



TN5250 Emulation Software

Installation and User's Manual



Complete Midrange Solutions



Table of Contents

Table of Contents	2
Legal Notices	5
CHAPTER 1	6
INTRODUCTION	6
ES/TCP Features	7
ES/TCP Technical Specifications	8
CHAPTER 2	9
INSTALLATION	9
Preparations	9
Uninstall previous versions of ES32 software	9
Verify your Network Interface Card	9
Installing The ES/TCP Software	10
Configuring ES/TCP	14
CHAPTER 3	19
RUNNING THE ES/TCP EMULATION	19
Running ES32	19
Registering the software	19
Starting a session	20
Status Indicators:	23
CHAPTER 4	24
CONFIGURING ES32	24
Session Properties	24
General Settings	26
Display options	27
HotSpots	27
Font	30
API	31
Colors	32
Keyboard	33
Using Macros	36
To record a macro	36
To play back a macro	36
Adding a macro to the toolbar	37
To pause a macro	38
To edit a macro	38
The ES32 Printer	39
Adding and configuring an ES32 Printer	39
To Open A Printer Session	42
Print Data Control	43
Formatting that occurs on the host	43
AS400 Host Print Transform	44
Getting Help	46

APPENDIX A	47
TERMINAL DEVICE TYPE CODES	47
APPENDIX B	48
AS400 HOST PRINT TRANSFORM	48
APPENDIX D	50
TROUBLESHOOTING	50
Indicators	50
Cursor Positions:	50
Status Indicators:	50
Problem Guide	51
ES/TCP CONFIGURATION PROBLEMS	52
INVALID ADDRESS PROBLEMS	55
NETWORK PROBLEMS	58
PROBLEMS AT THE HOST	60
REAL PROBLEMS AT THE HOST	63
INTERLYNX/S CONNECTIONS	69
REMOTE CLIENT PROBLEMS	70
ES32 Error Messages	72
Session Questions:	74
Screen Questions:	74
Font Questions:	75
Keyboard Questions:	76
Printer Troubleshooting	78
Other Questions:	80
APPENDIX E	81
IBM 5250 ERROR CODES	81
0000 to 0038, Operator Entry Error Codes	82
0040 to 005F Communication Network Errors	84
0060 to 0069 Ideographic Errors	85
0070 to 0078, Text Entry Assist Error Codes	85
0097 to 0099 Host Support Error Codes	86
100000 to 101D00 X.25 Error Codes	86

APPENDIX F	88
GLOSSARY	88
APPENDIX G	89
TECHNICAL SUPPORT	89
APPENDIX H	90
ES/TCP LIMITED WARRANTY	90

Legal Notices

COPYRIGHT

Copyright 2006 © Ringdale UK Ltd. All rights reserved. No part of this publication may be reproduced, transmitted, transcribed, stored in a retrieval system, or translated into any language or any computer language, in any form or by any third party, without prior permission of Ringdale UK Limited.

DISCLAIMER

Ringdale UK Ltd. reserves the right to revise this publication and to make changes from time to time to the contents hereof without obligation to notify any person or organization of such revision or changes. Ringdale UK Ltd. has endeavored to ensure that the information in this publication is correct, but will not accept liability for any error or omission.

TRADEMARKS

All trademarks are hereby acknowledged.

INTRODUCTION

ES/TCP is a software package that connects your PC to IBM Midrange computers through your network card, using TCP/IP. The emulation is TN5250E or Telnet 5250 Enhanced.

PC REQUIREMENTS

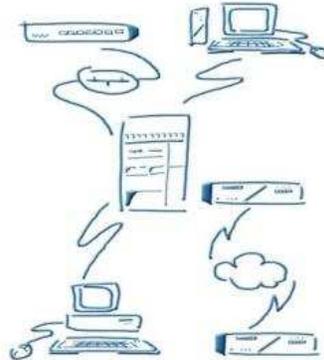
- IBM PC (or compatible) with 486, Pentium®, or higher processor,
- CD-ROM drive,
- Hard drive with 6 MB available,
- A minimum of 8 MB of available memory,
- Windows 98, NT 3.51 (or above), 2000 or XP,

ES/TCP Features

- There is no need to configure memory and I/O address during installation.
- Supports as many sessions as you require using Emerald Series emulation software.
- All combinations of display station models supported. Color, monochrome, 80 or 132 wide.
- Supports both Enhanced Telnet, and Line Printer Daemon (for older systems).
- Communicates with any Telnet 5250 Server.
- 32-bit Emulation Software included. Setup detects the PC operating system and installs the appropriate emulation.
- With the [emulator](#), you can:
 - Open multiple host sessions at any one time and work with those sessions to run host applications;
 - Emulate a variety of host display stations and printers;
 - Customize the IBM host screen to fit your needs by changing the screen colors, the [font](#), the shape of the cursor, and other features;
 - Use [HotSpots](#) to enact host menu items and commands by clicking on them with the mouse;
 - Assign many IBM host functions to your PC's keyboard;
 - Automate host procedures by recording macros. You can play back the macro any time you want to perform the procedure;
 - Copy IBM host screens to the Windows clipboard. From there you can paste them into PC applications or other host applications;
 - Copy tabular data from the IBM host to PC applications, such as spreadsheets;
 - Use [ETU](#) to transfer files between the IBM host and the PC. ETU is a file transfer utility, available from NLynx Systems.

ES/TCP Technical Specifications

- Emulation TN5250 or TN5250E
- ES/TCP part number 00-31-9603-0001



Preparations

Uninstall previous versions of ES32 software

If you have installed an ES/PCI or ES/3XTwin, ES/Client, or ES/Server on the PC it must be uninstalled before installing the ES/TCP software. If neither ES32 nor the Twinax Adapter was previously installed, you can start at the next section. Otherwise, you must **remove all** previous versions of ES95 (or ES32) from the computer, by using the uninstall utility found in the ES95 (or ES32) folder and deleting the physical driver files from the PC. This will prevent Windows from reinserting an incorrect hardware driver.

- 1) Click the Windows **Start** button.
- 2) Select "**Programs**", then the **ES32 (or ES95)**, and then finally "**Uninstall**".
- 3) You should also uninstall the hardware from the Device Manager. (If the Twinax Adapter hardware was been done before, and the driver chosen was wrong, then you must uninstall.
- 4) Go to the Desktop, and right-click on "**My Computer**".
- 5) Select "**Properties**", which will bring up the **System Properties** window.
- 6) Select the "**Hardware**" tab, and then select the **Device Manager** button.
- 7) First look for "**Twinax Adapters**", if it does not exist, then look for 'PCI Simple communication device', or a card that you do not recognize in "Other".
- 8) Click on the "+" next to Twinax Adapter to show the devices in this group. Click on "**NLynx PCI Twinax Adapter**" to highlight it. Select the **Action** menu and then '**Uninstall...**'.
- 9) Use the Windows Search (For Files or Folders) or Find to look for the **PCITwin.VxD** or **NLTwinax.sys** and delete them, wherever you find them.

Verify your Network Interface Card

- 1) Make certain that you can ping your AS/400 or Telnet 5250 Server.
- 2) Click on the **Start** button in the lower left of your screen, select **Run...** , and type in **CMD**.
- 3) Type in **ping** and then the IP Address of your AS/400.

Good : Reply from 205.242.238.38: bytes=32 time=7ms TTL=64

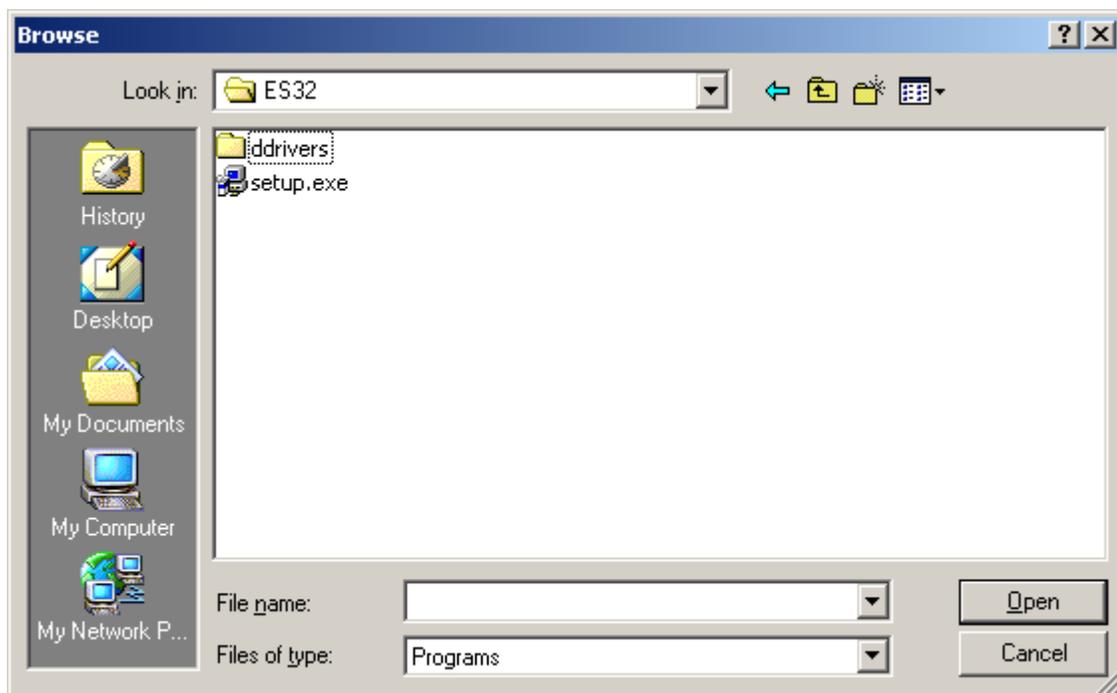
Bad : Request timed out.

Installing The ES/TCP Software

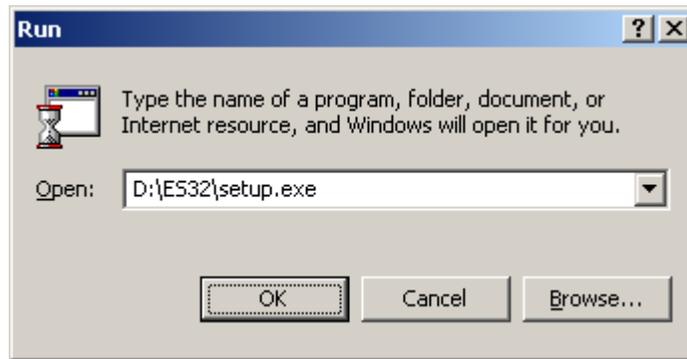
You can install the emulation software setup before installing the hardware driver, but you will not be able to configure the software until the hardware driver is properly installed.

Installing the software is the same for Windows 9X, Windows NT and Windows 2000 users, simply run the emulation software setup from the **ES32** folder on the CDROM.

- 1) Insert the ES/TCP CDROM into the CDROM Drive.
- 2) Click the Windows **Start** button, and then select **Run**.



- 3) Use the **Browse** button. You will click on **My Computer**, then the **D:** drive (or wherever your CDROM is), then the **ES32** folder, and select **Setup** and then click **Open** button.

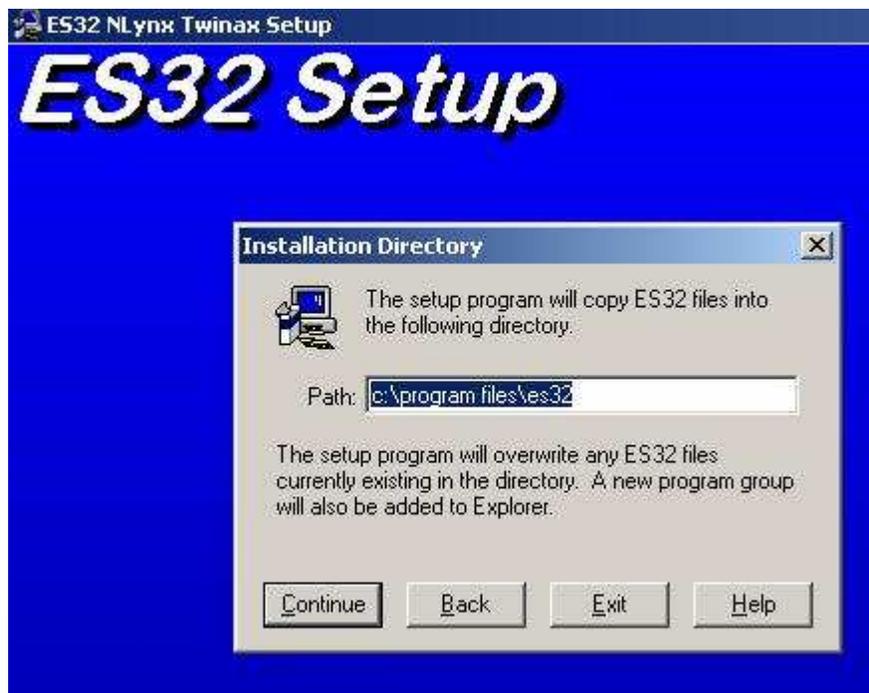


- 4) The path in the open field should be something like **D:\ES32\setup.exe**. If it is, click the **OK** button.





- 5) It will start the **ES32 Setup** and you will get the **"Welcome to ES32"** message. Click the **Continue** button.
- 6) You will get the SOFTWARE LICENSE AGREEMENT. Select the **Agree** button.



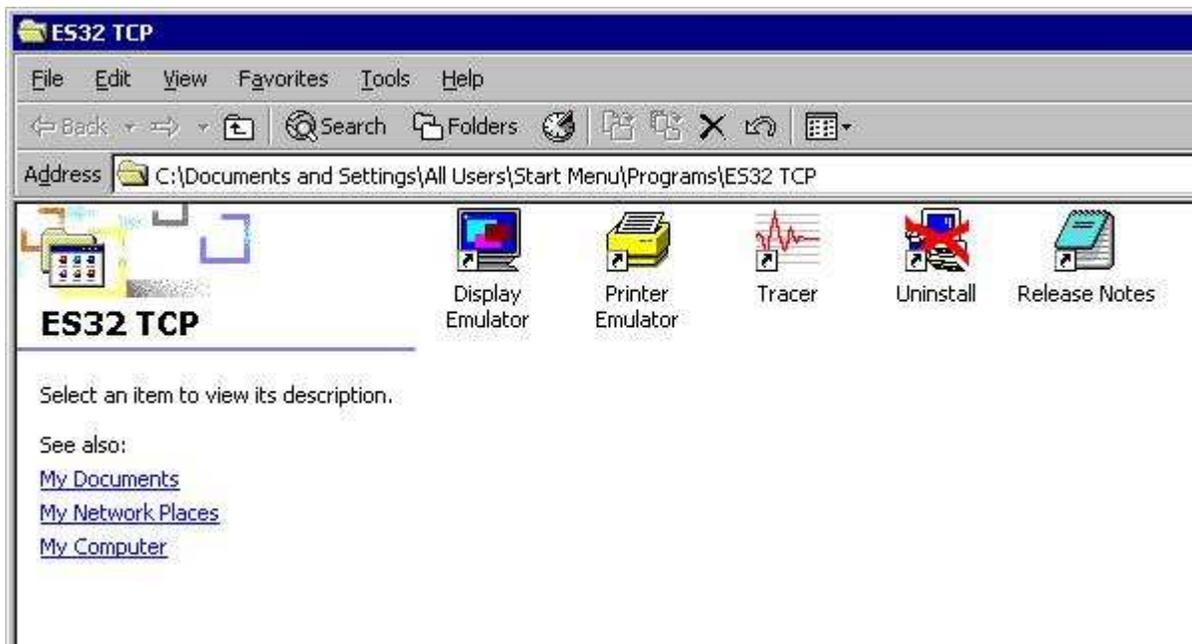
- 7) It will indicate that the installation directory is **C:\program files\es32**. Click the **Continue** button.



8) The installation will start.

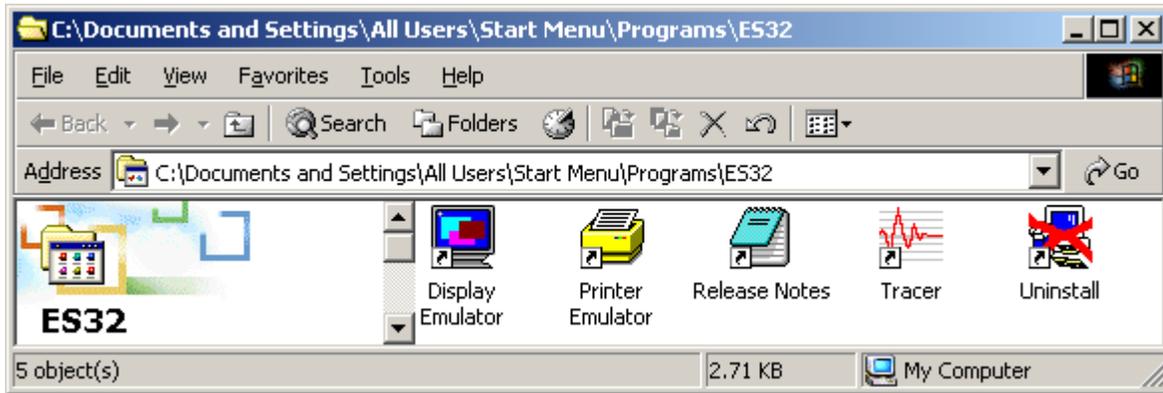


9) After the "Setup Succeeded" message appears, click **OK** and the folder with the ES32 files will come up.

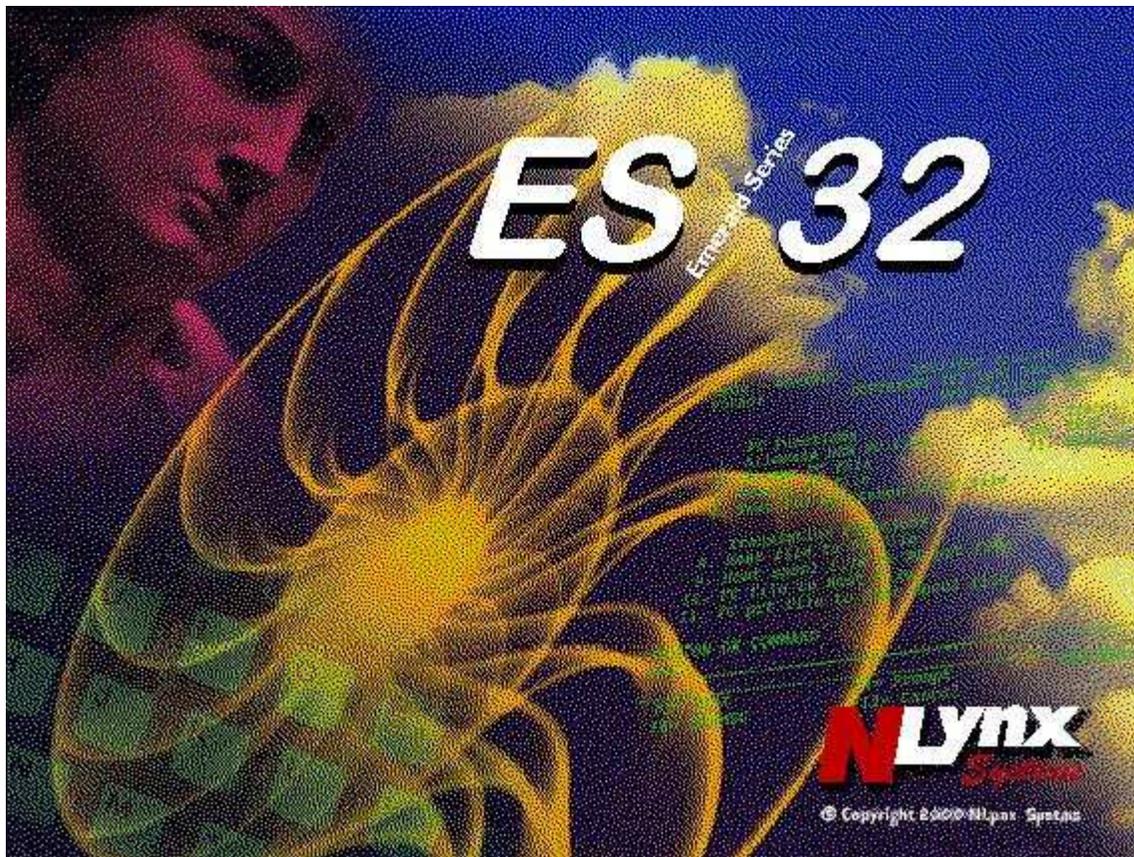


Configuring ES/TCP

This procedure must be performed when you first start the emulation software after installing the hardware driver and software.



- 1) Double click on the **Display Emulator** icon.



- 2) It will bring up the ES/32 splash screen.



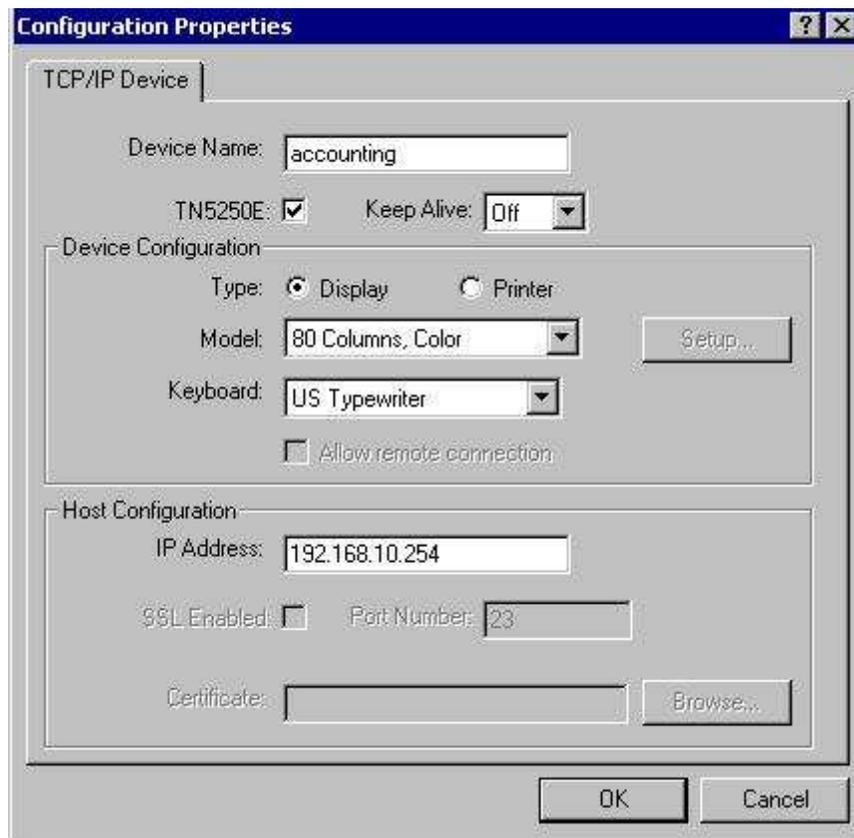
- 3) You will get the message **"Do you want to specify the password now?"** It is recommended to click **NO**. You may assign an administrator password later.



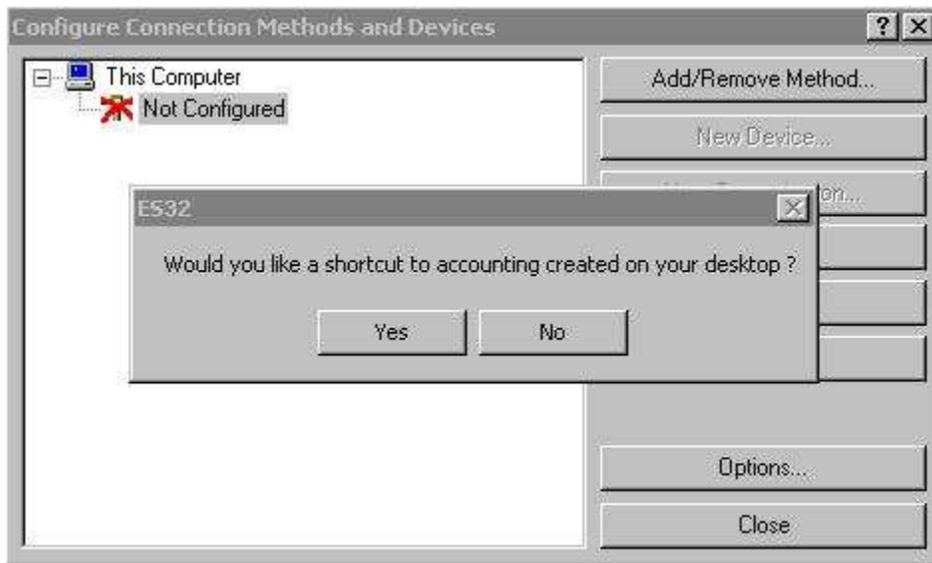
- 4) You will get the message **"You have not configured any emulation devices. You must configure at least one device before you can use the emulator. OK to configure now."** Click the **OK** button.



- 5) The Configuration Properties window comes up. If you wish to change the Character Set, do so now, then click the **OK** button.



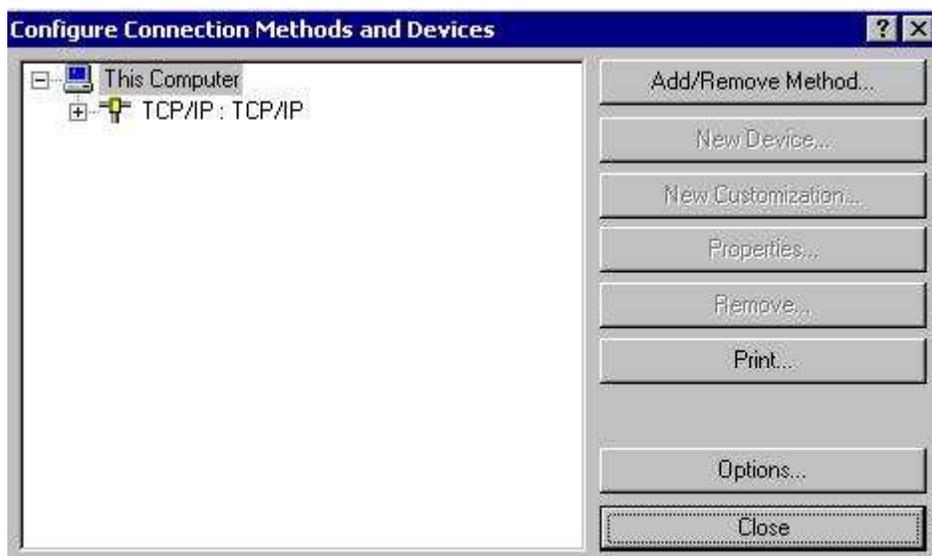
- 6) Enter a **Device Name**. This name will show up on the AS/400. Ten characters maximum. Do not use spaces, dashes, asterisks, question marks, apostrophes, or double quotation marks in the Device Name.
- 7) Normally **TN5250E** will be left checked unless you have an older AS/400 that does not support it. If that is the case, your device name will be QPADEVxxxx where the xxxx is four numbers.
- 8) **Keep Alive** is used for remote connections that are connecting over routers that may time out the network's TCP/IP connection if there is no activity. It will send a telnet null after the number of seconds that it is set to has been reached.
- 9) Usually the first session that you configure will be a Display. Later configuring a printer will be covered.
- 10) Choose the Model. The 80 Columns, Color will emulate the IBM 3179. The 132 Columns, Color will emulate an IBM 3477. The 80 Columns, Monochrome will emulate the IBM 3196. The 132 Columns, Monochrome will emulate an IBM 3180. The monochrome options only use green and white, whereas the color options use other colors. The 132 wide options can only be seen in OS/400 applications that implement it, for example when viewing a wide print job.
- 11) Choose the International, US Typewriter, or World Trade keyboard. The default is US Typewriter.
- 12) Enter the **AS/400's IP Address**. On the AS/400 the command CFGTCP will bring up the "Configure TCP/IP" menu. From there take option 1 for the "Work with TCP/IP Interfaces" menu, where you will see the IP Addresses.
- 13) When you are done, click the **OK** button.

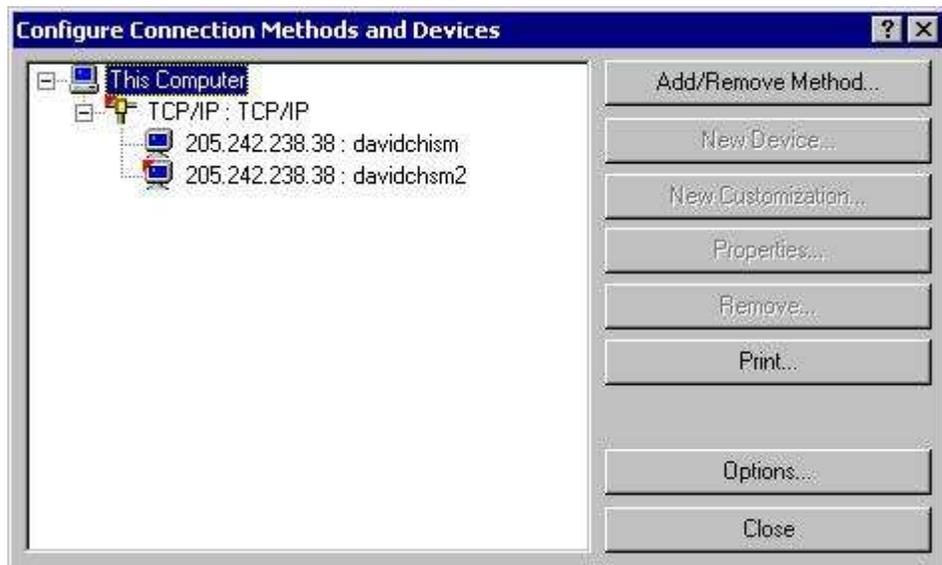


- 14) It will ask you if you would like a shortcut on your desktop. Make your selection. If you do not choose yes, you can start the software from the Windows Start button, and selecting Programs, ES32, and Display Emulator. Answering No, will take you to step 15. Answering Yes, will take you to step 16.



- 15) It will ask you if you want to open the new configuration now. If you select yes, it will close the Configure Connection Methods and Devices dialogue box. If you select **Yes**, continue on step 21. If you want to add more sessions, click the **No** button and it will take you to step 16.





- 16) When the **TCP/IP : TCP/IP** Connection Method shows, you can click on the + to the left of it, to see your device(s). If you want to add another device, click on **TCP/IP : TCP/IP** to highlight it and activate the **New Device** button. Click on it to configure another Display Emulator or a Printer session and repeat steps 6-16.
- 17) When you are done adding sessions, click the **Close** button.

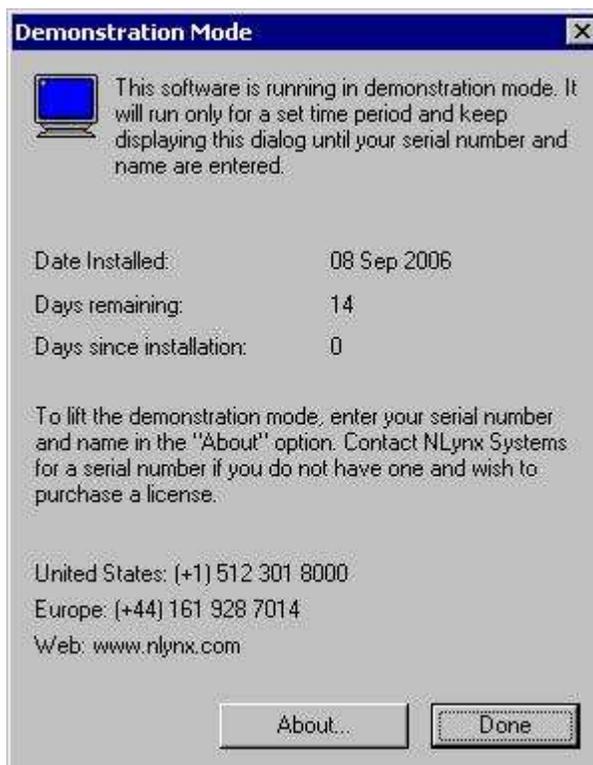
RUNNING THE ES/TCP EMULATION

At this point, you have completed the setup of ES/TCP and are now ready to run your emulation software.

Running ES32

Registering the software

When you start your first emulation session the first time, it will bring up the Demonstration Mode window. You will need the serial number from your CDROM in order to register the software.



- 1) Click on the **About** button to register the software with your serial number.



- 2) Enter your serial number and a User Name, and then click the **OK** button.

Starting a session

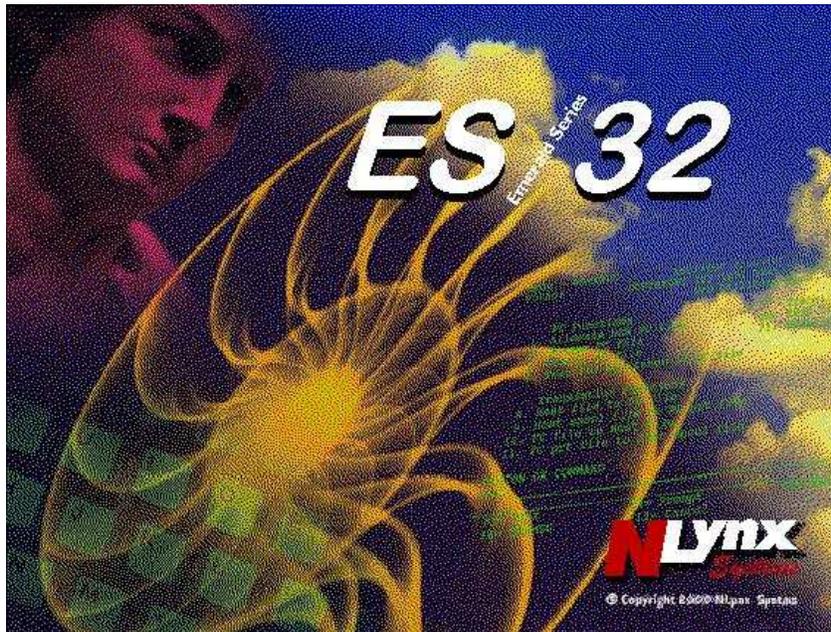
- 1) If you created a shortcut,  double click on it **or** go to **START>PROGRAMS>ES32>** and click on **Display Emulator**. 

NOTE: If the icon has a red triangle on the upper left, it is already being used.

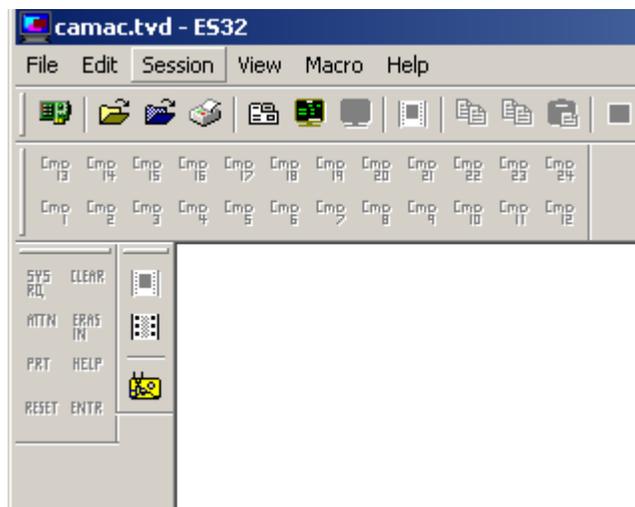


NOTE: If the icon has a big red X over it, it is not able to connect with the host.





- 2) The splash screen will come up first.



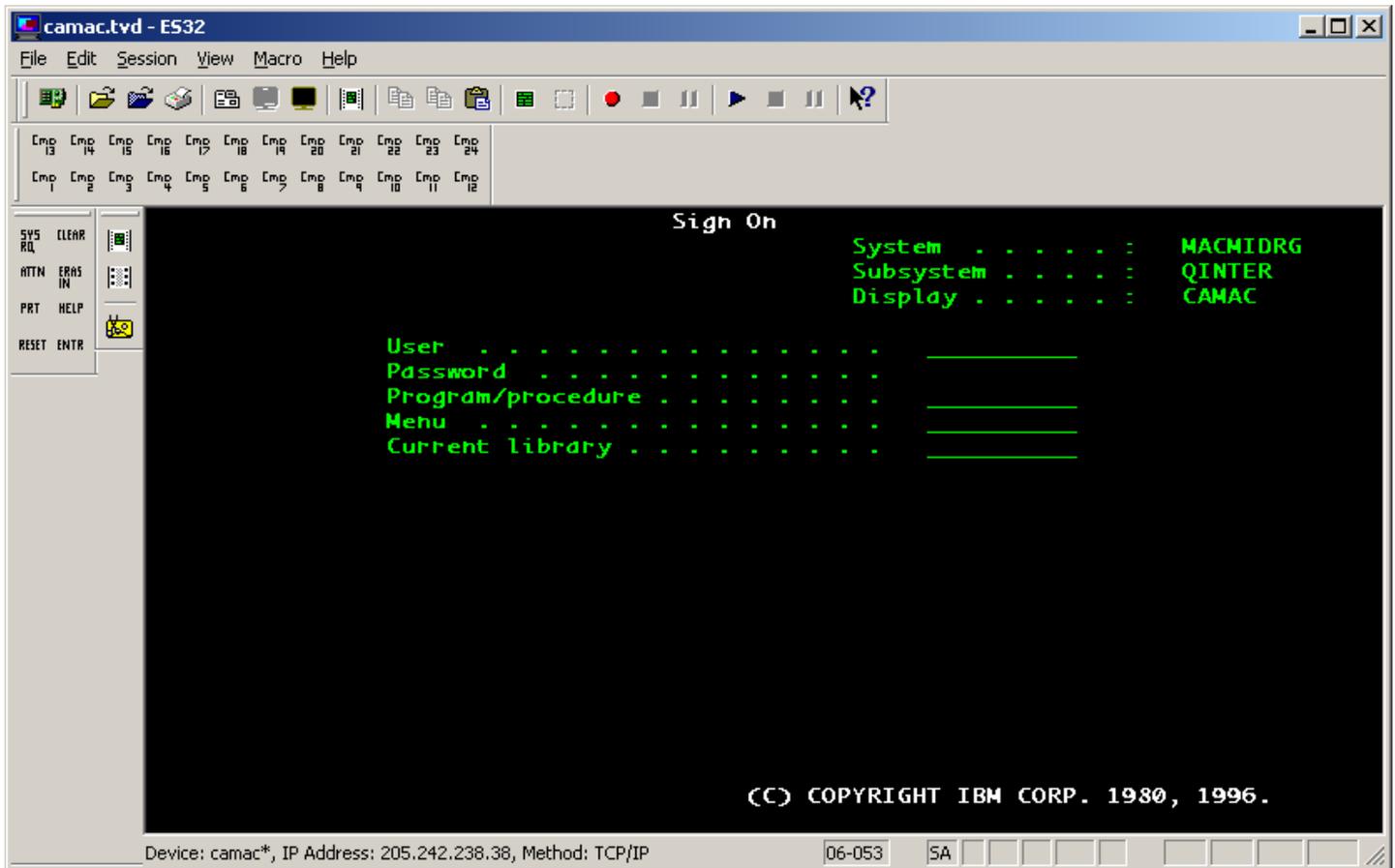
- 3) When the display emulator comes up it should open the last [TVD](#) (Telnet Virtual Display) that was opened. If it does not, and you are at a white screen, then click on the Session menu at the top, and then choose Connect or click the icon that looks like a signon screen (sixth from the left).

Device: ca132mac, IP Address: 205.242.238.38, Method: TCP/IP

- 4) The device name, IP Address, and connection method will show in the lower left.



- 5) You will first see the dancing terminal on a gray screen.



- 6) A black signon screen should appear.
- ❑ If you do not get a signon screen, and the cursor is in the upper right, it means that you do not have a good cable connection to the IBM host.
 - ❑ If the signon screen does not come up and the cursor is in the upper left, it means that you have connected to the host, but the session is varied off.
 - ❑ If the cursor bounces from left to right, it means that you have configured this session on the same twinax station address that another device is already using or that you have configured as the wrong device type.

Check with your IBM Host System Administrator to verify the host address and model type for your workstation.

For further troubleshooting see the [Problem Guide](#).

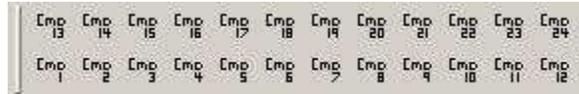


Status Indicators:

- **24-002** indicates the cursor is in the lower left position of the screen.
- **SA** means **Station Available**. If this is showing, but you do not have a signon screen, it would indicate that you are connected, but the controller is down.
- **II** means **Input Inhibited**. You are connected to the host, but an error prevents you from communicating. Pressing Error Reset (Ctrl) will clear this. If it recurs, do an Erase All Input, then Error Reset.
- **IM** is for **Insert Mode**. This allows you to insert new text, push existing text to the right.
- **KS** is for **Key Shift**.
- **MW** indicates that you have a **Message Waiting**.

Tips and tools:

- Click on **View** and then **Function Keys** to get a dropdown of common Function Keys that you can click on with the mouse.



- Click on **View** and then **Command Keys** to get a dropdown of the Command Keys that you can click on with the mouse.

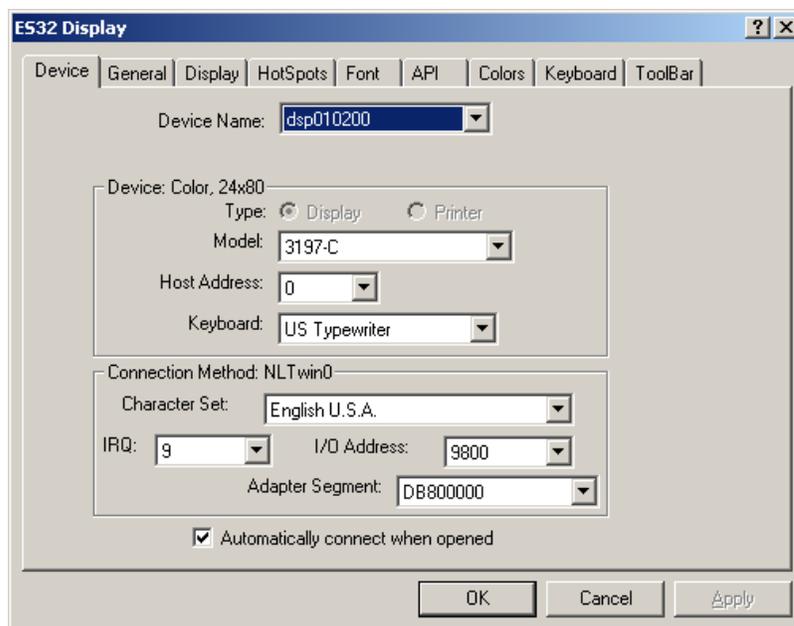
Session Properties

Changes must be made on each session individually.

Configure the properties of the emulation sessions by clicking on the **Session** menu at the top of the screen and selecting **Properties**.

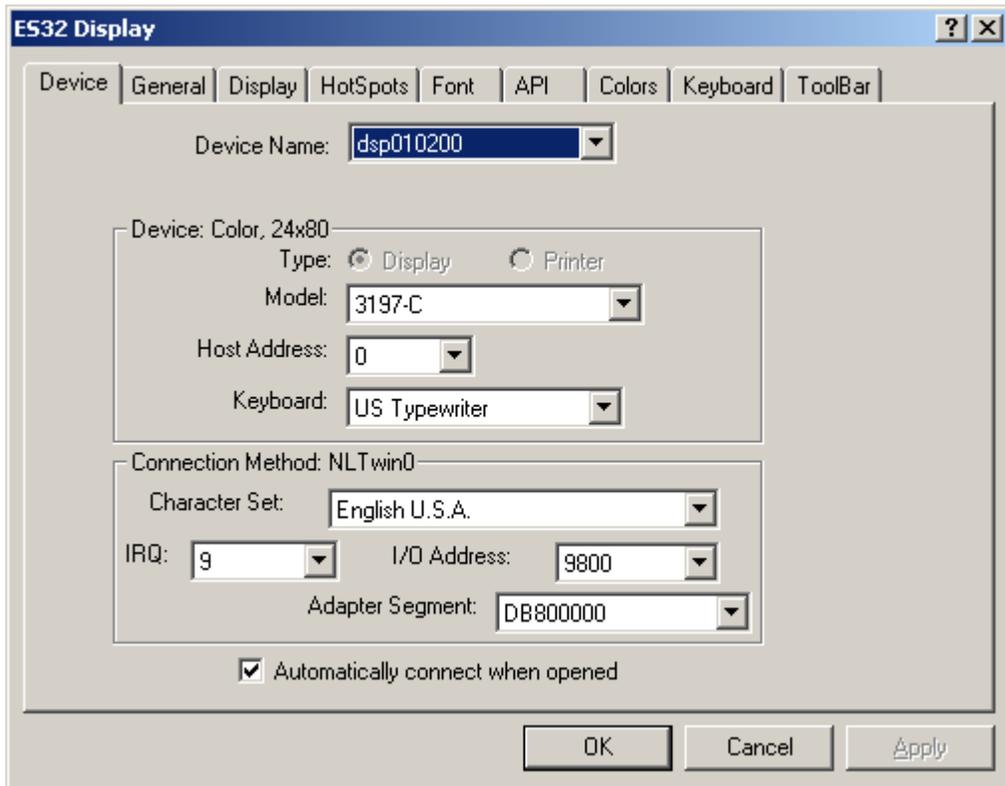


You can also click on the Properties icon  to access the ES32 Display window.



NOTE: For many of the properties, you must perform Session – Disconnect before you can change it.

Device Settings:

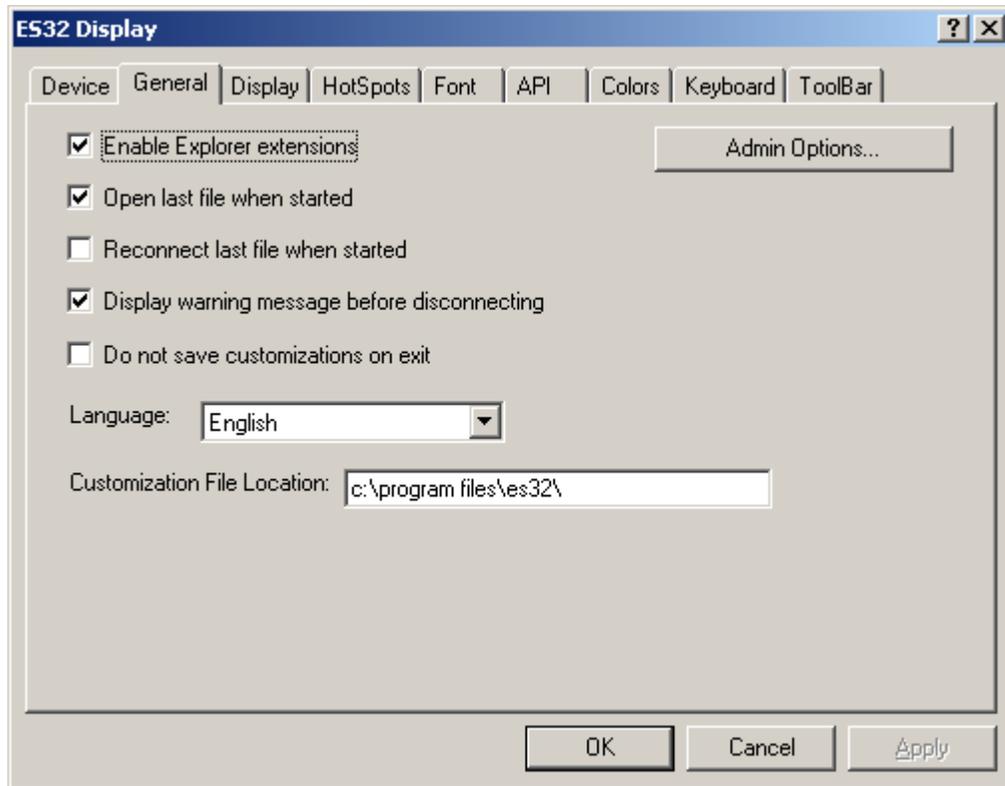


The Device Settings page shows the settings that you configured in the Configuration. You cannot alter the settings on this page with the exception of **Automatically connect when opened** if you have the session open.

To alter these settings, close the **ES32 Display** window (if it is open), then either click on the icon that looks like a dark terminal and says Disconnect when you hover the mouse over it, or click on Session and select Disconnect. After disconnecting the session, you can modify your parameters either by Session – Properties or by File – Configure, then opening the session from the Configure Connection Methods and Devices window.



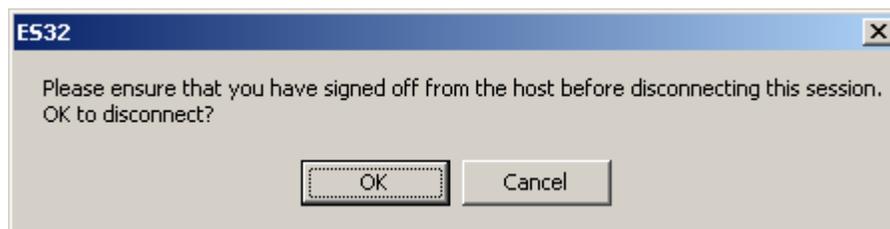
General Settings



The option "**Enable Explorer extensions**" allows you to create shortcuts to [TVD](#) and [TVP](#) files.

If you open the Display Emulator from the Start / Programs / ES32 / Display Emulator, the option **Open last file when started** will point to the last TVD or TVP that was open.

Reconnect last file when started opens the session.

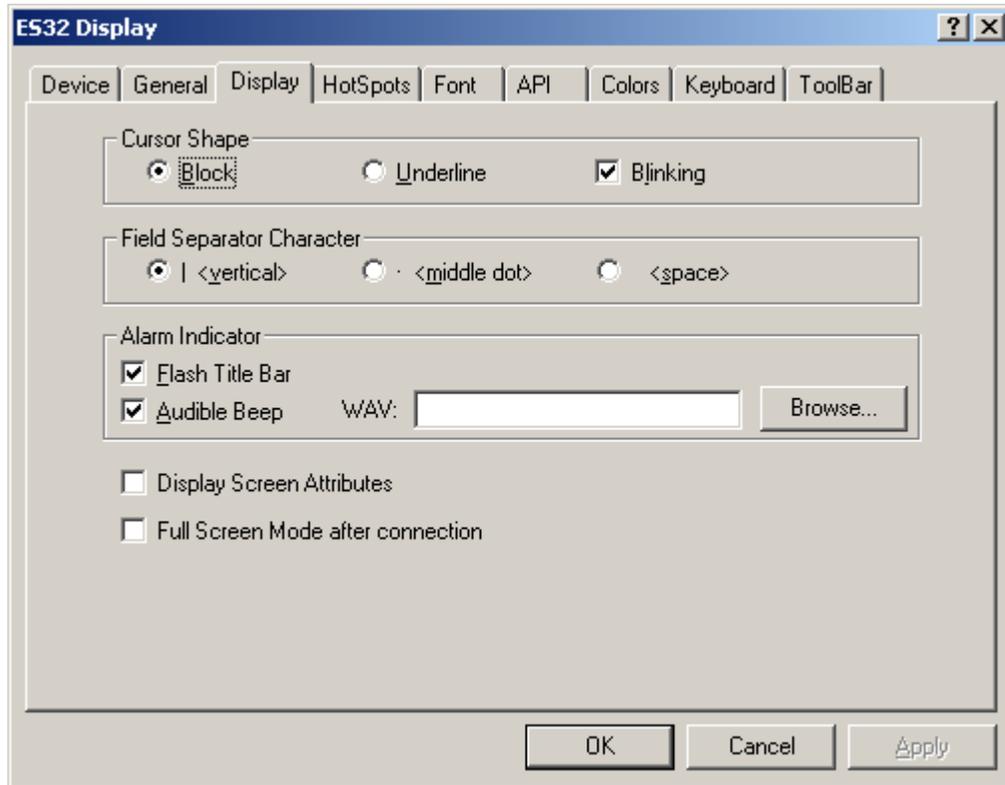


If you shut down a session without logging off, your host may require that the System Administrator vary the session off and back on. **Display warning message before disconnecting** will give the above warning to remind you to log off the host so that you will be able to log on again without contacting the System Administrator.

Do not save customization on exit is for when you are sharing a session with other people or when you do not want a user to change their settings.

Admin Options allow an Administrator to lock options down.

Display options



Display options are self-explanatory. Display Screen Attributes is a troubleshooting tool.

If you enable **Full Screen Mode after connection** you will not have your Main Toolbar, Custom Toolbars, Command Key pad, or Function Key pad. If you enable Full Screen and wish to get the other functions back, right-click inside the screen and take the check out of Full Screen.

HotSpots

If HotSpots are enabled, you can click on menu options, or command options that are showing on the screen, using the mouse.

Menu HotSpot Example:

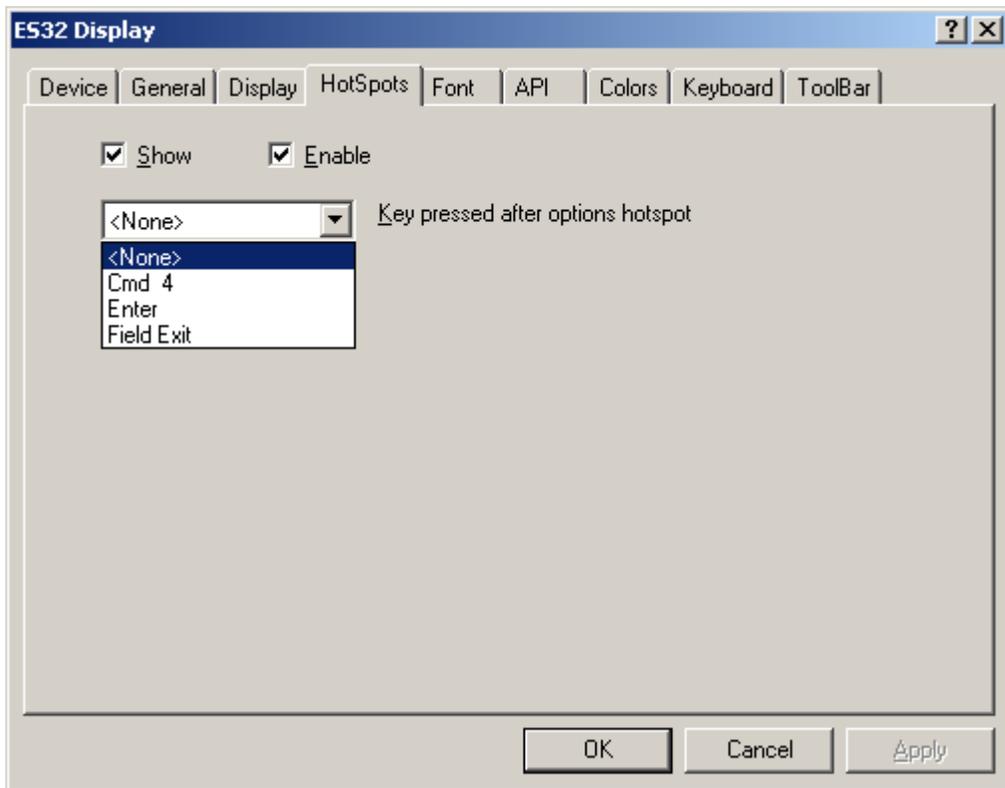
```
1. User tasks
2. Office tasks
```

You can click on the number 1 or click on "User tasks", to bring up the IBM "User Tasks" menu.

Command HotSpot Example:

```
F3=Exit    F4=Prompt
F23=Set initial menu
```

Click on the F3 or Exit, to perform the Exit command.



You can select whether Command and Menu HotSpots will be show in this window.

Menu HotSpot Examples:

Showing

```
1. User tasks
2. Office tasks
```

Not showing

```
1. User tasks
2. Office tasks
```

Command HotSpot Examples:

Showing

```
F3=Exit F4=Prompt
F23=Set initial menu
```

Not showing

```
F3=Exit F4=Prompt
F23=Set initial menu
```

You can also select whether to add a CMD 4 (usually used for a prompt), an Enter, or a Field Exit after using any [HotSpot](#).

To enable Hotspots

1. From the Session menu, click Properties.
2. Click the Hotspots tab.
3. Click Enable.

NOTE: Clicking Show highlights all Hotspots, regardless of whether they are enabled or not.

To display Hotspots

1. From the Session menu, click Properties.
2. Click the Hotspots tab.
3. Click Show.

NOTE: The Hotspots are displayed even if they are currently disabled.

To hide the HotSpots, remove the check from Show.

To hide Hotspots

1. From the Session menu, click Properties.
2. Click the Hotspots tab.
3. Remove the check from Show.

NOTE: If the Hotspots are hidden, they are still active and available to use as long as they enabled.

To use Hotspots

1. Start the emulator and sign on to the host.
2. To enact a command key Hotspot, click on the command key at the bottom of the host screen.
3. To enact a menu item Hotspot, click on the menu item number on the host screen.

NOTE: For menu item Hotspots, the cursor must be on the host command line.

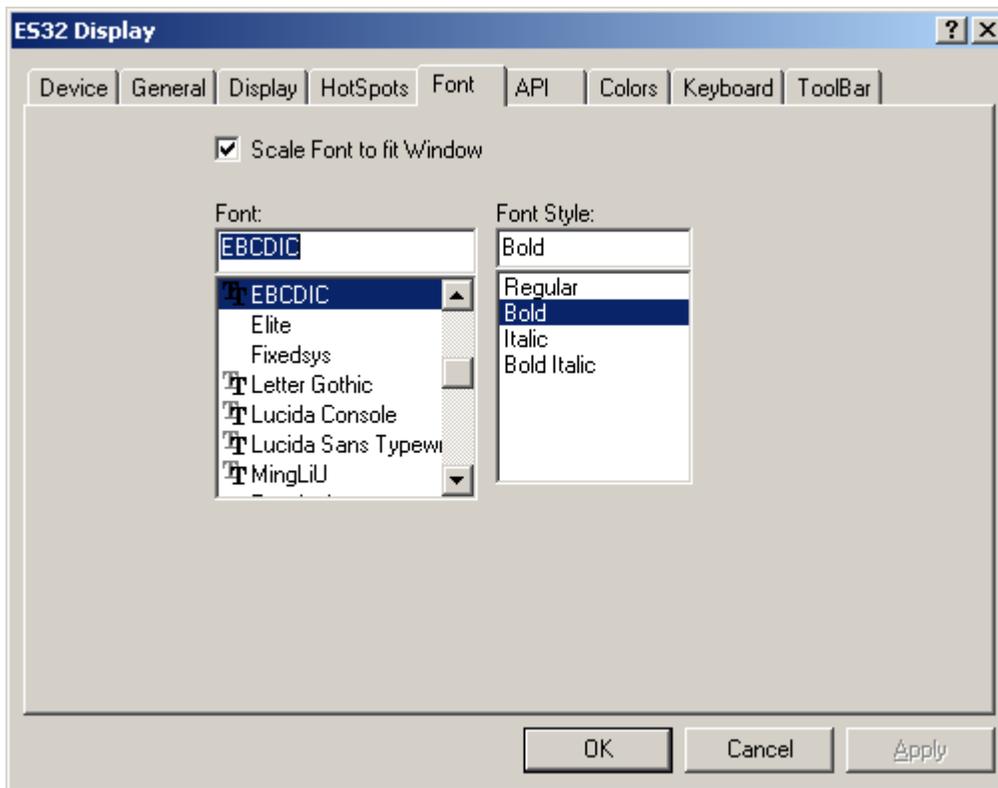
To add a keystroke after a Hotspot

1. From the Session menu, click Properties.
2. Click the Hotspot tab.
3. Select the keystroke you want to be added after a Hotspot is enacted.
Select <None> for no keystroke to be added after the Hotspot is enacted.

NOTE: The keystroke you select will be added after all Hotspots you enact.

NOTE: See the [Colors](#) screen to change the colors of Menu or Command HotSpots.

Font



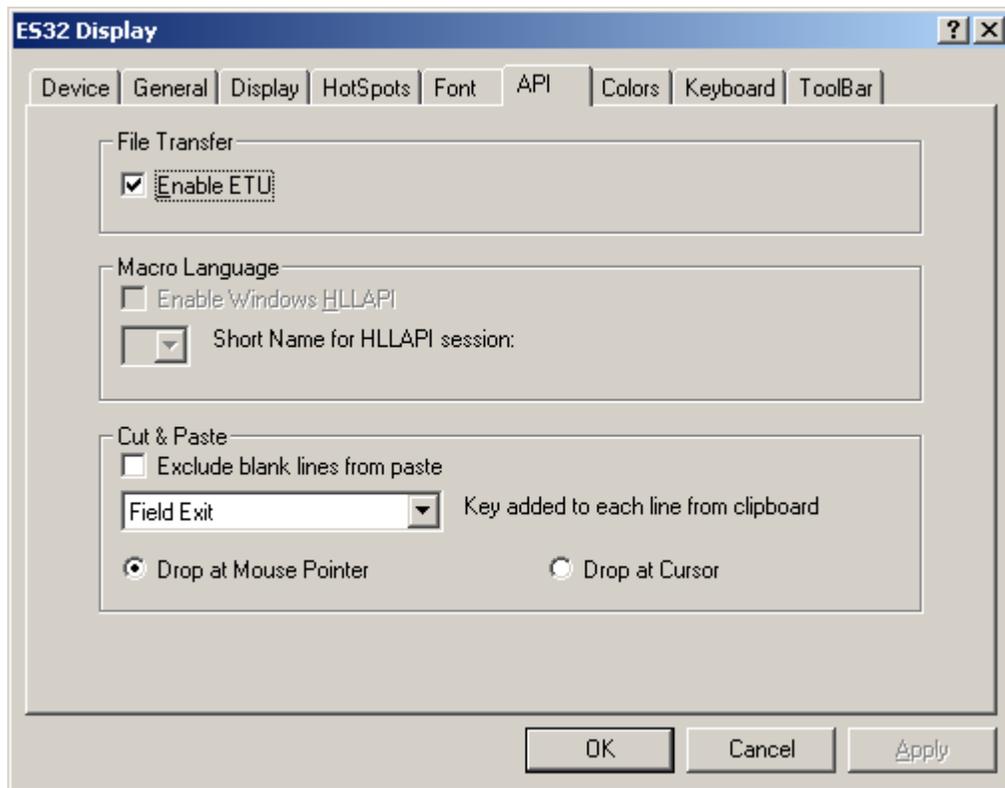
This is a fun screen to play with.

ES32 uses [monospaced fonts](#). They can either be screen bitmap fonts or [TrueType fonts](#). The fact that the font is monospaced is encoded in the font descriptor. ES32 will go through the list that Windows have and select only the monospaced fonts for the user to select.

TrueType fonts are really meant for printing. For display purposes, the font installer will create a *.FOT file that contains the screen bitmap fonts.

Most fonts that you find in Windows are proportional fonts. They cannot be used in ES32 because a 5250 terminal display only uses monospaced fonts. Monospaced fonts are essentially fonts where the width of each character is the same. That is, the width of an "I" is the same as a "W". Terminal emulators cannot use proportional fonts; otherwise, tabular data will be out of alignment.

API

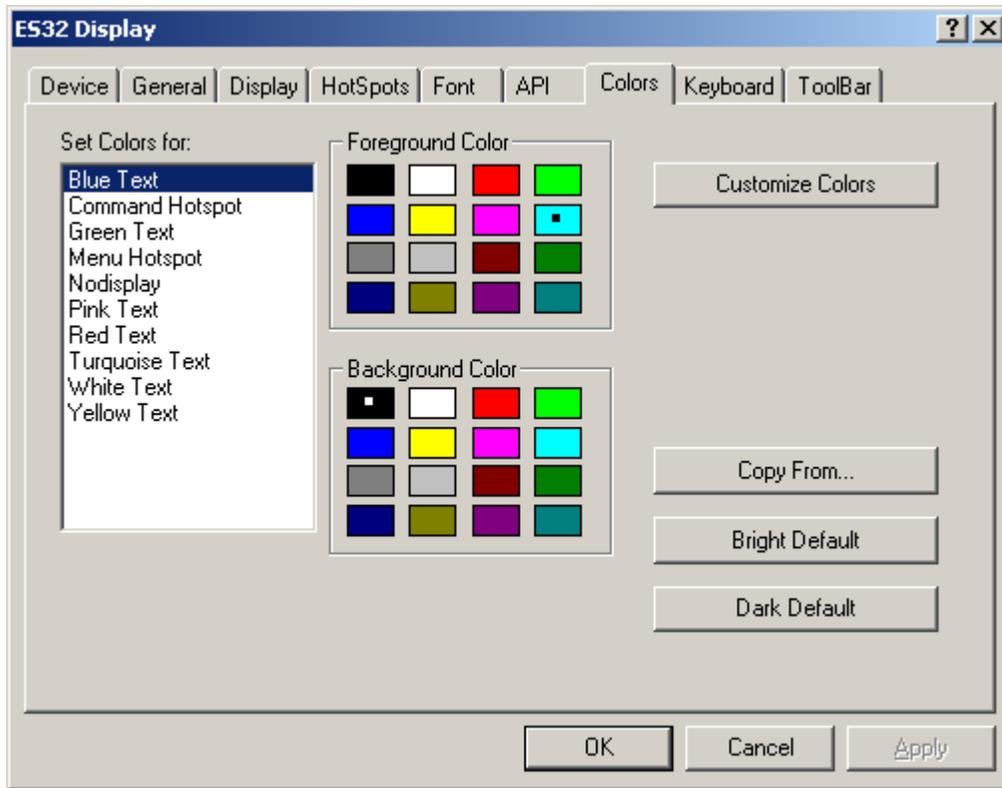


The **Enable ETU** must be checked if you are using [ETU](#). Leaving it enabled if you do not have or use ETU does no harm.

Macro Language is for use with [HLLAPI](#). In order to use this a C Language programmer can obtain the Advanced Developer's Kit from Ringdale. Contact technical support for this.

Cut & Paste allows advanced functionality to normal cut & paste.

Colors



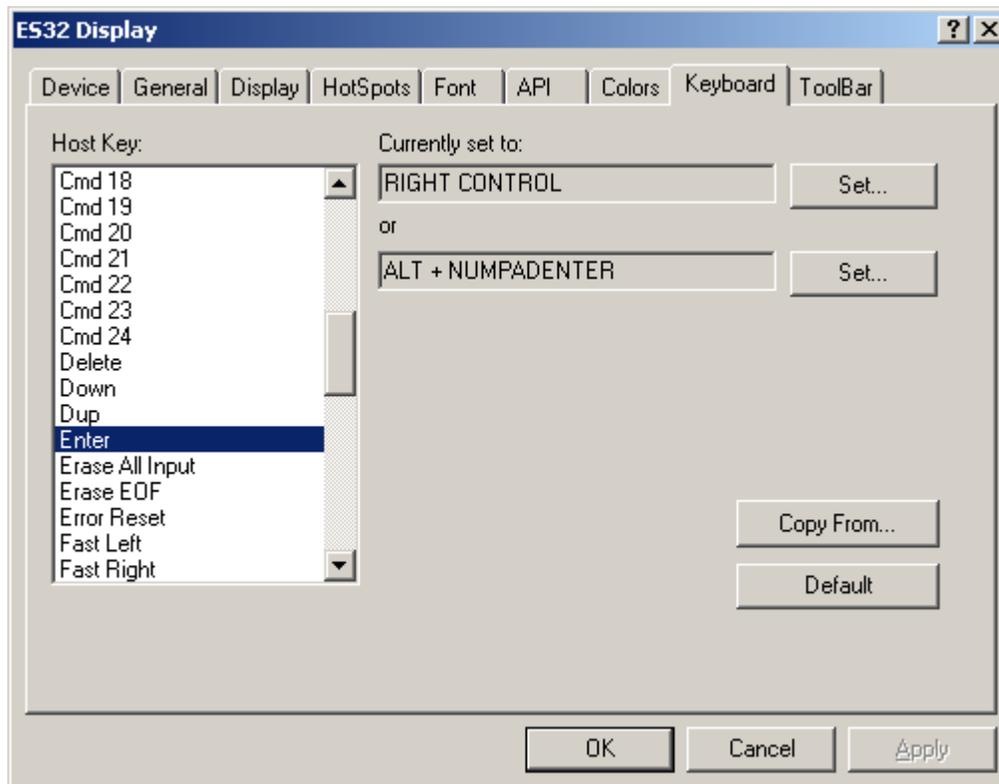
Click on the type of text that you would like to change the color of, and then select the foreground color and background.

NOTE: Do not use the same color for your foreground and background, or your data will be invisible.

Keyboard

The default ES32 keyboard is laid out like an IBM 5250 keyboard. The Enter key on an IBM 5250 keyboard is positioned where the Ctrl key is on a standard PC keyboard. If you would like to change it so that the key names match the functions, or if you would like to figure out where one of the IBM 5250 functions are mapped, use these instructions:

- Click on the **Sessions** menu and select **Properties**.
- Click on the **Keyboard** tab.
- From the list of **Host Keys**, select the one you want to see or re-map.

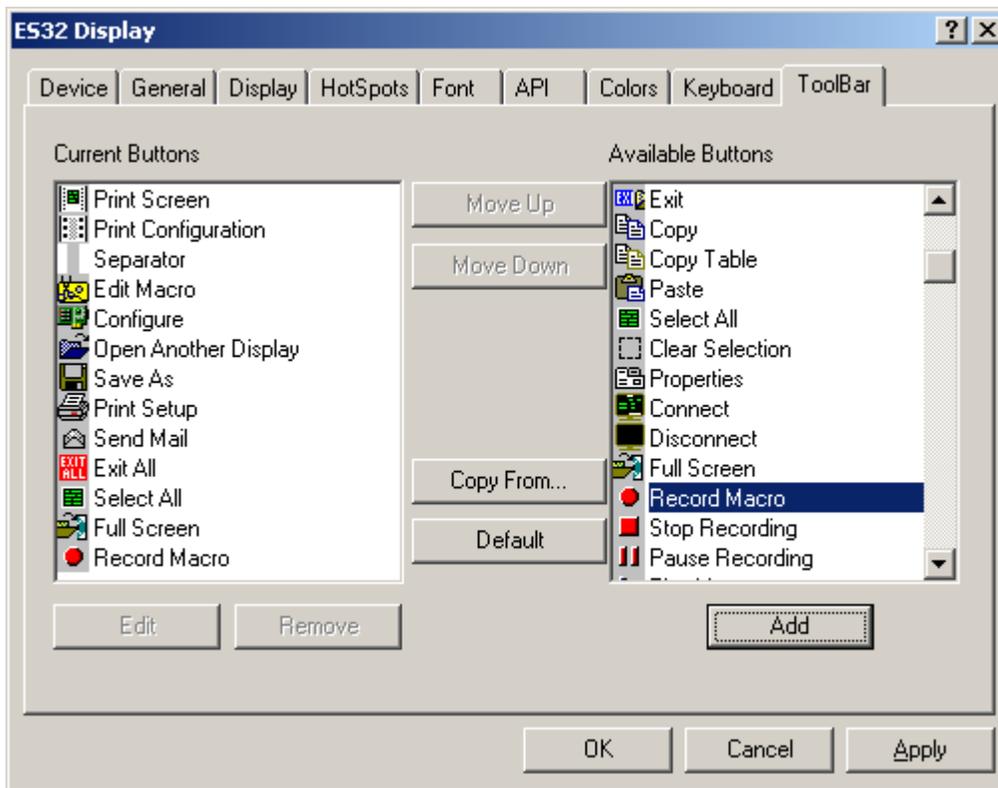


- If the host function is currently mapped to your keyboard, its key combination will display under **Currently Set To** on the right side of that window. In the above example, it shows that Enter is mapped to the right Ctrl key.



- If you would like to change it click **Set**, then press the key, or a key combination with Control, Alt, or Shift that you would like to remap it to. It will inform you as to whether that combination is already in use. If you choose to continue, click **OK**.

Toolbar



In the toolbar menu you can add buttons for functions that you use regularly and desire fast access to.

After you add them, they will show on the side of your emulation screen.

Adding another Display session

- 1) If it is not already started, start the Display Emulator. Start/Program Files/ES32/ Display Emulator.
- 2) Disconnect any open sessions. Click the **Session** menu at the top of the ES32 screen, and then select **Disconnect**.
- 3) Click the **Configure** icon, (or select **File**, then **Configure**) to bring up the **Configuration Connection Methods and Devices** window.
- 4) Click once on **TCP/IP : TCP/IP** to select it and the **New Device** button will become enabled.
- 5) Click on the **New Device** button to bring up the **Configuration Properties** window.
- 6) Enter a **Device Name**. This name will show up on the AS/400. Ten characters maximum. Do not use spaces, dashes, asterisks, question marks, apostrophes, or double quotation marks in the Device Name.
- 7) All of the rest of the settings should be the same as your first session. When you are done, click the **OK** button.

Using Macros



With the emulator you can create macros that let you perform tasks on the host. A macro is a set of instructions that you record and then playback. Macros make it easy to perform complicated tasks or tasks that you do over and over. You can start and stop the macros from the Macro Menu or by clicking on the

Macro tool buttons:

To record a macro

From the Macro menu, click Record or click the button.

Perform the steps you want to record. While you are recording, any keys you press are captured and saved for when you play back the macro.

If you want to pause the macro while you are recording, click on Pause from the Macro Record menu.

NOTE: You might want to pause in the middle of macro if you are recording a task that contains sensitive information, like a sign-on procedure containing a password. You can pause the macro and, after entering your password, click Record again to begin the recording the macro again.

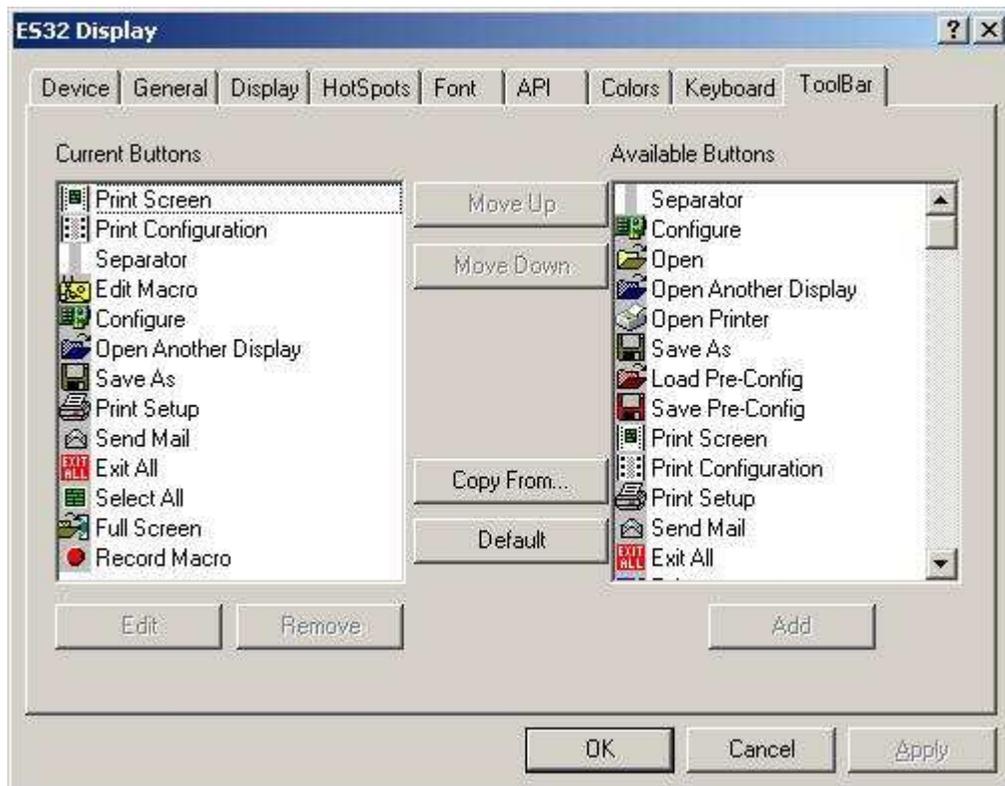
When you are done, from the Macro menu, click Stop or click the stop button.

To play back a macro

- 1) From the **Macro** menu, click **Play** or click on the toolbar play option.
- 2) Click the macro that you want to play back.

NOTE: You can assign macros to the Toolbar. To play back a macro, just click the Toolbar button assigned to the macro.

Adding a macro to the toolbar



- 1) On the **Session** menu, click **Properties**.
- 2) Click the **ToolBar** tab.
- 3) Under **Available Buttons**, scroll down until you come to the list of Macro Buttons.
- 4) Click one of the macro buttons.
- 5) Click the **Add** button.
- 6) Type a name for the macro.
- 7) Type the macro file name or select Browse and choose the macro file from the list.
- 8) Click the **OK** button.
- 9) Click the **OK** button again.

To pause a macro



1. During playback of a macro, click **Pause** from the **Macro** menu under Play or click the
2. Click Play to resume playback of your macro.

To edit a macro

1. On the Macro menu, click Edit.
2. Click the macro you want to edit.

NOTE: Macro files have .tvm extensions.

3. Click Open.

The emulator launches the Notepad application. You will edit the macro from there.

4. Edit the macro by:

Adding SEND, PAUSE, or HOSTKEY commands or changing the existing text in an ASCII string.

Adding LABEL and GOTO statements to make it loop.

5. Save the macro.

NOTE: You may find it easier to record a new macro than to edit an existing one.

EXAMPLE:

```
HOSTKEY (Enter)
HOSTKEY (Enter)
HOSTKEY (Enter)
LABEL START
SEND 1
HOSTKEY (Enter)
SEND 1
HOSTKEY (Enter)
SEND 1
HOSTKEY (Enter)
HOSTKEY (Cmd 12)
SEND 2
HOSTKEY (Enter)
HOSTKEY (Cmd 12)
GOTO START
```

The ES32 Printer

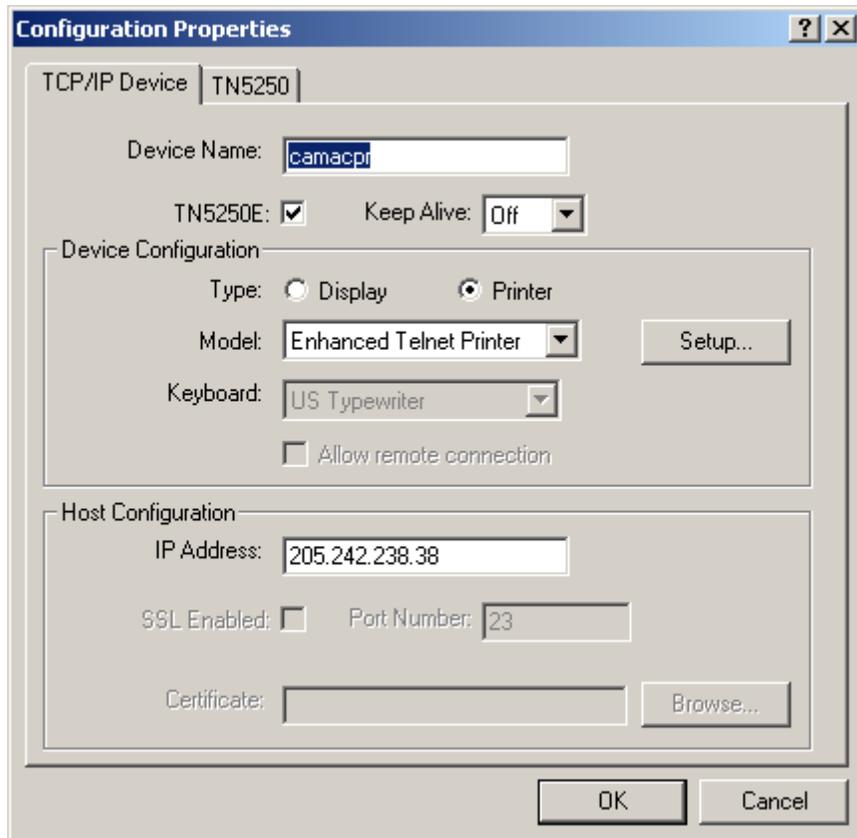
IBM's 5250 printers are very different from the rest of the world's printers. IBM printers connect to the IBM host using [Twinaxial](#) cable, whereas the rest of the printers generally connect using serial or parallel cables. IBM printers only accept EBCDIC data, whereas the rest of the world's printers accept ASCII data. IBM printers follow the IBM 5250 protocol, a complicated form of communications that does addressing, error-correction, and so forth, whereas the rest of the world's printers use more basic flow control methods. The data formatting commands are completely different between IBM and the rest of the world.

Three main things control the data formatting, the printer you are emulating, the printer you have, and where you plan to control the output.

Adding and configuring an ES32 Printer

This is the complete process for adding the ES32 printer.

- 1) Open your ES32 **Display Emulator**.
- 2) Close the sessions down by signing off the host and then selecting **Session – Disconnect**.
- 3) Select the **File** menu, then **Configure**, and it will bring up the **Configure Connection Methods and Devices** window.
- 4) Select the **TCP/IP : TCP/IP** card, by clicking on it, then click on **New Device**. It will bring up the **Configuration Properties** window.



- 5) Enter a **Device Name**. This name will show up on the AS/400. Ten characters maximum. Do not use spaces, dashes, asterisks, question marks, apostrophes, or double quotation marks in the Device Name.
- 6) Select the **Printer** (vs. Display) dot.
- 7) Select either **Enhanced Telnet**, or Line Printer Daemon (for older systems). TN5250 printers always emulate an IBM 3812 page printer.

This printer is one of the most sophisticated printers available for the AS/400. It supports several character densities, line densities, [fonts](#) and highlighting effects (underline, overstrike, superscript, subscript, etc.).

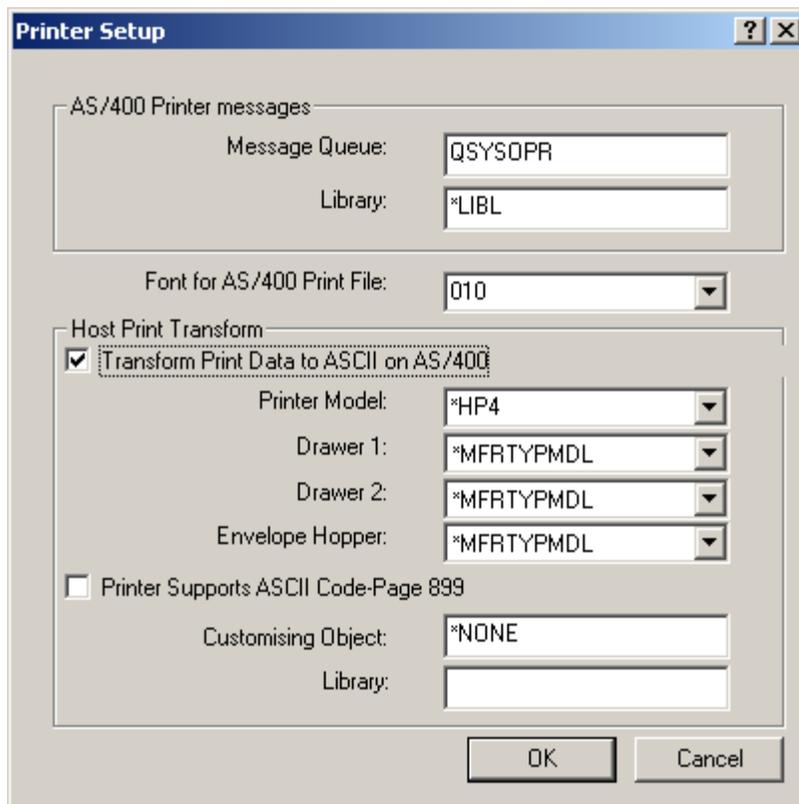
The page length can be specified either in inches or as the number of lines per page. The page width can be specified either in inches or as the number of characters per line. If an attempt is made to print beyond the horizontal limits, the printer may insert an automatic New Line, if desired. Similarly, if an attempt is made to print beyond the vertical limits, an automatic Form Feed may be inserted, if desired.

The valid character density values are 10, 12 and 15 CPI.

Available line density values are 48 [LPI](#), 24 LPI, 12 LPI, 9.6 LPI, 8 LPI, 6 LPI, 5.33 LPI, 4 LPI, 3 LPI and 1 line/cm.

This printer is best suited for word processing applications and, on the System/36, data processing applications that do not require change of page parameters (unless the DP program itself produces the required SCS commands).

NOTE: The 3812 is a laser printer that emulates a 5219 printer. Because of the additional capabilities that a laser printer has, more features are possible, including improved font handling. This emulation does not support IPDS (Intelligent Printer Data Stream).



- 8) To allow your printer to work better with the AS/400, you can click the **Setup** button on the Configuration Properties window to configure **Host Print Transform**. See [Appendix B](#).

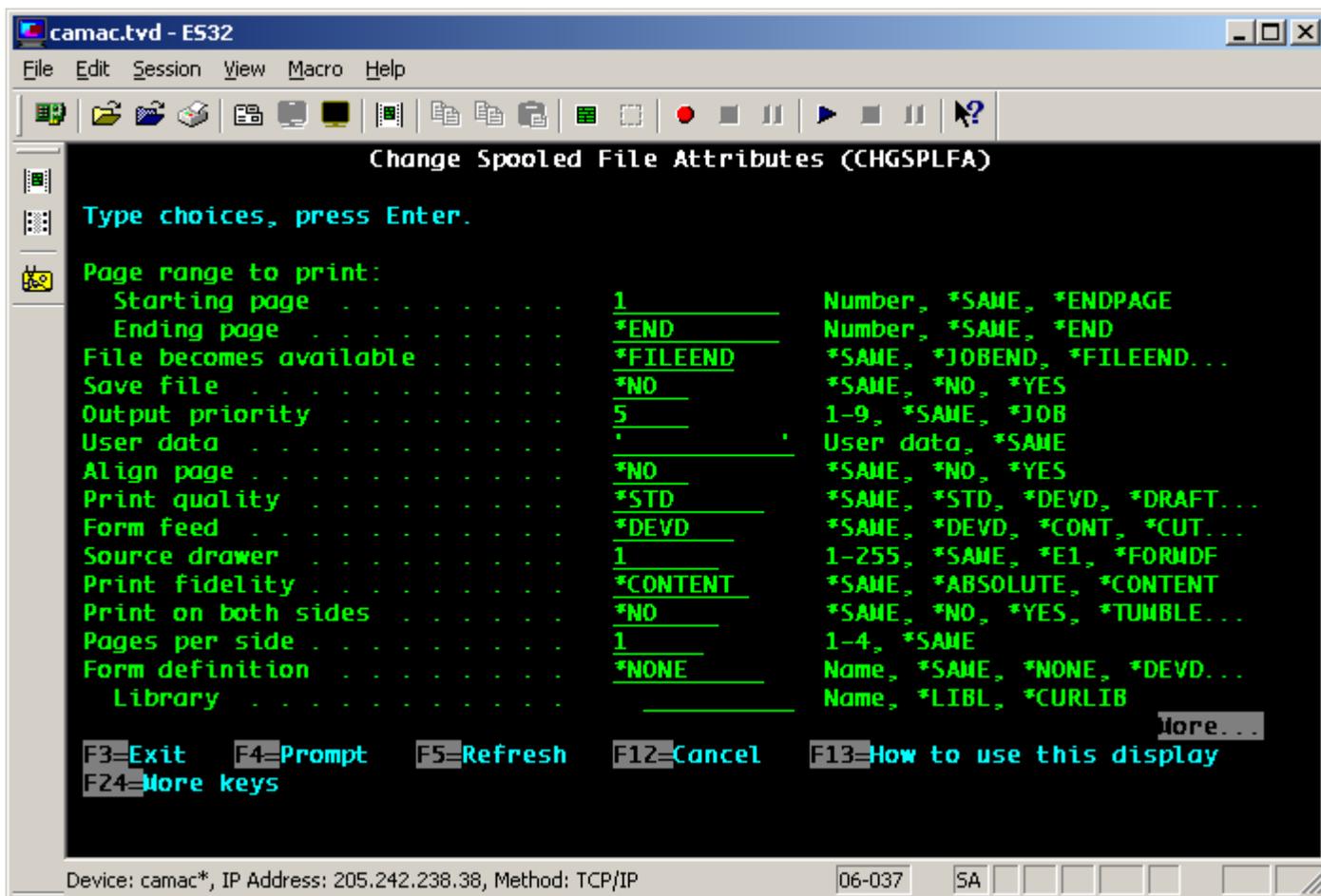
To Open A Printer Session

- 1) On the **File** menu, click Open Printer.
- 2) In the **Look In** box, click the drive that contains the session you want to open. This will usually be the C: drive.
- 3) Below the **Look In** box, click the folder that contains the session you want to open. This will usually be the C:\Program files\ES32 folder.
- 4) Click the display session name, or type it in the **File Name** box.
- 5) Click **OK**.

Print Data Control

The ES32 software is very versatile in controlling the data to the printer. The default is to not change the data at all.

Formatting that occurs on the host



First the data is formatted by the application that generated the data. MAPICS, QRY or SEU for example. You can select the form size in length and width, the form type, and the number of copies. These parameters can be adjusted in the spool queue as well.

AS400 Host Print Transform

If you have an AS/400, there is a parameter that can be enabled, called Host Print Transform. Host Print Transform is a way to allow the AS/400 to control all aspects of the print job, [CPI](#), [LPI](#), and special features. It allows you to select the specific Manufacturer, Type, and Model of your printer. If this is enabled, the data will be sent in "transparent ASCII" from the AS400. The AS400 will have already formatted the data for your printer model. Control is then handled at the AS/400 application. This method works quite well in applications where the user needs complete control over their device.

On your AS400, Using the **CHGDEVPRT** command, set:

```
Host print transform . . . . . *YES
Manufacturer type and model. . * YourPrinter
```

Put your cursor on the **Manufacturer type and model** line and press **F4** to see your choices for Manufacturer type and model. You can then press **F1** for more specifics. You do not have to match a printer model exactly. Quite often a printer will support other emulations (for example IBM Proprinter, or PCL) and you can set the Manufacturer type and model parameter to match. See Appendix C for help

If you use Host Print Transform, you should go to the Windows printer setting and change the Spool Settings to Print Directly to Printer.

To change the spool settings, follow these steps:

- 1) Click the **Start** button, point to **Settings**, and click **Control Panel**.
- 2) Double-click the **Printers** icon.
- 3) Use the **right** mouse button to click the printer icon, and then click **Properties** on the menu that appears.
- 4) For Win95, Win98, or WinME, click the **Details** tab, and the **Spool Settings** button.
- 4) For Windows XP or Windows 2000, click the **Advanced** tab.

Select **Print directly to printer**.

Formatting that occurs in ES32

ES32 first looks at the data to see if **“transparent ASCII”** (Host Print Transform enabled) is sent.

If **“transparent ASCII”** (Host Print Transform) is **enabled**, the data is already formatted for a specific printer and is ported straight to the printer port whether it is a parallel port, USB port, network port, or serial port.

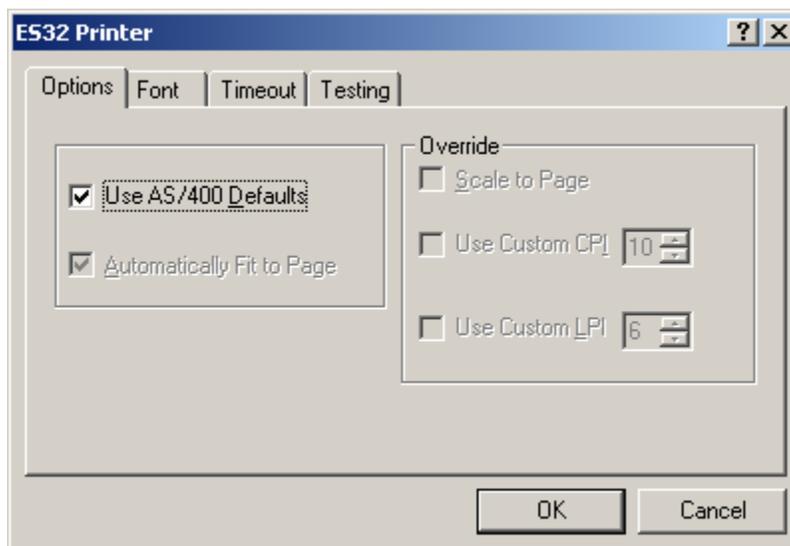
NOTE: If the printer that the data is sent to is not the same as the model that is selected in the AS/400 manufacturer type and model, unpredictable results may occur.

NOTE: If Host Print Transform is enabled, the ES32 Properties – Option and [Font](#) are disabled.

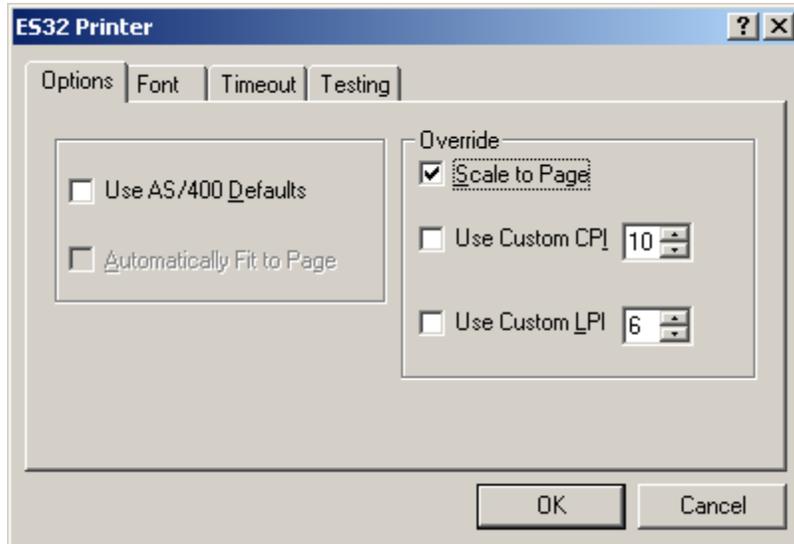
If **“transparent ASCII”** (Host Print Transform) is **not enabled**, then ES32 converts the EBCDIC data to ASCII and puts the data to a temporary ‘document’ based on the [SCS](#) formatting.

Use AS/400 Defaults:

When this option is selected the emulator will scale and rotate each print job so that it will best fit onto a piece of paper. Selecting this option may override the paper orientation you have selected from Page Setup. If ES32 is configured to use AS/400 defaults, once a full page of data is received, that data is sent to the Microsoft [PAPI](#), where the data is formatted for the printer that you have selected.



Not Using AS/400 Defaults:



If you take the check out of the "Use AS/400 Defaults" you can select "Scale to Page" and define Custom [CPI](#) and [LPI](#). If you select Scale to Page, you must define the Page Setup. This option does not work well if you are sending different types of print jobs.

- 1) In your ES32 printer window, click on the **Online** button to take the printer offline.
- 2) Click on the **Properties** button.
- 3) Under the **Options** tab, take the check out of the "Use AS/400 Defaults".
- 4) Select either "**Scale to Page**" or define specific parameters.

NOTE: If you select Scale to Page, you must further select define the **Page Setup**.

Getting Help

For help on running your emulation software you can use the context sensitive on-line help, built into the application.

Terminal Device Type Codes

	80 wide	132 wide
Color	3179	3477
Monochrome	3196	3180

The monochrome options only use green and white, whereas the color options use other colors.

The 132 wide options can only be seen in OS/400 applications that implement it, for example when viewing a wide print job.

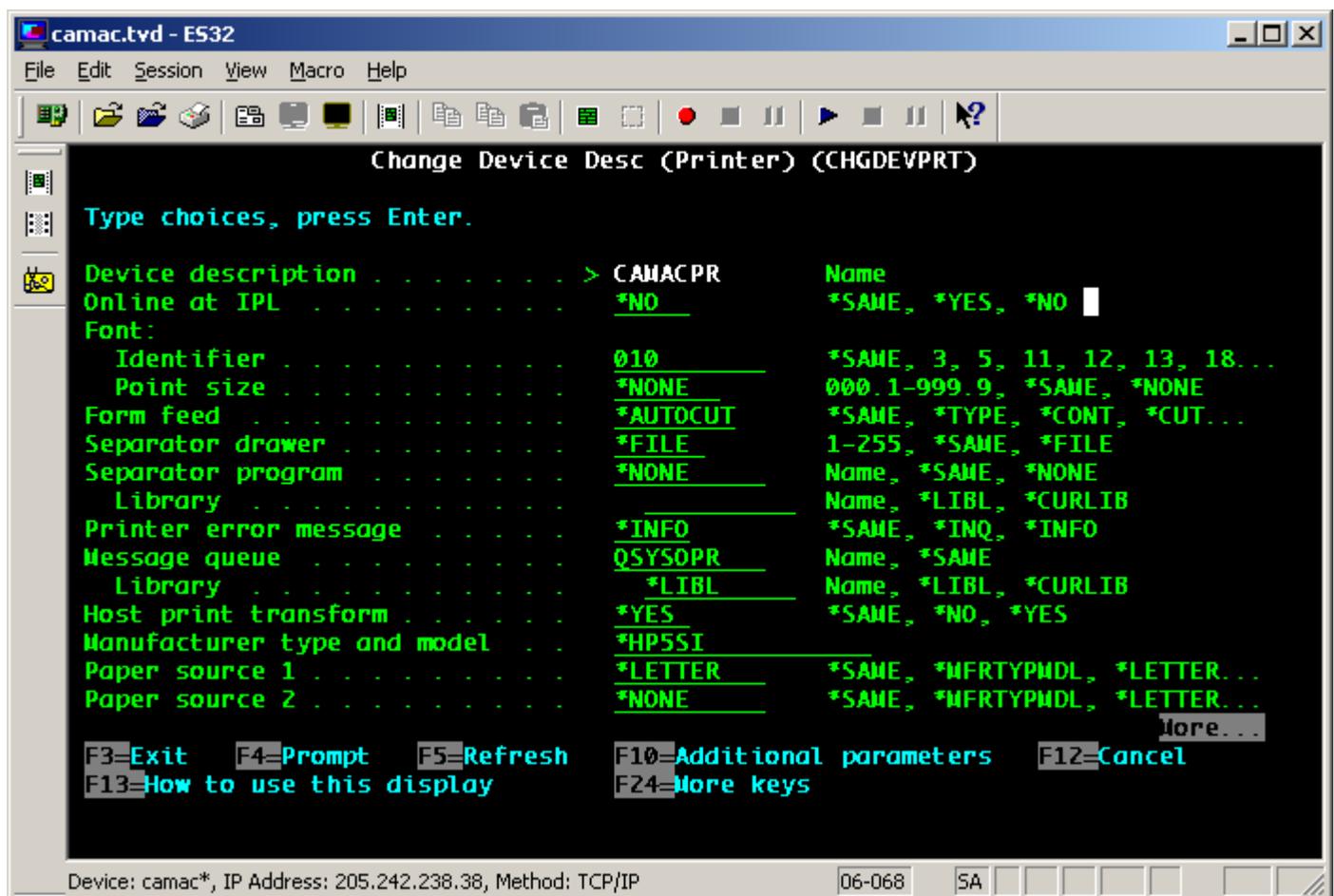
The TN5250E printers always emulate an IBM 3812 Page Printer.

AS400 Host Print Transform

What is Host Print Transform?

In order to make a physical connection to an AS400; you have to tell the host that the printer is one of the many AS400 printer models. This defines the connectivity method, speed, and type of printer for the host. The AS400's Host Print Transform feature allows you to tell the AS400 what kind of printer is actually attached. Once the AS400 knows this, it can speak to the printer in its native language, or the language that the printer is emulating.

You will select the formatting attributes for the job at the AS400. The AS400 will format the data for the specific printer. It will send the data to the printer using ASCII Transparency. You must know what emulation your printer is set to. Nearly all printers can be configured to emulation at a few other printers. The printer must be configured to match the 'manufacturer type and model' that you select at the AS400. One of the most common printer emulations is the IBM Pro Printer (which is *IBM42011 for the IBM 4201-1 Proprinter).



How do you enable Host Print Transform on the AS400?

For [TDLC](#), you must enable it at the AS/400 manually. This is the procedure.

- 1) On your AS400, Using the **CHGDEVPRT** command, set:
Host print transform *YES
Manufacturer type and model. . *SAME
- 2) Place the cursor on the "**Manufacturer type and model. . *SAME**" line.
Press **F4**, which will bring up the Specify Value for Parameter MFRTYPMDL. This is where you can see your choices for Manufacturer type and model. For example: *IBM2380, *HPII, *HP5SI...
- 3) If you want more information on what one of these choices support, you can use F1 on this screen. You do not have to find your exact model. For instance, if you have an HP printer it is likely that any of the lower level HP selections will work, like HPII or HPIII, because all HP printers support Hewlett Packard printer language [PCL](#), and the difference between them is in the options that are supported.
- 4) Once you have chosen a printer to try, you must type that in on the Manufacturer type and model field.

What does the AS400 do when Host Print Transform is select?

The AS400 Operating System inserts a code to tell the peripheral that the data is ASCII instead of EBCDIC, and it will send the data as ASCII, which the printer control codes that are native to the printer that was selected. In the 5250 to S/36, S/38, & AS/400 Product Attachment Information, IBM refers to the command as ASCII Transparent (ATRN), format = x'03nnxx'. nn is the number of characters (in hex) to be transferred.

Is there anything that I have to do in the PC printer setup to enable Host Print Transform?

Yes, if you use Host Print Transform, you should go to the Windows printer settings and change the Spool Settings to RAW where it will Print Directly to Printer.

To change the spool settings, follow these steps:

- 1) Click the Start button, point to Settings, and click Control Panel.
- 2) Double-click the Printers icon.
- 3) Use the right mouse button to click the printer icon, and then click Properties on the menu that appears.
- 4) For Win95, Win98, or WinME, click the Details tab and the Spool Settings button.
- 5) For Windows XP or Windows 2000, click the Advanced tab.
- 6) Select Print directly to printer.

Indicators

When your signon screen does not come up. You will need to look at the following indicators to determine what the problem is:

- ✓ Cursor position: upper left, upper right, bouncing from upper left to upper right.
- ✓ Status indicators at the bottom of the screen. SA, II.
- ✓ Error codes in the upper or lower left corner.
- ✓ Screen color: white, gray with a dancing terminal, or black.

Cursor Positions:

- Upper right (usually accompanied by the dancing terminal) means that you do not have a twinax connection.
- Upper left means that you have connected to the host, but your session is varied off.
- Bouncing from upper left to upper right means that you have a workstation address conflict or a device mismatch.



Status Indicators:

- **24-002** indicates the cursor is in the lower left position of the screen.
- **SA** means **Station Available**. If this is showing, but you do not have a signon screen, it would indicate that you are connected, but the controller is down.
- **II** means **Input Inhibited**. You are connected to the host, but an error prevents you from communicating. Pressing Error Reset (Ctrl) will clear this. If it recurs, do an Erase All Input, then Error Reset.
- **IM** is for **Insert Mode**. This allows you to insert new text, push existing text to the right.
- **KS** is for **Key Shift**.
- **MW** indicates that you have a **Message Waiting**.

Error Codes: covered in a table in [Appendix E](#).

Screen Color:

- **White** indicates that you have not performed Session – Connect.
- **Gray** indicates that the hardware has not connected.
- **Black** means that you are connected and the problem is either a device mismatch or problem at the host.

Problem Guide

This document contains solutions to problems that one might encounter when installing ES/TCP. The latest version of ES/TCP is 5.0.1.7.

To connect to the host, you must install a hardware adapter card in your PC. This adapter card, along with the emulation software, makes it possible for your PC to communicate with the host computer. A TCP/IP connection requires a network interface adapter card. You can use a token ring adapter or an Ethernet adapter. Install the adapter card according to the instructions provided in the documentation that came with your adapter card.

To run the emulator using TCP/IP, you must enable the TCP/IP networking protocol in Windows 95 and be able to "ping" your host.

The categories of problems are:

ES/TCP CONFIGURATION PROBLEMS:	51
INVALID ADDRESS PROBLEMS	55
NETWORK PROBLEMS:	58
PROBLEMS AT THE HOST	60
REAL PROBLEMS AT THE HOST	63
INTERLYNX/S CONNECTIONS:	69
REMOTE CLIENT PROBLEMS	70

ES/TCP CONFIGURATION PROBLEMS

These are problems that can occur during the initial configuration.

PROBLEM:

After the Administrator installed it, you are trying to configure it and get this message:

EMUapp32.exe Application error.

The instruction at 0x0213684 referenced memory at 0x026dd14f.
The memory could not be "read".

CAUSE:

You must be logged on as Administrator to change the settings.

SOLUTION:

Log on as Administrator.

PROBLEM:

Program says, "**You have not configured any emulation devices. You must configure at least one device before you can use the emulator. OK to configure now.**" even after you configured one.

CAUSE:

This could happen if you did not name your device.

SOLUTION:

- Click on Start/Programs/ES32 and then Display Emulator.
- Click on the **OK** button. It will bring you to the "**Configure Connection Methods and Devices**" menu.
- Click on **ES/PCI** to select it.
- Click on **New Device**. It will bring up the **Configuration Properties** menu.
- Select Display or Printer if it is not already selected, and give the device a name that is indicative on the connection method and device. Anything will do, but it can not have spaces and the maximum number of characters is 10.

A value that starts with an alphabetic character followed by alphanumeric characters that may include periods and underscores. Alphabetic characters include A-Z, \$, # and @. Alphanumeric characters include alphabetic characters plus 0-9.

A value that starts and ends with double quotation marks ("), with any characters which can be shown

between the double quotation marks except blanks, asterisks, question marks, dashes, apostrophes, and double quotation marks.

PROBLEM:

The display comes up to a gray screen but it never connects, the cursor goes to the upper left and the terminal just keeps dancing.

CAUSE:

This could happen if you were using a space or another illegal character in the Device Name.

SOLUTION:

Do not use spaces, dashes, asterisks, question marks, apostrophes, or double quotation marks in the Device Name.

PROBLEM:

Flash screen comes up, then "**FAILED TO UPDATE SYSTEM REGISTRY**".

CAUSE:

Windows 2000 Professional has an option to prevent users from writing to the registry.

SOLUTION:

All users who use the ES/PCI card must be defined as at least a Standard user in the Power User Group under the Control Panel's Users and Password settings for Group Membership.

PROBLEM:

When you try to ping the AS/400, it reports **IP Address is expired**.

POSSIBLE CAUSE:

Network changes, PC does not have a valid IP address.

SOLUTION:

Click the **Start** button and select **Run**.

Type in **WINIPCFG**. This will bring up your Windows IP Configuration.

Make certain that you have a valid IP address.

Click **Renew All**. If that does not work, click **Release All**, then **Renew All**. If that does not work, make certain that you have a good connection to a DHCP server.

PROBLEM:

When you try to connect to the AS/400 it gives this message: "**Invalid TCP/IP host name. Check your TCP/IP configurator to ensure that the host name is defined with a valid Internet address.**"

CAUSE:

ES/TCP does not have a valid IP address.

SOLUTION:

- Click the **Configure** icon in the upper left.
- *Double-click* "**TCP/IP: TCP/IP**". This will bring up the **Configuration Properties** window.
- Make certain the IP Address is in the format xxx.xxx.xxx.xxx.

INVALID ADDRESS PROBLEMS

This category of problems assumes that you have other users already using TN5250E connections to the AS/400.

PROBLEM:

When you try to ping the AS/400, it responds on 1 of 5, but fails on the rest. The AS/400 can not ping the PC either. Your AS/400 is at the latest PTF and CUM level and can ping other devices.

POSSIBLE CAUSE:

You have a network problem. This could be an **IP address** problem, a subnet mask problem or an even a duplicate address.

SOLUTION:

Have your network administrator make certain the IP addresses are correct.

PROBLEM:

Tried to connect from same network and getting **Invalid Internet Address** error. Can access the web.

CAUSE:

This means that you may be accessing a valid IP address, but it is not a TN5250E host, the Telnet Server is not running, or ES/TCP or the host is not configured correctly.

ACTION:

Verify that the IP Address of the AS/400 is on the same subnet as the PC with ES/TCP. The Subnet Masks must be the same. Address bits that are not 0, need to be the same. Must be on the same physical network.

First, ping the PC from the AS/400:

a) Go to any command line, where it says:
Selection or command
===>

b) Type **PING** '###.###.###.###' (where ###.###.###.### is the IP address that you are trying to reach, enclosed in single quotes)

c) You will get a message: "Verifying connection to host system ###.###.###.###"

d) Put your cursor on that message and ROLL UP (which is the Page Down key in some of the better emulation packages).

e) If it says: " PING reply 1 from ###.###.###.### took 59 ms. 256 bytes. TTL 128"

f) Then roll up again to check the next five. At the end it should say:
"Connection verification statistics: 5 of 5 successful (100 %)."

If it says "Unknown Host" or "No response from host within 1 seconds for connection verification 1." well obviously you have a network problem to resolve.

Next, ping from the PC to the AS/400:

a) Click Start, then Run, then type in ping '###.###.###.###' (where ###.###.###.### is the IP address of the AS/400.)

CAUSE:

Different subnet masks or a different physical network.

SOLUTION:

If the subnet for the AS/400 is not the same as the subnet for the ES/TCP Workstation, they are on different supernets and would need a router to connect.

If the IP address and subnet masks are logically on the same network, but you still can not ping, then there may be a physical break in the networks.

You must be able to ping the AS/400, and the AS/400 must be able to ping the client PC.

PROBLEM:

You are not able to ping the AS/400. The AS/400 is able to ping the workstation. The workstation is on the connected via the Internet over a VPN over a Visa. You get an **Invalid Internet Address** message.

CAUSE:

The AS/400 needs to have the IP Address of the Internet Gateway or VPN Router added as a Default Gateway in order to know where to route the remote IP address.

SOLUTION:

After signing on to the AS/400 with the appropriate privileges, type "**CFGTCP**" and strike the **<Enter>** key at any command line.

On the next screen, type "**2**" (Work with TCP/IP Routes) and hit the **<Enter>** key.

Type "**1**" to Add and hit the **<Enter>** key.

Add as follows:

```
Route destination . . . . . : *DFTRROUTE
Subnet mask . . . . . : *NONE
Type of service . . . . . : *NORMAL
Next hop . . . . . : 192.168.1.5 ←
Maximum transmission unit . . . . . : *IFC
```

PROBLEM:

You are able to ping the AS/400. The AS/400 is able to ping the workstation. The workstation is on the same supernet. Using DHCP for addressing. Any of the systems that had MS Proxy client installed were not able to access the AS400 system. You get an **Invalid Internet Address** message.

CAUSE:

ES/TCP will not resolve the AS/400 IP address through a DHCP. That is, if he has the AS/400 defined as say AS400 on the DHCP Server and puts AS400 in the IP address of ES/TCP that will not work. AS400 needs to be defined in the HOSTS file on the PC, or the IP address of the AS/400 needs to be configured fully.

SOLUTION:

- Click the **Configure** icon in the upper left.
- *Double-click* "**TCP/IP: TCP/IP**". This will bring up the **Configuration Properties** window.
- Make certain the IP Address is in the format xxx.xxx.xxx.xxx.
- Use the actual IP Address of the AS/400 or uninstall the MS Proxy client.

NETWORK PROBLEMS

You are having a problem connecting to the AS/400. The first thing to do is make certain that you can ping the AS/400 and that the AS/400 can ping your device. If you can not, then you have a network problem that has nothing to do with our software. We can not help you to troubleshoot all of your network problems, but this guide may help.

PROBLEM:

When you try to ping the AS/400, it fails on all attempts.

POSSIBLE CAUSE:

You do not have a good network connection. It could be a hardware, software, or configuration problem, most often, the latter, but verify the hardware first.

SOLUTION:

First, ping the PC from the AS/400:

a) Go to any command line, where it says:
Selection or command
===>

b) Type **PING** '###.###.###.###' (where ###.###.###.### is the IP address that you are trying to reach, enclosed in single quotes)

c) You will get a message: "Verifying connection to host system ###.###.###.###"

d) Put your cursor on that message and ROLL UP (which is the Page Down key in some of the better emulation packages).

e) If it says: " PING reply 1 from ###.###.###.### took 59 ms. 256 bytes. TTL 128"

f) Then roll up again to check the next five. At the end it should say:
"Connection verification statistics: 5 of 5 successful (100 %)."

If it says "Unknown Host" or "No response from host within 1 seconds for connection verification 1." you have a network problem to resolve.

PROBLEM:

When you try to ping the AS/400, it fails on all attempts, and when you try to ping the PC from the AS/400, it fails on all attempts.

POSSIBLE CAUSE:

You do not have a good network connection. This would tend to indicate a physical connection problem, or a hardware failure.

SOLUTION:

Check your hubs. See what devices you can reach, and what the AS/400 can reach, to get a clue where the problem is. Look at the *lights*.

PROBLEM:

You see some devices on the network in the Network Neighborhood; you can not ping the AS/400.

POSSIBLE CAUSE:

Some of your network protocols are configured correctly, but your TCP/IP is not.

SOLUTION:

Your LAN Administrator should provide you with the correct parameters for TCP/IP. How you configure this will depend on your network.

PROBLEMS AT THE HOST

The first problems in this category are for when there are other users who have Telnet sessions working.

PROBLEM:

When you click the Connect icon, ES/TCP comes up with a message that says: "**Cannot connect to the host due to network timeout. Be sure that TCP/IP is properly installed and configured at the host.**" After you click OK to this message, it reports "**Unable to connect to Device xxxxxx**".

POSSIBLE CAUSES:

You may have plugged in the wrong IP address for the AS/400.

The AS/400 may not have TCP/IP, Telnet, or the Virtual Device Server may not be running.

ACTION:

Verify the IP address, if it is correct, then verify that the Ethernet line is active.

PROBLEM:

You do not know the IP Address of the AS/400.

SOLUTION:

You'll need access to the AS/400's command line. This may imply you have to get your AS/400 System Administrator involved. Ask him or her to provide you with the correct IP address for the AS/400 that you want to connect to. For those that don't know, or would like to know the AS/400 command is as follows:

After signing on to the AS/400 with the appropriate privileges, type "**CFGTCP**" and strike the **<Enter>** key at any command line.

On the next screen, type "**1**" (Work with TCP/IP Interfaces) and hit the **<Enter>** key.

Locate the interface that you are going to connect to. (If you only see 127.0.0.1 this means TCP/IP has not been properly configured on your AS/400. DO NOT use 127.0.0.1. If you do so you will NEVER get a sign on from the AS/400. If TCP/IP is not configured on your AS/400 we recommend you follow the instructions from IBM. The name of the book is called "**Getting Your AS/400 Working for You**". Publication number is SC41-5161-00. You'll find helpful information on TCP/IP in Chapter 6.) Write down the IP address and enter that in the **ES/TCP** configuration for IP Address:

Start / Program files / ES32 / Display Emulator

File menu / Configure

Click on the **+** next to **TCP/IP** to find your device, then double-click on it.

PROBLEM:

It was working. You get to the emulation screen, but it is blank. The SA (Station Available) indicator is lit. The cursor stays upper left.

CAUSE:

Top left means that your station is not varied on. This can happen if you disconnect when you are not at the signon screen.

SOLUTION(s):

If the last device using this station address crashed, the station address will be varied off. Ask the System Administrator to vary your device on. This may require varying off, then back on.

WRKCFGSTS *DEV *yourdevice*

Put the cursor on the line to the left of your device and take an option **1**.

PROBLEM:

It was working. Getting the message "**CONNECTION FAILURE. DEVICE ALREADY IN USE.**"

CAUSE:

Disconnecting the session when you are not at a signon screen would cause your problem. This could also happen if your PC crashed and you had to re-boot. The AS/400 still has your session active, although in a crashed status.

SOLUTION:

Either have the system administrator vary your session off or you could create a new session, and then shut down the old session yourself, if you have enough authority.

To create a duplicate session, select the **File** menu, then **Configure**. Click *once* on **TCP/IP:TCP/IP** to select it, and then click on the **New Device** button. Use the same IP address, but a different name.

To restart the original device: On an AS/400 command line:

WRKCFGSTS *DEV *oldname*

<Tab> to *oldname*

2 to vary off

1 to vary back on.

PROBLEM:

Upgraded AS400 from V4R4 to V4R5. Remote users are locking up. Screens sent to host are not acknowledged. ES/TCP remains in Input Inhibited status.

CAUSE:

Large records are not being passed through the Shiva Firewall and router.

SOLUTION:

The AS400 commands:

CFGTCP to Configure TCP/IP

3 takes you to the Change TCP/IP Attributes (CHGTCPA) menu.

There is a parameter called Path MTU discovery and the option is yes or no.

Here's the definition:

Specifies whether the Path Maximum Transmission Unit (MTU) discovery function will be enabled on this system. Path MTU discovery allows for dynamic MTU adjustment, on a per connection basis, in order to maximize network throughput.

The value should be changed from YES to NO.

PROBLEM:

Trying to install new client. Get as far as a black screen with the cursor in the upper left.

CAUSE:

The device type that you have chosen for your emulation is not enabled on the AS400.

SOLUTION:

Add the device type (3477, 3179) as a workstation entry (ADDWSE) in subsystem QINTER.

REAL PROBLEMS AT THE HOST

In this category of problems, none of the Telnet sessions are working.

PROBLEM:

"**Invalid Internet Address**" on printer an NT4 server that hosts for all workstations. AS/400 can ping the NT Server. The NT Server can also ping the AS/400. OS400 V4R2M0. WRKWTR displays PRT2.3 same name as the printer queue. The writer was hung up.

Frame Relay - went down and did not flush the route to the NT Server. LPD/LPR gets a problem when NT Server TCP/IP Print Server on NT cause LPD/LPR printing problem. Printer session does not find IP address - "Invalid IP address" HP Jet Direct. NT Server TCP/IP Printer Service and ES/TCP printer conflict. Log full on Event Log on NT Server - every 30 second LPD service warning Printer - Printer PRT6 does not exist.

Printer is giving an Invalid - 192.168.254.40 AS/400 IP Address.

ACTION:

On the AS/400 command line, do **CFGTCP**. Check the **Work with TCP/IP Interfaces**:

Internet Opt	Subnet Address	Mask	Line Description	Line Type
	127.0.0.1	255.0.0.0	*LOOPBACK	*NONE
	192.168.xxx.xxx	255.255.255.0	ENETLINE	*ELAN

And **20. Configure TCP/IP applications**: then **11. Configure TELNET**

CAUSE:

Telnet is not started or PTF's are not installed.

SOLUTION:

If **Configure TELNET** does not exist, then contact Big Blue.

PROBLEM:

When trying to run ES/TCP on an **IDEA Concert** connection to a midrange host, they get "**Unable to connect to host, due to an Invalid IP Address**".

SOLUTION:

Make certain that the visa has the correct IP address. Make certain the Telnet Server is up. Make certain that there is not a proxy server problem.

PROBLEM:

When trying to run ES/TCP on an **IDEA Concert** connection to a midrange host, they get "**Unable to connect to host, Invalid Internet Address**".

SOLUTION:

Configure TN5250 Server on Concert:

<http://www.nlynx.com/html/tb-tn5250.htm>

PROBLEM:

Getting "**Invalid Internet Address**" error. 400 can ping PC and PC can ping 400. V4R3. QAUTOVRT has been increased to 100. Trying to attach only 1 device via Telnet at this time. You are trying to connect with Persistent LU naming. You've changed the name to no avail.

CAUSE:

Persistent LU naming is a function of TN5250E. This may not be enabled or running on the host.

SOLUTION:

Make certain that you have all of the PTFs for TN5250E:

<http://www.nlynx.com/html/tb-tm5250e.htm>

If you do not have all of the PTFs required for TN5250E, you can disable it in ES/TCP.

- Click the **Configure** icon in the upper left.
- *Double-click* "**TCP/IP: TCP/IP**". This will bring up the **Configuration Properties** window.
- *Remove* the check from TN5250E.

PROBLEM:

You see some devices on the network in the Network Neighborhood, you can not ping the AS/400.

POSSIBLE CAUSE:

The Telnet server on the AS/400 is not running.

SOLUTION:

ES/TCP uses the TCP/IP protocol to communicate with the AS/400. Specifically, it Telnets to the AS/400. Hence, the TELNET server on the AS/400 must be running. The AS/400 administrator can check this by typing (on an AS/400's command line) "**NETSTAT**" followed by hitting the **<Enter>** key. Next, take option "**3**" (Work with TCP/IP connection status) and hit the **<Enter>** key. Under "**Local Port**" you should see "**telnet**" with a corresponding "**State**" of "**Listen**". If you don't see "**telnet**" then type "**STRTCPTELN**" on the AS/400's command line to start the Telnet server on the AS/400.

PROBLEM:

The PC can successfully PING the AS/400 but you're still not getting a session from the AS/400.

POSSIBLE CAUSE:

The subsystem that runs your virtual devices is inactive.

SOLUTION:

Assuming you know the name of the subsystem you can easily check this by typing "**WRKACTJOB**" and hitting the **<Enter>** key. Look for the subsystem and page down, if necessary. If you don't see it, type "**STRSBS ZZZ**" (where ZZZ equals the name of your subsystem) and then hit the **<Enter>** key. Note: To start a subsystem, the user must have job control (*JOBCTL) special authority.

PROBLEM:

You see some devices on the network in the Network Neighborhood, you can not ping the AS/400.

POSSIBLE CAUSE:

The route is not up.

SOLUTION:

Another thing to check is to make sure the route(s) is/are up and running. Typing "**CFGTCP**" on the command line and striking the **<Enter>** key can check this. Then, type "**1**" (Work with TCP/IP interfaces) and strike the **<Enter>** key. When the next screen appears hit the **F11** (Display Interface Status) key. Under the "Interface Status" column the appropriate interface (the one you'll be using) should read "Active". If it's "Inactive" use option "**9**" to "Start" it. If it reads "Starting" give it about a minute or so and then hit "**F5**" (Refresh). If anything else other than "Inactive" or "Starting" appears it's time to get the AS/400 administrator involved and if he or she is already involved then it's time to call IBM, or your AS/400 Consultant.

PROBLEM:

You see some devices on the network in the Network Neighborhood, you can not ping the AS/400.

POSSIBLE CAUSE:

TCP/IP is not started and/or improperly configured on the AS/400.

SOLUTION:

The AS/400 administrator can check this by typing (on an AS/400's command line) "**NETSTAT**" and hitting the **<Enter>** key. If you get an error message stating "Not able to complete request. TCP/IP services are not available." then TCP/IP is not started. Assuming that TCP/IP is already configured on your AS/400 the AS/400 administrator can start TCP/IP by typing "**STRTCP**" and hitting the **<Enter>** key.

If TCP/IP is not configured on your AS/400 we recommend you follow the instructions from IBM. The name of the book is called "Getting Your AS/400 Working for You". Publication number is SC41-5161-00. You'll find helpful information on TCP/IP in Chapter 6.

PROBLEM:

He is getting a message "**Invalid Internet Address**".

ACTION:**CAUSE:**

Configure TELNET is not an option on his AS/400. TCP/IP Connectivity Utility Server is not installed.

SOLUTION:

Contact Big Blue.

PROBLEM:

When you try to ping the AS/400, it responds on 1 of 5, but fails on the rest. The AS/400 can not ping the PC either.

POSSIBLE CAUSE:

Your AS/400 may not be at the latest **PTF** level.

SOLUTION:

Make certain that the AS/400 is at the latest PTF level. What version is your AS400?

GO LICPGM, option 10, then F11 to see AS/400 version. It will be under Installed Release. You must have security officer privileges to do this. Once you have this information, you must contact your IBM person for assistance.

PROBLEM:

You see some devices on the network in the Network Neighborhood, you can not ping the AS/400.

POSSIBLE CAUSE:

Ethernet standard is not set to ***ALL** or the line speed setting is not correct.

SOLUTION:

If you're connecting the AS/400 via an Ethernet line there is a parameter which may prevent the PC from 'talking' to the AS/400. This can be checked by typing "**WRKCFGSTS *LIN**" and hitting the **<Enter>** key. Once you locate the line you're trying to connect to type an "**8**" (Work with Description) next to it and hit the **<Enter>** key. Then, type a "**5**" (Display) on the next screen and hit the **<Enter>** key. Make sure "Ethernet standard" is set to "***ALL**" and that the correct "Line speed" is displayed. The line speed can be changed by hitting the **F12** (Cancel) key and typing "**2**" (Change) and then making the change. If you need to change "Ethernet standard" you'll have to type "**CRTLINETH**" and create a new line description. For help on this, consult IBM, your AS/400 Consultant, or the IBM book. The name of the book is called "Getting Your AS/400 Working for You". Publication number is SC41-5161-00. Related information is in Chapter 6.

PROBLEM:

When you try to ping the AS/400, it responds on 1 of 5, but fails on the rest. The AS/400 can not ping the PC either. Your AS/400 is at the latest PTF and CUM level and can ping other devices. Your network administrator made certain the IP addresses are correct.

POSSIBLE CAUSE:

You have a network problem. This could be a bridge or router problem. It could be a problem with routing tables.

SOLUTION:

Recreate the Ethernet line. **Do not override** the MAC address.

Check the routers routing tables. Reset the routers.

PROBLEM:

The PC can successfully PING the AS/400 but you're still not getting a session from the AS/400.

POSSIBLE CAUSE:

One of the networked devices or networked nodes is improperly configured.

SOLUTION:

The next step here is to see if the AS/400 can successfully PING the PC. On an AS/400's command line, type "PING 'x.x.x.x'" where x = IP address of the PC in question. If the PING from the AS/400 to the PC is unsuccessful then try Pinging the network side of the router. If you can PING it but not the Ethernet side of the router then there's probably something wrong with the configuration of the router. If you cannot PING the network side of the router then there's probably something wrong with the TCP/IP configuration on the AS/400. Specifically, the route configuration or the subnet mask on the AS/400 could be wrong but it could be something else. It is recommended that you consult your AS/400 Administrator, your AS/400 Consultant, IBM, or the IBM book. The name of the book is called "Getting Your AS/400 Working for You". Publication number is SC41-5161-00. Related information is in Chapter 6.

PROBLEM:

You can ping the AS/400 from the PC and the AS/400 can ping the PC, but the session never starts. The 'dancing terminal' just keeps dancing with the cursor in the upper left.

POSSIBLE CAUSE:

The 5.0.0.0 and greater versions of ES/TCP supports 'Enhanced Telnet 5250' or TN5250E. The main feature that TN5250E provides is Persistent LU naming, which is where the name that you provide when you set each ES/TCP session up is the one that the AS/400 sees for your session. It goes out with this enabled as the default.

Two possible problems that can occur:

- 1) Certain names are invalid. If another TCP/IP client uses a name it can not be used.
- 2) The AS/400 will either have this enabled or not. If it does not have it enabled, you have to remove the check from that option.

SOLUTION:

In the Display Emulator, select **File**, then **Configure...** it will bring up the **Configure Connection Methods and Devices** screen.

If your display devices are not shown under the TCP/IP : TCP/IP connection method, then click the + to the left of it to see them.

Double-click on a display to select the **display**, then **Properties**, to bring up the **Configuration Properties** window.

Select the **TCP/IP Device** tab. There will be a **TN5250E** option. If your host does not support it, remove the check. Or vice-versa.

PROBLEM:

The PC can successfully PING the AS/400 but you're still not getting a session from the AS/400.

POSSIBLE CAUSE:

Improper configuration of the subsystem used for the virtual devices.

SOLUTION:

Our product emulates a 3179. This means your subsystem (typically, QINTER) must allow a 3179. You can check this by typing "**WRKSBSD *ALL**", locate the subsystem you're using for the virtual devices, take option "**5**" (Display), and hit **<Enter>**. On the next display, select option "**5**" (Workstation type entries) and hit the **<Enter>** key. On the next display, you should see a "Type" of "*all", or a type of "**3179**". If you do see a "Type" of "*all", or a type of "**3179**" then take option "5" (Display workstation type details) and hit the **<Enter>** key. On the next display you should see an appropriate value for the "Maximum active jobs" parameter. You can make changes in one or both cases by typing "**CHGWSE**" (or "ADDWSE"), hitting the **<Enter>** key, and making the appropriate changes.

PROBLEM:

When you try to ping the AS/400, it responds on 5 of 5. The AS/400 can ping the PC, too. Your AS/400 is at the latest PTF and CUM level and can ping other devices. Your Network Administrator made certain the IP addresses are correct. You recreated the Ethernet line and restarted all routers. But it still will not bring a session up.

POSSIBLE CAUSE:

Your AS/400 is not set up for enough virtual devices.

SOLUTION:

WRKSYSVAL work with system values

QAUTOVRT how many virtual devices

INTERLYNX/S CONNECTIONS

PROBLEM:

Installing ESTCP with a secure driver and creating a secure remote access visa. Getting an error saying **Invalid Internet Address**.

He cannot ping the router from the IL/S. I believe they still have a cable problem. He also cannot telnet to the IL/S.

CAUSE:

The router was not configured correctly, or connected wrong. Using a straight through cable to connect the router to the ILS.

SOLUTION:

Cable between the router and the ILS needs to be reversing.

Swapped out the Ethernet cable between the Router and the IL/S and now they are able to ping between the 2 boxes.

REMOTE CLIENT PROBLEMS

PROBLEM:

Trying to connect from remote ES/TCP client through InterLynx/S to the AS/400. Getting an error message "unable to connect to host due to **Invalid Internet Address.**"

CAUSE:

Improperly configured visa file.

SOLUTION:

When configuring the Visa, put in IP Address of the port of the ILS that connects to the Internet.

When configuring the ES/TCP session, use the IP address of the AS/400, not the ILS.

PROBLEM:

You are trying to connect remotely from home and are getting **Invalid Internet Address** error. Can access the web and traceroute to host site. The host site is unable to get any kind of traceroute to remote location.

ACTION:

Call the ISP to help troubleshoot.

CAUSE:

The router had some type of firewall setup.

SOLUTION:

Disable the firewall function of the router. Open port 1081 TCP to allow ESTCP to make a connection.

PROBLEM:

Users are getting disconnected and having trouble getting connected.

CAUSE:

The AS/400 drops the sessions if it does not see activity.

ES/TCP implemented a timeout in v5011/v5012 that is set at 30 seconds and is not configurable.. After that period of time ES/TCP transmits a "Telnet null" to the AS/400. This is a 2-byte string of characters. The purpose is to "Keepalive" communication lines that may drop after a period of time if there is no activity on the line. Some ISDN lines disconnect after say 2 minutes if there has been no transmission/reception on the line. This is a problem for applications like ES/TCP as an abnormal disconnect would disrupt the Users session.

Unfortunately, as with all good ideas, IBM has to have the last word. OS400 V4R3/V4R4 IBM's operating system does not like the Telnet null, and will disconnect the session. So, if there is no activity on the line for 30 seconds ES/TCP v5011/v5012 will send a Telnet Null. This gives the impression of ES/TCP hanging as the link to the AS/400 has been disconnected by OS400.

NLynx's solution is ES/TCP v5013 where the timeout is configurable, from OFF to 1800 seconds, in various increments. The default is OFF, and unless you are absolutely sure that the line is disconnected by the Telecom equipment should stay OFF.

SOLUTIONS:

1. IBM solution: Keep your existing ES/TCP software and download this PTF-----> MF23060 from IBM. This does something with the keepalive option on the AS/400.
2. NLynx solution: Install ES/TCP 5.0.1.3. This software has a keepalive timeout that will send a "tickle" to the AS/400 to let it know that the session is still there. The timeout is configurable, from OFF to 1800 seconds, in various increments. The default is OFF, and unless you are absolutely sure that the Telecom equipment disconnects the line, it should stay OFF. When you are configuring your ES/TCP devices, make sure the "keepalive" box says off.

From ES/TCP, select **File/Configure**, which will bring up the **Configure Connection Methods and Devices** dialog window.

Click the **+** on **TCP/IP** to see all of your sessions, and double-click on each that you wish to change.

The keepalive settings in ES/TCP are not sent to the AS/400 but a keepalive packet is sent to the As/400 every X sec. as defined in ES/TCP keepalive box.

There is also a keepalive in ILS 3.2.1. You can see that when configuring a Visa. It is not labeled as such. It just says "Idle telnet clients are probed after X seconds (blank to disable)". The default value is 300 sec.

The ES/TCP Timeout is between ES/TCP and the AS/400, and has no impact on the ILS.

ES32 Error Messages

These are the error messages that one might encounter when installing or running the ES/TCP emulation software.

ERROR MESSAGE: "You have not configured any emulation devices. You must configure at least one device before you can use the emulator. OK to configure now."

CAUSE: This could happen if you did not properly name your device. You must name it. Do not use spaces or funny characters.

CAUSE: This points to a mismatch between the hardware driver and the connection method driver. You may have installed the wrong hardware driver. These are the drivers that must be installed when you first bring up the PC after installing the card, but before running the setup, where you install the connection method driver. It could also be a hardware conflict or a hardware failure.

CAUSE: This could be caused by an interrupt conflict the Windows Power Management module.

SOLUTION: Click on New Device. It will bring up the Configuration Properties menu. Select Display or Printer if it is not already selected, and give the device a name that is indicative on the connection method and device, like 'DSP01'0100 or 'PRT010101'. Do not use spaces or funny characters.

SOLUTION: Check the hardware driver for problems in the Device Manager. See Chapter 1.

SOLUTION: Go into the BIOS and disable Power Management functions. After you reboot, go into the Control Panel, and change all of the power settings to Never.

ERROR MESSAGE: Popup screen: "**FAILED TO UPDATE SYSTEM REGISTRY**" and On ES32 shutdown: "**Unable to save C:\program files\es32***.TVD Error: (5) Access is denied.**" The two options are Retry and Cancel. Only cancel works.

CAUSE: Windows 2000 Professional and Windows XP has an option to prevent users from writing to the registry.

SOLUTION: 1) No harm is done and these error messages can be ignored. 2) Define all users of the ES/TCP as at least a Standard user in the Power User Group under the Control Panel's Users and Password settings for Group Membership or ignore these messages, 3) upgrade to version 5.0.1.6 or greater or 5) you can get rid of the ES32 shutdown message by changing the ES32 Display option: "Do not save customizations on exit". Do this by selecting File/Configure, and then select the Options button.

ERROR MESSAGE: "Unable to write this configuration please re-configure" or "**Unable to write configuration file**"

CAUSE: This could happen if you are not logged on as an Administrator.

SOLUTION:

Log on as an Administrator and reinstall.

ERROR MESSAGE: When I try to open my session, it says, "**The device name xxxxx is in use**".

CAUSE: If you open *display2* from *display1* then close down *display2* last AND you also have the parameter "**Open last file when started**" enabled, it will make *display1* open *display2*.

SOLUTION: Open Notepad (**Start/Programs/Accessories/NOTEPAD**)

Open the [TVD](#) file that you open first. (**File/Open**, change the **Files of Type** to **All Files**, then browse to **Desktop** (click on the desktop icon at the top), then **My Computer**, select the **C:** drive, then **Program files**, then **ES32/** and finally *display1.TVD*
It will bring up a file that has a parameter HostLinkName= *display1* at the top. This needs to match the name of the TVD file.

PREVENTION: After bringing up the Display Emulator, go to each of your sessions and select the **Session/Properties** menu.

Select the **General** tab.

Remove the check from "**Open last file when started**"

PROBLEM: You ran the configuration and there was no conflict, no problems. You get to the emulation screen, but it is blank. The SA (Station Available) indicator is lit. The cursor stays upper left.

CAUSE: Top left means that your station is not varied on. This can happen if you disconnect when you are not at the signon screen.

SOLUTION: If the last device using this station address crashed, the station address will be varied off. Ask the System Administrator to vary your device on. This may require varying off, and then back on.

PROBLEM: You ran the configuration and there were no conflicts. You get the black emulation screen, but it is blank. The SA (Station Available) indicator is not lit. The cursor stays upper right.

CAUSE: No Station Available indicates that the network card does not have a connection to the Midrange host. You probably have a network card connection, but there is not a connection to the host. This could be a controller problem if you are at a remote site.

SOLUTION(s): Make certain the Ethernet Line is connected to the host and varied on.

Session Questions:

QUESTION: What are the requirements of the device name?

ANSWER: It is recommended that you use a device name that has part of your IP Address or Work Station Address at the end. For TN5250E sessions where the name provided is shown on the AS/400, the initials or name of the user is helpful. It is also useful to reference the application that the session is usually used for.

- You can use any number and letter combinations.
- You can use the characters @ \$ and _.
- Ten characters is the maximum for TN5250E sessions.
- The characters ? < > , . / \ | and * are not accepted.
- The characters ~ ! % ^ & () - + = { } [] are accepted, but should be avoided for ES/TCP because the character will change to # at the AS/400.
- You cannot use - (dash).
- You cannot use spaces for TN5250E sessions.

QUESTION: What is the big red triangle over the left corner of my [TVD](#) or [TVP](#) icon?

ANSWER: This is the session that was opened to initially start ES32.

QUESTION: Why don't I get the big red triangle over the left corner of my [TVD](#) or [TVP](#) icon on my other open sessions?

ANSWER: If you opened them from the TVD or TVP file, you would, but if you open them from the open Display Emulator session, using File/Open Display or the Open Another Display icon, it will not put the red triangle there.

QUESTION 8: My shortcuts keep pulling up Untitled.

CAUSE: Invalid name.

SOLUTION: Do not use a name with more than ten characters or a -.

Screen Questions:

QUESTION: I do not have access to the menu bars, how do I get my screen out of full screen mode?

ANSWER: **Right-click** in the middle of the screen.
Remove the check from **Full Screen**.

QUESTION: Every time I start the software, I do not have access to the menu bars, how do I get my screen out of full screen mode?

ANSWER: **Right-click** in the middle of the screen.
Remove the check from **Full Screen**.
Now click on the **Sessions** menu and select **Properties**.
Click on the **Display** tab.
Remove the check from **Full Screen Mode after connection**.

Font Questions:

QUESTION: My local (not host) screen prints print out garbage.

CAUSE: The [font](#) that you have chosen in the ES32 setup is either not a [TTF](#) (True Type Font) or is not loaded in the printer.

SOLUTION: All printer interfaces are different in Windows, but some printers have an option in the printer driver to print fonts from the printer or direct from the application.

SOLUTION: Choose a different font. In ES32, click on Session, and select Properties, the Font tab.

QUESTION: Why does it not retain the column formatting when I cut and paste into a Word doc?

ANSWER: It assumes the font of the document that you paste into. If you choose EBCDIC it will regain the columns. To see the other fonts that work, you can to the Session menu, click Properties. Click the Font tab.

QUESTION: How do I get it to show all 132 columns?

ANSWER: You must select a model to emulate that supports wide screens. These would be 3180, 3197D, or 3477. This happens automatically with ES/TCP when you select 132 columns.

Select **File** then **Configure**.

Select your display. If it is not showing, click the **+** on the display adapter.

Click on **Properties**, it should bring up the **Configuration Properties** window.

QUESTION: I selected 3197D but I am unable to achieve a 132-col display.

ANSWER: Check your [font](#) selection.

Select **Session**, then **Properties**

Select the **Font** tab.

Make certain that the "**Scale font to fit Window**" is checked.

QUESTION: Why are there so few font options in ES32?

ANSWER: The fonts have to be True Type and [monospaced](#) (or fixed spacing) for IBM screen emulation. Every character has to take up the same amount of space. Most fonts in use are not monospaced. They have to be created internally.

Keyboard Questions:

QUESTION: How do I do re-map the keyboard?

ANSWER: Click on the **Sessions** menu and select **Properties**.

Click on the **Keyboard** tab.

From the list of Host Keys, select the one you want to map to your keyboard.

If the host function is currently mapped to your keyboard, its key combination will display under **Currently Set To**.

Click **Set**.

Choose a different key, or a key together with Control, Alt, or Shift to remap it to and press that key or key combination and click **OK**.

QUESTION: I wanted to make the left ALT key the error reset, in addition to the left control (CTRL). I also wanted to make the right ALT key the Newline key. Whenever I try to do that, it expects ALT + another key. Can I do what I want to do?

ANSWER: No, the Alt key by itself has a System 36 function so it cannot be used by itself, except for the System 36 function. Not only that, but some of the old programs like DisplayWrite used ALT letter combinations, for example ALT C to center. This particular function often will not work if the PC has a program trap set for that key scan.

QUESTION: How do I do things like System Request and Command 13-24?

ANSWER: Easiest way is to click **View** then put a check in **Command Keys**, then click it again and put a check in **Function Keys**. After that you can use your mouse.

Alternative method is to figure out where everything is mapped to the keyboard, by selecting the **Sessions** menu and select **Properties**.

Click on the **Keyboard** tab.

QUESTION: When I try to use the **/**, *****, **-**, and **+**, on the numeric keypad, it does not work, how do I do re-map the keyboard to use these characters?

ANSWER: Those characters are assigned by default to the Duplicate, Jump, Field Minus, and Field Plus functions.

Click on the **Sessions** menu and select **Properties**.

Click on the **Keyboard** tab.

From the list of Host Keys, select the one you want to map to your keyboard.

If the host function is currently mapped to your keyboard, its key combination will display under **Currently Set To**. Click **Set** on the Host Key that you want to change.

Either just select **Remove** or Choose a different key, or a key together with Control, Alt, or Shift to remap it to and press that key or key combination and click **OK**.

QUESTION: How do I perform ALT-letter combinations required by DisplayWrite36 to do functions like ALT B for Bold.

ANSWER: The left CTRL key functions as either the CMD key or the ALT key for most of these functions. This will work for most cases, except where the Windows OS interprets the Control/Key sequence first. The Keyboard Driver handles this. Microsoft or the Keyboard vendor writes keyboard Driver. Functions that would cause problems are Control/C, Control/P, and Control/V.

QUESTION: When you use DisplayWrite36, Alt/c or Ctrl/c are supposed to center text, and Alt/p or Ctrl/p is supposed to insert a page-end. These functions do not work. All the other Alt or Ctrl key combinations the application uses do work.

CAUSE: Windows OS interprets the Control/Key sequence first. Functions that would cause problems are Ctrl/C, Ctrl/P, and Ctrl/V, because these are standard Copy, Print, and Paste.

SOLUTION: Use the combinations:

Shift/Ctrl/ (and the appropriate letter) to get past the Windows trap and be interpreted as the appropriate DisplayWrite36 function. For Example:

Shift/Ctrl/C will product CMD-c that is used to produce the DisplayWrite centering command.

QUESTION: Where is the cent sign key on the ES32 emulation keyboard? Also, where is the key that looks like an upper right corner, looks like a 7 except it is a right angle with equal sides?

ANSWER: The cent sign and logical not are not defined on the PC keyboard so there is a workaround called 'executing a hex value'. In the example below, the upper right corner symbol is a logical not and its hex value is 5F. To execute a hex value on the ES32 emulation software (in this case you are trying to execute a logical NOT or hex 5F) do the following:

1. Get the emulation connected and signed on.

Go to where you want to place a hex value, click the **right-side mouse** button.

Select **Function Keys** and then **Hex**.

Using the number pad of the keyboard select **'5'**.

Using the alpha keys select **'F'**.

This will produce the logical NOT sign. All hex values can be done this way. The hex value for the cent sign is 4A.

To avoid steps 1-3, you can define a key as the Hex key, by doing the following steps:

1. Go to the Properties menu by pressing the Properties icon or select **Session**, then **Properties**.

2. Select the **Keyboard** tab.

3. Scroll the **Host Key** window down to **Hex**, and click on it to select the key that you want to have as your 'Hex' key.

4. Click **Set**.

5. Press a key (that will become your Hex key).

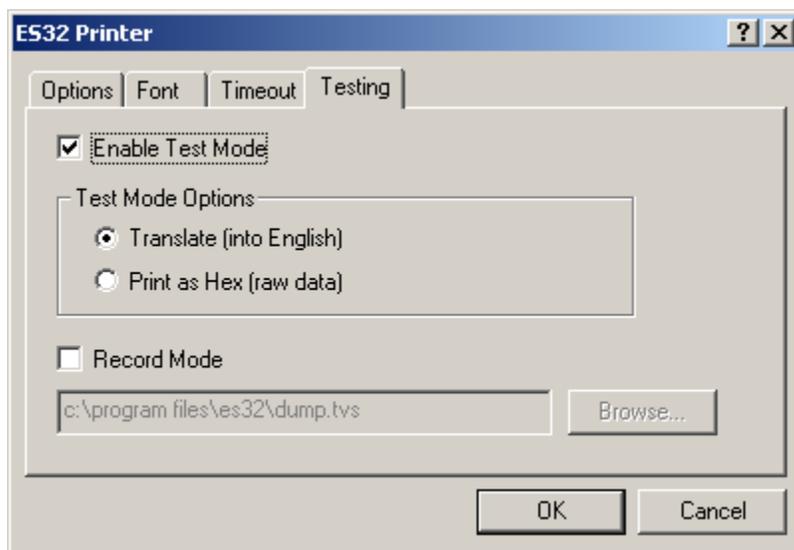
6. Click **OK**.

7. Click **OK** again.

Printer Troubleshooting

Resolving printer problems is usually a case of tweaking parameters here and there and examining the output. Typically this is done in the application or the printer configuration at the AS/400. This is not our area of expertise or responsibility. If you believe that the terminal is doing something wrong. Technical Support can examine the output and make a recommendation. This is what we will need after each attempt.

1. Determine what IBM printer you are emulating and see if it is the best printer for your purposes.
2. Determine method of control you will use. If modifying the data output does not have any effect, then make certain that you have proper set up the control of the printer at that point.
3. Look at the printer definition on the AS/400 and the job definition on the AS/400. There are many places for the AS/400 to affect the job output, make certain that you have explored them all.



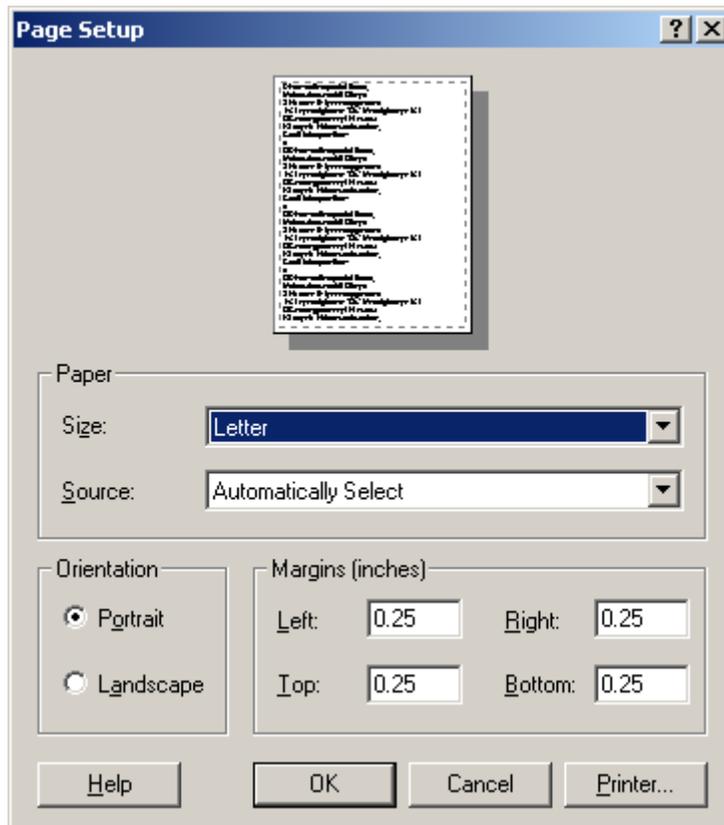
Get a printer hex dump from ES32:

- Put the host job that you are having a problem with in save mode so that you can send the same job a few times.
- Send that job to get a sample of failing output.
- In the ES32 printer control panel, click on the **Online** button to take the interface offline. The green light will go out.
- Click the **Properties** button and select the **Testing** tab.
- Put a check in **Enable Test Mode**.
- Either put a check in **Translate** (into English). This will show the printer commands that were sent or put a check in **Print as Hex** (raw data).
- Click the **OK** button, and then the **Online** button to put the interface back online. The 'green light' will come back on.
- Re-submit the AS/400 job that you put in save mode.
- Examine the failing output and the translated output. This may help you to see what commands are being sent and find the problem.
- In the ES32 printer control panel, click on the **Online** button to take the interface offline. The green light will go out.

- Click the **Properties** button and select the **Testing** tab.
- Remove the check from **Enable Test Mode**.
- Click the **OK** button, and then the **Online** button to put the interface back online. The 'green light' will come back on.

Technical Support can help you to examine the traces. Fax samples of the failure (marked up as necessary) and the test output to 512-869-2621. Alternately scan and email to support@ringdale.com.

It may also be helpful for technical support to see the host definition and the printer definition. You can print these by using **Alt / Print Screen** and either printing the result or paste into an email, when on the appropriate screens.



Other Questions:

QUESTION: Does your software under printer configurations, goes it have an option to print to a file instead of a printer?

ANSWER: ES32 uses the Windows Driver Interface. The Windows Driver Interface has an option where you can create a file on disk. The procedure is to add a printer that does this and print to that printer:

Click the **Start** button then select **Settings** and then **Printers**. This will bring up the **Printers** folder.

Double-click on **Add Printer** to bring up the **Add Printer Wizard**.

Click the **Next** button and it gives you an option of Local or Network printer. Choose either, and then click the **Next** button again.

Select the printer (usually you will choose **Generic/Text Only**).

There is an option to select one of the "**Available ports**" where you will see the option to select **FILE: Creates a file on disk**.

After creating this printer, bring up the ES32 printer interface using **File / Open Printer**.

Click the **Online** button to take the printer offline (green 'light' goes out).

Click the **Page Setup** button.

In the lower right, click the **Printer** button.

Select the **Generic/Text Only**.

QUESTION: How do I get help for myself?

ANSWER: Click on the Help menu at the top right.

More documents like this can be located on our web site at <http://www.nlynx.com/html/technicalbulletins.htm>

IBM 5250 Error Codes



Error Codes are four or six digit hexadecimal codes that may appear on the error line in your terminal workstation display during operation. These codes are sent from the host system.

Refer to the Error Code Range Chart below, and then go the appropriate chart.

Error Code Range	Description of Error Code and Suggested Response
0000 to 003F	An operator error occurred during an entry operation Locate the exact code and follow the instructions. See Operator Entry Errors Codes
0040 to 005F	An error occurred on the communication network during controller/host communication. Check the modems, cables, line and connections to the host system.
0060 to 0069	An operation error occurred when trying Ideographic Support. See Ideographic Support Error Codes.
0070 to 007F	An operator error occurred. See Text Entry Assist Error Codes while using the text processing function.
0090 to 009F	A display station operator Error Codes. See Host Support System caused an error that involves the host system.
100000 to 10FFFF	A display station operator attempted to enter an incorrect or invalid, X.25 command or parameters from the keyboard. See X.25 Error Codes
110000 to 1FFFFF	An error was detected by the DTE or DCE X.25 Network. See sections Call Systems and try to re-establish the communications.
400000 to 400900	Linking errors.
400A00 to 411300	XID Errors
420000 to 441200	LU6.2 Errors
540404 to 540408	LAN AS/400 attachment errors

0000 to 0038, Operator Entry Error Codes

Refer to the following Operator Entry Error Code Chart if the code displayed is in the range from 0000 through 003F. Note the following:

1. If an operator entry error occurs, further input tasks are suspended until the problem is resolved. The error might be an invalid key, input or entering data at too high a rate.
2. In some applications you can press the HELP key to get more information about the nature of the error.
3. To recover from the error, press the **Error Reset** key at the operator workstation involved and then the **Field-**, **Field+**, or **Field Exit** key to blank the field.

Operator Entry Error Code Chart

Error Code	Error Description and Suggested Recovery
0000	HELP Key Not Allowed.
0001	Keyboard Overrun. Entering information at too high a rate.
0002	Invalid Scan Code.
0003	Invalid Command/PF Key
0004	Data Not Allowed in This Field
0005	Cursor in Protected Area of Display.
0006	Key Following SYS REQ Key Not Valid.
0007	Mandatory Enter Field - Must Enter Data
0008	This Field Must Have Alphabetic Characters
0009	This Field Must Have Numeric Characters
0010	Only Characters 0 Through 9 Permitted.
0011	Key For Sign Position of Field Not Valid.
0012	Insert mode--no room to insert data.
0013	Insert Mode - Only Data Keys Permitted
0014	Mandatory Fill Field - Must Fill to Exit
0015	Modulo 10 or 11 Check Digit Error. You entered data into a self-check field.
0016	F - Key Not Valid in this field
0017	To recover - press the ERROR RESET key. Enter data to the end of the field or move the cursor to the start of the field and use
0018	Key Used to exit this field not valid
0019	DUP or FIELD-MARK keys not permitted in this field
0020	Function key not valid for right adjust field
0021	Data must be entered in this field.
0022	Status of field not known
0023	Hex Mode - Entry not valid

0024	Decimal Field - Entry Not Valid
0026	F-Key Entry Not Valid
0027	The key pressed is undefined and therefore cannot be used.
0029	Diacritic Character not valid.
0031	Data Buffer overflow
0032	MSR data error
0033	MSR data received was secured and this field was not specified for secured data.
0034	MSR data exceeds length of field. Data received from card exceeds length of field.
0035	MSR Error. Card incorrectly inserted or damaged.
0036	Cursor Select not allowed in field-exit required state.
0037	This is a non-selectable field - you've pressed cursor select.
0038	Light Pen and MSR Use Not Allowed.

0040 to 005F Communication Network Errors

Cause Code	Description and Suggested Recovery
0040	Modem or DCE is not ready or not functioning properly. Data Set Ready (DSR) Line Inactive (Model 01); DCE Not Ready (Model 02) This error indicates that the modem or DCE was not ready during required intervals of normal operation. The operating state of the modem or DCE is checked at different times, depending on the specific link-level protocol in use.
0041	Idle condition detected (X.25 only). This error indicates that the receive line was idle for 15 or more contiguous bit-times.
0042	Receive Clock Failure This error indicates that the receive clock signal became inactive during data transfer.
0044	30-Second Timeout (switched line only). Indicates that no valid data has been received for 30 seconds. The DTR signal goes inactive to disconnect the line
0045	DCE Will Not Activate (X.25 only) Indicates that either a Disconnect mode (DM) or a DISCONNECT (DISC) command was received during the link setup sequence.
0046	Frame Reject Received. The control unit received an FRMR from the network, indicating that an error was detected in the last frame transmitted. The error log entry of this code includes three sense bytes, which preserve the contents of the FRMR I-field.
0047	Unexpected Disconnect Mode (DM) or DISCONNECT (DISC) Command Received. Indicates that either a Disconnect mode (DM) or a DISCONNECT (DISC) command was received while in information transfer state.
0048	Unexpected Unnumbered Acknowledgment (UA) Frame Received. The control unit received a UA frame while in information transfer state.
0049	An SABME was received while the controller was in information transfer state.
0050	Ready For Sending (RFS) Error. This error occurs when either the RFS line is inactive for up to 30 seconds while the RTS line is active or the RFS line is active when the RTS line is inactive. (except during V.25 bis call establishment).
0051	Transmit Clock Failure. The transmit clock failed during a transmit operation.
0052	Transmit Hardware Error. The link adapter hardware failed to complete a transmit operation within 30 seconds, but no transmit clock or other DCE signal failure was detected.
0053	Expiration of Retry Count (X.25 only). No acknowledgment of a transmission was received within allowed timeout. (Timeout retry count (N2) and retry interval (T1) are specified in CSU Field 7)
0054	Frame Reject Sent. The control unit has sent a link-level FRMR response to the host system after receiving an invalid SDLC or LAPB command. Sense bytes S1, S2 and S3 preserve the contents of the FRMR I-field.

0060 to 0069 Ideographic Errors

0060	Ideographic or Bidirectional support error. Invalid data or key pressed. To correct error, press Error-Reset at the workstation and if it is an Ideographic error, this field only accepts double-data characters--enter the correct data.
0061	Ideographic or Bidirectional support error. Invalid data or key pressed. To correct error, press Error-Reset at the workstation and if it is an Ideographic error, this field only accepts alphanumeric data--enter the correct data.
0062	The cursor is not in position to change the data type. Press Error-Reset and re-attempt.
0063	Invalid Ideographic character entered in Alternate Entry mode. Press Error-Reset.
0064	The keyboard mode does not support the key pressed. Press Error-Reset.
0065	The cursor is in a column reserved for shift-out or shift-in characters. Press Error-Reset.
0066	This is not a data character and therefore, cannot be repeated. Press Error-reset.
0067	The workstation extension character RAM is full. Press Error-Reset.
0068	The output data stream to the 3030 is not valid for extension characters. Press Error-Reset.
0069	Ideographic or Bidirectional support error. Ideographic error--The extension characters to the 3030 are undefined; Bi-directional error--a terminating character cannot be inserted. Press Error-Reset.

0070 to 0078, Text Entry Assist Error Codes

If you are using the Display Write program and an error code in the range 0070 through 007F is displayed, refer to the following Text Entry Assist Error Code Chart for a detailed description of the problem and a suggested recovery action.

Text Entry Assist Error Code Chart

Error Code	Description and Suggested Recovery
0070	Word Wrap/Carrier Return Error. To recover - press the Error Reset key. For more information, press the Help key.
0071	Command Conflict. To recover - press the Error Reset key. Try the operation again when the operation in progress is complete.
0072	Key Not Valid For Cursor Position. To recover - press the Error Reset key. Move the cursor to the correct position and try again.
0073	Invalid Attempt To Delete. To recover - press the Error Reset key. Press the general prompt command key to delete or replace instruction and format change characters. For more information, press the Help key.
0074	Invalid Entry During General Prompt. To recover - press the Error Reset key
0075	Character Not Found. To recover - press the Error Reset key. Try the operation again when the operation in progress is complete.
0076	Continuous Insert Mode Failed . To recover - press the Error Reset key. Wait until the host system processes the text on the screen and try again.
0077	Function Key Selection Not Valid. To recover - press the Error Reset key.
0078	Required Scale Line Not Defined to Control Unit There is an error in the application program. No scale line is defined for this line.

0097 to 0099 Host Support Error Codes

Refer to the following chart if the error code displayed is in the range from 0097 through 0099.

NOTE: When one of these codes is displayed, the required host support will not be available.

Host Support Error Code Chart

Error Code	Description and Suggested Recovery
0097	Test Request Function Not Supported. Contact host system operator and determine why the function is not supported.
0098	Undefined Hardware Error To recover - press the Error Reset key.
0099	Host Support Not Currently Available To recover - press the Error Reset key.

100000 to 101D00 X.25 Error Codes

When a keyboard entry error occurs while in X.25 Communication mode, a six-digit error code between 100000 and 10FFFF is displayed. Error codes along with a short description and suggested recovery action(s) are listed below:

For errors 100200 - check the system configuration. If the settings match, press the **ERROR RESET** key, check options and repeat the operation. Refer to Host Access Section for procedure on restarting communications. If this too fails, call your System Operator.

Error Code	Description and Suggested Recovery
100000	Previous CALL command in progress. Wait until the previous call is complete, or an error code other than 100000 is displayed.
100100	Virtual circuit already established. Wait for the virtual circuit to be detached before trying CALL/OPEN commands. It is possible to communicate over one virtual circuit at a time.
100200	ANSWER command entered for a PVC - Permanent Virtual Circuit` .
100300	CALL command entered for a PVC - Permanent Virtual Circuit
100400	Invalid logical channel ID. (Less than 3 characters long)
100500	Invalid logical channel ID. (Not a hexadecimal value between 001 and FFF).
100600	Invalid password. (More than 8 characters)
100700	Invalid Host Network Address. (TO network address exceeds 15 digits)
100800	Invalid Host Address. (FROM network address exceeds 15 digits)
100900	Invalid Host Network Address
100A00	Attempt to enter manual options or flow control negotiation from the keyboard with these parameters disabled.

100B00	Facility option entered incorrectly. (Characters entered are not hexadecimal - 0 through 9 or A through F)
100C00	Invalid packet window size option. (Less than 02)
100D00	Invalid packet window size option. (Greater than 07 with Modulo 8 specified)
100E00	Invalid packet window size option. (Greater than 15 with Modulo 128 specified)
100F00	Packet size not equal to 064, 128, 256 or 512.
101000	Invalid closed user group option. (Does not contain two decimal digits)
101100	Invalid control character entered.
101200	Host network address missing a CALL command.
101300	First control character (A, O, C or D) has already been entered.
101400	Network address was entered for a permanent virtual circuit (PVC).
101500	Password option was entered for a permanent virtual circuit (PVC)
101600	Invalid password option. (All not alphanumeric characters)
101800	Invalid password option. (All not alphanumeric characters)
101900	The Q or the E option was selected with the ANSWER command.
101A00	F or R control character entered for an ANSWER command or a PVC. [F=Facility; R=Reversed charging].
101B00	The Q or the E option was selected with the ANSWER command.
101C00	CALL entered for an answer-only SVC.
101D00	OPEN entered for an answer-only SVC

API -- **A**pplication **P**rogram **I**nterface. An API is an Interface, which is used for accessing an application or a service from a program. An API makes it possible to use programs from within programs, therefore it is the foundation for modular systems with clearly defined Interfaces between separate components.

Balun – (**BAL**anced **UN**balanced) A device that connects a balanced line to an unbalanced line; for example, a twisted pair to a twinaxial cable.

CPI – **C**haracters **P**er **I**nch

Emulator - A program that allows a computer to act like a (particular brand of) terminal, e.g. a vt-100. The computer thus appears as a terminal to the host computer and accepts the same escape sequences for functions such as cursor positioning and clearing the screen.

ETU – **E**mulator **T**ransfer **U**tility. This is a file transfer program that is installed on a IBM midrange host, such as the AS/400 or Advanced System/36. <http://www.ringdale.com>

Font -- a set of characters that has the same typeface, style (italic, bold, etc.) and size (10,12, 24, etc.).

HLLAPI – **H**igh **L**evel **L**anguage **A**pplication **P**rogram **I**nterface. An IBM programming interface that allows a PC application to communicate with a midrange application. The hardware hookup is handled via normal micro to midrange 5250 emulation.

HotSpot – This is an area on the screen this is linked to a specific command or menu for that specific screen so that you can activate the command or menu by clicking on it.

INF - (IN**F**ormation file) A Windows file that contains installation information.

LPI – **L**ines **P**er **I**nch

Midrange host -- In general, midrange refers to computers that are more powerful and capable than personal computers but less powerful and capable than mainframe computers.

Monospaced -- A type [font](#) where all characters have the same width.

PAPI – Microsoft uses the **P**rinter **A**pplication **P**rogram **I**nterface to format printer data for a specific printer using the INF for that printer.

OCL -- Object Constraint Language is an expression language that can be used to define expressions in object-oriented models. These expressions enrich the respective model with precise and unambiguous annotations, thus preserving precious information about the underlying business domain.

PCL -- **P**rinter **C**ontrol **L**anguage developed by [Hewlett Packard](#) and used in many of their laser and inkjet printers. Printer Control Language (PCL) is a language (a set of command codes) that enables applications to control Hewlett-Packard DeskJet, LaserJet, and other HP printers. Today, most computers have only PCI slots along with one AGP or one PCI Express slot for the display adapter.

SCS – **SNA** **C**haracter **S**et is the print control language that IBM printers use.

TN5250E - Telnet 5250 Enhanced

TTF - TrueType [Font](#) – A scalable font technology that renders fonts for both the printer and the screen.

Unlike PostScript and other font technologies, in which the rendering algorithms are maintained in the rasterizing engine, each TrueType font contains its own algorithms for converting the outline into bitmaps. The lower-level language embedded within the TrueType font allows unlimited flexibility in the design.

TVD – **T**elnet **V**irtual **D**evice. This is a Display Emulator session. The TVD file contains the properties.

TVP – **T**elnet **V**irtual **P**rinter. This is a Printer Emulator session. The TVP file contains the properties.

Ringdale, Inc.
101 Halmar Cove
Georgetown, Texas 78638
Tel: 1-888-288-9080 or 1-512-288-9080
FAX: 1-512-826-2621
<http://www.nlynx.com>
<http://www.ringdale.com>

Before you call:

Please have the following information ready:

- ✓ Your contact information.
- ✓ Serial number of the adapter card. This is located on the card guide where you can see it from the back of the PC.
- ✓ Cursor position, upper right, upper left, dancing terminal.
- ✓ The symptoms of the problem.
 - Does not work at all or intermittent?
 - IP Addresses
 - Certain application?
- ✓ History of the Problem:
 - Did the device work for a period of time or fail immediately after installation?
 - Was any PC option changed (hardware or software) prior to the problem appearing?

Address manual comments to:

Ringdale Inc.
Technical Support
101 Halmar Cove
Georgetown, Texas 78628
888-288-9080
www.ringdale.com
support@ringdale.com

ES/TCP Limited Warranty

General Terms and Conditions

Software Warranty: Ringdale, Inc. warrants that for a period of ninety (90) days from the date of purchase by the End User, its Software Products shall conform to its published specifications under normal usage. RINGDALE, INC. DOES NOT WARRANT THAT THE OPERATION OF THE SOFTWARE WILL BE UNINTERRUPTED OR ERROR FREE, OR THAT ALL SOFTWARE DEFECTS WILL BE CORRECTED. In the event a Software Product fails to comply with the warranty set forth above, Ringdale, Inc. will replace the product. End User must, however, return all copies of the Software, along with proof of purchase, to Ringdale, Inc. within 90 days from the Software purchase date.

Warranty Limitations: End User's sole remedy under any Warranty provided by Ringdale, Inc. shall be limited to the replacement or repair of the Product, or at Ringdale, Inc.'s sole discretion, a refund of the purchase price. The End User shall pay transportation costs in connection with the return of any Product to and from Ringdale, Inc.'s plant. RINGDALE, INC. GRANTS NO WARRANTY, EXPRESS OR IMPLIED, OTHER THAN THE WARRANTIES STATED ABOVE. EXPRESSLY EXCLUDED ARE THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. IN NO EVENT SHALL RINGDALE, INC. BE LIABLE FOR SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES, INSTALLATION COSTS, LOST REVENUE OR PROFITS, OR ANY OTHER COSTS INCURRED AS A RESULT OF THE USE OF ANY RINGDALE, INC. PRODUCT, WHETHER OR NOT USED IN ACCORDANCE WITH INSTRUCTIONS.