



**Avid Configuration Guidelines
Lenovo P920 workstation
Dual 8 to 28 Core CPU System**



1.) Lenovo P920 AVID Qualified System Specification:

P920 Hardware Configuration

Supported Intel Xeon Scalable family (Skylake) CPU Choices

- Dual Xeon Silver 4110 2.1 Ghz, turbo up to 3.0Ghz 8-core
- Dual Xeon Silver 4114 2.2 Ghz, turbo up to 3.0Ghz 10-core
- Dual Xeon Silver 4116 2.1 Ghz, turbo up to 3.0Ghz 12-core
- Dual Xeon Gold 5115 2.4 Ghz, turbo up to 3.2Ghz 10-core
- Dual Xeon Gold 5118 2.3 Ghz, turbo up to 3.2Ghz 12-core (Good - SD, HD editing)
- Dual Xeon Gold 5120 2.2 Ghz, turbo up to 3.7Ghz 14-core
- Dual Xeon Gold 6130 2.1 Ghz, turbo up to 3.7Ghz 16-core
- Dual Xeon Gold 6134 3.2 Ghz, turbo up to 3.7Ghz 8-core
- Dual Xeon Gold 6136 3.0 Ghz, turbo up to 3.7Ghz 12-core (Better - UHD editing)
- Dual Xeon Gold 6138 2.0 Ghz, turbo up to 3.7Ghz 20-core (MC 8.9.3 or higher)
- Dual Xeon Gold 6142 2.6 Ghz, turbo up to 3.7Ghz 16-core *
- Dual Xeon Gold 6148 2.4 Ghz, turbo up to 3.7Ghz 20-core (MC 8.9.3 or higher)
- Dual Xeon Gold 6154 3.0 Ghz, turbo up to 3.7Ghz 18-core (MC 8.9.3 or higher) (Best – UHD 5994 4 stream XAVC)
- Dual Xeon Platinum 8160 2.1 Ghz, turbo up to 3.7Ghz 24-core (MC 8.9.3 or higher)
- Dual Xeon Platinum 8180 2.5 Ghz, turbo up to 3.8Ghz 28-core (MC 8.9.3 or higher)

Supported Intel Xeon Scalable family Gen 2 (Cascade lake) CPU Choices (min MC 2018.12.x)

- Dual Xeon Silver 4210 2.2 Ghz, turbo up to 3.2 Ghz 10-core
- Dual Xeon Silver 4214 2.2 Ghz, turbo up to 3.2 Ghz 12-core
- Dual Xeon Silver 4216 2.1 Ghz, turbo up to 3.2 Ghz 16-core *
- Dual Xeon Gold 5215 2.5 Ghz, turbo up to 3.4 Ghz 10-core
- Dual Xeon Gold 5217 3.0 Ghz, turbo up to 3.7 Ghz 8-core
- Dual Xeon Gold 5218 2.3 Ghz, turbo up to 3.9 Ghz 16-core * (Good - SD, HD editing)
- Dual Xeon Gold 6230 2.1 Ghz, turbo up to 3.9 Ghz 20-core *
- Dual Xeon Gold 6234 3.3 Ghz, turbo up to 4.0 Ghz 8-core
- Dual Xeon Gold 6238 2.1 Ghz, turbo up to 3.7 Ghz 22-core *
- Dual Xeon Gold 6242 2.8 Ghz, turbo up to 3.9 Ghz 16-core * (Better - UHD editing)
- Dual Xeon Gold 6254 3.1 Ghz, turbo up to 4.0 Ghz 18-core * (Best – UHD 5994 4 stream XAVC)
- Dual Xeon Platinum 8280 2.7 Ghz, turbo up to 4.0 Ghz 28-core * (super high perf with extreme cost)

Notes –

- Higher CPU speeds are preferred over CPU core count for MC application
- * - Dual 16+ Core CPUs require MC 8.9.3 or higher (64+ virtual CPUs)
- Only one 1400W power supply is offered with the P920.

Supported Video Cards

- 1.) NVIDIA P4000 8GB PCI-e video board (recommended)
- 2.) NVIDIA P5000 16GB PCI-e video board
- 3.) NVIDIA P6000 24GB PCI-e video board
- 4.) NVIDIA RTX4000 8GB PCI-e video board (min MC 2018.12.2) (best price performance)
- 5.) NVIDIA RTX5000 16GB PCI-e video board (min MC 2018.12.2) (better performance – higher \$\$)
- 6.) NVIDIA RTX6000 24GB PCI-e video board (min MC 2018.12.2)

System Disk Drive – 500 GB (recommended) SATA SSD or NVMe. 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 Xeon scalable Skylake CPU's will use DDR4-2666MHz memory (up to 16 DIMMs per system)
- Systems with Xeon scalable Gen2 Cascade Lake CPU's use DDR4-2933MHz memory (up to 16 DIMMs)
- Each CPU has 6 memory lanes - optimal bandwidth when 12 memory lanes filled
- 64GB (8 x 8GB) DDR4 2666/2933 MHz ECC memory – (Requires eight 8GB DIMMs) - minimum
- 96GB (12 x 8GB) DDR4 2666/2933 MHz ECC memory – (Requires twelve 8GB DIMMs) – **Best Performance**
- 192GB (12 x 16GB) DDR4 2666/2933 ECC memory – (Requires twelve 16GB DIMMs) – **Best Performance**

Memory modules must be installed according to manufacturer's requirements

Optional AVID memory configuration:

- 128GB (8 x 16GB) DDR4 2666/2933 ECC memory – (Requires eight 16GB DIMMs)
- 128GB (16 x 8GB) DDR4 2666/2933 ECC memory – (Requires sixteen 8GB DIMMs)
- 256GB (16 x 16GB) DDR4 2666/2933 ECC memory – (Requires sixteen 16GB DIMMs)

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.**
- NUMA should be disabled in BIOS

2.) Qualified Operating Systems, Avid Client Editing Applications, Hardware and Shared-Storage support for the Lenovo P920:

Lenovo Supports:

- **Microsoft® Windows 10 Pro / Enterprise 64-bit Edition Version 1809 or later – (MC 8.5 or above)**
- **Microsoft® Windows 10 Pro for workstations 64-bit Version 1809 or later – (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 18.12.x	18.12.2 required for Gen 2 Scalar CPUs and Nvidia RTX graphics
Media Composer 8.x	8.8 for Gen 1 Scalar CPUs, Nvidia Pascal graphics 8.9.3 required for CPU virtual core count > 64
Media Composer 7.x	Not supported
NewsCutter 11.x	Not Supported

* Nvidia P4000, P5000, P6000 require Nvidia driver that ships with the version of MC 8.8 and above

* Nvidia RTX4000, RTX5000, RTX 6000 require Nvidia driver that ships with the version of MC 2018.12.2 and above

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

	Qualified / Supported
Nitris 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/DNxIP/DNxID (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 TB bus with DNxIO, DNxIQ, DNxIV, DNxID DNxIO would require TB3 to TB2 converter
3 rd Party Qualified Hardware	See release notes and Avid website for information regarding supported 3 rd party hardware (vendor qualified)
NEXIS / ISIS Single 1Gb Ethernet Client NEXIS Dual 1Gb Ethernet Client Intel i350 T2V2, i219, X722	ISIS 5500 / 5000 , 7500 / 7000 Avid NEXIS Pro, E2, E2 SSD, E4, E5, E5 NL V18.x
NEXIS / ISIS Ultra Hi-res (10Gbit) client Myricom Single or dual Port 10Gbit Atto FFRM-NS11,NS12 NT11, NT12	ISIS 5500 / 5000 , 7500 / 7000 Avid NEXIS Pro, E2, E2 SSD, E4, E5, E5 NL V18.x
NEXIS 40Gigabit Atto FFRM-NQ 41/42	Avid NEXIS Pro, E2, E2 SSD, E4, E5, E5 NL V18.x

4.) AVID qualified HBA info

AVID qualified HBA	AVID Part Number	Slot Location	Function
Avid Artist DNxIO HBA Avid Artist DNxIQ HBA	Avid part # 7030-30048-02 BMD PCIe cable kit	#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	#4	Avid Mojo DX Hardware Interface HBA – Supported with any of the three listed Active HBA's
Lenovo Thunderbolt 3 adapter card	Not stocked by AVID	#5	Optional Lenovo TB3 PCIe card Optional Lenovo Dual Thunderbolt 3 Flex bay
Atto R680, H680	Not stocked by AVID	#7	Local SAS Storage
LSI 9200-8e SAS controller	7030-30036-01	#7	SAS Local Storage:
Vendor qualified 3 rd party hardware x8 PCI-E	Not stocked by AVID	#8 or #4	Vendor qualified 3 rd party hardware interface. See release notes and Avid website for information regarding supported 3 rd party hardware
Atto FFRM-NS11, NS12, NT11, NT12 10 Gb single or dual port	Not stocked by AVID	#3	Shared Storage: NEXIS Optical Gb-Ethernet
Intel i350-T2 – Dual Gb NIC	Not stocked by AVID	#3	Shared Storage: NEXIS Copper Gb-Ethernet Dual Gb NEXIS Connectivity
Intel X710 dual port 10Gb	Not stocked by AVID	#3	Shared Storage: NEXIS Optical Gb-Ethernet
Myricom 10G-PCIE-8B-S 10G-PCIE-8B2-2S 10G-PCIE-8C2-2T	7030-30041-01	#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 PCIe card supported in P920/9720/P520/P520c
- Optional Lenovo dual Thunderbolt 3 flex module

5.) Slot Configuration:

Slot Configuration Information			
Slot #	Electrical	Mechanical	
1	X16 PCI-E Gen 3 CPU1 (75Watts)	x16 Slot below memory	Graphics Card: Nvidia P4000, P5000*, P6000* RTX4000, RTX5000*, RTX6000* Please Note: Dual slot graphics cards will block access
2	X4 PCI-E Gen 3 CPU1	X4 open ended	Leave open for dual slot graphics card.
3	X16 PCI-E Gen 3 CPU1 (75Watts)	x16	Shared Storage Controllers Nexis/ISIS Intel X710, i350-T2 Atto FFRM-NS11/NS12/NT11/NT12 Myricom 10G-PCIE-8B-S
4	X4 PCI-E Gen 3 CPU1	X4 open ended	Avid/BMD HIB card for DNxIO/DNxIQ/Mojo DX Or 3 rd party PCIe Open IO card (x4)
5	X4 PCI-E Gen 3 CPU1	X4 open ended Half Length Bottom slot	Optional Lenovo Thunderbolt 3 card or nVme PCI storage cards
6*	x16 PCI-E Gen 3 CPU2 (75Watts)	x16 Half Length Top Slot above memory	
7*	x16 PCI-E Gen 3 CPU2 (75Watts)	x16 Middle Slot above memory	Local SAS Storage Controllers or Pro Tools HD h/w
8*	x16 PCI-E Gen 3 CPU2 (75Watts)	x16 Slot above memory	3 rd party PCIe OpenIO card (x8 or x16) or Pro Tools HD h/w
	Embedded Intel I219-LM Gb NIC	PCI-E x1 Gen 3	Qualified for Avid Nexis/ISIS
	Embedded Intel I210 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 P920 has two embedded NIC ports. Both ports are 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 1024
 - 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 P920 systems*

P920 Required system BIOS changes:

1. Verify CPU Processors are set to Hyper-Threading
2. Memory option for NUMA – **Disable**

Set P920 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)
- Select Common Ref Code Configuration
- Set NUMA to disable (Avid MC runs best with NUMA disabled)
- Save changes and exit

8.) Graphics Qualified

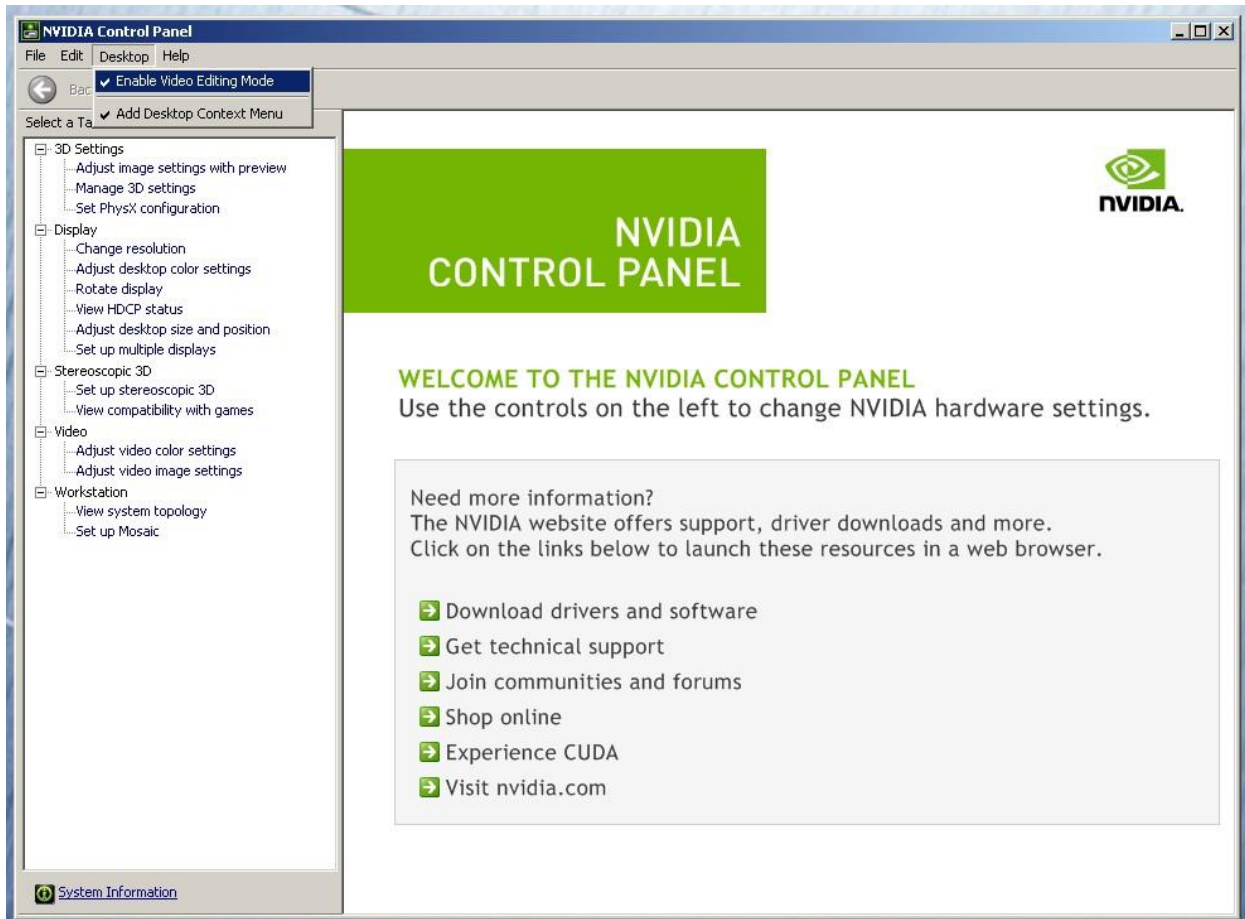
Drivers:

AVID Software	Version(s)	GPU	Driver Required
Media Composer	2018.12.2	RTX4000, RTX5000, RTX6000	411.95
Media Composer	8.8.x	Nvidia P4000, P5000, P6000	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.](#)

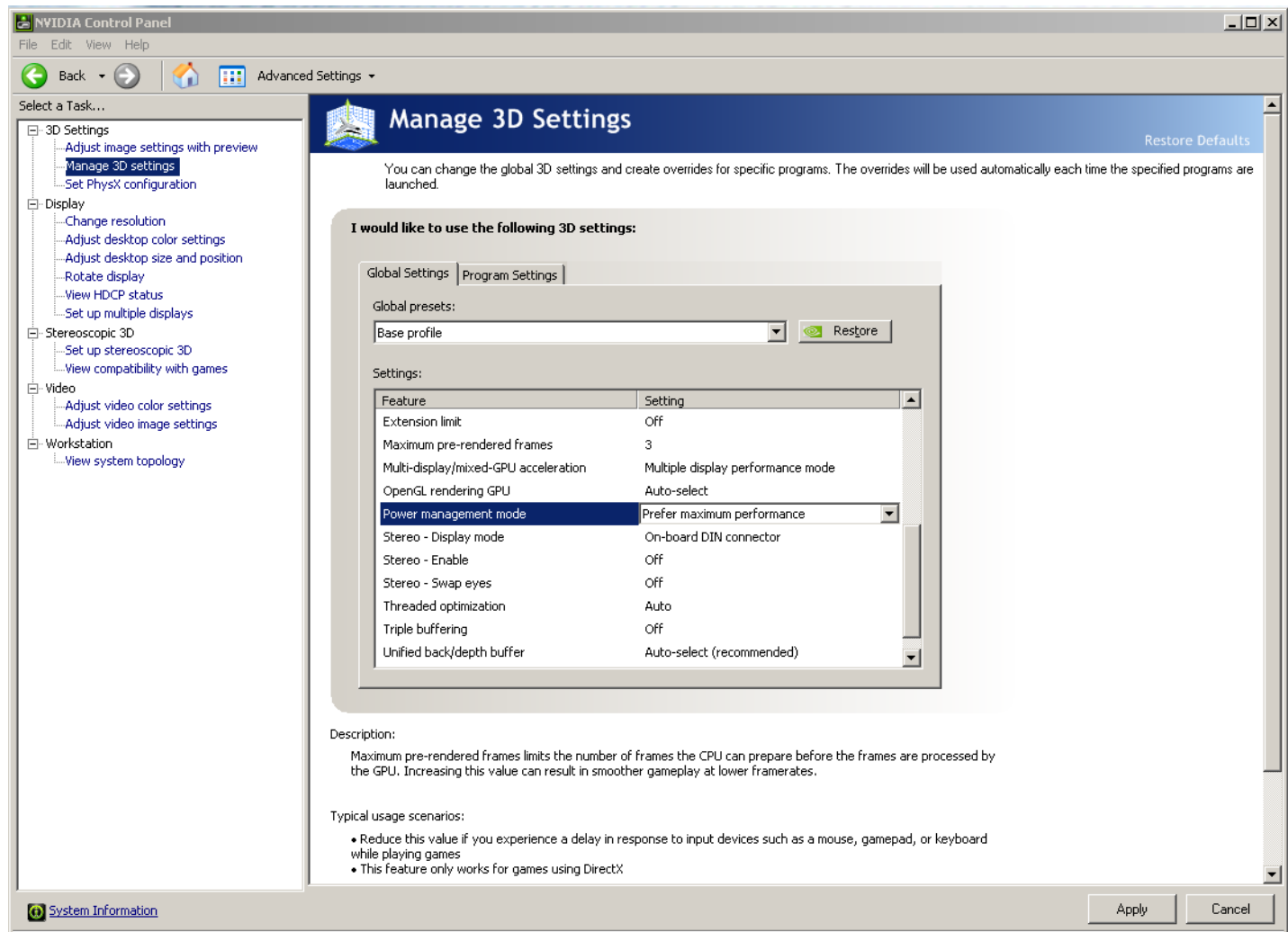
Set optimized Nvidia driver settings for Avid editing environments:

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” or “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 P4000 graphics card has four Display-Port ports. All 4 ports can be used simultaneously. The Nvidia Quadro P5000 & P6000 graphics cards have one DVI port and four Display-Port ports. 4 of the 5 ports can be used simultaneously.

The RTX 4000 has 3 Display Ports. The RTX5000 & RTX6000 have 4 Display Ports.

*(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 P920 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:

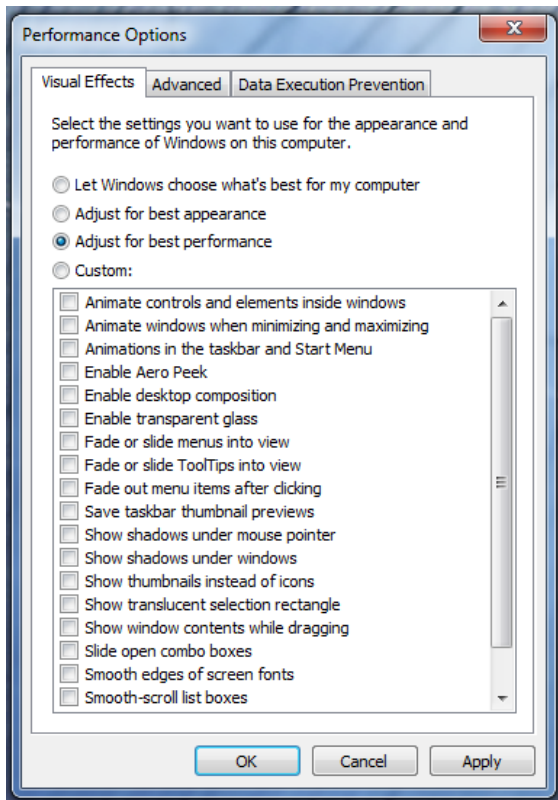
The following links provide O.S. setting suggestions for ensuring optimum performance when working with your Avid editing application with a Windows operating system.

- 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.

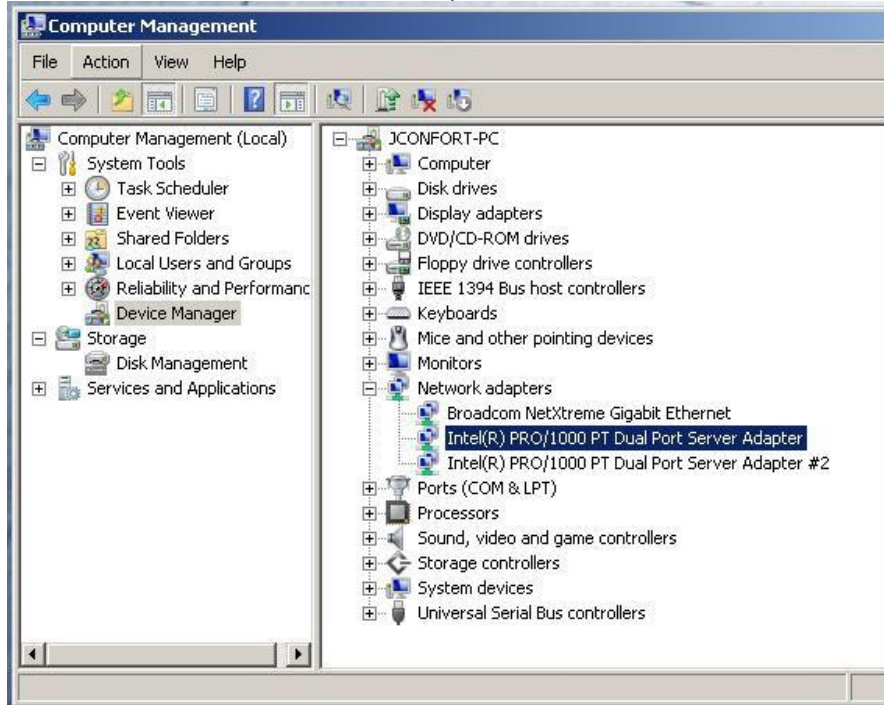
I.) Intel NIC Port(s) for NEXIS connectivity:

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.

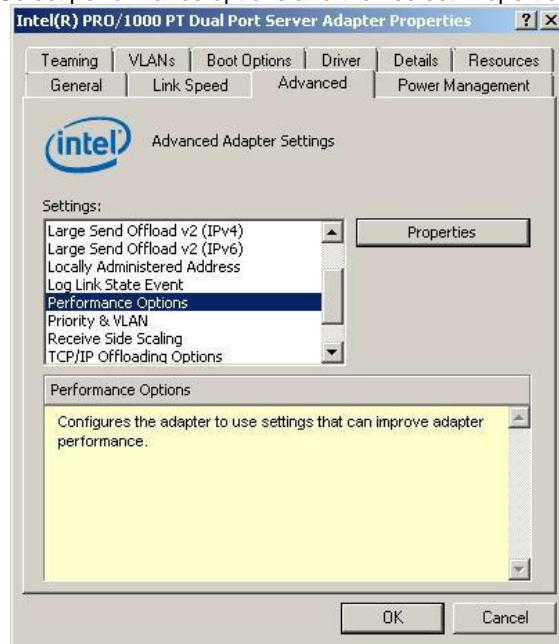
1. For the performance settings, change the following parameters:
 - Receive Buffers to 1024
 - Transmit Buffers to 1024
2. Disable the windows firewall.

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.

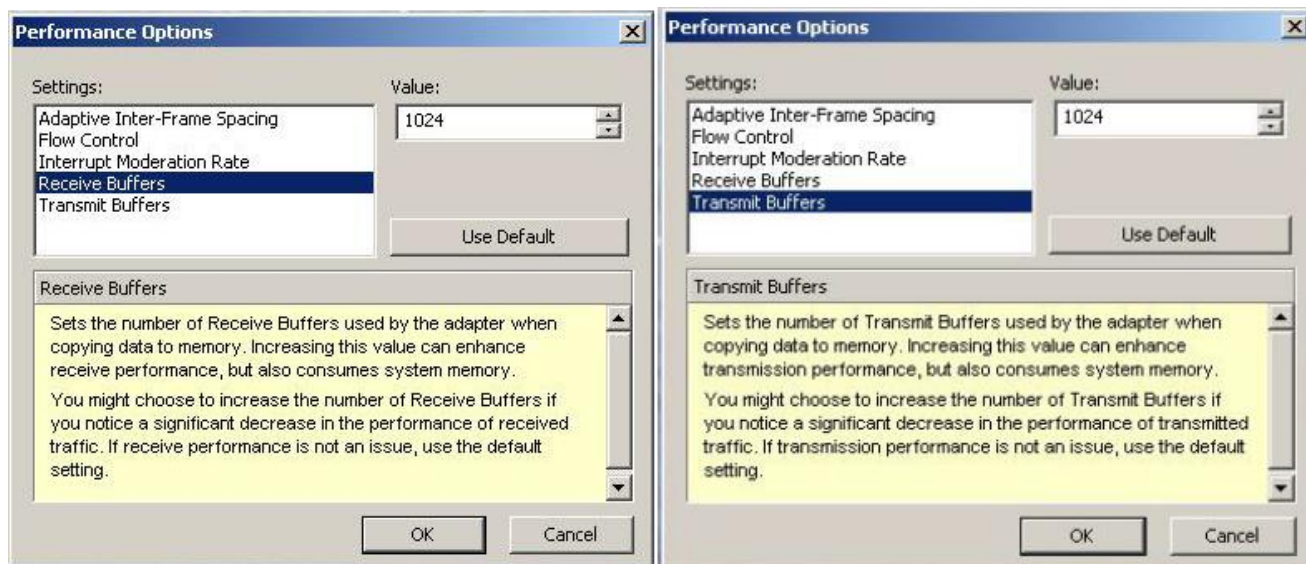


Select performance options and then select Properties.



Set Receive Buffers to 1024

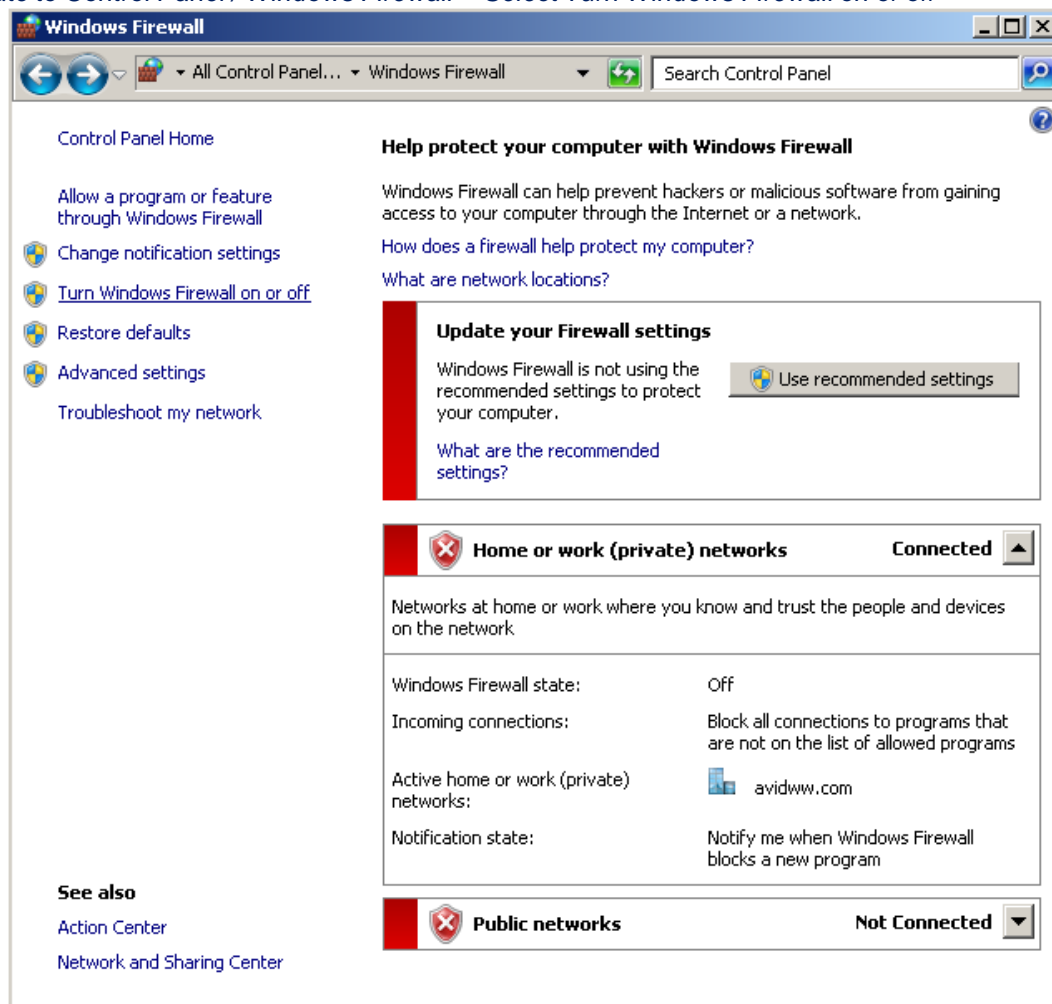
Set Transmit Buffers to 1024



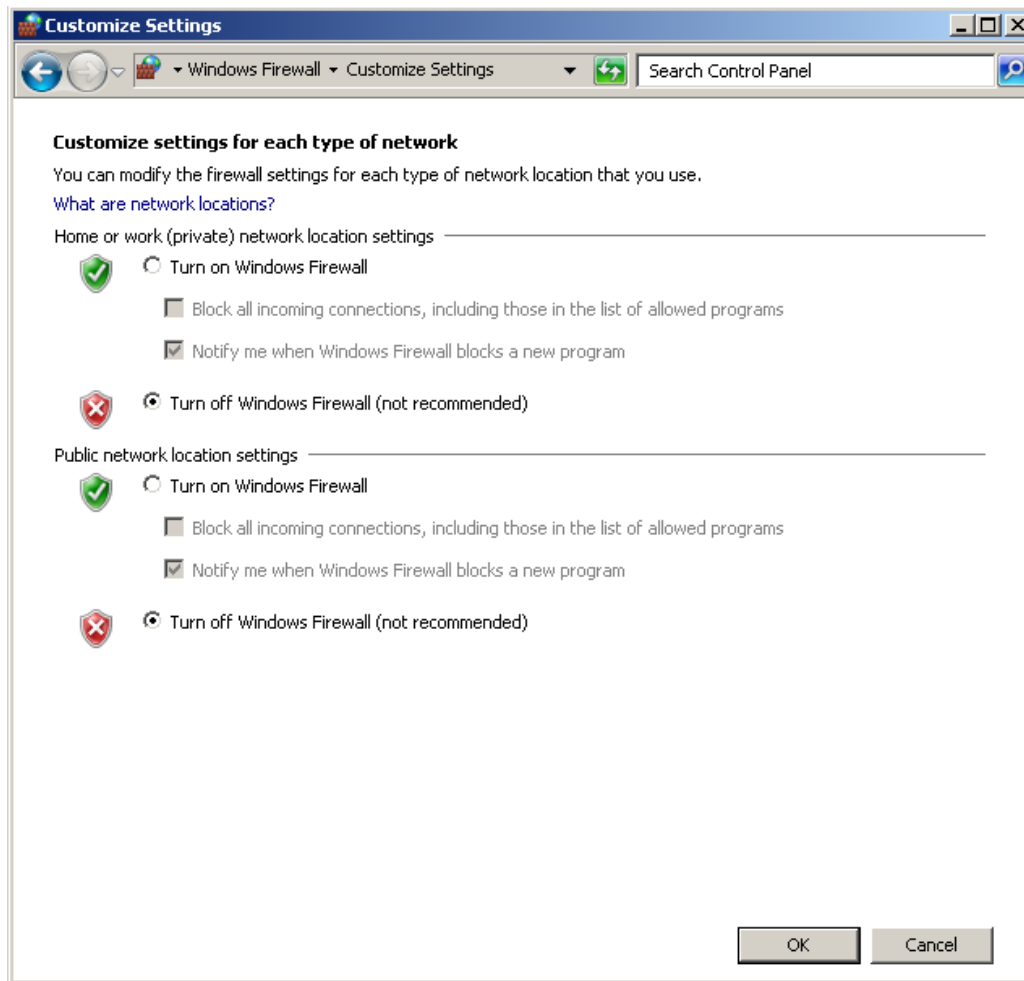
Perform this for each instance of and Intel NIC port which will be used for NEXIS connectivity.

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 P920 configuration guide
Rev B	April 25 th , 2018	Dave Pimm	Corrections and updates
Rev C	March 25, 2019	Dave Pimm	Add Nvidia RTX cards
Rev D	Nov 25 th , 2019	Dave Pimm	Add 2 nd gen Scalar CPUs, 40 Gb NICs