



# Installing FACTS in UNIX Environments

These instructions work for the following UNIX operating systems:

- ☐ IBM AIX v 3.2.5 and v4.2
- ☐ SCO v3.2.4.x, SCO OpenServer 5, UnixWare 2.x, UnixWare 7
- ☐ HP-UX 9000
- ☐ Linux

## Things to know before you begin

- Install FACTS, ProvideX, and third-party products after normal business hours. All users are logged off the system.
- Read the section “Understanding SSI\_BASE environment variable.” Make sure you have the FACTS Authorization Code Sheet and you understand the layout (see Chapter 1).
- Read the section “Understanding WindX and the Pvxhost script” in Chapter 1.
- Create a user with appropriate rights for WindX users, ssi7 for example. Make sure the user does not require a password and it is not *root*. *AIX users*: Make sure the nproc is set as high as possible so that WindX users don't run out of sessions.
- Make sure TCP/IP is set up and working. Test the connection by pinging the server from a client and visa versa. If you are not familiar with TCP/IP, do not proceed with these instructions.
- Make sure you have the latest monthly updates on diskette, tape or CD. **To do this, download the updates from the Nexus (on the Monthly Updates page) and follow the instructions in the UNIX readme file for creating install media.**

**FACTS customers** should not attempt 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 authorized Affiliate personnel is on site.

# Installing FACTS

## Process overview

1. **Install FACTS on the server.** The installation script installs the current version of FACTS and ProvideX. It also enables you to install several third-party products — Uniform, General Report Writer and FacetTerm.  
*Instructions begin on this page.*
2. **Configure the terminals and install WindX on PC clients.** 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 2-11.*
3. **Configure printers.** The end of this chapter provides instructions on printer configuration, including driver and link file considerations.  
*Installation instructions begin on page 2-15*
4. **Configure any third-party products purchased.**  
Refer to Chapter 6 for Report Writer.  
Refer to Chapter 7 for Uniform.  
Refer to Chapter 8 for VSI-FAX and FaxLink.

## Server installation

1. Sign on to the server as root and make sure TERM is set correctly for the type of terminal you are using.
2. Place the CD-ROM in the drive and mount the drive. Refer to your current operating system documentation for instructions on drive mounting. We recommend that you name the drive **cd\_drive**.
3. Change directories to the CD drive.
4. Type **/INSTALL.SH** to launch the installation script. The installation script automatically sets umask to 0.
5. Choose the operating system running on the server and the OS version.
6. Enter the destination directory. **/ssi7** is the recommended default. Enter another destination directory if necessary. You also have the option of checking disk space on this screen before you continue with the installation.
7. Enter the path to the CD-ROM drive on your server. The default is **/cd\_drive**.
8. Select FACTS and ProvideX from the list of components. Select any third-party components that were purchased.
9. Type **Y** to install FACTS 7.1. Press Enter.
10. Type **Y** to install ProvideX. Press Enter.
11. Indicate whether you want to install Uniform.

**Canceling the install script.** Type **Q** to quit if you need to get out of the install script for any reason.

When you are ready to restart the installation, run **/INSTALL.SH**

12. Indicate whether you want to install General Report Writer.
13. Indicate whether you want to install FacetTerm. This is a 30-day trial version of the software. If you are upgrading, you may want to backup up the configuration files since this installation will overwrite them.
14. Enter the **TCP/IP socket** that you want \*NTHOST to monitor. The default is 10000. Enter a different socket if another service is running on 10000. See “Understanding WindX and pvxhost script” in Chapter 1 for more information about WindX, TCP/IP services and socket number assignments.
15. Enter the **maxport** or the highest socket number WindX can use. Multiply the number of FACTS users by nine to determine the range of sockets you need for WindX.
16. Enter the user id for WindX users. This should not be *root*. The default is *ssi7*.

Type **Y** and press Enter to accept the entries on this screen.

17. Review the Installation Overview screen. Type **Y** to begin copying files and installing software. Type **Q** to quit the installation script, if needed, and begin again at Step 4.

The script installs FACTS, ProvideX and third-party products.

18. Enter the ProvideX Serial Number and Activation information from the FACTS Authorization Code Sheet.

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# in addition to the standard activation key. The Package# is 774, and you will find it's activation key on your FACTS authorization sheet.

ProvideX will ask for another package ID. Hit return to continue.

19. The script installs any third-party products selected in the following order.
  - Uniform (refer to Chapter 7 for additional instructions)
  - General Report Writer (refer to Chapter 6 for additional instructions)
  - FacetTerm (30 day trial installation)
20. This completes the scripted portion of the installation. Apply the monthly updates that you downloaded from the Nexus. Use the UNIX readme file for installation instructions.

21. Set SSI\_BASE, according to guidelines in “Understanding the SSI\_BASE Environment Variable” in Chapter 1.
22. Add a line to the end of **etc/inittab** that will respawn \*NTHOST.  
*Example: ssi7:234:respawn:/ssi7/pvxhost*  
 See “Understanding WindX and pvxhost.”
23. Run **./FACTS7** and begin setting up the INSTALL menu programs.

## Setting up INSTALL menu programs

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

**For more information** about programs on the INSTALL menu, see Chapter 11 in the *System Management* manual.

**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.

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. In character, this appears in the FACTS Banner Screen.
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.

Enter a security code (0-9, A-Z, a-z) that FACTS users will need to enter to set system templates in FACTS reports.

Enter a security code (0-9, A-Z, a-z) that FACTS users will need to enter to export data from FACTS searches.

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 and refer to the section in this chapter on "Printers, drivers and link files," page 2-15.

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**This concludes the FACTS server installation.**

Test the installation by signing into FACTS.

Type **/FACTS7** at a UNIX prompt.

When the Banner Screen appears, sign in with the following information:

**Login:** SSI

**Password:** SSI

**Company number:** 01

If you can successfully sign into FACTS, begin configuring terminals and installing FACTS on PC clients.

## 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.

## Terminal configuration

ProvideX ships with a set of standard terminal drivers and keyboard configuration files. They may not work with every terminal, however. As a result, some keyboards may not respond after initial installation, and some terminals may not display information properly.

### Creating terminal drivers

These files reside in the **pvx/lib/\_dev** directory. If the display doesn't look right:

1. Identify what emulation UNIX is using by echoing the \$TERM variable from the operating system:

*Example:* `echo $TERM`

2. Check for a program in **pvx/lib/\_dev** named the same as the \$TERM value. If you don't find an exact match, copy a similar entry and rename it the same as the \$TERM value.

For example, if you find **wyse60** in the **\_dev** directory, but \$TERM is **wy60**, copy the **wyse60** entry and rename it **wy60**.

3. Set and export the **TERMCAP** and start ProvideX. ProvideX automatically builds a default driver when it restarts. As an extra precaution, check the definitions in the new driver against the manufacturer's manual to make they are accurate.

### Resolving keyboard issues

You may need to set navigation and special function keys after loading the FACTS software. These keys are set in one of two places: the ProvideX keyboard configuration utility (**\*uck**) and on the **Keys** tab located in **Terminal F/M** (*System Management* → *File Maintenances* → *Terminal F/M*).

### Creating keyboard maps:

1. From the operating system, echo the \$TERM variable.

*Example:* `echo $TERM`

2. Run **"\*ufv"** and view **\*kybrd.std**. Check to see if a key exists for the \$TERM returned from the OS.
3. If a key does not exist for the terminal in question, copy one that is similar and add it to **\*kybrd.cfg**. Rename it to match \$TERM. For example,



```

→Open (1) "\pvx\lib\_kybrd.cfg"
→Read record (1,key="wyse60")A$
→Write record (1,key="wyse50")A$
→Close (1)

```

4. Create the keyboard definitions for this terminal by running `"*uck."`
5. At the top of the screen, the following message appears: "Keyboard definition utility for [the terminal emulation]. Is this specific to the user?"

Answer **No**. **Do not** create user-specific keyboard configurations.

6. The first hotkey entry in the main window - F1 - should be highlighted. Use the arrow keys or the U, D, L and R keys to navigate to the fields you want to edit.

To change an entry, press **Enter** and then press the key or combination of keys that will serve as the hotkey.

To completely remove an entry (so the key is not mapped), tab to field, press **Enter** and press the **Space Bar**. The field should now be blank.

7. Press **Q** to quit the utility when all the keys are set.

- Consider disabling PVX-related keyboard shortcuts so users cannot accidentally access ProvideX utilities.

**Disadvantages of user-specific keyboard configuration files.** In short, user-specific keyboard configuration files create more work. ProvideX first looks for the user-specific .cfg file, then the system-wide .cfg file and then the .std file corresponding to the terminal in use.

If a user-specific .cfg file exists, ProvideX uses that file and stops looking. It will use the settings in that file and ignore the system-wide .cfg and terminal specific .std files.

As a result, ProvideX ignores any changes made to the system-wide .cfg files and the terminal-specific .std files. Which means you have to edit *each* user's file so that each user will see the changes when user-specific keyboard configuration files are used.

### Looking for and removing user-specific keyboard configuration files

Run `*ufv` to look at `*kybrd.cfg` for any user-specific entries for the terminal in question. Use `*ufu` to delete them.

### Special function keys trigger the wrong function?

If a hotkey triggers a different function than expected — such as the FACTS on-line calendar, calculator, etc. — check the special function keys set in Terminal F/M (*System Management* → *File Maintenances* → *Terminal F/M*). If the key or key sequence is already set in Terminal F/M, either change the Terminal F/M special function key setting or use another key sequence in the ProvideX keyboard mapping utility.

## Post-installation options

### *Setting auto login/logoff options*

The following variables can be set in an alternate FACTS startup script.

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.

## Installing WindX on PC clients

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

- The only third-party product available for installation is the VSI-FAX client. The other products only install on the server.
- 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. Note: If the PC already has an SSI\_BASE value in its *autoexec.bat* file, the install will use this value instead of asking for one.
- 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.

- 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.

**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. Choose *Start → Run*. Click **Browse** and select the **Setup.exe** file on the CD. Click **OK** in the Run dialog box to begin the installation.
4. Choose **Next** at the first screen if there are no Windows programs open.
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. Select **Client Installation** as your setup type and choose **Next**.
8. Make sure FACTS Client Application is selected in the Components list box. If prompted, enter a unique SSI\_BASE value for this client, for example the Windows login or the PCs Network ID. See the page 4-1 for more information. Choose **Next** to continue.
9. If prompted, enter the drive letter of the client workstation's CD-ROM drive or the letter of the shared CD-ROM drive being used. Click **Next** to continue.
10. Choose **Next** to accept the default Program Folder name.
11. Review the selections made in the previous screens. Choose **Back** if you need to make any corrections. Otherwise, click **Next** to begin copying files.
  - If you are installing Adobe Acrobat Reader, **do not restart** the client workstation at the end of the Acrobat installation.
12. Choose **Finish** to continue.
13. Choose **Yes** to begin installing WindX client software.
14. Choose **Next** at the first screen if all Window programs are closed.
15. If you agree to the terms, choose **Yes** to accept the ProvideX/WindX license agreement.
16. 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.

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 this is complete, 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 or 7.0, 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 its 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.**

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.

**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.

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

There are essentially four steps to setting up printers for FACTS.

1. Make a list of required printers.
2. Create a device driver for each printer.
3. Create a link file to associate the driver with the appropriate device.
4. Set up the printer in Printer F/M. This enables users to select printers from menus in 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.

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.

**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.

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+"&l80" ! 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'=$0D0A$ ! <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 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'=$0D0A$ ! <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. Simply 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 directory from a ProvideX prompt. If you're in FACTS, press **Cntl+Break**. If you are at the Sign-in Screen, click the Software Solutions logo and type **Basic**.

At the prompt, type *run\*ucl*. Answer the following questions.

#### 1. Name of link file?

Enter *link/[three characters]*, for example **link/P1**. Prefacing the name with *link/* ensures that the file gets created in **ssi7/link**. Make sure the link file name is three characters or less.

As you create the link file name, 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 ...

Enter the physical device, in this case the printer, to which you're linking. If the printer in question is a spooled printer, your entry should look something like:

```
>lp -s -d[printer name according the spooler] 2>/dev/null
```

If you are linking to a non-spooled printer, your entry should look like:

```
/dev/tty[value]
```

#### 3. What type of link is "xxxx"?

Select **Printer**. The utility then asks *Is this printer connected via a Terminal Auxiliary Port?* Select **Yes** only if you are setting up a slave printer.

Select the appropriate printer driver from the popup list.

**Do not use**  
\*WINDEV,  
\*WINPRT,  
\*VIEWER\*, UNC or  
LPT when  
specifying physical  
devices in UNIX.

These are special  
device files specific  
to Windows printer  
configuration.

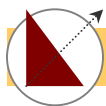
If you setting up a link file for the HP Portrait, 10 cpi printer in the example below, you would select the **hpp10** driver.

FACTS Printer # (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. For example, Genicom line, HP Port 10, HP Land 17. Descriptions can be up to 25 characters long.



## Technical Insight: Troubleshooting printer issues in UNIX

### **Handling non-spooled printers in UNIX**

In this environment, ProvideX must take on the role of the spooler and act as the traffic cop for print jobs. However, ProvideX only handles its own jobs. Any documents sent to the printer from the operating system or from another program outside of ProvideX may conflict with the ProvideX print jobs. This is true even if the non-ProvideX applications are running through a spooler.

When printing to non-spooled printers from within ProvideX, users will receive "Error 0-Printer Not Available" messages when the printer is processing another print job. They may also get this message when printing very large reports. Depending on the amount of traffic and the size of the report, users may perceive that they are continually getting Error 0 messages. In reality, other print jobs may keep beating them to the printer or the printer may not be able to keep up with the system processing the report.

As a result, we recommend that administrators use spooled printers whenever possible. If they do need to bypass spoolers, they need to edit the printer driver so when users attempt to open a printer, the device driver can handle the following behind the scenes:

1. Check to see if a lock file exists. If the driver finds a lock file (which indicates the printer is in use), it issues an Error 0. If the driver does not find a lock file (indicating the printer is available), it creates a lock file to notify the next user that the printer is occupied.
2. Define the \*C mnemonic, which is responsible for removing the lock file when the printer is closed.

The following is an example of what this code should look like:

```
0010 ! * Generic Printer - Non spooled *
0020 ! Save channel number printer is open on and fid (name) of printer
0030 let X=lfo,X$=fid(lfo)
0040 ! see if lock file exists
0050 let Y=hfn; open (Y,err=*next)"sample_lock"; close (Y); goto ERROR_ZERO
0060 ! create lock file to prevent others from using the printer
0070 serial "sample_lock",err=ERROR_ZERO
0080 ! close the printer channel (if it was open to /dev/null)
0090 close (X)
0100 ! open the true destination of the report on printer channel (if
necessary)
0110 open (X)"/dev/tty15"
0120 ! set fid of the channel back to what it started out as (if the
channel was closed and reopened)
0130 setfid (X)X$
0140 ! define appropriate mnemonics and printer settings
0150 defprt (X)80,66 ! We are assuming narrow carriage
0160 mnemonic (X)'FF'=$0C$ ! <formfeed>
0170 mnemonic (X)'CR'=$0D$ ! <cr>
0180 mnemonic (X)'LF'=$0D0A$ ! <cr><lf>
0190 ! set the *r mnemonic - operating system command to execute on close
channel
0200 mnemonic (X)'*R'="rm sample_lock"
0210 end
0220 ERROR_ZERO:
0230 ! issue an error to the open statement
```

```
0240 exit 1
```

### Handling slave printer issues

Slave printing or transparent printing configurations involve the printer driver and the terminal driver.

All of the ProvideX standard printer drivers include a Start Slave, End Slave mnemonic (always 'PS' and 'PE', respectively). These are required to switch on the terminal auxiliary port for printing and switch it back off on when the print job ends.

### Setting up a generic link file for various terminals to print only to their own auxiliary port printer

Run the link file utility program.

4. Enter the name of the link file.
5. Enter /dev/tty as the name of the device. (/dev/tty is a generic device in UNIX)
6. Select *Printer* when the utility asks "What type of link is [link file name]."
7. Select *Yes* when the utility asks "Is this printer connected via a Terminal Aux Port?"
8. Specify the printer driver.

In the printer device driver, make sure that 'PS' and 'PE' mnemonics are included. For example,

```
0160 let X$=mnemonic('PS',0); if X$<>""then mnemonic (lfo)'PS'=X$ ! Start Slave
0170 let X$=mnemonic('PE',0); if X$<>""then mnemonic (lfo)'PE'=X$ ! End Slave
```

Also, make sure the escape code sequences for "PS" and "PE" are defined in the terminal driver. For instance:

```
0160 mnemonic (lfo)'PS'=$1B6423$ ! START SLAVE
0170 mnemonic (lfo)'PE'=$14$ ! END SLAVE
```

The escape code sequences should be available in the terminal's user manual.

### Setting up a printer attached to a specific terminal so everyone has access to it

In this case, the escape sequences for the 'PS' and 'PE' mnemonics need to be defined in the printer driver, not the terminal drivers.

Use the following steps to create the link file for this configuration:

3. Run the ProvideX link file utility.
4. Enter the name of the link file.
5. Enter /dev/tty[xx] as the device name.
6. Select *Printer* when the utility asks "What type of link is [link file name]."
7. Select *Yes* when the utility asks "Is this printer connected via a Terminal Aux Port?"
8. Specify a device driver.

In the printer driver, make sure 'PS' and 'PE' are set appropriately for whatever type of terminal the printer is attached to. For example,

```
0160 mnemonic (lfo)'PS'=$1B6423$ ! START SLAVE
0170 mnemonic (lfo)'PE'=$14$ ! END SLAVE
```

→ In addition, move the \*C (close printer) mnemonic from the beginning of the driver to just after the PE line. This ensures that 'PS' and 'PE' have been defined before you use them.

→ Delete the original \*C line.

→ Modify the new \*C line and put the END SLAVE mnemonic at the end of the close printer line to:

```
0175 mnemonic (lfo)'*C'=esc+"E"+mnm('PE',lfo) ! Close printer mnemonic -
Resets all
```

This ensures that the End Slave mnemonic is the last piece of information sent the printer from this line.

→ Finally, put the Start Slave mnemonic at the beginning of the printer line:

```
0190 print (lfo,err=0200)'PS','RM'
```

Administrators may also want to add lock file logic to the driver to handle Error 0s.

### **Printing to a file**

The following outlines a sample driver that administrators can use to set up print-to-file capabilities. In addition to creating this driver, set up a directory called fileprt in ssi7. This is where the flat files will be created. This sample driver will name the files file1 through file99, but administrators can modify lines 40 through 80 to print any kind of file name they want. They can also set up the driver so that it prompts users to name their own files.

```
0010 ! FILEPRT - Print to file
0020 let X=lfo,X$=fid(X)
0030 close (X)
0040 for I=1 to 99
0050 open (X,err=*next)"/fileprt/file"+str(I); close (X); goto 0080
0060 serial lwd+"/fileprt/file"+str(I)
0070 open (X)"/fileprt/file"+str(I); exitto 0100
0080 next I
0090 erase "/fileprt/file1"; open (X)"/fileprt/file1"
0100 setfid (X)X$
0110 defprt (X)200,66 ! We are assuming narrow carriage
0120 mnemonic (X)'FF'=" " ! <formfeed>
0130 mnemonic (X)'CR'=$0D$ ! <cr>
0140 mnemonic (X)'LF'=$0D0A$ ! <cr><lf>
0150 let X$=fib(X); if X$(19,1)="S" then lock (X,err=*next)
0160 end
```

### **Troubleshooting other 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.

the link file may be accessing the wrong device. You can check by navigating to ssi7/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 ssi7/link. In \*UCL, enter link/[file name].

3. Check case. Does the link file appear in /link in one case and Printer F/M designation in another?

**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.