Imagine COMMUNICATIONS™

Installation Guide

Nexio AMP® Share

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Overview

Nexio AMP Share is a client/server architecture that allows you to use a Nexio AMP HDI server as a central storage device for up to three client nodes. Nexio AMP Share HDI device serves as a host for Network Server and NetDisk traffic. The AMP Share HDI can simultaneously record, play out, and transfer media via FTP.

The Nexio AMP Share design offers a cost-effective solution that leverages the integrated storage of a Nexio AMP video server and shares the storage capacity and throughput with its attached client devices. This efficient and economical architecture does not include redundant data paths or Intrinsic Mirroring technologies. The AMP Share design promotes maximum throughput with the connected devices.

Features

Cost Advantage. The AMP Share HDI host connects directly to the editing clients. No Ethernet switches, external drive chassis or Fibre channel switches are needed.

Integrated FCP Gateway. AMP Share supports the attached client editing devices by running a second instance of the LLM and the CIFS application. The AMP Share HID host can support up to three attached devices without using any additional FCP gateway hardware.

Record and Playback. AMP Share allows you to record and play back media on the host device.

RAID-6 Data Protection. Nexio AMP Share HDI host system uses RAID-6 for data protection. RAID-6 is a very secure RAID scheme that protects data from one or two drive failures. RAID-6 is more efficient than the ECC parity used in legacy storage systems because RAID-6 requires only two parity drives.

No Redundancy. The AMP Share design has no data path redundancy. If the connection between a client and the HDI host fails, there is no redundant connection to take over.

No Low-Res Proxy Encoding. Nexio AMP Share does not permit low-res proxy encoding on the client servers or on the HDI host.

No Expansion. AMP Share requires an AMP HDI device with a full complement of 16 internal media drives. Therefore you cannot expand storage capacity throughput on an AMP Share device.

Terminology

Nexio AMP Share host	Nexio AMP HDI device, Gen-6 or higher, with 16 drives configured as 14 + 2 RAID-6.
Nexio AMP Share client	A node attached to an AMP Share host device.
3rd Party Editors	Non-Nexio editors such as Adobe® Premier or Apple® Final Cut Pro.

AMP Share System
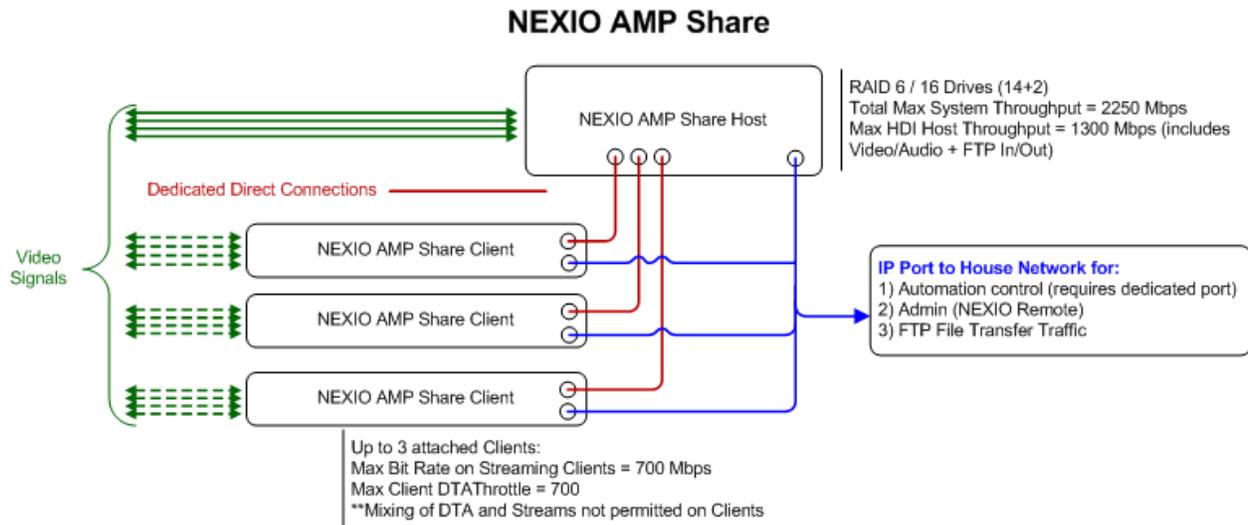
The Nexio AMP Share host device is connected to one, two, or three AMP Share clients. AMP Share uses direct Ethernet connections between host and clients, therefore no Ethernet switches are required.

Hardware Requirements

AMP Share Host

■ The Nexio AMP Share host must be a Nexio AMP HDI device (Gen-6 or later).

Note. Serial numbers for all Gen-6 3801 devices begin with 5006 (e.g. 500612200001)

AMP Share Client

■ Up to three of the following devices can be used as a Nexio AMP Share client:

- Nexio AMP: NX3801 HDX (Gen-6 or later)
- Nexio Volt: NX1801 VOLT II
- Velocity Editors: Version 2.5 or later.
- Proxy Transcoder: NX1011PTCD (Low-res proxy encoding is not supported on AMP Share)
- Instant Online: NX1011IOL or later
- FTP Gateway: NX1011MGX
- 3rd Party Editors with CIPS connectivity: (e.g. Apple Final Cut Pro or Adobe Premier)

■ Client devices that are *not* supported for AMP Share include Volt 1, AMP3601, AMP Gen-5 or Nexio 3600.

■ No mixing of Video/Audio Streaming and DTA Activity on a single client.

Host/Client Connection

▪ There must be a single direct connection between each AMP Share client and each port on the AMP Share host.

Devices Not Allowed

The following devices cannot be used as an AMP Share client.

- NX3801 HDX Gen-5
- NX1401 VOLT
- NX3601
- NX3600
- NX1011FCP
- NX1011MIOH

Throughput Specifications

Total system – maximum throughput	2250 Mbps
AMP Share HDI host – maximum activity (Includes video/audio plus FTP activity)	1300 Mbps
AMP Share clients – total maximum throughput (Includes video/audio)	700 Mbps
3rd Party Client – maximum activity	1100 Mbps
Total client DTAThrottle	700 Mbps

Note. You cannot mix streaming video/audio with DTA activity. This activity is *not supported* on Nexio AMP Share clients. See Setting DTA Throttle.

Install and Config

Installing the Software

Basic Nexio Installation

To install AMP Share software, you must first run the **NexioSetupLauncher.exe** file for the Nexio 7.0.2 release. The **.exe** file will launch a software installer. Follow the screen prompts to complete the installation. When the installer asks you to identify storage, select **Farad**.

AMP Share Installation

In addition to the Nexio Setup software, you must also install AMP Share software onto all Nexio devices in your AMP Share system. You can download the **7.0.2_NEXIO AMP Share** zip file from the eCustomer portal.

The compressed file contains three folders. You must decompress the file and copy these three folders into the **C:\Install** folder on your AMP Share host device.

- InstallPostGreSQLForCIFS
- CIFS LLM
- REG Files

Installation for 3rd Party Editors

If your installation includes 3rd party editors, you must install PostGreSQL and the CIFS LLM on the AMP Share host device. In addition, you must adjust the Network Adapter Bindings to support CIFS.

NOTE. PostGreSQL is not required unless your system uses 3rd party editors.

Installing PostGreSQL

1. Decompress the **InstallPostGreSQLForCIFS** folder and copy it into the **C:\Install** folder on your Nexio AMP Share host device.

2. Double-click on the **InstallPostGreSQLForCIFS.cmd** file. This will automatically install and set up **PostGreSQL**.

   This installation will only take a few minutes. Once complete, the AMP Share device will reboot automatically.

The files in the **InstallPostGreSQLForCIFS** folder are automatically deleted when the installation is complete. If you need the files again, you can decompress them again from the original **7.0.2_Nexio_AMP_Share.7x** compressed file.

Modifying Network Adapter Settings

1. On your Nexio AMP Share device, navigate to **Control Panel > Network and Internet > Network Connections** to display the Local Area Connection 4 Properties dialog.
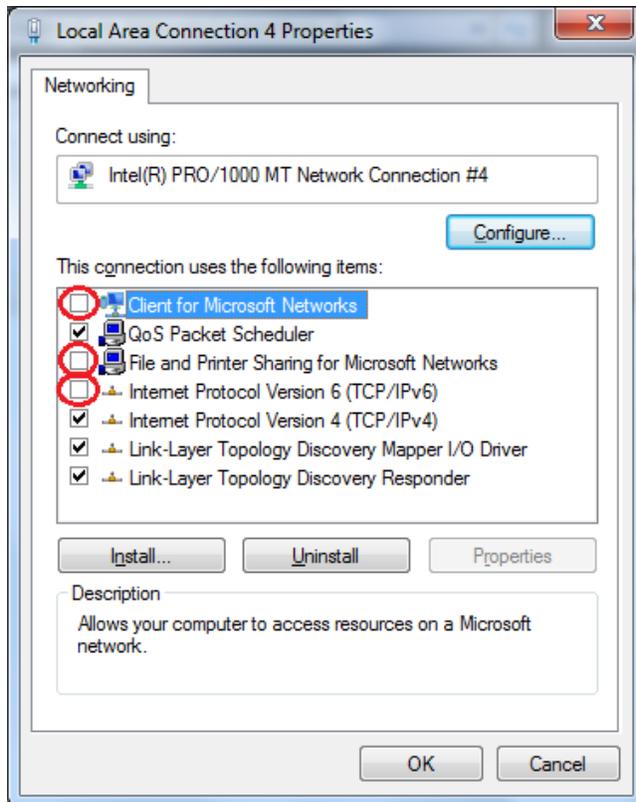
2. Clear the boxes next to **Client for Microsoft Network** and **File and Printer Sharing for Microsoft Network**s. Then click **OK**.

NOTE: You must uninstall these items for all four network adapters.

Installing CIFS

3. On your Nexio AMP Share device, create this folder: **C:\VR3** and copy the following files from the **C:\VR** folder into the new **C:\VR3** folder you just created.

    *   Mapmemdll.dll
    *   Network.dll
    *   NFsLib.dll

4. Copy the following files from the **C:\Install\CIFS LLM** folder to the **C:\VR3** folder. (You downloaded the CIFS LLM folder with the Nexio AMP Share Installation.)

    *   LLM-CIFS.exe
    *   VRLINK.dll
    *   CIFServer.exe
    *   Black.dat

5. Create a shortcut on the desktop of your Nexio AMP Server to the **LLM-CIFS.exe** file. Set the properties so the target of the shortcut is **C:\VR3\LLM-CIFS.exe 3 0 0 0**.

6. Create a shortcut on the desktop of your Nexio AMP Server to CIFServer.exe in the **C:\VR3** directory. There are no special properties for the CIFS server shortcut.

Configuring the System

Here is a summary list of the configuration tasks you must perform.

- Apply the Software License Key to all Nexio devices.
- Configure your video and audio channels using Nexio Config.
- Set the Windows REG files on your AMP Share client and host devices.
- Assign IP addresses for your network adapters.

Configuring Video and Audio Channels

You will use the Nexio Config software tool to configure your AMP Share device. To start Nexio Config, look for a short-cut icon on the AMP Share desktop or navigate to **Start > Programs > Harris > Nexio Config**.

You must configure the AMP Share device to operate properly within your network environment. For general configuration information, refer to the *Nexio Config User Guide*. Special AMP Share configuration information is listed here.

RAID-6

Make sure the Raid Configuration control on the **Server Setting** tab is set to **RAID6**.

NOTE. You will select RAID-6 here, even though you selected **Farad** when you ran the **NexioSetupLauncher.exe** file**.**
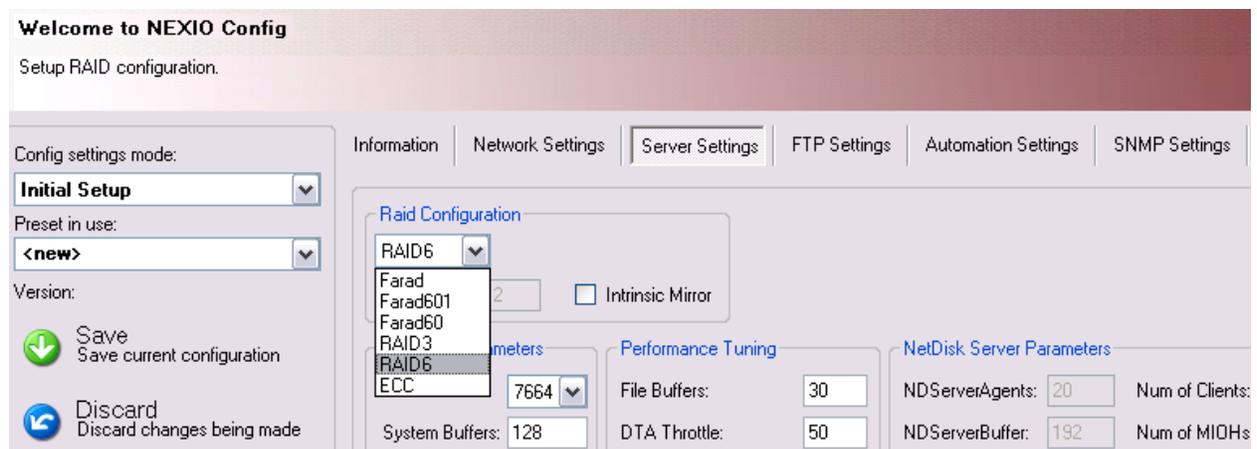
Note. Be sure to click on each Nexio Config tab to verify your settings.

System Reset

After you have made your settings you will click the Nexio Config **Finish** button.
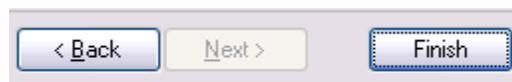
When you see the prompt to **Save As Preset**, select **No**. If you are prompted to allow a system reboot, select **Yes**.

Setting the Windows REG Files

You must run the REG files on each of your AMP Share devices. These are the REG files you decompressed and copied into the **C:\Install** folder on your AMP Share host device.   See AMP Share Installation.

AMP Share Clients

Copy the AMPShareClient.REG file into the **C:\Instal**l folder on each of your AMP Share client devices. Double-click the file to run it.

AMP Share Host with CIFS

Make sure the AMPShareHDIHostCIFS.REG file is located in the **C:\Install** folder on your AMP Share host device. Double-click the file to run it.

NOTE: Your AMP Share host must have CIFS if you are using a 3rd party editor.

AMP Share Host

Make sure the AMPShareHDIhost.REG file is located in the **C:\Install** folder on your AMP Share host device. Double-click the file to run it.

Assign IP Addresses

AMP Share Host

Your AMP Share host has four NICs. You must set up the IP Addresses so that three of the NICs provide a dedicated direct connection to a single AMP Share client device. The fourth NIC is connected to your house network. Each AMP Share client requires at least one NIC with a direct connection to the AMP Share host.

NOTE: You can use Windows to make these settings.

7. From the desktop of your AMP Share host, right-click on the Network icon and select **Properties**, then click on **Change adapter settings**. Windows will display the AMP Share's network connections.
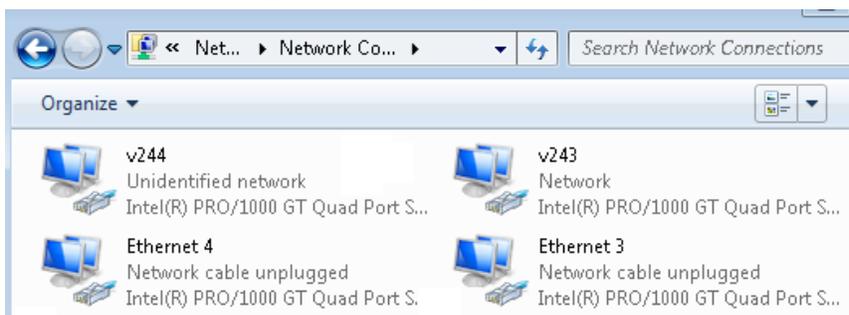
8. Right-click on an Ethernet port icon and select **Properties**. Windows will display the **Ethernet Properties** dialog. Select Internet Protocol Version 4 (TCP/IPv4) and click **Properties**.
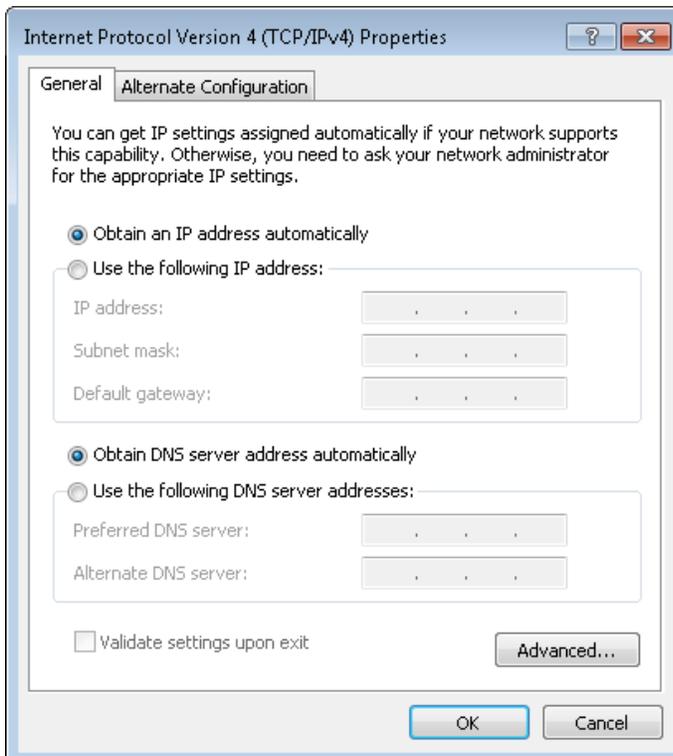
9. Set the IP address to the AMP Share client connected to this port.

10. Repeat this process to set the IP addresses for each AMP Share client. (Up to three clients are allowed.)

AMP Share Client

Each AMP Share client must be attached to your AMP Share host via Ethernet. Just as you set the IP addresses for the AMP Share host, you must also set the IP Addresses for the AMP Share client.

NOTE: You can use Windows to make these settings.

Start from the desktop of your AMP Share client and follow the instructions for setting up IP addresses from the AMP Share Host section of this manual as a guide to setting up IP addresses for each client.

Setting Registry Keys for AMP Share Client

Here you will set the registry keys on the client so that they point to the host. Set the **NetworkServer** and **NetDisk Server** registry keys to the corresponding IP addresses that you assigned for each AMP Share client. Use Windows REGEDIT to set the registries for the following keys.

■ HKCU\Software\ASC Audio Video\LLM\Control\NetworkServer

■ HKCU\Software\ASC Audio Video\LLM\Parameters\NetworkDiskServer

Example IP Address Configuration

These tables show example IP Address configuration for the AMP Share host, the IP Address configuration for AMP Share client, and the Registry Key settings for NetworkServer and NetworkDiskServer. You can use this example as a model for your AMP Share network setup.

AMP Share Host – IP Address Example

AMP Share Host	IP Address	Use
Adapter 1	172.16.250.81	Direct connect to 1st AMP Share client
Adapter 2	172.16.251.81	Direct connect to 2nd AMP Share client
Adapter 3	172.16.252.81	Direct connect to 3rd AMP Share client
Adapter 4	172.16.253.81 (Default Gateway 172.16.253.1)	Connect to your house network

Each AMP Share client requires a direct connection to a NIC on the AMP Share host. The client NIC must be set to the same subnet as the NIC it is connected to on the host. The extra NICs on the client can be used for network routing.

AMP Share Client – IP Address Example

AMP Share Client	IP Address	Use
Client 1	172.16.250.21	Direct connect to 1st port on AMP Share host
Client 2	172.16.251.22	Direct connect to 2nd port on AMP Share host
Client 3	172.16.252.23	Direct connect to 3rd port on AMP Share host

AMP Share Client REG Keys – IP Address Example

AMP Share Client	NetworkServer REG Key	NetDiskServer REG Key
Client 1	172.16.250.81	172.16.250.81
Client 2	172.16.251.81	172.16.251.81
Client 3	172.16.252.81	172.16.252.81

Setting Registry Keys for AMP Share Host Running CIFS

If your system includes 3rd party editors, your host will be running CIFS. See Installing CIFS. In this case you must use REGEDIT to set the following registry keys.

- HKCU\Software\ASC Audio Video\LLM3\Control\NetworkServer
- HKCU\Software\ASC Audio Video\LLM3\Control\LLMDomainLetters
- HKCU\Software\ASC Audio Video\LLM3\Control\LLMNodeNumber

Example Registry Settings for Using 3rd Party Editors (CIFS)

If using CIFS you must set the NetworkServer registry key to point to the 4th NIC on the AMP Share host. Use Windows REGEDIT to set the registry for the following key.

- HKCU\Software\ASC Audio Video\LLM3\Control\NetworkServer

AMP Share Host – REG Setting Example

Registry Key	HKCU\Software\ASC Audio Video\LLM3\Control	Use
Network Server	127.0.0.1	Connects to AMP Share host
LLMDomainLetters	As needed	Must match LLMDomain letters setting for the rest of the system.
LLMNodeNumber	10	Any number can be used except the number used for the LLMNode on the AMP Share host or any of its clients.

Setting DTA Throttle

Total system throughput for Nexio AMP Share must be less than or equal to 2250 Mbps. You must use the DTAThrottle registry setting on the AMP Share host to make sure your maximum system throughput for all non-video/audio streaming stays at or under the 2250 limit.

- DTAThrottle = 0 means no limit. In this case throughput can equal the maximum rate allowed by the Ethernet connection.

- DTAThrottle = 500 limits the throughput rate to 500 Mbps.

You must set the DTAThrottle registry setting at **HKCU\Software\ASC Audio Video\LLM\Parameters** on the Nexio AMP Share host device.

For Example:

- An AMP Share host using FTP transfers where DTAThrottle was set to 200, would have a maximum FTP transfer rate of 200 Mbps.

- A Velocity editor where DTAThrottle was set to 400 would have its read/write activity between the HDI host limited to 400 Mbps.

- A Velocity editor where DTAThrottle was set to 0 would have its read/write activity between the HDI host limited only by the rate allowed by the Ethernet connection.

DTAThrottle Limits for 3rd Party Editors

If you have a system where three 3rd party editors will all be rendering at the same time the AMP Share host is doing a re-build, the following rules apply.

Note. DTAThrottle can be set on Velocity and MGX clients. DTAThrottle cannot be set onVolts and HDX clients.

You must set the DTAThrottle registry setting at **HKCU\Software\ASC Audio Video\LLM3\Parameters** on the Nexio AMP Share host device.

- You should set the DTAThrottle value to 900. With this setting, all rendering will be restricted to 900 Mbps divided among the three 3rd party editors.

- If you set DTAThrottle higher than 900, only two 3rd party editors can be rendering at the same time while the AMP Share host is doing a re-build.

- Although it may seem reasonable to leave the DTAThrottle value set to 0 for the fastest throughput, limitations will occur. In this case, if three 3rd party editors are trying to render at the same time, activity would stop and start such that only two editors could write simultaneously.

You can restrict throughput on your 3rd party editors to make more throughput available elsewhere. See HDI Host – 1 Velocity Editor, 1 Adobe Premier and 1 FCP Editor. This example shows each of two 3rd party editors with DTAThrottle set to 550 Mbps. This is done by setting the DTAThrottle value on the AMP Share host to 1100 Mbps.

Running the Software

Launch the LLM on the Nexio AMP Share host using the Nexio Startup icon before launching the LLM on each of the client machines.

Systems with CIFS and 3rd Party Editors

1. Launch the standard Nexio LLM on the host machine using the Nexio Startup icon.

2. Launch the CIFS LLM on the host machine using the LLM-CIFS shortcut.

3. Launch the CIFS application using the CIFS shortcut.

4. Launch the Nexio LLM on each of the client machines using the Nexio Startup icon.

System Support

Rebuilding a Failed Drive

If your AMP Share host experiences a failed drive, you will use your LLM software to remove, replace and rebuild the drive. Use the procedure described in your *Nexio LLM User manual*.
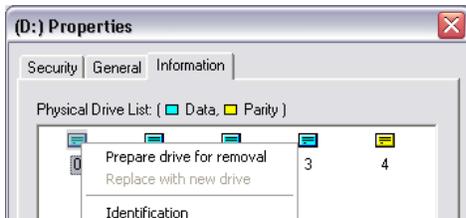
When you have gone through the LLM's **Prepare Drive for Removal** process and replaced the physical drive, it can take a long time (sometimes 30+ minutes) for the operating system to discover the drive and before the drive appears in the **LLM Physical Disks** pane. To avoid the delay, right-click in the **Physical Disks Pane** and select **Rescan**.
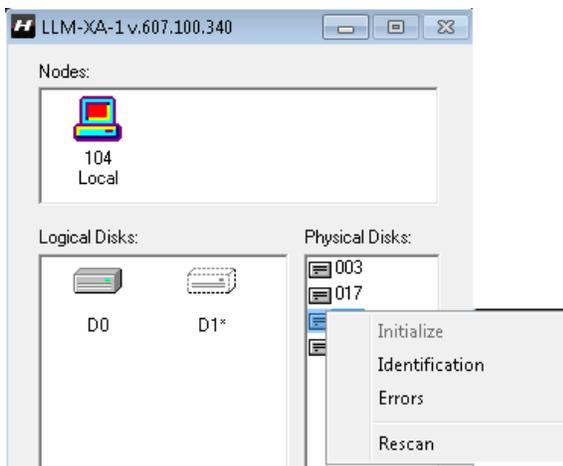
Before using **Replace with new drive** on the AMP Share host, even if the new drive is displayed in the LLM on the AMP Share host, you must use the **Rescan** command on the **Physical Disks Pane** of ALL MACHINEs in the system. This includes the AMP Share host and all AMP Share clients.
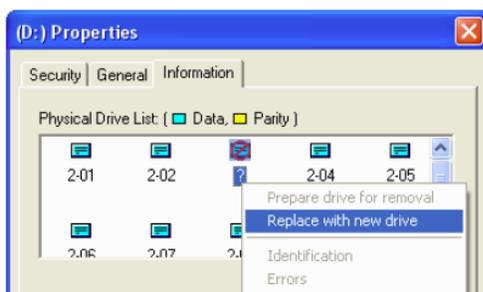
All machines must show the new drive in the LLM Physical Disks pane before you can successfully use the **Replace with new drive** on the AMP Share host.

Nexio AMP Share Compared to Farad

This table shows some of the differences between a Nexio Farad system and a Nexio AMP Share system.

| Feature	Nexio Farad	Nexio AMP Share
Cost	Higher cost, premium system.	Lower cost, entry-level system.
Storage Availability	• **Nexio Farad 601.** High availability storage, no single point of failure. • **Nexio Farad 60.** Highly reliable storage, no single point of failure.	Single points of failure exist including host HDI CPU and single data paths to each client.
Connectivity	Additional infrastructure required. (Ethernet switches, fibre channel switches, drive chassis, RAID controllers.)	No external hardware required.
Redundancy for Client Connectivity	Redundancy through additional hardware infrastructure.	None.
LLM RAID Level Storage	Nexio Farad: RAID-60 or RAID-601.	LLM RAID-6.
Connectivity for 3rd Party Editors	CIFS Gateway required.	No FCP Gateway required. CIFS LLM runs as second instance on the HDI host.
Expansion	Nexio Farad 60/601 expansion supported.	None supported. (All devices and components can be re-used if you upgrade to a Nexio Farad system.)
Record/Playback on Host	Not supported.	Record and playback are supported.

Example Systems

HDI Host – 1 Volt 2 and 2 Velocity Editors

This system is set up with 8 SDI/HD-SDI channels, FTP input and two Velocity editors using XDCAM HD 422.
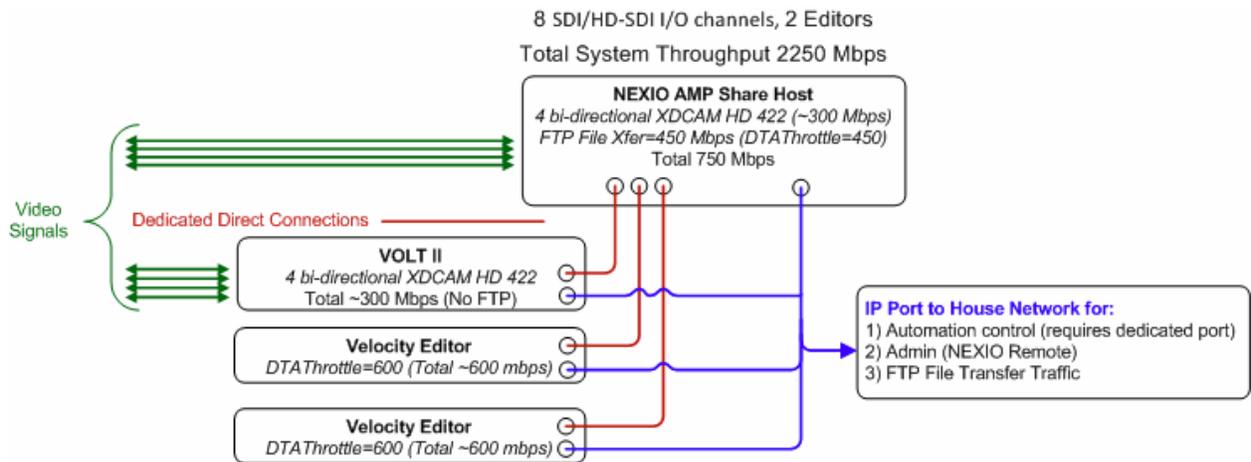
Nexio AMP Share Host		
• Video/Audio throughput: 4 bi-directional XDCAM HD 422	~ 75 Mbps X 4	= ~300 Mbps
• FTP throughput: DTAThrottle = 450	~ 450 Mbps	= ~450 Mbps
Volt 2		
• Video/audio throughput: 4 bi-directional XDCAM HD 422	~ 75 Mbps X 4	= ~300 Mbps
Velocity Editor		
• DTA throttle = 600	~ 600 Mbps	~ 600 Mbps
Velocity Editor		
• DTA throttle = 600	~ 600 Mbps	~ 600 Mbps
Total System Throughput		**~2250 Mbps**

HDI Host – 3 Volt 2s

This system is set up with16 SDI/HD-SDI channels along with FTP and DV100.
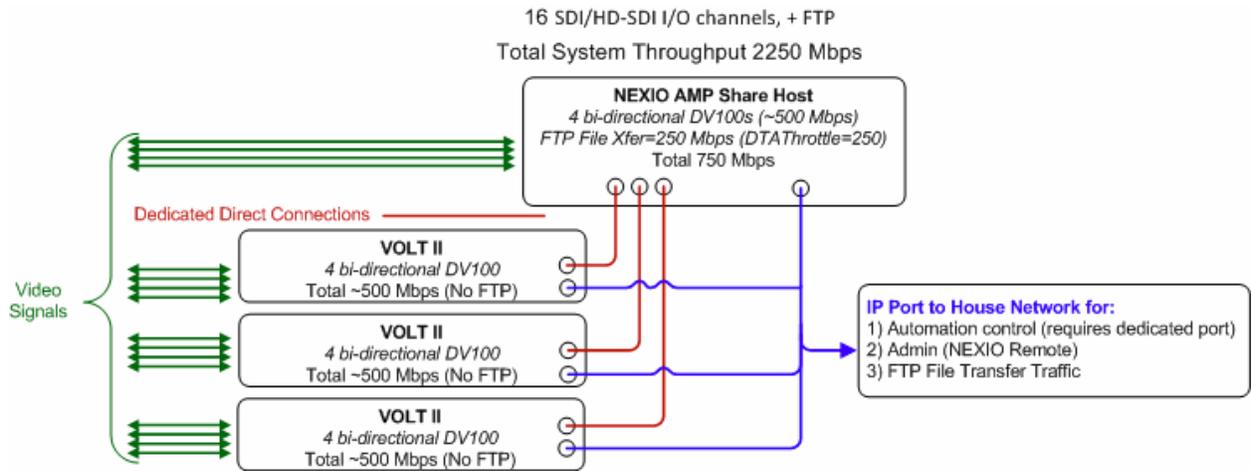
Nexio AMP Share Host • Video/Audio throughput: 4 bi-directional DV100 • FTP activity DTAThrottle = 250	~ 125 Mbps X 4 ~ 250 Mbps	= ~500 Mbps = ~250 Mbps
Volt 2 • Video/audio throughput: 4 bi-directional DV100	~ 125 Mbps X 4	= ~500 Mbps
Volt 2 • Video/audio throughput: 4 bi-directional DV100	~ 125 Mbps X 4	= ~500 Mbps
Volt 2 • Video/audio throughput: 4 bi-directional DV100	~ 125 Mbps X 4	= ~500 Mbps
Total System Throughput		**~2250 Mbps**

HDI Host – 1 Proxy Transcoder, 1 IOL and 1 High-Res Editor

This system has low-res components with 4 channels of playback and FTP input. Note that the maximum allowed client throughput is configured via DTAThrottle registry setting on the client. This allows transcoding to move as fast as possible so it can keep up with other activity on the system. If you wanted faster FTP file transfer, you could decrease the proxy transcoder throughput   (decrease the DTAThrottle value) and increase the DTAThrottle value on the HDI device.

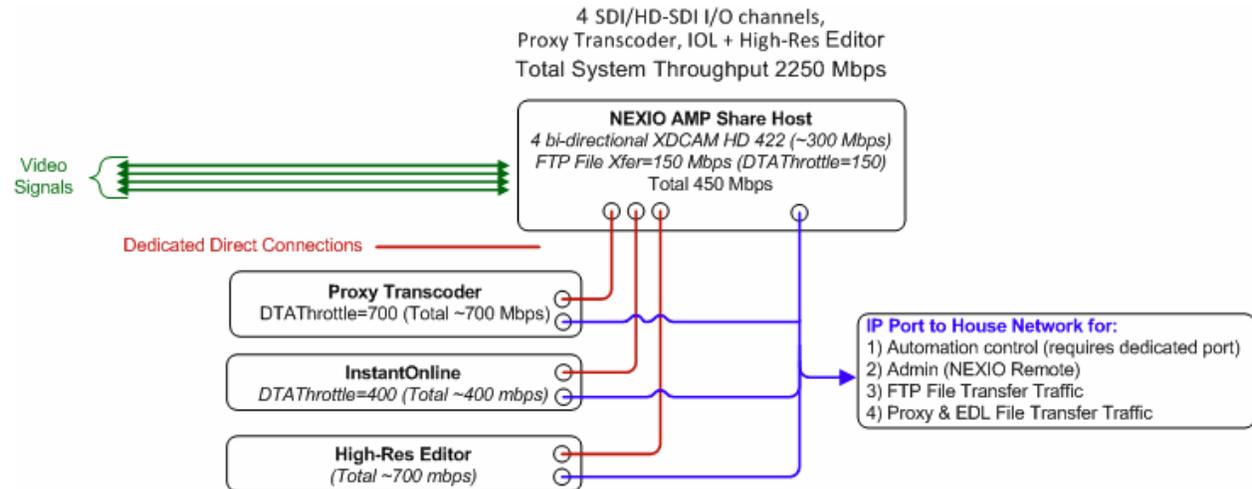Total system throughput must be less than or equal to 2250 Mbps.

Nexio AMP Share Host • Video/Audio throughput: 4 bi-directional XDCAM HD 422 • FTP activity DTAThrottle = 150	~ 75 Mbps X 4 ~ 150 Mbps	= ~300 Mbps = ~150 Mbps
Proxy Transcoder • DTA throttle = 700	~ 700 Mbps	= ~700 Mbps
Instant Online • DTA throttle = 400	~ 400 Mbps	= ~400 Mbps
High Res Editor • DTA throttle = 700	~ 700 Mbps	= ~700 Mbps
Total System Throughput		**~2250 Mbps**

HDI Host – 1 Velocity Editor, 1 Adobe Premier and 1 FCP Editor

This system has 3rd party editors mixed with Velocity and 4 channels of playback with FTP input. In this case, limiting the editors to 550 Mbps leaves 600 Mbps for use by the host for recording, playing, and FTP activity.

In this example, the total throughput from each of the two 3rd party editors is 550Mbps. You can do this by setting the HKCU\Software\ACS Audio Video\LLM3\Parameters\DTAThrottle value to 1100 on the AMP Share host. DTAThrottle must be set to 550 on Velocity to allow it to have throughput of 550 Mbps.

Total system throughput must be less than or equal to 2250 Mbps.
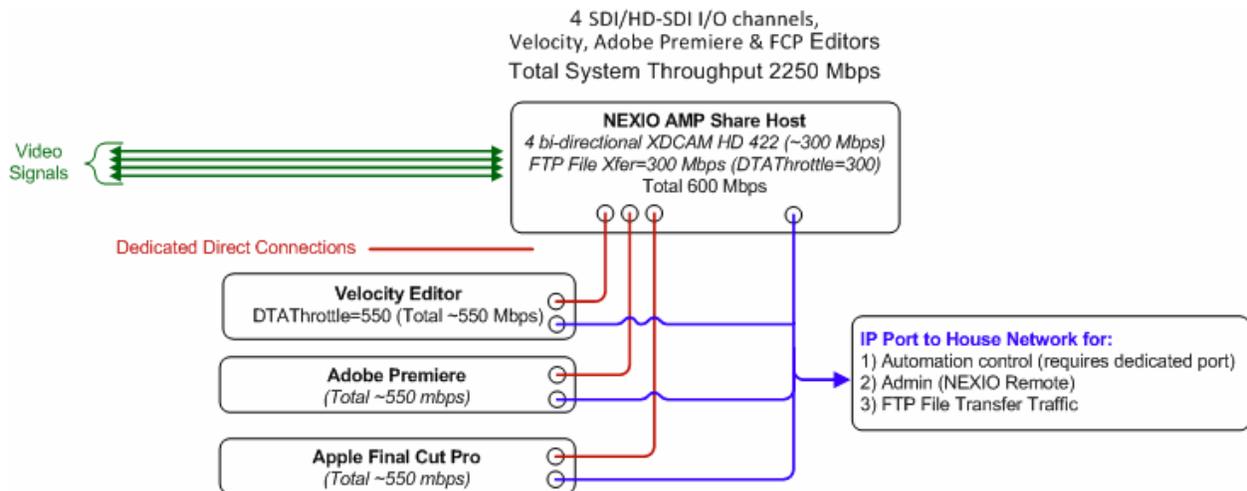
Nexio AMP Share Host (NXAMP3801HDI)		
• Video/Audio throughput: 4 bi-directional XDCAM HD 422	~ 75 Mbps X 4	= ~300 Mbps
• FTP activity with DTAThrottle = 300	~ 300 Mbps	= ~300 Mbps
Velocity Editor		
• DTAThrottle = 550	~ 550 Mbps	= ~550 Mbps
Adobe Premier Editor		
• Total throughput	~ 550 Mbps	= ~550 Mbps
Final Cut Pro Editor		
• Total throughput	~ 550 Mbps	= ~550 Mbps
Total System Throughput		**~2250 Mbps**

Registry Keys

All of the registry key information needed to configure Nexio AMP Share is covered in the section on Configuring the System. This section gives information about other important settings that may be helpful in configuring your AMP Share system.

AMP Share HDI Host

These registry keys are set in **HKCU\Software\ACS Audio Video\LLM\Parameters**.

Registry Key	AMP Share HDI host value (decimal)	Comment
BuffSize	7664	
DiskLatencyAvg & Max	3000	
FileBuffs	30	
MaxIOQuota	4	
MaxIOs	16	Legacy SBOD had this at 10 (d), Nexio AMP Share uses 16 (d) which is 0x10.
MinDisks	16	
MaxParity	2	
NetDiskServerIOs	16	*All storage products up to now have used 10 (d), but Nexio AMP Share uses 16 (d) which is 0x10.
NetDiskWindowSize	128	Our testing found that 128 gave best performance in the Nexio AMP Share environment
RAID6Type	0	A different value is required for the ..\LLM3\Parameters key – see below
StartSector	2047	
SaveDirecotryHold	600	*Introduced in SA291 and 7.0 Release

AMP Share HDI Host Running CIFS

These registry keys are set in **HKCU\Software\ACS Audio Video\LLM3\Parameters**.

Note. These keys are in the LLM3 directory, not LLM.

Registry Key	AMP Share HDI host value if running CIFS (decimal)	Comment
BuffSize	7664	
DiskLatencyAvg & Max	3000	
DTAThrottle	500	Can be set to 700 if there are only two 3rd Party Editors.
FileBuffs	192	
MaxIOQuota	4	
MaxIOs	16	Legacy SBOD had this at 10 (d), NEXIO AMP Share uses 16 (d) which is 0x10
MaxParity	2	
MinDisks	16	MinDisks
NetDiskServerIOs	16	All storage products up to now have used 10 (d), but NEXIO AMP Share uses 16 (d) which is 0x10.
NetDiskWindowSize	128	
RAID6Type	1	A different value is required for the .\LLM\Parameters key – see below
StartSector	2047	
SaveDirectoryHold	600	*Introduced in SA291 and 7.0 Release

These registry keys are set in **HKCU\Software\ACS Audio Video\LLM3\Control**.

TCPPortOffset	100	
NetworkServer	172.16.253.81	IP Address will vary depending on IP setup of site.

AMP Share Clients

These registry keys are set in **HKCU\Software\ACS Audio Video\LLM\Parameters.**

Registry Key	NEXIO AMP Share Client value for LLM-CIFS.EXE (decimal)	Comment
BuffSize	7664	
DiskLatencyAvg & Max	3000	
MaxIOQuota	4	
MaxIOs	16	Legacy SBOD had this at 10 (d), NEXIO AMP Share uses 16 (d)
MaxParity	2	
MinDisks	16	MinDisks
NetDiskServerIOs	16	*All storage products up to now have used 10 (d), but NEXIO AMP Share uses 16 (d) which is 0x10.
NetDiskWindowSize	128	
RAID6Type	0	
StartSector	2047	
SaveDirectoryHold	600	Introduced in SA291 and 7.0 Release