

Kestrel

Reference Manual

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MANUAL INFORMATION

This document applies to the all versions of the Kestrel coprocessor and the three operating systems under which it runs. The Kestrel emulates all versions of the HP 1000 A-Series and 21MX M/E/F computers and is available at three performance levels: low (Kestrel/SX), medium (Kestrel/DX) and high (Kestrel/QX). The three operating systems are Windows XP, Windows 2K and Windows NT. When something applies only to one version, a superscript notation will indicate the version. For example:

```
FatalVCPError(A-series) = {Yes No}
LegacyBus(21MX) = {None Off Jump sc sc1-scn ...} ...
The default is AboveNormal(2K, XP) or High(NT).
```

Complete configuration file example lines will be shown in a fixed pitch underlined font. For example:

```
FirmwareRoms = Clock
```

Partial configuration file examples that are embedded in the middle of text will be shown in a fixed pitch font. For example, /Pass:All and /Pass:1,2,3,4,5,6,7 are equivalent.

Kestrel menu entries are indicated in underlined italic font (e.g., *Edit*).

Braces are used to document a set of valid option values from which one value must be selected. For example:

```
MessageDisplayMinimum = {Default None 0-10000}
```

Numbers are always unsigned and must be given in decimal unless otherwise indicated. A range of integer values is specified by two numbers separated by a hyphen. These two numbers are included in the indicated range. For example:

```
WinExecDelay = {0-10000}
```

Brackets are used to document optional configuration command options. The parts shown in brackets may be given or omitted. For example:

```
PasteDelays = {0-1000 [0-10000]}
```

Ellipsis (...) is used to indicate that the previous command options may be repeated zero or more additional times; however, when given in braces, the ellipsis is just one of the set of valid option values. For example:

```
FirmwareROMs = Romname[Opcode] ...
LegacyBus(21MX) = {None Off Jump sc sc1-scn ...} ...
```

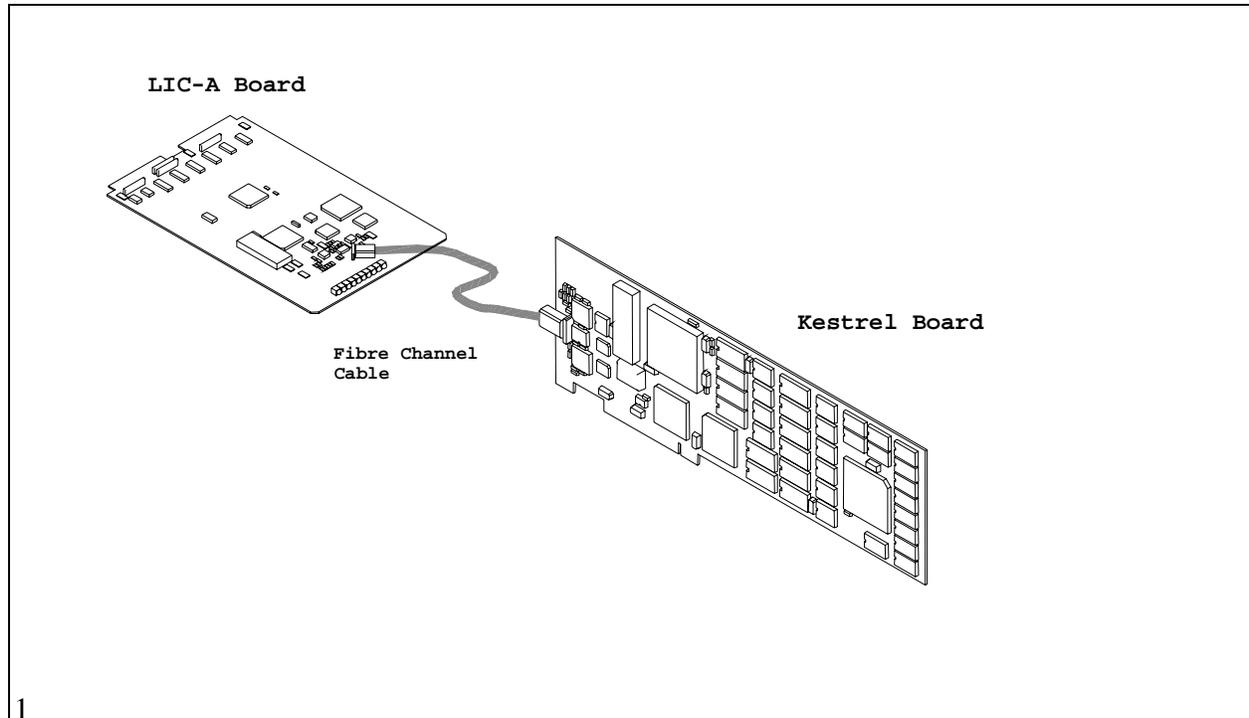

PRODUCT OVERVIEW

The Kestrel coprocessor is a PC add-in card that allows any standard PCI based PC to replace a Hewlett-Packard Company 16-bit HP 1000 21MX or A-Series minicomputer. The system uses PC hardware devices to replace corresponding minicomputer peripherals in a manner transparent to the HP 1000 software. Thus, HP 1000 operating systems and applications run without modification on the Kestrel/PC platform.

Most HP 1000 instructions are executed directly out of local memory by the Kestrel CPU. Traditional HP 1000 hardware floating-point instructions are executed using an onboard 80X86 processor.

I/O instructions are also handled by a local 80X86 microprocessor. This processor serves as the interface between the host PC software and the Kestrel CPU. On the Kestrel side, it provides the low-level data, control, status and interrupt functions that the HP 1000 software expects for each device. On the host side, it provides a high level interface for the routing of I/O requests to the appropriate host device.

Not every HP 1000 device has a counterpart in the PC environment. In addition, some devices used in data collection and process control are not well suited to device emulation. The Kestrel system addresses this issue by allowing physical HP 1000 devices to be supported using the Kestrel Legacy Interface Card (LIC-A ^(A-Series) or LIC-MEF ^(21MX)). The LIC cards are I/O bus adapter cards that connect to the main Kestrel card and provide the required HP 1000 chassis back plane signals in response to I/O instructions executed by the Kestrel processors. In this configuration, the Kestrel hardware is initialized on startup to route specified I/O instructions to the legacy bus.



Kestrel (PCI) board with Legacy Interface Card (LIC-A) for HP 1000 A-Series I/O Chassis

The Kestrel board is available in several configurations:

<u>Board type</u>	<u>Bus type</u>	<u>Speed</u>
Kestrel/SX	PCI	Low
Kestrel/DX	PCI	Medium
Kestrel/QX	PCI	High

INSTALLATION

Hardware Installation

FCC Class A Radio Frequency Interference Statement

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Kestrel Installation

The Kestrel board installs in a PCI slot. The Kestrel board interrupt, memory addresses and device I/O addresses are controlled in the motherboard PCI hardware and Windows operating system software.

Cooling is essential to reliability, even longevity, of the Kestrel. Make sure your PC has adequate airflow. If your machine has enough slots, leave an empty slot on each side of the Kestrel card set to provide extra cooling.

PC Considerations

We advise our VARs to exercise extreme caution in their selection of PC hosts for Strobe's line of coprocessors. Strobe suggests the use of only top-line PC -- those marketed specifically for use as file servers, for instance. For the full description, please read our online information.

<http://www.strobedata.com/home/badpcs.html>

In terms of speed and memory, any modern host PC that is satisfactory for running Windows will be adequate for running the Kestrel.

Monitor Considerations

The Kestrel software sometimes uses dynamic font sizing to find the best fit for a given window size. As you size the window, you will see the screen font adjust. At a minimum, the screen resolution should be 800 x 600, and 1024 x 768 is better. At 800 x 600, each character has only seven pixels in 80-column mode and five pixels in 132-column mode. A five-pixel character is nearly unreadable. At 800 x 600, a 100-line screen also has only five pixels per character.

Software Installation

Kestrel software is delivered on 3½” diskettes. The software requires about 20MB of disk space to install.

The Kestrel software is also available from the Internet at <http://www.strobedata.com> in the Kestrel section.

Insert disk 1 and use any one of the standard Windows installation methods:

- 1) Choose *Start \ Run \ A:SETUP.EXE*.
- 2) Choose *Add-Remove Programs* from the control panel.
- 3) Click the “My Computer” icon and then the 3½” floppy. Run SETUP.EXE.

The setup program will guide you through the installation process. You will need to know if you need the Strobe Data StrobeMux multi-line serial I/O card driver

The StrobeMux driver allows access to the StrobeMux ports via the standard Windows COM interface (modem control functions are disabled as the StrobeMux ports do not support modem control signals). You also need to select a starting COM port number for the serial ports on each board and to specify a 16 or 32 port board.

After the software is installed, the Windows system must be restarted to load the drivers. If any driver fails to load, Windows will display a message directing you to the ‘Event Viewer’ program to see the detailed error descriptions. The ‘Event Viewer’ program is found in the ‘Administrative Tools’ program group.

Getting New Versions of the Software

The most recent versions of Kestrel software and utilities are available on the Strobe Data ftp site and web site.

You may also retrieve software, get technical support, or get marketing information via the Internet. All information is available via the home page.

Home Page <http://www.strobedata.com/>
Marketing/sales sales@strobedata.com
Tech support support@strobedata.com

System Verification

Once the hardware and software have been installed, click:
Start \ Programs \ Kestrel \ Diagnose Hardware (low level).
This will run the HWDIAG.EXE low level hardware diagnostic program.

PC Hardware Installation

Standard Windows disk drives, monitors, keyboards, COM ports, parallel ports, removable drives and networks are used by the Kestrel system.

ASPI Installation

The [ASPIDisk](#) (see page 90) and [ASPITape](#) (see page 110) physical devices require a SCSI controller. The ASPI device can be used regardless of whether a Windows driver is installed.

If the device has not been claimed by a Windows class driver, the SCSI device unit and controller must be specified by use of the /Unit and /Adapter options.

If the device has been claimed by a Windows class driver, the /Name option must be used. For example /Name:PhysicalDrive1 might be used to specify a SCSI disk claimed by the disk class driver.

A utility program, DOSDEV.EXE, has been provided that can be used to display all system device names by clicking *Start \ Programs \ Kestrel \ DOSDEV.* Note that this program displays the device names in the left column. The right column shows the Windows native names that give a better indication of the actual device.

Network Emulation Installation

Configuration of the [Network](#) physical device (page 116) requires installation of the third-party WinPcap software, which is included in binary form without modification with the Kestrel installation software. WinPcap is an industry-standard tool for link-layer network access in Windows environments. The WinPcap software may be installed by clicking: *Start \ Programs \ Kestrel \ Install WinPcap* and following the installation directions.

Customer Software/Data Installation

After the system has been verified with HWDIAG, you are ready to move the original HP 1000 software and data to the PC.

Each physical disk unit on the HP 1000 minicomputer may have a corresponding disk emulation (disk image) on the PC. You can choose files on the hard disk, memory areas, floppy disks, removable disks, network files, etc. for your disk images. (See the [Configuration](#) section beginning on page 9 for a complete description.)

HP 1000 disk drives most often are emulated by means of ordinary Windows files called container files. An installer with a Kestrel and a Legacy Interface Card can usually copy legacy disk images to container files by use of the [GETDISK](#) program (page 145) that is provided with the Kestrel software.

If it is not possible to use the GETDISK program, you will need to use the standard HP 1000 operating system to copy the legacy disk images. Empty container files can be created for this purpose using the [Container File Builder](#) (page 137) program (WINCON.EXE).

After all container files have been created by the GETDISK program or by the Container File Builder program, their names need to be added to the configuration file. (See the [Configuration](#) section beginning on page 9 for a complete description.)

CONFIGURATION

Examples

[Appendix K](#) (page 183) shows two sample Kestrel configuration files – one for a typical 21MX system configuration, and the other for a typical A-Series system configuration. Examples of most common configuration commands and options are shown.

The following simple examples and explanations are provided as the first part of this section with the hopes of answering questions early and keeping customers running.

```

;-----
; A Simple Example Kestrel A-Series Configuration File
;-----
CPU          = A700  /Switches:200

VT100       = ASIC /SC:20

LegacyBus   = All

```

This configuration file sets the CPU to an HP 1000 A700 with CPU switches set to 200 (octal). A VT100 interface console is attached to an ASIC device configured at Select Code 20 (octal). Any required disk support is expected from the legacy bus devices.

```

;-----
; An Expanded Example Kestrel A-Series Configuration File
;-----
CPU          = A900  /Switches:204
EmuClock    = 7.5

Console     = StrobeVCP /Startup:Off

MemFile     = C:\Kestrel\RTE\asic_test.mem

LegacyBus   = All

WRQ /WinExec:'C:\Reflection\r1win.exe /n /s Kestrel.rlw' = ASIC /SC:20 /Vcp:On

```

This configuration file sets the CPU to an HP 1000 A900 with CPU switches set to 204 (octal) and the Kestrel clock speed to 7.5 (MHz). A Strobe VCP adjunct console is configured but is disabled on start-up. The initial memory image is loaded from file c:\kestrel\rte\asic_test.mem. All non-overridden devices on the legacy bus are enabled. A WRQ session is automatically launched (/WinExec:) and attached to a virtual ASIC device configured at Select Code 20 (octal). Any required disk support is expected from the legacy bus devices.

```

;-----
; A More Complex Example Kestrel 21MX Configuration File
;-----
;
; Configure the CPU options
;
CPU = 21MX-F /RPLVAL:001500 /Lock:On ; Define CPU and switches
Performance = 21MX-F ; Define CPU performance (speed)
;
; Configure the installed boot ROMs
;
BootROMs = HP12992B ; MAC 7905/7906/7920/7925 boot loader ROM
;
; Configure the Virtual Control Panel options
;
Console /Height:50 /Name:Console.txt = StrobeVCP /Startup:Run ; Set up VCP screen
RestoreOnHalt = Yes ; Restore and activate Strobe VCP when stopped
MinimizeOnRun = Yes ; Minimize Kestrel application when running
;
; Configure the virtual device emulations
;
Clock = TBG /SC:11 ; Configure a virtual TBG
File /Name:Images\RTE6FSYS.DISK /UnitName:"LU 2" = MAC /SC:12 /Unit:0 /Drive:7925
WRQ /WinExec:'C:\Reflection\rlwin.exe /n /s Console.rlw' = BACI /SC:13 /Baud:9600
;
; Configure the legacy bus devices
;
LegacyBus = 16 ; 5064-4913 Modem
LegacyBus = 17 ; 12661 DVS Program (Universal I/f)
LegacyBus = 20 ; 12566 Microcircuit (16-bit)
LegacyBus = 21 ; 59310 Bus I/O (HP-IB Instrument)
LegacyBus = 22 ; 59310 Bus I/O (HP-IB Instrument)
LegacyBus = 23 ; 12566 Microcircuit (16-bit)
LegacyBus = 25 ; 12566 Microcircuit (16-bit)

```

This configuration file sets the CPU to an HP 1000 21MX-F with the Lock switch in the 'On' position and the CPU RPL switches set to load the S register with 001500 (octal) during Remote Program Load. The Kestrel clock speed is set to approximately match the performance of a 21MX-F CPU.

The MAC (13037) 7905/7906/7920/7925 disk boot loader ROM is configured as the first (and only) boot ROM.

The Strobe VCP console is configured with a 50-line screen with capturing directed to the file named Console.txt. The Strobe VCP screen will be restored and activated whenever the Kestrel is stopped. The Kestrel application will be minimized whenever the Kestrel is running.

A virtual TBG (Time-Based Generator) card is configured at select code 11. A virtual MAC (13037) disk interface is configured at select code 12 and emulated using the container file named Images\RTE6FSYS.DISK. A virtual BACI (12966) interface (jumpered for a fixed 9600 baud rate) is configured at select code 13 and emulated by a WRQ session saved as Console.rlw.

The remaining configuration lines define the physical devices that are supported on the legacy bus. The seven listed devices (that had select codes 16, 17, 20, 21, 22, 23 and 25 in the original chassis) must be present in the given order in the first seven slots of the legacy bus chassis.

No support is provided for any other devices (select codes 10, 14, 15, 24 and 26-77).

Command Line

When the KESTREL.EXE program is invoked, the following options can be given on the command line:

/? or /H or /R	Display the command line help message, which includes the software revision number. The software revision number is also available by clicking the <i>Initialization Messages</i> entry on the <i>Window</i> menu or the <i>About</i> entry on the <i>Help</i> menu.
/A	Display a message box before shutting down when the Kestrel Shutdown instruction (.DOWN) is executed. See the AutoShutdownMessage general configuration command (page 17) for another way to enable display of this message box.
/B:boardname	Specify the Kestrel board name. The default is KESTREL0. See the BoardName general configuration command (page 17) for another way to specify the board name.
/C:filename	Specify the configuration file. The default is KESTREL.CNF.
/C:Pre:"configline"	Parse this configuration line before parsing the configuration file.
/C:Post:"configline"	Parse this configuration line after parsing the configuration file.
/D:varname=value	Specify the initial value for an environment variable for this Kestrel run. The specified value can be used and modified during configuration by use of the Set and SetDefault general configuration commands. See Appendix A (page 149) for details about setting and using environment variables.
/I	Force the Kestrel to start minimized (i.e., as an icon).
/K:key	Specifies the registry key under which the properties are stored. See Properties (page 135).
/M:filename	Specify the initial memory image. See the MemFile general configuration command (page 32) for another way to specify the initial memory image.
/N:filename	Specify the configuration file and registry key. See Properties (page 135). This option is equivalent to giving both the /C option and the /K option, where key is filename without drive, folder or extension.
/Q	Specify quiet startup mode, which will suppress the initial splash screen graphic. See the QuietMode general configuration command (page 36) for another way to specify quiet startup mode.
/T	Disable the <i>Shutdown and Restart</i> option on the <i>File</i> menu.
/U	Force the Kestrel to start hidden (i.e., invisible).

File Searching

The Kestrel software uses several support files. All Kestrel support files must reside in the same folder as KESTREL.EXE, the current folder, a folder listed in the KESTREL environment variable, or a folder listed in the PATH environment variable. The Kestrel searches directories in that order for its support files.

User-provided files (e.g., configuration files) must reside in the current folder, the same folder as the configuration file, the same folder as KESTREL.EXE, a folder listed in the KESTREL environment variable, or a folder listed in the PATH environment variable. The Kestrel searches directories in that order for user-provided files.

Configuration File

The Kestrel configuration file is an ASCII file that defines which PC devices are used to emulate HP 1000 minicomputer devices. The default configuration file name is KESTREL.CNF.

Blank lines and comments in the configuration file are ignored. A comment is defined as a semicolon (;) and anything that follows on the same line. Upper case and lower case are treated equally, except when contained within quotation marks. Tabs and spaces are treated equally, except when contained within quotation marks. At least one space or tab must separate each option or specifier from other options and specifiers.

The configuration file is scanned multiple times, so device configuration lines often do not need to be placed in a particular order. The early passes configure information that needs to be set up before the Kestrel board is initialized. Subsequent passes configure information that is required after the board is initialized. Device emulations are always configured on a single pass. Cases for which the configuration line order is significant are documented in the descriptions of the affected commands.

Configuration Line Formats

There are three different configuration line formats:

The first configuration line format, [General Configuration Commands](#) (page 16), is used to specify general Kestrel configuration information (e.g., the boot ROMs installed in a 21MX computer). General Configuration Commands have the form:

command-keyword = configuration-options

The second configuration line format, [Direct Device Configuration Commands](#) (page 49), is used to specify configuration information for HP 1000 device interfaces that support one type of physical peripheral (e.g., the 13037 MAC disk interface on a 21MX computer). Direct Device Configuration Commands are used to specify a direct connection between a virtual device emulation and a physical device interface. Direct Device Configuration Commands have the form:

```
physical-device-specifier = virtual-device-specifier
```

The third configuration line format, [Device Translation Configuration Commands](#) (page 52), is used to specify translation from a virtual device protocol (e.g., HP-IB) to a physical device protocol (e.g., for a Disk type physical device). Device Translation Configuration Commands have the form:

```
physical-device-specifier = translation-specifier = virtual-device-specifier
```

Each device is classified by its type (character, disk, tape, etc.). The physical and the virtual devices in a Direct Device Configuration Command must have the same type. For Device Translation Configuration Commands, the specified translator must provide the appropriate conversion between the types of the attached virtual and physical devices.

Most device specifiers may have additional configuration information. The format for such configuration options is:

```
specifier /option:value ...
```

Note that each /option:value must not contain any embedded white space (except within a quoted string) and must follow and be on the same side of an equal sign (=) as the specifier that it modifies. For example:

```
COM /Port:1 = ASIC /SC:20
```

specifies that PC serial port number 1 (i.e., COM1) is attached to the virtual HP 1000 ASIC device on select code 20 octal.

Quoted Strings

File names that contain spaces and are part of a specifier option must be specified using a quoted string. Apostrophes (') should be used unless the apostrophe character is required. Strings contained in apostrophes are copied directly, with no escape characters or special handling. For example:

```
WRQ /WinExec:'C:\Reflection\r1win.exe /n /s kestrel.r1w' = BACI /SC:13
```

Some strings may require characters that have special meaning in a Kestrel configuration file, such as semicolons. You must enclose the entire string in quotation marks (") if it contains one of these special characters. Within a string enclosed with quotation marks, all characters are copied exactly, except escape sequences. An escape sequence consists of a back slash (\) followed by one or more characters that define the actual character to be copied.

<u>Escape sequence</u>	<u>Octal</u>	<u>Inserts</u>
\\	134	Back slash (\)
\"	042	Quotation mark (")
\n	012	New line
\r	015	Carriage return
\t	010	Tab
\nnn	nnn	Octal value

It is not necessary to use a quoted string for [General Configuration Command](#) lines of the form:

```
keyword = filename
```

For example, the following three lines are functionally equivalent:

```
MemFile = C:\Program Files\Strobe Data\Kestrel\Kestrel.Mem
MemFile = 'C:\Program Files\Strobe Data\Kestrel\Kestrel.Mem'
MemFile = "C:\\Program Files\\Strobe Data\\Kestrel\\Kestrel.Mem"
```

Special Filename Characters

The names of files that are used for logging or character data capture can contain special character sequences that facilitate the creation of unique files each time the Kestrel is started. In such file names, an asterisk followed by a letter will be replaced by date or time information as follows: *d = day 01-31, *H is hour 00-23, *j is day of year 001-366, *m is month 01-12, *M is minute 00-59, *S is second 00-59, *y is the two digit year 00-99, and *Y is the four digit year.

Special Filename Extensions

The Kestrel installer program will, by default, register the .CNF and .KCNF extensions for use by the Kestrel. If you select such a file from the desktop or using Windows Explorer, Windows will automatically start the Kestrel using that configuration file. Although Kestrel configuration files can have any extension, we strongly recommend that configuration files use the .KCNF extension.

Kestrel logging and capture files are ASCII text files. As such, we strongly recommend that logging and capture files use the .TXT extension, which, by default, is associated with the Windows NotePad text file editor application.

The container file browse dialog boxes assume that disk, tape and cartridge tape container files have the .DISK, .TAPE and .CART file name extensions, respectively. Although container files can have any otherwise legal file name extension, we strongly recommend that container files use these file name extensions.

When it is enabled, the Windows XP System Restore Service monitors writes to files with many (over 600, mostly three character) extensions. Such files are invisibly copied and will later be restored if the user chooses to revert the Windows system to a previous restore point. The Windows System Restore Service is not intended to restore application data files, can introduce unexpected and/or deleterious delays when writing such files, and can cause corruption or data loss if such files are restored. For this reason, the Kestrel by default prohibits using data files (e.g., container files) that would be monitored by the Windows System Restore Service. Should the Kestrel prohibit the use of a file name that would imply monitoring by the Windows System Restore Service, we strongly recommend that you change file name extension to one of the approved ones mentioned above.

Time Value Units

When a configuration file command or option requires a time value, the value may be given with one of the following time unit suffixes: us, ms, s or m (microseconds, milliseconds, seconds or minutes, respectively). The effective, scaled value must be within the valid range when expressed in the default time unit for the command or option. If no unit suffix is given, the assumed time unit is the default time unit as described for the command or option. If a time unit is given that is smaller than the default time unit for the command or option, the effective value is truncated toward zero rather than rounded. For example, the default time unit for the MessageDisplayMinimum command is milliseconds, so:

```
MessageDisplayMinimum = 2s ; Show messages for at least 2000 ms
MessageDisplayMinimum = 2500 ; Show messages for at least 2500 ms
MessageDisplayMinimum = 2345678us ; Show messages for at least 2345 ms
```

Special Configuration File Features

Several features exist to facilitate the creation of more complex Kestrel configuration files. Some of these features are:

1. The ability to include a separate configuration file as if its lines were a part of the current configuration file.
2. The ability to include or exclude configuration file lines based on conditions determined at the time the Kestrel is started.
3. The ability to define and/or use environment variables.

For details about how to use these features, see [Appendix A](#) (page 149).

General Configuration Commands

<p>AllowSmallFrame If Yes is specified, the Kestrel frame (application) window may be made as small as allowed by Windows; otherwise, the Kestrel frame window must be big enough to show the entire status/control line.</p> <p><u>AllowSmallFrame = Yes</u></p>	<p>= { Yes No } The default is No.</p>
<p>AllowSystemRestoreFiles If Yes is specified, the Kestrel will permit access to files that are monitored and backed-up by the Windows XP System Restore service.</p> <p><u>AllowSystemRestoreFiles = Yes</u></p>	<p>= { Yes No } The default is No.</p> <p>Warning: If Yes is specified and a you later restore to a Windows XP System Restore point, files that the Windows XP System Restore service has been monitoring will revert to their state at the time of the selected restore point, possibly corrupting your HP 1000 system.</p>

<p>AutoShutdownMessage If Yes is specified, the Kestrel will display a message box before shutting down when the Kestrel Shutdown instruction is executed.</p> <p><u>AutoShutdownMessage = Yes</u></p>	<p>= {Yes No}</p> <p>The default is No.</p> <p>See the ShutDown command (page 40) for how to configure the Kestrel Shutdown instruction.</p> <p>See the /A command line option (page 11) for another way to enable display of this message box.</p>
<p>BaseYear Specifies how the time-of-day clock determines the century.</p> <p><u>BaseYear = 1970</u></p>	<p>= {RTE yyyy}</p> <p>The default is RTE.</p> <p>With <u>BaseYear = RTE</u>, the Time-of-Day Clock logic assumes that clock register 1 is used to store the century part of the year (this is what the RTE CLOCK.RUN program does). With <u>BaseYear = yyyy</u> configured (where yyyy is a four digit year in the interval from 99 years ago to this year), the actual year is assumed to be in the interval from yyyy to yyyy+99 (as determined by clock register 9).</p>
<p>BoardName Specifies the name of the Kestrel device to use.</p> <p><u>BoardName = Kestrel1</u></p>	<p>= Kestrel device name.</p> <p>The default is Kestrel0.</p> <p>See the /B command line option (page 11) for another way to set BoardName.</p>

<p>BootROMs ^(21MX)</p> <p>Specifies the boot ROMs that are installed in the 21MX computer.</p> <p><u>BootROMs = HP12992B HP12992J</u> <u>BootROMs = None HP91740</u> <u>BootROMs = HP12992B ; MAC disk</u></p>	<p>= {None HP12992A HP12992B HP12992C HP12992D HP12992E HP12992F HP12992H HP12992J HP12992K HP12992L HP91740 HP91750 50812361 SDI12992D} ^(21MX)</p> <p>The default is None for all four boot ROMs sockets.</p> <p>Up to four boot ROM file names may be specified. See Appendix B (page 155) for more information. Boot ROMs are used by the IBL and RPL functions. The keyword None may be used as a placeholder to indicate a vacant boot ROMs socket.</p> <p>More than one boot ROM file selection may be given on a single BootROMs configuration command line.</p> <p>More than one BootROMs configuration line may be given, in which case the order is significant. When used with comments, this facilitates documenting the installed BootROMs options.</p>
--	---

<p>BootString ^(A-series)</p> <p>Specifies a string to write into the VCP boot string area of the time-of-day clock non-volatile RAM. Alphabetic characters in the given string will be converted to upper case and all blank characters will be removed.</p> <p><u>BootString = DC5033</u></p>	<p>= string</p> <p>The default is to leave the VCP boot string area of the time-of-day clock non-volatile RAM unchanged.</p> <p>The given string must not contain more than 30 non-blank characters.</p> <p>This command is legal only if a time-of-day clock is configured. A time-of-day clock is standard for the A990 CPU, but optional for all other CPUs. See the FirmwareROMs command (page 27) for information about how to configure a time-of-day clock for a CPU other than the A990.</p>
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<p>BreakPoint Specifies the instruction to be used as the breakpoint instruction by the Strobe VCP.</p> <p><u>BreakPoint = 100720</u></p>	<p>= {opcode None} The default is 101717 (octal).</p> <p>The given octal opcode must correspond to an undefined Extended Instruction Group instruction. If None is specified, a Strobe VCP breakpoint instruction is not configured.</p>
<p>DefColor Changes the colors of characters displayed on VT100 and Console screens.</p> <p><u>DefColor = 13 D5CCBB FF0000 00FFFF</u></p>	<p>= ColorIndex rgb0 [rgb1 [rgb2]] See Appendix D (page 163) for details on changing colors and attributes.</p>
<p>Defphurb Changes the attributes of characters displayed on VT100 and Console screens.</p> <p><u>Defphurb = 01100 3 0 /Underline:On</u></p>	<p>= phurb fgcidx bgcidx [/Underline:{On Off}] See Appendix D (page 163) for details on changing colors and attributes.</p>

<p>Delay</p> <p>Specifies that the Kestrel should delay the indicated time interval during the specified Kestrel configuration passes. This command can be used to allow sufficient time for a third-party application to start up before the Kestrel completes its configuration (initialization).</p> <p><u>Delay = 10000</u> <u>Delay = /Pass:Post 2000</u> <u>Delay = /Pass:3 = 2s</u></p>	<p>= [options] {0-65535}</p> <p>The default delay is 0 (i.e., no delay). Specify a number of milliseconds.</p> <p>The options may be omitted or may be /Pass followed by one or more of the listed values, separated by commas: {First File Pre Device Post Last All 1-7} The default is the same as /Pass:Last.</p> <p>The configuration file is scanned seven times during the course of Kestrel start up. The mnemonics and/or numeric values following the /Pass option indicate on which configuration file pass the Delay command is processed. The following are equivalent:</p> <p>/Pass:First and /Pass:1 /Pass:File and /Pass:2 /Pass:Pre and /Pass:4 /Pass:Device and /Pass:5 /Pass:Post and /Pass:6 /Pass:Last and /Pass:7 /Pass:All and /Pass:1,2,3,4,5,6,7</p>
<p>DemoReminderDisplay</p> <p>Enables or disables the display of a message box that periodically reminds the user of the remaining execution time for a Kestrel demo board. This command is ignored for a production Kestrel board.</p> <p><u>DemoReminderDisplay = No</u></p>	<p>= {Yes No}</p> <p>The default is Yes.</p> <p>Warning: disabling the periodic reminder messages by specifying <u>DemoReminderDisplay = No</u> does not allow a demo Kestrel board to exceed its predetermined execution limit.</p>

<p>DemoReminderInitial Enables or disables the display of a message box during start-up that reminds the user of the remaining execution time for a Kestrel demo board. This command is ignored for a production Kestrel board.</p> <p><u>DemoReminderInitial = No</u></p>	<p>= {Yes No}</p> <p>The default is Yes.</p> <p>Warning: disabling the initial reminder message by specifying <u>DemoReminderInitial = No</u> does not allow a demo Kestrel board to exceed its predetermined execution limit.</p>
<p>DemoReminderTitle Enables or disables the display of the remaining execution time for a Kestrel demo board in the title line. This command is ignored for a production Kestrel board.</p> <p><u>DemoReminderTitle = No</u></p>	<p>= {Yes No}</p> <p>The default is Yes.</p> <p>Warning: disabling the remaining execution time in the title line by specifying <u>DemoReminderTitle = No</u> does not allow a demo Kestrel board to exceed its predetermined execution limit.</p>
<p>DiskFilesFolder Specifies the default folder in which disk image container files reside.</p> <p>If the DiskFilesFolder command is given, then the named folder is where the File (page 91) and MEM (page 94) physical disk devices will look for disk container files specified by the /Name option, provided that the specified container file name does not include a drive letter or an absolute path.</p> <p><u>DiskFilesFolder = C:\DiskImages</u></p>	<p>= A folder name</p> <p>The default is the folder from which the Kestrel was started.</p>

<p>DmpFile Specifies the name of the information dump file to create on fatal error terminations. This file is copied from the file specified by the RunFile command (page 37) on a fatal error termination.</p> <p>See Special Filename Characters (page 14) for information on how to create a unique DmpFile on each Kestrel start-up.</p> <p><u>DmpFile = ANOTHER.DMP</u></p>	<p>= A file name or OFF</p> <p>The default is KESTREL.DMP.</p> <p>If you specify <u>DmpFile = Off</u>, then no information dump file will be created on fatal error termination.</p>
<p>DumpCompressed Specifies whether the “Dump Compressed” control is checked when the “Dump Memory Image(s)” dialog is first accessed.</p> <p><u>DumpCompressed = No</u></p>	<p>= {Yes No}</p> <p>The default is Yes.</p> <p>This value will be superceded by checking or unchecking the “Dump Compressed” control on the “Dump Memory Image(s)” dialog.</p>
<p>DumpEmuSize Specifies the default number of 1KB emulation memory blocks that the “Dump Memory Image(s)” dialog will dump.</p> <p><u>DumpEmuSize = 2048</u></p>	<p>= {Maximum 0-4096}</p> <p>The default is Maximum.</p> <p>This value will be superceded by any number entered for this value on the “Dump Memory Image(s)” dialog.</p>

<p>DumpFilename Specifies the initial root name of the files that will be created by the “Dump Memory Image(s)” dialog.</p> <p><u>DumpFilename = SomeName</u></p>	<p>= A file name</p> <p>The default is the root name of the file specified by the MemFile (page 32) configuration command if one is given; otherwise, the default is the root name of the configuration file.</p> <p>If the specified file name contains a full path, then this path overrides any folder specified by the DumpFolder (page 23) configuration command. If the specified file name contains a partial path, then this partial path is appended to any folder specified by the DumpFolder (page 23) configuration command.</p> <p>This value will be superceded by any file name entered on the “Dump Memory Image(s)” dialog.</p>
<p>DumpFolder Specifies the initial name of the folder in which the “Dump Memory Image(s)” dialog will create files.</p> <p><u>DumpFolder = C:\Temp</u></p>	<p>= A folder name</p> <p>The default is none, in which case Windows will determine a default folder for memory image dump files.</p> <p>See also the DumpFilename (page 23) configuration command.</p> <p>This value will be superceded the last folder referenced on the “Dump Memory Image(s)” dialog box.</p>
<p>DumpUncompressed Specifies whether the “Dump Uncompressed” control is checked when the “Dump Memory Image(s)” dialog is first accessed.</p> <p><u>DumpUncompressed = Yes</u></p>	<p>= { Yes No }</p> <p>The default is No.</p> <p>This value will be superceded by checking or unchecking the “Dump Uncompressed” control on the “Dump Memory Image(s)” dialog.</p>

<p>DumpX86Size Specifies the default number of 1KB X86 memory blocks that the “Dump Memory Image(s)” dialog will dump.</p> <p><u>DumpX86Size = 64</u></p>	<p>= {Maximum 0-2048} The default is Maximum.</p> <p>Maximum is the maximum legal value and depends on the amount of X86 memory installed on the Kestrel coprocessor card.</p> <p>This value will be superceded by any number entered for this value on the “Dump Memory Image(s)” dialog.</p>
<p>EditCommand Specifies the program used to edit the configuration file.</p> <p><u>EditCommand = 'Wordpad %s'</u></p>	<p>= 'program [%s [%u [%u]]] ' The default is 'NOTEPAD %s'.</p> <p>The %s is replaced by the configuration file name. The first %u, if given, will be replaced by a line number. The second %u, if given, will be replaced by a character number.</p>

<p>EmuClock</p> <p>Specifies the emulation clock rate in megahertz.</p> <p><u>EmuClock = 10.9227</u></p>	<p>= {Default Maximum 0.0625-16.750}</p> <p>The default is Default, the value of which depends on the product option purchased.</p> <p>The value Maximum selects the highest legal clock rate for the product option purchased. A numeric value must be a real number in the indicated range; however, the given value cannot exceed Maximum.</p> <p>See the Performance command (page 35) for another way to set the emulation clock rate.</p> <p>If both X86Clock and EmuClock values are configured, these values must satisfy the equation: $X86Clock/EmuClock=N$, where N is either an integer in the range 2-33 or is an integer divisible by 8 and in the range 40-256.</p> <p>See also the X86Clock command (page 47).</p>
<p>EnableMenu</p> <p>Overrides the initial setting for the Enable Menu check box on the <i>Enable Menu</i> dialog box. See Kestrel Menus (page 135). On forces the check box to be checked; Off, forces the check box to be unchecked.</p> <p><u>EnableMenu = On</u></p>	<p>= {On Off}</p> <p>The default is to use the last Enable Menu check box on the <i>Enable Menu</i> dialog box (see Kestrel Menus, page 135), or On for the first execution of Kestrel.</p>

<p>EnglishErrorText</p> <p>If No is specified, the Kestrel will first attempt to display all operating system error messages in the default system language, then in English; otherwise, the Kestrel will first attempt to display all operating system error messages in English, then in the default system language.</p> <p><u>EnglishErrorText = No</u></p>	<p>= {Yes No}</p> <p>The default is Yes.</p>
<p>Error</p> <p>Specifies that a user-requested configuration error be reported on this configuration file line. This command normally is used with either the .IF or .IFL conditional configuration statement to report an unhandled condition state.</p> <p><u>Error = Unexpected Config Error</u></p>	<p>= text</p> <p>There is no default.</p> <p>The following text has no significance other than that it is included as part of the reported configuration error message.</p>
<p>FatalVCPError ^(A-series)</p> <p>If Yes is configured, the Kestrel will treat all VCP device initialization errors as fatal errors. If No is configured, the Kestrel VCP will indicate any initialization errors in the same manner as the HP 1000 VCP.</p> <p><u>FatalVCPError = No</u></p>	<p>= {Yes No}</p> <p>The default is Yes.</p> <p>VCP device initialization errors usually indicate a device interface card failure or a bus configuration error. See Appendix E (page 165) for a description of the possible Kestrel VCP fatal device initialization errors.</p>

<p>FirmwareROMs Specifies additional firmware ROMs to be installed in the Kestrel computer.</p> <p><u>FirmwareROMs = *RTE6OS *RTE6VMA</u> <u>FirmwareROMs = DTS70</u> <u>FirmwareROMs = DS1000</u> <u>FirmwareROMs = CPUID CLOCK SPEED</u> <u>FirmwareROMs = *STACK 100140</u></p>	<p>= Romname[Opcode] ...</p> <p>Romname specifies one of a set of available firmware expansion modules. Opcode specifies the first instruction opcode for which support is to be added. If Opcode is not given, the named firmware expansion module is installed at its default opcode location. See Appendix F (page 167) for a list of the configurable firmware ROMs.</p> <p>More than one firmware expansion module may be given on a single FirmwareROMs configuration command line, in which case the order is not significant.</p> <p>More than one FirmwareROMs configuration command may be given, in which case the order is not significant. When used with comments, this facilitates documenting the firmware ROMs that are installed in the Kestrel computer.</p>
<p>HaltedConsoleInput Determines whether keyboard input is permitted to a VT100 screen emulation window while the Kestrel processor is halted.</p> <p><u>HaltedConsoleInput = Yes</u></p>	<p>= {Yes No}</p> <p>The default is No.</p>
<p>HideOnRun If Yes is specified, then the Kestrel application will become the bottom screen window whenever the Kestrel processor starts running.</p> <p><u>HideOnRun = Yes</u></p>	<p>= {Yes No}</p> <p>The default is No.</p> <p>See also the MinimizeOnRun configuration command (page 33).</p>

<p>HidePleaseWait If Yes is specified, then the various 'Please Wait' information message boxes will not appear.</p> <p><u>HidePleaseWait = Yes</u></p>	<p>= { Yes No } The default is No.</p>
<p>HideWhenMinimized Determines whether the Kestrel icon appears in the task bar when its frame window is minimized.</p> <p><u>HideWhenMinimized = Yes</u></p>	<p>= { Yes No } The default is No.</p> <p>When Yes is specified, the Kestrel icon does not appear in the task bar when its frame window is minimized.</p>
<p>InitStepDelay Specifies the minimum time between consecutive initialization messages.</p> <p><u>InitStepDelay = 100</u></p>	<p>= { 0-10000 } The default is 0 (no delay).</p> <p>Specify a number of milliseconds.</p>
<p>KestrelActivate Specifies whether the Kestrel should become the active Windows application whenever notification of a critical state change is required.</p> <p><u>KestrelActivate = No</u></p>	<p>= { Yes No } The default is Yes.</p>
<p>KestrelIdentify Determines the behavior of the 106303 opcode (SFS 3) instruction. When Yes is specified, the 106303 opcode (SFS 3) can be used to detect if a program is executing on an actual HP 1000 or on a Kestrel.</p> <p><u>KestrelIdentify = Yes</u></p>	<p>= { Yes No } The default is No.</p> <p>If Yes is specified, this instruction will always skip; otherwise, this instruction (which is a privileged NOP on all HP 1000 CPUs) will execute in the standard fashion.</p>

<p>LampColors</p> <p>Specifies the colors to use when displaying the front panel LEDs.</p> <p><u>LampColors = Orange Black</u> <u>LampColors = Red on BtnFace</u> <u>LampColors = Salmon on Wheat</u> <u>LampColors = FF0000 D5CCBB</u></p>	<p>= onrgb [[On] offrgb]</p> <p>The default LED colors are White on Black.</p> <p>The (up to) two colors specify the On (onrgb) and Off (offrgb) lamp colors. The first value specifies the color of ‘on’ LEDs; the second value, if given, specifies the color of ‘off’ LEDs.</p> <p>Each color value may be given as Default, a Standard Color Name (page 171), a Windows System Color Name (page 174), or as a six-digit hexadecimal number. See Appendix G (page 171). The six-digit hexadecimal numbers are in standard Windows RRGGBB format where the RR, GG, and BB specify the red, green and blue color intensities.</p>
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<p>LegacyBus ^(2IMX) Specifies the legacy bus devices configuration.</p> <p><u>LegacyBus = None</u> <u>LegacyBus = 11 13 15 Jump 21</u> <u>LegacyBus = 12 ; BACI</u> <u>LegacyBus = 15 ; MAC Disk</u> <u>LegacyBus = 34-37 ; Printers</u> <u>LegacyBus = 40 ...</u></p>	<p>= {None Off Jump sc sc₁-sc_n ...} ... The default is None.</p> <p>These legacy bus device configuration options are described below:</p> <p>{None Off} Specifies that the Kestrel does not use the legacy bus at all. When given, None or Off must be the only token.</p> <p>Jump Specifies that the next slot in the legacy bus chassis will not be used. Note that a jumper card or some other legacy bus interface card must still be installed in this slot to provide signal continuity for the priority chain.</p> <p>sc Specifies the original bus octal select code of the device plugged into the next legacy bus chassis slot.</p> <p>sc₁-sc_n Specifies the original bus octal select codes (consecutive select codes from sc₁ through sc_n, inclusive) of the devices plugged into the next n legacy bus chassis slots.</p> <p>... Specifies that all bus select codes following the last one given are assigned to the remaining legacy bus chassis slots.</p> <p>To maintain the original interrupt priority order, devices must be plugged into the legacy bus chassis in the same physical order that they had in the original bus chassis; therefore, the select codes must be given in numerically ascending order.</p> <p>Multiple LegacyBus configuration lines may be given, in which case the order is significant. When used with comments, this facilitates documenting the configured LegacyBus devices.</p>
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<p>LegacyBus ^(A-series)</p> <p>Specifies the legacy bus devices configuration.</p> <p><u>LegacyBus = None</u> <u>LegacyBus = All</u> <u>LegacyBus = Except 20</u> <u>LegacyBus = All Require 26</u> <u>LegacyBus = All 26</u></p>	<p>= {None Off All Require Except sc} ... The default is None.</p> <p>These legacy bus device configuration options are described below:</p> <p>{None Off} Specifies that the Kestrel does not use the legacy bus. When given, None or Off must be the only token.</p> <p>All Configures all legacy bus devices found, except for those that have select codes claimed by virtual devices in the configuration file (which take precedence). When given, All must be the first token.</p> <p>Require All select codes that follow Require must exist on the legacy bus.</p> <p>Except All select codes that follow Except will be ignored on the legacy bus. Except implies All.</p> <p>sc Specifies an octal bus select code that follows the Require token (is required) or the Except token (is ignored).</p> <p>At most, one LegacyBus configuration line may be given; therefore, multiple options must be given on a single LegacyBus configuration line.</p>
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<p>LegacyBusExtension ^(A-series) Specifies extended legacy bus timing required to support an expansion bus connected by the HP 12025-60001 and HP 12025-60002 Bus Extender cards.</p> <p><u>LegacyBusExtension = Single</u> <u>LegacyBusExtension = 12</u></p>	<p>= {None Single 0-31} The default is None.</p> <p>The value None is equivalent to 0 and indicates standard legacy bus timing without bus extension. The value Single indicates the minimum number of additional wait intervals required to support a single bus extension chassis. A numeric value specifies the number of wait intervals to delay before indicating no I/O response from a legacy bus device.</p>
<p>MaximizeOnHalt If Yes is specified, whenever the Kestrel processor enters the Strobe VCP, the Kestrel window is maximized and made the topmost window. When the Kestrel processor exits the Strobe VCP, the Kestrel window returns to the non-maximized state.</p> <p><u>MaximizeOnHalt = Yes</u></p>	<p>= {Yes No} The default is No.</p> <p>See also the RestoreOnHalt (page 36) general configuration command.</p>
<p>MemFile Specifies the initial contents of the emulation processor memory.</p> <p><u>MemFile = ANOTHER.MEM</u></p>	<p>= A file name There is no default: if MemFile is not specified, the initial contents of the emulation processor memory are zeroed.</p> <p>See the /M command line option (page 11) for another way to specify the initial memory image.</p>
<p>MessageDisplayDelay Specifies the millisecond time interval to wait before displaying a “Please Wait ...” message box.</p> <p><u>MessageDisplayDelay = 1000</u></p>	<p>= {Default None 0-10000} The default is Default (which is currently 250 milliseconds).</p> <p>Specifying None is the same as specifying 0, which means do not delay before displaying a “Please Wait ...” message box.</p>

<p>MessageDisplayMinimum Specifies the minimum millisecond time interval for which a “Please Wait ...” message box will be displayed.</p> <p><u>MessageDisplayMinimum = 2000</u></p>	<p>= {Default None 0-10000}</p> <p>The default is Default (which is currently 1000 milliseconds).</p> <p>Specifying None is the same as specifying 0, which means do not delay before removing a “Please Wait ...” message box.</p>
<p>MinimizeInactiveVCP If Yes is specified, then whenever the Strobe VCP exits, its window is minimized.</p> <p><u>MinimizeInactiveVCP = No</u></p>	<p>= {Yes No}</p> <p>The default is Yes.</p>
<p>MinimizeOnRun If Yes is specified, the Kestrel application window will be minimized whenever the Kestrel processor starts running.</p> <p><u>MinimizeOnRun = Yes</u></p>	<p>= {Yes No}</p> <p>The default is No.</p> <p>See also the HideOnRun (page 27) configuration command.</p>

<p>NextVar</p> <p>Specifies the name of an environment variable that will be assigned the next value from a given list. Each time the Kestrel is started, the named environment variable is set to the next value, taken cyclically, from the list specified by the method option. The named environment variable should occur in no more than one NextVar command.</p> <p>See Appendix A (page 149) for a description of how to set and use environment variables in Kestrel configuration files.</p> <p>The index of the current entry in the specified value list is saved (with the other Kestrel properties) in the Windows registry. See Command Line (page 11) and Properties (page 135) for more information.</p> <p><u>NextVar = Cycle</u> <u>NextVar = N /Count:100</u> <u>NextVar = Port /Range:7000-7099</u> <u>NextVar = Which /Chars:abcde</u> <u>NextVar = JGG /Words:Fe,Fi,Fo,Fum</u></p>	<p>= variable [method]</p> <p>Where variable is a string consisting of letters, numbers and/or underscore (_) characters that specifies the name of an environment variable. There is no default variable name – it must be given.</p> <p>The method option may be omitted (in which case the default method is /Count:10) or may be one of the following:</p> <p>/Count:{1-4294967295} The named environment variable is assigned the next number, starting with 0 and running up to, but not including the specified value.</p> <p>/Range:{0-4294967295}-{0-4294967295} The named environment variable is assigned the next number, starting with the first number and running up to and including the second number. The second number must be no less than the first number.</p> <p>/Chars:string The named environment variable is assigned the next character from the specified string of one or more characters.</p> <p>/Words:list The named environment variable is assigned the next word from the specified list of one or more words separated by commas.</p>
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<p>PasteDelays Specifies the millisecond delay between characters when the <i>Paste</i> entry is selected from the Kestrel <i>Edit</i> menu.</p> <p><u>PasteDelays = 50 500</u></p>	<p>= {0-1000} [{0-10000}] The default is 10 100.</p> <p>The first number specifies the number of milliseconds to delay between characters. The second number, if given, specifies the number of milliseconds to delay after a carriage return.</p>
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<p>Performance Overrides the default performance by setting the emulation clock rate.</p> <p><u>Performance = A400 /Factor:2</u></p>	<p>= {Default Maximum 2114 2115 2116 2100 21MX-M 21MX-E 21MX-F A400 A600 A600+ A700 A900 A990} [/Factor:x] The default is Default, the value of which depends on the product option purchased.</p> <p>This command specifies the CPU speed of the Kestrel.</p> <p>You may specify /Factor to adjust the base rate of the CPU, but the specified performance factor cannot require a speed that lies outside the valid range for the product option purchased. /Factor cannot be given with Default or Maximum.</p> <p>See the EmuClock command (page 25) for another way to set the emulation clock rate.</p>
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<p>PriorityClass Specifies the process priority in the Windows task manager.</p> <p><u>PriorityClass = Normal</u></p>	<p>= {Default Idle Low BelowNormal^(2K, XP) Normal AboveNormal^(2K, XP) High RealTime} The default is Default, which is equivalent to AboveNormal^(2K, XP) or High^(NT).</p> <p>Idle and Low are synonyms.</p> <p>Warning: Setting the process priority to RealTime may disable the Windows task manager. Setting the process priority to Low may result in Kestrel failures caused by CPU cycle starvation.</p>
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<p>QuietMode Inhibits the splash screen.</p> <p><u>QuietMode = On</u></p>	<p>= {On Off}</p> <p>The default is Off.</p> <p>See the /Q command line option (page 11) for another way to set QuietMode.</p>
<p>RestoreOnHalt If Yes, restore the Kestrel screen from a minimized state and make it the top window whenever the Kestrel processor stops.</p> <p><u>RestoreOnHalt = Yes</u></p>	<p>= {Yes No}</p> <p>The default is Yes.</p> <p>See also the MaximizeOnHalt (page 32) general configuration command.</p>
<p>RteCpuColors Specifies the colors to use when displaying the RTE CPU utilization status line control.</p> <p><u>RteCpuColors = Red</u> <u>RteCpuColors = White Black</u> <u>RteCpuColors = Blue on BtnFace</u> <u>RteCpuColors = Salmon on Wheat</u> <u>RteCpuColors = Red White Blue</u> <u>RteCpuColors = Red Pink Default</u> <u>RteCpuColors = 00FFFF 000000</u></p>	<p>= fgrgb [[On] bgrgb [[On] scrgb]]</p> <p>The default RTE CPU utilization status line control colors are, in order, Green, BtnFace, and a color that contrasts the most with both the foreground and the background colors.</p> <p>The (up to) three colors specify the foreground (fgrgb), background (bgrgb) and scale tick mark (scrgb) colors of the RTE CPU utilization status line control. Each color value may be given as Default, a Standard Color Name (page 171), a Windows System Color Name (page 174), or as a six-digit hexadecimal number. See Appendix G (page 171). The six-digit hexadecimal numbers are in standard Windows RRGGBB format, where RR, GG, and BB specify the red, green and blue color intensities, respectively.</p>

<p>RteCpuWeight Specifies the time interval (given in milliseconds) over which RTE CPU utilization is averaged for display.</p> <p>(A-Series) The RTE CPU utilization measurement is only valid when RTE-A is running.</p> <p>(21MX) The RTE CPU utilization measurement is only valid when the CUWFI program is running under RTE as a lowest priority background task.</p> <p><u>RteCpuWeight = 100</u></p>	<p>= {0-60000}</p> <p>The default is 0.</p> <p>Specify a number of milliseconds. If this value is 0, then RTE CPU utilization is not measured and the associated status line control is not displayed. If this weight value is non-zero, then the running RTE CPU utilization value is averaged over the specified time interval. Therefore, if this value is 1, the status line control shows the instantaneous RTE CPU utilization, and larger values provide more smoothing.</p>
<p>RteCpuWidth Specifies the width, in pixels, of the RTE CPU utilization status line control.</p> <p><u>RteCpuWidth = 200</u></p>	<p>= {0-32767}</p> <p>The default is 0.</p> <p>If this value is zero, then the RTE utilization control will fill the available space on the status line. If this value is non-zero, then it specifies the fixed screen pixel width of the RTE CPU utilization control. A non-zero value will be reduced to fit the pixel width of the Windows desktop.</p>
<p>RunFile Specifies the name of the informational output file to create for each run of the Kestrel. This file is copied to the file specified by the DmpFile command (page 22) on a fatal error termination. See Special Filename Characters (page 14) for information on how to create a unique RunFile on each Kestrel start-up.</p> <p><u>RunFile = ANOTHER.RUN</u></p>	<p>= A file name or Off</p> <p>The default is KESTREL.RUN.</p> <p>If you specify Off, which means do not create an informational output file, you must also give the <u>DmpFile = Off</u> command. See also the DmpFile command (page 22).</p>

<p>RxDelayDefault Specifies the default value for all virtual devices that accept the /RxDelay option.</p> <p><u>RxDelayDefault = 1042</u></p>	<p>= {0-1000000}</p> <p>The default is 0.</p>
<p>ScreenSaverInhibit Inhibits activation of the Windows screen saver. Warning: Allowing the Windows screen saver to activate may have an adverse affect on the Kestrel.</p> <p><u>ScreenSaverInhibit = No</u></p>	<p>= {Yes No}</p> <p>The default is Yes.</p> <p>If you specify No, the Windows screen saver may activate after the configured idle time interval.</p>

<p>Show</p> <p>Specifies that the following text should be added to the Initialization Messages dialog box and to the file specified by the RunFile command (page 37). This command normally is used with either the .IF or .IFL conditional configuration statement to report an handled condition state or with an environment variable to show its current value.</p> <pre> <u>Show = [%PROCESSOR_IDENTIFIER%]</u> <u>Show = /Pass:Device Start LU7</u> <u>Show = /Pass:File User=%USERNAME%</u> <u>Show = /Pass:1,3,5,7 Got Here!</u> </pre>	<p>= [options] text</p> <p>Where text is any message.</p> <p>The options may be omitted or may be /Pass followed by one or more of the listed values, separated by commas: {First File Pre Device Post Last All 1-7} The default is the same as /Pass:Last, which means the message will be displayed at end of the Initialization Messages dialog box and at the end of the file specified by the RunFile command (page 37).</p> <p>The configuration file is scanned seven times during the course of Kestrel start up. The mnemonics and numeric values following the /Pass option indicate on which configuration file pass the Show command is processed. The following are equivalent:</p> <pre> /Pass:First and /Pass:1 /Pass:File and /Pass:2 /Pass:Pre and /Pass:4 /Pass:Device and /Pass:5 /Pass:Post and /Pass:6 /Pass:Last and /Pass:7 /Pass:All and /Pass:1,2,3,4,5,6,7 </pre> <p>Note: /Pass:First will not write the text message to the file specified by the RunFile command, because the RunFile command is processed on configuration pass 1 and the informational output file is created and opened after configuration pass 1 is finished.</p>
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<p>ShutDown Specifies the instruction to use as the Kestrel shutdown instruction.</p> <p><u>ShutDown = 100727</u></p>	<p>= {opcode None} The default is 105717.</p> <p>The given octal opcode must correspond to an undefined Extended Instruction Group instruction. If None is specified, a shutdown instruction is not configured.</p>
<p>SplashActivate Specifies whether the splash graphic should be made the top window and activated regularly during Kestrel initialization.</p> <p><u>SplashActivate = No</u></p>	<p>= {Yes No} The default is Yes.</p>
<p>SplashBorder Specifies whether a border is drawn around the splash graphic.</p> <p><u>SplashBorder = No</u></p>	<p>= {Yes No} The default is Yes.</p>
<p>SplashGraphic Specifies the .BMP file graphic to use for the splash screen. The BMP file graphic may be of any size.</p> <p><u>SplashGraphic = Company.BMP</u></p>	<p>= A file name The default is KESTREL.BMP.</p>
<p>SplashInterval Specifies the minimum millisecond time interval that the splash screen will be displayed.</p> <p><u>SplashInterval = 4000</u></p>	<p>= {Default 1-60000} The default is Default (which is currently 2000 milliseconds).</p>

<p>TapeFilesFolder Specifies the default folder in which tape image container files reside.</p> <p>If the TapeFilesFolder command is given, then the named folder is where the TPF (page 111) and CTD (page 58) physical tape device will look for tape container files specified by the /Name option, provided that the specified tape container file name does not include a drive letter or an absolute path.</p> <p><u>TapeFilesFolder = C:\TapeImages</u></p>	<p>= A folder name</p> <p>The default is the folder from which the Kestrel was started.</p>
<p>Title Specifies the text in the title line of the Kestrel application window.</p> <p><u>Title = Acme Mail Order Widgets</u></p>	<p>= text</p> <p>The default is Kestrel followed by the name of the configuration file in square brackets.</p>
<p>TelnetTimeoutDefault Specifies the default maximum time that Telnet units on a specific TCP/IP port should wait for data.</p> <p><u>TelnetTimeoutDefault = 2500</u> <u>TelnetTimeoutDefault = 2ms</u></p>	<p>= {1-4294967295}</p> <p>The default is 1000 microseconds.</p> <p>This value is used only if the /Timeout option is not given for any configured Telnet unit on a specific TCP/IP port.</p> <p>See also the Telnet (page 72) physical character device /Timeout option.</p>

<p>TockCounter</p> <p>Specifies the value for the X86 Tock counter, which determines the X86 Tock interval.</p> <p>See also the TockInterval (page 43) general configuration command.</p> <p>The Kestrel board CTRL firmware must be at least version 9 to configure this command.</p> <p>TockCounter and TockInterval are related by the formula: $TockInterval = TockCounter / X86Clock$</p> <p><u>TockCounter = 5760</u></p>	<p>= {Maximum 4098-8192}</p> <p>For a Kestrel board with control firmware revision 9 or higher, the default is equivalent to specifying <code>TockInterval = 200 /Adjust:Closest</code></p> <p>For a Kestrel board with control firmware revision prior to revision 9, the default is equivalent to specifying <code>TockInterval = Maximum /Adjust:None</code></p> <p>A given value must be an even integer in the indicated range.</p> <p>See also the TockInterval (page 43) general configuration command.</p> <p>The TockCounter and TockInterval configuration commands provide alternate methods of specifying the X86 Tock counter and interval; the last such command given will apply.</p>
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<p>TockInterval</p> <p>Specifies the value for the X86 Tock time interval, which determines the X86 Tock counter value.</p> <p>See also the TockCounter (page 42) general configuration command.</p> <p>The Kestrel board CTRL firmware must be at least version 9 to configure this command.</p> <p>TockInterval and TockCounter are related by the formula: $TockCounter = TockInterval * X86Clock$</p> <p><u>TockInterval = 250 /Adjust:Lower</u></p>	<p>= {Maximum 124-512} [adjustoptions]</p> <p>For a Kestrel board with control firmware revision 9 or higher, the default is equivalent to specifying <code>TockInterval = 200 /Adjust:Closest</code></p> <p>For a Kestrel board with control firmware revision prior to revision 9, the default is equivalent to specifying <code>TockInterval = Maximum /Adjust:None</code></p> <p>A specified time interval must be an integer number of microseconds in a range determined by the product option purchased but always in the range 124-512.</p> <p>Maximum is the largest possible Tock interval for the effective X86Clock value. Note that this is not necessarily the absolute largest possible Tock interval.</p> <p>The adjustoptions may be omitted or may be /Adjust followed by one of the values: {None Lower Higher Closest}. Except for /Adjust:None, the Kestrel will adjust the effective EmuClock and X86Clock values as indicated to make the specified X86 Tock time interval exact. If the adjustoptions are not given, the default is /Adjust:Closest when a numeric time interval is specified or /Adjust:None when Maximum is specified.</p> <p>See also the TockCounter (page 42) general configuration command.</p> <p>The TockCounter and TockInterval configuration commands provide alternate methods of specifying the X86 Tock interval; the last such command given will apply.</p>
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<p>TxDelayDefault Specifies the default value for all virtual devices that accept the /TxDelay option.</p> <p><u>TxDelayDefault = 1042</u></p>	<p>= {0-1000000} The default is 0.</p>
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<p>Unsynchronized Specifies a set of select codes for which I/O instruction execution may run unsynchronized with the legacy bus.</p> <p>An Unsynchronized legacy bus device can execute control and output I/O instructions at a significantly higher rate (DMA transfer rate is not affected). This command has no effect for virtual devices or system device commands that are not broadcast on the legacy bus (e.g., disabling interrupts, setting the overflow bit or outputting to the display register).</p> <p><u>Unsynchronized = None</u> <u>Unsynchronized = All</u> <u>Unsynchronized = 02 21 30 60 70</u> <u>Unsynchronized = 27 ; HP-IB</u></p>	<p>= {All None 00-77} ... The default is None.</p> <p>These configuration options are described below:</p> <p>None Specifies that no select codes are unsynchronized. When given, None must be the only token.</p> <p>All Specifies that all select codes that are broadcast to the legacy bus are unsynchronized. When given, All must be the only token.</p> <p>00-77 Specifies one or more octal select codes of devices that are to run unsynchronized with the legacy bus.</p> <p>Multiple Unsynchronized commands may be given, in which case the set of devices to be run unsynchronized is the union of the sets of such devices specified by the individual Unsynchronized commands.</p>
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<p>UserMan Specifies the file to display (open) when the user selects the second entry on the Kestrel Help pull-down menu. This command normally is used in conjunction with the UserManMenu (page 45) command to configure a system-specific help file.</p> <p><u>UserMan = OperatorInstructions.PDF</u></p>	<p>= A file name The default is USERMAN.PDF.</p>
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<p>UserManMenu Specifies the text to display for the second entry on the Kestrel Help pull-down menu.</p> <p>This command normally is used in conjunction with the UserMan (page 44) command to configure a system-specific help file.</p> <p><u>UserManMenu = Operator &Instructions</u></p>	<p>= text</p> <p>The default is 'View Kestrel Reference Manual'.</p> <p>The given text may contain at most one & character, which should immediately precede an alphanumeric character other than 'A' to be used as the keyboard accelerator key for this menu entry.</p>
<p>VcpMan Specifies the file to display (open) when the user selects HELP (by pressing F1, ? or \$?) in the Strobe VCP.</p> <p><u>VcpMan = OperatorVcpHelp.PDF</u></p>	<p>= A file name</p> <p>The default is VCPHELP.PDF ^(A-series) or MEFHELP.PDF ^(21MX).</p>
<p>VcpStartFile Specifies an alternate text file to be displayed on first entry to the Strobe VCP.</p> <p><u>VcpStartFile = SPECIAL.TXT</u></p>	<p>= A file name</p> <p>The default is VCPSTART.TXT.</p>

<p>WinExec Launches a process.</p> <p><u>WinExec = /Complete:Yes NOTEPAD</u></p>	<p>= [options] commandline Where commandline is the command used to launch the process. Options may be zero or more of the following:</p> <p>/PostDevice:{ Yes No } The default is No, which means the specified process is launched before any physical/virtual devices are configured. If Yes is given, the specified process is launched after all physical/virtual devices are configured.</p> <p>/Show:{ Normal Min Max Hide } The default is Normal. Specifies the initial display mode for the process being launched.</p> <p>/Delay:{ None Infinite Default 0-4294967294 } The default delay is Default, which is 20000 milliseconds. Specifies the maximum number of milliseconds to wait for the launched process to go idle. Use Infinite to wait for the process to go idle, regardless of how long it takes. Use None to inhibit waiting for the process to go idle.</p> <p>/Complete:{ Yes No } The default is No. Specifies whether the launched process must run to completion before Kestrel initialization continues. /Complete:Yes and /Dependent:Yes may not both be given.</p> <p>/Dependent:{ Yes No } If /Complete:Yes is given, the default is No; otherwise the default is Yes. Specifies whether the Kestrel should shut down when the launched process terminates. /Dependent:Yes and /Complete:Yes may not both be given.</p> <p>/Terminate:{ Yes No } The default is Yes. Specifies whether the launched process should be shut down when the Kestrel terminates.</p>
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<p>WinExecDelay Specifies the amount of time to delay after each WinExec (page 46) option is executed.</p> <p><u>WinExecDelay = 500</u></p>	<p>= {0-10000}</p> <p>The default is 0.</p> <p>Specify a number of milliseconds. This delay can be used to allow the application processes launched by the WinExec options to completely start up before Kestrel initialization continues. This delay may need to be increased if these processes require an excessive amount of time to completely start up.</p>
<p>WrqActivateInhibit Inhibits activation of the most recently used WRQ window whenever the Strobe VCP exits.</p> <p><u>WrqActivateInhibit = Yes</u></p>	<p>= {Yes No}</p> <p>The default is No.</p> <p>If you specify Yes, then the Kestrel will not attempt to activate the most recently used WRQ window whenever the Strobe VCP exits.</p>
<p>X86Clock Specifies the Kestrel on-board X86 clock rate in megahertz.</p> <p>This command is provided as a tool for fine tuning the execution rate for the Kestrel and is normally not of use in a typical configuration.</p> <p><u>X86Clock = 32.768</u></p>	<p>= {Default Maximum 16.0000-36.0000}</p> <p>The default is Default, the value of which depends on the product option purchased and any configured EmuClock (page 25) value.</p> <p>The value Maximum selects the highest legal clock rate for the product option purchased. A numeric value must be a real number in the indicated range; however, the given value cannot exceed Maximum.</p> <p>If both X86Clock and EmuClock values are configured, these values must satisfy the equation: $X86Clock/EmuClock=N$, where N is either an integer in the range 2-33 or is an integer divisible by 8 and in the range 40-256.</p>

<p>X86CpuColors Specifies the colors to use when displaying the X86 CPU utilization status line control. The Kestrel board CTRL firmware must be at least version 6 to display the X86 CPU utilization status line control.</p> <p><u>X86CpuColors = Red</u> <u>X86CpuColors = White Black</u> <u>X86CpuColors = Blue on BtnFace</u> <u>X86CpuColors = Salmon on Wheat</u> <u>X86CpuColors = Red White Blue</u> <u>X86CpuColors = Red Pink Default</u> <u>X86CpuColors = 00FFFF 000000</u></p>	<p>= fgrgb [[On] bgrgb [[On] scrgb]]</p> <p>The default X86 CPU utilization status line control colors are, in order, Red, BtnFace, and a color that contrasts the most with both the foreground and the background colors.</p> <p>The (up to) three colors specify the foreground (fgrgb), background (bgrgb) and scale tick mark (scrgb) colors of the X86 CPU utilization status line control. Each color value may be given as Default, a Standard Color Name (page 171), a Windows System Color Name (page 174), or as a six-digit hexadecimal number. See Appendix G (page 171). The six-digit hexadecimal numbers are in standard Windows RRGGBB format, where RR, GG, and BB specify the red, green and blue color intensities, respectively.</p>
<p>X86CpuWeight Specifies the time interval (given in milliseconds) over which the X86 CPU utilization is averaged for display.</p> <p>The Kestrel board CTRL firmware must be at least version 6 to display the X86 CPU utilization status line control.</p> <p><u>X86CpuWeight = 100</u></p>	<p>= {0-65535}</p> <p>The default is 0.</p> <p>Specify a number of milliseconds. If this value is 0, then X86 CPU utilization is not measured and the associated status line control is not displayed. If this weight value is non-zero, then the running X86 CPU utilization value is averaged over the specified time interval. Therefore, if this value is 1, the status line control shows the instantaneous X86 CPU utilization, and larger values provide more smoothing.</p>

<p>X86CpuWidth Specifies the width, in pixels, of the X86 CPU utilization status line control.</p> <p>The Kestrel board CTRL firmware must be at least version 6 to display the X86 CPU utilization status line control.</p> <p><u>X86CpuWidth = 200</u></p>	<p>= {0-32767}</p> <p>The default is 0.</p> <p>If this value is zero, then the X86 CPU utilization control will fill the available space on the status line. If this value is non-zero, then it specifies the fixed screen pixel width of the X86 CPU utilization control. A non-zero value will be reduced to fit the pixel width of the Windows desktop.</p>
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Direct Device Configuration Commands

Cartridge Devices

Physical Cartridge Devices (Page 58)	=	Virtual Cartridge Devices
CTD Linus CS80Tape (Page 58)	=	There are no virtual cartridge devices.
See IEEE-488 Cartridge Device Translators (page 52) for ways to attach to these physical cartridge devices.		

Character Devices

Physical Character Devices (Page 59)	=	Virtual Character Devices (Page 79)
CharPipe (Page 59)	=	(A-series) 12005A, 12005B, ASIC (Page 79)
CharPrint (Page 60)		(A-series) 12040C, CMUX (Page 81)
COM (Page 66)		(A-series) 12040D, DMUX (Page 81)
LPT (Page 68)		(A-series) 12100A, OBIO (Page 82)
RawPrint (Page 69)		(21MX) 12531D, HSTI (Page 82)
Telnet (Page 72)		(21MX) 12792C, CMUX (Page 83)
VT100 (Page 76)		(21MX) 12792D, DMUX (Page 83)
WRQ (Page 78)		(21MX) 12880A (Page 84)
		(21MX) 12966A, BACI (Page 84)
		(21MX) SDIChar (Page 85)

Clock Devices

Physical Clock Devices (Page 86)	=	Virtual TBG Devices (Page 86)
(21MX) Clock (Page 86)	=	(21MX) TBG, 12539, 12539A, 12539B, 12539C (Page 86)

CPU Devices

Physical CPU Devices	(Page 87)	=	Virtual CPU Devices	(Page 87)
CPU	(Page 87)	=	(21MX) 2100, 2114, 2115, 2116, (A-series) 21MX-M, 21MX-E, 21MX-F	(Page 87)
			A400, A600, A600+, A700, A900, A990	(Page 87)

Disk Devices

Physical Disk Devices	(Page 90)	=	Virtual Disk Devices	(Page 98)
ASPIDisk	(Page 90)	=	(21MX) 13037, 13175, 13178, MAC	(Page 98)
File	(Page 91)	=	(A-series) SDIDisk	(Page 99)
FixedDisk	(Page 92)			
Floppy	(Page 93)			
MEM	(Page 94)			
RawDisk	(Page 96)			
Removable	(Page 97)			
<p>Also see IEEE-488 Disk Device Translators (page 53) and SCSI Disk Device Translators (page 54) for other ways to attach to these physical disk devices.</p>				

Fence Devices

Physical Fence Devices	(Page 100)	=	Virtual Fence Devices	(Page 100)
(21MX) Fence	(Page 100)	=	(21MX) 12620A, 12936, Fence, Breadboard	(Page 100)

HDLC Devices

Physical HDLC Devices	(Page 100)	=	Virtual HDLC Devices	(Page 103)
NetPtoP	(Page 100)	=	(A-series) 12007, 12044 (21MX) 12794, 12825	(Page 103)

Host Access Devices

Physical Host File Devices	(Page 103)	=	Virtual Host Access Devices	(Page 104)
HostFile	(Page 103)	=	HostAccess	(Page 104)

IEEE-488 Devices

Physical GPIB Devices (Page 104)	=	Virtual HP-IB Devices (Page 106)
GPIB (Page 104)	=	(A-series) 12009A, HP-IB (Page 106)
See IEEE-488 Device Translators (page 52) for an alternate way to support virtual HP-IB devices.		(21MX) 12821, 12821A (Page 107)
		(21MX) 59310, 59310A, 59310B (Page 108)
		See IEEE-488 GPIB Device Translator (page 53) for an alternate way to attach to a legacy hardware HP-IB device.
		Using IEEE-488 Device Translators (page 52), including the IEEE-488 GPIB Device Translator (page 53), is the only way to support a mix of emulated and legacy hardware HP-IB devices on a single select code.

Network Devices

Physical Network Devices (Page 116)	=	Virtual Network Devices (Page 117)
(A-series) Network (Page 116)	=	(A-series) 12076A, LANIC (Page 117)

Parallel Devices

Physical Parallel Devices	=	Virtual Parallel Devices (Page 117)
There are no physical parallel devices currently supported.	=	(21MX) 12845B, 12845 (Page 117)
See Parallel Device Translators (page 54) for a way to support virtual parallel devices.		(21MX) 26099A, 26099 (Page 118)

Printer Devices

Physical Printer Devices (Page 118)	=	Virtual Printer Devices
WinPrint (Page 118)	=	There are no virtual printer devices.
See IEEE-488 Printer Device Translators (page 53) and Parallel Printer Device Translators (page 54) for ways to attach to this physical printer device.		

SCSI Devices

Physical SCSI Devices	=	Virtual SCSI Devices	(Page 109)
There are no physical SCSI devices currently supported.	=	(A-series) 12016, SCSI	(Page 109)
See SCSI Device Translators (page 54) for an alternate way to support virtual SCSI devices. See ASPIDisk (page 90) and ASPITape (page 110) for alternate ways to access legacy hardware SCSI disk and tape devices.			

Tape Devices

Physical Tape Devices	(Page 110)	=	Virtual Tape Devices	(Page 113)
ASPITape	(Page 110)	=	(21MX) 13181,13181A	(Page 113)
TPF	(Page 113)	=	(21MX) 13183,13183A	(Page 113)
Also see IEEE-488 Tape Device Translators (page 53) and SCSI Tape Device Translators (page 54) for other ways to attach to these physical tape devices.				

VCP Devices

Physical Console Devices	(Page 113)	=	Virtual VCP Devices	(Page 114)
Console	(Page 113)	=	StrobeVCP	(Page 114)

WCS Devices

Physical WCS Devices	(Page 115)	=	Virtual WCS Devices	(Page 115)
WCS	(Page 115)	=	(21MX) 13197, 13197A	(Page 115)

Device Translation Configuration Commands

IEEE-488 Device Translators

IEEE-488 Cartridge Device Translators

Physical Cartridge Devices	(Page 58)	=	IEEE-488 Cartridge Device Translators	(Page 128)	=	Virtual HP-IB Devices	(Page 106)
CTD Linus CS80Tape	(Page 58)	=	(A-series) /Protocol:DD*33	(Page 128)	=	(A-series) HP-IB, 12009A	(Page 106)
			(21MX) /Protocol:DVM33	(Page 128)		(21MX) 12821A, 12821	(Page 107)

IEEE-488 Disk Device Translators

Physical Disk Devices (Page 90)	=	IEEE-488 Disk Device Translators IEEE-488 /Protocol (Page 127)	=	Virtual HP-IB Devices (Page 106)
ASPIDisk (Page 90) File (Page 91) FixedDisk (Page 92) Floppy (Page 93) MEM (Page 94) RawDisk (Page 96) Removable (Page 97)	=	(A-series) /Protocol:DD*33 (Page 127) (21MX) /Protocol:DVM33 (Page 127)	=	(A-series) HP-IB, 12009A (Page 106) (21MX) 12821A, 12821 (Page 107)

IEEE-488 GPIB Device Translator

Physical GPIB Devices (Page 104)	=	IEEE-488 GPIB Device Translator IEEE-488 /Protocol (Page 131)	=	Virtual HP-IB Devices (Page 106)
GPIB (Page 104)	=	/Protocol:Bus (Page 131)	=	(A-series) HP-IB, 12009A (Page 106) (21MX) 12821, 12821A (Page 107) (21MX) 59310, 59310A, 59310B (Page 108)

IEEE-488 Printer Device Translators

Physical Printer Devices (Page 118)	=	IEEE-488 Printer Device Translators IEEE-488 /Protocol (Page 130)	=	Virtual HP-IB Devices (Page 106)
WinPrint (Page 118)	=	(A-series) /Protocol:DD*12 (Page 130) /Protocol:PRINT (Page 130)	=	(A-series) HP-IB, 12009A (Page 106) (21MX) 12821A, 12821 (Page 107) (21MX) 59310, 59310A, 59310B (Page 108)

IEEE-488 Tape Device Translators

Physical Tape Devices (Page 110)	=	IEEE-488 Tape Device Translators IEEE-488 /Protocol (Page 129)	=	Virtual HP-IB Devices (Page 106)
ASPI Tape (Page 110) TPF (Page 113)	=	(A-series) /Protocol:DD*24 (Page 129) (21MX) /Protocol:DVS23 (Page 129)	=	(A-series) HP-IB, 12009A (Page 106)

Parallel Device Translators

Parallel Printer Device Translators

Physical Printer Devices (Page 118)	=	Parallel Printer Device Translators Parallel /Protocol (Page 133)	=	Virtual Parallel Devices (Page 117)
WinPrint (Page 118)	=	^(21MX) /Protocol:DVA12 (Page 133) ^(21MX) /Protocol:DVB12 (Page 133)	=	^(21MX) 12845B, 12845 (Page 117) ^(21MX) 26099A, 26099 (Page 118)

SCSI Device Translators

SCSI Disk Device Translators

Physical Disk Devices (Page 90)	=	SCSI Disk Device Translators SCSI /Protocol (Page 132)	=	Virtual SCSI Devices (Page 109)
ASPIDisk (Page 90) File (Page 91) FixedDisk (Page 92) Floppy (Page 93) MEM (Page 94) RawDisk (Page 96) Removable (Page 97)	=	^(A-series) /Protocol:DDQ30 (Page 132)	=	^(A-series) SCSI, 12016 (Page 109)

SCSI Tape Device Translators

Physical Tape Devices (Page 110)	=	SCSI Tape Device Translators SCSI /Protocol (Page 133)	=	Virtual SCSI Devices (Page 109)
ASPTape (Page 110) TPF (Page 113)	=	^(A-series) /Protocol:DDQ24 (Page 133)	=	^(A-series) SCSI, 12016 (Page 109)

Common Options for Physical Device Configuration

Modem Signal Options

The following options provide a general mechanism for emulating all the possible cable wiring choices that affect how the four input modem signals and two output modem signals can be generated. The option names CTS, DCD, DSR and RI represent the signals presented to the attached virtual character device, the option names DTR and RTS represent the signals presented to this physical character device, and the values list represents the possible sources for these signals. Each option may be given more than once, in which case the signal indicated by the option name is asserted if any of the source signals indicated by the value names are asserted.

As values, CTS, DCD, DSR and RI select the named input modem signal sources and DTR and RTS select the named output modem signal sources provided by the attached virtual device. The value On, which must not be combined with any other value, means that the indicated signal is always asserted. The value Off, which must not be combined with any other value, means that the indicated signal is always deasserted. To maintain backward compatibility, CD is a synonym for DCD (data carrier detect) and may be used as either an option name or as a value.

`/CTS:{CTS DCD DSR DTR RI RTS On Off}`

Specifies the conditions under which the CTS (clear to send) signal is asserted.

The default is `/CTS:CTS`, which means the CTS input modem signal is connected directly to (i.e., drives) the CTS input signal of the attached virtual device.

`/DCD:{CTS DCD DSR DTR RI RTS On Off}`

Specifies the conditions under which the DCD (data carrier detect) signal is asserted. The default is `/DCD:DCD`, which means the DCD input modem signal is connected directly to (i.e., drives) the DCD input signal of the attached virtual device.

`/DSR:{CTS DCD DSR DTR RI RTS On Off}`

Specifies the conditions under which the DSR (data set ready) signal is asserted.

The default is `/DSR:DSR`, which means the DSR input modem signal is connected directly to (i.e., drives) the DSR input signal of the attached virtual device.

`/DTR:{CTS DCD DSR DTR RI RTS On Off}`

Specifies the conditions under which the DTR (data terminal ready) signal is asserted.

The default is `/DTR:DTR`, which means the DTR output modem signal is connected directly to (i.e., sourced from) the DTR output signal of the attached virtual device.

`/RI:{CTS DCD DSR DTR RI RTS On Off}`

Specifies the conditions under which the RI (ring indicator) signal is asserted.

The default is `/RI:RI`, which means the RI input modem signal is connected directly to (i.e., drives) the RI input signal of the attached virtual device.

`/RTS:{CTS DCD DSR DTR RI RTS On Off}`

Specifies the conditions under which the RTS (request to send) signal is asserted.

The default is `/RTS:RTS`, which means the RTS output modem signal is connected directly to (i.e., sourced from) the RTS output signal of the attached virtual device.

Common Options for Virtual Device Configuration

Instance Options

`/SC:value`

Specifies the select code to use for the virtual interface. The required octal number must be between 20 (A-Series) or 10 (21MX) and 77 inclusive.

An unmodified operating system would expect to each controller at the select code it had in the original HP 1000 I/O backplane.

`/Logging:{Off On Delta Timed}[, {Terse Verbose}]`

Specifies the logging mode for this virtual device select code.

See [Appendix L](#) (page 187) for more information.

The default logging mode is Off, Terse.

Character Options

`/RxBuff:bfsz[e],bfstop[,bfstart]`

The bfsz[e] value specifies the size of the receive buffer. The number must be between 2 and 65521 inclusive.

The default is bfsz[e] value is 64.

`/RxBuff:100,90,50`

The bfstop value specifies the maximum number of bytes that are allowed in the receive buffer before the receive buffer is indicated as full. The number must be greater than or equal to 1 and less than the bfsz[e] value.

The default bfstop value is one less than the bfsz[e] value.

The bfstart value specifies the minimum number of bytes that are required in the receive buffer before the attached physical character device is notified to begin supplying more data. The number must be greater than or equal to 0 and less than the bfstop value.

The default bfstart value is half of the bfstop value.

`/RxDelay:microseconds`

Specifies the minimum time interval, in microseconds, between received characters. The number must be between 0 and 1000000, inclusive.

The default is the value specified by the [RxDelayDefault](#) (page 38) general configuration command, or 0 (no receive delay) if no RxDelayDefault command is configured.

`/RxDelay:1042`

The effective baud rate can be estimated by calculating $10000000/RxDelay$. Or, if you want to know exactly what `RxDelay` to use, divide 1000000 by your desired baud rate and multiply by the number of bits per character, including start and stop bits. See the table below for approximate baud rates.

Microseconds	Baud rate (no parity, 8 data bits, 1 start bit, 1 stop bit)
1042	9600
2083	4800
4167	2400
8333	1200

`/TxBuff:bfsize[,bfstop[,bfstart]]`

The `bfsize` value specifies the size of the transmit buffer. The number must be between 2 and 65521 inclusive.

The default is `bfsize` value is 64.

`/TxBuff:100,90,50`

The `bfstop` value specifies the maximum number of bytes that are allowed in the transmit buffer before the transmit buffer is indicated as full. The number must be greater than or equal to 1 and less than the `bfsize` value.

The default `bfstop` value is one less than the `bfsize` value.

The `bfstart` value specifies the minimum number of bytes that are required in the transmit buffer before the attached physical character device will request additional transmitted data. The number must be greater than or equal to 0 and less than the `bfstop` value.

The default `bfstart` value is half of the `bfstop` value.

`/TxDelay:microseconds`

Specifies the minimum time interval, in microseconds, between transmitted characters. The number must be between 0 and 1000000, inclusive.

The default is the value specified by the [TxDelayDefault](#) (page 44) general configuration command, or 0 (no transmit delay) if no `TxDelayDefault` command is configured.

`/TxDelay:1042`

The effective baud rate can be estimated by calculating $10000000/TxDelay$. Or, if you want to know exactly what `TxDelay` to use, divide 1000000 by your desired baud rate and multiply by the number of bits per character, including start and stop bits. See the table below for approximate baud rates.

Microseconds	Baud rate (no parity, 8 data bits, 1 start bit, 1 stop bit)
1042	9600
2083	4800
4167	2400
8333	1200

Cartridge Type Physical Devices

CTD Linus CS80Tape =

Aliases that specify a Windows file to be used as a cartridge tape container file.

CTD /Name:Cart-1.Tape /UnitName:LU24 = IEEE-488 /Protocol:DD*33 /BusAdr:2 /Drive:88140L = HP-IB /SC:30

/Blocks:{Maximum 64-2064888}

Specifies the maximum number of tape blocks to use for a newly created cartridge tape container file, where Maximum is equivalent to the maximum legal number of tape blocks (2064888). If `/ForceSize:Yes` is also given, then the specified number of tape blocks overrides the number of tape blocks in an existing tape container file.

The default is the number of tape blocks specified by the attached cartridge device translator, if known; otherwise, the default is 65536 blocks.

/Delay:milliseconds

Specifies a minimum amount of time (in milliseconds) to delay per cartridge tape block read, written or skipped.

The default is 0 (i.e., no minimum tape motion delay is imposed).

/ForceSize:{Yes No}

Specifies whether the number of tape blocks specified by the `/Blocks` option overrides the number of tape blocks in an existing tape container file.

The default is No.

`/ForceSize:On` and `/ReadOnly:On` cannot both be specified.

/Mount:{Yes No Exist}

Controls whether the cartridge tape is mounted during startup.

If `/Mount:Exist` is given and the `/Name` option is also given and the tape cartridge container file specified by the `/Name` option exists, then `/Mount:Exist` is equivalent to `/Mount:Yes`; otherwise, `/Mount:Exist` is equivalent to `/Mount:No`.

The default is Yes if the `/Name` option is given; otherwise, the default is No.

/Name:filename

Specifies the name of the file to use as the cartridge tape image container file. There is no default cartridge tape container file name – the `/Name` option must be given if `/Mount:Yes` is given.

See [Quoted Strings](#) (page 13) for details about file names with spaces. See [Special Filename Extensions](#) (page 14) for additional information about recommended and legal file name extensions. See the [TapeFilesFolder](#) command (page 41) for information about how to specify a default folder for your tape cartridge container files.

`/Notify:{Yes No}`

Signals the user if a program unloads the cartridge tape.
The default is No.

`/ReadOnly:{On Off}`

Specifies that a cartridge tape container file cannot be written.
The default is Off.

`/ForceSize:On` and `/ReadOnly:On` cannot both be specified.

`/UnitName:string`

Specifies the logical device name to be displayed on various *Devices* menu selections dialog boxes. The `UnitName` string must be unique, less than 256 characters long and must not contain any back slash (\) characters.

The default is a generic, system generated name.

`/UnlDelay:milliseconds`

Specifies a minimum amount of time (in milliseconds) to delay during program requested cartridge tape unloading. The minimum of `/UnlDelay` and the `/Delay` values is used.

The default is 0 (i.e., no minimum cartridge tape unload delay is imposed).

Character Type Physical Devices

`CharPipe =`

Specifies a named pipe.

`CharPipe /Name:mypipe = ASIC /SC:20`

[Modem Signal Options](#) (page 54) are allowed.

`/LSRMST:{00-FF}`

The default is no LSRMST (line status/modem status) support. The hexadecimal number represents the LSRMST escape character. A value of zero indicates the driver should disable LSRMST-insertion mode. A nonzero value is the caller-supplied LSRMST escape character. Please see [Appendix J](#) (page 179) for a more complete description of LSRMST.

`/Name:pipename`

This option is required.

Specifies the name of the pipe to create and use.

See [Quoted Strings](#) (page 13) for details about file names with spaces.

`/ReadTime:{Infinite 0-4294967295}`

Specifies the number of milliseconds to wait after the attached virtual device character buffer is full before discarding subsequent read data. The default is 100 milliseconds.

`/UnitName:string`

Specifies the logical device name to be displayed on various *Devices* menu selections dialog boxes. The UnitName string must be unique, less than 256 characters long and must not contain any back slash (\) characters.

The default is a generic, system generated name.

`/WriteTime:{Infinite 0-4294967295}`

Specifies the number of milliseconds to allow a pending write to complete before discarding data from a subsequent write. The default is 1000 milliseconds.

CharPrint =

Specifies that character data be sent to a Windows printer. The data are formatted using the configured font and page geometry. See also [RawPrint](#) (page 69) and [WinPrint](#) (page 118).

`CharPrint /Name:HpLaser /UnitName:LU56 = ASIC /SC:35`

[Modem Signal Options](#) (page 54) are allowed.

`/BlankPages:{Yes No}`

Specifies whether completely blank pages are printed.

The default is No.

`/Bold:{On Off}`

Specifies whether the 'bold' font attribute is on. `/Bold:Off` is equivalent to `/Weight:Normal` and `/Bold:On` is equivalent to `/Weight:Bold`.

The default is Off.

`/Bottom:inches`

Specifies the height of the page bottom margin as a non-negative decimal fraction number of inches (e.g., 0.75). The range of valid values for this option may be restricted by the printer being connected.

The default is to use the `/Margin` value.

`/Connect:{Yes No}`

Specifies whether the printer is initially connected.

If `/Connect:Yes` is given, the `/Name` option is required.

If the `/Name` option is given, the default is Yes; otherwise, the default is No.

/Configurable:{Yes No}

Specifies whether the configuration for this printer unit can be changed via the *Configure Printer Units...* entry on the *Devices* menu.

The default is Yes.

/CPI:{Device 1-72}

Specifies the number of characters to print per horizontal inch, which determines the font character width. `/CPI:Device` means use the device defaults. If the `/CPI` option is given, then neither the `/CPL` option nor the `/Point` option may be given. The range of valid values for this option may be restricted by the printer being connected.

There is no default: if none of the `/CPI`, `/CPL` or `/Point` options are given, then a default value of `/CPL:132` is used.

/CPL:{Device 1-512}

Specifies the maximum number of characters to print per line, which determines the font character width. `/CPL:Device` means use the device defaults. If the `/CPL` option is given, then neither the `/CPI` option nor the `/Point` option may be given. The range of valid values for this option may be restricted by the printer being connected.

If none of the `/CPI`, `/CPL` or `/Point` options are given, then a default value of `/CPL:132` is used.

/EndJob:{No Yes OnTop}

Specifies whether a floating 'End Job Now' dialog box should be created for this unit. If `/EndJob:OnTop` is given, the dialog box will be created with the 'Always on top' box checked; otherwise, it will be unchecked. This option overrides the 'Show separate End Job Now button' and 'Always on top' check box settings saved in the Windows registry. (See the `/UseSaved` option.)

If the printer configuration for this unit is loaded from the Windows registry, then the default is the saved 'Show separate End Job Now button' check box value; otherwise, the default is No.

/FontFace:name

Specifies the face name of the Windows fixed pitch font to use. Use the Windows Control Panel Fonts applet to select the face name of an appropriate fixed pitch font.

The default is "Courier New".

/HotKey:keyname

Specifies the hot key that may be used to end any currently active print job. See [Appendix H](#) (page 175) for possible values for keyname.

The default is no hot key.

/Italic:{On Off}

Specifies whether the 'italic' font attribute is on.
The default is Off.

/JobName:name

Specifies the base job name. A five-digit sequence number is appended to the given name.
The default is the unit name, which may be specified by the /UnitName option.

/JobTimeout:{None Infinite 1-3600000}

Specifies a millisecond job timeout. After data are received, if the job timeout happens before more data are received, the Windows print job ends. Specifying /JobTimeout:None or /JobTimeout:Infinite disables the job timeout facility (i.e., a print job will not end based on a job timeout). If both the /JobTimeout and /PageTimeout options are given, then the /JobTimeout value must be at least as large as the /PageTimeout value.
The default is None (no timeout).

/Landscape:{Yes No}

Specifies whether the page should be printed in portrait (/Landscape:No) or landscape (/Landscape:Yes) orientation.
The default is No.

/Left:inches

Specifies the width of the page left margin as a non-negative decimal fraction number of inches (e.g., 0.75). The range of valid values for this option may be restricted by the printer being connected.
The default is to use the /Margin value.

/LPI:{Device 1-72}

Specifies the number of lines to print per vertical inch, which determines the font character height. /LPI:Device means use the device defaults. If the /LPI option is given, then neither the /LPP option nor the /Point option may be given. The range of valid values for this option may be restricted by the printer being connected.
If none of the /LPI, /LPP or /Point options are given, then a default value of /LPP:60 is used.

/LPP:{Device 1-512}

Specifies the maximum number of lines to print per page, which determines the font character height. /LPP:Device means use the device defaults. If the /LPP option is given, then neither the /LPI option nor the /Point option may be given. The range of valid values for this option may be restricted by the printer being connected.
There is no default: if none of the /LPI, /LPP or /Point options are given, then a default value of /LPP:60 is used.

/Margin:inches

Specifies the height or width of all unspecified page margins as a non-negative decimal fraction number of inches (e.g., 0.75).

The default is 0.25 inches.

/MaxPages:{None Infinite 1-65536}

Specifies the maximum number of pages to accumulate before ending the Windows print job. `/MaxPages:None` or `/MaxPages:Infinite` disables this facility (i.e., print jobs are not ended based on page count).

The default is 1.

/Name:name

Specifies the name of the Windows printer. The `/Name` option is required with `/Connect:Yes`. If `/Connect:Yes` is given but the printer name is invalid or not given, then the error message will list all available printers.

There is no default printer name.

/NulStopsTimeout:{Yes No}

Specifies whether NUL (do nothing) characters sent to the printer should reset the job and page timeouts.

Some RTE serial printer configurations send frequent, periodic NUL characters to a printer when it is otherwise idle. If `/NulStopsTimeout:Yes` is given, these NUL characters can prevent the job and page timeouts from occurring; otherwise, these timeouts are not affected.

The default is No.

/Paper:pagesizename

Specifies one of the set of page size names that are valid for the specified printer.

The default is the currently selected default page size.

/PageTimeout:{None Infinite 1-3600000}

Specifies a millisecond page timeout. After a page ends, if the page timeout occurs before more data are received, the Windows print job ends. Specifying `/PageTimeout:None` or `/PageTimeout:Infinite` disables the page timeout facility (i.e., a print job will not end based on a page timeout). If both the `/JobTimeout` and `/PageTimeout` options are given, then the `/PageTimeout` value must be no larger than the `/JobTimeout` value.

The default is the smaller of any specified `/JobTimeout` value and 1000.

/Point:{Device 1-512}

Specifies the font height by point. `/Point:Device` means use the device defaults. If the `/Point` option is given, then none of the `/CPI`, `/CPL`, `/LPI` and `/LPP` options may be given. The range of valid values for this option may be restricted by the printer being connected.

There is no default: if none of the `/Point`, `/CPI`, `/CPL`, `/LPI` or `/LPP` options are given, then default values of `/CPL:132` and `/LPP:60` are used.

/Pipe:name

Specifies the name of the Windows named pipe to create and use. When a Windows named pipe is created, printer data can be monitored with the `WRQPIPE` or `VTPIPE` programs, or with a third party program.

The default is no pipe.

/Primary:charset

Specifies the primary character set. The specified charset must be one of the following: `USAscii`, `British`, `Danish`, `Finnish`, `French`, `German`, `Norwegian` or `Swedish`.

The default is `USAscii`.

/Right:inches

Specifies the width of the page right margin as a non-negative decimal fraction number of inches (e.g., `0.75`). The range of valid values for this option may be restricted by the printer being connected.

The default is to use the `/Margin` value.

/SaveOnExit:{ Yes No }

Specifies whether printer configuration information for this unit should be saved in the Windows registry when the Kestrel terminates. This option overrides the 'Save on Exit' check box setting saved in this Windows registry. (See the `/UseSaved` option below.)

If the printer configuration for this unit is loaded from the Windows registry, then the default is the saved 'Save Printer Configuration on Kestrel Exit' check box value; otherwise, the default is `Yes`.

/Secondary:charset

Specifies the secondary character set. The specified charset must be one of the following: `USAscii`, `British`, `Danish`, `Finnish`, `French`, `German`, `Norwegian` or `Swedish`.

The default is no secondary character set.

`/TabCols:{None 1-512}`

Specifies a fixed character spacing for horizontal tab stops. If `/TabCols:None` is given, then no fixed character spacing horizontal tab stops are set.

The default is 8.

`/Top:inches`

Specifies the height of the page top margin as a non-negative decimal fraction number of inches (e.g., 0.75). The range of valid values for this option may be restricted by the printer being connected.

The default is to use the `/Margin` value.

`/Underline:{On Off}`

Specifies whether the 'underline' font attribute is on.

The default is Off.

`/UseSaved:{Yes No}`

Specifies whether the printer configuration for this unit should be loaded from the printer configuration last saved in the Windows registry (if any). If no printer configuration has been saved for this unit, then the printer configuration information given on this configuration file line is used.

The default is No if any printer configuration option is given; otherwise, the default is Yes.

`/UnitName:string`

Specifies the logical device name to be displayed on various *Devices* menu selections dialog boxes. The `UnitName` string must be unique, less than 256 characters long and must not contain any back slash (\) characters.

The default is a generic, system generated name.

`/Weight:{DontCare Thin Extralight Light Normal Medium SemiBold Bold ExtraBold Heavy 1-1000}`

Specifies the font weight.

The default is Normal.

`/Wrap:{Yes No}`

When `/Wrap:Yes` is given, lines that are too long are wrapped onto two or more lines; otherwise, lines that are too long are truncated at the page margin.

The default is No.

`/WriteTime:{Infinite 0-3600000}`

Specifies the maximum number of milliseconds to wait for a previous write to the named pipe to complete before discarding subsequent write data (write timeout).

Use `/WriteTime:Infinite` to disable write timeouts.

The default is 1000 milliseconds.

COM =

Specifies a serial device that is configured as a COM port in Windows.

COM /Port:1 = ASIC /SC:20

[Modem Signal Options](#) (page 54) are allowed.

`/BaudXlat:oldbaud1->newbaud1[,oldbaud2->newbaud2 ...]`

Translates one or more baud rates (oldbaud_n) that can be requested by the associated virtual character device into corresponding baud rates (newbaud_n) that can actually be configured by the specified COM port. The oldbaud_n and newbaud_n values are decimal numbers.

The default is no translation.

Legacy character devices may request baud rates that are not supported on some COM port physical devices (e.g., 50 baud). This option can be used to translate baud rates that are not supported by the specified COM port to supported baud rates. Note: if the device that is connected to the specified host COM port actually requires the unsupported baud rate, then a different COM port that supports the required baud rate must be used.

`/Flow:{CTS XON}`

Enables CTS/RTS flow control or XON/XOFF flow control.

The default is no flow control.

`/LenXlat:oldlength1->newlength1[,oldlength2->newlength2 ...]`

Translates one or more character bit lengths (oldlength_n) requested by the associated virtual character device into corresponding character bit lengths (newlength_n) that can actually be configured by the specified COM port. The oldlength_n and newlength_n values are decimal numbers.

The default is no translation.

Legacy character devices may request character bit lengths that are not supported on some new host COM ports (e.g., 5 bits per character). This option can be used to translate character bit lengths that are not supported by the specified COM port to supported character bit lengths. Note: if the device that is connected to the specified host COM port actually requires the unsupported character bit length, then a different COM port that supports the required character bit length must be used.

`/Overrun:{ On Off}`

If Off, relies on Windows and X86 buffering to avoid overrun errors. If On, will lose data if the user program cannot respond quickly enough. Note that `/RxBuff:1` (see below) will probably also be necessary. The default is Off.

`/Port:{ 1-256}`

Specifies which serial port to use.

Any number of multiplexors, including Strobe Multiplexor, DigiBoard, and standard PC hardware may provide COM ports under Windows.

This option is required.

`/RIPolling:{ On Off}`

Since the standard PC COM hardware does not provide Ring Indicator (RI) signals compatible with the virtual character devices, RI polling is normally turned on. The DigiBoard driver correctly supports RI, so `/RIPolling:Off` can be specified on those COM lines to lighten the host CPU burden.

The default is On.

`/RIPollTime:{ 1-10000}`

Specifies the number of milliseconds between Ring Indicator (RI) polls when `/RIPolling:On` is set.

The default is 500.

`/RxBuff:{ 1-65535}`

Specifies the size of the receive buffer between the Windows COM driver and the Kestrel. This should be set to 1 if using `/Overrun:On`.

The default is 64.

`/Statuses:{ On Off}`

The default is On.

Some Windows COM port drivers do not support in-stream status (LSRMST). For COM port drivers that do not support in-stream status, set `/Statuses:Off`. Setting `/Statuses:Off` disables support for Ring Indicator (RI), Dataset Ready (DSR), Clear To Send (CTS), parity errors, framing errors, and all other character and modem signals.

`/Timeout:{ 0-1000}`

Specifies the number of milliseconds to wait after receiving a character from the COM port before a signal is sent.

A system with a large number of serial lines and high traffic may need this set to 5 or 10 in order to accumulate characters and reduce the burden on the host CPU.

The default is 0.

`/TxBuff:{1-65535}`

Specifies the size of the transmit buffer between the Windows COM driver and the COM physical device.

The default is 64.

`/UnitName:string`

Specifies the logical device name to be displayed on various *Devices* menu selections dialog boxes. The UnitName string must be unique, less than 256 characters long and must not contain any back slash (\) characters.

The default is a generic, system generated name.

LPT =

Specifies a file or device to capture data. See also [WinPrint](#) (page 118), [CharPrint](#) (page 60) and [RawPrint](#) (page 69) for preferred ways to attach to a Windows printer.

`LPT /Port:1 = ASIC /SC:20`

[Modem Signal Options](#) (page 54) are allowed.

`/Connect:{Yes No}`

Specifies whether the printer is initially connected.

Either `/Name` or `/Port` (but not both) is required with `/Connect:Yes`.

The default is Yes.

`/Mode:{Create Truncate New Append Extend Write Overwrite}`

Specifies the method used to open and verify the `/Port` or `/Name`.

Create	Create file (truncate if exists)
Truncate	Truncate file (must exist)
New	Create file (must not exist)
Append	Create file (append if exists)
Extend	Extend file (must exist)
Write	Write to file (must exist)
Overwrite	Create file (overwrite if exists)

The default is Create.

`/Name:filename`

Specifies the file or device name that will receive the data.

Either `/Name` or `/Port` (but not both) is required with `/Connect:Yes`.

See [Quoted Strings](#) (page 13) for details about file names with spaces.

If filename is a printer UNC name, Windows will not print any data until it knows the print job is complete. Since the Kestrel cannot tell when individual operating system jobs might complete, it cannot tell Windows that the job is complete until either the Kestrel is shut down or the user explicitly disconnects and reconnects the LPT via the appropriate *Devices* menu entry.

`/Port:{1-4}`

Specifies which LPTn BIOS printer to use.

Either `/Name` or `/Port` (but not both) is required with `/Connect:Yes`.

`/Port` reserves the printer for the Kestrel and prohibits all other machines and tasks on the Kestrel machine from accessing the printer. Windows will only allow one task access to a printer via the `/Port` method.

`/UnitName:string`

Specifies the logical device name to be displayed on various *Devices* menu selections dialog boxes. The `UnitName` string must be unique, less than 256 characters long and must not contain any back slash (\) characters.

The default is a generic, system generated name.

`RawPrint =`

Specifies that character data be sent directly to a Windows printer. No analysis, processing or formatting of the data occurs. See also [WinPrint](#) (page 118) and [CharPrint](#) (page 60).

`RawPrint /Name:HpLaser /UnitName:LU56 = ASIC /SC:35`

[Modem Signal Options](#) (page 54) are allowed.

`/BlankPages:{Yes No}`

Specifies whether completely blank pages are printed.

The default is No.

`/Configurable:{Yes No}`

Specifies whether the configuration for this printer unit can be changed via the *Configure Printer Units...* entry on the *Devices* menu.

The default is Yes.

`/Connect:{Yes No}`

Specifies whether the printer is initially connected.

If `/Connect:Yes` is given, the `/Name` option is required.

If the `/Name` option is given, the default is Yes; otherwise, the default is No.

/EndJob:{No Yes OnTop}

Specifies whether a floating ‘End Job Now’ dialog box should be created for this unit. If `/EndJob:OnTop` is given, the dialog box will be created with the ‘Always on top’ box checked; otherwise, it will be unchecked. This option overrides the ‘Show separate End Job Now button’ and ‘Always on top’ check box settings saved in this Windows registry. (See the `/UseSaved` option.)

If the printer configuration for this unit is loaded from the Windows registry, then the default is the saved ‘Show separate End Job Now button’ check box value; otherwise, the default is No.

/HotKey:keyname

Specifies the hot key that may be used to end any currently active print job. See [Appendix H](#) (page 175) for possible values for keyname.

The default is no hot key.

/JobName:name

Specifies the base job name. A five-digit sequence number is appended to the given name.

The default is JOB.

/JobTimeout:{None Infinite 1-3600000}

Specifies a millisecond job timeout. After data are received, if the job timeout happens before more data are received, the Windows print job ends. Specifying `/JobTimeout:None` or `/JobTimeout:Infinite` disables the job timeout facility (i.e., a print job will not end based on a job timeout). If both the `/JobTimeout` and `/PageTimeout` options are given, then the `/JobTimeout` value must be at least as large as the `/PageTimeout` value.

The default is 2000.

/MaxPages:{None Infinite 1-65536}

Specifies the maximum number of pages to accumulate before ending the Windows print job. Specifying `/MaxPages:None` or `/MaxPages:Infinite` disables this facility (i.e., print jobs are not ended based on page count).

The default is None.

/Name:name

Specifies the name of the Windows printer. The `/Name` option is required with `/Connect:Yes`. If the printer name is required but is invalid or not given, the error message will list all available printers.

There is no default printer name.

/NulStopsTimeout:{ Yes No }

Specifies whether NUL (do nothing) characters sent to the printer should reset the job and page timeouts.

Some RTE serial printer configurations send frequent, periodic NUL characters to a printer when it is otherwise idle. If `/NulStopsTimeout:Yes` is given, these NUL characters can prevent the job and page timeouts from occurring; otherwise, these timeouts are not affected.

The default is No.

/PageTimeout:{None Infinite 1-3600000}

Specifies a millisecond interpage timeout. After a page ends, if the page timeout occurs before more data are received, the Windows print job ends. Specifying `/PageTimeout:None` or `/PageTimeout:Infinite` disables the page timeout facility (i.e., a print job will not end based on a page timeout). If both the `/JobTimeout` and `/PageTimeout` options are given, then the `/PageTimeout` value must be no larger than the `/JobTimeout` value.

The default is the smaller of any specified `/JobTimeout` value and 1000.

/Pipe:name

Specifies the name of the Windows named pipe to create and use. When a Windows named pipe is created, printer data can be monitored with the `WRQPIPE` or `VTPIPE` programs, or with a third party program.

The default is no pipe.

/SaveOnExit:{ Yes No }

Specifies whether printer configuration information for this unit should be saved in the Windows registry when the Kestrel terminates. This option overrides the 'Save on Exit' check box setting saved in this Windows registry. (See the `/UseSaved` option.)

If the printer configuration for this unit is loaded from the Windows registry, then the default is the saved 'Save Printer Configuration on Kestrel Exit' check box value; otherwise, the default is Yes.

/UnitName:string

Specifies the logical device name to be displayed on various *Devices* menu selections dialog boxes. The `UnitName` string must be unique, less than 256 characters long and must not contain any back slash (\) characters.

The default is a generic, system generated name.

`/UseSaved:{Yes No}`

Specifies whether the printer configuration for this unit should be loaded from the printer configuration last saved in the Windows registry (if any). If no printer configuration has been saved for this unit, then the printer configuration information given on this configuration file line is used.

The default is No if any printer configuration option is given; otherwise, the default is Yes.

`/WriteTime:{Infinite 0-3600000}`

Specifies the maximum number of milliseconds to wait for a previous write to the named pipe to complete before discarding subsequent write data (write timeout).

Use `/WriteTime:Infinite` to disable write timeouts.

The default is 1000 milliseconds.

Telnet =

Specifies a Telnet server. See [Appendix I](#) (page 177) for a description of the process used to establish a Telnet connection.

`Telnet /UnitName:LU56 /Group:BACI = BACI /SC:12 /Baud:57600`

[Modem Signal Options](#) (page 54) are allowed.

`/Any:{Yes No}`

Specifies whether this unit will be included in the search list for a client that requests connection to any available unit or to any unit within a named group.

The default is Yes if the `/Group` option is given or the `/Password` option is not given; otherwise, the default is No.

`/Autoconnect:{Yes Once No}`

Specifies whether a client can connect to this unit without prompting.

The default is No.

If either `/Autoconnect:Yes` or `/Autoconnect:Once` is given, then the `/Password` option cannot be given.

`/Capture:{Yes No}`

Enables or disables capturing of all output data to the capture file specified by the `/Name` option.

The default is Yes if `/Name` is given and No if `/Name` is omitted.

/CaptureBinary:{ Yes No}

Enables or disables output of binary data (i.e., non-printable characters such as ENQ or ESC) to the capture file specified by the **/Name** option. Specify **/CaptureBinary:No** if you intend to analyze the captured Telnet session data with an application program that does not handle non-printable characters. The default is Yes (i.e., all data, including non-printable characters, are written to the capture file).

/CaptureFlush:{ Yes No}

Enables or disables immediate flushing of all data written to the capture file specified by the **/Name** option. The default is No (i.e., immediate data flushing is disabled).

/Configurable:{ Yes No}

Specifies whether the configuration for this Telnet unit can be changed via the *Configure Telnet Units...* entry on the *Devices* menu. The default is Yes.

/Disconnectable:{ Yes No}

Specifies whether a client can request that a current connection be broken before connecting with this unit. The default is No.

/EBC2ASC:{ Yes No}

Specifies whether characters sent to the Telnet client are translated from EBCDIC to ASCII. The default is No.

/Group:string

Specifies the name of a group of which this unit is part. This unit will be included in the search list for a client that requests connection to any available unit within the named group. The default is none (i.e., not part of a group).

/IPRule:rule

Specifies a rule that determines whether a client attempt to connect to this unit is accepted or rejected based on the client's IP (internet protocol) address. The rule must be a string of the form **[+ -]n.n.n.n[&m.m.m.m]** where n.n.n.n is an IP address and m.m.m.m is an address mask (each n or m must be a decimal number in the range 0-255). The **/IPRule** option may be given multiple times to specify more than one rule; the rules are evaluated from left to right. The default is none (i.e., no rules are evaluated). See the **/IPRules** and **/IPRulesFile** options for other ways to specify IP address acceptance and rejection rules.

/IPRules:rulesfile

Specifies a file that contains one or more rules that determine whether a client attempt to connect to this unit is accepted or rejected based on the client's IP (internet protocol) address. Each line of the file must consist of a single rule of the form described under the **/IPRule** option. The **/IPRules** option may be given multiple times to specify more than one rulesfile; rules from a rulesfile are appended the current set of rules in the given order. The lines of the specified rulesfile are read only once when the Kestrel processes this configuration file line. The default is none (i.e., no rulesfile is read).

See the **/IPRule** and **/IPRulesFile** options for other ways to specify IP address acceptance and rejection rules.

/IPRulesFile:rulesfile

Specifies a file that contains one or more rules that determine whether a client attempt to connect to this unit is accepted or rejected based on the client's IP (internet protocol) address. Each line of the file must consist of a single rule of the form described under the **/IPRule** option. The **/IPRulesFile** option may be given multiple times to specify more than one rulesfile; rules from a rulesfile are appended the current set of rules in the given order. The lines of the specified rulesfile are reread each time a client attempts to connect to this unit. The default is none (i.e., no rulesfile is read).

The default is none (i.e., no rulesfile is read).

See the **/IPRule** and **/IPRules** options for other ways to specify IP address acceptance and rejection rules.

/KeepAlive:{None Default 0-4294967295}

Specifies the time interval, in milliseconds, between NOP messages that may be sent periodically from the Telnet server to the client. If None or 0 is specified, periodic NOP messages are not sent to the Telnet client.

The default is 20000.

/Mode:{Create Truncate New Append Extend Write Overwrite}

Specifies the method used to open and verify the **/Name**.

Create	Create file (truncate if exists)
Truncate	Truncate file (must exist)
New	Create file (must not exist)
Append	Create file (append if exists)
Extend	Extend file (must exist)
Write	Write to file (must exist)
Overwrite	Create file (overwrite if exists)

The default is Create.

/Name:filename

Specifies the file that will capture data.

See [Quoted Strings](#) (page 13 for details about file names with spaces).

See [Special Filename Characters](#) (page 14) for information on how to create a unique capture file on each Kestrel start-up.

This option is required if `/Capture:Yes` is given.

/Password:string

Specifies a password for which a client will be prompted when attempting to connect to this unit.

The default is no password.

If the `/Password` option is given, then neither `/Autoconnect:Yes` nor `/Autoconnect:Once` can be given.

/Port:{1-65535}

Specifies the TCP/IP port number for the Telnet server.

The default is 23.

/ReportUnitName:{Yes No}

Specifies whether to report the client IP address and the UnitName and/or Group name of this unit when a connection is established.

The default is Yes.

/StartupTimeout:{0-65535}

Specifies that the Telnet server should wait up to the given time interval (milliseconds) for a connection to be established before allowing Kestrel initialization to complete. This option can be used to provide a mechanism to guarantee that an automatic connection has been established to a third-party Telnet client (e.g., WRQ Reflection) before allowing the Kestrel to run.

^(A-Series) The default is 10000 milliseconds if the attached virtual device is the Kestrel VCP console and either `/AutoConnect:Once` or `/AutoConnect:Yes` is given ; otherwise, the default is 0.

^(21MX) The default is 0.

/Timeout:{1-4294967295}

Specifies the maximum time, in microseconds, that all Telnet units on this TCP/IP port should wait for data. Only one distinct timeout value may be configured for each TCP/IP port. See also the `/Port` option for additional information.

The default is the value specified by the [TelnetTimeoutDefault](#) (page 41) general configuration command, or 1000 microseconds if no `TelnetTimeoutDefault` command is configured.

`/TimingMark:{None Default 0-4294967295}`

Specifies the time interval, in milliseconds, between timing mark messages that may be sent periodically from the Telnet server to the client. If None or 0 is specified, periodic timing mark messages are not sent to the Telnet client. The default is None.

`/UnitName:string`

Specifies the logical device name to be displayed on various *Devices* menu selections dialog boxes. The UnitName string must be unique, less than 256 characters long and must not contain any back slash (\) characters. The default is a generic, system generated name.

VT100 =

Specifies that a Kestrel child window will be created and used for an emulation of the VT100 terminal.

VT100 /Unit:1 /EnqAck:On /Autowrap:On = ASIC /SC:20

[Modem Signal Options](#) (page 54) are allowed.

`/8Bit:{On Off}`

Enables 8-bit mode.
The default is Off.

`/Autowrap:{Yes No}`

If Yes, makes the console wrap to the next line from the right margin instead of pegging at the right margin.
The default is No.

`/Capture:{Yes No}`

Enables or disables capturing to /Name.
The default is Yes if /Name is given and No if /Name is omitted.

`/CNF:filename`

Specifies an alternate configuration file for this console.
The default file name is VT100.CNF. See [VT100.CNF](#) (page 141) for a description of the VT100 configuration file.

`/Cursor:{On Off}`

Enables or disables the blinking cursor.
The default is On.

`/EnqAck:{On Off}`

Sets Enq/Ack option for HP usage of VT100.
The default is Off.

`/FFBar:{Yes No}`

Specifies how the ASCII FormFeed character (character code 14₈) is handled. When `/FFBar:Yes` is given, a FormFeed character will cause the VT100 screen to display a horizontal bar to indicate the start of a new page. The default is No.

`/FFClr:{Yes No}`

Specifies how the ASCII FormFeed character (character code 14₈) is handled. When `/FFClr:Yes` is given, a FormFeed character will cause the VT100 screen to clear. The default is No.

`/Height:{2-254}`

Specifies the number of lines on the VT100 screen. The use of a number other than 24 makes sense only for a “glass TTY” application. Numbers substantially larger than 24 may need higher screen resolutions. See [Monitor Considerations](#) (page 6) for more information. The default is 24.

`/Mode:{Create Truncate New Append Extend Write Overwrite}`

Specifies the method used to open and verify the `/Name`.

Create	Create file (truncate if exists)
Truncate	Truncate file (must exist)
New	Create file (must not exist)
Append	Create file (append if exists)
Extend	Extend file (must exist)
Write	Write to file (must exist)
Overwrite	Create file (overwrite if exists)

The default is Create.

`/Name:filename`

Specifies the file that will capture data.

See [Quoted Strings](#) (page 13) for details about file names with spaces.

See [Special Filename Characters](#) (page 14) for information on how to create a unique capture file on each Kestrel start-up.

This option is required if `/Capture:Yes` is given.

`/Unit:{0-99}`

Specifies which logical console is used. For consoles numbered 0-9, the keyboard accelerators ALT-0 through ALT-9 switch to the windows for consoles 0 through 9, respectively.
The default is 0.

`/UnitName:string`

Specifies the logical device name to be displayed on various *Devices* menu selections dialog boxes. The UnitName string must be unique, less than 256 characters long and must not contain any back slash (\) characters.
The default is a generic, system generated name.

`/Width:{80 132}`

Specifies the initial width of the VT100 display.
The default is 80.

WRQ =

Specifies a filter connection to the WRQ Reflection package (a terminal emulator).

`WRQ /BreakChar:0 = ASCII /SC:20`

[Modem Signal Options](#) (page 54) are allowed.

`/Activate:{Yes No}`

Specifies whether Kestrel should consider the connected Reflection session for activation when the Kestrel enters the 'running' state.
The default is Yes.

`/BreakChar:{0-255}`

Specifies the character in the input stream that indicates the start of a line break.
The default is none.

Configure BreakChar in WRQ by clicking *Setup* and then *Keyboard Map*. Click CTRL then BK. Click the Commands radio button. Select Visual Basic from the Command type drop down list. In the Command field, enter the command string "Transmit "\x000", rcHexData". Replace the 000 digits with the hexadecimal equivalent of the actual code to be used to signal the start of a line break. The typical setup will use `/BreakChar:0` and "\x000".

`/Codependent:{Yes No}`

Specifies whether Reflection is started as a codependent process with the Kestrel.
The default is Yes: that is, if either the Reflection session or the Kestrel process terminates, then its codependent process will also be shut down.

`/Delay:{ Infinite Default 1-4294967294 }`

Specifies the maximum number of milliseconds to wait for a `/WinExec` Reflection session to start. Use `/Delay:Infinite` to wait for the Reflection session to start, regardless of how long it takes.

The default is `/Delay:Default`, which is 60000.

`/Pipe:pipeName`

Specifies the name of the pipe to create and use.

See [Quoted Strings](#) (page 13 for details about file names with spaces).

This specifies a parallel pipe. WRQ sessions can be monitored with the WRQPIPE program.

The default is no parallel pipe.

`/UnitName:string`

Specifies the logical device name to be displayed on various *Devices* menu selections dialog boxes. The `UnitName` string must be unique, less than 256 characters long and must not contain any back slash (`\`) characters.

The default is a generic, system generated name.

`/WinExec:commandline`

Specifies the command line to start the Reflection program. Typically, this will be: `/WinExec:'C:\Program Files\Reflection\rlwin.exe /n /s session.rlw'` where `session` is a unique name under which each Reflection session is saved.

The default is no Reflection session is started.

`/WriteTime:{ Infinite 0-4294967294 }`

Specifies the maximum number of milliseconds to wait for a previous write to the named pipe to complete before discarding subsequent write data (write timeout).

Use `/WriteTime:Infinite` to disable write timeouts.

The default is 1000.

Character Type Virtual Devices

= {12005A 12005B ASIC} (A-Series)

Aliases that specify one of the standard HP 1000 ASIC cards. The difference between the HP 12005A and 12005B interfaces was the addition of the W3 jumper to allow more character framing selections and the S7 baud rate switch to extend the range to 19200 baud. ASIC is an alias for the 12005B interface card.

COM /Port:1 = ASIC /SC:20 /Baud:19200 /VCP:On

[Instance Options](#) (page 56) are allowed. The default select code is 20 octal.

[Character Options](#) (page 56) are allowed.

`/Baud:{10-4194304}`

Specifies the fixed line baud rate selected by jumpers in the interface cable connector hood or by interface switches S1, S2, S3, S4 and S7. The specified rate value must be an integer in the range 10-4194304. In addition, if the attached physical device is a serial device that is supported as a COM port in Windows, the specified rate must be valid for that device.

Multiple `/Baud` options may be given, in which case the last baud rate given is used.

The default is 9600 baud.

`/S5:{Open Closed}`

Specifies the state of the ASIC controller S5 switch. Switch S5 controls the number of stop bits (Open = 2 stop bits, Closed = 1 stop bit).

The default is Closed.

`/S6:{Open Closed}`

Specifies the state of the ASIC controller S6 switch. Switch S6 controls the parity sense (Open = Even parity, Closed = Odd parity).

The default is Closed.

`/Special1:nnn[,nnn...]`

`/Special2:nnn[,nnn...]`

`/Special3:nnn[,nnn...]`

The `/Special1`, `/Special2` and `/Special3` options allow specification of the contents of the PROM chip in socket U83 (see the RTE-A Driver Reference Manual, Appendix I). These options must be used if and only if the data in this PROM chip have been altered. (A nonstandard PROM will often be marked in some way so that it is easily recognizable as being a custom PROM.) The first occurrence of `/Special1`, `/Special2` or `/Special3` erases all special character handling. The octal codes (nnn) specify which characters are to be treated as type 1, type 2, or type 3 special characters. For example, the contents of the standard PROM could be specified by giving: `/Special1:004,204,010,210,015,215,022,222,177,377`
`/Special2:036,236` `/Special3:015,215`

The default corresponds to the contents of standard PROM.

`/VCP:{On Off}`

Enables Kestrel VCP (Virtual Control Panel) for this select code.

The default is Off.

`/W3:{A B}`

Specifies the position of the 12005B interface W3 jumper. This option is not allowed for the 12005A interface. Jumper W3 controls character framing, and must be specified if the W3 jumper has been moved from the factory installed position.

The default is A, which is the factory installed jumper position.

= {12040C CMUX} ^(A-Series)

Aliases that specify the standard HP 1000 12040C 8-channel asynchronous multiplexor.

COM /Port:1 = 12040C /SC:42 /Port:0

[Instance Options](#) (page 56) are allowed. There is no default select code.

[Character Options](#) (page 56) are allowed.

/Port:{0-7}

Selects which multiplexor port is referenced.
The default is 0.

/VCP:{On Off}

Enables the Kestrel VCP (Virtual Control Panel) for this port.
The default is Off.
Only port 0 can be enabled as VCP.

= {12040D DMUX} ^(A-Series)

Aliases that specify the standard HP 1000 12040D 8-channel asynchronous multiplexor.

COM /Port:1 = DMUX /SC:31 /port:0 /vcp:on

[Instance Options](#) (page 56) are allowed. There is no default select code.

[Character Options](#) (page 56) are allowed.

/BRG:{0-1}

Specifies the baud rate generator to which this port is connected.
The default is 0 for port 0 and 1 for ports 1 through 7, which corresponds to the HP 12828-60002 or HP 28658-63005 cables.

/CN06Death:{On Off}

Enables or disables fatal error termination on attempt to perform an unsupported Z80 microprocessor action.
The default is On.

/Port:{0-7}

Selects which HP 1000 MUX port is referenced.
The default is 0.
Only port 0 can be enabled as VCP.

`/VCP:{On Off}`

Enables the Kestrel VCP (Virtual Control Panel) for this port.
The default is Off.
Only port 0 can be enabled as VCP.

= {12100A OBIO} ^(A-Series)

Aliases that specify the standard HP 1000 12100A OBIO (On-Board I/O) 4-channel asynchronous multiplexor. Although the OBIO device exists only on the original HP 1000 A400 CPU board, the Kestrel allows this virtual device to be configured on any A-series CPU.

COM /Port:1 = OBIO /Port:0 /VCP:On

[Instance Options](#) (page 56) are allowed. The default select code is 77, which is the only select code supported by the legacy HP 12100A device and by RTE-A.

[Character Options](#) (page 56) are allowed.

`/Baud:{10-4194304}`

Specifies the fixed (i.e., not programmable) baud rate for this port. The specified rate value must be an integer in the range 10-4194304. In addition, if the attached physical device is a serial device that is supported as a COM port in Windows, the specified rate must be valid for that device.

Multiple `/Baud` options may be given, in which case the last baud rate given is used.

The default is to use the programmed baud rate for this port.

`/Port:{0-3}`

Selects which HP 1000 OBIO port is referenced.

The default is 0.

Only Port 0 can be enabled as VCP.

`/VCP:{On Off}`

Enables the Kestrel VCP (Virtual Control Panel) for this port.

The default is Off.

Only Port 0 can be enabled as VCP.

= {12531D HSTI} ^(21MX)

Aliases that specify the standard HP 1000 12531D High Speed Terminal Interface.

COM /Port:1 = 12531D /SC:12 /W7:B /Baud:9600

[Instance Options](#) (page 56) are allowed. There is no default select code.

[Character Options](#) (page 56) are allowed.

`/Baud:{10-4194304}`

Specifies the fixed line baud rate selected by interface jumpers W1, W2, W3, W4, W5 and W6. The specified rate value must be an integer in the range 10-4194304. In addition, if the attached physical device is a serial device that is supported as a COM port in Windows, the specified rate must be valid for that device.

Multiple `/Baud` options may be given, in which case the last baud rate given is used.

The default is 2400 baud.

`/W7:{A B}`

Selects the number of stop bits in the character frame: A = two stop bits, B = one stop bit.

The default is A.

= {12792C CMUX} ^(21MX)

Aliases that specify the standard HP 1000 12792C 8-channel asynchronous multiplexor.

COM /Port:1 = 12792C /SC:12 /Port:0

[Instance Options](#) (page 56) are allowed. There is no default select code.

[Character Options](#) (page 56) are allowed.

`/Port:{0-7}`

Selects which HP 1000 MUX port is referenced.

The default is 0.

= {12792D DMUX} ^(21MX)

Aliases that specify the standard HP 1000 12792D 8-channel asynchronous multiplexor.

COM /Port:1 = 12792D /SC:12 /Port:0

[Instance Options](#) (page 56) are allowed. There is no default select code.

[Character Options](#) (page 56) are allowed.

`/BRG:{0-1}`

Specifies the baud rate generator to which this port is connected.

The default is 0 for port 0 and 1 for ports 1 through 7, which corresponds to the HP 12828-60002 or HP 28658-63005 cables.

`/CN06Death:{On Off}`

Enables or disables fatal error termination on attempt to perform an unsupported Z80 microprocessor action.

The default is On.

`/Port:{0-7}`

Selects which HP 1000 MUX port is referenced.

The default is 0.

= 12880A ^(21MX)

Specifies the standard HP 1000 12880A Keyboard-Display Terminal Interface.

COM /Port:1 = 12880A /SC:12 /Baud:9600

[Instance Options](#) (page 56) are allowed. There is no default select code.

[Character Options](#) (page 56) are allowed.

`/Baud:{10-4194304}`

Specifies the fixed line baud rate selected by interface jumpers W1, W2, W3, W4, W5 and W6. The specified rate value must be an integer in the range 10-4194304. In addition, if the attached physical device is a serial device that is supported as a COM port in Windows, the specified rate must be valid for that device.

Multiple `/Baud` options may be given, in which case the last baud rate given is used.

The default is 2400 baud.

= {12966A BACI} ^(21MX)

Aliases that specify the standard HP 1000 Buffered Asynchronous Data Communications Interface (BACI card).

COM /Port:1 = BACI /SC:12 /Baud:9600

[Instance Options](#) (page 56) are allowed. There is no default select code.

[Character Options](#) (page 56) are allowed.

`/Baud:{10-4194304}`

Specifies a fixed (i.e., jumpered) line baud rate. The specified rate value must be an integer in the range 10-4194304. In addition, if the attached physical device is a serial device that is supported as a COM port in Windows, the specified rate must be valid for that device.

If the `/Baud` option is given, neither the `/ExtClk` option nor the `/Fdiv` option may be given.

Multiple `/Baud` options may be given, in which case the last baud rate given is used.

The default is to use the programmed baud rate for this port.

`/Delay:{Default 0-6000000}`

Specifies the duration of a time interval, given in microseconds, that is used to simulate the delays inherent to the half-duplex UART on the 12966A interface. This delay is introduced on transmit before setting the 'FIFO empty' status bit and on receive before discarding received characters when the interface is in transmit mode. Default specifies a value based on the currently selected baud rate.

The default is Default.

`/ExtClk:{10-4194304}`

Specifies a rate to be used when rate index 0 is programmed (i.e., when the device uses the jumpered external clock). The specified rate value must be an integer in the range 10-4194304. In addition, if the attached physical device is a serial device that is supported as a COM port in Windows, the specified rate must be valid for that device.

If the `/ExtClk` option is given, the `/Baud` option cannot be given.

The default is 19200 baud.

`/Fdiv:divisor`

Specifies the jumpered clock rate divisor, which must be one of the values 1, 2, 4, 8, or 16.

The default is 8 (i.e., the hood jumpers are set to F/8).

If the `/Fdiv` option is given, the `/Baud` option cannot be given.

`= SDIChar` ^(21MX)

Specifies an invented virtual character device. This device is a simple, full duplex character device.

`COM /Port:1 = SDIChar /SC:24 /Line:19200,Odd,7,1`

[Instance Options](#) (page 56) are allowed. There is no default select code.

[Character Options](#) (page 56) are allowed.

/Baud:{10-4194304}

Specifies the baud rate for this virtual character device. The specified rate value must be an integer in the range 10-4194304. In addition, if the attached physical device is a serial device that is supported as a COM port in Windows, the specified rate must be valid for that device.

See the **/Line** option (described below), which may be used to specify all configurable line characteristics for this virtual character device.

Multiple **/Baud** and **/Line** options may be given, in which case the last baud rate given is used.

The default is 9600.

/Line:{lineconfig₁[,lineconfig₂[,...]]}

Specifies one or more line characteristics for this virtual character device. Each lineconfig value may be one of the following:

- A baud rate, which must be a decimal number in the range 10-4194304.
- A line parity descriptor, which must be one of the following: {None Even Odd Space Mark N E O S M}. The single-letter descriptors are equivalent to the full word descriptors that begin with the same letters.
- The number of data bits, which must be 5, 6, 7 or 8.
- The number of stop bits, which must be 1 or 2.

A particular line characteristic (i.e., baud rate, line parity, number of data bits, or number of stop bits) may be given more than once, and multiple **/Line** and **/Baud** options may be given; in either case, the last value given for a line characteristic is used.

The default is 9600,None,8,2.

Clock Type Physical Devices

Clock ^(21MX) =

Used in conjunction with the Time-Based Generator (TBG) virtual device to configure a virtual TBG device.

Clock = TBG /SC:15

There are no valid configuration options for this physical device.

TBG Type Virtual Devices

= {TBG 12539 12539A 12539B 12539C} ^(21MX)

Aliases that specify the standard HP 1000 Time-Based Generator (TBG) device.

Clock = TBG /SC:15

[Instance Options](#) (page 56) are allowed. There is no default select code.

`/W1:{A B}`

Configures the state of the TBG W1 jumper. Enables (B) or disables (A) connecting the TBG error flag to bit 15 of the input (LIA/LIB/MIA/MIB) register. The default is A.

`/W2:{A B}`

Configures the state of the TBG W2 jumper. When this jumper is installed (i.e., `/W2:B` is given), the last four rate decades run 1000 times slower than normal to allow rate testing within a reasonable time interval. The default is A.

CPU Type Physical Devices

CPU =

Specifies the processor type.

CPU = A900

There are no valid configuration options for this physical device.

CPU Type Virtual Devices

= {2114 2115 2116 2100 21MX-M 21MX-E 21MX-F} ^(21MX)

= {A400 A600 A600+ A700 A900 A990} ^(A-Series)

Specifies the emulated HP 1000 CPU type.

CPU = A900 /Switches:240

`/Lock:{Off On}` ^(21MX)

Specify the setting of the CPU Lock switch. The default is Off.

`/MemorySize:{32-2016}`

Specifies the memory size in kilowords. Allowed range is in increments of 32 kilowords. The default is 2016 ^(A-Series) or 1024 ^(21MX).

^(21MX) Memory sizes above 1024 kilowords are non-standard. If a memory size greater than 1024 kilowords is specified, bits 13-10 of the DMS map register data format exist and are used to specify absolute page addresses above page 1023. Operating systems that count on these bits being discarded on write and always zero on read will not function correctly.

`/RPLSW:value` ^(21MX)

Specifies the setting of the RPL (Remote Program Load) DIP switches. The default is 0.

The value is an octal number that corresponds to the positions of the 21MX CPU board RPL DIP switches. The RPL switches are an eight position DIP labeled 1-8 from left to right. Open switches are read as zero; closed switches are read as -one.

When `/Lock:On` is given, then any of the following conditions will cause Remote Program Load to be activated:

1. Power-up;
2. Programmed halt instructions (106xxx and 107xxx); or
3. Forced halts initiated by the I/O system.

On Remote Program Load, the sixteen-bit S (switches) register is set from the eight RPL switches (R1-R8) as follows:

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
R8	R7	0	0	0	R6	R5	R4	R3	R2	0	0	0	0	0	R1

Unlike the original 21MX-E and 21MX-F computers, the Kestrel does not treat RPL switch position 8 as “RPL enable”. Thus, it is possible to perform Remote Program Load using any of the four (potential) boot ROMs.

See the `/RPLVAL` option for another way to set the sixteen-bit S (switches) register on Remote Program Load. Note that the `/RPLVAL` option provides more functionality than the `/RPLSW` option.

`/RPLVAL:value` ^(21MX)

Specifies the value to be set into the sixteen-bit S (switches) register when Remote Program Load occurs. The default is 0.

When `/Lock:On` is given, then any of the following conditions will cause Remote Program Load to be activated:

1. Power-up;
2. Programmed halt instructions (106xxx and 107xxx); or
3. Forced halts initiated by the I/O system.

On Remote Program Load, the given sixteen-bit value is set into the S (switches) register.

See the `/RPLSW` option for another way to set the sixteen-bit S (switches) register on Remote Program Load. Note that the `/RPLVAL` option provides more functionality than the `/RPLSW` option.

`/Switches:value` ^(21MX)

Specifies the initial setting of the sixteen-bit 21MX CPU S (switches) register. The Initial Boot Load (IBL) logic uses the current S register value to specify the boot actions to be taken when the IBL button is pressed. The default is 0.

`/Switches:value` ^(A-Series)

Specifies the setting of the eight A-series CPU DIP switches. The default is 320 (Kestrel VCP with terminal speed sensing).

Much like the HP 1000 VCP, the Kestrel VCP uses the CPU switches to specify the boot actions to be taken upon a cold load (power up or start) as indicated in the following table:

CPU Switches								Octal Value	Meaning (* = auto restart if enabled by switch 8, § = do not use)	Simulated Boot String
1	2	3	4	5	6	7	8			
0	0	0	0	x	x	x	x	000	Loop in Kestrel VCP self-test forever	
0	0	0	1	x	x	x	x	020	* Get boot string from clock RAM	%BCL
0	0	1	0	x	x	x	x	040	Loop in Kestrel VCP self-test, stop on error	
0	0	1	1	x	x	x	x	060	§ Undefined	
0	1	0	0	x	x	x	x	100	* PIC Auto-boot	%BPI21
0	1	0	1	x	x	x	x	120	§ (A990) Load Product ID 121 from Kestrel VCP ROM	
0	1	1	0	x	x	x	x	140	Kestrel VCP – do not Power Fail Auto-Restart	
0	1	1	1	x	x	x	x	160	§ (A990) Load Product ID 120 from Kestrel VCP ROM	
1	0	0	0	x	x	x	x	200	* Kestrel VCP	
1	0	0	1	x	x	x	x	220	* MFM Disc Auto-boot	%BDI32
1	0	1	0	x	x	x	x	240	* PROM Auto-boot	%BRM22
1	0	1	1	x	x	x	x	260	* SDI Disk Auto-boot	%BDK76
1	1	0	0	x	x	x	x	300	* LAN/DS Auto-boot	%BDS24
1	1	0	1	x	x	x	x	320	* Kestrel VCP with terminal speed-sensing	
1	1	1	0	x	x	x	x	340	* HP-IB Auto-boot	%BDC2027
1	1	1	0	x	x	x	x	340	* SCSI Auto-boot	%BDC6027
1	1	1	1	x	x	x	x	360	§ Undefined	
x	x	x	x	0	x	x	x	000	Enable BREAK re-entry to Kestrel VCP on RTE system console	
x	x	x	x	1	x	x	x	010	Disable BREAK re-entry to Kestrel VCP on RTE system console	
x	x	x	x	x	0	x	x	000	Enable ENQ/ACK handshaking in Kestrel VCP	
x	x	x	x	x	1	x	x	004	Disable ENQ/ACK handshaking in Kestrel VCP	
x	x	x	x	x	x	0	x	000	Reserved	
x	x	x	x	x	x	1	x	002	Reserved (do not set)	
x	x	x	x	x	x	x	0	001	Disable Power Fail Auto-Restart	
x	x	x	x	x	x	x	1	004	Enable Power Fail Auto-Restart	

`/TBGAbort:{ Yes No }` ^(A-Series)

Specifies whether the ‘lost TBG tick’ abort is enabled or disabled. The default is No (i.e., disabled).

`/TrapUndefined:{Yes No}` ^(21MX)

Specifies how undefined opcodes are handled.
The default is Yes.

On 21MX CPUs, undefined opcodes are often equivalent to NOP instructions or behave in an undefined manner. When this option is set to No, the Kestrel treats all undefined opcodes as NOP instructions. When this option is set to Yes, the Kestrel traps into the Strobe VCP whenever an undefined opcode is encountered.

`/VISCompatibility:{Yes No}`

Specifies whether the Vector Instruction Set (VIS) instructions generate exactly the same (less accurate) results as the original VIS firmware/hardware.
The default is No.

For the VPIV, VSUM, VNRM, VDOT, DVPIV and DVDOT instructions, the Kestrel can generate a slightly more accurate result than the original HP 1000 VIS firmware/hardware because the Kestrel performs all floating point operations with 64 bits of precision. This increased accuracy can, however, cause some diagnostics to report errors for these instructions because the Kestrel does not generate exactly the same (less accurate) results as the original VIS firmware/hardware. If you specify `/VISCompatibility:Yes`, the Kestrel generates exactly the same (less accurate) results as the original HP 1000 VIS firmware/hardware by repeatedly rounding the intermediate results to 56 bits of precision. If you specify `/VISCompatibility:Yes` these instructions also execute somewhat slower due to the additional rounding step(s) required.

Disk Type Physical Devices

`ASPIDisk =`

Specifies that the ASPI interface should be used. See [ASPI Installation](#) (page 7) for installation requirements.

`ASPIDisk /Name:PhysicalDrive1 = MAC /SC:15 /Unit:5 /Drive:7920`

`/Adapter:{0-7}`

Specifies the ASPI controller number.
The default is 0.

The `/Adapter` option cannot be given if Windows has assigned a name to the disk device.

`/Drive:{Generic}`

Specifies the drive type.
The default is Generic.

/Name:aspiname

Specifies the Windows name for the disk drive. You may need to use the [DOSDEV.EXE](#) program (page 7) to determine the correct aspiname to use.

There is no default - the /Name option is required if Windows has assigned a name to the disk device.

/Poll:{0-60000}

Specifies the interval in milliseconds to poll the disk drive for status changes.

The default is 10 milliseconds.

If `/Poll:0` is given, disk drive status changes are not polled.

/Unit:{0-15}

Specifies the SCSI device number.

The default is 0.

The /Unit option cannot be given if Windows has assigned a name to the disk device.

/UnitName:string

Specifies the logical device name to be displayed on various *Devices* menu selections dialog boxes. The UnitName string must be unique, less than 256 characters long and must not contain any back slash (\) characters.

The default is a generic, system generated name.

File =

Specifies a Windows file to be used as a disk image container file. See [GetDisk](#) (page 145) and [Container File Builder](#) (page 137) for information about how to create a disk image container file.

File /Name:Images\7920.DISK = MAC /SC:15 /Unit:4 /Drive:7920

/Delay:milliseconds

Specifies an amount of time to delay (in milliseconds) before starting a container file read or write operation.

The default is 0.

/Flush:{Yes No}

Specifying `/Flush:Yes` forces Windows to flush data to the disk as soon as possible after a write. Normally, Windows uses a lazy writer to flush data when the system is otherwise idle.

The default is No.

/Mount:{ Yes No Exist}

Controls whether the disk is mounted during startup.

If `/Mount:Exist` is given and the `/Name` option is also given and the disk container file specified by the `/Name` option exists, then `/Mount:Exist` is equivalent to `/Mount:Yes`; otherwise, `/Mount:Exist` is equivalent to `/Mount:No`.

The default is Yes if the `/Name` option is given; otherwise, the default is No.

/Name:filename

Specifies the name of the file to use as the disk image container file.

There is no default container file name – the `/Name` option must be given if `/Mount:Yes` is given.

See [Quoted Strings](#) (page 13) for details about file names with spaces. See [Special Filename Extensions](#) (page 14) for additional information about recommended and legal file name extensions. See the [DiskFilesFolder](#) command (page 21) for information about how to specify a default folder for your disk image container files.

/ReadOnly:{ On Off}

Specifies that a container file cannot be written.

The default is Off.

/Size:blocks

Specifies the maximum number of 256 byte blocks to be used. The number of bytes can either limit a current container file or extend the container file. ReadOnly files cannot be extended.

The default is the current file size.

/UnitName:string

Specifies the logical device name to be displayed on various *Devices* menu selections dialog boxes. The UnitName string must be unique, less than 256 characters long and must not contain any back slash (\) characters.

The default is a generic, system generated name.

FixedDisk =

Specifies a directly accessible fixed disk drive. Warning: This option allows unrestricted access to the specified fixed disk drive. Incorrect use of this option can result in the corruption of data on the specified disk and may make your system unusable!

FixedDisk /Name:D: = MAC /SC:15 /Unit:6 /Drive:7925

/AutoSize:{ Yes No }

Controls how the physical disk size is determined. When AutoSize is No, the disk geometry reported by the operating system device driver is used to compute the physical size of the drive. When AutoSize is Yes, the disk geometry reported by the operating system device driver is used as an initial, minimum estimate of the actual physical disk size, which is determined subsequently by an iterative algorithm. Use of USB RAM drives or ZIP drives under Win2K requires AutoSize be Yes in order to use the full medium.

The default is Yes.

/Delay:milliseconds

Specifies an amount of time to delay (in milliseconds) before starting a disk read or write operation.

The default is 0.

/Mount:{ Yes No }

Controls whether the disk is mounted during startup.

The default is Yes.

/Name:letter

Specifies the fixed disk by its drive letter (with or without a trailing colon).

This option is required.

/ReadOnly:{ On Off }

Specifies that the fixed disk cannot be written.

The default is Off.

/UnitName:string

Specifies the logical device name to be displayed on various *Devices* menu selections dialog boxes. The UnitName string must be unique, less than 256 characters long and must not contain any back slash (\) characters.

The default is a generic, system generated name.

Floppy =

Specifies a directly accessible floppy drive.

Floppy /Name:A: = MAC /SC:15 /Unit:6 /Drive:7905-R /Cylinders:60

/AutoSize:{ Yes No }

Controls how the physical disk size is determined. When AutoSize is No, the disk geometry reported by the operating system device driver is used to compute the physical size of the medium in the drive. When AutoSize is Yes, the disk geometry reported by the operating system device driver is used as an initial, minimum estimate of the actual physical disk size, which is determined subsequently by an iterative algorithm.

The default is No.

/Delay:milliseconds

Specifies an amount of time to delay (in milliseconds) before starting a floppy disk read or write operation.

The default is 0.

/ForceOnline:{ Yes No }

Some operating systems will refuse to retest the floppy drive if the initial request to bring it online fails. This ensures that the floppy device will be reported as online, even if the medium is not in the drive.

The default is No.

/Mount:{ Yes No }

Controls whether the disk is mounted during startup.

The default is Yes.

/Name:letter

Specifies the floppy disk by its drive letter (with or without a trailing colon).

This option is required.

/ReadOnly:{ On Off }

Specifies that the floppy disk cannot be written.

The default is Off.

/UnitName:string

Specifies the logical device name to be displayed on various *Devices* menu selections dialog boxes. The UnitName string must be unique, less than 256 characters long and must not contain any back slash (\) characters.

The default is a generic, system generated name.

MEM =

Specifies a memory (RAM) disk. The Windows virtual memory manager may actually swap some or all memory-based disk image data to disk, depending on your computer's free memory. See [GetDisk](#) (page 145) and [Container File Builder](#) (page 137) for information about how to create a disk image container file.

MEM /Name:Images\SMALDISK.DISK = MAC /SC:15 /Unit:6 /Drive:7905-F

/Delay:milliseconds

Specifies an amount of time to delay (in milliseconds) before starting a memory disk read or write operation.

The default is 0.

/Mount:{ Yes No Exist }

Controls whether the disk is mounted during startup.

If `/Mount:Exist` is given and the `/Name` option is also given and the disk container file specified by the `/Name` option exists, then `/Mount:Exist` is equivalent to `/Mount:Yes`; otherwise, `/Mount:Exist` is equivalent to `/Mount:No`.

The default is Yes if the `/Name` option is given; otherwise, the default is No.

/Name:filename

Specifies a container file used to initialize the RAM disk.

There is no default container file name – the `/Name` option must be given if `/Mount:Yes` is given.

See [Quoted Strings](#) (page 13) for details about file names with spaces. See [Special Filename Extensions](#) (page 14) for additional information about recommended and legal file name extensions. See the [DiskFilesFolder](#) command (page 21) for information about how to specify a default folder for your disk container files.

If `/WriteBack:On` is specified, the RAM disk will be written back to this file when the Kestrel shuts down or the disk is dismounted.

/ReadOnly:{ On Off }

Specifies that the memory file cannot be written.

The default is Off.

`/ReadOnly:On` and `/WriteBack:On` cannot both be specified.

/Size:blocks

Specifies the maximum number of 256 byte blocks to be used.

The default is the size of the file specified by the `/Name` option, if given.

The disk size specified by the `/Size` option must not be smaller than the actual size of a RAM disk container file specified by the `/Name` option.

/UnitName:string

Specifies the logical device name to be displayed on various *Devices* menu selections dialog boxes. The `UnitName` string must be unique, less than 256 characters long and must not contain any back slash (\) characters.

The default is a generic, system generated name.

/WriteBack:{On Off Disable}

`/WriteBack:On` and `/WriteBack:Off` determine whether the contents of the RAM disk are written back to the file specified by the `/Name` option when the Kestrel shuts down or the disk is dismounted from the Change Disk Unit Status dialog box. `/WriteBack:Disable` disables writing to the container file specified by the `/Name` option for the duration of the Kestrel run and disables (i.e., grays out) the WriteBack check box on the Change Disk Unit Status dialog. The default is Off.

`/ReadOnly:On` and `/WriteBack:On` cannot both be specified.

RawDisk =

Specifies a directly accessible disk device. Warning: This option allows unrestricted access to the specified disk device. Incorrect use of this option can result in the corruption of data on the specified disk and may make your system unusable!

RawDisk /Name:PhysicalDrive1 = MAC /SC:15 /Unit:6 /Drive:7925

/AutoSize:{Yes No}

Controls how the physical disk size is determined. When `AutoSize` is `No`, the disk geometry reported by the operating system device driver is used to compute the physical size of the medium in the drive. When `AutoSize` is `Yes`, the disk geometry reported by the operating system device driver is used as an initial, minimum estimate of the actual physical disk size, which is determined subsequently by an iterative algorithm. Use of USB RAM drives or ZIP drives under Win2K requires `AutoSize` be `Yes` in order to use the full medium.

The default is `Yes`.

/Delay:milliseconds

Specifies an amount of time to delay (in milliseconds) before starting a disk read or write operation.

The default is 0.

/ForceOnline:{Yes No}

Some operating systems will refuse to retest the device if the initial request to bring it online fails. This ensures that the device will always be reported as online.

The default is `No`.

/Mount:{Yes No}

Controls whether the disk is mounted during startup.

The default is `Yes`.

`/Name:devicename`

This option is required.

Specifies the device name of the directly accessed disk device. You may need to use the [DOSDEV.EXE](#) program (page 7) to determine the correct device name.

`/ReadOnly:{On Off}`

Specifies that the directly accessed disk device cannot be written.

The default is Off.

`/UnitName:string`

Specifies the logical device name to be displayed on various *Devices* menu selections dialog boxes. The UnitName string must be unique, less than 256 characters long and must not contain any back slash (\) characters.

The default is a generic, system generated name.

Removable =

Specifies a directly accessible removable disk. Warning: This option allows unrestricted access to the specified removable disk. Incorrect use of this option can result in the corruption of data on the removable disk and may make your system unusable!

Removable /Name:E = MAC /SC:15 /Unit:6 /Drive:7925

`/AutoSize:{Yes No}`

Controls how the physical disk size is determined. When AutoSize is No, the disk geometry reported by the operating system device driver is used to compute the physical size of the medium in the drive. When AutoSize is Yes, the disk geometry reported by the operating system device driver is used as an initial, minimum estimate of the actual physical disk size, which is determined subsequently by an iterative algorithm. Use of USB RAM drives or ZIP drives under Win2K requires AutoSize be Yes in order to use the full medium.

The default is Yes.

`/Delay:milliseconds`

Specifies an amount of time to delay (in milliseconds) before starting a removable disk read or write operation.

The default is 0.

`/ForceOnline:{Yes No}`

Some operating systems will refuse to retest the removable device if the initial request to bring it online fails. This ensures that the removable device will be reported as online, even if the medium is not in the drive.

The default is No.

`/Mount:{ Yes No }`

Controls whether the disk is mounted during startup.
The default is Yes.

`/Name:letter`

Specifies the removable disk by its drive letter (with or without a trailing colon).
This option is required.

`/ReadOnly:{ On Off }`

Specifies that the removable disk cannot be written.
The default is Off.

`/UnitName:string`

Specifies the logical device name to be displayed on various *Devices* menu selections dialog boxes. The UnitName string must be unique, less than 256 characters long and must not contain any back slash (\) characters.
The default is a generic, system generated name.

Disk Type Virtual Devices

= {MAC 13037 13175 13178} ^(21MX)

Aliases that specify a MAC (13175/13178) interface, 13037 controller combination.

File /Name:Images\7920.DISK = MAC /SC:15 /Unit:4 /Drive:7920

[Instance Options](#) (page 56) are allowed. There is no default select code.

`/Cylinders:{1-65535}`

Specifies or overrides the number of cylinders for a given drive.
The valid values and the default depend on the drive.

`/Delay:{0-2147483647}`

Specifies the minimum disk transfer time in microseconds.
The default is 0 (i.e., no minimum transfer time).

`/Drive:name`

Specifies the drive type name. Name must be one of the following: 7905-R, 7905-F, 7905-P, 7906-R, 7906-F, 7906-P, 7907-R, 7907-F, 7920, or 7925. For 7905 or 7906 disks, a removable and fixed disk pair (e.g., 7906-R and 7906-F) may be specified for a single unit number on separate configuration lines.
There is no default: either this option or complete custom drive geometry (`/DriveType`, `/Cylinders`, `/Heads` and `/Sectors`) must be given.

`/DriveType:{0-65535}`

Specifies or overrides the drive type number for a given drive.
The valid values and the default depend on the drive.

`/Format:{On Off}`

Specifies the initial state of the drive Format switch.
The default is Off.

`/Heads:{1-256}`

Specifies or overrides the number of heads per cylinder for a given drive.
The valid values and the default depend on the drive.

`/Protect:{On Off}`

Specifies the initial state of the drive Write Protect switch.
The default is Off.

`/Sectors:{1-256}`

Specifies or overrides the number of sectors per track for a given drive.
The valid values and the default depend on the drive.

`/SectorSize:256`

Specifies or overrides the number of bytes per sector for a given drive.
The only valid value for MAC disks is 256.
The default is 256.

`/SurfaceWise:{Yes No}`

Specifies or overrides the drive data organization for a given drive. Data bytes may be organized with cylinder number changing faster than head number (Yes) or vice versa (No).
The default is No.

`/Unit:{0-7}`

Specifies the drive unit number on the MAC interface.
This option is required – there is no default unit number.

`/W4:{In Out}`

Specifies the interface card W4 jumper state. If given for more than one drive on this controller, the given states must all be the same.
The default is Out.

= `SDIDisk` ^(A-Series)

Specifies an invented virtual disk. The VCP boot code for this device is `%BDK`.

`File /Name:HPSCSIBOOT.IMG = SDIDisk /Unit:1`

[Instance Options](#) (page 56) are allowed. The default select code is 76 octal.

`/Delay:{0-2147483647}`

Specifies the minimum disk transfer time in microseconds.
The default is 0 (i.e., no minimum transfer time).

`/Unit:{0-63}`

Specifies the drive unit number.
This option is required – there is no default unit number.

Fence Type Physical Devices

`{Fence}` ^(21MX) =

Specifies a placeholder physical device for use in conjunction with any of the privileged interrupt fence type virtual devices.

`Fence = 12936 /SC:17`

There are no valid configuration options for this physical device.

Fence Type Virtual Devices

= `{12620A 12936 Fence Breadboard}` ^(21MX)

Aliases that specify a virtual device to be used as a privileged interrupt fence device.

`Fence = 12620A /SC:17`

[Instance Options](#) (page 56) are allowed. There is no default select code.

HDLC Type Physical Devices

`NetPtoP` =

Provides an emulated HDLC connection to another Kestrel system by using a point-to-point TCP/IP connection identified by a specified pair of IP (internet protocol) address and port number combinations. If the Windows system has firewalls or other tools that prohibits the Kestrel from creating a point-to-point TCP/IP connection, then the Kestrel will not be able to support NetPtoP connections until the Windows system is reconfigured to allow such connections.

`NetPtoP /RemoteName:SystemB = 12007 /sc:61`

/LocalIP:ipaddr[:portno]

Specifies the IP address (the local IP address) and, optionally, the local port number to be used to emulate this end of the HDLC connection.

The ipaddr value is a string of the form nnn.nnn.nnn.nnn where each nnn is a decimal number in the range 0-255. The IP addresses for all Windows PC network devices may be displayed by running the Windows utility program IPCONFIG /ALL at the Command prompt.

The optional portno value is a decimal integer in the range 1-65535. The portno value may also be specified by giving the /LocalPort option.

At most one of the options that select the local IP address (the /LocalIP option or the /LocalName option) may be given.

If neither the /LocalIP option nor the /LocalName option is given and there is exactly one IP address configured for this computer, then that unique IP address is selected by default; otherwise, a configuration error is reported. If the local port number is not specified, the default is 6000.

/LocalName:computername[:portno]

Specifies the name of this computer and, optionally, the local port number on this computer to be used to emulate this end of the HDLC connection.

If there is exactly one IP address configured for this computer, then that IP address (the local IP address) is selected to be used to emulate this end of the HDLC connection. If this computer has multiple configured IP addresses, then the /LocalIP option must be used instead.

The optional portno value is a decimal integer in the range 1-65535. The portno value may instead be specified by giving the /LocalPort option.

At most one of the options that select the local IP address (the /LocalIP option or the /LocalName option) may be given.

If neither the /LocalIP option nor the /LocalName option is given and there is exactly one IP address configured for this computer, then that unique IP address is selected by default; otherwise, a configuration error is reported. If the local port number is not specified, the default is 6000.

/LocalPort:portno

The portno value must be a decimal value in the range 1-65535 that specifies the local port number to be used in association with the local IP address to identify a unique TCP/IP address for this end of the emulated HDLC connection. The portno value may instead be specified as part of the /LocalIP or /LocalName option.

If the local port number is not specified, the default is 6000.

/Reconnect:{1-65535}

Specifies the time interval (in milliseconds) to wait following a failed connection attempt before automatically retrying to establish the connection.

If the /Reconnect option is not given, the default is 100 milliseconds.

/RemoteIP:ipaddr[:portno]

Specifies the IP address (the remote IP address) and, optionally, the remote port number that should be used by another Kestrel application to emulate the other end of the HDLC connection.

The ipaddr value is a string of the form nnn.nnn.nnn.nnn where each nnn is a decimal number in the range 0 255. The IP addresses for all Windows PC network devices may be displayed by running the Windows utility program IPCONFIG ALL at the Command prompt.

The optional portno value is a decimal integer in the range 1-65535. The portno value may also be specified by giving the /RemotePort option.

There is no default remote IP address; either the /RemoteIP option or the /RemoteName must be given. If the remote port number is not specified, the default is 6000.

/RemoteName:computername[:portno]

Specifies the name of a computer and, optionally, the remote port number on that computer to be used to emulate the other end of the HDLC connection.

The specified computer must currently be running Windows. If the specified computer has exactly one configured IP address, then the Kestrel on that computer must use that unique IP address (the remote IP address). If the specified computer has multiple configured IP addresses, then the /RemoteIP option must be used instead.

The optional portno value is a decimal integer in the range 1-65535. The portno value may instead be specified by giving the /RemotePort option.

There is no default remote IP address; either the /RemoteIP option or the /RemoteName must be given. If the remote port number is not specified, the default is 6000.

/RemotePort:portno

The portno value must be a decimal value in the range 1-65535 that specifies the remote port number to be used in association with the remote IP address to identify a unique TCP/IP address for the other end of the emulated HDLC connection. The portno value may instead be specified as part of the /RemoteIP or /RemoteName option.

If the remote port number is not specified, the default is 6000.

/UnitName:string

Specifies the logical device name to be associated with this end of the emulated HDLC connection. This name is displayed in the Initialization Messages dialog box to identify the HDLC connection being established. The UnitName string must be unique, less than 256 characters long and must not contain any back slash (\) characters.

The default is a generic, system generated name.

HDLC Type Virtual Devices

= {12007 12044} ^(A-Series)

Aliases that specify one of the standard HP 1000 A-Series HDLC interface cards.

NetPtoP /RemoteName:SystemB = 12007 /sc:61

[Instance Options](#) (page 56) are allowed. The default select code is 70 octal.

/VCP:{On Off}

Enables the Kestrel VCP (Virtual Control Panel) for this select code. When an HDLC device is selected as the Kestrel VCP device, the actual VCP terminal is provided by the DSVCP program running under RTE on the computer at the other end of the HDLC connection.

The default is Off.

= {12794 12825} ^(21MX)

Aliases that specify one of the standard HP 1000 21MX HDLC interface cards.

NetPtoP /RemoteName:SystemB = 12794 /sc:61

[Instance Options](#) (page 56) are allowed. The default select code is 70 octal.

Host Access Type Physical Devices

HostFile =

Provides access to the Windows file system on the host processor.

HostFile /Handles:60 = HostAccess /SC:74

/Handles:{1-65535}

Specifies the number of files that may be opened simultaneously by the attached HostAccess virtual device.

The default is 32.

/WindowsTimes:{Yes No ^(XP)}

Specifies whether the algorithm for converting UTC times to local times should be the incorrect one that is used by the Windows Explorer program and the Command Interpreter program.

The default is No ^(XP) or Yes ^(NT, 2K).

Note: The Windows local time conversion algorithm is incorrect. The Windows Explorer program and the Command Interpreter program display the wrong time for a file when the current local daylight savings time state does not match the daylight savings time state that was in effect when a file was created.

Host Access Type Virtual Devices

= HostAccess

Defines a virtual device to provide access to the native file system on the host processor.

HostFile = HostAccess

[Instance Options](#) (page 56) are allowed. The default select code is 75 octal.

GPIB (IEEE-488) Type Physical Devices

GPIB =

Specifies the National Instruments TNT4882 IEEE-488 GPIB card.

GPIB /Index:1 = HP-IB /SC:27

/Index:{0-9}

Specifies the number of the National Instruments GPIB device to use. The given digit is appended to the string GPIB to select one of the GPIB devices GPIB0, GPIB1, etc.

At most one of the /Index and /Name options may be given.

If neither the /Index option nor the /Name option is given, the default is 0 (i.e., use device GPIB0) if no GPIB /Index option has ever been given; otherwise, the default is the previously specified /Index plus 1.

/Name:gpibname

Specifies the name of the National Instruments GPIB device to use.

At most one of the /Index and /Name options may be given.

If neither the /Index option nor the /Name option is given, the default is 0 (i.e., use device GPIB0) if no GPIB /Index option has ever been given; otherwise, the default is the previously specified /Index plus 1.

/PPFTM:{0-1000000000}

Specifies the interval (in microseconds) during which ‘fast’ parallel polling will occur. During the ‘fast’ parallel polling interval, the Kestrel conducts parallel polling with no delay between parallel polling transactions with a duration specified by the /PPTMO option. After the ‘fast’ parallel polling interval has elapsed, the Kestrel will continue ‘slow’ parallel polling every millisecond. It is usually not necessary to specify this option.

The default is 100000 microseconds (100 milliseconds).

/PPTMO:{0-1000000000}

Specifies the duration (in microseconds) of a single parallel poll transaction. If no device responds to a parallel poll within the specified time interval, the interval specified by the /PPFTM option will elapse before another ‘fast’ parallel poll will be conducted. It is usually not necessary to specify this option.

The default is 0 (i.e., conduct a parallel poll for the minimum time interval).

/STMO:{0-1000000000}

Specifies the maximum time interval (in microseconds) allowed for completion of synchronous addressing commands. It is usually not necessary to specify this option.

The default is 1000000 microseconds (1 second).

/StopDelay:{Off 0-10000}

Specifies the time interval (in milliseconds) before stopping a GPIB read or write operation that is in progress. It is usually not necessary to specify this option.

The default is Off.

/TestNRFD:{Yes No}

Specifies if the Kestrel should attempt to check for and handle improper GPIB bus behavior. It is usually not necessary to specify this option.

The default is No.

Certain badly designed GPIB devices may sometimes not release the bus, leaving the bus NRFD signal asserted (e.g., when the HP ThinkJet 2225A printer runs out of paper and its buffer fills up). In this case, the “untalk” and “unlisten” commands sent by RTE on LU timeout, when executed by the National Instruments software, fail to complete and cannot be terminated. This will cause the Kestrel to issue a fatal error report. If the user configures the /TestNRFD:Yes option, then before attempting to transmit or receive any commands or data, the Kestrel will assert the bus ATN signal and check the state of the bus NRFD signal. If NRFD is still asserted, then the Kestrel will not attempt to start a transfer, but will wait for NRFD to be unasserted, the transfer to be stopped, or a shutdown to occur.

`/WTMO:{0-1000000000}`

Specifies the time interval (in microseconds) to wait for completion of an asynchronous command or data transfer to complete before checking for an attempt to terminate or suspend this transfer. It is usually not necessary to specify this option.

The default is 1000 microseconds (1 millisecond).

HP-IB (IEEE-488) Type Virtual Devices

= {12009A HP-IB} ^(A-Series)

Aliases that specify the standard HP 1000 12009A HP-IB interface.

GPIB = HP-IB /SC:27

Instance Options (page 56) are allowed. The default select code is 27 octal.

`/FifoSize:{8-32768 Minimum Standard Default Maximum}`

Specifies the byte size of the emulated HP-IB chip inbound and outbound FIFO's. The Minimum legal value is 8 bytes and the Maximum legal value is 32768 bytes. The Standard value (i.e., the size of the actual 12009A inbound and outbound FIFO's) is 8 bytes.

The default is Default, which is 256 bytes.

For applications where the all HP-IB devices are large block transfer devices (e.g., discs and tapes), larger FIFO sizes improve the performance of the device transfers. The Default size is chosen to be the size of the standard CS/80 disk block.

For applications where the HP-IB devices are instruments with relatively small data messages, configuring `/FifoSize:Standard` may improve error recovery in the case of data transmission errors.

`/ReadToEOI:{Yes No}`

Specifies whether uncounted data read transfers must be terminated by either a byte tagged with EOI or by a LF (linefeed) character. To allow uncounted and unterminated reads to occur, configure `/ReadToEOI:No`, which will cause the Kestrel to perform all uncounted reads as single character read requests. When used with a standard RTE driver, it is usually not necessary to specify this option.

The default is Yes.

`/Signals:{Yes No}`

Specifies whether the polling of bus signals (specifically, SRQ) should be enabled (Yes) or disabled (No). When used with a standard RTE driver, it is usually not necessary to specify this option.

The default is Yes.

`/U16:{0-377}`

Specifies an eight bit octal number that corresponds to the setting of the U16 switches on the 12009-60001 or the 12009-90000 cards, or the U144 switches on the 12009-90001 card. This value shows up as the low-order eight bits of card register 32 (octal). When used with a standard RTE driver, it is usually not necessary to specify this option.

The default is 036.

`/WaitPPValid:{Yes No}`

Specifies whether attempting to read the HP-IB chip inbound FIFO before the parallel polling result is valid will return the "no device responded" value (No) or will wait for the parallel polling result to be valid before returning (Yes). When used with a standard RTE driver, it is usually not necessary to specify this option.

The default is No.

`= {12821 12821A} (21MX)`

Aliases that specify the standard HP 1000 12821 HP-IB interface.

`GPIB = 12821A /SC:20`

[Instance Options](#) (page 56) are allowed. There is no default select code.

`/BusAdr:{0-30}`

Defines the primary bus address that the HP-IB card will recognize as its own (this is the DIP U13 switches 5-1 setting).

The default is 30.

The HP-IB card primary bus address must be set to a number that does not duplicate the primary bus address of any other physical or virtual bus device. It is necessary to specify this option only when some device that is connected to the bus has a primary bus address of 30.

Note: The hardware design of the HP 12821 HP-IB interface card allows the standard RTE drivers to ignore the card's primary bus address and program the card directly, even if the bus address conflicts with that of another device connected to the bus or is illegal. This is a violation of the IEEE-488 bus specification and will fail when the virtual HP 12821 device is attached to a physical GPIB card such as the National Instruments TNT4882 IEEE-488 GPIB card.

`/PPWait:{Never Once Twice Always 0-65535}`

Specify the number of initial parallel polling requests for which this virtual device must wait for the host GPIB to respond before continuing. When used with a standard RTE driver, it is usually not necessary to specify this option. The default is Once.

`/Spoll:{0-377}`

Specifies an octal number to be used as the byte value to return in response to a serial poll. Bit 6 of this value is ignored and replaced with the bus SRQ signal assertion by this card. When used with a standard RTE driver, it is usually not necessary to specify this option. The default is 0.

`/SysCtl:{On Off Open Closed}`

Enables (On or Open) or disables (Off or Closed) whether the HP-IB card is the system controller (this is the DIP U13 switch 8 setting). When used with a standard RTE driver, it is usually not necessary to specify this option. The default is Open.

`= {59310 59310A 59310B} (21MX)`

Aliases that specify the standard HP 1000 59310 HP-IB interface.

`GPIB = 59310B /SC:22`

[Instance Options](#) (page 56) are allowed. There is no default select code.

`/BusAdr:{0-30}`

Defines the primary bus address that the HP-IB card will recognize as its own (this is the DIP SW2 switches 1-5 setting). The default is 0.

The HP-IB card primary bus address must be set to a number that does not duplicate the primary bus address of any other physical or virtual bus device. It is necessary to specify this option only when some device that is connected to the bus has a primary bus address of 0.

Note: The hardware design of the HP 59310 HP-IB interface card allows the standard RTE drivers to ignore the card's primary bus address and program the card directly, even if the bus address conflicts with that of another device connected to the bus or is illegal. This is a violation of the IEEE-488 bus specification and will fail when the virtual HP 59310 device is attached to a physical GPIB card such as the National Instruments TNT4882 IEEE-488 GPIB card.

`/IFC:{On Off Open Closed}`

Enables (On or Open) or disables (Off or Closed) the ability of the HP-IB card to drive the bus IFC signal (this is the DIP SW2 switch 7 setting). When used with a standard RTE driver, it is usually not necessary to specify this option.

The default is On.

`/PPBit:{0-8}`

Specifies data bit (DIO1-DIO8) the HP-IB card will assert in response to a parallel poll (this is the DIP SW1 switches 1-8 setting). A value of 0 indicates no response to a parallel poll. When used with a standard RTE driver, it is usually not necessary to specify this option.

The default is 0.

`/REN:{On Open Off Closed}`

Enables (On or Open) or disables (Off or Closed) the ability of the HP-IB card to drive the bus REN signal (this is the DIP SW2 switch 6 setting). When used with a standard RTE driver, it is usually not necessary to specify this option.

The default is On.

`/Spoll:{0-377}`

Specifies an octal number to be used as the byte value to return in response to a serial poll. Bit 6 of this value is ignored and replaced with the bus SRQ signal assertion by this card. When used with a standard RTE driver, it is usually not necessary to specify this option.

The default is 0.

`/W1:{Out In}`

Enables (In) or disables (Out) the ability of the HP-IB card to set the main flag (this is the jumper W1). When used with a standard RTE driver, it is usually not necessary to specify this option.

The default is In.

SCSI Type Virtual Devices

= {12016 SCSI} ^(A-Series)

Aliases that specify the standard HP 1000 12016 SCSI interface.

File /Name:System.Disk = SCSI /Protocol:DDQ30 /Drive:C2212A /BusAdr:6 = 12016 /SC:27

[Instance Options](#) (page 56) are allowed. The default select code is 27 octal.

Tape Type Physical Devices

ASPITape =

Specifies that a tape drive on the ASPI interface should be used. See [ASPI Installation](#) (page 7) for installation requirements.

ASPITape /Name:Tape0 /UnitName:LU30 = 13181 /SC:20 /Unit:0

/Adapter:{0-7}

Specifies the ASPI controller number.

The default is 0.

The /Adapter option cannot be given if Windows has assigned a name to the tape device.

/BlockSize:{0 512 1024}

Controls the blocking mode. Blocked tapes contain a header block for each record written.

The default is 0.

If /BlockSize:0 is given, the ASPITape device tries to set the mode (in order) to variable length records, then 512 byte records, then 1024 byte records. If none succeed, ASPITape generates an error. If /BlockSize:512 or /BlockSize:1024 is given, ASPITape tries to set the mode to the value specified and generates an error if it fails.

/BPS:{Infinite Fastest Fast Medium Slow 1-4294967294}

Specifies the maximum emulated tape data transfer speed in units of bytes per second. This option can be used to slow down the actual tape data transfer speed to emulate a tape drive of the indicated speed. The value Fastest introduces the minimum possible delay (1-2 milliseconds per data transfer). The value Fast is equivalent to 531250 bytes per second. The value Medium is equivalent to 136000 bytes per second. The value Slow is equivalent to 36000 bytes per second.

The default is Infinite (i.e., no data transfer slow down is applied).

/Drive:{Generic TZ30}

Specifies the drive type.

The default is Generic.

/Name:aspiname

Specifies the Windows name for the tape drive. You may need to use the [DOSDEV.EXE](#) program (page 7) to determine the correct aspiname to use.

There is no default - the /Name option is required if Windows has assigned a name to the tape device.

/Poll:{0-60000}

Specifies the interval in milliseconds to poll the tape drive for status changes.

The default is 10 milliseconds.

If /Poll:0 is given, tape drive status changes are not polled.

/Unit:{0-15}

Specifies the SCSI device number.

The default is 0.

The /Unit option cannot be given if Windows has assigned a name to the tape device.

/UnitName:string

Specifies the logical device name to be displayed on various *Devices* menu selections dialog boxes. The UnitName string must be unique, less than 256 characters long and must not contain any back slash (\) characters.

The default is a generic, system generated name.

/Unload:{Yes No}

Specifies whether the tape should be unloaded (i.e., ejected) whenever the attached virtual tape device requests that the physical tape be put offline.

The default is Yes.

TPF =

Specifies a Windows file to be used as a tape container file.

TPF /UnitName:LU7 /Name:REEL1.TAPE = 13181A /SC:16

/Delay:milliseconds

Specifies a minimum amount of time (in milliseconds) to delay per tape record read, written or skipped. The minimum amount of time to delay for a rewind is not per tape record rewind, but scales from 1 to 32 times the amount given, depending on the number of records rewind.

The default is 0 (i.e., no minimum tape motion delay is imposed).

/ForceSize:{Yes No}

Specifies whether the size limit specified by the `/Size` option overrides the size of an existing tape container file.

The default is No.

`/ForceSize:On` and `/ReadOnly:On` cannot both be specified.

/Mount:{Yes No Exist}

Controls whether the tape is mounted during startup.

If `/Mount:Exist` is given and the `/Name` option is also given and the tape container file specified by the `/Name` option exists, then `/Mount:Exist` is equivalent to `/Mount:Yes`; otherwise, `/Mount:Exist` is equivalent to `/Mount:No`.

The default is Yes if the `/Name` option is given; otherwise, the default is No.

/Name:filename

Specifies the name of the file to use as the tape image container file. There is no default container file name - the `/Name` option must be given if `/Mount:Yes` is given.

See [Quoted Strings](#) (page 13) for details about file names with spaces. See [Special Filename Extensions](#) (page 14) for additional information about recommended and legal file name extensions. See the [TapeFilesFolder](#) command (page 41) for information about how to specify a default folder for your tape container files.

/Notify:{Yes No}

Signals the user if a program unloads the tape.

The default is No.

/ReadOnly:{On Off}

Specifies that a container file cannot be written.

The default is Off.

`/ForceSize:On` and `/ReadOnly:On` cannot both be specified.

/RewDelay:milliseconds

Specifies a minimum amount of time (in milliseconds) to delay during rewinding.

The minimum of `/RewDelay` and the scaled time for `/Delay` is used.

The default is 0 (i.e., no minimum tape motion delay is imposed).

/Size:{Maximum 65-2097151}

Specifies the maximum size (in kilobytes) of a newly created tape container file, where `Maximum` is equivalent to the maximum legal number of kilobytes (2097151). If `/ForceSize:Yes` is also given, then the specified size overrides the size of an existing tape container file.

The default is `Maximum`.

`/UnitName:string`

Specifies the logical device name to be displayed on various *Devices* menu selections dialog boxes. The `UnitName` string must be unique, less than 256 characters long and must not contain any back slash (\) characters.

The default is a generic, system generated name.

Tape Type Virtual Devices

= 13181 13181A ^(21MX)

Aliases that specify a standard HP 1000 13181A tape controller.

TPF /UnitName:LU7 /Name:REEL1.TAPE = HP13181 /SC:16

[Instance Options](#) (page 56) are allowed. There is no default select code. The 13181 tape controller uses two consecutive select codes – the value specified by the `/SC` option must be the lower of the two.

`/Unit:{0-3}`

Specifies the tape drive unit number.

The default is unit 0.

= 13183 13183A ^(21MX)

Aliases that specify a standard HP 1000 13183A tape controller.

TPF /UnitName:LU7 /Name:REEL1.TAPE = HP13183 /SC:16

[Instance Options](#) (page 56) are allowed. There is no default select code. The 13183 tape controller uses two consecutive select codes – the value specified by the `/SC` option must be the lower of the two.

`/Unit:{0-3}`

Specifies the tape drive unit number.

The default is unit 0.

VCP Type Physical Devices

Console =

Specifies the Strobe PC console. See [Appendix C](#) (page 157) for information about the Strobe VCP interface.

Console = StrobeVCP

`/Capture:{ Yes No}`

Enables or disables capturing to the file specified by the `/Name` option.
The default is Yes if `/Name` is given and No if `/Name` is omitted.

`/Height:{ 10-254}`

Specifies the number of lines on the screen. This will provide more lines of history on the screen. Numbers substantially larger than 24 may need higher screen resolutions. See [Monitor Considerations](#) (page 6) for more information.
The default is 24.

`/Mode:{ Create Truncate New Append Extend Write Overwrite}`

Specifies the method used to open and verify the file name given with the `/Name` option.

Create	Create file (truncate if exists)
Truncate	Truncate file (must exist)
New	Create file (must not exist)
Append	Create file (append if exists)
Extend	Extend file (must exist)
Write	Write to file (must exist)
Overwrite	Create file (overwrite if exists)

The default is Create.

`/Name:filename`

Specifies the file that will capture data.

See [Quoted Strings](#) (page 13) for details about file names with spaces.

See [Special Filename Characters](#) (page 14) for information on how to create a unique capture file on each Kestrel start-up.

This option is required if `/Capture:Yes` is given.

`/UnitName:string`

Specifies the logical device name to be displayed on various *Devices* menu selections dialog boxes. The `UnitName` string must be unique, less than 256 characters long and must not contain any back slash (`\`) characters.

The default is a generic, system generated name.

`/Width:{ 80-254}`

Specifies the character width of the console screen.

The default is 80.

VCP Type Virtual Devices

`= StrobeVCP`

Specifies the Strobe VCP.

`Console = StrobeVCP /Startup:Off`

`/BreakToConsole:{On Off}` ^(A-Series)

Strobe Data internal option. When `/BreakToConsole:Yes` is given, causing a line break from the VCP console or selecting the Control entry on the Halt menu when the Kestrel VCP is active will stop the Kestrel VCP and enter the Strobe VCP.

The default is Off.

`/Startup:{Off` ^(A-Series) `Run VCP Address}`

The following table describes the meaning of the various Startup options:

Option	Description
Off ^(A-Series)	Start in the Kestrel VCP. The Strobe VCP is configured but inactive.
Run	Use the Strobe VCP, set the initial P register to 00002 and begin running.
VCP	Use the Strobe VCP, set the initial P register to 00002 and begin in the stopped state.
Address	Use the Strobe VCP and set the initial P register to the least-significant 15 bits of the specified octal address. If the most-significant bit (bit 15) of the specified address is 0, the Kestrel will begin running; otherwise, the Kestrel will begin in the stopped state.

WCS Type Physical Devices

WCS =

Specifies a placeholder physical device for use in conjunction with any WCS (writable control store) virtual device.

WCS = 13197A /SC:12

There are no valid configuration options for this physical device.

WCS Type Virtual Devices

= {13197 13197A} ^(21MX)

Aliases that specify a virtual device to be used to support writes to and reads from a WCS (writable control store) device. Note: The Kestrel does not support WCS devices, although firmware ROMs are supported. See the [FirmwareROMs](#) command (page 27). These virtual devices only capture writes to and reads from these WCS devices. See the virtual CPU device [/TrapUndefined](#) option (page 90) for a description of how to identify usage of instructions that may have been defined by a WCS device.

WCS = 13197A /SC:12

[Instance Options](#) (page 56) are allowed. There is no default select code.

Network Type Physical Devices

Network =

Specifies the Windows PC network device to be used to provide connectivity for the attached virtual network device.

Network /Name:'Onboard LAN' = 12076A /SC:37 /MAC:08-00-09-02-03-5A

/IP:ipaddr

Selects the Windows network device to use based on its IP (internet protocol) address. The ipaddr value is a string of the form nnn.nnn.nnn.nnn where each nnn is a decimal number in the range 0-255. If your Windows network device is configured to obtain an IP address automatically (i.e., DHCP is enabled), do not use the /IP option to select the Windows PC network device. The IP addresses for all Windows PC network devices may be displayed by running the Windows utility program IPCONFIG /ALL at the Command Prompt.

At most one of the options that select the Windows network device (the /IP option, /MAC option or /Name option) may be given.

If none of the options that select the Windows network device is given and there is exactly one Windows network device, then it is selected by default; otherwise, a configuration error is reported.

/MAC:macaddr

Selects the Windows network device to use based on its physical (MAC) address. The macaddr value is a string of the form xx-xx-xx-xx-xx-xx, where each xx is a pair of hexadecimal digits. The MAC addresses for all Windows network devices may be displayed by running the Windows utility program IPCONFIG /ALL at the Command Prompt.

At most one of the options that select the Windows network device (the /IP option, /MAC option or /Name option) may be given.

If none of the options that select the Windows network device is given and there is exactly one Windows network device, then it is selected by default; otherwise, a configuration error is reported.

/Name:netname

Selects the Windows network device to use based on its network connection name. The netname value is the name shown on the Network Connections display. The names of all Windows network devices may be displayed by running the Windows utility program IPCONFIG /ALL at the Command Prompt.

At most one of the options that select the Windows network device (the /IP option, /MAC option or /Name option) may be given.

If none of the options that select the Windows network device is given and there is exactly one Windows network device, then it is selected by default; otherwise, a configuration error is reported.

/UnitName:string

Specifies the logical device name to be displayed on various *Devices* menu selections dialog boxes. The UnitName string must be unique, less than 256 characters long and must not contain any back slash (\) characters.

The default is a generic, system generated name.

Network Type Virtual Devices

= {12076A LANIC} ^(A-Series)

Aliases that specify a standard HP 1000 12076A LAN interface.

Network /Name:'Onboard LAN' = 12076A /SC:37 /MAC:08-00-09-02-03-5A

[Instance Options](#) (page 56) are allowed. There is no default select code.

/MAC:macaddr

Specifies the physical (MAC) address of the HP 12076A LAN interface to be emulated. The macaddr value is a string of the form xx-xx-xx-xx-xx-xx, where each xx is a pair of hexadecimal digits. This value must be unique on the local network. The best MAC address to use is that of the original 12076A LAN interface being emulated.

If the /MAC option is not given, then the default value is the address derived from the MAC address of the attached Windows network device.

Parallel Type Virtual Devices

= {12845B 12845}

Aliases that specify the standard HP 1000 12845B Differential (Parallel Printer) Interface.

WinPrint /Name:HpLaser /UnitName:LU56 = Parallel /Protocol:DVA12 = 12845B /SC:16

[Instance Options](#) (page 56) are allowed. There is no default select code.

`/Printer:{ Yes No }`

Specifies whether the 12845B Parallel Interface is connected to a printer.
The default is Yes.

`= {26099A 26099}`

Aliases that specify the standard HP 1000 26099A Differential (Parallel Printer) Interface.

`WinPrint /Name:HpLaser /UnitName:LU56 = Parallel /Protocol:DVB12 = 26099A /SC:15`

[Instance Options](#) (page 56) are allowed. There is no default select code.

`/Printer:{ Yes No }`

Specifies whether the 26099A Parallel Interface is connected to a printer.
The default is Yes.

Printer Type Physical Devices

`WinPrint =`

Specifies that data be sent to a Windows printer. The data are formatted using the configured font and page geometry by default, but may contain printer escape control sequences if a particular printer is specified. See also [CharPrint](#) (page 60) and [RawPrint](#) (page 69).

`WinPrint /Name:HpLaser /UnitName:LU56 = Parallel /Protocol:DVB12 = 26099A /SC:15`

`/BlankPages:{ Yes No }`

Specifies whether completely blank pages are printed.

If the `/UseSaved:Yes` option is given and a printer configuration has been saved in the Windows registry, then the value from the Windows registry will be used.

The default is No.

`/Bold:{ On Off }`

Specifies whether the 'bold' font attribute is on. `/Bold:Off` is equivalent to `/Weight:Normal` and `/Bold:On` is equivalent to `/Weight:Bold`.

If the `/UseSaved:Yes` option is given and a printer configuration has been saved in the Windows registry, then the value from the Windows registry will be used.

The default is Off.

/Bottom:inches

Specifies the height of the page bottom margin as a non-negative decimal fraction number of inches (e.g., 0.75). The range of valid values for this option may be restricted by the printer being connected.

If the `/UseSaved:Yes` option is given and a printer configuration has been saved in the Windows registry, then the value from the Windows registry will be used.

The default is to use the `/Margin` value.

/Connect:{Yes No}

Specifies whether the printer is initially connected.

If the `/UseSaved:Yes` option is given and a printer configuration has been saved in the Windows registry, then the value from the Windows registry will be used.

If the `/Name` option is given or a Windows default printer exists, then the default is Yes; otherwise, the default is No.

/Configurable:{Yes No}

Specifies whether the configuration for this printer unit can be changed via the *Configure Printer Units...* entry on the *Devices* menu.

The default is Yes.

/CPI:{Device 1.0-72.0}

Specifies the decimal fraction number of characters to print per horizontal inch, which determines the font character width. `/CPI:Device` means use the device defaults. If the `/CPI` option is given, then neither the `/CPL` option nor the `/Point` option may be given. The range of valid values for this option may be restricted by the printer being connected.

If the `/UseSaved:Yes` option is given and a printer configuration has been saved in the Windows registry, then the value from the Windows registry will be used.

There is no default: if none of the `/CPI`, `/CPL` or `/Point` options are given, then a default value of `/CPL:132` is used.

/CPL:{Device 1-512}

Specifies the maximum number of characters to print per line, which determines the font character width. `/CPL:Device` means use the device defaults. If the `/CPL` option is given, then neither the `/CPI` option nor the `/Point` option may be given. The range of valid values for this option may be restricted by the printer being connected.

If the `/UseSaved:Yes` option is given and a printer configuration has been saved in the Windows registry, then the value from the Windows registry will be used.

If none of the `/CPI`, `/CPL` or `/Point` options are given, then a default value of `/CPL:132` is used.

/EndJob:{No Yes OnTop}

Specifies whether a floating 'End Job Now' dialog box should be created for this unit. If `/EndJob:OnTop` is given, the dialog box will be created with the 'Always on top' box checked; otherwise, it will be unchecked. This option overrides the 'Show separate End Job Now button' and 'Always on top' check box settings saved in this Windows registry. (See the `/UseSaved` option.)

If the printer configuration for this unit is loaded from the Windows registry, then the default is the saved 'Show separate End Job Now button' check box value; otherwise, the default is No.

/FontFace:name

Specifies the face name of the Windows fixed pitch font to use. Use the Windows Control Panel Fonts applet to select the face name of an appropriate fixed pitch font.

If the `/UseSaved:Yes` option is given and a printer configuration has been saved in the Windows registry, then the value from the Windows registry will be used.

The default is "Courier New".

/HotKey:keyname

Specifies the hot key that may be used to end any currently active print job. See [Appendix H](#) (page 175) for possible values for keyname.

The default is no hot key.

/Italic:{On Off}

Specifies whether the 'italic' font attribute is on.

If the `/UseSaved:Yes` option is given and a printer configuration has been saved in the Windows registry, then the value from the Windows registry will be used.

The default is Off.

/JobName:name

Specifies the base job name. A five-digit sequence number is appended to the given name.

If the `/UseSaved:Yes` option is given and a printer configuration has been saved in the Windows registry, then the value from the Windows registry will be used.

The default is the `UnitName`.

/JobTimeout:{None Infinite 1-3600000}

Specifies a millisecond job timeout. After data are received, if the job timeout happens before more data are received, the Windows print job ends. Specifying `/JobTimeout:None` or `/JobTimeout:Infinite` disables the job timeout facility (i.e., a print job will not end based on a job timeout). If both the `/JobTimeout` and `/PageTimeout` options are given, then the `/JobTimeout` value must be at least as large as the `/PageTimeout` value.

If the `/UseSaved:Yes` option is given and a printer configuration has been saved in the Windows registry, then the value from the Windows registry will be used.

The default is `None` (no timeout).

/Landscape:{Yes No}

Specifies whether the page should be printed in portrait (`/Landscape:No`) or landscape (`/Landscape:Yes`) orientation.

If the `/UseSaved:Yes` option is given and a printer configuration has been saved in the Windows registry, then the value from the Windows registry will be used.

The default is `Yes`.

/Left:inches

Specifies the width of the page left margin as a non-negative decimal fraction number of inches (e.g., 0.75). The range of valid values for this option may be restricted by the printer being connected.

If the `/UseSaved:Yes` option is given and a printer configuration has been saved in the Windows registry, then the value from the Windows registry will be used.

The default is to use the `/Margin` value.

/LPI:{Device 1-72}

Specifies the number of lines to print per vertical inch, which determines the font character height. `/LPI:Device` means use the device defaults. If the `/LPI` option is given, then neither the `/LPP` option nor the `/Point` option may be given. The range of valid values for this option may be restricted by the printer being connected.

If the `/UseSaved:Yes` option is given and a printer configuration has been saved in the Windows registry, then the value from the Windows registry will be used.

If none of the `/LPI`, `/LPP` or `/Point` options are given, then a default value of `/LPP:60` is used.

/LPP:{Device 1-512}

Specifies the maximum number of lines to print per page, which determines the font character height. `/LPP:Device` means use the device defaults. If the `/LPP` option is given, then neither the `/LPI` option nor the `/Point` option may be given. The range of valid values for this option may be restricted by the printer being connected.

If the `/UseSaved:Yes` option is given and a printer configuration has been saved in the Windows registry, then the value from the Windows registry will be used.

There is no default: if none of the `/LPI`, `/LPP` or `/Point` options are given, then a default value of `/LPP:60` is used.

/Margin:inches

Specifies the height or width of all unspecified page margins as a non-negative decimal fraction number of inches (e.g., 0.75).

The default is 0.25 inches.

/MaxPages:{None Infinite 1-65536}

Specifies the maximum number of pages to accumulate before ending the Windows print job. `/MaxPages:None` or `/MaxPages:Infinite` disables this facility (i.e., print jobs are not ended based on page count).

If the `/UseSaved:Yes` option is given and a printer configuration has been saved in the Windows registry, then the value from the Windows registry will be used.

The default is 1.

/Name:name

Specifies the name of the Windows printer. If `/Connect:Yes` is given but the printer name is invalid or is not given and there is no Windows default printer, then a configuration error message will list all available printers.

If the `/UseSaved:Yes` option is given and a printer configuration has been saved in the Windows registry, then the value from the Windows registry will be used.

If there is a Windows default printer, then the default is the name of the Windows default printer; otherwise, there is no default printer name.

/NulStopsTimeout:{Yes No}

Specifies whether NUL (do nothing) characters sent to the printer should reset the job and page timeouts.

Some RTE serial printer configurations send frequent, periodic NUL characters to a printer when it is otherwise idle. If `/NulStopsTimeout:Yes` is given, these NUL characters can prevent the job and page timeouts from occurring; otherwise, these timeouts are not affected.

The default is No.

/Paper:pagesizename

Specifies one of the set of page size names that are valid for the specified printer.

If the `/UseSaved:Yes` option is given and a printer configuration has been saved in the Windows registry, then the value from the Windows registry will be used.

The default is the printer default page size.

/PageTimeout:{None Infinite 1-3600000}

Specifies a millisecond page timeout. After a page ends, if the page timeout occurs before more data are received, the Windows print job ends. Specifying `/PageTimeout:None` or `/PageTimeout:Infinite` disables the page timeout facility (i.e., a print job will not end based on a page timeout). If both the `/JobTimeout` and `/PageTimeout` options are given, then the `/PageTimeout` value must be no larger than the `/JobTimeout` value.

If the `/UseSaved:Yes` option is given and a printer configuration has been saved in the Windows registry, then the value from the Windows registry will be used.

The default is the smaller of any specified `/JobTimeout` value and 1000.

/Point:{Device 1-512}

Specifies the font height by point. `/Point:Device` means use the device defaults. If the `/Point` option is given, then none of the `/CPI`, `/CPL`, `/LPI` and `/LPP` options may be given. The range of valid values for this option may be restricted by the printer being connected.

If the `/UseSaved:Yes` option is given and a printer configuration has been saved in the Windows registry, then the value from the Windows registry will be used.

There is no default: if none of the `/Point`, `/CPI`, `/CPL`, `/LPI` or `/LPP` options are given, then default values of `/CPL:132` and `/LPP:60` are used.

/Pipe:name

Specifies the name of the Windows named pipe to create and use. When a Windows named pipe is created, printer data can be monitored with the `WRQPIPE` or `VTPIPE` programs, or with a third party program.

The default is no pipe.

/Primary:charset

Specifies the primary character set. The specified charset must be one of the following: `USAscii`, `British`, `Danish`, `Finnish`, `French`, `German`, `Norwegian` or `Swedish`.

The default is `USAscii`.

/Right:inches

Specifies the width of the page right margin as a non-negative decimal fraction number of inches (e.g., `0.75`). The range of valid values for this option may be restricted by the printer being connected.

If the `/UseSaved:Yes` option is given and a printer configuration has been saved in the Windows registry, then the value from the Windows registry will be used.

The default is to use the `/Margin` value.

/SaveOnExit:{Yes No}

Specifies whether printer configuration information for this unit should be saved in the Windows registry when the Kestrel terminates. This option overrides the 'Save on Exit' check box setting saved in this Windows registry. (See the `/UseSaved` option.)

If the `/UseSaved:Yes` option is given and a printer configuration has been saved in the Windows registry, then the value from the Windows registry will be used.

If the printer configuration for this unit is loaded from the Windows registry, then the default is the saved 'Save Printer Configuration on Kestrel Exit' check box value; otherwise, the default is `Yes`.

/Secondary:charset

Specifies the secondary character set. The specified charset must be one of the following: USAscii, British, Danish, Finnish, French, German, Norwegian or Swedish.

The default is no secondary character set.

/TabCols:{None 1-512}

Specifies a fixed character spacing for horizontal tab stops. These tab stops apply only if the programmable horizontal tab stops feature of a legacy printer is not used. If **/TabCols:None** is given, then no fixed character spacing horizontal tab stops are set.

If the **/UseSaved:Yes** option is given and a printer configuration has been saved in the Windows registry, then the value from the Windows registry will be used.

The default is 8.

/Top:inches

Specifies the height of the page top margin as a non-negative decimal fraction number of inches (e.g., 0.75). The range of valid values for this option may be restricted by the printer being connected.

If the **/UseSaved:Yes** option is given and a printer configuration has been saved in the Windows registry, then the value from the Windows registry will be used.

The default is to use the **/Margin** value.

/Underline:{On Off}

Specifies whether the 'underline' font attribute is on.

If the **/UseSaved:Yes** option is given and a printer configuration has been saved in the Windows registry, then the value from the Windows registry will be used.

The default is Off.

/UseSaved:{Yes No}

Specifies whether the printer configuration for this unit should be loaded from the printer configuration most recently saved in the Windows registry via the *Configure Printer Units...* entry on the *Devices* menu. If **/UseSaved:Yes** is given but no printer configuration has been saved for this unit, then any printer configuration information given on this configuration file line is used, along with the default values for all printer configuration options that are not given.

The default is No if any printer configuration option is given; otherwise, the default is Yes.

`/UnitName:string`

Specifies the logical device name to be displayed on various *Devices* menu selections dialog boxes. The `UnitName` string must be unique, less than 256 characters long and must not contain any back slash (\) characters.

The default is a generic, system generated name.

`/Weight:{DontCare Thin Extralight Light Normal Medium SemiBold Bold ExtraBold Heavy 1-1000}`

Specifies the font weight.

If the `/UseSaved:Yes` option is given and a printer configuration has been saved in the Windows registry, then the value from the Windows registry will be used.

The default is Normal.

`/Wrap:{Yes No}`

When `/Wrap:Yes` is given, lines that are too long are wrapped onto two or more lines; otherwise, lines that are too long are truncated at the page margin.

If the `/UseSaved:Yes` option is given and a printer configuration has been saved in the Windows registry, then the value from the Windows registry will be used.

The default is No.

`/WriteTime:{Infinite 0-3600000}`

Specifies the maximum number of milliseconds to wait for a previous write to the named pipe to complete before discarding subsequent write data (write timeout).

Use `/WriteTime:Infinite` to disable write timeouts.

The default is 1000 milliseconds.

IEEE-488 Translators

... = IEEE-488 ... = ...

Specifies an IEEE-488 bus protocol translator. IEEE-488 (HP-IB) bus protocol translators are used to translate IEEE-488 bus commands to a form that is appropriate for an attached physical (PC) device.

TPF /Name:REEL1.Tape = IEEE-488 /Protocol:DD*24 /BusAdr:1 /Model:7978B = HP-IB /SC:31

WinPrint = IEEE-488 /Protocol:DD*12 /BusAdr:2 /Printer:2631B = HP-IB /SC:31

File /Name:Boot.Disk = IEEE-488 /Protocol:DVM33 /BusAdr:0 /Drive:7958B = 12821A /SC:20

WinPrint = IEEE-488 /Protocol:Print /BusAdr:3 = 59310 /SC:30

File /Name:RteData.Disk = IEEE-488 /Protocol:DD*33 /BusAdr:2 /Unit:0 /Drive:7914 = HP-IB /SC:30

CTD /Name:Linus1.Tape = IEEE-488 /Protocol:DD*33 /BusAdr:2 /Unit:1 /Drive:88140L = HP-IB /SC:30

GPIB = IEEE-488 /Protocol:Bus = 59310 /SC:30

/Protocol:translator

Specifies the translation interface to use to convert from the IEEE-488 (HP-IB) bus protocol provided by the attached virtual device to the appropriate commands required for the attached physical device.

This option is required and must be the first option given.

For ease of identification, the protocol translators are usually named the same as the RTE driver that was configured for this device during RTE system generation. The exception is the PRINT protocol, which is used to translate commands sent to the HP-IB device without interpretation by a configured RTE printer device driver.

The following table lists the available IEEE-488 translators for Disk type physical devices:

DD*33 ^(A-Series)	Translates HP-IB (IEEE-488) CS/80 commands prepared by the DD*33 device driver to the commands required for a Disk type physical device.
DVM33 ^(21MX)	Translates HP-IB (IEEE-488) CS/80 commands prepared by the DVM33 device driver to the commands required for a Disk type physical device.

/BusAdr:{0-30}

Defines the IEEE-488 (HP-IB) primary bus address associated with the attached Disk type physical device.

The /BusAdr option is required.

/Cylinders:{1-16777215}

Specifies or overrides the number of cylinders for a given drive.

/Drive:name

Specifies the drive type. The list of valid drive names is identical to that used by the container file builder program (WINCON.EXE). The given name should specify a drive with a CS/80 interface unless the /SectorSize option is also given to override the default value. /Drive:Flat may be given to specify a drive of unknown geometry, but this form will not work properly for operating systems that perform CS/80 disk I/O using cylinder/head/sector commands (e.g., TODS) unless complete drive geometry (i.e., all of the /Cylinders, /Heads and /Sectors options) is also given.

The /Drive option must be given.

/Heads:{1-255}

Specifies or overrides the number of heads per cylinder for a given drive.

/InhibitChangeNotify:{ Yes No}

Specifies whether the attached physical disk device should report online state changes to the operating system. Some CS/80 disks do not report online state changes, so some operating systems do not handle this behavior properly, even if the drive is not mounted within the operating system. If changing the online state of a drive that is not mounted in the operating system causes errors, specify `/InhibitChangeNotify:Yes` to inhibit reporting drive online state changes.

The default is No (i.e., drive online state changes should be reported to the operating system).

/Model:{0-999999}

Specifies or overrides the six-digit binary-coded-decimal model (XXXXXY = HP product number XXXXX and option number Y) that is returned by the CS/80 describe command.

/Sectors:{1-65535}

Specifies or overrides the number of sectors per track for a given drive.

/SectorSize:256

Specifies or overrides the number of bytes per sector for a given drive. For the DD*33 and DVM33 translators, the only legal value is 256.

/Unit:{0-14}

Specifies the disk unit number on the given CS/80 bus address. The default is unit 0.

The following table lists the available IEEE-488 translators for Cartridge type physical devices:

DD*33 ^(A-Series)	Translates HP-IB (IEEE-488) CS/80 commands prepared by the DD*33 device driver to the commands required for a Cartridge type physical device.
DVM33 ^(2IMX)	Translates HP-IB (IEEE-488) CS/80 commands prepared by the DVM33 device driver to the commands required for a Cartridge type physical device.

/BusAdr:{0-30}

Defines the IEEE-488 (HP-IB) primary bus address associated with the attached Cartridge type physical device.

The `/BusAdr` option is required.

`/Drive:{Tape 9144 88140L 88140LC 88140S 88140SC}`

Specifies the cartridge tape or drive type. `/Drive:Tape` may be given to specify an unknown or undefined cartridge tape.

The `/Drive` option must be given.

`/InhibitChangeNotify:{ Yes No}`

Specifies whether the attached physical cartridge tape device should report online state changes to the operating system. Some CS/80 cartridge tapes do not report online state changes, so some operating systems do not handle this behavior properly, even if the drive is not mounted within the operating system. If changing the online state of a drive that is not mounted in the operating system causes errors, specify `/InhibitChangeNotify:Yes` to inhibit reporting drive online state changes.

The default is No (i.e., drive online state changes should be reported to the operating system).

`/Model:{0-999999}`

Specifies or overrides the six-digit binary-coded-decimal model (XXXXXY = HP product number XXXXX and option number Y) that is returned by the CS/80 describe command.

`/Unit:{0-14}`

Specifies the cartridge tape unit number on the given CS/80 bus address.

The default is unit 0.

The following table lists the available IEEE-488 translators for Tape type physical devices:

<code>DD*24</code> ^(A-Series)	Translates HP-IB (IEEE-488) commands prepared by the <code>DD*24</code> device driver to the commands required for a Tape type physical device.
<code>DVS23</code> ^(21MX)	Translates HP-IB (IEEE-488) commands prepared by the <code>DVS23</code> device driver to the commands required for a Tape type physical device.

`/BusAdr:{0-30}`

Defines the IEEE-488 (HP-IB) primary bus address associated with the attached Tape type physical device.

The `/BusAdr` option is required.

`/Density:{800 1600 6250}`

Specifies the tape data density in bytes per inch (BPI)..

The default is 6250 BPI.

`/Fatal:{Yes No}`

Specifies whether unsupported tape requests cause a fatal error or are ignored.

The default is No (i.e., unsupported tape requests are ignored).

`/Model:{7974 7974A 7978 7978A 7980 7980A C151x DAT}`

Specifies the tape drive model. The designations C151x and DAT may be used for any of the DAT tape drives C1511, C1512, C1513, etc.

The default is 7980.

The following table lists the available IEEE-488 translators for Printer type physical devices:

<code>DD*12</code> ^(A-Series)	Translates HP-IB (IEEE-488) commands prepared by the DD*12 device driver to the commands required for a Printer type physical device. All of the following options are valid for the DD*12 protocol.
<code>PRINT</code>	Translates HP-IB (IEEE-488) commands sent without interpretation by a configured RTE printer device driver to the commands required for a Printer type physical device. Only the <code>/BusAdr</code> option is valid for the PRINT protocol.

`/BusAdr:{0-30}`

Defines the IEEE-488 (HP-IB) primary bus address associated with the attached Printer type physical device.

The `/BusAdr` option is required.

`/Delay:milliseconds`

Specifies the minimum time (in milliseconds) to complete a Print Command for the printer. This option is not permitted with `/Protocol:PRINT`.

The default is 0 (i.e., lines are printed at maximum speed).

`/Fatal:{Yes No}`

Specifies whether unsupported print requests cause a fatal error or are ignored. This option is not permitted with `/Protocol:PRINT`.

The default is No (i.e., unsupported print requests are ignored).

`/LPI:{6 8}`

Specifies the setting of the printer LPI switch. This option is not permitted with `/Protocol:PRINT`.

If the `/LPI` option is not given, the default value is the effective lines per inch value of the attached printer.

/Pitch:{Norm Comp Exp}

Specifies the width (characters per inch) of the printed characters. The Norm, Comp and Exp values are 10.00, 16.67 and 5.00 character per inch, respectively. This option is not permitted with `/Protocol:PRINT`.

If the `/Pitch` option is not given, the default value is the effective characters per inch value of the attached printer.

/Printer:{Generic 2631B}

Specifies the type of legacy printer that is to be emulated. If `/Printer:Generic` is given, escape code sequences are not permitted (i.e., escape codes are ignored); otherwise, escape code sequences designed for the specified printer are translated to the command language required for a Printer type physical device. This option is not permitted with `/Protocol:PRINT`.

The default is Generic.

/SRQEN:{On Off}

Specifies the state of the “SRQ EN” (service request) HP-IB configuration switch. When this switch is Off, the SRQ function is disabled, which prevents the printer from requesting service when needed; the printer will respond to parallel polling only. This option is not permitted with `/Protocol:PRINT`.

The default is Off.

The following table lists the available IEEE-488 translators for GPIB type physical devices:

Bus	Passes HP-IB (IEEE-488) commands to the attached GPIB physical device without translation. <code>/Protocol:Bus</code> is used to support actual devices attached to the host GPIB when support for one or more virtual devices is also required on the same select code. All primary bus addresses that are not specified by other configuration lines for the same select code are sent to the attached GPIB device.
-----	---

SCSI Interface Translators

`... = SCSI ... =`

Specifies a SCSI interface protocol translator. SCSI interface protocol translators are used to translate SCSI bus commands to a form that is appropriate for an attached physical (PC) device.

```

File      /Name:System.Disk      = SCSI /Protocol:DDQ30 /BusAdr:6 /Drive:C2212A = 12016 /SC:27
ASPIDisk /Name:PhysicalDrive1 = SCSI /Protocol:DDQ30 /BusAdr:7 /Drive:C2235 = 12016 /SC:27
TPF      /Name:'7980-1.Tape'    = SCSI /Protocol:DDQ24 /BusAdr:3           = 12016 /SC:26
ASPI Tape /Name:Tape0            = SCSI /Protocol:DDQ24 /BusAdr:4           = 12016 /SC:26
    
```

/Protocol:translator

Specifies the translation interface to use to convert from the SCSI interface protocol provided by the attached virtual device to the appropriate commands required for the attached physical device.

This option is required and must be the first option given.

For ease of identification, the protocol translators are named the same as the RTE driver that was configured for this device during RTE system generation.

The following table lists the available SCSI protocol translators for Disk type physical devices:

DDQ30 ^(A-Series)	Translates SCSI commands prepared by the DDQ30 device driver to the commands required for a Disk type physical device.
-----------------------------	--

/BusAdr:{0-7}

Defines the SCSI bus address associated with the attached physical device. The /BusAdr option is required.

/Blocks:{1-4294967295}

Specifies or overrides the number of blocks for a given drive. Either the /Blocks option or the /Drive option must be given.

/Drive:name

Specifies the drive type. The list of valid drive names is identical to that used by the container file builder program (WINCON.EXE). For the DDQ30 translator, the given name usually specifies a drive with a SCSI interface.

Either the /Drive option or complete custom drive description (the /Blocks and /SectorSize options) must be given.

/SectorSize:{256 512 1024}

Specifies or overrides the number of bytes per block for a given drive. Either the /SectorSize option or the /Drive option must be given.

The following table lists the available SCSI protocol translators for Tape type physical devices:

DDQ24 ^(A-Series)	Translates SCSI commands prepared by the DDQ24 device driver to the commands required for a Tape type physical device.
-----------------------------	--

`/BusAdr:{0-7}`

Defines the SCSI bus address associated with the attached physical device. The `/BusAdr` option is required.

Parallel Interface Translators

`... = Parallel ... = ...`

Specifies a parallel interface protocol translator. Parallel interface protocol translators are used to translate parallel interface device commands to a form that is appropriate for an attached physical (PC) device.

WinPrint /Name:HPLaser /UnitName:LU56 = Parallel /Protocol:DVB12 = 26099A /SC:15
WinPrint /Name:HPLaser /UnitName:LU6 = Parallel /Protocol:DVA12 = 12845B /SC:22

`/Protocol:translator`

Specifies the translation interface to use to convert from the parallel interface protocol provided by the attached virtual device to the appropriate commands required for the attached physical device.

This option is required and must be the first option given.

For ease of identification, the protocol translators are named the same as the RTE driver that was configured for this device during RTE system generation.

The following table lists the available Parallel protocol translators for Printer type physical devices:

DVA12 ^(21MX)	Translates parallel interface commands prepared by the DVA12 device driver to the commands required for a Printer type physical device.
DVB12 ^(21MX)	Translates parallel interface commands prepared by the DVB12 device driver to the commands required for a Printer type physical device.

`/Delay:milliseconds`

Specifies the minimum time (in milliseconds) to complete a Print Command for the printer.

The default is 0 (i.e., lines are printed at maximum speed).

`/Fatal:{Yes No}`

Specifies whether unsupported print requests cause a fatal error or are ignored.

The default is No (i.e., unsupported print requests are ignored).

`/LPI:{6 8}`

Specifies the setting of the printer LPI switch.

If the `/LPI` option is not given, the default value is the effective lines per inch value of the attached printer.

`/Pitch:{Norm Comp Exp}`

Specifies the width (characters per inch) of the printed characters. The Norm, Comp and Exp values are 10.00, 16.67 and 5.00 character per inch, respectively.

If the `/Pitch` option is not given, the default value is the effective characters per inch value of the attached printer.

`/Whitespace:{Yes No}`

When `/Whitespace:Yes` is given, embedded white space characters (TAB, VT, FF, LF and CR) are passed through for handling by the attached physical device; otherwise, embedded white space characters are printed as symbols. This option is not permitted only with `/Protocol:DVB12`.

The default is No (i.e., embedded white space characters are printed as symbols).

KESTREL MENUS

The Kestrel control and configuration menus are available through the menu bar. Click on *File*, *Edit*, *Control*, *Devices*, *Window* or *Help* to control or configure various aspects of the Kestrel.

Some menu and dialog box options may be unavailable because of current Kestrel operating conditions. Such options are shown in gray and cannot be selected. The *Exit* and *Restart* entries on the *File* menu and the *Close* option on the system menu will be unavailable when the Kestrel is running and the “Shutdown while Running” box on the *Properties* dialog box is not checked. The *Reboot* option on the *Control* menu will be unavailable when the Kestrel is running. The *Halt (Break)* option on the *Control* menu will be available only when the Kestrel is running or in the Kestrel VCP. The *Continue* option on the *Control* menu will be available only when the Strobe VCP is active.

Devices

Disk, Tape, Console, LPT, Printer and Telnet device interfaces may be reconfigured and/or have their status changed while the Kestrel is running. From the *Devices* menu, select the type of device changes you wish to make, and then select the particular device unit. The Kestrel will show you all configurable options.

Properties

The properties selectable via the *Properties* entry of the *Edit* menu, along with window positions and other information, are saved in the Windows registry. The registry key name under which they are stored is either “HKEY_CURRENT_USER\Software\Strobe Data\Kestrel” if no key name is specified, or “HKEY_CURRENT_USER\Software\Strobe Data\Kestrel\keyname” if a key name is specified by either the /K or the /N command line option. See [Command Line](#) (page 11).

/K:keyname specifies a key name under which properties are to be saved. This is especially useful in an installation with several similar configurations for which a common “current state” should be saved. The keyname must be a string of 1-256 characters, and must not contain any back slash (\) characters.

/N:filename takes a configuration file name, exactly like /C:filename does. The file name specified will also set the /K:keyname to the base file name (without drive, folder or extension).

Enable Menu

Certain menu items may permit undesirable effects on a production Kestrel system. In cases where users must be denied access to menu selections, such as the *Shutdown and Exit* entry on the *File* menu or the *Halt* entry on the *Control* menu, the Windows system should be isolated from the users. Since users could potentially run any number of programs harmful to the Kestrel or Windows environment, this is the only way to deny users the ability to adversely affect the Kestrel or Windows environment.

A much less secure, but possibly adequate, method is use of the *Enable Menu* entry on the *Edit* menu. Menu items that should not be allowed may be unchecked in this dialog box. The unchecked menu items will appear grayed out in the menu and will no longer be available. Once the menu has been configured as desired, uncheck the Enable Menu box in that dialog, and changes will be disallowed.

In the event that the Enable Menu box was unchecked and more changes need to be made, see the [EnableMenu](#) configuration file option (page 25).

CONTAINER FILE BUILDER

Starting the Container File Builder

The container file builder program is named WINCON.EXE and is started from *Start \ Programs \ Kestrel \ Container File Builder.*

KEYNAM32

The key name program, called KEYNAM32.EXE, shows the character names used to remap keyboard codes for the VT100 physical device interface. Run the KEYNAM32.EXE program in the Kestrel installation folder, or start the program by clicking:

Start \ Programs \ Kestrel \ Get Key Mappings.

When the KEYNAM32.EXE program starts, it first displays a message like:

Compatible with Kestrel Version 2.10.12

Please press a key

You may then press keyboard characters to display the corresponding keyboard character names. For example, if you press the Enter, F1 and O/Ins keys, the KEYNAM32.EXE program will display:

That key is 0x000D or CTRLM

That key is 0x013B or F1

That key is 0x0252 or KPDZERO

To show the key names for the WinPrint or CharPrint /HotKey option, run the program with an additional parameter: KEYNAM32.EXE –HotKey, or start the program by clicking:

Start \ Programs \ Kestrel \ Get Hot Key Mappings.

You may then press keyboard characters to display the corresponding hot key names. For example, if you press the up arrow key, F1, and O/Ins keys, the KEYNAM32.EXE –HotKey will display:

/HotKey:WIN+UP

/HotKey:F1

/HotKey:INSERT

VT100.CNF

The VT100 configuration file VT100.CNF is an ASCII file that defines what VT100 codes are sent for PC keys and other characteristics of the VT100 emulator. The file must reside in the current folder, or a folder listed in the KESTREL environment variable or in the PATH. The Kestrel searches for all files in that order. The VT240.CNF, if used, must be specified with VT100 /CNF:VT240.CNF before the Kestrel will use it. Note that the VT240.CNF simply changes the behavior of the keyboard; it does not add extra VT240 emulation.

Each line in the configuration file contains a single definition. Blank lines and comments in the configuration file are ignored. A comment is defined as anything that follows a semicolon (;). Upper case and lower case are treated equally, except when contained within quotation marks. Tabs and spaces are treated equally, except when contained within quotation marks. At least one space or tab must separate each option or specifier from other options and specifiers.

All codes are octal unless otherwise specified; however, the codes may also be given in hexadecimal or decimal. Hexadecimal codes must be preceded by 0x (0x41) and decimal codes must be followed by a period (65.). Octal codes may also be preceded by 0 (0101).

Certain strings may contain characters that are not allowed in a Kestrel configuration file, such as the semicolon. You must enclose the entire string in quotation marks if it contains a semicolon or quotation mark. Please see the details of [Quoted Strings](#) (page 13).

Note: If you feel that the VT100 emulation is not working when you use function keys or arrows, please add /RxDelay:1000 /TxDelay:1000 to your VT100 = ... configuration line. See the [VT100](#) physical device description (page 76). Some operating systems cannot handle extremely high baud rate VT100 devices.

If the VT100 becomes unusable (for example, because an application has sent peculiar escape codes) the screen can be reset. Click the upper left corner (system control) of the window and select Reset.

Some applications require keyboard parity or only upper case. In those cases, include one of the following helper configuration files into your VT100.CNF configuration file:

<u>File</u>	<u>Usage</u>
VTUCASE.CNF	Upper case letters
VTPARE.CNF	Mixed case letters and even parity
VTPARO.CNF	Mixed case letters and odd parity
VTPAREU.CNF	Upper case letters and even parity
VTPAROU.CNF	Upper case letters and odd parity

VT100 Configuration Commands

<p>52Key <code> =</p> <p>Remaps the VT52 mode keyboard. For PC key names and values, see the KEYNAM32 program (page 139).</p> <p><u>52Key F1 = 0x1B 0x50</u></p>	{<VT100 octal code(s)> <“string”>}
<p>52Akey <code> =</p> <p>Remaps the VT52 mode keyboard in application keypad mode. For PC key names and values, see the KEYNAM32 program (page 139).</p> <p><u>52Akey KPDZERO = 0x1B 0x3F 0x70</u></p>	{<VT100 octal code(s)> <“string”>}
<p>Key <code> =</p> <p>Remaps the standard mode VT100 keyboard. For PC key names and values, see the KEYNAM32 program (page 139).</p> <p><u>Key F1 = 0x1B 0x4F 0x50</u></p>	{<VT100 octal code(s)> <“string”>}
<p>Akey <code> =</p> <p>Remaps the alternate keypad mode VT100 keyboard. For PC key names and values see the KEYNAM32 program (page 139).</p> <p><u>Akey KPDZERO = 0x1B 0x4F 0x70</u></p>	{<VT100 octal code(s)> <“string”>}
<p>Char <code> =</p> <p>Remaps the standard VT100 display characters.</p> <p><u>Char 0101 = 0102 ;All A show as B</u></p>	<octal code>
<p>Graphic <code> =</p> <p>Remaps the graphics mode VT100 display characters.</p> <p><u>Graphic 0141 = 0xDB ;Checkerboard</u></p>	<octal code>
<p>IDString =</p> <p>Specifies the I.D. String returned when the VT100 is queried with ESC [c or ESC Z in VT100 mode. The default is “\033[?1;0c”</p> <p><u>IDString = "c"</u></p>	{<I.D. codes> “string”}

Type = {VT100 VT52}

Specifies the default start up mode for the terminal emulation. Many programs will send codes to the VT100 that will override this mode.

The default is VT100.

Type = VT52

GETDISK

Disk to Windows Container File Copy

The GetDisk program is a console application shipped with the Kestrel software that can be used to copy the contents of legacy disk drives into Windows container files. To run the GetDisk program, click Start \ Programs \ Kestrel \ GetDisk.

Each time you need to answer a question by selecting one of a set of options, type the option ID number and press Enter. ID numbers start with zero and increase.

Most questions have a default answer, which is shown in brackets at the end of the question (e.g., [0]). If you just press Enter, the default answer is used.

A sample screen dialog for disks on a 21MX-M/E/F bus is shown below. Each place where user input was typed is shown **underlined and bold**. Of course, this screen capture is just for purposes of demonstration – the actual dialog will be different for each system.

```
Strobe Kestrel GetDisk Rev 1.31
Copyright (c) 2000-2006 Strobe Data Inc. All rights reserved.
For Kestrel Version 2.20.04
Build 343. Wednesday, September 13, 2006 11:21:38
Started 2006-09-14 14:00:34
```

```
ID   Bus Type
-----
0   - M/E/F-Series Bus
1   - A-Series Bus
2   - Host PC GPIB
```

To what type bus is your source legacy disk connected? [0] **0**

```
ID   Interface
-----
0   - MAC
1   - CS/80
2   - ICD
3   - Flex Disk
4   - Bering (MAC)
```

Which interface are you using? [0] **0**

In what legacy bus slot is the disk interface installed (10-47)? [10] **15**

```
ID - Model
-----
0   - 7925 unit 0 C:823 H:9 S:64 @128=121356288 bytes
1   - 7925 unit 1 C:823 H:9 S:64 @128=121356288 bytes
2   - 7905 unit 2 removable/fixed pair C:411 H:3 S:48 @128=15151104 bytes
3   - 7906 unit 3 removable/fixed pair C:411 H:4 S:48 @128=20201472 bytes
4   - 7920 unit 4 C:823 H:5 S:48 @128=50565120 bytes
```

```

Please select a source disk ID: [0] 2

ID - Type of copy
-----
0 - Create one container file for the fixed, and another for the removable
1 - Create one container file for the removable portion
2 - Create one container file for the fixed portion
3 - Create one container file with both the fixed and removable in it

What do you want to do? [0] 0

What is the fixed container filename? Images\7905fixed.disk
Do you want images\7905fixed.disk to be read-only? [N] n

What is the removable container filename? Images\7905removable.disk
Do you want images\7905removable.disk to be read-only? [N] n

ID   Verify type
-----
0 - No verify
1 - Compare source to target
2 - Compare source to source
3 - Compare source to source and to target

What kind of verify do you want? [1] 0
Cylinder 411/411 243708 BPS

Copy complete: 15151104 bytes, 62.17 seconds, 243708 BPS

Press Enter to finish

```

The first question GetDisk asks is the kind of bus to which your legacy disk is connected. This example is for a 21MX-M/E/F configuration.

Next GetDisk asks whether you are going to copy a MAC disk, a CS/80 disk, an ICD disk, a Flex Disk or a Bering disk. *Currently, the GetDisk program does not support ICD disks.*

After you tell GetDisk which interface type you are going to access, it will ask you for the legacy bus slot number in which your disk interface is installed. GetDisk will then identify all the disks on that interface and present each one. The output might look like this:

```

ID - Model
-----
0 - 7925 unit 0 C:823 H:9 S:64 @128=121356288 bytes
1 - 7925 unit 1 C:823 H:9 S:64 @128=121356288 bytes
2 - 7905 unit 2 removable/fixed pair C:411 H:3 S:48 @128=15151104 bytes
3 - 7906 unit 3 removable/fixed pair C:411 H:4 S:48 @128=20201472 bytes
4 - 7920 unit 4 C:823 H:5 S:48 @128=50565120 bytes

```

For all the disks on the given interface, GetDisk shows the model number, unit number, and the physical geometry of the drive.

The container file name may be any valid Windows file name, including files on local drives, network drives, UNC paths, or any other valid way to specify a file in Windows.

The next question asks what type of data verification to perform. The four types are listed below:

- 0 – No verify. The source disk is read once and the data are written to the target disk.
- 1 – Compare source to source. The source disk is read twice. The data are compared to each other, then the verified source disk data are written to the target disk.
- 2 – Compare source to target. The source disk is read once and the data are written to the target disk. The target disk is then read and the original source disk data are compared to the newly read target disk data.
- 3 – Compare source to source and to target (a combination of 1 and 2, above). The source disk is read twice. The data are compared to each other, then the source disk data are written to the target disk. The target disk is then read and the original source disk data are compared to the newly read target disk data.

Once the verification is specified, the copy process starts. A progress report is shown that details the current cylinder along with total cylinders, and current number of bytes per second that are being copied. The copy speed will be higher with no verification than with verification.

You may abort the GetDisk program at any time by pressing Ctrl-C or Ctrl-Break, but the resulting container file will be incomplete and should not be used.

If the Kestrel encounters an unexpected error, please take a screen capture of the error message and email it to support@strobedata.com. An example error message is listed below. This particular error message can happen if you give an invalid bus slot number for the interface.

```
In what legacy bus slot is the disk interface installed (10-47)? 26
```

```
<5 seconds until timeout>
```

```
PacketAddress: 000000
Packet 0:      000000
Packet 1:      000000
Packet 2:      000026
Packet 3:      000000
Packet 4:      000000
Packet 5:      000000
Packet 6:      000000
Packet 7:      000000
Packet 8:      000000
Packet 9:      000000
Packet 10:     000003
Invalid legacy bus slot / interface type
```


APPENDIX A

Including Other Configuration Files

A configuration file may include other configuration files. This facilitates having a standard configuration that is included in multiple special purpose configurations. The way to include a file is by using the command:

```
Include filename
```

Included configuration files may include other configuration files as long as the required inclusion depth does not exceed available memory.

Using and Defining Windows Environment Variables

You may set environment variables in the configuration file by using the SET or SETDEFAULT commands. The variable settings apply only during the current Kestrel session. For example, to set the BUSDEVICES environment variable to the value 20 22 27 within a configuration file, use the following SET command (note that the white space before and after the equal sign is required):

```
SET BUSDEVICES = 20 22 27
```

You may set an environment variable to an empty value by using the SET command with an empty (completely blank) string following the equal sign. For example, to set the VCPDEVICE environment variable to an empty string, use the following SET command:

```
SET VCPDEVICE =
```

Environment variables may be set conditionally using the SetDefault command. The SetDefault command performs the same function as the Set command, but only if the variable does not already have a non-empty value; if the variable has a non-empty value, the SetDefault command has no effect. For example, to set the VCPDEVICE environment variable to the value 44 only if its current value is an empty string, use the following SETDEFAULT command:

```
SETDEFAULT VCPDEVICE = 44
```

You may utilize the values associated with Windows environment variables in your configuration file by using the form %variable% where variable is the name of an environment variable. In this case, the value of the named environment variable replaces the %variable% string. Continuing the above example with the environment variable BUSDEVICES which has value 20 22 27, if your configuration file has the command:

```
LegacyBus = %BUSDEVICES%
```

then the Kestrel will replace %BUSDEVICES% with 20 22 27, resulting in the command:

```
LegacyBus = 20 22 27
```

Two consecutive % characters are replaced by a single % character, so if you need to include a single % text character in your configuration file, put two % together (i.e., %%). For example, the command:

```
Title = Kestrel running at 75%% maximum speed
```

would change the Kestrel application window title to “Kestrel running at 75% maximum speed”.

It is possible to replace part of the value of an environment variable when substituting its value by using the form %variable:match=replacement%, where *variable* is the name of an environment variable, *match* is any string of characters to be replaced that does not include either the = or % characters, and *replacement* is a string of replacement characters that does not include the % character. Any occurrence of the *match* string in the value of *variable* will be replaced by the *replacement* string. The comparison is insensitive to alphabetic case; use the form %variable;match=replacement% to perform a comparison that is sensitive to alphabetic case. Using the above example, if you have the environment variable BUSDEVICES which has value 20 22 27 and your configuration file has the command:

```
Logging /Name:'C:\Temp\Log.Txt' = Logging /SC:%BUSDEVICES: =,%=Delta
```

then the effective configuration command would be:

```
Logging /Name:'C:\Temp\Log.Txt' = Logging /SC:20,22,27=Delta
```

The form %variable\% is useful when *variable* is defined as the name of a folder. In this case, %variable\% is replaced by the appropriate folder name with a back slash (\) character appended if and only if the value defined for *variable* does not end with a back slash character. For example, the TEMP environment variable is often defined in the standard Windows environment as the name of a folder into which temporary files should be placed. Sometimes the TEMP environment variable definition ends with a back slash and sometimes it does not, so %TEMP\% would be the best way to reference this variable in a configuration file. Using the example configuration file command shown above:

```
Logging /Name:'%Temp%\Log.Txt' = Logging /SC:20,22,27=Delta
```

would create the logging file named Log.Txt in the folder specified by the TEMP environment variable, regardless of whether or not the TEMP environment variable ends with a back slash character. Note that giving '%Temp%\Log.Txt' or '%Temp%Log.Txt' would specify an incorrect location if the value of the Temp environment variable respectively did or did not end with a back slash character, respectively.

Using Conditional Configuration Commands

It is possible to have a single configuration file line be parsed or skipped based on a predefined condition by using the command:

```
.IFL condition configline
```

where `configline` is any valid configuration file line (other than another conditional statement) and `condition` is a single token that can be:

- A. A number.
- B. An arithmetic expression formed by using any combination of the following:
 1. A number.
 2. Unary arithmetic operators + (plus) and - (minus).
 3. Binary arithmetic operators + (addition), - (subtraction), * (multiplication), / (division) and % (remainder).
 4. Bitwise unary operator ~ (ones complement).
 5. Bitwise binary operators & (and), | (inclusive or) and ^ (exclusive or).
 6. Binary bit shift operators << (shift left) and >> (shift right).
 7. Numeric relational operators = (equal), < (less than), <= (less than or equal), >= (greater than or equal), > (greater than) and != (not equal), which give 1 if the relation is TRUE, otherwise 0.
 8. The unary boolean negation operator !, which gives 1 if the operand value is 0, otherwise 0.
- C. A string expression using one of the following text comparison operators:
 1. 'string₁'.EQ.'string₂'
Gives 1 if string₁ exactly matches string₂ (case sensitive), otherwise 0.
 2. 'string₁'.EQI.'string₂'
Gives 1 if string₁ exactly matches string₂ (case insensitive), otherwise 0.
 3. 'string₁'.NE.'string₂'
Gives 1 if string₁ does not exactly match string₂ (case sensitive), otherwise 0.
 4. 'string₁'.NEI.'string₂'
Gives 1 if string₁ does not exactly match string₂ (case insensitive), otherwise 0.
 5. 'string₁'.HAS.'string₂'
Gives 1 if string₁ contains string₂ as a subset (case sensitive), otherwise 0.
 6. 'string₁'.HASI.'string₂'
Gives 1 if string₁ contains string₂ as a subset (case insensitive), otherwise 0.
 7. 'string₁'.HASNT.'string₂'
Gives 1 if string₁ doesn't contain string₂ as a subset (case sensitive), otherwise 0.
 8. 'string₁'.HASNTI.'string₂'
Gives 1 if string₁ doesn't contain string₂ as a subset (case insensitive), otherwise 0.

9. 'string₁'.ISEMPTY.
Gives 1 if string does not contain any characters, otherwise 0.
 10. 'string₁'.ISNEMPTY.
Gives 1 if string contains any characters, otherwise 0.
 11. .EXISTS. 'filename'
Gives 1 if the file specified by filename exists in any of the folders normally searched for user files, otherwise 0.
 12. .EXISTSHERE. 'filename'
Gives 1 if the file specified by filename exists in the current folder, otherwise 0.
- D. Any of the above enclosed by parentheses and used as a term in a more complex arithmetic expression.

A condition is treated as TRUE if its value is nonzero; otherwise, it is treated as FALSE.

There is no operator precedence: expressions are evaluated from left to right, except that parenthesized expressions are evaluated first. Thus, $1+2*3$ and $(1+2)*3$ would evaluate to 9, whereas $1+(2*3)$ and $3*2+1$ would evaluate to 7.

The strings to be tested by the text comparison operators cannot contain any parenthesis characters. Enclosing apostrophes are required for strings only if they contain white space or a special character such as the semicolon (;) character. The enclosing apostrophes are not considered part of the string being evaluated.

Elaborating on the example shown in the previous section, if your configuration file contains the command:

```
SET BUSDEVICES = 20 22 27
```

and your configuration file subsequently contains the following lines:

```
.IFL '%BUSDEVICES%'.HASNT.'20' Telnet /UnitName:LU20 = ASIC /SC:20  
.IFL '%BUSDEVICES%'.HASNT.'21' Telnet /UnitName:LU21 = ASIC /SC:21  
.IFL '%BUSDEVICES%'.HASNT.'22' Telnet /UnitName:LU22 = ASIC /SC:22
```

then a virtual ASIC device will be configured for select code 21 but not for select codes 20 or 22.

To have multiple configuration file lines be parsed or skipped based on a predefined condition, use the commands:

```
.IF condition1           ; Required: specifies the condition for the following block:
    configline           ;   These lines represent the zero or more
    ...                  ;   configuration lines that are selected
    configline           ;   when condition1 is TRUE
.ELSEIF conditionn       ; Optional: specifies the condition for the following block:
    configline           ;   These lines represent the zero or more configuration
    ...                  ;   lines that are selected when all of the above
    configline           ;   conditions are FALSE and conditionn is TRUE
.ELSE                     ; Optional: specifies the 'none of the above' block:
    configline           ;   These lines represent the zero or more configuration
    ...                  ;   lines that are selected when all of the
    configline           ;   above conditions are FALSE
.ENDC                     ; Required: delimits the end of this conditional block
```

where each `configline` is any valid configuration file line and `condition1 ... conditionn` are condition tokens as described above for the `.IFL` command. (The blocks of conditional configuration lines are shown indented for clarity. Such indenting is not necessary, but does help make a configuration file more readable.)

For example, if your configuration file contains the command:

```
SET FLOPPY = A:
```

and your configuration file subsequently contains the following lines:

```
.IF '%FLOPPY%'.isempty.
File /UnitName:LU30 /Name:Floppy.Disk = MAC /SC:15 /Unit:6 /Drive:7905-R /Cylinders:60
.ELSE
Floppy /UnitName:LU30 /Name:%FLOPPY% = MAC /SC:15 /Unit:6 /Drive:7905-R /Cylinders:60
.ENDC
```

then the virtual `MAC` disk unit number `6` that is configured for select code `15` will be attached to physical host PC floppy drive `A:`.

If instead the `SET` command were given as:

```
SET FLOPPY =
```

then the virtual `MAC` disk unit number `6` that is configured for select code `15` would be attached to the host disk file named `Floppy.Disk`.

APPENDIX B

Boot Loader ROMs ^(21MX)

The following table summarizes the boot loader ROM files currently available for use with the Kestrel `bootROMs` general configuration command:

Filename	Product No.	Part Number	or	Part Number	HP Description (additional information)
HP12992A	12992A	1816-0863		12992-80008	7900/7901/2883 Disc Boot Loader
HP12992B	12992B	1816-0869		12992-80002	7905/7906/7920/7925 Disc Boot Loader (MAC Disc Loader)
HP12992C	12992C	1816-0857		12992-80009	2644/2645/2648 Cartridge Tape Binary Loader (Anv 264x Terminal CTU Loader)
HP12992D	12992D	1816-0962		12992-80006	7970 Magnetic Tape Absolute Binary Loader (7970B/E Magnetic Tape Loader)
HP12992E	12992E	1816-1051		12992-80007	9885 Flexible Disc Loader (9885 8" Flexible Disc Loader)
HP12992F	12992F			12992-80003	7900 Disc Boot Loader (7900 Familv 7900/7901 Disc Loader)
HP12992H	12992H			12992-80004	ICD Disc Boot Loader (ICD Familv 7906H/7910H/7920H Disc Loader)
HP12992J	12992J			12992-80005	CS80 Boot Loader (CS/80 Disc Familv Loader)
HP12992K	12992K	1816-0420		12992-80010	MX/XE Paper Tape Absolute Binary Loader
HP12992L	12992L			12992-80011	HP 7974 Magnetic Tape Absolute Binary Loader
50812361		5081-2361			21MXE Disc Boot Loader (Combo 7900 and 7905M/7920M Disc Loader)
HP91740		1816-0782			DS1000 Boot Loader (Network Boot Loader)
HP91750				91750-80018	DS/1000-IV Boot Loader (Network Boot Loader)
SDI12992D	Kestrel only				7970E Magnetic Tape Absolute Binary Loader (for booting 1600 BPI tapes using DCPC)

APPENDIX C

Kestrel VCP ^(A-Series)

The standard Kestrel VCP provides much the same functionality and user interface as the original HP 1000 A-Series computer VCP. The standard Kestrel VCP is always available when running the Kestrel.

Strobe VCP ^(A-Series)

The Strobe VCP is an adjunct to the standard Kestrel VCP. The Strobe VCP provides extra features and tools that are lacking in the original HP 1000 A-Series computer VCP and the Kestrel VCP. The Strobe VCP provides an enhanced execution environment that displays disassembled instructions, allows setting breakpoints, stepping single instructions, etc. The Strobe VCP is configured when you add Console = StrobeVCP to your configuration file. The Strobe VCP is useful primarily to programmers and developers. It is not necessary during normal runtime operations, and may be left out of the configuration file.

Without Strobe VCP ^(A-Series)

If you do not have Console = StrobeVCP in your configuration file, the Strobe VCP is disabled, but the standard Kestrel VCP is always available.

Strobe VCP ^(21MX)

The Strobe VCP is entered whenever the emulation processor stops for any reason. The Strobe VCP provides a superset of the functionality of the 21MX processor front panel, such as the ability to examine or change processor registers or memory locations. In addition, the Strobe VCP provides an enhanced execution environment that displays disassembled instructions, allows setting breakpoints, stepping single instructions, etc. The Strobe VCP is configured when you add Console = StrobeVCP to your configuration file. This configuration line is required.

Usage Summary

The Strobe VCP commands are single character commands. Strobe VCP commands are not case sensitive. Some of the commands must be preceded by the ESC key (displayed as a dollar sign) or by the dollar sign (\$) character. Some of the commands take an argument that precedes the command. Some of the keys below will be spelled out and shown in an italic font, for example *DownArrow* means touch the down arrow key (cursor down) once. Parts of commands shown in brackets (e.g., [*<map>*]*\$M*) are optional; the default value is described (for memory or register access commands, the default value is the current location address).

Help Commands

- F1* Display the VCP commands help text.
 [\$?]? Display the VCP commands help text.

Program Control Commands

- \$G* Set P = 2 and proceed with program execution.
\$P or *F5* Proceed with program execution.
<pc>\$G Set P = *<pc>* and proceed with program execution.
<pc>\$P or *<pc>F5* Set P = *<pc>* and proceed with program execution.
<msec>\$Z Proceed with program execution and stop after *<msec>* milliseconds.
\$L Load a memory image file at memory address 0 (file name is prompted).
<address>\$L Load a memory image file at specified address (file name is prompted).
+\$L Load a memory image file (filename, addresses, length are prompted).
\$E Reboot the Kestrel.
\$K ^(A-Series) Enter or return to the Kestrel VCP.
*<boolean>\$** Disable/Enable mapped memory protection for VCP access.
<boolean>\$! ^(A-Series) Exit/Enter VCP execution mode (for VCP debugging only!)
@<filename>Enter Get VCP keystrokes from the file specified by *<filename>*.

Display Commands

- \$R* Display all registers.
\$Y Show the reason for Strobe VCP entry.
\$X ^(A-Series) Show the execute code mapping table.
\$X ^(21MX) Show the execute mapping table.
<map>\$D ^(A-Series) Show the data mapping table [0,2] (default = 0 = execute data).
\$D ^(21MX) Show the alternate mapping table.
<map>\$M Show the specified mapping table (default = last given).
*\$** Display mapped memory protection state for VCP access.
\$! ^(A-Series) Display VCP execution mode (for VCP debugging only!).
[<n>]\$V Switch to the console for VT100 /Unit:n (default console = 0).

Memory or Register Access Commands

[<regname>!]	(A-Series) Open a register [A,B,X,Y,E,O,RI,G,P,WM,CQ,IM,IQ,Z,V,RC]
[<regname>!]	(21MX) Open a register [A,B,X,Y,E,O,P,MS,MV,MP,V,RC]
[<address>\]	Open absolute memory location [0-7777777].
[<address>/]	(A-Series) Open execute code space mapped memory location [0-777777].
[<address>/]	(21MX) Open current map memory location [0,777777].
[<address>]	(A-Series) Open execute data space mapped memory location [0,777777].
[<address>]	(21MX) Open alternate map memory location [0,777777].
[<address>#]	Open specified map memory location [0,777777].
[<mapreg>~]	(A-Series) Open specified map register [0,1777]
[<mapreg>~]	(21MX) Open specified map register [0,177]
[<map>] \$ #	[Set] or show the cross map for # open.
[<value>] Enter	[Change and] close the current memory location.
[<value>] DownArrow	[Change and] close current memory location and move to next location.
[<value>] UpArrow	[Change and] close current memory location and move to the previous.
[<value>] RightArrow	[Change and] close current location, move to next word.
[<value>] LeftArrow	[Change and] close current location, move to previous word.

Output Format Commands

=	Display the current value in octal format.
{	Display the current value in hexadecimal format.
"	Display the current value in decimal integer format.
^	Display the current value in floating point format.
;	Display the current value in assembly language format.
'	Display the current value in ASCII two-byte format.
[Display the current value in combined format.
\$ =	Set octal format as the default output format.
\$ {	Set hexadecimal format as the default output format.
\$ "	Set decimal integer format as the default output format.
\$ ^	Set floating point format as the default output format.
\$;	Set assembly format as the default output format.
\$ '	Set ASCII format as the default output format.
\$ [Set combined format as the default output format.
<length>\$ {	Set precision for hexadecimal format [1,2,3,4].
<length>\$ "	Set precision for unsigned decimal format [1,2,3,4].
-<length>\$ "	Set precision for signed decimal format [1,2,3,4].
<length>\$ ^	Set precision for floating point format [2,3,4].
<length>\$;	Set maximum decode for assembly format [1,2,...10].

Debugging Commands

\$T or <i>F10</i>	Trace one instruction. The registers are displayed after completion.
<n>\$T or <n> <i>F10</i>	Trace <n> instructions. The registers are displayed after completion.
\$A or \$B	Display all breakpoints.
<a ₁ >[, <a ₂ >...]\$A	Set breakpoint(s) at absolute address(es).
<a ₁ >[, <a ₂ >...]\$B	Set breakpoint(s) at logical address(es).
+<a ₁ >[, <a ₂ >...]\$A	Set oneshot breakpoint(s) at absolute address(es).
-\$A or -\$B	Clear all breakpoints.
+\$A or +\$B	Clear all oneshot breakpoints.
-<n ₁ >[, <n ₂ >...]\$A	Clear the specified (by number) breakpoint(s).
-<n ₁ >[, <n ₂ >...]\$B	Clear the specified (by number) breakpoint(s).
+<a ₁ >[, <a ₂ >...]\$B	Set oneshot breakpoint(s) at logical address(es).
<a ₁ >[, <a ₂ >...]\$J	Set oneshot breakpoint(s) at logical address(es) and proceed.
+<a ₁ >[, <a ₂ >...]\$J	Set oneshot breakpoint(s) at P-relative address(es) and proceed.
[<n>] <i>F9</i>	Proceed past <n> microcode debug points.
\$U	Show user watch data.
<a ₁ >[, <a ₂ >...]\$U	Set user watch address(es) in current space and format.
-<n ₁ >[, <n ₂ >...]\$U	Clear the specified (by number) user watch data.
-\$U	Clear all user watch data.
[[<low> ,]<high>]\$Q	[Set new addresses] and Quick dump low-high memory range.
\$O	Display all symbolic origin values.
<address>\$O	Set symbolic origin name to address (symbol name is prompted).
-<n ₁ >[, <n ₂ >...]\$O	Clear the specified (by name) symbolic origins.
-\$O	Clear all symbolic origins.
+ [<maxoffset>]\$O	Enable origin based address display
+ 0 \$O	Disable origin based address display

Search/Fill Commands

\$<	Show the low address register value.
<low>\$<	Set the low address register value.
\$>	Show the high address register value.
<high>\$>	Set the high address register value.
\$W	Show search/fill value.
<number>\$W	Set search/fill value.
\$&	Show search mask.
<number>\$&	Set search mask.
[[<low> ,]<hi>]\$F	[Set new addresses and] Fill low-hi with the fill value.
[[<low> ,]<hi>]\$S	[Set new addresses and] Search low-hi for the search value.
[[<low> ,]<hi>]\$N	[Set new addresses and] Search low-hi for not the search value.

Searching

The search commands (\$S and \$N) will search the range beginning with the low address register and ending with the high address register. Each location is ANDed with the mask register value. If this result is the same as the word register, the location is displayed. The \$N command displays the values that are different from the word register.

APPENDIX D

DefColor = ...

Defphurb = ...

The Kestrel uses a default set of colors on `Console` and `VT100` physical device screens. The colors and underlining are entirely configurable by use of the `DefColor` and `Defphurb` configuration options. The colors configuration file named `COLOR.CNF` provides several complete examples of the use of these two configuration options. In particular, the default Kestrel colors are documented in the first pair of tables (selected by setting `SELECTOR = 0`) in this file.

Some video modes support paletted colors and other video modes do not. The Kestrel system only supports actual blinking on paletted color systems. A paletted system has 256 colors or fewer. Systems with more than 256 colors could only support actual blink by repainting all pixels, which would be very slow. On systems that do not support paletted colors, the Kestrel uses different colors to distinguish characters that would otherwise blink.

Defining the colors is done through two configuration options. The `Defphurb` option is used to translate a set of `VT100` attributes into a color index. The `DefColor` option translates a color index into Windows RGB colors.

```
DefColor = ColorIndex rgb0 [rgb1 [rgb2]]
```

This specifies a set of colors to use at the given index. The color index must be 0 to 17. `ColorIndex` of 16 or 17 is a cursor index and then all three `rgb` values are required.

When `ColorIndex` is a cursor index (i.e., 16 or 17), `rgb0` is used when the screen cannot use a paletted blink (i.e., it has more than 256 colors); `rgb1` is used when the screen can blink but is currently using “blink off” colors; `rgb2` is used when the screen can blink and is using the “blink on” colors.

The `Reverse Video` checkbox in the properties and the current character highlight attribute determine whether `ColorIndex 16` or `ColorIndex 17` is used. `ColorIndex 16` is used when the `Reverse Video` and the highlight are the same; `ColorIndex 17` is used when they are different.

Other `ColorIndex` numbers may specify one, two, or all three `rgb` values. If only one is specified, that value is used for all three `rgb` values. If two are specified, the first one is used for `rgb0` and `rgb1` and the second one is used for `rgb2`. The `rgb0` value is used when the screen cannot use a paletted blink; `rgb2` is used when the screen can blink and is using “blink off” colors; `rgb2` is used when the screen can blink and is using “blink on” colors.

Each rgb value may be given as a [Standard Color Name](#) (page 171), a [Windows System Color Name](#) (page 174), or as a six-digit hexadecimal number. See [Appendix G](#) (page 171). The six-digit hexadecimal numbers are in standard Windows RRGGBB format where the RR, GG, and BB specify the intensity of red, green, and blue. ColorIndex of 13 is not used internally by Kestrel and may be very useful to redefine a single color with DefPhurb.

```
DefPhurb = phurb fgcidx bgcidx [/Underline:{On, Off}]
```

This specifies which color index should be used based on the attributes of a character.

The five letters of phurb stand for *protect* (used for marking and the Reverse Video checkbox), *highlight* (or bold), *underline*, *reverse video*, and *blink*. The phurb value must be given as a five digit binary number. Each 1 bit in phurb corresponds to the attribute being active. The fgcidx and bgcidx specify which ColorIndex (as defined by DefColor =) is used for the foreground and background colors for all characters with the matching active attributes. Because the Defphurb configuration option name is not case sensitive, it may help to make the configuration file clearer to specify the phurb portion using upper case letters which correspond to one bits, and lower case letters to correspond to zero bits, as below in the example.

Setting `/Underline:On` forces underlining on characters which match the phurb attributes.

```
defphurb = 00000 2 0 /Underline:No
defphurb = 00001 11 0 /Underline:No
defphurb = 00010 0 1 /Underline:No
defphurb = 00011 5 7 /Underline:No
defphurb = 00100 2 0 /Underline:Yes
defphurb = 00101 11 0 /Underline:Yes
defphurb = 00110 0 1 /Underline:Yes
defphurb = 00111 5 7 /Underline:Yes
defphurb = 01000 3 0 /Underline:No
defphurb = 01001 15 0 /Underline:No
defphurb = 01010 0 2 /Underline:No
defphurb = 01011 6 10 /Underline:No
defphurb = 01100 3 0 /Underline:Yes
defphurb = 01101 15 0 /Underline:Yes
defphurb = 01110 0 2 /Underline:Yes
defphurb = 01111 6 10 /Underline:Yes
defphurb = 10000 1 3 /Underline:No
defphurb = 10001 8 3 /Underline:No
defphurb = 10010 3 2 /Underline:No
defphurb = 10011 14 12 /Underline:No
defphurb = 10100 1 3 /Underline:Yes
defphurb = 10101 8 3 /Underline:Yes
defphurb = 10110 3 2 /Underline:Yes
defphurb = 10111 14 12 /Underline:Yes
defphurb = 11000 0 3 /Underline:No
defphurb = 11001 4 3 /Underline:No
defphurb = 11010 3 2 /Underline:No
defphurb = 11011 14 9 /Underline:No
defphurb = 11100 0 3 /Underline:Yes
defphurb = 11101 4 3 /Underline:Yes
defphurb = 11110 3 2 /Underline:Yes
defphurb = 11111 14 9 /Underline:Yes
```

APPENDIX E

Fatal Device Error Detected by VCP ^(A-Series)

The Kestrel VCP can detect many device configuration errors during initialization. By default, or if the `FatalVCPError = Yes` configuration line is given, an occurrence of any of these configuration errors will result in an error dialog box that says:

Fatal device error detected by VCP: nnn nnn nnn nnn

where four octal numbers are represented by the nnn fields in the above message. If the `FatalVCPError = No` configuration line is given, these errors are reported by flashing the LEDs instead (a method similar to that used by a HP 1000 CPU).

The following table summarizes these error codes and their meanings:

300 200 000 000	No cards were found in the legacy bus ‘broken chain’ test – this usually means there is a gap between the Kestrel LIC-A card and the first I/O device card.
300 201 0xx 0yy	More than one card is configured to be the VCP – the select codes of the detected I/O cards configured to be the VCP are xx and yy.
300 202 0xx 0yy	The legacy bus ‘scan chain’ test did not find the same number of I/O cards as were found during the ‘polling’ test – xx is the number found by polling and yy is the number found by scanning; a break in the legacy bus interrupt priority chain probably follows card yy.
300 203 000 0ss	More than one card with select code ss was detected on the legacy bus.
300 204 000 0ss	A card with a select code less than 20 (ss) was detected on the legacy bus.
300 205 000 000	No card is configured to be the VCP interface.
300 211 000 000	An OBIO was not found at the head of the I/O chain on an A400.
300 213 ??? ???	A VCP interface speed sense failure has occurred.
300 2ss aaa aaa	The I/O card with select code ss failed the IOP function tests at address <aaa><aaa> in the Kestrel VCP code.
340 2nn mmm mmm	Memory test nn failed while using map <mmm><mmm>.
360 360 aaa aaa	TBG test failure detected at address <aaa><aaa>.

APPENDIX F

Firmware Expansion ROMs

The `FirmwareROMs` configuration command specifies optional firmware to be installed in a Kestrel system. The command syntax is:

```
FirmwareROMs = romname[|opcode] [romname[|opcode]]
```

where `romname` specifies one of a set of available firmware expansion modules and `opcode` specifies the first instruction opcode for which support is to be added. If `opcode` is not given, the named firmware expansion module is installed for its default opcodes.

More than one firmware expansion module may be given in a single `FirmwareROMs` configuration command and more than one `FirmwareROMs` configuration command may be given.

The following table summarizes the firmware ROM files currently available for use with the Kestrel `FirmwareROMs` configuration line. Note: Where shown, the asterisk character (*) is part of the firmware expansion module name (e.g., *RTE6OS).

Romname	HP Part Numbers	Default Opcodes	Description (additional information)
*RTE4EMA	92067-<80001,80002,80003>	105240-105257	E/F-Series RTE-4A/B EMA
*RTE6OS	92084-<80001,80002,80003>	105340-105357	E-Series RTE-6/VM Operating System
*RTE6OS	92084-<80001,80102,80103>	105340-105357	F-Series RTE-6/VM Operating System
*RTE6VMA	92084-<80004,80005,80006>	105240-105257	E/F-Series RTE-6/VM EMA/VMA
DTS70	1816-<1301,1303,1304,1305,1306,1307>	101540-101577 105540-105577	91073A PROM Kit (DTS-70/ATS-80)
DS1000	91740-<80001,80002,80003,80016> or 91740-<80018,80019,80020,80017> or 91740-<80033,80034,80035,80048> or 91740-<80049,80050,80051,80048> or 91740-<80064,80065,80066,80048> or 91740-<80067,80068,80069,80016>	105300-105304	E/F-Series DS1000 Note: The Kestrel DS1000 firmware expansion ROM also includes the CPUID firmware expansion ROM described below.
CPUID	Standard ^(A-Series) None ^(21MX)	105300	^(21MX) Kestrel enhancement: optional firmware to support the .CPUID instruction (which is standard on A-series CPUs) on 21MX CPUs. This enhanced instruction returns the following codes in the A register on 21MX CPUs: 0 = 21MX-M 1 = 21MX-E 2 = 21MX-F

Romname	HP Part Numbers	Default Opcodes	Description (additional information)
CLOCK	Standard ^(A990) None ^(Other)	105306-105311	Kestrel enhancement: optional firmware to support a time-of-day clock and the .WTM, .WTC, .RTM and .RTC instructions (which are standard on the A990 CPU) on CPUs other than the A990.
SPEED	None	105312	Kestrel enhancement: optional firmware to support the .SPEED instruction, which provides a method of ascertaining the operating speed of the Kestrel processor.
BREAKPT	None	101717	Kestrel enhancement: may be loaded using the FirmwareOverride configuration command to replace any single opcode with the equivalent of the standard Kestrel .BKPT (breakpoint) instruction for diagnostic purposes.
*WFICOUNT	None	105302 ^(A-Series) 105303 ^(21MX)	Kestrel enhancement: automatically loaded when the RteCpuWeight configuration command is given with a non-zero weight.
*STACK	None	100140-100157 and 104140-104157	Kestrel enhancement: optional firmware to implement a suite of stack instructions. See STACK.DOC for full documentation.
ARITH	None	100160-100177 and 104160-104177	Kestrel enhancement: optional firmware to implement a suite of single-precision comparison and subtract instructions. See ARITH.DOC for full documentation

Standard ROMs

The following table summarizes the firmware ROM files currently provided by default (i.e., standard) with the Kestrel. The Kestrel supports these opcodes for all appropriate 21MX configurations – no FirmwareROMs configuration is required. Where several HP part number revisions are listed, the Kestrel provides support for the latest revision. The familiar HP 1000 21MX Firmware “Module No.” with equivalent opcode ranges are provided in the table.

HP Revision Part Numbers	Module No.	Default Opcodes	ROM Set Description
1816-1002,3,4 1816-1028,29,30 1816-1073,4,5 5090-0563,4,5 5090-0563,64,96 5090-0600,564,596	0 1	00000-00377B 00400-00777B	E-Series “Base Set”
1816-0941,392,943 5090-0566,7,8	2 3	01000-01377B 01400-01777B	E-Series Extended Instruction Group (EIG)

HP Revision Part Numbers	Module No.	Default Opcodes	ROM Set Description
02113-80003,4,5 02113-80006,7,8	0 1 2 3	00000-00377B 00400-00777B 01000-01377B 01400-01777B	E-Series "Combined" Base Set/EIG
13307-80001,2,3,4,5,6 13307-80011,12,13,14,15,16 13307-80021,22,23,24,25,26 13307-80027,28,29,30,31,32	32	20000-20377B	E-Series Dynamic Mapping Instructions (DMI)
13306-80001,02,03,04,05,06 and 1816-0944,5,6 13306-80001,12,03,04,05,06 and 1816-0944,5,6 13306-80001,12,03,04,05,06 and 5090-0569,70,71 13306-80013,14,15,16,17,18 and 5090-0589,90,91	33 34 35	20400-20777B 21000-21377B 21400-21777B	E-Series Fast FORTRAN Processor (FFP)
13307-80033,34,35 and 5090-0589,90,91 (4k ROMs) 13307-80036,37,38 and 5090-0589,90,91 (4k ROMs) 02113-80009,10,11 (8k ROMs)	32 33 34 35	20000-20377B 20400-20777B 21000-21377B 21400-21777B	E-Series "Combined" DMI/FFP
12740-80014,15,16 12740-80019,20,21	0 1	00000-00377B 00400-00777B	F-Series "Base Set"
12740-80011,12,13 12740-80022,23,24	2 3	01000-01377B 01400-01777B	F-Series Extended Instruction Group (EIG)
02117-80001,2,3 02117-80016,17,18	0 1 2 3	00000-00377B 00400-00777B 01000-01377B 01400-01777B	F-Series "Combined" Base Set/EIG
13307-80027,28,29,30,31,32	32	20000-20377B	F-Series Dynamic Mapping Instructions (DMI)
13306-80013,14,15,16,17,18 and 5090-0589,90,91 5090-1615,16,17,18,19,20,21,22,23	33 34 35	20400-20777B 21000-21377B 21400-21777B	F-Series Fast FORTRAN Processor (FFP)
5180-0141,2,3	32 33 34 35	20000-20377B 20400-20777B 21000-21377B 21400-21777B	F-Series "Combined" DMI/FFP
12823-80001,2,3,4,5,6 12823-80007,8,9,10,11,12 12823-800013,14,15,16,17,18 12823-80019,20,21	40 41 42 43	24000-24377B 24400-24777B 25000-25377B 25400-25777B	F-Series Scientific Instruction Set (SIS)

HP Revision Part Numbers	Module No.	Default Opcodes	ROM Set Description
12824-80001,2,3,4,5,6	12	06000-06377B	F-Series Vector Instruction Set (VIS)
12824-80007,8,9	13	06400-06777B	
	14	07000-07377B	
	15	07400-07777B	

If you suspect your legacy HP 1000 uses a firmware ROM set that may not be covered by these tables, please contact your VAR or Strobe Data Inc. at <http://www.strobedata.com>.

APPENDIX G

Standard Color Names

The following is a table of standard color names that may be used instead of a hexadecimal RGB color value for all configuration commands that require information of that format (i.e., `Defcolor`, `LampColors`, `RTECpuColors` and `X86CpuColors`). The second column of the table shows the equivalent hexadecimal RGB color value.

Standard Color Name	Hex. RGB
AliceBlue	F0F8FF
AntiqueWhite	FAEBD7
Aqua	00FFFF
Aquamarine	7FFFD4
Azure	F0FFFF
Beige	F5F5DC
Bisque	FFE4C4
Black	000000
BlanchedAlmond	FFEBCD
Blue	0000FF
BlueViolet	8A2BE2
Brass	B5A642
BrightGold	D9D919
Bronze	8C7853
Brown	A52A2A
BurlyWood	DEB887
CadetBlue	5F9EA0
Chartreuse	7FFF00
Chocolate	D2691E
CoolCopper	D98719
Copper	B87333
Coral	FF7F50
CornflowerBlue	6495ED
Cornsilk	FFF8DC
Crimson	DC143C
Cyan	00FFFF
DarkBlue	00008B
DarkBrown	5C4033
DarkCyan	008B8B
DarkGoldenrod	B8860B
DarkGray	8B8B8B

Standard Color Name	Hex. RGB
DarkGreen	006400
DarkGreenCopper	4A766E
DarkKhaki	BDB76B
DarkMagenta	8B008B
DarkOliveGreen	556B2F
DarkOrange	FF8C00
DarkOrchid	9932CC
DarkPurple	871F78
DarkRed	8B0000
DarkSalmon	E9967A
DarkSeaGreen	8FBC8F
DarkSlateBlue	483D8B
DarkSlateGray	2F4F4F
DarkTan	97694F
DarkTurquoise	00CED1
DarkViolet	9400D3
DarkWood	855E42
DarkYellow	8B8B00
DeepPink	FF1493
DeepSkyBlue	00BFFF
DimBlue	000069
DimCyan	006969
DimGray	696969
DimMagenta	690069
DimRed	690000
DimYellow	696900
DodgerBlue	1E90FF
DustyRose	856363
Feldspar	D19275
FireBrick	B22222
FloralWhite	FFFAF0

Standard Color Name	Hex. RGB
ForestGreen	228B22
Fuchsia	FF00FF
Gainsboro	DCDCDC
GhostWhite	F8F8FF
Gold	FFD700
Goldenrod	DAA520
Gray	BEBEBE
Green	008000
GreenCopper	527F76
GreenYellow	ADFF2F
Honeydew	F0FFF0
HotPink	FF69B4
HunterGreen	215E21
IndianRed	CD5C5C
Indigo	4B0082
Ivory	FFFFFF0
KestrelBlack	000000
KestrelBlue	0000AA
KestrelBrightBlue	0000FF
KestrelBrightCyan	00FFFF
KestrelBrightGreen	00FF00
KestrelBrightMagenta	FF00FF
KestrelBrightRed	FF0000
KestrelBrightYellow	FFFF00
KestrelCyan	00AAAA
KestrelDarkBlue	000055
KestrelDarkCyan	005555
KestrelDarkGray	555555
KestrelDarkGreen	005500
KestrelDarkMagenta	550055
KestrelDarkRed	550000
KestrelDarkYellow	555500
KestrelGray	AAAAAA
KestrelGreen	00AA00
KestrelMagenta	AA00AA
KestrelNeonBlue	5555FF
KestrelPaleBlue	AAAAFF
KestrelRed	AA0000
KestrelWhite	FFFFFF
KestrelYellow	AAAA00

Standard Color Name	Hex. RGB
Khaki	F0E68C
Lavender	E6E6FA
LavenderBlush	FFF0F5
LawnGreen	7CFC00
LemonChiffon	FFFACD
LightBlue	ADD8E6
LightCoral	F08080
LightCyan	E0FFFF
LightGoldenRod	EEDD82
LightGoldenrodYellow	FAFAD2
LightGray	D3D3D3
LightGreen	90EE90
LightPink	FFB6C1
LightSalmon	FFA07A
LightSeaGreen	20B2AA
LightSkyBlue	87CEFA
LightSlateBlue	8470FF
LightSlateGray	778899
LightSteelBlue	B0C4DE
LightTurquoise	ADEAEA
LightWood	E9C2A6
LightYellow	FFFFE0
Lime	00FF00
LimeGreen	32CD32
Linen	FAF0E6
Magenta	FF00FF
MandarianOrange	E47833
Maroon	800000
MediumAquamarine	66CDAA
MediumBlue	0000CD
MediumCyan	00A8A8
MediumForestGreen	6B8E23
MediumGoldenrod	EAEAAE
MediumGray	A8A8A8
MediumMagenta	CD00CD
MediumOrchid	BA55D3
MediumPurple	9370DB
MediumRed	CD0000
MediumSeaGreen	3CB371
MediumSlateBlue	7B68EE

Standard Color Name	Hex. RGB
MediumSpringGreen	00FA9A
MediumTurquoise	48D1CC
MediumVioletRed	C71585
MediumWood	A68064
MediumYellow	CDCD00
MidnightBlue	191970
MintCream	F5FFFA
MistyRose	FFE4E1
Moccasin	FFE4B5
NavajoWhite	FFDEAD
Navy	000080
NavyBlue	23238E
NeonBlue	4D4DFF
NeonPink	FF6EC7
NewTan	EBC79E
OldGold	CFB53B
OldLace	FDF5E6
Olive	808000
OliveDrab	6B8E23
OliveGreen	4F4F2F
Orange	FFA500
OrangeRed	FF4500
Orchid	DA70D6
PaleGoldenrod	EEE8AA
PaleGreen	98FB98
PaleTurquoise	AFEEEE
PaleVioletRed	DB7093
PapayaWhip	FFefd5
PeachPuff	FFDAB9
Peru	CD853F
Pink	FFC0CB
Plum	DDA0DD
PowderBlue	B0E0E6
Purple	800080

Standard Color Name	Hex. RGB
Quartz	D9D9F3
Red	FF0000
RichBlue	5959AB
RosyBrown	BC8F8F
RoyalBlue	4169E1
SaddleBrown	8B4513
Salmon	FA8072
SandyBrown	F4A460
Scarlet	8C1717
SeaGreen	2E8B57
Seashell	FFF5EE
Sienna	A0522D
Silver	C0C0C0
SkyBlue	87CEEB
SlateBlue	6A5ACD
SlateGray	708090
Snow	FFFAFA
SpicyPink	FF1CAE
SpringGreen	00FF7F
SteelBlue	4682B4
SummerSky	38B0DE
Tan	D2B48C
Teal	008080
Thistle	D8BFD8
Tomato	FF6347
Turquoise	40E0D0
Violet	EE82EE
VioletRed	D02090
Wheat	F5DEB3
White	FFFFFF
WhiteSmoke	F5F5F5
Yellow	FFFF00
YellowGreen	9ACD32

Windows System Color Names

The following is a table of Windows system color names that may be used instead of a hexadecimal RGB color value for the `Defcolor`, `LampColors`, `RTECpuColors` and `X86CpuColors` configuration commands. These color names reference the Windows system colors specified in the Windows desktop properties/appearance dialog. The Kestrel application window status line (i.e., the bottom line of the main Kestrel window) is drawn with a background of `BtnFace`, so if you want to draw your CPU lights as being white when ‘on’ and transparent (i.e., showing the default status line background) when ‘off’, then the appropriate `LampColors` configuration command would be: `LampColors = White on BtnFace`

Windows System Color Name
ScrollBar
Background
ActiveCaption
InactiveCaption
Menu
Window
WindowFrame
MenuText
WindowText
CaptionText
ActiveBorder
InactiveBorder
AppWorkspace
Highlight
HighlightText
BtnFace
BtnShadow
GrayText
BtnText
InactiveCaptionText
BtnHighlight
3DdkShadow
3Dlight
InfoText
InfoBk
Desktop
3Dface
3Dshadow
3Dhighlight
3Dhilight
BtnHilight

APPENDIX H

Windows HotKey Names

The following is a table of Windows HotKey Names that may be used with the /HotKey option on [WinPrint](#) (page 118) or [CharPrint](#) (page 60) physical device configuration lines. In addition to the names listed below, the ten decimal digits 0-9 and the twenty-six letters A-Z are allowed. Key names are not case sensitive.

Not all key combinations will be available on all Windows systems and keyboards. Many keys and key combinations are used by Windows or other programs - care must be taken to ensure that selected hotkeys do not interfere with the operation of Windows or other applications.

Each key name may be preceded by one or more modifiers. The four modifiers are Ctrl, Alt, Shift, and Win. The modifiers must be separated from each other and from the key name by a single plus sign (+). For example: Ctrl+Alt+End.

The [KEYNAM32](#) program (page 139) may be used to touch a key sequence and read the corresponding hot key name.

LButton	RButton	Cancel	MButton	Back
Tab	Clear	Return	Pause	Capital
Kana	Hangeul	Hangul	Junja	Final
Hanja	Kanji	Escape	Convert	NonConvert
Accept	ModeChange	Space	Prior	Next
End	Home	Left	Up	Right
Down	Select	Print	Execute	Snapshot
Insert	Delete	Help	Apps	NumPad0
NumPad1	NumPad2	NumPad3	NumPad4	NumPad5
NumPad6	NumPad7	NumPad8	NumPad9	Multiply
Add	Separator	Subtract	Decimal	Divide
F1	F2	F3	F4	F5
F6	F7	F8	F9	F10
F11	F12	F13	F14	F15
F16	F17	F18	F19	F20
F21	F22	F23	F24	NumLock
Scroll				

APPENDIX I

Telnet Connections

Each configuration line that specifies a Telnet physical device is part of a Telnet server installed when the Kestrel starts up. There is one Telnet server installed for every unique port number (configured by the Telnet /Port option). If the Windows system has firewalls or other tools that prohibits the Kestrel from starting a Telnet server, then the Kestrel will not be able to support Telnet connections until the Windows system is reconfigured to allow the server to run.

When a Telnet client connects to the Kestrel Telnet server, the Kestrel tries to associate the client with one of the units (Telnet lines). If it cannot associate the client with any unit, the client is disconnected. The Telnet configuration file options affect whether the association can be made, what (if anything) the Telnet client sees, and what (if any) responses are required.

The /IPRule, /IPRules and /IPRulesFile options may be used to define a set of rules to accept or reject a Telnet client association based on the client's Internet Protocol (IP) address.

Rules specified by the /IPRule option are immediately appended to the end of the list of rules for this unit. Rules read from a file specified by the /IPRules option are also immediately appended to the end of the list of rules for this unit. The /IPRule and /IPRules options may be given multiple times on a single configuration file line, in which case the order is important.

Rules are read from a file specified by the /IPRulesFile option only when a Telnet client attempts to establish an association with this unit. Rules specified by the /IPRulesFile option are always appended at the end of any rules specified by the /IPRule and /IPRules options. The /IPRulesFile option may be given multiple times on a single configuration file line, in which case the order is important.

Each rule specified by the /IPRule, /IPRules and /IPRulesFile options must have the form [+ -]n.n.n.n[&m.m.m.m] where each n and m is a decimal number in the range 0-255. An IP address rule may contain white space (blanks and/or tabs) between elements. If - is not specified, then + is assumed. A prefix + means if the IP address n.n.n.n matches the client's IP address, the client is allowed to attach (whitelist). A prefix - means if the IP address n.n.n.n matches the client's IP address, the client is not allowed to attach (blacklist). The mask m.m.m.m is optional and may be used to specify that n.n.n.n is a subnet base.

For each unit with the correct port number (in configuration file order), the IP rules are tested in given order. If a + IP rule matches, then the association is allowed; if a - rule matches, then the association is rejected. If the client's IP address does not match any rule and at least one + IP rule was given and no - IP rules are given, the association is rejected. If the client's IP address cannot be determined and any IP address rules were given, then the association is rejected.

The Kestrel makes the following tests to try to associate a Telnet client with each unit. In each case, if the Telnet IP address fails one of the rules specified by the `/IPRule`, `/IPRules` and `/IPRulesFile` options, it will not be associated with that unit and the Kestrel will instead try the next unit. The Kestrel checks whether an association can be established for each Telnet unit with the correct port number in the order given in the configuration file.

Any time the Kestrel establishes an association between a Telnet client and a unit, the client gets notified of the `UnitName` for the associated unit (unless `/ReportUnitName:No` is specified). Once the Kestrel has associated a Telnet client with a unit, it does not try further units.

First, if an `/Autoconnect:Yes` or `/Autoconnect:Once` unit is currently available (i.e., unassociated), then that unit is associated with the client.

Second, the Telnet client is asked for the desired `UnitName` or `Group` and `Password`. This may be specified using the RTE convention of `UnitName/Password`, with both pieces being optional.

Third, the Kestrel then looks at each unit to see if the Telnet client should be associated with it. It will only be associated if the unit is not currently in associated with another Telnet client. If the `UserName` is blank, the unit must have `/Any:Yes`; otherwise, the `UnitName` or `Group` specified by the client must match either the given `/UnitName` or the `/Group` string; the match is not case-sensitive. If the entered `Password` is blank, then the unit must not have the `/Password` option specified. If the entered `Password` is not blank, then the unit must have a password specified and they must exactly match; the password match is case-sensitive. If the `UnitName` or `Group` and `Password` pass both tests, the Kestrel associates the Telnet client with this unit.

Finally, if the Kestrel was unable to associate the Telnet client, and the client entered a specific `UnitName` (not `Group`), and that unit has `/Disconnectable:Yes` given, then the client is prompted whether or not to disconnect the current Telnet client that is using the unit. If the client responds with `Yes` then the current Telnet client is immediately disconnected and the new Telnet client is associated with the unit.

If the Kestrel fails to associate the Telnet client, it notifies the client and asks for the `UnitName/Group` and `Password` again, etc.

APPENDIX J

LSRMST definition

LSRMST (Line Status / Modem Status) codes are used with the CharPipe physical device when the /LSRMST option is given. See the [CharPipe](#) (page 59) physical device description. The LSRMST protocol provides escape codes to represent actual line status (e.g., break detected) and modem status (e.g., CTS) changes. This protocol has been extended to support sending line control (e.g., select parity), modem control (e.g., set RTS) and baud rate sequences from the attached virtual device to the customer end of the named pipe.

Without the /LSRMST, all virtual device line control and modem control changes are ignored, and line status and modem status changes cannot be written to the customer end of the named pipe. CharPipe passes data through without inspection or modification.

When LSRMST mode is active (i.e., when the /LSRMST option is present and the associated value is non-zero), line status, modem status, line control, modem control and baud rate commands are prefixed by the given value (the LSRMST escape code). Following this byte is the LSRMST command sequence.

The bit values for line status, modem status, line control and modem control used by LSRMST are compatible with the 8250/16450/16550 serial line controller chips used by the PC, XT, and AT compatible machines.

In the following discussion, data transmission is described from the point of view of the customer end of the named pipe. Generally, status changes are written to the customer end of the named pipe and control commands are read from the customer end of the named pipe.

LSRMST commands

Following the LSRMST escape code is a single command byte and possibly one or more data bytes. If the customer sends an escape code followed by an unknown command byte, CharPipe will discard the LSRMST escape code and transmit the unknown command byte to the attached virtual device.

In the following descriptions, each 0x?? is used to represent the LSRMST escape byte (i.e., the value given with the /LSRMST option).

<u>Command byte</u>	<u>Meaning</u>
0x00	Escape. An LSRMST escape code should be inserted into the data stream.
0x01	Data and status. Written to the customer end of the named pipe: the first following data character contains the line status register, and the second data character contains the received data byte associated with the line status. This sequence will never be read at the customer end of the named pipe.
0x02	Status only. Written to the customer end of the named pipe: the data character contains the line status register. Read at the customer end of the named pipe: the data character contains the line control register.
0x03	Modem status. Written to the customer end of the named pipe: the data character contains the modem status register. Read at the customer end of the named pipe: the data character contains the modem control register.
0x05	Baud rate. Read at the customer end of the named pipe: the first data character contains the least significant byte of the baud rate divisor, and the second data character contains the most significant byte of the baud rate divisor. This LSRMST command is not part of the standard as defined by Microsoft, and was created for Strobe Data use with the CharPipe. If written to the customer end of the named pipe, this command is ignored by CharPipe.

Line Status Register

The line status register (LSR) follows command bytes 0x01 and 0x02 when written to the customer end of the named pipe.

<u>Bit</u>	<u>Meaning</u>
0x10	Break detected
0x08	Framing error detected
0x04	Parity error detected
0x02	Overrun error detected

Written to the customer end of the named pipe:
 0x?? 0x01 LSR data
 0x?? 0x02 LSR

Line Control Register

The line control register (LCR) follows command byte 0x02 when read at the customer end of the named pipe.

<u>Bit</u>	<u>Meaning</u>
0x40	Break state to set
0x20	Stick parity
0x10	Even parity select
0x08	Parity enable
0x04	Stop bits (0=1 stop bit, 1=2 stop bits (1.5 if 5 bits per word))
0x02	Bits per character, with 0x01. (00=5 01=6 10=7 11=8)
0x01	See 0x02

Read at the customer end of the named pipe:

0x?? 0x02 LCR

Modem Status Register

The modem status register (MSR) follows command byte 0x03 when written to the customer end of the named pipe.

<u>Bit</u>	<u>Meaning</u>
0x80	Carrier detect
0x40	Ring indicator
0x02	CTS has changed state
0x01	DSR has changed state

Written to the customer end of the named pipe:

0x?? 0x03 MSR

Modem Control Register

The modem control register (MCR) follows command byte 0x03 when read at the customer end of the named pipe.

<u>Bit</u>	<u>Meaning</u>
0x02	RTS state to set
0x01	DTR state to set

Read at the customer end of the named pipe:

0x?? 0x03 MCR

Baud Rate

The baud rate bytes follow command byte 0x05 when read at the customer end of the named pipe.

The baud rate divisor can be calculated by dividing the crystal rate input to a typical COM (8250) chip by both the crystal rate and the baud rate. For the CharPipe implementation, the baud rate divisor is 115,200 divided by the baud rate and truncated to the nearest lower integer. This divisor matches the divisor programmed into the divisor latch register of the 8250 class chips.

The low order eight bits (LSB) of the divisor are transmitted first, followed by the high order eight bits (MSB).

<u>Baud</u>	<u>Divisor Bytes</u>	
	<u>LSB</u>	<u>MSB</u>
300	0x80	0x01
1200	0x60	0x00
2400	0x30	0x00
9600	0x0C	0x00

Read at the customer end of the named pipe:

0x?? 0x05 LSB MSB

APPENDIX K

Sample 21MX Configuration File

The following is a sample Kestrel configuration file for a 21MX system. Many of the common configuration commands and options for a typical 21MX Kestrel installation are shown.

```

; +-----
; | Set up standard environment
; +-----
SetDefault R1WINEXE = C:\Program Files\Reflection\R1WIN.EXE
SetDefault PROJECTDIR = C:\Data Files\Kestrel
SetDefault R1WFILES = %PROJECTDIR%
SetDefault DISKIMAGES = %PROJECTDIR%\DiskImages
SetDefault TAPEIMAGES = %PROJECTDIR%\TapeImages
SetDefault LOGDIR = %TEMP%

Set DVM33 = IEEE-488 /Protocol:DVM33
Set DVS23 = IEEE-488 /Protocol:DVS23

DiskFilesFolder = %DISKIMAGES%
TapeFilesFolder = %TAPEIMAGES%

LampColors = Red on BtnFace

X86CpuWeight = 100
X86CpuWidth = 0
X86CpuColors = Red Pink

RteCpuWeight = 100
RteCpuWidth = 0
RteCpuColors = DimBlue DeepSkyBlue

; +-----
; | Specify the CPU configuration
; +-----
CPU = 21MX-F /MemorySize:1024 /Switches:001500 /RPLVAL:001500 /Lock:Yes
FirmwareROMs = *RTE60S *RTE6VMA CLOCK CPUID
Performance = Default ; 21MX-F

; +-----
; | Specify installed boot ROMs:
; +-----
BootROMs = HP12992B ; 7905/7906/7920/7925 loader (MAC Disc Loader)
BootROMs = HP12992J ; 12821A/CS/80 disk loader (CS/80 Disc Family Loader)
BootROMs = HP12992L ; HP 7974 Mag Tape Absolute Binary Loader
BootROMs = None ; Not installed

; +-----
; | VCP Console options
; +-----
Console /Height:50 /Width:90 /Name:'%LOGDIR%\Console.txt' /Capture:No = StrobeVCP
Set SELECTOR = 0
Include Color.Cnf

; +-----
; | Override Options
; +-----
Title = RTE-6 21MX-F
RestoreOnHalt = Yes
AllowSmallFrame = Yes
MessageDisplayDelay = None
MessageDisplayMinimum = None

; +-----
; | I/O interface emulations
; +-----

; ** Virtual TBG device
Clock = TBG /SC:11

```

```

; ** Virtual disks
File /Name:'RTE6FSYS.Disk' /UnitName:'LU 50-52' = MAC /SC:15 /Unit:0 /Drive:7925
Mem /Name:'7925.Disk' /UnitName:'LU 53' = MAC /SC:15 /Unit:1 /Drive:7925
File /Name:'7905-R.Disk' /UnitName:'LU 45' = MAC /SC:15 /Unit:2 /Drive:7905-R
File /Name:'7905-F.Disk' /UnitName:'LU 46' = MAC /SC:15 /Unit:2 /Drive:7905-F
File /Name:'7906-R.Disk' /UnitName:'LU 47' = MAC /SC:15 /Unit:3 /Drive:7906-R
File /Name:'7906-F.Disk' /UnitName:'LU 48' = MAC /SC:15 /Unit:3 /Drive:7906-F
File /Name:'7920.Disk' /UnitName:'LU 49' = MAC /SC:15 /Unit:4 /Drive:7920
Removable /Mount:No /Name:E: /UnitName:'LU 54' = MAC /SC:15 /Unit:5 /Drive:7920
Floppy /Mount:No /Name:A: /UnitName:'LU 55' = MAC /SC:15 /Unit:6 /Drive:7905-R
Mem /Name:'7957A.Disk' /UnitName:'LU 20...' = %DVM33% /BusAdr:0 /Drive:7957A = 12821A /SC:20

; ** Virtual tapes
TPF /Name:'LU8-1.Tape' /Mount:No /UnitName:'LU 8' = 13181 /SC:16 /Unit:0
TPF /Name:'LU9-1.Tape' /Mount:No /UnitName:'LU 9' = 13181 /SC:16 /Unit:1
TPF /Name:'LU10-1.Tape' /Mount:No /UnitName:'LU 10' = %DVS23% /BusAdr:0 /Model:7974A = 12821 /SC:14
ASPItape /Name:Tape0 /Unload:Yes /UnitName:'LU 11' = %DVS23% /BusAdr:1 /Model:7974A = 12821 /SC:14

; ** Virtual HP-IB Devices
 GPIB = 59310B /SC:23

; ** Host file access
HostFile = HostAccess /SC:75

; ** WRQ consoles attached to virtual character devices
WRQ /WinExec:'%R1WINEXE%' /n /s "%R1WFILES%\LU01.R1W" /Codependent:Yes = BACI /SC:13 /Baud:19200

; ** Telnet sockets attached to virtual character devices
Telnet /UnitName:'LU 7' /Group:CMUX = CMUX /SC:21 /Port:1
Telnet /UnitName:'LU 58' /Group:CMUX = CMUX /SC:21 /Port:0
Telnet /UnitName:'LU 60' /Group:BACI = BACI /SC:33 /Baud:19200
Telnet /UnitName:'LU 61' /Group:BACI = BACI /SC:34 /Baud:19200
Telnet /UnitName:'LU 62' /Group:BACI = BACI /SC:35 /Baud:19200
Telnet /UnitName:'LU 63' /Group:BACI = BACI /SC:36 /Baud:19200

; COM ports attached to virtual character devices
Com /Port:1 = BACI /SC:12 /Baud:9600
Com /Port:2 = 12531D /SC:24 /Baud:9600 /W7:B

; ** LPTs attached to virtual character devices
LPT /UnitName:'LU 14' /Name:LPT2 = 12880A /SC:25 /Baud:9600

; ** Windows printers attached to parallel interfaces
WinPrint /UnitName:'LU 6' = Parallel /Protocol:DVA12 = 12845B /SC:22

; +-----+
; | Legacy bus options:
; | This documents all the original legacy bus configuration.
; | All lines that are commented out are now supported using virtual devices.
; | All others are for the only interfaces that remain in the legacy bus chassis.
; +-----+
; LegacyBus = 10 ; = FEM
; LegacyBus = 11 ; = TBG
; LegacyBus = 12 ; LU 56,57 = BACI interface
; LegacyBus = 13 ; LU 1 = BACI interface
; LegacyBus = 14 ; LU 10,11 = 12821A 7974/78 magnetic tape (units 0,1)
; LegacyBus = 15 ; LU 45-55 = MAC Disk interface
; LegacyBus = 16 ; LU 8,9 = 13181A 7970 9-track magnetic tape (units 0,1)
; ; (second 13181A interface card)
; LegacyBus = 20 ; LU 20 ... = 12821A HP-IB interface
; LegacyBus = 21 ; LU 7,58,59 = 12792C 8-channel Mux
; LegacyBus = 22 ; LU 6 = 12845B Parallel Printer interface
; LegacyBus = 23 ; LU 37,38,39 = 59310B HP-IB interface
; LegacyBus = 24 ; LU 13 = 12531D interface 9600 baud, W7=B
; LegacyBus = 25 ; LU 14 = 12880A interface 9600 baud
; LegacyBus = 26 ; LU 40 = 12532A Paper Tape Reader interface
; LegacyBus = 27 ; LU 41 = 12536A Paper Tape Punch interface
; LegacyBus = 30 ; LU 42 = 12566C 16-bit Microcircuit interface
; LegacyBus = 31 ; LU 43 = 12566C 16-bit Microcircuit interface
; LegacyBus = 32 ; LU 44 = 12620A Breadboard interface
; LegacyBus = 33 ; LU 60 = BACI interface
; LegacyBus = 34 ; LU 61 = BACI interface
; LegacyBus = 35 ; LU 62 = BACI interface
; LegacyBus = 36 ; LU 63 = BACI interface

; +-----+
; | X86 logging options
; +-----+
Logging /Unitname:'LoggingALL' /Name:'%LOGDIR%\LoggingALL.txt' /Capture:No = Logging /SC:All

```

Sample A-Series Configuration File

The following is a sample Kestrel configuration file for an A-Series system. Many of the common configuration commands and options for a typical A-Series Kestrel installation are shown.

```

; +-----+
; | Set up standard environment
; +-----+
SetDefault R1WINEXE   = C:\Program Files\Reflection\R1WIN.EXE
SetDefault PROJECTDIR = C:\Data Files\Kestrel
SetDefault R1WFILES   = %PROJECTDIR%
SetDefault DISKIMAGES = %PROJECTDIR%\DiskImages
SetDefault TAPEIMAGES = %PROJECTDIR%\TapeImages
SetDefault LOGDIR     = %TEMP%

Set DD*12 = IEEE-488 /Protocol:DD*12
Set DD*24 = IEEE-488 /Protocol:DD*24
Set DD*33 = IEEE-488 /Protocol:DD*33
Set DDQ24 = SCSI    /Protocol:DDQ24
Set DDQ30 = SCSI    /Protocol:DDQ30

DiskFilesFolder = %DISKIMAGES%
TapeFilesFolder = %TAPEIMAGES%

LampColors      = Red on BtnFace

X86CpuWeight    = 100
X86CpuWidth     = 0
X86CpuColors    = Red Pink

RteCpuWeight    = 100
RteCpuWidth     = 0
RteCpuColors    = DimBlue DeepSkyBlue

; +-----+
; | Specify the CPU configuration
; +-----+
CPU              = A400 /Switches:260 /TBGAbort:Yes
FirmwareROMs    = Clock    ; Must be enabled to use Klock with CPU's other than A990
Performance     = Maximum

; +-----+
; | VCP Console options
; +-----+
Console /Height:60 /Width:152 /Name:Console.TXT /Capture:No = StrobeVCP /Startup:Off
Set SELECTOR = 0
Include Color.Cnf

; +-----+
; | Override Options
; +-----+
Title            = Kestrel RTE-A (A400)
MaximizeOnHalt  = Yes          ; Maximize Kestrel when stopped
MessageDisplayDelay = None      ; No delay before displaying 'Please Wait'
MessageDisplayMinimum = None    ; No minimum 'Please Wait' display time

; +-----+
; | I/O interface emulations
; +-----+

; ** Virtual Network (LAN) interfaces
Network /UnitName:LU60 = 12076A /SC:37 /MAC:08-00-09-02-03-5A

; ** Host file access
HostFile = HostAccess /SC:75

; ** WRQ consoles attached to virtual character devices
WRQ /WinExec:"%R1WINEXE%" /n /s AKestrel.LU01.R1W' /BreakChar:0 /Codependent:Yes = ASIC /SC:20 /Vcp:On

; COM ports attached to virtual character devices
Com /Port:1 = 12005B /SC:21
Com /Port:2 = 12005B /SC:22

```

```

; ** Telnet sockets attached to virtual character devices
Telnet /UnitName:LU47 /Group:ASIC = 12005B /SC:23
Telnet /UnitName:LU110 /Group:OBIO = OBIO /SC:77 /Port:0
Telnet /UnitName:LU111 /Group:OBIO = OBIO /SC:77 /Port:1
Telnet /UnitName:LU112 /Group:OBIO = OBIO /SC:77 /Port:2
Telnet /UnitName:LU113 /Group:OBIO = OBIO /SC:77 /Port:3
Telnet /UnitName:LU30 /Group:DMUX = DMUX /SC:30 /Port:0
Telnet /UnitName:LU31 /Group:DMUX = DMUX /SC:30 /Port:1
Telnet /UnitName:LU32 /Group:DMUX = DMUX /SC:30 /Port:2
Telnet /UnitName:LU33 /Group:DMUX = DMUX /SC:30 /Port:3
Telnet /UnitName:LU34 /Group:DMUX = DMUX /SC:30 /Port:4
Telnet /UnitName:LU35 /Group:DMUX = DMUX /SC:30 /Port:5
Telnet /UnitName:LU36 /Group:DMUX = DMUX /SC:30 /Port:6
Telnet /UnitName:LU37 /Group:DMUX = DMUX /SC:30 /Port:7
Telnet /UnitName:LU120 /Group:DMUX = DMUX /SC:31 /Port:0
Telnet /UnitName:LU121 /Group:DMUX = DMUX /SC:31 /Port:1
Telnet /UnitName:LU122 /Group:DMUX = DMUX /SC:31 /Port:2
Telnet /UnitName:LU123 /Group:DMUX = DMUX /SC:31 /Port:3
Telnet /UnitName:LU124 /Group:DMUX = DMUX /SC:31 /Port:4
Telnet /UnitName:LU125 /Group:DMUX = DMUX /SC:31 /Port:5
Telnet /UnitName:LU126 /Group:DMUX = DMUX /SC:31 /Port:6
Telnet /UnitName:LU127 /Group:DMUX = DMUX /SC:31 /Port:7

; ** Virtual disks
File /UnitName:LU52 /Name:AKestrel-LU52.Disk = %DD*33% /BusAdr:2 /Drive:Flat = 12009A /SC:25
File /UnitName:LU18 /Name:AKestrel-LU18.Disk = %DDQ30% /BusAdr:6 /Drive:SCSIZip100 = 12016 /SC:26
File /UnitName:LU11 /Name:AKestrel-LU11.Disk = %DDQ30% /BusAdr:6 /Drive:SCSIZip100 = 12016 /SC:67

; ** Virtual tapes
ASPI Tape /UnitName:LU9 /Name:Tape0 /Unload:Yes = %DD*24% /BusAdr:3 /Model:7980 /Density:6250 = 12009A /SC:25
TPF /UnitName:LU7 /Name:7980-1.Tape /Mount:No = %DD*24% /BusAdr:3 /Model:7980 /Density:1600 = 12009A /SC:24
TPF /UnitName:LU8 /Name:7980-2.Tape /Mount:No = %DDQ24% /BusAdr:3 = 12016 /SC:26

; ** Windows printers
WinPrint /UnitName:LU6 = %DD*12% /BusAdr:4 = 12009A /SC:24

; +-----+
; | Legacy bus options
; +-----+
LegacyBus = All ; Support for all other legacy bus devices

; +-----+
; | X86 logging options
; +-----+
Logging /Unitname:'LoggingALL' /Name:'%LOGDIR%\LoggingALL.txt' /Capture:No = Logging /SC:All

```

APPENDIX L

Kestrel Device Logging

The Kestrel includes the ability to log information about all I/O instructions and interrupts for any set of virtual devices and/or legacy bus devices. This capability normally is used only for diagnostic purposes and should not be activated except on direction of Strobe Data Inc. customer service.

To log I/O instructions and interrupts, it is necessary to enable logging for one or more device select codes, and capture the logging information to an output file. These two steps are described below.

Select Code Logging

Select code logging may be configured initially by use of the `/Logging` option on device configuration lines. The valid syntax for the `/Logging` option is:

```
/Logging:{Off On Delta Timed}[,{Terse Verbose}]
```

If no `/Logging` option is given, the default logging mode is Off. Off disables logging for the current select code, On enables logging without timestamps, Delta enables logging with “delta” (i.e., time interval) timestamps, and Timed enables logging with absolute timestamps. The time unit for logged timestamps is microseconds.

Most Kestrel device select codes may be logged as follows:

- Virtual devices that are explicitly configured always support the `/Logging` option to specify logging for that select code.
- Select code logging for virtual devices that are implicitly configured (i.e., the 21MX DCPC, the A-series Interrupt Mask Register, the A-series Global Register, the A-series TBG, and the A400 OBIO) may be specified by the virtual CPU device `/Logging` option.
- Legacy bus devices that are explicitly configured use the `/Logging` option most recently given on the LegacyBus configuration line(s).
- A-series legacy bus devices that are implicitly configured (by the LegacyBus ALL or LegacyBus EXCEPT configuration options) use the final `/Logging` option given on the LegacyBus configuration line.
- All select codes above 07 (octal) that are neither explicitly nor implicitly configured as virtual or LegacyBus devices are configured as Ignored devices.

Ignored devices use the logging mode specified by the virtual CPU device /Logging option. Ignored devices respond exactly as the HP 1000 computer would respond to a bus jumper card.

The select codes below 10 (octal) that can be logged are those for the 21MX DCPC (select codes 2, 3, 6, 7), the A-series Interrupt Mask Register (output to and input from select code 0), the A-series Global Register (select code 2), and the A-series TBG (select code 6).

Other select codes below 10 (octal) do not refer to actual devices, but instead specify internal CPU registers or states. I/O instructions and interrupts for such CPU select codes usually cannot be logged. Logging of select codes that correspond to internal CPU registers is supported only by a debug build of the WcoFile.

Verbose logging is supported only by a debug build of the X86File, and not all virtual devices support Verbose logging. If a virtual device does not support Verbose logging, then Verbose and Terse are equivalent. Enabling Verbose logging for a select code can significantly degrade performance of a Kestrel system.

Uncaptured data from select code logging will be discarded with minimal overhead.

Select Code Logging Configuration Examples

Some examples of select code logging follow:

```
; Turn on logging (without timestamps) for virtual HP-IB device on select code 30  
GPIB = 59310A /SC:30 /Logging:On
```

```
; Turn on logging (with delta timestamps) for all CPU and non-existent devices  
CPU = 21MX-F /Switches:001500 /RPLVAL:001500 /Lock:On /Logging:Delta
```

```
; Turn on logging (with absolute timestamps) for 21MX legacy bus device 15 only  
LegacyBus = /Logging:Off 12 14 /Logging:Timed 15 /Logging:Off 17 22
```

```
; Turn on logging (with delta timestamps) for all A-series legacy bus devices  
LegacyBus = All /Logging:Delta
```

Capturing Logging Information

Kestrel device logging information may be captured by including one or more lines of the following form in the configuration file:

```
Logging logging-capture-options ... = Logging logging-select-options ...
```

Logging Capture Options

`/Capture:{Yes No}`

Specifies whether a logging output file is initially captured. The `/Name` option is required if `/Capture:Yes` is given.

The default is Yes if the `/Name` option is given; otherwise, the default is No.

`/LogLimit:{None Minimum Maximum 2048-4294967295}`

Specifies the maximum size (in bytes) of the logging file indicated by the `/Name` option. `/LogLimit:None` means the size of the logging file is limited only by available disk space; `/LogLimit:Minimum` specifies the smallest possible logging file limit; `/LogLimit:Maximum` specifies the largest possible logging file limit.

The default is None.

If the file name extension is `.GZ`, then the logging file will be created automatically as a gzip compressed file. In this case, logging file size limiting is not permitted (i.e., only `/LogLimit:None` may be given).

`/MaxUs:{0-4294967295}`

Specifies the maximum number of microseconds to continuously process logging data before allowing other Kestrel processes to run.

The default is 3000.

`/Mode:{Create Truncate New Append Extend Write Overwrite}`

Specifies the method used to open the logging file indicated by the `/Name` option.

Create	Create file (truncate if exists)
Truncate	Truncate file (must exist)
New	Create file (must not exist)
Append	Create file (append if exists)
Extend	Extend file (must exist)
Write	Write to file (must exist)
Overwrite	Create file (overwrite if exists)

The default is Create.

If the file name extension is `.GZ`, then the logging file will be created automatically as a gzip compressed file. In this case, the logging file must be completely created or replaced (i.e., only `/Mode:Create`, `/Mode:Truncate` or `/Mode:New` may be given).

/Name:filename

Specifies the name of the file to use to capture the decoded logging output information.

There is no default. This option is required if `/Capture:Yes` is given.

If the file name extension is `.GZ`, then the logging file will be created automatically as a gzip compressed file. In this case, logging file size limiting is not permitted (i.e., only `/LogLimit:None` may be given) and the logging file must be completely created or replaced (i.e., only `/Mode:Create`, `/Mode:Truncate` or `/Mode:New` may be given).

/SleepUs:{0-4294967295}

Specifies number of microseconds to delay if the limit specified by the `/MaxUs` option is exceeded. This number is rounded up to the next larger multiple of 1000.

The default is 1000.

/UnitName:string

Specifies the logical device name to be displayed on various *Devices* menu selections dialog boxes. The UnitName string must be unique, less than 256 characters long and must not contain any back slash (`\`) characters.

The default is a generic, system generated name.

Logging Select Options

/SC:scspec[,scspec...][=logmode]

This option is required – there is no default.

The `/SC` option specifies the set of virtual device or legacy bus device select codes for which I/O instructions and interrupts are to be logged.

The `/SC` option may be given more than once on a single configuration file line, but no select code may be specified more than once.

Each `scspec` specifies a set of device select codes and may be one or more of the following:

- A single octal select code in the range 00-77. This indicates that the attached physical device will capture I/O logging for the virtual device or legacy bus device specified by the select code.
- A pair of octal select codes separated by a hyphen. This indicates that the attached physical device will capture I/O logging for the virtual devices or legacy bus devices specified by the select code range.
- The keyword CPU. This indicates that the attached physical device will capture I/O logging for all CPU devices that are not otherwise specified. The CPU devices are the 21MX DCPC (select codes 02, 03, 06, 07), the A-series Interrupt Mask Register (output to and input from select code 00),

the A-series Global Register (select code 02), and the A-series TBG (select code 06). The CPU keyword may not be given more than once.

- The keyword BUS. This indicates that the attached physical device will capture I/O logging for all legacy bus devices that are not otherwise specified. The BUS keyword may not be given more than once.
- The keyword UNKNOWN. This indicates that the attached physical device will capture I/O logging for all select codes that do not correspond to a CPU device and are not configured as a virtual device or as a legacy bus device. The UNKNOWN keyword may not be given more than once.
- The keyword ALL. This indicates that the attached physical device will capture I/O logging for all virtual devices and legacy bus devices that are not otherwise specified, The ALL keyword may not be given more than once.

If the =logmode suffix is appended, then logmode must be the same format as the value following the colon of the virtual device /Logging option. That is, logmode must have the form: {Off On Delta Timed}[,{Terse Verbose}]. If a logmode suffix is given, the indicated logging mode overrides any logging mode given with individual virtual device or legacy bus device configurations.

`/TxBuff:{2-65521}`

Specifies the size of the logging capture buffer. The decimal number must be between 2 and 65521 inclusive. Using a larger logging buffer may reduce the overhead imposed on Kestrel execution by device logging.

The default is 8192.

Logging Capture Configuration Examples

Some examples of logging capture configuration lines follow:

```
; Capture logging information for the device with select code 23  
Logging /Name:'C:\Temp\SC23.txt' /UnitName:"SC 23" = Logging /SC:23
```

```
; Capture logging information for the devices with select codes 26 and 27  
Logging /Name:'C:\Temp\SC26,27.txt' /UnitName:"SC 26,27" = Logging /SC:26,27
```

```
; Capture and force 'timed' logging for all unknown select codes  
Logging /Name:'C:\Temp\Unknown.txt' /UnitName:"Unknown" = Logging /SC:Unknown=Timed
```

```
; Capture and force 'delta' logging for devices with select codes 30 through 37  
Logging /Name:'C:\Temp\SC30-37.txt' /UnitName:"SC 30-37" = Logging /SC:30-37=Delta
```

```
; Capture logging for all other select codes  
Logging /Name:'C:\Temp\All Other.txt' /UnitName:"All Other" = Logging /SC:All
```

Device Logging Menus

If a configuration file includes one or more logging capture lines, then two entries on the Kestrel main *Devices* menu are enabled for selection. These two menu entries, *Logging Select Codes ...* and *Logging Units ...*, allow dynamic modification of the initial select code logging modes and logging capture information specified within the configuration file.

The simplest method to facilitate the future use of device I/O logging is to include the following line in a configuration file:

```
Logging /Capture:No = Logging /SC:All
```

With this line in the configuration file, it is always possible to use the *Logging Units ...* menu option to capture logging information from any select codes for which logging is enabled, and to use the *Logging Select Codes ...* menu option to enable logging for one or more selected devices. Adding this line to a configuration file does not incur any Kestrel performance penalty when no devices have logging enabled.

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