




# Dell™ PowerConnect™ 2216/2224/2324 Switches User's Guide

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## Notes, Notices, and Cautions

-  **NOTE:** A NOTE indicates important information that helps you make better use of your system.
  -  **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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Models PowerConnect 2216, PowerConnect 2224, PowerConnect 2324

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## Introduction

### Dell™ PowerConnect™ 2216/2224/2324 Switches User's Guide

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Dell™ PowerConnect™ switches provide 10/100-Mbps Gigabit or 10/100/1000-Mbps Gigabit Ethernet connectivity. The switches have the following features:

- 1 Switch ports
    - o PowerConnect 2216 — 16 ports, 10/100-Mbps Gigabit
    - o PowerConnect 2224 — 24 ports, 10/100-Mbps Gigabit
    - o PowerConnect 2324 — 24 ports, plus two additional RJ-45 Gigabit Ethernet ports, 10/100/1000-Mbps Gigabit.
  - 1 Complies with IEEE 802.3 10Base-T, IEEE 802.3u 100Base-TX, IEEE 802.3z/ab 1000Base-T
  - 1 Tag-based IEEE 802.1p Class-of-Service with two priority queues per port
  - 1 IEEE 802.3x PAUSE frames flow control in full-duplex operation
  - 1 Automatic negotiation for speed and full- and half-duplex mode on all ports
  - 1 Backpressure flow control in half-duplex operation
  - 1 Collision detection on all ports
  - 1 Auto MDI/MDIX
  - 1 8K MAC address entries supported
  - 1 Comprehensive LED indicator panel to monitor overall switching condition
  - 1 19-inch rackmountable and wallmountable, standard 1U chassis
  - 1 Internal power supply
- 

## Package Contents

Before you install a switch, verify that your package contains the following items:

- 1 Switch
  - 1 Self-adhesive rubber pads for desktop installation
  - 1 Kit for 19-inch rack installation
  - 1 Kit for wallmount installation of 16- and 24-port switches
  - 1 *PowerConnect 2216/2224/2324 Switches* CD
  - 1 AC power cord
- 

## Front Panel Indicators

Your PowerConnect switch contains two rows of LEDs that provide information about connection speed, data activity, and duplex operation mode.

### Power (POWER) LED

- 1 Green — The switch is powered on.

- 1 Off — The switch is off.

### 10/100 Ports Link/Activity (SPD/LNK/ACT) LED

- 1 Steady green — A 100-Mbps link has been established, but no data is being transmitted or received.
- 1 Blinking green — A 100-Mbps link has been established and data is being transmitted or received.
- 1 Steady amber — A 10-Mbps link has been established, but no data is being transmitted or received.
- 1 Blinking amber — A 10-Mbps link has been established and data is being transmitted or received.
- 1 Off — No link has been established.

### 10/100/1000 Ports Link/Activity (SPD/LNK/ACT) LED (2324 only)

- 1 Steady green — A 1000-Mbps link has been established, but no data is being transmitted or received.
- 1 Blinking green — A 1000-Mbps link has been established and data is being transmitted or received.
- 1 Steady amber — A 10-Mbps or 100-Mbps link has been established, but no data is being transmitted or received.
- 1 Blinking amber — A 10-Mbps or 100-Mbps link has been established and data is being transmitted or received.
- 1 Off — No link has been established.

### Duplex Mode/Collisions (FDX/HDX) LED

- 1 Steady green — The port is operating in full-duplex mode.
- 1 Blinking green — Collisions are occurring on the port.
- 1 Off — The port is operating in half-duplex mode.

Figure 1-1. PowerConnect 2216

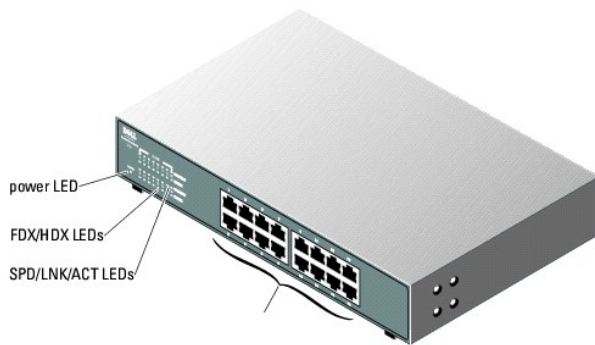


Figure 1-2. PowerConnect 2224

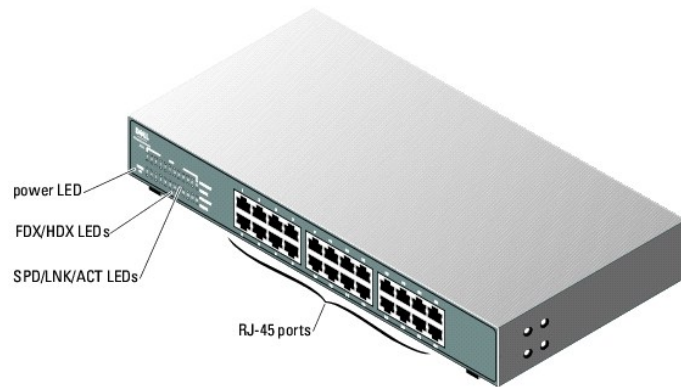
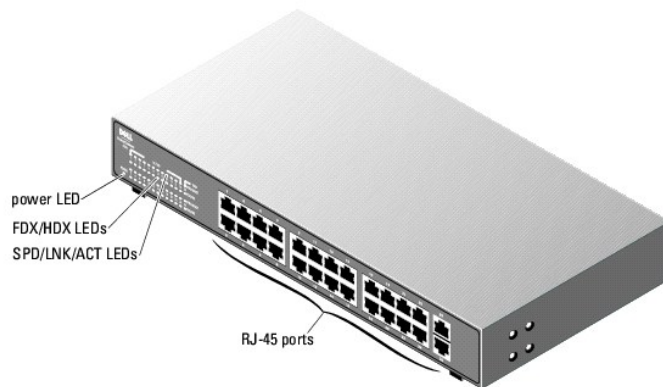


Figure 1-3. PowerConnect 2324



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## Connecting Devices

### RJ-45 Switch Ports

RJ-45 connectors are located on the front panel of the switch.

**NOTE:** Ensure that Category 5E (CAT 5E) cabling is used for connecting devices at 1000-Mbps Gigabit Ethernet speed.

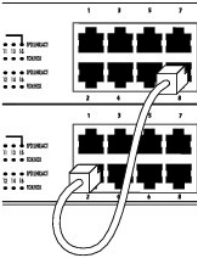
All ports can negotiate full- and half-duplex modes automatically. These switching ports allow users to connect the switches to 10Base-T and 100Base-T on ports 1-16 (2216), ports 1-24 (2224, 2324) and 1000Base-T devices on uplink ports 25 and 26 on the 2324.

### Connecting Two or More Switches Together

Each port supports Auto MDI and MDIX functionality. When cascading with other switches or hubs, each port can connect directly to a switch or hub with straight-through twisted-pair cable (see [Figure 1-4](#)).

**NOTE:** Do not connect two switches together with more than one cable. Using multiple cables to connect switches can create a loop and cause collisions.

Figure 1-4. Cascading Switches



## Connecting Switches to Other Devices

By connecting a switch to other devices, you can form a small network. All the RJ-45 ports support Auto MDI/MDIX and therefore automatically detect the type of cable used to connect the network device. Crossover or straight-through networking cables can be used to connect PCs as well as other networking devices like hubs or routers to the switch. All ports on the switch automatically negotiate speed and whether to operate in full duplex or half duplex.

## Typical Deployments

Your switch can be deployed in small and large workgroups. [Figure 1-5](#) depicts a typical small workgroup network that has a limited number of attached devices. [Figure 1-6](#) Figure 1.6 depicts a typical large workgroup that has several groups of individuals not all working in the same physical area.

Figure 1-5. Small Workgroup

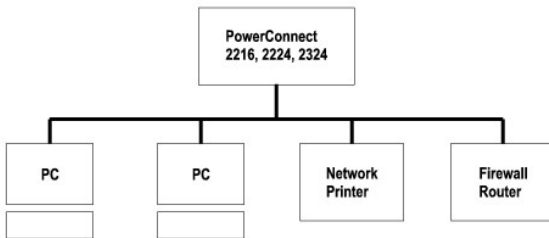
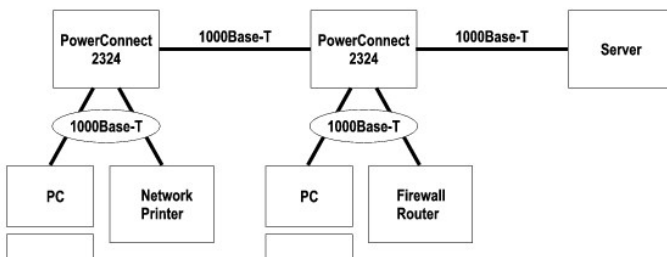


Figure 1-6. Large Workgroup



## Class-of-Service

The switch supports tag-based prioritization following the IEEE 802.1p standard. The eight levels of IEEE 802.1p priority are mapped to the two priority queues of each port. For each port, the two priority queues are scheduled following a Weighted Round Robin scheme.

Table 1-1. Tag-Based Prioritization

IEEE 802.1p Priority	Priority Queue	Scheduling Weight
0-3	0	1
4-7	1	4

**NOTE:** The IEEE 802.1p priority information is part of the IEEE 802.1q tag that also defines VLAN memberships. The switches will ignore the VLAN membership information in the tag (that is, all ports are part of all VLANs), but will preserve the full tag information—including packet priority and VLAN ID—when transmitting the packet at the destination port.

## Mounting Kit Instructions

The switches come with mounting brackets and screws for rackmounting or wallmounting and rubber feet for stationing on a flat surface.

### Installing the Switch on a Flat Surface

The switch can be installed on any appropriate level surface that can safely support the weight of the switches and their attached cables. There must be adequate space around the switch for ventilation and access to cable connectors.

To install the switch on a flat surface, complete the following steps:

1. Set the switch on the flat surface and check for proper ventilation.

Allow at least 5.1 cm (2 inches) on each side for proper ventilation and 12.7 cm (5 inches) at the back for power cable clearance.

2. Attach rubber feet on each marked location on the bottom of the chassis.

The rubber feet are optional, but are recommended to keep the switch from slipping.

### Installing the Switch in a Rack

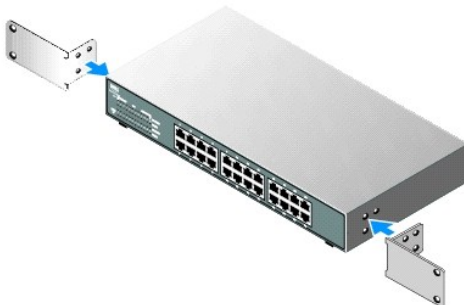
The switch can be installed in Dell PowerEdge™ racks, which are 48.3 cm (19 inches). It can also be installed in most other standard 19-inch racks and most telco two-post racks.

**NOTE:** Do not install rubber feet on the switch if you are rackmounting the switch.

To install the switch in a rack, complete the following steps:

1. Use the supplied screws to attach a mounting bracket to each side of the switch (see [Figure 1-7](#)).

Figure 1-7. Brackets for Rack Installation



2. Install the cage nuts onto the mounting rails of your rack, if your rack requires them.

**NOTE:** Additional screws are provided for racks that have threaded mounting holes.

3. Position the switch in the rack and align the holes in the mounting bracket with the holes in the rack.
4. Insert and tighten two screws appropriate for your rack through each of the mounting brackets.

## Installing the Switch on a Wall

To mount the switch on a wall, complete the following steps:

1. Ensure that the mounting point meets the following requirements:
  1. The wall surface must be capable of supporting the switch.
  1. Allow at least 5.1 cm (2 inches) on each side for proper ventilation and 12.7 cm (5 inches) at the back for power cable clearance.
  1. The location must not be located in direct sunlight.
  1. The location must not be within 2 feet of any heating vents, nor should any area heating vent point toward the unit.
  1. The location must be ventilated to prevent heat buildup.
  1. Do not locate the switch where there may be data or electrical cabling located directly behind the unit.
  1. The power cable must reach an outlet.
2. Use the supplied screws to attach a mounting bracket to each side of the switch (see [Figure 1-8](#)).

**Figure 1-8. Brackets for Wall Installation**



3. Place the switch against the wall and mark the wall through the holes of the brackets.
4. Drill holes in the wall for the brackets and install the appropriate mounting hardware (not supplied).
5. Place the switch against the wall so that the bracket holes align with the holes in the wall.
6. Insert and tighten the screws through each of the mounting brackets.

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## Technical Information

**Table 1-2. Specifications**

<b>Network Protocol and Standards Compatibility</b>	
	IEEE 802.3 CSMA/CD
	IEEE 802.3 10Base-T
	IEEE 802.3u 100Base-TX
	IEEE 802.3z/ab 1000Base-T
	IEEE 802.3x Flow Control
	IEEE 802.3p Priority
<b>Interface</b>	
	RJ-45 connectors

<b>Power Supply</b>	
PowerConnect 2216	Supply voltage: 100-240 VAC Frequency: 50-60 Hz Current consumption: 0.4A
PowerConnect 2224	Supply voltage: 100-240 VAC Frequency: 50-60 Hz Current consumption: 0.75A
PowerConnect 2324	Supply voltage: 100-240 VAC Frequency: 50-60 Hz Current consumption: 0.75A
<b>Physical Dimensions</b>	
PowerConnect 2216	266 x 161 x 43 mm (W x D x H) 10.5 x 6.3 x 1.7 inches Unit Weight: 3.0 Lbs Packaged Weight: 3.3 Lbs (6 per container)
PowerConnect 2224	328 x 231 x 43 mm (W x D x H) 13 x 9 x 1.7 inches Unit Weight: 4.8 Lbs Packaged Weight: 5.24 Lbs (5 per container)
PowerConnect 2324	328 x 231 x 43 mm (W x D x H) 13 x 9 x 1.7 inches Unit Weight: 5.1 Lbs Packaged Weight: 5.46 Lbs (5 per container)
<b>Environmental Specifications</b>	
Operating temperature	0° to 40°C (32° to 104°F)
Storage temperature	-20° to 70°C (-4° to 158°F)
Operating Relative Humidity	10% to 90% non-condensing
Storage Relative Humidity	10% to 95% non-condensing

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## Troubleshooting

### Dell™ PowerConnect™ 2216/2224/2324 Switches User's Guide

This section provides troubleshooting information for your switch. [Table 2-1](#) describes general problems you may encounter and the probable causes and solutions.

**Table 2-1. Basic Troubleshooting**

Problem	Probable Cause	Corrective Action
Power LED is not lighted.	There is no power to the switch.	Confirm that the switch is connected to a properly functioning and active power source.
		Ensure that the power cable is securely connected to the switch and to a power source.
Link LED is not lighted.	The cable is not securely connected to the switch or the attached device.	Ensure that the connectors are fully inserted into the ports of the switch and the attached device.
	The attached device is not configured correctly, or it is not powered on.	Ensure that the attached device is powered on. Verify that the NIC on the attached device is operating properly.
	The cable is damaged or not properly terminated.	Test the cable.
		Try a known working cable.
		Ensure that the cables are terminated using TIA 568A or 568B standards.
	The cable's maximum distance has been exceeded.	10Base-T, 100Base-T, and 1000Base-T cables have limitations for link lengths. Move the connected device closer to the switch and use a shorter cable.
	Mismatched duplex mode.	Ensure that all devices connected to the switch are configured to automatically detect and set port speed and duplex settings.
Bad switch port.	Reconnect the connector for the affected link to a different switch port.	
Link speed LED indicates a lower speed than expected.	Incorrect cable grade.	Ensure that you are using Category 5 cable or better for all 10Base-T and 100Base-T links, or Category 5e for 1000Base-T links.
	Damaged cable.	Test any cables that have kinks, sharp bends, or appear to be damaged.
	The cable's maximum distance has been exceeded.	10Base-T, 100Base-T, and 1000Base-T cables have limitations for link lengths. Move the connected device closer to the switch and use a shorter cable.
Link LED is lighted, but the activity (ACT) LED does not blink.	There is no Ethernet traffic on the link. The LED blinks only when traffic is being passed to or sent from a device that is connected to the port.	No action required.
	The attached device is not configured correctly.	Verify that the port or NIC on the attached device is operating properly.
Link LED is lighted and the FDX/HDX LED blinks occasionally.	This can be normal link activity. Some collisions take place during normal operation.	No action required.
Link LED is lighted and the FDX/HDX LED blinks frequently.	Mismatched duplex mode.	Ensure that any devices connected to the switch are set to automatically detect and set port speed and duplex settings.
	The link is reaching its maximum capacity.	Resegment the network to decrease the number of users on the link.

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## Getting Help

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  - [Product Information](#)
  - [Returning Items for Warranty Repair or Credit](#)
  - [Before You Call](#)
  - [Contacting Dell](#)
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## Technical Assistance

If you need assistance with a technical problem, use Dell's extensive suite of online services available at Dell™ Support at [support.dell.com](http://support.dell.com) for help with installation and troubleshooting procedures. For more information, see "Online Services."

If you cannot resolve the problem using the online services, call Dell for technical assistance. See "[Contacting Dell](#)."

**NOTE:** Call technical support from a phone near or at the system so that technical support can assist you with any necessary procedures.

For instructions on using the technical support service, see "[Technical Support Service](#)" and "[Before You Call](#)."

**NOTE:** Some of the following services are not always available in all locations outside the continental U.S. Call your local Dell representative for information on availability.

## Online Services

You can access Dell Support at [support.dell.com](http://support.dell.com). Select your region on the **WELCOME TO DELL SUPPORT** page, and fill in the requested details to access help tools and information.

You can contact Dell electronically using the following addresses:

- 1 World Wide Web

[www.dell.com/](http://www.dell.com/)

[www.dell.com/ap/](http://www.dell.com/ap/) (Asian/Pacific countries only)

[www.dell.com/jp](http://www.dell.com/jp) (Japan only)

[www.euro.dell.com](http://www.euro.dell.com) (Europe only)

[www.dell.com/la](http://www.dell.com/la) (Latin American countries)

[www.dell.ca](http://www.dell.ca) (Canada only)

- 1 Anonymous file transfer protocol (FTP)

**ftp.dell.com/**

Log in as user:anonymous, and use your e-mail address as your password.

1 Electronic Support Service

support@us.dell.com

apsupport@dell.com (Asian/Pacific countries only)

**support.jp.dell.com** (Japan only)

**support.euro.dell.com** (Europe only)

1 Electronic Quote Service

sales@dell.com

apmarketing@dell.com (Asian/Pacific countries only)

sales\_canada@dell.com (Canada only)

1 Electronic Information Service

info@dell.com

## AutoTech Service

Dell's automated technical support service—AutoTech—provides recorded answers to the questions most frequently asked by Dell customers about their portable and desktop computer systems.

When you call AutoTech, use your touch-tone telephone to select the subjects that correspond to your questions.

The AutoTech service is available 24 hours a day, 7 days a week. You can also access this service through the technical support service. See the contact information for your region.

## Automated Order-Status Service

To check on the status of any Dell™ products that you have ordered, you can go to **support.dell.com**, or you can call the automated order-status service. A recording prompts you for the information needed to locate and report on your order. See the contact information for your region.

## Technical Support Service

Dell's technical support service is available 24 hours a day, 7 days a week, to answer your questions about Dell hardware. Our technical support staff use computer-based diagnostics to provide fast, accurate answers.

To contact Dell's technical support service, see "[Before You Call](#)" and then see the contact information for your region.

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## Dell Enterprise Training and Certification

Dell Enterprise Training and Certification is available; see [www.dell.com/training](http://www.dell.com/training) for more information. This service may not be offered in all locations.

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## Problems With Your Order

If you have a problem with your order, such as missing parts, wrong parts, or incorrect billing, contact Dell for customer assistance. Have your invoice or packing slip available when you call. See the contact information for your region.

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## Product Information

If you need information about additional products available from Dell, or if you would like to place an order, visit the Dell website at [www.dell.com](http://www.dell.com). For the telephone number to call to speak to a sales specialist, see the contact information for your region.

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## Returning Items for Warranty Repair or Credit

Prepare all items being returned, whether for repair or credit, as follows:

1. Call Dell to obtain a Return Material Authorization Number, and write it clearly and prominently on the outside of the box.

For the telephone number to call, see the contact information for your region.

2. Include a copy of the invoice and a letter describing the reason for the return.
3. Include a copy of any diagnostic information.
4. Include any accessories that belong with the item(s) being returned (such as power cables, media such as CDs and diskettes, and guides) if the return is for credit.
5. Pack the equipment to be returned in the original (or equivalent) packing materials.


You are responsible for paying shipping expenses. You are also responsible for insuring any product returned, and you assume the risk of loss during shipment to Dell. Collect-on-delivery (C.O.D.) packages are not accepted.

Returns that are missing any of the preceding requirements will be refused at our receiving dock and returned to you.

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## Before You Call

If possible, turn on your system before you call Dell for technical assistance and call from a telephone at or near the system. You may be asked to relay detailed information during operations, or try other troubleshooting steps possible only at the system itself. Ensure that the system documentation is available.

 **CAUTION:** Before servicing any components inside your system, see your *System Information Guide* for important safety information.

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## Contacting Dell

To contact Dell electronically, you can access the following websites:

- 1 [www.dell.com](http://www.dell.com)
- 1 [support.dell.com](http://support.dell.com) (technical support)
- 1 [premiersupport.dell.com](http://premiersupport.dell.com) (technical support for educational, government, healthcare, and medium/large business customers, including Premier, Platinum, and Gold customers)

For specific web addresses for your country, find the appropriate country section in the table below.

**NOTE:** Toll-free numbers are for use within the country for which they are listed.

When you need to contact Dell, use the electronic addresses, telephone numbers, and codes provided in the following table. If you need assistance in determining which codes to use, contact a local or an international operator.

Country (City) International Access Code Country Code City Code	Department Name or Service Area, Website and E-Mail Address	Area Codes, Local Numbers, and Toll-Free Numbers
<b>Anguilla</b>	General Support	toll-free: 800-335-0031
<b>Antigua and Barbuda</b>	General Support	1-800-805-5924
<b>Argentina (Buenos Aires)</b>	Website: <a href="http://www.dell.com.ar">www.dell.com.ar</a>	
International Access Code: 00	Tech Support and Customer Care	toll-free: 0-800-444-0733
Country Code: 54	Sales	0-810-444-3355
City Code: 11	Tech Support Fax	11 4515 7139
	Customer Care Fax	11 4515 7138
<b>Aruba</b>	General Support	toll-free: 800-1578
<b>Australia (Sydney)</b>	E-mail (Australia): <a href="mailto:au_tech_support@dell.com">au_tech_support@dell.com</a>	
International Access Code: 0011	E-mail (New Zealand): <a href="mailto:nz_tech_support@dell.com">nz_tech_support@dell.com</a>	
Country Code: 61	Home and Small Business	1-300-65-55-33
City Code: 2	Government and Business	toll-free: 1-800-633-559
	Preferred Accounts Division (PAD)	toll-free: 1-800-060-889
	Customer Care	toll-free: 1-800-819-339
	Corporate Sales	toll-free: 1-800-808-385
	Transaction Sales	toll-free: 1-800-808-312
	Fax	toll-free: 1-800-818-341
<b>Austria (Vienna)</b>	Website: <a href="http://support.euro.dell.com">support.euro.dell.com</a>	
International Access Code: 900	E-mail: <a href="mailto:tech_support_central_europe@dell.com">tech_support_central_europe@dell.com</a>	
Country Code: 43	Home/Small Business Sales	0820 240 530 00
City Code: 1	Home/Small Business Fax	0820 240 530 49
	Home/Small Business Customer Care	0820 240 530 14
	Preferred Accounts/Corporate Customer Care	0820 240 530 16
	Home/Small Business Technical Support	0820 240 530 14
	Preferred Accounts/Corporate Technical Support	0660 8779
	Switchboard	0820 240 530 00
<b>Bahamas</b>	General Support	toll-free: 1-866-278-6818
<b>Barbados</b>	General Support	1-800-534-3066
<b>Belgium (Brussels)</b>	Website: <a href="http://support.euro.dell.com">support.euro.dell.com</a>	
International Access Code: 00	E-mail: <a href="mailto:tech_be@dell.com">tech_be@dell.com</a>	
Country Code: 32	E-mail for French Speaking Customers: <a href="http://support.euro.dell.com/be/fr/emaildell/">support.euro.dell.com/be/fr/emaildell/</a>	
City Code: 2	Technical Support	02 481 92 88
	Customer Care	02 481 91 19
	Corporate Sales	02 481 91 00
	Fax	02 481 92 99
	Switchboard	02 481 91 00
<b>Bermuda</b>	General Support	1-800-342-0671
<b>Bolivia</b>	General Support	toll-free: 800-10-0238
<b>Brazil</b>	Website: <a href="http://www.dell.com/br">www.dell.com/br</a>	
International Access Code: 00	Customer Support, Technical Support	0800 90 3355

Country Code: 55	Tech Support Fax	51 481 5470
	Customer Care Fax	51 481 5480
City Code: 51	Sales	0800 90 3390
<b>British Virgin Islands</b>	General Support	toll-free: 1-866-278-6820
Brunei Country Code: 673	Customer Technical Support (Penang, Malaysia)	604 633 4966
	Customer Service (Penang, Malaysia)	604 633 4949
	Transaction Sales (Penang, Malaysia)	604 633 4955
<b>Canada (North York, Ontario)</b>	Online Order Status: <a href="http://www.dell.ca/ostatus">www.dell.ca/ostatus</a>	
International Access Code: 011	AutoTech (automated technical support)	toll-free: 1-800-247-9362
	TechFax	toll-free: 1-800-950-1329
	Customer Care (Home Sales/Small Business)	toll-free: 1-800-847-4096
	Customer Care (med./large business, government)	toll-free: 1-800-326-9463
	Technical Support (Home Sales/Small Business)	toll-free: 1-800-847-4096
	Technical Support (med./large bus., government)	toll-free: 1-800-387-5757
	Sales (Home Sales/Small Business)	toll-free: 1-800-387-5752
	Sales (med./large bus., government)	toll-free: 1-800-387-5755
	Spare Parts Sales & Extended Service Sales	1 866 440 3355
<b>Cayman Islands</b>	General Support	1-800-805-7541
<b>Chile (Santiago)</b> Country Code: 56 City Code: 2	Sales, Customer Support, and Technical Support	toll-free: 1230-020-4823
<b>China (Xiamen)</b> Country Code: 86 City Code: 592	Tech Support website: <a href="http://support.ap.dell.com/china">support.ap.dell.com/china</a>	
	Tech Support E-mail: <a href="mailto:cn_support@dell.com">cn_support@dell.com</a>	
	Tech Support Fax	818 1350
	Home and Small Business Technical Support	toll-free: 800 858 2437
	Corporate Accounts Technical Support	toll-free: 800 858 2333
	Customer Experience	toll-free: 800 858 2060
	Home and Small Business	toll-free: 800 858 2222
	Preferred Accounts Division	toll-free: 800 858 2557
	Large Corporate Accounts GCP	toll-free: 800 858 2055
	Large Corporate Accounts Key Accounts	toll-free: 800 858 2628
	Large Corporate Accounts North	toll-free: 800 858 2999
	Large Corporate Accounts North Government and Education	toll-free: 800 858 2955
	Large Corporate Accounts East	toll-free: 800 858 2020
	Large Corporate Accounts East Government and Education	toll-free: 800 858 2669
	Large Corporate Accounts Queue Team	toll-free: 800 858 2222
	Large Corporate Accounts South	toll-free: 800 858 2355
	Large Corporate Accounts West	toll-free: 800 858 2811
	Large Corporate Accounts Spare Parts	toll-free: 800 858 2621
<b>Colombia</b>	General Support	980-9-15-3978
<b>Costa Rica</b>	General Support	0800-012-0435
<b>Czech Republic (Prague)</b> International Access Code: 00 Country Code: 420 City Code: 2	Website: <a href="http://support.euro.dell.com">support.euro.dell.com</a>	
	E-mail: <a href="mailto:czech_dell@dell.com">czech_dell@dell.com</a>	
	Technical Support	02 2186 27 27
	Customer Care	02 2186 27 11
	Fax	02 2186 27 14
	TechFax	02 2186 27 28
	Switchboard	02 2186 27 11
<b>Denmark (Copenhagen)</b> International Access Code: 00 Country Code: 45	Website: <a href="http://support.euro.dell.com">support.euro.dell.com</a>	
	E-mail Support (portable computers): <a href="mailto:den_nbk_support@dell.com">den_nbk_support@dell.com</a>	
	E-mail Support (desktop computers): <a href="mailto:den_support@dell.com">den_support@dell.com</a>	
	E-mail Support (servers): <a href="mailto:Nordic_server_support@dell.com">Nordic_server_support@dell.com</a>	
	Technical Support	7023 0182
	Customer Care (Relational)	7023 0184
	Home/Small Business Customer Care	3287 5505
	Switchboard (Relational)	3287 1200
	Fax Switchboard (Relational)	3287 1201
	Switchboard (Home/Small Business)	3287 5000

	Fax Switchboard (Home/Small Business)	3287 5001
<b>Dominica</b>	General Support	toll-free: 1-866-278-6821
<b>Dominican Republic</b>	General Support	1-800-148-0530
<b>Ecuador</b>	General Support	toll-free: 999-119
<b>El Salvador</b>	General Support	01-899-753-0777
<b>Finland (Helsinki)</b>	Website: <a href="http://support.euro.dell.com">support.euro.dell.com</a>	
International Access Code: 990	E-mail: <a href="mailto:fin_support@dell.com">fin_support@dell.com</a>	
	E-mail Support (servers): <a href="mailto:Nordic_support@dell.com">Nordic_support@dell.com</a>	
Country Code: 358	Technical Support	09 253 313 60
	Technical Support Fax	09 253 313 81
City Code: 9	Relational Customer Care	09 253 313 38
	Home/Small Business Customer Care	09 693 791 94
	Fax	09 253 313 99
	Switchboard	09 253 313 00
<b>France (Paris) (Montpellier)</b>	Website: <a href="http://support.euro.dell.com">support.euro.dell.com</a>	
International Access Code: 00	E-mail: <a href="mailto:support.euro.dell.com/fr/fr/emaildell/">support.euro.dell.com/fr/fr/emaildell/</a>	
	<b>Home and Small Business</b>	
Country Code: 33	Technical Support	0825 387 270
	Customer Care	0825 823 833
City Codes: (1) (4)	Switchboard	0825 004 700
	Switchboard (calls from outside of France)	04 99 75 40 00
	Sales	0825 004 700
	Fax	0825 004 701
	Fax (calls from outside of France)	04 99 75 40 01
	<b>Corporate</b>	
	Technical Support	0825 004 719
	Customer Care	0825 338 339
	Switchboard	01 55 94 71 00
	Sales	01 55 94 71 00
	Fax	01 55 94 71 01
<b>Germany (Langen)</b>	Website: <a href="http://support.euro.dell.com">support.euro.dell.com</a>	
International Access Code: 00	E-mail: <a href="mailto:tech_support_central_europe@dell.com">tech_support_central_europe@dell.com</a>	
	Technical Support	06103 766-7200
Country Code: 49	Home/Small Business Customer Care	0180-5-224400
	Global Segment Customer Care	06103 766-9570
City Code: 6103	Preferred Accounts Customer Care	06103 766-9420
	Large Accounts Customer Care	06103 766-9560
	Public Accounts Customer Care	06103 766-9555
	Switchboard	06103 766-7000
<b>Greece</b>	Website: <a href="http://support.euro.dell.com">support.euro.dell.com</a>	
International Access Code: 00	E-mail: <a href="mailto:support.euro.dell.com/gr/en/emaildell/">support.euro.dell.com/gr/en/emaildell/</a>	
	Technical Support	080044149518
Country Code: 30	Gold Technical Support	08844140083
	Switchboard	2108129800
	Sales	2108129800
	Fax	2108129812
<b>Grenada</b>	General Support	toll-free: 1-866-540-3355
<b>Guatemala</b>	General Support	1-800-999-0136
<b>Guyana</b>	General Support	toll-free: 1-877-270-4609
<b>Hong Kong</b>	Website: <a href="http://support.ap.dell.com">support.ap.dell.com</a>	
International Access Code: 001	E-mail: <a href="mailto:ap_support@dell.com">ap_support@dell.com</a>	
	Technical Support (Dimension™ and Inspiron™)	2969 3189
	Technical Support (OptiPlex™, Latitude™, and Dell Precision™)	2969 3191
Country Code: 852	Technical Support (PowerApp™ and PowerVault™)	2969 3196
	Gold Queue EEC Hotline	2969 3187
	Customer Advocacy	3416 0910
	Large Corporate Accounts	3416 0907
	Global Customer Programs	3416 0908
	Medium Business Division	3416 0912

	Home and Small Business Division	2969 3105
<b>India</b>	Technical Support	1600 33 8045
	Sales	1600 33 8044
<b>Ireland (Cherrywood)</b>	Website: <a href="http://support.euro.dell.com">support.euro.dell.com</a>	
International Access Code: <b>16</b>	E-mail: <a href="mailto:dell_direct_support@dell.com">dell_direct_support@dell.com</a>	
Country Code: <b>353</b>	Technical Support	1850 543 543
	U.K. Technical Support (dial within U.K. only)	0870 908 0800
City Code: <b>1</b>	Home User Customer Care	01 204 4014
	Small Business Customer Care	01 204 4014
	U.K. Customer Care (dial within U.K. only)	0870 906 0010
	Corporate Customer Care	1850 200 982
	Corporate Customer Care (dial within U.K. only)	0870 907 4499
	Ireland Sales	01 204 4444
	U.K. Sales (dial within U.K. only)	0870 907 4000
	Fax/SalesFax	01 204 0103
	Switchboard	01 204 4444
<b>Italy (Milan)</b>	Website: <a href="http://support.euro.dell.com">support.euro.dell.com</a>	
International Access Code: <b>00</b>	E-mail: <a href="mailto:support.euro.dell.com/it/it/emaiddell/">support.euro.dell.com/it/it/emaiddell/</a>	
Country Code: <b>39</b>	<b>Home and Small Business</b>	
	Technical Support	02 577 826 90
City Code: <b>02</b>	Customer Care	02 696 821 14
	Fax	02 696 821 13
	Switchboard	02 696 821 12
	<b>Corporate</b>	
	Technical Support	02 577 826 90
	Customer Care	02 577 825 55
	Fax	02 575 035 30
	Switchboard	02 577 821
<b>Jamaica</b>	General Support (dial from within Jamaica only)	1-800-682-3639
<b>Japan (Kawasaki)</b>	Website: <a href="http://support.jp.dell.com">support.jp.dell.com</a>	
International Access Code: <b>001</b>	Technical Support (servers)	toll-free: 0120-198-498
	Technical Support outside of Japan (servers)	81-44-556-4162
Country Code: <b>81</b>	<b>Technical Support (Dimension™ and Inspiron™)</b>	toll-free: 0120-198-226
	Technical Support outside of Japan (Dimension and Inspiron)	81-44-520-1435
City Code: <b>44</b>	<b>Technical Support (Dell Precision™, OptiPlex™, and Latitude™)</b>	toll-free: 0120-198-433
	Technical Support outside of Japan (Dell Precision, OptiPlex, and Latitude)	81-44-556-3894
	<b>Technical Support (Axim™)</b>	toll-free: 0120-981-690
	Technical Support outside of Japan (Axim)	81-44-556-3468
	Faxbox Service	044-556-3490
	24-Hour Automated Order Service	044-556-3801
	Customer Care	044-556-4240
	Business Sales Division (up to 400 employees)	044-556-1465
	Preferred Accounts Division Sales (over 400 employees)	044-556-3433
	Large Corporate Accounts Sales (over 3500 employees)	044-556-3430
Public Sales (government agencies, educational institutions, and medical institutions)	044-556-1469	
Global Segment Japan	044-556-3469	
Individual User	044-556-1760	
Switchboard	044-556-4300	
<b>Korea (Seoul)</b>	Technical Support	toll-free: 080-200-3800
International Access Code: <b>001</b>	Sales	toll-free: 080-200-3600
	Customer Service (Seoul, Korea)	toll-free: 080-200-3800
Country Code: <b>82</b>	Customer Service (Penang, Malaysia)	604 633 4949
	Fax	2194-6202
City Code: <b>2</b>	Switchboard	2194-6000
<b>Latin America</b>	Customer Technical Support (Austin, Texas, U.S.A.)	512 728-4093
	Customer Service (Austin, Texas, U.S.A.)	512 728-3619
	Fax (Technical Support and Customer Service) (Austin, Texas, U.S.A.)	512 728-3883
	Sales (Austin, Texas, U.S.A.)	512 728-4397



	SalesFax (Austin, Texas, U.S.A.)	512 728-4600 or 512 728-3772
<b>Luxembourg</b>	Website: <a href="http://support.euro.dell.com">support.euro.dell.com</a>	
International Access Code: <b>00</b>	E-mail: <a href="mailto:tech_be@dell.com">tech_be@dell.com</a>	
Country Code: <b>352</b>	Technical Support (Brussels, Belgium)	3420808075
	Home/Small Business Sales (Brussels, Belgium)	toll-free: 080016884
	Corporate Sales (Brussels, Belgium)	02 481 91 00
	Customer Care (Brussels, Belgium)	02 481 91 19
	Fax (Brussels, Belgium)	02 481 92 99
	Switchboard (Brussels, Belgium)	02 481 91 00
<b>Macao</b>	Technical Support	toll-free: 0800 582
Country Code: <b>853</b>	Customer Service (Penang, Malaysia)	604 633 4949
	Transaction Sales	toll-free: 0800 581
<b>Malaysia (Penang)</b>	Technical Support	toll-free: 1 800 888 298
International Access Code: <b>00</b>	Customer Service	04 633 4949
Country Code: <b>60</b>	Transaction Sales	toll-free: 1 800 888 202
	Corporate Sales	toll-free: 1 800 888 213
<b>Mexico</b>	Customer Technical Support	001-877-384-8979 or 001-877-269-3383
	Sales	50-81-8800 or 01-800-888-3355
		Customer Service
	Main	50-81-8800 or 01-800-888-3355
<b>Montserrat</b>	General Support	toll-free: 1-866-278-6822
<b>Netherlands Antilles</b>	General Support	001-800-882-1519
<b>Netherlands (Amsterdam)</b>	Website: <a href="http://support.euro.dell.com">support.euro.dell.com</a>	
International Access Code: <b>00</b>	E-mail (Technical Support):	
Country Code: <b>31</b>	(Enterprise): <a href="mailto:nl_server_support@dell.com">nl_server_support@dell.com</a>	
	(Latitude): <a href="mailto:nl_latitude_support@dell.com">nl_latitude_support@dell.com</a>	
	(Inspiron): <a href="mailto:nl_inspiron_support@dell.com">nl_inspiron_support@dell.com</a>	
	(Dimension): <a href="mailto:nl_dimension_support@dell.com">nl_dimension_support@dell.com</a>	
	(OptiPlex): <a href="mailto:nl_optiplex_support@dell.com">nl_optiplex_support@dell.com</a>	
	(Dell Precision): <a href="mailto:nl_workstation_support@dell.com">nl_workstation_support@dell.com</a>	
City Code: <b>20</b>	Technical Support	020 674 45 00
	Technical Support Fax	020 674 47 66
	Home/Small Business Customer Care	020 674 42 00
	Relational Customer Care	020 674 4325
	Home/Small Business Sales	020 674 55 00
	Relational Sales	020 674 50 00
	Home/Small Business Sales Fax	020 674 47 75
	Relational Sales Fax	020 674 47 50
	Switchboard	020 674 50 00
	Switchboard Fax	020 674 47 50
<b>New Zealand</b>	E-mail (New Zealand): <a href="mailto:nz_tech_support@dell.com">nz_tech_support@dell.com</a>	
International Access Code: <b>00</b>	E-mail (Australia): <a href="mailto:au_tech_support@dell.com">au_tech_support@dell.com</a>	
Country Code: <b>64</b>	Home and Small Business	0800 446 255
	Government and Business	0800 444 617
	Sales	0800 441 567
	Fax	0800 441 566
<b>Nicaragua</b>	General Support	001-800-220-1006
<b>Norway (Lysaker)</b>	Website: <a href="http://support.euro.dell.com">support.euro.dell.com</a>	

International Access Code: 00 Country Code: 47	E-mail Support (portable computers): nor_nbk_support@dell.com	
	E-mail Support (desktop computers): nor_support@dell.com	
	E-mail Support (servers): nordic_server_support@dell.com	
	Technical Support	671 16882
	Relational Customer Care	671 17514
	Home/Small Business Customer Care	23162298
	Switchboard	671 16800
	Fax Switchboard	671 16865
<b>Panama</b>	General Support	001-800-507-0962
<b>Peru</b>	General Support	0800-50-669
<b>Poland (Warsaw)</b> International Access Code: 011 Country Code: 48 City Code: 22	Website: <a href="http://support.euro.dell.com">support.euro.dell.com</a>	
	E-mail: <a href="mailto:pl_support@dell.com">pl_support@dell.com</a>	
	Customer Service Phone	57 95 700
	Customer Care	57 95 999
	Sales	57 95 999
	Customer Service Fax	57 95 806
	Reception Desk Fax	57 95 998
Switchboard	57 95 999	
<b>Portugal</b> International Access Code: 00 Country Code: 351	Website: <a href="http://support.euro.dell.com">support.euro.dell.com</a>	
	E-mail: <a href="mailto:support.euro.dell.com/pt/en/emaiddell/">support.euro.dell.com/pt/en/emaiddell/</a>	
	Technical Support	707200149
	Customer Care	800 300 413
	Sales	800 300 410 or 800 300 411 or 800 300 412 or 21 422 07 10
Fax	21 424 01 12	
<b>Puerto Rico</b>	General Support	1-800-805-7545
<b>St. Kitts and Nevis</b>	General Support	toll-free: 1-877-441-4731
<b>St. Lucia</b>	General Support	1-800-882-1521
<b>St. Vincent and the Grenadines</b>	General Support	toll-free: 1-877-270-4609
<b>Singapore (Singapore)</b> International Access Code: 005 Country Code: 65	Technical Support	toll-free: 800 6011 051
	Customer Service (Penang, Malaysia)	604 633 4949
	Transaction Sales	toll-free: 800 6011 054
	Corporate Sales	toll-free: 800 6011 053
<b>South Africa (Johannesburg)</b> International Access Code: 09/091 Country Code: 27 City Code: 11	Website: <a href="http://support.euro.dell.com">support.euro.dell.com</a>	
	E-mail: <a href="mailto:dell_za_support@dell.com">dell_za_support@dell.com</a>	
	Technical Support	011 709 7710
	Customer Care	011 709 7707
	Sales	011 709 7700
	Fax	011 706 0495
Switchboard	011 709 7700	
<b>Southeast Asian and Pacific Countries</b>	Customer Technical Support, Customer Service, and Sales (Penang, Malaysia)	604 633 4810
<b>Spain (Madrid)</b> International Access Code: 00 Country Code: 34 City Code: 91	Website: <a href="http://support.euro.dell.com">support.euro.dell.com</a>	
	E-mail: <a href="mailto:support.euro.dell.com/es/es/emaiddell/">support.euro.dell.com/es/es/emaiddell/</a>	
	<b>Home and Small Business</b>	
	Technical Support	902 100 130
	Customer Care	902 118 540
	Sales	902 118 541
	Switchboard	902 118 541
	Fax	902 118 539
	<b>Corporate</b>	
	Technical Support	902 100 130
	Customer Care	902 118 546
Switchboard	91 722 92 00	
Fax	91 722 95 83	

<b>Sweden (Upplands Vasby)</b> International Access Code: <b>00</b> Country Code: <b>46</b> City Code: <b>8</b>	Website: <a href="http://support.euro.dell.com">support.euro.dell.com</a>	
	E-mail: <a href="mailto:swe_support@dell.com">swe_support@dell.com</a>	
	E-mail Support for Latitude and Inspiron: <a href="mailto:Swe-nbk_kats@dell.com">Swe-nbk_kats@dell.com</a>	
	E-mail Support for OptiPlex: <a href="mailto:Swe_kats@dell.com">Swe_kats@dell.com</a>	
	E-mail Support for Servers: <a href="mailto:Nordic_server_support@dell.com">Nordic_server_support@dell.com</a>	
	Technical Support	08 590 05 199
	Relational Customer Care	08 590 05 642
	Home/Small Business Customer Care	08 587 70 527
	Employee Purchase Program (EPP) Support	20 140 14 44
	Fax Technical Support	08 590 05 594
Sales	08 590 05 185	
<b>Switzerland (Geneva)</b> International Access Code: <b>00</b> Country Code: <b>41</b> City Code: <b>22</b>	Website: <a href="http://support.euro.dell.com">support.euro.dell.com</a>	
	E-mail: <a href="mailto:swisstech@dell.com">swisstech@dell.com</a>	
	E-mail for French-speaking HSB and Corporate Customers: <a href="http://support.euro.dell.com/ch/fr/emaildell/">support.euro.dell.com/ch/fr/emaildell/</a>	
	Technical Support (Home and Small Business)	0844 811 411
	Technical Support (Corporate)	0844 822 844
	Customer Care (Home and Small Business)	0848 802 202
	Customer Care (Corporate)	0848 821 721
	Fax	022 799 01 90
Switchboard	022 799 01 01	
<b>Taiwan</b> International Access Code: <b>002</b> Country Code: <b>886</b>	Technical Support (portable and desktop computers)	toll-free: 00801 86 1011
	Technical Support (servers)	toll-free: 0080 60 1256
	Transaction Sales	toll-free: 0080 651 228
	Corporate Sales	toll-free: 0080 651 227
<b>Thailand</b> International Access Code: <b>001</b> Country Code: <b>66</b>	Technical Support	toll-free: 0880 060 07
	Customer Service (Penang, Malaysia)	604 633 4949
	Sales	toll-free: 0880 060 09
<b>Trinidad/Tobago</b>	General Support	1-800-805-8035
<b>Turks and Caicos Islands</b>	General Support	toll-free: 1-866-540-3355
<b>U.K. (Bracknell)</b> International Access Code: <b>00</b> Country Code: <b>44</b> City Code: <b>1344</b>	Website: <a href="http://support.euro.dell.com">support.euro.dell.com</a>	
	Customer Care website: <a href="http://support.euro.dell.com/uk/en/ECare/Form/Home.asp">support.euro.dell.com/uk/en/ECare/Form/Home.asp</a>	
	E-mail: <a href="mailto:dell_direct_support@dell.com">dell_direct_support@dell.com</a>	
	Technical Support (Corporate/Preferred Accounts/PAD [1000+ employees])	0870 908 0500
	Technical Support (direct/PAD and general)	0870 908 0800
	Global Accounts Customer Care	01344 373 186
	Home and Small Business Customer Care	0870 906 0010
	Corporate Customer Care	01344 373 185
	Preferred Accounts (500-5000 employees) Customer Care	0870 906 0010
	Central Government Customer Care	01344 373 193
	Local Government & Education Customer Care	01344 373 199
	Health Customer Care	01344 373 194
	Home and Small Business Sales	0870 907 4000
	Corporate/Public Sector Sales	01344 860 456
Home and Small Business Fax	0870 907 4006	
<b>Uruguay</b>	General Support	toll-free: 000-413-598-2521
<b>U.S.A. (Austin, Texas)</b> International Access Code: <b>011</b> Country Code: <b>1</b>	Automated Order-Status Service	toll-free: 1-800-433-9014
	AutoTech (portable and desktop computers)	toll-free: 1-800-247-9362
	<b>Consumer (Home and Home Office)</b>	
	Technical Support	toll-free: 1-800-624-9896
	Customer Service	toll-free: 1-800-624-9897
	DellNet™ Service and Support	toll-free: 1-877-Dellnet (1-877-335-5638)
	Employee Purchase Program (EPP) Customers	toll-free: 1-800-695-8133
	Financial Services website: <a href="http://www.dellfinancialservices.com">www.dellfinancialservices.com</a>	

	Financial Services (lease/loans)	toll-free: 1-877-577-3355
	Financial Services (Dell Preferred Accounts [DPA])	toll-free: 1-800-283-2210
	<b>Business</b>	
	Customer Service and Technical Support	toll-free: 1-800-822-8965
	Employee Purchase Program (EPP) Customers	toll-free: 1-800-695-8133
	Projectors Technical Support	toll-free: 1-877-459-7298
	<b>Public (government, education, and healthcare)</b>	
	Customer Service and Technical Support	toll-free: 1-800-456-3355
	Employee Purchase Program (EPP) Customers	toll-free: 1-800-234-1490
	Dell Sales	toll-free: 1-800-289-3355 or toll-free: 1-800-879-3355
	Dell Outlet Store (Dell refurbished computers)	toll-free: 1-888-798-7561
	Software and Peripherals Sales	toll-free: 1-800-671-3355
	Spare Parts Sales	toll-free: 1-800-357-3355
	Extended Service and Warranty Sales	toll-free: 1-800-247-4618
	Fax	toll-free: 1-800-727-8320
	Dell Services for the Deaf, Hard-of-Hearing, or Speech-Impaired	toll-free: 1-877-DELLTTY (1-877-335-5889)
<b>U.S. Virgin Islands</b>	General Support	1-877-673-3355
<b>Venezuela</b>	General Support	8001-3605

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**NOTE:** A NOTE indicates important information that helps you make better use of your system.



**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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Models PowerConnect 2216, PowerConnect 2224, PowerConnect 2324

December 2003 Rev. A00

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