NCD ThinSTAR 300
System Administrator's Guide

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Revisions

Part Number	Revision Date	Description
9300745 Rev. A	December, 1998	First release for NCD ThinSTAR 300

Contents

CHAPTER 1
About This Guide

This guide explains how to configure and manage the NCD ThinSTAR 300, a Windows-based Terminal for accessing applications on Microsoft Windows NT servers.

Note If you have optional client software packages, you can connect to other types of application servers.

This guide also explains the required and optional network services for supporting the NCD ThinSTAR 300.

Audience

This guide is for system administrators and users responsible for maintaining NCD ThinSTAR 300s and application servers. This guide assumes that you are familiar with the management of:

- Local area networks
- Microsoft Windows NT servers

Typographical Conventions

The following table lists the conventions used in this guide.

Table 1-1 Typographical Conventions and their Character Formats

Text in This Format	Indicates...
`display text`	Text displayed on the screen or text in a file.
`input text`	Text to be typed as shown.
variable	Portion of a command line or line in a file where you provide the value.
filename	The name of a system file, directory, or pathname.
emphasized text	An especially important word or phrase or explanatory text.

The following table lists resources for additional information on setup, support, and daily operation of NCD ThinSTAR 300s.

Table 1-2 Related Information

For information on...	See...
Administration of Microsoft Windows Terminal Server	Microsoft documentation that accompanies the Terminal Server software
Using NCD ThinSTAR 300	*NCD ThinSTAR 300 User's Guide*
Installing NCD ThinSTAR 300	*NCD ThinSTAR 300 Installation Guide*
Late-breaking information on the NCD ThinSTAR 300	*NCD ThinSTAR 300 Release Notes*
NCD ThinSTAR Management Service (TMS)	*What's This?* on-line help built into the program

CHAPTER 2
Overview and Prerequisites

This chapter introduces the NCD ThinSTAR 300, presents concepts you need to integrate it into your network, and lists the prerequisites for using the NCD ThinSTAR 300.

What Is the NCD ThinSTAR 300?

The NCD ThinSTAR 300 is a Windows-based Terminal, a thin client device that connects to a server to run applications. The application server does the application processing, while the NCD ThinSTAR 300 handles application input and output. (See Figure 2-1.)

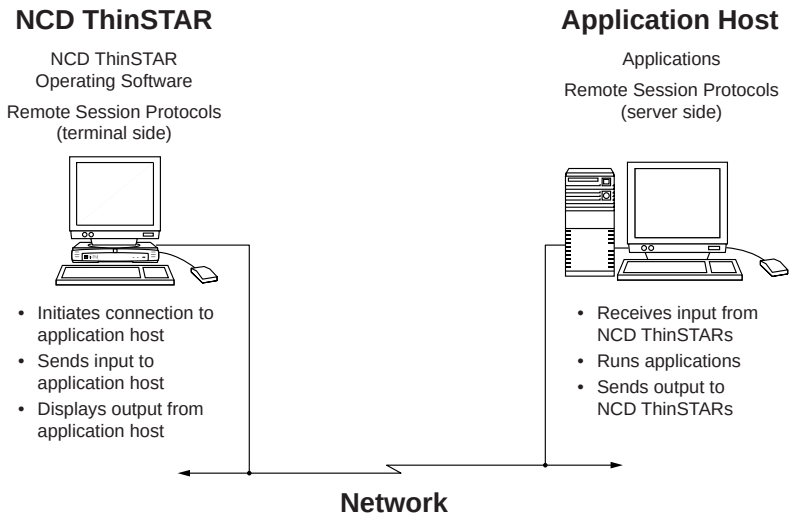


Figure 2-1 NCD ThinSTAR 300 Computing Environment

What Is a Connection?

A connection is a set of commands and data that establish communication between the NCD ThinSTAR 300 and an application server.

Using the software included with every NCD ThinSTAR 300, you can define connections to servers running both Microsoft Windows NT 4.0, Terminal Server Edition and Citrix WinFrame / MetaFrame. To log on, the user selects a connection you have defined. The basic attributes of a connection are:

- Client software implementing a terminal-to-server communication protocol. This enables the terminal to exchange application input and output with the application servers.
- A server with which the NCD ThinSTAR 300 connects
- A name for the connection

Beyond this, clients provide many ways to configure additional connection attributes. You can distinguish connections in many ways, including:

- The user account used for logging on
- Whether to start the connection automatically when the NCD ThinSTAR 300 is powered on
- Whether to start an application on the server automatically
- The speed supported by the physical connection

What is a Client?

Clients enable the terminal to exchange application input and output with a server. For each client on an NCD ThinSTAR 300, you can define any number of connections. Most clients include a setup wizard or utility for configuring connections.

Every NCD ThinSTAR 300 has three built-in clients: Microsoft Terminal Server Client, Citrix ICA Client, and NCD Dial-Up Client. Other clients are available as options.

The basic attributes of the three included clients are:

- The Microsoft Terminal Server Client connects to Microsoft Terminal Server hosts using RDP (Remote Desktop Protocol). RDP is a remote session protocol. RDP carries keyboard and mouse input from the terminal to the Terminal Server host, and carries graphics display instructions and application output from the host back to the terminal.
- The Citrix ICA Client connects to a Citrix MetaFrame or WinFrame server using the ICA (Independent Computing Architecture) protocol.
- The NCD Dial-Up Client is different from the two protocol clients listed above in that it establishes a network connection via modem, which is then used by a protocol client. By default, the Dial-Up Client uses the PPP (point-to-point) protocol to establish the connection.

What Is NCD ThinSTAR Operating Software?

NCD ThinSTAR Operating Software refers to the standard set of software components residing on the NCD ThinSTAR 300:

- **NCD ThinSTAR boot software**

  Provides the low-level startup functions. Initializes and verifies correct operation of terminal hardware and starts Windows CE. Also initiates software recovery, when needed.

- **Client software**

  Enables the NCD ThinSTAR 300 to define and start connections with application servers and exchange application data with them. Consists of:

  — Communication protocol, such as Microsoft RDP and Citrix ICA

  — Connection manager for defining and selecting connections to hosts

  — The clients included with every ThinSTAR 300 are the Microsoft Terminal Server Client, the Citrix ICA Client, and the NCD Dial-Up Client.

- **NCD ThinSTAR core software**

  Provides the operating system functionality and graphical user interface for the NCD ThinSTAR 300. Components are:

  — Microsoft Windows CE
  A compact Microsoft operating system that has been adapted for use in thin client devices.

  — NCD Windows CE device drivers

  — Terminal Properties
  Screens for configuring the terminal

  — Other NCD ThinSTAR supporting software

Network Services

Several types of network services support the NCD ThinSTAR 300:

- **TCP/IP (required)**

  This suite of network communications protocols permits different machines on your network to communicate with each other. TCP / IP service is a requirement for any machine with which the NCD ThinSTAR 300 communicates.

- **Remote session protocol (required)**

  This permits the NCD ThinSTAR 300 to exchange application input and output with application servers.

  Servers running Terminal Server provide the RDP protocol; servers running Citrix WinFrame or MetaFrame provide the ICA protocol.

- **DHCP (optional, except for forced recovery)**

  To be recognized by the network, each NCD ThinSTAR 300 must be assigned an IP (Internet Protocol) address.

  The Dynamic Host Configuration Protocol (DHCP) does this automatically. It can also supply other network identifiers, such as subnet mask values, gateway addresses, and Domain Name System (DNS) and Windows Internet Naming Service (WINS) server addresses.

  DHCP service is required for automatic recovery of flash software, as explained in Chapter 7.

  If DHCP service is not available, you *must* assign an IP address at each NCD ThinSTAR 300 or your dial-up connection must provide an IP address.

- **DNS (optional)**

  The Domain Name System (DNS) lets you map hostnames for networked devices to their IP addresses in a static database. Users can then specify devices by their hostnames instead of their IP addresses. DNS is used in UNIX-based and mixed-platform networks.

- **WINS (optional)**

  The Windows Internet Naming Service (WINS) serves a similar function to DNS, but dynamically updates its database to reflect current IP addresses. WINS works only within a Microsoft Windows network.

- **NCD ThinSTAR Management Service (TMS) (optional, except for updates and recovery)**

  The NCD ThinSTAR Management Service (TMS) remotely updates and repairs NCD ThinSTAR Operating Software, which is the software that runs locally on NCD ThinSTAR 300s.

  Any Windows NT Server can provide these supplemental services. However, TMS must be installed on the Windows NT server.

For more information on network services, see Chapter 3. For information on the NCD ThinSTAR Management Service (TMS), see Chapter 7.

Understanding Networks, Subnets and Domains

Many networking issues affecting the NCD ThinSTAR 300 involve identifying domains correctly. It helps to know the different types of domains, and understand the relationships between networks, subnets and domains. These relationships are illustrated in Figure 2-2.

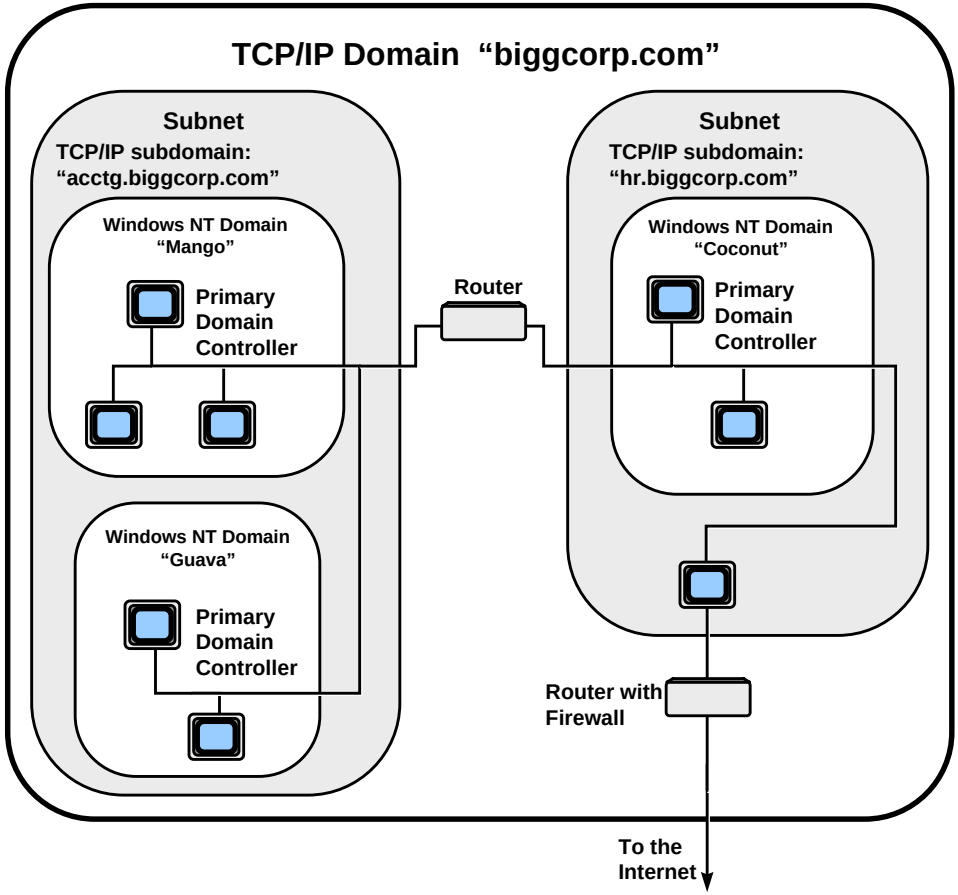


Figure 2-2 Relation of Networks and Domains

About Subnets

A subnet is a physical subdivision of a network. Thus, a company's intranet is a subnet, connected to the internet through a gateway device. This subnet can itself be divided into smaller subnets, each connected to the internet through a gateway device, and possibly also connected to each other through router devices.

About Domains

The most generic definition of a domain is a named collection of systems that are administered as a group. Whereas subnets are physical divisions of a network, domains are logical divisions.

TCP/IP networks and Microsoft networks define domains differently and have different naming conventions for them.

Communication over the Internet is based on TCP/IP protocol, so even if your organization uses a Microsoft network exclusively, you may still need to understand both types of domains.

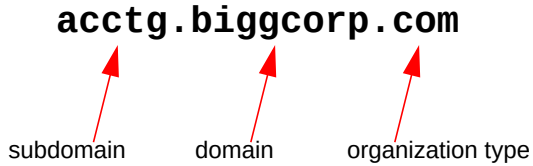
TCP/IP Internet Domains

A TCP/IP Internet domain is a segment of the Internet that has been granted a unique, official name by InterNIC (the Internet organization administering Internet names and IP addresses). Internet domains can be subdivided into subdomains. This structure is reflected by a naming convention having the following form:

name_n.name_n-1...name_0.org_type

...where *name_n* is a subdomain of domain *name_n-1*, and *org_type* designates the type of organization (`com` for commercial organizations, `edu` for educational organizations, `gov` for government organizations).

In the following example, the domain name, `acctg.biggcorp.com`, designates a subdomain called `acctg` within the domain of `biggcorp`, a commercial organization.



IP Addresses and Hostnames

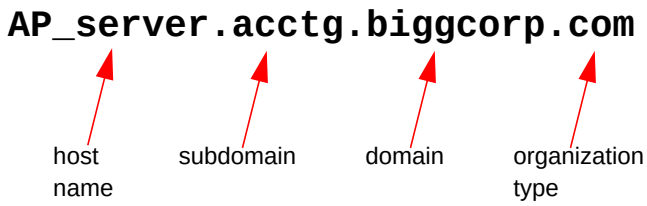
In addition to a domain name, an organization is issued an IP address by InterNIC. Every device that communicates with other devices over a TCP/IP network must have a unique IP address, which is composed partly from the address issued by InterNIC. All IP addresses are four-byte numbers, of the form *nnn.nnn.nnn.nnn*.

Name resolution utilities, such as DNS for TCP/IP networks, support the use of hostnames to identify devices, which you map to valid IP addresses. This allows users to specify devices on the network by names that make sense to them, such as AP_Server, instead of IP addresses.

Specifying Devices with Fully Qualified Domain Names

By prefixing a TCP/IP domain name with a hostname, you can specify a device in a way that makes that device identifiable across networks. This is called a Fully Qualified Domain Name (or FQDN).

An example is shown below.



Windows NT Domains

A Windows NT domain is made up of equipment running Windows NT (servers, workstations, or other equipment). The administrator creating the domain assigns it a name, for example, `checkers` or `accounting`.

A Windows NT domain is created in the process of setting up a Primary Domain Controller, which is a Windows NT server specially configured to perform user authentication for the domain.

User Authentication in Windows NT Domains

In creating a connection to a Windows NT server, it is important to realize that user accounts can be authenticated either locally or globally for logging on to Windows NT servers.

- **Locally**

  The Windows NT server you are logging onto checks the user ID and password against its authentication database.

- **Globally**

  A Windows NT server set up as the Primary Domain Controller for that Windows NT domain checks the user ID and password against its authentication database.

  This approach allows one database to authenticate users for logging onto multiple Windows NT servers in the same Windows NT domain.

When you create an NCD ThinSTAR 300 connection, you are queried for the name of the Windows NT domain to which the target Windows NT server belongs. Supplying a Windows NT domain name routes the user account data at logon to the Primary Domain Controller of that domain for global authentication.

As an alternative, your connection can use the name of a particular Windows NT Server instead of a Windows NT domain name. In that case, the user account data is routed to that server for local authentication.

Prerequisites

Before using your NCD ThinSTAR 300s, make sure that the following criteria are met:

- **Hardware setup**

  Your NCD ThinSTAR 300s must be set up and physically connected to your network as explained in the *NCD ThinSTAR 300 Installation Guide.*

- **Application server**

  For connections via RDP, at least one Terminal Server host must be running on the network.

  For connections via ICA, at least one WinFrame or MetaFrame host must be running on the network.

- **Router**

  A router is needed when going across subnets.

- **Applications**

  The applications you want accessible to NCD ThinSTAR 300 terminals must be installed on the application server.

- **Network services**

  The network services you need (see Chapter 3) must be running on the same subnet as the NCD ThinSTAR 300s. In particular, TCP/IP must be running on all servers with which NCD ThinSTAR 300s communicate.

- **NCD ThinSTAR Management Service (TMS)**

  Although you don't need TMS to use the NCD ThinSTAR 300, you do need it for automatic update and recovery of the NCD ThinSTAR Operating Software. Install TMS on any Windows NT server in the network containing your terminals. See Chapter 7 for more information.

CHAPTER 3
Configuring Network Services

This chapter explains how to set up network services that support the NCD ThinSTAR 300:

- TCP/IP
- DHCP
- DNS and WINS
- Remote session protocol

Introduction to Network Services

Except for TCP/IP, these services do *not* have to run on the hosts to which the terminal connects. The other services can run on other hosts in your network, and running the services on other hosts reduces the load on the application servers. This chapter identifies the types of host(s) on which each service can run.

The NCD ThinSTAR Management Service (TMS), which supports software updates and recovery of flash software on the NCD ThinSTAR 300, is covered in Chapter 7.

Configuring Network Communication — TCP/IP

TCP/IP must be running on any server that provides services to an NCD ThinSTAR 300. This section describes how to configure TCP/IP on Windows NT servers.

For other types of hosts, refer to your system documentation for information on setting up TCP/IP.

Configuring TCP/IP for Windows NT 3.51

1. Select **Main > Control Panel**.
2. Double click **Network**.
3. If **TCP/IP** is included in the list of Installed Network Software, it is installed on that machine and you can skip to Step 7. If it is not present, continue with Step 4.
4. Select **Control Panel > Network > Add Software**.
5. From the list, select TCP/IP and related components.
6. The Windows NT TCP/IP Installation Options dialog box lists a number of optional components. From the list, check the **TCP/IP** check box.
7. Verify that TCP/IP is configured correctly. For information on this, read the Microsoft Help topics, "Configuring TCP/IP" and "Installing TCP/IP and SNMP."

Configuring TCP/IP for Windows NT 4.0 and Later

1. Right click **Network Neighborhood**. In the resulting menu, select **Properties**. In the resulting Network dialog box, select the Protocols tab.
2. If TCP/IP is listed on the Protocols tab, it is installed on that machine, and you can skip to Step 4. If it is not installed, continue with Step 3.
3. On the Protocols tab, click **Add**. In the resulting list of Microsoft-supplied protocols, select TCP/IP.

4. Verify that TCP/IP is correctly configured on this machine. With TCP/IP selected on the Protocols tab, click Properties. In the TCP/IP Properties dialog box, select one of the following options:
   — **Obtain an IP address from a DHCP server** if you want to have DHCP automatically assign the Windows NT Server an IP address.
   — **Specify an IP address** if you want to manually assign the Windows NT server a static IP address. Supply an available IP address in the associated text boxes.

   For more information on configuring TCP/IP, read the Microsoft Help topic, "Installing and Configuring Microsoft TCP/IP."

Configuring Device Identification Services — DHCP

To communicate with other devices in a network, a terminal must have a valid IP address. You can either assign these addresses manually or use DHCP (Dynamic Host Configuration Protocol) to assign them automatically.

Note DHCP can also supply other network identifiers, including subnet mask values, an IP address for an Internet gateway device, and IP addresses of DNS and WINS servers.

DHCP is required for automatic recovery of flash software and automatic updates by NCD ThinSTAR Management Service (TMS).

You can disable any terminal's use of DHCP and assign it an IP address explicitly.

Note If DHCP service is not available on your network, you *must* explicitly assign IP addresses on every NCD ThinSTAR 300. (See "Enable / Disable Dynamic Assignment of IP Address" on page 4-5.)

The following sections describe how to install and configure DHCP on a Windows NT server. For information on configuring DHCP on a UNIX server, see the host documentation.

Installing the DHCP Server for Windows NT 3.51

1. Select **Main > Control Panel**.
2. Double click **Network**.
3. If DHCP is listed under Installed Network Software, it is installed on that machine and you can skip to Step 5. If it is not present, continue with Step 4.
4. Select **Control Panel > Network > Add Software**. From the list, select TCP / IP and related components.
5. The Windows NT TCP / IP Installation Options dialog box is displayed, listing a number of optional components. From the list, check the DHCP check box.
6. Configure DHCP as described in "Configuring the DHCP Server" on page 3-5.

Installing the DHCP Server for Windows NT 4.0 and Later

1. Select **Start > Settings > Control Panel**.
2. Double click **Network**.
3. Go to the Services tab.
4. If Microsoft DHCP is included in the Services list, it is present on this machine and you can skip to Step 6. Otherwise, continue with Step 5.
5. On the Service tab of the Network dialog box, click Add. In the resulting list, select Microsoft DHCP

Server, click OK, and when prompted, insert the requested compact disk.

6. Configure DHCP as described in the next section.

Configuring the DHCP Server

1. Start the DHCP Manager as follows:

   — For Windows NT 3.51:

   In the Network Administration program group, double-click the DHCP Manager icon to start the DHCP Manager.

   — For Windows NT 4.0 and later:

   Select **Start > Programs >Administrative Tools > DHCP Manager**.

2. If a scope (a range of valid IP addresses) has not already been defined, you must define one. Select **Scope > Create** and complete the resulting dialog box.
3. (This step is optional.) To have DHCP supply network parameters to terminals, select **DHCP Options > Scope**, then supply one or more of the following parameters:

   — Domain Name

   The name identifying the TCP/IP domain in which the DNS server resides.

   — Router

   Four-byte value identifying the machine through which a subnet communicates with another network.

   — DNS Servers

   The IP address(es) of the DNS server(s) where you want hostnames routed for resolution to IP addresses.

— **WINS/NBNS Servers**

The IP address(es) of the WINS server(s) where you want hostnames routed for resolution to IP addresses.

If you don't configure DHCP to supply this information, you must specify it explicitly when configuring the terminal.

Configuring Name Resolution — DNS and WINS

When you define connections (see the instructions in Chapter 5), you might want to identify hosts by hostnames, rather than by IP addresses. Windows NT hosts and the NCD ThinSTAR 300 support two name resolution services that allow this: DNS and WINS. Both services map computer names to IP addresses. However, DNS and WINS differ in important ways.

About DNS

DNS (Domain Name System) was originally developed to map hostnames to IP addresses in UNIX-based networks. Now most operating systems support DNS, so it also works in mixed networks.

The DNS database is static; you must create and update the name-to-IP address mappings by hand.

The Internet uses the TCP/IP protocol, and DNS is based on TCP/IP addresses, so DNS supports name resolution across networks. If you want to resolve hostnames across the world-wide web, you need to use DNS.

You do not have to set up DNS service on the connection host; you can use any Windows NT server or UNIX-based DNS in the network.

About WINS

WINS (Windows Internet Naming Service) was developed for Microsoft networks. Because it is based on Microsoft's NetBIOS device-naming protocol, WINS resolves names only among Microsoft Windows-based machines.

Under Windows NT 4.0, WINS supports mapping of NetBIOS hostnames to IP addresses over a TCP/IP network. (In pre-4.0 versions of Windows NT, WINS maps these names to the IDs of machines' network interface cards).

Unlike DNS, the WINS database is dynamic. WINS detects devices' current IP addresses and automatically updates its database accordingly. Using WINS with DHCP completely automates IP assignment and name resolution.

You do not have to set up WINS service on the connection host; you can use any Windows NT server.

Using DNS and WINS Together

DNS servers and WINS servers can communicate with each other to resolve hostnames.

If both services are available on the same network, when an NCD ThinSTAR 300 starts a connection that uses a hostname, that name is submitted first to the WINS server, then to the DNS server for resolution to an IP address.

Choosing a Name Resolution Service

You can enable the NCD ThinSTAR 300 to use DNS, or WINS, or both.

Here are some general guidelines for deciding which service(s) are appropriate for your environment:

- If all your networked devices are based on Microsoft Windows and are in the same subnet, use WINS. You can use DNS in conjunction with WINS, if desired.
- If you have a UNIX or mixed-platform environment, use DNS. You can use WINS in conjunction with DNS, if desired.
- If you need to create connections across subnets, use DNS. You can use WINS in conjunction with DNS, if desired.

Configuring the Remote Session Protocol Software

The NCD ThinSTAR 300 exchanges application input and output with hosts by means of a remote session protocol configured on both devices.

Configuring RDP on Terminal Server Hosts

Terminal Server hosts include the Microsoft RDP protocol with a default configuration. The NCD ThinSTAR 300 comes preconfigured to use the Microsoft Terminal Server Client, the terminal-side implementation of RDP.

You can modify the default configuration of RDP on the Terminal Server host. For example, you might want to change timeout settings or how the client should behave if a connection to the host is broken.

Configuring RDP Globally

To modify the RDP configuration on a Terminal Server host:

1. Select **Start > Programs > Administrative Tools > Terminal Server Connection Configuration**.
2. In the Terminal Server Connection Configuration dialog box, double click the RDP-TCP connection you want to modify.
3. In the Edit dialog box, click **Advanced**.
4. In the Advanced Connection Settings dialog box, make the desired changes.

Configuring RDP for Individual Users

The preceding steps set global defaults that affect all users logging into that Terminal Server host. But you can override the global defaults through user settings. To do so:

1. Select **Start > Programs > Administrative Tools > User Manager for Domains**.
2. In the User Manager, select the desired user, or choose to create a new user.
3. In the User Properties dialog box, click **Configure**.
4. In the User Configuration dialog box, make the desired changes.

Configuring ICA on WinFrame or MetaFrame Hosts

Servers that have Citrix WinFrame or MetaFrame installed include the ICA protocol. The NCD ThinSTAR 300 comes preconfigured to use the Citrix ICA Client, the terminal-side implementation of ICA. For information about configuring ICA, see the WinFrame or MetaFrame documentation.

CHAPTER 4
Configuring the NCD ThinSTAR 300 via the Setup Wizard

This chapter explains how to use the Setup Wizard to set and change options on the NCD ThinSTAR 300.

Prerequisites

Before performing the tasks described in this chapter, make sure your NCD ThinSTAR 300 terminals, your application hosts, and your network meet the criteria listed in “Prerequisites” on page 2-12.

When You Start the NCD ThinSTAR 300

What happens when you power on the NCD ThinSTAR 300 depends on whether it has been previously configured and whether any connections have been created.

Note *Power on* means to turn on the power switch on the back panel of the terminal. When this switch is on, you can turn the terminal on or off using the power button on the front. For information about using the back-panel switch when you want to upgrade software, see Chapter 7.

- When you power on a terminal the very first time, or after resetting it to factory defaults, or after software recovery, the NCD ThinSTAR Setup Wizard guides you through configuring the terminal and creating an initial connection. See “Configuring the Terminal via the Setup Wizard” on page 4-2.
- If no connections have been defined for the terminal, or the connections have been lost due to flash recovery, a connection wizard guides you through the creation of a connection. See “Creating Connections” on page 5-3 for information on creating connections.
- If a terminal has been configured and has at least one connection defined when you power it up, the Connection Manager appears, listing the existing connections. From there, you simply select a connection. See “Starting a Connection” on page 5-24.

  Whenever the Connection Manager is on the screen, you can display Terminal Properties and modify the terminal’s configuration. This is how you change an NCD ThinSTAR 300’s configuration after using the Setup Wizard for first-time configuration. See Chapter 6 for information on displaying and using Terminal Properties.

Configuring the Terminal via the Setup Wizard

The first time you power up an NCD ThinSTAR 300, the NCD ThinSTAR Setup Wizard leads you through the configuration tasks.

After the setup process is completed, the Setup Wizard does not appear again unless the terminal performs a flash software recovery or you reset the terminal to factory defaults (see “Resetting Factory Defaults” on page 6-3).

This section explains each screen of the NCD ThinSTAR Setup Wizard in sequential order.

After you finish the Setup Wizard, you can change any configuration settings through Terminal Properties (see Chapter 6 for information about Terminal Properties).

Welcome Screen

When the Welcome Screen appears, click **Next**.

License Agreement Screen

The End User License Agreement specifies the legal terms governing your use of this product. To proceed, click **Accept**.

Select Network Connection

The Network Connection Selection screen allows you to select the network connection type. Selecting the network connection type determines whether the terminal connects to a host via modem or via the LAN.

If you select Dialup Connection to connect via a modem, the next screen is Client Selection, then Desktop Area and Refresh Frequency. The screens for assigning IP addresses do not appear.

Select Client Software

The screen in Figure 4-1 allows you to select a protocol client for creating connections. This becomes the default client when you create connections. The protocol clients implement a communication protocol that allows the NCD ThinSTAR 300 and application hosts to exchange application input and output.

The built-in protocol clients are Microsoft Terminal Server Client and Citrix ICA Client.

Note The NCD Dial-Up Client is not listed in this screen because it is not a protocol client, rather it establishes a network connection via modem for protocol clients.

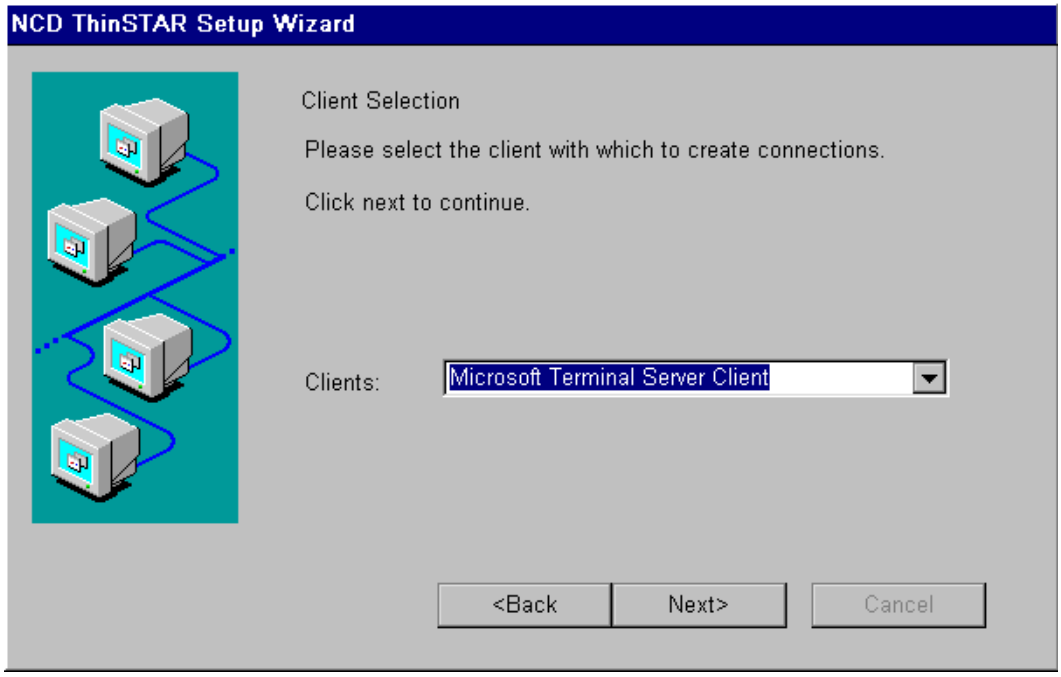


Figure 4-1 Selecting a Protocol Client

To select client software, complete the following steps.

1. Click the down-arrow at the right of the Clients list box to see all the client software packages installed. Select the desired client.

   Note If you installed optional client software, those clients appear in the Clients list along with the built-in clients. See the documentation for the optional clients for information about adding those clients to the list

2. Click **Next**.

Enable/Disable Dynamic Assignment of IP Address

The screen in Figure 4-2 allows you to choose a method of assigning IP addresses.

Any device used in a TCP/IP network must have a unique IP address.

If you selected Dialup Connection, this screen does not appear.

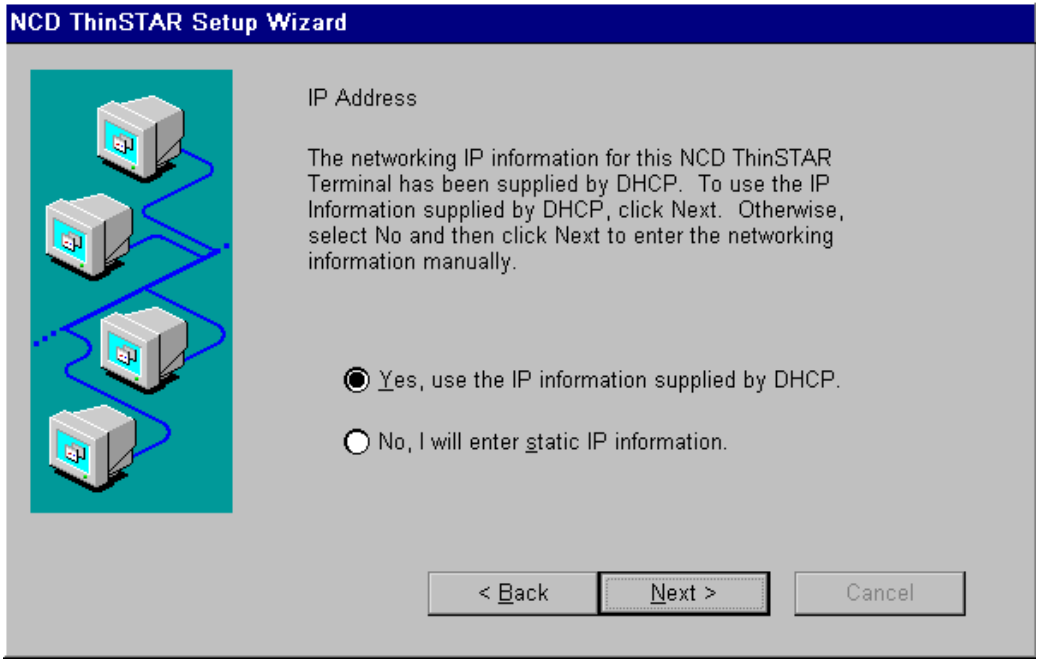


Figure 4-2 Enabling Dynamic IP Assignment

The NCD ThinSTAR 300 gets its IP address (and other network identifiers) through DHCP service by default (provided the terminal is properly connected to the network and DHCP service is available and configured). When a device broadcasts a request for its IP address, DHCP automatically assigns one drawn from a pool of available IP addresses.

1. Select the method of providing IP addresses.
   - — If your network provides DHCP service, and you want DHCP to provide the terminal's IP address, leave the first option selected.
   - — If you would rather specify a static IP address for the terminal, select the second option.

     This option is selected automatically if your network does *not* provide DHCP service, or if the NCD ThinSTAR 300 is not properly connected to the network. If your network does *not* provide DHCP, leave the Static IP option selected.

   Note If your network *does* provide DHCP, but the Static IP option is selected in this screen, make sure the NCD ThinSTAR 300 is properly connected to the network, then restart it by cycling the power.
2. Click **Next**.

Specify a Static IP Address

If the Static IP option is selected, the next Setup Wizard screen queries you for the network identifiers, as shown in Figure 4-3.

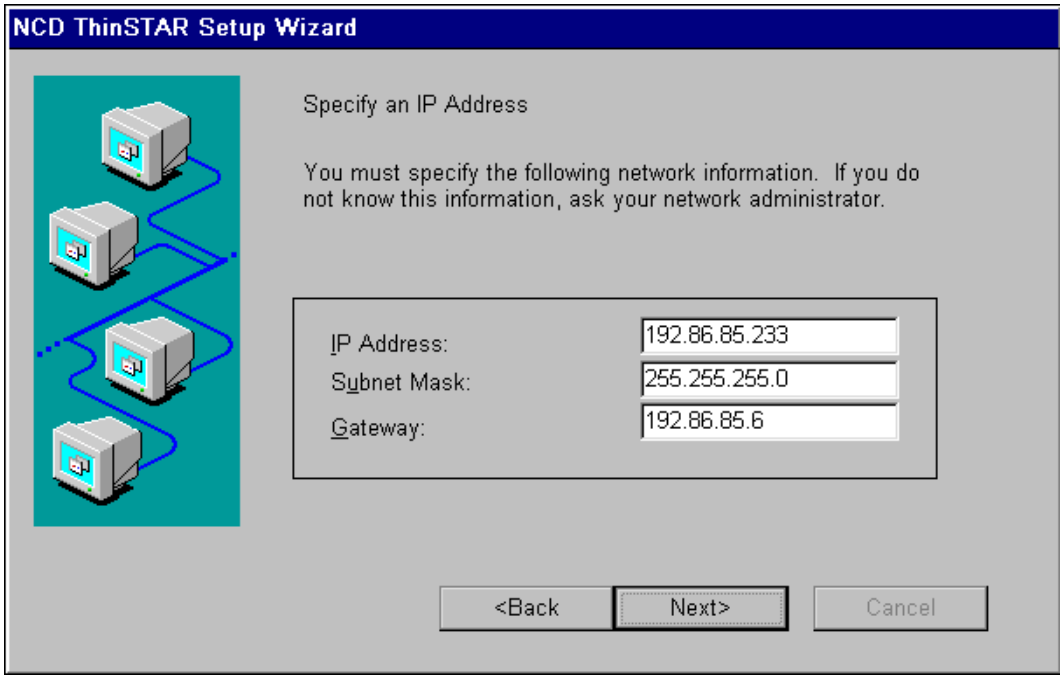


Figure 4-3 Entering the IP Address

1. Supply the following network information:

   — IP Address

   Required. The four-byte address that identifies the NCD ThinSTAR 300 to the network.

   — Subnet Mask

   Required. The four-byte value that identifies the part of the IP address that designates the network, and the part that designates specific machines.

   The subnet mask is calculated automatically, and the value calculated assumes that there are no subnets.

   If you have subnets, you can change the calculated value to the subnet mask for the subnet on which the NCD ThinSTAR 300 is located.

— **Gateway**

Optional. The four-byte value that identifies the machine through which a subnet communicates with another network.

2. Click **Next**.

Enable/Disable Name Resolution Services

DHCP can supply the information required to use a name resolution service, so the screen shown in Figure 4-4 appears only if you chose *not* to use DHCP services.

This screen does not appear if you selected a dial-up connection.

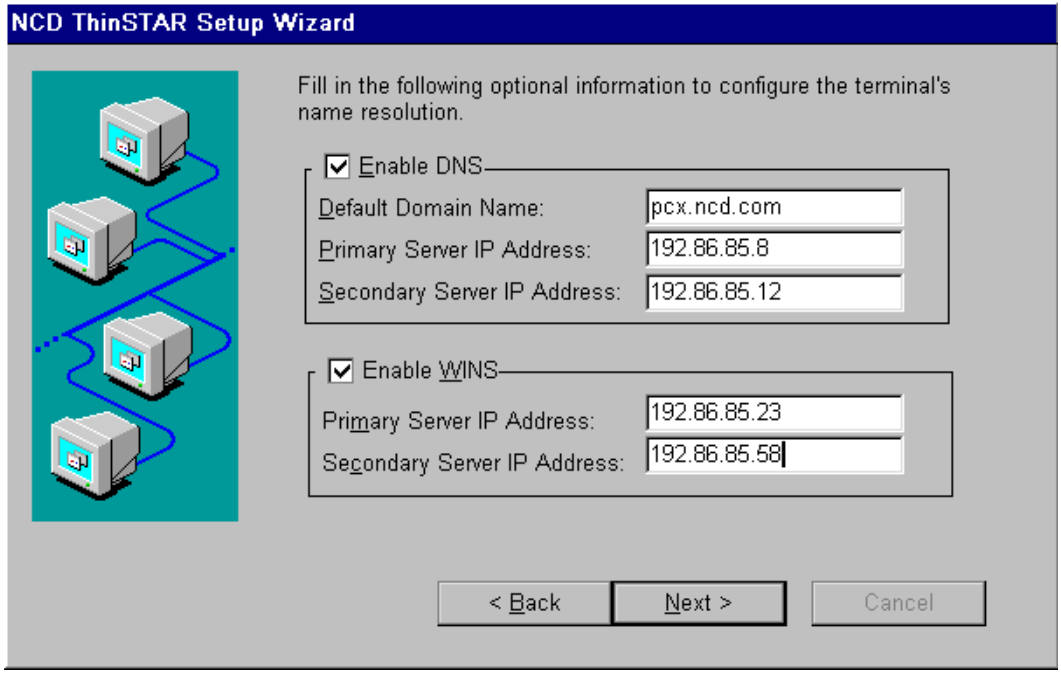


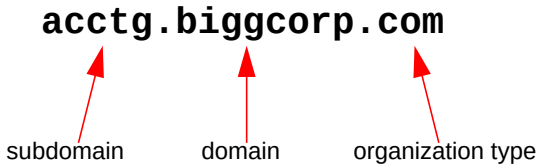
Figure 4-4 Enabling Automated Name Resolution

Microsoft Windows NT hosts support both WINS and DNS name resolution services (see “Configuring Name Resolution — DNS and WINS” on page 3-6). This screen lets you enable the NCD ThinSTAR 300 to use one or both of these services. The selected service must be available on the network, and properly configured.

1. To enable DNS, WINS, or both, check the corresponding box.
2. In the text boxes, enter the following information as appropriate for each.

   — Default Domain Name (applies to DNS only)

   This refers to the name identifying the TCP / IP domain in which the DNS server resides. For example:



   In this example, the domain name is **`biggcorp.com`**.

   Specifying a Default Domain Name and a Primary DNS Server IP Address (described below) lets users specify a connection using just a hostname rather than the FQDN (Fully Qualified Domain Name). For example, the connection could use the server name **`AP_server`** instead of the FQDN, which is **`AP_server.acctg.biggcorp.com`**.

   Enabling DNS on this screen assumes a DNS service is available and has been properly configured (see page 3-3). The DNS server can be either a Windows NT or UNIX host.

— **Primary Server IP Address**

The IP address of the DNS or WINS server to which you want device names routed first for resolution.

Windows NT includes WINS. But it must be properly configured. Enabling WINS on this dialog box assumes this has been done (see "Configuring Name Resolution — DNS and WINS" on page 3-6).

— **Secondary Server IP Address**

The IP address of the DNS or WINS server to which you want device names routed if the primary server fails to resolve them.

Choose Display Resolution

The screen in Figure 4-5 lets you choose a display resolution.

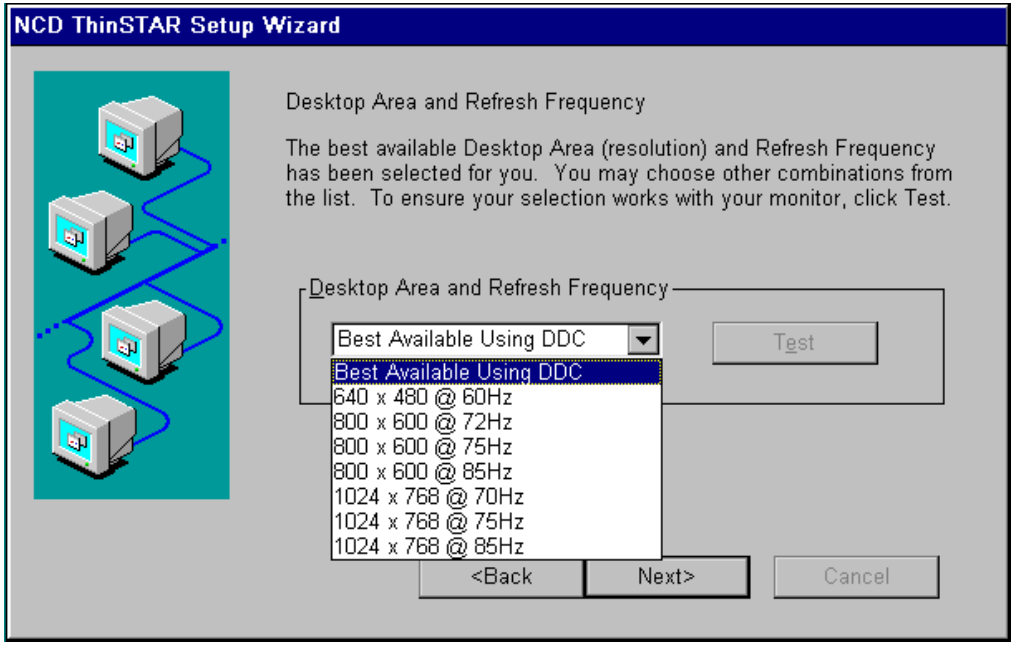


Figure 4-5 Selecting Display Resolution

About DDC-Compliant Monitors

Newer monitors support a protocol called DDC (Display Data Channel), version 2.0, that lets a computer's video chip query monitors about their capabilities and automatically adjust video settings to get the best resolution. The best resolution is the largest desktop area and fastest refresh rate the monitor supports. (The higher the refresh rate, the less flicker. Most people prefer at least 70 Hz.)

You can use virtually any monitor with the NCD ThinSTAR 300. The default option, “Best Available Using DDC,” makes the NCD ThinSTAR 300 check for a DDC 2.0-compliant monitor. If the monitor is DDC 2.0-compliant, the terminal automatically sets the display to the best resolution the monitor supports, up to a 1024x768 desktop area and an 85 Hz refresh rate.

If the monitor is not DDC 2.0-compliant or cannot be identified, the NCD ThinSTAR 300 sets the desktop area to 800x600 and the refresh rate to 75 Hz.

Trying Alternate Display Settings

If you get the default 800x600 desktop, the monitor may nevertheless support a better resolution. To test this, select a higher resolution from the list box, then click **Test**. If the test pattern (a bordered rectangular grid) is not distorted or skewed, the monitor supports the selected resolution.

If the monitor is DDC 2.0-compliant, but you want a specific resolution, select and test that resolution.

Note To see which resolution setting was chosen by the DDC inquiry, complete the Setup Wizard and subsequent Connection Wizard, then follow instructions under “Viewing Hardware and Software Status” on page 6-23.

Safe Boot at 640 x 480

If you can see the initial logo screen at power-on, but cannot see anything on the monitor after that, you may need to use the Safe Boot at 640 x 480 feature.

To use this feature, complete the following steps.

1. Power on the terminal.
2. When you see the progress bar on the logo screen, press **F5** to boot at 640 x 480 60 Hz.

Finish the NCD ThinSTAR Setup Wizard

In the last screen of the NCD ThinSTAR Setup Wizard:

- To review or change settings made on previous pages, click **Back**. To apply the settings, click **Finish**.
- To change settings after finishing the NCD ThinSTAR Setup Wizard and setting up a connection, use the Terminal Properties property sheet (see Chapter 6 for directions on using Terminal Properties).

What Happens Next

What happens next depends on the client and network connection type you selected in the Setup Wizard:

- If you selected a protocol client, the configuration utility for the client starts.
- If you selected a dial-up connection, first the configuration utility for the protocol client starts and then the Dial-up Connection Wizard starts.

For information on using the Microsoft Terminal Server Client's connection wizard, see "Creating Connections to Terminal Server Hosts" on page 5-3. For information on using the Citrix ICA Client connection utility, see the *Citrix ICA Windows CE Client Quick Reference Card*. For information on using the Dial-up Connection Wizard, see "Creating Dial-up Connections" on page 5-11.

Note If any connections were defined before the Setup Wizard runs, a connection wizard or utility does not appear. Instead, the NCD ThinSTAR Connection Manager appears, listing the defined connections. (See “Starting a Connection” on page 5-24.)

CHAPTER 5
Creating Connections to Hosts

Every NCD ThinSTAR 300 includes three connection clients:

- Microsoft Terminal Server Client connects to Terminal Server hosts via RDP
- Citrix ICA Client connects to Citrix Winframe and MetaFrame hosts via ICA
- NCD Dial-up Client provides network transport through a modem for a protocol client (RDP or ICA)

This chapter describes configuring the clients included with each NCD ThinSTAR 300. For background on connections and clients, read “What Is a Connection?” on page 2-2 and “What is a Client?” on page 2-3.

Selecting a Client

You can select a client for creating a connection in either of the following ways:

- In the Setup Wizard, select a protocol client on the Client Selection screen (see “Select Client Software” on page 4-3). This sets the default client in the **NCD ThinSTAR Connection Manager > Configure > Add** dialog to the selected client.

Note After you have gone through the Setup Wizard once, it does not reappear unless you reset factory defaults. Resetting defaults has other effects. See “Resetting Factory Defaults” on page 6-3.

- On the Configure tab of the NCD ThinSTAR Connection Manager, click **Add**.

  The resulting New Connection dialog lets you select the client. See "Adding Additional Connections" on page 5-35.

  After you have run the Setup Wizard and created a connection, the Connection Manager is the window displayed when a host desktop or application is not on the screen.

  If the Configure tab is not displayed, see "Enabling/Disabling the Connection Manager's Configure Tab" on page 6-18.

Note Whether you are creating the initial connection right after the Setup Wizard runs or adding/editing connections in the Connection Manager, you use the same connection wizard.

Creating Connections

This section explains how to use the connection wizards to create connections for the Microsoft Terminal Server Client, Citrix ICA Client, and NCD Dial-up Client.

Creating Connections to Terminal Server Hosts

The Microsoft Terminal Server Client has a wizard for defining connections, the Windows Terminal Server (WTS) Connection Wizard. The Microsoft Terminal Server Client and the WTS Connection Wizard are documented in this section.

Start the WTS Connection Wizard

The way you create a connection to a Terminal Server host depends on the terminal's state.

If no connections were defined:

- When you finish the Setup Wizard, if no connections were previously defined and you selected the Microsoft Terminal Server Client as the default client, the WTS Connection Wizard appears automatically to ensure that you define at least one.
- When you start the terminal, if it has been configured (that is, the Setup Wizard was completed) and you selected the Microsoft Terminal Server Client, but no connections are defined, the WTS Connection Wizard appears automatically to ensure that you define at least one.

If connections were defined and you want to add more connections, in the Configure tab of the NCD ThinSTAR Connection Manager, click **Add**. In the resulting New Connection dialog box, select Microsoft Terminal Server Client. The WTS Connection Wizard starts.

The rest of this section describes creating a connection using the WTS Connection Wizard.

Specify Connection Name and Terminal Server Host

The WTS Connection Wizard's first screen is shown in Figure 5-1.

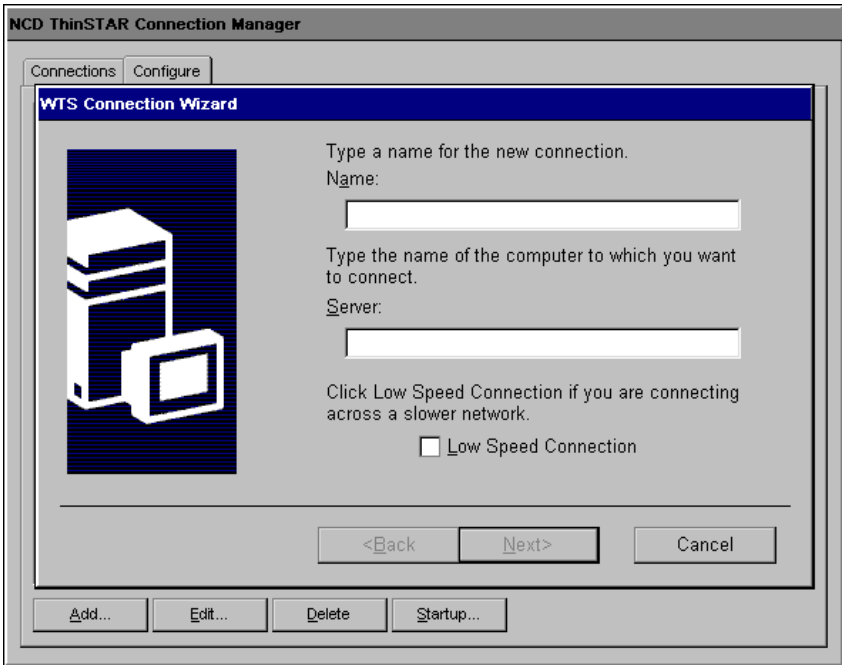


Figure 5-1 Specifying Connection Name and Server

Fill in the information as follows.

— Name

Enter text that clearly identifies the connection you are creating. This might be the name or a description of the Terminal Server to which it connects, for example Faustus or Lab 8, or perhaps the type of application or data provided by that server, for example, dBase or Finance. The name can have up to 32 characters.

— **Server**

Enter the IP address or, if DNS or WINS are enabled, the name of the Terminal Server host where you want this connection to log in.

If you specified a default domain when you configured DNS (see “Enable / Disable Name Resolution Services” on page 4-8), you can specify just the Terminal Server name here, for example AP_server.

However, if you did not specify a default domain, or if the DNS server is in a different TCP / IP domain from the terminal, then you must specify a Fully Qualified Domain Name here; for example, AP_server.acctg.biggcorp.com.

If neither DNS nor WINS is configured, you must use the IP address of the Terminal Server.

— **Low Speed Connection**

If the physical connection to the Terminal Server is through a low bandwidth line (WAN or serial line), rather than over an Ethernet cable, check this box.

3. Click **Next**.

Enable/Disable Automatic User Logon

The next WTS Connection Wizard screen allows you to enable or disable automatic user logon.

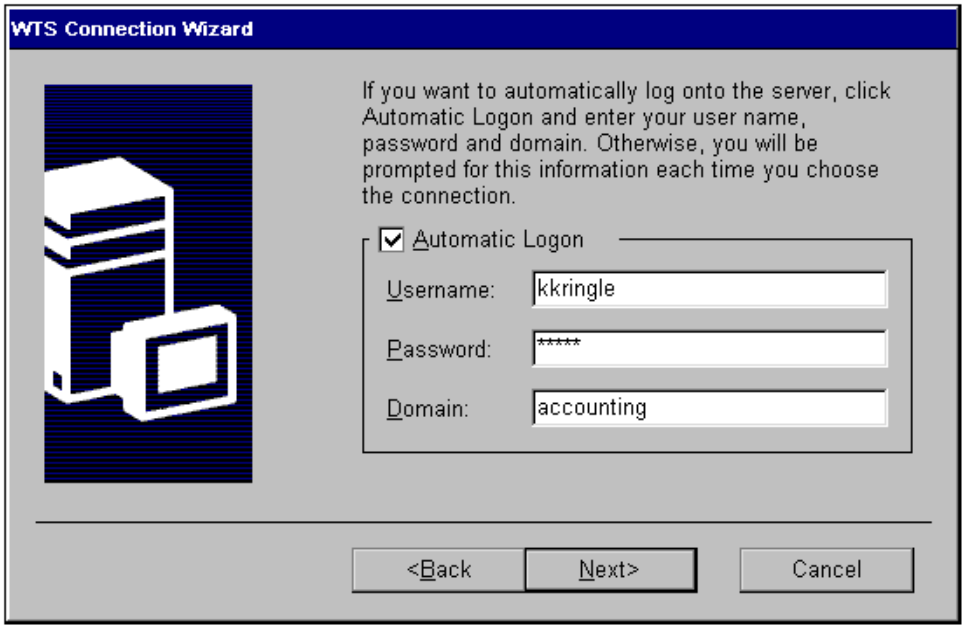


Figure 5-2 Enabling Automatic User Logon

By default, user login is not automatic; if you leave this screen in its default (disabled) state, all users must provide login data when using this connection.

If you want a particular user automatically logged on to the Terminal Server host when activating this connection, complete the following steps.

1. Check the **Automatic Logon** checkbox.
2. Supply the requested user and domain information.

Note Depending on your environment, automatic login may pose an unacceptable security risk. If so, leave this feature disabled.

— **Username**

Depending on what you enter for the Domain, Username is one of the following:

- User ID of a local user account set up on a particular Terminal Server.
- User ID of a global user account set up on a Domain Controller.

— **Password**

The password associated with the user ID specified above. Passwords are kept on the terminal in encrypted form.

— **Domain**

If the Terminal Server for which you are creating the connection belongs to a Windows NT domain, and the Primary Domain Controller is performing user authentication, enter the Windows NT domain name (for example, **`accounting`**).

However, if the Terminal Server is not a member of a Windows NT domain, or if you want user authentication performed locally on that server, enter the name of Terminal Server here.

3. Click **Next** to go to the next screen.

Choose Desktop or Application to Run at Login

The screen in Figure 5-3 lets you specify whether an application automatically starts when a connection is made.

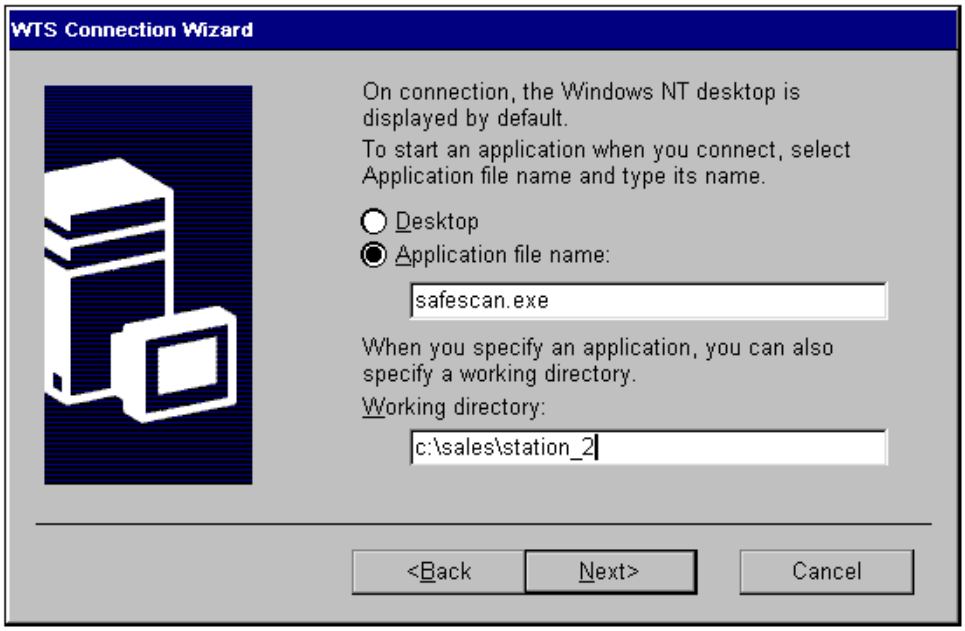


Figure 5-3 Choosing Whether to Run an Application at Login

1. Supply information as follows.

   — Desktop

   Select this option if you want the connection to display the entire Windows NT desktop.

   — Application file name

   Select this option if you want an application to start automatically as soon as the connection is made. If you select this option, the text box beneath this button becomes active. Enter the directory path and filename of the desired application.

If the path to the desired application is not specified in the Working Directory command on the Terminal Server host, you must specify the full pathname to it.

When a user activates this connection, the application starts automatically. When the user closes the application, the connection also terminates.

— **Working directory**

If you have specified an application for the connection to start, you can also specify the pathname to a working directory for it to start in. Any data files generated by the application are saved by default in the directory specified.

If you do not specify a working directory, data files are saved in the user's home directory on the host (as set in **Start > Programs > Administrative Tools > User Manager for Domains> User > Properties > Profile**).

2. Click **Next** to go to the next screen.

Finish Defining the Connection

To review or change settings made with the WTS Connection Wizard, click **Back**. To apply the settings, click **Finish**. The new connection is now included in the list of connections in the NCD ThinSTAR Connection Manager.

If the terminal is in dial-up mode and you have just created the first connection, the NCD Dial-up Client's connection wizard now starts. See "Creating Dial-up Connections" on page 5-11.

Creating Connections to WinFrame/MetaFrame Servers

The Citrix ICA Client can connect to Windows NT servers running Citrix WinFrame or MetaFrame. This client has a configuration utility for defining connections.

Start the ICA Connection Utility

How you create ICA connections depends on the state of the terminal.

If no connections are defined:

- When you finish the Setup Wizard, if no connections were previously defined and you selected the Citrix ICA Client, the connection utility displays automatically to ensure that you define at least one.
- When you start the terminal, if it has been configured (that is, the Setup Wizard was completed) and you selected the Citrix ICA Client, but there are no connections defined, the connection utility displays automatically to ensure that you define at least one.

If connections are already defined and you want to add more connections, on the Configure tab of the NCD ThinSTAR Connection Manager, click **Add**. In the resulting New Connection dialog box, select Citrix ICA Client. The connection utility displays.

Using the connection utility is explained in the *Citrix ICA Windows CE Client Quick Reference Card*.

Finish Defining the Connection

After you finish defining the connection, the new connection is included in the list of connections in the NCD ThinSTAR Connection Manager.

If the terminal is in dial-up mode and you have just created the first connection, the NCD Dial-up Client's connection wizard now starts. See "Creating Dial-up Connections" on page 5-11.

Configure Global Characteristics of the Citrix ICA Client

In the Terminal Properties property sheet, you can configure global properties of the Citrix ICA Client. For information on starting Terminal Properties, see Chapter 6. For specifics on the global properties, see the *Citrix ICA Windows CE Client Quick Reference Card*.

Creating Dial-up Connections

To place the terminal in dial-up mode, either:

- Select **Dial-Up Connection** in the Setup Wizard (see "Select Network Connection" on page 4-3)
- Select **Dial-Up Connection** in **Terminal Properties > Management > Network Options** (see "Select and Configure Dial-up Connection" on page 6-17)

The NCD Dial-up Client has a wizard for creating connections, the NCD Dial-Up Connection Wizard. The Dial-up Client and Dial-Up Connection Wizard are documented in this section.

The Dial-up Client works by providing the network connection over a modem. Once the connection is established, a protocol client connection (RDP, ICA, or an optional protocol client) can start. Therefore, you must configure at least one protocol client connection as well as a dial-up connection.

Note When an NCD ThinSTAR 300 starts in dial-up mode, the terminal checks to make sure there is at least one dial-up connection and one protocol connection defined. If either condition is not met, the terminal runs the appropriate wizard to allow the user to create a connection.

Start the Dial-Up Connection Wizard

How you create a dial-up connection depends on the terminal's state.

If no connections are defined:

- When you finish the Setup Wizard, if no connections were previously defined, the protocol client wizard or utility starts and you configure the protocol connection (either the Microsoft Terminal Server Client or the Citrix ICA Client). Next, the Dial-Up Connection Wizard starts and you configure the dial-up connection.
- When you start the terminal, if it has been configured (that is the Setup Wizard was completed), but the connections are not defined, the relevant protocol connection utility starts automatically to ensure that you define at least one connection. Next the Dial-Up Connection Wizard starts and you can configure the dial-up connection.

If connections are already defined and you want to add more connections, on the Configure tab of the NCD ThinSTAR connection manager, click **Add**. In the resulting New Connection dialog box, select NCD Dial-up Client.

Specify the Connection Name

The Dial-Up Connection Wizard's initial screen is shown in Figure 5-4.

Figure 5-4 Specifying the Connection Name

Every connection must have a name. To create a name for the connection, complete the following steps.

1. Type a name in the text entry box. This name might identify the host or the application provided by that host. The name can have up to 20 characters when you are defining the connection. Later, when you edit the connection from the Configuration Manager, the name can be extended to 32 characters.
2. Click **Next** to go to the next screen.

Selecting a Modem

In the screen shown in Figure 5-5, you select the modem type.

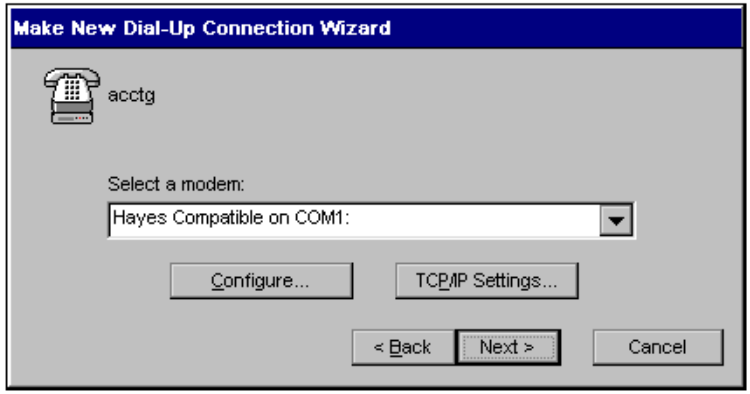


Figure 5-5 Select a Modem

To select a modem, complete the following steps.

1. Click the down arrow to display the list of modems and select a modem. Currently, Hayes Compatible is the only type listed.
2. Either click **Next** to continue to the next screen or click **Configure** or **TCP/IP Settings** to configure modem properties or TCP/IP settings.

Configuring Modem Properties

To configure the modem and modem port, complete the following steps.

1. In the modem selection screen, click **Configure** to configure the port settings and call options. The Device Properties screen shown in Figure 5-6 displays.

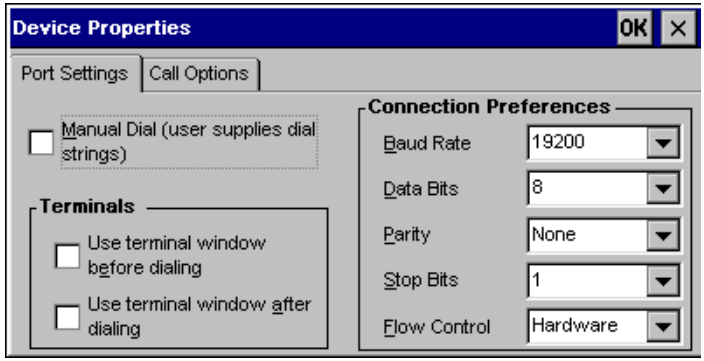


Figure 5-6 Configure Port Settings

2. Supply information as follows in the Port Settings tab shown in Figure 5-6:

— Manual Dial

If this option is enabled, the user can enter data and modem commands in a separate window during the dialing process. This window is provided by the Microsoft Windows RAS/TAPI subsystem. If this option is disabled, RAS dials the phone number and no window is displayed.

— Use terminal window before dialing

If this option is enabled, the user can enter modem commands before dialing the host computer.

— Use terminal window after dialing

If this option is enabled, the user can enter commands to the host computer after dialing is complete.

— Connection Preferences

Chose values from the drop-down lists as follows.

The following serial port parameters (baud rate, data bits, parity, and stop bits) determine the characteristics of the connection between the terminal and the modem and are automatically sensed by the modem. The modem uses these parameters to define the format of the data that it sends to the host and expects from the host.

Baud Rate—Determines the upper limit of the speed of the connection between the modem and the host. Select the highest speed available on the terminal's modem; the modem does not negotiate a connection higher than the baud rate you specify.

Data Bits—The number of data bits generated by the terminal and expected by the host.

Parity—The type of parity generated by the terminal and expected by the host.

Stop Bits—The number of stop bits generated by the terminal and expected by the host.

Flow Control—The type of flow control handshaking used on the terminal's serial port and expected by the host. You can select one of the following:

If you choose Hardware, hardware handshaking, also called DTR/DSR, is used.

If you choose Software, the terminal sends an XOFF (^S) character when the input buffer space is low and an XON (^Q) character when input buffer space is available. This is *not recommended* because noise on the line can introduce spurious XOFF characters than can cause the connection to freeze.

If you choose None, there is no flow control handshaking.

3. Supply information as follows in the Call Options tab shown in Figure 5-7.

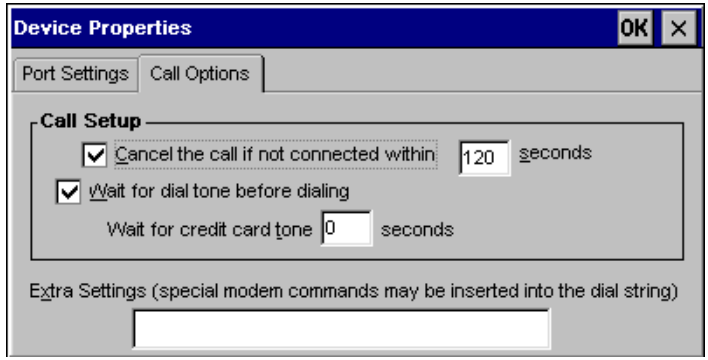


Figure 5-7 Configure Call Options

— Call Setup

Use these options as follows.

Cancel the call if not connected within *seconds*—This option cancels the call if it is not completed within the specified time. Set this to the amount of time you are willing to wait for the connection to occur.

Wait for dial tone before dialing—When this is enabled, the call does not go through until there is a dial tone. Disable this if you are making a direct serial connection between two modems and not using the phone line. With such a connection, there is never a dial tone.

Wait for credit card tone *seconds*—This option waits for the specified time before continuing the call to allow time for entering a credit card number.

— Extra Settings

You can enter modem commands here to override the default settings; for example, to turn on local echo, enter ‘E1’.

4. When you are finished with Device Properties, click **OK** to apply your changes or click **X** to cancel them.

Configuring TCP/IP Settings

To configure TCP / IP settings, complete the following steps.

1. In the modem selection screen, click **TCP/IP Settings** to configure TCP / IP. The TCP / IP Settings screen shown in Figure 5-8 displays.

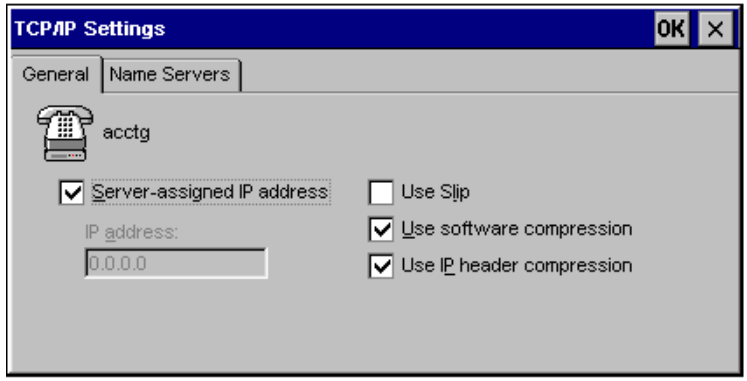


Figure 5-8 Configure TCP/IP Settings

2. In the General tab, supply information as follows:

— Server-assigned address

Select this item if your dial-in host supplies the terminal with an IP address. Uncheck this box and fill in the IP address field if the host does not supply an IP address. You may want to assign an address (if allowed by the server) for long-term, dedicated dial-up connections.

— Use SLIP

The default protocol is PPP. Enable this option if the dial-in server does not support PPP.

— **Use software compression**

Compression speeds up data transmission; however, it can only used if the terminal and the host use compatible compression methods. It should not be necessary to disable this option.

— **Use IP header compression**

Compression speeds up data transmission; however, it can only used if the terminal and the host use compatible compression methods. It should not be necessary to disable this option.

3. Supply information as follows in the Name Servers tab shown in Figure 5-9.

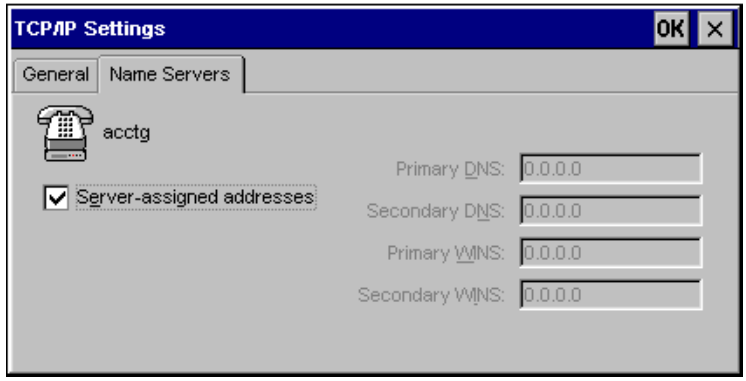


Figure 5-9 Configure Name Service

— **Server-assigned addresses**

When enabled, this option causes the Dial-up Client to accept from the dial-in server the IP addresses of the hosts providing name service. Select this item if your dial-in host supplies name resolution parameters to the terminal. Disable this option and enter the DNS and/or WINS name server host addresses if the PPP host does not provide name server information or you want to use different name server hosts.

— **Primary and Secondary DNS**

The IP address of the DNS server to which you want device names routed first for resolution and the IP address of the DNS server to which you want device names routed if the primary server fails to resolve them.

— **Primary and Secondary WINS**

The IP address of the WINS server to which you want device names routed first for resolution and the IP address of the WINS server to which you want device names routed if the primary server fails to resolve them.

4. When you have finished with the TCP/IP Settings screen, click **OK** to apply your settings or **X** to cancel them.
5. The main select modem screen redisplays. Click **Next** to go to the next screen.

Specifying the Telephone Number

In the screen shown in Figure 5-10, you specify the telephone number to dial.

Type the complete the phone number; for example:

```
9-1-650-555-1212
```

The phone number can have up to 128 characters.

Note Although hyphens improve readability, they are not required. In particular, if hyphens cause the number to exceed the 128-character limit, you should remove them.

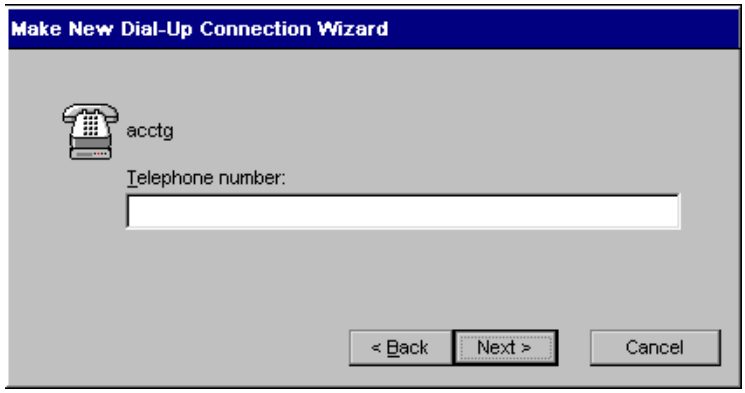


Figure 5-10 Specify the Telephone Number

To specify the telephone number, complete the following steps.

1. Type the complete phone number of the modem on the dial-in server.
2. Click **Next** to go to the next screen.

Configuring the Protocol Session

In the screen shown in Figure 5-11 you can optionally specify a protocol connection to start; the protocol connection starts automatically once the dial-up network connection is established. The drop-down list in this screen lists all of the protocol connections (RDP or ICA) that you have created.

If you don't select a protocol session, the user starts the Connection Manager and selects a protocol connection after starting the dial-up connection.

Figure 5-11 Specify the Session to Start

To specify the protocol connection to start and other options pertaining to the protocol connection:

1. Select a protocol connection or **<none>** from the drop-down list.
2. To automatically close the dial-up connection when the user logs off or disconnects from the protocol session, enable **Close dial-up connection at session end**. Otherwise, the dial-up connection remains open and the user can select another protocol session.
3. To erase the saved username and password, click **Forget Password**.

   This option is grayed-out and unselectable when the connection is first created. This option is enabled if the user has started the connection and elected to save the username and password. For more information about saving the username and password, see "Starting a Dial-Up Connection" on page 5-28.

Note Depending on your environment, saving the password may be an unacceptable security risk.

4. Click **Next** to go to the final screen.

Finish Defining the Connection

To review or change settings, click **Back**. To apply the settings and quit the wizard, click **Finish**.

The new connection is included in the list of connections in the NCD ThinSTAR Connection Manager.

Starting a Connection

Once connections have been defined on a terminal, the Connections tab of the NCD ThinSTAR Connection Manager lists them, as in Figure 5-12.

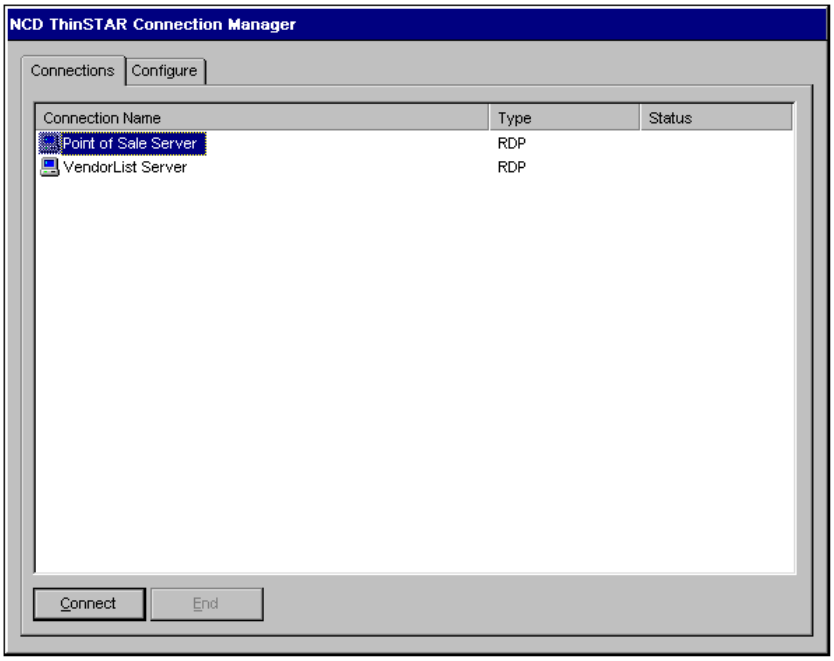


Figure 5-12 Connections Tab of the NCD ThinSTAR Connection Manager

Note To start a connection on a LAN, the terminal must be in LAN mode. To start a dial-up connection, the terminal must be in dial-up mode. To change the mode, see "Selecting the Connection Type" on page 6-16.

Starting a Microsoft Terminal Server Client Connection

To start a connection to a Terminal Server host:

1. On the Connections tab of the NCD ThinSTAR Connection Manager, select the desired RDP connection and click **Connect** or double click the connection.

   If the connection was correctly defined, and the Terminal Server it connects to is running, the NCD ThinSTAR 300 makes the connection to that server.
2. If the terminal could not make the connection, verify the following:

   — The connection specifies the Terminal Server correctly.

   — The Terminal Server is running.

   — The terminal is physically connected to the network.

   Make any needed changes, then try to make the connection again.
3. The Logon Information dialog box is displayed in either of the following cases:

   — The connection required the user to log on manually (see “Enable / Disable Automatic User Logon” on page 5-6).

   — The user account information in an automatic logon connection is incorrect or is not authenticated for that Terminal Server.
4. If the Logon Information dialog box is displayed, as in Figure 5-13, enter the user name and password, select the appropriate domain from the list, then click **OK**.

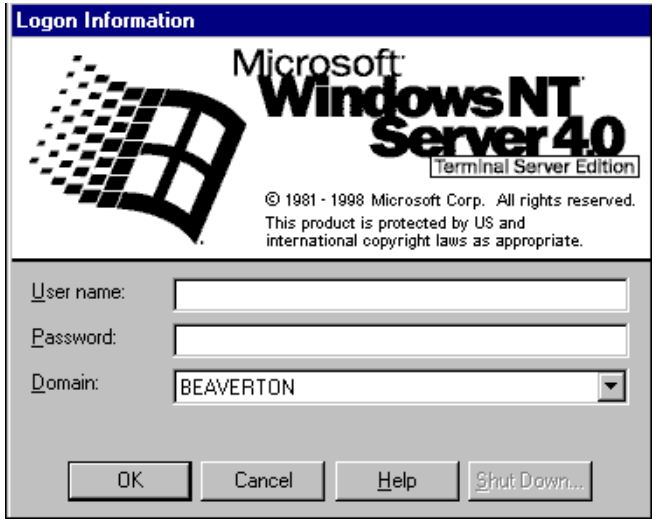


Figure 5-13 Windows NT Server Logon Dialog Box

5. If the connection was defined to start an application, that application starts running automatically. Otherwise, the host's desktop displays. (See "Creating Connections" on page 5-3.)

Starting a Citrix ICA Client Connection

To start a connection to a WinFrame or MetaFrame host:

1. On the Connections tab of the NCD ThinSTAR Connection Manager, select the desired ICA connection and click **Connect** or double click the connection.

   If the connection was correctly defined, and the host it connects to is running, the NCD ThinSTAR 300 makes the connection to that host.

2. If the terminal could not make the connection, verify the following:

   — The connection specifies the host correctly.

   — The host is running.

   — The terminal is physically connected to the network.

   Make any needed changes, then try to make the connection again.

3. A logon dialog box is displayed in either of the following cases:

   — The connection required the user to log on manually.

   — The user account information in an automatic logon connection is incorrect or is not authenticated for that host.

4. If a logon dialog box is displayed, enter the user name and password, select the appropriate domain from the list, then click **OK**.

5. If the connection was defined to start an application, that application starts running automatically. Otherwise, the host's desktop displays.

For details about configuring ICA connections, see the *Citrix ICA Windows CE Client Quick Reference Card*.

Starting a Dial-Up Connection

To start a dial-up connection:

1. The terminal must be in dial-up mode. See “Selecting the Connection Type” on page 6-16.
2. On the Connections tab of the NCD ThinSTAR Connection Manager, select a dial-up connection and click **Connect** or double-click the connection.
3. If the dial-up connection is successful, the **Connected to** *name* dialog box (*name* is the name of the dial--up connection) displays.
4. If the terminal could not make the dial-up connection, verify the following:
   — The connection is correctly configured.
   — The host is running.
   — The terminal is connected to a modem.
   Make any needed changes, then try to make the connection again.
5. The first time you use a dial-up connection, the **Connect to** *name* dialog box displays and you must log in. If you want to save the password on the terminal, click **Save Password**. The next time you start the dial-up connection, the logon dialup box does not display.

Note Saving the password may be an unacceptable security risk for your environment. To erase a saved password, edit the dial-up connection and enable **Forget Password**. See “Configuring the Protocol Session” on page 5-21 for more information.

6. The **Connected to** *name* dialog box displays.
   — If you selected a protocol session when defining the dial-up connection, the protocol session starts automatically.

— If you selected **<none>** for protocol session when defining the dial-up connection, when the **Connected to** *name* dialog appears, you must select a protocol client. Press **CTRL-ALT-END** to display the Connection Manager, select a protocol session, and click **Connect**.

7. A logon dialog box for the application host is displayed in either of the following cases:
   — The connection required the user to log on manually.
   — The user account information in an automatic logon connection is incorrect or is not authenticated for that host.
8. If a logon dialog box is displayed, enter the user name and password, select the appropriate domain from the list, then click **OK**.
9. If the connection was defined to start an application, that application starts running automatically. Otherwise, the host's desktop displays.

Stopping a Connection

This section explains how to end or suspend connections. You can stop or suspend connections on the host desktop or by quitting the application or you can stop connections in the NCD ThinSTAR Connection Manager.

Stopping a Terminal Server Connection on the Desktop

Via Start > Disconnect

On the Windows NT desktop, select **Start > Disconnect**. This logs you off, ends the connection, but leaves any open applications running. When you reconnect to that Terminal Server, the applications are in the same state as when you disconnected.

Disconnecting provides some convenience to users who want to log on to some other server, then return to the original server and continue their work.

As system administrator, however, be aware that if a given Terminal Server experiences excessive demands, it might be due to applications users have left running after disconnecting from the Terminal Server.

Via Start > Logoff

On the Windows NT desktop, select **Start > Logoff**. This closes any open applications, then logs you off and ends the connection.

Stopping a Winframe/MetaFrame Connection on the Desktop

See the *Citrix ICA Windows CE Client Quick Reference Card* for directions on stopping the connection on the desktop.

Stopping a Dial-up Connection

There are three possibilities when stopping a dial-up connection, depending on how the connection is configured.

- If you enabled **Close dial-up connection at session end** in the Dial-up Connection Wizard, when you log off or disconnect from the application host the dial-up connection automatically stops.
- If you chose a protocol session to start automatically but did not enable **Close dial-up connection at session end**, highlight the active dial-up session in the Connection Manager and click **End**.

  The protocol session disconnects or resets (depending on how the host is configured), and the dial-up connection stops.
- If you did not choose a protocol session to start automatically, when you log off or disconnect from the application host, the **Connected to** *name* dialog box displays. Click **Disconnect** to stop the dial-up connection.

  You can also highlight the active dial-up session in the Connection Manager and click **End**.

Stopping a Connection in the Connection Manager

It is best to disconnect or log off from the host desktop or the application. When this is not possible, the Connection Manager (Figure 5-14) provides an alternate means of disconnecting or terminating a connection.

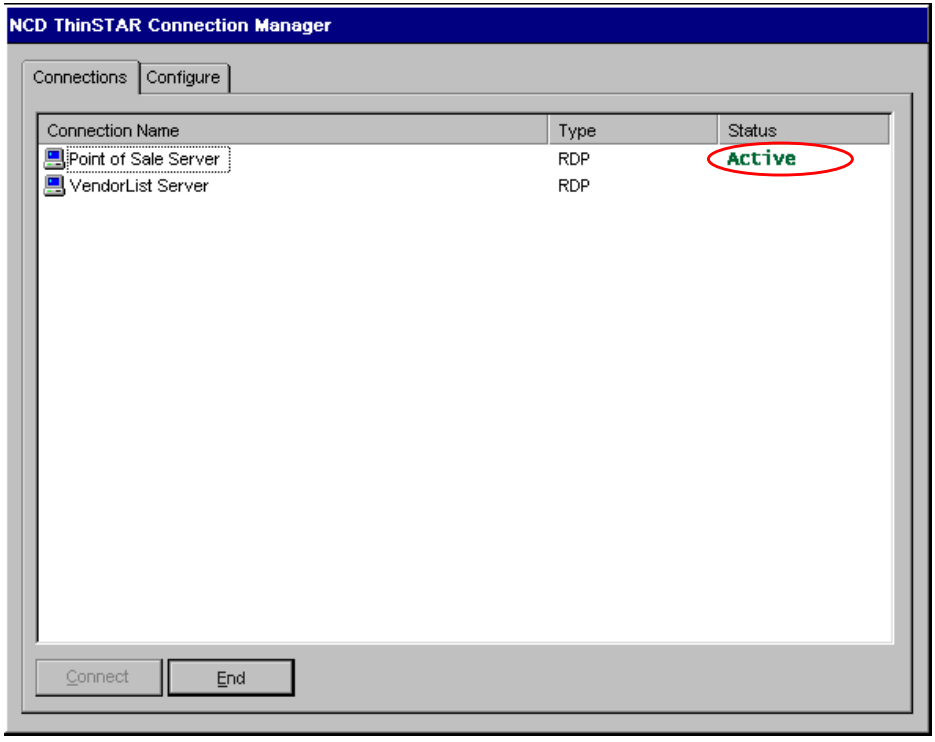


Figure 5-14 Stopping a Connection via the Connection Manager

1. On the Connections tab of the NCD ThinSTAR Connection Manager, select the connection you want to end. (If the Windows NT desktop is displayed, press **CTRL+ALT+END** to display the Connection Manager.) If a connection is currently running, it will be designated as “Active” in the Status column.

2. Click **End**.

   A message box on the Windows NT desktop confirms the request to disconnect the session.

   Click **OK** to disconnect the session. If you do not respond or there is a problem with the Windows session, another dialog box allows you to terminate the session immediately. If this occurs, click **End Task** to terminate the connection immediately.

Managing Connections

Using the Configure tab of the NCD ThinSTAR Connection Manager, you can perform the following connection management operations:

- Adding additional connections
- Modifying existing connections
- Deleting existing connections
- Designating a connection as the default connection or as a connection that is started automatically

These operations are described in the following sections.

By default, the NCD ThinSTAR Connection Manager Configure tab is displayed, making it easy to modify the connection setup at a terminal. After you have created connections for your users, you can hide the Configure tab so that users cannot modify the connection setup of a terminal. To hide the Configure tab, see "Enabling / Disabling the Connection Manager's Configure Tab" on page 6-18.

The NCD ThinSTAR Connection Manager is visible on the terminal screen whenever no connection is running. To make it appear when a connection is running, press **CTRL+ALT+END**.

Adding Additional Connections

To create a new connection (when at least one other connection has already been defined on the terminal), complete the following steps.

1. On the Configure tab of the NCD ThinSTAR Connection Manager, click **Add**. See Figure 5-15.

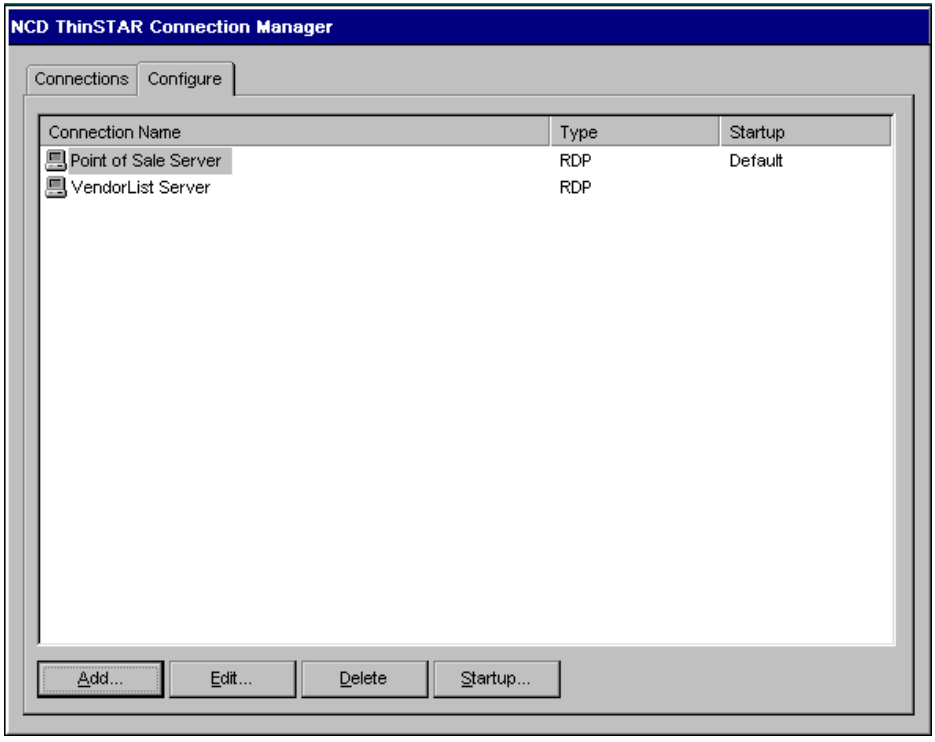


Figure 5-15 Adding a New Connection

If the Configure tab is not displayed, see "Enabling / Disabling the Connection Manager's Configure Tab" on page 6-18.

2. From the drop-down list in the New Connection dialog box (Figure 5-16), select the client you want this connection to use.

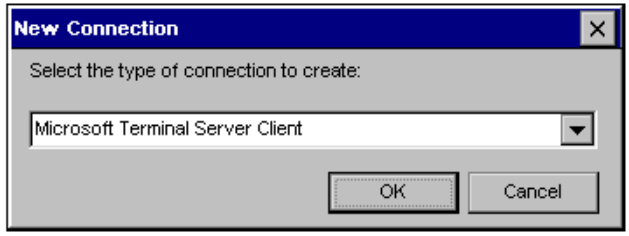


Figure 5-16 Selecting the Client

3. Click **OK**.
4. Most client software provides a wizard or utility for defining a new connection.

   For details on defining a new connection using the Microsoft Terminal Server Client, see “Start the WTS Connection Wizard” on page 5-3.

   For information on defining a new connection using the Citrix ICA Client, see “Creating Connections to WinFrame / MetaFrame Servers” on page 5-10 and the *Citrix ICA Windows CE Client Quick Reference Card*.

   For details on creating a new dial-up connection, see “Creating Dial-up Connections” on page 5-11.

Designating the Default Connection

The default connection is the one highlighted when the terminal powers on and displays the NCD ThinSTAR Connection Manager. To designate a connection as the default, complete the following steps.

1. On the Configure tab of the Connection Manager, select the connection to designate as the default.

   If the Configure tab is not displayed, see "Enabling / Disabling the Connection Manager's Configure Tab" on page 6-18.

2. Click **Startup**.
3. In the Connection Startup dialog box, click **Make the selected connection your default connection** (see Figure 5-19).

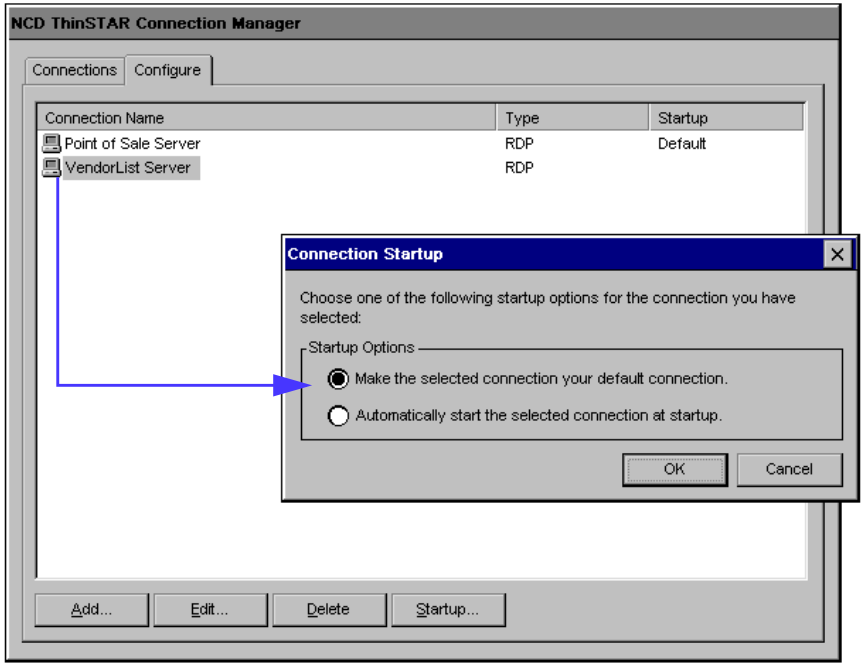


Figure 5-17 Designating the Default Connection

Designating the Autostart Connection

You can configure a connection to start automatically each time a user starts up the NCD ThinSTAR 300. To do this, complete the following steps.

1. On the Configure tab of the NCD ThinSTAR Connection Manager, select the connection you want to start automatically.

   If the Configure tab is not displayed, see "Enabling/Disabling the Connection Manager's Configure Tab" on page 6-18.

2. Click **Startup**.
3. In the Connection Startup dialog box, click **Automatically start the selected connection at startup**, which is shown in Figure 5-18.
4. If you selected a dial-up connection as the autostart connection, you should associate a protocol connection with the dial-up connection to provide true automated connection startup. If you don't, the user has to start the protocol connection manually.

   To associate a protocol connection with the dial-up connection:

   a. In the Configure tab of the Connection Manager, select the dial-up connection and click **Edit**.
   b. The Dial-Up Connection Wizard starts and you can navigate to the screen that offers protocol connections to start.

   For more information, see "Creating Dial-up Connections" on page 5-11.

Note Designating an autostart connection makes it the default connection, as well. Conversely, designating a connection as the default makes any autostart connection revert to non-autostart status.

Note When the user logs off the autostart connection, the connection immediately restarts. See “Stopping the Autostart Connection” on page 5-40.

Note Make sure that the autostart connection corresponds to the network connection mode of the terminal (LAN or dial-up). If the autostart connection does not correspond to the network connection mode, the connection attempt fails. If you need to change the mode, see “Selecting the Connection Type” on page 6-16.

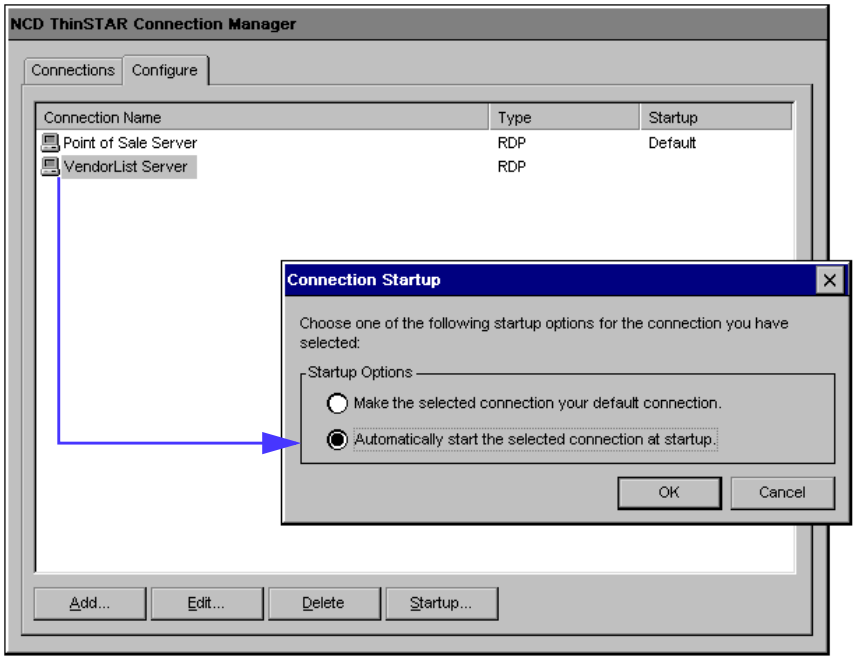


Figure 5-18 Designating the Autostart Connection

Stopping the Autostart Connection

If you are in "automatic startup" mode when you end the connection by closing the Windows NT desktop or logging off (see "Designating the Autostart Connection" on page 5-38), the connection to the same server is restarted automatically. To prevent this, complete the following steps.

1. Press **CTRL+ALT+END** to go to the NCD ThinSTAR Connection Manager.
2. Go to the Configure tab.
3. Disable the autostart setting for the current connection by making the connection designated as "Autostart" the default connection.

   See "Designating the Default Connection" on page 5-37.
4. To return to your running connection, go to the Connections tab of the NCD ThinSTAR Connection Manager and select the "Active" connection.
5. Click **Connect**.

Modifying a Connection

To modify attributes of an existing connection, complete the following steps.

1. On the Configure tab of the NCD ThinSTAR Connection Manager, select the connection you want to modify.

   If the Configure tab is not displayed, see "Enabling / Disabling the Connection Manager's Configure Tab" on page 6-18.

2. Click **Edit**, as shown in Figure 5-19.

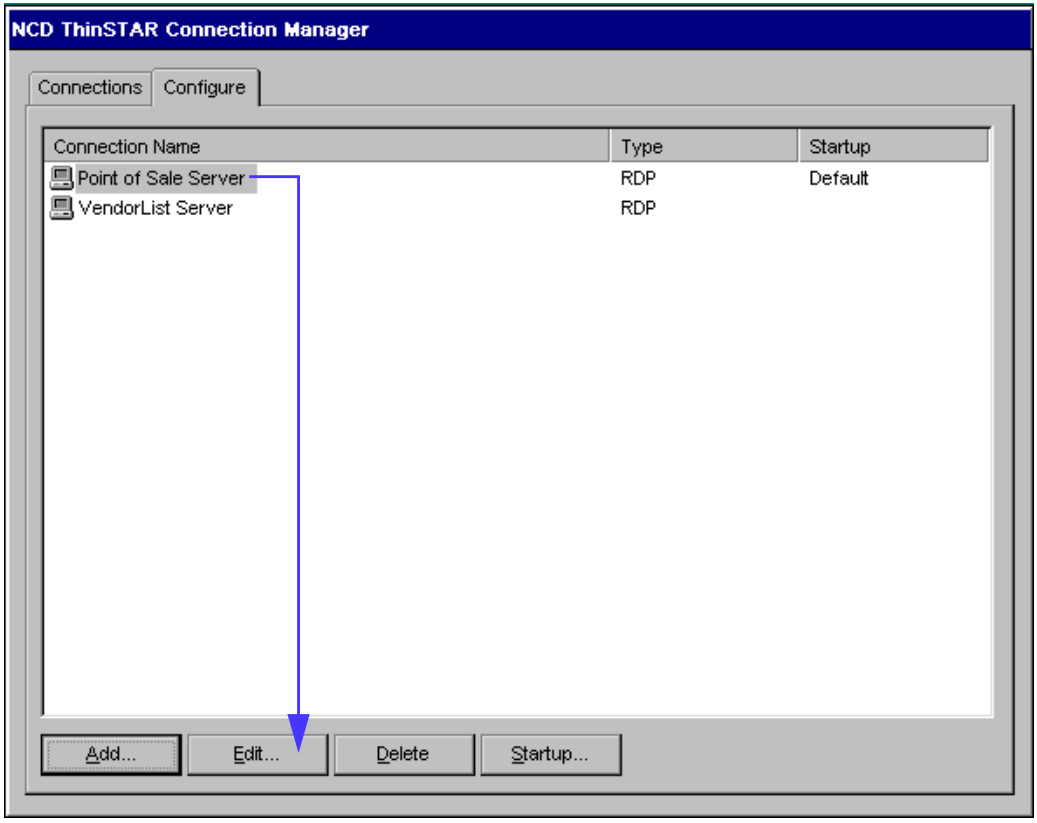


Figure 5-19 Modifying a Connection

3. The client's utility for modifying a connection displays. Make the desired changes, as described in the following sections.

   Note You cannot modify an active connection. You must stop the connection first.

Modifying a Microsoft Terminal Server Client Connection

To modify attributes of a Microsoft Terminal Server connection, complete the following steps.

1. On the Configure tab of the NCD ThinSTAR Connection Manager, select the desired RDP connection.
2. Click **Edit** to display the Properties screen (see Figure 5-20).

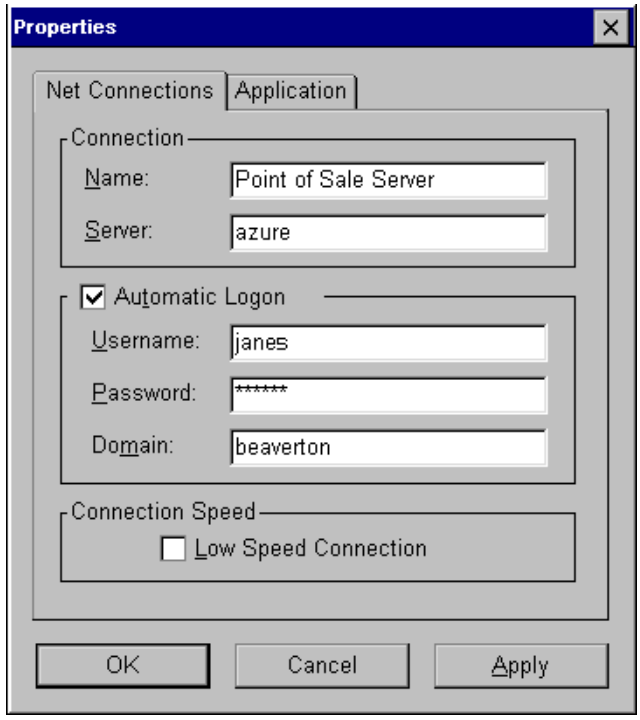


Figure 5-20 Changing Connection Characteristics

3. On the Net Connections tab, change the following attributes as needed.

   — **Name**

   Enter text that clearly identifies the connection you are creating. This might be the name or a description of the Terminal Server host, for example **Faustus** or **Lab 8**, or perhaps the type of application or data provided by that server, for example, **dBase** or **Finance**.

   — **Server**

   The IP address or, if DNS or WINS is running and enabled, the name of the Terminal Server.

   If you specified a default domain when you configured DNS (see "Enable / Disable Name Resolution Services" on page 4-8 or "Reconfiguring Name Resolution" on page 6-11), you can specify just the Terminal Server name here, for example AP_server.

   However, if you did not specify a default domain, or if the DNS server is in a different TCP / IP domain from the NCD ThinSTAR 300, then you must specify a Fully Qualified Domain Name here, such as, **AP_server.acctg.biggcorp.com**.

   — **Username**

   Depending on what you enter for the Domain, Username is one of the following:

   - User ID of a local account set up on a particular Terminal Server.
   - User ID of a global account set up on a Domain Controller.

— **Password**

The password associated with the user ID specified above. Passwords are kept on the terminal in encrypted form.

— **Domain**

If the Terminal Server host belongs to a Windows NT domain, and you want users authenticated by the Primary Domain Controller, enter the Windows NT domain name (for example, **`accounting`**).

However, if the Terminal Server host is not a member of a Windows NT domain and/or you want users authenticated locally on that server, enter the name of the Terminal Server here, for example, **`AP_Server`**.

— **Low Speed Connection**

If the physical connection to the Terminal Server host is through a low bandwidth line (WAN or serial line), rather than over an ethernet cable, check this box.

4. If you want to change whether the connection starts an application after logon, or which application starts, select the Application tab, shown in Figure 5-21.

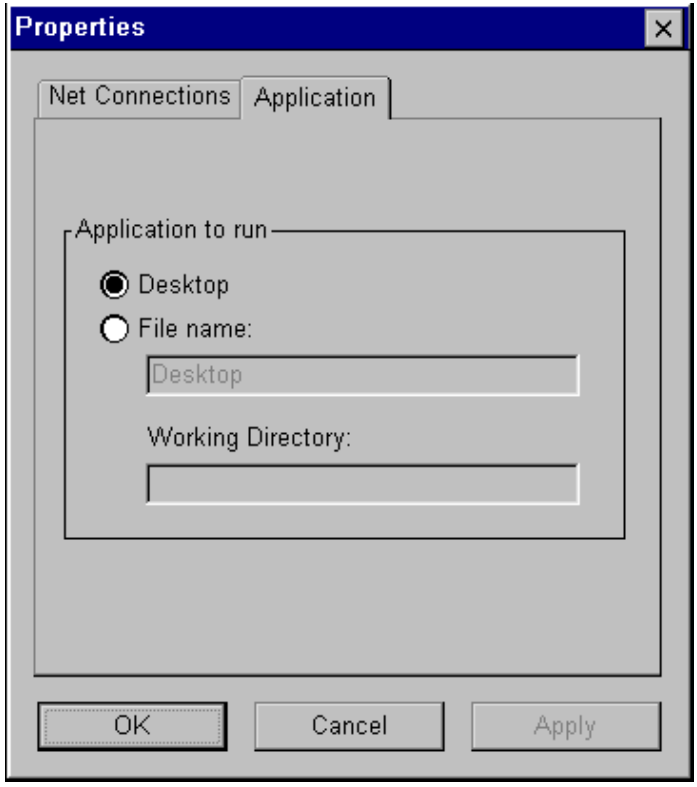


Figure 5-21 Setting Application Startup

5. On the Application tab, change the following characteristics as needed.

— Desktop

Select this if you want the standard Windows NT desktop to appear when connecting to the Terminal Server.

— File name

Select this if you want an application to start as soon as the terminal connects. In the File name text box, enter the name of the application's executable file.

If the path to this file is not specified in the Path command on the Terminal Server, you must specify the full pathname and filename of the application here, for example:

C:\Program Files\Netscape\Netscape.exe.

— **Working Directory**

If you specified an application to start, enter the path to the directory where you want application data files saved by default.

If you do not specify a working directory, data files are saved in the user's home directory on the Terminal Server.

6. Click **OK**.

Modifying a Citrix ICA Client Connection

To modify the attributes of an ICA connection:

1. On the Configure tab of the NCD ThinSTAR Connection Manager, select the desired ICA connection.
2. Click **Edit** to display the client's configuration utility.
3. To change attributes, follow the directions in the *Citrix ICA Windows CE Client Quick Reference Card*.

Modifying a Dial-up Connection

To modify the attributes of a dial-up connection:

1. On the Configure tab of the NCD ThinSTAR Connection Manager, select the desired dial-up connection.
2. Click **Edit** to display the Edit Dial-Up Connection Wizard.
3. Change attributes as desired. See "Creating Dial-up Connections" on page 5-11 for background information on the screens and choices.

Deleting a Connection

To delete an existing connection, complete the following steps.

1. On the Configure tab of the NCD ThinSTAR Connection Manager, select the connection you want to delete.
2. Click **Delete** (see Figure 5-22).

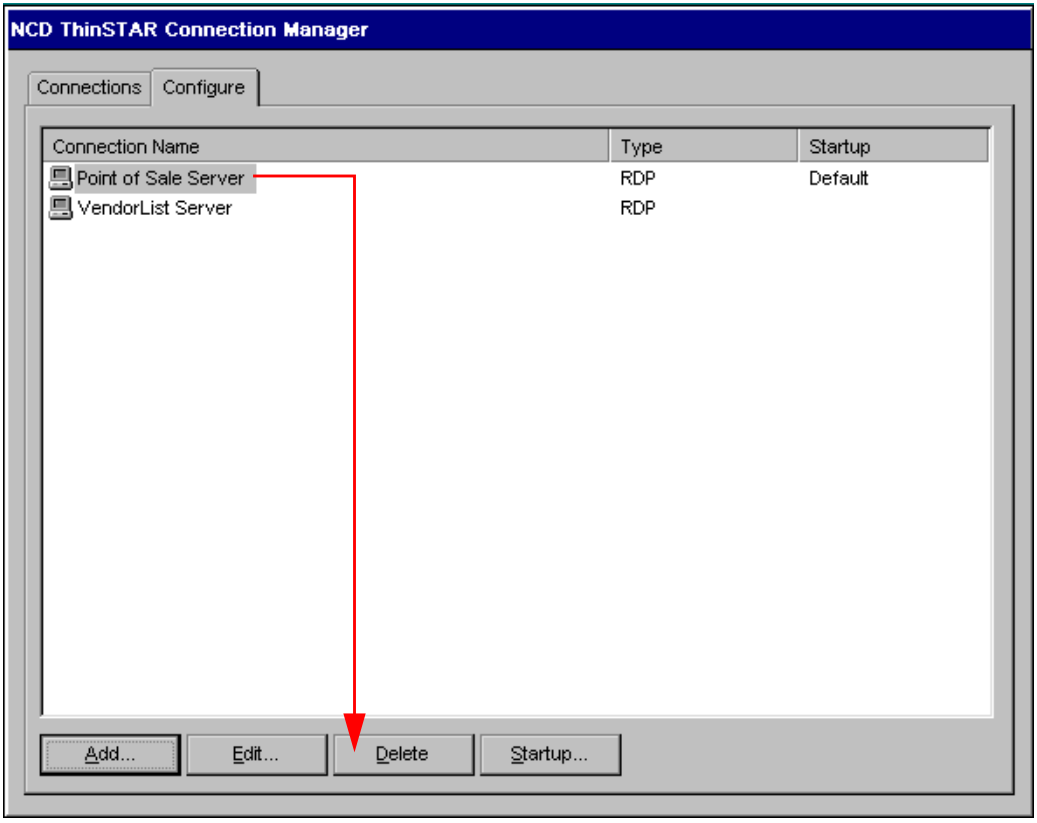


Figure 5-22 Deleting a Connection

CHAPTER 6
Configuring the NCD ThinSTAR 300 via Terminal Properties

When you start an NCD ThinSTAR 300 the first time, or reset factory defaults, or when the terminal recovers flash software, the NCD ThinSTAR Setup Wizard leads you through the process of setting essential parameters, including the IP address, name resolution, and display characteristics (see Chapter 4).

After you have performed initial configuration through the NCD ThinSTAR Setup Wizard, you can modify configuration settings through the Terminal Properties property sheet, shown in Figure 6-1.

Displaying and Using Terminal Properties

You display the Terminal Properties property sheet by pressing **CTRL+ALT+END** to go to the NCD ThinSTAR Connection Manager, then pressing **F2**.

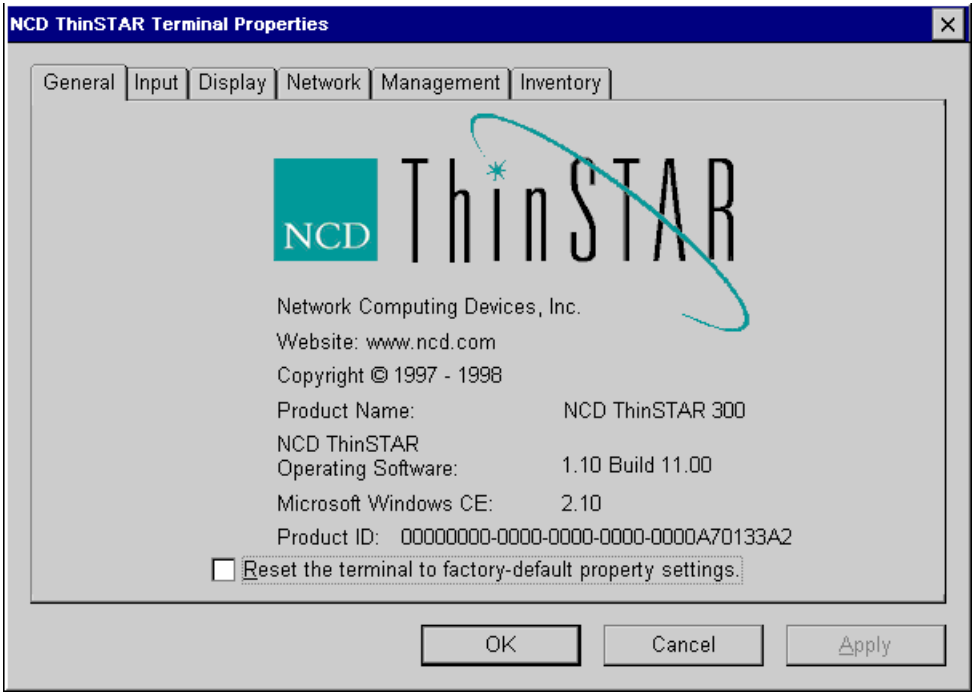


Figure 6-1 Terminal Properties General Tab

In Terminal Properties, you can do the following:

- Reset the terminal to factory defaults.
- Change keyboard and mouse attributes.
- Change display characteristics.
- Change the terminal's network information.
- Change name resolution settings.
- Specify the server from which to get software updates.
- Enable / disable display of connection configuration options in the NCD ThinSTAR Connection Manager.
- Check hardware and software status of the terminal.

When you finish viewing or modifying configuration settings in the Terminal Properties property sheet, do one of the following:

- Click **Apply** to apply changes you have made without closing the dialog box.
- Click **OK** to apply the changes and close the dialog box.
- Click **Cancel** to close the dialog box without applying any changes.

If the **OK** and **Apply** buttons are grayed-out, a password has been set to prevent users from modifying the terminal's configuration. To modify the configuration when a password is set, complete the following steps.

1. Display Terminal Properties.
2. Select the Management Tab.
3. Click **Security**. The Enter Password dialog box displays.
4. Enter the password in the **Password** field and click **OK**.

The rest of this section explains how to perform the configuration tasks. They are discussed in the same order as the tabs that support them on the Terminal Properties property sheet.

Resetting Factory Defaults

NCD has set default configuration values, which you can restore. Resetting default configuration values does not remove connections.

Table 6-2 explains the results of resetting factory defaults on the fields in Terminal Properties.

Table 6-2 Results of Resetting to Factory Defaults

Tab or Button	Attribute	Default Setting
General		No effect.
Input	Keyboard	English (United States).
	Mouse	Right-handed.
	Character Repeat	The shortest delay and midway between the fastest and the slowest rate.
Display	Desktop Area and Refresh Frequency	Best Available Using DDC.
	Screen Saver	Enabled, with a timeout of 20 minutes.
Network **Advanced Network**	IP Address Assignment	Obtain addresses from a DHCP server. Any existing IP address entries are removed.
	Enable DNS	Filled with data obtained from DHCP.
	Enable WINS	Filled with data obtained from DHCP.
Management	Server	Empty; broadcast to subnet for an NCD ThinSTAR Management Service (TMS).
	Client	Microsoft Terminal Server Client.
	Connection Hot Keys	Enable the connection hot keys.
	French Terminal Server	Disallow connections to the French version of Terminal Server.
	Configure Tab	Display the NCD ThinSTAR Connection Manager Configure tab.
	Network Options	LAN connection with automatically sensed network speed.
	Security	No password set initially; existing password retained.
Inventory	Network information	Reports IP address changes caused by reset to defaults on Network tab and Display tab.

To return the configuration of an NCD ThinSTAR 300 to the default values set at the factory, complete the following steps.

1. Display Terminal Properties.
2. Select the General tab.
3. Check **Reset** near the bottom of the dialog box and click **OK**.
4. Answer Yes to the subsequent dialog box stating that you must restart the NCD ThinSTAR 300. When you restart the terminal, the Setup Wizard starts.

   See Chapter 4 for information about the Setup Wizard.

Modifying Keyboard and Mouse Characteristics

1. Display Terminal Properties.
2. Select the Input tab, shown in Figure 6-3.

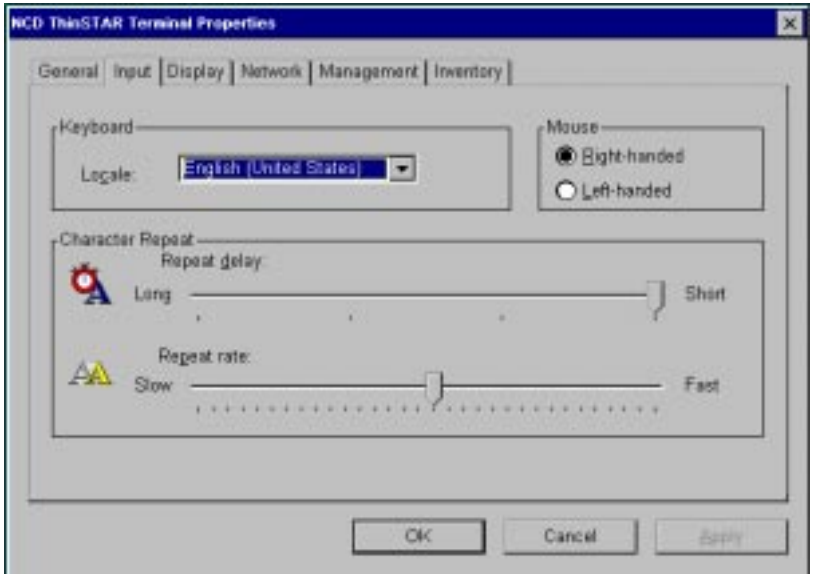


Figure 6-3 Modifying Mouse and Keyboard Behavior

3. Modify the following attributes as desired.

   — **Keyboard**

   From the Locale list box, select the desired keyboard type. Applied changes are effective immediately.

   — **Mouse**

   Select Right- or Left-handed. Applied changes are effective immediately. To click **OK** or **Apply**, use the left mouse button if you selected Right-handed, and use the right mouse button if you selected Left-handed.

   — **Character Repeat**

   This affects what happens when you continue holding down a key.

   Under **Repeat delay**, move the slider to indicate how long you want a key to be held down, before it starts repeating.

   Under **Repeat rate**, move the slider to indicate how quickly you want the character to repeat when you hold a key down.

Modifying Display Appearance

If the screen is unreadable when you turn on the NCD ThinSTAR 300, its monitor settings (desktop area or refresh frequency) are incorrect.

To boot at 640 x 480 60 Hz, power on the terminal and press **F5** when you see the progress bar on the NCD logo screen. (Cycle the power if necessary to display the logo and progress bar.) This starts the terminal in “Safe Boot Mode.”

The monitor may support a better desktop area (resolution) and frequency than the default or “Safe Mode” setting.

If the terminal restarts the Setup Wizard, it gives you the opportunity to try alternate monitor settings. See “Choose Display Resolution” on page 4-10.

Otherwise, to try alternate monitor settings, complete the following steps.

1. Display the Terminal Properties property sheet.
2. Select the Display tab, shown in Figure 6-4.

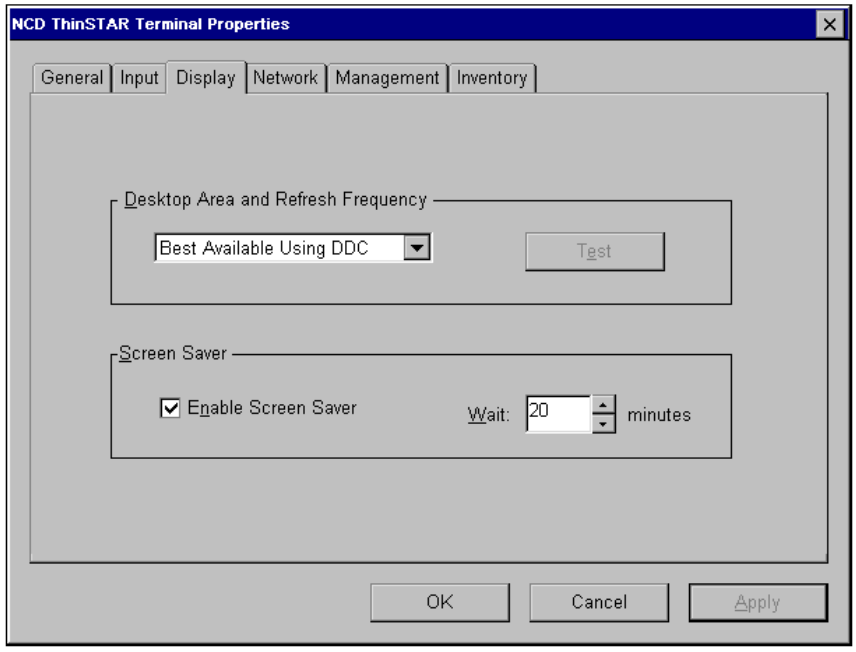


Figure 6-4 Modifying Desktop Size and Refresh Frequency

3. Modify the following attributes as desired.

— Desktop Area and Refresh Frequency

From this list box, select the desired size of the Windows NT session window and the rate at which the display is refreshed. The default is to use DDC to establish the optimal setting automatically. (For

background information, see "Choose Display Resolution" on page 4-10.)

— **Enable Screen Saver**

By default this box is checked, causing the screen to have a blank screen saver after the terminal has been idle for a specified period. If you do not want a screen saver, clear this box.

— **Wait** *n* **Minutes**

Enter the number of minutes the terminal is idle before the screen saver is used.

4. If you changed the **Desktop Area and Refresh Frequency** setting from its current value, click **Test**.

   A distorted or partially visible test grid indicates that your monitor does not support that setting. Click **No** on the subsequent dialog box, then try a different setting.

   When the test grid is acceptable, click **Yes** on the subsequent dialog box.

5. If the Terminal Settings Change dialog box appears, click **Apply** or **OK** to put the new setting into effect, then reboot the terminal by clicking **Yes**.

Specifying the IP Address Mode

Every NCD ThinSTAR 300 needs a valid IP address to identify itself to the network (see "TCP/IP Internet Domains" on page 2-8 and "Network Services" on page 2-5). The NCD ThinSTAR 300 supports dynamic IP assignment through DHCP, or manual assignment of a static IP address.

Note If the terminal is in dial-up mode, IP information is obtained from the dial-up connection; therefore you cannot select DHCP or enter static IP addresses. Any settings you make when the terminal is in

LAN mode, however, are preserved. To change the network connection mode, see “Selecting the Connection Type” on page 6-16.

Enabling DHCP to Assign IP Addresses

If the terminal is not using DHCP, but you want it to, complete the following steps.

1. Display the Terminal Properties property sheet.
2. Select the Network tab, shown in Figure 6-5.

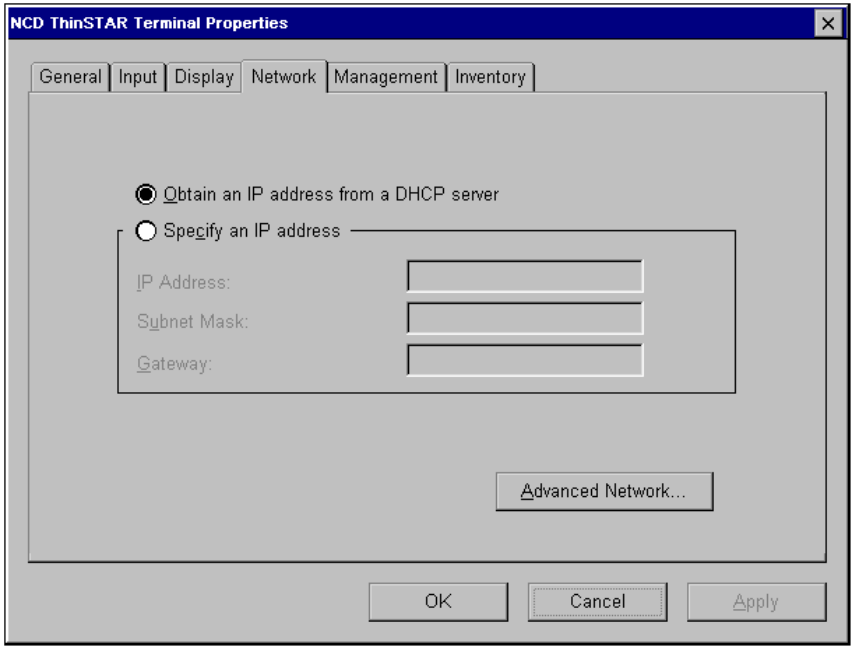


Figure 6-5 Network Tab

3. Select **Obtain an IP address from a DHCP server**.
4. Click **OK**.

Manually Assigning Static IP Addresses

DHCP, which is enabled on the terminal by default, obtains an IP address from a pool each time it is powered on (see "Network Services" on page 2-5). If you want to disable DHCP and assign the terminal's IP address and other addresses, complete the following steps.

1. Display the Terminal Properties property sheet.
2. Select the Network tab (Figure 6-5).
3. Select **Specify an IP address**.
4. In the text boxes, specify the following network data for the terminal:

   — **IP Address**

   Required. The four-byte address that identifies the NCD ThinSTAR 300 to the network.

   — **Subnet Mask**

   Required. The four-byte value that identifies the part of the IP address that designates networks, and the part that designates specific machines. This value is used to partition networks into smaller subnets.

   — **Gateway**

   Optional. The four-byte value that identifies the machine through which a subnet communicates with another network.
5. Click **Apply** or **OK**.

Reconfiguring Name Resolution

To change whether and how hostnames used in connections are resolved to IP addresses, complete the following steps.

Note If the terminal is using DHCP, values supplied by DHCP are grayed out; you cannot change them. You can change values that are not supplied by DHCP.

1. Display the Terminal Properties property sheet.
2. Select the Network Tab.
3. Select **Specify an IP Address**.
4. Provide the required IP information.

   — IP Address

   Required. The four-byte address that identifies the NCD ThinSTAR 300 to the network.

   — Subnet Mask

   Required. The four-byte value that identifies the part of the IP address that designates networks, and the part that designates specific machines. This value is used to partition networks into smaller subnets.

   — Gateway

   Optional. The four-byte value that identifies the machine through which a subnet communicates with another network.

5. Click **Advanced Network** to display the Advanced Network Settings dialog box, shown in Figure 6-6.

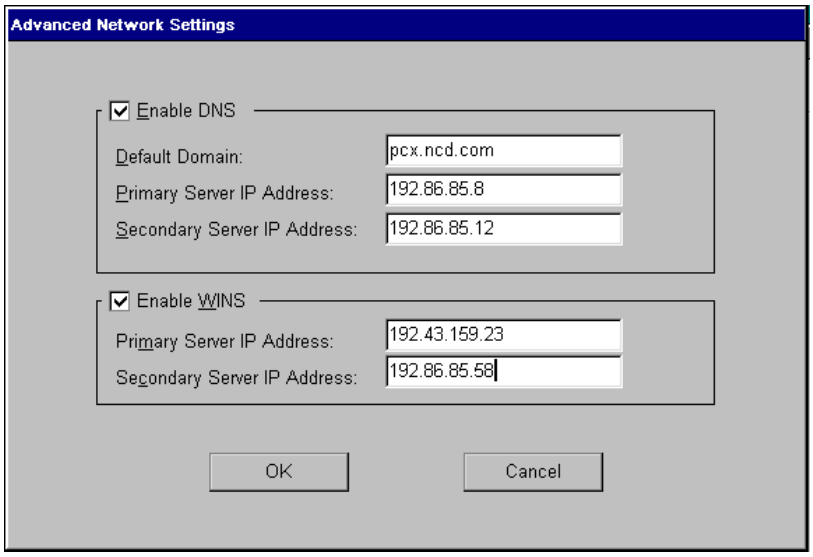


Figure 6-6 Enabling/Disabling Name Resolution Services

6. Check or clear the following boxes as desired.

   — Enable DNS

   Tells the NCD ThinSTAR 300 to use the Domain Name System to resolve computer names. (If you are using DHCP to supply IP information, the DNS area is filled with information supplied by your DHCP server.)

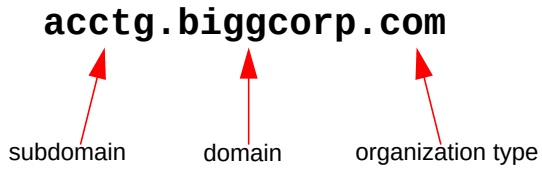
   — Enable WINS

   Tells the NCD ThinSTAR 300 to use the Windows Internet Naming Service to resolve computer names. (If you are using DHCP to supply IP information, the WINS area is filled with information supplied by your DHCP server.)

   For background on these services, see "Enable / Disable Name Resolution Services" on page 4-8.

7. In the text boxes under the service(s) you have checked, enter the following information as appropriate for each.

   Default Domain (applies to DNS only)
   This name identifies the TCP/IP domain in your network within which the DNS server resides. For example:



   Specifying a default domain lets users specify a connection using a hostname instead of an FQDN (Fully Qualified Domain Name). For example, **`AP_server`**, rather than **`AP_server.acctg.biggcorp.com`**.

   Enabling DNS on this dialog box assumes a DNS service is available and has been properly configured (see page 3-6). The DNS server can be either a Windows NT or UNIX host.

   — Primary Server IP Address

   The IP address of the DNS or WINS server to which you want device names routed first for resolution.

   Windows NT includes WINS, but it must be properly configured. Enabling WINS on this dialog box assumes this has been done (see page 3-6).

   — Secondary Server IP Address

   The IP address of the DNS or WINS server to which you want device names routed if the primary server fails to resolve them.

8. Click **Apply** or **OK**.

Designating the Software Update Server

The NCD ThinSTAR Management Service (TMS), automatically updates the NCD ThinSTAR Operating Software residing on the terminals. TMS can be installed on any Windows NT server in your network. See Chapter 7 for details.

By default, the **ThinSTAR Management Service Server** field is empty and the terminal broadcasts on the network to locate a TMS server. In the following situations, you may want to configure the terminal for a specific TMS server by entering the name or IP address of the TMS server in the **Server** field:

- **The TMS server and terminal are on different subnets.**

  Most broadcasts are only delivered to the local subnet, so you must specify the TMS server when it is not on the same subnet as the terminal.

- **Multiple TMS servers are installed on the terminal's subnet.**

  Specifying the TMS server ensures that the terminal receives software updates from the desired server.

To designate the software update server, complete the following steps.

1. Display the Terminal Properties property sheet.
2. Select the Management tab, shown in Figure 6-7.

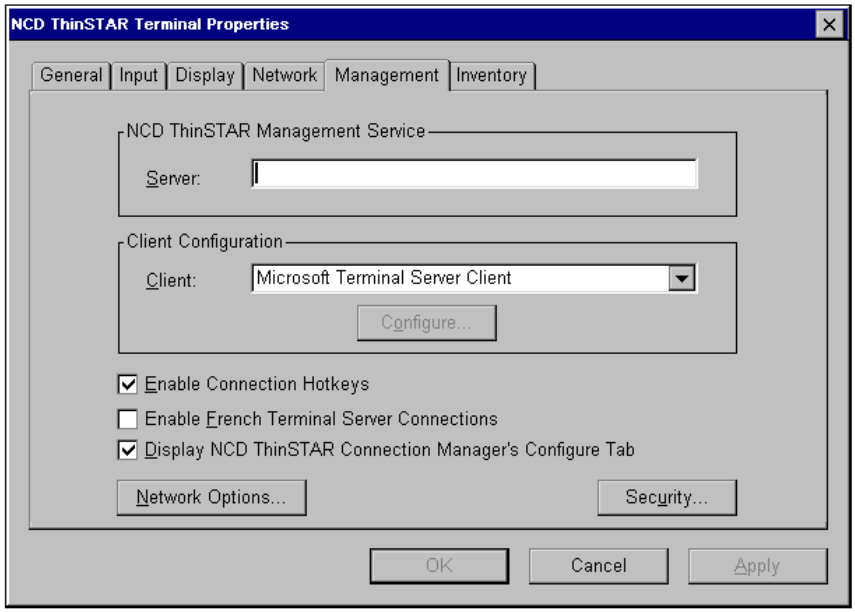


Figure 6-7 Management Tab

3. Enter the IP address (or, if name resolution service is available, the name) of the TMS server where you want this terminal to get updates of the NCD ThinSTAR Operating Software. This feature also allows you to specify a TMS server on a different subnet, as long as a gateway has been defined.
4. Click **Apply** or **OK**.

Configuring Client Software

Some clients, such as the Citrix ICA Client, have globally configurable characteristics. To configure the client software, complete the following steps.

1. Display the Terminal Properties property sheet.
2. Select the Management tab (Figure 6-7).
3. From the Client list, select the client you want to configure.

   If the client is configurable, **Configure** is enabled.
4. Click **Configure** to set global options for the client.

   The client software displays its configuration dialog box.

   For information about the Citrix ICA Client dialog box, see the *Citrix ICA Windows CE Client Quick Reference Card*.
5. Click **Apply** or **OK**.

Selecting the Connection Type

You can set the NCD ThinSTAR 300 to communicate over a modem or over a LAN. If you are using the terminal on a LAN, you can specify the network speed or set the terminal to automatically sense the network speed.

Note After you switch the connection mode, the terminal must restart to apply the change.

To display the Network Options screen, complete these steps.

1. Display the Terminal Properties property sheet.
2. Select the Management tab.
3. Click **Network Options**. The Network Options dialog box shown in Figure 6-8 displays.

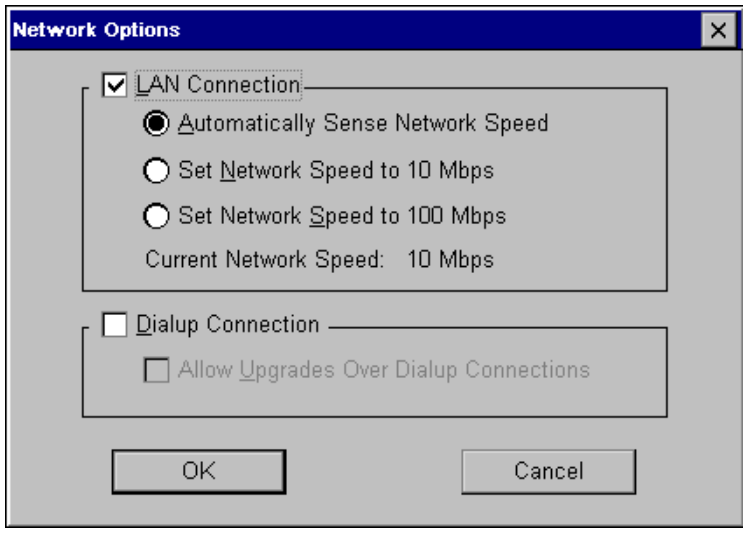


Figure 6-8 Network Options Dialog Box

Select and Configure LAN Connection

To select a LAN connection and set global options, complete these steps.

1. In the Network Options dialog box, check **LAN Connection**.
2. Check one of the network speed options. NCD recommends that you select **Automatically Sense Network Speed**.
3. Click **Apply** or **OK**.

Select and Configure Dial-up Connection

To select a dial-up connection and configure the dial-up upgrades option, complete these steps.

1. Display the Terminal Properties property sheet.
2. Select the Management tab.
3. Click **Network Options**. The Network Options dialog box shown in Figure 6-8 displays.

4. If you are connecting to a host through a modem, check **Dialup Connection** and click **OK**.
5. If you want to allow software upgrades over the modem, check **Allow Upgrades Over Dial-up Connections**.

   Note It may not be desirable to allow upgrades over a dial-up connection; it may take a long time to download the new software.

6. Click **Apply** or **OK**.

Enabling/Disabling the Connection Manager's Configure Tab

The Configure tab of the NCD ThinSTAR Connection Manager lets you perform several connection management tasks.

The Configure tab is shown by default so that you can set up connections initially, but you can hide it to prevent users from making changes to the terminal's connections.

Hiding the Configure Tab

To hide the Connection Manager's Configure tab, complete the following steps.

1. Display Terminal Properties.
2. Select the Management tab.
3. Clear **Display NCD ThinSTAR Connection Manager's Configure Tab**.
4. Click **OK**.

Making the Configure Tab Visible

To make the Configure tab visible, enabling access to connection management capabilities, complete the following steps.

1. Display the Terminal Properties property sheet.
2. Select the Management tab.
3. Check **Display NCD ThinSTAR Connection Manager's Configure Tab**.
4. Click **OK**.

Enabling Connection Hot Keys

You can enable hot keys so that users can use the following key sequences to switch connections during a running session:

- **CTRL+ALT+UP ARROW** lets a user cycle through sessions, moving up through the list of active connections.
- **CTRL+ALT+DOWN ARROW** lets a user cycle through sessions, moving down through the list of active connections.
- **CTRL+ALT+HOME** lets a user go to the default connection. If the connection is not already active, it is started.

To enable connection hot keys, complete the following steps.

1. Display the Terminal Properties property sheet.
2. Select the Management tab.
3. Check **Enable Connection Hot Keys**.
4. Click **OK**.

Enabling French Terminal Server Connections

The French version of Microsoft Terminal Server has special requirements. If you need to configure connections to a French Terminal Server host, complete the following steps.

1. Display Terminal Properties.
2. Select the Management tab.
3. Check **Enable French Terminal Server Connections**.
4. Click **Apply** or **OK**.

Configuring a Password for Terminal Properties

To increase security on a terminal, you can specify a password for Terminal Properties. When a password is set, the **OK** and **Apply** buttons are grayed out in all the tabs.

The following sections explain how to specify, change, or delete the password.

Specifying a Password

To specify a password for the first time, complete these steps.

1. Display Terminal Properties.
2. Select the Management tab.
3. Click **Security**. The Password Change dialog box shown in Figure 6-9 displays.

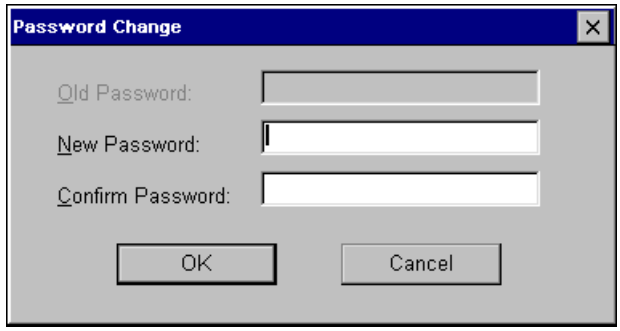


Figure 6-9 Specifying the Password

4. Type the password in the **New Password** and **Confirm Password** fields and click **OK**.
5. Click **OK** or **Apply** in the Management Tab.

Changing the Password

To change the current password, complete these steps.

1. Display Terminal Properties.
2. Select the Management Tab.
3. Click **Security.** The Enter Password dialog box shown in Figure 6-10 displays.

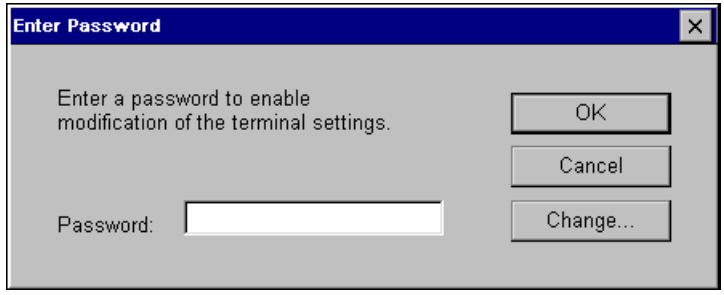


Figure 6-10 Changing the Password

4. Click **Change**. The Password Change dialog box shown in Figure 6-11 displays.

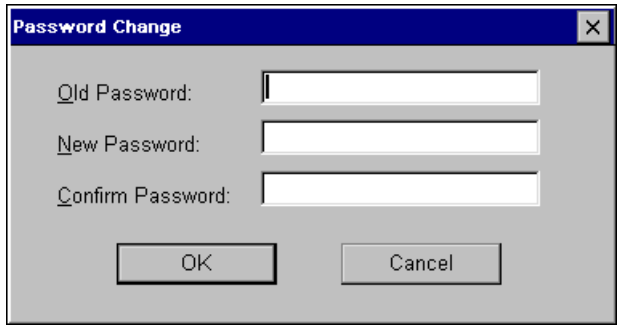


Figure 6-11 Entering the Password Change

5. Enter the old password in the **Old Password** field.
6. Enter the new password in the **New Password** and **Confirm Password** fields and click **OK**.
7. Click **OK** or **Apply** in the Management Tab.

Deleting the Password

To delete the current password, complete these steps:

1. Display Terminal Properties
2. Select the Management Tab.
3. Click **Security**. The Enter Password dialog box shown in Figure 6-11 displays.
4. Enter the current password in the **Old Password** field, leaving the other fields blank, and click **OK**.
5. Click **OK** or **Apply** in the Management Tab.

Viewing Hardware and Software Status

To see the hardware configuration of the NCD ThinSTAR 300, the software loaded on it, and the current network information for the terminal, complete the following steps.

1. Display Terminal Properties.
2. Select the Inventory tab.

   The information on the Inventory tab can be useful for verifying software versions, successful upgrade, and for reporting problems to NCD Technical Support.

   Note If the terminal is in dial-up mode, the IP address shown in the Inventory tab is the address returned from the dial-up connection. The PPP protocol returns this address.

CHAPTER 7
Updating NCD ThinSTAR Operating Software

This chapter explains how to use the NCD ThinSTAR Management Service (TMS) to update and recover (repair) NCD ThinSTAR Operating Software.

Prerequisites

You only need one Windows NT server running TMS per network. However, if you decide to run TMS on more than one server as backup protection, be certain all servers always have the same version of the NCD ThinSTAR Operating Software.

If TMS is not installed on the same subnet as the NCD ThinSTAR 300s, recovery is not supported and update is supported only if each terminal is configured to specify the TMS server and also uses DHCP to obtain an IP address, as described in “Designating the Software Update Server” on page 6-14.

If the terminal is dial-up mode, it can upgrade its software over a dial-up connection. To specify upgrades over a dial-up connection, see “Select and Configure Dial-up Connection” on page 6-17.

Note Although terminals can upgrade their software over a dial-up connection, they cannot *recover* software over a dial-up connection.

What Is NCD ThinSTAR Management Service (TMS)?

The NCD ThinSTAR Management Service (TMS) provides a mechanism ensuring the NCD ThinSTAR 300 always runs the desired versions of NCD ThinSTAR Operating Software components. The same mechanism also lets you ensure that the Operating Software is automatically replaced with a fresh copy if it is corrupted. (See Figure 7-1.)

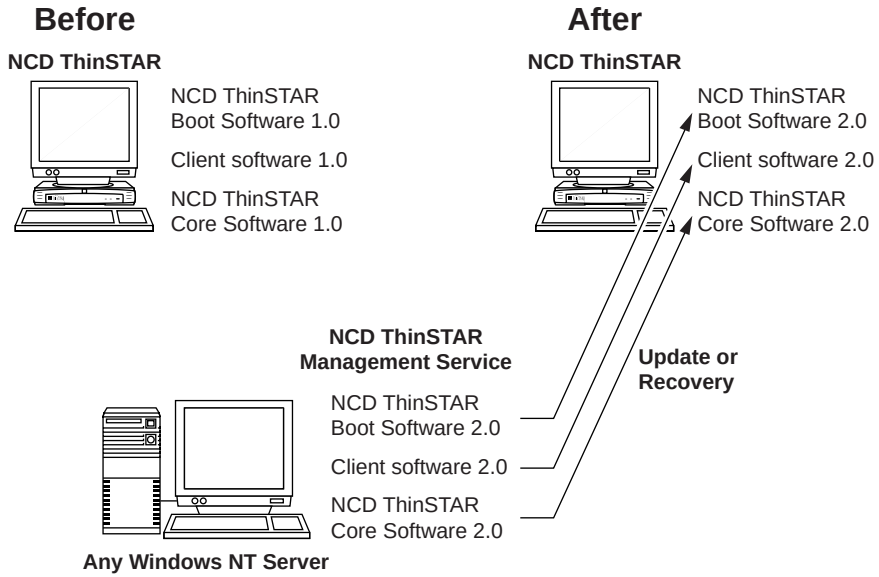


Figure 7-1 Updating NCD ThinSTAR Operating Software

Once you install TMS on a Windows NT Server, it starts automatically whenever you power up the server, and runs as a service listed in the Control Panel, unless you disable it (see “Disabling NCD ThinSTAR Management Service” on page 7-12).

TMS lets you select an upgrade policy, which specifies whether, and to which versions of software, upgrades occur. For details, see “Configuring Upgrade and Recovery Policy” on page 7-4.

Installing NCD ThinSTAR Management Service (TMS)

To install TMS, insert the NCD ThinSTAR Management Service (TMS) CD-ROM into the CD-ROM drive on any of the following servers:

- Microsoft Windows NT 4.0, Terminal Server Edition
- Microsoft Windows NT 4.0
- Microsoft Windows NT 3.51

On Windows NT 4.0 Servers, the installation program starts automatically. On Windows NT 3.51 Servers, you must explicitly run **setup.exe**.

The installation program guides you through the installation process. You can specify an installation directory, or the installation program will install TMS files into the default location: **Program Files > NCD > ThinSTAR Management**.

The installation creates an NCD icon labeled **ThinSTAR Manager** in the Control Panel.

On Windows NT 3.51 servers, installation creates a desktop program group labeled **NCD ThinSTAR Management Service**, containing an **Uninstall** icon and a **Readme** text file.

Configuring Upgrade and Recovery Policy

For each component of the NCD ThinSTAR Operating Software, TMS lets you specify one of three *upgrade policies* that govern whether and under what conditions upgrades and recoveries occur:

- **Upgrade if the version on server is not the same as version on the terminal.**

  Under this policy, TMS upgrades the terminal if the Operating Software on the terminal is newer or older than the version on the TMS server. This provides a means of going back to an earlier version, if desired, as well as updating to a newer version.

- **Upgrade if the version on server is newer than version on the terminal.**

  Under this policy, the terminal always runs the latest version of the Operating Software kept on the TMS server. This is the default value.

- **Do not upgrade.**

  Under this policy, TMS does not replace the Operating Software under any condition.

When a user powers up an NCD ThinSTAR 300, the following events occur:

- The terminal broadcasts to find a TMS server on the same subnet or directly contacts the TMS server specified in the **Terminal Properties > Management** tab.

  See “Designating the Software Update Server” on page 6-14.

- TMS checks the status of the software residing on the NCD ThinSTAR 300. If it satisfies the upgrade condition specified by the current policy, TMS downloads a fresh copy of the software.

This is also how TMS restores corrupted Operating Software.

Note If the NCD Boot Software is corrupted, however, contact NCD Technical Support.

To set the upgrade policy for each component of the NCD ThinSTAR Operating Software, complete the following steps.

1. Open the Control Panel and click the NCD icon labeled **ThinSTAR Manager**.
2. The NCD ThinSTAR Management Service (TMS) dialog box is displayed (see Figure 7-2).

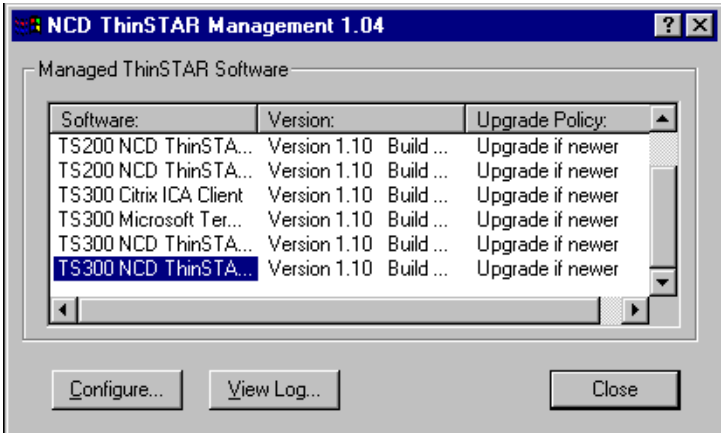


Figure 7-2 Listing of Current Upgrade Policies

Each entry in the list represents a component of the NCD ThinSTAR 300 or NCD ThinSTAR 200 Operating Software.

TMS provides context-sensitive help that explains each item in its dialog box. Under Windows NT 4.0, click the question mark button in the taskbar, then click the resulting question mark cursor on the item of interest. Click again to close the help window. To get help under Windows NT 3.51, put the cursor over the item of interest and press F1.

3. Click on the software component whose policy you want to modify, then click Configure to go to the Configure Upgrade Policy dialog. (See Figure 7-3.)

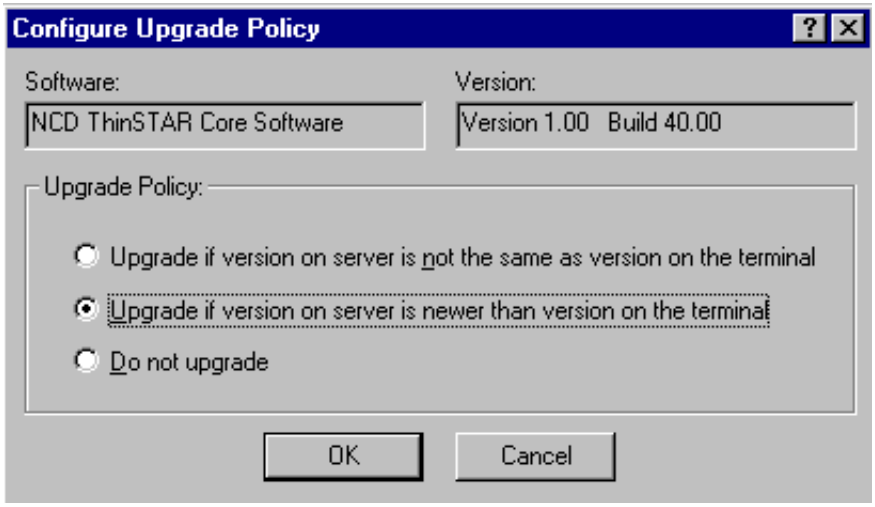


Figure 7-3 Changing Upgrade Policy Settings

4. Select an upgrade policy, then click OK.

   Your choice is reflected in the NCD ThinSTAR Connection Manager dialog box.

Viewing the Upgrade Log

The TMS log tracks communication between a ThinSTAR 300 and the TMS service. This log can be useful in troubleshooting and tracking the history of ThinSTAR-TMS service communication.

When the log contains 64K of text, it is cleared automatically and logging continues.

To view the log, complete the following steps.

1. Open the Control Panel and click the NCD icon labeled **ThinSTAR Manager** to go to the NCD ThinSTAR Management Service (TMS) dialog box, shown in Figure 7-4.

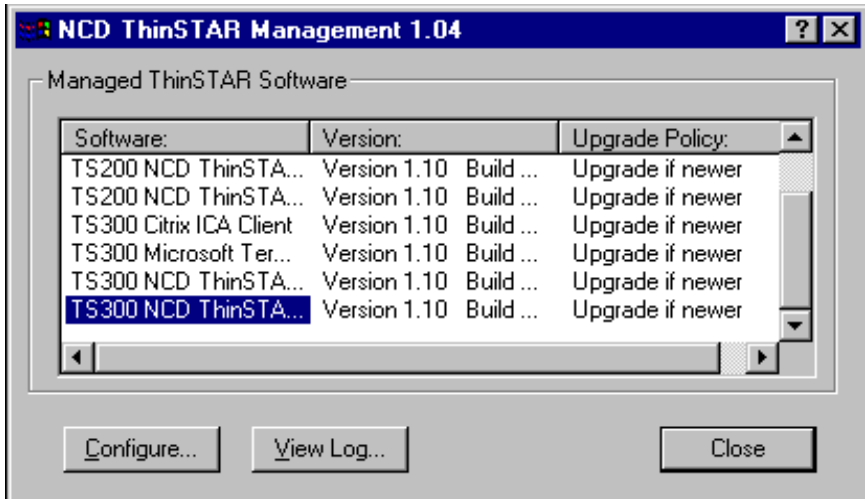


Figure 7-4 Viewing the TMS Log

2. Click **View Log** to display the log.

   The sample in Figure 7-5 has just been cleared, so **Clear** is grayed out. **Refresh** is available so that you can refresh the log manually if the log is open for a long time.

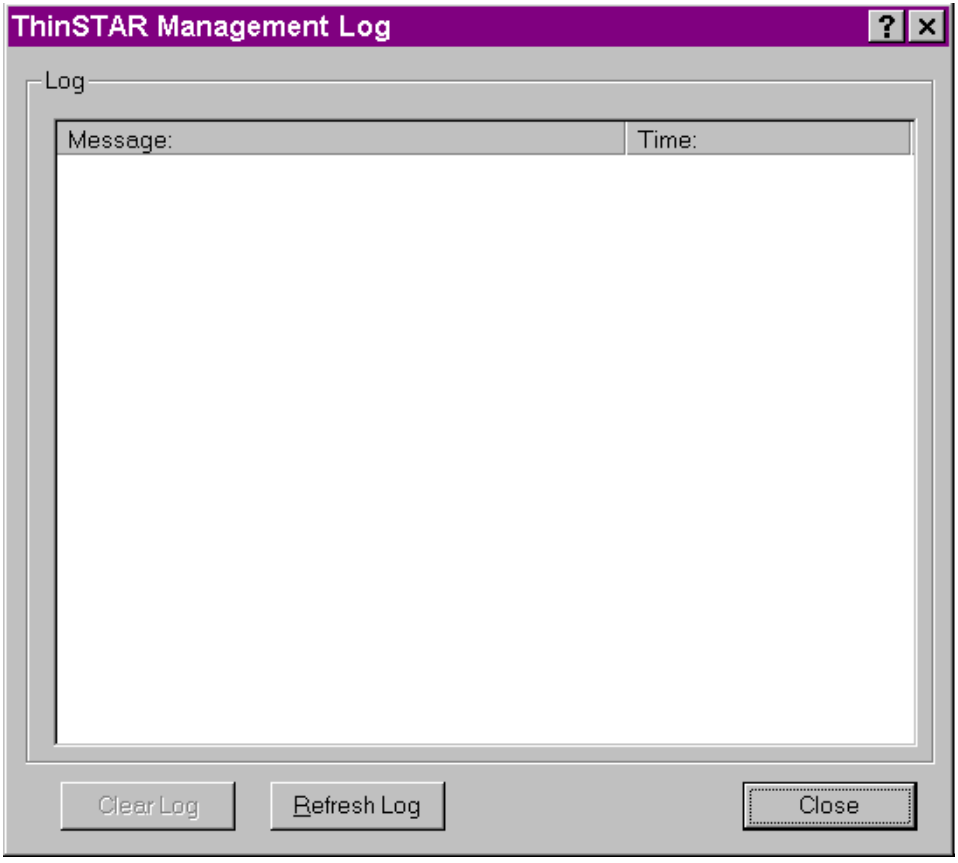


Figure 7-5 The TMS Log

3. Click **Close** to close the log.

Terminal Actions During Upgrade

Each time it is powered on, the NCD ThinSTAR 300 checks the network for a newer version of its operating software. If it detects newer software (that is, an accessible Windows NT server is configured to upgrade terminal software), the terminal displays the upgrade message shown in Figure 7-6.

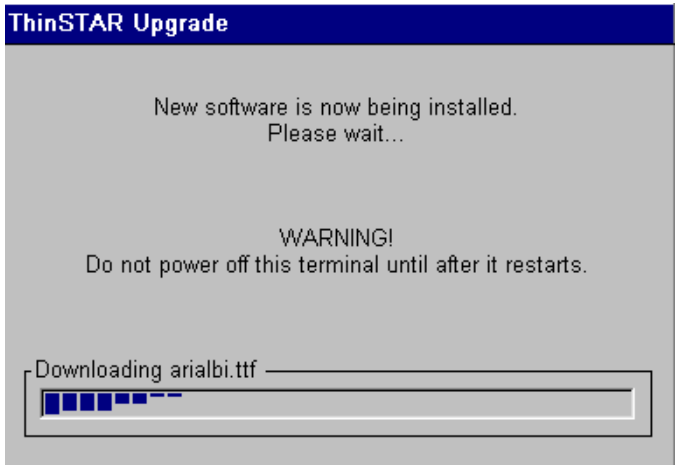


Figure 7-6 Upgrade Screen

Caution

Do not power off the terminal during an upgrade. Turning off the terminal at this time may damage it.

After the upgrade is complete, the terminal restarts automatically.

Flash Recovery

It is not likely that the NCD ThinSTAR Operating Software on an NCD ThinSTAR 300 will become corrupted. However, if it does, TMS provides for automated recovery of the software.

Prerequisites for Flash Recovery

For automated flash recovery to occur, the following prerequisites must be met:

- TMS must be installed on the same subnet as the NCD ThinSTAR 300.
- All TMS upgrade policies must specify one of the two upgrade options; they must *not* specify the "Do not upgrade" option, or recovery will not occur.
- A DHCP server must be running on the same network as the NCD ThinSTAR 300s (see "Configuring Device Identification Services — DHCP" on page 3-3).

Automatic Flash Recovery

When the NCD ThinSTAR 300 starts up, it checks flash memory and restores it, if necessary.

If this occurs, a message announces the software recovery.

Do not power off the terminal during recovery.

After the recovery is completed, the terminal reboots and displays the NCD ThinSTAR Setup Wizard.

Forcing Flash Recovery

If an NCD ThinSTAR 300 does not automatically recover when an error occurs, you can force a recovery as follows.

1. Turn the terminal off, then on.
2. When you see the progress bar on the NCD ThinSTAR logo screen, press **Shift+F11**.

Getting Software Updates

Updates to the NCD ThinSTAR Operating Software are installed as new NCD ThinSTAR Management Service (TMS) components. You install them according to the instructions provided with those updates.

After you have installed a software update, when a user powers up an NCD ThinSTAR 300, TMS either upgrades the Operating Software on the terminal, or leaves it intact, according to the upgrade policy you set (see “Configuring Upgrade and Recovery Policy” on page 7-4).

Disabling NCD ThinSTAR Management Service

Once you install TMS on a Windows NT Server, it runs automatically by default whenever the Windows NT Server is booted. However, you may want to disable TMS in the following situations:

- All your NCD ThinSTAR 300s are running the correct version of the NCD ThinSTAR Operating Software and you want to reduce demands on the Windows NT Server.
- You have a backup TMS server.

Never disable TMS if a terminal is in the midst of a recovery or upgrade.

To turn off TMS, complete the following steps on the Windows NT Server where TMS is installed.

1. Navigate to **Control Panel > Services** icon. Scroll down the list of services until you see:
   — ThinSTAR Management Service
   — TMS File Server
2. Select each service and click **Stop**.

If you disable TMS, remember to re-enable it when you want updates to resume. To do that follow the steps given above, but click **Start** instead of **Stop**.

APPENDIX A
Product Support

This appendix explains how to contact NCD Product Support staff. Before you request product support for an NCD product, you need to return your product registration card.

If you purchased your NCD product from an NCD distributor or a value-added reseller (VAR), ask that distributor or reseller whether they provide product support before you contact NCD directly.

Support for the NCD ThinSTAR 300 is free during regular business hours for 30 days, beginning with your first call. After this period, or for information regarding support outside regular business hours, please contact NCD at 1-800-800-9599 (customers in the United States and Canada only) or 1-503-641-2200 for information about support contracts.

About Support Contracts

Support for NCD products is available Monday through Friday, 6AM through 5PM Pacific time. If you want telephone support between 5PM and 6AM Pacific time after the initial 30-day grace period, contact NCD for information on support contract offerings:

US and Canada:	(800) 800-9599
Worldwide:	(503) 641-2200

When you encounter a technical problem or have a question, consult the product's documentation and on-line help. For late-breaking updates and technical information, see the product release notes. If you cannot find an answer or a solution in the documentation, see the following sections.

Contacting Product Support

International Product Support

If you are outside the United States and Canada, contact the distributor that sold you the NCD product. If this is not possible, or if you need direct technical assistance, follow the international dialing instructions appropriate for your location to call the numbers provided in "Telephone Support" on page A-4.

Electronic Mail Support

To contact NCD via e-mail, send a mail message to:

support@ncd.com

Product support automatically returns an electronic problem-report form like the one on page A-4.

Product Support's reply to your e-mail contains an NCD Support Incident ID number. Include this number in subsequent e-mail messages to Product Support pertaining to this issue. You do not need to include the information in the problem-report form in subsequent messages.

World Wide Web Support

NCD's World Wide Web site provides updates, product information, technical notes, and the NCD Knowledgebase. You can also submit a support request or comment.

The NCD web site is located at **http://www.ncd.com**.

FTP Support

The NCD FTP site provides product updates and other software updates. To access NCD's FTP site, log into the following host:

ftp.ncd.com

When prompted for a user name, enter **anonymous**. When prompted for a password, enter your e-mail address. After logging in, go to this directory to find updates for the NCD ThinSTAR 300:

/pub/ncd/thinstar

Most files are binary, so remember to execute a binary command before getting a file.

Fax Support

Sending a fax to Product Support helps the support engineer analyze your question and prepare a solution before contacting you.

Before you send a fax, make sure that it contains all of the information listed in "Information Required by Product Support" on page A-4.

The fax number is:

(503) 641-2959

Telephone Support

Collect the information requested on this page and the following pages, then call one of the following numbers and ask for Product Support:

(503) 641-2200

(800) 800-9599 (United States and Canada only)

During your call, you will be given an NCD Support Incident ID number. Record this number so that you can use it if you call again concerning the same issue.

Information Required by Product Support

Before calling NCD Product Support, collect the following information:

NCD Customer ID	
User Name	
Company / Organization Name	
Title	
Phone Number	
Fax Number	
E-mail Address	
Mailing Address	

You can get the following information from the NCD ThinSTAR 300 by viewing the Inventory tab of the Terminal Properties dialog box.

Serial Number	
CPU	
Base Memory	
DIMM Memory	

Serial Number	
CPU	
Flash Memory	
Ethernet MAC Address	
NCD ThinSTAR Core Software version	
Windows CE version	
Microsoft Terminal Server Client version	
NCD ThinSTAR Boot Software version	
Other client software, if any	

NCD ThinSTAR Management Service (TMS) Software

Include the following information about the Windows NT Servers you are accessing:

Version of TMS Software	
Windows NT Server where TMS is running	Windows NT 3.51, Windows NT 4.0, Windows NT WTS, Other
File System type on Windows NT Server where TMS is installed	NTFS or FAT

Network Server

Include the following information about the network servers.

Terminal Server Version	
File System Type	NTFS or FAT
Running Software (title and version)	

Hardware

Include the following information if it is hardware problem:

Serial number	
Type of warranty	Standard, Express, Extended, Express Exchange, Out-of-Warranty

Detailed Problem Description

Include a detailed description of the problem:

Returning Hardware

If you have to return a component, follow these steps.

1. Gather the information listed in "Hardware" on page A-6 and contact NCD Technical Support to obtain a Return Material Authorization (RMA) number.
2. Once you have obtained an RMA number, package the component for return.

   If you would rather not pack the component yourself, NCD recommends that you take it to a commercial packing and shipping company.
3. Mark each return package with the assigned RMA number and address each package as shown below to avoid problems or delays:

   Customer Service
   Network Computing Devices
   350 North Bernardo Avenue
   Mountain View, CA 94043
   RMA number

Note Equipment returned without an RMA number is subject to delays or might be returned to the sender.

APPENDIX B

Adding Memory to the NCD ThinSTAR 300

This appendix describes the installation of a DIMM (dual inline memory module) in the NCD ThinSTAR 300, provides the memory specifications, and explains how to test memory.

Memory Configurations

The NCD ThinSTAR 300 terminal has two 168-pin DIMM slots for optional SDRAM (synchronous dynamic random access memory) DIMMs. The maximum total memory that the NCD ThinSTAR 300 can use is 32 MB. Your NCD ThinSTAR 300 terminal comes with 16 MB.

You can remove an existing DIMM and replace it with a 32-MB DIMM or insert a 16-MB DIMM in the empty slot at any time.

DIMM Specifications

Table B-1 lists the DIMM specifications.

Table B-1 NCD ThinSTAR 300 DIMM Specifications

Mode	Synchronous dynamic random access memory (SDRAM) Unbuffered Non-ECC (error correcting code) / parity
Speed grade	66 MHz or faster
CAS latency	3 or less
Voltage	3.3 Volts
Profile	168-pin DIMM contacts Maximum 1.25 inches (31.75 mm) tall) Gold-plated fingers
Board Thickness	0.047 inches to 0.054 inches (0.050 inches (1.27 mm) nominal) Installing DIMMs that are outside specification might damage the DIMM slot or cause the terminal to behave erratically.
Intel references	The SDRAM DIMMs must conform to the following Intel specifications: PC SDRAM, Version 1.1 4-Clock 66 MHz Unbuffered SDRAM DIMM, Revision 1.0 PC SDRAM Serial Presence Detect (SPC), Revision 1.2A
Sizes	Use only the following sizes of SDRAMs: One bank: 2 Megabit x 64 bits = 16 Megabytes 4 Megabit x 64 bits = 32 Megabytes Two banks: 2 Megabit x 64 bits = 16 Megabytes 4 Megabit x 64 bits = 32 Megabytes The number of banks on a DIMM refers to the internal operation of its address rows. Refer to the manufacturer's data sheet because the manufacturer's DIMM part number indicates the number of banks. The number of banks is unrelated to whether there are memory chips on one or both sides of a DIMM.

Installation Procedures

If you do not feel confident performing the following procedure on your terminal, send the terminal to a qualified service center.

Installing additional memory is a four-step procedure, which is described in detail on the following pages:

1. Disassemble the terminal. See “Disassembling the Base” on page B-3.
2. Install the DIMM(s). See “Installing DIMMs” on page B-6.
3. Reassemble the terminal. See “Reassembling the Base” on page B-9.
4. Test the memory after your terminal is up and running. See “Testing NCD ThinSTAR Memory” on page B-10.

The only tool you need is a small flat-blade screwdriver.

Disassembling the Base

To disassemble the base, follow these steps:

1. Turn off power.
2. Remove all cables connected to the base.
3. Place the base with the top up and the front facing you (preferably, on an antistatic mat).
4. Use your finger to release the large clip on the underside of the front panel and remove the panel by prying on the top of the panel to release several small clips. See Figure B-1.

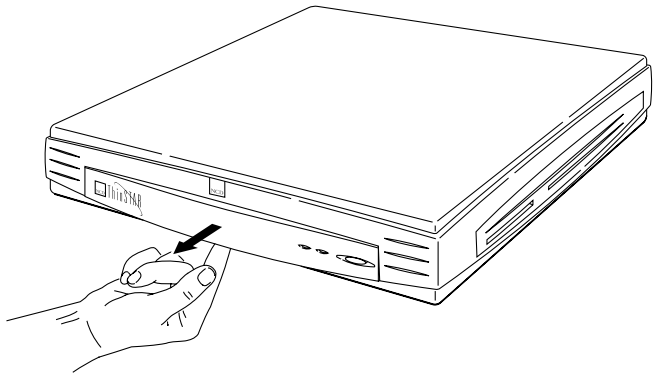


Figure B-1 Removing the Front Panel

5. Use a small flat-blade screwdriver to remove the screw located on the front of the terminal, as shown in the insert of Figure B-2. Then remove the clip from its slot.

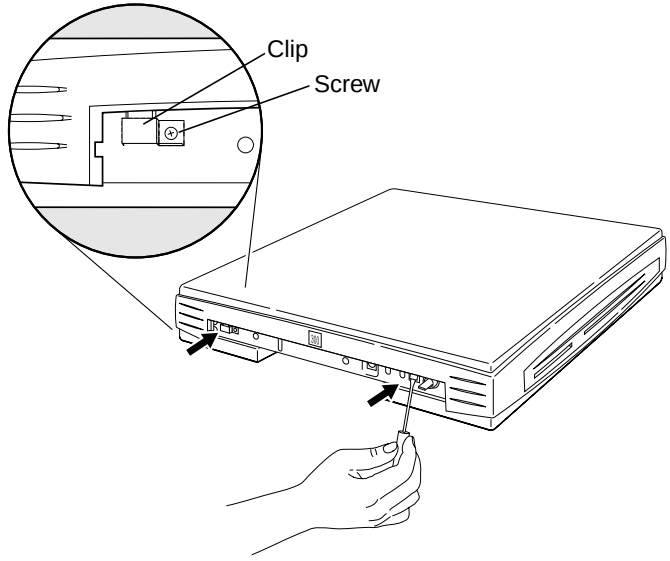


Figure B-2 Releasing the Tabs

6. Use a small flat-blade screwdriver to release the two tabs located on the front of the terminal, as shown in Figure B-2.
7. See Figure B-3. Carefully lift the top section up at the front so you can slide the top's rear tabs from the bottom section's slots to separate the cover from the bottom.

Caution

Lift the top section up at the front *only until* **you can slide the top's rear tabs from the bottom section's slots. If you lift the top section too high, the tabs can break.**

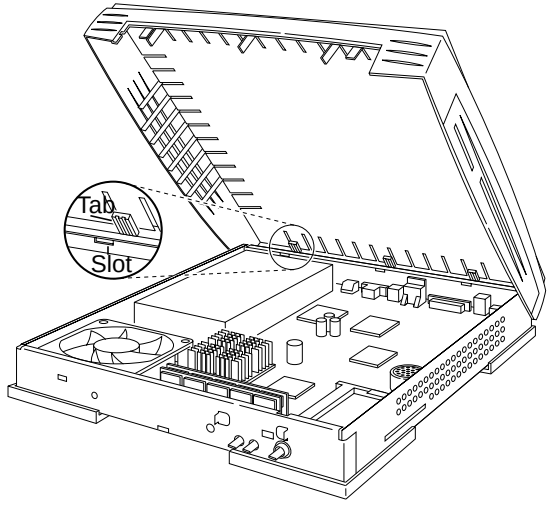


Figure B-3 Removing the Top Cover

Installing DIMMs

Caution

Electrostatic Discharge (ESD) can damage DIMMs and other components located on the logic board. Make sure you touch a suitable ground before handling any DIMM. If possible, set the terminal on an antistatic mat and wear a grounding strap.

Never **touch the connector pins when you handle DIMMs.**

Your terminal already has a DIMM installed. The DIMM slots, located on the front of the logic board, are labeled J13 and J14. See Figure B-4.

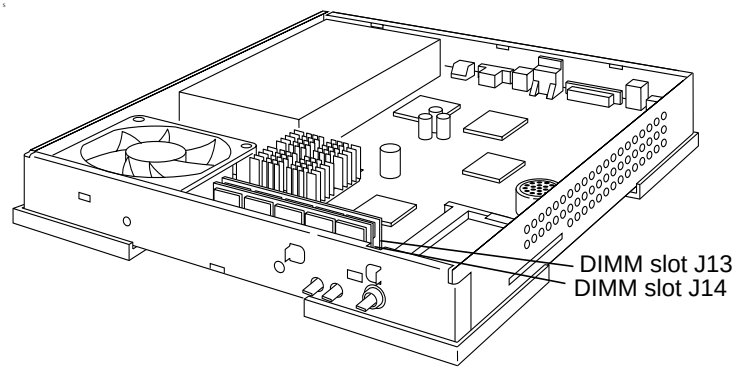


Figure B-4 Location of the DIMM Slots

If you are replacing a 16 MB DIMM with a 32 MB DIMM, you need to remove the existing DIMM. Read “Removing DIMMs” on page B-8 and then return to this section for installation instructions.

To install DIMMs in the NCD ThinSTAR 300, follow these steps:

1. Orient the DIMM so that the key will fit into the slot's pin. See Figure B-5.

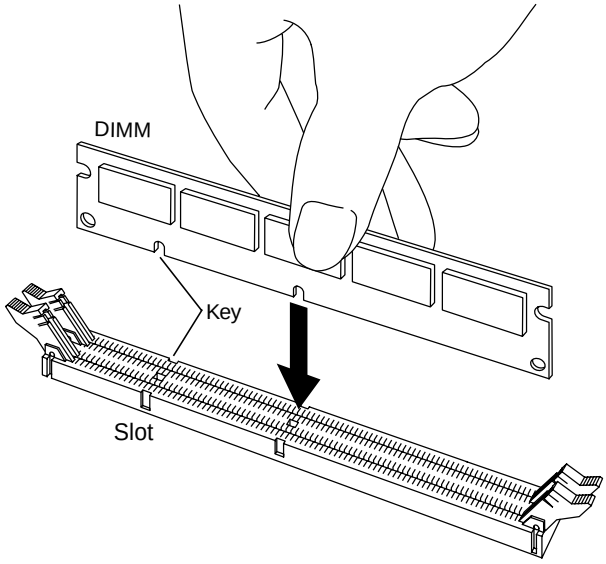


Figure B-5 Orienting the DIMM

2. If necessary, push the two plastic lock/ejection levers located on each end of the DIMM slot outwards. Firmly insert the DIMM into the slot and push the lock/ejection levers inwards to lock the DIMM. See Figure B-6.

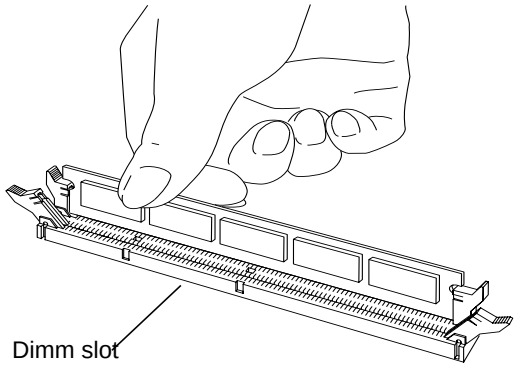


Figure B-6 Inserting the DIMM

Removing DIMMs

To remove a DIMM:

1. Push outwards on the two plastic lock / ejection levers located on each end of the DIMM slot. See Figure B-7. The DIMM will eject from the slot.

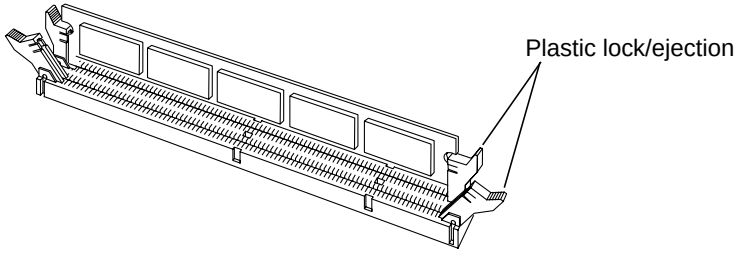


Figure B-7 Slot's Tab Locations

2. Remove the DIMM from the slot. Do not touch the connector pins.

Reassembling the Base

To reassemble the base, follow these steps:

1. Swing the back of the top section over the back edge of the bottom section and align the three rear tabs on the top section with the slots on the bottom section, as shown in Figure B-8.

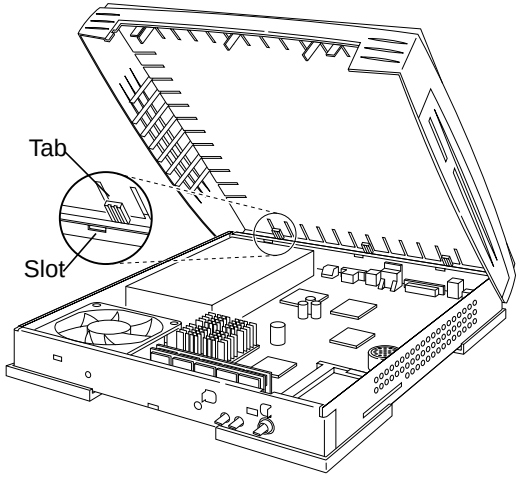


Figure B-8 Placing the Top Cover on the Bottom Section

2. Lower the front of the top section until the three rear tabs slide through the three slots on the bottom section.
3. Replace the clip and the screw shown in the insert of Figure B-9.

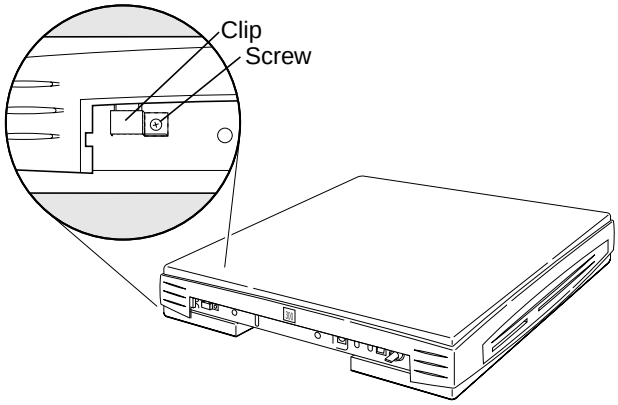


Figure B-9 Replacing the Clip and Screw

4. Replace the front panel.
5. Install the cabling.
6. After the system is installed, perform the memory test described in the next section.

Testing NCD ThinSTAR Memory

The terminal must be installed before you can test the memory. After installation, perform the following steps:

1. Power the terminal up.
2. The Connection Manager window displays. If it does not, press **CTRL+ALT+END**.
3. Press F2 to display the NCD ThinSTAR Terminal Properties
4. Click on the Inventory tab. The Inventory Window reports DIMM1 and DIMM2 memory.

If the terminal does not boot or the reported memory is incorrect when you power the terminal up, verify that the DIMM is properly seated.

APPENDIX C
Troubleshooting

This appendix covers problems that may occur with NCD ThinSTAR 300s and suggests strategies for resolving them.

This appendix also lists the flashes, tones, and messages NCD ThinSTAR 300s produce under various conditions, and explains what action you should take in each case.

Problems and Solutions

This section describes the most common problems and offers solutions.

Unreadable Display

If the screen is unreadable when you turn on the NCD ThinSTAR 300, the monitor settings (desktop area and / or refresh frequency) are incorrect.

To boot at 640 x 480 Hz, power on the terminal, then press **F5** when you see the progress bar on the NCD ThinSTAR logo screen. This starts the terminal in “Safe Boot Mode.”

The monitor may support a better desktop area (resolution) and frequency than the default setting. To try alternate monitor settings, follow the instructions in “Modifying Display Appearance” on page 6-6.

If the terminal restarts the Setup Wizard, it also gives you the opportunity to try alternate monitor settings. See “Choose Display Resolution” on page 4-10.

NCD ThinSTAR 300 Does Not Operate

If an NCD ThinSTAR 300 stops operating and cycling the power does not remedy the problem, you must force a recovery of its software.

To force the recovery, complete the following steps.

1. Turn the power to the terminal off, then on.
2. Press **Shift+F11** when you see the progress bar on the NCD ThinSTAR logo screen.

For details on recovering software, see “Flash Recovery” on page 7-10.

The Network Screen Displays at Startup

At startup, an NCD ThinSTAR 300 checks for network accessibility and availability of IP addresses. If the cable is not secure, the terminal cannot determine the necessary network addresses, or the terminal is in the wrong network connection mode, the Network screen displays.

Disconnected Network Cable

Check the network cable connection at the terminal and at the outlet on the wall or hub. If the cable is not secure, make sure it is plugged in and click **Restart** in the Network screen. The terminal should restart normally.

Fixing an Address Problem

If the cable is plugged in securely, the problem may be that the terminal cannot find the required network identifiers.

To check how the terminal is configured for network identifiers:

1. In the Network screen, click **Manage Network Options**.
2. Terminal Properties displays. Go to the Network tab.
   — If the terminal is configured to use DHCP, make sure DHCP is properly configured on the server.

— If the terminal uses static IP addresses, make sure it is configured with the correct identifiers.

3. Click **OK**. The terminal restarts.

See Chapter 6 for more information on using Terminal Properties.

Changing from LAN Use to Dial-up Use

If the NCD ThinSTAR 300 is in LAN mode and you do not switch it to dial-up mode before taking it off the LAN and attaching it to a modem, the Network screen displays when you start the terminal.

To switch the terminal to dial-up mode:

1. In the Network screen, click **Manage Network Options**.
2. The Management tab of Terminal Properties displays. Click **Network Options**.
3. Enable **Dial-Up Connection**.
4. Click **OK**. The terminal restarts in dial-up mode.

Error Codes and Messages

This section lists error codes and messages for the NCD ThinSTAR 300 and offers recommendations for actions to take.

Boot Error Alert Tones

The following table lists boot software errors that are signaled by a series of tones from the NCD ThinSTAR 300. For example, the tone pattern 3-2-4 means three tones, pause, two tones, pause, four tones.

Table C-1 Boot Error Alert Tones

Tone Pattern	Description	Recommended Actions
3-2-4	Keyboard controller failed	1. Try a different keyboard. 2. If the error persists, contact NCD Technical Support.
3-4-1	Video subsystem failure	Contact NCD Technical Support.

Boot Error Flashes

The following table lists bootstrap errors that are signaled by a series of flashes punctuated with a short pause from the LED light on the front of the NCD ThinSTAR 300.

Table C-2 Boot Error Flashes

Flashes	Description	Recovery Recommendations
1	Video controller initialization failed	Contact NCD Technical Support.
2	Video memory test failed	Contact NCD Technical Support.

Error and Status Messages

The following table explains the error and status messages that can appear on the monitor of the NCD ThinSTAR 300.

Table C-3 Error and Status Messages

Message	Description	Recommended Action
RE000000 STARTING USER FORCED RECOVERY	STATUS MESSAGE: Recovery mechanism was initiated by holding down **SHIFT+F11**.	No action.
RE000001 RECOVERY ATTEMPT STARTED	STATUS MESSAGE: File system hardware failed during a read operation. Recovery mechanism started.	No action.
RE000002 RECOVERY ATTEMPT DHCP	STATUS MESSAGE: File system hardware failed during a read operation. Recovery mechanism has begun, using DHCP to get an IP address.	No action.
RE000003 RECOVERY ATTEMPT BROADCAST	STATUS MESSAGE: File system hardware failed during a read operation. Recovery mechanism started; broadcasting to find a Windows NT server running NCD ThinSTAR Management Service (TMS).	No action.
RE000004 RECOVERY ATTEMPT RETRY ###	STATUS MESSAGE: File system hardware failed during a read operation. Recovery mechanism re-broadcasting to find a Windows NT server running NCD ThinSTAR Management Service (TMS).	No action.

Table C-3 Error and Status Messages

Message	Description	Recommended Action
RE000005 RECOVERY ATTEMPT FAILED TO CONNECT	File system hardware failed during a read operation. Failed to find a Windows NT server running NCD ThinSTAR Management Service (TMS). The terminal stops operating.	Make sure NCD ThinSTAR Management Service (TMS) is running on a Windows NT server in the same subnet as the NCD ThinSTAR 300.
RE000006 RECOVERY ATTEMPT: CONNECT	STATUS MESSAGE: Successful connection to a Windows NT server running NCD ThinSTAR Management Service (TMS).	No action.
RE000007 RECOVERY ATTEMPT: LOADING	STATUS MESSAGE: File system hardware failed during a read operation. A fresh copy of the ThinSTAR Operating Software is being downloaded.	No action.
RE000008 RECOVERY ATTEMPT: FAILED LOAD	File system hardware failed during a read operation. An attempt to download a fresh copy of the ThinSTAR Operating Software failed due to incorrect format or a transmission error.	1. Retry recovery by restarting the NCD ThinSTAR 300. 2. Re-install NCD ThinSTAR Management Service (TMS) on the Windows NT server, then restart the NCD ThinSTAR 300.
RE000009 RECOVERY ATTEMPT: EXECUTING	STATUS MESSAGE: File system hardware failed during a read operation. Executing recovery code. Control has passed from Boot Software to Windows CE. The NCD ThinSTAR 300 will restart.	No action.

Table C-3 Error and Status Messages

Message	Description	Recommended Action
RE000010 RECOVERY ATTEMPT: CHECK NETWORK CONNECTION	The NCD ThinSTAR 300 tried to get an IP address via DHCP, but detected a connectivity problem. This can be caused by a network cable not securely connected to the unit.	1. Check the network cable connection to the terminal. If the green link light on the back of the terminal is on, the terminal is properly connected. 2. If the network cable is secure, check physical network cable connections back to the hub.
MS000001 COULD NOT MOUNT FILE SYSTEM	The firmware could not mount the file system. The NCD ThinSTAR 300 stops operating.	Contact NCD Technical Support.
MS000002 NVINFO BLOCK NOT FOUND	The MAC address (the low-level network ID of the NCD ThinSTAR 300) has been lost. The terminal stops operating.	Contact NCD Technical Support.
MS000005 DID NOT FIND NVINFO BLOCK	The MAC address (the low-level network ID of the NCD ThinSTAR 300) has been lost. The terminal stops operating.	Contact NCD Technical Support.
MS000006 FAILURE READING NVINFO BLOCK	The MAC address (the low-level network ID of the NCD ThinSTAR 300) and serial number have been lost. The terminal stops operating.	Contact NCD Technical Support.
MS000007 UNABLE TO READ NV STORAGE	The MAC address (the low-level network ID of the NCD ThinSTAR 300) and serial number have been lost. The terminal stops operating.	Contact NCD Technical Support.

Table C-3 Error and Status Messages

Message	Description	Recommended Action
MS000008 MAC ADDRESS CHECKSUM FAILURE	The MAC address (the low-level network ID of the NCD ThinSTAR 300) and serial number have been lost. The terminal stops operating.	Contact NCD Technical Support.
MS000011 FAILED TO REGISTER NFTL	The file system failed to load low-level routines.	Contact NCD Technical Support.
MS000012 FAILED TO REGISTER DOCSOC	The file system failed to load low-level routines.	Contact NCD Technical Support.
MS000013 FAILED TO REGISTER DOC200	The file system failed to load low-level routines.	Contact NCD Technical Support.
MS000019	WARNING: File has no CRC (Cyclical Redundancy Code–refers to checksum functions) installed; unable to verify CRC. Will continue to load and execute code.	No action.
MS000020	Incorrect product file. Fails to load, displays error message and stops operating.	Contact NCD Technical Support.
MS000021	Incorrect file type. Fails to load, displays error message and stops operating.	Contact NCD Technical Support.
MS000022	Bad record checksum. Fails to load, displays error message.	Contact NCD Technical Support.
MS0000014 FAILED TO MOUNT FLASH FOR READ	The firmware could not mount the file system. The terminal keeps trying to recover.	Contact NCD Technical Support.
MS0000015 FAILED TO PARSE FILENAME	The firmware had an error processing the name of a file to be loaded. The terminal keeps trying to recover.	If the error persists, contact NCD Technical Support.

Table C-3 Error and Status Messages

Message	Description	Recommended Action
MS0000018 FAILED TO DISMOUNT FILE SYSTEM	The NCD ThinSTAR 300 could not dismount the file system after a read operation. The terminal keeps trying to recover.	If the error persists, contact NCD Technical Support.
MS207180 FAILED TO OPEN FILE TO READ	The NCD ThinSTAR 300 could not load the file containing the Windows CE code, **wbt.bin**. The terminal keeps trying to recover.	If the error persists, contact NCD Technical Support.
MS107180 FAILURE ON READ	The NCD ThinSTAR 300 could not load the file containing the Windows CE code, **wbt.bin**. The terminal keeps trying to recover.	If the error persists, contact NCD Technical Support.
MS007180 FILE LOAD FAILED	The NCD ThinSTAR 300 could not load the file containing the Windows CE code, **wbt.bin**. The terminal keeps trying to recover.	If the error persists, contact NCD Technical Support.
SE000012 UNABLE TO READ NV STORAGE	The MAC address (the low-level network ID of the NCD ThinSTAR 300) and serial number have been lost. The unit stops operating.	Contact NCD Technical Support.
SE000014 KEYBOARD CONTROLLER ERROR	Keyboard controller module on the circuit board did not pass diagnostic test.	1. Try a different keyboard. 2. If the error persists, contact NCD Technical Support.
SE000016 NETWORK CONTROLLER FAILURE	The network controller failed diagnostic tests.	Contact NCD Technical Support.
SE000017 FLASH SYSTEM REQUIRES FACTORY REWORK - PLEASE CONTACT NCD	The NCD ThinSTAR 300 has outdated flash memory.	Contact NCD Technical Support.

Table C-3 Error and Status Messages

Message	Description	Recommended Action
SE000019 FLASH SYSTEM REQUIRES FACTORY REWORK - PLEASE CONTACT NCD	The NCD ThinSTAR 300 has an outdated flash memory.	Contact NCD Technical Support.
SE000020 MARCH FAILURE FOUND A5A5A5A6 exp A5A5A5A5 at 40122040	A memory test failed. There may be a problem with the memory or with the SIMM in the NCD ThinSTAR 300.	1. Open the unit (refer to Appendix B). 2. If there is no SIMM installed, contact NCD Technical Support. 3. If there is a SIMM installed, it may be defective; replace it with another SIMM (must be EDO with tin contacts). If the error persists, contact NCD Technical Support.
SE000030 CANNOT CHANGE NVINFO DUE TO VERSION MISMATCH	When the MAC address or serial number is changed, the info block is not a version 2 or version 3. Should be seen in manufacturing only.	Contact NCD Technical Support.
SM000001 SAFE BOOT ENABLED	STATUS MESSAGE: The Safe Boot mode has been enabled by pressing **F5**. The NCD ThinSTAR 300 will use the default 640x480 display resolution.	No action.

Glossary

Backup Domain Controller (BDC)	A Windows NT Server that handles the same functions as a Primary Domain Controller (PDC) if the PDC is unavailable. (See domain controller.)
Boot ROM	See **NCD ThinSTAR Boot Software**.
booting	The process of loading the startup programs into a terminal after it has been turned on or rebooted.
client	A device on a network that accesses resources (services, applications or data) provided by a server. See also **thin client**.
connection	Establishment of communication between an NCD ThinSTAR 300 and a Terminal Server by means of a remote session protocol, such as the Microsoft Terminal Server Client. You can predefine any number of connections on an NCD ThinSTAR 300.
DDC	Display Data Channel. DDC allows a display monitor to inform the host system about its identity and communicate additional levels of display capabilities.
desktop	The working area of your screen where windows, icons, and dialog boxes appear.
DHCP	Dynamic Host Configuration Protocol, a network service that dynamically assigns identifiers from a pool of valid IP addresses to network devices as they start up. DHCP can also be used to provide machines with valid Subnet Mask values, the IP addresses of internet Gateway devices, DNS servers, and WINS server IDs. (Also see **subnet mask**, **gateway**, and **DNS**.)
DNS	Domain Name System. A distributed database and utilities for defining TCP/IP domains, and for translating domain names to IP addresses. See also domain and fully qualified domain name.

domain	A collection of systems that are managed together. In managing NCD ThinSTAR 300s, you must be aware of two types of domains: A DNS domain is a TCP/IP construct for defining hierarchical groupings of devices on the Internet. It is a segment of the Internet granted a unique, official name by InterNIC (the organization administering Internet names and IP addresses). A domain name generally conveys information about the type of entity using the domain name. It has the form *name_n.name_n-1…name_0.org_type*, where *name_n* is a subdomain of name_n-1, and org_type designates the type of organization (com for commercial organizations, edu for educational organizations, gov for government organizations). For example, acctg.biggcorp.com designates a subdomain of acctg within a domain of `biggcorp`, a commercial organization. See also **fully qualified domain name**. A Microsoft Windows NT domain is a unique group of Windows NT Servers and workstations defined by the system administrator for centralized administration (see **domain controller**). See also **DNS** and **fully qualified domain name**.
domain controller	A Windows NT Server that maintains the master database defining a Microsoft domain (see **domain**). The database identifies users and systems, both of which may be members of the domain. The domain controller authenticates domain logons and maintains the Windows NT domain's security policy.
Ethernet	A popular network protocol (IEEE 802.3) and a physical channel for transmitting data over coaxial, twisted-pair, or fiber-optic cable.
Ethernet address	The low-level address that the physical Ethernet network uses. Each device on the Ethernet has a unique physical address assigned by the IEEE and the device vendor. This is also called a MAC address or NIC ID.
focus	Being in a mode to receive input from the keyboard or mouse. Used in reference to tasks on a graphical computer desktop. While there may be several tasks that are currently active, only one has the focus at a time.

fully qualified domain name	A text string designating a networked device by prefixing its hostname to its DNS domain name. For example: SaleServer.acctg.biggcorp.com designates a device with the hostname `SaleServer` in the domain `acctg.biggcorp.com`. See also **DNS** and **domain**.
FQDN	See **fully qualified domain name.**
gateway	A computer that attaches to two or more networks and routes packets from one to the other.
IP	Internet Protocol. Part of the TCP/IP family of protocols. Responsible for addressing and routing datagrams at the network level.
host	A device on the network, such as an NCD terminal or a computer.
hostname	A string used to uniquely identify a device on a network. It is part of the domain name.
ICA	(Independent Computing Architecture) Remote session protocol developed by Citrix Systems for communication between terminals and servers running Citrix WinFrame or Citrix MetaFrame.
IP address	Internet Protocol address. Internet addresses are currently 32-bit binary numbers written as four decimal bytes separated by periods, for example, 127.0.0.1. The IP address identifies devices on the network so that they can participate in the IP network using the TCP/IP protocols.
Internet	The collection of networks and gateways that use the TCP/IP protocol family and function as a single, cooperative virtual network that connects many businesses, universities, and government facilities.
LAN	Local Area Network, one that connects devices over relatively short distances, typically within a building or campus.
MetaFrame	Server software from Citrix Systems for Microsoft Windows 4.0, Terminal Server Edition. Provides connectivity for NCD ThinSTAR terminals through the ICA protocol.
Microsoft Windows CE	A compact Microsoft operating system, originally developed for handheld devices, that has been adapted for use in thin client devices. See also **thin client**.

Microsoft Terminal Server Client	An implementation of Microsoft's RDP remote session protocol. It enables NCD ThinSTAR 300s and Terminal Servers to exchange graphical application input and output. See also, **client** and **Terminal Server**.
NCD ThinSTAR 200 NCD ThinSTAR 300	NCD's Windows-based terminals.
name server	A host that provides translation between network hostnames and IP addresses. See also **DNS**.
NCD ThinSTAR Boot Software	Low-level code that initiates the startup process of an NCD ThinSTAR 300 when it is powered up or rebooted.
NCD ThinSTAR Management Service (TMS)	An NCD utility that runs on a Windows NT Server. Can be configured to automatically replace outdated or corrupt Operating Software on NCD ThinSTAR 300s.
NetBIOS	A communication protocol developed for networks of Microsoft platforms. NetBIOS identifies devices by the ID number of their NICs (Network Interface Cards). Devices' host names are mapped to their NIC IDs. (The WINS name resolution service can map NetBIOS hostnames to IP addresses, enabling Microsoft platforms to communicate over TCP/IP networks. See **WINS**.)
network server	See Windows NT server.
Primary Domain Controller	See **domain controller**.
RAS	Remote Access Service. Service on Windows NT hosts that enables users to dial into a Windows NT network over a phone line.
RDP	Remote Desktop Protocol, a proprietary communication protocol developed by Microsoft Corporation to enable exchange of graphical application input and output between Windows-based Terminals, such as the NCD ThinSTAR 300, and Terminal Servers.
registered	The attribute of having been recorded in a database called the Registry in Microsoft Windows operating systems. For an application to be available on an NCD ThinSTAR 300, it must be registered in the NCD ThinSTAR 300's Registry.
Registry	A database integral to Microsoft Windows operating systems. It is used to record and track the presence and state of applications, hardware, and configuration files.

server	A computer or device that provides shared resources to network users.
subnet mask	A 4-byte value used in network communication to designate which part of IP addresses is to be interpreted as a subnet identifier, and which part is to be interpreted as a machine identifier. Used to divide a network into subnets.
subnet	A physical network within a larger IP network. A scheme that allows a site to use a single Internet network for multiple physical networks.
TCP/IP	Transmission Control Protocol/Internet Protocol. A common name for the Internet protocol family.
terminal	A set of input and output devices, such as a monitor and keyboard, that access data and/or computing services on a server across a network.
Terminal Server	The Microsoft Windows NT Server 4.0, Terminal Server Edition operating system. It allows Windows-based terminals like the NCD ThinSTAR 200 to run Windows NT applications remotely.
Terminal Server host	A personal computer running the Microsoft Windows NT Server 4.0, Terminal Server Edition operating system. See also **Terminal Server**.
thin client	A small operating system that manages input and output between a user's input/output devices (keyboard, mouse and monitor) and a server. (See **thin client device**.)
thin client device	Hardware running a thin client. (See **thin client**.)
ThinSTAR	See **NCD ThinSTAR 200/300**.
ThinSTAR Management Service	See **NCD ThinSTAR Management Service (TMS)**.
TMS	See **NCD ThinSTAR Management Service (TMS)**.
upgrade policies	Options offered by the NCD ThinSTAR Management Service (TMS) that determine whether, and under what conditions, the Operating Software on NCD ThinSTAR 300s will be automatically updated.
Windows-based terminal	A thin client device implemented to connect with Terminal Servers. (Also see **NCD ThinSTAR 300** and **Terminal Server**.)
Windows NT domain	See **domain**.

Windows NT server	A version of Windows NT that provides centralized management and security, advanced fault tolerance, and additional connectivity.
WinFrame	Multi-user Windows NT from Citrix Systems. Uses the Windows NT 3.51 interface and provides connectivity for NCD ThinSTAR terminals through the ICA protocol.
WINS	Windows Internet Naming Service, a dynamic database and utilities that map the hostnames of Microsoft-based platforms to their assigned IP addresses. Also see **NetBIOS** and **DNS**.

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