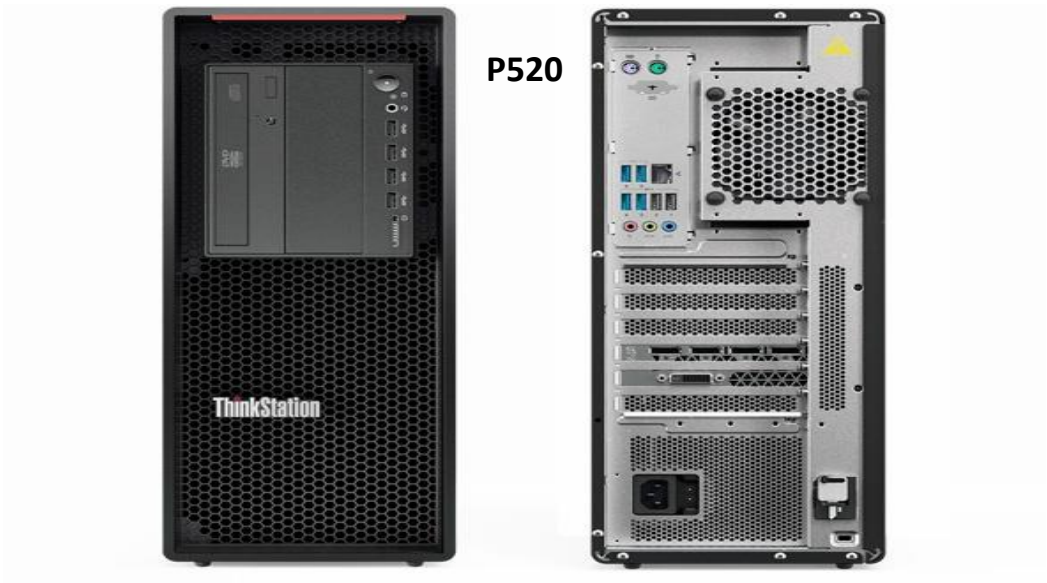
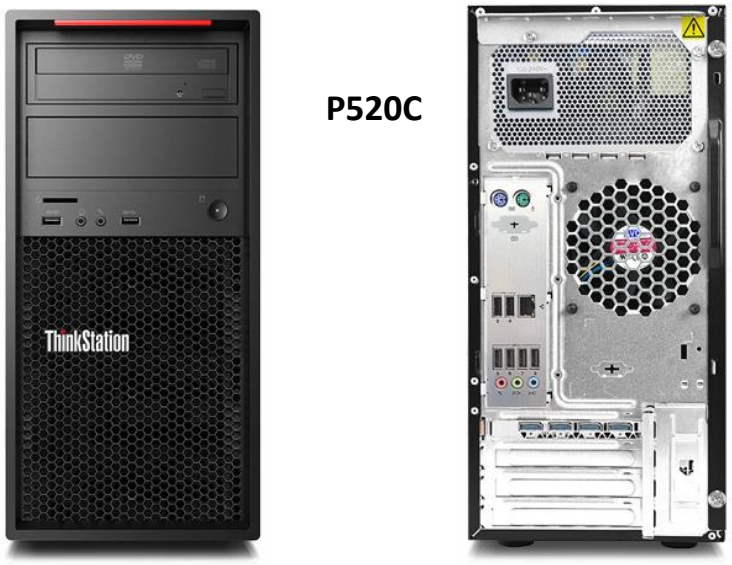
Avid Configuration Guidelines
Lenovo P520/P520C workstation
Single 6 to 18 Core CPU System



P520



P520C

Dave Pimm – Avid Technology – Feb 9, 2022

Rev F

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

P520 & P520C Hardware Configuration

Intel Xeon W-series (Skylake - Q3 '17) (No Longer Available)

- 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
- Xeon W-2145 3.7 Ghz, turbo up to 4.5Ghz 8-core
- 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

Intel Xeon W-series (Cascade lake – Q4 '19) - min MC 2018.12.x – Lower pricing than Skylake W-series

- Xeon W-2235 3.8 Ghz, turbo up to 4.6Ghz 6-core
- Xeon W-2245 3.9 Ghz, turbo up to 4.5Ghz 8-core
- Xeon W-2255 3.7 Ghz, turbo up to 4.5 Ghz 10-core (Good)
- Xeon W-2265 3.5 Ghz, turbo up to 4.6 Ghz 12-core (Better)
- Xeon W-2275 3.3 Ghz, turbo up to 4.6 Ghz 14-core
- Xeon W-2295 3.0 Ghz, turbo up to 4.6 Ghz 18-core (Best performance)

- Note – Higher CPU speeds are preferred over CPU core count for MC application (as turbo speeds are similar, higher core count will give better performance.

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

Supported Video Cards

1.) NVIDIA P1000 4GB PCI-e video board (no longer available)
2.) NVIDIA P2000 5GB PCI-e video board (no longer available)
3.) NVIDIA P4000 8GB PCI-e video board (no longer available)
4.) NVIDIA P2200 5GB PCI-e video board (*min MC 2018.12.x*) (no longer available)
5.) NVIDIA T1000 4 & 8 GB PCI-e video board
6.) NVIDIA RTX 4000 8GB PCI-e video board (*min MC 2018.12.x*) - (Best performance)
7.) NVIDIA RTX A2000 6 & 12 GB PCI-e video board (*min MC 2019.12.x*)
8.) NVIDIA RTX A4000 16GB PCI-e video board (*min MC 2019.12.x*) - (Best performance)

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 with Xeon W Skylake CPUs use DDR4-2666MHz ECC memory (up to 8 DIMMs per system)
- Systems with Xeon W Cascade lake CPUs use DDR4-2933MHz ECC memory (up to 8 DIMMs per system)
- 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 2666/2933 MHz 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 2666/2933 ECC memory – (Requires eight 8GB DIMMs **P520 only)
- 64GB (4 x 16GB) DDR4 2666/2933 ECC memory – (Requires four 16GB DIMMs)
- 128GB (8 x 16GB) DDR4 2666/2933 ECC memory – (Requires eight 16GB DIMMs ** P520 only)
- 128GB (4 x 32GB) DDR4 2666 /2933 ECC memory – (Requires four 32GB 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.

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 2004 or later – (MC 8.8 or above)**

  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 (Microsoft end of life)**

Media Composer Application	Minimum Rev
Media Composer 18.12.x	Min 18.12.2 required for Cascade Lake CPUs and Nvidia RTX graphics
Media Composer 8.x	8.8 for Skylake 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 P1000, P2000, P4000 require Nvidia driver that ships with the version of MC 8.8 and above
* Nvidia P2200, RTX 4000 require Nvidia driver that ships with the version of MC 2018.12.2 and above
* Nvidia T1000, RTX A4000 require Nvidia driver 462.96 or later

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
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	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
Lenovo Thunderbolt 3 adapter card or flex bay	Not stocked by AVID	#6	#4	
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 X520, X540, X710 single or 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
Atto FFRM-NQ 41/42 40 Gb single or dual port	Not stocked by AVID	#3	#3	Shared Storage: NEXIS Optical 40Gb-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 Front Flex Module supported in P520/P520C**

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 Single or dual NIC 1Gb, 10Gb, 40Gb
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	Nvidia Graphics Card
5	PCI 32/33	PCI	Not used
6	X4 PCI-E Gen 3	X4 Open Ended Half Length	Optional Lenovo nVme PCI storage cards or Lenovo Thunderbolt card
	Embedded Intel I219-LM Gb NIC	PCI-E x1 Gen 3	Qualified for Avid Nexis

5.) Slot Configuration for P520C:

Slot Configuration Information			
Slot #	Electrical	Mechanical	
1	X16 PCI-E Gen 3 (75W)	X16	Nvidia Graphics Card
2	X8 PCI-E Gen 3	X8 Open Ended	Local Storage controllers
3	X16 PCI-E Gen 3 (75W)	X16	Shared Storage Controllers Nexis Single or dual NIC 1Gb, 10Gb, 40Gb
4	X4 PCI-E Gen 3	X4 open ended	Avid/BMD HIB card for DNxIO/DNxIQ Or Lenovo Thunderbolt 3 card or 3rd party PCIe Open IO card
	Embedded Intel I219-LM Gb NIC	PCI-E x1 Gen 3	Qualified for Avid Nexis

6.) Use of embedded NIC ports for Nexis 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 1024
   - Transmit Buffers to 1024

2. Disable the windows firewall.

7.) Required system BIOS settings for AVID environments:

Use latest version from Vendor website

P520 Required system BIOS changes:

1. Verify CPU Processors are set to Hyper-Threading

Set P520 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

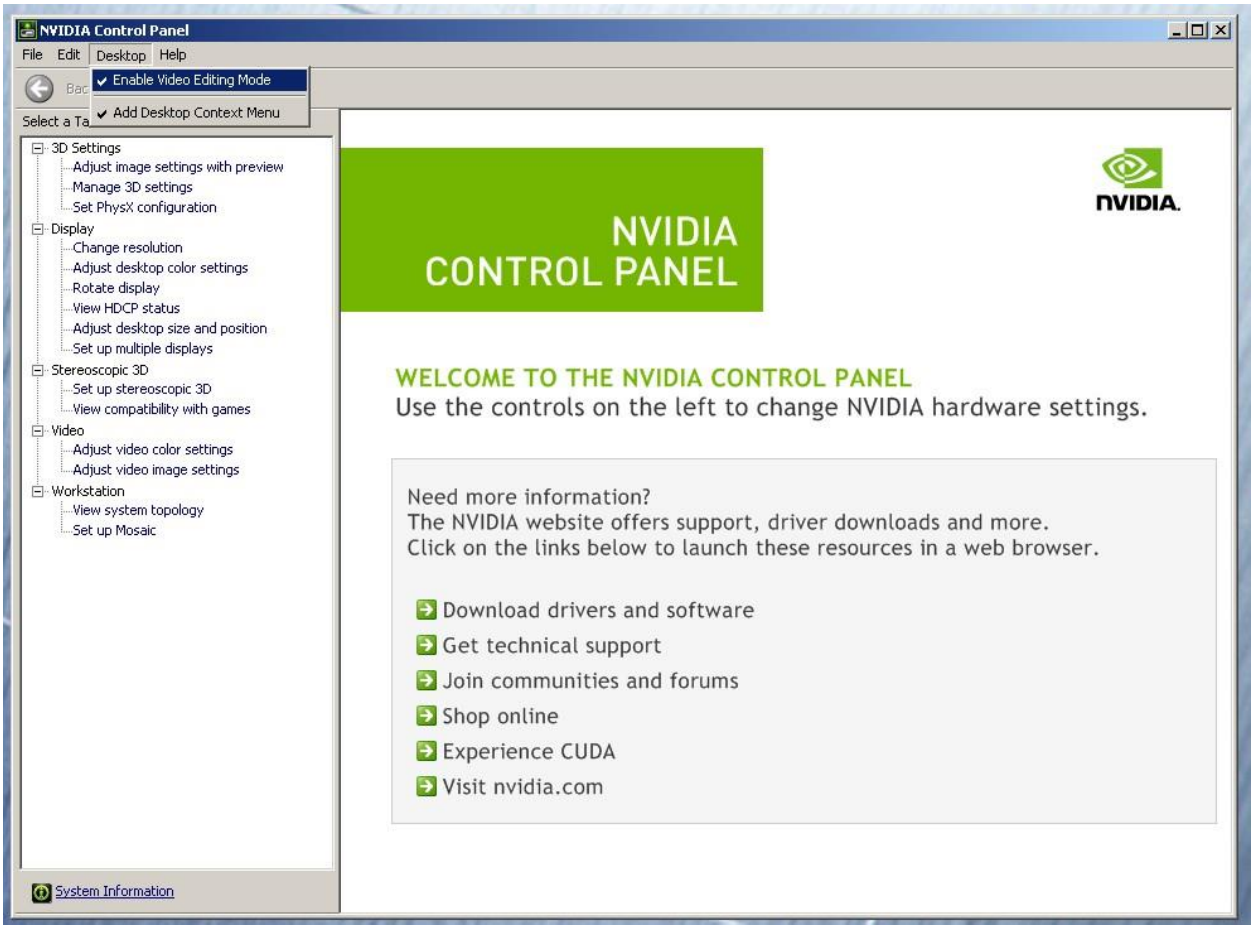
8.) Graphics Qualified Drivers:

AVID Software	Version(s)	GPU	Driver Required
Media Composer	2021.12	Nvidia cards	472.47
Media Composer	2019.12.x	T1000, RTX A4000	462.96
Media Composer	2018.12.2	P2200, RTX4000	411.95
Media Composer	8.8.x	Nvidia P1000, P2000, P4000	385.08

** Nvidia graphics driver are no longer 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:

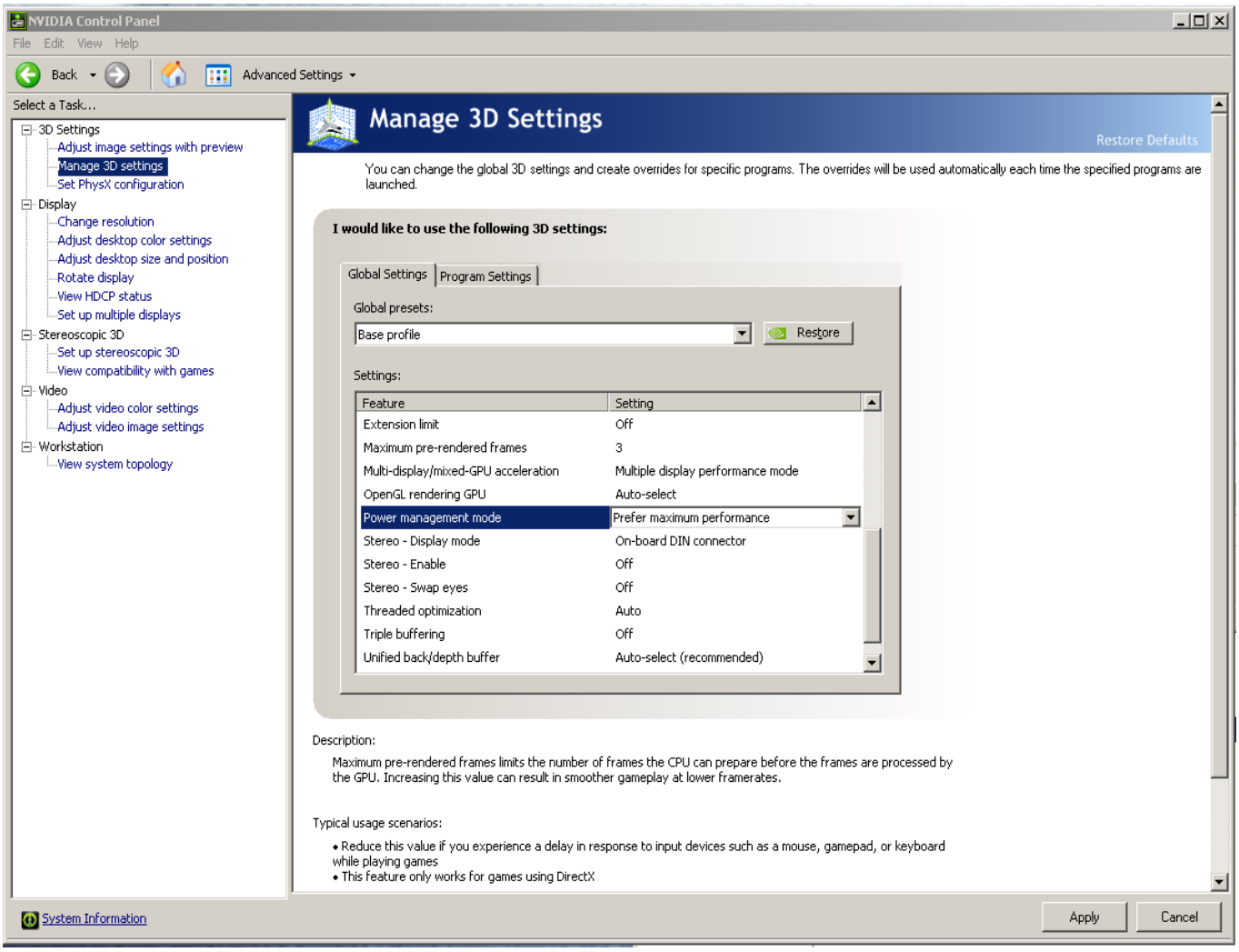
1. See picture below
2. Right-Click on the desktop and select Nvidia Control Panel
3. Select the “Desktop” menu selection in the control panel menu bar.
4. Enable “Desktop -> Video Editing Mode



5. Select Manage 3D Settings
6. Select “Global Settings” Tab
7. Under the “Global Settings” tab select “3D App – Default Global Settings” (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, P2200 & P4000 graphics card has four Display-Port ports. The RTX 4000 has 3 Display-Ports. 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 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 P520 & P520C configuration guide
Rev B	April 25, 2018	Dave Pimm	Corrections and updates
Rev C	March 25, 2019	Dave Pimm	Add Nvidia RTX cards
Rev D	Dec 30, 2019	Dave Pimm	Add Cascade Lake Xeon CPUs
Rev E	Aug 4, 2021	Dave Pimm	Updates plus new graphics
Rev F	Feb 9, 2022	Dave Pimm	New Nvidia GPUs plus Win 11