

Dell™ Integrated KVM  
Switch Module  
**User's Guide**

## 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.

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**November 2004**

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# Safety Instructions

## Safety Cautions

Observe the following cautions while servicing this system:

 **CAUTION: The power supplies in your system may produce high voltages and energy hazards, which can cause bodily harm. Only trained service technicians are authorized to remove the covers and access any of the components inside the system.**

 **CAUTION: This system may have more than one power supply cable. To reduce the risk of electrical shock, a trained service technician must disconnect all power supply cables before servicing the system.**



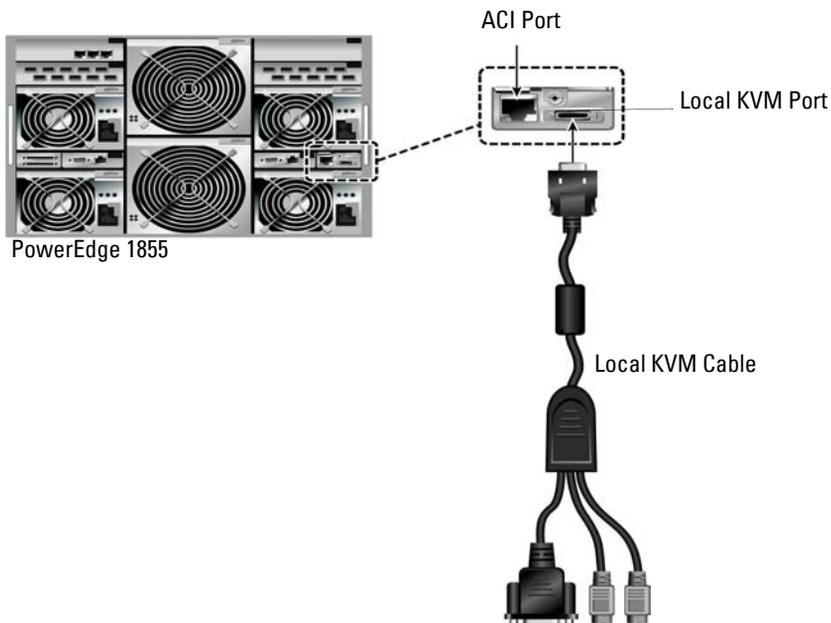
# Product Overview

## Features and Benefits

The Dell™ Integrated KVM Switch Module (KVM switch) is an analog keyboard, video and mouse (KVM) switch integrated into your Dell PowerEdge™ 1855 chassis. The KVM switch allows you to configure and manage your Server Modules by providing keyboard, monitor and mouse functions and allowing you to control the servers in the same way as you would if you were directly connected to the server. Selection of the server is accomplished via the On-Screen Configuration and Reporting interface (OSCAR®).

An Analog Console Interface (ACI) circuit connection allows you to connect a server via CAT5 cabling to a Rack Control Module (RCM) such as the Dell 2161DS Console Switch. This allows combinations of modular servers, standard servers, and Dell KVM Console Switches to be managed by network administrators from either a common access point or across an IP network.

**Figure 1-1. KVM Switch**



## OSCAR® graphical user interface

The KVM switch uses OSCAR's intuitive menus that allow you to configure and manage your switch system and select servers.

### Security

OSCAR allows you to protect your system with a screen saver password. After a user-defined time, the screen saver mode engages and access is prohibited until the appropriate password is entered to reactivate the system.

### Scanning

OSCAR allows you to select a list of Server Modules which are then displayed in the order selected while OSCAR is in scan mode. Each Server Module is displayed for a time period that you have specified.

### Identify Server Modules

Assign names to Server Modules using OSCAR. By default all Server Modules are given the name Slot followed by the slot number. However, these names are user definable to allow ease of use.

### Tiering

The KVM switch can be tiered from an existing DELL Console Switch. In this instance, the Server Modules are accessed through the OSCAR screens or software of the switch from which PowerEdge 1855 is tiered.

### FLASH upgradable

The KVM switch is FLASH upgradable to ensure that it is always running the most current firmware version available.

## Safety Precautions

Use the following safety guidelines to help ensure your own personal safety and to help protect your system and working environment from potential damage.

**⚠ CAUTION: The power supplies in your system may produce high voltages and energy hazards, which can cause bodily harm. Only trained service technicians are authorized to remove the covers and access any of the components inside the system.**

This document pertains only to the KVM switch. You should also read and follow the additional safety instructions contained elsewhere:

- The *Dell PowerEdge 1855 Installation and User's Guide* included with your rack solution that describes how to install your system into a rack.

**⚠ CAUTION: To reduce the risk of electrical shock, a trained service technician must disconnect all power supply cables before servicing the system.**

## General

- Observe and follow service markings.
- Do not service any product except as explained in your system documentation.
- Opening or removing covers that are marked with the triangular symbol with a lightning bolt may expose you to electrical shock.
- Components inside these compartments should be serviced only by a trained service technician.
  - This product contains no serviceable components. Do not attempt to open.
- Keep your system away from radiators and heat sources. Also, do not block cooling vents.
- Do not spill food or liquids on your system components, and never operate the product in a wet environment. If the system gets wet, see the appropriate section in your troubleshooting guide or contact your trained service provider.
- Use the product only with approved equipment.
- Allow the product to cool before removing covers or touching internal components.
- Be sure that your monitor and attached devices are electrically rated to operate with the power available in your location.
- Position system cables and power cables carefully. Route cables so that they cannot be stepped on or tripped over. Be sure that nothing rests on any cables.



## Installation

The Dell™ Integrated KVM Switch Module (KVM switch) can be deployed into most existing KVM infrastructures in order to manage standard integrated servers and modular Dell server blades all from a single console.

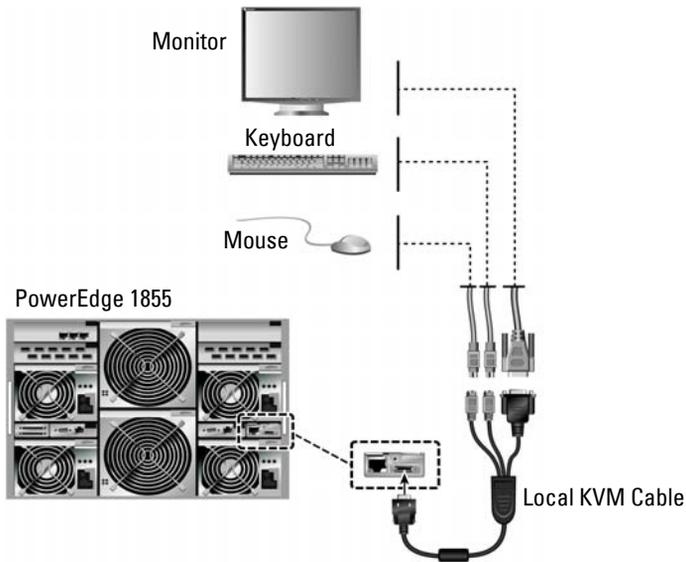
The KVM switch can be tiered from Dell-branded KVM switches such as the 2161DS Console Switch, 2160AS, and analog 180ES and 2160ES KVM switches. It can also be tiered from other industry products that support the On-Screen Configuration and Activity Reporting interface (OSCAR®).

### Configuring the KVM Switch for Tiering

Before the KVM Switch can be tiered in any configuration, it must first be set up for use. Figure 2-1 displays a basic configuration for the KVM Switch.

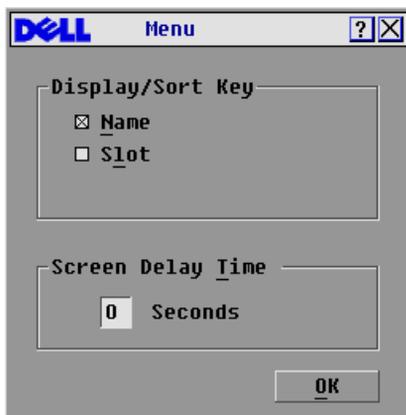
To connect the KVM Switch:

- 1 Connect the local KVM cable to the appropriate port on the KVM Switch (Figure 2-1).
- 2 Connect the keyboard, monitor, and mouse to the local KVM cable.

**Figure 2-1. KVM Switch Basic Configuration**

To display the KVM Switch **Main dialog box** by slot order:

- 1 Press <Print Screen> to launch the KVM Switch OSCAR.
- 2 Click **Setup – Menu**. The **Menu dialog box** appears.

**Figure 2-2. Menu Dialog Box**

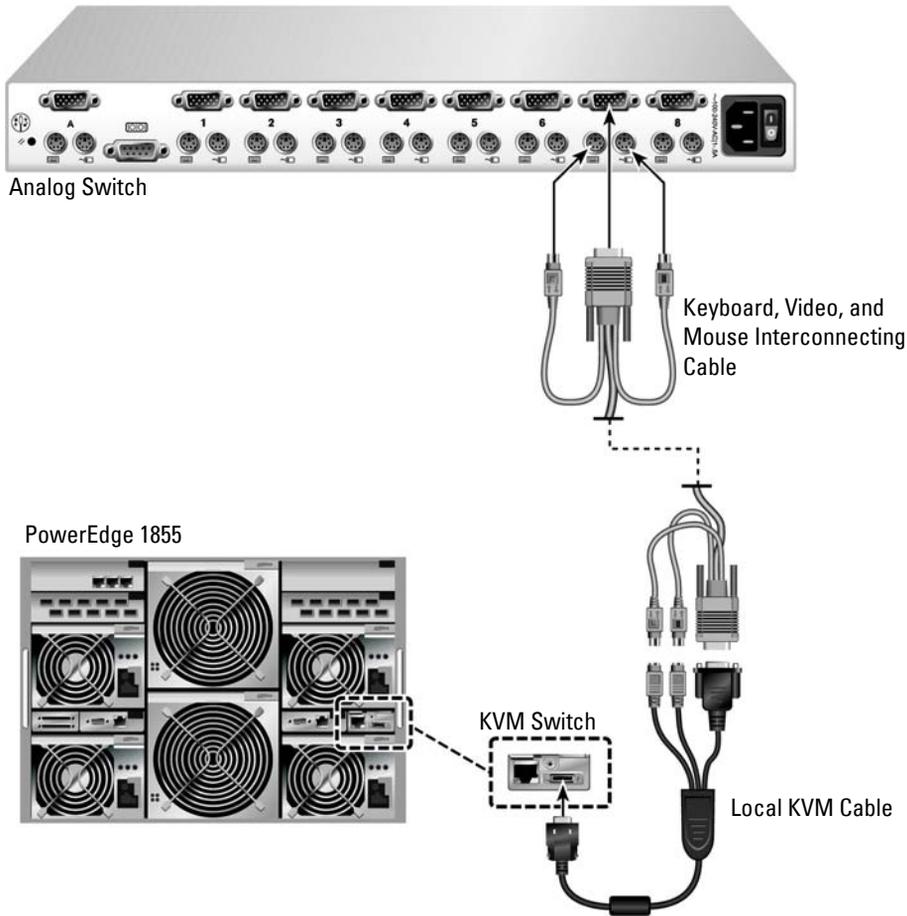
- 3 Select **Slot** to display servers numerically by slot number. Type a screen delay time of 1 second.
- 4 Click **OK**.

## Tiering an Analog KVM Switch

The KVM switch can be tiered from analog KVM switches such as the 180ES and 2160ES as well as Avocent OutLook 140ES, 180ES, 280ES, 1160ES, 2160ES, and 4160ES switches.

To connect the KVM Switch to a supported analog switch:

- 1 Place the PowerEdge1855 and the analog switch in the desired location. Dell recommends powering off and unplugging both appliances before connecting them.
- 2 Connect the local keyboard, video, and mouse interconnecting cable to the analog switch.
- 3 Connect the other end of this cable to the local KVM cable.
- 4 Connect the local KVM cable to the local KVM port of the KVM Switch(Figure 2-3).
- 5 Connect the power cords for both the analog switch and the PowerEdge1855 to the appropriate socket on the rear of the appliance.
- 6 Connect both the analog switch and the PowerEdge1855 to an appropriate power supply.
- 7 Power up the analog switch and the PowerEdge1855.

**Figure 2-3. KVM Switch Tiered from an Analog KVM Switch**

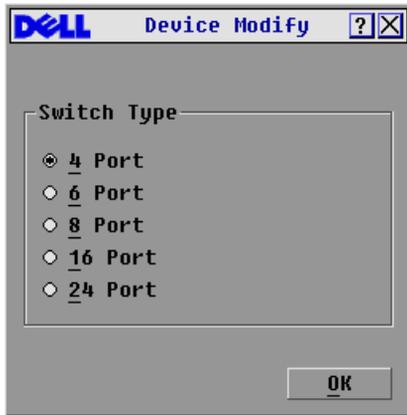
Before connecting your KVM Switch to a supported analog switch, you must ensure that it has been set to display in Slot order and that the **Screen Delay Time** is set to 1 or more seconds. Once in Slot order, it is possible to also set a **Screen Delay Time** that allows you to soft switch to a server without launching OSCAR.

**NOTE:** Soft switching allows you to switch servers using a hot key sequence. You can soft switch to a server by pressing <Print Screen> and then typing the first few characters of its name or number. If you have a Delay Time set and you press the key sequences before that time has elapsed, OSCAR will not display.

To configure the analog switch:

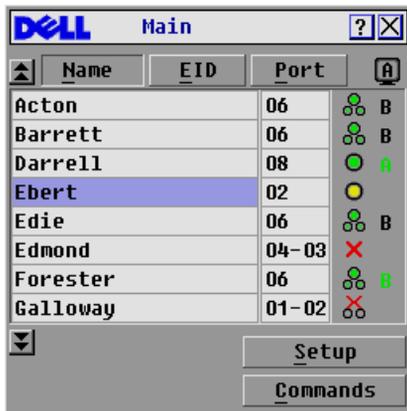
- 1 Press <Print Screen> to open the OSCAR Main dialog box.
- 2 Click **Setup - Devices - Device Modify**.

**Figure 2-4. Device Modify Dialog Box**



- 3 Click to select the 10-port option to match the number of slots in the PowerEdge 1855. If the 10-port option is not available, select the 16-port option.
- 4 Click OK to exit OSCAR.
- 5 Press <Print Screen> to verify that the settings have taken effect. The slot number of the blade to which the KVM Switch is now attached should be expanded to display each of the slot locations of the servers in the PowerEdge 1855. For instance, if the KVM Switch is attached to slot 1, it would now be displayed as 01-01 to 01-10.

**Figure 2-5. Main Dialog Box.**

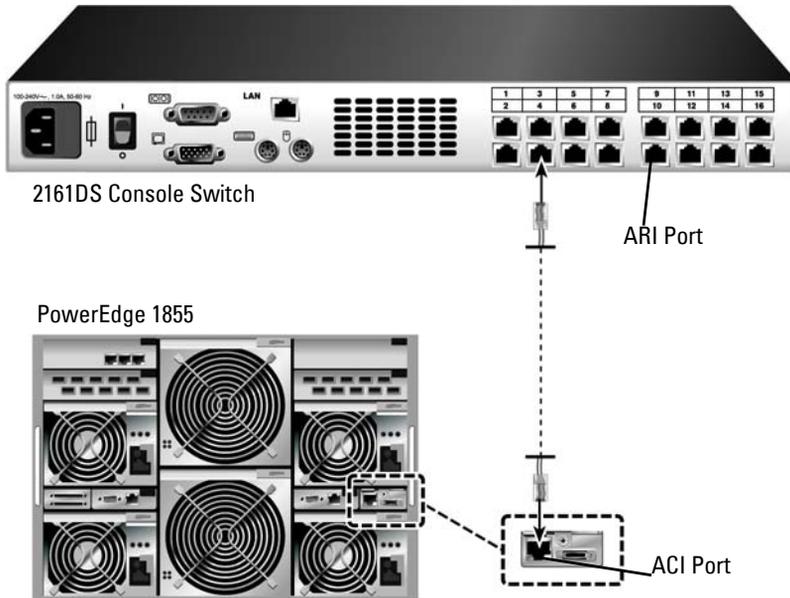


## Tiering a KVM switch from a 2161DS Console Switch

To tier a KVM Switch from a Dell 2161DS Console Switch:

- 1 Connect the ACI port on the rear of the PowerEdge 1855 to one of the 16 ARI ports on the back of the Dell 2161DS Console Switch (Figure 2-6).
- 2 Once the KVM Switch is connected, the server blades appear in OSCAR.

**Figure 2-6. Tying a KVM Switch from a 2161DS Console Switch**



Once connected, the Dell 2161DS will automatically configure the slots in the KVM menu. Once the local system is set up, you will need to resynchronize the server list from the Remote Console Switch Software in order to see the list of PowerEdge 1855 server blades.

### Resynchronizing the Server List at the Remote Client Workstation

Once the KVM switch is connected, the server blades appear in OSCAR. You now need to resynchronize the servers on any remote workstation to ensure that the server blades are now available to any remote users that are connected to the 2161DS Console Switch through the Remote Console Switch Software.

**NOTE:** This procedure only resynchronizes one remote client workstation. With multiple client workstations, save the resynchronized local database and load it into the other client workstations to ensure consistency.

**CAUTION:** Do not connect the KVM switch ACI port to a LAN device such as a network hub. Doing so may result in equipment damage.

To resynchronize the server listing:

- 1 Click the **Resync** button in the **Server** category of the MP. The Resync Wizard launches. Click **Next**. A warning message displays indicating that the database will be updated to match the current configuration in the 2161DS Console Switch. Your current local database names will be overridden with the switch names. To include unpowered SIPs or Avocent AVRIQs in the resynchronization, click to enable the **Include Offline SIPs** check box.
- 2 Click **Next**. A polling Remote Console Switch message box appears with a progress bar indicating that the switch information is being retrieved.
- 3 If no changes were detected in the appliance, a completion dialog box appears with this information.  
-or-  
If server changes were detected, then the **Detected Changes** dialog box will be displayed. Click **Next** to update the database.
- 4 If a cascade switch was detected, the **Enter Cascade Switch Information** dialog box appears. Select the type of switch connected to the appliance from the drop-down list. If the type you are looking for is not available, you can add it by clicking the **Add** button.
- 5 Click **Next**. The completion dialog box appears.
- 6 Click **Finish** to exit.



# Analog Port Operation

## Controlling Your System

The Dell™ Integrated KVM Switch Module (KVM switch) uses the intuitive menus of the On-Screen Configuration and Activity Reporting interface (OSCAR®) to allow you to configure your system, and select Server Modules.

## Viewing and Selecting Slots and Server Modules

Use the **Main** dialog box to view, configure, and control Server Modules connected to the KVM switch. You can view your Server Modules by name or by slot. The slot number is determined by the chassis slot number which a Server Module occupies. You will see an OSCAR-generated **Name** list by default when you first launch OSCAR.

To access the **Main** dialog box:

Press <Print Screen> to launch OSCAR. The **Main** dialog box appears.

-or-

If a password has been assigned, the **Password** dialog box appears. Type your password and click **OK**. The **Main** dialog box appears. For more information, see "Setting Console Security".

**Figure 3-1. Example of Configured Main Dialog Box**



**NOTE:** You can also press the <Ctrl> key twice within one second to launch OSCAR. You can use this key sequence in any place you see <Print Screen> throughout this User's Guide.

The status of Server Modules in your system is indicated in the far right column of the **Main** dialog box. Table 3-1 describes the status symbols.

**Table 3-1. OSCAR Status Symbols**

Symbol	Description
	Server Module is online
	Server Module is offline or is not operating properly
	User connection

### Selecting Server Modules

Use the **Main** dialog box to select Server Modules. When you select a Server Module, the KVM switch reconfigures the keyboard and mouse to the proper settings for that Server Module.

To select Server Modules:

Double-click the Server Module name or slot number.

-or-

If the display order of your Server Module list is by slot (Slot button is depressed), type the slot number and press <Enter>.

-or-

If the display order of your Server Module list is by name (Name button is depressed), type the first few letters of the name of the Server Module, establish it as unique, and press <Enter> twice.

To select the previous Server Module:

Press <Print Screen> and then <Backspace>. This key combination toggles you between the previous and current connections.

To disconnect the analog user from a Server Module:

Press <Print Screen> and then <Alt><Ø>. This leaves you in a free state, with no Server Module selected. The status flag on your desktop, if active, displays Free.

### Soft Switching

Soft switching is the ability to switch Server Modules using a hot key sequence. You can soft switch to a Server Module by pressing <Print Screen> and then typing the first few characters of its name or number. If you have a Delay Time set and you press the key sequences before that time has elapsed, OSCAR will not display.

To configure OSCAR for soft switching:

- 1 Press <Print Screen> to launch OSCAR. The **Main** dialog box appears.
- 2 Click **Setup - Menu**. The **Menu** dialog box appears.
- 3 Select Name or Slot for the Display/Sort Key.

- 4 For **Delay Time**, type the number of seconds of delay desired before the **Main** dialog box is displayed after <Print Screen> is pressed.
- 5 Click **OK**.

To soft switch to a Server Module:

- 1 To select a Server Module, press <Print Screen>. If the display order of your Server Module list is by slot as chosen above in step 3 (**Slot** button is depressed), type the slot number and press <Enter>.  
-or-
- 2 If the display order of your Server Module list is by name as chosen above in step 3 (**Name** button is depressed), type the first few characters of the name of the Server Module to establish it as unique and press <Enter>.
- 3 To switch back to the previous Server Module, press <Print Screen> then <Backspace>.

## OSCAR Navigation Basics

Table 3-2 describes how to use the keyboard and mouse to navigate OSCAR.

**Table 3-2. Keyboard and Mouse Navigation**

This Keystroke	Does this
Print Screen	Opens OSCAR. Press <Print Screen> twice to send the <Print Screen> keystroke to the currently selected device.
F1	Opens the Help screen for the current dialog box.
Escape	Closes the current dialog box without saving changes and returns to the previous one. In the <b>Main</b> dialog box, it closes OSCAR and returns to the selected Server Module. In a message box, it closes the pop-up box and returns to the current dialog box.
Alt	Opens dialog boxes, selects or checks options and executes actions when used in combination with underlined letters or other designated characters.
Alt+X	Closes current dialog box and returns to the previous one.
Alt+O	Selects the <b>OK</b> button, then returns to the previous dialog box.
Enter	Completes the switch operation in the <b>Main</b> dialog box and exits OSCAR.
Single-click Enter	In a text box, it selects the text for editing and enables the <i>left-arrow key</i> and <i>right-arrow key</i> keys to move the cursor. Press <Enter> again to quit the edit mode.
Print Screen, Backspace	Toggles back to previous selection if no other keystrokes have been typed.
Print Screen, Alt+Ø	Immediately disconnects user from a Server Module; no Server Module is selected. Status flag displays Free. (This only applies to the <Ø> on the keyboard and not the keypad.)
Print Screen, Pause	Immediately turns on screen saver mode and prevents access to that particular console, if it is password protected.
Up/Down Arrows	Moves the cursor from line to line in lists.
Right/Left Arrows	When editing a text box, these keys move the cursor within the column
Home/End	Moves the cursor to the top or bottom of a list.
Backspace	Erases characters in a text box.
Delete	Deletes characters in a text box.
Numbers	Type from the keyboard or keypad.
Caps Lock	Disabled. Use the <Shift> key to change case.

## Configuring OSCAR

You can configure your KVM switch from the **Setup** menu within OSCAR. Select the **Names** button when initially setting up your KVM switch system to identify Server Modules by unique names. Select the other setup features to manage routine tasks for your Server Modules from the OSCAR menu.

To access the **Setup** menu:

- 1 Press <Print Screen> to launch OSCAR. The **Main** dialog box appears.
- 2 Click **Setup**. The **Setup** dialog box appears.

**Figure 3-2. Setup Dialog Box**



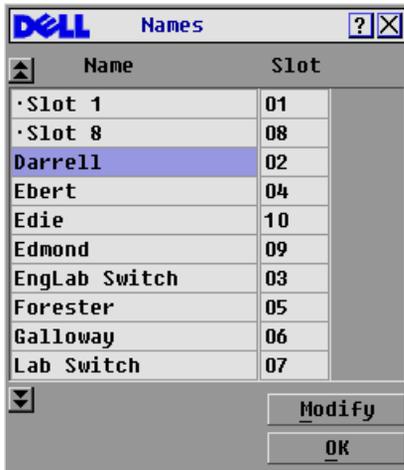
### Assigning Server Module Names

Use the **Names** dialog box to identify Server Modules by name rather than by slot number. The **Names** list is always sorted by slot order.

To access the **Names** dialog box:

- 1 Press <Print Screen>. The **Main** dialog box will appear.
- 2 Click **Setup - Names**. The **Names** dialog box appears.

Figure 3-3. Names Dialog Box

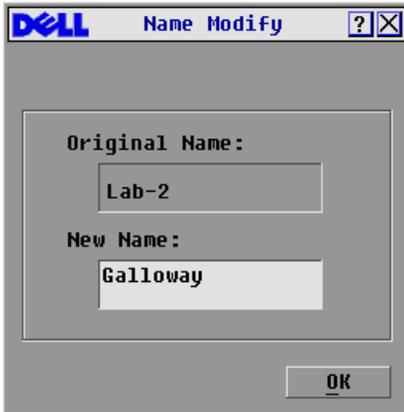


-  **NOTE:** If new Server Modules are discovered by the KVM switch system, the on-screen list will be automatically updated. The mouse cursor will change into an hourglass during the update. No mouse or keyboard input will be accepted until the list update is complete.
-  **NOTE:** The Server Module names are stored for each slot on the KVM switch. If a Server Module is moved to a new slot or chassis, the name does not move with it and must be reassigned by the user in the **Names** dialog box.

To assign names to Server Modules:

- 1 In the **Names** dialog box, select the name or slot number you wish to change and click **Modify**. The **Name Modify** dialog box appears.

**Figure 3-4. Name Modify Dialog Box**



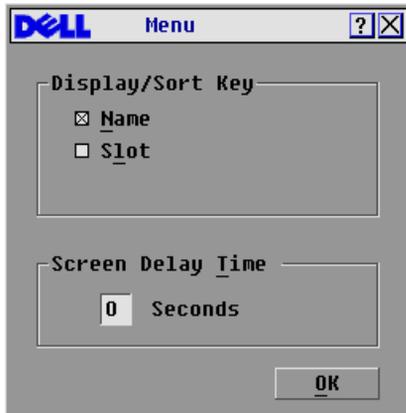
- 2 Type a name in the **New Name** box. Names of Server Modules may be up to 15 characters long. Legal characters include: A-Z, a-z, Ø-9, space, and hyphen.
- 3 Click **OK** to transfer the new name to the **Names** dialog box. Your selection is not saved until you click **OK** in the **Names** dialog box.
- 4 Repeat steps 1-3 for each Server Module in the system.
- 5 Click **OK** in the **Names** dialog box to save your changes.  
-or-  
Click **X** or press <Escape> to exit the dialog box without saving changes.

## Changing the Display Behavior

Use the **Menu** dialog box to change the display order of Server Modules and set a screen delay time for OSCAR.

To access the **Menu** dialog box:

- 1 Press <Print Screen> to launch OSCAR. The **Main** dialog box appears.
- 2 Click **Setup - Menu**. The **Menu** dialog box appears.

**Figure 3-5. Menu Dialog Box**

To choose the display order of Server Modules in the **Main** dialog box:

- 1 Select **Name** to display Server Modules alphabetically by name.  
-or-  
Select **Slot** to display Server Modules numerically by slot number.
- 2 Click **OK**.

To set a screen delay time for OSCAR:

- 1 Type in the number of seconds (0-9) you want to delay display of OSCAR after you press <Print Screen>. Entering <0> will instantly launch OSCAR with no delay.
- 2 Click **OK**.

Setting a time to delay display of OSCAR allows you to complete a soft switch without OSCAR displaying. To perform a soft switch, see "Soft Switching".

## Controlling the Status Flag

The status flag displays on your desktop and shows the name of the selected Server Module or the status of a slot. Use the **Flag** dialog box to configure the flag to display by Server Module name, or to change the flag color, opacity, display time, and location on the desktop.

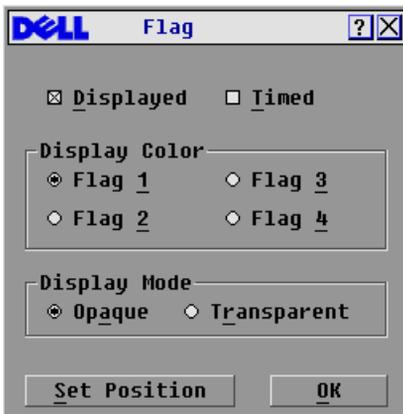
**Table 3-3. OSCAR Status Flags**

Flag	Description
	Flag type by name
	Flag indicating that the user has been disconnected from all systems

To access the **Flag** dialog box:

- 1 Press <Print Screen>. The **Main** dialog box will appear.
- 2 Click **Setup - Flag**. The **Flag** dialog box appears.

**Figure 3-6. Flag Dialog Box**



To determine how the status flag is displayed:

- 1 Select **Displayed** to show the flag all the time or select **Displayed** and **Timed** to display the flag for only five seconds after switching.



**NOTE:** If only **Timed** is selected the flag will not be displayed at all.

- 2 Select a flag color in **Display Color** from the available colors of black, red, blue, and purple.
- 3 In **Display mode**, select **Opaque** for a solid color flag or select **Transparent** to see the desktop through the flag.

- 4 To position the status flag on the desktop:
  - a Click **Set Position** to gain access to the **Position Flag** screen.
  - b Left-click on the title bar and drag to the desired location.
  - c Right-click to return to the **Flag** dialog box.

**Figure 3-7. Position Flag**



 **NOTE:** Changes made to the flag position are not saved until you click **OK** in the **Flag** dialog box.

- 5 Click **OK** to save settings.  
-or-  
Click **X** to exit without saving changes.

### Setting Console Security

OSCAR enables you to set security on your KVM switch console. You can establish a screen saver mode that engages after your console remains unused for a specified delay time. Once engaged, your console will remain locked until you press any key or move the mouse. You will then need to type in your password to continue.

Use the **Security** dialog box to lock your console with password protection, set or change your password and enable the screen saver.

To access the **Security** dialog box:

- 1 Press <Print Screen>. The **Main** dialog box will appear.
- 2 Click **Setup - Security**. The **Security** dialog box appears.

 **NOTE:** If a password has been previously set, the user will have to enter the password before being able to access the **Security** dialog box.

Figure 3-8. Security Dialog Box



To set or change the password:

- 1 Single-click and press <Enter> or double-click in the **New** text box.
- 2 Type the new password in the **New** text box and press <Enter>. Passwords require 5 to 12 characters and must include at least one letter and one number. Passwords are also case sensitive. Legal characters are: A-Z, a-z, and 0-9.
- 3 In the **Repeat** box, type the password again and press <Enter>.
- 4 Click **OK** if you only want to change your password, and then close the dialog box.

To password protect your console:

- 1 Set your password as described in the previous procedure.
- 2 Select **Enable Screen Saver**.
- 3 Type the number of minutes for **Inactivity Time** (from 1 to 99) to delay activation of password protection and the screen saver feature.
- 4 For **Mode**, select **Energy** if your monitor is ENERGY STAR™ compliant; otherwise select **Screen**.



**CAUTION: Monitor damage can result from the use of Energy mode with monitors not compliant with ENERGY STAR™.**

- 5 (Optional) Click **Test** to activate the screen saver test which lasts 10 seconds then returns you to the **Security** dialog box.
- 6 Click **OK**.

To log in to your console:

- 1 Press <Print Screen> to launch OSCAR. The **Password** dialog box appears.
- 2 Type your password and then click **OK**.
- 3 The **Main** dialog box appears if the password was entered properly.

To automatically log out of a Server Module when inactive:

- 1 In the **Main** dialog box, click **Setup - Security**. If you have password protection, the **Password** dialog box appears.
- 2 Type your password, and then click **OK**. The **Security** dialog box appears.
- 3 In the **Inactivity Time** text box, enter the length of time you want to stay connected to a Server Module before it automatically disengages you.
- 4 Click **OK**.

To remove password protection from your console:

- 1 In the **Main** dialog box, click **Setup - Security**. the **Password** dialog box appears.
- 2 Type your password, and then click **OK**.
- 3 In the **Security** dialog box, single-click and press <Enter> or double-click in the **New** box. Leave the box blank. Press <Enter>.
- 4 Single-click and press <Enter> or double-click in the **Repeat** box. Leave the box blank. Press <Enter>.
- 5 Click **OK** if you only want to eliminate your password.

To enable the screen saver mode with no password protection:

- 1 If your console does not require a password to gain access to the **Security** dialog box, go to step 2.  
- or -  
If your console is password protected, see the previous procedure, then go to step 2.
- 2 Select **Enable Screen Saver**.
- 3 Type the number of minutes for delay time (from 1 to 99) that you want to delay activation of the screen saver.
- 4 Choose **Energy** if your monitor is ENERGY STAR™ compliant; otherwise select **Screen**.



**CAUTION: Monitor damage can result from the use of Energy mode with monitors not compliant with ENERGY STAR™.**

- 5 (Optional) Click **Test** to activate the screen saver test which lasts 10 seconds then returns you to the **Security** dialog box.
- 6 Click **OK**.



**NOTE:** Activation of the screen saver mode disconnects the user from a Server Module; no Server Module is selected. The status flag displays Free.

To exit the screen saver mode:

Press any key or move your mouse. The **Main** dialog box appears.

To turn off the screen saver:

- 1 In the **Security** dialog box, clear **Enable Screen Saver**.
- 2 Click **OK**.

To immediately turn on the screen saver:

Press <Print Screen>, then press <Pause>.

 **NOTE:** **Enable Screen Saver** must be selected in the **Security** dialog box.

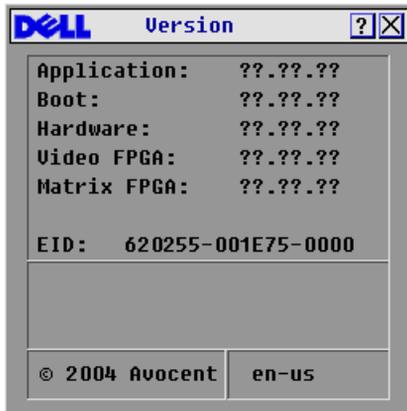
## Displaying Version Information

Use the **Version** dialog box to display the KVM switch firmware, hardware and FPGA versions, and to identify the language and keyboard configuration. For optimum performance, keep your firmware current. For more information on updates, see "Appendix B: OSCAR Refresh Rates".

To display version information:

- 1 Press <Print Screen>. The **Main** dialog box will appear.
- 2 Click **Commands - Display Versions**. The **Version** dialog box appears. The top half of the box lists the subsystem versions in the KVM switch.

**Figure 3-9. Version Dialog Box**



- 3 Click **X** or press <Escape> to close the **Version** dialog box.

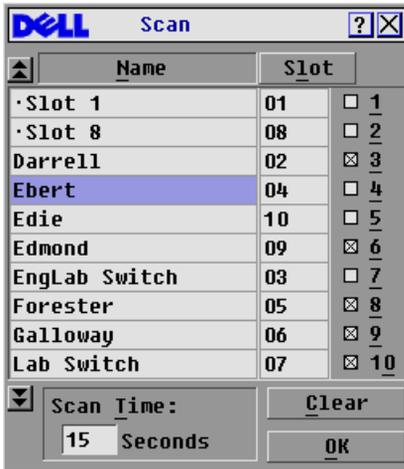
## Scanning Your System

In scan mode, the KVM switch automatically scans from slot to slot (Server Module to Server Module). You can scan up to 10 Server Modules by specifying which Server Modules you want to scan and the number of seconds that each Server Module will display.

To add Server Modules to the **Scan** list:

- 1 If OSCAR is not open, press <Print Screen>. The **Main** dialog box will appear.
- 2 Click **Setup - Scan**. The **Scan** dialog box appears.

**Figure 3-10. Scan Dialog Box**



- 3 The dialog box contains a listing of all the Server Modules attached to your unit. Click to enable the check box next to the Server Modules you wish to scan.
  - or-
  - Double-click on a Server Module's name or slot.
  - or-
  - Press <Alt> + the number of the Server Module you wish to scan. You can select up to 10 Server Modules.
- 4 In the **Scan Time** box, type the number of seconds (from 3 to 99) of desired time before the scan moves to the next Server Module in the sequence.
- 5 Click **OK**.

To remove a Server Module from the **Scan** list:

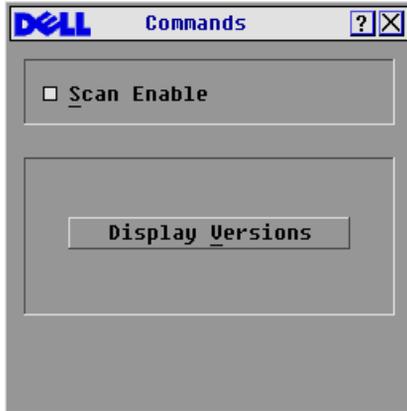
- 1 In the **Scan** dialog box, click to disable the check box next to a Server Module to be removed.
  - or-
  - Double-click on a Server Module's name or slot.
  - or-
  - Click the **Clear** button to remove all Server Modules from the **Scan** list

- 2 Click OK.

To start the scan mode:

- 1 Press <Print Screen>. The **Main** dialog box will appear.
- 2 Click **Commands**. The **Command** dialog box appears.

**Figure 3-11. Command Dialog Box**



- 3 Select **Scan Enable** in the **Command** dialog box.

To cancel scan mode:

- 1 Select a **Server Module** if **OSCAR** is open.  
-or-  
Move the mouse or press any key on the keyboard if **OSCAR** is not open. Scanning will stop at the currently selected **Server Module**.  
-or-  
Press <Print Screen>. The **Main** dialog box will appear.
- 2 Click **Commands**. The **Command** dialog box appears.
- 3 Clear **Scan Enable**.



# Appendices

## Appendix A: Technical Specifications

**Table 4-1. Technical Specifications**

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<b>Server Module Slots</b>	
Number	10
Plug and Play	DDC2B
Video Resolution	Analog Port Maximum 1600x1200@ 85Hz.
<b>ACI Port</b>	
Number	1
Type	Avocent ACI
Connectors	RJ45
<b>Analog Port</b>	
Number	1
Type	PS/2 and VGA
Connectors	PS/2 MiniDIN, 15 Pin D

---

## Appendix B: OSCAR Refresh Rates

On-Screen Configuration and Activity Reporting interface (OSCAR®) synchronizes to the following refresh rates.

**Table 4-2. Refresh Rates**

Resolution	Refresh Rate	Horizontal Frequency
640 x 480	60 Hz	31.5 Khz
640 x 480	72 Hz	37.9 Khz
640 x 480	75 Hz	37.5 Khz
640 x 480	85 Hz	43.3 Khz
800 x 600	60 Hz	37.9 Khz
800 x 600	72 Hz	48.1 Khz
800 x 600	75 Hz	46.9 Khz
800 x 600	85 Hz	53.7 Khz
1024 x 768	60 Hz	48.4 Khz
1024 x 768	72 Hz	56.5 Khz
1024 x 768	75 Hz	60.0 Khz
1024 x 768	85 Hz	68.7 Khz
1152 x 864	75 Hz	67.5 Khz
1280 x 768	60 Hz	60.0 Khz
1280 x 768	85 Hz	85.9 Khz
1280 x 1024	60 Hz	64.0 Khz
1280 x 1024	75 Hz	80.0 Khz
1280 x 1024	85 Hz	91.1 Khz
1600 x 1200	60 Hz	75.0 Khz
1600 x 1200	70 Hz	87.0 Khz
1600 x 1200	75 Hz	93.8 Khz
1600 x 1200	85 Hz	106.3 Khz

# Appendix C: Notifications

## USA Notification



**CAUTION:** Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.



**NOTE:** This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

## Canadian Notification

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le Règlement sur le brouillage radioélectrique édicté par le Ministère des Communications du Canada.

## Japanese Approvals

この装置は、情報処理装置等電波障害自主規制協議会（VCCI）の基準に基づくクラスA情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

## Taiwanese Approvals

警告使用者：  
這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。



## Limited Warranties and Return Policy

Dell-branded hardware products purchased in the U.S. or Canada come with either a 90-day, 1-year, 2-year, 3-year, or 4-year limited warranty. To determine which warranty came with your hardware product(s), see your packing slip or invoice. The following sections describe the limited warranties and return policy for the U.S., the limited warranties and return policy for Canada, the manufacturer guarantee for Latin America and the Caribbean, and the Intel® Pentium® and Celeron® warranty for the U.S. and Canada.

### Limited Warranty for Dell-Branded Hardware Products (U.S. Only)

#### What is covered by this limited warranty?

This limited warranty covers defects in materials and workmanship in your—our end-user customer's—Dell-branded hardware products, including Dell-branded peripheral products.

#### What is not covered by this limited warranty?

This limited warranty does not cover:

- Software, including the operating system and software added to the Dell-branded hardware products through our factory-integration system, third-party software, or the reloading of software
- Non-Dell-branded and Solution Provider Direct products and accessories
- Problems that result from:
  - External causes such as accident, abuse, misuse, or problems with electrical power
  - Servicing not authorized by Dell
  - Usage that is not in accordance with product instructions
  - Failure to follow the product instructions or failure to perform preventive maintenance
  - Problems caused by using accessories, parts, or components not supplied by Dell
- Products with missing or altered Service Tags or serial numbers
- Products for which Dell has not received payment

**THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE (OR JURISDICTION TO JURISDICTION). DELL'S RESPONSIBILITY FOR MALFUNCTIONS AND DEFECTS IN HARDWARE IS LIMITED TO REPAIR AND REPLACEMENT AS SET FORTH IN THIS WARRANTY STATEMENT. ALL EXPRESS AND IMPLIED WARRANTIES FOR THE PRODUCT, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTIES AND CONDITIONS OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED IN TIME TO THE TERM OF THE LIMITED WARRANTY PERIOD REFLECTED ON YOUR PACKING SLIP OR INVOICE. NO WARRANTIES, WHETHER EXPRESS OR IMPLIED, WILL APPLY AFTER THE LIMITED WARRANTY PERIOD HAS EXPIRED. SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THIS LIMITATION MAY NOT APPLY TO YOU.**

WE DO NOT ACCEPT LIABILITY BEYOND THE REMEDIES PROVIDED FOR IN THIS LIMITED WARRANTY OR FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES, INCLUDING, WITHOUT LIMITATION, ANY LIABILITY FOR THIRD-PARTY CLAIMS AGAINST YOU FOR DAMAGES, FOR PRODUCTS NOT BEING AVAILABLE FOR USE, OR FOR LOST DATA OR LOST SOFTWARE. OUR LIABILITY WILL BE NO MORE THAN THE AMOUNT YOU PAID FOR THE PRODUCT THAT IS THE SUBJECT OF A CLAIM. THIS IS THE MAXIMUM AMOUNT FOR WHICH WE ARE RESPONSIBLE.

SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU.

## How long does this limited warranty last?

This limited warranty lasts for the time period indicated on your packing slip or invoice, except for the following Dell-branded hardware:

- Portable computer batteries carry a 1-year limited warranty.
- Projector lamps carry a 90-day limited warranty.
- Memory carries a lifetime limited warranty.
- Monitors carry the longer of either a 3-year limited warranty or the remainder of the warranty for the Dell computer to which the monitor will be connected.
- Other add-on hardware carries the longer of either a 1-year limited warranty for new parts and a 90-day limited warranty for reconditioned parts or, for both new and reconditioned parts, the remainder of the warranty for the Dell computer on which such parts are installed.

The limited warranty on all Dell-branded products begins on the date of the packing slip or invoice. The warranty period is not extended if we repair or replace a warranted product or any parts. Dell may change the availability of limited warranties, at its discretion, but any changes will not be retroactive.

## What do I do if I need warranty service?

Before the warranty expires, please call us at the relevant number listed in the following table. Please also have your Dell Service Tag or order number available.

<b>Individual Home Consumers:</b>	<b>U.S. Only</b>
Technical Support	1-800-624-9896
Customer Service	1-800-624-9897
<b>Individual Home Consumers who purchased through an Employee Purchase Program:</b>	
Technical Support and Customer Service	1-800-822-8965
<b>Home and Small Business Commercial Customers:</b>	
Technical Support and Customer Service	1-800-456-3355
<b>Medium, Large, or Global Commercial Customers, Healthcare Customers, and Value-Added Resellers (VARs):</b>	
Technical Support and Customer Service	1-800-822-8965
<b>Government and Education Customers:</b>	
Technical Support and Customer Service	1-800-234-1490
<b>Dell-Branded Memory</b>	1-888-363-5150

## What will Dell do?

**During the 90 days of the 90-day limited warranty and the first year of all other limited warranties:** During the 90 days of the 90-day limited warranty and the first year of all other limited warranties, we will repair any Dell-branded hardware products returned to us that prove to be defective in materials or workmanship. If we are not able to repair the product, we will replace it with a comparable product that is new or refurbished.

When you contact us, we will issue a Return Material Authorization Number for you to include with your return. You must return the products to us in their original or equivalent packaging, prepay shipping charges, and insure the shipment or accept the risk if the product is lost or damaged in shipment. We will return the repaired or replacement products to you. We will pay to ship the repaired or replaced products to you if you use an address in the United States (excluding Puerto Rico and U.S. possessions and territories). Otherwise, we will ship the product to you freight collect.

If we determine that the product is not covered under this warranty, we will notify you and inform you of service alternatives that are available to you on a fee basis.

**During the remaining years:** For the remaining period of the limited warranty, we will replace any defective part with new or refurbished parts, if we agree that it needs to be replaced. When you contact us, we will require a valid credit card number at the time you request a replacement part, but we will not charge you for the replacement part as long as you return the original part to us within 30 days after we ship the replacement part to you. If we do not receive the original part within 30 days, we will charge to your credit card the then-current standard price for that part.

We will pay to ship the part to you if you use an address in the United States (excluding Puerto Rico and U.S. possessions and territories). Otherwise, we will ship the part freight collect. We will also include a prepaid shipping container with each replacement part for your use in returning the replaced part to us.

**NOTE:** Before you ship the product(s) to us, make sure to back up the data on the hard drive(s) and any other storage device(s) in the product(s). Remove any confidential, proprietary or personal information, removable media, such as diskettes, CDs, or PC Cards. We are not responsible for any of your confidential, proprietary or personal information; lost or corrupted data; or damaged or lost removable media.

## What if I purchased a service contract?

If your service contract is with Dell, service will be provided to you under the terms of the service agreement. Please refer to that contract for details on how to obtain service.

If you purchased through us a service contract with one of our third-party service providers, please refer to that contract for details on how to obtain service.

## How will you fix my product?

We use new and refurbished parts made by various manufacturers in performing warranty repairs and in building replacement parts and systems. Refurbished parts and systems are parts or systems that have been returned to Dell, some of which were never used by a customer. All parts and systems are inspected and tested for quality. Replacement parts and systems are covered for the remaining period of the limited warranty for the product you bought. Dell owns all parts removed from repaired products.

## May I transfer the limited warranty?

Limited warranties on systems may be transferred if the current owner transfers ownership of the system and records the transfer with us. The limited warranty on Dell-branded memory may not be transferred. You may record your transfer by going to Dell's website:

- If you are an Individual Home Consumer, go to [www.dell.com/us/en/dhs/topics/sbtopic\\_015\\_ccare.htm](http://www.dell.com/us/en/dhs/topics/sbtopic_015_ccare.htm)
- If you are a Home Office, Small, Medium, Large, or Global Commercial Customer, go to [www.dell.com/us/en/biz/topics/sbtopic\\_ccare\\_nav\\_015\\_ccare.htm](http://www.dell.com/us/en/biz/topics/sbtopic_ccare_nav_015_ccare.htm)

- If you are a Government, Education, or Healthcare Customer, or an Individual Home Consumer who purchased through an Employee Purchase Program, go to [www.dell.com/us/en/pub/topics/sbtopic\\_015\\_ccare.htm](http://www.dell.com/us/en/pub/topics/sbtopic_015_ccare.htm)

If you do not have Internet access, call your customer care representative or call 1-800-624-9897.

All requests to transfer ownership are at Dell's sole discretion. All such transfers will be subject to the terms and conditions of the original service or limited warranty agreement and Dell's terms and conditions of sale located at [www.dell.com](http://www.dell.com). Dell cannot guarantee the authenticity of the products, limited warranties, service or support or the accuracy of the listings of products you purchase from a third party.

## Total Satisfaction Return Policy (U.S. Only)

We value our relationship with you and want to make sure that you're satisfied with your purchases. That's why we offer a "Total Satisfaction" return policy for most products that you—the end-user customer—purchase directly from Dell. Under this policy, you may return to Dell products that you purchased directly from Dell for a credit or a refund of the purchase price paid, less shipping and handling and applicable return fees as follows:

**New Hardware Products and Accessories** — Unless you have a separate agreement with Dell, all hardware, accessories, peripherals, parts, and unopened software still in its/their sealed package, excluding the products listed below, may be returned within twenty-one (21) days from the date on the packing slip or invoice.

Exclusions from the foregoing return policy:

- New PowerEdge™, PowerConnect™, and PowerVault™ products (excluding PowerVault 160T tape libraries) may be returned within thirty (30) days from the date on the packing slip or invoice, except that new PowerEdge™ SC servers and n series products purchased from the Small and Medium Business Sales Division may only be returned within fourteen (14) days from the date on the packing slip or invoice.
- Application software or an operating system that has been installed by Dell may not be returned unless you return the entire computer under the 21-day return policy, if applicable to your purchase (if not applicable to your purchase, you may not return application software or an operating system).
- Nondefective third party and Dell-branded software, peripheral, electronics and accessory products (for example: televisions, printers, projectors, MP3 players, PDAs, battery chargers, un-preinstalled third party software, wireless cards/access points/routers), including but not limited to those sold by or through Dell's "Software & Peripherals" or "Electronics & Accessories" groups, may be returned within twenty-one (21) days from the date on the packing slip or invoice, but a fifteen percent (15%) return fee may be deducted from any refund or credit.
- Dell | EMC storage products, EMC-branded products, Unisys-branded products, PowerVault™ 160T tape libraries, enterprise software, non-Dell-branded enterprise products, software and/or software licenses, or any non-Dell-customized hardware and/or software product(s) may not be returned at any time.

**Reconditioned or Refurbished Dell-Branded Hardware Products and Parts** — All reconditioned or refurbished PowerEdge™, PowerConnect™, and PowerVault™ products may be returned within 30 days from the date on the packing slip or invoice. All other reconditioned or refurbished Dell-branded hardware products and parts may be returned within 14 days of the date on the packing slip or invoice.

**How to Return** — To return products, e-mail or call Dell customer service to receive a Credit Return Authorization Number within the return policy period applicable to the product you want to return. You must obtain a Credit Return Authorization Number in order to return the product. See "Contacting Dell" or "Getting Help" in your customer documentation (or [www.dell.com/us/en/gen/contact.htm](http://www.dell.com/us/en/gen/contact.htm)) to find the appropriate contact information for obtaining customer assistance.

You must ship the products to Dell within 5 days of the date that Dell issues the Credit Return Authorization Number. You must also return the products to Dell in their original packaging, in as-new condition along with any media, documentation, and all other items that were included in the original shipment, prepay shipping charges, and insure the shipment or accept the risk of loss or damage during shipment.

# Limited Warranty Terms for Dell-Branded Hardware Products (Canada Only)

## What is covered by this limited warranty?

This limited warranty covers defects in materials and workmanship in your—our end-user customer's—Dell-branded hardware products, including Dell-branded peripheral products.

## What is not covered by this limited warranty?

This limited warranty does not cover:

- Software, including the operating system and software added to the Dell-branded hardware products through our factory-integration system, or the reloading of the software
- Non-Dell branded and Solution Provider Direct products and accessories
- Problems that result from:
  - External causes such as accident, abuse, misuse, or problems with electrical power
  - Servicing not authorized by Dell
  - Usage that is not in accordance with product instructions
  - Failure to follow the product instructions or failure to perform preventive maintenance
  - Problems caused by using accessories, parts, or components not supplied by Dell
- Products with missing or altered Service Tags or serial numbers
- Products for which Dell has not received payment

THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM PROVINCE TO PROVINCE. DELL'S RESPONSIBILITY FOR MALFUNCTIONS AND DEFECTS IN PRODUCT IS LIMITED TO REPAIR AND REPLACEMENT AS SET FORTH IN THIS WARRANTY STATEMENT, FOR THE TERM OF THE WARRANTY PERIOD REFLECTED ON YOUR PACKING SLIP OR INVOICE. EXCEPT FOR THE EXPRESS WARRANTIES CONTAINED IN THIS WARRANTY STATEMENT, DELL DISCLAIMS ALL OTHER WARRANTIES AND CONDITIONS, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION IMPLIED WARRANTIES AND CONDITIONS OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, STATUTORY OR OTHERWISE. SOME PROVINCES DO NOT ALLOW THE EXCLUSION OF CERTAIN IMPLIED WARRANTIES OR CONDITIONS, OR LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY OR CONDITION LASTS. THEREFORE, THE FOREGOING EXCLUSIONS AND LIMITATIONS MAY NOT APPLY TO YOU.

WE DO NOT ACCEPT LIABILITY BEYOND THE REMEDIES PROVIDED FOR IN THIS WARRANTY STATEMENT OR FOR SPECIAL, INDIRECT, CONSEQUENTIAL, OR INCIDENTAL DAMAGES, INCLUDING, WITHOUT LIMITATION, ANY LIABILITY FOR THIRD-PARTY CLAIMS AGAINST YOU FOR DAMAGES, FOR PRODUCTS NOT BEING AVAILABLE FOR USE, OR FOR LOST DATA OR LOST SOFTWARE. OUR LIABILITY WILL BE NO MORE THAN THE AMOUNT YOU PAID FOR THE PRODUCT THAT IS THE SUBJECT OF A CLAIM. THIS IS THE MAXIMUM AMOUNT FOR WHICH WE ARE RESPONSIBLE.

SOME PROVINCES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF SPECIAL, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU.

## How long does this limited warranty last?

This limited warranty lasts for the time period indicated on your packing slip or invoice, except that the limited warranty on Dell-branded batteries lasts only 1 year and the limited warranty on the lamps for Dell-branded projectors lasts only 90 days. The limited warranty begins on the date of the packing slip or invoice. The warranty period is not extended if we repair or replace a warranted product or any parts. Dell may change the terms and availability of limited warranties, at its discretion, but any changes will not be retroactive (that is, the warranty terms in place at the time of purchase will apply to your purchase).

## What do I do if I need warranty service?

Before the warranty expires, please call us at the relevant number listed in the following table. Please also have your Dell Service Tag or order number available.

<b>Individual Home Consumers; Home Office and Small Business Customers:</b>	<b>Canada Only</b>
Technical Support and Customer Service	1-800-847-4096
<b>Medium, Large, and Global Commercial Customers; Government, Education, and Healthcare Customers; and Value-Added Resellers (VARs):</b>	
Technical Support	1-800-387-5757
Customer Service	1-800-326-9463
<b>Government or Education Customers, or Individual Home Consumers who purchased through an Employee Purchase Program:</b>	
Technical Support	1-800-387-5757
Customer Service	1-800-326-9463 (Extension 8221 for Individual Consumers)
<b>Dell-Branded Memory</b>	1-888-363-5150

## What will Dell do?

**During the 90 days of the 90-day limited warranty and the first year of all other limited warranties:** During the 90 days of the 90-day limited warranty and the first year of all other limited warranties, we will repair any Dell-branded hardware products returned to us that prove to be defective in materials or workmanship. If we are not able to repair the product, we will replace it with a comparable product that is new or refurbished.

When you contact us, we will issue a Return Material Authorization Number for you to include with your return. You must return the products to us in their original or equivalent packaging, prepay shipping charges, and insure the shipment or accept the risk if the product is lost or damaged in shipment. We will return the repaired or replacement products to you. We will pay to ship the repaired or replaced products to you if you use an address in Canada. Otherwise, we will ship the product to you freight collect.

If we determine that the problem is not covered under this warranty, we will notify you and inform you of service alternatives that are available to you on a fee basis.

**NOTE:** Before you ship the product(s) to us, make sure to back up the data on the hard drive(s) and any other storage device(s) in the product(s). Remove any confidential, proprietary or personal information, removable media, such as diskettes, CDs, or PC Cards. We are not responsible for any of your confidential, proprietary or personal information; lost or corrupted data; or damaged or lost removable media.

**During the remaining years following the first year of all limited warranties:** We will replace any defective part with new or refurbished parts, if we agree that it needs to be replaced. When you contact us, we will require a valid credit card number at the time you request a replacement part, but we will not charge you for the replacement part as long as you return the original part to us within 30 days after we ship the replacement part to you. If we do not receive the original part within 30 days, we will charge to your credit card the then-current standard price for that part.

We will pay to ship the part to you if you use an address in Canada. Otherwise, we will ship the part freight collect. We will also include a prepaid shipping container with each replacement part for your use in returning the replaced part to us.

**NOTE:** Before you replace parts, make sure to back up the data on the hard drive(s) and any other storage device(s) in the product(s). We are not responsible for lost or corrupted data.

## **What if I purchased a service contract?**

If your service contract is with Dell, service will be provided to you under the terms of the service contract. Please refer to that contract for details on how to obtain service. Dell's service contracts can be found online at [www.dell.ca](http://www.dell.ca) or by calling Customer Care at 1-800-847-4096. If you purchased through us a service contract with one of our third-party service providers, please refer to that contract (mailed to you with your packing slip or invoice) for details on how to obtain service.

## **How will you fix my product?**

We use new and refurbished parts made by various manufacturers in performing warranty repairs and in building replacement parts and systems. Refurbished parts and systems are parts or systems that have been returned to Dell, some of which were never used by a customer. All parts and systems are inspected and tested for quality. Replacement parts and systems are covered for the remaining period of the limited warranty for the product you bought. Dell owns all parts removed from repaired products.

## **May I transfer the limited warranty?**

Limited warranties on systems may be transferred if the current owner transfers ownership of the system and records the transfer with us. The limited warranty on Dell-branded memory may not be transferred. You may record your transfer by going to Dell's website:

- For Canada-purchased computers (in-country transfers) and to transfer from one customer to another, go to [www.dell.ca/ca/en/gen/topics/segtopic\\_ccare\\_nav\\_013\\_ccare.htm](http://www.dell.ca/ca/en/gen/topics/segtopic_ccare_nav_013_ccare.htm)
- For out-of-country transfers (outside of the original country of purchase), go to [www.dell.com/us/en/biz/topics/sbtopic\\_ccare\\_nav\\_016\\_ccare.htm](http://www.dell.com/us/en/biz/topics/sbtopic_ccare_nav_016_ccare.htm)

If you do not have Internet access, call Dell at 1-800-847-4096 (Home Consumer customers) or 1-800-326-9463 (Corporate Commercial or Government customers).

## **Total Satisfaction Return Policy (Canada Only)**

If you are an end-user customer who bought new products directly from Dell, you may return them to Dell up to 30 days after you receive them for a refund or credit of the product purchase price. If you are an end-user customer who bought reconditioned or refurbished products from Dell, you may return them to Dell within 14 days after the date on the packing slip or invoice for a refund or credit of the product purchase price. In either case, the refund or credit will not include any shipping and handling charges shown on your packing slip or invoice and will be subject to a fifteen percent (15%) restocking fee, unless otherwise prohibited by law. If you are an organization that bought the products under a written agreement with Dell, the agreement may contain different terms for the return of products than specified by this policy.

To return products, you must call Dell Customer Service at 1-800-847-4096 to receive a Credit Return Authorization Number. To expedite the process of your refund or credit, Dell expects you to return the products to Dell in their original packaging within 5 days of the date that Dell issues the Credit Return Authorization Number. You must also prepay shipping charges and insure the shipment or accept the risk of loss or damage during shipment. You may return software for a refund or credit only if the sealed package containing the diskette(s) or CD(s) is unopened. Returned products must be in as-new condition, and all of the manuals, diskette(s), CD(s), power cables, and other items included with a product must be returned with it. For customers who want to return, for refund or credit only, either application or operating system software that has been installed by Dell, the whole system must be returned, along with any media and documentation that may have been included in the original shipment.

The "Total Satisfaction" Return Policy does not apply to Dell | EMC storage products. It also does not apply to products purchased through Dell's Software and Peripherals division. For those products, please instead refer to Dell's Software and Peripheral's then-current return policy (see the following section, "Dell Software and Peripherals [Canada Only]").

## **Dell Software and Peripherals (Canada Only)**

### **Third-Party Software and Peripherals Products**

Similar to other resellers of software and peripherals, Dell does not warrant third-party products. Third-party software and peripheral products are covered by the warranties provided by the original manufacturer or publisher only. Third-party manufacturer warranties vary from product to product. Consult your product documentation for specific warranty information. More information may also be available from the manufacturer or publisher.

While Dell offers a wide selection of software and peripheral products, we do not specifically test or guarantee that all of the products we offer work with any or all of the various models of Dell computers, nor do we test or guarantee all of the products we sell on the hundreds of different brands of computers available today. If you have questions about compatibility, we recommend and encourage you to contact the third-party software and peripheral product manufacturer or publisher directly.

### **Dell-Branded Peripheral Products**

Dell does provide a limited warranty for new Dell-branded peripheral products (products for which Dell is listed as the manufacturer) such as monitors, batteries, memory, docking stations, and projectors. To determine which limited warranty applies to the product you purchased, see the Dell packing slip or invoice and/or the product documentation that accompanied your product. Descriptions of Dell's limited warranties are described in preceding sections.

### **Return Policy**

If you are an end-user customer who bought Dell Software and Peripherals products directly from a Dell company, you may return Dell Software and Peripherals products that are in as-new condition to Dell up to 30 days from the date on the packing slip or invoice for a refund of the product purchase price if already paid. This refund will not include any shipping and handling charges shown on your packing slip or invoice; you are responsible for those.

To return products, you must call Dell Customer Service at 1-800-387-5759 to receive a Credit Return Authorization Number. You must ship the Dell Software and Peripherals products back to Dell in their original manufacturer's packaging (which must be in as-new condition), prepay shipping charges, and insure the shipment or accept the risk of loss or damage during shipment.

To qualify for refund or replacement, returned products must be in as-new condition, software products must be unopened, and all of the manuals, diskette(s), CD(s), power cables, and other items included with a product must be returned with it.

# 1-Year End-User Manufacturer Guarantee (Latin America and the Caribbean Only)

## Guarantee

Dell Inc. ("Dell") warrants to the end user in accordance with the following provisions that its branded hardware products, purchased by the end user from a Dell company or an authorized Dell distributor in Latin America or the Caribbean, will be free from defects in materials, workmanship, and design affecting normal use, for a period of 1 year from the original purchase date. Products for which proper claims are made will, at Dell's option, be repaired or replaced at Dell's expense. Dell owns all parts removed from repaired products. Dell uses new and reconditioned parts made by various manufacturers in performing repairs and building replacement products.

## Exclusions

This Guarantee does not apply to defects resulting from: improper or inadequate installation, use, or maintenance; actions or modifications by unauthorized third parties or the end user; accidental or willful damage; or normal wear and tear.

## Making a Claim

Claims must be made in Latin America or the Caribbean by contacting the Dell point of sale within the guarantee period. The end user must always supply proof of purchase, indicating name and address of the seller, date of purchase, model and serial number, name and address of the customer, and details of symptoms and configuration at the time of malfunction, including peripherals and software used. Otherwise, Dell may refuse the guarantee claim. Upon diagnosis of a warranted defect, Dell will make arrangements and pay for ground freight and insurance to and from Dell's repair/replacement center. The end user must ensure that the defective product is available for collection properly packed in original or equally protective packaging together with the details listed above and the return number provided to the end user by Dell.

## Limitation and Statutory Rights

Dell makes no other warranty, guarantee or like statement other than as explicitly stated above, and this Guarantee is given in place of all other guarantees whatsoever, to the fullest extent permitted by law. In the absence of applicable legislation, this Guarantee will be the end user's sole and exclusive remedy against Dell or any of its affiliates, and neither Dell nor any of its affiliates shall be liable for loss of profit or contracts, or any other indirect or consequential loss arising from negligence, breach of contract, or howsoever.

**This Guarantee does not impair or affect mandatory statutory rights of the end user against and/or any rights resulting from other contracts concluded by the end user with Dell and/or any other seller.**

### Dell World Trade LP

One Dell Way, Round Rock, TX 78682, USA

### Dell Computadores do Brasil Ltda (CNPJ No. 72.381.189/0001-10)

Avenida Industrial Belgraf, 400  
92990-000 - Eldorado do Sul – RS - Brasil

### Dell Computer de Chile Ltda

Coyancura 2283, Piso 3- Of.302,  
Providencia, Santiago - Chile

### Dell Computer de Colombia Corporation

Carrera 7 #115-33 Oficina 603  
Bogota, Colombia

Dell Computer de Mexico SA de CV  
Paseo de la Reforma 2620 - 11° Piso  
Col. Lomas Altas  
11950 México, D.F.

# Intel® Warranty Statement for Pentium® and Celeron® Processors Only (U.S. and Canada Only)

## Intel's Three Year Limited Warranty

### Limited Warranty

Intel warrants that its family of Pentium® and Celeron® processors, if properly used and installed, will be free from defects in materials and workmanship and will substantially conform to Intel's publicly available specifications for a period of three (3) years after the date the Pentium or Celeron processor was purchased (whether purchased separately or as part of a computer system).

If the Pentium or Celeron processor, which is the subject of this Limited Warranty, fails during the warranty period for reasons covered by this Limited Warranty, Intel, at its option, will:

- REPAIR the Pentium or Celeron processor by means of hardware and/or software; OR
  - REPLACE the Pentium or Celeron processor with another Pentium or Celeron processor; OR
- if Intel is unable to repair or replace the particular Pentium or Celeron processor,
- REFUND the then-current value of the Pentium or Celeron processor.

THIS LIMITED WARRANTY, AND ANY IMPLIED WARRANTIES THAT MAY EXIST UNDER STATE LAW, APPLY ONLY TO THE ORIGINAL PURCHASER OF THE PENTIUM OR CELERON PROCESSOR, OR PENTIUM OR CELERON PROCESSOR-BASED COMPUTER AND LAST ONLY FOR AS LONG AS SUCH PURCHASER CONTINUES TO OWN THE PROCESSOR.

### Extent of Limited Warranty

Intel does not warrant that your Pentium or Celeron processor will be free from design defects or errors known as "errata." Current characterized errata are available upon request. This limited warranty is for purchasers in the United States and Canada only. The limited warranty does not cover any costs relating to removal or replacement of any Pentium or Celeron processors that are soldered or otherwise permanently affixed to your system's motherboard.

This limited warranty does not cover damages due to external causes, including accident, problems with electrical power, usage not in accordance with product instructions, misuse, neglect, alteration, repair, improper installation, or improper testing.

### How to Obtain Warranty Service

To obtain warranty service for your Pentium or Celeron processor, you may contact your computer system manufacturer in accordance with its instructions, or you may contact Intel.

To request warranty service from Intel, you should call Intel at 1-800-628-8686 during the warranty period during normal business hours (Pacific Time), excluding holidays. Please be prepared to provide:

- (1) your name, address, and telephone numbers;
- (2) proof of purchase;
- (3) this Intel warranty card;
- (4) a description of the computer system including the brand and model; and
- (5) an explanation of the problem.

[Note: The Customer Service Representative may need additional information from you depending on the nature of the problem.]

The replacement processor is warranted under this written warranty and is subject to the same limitations and exclusions for the remainder of the original warranty period or one (1) year, whichever is longer.

### WARRANTY LIMITATIONS AND EXCLUSIONS

THESE WARRANTIES REPLACE ALL OTHER WARRANTIES, EXPRESS OR IMPLIED INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. INTEL MAKES NO EXPRESS WARRANTIES BEYOND THOSE STATED HERE. INTEL DISCLAIMS ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

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THE LIMITED WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER RIGHTS THAT VARY FROM JURISDICTION TO JURISDICTION.

**Intel Pentium® and Celeron® Processors are backed by a three-year limited warranty.  
Please refer to the reverse side of this card for complete warranty details.**

**Intel's Commitment to Quality**

Intel is committed to producing the highest quality processors available. That's why we have hundreds of people dedicated to continuously improve our design, manufacturing, and testing technology.

We put every one of our Pentium® and Celeron® processors through a rigorous battery of tests during the design and manufacturing processes.

To verify that the new chip will correctly run the software written for Intel Architecture processors, a team of Intel engineers is dedicated to compatibility testing. In a state-of-art lab, this group runs an extensive set of operating systems, applications, network tests and stress tests repeatedly to ensure that the processor is compatible with representative software.

Just as importantly, we work with hardware and software companies in the computer industry to ensure that our processors are compatible with their products.

Additionally, a sampling of Intel processors are subjected to a rigorous "burn-in" test whereby the chip is operated at higher-than-normal temperatures and voltages. During this burn-in period, the processor experiences the equivalent of weeks of normal usage. These units are monitored for failures as part of our ongoing quality assurance process.

As a result, today's microprocessors from Intel are among the most reliable components in computers.

**What are "Errata"?**

Exhaustive product testing can highlight differences between the actual behavior of the microprocessor and its specifications. Sometimes the discrepancies are caused by a design defect or error, which we call errata. Rigorous validation identifies most errata during the development of the processor, but we do detect additional errata during the life cycle of a microprocessor.

When an erratum is identified, our engineers work to characterize it and find a solution. We work with system designers and software developers to ensure that the discrepancy does not affect their products. If necessary, special software or hardware solutions (sometimes known as "work arounds") are implemented in the system design to prevent computer users from encountering the problem. Errata may then be corrected in future revisions of the microprocessor.

No microprocessor is perfect, and Intel recognizes that some consumers want to know about any errata, whether or not the errata affect them. Intel makes documentation of all characterized Pentium and Celeron processor errata publicly available through our Technical Documentation Service.

*At Intel, our goal is to make every computer user satisfied with his or her Pentium or Celeron processor. Should you have any questions, comments or concerns about your Intel microprocessor, please call us at 1-800-628-8686.*

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