

# ***Dell™ PowerVault™ 705N Administrator Guide***



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**Authorized Service**

Only an authorized service representative can service the PowerVault NAS Appliance. Failure to comply with this requirement will void the warranty.

**WARNING to Service Personnel**

Danger of explosion if battery is incorrectly replaced on a PowerVault NAS Appliance.

Replace with only the same or equivalent type recommended by the battery manufacturer. Dispose of used batteries according to the battery manufacturer's instructions.

**WARNING**

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 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 their own expense.

Changes or modifications not expressly approved by Dell could void the user's authority to operate the equipment.



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# CHAPTER 1 *Installing the Dell™ PowerVault™ 705N On Your Network*

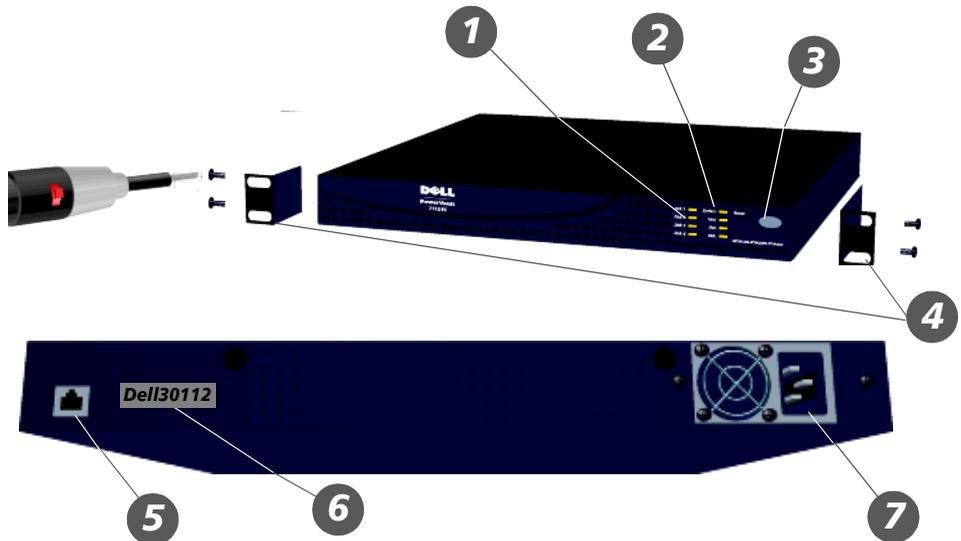
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To install a PowerVault 705N on your network, locate the connectors and controls, connect the server to your network, turn the server on, and assign an IP address.

## **Connectors and Controls**

Your 705N has the following connector and controls:

1. Status lights
2. Reset button
3. Power button
4. Mounting brackets
5. Network connector
6. Serial number label
7. Power connector



## Preparing for Rack Installation

You can install the 705N in a standard 19-inch rack.

1. Install the mounting brackets onto the server as shown using the *black* screws.



It is important that you use the black screws, and make sure that the mounting brackets are securely connected to the unit. These brackets will hold the entire weight of the unit.

2. Carefully slide the server into a shelf in the rack. Use the *silver* screws to secure the server in place on the rack.

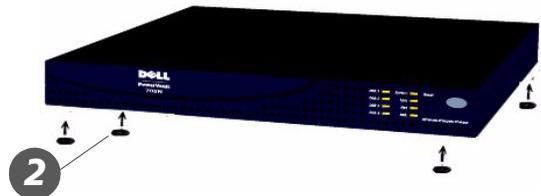
**Note:** Do not put heavy objects on top of the PowerVault 705N.



## Preparing for Desktop Installation

If you choose not to install your server in a rack, you can place the 705N on a desktop or workstation.

1. Peel the five rubber feet off the backing sheet.
2. Attach the rubber feet into the markings on the bottom of the unit.



## Connecting Your Server to Your Network

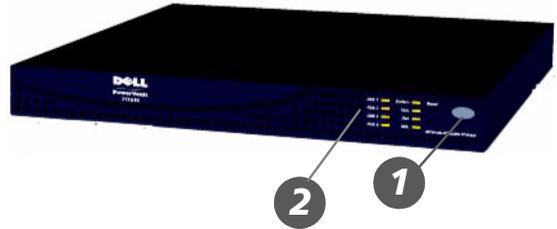
You can connect your 705N to a 10Base-T or 100Base-TX network.

1. Connect the server to your network using the Ethernet cable provided.
2. Connect the server to an AC wall outlet using the power cord provided.



## Turning On Your 705N

1. Press and hold down the power button until the System light turns on, then release the button and wait for the server to start up.
2. When the System light starts blinking at a steady rate (about once a second), startup is complete.



## Turning Off Your 705N

1. To turn off the 705N, press the power button until the System light blinks three times.
2. After you turn off the 705N, the lights will remain lit while the server completes its shutdown. You must wait for all of the lights to turn off before you turn on the server again or disconnect it from the power source. The 705N should never take more than half a minute to shut down.

**Note:** It is important to shut down your server properly to avoid the possibility of data corruption.

## Assigning a Network Address

To configure the 705N and use it in network environments, it must have an IP address. (An IP address is a network address and is required for TCP/IP.)

Your PowerVault 705N can automatically obtain an IP address from a DHCP server. If your network assigns IP addresses automatically, skip to Chapter 2, "Using Your Dell™ PowerVault™ 705N."

Note that your PowerVault 705N must be configured to use the same subnet as the NT domain controller if WINS is not in use on the network.

If your network does not assign IP addresses automatically, follow the procedure below for your computer type to assign one. You can also use these procedures to look up an automatically assigned address.

**Note:** Use the Web interface to change the server's IP address once it has been assigned.

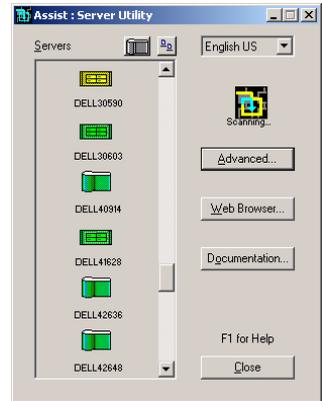
### Windows® Computers

To assign or look up an IP address on a Windows computer:

1. Load the PowerVault 705N CD-ROM into your computer's CD-ROM drive.

On most computers **Assist** starts automatically when you load the CD-ROM. If it does not start, view the contents of the CD-ROM drive, then double-click the **Assist** program icon.

2. Select a server to install from the list of 705Ns that **Assist** displays (it might take a few minutes for the server to appear on the list). To view an automatically assigned IP address, double-click the server name and read the address on the **Details** window. If no address is assigned, continue to step 3.
3. Click **Initial Setup** or **IP Address** to begin the configuration. If these buttons are not visible, then the server you selected has already been configured with an IP address.
4. If the **IP Address** window is displayed, enter the desired IP address and click **Apply**. Otherwise, follow the instructions presented by the **Initial Configuration Wizard**: read the **Welcome** page, assign a server name and administrator password, set the date and time, and configure TCP/IP settings. For more information about any setting, click **Help**.
5. Finish the **Initial Configuration** wizard by clicking **Finish** to apply your changes. This will also restart the 705N if necessary.



## Macintosh® Computers

To assign or view an IP address on a Macintosh computer:

1. Load the 705N CD-ROM into the computer's CD-ROM drive and double-click the **PowerVault IP** icon to display the 705N **Selection** window. A new window appears.
2. Double-click the **PowerVault IP** icon.
3. If you use zones with AppleTalk®, select the zone for the server you want to configure.
4. Select the 705N you want to configure, then click **OK** to display the TCP/IP Settings dialog box.

If the TCP/IP settings are blank, you must assign the following settings appropriately for your network:

- IP address of the 705N.
- Your network's subnet mask.
- IP address of your network's default gateway (router). If you do not want to assign a default gateway, enter 0 (zero) in each field.

If necessary, ask your Network Administrator for help in determining appropriate settings.

5. Click **OK** to assign the TCP/IP settings.

## ***For More Detailed Information***

You can always find more detailed information about your PowerVault 705N in the Technical Reference. To access this document, use your Web browser to open the 705N CD-ROM.

You can also find more information in the online help. Both the main interface and the Assist utility contain helpful information. To access the Web Administration online help, click the **Help** link. To access the Assist online help, click the **Documentation** button.



# CHAPTER 2 *Using Your Dell™ PowerVault™ 705N*

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Once installed on your network, the 705N appears as a server with shared folder(s). You can use it to organize and store files in the same way that you use the folders on your local hard disk.

The default server name is DELLnnnnnn, where nnnnnn is the serial number from the label on your unit (for example, DELL300020). For Novell® NetWare® users, the server name is DELLnnnnnnNW, where nnnnnn is the serial number.

In general, you can use the following procedures to connect to the 705N. The remainder of this chapter describes these procedures in more detail.

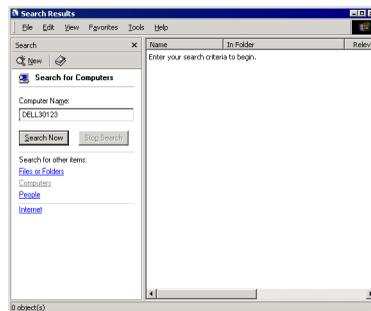
<i>To connect to the server using:</i>	<i>Do this:</i>
Microsoft® Windows® 2000 Microsoft Windows Me	Look for the server in <b>My Network Places</b> . If the default settings were not changed during installation, it will appear under <b>WorkGroup</b> .
Microsoft Windows 95/98/NT®	Look for the server in <b>Network Neighborhood</b> . If the default settings were not changed during installation, it will appear under <b>WorkGroup</b> .
Macintosh®	Connect to the server using the <b>Chooser, Network Browser, or Connect to Server</b> .
Web browser	Enter the server name or IP address in your Web browser's location or address box.
NFS	Mount the desired share using the server name or IP address.
FTP	Enter the server name or IP address in your FTP client application.

# Windows Users

## Windows® 2000 or Me

The 705N should automatically appear in **My Network Places** under **WorkGroup** if the default setup was accepted during installation. If it does not, follow the steps described here:

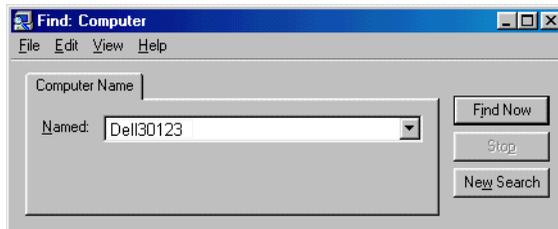
1. On the **Start** menu, click **Search** and then **For Files or Folders**.
2. In the **Search Results** window, select **Computers**.
3. In the Search for Computers dialog box, enter the server name and click **Search Now**.
4. Wait for the server to appear (you may need to try again after a few minutes if you have just turned on the server).
5. Double-click the 705N icon to see a folder that represents the network disk drive(s). (NetWare users also see a SYS volume.)



## Windows® 95, 98, or NT

The 705N should automatically appear in your Network Neighborhood under **WorkGroup** (if the default settings were used). If it does not, follow the steps described here:

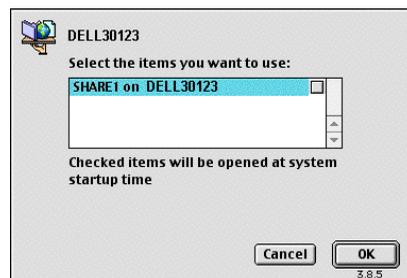
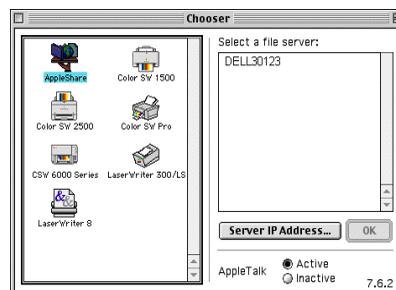
1. On the **Start** menu, click **Find** and then **Computer**.
2. Enter the server name. (The default naming convention is described on page 7.)
3. Click **Find Now** and wait for the 705N to appear. (You may need to try again after a few minutes if you just turned on the server.)
4. Double-click the 705N icon to see a folder that represents the network disk drive(s). (NetWare users also see a SYS volume.)



## Macintosh Users

To connect to the 705N:

1. Select the Network Browser, Chooser, or Connect to Server from the **Apple** menu. In the Chooser, click the **AppleShare®** icon.
2. If you use zones with AppleTalk®, select the default zone in the AppleTalk Zones® list.
3. Scroll through the list of servers in the **Select a file server** list and select your 705N, then click **OK**.
4. When asked for a user name or password, click **Guest**, then click **OK**.
5. In the server dialog box, select **SHARE1 on Dellnnnnnn**.
6. Click **OK** to mount the server on your desktop.



## Connecting From the Web

By default, you can view folders and files on the 705N from the Web. To connect from a Web browser:

1. Type the server's name or IP address in your browser's Location or Address box.
2. Press **Enter**. This will connect you to the server's **Home** page.

To browse the contents of the server, click the SHARE1 link. (Additional links appear if you add network shares, as described in “Assigning User Access to Network Shares” on page 16.) If you restrict access to a network share, you must log in with the right privileges to browse the contents of the share.

Tip: If you plan to use your 705N as a Web server (hosting static Web content), you can customize the server's **Home** page and change other Web-related settings. From the server's **Administration** page, first click **Network Settings** and then click **Web**. Instructions are available through the **Help** link.

## Connecting from an NFS Mount (UNIX<sup>®</sup> systems only)

To connect to the server using an NFS mount:

1. From a command line, type  
**mount server\_name:/share\_name /dir\_path /local\_mount**

where **server\_name** is the name or IP address of the server, **share\_name** is the name of the share to which you want to mount, **dir\_path** is the directory path, and **local\_mount** is the name of the mount target directory. Note that there is a space inserted after the directory path.

2. Press **Enter**. You are now connected to the specified share on the server.

For more details about working with UNIX NFS Networks, see “UNIX NFS Networks” on page 25.

## Connecting from an FTP Application

To connect to the server using FTP:

1. Type the server's name or IP address in your FTP program's Location or Address box.

To connect via a command line, type **ftp server\_name**

To connect via a Web browser, type **ftp://server\_name**

where **server\_name** is the name or IP address of the server.

2. Press **Enter**. This connects you to the server's FTP root directory. All shares and subdirectories will appear as links or folders.

If you restrict access to a network share, you must log in with the right privileges to browse the contents of the share. You cannot manage files or folders in the FTP root directory.

# CHAPTER 3 *Customizing Your Dell™ PowerVault™ 705N*

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You can use your 705N in its default configuration, or you can customize its name, disk configuration, and other features.

By default, no security restrictions are in place for accessing the files and folders within a new 705N. Anyone who can connect to the 705N from their network or from the Internet can access any of the server's files. If you are concerned about the security of your files, set up users and access restrictions.

Use a Web browser to enable security on your 705N and to perform other management functions. For detailed instructions, see the online **Help**.

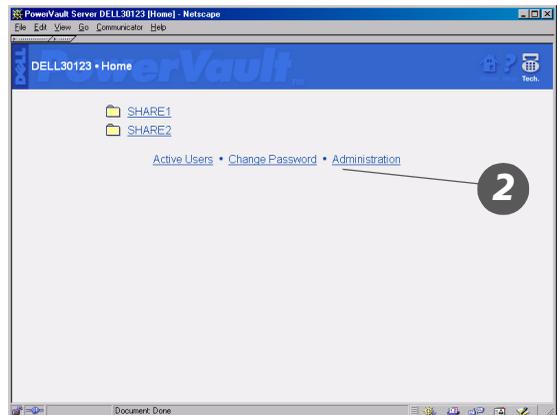
- Click the **Tech Support** Link to go to the Dell Support Web site.

You can always find more detailed information about your 705N in the Technical Reference. To access this document, use your Web browser to open the 705N CD-ROM.

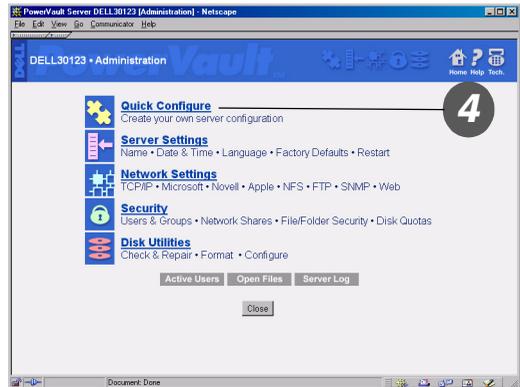
**Note:** *The first time you access the 705N from a Web browser, you are asked to select your home language.*

## **Using Quick Configure**

1. Start your Web browser, enter the server's name or IP address in the Location or Address box, and press Enter to display the Dell PowerVault 705N NAS **Home** page.
2. On the **Home** page, click **Administration**.



3. When asked to log in, enter Administrator as the user name and enter the Administrator password (leave the password blank if you have not changed it from its default).
4. On the **Administration** menu, click **Quick Configure** for the initial setup procedure.
5. Follow Quick Configure's instructions to customize the server. For more information about the settings on any page, click the help link on top of the PowerVault NAS **Home** page.
6. When you complete the initial setup, click **Finish** to apply your changes, and if necessary, restart the server.
7. After you complete the Quick Configure process, you might want to return to the **Administration** menu and change the disk configuration or set up security. The remainder of this chapter describes how to do so.



## Changing the Disk Configuration

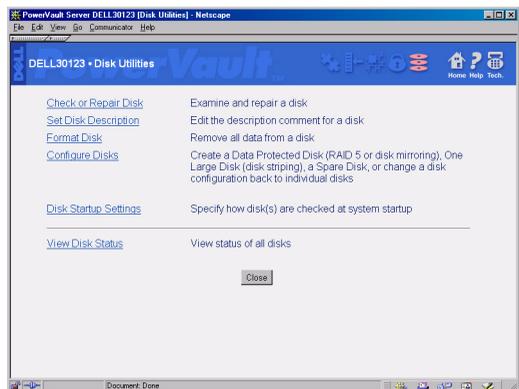
Your 705N's disk configuration was preset at the factory.

**Note:** *If you want to change the disk configuration, do so before you store files on the server because changing the configuration will erase all data stored on the disk drives.*

By default, the four disk drives on a PowerVault 705N are combined into one large, data-protected disk. This configuration is called RAID 5. The total capacity of the combined disks (known as a disk array) is equivalent to the capacity of three individual disks. The remaining disk space is used for data protection. If any single disk in the array fails, the array automatically recovers from the failure, and the server continues operating without interruption or data loss.

You may want to configure your disks differently:

- You can configure each disk as an individual unit, which network users can access as an independent storage device.



- You can combine any two to four disks to make a single larger disk that has no data protection. This configuration is called disk striping, or RAID 0. Disk striping is best suited for applications where maximum performance and highest capacity are more important than data protection.
- You can combine any two disks, using one disk to duplicate the data stored on the other. This configuration is called disk mirroring, or RAID 1. If either disk in the configuration fails, the other automatically takes over; the server continues operating without interruption or data loss. Disk mirroring sacrifices disk capacity, which is reduced by half, to provide the highest possible level of data protection.
- You can use any leftover disk as an individual unit, or reserve it as a spare. If you configure a disk as a spare, you cannot take advantage of its storage space. The spare automatically will replace a failed drive in a mirrored pair or RAID 5 disk array.

To change disk settings, use the **Disk Utilities** menu. You can access Disk Utilities from the 705N **Administration** menu.

For detailed information about disk configurations, click the **Help** link on the **Disk Utilities** menu.

## ***Setting Up Security***

Security restrictions control who can access the files and folders stored on the server.

The default configuration allows all users on your network full access to all disks on the server. If you have Web access enabled, this could include Internet users as well. If you intend to store sensitive data, define tighter security restrictions before putting it on the server.

If you want to enforce security, you can define users (and groups) and identify which of these may access your 705N. When planning how you want to enforce security at your location, consider the following 705N features:

- You can secure a share, an entire disk, selected folders, or individual files.
- On Microsoft® and Novell® networks, you can use another server to authenticate users for you. (You do not need to re-enter users and groups who are already known to a Microsoft network domain or to a Novell network bindery server.) See “Defining PowerVault Users” on page 14.
- You can control how much disk space a user can consume by assigning usage quotas.

See the Technical Reference for additional information on security topics. To access this document, use your Web browser to open the CD-ROM.

To set up security on your server, use the settings on the **Security** menu. You access the **Security Administration** menu from the 705N

## Defining PowerVault Users

Before you can give or deny access to a server, you need to identify the users. Your server allows you to define Network Users, Local Users, and User Groups.



### Network Users

Network users are users whose information the server obtains from a Microsoft® domain or a Novell® network bindery server. These network services allow you to define users in a central location and use those definitions across your network. To access network user lists, click **Security Guides** on the **Security** menu, and then do one of the following:

- Click **Using NT domain security** to add Microsoft and Apple network users that are part of the domain. Read the initial screen, then click **Next** to continue. You are guided step by step to add desired users.

**Note:** Once NT domain users are enabled, anonymous connection to a 701N is disabled. The anonymous access to the 701N must be done through an anonymous NT domain user.

- Click **Using the security from another Netware server** to add Novell network users. Read the initial screen, then click **Next** to continue. You are guided step by step to add desired users.

You can find more information in the Technical Reference. To access this document, use your Web browser to open the ReadMeFirst.html file on the 705N CD-ROM.

### Local Users

Local Users are users whom you define on a specific server. All of their user information is stored on the server. If you must have other servers on your network, you must define a user on each server, or import users from one server to another using the **Assist** program on your 705N CD-ROM.

To define Local Users, click **Users** on the **Security** menu and then click **New**. You can use other buttons on this page to manage Local Users.

### User Groups

You can define User Groups and you can also give or deny access to the entire group. If you have defined network users, any groups defined in the Microsoft domain service or Novell network bindery service are available for you to use on the server.

To define groups of Local Users, move to the **Security** menu, click **Groups** on the **Users & Groups** menu selection. Click **New**. You can use the other buttons on this page to manage local user groups.

## **Configuring Microsoft Domain Security**

You can configure your server to take advantage of Microsoft NT domain security. In this configuration, you do not need to set up Microsoft (or Apple®) network users and groups that are already recognized by the domain.

**Note:** *Once NT domain users are enabled, anonymous connection to a 705N is disabled. The anonymous access to the 705N must be done through an anonymous NT domain user.*

*For example, if user JohnD is a member of the domain, you do not need to create a Local User called JohnD in order to connect to the server using Microsoft (or Apple) networking. When assigning access privileges, JohnD (along with all other domain users) appears in the list of available users.*

You configure domain security from the **Security** menu by clicking **Security Guides**, then clicking **Using NT domain security**, and follow the instructions (click the **Help** link if you need more information).

You can configure the server to be part of a “resource” domain (which is where your server appears when browsing the network via Network Neighborhood or My Network Places) and a “security” domain (which is the domain that contains all your users and groups). These two domains could be one and the same (which is typically recommended for smaller networks) or separate (which may be better suited for larger networks).

If you configure your server to use separate domains, the “security” domain must be a domain “trusted” by the “resource” domain. In other words you will need to establish “trust relationships” between the two domains. (For information on configuring trust relationships, see the Windows Server documentation.)

As part of the configuration procedure, you must provide a user account (user name and password). This user account must belong to the security domain, but does not need any administration privileges. The account is used by the server to log in to the security domain and obtain information on users and groups.

After enabling domain security, domain users and groups show up when you assign access rights to network shares. However, domain users and groups do not appear in configuration pages which are used to manage local 705N users and groups.

If a user is already part of the domain, do not create a 705N local account with the same name and password. This can cause confusion when assigning access rights to network shares.

If you have a large domain (more than 2000 users or groups), the server cannot automatically download the entire list of users (or groups) from the PDC. You can work around this problem by checking **Import user/group list from large security domain** in the **Large User/Group List** tab in **Assist's Advanced** window. This function downloads the full list of users/groups into the server. (The

workstation running **Assist** must be part of the same resource domain as the 705N. If you are using separate “resource” and “security” domains, trust relationships need to be established between the two.)

Checking **Import user/group list from large security domain** prevents the 705N from downloading the list of domain users/groups automatically. As a result, if the list has changed since you last imported it, you need to “Refresh” it from the **Large User/Group List** tab in **Assist**.

## ***Assigning User Access to Network Shares***

Network shares are virtual folders that map to an actual directory on the server. They are equivalent to Apple networking shared folders, Novell networking volumes, and NFS exported file systems. Unlike standard NetWare or AppleShare servers, it is possible to share folders contained in a folder that is already shared.

705Ns are configured at the factory with one share for each disk drive or disk array. (For more information on disk configurations, see “Changing the Disk Configuration” on page 12.) You can create additional shares that represent an entire disk or a folder within a disk.

You can also assign users or groups access permissions (full access, read only, or access denied) to shares. These access permissions apply to all files and folders accessible through the share.

To assign access permissions, click **Security Guides** on the **Security** menu and then click **Give or deny users access to an entire disk** or **Give or deny users access to a folder on a disk**. Follow the instructions to select (or create) a share and then give or deny access to that share.

When restricting access to a share, consider the following:

- If you leave a share configured with full access to Everyone, all users (except those who are denied access to the share) can still read and write files and folders accessible through the network share.
- Security changes made to 705N network shares may not take effect until users log off and back on. Restart the 705N if you absolutely need security changes to be effective immediately.
- Denying access to a share overrides any access granted to a user or group.
- If your network has over 1000 user and group names, the users may be displayed as a range, for example [USR\_1000.USR\_2000]. Select **Expand Range** to see all of the users within the selected range.

## ***Assigning Users Access to Files and Folders***

If desired, you can assign the following access permissions to specific files and folders on your 705N:

No Access	User/group is denied access to the file/folder.
-----------	---

Read	User/group can only read the contents of the files or folders.
Add	User/group can create files and folders but not read or modify them.
Write	User/group can create files but not read them.
Add & Read	User/group can create and read the files and folders but not modify them.
Read & Write	User/group can read and write files but not delete them.
Change	User/group can create, read, modify and delete files and folders, but cannot change the access rights.
Full Control	User/group has full access privileges.

*For example, you may have a network share open for full access by everyone. You can prevent certain files (or folders) from being overwritten by changing their access rights from "Full Control" to "Read." You can also control access to individual files (or folders) by adding users (or groups) with specific rights to the list of who can access the files (or folders).*

To assign access permissions:

1. Click **File/Folder Security** on the **Security** menu. The server displays a list of network shares that you have defined.
2. Browse the contents of the shares to locate files or folders you want to secure.
3. To view and/or modify the security settings for a file or folder, click the corresponding security icon (it looks like a key).
4. Select users and groups you wish to add, pick the appropriate security level, and click **Add** to add them to the security list. To change the access permissions for a user (or group), remove the user (or group) from the list, then add it back with the correct settings.
5. When assigning access rights to a folder, you can click **Apply this folder's security to all sub-files and folders** to propagate the access rights for the folder to all files and folders it contains.

If your network has over 1000 user and group names, the users may be displayed as a range, for example [USR\_1000..USR\_2000]. Select **Expand Range** to see all of the users within the selected range.

The access permissions you assign to specific files and folders work in conjunction to access permissions you assign to a network share. When share access rights for a user or group differ for a file or folder in the share, the most restrictive access right is enforced.

*For example, you may have a network share where you have denied access to Guest. Guest cannot access this share regardless of access permissions assigned to individual files. You may also have a network share where the group Sales has read*

only access. Members of Sales cannot modify files they access through this share even if these are configured for “Full Control” by everyone.

## **Assigning File Ownership**

The person who creates a file owns that file. Owners always have full access to their own files, regardless of Access settings. File ownership information is also used to calculate disk space usage for Disk Quotas. For better file control you can change file ownership.

*For example, a file may exist on the server that was created by one person or a third party, but afterwards the project for which the file was created is transferred to a new employee. You then want to transfer file ownership to the new person.*

1. Click **File/Folder Security** on the **Security** menu. Select **Set File/Folder Security**. The server displays a list of network shares that you have defined.
2. Browse the contents of the shares to locate files or folders you want to secure.
3. To view and/or modify the security settings for a file or folder, click the corresponding ownership icon (it looks like a face).
4. Select the person to whom you want to assign ownership of the file, then click **Set Owner**. To apply ownership to an entire folder or subfolder, click **Apply this folder's ownership to all files and subfolders**.

If your network has over 1000 user and group names, the users may be displayed as a range, for example [USR\_1000..USR\_2000]. Select **Expand Range** to see all of the users within the selected range.

## **Assigning Disk Usage Quotas**

If desired, you can control how much disk storage space a user can consume on the 705N.

*For example, you may want to prevent some of your users from consuming more than 100 MB of disk space each, while allowing other users to operate without any restrictions.*

To assign disk usage quotas:

1. Click **Disk Quotas** on the **Security** menu and then click **Modify/View Disk Quotas**. The server displays a list of users along with their current disk space allocation and consumption. Disk Quotas must be enabled in order to set quotas for users.
2. Click on a user name to change the disk quotas for that user.

If you have enabled the 705N e-mail notification feature, the server informs you whenever users fills up their available disk space.

If your network has over 1000 user and group names, the users may be displayed as a range, for example [USR\_1000..USR\_2000]. Select **Expand Range** to see all of the users within the selected range.

Quotas use file ownership to calculate disk space consumed per user. In some cases, it may be desirable to change file ownership in order to distribute disk usage fairly.

## **Accessing the Server with Guest Privileges**

By default, a 705N has a predefined local user named Guest that allows anyone to use the 705N. If a user tries to access the 705N and is not recognized, then that user is identified as Guest and has whatever access privileges have been allowed to Guest. This is equivalent to using an anonymous login to access those shares made available to Guest. Depending on the level of security you require, you may want to restrict Guest privileges when accessing some (or all) network shares.

### **How Users Can Auto-Connect with Guest Privileges**

When a user tries to connect with a name that is not recognized as a local user, the 705N checks to see if network users are enabled. If so, it lets the NT domain (or external NetWare server) decide what to do. If network users are not enabled, the 705N auto-connects the user as Guest.

*For example, assume that your 705N still has its default security settings. If user JaneD tries to connect to the server, she is allowed in with Guest privileges. In other words, she is listed as JaneD in the server's active user lists, but is treated as if she were Guest when accessing information on the server. Since, by default, Everyone has full access to the server, JaneD has full access to all 705N files and folders.*

*If you configure JaneD as a local user (or use a pre-defined user account, such as Administrator), JaneD (or Administrator) is only allowed to connect to the server by supplying the correct password. However, once connected, JaneD and Administrator have their own user identity. As a result, these users may be allowed access to files or folders that are denied to Guest.*

If you now enable NT domain security (for both Microsoft and Apple network users), the server behaves differently depending on what network protocol is used to connect.

*For example, user JohnD (who is not configured as a local user) tries to connect from a Macintosh, the 705N lets the domain decide if he is allowed access. However, if JohnD is using a Web browser, the 705N auto-connects him with Guest privileges (because the Web is not enabled for domain security).*

### **Security Tips for Guest Users**

If you are not comfortable with the "auto-connect" feature, simply delete the Guest account or assign a password to it. If you decide to leave the Guest account unchanged, consider the following:

- Change access restrictions for Share1. In most cases, you should only allow network administrators to access this share. (Delete "Everyone" from the access list and add the local group "Admin" instead.)
- For a small set of users, enter these as local users. When restricting access to a network share, allow full access to Everyone but deny access to Guest. All local users, except Guest, now have full access to the share.



# CHAPTER 4 *Managing Your Dell™ PowerVault™ 705N*

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If you are the Administrator of a 705N, you can use your Web browser to connect to the server and perform administrative tasks such as checking who is using the server, checking the disk status, and changing configuration options. This chapter gives you a brief introduction to these administrative tools. It also covers special concerns for backing up the data stored on your 705N and using the 705N in different network environments.

## ***Language Support For File And Folder Names***

Documents saved on a 705N may be written in any language that the operating system supports. File and folder name support is provided only for languages that are compatible with Code Pages 437 (US English, Indonesian<sup>1</sup>, Basque<sup>1</sup>, Catalan<sup>1</sup>), 850 (Western Europe including Afrikaans, Basque, Catalan, Dutch, English, French, German, Italian, Indonesian<sup>1</sup>, Icelandic<sup>2</sup>, and Spanish) and 865 [Northern Europe including Danish, Finnish, Norwegian (Bokmål), Norwegian (Norsk), and Swedish].

Use of file and folder names in other languages not listed above may not be fully supported. Thus, files and folders may be impossible to open or delete if named using unique characters in unsupported languages. Cyrillic characters are an example of characters that are not supported for use in file or folder names.

For details about language support and code pages, see the Technical Reference or visit the Dell Web site.

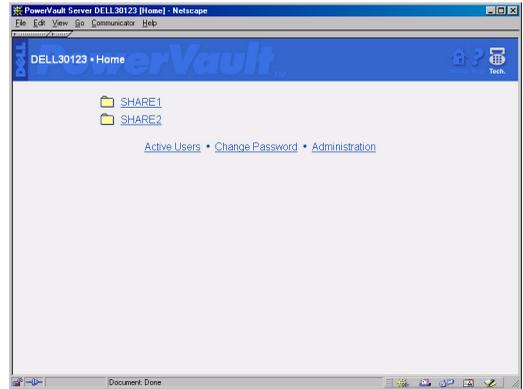
- 
1. The primary and secondary code pages for Indonesian (437, 850), Basque (850, 437), and Catalan (850, 437) are all supported.
  2. The primary Icelandic code page (850) is supported, but the secondary page (861) is not supported.

## Using the Home Page

To display the **PowerVault Home** page, start your Web browser, enter the server's name or IP address in the Address or Location box, and press **Enter** or **Return**.

On the **Home** page, you can:

- Click a share icon to access the folders and files within that share.
- Click the **Active Users** link to see who is currently using the server.
- Click the **Change Password** link to change the password for a local user. (Local users are described in “Defining PowerVault Users” on page 14.)
- Click the **Administration** link to display the **Administration** menu where you can access additional server management features.



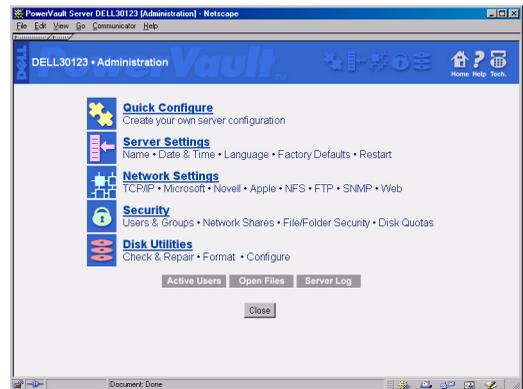
## Using the Administration Menu

From the **Administration** menu you can:

- Click **Quick Configure** if you would like step-by-step instructions that help you customize your server by changing basic configuration settings from their factory defaults. (See “Using Quick Configure” on page 11.)
- Click **Server Settings**, **Network Settings**, **Security**, or **Disk Utilities** to review your server's configuration settings, make configuration changes as needed, and monitor your server's operation.

*For example, you can use **Disk Utilities** to check a disk or change its description.*

- View information about users (click **Active Users**), files (click **Open Files**), and the server log (click **Server Log**).



To learn more about the links and buttons on the **Administration** menu, click **Help** at the top of the page.

## **Backing Up the PowerVault**

You should back up files stored on the 705N in the same manner that you back up any other file server. You can use any of several commercial backup programs to copy the data stored on your server to backup media such as tape, another disk drive, another 705N, or CD-ROM. Most backup programs store the data in a special format and include a restore function for retrieving files from backups.

The 705N is fully compatible with Microsoft® Windows® 95, Windows 98, Windows NT®, Windows 2000, and Novell® NetWare® backup software.

Some special considerations for backing up from different operating systems are detailed in this section.

### **Windows® Systems**

The 705N is compatible with all major backup software for Microsoft® Windows NT and Microsoft Windows 2000 servers.

### **Macintosh® Systems**

To back up data on your 705N from a Macintosh computer, you must first mount the appropriate network shares (volumes) on the desktop. Doing so allows Macintosh backup programs to operate without a remote agent running on the 705N.

### **Novell® Networking Systems**

You can back up a 705N using applications that are compatible with the Novell SMS (Storage Management System) and TSA (Target Service Agent) protocols. Supported network backup programs include Computer Associates® ARCserveIT™ and Veritas Backup Exec™ for NetWare.

When using Novell-based networking backup applications with a 705N, you need to be aware of the following issues:

- If the 705N does not appear on the list of servers available for backup, you may need to reconfigure the backup software to recognize the server. With some software packages, the only way to do this is to reinstall the backup program.
- Some backup applications do not operate if your server supports more users than allowed by your backup software license. By default, the 705N is configured for 250 Novell networking users; you may need to reduce this number to match your license restrictions.

*For example, if you purchased a 25-user version of Computer Associates ARCserveIT, you need to change the number of Novell networking users to 25 or fewer. (From the **Novell Networking** page, click **Advanced**, then change the*

**Number of user licenses.** *This setting has no effect on other networking environments.)*

- The 705N does not currently support data compression. Therefore, you cannot back up data from a NetWare 4.x or 5.x volume with data compression enabled and restore it to a 705N. (Compressed files are restored as zero length files to the 705N volume.) If you want to transfer your data to a 705N, you must decompress it on the NetWare server before you perform the backup.

For more detailed information about your 705N see the Technical Reference. To access this document, use your Web browser to open the 705N CD-ROM.

## **UNIX<sup>®</sup> Systems**

You can back up your 705N using UNIX backup applications, such as **tar** and **cpio**. However, you must use backup software that supports remote volumes without requiring remote system agent support.

## **Tips for Specific Network Environments**

This section contains additional tips for using your 705N in specific network environments. See the 705N Technical Reference for additional information on this topic. To access this document, use your Web browser to open the 705N CD-ROM.

### **Apple<sup>®</sup> Networks**

The server operates like an AppleShare<sup>®</sup> 6.0 file server. The interoperability with Windows clients is equivalent to that of a Windows NT 4.0 server with **Services for Macintosh** enabled.

If you use Microsoft networking, you can enable domain support for Apple networking users by configuring the 705N to use Microsoft domain security to authenticate Apple Networking users that are registered in the domain (see “Defining PowerVault Users” on page 14). In this configuration, you do not need to set up local users and groups for Apple Networking.

Security settings for folders cannot be changed from a user computer using native Macintosh tools; any changes made will have no effect.

The 705N supports cross-platform access to application-specific files, thus allowing Macintosh-based and Windows-based applications to interoperate transparently. The 705N keeps the resource forks in a hidden folder. To maintain compatibility with Apple programs, it is best to copy, delete, or move these shared files using a Macintosh computer. (If working on a Windows computer, copy, delete, or move the entire folder containing the shared files.)

### **Microsoft Networks**

The 705N operates like a Microsoft Windows NT 4.0 file server.

By default, the server is configured as part of **WorkGroup**. You can reconfigure the 705N for a different workgroup or domain through **Quick Configure** or **Network Settings** (see “Using the Administration Menu” on page 22).

If you configure your 705N to use Microsoft domain security (as described in “Defining PowerVault Users” on page 14), you do not need to set up your network users as local 705N users.

## **Novell Networks**

The 705N operates in a manner similar to a Novell NetWare 3.12 file server.

The 705N is preconfigured to operate with other NetWare servers on a Novell network. If you want to use the 705N as the only server for a network of Windows computers, use Microsoft networking instead.

You can link the 705N security to that of another NetWare server, meaning that all of the users (and groups) on the existing NetWare server are automatically accepted as remote 705N users (or groups). (See “Defining PowerVault Users” on page 14.) The external NetWare server used for this purpose must be a 3.x server or have both bindery emulation and IPX support enabled. (NDS users can take advantage of this feature to connect to the 705N using bindery authentication.)

A network share on a 705N is equivalent to a volume on a NetWare server.

## **UNIX NFS Networks**

The 705N supports version 2.0 and 3.0 of the NFS protocol. The 705N preserves the case of file names but is case insensitive when comparing file names. Therefore, the server cannot have two files with the same name.

*For example, a file saved as “FOOD,” another saved as “Food,” and a third saved as “food” are considered the same file to the server.*

A network share on a 705N is equivalent to an exported file system on an NFS server. NFS users can mount 705N shares and access their content directly or mount a subdirectory of a share. They can use dynamic mounting (with auto-mount) or static mounting (with automatic remount when the server restarts after being shut down). To perform a static mount, you must be logged in to your UNIX system as root. Mount a 705N exported file system with the following commands:

```
mount servername:/share_name/mnt /local_dir
```

where *servername* is the server’s name or IP address, *share\_name* is the name of the share, *mnt* is an optional subdirectory of the share, and *local\_dir* is the local directory to which the file system is mounted. Note the space instructed after the mount. Below are two examples of mounting your 705N:

```
mount Dell30286:/share1/mnt /workdir
```

or

```
mount 192.168.1.1:/share1/mnt /workdir
```

You can configure 705N users and grant them rights for selected network shares. (705N user names, such as ROOT and GUEST are not case-sensitive.) You can then associate user accounts from one or more UNIX systems to a 705N user.

To configure NFS users first click **Users** on the **Security** menu and then click **New** to create a new, local user. (For more information about local users, see “Defining PowerVault Users” on page 14.) Select the user you created and then click **NFS**. On the **NFS Settings for User** page, click **New**. On the **New NFS Settings for User** page, enter the user ID (UID), IP address, and Mask. Click **OK** to apply your changes. For more information, refer to online **Help**.

## Operating the 705N as a Web Server

In addition to providing administration functions through the Web, the 705N can also operate as a Web server, providing Web access to files and folders.

The 705N supports direct read-only Web access to its files using the HTTP 1.0 protocol. The 705N is not intended for use as a general-purpose Web server, as it does not support PERL or Java scripting, animations, streaming video, or anything that would require a special application or service running on the server.

To access a 705N share (see “Defining PowerVault Users” on page 14), enter the following address in a Web browser’s Address or Location box:

`http://servernamennnnn/share_name`

where *servername* is the 705N’s name or IP address and *share\_name* is the name of the share. Your share should look similar to the ones below.

`http://Dell300286/share1`

or

`http://192.168.1.1/share1`

By default, when you connect to a share from the Web, you see a list of files and folders contained in that share. How your browser displays a file depends on the file type and browser settings. To set up a Web “home” page for a share, create an HTML file named `index.html` and store it in the root of the share.

You can enable or disable Web access to network shares. From the **Administration** menu, click **Network Settings, Web**, and then **Enable or Disable Web**. When Web access is disabled, only administrators can access shares from the Web. When Web access is enabled, access to shares is based on the security settings you defined for that share. See “Setting Up Security” on page 13. Outside Internet users may be able to access your server if your network does not protect it with a firewall or you have not set stronger security restrictions.

Tip: You can use the Web settings to customize the server’s **Home** page.

## Operating the 705N as an FTP Server

Your PowerVault 705N can also be used as an FTP server, allowing users to access to the server’s files and directories via FTP clients.

To access a 705N share, enter the following address in a Web browser’s or FTP program’s Address or Location box:

*ftp://servernamennnnn/share\_name*

where *servernamennnnn* is the 705N's name or IP address and *share\_name* is the name of the share. It should look similar to the examples below.

*ftp://Dell300286/share1*

or

*ftp://192.168.1.1/share1*

By default, when you connect to a share via FTP, you see a list of files and folders contained in that share.

You can enable or disable FTP access to network shares. From the **Administration** menu, click **Network Settings, FTP**, and then **Enable FTP Server**. When FTP access is enabled, access to shares is based on the security settings you defined. See "Setting Up Security" on page 13. Outside Internet users may be able to access your server if your network does not protect it with a firewall or you have not set stronger security restrictions.

## ***Managing the 705N with SNMP***

Your 705N can be managed using SNMP.

To disable SNMP access:

- 1.** Go to the server's **Home** page and open the **Administration** menu.
- 2.** Select **Network Settings** and then select **SNMP**.
- 3.** Disable the **SNMP access**.



# CHAPTER 5 *Troubleshooting*

---

This chapter contains answers to several frequently asked questions and describes the tools Dell provides to help you when you have a problem with your server.

## ***Frequently Asked Questions***

<b><i>Question:</i></b>	<b><i>Answer:</i></b>
Can I use standard UNIX <sup>®</sup> file security on my 705N?	Yes. The 3.0 release supports standard UNIX-type file security. For details, check the Technical Reference.
Does the 705N support Novell <sup>®</sup> NetWare <sup>®</sup> 5 TCP/IP only clients?	Your 705N only supports Novell networking shares that use IPX.  There are two possible workarounds for this limitation: <ul style="list-style-type: none"><li>• Install the Microsoft Networking Client and its version of TCP/IP.</li><li>• Install a NetWare client that supports IPX communications.</li></ul>
What utility is best to use to defragment 705N hard disks?	The 705N uses an open fast file system which is highly efficient at preventing file fragmentation provided the hard disks are not filled to greater than 90% of their capacity. We recommend that customers leave 10% of the disk capacity as free space so the file system can handle defragmenting the disks in the most efficient way possible.

<b>Question:</b>	<b>Answer:</b>
How can I back up a 705N?	<p>The 705N can be backed up over the network from a workstation or remote server with a backup device such as a tape drive or hard drive connected to the workstation or remote server. You have a substantial range of choices, as Dell has tested the most popular server backup applications. Some of the products that are known to work include:</p> <ul style="list-style-type: none"> <li>• Microsoft Windows® NT or Windows® 95, Windows® 98, and Windows® 2000 Backup</li> <li>• Computer Associates ARCserve® IT™ (Windows NT and NetWare versions)</li> <li>• Veritas Backup Exec™ (Windows NT, Windows 95 and NetWare versions)</li> <li>• Dantz Retrospect® (Macintosh)</li> </ul> <p>See “Backing Up the PowerVault” on page 23.</p>
How do I grant complete access to a few users on my network, but not others?	<p>This common scenario is actually quite simple to set up. The simplest thing to do is to enter the user names of the people you want to allow access to the server, in its Web-based security setup screen. Then either remove or password-protect the GUEST user account. Those users defined in the 705N security setup will automatically become members of the EVERYONE group, which is granted complete access to all shares in the default configuration. By disabling or password protecting the GUEST account, you prevent connection by any user not defined to the 705N security setup.</p>
Why do I get an “Access Denied” message after configuring Microsoft Domain Security?	<p>The 705N authenticates the users as local users first, before authenticating through the NT Domain. However, the NT Domain users/groups are typically the ones that had been granted access to the shares.</p> <p>You need to decide whether you want to use their Microsoft Domain security (recommended) or the native 705N security, and not try to combine the two. It is acceptable to leave the default local users (GUEST, ROOT, SUPERVISOR, and ADMINISTRATOR), and the default local groups (EVERYONE and ADMIN), but you should not try to add users and groups that are duplicates of those that are already reside on the domain controller.</p>

<i>Question:</i>	<i>Answer:</i>
<p>Why does Windows sometimes inaccurately report free space?</p>	<p>Some Windows clients are unable to recognize free disk space in excess of two gigabytes. This problem only affects the display, it does not affect the available space or your ability to use it. Use a browser to determine how much free space is available.</p>
<p>Why do I get "File is in use" errors in my AutoCAD users report?</p>	<p>AutoCAD users on Microsoft networks sometimes get an inaccurate error message indicating that a file is in use when this is not the case.</p> <p>This is due to the Microsoft Network client, and is not specific to 705N. A patch to correct this problem is available at <b><a href="http://www.autodesk.com">www.autodesk.com</a></b>.</p>
<p>How do I reset my server to factory defaults?</p>	<p>Connect to your server and select Administration, then select Server Settings. Click Factory Defaults. Select <b>Reset IP Address only, Reset IP address and network settings, Reset IP address, network settings, and shares, or Reset IP Address, network settings, shares, and file/folder security</b>. Select the desired settings and click <b>OK</b> to restore default settings.</p>

<b>Question:</b>	<b>Answer:</b>
<p>How do I reset the server settings if I cannot connect to it?</p> <p><i>Resetting the server to its factory default settings does not change the existing disk configuration or erase any data stored on your disks.</i></p>	<p>To reset the server:</p> <ol style="list-style-type: none"><li><b>1.</b> Turn the server off (as described on page 3) and wait for all of the lights to turn off.</li><li><b>2.</b> Press and hold down the Reset button while you turn the server back on; wait until both the System and Disk lights start flashing in sync. To press the Reset button which is located next to the power switch, push a pencil point (or similar object) into the hole located immediately to the right of the Ethernet connector.</li><li><b>3.</b> Release the Reset button.</li><li><b>4.</b> To select the settings you want to clear and reset, briefly press the Reset button:<ul style="list-style-type: none"><li>• Once to clear the server's IP address</li><li>• Twice to clear the Administrator password</li><li>• Three times to clear the server's network settings</li><li>• Four times to clear all system settings</li></ul></li><li><b>5.</b> Watch the Disk light; the number of times it flashes corresponds to the number of times you pressed the Reset button. For example, if you pressed Reset three times to clear the network settings, the Disk light should flash three times repeatedly to confirm the reset. If the number of flashes exceeds the number you intended, repeat steps 4 and 5 of this procedure.</li><li><b>6.</b> When the light confirms the level of reset you intended, press and hold down the Reset button until both the System and Disk lights turn off, and then release the Reset button. The server then restarts, and resets the settings you cleared to the factory defaults.</li></ol>

## Technical Assistance

### Obtaining Technical Assistance

If you need assistance with a technical problem, perform the following steps:

1. Use Dell's extensive suite of online services available at Dell's World Wide Web site (<http://www.dell.com>) and Dell's Customer Support World Wide Web site (<http://support.dell.com>) for help with installation and troubleshooting procedures.

For more information, refer to "World Wide Web" found later in this chapter.

2. If the preceding steps have not resolved the problem, call Dell for technical assistance.

**Note:** For instructions on using the technical support service, refer to "Technical Support Service" and "Before You Call" found later in this chapter.

## Help Tools

Dell provides a number of tools to assist you. These tools are described in the following sections. Your first step in troubleshooting should be to consult the Technical Reference.

**Note:** Some of the following tools are not always available in all locations outside the continental U.S. Please call your local Dell representative for information on availability.

### World Wide Web

The Internet is your most powerful tool for obtaining information about your server and other Dell products. Through the Internet, you can access most of the services described in this section, including AutoTech, TechFax, order status, technical support, and product information.

You can access Dell's support Web site at <http://support.dell.com>. To select your country, click the map that appears. The **Welcome to support.dell.com** page opens. Enter your system information to access help tools and information.

Dell can be accessed electronically using the following addresses:

- World Wide Web  
<http://www.dell.com>  
<http://www.dell.com/ap/> (for Asian/Pacific countries only)  
<http://www.euro.dell.com> (for Europe only)  
<http://www.dell.com/la> (for Latin American countries)
- Anonymous file transfer protocol (FTP)  
<ftp.dell.com/>

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

- Electronic Support Service  
support@us.dell.com  
apsupport@dell.com (for Asian/Pacific countries only)  
**http://support.euro.dell.com** (for Europe only)
- Electronic Quote Service  
sales@dell.com  
apmarketing@dell.com (for Asian/Pacific countries only)
- 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.

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

The AutoTech service is available 24 hours a day, seven days a week. You can also access this service through the technical support service. For the telephone number to call, refer to “Dell Contact Numbers” found later in this chapter.

### ***TechFax Service***

Dell takes full advantage of fax technology to serve you better. Twenty-four hours a day, seven days a week, you can call the Dell TechFax line toll-free for all kinds of technical information.

Using a touch-tone phone, you can select from a full directory of topics. The technical information you request is sent within minutes to the fax number you designate. For the TechFax telephone number to call, refer to “Dell Contact Numbers” found later in this chapter.

### ***Automated Order-Status System***

You can call this automated service to check on the status of any Dell products that you have ordered. A recording prompts you for the information needed to locate and report on your order. For the telephone number to call, refer to “Dell Contact Numbers” found later in this chapter.

### ***Technical Support Service***

Dell's industry-leading hardware technical-support service is available 24 hours a day, seven days a week, to answer your questions about Dell hardware.

Our technical support staff pride themselves on their track record: more than 90 percent of all problems and questions are taken care of in just one toll-free call,

usually in less than 10 minutes. When you call, our experts can refer to records kept on your Dell system to better understand your particular question. Our technical support staff use computer-based diagnostics to provide fast, accurate answers to questions.

To contact Dell's technical support service, first refer to the section titled "Before You Call" and then call the number for your country as listed in "Dell Contact Numbers" found later in this chapter.

## ***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 handy when you call. For the telephone number to call, refer to "Dell Contact Numbers" found later in this chapter.

## ***Product Information***

If you need information about additional products available from Dell, or if you would like to place an order, visit Dell's World Wide Web site at <http://www.dell.com>. For the telephone number to call to speak to a sales specialist, refer to "Dell Contact Numbers" found later in this chapter.

## ***Returning Items for Warranty Repair or Credit***

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

1. Call Dell to obtain an authorization number, and write it clearly and prominently on the outside of the box.

For the telephone number to call, refer to "Dell Contact Numbers" found later in this chapter.

2. Include a copy of the invoice and a letter describing the reason for the return.
3. Include a copy of the Diagnostics Checklist indicating the tests you have run.
4. Include any accessories that belong with the item(s) being returned (power cables, software diskettes, guides, and so on) 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. Cash-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.

## ***Before You Call***

Remember to fill out the “Diagnostics Checklist” on page 37. If possible, turn on your system before you call Dell for technical assistance and call from a telephone at or near the server. You may be asked to type some commands at the keyboard, relay detailed information during operations, or try other troubleshooting steps possible only at the server system itself. Make sure that the system documentation is available.

## ***Diagnostics Checklist***

Name: \_\_\_\_\_ Date: \_\_\_\_\_

Address: \_\_\_\_\_ Phone number: \_\_\_\_\_

Dell Service tag (bar code on the back of the server): \_\_\_\_\_

Return Material Authorization Number (if provided by Dell support technician): \_\_\_\_\_

Network vendor and version you are using: \_\_\_\_\_

Client operating system and version: \_\_\_\_\_

PowerVault Server model and serial number (located on your server): \_\_\_\_\_

PowerVault Server software, BIOS, and hardware version numbers: \_\_\_\_\_

(You can obtain this information by clicking the DELL logo at the top of the Dell PowerVault NAS home page.)

Error message, beep code, or diagnostic code, if applicable: \_\_\_\_\_

Description of problem and troubleshooting procedures you performed: \_\_\_\_\_

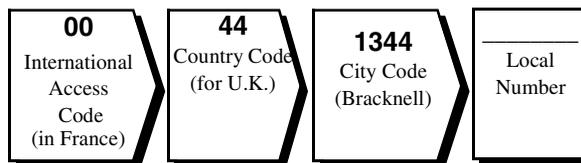
\_\_\_\_\_

\_\_\_\_\_

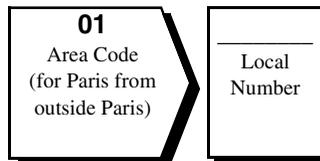
\_\_\_\_\_

## Dell Contact Numbers

When you need to contact Dell, use the telephone numbers, codes, and electronic addresses provided in this section. “International Dialing Codes” on page 39 provides the various codes required to make long-distance and international calls. “Dell Contact Numbers” on page 41 provides local telephone numbers, area codes, toll-free numbers, Web site and e-mail addresses, if applicable, for each department or service available in various countries around the world. If you are making a direct-dial call to a location outside of your local telephone service area, determine which codes to use (if any) in “International Dialing Codes” on page 39 in addition to the local numbers provided in “Dell Contact Numbers” on page 41. For example, to place an international call from Paris, France to Bracknell, England, dial the international access code for France followed by the country code for the U.K., the city code for Bracknell, and then the local number as shown in the following illustration.



To place a long-distance call within your own country, use area codes instead of international access codes, country codes, and city codes. For example, to call Paris, France from Montpellier, France, dial the area code plus the local number as shown in the following illustration.



The codes required depend on where you are calling from as well as the destination of your call; in addition, each country has a different dialing protocol. If you need assistance in determining which codes to use, contact a local or international operator.

**Note:** *Toll-free numbers are for use only within the country for which they are listed. Area codes are most often used to call long distance within your own country (not internationally)—in other words, when your call originates in the same country you are calling.*

## ***International Dialing Codes***

<b>Country (City)</b>	<b>International Access Code</b>	<b>Country Code</b>	<b>City Code</b>
Australia (Sydney)	0011	61	2
Austria (Vienna)	900	43	1
Belgium (Brussels)	00	32	2
Brazil	0021	55	51
Brunei	—	673	—
Canada (North York, Ontario)	011	—	Not required
Chile (Santiago)	—	56	2
China (Xiamen)	—	86	592
Czech Republic (Prague)	00	420	2
Denmark (Horsholm)	009	45	Not required
Finland (Helsinki)	990	358	9
France (Paris) (Montpellier)	00	33	(1) (4)
Germany (Langen)	00	49	6103
Hong Kong	001	852	Not required
Ireland (Bray)	16	353	1
Italy (Milan)	00	39	2
Japan (Kawasaki)	001	81	44
Korea (Seoul)	001	82	2
Luxembourg	00	352	—
Macau	—	853	Not required
Malaysia (Penang)	00	60	4
Mexico (Colonia Granada)	95	52	5
Netherlands (Amsterdam)	00	31	20
New Zealand	00	64	—
Norway (Lysaker)	095	47	Not required
Poland (Warsaw)	011	48	22
Singapore (Singapore)	005	65	Not required
South Africa (Johannesburg)	09/091	27	11

<b>Country (City)</b>	<b>International Access Code</b>	<b>Country Code</b>	<b>City Code</b>
Spain (Madrid)	07	34	91
Sweden (Upplands Vasby)	009	46	8
Switzerland (Geneva)	00	41	22
Taiwan	002	886	—
Thailand	001	66	—
U.K. (Bracknell)	010	44	1344
U.S.A. (Austin, Texas)	011	1	Not required

## Dell Contact Numbers

Country (City)	Department Name or Service	Local Number or Toll-Free Number
<b>Australia</b> (Sydney)	Home and Small Business . . . . . Government and Business . . . . . Preferred Accounts Division (PAD) . . . . . Customer Care . . . . . Corporate Sales . . . . . Transaction Sales . . . . . Fax . . . . .	1-300-65-55-33 toll free: 1-800-633-559 toll free: 1-800-060-889 toll free: 1-800-819-339 toll free: 1-800-808-385 toll free: 1-800-808-312 toll free: 1-800-818-341
<b>Austria</b> (Vienna)  <i>Note: Customers in Austria call Germany for technical and customer assistance.</i>	Home/Small Business Sales . . . . . Home/Small Business Fax. . . . . Home/Small Business Customer Care . . . . . Preferred Accounts/Corporate Customer Care . . . . . Home/Small Business Technical Support . . . . . Preferred Accounts/Corporate Technical Support . . . . . Switchboard . . . . . Web site: <b><a href="http://support.euro.dell.com">http://support.euro.dell.com</a></b> E-mail: tech_support_germany@dell.com	795 67602 795 67605 795 67603 0660 8056 795 67604 0660 8779 491 04 0
<b>Belgium</b> (Brussels)	Technical Support . . . . . Customer Care . . . . . Home/Small Business Sales . . . . . Corporate Sales . . . . . Fax . . . . . Switchboard . . . . . Web site: <b><a href="http://support.euro.dell.com">http://support.euro.dell.com</a></b> E-mail: tech_be@dell.com	481 92 88 481 91 19 toll free: 0800 16884 481 91 00 481 92 99 481 91 00
<b>Brazil</b>	Customer Support, Technical Support . . . . . Sales . . . . . Web site: <b><a href="http://www.dell.com/br">http://www.dell.com/br</a></b>	0800 90 3355 0800 90 3366

Country (City)	Department Name or Service	Local Number or Toll-Free Number
<b>Brunei</b>  <i>Note: Customers in Brunei call Malaysia for sales, customer, and technical assistance.</i>	Customer Technical Support (Penang, Malaysia) . . . . . 633 4966 Customer Service (Penang, Malaysia) . . . . . 633 4949 Transaction Sales (Penang, Malaysia). . . . . 633 4955	
<b>Canada</b> (North York, Ontario)	Automated Order-Status System . . . . . toll free: 1-800-433-9014 AutoTech (Automated technical support) . . . . . toll free: 1-800-247-9362 Customer Care (From outside Toronto) . . . . . toll free: 1-800-387-5759 Customer Care (From within Toronto) . . . . . 758-2400 Customer Technical Support . . . . . toll free: 1-800-847-4096 Sales (Direct Sales—from outside Toronto). . . . . toll free: 1-800-387-5752 Sales (Direct Sales—from within Toronto). . . . . 758-2200 Sales (Federal government, education, and medical). . . . . toll free: 1-800-567-7542 Sales (Major Accounts). . . . . toll free: 1-800-387-5755 TechFax. . . . . toll free: 1-800-950-1329	
<b>Chile</b> (Santiago)  <i>Note: Customers in Chile call the U.S.A for sales, customer, and technical assistance.</i>	Sales, Customer Support, and Technical Support toll free: 1230-020-4823	
<b>China</b> (Xiamen)	Technical Support . . . . . toll free: 800 858 2437 Customer Experience. . . . . toll free: 800 858 2060 Home and Small Business . . . . . toll free: 800 858 2222 Preferred Accounts Division . . . . . toll free: 800 858 2062 Large Corporate Accounts . . . . . toll free: 800 858 2999	

Country (City)	Department Name or Service	Local Number or Toll-Free Number
<b>Czech Republic</b> (Prague)	Technical Support . . . . . Customer Care . . . . . Fax . . . . . TechFax. . . . . Switchboard . . . . . Web site: <b>http://support.euro.dell.com</b> E-mail: czech_dell@dell.com	22 83 27 27 22 83 27 11 22 83 27 14 22 83 27 28 22 83 27 11
<b>Denmark</b> (Horsholm)  <i>Note: Customers in Denmark call Sweden for fax technical support.</i>	Technical Support . . . . . Relational Customer Care . . . . . Home/Small Business Customer Care . . . . . Switchboard . . . . . Fax Technical Support (Upplands Vasby, Sweden) . . . . . Fax Switchboard . . . . . Web site: <b>http://support.euro.dell.com</b> E-mail: den_support@dell.com	45170182 45170184 32875505 45170100 859005594 45170117
<b>Finland</b> (Helsinki)	Technical Support . . . . . Technical Support Fax. . . . . Relational Customer Care . . . . . Home/Small Business Customer Care . . . . . Fax . . . . . Switchboard . . . . . Web site: <b>http://support.euro.dell.com</b> E-mail: fin_support@dell.com	253 313 60 253 313 81 253 313 38 693 791 94 253 313 99 253 313 00
<b>France</b> (Paris/Montpellier)	Technical Support . . . . . Customer Care (Paris) . . . . . Customer Care (Montpellier) . . . . . Fax (Montpellier) . . . . . Switchboard (Paris) . . . . . Switchboard (Montpellier) . . . . . Web site: <b>http://support.euro.dell.com</b> E-mail: web_fr_tech@dell.com	387 270 55 94 75 75 823 833 67 06 60 01 55 94 71 00 67 06 60 00

Country (City)	Department Name or Service	Local Number or Toll-Free Number
<b>Germany</b> (Langen)	Technical Support . . . . .766-7200 Technical Support Fax . . . . .766-9222 Home/Small Business Customer Care . . . . . 0180-5-224400 Global Segment Customer Care . . . . .766-9570 Preferred Accounts Customer Care . . . . .766-9420 Large Accounts Customer Care . . . . .766-9560 Public Accounts Customer Care . . . . .766-9555 Switchboard . . . . .766-7000 Web site: <b>http://support.euro.dell.com</b> E-mail: tech_support_germany@dell.com	
<b>Hong Kong</b>  <i>Note: Customers in Hong Kong call Malaysia for customer assistance.</i>	Technical Support . . . . .toll free: 800 96 4107 Customer Service (Penang, Malaysia) . . . . .633 4949 Transaction Sales . . . . .toll free: 800 96 4109 Corporate Sales . . . . .toll free: 800 96 4108	
<b>Ireland</b> (Bray)	Technical Support . . . . .1-850-543-543 Customer Care . . . . .204 4026 Sales . . . . .1-850-235-235 SalesFax . . . . .286 2020 Fax . . . . .286 6848 TechFax . . . . .204 4708 Switchboard . . . . .286 0500 Web site: <b>http://support.euro.dell.com</b> E-mail: dell_direct_support@dell.com	
<b>Italy</b> (Milan)	Technical Support . . . . .57782.690 Customer Care . . . . .57782.555 Sales . . . . .57782.411 Fax . . . . .57503.530 Switchboard . . . . .57782.1 Web site: <b>http://support.euro.dell.com</b> E-mail: support_italy@dell.com	

Country (City)	Department Name or Service	Local Number or Toll-Free Number
<b>Japan</b> (Kawasaki)	Technical Support (Server) . . . . . toll free: 20-1984-35 Technical Support (Dimension™ and Inspiron™) toll free: 0120-1982-56 or . . . . . 0088-25-3355 Technical Support (WorkStation, OptiPlex™, and Latitude™) . . . . . toll free: 0120-1984-39 or . . . . . 88-22-7890 Y2K Support . . . . . 556-4298 Customer Care . . . . . 556-4240 Home and Small Business Group Sales . . . . . 556-3344 Preferred Accounts Division Sales . . . . . 556-3433 Large Corporate Accounts . . . . . 556-3430 Faxbox Service . . . . . 03-972-5840 Switchboard . . . . . 556-4300 Web site: <a href="http://support.jp.dell.com">http://support.jp.dell.com</a>	
<b>Korea</b> (Seoul)	Technical Support . . . . . toll free: 080-200-3800 Sales . . . . . toll free: 080-200-3777 Customer Service (Seoul, Korea) . . . . . 2194-6220 Customer Service (Penang, Malaysia) . . . . . 604-633-4949 Fax . . . . . 2194-6202 Switchboard . . . . . 2194-6000	
<b>Latin America</b>  <i>Note: Customers in Latin America call the U.S.A. for sales, customer, and technical assistance.</i>	Customer Technical Support (Austin, Texas, U.S.A.) . . . . . 728-4093 Customer Service (Austin, Texas, U.S.A.) . . . . . 728-3619 Fax (Technical Support and Customer Service) (Austin, Texas, U.S.A.) . . . . . 728-3883 Sales (Austin, Texas, U.S.A.) . . . . . 728-4397 SalesFax (Austin, Texas, U.S.A.) . . . . . 728-4600 . . . . . 728-3772	

Country (City)	Department Name or Service	Local Number or Toll-Free Number
<b>Luxembourg</b>  <i>Note: Customers in Luxembourg call Belgium for sales, customer, and technical assistance.</i>	Technical Support (Brussels, Belgium) . . . . . Home/Small Business Sales (Brussels, Belgium) . . . . . Corporate Sales (Brussels, Belgium) . . . . . Customer Care (Brussels, Belgium) . . . . . Fax (Brussels, Belgium) . . . . . Switchboard (Brussels, Belgium) . . . . . Web site: <a href="http://support.euro.dell.com">http://support.euro.dell.com</a> E-mail: tech_be@dell.com	481 92 88 toll free: 080016884 481 91 00 481 91 19 481 92 99 481 91 00
<b>Macau</b>  <i>Note: Customers in Macau call Malaysia for customer assistance.</i>	Technical Support . . . . . Customer Service (Penang, Malaysia) . . . . . Transaction Sales . . . . .	toll free: 0800 582 633 4949 toll free: 0800 581
<b>Malaysia</b> (Penang)	Technical Support . . . . . Customer Service . . . . . Transaction Sales . . . . . Corporate Sales . . . . .	toll free: 1 800 888 298 633 4949 toll free: 1 800 888 202 toll free: 1 800 888 213
<b>Mexico</b> (Colonia Granada)  <i>Note: Customers in Mexico call the U.S.A. for access to the Automated Order-Status System and AutoTech.</i>	Automated Order-Status System (Austin, Texas, U.S.A.) . . . . . AutoTech (Automated technical support) (Austin, Texas, U.S.A.) . . . . . Customer Technical Support . . . . . Sales . . . . . . . . . . . . . . . Customer Service . . . . . Main . . . . .	728-0685 728-0686 228-7870 228-7811 toll free: 91-800-900-37 toll free: 91-800-904-49 228-7878 228-7800

Country (City)	Department Name or Service	Local Number or Toll-Free Number
<b>Netherlands</b> (Amsterdam)	Technical Support . . . . . 581 8838 Customer Care . . . . . 581 8740 Home/Small Business Sales . . . . . toll free: 0800-0663 Home/Small Business Sales Fax . . . . . 682 7171 Corporate Sales . . . . . 581 8818 Corporate Sales Fax . . . . . 686 8003 Fax . . . . . 686 8003 Switchboard . . . . . 581 8818 Web site: <b>http://support.euro.dell.com</b> E-mail: tech_nl@dell.com	
<b>New Zealand</b>	Home and Small Business . . . . . 0800 446 255 Government and Business . . . . . 0800 444 617 Sales . . . . . 0800 441 567 Fax . . . . . 0800 441 566	
<b>Norway</b> (Lysaker)  <i>Note: Customers in Norway call Sweden for fax technical support.</i>	Technical Support . . . . . 671 16882 Relational Customer Care . . . . . 671 17514 Home/Small Business Customer Care . . . . . 231 62298 Switchboard . . . . . 671 16800 Fax Technical Support (Upplands Vasby, Sweden) . . . . . 590 05 594 Fax Switchboard . . . . . 671 16865 Web site: <b>http://support.euro.dell.com</b> E-mail: nor_support@dell.com	
<b>Poland</b> (Warsaw)	Technical Support . . . . . 60 61 999 Customer Care . . . . . 60 61 999 Sales . . . . . 60 61 999 Fax . . . . . 60 61 998 Switchboard . . . . . 60 61 999 Web site: <b>http://support.euro.dell.com</b> E-mail: pl_support@dell.com	

Country (City)	Department Name or Service	Local Number or Toll-Free Number
<b>Singapore</b> (Singapore)  <i>Note: Customers in Singapore call Malaysia for customer assistance.</i>	Technical Support . . . . . toll free: 800 6011 051 Customer Service (Penang, Malaysia) . . . . . 633 4949 Transaction Sales . . . . . toll free: 800 6011 054 Corporate Sales . . . . . toll free: 800 6011 053	
<b>South Africa</b> (Johannesburg)	Technical Support . . . . . 709 7710 Customer Care . . . . . 709 7710 Sales . . . . . 706 7700 Fax . . . . . 709 0495 Switchboard . . . . . 709 7700 Web site: <b>http://support.euro.dell.com</b> E-mail: dell_za_support@dell.com	
<b>Southeast Asian/            Pacific Countries</b> (excluding Australia, Brunei, China, Hong Kong, Japan, Korea, Macau, Malaysia, New Zealand, Singapore, Taiwan, and Thailand—refer to individual listings for these countries)	Customer Technical Support, Customer Service, and Sales (Penang, Malaysia) . . . . . 60 4 633 4810	
<b>Spain</b> (Madrid)	Technical Support . . . . . 902 100 130 Corporate Customer Care . . . . . 902 118 546 Home/Small Business Customer Care . . . . . 902 118 540 Corporate Sales . . . . . 902 100 185 Home/Small Business Sales . . . . . 902 118 541 Switchboard . . . . . 722 92 00 Web site: <b>http://support.euro.dell.com</b> E-mail: es_support@dell.com	

Country (City)	Department Name or Service	Local Number or Toll-Free Number
<b>Sweden</b> (Upplands Vasby)	Technical Support . . . . . Relational Customer Care . . . . . Home/Small Business Customer Care . . . . . Fax Technical Support . . . . . Sales . . . . . Web site: <b>http://support.euro.dell.com</b> E-mail: swe_support@dell.com	590 05 199 590 05 642 587 70 527 590 05 594 590 05 185
<b>Switzerland</b> (Geneva)	Technical Support . . . . . Customer Care . . . . . Fax . . . . . Switchboard . . . . . Web site: <b>http://support.euro.dell.com</b> E-mail: swisstech@dell.com	0844 811 411 0848 802 802 799 01 90 799 01 01
<b>Taiwan</b>	Technical Support . . . . . Technical Support (servers) . . . . . Transaction Sales . . . . . Corporate Sales . . . . .	toll free: 0080 60 1255 toll free: 0080 60 1256 toll free: 0080 651 228/0800 33 556 toll free: 0080 651 227/0800 33 555
<b>Thailand</b>  <i>Note: Customers in Thailand call Malaysia for customer assistance.</i>	Technical Support . . . . . Customer Service (Penang, Malaysia) . . . . . Sales . . . . .	toll free: 0880 060 07 633 4949 toll free: 0880 060 09

Country (City)	Department Name or Service	Local Number or Toll-Free Number
<b>U.K.</b> (Bracknell)	Technical Support . . . . .	0870-908-0800
	Global Accounts Customer Care . . . . .	723186
	Corporate Customer Care . . . . .	723185
	Preferred Accounts (500-5000 employees) Customer Care . . . . .	723196
	Central Government Customer Care . . . . .	723193
	Local Government Customer Care . . . . .	723194
	Home/Small Business Sales . . . . .	0870-907-4000
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