

Setting up a Symbol PDT6840 scanner and Spectrum 24 With a Zebra PA400 printer

This document is divided into sections. The first section is on setting up the SCO server. The second section walks you through setting up the Spectrum 24 access point. The third section steps through the configuration of the Symbol PDT6840 scanner. At the end of the document you will find some troubleshooting tips to aid you in fixing problems that may not be addressed in the other three sections.

Setting up the SCO server

During this section of the document, we will be configuring the settings on the server so that it will work with the PDT6840 scanner, and the PA400 printer. You will have to be logged in as root, and at a #.

The scanner (PDT6840):

- 1.) Type 'sysut' and press <enter>.
- 2.) Arrow down to 'user', and press <enter>.
- 3.) Press the space to clear the grey screen. At the 'System Login Maintenance' screen, press <insert>.
- 4.) For login type 'symbol', then press the down arrow. For comment type 'symbol user'. Press <insert>. Press <Esc> three times. This should take you to the #.
- 5.) Type 'cd ~symbol' and press <enter>. Now type 'nte .profile1', press <enter>.
- 6.) Answer 'y' for yes. Type 'export NSTERM=vt10020'.
- 7.) Press <F2>, then 'x', then 'y' and <enter>.
- 8.) At #, type 'touch .nogo'.
- 9.) Type 'nte .profile2', press <enter>.
- 10.) Answer 'y' for yes. If you want to choose your dataset from a menu when you log in on the symbol, type 'exec dbrslexe compenvi.app symbolrf'. If you want a specific dataset every time, type '.dset ###; exec dbrslexe symbolrf.app'. The number of the dataset will be in place of ##.
- 11.) Press <F2>, then 'x', then 'y' and <enter>.
- 12.) At the #, type 'cd etc' <enter>. Then type 'nte hosts' <enter>.
- 13.) Arrow down to the grey area of the screen at the bottom and type in an unused IP address that will become the IP of the symbol scanner, and beside it type a corresponding name. For instance, if it is the first one, the name would be 'rf1', if it was the second one then type 'rf2', so on and so forth. It will look something like the following.

192.168.1.201	rf1
192.168.1.202	rf2
192.168.1.203	rf3
- 14.) Once you're done, press <F2>, then 'x', then 'y' and <enter>.

- 15.) Type 'cd /work/configs' <enter>. Type 'nte termdevs.cfg' <enter>.
- 16.) Arrow down to the grey at the bottom of the screen and type the same name you gave it in the 'hosts' file. (Example: rf1) However, do **NOT** put a '.1' beside it. With your cursor on the line that the name of your unit is typed, make a note of the line number located in the upper right hand corner of the screen. (ex: L000253) This will become the workstation number of the scanner. In this example the work station number will be 253.
- 17.) Press <F2>, then 'x', then 'y' and <enter>. The PDT6840 is now set up.

The printer (PA400):

- 1.) At the #, type 'sysut', press <enter>.
- 2.) Arrow down to 'Printer' and press <enter>. Then select 'Software Printer Maintenance' and press <enter>.
- 3.) Press <insert>. Type a relevant name into printer id code. Beside description, type an easily identifiable description of the printer. (this will help you identify it later)
- 4.) For location, enter the workstation number of the scanner. (You should have taken note of this in the last part of this section.)
- 5.) Beside [L]ocal/[R]emote/[T]ransparent, put 'T'.
- 6.) The printer type will be 'dumb'.
- 7.) Forms class will be 'plnpaper'.
- 8.) In the Device, file or |SpoolCommand, type '/dev/tty'.
- 9.) Leave the last two blank. Now press <insert>, <F10>, then <Esc> several times until you get to the #.

Setting up the Spectrum 24 AP

This part of the document will walk you through the procedure for setting up the AP, or access point. The AP is the device that enables wireless communication between the server and the scanner. It interfaces with the network via a standard cat 5 cable, and passes the signals between the scanner and server across radio frequency waves. You will need a 9 pin female/ 9 pin female null serial cable, the access point, and access to a server or a PC. The following instructions will use the server. The procedure for using a PC may differ slightly because of the program that it uses for serial connections will be different. If you are going to connect the AP to the switch or hub, use a straight through cat 5 cable. If you will be connecting it directly to a NIC, then use a null (crossover) cable.

- 1.) Plug the AP into the wall with the ac adapter that came with it. Now plug one end of the serial cable into the serial connection on the AP, and the other end into an open com port on the server and note which one it is. (com1, or com2) Then

connect your network cable to your AP and the other end to the switch, hub, or server.

- 2.) Log in as root on the server and get to the #.
- 3.) Type 'mmlink' and press <enter>.
- 4.) If it asks you to reconfigure press 'y', else press <ctrl> and ']' at the same time.
- 5.) Press 'c', then 'c' again.
- 6.) Now type the name of the com port the cable is plugged into on the back of the server. If you are using com1 then the name will be 'tty1a', if it is com2 then the name will be 'tty2a'.
- 7.) Press 'b' then 'p'. This will set the baud to 19200.
- 8.) Press <enter> twice, this should bring up the Symbol Access Point Main Menu. If it does not, press enter a few more times, else check your cable at both ends. Also make sure that you have it in the same port you noted earlier.
- 9.) Arrow down to 'Enter Admin Mode' and press <enter>. The password is 'Symbol', as shown without the single quotation marks. (capital S, lowercase ymbol) Press <enter>.
- 10.) Arrow to 'AP Installation', press <enter>.
- 11.) Beside 'IP Address', type a valid and unique IP address. (Not the same as the scanner or any other device on the network.) If this store is a remote, then also put the proper gateway. For 'Subnet Mask' input '255.255.255.0'.
- 12.) The 'NET_ID (ESS)' should be 101 by default. <Backspace> it out and type 'linksys'. If you will have multiple AP's then give it an id that will allow it to work with only the RF units that you want it to work with. Example: Say you have two scanners and two AP's. You want one scanner and AP to go to the paint department, and the others to go to the hardware department. If you don't want them to communicate with the other's AP, you could make one scanner and AP's ESS be 'hardware', and the other be 'paint'. The point is that the access point will ignore any device that does not share the same ESS ID.
- 13.) Arrow down to '.Antenna Selection', if you have 1 antenna, choose 'Primary Only' by hitting the spacebar. If you have 2 antenna's the choose 'Primary and Secondary'. Then press <F1>, then 'y' to save.
- 14.) Go to 'Exit Admin Mode' and press <enter>. Then press <ctrl> and ']' at the same time, then 'q' to quit.
- 15.) Unplug the power cable to the access point, wait for a few seconds and then plug it back in. This will cause it to come up with its new settings. It will **NOT** take on the new settings until you do this.
- 16.) Once it is back up, ping the access point from the server. The command will look something like this 'ping 192.168.1.200'. When you type it, you will use the IP address you gave it instead of 192.168.1.200. If it pings, then it has accepted its new settings. Otherwise you will have to do it all over again.

Setting up the PDT6840

You will need the following items in order to program this device:

- a) a 9 pin female to 25 pin male, null cable
- b) a charging cradle with power adapter
- c) a Symbol model PDT6840
- d) a Windows based PC with working 9 pin male serial port
- e) the proper files for the application at hand (10 or 12 digit UPCA)

The Symbol unit will remain in the cradle unless otherwise specified.

- 1.) Insert the floppy disk into the drive.
- 2.) Double click on My Computer
- 3.) Double click on Floppy [A:]
- 4.) Double click on install.bat
- 5.) Click on Start
- 6.) Choose Programs
- 7.) Click on MS-DOS Prompt
- 8.) Type **cd c:\hexfiles** and press **[Enter]** (You are done with the PC until step 26, leave it as is. Don't close any windows.)
- 9.) Press and hold the **A B** and **D** keys on the Symbol unit.
- 10.) Press and release the **PWR** button.
- 11.) Release the **A B** and **D** keys. This will cold boot the unit.
- 12.) When you get a D:\ prompt on the screen type **flshfmt** and press **[Enter]** on the Symbol unit.
- 13.) When asked 'Are you sure?(N)/Y' press **Y**.
- 14.) When you are returned to a D:\> prompt, press and release the **PWR** button.
- 15.) Press and hold the **F** and **I** keys on the Symbol unit.
- 16.) Press and release the **PWR** button.
- 17.) Release the **F** and **I** keys.
- 18.) This will bring you to the following screen:
COMMAND MODE

Select function
Self test
- 19.) Press the arrow down button.
COMMAND MODE

Select function
Program loader
- 20.) Press **[Enter]**
- 21.) It will now display:

Program loader
WARNING: EEPROM
WILL BE ERASED
CONTINUE? <ENT>

22.) Press **[Enter]**

23.) You will see:

Comm Parameters

Baud

4 9600

24.) Arrow up to 19200 and press **[Enter]** four times

25.) You will see:

Comm Parameters

Start? <ENT>

26.) On the PC you should be at a dos prompt like this: C:\hexfiles>_

27.) At the dos prompt on the PC type **sendhex lwp.hex 19200 1** and press **[Enter]**

28.) You should see 'Press <ENTER> when remote is ready. ESC to abort...' on the PC.

29.) Press **[Enter]** on the Symbol unit. You should see:

Program loader

Receiving :

If you don't press **[Enter]** again on the Symbol unit.

30.) Press **[Enter]** on the PC. The file will start transferring now from the PC to the Symbol unit.

31.) When it is done, if you see anything other than the following, you will need to press **[Enter]** go back to step 10.

Program loader

Status 0000

32.) Press **PWR** on the Symbol unit.

33.) Press and hold the **A B** and **D** keys on the Symbol unit.

34.) Press and release the **PWR** button.

35.) Release the **A B** and **D** keys. This will cold boot the unit.

36.) The unit will come up to a screen that look like this:

INSTALLING
LWP HEX Ver

Spring: 3.06 – 07
802.11: 4.02 – 07
Loading system files
1. Re-format flash
2. Use flash as is
Select[1,2]:

- 37.) Press **1**
- 38.) When asked ‘Are You Sure?(N)/Y’ press **Y**
- 39.) When you see ‘Load UPD802.HEX Strike any key when ready...’ press **[Enter]** on the Symbol unit.
- 40.) At ‘<ENTER> to erase NVM’ press **[Enter]** on the Symbol unit.
- 41.) When you see the following screen press **[Enter]** five times

Symbol Technologies
NVM Loader 2.09-01

Protocol
Standard

- 42.) This will bring you to the following screen:
Symbol Technologies
NVM Loader 2.09-01

<ENTER> to Download
<F1> Repeat Menus
<F2> Restart Loader

- 43.) On the PC type **sendhex upd802.hex 19200 1** and press **[Enter]**
- 44.) You should see ‘Press <ENTER> when remote is ready. ESC to abort...’ on the PC.
- 45.) Press **[Enter]** on the Symbol unit. You should see:

Symbol Technologies
NVM Loader 2.09-01

Address:

If you don’t press **[Enter]** again on the Symbol unit.

- 46.) Press **[Enter]** on the PC. The file will start transferring.
- 47.) When it is done, if you see anything other than the following, you will need to press **FUNC** then **2** and go back to step 33.

Symbol Technologies
NVM Loader 2.09-01

Valid Download

<ENTER> to Download
<F1> Repeat Menus
<F2> Restart Loader

- 48.) Press **[Enter]** on the Symbol unit.
- 49.) When you come to where it says that the terminal cannot associate with the AP, press **CTL** then **C** on the Symbol Unit.
- 50.) When asked 'Halt Batch Process (Y/N) ?' press **Y**
- 51.) You will be brought to a **D:\>** prompt.
- 52.) Type **cfg24** and press **[Enter]** on the Symbol unit.
- 53.) Arrow down to **ESS Id** and press **[Enter]**
- 54.) Press **BKSP** to clear out anything that is listed under 'Enter ESS Id:'
- 55.) Type **linksys** and press **[Enter]**
- 56.) Arrow down to **Subnet Mask** and press **[Enter]**
- 57.) Make sure it says **255.255.255.0**
- 58.) If it does not press **BKSP** to clear out anything that is listed under 'Enter SN Mask:' and type **255.255.255.0**
- 59.) Press **[Enter]** on the Symbol unit.
- 60.) Arrow down to **MU IP Address** and press **[Enter]**
- 61.) Press **BKSP** to clear out anything that is listed under 'Enter IP addr:'
- 62.) Type in an appropriate IP address and press **[Enter]**
- 63.) Arrow down to **Boot Mode** and press **[Enter]**
- 64.) Arrow up to change it to **Manual entry** and press **[Enter]**
- 65.) If you are configuring this for a remote site that does not have its own server, then arrow up to **Default router** and configure it with the router's IP address as well.
- 66.) Arrow down to **Exit** and press **[Enter]**
- 67.) When you are returned to a **D:\>** prompt, press and release the **PWR** button.
- 68.) Press and hold the **F** and **I** keys on the Symbol unit.
- 69.) Press and release the **PWR** button.
- 70.) Release the **F** and **I** keys.
- 71.) This will bring you to the following screen:
COMMAND MODE

Select function
Self test
- 72.) Press the arrow down button.
COMMAND MODE

Select function
Program loader
- 73.) Press **[Enter]**
- 74.) It will now display:
Program loader

WARNING: EEPROM
WILL BE ERASED
CONTINUE? <ENT>

75.) Press **[Enter]**

76.) You will see:

Comm Parameters

Baud

4 9600

77.) Arrow up to 19200 and press **[Enter]** four times

78.) You will see:

Comm Parameters

Start? <ENT>

79.) At the dos prompt on the PC type **sendhex vtl46k.hex 19200 1** and press **[Enter]**

80.) You should see 'Press <ENTER> when remote is ready. ESC to abort...' on the PC.

81.) Press **[Enter]** on the Symbol unit. You should see:

Program loader

Receiving :

If you don't press **[Enter]** again on the Symbol unit.

82.) Press **[Enter]** on the PC. The file will start transferring now from the PC to the Symbol unit.

83.) When it is done, if you see anything other than the following, you will need to press **PWR** go back to step 58.

Program loader

Status 0000

84.) Press **PWR** on the Symbol unit.

85.) Press and hold the **A B** and **D** keys on the Symbol unit.

86.) Press and release the **PWR** button.

87.) Release the **A B** and **D** keys. This will cold boot the unit.

88.) When the unit asks for you to remove it from the cradle, then do so.

89.) When it comes up to <Enter> to connect press **FUNC** then **CTL** then **R**

90.) When asked for the password, type **system** and press **[Enter]**

91.) Answer yes to the warning by pressing **Y**

92.) You will come to a screen like this:

MODIFY:

1. Terminal Config
2. Host Profiles

3. RETURN HIT 1, 2 OR 3

- 93.) Press **2**
- 94.) Press [**Enter**] on Advantage
- 95.) Change the Host Address to the IP address of the server that this device will connect to.
- 96.) Press **CTL** then **S** to save.
- 97.) Press **CTL** then **S** to save again.
- 98.) Press **3**
- 99.) You will see <Enter> to connect again.
- 100.) Press [**Enter**] on the Symbol unit. You should get a login, if not then you will need to press **FUNC** then **CTL** then **R**. Choose option 1 and check the Advantage IP address. If that is not it, choose option 2 from the MODIFY menu and check the MU IP Settings.

Troubleshooting Tips

Terminal Configuration: If for some reason you need to change something in the configuration of the PDT6840 like the ESS ID or the IP Address, you can do it without having to start over. Press <Func>, then <ctrl>, then 'r'. If you go to option 1, it lets you change settings specific to the unit itself. If you choose option 2, it will allow you to change settings that relate to what host (server) the unit will connect to.

Diagnostics: The scanner has a few diagnostics programs that it can run, such as printer diagnostics. The printer diagnostic test don't really apply to the zebra printer, but it will allow you to change the printer type without having to rebuild the VTL software and reload it onto the scanner. You access this by pressing <Func>, then <ctrl>, then 'd'.

Reloading VTL: This is a little more FYI than troubleshooting. However, if you need it, it is nice to know. If the VTL software (the software that actually connects to the server) gets damaged, and changing settings doesn't work, then you can reload the VTL hex file again, and it will overwrite the previously installed version.

I can't print: Make sure that you have the correct cable running in from the scanner to the printer. There are two cables with optical ends that can be attached. The PTD6840 uses the 52532 model cable. This is because the optical port on the scanner is configured to be used as a serial port. Other scanners have a physically identical port, but theirs' is configured to act like a lpt port. Make sure you have the right cable. Also, the zebra PA400 uses the 'lineprinter' driver in the VTL software. (see: *Diagnostics*)

Another thing to check is that you have a functioning printer. You can make the 9 pin to RJ – 45 connector that is listed in the back of the zebra manual, and connect it to the printer with a head to head cable. Connect the connector to a null cable and then to a

com port on the server and set it up as a 'dumb' local printer and you should be able to print to it using a text file with the correct zebra code and the cat command.

- 1.) At the # type 'touch /tmp/zebra.txt' then press <enter>.
- 2.) Type 'nte /tmp/zebra.txt' and press <enter>.
- 3.) When the editor comes up type the following exactly as shown:
^XA
^FO75,250^A0N,77,67^FR^FDTHIS IS A TEST LABEL^FS
^PQ1,0,0,N
^XZ
- 4.) Then press <F2>, 'x', then 'y', then <enter>.
- 5.) At the # type 'cat /tmp/zebra.txt >/dev/tty2a' (note: if you are using com1 then you would type 'cat /tmp/zebra.txt >/dev/tty1a')

Your printer should print 'THIS IS A TEST LABEL' in the middle of the label.

If you've double checked all of the settings reviewed in the 3 sections of this document, and you know that you have a functioning printer that won't print from the scanner then try the following. On the SCO server at the # type 'dbmnu' and press <enter>. Type your password; press <enter>. Choose 'Inventory Control'. Choose 'Administrative Menu', then choose 'Inventory Header Configuration'. Press <pgdn> 4 times or until you get to 'page 5 of 10'. Change 'bin tag label type.....' to 'L' and press <insert> to save. Then escape several times to get to a #.

Another problem that has come up with printing is a version problem with the VTL software and the Zebra PA400 printer. The Zebra printer, as of the revision of this document, has never been officially supported by the VTL software. The new versions of the VTL software cause the printer not to print and the Symbol unit gets 'stuck' asking if you wish to reprint the label or press Enter to continue.

What is actually happening is that the VTL package is managing to open and close the Communications port to the printer around each individual character of the print string that is sent via our transparent printing process. There are two ways that you can test for this error, the first is to put the printer into hex dump mode. This mode 'dumps' any and all data to the label without any interpretation. To do this turn the printer off, hold down the feed button, then turn it on and immediately release both buttons. A configuration will print out, then the printer will be in dump mode. (You will need wide labels.) After that each time that you press enter when you are stuck in the loop mentioned above, it will print one ASCII character to the label.

The other way is that you can work around the problem by changing the printer configuration in software printer maintenance. Change the printer from transparent to local and change your spool command and close command to look like this:

```
Device, File or |Spool command:    /tmp/%temp
Command to execute before open:
Command to execute after close:    echo "\033""[5i"> /dev/tty; cat
                                   /tmp/%temp> /dev/tty; echo "\033""[4i"> /dev/tty; rm -f /tmp/%temp
```

What the above command does first is to capture the printer command string in a temp file. Then it sends the signal to open the printer communications port on the Symbol unit. Next it passes the printer command code to the printer through the port. Last, it closes the printer communications port and deletes the temporary file.

The problem is more properly solved by using a known good, though older, version of the VTL package. The last known good version is 3.94-05. The first version encountered with the problem is version 3.94-16. By using the older version we are able to use our standard method of setting up the printer as transparent. This helps to keep an unknowing technician or a helpful customer employee from trying to correct a seemingly overcomplicated and unnecessary spool command. You can check the version of the VTL when you get to the <Enter> to connect screen on the unit. Press **FUNC** then **CTL** then **P**. The number to the right of VERSION: LWP is actually the client, or VTL version.

If you have any trouble with these units that is not covered in this document, then you can call technical support.

Symbol Technical support: 1 (800) 653 – 5350

Zebra Technical support: 1 (847) 913 - 2259