Setting-Up A Local Repository in Red Hat Linux
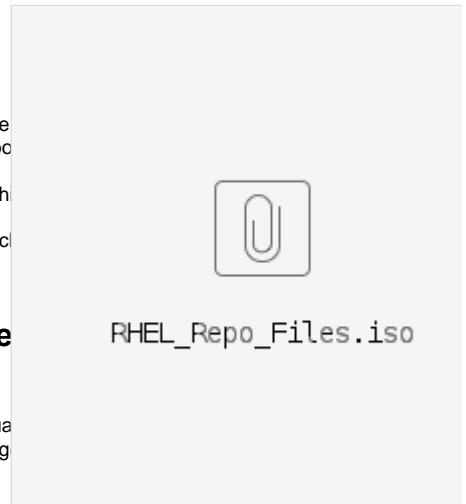
RHEL_Repo_Files.iso

Why Should I Setup A Local Repository in Red Hat Linux?

- Having a Local Repository will allow you to Install, and Apply, the Latest Updates for both Applications and the Operating System itself.
- If there is a Critical Vulnerability in the Red Hat Linux OS Version, or Application, that you are using, having a Local Repository will allow you to Install, and Apply, the Latest Updates for both Applications and the Operating System itself.
  - This will allow you to maintain the Security and Integrity of your Red Hat Linux Machine.
- If there are any issues with "Platform Binary" with Applications, such as Java, the Local Repository can be Utilized to Install, and Apply, Updates that could *potentially* Fix issues, such as the "Platform Binary" Issue.

How to Setup a Local Repository in Red Hat Linux (vSphere Client)

This Guide will show you how to Setup a Local Repository in Red Hat Linux for a vSphere Client Virtual Machine. This guide assumes you have already installed Red Hat Enterprise Linux (RHEL) on the target device, and that you are currently signed into an account with "**sudo**" privileges.

1. **Download** the Attached "**RHEL_Repo_Files.iso**" (Found on the Right Side of this Page)
2. Go to **[Link REDACTED For Security Purposes]**
   a. **Note:** Both of these Downloads Can Take a Good Amount of Time (About 10 Hours to 1 Day)
   b. **Download:** "**rhel-8-for-x86_64-appstream-rpms.iso**" - **Size: 89G**
   c. **Download:** "**rhel-8-for-x86_64-baseos-rpms.iso**" - **Size: 23G**
3. **[REDACTED For Security Purposes]**
4. Click on the Icon Resembling a Stack of Disks on the Top-Left of the Screen:

   a. On the Drop-Down Below that, Click on **[Link REDACTED For Security Purposes]**
   b. **[REDACTED For Security Purposes]**
   c. Click on "**ISOs**"
5. On the Top-Middle of the Page, Click on "**UPLOAD FILES**"
   a. Go to where you Downloaded the .ISO Files From Before (Most Likely the "**Downloads**" Folder)
   b. Click on "**rhel-8-for-x86_64-appstream-rpms.iso**", and then Click "**Open**"
6. On the Top-Middle of the Page, Click on "**UPLOAD FILES**" Again
   a. Go to where you Downloaded the .ISO Files From Before (Most Likely the "**Downloads**" Folder)
   b. Click on "**rhel-8-for-x86_64-baseos-rpms.iso**", and then Click "**Open**"
7. On the Top-Middle of the Page, Click on "**UPLOAD FILES**" Again
   a. Go to where you Downloaded the .ISO Files From Before (Most Likely the "**Downloads**" Folder)
   b. Click on "**RHEL_Repo_Files.iso**", and then Click "**Open**"
8. Your "**rhel-8-for-x86_64-appstream-rpms.iso**", "**rhel-8-for-x86_64-baseos-rpms.iso**", and "**RHEL_Repo_Files.iso**" Files Should Now be Uploading to the **[REDACTED For Security Purposes]** Server
   a. You will know when they have Finished Uploading by Checking the Middle-Left of the Screen, and Looking at the "**Name**" and "**Status**" Fields.
      i. When all of the "**Status**" Fields have a Green Checkmark, Followed by "**Completed**", you are ready to go.
   b. **Note:** These Uploads Can Take a Good Amount of Time
9. Click on the Icon Resembling 3 Desktop Computers on the Top-Left of the Screen:

   a. On the Drop-Down Below that, Click on **[Link REDACTED For Security Purposes]**
   b. **[REDACTED For Security Purposes]**
   c. **[REDACTED For Security Purposes]**
   d. Navigate to Your Virtual Machine, and Click on it
      i. **Ex:** The One I will be Using in this Guide is "**[REDACTED For Security Purposes]-RHEL8**"
10. Once you have Navigated to Your Virtual Machine, Click on the **3 Dots** "**ACTIONS**" Button, on

    the Top-Middle of the Screen:
    a. Click on "**Edit Settings...**"
    b. Make Sure you are on the "**Virtual Hardware**" Tab, and Click on "**ADD NEW DEVICE**"

c. Under "**Disks, Drives and Storage**", Click on "**CD/DVD Drive**"
d. On the "**Virtual Hardware**" Tab, the Section "**New CD/DVD Drive ***" Should've Appeared
   i. Click on the Drop-Down that Says "**Client Device**", and Click on "**Datastore ISO File**"
   ii. When the "**Select File**" Window Appears, In the "**Datastores**" Section, Click on "**ISOs**"
   iii. In the "**Contents**" Section, Scroll-Down Until you Find your "**rhel-8-for-x86_64-appstream-rpms.iso**", Click on it, and then Click "**OK**"
e. For the "**New CD/DVD Drive ***" Field, Check the Box on the Right that Says "**Connected**"

11. Make Sure you are Still on the "**Virtual Hardware**" Tab, and Click on "**ADD NEW DEVICE**"
    a. Under "**Disks, Drives and Storage**", Click on "**CD/DVD Drive**"
    b. On the "**Virtual Hardware**" Tab, the Section "**New CD/DVD Drive ***" Should've Appeared
       i. Click on the Drop-Down that Says "**Client Device**", and Click on "**Datastore ISO File**"
       ii. When the "**Select File**" Window Appears, In the "**Datastores**" Section, Click on "**ISOs**"
       iii. In the "**Contents**" Section, Scroll-Down Until you Find your "**rhel-8-for-x86_64-baseos-rpms.iso**", Click on it, and then Click "**OK**"
    c. For the "**New CD/DVD Drive ***" Field, Check the Box on the Right that Says "**Connected**"

12. Make Sure you are Still on the "**Virtual Hardware**" Tab, and Click on "**ADD NEW DEVICE**"
    a. Under "**Disks, Drives and Storage**", Click on "**CD/DVD Drive**"
    b. On the "**Virtual Hardware**" Tab, the Section "**New CD/DVD Drive ***" Should've Appeared
       i. Click on the Drop-Down that Says "**Client Device**", and Click on "**Datastore ISO File**"
       ii. When the "**Select File**" Window Appears, In the "**Datastores**" Section, Click on "**ISOs**"
       iii. In the "**Contents**" Section, Scroll-Down Until you Find your "**RHEL_Repo_Files.iso**", Click on it, and then Click "**OK**"
    c. For the "**New CD/DVD Drive ***" Field, Check the Box on the Right that Says "**Connected**", and then Click "**OK**"

13. Click the **Green Triangle** to Power the Device On (If Necessary), Click "**LAUNCH WEB CONSOLE**", and **Login** to Your Virtual Machine.

14. At the Top-Left of the Screen, Click on "**Activities**", and Click on "**Files**" (Blue Drawers Icon)
    a. If you have Setup your .ISO Files Correctly, All Three Should Appear on the Bottom-Left Side of the Files Window, Above "**Other Locations**"

    b.
       i. If you can see the Three .ISO Files you've Added, Proceed to the Next Step. If you cannot see the Three .ISO Files, Try Restarting your Machine and Repeating **Step 14**. If that doesn't work, Try Following the Guide From **Step 9** and Onwards.

15. Open the "**Terminal**", Type in the Command, "**lsblk**", and Press "**Enter**"
    a. This will show you all of the Drives Connected to the Computer (Such as Partitions and External Drives).
    b. Find Where your .ISO Files are Located, and **Make Note of these Locations**

    c.
    d. **Ex:** My "**rhel-8-for-x86_64-appstream-rpms.iso**" Would Be Located in "**/dev/sr0**", since the File Size is about "**89.1G**", which is the largest of the three .ISOs.
       i. The "**/dev**" is for the Device Directory, While "**/sr0**" is for the "**NAME**" for your Corresponding Drive/Partition.
    e. **Ex:** My "**RHEL_Repo_Files.iso**" Would Be Located in "**/dev/sr1**", since the File Size is about "**64K**".
    f. **Ex:** My "**rhel-8-for-x86_64-baseos-rpms.iso**" Would Be Located in "**/dev/sr2**", since the File Size is about "**23.1G**", which is less than the Appstream .ISO File.

16. Now we can Create all the Necessary Directories.
    a. Type in the Command "**sudo mkdir /share**", and Press "**Enter**"
    b. Type in the Command "**sudo mkdir /share/repo**", and Press "**Enter**"
    c. Type in the Command "**sudo mkdir /share/repo/Media**", and Press "**Enter**"
    d. Type in the Command "**sudo mkdir /share/repo/Linux**", and Press "**Enter**"
    e. Type in the Command "**sudo mkdir /share/repo/yum.repos.d**", and Press "**Enter**"
17. Type in the Command "**cd /**", and Press "**Enter**"
    a. Type in the Command "**ls -al**", Press "**Enter**", and Verify that the "**/share**" Directory was Created Successfully.
18. Type in the Command "**sudo chmod 755 -R /share**", Press "**Enter**"
19. Type in the Command "**ls -al**", Press "**Enter**", and Verify that the "**/share**" Folder has the Permissions "**drwxr-xr-x.**".
20. Type in the Command "**cd /share/repo**", and Press "**Enter**"
    a. Type in the Command "**ls -al**", Press "**Enter**", and Verify that the "**/Media**", "**/Linux**", and "**/yum.repos.d**" Directories were Created Successfully.
21. Type in the Command "**sudo mount /dev/[Location of "rhel-8-for-x86_64-appstream-rpms. iso"] /share/repo/Media**", and Press "**Enter**"
    a. **Ex:** My "**rhel-8-for-x86_64-appstream-rpms.iso**" was mounted to "**/dev/sr0**", so the Command I would Input is: "**sudo mount /dev/sr0 /share/repo/Media**"
    b. You should get a Message in the Terminal saying, "*mount: /share/repo/Media: WARNING: device write-protected, mounted read-only.*"
        i. If you get this Message, the Mount was Successful.
22. Type in the Command "**sudo mount /dev/[Location of "RHEL_Repo_Files.iso"] /share/repo /yum.repos.d**", and Press "**Enter**"
    a. **Ex:** My "**RHEL_Repo_Files.iso**" was mounted to "**/dev/sr1**", so the Command I would Input is: "**sudo mount /dev/sr1 /share/repo/yum.repos.d**"
    b. You should get a Message in the Terminal saying, "*mount: /share/repo/yum.repos.d: WARNING: device write-protected, mounted read-only.*"
        i. If you get this Message, the Mount was Successful.
23. Type in the Command "**sudo mount /dev/[Location of "rhel-8-for-x86_64-baseos-rpms.iso"] /share/repo/Linux**", and Press "**Enter**"
    a. **Ex:** My "**rhel-8-for-x86_64-baseos-rpms.iso**" was mounted to "**/dev/sr2**", so the Command I would Input is: "**sudo mount /dev/sr2 /share/repo/Linux**"
    b. You should get a Message in the Terminal saying, "*mount: /share/repo/Linux: WARNING: device write-protected, mounted read-only.*"
        i. If you get this Message, the Mount was Successful.
24. Type in the Command "**cd /share/repo**", and Press "**Enter**"
    a. **To Verify Contents:** Type in the Command "**ls -al Media**", Press "**Enter**", and Verify that the "**/Packages**" and "**/repodata**" Directories are there.
        i. Type in the Command "**ls -al Linux**", Press "**Enter**", and Verify that the "**/Pack ages**" and "**/repodata**" Directories are there.
        ii. Type in the Command "**ls -al yum.repos.d**", Press "**Enter**", and Verify that the "**media.repo**" and "**updates.repo**" Files are there.
25. Type in the Command "**cd /share/repo/yum.repos.d**", and Press "**Enter**"
    a. Type in the Command "**cp media.repo /etc/yum.repos.d**", and Press "**Enter**"
    b. Type in the Command "**cp updates.repo /etc/yum.repos.d**", and Press "**Enter**"
26. Type in the Command "**ls -al /etc/yum.repos.d**", Press "**Enter**", and Verify that the "**media.repo**" and "**updates.repo**" Files are there.
27. Type in the Command "**su adminstrator**" (or whatever account you were previously using), and Press "**Enter**"
28. Type in the Command "**sudo yum update && yum upgrade -y**", Press "**Enter**"
    a. This Command will Install, "**yum update**", and Apply, "**yum upgrade**", the Latest Operating System and Application Updates
        i. The "**-y**" Option will Automatically Accept *most* of the Prompts that Pop-up During the OS and Application Updates

29.

30. The System will then check with the Repository Files, "**AppStreamUpdates**" and "**BaseOS**", to see which Packages have updates available, on the RHEL machine.

31. After all of the Packages (which need to be updated) are discovered, you will get a prompt saying, "**Total size: [#] M**", and below that it will say "**Is this ok [y/N]:** "
    a. Type "**y**", and Press the "**Enter**" Key.

    b.
    ```
    Transaction Summary
    =======================
    Install     5 Packages
    Upgrade   214 Packages


    Total size: 721 M
    Is this ok [y/N]: y
    ```

32. The Package Update will now commence, and it will take about 15 minutes (depending on how many packages need to be updated).

33. When the Updates are Complete you will get message for Packages Updated, "**Upgraded:**", along with a list of Package Names that were Updated, a message for Packages Installed, "**Installed:**", along with a list of Package Names that were Installed, as well as the message "**Complete!**".

    a.
    ```
    Installed:
      grub2-tools-efi-1:2.02-142.el8_7.3.x86_64          kernel-4.18.0-425.19.2.el8_7.x86_64
      kernel-devel-4.18.0-425.19.2.el8_7.x86_64          kernel-modules-4.18.0-425.19.2.el8_7.x86_64

    Complete!
    Updating Subscription Management repositories.
    Unable to read consumer identity

    This system is not registered with an entitlement server. You can use subscription-manager to register.

    Last metadata expiration check: 0:17:15 ago on Fri 21 Jul 2023 02:14:27 PM PDT.
    Dependencies resolved.
    Nothing to do.
    Complete!
    ```

34. Lastly, Reboot the System, to ensure the Package Updates are properly applied.

35. **Note:** You may want to Un-Mount, or Clean-up the Mounted CDs, in the File System for Red Hat Enterprise Linux.
    a. To do this, first Type in the Command "**lsblk**", Press "**Enter**", and make note of which Devices ("**sr0**", "**sr1**", or "**sr2**"... etc) are mounted to the "**/share/repo/~**" Directories.
    b. For the "**sr#**" Mounted to "**/share/repo/Linux**", Type in the Command "**sudo umount /dev/sr#**", Press "**Enter**", Then Type in the Same Command for the Same "**sr#**" Device "**sudo umount /dev/sr#**", and Press "**Enter**".
    c. Then Type in the Command "**lsblk**", and Verify that the "**sr#**", previously associated with the "**/share/repo/Linux**" Directory is Blank, as seen in the Screenshot Below.

    d.
    ```
    sr0                   11:0   1 80.1G  0 rom  /share/repo/Media
    sr1                   11:1   1   64K  0 rom  /share/repo/yum.repos.d
    sr2                   11:2   1 23.1G  0 rom
    [sandbox@localhost yum.repos.d]$
    ```

    e. Repeat Steps "**b**", "**c**", and "**d**" Two More Times, Once for the Device Mounted to "**/share/repo/yum.repos.d**", and Once for the Device Mounted to "**/share/repo/Media**".
    f. After you have Unmounted all of the associated "**/share/repo/~**" Devices, Type in the Command "**lsblk**", and verify that none of the Devices have the Directory "**/share/repo/~**", if this is the case, you are good to go!

    g.
    ```
    [sandbox@localhost ~]$ lsblk
    NAME                    MAJ:MIN RM  SIZE RO TYPE MOUNTPOINT
    sda                       8:0    0  120G  0 disk
    ├─sda1                    8:1    0    1G  0 part /boot
    └─sda2                    8:2    0  119G  0 part
      ├─rhel-root           253:0    0   70G  0 lvm  /
      ├─rhel-swap           253:1    0  7.9G  0 lvm  [SWAP]
      ├─rhel-tmp            253:2    0  4.7G  0 lvm  /tmp
      ├─rhel-var_log_audit  253:3    0  4.7G  0 lvm  /var/log/audit
      ├─rhel-var            253:4    0  4.7G  0 lvm  /var
      ├─rhel-home           253:5    0 17.8G  0 lvm  /home
      ├─rhel-var_log        253:6    0  4.7G  0 lvm  /var/log
      └─rhel-var_tmp        253:7    0  4.7G  0 lvm  /var/tmp
    sr0                      11:0    1 1024M  0 rom
    sr1                      11:1    1   64K  0 rom
    sr2                      11:2    1 1024M  0 rom
    [sandbox@localhost ~]$
    ```

    h. **Side Note:** The reasoning behind preforming the "**sudo umount**" command twice for each given device, is due to the fact that the device was already mounted when it was inserted into the machine, a default directory of sorts. Then, after it was already mounted to the default directory, we mounted it somewhere else as well, which is essentially like putting a shortcut to another shortcut, which leads to the actual file.

36. The Attached "**RHEL_Repo_Files.iso**" Contains Repo Files that do not Utilize "**gpgfile**"s. The "**gpgfile**"s are Utilized when Public Key, and Private Key, Update Validation is Required.
    a. If you want to learn more about the individual components of the Repo Files, Check out the Section Called "**Repository File Components**".

37. You have Successfully Setup a Local Repository in Red Hat Linux, as well as Installed, and Applied, the Latest Operating System and Application Updates! 🙂

Why Should I Setup A Local Repository in Red Hat Linux?

- Having a Local Repository will allow you to Install, and Apply, the Latest Updates for both Applications and the Operating System itself.

- If there is a Critical Vulnerability in the Red Hat Linux OS Version, or Application, that you are using, having a Local Repository will allow you to Install, and Apply, the Latest Updates for both Applications and the Operating System itself.
  - This will allow you to maintain the Security and Integrity of your Red Hat Linux Machine.
- If there are any issues with "Platform Binary" with Applications, such as Java, the Local Repository can be Utilized to Install, and Apply, Updates that could *potentially* Fix issues, such as the "Platform Binary" Issue.

How to Setup a Local Repository in Red Hat Linux (Local Machine/VMWare/VirtualBox)

This Guide will show you how to Setup a Local Repository in Red Hat Linux for a Local Machine, VMWare, and VirtualBox. This guide assumes you have already installed Red Hat Enterprise Linux (RHEL) on the target device, and that you are currently signed into an account with "**sudo**" privileges.

1. **Download** the Attached "**RHEL_Repo_Files.iso**" (Found on the Right Side of this Page)
2. Go to **[Link REDACTED For Security Purposes]**
   a. **Note:** Both of these Downloads Can Take a Good Amount of Time
   b. **Download:** "**rhel-8-for-x86_64-appstream-rpms.iso**" - **Size: 89G**
   c. **Download:** "**rhel-8-for-x86_64-baseos-rpms.iso**" - **Size: 23G**
3. **VirtualBox ONLY**
   a. Click on your Red Hat Enterprise Linux Virtual Machine, and Click on "**Settings**".
      i. Click on "**Storage**", Click on "**Controller: IDE**", Click on [icon], Click "**Optical Drive**", and Click on "**Add**".
      ii. Navigate to where you Stored your "**rhel-8-for-x86_64-appstream-rpms.iso**" File, and Click on it, and Click "**Open**".
      iii. Click the Box that says "**Choose**" at the Bottom Right-Hand Corner.
   b. Click on "**Controller: IDE**", Click on [icon], Click "**Optical Drive**", and Click on "**Add**".
      i. Navigate to where you Stored your "**rhel-8-for-x86_64-baseos-rpms.iso**" File, and Click on it, and Click "**Open**".
      ii. Click the Box that says "**Choose**" at the Bottom Right-Hand Corner.
   c. Click on "**Controller: IDE**", Click on [icon], Click "**Optical Drive**", and Click on "**Add**".
      i. Navigate to where you Stored your "**RHEL_Repo_Files.iso**" File, and Click on it, and Click "**Open**".
      ii. Click the Box that says "**Choose**" at the Bottom Right-Hand Corner, and then Click "**OK**".
4. **VMWare ONLY**
   a. Click on your Red Hat Enterprise Linux Virtual Machine, and Click on "**Edit virtual machine settings**".
      i. Click on "**Add...**", Click on "**CD/DVD Drive**", and Click "**Finish**".
      ii. Click on "**New CD/DVD (SATA)**", Click on "**Use ISO image file:**", and Click "**Browse...**".
      iii. Navigate to where you Stored your "**rhel-8-for-x86_64-appstream-rpms.iso**" File, and Click on it, and Click "**Open**".
      iv. Check the Box that says "**Connected**", and then Click "**OK**".
   b. Click on your Red Hat Enterprise Linux Virtual Machine, and Click on "**Edit virtual machine settings**".
      i. Click on "**Add...**", Click on "**CD/DVD Drive**", and Click "**Finish**".
      ii. Click on "**New CD/DVD (SATA)**", Click on "**Use ISO image file:**", and Click "**Browse...**".
      iii. Navigate to where you Stored your "**rhel-8-for-x86_64-baseos-rpms.iso**" File, and Click on it, and Click "**Open**".
      iv. Check the Box that says "**Connected**", and then Click "**OK**".
   c. Click on your Red Hat Enterprise Linux Virtual Machine, and Click on "**Edit virtual machine settings**".
      i. Click on "**Add...**", Click on "**CD/DVD Drive**", and Click "**Finish**".
      ii. Click on "**New CD/DVD (SATA)**", Click on "**Use ISO image file:**", and Click "**Browse...**".
      iii. Navigate to where you Stored your "**RHEL_Repo_Files.iso**" File, and Click on it, and Click "**Open**".
      iv. Check the Box that says "**Connected**", and then Click "**OK**".
5. **Local Machine ONLY**
   a. Copy the "**rhel-8-for-x86_64-appstream-rpms.iso**", "**rhel-8-for-x86_64-baseos-rpms.iso**", and "**RHEL_Repo_Files.iso**" Files to an External Drive, and Insert the External Drive into the RHEL Machine.
6. **Power On**, and **Login**, to your Red Hat Linux Virtual/Local Machine
7. At the Top-Left of the Screen, Click on "**Activities**", and Click on "**Files**" (Blue Drawers Icon)
   a. If you have Setup your .ISO Files Correctly, All Three Should Appear on the Bottom-Left Side of the Files Window, Above "**Other Locations**"

b.

    i. If you can see the Three .ISO Files you've Added, Proceed to the Next Step. If you cannot see the Three .ISO Files, Try Restarting your Machine and Repeating **Step 7**. If that doesn't work, Try Following the Guide From **Step 3** and Onwards.

8. Open the "**Terminal**", Type in the Command, "**lsblk**", and Press "**Enter**"
   a. This will show you all of the Drives Connected to the Computer (Such as Partitions and External Drives).
   b. Find Where your .ISO Files are Located, and **Make Note of these Locations**

   ```
   [sandbox@localhost ~]$ lsblk
   NAME                 MAJ:MIN RM  SIZE RO TYPE MOUNTPOINT
   sda                      8:0    0  120G  0 disk
   ├─sda1                   8:1    0    1G  0 part /boot
   └─sda2                   8:2    0  119G  0 part
     ├─rhel-root          253:0    0   70G  0 lvm  /
     ├─rhel-swap          253:1    0  7.9G  0 lvm  [SWAP]
     ├─rhel-tmp           253:2    0  4.7G  0 lvm  /tmp
     ├─rhel-var_log_audit 253:3    0  4.7G  0 lvm  /var/log/audit
     ├─rhel-var           253:4    0  4.7G  0 lvm  /var
     ├─rhel-home          253:5    0 17.8G  0 lvm  /home
     ├─rhel-var_log       253:6    0  4.7G  0 lvm  /var/log
     └─rhel-var_tmp       253:7    0  4.7G  0 lvm  /var/tmp
   sr0                     11:0    1 89.1G  0 rom  /run/media/sandbox/CDROM1
   sr1                     11:1    1   64K  0 rom  /run/media/sandbox/05_03_2023
   sr2                     11:2    1 23.1G  0 rom  /run/media/sandbox/CDROM
   [sandbox@localhost ~]$
   ```
   c.
   d. **Ex:** My "**rhel-8-for-x86_64-appstream-rpms.iso**" Would Be Located in "**/dev/sr0**", since the File Size is about "**89.1G**", which is the largest of the three .ISOs.
          i. The "**/dev**" is for the Device Directory, While "**/sr0**" is for the "**NAME**" for your Corresponding Drive/Partition.
   e. **Ex:** My "**RHEL_Repo_Files.iso**" Would Be Located in "**/dev/sr1**", since the File Size is about "**64K**".
   f. **Ex:** My "**rhel-8-for-x86_64-baseos-rpms.iso**" Would Be Located in "**/dev/sr2**", since the File Size is about "**23.1G**", which is less than the Appstream .ISO File.

9. Now we can Create all the Necessary Directories.
   a. Type in the Command "**sudo mkdir /share**", and Press "**Enter**"
   b. Type in the Command "**sudo mkdir /share/repo**", and Press "**Enter**"
   c. Type in the Command "**sudo mkdir /share/repo/Media**", and Press "**Enter**"
   d. Type in the Command "**sudo mkdir /share/repo/Linux**", and Press "**Enter**"
   e. Type in the Command "**sudo mkdir /share/repo/yum.repos.d**", and Press "**Enter**"

10. Type in the Command "**cd /**", and Press "**Enter**"
    a. Type in the Command "**ls -al**", Press "**Enter**", and Verify that the "**/share**" Directory was Created Successfully.

11. Type in the Command "**sudo chmod 755 -R /share**", Press "**Enter**"

12. Type in the Command "**ls -al**", Press "**Enter**", and Verify that the "**/share**" Folder has the Permissions "**drwxr-xr-x.**".

13. Type in the Command "**cd /share/repo**", and Press "**Enter**"
    a. Type in the Command "**ls -al**", Press "**Enter**", and Verify that the "**/Media**", "**/Linux**", and "**/yum.repos.d**" Directories were Created Successfully.

14. Type in the Command "**sudo mount /dev/[Location of "rhel-8-for-x86_64-appstream-rpms.iso"] /share/repo/Media**", and Press "**Enter**"
    a. **Ex:** My "**rhel-8-for-x86_64-appstream-rpms.iso**" was mounted to "**/dev/sr0**", so the Command I would Input is: "**sudo mount /dev/sr0 /share/repo/Media**"
    b. You should get a Message in the Terminal saying, "*mount: /share/repo/Media: WARNING: device write-protected, mounted read-only.*"
           i. If you get this Message, the Mount was Successful.

15. Type in the Command "**sudo mount /dev/[Location of "RHEL_Repo_Files.iso"] /share/repo/yum.repos.d**", and Press "**Enter**"
    a. **Ex:** My "**RHEL_Repo_Files.iso**" was mounted to "**/dev/sr1**", so the Command I would Input is: "**sudo mount /dev/sr1 /share/repo/yum.repos.d**"
    b. You should get a Message in the Terminal saying, "*mount: /share/repo/yum.repos.d: WARNING: device write-protected, mounted read-only.*"
           i. If you get this Message, the Mount was Successful.

16. Type in the Command "**sudo mount /dev/[Location of "rhel-8-for-x86_64-baseos-rpms.iso"] /share/repo/Linux**", and Press "**Enter**"
    a. **Ex:** My "**rhel-8-for-x86_64-baseos-rpms.iso**" was mounted to "**/dev/sr2**", so the Command I would Input is: "**sudo mount /dev/sr2 /share/repo/Linux**"
    b. You should get a Message in the Terminal saying, "*mount: /share/repo/Linux: WARNING: device write-protected, mounted read-only.*"
           i. If you get this Message, the Mount was Successful.

17. Type in the Command "**cd /share/repo**", and Press "**Enter**"
    a. **To Verify Contents:** Type in the Command "**ls -al Media**", Press "**Enter**", and Verify that the "**/Packages**" and "**/repodata**" Directories are there.

<blockquote>

i. Type in the Command "**ls -al Linux**", Press "**Enter**", and Verify that the "**/Pack ages**" and "**/repodata**" Directories are there.

ii. Type in the Command "**ls -al yum.repos.d**", Press "**Enter**", and Verify that the "**media.repo**" and "**updates.repo**" Files are there.
</blockquote>

18. Type in the Command "**cd /share/repo/yum.repos.d**", and Press "**Enter**"
    a. Type in the Command "**sudo cp media.repo /etc/yum.repos.d**", and Press "**Enter**"
    b. Type in the Command "**sudo cp updates.repo /etc/yum.repos.d**", and Press "**Enter**"
19. Type in the Command "**ls -al /etc/yum.repos.d**", Press "**Enter**", and Verify that the "**media.repo**" and "**updates.repo**" Files are there.
20. Type in the Command "**sudo yum update && yum upgrade -y**", Press "**Enter**"
    a. This Command will Install, "**yum update**", and Apply, "**yum upgrade**", the Latest Operating System and Application Updates
        i. The "**-y**" Option will Automatically Accept *most* of the Prompts that Pop-up During the OS and Application Updates

21.
22. The System will then check with the Repository Files, "**AppStreamUpdates**" and "**BaseOS**", to see which Packages have updates available, on the RHEL machine.
23. After all of the Packages (which need to be updated) are discovered, you will get a prompt saying, "**Total size: [#] M**", and below that it will say "**Is this ok [y/N]:** "
    a. Type "**y**", and Press the "**Enter**" Key.

    b.
24. The Package Update will now commence, and it will take about 15 minutes (depending on how many packages need to be updated).
25. When the Updates are Complete you will get message for Packages Updated, "**Upgraded:**", along with a list of Package Names that were Updated, a message for Packages Installed, "**Insta lled:**", along with a list of Package Names that were Installed, as well as the message "**Complet e!**".

    a.
26. Lastly, Reboot the System, to ensure the Package Updates are properly applied.
27. **Note:** You may want to Un-Mount, or Clean-up the Mounted CDs, in the File System for Red Hat Enterprise Linux.
    a. To do this, first Type in the Command "**lsblk**", Press "**Enter**", and make note of which Devices ("**sr0**", "**sr1**", or "**sr2**"... etc) are mounted to the "**/share/repo/~**" Directories.
    b. For the "**sr#**" Mounted to "**/share/repo/Linux**", Type in the Command "**sudo umount /dev/sr#**", Press "**Enter**", Then Type in the Same Command for the Same "**sr#**" Device "**sudo umount /dev/sr#**", and Press "**Enter**".
    c. Then Type in the Command "**lsblk**", and Verify that the "**sr#**", previously associated with the "**/share/repo/Linux**" Directory is Blank, as seen in the Screenshot Below.

    d.
    e. Repeat Steps "**b**", "**c**", and "**d**" Two More Times, Once for the Device Mounted to "**/shar e/repo/yum.repos.d**", and Once for the Device Mounted to "**/share/repo/Media**".

      f. After you have Unmounted all of the associated "**/share/repo/~**" Devices, Type in the Command "**lsblk**", and verify that none of the Devices have the Directory "**/share/repo /~**", if this is the case, you are good to go!

```
[sandbox@localhost ~]$ lsblk
NAME                  MAJ:MIN RM   SIZE RO TYPE MOUNTPOINT
sda                       8:0   0   120G  0 disk
├─sda1                    8:1   0    1G  0 part /boot
└─sda2                    8:2   0   119G  0 part
  ├─rhel-root           253:0   0    70G  0 lvm  /
  ├─rhel-swap           253:1   0   7.9G  0 lvm  [SWAP]
  ├─rhel-tmp            253:2   0   4.7G  0 lvm  /tmp
  ├─rhel-var_log_audit  253:3   0   4.7G  0 lvm  /var/log/audit
  ├─rhel-var            253:4   0   4.7G  0 lvm  /var
  ├─rhel-home           253:5   0  17.8G  0 lvm  /home
  ├─rhel-var_log        253:6   0   4.7G  0 lvm  /var/log
  └─rhel-var_tmp        253:7   0   4.7G  0 lvm  /var/tmp
sr0                      11:0   1 1024M  0 rom
sr1                      11:1   1   64K  0 rom
sr2                      11:2   1 1024M  0 rom
[sandbox@localhost ~]$
```

      g.

      h. **Side Note:** The reasoning behind preforming the "**sudo umount**" command twice for each given device, is due to the fact that the device was already mounted when it was inserted into the machine, a default directory of sorts. Then, after it was already mounted to the default directory, we mounted it somewhere else as well, which is essentially like putting a shortcut to another shortcut, which leads to the actual file.

28. The Attached "**RHEL_Repo_Files.iso**" Contains Repo Files that do not Utilize "**gpgfile**"s. The "**gpgfile**"s are Utilized when Public Key, and Private Key, Update Validation is Required.
      a. If you want to learn more about the individual components of the Repo Files, Check out the Section Called "**Repository File Components**".
29. You have Successfully Setup a Local Repository in Red Hat Linux, as well as Installed, and Applied, the Latest Operating System and Application Updates! 🙂

Understanding Repository File Components in Red Hat Linux

This Guide will Explain some of the Various Components of the .REPO Files in Red Hat Linux. This Guide will teach you how to create, and utilize your own .REPO Files in Red Hat Linux.

The Pre-Configured "updates.repo" File

---

updates.repo

```
[BaseOSUpdates]
name=Red Hat Enterprise Linux 8 BaseOS
mediaid=None
metadata_expire=-1
gpgcheck=0
cost=500
enabled=1
baseurl="file:///share/repo/Linux"
gpgfile="file:///etc/pki/rpm-gpg/RPM-GPG-KEY-redhat-release"

[AppStreamUpdates]
name=Red Hat Enterprise Linux 8 AppStream
mediaid=None
metadata_expire=-1
gpgcheck=0
cost=500
enabled=1
baseurl="file:///share/repo/Media"
gpgfile="file:///etc/pki/rpm-gpg/RPM-GPG-KEY-redhat-release"
```

1. The "**[BaseOSUpdates]**" and "**[AppStreamUpdates]**" Sections are the Headers for a given Repository. These are used to Identify the Configuration Section for a given Repository.
2. The "**name=**" Section Stands for the Name of the Operating System, and Type of Repository, associated with the Repo File that you are Installing.
      a. You can put anything for this Section, this Section is useful if you want to keep track of the Specific Operating System, as well as the Type of Repository, that you are Targeting.
3. The "**metadata_expire=**" Section Stands for the Amount of Time, in Days, Until the Repository is Checked for a Metadata Update.
      a. **Ex:** "**metadata_expire=-1**" **-** This means that the Repository will Never be Checked for a Metadata Update.
      b. **Ex:** "**metadata_expire=7d**" **-** This means that the Repository will be Checked for a Metadata Update in 7 Days.
4. The "**gpgcheck=**" Section Indicates whether or not it will Verify the GPG Signature on the Package, for a given Repository. The "**gpgcheck=**" Value can be False: "**0**", or True: "**1**".

      a. **Ex:** "**gpgcheck=0**", the GPG Signature Will NOT be Verified for the given Repo File.

      b. **Ex:** "**gpgcheck=1**", the GPG Signature Will Be Verified for the given Repo File, Using the File Outlined in the "**gpgfile=**" Section Below.

5. The "**enabled=**" Section Indicates if the given Repository Section, in a .REPO File, Should be Enabled: "**1**", or Disabled: "**0**".

6. The "**baseurl=**" Section Stands for the Location of the .ISO Repository File.

      a. **Format:** "**baseurl="file://[Repository File Directory Path]"**"

            i. **Ex:** "**baseurl="file:///share/repo/Media"**" **-** This depicts that the Target .ISO Repository File is Stored in "**/share/repo/Media**".

7. The "**gpgfile=**" Section Stands for the Location of the File that Stores the GPG Signatures (Public and Private Keys).

      a. **Format:** "**baseurl="file://[GPG File Directory Path]"**"

            i. **Ex:** "**baseurl="file:///etc/pki/rpm-gpg/RPM-GPG-KEY-redhat-release"**" **-** This depicts that the Target GPG File is Stored in "**/etc/pki/rpm-gpg/RPM-GPG-KEY-redhat-release**".

8. Additional Information on .REPO Files can be Found on the Red Hat Developer Website: **https://developers.redhat.com/articles/2022/10/07/whats-inside-rpm-repo-file#**