

Installing Red Hat using the Embedded SATA Controller with the megaSR swraid driver and OS drive steering for common device usage

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Summary

When trying to install on later series M4 or M5 rack mount servers, the OS has trouble with the embedded raid controller and installing to the correct drives.

this document will help resolve the issue of the correct modules, and drives being loaded for redhat operating Systems.

Issue: Previously , in Red Hat 6.10 and below, the way to install was to map the Server installer ISO and then do a whole bunch of extra steps to get the drivers and os installed. further complicating things, In RHEL 7.1 and later, the file type of the dud.img driver image was changed to dd.iso. The Cisco IMC virtual drive mapper can map only one .iso file at a time, and only as a virtual CD/DVD.

Workaround: This procedure simplified the steps by renaming the dd.iso driver file to dd.*img* before mapping. This allows you to map the RHEL installation ISO as a virtual CD/DVD and the renamed dd.img driver file as a virtual floppy disk or virtual removable disk at the same time. RHEL still detects the dd.img as dd.iso; it is only the Cisco IMC virtual drive mapper that sees it as an img file. please note, upon installation wizard initialization the disk may show up as a separate disk / partition then what is wanted for install. this can cause confusion due to how linux modules are loaded on installer. to resolve this please follow the steps at the bottom of this document to preserve the disk nomenclature for M.2 install.

Procedure

For the specific supported OS versions, see the [Hardware and Software Compatibility Matrix](#) for your server release.

This topic describes the fresh installation of the RHEL device driver on systems that have the embedded MegaRAID stack.

Note: If you use an embedded RAID controller with Linux, both the pSATA and the sSATA controller must be set to LSI SW RAID mode.

Before you begin

Before you install this driver on an embedded controller, you must configure a RAID drive group

on the embedded controller that controls the drives where you will install the OS (pSATA and/or sSATA).

To access the configuration utility, open the BIOS Setup Utility, go to the **Advanced** tab, and then choose the utility instance for the embedded controller:

For pSATA, select LSI Software RAID Configuration Utility (SATA)

For sSATA, select LSI Software RAID Configuration Utility (sSATA)

Procedure Steps

- Step 1 • Download the Cisco UCS C-Series drivers' ISO. See <http://www.cisco.com/cisco/software/navigator.html>
Extract the dd.iso file:
1. Burn the Cisco UCS C-Series Drivers ISO image to a disk.
- Step 2 2. Browse the contents of the drivers folders to the location of the embedded MegaRAID drivers:
/<OS>/Storage/Intel/C600-M5/
3. Copy the dd.iso file to a temporary location on your workstation.
4. Rename the saved dd.iso to dd.img.
- Step 3 Log in to the server's Cisco IMC interface.
Launch a Virtual KVM console window and click the **Virtual Media** tab.
Click **Add Image** and browse to select your remote RHEL installation ISO image.
Note: An .iso file can be mapped only as a virtual CD/DVD.
- Step 4 Click **Add Image** again and browse to select your RHEL 7.x dd.img file that you renamed in step 2.
Note: Map the dd.img file as a virtual floppy disk or virtual removable disk.
Check the check boxes in the **Mapped** column for the media that you just added, then wait for mapping to complete.
- Step 5 Power-cycle the target server.
- Step 6 Press **F6** when you see the F6 prompt during bootup. The Boot Menu window opens.
Note: Do not press Enter in the next step to start the installation. Instead, press **e** to edit installation parameters.
- Step 7 On the Boot Menu window, use the arrow keys to select **Install Red Hat Enterprise Linux** and then press **e** to edit installation parameters.
Append the following blacklist command to the end of the line that begins with **linuxefi**:
- Step 8 • For RHEL 7.x (32- and 64-bit), type:
linux dd modprobe.blacklist=ahci nodmraid
- Step 9 **Optional:** To see full, verbose installation status steps during installation, delete the **Quiet** parameter from the line.
- Step 10 On the Boot Menu window, press **Ctrl+x** to start the interactive installation.
Below **Driver disk device selection**, select the option to install your driver .img file. (Type **r** to refresh the list if it is not populated.)
Note: The installer recognizes the driver file as an .iso file, even though you renamed it to dd.img for mapping.
- Step 11 Type the number of the driver device ISO in the list. Do *not* select the RHEL ISO image. In the following example, type **6** to select device sdb:
5) sr0 iso9660 RHEL-7.6x20Server.x
6) sdb iso9660 CDROM
to select, 'r' - refresh, or 'c' -continue: **6**

The installer reads the driver file and lists the drivers.

Under **Select drivers to install**, type the number of the line that lists the megaraid driver. In the following example, type 1:

Step 1) [] /media/DD-1/rpms/x86_61/kmod-megasr-18.01.2010.1107_e17.6-1.x86_61.rpm

12 # to toggle selection, or 'c' -continue: 1

Your selection is displayed with an X in brackets.

1) [X] /media/DD-1/rpms/x86_61/kmod-megasr-18.01.2010.1107_e17.6-1.x86_61.rpm

Step 13 Type **c** to continue.

Step 14 Follow the RHEL installation wizard to complete the installation.

Step 15 When the wizard's Installation Destination screen is displayed, ensure that **LSI MegaSR** is listed as a selection. If it is not listed, the driver did not load successfully. In that case, select **Rescan Disc**.

Step 16 After the installation completes, reboot the target server.

Using Redhat options to preserve megaraid as bootable os raid disks.

when installing, a common scenario is to have /dev/sda be the install. this is to make sure that the OS always has /dev/sda for /boot /boot/EFI and then lvm preserving data disks/luns for data only and OS luns to have the bootable options. since the m.2 drives use swraid, and hwraid is used for data, sometimes the installer will pick the wrong drive after install to boot to.

from the OS settings below after install we can preserve the functionality and os drive mapping by performing the following per Redhat solution [How do I change the order of storage devices during boot in RHEL 7?](#) below:

Step 1:

Edit the /etc/sysconfig/grub file and modify GRUB_CMDLINE_LINUX line like below:

```
GRUB_CMDLINE_LINUX="rd.lvm.lv=rootvg/rootlv rd.lvm.lv=rootvg/swaplv rd.driver.pre=megasr rd.driver.post=megaraid_sas"
```

Step 2:

After saving the changes in /etc/sysconfig/grub, run following command to write the GRUB configuration

```
On BIOS-based machines ( legacy boot ): ~]# grub2-mkconfig -o /boot/grub2/grub.cfg
```

```
On UEFI-based machines: ~]# grub2-mkconfig -o /boot/efi/EFI/redhat/grub.cfg
```

upon reboot /dev/sda will be the megaraid disk and then hwraid will be the other raid/disk.

you can run the following commands to confirm this.

```
On UEFI-based machines: ~]# grub2-mkconfig -o /boot/efi/EFI/redhat/grub.cfg
```

Cisco UCS reference documentation for M4/M5 servers with

M.2 /Embedded SATA raid controller and linux

B-series:

[B200-m5 with M.2 storage install linux](#)

[B480-m5 with M.2 storage install linux](#)

C-Series:

[C220-m4 M.2 storage install linux](#)

[C220-M5 with M.2 storage install linux](#)

[C240-m4 with M.2 install linux](#)

[C240-m5 with M.2 Storage install linux](#)

[C480-m5- with M.2 Storage install linux](#)

[C480-m5-ML with M.2 Storage install linux](#)

S-Series:

[S3260-M5 with m.2/SSD embedded SATA controller](#)