

Chapter 5 *Configuring the Terminal: Edit the Configuration Files*

Introduction

This chapter details the recommended edits of DOS system files.

Note: For more information on editing the DOS system files covered in this section, please refer to the *Microsoft® MS-DOS User's Guide*.

CONFIG.SYS

HIDOS.SYS Device Driver

This driver provides access to the terminal's extended memory (RAM beyond the first 1MB). It provides services for managing the High Memory Area (HMA).

Various uses of extended memory include:

- Loading DOS high (see DOS Settings: DOS = HIGH)
- Using Expanded Memory (EMS; see PCCEMM.SYS)

Note: This driver must be loaded in CONFIG.SYS to allow use of extended memory. Most configurations created for the PPT 41xx should include this driver.

Recommended usage in CONFIG.SYS is:

```
DEVICE=HIGHDOS.SYS
```

PCCEMM.SYS Device Driver

This driver is an expanded memory emulator. An expanded memory emulator uses extended memory to simulate expanded memory. Application programs can then use the simulated expanded memory as if it were physical expanded memory. PCCEMM.SYS is supplied as a device driver that can be loaded at boot time. To install it, the user must edit the CONFIG.SYS file so that it contains the following device command:

DEVICE=d:[path]\PCCEMM.SYS[options]

where *d*: and *[path]* indicate the drive and directory in which the driver is located.

Refer to [Chapter 11, Utilities](#), for more information on the HIDOS.SYS and PCCEMM.SYS drivers.

CONFIG.SYS DOS Settings

- **BREAK = [ON | OFF]**

Controls whether or not extended CTRL+C checking is enabled. Since this feature introduces additional overhead and is useful only when a keyboard is attached, it should be disabled under most circumstances. Off is the default setting; hence this command need not be used unless this feature is being enabled.

- **BUFFERS = n[,m] 1≤n≤99 0≤m≤8**

Specifies the number of disk buffers to be allocated for use by DOS. The default value for the PPT 41xx is n=15 and m=0. Many applications and environments request a larger setting. Windows, for example, recommends a setting of n=20 and m=0. Using too large a value wastes memory and using too small a value can reduce performance. Unless there is a specific requirement, we recommend using the n=20 and m=0 settings.

- **COUNTRY = XXX[,YYY]**

Specifies the country-specific settings. The default is U.S. This command is required only for a different country setting.

- **DEVICE = driver.ext**

This command loads the specified driver.

- **DOS = [HIGH]**

This command allows DOS to load information into the HMA (DOS = HIGH), increasing the amount of TPA available for applications.

Note: DOS = HIGH can only be used if HIDOS.SYS is loaded.

- **FILES = n** $8 \leq n \leq 255$

Controls the number of files that DOS can open at once. The larger this number, the more memory DOS allocates for file handles. The default is 8, which is generally inadequate for most applications and environments. Allocating too many files wastes memory; allocating too few files may cause an application or environment to fail if it attempts to open too many files. Unless there is a specific requirement for more files, we recommend using a value of $n=20$.

- **INSTALL = file.ext**

This command loads a TSR from CONFIG.SYS. This command can be used to load TSRs that go along with drivers (as a convenience). Note that DOS does not load the TSRs until the end of CONFIG.SYS (as opposed to where they appear). If you use your application as a shell (see SHELL=), you can use this command to load TSRs prior to execution of the application as the shell.

- **LASTDRIVE = x**

Specifies the number of disk drives managed by DOS. This command is necessary only if the number of drive letters managed by DOS must be increased. DOS automatically allocates A: and B:, plus C: and possibly D: if ROM disk(s) are present.

One common use of this command is to reserve one or more drive letters for use by the DOS SUBST command.

If the Symbol Spectrum24 Wireless LAN PC Card is used with the FTP TCP/IP stack and drive redirection, the network drive will start on the drive letter specified in LASTDRIVE=. Ensure that the drive letter correctly reflects the next available drive letter that you want the network to use, not the last drive letter managed by DOS.

For example, if DOS is managing drives A-F, set **LASTDRIVE=G**.

For Novell Netware and LAN Workplace, LASTDRIVE= must be set to **Z**.

- **SHELL = file.ext**

This command specifies the command shell to be used. The default command shell is COMMAND.COM from the boot drive's root directory.

Reasons for using this command include:

- To increase the size of the environment table when running COMMAND.COM as the shell.

Note: The recommended command line for this is:

`SHELL=C:\COMMAND.COM/P/E:1024`

For additional information, consult the *MS-DOS User's Guide*.

- To run (and store) COMMAND.COM in a directory other than the root directory (see also **SET COMSPEC=** above)
- To use an application other than COMMAND.COM as the shell.

- **STACKS = n, s** **0≤n≤64, 32≤s≤512**

This command controls the number and size of the DOS stacks used to service hardware interrupts. Unless there is a specific requirement otherwise, we recommend using a value of n=9 and s=256 to save memory.

Other MS-DOS Device Drivers

- **ANSI.SYS**

This driver provides text mode display attribute support for applications that desire ANSI terminal command set portability.

- **DISPLAY.SYS**

This driver allows internationalization of the text mode character set.

- **RAMDRIVE.SYS**

This driver creates a simulated “disk” using TPA or EMS.

To include a small RAM Disk in EMS, add the line:

`DEVICEHIGH=RAMDRIVE.SYS 256 /A`

- **SETVER.EXE**

This driver reports different version numbers for use with DOS-version-specific software programs. Consult the *MS-DOS User's Manual* for more information.

- **SMARTDRV.EXE**

This driver caches access to disk drives, thus increasing disk access speed. Due to the solid state nature of the “disks” available on the PPT 41xx, this driver may be of limited use.

AUTOEXEC.BAT

Note: AUTOEXEC.BAT is processed by COMMAND.COM and has no meaning if another program is used as a shell (see the section **SHELL=** above).

DOS Settings

- **ECHO [ON | OFF | TEXT]**

This command (which is commonly used in batch files, especially AUTOEXEC.BAT) displays a text string (the TEXT option), or enables/disables the echoing of commands in the batch file as it is executed. When a batch file is used to execute a program, it gives a more “transparent” look if the commands which “set up” the applications’s execution are hidden. To prevent the ECHO OFF command from itself echoing, precede it with an @ sign (e.g., @ECHO OFF).

- **MODE**

This command sets up and/or configures various drivers. Refer to the *MS-DOS User’s Manual* for more information.

- **PATH**

This command sets the path(s) used to find executable programs.

- **PROMPT**

This command modifies the DOS COMMAND.COM shell prompt.

- **SET**

This command sets environment variables. This is normally used to set up environment variables required by TSRs or applications/environments.

Symbol-Supplied TSRs

Symbol has provided the following device drivers and TSRs for use with the PPT 41xx. For information on loading the TSRs device drivers, and on the APIs supported by each device driver or TSR, refer to the *PPT 41xx System Software Manual*, p/n 70-12524-xx.

CRADLE.COM

The Cradle Handler (CRADLE.COM) is a Terminate and Stay Resident (TSR) program that provides cradle support. If an installation has cradles, then Cradle Handler must be loaded on the terminal *before* the XSYMBIOS program is loaded, in order to take advantage of cradle features in the operation of the terminal. If an installation does *not* have cradles, then Cradle Handler is not required.

The Cradle Handler controls the following operations when the terminal is in a cradle:

- **Terminal Charging**

If the Cradle Handler is not loaded, the terminal will not charge while it is seated in the cradle.

- **Modem Control and Modem Status Register**

These two registers are non-functional when the terminal is in the cradle, if the Cradle Handler is not loaded.

- **Bus Arbitration**

The Cradle Handler provides the method for gaining control of and releasing the cradle bus. This control is essential when multiple cradles are chained together and a terminal needs to write to the host.

- **XSYMBIOS.EXE**

The extended Symbol BIOS program (XSYMBIOS) is a Terminate and Stay Resident (TSR) program that is executed on the PPT 41xx. Since it contains functions that enable the PPT 41xx scanner driver (SCAN4122.EXE) and the PPT 4110 Spectrum One Radio Driver (RFDVR.EXE) to interface with the terminal hardware platform, it should be loaded on the terminal prior to the installation of these driver programs.

XSYMBIOS directly accesses the PPT 41xx gate array, controls power management for the terminal, and performs a variety of functions related cradle insertions and removals. It supports ROM BIOS extensions, based on the Series 3000 BIOS, and provides an application program interface (API) for controlling power management.

Table 5-1 lists the Series 3000 BIOS service groups in which services are supported by XSYMBIOS along with the associated interrupt for each group.

Table 5-1. XSYMBIOS Service Extension Groups

PC Interrupt (Hex)	BIOS Service
0x14	Serial Communications
0x32	Miscellaneous Services
0xAC	Timer Services
0xAD	Sound Services
0xAE	CRC Services
0xB1	Power Management Services
0x16	Keyboard Services
0x17	Printer Services
0x1A	Time of Day Services
0x1C	Timer Tick

- **PEN4100.EXE**

The Mouse TSR API provides Microsoft Mouse-compatible use to support the use of the pen and digitizer as a mouse. Mouse-aware applications can use this TSR to provide mouse emulation.

- **SCAN41xx.EXE**

The purpose of the PPT 41xx Scan Driver Program is to enable applications running on the PPT 41xx terminals to read bar coded data. It is a Terminate and Stay Resident (TSR) program that is loaded once upon terminal initialization and controls the internal scan module.

Spectrum24 ODI (SLAODI.EXE)

The Spectrum24 ODI drivers provided by Symbol consist of the Link Support Layer (LSL) and Multiple Link Interface Driver (MLID) layers. There is also a PCMCIA enabler program.

- **LSL.COM**

The LSL manages communications between protocol stacks and MLIDs. Its purpose is to let multiple protocol stacks access a network card simultaneously. This layer is a component of the Novell Open DataLink Interface (ODI) driver specification.

- **SLAODI.EXE**

The MLID layer controls a specific network interface and works below the LSL. The MLID manages the transmission and reception of packets to and from a physical or logical network interface. This layer is a component of the ODI driver specification.

Symbol-Supplied Network Configuration Files

- **NET.CFG**

Required when using ODI. Contains configuration information for each ODI module.

Spectrum24 Software: Edit & Installation Summary

Spectrum24's built-in network components include support for network transports such as TCP/IP, and existing network device standards such as ODI. Because of the open architecture, other network vendors may add network connectivity and application support.

Use this section as a guideline to ensure that you make all the necessary edits to the configuration files to ensure the PPT 4140 operates in a Spectrum24 network environment. For additional assistance, refer to the code samples provided in the PPT 4140 Network Development Kit.

ODI Installation

The PPT 4140 ODI drivers provide the support necessary to use the following networks:

- Novell® LAN WorkPlace® version 5.x
- FTP Software® PC/TCP® version 3.x

Note: FTP software is *not* supplied as part of the SDK or NDK and must be purchased, with appropriate license agreements, from FTP Software for use in the PPT 4140.

Refer to the PPT 4140 Network Developer’s Kit (NDK) for more information on installing and configuring the Novell LAN Workplace stack.

Spectrum24 SLAODI driver requires that XSYMBIOS be loaded before loading the driver. The driver does not check to see that XSYMBIOS is loaded before loading itself. Spectrum24 SLAODI driver only works with XSYMBIOS version 1.03-04 and later.

Refer to figure 5-1 to review network driver layering. Components shown in solid boxes are provided with the PPT 4140 Network Developer’s Kit (NDK). Components in dash-boxes must be obtained from third-party software providers.

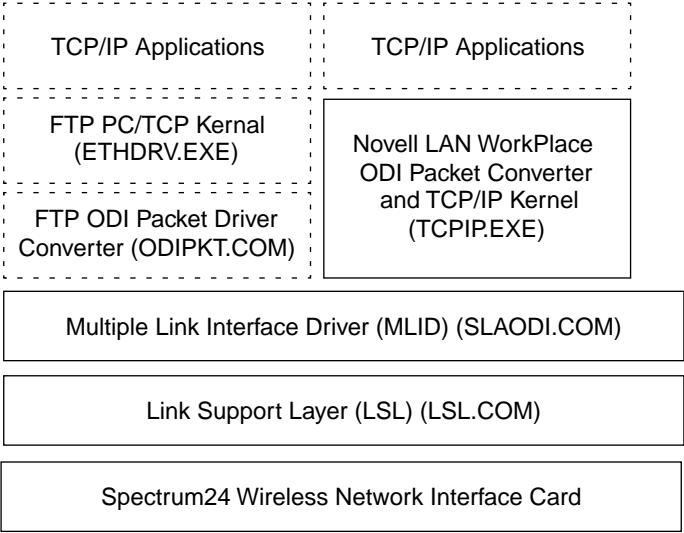


Figure 5-1. ODI Driver Layers

To install Spectrum24 and bind the stack on the PPT 4140, modify the NET.CFG file as follows:

1. Under the “Protocol TCPIP” section, be sure to set the appropriate Net_id, Ip_address, Ip_netmask, and Ip_router parameters for your specific installation.
2. Under the “link driver slaodi” section,

- a. Set the Unit Type as follows:

```
Unittype 4000
```

- b. Set the Memory Window address for the driver as follows:

```
Memory CC00
```

- c. Set the IO Port Address for the driver as follows:

```
IOAddress 300
```

- d. Set the interrupt number for the driver as follows:

```
Interrupt 2
```

- e. Specify socket 2 for the PPT4140 to use:

```
Socket 2
```

- f. Set the Mode keyword to use memory mode:

```
Mode
```

- g. Set the power options to maintain network connection while in a timeout suspend:

```
NIC_Timeout 0
```

This timeout value determines how long an association with a Spectrum24 Access Point (AP) is maintained during a timeout suspend of the terminal. When the NIC timeout value is reached, the AP association is terminated to conserve power. Time is in seconds. Values up to 3600 seconds (60 minutes) are valid. If value is set to 0, this function is disabled.

- h. Set PSP mode as follows:

```
Powermgmt 1
```

```
Beacon_algorithm 11
```

```
Beacon_minimum 1
Beacon_maximum 10
```

- i. Set primary antenna only as follows:

```
Diversity 0
```

- j. For Novell LAN Workplace, add the following lines to the NET.CFG file:

```
link support
Max Stacks 10
Mempool 4096
Buffers 4 1500
link driver slaodi
Frame Ethernet_II
net_id 101
```

3. In the AUTOEXEC.BAT file, load the drivers in the order indicated:

```
LSL.COM
SLAODI.COM
```

4. In the AUTOEXEC.BAT file, optionally add lines to load the third party drivers (refer to the manufacturer's documentation for command line switches and initialization files).

- a. load the following TSRs in the order indicated:

```
ODIPKT.COM
ETHDRV.EXE
```

- b. For Novell LAN Workplace, load the following driver:

```
TCPIP.EXE
```