Avid Configuration Guidelines
HP Z220 Single Quad-Core CPU Minitower Workstation
No Embedded Firewire
Qualified for Software Only
Symphony 6.x, Media Composer 6.x, & NewsCutter 10.x

1.) HP Z220 AVID Qualified System Specification:

Z220 / AVID Qualified Operating System:

- **Supported: Microsoft® Windows 7 Professional 64-bit Edition withSP1 (SP1 required)**

Not Supported

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

Note regarding Service packs:

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

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Z220 / AVID Qualified Hardware Configuration

Qualified CPU Choices

1.) Single Intel® Quad-Core Xeon® E3-1245 V2 GT2 Processor @ 3.4GHz 77Watt / 8MB cache / 1600MHz memory (GT2 refers to onboard Intel graphics - HD4000, GT0 means NO onboard Intel graphics)

Video Card

1. On Chip Intel HD Graphics P4000
2. Optional - NVIDIA Quadro 600 1GB PCI-Express video board (not required)
3. Optional - NVIDIA Quadro K600 1GB PCI-Express video board (not required)

O.S. System Hard Drive

250GB SATA-II 3Gb/s 7200RPM Hard Disk Drive (Minimum Recommendation)

Supported Memory Configurations

1.) Memory: 8GB (2 x 4GB) DDR3 1600 ECC memory –
Requires two 4GB DIMMs, (mixed DIMM sizes not recommended and may impact performance)
4GB memory modules installed in the following memory slots: DIMM1, DIMM2

2.) Memory: 8GB (4 x 2GB) DDR3 1600 ECC memory –
Requires four 2GB DIMMs, (mixed DIMM sizes not recommended and may impact performance)
2GB memory modules installed in the following memory slots: DIMM1, DIMM2, DIMM3, DIMM4

3.) Memory: 16GB (4 x 4GB) DDR3 1600 ECC memory –
Requires four 4GB DIMMs, (mixed DIMM sizes not recommended and may impact performance)
4GB memory modules installed in the following memory slots: DIMM1, DIMM2, DIMM3, DIMM4

Memory configuration constraints

Memory configurations which mix and match memory module sizes and locations should be avoided as they may potentially result in a poor performing, non-optimal Avid editing operating environment.

3.) Qualified O.S., Hardware and shared storage supported:

Qualified Operating System	Win 7 Pro 64-bit
Service Pack	SP1 – Required
ISIS 1Gb Ethernet Client (Minimum)	ISIS 5000/7000 V4.0
ISIS 10Gb Hi-res Ethernet Client	**Not Supported**
H.P. / StarTech 1394a PCI Firewire adapter. P/N PCI1394MP 3 external ports , 1 internal Port H.P. Option PCI1394_4	Only Supported 1394 connection for 1394 camera or deck. Can also be used for 1394 disk drives (recommended only for file transfers).

AVID qualified HBA info

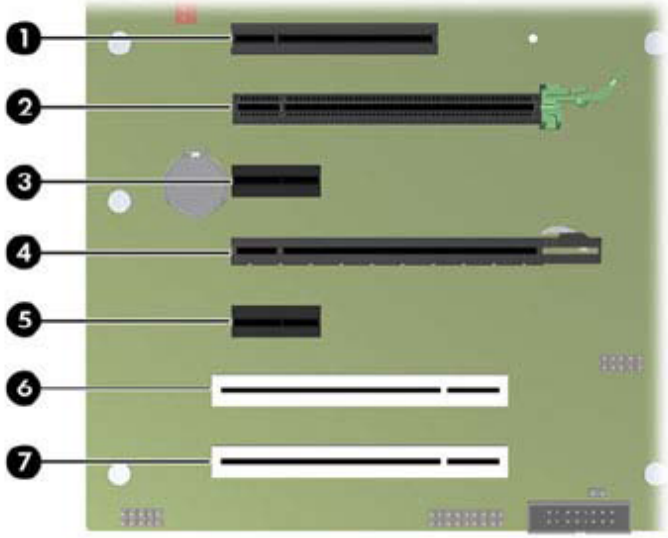
AVID qualified HBA	AVID Part Number	Slot	Function
LSI 9200-8e SAS controller	7030-30036-01	#4	SAS Local Storage: Xtore StudioRAID 16Re (16-bay) chassis Xtore StudioRAID 5Te (5-bay) chassis
Atto H680	7030-30028-01	#4	SAS Local Storage – Avid VideoRAID SR (16-bay)
Atto R680	7030-	#4	SAS Local Storage –Avid VideoRAID ST (5-bay) and Xtore StudioRAID 5Ti (5-bay) chassis
H.P. / StarTech PCI1394MP Firewire adapter. 1394a PCI HBA H.P. Option PCI1394_4	Not stocked by AVID (Available from H.P. or direct from StarTech) More info below	#6	Mandatory primary 1394a connectivity for 1394 camera / deck / disk drive

4.) Slot Configuration:

Slot #	Electrical	Mechanical	Utilization
1	x4 PCI-E Gen 2 (25Watts)	x8	Not defined for use. Could be used for optional 3rd party IO (see vendor website for support & slot guide)
2	x16 PCI-E Gen 3 (75Watts)	x16	Optional Graphics Card: Nvidia Quadro 600 or K600
3	x1 PCI-E Gen 2 (10Watts)	x1	Not defined for use. Could be used for optional secondary H.P. 1394a PCI-Express HBA**
4	x4 PCI-E Gen 2 (75Watts)	x16	Local Storage Controllers: Atto H680 – Avid SAS VideoRAID SR (16-bay) support Atto R680 – Avid SAS VideoRAID ST (5-bay) support Atto R680 – 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
5	x1 PCI-E Gen 2 (10Watts)	x1	Not defined for use.
6	PCI 32bit /33MHz	PCI 32/33	H.P. / StarTech PCI1394MP Firewire adapter. 1394a PCI HBA, H.P. Option PCI1394_4 (Mandatory primary 1394a connectivity for 1394 camera / deck)
7	PCI 32bit /33MHz	PCI 32/33	**Do Not Use.** Will cause BUS contention with 1394 controller installed in slot #5.
	Embedded Intel 82579LM GbE NIC	PCI-E x1 Gen 1	Use for connectivity to Avid ISIS 5000 / 7000

***** Firewire 1394a camera / deck should not be connected to optional H.P. PCI-Express 1394 HBA (if this option is in the Z220 system, HP installs it in slot #3). For Symphony, Media Composer and NewsCutter, a 1394 camera or deck must connect via the H.P. / StarTech PCI1394MP PCI 1394a controller (HP Option PCI1394_4) which resides in slot #6.***

HP Z220 I/O Slot Layout

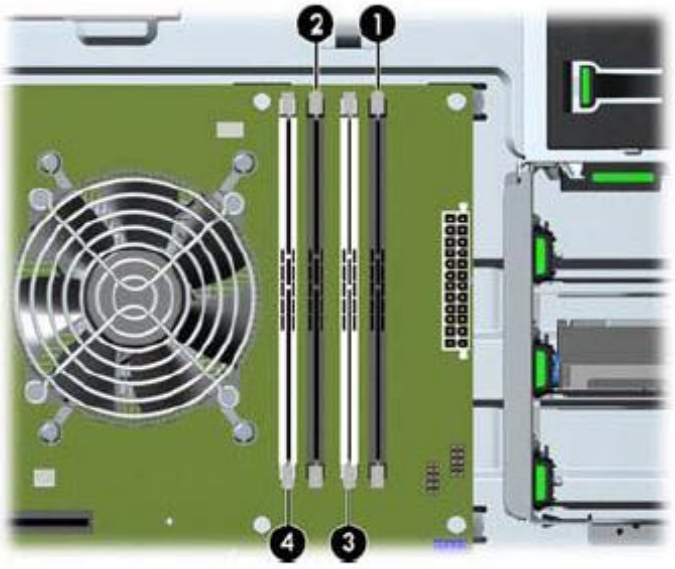


The following table describes the workstation PCIe card slots.

Table 5-5 PCI slots

Slot	Type	Slot power (per slot)	Slot power (maximum)
1	PCIe2 - x8(4)	25W	150W max for total power usage of all card slots
2	PCIe2 - x16	75W	
3	PCIe2 - x1	10W	
4	PCIe2 - x16(4)	25W	
5	PCIe2 - x1	10W	
6	PCI 32b/33MHZ	25W	
7	PCI 32b/33MHZ	25W	

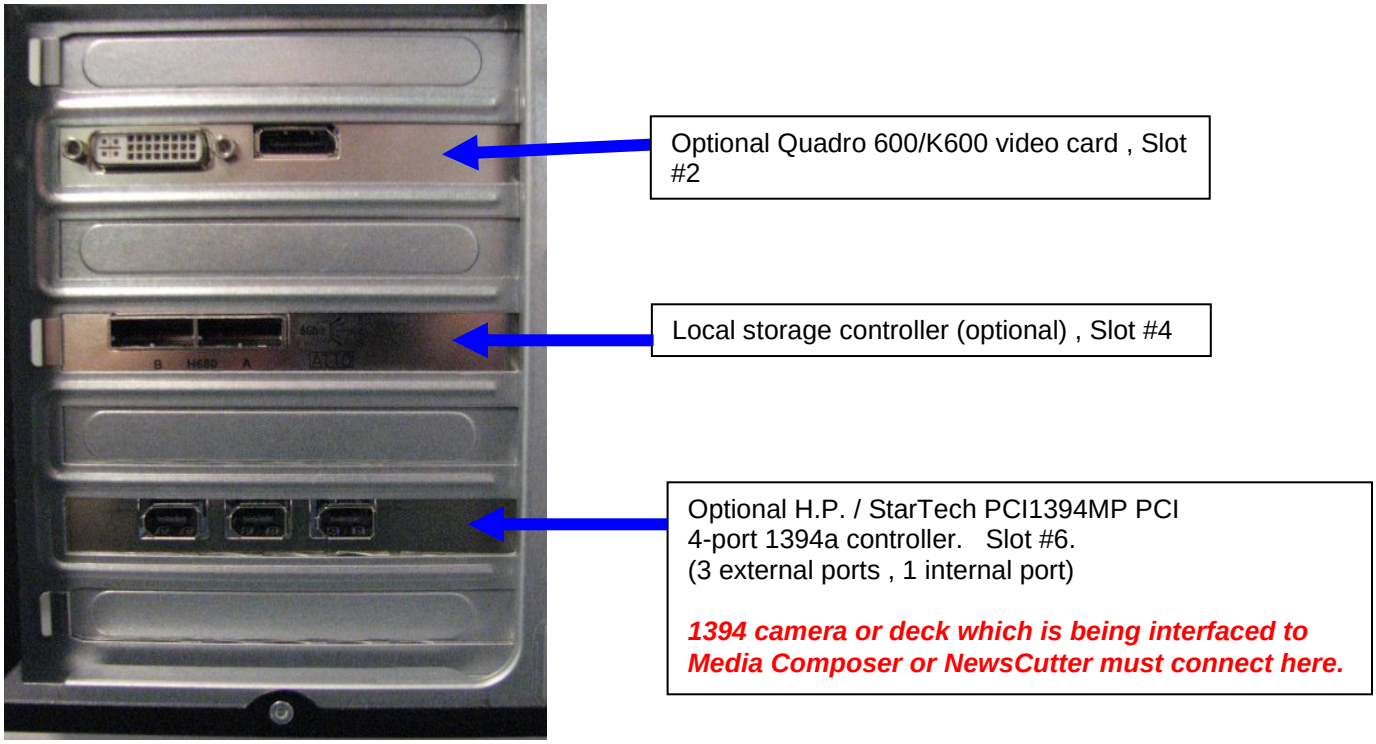
HP Z220 Memory DIMM Installation order



5.) Clarification / Utilization of optional add-in 1394 controllers for camera / deck control.

For Symphony, Media Composer and NewsCutter, a 1394 camera or deck must connect via the optional H.P. / StarTech PCI1394MP PCI 1394a 4-port controller (3 external ports , 1 internal port) which resides in slot #6.

Rear of Z220 MiniTower Workstation



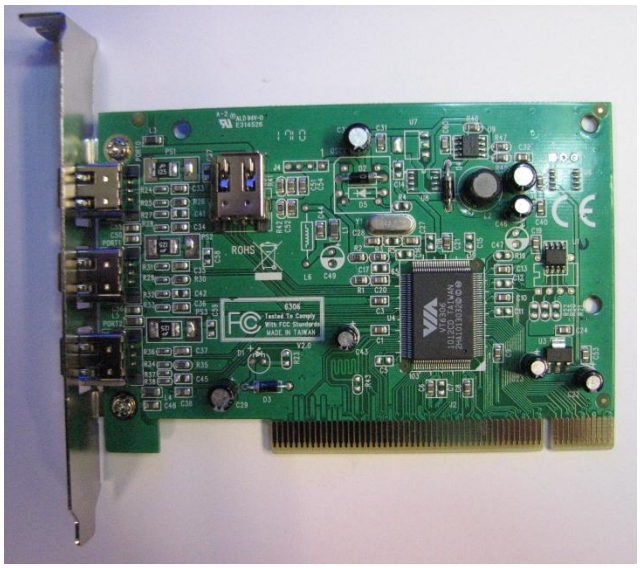
Add-in 1394 Controller	Utilization for 1394 Camera / Deck connectivity with Symphony, Media Composer & NewsCutter
Optional H.P. / StarTech PCI1394MP PCI 1394a 4-port controller H.P. Option PCI1394_4 (Sot #6)	**Mandatory requirement.** **Yes** - Supports 1394 Deck / Camera
Optional HP FireWire IEEE 1394a PCI-Express x1 HBA H.P. Option A8X18AV HP installed in slot #3	**Cannot be used for connectivity to a 1394 Deck / Camera which is being interfaced to Symphony, Media Composer or NewsCutter** ***Also connects internally to Z220 front panel 1394a port. Front panel 1394 port should also not be used for 1394 connectivity to Avid applications.*** **It is alright for this HBA to reside in the system. It will not cause any functional problem as long as it is not used for 1394 Camera / Deck connectivity for Symphony, Media Composer or NewsCutter.**

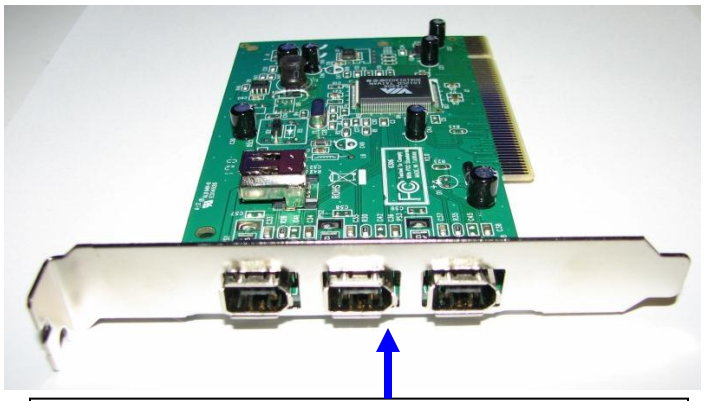
Below are pictures and links to specifications and ordering information for the Avid qualified PCI 1394a Firewire HBA:

Optional H.P. / StarTech PCI1394MP PCI 1394a 4-port (3 external / 1 internal) controller, H.P. Option PCI1394_4 (Sot #6)

http://h30094.www3.hp.com/product.asp?sku=1846038&mfg_part=PCI1394MP&pagemode=ca

http://www.startech.com/Cards-Adapters/FireWire/4-Port-IEEE-1394-FireWire-PCI-Card~PCI1394MP





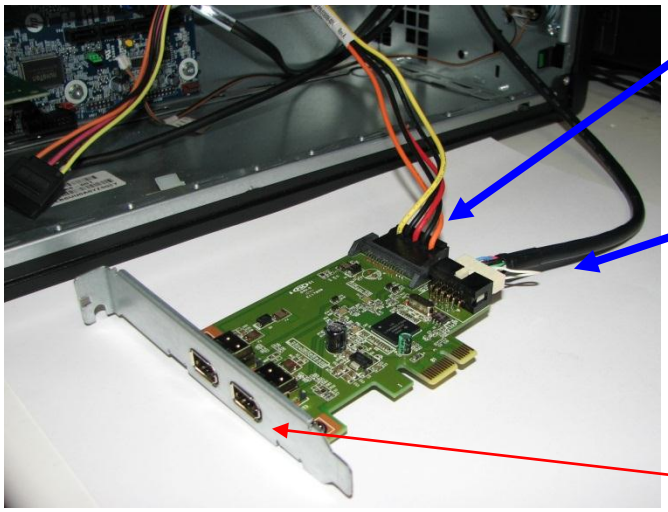
Use only external 1394 ports for M/C and N/C 1394

How to identify the unqualified (incorrect) Firewire HBA:

For identification purposes, below are pictures showing the incorrect (unqualified) PCI-Express 1394a Firewire HBA:

HP FireWire IEEE 1394a PCI-Express x1 HBA H.P. Option A8X18AV (Might be installed in slot #3)

It is alright for this HBA to reside in the system, it will not cause a problem as long as it not used for 1394 Camera / Deck connectivity for Symphony, Media Composer or NewsCutter.



Power connector / cable

The unqualified (incorrect) 1394 HBA is easily determined by the existence of a power connector / cable and 1394 “break-out” connector / cable.

1394 “Break-out” connector

Connects via cable from HBA to front panel 1394 port.

Do not use this 1394 connection for 1394 devices being interfaced to Media Composer or NewsCutter.

Only 2 external 1394 ports on incorrect (unqualified) HBA

6.) Various Configuration Issues:

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

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

- Minimum BIOS ver 1.02

Current Avid qualified Z220 BIOS information is maintained at the following Avid KB link:

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

Z220 Required system BIOS settings:

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

Set Z220 Required system BIOS (UEFI) settings:

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

- Select Device Options.
- Select Hyper-Threading
- Default setting is Disable
  - Change this setting from Disable to Enable
- Hit F10 to save the Hyper-Threading setting

- Select the Power tab
- Select OS Power Management
- Select Runtime Power Management
- 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

- Hit F10 to save the Hyper-Threading, Runtime Power Management, and Idle Power Savings

Optional settings:

- Select the Advanced tab
- Select Device Options <Enter>
- Select Turbo Mode
- Default setting is Enable
  - Change this setting from Enable to Disable (Only required if connecting USB audio I/O devices)

- Press F10 twice to Save
- Save Changes and Exit

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

The following link provides O.S. setting suggestions for ensuring optimum performance when working with your Avid editing application with a Windows 7 operating system.

- Optimizations for Video Editors - Windows 7

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

C.) Qualified Graphics Drivers:

AVID Software	Version(s)	Nvidia GPU	Nvidia Driver Required
Symphony, Media Composer NewsCutter	6.0 and later 10.0 and later	Quadro 600	275.89
Symphony, Media Composer NewsCutter	6.0.3.4 and later 6.5.2.1 and later 10.0.3.4 and later 10.5.2.1 and later	Quadro 600, K600	310.90
Symphony, Media Composer NewsCutter	6.0 and later 10.0 and later	Intel HD P4000	8.15.10.2712

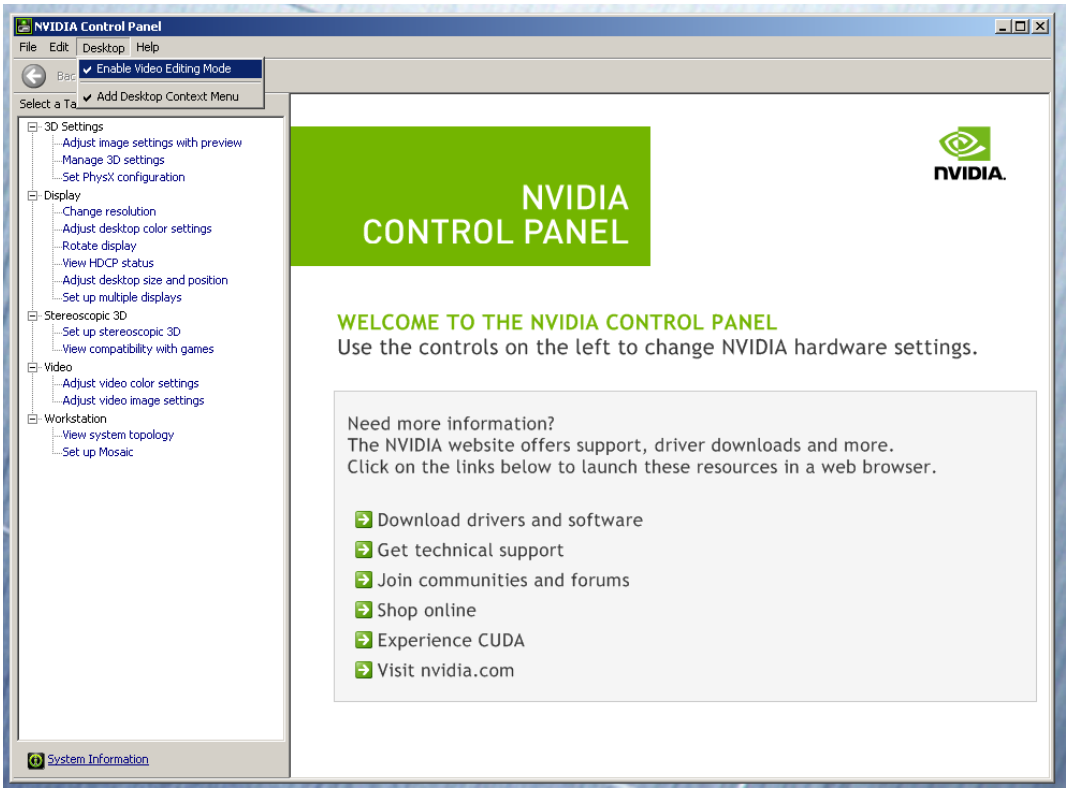
After installation of the AVID software, the supported Nvidia driver can be found in the following directory: C:\Program Files\Avid\Utilities\Nvidia. The new Nvidia driver, 310.90, is NOT included with the patch. You can find the Nvidia driver on the Avid Knowledge Base.

The latest Intel HD P4000 driver can be found on the Vendor's website.

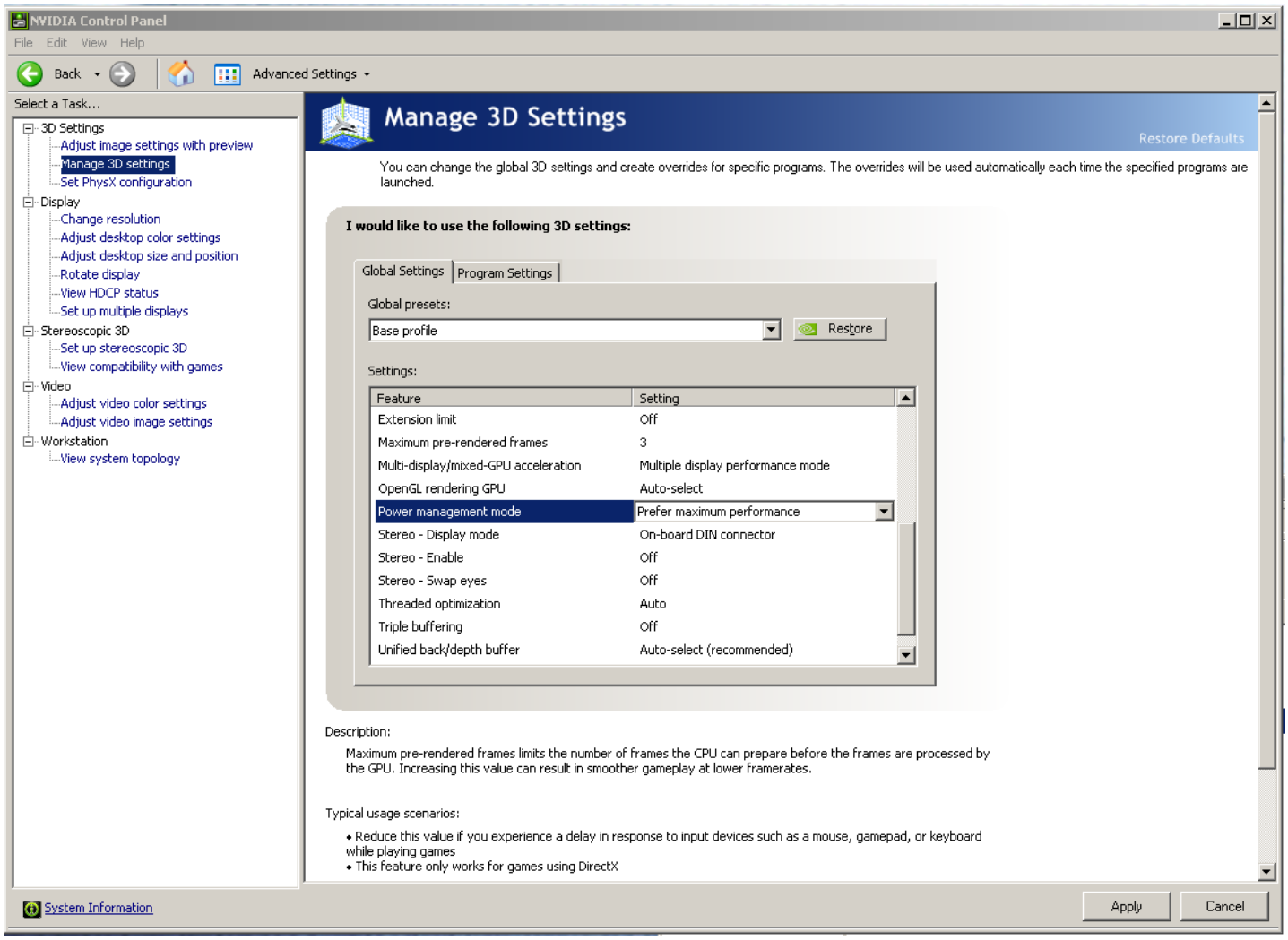
Refer to the ReadMe for driver information for the specific version of Symphony, Media Composer or NewsCutter being installed

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. 

6. Select Manage 3D Settings
7. Select “Global Settings” Tab
8. Under the “Global Settings” tab select “Base Profile”.
9. Scroll down and locate the “Power Management Mode” feature. The default setting is “Adaptive”. For the “Power management mode” feature, select “Prefer maximum performance” as shown in the picture below.



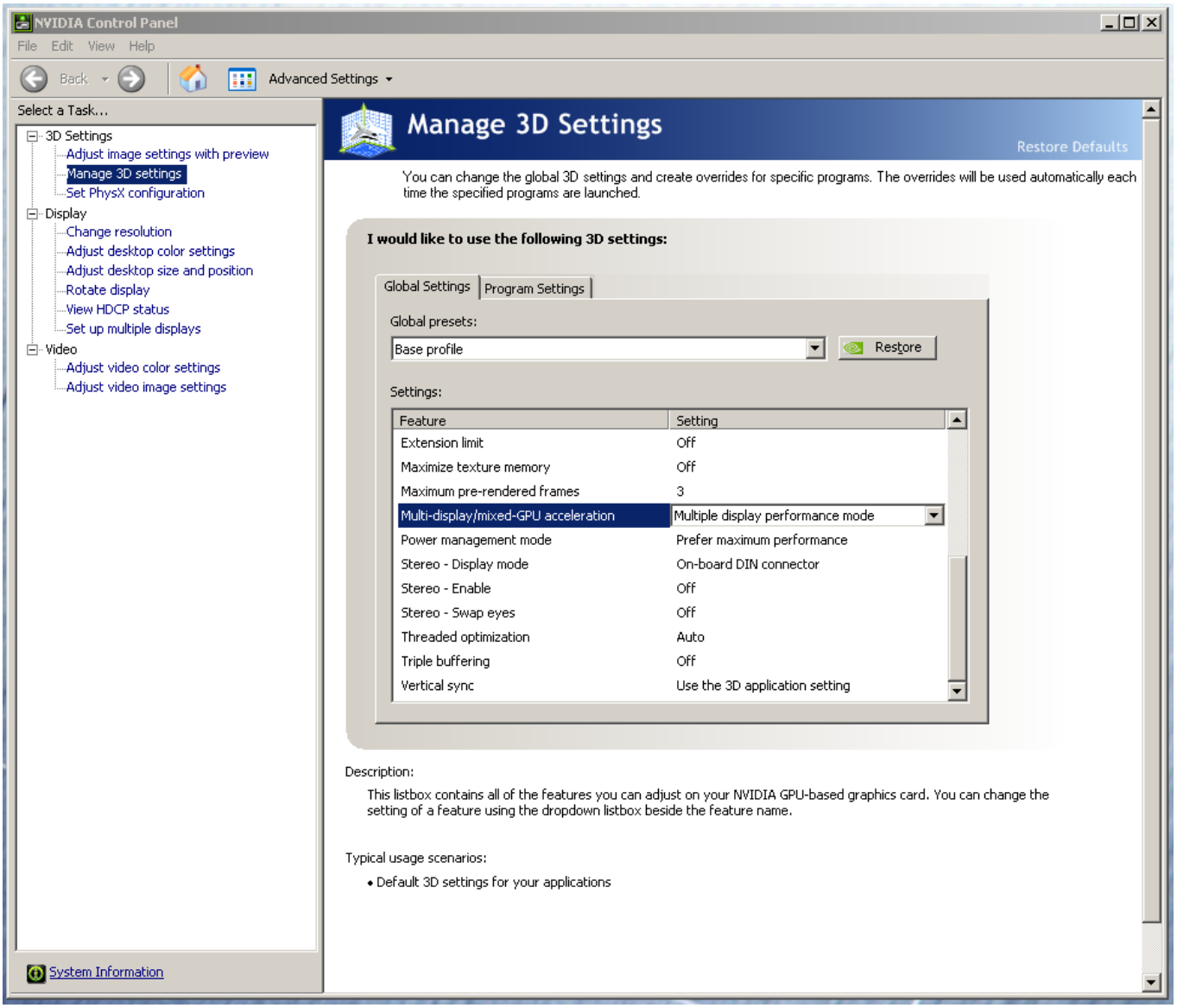
10. Depress the “Apply” button.

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

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

2. Select “Global Settings” Tab

3. 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).

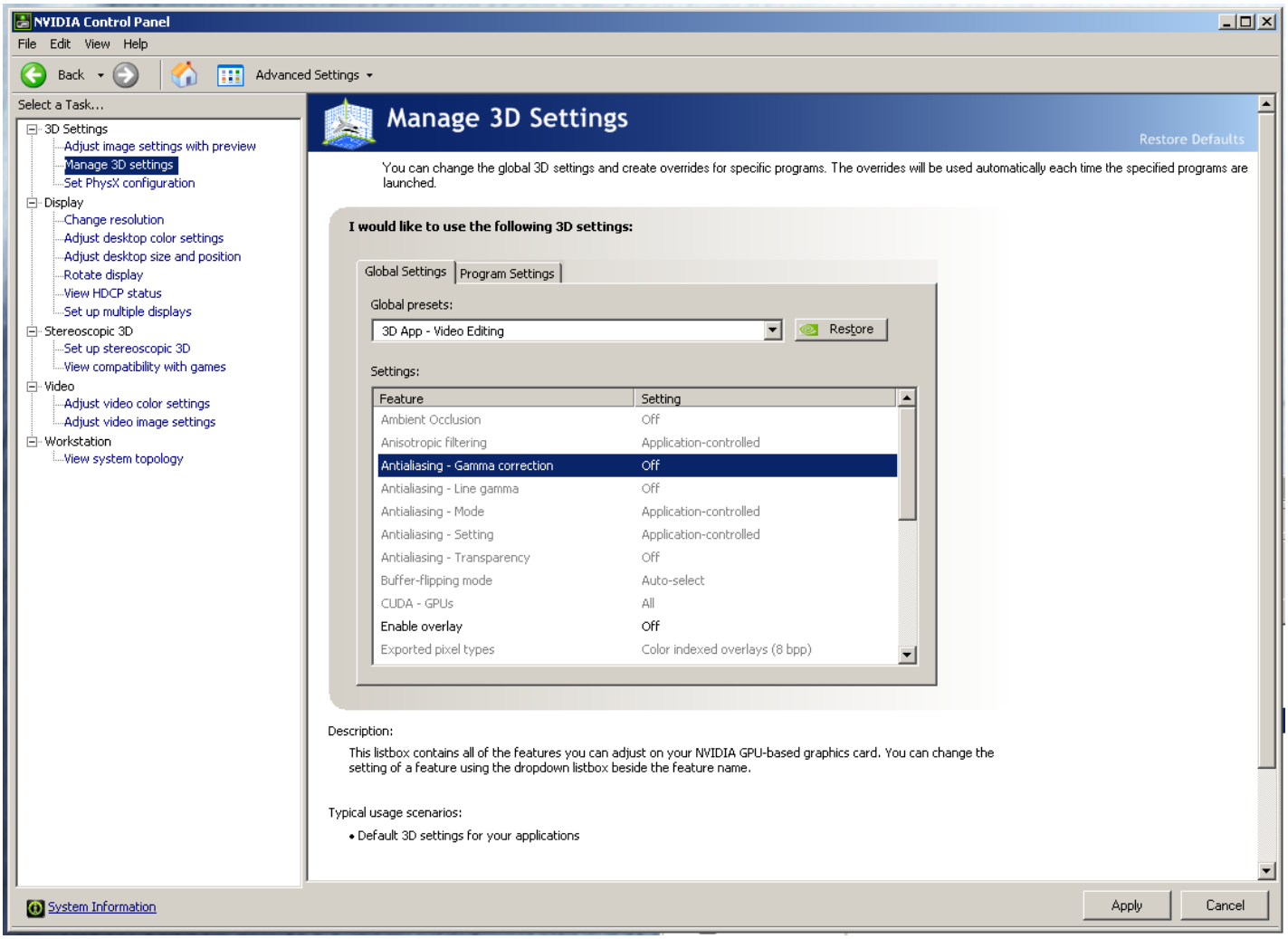


Make the following additional setting for “3D App-Video Editing”

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

5. Select “Global Settings” Tab

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



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

D.) Nvidia Quadro GPU monitor connectivity:

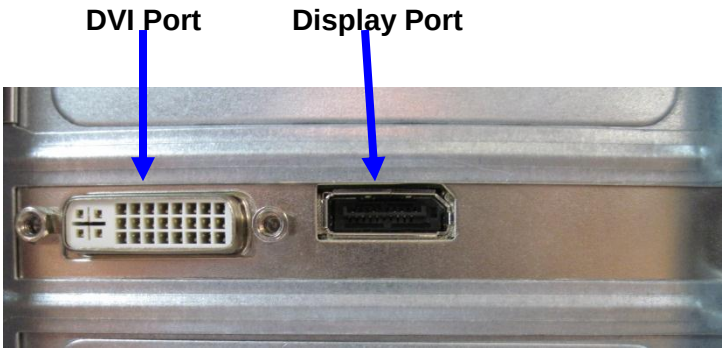
The Nvidia Quadro 600 graphics card has a single DVI port and one Display-Port
*(Important: Display-ports **are not** HDMI ports; at first glance they do look very similar to HDMI ports)*

The HP Z220 includes one Display-Port-to-DVI adapter. HP P/N 481409-001. This is digital only and will NOT connect to a VGA port with a converter.

For dual monitor connectivity:

Use the DVI port and 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).

Reference picture Quadro 600/K600 connectors



E.) Serial Port Deck Control:

The HP Z220 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 Z220 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

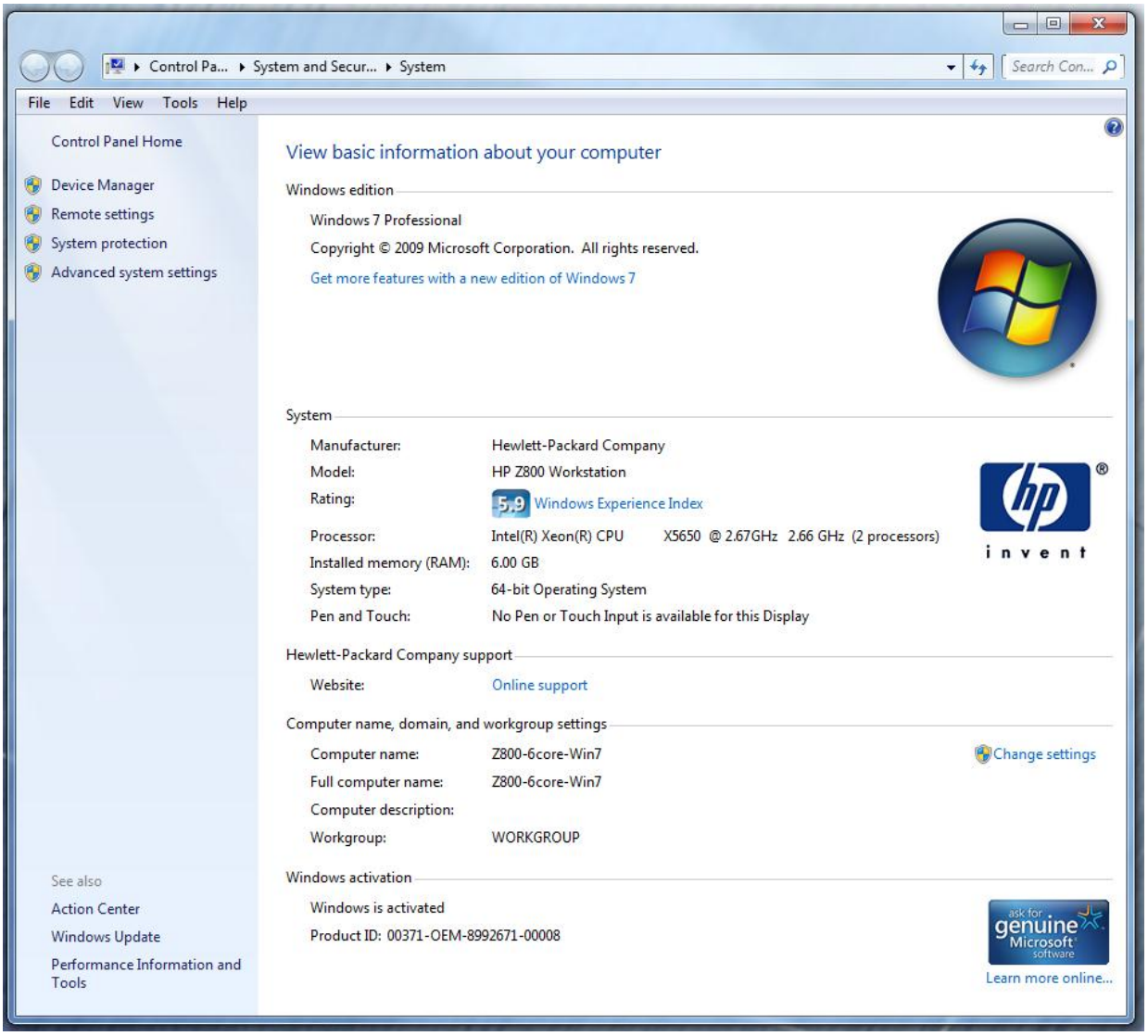
   - Keyspan (Tripp-Lite) Model USA-19HS (AVID P/N 7080-20013-01)
     http://www.tripplite.com/en/products/model.cfm?txtSeriesID=518&EID=13384&txtModelID=3914
   - Addenda Rosetta Stone (or equivalent) model RS – 2/8 RS232-to-RS422 converter (AVID P/N 7070-00507-01)
     http://www.addenda.com/addenda-elect/products/rs28.php

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

- Install the Keyspan 19HS driver before plugging the device into a Z220 USB port.
- Once the Keyspan 19HS driver is installed then plug the Keyspan 19HS into a Z220 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.

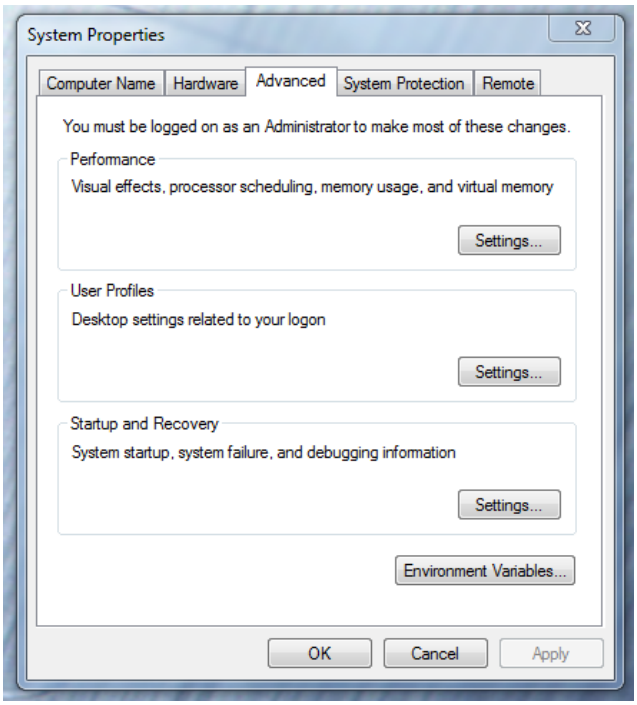
F.) Set Windows “Visual Effects” for “best performance”:

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

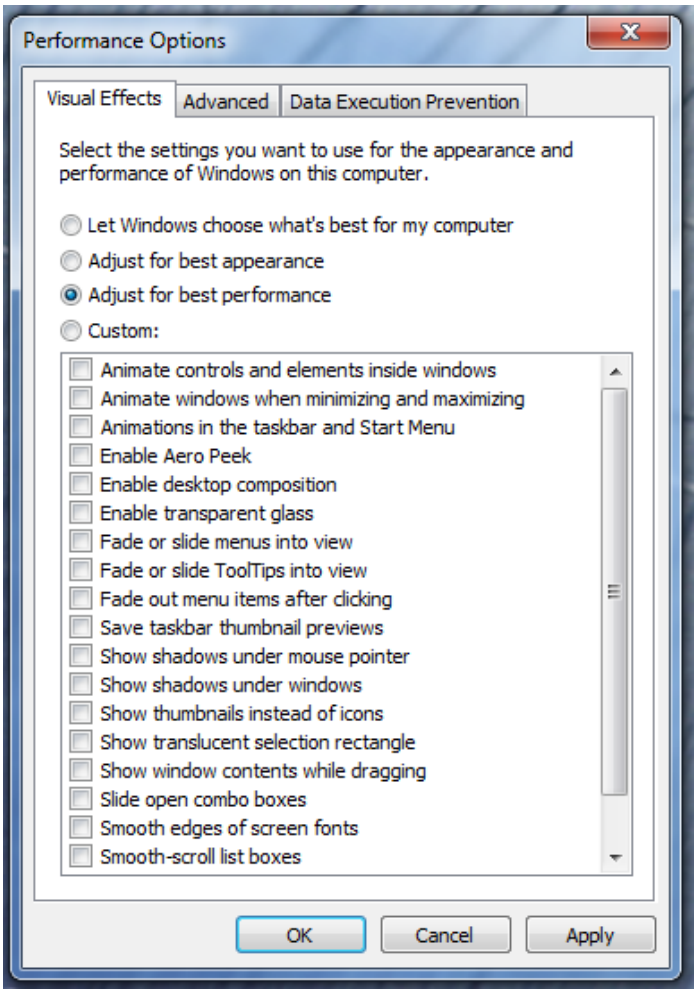


4. On the left side of the screen above, locate and select “Advanced system settings”

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

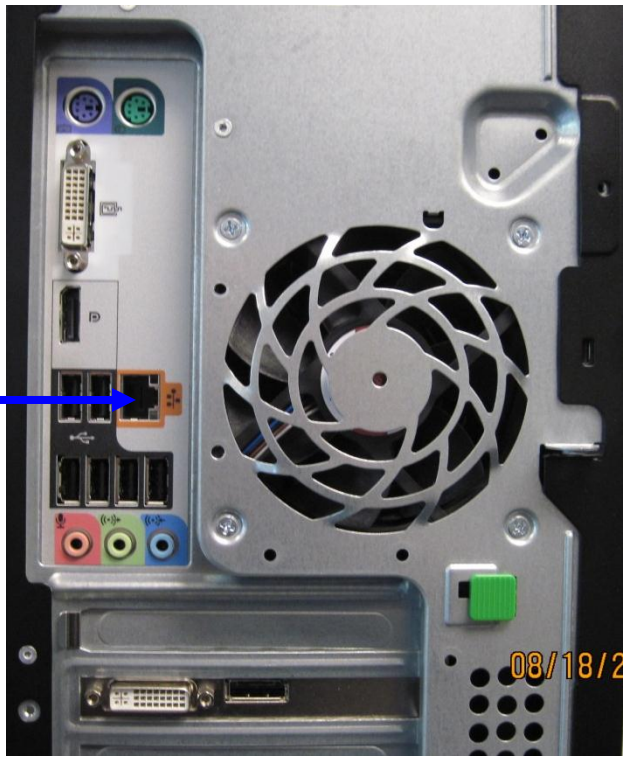


9. Depress the “Apply” button

10. Reboot Windows
11. Required Windows visual performance settings for Avid environments are now complete

G.) <u>Embedded Intel 82579LM network interface for ISIS connectivity:</u>

Use the embedded Intel 82579LM network interface for ISIS 5000 / 70000 connectivity.

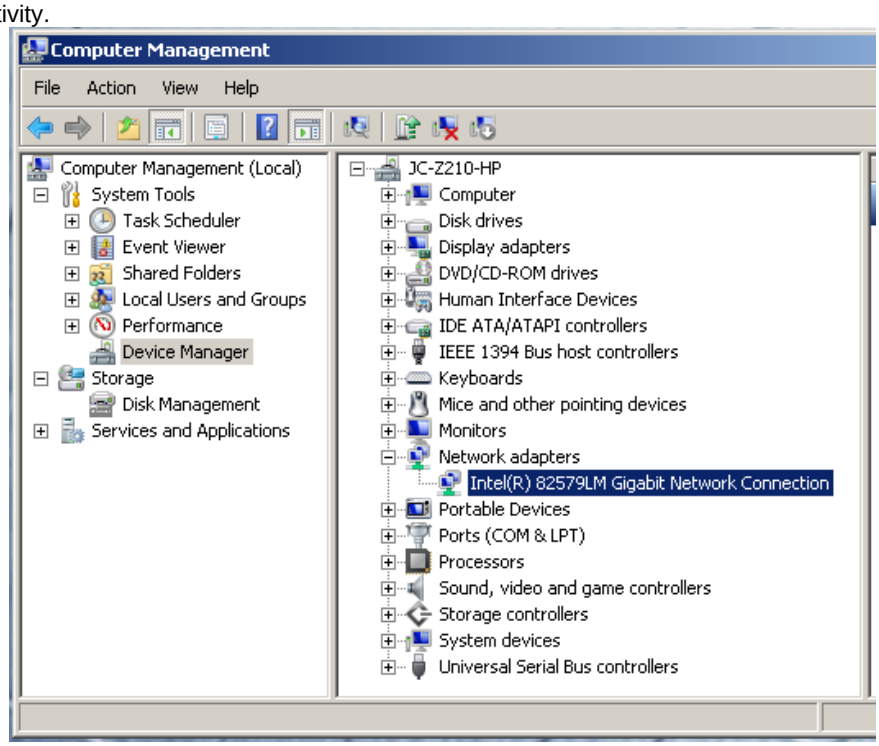


For proper operation and connectivity of the Intel 82579LM network interface with ISIS the following are required:

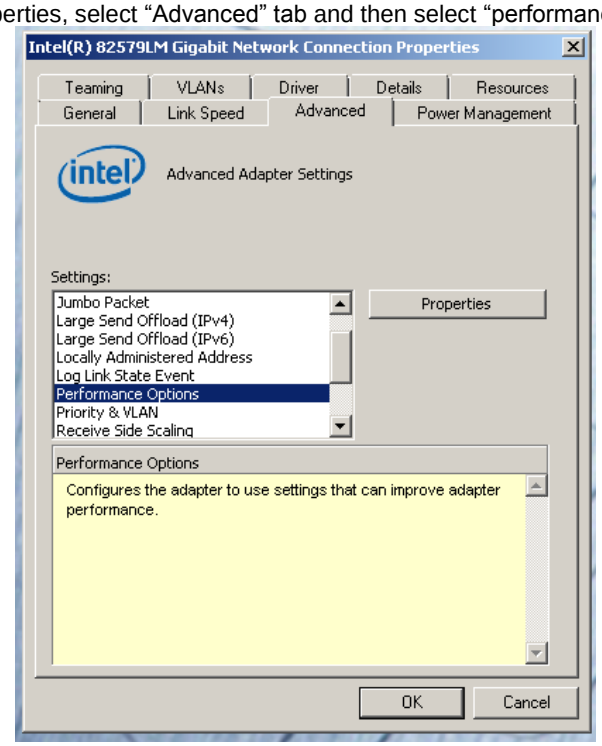
1. For the Intel 82579LM driver, under the performance settings, change the following parameters:
   - Receive Buffers to 1024
   - Transmit Buffers to 1024

2. Disable the windows firewall.

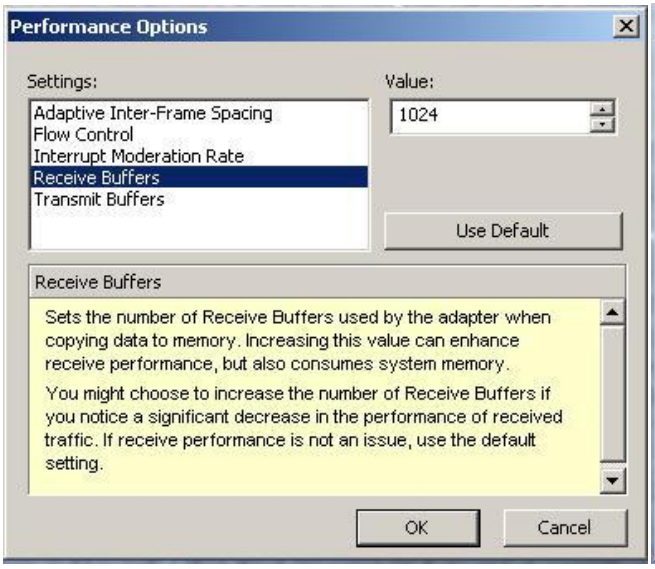
To set the Intel 82579LM Receive / Transmit buffers:
Go to device manager. Under “Network adapters” select the device named “Intel 82579LM Gigabit Network Connection”, which will be used for ISIS connectivity.



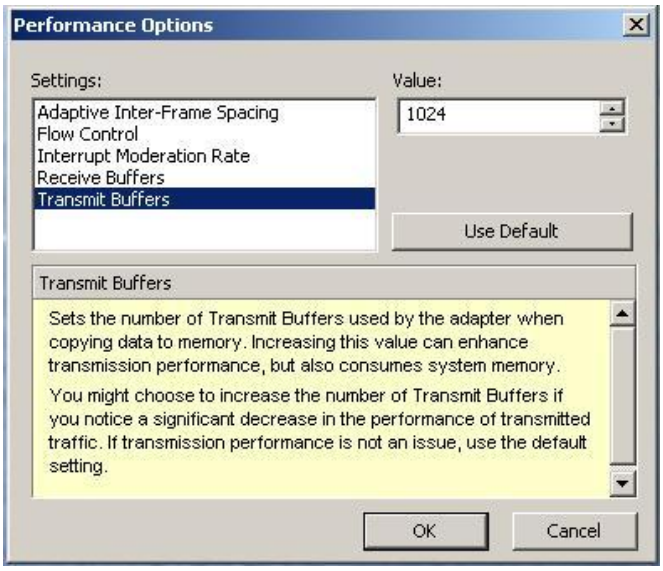
Select properties, select “Advanced” tab and then select “performance Options”.



Set Receive Buffers to 1024



Set Transmit Buffers to 1024



Revision Update

Revision	Date	Name	Update
A	July 11th , 2012	Dave Pimm	Initial Public Release of the Z220 Minitower Workstation configuration guide for Symphony 6.0, Media Composer 6.0 and NewsCutter 10 (Software only)
B	March 28th, 2013	Dave Pimm	Addition Nvidia Kepler card and driver