Avid Configuration Guidelines
HP Z400 Single 6-Core / Quad-Core CPU Workstation
Gen2 Z400 – (6 DIMM / Embedded 1394a Firewire version)
Media Composer 6.0, NewsCutter 10 and later
(To configure a Z400 for prior versions of Avid software see the earlier version Z400 guide posted on the Avid KB)

1.) HP Z400 AVID Qualified System Specification:

Z400 / AVID Qualified Operating System choices:

- Microsoft® Windows 7 Professional 64-bit Edition with Service Pack 1

Z400 Hardware Configuration

Qualified CPU Choices

1.) Single Intel® 6-Core Xeon® W3680 Processor @ 3.33GHz 12MB cache / 1333MHz memory*

2.) Single Intel® Quad-Core Xeon® W3550 Processor @ 3.06GHz 8MB cache / 1066MHz memory

3.) Single Intel® Quad-Core Xeon® W3540 Processor @ 2.93GHz 8MB cache / 1066MHz memory^^

^^*This processor selection has gone End-of-Life and is no longer available in new systems being purchased from H.P.*

***CPU Codec performance constraints**

The 3.33GHz W3680 6-core CPU is a mandatory Z400 requirement for support of the XDCAM HD 50 codec operation / capabilities in Media Composer / NewsCutter

*Video Card Choices***

1.) NVIDIA Quadro 2000 1GB PCI-e video board

2.) NVIDIA Quadro FX 3800 1GB PCI-E video board

System Hard Drive

- 320GB SATA-II 3Gb/s 7200RPM Hard Disk Drive (Minimum Recommendation)

Memory Configurations

- Memory: (3 supported configurations)

  a.) Memory: 6GB (3 x 2GB) DDR3 1333 ECC memory –
  (Requires three 2GB DIMMs, DIMM sizes cannot be mixed sizes)

  2GB memory modules must be installed in the following memory slots:
  CPU0-DIMM1, CPU0-DIMM3, CPU0-DIMM5

  b.) Memory: 12GB (6 x 2GB) DDR3 1333 ECC memory –
  (Requires six 2GB DIMMs, DIMM sizes cannot be mixed sizes)

  2GB memory modules must be installed in the following memory slots:
  CPU0-DIMM1, CPU0-DIMM2, CPU0-DIMM3, CPU0-DIMM4, CPU0-DIMM5, CPU0-DIMM6

  c.) *** Memory: 6GB (6 x1GB) DDR3 1333 ECC memory –
  (Requires six 1GB DIMMs, DIMM sizes cannot be mixed sizes)

  1GB memory modules must be installed in the following memory slots:
  CPU0-DIMM1, CPU0-DIMM2, CPU0-DIMM3, CPU0-DIMM4, CPU0-DIMM5, CPU0-DIMM6

  *** This Config has the disadvantage that it cannot be expanded, the existing 1GB modules would all need to be removed and replaced with 2GB modules

Memory configuration constraints
No other memory configurations are recommended in Gen2 Z400 AVID environments. Only the 3 described configurations are supported. Memory configurations which mix and match memory module sizes and locations will result in a poor performing, non-optimal Avid editing operating environment.

2.) Qualified Operating Systems for Avid Client Editing Applications, Hardware and Shared-Storage connectivity with the HP Z400:

1. **Supported: Only Microsoft® Windows 7 Professional 64-bit Edition with SP1 (SP1 required)**

1. **Not Supported - Microsoft® Windows XP 32-bit, 64-bit (any version)**
2. **Not Supported - Microsoft® Windows Vista 32-bit, 64-bit (any version)**
3. **Not Supported - Microsoft® Windows 7 – any 32-bit version, or any version of Home, Ultimate or Enterprise editions.**

Note regarding Service packs:

As of this writing Service Pack 1 is the current Service Pack release for Win7. SP1 is required for Media Composer 6.0 and NewsCutter 10. As future Service Packs are released Avid will evaluate and announce formal support when testing is completed.

3.) Qualified Hardware and shared storage supported:

AVID qualified Hardware / Shared Storage

	Qualified / Supported
Mojo DX	Yes
Nitris DX	Yes
3rd Party Qualified Hardware (vendor qualified)	See release notes and Avid website for information regarding supported 3rd party hardware (vendor qualified)
Unity ISIS System Infrastructure	ISIS 1.4 Infrastructure
Unity ISIS 1 Gbit Ethernet Client	ISIS 2.03 Client
Unity ISIS Hi-res (10 Gbit) client	**Requires minimum ISIS 2.2** (ISIS 7000 only)
Unity MediaNet Infrastructure	MediaNet 4.2.4 Infrastructure
Unity MediaNet Fibre	MediaNet 5.1.2 Client
Unity MediaNet AECIFs	MediaNet 5.1.2 Client
1394 Adrenaline DNA	**N/A Not Supported**
1394 Mojo-SDI DNA	**N/A Not Supported**
1394 Mojo-Analog DNA	**N/A Not Supported**

AVID qualified HBA info

AVID qualified HBA	AVID Part Number	Slot	Function
Avid HIB, DX Interface HBA**	Active: 7030-30048-01 Active: 7030-20084-01 Passive: 7030-30021-01	#1	Avid DX Hardware Interface HBA
Qualified 3rd party hardware interface (vendor qualified)	Not stocked by AVID	#1	See release notes and Avid website for information regarding supported 3rd party hardware (vendor qualified)
Atto FC-41ES***	7030-20004-01	#3	Shared Storage: MediaNet LAN-Share Fibre
Intel PRO 1000 PT - ISIS	7030-20139-01	#3	Shared Storage: Unity ISIS Copper Gb-Ethernet
Intel PRO 1000 PF - ISIS	Not stocked by AVID	#3	Shared Storage: Unity ISIS Optical Gb-Ethernet
Myricom 10G-PCIE-8B-S*** **Requires minimum ISIS 2.2** (ISIS 7000 only)	7030-30041-01	#4	Shared Storage: Unity ISIS 10Gb-Ethernet **Requires minimum ISIS 2.2** (ISIS 7000 only)
LSI 9200-8e SAS controller	7030-30036-01	#4	SAS Local Storage: Xtore StudioRAID 16Re (16-bay) chassis Xtore StudioRAID 5Te (5-bay) chassis
Atto H680	7030-30028-01	#4	SAS Local Storage – Avid VideoRAID SR (16-bay)
Atto R380	7030-20166-01	#4	SAS Local Storage –Avid VideoRAID ST (5-bay) and Xtore StudioRAID 5Ti (5-bay) chassis
Atto UL5D	7030-20002-01	#4	Local Storage – VideoRAID RTR & Legacy Avid u320 SCSI storage *(The UL5D BIOS should be disabled)*

Specific Important qualified HBA Support Notes

**** ***Avid DX Interface HBA Support Note: (See reference pictures on page 9 of this guide).***

All 3 versions of the DX interface HBA are supported with the Media Composer 6.x and NewsCutter 10.x

1) Active DX interface HBA 7030-30048-01
2) Active DX interface HBA 7030-20084-01
3) Passive DX interface HBA 7030-30021-01

**** ***Atto FC-41ES HBA Support Note:.***

1) The Z400 requires a Rev D or later version FC-41ES. The board revision is clearly marked on a label on the back of the FC-41ES. Earlier revisions (A, B and C) of the FC-41ES may demonstrate compatibility issues when used with the Z400 including not being recognized by the Z400 CPU.

**** ***Myricom 10G-PCIE-8B-S 10Gb Interface HBA Support Notes.***

1) Initial shared storage HBA's used in the Z400 resided in slot #3. However, the Myricom 10G-PCIE-8B-S must reside in slot #4 as this HBA requires the performance of the additional PCI-E lanes offered for slot#4. It will not function properly if used in slot #3. Using the Myricom 10G-PCIE-8B-S for ISIS 2.2.x connectivity will not allow for support of simultaneous connection to local storage in Z400 configurations as the local storage controllers must also reside in slot #4.

4.) Slot Configuration:

Slot Configuration Information			
Slot #	Electrical	Mechanical	
1	x4 PCI-E Gen 2 (25Watts)	x8	Avid HIB, DX Interface HBA Active: 7030-30048-01 & 7030-20084-01 Passive: 7030-30021-01 **OR** Vendor Qualified 3rd Party Hardware PCI-e Interface *See release notes and Avid website for information regarding supported 3rd party hardware (vendor qualified)*
2	x16 PCI-E Gen 2 (75Watts)	x16	Graphics Card: Quadro 2000 Quadro FX 3800
3	x4 PCI-E Gen 1 (25Watts)	x8	Shared Storage Controllers: Atto FC-41ES - MediaNet LAN Share Intel PRO 1000 PT - ISIS 5000 / 7000 Intel PRO 1000 PF - ISIS 5000 / 7000
4	x16 PCI-E Gen 2 (75Watts)	x16	Local Storage Controllers: Atto H680 – Avid SAS VideoRAID SR (16-bay) support Atto R380 – Avid SAS VideoRAID ST (5-bay) support Atto R380 – SAS Xtore StudioRAID 5Ti (5-bay) support LSI 9200-8e SAS Xtore 16Re (16-bay) support LSI 9200-8e SAS Xtore 5Te (5-bay) support Atto UL5D - Legacy u320 SCSI support OR Shared Storage Controller: Myricom 10G-PCIE-8B-S
5	PCI 32bit /33MHz	PCI 32/33	**Do Not Use.** Will cause BUS contention with embedded 1394 controller
6	PCI 32bit /33MHz	PCI 32/33	**Do Not Use.** Will cause BUS contention with embedded 1394 controller
	Embedded Broadcom BCM5764 GbE NIC	PCI-E x1 Gen 1	*Not qualified for Avid ISIS 5000 / 7000 Connectivity* *Qualified for Avid MediaNetwork AECIFs*

6.) Utilization of the Z400 embedded front panel 1394a Firewire IEEE port for Camera / Deck / Disk Drive support

- Embedded single-port PCI 1394a Firewire controller, ***connects only to Z400 front panel 1394a port.***

Media Composer 6.0 and NewsCutter 10 do not support Avid 1394 hardware such as Adrenaline and 1394 Mojo-SDI. This simplifies utilization of the Z400 embedded 1394 port. The embedded 1394 ports can and should be used for all 1394 Camera / Deck / Disk Drive connectivity for all configurations running Media Composer 6.0 and NewsCutter 10.

Configuration	**Embedded front panel 1394a port utilization for Camera / Deck / Disk Drive support**
Avid DX Hardware	**Yes** - Supports 1394 Deck / Camera / Disk Drive (1394 disk drives are recommended only for file transfers)
Software Only	**Yes** - Supports 1394 Deck / Camera / Disk Drive (1394 disk drives are recommended only for file transfers)
Vendor Qualified 3rd Party PCIe Hardware	**Yes** - Supports 1394 Deck / Camera / Disk Drive **However 3rd party hardware and a 1394 Camera or Deck cannot be simultaneously connected.** (1394 disk drives are recommended only for file transfers)

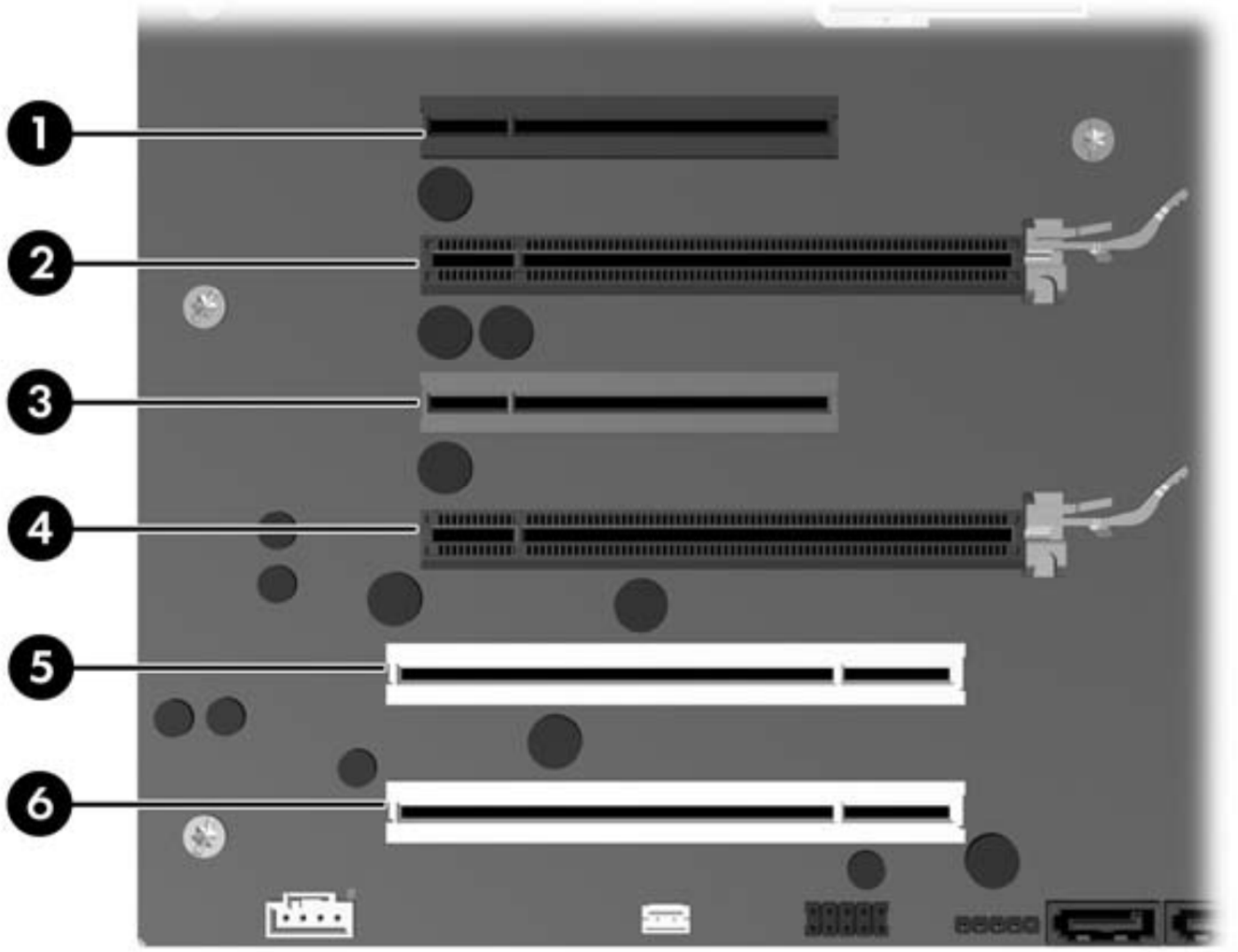
Primary 1394 connection for Deck / Camera / Disk Drive

Primary 1394 connection for Deck / Camera / Disk Drive
Embedded 1394a Controller Front Panel Connection

Embedded 1394a controller of the Gen2 Z400 does not have any 1394 ports on the rear of the chassis.

7.) HP Z400 I/O Slot Layout

HP Z400 Slot Layout



8.) Various Configuration Issues:

A.) D/X hardware configs –

All 3 versions of the DX interface HBA are supported with the Media Composer 6.x and NewsCutter 10.x releases

1) Active DX interface HBA 7030-30048-01
2) Active DX interface HBA 7030-20084-01
3) Passive DX interface HBA 7030-30021-01

Active DX interface HBA 7030-30048-01

Active DX interface HBA 7030-20084-01

Passive DX interface HBA (7030-30021-01)

B.) Qualified Avid system BIOS version(s): (As of this writing):

It is **mandatory** that the BIOS be updated to an "AVID Qualified" BIOS. *Failure to update the Z400 to an "Avid qualified BIOS" may result in non-optimal operation of the AVID software and hardware.*

Quad-Core CPU configurations:

- Minimum BIOS ver 1.06
- Also qualified ver 1.14, ver 1.17, ver 3.07, ver 3.12, ver 3.12, ver 3.15, ver 3.16, ver 3.19, ver 3.20, *ver 3.21 (preferred)*

6-Core CPU configurations:

- **Mandatory Minimum BIOS ver 3.12 ,** ver 3.15, ver 3.19, ver 3.20, *ver 3.21 (preferred)*

Current Avid qualified Z400 BIOS information is maintained at the following Avid KB link:

http://avid.custkb.com/avid/app/selfservice/search.jsp?DocId=267609&Hilite=hp+bios

Z400 Required system BIOS settings:

1. Set CPU Processors Hyper-Threading – Enable
2. Set Runtime Power Management – Disable
3. Set MWAIT-Aware OS – Disable
4. Set Idle Power Savings – Normal

Z400 Optional system BIOS change:

1. Set Intel Turbo Boost Technology** – Disable

** Only required if connecting USB audio I/O devices. This setting will eliminate any audio "motor-boating" or audio "popping" which may be experienced with USB audio I/O devices.

See Instructions on how to set Z400 BIOS settings on the next page:

Set Z400 Required system BIOS settings:

- During boot up press F10 at the HP splash screen to invoke Set Up.

- Select the Advanced tab

- Select Processors. <Enter>
- Select Hyper-Threading
- Default setting is Disable
    - Change this setting from Disable to Enable
- Hi F10 to save the Hyper-Threading setting

- Select the Power tab

- Select OS Power Management <return>

- Select Runtime Power Management

- Default setting is Enable
    - Change this setting from Enable to Disable

- Select MWAIT-Aware OS
- Default setting is Enable
    - Change this setting from Enable to Disable

- Select Idle Power Savings
- Default setting is Extended
    - Change this setting from Extended to Normal

- Hi F10 to save the Runtime Power Management, MWAIT-Aware OS, and Idle Power Savings

- Press F10 twice to Save

- Save Changes and Exit
- System will Reboot

Set Z400 Optional system BIOS setting:

- Select the Power tab
- Select Hardware Power Management <Enter>
- Select Intel Turbo Boost Technology
- Default setting is Enable
    - Change this setting from Enable to Disable
- Press F10 twice to Save
- Save Changes and Exit

C.) Nvidia Qualified Drivers:

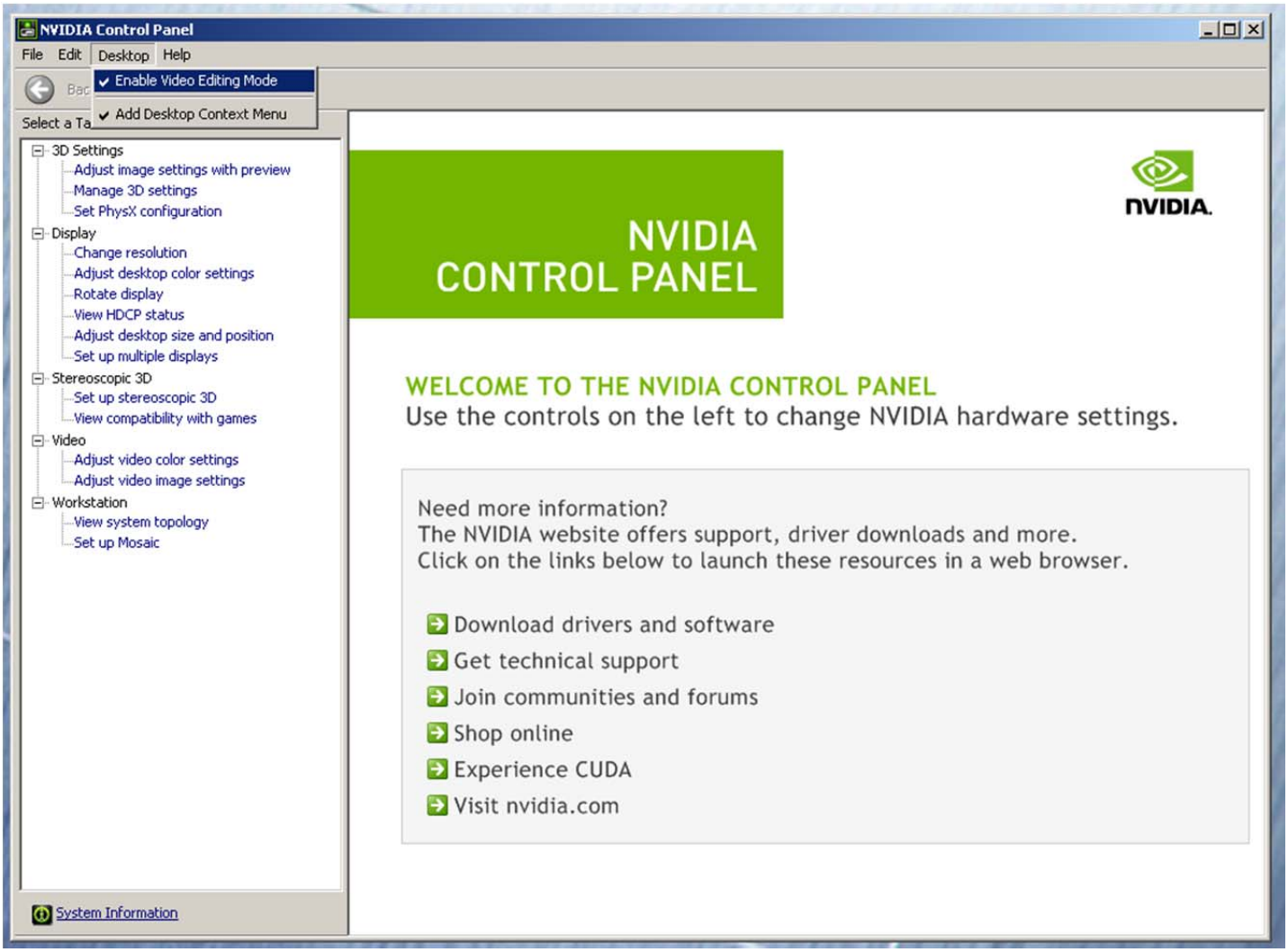
Nvidia qualified drivers

AVID Software	Version(s)	Nvidia GPU	Nvidia Driver Required
Media Composer	6.0 and later	Quadro 2000 Quadro FX 3800	275.89
NewsCutter	10.0 and later	Quadro 2000 Quadro FX 3800	275.89

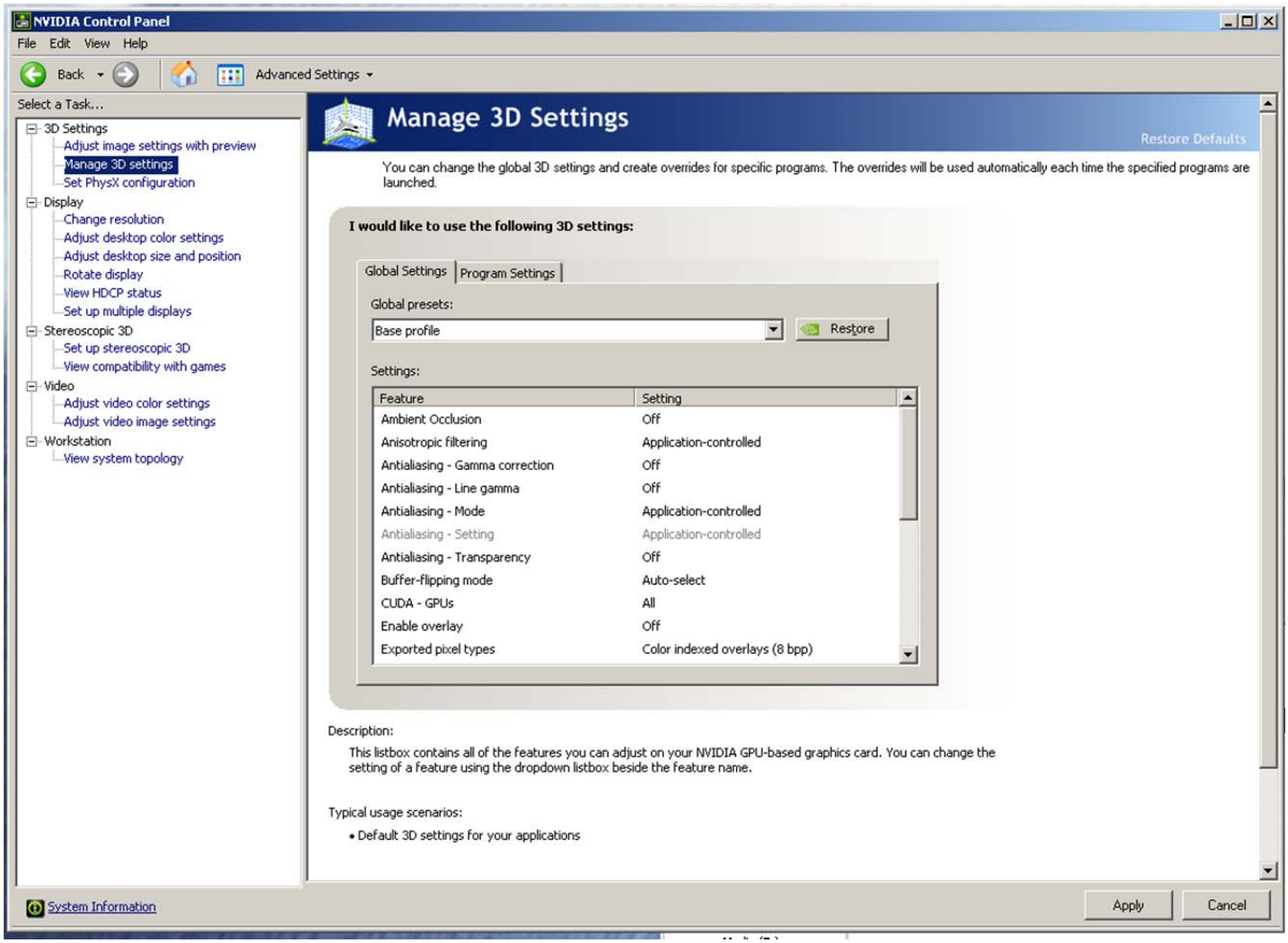
After installation of the AVID software the supported Nvidia driver can be found in the following directory:
Program Files / Avid / Utilities / Nvidia

Set optimized Nvidia driver settings for Avid editing environments:

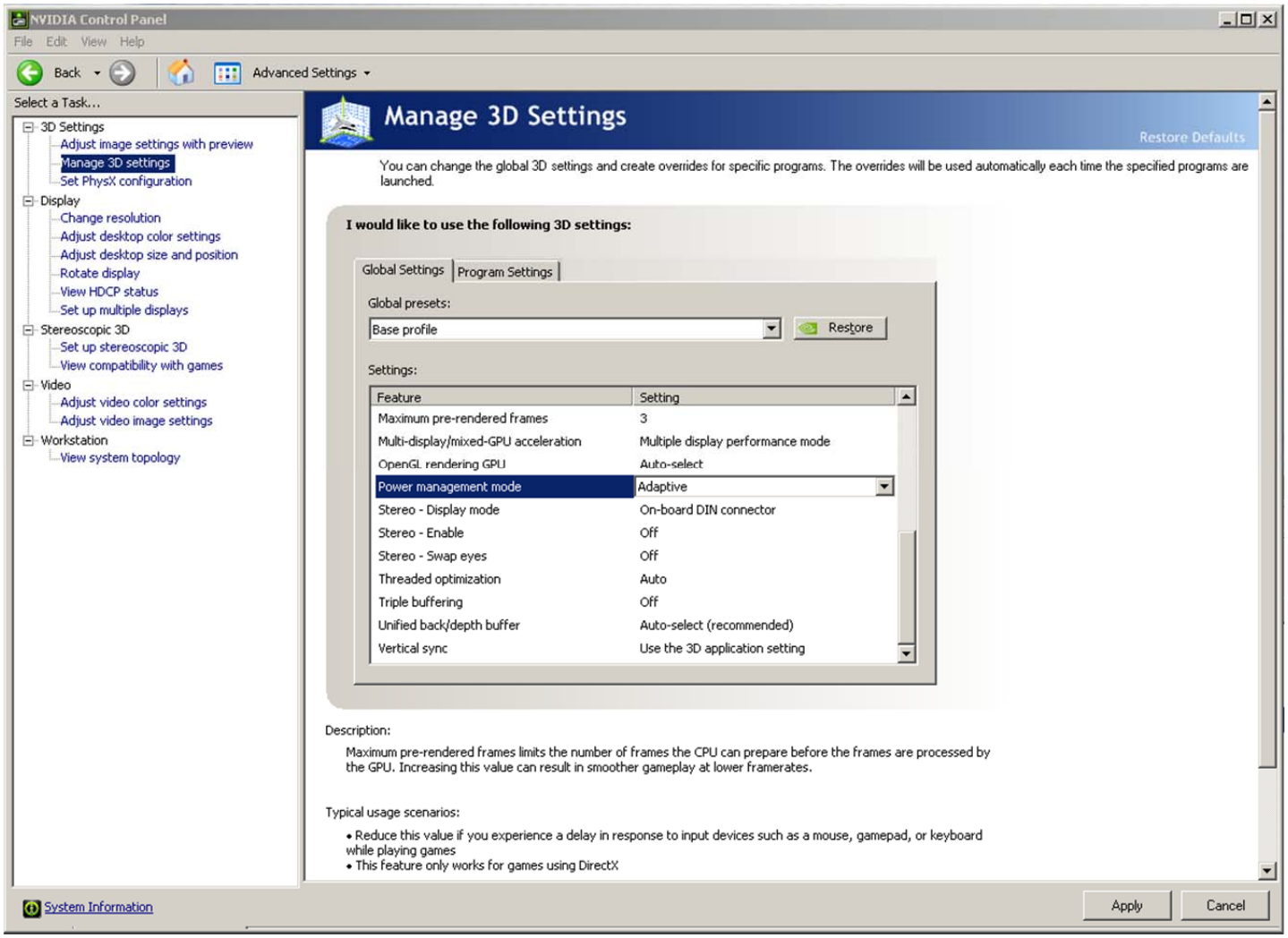
1. See picture below
2. Right-Click on the desktop and select Nvidia Control Panel
3. Select the “Desktop” menu selection in the control panel menu bar.
4. Enable “Desktop -> Video Editing Mode



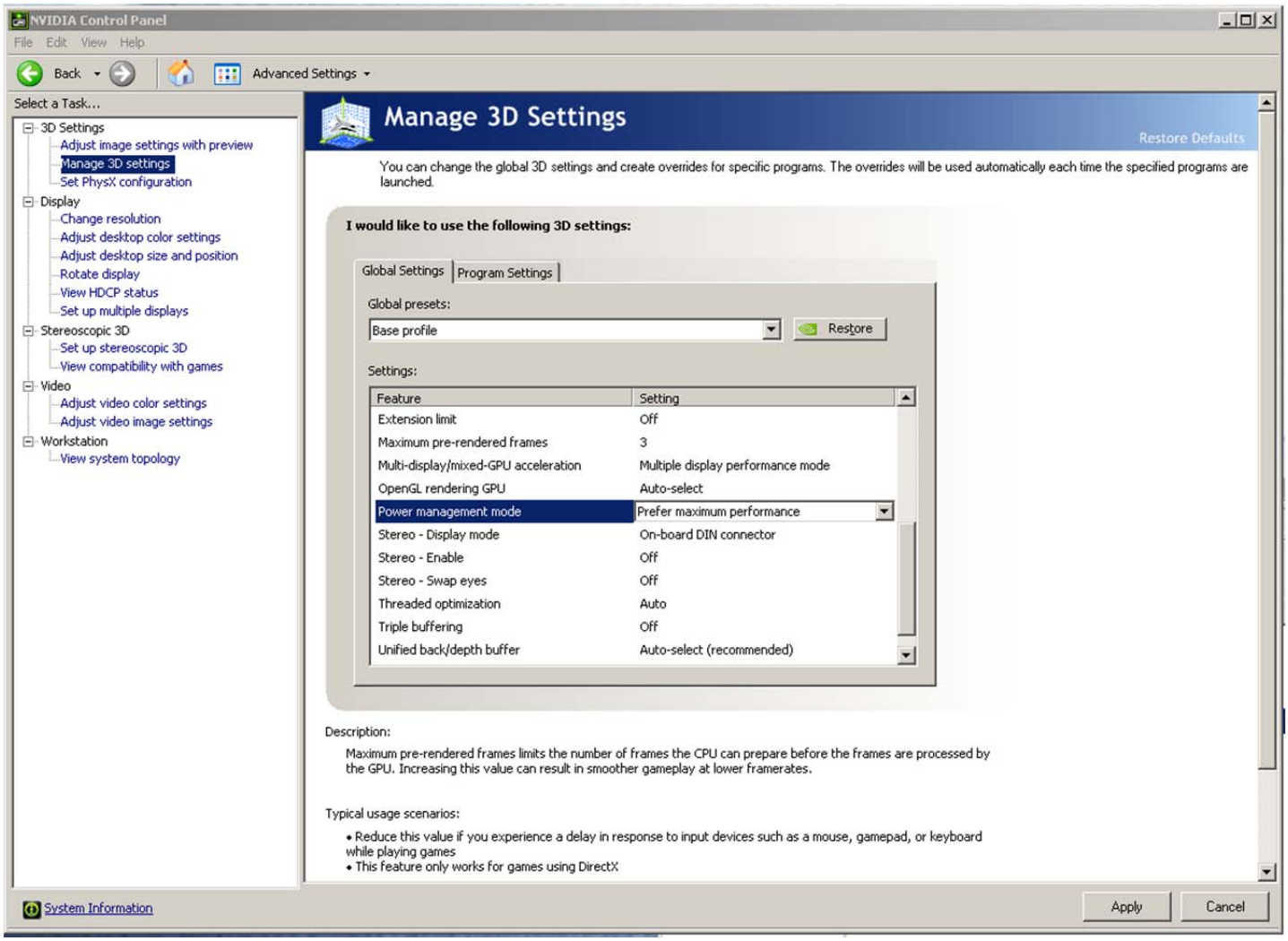
5. Select Manage 3D Settings
6. Select “Global Settings” Tab
7. Under the “Global Settings” tab select “Base Profile” as shown in the picture below:



8. Scroll down and locate the “Power Management Mode” feature. The default setting is “Adaptive” as shown in the picture below.



9. For the “Power management mode” feature, select “Prefer maximum performance” as shown in the picture below.



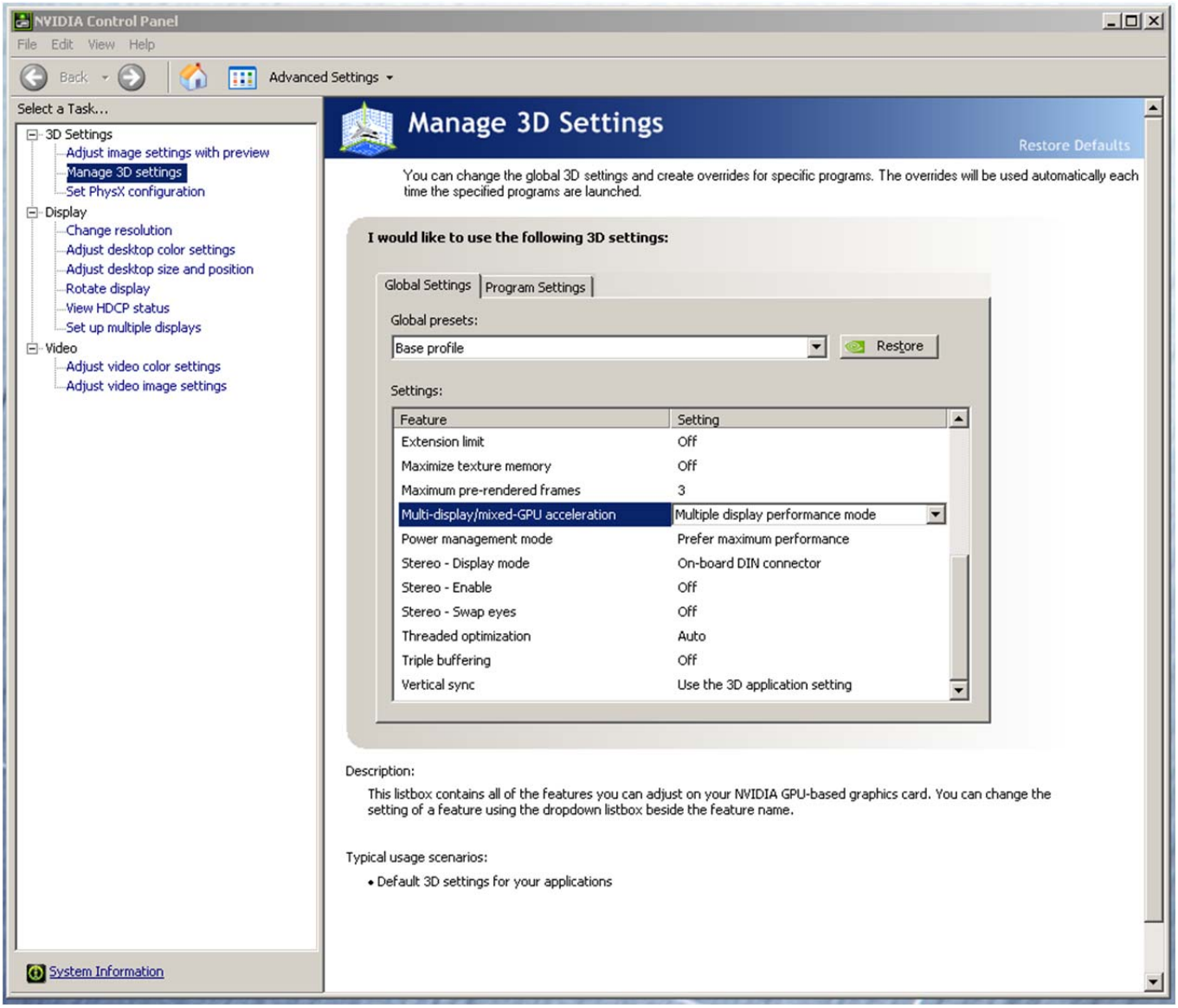
10. Depress the “Apply” button.

Make the following setting for “Multi-display/mixed-GPU acceleration”

11. Stay in the “Manage 3D Settings” and “Base Profile” area

12. Select “Global Settings” Tab

13. Scroll down and locate the “Multi-display/mixed-GPU acceleration” feature. See picture below. The setting should be set to “Multiple display performance mode”. If not set properly, select Multiple display performance mode and depress the “Apply” button. (The other settings are “Single display performance mode” and “Compatibility performance mode”. These settings are not recommended for Avid editing environments).

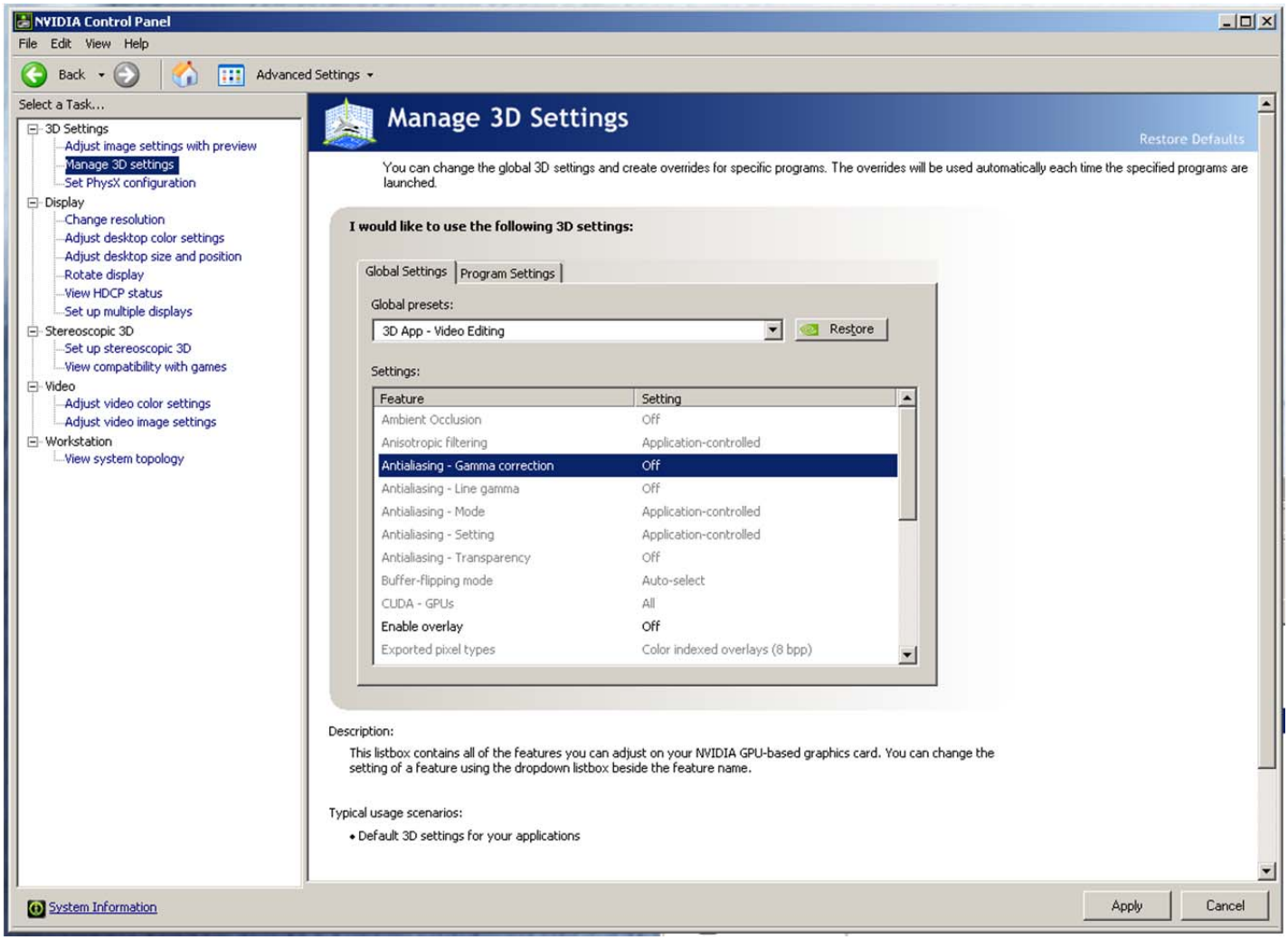


Make the following additional setting for “3D App-Video Editing”

14. Stay in the “Manage 3D Settings” area

15. Select “Global Settings” Tab

16. Under “Global Settings” tab select “3D App-Video Editing” setting as shown in picture below:



17. Depress the “Apply” button
18. Nvidia driver optimization settings for Avid environments are complete.

D.) Nvidia Quadro GPU monitor connectivity:

The Nvidia Quadro 2000 and Quadro FX 3800 graphics card have a single DVI port and two Display-Port ports

*(Important: Display-ports **are not** HDMI ports; at first glance they do look very similar to HDMI ports)*

(Please Note: Only two of the three video ports can simultaneously be used. Connecting to all three video ports at the same time will result in non-functioning video output from the Nvidia GPU video card.)

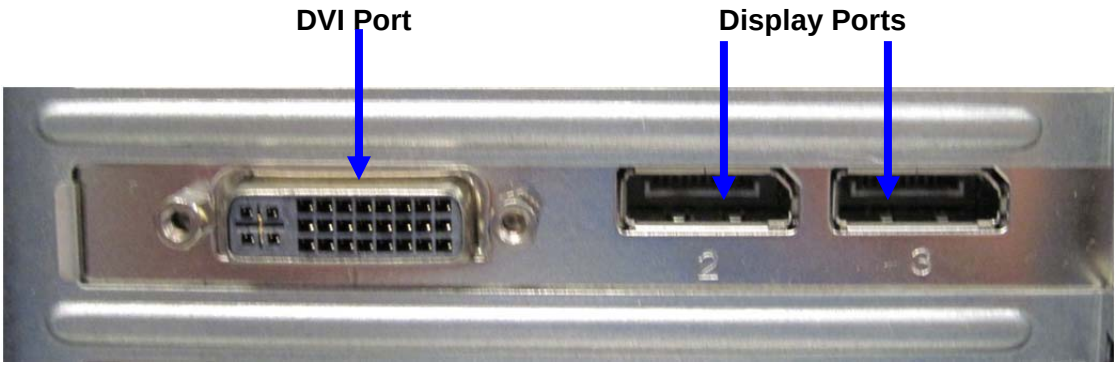
The HP Z400 includes one Display-Port-to-DVI adapter. HP P/N 481409-001

For dual monitor connectivity:

1. Use the DVI port and one Display-Port (Display-Port connection can be native display-port to monitor via display-port connection, or use the display-port-to-DVI-adapter supplied with the system to connect to a native DVI monitor).

2. Or use two Display-Ports (Requires monitors with native display-port connections, two display-port to DVI adapters are not recommended when using dual display-port connections).

Reference picture Quadro FX 3800 (similar to Quadro 2000)



E.) Serial Port Deck Control:

The HP Z400 workstation does not have an embedded serial port. Serial port deck control can be established via two methods (both of which have been qualified by Avid and will maintain frame accuracy in Avid environments)

1. Addenda model **RS-USB / 4** direct USB-to-RS422 serial adapter. This is a simple device which connects directly from a USB port of the Z400 directly to the RS422 port of a deck.
   http://www.addenda.com/addenda-elect/products/rsUSB4.php

2. Combination of a Keyspan (Tripp-Lite) Model USA-19HS USB-to-serial-port adapter with Addenda Rosetta Stone model RS – 2/8 RS232-to-RS422 converter

   - Keyspan (Tripp-Lite) Model USA-19HS (AVID P/N 7080-20013-01)
     http://www.tripplite.com/en/products/model.cfm?txtSeriesID=518&EID=13384&txtModelID=3914
   - Addenda Rosetta Stone (or equivalent) model RS – 2/8 RS232-to-RS422 converter (AVID P/N 7070-00507-01)
     http://www.addenda.com/addenda-elect/products/rs28.php

To connect the Keyspan 19HS / Addenda RS -2/8 combination:

- Install the Keyspan 19HS driver before plugging the device into a Z400 USB port.
- Once the Keyspan 19HS driver is installed then plug the Keyspan 19HS into a Z400 USB port.
- The Keyspan 19HS will now show up in device driver.
- Using a serial cable, connect the 9-pin serial port of the Keyspan 19HS USB adapter to the port of the Addenda marked RS232 from PC
- Using a 2nd serial port cable connect the port of the Addenda marked “RS422 to VTR” to the deck control serial port of the deck.

F.) O.S. setting recommendations for optimum performance with Avid Editing applications:

The following links provide O.S. setting suggestions for ensuring optimum performance when working with your Avid editing application with a Windows operating system.

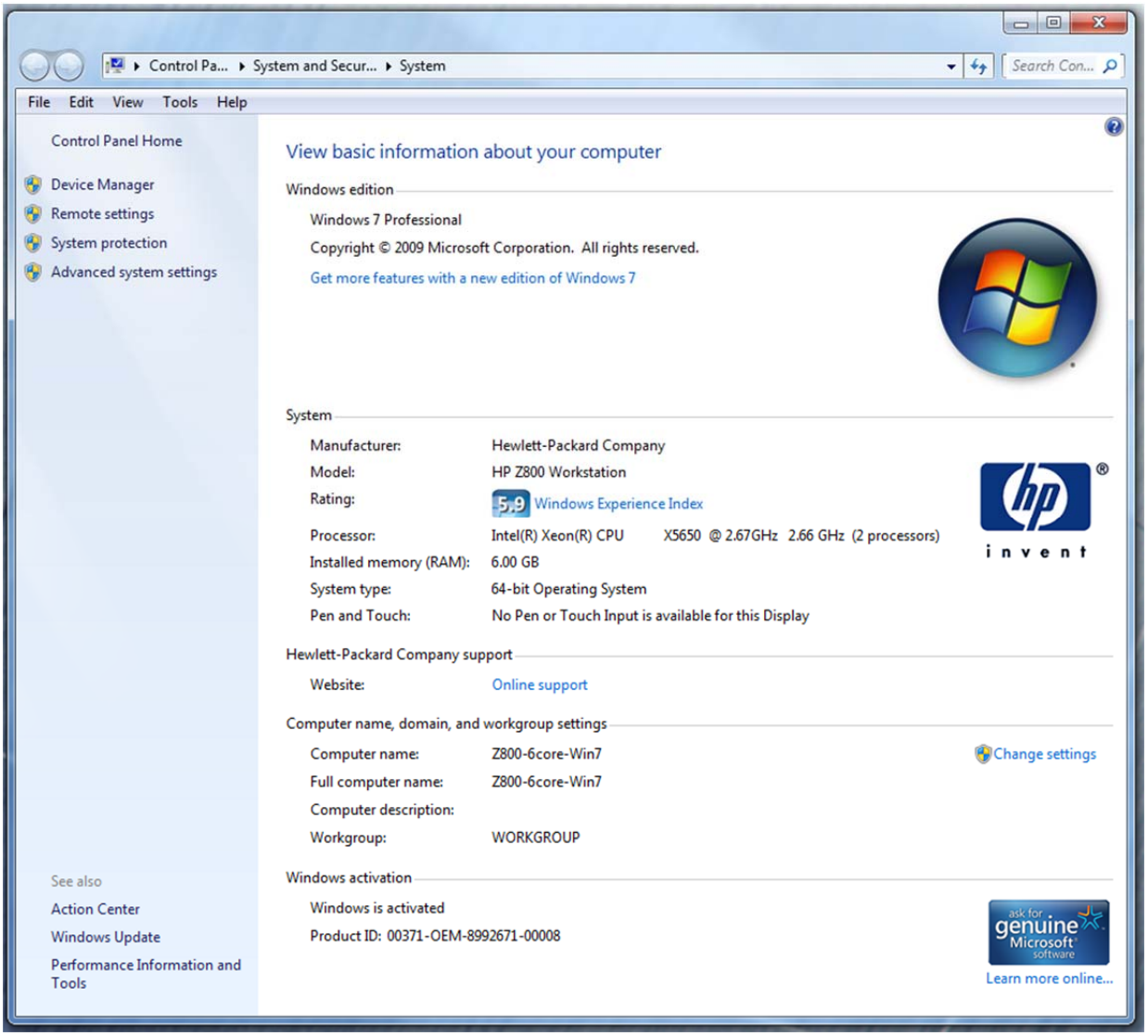
- Optimizations for Video Editors - Windows 7

  http://avid.custkb.com/avid/app/selfservice/search.jsp?DocId=390339

G.) Set Windows “Visual Effects” for “best performance”:

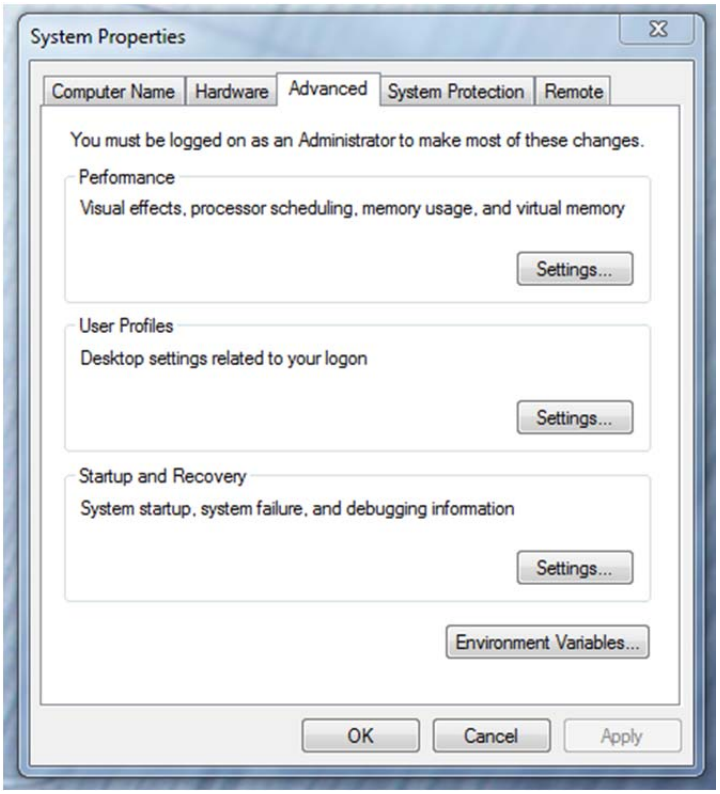
(Please Note: Windows 7 screen shots shown for reference. WinXP and Vista screens will vary).

1. Right-Click on My Computer / Computer
2. Select Properties
3. The screen below will be displayed:

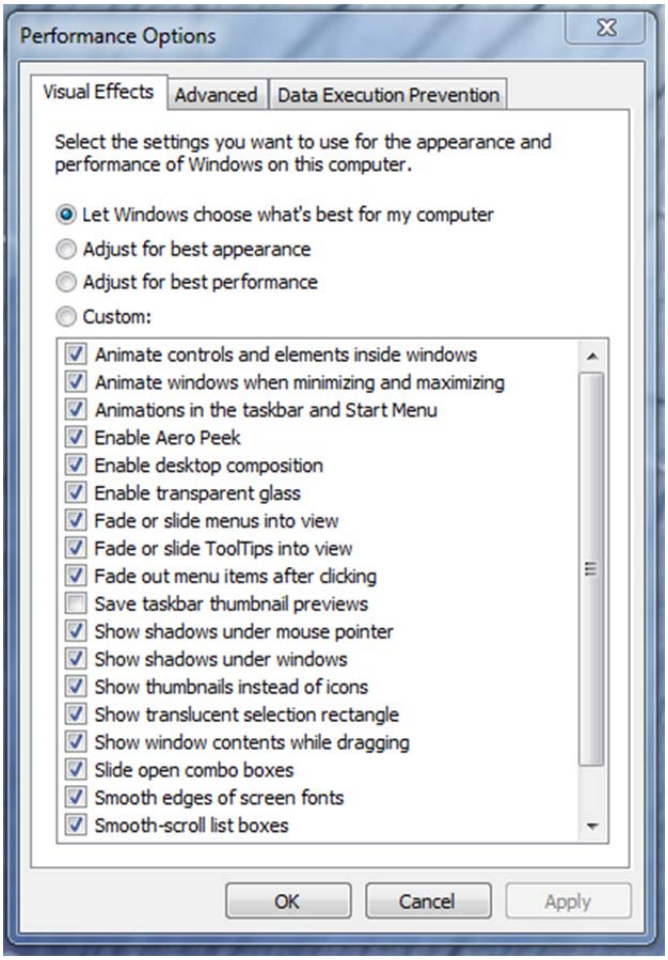


4. On the left side of the screen above, locate and select “Advanced system settings”

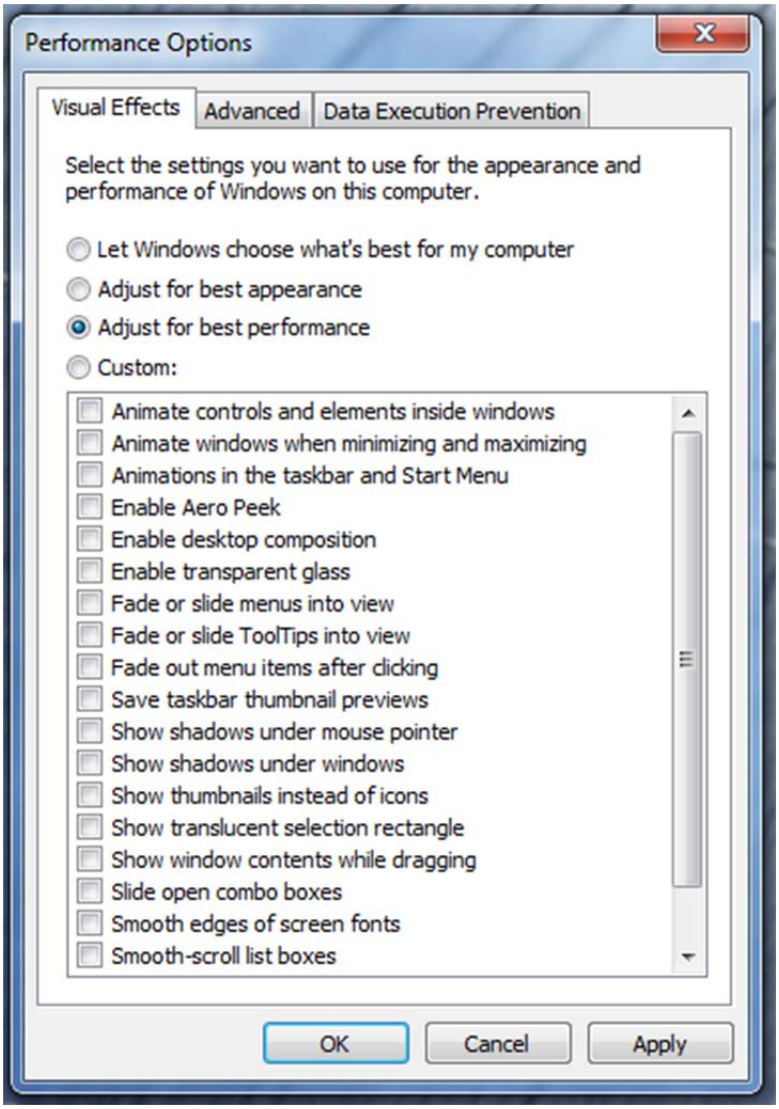
5. The System properties window will be displayed. (Picture below).



6. Under the “Advanced” tab depress the “Settings...” button for performance.
7. The “performance Options” window will be displayed. (Picture below).



8. Under the “Visual Effects” tab select the “Adjust for best performance” selection. (Picture below).



9. Depress the “Apply” button
10. Reboot Windows
11. Required Windows visual performance settings for Avid environments are now complete.

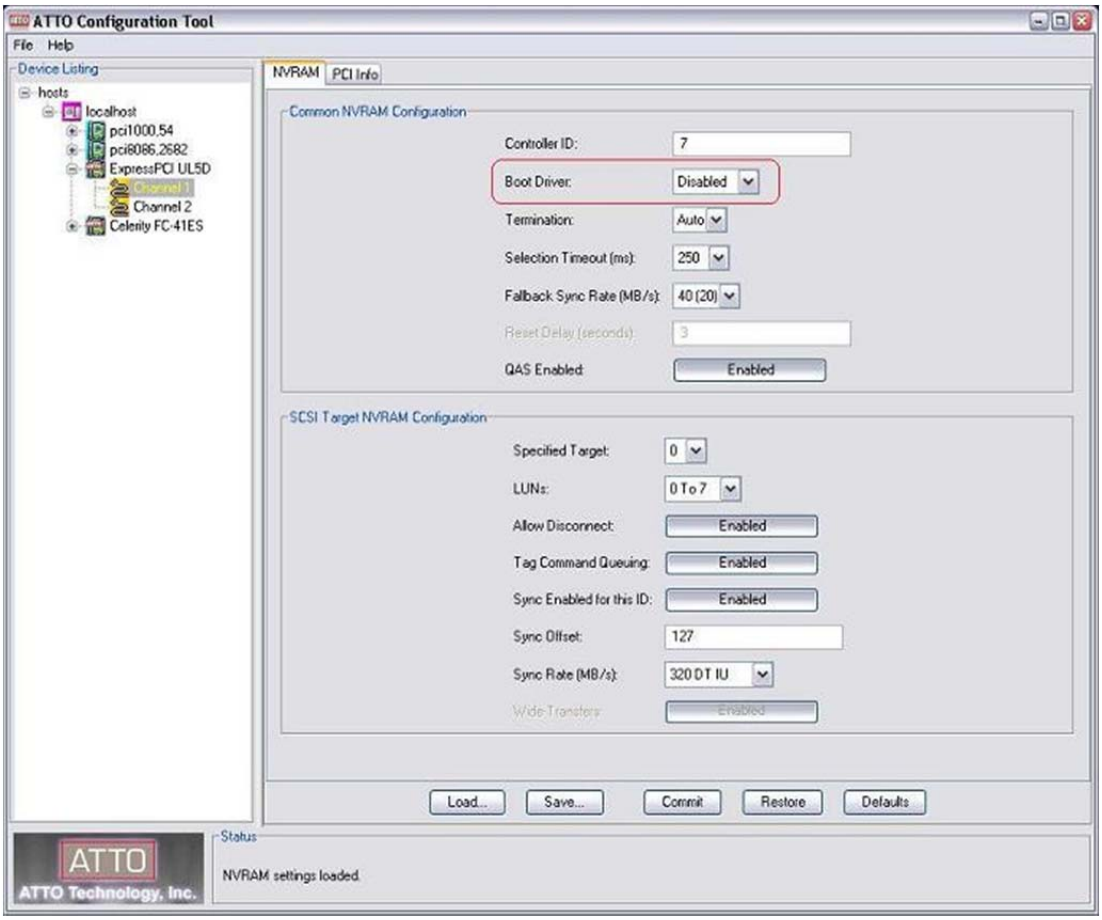
H.) **ATTO UL5D issue:** When an ATTO UL5D PCI-E u320 SCSI controller is installed in slot #5, the UL5D BIOS must be disabled or the following warning may be reported during system boot: (Also the UL5D BIOS must be disabled for proper operation when connected to an AVID VideoRAID RTR u320 SCSI).

110 – Out of memory space for option ROMS.
The option ROM for the following device was unable to run due to memory constraints. If you choose to continue, one or more PCI devices may not work properly

To disable the UL5D BIOS and eliminate the above warning, perform one of the following:

A. AVID Knowledge Base article 273945,
http://avid.custkb.com/avid/app/selfservice/search.jsp?DocId=273945&Hilite=UL5D

Install Atto UL5D configuration tool and launch the software.
Expand the Express PCI UL5D menu, and click on Channel.
The Boot Driver has to be disabled on both channels of the UL5D.
Configure the UL5D per this screenshot, and do this for both Channel 1 and Channel 2



B. Or during system boot perform the following:

1. Reboot the system
2. Hit "Escape" to clear the HP splash screen
3. Hit Ctrl-Z when the following Atto UL5D BIOS message prompts
   ```
   ************************************************
   ** ATTO ExpressPCI ™ Version 2.10 **
   ***** Press [Ctrl + Z] for Setup Utility *****
   ```
4. Select 1 - Adapter menu
5. Select 2 - Configure Both Adapter Channels
6. For ver 2.10 firmware
   - Select Host Adapter BIOS
   - Select "Disabled" using [Page Up] / [Page Down]
7. For ver 2.27 firmware
   - Select Boot Driver
   - Select "Disabled" using [Page Up] / [Page Down]
8. Press "ESC"
9. Press "ESC"
10. Select 4 – Save Parameters and Exit

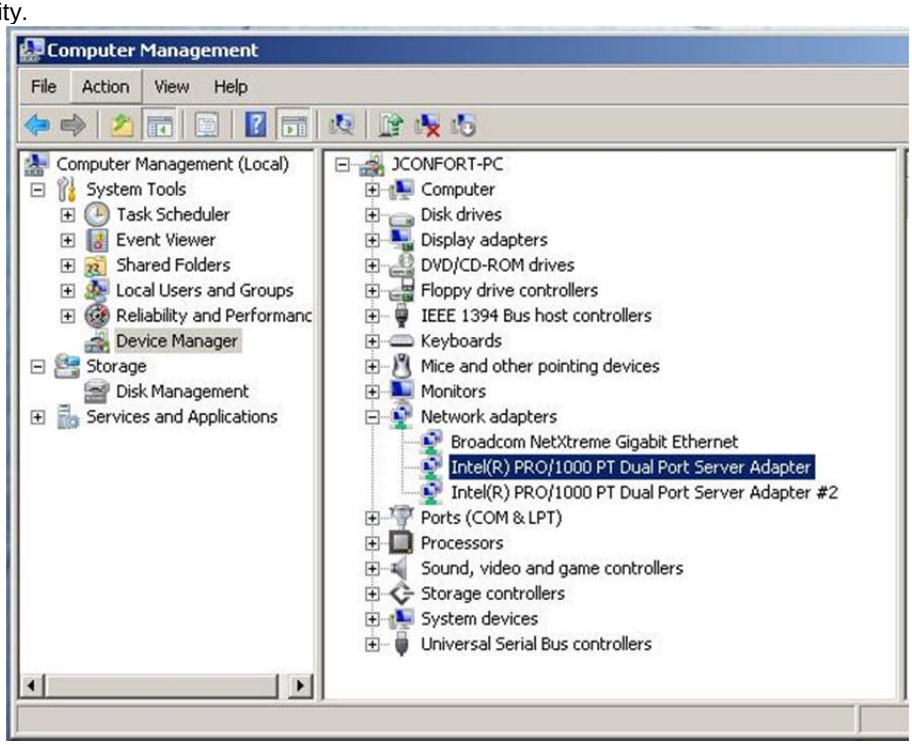
I.) **<u>Intel PRO 1000 PT for ISIS connectivity:</u>** For proper operation and connectivity of the Intel PRO 1000 PT with ISIS the following are required:

1. For the Intel PRO 1000 PT driver, under the performance settings, change the following parameters:
   - Receive Buffers to 1024
   - Transmit Buffers to 1024

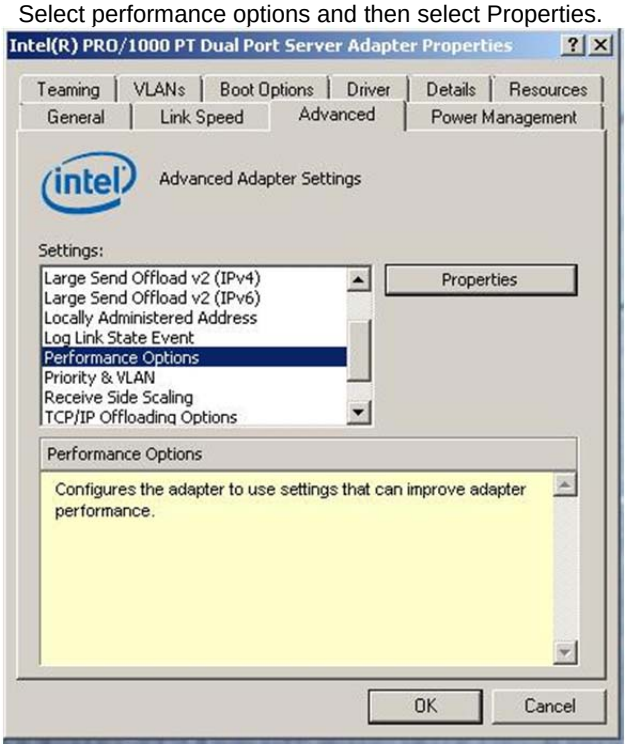
2. Disable the windows firewall.

Intel PRO 1000 PT Driver: The proper driver can be found in the ISIS software directory: Tools_3rdParty / Drivers_and_Firmware

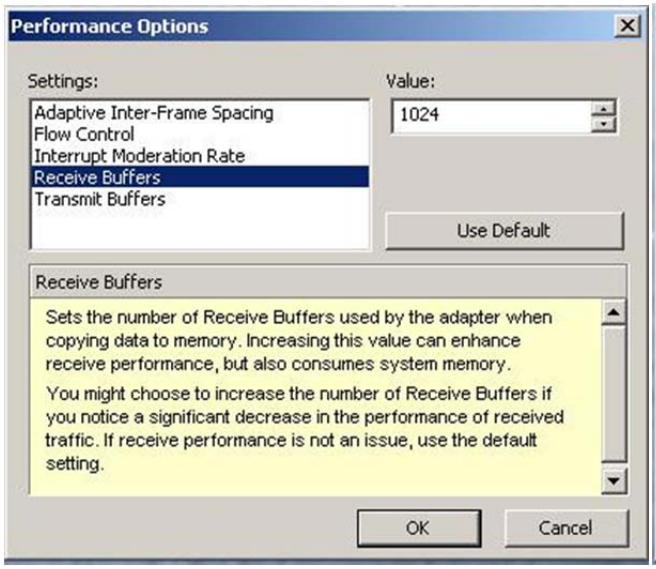
<u>To set the Intel PRO 1000 PT Receive / Transmit buffers:</u>
Go to device manager and select each instance of the device named Intel(R) PRO/1000 PT Dual Port Server Adapter which will be used for ISIS connectivity.



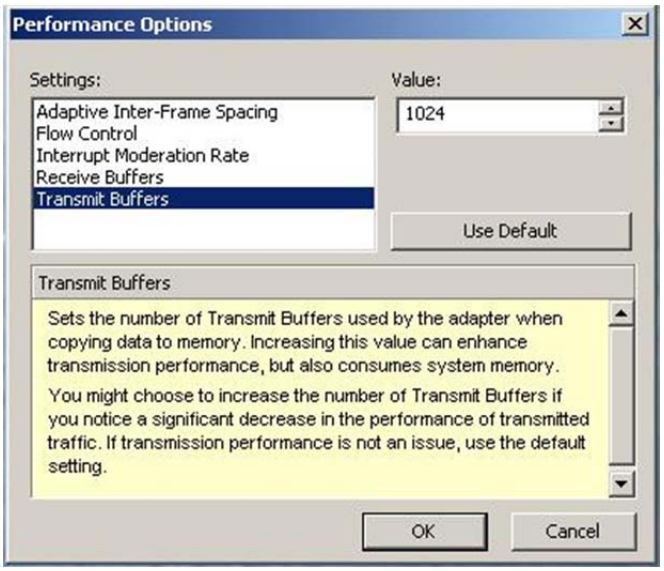
Select performance options and then select Properties.



Set Receive Buffers to 1024



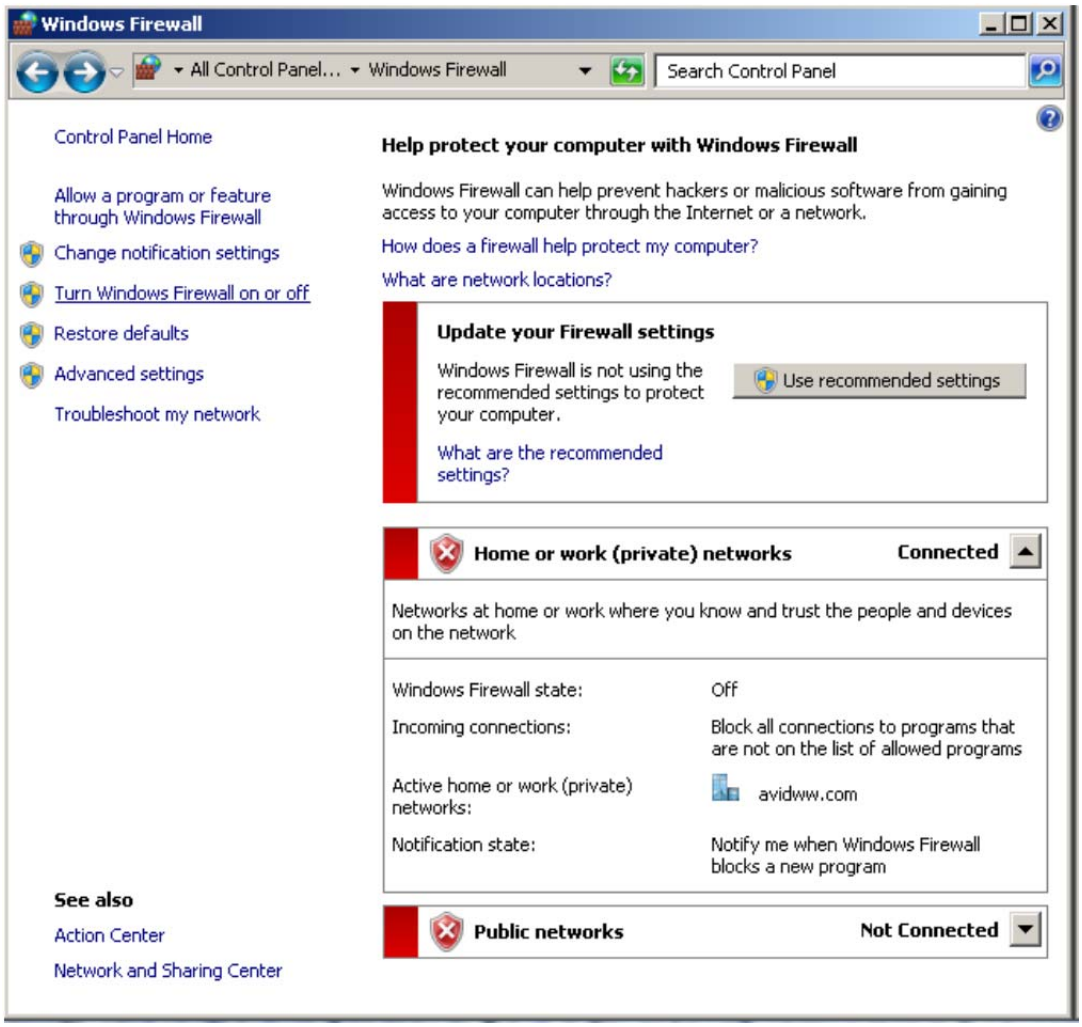
Set Transmit Buffers to 1024



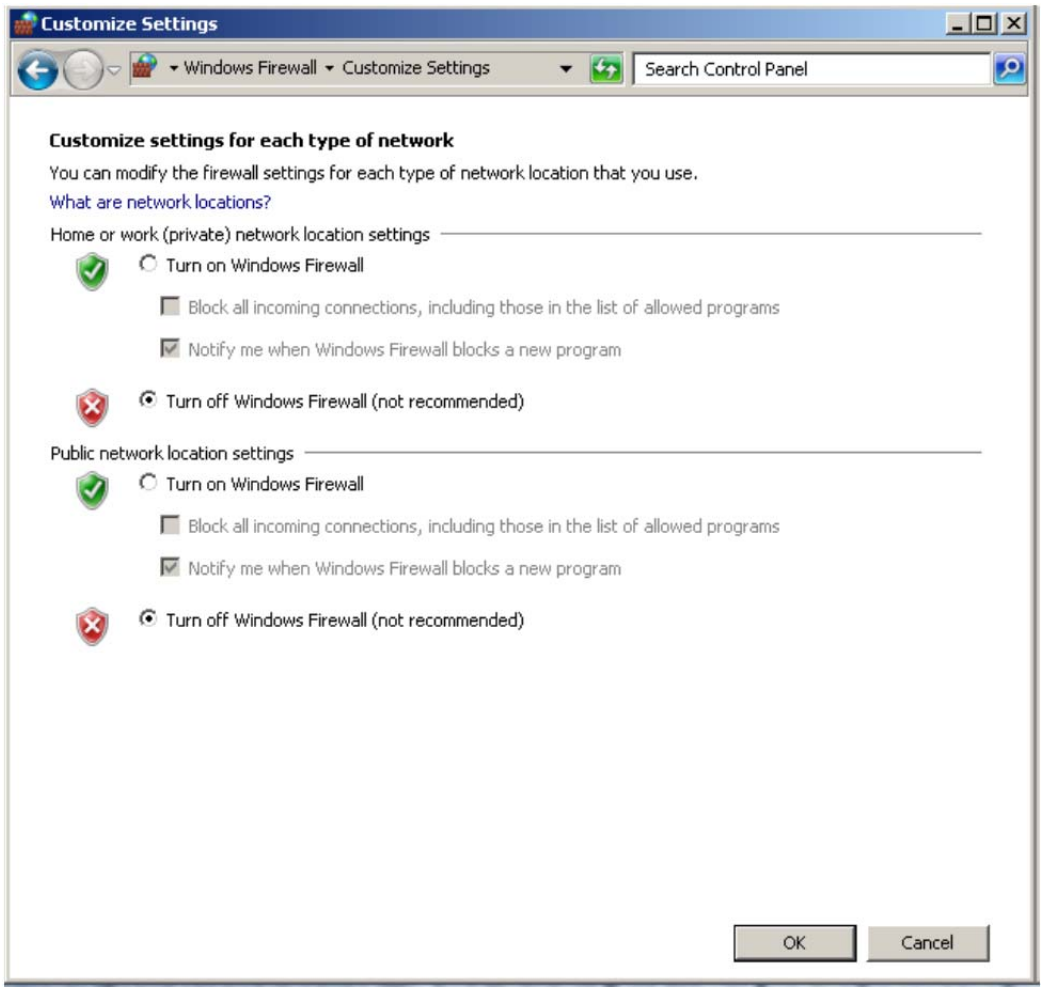
Perform this for each instance of the device named “Intel(R) PRO/1000 PT Dual Port Server Adapter” which will be used for ISIS connectivity.

J.) Disable the windows firewall:

Navigate to Control Panel / Windows Firewall -- Select Turn Windows Firewall on or off



Select Turn off windows firewall in both network locations, OK to save



Revision Update

Revision	Date	Name	Update
A	Oct 27th, 2011	Joe Conforti	Initial public release of the Z400 Gen2 configuration guide for support of Media Composer 6.0 and NewsCutter 10