



TM5800 System Development Kit

MontaVista Linux Release Notes

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Property of:

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Introduction

The Transmeta MicroATX board is configured with an Ethernet controller that is not supported by the default x86 LSP MontaVista Linux 2.1. This is easy to work around by recompiling the kernel to include the module (or driver) for the onboard Ethernet controller. It is also possible to use a separate PCI Ethernet controller if you do not want to recompile your kernel.

Following is a list of the Ethernet controllers supported by the default x86 LSP in MontaVista Linux:

- Intel Etherexpress Pro/100
- 3COM 3c509/3c529
- 3COM 3c590/3c900 series "Vortex/Boomerang"
- NE2000 ISA cards
- DEC Tulip dc21x4x

If you use a PCI Ethernet card with one of these chipsets you do not have to recompile your kernel. If you wish to use the onboard National Semiconductor DP83815 controller please follow the steps outlined below.

Adding the National Semiconductor DP83815 Ethernet Driver

Following are the steps required to add the National Semiconductor DP83815 driver to the MontaVista Linux.

Once you have completed the MontaVista Linux installation, you will need to modify the supplied MontaVista Linux kernel.

The kernel binary is at the core of every MontaVista Linux execution. It handles scheduling, resource allocation, and use of programs. MontaVista Linux 2.1 provides two kernel images: a default kernel image and a preemptible kernel image (the preemptible kernel image has kernel preemption enabled, and the default image does not).

To build a MontaVista Linux 2.1 kernel that supports the National Semiconductor DP83815 Ethernet controller on the Crusoe MicroATX development board, complete the following steps:

Note: See "Technical Notes" below for a detailed description of items enclosed in '<>'.

1. Copy the kernel sources from /<prefix>/hardhat/previewkit/kernel/linux-2.4.17_mv121/ to your home directory, for example

```
cp -a /<prefix>/hardhat/previewkit/kernel/linux-2.4.17_mv121 ~
```

2. Change to the directory of that particular kernel tree, for example

```
cd ~/linux-2.4.17_mv121/
```

Copy the vmlinux.config-<lsp name> file from the /boot directory to a file named .config (note the period at the beginning of the file name).

```
cp /<prefix>/hardhat/previewkit/<arch>/<processor>/target \  
/boot/vmlinux.config-<lsp name> .config
```

3. Edit the .config file so that the correct Ethernet driver is enabled.

```
vi .config
```

(Or use your favorite editor)

Change the line that reads:

```
# CONFIG_NATSEMI is not set
```

to

```
CONFIG_NATSEMI=y
```

Then save the file and exit the editor.

4. To create your kernel, use the following commands

```
make ARCH=<kernel arch> \  
CROSS_COMPILE=/<prefix>/hardhat/previewkit/<arch>/<processor> \  
/bin/<toolprefix>-oldconfig dep bzImage
```

For the Crusoe mATX board you can use the following string to build the kernel:

```
make ARCH=i386 \  
CROSS_COMPILE=/<prefix>/hardhat/previewkit/x86/586/bin/586- \  
oldconfig dep bzImage
```

If you install the Demo CD to the default location (/opt/) the string would be:

```
make ARCH=i386 \  
CROSS_COMPILE=/opt/hardhat/previewkit/x86/586/bin/586- \  
oldconfig dep bzImage
```

Note: This command is a single line. The “\” characters are line returns to show that the command wraps to the next line.

Note: You will need to use bzImage because the kernel will now be larger than zImage can handle.

Note: 'ARCH' and 'CROSS_COMPILE' must be defined each time a 'make' is called.

5. Copy the new kernel to the boot floppy:

```
cd arch/i386/boot/
```

Place a new floppy disk in the floppy drive of your host machine

```
dd if=bzImage of=/dev/fd0
```

6. Once the floppy is written, place it in the floppy drive on the Crusoe MicroATX development system and hook up the Ethernet cable. The target system will boot and download the MontaVista image over Ethernet.

Technical Notes

- a) <arch> = The MontaVista Software name of the CPU family, such as 'ppc' or 'x86'.

<kernel arch> = The kernel architecture name, which may differ from the MontaVista Software name of the CPU family (<arch>), such as where <arch> is 'x86' and <kernel arch> is 'i386.'

<lsp name> = The MontaVista Software name of the Linux Support Package (LSP).

<prefix> = The default is '/opt'. If you used relocation, replace '<prefix>' with the name of the directory you used when you installed MontaVista Linux.

<processor> = The MontaVista Software processor differentiator.
For example, '/ppc/8xx/', where 'ppc' is the CPU family and '8xx' is the processor differentiator.

<toolprefix> = The MontaVista Software architecture name followed by the package name, such as 'sh_sh4_le-gcc' or '586-gcc.'

- b) Comparison of MontaVista Linux Pro 2.1 architectures and kernel architectures (needed when using '<kernel arch>'):

MontaVista Linux Pro 2.1 Architectures Kernel Architectures

ppc	ppc
x86	i386
mips	mips
sh	sh
arm	arm

- c) Proper CROSS_COMPILE settings are as follows:

/opt/hardhat/previewkit/x86/586/bin/586-
/opt/hardhat/previewkit/mips/fp_be/bin/mips_fp_be-
/opt/hardhat/previewkit/mips/fp_le/bin/mips_fp_le-
/opt/hardhat/previewkit/ppc/8xx/bin/ppc_8xx-
/opt/hardhat/previewkit/ppc/74xx/bin/ppc_74xx-
/opt/hardhat/previewkit/ppc/7xx/bin/ppc_7xx-
/opt/hardhat/previewkit/ppc/82xx/bin/ppc_82xx-
/opt/hardhat/previewkit/arm/sa_le/bin/arm_sa_le-
/opt/hardhat/previewkit/arm/720t_le/bin/arm_720t_le-
/opt/hardhat/previewkit/arm/920t_le/bin/arm_920t_le-
/opt/hardhat/previewkit/sh/sh4_le/bin/sh_sh4_le-