

# BlueCat Linux Board Support Guide

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BlueCat Linux Release 5.4

DOC-0741-00

*for PowerPC 440EP/GR Boards*

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U.S. Patents 5,469,571; 5,594,903; 6,075,939; 7,047,521

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# — *Preface*

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## For More Information

For more information on the features of BlueCat Linux, refer to the following printed and online documentation.

- *BlueCat Linux Release Notes*

This printed document contains late-breaking information about the current release of BlueCat Linux.

- *BlueCat Linux User's Guide*

This document contains information about installing, configuring and using BlueCat Linux.

- Online information

The complete BlueCat Linux documentation set is available on the BlueCat Linux Documentation CD-ROM. Books are provided in both HTML and PDF formats.

Updates to these documents are available online at the LynuxWorks Website: <http://www.linuxworks.com>.

Additional information about commands and utilities is provided online with the `man` command. For example, to find information about the GNU GCC compiler, use the following syntax:

```
man gcc
```

## Typographical Conventions

The typefaces used in this manual, summarized below, emphasize important concepts. All references to filenames and commands are case-sensitive and should be typed accurately.

Kind of Text	Examples
Body text; <i>italicized</i> for emphasis, new terms, and book titles	Refer to the <i>BlueCat Linux User's Guide</i> .
Environment variables, filenames, functions, methods, options, parameter names, path names, commands, and computer data	<code>ls</code> <code>-l</code> <code>myprog.c</code> <code>/dev/null</code>
Commands that need to be highlighted within body text, or commands that must be typed as is by the user are <b>bolded</b> .	<code>login: <b>myname</b></code> <code># <b>cd</b> /usr/home</code>
Text that represents a variable, such as a filename or a value that must be entered by the user, is <i>italicized</i> .	<code>cat &lt;<i>filename</i>&gt;</code> <code>mv &lt;<i>file1</i>&gt; &lt;<i>file2</i>&gt;</code>
Blocks of text that appear on the display screen after entering instructions or commands	<code>Linux version 2.4.10-1</code> <code>(bin@build1) (gcc version</code> <code>2.95.3 20010315 (release)) #5</code> <code>Tue Dec 18 13:33:08 MSK 2001</code> <code>Processor: Intel StrongARM-</code> <code>IXP1200 revision 3</code> <code>Architecture: Intel IXP1200</code> <code>On node 0 totalpages: 32768</code> <code>zone(0): 32768 pages.</code> <code>zone(1): 0 pages.</code> <code>zone(2): 0 pages.</code>
Keyboard options, button names, and menu sequences	<b>Enter</b> , <b>Ctrl-C</b>

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## Special Notes

The following notations highlight any key points and cautionary notes that may appear in this manual.

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**NOTE:** These callouts note important or useful points in the text.

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**CAUTION!** Used for situations that present minor hazards that may interfere with or threaten equipment/performance.

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## Technical Support

LynuxWorks Support handles support requests from current support subscribers.

For questions regarding LynuxWorks products or evaluation CDs, or to become a support subscriber, our knowledgeable sales staff will be pleased to help you (<http://www.lynuxworks.com/corporate/contact/sales.php3>).

### How to Submit a Support Request

When you are ready to submit a support request, please include *all* the following information:

- First name
- Last name
- Your job title
- Phone number
- Fax number
- E-mail address
- Company name
- Address
- City, state, ZIP

- Country
- LynxOS or BlueCat Linux version you are using
- Target platform (for example, PowerPC or x86)
- Board Support Package (BSP)
- Current patch revision level
- Development host OS version
- Description of problem you are experiencing

## Where to Submit a Support Request

### By E-mail:

Support, Europe	tech_europe@lnxw.com
Support, worldwide except Europe	support@lnxw.com
Training and courses	USA: training-usa@lnxw.com Europe: training-europe@lnxw.com

### By Phone:

Training and courses	USA: +1 408-979-4353 Europe: +33 1 30 85 06 00
Support, Europe (from our Paris, France office)	+33 1 30 85 93 96
Support, worldwide except Europe and Japan (from our San José, CA, USA headquarters)	+1 800-327-5969 or +1 408-979-3940
Support, Japan	+81 33 449 3131

**By Fax:**

Support, Europe (from our Paris, France office)	+33 1 30 85 06 06
Support, worldwide except Europe and Japan (from our San José, CA, USA headquarters)	+1 408-979-3945
Support, Japan	+81 22 449 3803



The BlueCat Linux Board Support Guide for PowerPC 440EP/GR Boards provides information about the BlueCat Linux Board Support Package (BSP) for the PowerPC 440EP/GR board.

The PowerPC 440EP/GR platform features the exceptional performance, design flexibility, and robust features geared to demanding imaging, industrial control, networking, and other embedded applications. With speeds of up to 533 MHz, PowerPC Book E architecture, and a rich peripheral mix, PowerPC 440EP/GR processors are ideally suited for a wide range of high performance applications.

Throughout this Board Support Guide (BSG), the BSP is referred to as the “PPC440EP/GR” and the target board is referred to as the “PowerPC 440EP/GR board” or simply as the “target board.”

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## Features Overview

This following sections describe the new features of this release.

### Kernel Version

BlueCat Linux release 5.4 is based on the Linux kernel version 2.6.13 available from [www.kernel.org](http://www.kernel.org).

## BlueCat Linux Cross-Development Tools

### GNU Toolchain

BlueCat Linux release 5.4 supports the following versions of GNU toolchain:

- `gcc` version 3.4.3
- `binutils` version 2.14

### `gdb`

BlueCat Linux release 5.4 supports `gdb` version 6.3.

## BlueCat Linux Target Components

BlueCat Linux release 5.4 uses Fedora Core 4 as a code base for the target RPM packages.

### `glibc`

BlueCat Linux release 5.4 supports the `glibc` version 2.3.3.

### `mkboot`

The `mkboot` utility in BlueCat Linux release 5.4 is extended with the ability to create a any number of partitions.

### `mkrootfs`

The `mkrootfs` utility in BlueCat Linux release 5.4 is extended to support the ext3 Journalling file system.

## Supported Hardware

Table 1-1 describes the hardware supported with this release. For available BlueCat Linux drivers, please see Chapter 5, “Supported Device Drivers.”

**Table 1-1: Hardware Supported**

Model	Description
PPC440EP/GR board	<ul style="list-style-type: none"> <li>• PowerPC 440EP up to 533 MHz embedded microprocessor with FPU or 440GR up to 667 MHz with FPU</li> <li>• Big Endianness (in toolchain and BSP)</li> <li>• 256 MB of DDR SDRAM; 266 MHz data rate, x32</li> <li>• 32 MB Flash on 440EP or 64 MB Flash on 440GR</li> <li>• 32 KB I- and D-on-chip caches</li> <li>• Built-in universal interrupt controller</li> <li>• Built-in DMA controller</li> <li>• Built-in PCI interface (33 MHz or 66 MHz per PCI Local Bus 2.2 host only)</li> <li>• Two built-in 10/100 Ethernet controllers</li> <li>• Two built-in UART 16750-compatible serial ports</li> <li>• Two I2C controllers</li> </ul>

## BlueCat Linux Debugging, Development, and Programming Tools for Embedded System Design

Please contact your LinuxWorks Account Manager for information about the availability of the following premium LynxOS development tools on the cross-development platforms listed for use with this BSP:

- Luminosity—an Eclipse-based IDE providing an enhanced tool set that enables embedded system developers to accelerate product time-to-market in the aerospace, telecommunications, and military sectors
- SpyKer—a dynamically instrumented system trace tool to debug, diagnose, and optimize system performance

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## Supported Cross-Development Hosts

The BlueCat Linux development environment requires an installed, functional cross-development host with an Intel 386 or higher CPU. This host needs to be running one of the following development environments:

- Windows XP Professional
- Red Hat Enterprise Linux 4

# *Downloading and Booting BlueCat Linux on the Target*

This chapter provides instructions for downloading a BlueCat Linux demo system from a cross-development host onto the target and then booting the demo system on the target board.

---

## **Prerequisites**

This document is a guide to downloading and booting BlueCat Linux systems onto the user's target board. Scenarios that use demo systems included in the BlueCat Linux distribution are presented. A basic familiarity with the target board hardware and operation is required. The user must also have an understanding of system administration for the particular cross-development host on which the BlueCat Linux Core and the BSP are installed. It is assumed that the user has the manufacturer's documentation for the target board as well as system administration reference material for the cross-development host.

Before downloading and booting BlueCat Linux on the target board, it is assumed that the default BlueCat Linux PowerPC configuration and the PPC440EP/GR BSP have been installed on the development host. The user must:

1. Install the BlueCat Linux PowerPC Core onto the cross-development host as described in the "Installing the Default Configuration" section in Chapter 1, "Introduction and Installation" in the *BlueCat Linux User's Guide*.
2. Install the PPC440EP/GR BSP onto the cross-development host as detailed in the "Installing Target Board Support" section of Chapter 1, "Introduction and Installation" in the *BlueCat Linux User's Guide*.
3. Activate support for the PPC440EP/GR BSP as detailed in the "Activating Support for a Target Board" section of Chapter 1, "Introduction and Installation" in the *BlueCat Linux User's Guide*.

## Downloading and Booting Overview

The procedure for downloading and booting BlueCat Linux onto a PowerPC 440EP/GR target consists of the following main steps:

- Setting up hardware
- Setting up the U-Boot firmware
- Downloading and booting a BlueCat Linux system from the target Flash memory or a network

Downloading and booting a BlueCat Linux system can be performed using either of the two OS boot loaders:

- U-Boot firmware
- BlueCat Linux OS loader

The BlueCat Linux OS loader demo system currently includes the `osloader` Kernel Downloadable Image (KDI). `osloader` is the image with the base functionality of the BlueCat Linux OS loader configured in.

Please refer to Chapter 3, “Downloading and Booting BlueCat Linux” in the *BlueCat Linux User’s Guide* for a discussion of the OS loader.

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## Setting up Hardware

### Connecting the Target Board Serial Port to the Host

The target board has two serial ports. One port is used both by the U-Boot firmware and the BlueCat Linux system console.

The serial port connected to the target serial port has a baud rate of 9600.

Throughout this chapter, the terminal window connected to the serial connector is referred to as the “U-Boot firmware console” or the “BlueCat Linux console,” depending on the context.

### Connecting the Target Platform Ethernet Card to the Host

The Ethernet port on the target board is used to provide a standard network connection for the board and, in particular, to load BlueCat Linux embedded

systems onto the board over a network. The Ethernet port on the PPC440EP/GR board is used to connect to a LAN.

It is also required that the user set up networking on the host system. In particular, the user must choose a unique IP address for the development host as well as for the target board. These addresses are referred to as `<host_IP_address>` and `<target_IP_address>`, respectively. For more information on how to set up networking on the host, please refer to system administration reference material.

TFTP must be enabled on the host. For more information, refer to “Setting Up a TFTP Server” in Chapter 3, “Downloading and Booting BlueCat Linux” in the *BlueCat Linux User’s Guide*.

---

## Downloading a BlueCat Linux System into Flash

This section provides instructions on how a BlueCat Linux embedded system can be downloaded into the target Flash memory using either the U-Boot firmware or the BlueCat Linux OS loader. Refer also to the *BlueCat Linux User’s Guide* for additional details about the BlueCat Linux OS loader.

### Downloading a BlueCat Linux System into Flash Using the U-Boot Firmware

To download a BlueCat Linux embedded system into the target Flash memory using the U-Boot firmware, perform the steps below. This section uses the `osloader` demo system as an example, but these instructions are applicable to any of the demo systems.

1. Copy the `osloader.kdi` file from the `$BLUECAT_PREFIX/demo/osloader` directory to the `/tftpboot` directory on the development host:

```
BlueCat:$ cp $BLUECAT_PREFIX/demo/osloader/\
osloader.kdi /tftpboot/osloader.kdi
```

2. Reset the target board.
3. Set up the environment variables to specify the IP address of the TFTP host, the IP address of the TFTP server, and the name of the KDI image file on the host. For example:

```
setenv ipaddr <target_ip_address>
setenv serverip <host_ip_address>
```

```
setenv bootfile i_osloader.kdi
saveenv
```

4. To get a Flash memory start address, execute the `flinfo` command.

In the example of this section, the Flash memory start address is `fc000000`.

5. At the U-Boot prompt, enter the following commands:

```
=> tftp
=> erase fc000000 fc1bffff
=> cp 0x100000 fc000000 1adf00
```

where `1adf00` is the size of `osloader.kdi`.

As the result, the `osloader` demo is programmed into Flash.

To boot the `osloader` demo installed into the Flash memory, type the following command at the U-Boot prompt:

```
=> go fc007000
```

Note that address parameter for the `go` command is calculated as follows:

```
<Flash_memory_start_address> + 0x7000
```

where `0x7000` is the BlueCat Linux entry point offset.

This command starts the `osloader` demo system programmed into Flash.

## Downloading a BlueCat Linux System into Flash Using the OS Loader

To download a BlueCat Linux embedded system into the target Flash memory using the BlueCat OS loader, perform the steps below. This section uses the `osloader` demo system as an example, but these instructions are applicable to any of the demo systems.

1. Copy the `i_osloader.kdi` file from the `$BLUECAT_PREFIX/demo/osloader` directory to the `/tftpboot` directory on the development host:

```
BlueCat:$ cp $BLUECAT_PREFIX/demo/osloader/\
i_osloader.kdi /tftpboot/i_osloader.kdi
```

2. Copy the `osloader.kdi` file from the `$(BLUECAT_PREFIX)/demo/osloader` directory to the `/tftpboot` directory on the development host:

```
BlueCat:$ cp $(BLUECAT_PREFIX)/demo/osloader/\
osloader.kdi /tftpboot/osloader.kdi
```

3. Reset the target board.
4. Boot the `i_osloader` demo from a network as described in “Booting a BlueCat Linux System from a Network” on page 10.

The BlueCat Linux OS loader prompt (`>`) appears on the console.

5. At the BlueCat Linux OS loader prompt, type the following commands:

```
> set IF eth0
> set IP <target_board_IP>
> set HOST <development_host_IP>
> set FILE tftp osloader.kdi
> exec flash_fdisk /dev/mtdchar0 0-13
> flash /dev/mtdchar1 erase
> reset
```

where `<target_board_IP>` is the IP address of the target and `<development_host_IP>` is the IP address of the development host.

The partition size specified in the `flash_fdisk` command depends on the size of the system and should be large enough to hold the BlueCat Linux demo KDI. For the example above, the following calculation shows that a partition of size 0-13 is a correct parameter for the `osloader` demo system:

$$(13 - 0 + 1) * 128KB = 1792KB$$

where 128 KB is the size of the Flash sector. The calculated value 1792 KB is greater than the ROM requirement for the `osloader` demo (1760.7 KB). Refer to Chapter 4, “Supported Demo Systems” for details about the ROM requirements for all supported BlueCat Linux demo systems.

As the result, the `osloader` demo is programmed into Flash.

To boot the `osloader` demo installed into the Flash memory, type the following command at the U-Boot prompt:

```
=> go fc007000
```

This command starts the `osloader` demo system programmed into Flash.

---

## Booting a BlueCat Linux System from a Network

A BlueCat Linux demo system can be booted from a network using either the U-Boot firmware or the BlueCat Linux OS loader.

### Booting a BlueCat Linux System from a Network using the U-Boot Firmware

The U-Boot firmware uses the TFTP network protocol to load BlueCat Linux images over a network. To boot the `osloader` demo system over a network using the U-Boot firmware, perform the following steps:

1. Copy the `osloader.kdi` file from the `$BLUECAT_PREFIX/demo/osloader` directory to the `/tftpboot` directory on the cross-development host.

```
BlueCat:$ cp $BLUECAT_PREFIX/demo/osloader/\
osloader.kdi /tftpboot/osloader.kdi
```

2. Reset the board.

The following information appears on the console:

```
U-Boot 1.1.4 (Nov 29 2005 - 14:21:14)

AMCC PowerPC 440EP Rev. B
Board: Yosemite - AMCC PPC440EP Evaluation Board
      VCO: 1066 MHz
      CPU: 533 MHz
      PLB: 133 MHz
      OPB: 66 MHz
      EPB: 66 MHz
      PCI: 66 MHz

I2C:   ready
DRAM:  256 MB
FLASH: 64 MB
PCI:   Bus Dev VenId DevId Class Int
In:    serial
Out:   serial
Err:   serial
Net:   ppc_4xx_eth0, ppc_4xx_eth1
Hit any key to stop autoboot:  0
=>
```

3. Set up the environment variables to specify the IP address of the TFTP host, the IP address of the TFTP server, and the name of the KDI image file on the host. For example:

```
setenv ipaddr <target_ip_address>
setenv serverip <host_ip_address>
```

```
setenv bootfile i_osloader.kdi
saveenv
```

4. To download the `osloader` demo image, execute the following command:

```
=> tftp
ENET Speed is 100 Mbps - FULL duplex connection
Using ppc_4xx_eth0 device
TFTP from server 192.168.4.101; our IP address is 192.168.4.34
Filename 'osloader.kdi'.
Load address: 0x100000
Loading:
#####
#####
#####
#####
#####
#####
done
Bytes transferred = 1760768 (1ade00 hex)
=>
```

Note the image load address (`<image_load_address>`). In the screenshot above, the load address is `0x100000`.

5. Note that the address in the `go` command is calculated as `<image_load_address> + 0x7000`. To boot a BlueCat Linux system enter the `go` command as shown below:

```
=> go 0x107000
## Starting application at 0x00107000 ...
loaded at: 01000000 011A6E00
zimage at: 01005A05 0113B52D
initrd at: 0114A000 011A6E00
avail ram: 00400000 00800000

Linux/PPC load: console=ttyS0,9600 root=/dev/ram rw hda=bswap
hdb=bswap hdc=bswl
Uncompressing Linux...done.
Now booting the kernel
Linux version 2.6.13.4 (bin@bluecat1) (gcc version 3.4.3) #2 Tue Apr
25 13:26:56
AMCC PowerPC 440GR Yellowstone Platform
Built 1 zonelists
Kernel command line: console=ttyS0,9600 root=/dev/ram rw hda=bswap
hdb=bswap hdl
PID hash table entries: 2048 (order: 11, 32768 bytes)
Dentry cache hash table entries: 65536 (order: 6, 262144 bytes)
Inode-cache hash table entries: 32768 (order: 5, 131072 bytes)
Memory: 256384k available (1828k kernel code, 568k data, 336k init,
0k highmem)
Mount-cache hash table entries: 512
NET: Registered protocol family 16
PCI: Probing PCI hardware
```

```
SCSI subsystem initialized
JFFS version 1.0, (C) 1999, 2000 Axis Communications AB
JFFS2 version 2.2. (NAND) (C) 2001-2003 Red Hat, Inc.
Serial: 8250/16550 driver $Revision: 1.90 $ 4 ports, IRQ sharing
enabled
ttyS0 at MMIO 0x0 (irq = 0) is a 16550A
ttyS1 at MMIO 0x0 (irq = 1) is a 16550A
io scheduler noop registered
io scheduler anticipatory registered
io scheduler deadline registered
io scheduler cfq registered
RAMDISK driver initialized: 16 RAM disks of 8192K size 1024 blocksize
mal0: Initialized, 4 tx channels, 2 rx channels
emac: IBM EMAC Ethernet driver, version 2.0
Maintained by Benjamin Herrenschmidt <benh@kernel.crashing.org>
zmii0: input 0 in RMII mode
eth0: IBM emac, MAC 00:ba:dc:00:12:34
eth0: Found Generic MII PHY (0x01)
zmii0: input 1 in RMII mode
eth1: IBM emac, MAC 00:ba:dc:00:12:35
eth1: Found Generic MII PHY (0x03)
Uniform Multi-Platform E-IDE driver Revision: 7.00alpha2
ide: Assuming 50MHz system bus speed for PIO modes; override with
idebus=xx
Yellowstone large flash: Found 1 x16 devices at 0x0 in 16-bit bank
  Amd/Fujitsu Extended Query Table at 0x0040
Yellowstone large flash: CFI does not contain boot bank location.
Assuming top.
number of CFI chips: 1
cfi_cmdset_0002: Disabling erase-suspend-program due to code
brokenness.
Yellowstone 440GR flash: registering 1 flash banks [FC000000 -
FDFFFFFFFF = 32 Mb]
sram disabled: Probe failed due to probable hardware issue
mice: PS/2 mouse device common for all mice
IBM IIC driver v2.1
ibm-iic0: using standard (100 kHz) mode
ibm-iic1: using standard (100 kHz) mode
NET: Registered protocol family 2
IP route cache hash table entries: 4096 (order: 2, 16384 bytes)
TCP established hash table entries: 16384 (order: 5, 131072 bytes)
TCP bind hash table entries: 16384 (order: 4, 65536 bytes)
TCP: Hash tables configured (established 16384 bind 16384)
TCP reno registered
TCP bic registered
NET: Registered protocol family 1
NET: Registered protocol family 17
eth0: Link is Up
eth0: Speed: 100, Full duplex.
eth0: Transmit request threshold: 256
eth0: Transmit request threshold: 256
eth1: Transmit request threshold: 256
eth0: Link is Up
eth0: Speed: 100, Full duplex.
eth0: Transmit request threshold: 256
IP-Config: Incomplete network configuration information.
RAMDISK: Compressed image found at block 17704
Freeing BlueCat RFS memory: 371k freed
VFS: Mounted root (ext2 filesystem).
Freeing unused kernel memory: 336k init
BlueCat Loader Shell
> eth0: Link is Up
eth0: Speed: 100, Full duplex.
```

```
eth0: Transmit request threshold: 256  
>
```

## Booting a BlueCat Linux System from a Network using the OS Loader

To boot the `showcase` demo system over a network using the BlueCat Linux OS loader, perform the following steps:

1. Copy the `showcase.kernel` and `showcase.rfs` files from the `$BLUECAT_PREFIX/demo/showcase` directory to the `/tftpboot` directory on the cross-development host.
2. Boot the OS loader as described in “Booting a BlueCat Linux System from a Network using the U-Boot Firmware” on page 10.
3. At the BlueCat Linux OS loader prompt (`>`), enter the following commands:

```
> set IF eth0  
> set IP <target_board_IP>  
> set HOST <development_host_IP>  
> set KERNEL tftp showcase.kernel  
> set RFS tftp showcase.rfs  
> set CMD ramdisk_size=28472  
> boot
```

where `<target_board_IP>` is the IP address of the target and `<development_host_IP>` is the IP address of the development host.

These commands load the `showcase` demo system from a network onto the target board and then automatically start it.



# Kernel Configuration Options

The PPC440EP/GR BSP comes with a default BlueCat Linux kernel. This kernel has a number of configuration options. This chapter details these options in the tables listed in Table 3-1: “BlueCat Linux Default Configuration for the PPC440EP/GR BSP Distribution” below. Boldfaced entries in the tables represent subordinate menus. Italicized entries represent comments.

**Table 3-1: BlueCat Linux Default Configuration for the PPC440EP/GR BSP Distribution**

Table Number and Configuration Parameter
Table 3-2: “Code Maturity Level Options”
Table 3-3: “General Setup”
Table 3-4: “Loadable Module Support”
Table 3-5: “Processor”
Table 3-6: “Platform Options”
Table 3-7: “Bus Options”
Table 3-8: “Advanced Setup”
Table 3-9: “Networking”
Table 3-10: “Device Drivers”
Table 3-11: “File Systems”
Table 3-12: “Library Routines”
Table 3-13: “Profiling Support”
Table 3-14: “Kernel Hacking”
Table 3-15: “Security Options”
Table 3-16: “Cryptographic Options”

**Table 3-2: Code Maturity Level Options**

<b>Description</b>	<b>Setting</b>
Prompt for development and/or incomplete code/drivers	Y
Select only drivers expected to compile cleanly	Y

**Table 3-3: General Setup**

<b>Description</b>	<b>Setting</b>
Local version—append to kernel release	is not set
Support for paging of anonymous memory	Y
System V IPC	Y
POSIX message queues	is not set
BlueCat Linux OS loader support	is not set
Memory sizing benchmarks	is not set
BSD process accounting	is not set
Sysctl support	Y
Auditing support	is not set
Support for hot-pluggable devices	is not set
Kernel Userspace Events	Y
Kernel <code>.config</code> support	is not set
<b>Configure standard kernel features (for small systems)</b>	Y
<i>--- Configure standard kernel features (for small systems).</i>	
Load all symbols for debugging/ <code>kksymoops</code>	Y
Include all symbols in <code>kallsyms</code>	is not set
Do an extra <code>kallsyms</code> pass	is not set
Enable support for <code>printk</code>	Y
<code>BUG()</code> support	Y
Enable full-sized data structures for core	Y

**Table 3-3: General Setup (Continued)**

<b>Description</b>	<b>Setting</b>
Enable futex support	Y
Enable eventpoll support	Y
<b>CODETEST device driver configuration</b>	is not set
Optimize for size	is not set
Use full <code>shmem</code> file system	Y
Function alignment	0
Label alignment	0
Loop alignment	0
Jump alignment	0

**Table 3-4: Loadable Module Support**

<b>Description</b>	<b>Setting</b>
Enable loadable module support	Y
Module unloading	Y
Forced module unloading	is not set
Module versioning support (Experimental)	is not set
Source checksum for all modules	is not set
Automatic kernel module loading	Y

**Table 3-5: Processor**

<b>Description</b>	<b>Setting</b>
<b>Processor Type</b>	
6xx/7xx/74xx/8260	is not set
40x	is not set
44x	Y

**Table 3-5: Processor (Continued)**

<b>Description</b>	<b>Setting</b>
POWER3	is not set
POWER4 and 970 (G5)	is not set
8xx	is not set
e200	is not set
e500	is not set
Math emulation	is not set
kexec system call (Experimental)	is not set
CPU frequency scaling	is not set
IBM 4xx options	Y
Machine Type (Yellowstone)	Y
Bamboo	is not set
Ebony	is not set
Luan	is not set
Ocotea	is not set
Yellowstone	Y
Yosemite	is not set
PPC4xx DMA controller support	is not set

**Table 3-6: Platform Options**

<b>Description</b>	<b>Setting</b>
<b>Platform options</b>	is not set
PC PS/2-style keyboard	is not set
High memory support	is not set
Timer frequency (250 HZ)	
100 HZ	is not set
250 HZ	Y

**Table 3-6: Platform Options (Continued)**

<b>Description</b>	<b>Setting</b>
1000 HZ	is not set
Preemption Model (No Forced Preemption [Server])	
No Forced Preemption (Server)	Y
Voluntary Kernel Preemption (Desktop)	is not set
Preemptible Kernel (Low-Latency Desktop)	is not set
Memory model (Flat Memory)	
Flat Memory	Y
Kernel support for ELF binaries	Y
Kernel support for MISC binaries	is not set
Default bootloader kernel arguments	Y
Initial kernel command string	Console= ttyS0, 9600 panic=25
Enable seccomp to safely compute untrusted bytecode	Y

**Table 3-7: Bus Options**

<b>Description</b>	<b>Setting</b>
Legacy <code>/proc/pci</code> interface	Y
PCI device name database	Y
PCI debugging	is not set
PCCARD (PCMCIA/CardBus) support	
PCCard (PCMCIA/CardBus) support	is not set

**Table 3-8: Advanced Setup**

Description	Setting
Prompt for advanced kernel configuration options	is not set
<i>--- Default settings for advanced configuration options are used.</i>	

**Table 3-9: Networking**

Description	Setting
Networking support	Y
Packet socket	Y
Packet socket	Y
Packet socket: mmaped I/O	is not set
UNIX domain sockets	Y
PF_KEY sockets	is not set
TCP/IP networking	Y
IP: multicasting	is not set
IP: advanced router	is not set
IP: kernel level autoconfiguration	Y
IP: DHCP support	is not set
IP: BOOTP support	is not set
IP: RARP support	is not set
IP: tunneling	is not set
IP: GRE tunnels over IP	is not set
IP: ARP daemon support (Experimental)	is not set
IP: TCP syncookie support (disabled per default)	is not set
IP: AH transformation	is not set
IP: ESP transformation	is not set
IP: IPComp transformation	is not set

**Table 3-9: Networking (Continued)**

Description	Setting
IP: tunnel transformation	is not set
IP: TCP socket monitoring interface	Y
TCP: advanced congestion control	is not set
IP: Virtual Server Configuration	is not set
IP virtual server support (Experimental)	is not set
The IPv6 protocol	is not set
Network packet filtering (replaces ipchains)	Y
--- <i>Network packet filtering (replaces ipchains)</i>	is not set
Network packet filtering debugging	is not set
IP: Netfilter Configuration	is not set
Connection tracking (required for masq/NAT)	is not set
Connection mark tracking support	is not set
Userspace queueing via NETLINK	is not set
IP tables support (required for filtering/masq/NAT)	is not set
ARP tables support	is not set
SCTP Configuration (Experimental)	is not set
The SCTP Protocol (Experimental)	is not set
Asynchronous Transfer Mode (ATM) (Experimental)	is not set
802.1d Ethernet Bridging	is not set
802.1Q VLAN support	is not set
DECnet support	is not set
The IPX protocol	is not set
Appletalk protocol support	is not set
CCITT X.25 Packet Layer (Experimental)	is not set
LAPB Data Link Driver (Experimental)	is not set
Frame Diverter (Experimental)	is not set
Acorn Econet/AUN protocols (EXPERIMENTAL)	is not set

**Table 3-9: Networking (Continued)**

Description	Setting
WAN router	is not set
QoS and/or fair queueing	is not set
Network testing	is not set
Packet Generator (Use With Caution)	is not set
Amateur Radio support	is not set
IrDA (infrared) subsystem support	is not set
Bluetooth subsystem support	is not set

**Table 3-10: Device Drivers**

Description	Settings
<b>Generic Driver Options</b>	
Select only drivers that don't need compile-time external firmware	is not set
Prevent firmware from being built	Y
Hotplug firmware loading support	is not set
Driver Core verbose debug messages	is not set
<b>Memory Technology Devices (MTD)</b>	
Memory Technology Device (MTD) support	Y
Debugging	is not set
MTD concatenating support	is not set
MTD partitioning support	Y
RedBoot partition table parsing	is not set
Command line partition table parsing	is not set
<i>--- User Modules And Translation Layers</i>	
Direct char device access to MTD devices	Y
Caching block device access to MTD devices	Y

**Table 3-10: Device Drivers (Continued)**

<b>Description</b>	<b>Settings</b>
Flash Translation Layer (FTL) support	is not set
NAND Flash Translation Layer (NFTL) support	is not set
Inverse NAND Flash Translation Layer (INFTL) support	is not set
RAM/ROM/Flash chip drivers	is not set
Detect Flash chips by Common Flash Interface (CFI) probe	Y
Detect non-CFI AMD/JEDEC-compatible Flash chips	is not set
Flash chip driver advanced configuration options	is not set
Support for Intel/Sharp Flash chips	is not set
Support for AMD/Fujitsu Flash chips	Y
Retry failed commands (erase/program)	0
Support for ST (Advanced Architecture) Flash chips	is not set
Support for RAM chips in bus mapping	is not set
Support for ROM chips in bus mapping	is not set
Support for absent chips in bus mapping	is not set
Mapping drivers for chip access	is not set
Support nonlinear mappings of Flash chips	is not set
CFI Flash device in physical memory map	is not set
Flash devices mapped on IBM 440GR Yellowstone	Y
Map driver for platform device RAM (mtd-ram)	is not set
Self-contained MTD device drivers	
Ramix PMC551 PCI Mezzanine RAM card support	is not set
Uncached system RAM	is not set
Physical system RAM	is not set
Test driver using RAM	is not set
MTD emulation using block device	is not set
MTD using block device (rewrite)	is not set
--- <i>Disk-On-Chip Device Drivers</i>	is not set

**Table 3-10: Device Drivers (Continued)**

<b>Description</b>	<b>Settings</b>
M-Systems Disk-On-Chip 2000 and Millennium (Deprecated)	is not set
M-Systems Disk-On-Chip Millennium-only alternative driver (Deprecated)	is not set
M-Systems Disk-On-Chip Millennium Plus	is not set
NAND Flash Device Drivers	is not set
NAND Device support	is not set
<b>Parallel port support</b>	
Parallel port support	is not set
<b>Plug and Play support</b>	
<b>Block Devices</b>	
Normal floppy disk support	is not set
Compaq SMART-2 support	is not set
Compaq Smart Array 5xxx support	
Mylex DAC960/DAC1100 PCI RAID Controller support	is not set
Micro Memory MM5415 Battery Backed RAM support (Experimental)	is not set
Loopback device support	is not set
Network block device support	is not set
Promise SATA SX8 (carmel) support	is not set
RAM disk support	Y
Default number of RAM disks	16
Default RAM disk size	8192
Initial RAM disk (initrd) support	is not set
Initramfs source file(s)	is not set
BlueCat Linux RFS support	Y
Support for Large Block Devices	is not set
Packet writing on CD/DVD media	is not set

**Table 3-10: Device Drivers (Continued)**

<b>Description</b>	<b>Settings</b>
I/O Schedulers	
Anticipatory I/O scheduler	Y
Deadline I/O scheduler	Y
CFQ I/O scheduler	Y
ATA over Ethernet support	is not set
<b>ATA/ATAPI/MFM/RLL support</b>	
ATA/ATAPI/MFM/RLL support	is not set
Enhanced IDE/MFM/RLL disk/CD-ROM/tape/floppy support	is not set
Please see <code>Documentation/ide.txt</code> for help/info on IDE drives	is not set
Support for SATA (deprecated; conflicts with libata SATA drives)	is not set
Include IDE/ATA-2 DISK support	is not set
Use multimode by default	is not set
Include IDE/ATAPI CD-ROM support	is not set
Include IDE/ATAPI TAPE support (Experimental)	is not set
Include IDE/ATAPI FLOPPY support	is not set
SCSI emulation support	is not set
IDE Taskfile Access	is not set
IDE chipset support/bugfixes	is not set
generic/default IDE chipset support	is not set
PCI IDE chipset support	is not set
Sharing PCI IDE interrupts support	is not set
Boot off-board chipsets first support	is not set
Generic PCI IDE Chipset support	is not set
OPTi 82C621 chipset enhanced support (Experimental)	is not set
Winbond SL82c105 support	is not set
Generic PCI bus-master DMA support	is not set

**Table 3-10: Device Drivers (Continued)**

<b>Description</b>	<b>Settings</b>
Force enable legacy 2.0.X HOSTS to use DMA	is not set
Use PCI DMA by default when available	is not set
AEC62XX chipset support	is not set
ALI M15x3 chipset support	is not set
AMD and nVidia IDE support	is not set
CMD64{3 6 8 9} chipset support	is not set
Compaq Triflex IDE support	is not set
CY82C693 chipset support	is not set
Cyrix CS5510/20 MediaGX chipset support (Very Experimental)	is not set
Cyrix/National Semiconductor CS5530 MediaGX chipset support	is not set
HPT34X chipset support	is not set
HPT36X/37X chipset support	is not set
National SCx200 chipset support	is not set
Intel PIIXn chipsets support	is not set
IT821X IDE support	is not set
NS87415 chipset support	is not set
PROMISE PDC202{46 62 65 67} support	is not set
PROMISE PDC202{68 69 70 71 75 76 77} support	is not set
ServerWorks OSB4/CSB5/CSB6 chipsets support	is not set
Silicon Image chipset support	is not set
SLC90E66 chipset support	is not set
Tekram TRM290 chipset support	is not set
VIA82CXXX chipset support	is not set
IGNORE word93 Validation BITS	is not set
<b>SCSI device support</b>	
SCSI device support	Y

**Table 3-10: Device Drivers (Continued)**

<b>Description</b>	<b>Settings</b>
Legacy <code>/proc/scsi/</code> support	Y
SCSI support type (disk, tape, CD-ROM)	is not set
SCSI disk support	Y
SCSI tape support	is not set
SCSI OnStream SC-x0 tape support	is not set
SCSI CD-ROM support	is not set
SCSI generic support	is not set
SCSI media changer support	is not set
Some SCSI devices (for example, CD jukebox) support multiple LUNs	is not set
Probe all LUNs on each SCSI device	is not set
Verbose SCSI error reporting (kernel size +=12K)	is not set
SCSI logging facility	is not set
SCSI Transport Attributes	is not set
--- <i>Parallel SCSI (SPI) Transport Attributes</i>	is not set
FiberChannel Transport Attributes	is not set
iSCSI Transport Attributes	is not set
SCSI low-level drivers	is not set
3ware 5/6/7/8xxx ATA-RAID support	is not set
3ware 9xxx SATA-RAID support	is not set
ACARD SCSI support	is not set
Adaptec AACRAID support	is not set
Adaptec AIC7xxx Fast -> U160 support (New Driver)	is not set
Adaptec AIC7xxx support (old driver)	is not set
Adaptec AIC79xx U320 support	is not set
Adaptec I2O RAID support	is not set
LSI Logic New Generation RAID Device Drivers	is not set

**Table 3-10: Device Drivers (Continued)**

Description	Settings
LSI Logic Legacy MegaRAID Driver	is not set
Serial ATA (SATA) support	is not set
BusLogic SCSI support	is not set
DMX3191D SCSI support	is not set
EATA ISA/EISA/PCI (DPT and generic EATA/DMA-compliant boards) support	is not set
Future Domain 16xx SCSI/AHA-2920A support	is not set
Intel/ICP (former GDT SCSI Disk Array) RAID Controller support	is not set
IBM ServeRAID support	is not set
Initio 9100U(W) support	is not set
Initio INI-A100U2W support	is not set
SYM53C8XX Version 2 SCSI support	Y
DMA addressing mode	1
Default tagged command queue depth	16
Maximum number of queued commands	64
Use port I/O	is not set
IBM Power Linux RAID adapter support	is not set
Qlogic ISP FC SCSI support	is not set
Qlogic QLA 1240/1x80/1x160 SCSI support	is not set
QLogic ISP2100 host adapter family support	is not set
QLogic ISP2300 host adapter family support	is not set
QLogic ISP63xx host adapter family support	is not set
QLogic ISP24xx host adapter family support	is not set
QLogic ISP24xx host adapter family support	is not set
Emulex LightPulse Fibre Channel support	is not set
Tekram DC395(U/UW/F) and DC315(U) SCSI support (Experimental)	is not set
Tekram DC390(T) and Am53/79C974 SCSI support	is not set

**Table 3-10: Device Drivers (Continued)**

<b>Description</b>	<b>Settings</b>
Workbit NinjaSCSI-32Bi/UDE support	is not set
SCSI debugging host simulator	is not set
<b>Multiple device support (RAID and LVM)</b>	
Multiple devices driver support (RAID and LVM)	is not set
<b>Fusion MPT device support</b>	
Fusion MPT ScsiHost drivers for SPI	is not set
Fusion MPT ScsiHost drivers for SPI	is not set
<b>IEEE 1394 (FireWire) support</b>	
IEEE 1394 (FireWire) support	is not set
<b>I2O device support</b>	
I2O support	is not set
<b>Macintosh device drivers</b>	
<b>Networking device support</b>	
Networking device support	Y
Dummy net driver support	is not set
Bonding driver support	is not set
EQL (serial line load balancing) support	is not set
Universal TUN/TAP device driver support	is not set
ARCnet devices	
ARCnet support	is not set
IBM On-chip net device	
IBM on-chip Ethernet	is not set
Ethernet (10 or 100Mbit)	is not set
Ethernet (10 or 100Mbit)	Y
Generic Media Independent Interface device support	is not set
Sun Happy Meal 10/100baseT support	is not set

**Table 3-10: Device Drivers (Continued)**

<b>Description</b>	<b>Settings</b>
3COM cards	is not set
Tulip family network device support	is not set
“Tulip” family network device support	is not set
HP 10/100VG PCLAN (ISA, EISA, PCI) support	is not set
IBM PPC4xx EMAC driver support	Y
Number of receive buffers	64
Number of transmit buffers	8
Frame gap	8
Skb reserve amount	0
EISA, VLB, PCI, and on board controllers	Y
AMD PCnet32 PCI support	is not set
AMD 8111 (new PCI lance) support	is not set
Adaptec Starfire/DuraLAN support	is not set
Broadcom 4400 Ethernet support (Experimental)	is not set
Reverse Engineered nForce Ethernet support (Experimental)	is not set
Digi Intl. RightSwitch SE-X support	is not set
EtherExpressPro/100 support (eepro100, original Becker driver)	is not set
Intel PRO/100+ support	is not set
Myson MTD-8xx PCI Ethernet support	is not set
National Semiconductor DP8381x series PCI Ethernet support	is not set
PCI NE2000 and clones support (see help)	is not set
RealTek RTL-8139 C+ PCI Fast Ethernet Adapter support (Experimental)	is not set
RealTek RTL-8129/8130/8139 PCI Fast Ethernet Adapter support	Y
Use PIO instead of MMIO	is not set
Support for uncommon RTL-8139 rev. K (automatic channel equalizer)	is not set
Support for older RTL-8129/8130 boards	is not set

**Table 3-10: Device Drivers (Continued)**

<b>Description</b>	<b>Settings</b>
Support for RTL-8139 eeprom device	is not set
Use older RX-reset method	is not set
SiS 900/7016 PCI Fast Ethernet Adapter support	is not set
SMC EtherPower II	is not set
Sundance Alta support	is not set
TI ThunderLAN support	is not set
VIA Rhine support	is not set
Ethernet (1000 Mbit)	is not set
Alteon AceNIC/3Com 3C985/NetGear GA620 Gigabit support	is not set
D-Link DL2000-based Gigabit Ethernet support	is not set
Intel PRO/1000 Gigabit Ethernet support	is not set
National Semiconductor DP83820 support	is not set
Packet Engines Hamachi GNIC-II support	is not set
Packet Engines Yellowfin Gigabit-NIC support (Experimental)	is not set
Realtek 8169 Gigabit Ethernet support	is not set
New SysKconnect GigaEthernet support (Experimental)	is not set
Marvell Yukon Chipset/SysKconnect SK-98xx support	is not set
VIA Velocity support	is not set
Broadcom Tigon3 support	is not set
Broadcom NetXtremeII support	is not set
Ethernet (10000 Mbit)	is not set
Intel PRO/10GbE support	is not set
S2IO 10Gbe XFrame NIC	is not set
Token Ring devices	
Token Ring driver support	is not set
Wireless LAN (non-ham radio)	
Wireless LAN drivers (non-ham radio) and wireless extensions	is not set

**Table 3-10: Device Drivers (Continued)**

<b>Description</b>	<b>Settings</b>
WAN interfaces	is not set
WAN interfaces support	is not set
Fiber Distributed Data Interface (FDDI) driver support	is not set
High Performance Parallel Interface (HIPPI) driver support (Experimental)	is not set
Point-to-Point Protocol (PPP) support	is not set
Serial Line Internet Protocol (SLIP) support	is not set
Fibre Channel driver support	is not set
Traffic Shaper (Experimental)	is not set
Network console logging support (Experimental)	is not set
<b>ISDN subsystem</b>	
ISDN support	is not set
<b>Telephony Support</b>	
Linux telephony support	is not set
<b>Input device support</b>	
Generic input layer (needed for keyboard, mouse, ...)	Y
Userland interfaces	is not set
Mouse interface	Y
Provide legacy /dev/psaux device	Y
Horizontal screen resolution	1024
Vertical screen resolution	768
Joystick interface	is not set
Touchscreen interface	is not set
Event interface	is not set
Event debugging	is not set
Input Device Drivers	is not set
Keyboards	is not set

**Table 3-10: Device Drivers (Continued)**

<b>Description</b>	<b>Settings</b>
Mouse	is not set
Joysticks	is not set
Touchscreens	is not set
Miscellaneous devices	is not set
Hardware I/O ports	is not set
Serial I/O support	Y
i8042 PC Keyboard controller	is not set
Serial port line discipline	is not set
PCI PS/2 keyboard and PS/2 mouse controller	is not set
PS/2 driver library	is not set
Raw access to serio ports	is not set
Gameport support	is not set
<b>Character devices</b>	
Virtual terminal	is not set
Nonstandard serial port support	is not set
Serial drivers	
8250/16550 and compatible serial support	Y
Console on 8250/16550 and compatible serial port	Y
Maximum number of 8250/16550 serial ports	4
Extended 8250/16550 serial driver options	Y
Support more than 4 legacy serial ports	is not set
Support for sharing serial interrupts	Y
Autodetect IRQ on standard ports (unsafe)	is not set
Support RSA serial ports	is not set
Non-8250 serial port support	is not set
Digi International NEO PCI support	is not set
Unix98 PTY support	Y

**Table 3-10: Device Drivers (Continued)**

<b>Description</b>	<b>Settings</b>
Legacy (BSD) PTY support	Y
Maximum number of legacy PTY in use	256
IPMI	
IPMI top-level message handler	is not set
Watchdog Cards	
Watchdog Timer support	is not set
/dev/nvram support	is not set
Generic /dev/rtc emulation	is not set
Double Talk PC internal speech card support	is not set
Siemens R3964 line discipline	is not set
Applicom intelligent fieldbus card support	is not set
Ftape, the floppy tape device driver	is not set
/dev/agpgart (AGP support)	is not set
Direct Rendering Manager (XFree86 4.1.0 and higher DRI support)	is not set
RAW driver (/dev/raw/rawN) (Obsolete)	is not set
TPM devices	
TPM hardware support	is not set
<b>I2C support</b>	
I2C support	Y
I2C device interface	is not set
I2C algorithms	
I2C bit-banging interfaces	is not set
I2C PCF 8584 interfaces	is not set
I2C PCA 9564 interfaces	is not set
I2C hardware bus support	is not set
ALI 1535	is not set
ALI 1563	is not set

**Table 3-10: Device Drivers (Continued)**

<b>Description</b>	<b>Settings</b>
ALI 15x3	is not set
AMD 756/766/768/8111 and nVidia nForce	is not set
AMD 8111	is not set
Intel 82801 (ICH)	is not set
Intel 810/815	is not set
Intel PIIX4	is not set
IBM PPC 4xx on-chip I2C interface	Y
ISA Bus support	is not set
MPC107/824x/85xx/52xx	is not set
Nvidia nForce2, nForce3, and nForce4	is not set
Parallel port adapter (light)	is not set
S3/VIA (Pro)Savage	is not set
S3 Savage 4	is not set
NatSemi SCx200 ACCESS.bus	is not set
SiS 5595	is not set
SiS 630/730	is not set
SiS 96x	is not set
I2C/SMBus Test Stub	is not set
VIA 82C586B	is not set
VIA 82C596/82C686/823x	is not set
Voodoo 3	is not set
PCA9564 on an ISA bus	is not set
Miscellaneous I2C Chip support	is not set
Dallas Semiconductor DS1337 and DS1339 Real Time Clock	is not set
Maxim/Dallas Semiconductor DS1374 Real Time Clock	is not set
EEPROM reader	Y
Philips PCF8574 and PCF8574A	is not set

**Table 3-10: Device Drivers (Continued)**

<b>Description</b>	<b>Settings</b>
Philips PCA9539 16-bit I/O port	is not set
Philips PCF8591	is not set
Epson 8564 RTC chip	is not set
ST M41T00 RTC chip	is not set
Maxim MAX6875 Power supply supervisor	is not set
I2C Core debugging messages	is not set
I2C Algorithm debugging messages	is not set
I2C Bus debugging messages	is not set
I2C Chip debugging messages	is not set
<b>Dallas's 1-wire bus</b>	
Dallas's 1-wire support	is not set
<b>Hardware Monitoring support</b>	
Hardware Monitoring support	Y
Analog Devices ADM1021 and compatibles	is not set
Analog Devices ADM1025 and compatibles	is not set
Analog Devices ADM1026 and compatibles	is not set
Analog Devices ADM1031 and compatibles	is not set
Analog Devices ADM9240 and compatibles	is not set
Asus ASB100 Bach	is not set
Attansic ATXP1 VID controller	is not set
Dallas Semiconductor DS1621 and DS1625	is not set
FSC Hermes	is not set
FSC Poseidon	is not set
Genesys Logic GL518SM	is not set
Genesys Logic GL520SM	is not set
ITE IT87xx and compatibles	is not set
National Semiconductor LM63	is not set

**Table 3-10: Device Drivers (Continued)**

<b>Description</b>	<b>Settings</b>
National Semiconductor LM75 and compatibles	is not set
National Semiconductor LM77	is not set
National Semiconductor LM78 and compatibles	is not set
National Semiconductor LM80	is not set
National Semiconductor LM83	is not set
National Semiconductor LM85 and compatibles	is not set
National Semiconductor LM87	is not set
National Semiconductor LM90 and compatibles	is not set
National Semiconductor LM92 and compatibles	is not set
Maxim MAX1619 sensor chip	is not set
National Semiconductor PC87360 family	is not set
Silicon Integrated Systems Corp. SiS5595	is not set
SMSC LPC47M10x and compatibles	is not set
SMSC LPC47B397-NC	is not set
VIA686A	is not set
Winbond W83781D, W83782D, W83783S, W83627HF, Asus AS99127F	is not set
Winbond W83L785TS-S	is not set
Winbond W83627HF, W83627THF, W83637HF, W83697HF	is not set
Winbond W83627EHF	is not set
Hardware Monitoring Chip debugging messages	is not set
<b>Misc devices</b>	
<b>Multimedia devices</b>	
Video for Linux	is not set
Digital Video Broadcasting Devices	is not set
DVB for Linux	is not set
<b>Graphics support</b>	

**Table 3-10: Device Drivers (Continued)**

<b>Description</b>	<b>Settings</b>
Support for frame buffer devices	is not set
<b>Sound</b>	
Sound card support	is not set
<b>USB support</b>	
Support for host-side USB	is not set
USB Gadget support	
Support for USB Gadgets	is not set
<b>MMC/SD Card support</b>	
MMC support	is not set
<b>InfiniBand support</b>	
InfiniBand support	is not set
<b>SN Devices</b>	
<b>CAN Support</b>	
Controller Area Network (CAN) support	is not set

**Table 3-11: File Systems**

<b>Description</b>	<b>Setting</b>
Second extended file system support	Y
Ext2 extended attributes	is not set
Ext2 execute in place support	is not set
Ext3 journalling file system support	is not set
Reiserfs support	is not set
JFS file system support	is not set
XFS file system support	is not set
XFS file system support	is not set

**Table 3-11: File Systems (Continued)**

<b>Description</b>	<b>Setting</b>
Minix file system support	is not set
ROM file system support	is not set
Inotify file change notification support	Y
Quota support	is not set
Dnotify support	Y
Kernel automounter support	is not set
Kernel automounter version 4 support (also supports v3)	is not set
<b>CD-ROM/DVD File Systems</b>	
ISO 9660 CD-ROM file system support	is not set
UDF file system support	is not set
<b>DOS/FAT/NT File Systems</b>	
MS-DOS file system support	is not set
VFAT (Windows 95) file system support	is not set
NTFS file system support	is not set
<b>Pseudo File Systems</b>	
<code>/proc</code> file system support	Y
<code>/proc/kcore</code> support	Y
<code>sysfs</code> file system support	Y
<code>/dev/pts</code> Extended Attributes	is not set
Virtual memory file system support (former <code>shm</code> file system)	is not set
<b>Miscellaneous File Systems</b>	
ADFS file system support (Experimental)	is not set
Amiga FFS file system support (Experimental)	is not set
Apple Macintosh file system support (Experimental)	is not set
Apple Extended HFS file system support	is not set
BeOS file system (BeFS) support (read-only) (Experimental)	is not set

**Table 3-11: File Systems (Continued)**

<b>Description</b>	<b>Setting</b>
BFS file system support (Experimental)	is not set
EFS file system support (read-only) (Experimental)	is not set
Journalling Flash File System (JFFS) support	Y
JFFS debugging verbosity (0 = quiet, 3 = noisy)	0
JFFS stats available in <code>/proc</code> file system	Y
Journalling Flash File System v2 (JFFS2) support	Y
JFFS2 debugging verbosity (0 = quiet, 2 = noisy)	0
JFFS2 write-buffering support	Y
Advanced compression options for JFFS2	is not set
Compressed ROM file system support	is not set
FreeVxFS file system support (VERITAS VxFS-compatible)	is not set
OS/2 HPFS file system support	is not set
QNX4 file system support (read-only)	is not set
System V/Xenix/V7/Coherent file system support	is not set
UFS file system support (read-only)	is not set
<b>Network File Systems</b>	
NFS file system support	Y
Provide NFSv3 client support	Y
Provide client support for the NFSv3 ACL protocol extension	is not set
Provide NFSv4 client support (Experimental)	is not set
Allow direct I/O on NFS files (Experimental)	is not set
NFS server support	is not set
Root file system on NFS	Y
Secure RPC: Kerberos V mechanism (Experimental)	is not set
Secure RPC: SPKM3 mechanism (Experimental)	is not set
SMB file system support (to mount Windows shares, etc.)	is not set

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**Table 3-11: File Systems (Continued)**

<b>Description</b>	<b>Setting</b>
CIFS support (advanced network file system for Samba, Windows, and other CIFS-compliant servers)	is not set
NCP file system support (to mount NetWare volumes)	is not set
Coda file system support (advanced network file system)	is not set
Andrew File System (AFS) support (Experimental)	is not set
<b>Partition Types</b>	
Partition Types	is not set
<b>Native Language Support</b>	
Base native language support	is not set

**Table 3-12: Library Routines**

<b>Description</b>	<b>Setting</b>
CRC-CCITT functions	is not set
CRC32 functions	is not set
CRC32c (Castagnoli et al) Cyclic Redundancy-Check	is not set

**Table 3-13: Profiling Support**

<b>Description</b>	<b>Setting</b>
Profiling support (Experimental)	is not set

**Table 3-14: Kernel Hacking**

Description	Setting
Show timing information on printks	is not set
Kernel debugging	Y
Magic SysRq key	Y
Kernel log buffer size (16 => 64KB, 17 => 128KB)	14
Collect scheduler statistics	is not set
Debug memory allocations	is not set
Spinlock debugging	is not set
Sleep-inside-spinlock checking	is not set
kobject debugging	is not set
Compile the kernel with debug info	Y
Debug file system	is not set
BlueCat Linux kernel debugger	is not set
Include <code>kgdb</code> kernel debugger	is not set
Include <code>xmon</code> kernel debugger	is not set
Include BDI-2000 user context switcher	Y
Support for early boot texts over serial port	is not set

**Table 3-15: Security Options**

Description	Setting
Enable access key retention support	is not set
Enable different security models	is not set

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**Table 3-16: Cryptographic Options**

<b>Description</b>	<b>Setting</b>
Cryptographic API	is not set
Hardware crypto devices	is not set



This chapter provides information about BlueCat Linux demo systems supported by the PPC440EP/GR BSP.

## Demo Systems

Table 4-1 lists the demo systems supported in the PPC440EP/GR BSP distribution, the boot devices supported by each demo system, and their respective RAM and ROM requirements.

**Table 4-1: Demo Systems Supported by the PPC440EP/GR BSP**

Demo	Boot Devices Supported by Default	ROM Requirements	RAM Requirements
developer	Network (using U-Boot firmware) Network (using BlueCat Linux OS loader) ROM/Flash (using U-Boot firmware) ROM/Flash (using BlueCat Linux OS loader)	5254.5 KB	27732 KB
osloader	Network (using U-Boot firmware) ROM/Flash (using U-Boot firmware)	1246 KB	9426 KB
showcase	Network (using U-Boot firmware) Network (using BlueCat Linux OS loader) ROM/Flash (using U-Boot firmware) ROM/Flash (using BlueCat Linux OS loader)	4103 KB	20153 KB

### developer Demo System

The `developer` demo system is a package consisting of the functionalities of the shell, ftp, ping, and gdb systems. For descriptions of `developer` and its

components, refer to Chapter 4, “BlueCat Linux Demo Systems” in the *BlueCat Linux User’s Guide*.

### **osloader Demo System**

`osloader` is the BlueCat Linux OS loader used to boot a BlueCat Linux system on the target board. Refer to Chapter 4, “BlueCat Linux Demo Systems” in the *BlueCat Linux User’s Guide* for details.

### **showcase Demo System**

The `showcase` demo system starts and configures the Apache HTTP daemon, turning the target board into a web server. Refer to Chapter 4, “BlueCat Linux Demo Systems” in the *BlueCat Linux User’s Guide* for details.

Table 5-1 lists the device drivers supported by the PPC440EP/GR BSP and provides important information about them.

**Table 5-1: Device Drivers Supported by the PPC440EP/GR BSP**

Hardware Device	Device Drivers	Location in Source Tree	Kernel Configuration Options
UART  Two built-in 16750-compatible serial ports	8250.c	drivers/serial	CONFIG_SERIAL_8250 CONFIG_SERIAL_CONSOLE
Ethernet  Two built-in 10/100 Mb Ethernet controllers	Ibm_emac*.c	Drivers/net/ibm_emac	CONFIG_IBM_EMAC
Flash Memory	yellowstone.c	drivers/mtd/maps	CONFIG_MTD CONFIG_MTD_PARTITIONS CONFIG_MTD_CHAR CONFIG_MTD_BLOCK CONFIG_MTD_CFI CONFIG_MTD_GEN_PROBE CONFIG_MTD_CFI_ADV_OPTIONS CONFIG_MTD_CFI_NOSWAP CONFIG_MTD_CFI_AMDSTD CONFIG_MTD_YELLOWSTONE CONFIG_MTD_START CONFIG_MTD_LEN CONFIG_MTD_BUSWIDTH
PCI	yosemite.c	arch/ppc/platforms/4xx	CONFIG_PCI
I2C	i2c-core.c i2c-dev.c i2c-sensor-detect.c i2c-sensor-vid.c	drivers/i2c	CONFIG_I2C CONFIG_I2C_IBM_IIC CONFIG_I2C_SENSOR



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## CHAPTER 6 *Known Problems and Limitations*

This chapter describes known problems and limitations of this release.

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### **PPC440EP/GR Target Board Problems and Limitations**

The following are known problems and limitations of this release:

- Configuring MTD partitions via the kernel command line does not work in this release of BlueCat Linux.

