Avid NEXIS®

Network and Switch Guide

March 2023

Revision History

March 2023	Added Avid NEXIS | F2 SSD switch/cables/NICs
Nov 2022	Updated the section "Know Where Your Subnets Are on the Network" on page 4
Oct 2022	Updated Flow Control from recommendation to requirement
Sept 2022	Added F-series as supported with Dell S4048-ON switch
August 2022	Clarified flow control specification
July 2022	Introduced Avid NEXIS F-Series and supporting switches and options
May 2022	Minor updates for Avid NEXIS 2022.5
Oct 2021	Moved older switches to Legacy table, added more switches to Approved table
Apr 2021	Added Mac Pro 7,1 to Apple/Aquantia row in Supported NIC cards table. Added Avid NEXIS v2020.x and 2021.x
Dec 2020	macOS 11/Myricom issue
Nov 2020	Added Dell S5200-ON series
Oct 2020	Added more ATTO NICs and supported operating systems
Sep 2020	Added Dual Port Networking and AALB; added Cisco 93xxx "qualified" switches from KB page

Aug 2020	Changes to LACP procedures for Arista and Cisco switches, added Dell 4100 Series switches
May 2020	Added CentOS 7.x support for some ATTO NICs
Apr 2020	Added Intel X550 NIC
Mar 2020	Added long-range optics information
Jan 2020	Added more OS detail to NIC tables. Added more Sonnet NICs. Removed NETGEAR X728 (not tested in Avid).
Sep 2019	Removed some ATTO switches and NICs (duplications or never released)
Jul 2019	Dell switches rebranded to PowerSwitch
May 2019	Improved the Supported NIC table in “Supported Network Components and Cables” on page 18

Contents

Using This Guide

This document describes switch setup information for the Avid NEXIS® shared storage networks. Your network might not contain certain topologies that are covered in the documentation. The Avid network and switches are tuned for high-speed and high-capacity shared storage primarily for Avid editing workstations and servers that manage media.

Symbols and Conventions

Avid documentation uses the following symbols and conventions:

Symbol or Convention	Meaning or Action
	A note provides important related information, reminders, recommendations, and strong suggestions.
	A caution means that a specific action you take could cause harm to your computer or cause you to lose data.
	A warning describes an action that could cause you physical harm. Follow the guidelines in this document or on the unit itself when handling electrical equipment.
>	This symbol indicates menu commands (and subcommands) in the order you select them. For example, File > Import means to open the File menu and then select the Import command.
‣	This symbol indicates a single-step procedure. Multiple arrows in a list indicate that you perform one of the actions listed.
(Windows) or (Macintosh)	This text indicates that the information applies only to the specified operating system, either Windows or Macintosh OS X.
Bold font	Bold font is primarily used in task instructions to identify user interface items and keyboard sequences.
Italic font	Italic font is used to emphasize certain words and to indicate variables.
`Courier Bold font`	Courier Bold font identifies text that you type.
Ctrl+key or mouse action	Press and hold the first key while you press the last key or perform the mouse action. For example, Command+Option+C or Ctrl+drag.

If You Need Help

If you are having trouble using your Avid product:

1. Retry the action, carefully following the instructions given for that task in this guide. It is especially important to check each step of your workflow.

2. **Always check online for the most up-to-date documentation or ReadMe, which is updated whenever new information becomes available.** Visit the Knowledge Base at www.avid.com/support.
3. Check the documentation that came with your Avid application or your hardware for maintenance or hardware-related issues.
4. Visit the Knowledge Base at www.avid.com/US/support. Online services are available 24 hours per day, 7 days per week. Search this Knowledge Base to find answers, to view error messages, to access troubleshooting tips, to download updates, and to read or join message-board discussions.

Accessing the Online Documentation

The Avid online documentation contains all the product documentation in PDF format. You can access the documentation from the Knowledge Base site specific to your release. Download and install Acrobat Reader before you access the PDF documentation.

Avid Training Services

Avid makes lifelong learning, career advancement, and personal development easy and convenient. Avid understands that the knowledge you need to differentiate yourself is always changing, and Avid continually updates course content and offers new training delivery methods that accommodate your pressured and competitive work environment.

For information on courses/schedules, training centers, certifications, courseware, and books, please visit www.avid.com/support and follow the Training links, or call Avid Sales at 800-949-AVID (800-949-2843).

1 Planning Your Configuration

This document provides Avid NEXIS Administrators with a single reference regarding the implementation, configuration and troubleshooting of Avid® qualified, approved, and architecturally capable Ethernet switches for use as the Avid Production Network (APN) switch for all Avid platforms. See the *Avid NEXIS Setup and Maintenance Guide* and the latest *Avid NEXIS ReadMe* for information about currently supported models.

Network Considerations

Carefully plan for space, environmental, and power requirements for your Avid hardware. This section contains topics related to setting up your Avid network environment.

For environmental specifications and recommendations for Avid hardware, racks, and Uninterruptible Power Supplies, see the *Avid NEXIS Setup and Maintenance Guide*.

Computer Names

A hostname must comply with RFC 952 and RFC 1123 standards. For example, you cannot use an underscore in a hostname. For more information, see the Microsoft Knowledge Base article "Naming Conventions in Active Directory for Computers, Domains, Sites, and OUs."

Verify Entries on the DNS Server

Make sure that you correct any errors in DNS entries for name to IP resolution. The Avid network can become sluggish and unstable if there are incorrect entries in the DNS server for any of the computers in the MediaCentral | Production Management (Interplay) environment. Symptoms include excessive CPU usage by the Interplay Framework Lookup service and Interplay Diagnostics. The tree view in the Interplay Service Configuration or Health Monitor may also fail to populate if there are incorrect DNS entries.

Configure the DNS Server to Support Reverse Lookup

Make sure that the DNS server is configured to support Reverse Lookups. If not, Interplay Framework cannot resolve IP addresses to host names, and tree views can fail to populate in the Interplay Service Configuration, Interplay Diagnostics, and Health Monitor.

Computers with Multiple Network Interfaces

Computers that have multiple network interfaces in use must be entered in DNS so that all IP addresses have the same hostname.

If you have multiple network interfaces on a computer and one is not used, use the Device Manager to disable the interface. Otherwise, the computer might have problems communicating with the Interplay Framework. If multiple network interfaces are used, adjust the binding order and local specific routes to ensure the intended operation. Use the Advanced setting in the Network adapter properties to change the priority order on the network interfaces.

Configuring an Avid Shared Storage System

On an Avid Production Network, to support clients that are not routed, you must configure a Layer 3 switch to route between subnetworks.

Know Where Your Subnets Are on the Network

Create a system diagram or a table that identifies the subnets on your Avid network environment. Avid recommends you use Classless Inter-Domain Routing (CIDR) contiguous (sequential) IP ranges with a /24 size and matching VLAN IDs. Avid no longer recommends using non-contiguous IP ranges and VLAN IDs such as VLAN 10, 20, 30.

Time Synchronization

If you already have a system in place to maintain Time Sync on your network, you can continue to use that system. Avid has created a detailed guide on synchronizing many Avid products. Search for “Time Synchronisation for Avid MediaCentral” posted on the Avid Knowledge Base at www.avid.com/US/support.

It is important to use only one time synchronism mechanism to set the local PC clocks in the MediaCentral | Production Management environment.

2 Qualified and Approved Switches for Avid NEXIS

Avid uses the following designations for Ethernet switches that can provide suitable performance for Avid NEXIS storage:

- Qualified

  Fully qualified for a broad range of applications. Qualified switches are typically part of the Avid engineering and test labs and part of ongoing testing, or an accepted (and listed) next-generation family variant.

- Approved

  Approved for deployment as detailed in the Avid ISIS / NEXIS & Media Central Network Requirements Document. (Approved switches are typically tested at a customer site as part of a specific commissioning engagement.)

All of the listed switches support using the 802.3ad Link Aggregation Control Protocol (802.1ax), which is supported on any Avid NEXIS Enterprise (E-Series) Engine and the Avid NEXIS | SDA running Avid NEXIS v7.0 or higher, and Avid NEXIS F-Series and Avid NEXIS | SDA+ running Avid NEXIS v2022.5.0 and higher.

LACP is not supported on Avid NEXIS | PRO and Avid NEXIS | PRO+.

Refer to the switch vendor's documentation for specifics.

The switches in each table are listed in alphabetical order. If a switch cannot connect directly to an Avid NEXIS system it can still be used as a down-linked (subordinate) edge switch.

Qualified Switches and Options

When purchased through Avid, many switches come with Avid-supported components such as NICs and transceivers. The following table lists qualified switches and the options or components preinstalled in switches purchased through Avid, or available to purchase separately for your switches.

See also "Legacy Switches and Options" on page 10 for switches that may have reached end-of-life or end-of-sales and been moved into that table.

Qualified Switches and Options

Vendor and Model	Avid NEXIS Models[ab]	Minimum Firmware or Network OS[c]	Description and Approved Blades
Cisco Nexus 93108TC-EX, 93108TC-FX	All E-series All F-series (see "Switch Speeds for Avid NEXIS F-Series" on page 9)	NXOS: 7.0(3)I7(6)	48x100M/1/10GBASE-T ports and 6x40/100Gbps QSFP28 ports See also "40GbE Switch Operation" on page 16
Cisco Nexus 93180YC-EX, 93180YC-FX	All E-series All F-series (see "Switch Speeds for Avid NEXIS F-Series" on page 9)		48x1/10/25Gbps fiber ports and 6x40/100Gbps Quad Small Form-Factor Pluggable 28 (QSFP28) ports See also "40GbE Switch Operation" on page 16
Cisco Nexus 9336C-FX2	All E-series All F-series (see "Switch Speeds for Avid NEXIS F-Series" on page 9)		36x100/14Gbps 100/40Gbps ports can be broken out to 4x25/19Gbps 100Gbps Quad Small Form-Factor Pluggable 28 (QSFP28) ports
Cisco Nexus 9348GC-FXP	All E-series All F-series (see "Switch Speeds for Avid NEXIS F-Series" on page 9)		48x1G RJ45, 4x1/10/25Gbps SFP, 2x40/100Gbps QSFP28
Cisco Nexus 93216TC-FX2	All E-series All F-series (see "Switch Speeds for Avid NEXIS F-Series" on page 9)		96x100M/1/10GBASE-T ports and 12x40/100Gbps QSFP28 ports
Cisco Nexus 93240YC-FX2	All E-series All F-series (see "Switch Speeds for Avid NEXIS F-Series" on page 9)		48x1/10/25Gbps fiber ports and 12x40/100Gbps Quad Small Form-Factor Pluggable 28 (QSFP28) ports *This switch does not support breakout connections — cannot be used with F-Series Engines at 50GbE.*
Cisco Nexus 93360YC-FX2	All E-series All F-series (see "Switch Speeds for Avid NEXIS F-Series" on page 9)		96x1/10/25Gbps SFP28 and 12x40/100Gbps QSFP28

Qualified Switches and Options (Continued)

Vendor and Model	Avid NEXIS Models[ab]	Minimum Firmware or Network OS[c]	Description and Approved Blades
Dell EMC PowerSwitch N2024 (Avid P/N: 7080-30085-00)	E2, E4, PRO F2, PRO+ *Avid NEXIS | F2X connects only to an Avid NEXIS | F2, which in turn connects to the switch.*	6.3.0.18 and later	24x1GbE (RJ45) 2x10GbE SFP+ ports Avid-supplied switch includes 2-port 10GbE SFP+ module **Supported options:** 10GigE, SFP+, single, transceiver, SR, 850nm (Avid PN 7070-30026-01) 10GigE, SFP+, single transceiver, LR, 1310nm
Dell EMC PowerSwitch N3024 (Avid P/N: 9935-65890-xx) Dell EMC PowerSwitch N3024E	E2, E4, E5 NL, PRO F2, F5 NL, PRO+ *Avid NEXIS | F2X connects only to an Avid NEXIS | F2, which in turn connects to the switch.*	6.3.0.18 and later	24x1GbE (RJ45) 2x1GbE SFP ports 2x10GbE SFP+ ports 1 slot for 2-port 10GbE SFP+ or 10GBASE-T module **Supported options:** 10GigE, SFP+, single transceiver, LR, 1310nm SFP 1000Base-Sx 850nm. 1GbE optical transceiver (Avid PN 7070-30584-00) SFP+ (LR) 1300 nm (Avid PN 7070-30583-00) SFP+ (SR) 850 nm For Dell PowerSwitch 3000: Spare SFP+ 2-port 10GbE module (spare, no optics, no cables) (Avid PN 7030-65530-00)

Qualified Switches and Options (Continued)

Vendor and Model	Avid NEXIS Models[ab]	Minimum Firmware or Network OS[c]	Description and Approved Blades
Dell EMC PowerSwitch N3048 (Avid P/N: 9935-65892-xx) Dell EMC PowerSwitch N3048E	E2, E4, E5 NL, PRO F2, F5 NL, PRO+ (see "Switch Speeds for Avid NEXIS F-Series" on page 9) *Avid NEXIS | F2X connects only to an Avid NEXIS | F2, which in turn connects to the switch.*	6.3.0.18 and later	48x1GbE (RJ45), 2x1GbE SFP ports, 2x10GbE SFP+ ports 1 slot for 2-port 10GbE SFP+ or 10GBASE-T module Avid-supplied switch includes 2-port 10GbE SFP+ module **Supported options**: 10GigE, SFP+, single transceiver, LR, 1310nm SFP 1000Base-Sx 850nm. 1GbE optical transceiver (Avid PN 7070-30584-00) SFP+ (LR) 1300 nm (Avid PN 7070-30583-00) SFP+ (SR) 850 nm
Dell EMC PowerSwitch S4048T-ON	E2, E4, PRO F2, PRO+ (see "Switch Speeds for Avid NEXIS F-Series" on page 9) *Avid NEXIS | F2X connects only to an Avid NEXIS | F2, which in turn connects to the switch.*	9.8(0.0P5)	48x10GbE/1GbE/100Mb (RJ45)
Dell EMC S4100-ON Series	All E-series All F-series (see "Switch Speeds for Avid NEXIS F-Series" on page 9)	10.4.3.4 or later	Available as 12-port half-width switches, and 28-port and 48-port versions with SFP+ or 10G-BaseT. See also "40GbE Switch Operation" on page 16
Dell EMC S5200-ON Series	All E-series All F-series (see "Switch Speeds for Avid NEXIS F-Series" on page 9)	10.4.3.6.244 or later	Available as 12-port, 24-port, and 48-port switches. See Dell.com for more details. See also "40GbE Switch Operation" on page 16

a. "E-Series" includes all Avid NEXIS Enterprise engines, Avid NEXIS | PRO and Avid NEXIS | SDA.
b. "F-Series" includes all Avid NEXIS F-Series Engines and Expansion Chassis, Avid NEXIS | PRO+ and Avid NEXIS | SDA+, unless otherwise noted.
c. Later firmware/operating system versions should be acceptable but are not tested by Avid.

Switch Speeds for Avid NEXIS F-Series

Avid NEXIS F-Series Engines can run at 10, 25, 40, or 50GbE depending on the model:

- 10GbE only: Avid NEXIS | F5 NL
- 10 or 25GbE: Avid NEXIS | SDA+, Avid NEXIS | PRO+, Avid NEXIS | F2, Avid NEXIS | F2X
- 40 or 50GbE: Avid NEXIS | F5
- 100GbE: Avid NEXIS | F2 SSD

You might need to map switch ports to accommodate 10, 25, 40, or 50GbE operation. See your switch vendor documentation for details where applicable.

Approved Switches and Options

In addition to the approved switches listed here, you can also use any switch considered architecturally capable, meaning they have been stress tested by the switch vendor in coordination with Avid and subject to an Avid specific test plan (see Avid NEXIS Switch Infrastructure for details).

Approved Switches and Options

Vendor and Model	Avid NEXIS Models	Minimum Firmware or Network OS[a]	Description and Approved Blades
Arista Networks 7280xR, 7500xR	E2, E2 SSD, E4, E5, E5 NL, PRO F2, F5, F5 NL (at 10GbE only), PRO+ (see "Switch Speeds for Avid NEXIS F-Series" on page 9)		48-port SFP+ and 6-port QSFP100
Cisco Catalyst 9300	E2, E4, E5 NL, PRO F2, F5, F5 NL (at 10GbE only), PRO+ (see "Switch Speeds for Avid NEXIS F-Series" on page 9)	IOSXE 16.12.1	
Juniper Networks QFX5120	E2, E2 SSD, E4, E5, E5 NL, PRO F2, F5, F5 NL (at 10GbE only), PRO+ (see "Switch Speeds for Avid NEXIS F-Series" on page 9)	20.2R3.9	

Approved Switches and Options (Continued)

Vendor and Model	Avid NEXIS Models	Minimum Firmware or Network OS[a]	Description and Approved Blades
Juniper Networks EX4400	E2, E4, E5 NL, PRO F2, F5, F5 NL (at 10GbE only), PRO+ (see "Switch Speeds for Avid NEXIS F-Series" on page 9)	21.2R1.6	

a. Later firmware/operating system versions should be acceptable but are not tested by Avid.

Legacy Switches and Options

The switches listed here are either end-of-life or no longer commercially available. However, if you have one, you can still use it with the indicated Avid NEXIS models.

These switches are not actively tested with new Avid NEXIS versions. Avid will offer "best-effort" support, and cannot guarantee to fix or investigate issues as we may no longer have access to the product.

Legacy Switches and Options

Vendor and Model	Avid NEXIS Models	Minimum Firmware or Network OS[a]	Description and Approved Blades
Arista Networks 7150S-24 (10GbE only)	E2, E4, E5 NL, PRO		24-Port SFP+
Arista Networks 7150S-52 (10GbE only)	E2, E4, E5 NL		52-Port SFP+
Arista Networks 7280SE-64	All E-series[b]	4.14.7M or 4.16.7M	48x1/10GbE and 4x10/40GbE
Arista Networks 7048	E2, E4, PRO	4.8.6	NA
Cisco Catalyst 4500-X (Layers 2 and 3) 32-port switch, 16-port switch	E2, E4, E5 NL, PRO	ROM: 15.0(1R)SG6 (and later[a]) IOS: 03.04.02.SG (and later[a])	16 or 32 dual-speed 1Gbps (SFP) or 10Gbps (SFP+) ports Supported options: • 8-port 10GigE module, Avid PN 7030-65533-00 • 10GbE optical SFP+ 850 nm laser compatible with 50 micron MMF cable; 300 meters maximum distance. Cisco p/n SFP-10G-SR= *The minimum cable length for -LR and -SR transceivers is 2 meters.*

Legacy Switches and Options (Continued)

Vendor and Model	Avid NEXIS Models	Minimum Firmware or Network OS[a]	Description and Approved Blades
Cisco Nexus 9372-PX and PXE (SFP+ based)	E2, E4, E5, E2 SSD, E5 NL, PRO F2, F5, F5 NL, PRO+ (see "Switch Speeds for Avid NEXIS F-Series" on page 9)	7.0 (3) I1 (3)	All 9372 switches have 6x40Gbps QSFP+ ports plus 48x1/10Gbps ports For 40Gbps use, see "40GbE Switch Operation" on page 16.
Cisco Nexus 9372-TX and TXE (RJ-45 based)	All E-series		For 40Gbps use, see "40GbE Switch Operation" on page 16.
Cisco Nexus 9372 PX and PXE, and TX and TXE (40Gbps), with the Cisco 40GBASE-CR4 Passive Copper cable (QSFP-H40G-CU5M)	E5, E2 SSD		For 40Gbps use, see "40GbE Switch Operation" on page 16.
Cisco Nexus 93180LC-EX	All E-series All F-series (see "Switch Speeds for Avid NEXIS F-Series" on page 9)	BIOS: 05.19 NXOS: 7.0(3)16(1)	Up to 32x40/50Gbps QSFP+ ports OR 18x100Gbps QSFP28 ports For 40Gbps use, see "40GbE Switch Operation" on page 16.
Cisco Catalyst 4900M (Layers 2 and 3)	E2, E4, E5 NL, PRO	Rommon 12.2(44r)SG (and later[a]) IOS: 12.2 (46)SG (and later[a])	20x1Gbps (RJ-45), WS-X4920-GB-RJ45 and/or • 4x10Gbps (X2/SC)WS-X4904-10GE • 8x10Gbps (X2/SC) **Supported options:** • 20-port 1GbE copper module, p/n WS-X4920-GB-RJ45 • 4x10GbE port add-in module for 4900M base unit • 10GBASE-SR 850nm X2 Module/ Single Transceiver, Cisco p/n X2-10GB-SR • 10GBASE-LR 1310nm X2 Module/Single Transceiver, Cisco p/n X2-10GB-LR • SC connector X2 = Cisco X2-10GB-SR for MMF • SC connector X2 = Cisco X2-10GB-LR for SMF

Legacy Switches and Options (Continued)

Vendor and Model	Avid NEXIS Models	Minimum Firmware or Network OS[a]	Description and Approved Blades
Cisco Catalyst 4948E (Layers 2 and 3)	E2, E4, E5 NL, PRO	Rommon: 12.2(44r)SG8 (and later[a]) IOS: 12.2 (54)SG (and later[a])	48x1Gbps (RJ45) 4x10Gbps (SFP+/LC) **Supported options:** • 10GbE optical SFP+ 850 nm laser compatible with 50 micron MMF cable; 300 meters maximum distance. Cisco p/n SFP-10G-SR= *The minimum cable length for -LR and -SR transceivers is 2 meters.*
Cisco Catalyst 4948-10GE (Layers 2 and 3)	E2, E4, E5 NL, PRO	Rommon: 12.2(31r)SGA (and later[a]) IOS: 12.2 (25) EWA8 (and later[a])	48x1Gbps (RJ45) 2x10Gbps (X2/SC)
Cisco Nexus 7000 series (Layers 2 and 3)[c]	E2, E4, E5 NL, PRO	BIOS 3.19.0 (and later[a])	48-port 10Gbps/1Gbps module (optical) N7K-F248XP-25E
		Kickstart 4.2(4) (and later[a])	24-port 10Gbps module (optical) N7K-M224XP-23L
		System 4.2(4) (and later[a])	48-port 1Gbps copper N25-C2248TP-E-1GE
		CMP BIOS 02.01.05 (and later[a])	48x1Gbps module (copper) N7K-M148GT-11
		CMP Image 4.2(1) (and later[a])	32x10Gbps module (optical) N7K-M132XP-12 (only 8 supported running simultaneously due to 4 to 1 over-subscription) N7K-M108x2

Legacy Switches and Options (Continued)

Vendor and Model	Avid NEXIS Models	Minimum Firmware or Network OS[a]	Description and Approved Blades
Dell EMC PowerSwitch S4810	E2, E4, E5 NL, PRO, F2, F5 NL, PRO+ (see "Switch Speeds for Avid NEXIS F-Series" on page 9)	FTOS 8.3.7.0 (and later)	48x1Gbps SFP or 10Gbps SFP+
	E5, E2 SSD, F5 (see "Switch Speeds for Avid NEXIS F-Series" on page 9)		4x40GbE
Dell EMC PowerSwitch S4820T	E2, E4, E5 NL, PRO		48x100Mbps/1Gbps/10Gbps (RJ45)
	E5, E2 SSD		4x40GbE
Dell EMC PowerSwitch N4032	E2, E4, E5 NL, PRO		24x10GbE RJ45 auto-sensing (10GbE/1GbE/100Mb) fixed ports 1 hot swap expansion module bay
Dell EMC PowerSwitch N4032F	E2, E4, E5 NL, PRO		24x10GbE SFP+ (10GbE/1GbE) fixed ports 1x hot swap expansion module bay
Dell EMC PowerSwitch S60	E2, E4, E5 NL, SDA, PRO	FTOS 8.3.3.4 (and later)	48x1GbE (RJ-45) Two slots for 10GbE SFP+ or 24GbE stacking modules Two 10GbE SFP+ ports per module (SFP+/LC)

Legacy Switches and Options (Continued)

Vendor and Model	Avid NEXIS Models	Minimum Firmware or Network OS[a]	Description and Approved Blades
Dell EMC PowerSwitch S4048-ON	All E-series and F-series (see "Switch Speeds for Avid NEXIS F-Series" on page 9)	9.8 or later	48 dual-speed 1/10GbE (SFP+) ports and six 40GbE (QSFP+) uplinks (totaling 72 10GbE ports with breakout cables) with OS support. **Supported options for S4048:** GP-SFP2-1T single 1GigE RJ45 Copper transceiver (407-BBTS) **Supported options for S4048-ON:** GP-SFP2-1T single 1GigE RJ45 Copper transceiver (407-BBTS), Avid PN 7070-35076-00 10GigE, SFP+, single, transceiver, SR, 850nm, Avid PN 7070-30026-01 10GigE, SFP+, single transceiver, LR, 1310nm QSFP+ SR Optic, 40GbE (100-150m) (Avid PN 7070-35041-00) *The Dell EMC PowerSwitch S4048 switch supports a mix of 10GbE SFP+ (optical) and 10GBASE-T (copper) connection types. However there are minimum firmware requirements and restrictions on how many 10GBASE-T devices are supported, and in which locations. Consult your Dell documentation for more information.*
NETGEAR XS712T	PRO	6.1.0.34 or later	12x1/10GbE RJ45 (Copper), or 2x10GbE SFP+ plus 10x1/10GbE RJ45 (ports 11 and 12 are dual-purpose; can be used either as SFP+ or RJ45) **Supported options (for both X712T and X716T):** AXM761-10000S: 10GBase-SR short-range SFP+ LC transceiver module AXC761-10000S: 10GSFP+ Cu (passive) cable with SFP+ connectors on both ends, 1m (3.3 ft) AXC763-10000S: 10GSFP+ Cu (passive) cable with SFP+ connectors on both ends, 3m (9.8 ft)

Legacy Switches and Options (Continued)

Vendor and Model	Avid NEXIS Models	Minimum Firmware or Network OS[a]	Description and Approved Blades
NETGEAR XS716T	E2, E4, PRO	6.6.1.7	16x10GBase-T + 2 shared 10 Gigabit SFP+

a. Later firmware/operating system versions should be acceptable but are not tested by Avid.
b. For simplicity, “Avid NEXIS E-Series” includes Avid NEXIS | PRO and Avid NEXIS | SDA, unless otherwise noted.
c. The Cisco Nexus 7000 series can be configured to meet a wide variety of combinations of 1, 10, and 40GbE connections. Depending on the base unit, there are from 4 to 18 slots that allow for supervisor modules and up to 16 I/O modules offering a variety of ports (including SFP+ with XL option).

Dual Port Network Connections and Avid Adaptive Load Balancing (AALB)

Dual 1-GbE, 10-GbE, and 40-GbE Ethernet connections allow you to use a dual-attached client for redundancy and performance enhancements. Each port is configured separately. The NICs in dual connected clients must be the same speed and on the same subnet for redundancy.

Linux does not support multiple NICs on the same subnet.

Avid NEXIS uses Avid Adaptive Load Balancing (AALB) for optimizing client performance when using dual NICs configured in Avid NEXIS Client Manager.

When using a dual port configuration, make sure both ports are enabled in the Client Manager Network Interface Settings and the network properties (see the *Avid NEXIS Client Guide* for more information). Avid Adaptive Load Balancing is automatically configured when both ports are enabled. No additional actions are required.

Flow Control Required in Avid Production Networks

Avid requires configuring Rx Flow Control (LFC) Enabled on the switch that connects to Avid NEXIS Engines and clients. The client or Engine sends 'pause frame' requests to throttle the send rate to avoid overwhelming the IP stack on the client or Engine, which results in buffering at the switch during these short pauses.

Many network switches have Rx Flow Control enabled by default. Consult your switch documentation to verify your switch’s settings.

Long-Range Optics

LR-4 optics are supported for connecting the Avid NEXIS models that support 40GbE operation using long range, 1310 nm optics, to a switch. Use the Mellanox MC2210511-LR4 Optical Module, with a minimum firmware version of 2.42.5000, in the Engine’s Mellanox 40GbE NIC. Some Avid NEXIS | E5 Engines ship with this version.

To convert an existing engine to LR-4 optics, confirm it has the minimum firmware revision, as follows:

1. Connect to the Engine Agent (https://<engine name or IP>:5015).
2. Click the Advanced tab.
3. In the Issue Shell Command field, enter the following: **`ethtool -i gt0`**

   If the response says `firmware-version: 2.42.5000` or higher, you can use LR-4. If the version is lower than that, contact Avid Customer Care if you want to use LR-4.

Connecting the Engine to a Switch

See the *Avid NEXIS Setup and Maintenance Guide* for your model for information on connecting to a switch, with and without LACP.

To connect the Avid NEXIS to a switch, you will need one or two transceivers or direct attach (Twinax) cables per Controller (if using redundant Controllers), depending on whether you are using link aggregation (LACP).

40GbE Switch Operation

Cisco Switches

For Avid NEXIS Engines that connect to Cisco 9372 (legacy) and 93180 (legacy) series switches at 40GbE (Avid NEXIS | E5 and Avid NEXIS | E2 SSD), you might need to force 40GbE operation using the following port level commands:

```
speed 40000
no negotiate auto
```

Dell S4100 Switches

For Avid NEXIS Engines that connect to Dell S4100 series switches at 40GbE (Avid NEXIS | F5, Avid NEXIS | E5 and Avid NEXIS | E2 SSD), enter the following commands:

```
interface breakout node/slot/port map 40g-1x
```

For 40GbE uplink to an intermediary switch (for example, to a Dell S4048-ON), you may need to turn off negotiation on the uplink port to enable the switches to link.

Dell S5200 Switches

The 25/10/1GbE based ports are grouped in fours and the default configuration is 25GbE, which in the switch settings is called “mode Eth 25g-4x.” To run those ports at 10 or 1GbE, change the port group to “mode Eth 10g-4.”

To change the 100GbE ports to 40GbE, change the setting from “mode Eth 100g-1x” to “mode Eth 40g1x.”

See the Dell switch documentation for details.

Configuring Switches for LACP

Avid NEXIS v7.0 and higher supports enabling LACP on the Ethernet ports on the Controllers. See the *Avid NEXIS Administration Guide* for more information.

Before enabling LACP, make sure both Ethernet ports on the Controllers are connected to one or more switches that support, and are configured to accept, using link aggregation groups (LAGs).

Switch vendors refer to this feature using different terminology:

Vendor	Terminology
Arista, Dell EMC PowerSwitch N-Series, Juniper Networks	Multi-chassis link aggregation (MLAG)
Dell EMC PowerSwitch S-Series	Virtual Link Trunking (VLT)
Cisco Nexus	Virtual PortChannel (vPC)
Cisco Catalyst	Virtual Switching System (VSS)
NETGEAR	*Not supported*

Consult your switch vendor documentation for steps on how to enable or configure link aggregation on your switches.

If you plan to bind the Media Packs as High Performance in a paired Avid NEXIS | F2 and Avid NEXIS | F2X configuration, connect them to a switch as follows:

- 2 x 10GbE with LACP enabled on both Controllers in the Avid NEXIS | F2
- 25GbE with no LACP configured on the Avid NEXIS | F2 Controllers

3 Supported Network Components and Cables

The cables and components described in this section pertain to Avid Engines and switches used in the Avid workgroup environments. Use these guidelines when connecting your clients and workstations to the workgroup.

Supported Network Interface Cards

Avid sells or supports the following network interface cards (NICs) for use in client systems that will connect to an Avid NEXIS system.

For NICs suitable for VM deployments, also see Interplay Virtualization Best Practices.

See the Avid NEXIS ReadMe for the currently supported Avid NEXIS and client operating system versions.

NIC Vendor/Model	Operating System	Interface[a]	Bus Type	Notes[b]
Apple/Aquantia **Not supported with Avid ISIS.**	macOS	1x10GbE 10GBaseT		Default on-board 10/1GbE NIC in iMac Pro 1,1 and mac mini 8,1 and Mac Pro 7,1 for 1 or 10GbE connections to Avid NEXIS for use with Media Composer. For more detailed information, see the *Mac Current CPU Specifications* document on the Avid Qualified Systems and IO Hardware Knowledge Base
ATTO FFRM-N311/N312	Windows and Windows Server macOS	1 or 2x40GbE QSFP+	PCI x16	This card supports up to 100GbE using QSFP28, but is not performance optimized. Use the 40Gb resolution setting in the Avid NEXIS Client Manager for 40GbE or higher. Use latest driver from www.attotech.com
ATTO FFRM-N322	Windows and Windows Server CentOS	2x10GbE SFP+	PCI x8	This card supports 25GbE operation using SFP28. Use latest driver from www.attotech.com

NIC Vendor/Model (Continued)	Operating System	Interface[a]	Bus Type	Notes[b]
ATTO FFRM-N351/N352	Windows and Windows Server macOS	1 or 2x40GbE QSFP+	PCI x8	This card supports up to 50GbE operation using QSFP+. Use latest driver from www.attotech.com Use the 40Gb resolution setting in the Avid NEXIS Client Manager for 40GbE or higher.
ATTO FFRM-NQ41 FFRM-NQ42	Windows and Windows Server CentOS	1 or 2x40GbE QSFP+	PCIe x8	Windows: Use latest driver from www.attotech.com CentOS: Use the latest “in-box” drivers available within the kernel.
ATTO FFRM-NS 11 FFRM-NS 12	Windows and Windows Server CentOS	1 or 2x10GbE SFP+	PCIe x8	Use latest driver from www.attotech.com
ATTO FFRM-NT 11 FFRM-NT 12	Windows CentOS	1 or 2x10GbE 10GBaseT	PCIe x8	Use latest driver from www.attotech.com
ATTO TLN3 3102	macOS	1 or 2x10GbE SFP+	Thunderbolt 3	Use latest driver from www.attotech.com
ATTO TLNQ 3402	macOS	2x40GbE QSFP+	Thunderbolt 3	Bandwidth limited by TB3 bus. Use latest driver from www.attotech.com
ATTO TLNS 2102	macOS	1 or 2x10GbE SFP+	Thunderbolt 2	Use latest driver from www.attotech.com Avid P/N: 7030-72023-00
ATTO TLNS 3102	macOS	1 or 2x10GbE SFP+	Thunderbolt 3	
ATTO TLNS 3252	macOS	1 or 2x10GbE SFP+	Thunderbolt 3	Use latest driver from www.attotech.com
ATTO TLNT 2102	macOS	1 or 2x10GbE 10GBaseT	Thunderbolt 2	Use latest driver from www.attotech.com Avid P/N: 7030-72024-00
Intel Converged Ethernet X540-T2	Windows CentOS	2x1GbE RJ-45, 2x10GbE RJ-45	PCIe x8	
Intel Converged Ethernet X550	Windows	2x10GBase-T	PCIe x8 (Gen 3)	Use OS-specific driver for Windows.

NIC Vendor/Model (Continued)	Operating System	Interface[a]	Bus Type	Notes[b]
Intel Converged Ethernet X710	Windows and Windows Server CentOS	2x10GbE SFP+	PCIe x8	Use OS-specific driver for Windows or CentOS.
Intel Converged Ethernet X710DA2	Windows and Windows Server	2x10GbE SFP+	PCIe x8	Driver available from HP website in support under Z840 & Z8 G4 platforms.
Intel i350, v1 and v2	Windows and Windows Server CentOS	1, 2, or 4x1GbE RJ-45 or SFP	PCIe x4	
Intel QUAD PORT Ethernet i340[c]				For ISIS 5500 direct attach clients Avid P/N: 7030-30346-01
Intel X722	Windows and Windows Server	1 or 2x1Gb, 1 or 2x10GbE add-in option for HP Z6 and Z8 G4	PCIe x8	Driver available from HP website in support under Z8 G4 platforms. Add-in card only available for HP Z6 & Z8 platforms
Myricom 10G-PCIE-8B-S	Windows and Windows Server macOS CentOS	1x10GbE SFP+ 2x10GbE SFP+	PCIe x8	
Myricom 10G-PCIE2-8C-S	Windows and Windows Server macOS CentOS	2x10GbE SFP+	PCIe x8	Avid P/N: 7010-30241-01
Myricom[d] 10G-PCIE2-8C2-2T 10G-PCIE2-8C-T	Windows and Windows Server macOS CentOS	1 or 2x10GbE 10GBaseT	PCIe x8	
Sonnet 10G Solo (with Thunderbolt **3**)	Windows and Windows Server macOS	1x10GbE 10GBaseT	Thunderbolt 3	Download driver from www.sonnettech.com and latest Thunderbolt software for Windows from Intel. **Not supported with Avid ISIS**

NIC Vendor/Model (Continued)	Operating System	Interface[a]	Bus Type	Notes[b]
Sonnet 10G Solo SFP+	Windows and Windows Server macOS	1x10GbE SFP+	Thunderbolt 3	Download driver from www.sonnettech.com and latest Thunderbolt software for Windows from Intel. **Not supported with Avid ISIS**
Sonnet 10G Solo (with Thunderbolt **2**)	macOS	1x10GbE 10GBaseT	Thunderbolt 2	Download driver from www.sonnettech.com and latest Thunderbolt software for Windows from Intel. **Not supported with Avid ISIS**
Sonnet Twin10G SFP+ (with Thunderbolt **2**)	macOS	2x10GbE SFP+	Thunderbolt 2	Download driver from www.sonnettech.com and latest Thunderbolt software for Windows from Intel. **Not supported with Avid ISIS**
Sonnet Twin10G SFP+ (with Thunderbolt **3**)	Windows and Windows Server macOS	2x10GbE SFP+	Thunderbolt 3	Download driver from www.sonnettech.com and latest Thunderbolt software for Windows from Intel. **Not supported with Avid ISIS**
Sonnet Twin10G (with Thunderbolt **2**)	macOS	2x10GbE 10GBaseT	Thunderbolt 2	Download driver from www.sonnettech.com and latest Thunderbolt software for Windows from Intel. **Not supported with Avid ISIS**
Sonnet Twin10G (with Thunderbolt **3**)	Windows and Windows Server macOS	2x10GbE 10GBaseT	Thunderbolt 3	Download driver from www.sonnettech.com and latest Thunderbolt software for Windows from Intel. **Not supported with Avid ISIS**

a. Any vendor-branded NIC using the same chipset as that listed here is considered a suitable substitute.
b. For all ATTO NIC driver installations, enable the checkbox to “Use optimized network settings.”
c. Supported for Avid ISIS systems running version 4.7.x.
d. Myricom NICs are supported on macOS 10.x. only. Not supported for macOS 11 or 12.

Transceivers and Cables

Avid sells the following cables and transceivers.

10GbE SFP+ Optical Transceivers

Avid Part Number	Description
9900-65632-00	Optical 10Gbps transceiver. 10GbE Ethernet SFP+ LC 300m range, SR 850nm wavelength (Default for 10G optical short range)
9900-65652-00	Optical 10Gbps transceiver. 10GbE Ethernet SFP+ LC 10km range, LR 1310nm wavelength
9635-70654-00	ATTO.FF.NS12.LC.SFP+ ATTO FastFrame NS12 LC SFP+ SR Optical Interface - Dual Port 10GbE PCIe 2.0 Network Adapter (includes SFPs)
9635-70654-00	ATTO.FF.N352-DA0 ATTO FastFrame N352 QFP28 Optical Interface - Dual Port 10/25/40/50GbE PCIe 3.0 Network Adapter

10GbE SFP+ Direct Attach Cables (Twinax)

Avid Part Number	Description
7070-30615-01	Dell Direct Attach 10G Cable. Copper 10GbE SFP+ twinax cable, 1 meter
7070-30615-03	Dell Direct Attach 10G Cable. Copper 10GbE SFP+ twinax cable, 3 meter
7070-30358-01	Cisco 10G SFP+ direct attach cable (twinax) 1 meter
7070-30358-03	Cisco 10G SFP+ direct attach cable (twinax) 3 meter
7070-30358-05	Cisco 10G SFP+ direct attach cable (twinax) 5 meter
7070-35252-00	Optical Transceiver SFP+ for 10GBASE-SR (Mellanox MFM1T02A-SR) For use with Avid NEXIS F-Series
7070-35253-00	Optical Transceiver 25GbE SFP28 LC-LC SR (Mellanox MMA2P00-AS) For use with Avid NEXIS F-Series
7070-35254-00	Optical Transceiver 25GbE SFP28 LC-LC LR (Mellanox MMA2L20-AR) For use with Avid NEXIS F-Series
7070-35255-00	Optical Transceiver 100GbE QSFP28 MPO SR4 (Mellanox MMA1B00-C100D) For use with Avid NEXIS F-Series
7070-35256-00	DAC Splitter Cable Ethernet 100GbE to 2x50GbE (Mellanox MCP7H00-G003R26N) For use with Avid NEXIS F-Series
7070-35257-00	AOC Splitter Cable Ethernet 100GbE to 2x50GbE (Mellanox MFA7A20-C010) For use with Avid NEXIS F-Series
7070-35258-00	DAC Splitter Cable Ethernet 100GbE to 4x25GbE (Mellanox MCP7F00-A003R26N) For use with Avid NEXIS F-Series

Avid Part Number	Description
7070-35259-00	DAC Cable Ethernet 25GbE SFP28 (Mellanox MCP2M00-A003E26N) For use with Avid NEXIS F-Series
7070-35260-00	DAC Cable Ethernet 10GbE SFP+ (Mellanox MC3309130-003) For use with Avid NEXIS F-Series

40GbE SFP+ Direct Attach Cables (Twinax)

Avid Part Number	Description
7070-35070-00	40GbE QSFP MPO connector Optic SR (300m, Short Range) for E5 & E2 SSD controller (Mellanox MC2210411-SR4E)
7070-35071-03	Avid NEXIS 40GbE QSFP passive copper cable, 3m (Mellanox MC2210128-003)
7070-35071-05	Avid NEXIS 40GbE QSFP passive copper cable, 5m (Mellanox MC2210126-005)

100GbE Cables and Transceiver

Avid Part Number	Description (For use with Avid NEXIS | F2 SSD)
N/A	NVIDIA MMA1B00-C100D Optical Transceiver 100GbE QSFP28 MPO SR4
7070-35281-00	NVIDIA MCP1600-C003E26N DAC Cable Ethernet 100GbE QSFP28 3m
7070-35282-00	NVIDIA MFA1A00-C010 AOC Cable Ethernet 100GbE QSFP 10m

Miscellaneous

Avid Part Number	Description
9900-65653-00	Spare QSFP to SFP+ adapter (QSA) for Avid NEXIS | PRO and E5 NL controller 10 Gigabit Ethernet interface
7070-35192-00	SAS cable for connecting F2 and F2X (two cables are included with each F2X)

Patch Cables

When planning your cable routes, make sure your cables cannot be damaged by traffic or moving objects. The network interface ports in Avid NEXIS systems work with any cable supported by the vendor for their switches.

Call Avid Customer Support for supported cable and accessory information. For cable connections, see the Avid NEXIS Setup and Maintenance Guide for your product.