RSA NETWITNESS® PLATFORM

Series 6 Add-on Card Guide

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October 2019

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About this Document

This document is a step by step guide for installing and replacing add-on cards in RSA NetWitness Platform Series 6 physical hosts (appliances).

The hardware setup instructions in this document are for hardware only; they do not apply to a specific release of NetWitness Platform software. After completing the hardware setup, please continue setup and configuration of the NetWitness Server physical host as described in the NetWitness Platform online documentation at RSA Link (https://community.rsa.com/docs/DOC-40370).

This document is not a replacement for the original manufacturer's documentation; it contains information specifically for the NetWitness Platform physical hosts.

Note: When viewing a printed guide, be aware that a newer version of the guide may be available online at RSA Link in RSA NetWitness Platform under Hardware Setup Guides: https://community.rsa.com/community/products/netwitness/hardware-setup-guides

Install a Series 6 Host PCI Expansion Card

Expansion cards can be installed in RSA NetWitness Platform physical hosts to add functionality to the system. This topic provides the general procedure for installing a PCI expansion card into the NetWitness Platform Series 6 hosts. All but one of the Series 6 hosts are based on the Dell PowerEdge R640 chassis. The exception is the Hybrid host, which is based on the Dell PowerEdge R740xd chassis.

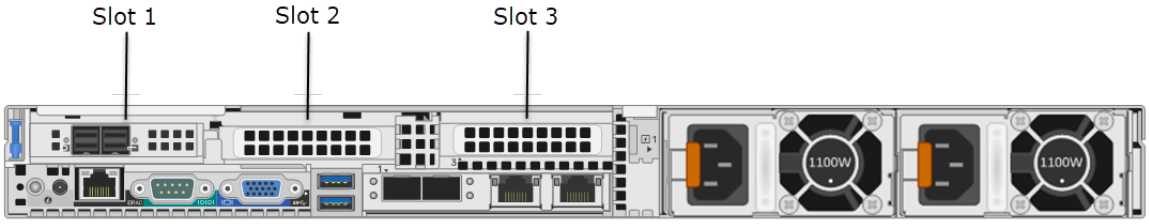
PCI Expansion Card Kit Package Contents

The kit consists of the following:

- One PCI Expansion Card
- ESD Wrist Strap
- Warranty Label

An Emulex kit also includes two fiber channel LC-LC multimode 6M cables.

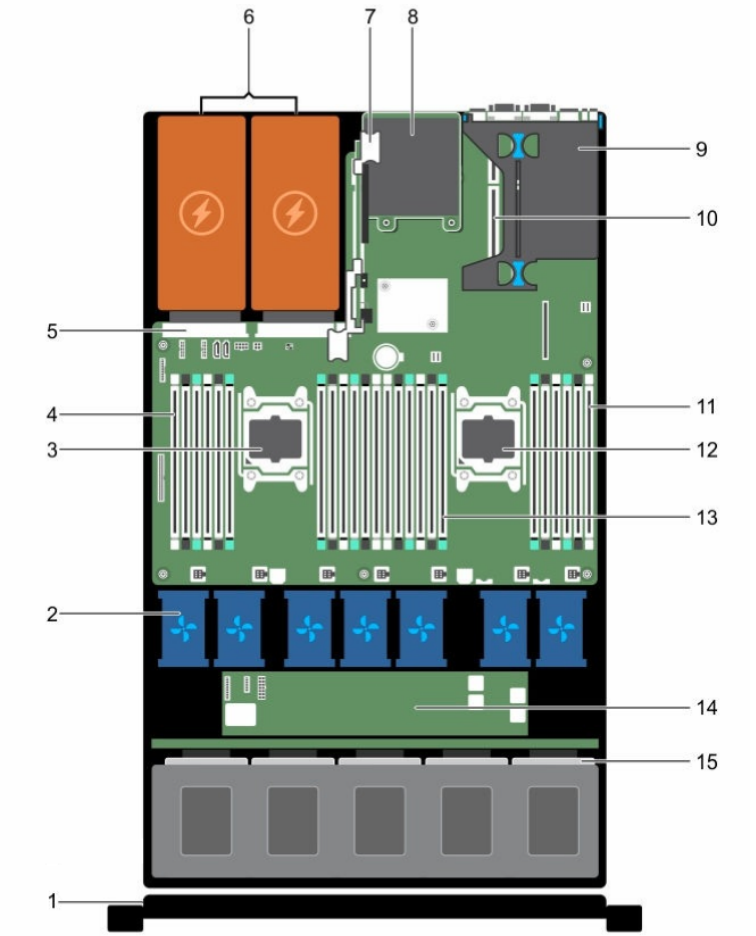
Rear View of Series 6 Hosts (Except Hybrid)



Slot 1 already contains a PERC H840 RAID controller.
When adding an Emulex Fiber Channel (FC) PCI expansion card, install the FC card in Slot 2.
When adding an Intel Ethernet Quad Port (QP) or Intel FC Dual Port (DP) PCI expansion card, install the QP/DP card in Slot 2 or Slot 3.
To install another PERC H840 controller so that you can connect DACs and PowerVaults to the same Series 6 host, install the additional PERC H840 in slot 3. See also PERC Card Firmware Installation.

Note: A missing or an unsupported card riser logs an SEL event. It does not prevent your system from powering on and a BIOS POST message or F1/F2 pause is not displayed.

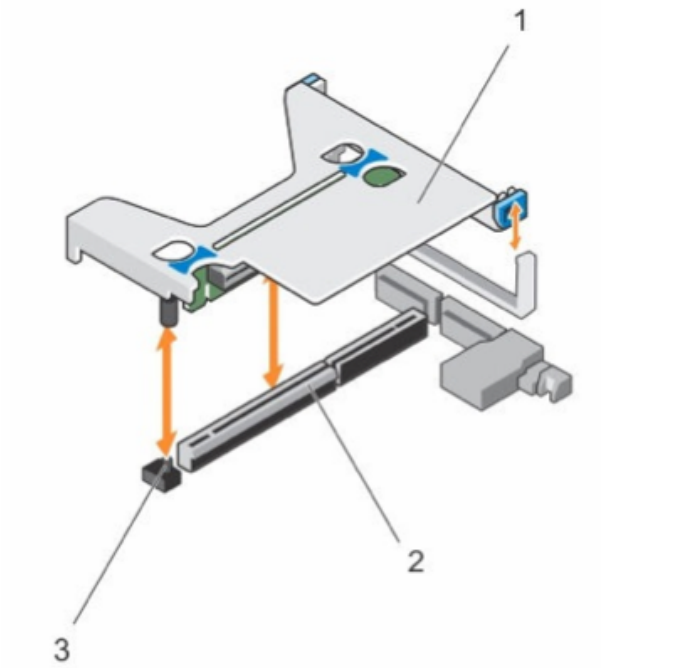
R640 System Board



Key	Description	Key	Description
1	Control panel location	9	Riser card 1
2	Cooling fans (7)	10	Riser card 2
3	Processor 1	11	DIMMs (6)
4	DIMMs (6)	12	Processor 2
5	PSU connector	13	DIMMs (12)
6	Power supply (2)	14	Expander board
7	Riser card 3	15	Hard drive
8	Network daughter card		

Expansion Card Riser in the R640

The following figure shows the parts involved when removing or installing the expansion card riser 1.



Key	Description
1	Expansion-card riser 1
2	Connector
3	Riser guide pin

Install a PCI Expansion Card in an R640 Host

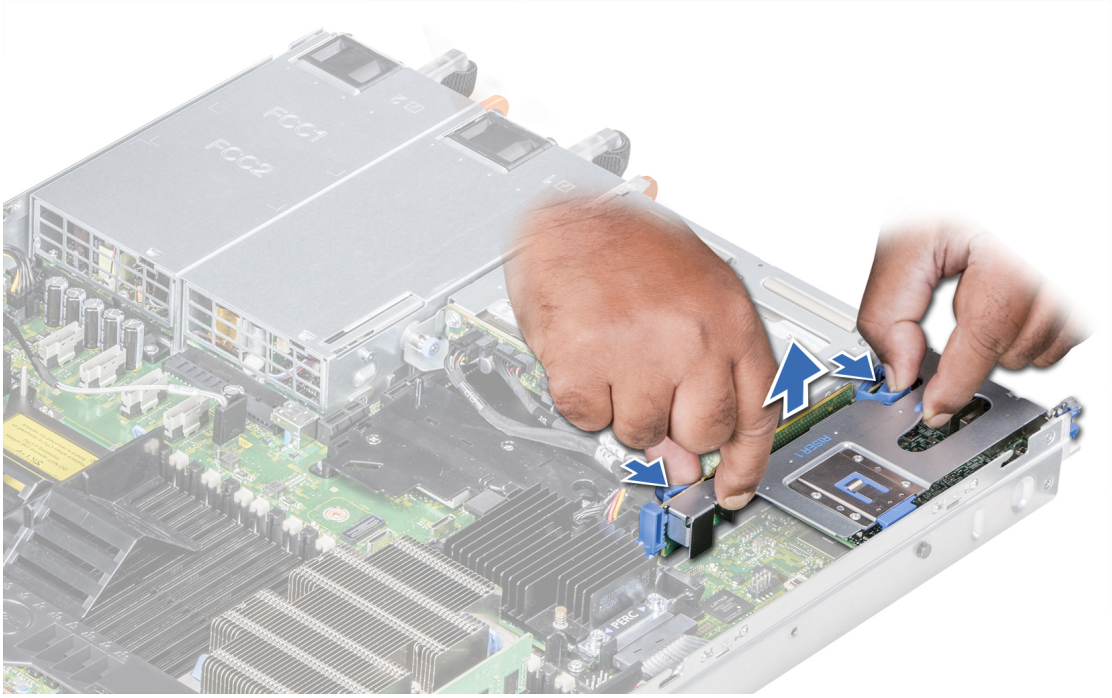
The following procedure shows how to remove and install the expansion-card riser to install a PCI expansion card in a NetWitness Platform Series 6 R640 host. When adding an Emulex Fiber Channel (FC) PCI expansion card for a Storage Area Network (SAN), such as VNX or VNX2, install the FC card in Slot 2. To install another PERC H840 controller so that you can connect DACs and PowerVaults to the same Series 6 host, install the additional PERC H840 in slot 3. See also PERC Card Firmware Installation.

Caution: Many repairs may only be done by a certified service technician. You should only perform troubleshooting and simple repairs as authorized in your product documentation, or as directed by the online or telephone service and support team. Damage due to servicing that is not authorized by RSA is not covered by your warranty. Read and follow the safety instructions that came with the product.

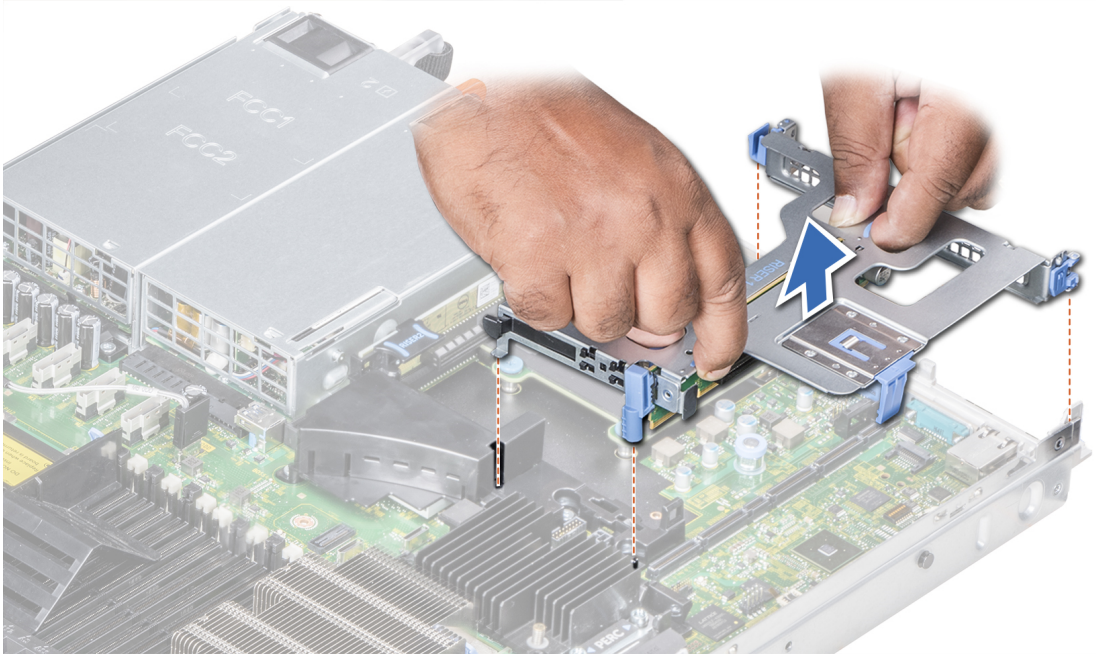
Note: As long as the repairs and servicing made are allowed under customer support, your warranty will not be voided.

1. Turn off the system, including any attached peripherals.
2. Disconnect the system from the electrical outlets, any attached peripherals, and any network interface cables.
3. Make sure to protect yourself by wearing an anti-static wrist strap before touching any internal parts.
   An ESD wrist strap is provided for this purpose.
4. Remove the Warranty label on the server.
5. Open the system.
6. Holding the touch points, lift the expansion-card riser from the riser connector on the system board.

   The following figure shows the steps for removal of expansion riser 1B.

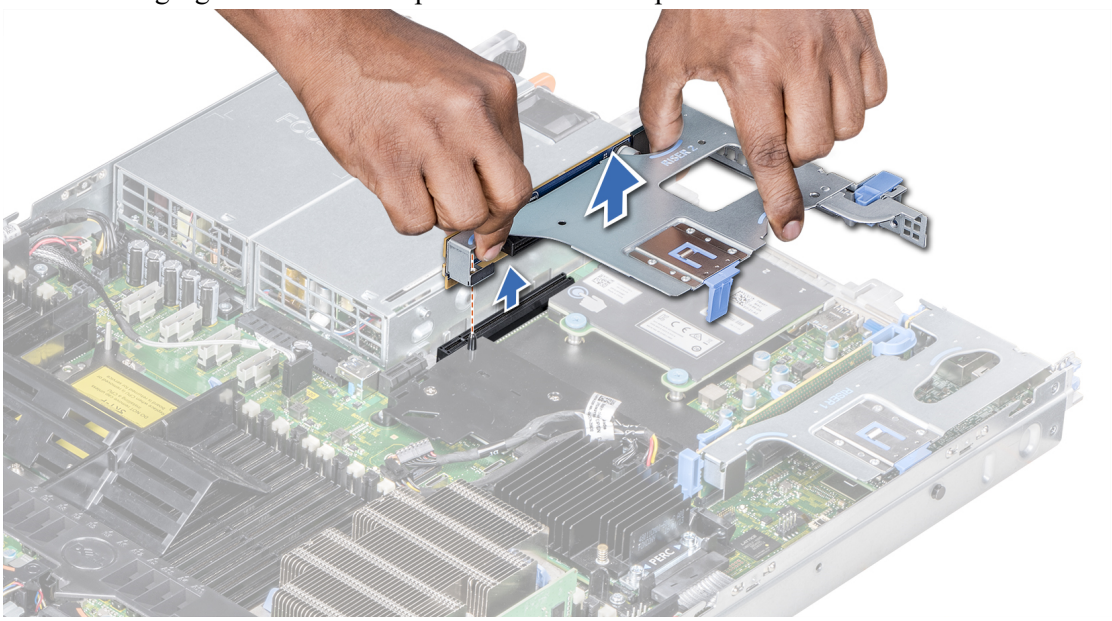


The following figure shows the steps for removal of expansion riser 1A.



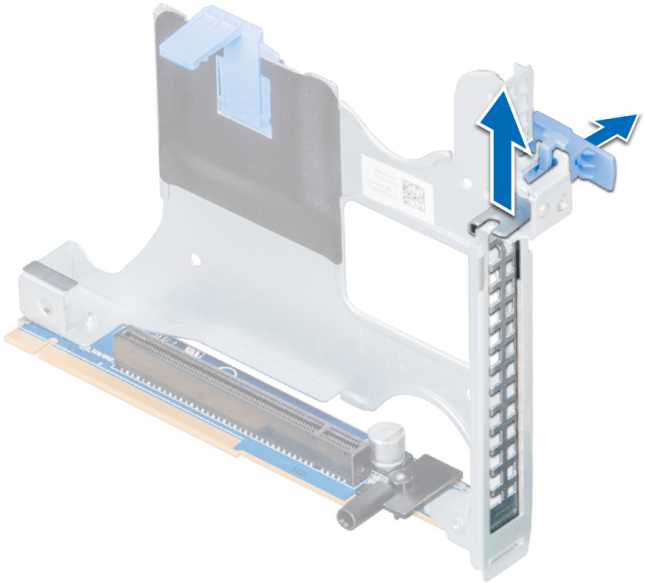
The following figure shows the steps for removal of expansion riser 2A.

The following figure shows the steps for removal of expansion riser 2B.

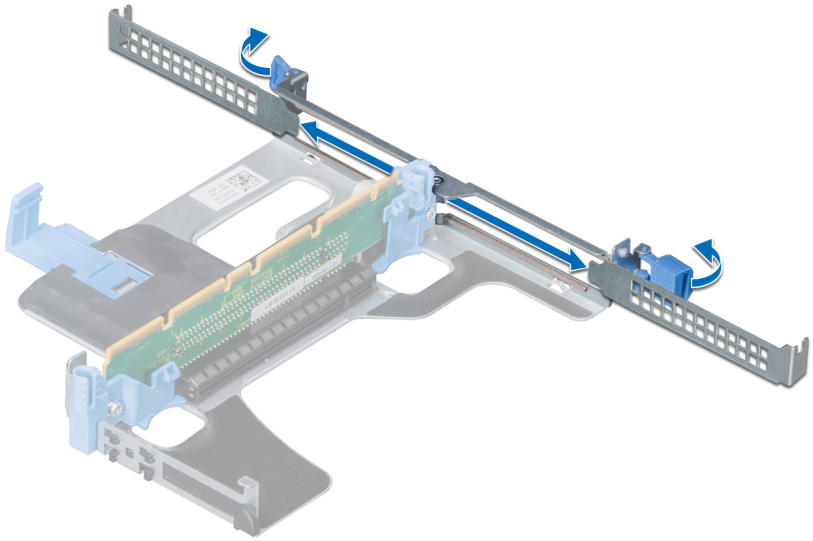


7. If applicable, lift the expansion card latch and remove the filler bracket.

   The following figure shows the steps for removal of the metal filler bracket on Riser 2B.

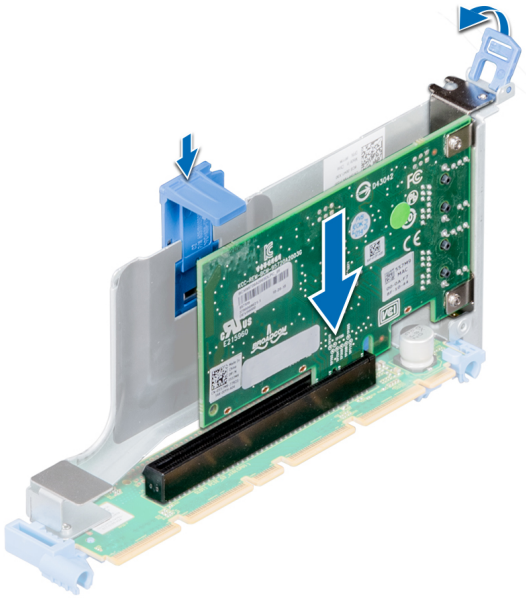


The following figure shows the steps for removal of the metal filler bracket on Riser 1A.

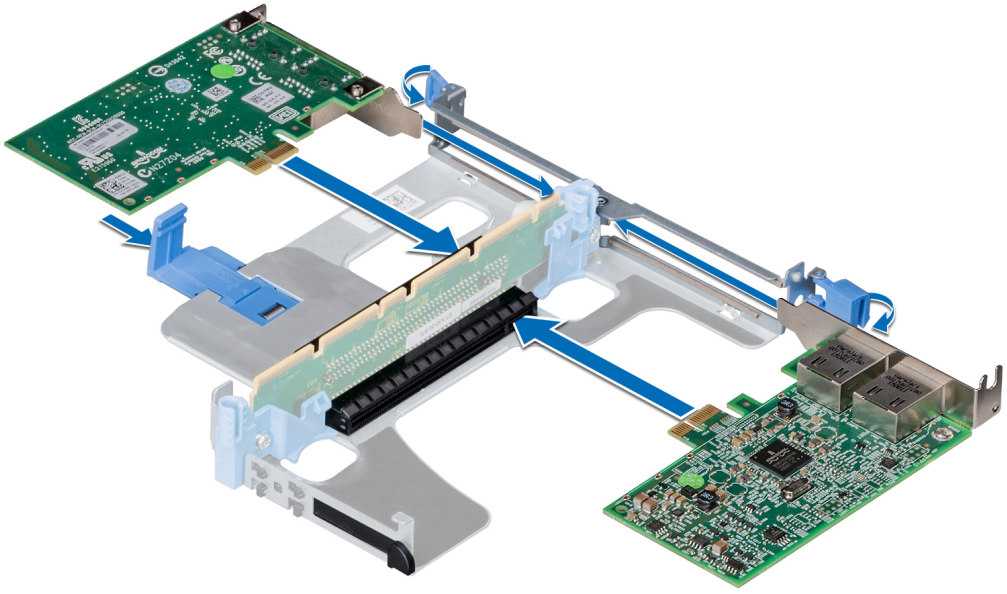


8. Hold the card by its edges, and align the card edge connector with the expansion card connector on the riser.
9. Insert the card edge connector firmly into the expansion card connector until the card is fully seated.
10. Close the expansion card latch.

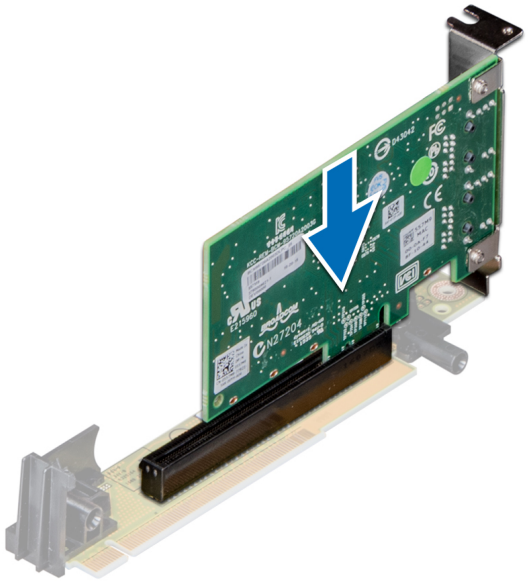
The following figure shows the installation of an expansion card into the expansion riser 1B.



The following figure shows the installation of an expansion card into the expansion riser 1A.

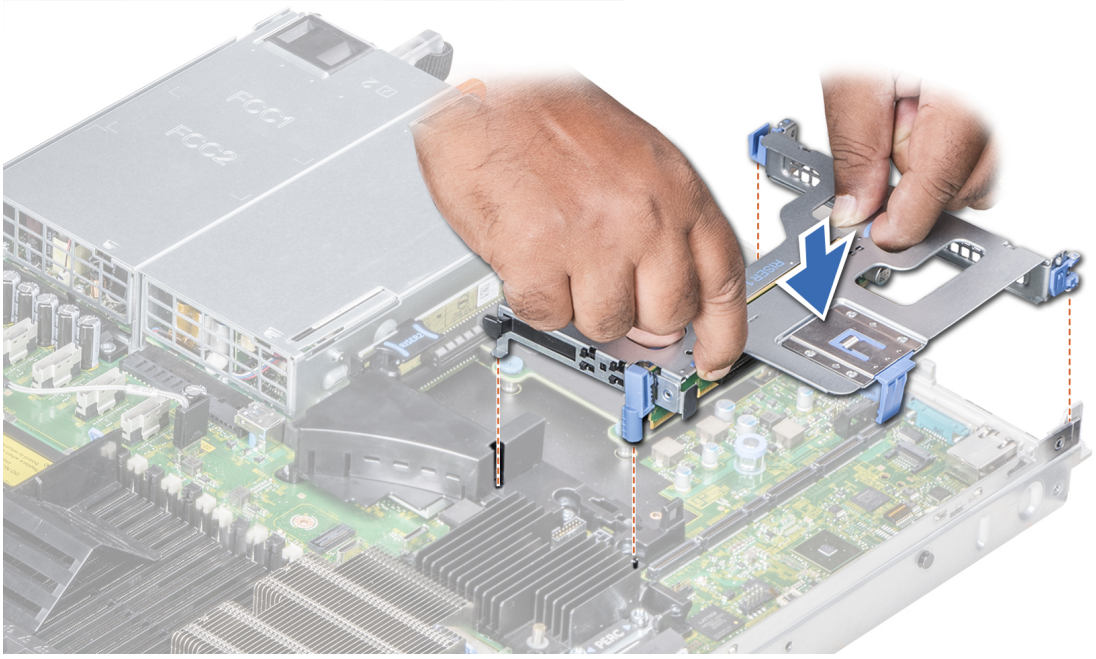


The following figure shows the installation of an expansion card into the expansion riser 2A.

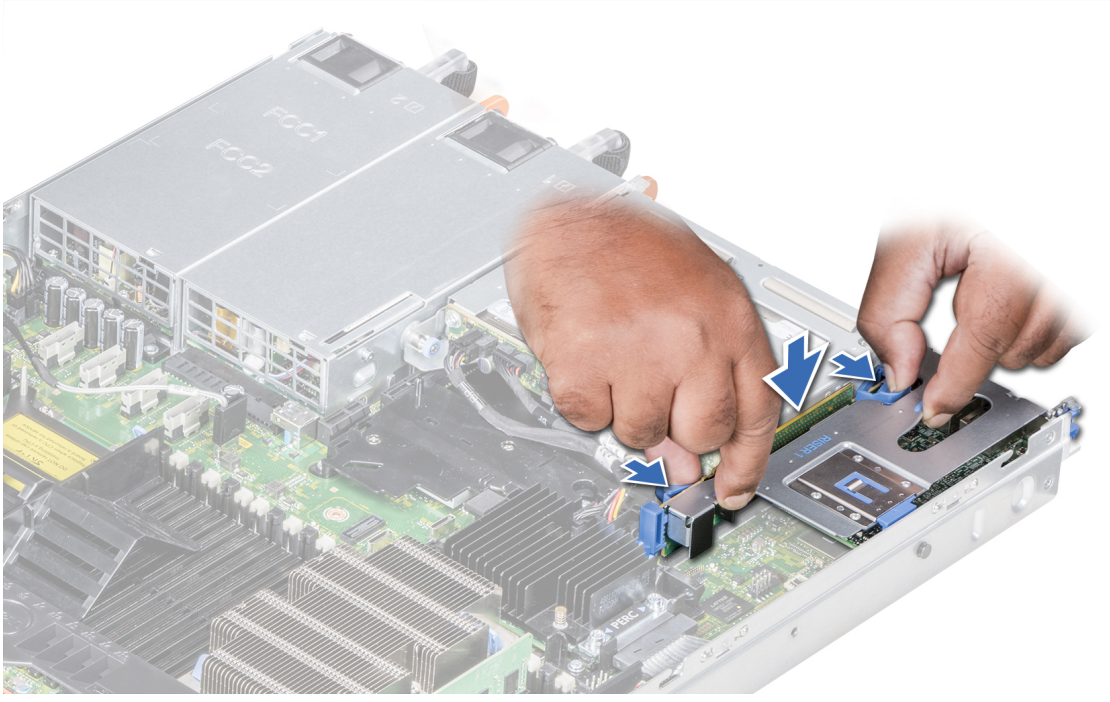


11. Holding the touch points, align the expansion-card riser with the connector and the riser guide pin on the system board.
12. Lower the expansion-card riser into place until the expansion-card riser connector is fully seated in the connector.

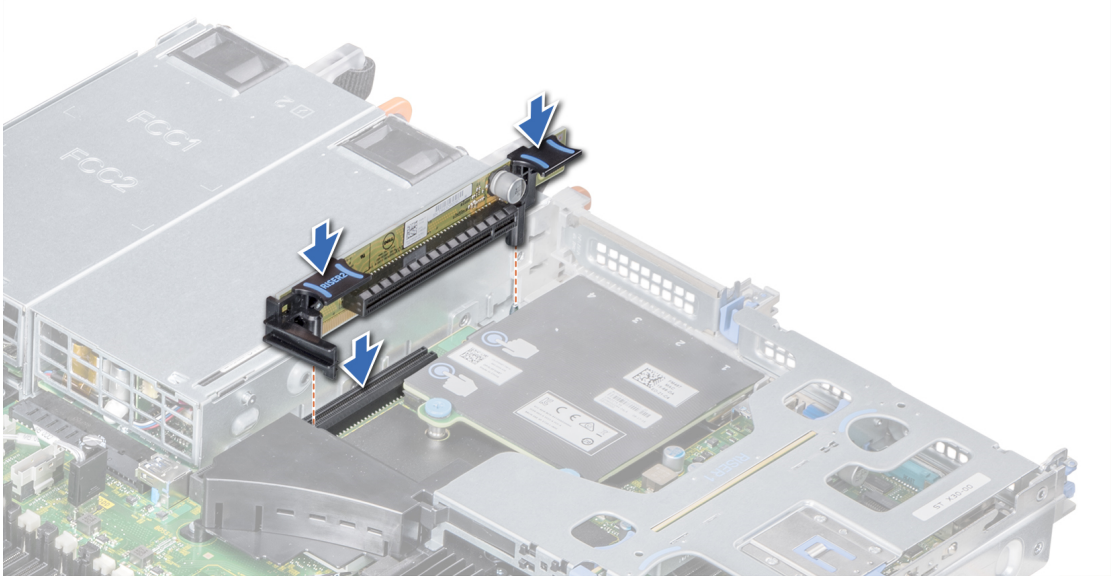
The following figure shows the installation of expansion riser 1B.



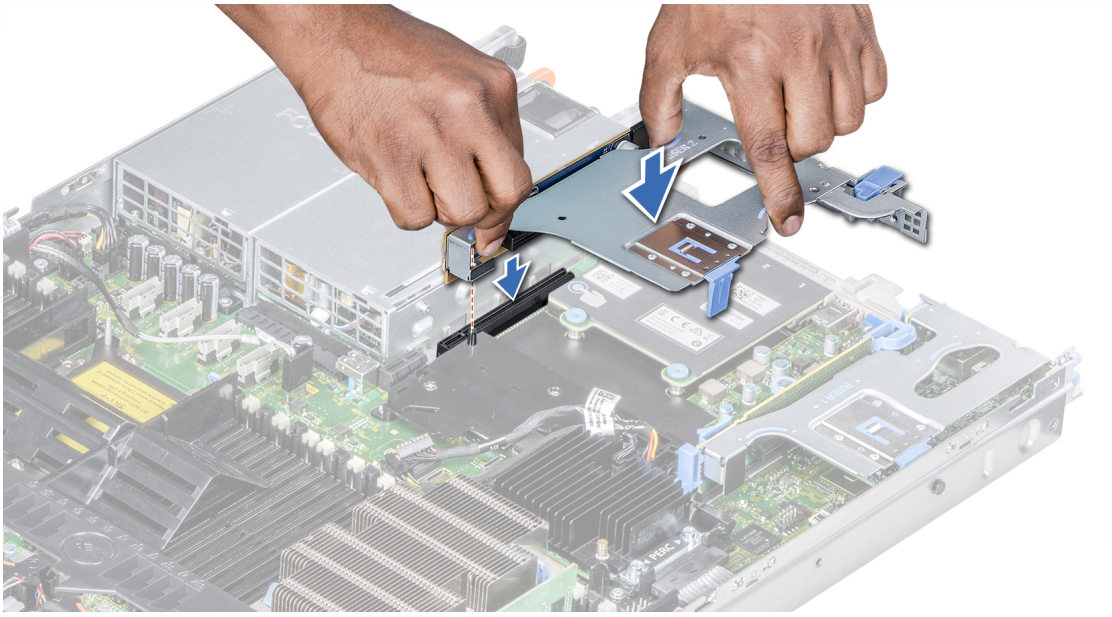
The following figure shows the installation of expansion riser 1A.



The following figure shows the installation of expansion riser 2A.

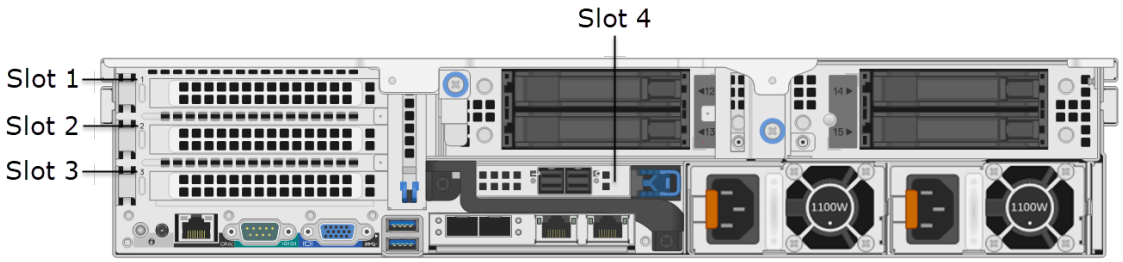


The following figure shows the installation of expansion riser 2B.



13. Close the system.
14. Replace the Warranty label on the server with a new label provided with the PCI card.
15. Reconnect the system to the electrical outlets and any attached peripherals, including any network interface cables.

Rear View of Series 6 Hybrid Host

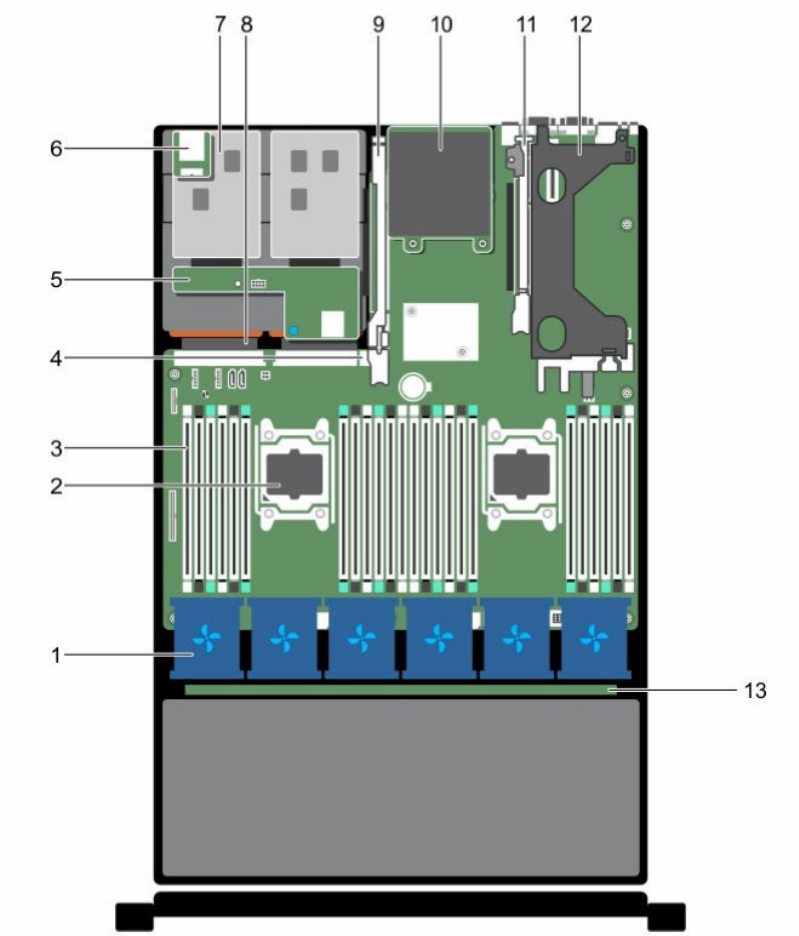


Slot 4 already contains a PERC H840 RAID controller. The PERC H840 card is installed inverted (upside down) in slot 4, which means that port is on the right and port 1 is on the left on the R740xd Hybrid. You must attach cables to the R740xd with the connector's white or blue tab on the bottom.

When adding an Intel FC Dual Port (DP) PCI expansion card, install the DP card in Slot 1.
When adding an Emulex Fiber Channel (FC) PCI expansion card, install the FC card in Slot 2.
When adding an Intel Ethernet Quad Port (QP) PCI expansion card, install the QP card in Slot 3.

Note: A missing or an unsupported card riser logs an SEL event. It does not prevent your system from powering on and a BIOS POST message or F1/F2 pause is not displayed.

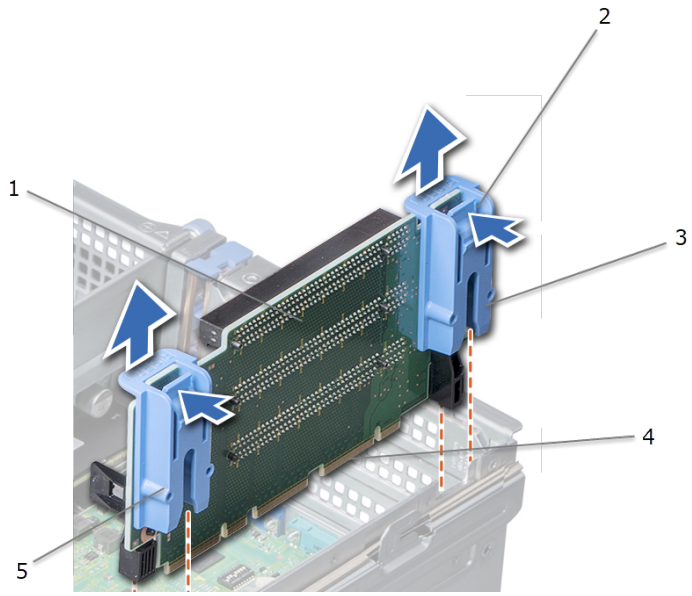
R740xd (Hybrid) System Board



Key	Description	Key	Description
1	Cooling fan in the cooling fan assembly (6)	8	Power supply unit (2)
2	Processor (2)	9	Expansion-card riser 3
3	DIMMs (24)	10	Network daughter card
4	Internal USB port	11	Expansion-card riser 2
5	Hard drive backplane (back)	12	Expansion-card riser 1
6	vFlash media slot	13	Hard drive backplane
7	Hard drive (2) (back)		

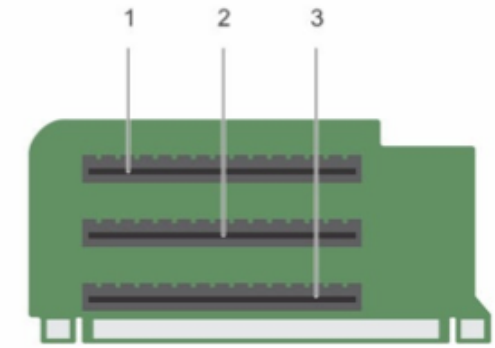
Expansion Card Riser in the R740xd (Hybrid)

The following figure shows the parts involved when removing or installing the expansion-card riser.



Key	Description	Key	Description
1	Expansion-card riser	4	Expansion-card riser connector
2	Riser release latch	5	Riser guide-back (left)
3	Riser guide-back (right)		

The following figure shows the connectors on expansion card riser 1.



Key	Description
1	Expansion card slot 1
2	Expansion card slot 2
3	Expansion card slot 3

Install a PCI Expansion Card in an R740xd (Hybrid) Host

The following procedure shows how to remove and install the expansion card riser to install a PCI expansion card in a NetWitness Platform Series 6 R740xd (Hybrid) host. When adding an Emulex Fiber Channel (FC) PCI expansion card for a Storage Area Network (SAN), such as VNX or VNX2, install the FC card in Slot 2.

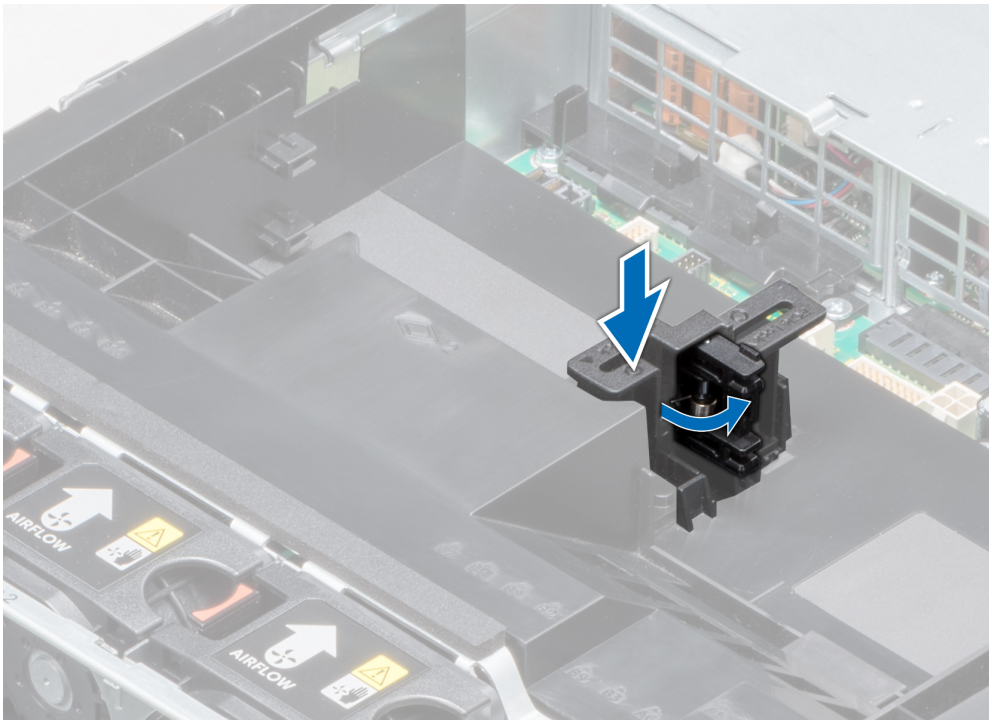
Caution: Many repairs may only be done by a certified service technician. You should only perform troubleshooting and simple repairs as authorized in your product documentation, or as directed by the online or telephone service and support team. Damage due to servicing that is not authorized by RSA is not covered by your warranty. Read and follow the safety instructions that came with the product.

Note: As long as the repairs and servicing made are allowed under customer support, your warranty will not be voided.

1. Turn off the system, including any attached peripherals.
2. Disconnect the system from the electrical outlets, any attached peripherals, and any network interface cables.
3. Make sure to protect yourself by wearing an anti-static wrist strap before touching any internal parts.
   An ESD wrist strap is provided for this purpose.

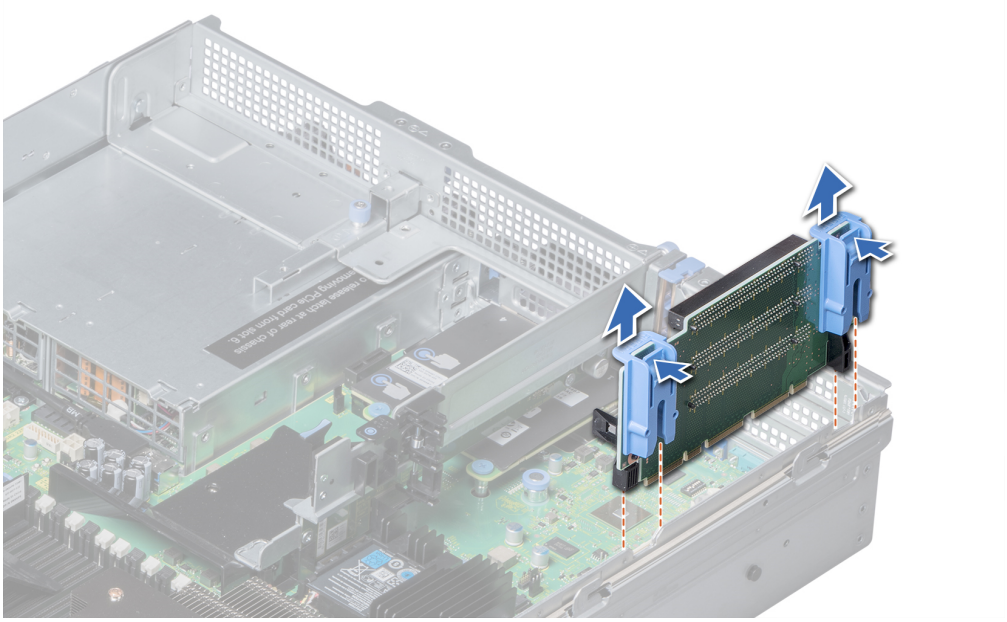
4. Remove the Warranty label on the server.
5. Open the system.
6. For full length PCI cards, open the PCI card holder latch by pressing the release tab.

   The following figure shows the opening of the PCIe card holder latch.



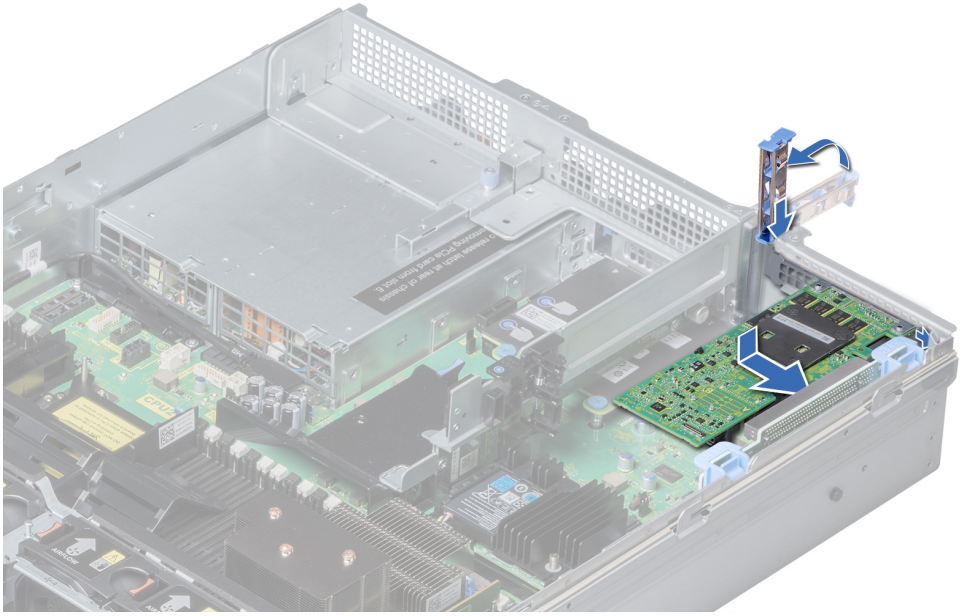
7. (Optional) Press the release latches, and lift the expansion riser 1 from the riser connector on the system board.

The following figure shows the removal of the expansion card riser.



8. Remove the metal filler bracket from the appropriate slot.
9. Holding the card by its edges, position the PCI expansion card so that the card-edge connector aligns with the expansion card connector.
10. Insert the card-edge connector firmly into the expansion card connector until the card is fully seated.

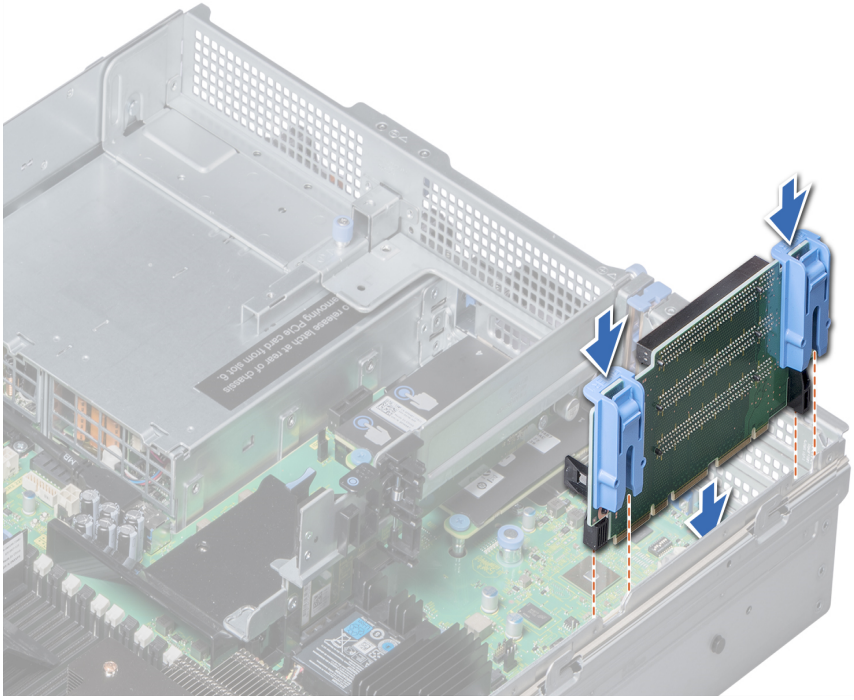
    The following figure shows the installation of the expansion card into the expansion card riser.



11. (Optional) Align the guide rails on the riser with the standoffs on the side of the system.

12. (Optional) Lower the riser into the system until the riser connector engages with the connector on the system board.

    The following figure shows the installation of the expansion card riser.



13. Close the PCIe card holder latch by pushing the latch until it locks.

    The following figure shows the closing of the PCIe card holder latch.

14. Close the system.
15. Replace the Warranty label on the server with a new label provided with the PCI card.
16. Reconnect the system to the electrical outlets and any attached peripherals, including any network interface cables.

Install PERC Card Firmware

A PERC card is the RAID controller for the storage expansion JBOD, such as a DAC or PowerVault. After installing a PERC Card in your physical host, you must go to the Product Advisory links to get the latest qualified firmware and install it. This ensures that you have the latest qualified code. There are different models of this card, such as PERC H830 and PERC H840.

Identify the PERC Card Model Number

To identify the model number of your PERC card, in the rear of the physical host, look at the face of the card bracket. Since these cards do not share the same firmware code, you need to know the model number to download the correct firmware. The following figure shows a PERC H840 card.

Get the Latest Qualified Firmware and Install It

Download the latest qualified firmware for your PERC card model from the link below and install it.

RSA NetWitness Availability of BIOS & iDRAC Firmware Updates:
https://community.rsa.com/docs/DOC-79266

Replace the PERC Card

A PERC card is the RAID controller for the storage expansion JBOD, such as a DAC or PowerVault. After replacing a PERC Card in your physical host (appliance), you must go to the Product Advisory links to get the latest qualified firmware and install it. This ensures that you have the latest qualified code. See Install PERC Card Firmware.

Prerequisites

RSA Product Set: NetWitness Platform

RSA Version/Condition: 11.x

Platform: CentOS 7

PERC Card Replacement Procedure

1. In **/etc/fstab**, comment out (by adding a # to the beginning of the line) all filesystems that mount under **/var/netwitness**.
2. (optional but recommended) Edit **/boot/grub/grub.conf** and remove the following part of the active boot section's 'kernel' line: **`'console=ttyS0,115200n8r'`**. This disables serial console redirection at boot if the appliance goes into maintenance mode because it is not able to mount a RAID filesystem. If you do not follow this step and the appliance goes into maintenance mode at boot, you will only be able to see the prompts and interact with the OS by attaching a console device to the serial port rather than by using VGA, keyboard, and mouse.
3. Stop capture on the Decoder. You should do this before shutting down the service to ensure that all indexes are saved properly, which prevents having to reindex any sessions upon the next start of the service.
4. Stop the service with the **`systemctl stop nwdecoder`** (NW11.x/CentOS7) command.
5. Run this command to shut down the appliance:
   `shutdown -h now`
6. Make a note of which ports are connected to the DACs and which internal port is connected to the internal RAID enclosure.
7. Open the case and perform the swap of the RAID controller, plugging the cables back in to their original slots. Move the cable for the old battery backup unit (BBU) from the old to the new controller. Power the appliance back on.

8. During boot, you should see a message that says 'foreign configuration detected' on the RAID controller, or words to that effect. Select **F** to try to import. It is alright if you miss this part; the RAID configuration can be imported after the OS boots.
9. The OS should now fully boot since you commented out all of the hardware RAID file systems in step 1.
10. Run **nwraidutil.pl** on the appliance. Check for the presence of all enclosures. If all RAID disks are reported as being online, skip ahead to step 13. If the RAID disks are in an Unconfigured(Good) state, skip ahead to step 12. If you do not see all of your expected enclosures, check your cabling and ensure that all cables are connected to the same ports as before the swap (see step 6).
11. If the disks are in an Unconfigured(Bad) state, run this command:

    Note: For newer versions of NetWitness 11.x, you may need to substitute **/opt/MegaRAID/MegaCli/MegaCli64** with **/opt/MegaRAID/perccli/perccli64** if the commands return an error.

    /opt/MegaRAID/MegaCli/MegaCli64 PDMakeGood -PhysDrv [ENCLOSURE:DISK,ENCLOSURE:SLOT] -a0
    Substitute the enclosure and slot number for each drive in an Unconfigured(Bad) state, and substitute the correct adapter number (for example, -a1) where appropriate. If successful, go to step 12.

    Example:

    ```
    /opt/MegaRAID/MegaCli/MegaCli64 PDMakeGood -PhysDrv
    [6:0,6:2,6:3,6:4,6:5,6:6,6:7,6:8,6:9,6:10,6:11,6:11] -a0
    ```

    ```
    /opt/MegaRAID/MegaCli/MegaCli64 PDMakeGood -PhysDrv
    [25:1,25:2,25:3,25:4,25:5,25:6,25:7,25:8,25:9,25:10,25:11,25:
    12] -a1
    ```

    If successful, go to step 12. If you cannot get past this step, open a case with RSA NetWitness Support for assistance and attach the output of **nwtech.sh -d** to the case.
12. If the disks in step 10 are in a foreign state (run **nwraidutil.pl** again to verify), run these commands:

    /opt/MegaRAID/MegaCli/MegaCli64 -CfgForeign -Import -aall

    If successful, proceed to step 13. If you cannot get past this step, open a case with RSA NetWitness Support for assistance and attach the output of **nwtech.sh -d** to the case.
13. Run the following commands:

    pvscan

    vgscan

```
lvscan
lvdisplay -C
vgmknodes
```

14. If the above commands indicate that physical volumes (PV) and volume groups (VG) are detected but **'lvdisplay -C'** indicates the logical volumes (LV) are not online (the attributes will be **'-wi---'** if offline, **'-wi-ao'** if online), then run these commands:

    ```
    lvchange -ay /dev/<VG>/<LV>
    vgmknodes
    ```

    Example:

    ```
    lvchange -ay /dev/decodersmall/decoroot
    lvchange -ay /dev/decodersmall/index
    lvchange -ay /dev/decodersmall/metadb
    lvchange -ay /dev/decodersmall/sessiondb
    lvchange -ay /dev/decoder/packetdb
    lvchange -ay /dev/decoder0/packetdb
    lvchange -ay /dev/decoder1/packetdb
    vgmknodes
    ```

15. If the output of steps 13 and 14 show that all LVM RAID volumes are detected and online, you can remove the comments you added in step 1 to the **/var/netwitness** filesystems in **/etc/fstab**.

16. Run the following command:

    ```
    mount -a
    ```

    If your filesystems do not mount, open a case with RSA NetWitness Support for assistance and attach the output of nwtech.sh -d to the case.

17. If all went well and all of the RAID filesystems mounted, you can start the Decoder process back up with **systemctl start nwdecoder** (NW11.x/CentOS7) and watch **/var/log/messages** for errors. If the Decoder fails to load, open a case with RSA NetWitness Support for assistance and attach the *full* output of nwtech.sh to the case.

Revision History

Date	Description
October 9, 2019	Initial Release