

# Dell™ PowerVault™ 745N Systems Service Manual

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## Notes, Notices, and Cautions

-  **NOTE:** A NOTE indicates important information that helps you make better use of your computer.
-  **NOTICE:** A NOTICE indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.
-  **CAUTION:** A CAUTION indicates a potential for property damage, personal injury, or death.

## Abbreviations and Acronyms

For a complete list of abbreviations and acronyms, see your *Installation and Troubleshooting Guide*.

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## Before You Begin

This document includes procedures only for removing and reinstalling the system board and control panel. For procedures regarding maintenance of other components, see the Installation and Troubleshooting Guide.

The procedures in this document require that you remove the cover and work inside the system. While working inside the system, do not attempt to service the system except as explained in this document and elsewhere in your system documentation. Always follow the instructions closely, and ensure that you review all information in the "Safety Instructions" in your *System Information Guide*.

 **CAUTION:** See your *System Information Guide* for complete information about safety precautions, working inside the computer, and protecting against electrostatic discharge.

 **NOTE:** To remove or replace components in your system other than the control panel and system board, see the *Installation and Troubleshooting Guide*.

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## Recommended Tools

You may need the following items to perform the procedures in this section:

- 1 #2 Phillips screwdriver
  - 1 Wrist grounding strap
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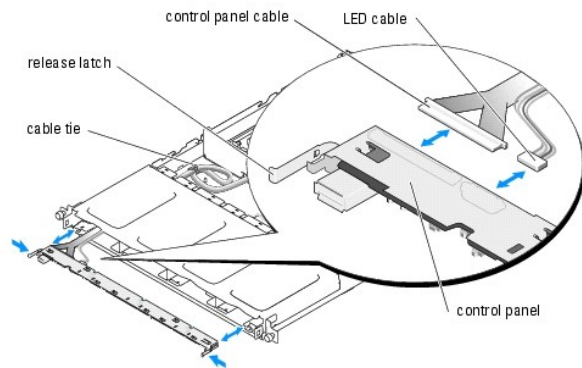
## Control Panel Assembly

### Removing the Control Panel Assembly

 **CAUTION:** See your *System Information Guide* for complete information about safety precautions, working inside the computer, and protecting against electrostatic discharge.

1. Turn off the system and attached peripherals, and disconnect the system from the electrical outlet.
2. Dismount the system from the rack.
3. Remove the bezel.
  - a. Push the bezel release latches inward.
  - b. Pull the panel away from the system.
4. Open the system.
  - a. Loosen the two captive screws at the back of the system.
  - b. While pressing down on the cover indentation, slide the cover backward about an inch, and grasp the cover on both sides.
  - c. Carefully lift the cover away from the system.
5. Remove all of the hard drive carriers in the system.
6. Label the hard drives with their locations in the hard drive bay.
7. Untwist the cable tie that holds the control panel cable and the LED cable together. See [Figure 1-1](#).
8. Press the release latches inward on each side of the control panel and carefully slide the control panel out of the system. See [Figure 1-1](#).
9. Disconnect the control panel cable and the LED cable from the control panel.

Figure 1-1. Control Panel Removal



## Installing the Control Panel

**⚠ CAUTION:** See your *System Information Guide* for complete information about safety precautions, working inside the computer, and protecting against electrostatic discharge.

1. Align the control panel and connect the control panel and LED cables to the control panel.
2. Carefully slide the control panel into the system until the release latches click. See [Figure 1-1](#).
3. Replace all of the hard drive carriers in the system at their labeled locations.
4. Close the system.
  - a. Ensure that you did not leave tools or parts inside the system.
  - b. Place the cover over the sides of the chassis, and slide the cover forward.
  - c. Tighten the two captive screws at the back of the system to secure the cover.
5. Reconnect the system to the electrical outlet, and turn on the system.
6. Replace the bezel.
  - a. Push the latches on the bezel inward.
  - b. Place the panel on the front of the system and release the latches.

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## System Board

This section contains information on installing and removing the main system board. The system board and system board tray are removed and replaced as a single assembly.

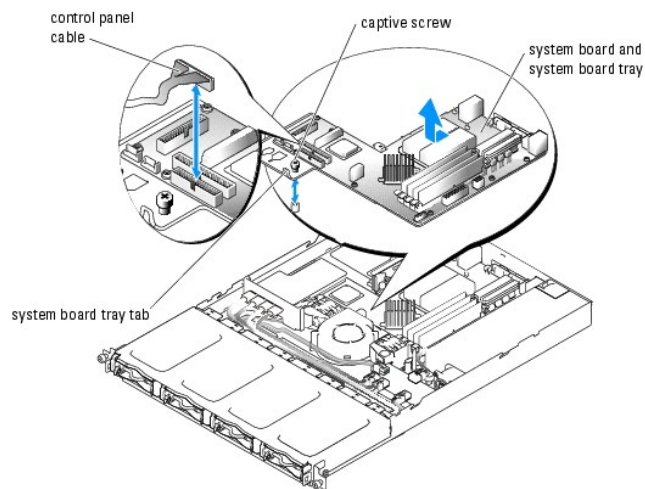
## Removing the System Board Assembly

**⚠ CAUTION:** See your *System Information Guide* for complete information about safety precautions, working inside the computer, and protecting against electrostatic discharge.

1. Remove the bezel.
  - a. Push the bezel release latches inward.
  - b. Pull the panel away from the system.
2. Turn off the system and attached peripherals, and disconnect the system from the electrical outlet.
3. Dismount the system from the rack.
4. Open the system.
  - a. Loosen the two captive screws at the back of the system.

- b. While pressing down on the cover indentation, slide the cover backward about an inch, and grasp the cover on both sides.
    - c. Carefully lift the cover away from the system.
  5. Remove the cooling shroud.
  6. Remove the heat sink and processor.
  7. Remove the memory modules.
- NOTE:** After removing the memory modules, record the memory module socket locations to ensure proper installation.
8. Disconnect the hard-drive interface cables from the appropriate card:
    - a. If this is a software RAID or external storage configuration system, remove the cables from the daughter card.
    - b. If this is a hardware RAID system, remove the cables from the CERC SATA RAID controller.
  9. If this is a software RAID or external storage configuration system, remove the daughter card. See your Installation and Troubleshooting Guide for more information.
  10. Disconnect the control panel interface cable from the J7 connector on the system board. See [Figure 1-2](#).
  11. Remove all PCI expansion cards installed on the riser board.
  12. Using a #2 Phillips screwdriver, loosen the two captive screws securing the riser board to the system board.
  13. Disconnect the riser board from the system board card-edge connector.
  14. Remove the fan assembly. See your Installation and Troubleshooting Guide for more information.
  15. Remove the power supply. See your Installation and Troubleshooting Guide for more information.
  16. Using a #2 Phillips screwdriver, loosen the captive screw that secures the system board tray to the chassis floor. See [Figure 1-2](#).
  17. Using the tab on the system board tray, slide the system board forward, toward the front of the system and lift the assembly up and out of the chassis. See [Figure 1-2](#).
  18. Lay the system board tray down on a smooth, nonconductive work surface.

**Figure 1-2. Removing the System Board and System Board Tray**




## Installing the System Board Assembly


**CAUTION:** See your *System Information Guide* for complete information about safety precautions, working inside the computer, and protecting against electrostatic discharge.

1. Unpack the new system board assembly.
2. Align the system board tray so that the tabs on the chassis floor slide into the notches in the system board tray.
3. Slide the system board tray backward until it stops.
4. Using a #2 Phillips screwdriver, tighten the captive screw that secures the system board tray to the chassis. See [Figure 1-2](#).

5. Install the power supply. See your Installation and Troubleshooting Guide for more information.
6. Install the fan assembly. See your Installation and Troubleshooting Guide for more information.
7. Connect the riser board.
8. Using a #2 Phillips screwdriver, tighten the two captive screws that secure the riser board to the system board.
9. Install any PCI expansion cards that you removed.
10. If this is a software RAID or external storage configuration system, install the daughter card. See your Installation and Troubleshooting Guide for more information.
11. Connect the hard-drive interface cables:
  - a. If this is a software RAID or external storage configuration system, connect the cables from the daughter card.
  - b. If this is a hardware RAID system, connect the cables from the CERC SATA RAID controller.
12. Install the processor.
13. Install the heat sink.
  - a. Using a lint-free cloth, remove the existing thermal grease from the processor and heat sink.

 **NOTE:** Use the same heat sink that you removed from the processor.


- b. Apply thermal grease evenly to the top of the processor.
  - c. Align the holes on both sides of the heat sink with the heat-sink posts on the system chassis.
14. Orient the securing clips so that the rubber-coated tabs are toward the back of the chassis.

 **NOTE:** If the securing clips are installed so that the rubber-coated tabs are toward the front of the system, the cooling shroud cannot be installed correctly.

15. Lower the end opposite of the rubber-coated tab of each securing clip over the heat-sink post, and then slide the securing clip toward the heat-sink post until they snap onto the post.
16. While holding down the rubber-coated tab with one hand, push the latch on the securing clip toward the heat-sink post until it locks the clip onto the post.
17. Repeat [step 15](#) and [step 16](#) for the other securing clip.
18. Install the memory modules.

 **NOTE:** Install the memory modules as noted in [step 7](#) of the procedure in "Removing the System Board Assembly."

19. Connect the LED cable to the daughter card on software RAID or external storage configurations, or the CERC SATA RAID controller on hardware RAID systems.
20. Connect the control panel interface cable to the J7 connector on the system board.
21. Install the cooling shroud.

 **NOTE:** When installing the cooling shroud, ensure that the two tabs on the cooling shroud are inserted into the two retaining slots in the back panel.

22. Close the system.
  - a. Ensure that you did not leave tools or parts inside the system.
  - b. Place the cover over the sides of the chassis, and slide the cover forward.
  - c. Tighten the two captive screws at the back of the system to secure the cover.
23. Reconnect the system to the electrical outlet, and turn on the system.
24. Replace the bezel.
  - a. Push the latches on the bezel inward.
  - b. Place the panel on the front of the system and release the latches.