

BlueCat Linux Target Support Guide

DOC-0386-01

for MPC8260 PowerQUICC II ADS Boards

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The BlueCat Linux Target Support Guide (TSG) for the Motorola MPC8260 PowerQUICC II ADS Board describes the BlueCat Linux boot procedure and the configuration of the prebuilt BlueCat Linux kernel contained in the mpc8260_vads TSP distribution. It summarizes the demo systems supported by the mpc8260_vads TSP. Chapters 4 and 5 list the supported demo systems and device drivers. Chapter 6 provides an overview of the Automated Test System (ATS) and qualification of the MPC8260 PowerQUICC II ADS board.



This chapter describes the boot procedure for the MPC8260 PowerQUICC II ADS board.

Setting Up the ADS Hardware

The ADS board has been designed as a network-ready embedded controller. The BlueCat Linux development environment heavily depends on having the ADS board on the local network, with a unique IP address and network name.

The MPC8260-ADS board has a single Ethernet option:

100/10-Base-T Port connected to FCC2

Before BlueCat Linux operation can be enabled on ADS, the Startup Monitor image must be loaded on the board. The 8260 ADS boards does not include a default firmware. Users must program Startup Monitor into flash. See "Programming the Startup Monitor into Flash" on Page 9 for examples. The board must be attached to the cross development host via a special cable. As soon as the Startup Monitor image is successfully programmed into the Flash SIMM, the debug cable can be disconnected and the ADS is ready to operate in a standalone mode.

Obtaining Network Parameters

Before setting up the ADS board, obtain the IP address and network machine name for your board. If you will be sharing the local network, the IP address and the machine name will need to be unique and coordinated through the network administrator. If you are going to set up an isolated network, then you do not need to consult the local network administrator.

The ADS board does not support any type of inventory data, so it is your responsibility to assign a hardware (Ethernet) address to the Ethernet interface of the ADS. Select the Ethernet address of the 10/100 Mbit interface. If you are going to set up more than one ADS board in the local network, it is critical that you assign unique Ethernet addresses to each Ethernet interface.

Setting Up Network Parameters

The IP addresses of the ADS board and TFTP server machine, as well as the Ethernet address for the 100 Mbit interface, are stored in the prebuilt Startup Monitor image `$BLUECAT_PREFIX/boot/sm.vads` contained in the BlueCat Linux distribution installed on the host system. The Startup Monitor uses these addresses for the TFTP download. The Ethernet address is also passed as a parameter to the BlueCat Linux kernel and is used by the 100 Mbit BlueCat Linux Ethernet driver. You can change the IP and Ethernet addresses to values most appropriate for your local environment as described below.

The prebuilt Startup Monitor image `$BLUECAT_PREFIX/boot/sm.vads` installs the networking-related environment variables to the following default values:

ADS Board IP	172.16.1.57
TFTP Server IP	172.16.1.2
100 Mbit Ethernet	66:55:44:33:22:11

You can update the IP and Ethernet addresses contained in the prebuilt Startup Monitor image using a special BlueCat Linux utility `sm_patch(1)`. For instance, the following commands run on the host will update the prebuilt Startup Monitor image `$BLUECAT_PREFIX/boot/sm.vads` to contain the IP and Ethernet addresses different from the defaults:

```
BlueCat:$ cd $BLUECAT_PREFIX/boot/
BlueCat:$ cp sm.vads sm.vads.dflt
BlueCat:$ sm_patch -e 0A:16:00:00:02:04 -h 1.0.3.1
           -l 1.0.3.57 sm.vads
```

This `sm_patch` command will set the ADS board IP address to `1.0.3.57` and the TFTP Server IP address to `1.0.3.1`. It will also set the Ethernet address of the 100 Mbit interface to `0A:16:00:00:02:04`.

Please note that the `sm_patch(1)` utility is available as a part of the BlueCat Linux development environment. This means that you have to install the BlueCat Linux development environment for the ADS board in order to be able to use `sm_patch(1)` for setting new values to the Startup Monitor network configuration variables. It is recommended that you install the cross-development environment and update the prebuilt Startup Monitor image `$BLUECAT_PREFIX/boot/sm.vads` using `sm_patch(1)` before you boot the Startup Monitor onto the ADS board (versus booting the prebuilt Startup Monitor image).

Preparing the Board

In order to be able to boot the initial Startup Monitor image onto the ADS, attach your ADS board to the ADI card in a Windows or Sun debugger host, as described in the Motorola-provided *MPC8260-ADS User's Manual*. As soon as you program the Startup Monitor image into the Flash SIMM, the ADS board is ready for a standalone operation, and you can disconnect the debug interface cable.

Attach your ADS board to the local network using the Twisted Pair Ethernet connector located on the board. LynuxWorks recommends you adhere to the Category 5 cabling. Connect a network cable to the Ethernet interface.

Setting I²C Slave Address for SDRAM DIMM

The switch DS2 must have the following settings: DS#1 - ON, DS#2 - ON, DS#3 - ON, thus setting the I²C slave address for the SDRAM DIMM to 0xA0.

Selecting Frequency

The input clock frequency is hardcoded in the Startup Monitor image `$BLUECAT_PREFIX/boot/sm.vads`. You can change the hardcoded value of the input clock frequency by using the `sm_patch(1)` utility. By default, the clock frequency is set to 40000000 (40 MHz).

The MPC8260 CPU and CPM frequencies are hardcoded in the Startup Monitor image `$BLUECAT_PREFIX/boot/sm.vads`. You can change the hardcoded values in the prebuilt Startup Monitor image using the `sm_patch(1)` utility. By default, `modckh` is set to 6, thus setting the CPU frequency to 140 MHz and the CPM frequency to 80 MHz (assuming the default 40 MHz is input clock frequency).

You have to ensure two things:

- The startup Monitor image you are using corresponds to the frequency generated by the oscillator installed on the board. If necessary, change the input clock frequency using the `sm_patch(1)` utility.
- Switch DS1 sets `MODCK(1:3)` to a multiplication factor supported by the BlueCat Linux software. The following table shows settings of the DS1 switch for the default configuration of the ENG revision of the ADS board:

Table 2-1: DS1 Switch Default Configuration of the ENG Revision

Input Freq	modckh	DS1#1	DS1#2	DS1#3	MODCK(1:3)	CPU Freq	CPM Freq
40 MHz	0x06000000	ON	ON	ON	0	140 Mhz	80 Mhz

The following table shows settings of the DS1 switch for the default configuration of the PILOT revision of the ADS board:

Table 2-2: DS1 Switch Default Configuration of the PILOT Revision

Input Freq	DS1# 1	DS1# 2	DS1# 3	DS1#4	DS1#5	DS1#6	DS1# 7	DS1# 8	CPU Freq	CPM Freq
40 MHz	OFF	ON	OFF	OFF	ON	ON	ON	ON	140-Mhz	80-Mhz

Booting the Startup Monitor onto a ADS Board

Motorola ships the ADS board with no default firmware programmed into Flash. There are several ways users can program Startup Monitor on the ADS board. The following sections provide example instructions for programming the Startup Monitor onto the ADS board via the Macraigor Wiggler.

NOTE: *The following examples of programming Startup Monitor on the ADS board are not supported by LynuxWorks. These examples are provided for reference only.*

Installing Startup Monitor via Macraigor Wiggler

Macraigor Wiggler (or Raven) parallel port interfaces can be used to connect a Windows cross development host with the 8260 ADS board. With the Macraigor Flash Programmer utility, users can program the `sm.bug` image to the target board. Use the following instructions to configure the Flash Programmer options for the 8260 ADS board and program the image. The following instructions are provided for reference only and are not supported by LynuxWorks.

1. From the Windows cross development host, run the OCD Commander Flash Programmer (`flashbpgm.exe`).
2. Click the **Program** tab.

3. Select the `sm.bug` image:
For 66Mhz Crystal ADS boards: `sm.bug.bc.66`
For 40Mhz Crystal ADS boards: `sm.bug.bc.40`
4. Change the **Start Programming at Flash address** field from `0xFF800000` to `0xFFF00000`.
5. Click the **Program** button.

This procedure is only valid for burning `sm.bug` into flash directly. It does not allow a user to load and run `sm.bug` from RAM.

HyperTerm Settings

To access Startup Monitor once it is programmed onto the 8260 ADS board, use the Windows HyperTerm. The following provides an example configuration using COM2:

In the **Connect To** dialog box, select COM2:

- Connect using: COM2

In the **COM2 Properties** dialog box, set these values:

- Bits per second: 9600
- Data bits: 8
- Parity: None
- Stop bits: 1
- Flow control: Hardware

Enabling TFTP on a ADS Board

If you loaded a Startup Monitor image with the updated network configuration for your local LAN settings, you should be able to access the network at this point. If you have loaded the unmodified prebuilt image `$(BLUECAT_PREFIX)/boot/sm.vads`, you have to change the IP addresses used by the Startup Monitor. You can check the current settings using the Startup Monitor `echo` command.

Changing IP Addresses

You can change IP addresses used by the Startup Monitor networking code at the run-time using `set`. At the `(vads) ->` prompt, do the following:

```
(vads)-> set local_ip new_vads_ip
(vads)-> set host_ip new_host_ip
```

Verifying Network Operation

If your board has been set up correctly on the network, you should be able to test access to your TFTP server with the `ping` command as follows:

```
(vads)-> ping host_ip
PING host_ip: 56 data bytes 5 packets
64 bytes from host_ip: icmp_seq=0 ttl=255 time=0 ms
64 bytes from host_ip: icmp_seq=1 ttl=255 time=0 ms
64 bytes from host_ip: icmp_seq=2 ttl=255 time=0 ms
64 bytes from host_ip: icmp_seq=3 ttl=255 time=0 ms
64 bytes from host_ip: icmp_seq=4 ttl=255 time=0 ms

--- host_ip ping statistics ---
5 packets transmitted, 5 packets received, 0% packet
loss
round-trip min/avg/max = 0/0/0 ms
```

Programming the Startup Monitor into Flash

As soon as the network operation is available from the Startup Monitor, the next step is to program the Startup Monitor image into the Flash SIMM. This allows you to disconnect the ADS from the ADI host and enables the board for the standalone operation.

The Startup Monitor image is programmed into the Flash SIMM (described in "Programming the Startup Monitor into Flash" on Page 9). It is recommended that you program a Startup Monitor image updated for your LAN environment in the Flash using `sm_patch(1)`. You should have already installed the BlueCat Linux development environment on your cross machine and modified the prebuilt startup monitor image `sm.vads` for your local LAN preferences using `sm_patch(1)`.

The following example shows how the Startup Monitor image is programmed into the Flash:

```
(vads)-> program -t ro -p kremlin -d
tftp /tftpboot/sm.vads
Our IP (as assigned by operator) is local_ip. Host IP is
host_ip
Loading file /tftpboot/sm.vads into 0x4000
.....
File loaded. Size is 270254
Erasing ..
Programming ..
Done
```

As soon as programming is complete, you can power down your ADS board, disconnect the debug interface cable, and power up the ADS board again. If the Startup Monitor banner and the (vads)-> prompt appear on the serial console on power-up, the Startup Monitor has been successfully programmed into the Flash memory and the ADS board is ready for a standalone operation.

Booting BlueCat Linux on a ADS Board from a Network

From the Startup Monitor, use the boot command to boot a BlueCat Linux embedded system on the ADS board from a TFTP host. For instance:

```
(vads)-> boot -p -d tftp ping.kdi

Our IP (as assigned by operator) is 172.16.1.57. Host
IP is 172.16.1.2
Loading file /tftpboot/ping.kdi into 0x4ffc00
.....
File loaded. Size is 1187704
loaded at:      FE080400 FE08B5CC
relocated to:  00100000 0010B1CC
board data at: 001001AC 001001D4
relocated to:  0010B1CC 0010B1F4
zimage at:     FE086400 FE0E1E35
initrd at:     FE0E37F8 FE1A1F78
relocated to:  00F41000 00FFF780
avail ram:     0010C000 00F41000
```

```
Linux/PPC load: root=/dev/ram root=/dev/ram
Uncompressing Linux...done.
Now booting the kernel
Total memory = 16MB; using 64kB for hash table (at
c0100000)
...
```

Booting BlueCat Linux on a ADS Board from Flash

From the Startup Monitor, use the `program` command to burn a BlueCat Linux embedded system image in the Flash of the ADS board. The image is downloaded from a TFTP host. For instance:

```
(vads)-> program -t kdi -d tftp ping.kdi
Our IP (as assigned by operator) is 172.16.1.57.
Host IP is 172.16.1.2
Loading file ping.kdi into 0x4000
.....
File loaded. Size is 1187704
Erasing .....
Programming .....
Done
```

Alternatively, you can use the BlueCat Linux Flash support tools to install your embedded system on target. The following procedure is used:

- Boot the OS Loader or the install demo system on target from a network
- Install your embedded BlueCat system into Flash using the OS loader of the install demo system. Refer to the “Booting BlueCat Linux from Flash” in the *BlueCat Linux User's Guide for a detailed description of the installation procedure*.

When a BlueCat Linux image has been successfully programmed into the Flash, use the `boot` command to boot BlueCat Linux from the Flash:

```
(vads)-> boot -p -d flash
loaded at:      FE080400 FE08B5CC
relocated to:  00100000 0010B1CC
board data at: 001001AC 001001D4
relocated to:  0010B1CC 0010B1F4
zimage at:     FE086400 FE0E1E35
initrd at:     FE0E37F8 FE1A1F78
relocated to:  00F41000 00FFF780
avail ram:     0010C000 00F41000

Linux/PPC load: root=/dev/ram root=/dev/ram
Uncompressing Linux...done.
Now booting the kernel
```

```
Total memory = 16MB; using 64kB for hash table (at  
c0100000)
```


This chapter lists the configuration of the prebuilt BlueCat Linux kernel contained in the mpc8260_vads TSP distribution.

Table 3-1: BlueCat Linux Default Configuration for the mpc8260_vads TSP Distribution

Parameters	Table Number
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General Setup	Table 3-3
Memory Technology Devices (MTD)	Table 3-4
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Table 3-1: BlueCat Linux Default Configuration for the mpc8260_vads TSP Distribution (Continued)

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Mice	Table 3-20
Video for Linux	Table 3-21
Joystick Support	Table 3-22
Ftape, the Floppy Tape Device Driver	Table 3-23
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Table 3-2: Platform Support

Option	Value	Description
CONFIG_PPC	Y	PowerPC Architecture
CONFIG_82xx	Y	82xx Processor Type
CONFIG_VADS	Y	VADS Machine Type
CONFIG_SMP	N	Symmetric multi-processing support

Table 3-3: General Setup

Option	Value	Description
CONFIG_EXPERIMENTAL	N	Prompt for development and/or incomplete code/drivers
CONFIG_MODULES	Y	Enable loadable module support
CONFIG_MODVERSIONS	Y	Set version information on all symbols for modules
CONFIG_KMOD	Y	Kernel module loader
CONFIG_PCI_QUIRKS	N	PCI quirks

Table 3-3: General Setup (Continued)

Option	Value	Description
CONFIG_PCI_OLD_PROC	N	Backward-compatible <code>/proc/pci</code>
CONFIG_NET	Y	Networking support
CONFIG_BLUECAT_IGNORE_PRINTK	N	BlueCat Ignore printk
CONFIG_BLUECAT_SMALL_FOOTPRINT	N	BlueCat small memory footprint
CONFIG_BLUECAT_MEMSIZE	N	Memory usage statistics
CONFIG_SYSCTL	N	Sysctl support
CONFIG_SYSVIPC	N	System V IPC
CONFIG_BSD_PROCESS_ACCT	N	BSD Process Accounting
CONFIG_BINFMT_MISC	N	Kernel support for MISC binaries
CONFIG_BINFMT_JAVA	N	Kernel support for JAVA binaries (obsolete)
CONFIG_PARPORT	N	Parallel port support
CONFIG_VGA_CONSOLE	N	Support for VGA Console
CONFIG_FB	N	Support for frame buffer devices
CONFIG_PMAC_PBOOK	N	Power Management support for Apple PowerBook
CONFIG_MAC_KEYBOARD	N	Support for PowerMac keyboard
CONFIG_MAC_FLOPPY	N	Support for PowerMac floppy
CONFIG_MAC_SERIAL	N	Support for PowerMac serial parts
CONFIG_ADBMOUSE	N	Support for PowerMac ADS mouse
CONFIG_PROC_DEVICETREE	N	Support for Open Firmware device tree in/ <code>proc</code>
CONFIG_TOTALMP	N	Support for TotalImpact TotalMP
CONFIG_BOOTX_TEXT	N	Support for early boot text console (BootX only)
CONFIG_MOTOROLA_HOTSWAP	N	Support for Motorola Hot Swap

Table 3-4: Memory Technology Devices (MTD)

Option	Value	Description
CONFIG_MTD	N	Memory Technology Device (MTD) support

Table 3-5: Modular Advanced Power Management (MAPM)

Option	Value	Description
CONFIG_MAPM	N	Modular Advanced Power Management support

Table 3-6: Plug-and-Play Support

Option	Value	Description
CONFIG_PNP	N	Plug-and-Play support

Table 3-7: Block Devices

Option	Value	Description
CONFIG_BLK_DEV_FD	N	Normal PC floppy disk support
CONFIG_BLK_DEV_IDE	N	Enhanced IDE/MFM/RLL disk/cdrom/tape/floppy support
CONFIG_BLK_DEV_HD_ONLY	N	Old hard disk (MFM/RLL/IDE) driver
CONFIG_BLK_DEV_LOOP	N	Loopback device support
CONFIG_BLK_DEV_NBD	N	Network block device support
CONFIG_BLK_DEV_MD	N	Multiple devices driver support
CONFIG_BLK_DEV_RAM	Y	RAM disk support
CONFIG_BLK_DEV_INITRD	N	Initial RAM disk (initrd) support
CONFIG_BLUECAT_RFS	Y	BlueCat RFS support
CONFIG_BLK_DEV_GENERIC_FLASH_DOC	N	M-System DiskOnChip
CONFIG_BLK_DEV_XD	N	XT hard disk support
CONFIG_BLK_DEV_DAC960	N	Mylex DAC960/DAC1 100 PCI RAID Controller support

Table 3-7: Block Devices (Continued)

Option	Value	Description
CONFIG_PARIDE_PARPORT	N	Parallel port IDE device support
CONFIG_BLK_CPQ_DA	N	Compaq SMART2 support

Table 3-8: Networking Options

Option	Value	Description
CONFIG_PACKET	N	Packet socket
CONFIG_NETLINK	N	Kernel/User netlink socket
CONFIG_FIREWALL	N	Network firewalls
CONFIG_FILTER	N	Socket Filtering
CONFIG_UNIX	Y	UNIX domain sockets
CONFIG_INET	Y	TCP/IP networking
CONFIG_IP_MULTICAST	N	IP: multicasting
CONFIG_IP_ADVANCED_ROUTER	N	IP: advanced router
CONFIG_IP_PNP	N	IP: kernel level autoconfiguration
CONFIG_IP_ROUTER	N	IP: optimize as router not host
CONFIG_NET_IPIP	N	IP: tunneling
CONFIG_NET_IPGRE	N	IP: GRE tunnels over IP
CONFIG_IP_ALIAS	N	IP: aliasing support
CONFIG_SYN_COOKIES	N	IP: TCP syncookie support (not enabled per default)
CONFIG_INET_RARP	N	IP: Reverse ARP
CONFIG_SKB_LARGE	N	IP: Allow large windows (not recommended if <16 MB of memory)
CONFIG_IPX	N	The IPX protocol
CONFIG_ATALK	N	AppleTalk DDP

Table 3-9: SCSI Support

Option	Value	Description
CONFIG_SCSI	N	SCSI support

Table 3-10: SCSI Low-Level Drivers

Option	Value	Description
CONFIG_SCSI_G_NCR5380_PORT	Not Set	SCSI low-level drivers NCR5380/53c400 mapping method (use Port for T130B) (PORT)

Table 3-11: Network Device Support

Option	Value	Description
CONFIG_NETDEVICES	Y	Network device support
CONFIG_DUMMY	N	Dummy net driver support
CONFIG_EQUALIZER	N	EQL (serial line load balancing) support
CONFIG_NET_SB1000	N	General Instruments Surfboard 1000
CONFIG_FDDI	N	FDDI driver support
CONFIG_PPP	N	PPP (point-to-point) support
CONFIG_SLIP	N	SLIP (serial line) support
CONFIG_NET_RADIO	N	Wireless LAN (non-ham radio)
CONFIG_NET_FC	N	Fibre Channel driver support
CONFIG_SBNI	N	SBNI 12-xx support

Table 3-12: ARCnet Drivers

Option	Value	Description
CONFIG_ARCNET	N	ARCnet support

Table 3-13: Ethernet (10 or 100 Mbit)

Option	Value	Description
CONFIG_NET_ETHERNET	Y	Ethernet (10 or 100 Mbit)
CONFIG_82XX_FCC_ENET	Y	82xx FCC Fast Ethernet support
CONFIG_MACE	N	MACE (Power Mac Ethernet) support
CONFIG_BMAC	N	BMAC (G3 Ethernet) support
CONFIG_NET_VENDOR_3COM	N	3COM cards
CONFIG_LANCE	N	AMD LANCE and PCnet (AT 1500 and NE2100) support
CONFIG_NET_VENDOR_SMC	N	Western Digital/SMC cards
CONFIG_NET_VENDOR_RACAL	N	Racal-Interlan (micom) NI cards
CONFIG_NET_ISA	N	Other ISA cards
CONFIG_NET_EISA	N	EISA, VLB, PCI and on board controllers
CONFIG_NET_POCKET	N	Pocket and portable adaptors

Table 3-14: Token Ring Devices

Option	Value	Description
CONFIG_TR	N	Token Ring driver support

Table 3-15: WAN Interfaces

Option	Value	Description
CONFIG_HOSTESS_SV11	N	Control Hostess SV-11 support
CONFIG_COSA	N	COSA/SRP sync serial boards support
CONFIG_SEALEVEL_4021	N	Sealevel Systems 4021 support
CONFIG_DLCI	N	Frame relay DLCI support
CONFIG_WAN_DRIVERS	N	WAN drivers

Table 3-16: Amateur Radio Support

Option	Value	Description
CONFIG_HAMRADIO	N	Amateur Radio support

Table 3-17: ISDN Subsystem

Option	Value	Description
CONFIG_ISDN	N	ISDN support

Table 3-18: Old CD-ROM Drivers (not SCSI, not IDE)

Option	Value	Description
CONFIG_CD_NO_IDESCSI	N	Support non-SCSI/IDE/ATARI CD-ROM drivers

Table 3-19: Character Devices

Option	Value	Description
CONFIG_VT	N	Virtual terminal
CONFIG_VT_CONSOLE	N	Support for console on virtual terminal
CONFIG_SERIAL	Y	Standard/generic (dumb) serial support
CONFIG_SERIAL_CONSOLE	Y	Support for console on serial port
CONFIG_SERIAL_EXTENDED	N	Extended dumb serial driver options
CONFIG_SERIAL_NONSTANDARD	N	Non-standard serial port support
CONFIG_UNIX98_PTYS	N	UNIX98 PTY support
CONFIG_MOUSE	Y	Mouse support (not serial mice)
CONFIG_QIC02_TAPE	N	QIC-02 tape support
CONFIG_WATCHDOG	N	Watchdog Timer Support
CONFIG_NVRAM	N	/dev/nvram support
CONFIG_RTC	N	Enhanced Real-Time Clock Support
CONFIG_DTLK	N	Double Talk PC internal speech card support

Table 3-20: Mice

Option	Value	Description
CONFIG_ATIXL_BUSMOUSE	N	ATIXL busmouse support
CONFIG_BUSMOUSE	N	Logitech busmouse support
CONFIG_MS_BUSMOUSE	N	Microsoft busmouse support
CONFIG_PSMOUSE	N	PS/2 mouse (aka "auxiliary device") support
CONFIG_82C710_MOUSE	N	C&T 82C710 mouse port support (as on TI Travlmate)
CONFIG_PC110_PAD	N	PC110 digitizer pad support

Table 3-21: Video for Linux

Option	Value	Description
CONFIG_VIDEO_DEV	N	Video For Linux

Table 3-22: Joystick Support

Option	Value	Description
CONFIG_JOYSTICK	N	Joystick support

Table 3-23: Ftape, the Floppy Tape Device Driver

Option	Value	Description
CONFIG_FTAPPE	N	Ftape (QIC-80/Travan) support
CONFIG_FT_NORMAL_DEBUG	Not Set	Debugging output
CONFIG_FT_FULL_DEBUG	Not Set	Not debugging

Table 3-24: Filesystems

Option	Value	Description
CONFIG_QUOTA	N	Quota support
CONFIG_AUTOFS_FS	N	Kernel automounter support
CONFIG_AFFS_FS	N	Amiga FFS filesystem support

Table 3-24: Filesystems (Continued)

Option	Value	Description
CONFIG_HFS_FS	N	Apple Macintosh filesystem support (exp)
CONFIG_FAT_FS	N	DOS FAT fs support
CONFIG_ISO9660_FS	N	ISO 9660 CD-ROM filesystem support
CONFIG_JOLIET	N	Microsoft Joliet CD-ROM extensions
CONFIG_MINIX_FS	N	Minix fs support
CONFIG_NTFS_FS	N	NTFS filesystem support (read only)
CONFIG_HPFS_FS	N	OS/2 HPFS filesystem support (read only)
CONFIG_PROC_FS	Y	proc filesystem support
CONFIG_ROMFS_FS	N	ROM filesystem support
CONFIG_EXT2_FS	Y	Second extended fs support
CONFIG_SYSV_FS	N	System V and Coherent filesystem support
CONFIG_UFS_FS	N	UFS filesystem support

Table 3-25: Network File Systems

Option	Value	Description
CONFIG_CODA_FS	N	Coda filesystem support (advanced network fs)
CONFIG_NFS_FS	N	NFS filesystem support
CONFIG_SMB_FS	N	SMB filesystem support (to mount WfW shares etc.)
CONFIG_NCP_FS	N	NCP filesystem support (to mount NetWare volumes)

Table 3-26: Partition Types

Option	Value	Description
CONFIG_BSD_DISKLABEL	N	BSD disklabel (BSD partition tables) support
CONFIG_MAC_PARTITION	N	Macintosh partition map support
CONFIG_SMD_DISKLABEL	N	SMD disklabel (Sun partition tables) support
CONFIG_SOLARIS_x86_PARTITION	N	Solaris (x86) partition table support

Table 3-27: Sound

Option	Value	Description
CONFIG_SOUND	N	Sound card support

Table 3-28: Kernel Hacking

Option	Value	Description
CONFIG_MAGIC_SYSRQ	N	Magic SysRq key
CONFIG_KGDB	N	Include kgdb kernel debugger
CONFIG_BLUECAT_KDBG	N	Include BlueCat kernel debugger
CONFIG_XMON	N	Include xmon kernel debugger

The following table lists the demo systems supported by the mpc8260_vads TSP. Boot devices supported by the pre-built demo systems included in the distribution are shown.

Table 4-1: Demo Systems Supported by the mpc8260_vads TSP

Demo	Boot Devices Supported by Default	ROM Requirements	RAM Requirements
caffeine	Flash, Network using firmware	2711 KB	15500 KB
default	Flash, Network using firmware	1298 KB	8500 KB
ffs	Flash, Network using the OS Loader	1141 KB	7500 KB
ftp	Flash, Network using firmware	1693 KB	10000 KB
gdb	Flash, Network using firmware	1154 KB	8000 KB
hello	Flash, Network using firmware	443 KB	3500 KB
kdbg	Flash, Network using firmware	1150 KB	7500 KB
mapm	Flash, Network using the OS Loader	1003 KB	7500 KB
memsize	Flash, Network using firmware	1151 KB	8000 KB
modular	Flash, Network using firmware	1142 KB	7500 KB

Table 4-1: Demo Systems Supported by the mpc8260_vads TSP (Continued)

Demo	Boot Devices Supported by Default	ROM Requirements	RAM Requirements
msng_exmpl	Flash, Network using firmware	1101 KB	8500 KB
nfsroot	Flash, Network using firmware	404 KB	3500 KB
osloader	Flash, Network using firmware	663 KB	3000 KB
ping	Flash, Network using firmware	1169 KB	8000 KB
rcp	Flash, Network using firmware	1317 KB	8500 KB
rlogin	Flash, Network using firmware	1497 KB	9000 KB
shell	Flash, Network using firmware	1198 KB	8000 KB
tcl	Flash, Network using firmware	1360 KB	8500 KB
tcpdump	Flash, Network using firmware	1264 KB	8000 KB
tutorial	Flash, Network using firmware	1203 KB	8000 KB

The following table lists the device drivers supported by the mpc8260_vads TSP.

Table 5-1: The Device Drivers Supported by the mpc8260_vads TSP

Hardware Device	Device Drivers	Location in Source Tree	Kernel Configuration Options	Notes
Serial Lines Two async serial ports with RS-232 interface at SCC or SMC	82xx serial driver	arch/ppc/82xx_io/uart.c	None	The driver is always compiled into the kernel
Ethernet FCCx on MPC8260 with external LXT970 transceiver	82xx FCC Fast Ethernet driver	arch/ppc/82xx_io/fcc_enet.c	CONFIG_82xx_FCC_ENET	

CHAPTER 6

Target Testing and Qualification

This chapter provides the results of the Automated Test System (ATS) testing and qualification of BlueCat Linux for the for MPC8260 PowerQUICC II ADS Board. For a detailed description of the BlueCat Linux Test Suite and ATS refer to the *BlueCat Linux User's Guide*.

ATS Suites Test Results

All supported ATS Suites run on the MPC8260 PowerQUICC II ADS board. Test results are shown in the chapter titled “BlueCat Testing and Qualification” in the *BlueCat Linux User's Guide*.

Real-Time Performance

This section summarizes the results of the BlueCat Linux real-time performance test suite, which simulates a real-world system environment and measures the Interrupt Response and Task Response times.

The following two tables summarize the actual results of the real-time performance measurement for the MPC8260 PowerQUICC II ADS board. The results were obtained on the following hardware system:

- CPU - MPC8260 140 MHz
- L1 Cache - 16 KB
- L2 Cache - None
- RAM - 16 MB
- Ethernet - FCC on MPC8260

Table 6-1: Real-Time Performance - Configuration 1

Configuration schedule policy: fifo schedule priority: 99 background load: network (ping -f)	
Interrupt Response: Best Measured: Average: Worst Measured:	5 us 12 us 48 us
Task Response: Best Measured: Average: Worst Measured:	43 us 120 us 1,193 us

Table 6-2: Real-Time Performance - Configuration 2

Configuration schedule policy: fifo schedule priority: 99 background load: none	
Interrupt Response: Best Measured: Average: Worst Measured:	4 us 5 us 20 us
Task Response: Best Measured: Average: Worst Measured:	24 us 30 us 2,023 us