CHAPTER 3

Locating Users in the Network with User Tracking

User Tracking allows you to locate end-user hosts and IP phones in the network. It uses information gathered from network devices to display data about users, hosts, and IP phones in the network.

Use User Tracking to:

- Discover and display information about users, hosts, and IP phones in your network
- Query for users, hosts, and IP phones
- Modify, add, and delete username and notes in the main User Tracking table
- Highlight devices on the Layer 2 view in Topology Services
- View reports about duplicate IP addresses, duplicate MAC addresses, and duplicate MAC addresses and VLAN names

The following topics provide you with information about:

Starting and Navigating in User Tracking

From the CiscoWorks2000 desktop, select **Campus Manager >User Tracking**. The main User Tracking window appears (see Figure 3-1).

When you start User Tracking, the Startup dialog box appears. From this dialog box, you can choose to:

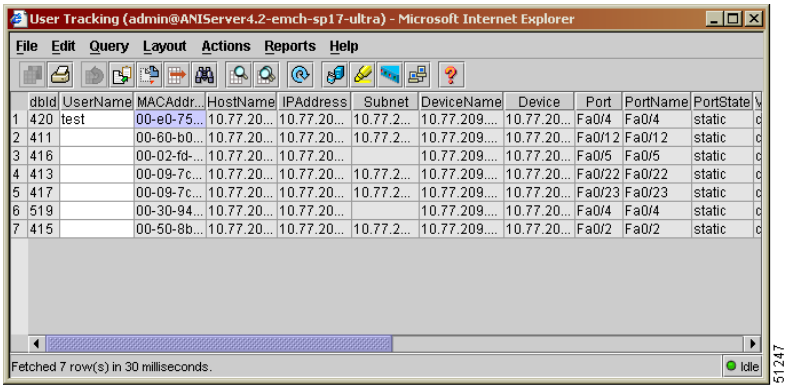
- Show all users and hosts currently in the ANI database—this is the default choice.
- Display a simple query dialog box.
- Display a User Tracking table with no entries.

To change the default startup mode, select **Edit > Preferences...**

The User Tracking table displays discovery results and data about workstations, users, and hosts in the network. Refer to Table 3-1 for a description of the elements in the User Tracking window.

The User Tracking IP Phone table displays discovery results and provides data about IP phones registered with discovered Media Convergence Servers. The IP Phone table appears in a window separate from the main User Tracking window.

Figure 3-1 Main User Tracking Window



	dbId	UserName	MACAddr...	HostName	IPAddress	Subnet	DeviceName	Device	Port	PortName	PortState	V
1	420	test	00-e0-75...	10.77.20...	10.77.20...	10.77.2...	10.77.209....	10.77.20...	Fa0/4	Fa0/4	static	c
2	411		00-60-b0...	10.77.20...	10.77.20...	10.77.2...	10.77.209....	10.77.20...	Fa0/12	Fa0/12	static	c
3	416		00-02-fd-...	10.77.20...	10.77.20...		10.77.209....	10.77.20...	Fa0/5	Fa0/5	static	c
4	413		00-09-7c...	10.77.20...	10.77.20...	10.77.2...	10.77.209....	10.77.20...	Fa0/22	Fa0/22	static	c
5	417		00-09-7c...	10.77.20...	10.77.20...	10.77.2...	10.77.209....	10.77.20...	Fa0/23	Fa0/23	static	c
6	519		00-30-94...	10.77.20...	10.77.20...		10.77.209....	10.77.20...	Fa0/4	Fa0/4	static	c
7	415		00-50-8b...	10.77.20...	10.77.20...	10.77.2...	10.77.209....	10.77.20...	Fa0/2	Fa0/2	static	c

Table 3-1 User Tracking Window Elements

Item	Description
Menu Bar	Contains User Tracking Commands
Tool Bar	Provides quick access to frequently used menu options
Main User Tracking Table	Contains fields providing details about end-user stations
Status Bar	Displays the number of entries in the User Tracking table or the status of the last action that was performed. Double-clicking on the status light displays the Discovery Information dialog box, which tells you your ANI Server and User Tracking login status and the completion time of the last ANI Server and User Tracking discoveries.

Using User Tracking

Table 3-2 lists the main tasks that you can perform using User Tracking. All actions begin from the User Tracking main window, unless otherwise specified. For more information about each task, refer to the User Tracking online help.

Table 3-2 User Tracking Tasks

Task	Purpose	Action
Enable or disable the Ping Sweep option.	Obtains the latest Address Resolution Protocol (ARP) information in routers and bridge table information in switches. By default, the Ping Sweep option is enabled.	1. Select **Edit > Preferences...**. 2. Select the **Discovery** tab. 3. Select the check box next to the Ping Sweep option to enable it. Deselect the check box to disable Ping Sweep. **Note** Pinging large networks can be time-consuming.
Discover all users and hosts.	Discovers all users and hosts on the network and to update the ANI Server database.	1. Enable the **Ping Sweep** option to ensure that the most recent network information is discovered. 2. Select **Actions >Discover All**.
Discover IP phones.	Discovers IP phones registered with discovered Media Convergence Servers.	1. Enable the **Ping Sweep** option to ensure that the most recent network information is discovered. 2. Select **Actions > Discover IP Phones**.

Table 3-2 User Tracking Tasks (continued)

Task	Purpose	Action
Discover hosts in a subnet.	Initiates the User Tracking discovery process for a specific subnet. This is less time-consuming than rediscovering all users and hosts.	1. Enable the **Ping Sweep** option to ensure that the most recent network information is discovered. 2. Select **Actions > Discover Subnet...**. 3. Enter the IP address or host name in the Hostname or IP Address field. 4. Enter the subnet mask in the Subnet Mask field. 5. Click **Discover**.
Discover hosts on a specific device.	Initiates the User Tracking discovery process for a specific device. This is less time-consuming than rediscovering all users and hosts.	1. Enable the **Ping Sweep** option to ensure that the most recent network information is discovered. 2. Select **Actions > Discover Device...**. 3. Enter the IP address or device name in the Device Name or IP Address field. 4. Click **Discover**.
Display all users and hosts.	Displays all discovered users and hosts in the User Tracking database.	Select **Query > Main Table Query > all**.
Display IP phones in your network.	Displays IP phones in your network.	Select **Query > IP Phone Table Query > all**.

Table 3-2 User Tracking Tasks (continued)

Task	Purpose	Action
Display selected users and hosts with a simple query.	Displays only those entries that match your specified criteria.	1. Select **Query > Simple Query...**. 2. Select the **Main Table** or **Phone Table** tab. 3. Specify up to three search criteria. 4. Choose either: • **Match all of the following**—to display only the entries that match all of the criteria. • **Match any of the following**—to display all entries that match at least one of the criteria. 5. To make your query case-sensitive, click the **Match case** check box. 6. Click **Apply**.
Create and save an advanced query.	Creates queries with complex search criteria and saves them. You can also view, edit, and delete saved queries.	1. Select **Query > Advanced Query...**. 2. Select the **Main Table** or **Phone Table** tab. 3. To create subqueries: a. Click the **Conditions** tab. b. Click **Add**. c. Enter conditions as you would for a simple query. 4. To run the query, click **Apply**. 5. To save the query, enter a name in the Save Query as field and click **Save**. To use a saved query, select **Query** and then the name of the query you want to run.

Table 3-2 User Tracking Tasks (continued)

Task	Purpose	Action
Customize the table format.	Customizes the User Tracking table or IP Phone Table to include only specific columns in a preferred order. You can also view, rename, modify, and delete saved layouts.	1. Select **Layout>Add Layout...**. 2. Select: • **Main Table** tab—to create a layout for the User Tracking main table. • **IP Phone Table** tab—to create a layout for the IP phone table. 3. To specify a column that you want to include, select the check box next to that column's name. 4. To alter the positions of a column relative to others, highlight a column name and use the blue arrows. 5. Save the layout by entering a name in the Save Layout as field and clicking **Save**. To use a saved layout, select **Layout,** then **Main Table Layout** or **IP Phone Table Layout,** and then the name of your saved layout.
Find entries.	Searches for a specific entry or range of entries in the displayed User Tracking table or IP phone table.	1. Select **Edit >Find in Table...**. 2. In the Find field, enter the string for the entry you want to locate. 3. Select the **Main Table** or **IP Phone Table** radio button. 4. Enter the appropriate settings in the From, Ignore Case, Match Cell, and By Row fields. 5. Click **Next** for the next match below the selected row or **Previous** for a match above the selected row.

Table 3-2 User Tracking Tasks (continued)

Task	Purpose	Action
Delete a selected entry.	Deletes a selected entry from the main User Tracking table.	1. Highlight the cells you want to clear by clicking and dragging the cursor over them, or by clicking the first and last consecutive cells while pressing **Shift**. 2. Select **Edit>Clear**. To delete entire rows, select **Edit>Delete Selected Rows**. You can choose to delete selected entries from the main table, the IP phone table, or both. 3. To reverse the deletion, select **Undo**.
Delete old entries from the User Tracking table.	Delete entries for hosts that are not rediscovered in a major acquisition. You can configure it to delete them once manually or automatically after every major acquisition.	1. Select **Edit>Preferences.** 2. Select the **Delete** tab. You can choose to delete entries from the main table, the IP phone table, or both. 3. Enter the number of days, hours, and minutes for entries you would like deleted in the Delete entries older than field. 4. If you would like to delete: • Immediately—select **Delete Now**. • After every major acquisition—select the **Delete after every discovery** check box.

Table 3-2 User Tracking Tasks (continued)

Task	Purpose	Action
Save User Tracking table changes to the ANI Server database.	Save changes to the ANI Server database. When you make changes to the User Tracking table, the changes remain local to the session in which you are running User Tracking until you send the information to the ANI Server database.	Select **File >Save Changes to Server**.
Add Notes and Usenames to entries.	Allows you to add notes and usernames to entries in the main User Tracking table.	1. Click the table cell you want to modify. 2. Enter the text and press Enter. **Note** The next time the ANI Server performs a discovery, the cells will be overwritten if the ANI Server discovers different information.
Export user data to a text file.	Saves information added to the UserName and Notes fields to a text file. You can import this information if the data are overwritten.	1. Select **File > Export.** 2. Choose **Main Table** or **IP Phone Table**. 3. Select the directory that you want to export and enter a file name. 4. Click **Save** to close the Export dialog box and save the file.

Table 3-2 User Tracking Tasks (continued)

Task	Purpose	Action
Import data from a previously saved file.	Imports lost or deleted UserName and Notes fields from a previously exported file.	1. Select **File > Import > Main Table.** 2. Select the text file you want to import and click **OK**. **Note** If the next discovery discovers different values, it overwrites the data.
Collect username information.	Configures the ANI Server to automatically acquire username information from UNIX, Windows NT, and Novell systems. You can also add usernames and notes manually, but if the ANI Server discovers conflicting username information, it overwrites the database.	You must configure the ANI Server to acquire the information: • UNIX hosts—enable rusersd on the host. • Windows NT hosts—install the UTLite script on the NT Primary Domain Controllers. • Novell hosts—install the UTLite script on the Novell Server. Refer to the ANI Server online help for information on these steps.
Start an application server.	Starts an application server. Please refer to the application server's manual for more information.	1. Select the workflow host in the User Tracking display. 2. Select **Actions > Display Service Attributes**.

Table 3-2 User Tracking Tasks (continued)

Task	Purpose	Action
Highlight a device on the Layer 2 view.	Highlights a selected device from User Tracking on the Layer 2 view in Topology Services.	1. Open the Layer 2 view in Topology Services. Refer to the Topology Services online help for more information. 2. Select an entry from the Device column in the User Tracking table. **Note** If you select multiple entries, User Tracking uses the entry you selected first. 3. Select **Actions > Highlight Devices on Map**.
Display detail on a device with CiscoView.	Starts CiscoView to display details about a particular device.	1. Select the device in the User Tracking table. **Note** If you attempt to start CiscoView for multiple devices by selecting more than one device, User Tracking uses the last selected device. 2. Select **Actions > Launch CiscoView**.
Start a telnet session.	Starts a remote terminal connection on a device.	1. Select a device in the main User Tracking table by clicking anywhere in that row. 2. Select **Actions > Telnet Device**.

Table 3-2 User Tracking Tasks (continued)

Task	Purpose	Action
Display discovery statistics.	Displays statistics about the most recent discovery. Statistics reported include the start time, end time, total number of hosts, total number of Media Convergence Servers, total number of IP phones, and number of duplicate MAC or IP addresses found.	Select **Reports > Discovery Statistics**.
Find duplicate IP addresses.	Finds duplicate IP addresses. Typically, each host should have its own, unique IP address. If two hosts have the same IP address, your network might not function correctly.	Select **Reports > Duplicate IP**.
Find duplicate MAC addresses.	Finds duplicate MAC addresses. Typically, each host has its own, unique MAC address. If two hosts have the same MAC address in the same VTP domain and VLAN, you have a misconfiguration.	Select **Reports > Duplicate MAC**.

Table 3-2 User Tracking Tasks (continued)

Task	Purpose	Action
Find duplicate MAC addresses and VLAN names.	Finds duplicate MAC addresses and VLAN names. Typically, each host has a unique MAC/VTP/VLAN combination. Multiple hosts with the same MAC address and VLAN name indicate a network problem.	Select **Reports > Duplicate MAC & VLAN**.
Find ports with multiple MAC addresses.	Finds ports with multiple MAC addresses (hubs). Ports being shared by multiple hosts may not yield the best performance.	Select **Reports > Ports with Multiple MAC**.

User Tracking Concepts

User Tracking uses the user and host acquisition service module in the ANI Server to discover end-user nodes. IP phones are discovered by querying the Media Convergence Servers. Refer to the *Getting Started with the CiscoWorks2000 Server* guide or the ANI Server online help for more information about the ANI Server and user and host acquisition.

Troubleshooting User Tracking

Use the information in the following topics to help you troubleshoot User Tracking:

- Frequently Asked Questions, page 3-15
- Troubleshooting Suggestions, page 3-18

Frequently Asked Questions

Use the information in these sections to answer some of your common questions:

How does the User Tracking discovery process differ from that of the ANI Server?

User Tracking is an ANI client application. The ANI Server provides several types of global discoveries, including:

- Device and physical topology discovery, resulting in baseline network information such as device identity, module and port information, and physical topology. This type of discovery is required for logical, user, and path discovery.
- User discovery, resulting in information about users and hosts on the network.

The ANI Server stores this information in the ANI database. User Tracking discovers the host and user information in the ANI database, correlates this information, and displays it in the User Tracking table.

Refer to the ANI Server online help for more information about the ANI discovery process.

How does the ANI Server's user and host acquisition process work?

Before collecting user and host information, the ANI Server first must complete a global discovery. During global discovery, the ANI Server generates a device list to determine which switches and routers it should look at to obtain MAC and IP address information.

With these device lists in place, the User Tracking service module of the ANI Server performs the following steps.

Process	Description
Performs Ping Sweeps	Pings every IP address on all known subnets, as long as you have ping sweeps enabled (the default). This process updates the switch and router tables before User Tracking reads those tables, ensuring that User Tracking displays the most recent information about users and hosts.
Obtains MAC addresses from switches	Reads the switch's bridge forwarding table. The bridge forwarding table provides the MAC addresses of end stations, and maps these MAC addresses to the switch port on which each workstation resides.
Obtains IP and MAC addresses from routers	Reads the Address Resolution Protocol (ARP) table in routers to obtain the IP and corresponding MAC addresses.
Obtains hostnames	Performs a Domain Name System (DNS) lookup to obtain the hostname for every IP address.
Obtains usernames	Attempts to locate the users currently logged in to the hosts and tries to obtain their username or login ID.
Records discovered information	Records the discovered information in the ANI database.

Refer to the ANI Server online help for further information about ANI Server discovery.

Why isn't User Tracking performing ping sweeps on some subnets?

The criterion for whether or not User Tracking performs ping sweeps on a subnet is the number of hosts in the subnet:

- If a subnet has 256 or fewer hosts, User Tracking performs ping sweeps on that subnet.
- If a subnet has more than 256 hosts, User Tracking does not perform ping sweeps on that subnet.

If ping sweeps are not performed, User Tracking still obtains information from the router and switch mapping tables during a discovery. Refer to the User Tracking online help for more information on ping sweep.

Why are outdated entries showing up in my User Tracking table?

Outdated entries result when:

- A user or host is assigned to new VLAN/port/VTP domain.
- A power failure occurred.
- A workstation has been switched off or removed from the network.

User Tracking does not automatically delete outdated end-user host entries. To delete these entries:

- Manually delete selected entries.
- Schedule User Tracking to remove old entries.

Why doesn't the IP phone display act like the User Tracking table?

The IP phone table appears in a separate window from the window that displays the main User Tracking table. You cannot run any commands from this window. You can only run commands from the main User Tracking table. Refer to the User Tracking command reference for more information.

Also, the IP phone table and the main User Tracking table display different kinds of information. Refer to the User Tracking table and the User Tracking table for IP Phone data to see what kinds of information each table displays.

How long does User Tracking maintain data?

Indefinitely, until you delete the information.

Does User Tracking discover users and hosts connected to non-Cisco Discovery Protocol (CDP) discovered/managed devices?

User Tracking discovers all users and hosts in the network from the list of devices known to the ANI Server. Refer to *Getting Started with the CiscoWorks2000 Server* or the ANI Server online help for more information about ANI discovery.

How does User Tracking log errors?

User Tracking errors are logged in the ANI Server error log. Refer to *Getting Started with the CiscoWorks2000 Server* or the ANI Server online help for more information.

Troubleshooting Suggestions

Use the information in Table 3-3 to troubleshoot the User Tracking application.

Table 3-3 Troubleshooting User Tracking

Symptom	Probable Cause	Possible Solution
User Tracking cannot discover any users or hosts, or User Tracking cannot display any IP phones.	There may be no information in the ANI database. You must have valid ANI seed device(s) and run an ANI discovery prior to running a User Tracking discovery.	See the ANI Server online help for further information.
User Tracking cannot discover certain users or hosts.	The ANI Server might not have discovered one or more devices to which users and hosts are connected.	Check the CiscoWorks2000 topology for the missing devices, make sure that CDP and SNMP are enabled on the devices, rediscover these devices, and verify that they appear on the topology view.

Table 3-3 Troubleshooting User Tracking (continued)

Symptom	Probable Cause	Possible Solution
User Tracking cannot discover certain IP phones.	The ANI Server might not have discovered the specific Media Convergence Server (MCS) that runs the instance of Cisco CallManager to which the IP phones are registered.	Check the CiscoWorks2000 topology for the missing MCS that runs the instance of Cisco CallManager to which the phones are registered. Make sure that Cisco CallManager is shown as a service running on the MCS shown in the topology view if it is discovered by the ANI Server. Rediscover all IP phones.
User Tracking table is missing hostname, IP address, and subnet information for some hosts.	User Tracking is not finding the most recent network information. Network changes are not currently reflected in ARP information (routers) or bridge tables (switches).	Enable ping sweeps when User Tracking performs discovery. ping sweeps are enabled by default.
You made changes to the network and then ran User Tracking discovery, but the changes are not showing in the User Tracking display.	A complete ANI discovery has not finished since you added your changes.	Try running a complete ANI Server discovery. Reload data from the ANI Server by selecting **Query > Reload Data**. User Tracking discovery is not a full network discovery; it only discovers the user and host data in your network. Changes that you make to your network might not appear after a User Tracking discovery.