

PHILIPS

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NeuViz 16

Workspace Replacement and Repair



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Revision B

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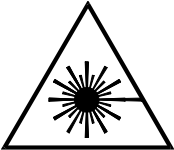

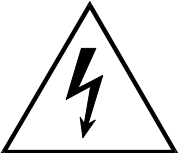
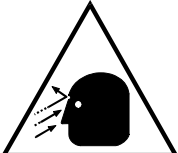
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Symbol Descriptions

	Attention symbol		Radiation warning symbol
	Laser warning symbol		Biohazard warning symbol
	Magnetism warning symbol		Projectile warning symbol

Revision History

ECO #	Revision	Date	Comments
	1.0	July 08, 2009	New release
	B	April 2010	Added Replacing the Data Receiving Card on page 27 Added Dell Service Tag Transfer Updated Replacing the Memory on page 36 Updated Replacing the Hard Disk on page 18

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Introduction

Overview

This manual contains the following sections:

- [Important Safety Information](#) on page 2
- [Opening and Closing the Console Rack](#) on page 4
 - [Opening the Computer](#) on page 6
 - [Opening the Computer](#) on page 6
 - [Closing the Computer](#) on page 11
 - [Log on and Startup Procedure](#) on page 12
- [Host Computer Parts Replacement](#) on page 13
 - [Replacing the Host Computer](#) on page 13
 - [Replacing Host Computer FRUs](#) on page 17
- [Console Rack Components Replacement](#) on page 40

Important Safety Information



WARNING

Prior to beginning any system installation or maintenance make sure that you are familiar with all of the safety procedures in the Safety User Guide. If you don't have a copy you can download it from the InCenter.

Precautionary Measures Regarding Electrical Voltage

Before you start the procedures outlined in this section make sure that you read and understand the warnings listed below.



WARNING

Prior to performing any service or maintenance of inside components:

- **Power OFF all of the following:**
The Wall Box
Regulator or Isolation Transformer
Gantry Main Power switch.
- **Make sure that no other person can turn power ON or turn the security measures OFF while the service procedures are being performed.**


Repair and Replacement Preparation

Log Off and Turn Off Procedure

NOTE If possible, perform a backup of all critical files and all images before you proceed.

When replacing parts on the Host computer, log Off the application and shutdown the power as follows:

Turn Off the Host Computer

1. Click  and then click **Logout**.
2. On Windows Desktop, click **Start|Turn Off Computer|Turn Off to Turn Off Computer**.
3. Confirm by clicking **Turn Off**.

Turn OFF Power

1. Turn OFF the output power from the UPS (optional) by pressing the **0** button (optional).
2. Turn OFF the Gantry Power and the Wall Box/Power Stability/Isolation Transformer.



WARNING

To guard against electrical shock, always unplug your computer from the electrical outlet before opening the cover.

Before removing a component from the system board, verify that the standby power light on the system board has turned off. (To locate this light, see the inside service label.)

Opening and Closing the Console Rack

Opening the Console Rack

1. Open the Front Door, and release the two screws that secure the Computer Chassis.
2. Remove the two screws that secure the Rack Rear Cover.
3. Open the Rack Rear Cover.



Figure 1: Rack Front

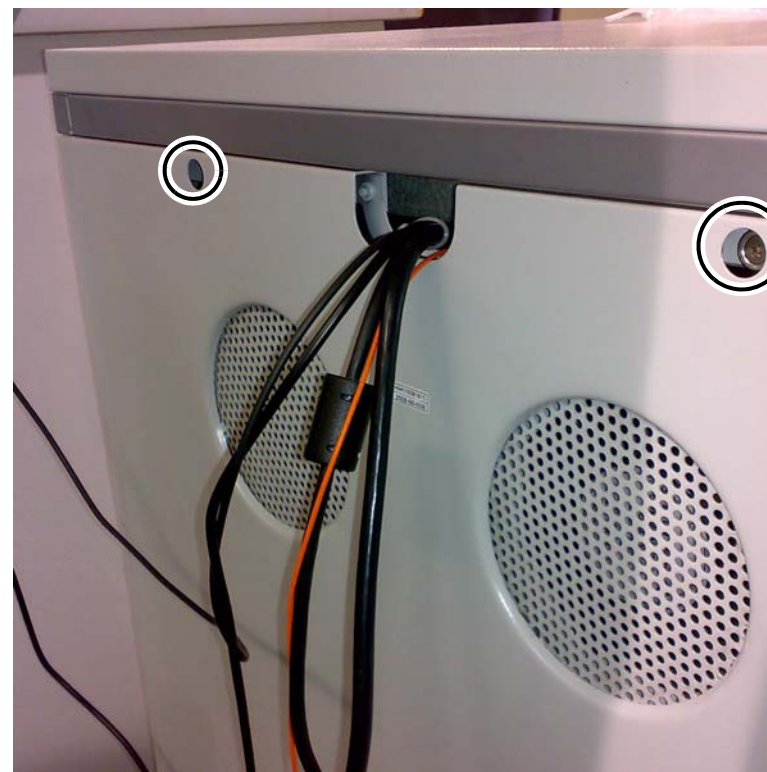


Figure 2: Rack Rear

4. Disconnect the GND cable and the Fans Power Cable.
5. Remove the Rack Rear Cover.

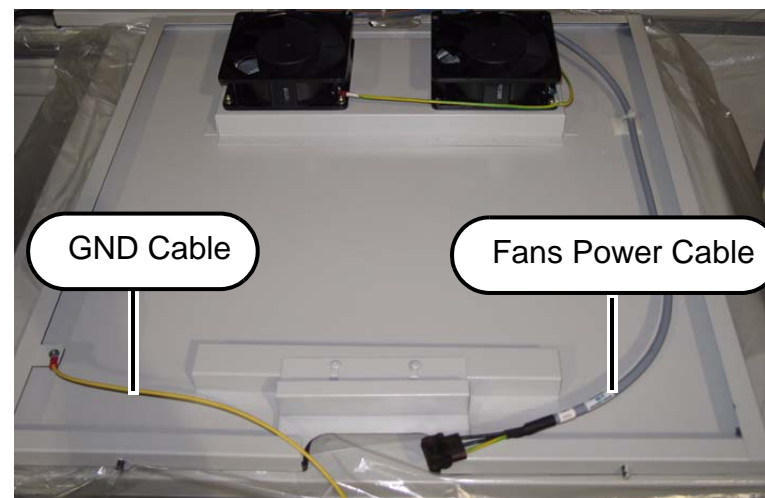


Figure 3: Console Rack Fans

Closing the Console Rack

1. Connect the GND cable and Fans Power Cable.
2. Position the computer and secure the Computer Carriage.
3. Replace the Rack Rear Cover and secure it with the screws removed when opening it.

Servicing the Computer

Opening the Computer



WARNING

Before disconnecting a device from the computer, turn off power off the computer and turn off the on-site power switch.

Before removing a component from the system board, verify that the standby power light on the system board has turned off. To locate this light, see the interior service label.

1. Turn Off the computer according to the [Log Off and Turn Off Procedure](#) on page 3.
2. Open the Console Rack according to [Opening and Closing the Console Rack](#) on page 4.
3. Put on a wrist grounding strap, and clip it to an unpainted metal surface, such as the computer chassis.
4. Disconnect all the computer cable connections and remove the computer from its chassis in the Console Rack.

NOTE To avoid damage and scraping the computer covers, place the computer on a protective surface.

5. Lay the computer gently on its side.

NOTE While you work, periodically touch any unpainted metal surface on the computer to dissipate any static electricity that could harm internal components.

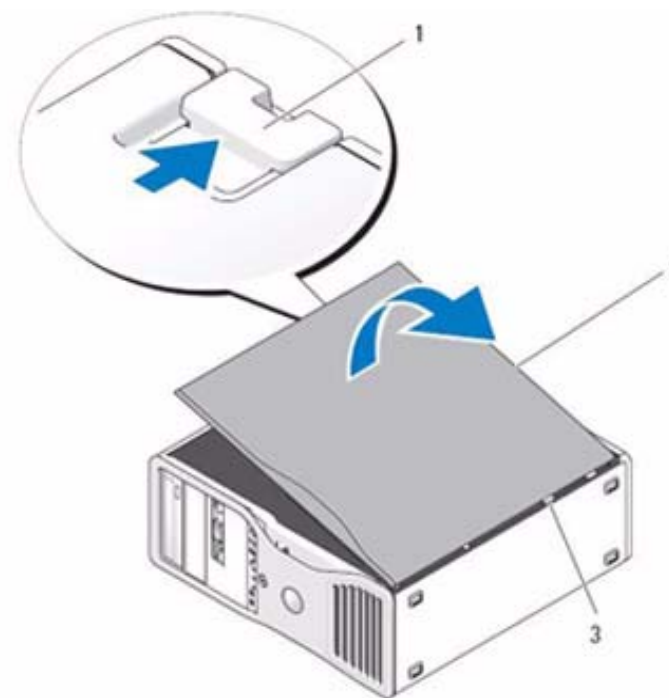


Figure 4: Open Computer

- 1 Cover latch Release 2 Computer Cover
3 Cover Hinges

6. Open the computer cover as follows:
 - a. Pull back the Cover and release the latch as shown in [Figure 4](#).
 - b. Grip the sides of the computer cover and pivot the cover up, using the hinges as leverage points.



CAUTION

The computer cooling system cannot function properly while the computer cover is not installed. Do not attempt to boot the computer before replacing the computer covers.

- c. Release the cover from the hinge tabs and set it aside in a safe area.

Removing the Hard Drive Carrier From the Computer

1. Disconnect either side of the P3 power-cable bundle that is attached to the Card Retention Mechanism:
 - a. Press the Release Latch on the P3 power-cable bundle connectors beside the power supply.
 - b. Pull the two connectors apart.

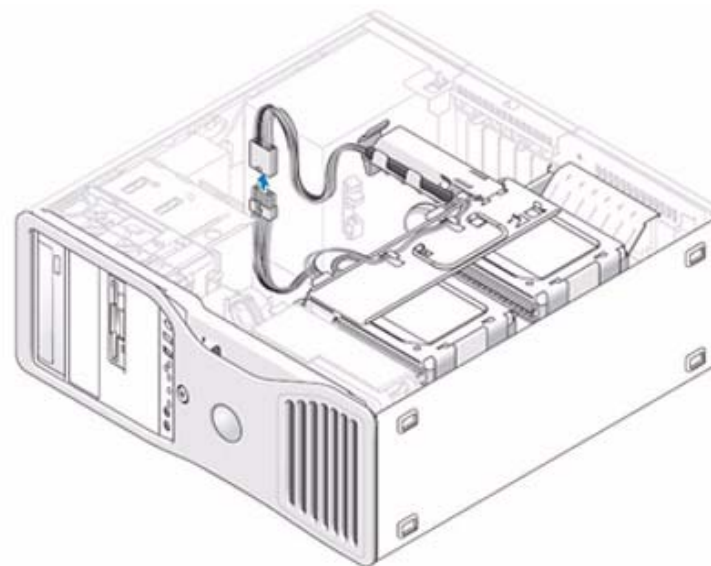


Figure 5: P3 Power Cable

2. Press the Card Retention Mechanism release-tab and rotate the Card Retention Mechanism so that it rests against the rotatable Hard-drive Carrier.
3. Press down against the Card Retention Mechanism until it clicks into place, locked against the Hard-drive Carrier.

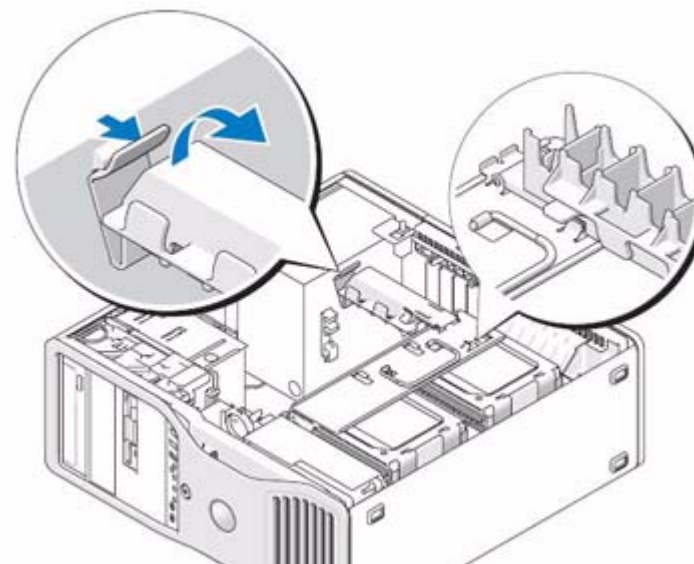


Figure 6: Open the Hard-drive Carrier

4. Grasp the handle on the hard-drive carrier and rotate the carrier out of the chassis so that it is at an angle of less than 180 degrees from its original position.

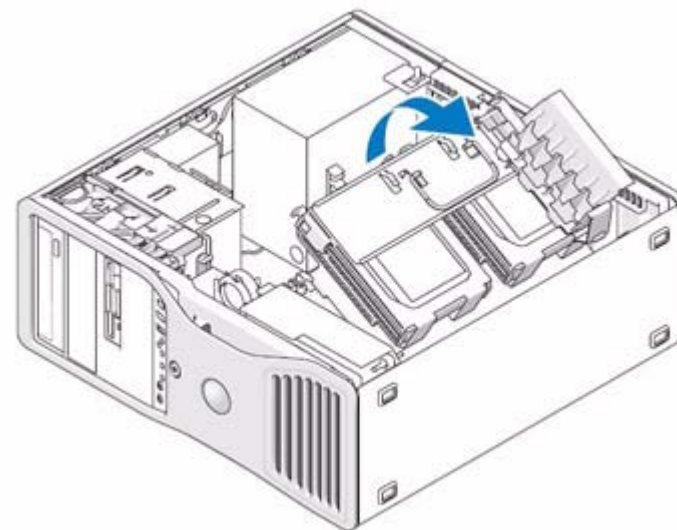


Figure 7: Hard-Drive Carrier

Putting the Hard Drive Carrier Back Into the Computer

1. Grab the handle on the Hard-drive Carrier and rotate the Carrier back into the chassis as shown in [Figure 8](#) on page 9 until the metal tabs on each side of the Carrier are seated, securing the Carrier.

Legend:

- 1 Rotatable Hard-drive Carrier
- 2 Handle
- 3 Card retention mechanism

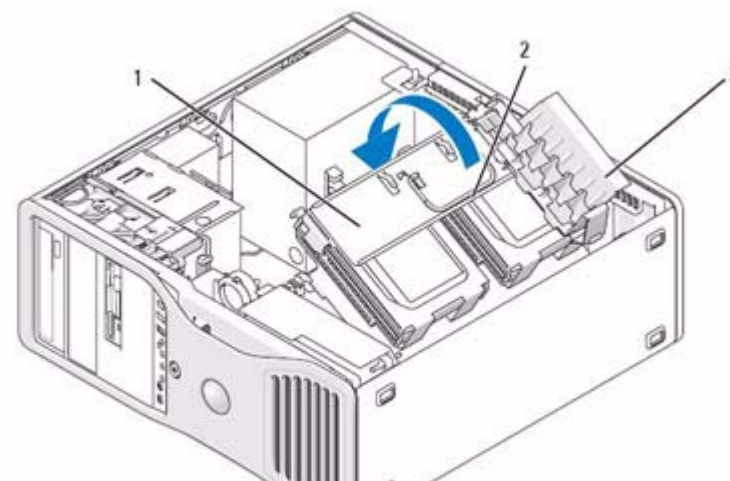
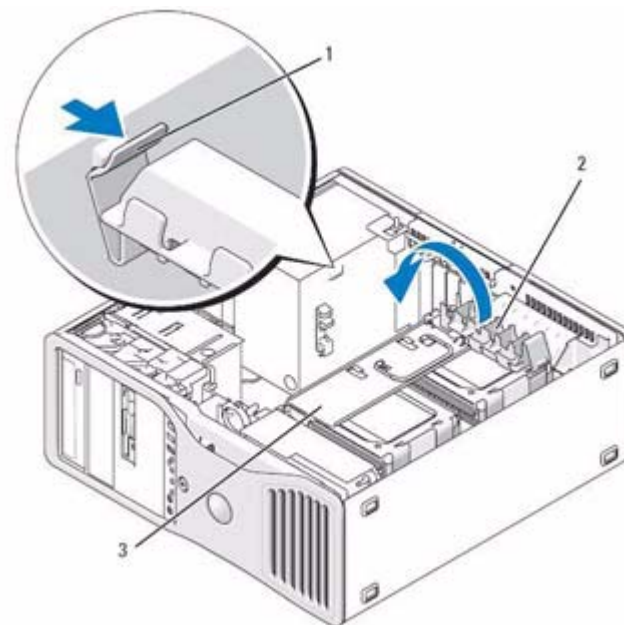


Figure 8: close

2. Rotate the Card Retention Mechanism back into its original position; push its tip so that its tab clicks into place as shown in [Figure 9](#) on page 10.
3. Reconnect both sides of the P3 power-cable bundle that is attached to the Card Retention Mechanism.

Legend:

- 1 Card Retention mechanism tab
- 2 Card Retention mechanism
- 3 Handle

**Figure 9:**

Closing the Computer



CAUTION

Ensure that all cables are connected, and fold cables out of the way.
Ensure that no tools or extra parts are left inside the computer.

Close the computer cover as follows (see [Figure 10](#) on page 11):

1. Pivot the cover down and into position.
2. If your computer has a baffle, ensure that the baffle is correctly positioned by guiding it into place as you lower the cover.
3. Press down on the cover to close it.
4. Once the cover is closed, slide the release latch until the latch clicks into place.

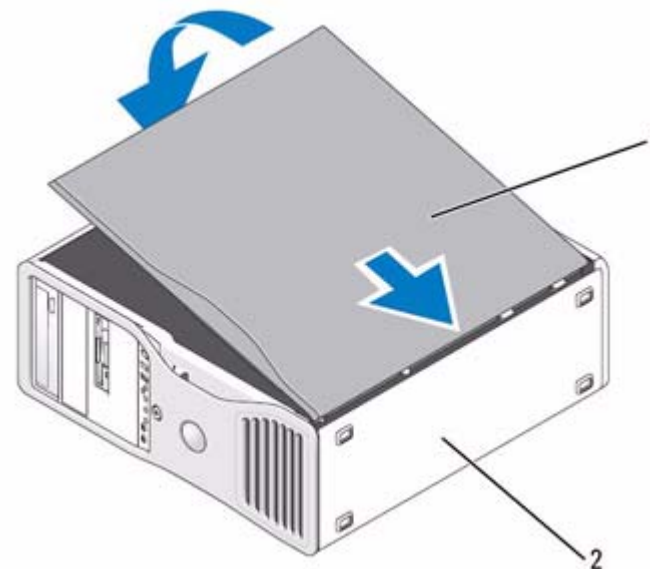


Figure 10: Closing the Computer

5. Verify that all cables are connected to the Host Computer Rear Panel.
6. Slide the Host computer into the Console Rack.

Log on and Startup Procedure

Perform this procedure when restarting the system after replacing any part.

1. Close the Console Rack according to [Opening and Closing the Console Rack](#) on page 4.
2. Turn On the Isolation Transformer
3. Turn On the Gantry.
4. Turn On the UPS.
5. Turn On the computer.
6. Double-click the **Host** icon on the desktop to log On to the application.



Host Computer Parts Replacement

This section includes the following topics:

- [Replacing the Host Computer](#) on page 13
- [Replacing Host Computer FRUs](#) on page 17



WARNING

Replacing a new Host computer may result in the loss of patient data. Therefore you are required to Perform a Backup prior to replacing the Host computer.



CAUTION

Call the Help Desk for a new Option key before starting this procedure.

Replacing the Host Computer

The following procedures describe how to remove and replace the Host Computer.

Required Tools

- FSE standard tools

Estimated Time

Table 1: Estimated time for replacing the [Replacing the Host Computer](#) on page 13

Procedure	Estimated Time	Required Manpower
Removing the Host Computer on page 14	1 hour	1 person

Table 1: Estimated time for replacing the [Replacing the Host Computer](#) on page 13

Procedure	Estimated Time	Required Manpower
Installing the New Host Computer on page 15	3 hours	1 person
Dell Service Tag Transfer on page 16	0.5 hour	1 person

Removing the Host Computer

Perform the following procedure to replace the Host computer:

1. Backup the Patient Images and Raw Data according to the local operator.
2. Power Off the system according to the [Log Off and Turn Off Procedure](#) on page 3.
3. Follow the Anti-static safety procedures in [Important Safety Information](#) on page 2.
4. Open the Console Rack Front Door and Rear Cover according to [Opening and Closing the Console Rack](#) on page 4.
5. Label the cables which are connected to the Host Computer, then disconnect all the cables.
6. Pull out the Computer Chassis as shown in [Figure 1](#) on page 4, and remove the Host Computer from the Console Rack.



WARNING

The inside temperature is very hot when the computer is turned off. Wait 10 minutes until the parts cool down.

7. Put the old Host Computer on a protective surface, and open the computer according to [Opening the Computer](#) on page 6.
8. Mark the position of the Video Card GTX 260 and the Data Receiving Card.
9. Remove the Video Card GTX 260 and the Data Receiving Card (see [Replacing the GTX260 Video Card](#) on page 26).
10. Close the old Host Computer.

Installing the New Host Computer

1. Unpack the new Host Computer.
2. Install the Video Card GTX260 and Data Receiving Card to their original positions.
3. Close the new Host Computer, and return it to the Console Rack.
4. Connect all the cables to the new Host Computer.
5. Power On the system according to [Log on and Startup Procedure](#) on page 12.
6. Install the Windows XP SP3 and the current version of the application software (refer to the NeuViz 16 CT Software Installation Manual)
7. Restore the application software settings and parameters.
8. Restore the patient images and data.
9. Run the Chorus Host application, and login as **Nms_Service**.
10. Go to the *Advanced Service* dialog box, and click **System Setting**.
11. Select **Option Key Setup**.
12. Type in the UserID and the Option key you received from the HelpDesk. and click **Save**.
13. Write down the new option key on a new label and replace the label attached to the inside of the rack with the one containing the new Option key.
14. Perform a few scans to make sure that the system operates normally.

Dell Service Tag Transfer

After system installation you must transfer the Service Tag to the customer as follows:

1. Go to the Dell website at:

http://support.dell.com/support/topics/global.aspx/support/dellcare/en/international_ownership_transfer_form1?c=us&cs=19&l=en&s=dhs&redirect=1

2. Fill out the electronic form as follows:

- a. In the **Original Owner Information** section, type the following:

Original Owner: Philips and Neusoft Medical Systems Co. Ltd.

E-mail Address: Person who performs tag transfer

Country of Original Purchase: China

- b. In the **Product Information** section, type the following:

Service Tag 1: Enter the number of the service tag located behind the front panel cover of the workstation (see example in [Figure 11](#) on page 16).

Product Type: Dell Precision

Service Level: Next Business Day (NBD) On-site

NOTE **Order or invoice number is not required.**

- c. In the **New Owner Information** section, type the following:

E-mail Address: Person who performs tag transfer



Figure 11: Dell Service tag

Replacing Host Computer FRUs



CAUTION

Before you begin any of the procedures in this section, follow the safety instructions in the *Product Information Guide*.

To guard against electrical shock, always unplug your computer from the electrical outlet before opening the cover.

NOTE

To prevent static damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's electronic components. You can do so by touching an unpainted metal surface on the computer.

To avoid damage to the hard drive, do not set it on a hard surface. Instead, set the drive on a surface, such as a foam pad, that will sufficiently cushion it.

The Dell Precision T5400 workstation is supplied as a field replacement unit (FRU) with the component FRUs listed below.

- [Replacing the Hard Disk](#) on page 18
- [Replacing the Network Card](#) on page 24
- [Replacing the GTX260 Video Card](#) on page 26
- [Replacing the Data Receiving Card](#) on page 27
- [Replacing the Video Card NVS290](#) on page 28
- [Replacing the Power Supply](#) on page 30
- [Replacing the Microprocessor](#) on page 31
- [Replacing the Memory](#) on page 36

Replacing the Hard Disk

There are four Hard Disk on the Console Computer, 250G Hard Disk is used to save the system software, Application software and Patient Image, three 160G Hard Disks composing a Raid to save Raw Data.

- 250G Hard Disk connected to SATA 0
- 160G Hard Disk connected to SATA 1
- 160G Hard Disk connected to SATA 3
- 160G Hard Disk connected to SATA 4

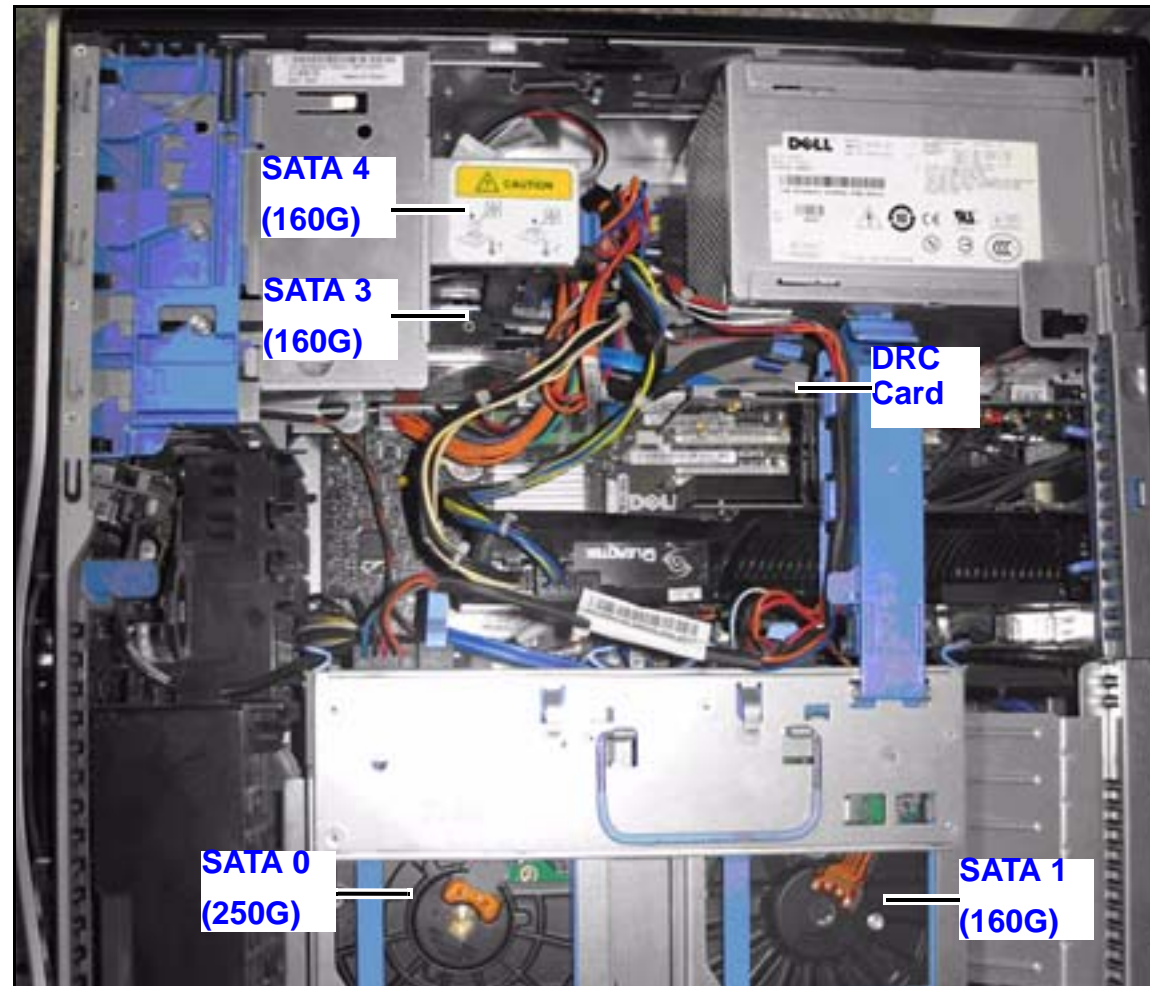


Figure 12:

Replacing the Hard Disks on the Rotatable Carrier

The following procedure describes how to remove the Hard Disks on the Rotatable Carrier

Required Tools

- FSE standard tools

Estimated Time

Table 2: Estimated time for replacing the [Replacing the Hard Disk](#) on page 18

Procedure	Estimated Time	Required Manpower
Replacing the Hard Disks on the Rotatable Carrier on page 19	4 hours	1 person

1. Perform a complete system Backup and copy the backup to removable memory device.

NOTE For the complete Backup procedure refer to **Software Installation instructions**.

2. Power Off the system according to [Log Off and Turn Off Procedure](#) on page 3.
3. Remove the Host Computer from the Console Rack, and put the Host Computer on a protective surface.
4. Open the computer cover according to [Opening the Computer](#) on page 6.
5. Disconnect the power cable and data cable from the Hard Disk that you are removing.
6. Rotate the Hard-drive carrier out of the computer according to [Removing the Hard Drive Carrier From the Computer](#) on page 8.
7. Press the blue tabs on each side of the Hard Disk bracket toward each other and slide the drive up and out of the hard-drive bay as shown in [Figure 13](#) on page 19.
8. Remove the bracket from the old Hard Disk.

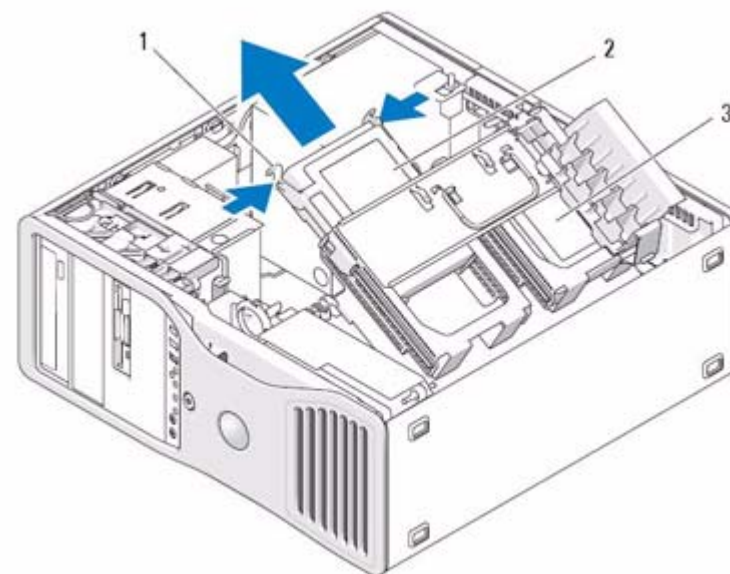


Figure 13:

9. Gently bend the Hard-drive bracket open and align the side holes in the new Hard Drive with the plastic pins on the bracket; release the tension on the bracket so that the Hard Drive is securely fastened as shown in [Figure 14](#) on page 20.
10. Slide the Hard Disk into the Hard-drive bay until it clicks securely into place.
11. Rotate the Hard-drive Carrier back into computer according to [Putting the Hard Drive Carrier Back Into the Computer](#) on page 9.
12. Connect the data and power cables to the new Hard Disk.

NOTE Ensure that all the connectors are properly cabled and firmly seated.

13. Close the Computer Cover according to [Closing the Computer](#) on page 11.

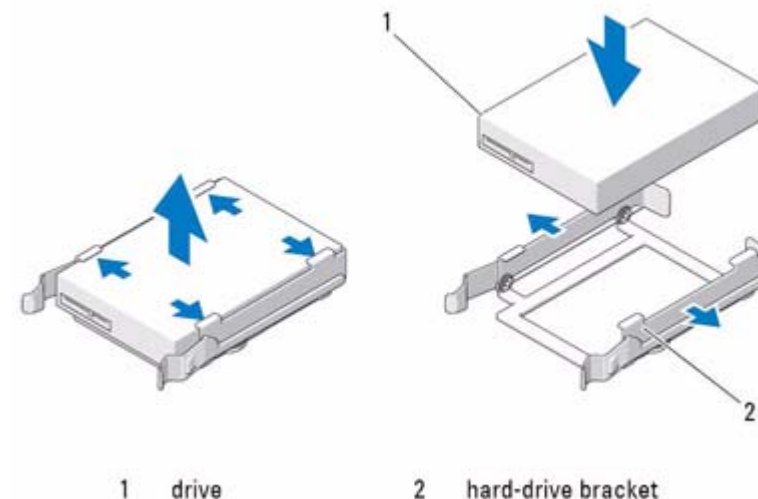


Figure 14:

Replacing the Hard Disks on Fixed Carrier

The following procedures describe how to remove the Hard Disks on the Fixed Carrier.

Required Tools

- FSE standard tools

Estimated Time

Table 3: Estimated time for replacing the [Replacing the Hard Disk](#) on page 18

Procedure	Estimated Time	Required Manpower
Replacing the Hard Disks on Fixed Carrier on page 21	4 hours	1 person

1. Perform a complete system Backup and copy the backup to removable memory device.

NOTE For the complete Backup procedure refer to **Software Installation instructions**.

2. Power Off the system according to [Log Off and Turn Off Procedure](#) on page 3.
3. Remove the Host Computer from Console Rack, and put the Host Computer on a protective surface.
4. Open the computer cover according to [Opening the Computer](#) on page 6.
5. Disconnect the power and data cables from the Hard Disk that you are removing.
6. Lift the front panel Release Lever, slide the front panel toward the top of the computer and then lift to remove the panel. When you are done, put it in a safe place as shown in [Figure 15](#) on page 21.
7. Grasp the Sliding Plate Lever and push it towards the base of the computer until the Drive Panel snaps open.

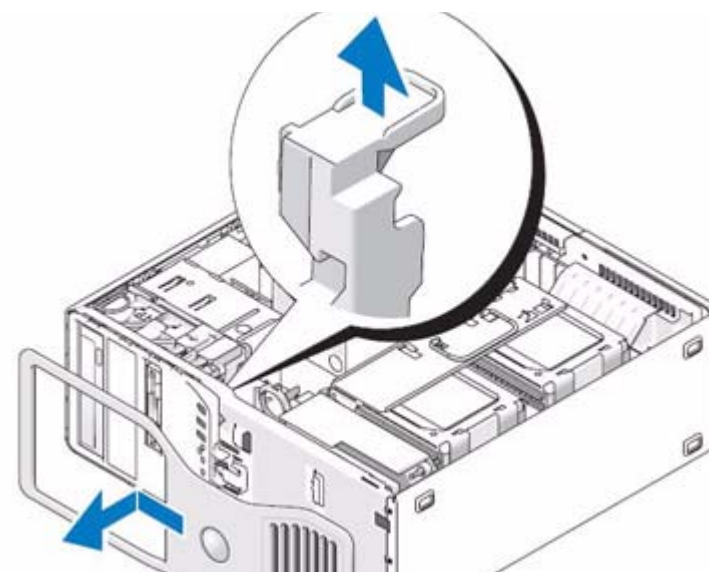


Figure 15:

8. Pivot the Drive Panel outward and lift it from its side hinges. When you are done, put the Drive Panel in a safe place [Figure 16](#) on page 22.
9. Pull the Desktop Drive Retention Insert out by the handle and put it in a safe place.
10. Disconnect the power and data cables from the Hard Disk that you are removing.
11. Slide the Hard Disk Carrier out of the 5.25-inch Hard-drive bay.
12. Press the blue tabs on each side of the Hard-drive bracket toward each other and slide the drive out of the Hard-drive Carrier.
13. Remove the bracket from the old Hard Disk.

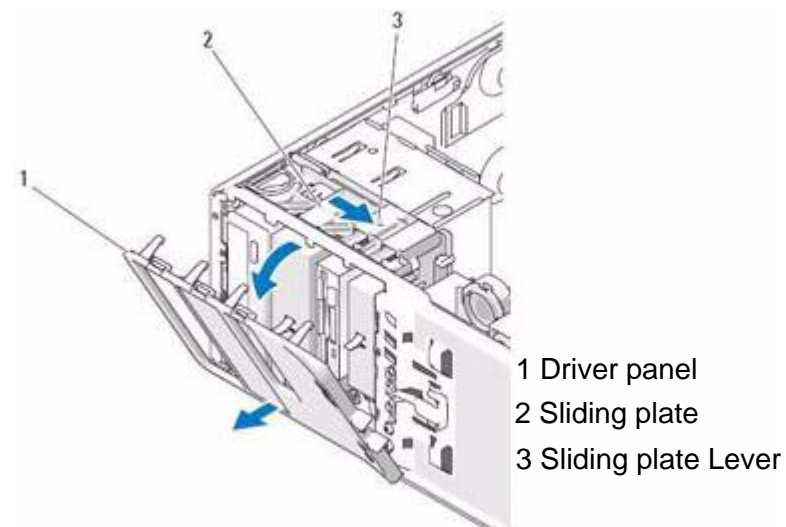


Figure 16:

14. Gently bend the Hard-drive bracket open and align the side holes in the new Hard Drive with the plastic pins on the bracket; release the tension upon the bracket so that the Hard Drive is securely fastened as shown in [Figure 17](#) on page 22.
15. Insert the new Hard Disk into the Carrier, and slide the Hard-drive Carrier into the 5.25-inch drive bay until it is securely seated.
16. Replace the Desktop Drive Retention Insert and fold down its handle.
17. Connect the power and data cables to the new Hard Disk.

NOTE Ensure that all connectors are properly cabled and firmly seated.

18. Reinstall the Drive Panel and close the Computer Cover according to [Closing the Computer](#) on page 11.

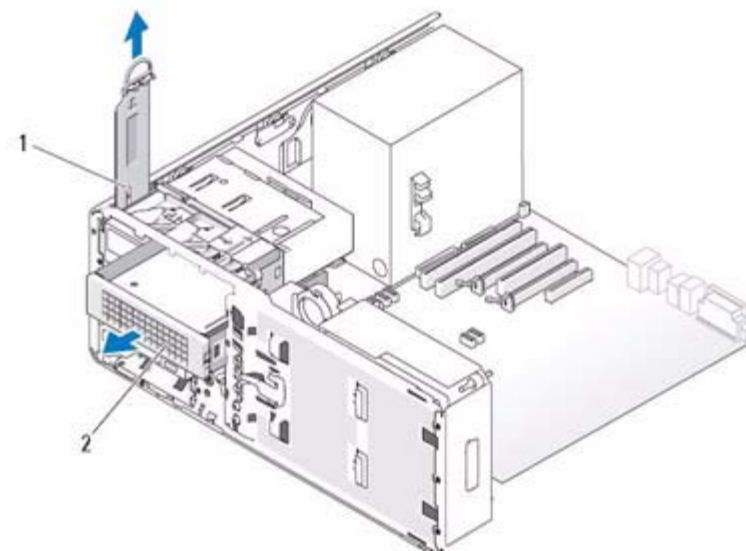


Figure 17:

19. Turn on the computer and install the Windows XP SP3 and current Application Software (refer to the NeuViz 16 CT Software Installation Manual).

Preparing to Remove an Extension Card

1. Power Off the system according to [Log Off and Turn Off Procedure](#) on page 3.
2. Remove the Host Computer from the Console Rack, and put the Host Computer on a protective surface.
3. Open the computer cover according to [Opening the Computer](#) on page 6.
4. Rotate the hard-drive carrier out of the computer if needed according to [Removing the Hard Drive Carrier From the Computer](#) on page 8.
5. Press the release tabs on the card retention door towards each other and pivot the door open [Figure 18](#) on page 23.

NOTE Because the door is attached, it will remain in the open position.

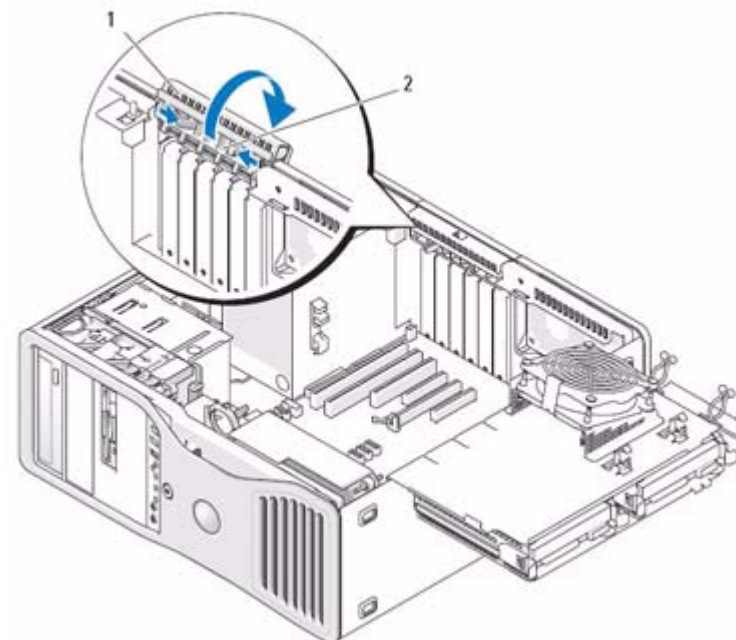


Figure 18:

1 Card retention door

2 Release tab

Replacing the Network Card

The following procedure describes how to remove the Network Card.

Required Tools

- FSE standard tools

Estimated Time

Table 4: Estimated time for replacing the [Replacing the Network Card](#) on page 24

Procedure	Estimated Time	Required Manpower
Replacing the Network Card on page 24	2 hour	1 person

NOTE

To prevent static damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's electronic components. You can do so by touching an unpainted metal surface on the computer.

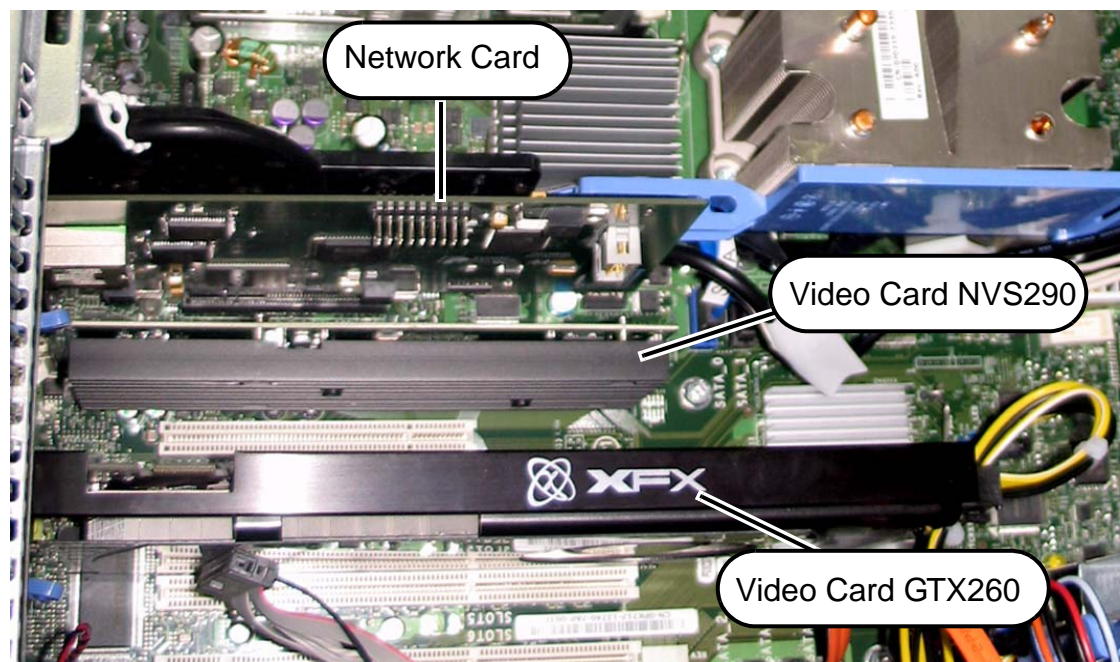


Figure 19: Inside Computer (Example)

1. Follow the instructions in [Preparing to Remove an Extension Card](#) on page 23.
2. Pull out the Network Card as shown in [Figure 19](#).
3. Install the new Network Card into the computer. Ensure that the card is pressed down firmly and fully seated in the slot.

NOTE **Ensure the tops of all cards and filler brackets are flush with the alignment bar.**

4. Rotate the Card Retention Door until it snaps into place.
5. Close the Computer Cover according to [Closing the Computer](#) on page 11
6. Connect all the cables to the computer.
7. Turn on the computer.
8. Log On as **Nms_Service** and select the **Advanced Service** tab.
9. In the *Advanced Service* window, select **System Setting**.
10. Click **Option Key Setup** item, and record the new UserID.
11. Input the new **Option Key**.

Replacing the GTX260 Video Card

The following procedure describes how to remove and replace the Video Card GTX 260.

Required Tools

- FSE standard tools

Estimated Time

Table 5: Estimated time for replacing the [Replacing the GTX260 Video Card](#) on page 26

Procedure	Estimated Time	Required Manpower
Replacing the GTX260 Video Card on page 26	1 hour	1 person

1. Follow the instructions in [Preparing to Remove an Extension Card](#) on page 23.
2. Remove the Video Card GTX260 as shown in [Figure 19](#) on page 25.
3. Install the new Video Card GTX260 into the computer. Press the card down firmly and verify that it is fully seated in the slot.

NOTE **Verify that the tops of all cards and filler brackets are flush with the alignment bar.**

4. Rotate the Card Retention Door until it snaps into place.
5. Close the Computer Cover according to [Closing the Computer](#) on page 11.
6. Connect all the cables to the computer.
7. Turn on the computer.

Replacing the Data Receiving Card

The following procedure describes how to remove and replace the Data Receiving Card.

Identifying the DMS Type



CAUTION

There are two types of Data Receiving Card for difference DMS type. Order the new Data Receiving Card according to the DMS type. Refer to the Gantry Repair and Replacement manual to identify your DMS type.

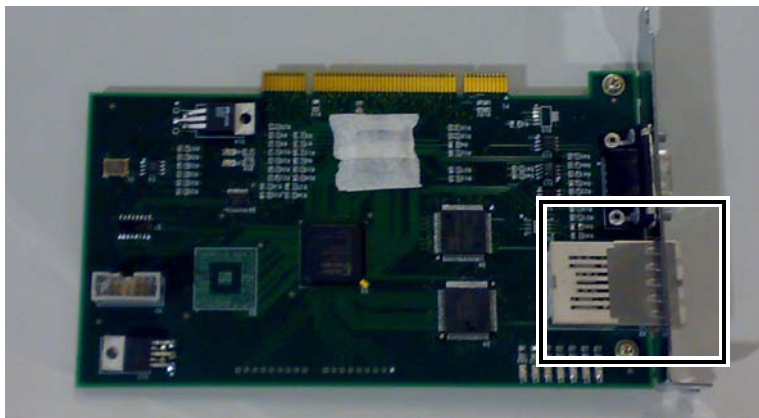


Figure 20: Data Receiving Card for DMS-GPN

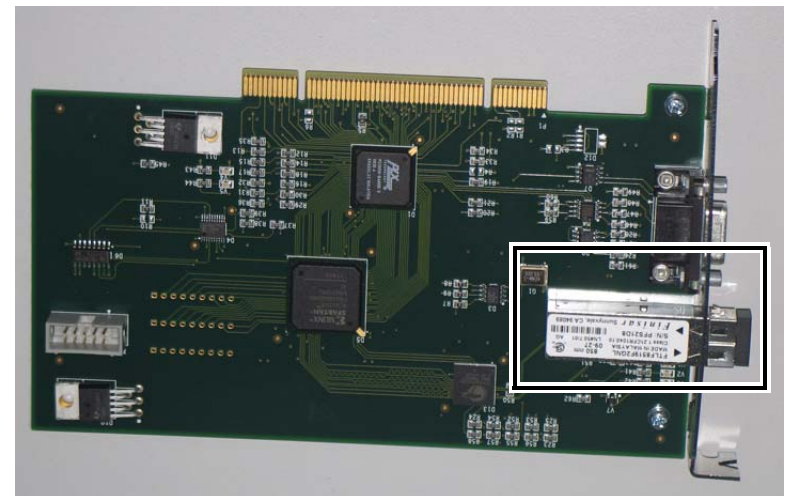


Figure 21: Data Receiving Card for DMS-DPN

Required Tools

- FSE standard tools

Estimated Time

Table 6: Estimated time for replacing the [Replacing the Data Receiving Card](#) on page 27

Procedure	Estimated Time	Required Manpower
Replacing the Data Receiving Card on page 27	1 hour	1 person

1. Follow the instructions in [Preparing to Remove an Extension Card](#) on page 23.
2. Remove the Data Receiving Card as shown in [Figure 12](#) on page 18.
3. Install the new Data Receiving Card into the computer. Press the card down firmly and verify that it is fully seated in the slot.

NOTE **Verify that the tops of all cards and filler brackets are flush with the alignment bar.**

4. Rotate the Card Retention Door until it snaps into place.
5. Close the Computer Cover according to [Closing the Computer](#) on page 11.
6. Connect all the cables to the computer.
7. Turn on the computer.

Replacing the Video Card NVS290

The following procedure describes how to remove and replace the Video Card NVS290.

Required Tools

- FSE standard tools

Estimated Time

Table 7: Estimated time for replacing the [Replacing the Video Card NVS290](#) on page 28

Procedure	Estimated Time	Required Manpower
Replacing the Video Card NVS290 on page 28	1 hour	1 person

1. Follow the instructions in [Preparing to Remove an Extension Card](#) on page 23.
2. Disconnect the cable from Video Card NVS290 as shown in [Figure 19](#) on page 25.
3. Remove the Video Card NVS290.
4. Install the new Video Card NVS290 into the computer. Press the card down firmly and verify that it is fully seated in the slot.

NOTE **Verify the tops of all cards and filler brackets are flush with the alignment bar.**

5. Rotate the Card Retention Door until it snaps into place.
6. Close the Computer Cover according to [Closing the Computer](#) on page 11.
7. Connect all the cables to the computer.
8. Turn on the computer.

Replacing the Power Supply

Removing the Power Supply

Remove the Power Supply as follows:

1. Turn Off the Computer and disconnect all the cables from the computer.
2. Remove the computer cover according to [Opening the Computer](#) on page 6.
3. Disconnect the cables from the Power Supply.
4. Release and remove the four screws shown in [Figure 22](#) on page 30 that attach the Power Supply to the back of the computer chassis.
5. Slide the Power Supply toward the front of the computer by approximately one inch.
6. Lift the Power Supply out of the computer.

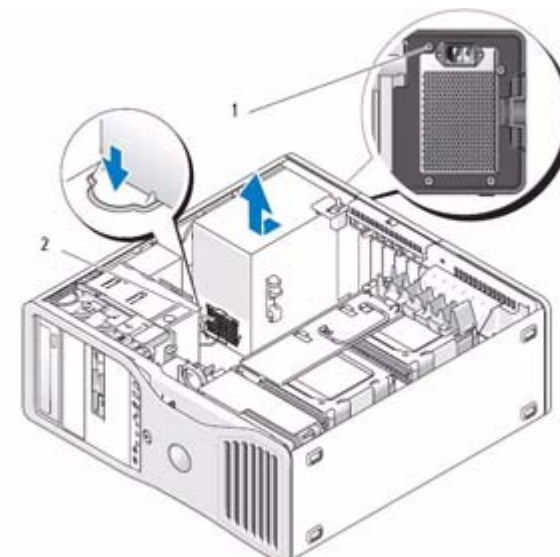


Figure 22:

- 1 Power Supply Screws(4)
- 2 Power cable harness connector

Replacing the Power Supply

Replace the Power Supply as follows:

1. Slide the Power Supply into place.
2. Replace the four screws that secure the Power Supply to the back of the computer chassis.
3. Reconnect the DC power cables.
4. On the desktop computer, reattach the power cables to the side of the Hard Drive.
5. Run the cables underneath the tabs, and press the tabs to close them over the cables.

6. Replace the computer cover (see [Closing the Computer](#) on page 11).
7. Connect the computer and devices to electrical outlets, and turn them on.

Replacing the Microprocessor

Overview

The Host computer is designed for two Quad-core processors operation. The heat sinks (CPU_0 and CPU_1) are keyed to fit their specific connector.

For the two Quad-core processors operation, both processor sockets and the VRM (Voltage Regulator Module) connector must be populated.

For two Quad-core processor operations, the two processors and the VRMs must be identical. If the processors do not match, you will receive a system message. If the processors voltage do not match or the VRM is not properly installed, the diagnostic lights indicate an error.

Removing the Microprocessor

Remove the Microprocessor as follows:

1. Turn off the computer and disconnect the cables from it.
2. Remove the computer cover according to [Opening the Computer](#) on page 6.
3. Rotate the Hard-drive Carrier out of the computer according to [Removing the Hard Drive Carrier From the Computer](#) on page 8.
4. Rotate the Processor Access Door to its open position as shown in [Figure 23](#) on page 32.

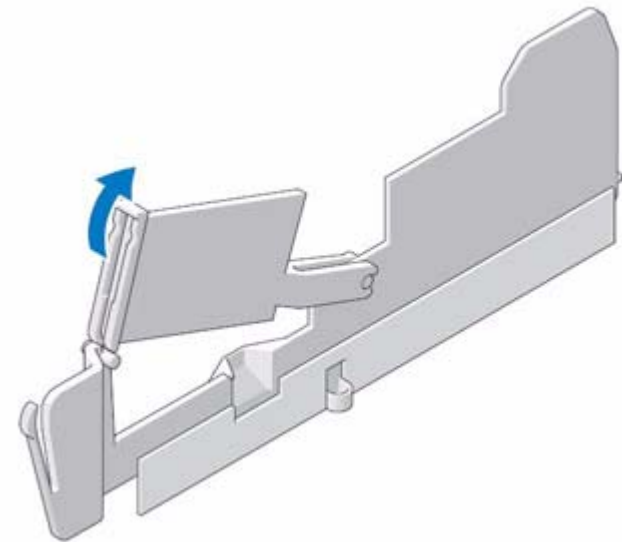


Figure 23:

NOTE

Use a long Phillips Head screwdriver to loosen the four captive screws on the sides of the heat-sink assembly.

5. Release the four captive screws on the sides of the Heat-sink Assembly as shown in [Figure 24](#) on page 33.

NOTE The Heat-sink Assembly may become very hot during normal operation. Ensure that it had sufficient time to cool before you touch it.

6. Lift to remove the Heat-sink Assembly from the computer.
7. Open the Processor Cover by sliding the Release Lever from under the center cover latch on the Socket. Then, pull the lever back to release the Processor as shown in [Figure 25](#) on page 33.
8. Gently remove the Processor from the Socket.

NOTE When replacing the Processor, do not touch any of the pin inside the Socket or allow any objects to fall on the pins in the Socket,

9. Leave the Release Lever extended in the release position so that the Socket is ready for the new Processor.

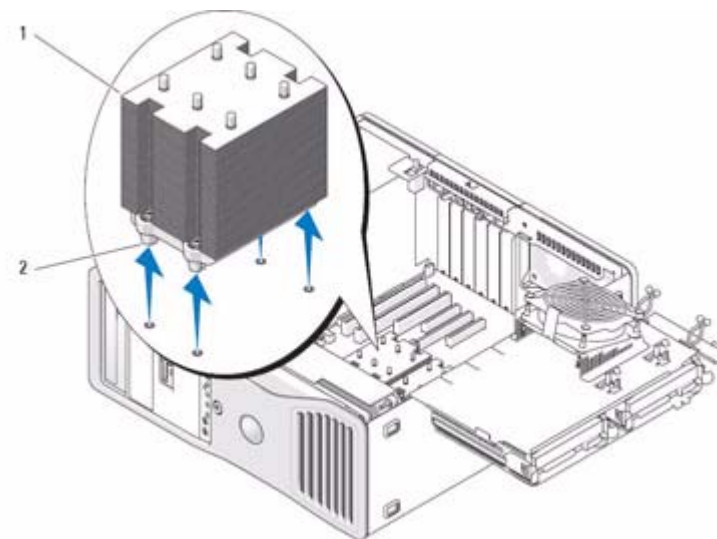


Figure 24:

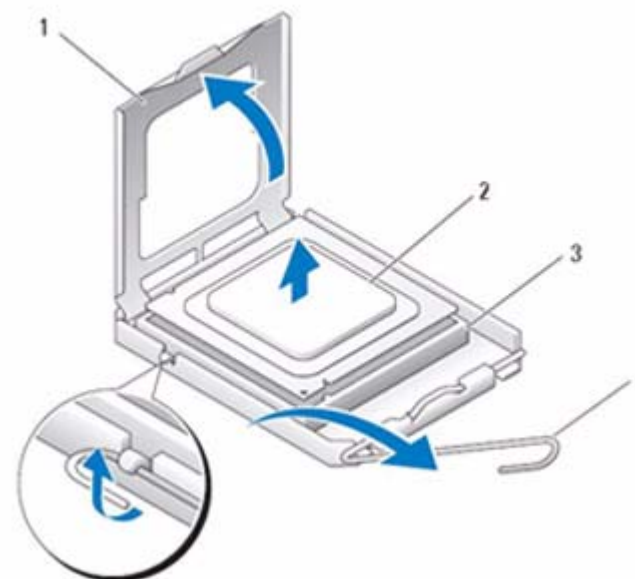


Figure 25:

1 Processor Cover
3 Socket

2 Processor
4 Release lever

Installing the Microprocessor

Install the Microprocessor as follows (see [Figure 26](#)):

1. Unpack the new Processor, being careful not to touch the underside of the Processor.

NOTE You must position the Processor correctly in the Socket to avoid permanent damage to the Processor and computer when you turn on the computer.

NOTE Verify that the Release Lever is fully extended.

2. Orient the front and rear alignment notches on the Processor with the front and rear alignment notches on the Socket.
3. Align the pin-1 corners of the Processor and Socket.

NOTE To avoid damage, verify that the Processor aligns properly with the Socket, and do not use excessive force when installing the Processor.

4. Set the Processor lightly in the Socket and verify that it is positioned correctly.
5. When the Processor is fully seated in the Socket, close the Processor Cover.
6. Verify that the tab on the Processor cover is positioned underneath the center cover latch on the Socket.
7. Pivot the Socket Release Lever toward the Socket and snap it into place to secure the Processor.

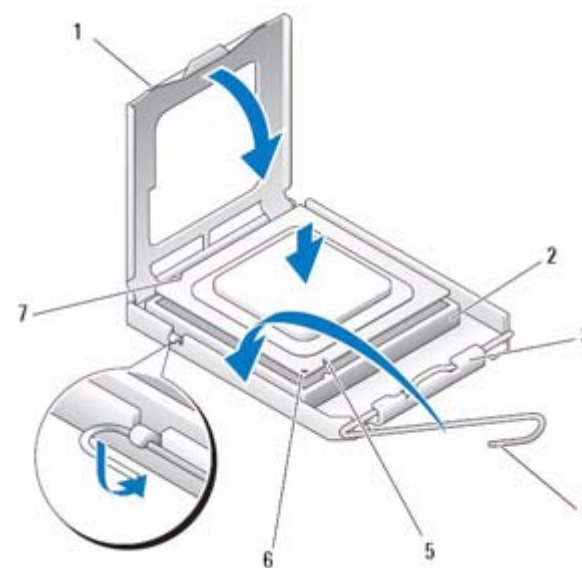


Figure 26:

- | | |
|--|------------------------|
| 1 Tab | 2 Processor socket |
| 3 Center cover latch | 4 socket release lever |
| 5 Front alignment notch | |
| 6 socket and processor pin-1 indicator | |
| 7 Rear alignment match | |

8. Install the Heat-sink Assembly as shown in [Figure 27](#) on page 35:
 - a. Place the Heat -sink Assembly back onto the Heat-sink Assembly Bracket.
 - b. Rotate the Heat-sink Assembly down towards the computer base and tighten the four screws.

NOTE Verify that the Heat-sink Assembly is correctly seated and secured.

9. Close the Processor Access Door.
10. Verify that all connectors are properly cabled and firmly seated.
11. Rotate the Hard-drive back into place according to [Putting the Hard Drive Carrier Back Into the Computer](#) on page 9.
12. Replace the computer cover according to [Closing the Computer](#) on page 11.
13. Connect the computer and devices to an electrical outlet and turn them on.

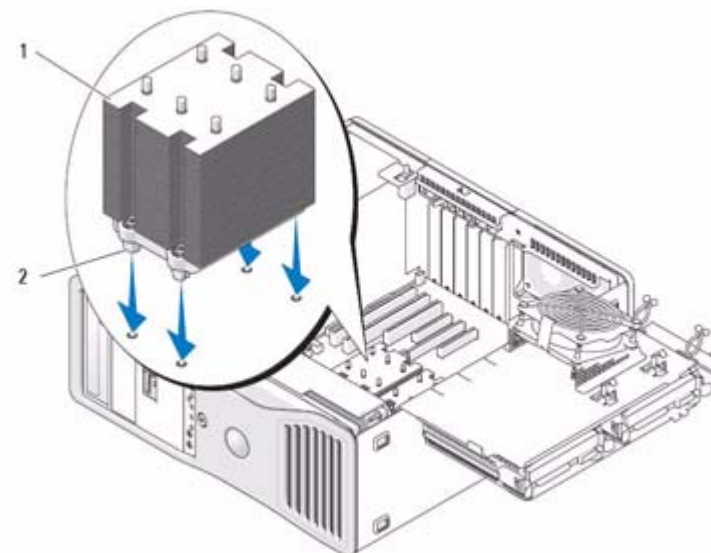


Figure 27:

- 1 Heat-sink assembly
- 2 Captive screws

Replacing the Memory

The following procedure describes how to remove and replace the Memory (see [Figure 28](#) on page 36 and [Figure 29](#) on page 36).

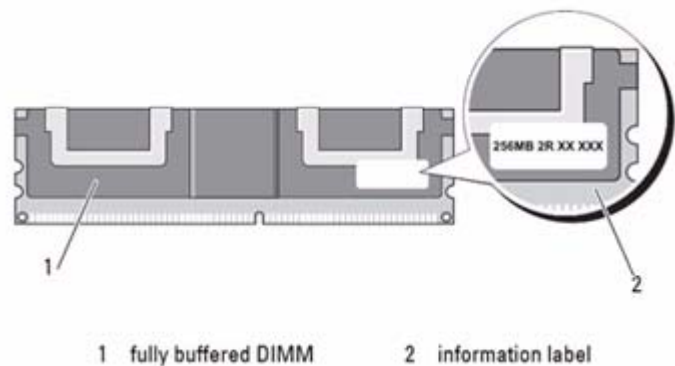


Figure 28:

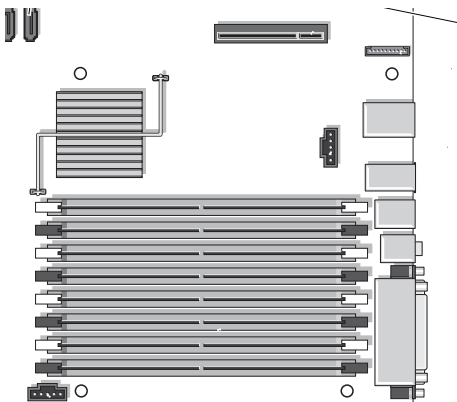


Figure 29:

Required Tools

- FSE standard tools

Estimated Time

Table 8: Estimated time for replacing the Memory

Procedure	Estimated Time	Required Manpower
Removing the Memory on page 37	0.5 hour	1 person
Installing the Memory on page 38	0.5 hour	1 person

**WARNING**

Memory modules can become very hot during normal operation. Make sure that the memory modules have had sufficient time to cool before you touch them.

Removing the Memory

1. Power Off the system according to [Log Off and Turn Off Procedure](#) on page 3.
2. Remove the Host Computer from the Console Rack, and put the Host Computer on a protective surface.
3. Open the computer cover according to [Opening the Computer](#) on page 6.
4. Rotate the Hard-drive Carrier out of the computer according to [Removing the Hard Drive Carrier From the Computer](#) on page 8.
5. Press out the Securing Clip at each of the Memory Module connectors as shown in [Figure 30](#) on page 37.
6. Grasp the module and pull up to lift the Memory Module from the Memory Riser Card.

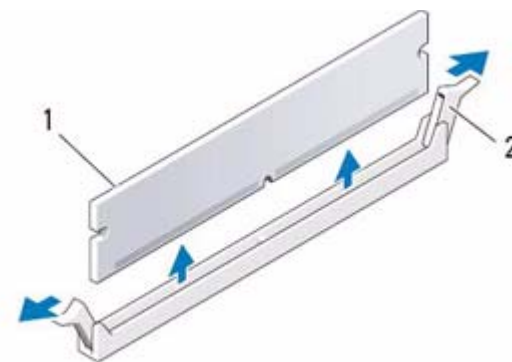


Figure 30:

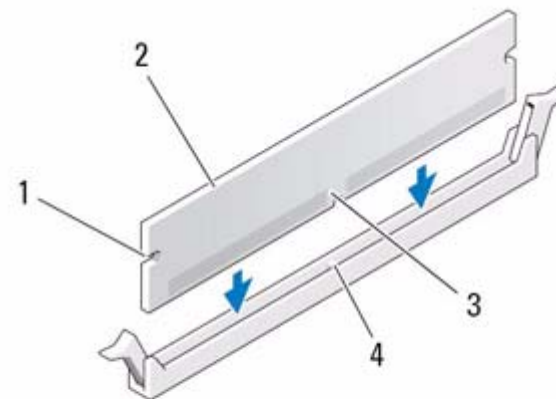
NOTE

If a module is difficult to remove, gently ease it back and forth to remove it from the connector.

Installing the Memory

1. Push out the Securing Clips at each end of the Memory Module connector.
2. Align the notch on the bottom of the module with the Crossbar in the connector.
3. Insert the module into the connector, ensuring that it fits into the guides at each end of the connectors.
4. Carefully press each end of the module into place.

NOTE The Memory Module Socket has alignment keys that allow the Memory Module to be installed in only one way as shown in [Figure 31](#) on page 38.



- | | |
|---------------|-----------------|
| 1 cutouts (2) | 2 memory module |
| 3 notch | 4 crossbar |

Figure 31:

7. Close the computer cover according to [Closing the Computer](#) on page 11.
8. Connect the computer and devices to electrical outlets, and turn them on.
9. The computer detects that the new memory does not match the existing configuration information and generates the following message:

```
The amount of system memory has changed.  
Strike the F1 key to continue, F2 to run the setup utility
```
10. Press **F2** to enter System Setup and check the value of **System Memory Info** as shown in [Figure 32](#) on page 39, The Install Memory = 8.0 GB.
11. The computer should have changed the value of **System Memory** to reflect the newly installed memory. Verify the new total.

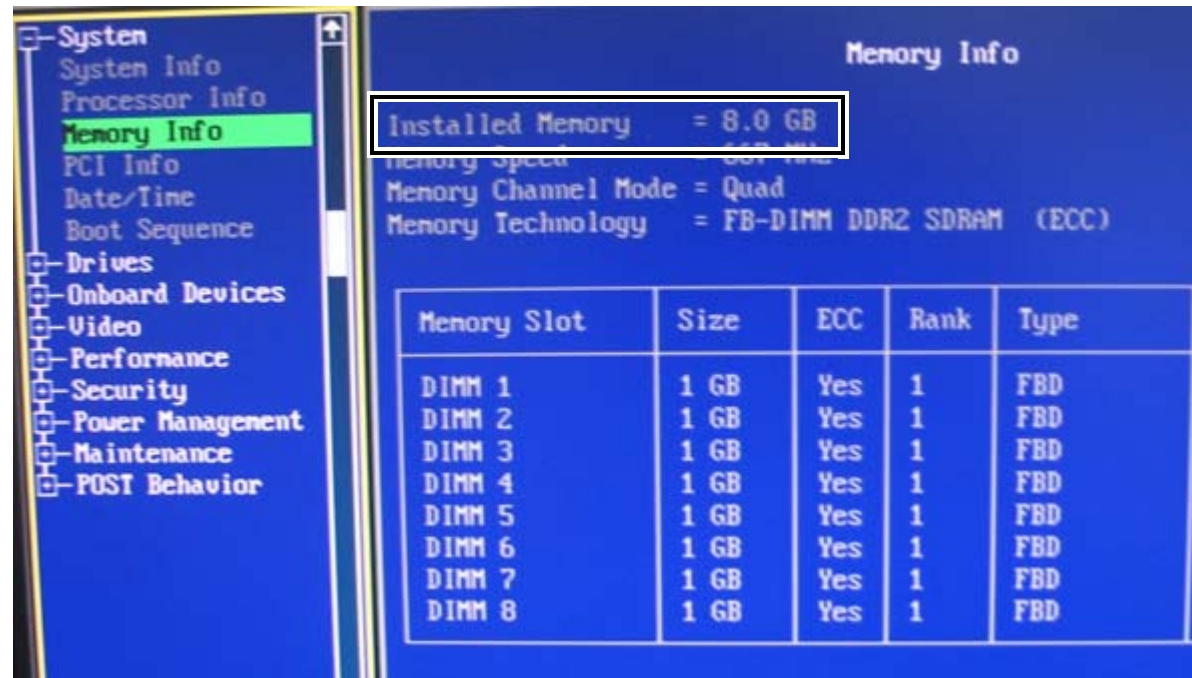


Figure 32: Memory Info

Console Rack Components Replacement

This section describes how to repair and replace the following Console Rack components as shown in [Figure 33](#) on page 40

- [CTBOX](#) on page 41
- [Isolation Transformer](#) on page 43
- [Console Switch Hub](#) on page 45
- [PDU \(Power Distributor Unit\)](#) on page 47
- [Console Interface Board](#) on page 49
- [12V DC Switch Power Supply](#) on page 51
- [Console Rack Fans](#) on page 53

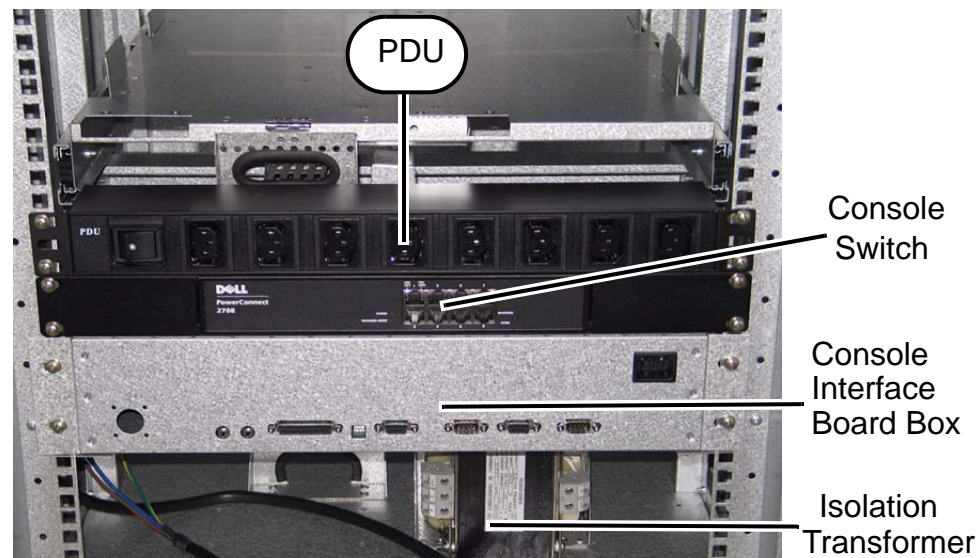


Figure 33:

CTBOX

The following procedures describe how to remove and replace the CTBOX.

Required Tools

- FSE standard tools

Estimated Time

Table 9: Estimated time for replacing the [CTBOX](#) on page 41

Procedure	Estimated Time	Required Manpower
Removing the CTBOX on page 41	0.5 hour	1 person
Installing the New CTBOX on page 42	0.5 hour	1 person

Removing the CTBOX

1. Open the Host Rack Rear Cover, do not disconnect the cables (see [Opening and Closing the Console Rack](#) on page 4).
2. Disconnect the old CTBOX cable from the X1 connector which is located at the Console Interface Board as shown in [Figure 34](#) on page 42.

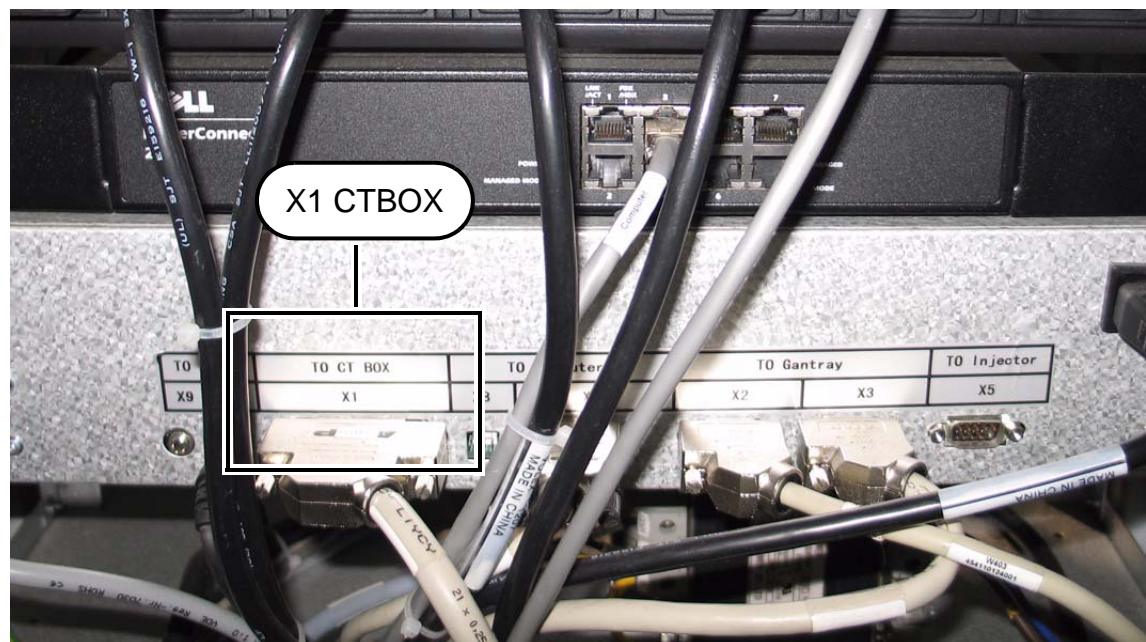


Figure 34: CTBOX Connector X1

3. Remove the old CTBOX from the console.

Installing the New CTBOX

1. Connect the new CTBOX cable to the X1 connector.
2. Close the Host Rack Rear Cover.
3. Power On the system and turn On the Host computer according to [Log on and Startup Procedure](#) on page 12.
4. Log On to the application as **Nms_Service**.
5. Go to the *Advanced Service* dialog box, then enter the *Hardware Test* dialog box.
6. Update the firmware in CTBOX (refer to the *NeuViz 16 System Flash Programming Manual*).
7. Use the new CTBOX to manually control the Gantry and Patient Table.
8. Perform a few axial and helical scans to make sure that the new CTBOX works normally.

Isolation Transformer

The following procedures describe how to remove and replace the Isolation Transformer.

Required Tools

- FSE standard tools

Estimated Time

Table 10: Estimated time for replacing the [Isolation Transformer](#) on page 43

Procedure	Estimated Time	Required Manpower
Removing the Isolation Transformer on page 44	1 hour	1 person
Installing the new Isolation Transformer on page 44	1 hour	1 person

Removing the Isolation Transformer

1. Power Off the system according to [Log Off and Turn Off Procedure](#) on page 3.
2. Remove the Console Rack Rear Cover according to [Opening and Closing the Console Rack](#) on page 4.
3. Label the power cable, and then disconnect the 220V AC power input cable from the Gantry.
4. Label the power cable, and then disconnect the 220V Power output to the PDU from the Isolation Transformer as shown in [Figure 35](#) on page 44.
5. Remove the four screws (not shown in the pictures) which secure the Isolation Transformer to the Host Rack.
6. Remove the Isolation Transformer.

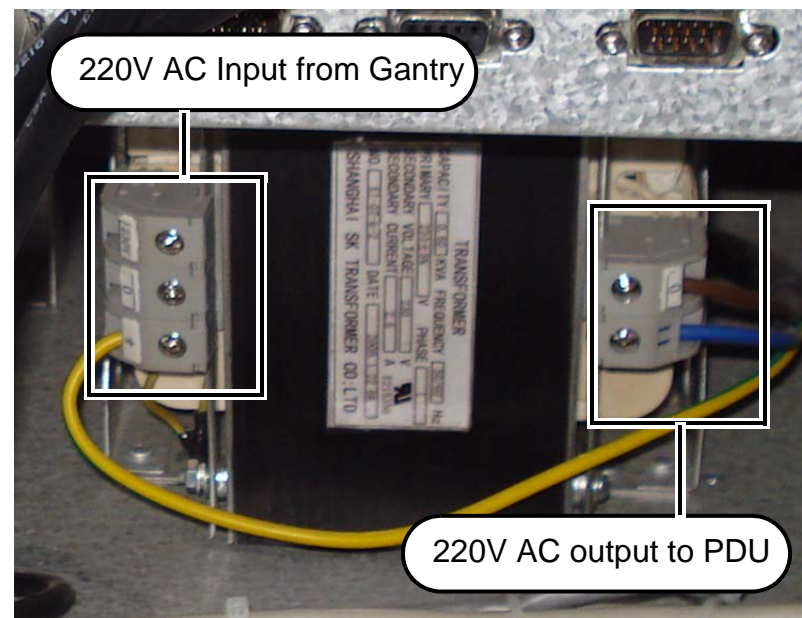


Figure 35: Isolation Transformer

Installing the new Isolation Transformer

1. Install the new Isolation Transformer, and secure it with screws.
2. Connect the 220V AC Input cable to the new Isolation Transformer.
3. Power On the Wall Box Power/Isolation Transformer/Power Stability, and use a Multimeter to measure the output voltage of the new Isolation Transformer.
If the output voltage **is not** 220V, check the cable connection or change a new Isolation Transformer.
If the output voltage **is** 220V, power Off the Wall Box Power/Main Isolation Transformer/Power Stability.
4. Connect the 220V AC output cable.
5. Double check the cable connection to make sure it is OK.
6. Close the Console Rack Rear Cover.
7. Power On the system according to [Log on and Startup Procedure](#) on page 12

Console Switch Hub

The following procedures describe how to remove and replace the Console Switch Hub.

Required Tools

- FSE standard tools

Estimated Time

Table 11: Estimated time for replacing the [Console Switch Hub](#) on page 45

Procedure	Estimated Time	Required Manpower
Removing the Console Switch Hub on page 45	1 hour	1 person
Installing the New Console Switch Hub on page 46	1 hour	1 person

Removing the Console Switch Hub

1. Remove the Host Rack Rear Cover according to [Opening and Closing the Console Rack](#) on page 4.
2. Label the LAN cables, then disconnect the LAN cables from the Console Switch Hub.
3. Remove the four screws shown in [Figure 36](#) on page 45 which secure the bracket to the Console Rack.
4. Remove the bracket.



Figure 36: Console Switch Hub

Installing the New Console Switch Hub

1. To install the new Console Switch Hub, perform the [Removing the Console Switch Hub](#) on page 45 procedure in reverse.
2. Connect the LAN cable to the new Console Switch Hub.
3. Power On the system according to [Log on and Startup Procedure](#) on page 12.
4. Check the Internet connection.

PDU (Power Distributor Unit)

This section describes how to remove and replace the PDU

Required Tools

- FSE standard tools

Estimated Time

Table 12: Estimated time for replacing the [PDU \(Power Distributor Unit\)](#) on page 47

Procedure	Estimated Time	Required Manpower
Removing the PDU on page 47	0.5 hour	1 person
Installing the New PDU on page 48	0.5 hour	1 person

Removing the PDU

1. Power Off the system according to [Log Off and Turn Off Procedure](#) on page 3.
2. Remove the Host Rack Rear Cover according to [Opening and Closing the Console Rack](#) on page 4.
3. Label the power connectors and disconnect them from the PDU.
4. Remove the four screws shown in [Figure 37](#) on page 47 which secure the bracket of the PDU to the Console Rack.
5. Remove the bracket.

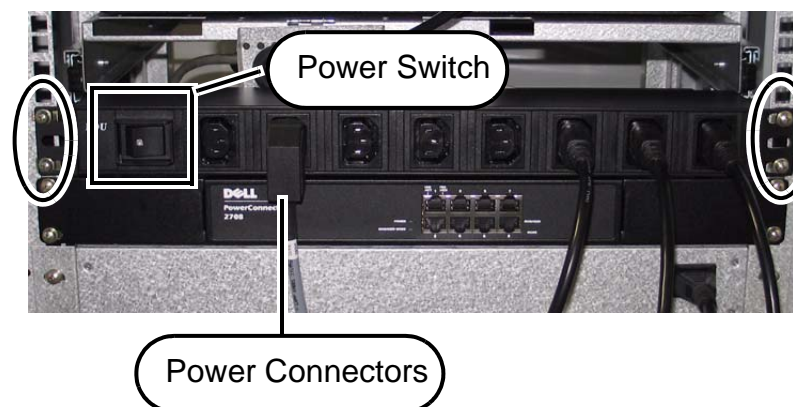


Figure 37: PDU

Installing the New PDU

1. Position the new PDU and secured it with screws.
2. Plug in the power connectors, and switch on.
3. Power On the system according to [Log on and Startup Procedure](#) on page 12.
4. Verify that all the devices whose power comes from the PDU operate properly.

Console Interface Board

The following procedures describe how to remove and replace the Console Interface Board.

Required Tools

- FSE standard tools

Estimated Time

Table 13: Estimated time for replacing the [Console Interface Board](#) on page 49

Procedure	Estimated Time	Required Manpower
Removing the Console Interface Board on page 49	1 hour	1 person
Installing the new Isolation Transformer on page 44	1 hour	1 person

Removing the Console Interface Board

1. Power Off the system according to [Log Off and Turn Off Procedure](#) on page 3
2. Remove the Host Rack Rear Cover according to [Opening and Closing the Console Rack](#) on page 4.
3. Label the cables which are connected to the Console Interface Board.
4. Disconnect the cables from the Console Interface Board Box.
5. Remove the four screws shown in [Figure 38](#) on page 50, which secure the Console Interface Box to the Console Rack
6. Remove the Console Interface Box.
7. Remove four screws (not shown) which secure the Console Interface Box cover.
8. Label the power cable, and disconnect the power cable from the board.
9. Remove the four screws shown in [Figure 39](#) on page 50, which secure the Console Interface Board to the Console Interface Board Box.
10. Remove the Console Interface Board.



Figure 38: Console Interface Board Box

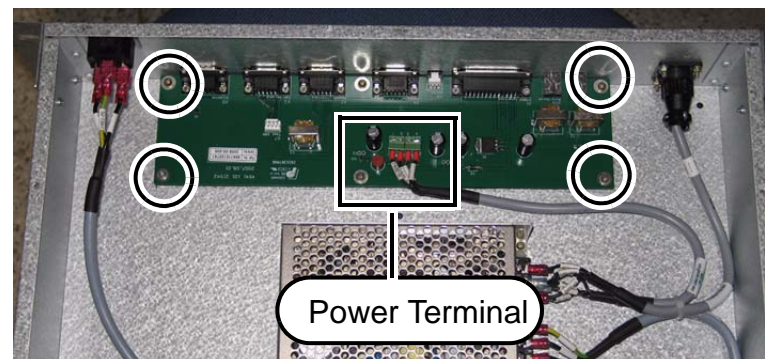


Figure 39: Console Interface Board

Installing the New Console Interface Board

1. Position the New Console Interface Board, and use four screws to secure it to the Console Interface Board Box.
2. Connect the power cable as shown in [Figure 39](#) on page 50.
3. Close the cover of the Console Interface Board Box.
4. Position the Console Interface Board Box, and secure it with four screws.
5. Connect the cables to the New Console Interface Board as shown in [Figure 40](#) on page 50.

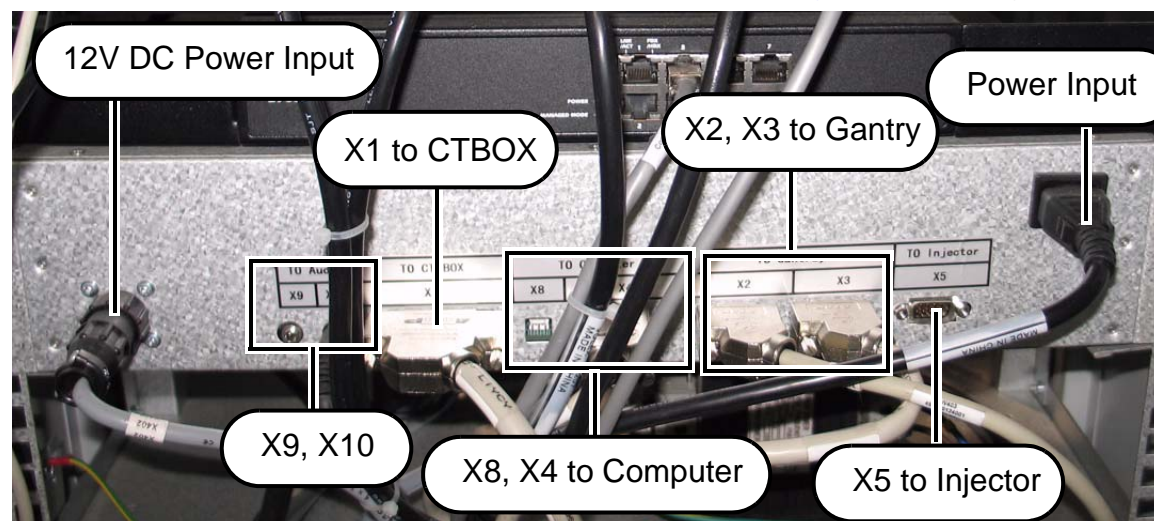


Figure 40: Console Interface Board

6. Power on the system according to [Log on and Startup Procedure](#) on page 12

12V DC Switch Power Supply

The following procedures describe how to remove and replace the 12V DC Switch Power Supply

Required Tools

- FSE standard tools

Estimated Time

Table 14: Estimated time for replacing the [12V DC Switch Power Supply](#) on page 51

Procedure	Estimated Time	Required Manpower
Removing the Switch Power Supply on page 51	1 hour	1 person
Installing the New Switch Power Supply on page 52	1 hour	1 person

Removing the Switch Power Supply

1. Power Off the system according to [Log Off and Turn Off Procedure](#) on page 3
2. Remove the Host Rack Rear Cover according to [Opening and Closing the Console Rack](#) on page 4.
3. Label the cables connected to the Console Interface Board, and disconnect the cables from the Console Interface Board Box.
4. Remove the four screws which secure the Console Interface Box to the Console Rack, and remove the box as shown in [Figure 38](#) on page 50.
5. Remove four screws (not shown) which secure the box cover.

6. Label the cables connected to the Switch Power Supply, and disconnect them from the 12V DC Switch Power Supply shown in [Figure 41](#) on page 52.
7. Release the two screws shown in [Figure 41](#) on page 52, which secure the Switch Power Supply.
8. Remove the Switch Power Supply.

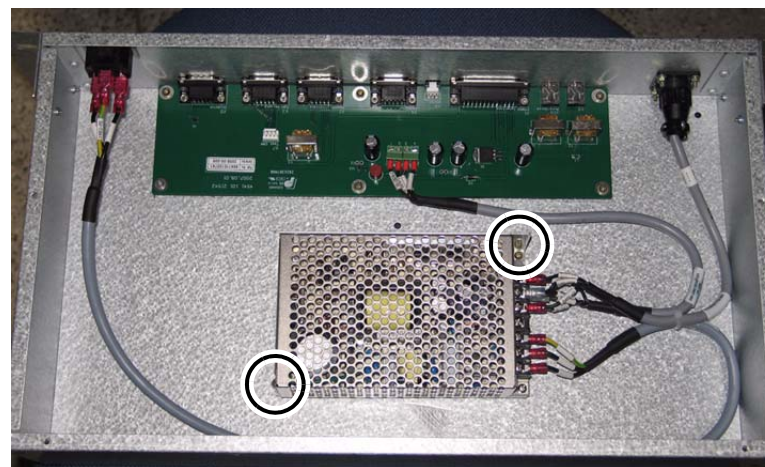


Figure 41: Switch Power Supply

Installing the New Switch Power Supply

1. Position the new Switch Power Supply, and use two screws to secure it.
2. Connect the power cable shown in [Figure 41](#) on page 52.
3. Close the box cover.
4. Position the Console Interface Board Box to Console Rack, and use four screws to secure it.
5. Connect the cables to the New Console Interface Board as shown in [Figure 40](#) on page 50.

Console Rack Fans

The following procedures describe how to remove and replace the Console Rack Fans

Required Tools

- FSE standard tools

Estimated Time

Table 15: Estimated time for replacing the [Console Rack Fans](#) on page 53

Procedure	Estimated Time	Required Manpower
Removing the Console Rack Fans on page 54	0.3 hour	1 person
Installing the New Console Rack Fans on page 54	0.5 hour	1 person

Removing the Console Rack Fans

1. Power Off the system according to [Log Off and Turn Off Procedure](#) on page 3
2. Remove the Console Rack Rear Cover according to [Opening and Closing the Console Rack](#) on page 4.
3. Remove the four screws which secure the Fan to the Rear Cover as shown in [Figure 42](#) on page 54.
4. Remove the Console Rack Fan
5. Clear the intake area of the Host Rack of any dust and dirt particles.

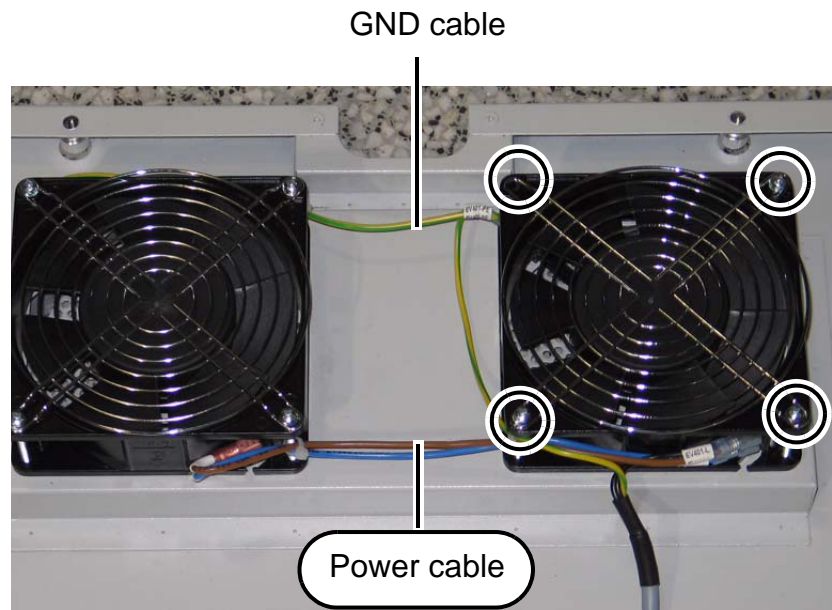


Figure 42: Host Rack Fans

Installing the New Console Rack Fans

1. To install the new Console Rack Fans, perform the procedure for [Removing the Console Rack Fans](#) on page 54 in reverse.
2. Power On the system according to the [Log on and Startup Procedure](#) on page 12.