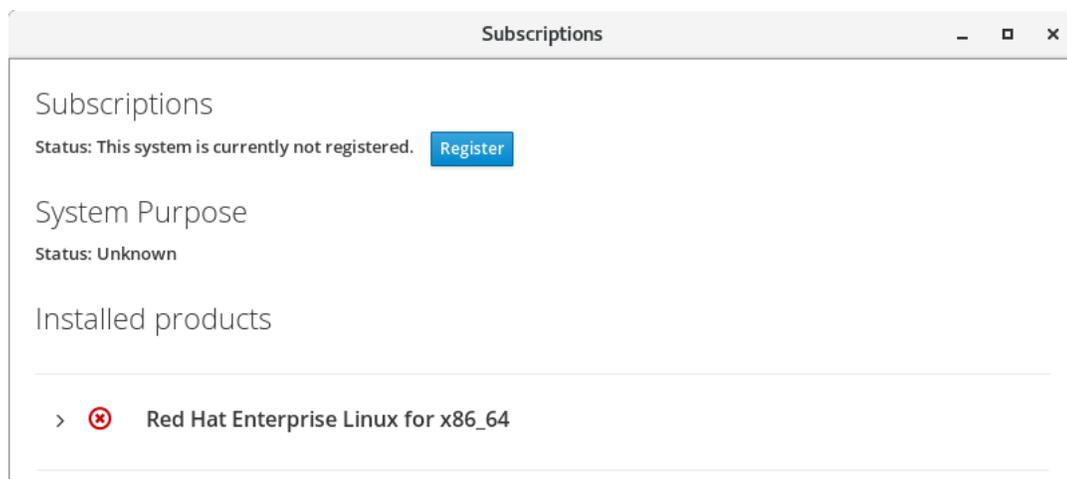
Click the Register button to register the system within the Red Hat Network, and a window like the following will next appear on the screen:
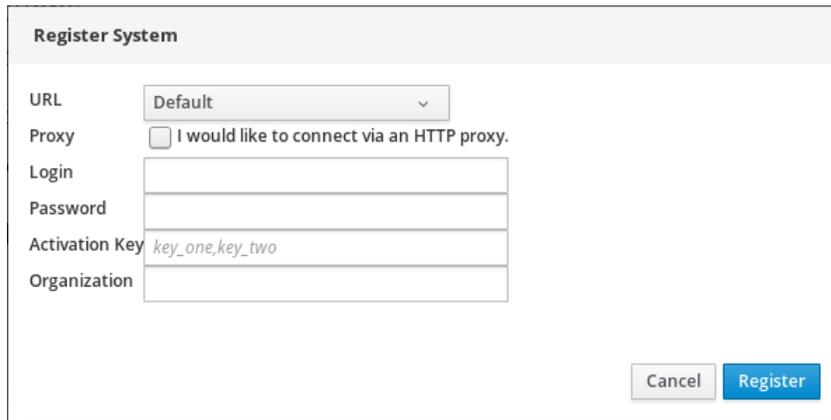
Enter your Red Hat account Login and Password and press the Register button. *(Usage of a Red Hat Activation Keys is not covered in this document)*. The system will register with Red Hat and automatically attach a matching subscription, and you will see a confirmation window like the following displayed:
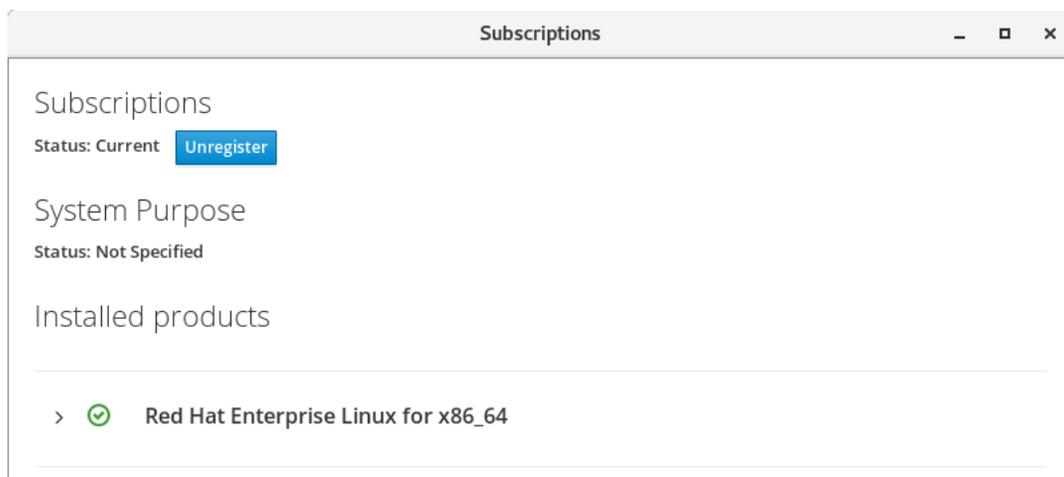
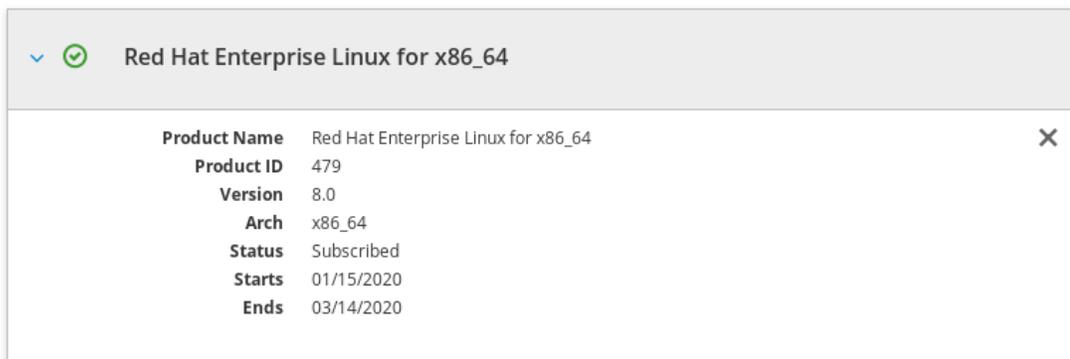Click on the Red Hat Enterprise Linux for x86_64 text under Installed products to see the details of the subscription attachment and you should see details like the following displayed:

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 --allowerasing 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 or 1-800-245-6453).