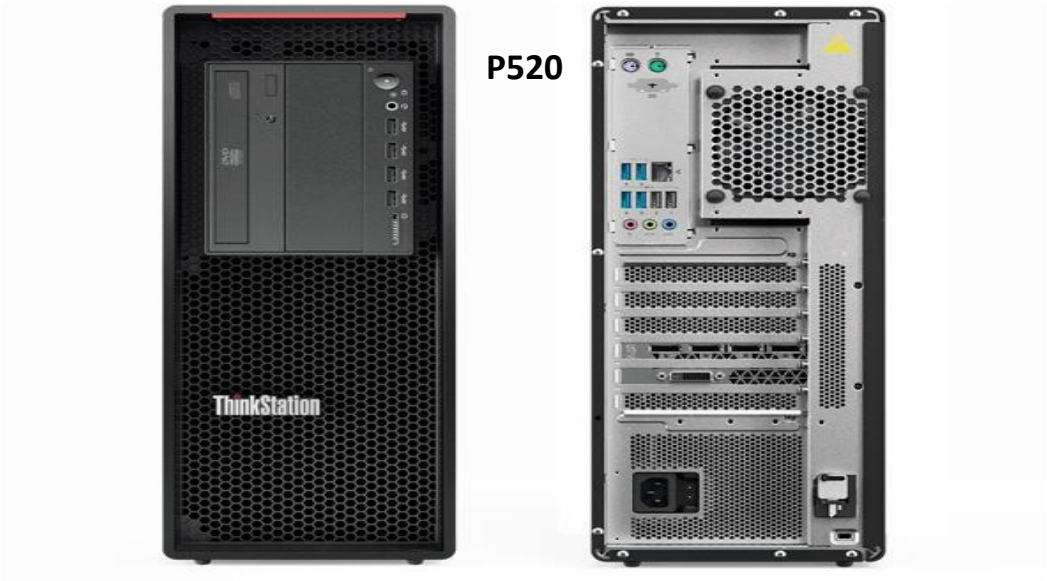
Avid Configuration Guidelines
Lenovo P520/P520C workstation
Single 6 to 18 Core CPU System



P520

P520C

Dave Pimm – Avid Technology – April 25, 2018

Rev B

1.) Lenovo P520 & P520C AVID Qualified System Specification:

P520 & P520C Hardware Configuration

Supported Intel Xeon Scalable family (Skylake) CPU Choices

- Xeon W-2133 3.6 Ghz, turbo up to 3.9Ghz 6-core
- Xeon W-2135 3.7 Ghz, turbo up to 4.5Ghz 6-core (Good)
- Xeon W-2145 3.7 Ghz, turbo up to 4.5Ghz 8-core (Better)
- Xeon W-2155 3.3 Ghz, turbo up to 4.5Ghz 10-core
- Xeon W-2195 2.3 Ghz, turbo up to 4.3Ghz 18-core (Best performance)

Note – Higher CPU speeds are preferred over core count for MC application

Note: high power CPUs with high end graphics require the 900W power supply option

Supported Video Cards

1.) NVIDIA P1000 4GB PCI-e video board
2.) NVIDIA P2000 5GB PCI-e video board (recommended)
3.) NVIDIA P4000 8GB PCI-e video board

System Disk Drive – 500 GB (recommended) SATA SSD. Lenovo offers higher performing solid-state, NVMe, and SAS boot drive options which are acceptable. Recommend a Lenovo qualified drive be selected.

Standard AVID memory configuration:

- Systems using the new Xeon W series Skylake CPU's will use DDR4-2666MHz memory
- P520 has 8 DIMM slots, P520C has only 4 DIMM slots
- Each CPU has 4 memory lanes - optimal bandwidth when 4 or 8 memory lanes filled
    - 32GB (4 x 8GB) DDR4 2666MHz ECC memory – (Requires four 8GB DIMMs)

Memory modules must be installed according to manufacturer's requirements

Optional AVID memory configuration:

- 64GB (8 x 8GB) DDR4 2666 ECC memory – (Requires eight 8GB DIMMs **P520 only)
- 64GB (4 x 16GB) DDR4 2666 ECC memory – (Requires four 16GB DIMMs)
- 128GB (8 x 16GB) DDR4 2666 ECC memory – (Requires eight 16GB DIMMs ** P520 only)

Memory configuration constraints

- No other memory configurations are formally supported in AVID environments.
- Un-balanced memory configurations which mix and match memory module sizes and locations will result in a poor performing, non-optimal operating environment.

2.) Qualified Operating Systems, Avid Client Editing Applications, Hardware and Shared-Storage support for the Lenovo P520, P520C:

Lenovo Supports:

- **Microsoft® Windows 10 Pro / Enterprise 64-bit Edition Version 1703 or 1709 – (MC 8.5 or above)**
- **Microsoft® Windows 10 Pro for workstations 64-bit Version 1709 – (MC 8.5 or above)**

Not Supported –

- **Microsoft® Windows 7 – any version**
- **Microsoft Windows 8 or 8.1 – any version**

Media Composer Application	Minimum Rev
Media Composer 8.x	8.8
Media Composer 7.x	Not supported
NewsCutter 11.x	Not Supported

* Nvidia P1000, P2000, P4000 require Nvidia driver that ships with the version of MC 8.8 and above

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

	Qualified / Supported
Nitris DX / Mojo DX	NOT SUPPORTED (requires PCIe gen 1 or 2 slot which is not available on this system) - causes system hang when MC upgraded
Mojo DX	SUPPORTED
Artist DNxIO/ DNxIQ (PCIe or thunderbolt connection) Artist DNxIV (thunderbolt 3 connection)	Yes – Supported <u>PCIe Guidance</u> PCIe preferred as it requires less system over-head due to direct PCIe to PCIe connection between the host CPU and Artist DNxIO. <u>Thunderbolt Guidance</u> Thunderbolt 2 & 3 - higher system over-head, not recommended to share Thunderbolt devices on the same Thunderbolt bus with DNxIO, DNxIQ, DNxIV Support for Lenovo Thunderbolt card will be 1H '18 DNxIO would require TB3 to TB2 converter
3rd Party Qualified Hardware	See release notes and Avid website for information regarding supported 3rd party hardware (vendor qualified)
NEXIS / ISIS Single 1Gb Ethernet Client NEXIS Dual 1Gb Ethernet Client Intel i350, i219, i210	ISIS 5500 / 5000 , 7500 / 7000 NEXIS Pro, E2, E4, E5 V7.9
NEXIS / ISIS Hi-res (single 10Gbit) client Myricom Single-Port 10Gbit Atto FFRM-NS11, NT11, Intel X710	ISIS 5500 / 5000 , 7500 / 7000 NEXIS Pro, E2, E4, E5 V7.9
NEXIS / ISIS Ultra Hi-res (dual 10Gbit) Myricom Dual-Port 10Gbit Atto FFRM-NS12, NT12, Intel X710	ISIS 5500 / 5000 NEXIS Pro, E2, E4, E5 V7.9

4.) AVID qualified HBA info

AVID	AVID Part	Slot P520	Slot P520C	Function
Avid Artist DNxIO HBA Avid Artist DNxIQ HBA	Avid part # 7030-30048-02 BMD PCie cable kit	#3	#4	Avid Artist DnxIO interface HBA Avid Artist DNxIQ interface HBA
Mojo-DX Interface HBA	Active: 7030-30048-02 Active: 7030-30048-01 Active: 7030-20084-01	#3	#4	Avid Mojo DX Hardware Interface HBA – Supported with any of the three listed Active HBA's
Vendor qualified 3rd party hardware X4 or x8 PCI-E	Not stocked by AVID	#3	#4	Vendor qualified 3rd party hardware interface. See release notes and Avid website for information regarding supported 3rd party hardware
Atto R680, H680	Not stocked by AVID	#1	#2	Local SAS Storage
LSI 9200-8e SAS controller	7030-30036-01	#1	#2	SAS Local Storage:
Atto FFRM-NS11, NS12, NT11, NT12 10 Gb single or dual port	Not stocked by AVID	#2	#3	Shared Storage: NEXIS Optical Gb-Ethernet
Intel i350-T2 – Dual Gb NIC	Not stocked by AVID	#2	#3	Shared Storage: NEXIS Copper Gb-Ethernet Dual Gb NEXIS Connectivity
Intel X710 dual port 10Gb	Not stocked by AVID	#2	#3	Shared Storage: NEXIS Optical Gb-Ethernet
Myricom 10G-PCIE-8B-S 10G-PCIE-8B2-2S 10G-PCIE-8C2-2T	7030-30041-01	#2	#3	Shared Storage: NEXIS 10Gb-Ethernet

Notes:

- **Avid HIB part # 7030-30048-01 is no longer supported with DNxIO (use # 7030-30048-02 only)**
- **Avid artist DnxIQ requires BMD cable kit and PCIe card – Avid HIB card is NOT supported with DNxIQ**
- **Optional Lenovo Thunderbolt 3 on flex module should be available 1H '18**

5.) Slot Configuration for P520:

Slot Configuration Information			
Slot #	Electrical	Mechanical	
1	X8 PCI-E Gen 3	X8 Open Ended Slot below memory	Local Storage controllers
2	X16 PCI-E Gen 3 (75W)	x16	Shared Storage Controllers Nexis/ISIS Intel X710, i350-T2 Atto FFRM-NS11/NS12 Myricom 10G-PCIE-8B-S
3	X4 PCI-E Gen 3	X4 open ended	Avid/BMD HIB card for DNxIO/DNxIQ/Mojo DX Or 3rd party PCIe Open IO card
4	X16 PCI-E Gen 3 (75W)	X16	Graphics Card: Nvidia P1000, P2000, P4000
5	PCI 32/33	PCI	Not used
6	X4 PCI-E Gen 3	X4 Open Ended Half Length	Optional Lenovo nVme PCI storage cards
	Embedded Intel I219-LM Gb NIC	PCI-E x1 Gen 3	Qualified for Avid Nexis/ISIS

5.) Slot Configuration for P520C:

Slot Configuration Information			
Slot #	Electrical	Mechanical	
1	X16 PCI-E Gen 3 (75W)	X16	Graphics Card: Nvidia P1000, P2000, P4000
2	X8 PCI-E Gen 3	X8 Open Ended	Local Storage controllers
3	X16 PCI-E Gen 3 (75W)	X16	Shared Storage Controllers Nexis/ISIS Intel X710, i350-T2 Atto FFRM-NS11/NS12 Myricom 10G-PCIE-8B-S
4	X4 PCI-E Gen 3	X4 open ended	Avid/BMD HIB card for DNxIO/DNxIQ/Mojo DX Or 3rd party PCIe Open IO card
	Embedded Intel I219-LM Gb NIC	PCI-E x1 Gen 3	Qualified for Avid Nexis/ISIS

6.) Use of embedded NIC ports for Nexis/ISIS connectivity **Important Information**

The P520 & P520C each have one embedded NIC port which is qualified for Nexis

For proper operation and connectivity of the Intel network interface with NEXIS the following settings are required:

1. For the Intel NIC driver, under the performance settings, change the following parameters:

   - Receive Buffers to 10 24
   - Transmit Buffers to 1024

2. Disable the windows firewall.

7.) Required system BIOS settings for AVID environments:

Use latest version from Vendor website

Please Note: *CPU Hyper-threading should be enabled in all configurations. It is currently enabled by default by Lenovo for shipping P520C systems*

P520C Required system BIOS changes:

1. Verify CPU Processors are set to Hyper-Threading

Set P520C Required system BIOS changes:

- During boot up press F1 or F2 at the Lenovo splash screen to invoke Set Up.

- Select the Setup tab, then select Advanced tab
- Select CPU Configuration
- Verify Hyper Threading is Enabled (or enable if currently set to disable)
- Save changes and exit

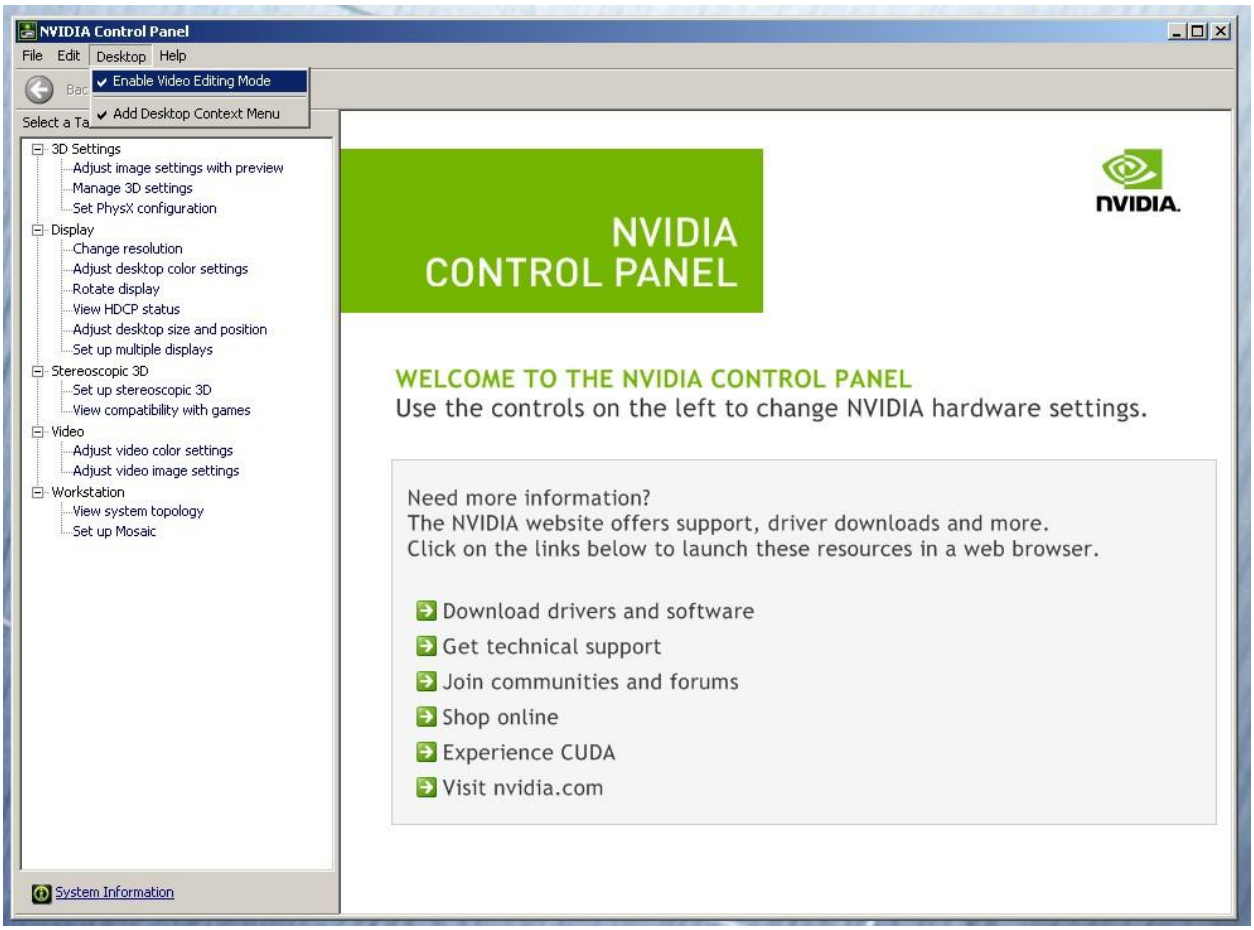
8.) Graphics Qualified Drivers:

AVID Software	Version(s)	GPU	Driver Required
Media Composer	8.8.x	Nvidia P1000, P2000, P4000	Nvidia 385.08

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:

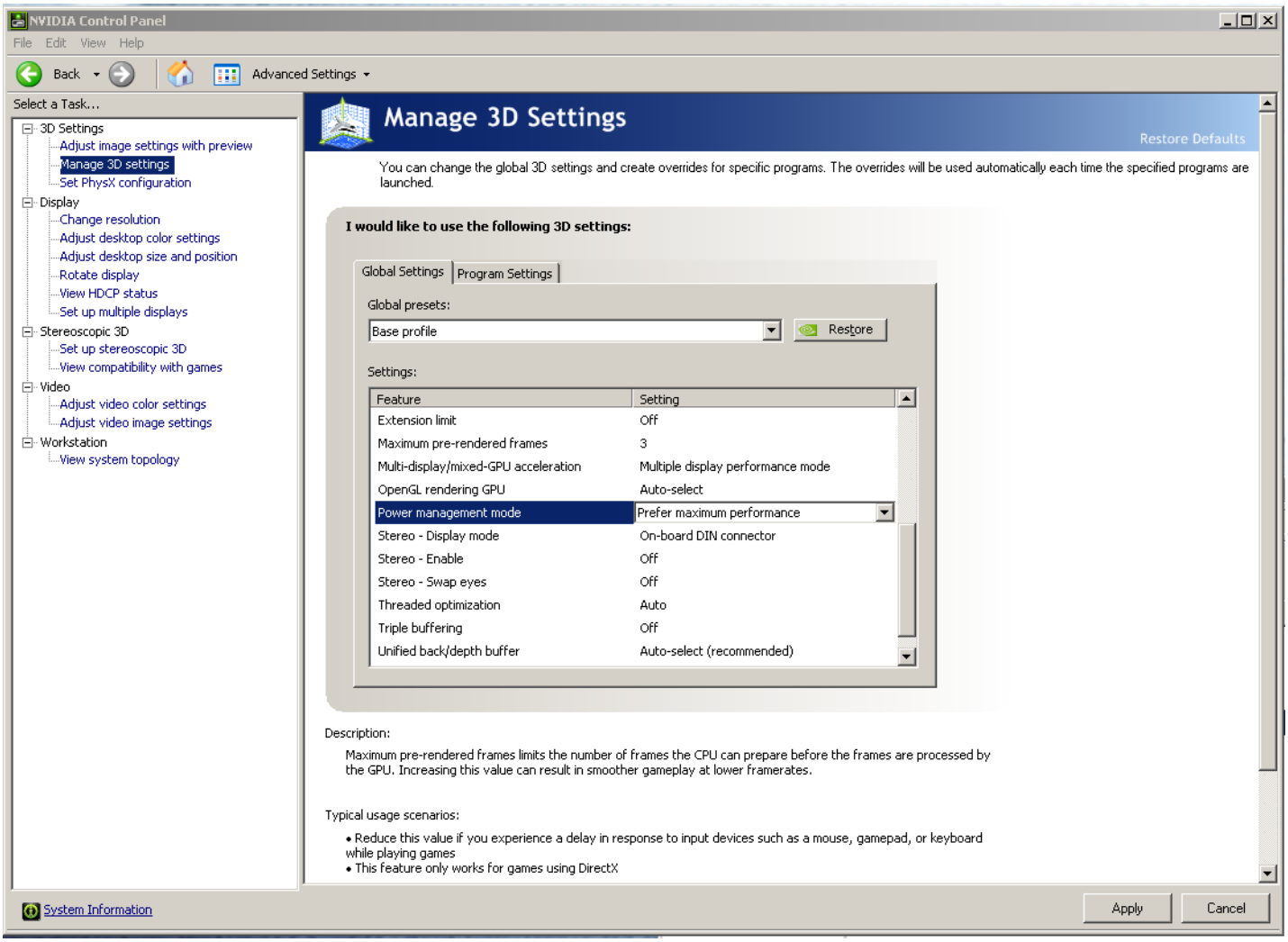
1. See picture below
2. Right-Click on the desktop and select Nvidia Control Panel
3. Select the “Desktop” menu selection in the control panel menu bar.
4. Enable “Desktop -> Video Editing Mode



5. Select Manage 3D Settings
6. Select “Global Settings” Tab
7. Under the “Global Settings” tab select “3D App – Default Global Settings” (Same as Base Profile)

8. Scroll down and locate the “Power Management Mode” feature. The default setting is “Adaptive”

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



10. Depress the “Apply” button.

11. Nvidia driver optimization settings for Avid environments are complete.

E.) GPU monitor connectivity:

The Nvidia Quadro P2000 & P4000 graphics card has four Display-Port ports. All 4 ports can be used simultaneously.

The Nvidia Quadro P1000 graphics cards have four mini Display-Port ports. All 4 ports can be used simultaneously.

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

F.) Serial Port Deck Control

The Lenovo P520C workstation does have an embedded serial port. The embedded serial-port has been qualified by Avid and will maintain frame accuracy in Avid environments. Primary or secondary / additional 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 to the RS422 port of a deck.
   http://www.addenda.com/addenda-elect/products/rsUSB4.pLenovo

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.pLenovo

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

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

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

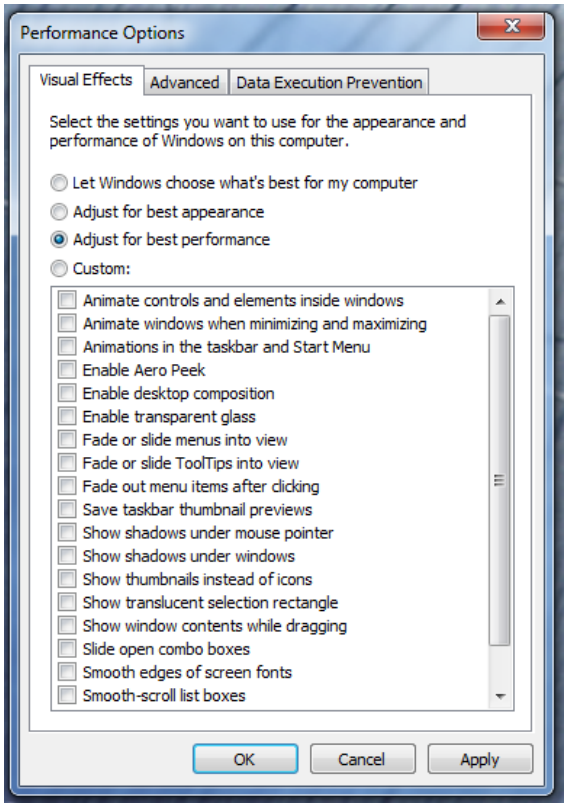
The following links provide O.S. setting suggestions for ensuring optimum performance when working with your Avid editing application with a Windows operating system.

- Optimizations for Video Editors - windows 10

http://avid.force.com/pkb/articles/en_US/troubleshooting/en349411

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

1. Right-Click on My Computer
2. Select Properties
3. On the left side of the menu, locate and select “Advanced system settings”
4. Under the “Advanced” tab depress the “Settings...” button for performance.
5. The “performance Options” window will be displayed.
6. Under the “Visual Effects” tab select the “Adjust for best performance” selection. (Picture below).



7. Depress the “Apply” button

8. Required Windows visual performance settings for Avid environments are now complete.

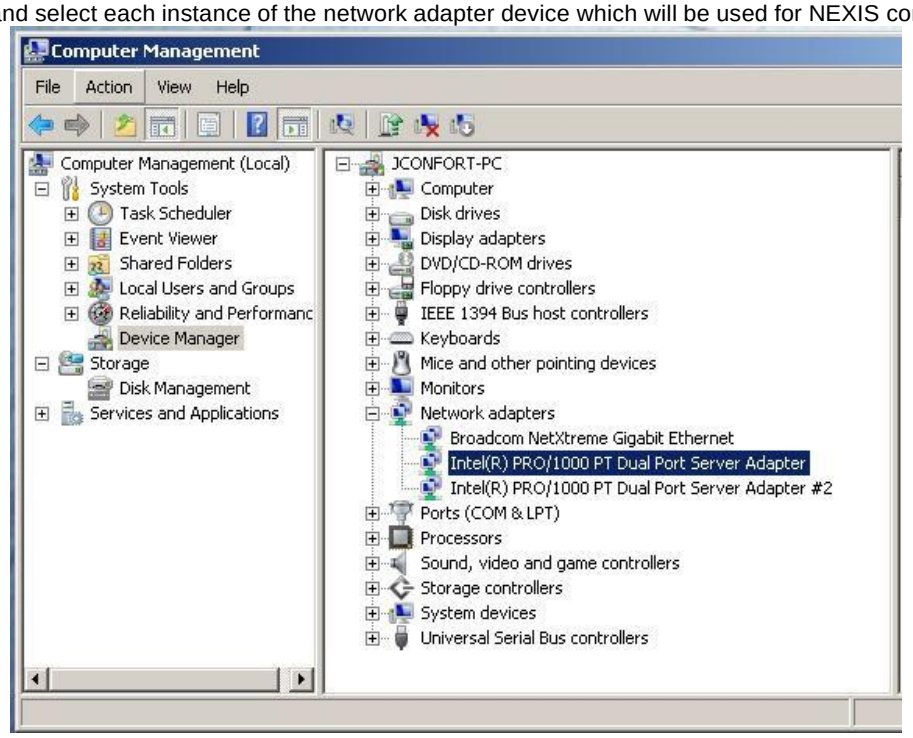
I.) Intel NIC Port(s) for NEXIS connectivity:

For proper operation and connectivity of any Intel NIC port used with NEXIS the settings below are required. Example below is for the Intel PRO 1000 PT.

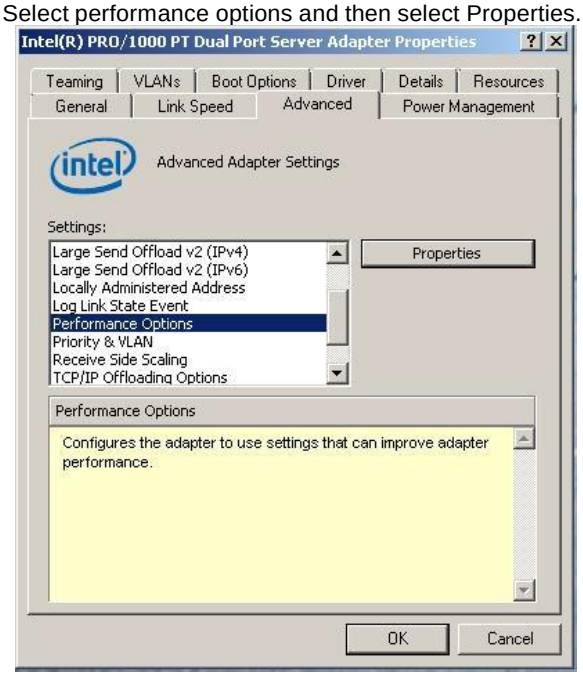
1. For the performance settings, change the following parameters:
   - Receive Buffers to 1024
   - Transmit Buffers to 1024

2. Disable the windows firewall.

To set the Intel NIC Receive / Transmit buffers:
Go to device manager and select each instance of the network adapter device which will be used for NEXIS connectivity.

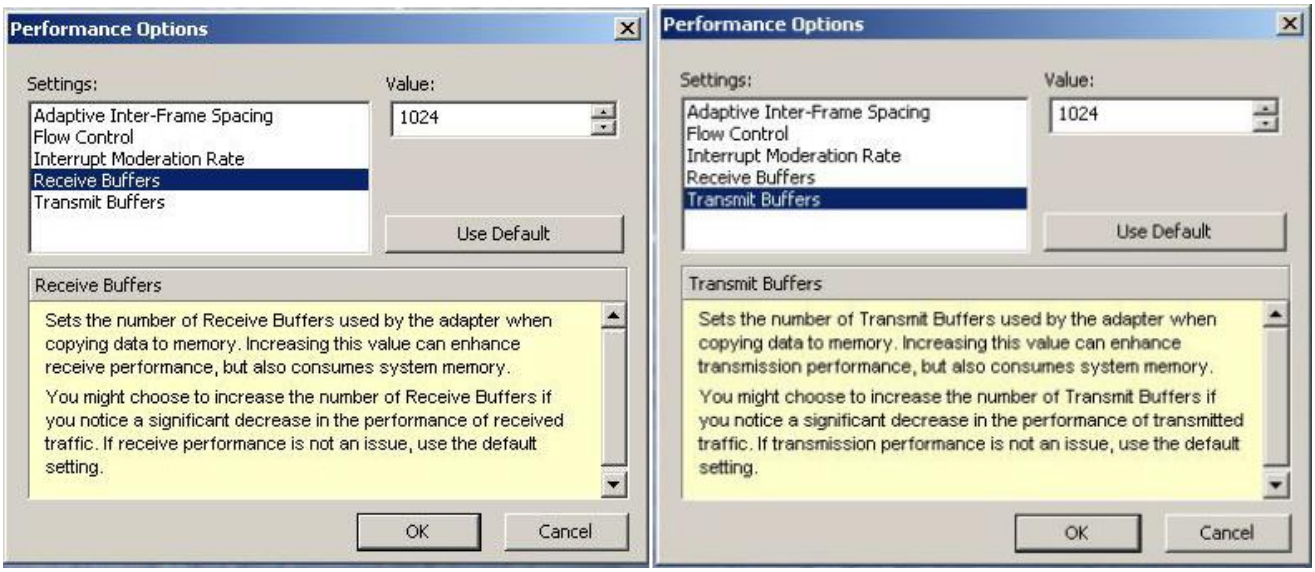


Select performance options and then select Properties.



Set Receive Buffers to 1024

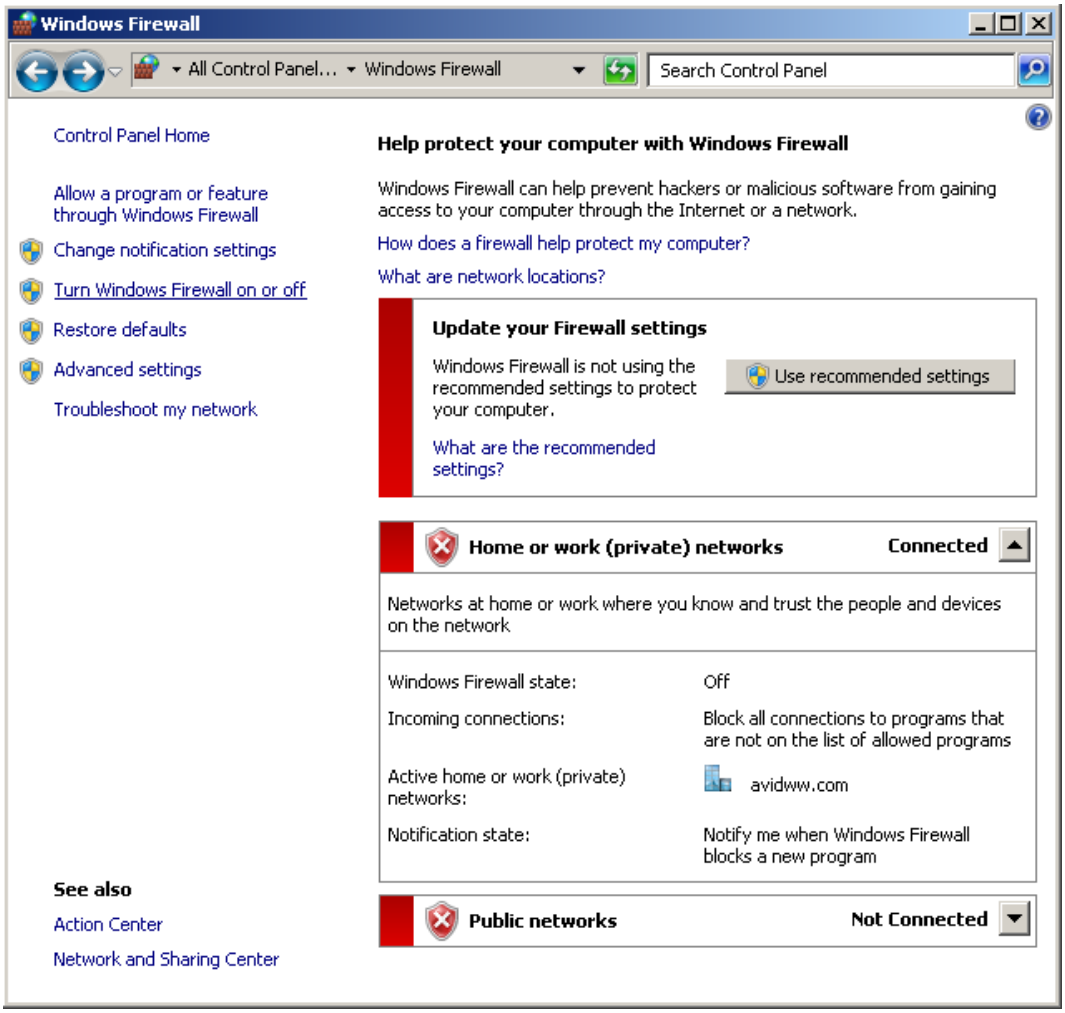
Set Transmit Buffers to 1024



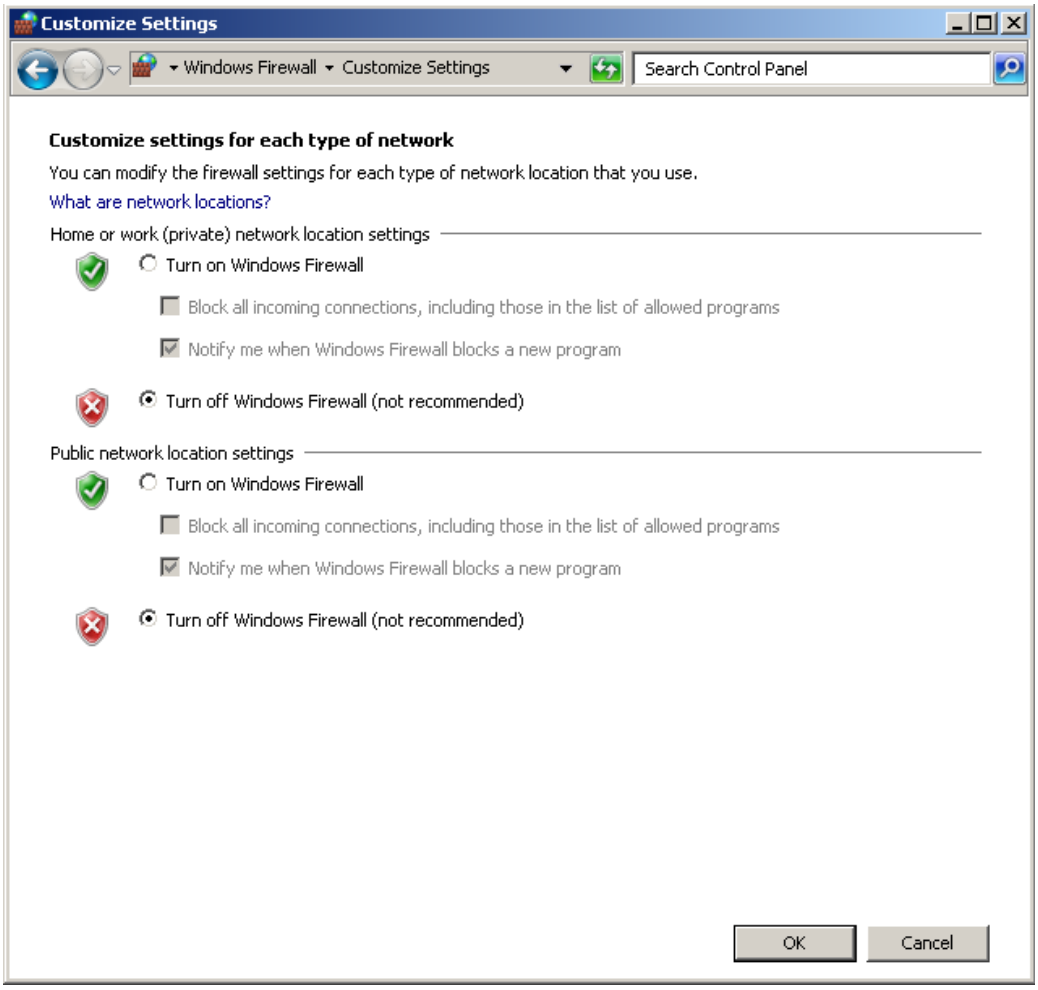
Perform this for each instance of and Intel NIC port which will be used for NEXIS connectivity.

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
Rev A	Jan 15, 2018	Dave Pimm	Initial release of the Lenovo P520 & P520C configuration guide
Rev B	April 25, 2018	Dave Pimm	Corrections and updates