



# Avid Unity ISIS™

## Version 1.1 ReadMe

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### Important Information

Avid® recommends that you read all the information in this ReadMe file thoroughly before installing software or attempting to use the Avid Unity ISIS™ (Infinitely Scalable Intelligent Storage) system. This ReadMe provides information that is not in the other Avid Unity ISIS documentation.



*Search the Avid Knowledge Base for the most up-to-date ReadMe file, which contains the latest information that might have become available after the documentation was published.*

This document provides hardware and software requirements, a hardware overview, and other important information not available in other documentation. This document also lists limitations and known issues. Physical connection of the system and loading of the system and client software is explained in the *Avid Unity ISIS Setup and Configuration Guide* located on the Avid Unity ISIS Documentation DVD. You should read this Avid Unity ISIS ReadMe *prior* to connecting the Avid Unity ISIS system and loading the software.



**Avid strongly recommends that you purchase installation with your Avid Unity ISIS system. Installing the Avid Unity ISIS system yourself could void your warranty.**

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## If You Need Help

If you are having trouble using Avid Unity ISIS system:

1. Retry the action, carefully following the instructions given for that task. It is especially important to check each step of your workflow.
2. Check this ReadMe file for the latest information that might have become available after the documentation was published. Also check online for the most up-to-date ReadMe because the online version is updated whenever new information becomes available. To view the online ReadMe, select ReadMe from the Help menu, or visit the Knowledge Base at [www.avid.com/readme](http://www.avid.com/readme).
3. Check the documentation that came with your Avid application or your hardware for maintenance or hardware-related issues.
4. Visit Avid Online Support at [www.avid.com/onlineSupport/](http://www.avid.com/onlineSupport/). Online support is available 24 hours per day, 7 days per week. Search the Knowledge Base to find answers, to view error messages, to access troubleshooting tips, to download updates, and to read or join online message-board discussions.

## Symbols, Conventions, and Nomenclature

ReadMe documents use the following symbols and conventions:

Symbol or Convention	Meaning or Action
	A note provides important related information, reminders, recommendations, and strong suggestions.
>	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.
<i>Italic font</i>	Italic font is used to emphasize certain words and to indicate variables.
<b>Courier Bold font</b>	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, Ctrl+drag.

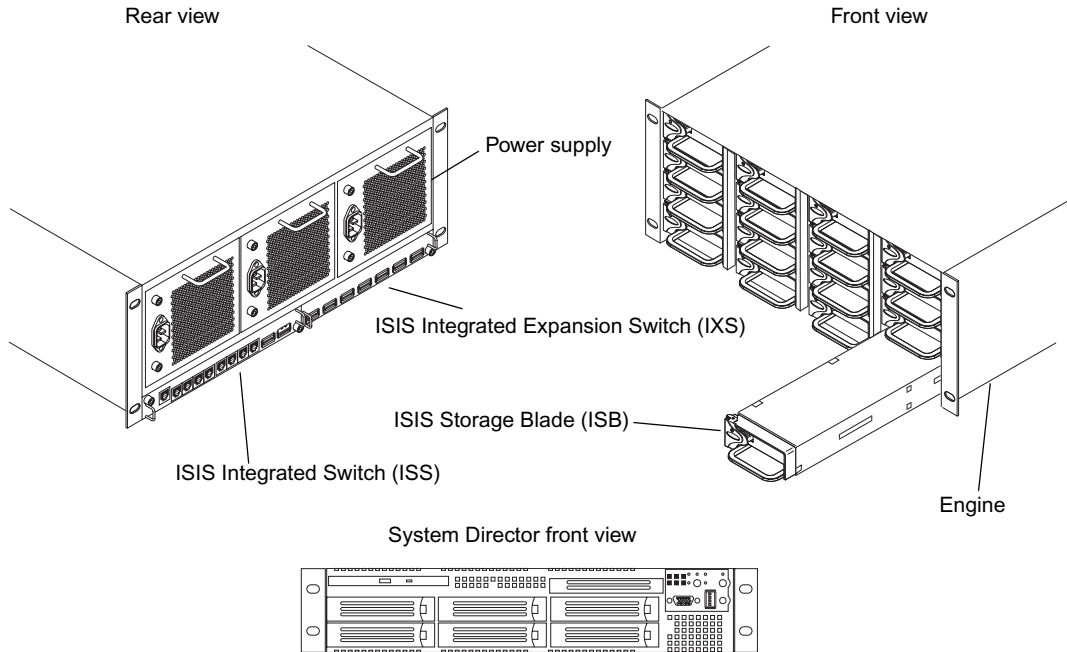
If you are unfamiliar with the names of the Avid Unity ISIS components, the table provides the terms used in this and other Avid Unity ISIS documents.

### Product Nomenclature

<b>Product name</b>	<b>Term used in this document</b>
Avid Unity ISIS media network	System or shared network storage environment  The Avid Unity ISIS consist of the hardware, Avid software, and other hardware supplied by the customer, such as external Ethernet switches The avid hardware is shown in the following figure.
Avid Unity ISIS architecture <sup>a</sup>	Architecture - including software
Avid Unity ISIS file system <sup>a</sup>	Group of bound storage elements
Avid ISIS™ storage blade, i500, i1000	ISIS Storage Blade ISB
Avid ISIS Integrated Ethernet switch blade	ISIS Integrated Switch (ISS)
Avid ISIS Expansion Integrated Ethernet switch blade	ISIS Integrated Expansion switch (IXS)
Integrated Power supply and Cooling fans	Power supplies
Avid ISIS Engine	The chassis that contains the ISBs, ISS, IXS, power supplies, and an internal midplane.
Avid Unity ISIS System Director (Active and Secondary)	System Director A CPU connected to the ISS to manage the servers and portions of the metadata to the System Director
Zone 1, Zone 2, and Zone 3 Configurations	These are Avid defined client configurations that connect the client to the Avid Unity ISIS system. A complete explanation can be found in the Avid Unity ISIS Setup Guide.

The major components used to create the Avid Unity ISIS media network are a System Director, an engine containing ISIS Integrated Switch (ISS), ISIS External Switch (IXS), ISIS Storage Blade (ISB), and one or more clients.

### Avid Unity ISIS Media Network Hardware



## New Features In Version 1.1

Along with many performance improvements, the following is a list the new features in Avid Unity ISIS v1.1.

- **10-Gb Link Aggregation** — Sometimes called “trunking,” link aggregation allows you to combine physical network links into a single logical link for increased bandwidth. Link aggregation can increase the capacity and availability of the communication channel between devices (both switches and clients) using existing Ethernet technologies in such a way that two or more Ethernet connections can be combined to increase the bandwidth capability and to create resilient and redundant links. Link aggregation also provides load-balancing where the processing and communications activity is distributed across multiple links so that no single link is overwhelmed.

- Administrator tool enhancements — The Administrator tool includes the following new features:
  - A Home page provides quick access to most of the Avid Unity ISIS tools, including the Administrator tool, the System Monitor, the Log Aggregator, the Switch Manager, the Disk Tester, and the Connection Analyzer.
  - The default column layout in the Main display area includes a basic set of headings to allow you can view standard information quickly. You can customize the Main display area to view all available column headings, or to hide or show columns,
  - You can sort and filter the items in the Main display area in the Administrator tool.
  - You can rearrange columns in the Main display area.
- File Structure Integrity Check — You can send a command to the storage element check the integrity of the file structure and rectify its files, in addition to the automatic process of rectifying files that the system conducts periodically. Rectifying files allows the ISBs to communicate with the System Director to monitor the state of its storage and clean up any files that the ISB no longer needs to store.
- Client Manager — The Avid Unity ISIS Client Manager has been redesigned to include added functionality. The Client Manager allows your client system to connect to the Avid Unity ISIS media network, to mount and access your workspaces at any time, and to manage your workspaces. The Client Manager allows users with the necessary account privileges to resize workspaces, to protect and unprotect workspaces, and to specify client bandwidth reservations, if any.
- Increased storage capacity for the Avid Unity ISIS media network — The media network now provides up to 192 terabytes (TB) of storage, or 96 TB of mirrored storage. The Avid ISIS Engine contains either two 250 GB ISBs or two 500 GB ISBs.
- Increased file management — The System Director handles file management for the system, which can support a configuration including the following:
  - 1000 user accounts
  - 2,500,000 total files
  - 10,000 folders
  - 10,000 files per folder (typical)



*The files and folders compete for space so, more files relates to less folders and vice versa. Maximum numbers depend on the number of folders, the number of files in folders, and even things like the length of file names.*

- Support for Macintosh® clients — Avid Unity ISIS now supports Macintosh G5 Avid editing systems as clients on the media network using the build in Ethernet port.

- Increased client capacity — Avid Unity ISIS supports up to 300 clients (150 active clients), each using dual-stream DV 50 video and up to 8 tracks of audio.

#### **Connected Active**

- Reading and writing to Avid Unity ISIS File System (using bandwidth)
- License Key is deducted from the total

#### **Connected Inactive**

- Avid Unity ISIS workspace mounted however, not reading or writing
- License Key is deducted from the total

#### **Disconnected**

- Connection Manager has not been started or client is logged out
- License Key is not deducted from the total
- Avid Unity ISIS Agents — The Switch Blade Agent includes the following features:
  - Port information is displayed and grouped by chip (reflecting the physical location of ports on the switch) and by function (for example, as client ports or stacking ports).
  - Link aggregation configuration is displayed. You can also create, modify, and delete link aggregation configurations.
- Replication Status — The Avid Unity ISIS System Director Control Panel now includes information on replication status for the system.
- Network Time Protocol (NTP) — You can now configure your Avid Unity ISIS components to use NTP server to keep all ISSs and ISBs in synchronized time.

## Upgrade Instructions For v1.1

The process for upgrading from Avid Unity ISIS v1.0x to Avid Unity ISIS v1.1 has change from previous upgrades.



*When installing the software on a Windows 2000 clients make sure you first run Windows Update and accept all “High-priority Updates” and install Windows msi 3.1. If Windows msi 3.1 is not installed, you might receive an error message informing you that a required DLL is missing while installing the client software.*

**The upgrade process from v1.0x to v1.1 is summarized as follows:**

1. Upgrade System Director software and load the Installers on the System Director as in previous releases. For more information, see the *Avid Unity ISIS Setup Guide*.
2. Upgrade all your ISSs, make sure each ISS finishes its upgrade before continuing with the ISB upgrades.

3. Upgrade your ISSs and wait until every ISS is at the “Install Waiting” state and then power down all the Avid ISIS Engines.
4. Power all the Avid ISIS Engines back on at the same time.

After the Avid ISIS Engines restart, the ISSs continue with the install (no additional user intervention is necessary).

## Memory Error Status

The Administration Tool now has the ability to display Memory Error status as part of the complete ISB status on the Storage Elements page. You can also view ISB status by placing the mouse pointer over a component in the Avid Unity System Monitor tool. This status is used as an indicator for an ISB failure. Replace any ISBs that return a Memory Error status.

After upgrading the System Director to v1.1, the ISBs initially show a status of “Disk Performance Degraded” while upgrading the ISBs. Once the ISBs are upgraded to the same version (v1.1), the ISB status is valid again.

## Upgrading Unstacked Switches to v1.1

If you need to upgrade switches that are not yet stacked, perform the following steps. The procedure requires possible changes to System Director IP addresses.

### To upgrade unstacked switches:

1. Note the System Director’s current IP address on the left and right side of the network. Save this information for restoring the System Director’s IP information.
2. Unplug the System Director’s connection from both the left and right side of the stacked configuration and give the System Director IP addresses on the same subnet as the new switches. For example 192.168.10.250 (left) and 192.168.20.250 (right).
3. Plug the left and right connections from the System Director into the new left and right switches.
4. Perform the upgrade from the Administration Tool on the System Director.
5. Repeat steps 2 to 4 for the remaining unstacked switches.
6. When all switches are upgraded to v1.1, plug the left and right System Director connections back into their original places in the stack.
7. Restore the original IP addresses for the System Director’s left and right connections.

You can now expand an eight engine Avid unity ISIS network to a twelve engine Avid unity ISIS, see the *Avid Unity ISIS Setup Guide*.

# Hardware and Software Requirements

The following table provides a list product clients and required software versions needed to work with Avid Unity ISIS v1.1.



*All Windows editing clients must use the 1-Gb Intel® Pro 1000 MT Ethernet board to connect to the Avid Unity ISIS system. For instructions on installing the board and software, see Avid Unity ISIS Client Manager Guide.*

## Editing Client Requirements for Avid Unity ISIS

Software	Release Number	Required Hardware
Media Composer®	1.6.3, and 1.6.7, 1.6.8, 2.1.8, 2.1.9, 2.2, 2.2.1, 2.5, and later 1.8.4 on MacOS 10.4.3 2.5 and later on MacOS 10.4.6	Dual Processor HP XW8000 or HP xw8200 Macintosh G5 systems
Avid iNEWS Instinct™	1.0 and later	Workgroup Environment
Avid Interplay™	1.0 and later	Workgroup Environment
Avid Symphony™ Nitris®	1.0 and later	Standalone and Workgroup
NewsCutter® Adrenaline and NewsCutter XP	6.1.8, 6.1.9, 6.2, 6.2.1, 5.6.3, 5.6.7, and 5.6.8, 6.5, and later	Dual Processor HP XW8000 or HP xw8200
Media Composer Meridien	v12.5	Single Processor HP XW8000 with 3.06 or 2.8 GHz CPUs or single processor Compaq® W8000 with 2.8 GHz CPU.
NewsCutter Effects/XP Meridien	Effects v4.5 XP v3.8.13	Single Processor HP XW8000 with 3.06 or 2.8 GHz CPUs. Single processor Compaq W8000 with 2.8 GHz CPU.
Avid Xpress® Pro	5.2.1, 5.5 and later 4.8.4 on MacOS 10.4.3 5.5 and later on MacOS 10.4.6	Standalone, not in a Workgroup environment. Macintosh G5 systems
Avid Unity MediaManager	v4.5.3, 4.5.4, and later	SR2200 <sup>a</sup> or SR2400 <sup>b</sup>
Avid Unity TransferManager	v2.9.6, 2.9.7, and later	SR2200 <sup>c</sup> or SR2400 <sup>d</sup>
AirSpeed®	v1.5.2 and later	
CaptureManager	v2.7.1.1, 2.7.2.2, and later	

- a. When MediaManager uses the SR2200 it must use the Intel Pro 1000 MT board to connect to the Avid Unity ISIS system.
- b. When MediaManager uses the SR2400 it must use built-in dual copper Gig-E connectors to connect to the Avid Unity ISIS system.
- c. When connecting to the Avid Unity ISIS system you use two dual Intel Pro 1000 boards. One for the Avid Unity ISIS system and the other to other devices.
- d. When connecting to the Avid Unity ISIS system you use the built-in dual copper Gig-E connectors, but must use the Intel Pro 1000 MT (copper) or MF (Optical) to connect to other devices.

## Laptops and Switches

For the latest list of qualified laptop systems for use with Avid Unity ISIS, check the Avid Knowledge Base.

### To access the Knowledge Base:

1. Access the Knowledge Base at [www.avid.com/onlinesupport/](http://www.avid.com/onlinesupport/).
2. Click all documentation > other docs.
3. Click the Browse by menu and select Unity ISIS.
4. Click go.

Avid supplies the following layer 2 and layer 3 switches used in a Zone 2 and Zone 3 configurations.

- Cisco 4948-10GE containing 48 1-Gb ports and two X2 based 10-Gb ports (Avid supports both LR and SR X2s)
- Foundry FESX424 containing 24 1-Gb ports and two XFPs based on 10-Gb ports (Avid supports both LR and SR XFPs)
- SMC 8724ML3 containing 24 1-Gb ports and no 10-Gb ports



*Access the Knowledge Base as previously described, to download the Avid Unity ISIS Qualified Switch Reference Guide. This document provides configuration information on the Ethernet switches that are qualified with the Avid Unity ISIS media network.*

## Network Connection Speed

Avid Unity ISIS no longer supports 10/100 BASE-T network interface connections. For more information, see [“Client Connection Speed” on page 21](#).

# Loading the System Software

The *Avid Unity ISIS System Setup Guide*, located on the Documentation DVD, contains complete instructions for loading the software onto the system that should be followed each time you load the software. The following sections include important information about each installation.

## Compatibility Driver Dialog Box

During the client software installation, a dialog box appears asking if you need the Compatibility drive loaded. Select Yes if you have one of the following Avid editing software versions. Select No if your Avid editing version is not listed.

- Media Composer Adrenaline — v1.6.3 - v1.6.7
- NewsCutter Adrenaline — v5.6.3 - 5.6.7
- Media Composer Meridien — v12.5

## Changing the Default Drive for the System Director Software

During installation, the installer defaults to loading the System Director software on drive D:. You can change that location by specifying a different drive for installation.

If you install the application to a location different from the default D: drive, and then later install the application to the default drive, the new software does not function properly. You can correct this either before or after installation by copying three files from one drive to the other.

**To change the default installation directory before re-installing the Avid Unity ISIS application:**

1. On the D drive create the following directory structure.



*You must spell the names exactly as they appear on drive C:.*

```
D:\Program Files\Avid Technology\AvidUnityISISSystemDirector
```

2. Copy the following files from the AvidUnityISISSystemDirector folder on drive C: to the AvidUnityISISSystemDirector folder you created on drive D:.
- Partition0
  - Partition1
  - PartitionDump.bin

3. Complete the installation, checking to see that installer places the application in the folder that was created and the System Director uses the correct files.

**To change the default installation directory after re-installing the Avid Unity ISIS application:**

1. Stop the System Director Service.
2. Copy the files listed below from their location on drive C: to the same location on drive D:
  - Partition0
  - Partition1
  - PartitionDump.bin
3. Start the System Director Service.

## Drivers and Installers Available on DVD

The Avid Unity ISIS Installation DVD contains the following installers and drivers:

- Installers — The following installers are needed when connecting to an Avid Unity ISIS system. How to load the Installers is explained in the *Avid Unity ISIS Setup Guide* or the specific documentation for the device, such as AirSpeed.
  - System Director
  - Avid Unity ISIS Installers
  - Windows Client Installer (this is the windows client installer used only if loading the client directly from the DVD)
- Drivers — The following drivers can be found on the Avid Unity ISIS DVD:
  - Drivers, firmware, and configuration files for external switches
  - Drivers for the supported Intel Ethernet boards
  - Java™

## Java Runtime Environment

The Avid Unity ISIS Client Manager requires v1.5.0 or higher of the Java Runtime Environment (JRE). Avid provides a qualified version of JRE for Windows systems on the Avid Unity ISIS DVD in the [*DVD drive*]:\Java folder.

For clients using a Macintosh system, download the Java software from the Apple® Web site ([www.apple.com](http://www.apple.com)) or use the Apple Software Update.

## Flash Player Software

To use the Administrator tool, you need to have Macromedia® Flash® Player installed on your system. If you encounter problems with the Administrator tool display, you might have an outdated version or multiple versions of Macromedia Flash Player installed. Uninstall any previous versions of Flash Player and install the Flash Player included on the Avid Unity ISIS installer DVD.

## Redistribution of Data

Redistribution of data in its simplest form is taking data from a location and moving to another location. Redistribution occurs when using the Administration Tool to add or remove an ISB from a Storage Group, moving a workspace from one storage group to another, or performing other selected functions. See the *Avid Unity ISIS Administration Guide* for an explanation on how to add and remove ISBs from the Storage Group.

- One example of redistribution is taking data from an ISB that had initially stored the data or from a mirrored location if the original isn't available, and placing it onto an existing ISB so it is not lost when you replace a bad or failing ISB with a new one.
- A second example of redistribution is after you place the new ISB into the system, data is placed onto the new ISB from other ISBs and also possibly new data from clients.

Since each customer can have a different number of engines, a different numbers of clients, and can be configured in different ways, Avid cannot define the exact time it will take to perform a redistribution. What Avid can do is:

- Provide Guidelines for Redistribution — These guidelines help you make the proper determination as to when and how to perform redistribution.
- Help you Understand Redistribution Workflows — These workflows explain how you might be able to determine how long redistribution will take, by taking into account specific variables.

## Guidelines for Redistribution

Redistribution occurs when you remove one or more ISBs from a Storage Group or when you add one or more ISBs to a Storage Group. Use the following precautions when handling ISBs:

- Handle ISBs carefully, physical shock such as dropping can permanently damage the disk drives.
- Do not force or slam an ISB into the midplane when inserting it into the chassis. This can cause errors on adjacent blades that are writing or reading.

The following guidelines are the recommended practices when invoking a redistribution.



*The following information assumes mirrored workspaces.*

Redistribution has been divided into the following two categories:

- Load — Load is defined as having clients reading and writing.
- No load — No load is defined as having clients attached, but clients are not doing any reads or writes.

Whenever you perform a redistribution you should attempt to observe the following guidelines:



**Any workspace that has had a full redistribution performed after upgrading to ISIS v1.1 or any new workspace that has been created in ISIS v1.1 will not be usable if the system is downgraded to v1.0.**

- Do not physically remove an ISB until the ISB has been removed from the file system and the redistribution is complete.
- When redistributing under load, allow a redistribution to complete before invoking a second redistribution.



*If more than one ISB is physically removed from a storage group before performing a redistribution, data loss can occur. You might be removing the mirrored drive used by the first ISB that was removed.*

## Understanding Redistribution Workflows

The following sections explain some workflows that help you understand the number of clients that can be used during redistribution and how to determine how long distribution *might* take. A area of improvement regarding redistribution is with the time required for a redistribution to complete. If upgrading from v1.0 to v1.1, all workspaces must undergo a full redistribution process to take advantage of the improvements.

- [Client Performance During Redistribution](#)
- [Single Blade Add Redistribution Times](#)
- [Single Blade Removal Redistribution Times](#)

## Client Performance During Redistribution

One area of significant improvement in 1.1 has to do with client performance during redistribution. In almost all cases, the editor clients will not suffer a degradation when a redistribution is initiated.

- Adding ISBs to an existing Storage Group will not impact clients and servers that are currently working.
- When removing multiple ISBs from a Storage Group, ensure that the existing load to the Storage Group does not exceed the available bandwidth of the remaining ISBs.

## Single Blade Add Redistribution Times

Use the following tables to determine the amount of time required when adding a single ISB to an existing storage group. The tables are based on the load to the storage group, the capacity of the ISB, as well as the amount of data that added to the blade.

### i500 Single Blade Add (Hours to Complete)

System Load	Data on ISBs		
	25% Full	50% full	100% Full
No Load	1.5	3	6
50% Load	2	3.5	7.5

### i1000 Single Blade Add (Hours to Complete)

System Load	Data on ISBs		
	25% Full	50% full	100% Full
No Load	3	6	12
50% Load	4	7	15

## Single Blade Removal Redistribution Times

Below is information, based on the usage of a the Storage Group, on how long a redistribution takes for a single ISB to be removed from a Storage Group.

Use the following table to determine the amount of time required when removing a single ISB from an existing storage group. The tables is based on the load to the storage group, the capacity of the ISB, as well as the amount of data that will be removed from the blade.

The times in the following tables are based on a blade that has failed and the amount of time required to protect the data that exists on the remaining blades in the Storage Group. It is always advised that if an ISB is to be removed and is functional that it should participate in the redistribution process. This will increase the overall time to complete but will prevent data loss in the event of blade failure during the redistribution process.

#### **500 GB Blade — Time To Completion with No Load**

<b>Chassis</b>	<b>25% Full (Minutes)</b>	<b>50% Full (Minutes)</b>	<b>100% Full (Minutes)</b>
1	18.3	36.6	73.1
2	7.8	15.6	31.2
3	6.1	12.1	24.3
4	5.0	9.9	19.8
5	4.5	9.0	17.9
6	4.1	8.2	16.3
7	4.1	8.2	16.3
8	4.1	8.2	16.3
10	4.1	8.2	16.3
12	2.6	5.1	10.3

#### **500 GB Blade — Time To Completion with a 50% Load**

<b>Engines</b>	<b>25% Full (Minutes)</b>	<b>50% Full (Minutes)</b>	<b>100% Full (Minutes)</b>
1	38.6	77.2	154.3
2	34.7	69.5	138.9
3	34.7	69.5	138.9
4	31.6	63.1	126.3
5	30.5	61.1	122.1
6	29.6	59.1	118.2
7	28.6	57.3	114.6
8	27.8	55.6	111.1
10	27.8	55.6	111.1
12	27.8	55.6	111.1

**I TB Blade — Time To Completion with No Load**

<b>Engines</b>	<b>25% Full (Minutes)</b>	<b>50% Full (Minutes)</b>	<b>100% Full (Minutes)</b>
1	36.6	73.2	146.4
2	15.6	31.2	62.5
3	12.1	24.3	48.6
4	9.9	19.9	39.7
5	9.0	17.9	35.9
6	8.2	16.4	32.7
7	8.2	16.4	32.7
8	8.2	16.4	32.7
10	8.2	16.4	32.7
12	5.2	10.3	20.6

**I TB Blade — Time To Completion with a 50% Load**

<b>Engines</b>	<b>25% Full (Minutes)</b>	<b>50% Full (Minutes)</b>	<b>100% Full (Minutes)</b>
Chassis	25% Full	50% Full	100% Full
1	77.3	154.5	309.0
2	69.5	139.1	278.1
3	69.5	139.1	278.1
4	63.2	126.4	252.8
5	61.1	122.2	244.5
6	59.2	118.3	236.7
7	57.3	114.7	229.4
8	55.6	111.2	222.5
10	55.6	111.2	222.5
12	55.6	111.2	222.5

# Scaling and Connecting an Avid Unity ISIS System

This section contains the following information:

- [Configuration Overview](#)
- [Client and Server Scalability Guidelines](#)
- [Client Connectivity Guidelines](#)

## Configuration Overview

You must understand the building-block principals for successfully scaling the Avid Unity ISIS products along with expected performance for clients and servers as well as rules for connectivity. To do this you must understand two basic concepts:

- [Engine Performance](#)
- [Client Performance](#)

## Engine Performance

Scaling the Avid Unity ISIS environment is based on the amount of bandwidth an ISIS engine (or several engines) are able to provide. A single ISIS engine is made up of 16 Avid ISIS Storage Blades and can produce upwards of 240 MB/s or 300 MB/s aggregate throughput by serving multiple clients simultaneously (see the following table). More regarding clients and resolutions will be explained later. Scaling an Avid Unity ISIS media network beyond a single ISIS engine will effectively scale in increments based on a single engine performance.

The following table defines Avid Unity ISIS media network throughput capabilities based on the number of ISIS engines in use.

### Engine Performance

<b>Number of ISIS Engines</b>	<b>DV25/50 and IMX 30/50 Throughput</b>	<b>DNxHD 145/120 Throughput</b>
1	300 MB per second	240 MB per second
2	600 MB per second	480 MB per second
3	900 MB per second	720 MB per second
4	1200 MB per second	960 MB per second
5	1500 MB per second	1200 MB per second
6	1800 MB per second	1440 MB per second
7	2100 MB per second	1680 MB per second

**Engine Performance (Continued)**

<b>Number of ISIS Engines</b>	<b>DV25/50 and IMX 30/50 Throughput</b>	<b>DNxHD 145/120 Throughput</b>
8	2400 MB per second	1920 MB per second
9	Not supported	Not supported
10	3000 MB per second	2400 MB per second
11	Not supported	Not supported
12	3600MB per second	2880 MB per second

**Client Performance**

The expected level of performance of an ISIS client can range from the Media Composer Adrenaline family of products to Workgroup solutions such as AirSpeed and TransferManager. Since all clients do not behave the same way, some clients have better overall performance than others depending on the client hardware and software architecture.

**Avid Adrenaline Media Composer and Avid Symphony Nitris Performance**

The following resolutions for the Media Composer Adrenaline family of products and Avid Symphony Nitris system have been tested and are supported for the V1.0 C release of Avid Unity ISIS media network in both NTSC and PAL. As enhancements to Avid Unity ISIS software occur the number of resolutions will increase.

- 2:1
- 3:1
- 15:1
- 20:1
- MPEG–2 Proxy for InterPlay
- HDV, DV50, and DV25
- IMX50 and IMX 30
- DNxHD145/120 (see note)



*At this time, the editor is qualified with the capability of using 2 streams of video and up to 8 tracks of audio. This level of functionality allows for better scalability of the ISIS environment while still allowing an adequate degree of client performance and functionality. Attempting to increase the clients stream playback may result in unexpected results for the client but should not impact the ISIS system. Other clients, such as MediaManager Selects, are only capable of playing 1 stream of video.*



*DNxHD might result in skipped video frames during a heavy system load. To prevent this, you should use 2 streams of video and 4 tracks of audio.*

### **Avid AirSpeed Performance**

The AirSpeed performance is governed by the resolution selected within the AirSpeed as well as the mode of operation. For the most up-to-date number of combined AirSpeed servers and Avid editing systems that have been qualified on a Avid Unity ISIS, check the Avid Knowledge Base.



*Avid recommends always using the Avid Unity ISIS in a mirrored state.*

### **TransferManager Performance**

The TransferManager server varies in performance based upon the Avid products and third party solutions that are integrated into the Avid Unity ISIS media network.

Scaling purposes must be handled on a case by case basis due to the dynamic nature of the product.

### **Bandwidth Reservation**

Bandwidth Reservation is a feature that controls the amount of bandwidth a device can use in the ISIS media network. The idea is to better manage the overall rate of devices, such as AirSpeed devices, and prevent bandwidth starvation in the ISIS media network that could impact clients that need data rates to support real-time effects. For ISIS media network 1.0, the only devices that will utilize Bandwidth Reservation will be AirSpeed devices. For AirSpeed devices, the templates listed in the previous section dictate the amount of bandwidth that it is allowed to use. However, the bandwidth allocation in the Administration Tool must be set to allow the reservation. For example, if an AirSpeed is configured as DV 50 playout, then the bandwidth for that device must be set for 26MB/s in the Administration Tool in order for the AirSpeed to access the workspace and reserve bandwidth. If the bandwidth is not set, the AirSpeed will not be able to access a workspace.

## **Client and Server Scalability Guidelines**

When scaling an Avid Unity ISIS media network, you first need to understand how much bandwidth is available based on the number of ISIS engines in use. It is also important to understand how the ISIS engines are segmented by way of Storage Groups, which will define the number of ISIS engines and ISIS Storage Blades that a client or several clients can access. For example; an ISIS media network can consist of 3 ISIS engines, but the engines could be segmented into Storage Groups of 2 and 1 ISIS engines respectively.



*Storage Groups are recommended to be sized in increments of ISIS engine. While Storage Groups can be created with partial ISIS engine, performance and sizing scalability cannot be guaranteed.*

Due to the dynamic nature of an ISIS media network environment, configurations can be different for every site, especially for broadcast facilities that have a wide range of Workgroup products. Because of this, all the rules regarding a configuration in terms of client/server count cannot be defined in a document. Avid uses a configuration tool to calculate configuration possibilities for new and existing sites. Contact your local Avid representative to make use of this tool when ordering or modifying a system.

## Scaling Editor Clients

When used as a guideline, the following table indicates the number of clients a Storage Group could possibly support based on the number of ISIS engines in the Storage Group and client resolution. However, the total number of clients that can be supported will be limited by network connectivity as well as other components that are using the Storage Group.

## Client Connectivity Guidelines

This section defines the rules and strategies of connecting clients and servers to the ISIS media network, from network recommendations to the use of external switches. To do this you must look at the following:

- [Client Connection Speed](#)
- [Network Addressing](#)

### Client Connection Speed

Zone 1 clients must use 1 Gb connections to the ISS. The ISS no longer negotiates at any rate below 1 Gb. If 100 BASE-T connections are needed, connect the clients or server to external switches configured for Zone 2 or 3.



*AirSpeed devices and TransferManagers must be connected as Zone 1 clients.*

### Network Addressing

In order for proper operation of the ISIS media network, clients must be configured on the same broadcast domain as the ISIS, ISSs and System Director. The ISIS network topology is split into 2 separate broadcast domains, with one broadcast domain represented by the ISIS ISSs on one side of the ISIS engine and the 2nd domain represented by the ISIS ISSs on the other side. The default network configuration looks like the following:

## Default Network Addresses for Avid Unity ISIS Engines

Location	Network ID	Subnet Mask
Left side of engine	192.168.10.0	255.255.255.0
Right side of engine	192.168.20.0	255.255.255.0

For more addressing information see “*IP Addressing Overview*”, in the *Avid Unity ISIS Setup Guide*. If the end user needs to change the network broadcast domains of the ISIS media network, the clients and servers that are to be attached must change and be outside the range of addresses used for the ISSs and IXSs.

The following table lists possible port configurations based on the above policies. For each ISIS engine listed in the table, there is an associated Foundry FES-X424. The exception is when you have 3 ISIS engines, you do not receive any additional ports due to the IXS module replacing the ISS module.

### Available Zone 1 and 2 Ports

Available Zone 1 and 2 Ports						
External Switches	ISIS Engines	VLAN 10		VLAN 20		Total Ports
1	1	6	10	6	10	32
2 <sup>a</sup>	2	12	20	12	20	64
2 <sup>a</sup>	3	12	20	12	20	64
3	4	18	30	18	30	96
4	5	24	40	24	40	121

a. Number of switches stay the same due to IXS connection in the engine instead of ISS when going to three engines.



*The number of ports shown above is based on available ports and is not indicative of what the Avid Unity ISIS engine can support based on overall system bandwidth.*

Each ISS is rated at 260MB/s of network bandwidth. This bandwidth is separate from the bandwidth available in an ISIS Engine. The 260MB/s network bandwidth can be allocated to all Zone 1 clients on a single ISS or it can be spread across ports used for Zone 1 clients as well as the 10Gb port used for Zone 2 and 3 client connectivity.

The 10-Gb port is able to support up to 230MB/s of the total 260MB/s available in an ISS. The remainder of the network bandwidth on that ISS can then be allocated to Zone 1 clients.

For example, 14 DV 50 clients are connected to an Avid Unity ISS by way of a supported Zone 2 switch. The total bandwidth of these clients is approximately 224MB/s. This allows for up to 36MB/s of additional network bandwidth that can be used by Zone 1 clients or servers on the same ISS.

**The following guidelines must be followed to maintain proper network performance:**

The following two tables describes the number of supported clients in a Zone 3 configuration.

#### **Number of Links between Layer 3 (L3) Switches Vs. Number of Clients**

<b>Number of 1-Gb Links Between AvidL3 Switch to House Core Switch<sup>a</sup></b>	<b>Maximum DV25 or IMX30 Clients</b>	<b>Maximum DV50 or IMX50 Clients</b>
1	15	8
2	30	15
4	50	32

a. This uses 1 Gb X-links

#### **Number of Clients per House Edge Switch<sup>a</sup>**

<b>Client Type</b>	<b>Maximum DV25 or IMX30 Media Clients</b>	<b>Maximum DV50 or IMX50 Media Clients</b>
MediaManager Select	15	NA
Avid iNEWS Instinct	15	8

a. Assuming 1 Gb uplink.

# Known Issues

The following sections describe known issues with the Avid Unity ISIS software. When a workaround exists, it appears in the paragraph directly following the issue description.

- As an editor client you might see the following:
  - Semaphore Time-out
  - Decomp Stream
  - Video or Audio overruns

**Workaround:** Clear the error message and re-try the function. If it continues to fail, call your Avid Representative.

- In order to play video from applications such as MediaManager Select and Instinct, your Avid Unity ISIS username must match your Windows login name. However it is not necessary for your Windows password to match your ISIS password.
- Before installing or updating the Avid Unity ISIS Client Manager software on your Macintosh system, you must unmount any mounted workspaces and exit the Client Manager software.
- Close all applications that use an Avid Unity ISIS workspace before attempting to restart or shut down your Macintosh client, and unmount the workspace. If a workspace is mounted when attempting to shutdown a Macintosh system, the Macintosh might enter an unresponsive state,

**Workaround:** If your Macintosh becomes unresponsive, you need to force a shut down by holding in the power button until the Macintosh system powers off.

- If you attempt to log in and receive the error “Invalid username or password. Please try again”, you might have Force Manual Creation checkbox selected.

**Workaround:** Disable the “Force Manual Device Creation” check box or have the Avid Unity ISIS Administrator use the Administration Tool to create the Device you are logging into.



*Although not as frequent, other problems can also cause this error.*

- After powering down and powering up an Avid Unity ISIS media network, some switches intermittently either take on a duplicate IP address used by another switch or resets to factory default.

**Workaround:**

- ▶ If your media network has multiple engines, disconnect the Hi-Gig links and re-add the engines to the stack.
  - ▶ If your media network has a single engine, use the management port to reconfigure the IP Addresses.
- If you are unable to re-connect to an unmounted workspace, you should restart the client.
- A delay up to 45 seconds is seen for the workspace to show after you reboot a client and map a workspace for the first time.

**Workaround:** You must perform the following:

1. Go to the System32 directory and browse to \drivers\etc and look for the lmhosts file. You might see the lmhosts.sam (sample file). To edit the lmhosts file (or create one if it is not there) use Notepad. Do not use Wordpad.

If there are already entries in the file, add the following loopback entry into it. Do not change any other entries or add any extra characters. There should be at least one space between each entry. Do not use tabs in this document.

```
127.0.0.1 <virtual name of System Director> #PRE
```

The virtual name should match exactly to what is entered into the System Director Control Panel.

2. Save this file as LMHOSTS (with no extension) to the following location:  
c:\windows\system32\drivers\etc



*Be aware the your system might not be displaying extensions if you have the Hide Extensions option selected in the Windows Explorer > Tools > Folder Options > View tab.*

3. Enable the operating system to look at the lmhosts file by:
  - a. Right clicking My Network Places and select Properties
  - b. Right click on any “Local Area Connections” and select properties.
  - c. Select Internet protocol TCP/IP and click Properties.
  - d. Click Advanced.
  - e. Click the WINS Tab, check the Enable LMHOSTS lookup, and click OK.
  - f. Close all windows by clicking OK in each Window.

- Deleting a ISS from a stack does not clear engine configuration.

**Workaround:** Use the Reset Factory defaults button to clear stack configuration info.

- Clips are not visible in Media Tool when you perform the following sequence:

1. Open Media Tool.
2. Select the drive and project that have clips and master clips.  
All Master clips are visible.
3. Close Media Tool.
4. Open Media Tool.
5. Select the same drive and project that have clips and master clips.
6. No clips are visible.

**Workaround:** Re-launch Media Composer. When you open Media Tool the clips are now visible.

## Accessing Online Support

Avid Online Support is available 24 hours per day, 7 days per week. Search the Knowledge Base to find answers, to view error messages, to access troubleshooting tips, to download updates, and to read/join online message-board discussions.

**To access Avid Online Support:**

- ▶ Go to [www.avid.com/onlineSupport/](http://www.avid.com/onlineSupport/).

## Technical Support Information

Most products feature a number of coverage options. Avid Assurance service offerings are designed to facilitate your use of Avid solutions. Service options include extended telephone coverage, automatic software maintenance, extended hardware warranty, and preferred pricing on replacement parts. Offerings and options may vary by product and are not available for all products.

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