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Text Part Number: 78-5459-03

Release Notes for User Registration Tool 1.2.1

These release notes are for the URT 1.2.1 release. They include the information previously in the URT 1.2 release notes. Read this information before installing URT, and use it in combination with the *Using the User Registration Tool* manual.

These release notes provide the following information:

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Documentation Roadmap

Use these publications to learn how to install and use URT:

- *Using the User Registration Tool* (DOC-785461=)—Describes how to plan for URT deployment, install URT, how to use URT, and how to troubleshoot network problems related to URT.

- **URT online help—**Contains all of the information available in *Using the User Registration Tool*. This ensures you have complete information even if you do not have the manual readily available while using URT.

Note The online help and hardcopy manual have not been updated for URT 1.2.1. This release note is included in the online help in **Help>What's New in URT 1.2.1**. Due to the changes in URT 1.2.1, some information in the online help is no longer correct. Information in this release note overrides the information in the online help and manual.

New Features

These sections describe the new features in the URT 1.2.x releases:

- New Features in Release 1.2.1, page 2
- New Features in Release 1.2, page 4

New Features in Release 1.2.1

These capabilities have been added to URT for release 1.2.1:

- **Ability to delete ClientService for Win9x clients from a batch file**—You can now remove ClientService from Win9x clients.

- **Support for New CiscoWorks2000 Releases**—URT now works with the CWSI Campus 2.4 release as well as the 2.3 release.

- **Full Support for Host-Based Dynamic VLANs (MAC-Based VLANs)**—In previous versions of URT, you could implement dynamic VLANs based on MAC address only by creating the VLAN mappings in the CWSI Campus User Tracking application and then updating the URT servers with those mappings. With URT 1.2.1, you can create these "host-based" dynamic VLANs from within URT. This change provides more complete and reliable host-based VLANs. This new support is described fully in the "Implementing Host Registration" section on page 5.

- **Support for Additional Switches**—URT now works with Catalyst 3500XL and Catalyst 6000 family switches. The Catalyst 3500XL switches require software release 11.2(8) SA5 or higher. The Catalyst 6000 switches require software release 5.3.1 or higher.

Note With 2900XL and 3500XL switches that are clustered, URT configures VMPS on the cluster's command switch. If the command switch becomes unavailable, URT cannot manage logins for clients connected to the other switches in the cluster (the command switch manages VMPS for the other switches in the cluster). When you resolve the availability problem with the command switch, URT will work properly again. If you cannot resolve the command switch problem, you must configure VMPS on each switch in the cluster to regain URT management of logins.

- **Support for Additional User Clients**—You can now use user registration with Windows2000 Workstation or Server.

Note The Release IP Address on the Logout option does not work on Windows 2000 clients. The Windows 2000 clients cannot release their IP address during logout.

You can use host registration with any client that has a MAC address that is directly connected to a supported switch (for example, UNIX, Linux, and Apple Macintosh).

- **URT Server Support on Windows 2000**—In addition to Microsoft Windows NT 4.0, the URT server is now supported on Windows 2000 Server edition.

- **Support for Active Directory**—URT now supports Microsoft's Active Directory. In URT, Active Directory support is identical to the existing support for Microsoft Networking users.

Note URT's support for Windows 2000 and Active Directory were tested on Microsoft's RTM (Release to Manufacturing) version of Windows 2000. If there are significant changes to the final version of Windows 2000, these changes might affect URT's support for Windows 2000 and Active Directory. Cisco will work to resolve any issues related to changes in Windows 2000 from RTM to the commercially available version.

Caution It is important to note that CiscoWorks2000 CWSI Campus does **not** support Windows 2000. Therefore, the URT administrative interface cannot be installed on Windows 2000.

- **Improved Feedback**—When you select an item in the tree view, the status bar shows a count of the items in the selected folder. For example, if you select the VLANs folder, the status bar shows the number of VLANs defined in the URT database. This can be helpful when you are managing a large number of resources.

- **Improved List Management**—You can now sort the lists shown in the right-hand list pane. When you click the heading of a column, the list is sorted according to the contents of the column. Each time you click the heading, the sorting toggles between ascending or descending order. (The first time you click the heading, the list is sorted in ascending order).

- **Ability to Delete URT Servers from the Folder Pane**—You can now delete unavailable URT servers from the list of servers in the folder pane. To delete the unavailable server (shown with an X through the icon), select it and select **Edit>Delete**. If the server is temporarily unavailable, it will reappear in the list when it becomes available.

- **Bug Fixes**—URT 1.2.1 includes fixes to these significant bugs (other minor bugs might also have been fixed):

  — **CSCdp03975**—100% CPU consumption in URT server

  — **CSCdp03977**—DHCP release/renew required when client service starts

  — **CSCdp03981**—Support needed for the 3500XL switch

  — **CSCdp13690**—Incorrect VLAN assignment with Windows 95 and Windows 98 users and groups because of case-sensitivity of names.

  — **CSCdp43437**—Performance issues when starting a URT server with a large number of user and group mappings. Performance has been improved.

New Features in Release 1.2

These capabilities have been added to URT for release 1.2:

- **Support NetWare User Logons**—You can now use URT to control user logons for Novell NetWare 5 networks.

- **Support for CiscoWorks2000**—URT 1.2 works only with the CWSI Campus 2.3 application suite included with CiscoWorks2000. You cannot use URT 1.2 with CWSI 2.1 or CWSI Campus 2.2.

- **Support for Additional Switches**—URT now works with Catalyst 1900 and 2800 series switches, Catalyst 2900 series XL switches, Catalyst 2948G switches, Catalyst 4000 series switches, and Catalyst 4912G switches, in addition to Catalyst 2926 series switches and Catalyst 5000 series switches. See *Using the User Registration Tool* for the required software versions for these switches.

Installing URT

⚠ **Caution** URT 1.2.1 works only with the CWSI Campus 2.3 or 2.4 application suite that is included with CiscoWorks2000. Do not attempt to use URT 1.2.1 with any other version of CWSI or CWSI Campus. You must install CiscoWorks2000 CWSI Campus before installing URT.

Read the planning and installation information in the *Using the User Registration Tool* manual before installing URT. For URT 1.2.1, the installation process no longer asks whether you want to continue to use MAC-based (host-based) VLAN associations. URT 1.2.1 automatically enables MAC-to-VLAN mappings.

Implementing Host Registration

This section describes the host-based dynamic VLAN support incorporated in URT 1.2.1. Host-based VLANs use MAC addresses instead of user names to determine the VLAN assignment.

Overview of Host Registration

URT's main capability is to assign users to VLANs. This allows you to develop VLAN-based services and ensure that users always get the expected services. As users move from machine to machine in your network, URT can identify the user based on user name and make the appropriate VLAN assignment.

However, URT does not support user-based assignment on all computers. In some cases, such as UNIX, this is because a single machine can support multiple simultaneous users, whereas the associated switch port can be in only one VLAN at a time. In other cases, there is not an appropriate network login that can be captured by the URT client.

Host registration allows you to assign VLANs based on a host's media access control (MAC) address, which is the number associated with the network interface card (NIC) in the computer. Because the VLAN mapping is based on MAC address, it is the host that is mapped to a VLAN, not the user.

However, if you have a one-to-one correspondence between users and hosts (that is, users do not move between hosts), then host registration and user registration will provide essentially identical network policy control. Also, because the VLAN is based on the host's MAC address rather than the switch port, you can move the host to a different port (for example, move a laptop between buildings) and make the desired VLAN assignment.

Host registration is the same capability as switch-based dynamic VLANs using CiscoWorks2000 User Tracking and Catalyst 5000 switch VMPS servers.

Types of Hosts That Can Be Registered

You can use host registration with any host that is directly attached to a port on a supported switch. You cannot use host registration with hosts attached to hubs, unsupported switches, or routers.

With host registration, you can include Macintosh, Linux, UNIX, and other types of hosts in your dynamic VLAN planning. You can also use host registration with Windows machines, even if the Windows version supports user registration.

Priority of User Registration vs. Host Registration

User registration always takes precedence over host registration. URT applies VLAN assignments in this priority order:

1 **User name**—If you assign a specific VLAN to a user name, that VLAN is used.

2 **NT or Active Directory group, or NDS organizational unit membership**—If a user name does not have an assigned VLAN, and the user name is a member of an NT or Active Directory group, or NDS organizational unit, URT uses the VLAN assigned to the group or organizational unit (if there is one).

3 **MAC address**—If a user name does not have a VLAN assignment, and the user name is not a member of a group or organizational unit that has a VLAN assignment, then URT uses the VLAN assigned to the MAC address of the machine (host registration).

Note   For clients that do not support user registration, only the MAC address VLAN assignment is checked.

4 **Logon VLAN**—If there are no VLAN assignments for user name, group name, organizational unit, or MAC address, the user remains in the logon VLAN.

Deciding Whether to Use User Registration or Host Registration

In many cases, you do not have a choice between user and host registration. If you want to use dynamic VLANs for hosts that do not support user registration, you must use host registration.

For those clients that support both user and host registration (Windows 95, Windows 98, Windows NT 4.0, and Windows 2000), consider these points when deciding between user and host registration:

- User registration lets you create policies based on user name. It does not matter to which host the user logs in, the user gets the same network resources. User-based policies work well with a mobile or changeable user base.

- User registration requires that you use TCP/IP with Microsoft Networking or Novell NetWare running over IP. If you do not want to use TCP/IP as your base protocol, you must use host registration.

- You can mix user and host registration freely in the same network. They are complementary capabilities. You can even use both capabilities on the same machine by mapping the host's MAC address to a VLAN. If a user with a VLAN mapping uses the host, the user gets the user-based VLAN. If an unmapped user uses the host, the user gets the host-based VLAN. Thus, for "open use" machines you can define a more restrictive host-based VLAN while giving trusted users their normal user-based VLAN resources.

URT's Relationship to CiscoWorks2000 User Tracking

Using the User Registration Tool describes the interaction between URT and User Tracking. With URT 1.2.1, there is increased interaction.

Each time you start URT, URT reads the User Tracking tables. Any new MAC address-to-VLAN mappings in User Tracking are added to the URT MAC Address list in the folder pane. However, if a MAC address already has a VLAN assignment in URT, any assignment for that address in User Tracking is ignored. Thus, when you start managing a MAC address in URT, you must continue managing it within URT (unless you explicitly remove it from URT).

If you make new mappings in User Tracking while URT is running, you can import that new mapping into URT by selecting the MAC address folder in URT and then selecting **View>Refresh**. All new non-conflicting mappings are added to URT.

When URT reads the User Tracking tables, URT also obtains a list of discovered MAC addresses. When you add a MAC-to-VLAN mapping in URT, URT presents you with a list of these discovered but unmapped addresses. To get an up-to-date list of MAC addresses, Cisco recommends that you do a discovery in User Tracking before starting URT when you intend to work with MAC addresses.

Mapping Hosts to VLANs

These sections describe the tasks for implementing host registration:

- Adding MAC Addresses and Host Mappings, page 9

- Changing Host Mappings, page 12

- Deleting MAC Addresses and Host Mappings, page 12

Adding MAC Addresses and Host Mappings

The list of MAC addresses in the main URT window displays only MAC addresses for which there are VLAN mappings. Although URT is aware of all MAC addresses discovered in the network by CiscoWorks2000 User Tracking, you can add only those addresses for which you are creating mappings to the main window list.

URT automatically adds any MAC addresses that have been mapped to VLANs in User Tracking to the URT main window.

Before You Begin

Before you start URT to create MAC-to-VLAN mappings, start the CiscoWorks2000 User Tracking application and do a host discovery. User Tracking will collect data on all the MAC addresses it can find in your network. URT displays this information so that you can select MAC addresses from a list. By priming the list of MAC addresses, you will not need to manually enter the MAC addresses.

Procedure

Step 1 Select the MAC Addresses folder in the URT folder pane and click the **Add** button (or select **Edit>Add**).

URT opens the Host Association window (Figure 1). URT displays all unmapped MAC addresses found by User Tracking in the Discovered MACs list. If a MAC address is already mapped to a VLAN, it is not displayed in the list (mapped MAC addresses are only displayed in the main URT window).

Figure 1   Adding MAC Address Mappings
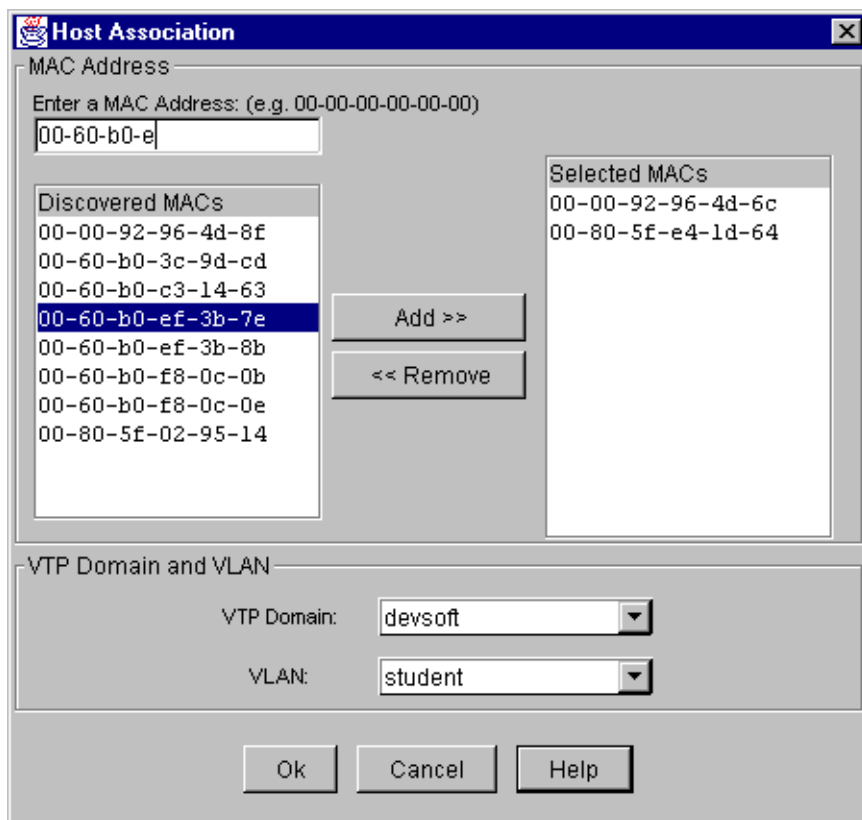
Step 2   Select the MAC addresses you want to map to a particular VLAN in the list of discovered addresses, and click **Add>>** to add them to the selected MACs list. You can map more than one address at a time, but all MAC addresses in the selected MACs list are mapped to the same VLAN.

You can scroll through the list of addresses quickly by typing the MAC address into the Enter a MAC address field (this is shown in Figure 1). As you type, URT scrolls through the list of discovered MACs to the next address that matches what you have typed. Eventually, the address you are looking for will be highlighted, unless it is an undiscovered address.

If the desired address is not in the discovered MACs list, enter the entire MAC address in the edit box and click **Add>>** to add it to the selected list. URT does not require that User Tracking discover the MAC address.

You must use hyphens to separate the bytes in the MAC address; you cannot use colons.

Step 3   When you have selected all of the MAC addresses you want to map to the same VLAN, select the VTP domain and the desired VLAN and click **OK**.

Tips

- You can select a range of MAC addresses using Shift+click, or multiple individual addresses using Ctrl+click. All addresses you select must be associated with the same VLAN.

- You can create different VLAN mappings for each of your VTP domains for each MAC address.

- When you select a MAC address in the main URT window, the list pane displays the VLAN mappings for each VTP domain for which there is a mapping.

- When you select a VLAN in the folder pane, URT does not display MAC addresses mapped to the VLAN.

- You can also add a VLAN mapping in User Tracking. After making the VLAN assignment in User Tracking and saving the change, select the MAC Addresses folder in URT and select **View>Refresh**. URT finds the new mapping in the User Tracking table and adds it to the list in URT.

Changing Host Mappings

You can change the VLAN mappings for any host that has a mapping, whether the mapping was made in URT or User Tracking.

Procedure

Step 1   Double-click the MAC address whose mapping you want to change in the MAC Addresses folder, or:

- Select the address and click the **Associate VLAN** button.
- Select the address and select **Edit>Associate VLAN**.

URT opens the Associate VLAN window.

Step 2   In the Associate VLAN window, select the desired VTP domain and VLAN and click **OK**.

Deleting MAC Addresses and Host Mappings

If you no longer want to use host registration with a host, delete its mappings in URT.

Procedure

Step 1   Select the MAC address you want to delete in the MAC Addresses folder.

Step 2   Select **Edit>Delete**.

URT deletes the MAC address and its VLAN mappings.

Note   If you delete all the VLAN associations for a MAC address, the MAC address will not show up in the tree.

Using Switch-Based VMPS Servers for Host Registration

If you want to use switch-based VMPS servers rather than URT servers to manage host registration, you can still use the URT interface to create the host-based VLAN mappings.

When you save the URT database, URT creates a vmps10.dat file in the dat folder in the URT installation folder on the URT server machines. See the Catalyst 5000 documentation for information on implementing switch-based VMPS using this file.

Deleting ClientService from Win9x Clients from a Batch File

You can now remove ClientService from Win9x clients by using the command **UrtClientUninstall.bat** from the PDC.

Step 1 In the Urt.bat file on the PDC, comment out the line containing %WINDIR%\\onoffhandler.

Step 2 Execute **@start %WINDIR%\\urt\\UrtClientUninstall.bat**

Mapping Users or Hosts from the Command Line

URT 1.2.1 includes a command that you can use to add user-to-VLAN or host-to-VLAN mappings from the command line. This is primarily useful if you have an automated method of creating a text file with your required mappings. You can pipe this text file into the **urt** command, thus creating mappings using a batch process.

The urt.bat file resides in the bin subdirectory of the CWSI root directory.

The syntax of the urt command is:

　　urt -cli -server *ANI-server-name* **[** < *textfile* **]**

You can get help information by entering **urt -help**.

Syntax Description

-cli	Indicates that you are running URT from the command line rather than the GUI.
-server *ANI-server-name*	The name of the ANI server used by CiscoWorks2000.

< *textfile*	Optionally, the name of a text file that contains the user-to-VLAN and host-to-VLAN mappings. If you do not specify a file, you must enter the mappings at the command prompt after you start the command. Whether you enter the mappings from a file or the command prompt, the mappings must be in this format:

- For host-to-VLAN mappings:

  MAC-address, *VTP-domain*, *VLAN*

- For NT-user-to-VLAN mappings:

  NT-domain\username, *VTP-domain*, *VLAN*

- For NDS-user-to-VLAN mappings:

  NDS-tree\username, *VTP-domain*, *VLAN*

Any mappings you enter override existing mappings in the URT database.

The NT domain or NDS tree must already be defined in URT through GUI before you can enter mappings for them using the command line. You cannot add domains or trees through the command line.

Additional Troubleshooting Tips

Here are some additional tips to troubleshooting URT. For more tips, see the troubleshooting chapter in *Using the User Registration Tool*.

- **"Waiting for ANI" message**—URT displays this message while it is trying to connect to the CiscoWorks2000 ANI server. If this message persists, URT is unable to make the connection. URT requires ANI services in order to work, so you must resolve this connection problem. To determine the source of the problem, try these steps:

  (a) Try to start CiscoWorks2000 CWSI Campus. If CWSI Campus cannot start, the ANI connection problem is due to a CiscoWorks2000 problem.

  (b) If you can successfully start CWSI Campus, make sure that you installed the URT CWSI Upgrade package.

  (c) If you installed the CWSI Campus package, make sure that you are using the same ANI server name in CWSI Campus and in URT.

     For CWSI Campus, you can find the ANI server name in the etc\cwsi\ani.properties file. Look for the AniName parameter.

For URT, you can find the ANI server name in the HKEY_LOCAL_MACHINE\System\CurrentControlSet\Services\urtsvc registry entry. Look for the Args parameter.

If the names are different, rerun the URT installation program and enter the correct CWSI Campus ANI server name when prompted.

- **"Network Error: Some Resources Not Available" message on the client**—The "Users Are Getting 'Network Error: Some Resources Not Available' Messages During Logon" section in *Using the User Registration Tool* mentions several possible causes of this problem. There is an additional possibility: check to ensure that your DHCP server is configured to give out the default gateway address. If the DHCP server does not give out the gateway (router) address, URT cannot switch the user to the correct VLAN, and the user remains in the logon VLAN.

Documentation Changes

The user guide and online help for URT was not updated for 1.2.1. A number of changes made in release 1.2.1 have made certain statements in the 1.2 documentation incorrect. This section describes these changes.

- **URT Server names**—URT now lists URT servers by host name rather than IP address.

- **Add Domain button and Edit>Add Domain command**—This button is now called **Add**, and its associated command **Edit>Add**. They are now sensitive to the selection in the tree view. If you select the NT/NDS Domains folder, click **Add** to add a domain. If you select the MAC Address folder, click **Add** to add MAC addresses and their VLAN mappings.

- **Delete Domain button and Edit>Delete Domain command**—This button is now called **Delete**, and its associated command **Edit>Delete**. They are now sensitive to the selection in the tree view. You can select and delete NT or NDS domains, MAC addresses and their VLAN mappings, and URT servers.

- **Configure>Update MAC to VLAN Mappings command**—Because URT 1.2.1 now directly supports host-based VLANs, this command is no longer necessary, and it has been removed. When you save the URT database, MAC to VLAN mappings are also saved in the vmps10.dat file on each URT server (in the dat folder in the URT installation folder).

- **Server Options dialog box**—The Server Options dialog box (access by double-clicking a server name in the tree view) no longer includes the Enable MAC-Based VLANs check box. URT always enables host-based VLAN support.

- **Configuring Catalyst 2900XL ports to be dynamic**—You might have to use the Catalyst 2900XL command line interface to make the switch ports dynamic. The command is **switchport access vlan dynamic**.

- **Helper addresses in router configurations**—In *Using the User Registration Tool*, "Detailed Example of Network Configuration for URT," step 3 (Chapter 2), the router configuration shown includes helper addresses. The sample address is of the machine that is running the DHCP server. You must configure the helper address to use the DHCP server for DHCP requests to be completed. This is required by DHCP even if URT is not used.

URT Known Problems

Known problems are unexpected behaviors or defects in the product. They are graded according to severity level. These release notes contain information for severity levels 1 and 2 only.

You can search for known problems on the Cisco bug tracking system tool, called Bug Navigator II. To access Bug Navigator II, do one of the following:

- Enter http://www.cisco.com/support/bugtools in your web browser.

- Log in to CCO and select **Services & Support>Online Technical Support>Software Bug Toolkit>Bug Navigator II**.

Table 1 describes restrictions or other known issues for using URT.

Table 1   URT 1.2 Known Problems

Bug ID	Summary	Explanation
CSCdp52403	Setting VMPS servers on a Catalyst 4000 switch running CatOS 5.2.2 using the URT management interface	You cannot set VMPS servers on a Catalyst 4000 switch running CatOS 5.2.2 using the URT management interface. If you see the message "Cannot set VMPS on the following switch:"
		Step 1 Verify that the SNMP Community string in CWSI corresponds to the SNMP Community string in the switch.
		Step 2 If this does not help, telnet to the switch and in the enable mode, enter the command:
		set vmps server <IP address of URT Server> [primary]
		Please refer to switch documentation for more information on usage.
		This problem does not occur on CatOS version 5.1.64 and will be addressed in a future CatOS release.
CSCdp50922	Using URT with port channelling set to mode Off	You cannot use URT with port channelling on a switch set to mode Off. URT cannot switch the port to the user assigned or logon VLAN and the port remains in state dyn- .
None	Using URT with span VLAN	You cannot use span VLAN on a switch with URT. If you are using span VLAN, you must turn off spanning, then disable and enable the dynamic switch port.
None	Some Win95 PCs may show Windows blue screen on login	This seems to be a problem with specific PCs running Windows 95 and OSR2(OEM Service Release 2). However, if you use OSR2.1 (like Windows 95 4.00.950B), you probably will not see this problem.
None	Uninstalling and reinstalling CWSI Campus with URT installed	If you are already using URT, and you need to uninstall and then reinstall the CiscoWorks2000 CWSI Campus suite, you must first make a copy of the urt.dat file. This file contains your URT configuration, and CWSI Campus will delete it during uninstallation. The file is in the db\data\ subdirectory of the CWSI Campus root directory.
		After you reinstall CWSI Campus, copy urt.dat back into the db\data\ subdirectory.

Table 1　　　　URT 1.2 Known Problems (continued)

Bug ID	Summary	Explanation
None	Changing to a secondary URT (VMPS) server	In Chapter 1 of *Using the User Registration Tool*, section "What Happens to User Logons If URT Servers Are Disabled," page 1-4, the note says that it takes 5 minutes for a switch to recognize that the URT server it uses for VMPS is not available and to change to a secondary URT server. In fact, it takes **8 to 15 minutes** for this changeover to occur.
None	Catalyst 3500XL switch clustering feature	URT does not directly support the switch clustering feature. You must assign each switch an IP address if you want to configure the switch's VMPS addresses through URT. If you use clustering, you must use the switch's commands to configure the VMPS server addresses.
None	Installing the client service	To install the URT client service on Windows NT workstations, you must log into the CiscoWorks2000-URT machine with administrative privileges in the NT domain that contains the Windows NT machines. It is not sufficient to log into the domain from the URT interface.
None	Multi-homed Windows 95 and Windows 98 systems	URT does work with Windows 95 or Windows 98 clients that are multi-homed, that is, clients that have more than one active NIC or an active NIC with an active modem. These clients must have only one active network connection.

Cisco Connection Online

Cisco Connection Online (CCO) is Cisco Systems' primary, real-time support channel. Maintenance customers and partners can self-register on CCO to obtain additional information and services.

Available 24 hours a day, 7 days a week, CCO provides a wealth of standard and value-added services to Cisco's customers and business partners. CCO services include product information, product documentation, software updates, release notes, technical tips, the Bug Navigator, configuration notes, brochures, descriptions of service offerings, and download access to public and authorized files.

CCO serves a wide variety of users through two interfaces that are updated and enhanced simultaneously: a character-based version and a multimedia version that resides on the World Wide Web (WWW). The character-based CCO supports Zmodem, Kermit,

Xmodem, FTP, and Internet e-mail, and it is excellent for quick access to information over lower bandwidths. The WWW version of CCO provides richly formatted documents with photographs, figures, graphics, and video, as well as hyperlinks to related information.

You can access CCO in the following ways:

- WWW: http://www.cisco.com

- WWW: http://www-europe.cisco.com

- WWW: http://www-china.cisco.com

- Telnet: cco.cisco.com

- Modem: From North America, 408 526-8070; from Europe, 33 1 64 46 40 82. Use the following terminal settings: VT100 emulation; databits: 8; parity: none; stop bits: 1; and connection rates up to 28.8 kbps.

For a copy of CCO's Frequently Asked Questions (FAQ), contact cco-help@cisco.com. For additional information, contact cco-team@cisco.com.

Note If you are a network administrator and need personal technical assistance with a Cisco product that is under warranty or covered by a maintenance contract, contact Cisco's Technical Assistance Center (TAC) at 800 553-2447, 408 526-7209, or tac@cisco.com. To obtain general information about Cisco Systems, Cisco products, or upgrades, contact 800 553-6387, 408 526-7208, or cs-rep@cisco.com.

Documentation CD-ROM

Cisco documentation and additional literature are available in a CD-ROM package, which ships with your product. The Documentation CD-ROM, a member of the Cisco Connection Family, is updated monthly. Therefore, it might be more current than printed documentation. To order additional copies of the Documentation CD-ROM, contact your local sales representative or call customer service. The CD-ROM package is available as a single package or as an annual subscription. You can also access Cisco documentation on the World Wide Web at http://www.cisco.com, http://www-china.cisco.com, or http://www-europe.cisco.com.

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