



Installing FACTS on Windows/NT/2000 Systems

These instructions work for the following configurations:

- NT Server networked with Windows 95, 98, 2000 or NT clients on direct TCP/IP connection.
- Windows peer-to-peer network using a direct TCP/IP connection.

- Novell is not a recommended solution.

Things to know before you begin

- FACTS does not support 16-bit operating systems. Make sure you perform the necessary upgrades to Windows before installing FACTS.
- We advise that you install FACTS and all other software components after normal business hours to ensure that all users are logged off the system.
- Make a list of the unique SSI_BASE values that you will use during server and client installations — one for the server and one for each FACTS client. Make sure all IDs are 20 characters or less.

Decide on whether you want to use Windows user login names or PC Network IDs, the latter of which you can find by selecting *Start → Settings → Control Panel → Network*. Select the Identification tab and look at the **Computer name**.

User logins and network IDs both provide unique SSI_BASE values; however PC Network IDs may make post-installation easier when users leave the company, switch departments or get new computers since the SSI_BASE value travels with the computer and not the user.

- Make sure TCP/IP is set up and working on the server. You should be able to *ping* the server from a networked workstation and vice versa.

If TCP/IP is not set up and you are not familiar with this procedure, do not proceed with this installation. Seek assistance from a qualified NT Administrator.

- Check that you have your FACTS Authorization Code Sheet. If you have any questions about the sheet, refer to Chapter 1.

Important note

FACTS customers should not attempt to perform their own installations.

If you asked Software Solutions, Inc. to send media directly to a client's site, inform your contact that installation should not begin until an authorized FACTS implementation consultant is on site.

- Make sure you have the latest monthly updates on diskettes, CD or tape. To do this log onto the Nexus, choose the Monthly Updates link and follow the instructions in the DOS readme file for creating install media. You will apply the monthly updates at the end of the server installation. If you have questions about accessing the Nexus, contact Tammy Morrissey, tmorrissey@sofsol.com.
- To take advantage of the full text search and indexing features in the PDF Documentation Library, install the version of the Adobe Acrobat Reader included on this FACTS Installation CD. Other versions of the Reader may not necessarily support this feature. Make sure you uninstall any existing versions of the Reader before you begin.

Installing FACTS

Process overview

1. **Install FACTS and ProvideX on the server.** The Install Shield installs the current version of FACTS and ProvideX. It also allows you to install several third-party products, if they have been purchased. *Instructions begin on page 4-3.*
 - The installation procedure requires that you restart the server after the CD installation is complete so that you can begin configuring the INSTALL menu.

After you complete the INSTALL menu, you will apply the monthly updates that you downloaded from the Nexus.
2. **Install WindX on all FACTS client PCs.** Use the FACTS Installation CD to install WindX client software on each of the client PCs that need to run FACTS. Assign one SSI_BASE value per client installation. *Instructions begin on 4-11.*
3. **Configure printers to run FACTS reports, prints and registers.** Make a list of the printers that FACTS users need to access. Create link files and modify drivers to produce the desired formats. *Instructions begin on 4-15.*
4. **Configure any third-party products purchased.**

Refer to Chapter 6 for Report Writer.

Refer to Chapter 7 for Unform.

Refer to Chapter 8 for VSI-FAX and FaxLink.

Server installation

1. Close all programs before you begin.
2. Place the FACTS Installation CD in the server's CD-ROM drive.
3. Wait for the InstallShield to start automatically or if autorun is not enabled on your computer, run _ishield\setup.exe from the CD.
4. Choose **Next** at the Welcome screen.
5. If you agree, select **Yes** to accept the FACTS license agreement.
5. Choose **Next** to accept the user information that appears on screen. This is default information supplied by the Windows operating system. You do not need to change this information.
6. Select **Server Installation** as your setup type and choose **Next**.

Note: With the InstallShield for FACTS 7.1, all 3rd party products are required to be installed individually.

7. Ensure FACTS Server Application is selected in the Components list box. When you select FACTS, the system automatically installs ProvideX.

The destination directory defaults to C:\Ssi7. Choose **Browse** to change drives or directories. Choose **Next** to accept the default.

8. If prompted, enter the server's SSI_BASE value (up to 20 characters) for FACTS installations. If the machine already has an SSI_BASE value assigned to it, the InstallShield will use it's value and skip this prompt. Refer to the previous page for more information. Choose **Next** to continue.
9. If you are accessing the CD-ROM across a network on a shared CD drive, you may see a screen requesting the drive letter for the CD drive. Enter the drive letter. Click **Next** to continue.
10. Click **Next** to accept the default Program Folder name.
11. Review the selections made in the previous screens. Choose **Back** to make changes to previous screens. Choose **Next** to begin copying files.
12. Choose **Finish** to continue with the ProvideX installations.
13. Choose **Yes** to install the ProvideX-Windows 32-bit software.
14. Choose **Next** at the first window to indicate all Windows programs are closed.
15. Choose **Yes** to accept the ProvideX license agreement.
16. At the Choose Destination Location screen, **make sure the destination directory is set to install in C:\Ssi7\pvx, not C:\pvx** (assuming FACTS was installed to drive C:\).

Click Browse to change the directory. Either type the path name or navigate to the ssi7 folder in the Directories box. Change drives with the bottom list box, if necessary.

Click **OK** to return to the Choose Destination Location Screen.

Choose **Next** to continue with the ProvideX installation.

17. Choose Typical setup and click **Next**.
18. Choose **Next** to accept the default Program Folder name.
19. Review the selections made in the previous screens. Choose **Next** to begin copying files.
20. If you are upgrading, choose **Yes** to switch to the library in C:\Ssi7\pvx (assuming you installed FACTS 7.1 to the C:\ drive).
21. Enter the ProvideX Serial Number and Activation information from the FACTS Authorization Code Sheet. *If you are upgrading from FACTS 6.07, the installation skips this box and uses the activation key from the previous version of ProvideX.*

Enter the Main Company name in the Registered User Name field. This is not case sensitive.

Enter the ProvideX Serial Number from the PVX Serial # column on the Authorization Code sheet. The system adds a leading zero to the serial number after you enter it.

Enter the Max. Number of Users indicated for ProvideX on the Authorization Code Sheet.

Remove the date in the Expiration Date field, if one appears.

Enter the ProvideX Activation Key. **This field is case sensitive.**

FACTS 7.1 utilizes a second activation key or package#, accessed through the Package button, in addition to the standard activation key. The Package# is 774, and you will find it's activation key on your FACTS authorization sheet. **Click Record to continue with the installation.**

22. This completes the installation from the CD. Right click on the NT Host icon. Select *Properties* from the popup menu and select the Shortcut tab in the Properties window.
23. Make sure the Target line includes the path to **pvxwin32.exe** and, if necessary, change the TCP/IP socket number and maxport. This is only necessary if other services are currently assigned to the default socket number and maxport.

*Sample target line: c:\ssi7\pvx\pvxwin32.exe *nthost -arg 10000 10999*

See "Understanding WindX and the pvxhost script" in Chapter 1 for more information.

25. Make sure the Start In line indicates the path to the **Ssi7** directory.

Example: C:\Ssi7

26. Choose **OK**.
27. **Restart the server to set SSI_BASE.**
28. Double click the NT Host icon to launch the NT Host script.
29. Apply the latest monthly updates. Use the installation instructions in the DOS readme file.

If you get an authorization error when you try to sign into FACTS, you can return the ProvideX Activation screen by choosing *Start → ProvideX → ProvideX Activation*. Verify the serial number and activation key entered.

Double-click the NT Host icon to restart the service each time you restart the server. WindX clients will not be able to start FACTS until NT Host is launched.

30. Double click the FACTS 7.1 Server icon to access the FACTS INSTALL menu.

3rd Party Installation

If you are installing a 3rd party application and you installed FACTS in a different directory or drive other than the FACTS default, be sure to change the 3rd party destination directory to the same directory in which you installed FACTS 7.1. Refer to the appropriate chapter for 3rd party installation instructions.

Configuring programs on the FACTS INSTALL Menu

The FACTS Install Menu enables you to set up the minimum amount of information necessary to get the system operational.

Make sure you have the FACTS Authorization Code Sheet. You may also want to print the System Management File Maintenance chapter (Chapter 10) from the PDF Documentation Library CD so you have a full description of these file maintenances.

Edit the programs in the order that they appear.

System Control F/M
Company F/M
Company Control F/M
Terminal F/M
Printer F/M

The Install Monthly Updates/Add-on Modules option is only used to upgrade from earlier versions of FACTS.

At the FACTS INSTALL menu, select System Control F/M to begin entering Authorization Code information and other system control settings.

1. Make sure the **ASCII Bit Set** field is set to 0.
2. Enter the **Number of printers** that will interface with FACTS. The system supports up to 99 printers.
3. From the Authorization Code Sheet, enter the Max FACTS Users in the **Maximum Terminals** field. **This must match the Authorization Code Sheet.**
4. Leave the **Use User Tracking** flag set to N.
5. Set the number of seconds you want to allow for **Menu Timeout**. You can set the Menu Timeout feature from 1 to 99 seconds.
 - If you don't want menus to timeout at all, enter 0 in this field.
6. Accept the current **FACTS Level** — FACTS 7.
7. Enter the **FACTS Serial Number** *exactly* as it appears on the Authorization Code Sheet.
8. Enter the **Main Company Name** *exactly as it appears* on the FACTS

To include your company logo in the GUI Sign-in Screen Support Information Window, create a 256-color .bmp version of your logo and name the file *support.bmp*. Save the bitmap in /pvx/lib/_bmp.

The logo appears in the Support Information Window that users can access when they select the bottom button on the GUI Sign-in Screen.

Authorization Code Sheet — character for character. **This field is case sensitive.** Failure to enter an exact match will prevent you from accessing the rest of the system.

9. Enter the **Affiliate Name** (up to 30 characters). In graphical mode this information appears on Sign-in Screen support button. In character, this information appears on the Banner screen.
10. Enter the **Affiliate Phone Number**, including area code. In graphical this appears when users select the Sign-in Screen support button. This field accepts up to 17 characters.
11. Enter the number of **IC Verify** licenses purchased, if any.
12. Enter the **ALF expiration date** found on the authorization sheet.
13. Select the **Purchased Modules** that appear on the Authorization Code Sheet.
14. Save all entries made to System Control F/M and exit the program. At the INSTALL menu, an **OK** should appear next to System Control F/M to show that it has been completed.

Select Company F/M from the menu to set up companies in FACTS.

1. Enter the **Company** code (up to two characters) exactly as it appears on the Authorization Code Sheet, for example 01. Failure to enter an exact match will prevent you from accessing the rest of the system.
2. Enter the **Company Name** (up to 30 characters) exactly as it appears on the Authorization Code Sheet. **This field is case sensitive.** Failure to enter an exact match will prevent you from accessing the rest of the system.
3. Enter the company street address (up to 30 characters) in the **Address 1** field. Use **Address 2** and **Address 3** fields for city, state, ZIP and other information.
4. Enter the company **Phone Number** (up to 17 characters), including area code and dashes.
5. Enter the **Authorization Code** assigned to this company. Make sure you enter the code exactly as it appears on the sheet. **This field is case sensitive.** Failure to enter an exact will prevent you from accessing the rest of the system.

Repeat Steps 1-5 for additional companies.

6. Save the entries made in Company F/M and exit the program. At the INSTALL menu, an **OK** should appear next to Company F/M to show that it has been completed.

Select Company Control F/M to establish company-specific parameters.

Most of this information should have been discussed with the client during personalization interviews.

Enter GL number information, item number padding, number of fiscal periods per year, commission and gross margin bases, system date format mask and system override password.

Define a security code (0-9, A-Z, a-z) for system-wide template creation in reports. Assign this code in User Code F/M to authorize a user to create system-wide report templates.

Define a security code (0-9, A-Z, a-z) for search exports. Assign this code in User Code F/M to authorize a user to export search results to ASCII or Excel files.

The Modules Used default to what you entered in Company F/M.

Repeat the entries for additional companies.

Save all entries and exit the program. An **OK** should appear next to this option to show that it has been completed.

Select Terminal F/M from the INSTALL menu to set up the T0 record. The T0 record serves as the template for all other terminal records created as users sign into the system.

The terminal code field is case sensitive.

For this record and all other Terminal ID records, the security system automatically creates the ID, description and base. It derives the values from the SSI_BASE environment variable you set during the CD installation.

Set **Input Default**, **Terminal Colors** and **Special Function** keys as you want them to appear in the rest of the terminal IDs.

Tip: The more defaults you can set in the T0 record *before* users begin to sign in, the better. This means you may want prevent users — or restrict the number of users — that sign into the system before you finish setting up the programs on the System Installation menu (*System Management* → *System Installation*), specifically, Branch F/M, Department F/M and Warehouse F/M.

Even if there are only five FACTS users that sign into FACTS five times each, you have to edit 25 records if you wait until after users sign in to set defaults.

For more information about terminal records and how they are created, see "Understanding FACTS Security" in Chapter 1.

Save all entries and exit the program when you are done. An **OK** should appear next to Terminal F/M to show that it has been completed.

Select Printer F/M from the INSTALL menu to set up FACTS printers.

If you have not already created drivers and link files, create at least one dummy printer — Printer number 0.

Refer to the section in this chapter on "Printers, drivers and link files," page 4-15 for printer configuration instructions.

This concludes the FACTS server installation.

Test the installation by signing into FACTS.

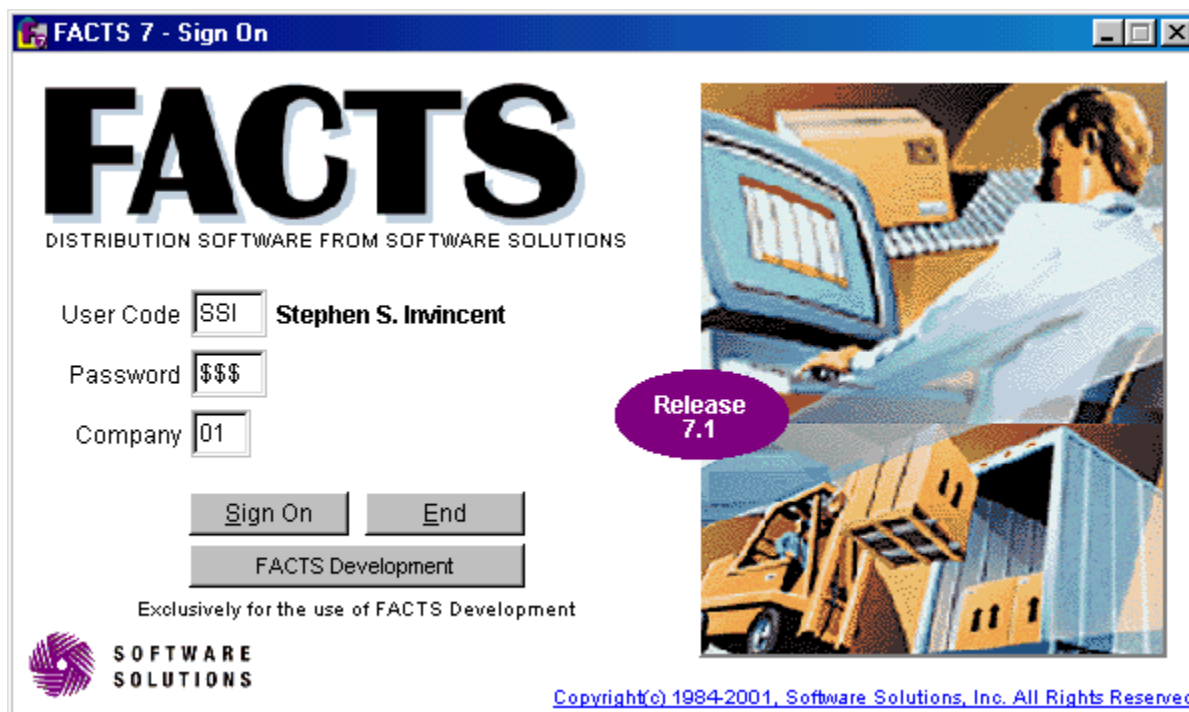
Double click the FACTS 7.1 Server icon on the desktop.

Enter the following information:

Login: SSI

Password: SSI

Company number: 01



- If a ProvideX Activation key error appears, choose *Start → Programs → ProvideX Windows 32-Bit → ProvideX Activation* and check the information entered in that screen against the FACTS Authorization Code Sheet.

If you can sign into FACTS, you can begin FACTS client installations.

Sales Order and Purchase Order Entry Options

For new FACTS 7.1 installs, a default record for all entry program types is included for both the Sales Order Entry Options F/M and Purchase Order Entry Options F/M.

For upgrades to FACTS 7.1, a default record for all entry types is included for the Purchase Order Entry Options F/M, but only a default record for quotes is included for Sales Order Entry Options F/M.

After installation options

Setting auto login/logoff options

The following variables can be set in an alternate .BAT file that starts FACTS.

SSI_USER – sets the FACTS user code.

SSI_PASSWORD – sets the user's FACTS password.

SSI_COMPANY – sets the company code.

SSI_RUNPROG – tells FACTS which program to run.

With these variables set, FACTS automatically logs the user into FACTS and runs the indicated program when the user launches FACTS. When the user exits that program, FACTS returns to the menu system. The user must manually sign out of FACTS, or he or she can select other programs from the menu.

You can also set SSI_AUTO_EXIT=1 in the same file. This instructs FACTS to logout after the user exits the program indicated in SSI_RUNPROG.

Getting the FACTS icon to appear in title bars

To replace the ProvideX title bar icon with the FACTS title bar icon, edit the pvx.ini file after the first time you login into FACTS. Access the file in *Windows → System*. Under the [Config] heading, add the following lines

```
resource-lib=factsw32.dll
```

```
icon=fact7
```

Installing WindX on PC clients

The FACTS client installation is almost identical to the Server installation. The primary differences are

- The installation procedure installs WindX instead of ProvideX.
- The Shortcut Properties Target line requires different input.

Things to know before you begin

- You will need to restart the client workstation to set the SSI_BASE value.
- Verify that TCP/IP is set up on the server and it is running. You should be able to *ping* the server.
- Make sure you have the list of SSI_BASE values you created before server installation. You will assign a value as you install each client.
- Make a note of the server's TCP/IP address. You will need it to modify the Shortcut Properties Target line for each client.

To find the TCP/IP address, go to the server and choose *Start → Settings → Control Panel*. Select Network and in the Network dialog box, select the Protocols tab. Double click the TCP/IP Protocol.

- Locate an open socket on the server. WindX defaults to the 10000 port. If this is occupied by another TCP/IP service, the WindX client cannot communicate with the server.

In Windows Explorer, navigate to WinNT\System32\drivers\etc. Double click on the **services** file and open it in Word Pad. This is a list of services and the sockets they use.

Make sure the socket you select has a block of free sockets above it so WindX has room to assign a port for each session of FACTS users need to run.

Tip: Multiply the number of FACTS users by nine — which is the maximum number of sessions each user can run. The socket you select needs to have at least this many ports above it so users don't receive errors when they try to open multiple sessions of FACTS.

- Uninstall any existing versions of Adobe Acrobat Reader if you plan to install the version on this CD.

To install WindX on PC clients:

1. Close all programs before you begin.
2. Place the FACTS Installation CD in the CD-ROM drive. If the client does not have a CD drive, you can use a shared CD-ROM drive on the network. The installation procedure will prompt you for the drive letter.
3. Wait for the InstallShield to start automatically or if autorun is not enabled on your computer, run _ishield\setup.exe from the CD.
4. Choose **Next** at the Welcome screen.
5. If you agree to the terms, select **Yes** to accept the FACTS license agreement.
6. Choose **Next** to accept the user information. This is default information supplied by the Windows operating system. You do not have to change this information.
7. If prompted, enter a unique SSI_BASE value for this client, for example the Windows login or the PCs Network ID. If the machine already has an SSI_BASE value assigned to it, the InstallShield will use it's value and skip this prompt. See the page 4-1 for more information. Choose **Next** to continue.
8. Select **Client Installation** as your setup type and choose **Next**.
9. Make sure FACTS Client Application is selected in the Components list box.

Choose Adobe Acrobat Reader, if you want to use the full text search and indexing capabilities in the PDF Documentation Library.

The destination directory defaults to C:\Ssi7. Click **Browse** to change drives or directories. Click **Next** when you are ready to continue.
10. If you are accessing the CD-ROM across a network on a shared CD drive, you may see a screen requesting the drive letter for the CD drive. If so, enter the drive letter of the CD-ROM drive from which you are performing the installation. Click **Next** to continue.
11. Choose **Next** to accept the default Program Folder name.
12. Review the selections made in the previous screens. Choose **Back** if you need to make any corrections. Otherwise, click **Next** to begin copying files.
13. Choose **Finish** to continue.
14. Choose **Yes** to begin installing WindX client software.
15. Choose **Next** at the first screen if all Window programs are closed.
16. If you agree to the terms, choose **Yes** to accept the ProvideX/WindX license agreement.
17. In the Choose Destination Location screen, **make sure the destination directory is C:\ssi7\pvx, not C:\pvx** (assuming you installed FACTS on the C: drive).

Choose **Browse** to change directories. Type the destination directory in the **Path** field or navigate to it using the Directory list box. Use the drop down box at the bottom of the screen to change drives, if necessary.

Important!

Do not choose the **Server Install** option during client PC installations

Running the full server package on client PCs results in data corruption and performance problems during live processing.

Choose **OK** to return to the Choose Destination Location screen and choose **Next** to continue with the installation.

17. Choose **Next** to accept the Typical setup type.
18. Choose **Next** to accept the default Program Folder name.
19. Review the selections you made in the previous screens. If anything needs to be changed, choose **Back**. Otherwise, click **Next** to begin copying files.

When all selected installations finish, choose **OK** at the "Demonstration Activation Complete!" message.

20. Enter the WindX Serial Number and Activation information from the FACTS Authorization Code Sheet in the ProvideX Activation screen. *If you are upgrading from FACTS 6.07, the installation skips this box and uses the activation key from the previous version of WindX.*

Enter the Main Company name in the Registered User Name field. This is not case sensitive.

Enter one of the WindX serial numbers from the PVX Serial # column on the FACTS Authorization Code sheet. The system adds a leading zero to the serial number after you enter it. **Do not use this serial number on any other client installations.**

Enter **1** in the Max. Number of Users field.

Remove the date in the Expiration Date field if one appears.

Enter a WindX Activation Key. **This field is case sensitive. Do not assign this activation key on any other client installations.**

FACTS 7.1 utilizes a second activation key or package#, accessed through the Package button, in addition to the standard activation key. The Package# is 774, and you will find it's activation key on your FACTS authorization sheet.

Click Record to continue with the installation.

21. This completes the CD installation. Right click on the *FACTS 7.1 Client* icon, select Properties and choose the Shortcut tab in the Properties window.

Assuming you installed FACTS to the C: drive, you should see the following in the **Target field**.

C:\Ssi7\pvx\pvxwin32.exe *ntslave -id=[NAME] -arg [TCP/IP] SSIWDX [SOCKET]

Enter the client's **id name**, the server's **TCP/IP address** and the **socket** number that the server monitors. Make sure you remove the brackets [].

For example:

C:\Ssi7\pvx\pvxwin32.exe *ntslave -id=Iron -arg 128.1.1.27 SSIWDX 15000

- The **-id** argument enables you to see which client workstations are running.
- The **TCP/IP address** tells WindX where to contact the server.
- The **socket number** indicates the port on which the client should connect. **Make sure this matches the socket number entered in the target line of NT Host shortcut icon.**

If you get an authorization error when you try to sign into FACTS, you can return to this screen by choosing Start → WindX 32Bit → ProvideX Activation.

Verify the serial number and activation key entered.

22. Make sure the **Start in** directory is C:\Ssi7, assuming you installed FACTS on the C: drive.
 23. Click **OK** in the FACTS 7.1 Client Properties window to set the properties.
 24. Restart the client workstation to set the SSI_BASE value.
 25. Double click the *FACTS 7.1 Client* icon to launch FACTS.
 26. This completes the WindX installation on a FACTS client. You are now ready to begin configuring printers, after which you can enter *PIA Personalization Sheet* data into FACTS by signing into FACTS and accessing the **System Installation** menu (*System Management* → *System Installation*).
- Finally, configure third-party packages according to the instructions provided in this manual and/or the manufacturers' installation manuals.
- If any errors occur when you try to sign into FACTS from a client workstation, refer to the troubleshooting tips on page 4-22.

Bitmap Synchronization:

With FACTS 7.1, when new or updated bitmaps are released, they will automatically be copied to the client's workstation. There is a new version file in the _bmp directory, and FACTS checks the server's version file against the version file on the client's PC each time the user signs on. If they are different, the program copies all the bitmaps and updates the client's version file. While the copy is taking place, "Synchronizing Bitmaps—Please Wait" is displayed. You no longer need to manually copy the bitmaps to the WindX PCs.

Printers, drivers and link files

FACTS printer configuration essentially involves four steps.

1. Make a list of required printers.
2. Create a device driver for each logical printer. We'll explain the difference between logical and physical printers shortly.
3. Create a link file to associate the driver with the appropriate device.
4. Set up the printers in Printer F/M. This program enables users to select printers from menus in FACTS reports, registers, updates and searches.

Make a list of required printers

Printer setup in ProvideX and FACTS starts with the PIA manual. Begin by using the [FACTS Printer Configuration Worksheet](#) to help you make a list of the printers that need to be configured. We recommend you do this prior to installation.

In our example below, an IC is configuring two physical printers for FACTS. Within FACTS, however, these two printers will appear as four separate printers, called *logical* printers.

FACTS printers

refer to output devices users can access from within FACTS.

Logical printers

refer to output devices that are based on driver formatting. Four logical printers can output to one physical printer.

Physical printers

refer to the hardware devices, for instance, an HP Laser Jet 4000 or Genicom dot-matrix printer.

Printer # in FACTS (start with 0)	Description/ characteristics	Device driver	Physical driver	Link file/ alias
0	Genicom			
1	HP 4000 Portrait, 10 cpi			
2	HP 4000 Landscape, 17 cpi			
3	HP 4000 Portrait, 17 cpi			

Most dot-matrix printers can link to one printer driver — `std_prtr`. This driver accommodates most output formats users need to print from FACTS.

However, Windows-compatible printers, such as laser printers, require that you create different drivers to accommodate different outputs. This is why one HP Laserjet 4000 appears as three different printers in FACTS.

Once you know the different types of outputs the customer needs, you're ready to build device drivers.

Creating device drivers

ProvideX ships with a standard device driver — `std_prtr` — that handles most dot-matrix printers. It also ships with several generic printer drivers for HP Laser and Epson printers. Drivers are located in the `*DEV` directory (`\PVX\LIB_DEV`).

☞ Before you modify one of the standard ProvideX drivers, check the [Nexus](#). The FACTS Technical Support Team periodically uploads new drivers as they are created. You may find one there that meets your needs.

The std_prtr driver that supports most dot-matrix printers appears as follows:

```

Company 01 - FACTS 7.0 Development
Help

Load *dev\std_prtr? (y/n)
->load ""dev\std_prtr
->print pgn
M:\PUX\lib\dev\std_prtr
->
->/
0010 ! * Generic Printer *
0020 defprt (lfo)80,66 ! We are assuming narrow carriage
0030 mnemonic (lfo)'FF'=$0C$ ! <Formfeed>
0040 mnemonic (lfo)'CR'=$0D$ ! <cr>
0050 mnemonic (lfo)'LF'=$0D0A$ ! <cr><lf>
0060 let X$=mnm('PS',0); if X$<>"" then mnemonic (lfo)'PS'=X$ ! Start Slave
0070 let X$=mnm('PE',0); if X$<>"" then mnemonic (lfo)'PE'=X$ ! End Slave
0080 let X$=fib(lfo); if X$(19,1)="S" then lock (lfo,err=*next)
0090 end
->|

```

The following shows the standard hplaser driver. This supports outputs to an HP Laser print in 10 cpi Portrait:

```

Company 01 - FACTS 7.0 Development
HELP

1>load ""dev/hpp10
1>print pgn
M:\PUX\lib\dev\hpp10
1>/
0010 ! HP Laser : 10 cpi, 6 lpi, Portrait
0020 defprt (lfo)80,60
0030 mnemonic (lfo)'*C'=esc+"E" ! Close printer mnemonic -- Resets all
0040 mnemonic (lfo)'FF'=$0C$ ! <Formfeed>
0050 mnemonic (lfo)'CR'=$0D$ ! <cr>
0060 mnemonic (lfo)'LF'=$0D0A$ ! <cr><lf>
0070 mnemonic (lfo)'NP'=esc+"&k0S":80,0 ! 10 cpi
0080 mnemonic (lfo)'SP'=esc+"(s12H":96,0 ! 12 cpi
0090 mnemonic (lfo)'CP'=esc+"&k2S":132,0 ! 16.66 cpi
0100 mnemonic (lfo)'LT'=esc+"&l12D":0,120 ! 12 Lines per inch
0110 mnemonic (lfo)'L8'=esc+"&l8D":0,80 ! 8 lines per inch
0120 mnemonic (lfo)'L6'=esc+"&l6D":0,60 ! 6 lines per inch
0130 mnemonic (lfo)'PM'=esc+"&l00" ! Portrait mode
0140 mnemonic (lfo)'LM'=esc+"&l10" ! Landscape mode
0150 mnemonic (lfo)'RM'=mnm('PM',lfo)+mnm('NP',lfo)+mnm('L6',lfo):80,60
0160 let X$=mnm('PS',0); if X$<>"" then mnemonic (lfo)'PS'=X$ ! Start Slave
0170 let X$=mnm('PE',0); if X$<>"" then mnemonic (lfo)'PE'=X$ ! End Slave
0180 let X$=fib(lfo); if X$(19,1)="S" then lock (lfo,err=*next)
0190 print (lfo,err=0200)*C',RM',
0200 end
1>

```

Important note Printer device driver names cannot be longer than 13 characters. If they exceed this limit, they will cause an Error 100 (No driver for terminal type of library missing.)

The following shows the same driver renamed and modified so that it supports outputs in 10 cpi Landscape. Since the printer needs to output to paper 11 inches wide and roughly 8 inches deep, the NP, SP, CP and RM mnemonics change to accommodate that size.


```

Company 01 - FACTS 7.0 Development
HELP
1>load "dev/hp110
1>print pgn
M:\PUX\lib\dev\hp110
1>/
0010 ? HP Laser : 10 cpi, 6 lpi, Landscape
0020 defprt (lfo)80,60
0030 mnemonic (lfo)'*C'=esc+"E" ? Close printer mnemonic -- Resets all
0040 mnemonic (lfo)'FF'=$0C$ ? <formfeed>
0050 mnemonic (lfo)'CR'=$0D$ ? <cr>
0060 mnemonic (lfo)'LF'=$0D00$ ? <cr><lf>
0070 mnemonic (lfo)'NP'=esc+"&k0S":110,0 ? 10 cpi
0080 mnemonic (lfo)'SP'=esc+"&s12H":132,0 ? 12 cpi
0090 mnemonic (lfo)'CP'=esc+"&k2S":180,0 ? 16.66 cpi
0100 mnemonic (lfo)'LT'=esc+"&l12D":0,96 ? 12 Lines per inch
0110 mnemonic (lfo)'L8'=esc+"&l8D":0,64 ? 8 lines per inch
0120 mnemonic (lfo)'L6'=esc+"&l6D":0,48 ? 6 lines per inch
0130 mnemonic (lfo)'PM'=esc+"&l00" ? Portrait mode
0140 mnemonic (lfo)'LM'=esc+"&l10" ? Landscape mode
0150 mnemonic (lfo)'RM'=mnm('LM',lfo)+mnm('NP',lfo)+mnm('L6',lfo):110,48
0160 let X$=mnm('PS',0); if X$<>"" then mnemonic (lfo)'PS'=X$ ? Start Slave
0170 let X$=mnm('PE',0); if X$<>"" then mnemonic (lfo)'PE'=X$ ? End Slave
0180 let X$=fib(lfo); if X$(19,1)="S" then lock (lfo,err=*next)
0190 print (lfo,err=0200)*C', 'RM',
0200 end
1>

```

This final screen shot shows the hplaser driver renamed and modified to support the 17 cpi Landscape format. Notice the changes to the the NP, SP, CP and RM mnemonics.

```

Company 01 - FACTS 7.0 Development
HELP
1>load "dev/hp117
1>print pgn
M:\PUX\lib\dev\hp117
1>/
0010 ? HP Laser : 17 cpi, 6 lpi, Landscape
0020 defprt (lfo)80,60
0030 mnemonic (lfo)'*C'=esc+"E" ? Close printer mnemonic -- Resets all
0040 mnemonic (lfo)'FF'=$0C$ ? <formfeed>
0050 mnemonic (lfo)'CR'=$0D$ ? <cr>
0060 mnemonic (lfo)'LF'=$0D00$ ? <cr><lf>
0070 mnemonic (lfo)'NP'=esc+"&k0S":110,0 ? 10 cpi
0080 mnemonic (lfo)'SP'=esc+"&s12H":132,0 ? 12 cpi
0090 mnemonic (lfo)'CP'=esc+"&k2S":180,0 ? 16.66 cpi
0100 mnemonic (lfo)'LT'=esc+"&l12D":0,96 ? 12 Lines per inch
0110 mnemonic (lfo)'L8'=esc+"&l8D":0,64 ? 8 lines per inch
0120 mnemonic (lfo)'L6'=esc+"&l6D":0,42 ? 6 lines per inch
0130 mnemonic (lfo)'PM'=esc+"&l00" ? Portrait mode
0140 mnemonic (lfo)'LM'=esc+"&l10" ? Landscape mode
0150 mnemonic (lfo)'RM'=mnm('LM',lfo)+mnm('CP',lfo)+mnm('L6',lfo):180,42
0160 let X$=mnm('PS',0); if X$<>"" then mnemonic (lfo)'PS'=X$ ? Start Slave
0170 let X$=mnm('PE',0); if X$<>"" then mnemonic (lfo)'PE'=X$ ? End Slave
0180 let X$=fib(lfo); if X$(19,1)="S" then lock (lfo,err=*next)
0190 print (lfo,err=0200)*C', 'RM',
0200 end
1>

```

Once you have created all the device drivers you need, make a note of them on the Printer Configuration Worksheet.

Printer # in FACTS (start with 0)	Description/ characteristics	Device driver	Physical driver	Link file/ alias
0	Genicom	std_prtr		
1	HP 4000 Portrait, 10 cpi	hplaser		
2	HP 4000 Landscape, 17 cpi	hpl17		
3	HP 4000 Landscape, 10 cpi	hpp10		

Creating link files

Link files are simple flat files that associate an output device with its corresponding driver. They essentially become a single alias for the device and its driver.

The easiest way to create link files is to use the ProvideX *UCL utility. Answer the questions and the utility builds the file from this information. Link files need to be kept in `ssi7\link`.

Access the link file utility from the FACTS menu by typing UT and selecting Run Utilities. From the menus, select *Utilities* → *Configuration* → *Linkfiles*.

1. Name of link file?

Enter `link\[three characters]`. Prefacing the name with `link\` ensures that the file gets created in the `ssi7\link` directory. Also, make a note of the link file on the Printer Configuration Worksheet; it serves as the printer designation in the FACTS Printer F/M.

Answer **Yes** to the message “File xxxx does not exist. Create?”

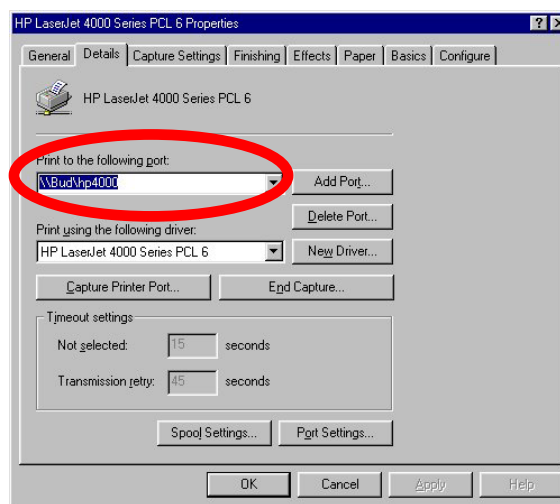
2. “xxx” links to ...

If it's set up on the network, use the **Universal Naming Convention** (`\\Machine_Name\Resource`).

If you're not sure of the printer's UNC, go to *Start* → *Printers* → *Settings* and right click on the printer icon. Select *Properties* from the menu and click on the Details tab. The Universal Naming Convention appears in the **Print to following port** prompt.

→ If your network doesn't use the Universal Naming Convention, use `*WINDEV*;printer name`.

A number of other considerations come into play at this step. Refer to “*Technical Insight: Accessing Windows Printers*” if you feel you need more information about UNC or `*WINDEV*` or what to do if the physical device is relative to a WindX station.



3. What type of link is “xxx”?

Select **Printer** and enter **No** when the utility asks *Is this printer connected via a Terminal Auxiliary Port?* Select the appropriate printer driver from the popup list.

If you are setting up a link file for the Portrait, 10 cpi printer in the example below, you would select the **hpp10** driver.

Printer # in FACTS (start with 0)	Description/ characteristics	Device driver	Physical driver	Link file/ alias
0	Genicom	std_prtr	>lp -s -d Genicom2> /dev/null	P1
1	HP 4000 Port., 10 cpi	hplaser	>lp -s -d HP4000> /dev/null	P2
2	HP 4000 Land., 17 cpi	hpl17	>lp -s -d HP4000> /dev/null	P3
3	HP 4000 Land., 10 cpi	hpp10	>lp -s -d HP4000> /dev/null	P4

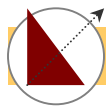
SMF940: Setting up Printer F/M in FACTS

Refer to the Printer Configuration Worksheet and enter the appropriate information into the following prompts:

1. Printer Number. Starting with the first printer on your sheet, enter the printer number you assigned. If you haven't assigned printer numbers, assign **0** to the first printer and work up from there. The number of printers you can set up in this program depends on the maximum number of printers entered in System Control F/M. FACTS supports up to 99 logical printers.

2. Designation. Enter the name of the link file created for this printer. Since the link file is an alias for the physical device and its driver, both pieces of information are tied into this prompt.

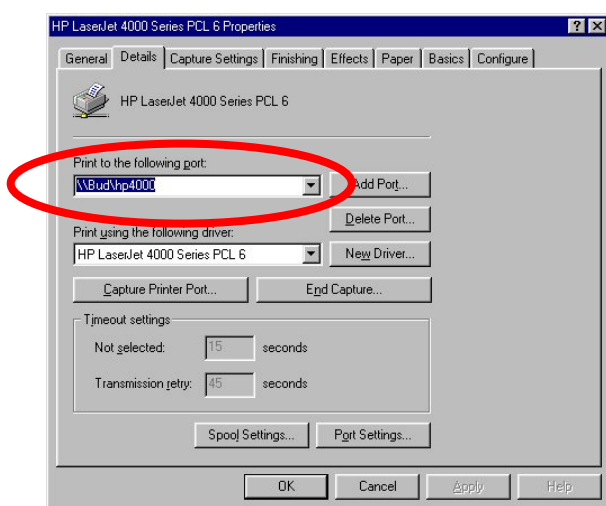
3. Printer Description. Enter the Description of Output information from the configuration worksheet. Make sure the description gives users some indication of the printer being used and the format that will be produced.



Technical Insight: Accessing Windows printers in ProvideX

If Universal Naming Conventions are in place, this is the best method of accessing Windows printers. Most Windows NT networks use this method to access printers. It allows Windows to transfer jobs around the network to the specified destination, bypassing the Windows print drivers and spoolers, and injects print jobs — along with all mnemonics — directly to the printer queue.

The UNC opens any shared resource, which is specified as [\\Machine_name\Shared Resource](#). (This is the same information entered in the Properties window for each printer when you specify a port.)



☞ If your system includes one of the newer, inexpensive “Windows only” printers, such as inkjets and deskjets, the UNC access method will not work. These types of printer cannot handle raw escape sequences. As a result, FACTS does not support these types of printers.

***WINDEV* Alternative**

If UNC's aren't in place, which might be the case with PC clients working in a Unix environment, use ***WINDEV*** to access printers. This method provides direct access to the Windows dialog box and permits ProvideX to send raw escape sequences to the printer.

WINDEV uses a Windows API technique called RAW or PASSthrough to send data, including escape sequences, through a ProvideX printer driver. The output then goes to the Windows spooling system and finally to the printer specified. It does not support graphical printing, so when the Windows dialog box appears, graphical settings, such as Landscape and Copies, are not available.

When you create a link file, you can simply specify ***WINDEV*** as the physical device without specifying a printer. For example,

Link file: LP

```
Device: *WINDEV*
```

```
Driver: hpp10
```

This requires less front-end work on the administrator's part because it allows each user to select a printer from the Windows Print dialog box. However, this may introduce user-created errors since it gives users the opportunity to select a different printer in the Windows dialog box than the one they selected in FACTS.

To eliminate this problem, identify a specific printer after *WINDEV*.

```
*WINDEV*;HP Laserjet 4000
```

This has same effect as the UNC method. It bypasses the Windows drivers *and* the Windows spooler so the operating system will not pop the Print dialog box.

However, this requires more administrative work on the front-end.

The physical printer specified after *WINDEV* must be entered exactly as it appears in the Windows Printers folder. If several users need to access this printer, the printer must appear the same way in each of their Windows Printers folders. If the printer is spelled differently in one user's Printers folder, that user will get an Error 12 when he or she tries to print.

***WINDEV* and WindX**

One of the advantages of using the UNC method, if it's available, is that administrators are not required to do anything differently for WindX users than for non-WindX users.

WINDEV opens a printer relative to the server unless it is told to do otherwise, and as a result, WindX users may experience printing errors.

Say, for instance, that WindX users select a printer using the following link file:

```
Link file name: link\P1
```

```
Device: *WINDEV*;HP Laserjet 4000
```

```
Driver: hpp10
```

ProvideX will route these jobs to the server. If there is an HP Laserjet 4000 set up on the server, the print jobs will output from that printer, which users may find confusing. If an HP Laserjet 4000 doesn't exist on the server, users receive Error 12s, which means ProvideX could not find the device.

To redirect printing to the client, administrators can create another link file for WindX users (using the same driver and physical device) and preface the device name with [wdx].

```
Device: [wdx] *WINDEV*;HP Laserjet 4000
```

This means that you also have to create another logical printer in FACTS and assign it a different printer number. When you enter the printer description in Printer F/M, make sure you clearly differentiate the two, and inform users which printer they need to select from the FACTS menu.

If you are concerned about using additional printer numbers in FACTS or users selecting the wrong printer, you can build an intelligent driver by adding four lines of code to the beginning of the printer driver and specifying a NUL device in the link file.

At the top of the printer driver, add

```
X$=fid(lfo)
close (lfo)
open (lfo) %wdx$+"*WINDEV*;HP Laserjet 4000"
setfid (lfo) X$
```

This code enables the driver to determine whether the station uses WindX or not and then directs the print job accordingly.

Other options

Even though ProvideX offers these alternate access methods, they are not used in FACTS printer configuration.

WINPRT provides direct access to the Windows Printer Dialog box, using standard Windows print API calls. ***WINPRT*** supports both character and graphical mode printing. It also supports all graphic mnemonics, such as 'Font', 'Text' and 'Picture'.

WINPRT **does not support raw escape sequences**, which is why it cannot be used in FACTS printer configurations. Any escape sequences added to a Windows printer driver go unnoticed because ProvideX contains a series of predefined escape sequences hardcoded into the language, which pass directly to the Windows drivers when you specify ***WINPRT*** in a link file.

Data sent to the ***WINPRT*** device is first interpreted by the device driver for the printer selected and then the driver's output is sent in to the Windows spooling system so that it can be transmitted to the selected printer. Data travels from the spooling system to the printer via UNC for network printers or PORT for local printers.

VIEWER is the special device file for the ProvideX graphical viewer. Software Solutions pre-configures the viewer so it's ready to go at installation.

Troubleshooting printer problems

This is by no means an exhaustive list of possible printer problems, but it covers some of the most commonly reported problems. They usually fall into two categories: The job doesn't print at all or the job doesn't format correctly.

Print job no-shows. When documents don't output at all, make sure the device can print from the operating system. When you set up a printer in Windows NT, run a test page or print a document from another application.

If you can successfully print in Windows, something might be wrong with the link file.

Try opening the printer from a ProvideX prompt. Example:

```
→Load "prog\SM\SME100"
→Open (1) "*WINDEV*;HP Laserjet 4000"
→List (1)
```

If a listing of SME100 prints on the printer you specified, then the link file may be accessing the wrong device. You can check by navigating to **ssi6\link** and opening the link file in Word Pad.

Error messages. If hard errors occur when someone tries to print, it may indicate that ProvideX is having trouble locating the link file or the physical device indicated in the link file.

1. Check permissions. Was the link file created by an administrator? Is it possible those administrator's rights were passed on to the link file?
2. Make sure the link file resides in **ssi6\link**. In *UCL, enter **link\[file name]**.
3. If you indicated a specific printer in the link file, make sure it's spelled the way it appears in the Windows Printers folder. If several users access this printer, make sure the printer is spelled the same way in each user's Printers folder.

Output is totally skewed. Text printing off the page, several characters printing leaving the rest of the page blank and other drastic formatting problems suggest the link file is associating the wrong driver to the specified device. This is especially true if a laser printer driver get associated to a dot-matrix printer or visa versa.

Driver specifies compressed print, but report doesn't output in compressed print. Check the CP mnemonic definition in the printer driver. Also check the defprt setting. It's possible that the number of columns specified for the default page setting is wide enough that it wouldn't trigger compressed print.

Random users report formatting errors on laser printers. If you've ruled out user error, it's possible that the printer isn't resetting after each job. Check that the driver has a *C mnemonic, which defines how the printer resets after each print job. If the mnemonic is there, make sure it's defined according to manufacturer recommendations.

Random formatting problems could also be tied to randomly deleted escape sequences.

Even printers that do support RAW passthrough may randomly delete escape sequences from the data stream. HP printers are particularly guilty of this.

Unfortunately, no one can provide a list of which printers delete which escape sequences because it changes with each manufacturer, printer driver and *version* of the printer driver.

ProvideX v4.10 will use a new series of Windows API calls that better support raw mode printing in 32-bit systems. These new API calls should help eliminate the instances of randomly deleted escape sequences.

A laser printer isn't feeding out the last page of each document. Check the *C mnemonic. Make sure it uses the manufacturers recommended hex code for printer reset.

Troubleshooting tips

Error message	Cause	Fix
Illegal pathname	Information in the target line of the FACTS 7.1 Client shortcut properties is incomplete or wrong.	Make sure you entered the TCP/IP and socket numbers correctly and you removed all brackets [] from the line.
TCP/IP address not found	Server may be down; NT Host is not running on the server; incorrect TCP/IP address entered on Target line of FACTS 7.1 Client shortcut properties.	Restart server; double click the NT Host icon on the server to kick off the service; check the server's TCP/IP address and make sure it was entered correctly in the Properties
Did not find C:\pvx\lib	The path C:\Ssi7\pvx was not specified during the ProvideX or WindX installations.	Uninstall FACTS and ProvideX/WindX software and reinstall the software.
VSI-FAX Server cannot install	Installing the VSI-FAX Server software on Windows 95 or 98	VSI-FAX server must be installed on an NT operating system.