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

Dave Pimm – Avid Technology – Feb 4, 2022

Rev G

1.) Lenovo P920 AVID Qualified System Specification:

P920 Hardware Configuration

Supported Intel Xeon Scalable family (Skylake) CPU Choices (no longer available)

- 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)

2nd Gen REFRESH early 2020 (faster and cheaper)

- Dual Xeon Gold 5218R 2.1 Ghz, turbo up to 4.0 Ghz 20-core *
- Dual Xeon Gold 5220R 2.2 Ghz, turbo up to 4.0 Ghz 24-core *
- Dual Xeon Gold 6226R 2.9 Ghz, turbo up to 3.9 Ghz 16-core *(Good - SD, HD editing)
- Dual Xeon Gold 6230R 2.1 Ghz, turbo up to 4.0 Ghz 26-core *
- Dual Xeon Gold 6238R 2.2 Ghz, turbo up to 4.0 Ghz 28-core *
- Dual Xeon Gold 6240R 2.4 Ghz, turbo up to 4.0 Ghz 24-core *
- Dual Xeon Gold 6242R 3.1 Ghz, turbo up to 4.1 Ghz 20-core *
- Dual Xeon Gold 6246R 3.4 Ghz, turbo up to 4.1 Ghz 16-core * (Better - UHD editing)
- Dual Xeon Gold 6248R 3.0 Ghz, turbo up to 4.0 Ghz 24-core *
- Dual Xeon Gold 6258R 2.7 Ghz, turbo up to 4.0 Ghz 28-core * (Best – UHD 5994 4 stream XAVC)

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 *(no longer available)*
2.) NVIDIA P5000 16GB PCI-e video board *(no longer available)*
3.) NVIDIA P6000 24GB PCI-e video board *(no longer available)*
4.) NVIDIA RTX4000 8GB PCI-e video board (min MC 2018.12.2)
5.) NVIDIA RTX5000 16GB PCI-e video board (min MC 2018.12.2)
6.) NVIDIA RTX6000 24GB PCI-e video board (min MC 2018.12.2)
7.) NVIDIA RTX A4000 16GB PCI-e video board (MC 2019.12 or later required) (best price performance)
8.) NVIDIA RTX A4500 20GB PCI-e video board (MC 2019.12 or later required)
9.) NVIDIA RTX A5000 24GB PCI-e video board (MC 2019.12 or later required) (better performance)
10.) NVIDIA RTX A6000 48GB PCI-e video board (MC 2019.12 or later required) (best performance)

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 twelve16GB 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 11 Pro / Enterprise 64-bit Edition Version 21H2 or later – (MC 21.12 or above)**
- **Microsoft® Windows 10 Pro / Enterprise 64-bit Edition Version 20H2 or later**

See microsoft win 10 lifecycle fact sheet for supported Win 10 versions:
https://support.microsoft.com/en-us/help/13853/windows-lifecycle-fact-sheet

Not Supported –

- **Microsoft Windows 7, 8 or 8.1 – any version**
- **Microsoft Windows 10 1909 or before**

Media Composer Application	Minimum Rev
Media Composer 19.12.x	19.12.x required for Nvidia RTX A series
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
* Nvidia RTX A4000, RTX A5000 require Nvidia driver 462.96 or later

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

	Qualified / Supported
Nitris DX, Mojo DX	NOT SUPPORTED - EOL
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
3rd Party Qualified Hardware	See release notes and Avid website for information regarding supported 3rd party hardware (vendor qualified)
NEXIS Single 1Gb Ethernet Client NEXIS Dual 1Gb Ethernet Client Intel i350 T2V2, i219, X722	Avid NEXIS Pro, E2, E2|SSD, E4, E5, E5|NL V18.x
NEXIS Ultra Hi-res (10Gbit) client Atto FFRM-NS11,NS12 NT11, NT12 Intel X550, X520-T2, X540-T2, X710-DA2, X722 Atto FFRM-N322 (10 Gb only) Intel X520-T2, X540-T2, X710-DA2, X722	Avid NEXIS Pro, E2, E2|SSD, E4, E5, E5|NL V18.x
NEXIS 40Gigabit Atto FFRM-NQ 41/42 Atto FFRM-N351/N352 (40 Gb only) Atto FFRM-N311/N312 (40 Gb only)	Avid NEXIS Pro, E2, E2|SSD, E4, E5, E5|NL V18.x

4.) AVID qualified HBA info

AVID qualified HBA	AVID Part	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
Lenovo Thunderbolt 3	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 3rd party hardware x8 PCI-E	Not stocked by AVID	#8 or #4	Vendor qualified 3rd party hardware interface. See release notes and Avid website for information regarding supported 3rd party hardware
Atto FFRM-NQ 41/42 Atto FFRM-N351/N352 (40 Gb only) Atto FFRM-N311/N312 (40 Gb only)	Not stocked by AVID	#3	Shared Storage: NEXIS 40 Gb-Ethernet
Atto FFRM-NS11,NS12 NT11, NT12 Intel X550, X520-T2, X540-T2, X710-DA2, X722 Atto FFRM-N322 (10 Gb only)	Not stocked by AVID	#3	Shared Storage: NEXIS 10 Gb-Ethernet
Intel i350-T2 – Dual Gb NIC	Not stocked by AVID	#3	Shared Storage: NEXIS Copper 1 Gb-Ethernet Dual Gb NEXIS Connectivity

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	Nvidia Graphics Card ***Please Note: Dual slot graphics cards will block access to slot #2***
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 Single or dual NIC 1Gb, 10Gb, 40Gb
4	X4 PCI-E Gen 3 CPU1	X4 open ended	Avid/BMD HIB card for DNxIO/DNxIQ Or 3rd 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	3rd 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
	Embedded Intel I210 Gb NIC	PCI-E x1 Gen 3	Qualified for Avid Nexis

6.) Use of embedded NIC ports for Nexis 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 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 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

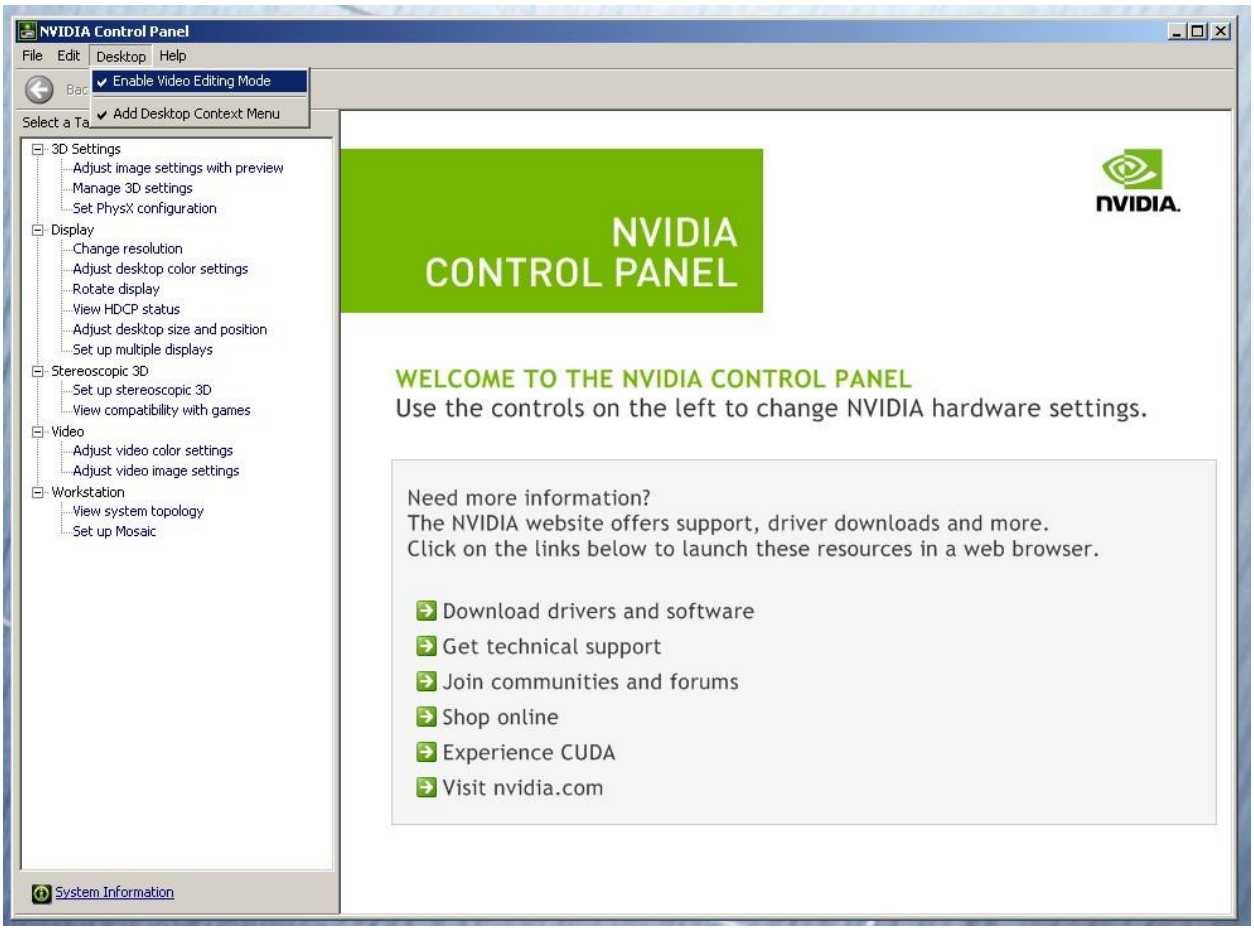
8.) Graphics Qualified Drivers:

AVID Software	Version(s)	GPU	Driver Required
Media Composer	2021.12	Nvidia cards	472.47
Media Composer	2019.12.x	RTX A4000, A5000, A6000	462.96
Media Composer	2018.12.2	RTX4000, RTX5000, RTX6000	411.95
Media Composer	8.8.x	Nvidia P4000, P5000, P6000	385.08

** Neither graphics driver is included with MC release builds. You can find links to this driver on the Avid Media Composer Documentation and Version Matrix web page
http://avid.force.com/pkb/articles/en_US/compatibility/en267087

Set optimized Nvidia driver settings for Avid editing environments:

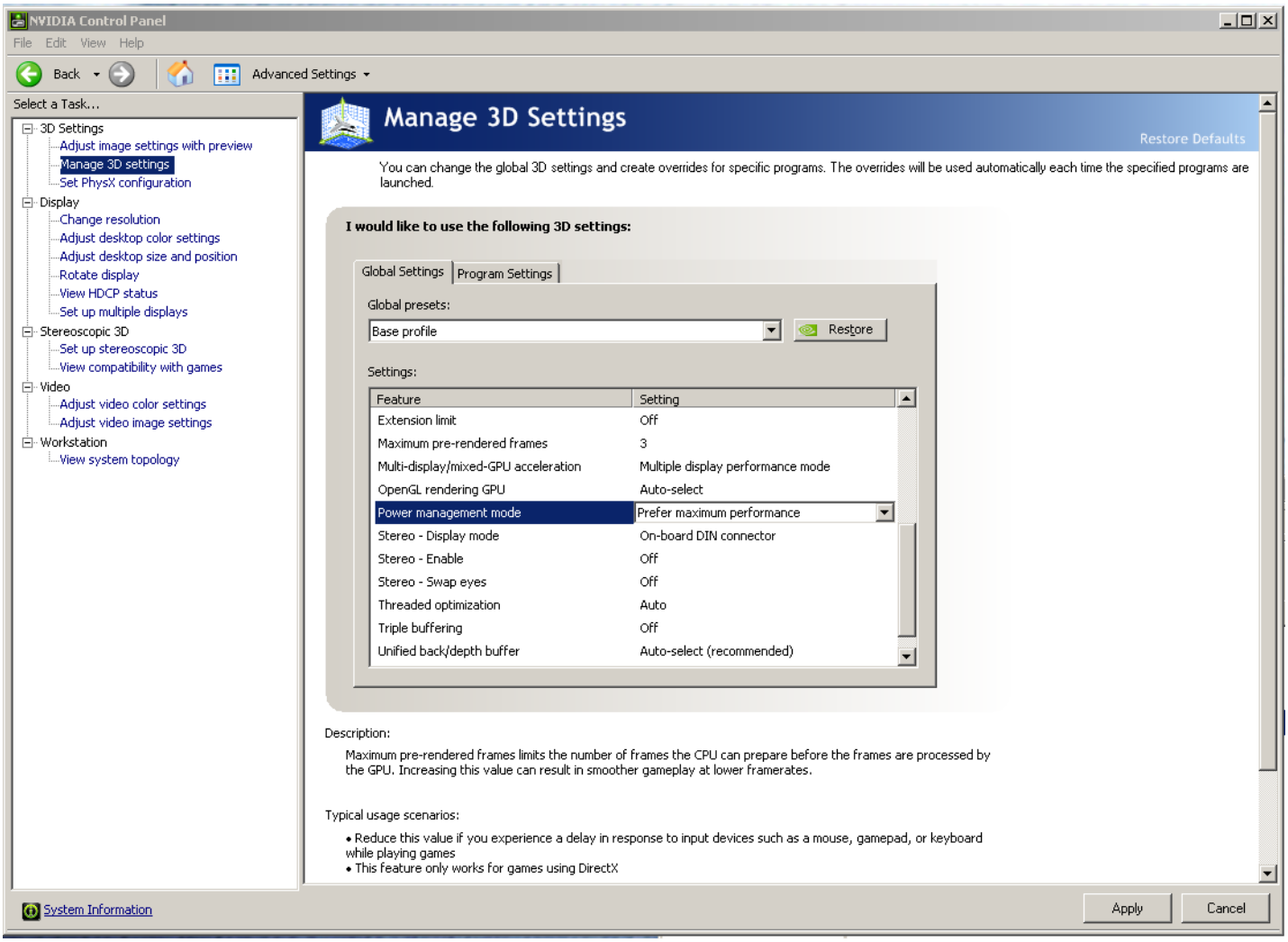
1. See picture below
2. Right-Click on the desktop and select Nvidia Control Panel
3. Select the “Desktop” menu selection in the control panel menu bar.
4. Enable “Desktop -> Video Editing Mode



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 using USB to serial port adapters. See the Avid KB for more info.

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

Revision Update

Revision	Date	Name	Update
Rev A	Jan 15, 2018	Dave Pimm	Initial release of the Lenovo P920 configuration guide
Rev B	April 25th, 2018	Dave Pimm	Corrections and updates
Rev C	March 25, 2019	Dave Pimm	Add Nvidia RTX cards
Rev D	Nov 25th, 2019	Dave Pimm	Add 2nd gen Scalar CPUs, 40 Gb NICs
Rev E	July 28, 2020	Dave Pimm	Add 2nd Gen Scalar REFRESH Intel processors
Rev F	Aug 4, 2021	Dave Pimm	Updates plus new Nvidia graphics