intel ®

Intel® Chipset Compatibility with Microsoft Windows* 95

Application Note

June 1998

Application Note

Contents

1.0   Background Information

The Microsoft* Windows* 95 operating system uses device information files (*.INF) to specify and define characteristics of various controller and device classes of the operating system. For certain classes, the device controller's PCI Device ID must be explicitly listed in the file for optimal operation.

Historically, release schedules for Intel chipsets and Microsoft operating systems have not aligned; therefore, PCI Device IDs for some Intel chipset components may not be listed in all versions of Windows* 95. This Application Note describes additions required to Windows* 95 .INF files for complete Intel chipset support, up to the Intel(r) 440GX AGPset.

1.1   Windows* 95 Versions and .INF Files

Since the Windows* 95 "Gold" retail release (August 1995), Microsoft released three complete operating system updates prior to the release of Windows* 98 in June, 1998. The various Windows* 95 releases and their respective version numbers are listed below.

Windows* 95 Versions

Retail release ("Gold") - Version .950
OEM Service Release 1 ("OSR1") - Version .950a
OEM Service Release 2 ("OSR2") - Version .950b
OEM Service Release 2.0 with USB Supplement ("OSR2.1") - Version .950b (no letter update)
OEM Service Release 2.5 ("OSR2.5") - Version .950c

(Windows* 95 version information may be obtained via the System applet in the Windows* 95 Control Panel.)

Each of the five Windows* 95 versions listed above contains its own unique .INF files. From the Windows* 95 Gold release to the Windows* 95 OSR 2.5 release, the number of .INF files has increased as the operating system has been enhanced to support many new device classes. Additionally, the content of core chipset .INF files has increased, as later versions of Windows* 95 now inherently identifies relatively new chipset devices.

This Application Note addresses changes required to three .INF files, namely:

MACHINE.INF   (contains core chipset device IDs and names)
MSHDC.INF   (contains IDE controller device IDs and names)
USB.INF   (contains USB controller device IDs and names)

These files are usually found in C:\WINDOWS\INF, although the WINDOWS directory name may differ depending on the Windows 95 install convention used.

2.0 Intel Chipset Device Information

The Windows 95 .INF files listed in Section 1.1 do not contain device information for Intel chipsets containing the PIIX4/PIIX4E (82371AB/EB) component. These chipsets are as follows:

Intel® 430TX PCIset (82371AB, 82439TX)
Intel® 440LX AGPset (82371AB, 82443LX)
Intel® 440EX AGPset (82371EB, 82443EX)
Intel® 440BX AGPset (82371AB/EB, 82443BX)
Intel® 440GX AGPset (82371AB/EB, 82443GX)

Naming and device information for each function of these Intel chipsets is listed below:

- Intel 82371AB/EB PCI to ISA bridge.
    — This device has PCI Device ID 7110h.
- Intel 82371AB/EB PCI Bus Master IDE Controller
    — This device has PCI Device ID 7111h.
- Intel 82371AB/EB PCI to USB Universal Host Controller
    — This device has PCI Device ID 7112h.
- Intel 82371AB/EB Power Management Controller
    — This device has PCI Device ID 7113h.
- Intel 82439TX Pentium® processor to PCI bridge
    — This device has PCI Device ID 7100h.
- Intel 82443LX/EX Pentium® II processor to PCI bridge
    — This device has PCI Device ID 7180h.
- Intel 82443LX/EX Pentium® II processor to AGP Controller
    — This device has PCI Device ID 7181h.
- Intel 82443BX Pentium® II processor to PCI Bridge
    — This device has PCI Device ID < 7190h or 7192h >
- Intel 82443BX Pentium® II processor to AGP Controller
    — This device has PCI Device ID 7191h.
- Intel 82443GX Pentium® II processor to PCI Bridge
    — This device has PCI Device ID < 71A0h or 71A2 >
- Intel 82443GX Pentium® II processor to AGP Controller
    — This device has PCI Device ID 71A1h

There are two different configurations available for the Intel 82371AB/EB PCI to ISA Bridge. Both configurations have identical PCI Device ID of 7110h, as specified above.

- ISA configuration:
    — This device has PCI Base Class ID 06h and Sub Class ID 01h.
    — This configuration requires driver support for full ISA bus.
- Extended IO (EIO) configuration:
    — This device has PCI Base Class ID 06h and Sub Class ID 80h.

Application Note

intel®

Note: The Intel 82371AB/EB device can be configured for a full ISA bus or a subset of the ISA bus called the Extended IO (EIO) bus. The use of the EIO bus allows unused signals to be configured as General Purpose Inputs and Outputs that are specified by the platform's BIOS or system initialization software. As a result, there are differences between the the ISA configuration and the EIO configuration of the PCI to ISA bridge device. Those differences are described in this document.

3.0 Required Changes to Base Windows* 95 .INF Files

Note: Some of the following procedures vary based on the Windows* 95 version.

3.1 Necessary Entries in MSHDC.INF File

The following text represents the portions of the MSHDC.INF file which must be verified to include the correct information. Note that the information below also includes 82371SB component device. The .INF files are divided into sections preceded by the section name inside square brackets. The sections may contain data for numerous devices other than the Intel devices specified in Section 2.0 of this docuement. Ensure that the text in each of the sections [INTEL_HDC], [Control Flags], and [Strings] includes the entries below for Intel chipset devices to be correctly recognized.

[INTEL_HDC]
;;ensure that the following lines are present:

%PCI\VEN_8086&DEV_7010.DeviceDesc%=DUAL_GOOD_IDE,,PCI\VEN_8086&DEV_7010

%PCI\VEN_8086&DEV_7111.DeviceDesc%=DUAL_GOOD_IDE,,PCI\VEN_8086&DEV_7111

[ControlFlags]
;;ensure that the following lines are present:

CopyFilesOnly=PCI\VEN_8086&DEV_7010

CopyFilesOnly=PCI\VEN_8086&DEV_7111

[Strings]
;;ensure that the following lines are present:

PCI\VEN_8086&DEV_7010.DeviceDesc="Intel 82371SB PCI Bus Master IDE Controller"

PCI\VEN_8086&DEV_7111.DeviceDesc="Intel 82371AB/EB PCI Bus Master IDE Controller"

3.2 Necessary Entries in MACHINE.INF File

The following text represents the portions of the MACHINE.INF file which must be verified to include the correct information. The .INF file is divided into sections preceded by the section name inside square brackets. The sections may contain data for numerous devices other than the Intel devices specified in Section 2.0 of this document. Ensure that the text in each of the sections [MS_SYS], [PCI_DRV_AddReg] , [Control Flags], and [Strings] includes the entries below in order for the Intel chipset devices to be correctly recognized.

Where applicable, ISA and EIO configuration options will be listed. Please follow the procedure for the configuration option implemented in the system.

3.2.1 Windows* 95 Gold and OSR1 Releases

This section refers to systems with Windows* 95 Gold and OSR1 releases only.

3.2.1.1 ISA/EIO Configuration

Note: **The code for ISA and EIO is the same, except for DEV_7110**

[MS_SYS]

;;ensure that the following lines are present:

%PCI\VEN_8086&DEV_7000.DeviceDesc%=ISA_DRV,PCI\VEN_8086&DEV_7000

Note: **For ISA, use the following line:**

%PCI\VEN_8086&DEV_7110.DeviceDesc%=ISA_DRV,PCI\VEN_8086&DEV_7110

Note: **For EIO, use the following line:**

%PCI\VEN_8086&DEV_7110.DeviceDesc%=NO_DRV,PCI\VEN_8086&DEV_7110

%PCI\VEN_8086&DEV_7113.DeviceDesc%=NO_DRV,PCI\VEN_8086&DEV_7113

%PCI\VEN_8086&DEV_7100.DeviceDesc%=NO_DRV,PCI\VEN_8086&DEV_7100

%PCI\VEN_8086&DEV_7180.DeviceDesc%=NO_DRV,PCI\VEN_8086&DEV_7180

%PCI/VEN_8085&DEV_7190.DeviceDesc%=NO_DRV,PCI\VEN_8086&DEV_7190

%PCI/VEN_8085&DEV_7192.DeviceDesc%=NO_DRV,PCI\VEN_8086&DEV_7192

%PCI/VEN_8085&DEV_71A0.DeviceDesc%=NO_DRV,PCI\VEN_8086&DEV_71A0

%PCI/VEN_8085&DEV_71A2.DeviceDesc%=NO_DRV,PCI\VEN_8086&DEV_71A2

[PCI_DRV_AddReg]

;;ensure that the following lines are present:

; Devices specific settings (value name is DevID cat with VenID)

; Bit 0: Devices video wanting no IRQ

; Bit 1: Devices PCMCIA wanting IRQ

; Bit 2: Devices Dual PCI IDE without programming code with bit 3 set

HKLM,System\CurrentControlSet\Services\VxD\PCI,70108086,1,04,00,00,00

HKLM,System\CurrentControlSet\Services\VxD\PCI,71118086,1,04,00,00,00

[ControlFlags]

;;ensure that the following lines are present:

ExcludeFromSelect=PCI\VEN_8086&DEV_7000

ExcludeFromSelect=PCI\VEN_8086&DEV_7110

ExcludeFromSelect=PCI\VEN_8086&DEV_7113

ExcludeFromSelect=PCI\VEN_8086&DEV_7100

ExcludeFromSelect=PCI\VEN_8086&DEV_7180

ExcludeFromSelect=PCI\VEN_8086&DEV_7190

ExcludeFromSelect=PCI\VEN_8086&DEV_7192

ExcludeFromSelect=PCI\VEN_8086&DEV_71A0

ExcludeFromSelect=PCI\VEN_8086&DEV_71A2

[Strings]

;;ensure that the following lines are present:

PCI\VEN_8086&DEV_7000.DeviceDesc="Intel 82371SB PCI to ISA bridge"

PCI\VEN_8086&DEV_7110.DeviceDesc="Intel 82371AB/EB PCI to ISA bridge"

PCI\VEN_8086&DEV_7113.DeviceDesc="Intel 82371AB/EB Power Management Controller"

PCI\VEN_8086&DEV_7100.DeviceDesc="Intel 82439TX Pentium® processor to PCI bridge"

PCI\VEN_8086&DEV_7180.DeviceDesc="Intel 82443LX/EX Pentium® II processor to PCI bridge"

PCI\VEN_8086&DEV_7181.DeviceDesc="Intel 82443LX/EX Pentium® II processor to AGP Controller"

intel

PCI\VEN_8086&DEV_7190.DeviceDesc="Intel 82443BX Pentium® II processor to PCI bridge"

PCI\VEN_8086&DEV_7191.DeviceDesc="Intel 82443BX Pentium® II processor to AGP Controller"

PCI\VEN_8086&DEV_7192.DeviceDesc="Intel 82443BX Pentium® II processor to PCI bridge"

PCI\VEN_8086&DEV_71A0.DeviceDesc="Intel 82443GX Pentium® II processor to PCI bridge"

PCI\VEN_8086&DEV_71A1.DeviceDesc="Intel 82443GX Pentium® II processor to AGP Controller"

PCI\VEN_8086&DEV_71A2.DeviceDesc="Intel 82443GX Pentium® II processor to PCI bridge"

3.2.2 Windows* 95 OSR2, OSR2.1 and OSR2.5 Releases

This section refers to systems with Windows* 95 OSR2, OSR2.1 and OSR2.5 releases only.

3.2.2.1 ISA/EIO Configuration

Note: **The code for ISA and EIO is the same, except for DEV_7110**

[MS_SYS]

;;ensure that the following lines are present:

%PCI\VEN_8086&DEV_7000.DeviceDesc%=ISA_DRV,PCI\VEN_8086&DEV_7000

Note: **For ISA, use the following line:**

%PCI\VEN_8086&DEV_7110.DeviceDesc%=ISA_DRV,PCI\VEN_8086&DEV_7110

Note: **For EIO, use the following line:**

%PCI\VEN_8086&DEV_7110.DeviceDesc%=NO_DRV,PCI\VEN_8086&DEV_7110

%PCI\VEN_8086&DEV_7113.DeviceDesc%=NO_DRV,PCI\VEN_8086&DEV_7113
%PCI\VEN_8086&DEV_7100.DeviceDesc%=NO_DRV,PCI\VEN_8086&DEV_7100
%PCI\VEN_8086&DEV_7180.DeviceDesc%=NO_DRV,PCI\VEN_8086&DEV_7180
%PCI\VEN_8086&DEV_7181.DeviceDesc%=PCI_BRIDGE_DRV,PCI\VEN_8086&DEV_7181
%PCI\VEN_8086&DEV_7190.DeviceDesc%=NO_DRV,PCI\VEN_8086&DEV_7190
%PCI\VEN_8086&DEV_7191.DeviceDesc%=PCI_BRIDGE_DRV,PCI\VEN_8086&DEV_7191
%PCI\VEN_8086&DEV_7192.DeviceDesc%=NO_DRV,PCI\VEN_8086&DEV_7192
%PCI\VEN_8086&DEV_71A0.DeviceDesc%=NO_DRV,PCI\VEN_8086&DEV_71A0
%PCI\VEN_8086&DEV_71A1.DeviceDesc%=PCI_BRIDGE_DRV,PCI\VEN_8086&DEV_71A1
%PCI\VEN_8086&DEV_71A2.DeviceDesc%=NO_DRV,PCI\VEN_8086&DEV_71A2

 [PCI_DRV_AddReg]

;;ensure that the following lines are present:

; Devices specific settings (value name is DevID cat with VenID)

; Bit 0: Devices video wanting no IRQ

; Bit 1: Devices PCMCIA wanting IRQ

; Bit 2: Devices Dual PCI IDE without programming code with bit 3 set

HKLM,System\CurrentControlSet\Services\VxD\PCI,70108086,1,04,00,00,00

HKLM,System\CurrentControlSet\Services\VxD\PCI,71118086,1,04,00,00,00

; IRQ Miniport Data

HKLM,System\CurrentControlSet\Services\VxD\PCI\IRQMiniports\70008086,Name,,"Intel 82371SB"

HKLM,System\CurrentControlSet\Services\VxD\PCI\IRQMiniports\70008086,Path,,"PCIMP.PCI"

HKLM,System\CurrentControlSet\Services\VxD\PCI\IRQMiniports\70008086,Instance,1,01,00,00,00

HKLM,System\CurrentControlSet\Services\VxD\PCI\IRQMiniports\71108086,Name,,"Intel 82371AB/EB"

HKLM,System\CurrentControlSet\Services\VxD\PCI\IRQMiniports\71108086,Path,,"PCIMP.PCI"

HKLM,System\CurrentControlSet\Services\VxD\PCI\IRQMiniports\71108086,Instance,1,01,00,00,00

; IDE Miniport Data

HKLM,System\CurrentControlSet\Services\VxD\PCI\IDEMiniports\70108086,Name,,"Intel 82371SB"

HKLM,System\CurrentControlSet\Services\VxD\PCI\IDEMiniports\70108086,Path,,"PCIMP.PCI"

HKLM,System\CurrentControlSet\Services\VxD\PCI\IDEMiniports\70108086,Instance,1,00,00,00,00

HKLM,System\CurrentControlSet\Services\VxD\PCI\IDEMiniports\71118086,Name,,"Intel 82371AB/EB"

HKLM,System\CurrentControlSet\Services\VxD\PCI\IDEMiniports\71118086,Path,,"PCIMP.PCI"

HKLM,System\CurrentControlSet\Services\VxD\PCI\IDEMiniports\71118086,Instance,1,00,00,00,00

[ControlFlags]

;;ensure that the following lines are present:

ExcludeFromSelect=PCI\VEN_8086&DEV_7000

ExcludeFromSelect=PCI\VEN_8086&DEV_7110

ExcludeFromSelect=PCI\VEN_8086&DEV_7113

ExcludeFromSelect=PCI\VEN_8086&DEV_7100

ExcludeFromSelect=PCI\VEN_8086&DEV_7180

ExcludeFromSelect=PCI\VEN_8086&DEV_7181

ExcludeFromSelect=PCI\VEN_8086&DEV_7190

ExcludeFromSelect=PCI\VEN_8086&DEV_7191

ExcludeFromSelect=PCI\VEN_8086&DEV_7192

ExcludeFromSelect=PCI\VEN_8086&DEV_71A0

ExcludeFromSelect=PCI\VEN_8086&DEV_71A1

ExcludeFromSelect=PCI\VEN_8086&DEV_71A2

[Strings]

;;ensure that the following lines are present:

PCI\VEN_8086&DEV_7000.DeviceDesc="Intel 82371SB PCI to ISA bridge"

PCI\VEN_8086&DEV_7110.DeviceDesc="Intel 82371AB/EB PCI to ISA bridge"

PCI\VEN_8086&DEV_7113.DeviceDesc="Intel 82371AB/EB Power Management Controller"

PCI\VEN_8086&DEV_7100.DeviceDesc="Intel 82439TX Pentium$^{®}$ processor to PCI bridge"

PCI\VEN_8086&DEV_7180.DeviceDesc="Intel 82443LX/EX Pentium$^{®}$ II processor to PCI bridge"

PCI\VEN_8086&DEV_7181.DeviceDesc="Intel 82443LX/EX Pentium$^{®}$ II processor to AGP Controller"

PCI\VEN_8086&DEV_7190.DeviceDesc="Intel 82443BX Pentium$^{®}$ II processor to PCI bridge"

PCI\VEN_8086&DEV_7191.DeviceDesc="Intel 82443BX Pentium$^{®}$ II processor to AGP Controller"

PCI\VEN_8086&DEV_7192.DeviceDesc="Intel 82443BX Pentium$^{®}$ II processor to PCI bridge"

PCI\VEN_8086&DEV_71A0.DeviceDesc="Intel 82443GX Pentium$^{®}$ II processor to PCI bridge"

PCI\VEN_8086&DEV_71A1.DeviceDesc="Intel 82443GX Pentium$^{®}$ II processor to AGP Controller"

PCI\VEN_8086&DEV_71A2.DeviceDesc="Intel 82443GX Pentium$^{®}$ II processor to PCI bridge"

intel®

3.3   Necessary Entries in USB.INF File

USB is only supported under the Windows* 95 OSR2.1 and Windows* 95 OSR2.5. The following text represents portions of the USB.INF file which must be verified to include the correct information. Note that the information below also includes 82371SB device information. The .INF file is divided into sections preceded by the section name inside square brackets. The sections may contain data for numerous devices other than the Intel devices specified in Section 2.0 of this document. Ensure that the text in each of the sections [Intel.Section], and [Strings] includes the entries below for the Intel chipset devices to be correctly recognized.

[Intel.Section]

;;ensure the following lines are present:

%PCI\VEN_8086&DEV_7020.DeviceDesc%=UniversalHCD.Dev,PCI\VEN_8086&DEV_7020

%PCI\VEN_8086&DEV_7112.DeviceDesc%=UniversalHCD.Dev,PCI\VEN_8086&DEV_7112

 [Strings]

;ensure the following lines are present:

Intel.Mfg="Intel"

PCI\VEN_8086&DEV_7020.DeviceDesc="Intel 82371SB PCI to USB Universal Host Controller"

PCI\VEN_8086&DEV_7112.DeviceDesc="Intel 82371AB/EB PCI to USB Universal Host Controller"

4.0   Editing .INF Files for System Testing

The following procedures can be used to modify the MSHDC.INF, MACHINE.INF, and USB.INF files for system testing. It is strongly recommended that the edited MSHDC.INF and MACHINE.INF files be present at the time of Windows* 95 installation. Although the MSHDC.INF and MACHINE.INF files can be edited after installation, this procedure is discouraged due to potential system lockup (see Section 4.5). To update the USB.INF file, Windows* 95 OSR2.1 or OSR2.5 must be installed first.

4.1   Incorporating MACHINE.INF and MSHDC.INF Files at Time of Windows* 95 Installation

Note: **This is the only acceptable procedure for Windows* 95 OSR1**

Note: **This is the suggested procedure for High Volume Manufacturing**

1. The Windows* 95 distribution CD contains a \CAB directory containing all the operating system .CAB files and installation program. The name of the directory can vary depending on the distribution (i.e,. \WIN95*.CAB, etc.). Copy the .CAB files and installation files from the Windows* 95 CAB directory to a directory on the hard disk. It is recommended to prepare the subdirectory with all the necessary .CAB files and .INF files and perform installation from this subdirectory. This procedure requires a large amount of disk storage. It is important to make sure this is enough disk space before beginning the copy process.

2. Extract the MACHINE.INF and MSHDC.INF files from the .CAB files contained on your CD. Locate the EXTRACT.EXE program either on your CD or system. You can do the extraction with the following commands:

    a. EXTRACT /A PRECOPY1.CAB MACHINE.INF

    b. EXTRACT /A PRECOPY1.CAB MSHDC.INF

    c. This command will start with the PRECOPY.CAB file and work through the chain of .CAB files until it finds MACHINE.INF and MSHDC.INF and saves them to your current directory.

3. Make a copy of the existing MSHDC.INF and MACHINE.INF files and then edit both files according to the procedures listed above.

4. Run SETUP.EXE to install Windows* 95.

5. After setup is complete, view devices in Device Manager to ensure all devices are configured correctly. If you are using Windows* 95 Gold or OSR1 releases, all devices should be set up correctly at this time. If you are using Windows* 95 OSR2.1 or OSR2.5, USB will not be configured correctly until the USB Supplement has been installed and the USB.INF file has been updated correctly. To view Device Manager:

    a. Run the Control Panel -> System applet

    b. Click on Device Manager

    c. Click on View devices by connection

    d. Click on Plug and Play BIOS

    e. Click on PCI bus

    f. Confirm none of the "PCI bus" devices is preceded with a yellow '!' or '?' symbol. Figure 1 shows an example of correct configuration of devices.

intel®

Figure 1. Device Manager Example of Intel 82371AB Updated Files
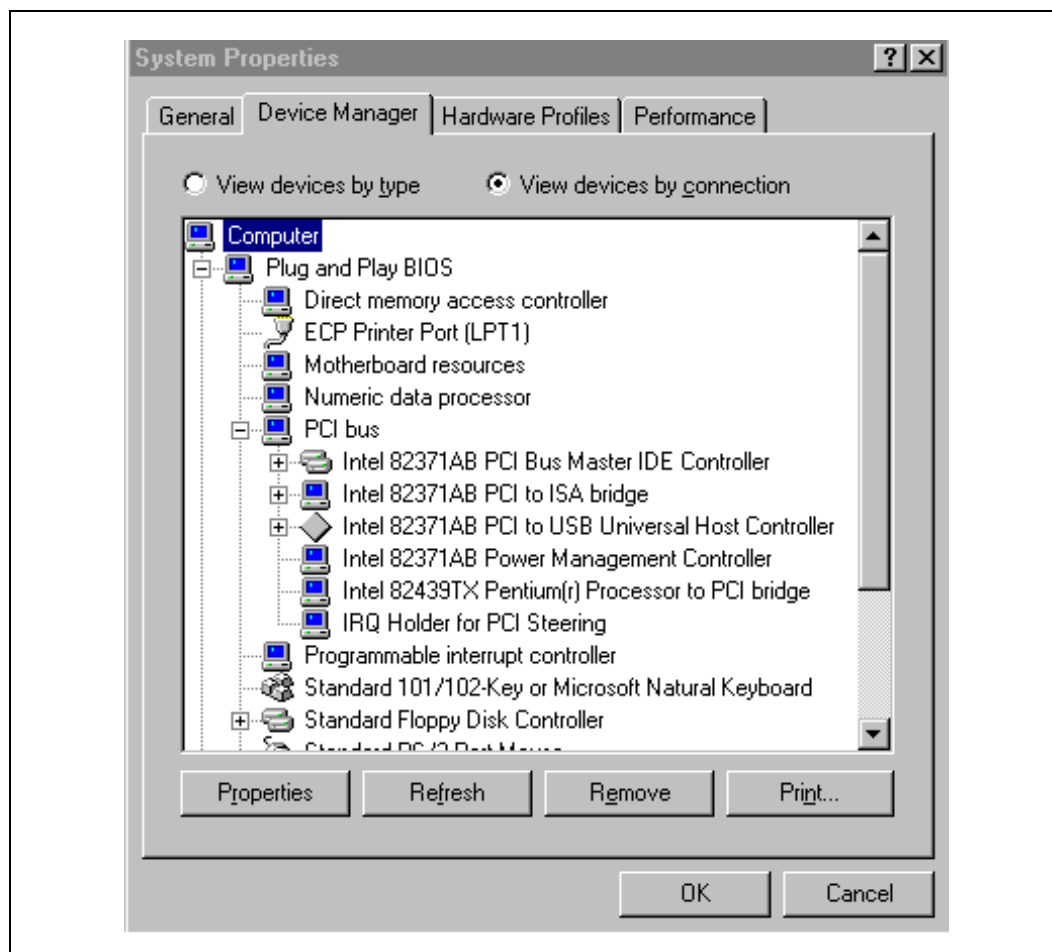
4.2   Updating the USB.INF File

1. To update the USB.INF file, Windows* 95 OSR2.1 or OSR2.5 must be installed first.

2. Make a copy of the existing "USB.INF" file

   a. C:\>CD <Windows 95 Path>\INF

   b. C:\<Windows 95 Path>\INF>COPY USB.INF USB.000

3. Edit the USB.INF file, adding the necessary information as described in Section 3.3.

4. Run the Control Panel->System applet.

5. Click on **Device Manager**

6. Click on **View devices by connection**.

7. Click on **Plug and Play BIOS**.

8. Click on **? PCI Universal Serial Bus**.

9. Select **Remove**. (For warning, see Section 4.5)

10. Select **Yes** to restart the system. (For warning, see Section 4.5)

11. Windows* 95 will display messages when various hardware components in the system are recognized. When prompted to install a driver, select the **Windows Default Driver** or appropriate device drivers from disk provided by the hardware manufacturer, if needed**.**

12. Select **Yes** to restart the system. (Steps 10-11 may occur several times.)

13. Re-install the custom drivers from disk provided by the hardware manufacturer, if needed.

4.3 Editing MACHINE.INF and MSHDC.INF Files After O/S Installation

Note: Please note that this method of updating system files is not recommended. The preferred mechanism is to incorporate updated MACHINE.INF and MSHDC.INF files at time of installation as described above. Also, do not use this procedure for Windows* 95 OSR1 based systems.

1. Make copy of existing MACHINE.INF and MSHDC.INF files.

   a. C:\> CD \<Windows 95 Path>\INF

   b. C:\<Windows 95 Path>\INF> COPY MACHINE.INF MACHINE.000

   c. C:\<Windows 95 Path>\INF> COPY MSHDC.INF MSHDC.000

2. Edit the MSHDC.INF and MACHINE.INF files, adding the necessary information as described in Sections 3.1 and 3.2.

3. Run the Control Panel->System applet.

4. Click on **Device Manager**

5. Click on **View devices by connection**.

6. Click on **Plug and Play BIOS**.

7. Click on **PCI bus**.

8. Select **Remove**. (For warning, see Section 4.5)

9. Select **Yes** to restart the system. (For warning, see Section 4.5)

10. Windows* 95 will display messages when various hardware components in the system are recognized. When prompted to install a driver, select the **Windows default driver** or appropriate device drivers from disk provided by the hardware manufacturer, if needed**.**

11. Select **Yes** to restart the system. (Steps 10-11 may occur several times.)

12. Re-install the custom drivers from disk provided by the hardware manufacturer, if needed.

intel®

4.4 Restoring Original MACHINE.INF, MSHDC.INF, and USB.INF Files

If it is desired to restore the original MACHINE.INF or MSHDC.INF file:

1. Make copy of new existing MACHINE.INF, MSHDC.INF, and USB.INF files

2. Restore the original MACHINE.INF, MSHDC.INF, and USB.INF files

   a. C:>CD \<Windows 95 Path>\INF\

   b. C:\<Windows 95 Path>\INF> COPY MACHINE.000 MSHDC.INF

   c. C:\<Windows 95 Path>\INF> COPY MSHDC.000 MSHDC.INF

   d. C:\<Windows 95 Path>\INF> COPY USB.000 MSHDC.INF

3. Delete PCI from Device Manager by doing the following:

   a. Run the Control Panel->System applet.

   b. Click on **Device Manager**

   c. Click on **View devices by connection**.

   d. Click on **Plug and Play BIOS**.

   e. Click on **PCI bus**.

   f. Select **Remove**. (For warning, see Section 4.5)

   g. Select **Yes** to restart the system. (For warning, see Section 4.5)

   h. Windows 95 will display messages when various hardware components in the system are recognized. When prompted to install a driver, select the **Windows default driver** or appropriate device drivers from disk provided by the hardware manufacturer, if needed**.**

   i. Select **Yes** to restart the system. (Steps 10-11 may occur several times.)

   j. Re-install the custom drivers from disk provided by the hardware manufacturer, if needed.

4.5 Warning - Potential System Lockup

System lockup can occur during Device Manager Remove operation or Control Panel Restart as a result of possible system issues during these operations. In the event of system lockup, restart the machine and view Device Manager. If devices are listed properly and system experiences no further problems, then the .INF file update process was successful. If devices are not configured correctly or further problems are experienced, re-install Windows 95 and repeat the editing process using the pre-install method described above..

Intel around the world

United States and Canada
Intel Corporation
Robert Noyce Building
2200 Mission College Boulevard
P.O. Box 58119
Santa Clara, CA 95052-8119
USA
Phone: (800) 628-8686

Europe
Intel Corporation (U.K.) Ltd.
Pipers Way
Swindon
Wiltshire SN3 1RJ
UK

Phone:
England   (44) 1793 403 000
Germany   (49) 89 99143 0
France   (33) 1 4571 7171
Italy   (39) 2 575 441
Israel   (972) 2 589 7111
Netherlands (31) 10 286 6111
Sweden   (46) 8 705 5600

Asia Pacific
Intel Semiconductor Ltd.
32/F Two Pacific Place
88 Queensway, Central
Hong Kong, SAR
Phone: (852) 2844 4555

Japan
Intel Kabushiki Kaisha
P.O. Box 115 Tsukuba-gakuen
5-6 Tokodai, Tsukuba-shi
Ibaraki-ken 305
Japan
Phone: (81) 298 47 8522

South America
Intel Semicondutores do Brazil
Rua Florida 1703-2 and CJ22
CEP 04565-001 Sao Paulo-SP
Brazil
Phone: (55) 11 5505 2296

For More Information
To learn more about Intel Corporation, visit our site
on the World Wide Web at www.intel.com

intel®