

# ES/PCI IRQ Conflict Resolution

## OVERVIEW:

IRQ Conflicts that involve the ES/PCI usually show up in the form of an unexpected lockup or an unwanted reset. PCI conflicts occur when a software routine written for another device is inadvertently run, when a 'shared' IRQ is activated or deactivated. IRQ assignment is the function of the PCI Controller and the motherboard. It is controlled by the BIOS (Basic Input Output System) that runs your computer. The PCI Controller and BIOS should sort these out and prevent problems but sometimes they still occur.

This is the procedure to verify this as the problem, and describe some potential solutions to it. If you have an IRQ conflict, solutions are the following:

- ❖ Disable unused devices (not always an option).
- ❖ Reserve an IRQ for that PCI slot (an option that is not available in all BIOS).
- ❖ Move to a different PCI slot.
- ❖ Change the order of installation.
- ❖ Update the BIOS.
- ❖ Disable ACPI in the Windows installation.

## A. VERIFY THE DRIVER

Verify the driver installation, and note what IRQ it is using, and what IRQs are available. The ES/PCI can handle any IRQ assigned to it.

1. Go to your desktop, right click the '**My Computer**' icon and select **Properties**. It will bring up the **System Properties** window.
2. If you have Windows XP or 2000, select the "**Hardware**" tab.
3. Select the **Device Manager** tab.
4. Double-click on **Twinax Adapters**, and then double-click on the **NLynx PCI Twinax Adapter**.
5. Click on the **Drivers** tab.
  - ❖ If you are using Windows 95, the date should be **5-20-1999**, and the driver should be PCITwin.vxd.
  - ❖ If you are using **Windows 98**, the Driver Date should be **4-19-2000**. If you click on the **Driver File Details** button, you will see **WINDOWS\SYSTEM\NLTWINAX.SYS**. It should be version **5.0.1.3**.
  - ❖ If you are using Windows Millenium, the Driver Date INF should be **23/03/2000**. If you click on **Driver File Details**, you will see **WINDOWS\SYSTEM\NLTWINAX.SYS**. It should be version **5.0.1.3**, dated **03/23/2000**.
  - ❖ If you are using Windows XP or 2000, click on the "+" next to **Twinax Adapters**. Double-click on "**NLynx PCI Twinax Adapter**" to highlight it. Select the **Driver** tab. For **Windows XP**, the driver version should be **5.0.1.3**. Click on the **Driver Details** button. The driver should be **C:/Windows/System32/DRIVERS/nltwinax.sys**. The **Driver Date** will say "**Not available**" and the **Digital Signer** will say "**Not digitally signed.**"
6. Select the Resources tab. Note what IRQ (Interrupt) it is using.

## B. CHECK FOR OTHER DEVICES SHARING THE IRQ

1. Go to the **Hardware Resources**.
  - ❖ To get there in Win98, or WinME, you will select the **Computer** in the **System Properties** window when you are in the Device Manager, then in the lower left, select **Properties**.
  - ❖ For Windows XP, select the **Computer**, then select **View** and **Resources by connection**
  - ❖ For Windows 2000, select **System Information**, then **Hardware Resources**.
2. Select the **View Resources** tab at the top and use the scroll bar to find the IRQ that the ES/PCI is using. Note what else is using the same IRQ.

**NOTE !** It is common and acceptable for PCI devices to share an IRQ with other PCI devices and internal motherboard devices. The ES/PCI can accept any IRQ provided to it.

## C. CHECK THE CONTROL PANEL – POWER MANAGEMENT FUNCTIONS

Some PCs have a Hibernation function that can be disabled. If hibernation started, the motherboard would shut down, and the Twinax poll responses would stop. Twinax TDLC protocol does not permit this, so we must disable hibernation in the Power Management or Power Options in the Control Panel. Change all of the Power options settings to Never.

1. Start/Settings/Control Panel.
2. Double-click on Power Management.
3. Options here are dependent on your PC's chipset and BIOS version. Usually you select. Advanced to see the option to disable Hibernation.

## D. RESOLVING THE IRQ CONFLICT IN THE BIOS.

1. Restart the PC and before Windows starts, go into the BIOS.

BIOS versions are different from one PC to the next. You will restart the PC and immediate go into the **BIOS SETUP** before Windows starts to initialize. Usually there will be a message like 'Press Del to Enter Setup'. If not, you will either have to look it up in the PC manual, call the manufacturer, or try one of the combinations listed in Appendix A. Usually you will press the **Del** key right after power-up and before Windows. If you see the Windows startup, it's too late.

Typical Key combinations to go into BIOS setup:

AMI Bios and Award Bios and others = **Del (most common)**

ASUS = Del

Compaq = F10 or F2 or Del

Award Bios = Ctrl-Alt-Esc

Dell Optiplex = F2

Dell Dimension = F2 (when the blue logo appears)

Dell = Ctrl-Alt-Enter

Dell = Reset (Twice)

Gateway = F1

HP Pavilion = Esc then F1

IBM = F1

NEC = F2

Phoenix Bios = Ctrl-Alt-S

Phoenix Bios = Ctrl-Alt-Ins

PS/2 = Ctrl-Alt-?

PS/2 = Ins

Toshiba = Esc

Toshiba = F1

## THINGS TO CHECK IN BIOS:

Once you get into BIOS, you must read the screen to figure out how to maneuver around to the different pages. Generally one uses the arrow keys to move to different options and the PG UP PG DN keys to adjust the options. Then Enter to select. (Sometimes you use other keys to maneuver around and make changes, but it is always shown on each screen what your options are).

There are a few things that can be checked in BIOS. *If you change any settings, make sure to only change one thing at a time.* Also, write down the original settings, so you can change that option back if it does not solve the problem.

- a) Avoid assigning IRQ 9 to legacy devices. ACPI uses this IRQ for PCI IRQ steering and this too can cause computer hangs during text-mode Setup. If the device cannot use any other interrupt, try to reserve the device interrupt in the computer BIOS.
- b) Sometimes there is an option to disable ACPI under the Power Management or Advanced Configuration options. If there is a setting for ACPI, disable it. If you can't find ACPI, try setting **Power Management** to disabled, if that option exists. Some BIOS versions have an "ACPI - Advanced Configuration Power Interface- Yes or No" option where it says "Using this setting set to Yes, IRQ 9 is not available for expansion cards." Select No.
- c) *Sometimes* under **PNP/PCI CONFIGURATION** there is a setting in the BIOS for '**PnP OS -- Yes or No?**' This option is basically asking if you have a Plug and Play Operating System (Win 95, 98, ME or 2000, answer **YES**). Normally you would answer this with a Yes, but occasionally the PCI does not handle the IRQ settings correctly, and you can have more control by setting it to No. For **WinNT4.0**, you must answer this with **NO**.<sup>1</sup> If you select **No**, the BIOS attempts to perform the Plug n Play operation. While it is technically best to answer this to match your OS, sometimes you can shift and reset things by changing the answer to the question, resetting the PC, then changing it back. Some BIOS allow PnP to be turned on or off for each PCI slot. Make certain it is enabled for the slot that the ES/PCI card is in.
- d) Disable hardware that is not currently being used and try again.
- e) Disable all non-essential hardware (essential hardware is internal video support, mouse, and keyboard) and try again. It may be necessary to temporarily disable hardware that you need (like Network interface, USB support, or Sound Blasters) to find out if it is where the conflict is.
- f) If you have a mix of ISA and PCI devices, remove the ISA devices (if possible) until after installation. The PCI bus has no reliable way of knowing of the resource settings of ISA devices. This means that it is possible for device conflicts to occur because of the lack of communication between the two bus types. Remove the ISA devices, then verify their settings against the computer's current resource usage. If possible, manually configure the ISA device to an unused resource configuration. If removing the ISA device until after Setup is finished is not feasible, check the computer BIOS to determine if it is possible to manually reserve the resources used by the ISA device (set to "Used by ISA" or "reserved for ISA").
- g) Sometimes there is a place where you can look at **PCI / IRQ / PnP Configuration** settings. You may have to PG DOWN or arrow down to find it. This is usually set to AUTO initially. De-select Auto, make certain that there are enough IRQ and DMA slots assigned to the PCI PnP devices. Find the Unknown Comm Adapter that is on the same IRQ as the PCI was in the Device Manager. Select it and use the space bar to change it. Watch what other devices are moving with it. Typically one or two devices will follow it. It will sometimes go to an IRQ where it will join even more devices. Choose the IRQ that has the least number of devices. IRQ 9 usually works, but sometimes you need to avoid IRQ 9. The ES/PCI card can accept any IRQ.

## ACPI:

Some IRQ conflicts are caused by the ACPI (Advanced Configuration Power Interface). This feature tells your PC when to shut off. The theory is that one device sharing an IRQ might tell the PC to shut off when the IRQ is at a low level. The ES/PCI might tell it to go low, releasing control of the IRQ. The PCI Controller gets confused and tells the PC to reset or stop the processor. If the PCI Controller, the BIOS, and the OS are at the latest level, this should not occur, but should is not good enough sometimes.

This procedure explains how to disable ACPI if you can not resolve it in the BIOS. In order to disable ACPI support with Windows 2000, you must install a fresh copy of Windows 2000. This will erase the hard drive and registry so you will have to re-install all of your programs. You must make certain to backup all of your important data files.

Verify that that your computer is listed on the ACPI portion of the HCL (Hardware Compatibility List) for Windows 2000. <http://www.microsoft.com/hcl/>

If it is, you have four choices, you can **1)** attempt to disable it in the BIOS, **2)** reinstall Windows without support for ACPI, **3)** edit the TXTSETUP.SIF file or **4)** upgrade the BIOS.

- 1) Review the previous page.
  - 2) You can press F7 during the portion of setup that displays the message to press F6 for adding SCSI drivers. This configures Setup to not try ACPI machine types. By doing so, you are not required to edit a file.
- ✓ Backup your important data files.
  - ✓ Boot with the Windows 2000 CDROM.
  - ✓ When it first starts the blue screen appears and you will see the message at the bottom for about a second: **"Press F6 to install a mass storage controller"**. **You will press F7 instead.** After pressing F7 nothing will happen but the system will be installed as a standard PC rather than an Advanced Configuration and Power Interface PC.
  - ✓ Hit Enter to install a fresh copy.
  - ✓ You will press **ESC** to "install a fresh copy of Windows 2000". From here you need to delete and recreate the partition, and install Win2K into this partition and follow the prompts.
  - ✓ The procedure takes about 30 minutes.

Microsoft Windows 2000 information on this problem:

[http://support.microsoft.com/support/kb/articles/Q224/8/26.ASP?LN=EN-US&SD=gn&FR=0&qry=F7&rnk=1&src=DHCS\\_MSPSS\\_gn\\_SRCH&SPR=WIN2000](http://support.microsoft.com/support/kb/articles/Q224/8/26.ASP?LN=EN-US&SD=gn&FR=0&qry=F7&rnk=1&src=DHCS_MSPSS_gn_SRCH&SPR=WIN2000)

<http://support.microsoft.com/directory/article.asp?ID=KB;EN-US;Q237556>

Microsoft Windows XP information on this problem:

<http://support.microsoft.com/default.aspx?scid=kb;en-us;Q307525>

Article on PCI Power Management:

[http://www.pcisig.com/specifications/pci\\_bus\\_power\\_management\\_interface](http://www.pcisig.com/specifications/pci_bus_power_management_interface)

Article on ACPI BIOS:

<http://kb.indiana.edu/data/ahvl.html>

3) Globally disable the installation of ACPI by altering the Txtsetup.sif file in the following manner:

```
; not in the GoodACPIBios list. If a BIOS has a date greater  
: than this and is not in the BadACPIBios list, then it will  
; be used unless ACPIEnable = 0  
;  
[ACPIOptions]  
ACPIEnable = 0 (Change this from 2 to 0)  
ACPIBiosDate = 01,01,1999
```

```
[BadACPIBios]
```

```
[GoodACPIBios]  
AcerAspire2100=AcerAspire2100  
AcerAspire3000 = AcerAspire3000
```

It would be better to remove ACPI support in the BIOS if that option is available. This prevents devices expecting the ability for the operating system to write back configuration information from not succeeding. For additional information about the Txtsetup.sif file, please see the following article in the Microsoft Knowledge Base: Q216573 How Windows 2000 Determines ACPI Compatibility

4) Update the BIOS in the PC. For assistance with this you must either contact your PC Manufacturer or try these web-sites. <http://www.firmware.com/support/bios/index.htm#5>

<http://www.unicore.com/biosagent/>

<http://www.unicore.com/bioswiz/>

[http://www.spacewalker.com/english/download\\_bios.asp?product=HOT-591P](http://www.spacewalker.com/english/download_bios.asp?product=HOT-591P)

<http://kb.indiana.edu/data/ahvl.html>

<http://www.phoenix.com/pcuser/BIOS/Award.htm>

<http://www.wimsbios.com/>