InterVideo® WinDVD™ Incompatibility Issue with Intel® CPU's
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Introduction

InterVideo® WinDVD™ is the preferred DVD movie player for use on the IBM ThinkPad. Due to an incompatibility issue with the previous release of the InterVideo WinDVD application and Intel's latest CPU revision, some users may find that the WinDVD application is unable to play DVD mo vies, and may cause a system crash when they attempt to play a movie.

InterVideo has designed the WinDVD application to be portable and useable by many different system manufacturers. The cause of this failure is due to a legacy CPU detection method in the WinDVD player which will cause the DVD player to incorrectly identify the Intel® CPU as an AMD® CPU. This failure is only exposed on the latest revision of Intel CPU's.

Beginning 4Q 2002 Intel will begin shipping new revisions of the **Mobile Intel® Pentium® 4 Processor-M** and the **Mobile Intel® Celeron® Processor**. The revision changes have been designed to have no impact to end-users. However, a legacy CPU detection scheme utilized in previous release of the InterVideo WinDVD player will incorrectly identify the new revision of the Intel CPU as an AMD processor. This incorrect detection will cause a general protection fault when the WinDVD application is used.

This document describes the failure condition, ThinkPad systems affected by the change, and the impact of the failing scenario.

Scope

IBM ThinkPad Models Affected

Intel Corporation has released new revisions for the **Mobile Intel® Pentium® 4 Processor-M** and the **Mobile Intel® Celeron® Processor**. Pentium 4 Processor-M revisions are affected on the 1.6GHz, 1.7GHz, 1.8GHz, 1.9GHz, and 2.0GHz speeds. Intel Celeron Processor revisions are affected on the 1.4GHz and 1.5GHz speeds. These processors will be shifted from the current step level of B0 to the new step level of C1.

The CPU revision changes will be rolled into the following ThinkPad systems starting October, 2002:

A-series: A31 systems with model number: 2652-xxx, 2653-xxx, 2654-xxx
R-series: R32 systems with model number: 2658-xxx, 2659-xxx, 2677-xxx
T-series: T30 systems with model number: 2366-xxx, 2367-xxx

No other ThinkPad systems are affected by the change.

To determine if you have a C1 revision CPU, you can obtain one of the CPU information utilities available from www.intel.com
A Windows based utility is available at: http://www.intel.com/support/processors/tools/frequencyid/
A DOS based utility is available at:
http://downloadfinder.intel.com/scripts-df/Detail_Desc.asp?strState=LIVE&ProductID=49&DwnldID=3088

See Appendix A. for installation information concerning the Intel CPU information utilities.

Detailed Failure Description

InterVideo WinDVD has been designed to take advantage of the hardware acceleration capabilities in both the Intel Pentium processor and the AMD processor family. Both the Intel and the AMD processors use unique instruction sets for hardware acceleration. Each application that wishes to take advantage of these features must detect the CPU's manufacturer and capabilities to properly utilize the acceleration tools provided.

The problem is introduced by a change in the Intel CPU identification method when used in conjunction with a legacy identification technique utilized by InterVideo. Older versions of WinDVD attempted to detect the hardware support information by directly accessing a control register on the CPU. Historically, the control bit which was polled was only used by AMD for detection of AMD's 3DNow!™ acceleration. Since Intel did not use this control register, it was safe to use this register to detect 3DNow! support. Based on the results of that polling, the WinDVD application would load either the Intel or the AMD instruction set.

With the latest revision of the Intel CPU, (C1 step) Intel has begun using this control register for their own purposes. When WinDVD attempts to use this register to detect for 3DNow! support the register will be active and the program will incorrectly assume the processor is an AMD CPU. With the incorrect detection WinDVD will load the AMD instruction set. When the application passes the AMD instructions to the Intel CPU, the processor will be unable to process the unknown commands, the application will be halted, and the operating system may crash.

Impact

Applications Affected in IBM Preload

The only application affected is InterVideo WinDVD. Only versions 3.2-41.142 and earlier are affected. The application will successfully load, but when a DVD movie is played the application will cause a General Protection Fault (crash). The user will be unable to play any DVD movies using the InterVideo player until they upgrade to version 3.2-41.148 or later. Note: A31, T30, and X30 systems will need to upgrade to version 3.2-B041.148 or later. R32 systems will need upgrade to version 3.2-41.148 or later.

The fix version of the WinDVD player is available on the web for A31, T30, and X30 systems. The updated player can be downloaded from: http://www.pc.ibm.com/qtechinfo/MIGR-42309.html (26MB). An updated player for use with the R32 system will be available on the web at a future date. When the download becomes available, this document will be updated with the download location.

If you already have an older version of the InterVideo WinDVD player installed, a patch version is available at: http://www.pc.ibm.com/qtechinfo/MIGR-44474.html.

Please refer to Appendix B. for information regarding how to determine what version you have installed.

Solutions

Description

The C1 step has not been shown to cause any other erroneous behavior aside from the InterVideo failure noted above. The failure is caused by a legacy CPU detection algorithm in older versions of the InterVideo application.

For a user who has a system already loaded with InterVideo 3.2-41.142 or earlier, an upgrade patch version is available at: http://www.pc.ibm.com/qtechinfo/MIGR-44474.html. **NOTE**: any system manufactured after October, 2002 will be loaded with an updated preload which contains the new InterVideo player. (See appendix C. for a list of changes to the preload).

End-user:
If you have a system with the Intel C1 step CPU, have InterVideo 3.2-41.142 or earlier installed, and are unable to download the update from the web, please contact the IBM Helpdesk at 1-800-772-2227.

Enterprise:
Beginning September, 2002 some ThinkPad systems will begin shipping with the new C1 stepping CPU. For customers who have a DVD or DVD/CD-RW combo drive and use the InterVideo WinDVD player, the system image will need to be updated to incorporate WinDVD version 3.2-41.148, 3.2-B041.148 or later.

The fix version WinDVD player is available on the web for A31, T30, and X30 systems. The updated player can be downloaded from: http://www.pc.ibm.com/qtechinfo/MIGR-42309.html (26MB). An updated player for use with the R32 system will be available on the web at a future date. When the download becomes available, this document will be updated with the download location.

Conclusion

Limited exposure
For customers using the IBM Preload, only those customers who have purchased one of the affected model types, have a DVD or CD-RW/DVD combo drive, and use an old version of the InterVideo WinDVD player to view DVD movies will notice any impact. No other preloaded applications or operating system component will be affected.

All ThinkPad systems shipped from IBM with the C1 step CPU will have a fixed version of the WinDVD application loaded in the preload. No adverse behavior will be noted on this system when used in conjunction with the latest release of the WinDVD player.
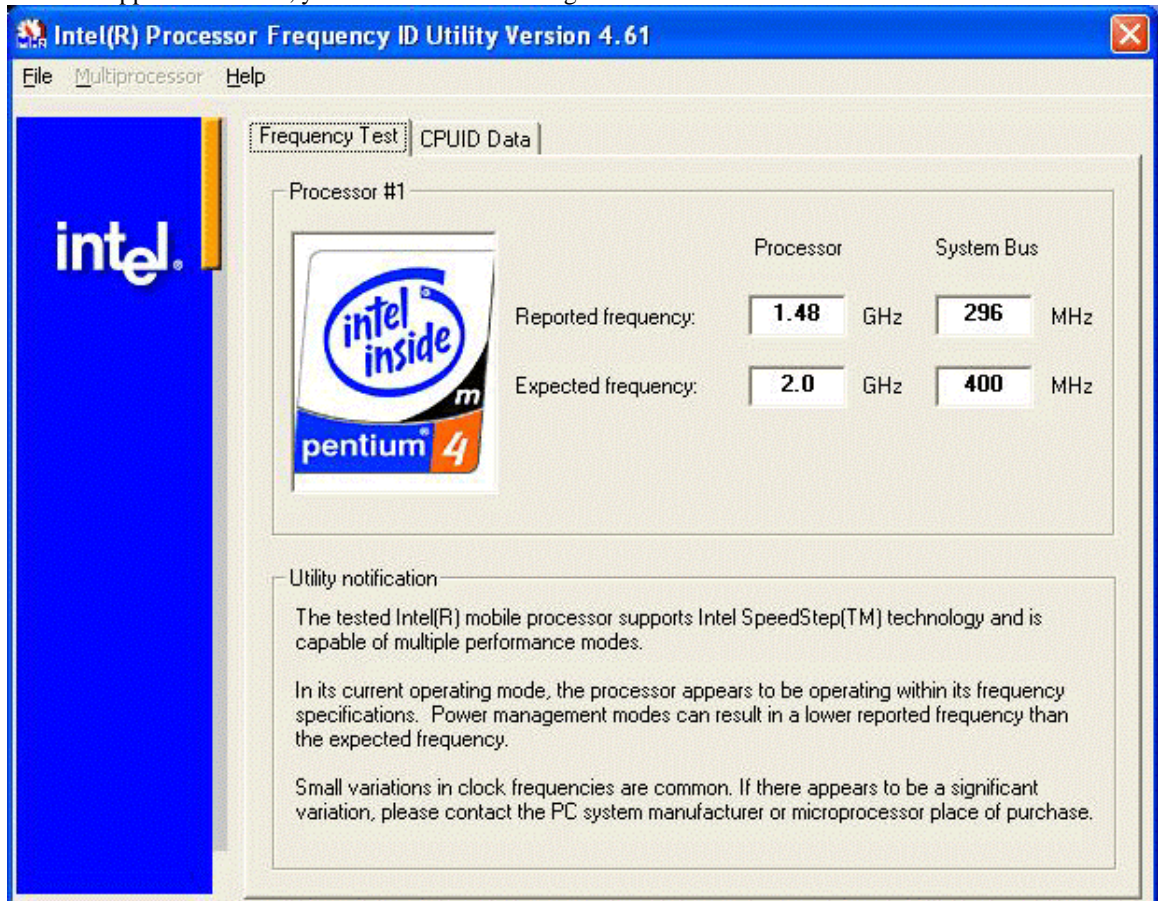
All other users who have an impact to their WinDVD player can download a fixed version of the WinDVD player from: http://www.pc.ibm.com/qtechinfo/MIGR-42309.html.

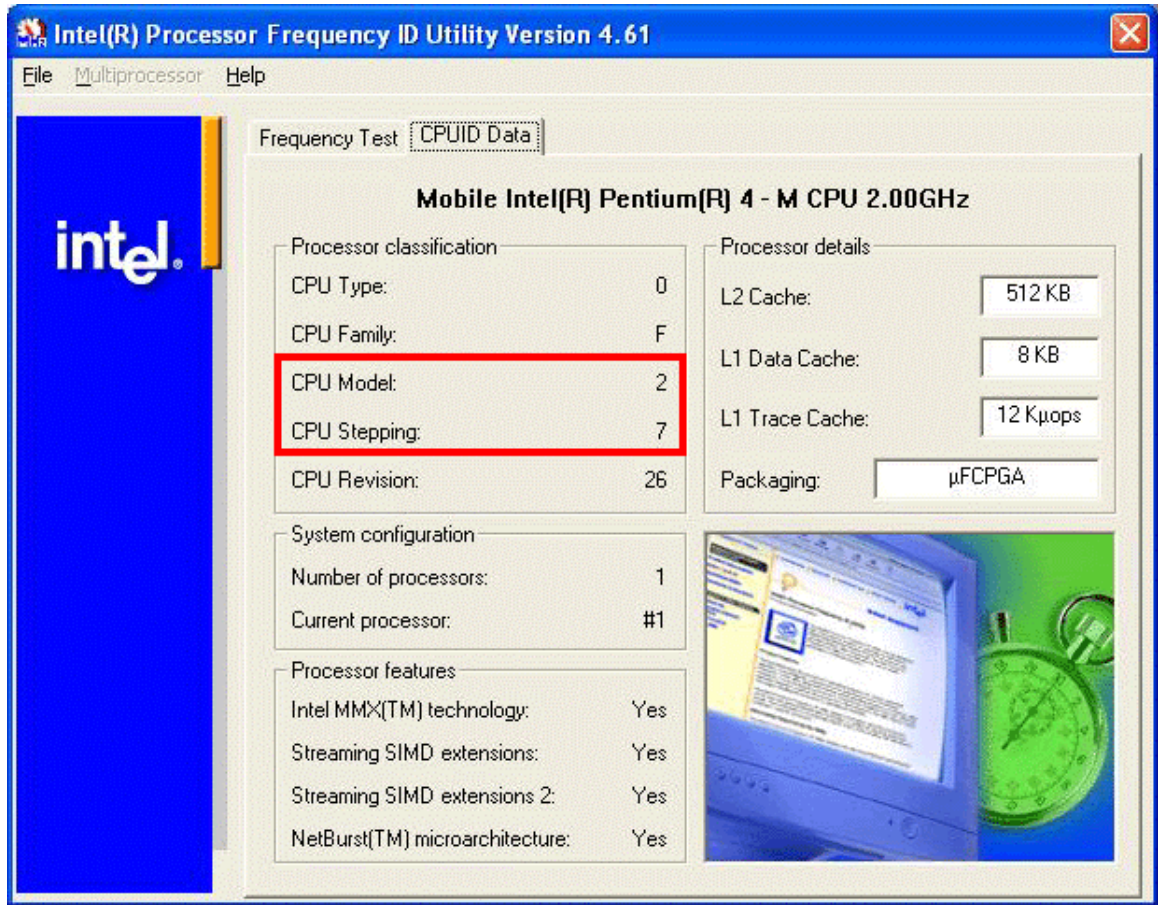## Appendix A. – Installing the Intel CPU information utilities

Installing the Windows based utility

To determine what revision Intel CPU is currently installed, refer to the following process:

1) Download the FrequencyID utility from:
   http://www.intel.com/support/processors/tools/frequencyid/
2) Launch the downloaded installation file, **fidenu21.exe**
3) Click "Next" to begin installation.
4) Review the Software License Agreement, and click "Yes" to proceed.
5) After choosing the installation directory, click "Next" to continue.
6) Enter the name of the Program Group you would like to add the Frequency ID utility to (Start Menu group), and click "Next" to continue.
7) Setup will copy files to your computer, and which finished you be offered the opportunity to launch the utility, or view the file readme.txt. Make sure the checkbox is marked next to "Launch the Intel® Frequency ID Utility now", and click "Finish".
8) Once the utility launches, click "Accept" on the Software License Agreement to start the application.
9) Once the application loads, you will see the following screen:

10) After you see the above screen, click on the "CPUID Data" tab to view the CPU information. You will see a screen similar to:
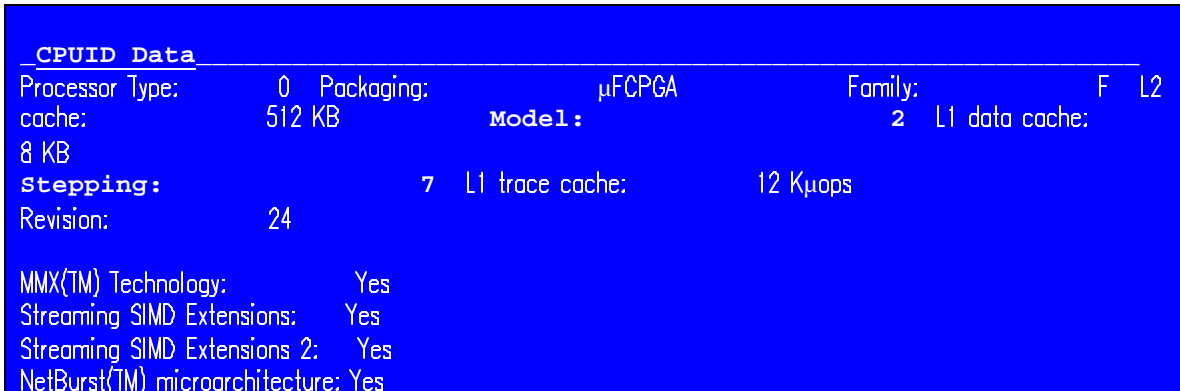

11) From this screen you can determine your processor stepping information. If you have one of the affected model types listed above, you can identify your CPU by referring to the CPU Model and CPU Stepping values. A **CPU Model** value of 2 and a **CPU Stepping** value of 7 correspond to a C1 CPU. A **CPU Model** value of 2 and a **CPU Stepping** value of 4 correspond to a B1 CPU.

Installing the DOS based utility

To determine what revision Intel CPU is currently installed using only a DOS boot diskette, refer to the following process:

1) Download the DOS utility from the following location: http://downloadfinder.intel.com/scripts-df/Detail_Desc.asp?strState=LIVE&ProductID=49&DwnldID=3088
2) Save the self-extracting zip file **bfid_e16.exe** from the above link to a temp directory on your hard drive. (e.g., C:\TEMP)
3) After the file has finished downloading, insert a blank 1.44MB floppy into your FDD drive. **Important:** the floppy disk must contain no other files
4) Launch the bfid_e16.exe to extract the contents. The files contained within this file will all be extracted to the current directory. If you launched the file from C:\TEMP, all of the files contained within this archive will be extracted to C:\TEMP.
5) Launch the newly extracted file, **SETUP.BAT**. This will copy 4 files to your floppy disk, and make the diskette bootable.
6) Remove the diskette from your host system, and place the diskette into the bootable FDD drive of the system you would like to check the CPU revision information.
7) At boot time, the diskette will automatically launch the information utility. After accepting the license agreement, you will see output similar to the following:

```
_CPUID Data_____
Processor Type:      0   Packaging:              µFCPGA           Family:               F  L2
cache:            512 KB          Model:                          2   L1 data cache:
8 KB
Stepping:                       7   L1 trace cache:              12 Kµops
Revision:         24

MMX(TM) Technology:          Yes
Streaming SIMD Extensions:     Yes
Streaming SIMD Extensions 2:   Yes
NetBurst(TM) microarchitecture: Yes
```
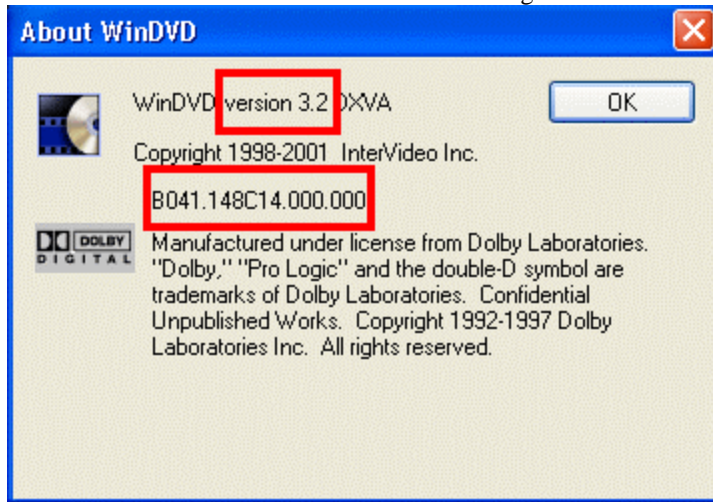
8) From this screen you can determine your processor stepping information. If you have one of the affected model types listed above, you can identify your CPU by referring to the CPU Model and CPU Stepping values. A **CPU Model** value of 2 and a **CPU Stepping** value of 7 correspond to a C1 CPU. A **CPU Model** value of 2 and a **CPU Stepping** value of 4 correspond to a B1 CPU.

Appendix B. – Determining InterVideo WinDVD version

To determine what version of InterVideo WinDVD currently installed, refer to the following process:

1) Click **Start**, select **Programs**, select **InterVideo WinDVD**, and then click **InterVideo WinDVD**. The DVD player should open at this time.
2) Right click in the main **DVD Player Panel**, and click **About**. An information window will open at this time.

3) You can determine the version from the following screen:

4) The numbers displayed after the text **WinDVD version** represents the major version. In the above graphic, this is version 3.2. The numbers displayed below the Copyright notice represent the minor version. In the above graphic, the minor version is B041.148C14.000.000. Taking a portion of the minor version, and then combining this with the major version number will provide the full version information. In the above graphic the reported full version is 3.2-B041.148.

Appendix C. – Changes in ThinkPad preload

<u>T30 – Preload updates</u>
The following list details the changes that will be introduced on ThinkPad T30 model(s) 2366 shipping after September, 2002.

Updated drivers: All drivers have been updated to the latest level available on the web. Drivers can be downloaded from the following location: http://www.pc.ibm.com/qtechinfo/TPAD-MATRIX.html

Updated applications: The following list details applications that were already installed in the previous version of the preload, but have been updated to a more recent version.

Note: Optional components infer that this component is not a mandatory update to continue proper functionality of the system. Mandatory components must be updated to ensure a stable operating environment.

Updated Applications:	Mandatory/Optional
ThinkPad Software Installer	Optional
Access ThinkPad	Optional
IBM Enhanced Diagnostics	Optional
Access Support Connected Client	Optional
Naviant Registration	Optional
Acrobat Reader	Optional
ConfigSafe	Optional
ThinkPad Utility Features	Optional
Intervideo WinDVD	**Mandatory**
Verital Record Now	Optional

New components: The following list details preload components which were not included in the previous version of the preload, but have been added to the most recent version.

Note: Optional components infer that this component is not a mandatory update to continue proper functionality of the system. Mandatory components must be updated to ensure a stable operating environment.

New Components:	Mandatory/Optional
Repair Diskettes – Windows 2000	Optional
Rapid Restore PC	Optional
IBM Rapid Restore PC Applet	Optional
Service Partition Enabler	Optional
WinXP QFE – Q318773 (USB Devices fix)	Optional
Win2K QFE – Q206455 (Can't record audio)	Optional
WinXP QFE – Q311455 (Cold swap fix)	Optional
Win 98 QFE – Q189591 (USB Device resume fix)	Optional
Win 98 QFE – Q305037 (Pwr mgmt update)	Optional

R32 – Preload updates

The following list details the changes that will be introduced on ThinkPad R32 model(s) 2658, 2659, and 2677 shipping after September, 2002.

Updated drivers: All drivers have been updated to the latest level available on the web. Drivers can be downloaded from the following location: http://www.pc.ibm.com/qtechinfo/TPAD-MATRIX.html

Updated applications: The following list details applications that were already installed in the previous version of the preload, but have been updated to a more recent version.

Note: Optional components infer that this component is not a mandatory update to continue proper functionality of the system. Mandatory components mu st be updated to ensure a stable operating environment.

Updated Applications:	Mandatory/Optional
Intervideo WinDVD	**Mandatory**
Veritas Record Now	Optional

New components: The following list details preload components which were not included in the previous version of the preload, but have been added to the most recent version.

Note: Optional components infer that this component is not a mandatory update to continue proper functionality of the system. Mandatory components must be updated to ensure a stable operating environment.

New Components:	Mandatory/Optional
Rapid Restore PC	Optional
IBM Rapid Restore PC Applet	Optional
Service Partition Enabler	Optional
WinXP QFE - Q317087 (UDMA dock suspend fix)	Optional
WinXP QFE - Q318358 (Cardbus from suspend fix)	Optional
WinXP QFE - Q309521 (IE/PNP Security update)	Optional
WinXP QFE - Q312131 (OOBE Intl Settings)	Optional

A31 – Preload updates

The following list details the changes that will be introduced on ThinkPad A31 model(s) 2652, 2653, 2654 shipping after September, 2002.

Updated drivers: All drivers have been updated to the latest level available on the web. Drivers can be downloaded from the following location: http://www.pc.ibm.com/qtechinfo/TPAD-MATRIX.html

Updated applications: The following list details applications that were already installed in the previous version of the preload, but have been updated to a more recent version.

Note: Optional components infer that this component is not a mandatory update to continue proper functionality of the system. Mandatory components must be updated to ensure a stable operating environment.

Updated Applications:	Mandatory/Optional
Intervideo WinDVD	**Mandatory**
Veritas Record Now	Optional

New components: The following list details preload components which were not included in the previous version of the preload, but have been added to the most recent version.

Note: Optional components infer that this component is not a mandatory update to continue proper functionality of the system. Mandatory components must be updated to continue

New Components:	Mandatory/Optional
Rapid Restore PC	Optional
IBM Rapid Restore PC Applet	Optional
Service Partition Enabler	Optional