NCD ThinPATH

NCD ThinPATH Plus
Startup Guide
version 2.11.7

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Revision History

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Welcome to NCD ThinPATH Plus

NCD ThinPATH$^®$ Plus is a multi-user Windows product that extends the capabilities of NCD thin client computing.

Thin client users connect to servers from ThinSTAR terminals and PCs. During a connection session, they run applications using either the Microsoft Terminal Server (RDP) client or Citrix ICA client.

- For Legacy ThinSTAR terminals (e.g. ThinSTAR 500) and PCs use serial and parallel desktop peripherals such as bar code readers and printers during RDP or ICA sessions

- For ThinSTAR 5xx.NET terminals use serial and parallel printing devices during RDP or ICA sessions

- For legacy ThinSTAR terminals use Windows audio input and output during RDP sessions (ThinSTAR 200 terminals have output capability, but not input capability)

- For PCs and ThinSTAR 5xx.NET terminals use audio output

- Use other storage devices that are connected to their PCs.

Supported Terminals

ThinPATH Plus supports the following NCD terminals:

Current Terminals:

- ThinSTAR 532.NET

- ThinSTAR 564.NET

Legacy Terminals:

- ThinSTAR 500

- ThinSTAR 400 / 450

- ThinSTAR 300 / 332/ 332 Web

- ThinSTAR 200 / 232

Multi-User Windows and NCD Thin Clients

Multi-user Windows is a network operating system that transmits its display to any compatible desktop. During a multi-user session, the application runs on the Windows-based server, wherever it is located. Only the display is on the desktop; no processing occurs there.

In traditional Windows systems, only the user at the console is logged onto the server. Other users can connect to a drive on the server and access files, but they run applications from their own computers.

In contrast, users in a multi-user Windows system connect to the Windows-based server and many sessions run on the server at the same time. Each user's computer is an input-display station with a keyboard, a mouse, and a monitor.

- The application running on the server sends a screen display over the network to the user's desktop.

- Information from the keyboard or mouse goes over the network to the application running on the server.

Desktops include Windows PCs and many thin client computers. Application screens appear on these desktops, but no application processing occurs on the desktop during a multi-user session.

Server Applications

NCD thin client computing supports network computing, with desktop users connecting to servers to run applications and store files.

- Desktops can be ThinSTAR terminals or PCs.

- Applications are Windows applications or applications available through optional NCD terminal emulation products.

- Windows-based servers are computers running the Microsoft Windows NT 4.0, Terminal Server Edition, or Windows 2000 operating system

Windows Terminal Server
(Windows 2000 or
Windows NT 4.0 Terminal
Server Edition)

ThinSTAR

Multiple users can connect
to the server.

Many applications run on
the server.

Applications display
screens on ThinSTAR
and PC desktops.

Saved files are stored in
the server's file system.

PC

Keyboard entries and mouse
selections go to the server
over the network.
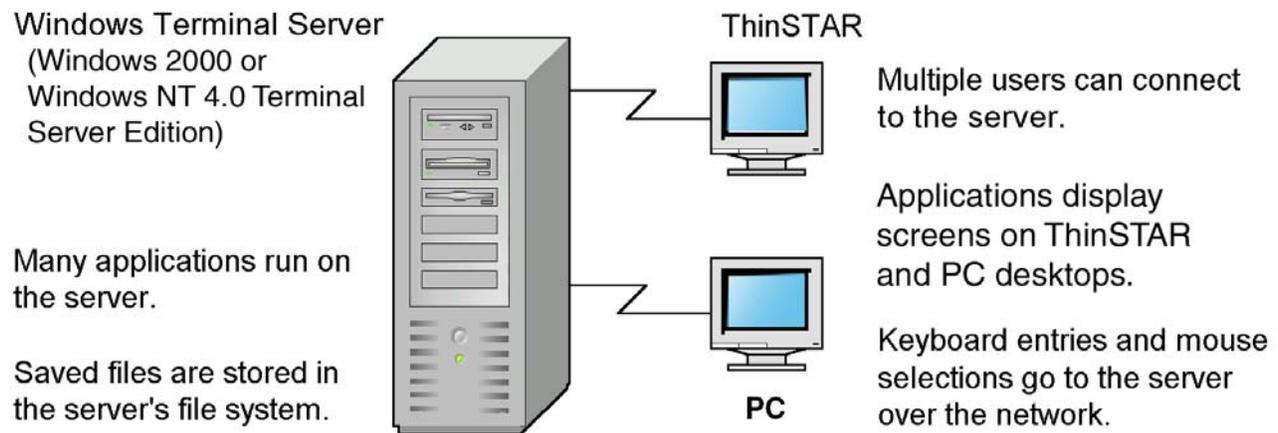
Desktop Ports and Devices

ThinPATH Plus lets a server-based application or device driver transfer data transparently from a server's virtual port to a desktop port over the TCP/IP network. To support high demand serial applications, this product includes complete bi-directional transfer for up to a 57.6K baud rate, as well as complete serial flow control. Devices include printers, bar code readers, personal digital assistants, digital cameras, and process control devices. They must

use standard Windows drivers to work with ThinPATH Plus. The software cannot have timing assumptions such as an expected time of response.

Note Bi-directional parallel devices such as scanners are not supported.

Note ThinSTAR 5xx.NET terminals support printing and audio output only.

As part of setting up NCD ThinPATH Plus, you associate a set of virtual server ports-both COM and LPT-with the serial and parallel ports on desktop devices.

▪ A legacy ThinSTAR terminal has up to two serial ports and one parallel port.

▪ A ThinSTAR 5xx.NET terminal has one serial port and one parallel port.

▪ A PC has serial and parallel ports as included in the configuration.

When a thin client user wants to print from an application-or read from a device such as a bar code reader-the application on the server sends the request to a virtual port on the server. This virtual port represents a real desktop device.
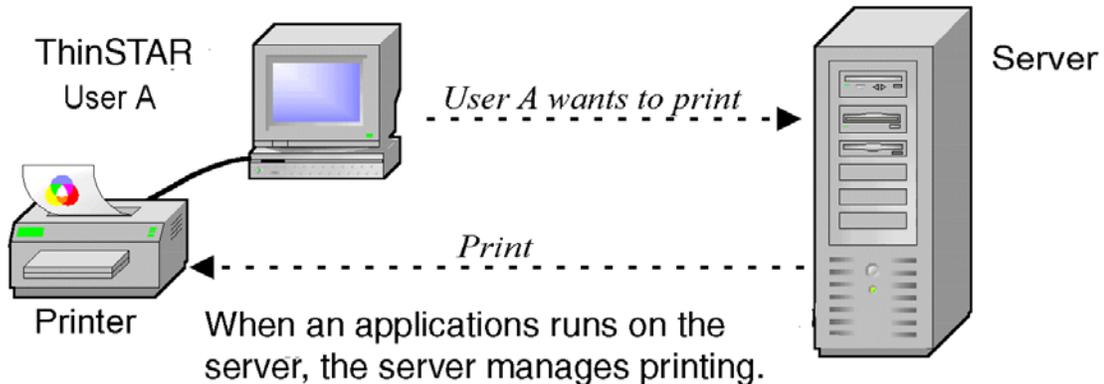
In ThinPATH Plus Configuration, the Virtual COM/LPT Ports tab lists virtual ports for the server. Nine serial (COM) ports and nine parallel (LPT) ports are provided at installation. You can assign these and create others as needed, then set properties through ThinPATH Plus Configuration. For a printer, you also add the printer in Windows NT.

Audio Input and Output

When a Windows-based server client session starts on a server and the application uses sound (for warnings, for example), ThinPATH Plus allows the sound to travel to the desktop. Dynamic network tuning adjusts to the available bandwidth and balances the network load and audio quality.

Using the standard Windows audio control, users can set volume controls from the desktop for each RDP session.

If the speaker icon is not on the taskbar, you can restore it. To do this, select **Start | Settings | Control Panel | Sounds and Multimedia** and check the box that says to show the volume control on the taskbar.

To see other volume controls, right click the speaker icon, then select **Open Volume Controls** and set slider bars.

Data Storage

You can access a storage device local to your PC or Legacy ThinSTAR terminal from any ICA or RDP session you are logged into. For example, you can copy data from your ICA or RDP session to a backpack floppy diskette drive (e.g. ThinSTAR 200, ThinSTAR 300, ThinSTAR 400, and ThinSTAR 450).

Note The NCD Legacy ThinSTAR only supports a MicroSolutions backpack floppy diskette drive (www.micro-solutions.com).

Note Legacy ThinSTAR 500, 332, and 332Web terminals and the ThinSTAR 5xx.NET terminals do not support any floppy diskette drive.

From a PC you can access any connected storage device which might include: local floppy drives, hard drives, CDs and DVDs.

Documentation

This guide and the release notes are provided as PDF files (**StartupGuide.pdf** and **ReleaseNotes.pdf**) installed in the destination directory. The default is:

C:\Program Files\ThinPATHPlus

You can also download these documents from the NCD website:

http://www.ncd.com/support/docs_thinpath.html

Software Installation

This section explains how to install software on Windows-based servers, NCD ThinSTARs, and PCs. Subsequent sections describe implementation options and explain how to configure the software and use the services.

Software for NCD ThinPATH Plus is installed on the following systems:

▪ Windows-based servers that provide NCD ThinPATH Plus software services to user-sessions.

▪ Thin STAR Management Server, which is the Windows NT server running the NCD ThinSTAR Management Service (TMS).

▪ Windows 2000 server which has NCD ThinPATH Portal installed.

▪ PCs that use ThinPATH Plus software services when connecting to Windows-based servers.

Software is installed as follows.
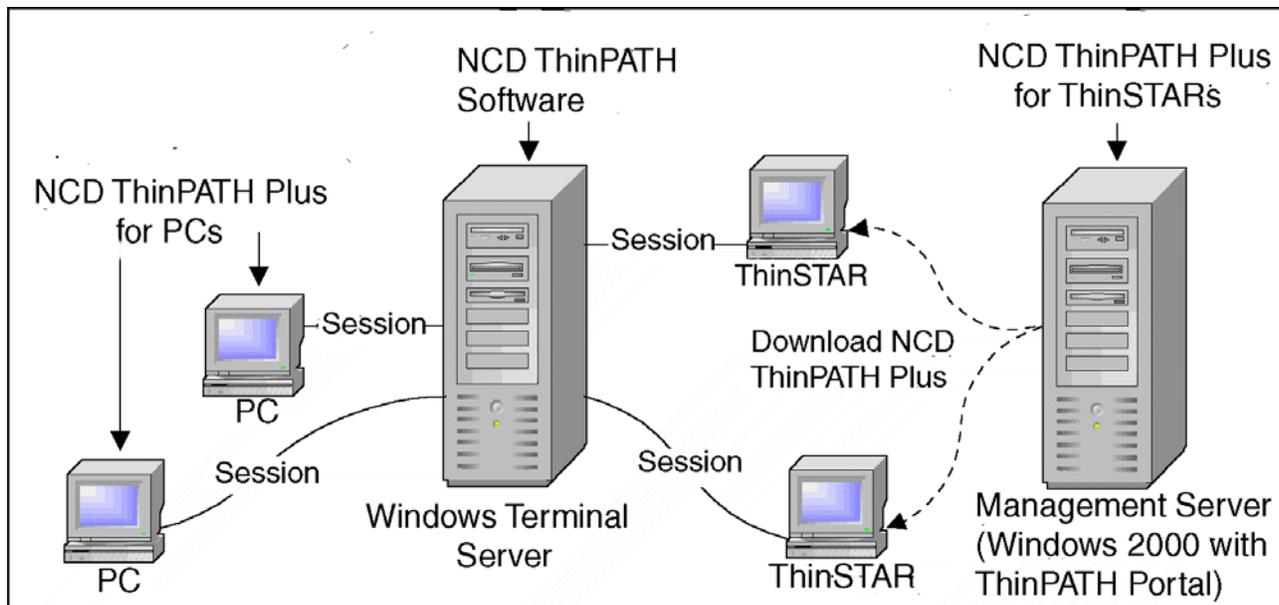
Installing NCD ThinPATH Plus for Terminal Services

You must install the ThinPATH Plus software on every Windows- based server that is to provide NCD ThinPATH Plus functionality.

To install software on the server, you need:

- Microsoft Windows NT Server 4.0, Terminal Server Edition or Microsoft Windows 2000 Server and Advanced Server for ThinSTAR Management Service (TMS)

- Windows 2000 Server and Advanced Server for ThinPATH Portal

- Administrative rights to install or configure the software

- Standard Windows multimedia capabilities for audio

To install NCD ThinPATH Plus software:

1. Download the software from the NCD website as described in the document included with the product package.

2. Run **NCDThinPATHPlus** to unpack the files and run the installation.

3. Select a destination, then click **Next**.

4. The default is **C:\Program Files\ThinPATHPlus**.

5. Select components, then click **Next**.

6. Enter the license key that came on the certificate of purchase in the product package.

7. Review your selections and go back, if necessary, to make changes.

To add additional license keys:

1. Log onto the server as the administrator.

2. Select Start | Programs | Administrative Tools (Common) | NCD ThinPATH Plus | NCD License Manager.

3. Enter the new license keys.

Installing Software on a Legacy ThinSTAR Terminal

NCD ThinPATH Plus is installed on ThinSTAR terminals through NCD ThinSTAR Management Service (TMS). TMS is part of the NCD ThinSTAR Operating Software.

Note For more information about TMS, see the NCD ThinSTAR System Administrator's Guide.

To install NCD ThinPATH Plus on a Legacy ThinSTAR, you must have:

- ThinSTAR terminal with 16 MB RAM recommended
- NCD ThinSTAR Operating Software (which includes TMS) version 2.20 or later installed on a server running Microsoft Windows NT 4.00 or later

To install the software:

1. Download the software from the NCD website as described in the document included with the product package.

2. Run **NCDThinPATHPlus** to unpack the files and run the installation.

3. Select a destination, then click **Next**.

4. The default is **C:\Program Files\ThinPATHPlus**.

5. Select components, then click **Next**.

6. Review your selections and go back, if necessary, to make changes.

7. Restart the ThinSTAR terminal to upgrade its software.

Installing Software on a ThinSTAR 5xx.NET Terminal

NCD ThinPATH Plus is installed on ThinSTAR 5xx.NET terminals through the ThinPATH Portal.

Note For more information about ThinPATH Portal, see the NCD ThinPATH Portal Administration Guide.

To install NCD ThinPATH Plus on a ThinSTAR .NET terminal, you must have:

- ThinSTAR terminal with 32 MB RAM recommended
- NCD ThinPATH Portal version 1.3.31 or greater
- NCD Portal Client for ThinSTAR 5xx.NET version 1.2.4.0 or greater

To install the software:

1. Download the software from the NCD website as described in the document included with the product package.

2. Run **NCDThinPATHPlus** to unpack the files and run the installation.

3. Select a destination, then click **Next**.

4. The default is **C:\Program Files\ThinPATHPlus**.

5. Select components, then click **Next**.

6. Review your selections and go back, if necessary, to make changes.

7. Restart the ThinSTAR terminal to upgrade its software.

Installing Client Software on PCs

To install NCD ThinPATH Plus on a PC, you must have:

- A PC with Windows 95, Windows 98, Windows NT 4.0, Windows 2000 Professional, or Windows XP Professional

- A sound card or sound card support for audio

- An RDP or ICA client installed on the PC

To install the software:

1. Download the software from the NCD website as described in the document included with the product package.

2. Run NCDThinPATHPlus to unpack the files and run the installation.

3. Select a destination, then click **Next**.

4. The default is **C:\Program Files\ThinPATHPlus**.

5. Select components, then click **Next.**

6. Review your selections and go back, if necessary, to make changes.

When you have completed the installation:

1. Select **Start | Settings | Control Panel | Plus** Controls and enable LPT/COM port services and audio services.

2. Set options for audio or COM/LPT ports.

You must enable audio on a PC to hear sound from a session; volume control determines how loud it is.

Desktop Port Options and Procedures

On the server, you use ThinPATH Plus Configuration to map virtual COM and LPT ports on a Windows-based server to physical serial and parallel ports on desktops. You do not configure the port through Windows NT.

NCD ThinPATH Plus makes serial and parallel peripheral devices available to users during RDP and ICA sessions where:

- People need to use a specific device. For example, several people may need to share a device attached to one desktop or an individual may require a personal device.

- Several people need to use devices attached to their desktops.

Setting up Device Access

With NCD ThinPATH Plus, it is possible to map a specific device. For example, if a printer is physically attached to one NCD ThinSTAR or PC desktop, you can map its parallel port to a virtual LPT port.

Where privacy is essential or use of a device is limited, an individual may have a personal device, as shown in this example.
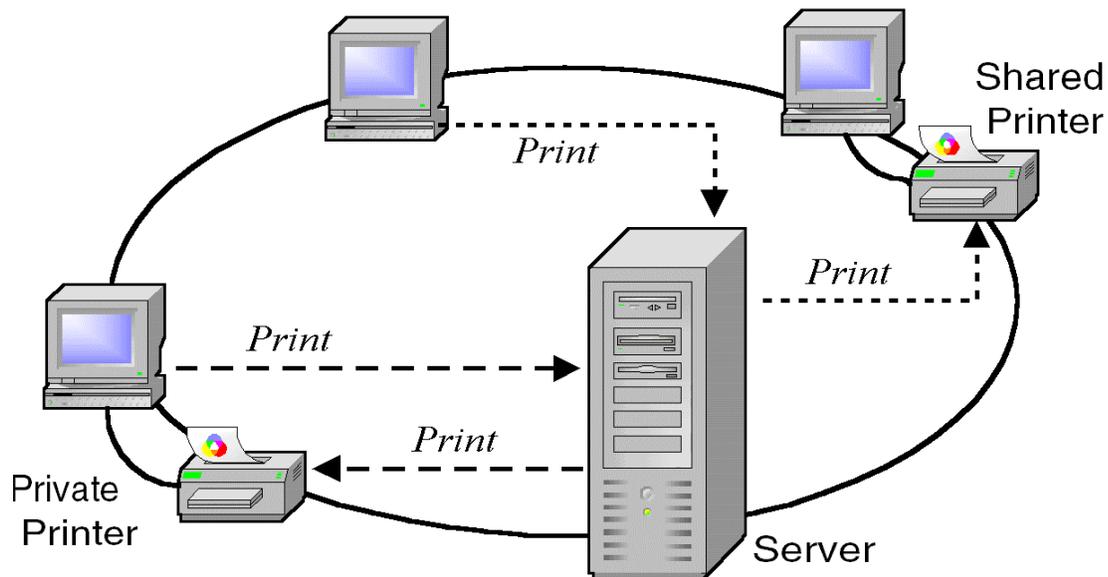
You map the physical desktop port to one virtual port on the server just as you map a port for a shared device. By setting access permissions you can restrict access to the device.

Note ThinPATH Plus is not designed to function as a print server. If you need print server capabilities (sending multiple print jobs to one ThinSTAR with a printer), use LPD which NCD offers in it's ThinPATH Manager product.

When you map a virtual port to a port on a specific physical desktop, you select the Use Specified Client Hostname option, then identify the desktop when you edit port properties.

To map a specific device:

1. Select Start | Programs | Administrative Tools (Common) | NCD ThinPATH Plus | ThinPATH Plus Configuration.

2. Select a Terminal Server port (COM 3-9, LPT 2-9, or a virtual port that you have added).

Note We recommend that you reserve LPT1, COM1, and COM2 for actual devices attached to the server. The word "Hardware" shows that a device is reserved.

If you map a physical hardware port on the server as a virtual port, you cannot use the physical port on the server.

3. Click **Edit Port**, then select **Use Specified Client Hostname** to map the port.

This maps a virtual port to the client device that you identify by host name or IP address. Click Next. For example, you would use this to map a port to a specific printer.

4. Select the desktop port to associate with the virtual port.

5. For a parallel port, click **Finish**.

6. For a serial port, click **Next**, then select default settings (baud rate, data bits, parity, stop bits, and flow control) for the connection and click Finish. Most applications override these, but serial printers often rely on them.

7. Click **Apply** to save the settings.

Mapping Multiple Stations

In some environments, multiple stations have desktops with attached devices.

For example, in the following retail environment, a person can go to any station and use the bar code reader attached to the desktop.
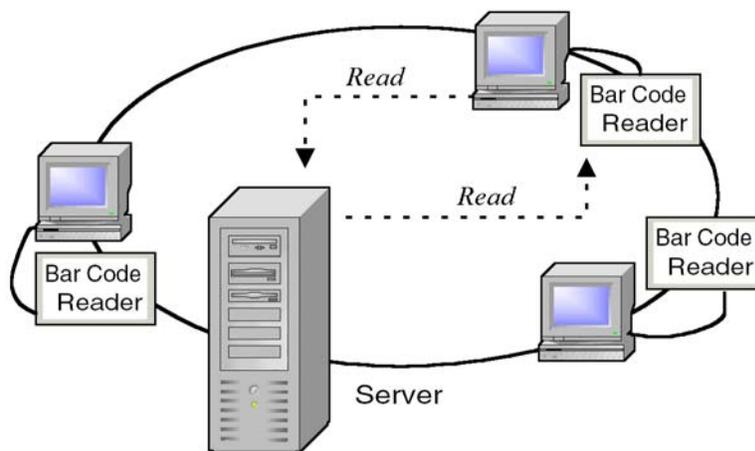
Likewise, in the following implementation, users can print to label printers attached to their own desktops.
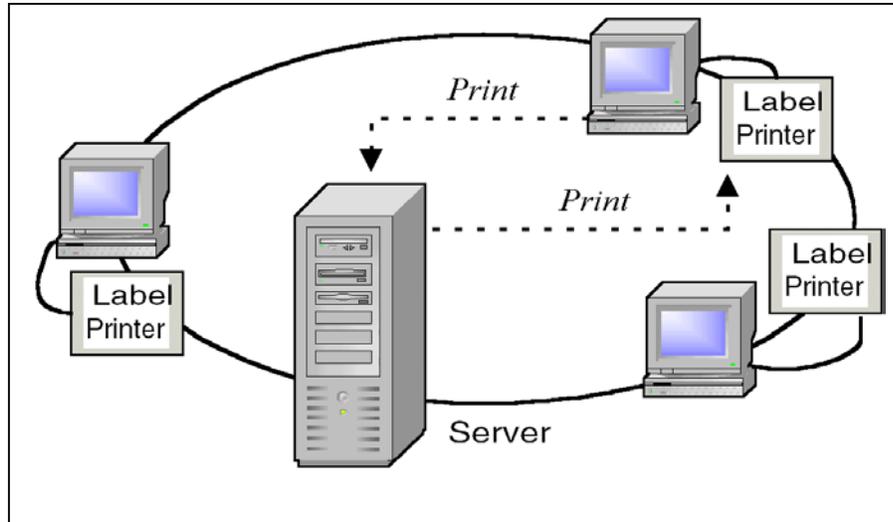
In both of these cases, a serial or parallel device port is mapped to a virtual port on the server using the Use Client Service option (rather than the Use Specified Client Hostname option). The following example shows a completed port assignment for label printers. The Port Option column shows the selected settings.
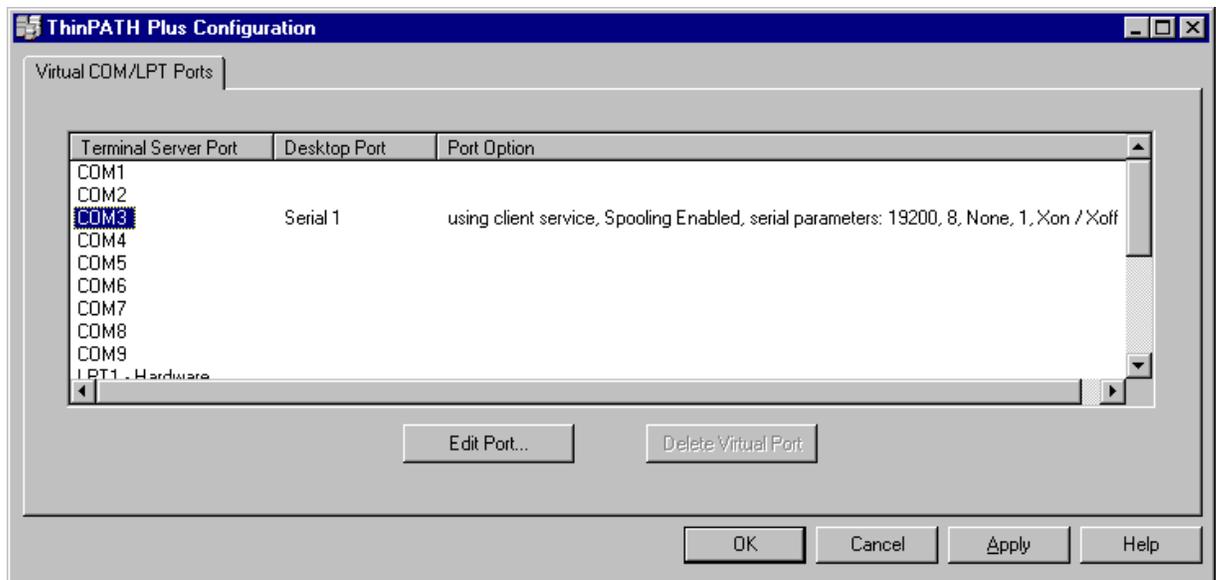
These port options, set by clicking Edit Port, are as follows.

Desktop Connection Options

Configuring: COM3

Specify how the virtual connection will be established. Either use the client information at session startup time or use the specified IP address for the connection.

(•) Use Client Service

( ) Use Specified Client Hostname

< Back | Next > | Cancel | Help
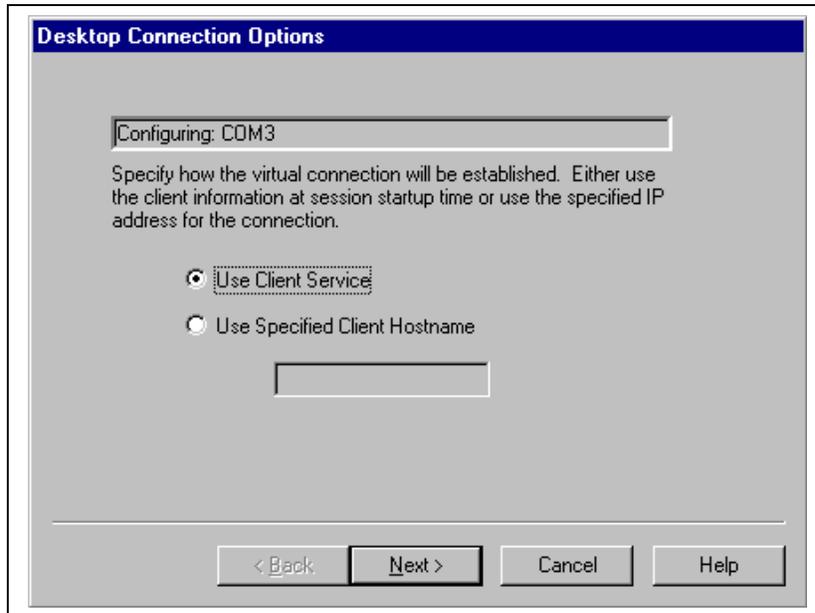
The **Use Client Service** option lets users print to the device attached to the specified port on their desktops.

Select Desktop Port

Configuring COM3 with the client service

Select the desktop port you want this virtual connection to be mapped to.

Serial 1
Serial 2
Serial 3
Serial 4
Serial 5
Parallel 1
Parallel 2

< Back | Next > | Cancel | Help
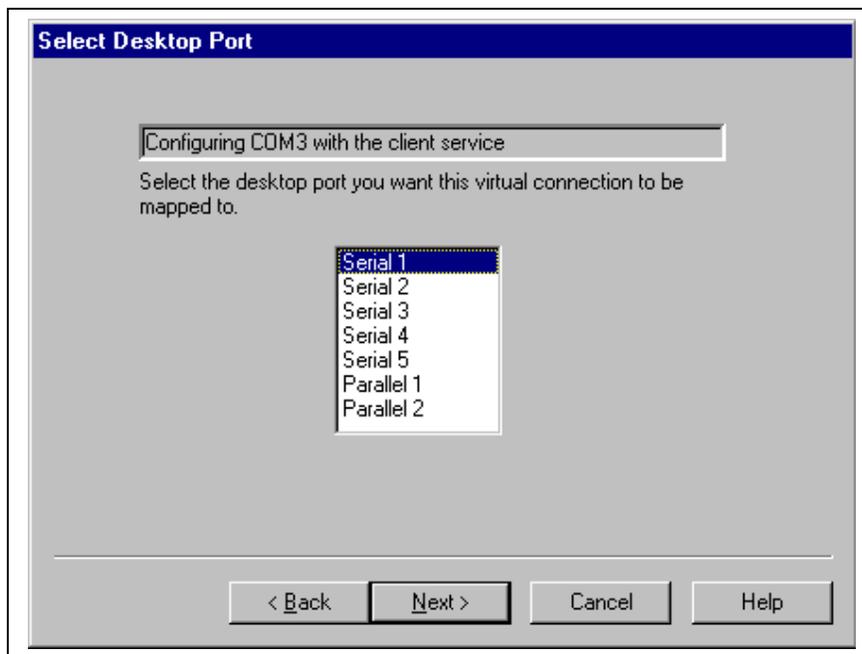
Since the desktop port is Serial 1, the label printer can be attached to a ThinSTAR. The ThinSTAR 500.NET models have one serial port and one parallel port.

Each user can print to the device attached to the serial 1 port on the desktop.

Serial Port Parameters

Configuring COM3 with client service on Serial 1

Select the Serial Com Port settings to be used with this virtual com connection.

Baud Rate: 19200

Data Bits: 8

Parity: None

Stop Bits: 1

Flow Control: Xon / Xoff

[< Back] [Next >] [Cancel] [Help]
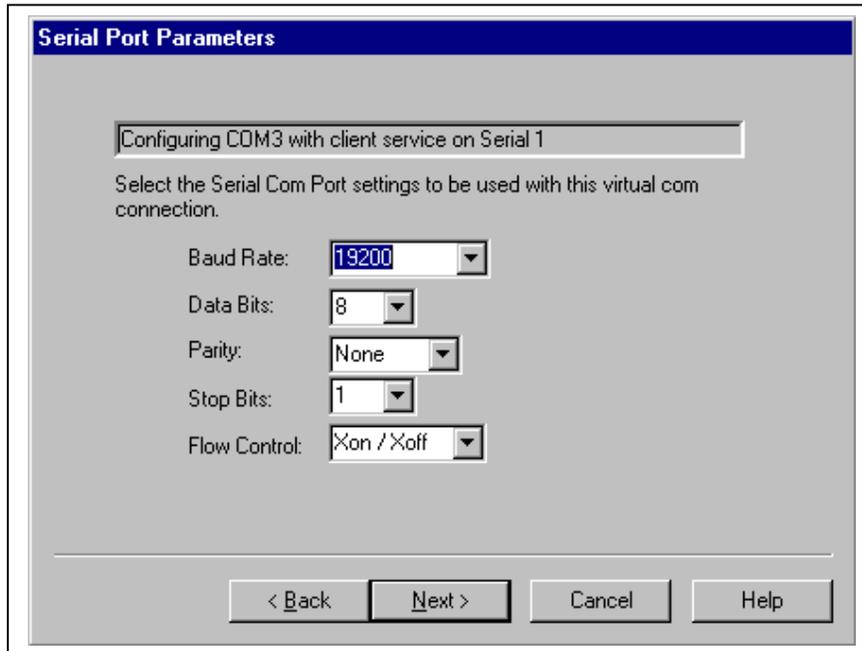
The default baud rate is 9600.

Most applications override these settings, but serial printers often rely on them and the settings should reflect the recommendations for the serial device.

To map a virtual COM or LPT port on the server to a specified serial or parallel port on multiple devices:

1. Select **Start | Programs | Administrative Tools (Common) | NCD ThinPATH Plus | ThinPATH Plus Configuration**.

2. Select a Terminal Server port (COM 3-9, LPT 2-9, or a virtual port that you have added).

   Note We recommend that you reserve LPT1, COM1, and COM2 for actual devices attached to the server. The word "Hardware" shows that a device is reserved.

If you map a physical hardware port on the server as a virtual port, you cannot use the physical port on the server.

3. Click **Edit Port**, then map the port with **Use Client Service**.

This maps a virtual port to the specified port of each client that logs into the server.

4. Select the desktop port to associate with the virtual port.

5. For a parallel port, click **Finish**.

6. For a serial port, click **Next**, then select default settings (baud rate, data bits, parity, stop bits, and flow control) for the connection and click Finish. Most applications override these, but serial printers often rely on them.

7. Click **Apply** to save the settings.

Verifying Device Connections

When data travels over a TCP/IP network, it may be delayed or interrupted. If software expects data to arrive within a certain time, it may time out while waiting and conclude that there is a hardware error.

We encourage you to test each device during client installation to determine whether there are any server timing issues when the device is attached to a desktop. Serial devices may not work properly, for example, if they use their own timeouts instead of the operating system's timeouts.

Adding Virtual Ports

Eighteen virtual ports are defined during installation, nine for LPT devices and nine for COM ports.

If you need more virtual ports, you can add them as needed, using ThinPATH Plus Configuration. You can also specify the maximum number of client ports. For example:
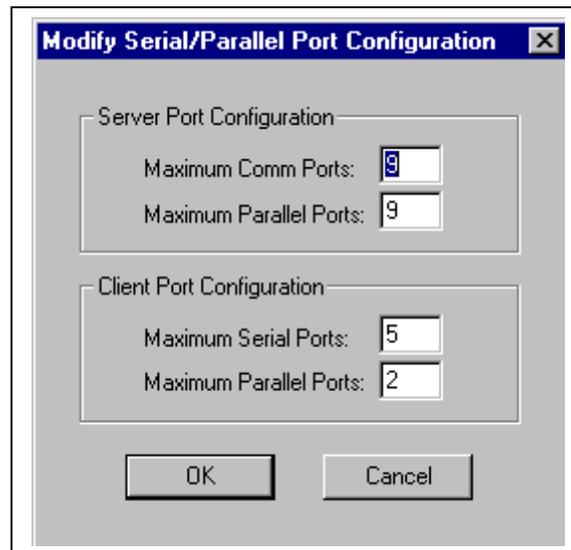
To add virtual COM/LPT ports:

1. Select **Start | Programs | Administrative Tools (Common) | NCD ThinPATH Plus | ThinPATH Plus Configuration**.

2. **Right click** on the ThinPATH Plus Configuration title bar.

3. Select **Modify Serial/Parallel Configuration**.

4. Set the maximum number of ports as needed and click **OK**.

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You can increase the maximum number of serial (COM) and parallel (LPT) ports on the server and on clients.

5. Restart the server so that it recognizes the new virtual ports.

6. Select **ThinPATH Plus Configuration** and configure the new virtual ports.

Adding a Printer That Uses a Virtual Port

After you configure a virtual port for a printer, you can add the printer through Windows **Start | Settings | Printers** and associate the printer with an NCD virtual port.

Note You cannot use the printer from applications running on the server and from applications running on your local system. If you print from your local system, the printer port opens and remains open; as a result, the virtual port cannot access the port.

After you assign the device to a virtual port and edit the port, you add the printer. The following example shows how a label printer is configured in Windows 2000.

In Windows 2000, you select **Start | Settings | Printers** and add the printer.

Here, the label printer has been added and named CoStar LabelWriter XL.

When you add the printer, a wizard prompts for information, and stores the entries as printer properties

One of the properties is the port, which must be one of the specially defined NCD virtual Ports. Here, the label printer has been associated with NCD_COM3.
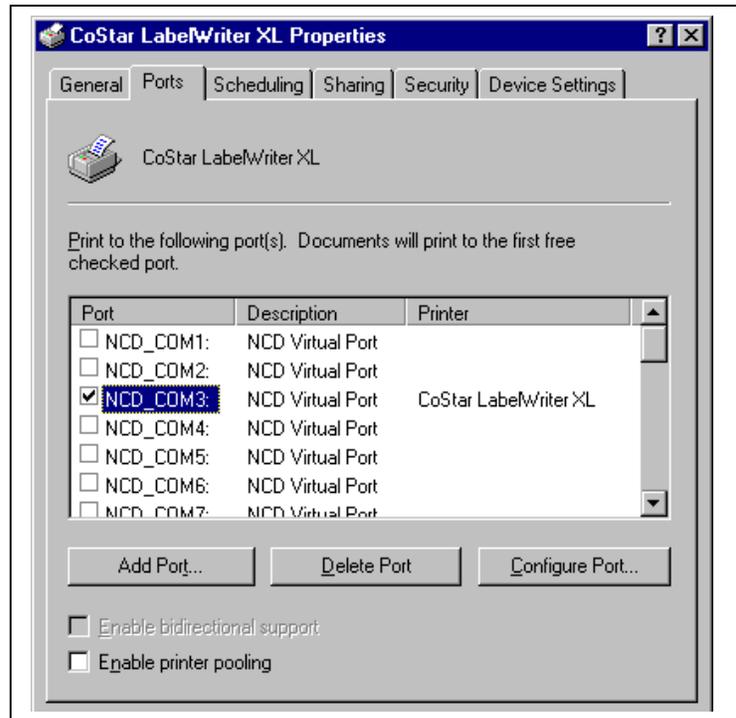
Note You do not use the buttons Add Port, Delete Port, or Configure Port when printing through the server with ThinPATH Plus.

To attach a printer to a ThinSTAR or PC that is using NCD ThinPATH Plus:

1. From the Windows Desktop, select **Start | Settings | Printer**.

2. Double click **Add Printer**.

3. Select My Computer and click **Next**.

4. Select the NCD virtual port you have configured for this device (you must click the port box to select it) and click **Next**.

Note Do not use Add Port or Configure Port here; do all configuration through ThinPATH Plus Configuration.

5. Select the printer to associate with this port.

6. Continue to set up the printer as you would for any Windows printer.

Configuring Data Storage Devices

With the remote storage function of ThinPATH Plus, a user can open or save files to their desktop. Some legacy ThinSTAR Windows-based terminal users can access a floppy drive

that is attached to the parallel port. PC desktop users can access files on any of their local drives including a floppy, CD or hard drive.

Administrators restrict users to limit access to certain devices. For example, users in some groups can be authorized for read only access and others restricted to no access. If administrators are concerned about virus introduction, they can allow files to be read but not saved.

Using the NCD ThinPATH Plus Storage Properties, you can:

- Assign classes of storage devices to specific drive letters

- Unsave any stored username/password used for automatic connection to shared drives

- See the available storage devices for the current session

- Set rules for user access to storage devices (admin function only)

- View the status of all the storage devices for each session (admin function only)

Note If you do not assign a storage device to a specific drive letter, it will not be available in the next session.

Mapping a Storage Device to a Drive Letter

Note By factory default, drives A and B are set for use as floppy drives. You can override these defaults.

We recommend that you set default drives for both the floppy drive and the SuperDensity floppy drive because your drive might be a super density drive.

1. **Select Start | Settings | Control Panel | NCD ThinPATH Plus Storage**.
2. Select the **Assign** tab.
3. Select a device from the Device Class list
4. Select a drive letter to assign to that storage device from the User Overrides list.

Note Your settings take effect when you have logged out and back in to a new session.

In the Global Defaults list, an administrator can assign a range of drive letters to a device. If the user has not specified a drive letter, the device will map to a drive letter within the range listed in the Global Defaults.

Checking the Status of a Client Storage Device

1. **Select Start | Settings | Control Panel | NCD ThinPATH Plus Storage**.
2. Select the **Client Status** tab.

The current terminal identifier is displayed.

Under the Attached Device list, you will find the:

- drive the device is mapped to
- description of the device
- class the device belongs to.

You can also unsave stored user names and passwords used for automatic connections by checking the Unsave stored username/ password credentials checkbox.

Setting Rules For User Access to Storage Devices

1. As an administrator, select **Start | Settings | Control Panel | NCD ThinPATH Plus Storage.**

2. Select the **Security** tab.

3. Click **New**.

4. From the Security Rule Definition dialog, provide a unique Rule Name that you will readily understand.

5. Select one or more Rule Definitions from the drop-down list. A Rule is an expression evaluated from left to right. Each condition must be met before the rule can be applied. Parenthesis can be used to create sub expressions which are evaluated first.

   For example, your rules might look something like this:

   DomainMember [Support] **&&** !GroupMember [Administrator]

   or

   GroupMember [Users **&&** !Administrator] **&&** StorageDeviceClass{HardDisk}

Note Since Rules are listed in priority from top to bottom, order the most restrictive rule at the top of the list and the general rules at the bottom of the list.

6. Select the desired action (**Read/Write, Read/Only or No Access**).

7. Click **Apply**.

Note Your setting takes effect when you have logged out and back in to a new session.

You can also edit existing definitions, delete definitions and move them up and down in the list.

Checking the Status of a Server Storage Device

1. As an administrator, select **Start | Settings | Control Panel | NCD ThinPATH Plus Storage.**

2. Select the **Server Status** tab.

3. Select a session from the Sessions list.

You can view:

- Current sessions on the server

- Storage devices attached to each session

- Client terminal's ID and description

- Type of storage device

- Drive letter assigned to the storage device

- Whether the drive is shared or not.

Using NCD Print Monitor

The NCD Print Monitor provides queuing of multiple print jobs when multiple users are using the same printer definition. For example, if three users with their own desktop printers use the same printer definition and one user's print job fails and, as a result, that desktop printer goes offline, the other two user's print jobs are queued individually to their desktop printer and are not held up in the queue by the one failed print job.

The NCD Print Monitor allows you to:

- Check on the status of a print job

- Pause a print job

- Cancel print jobs

By default, the virtual port is set to use the NCD Print Monitor.

Turning Off the Print Monitor

To turn off NCD Print Monitor:

1. Select **Start | Programs | Administrative Tools (Common) | NCD ThinPATH Plus | ThinPATH Plus Configuration**.

2. Select a Terminal Service Port and click **Edit port**.

3. Select how the virtual connection will be established and click **Next**.

4. Select **Don't use NCD Print Spooling**.

The change takes place immediately.

Checking Print Job Status

To check on the status of a print job:

1. From the Windows Desktop, select **Start | Programs | NCD ThinPATH Printing | NCD Print Monitor.**

The NCD Print Monitor window displays. If you are logged on as the administrator, the window titles indicates that you are in administrator mode.

Pausing Print Jobs

To pause a print job:

1. From the Windows Desktop, select **Start | Programs | NCD ThinPATH Printing | NCD Print Monitor.**

2. Select the print job you want to pause.

3. From the NCD Print Monitor dialog, select **Document | Pause**.

To send the job to the printer just select **Resume**.

Deleting Print Jobs

To delete a print job:

1. From the Windows Desktop, select **Start | Programs | NCD ThinPATH Printing | NCD Print Monitor.**

2. Select the print job you want to delete.

3. From the NCD Print Monitor dialog, select **Document | Delete**.

To delete all the selected jobs, just select **Delete All**.

Print Monitor Functions For Administrators

As an administrator you can:

▪ Determine where temporary print job files are placed on the disk.

▪ Set a limit on the disk space that a print job can occupy.

▪ Delete print jobs that exceed the maximum temporary disk space.

▪ Set the print monitor to inform users when their print job has been deleted.

▪ Delete print jobs by category (by session ID, client printer or all outstanding print jobs for a server)

Configuring the Print Monitor

To configure the Print Monitor:

1. From the Windows Desktop, select **Start | Programs | NCD ThinPATH Printing | NCD Print Monitor.**

2. Select **Admin | Configuration**.

   In the NCD Print Monitor Configuration dialogue, enter:

   — the maximum temp disk space

   — the temporary file path

3. Check the box to delete print jobs that exceed the temporary disk space and inform the user that the job has been deleted, if desired.

Deleting Print Jobs by Category

You can delete print jobs by category (session, individual client printer or all outstanding jobs on a server) rather than delete individual print jobs. To delete print jobs by category:

1. From the Windows Desktop, select **Start | Programs | NCD ThinPATH Printing | NCD Print Monitor.**

2. Select **Admin | Delete Jobs by Categories**.

3. In the **Delete Jobs by Category** dialog, select one of the following:

   — Session ID

   — Client Printer

   — All outstanding jobs on this server

4. In the appropriate dialog, select your session ID, printer, or all print jobs for a specific server to be deleted.

5. Click OK or yes to delete your print jobs.

TCP/IP Port Usage

Feature	Port Number
Virtual Ports	Serial 1 TCP 6461
	Serial 2 TCP 6462
	Parallel 1 TCP 6464
Audio	Listen TCP 9000
	Transmit UDP >= 10,000
PC Storage Mapping	TCP 6363 and UDP 139
ThinSTAR Storage Mapping	TCP 6363