



Avid® ISIS® 7500 | 7000 Setup Guide

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Contents

	Using This Guide	12
	Symbols and Conventions	12
	If You Need Help	13
	Accessing the Online Documentation	13
	Avid Training Services	14
Chapter 1	Avid Software and Hardware Install Checklist	15
	Software Upgrade	15
	Hardware Upgrade	17
	New System Director and Engine Installation	18
	Switch and ISB Upgrade Utility	19
	Recreating a File Systems	19
Chapter 1	Avid ISIS 7500 7000 System Overview	21
	Hardware Overview and Naming Convention	21
	System Director	24
	System Director Front Panel	24
	System Director Rear Panel	26
	Second System Director	26
	Engine	27
	Engine Front View	27
	Engine Rear View	28
	Power Supplies	28
	Integrated Ethernet Switches	29
	Storage Configurations	30
	Storage Group Size	30
	Chunk Size Support With ISB	31
	Adding an ISB to the File System	31
	Adding or Removing ISBs (Mirrored or RAID)	31

Moving Workspaces Between Storage Groups	31
Mirrored Storage Groups, Single ISB Failure	32
RAID-6 Storage Groups	32
RAID-6 Storage Groups, Single ISB Failure	33
RAID-6 Storage Groups, Dual ISB Failure	34
Automatic Redistribution on Disk Failure	34
Client	35
Network Zone Configurations	36
Zone 1 Clients (Direct Connected)	37
Zone 2 Clients (Indirect Connect) Configuration	38
Zone 1 and Zone 2 Clients Mixed Configuration	40
Zone 3 and Zone 4 Client Configuration	41
Link Aggregation Support	42
Cabling	43
Connecting the Engine CX-4 Cable	43
Removing the Avid Engine Interconnect Cable	43
10-Gb Link Aggregation Overview	44
Supported in Link Aggregation	45
Load Balancing	45
Failover	45
Recommended Topologies	46
Supported Functionality	46
Other Functionality	46
Chapter 2 Connecting the ISIS Equipment	47
Rack-Mounting the Equipment	47
Rack-Mounting Examples	47
Installing Rack-Mount Rails and Brackets	50
Rack-mount Requirements	51
Positioning the server in the Rack	52
Separating the Slide Rails	53
Attaching Inner Slide Rails to the System Director	53
Attaching the Outer Rails to a Square-Hole Rack	54
Attaching the Outer Rails to a Round-Hole Rack	56

Securing the System Director in a Rack	58
Mounting the Engine	59
Installing Blades and Power Supplies	60
Installing IXS and ISS Switches	62
Connecting a Keyboard, Monitor, and Mouse	62
Connecting the Optional Application Key	63
Connecting Power to Equipment	64
Connecting Power Cords	65
Three 20-Amp V AC Circuits for Three Engines	65
Three 20-Amp V AC Circuits for Two Engines	66
Two 20-Amp V AC Circuits for Two Engines	66
Turning System On and Off	67
Connecting ISIS Hardware	67
Engine Configuration v2.x Hardware Guidelines	68
Setting-Up Network Addresses In the Stack	69
Two-Engine Stacking	71
Three- to Twelve-Engine Stacking Summary With v2.x Switches	73
Three- to Twelve-Engine Connections With v2.x Switches	74
Hi-Gig Link Aggregation Group	79
Chapter 3 Installing Software and Configuring 10-Gb Link Aggregation	81
IP Addressing Overview	81
Configuration Overview	84
Software Installation	85
Loading the Software	85
Product Recovery Needs to be Copied to the USB Flash Drive	87
Activating the License Key	87
Installing the Optional Application Key	87
Creating an Active File System on the System Director	88
Binding the Storage Managers	89
Checking the Status of the System Director	90
Installing Software on the Engines	91
Engine Does Not Appear in Add Engine List	94
Check Switch IP Address	95

	Loading Client Software	96
	Configuring Client Software	98
	Adding a Remote Host for Zone 3 and 4 Clients.	100
	Avid Interplay Authentication.	101
	Configuring a 10-Gb Link Aggregation Group.	101
Chapter 4	Avid ISIS Software Licensing	105
	What You Need to Activate the ISIS Software License.	106
	License Activation Using an Internet Connection	106
	License Activation Without an Internet Connection.	108
	Deactivating the License	111
	License Requirement with Host Name Change	111
Chapter 5	Configuring Two Stacks of ISIS Engines	112
	ISIS Two Stack Configuration	113
	External Switch Link Aggregation Connection Guidelines	115
	IP Address Classes	116
	IP Addressing With Two Stacks	116
	Static IP Addresses Available	118
	Connecting Two Stacks of Engines	118
	Setting-Up Two Stacks.	119
	Reconfiguring One Stack into Two Stacks	119
Chapter 6	Configuring the System for Failover	122
	System Director Failover.	122
	Enabling a System Director	123
	Setting IP Addresses for Crossover Link	123
	Configure a Failover Connection.	124
	Stopping and Restarting the System Directors	132
	Binding Order for Health Monitoring	133
Chapter 7	Status LEDs and Stacking Problems	135
	LED Locations and Colors	135
	LED Summaries	136
	Recovering from Stacking Problems.	138
	Set One Switch Back to Default	138
	Rebuilding the Stack	139

Chapter 8	Avid ISIS 7500 7000 Upgrade Guidelines	141
	Health Check.....	141
	Software Upgrade.....	142
	Component Requirements From Previous ISIS 7500 7000 Releases.....	144
	ISIS 7500 7000 Upgrades	144
	Copying the Metadata to the New Default Location On the System Director	149
	Avid ISIS Software Installation From the USB Flash Drive	150
	Intel Network Driver and BIOS Update.....	152
	64-bit System Director BIOS Upgrade.....	152
	Intel RAID Controller Driver Update	152
	Record IP Addresses on the System Director	154
	Post Upgrade System Verification	155
	Preupgrade Information	158
	Zone 2 Switch Information	158
	System Director Information.....	159
	ISIS Engine/Switch Information	160
	On Site Spares.....	162
	Spares Checklist	163
	Additional spares for a comprehensive spares parts list:	163
Chapter 9	Avid ISIS Upgrade Utility	164
	Overview and Requirements.....	164
	Functional Description	164
	Software Component Design	165
	Software Interface.....	166
	FTP Server Section	167
	Install Control Section	168
	Monitoring Section	168
	Running the Avid ISIS Upgrade Utility	169
Chapter 10	Avid ISIS Recommended Maintenance	171
	Minimum Storage Space Requirement.....	171
	Daily Maintenance	171
	Weekly Maintenance.....	173
	Monthly Maintenance	174

	Redistribution Guidelines	174
	Saving ISIS Metadata	175
	Available Utilities	176
	Client Manager Maintenance	176
	Status Indicators and Troubleshooting	177
	Complete Server Room Shutdown	177
	False Link Aggregation Alerts	178
	Symptoms	178
	Displayed Link Alert Message	178
	Restart All Procedure	179
Chapter 11	Adding and Replacing Hardware	181
	Adding Hardware	181
	Adding an Engine	182
	Replacing an Engine Switch	183
	Replacing an Engine	184
	Replacing an Internal System Director Drive	186
	Replacing the System Director	187
	Replacing the Network Switch	190
Chapter 12	Using the Product Recovery USB for 64-bit System Directors	192
	Creating a Product Recovery USB Flash Drive	192
	Reinstalling the Windows Storage Server 2008 R2 Operating System	194
	Configuring the System Drive Using Windows 2008 Storage Server Setup	196
Chapter 13	Specifications and Notices	198
	Dimensions and Weight	198
	Environment	198
	Electrical	198
	Uninterruptible Power Supply (UPS)	199
	Supported Cabling	199
Appendix A	Safety and Regulatory Information	203
	Warnings and Cautions	203
	FCC Notice	204
	Class A Equipment	204
	Modifications	205

Cables	205
Canadian Notice (Avis Canadien)	205
Class A Equipment.	205
LED Safety Notices	205
European Union Declaration of Conformity	206
Disposal of Waste Equipment by Users in the European Union	208
Argentina Conformity	208
Australia and New Zealand EMC Regulations	208
Japan EMC Regulations	209
Class A Equipment.	209
Korean EMC Regulations	209
Class A Equipment.	209
Taiwan EMC Regulations	209
Index	215

Using This Guide

The Avid ISIS® media network provides a high-performance distributed file system that contains high-capacity shared media storage for workgroups of connected Avid® editing workstations.



This document describes the features for all Avid ISIS 7500 / 7000 shared storage networks. Therefore, your system might not contain certain features that are covered in the documentation.

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.
<i>Italic font</i>	Italic font is used to emphasize certain words and to indicate variables.
Courier Bold font	Courier Bold font identifies text that you type.

Symbol or Convention Meaning or Action

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. Check the latest information that might have become available after the documentation was published.

New information would be found in the ReadMe file supplied on your Avid software installation kit as a PDF document and is also available online.

You should always check online for the most up-to-date release notes or ReadMe because the online version is updated whenever new information becomes available. To view the online versions, visit the Knowledge Base at www.avid.com/US/support.

3. Check the documentation that came with your Avid application or your hardware for maintenance or hardware-related issues.
4. Visit the online Knowledge Base at www.avid.com/US/support. Online services are available 24 hours per day, 7 days per week. Search this online 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.

Accessing the Online Documentation

The Avid ISIS online documentation contains all the product documentation in PDF format. You can access the documentation in the AvidISISDocumentation folder on the Avid ISIS installer kit. You need to download and install Acrobat Reader on your Avid ISIS before you can access the PDF documentation.



You need to download and install Acrobat Reader on your Avid ISIS 5000 before you can access the PDF documentation.

To access the online documentation from the installer kit:

1. Insert your Avid ISIS USB flash drive with the Avid ISIS software kit into the USB port.
2. Navigate to the `[USB flash drive]:\AvidISISDocumentation` folder, and double-click the PDF file for the document you want to view.

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Avid Software and Hardware Install Checklist

The following checklists summarize the major steps for upgrading your software and hardware. These checklists are for experienced administrators that acts as a reminder of the tasks that need to be done in each upgrade. If you are not experienced with Avid ISIS, you should read this entire book first before installing or configuring the Avid ISIS.



Each Avid ISIS release could have different upgrade requirements, you must read the upgrade details in the ReadMe for each software release.

For detailed instructions on performing upgrades, see [“Avid ISIS 7500 | 7000 Upgrade Guidelines” on page 141](#).

Software Upgrade

This section lists the components and procedures to follow when performing a software upgrade from Avid ISIS v1.4 and later to the current release. This does not include adding hardware. In Avid ISIS v2.1.1 and later, Avid ISIS clients need to be upgraded before you upgrade the infrastructure. This is necessary because ISIS client software before v2.1.1 is not supported in the ISIS v2.1.1 infrastructure. Although, v2.1.1 client software is supported in v1.4 and later infrastructures. Once the clients have been upgraded, you can upgrade Avid ISIS v2.1.1 infrastructure.



If you are upgrading from a version earlier than Avid ISIS v1.4, you must first upgrade to Avid ISIS v1.4 before upgrading to v2.1.1, For instructions, see the v1.4 documentation.

The clients are defined as follows:

- Avid editing applications
- Interplay Assist and Instinct
- Interplay Access
- Avid Approved Applications Initiative such as Pro Tools and Final Cut Pro

The infrastructure is defined as follows:

- System Director — System Director software and upgrade Storage Blades (ISBs) and Switch Blades (ISS/IXSs) in the Avid ISIS engines to the v2.1.1 firmware
- Interplay servers — Interplay Engine, Interplay Media Indexer, Interplay Transfer, and CaptureManager
- Capture devices — AirSpeed, AirSpeed Multi Stream, and Avid Interplay Low-Res Encoder

Use the following checklist for a software upgrade:

Avid ISIS Software Upgrade

Complete	To be done
<input type="checkbox"/>	Upgrade your Avid ISIS Clients, see “Loading Client Software” on page 96 . Before installing the new client software, save the client settings and preferences. Depending on your Avid ISIS version, different Preferences settings are saved when upgrading. For more information on what is saved per version, see the <i>Avid ISIS ReadMe</i> .
<input type="checkbox"/>	Perform a Failover first to make sure both subnetworks are functioning and have updated metadata.
<input type="checkbox"/>	Shut down the Standby System Director Service first, then shut down the Active System Director Service.  <i>This checklist assumes you have two System Directors. Completely update one of the System Directors (allowing it to become the Active after it restarts), then repeat the procedure on the second System Director (allowing it to become the Standby). If you do not have two System Directors, you need only install the software once.</i>
<input type="checkbox"/>	Uninstall the Avid ISIS System Director software using the Windows Control Panel > Add or Remove Programs.
<input type="checkbox"/>	Uninstall the “AvidUnityISISInstallers” using the Windows Control Panel > Add or Remove Programs.  <i>If you do not uninstall the old Avid ISIS Installers, the old installers remain in the list with the new installers. Only the latest client software installers should be available from the ISIS Management Console.</i>
<input type="checkbox"/>	Check ReadMe to see if you need to update the Adobe® Flash® software and Intel® network interface driver.
<input type="checkbox"/>	Install your Avid ISIS software on the System Director, see “Loading the Software” on page 85 and “Software Upgrade” on page 142 .

Avid ISIS Software Upgrade (Continued)

Complete	To be done
<input type="checkbox"/>	Copy your Avid ISIS client installers on your System Director, see “Loading Client Software” on page 96 .
<input type="checkbox"/>	Upgrade all your ISBs, ISSs, and IXSs. Using the ISIS Management Console, select all the ISBs and click Upgrade Storage Blades and then select all your ISSs and IXSs and click Upgrade Switch Blades. You do not need to wait for the ISBs to be finished. ISBs, ISSs, and IXSs can be upgrading at the same time. For more information, see “Installing Software on the Engines” on page 91 .
<input type="checkbox"/>	Watch the upgrade in the Monitoring tool.
	<p>ISIS v2.0 — wait until every ISS is at the “Install Waiting” state and then power down all the Avid ISIS engines.</p> <p>Power on the Avid ISIS engines in 1 minute intervals starting with the chassis that has the IXSs. This reduces stress on the stack.</p> <p>After the Avid ISIS engines restart, the ISSs continue with the install (no additional user intervention is necessary).</p> <p>For information on the Monitoring tool, see the <i>Avid ISIS Administration Guide</i>.</p>
<input type="checkbox"/>	Make the newly upgraded System Director your Active System Director.
<input type="checkbox"/>	Perform these same procedures on the Standby System Director.

Hardware Upgrade

The firmware in the Avid ISIS hardware (ISBs and ISSs) is updated during the software upgrade. The firmware is updated using the ISIS Management Console. You select all the ISBs and click Upgrade Storage Blades and then select all your ISSs and click Upgrade Switch Blades. ISBs and ISSs can be upgrading at the same time. For more information, see [“Installing Software on the Engines” on page 91](#).

If adding an engine to an existing system, see [“Adding an Engine” on page 182](#).

New System Director and Engine Installation

Use the following checklist when setting up an Avid ISIS for the first time:

Avid ISIS New Installation

Complete	To be done
<input type="checkbox"/>	Determine Network Address Scheme
<input type="checkbox"/>	Configure SD IP Addresses, see “IP Addressing Overview” on page 81. <ul style="list-style-type: none"> • ISIS Left • ISIS Right • Management Port
<input type="checkbox"/>	In the 64-bit System Director, you need to change your default Internet Explorer 7 Security and Advance tab settings: Click Tools > Internet Options and change the Security to the following: <ul style="list-style-type: none"> • Internet - Medium • Trusted - Low Click the Advanced tab and change the following: <ul style="list-style-type: none"> • Phishing Filter - Disabled • Use SSL 2.0 - Enabled (checked) • Use TLS 1.0 - Disabled (unchecked)
<input type="checkbox"/>	Install System Director and Installers, see “Software Installation” on page 85.
<input type="checkbox"/>	Create File Systems, see the <i>Avid ISIS Administration Guide</i> . <ul style="list-style-type: none"> • Open System Director Control Panel • Click “Stop System Director” • Click “Configuration File System” • Click “Create Active File System”
<input type="checkbox"/>	Configure the first Engine (IP Addresses), see the <i>Avid ISIS Administration Guide</i> . <ul style="list-style-type: none"> • Start ISS Agent via Management port • Under System > Basic set IP Address
<input type="checkbox"/>	Connect the System Director to Engine number1, see “Connecting ISIS Hardware” on page 67.

Avid ISIS New Installation

Complete	To be done
<input type="checkbox"/>	Add Additional engine, see “Adding an Engine” on page 182.
<input type="checkbox"/>	Upgrade ISB and ISS, see “Installing Software on the Engines” on page 91.
<input type="checkbox"/>	Bind Storage Managers, see the <i>Avid ISIS Administration Guide</i> .
<input type="checkbox"/>	Create Storage Groups, see the <i>Avid ISIS Administration Guide</i> .
<input type="checkbox"/>	Create Workspaces, see the <i>Avid ISIS Administration Guide</i> .
<input type="checkbox"/>	Create Users, see the <i>Avid ISIS Administration Guide</i> .

Switch and ISB Upgrade Utility

The Switch and ISB Upgrade Utility is a stand-alone application that allows field engineers to perform switch and ISB upgrades from a laptop connected to Avid ISIS through the management port, and monitor the upgrade progress. This utility does not replace the current upgrade process. Its primary function is for upgrading a switch or a pair of switches that is incompatible with an existing stacked network. Insertion of these switches into the network before the upgrade could disrupt or compromise the network’s operation.

The typical procedure for loading the firmware on switches consists of selecting them with the Avid ISIS Management Console and initiating an automated upgrade. This process is very useful when upgrading a new or very interoperable Avid ISIS switch stack, see [“Installing Software on the Engines” on page 91.](#)

To start the utility, insert the Avid ISIS software USB into a laptop and double-click AvidUtilityISISTool.msi located in the following location.

```
drive:\AvidISISUtilities\ISIS 7000
```

For Instructions on using the utility, see [“Avid ISIS Upgrade Utility” on page 164.](#)

Recreating a File Systems

Deleting and creating a new file system is not common but if it is needed, this checklist provides the order and tasks to be completed. All of the tasks listed in this checklist are described in the *Avid ISIS Administration Guide*.

Use the following checklist when deleting and recreating a new file system:

Deleting and Creating a File System

Complete	To be done
----------	------------

- | | |
|--------------------------|-----------------------------------|
| <input type="checkbox"/> | Delete all files in all Workspace |
| <input type="checkbox"/> | Delete Workspaces |
| <input type="checkbox"/> | Delete Storage Group |
| <input type="checkbox"/> | Remove Storage Elements |
| <input type="checkbox"/> | Delete / Create New Active |
-

1 Avid ISIS 7500 | 7000 System Overview

The Avid ISIS® system enables multiple clients to capture, play, and edit video and audio media. This chapter provides an overview of the Avid ISIS 7500 | 7000 system and the basic function of each Avid hardware component within the system.

This guide describes how to connect cables between components that create a basic system and then how to connect more than one basic system together to create a larger, redundant system.



For an explanation of what you need to do to prepare your site for installation of a Avid ISIS system, see the Avid Products and Network Site Preparation Guide on the Avid Knowledge Base or included in the documentation folder on the top level of the Avid ISIS installer software installer kit.

Hardware Overview and Naming Convention

Each system component has a specific Avid name that define their function. It is important that you are familiar with these terms while using the documentation. The following table, used in conjunction with the figure that follows the table, provides the actual nomenclature and the terms used in this guide to describe that nomenclature:

Product Nomenclature

Product name	Term used and description
Avid ISIS shared storage network	System or shared network storage environment The Avid ISIS consist of the hardware, Avid software, and other hardware supplied by the customer, such as external Ethernet® switches.

Product Nomenclature

Product name	Term used and description
Avid ISIS client	Client, defined as a user's workstation or server with Avid ISIS client software that allows that system to mount workspaces
Avid ISIS storage blade (labeled i500, i1000, i2000, i4000, i8000)	ISIS Storage Blade (ISB) This hot swappable sled is accessible from the front of the ISIS engine and contains two SATA drives.
Avid ISIS Integrated Ethernet switch blade	ISIS Integrated Switch (ISS) This hot swappable switch is accessible from the rear of the ISIS engine and connects 1 Gb and 10 Gb clients. The ISS2000 indicates second generation hardware; first generation hardware is labeled ISS1000.
Avid ISIS Expansion Integrated Ethernet switch blade	ISIS Expansion Switch (IXS) This hot swappable switch is accessible from the rear of the ISIS engine is used to stack multiple ISIS engines. The IXS2000 indicates second generation hardware; first generation hardware is labeled IXS1000.
Integrated power supply and cooling fans	Power supplies Three hot swappable power supplies are accessible from the rear of the ISIS engine. Two power supplies is required to power the ISIS engines.
Avid ISIS engine	Called Chassis in the software interface Contains the ISBs, ISSs, IXSs, power supplies, and an internal midplane.
Avid ISIS System Director (Active and standby)	System Director, a server connected to the ISIS engine to manage the data and portions of the metadata

Although there are many components in Avid ISIS shared storage network, the basic components needed to create the system are a System Director, an engine containing ISIS Integrated Switch (ISS), ISIS Expansion Switch (IXS), ISIS Storage Blades (ISB), and one or more clients.

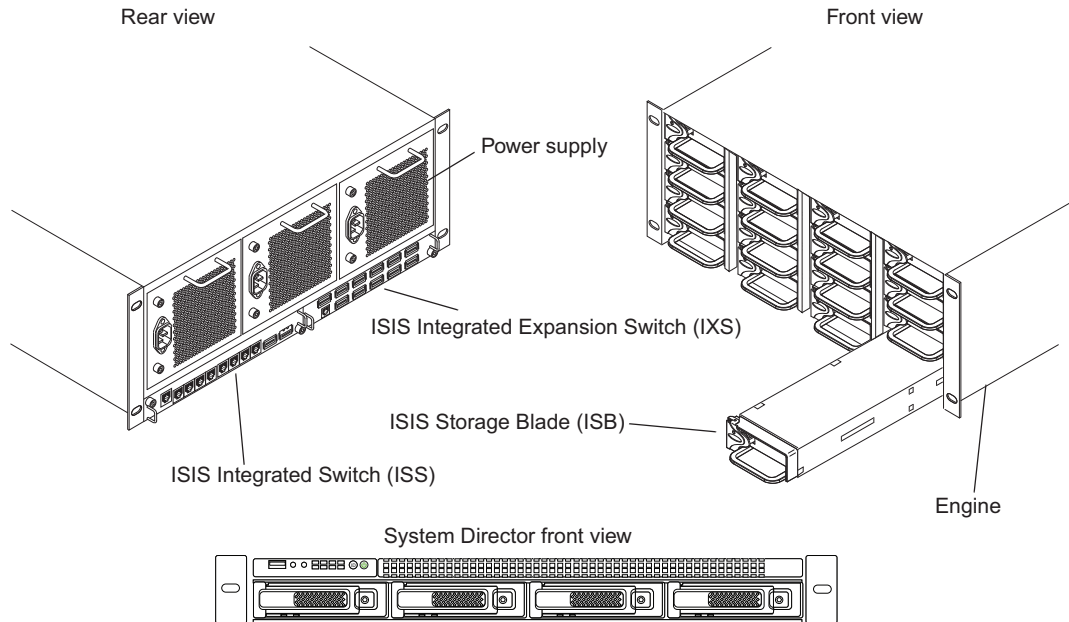
The second generation ISIS switches are branded with an IXS2000 and ISS2000 silk-screen. These switches cannot be mixed in ISIS engines with earlier versions of the switches (labeled IXS1000 and ISS1000). If your IXS and ISS switches are not labeled, consider them the earlier versions.



You cannot mix new switches (labeled IXS2000 and ISS2000) with original switch hardware (labeled IXS1000 and ISS1000). All switches in the engine, and engines in the stack must be from the same generation of hardware.

The Avid ISIS documentation refers to IXS2000 and ISS2000 switches as v2.x hardware and IXS1000 and ISS1000 switches as v1.x hardware.

Basic Avid ISIS 7500 | 7000 Shared Storage Network Hardware



The following sections explain these components and some basic client configurations:

- [System Director](#)
- [Engine](#)
- [Storage Configurations](#)
- [Automatic Redistribution on Disk Failure](#)
- [Client](#)
- [Network Zone Configurations](#)
- [Cabling](#)

System Director

The System Director is 1U in size (see [“System Director Front Panel” on page 24](#)) and manages the metadata by storing directory information and file attributes. The System Director does not store the data used by share clients (for example media files), these data files are stored on the ISBs within the engine.



The System Director password is preset to is-admin. Not to be confused with the System Director Web Page Administrator user whose default password is blank.

You can have two System Directors configured in a redundant configuration, one Active the other Standby. If the Active System Director goes down, the Standby System Director takes over. You need at least one System Director to run the Avid ISIS system.

System Directors, workgroup servers, and clients must all be synchronized with a common time-of-day. For information on setting the Network Time Protocol (NTP), see [“Setting-Up Network Addresses In the Stack” on page 69](#).

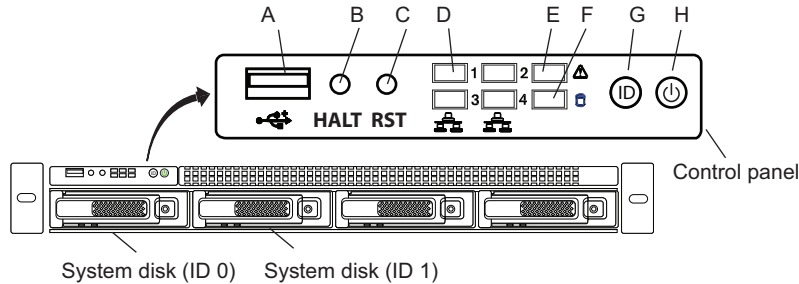
The System Director provides a location to coordinate file access modes (read/write), file locking, range locking, performance data collection, logging, file lookup, and directory change tracking for client systems. Examples of what the System Director is able to provide to a client or storage element are:

- Identity of all storage elements connected to the system
- Information about the ISS and IXS modules in the configuration.
- List of workspaces to include name and their unique ID number
- List of users and groups within the system
- Identity of all System Directors in the system (if you have more than one System Director)

System Director Front Panel


The following figure shows the front view and control panel of the System Director.

System Director Front View



The following table describes the control panel shown in the previous figure.

System Control Panel

Letter	Component	Description
A	Universal Serial Bus (USB) port	USB 2.0 device port on the front of the system supports one USB device. Recommended for use when re-imaging the system drives or loading software. Two more USB ports are located on the back of the system.
B	Halt or Non-maskable interrupt (NMI) button	The halt or NMI signal halts the processor, which effectively halts the server. A NMI is the highest priority interrupt and cannot be masked by software.  If the Halt/NMI button is pressed, the NMI signal locks the system and the system must be restarted to clear the interrupt.
C	System reset button	Performs a soft reset when pressed. Do not use this button unless the system has had a fatal error and you need to restart. A soft reset restarts the system; it clears all active program memory (you lose unsaved work) and shuts down all active programs.
D	Four green network activity LEDs	Illuminates green when a good network connection is established and blinks when there is network activity on the four built-in 1-GB network ports. The number beside the LED corresponds with the number beside the network port on the rear of the enclosure. For example, Connector 1 is LED 1 on the front. See “System Director Rear Panel” on page 26 .
E	Red System error LED	Illuminates red when an error is detected with the system (fan, power supply, temperature, voltage).

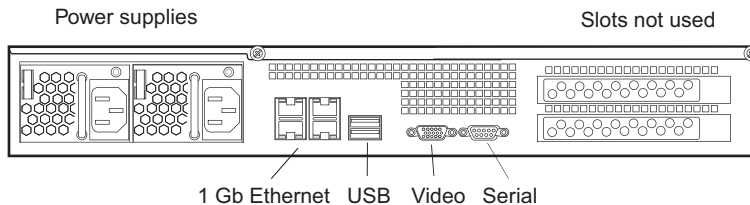
System Control Panel

Letter	Component	Description
F	System Drive activity LED	Indicates drive activity from the onboard SATA controller and blinks when either of the system drives is being accessed.
G	System ID button	When pressed it illuminates (blinks) blue and also illuminates an LED on the rear of the enclosure. The rear LED is also blue and is visible on the lower left-hand side of the Ethernet ports inside of the enclosure. It is used to identify a system for servicing when it is installed in a high-density rack/cabinet populated with several other similar systems.
H	Power button	Press to power on the enclosure. Power button illuminates green when the power is on.

System Director Rear Panel

The following figure shows the rear panel of the System Director and the function of each connection.

System Director Rear View



Second System Director

You can purchase a second System Director and configure it on the same subnets as the original System Director. This provides a redundant System Director that is in constant contact with the original System Director. The second System Director automatically takes over if the original System Director fails (called failover).



For true redundancy it is recommended that you connect the second System Director to a different engine than the first System Director. The Active and the Standby System Directors must be the same model server; you cannot mix SR2500s, and AS3000 servers.

Engine

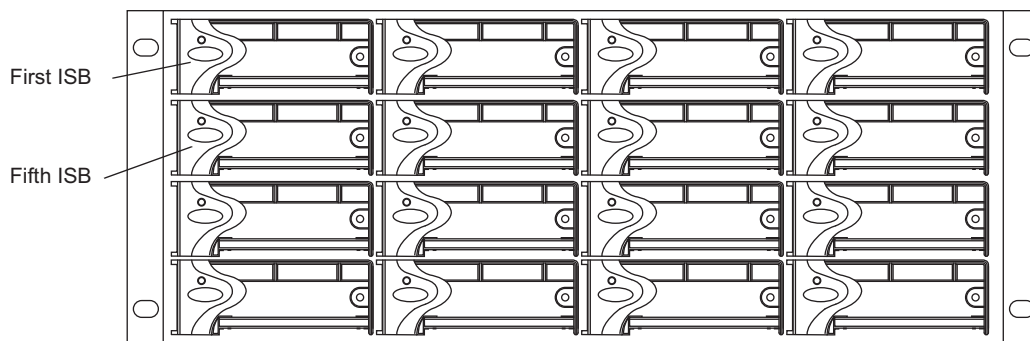
The engine contains the ISBs, ISSs, IXSs, power supplies, and an internal midplane. The engine stores the data created and shared by the clients. The data is passed in and out of the engine through the switches.

The engine contains:

- ISBs can support either 250 GB, 500 GB, 1 terabyte (TB), 2 terabyte, or 4 terabyte drives, with two drives in each ISB. The size of the drives are identified by the label on the front of the ISB (i500, i1000, i2000, i4000, i8000). As technology advances, the storage capacity of the drives could increase, allowing the total storage per ISB/engine to increase.
- An ISS provides connections for clients via 1000BASE-T Ethernet ports. A 10-Gb Ethernet port using SFP+ transceivers connects clients or serves as an uplink port. There is an engine interconnect port and a management port for configuration. See [“Integrated Ethernet Switches” on page 29](#).
- An IXS used when you have more than two engines (need an IXS for each subnet), allowing you to connect multiple engines providing up to 384 TB of storage, or 192 TB of mirrored storage. See [“Integrated Ethernet Switches” on page 29](#).

Engine Front View

The front of the engine allows access to the 16 ISBs. The first is in the upper left portion of the front and the last ISB is in the lower right.



Each ISB can be removed and replaced separately with the power on.



If you replace an ISB with power on, the LEDs in all of the ISBs go off momentarily. This does not represent a problem. All functions are still active and working properly.

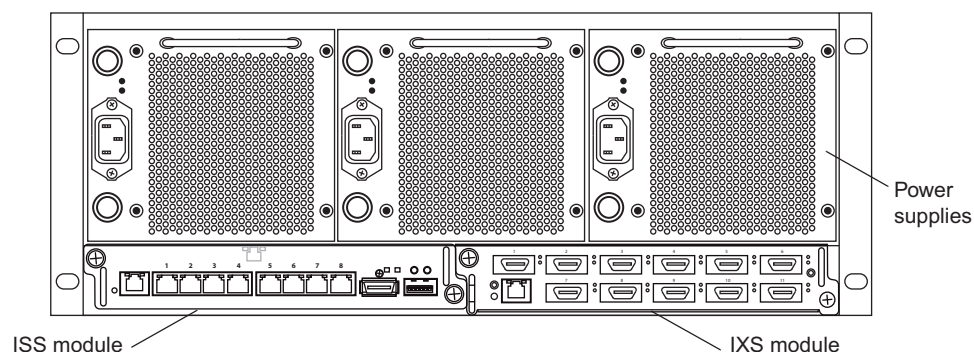
Engine Rear View

The following figure shows the rear of the engine in a configuration that contains the following:

- Three power supplies (with fans)
- Integrated Switch blade (ISS)
- Integrated Expansion Switch blade (IXS)



In a basic configuration containing two engines, each of the engines contains two ISS modules. The IXS module is used with an ISS module in an engine only when the configuration goes beyond two engines.



Power Supplies

The power supplies are powered on when the power cord is plugged in; they do not have power switches. The power supplies not only provide power, but they also contain fans that cool the system. The system only needs two of three power supplies to supply the needed power to function properly. You can remove and replace a power supply temporarily while the system is running if one fails.



You should leave the failing power supply in place until you replace the failing power supply. Replace the power supply as soon as possible to maintain the proper airflow. Do not remove the failing supply until immediately before you replace it.



Only trained Avid technicians should remove and replace the power supply while the system is running. Since power to the system is still applied internally to the midplane you must always keep your hands external to the engine when a power supply is missing from the engine.

Integrated Ethernet Switches

The two integrated Ethernet switches, ISS and IXS, serve different purposes and contain different types of connections. You must have at least two switches in each engine for the system to operate.

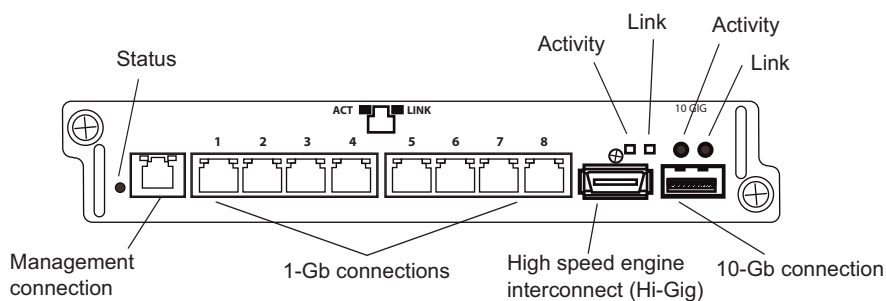
ISS Module

The connections on the ISS module are used for the following:

- Management connection — used to configure the Avid ISIS 7500 | 7000 engine hardware during installation. This information is used by Avid representatives to originally configure your system before turning it over to you.
- 1-Gb (RJ-45 cable) — direct connect for clients and the System Directors.
- High speed engine interconnect (CX-4 cable) — proprietary Avid bus that connects switch blades between engines allowing subnets to connect between the engines.
- 10-Gb XFP or SFP+ MSA form factor transceiver (for Optical cable) — used for a 10-Gb connection to a switch or 10-Gb Ethernet clients.



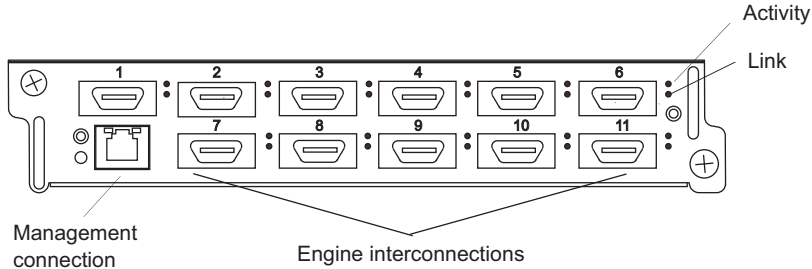
Only an Avid recommended SFP+ transceiver should be used in the 10-Gb XFP connection, and only Avid trained representatives should remove and replace the XFP transceiver. Currently supported XFP are the Picolight XFP and Foundry® XFP.



IXS Module

The IXS is needed only if you are connecting three or more engines. When connecting three or more engines, two IXS modules are installed in one engine. The IXS offers the following connections:

- Management connection — used to configure the switch during installation and monitor switch functions.
- High speed engine interconnect (Hi-Gig) — proprietary Avid interconnection that stacks the switches to create one large virtual switch.



In a basic configuration containing one or two engines, each of the engines contains two ISS modules. The IXS module is used with an ISS module in an engine only when the configuration goes beyond two engines.

Storage Configurations

A maximum of twelve Avid ISIS Engines can be stacked and populated with either 250 GB, 500 GB, 1 terabyte (TB), 2 terabyte or 4 terabyte SATA drives. A fully populated Avid ISIS system with 1 TB drives provides up to 384 terabytes (TB) of storage, or 192 TB of mirrored storage.

You can have mixed ISB drive sizes in an engine (250 GB, 500 GB, 1 TB, 2 TB, and 4 TB drives). You can even mix the different size ISBs in a Storage Group. Although, the larger ISBs in the mixed Storage Group only use the amount of storage that is available in the smaller ISBs.

Storage Group Size

Storage elements are combined to create Storage Groups in the ISIS file system. These Storage Groups can be configured to either operate using 512 KB (default) or 256 KB chunk sizes. Earlier Avid ISIS releases used 256 KB chunk sizes. For more information about setting the chunk size, see the *Avid ISIS Administration Guide*.



Avid ISIS 7000 switch hardware shipped with v1.x (ISS1000 and IXS1000) does not support 512 KB chunk sizes. If you have Avid ISIS 7000 v2.x software running on v1.x switches, you must select the 256KB chunk size when adding storage elements to the file system to create Storage Groups.

You cannot change the chunk size of a Storage Group once the Storage Group has been created. To change the chunk size of an existing Storage Group, you must delete the Storage Group and create a new Storage Group with the desired chunk size. The chunk size selection is only available when adding the storage elements.



When you delete Storage Groups all data on that Storage Group is lost.

Chunk Size Support With ISB

All ISBs (i500, i1000, and i2000, i4000 and i8000) support the 512 KB chunk size. Although you must have the new v2.x switch hardware (ISS2000 and IXS2000) to use the 512 KB chunk size.

Adding an ISB to the File System

If you add an ISB (displays as an available storage element) to your file system, make sure you match the chunk size of the new storage element to the chunk size of the existing storage group. New storage elements are added with a default chunk size of 512 KB. You cannot mix chunk sizes within a Storage Group. To change the chunk size of an ISB, you must remove the new storage element from the file system and add the storage element again choosing the correct chunk size.

Adding or Removing ISBs (Mirrored or RAID)

When permanently adding or removing ISBs from an ISIS Storage Group it is recommended to do a full redistribution for all workspaces in the Storage Group. The full redistribution should be done after the ISB add or remove is complete. Examples of permanent changes would be adding or removing an engine to the storage stack.

The full redistribution makes sure all blocks in the Storage Group are optimally distributed based on the new permanent configuration. Doing a full redistribution immediately after the permanent adds or removes minimizes the chances of running into issues if a full redistribution is required in the future. One potential issue would be the storage blades getting full during a full redistribution and requiring the user to delete files to allow the redistribution to complete.

This recommendation does not apply to the case of removing and then replacing failed storage blades. For other examples of symmetric and non-symmetric redistributions, see the *Avid ISIS Performance and Redistribution Guide* on the Knowledge Base at www.avid.com/US/support.

Moving Workspaces Between Storage Groups

You can move workspaces between Storage Groups that use the same chunk sizes. Workspaces cannot be moved between Storage Groups of different chunk sizes (256 KB and 512 KB chunk sizes),

A Tech Alert has been written describing the process for moving data from a 256 KB chunk size workspace to a 512 KB chunk size workspace. Search the Avid Knowledge Base at www.avid.com/onlinesupport/ for *Avid ISIS v2.x Moving Workspaces using RichCopy* in the Avid ISIS Tech Alerts.



Clients should not access workspaces that are in the process of being moved when it is a 256 KB chunk size workspace being moved into a Storage Group with a 512 KB chunk size. Avid recommends that clients unmount these workspaces until the move is complete to avoid an unintentional access. Once the move begins, it cannot be cancelled.

Mirrored Storage Groups, Single ISB Failure

It is considered an “unprotected state” if you have a single ISB failure in a mirrored Storage Group. In an unprotected state with no additional failures, read operations continue to function normally.

However, in an unprotected state a subsequent or infrastructure failure will cause operational issues which could result in failures when writing new data or prevent you from accessing data in the Storage Group. An additional ISB failure creates a situation in which data accessibility has been compromised. Networking issues, on the other hand, will not cause accessibility issues on previously written data but might prevent the successful completion of the active write operation.

This issue only applies when the Storage Group is in an unprotected state and the remove redistribution process on the failed ISBs has not been initiated. Therefore, it is highly recommended that the remove redistribution process is initiated immediately upon confirmation of any ISB failure. This ensures immediate protection (RAID or mirroring) of new data being written, and full protection of all stored data at the earliest possible time.

RAID-6 Storage Groups

Avid ISIS supports a two types of data protection. Besides mirrored Storage Groups, you can create redundant array of independent disks (RAID) Storage Groups. RAID storage offers more value in that it provides more storage at a lower cost per GB. Using the Avid Interplay Copy/Move service, data files can be moved from mirrored Storage Groups to and from RAID Storage Groups. The following are two obvious advantages to using RAID Storage Groups:

- Migration from mirrored to RAID workspaces can become part of your normal workflow. You can move the data that is no longer used in the mirrored workspaces to RAID workspaces for longer term storage. This frees up faster storage elements (mirrored) for higher performance work.
- RAID Storage Groups allow you to work on a lower resolution workflow at less cost.
- RAID Storage Groups increases available GB per physical engine from 50% in mirrored to 75% in RAID of installed capacity.

The following is a list of RAID workspace restrictions:

- Requires a Storage Group with a 512 KB chunk size (256 KB chunk sizes are not supported).
- Requires ISIS v2.x generation switches (ISS2000/IXS2000) in the ISIS Engines (these switches are also required for 512 KB chunk sizes).
- Avid recommends RAID Storage Groups have a minimum of 16 ISBs (one engine). The Management Console allows you to create and use RAID Storage Groups with eight ISBs but within a RAID Storage Group of eight, you must add an ISB before you can remove an ISB.
- Avid ISIS client software versions before v2.1.1 are not supported with RAID.
- RAID workflows require specific releases of Avid products that support the workflow (AirSpeed Multi Stream, Avid editing applications, and Interplay), see the *Avid ISIS ReadMe*.
- Supports only resolutions that draw 16 MB/s (50 Mb/s) or less.



For example, you can run two streams of DV 50 or DNxHD 36. Bandwidths are listed by resolution and number of streams on the Avid Knowledge Base. Search the Avid Knowledge Base for the Avid ISIS Performance and Redistribution Guide.

- If a RAID Storage Group experiences two disk failures, no writes to any of the workspaces in that Storage Group are supported until the error condition is corrected.
- If you need to do a non-symmetrical full redistribution, you must first limit the bandwidth used by your clients in that Storage Group. For more detailed guidance, see the *Avid ISIS Performance and Redistribution Guide* on the Knowledge Base at www.avid.com/US/support.



Avid does not recommend a non-symmetric redistribution when your RAID Storage Group capacity exceeds 80%.

RAID-6 Storage Groups, Single ISB Failure

When there is a single ISB failure in an ISIS Storage Group configured with RAID protection, the Storage Group continues to function normally at a lower bandwidth. For mirrored Storage Groups, see “[Mirrored Storage Groups, Single ISB Failure](#)” on page 32.

After confirming the failure of an ISB, it is highly recommended that you initiate the remove redistribution process of the failed ISB immediately. There are two benefits to doing this:

- First, immediately upon initiation of the remove redistribution, all new writes to the Storage Group have the full benefit of RAID-6 protection (dual-parity protection).
- Second, upon completion of the remove redistribution process, existing data in the Storage Group is once again fully protected. Prior to completion, if another ISB were to fail, the Storage Group would be in an unprotected state (though no data would be lost).

RAID-6 Storage Groups, Dual ISB Failure

It is considered an “unprotected state” if you are with two failed ISBs in a RAID-6 Storage Group. In an unprotected state with no additional failures, read operations continue to function normally at a lower bandwidth.

However, in an unprotected state, due to the distributed architecture of the ISIS file system (optimized for real-time performance), it is possible under certain circumstances that the system would not be able to correctly update the parity information when writing new data. As a result under these circumstances, the file system could return a failure status when writing. While the failure rate percentage on the total number of write operations is low, heavy workloads on the system would result in enough write failures to disrupt operations.

This issue only applies when the Storage Group is in an unprotected state and the remove redistribution process on the failed ISBs has not been initiated. Therefore, it is highly recommended that the remove redistribution process is initiated immediately upon confirmation of any ISB failure. This ensures immediate protection (RAID or mirroring) of new data being written, and full protection of all stored data at the earliest possible time.

Automatic Redistribution on Disk Failure

Avid ISIS performs an automatic redistribution on Disk Failure notification. Storage Elements continuously monitors disk status and sends a “Disk Failed” notification to the System Director upon determination that a disk is not usable. The System Director then removes the Storage Element from its associated Storage Group. The removal of the Storage Element from the Storage Group initiates redistributions on all workspaces associated with that Storage Group. The System Director then prevents the Storage Element that reported the disk failure from being added to a Storage Group.

The Automatic Removal feature is controlled by a system preference that is configured using the ISIS Management Console Preferences tool. The preference is called “Auto Remove Redistribution on Disk Failure” The default setting is “enabled.” The Storage Element is only removed from the Storage Group. It is not unbound from the ISIS Systems for the following reasons:

- The Storage Element participates in the removal redistribution. This is required to prevent data loss when there are un-protected workspaces or when full redundancy has not been attained for all data blocks.
- The Storage Element continues to report status, such as physically replacing the blade.

Auto removal status is reported by way of the System Event Log. A sequence of event log entries are generated for the initial report of the failure, the decision to remove the Storage Element, and subsequent success or failure. Events are also logged for the start and stop of all the workspace redistributions.

The following are important considerations when using Automatic Redistribution:

- When automatic redistribution is enabled, be sure to keep at least 7% of your Storage Group unused at all times. Failure to do so can cause the system to run out of space after an automatic redistribution has initiated and cause a client outage.
- If an automatic redistribution of a Storage Group is started during a critical time the overall system performance can degrade significantly and be disruptive. For more information on understanding the performance characteristics during remove redistribution, see the *Avid ISIS Performance and Redistribution Guide*.
- An automatic redistribution removes the Storage Element from the Storage Group but not from the file system. Once an automatic redistribution has occurred and completed, the removed Storage Element should be removed from the file system. You must first removed the Storage Element with the software and then physically replace it. A replacement ISB must then be added to the file system and then the Storage Group, triggering another redistribution.
- If unmirrored workspaces are in use, the data will be damaged on those workspaces in that Storage Group.

Client

A client uses services provided by the Avid ISIS architecture. The client system, using a 1 Gb or 10 Gb Ethernet connection, communicates with the ISBs through the ISS to create, modify, and read files stored in the actual ISB. Avid ISIS 7500 | 7000 supports 330 clients (150 active clients), each using dual-stream video and up to 8 tracks of audio.

A client uses mechanisms specific to the operating system to display, create, and delete files within the Avid ISIS shared storage network system. For example, when viewed from a Windows operating system, the system sees a server containing many shares that are mapped to drive letters.

Network Zone Configurations

All clients in the shared storage network are classified by zones, depending on how they connect to the network. The following list defines the clients in each network layer by their zone classification:



A System Director must be attached to both subnets, but can only be attached once to each subnet.

- Zone 1 Client — Connected to ISIS VLANs via an ISS 1 Gb or 10 Gb port (direct connect)
- Zone 2 Client — Connected to ISIS VLANs via a 1 Gb or 10 Gb port on an Avid qualified layer-2 switch (non-routed)
- Zone 3 Client — Connected to an Avid qualified layer-3 switch (routed) with known Quality of Service (QoS); traffic routed to ISIS (one hop) and load-balanced across ISIS VLANs (approximately a 60/40 ratio)
- Zone 4 Client — Connected to the house network using an edge or a core switch with unknown QoS; traffic routed to Avid ISIS (measured by the number of hops) and load-balanced across ISIS VLANs (approximately a 60/40 ratio)



Clients which can connect to one zone can run in any lower-numbered zone — for example, a Zone 3 client can also run as a Zone 2 or Zone 1 client.

Support for different client and device types vary by zone:

- Zone 1 — AirSpeed playout, Transfer Manager
- Zone 2 — AirSpeed ingest, editors, Interplay
- Zone 3 — Instinct, Assist, certain editors (for example, Avid NewsCutter); typical formats include DV25, DV50/IMX-50, MPEG-2 proxy (2 Mb/s)
- Zone 4 — Instinct, Assist; typical formats include DV25, MPEG-2 proxy (2 Mb/s)

The following four examples show different types of Avid ISIS 7500 | 7000 configurations.

Zone 1 Clients (Direct Connected)

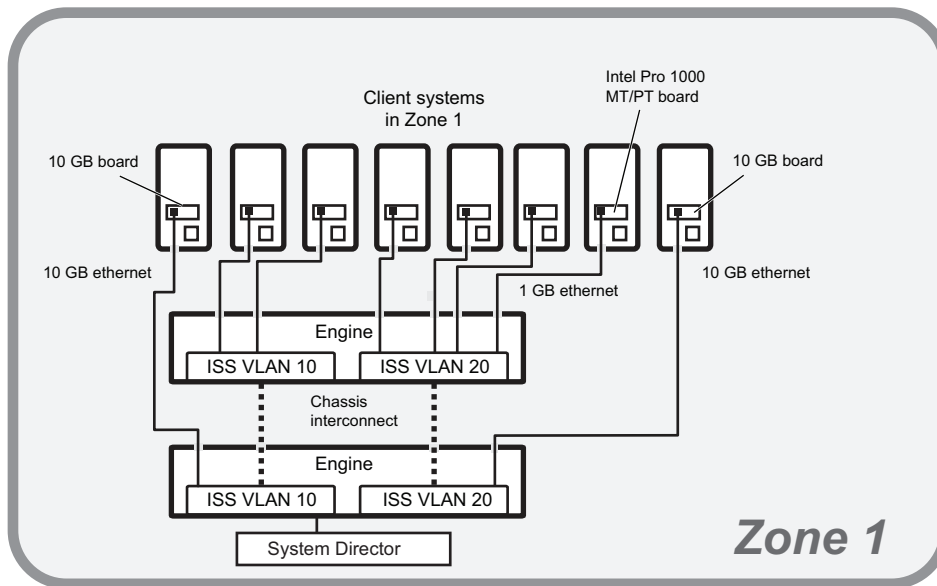
Any client that is connected directly to an ISIS is considered a Zone 1 or direct connected client. Each Integrated Switch Blade has a total of eight, 1 Gb Ethernet ports and one 10 Gb Ethernet port. A single engine has the capacity to support 18 clients or servers, subtracting any ports that are to be used by the System Director(s). The following table defines the total number of 1 Gb ports in Zone 1 based on what is available by the number of engines and System Directors in the configuration. In addition, each ISS2000 provides a 10 Gb Ethernet port connection for one 10 Gb client.



Connect TransferManagers and AirSpeed servers to Zone 1 or Zone 2.

A Zone 1 (direct connect) configuration consists of a group of clients connected directly to the 1-Gb and 10-Gb connections of the ISS in the engine. The System Director also connects to both subnets via both ISS modules using a 1-Gb port.

Avid ISIS 7500 \ 7000 Zone 1 Network Configuration



1 Gb Ports in Zone 1				
Number of ISIS Engines	ISS1000 and IXS1000 Switches		ISS2000 and IXS2000 Switches	
	One System Director	Two System Directors (failover)	One System Director	Two System Directors (failover)
1	14	12	14	12
2	30	28	30	28
3	30 ^a	28 ^a	30a	28a
4	46	44	46	44
5	62	60	62	60
6	78	76	78	76
7	94	92	94	92
8	110	108	110	108
9	110 ^b	108b	126	124
10	126	124	142	140
11	142	140	158	156
12	158	156	174	172

a. This is due to the use of IXS switches instead of an ISSs.

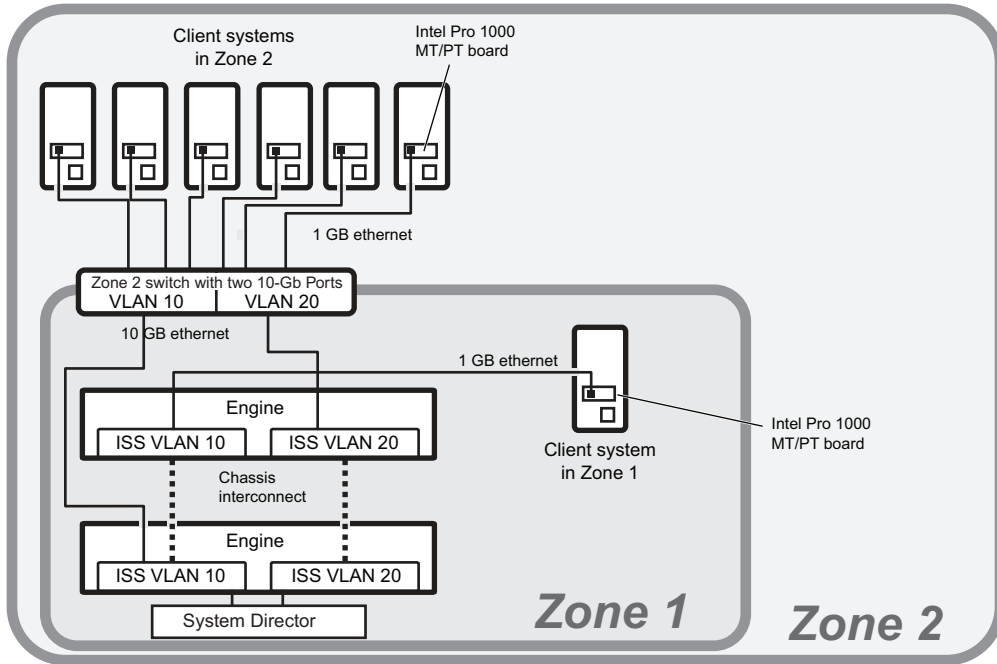
b. This is due to the use of two more IXS1000 switches instead of an ISS.

Zone 2 Clients (Indirect Connect) Configuration

There is support for external switches connected through the 10-Gb port on each ISS. Clients that are connected to an external switch are referred to as Zone 2 clients. For a list of supported switches, search the online Knowledge Base at www.avid.com/onlinesupport.

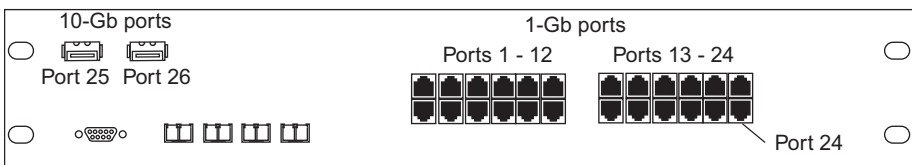
A Zone 2 (indirect connect) configuration consists of group of clients connected to an Ethernet switch with a 10-Gb port connected to an ISS located in the engine. The System Director also connects to both subnets via both ISS modules using a 1-Gb port. Depending upon the switch configuration, each client shown connected to the external switch is connected to one of the two subnets through one of the two 10-Gb connections.

Avid ISIS 7500 | 7000 Zone 2 Network Configuration



As an example, you can configure a 24-port switch for three VLANs with Gigabit (Gb) Ethernet ports 1 to 12 and 10-Gb Ethernet port 25 reserved for VLAN 10 (default ISIS VLAN configuration). Gigabit Ethernet ports 13 to 23 and 10-Gb port 26 are reserved for VLAN 20 (default ISIS VLAN configuration) and Gb port 24 is reserved for the switch’s default VLAN. The 10-Gb ports connected to the ISIS are also serving as uplinks to the ISIS for clients on either VLAN. Each VLAN on the switch is connected to the appropriate VLAN in the shared storage network using the 10-Gb port.

Zone 2 Switch



Each VLAN on the switch is allowed to support up to 12 connections but the size of the Storage Groups and engine determine the overall client count. Changing the switch configuration to increase the number of clients on a single VLAN is not supported and can result in unpredictable system performance. Client count can be scaled according to the number of available switches.

The following table provides possibilities of Zone 2 client counts based on the number of ISIS engine and switches. For each engine listed in the table, there is an associated 24-port switch. The exception is with three engines, in which the IXS does not provide additional ports.

Number of Engines	Available Zone 2 Ports	
	24-Port Switch Count	External Switch Ports
1	1	23
2	2	46
3	2	46 ^a
4	3	69

a. This is due to the use of an IXS board instead of an ISS.



The previous table does not reflect the use of Zone 1 Clients (Direct Connect), which at a minimum could consist of one System Director, AirSpeed devices, and TransferManagers. Mixing Zone 1 and Zone 2 clients in an ISIS shared storage network is discussed in the next section.

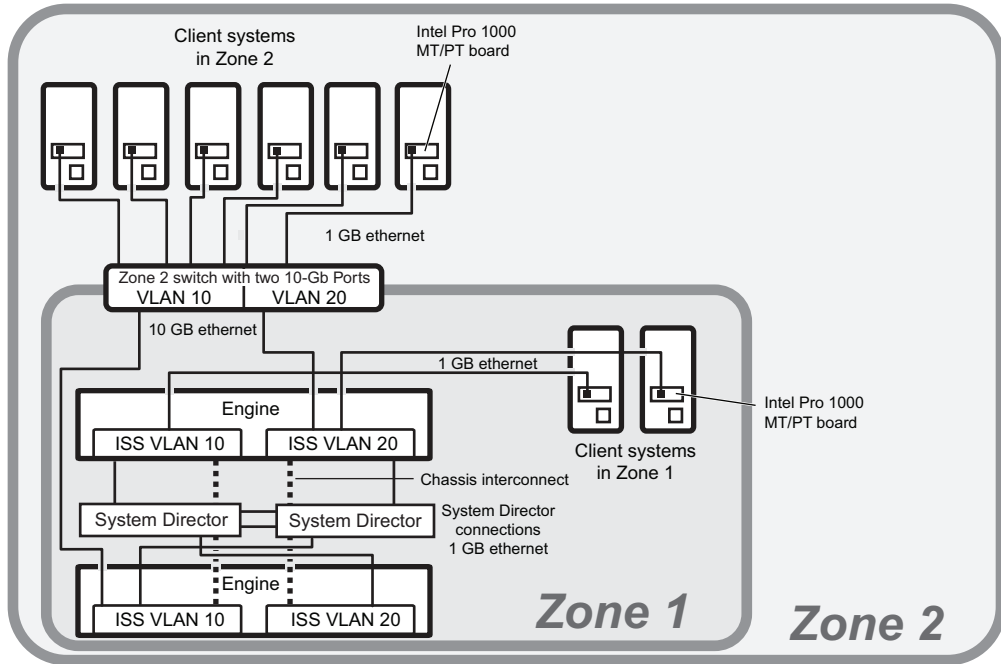
There is no current support for an external switch to be connected with the use of a 1 Gb connection as performance for multiple clients cannot be guaranteed over a single 1 Gb connection.

Zone 1 and Zone 2 Clients Mixed Configuration

The number of ports available on the ISS (Zone 1) makes it necessary to add another layer of clients through a qualified network switch to create a (Zone 2) in the ISIS shared storage network.

A mixed configuration (Zone 1 and Zone 2) consists of clients connected directly and indirectly through ports on the engine's ISS. Also shown are two System Directors that connect to the engine via two separate ISS 1-Gb ports for use as a redundant System Director in case of a failure. Both System Directors also connect to each other through the onboard Ethernet connections to monitor if one of the System Director fails.

Avid ISIS 7500 | 7000 Zone 1 and Zone 2 Mixed Network Configuration



Although it is not shown in the previous diagram, to ensure high availability, whenever possible, the System Directors should be connected to two different subnets through two different engines.

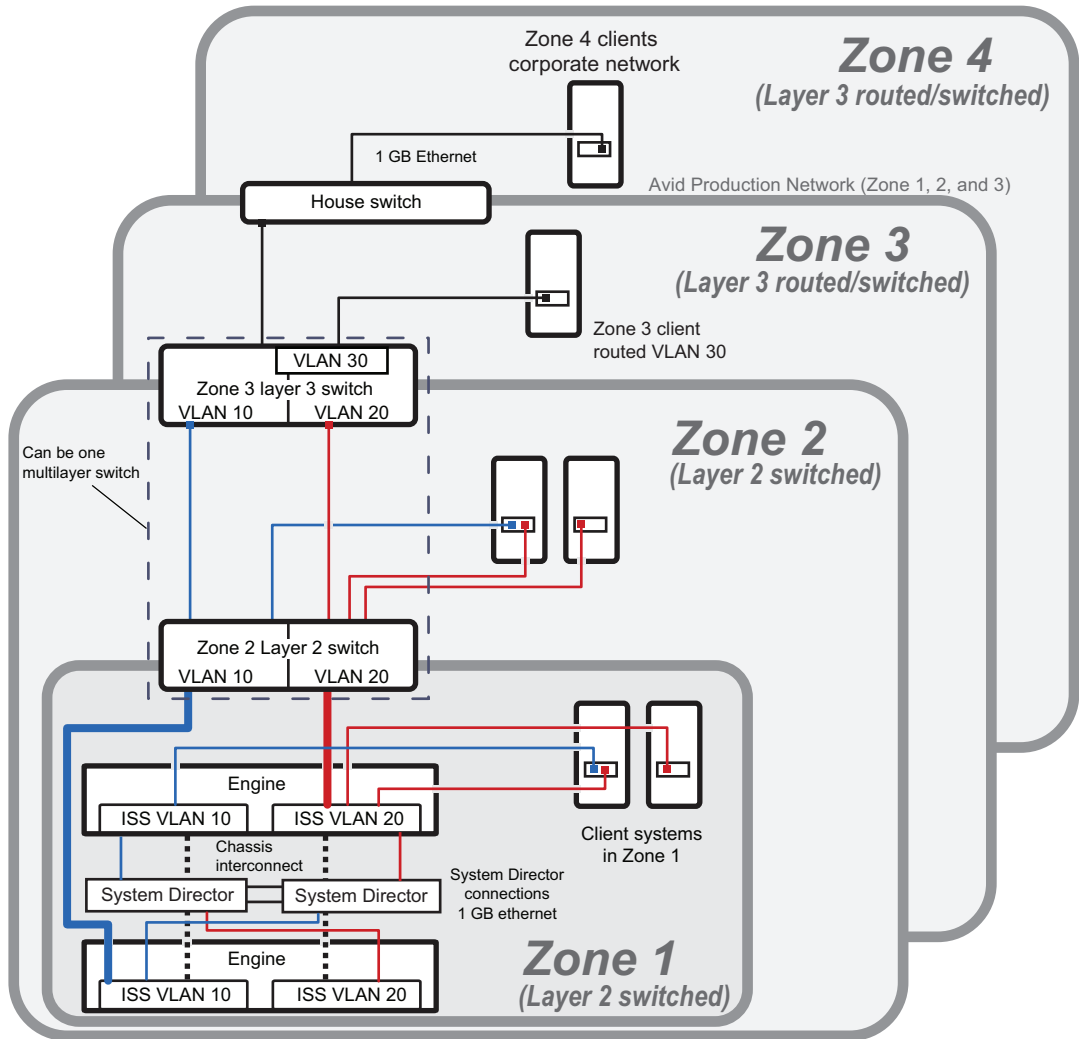
Zone 3 and Zone 4 Client Configuration

A Zone 3 (indirect connect) configuration consist of a group of clients connected to an Avid qualified layer-3 switch (routed) with known Quality of Service (QoS); traffic routed to ISIS (one hop) and load-balanced across ISIS VLANs (approximately a 60/40 ratio)

A Zone 4 (indirect connect) configuration consists of group of clients using an edge or a house Ethernet switch with unknown QoS; traffic routed to Avid ISIS (measured by the number of hops) and load-balanced across ISIS VLANs (approximately a 60/40 ratio)

This switch is normally connected to a house switch that has uplinks to the Avid Production Network through an Ethernet switch that contains a 10-Gb port connected to an ISS located in the engine. The System Director connects to the both subnets via both ISS modules using a 1-Gb port.

Avid ISIS 7500 | 7000 Zone 3 and Zone 4 Network Configuration



Link Aggregation Support

A link aggregation configuration supports Zone 2, Zone 3, and Zone 4 clients.

Cabling

For a list of cables qualified with the Avid ISIS system, see “Supported Cabling” on page 199. The following sections provide cabling information you should know when cabling your Avid ISIS stack.

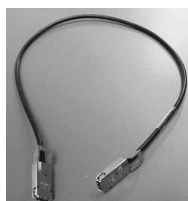
Connecting the Engine CX-4 Cable

The CX-4 cable is referred to as the Avid engine interconnect cable. It connects the engines through the integrated Ethernet switches (ISS and IXS) to create the Avid ISIS stack.

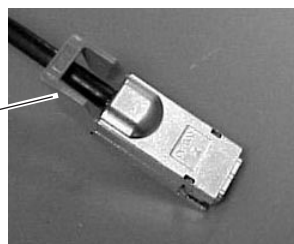
To connect the cable:

- ▶ Place it in the connector at the rear of the system.

You hear a snap, and the cable is connected.



Cable disconnect



Damage can occur when disconnecting the Avid engine interconnect cable from the switch board if not done properly.



Care should be taken to reduce strain on the ISS switch blades by organizing and dressing the ethernet cables and CX-4 cables. When dressing the cables do not block removable switch and power components.

Removing the Avid Engine Interconnect Cable

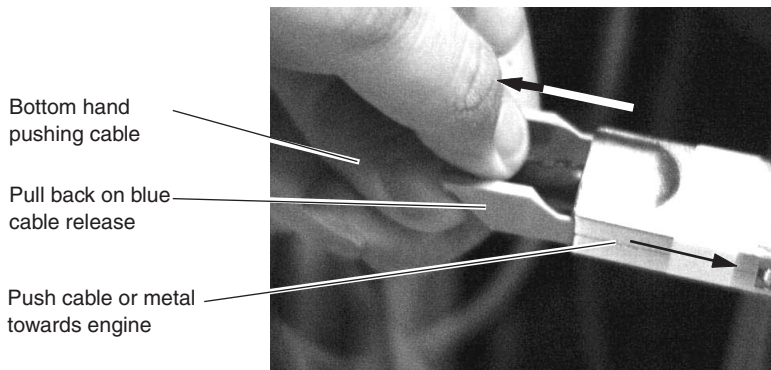
The following explanation and illustration explain how to properly remove the engine interconnect cable.



If you attempt to disconnect the cable by pulling the blue cable release towards you and pulling the cable out from the connector at the same time you can cause the cable and/or connector to be damaged.

To remove the Avid engine interconnect Cable from the Rear Connector:

1. While the cable is in the connector, use your bottom hand to grab the cable (or the metal portion of the connector) and push the cable (or metal portion of the cable) towards the connector at the rear of the engine.
2. While keeping the pressure towards the engine connector using the cable (or the metal portion of the connector), use the top hand to pull the blue portion of the cable directly back. This dislodges the connection of the cable from the connector.



3. Pull back with both hands to remove the cable.

10-Gb Link Aggregation Overview

The 10-Gb Link Aggregation functionality supported by the Avid ISIS 7500 | 7000 software is described in the following sections. For a procedure on creating a Link Aggregation Group, see [“Configuring a 10-Gb Link Aggregation Group” on page 101](#). When configuring a Hi-Gb link aggregation for ten- and twelve-engines, see [“Hi-Gig Link Aggregation Group” on page 79](#).

Link aggregation is a method of combining physical network links into a single logical link for increased bandwidth. With Link aggregation, you are able to increase the capacity and availability of the communication channel between devices (both switches and clients) using existing Ethernet technologies. Two or more 10-Gb Ethernet connections can be combined to increase the bandwidth capability and to create resilient and redundant links. Link aggregation is sometimes known as “Trunking.”

Link aggregation also provides load balancing across several links in a link aggregation so that no single link is overwhelmed.



You must disable link aggregation before creating or modifying your Avid ISIS stack. After your stack has been created, reconfigure your Link Aggregation Groups.

Supported in Link Aggregation

Avid ISIS 7500 | 7000 supports 10-Gb link aggregation (between the ISS and the Avid Production Network switch) and Hi-Gig link aggregation (between two IXS). Avid ISIS software supports the link aggregation standard clause 43 of 802.3-2005 (also known as 802.3ad).

Number of Groups Supported

A link aggregation group refers to a number of links that combine together to form a single link aggregation. The number of link aggregation groups supported in Avid ISIS 7500 | 7000 is five.

Number of Members Supported

A link aggregation group can have a maximum of eight members. This means no more than eight 10-Gb links can be combined into one link aggregation group per VLAN. The minimum number of link aggregation members in a group is 2.

For performance reasons, Avid recommends that you maintain an even number of link aggregation members. So for an eight engine stack, you can have a link aggregation group with two, four, and six members. For a ten or twelve engine stack, there can be two, four, six, and eight members in a link aggregation group.



If a member is already part of a link aggregation group, it cannot be part of another link aggregation group. You also cannot create a link aggregation group with a single member.

Load Balancing

The software balances the load across multiple 10-Gb aggregated links based on source and destination IP addresses.

Failover

If a 10-Gb trunk link fails, the software load balances the traffic among the remaining trunk links. For example in a four-way 10-Gb trunk if a single 10-Gb link fails, the traffic is load balanced among the remaining three links. This also means that the average traffic distribution increases from 25% with the four links, to 33% in the three links. Therefore, it is strongly advised that network planners setup the trunks to handle the additional load if a link or a set of links should fail in a trunk configuration. The traffic automatically re-balances the load when a trunk link returns.

Warning messages are sent to ISIS Management Console notifying you that a 10-Gb aggregation link status has changed. Switch diagnostics also provides errors when you have a failed link in a trunk.

The engine menu within the ISIS Management Console flashes a yellow warning triangle notifying you that a 10-Gb Link Aggregation link has changed. The specific engine displays a yellow warning circle, and the Switch Blade Status displays “1 Error(s).” Details on the engine switch displays a status of “Link Warning.” You can then open the Switch Agent page via the “info” button on the engines details page, and look at the Port Status page to verify the 10-Gb Link Status.



This failover feature functionality can be disabled in switch agent page.

Recommended Topologies

For the best performance in stacks with two IXSs, the link aggregation members need to be evenly distributed between the ISSs that are connected to each IXS. For example, with a four link group; two are connected to ISSs that are connected to IXS A, and the other two links are connected to ISSs that are connected to IXS B.

Supported Functionality

From the Link Aggregation menu in the switch agent, you can:

- View current settings — This displays the current link aggregation configurations, showing all currently configured groups. The user may also modify a group or delete a group from this page.
- Create a new link aggregation group — This allows you to define a new link aggregation group.
- Enable or disable link aggregation configuration — This allows you to disable or enable the current link aggregation configuration. The configuration is preserved.
- Restart the link aggregation configuration — This allows you to request that the stack restart its link aggregation configuration. This removes and rebuilds the link aggregation groups as defined in the current configuration.
- Delete the link aggregation configuration — This disables link aggregation and removes any existing link aggregation configuration. The configuration is not recoverable. This can be used to set link aggregation settings back to factory defaults.

Other Functionality

- Every time a switch is introduced to the stack (by connecting the stacking cable) or removed from the stack (by disconnecting the stacking cable), the link aggregation software clears the link aggregation information from the switches and re-programs them again.
- If the switches are being programmed with link aggregation information for the first time, link aggregation needs to be enabled. This is done by clicking on “Enable or Disable link aggregation configuration.”

2 Connecting the ISIS Equipment

This chapter explains how to rackmount and connect the system hardware. To do this, a system installation check list is provided to help you perform the installation in the correct order. The installation check list continues past the information in this chapter and points you to the correct area in this document or the ReadMe file to continue the installation.

This chapter contains the following information:

- [Rack-Mounting the Equipment](#)
- [Installing Blades and Power Supplies](#)
- [Connecting Power to Equipment](#)
- [Connecting a Keyboard, Monitor, and Mouse](#)
- [Connecting the Optional Application Key](#)
- [Connecting Power to Equipment](#)
- [Connecting ISIS Hardware](#)



For information on connecting and configuring two System Directors for failover, see “Configuring the System for Failover” on page 122.

Rack-Mounting the Equipment

This chapter describes how to install and connect the System Director and other workgroup hardware.



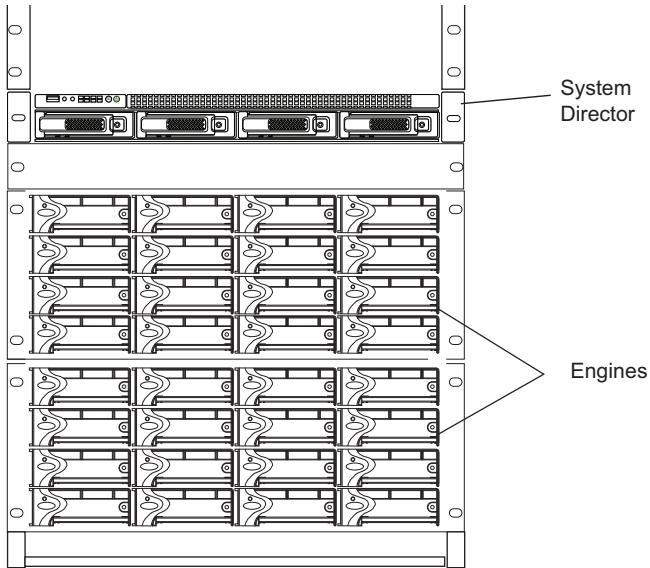
Before you start the procedures in this chapter, you should be familiar the previous chapters in this document.

Rack-Mounting Examples

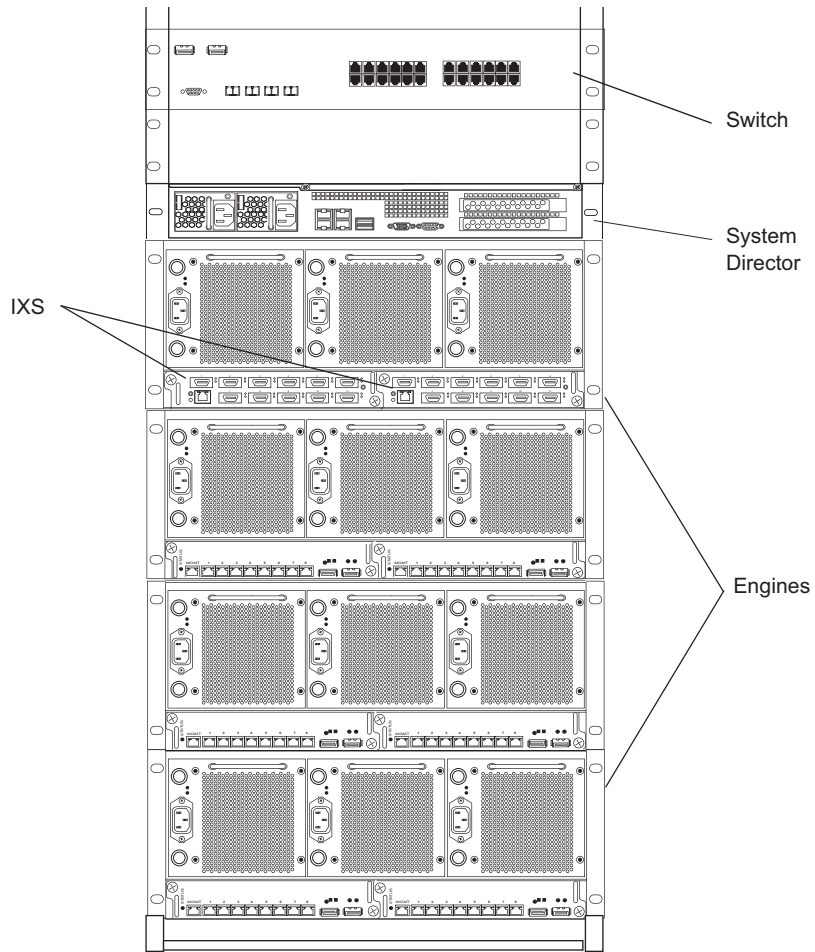
Avid supports more than one Avid ISIS rack configuration. You should have discussed the layout for your system with an Avid representative prior to purchase.

The following examples show a few of the supported rack configurations.

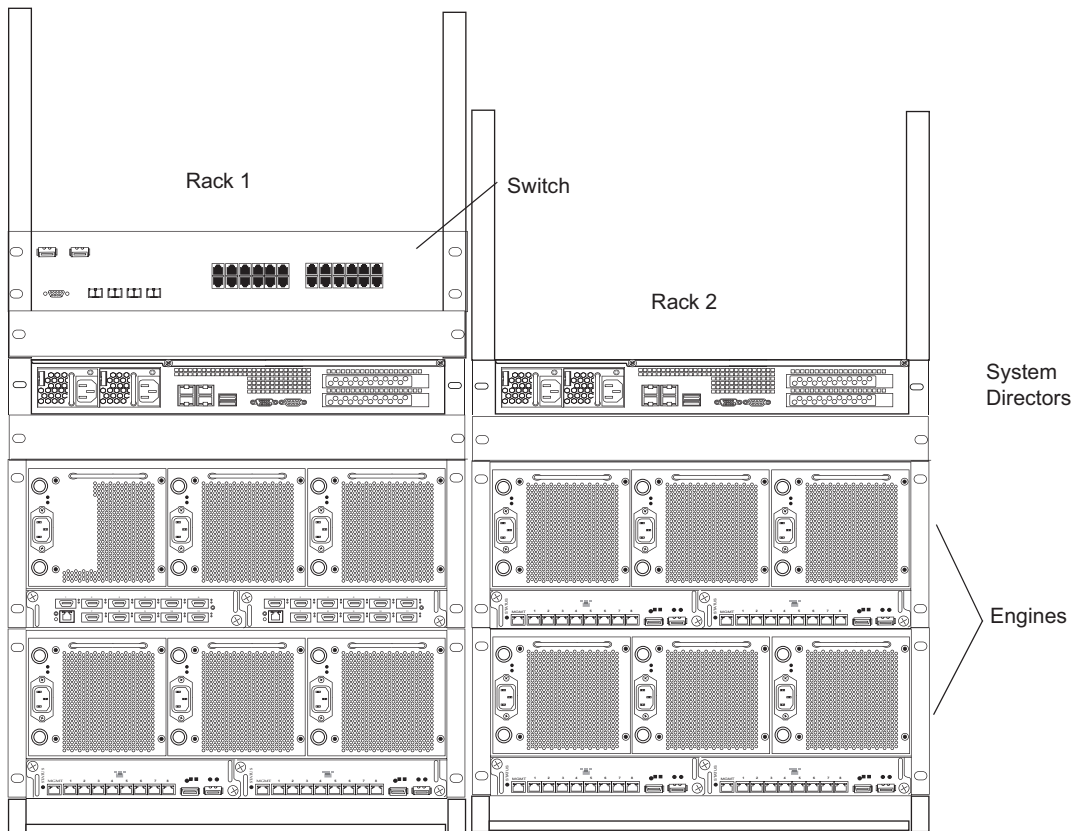
Single Rack - Two Engines - One System Director



Single Rack - Four Engines - One System Director



Dual Rack - Four Engines - Failover System



Installing Rack-Mount Rails and Brackets

The System Director is designed for 19-inch (483-mm) rack configurations and requires one EIA rack units (1U), or 1.75 inches (44.45 mm) of rack space. The rail kit installs into rails that are between 23-inches (584.2-mm) to 31-inches (787.4-mm) inches deep. An optional rail kit is available for racks that are up to 37 inches deep.

The System Director includes rack mounting slide rails. If instructions are included with your rail kit, use them instead of the instructions included in this section. The standard rail configuration is for racks with square mounting holes. Optional brackets are included for racks with round holes. The rack-mounting kit requires inner slide rails be mounted to the server and the outer slide rails are mounted to the rack. Once both the inner and outer rails are in place, slide the server with the inner rails attached into the outer rails. Secure the server in the front of the rack using the supplied screws so it does not slide forward.



The System Director is designed to be installed horizontally in a rack. Installing the System Director on an angle or in a sloped console causes the internal drives to wear faster than the intended life of the drive.



To ensure the stability of the rack enclosure, start with heaviest equipment installed at the bottom of the rack enclosure. Lighter equipment goes towards the middle and top.

The following are recommendations you should take into account prior to rack-mounting Avid ISIS equipment:

- Avid recommends that you leave a 1U or .5U space between each piece of equipment mounted in the racks. This allows for better airflow and cable access, and helps stop vibration in any equipment being transferred to spaces above and below.



The 1U System Director has vent holes on the top of the enclosure. Avid has performed thermal testing with the top vent holes blocked, and the results indicated that even with the top vent holes blocked, the 1U System Director still operates within the temperature tolerances.

- Avid recommends that you leave an 8 to 12 inch space at the bottom of the rack. This allows for better airflow and lowers the possibility of dust or dirt being picked up by the devices.
- If you have a redundant configuration, you might place equipment in different racks. Place the System Director and Failover System Director in different racks, separate the storage elements between racks, place redundant Ethernet switches in different racks, and have the power from each rack connected to different circuits.
- For normal operation, you'll need to maintain approximately 2 feet (0.6 meters) of open space in front of and behind the rack. This allows free access to the components in the rack for operating changes or adjustments. For service, you need approximately 3 feet (1 meter) of open space in front of the rack and 2 feet (0.6 meters) of open space behind the rack. This allows for the removal of any component that needs to be replaced.

Rack-mount Requirements

- **Elevated Operating Ambient** — If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment might be greater than room ambient. Therefore, consider installing the equipment in an environment compatible with the maximum ambient temperature (T_{ma}) specified by the manufacturer.
- **Reduced Air Flow** — Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.
Avid ISIS airflow is from the front of the enclosure to the rear. Make allowances for cooling air to be available to the front panel surface and no restrictions at the rear.
- **Mechanical Loading** — Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.

Make sure your rack enclosure is stable enough to prevent tipping over when one or more Avid ISIS servers are extended on the sliding rails.

- **Circuit Overloading** — Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.
- **Reliable Grounding** — Reliable grounding of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (for example, use of power strips).
- **Inside Enclosure Access** — If you want to extend the enclosure, and remove the top cover, you must allow 0.5 in (1.3 cm) clearance on top of the enclosure for cover removal.

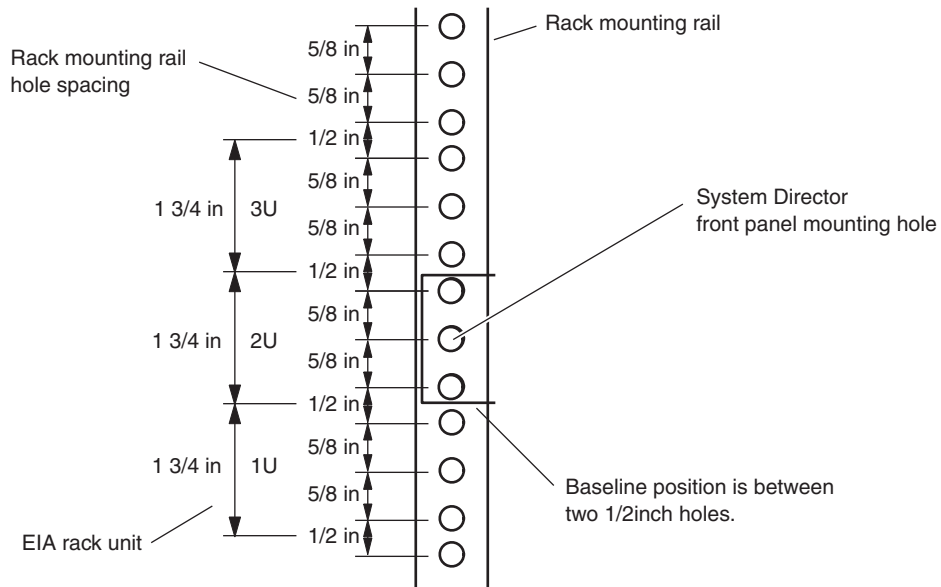
Positioning the server in the Rack

The following information helps you decide where to install the System Director in the rack.

To position the System Director in the rack enclosure:

- ▶ Select a position in the rack where the System Director is at the proper baseline position.

Positioning the System Director



Separating the Slide Rails

You need to separate the slide rails and attach the inner “movable” section to the System Director and the outer “fixed” section to the rack rails.

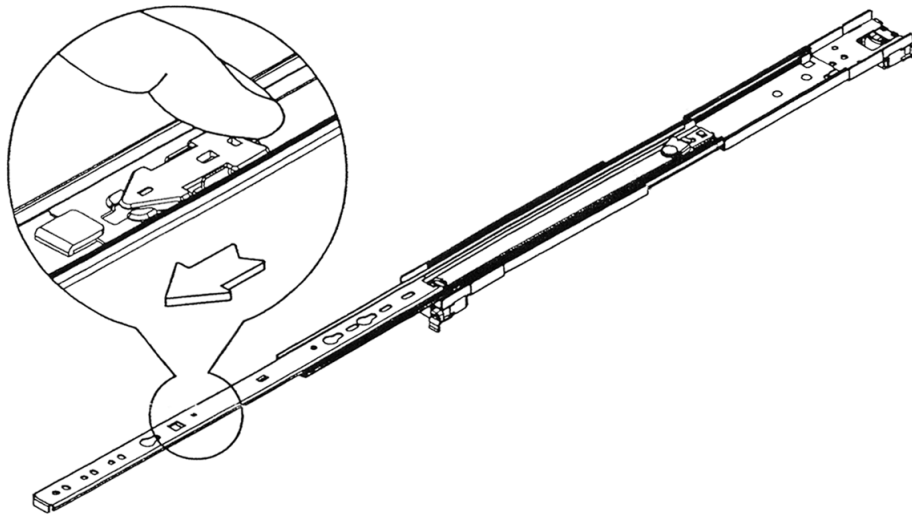
To separate the slide rails:

1. Slide the slide rail completely open.
2. Press the spring clip on the inner slide rail as shown in the illustration.



The blowup of the spring clip shown in the illustration is on the bottom side of the slide rail.

Separating the Slide Rails



3. Pull and separate the two halves.
4. Repeat these steps to separate the second slide rail.

Attaching Inner Slide Rails to the System Director

Attach the inner slide rails that were separated from the outer slide rails to the System Director.

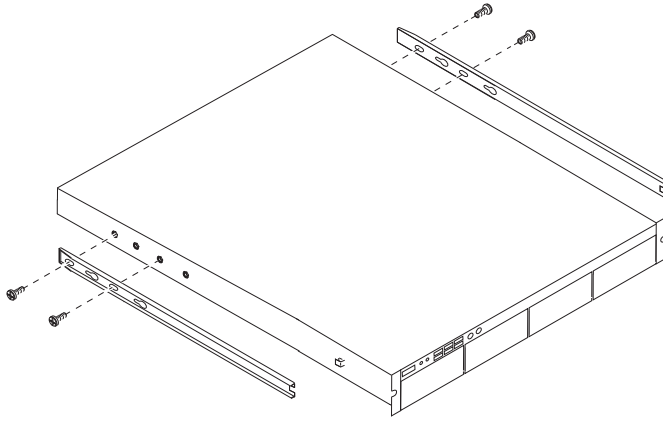
To attach the inner slide rails:

1. Position the inner slide rail against the side of the server so that the screw holes are toward the rear of the server, and front of the slide rail fits over the tab at the front of the server.
2. Secure the inner slide rail to the server with two of the small screws.



You might find more screws in the rail kit than is needed, and described in this procedure.

Attaching the Inner Slide Rails



3. Repeat this procedure to attach the other inner slide rail on the other side of the server.

Attaching the Outer Rails to a Square-Hole Rack

After separating the slide rails as previously described (see [“Separating the Slide Rails”](#) on page 53), perform the following procedure. If your mounting rails have round holes, see [“Attaching the Outer Rails to a Round-Hole Rack”](#) on page 56.

To attach the outer slide rails to the rack with square holes:

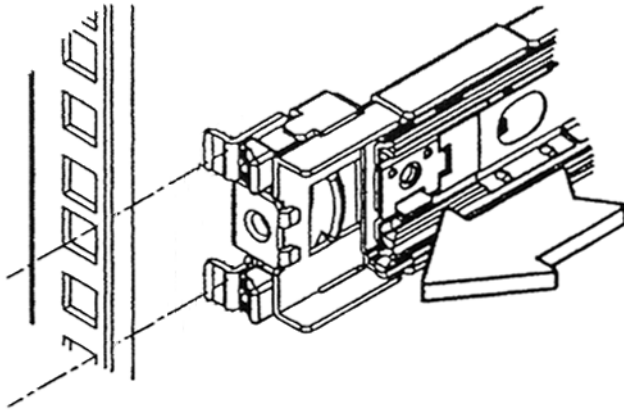
1. Align the outer slide rail bracket assembly with the front rack-mounting holes.



You should have someone helping you hold the slide rails level while you are positioning them in the rack.

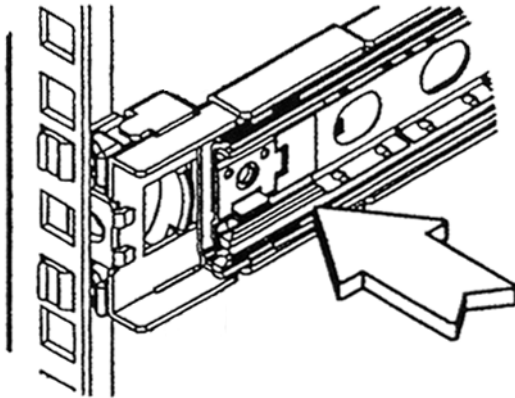
2. Slide the square tabs through the holes in the front, vertical rack-mounting rail.

Positioning the Outer Slide Rail with the Front Rack-Mounting Rail



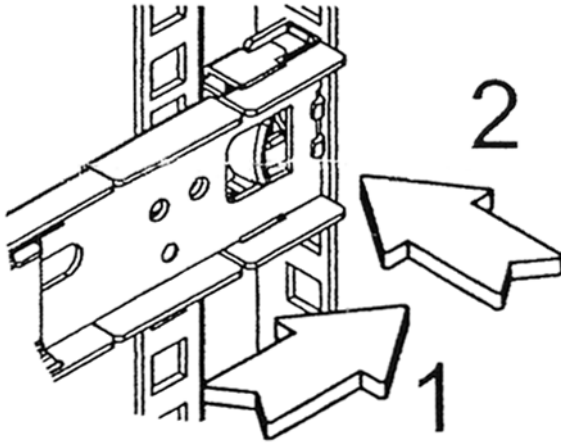
3. Push the outer rail towards the outside of the rack, to secure the outer rail in place

Insert the Outer Slide Rail to the Front Rack-Mounting Rail



4. Adjust the outer slide rail bracket assembly to the rear mounting rail.
5. Secure the rear outer slide rail bracket assembly to the rear mounting rail as you did for the front rack-mounting rail.

Securing the Outer Slide Rail to the Rear Rack-Mounting Rail



6. Repeat this procedure to attach the second outer slide rail on the other side of the rack.

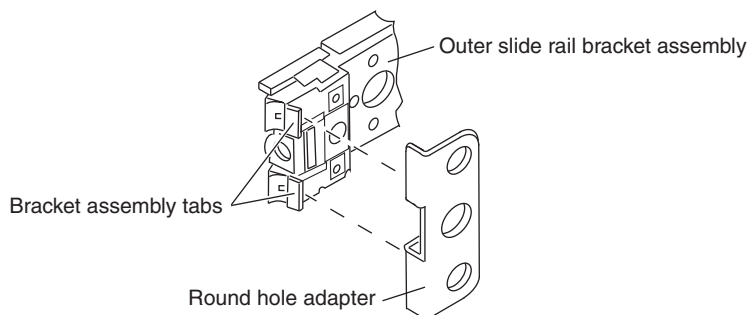
Attaching the Outer Rails to a Round-Hole Rack

After separating the slide rails as previously described (see [“Separating the Slide Rails” on page 53](#)), perform the following procedure. If your mounting rails have round holes, you first need to clip on the round hole adapter.

To attach the outer slide rails to the rack with round holes:

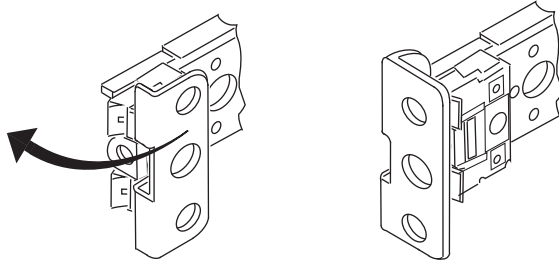
1. Locate the four round hole adapters (which ship in the accessory kit's plastic bag, not in the rack mount kit box) and position the adapter on the end of the outer slide rail bracket assembly as shown in the following illustration.

Attaching the Round Hole Adapter to the Bracket Assembly



2. With the bracket assembly tabs aligning with the cut-out in the round hole adapter, swing the adapter so that the holes face the front of the bracket assembly as shown in the following illustration.

Positioning the Round Hole Adapter

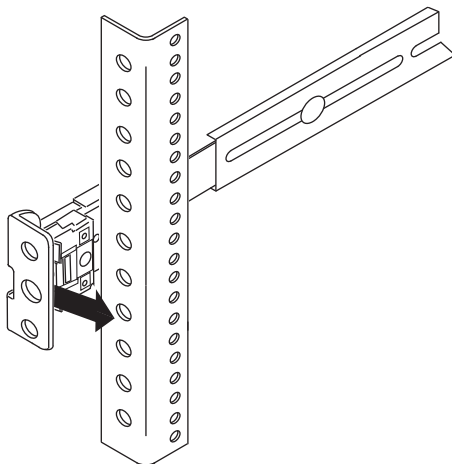


3. Slide the outer slide rail bracket assembly onto the side rack-mounting rail so that the round hole adapter is over the rack rail.



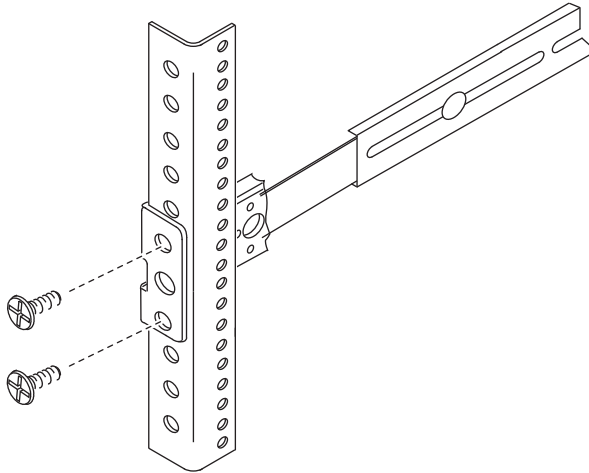
You should have someone helping you hold the slide rails level while you are positioning them in the rack.

Insert the Outer Slide Rail to the Front Rack-Mounting Rail



4. Insert the small (10-32) Phillips-head screws through the round-hole adapter and mounting rail, into the bracket. If the rack holes are different size, you need to supply your own screws

Securing the Outer Slide Rail to the Rack-Mounting Rail



5. Adjust the outer slide rail bracket assembly to the rear mounting rail.
6. Secure the rear outer slide rail bracket assembly to the rear mounting rail as you did for the front rack-mounting rail.
7. Repeat this procedure to attach the second outer slide rail on the other side of the rack.

Securing the System Director in a Rack

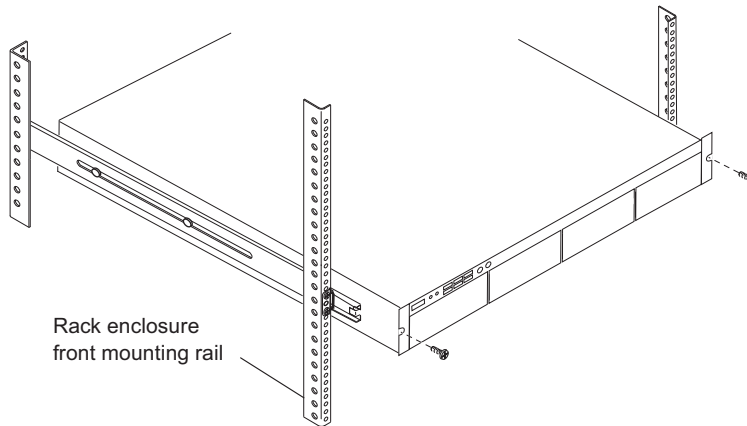


You should have someone helping you lift the System Director while you are positioning it into the slide rails.

To secure the server to the rack enclosure:

1. Lift and position the server so that the inner slide rails (secured to the System Director) are aligned with the outer slide rails secured to the rack.
2. Push the front of the System Director server flush against the front mounting rail. The holes in the server front panel align with the holes in the front mounting rail.
3. From the front of the rack enclosure, insert the large Phillips-head screw through the System Director and front mounting rail.
 - Square hole racks — the middle hole of the outer rail kit is where the screw anchors the server front panel to the vertical rail. A M6x10 screw in the parts kit is included to secure the front panel with square hole racks.
 - Round hole racks — the server front panel attaches to the vertical rail of the rack. Use a truss head screw or hardware that come with your rack to secure the front panel with round hole racks.

Front Panel Screws



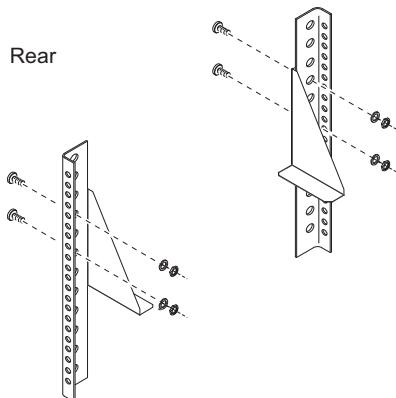
Mounting the Engine



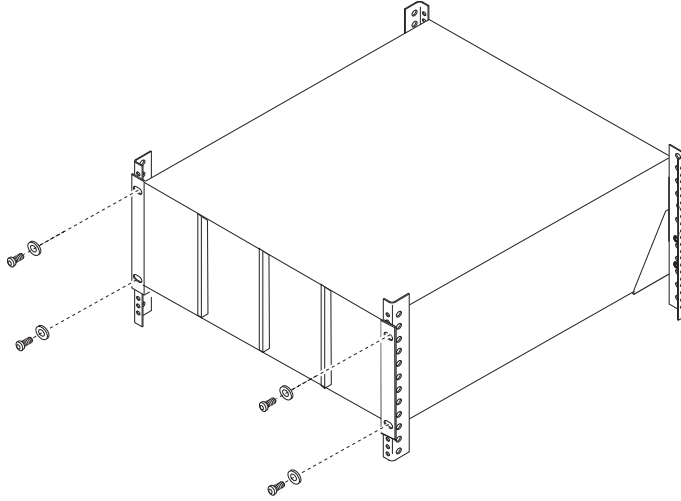
Lifting the engine with the blades and power supplies installed can cause an injury. The engine must have the blades and power supplies removed prior to lifting. Avid recommends that two people be used whenever lifting the empty engine.

To mount the engine into the rack:

1. Screw the brackets to the rear of the rack as shown in the following figure.



2. Make sure that the blades and power supplies are not in the engine.
3. Using two people, lift the engine and place the rear of the engine onto the brackets as shown in the following figure.



4. Screw the engine to the front of the rack through the ears of the engine as shown in the preceding figure.

Installing Blades and Power Supplies

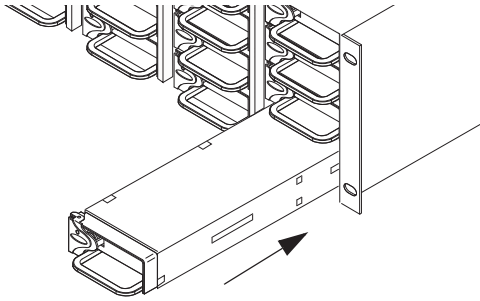
Once the engine has been mounted you can install the power supplies and blades.



Only trained Avid technicians should remove and replace the power supply when power is applied to the system. Since power to the system is still on, you must always keep your hands external to the engine when a power supply is missing from the engine.

To place the power supplies and blades into the engine:

1. Unpack each ISB and turn it so you can properly read the Avid name.
2. Pull open the plastic handle on the front of the ISB. (The plastic handle has the ISB model for example, i2000, i4000, i8000, printed on the recessed grey plastic face. The older models were reversed with the ISB model on the sticker on the handle and the Avid logo on the recessed grey plastic face.)
3. Place the ISB into the slot and slowly push the ISB completely into the slot.

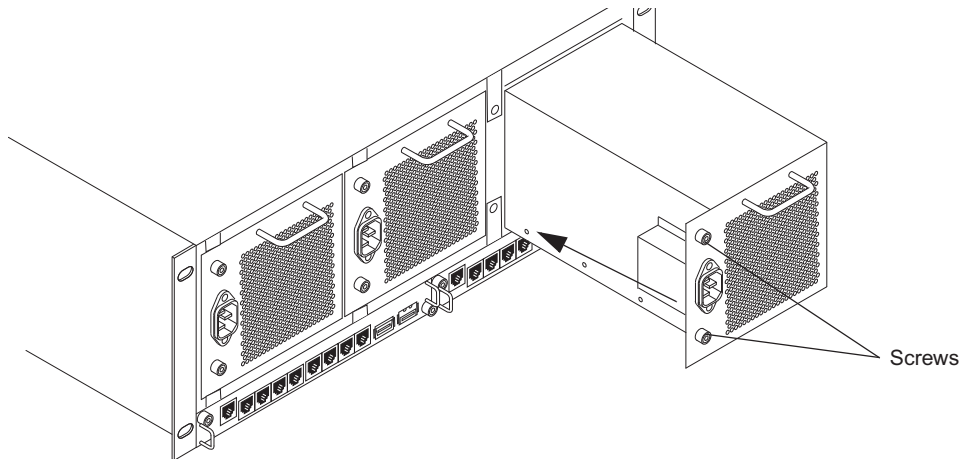


4. Push the plastic handle closed, to lock the ISB into the slot.
5. Repeat step 1 through step 4 until all blades are installed.
6. Carefully unpack each power supply.



Avid recommends that two persons be used to install the power supplies. You could be injured if you dropped a power supply on any part of your body.

7. Place the power supply into the engine as shown in the following figure and slowly push the power supply into the slot.



8. Turn the screws until tight.
9. Repeat step 6 through step 8 until all power supplies are installed.

Installing IXS and ISS Switches

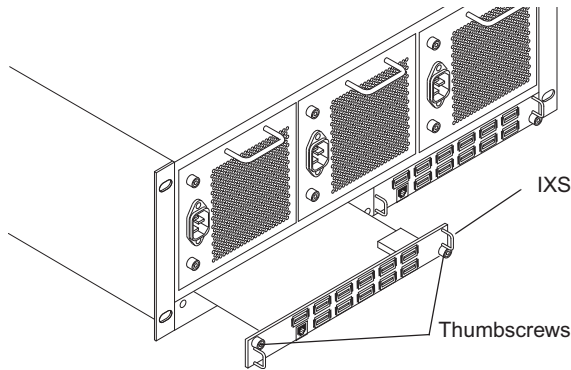
The location of the ISS and IXS switches in the stack are very important. If you have only one or two engines you should only be installing ISS switches into the engines, see [“Two-Engine Stacking”](#) on page 71.

If you have more than two engines, you need to install two IXSs in the first engine at the top of the stack, depending on your the version of the hardware, the following is needed:

- You need two IXS2000s in three- to twelve-engine configurations with v2.x hardware, see [“Three- to Twelve-Engine Stacking Summary With v2.x Switches”](#) on page 73.
- If you are installing a system with v1.x hardware, see the v2.1.1 (or earlier) *Avid ISIS Setup Guide* for detailed procedures.

To install your IXS or ISS:

1. Unpack the switch and insert the switch edges into the internal engine slides.
2. Carefully push the switch into the midplane of the engine until the connection is made.
3. Tighten the thumbscrew on each side of the switch.



Connecting a Keyboard, Monitor, and Mouse

An industry standard USB keyboard, USB mouse and VGA monitor are use to access the System Director. When installed in a rack with several servers an optional KVM switch can also be used. The keyboard, monitor, and mouse connections use the same ports described in the following procedure. Follow the instruction supplied with your KVM switch. You need to supply KVM cables that are compatible with your KVM switch.



There are only two USB ports on the rear of the System Director. One of the ports is typically used for the application key. When you purchase your KVM switch make sure it includes a USB splitter cable so that both your keyboard and mouse can plug into the splitter cable and use a single USB port on the Engine.

To connect a keyboard, monitor, and mouse to the Avid ISIS:

1. Install your KVM switch in a suitable slot next to the System Director in the rack.

You can also place the monitor on a shelf, and the keyboard and mouse on a sliding tray in the rack. These items are optional and can be purchased locally or from Avid.



Do not place the monitor on top of the Avid ISIS.

2. Attach the VGA connector on the monitor cable to the 15-pin video port on the back of the Avid ISIS. Secure the connector with the thumbscrews on the connector. For exact locations see [“System Director Rear Panel” on page 26](#).
3. Insert the connector on the keyboard and mouse cables into a USB splitter cable.

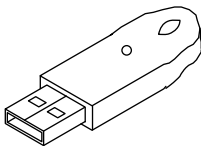


If you do not have a USB splitter cable, plug your keyboard and mouse cables directly into the USB ports on the rear of the System Director.

4. Insert the other end of the USB splitter cable into a USB connector on the back of the System Director.

Connecting the Optional Application Key

The default way of activating your ISIS software is through the Avid License Control tool (see [“Avid ISIS Software Licensing” on page 105](#)), although you can purchase a USB application key (also called a dongle). Before you start the System Director, you need to connect the Avid ISIS system USB application key.



Do not lose the USB application key. Your Avid ISIS system does not function without it. If you lose the USB application key, you must purchase another one from Avid to use your Avid ISIS system software.

To connect the application key to your Avid ISIS system:

1. Locate the USB application key in your Avid ISIS system kit.
2. Attach the USB application key to one of the rear USB ports of the System Director; see [“System Director Rear Panel”](#) on page 26.



Do not use the built-in USB connector on the front of the System Director.

Connecting Power to Equipment

The Avid ISIS 7500 | 7000 hardware includes three power supplies using an N+1 configuration for redundancy. The three power supplies “load share” to allow the balanced distribution of V ac power into each Avid ISIS 7500 | 7000 engine. Usually, a minimum of two of the three power supplies must be operational at one time for the engine to function properly. The fans in each power supply cool the supply and provides airflow for the engine. If a power supply fails, leave it in place until you have a replacement.

Each power supply is rated at 5 amps of current capacity at 120 Vac. You can have up to one power supply from each of the three engines on one 20-amp circuit. This allows the system to continue running if one of the three power supplies fails, with the two remaining load-sharing power supplies drawing slightly less than 10 amps.



Each System Director has two power supplies rated at 5.8 amps each. Avid recommends each power supplies be on a separated 20-amp circuit.

An engine can operate on two power supplies for a period of time to allow you to protect data. The following illustration shows an example of how the power should be connected to protect data.



Do not connect the power cords to the engines until instructed to do so in [“Setting-Up Network Addresses In the Stack”](#) on page 69.



Use this section to determine how you should connect power to the engines. Place the power cords into the engines when you place them into the rack as explained in [“Rack-Mounting the Equipment”](#) on page 47, but do not plug them into the outlets until told to do so later in the document.

See the following sections:

- [Three 20-Amp V AC Circuits for Three Engines](#)
- [Three 20-Amp V AC Circuits for Two Engines](#)
- [Two 20-Amp V AC Circuits for Two Engines](#)

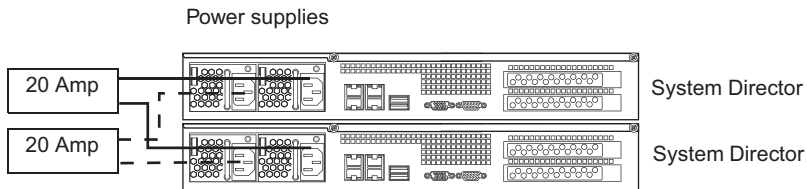
Connecting Power Cords

When using two System Directors, two 20-amp circuits should be supplied and configured as follows:

To connect the power cords to the System Director:

- ▶ Plug two power cords into the back of the server and then plug the other ends into power outlets on separate circuits.

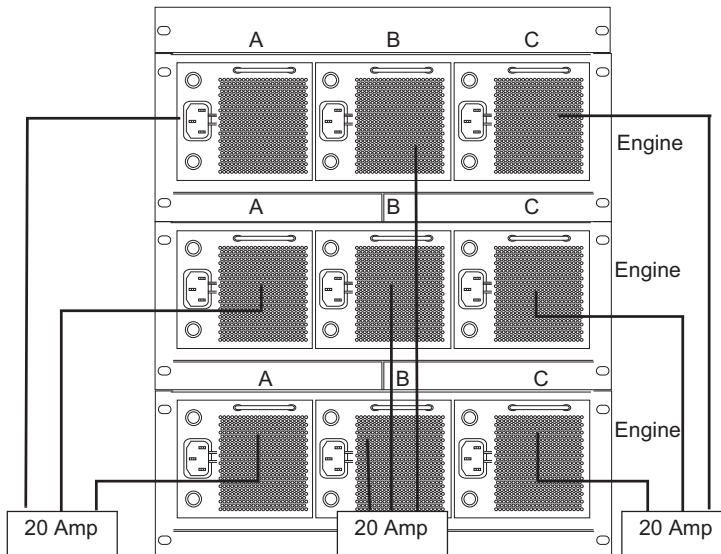
Power Connections



Three 20-Amp V AC Circuits for Three Engines

When you are using three 20-amp circuits for three engines, they are configured as follows:

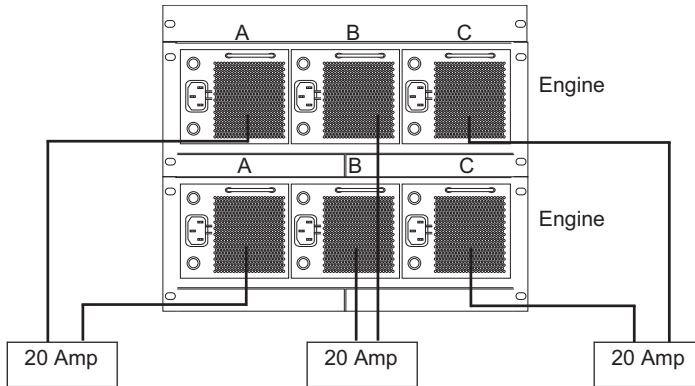
Basic Power Connection for Three ISIS Engines



Three 20-Amp V AC Circuits for Two Engines

When using three 20-amp circuits for the engine, they are configured as follows:

First Example of Power Connection for Two ISIS Engines



The 20-amp circuits shown for the System Directors should remain the same for both the three and two 20-amp circuit examples.

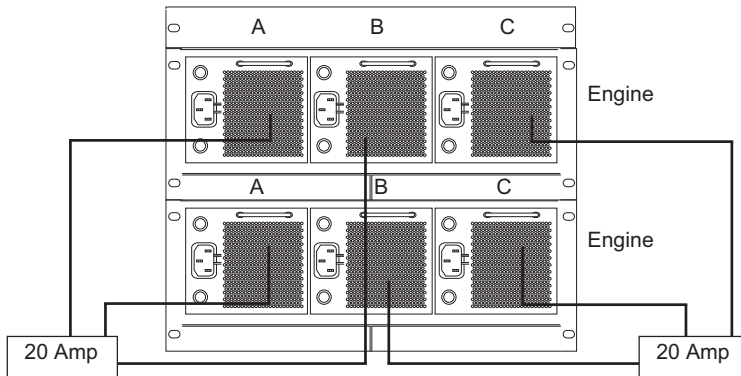
Two 20-Amp V AC Circuits for Two Engines



The following configuration is not recommended by Avid, but some locations might need to connect in this manner.

When using two 20-amp circuits for the engine, they are configured as follows:

Second Example of Power Connection for Two ISIS Engines





The 20-amp circuits shown for the System Directors should remain the same for both the three and two 20-amp circuit examples.

Turning System On and Off

To turn the system on or off, use the following procedures. Do not turn off the Avid ISIS components until they have completely powered on.

To turn your system on:

1. Turn on your engines one at a time by plugging at least two power cords into two power supplies at the same time. Plug the third power cord into the third power supply soon after the first two powers supplies have been given V ac power. Allow enough time for all lights on the front panel to turn Green.
2. Turn on the System Directors and to start the Avid ISIS system.
3. Clients should restart there systems and use the Client Manager software to log on and mount workspaces.

To turn your system off:

1. Exit the Client Manager on all clients.
2. Stop the secondary System Director using the System Director Control Panel if you are set up for failover.
3. Stop the Active System Director using the System Director Control Panel.
4. Turn off the System Directors.
5. Turn off the engines one at a time by unplugging the three power cords for each engine.

Connecting ISIS Hardware

The process of connecting the engines to the Avid ISIS network is a two step process. First you logically configure the addresses for the engine, then you physically make the connection to complete the process. If you need to install software, see [“Installing Software and Configuring 10-Gb Link Aggregation”](#) on page 81.



The engines are powered on when two or three power supplies are plugged into an V ac power source. When the engines are on, and the interconnect cables are attached, the network tries to identify the new connection before it should. Do not connect the interconnect cables until told to do so in the procedures.

The 64-bit System Directors introduced in Avid ISIS 7500 | 7000 v2.0 can be used with v2.x and v1.x generation switches in the engines. The two v2.x switches are branded with an IXS2000 and ISS2000 silk-screen. The v2.x switches cannot be mixed in ISIS engines with earlier versions (v1.x) of the switches (labeled IXS1000 and ISS1000). All the switches in the engines need to be of the same generation.



You cannot mix new switches (labeled IXS2000 and ISS2000) with original switch hardware (labeled IXS1000 and ISS1000). All switches in the engine, and engines in the stack must be from the same generation of hardware.

The procedures provided in this guide describe the AS3000 System Directors and Avid ISIS 2.x hardware. You will need the following:

- Windows computer (laptop or System Director)
- CAT5e or CAT6 Ethernet cable to run between the Windows computer and the Management port of the ISS or IXS
- Two or more engine interconnect cables (when using more than one engine)
- System Director ISIS software kit

Engine Configuration v2.x Hardware Guidelines

Although there are a few ways to physically connect and enable the engines, Avid recommends the process described in this section for consistency and dependability. In smaller configurations different switch blades are used:

- ISS — Only the ISS blades are used when you are connecting two engines.
- IXS — When connecting three to twelve engines, two IXS2000 blades are used in the first engine (one for each subnet) to connect the next eleven engines.

Engine configurations are described in the following sections:

- [“Two-Engine Stacking” on page 71.](#)
- [“Three- to Twelve-Engine Stacking Summary With v2.x Switches” on page 73](#)



You must disable link aggregation before creating or modifying your Avid ISIS stack. After your stack has been created, reconfigure your link aggregation.

Use the following list to help you when you connect the System Director, laptop for configuration, and clients to the Avid ISIS 7500 | 7000 system.

- A laptop (or any computer running a Windows operating system) is used in the following examples for configuring the engine at the beginning of the installation or for maintenance by an Avid representative. You can use the 1-Gb connection on the System Director for configuring the engine at the beginning if needed, but do not leave it connected or use it for a maintenance connection.
- All clients connected to the switches on the left side of the engine are connected to one subnet, while clients connected to the switches on right side of the box are connected to the second subnet.
- When you are connecting the System Director to the ISS module using the dual port Ethernet board, Avid recommends that you connect the left port to the left side of the engine and the right port to the right side of the engine. Where the left side corresponds to the VLAN 10 subnet and right side corresponds to the VLAN 20 subnet. However, it also functions properly the other way.

You should rename the left side, to “Left Side, VLAN 10” and the right side, to “Right Side, VLAN 20” in the Network Properties of your System Director.

Setting-Up Network Addresses In the Stack

Regardless of the number of engines you are planning in your Avid ISIS stack. The following procedure describes how to configure the first engine.

To configure the engine:

1. Connect the power cords that are connected to the System Director to the V ac circuit and turn on the System Director.



The System Director password is preset to is-admin. Not to be confused with the System Director Web Page Administrator user whose default password is blank.

2. Connect the power cords from at least two of the engine’s power supplies to V ac circuit at the same time. Then connect the third power supply.

It should take about 2 minutes for the engines to reach ready status. Wait for all the LEDS on the engine to be green.

3. Power on all the engines in the stack.



Power cords are plugged into the engines early in the process to speed up the installation time. Engines can take a minute or two to become ready. If the engines are ready when it is time to add them to the stack, the installation takes less time. Do not plug the interconnect cables into the engines until instructed to do so.

4. Using a laptop (or computer running a Windows operating system), assign a static IP address of 192.168.0.100 to the network adapter (NIC) and attach it to the management port of left switch.
5. Open a browser and navigate to the Switch Agent Web page via the following address:
https://192.168.0.10:5015.
6. You are asked for the default password. Type **se-admin**.
The Avid ISIS 7500 | 7000 Integrated Switch Blade page appears.
7. Type the following into the Chassis Configuration window:
 - Starting IP addresses. Enter the IP addresses for both subnets, see “[IP Addressing Overview](#)” on page 81.
 - Subnet mask
 - Ending IP address should be the last address of the engine in the system. Remember that each engine has 17 IP addresses on each side, for a total of 34. Set the ending address high enough to cover the last engine and any possible near term future needs.

If you are going to be using a Zone 3 environment you must set the default gateway addresses for both sides of the engine. These addresses must come from the site’s IS department.



Make sure there are no DHCP servers connected to the network segments that assign addresses in the Avid ISIS range.

- Date, Time, and Time Zone or Enable network time protocol

If your network has a network time protocol (NTP) server, you can enter the IP address of that server in the Chassis Configuration window. NTP Server 1 is for the primary NTP server and if you have a secondary NTP server, enter the secondary IP address in NTP Server 2.



Once the NTP is configured on a switch, the information propagates to all the other switches automatically. The time is also automatically synchronized onto the storage blades after the NTP is configured on the switch.

The screenshot shows the web interface for the Avid ISIS Integrated Ethernet Switch Blade II 4.0.0.5170. The browser address bar shows 10.105.138.83 / iss2-single-user. The interface has a top navigation bar with 'System', 'Statistics', 'Tools', 'Logging', 'Advanced', and 'Logout'. A left sidebar contains a tree view with 'System' selected, and sub-items like 'Overview', 'Configuration', 'Basic', '10 Gb Link Aggregation', 'Versioning', and 'Show Version Information'. The main content area is titled 'Chassis Configuration' and displays two ISS-2 blades: 'ISS-2 (left)' and 'ISS-2 (right)'. Each blade has a set of input fields for network configuration:

ISS-2 (left)	ISS-2 (right)
Start ip address block: 10.105.138.3	Start ip address block: 10.105.138.67
End ip address block: 10.105.138.20	End ip address block: 10.105.138.84
Subnet Mask: 255.255.255.192	Subnet Mask: 255.255.255.192
<input checked="" type="checkbox"/> Default gateway: 10.105.138.1	<input checked="" type="checkbox"/> Default gateway: 10.105.138.65

Below the blade configurations are three sections: 'Network', 'Date and Time', and 'Miscellaneous'. The 'Network' section includes a checkbox for 'Enable network time protocol', two NTP Server fields, and a 'Time Zone' dropdown set to 'GMT-05:00'. The 'Date and Time' section shows the 'Current Time' as 'Thu Feb 2 09:40:59 2012' and fields for 'Date' (YYYY.MM.DD) and 'Time' (HH.MM.SS). The 'Miscellaneous' section has a checkbox for 'Automatically reset blades after heartbeat timeout'. 'Submit' and 'Reset' buttons are at the bottom.

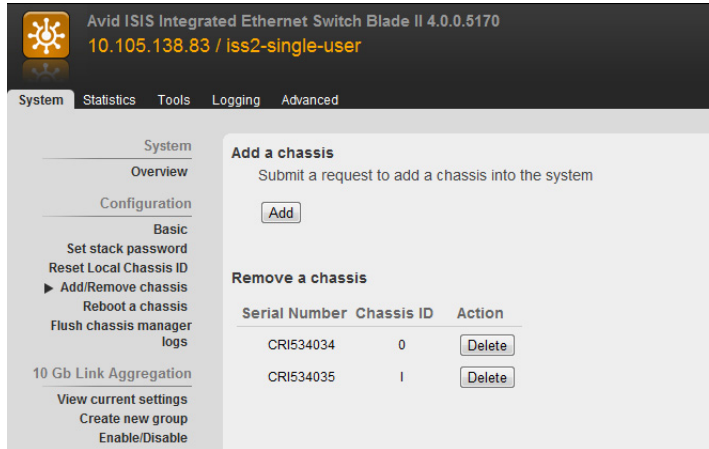
8. Click Submit.

A Dialog box might appear with an informational warning and can be disregarded. The first engine is now properly addressed.

Two-Engine Stacking

To stack two engines:

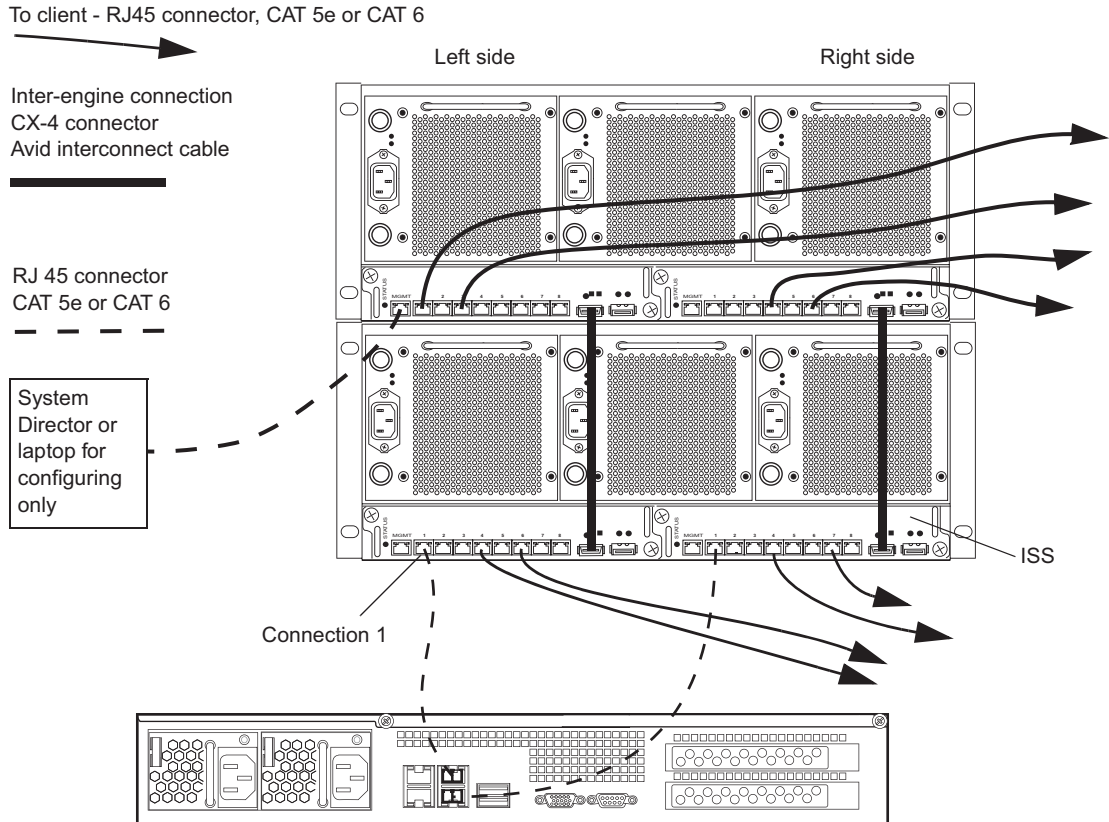
1. Complete the procedure [“Setting-Up Network Addresses In the Stack”](#) on page 69.
2. Open a left-side Switch Web page.
3. Go to System > Configuration > Add/Remove chassis.
4. Click Add and wait for the progress bar to complete.
5. Connect the interconnect cable from the left side of the stack to the new engine. The switch then picks up the addresses and stacking information.
Wait 5 minutes and refresh the page.
6. Verify that the serial number of the second engine is now in the Add a chassis list.



7. Attach the right interconnect cable.
8. Assign appropriate static IP address to the left and right network ports of the System Director.
9. Attach the System Director to the left and right switches and verify that all four switches can be pinged on their client IP address.

The following example shows the physical connections between two engines, a System Director, and clients. These are direct connections to the client system and not connected through switches. For a procedure of this connection, see [“Setting-Up Network Addresses In the Stack”](#) on page 69.

Two-Engine Connections

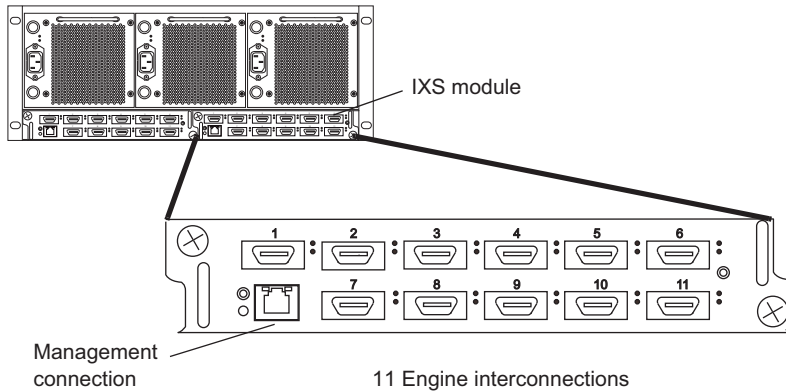


Three- to Twelve-Engine Stacking Summary With v2.x Switches

When connecting three- to twelve-engines, connect and add the switches to the VLAN 10 subnet (left side) first and then connect the engines to the VLAN 20 (right side) subnet. When accessing the Agent Web pages for the engines, use your laptop through the Management port or the Switch Agent Web through the Avid ISIS 7500 | 7000 software on your System Director. Information on installing the software on the system Director is described in [“Software Installation” on page 85](#).

In three- to twelve-engine configurations with IXS2000 switches, two IXSs are installed in the first engine, see [“Three- to Twelve-Engine Connections With v2.x Switches” on page 74](#). The IXS2000 ports 1 through 11 are referred to from left to right as shown in the following figure.

IXS2000 Engine Port Numbering



Avid strongly recommends you keep your engines and IP addresses in order in conjunction with the order of the ports used on the IXSs. When the IP address of the engines are in order with how they are mounted in the rack, support personnel can better identify the connections and components in the network. For an overview of the recommended IP addressing, see [“IP Addressing Overview”](#) on page 81.

Three- to Twelve-Engine Connections With v2.x Switches

The following procedure describes cabling up to twelve engines and might not represent your actual rack configuration. The cabling is the same when using IXSs regardless of the number of engines in your configuration.

To connect the VLAN 10 subnet (left side):

1. Loosen the thumb screws on all the right side switches (IXS and ISS) and pull the right side switches out about an inch of all the engines (so they are not electrically connected in the engine).
2. Connect the power cords from at least two of the engine’s power supplies to V ac circuit at the same time. Then connect the third power supply.

It should take about 2 minutes for the engines to reach ready status. Wait for all the LEDs on the engine to be green.

3. Power on all the engines in the stack.



Power cords are plugged into the engines early in the process to speed up the installation time. Engines can take a minute or two to become ready. If the engines are ready when it is time to add them to the stack, the installation takes less time. Do not plug the interconnect cables into the engines until instructed to do so.

4. Using a laptop (or computer running a Windows operating system), assign a static IP address of 192.168.0.100 to the network adapter (NIC) and attach it to the management port of left IXS.
5. Open a browser and navigate to the Switch Agent Web page via the following address:
https://192.168.0.10:5015.
6. You are asked for the default password. Type **se-admin**.
The Avid ISIS 7500 | 7000 Integrated Switch Blade Window appears.
7. Type the following into the Chassis Configuration window:
 - Starting IP addresses. Enter the IP addresses for both subnets, see “[IP Addressing Overview](#)” on page 81.
 - Subnet mask
 - Ending IP address should be the last address of the engine in the system. Remember that each engine has 17 IP addresses on each side, for a total of 34. Set the ending address high enough to cover the last engine and any possible near term future needs.

If you are going to be using a Zone 3 environment you must set the default gateway addresses for both sides of the engine. These addresses must come from the site’s IS department.



Make sure there are no DHCP servers connected to the network segments that assign addresses in the Avid ISIS range.

- Date, Time, and Time Zone or Enable network time protocol

If your network has a network time protocol (NTP) server, you can enter the IP address of that server in the Chassis Configuration window. NTP Server 1 is for the primary NTP server and if you have a secondary NTP server, enter the secondary IP address in NTP Server 2.



Once the NTP is configured on a switch, the information propagates to all the other switches automatically. The time is also automatically synchronized onto the storage blades after the NTP is configured on the switch.

The screenshot shows the web interface for the Avid ISIS Integrated Ethernet Switch Blade II 4.0.0.5170. The page title is "Chassis Configuration" and the URL is "10.105.138.83 / iss2-single-user". The interface is divided into a left sidebar and a main content area.

System Configuration:

- System Overview
- Configuration
 - Basic
 - Set stack password
 - Reset Local Chassis ID
 - Add/Remove chassis
 - Reboot a chassis
 - Flush chassis manager logs
 - 10 Gb Link Aggregation
 - View current settings
 - Create new group
 - Enable/Disable
 - Restart
 - Delete configuration
 - Configure failover policy
 - Versioning
 - Show Version Information

Chassis Configuration:

The configuration is split into two columns for "ISS-2 (left)" and "ISS-2 (right)".

ISS-2 (left)	ISS-2 (right)
Start ip address block: 10.105.138.3	Start ip address block: 10.105.138.67
End ip address block: 10.105.138.20	End ip address block: 10.105.138.84
Subnet Mask: 255.255.255.192	Subnet Mask: 255.255.255.192
<input checked="" type="checkbox"/> Default gateway: 10.105.138.1	<input checked="" type="checkbox"/> Default gateway: 10.105.138.65

Network, Date and Time, and Miscellaneous:

- Enable network time protocol
- Current Time: Thu Feb 2 09:40:59 2012
- NTP Server 1: [] Date (YYYY.MM.DD): [] Time (HH.MM.SS): []
- NTP Server 2: [] Time Zone: GMT-05:00
- Automatically reset blades after heartbeat timeout

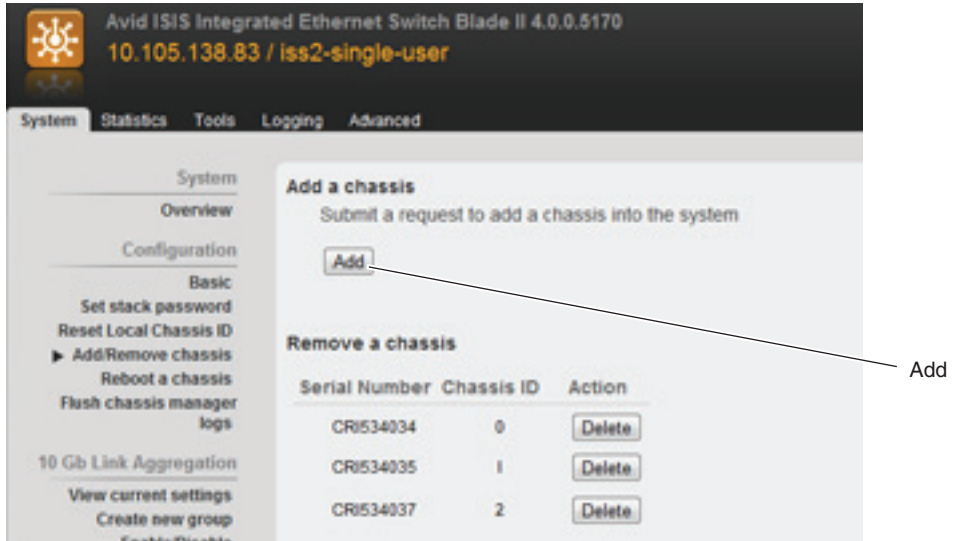
Buttons: [Submit] [Reset]

8. Click Submit.

A Dialog box might appear with an informational warning and can be disregarded. The first engine is now properly addressed.

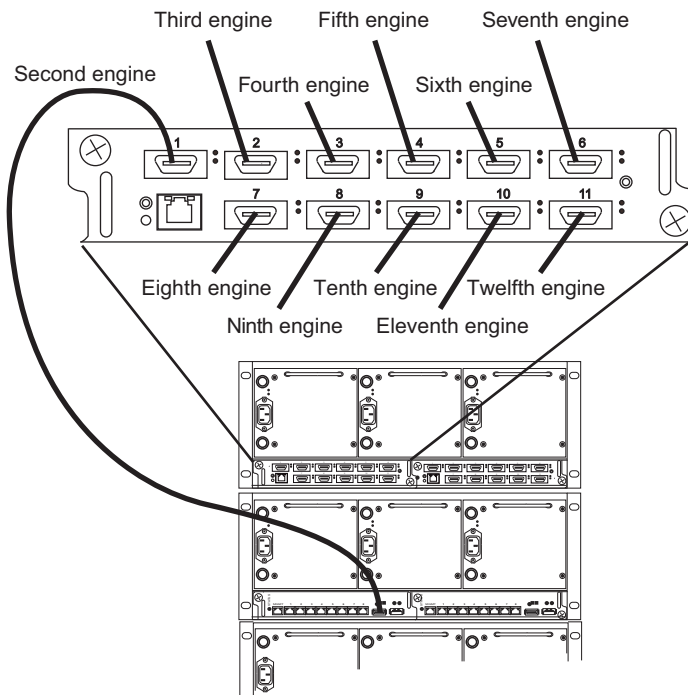
9. Click Add/Remove chassis to go to the Add a Chassis page.

10. Click Add and wait for the progress bar to complete.



11. Immediately attach an interconnect cable from port 1 of the left IXS to the left ISS interconnect port of the second engine.

Left Subnet Twelve-Engine Connections





It is not mandatory that you connect each engine to the exact ports shown in the illustration. The order of the ports and engines shown was suggested just to keep the stack logically organized.

12. Verify that the switch was added to the stack successfully.

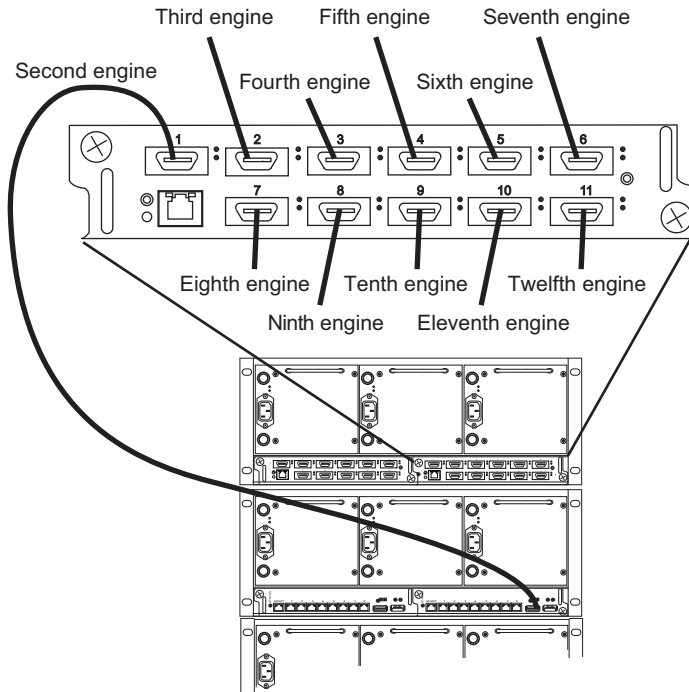
The serial number of the new engine appears in the Add/Remove Chassis list after a few moments when the switch is successfully added. If the new engine does not appear in the list (times out), see [“Engine Does Not Appear in Add Engine List” on page 94](#). You can also navigate to the Tools tab and verify that IXS can ping the added switch via the expected client IP address.

13. Repeat steps 9 through 11 until eleven engines are connected. Connect the third engine to port 2, fourth engine to port 3, and so on, until all engines are connected to ports 1 through 11 on left subnet (VLAN 10).
14. Attach the System Director to client port and assign an appropriate IP address for the left subnet. Verify that you can ping all the switches in the left stack at the expected IP addresses.
15. Continue with the following procedure to connect VLAN 20 (right side).

To connect the VLAN 20 subnet (right side)

1. Insert right IXS (right-side switch in the top engine) and tighten the thumb screws.
The IXS switch starts when inserted, allow the switch 2 minutes to power on and enter a ready state.
2. Insert the right side ISSs that you intend on connecting to right IXS subnet and tighten the thumb screws.
Allow the switches 2 minutes to power on and enter a ready state.
3. Connect the second engine to port 1, third engine to port 2, and so on, until all engines are connected to ports 1 through 11 on right subnet (VLAN 20).
Do not click “Add” from any IXS Agent Web page.

Right Subnet Twelve-Engine Connections



4. Attach the System Director to client port and assign an appropriate IP address for the right subnet. Verify that you can ping all the switches in the right stack at the expected IP addresses.

All switches in the stack (left and right sides) should now be pingable from the System Director.

Hi-Gig Link Aggregation Group

Two interconnect cables and Link Aggregation are used to increase the bandwidth between the IXS's. However, both interconnect cables must not be connected until Hi-Gig Link Aggregation is Enabled. Link Aggregation must be enabled for both sides of the network in order for clients on both sides to perform I/O operations.



If Hi-Gig Link Aggregation is not enabled, and two interconnect cables are used to connect the IXS's, then traffic loops and stacking problems occur.

To enable link aggregation:

1. Go to any left subnet Switch Agent Web page.
Notice on the left hand column of the System page there is an option Hi Gig Link Aggregation with an Enable/Disable radio button.
2. Click Enable/Disable.
3. Click the radio button to Enable Hi Gig Link Aggregation.
4. Click submit, the IXS's restart.
5. After the IXS has restarted, check that Hi Gig is "on" in the Hi Gig Link Aggregation column of the System page > Switch Agent > Management Domain.
6. Connect a stacking cable from one IXS port to an IXS port on another Engine.



Currently only Port 6 and Port 7 on v1.x hardware can be used for Hi-Gig Link Aggregation. Do not use any other stack ports to connect the IXS's to each other.

3 Installing Software and Configuring 10-Gb Link Aggregation

This chapter describes how to connect and configure the System Director and other Avid ISIS hardware. Since the number of different configurations are endless, it uses a configuration with four engines and one System Director as an example.

If you have questions, please call your Avid representative or your local ACSR.



Before you start the procedures in this chapter, you should be familiar with the information in previous chapters and the *Avid Products and Network Site Preparation Guide*.

This chapter contains the following sections:

- [IP Addressing Overview](#)
- [Configuration Overview](#)
- [Software Installation](#)
- [Product Recovery Needs to be Copied to the USB Flash Drive](#)
- [Avid Interplay Authentication](#)
- [Configuring a 10-Gb Link Aggregation Group](#)

IP Addressing Overview

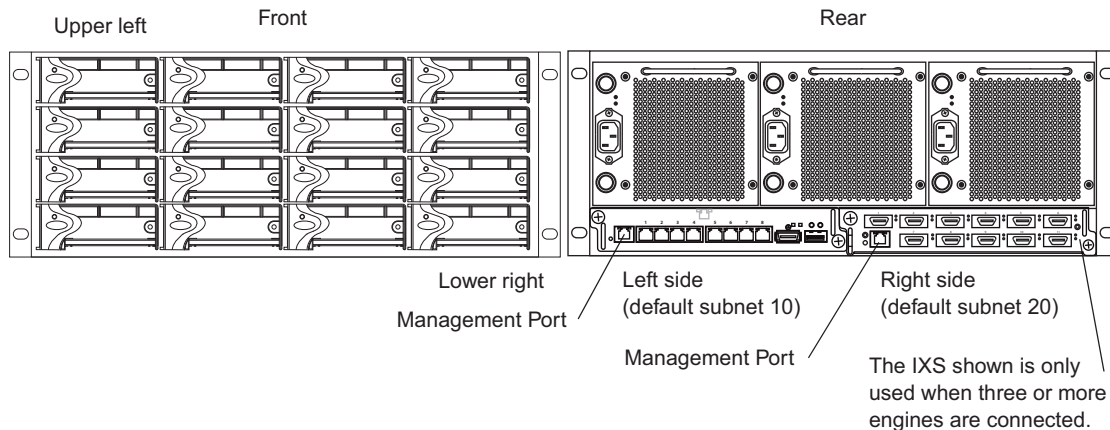
Before you attempt to define a total IP addressing scheme for your system and configure the static internal IP addresses of the engine, you should have a solid understanding of how the addresses are assigned within the engine and how the IP addresses increment between engines.



192.168.10.10 and 192.168.20.10, subnet 10 and subnet 20, are used by Avid as examples throughout this document, your site might require different addresses. Consult with your site's networking managers for site specific requirements. Unless specified, you can change the addresses used in the following example to suit your needs. However, whichever static IP addresses are assigned within the engine, they must not be assigned by a DHCP server to any other device within the Network.

The following figure shows the front and rear view of an engine. Use the following two figures and bulleted list to understand how static IP addresses are assigned to each engine.

Front and Rear of a Engine



The following list describes what needs to be accomplished to assign IP addresses to engines. You should understand the assignment of IP addresses completely before you perform the actual configuration.



Do not attempt to assign addresses to the engine using this list. This provides an overview, not a step-by-step procedure.

- Connect Port 1 of the System Director or a port on a laptop to the Management Port of the ISS in the bottom engine of the rack using a CAT5 E, CAT6 cable or better. See the previous figure.
- You are now talking to the Management Port on an isolated network interface on the ISS using the default IP address of 192.168.0.10. This IP address is used on every Management Port on the ISS and expansion switch blade. The address is not on the local 10 or 20 subnets Ethernet bus and is never used to transfer actual data.



When you assign subnet addresses internally and have more than one engine, all ISSs and IXSs on the left side of the rear of the engine are on one subnet, while all ISSs and IXSs on the right side of the rear of the engine are on the other subnet.

See the following tables provide an example of the address assignments described in the following bullets.

- Then two static IP addresses are assigned to the upper left-most ISB slot in the engine when looking at the engine from the front. The addresses are 192.168.10.10 on subnet 10 and 192.168.20.10 on subnet 20. You are assigning the address to the slot, not the blade. The ISB can be physically moved, but the IP address remains with the slot.
- As the slots go sequentially from top left to right, over a row and starting at the left again, each slot is assigned a static IP address that is incremented by one until you reach the right-most bottom slot that contains addresses of 192.168.10.25 and 192.168.20.25.
- At this point, each ISS or IXS is assigned a base address. One ISS is assigned a subnet 10 address of 192.168.10.26 and the other a subnet 20 address of 192.168.20.26 (unless the you want to change the IP scheme or subnet mask). Each side of the engine is assigned 17 addresses on each network for a total of 34 addresses per engine.
- You then increment the subnet 10 and subnet 20 addresses by one and assign them to the switch blades in the next engine.
- The ISB slots and switches are again incremented.

First Engine Internal Static IP Address Assignments

ISB 0 192.168.10.10 (left side) 192.168.20.10 (right side)	ISB 1 192.168.10.11 (left side) 192.168.20.11 (right side)	ISB 2 192.168.10.12 (left side) 192.168.20.12 (right side)	ISB 3 192.168.10.13 (left side) 192.168.20.13 (right side)
ISB 4 192.168.10.14 (left side) 192.168.20.14 (right side)	ISB 5 192.168.10.15 (left side) 192.168.20.15 (right side)	ISB 6 192.168.10.16 (left side) 192.168.20.16 (right side)	ISB 7 192.168.10.17 (left side) 192.168.20.17 (right side)
ISB 8 192.168.10.18 (left side) 192.168.20.18 (right side)	ISB 9 192.168.10.19 (left side) 192.168.20.19 (right side)	ISB 10 192.168.10.20 (left side) 192.168.20.20 (right side)	ISB 11 192.168.10.21 (left side) 192.168.20.21 (right side)
ISB 12 192.168.10.22 (left side) 192.168.20.22 (right side)	ISB 13 192.168.10.23 (left side) 192.168.20.23 (right side)	ISB 14 192.168.10.24 (left side) 192.168.20.24 (right side)	ISB 15 192.168.10.25 (left side) 192.168.20.25 (right side)
Switch (ISS or IXS) 192.168.10.26		Switch (ISS or IXS) 192.168.20.26	

Second Engine Internal Static IP Address Assignments

ISB 0 192.168.10.27 (left side) 192.168.20.27 (right side)	ISB 1 192.168.10.28 (left side) 192.168.20.28 (right side)	ISB 2 192.168.10.29 (left side) 192.168.20.29 (right side)	ISB 3 192.168.10.30 (left side) 192.168.20.30 (right side)
ISB 4 192.168.10.31 (left side) 192.168.20.31 (right side)	ISB 5 192.168.10.32 (left side) 192.168.20.32 (right side)	ISB 6 192.168.10.33 (left side) 192.168.20.33 (right side)	ISB 7 192.168.10.34 (left side) 192.168.20.34 (right side)
ISB 8 192.168.10.35 (left side) 192.168.20.35 (right side)	ISB 9 192.168.10.36 (left side) 192.168.20.36 (right side)	ISB 10 192.168.10.37 (left side) 192.168.20.37 (right side)	ISB 11 192.168.10.38 (left side) 192.168.20.38 (right side)
ISB 12 192.168.10.39 (left side) 192.168.20.39 (right side)	ISB 13 192.168.10.40 (left side) 192.168.20.40 (right side)	ISB 14 192.168.10.41 (left side) 192.168.20.41 (right side)	ISB 15 192.168.10.42 (left side) 192.168.20.42 (right side)
Switch (ISS or IXS) 192.168.10.43		Switch (ISS or IXS) 192.168.20.43	

Configuration Overview

Your System Director and engines should be rack mounted with the interconnect cables connected to the left side of your stack as previously described before continuing.

You now need to do the following:

1. Configure the engine by assigning IP addresses to the engine. This provides each ISS, IXS, and ISB with the needed IP addresses to connect to the clients and System Director, see [“Setting-Up Network Addresses In the Stack” on page 69](#).



The ghost image on the System Directors does not set the IP addresses of the two onboard NICs or the dual NICs card on the PCI bus; the system is set for DHCP.

2. Load the System Director software. This software is used to create a file system on the System Director, bind the ISBs to the software on the System Director, create Storage groups, and administer the Avid ISIS system. See [“Loading Client Software” on page 96](#).
3. Perform administrative functions: bind ISBs (storage elements), create storage groups, and do other administrative functions. See [Creating an Active File System on the System Director](#).
4. Load the client software; see [Loading Client Software](#).

Software Installation

Your System Director and engines should be cabled and attached to both internal subnets similar to the “[Setting-Up Network Addresses In the Stack](#)” on page 69.

Loading the Software

Avid ISIS Systems ship with one blank 8GB USB Drive that is intended to be used for storing the ISIS Software Kit. You will need to download the ISIS software kit from download center (www.avid.com/US/support/downloads) to your System Director using the software USB flash drive included with your Avid ISIS.

The *Avid ISIS 7500 / 7000 Setup Guide* contains complete instructions for loading the software onto the system. You can access the documentation in the top-level *AvidISISDocumentation* folder on the Avid ISIS software installer kit. The following is a summarized version of the procedure.



In the past Avid has instructed you stop the Standby System director, upgrade the Standby, and restart the Standby. Once the Standby was running you were instructed to update the Active System Director.

Avid has revised the upgrade process to stop the Standby System Director and upgrade the Active System Director first, then upgrade the Standby System Director. This process avoids replicating metadata between ISIS software versions.

To install your ISIS 7500 | 7000 software on new systems:

1. Log in to the Avid ISIS 7500 | 7000 System Director as Administrator (default password: `is-admin`).
2. Make a folder for the software kit on your root directory (C:\) of your Active System Director.
3. Insert the software USB flash drive into any of USB ports on your Active System Director.



You can run the software installer from the USB flash drive. The advantage of copying the software kit to the Avid ISIS 7500 / 7000 is that you have easy access to kit files if you should ever them in the future.

If the USB flash drive does not automatically display:

- a. Double-click the computer icon on the desktop.
 - b. Double-click the USB flash drive icon in the window and copy the software kit into the new folder you created on the Avid ISIS 7500 | 7000 system.
4. Double-click the Autorun.exe file in the root directory of software kit.

The installer detects the existing version of the installed software (if any) and displays the components that need to be upgraded in the splash screen.



*If the Package Selection menu does not allow you to select the software, click **Quit** and run the **Autorun.exe** again.*

5. Select ISIS 7500 | 7000 System Director from the “Select Software Package” menu.

The File Gateway selection is used when loading the Avid File Gateway server. The File Gateway software cannot be installed on the same server as the System Director software.

6. Click Apply.
7. Follow the screen prompts accepting the defaults and License agreement.
8. Once the installation is complete, click Finish.
9. Open the Avid License Control tool, click Start > Programs > Avid > Utilities > Avid License Control and activate your Avid ISIS license. For detailed license activation instructions, see the *Avid ISIS 7500 | 7000 Setup Guide*.

You will need the System ID and Activation ID card included with your new System Director.

10. Run the Product Recovery tool to create a Product Recovery USB flash drive.



For information on creating the Product Recovery USB flash drive, see the Avid ISIS 7500 | 7000 Setup Guide, Avid ISIS 2000 Setup Guide or Avid ISIS 5500 | 5000 Setup Guide. To open and use the ISIS Control Panel and Management Console see the Avid ISIS Administration Guide.

11. Open the ISIS Control Panel.
12. Click Stop System Director.
13. Click Configure File System.
14. Select Create Active File System and click OK.
15. Open the Management Console.

Log in using the Administrator user name and the default password is blank.

16. Load the ISBs and ISS/IXSs firmware. Using the ISIS Management Console > Engines page, select all the Engines and click Upgrade Blades and then select all your ISS/IXSs and click Upgrade Switches. You do not need to wait for the blades (ISBs) to be finished, you can upgrade ISBs and ISS/IXSs at the same time. For more information, see the *Avid ISIS 7000 Setup Guide*.

You can watch the upgrade progress in your Monitoring tool.

17. Bind the ISBs. Using the ISIS Management Console > Storage Managers page, select your ISIS Storage Mangers in the list and click Bind.

18. Create a Storage Group, Workspaces, and add Users in the Management Console.
19. Install your Avid ISIS client software. For information, see [“Loading Client Software” on page 96](#) or the *Avid ISIS Client Guide*.

Product Recovery Needs to be Copied to the USB Flash Drive

The product recovery image is included on the D:\ or E:\ partition of the system drive. The software installer splash screen provides a link to a tool that copies the image to the 16 GB USB flash drive provided with your ISIS 7000. Avid highly recommends you copy this image during the initial system setup. For instructions on how to create the product recovery USB flash drive, see [“Using the Product Recovery USB for 64-bit System Directors” on page 192](#).

Activating the License Key

You need to activate your Avid ISIS software before you can make an Active File System. After installing your software, see [“Avid ISIS Software Licensing” on page 105](#)



Previous versions of Avid ISIS software use an application key plugged into the System Director to allow clients to connect to the ISIS infrastructure. The USB application key is now available as an option. New ISIS systems ship with software licensing that is activated online. If you are already using an application key (dongle) in your ISIS infrastructure you can continue using it. Software licensing is only required with new ISIS installations. Clients cannot access the Avid ISIS software until the license key has been activated.

If configuring a Dual System Director for metadata redundancy, you will need a second application key with the second System Director. For more information, see [“Configuring the System for Failover” on page 122](#).

Installing the Optional Application Key

You have purchased the optional Application Key, you do not need to use the Avid License Control tool software.

To install the application key (dongle):

1. Locate the application key in the Avid ISIS kit.
2. Install the application key into one of the USB ports on the System Director. For an exact location, see [Engine Front View](#) or [“Engine Rear View” on page 28](#).

Make sure the application key is seated completely in the port.

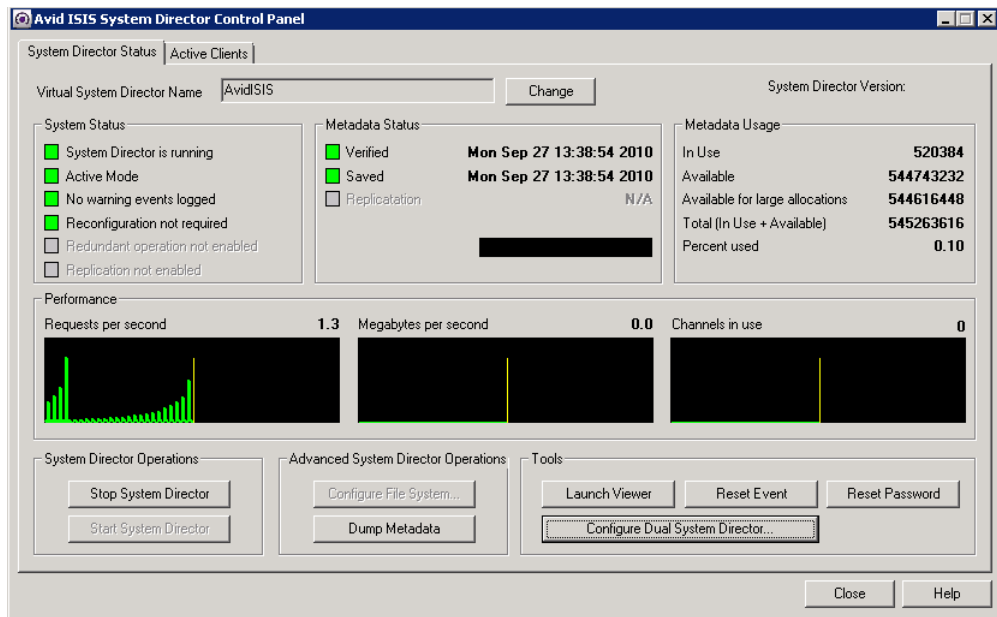
Creating an Active File System on the System Director

On new installations you must initialize your system by creating an Active File System on the System Director.

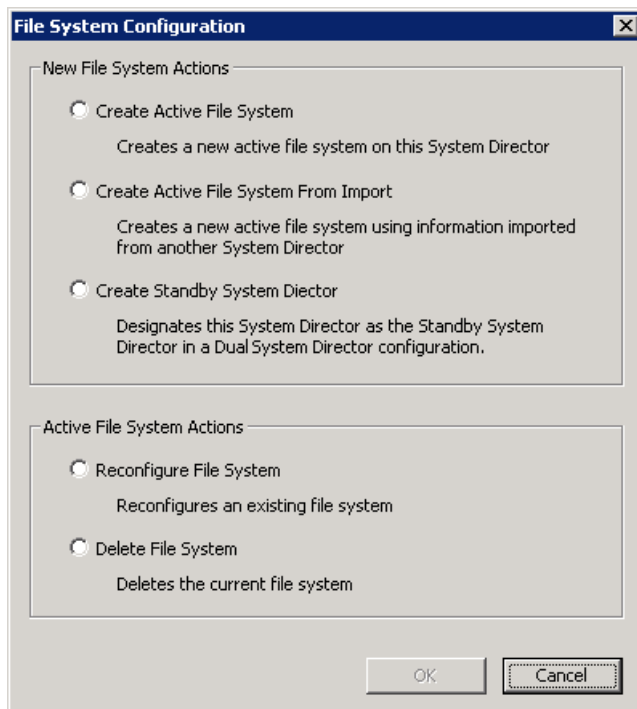
To create an Active File System:



1. In the ISIS Launch Pad, click ISIS Control Panel icon or Start > Programs > Avid > ISIS System Director and select Control Panel.



2. Click Stop System Director.
The Configure File System button becomes active.
3. Click Configure File System.
The File System Configuration dialog box opens.



When you Create Active File System, this action results in the loss of all media assets on the system. This is a non-recoverable action and extreme caution should be exercised when this command is invoked.

4. (First System Director) Select Create Active File System and click OK.

The Avid ISIS System Director service automatically starts when complete. In the System Director Control Panel, the “System Director is running” display turns green.

5. (Option) If creating a Standby System Director in an metadata redundancy configuration, see [“Configuring the System for Failover”](#) on page 122.

Binding the Storage Managers

After you have created an Active File System you need to bind the Storage Managers using the Management Console. If you have more than one Engine in your ISIS 7500 | 7000 configuration, they appear listed in the Storage Manager page. One or multiple Storage Managers can be bound.



This procedure assumes you are creating an Active File System on a new unused Engine. If you attempt to create a File System on an Engine that has been used before, your Storage Managers might enter an Orphaned state. To remove an Orphaned state, search the Avid ISIS Administration Guide for instructions on “Removing Orphaned Storage Managers.”

To bind the Storage Managers:

1. Type `https://IP address of System Director:5015` in your browser.



If already logged into the System Director, click the Management Console icon in the Launch Pad.

2. Log into the System Director and access the Management Console.



The default Management Console Administrator password is blank (no password).

3. Click the Storage Managers icon or double-click the unbound Status message in the System Status console.

The screenshot shows the 'Storage Managers' interface. On the left, there's a summary of storage usage: 800.00 GB Allocated (3%) and 0.00 B Used (0%). Below that, a 'STATUS' section shows two ISBs: 'isb-31-196' and 'isb-31-198', both marked as 'unbound'. The main area is a table with columns: Name, ISB Name, Status Time, Status, and Uptime. The table lists 10 ISBs, all with a status of 'unbound' and a status time of 09/18/2012 14:31:59. Above the table are buttons for Refresh, Bind, Unbind, Upgrade, Issue Command, and Force R.

Name	ISB Name	Status Time	Status	Uptime
isb-138-67	isb-138-67	09/18/2012 14:31:59	unbound	46 da
isb-138-68	isb-138-68	09/18/2012 14:31:46	unbound	46 da
isb-138-69	isb-138-69	09/18/2012 14:32:03	unbound	46 da
isb-138-70	isb-138-70	09/18/2012 14:31:47	unbound	41 da
isb-138-71	isb-138-71	09/18/2012 14:32:08	unbound	46 da
isb-138-72	isb-138-72	09/18/2012 14:31:43	unbound	46 da
isb-138-73	isb-138-73	09/18/2012 14:32:08	unbound	46 da
isb-138-74	isb-138-74	09/18/2012 14:31:59	unbound	46 da

4. Select the ISBs listed in the Storage Managers list.
Multiple ISBs can be selected and bound.
5. Click Bind.
6. Click Yes to confirm the request.
7. Click Refresh to see the status circle next to the *Name* turn change to green when complete.

Checking the Status of the System Director

After you have installed the System Director software, an Avid ISIS Launch Pad is displayed on the System Director Desktop.

To open and close the Launch Pad:

1. If the ISIS Launch Pad is not displayed on the Avid ISIS System Director Desktop, click the ISIS Launch Pad icon in the Taskbar's System Tray to display or hide the Launch Pad.



You can also open other ISIS tools by clicking the icons in the Launch Pad.

The ISIS Launch Pad is displayed.



2. Start or stop the System Director by clicking one of the following icons in the ISIS Launch Pad.



- ▶ Click the blue square icon to stop the System Director.
- ▶ Click the blue triangle icon to start the System Director.

Installing Software on the Engines

After you have loaded new software on the System Director you need to upgrade the software on the engines. You can use Web Administrator from anywhere to perform the following functions, but you usually do it from the System Director:

- Upgrade the ISS and IXS with the proper/latest software
- Upgrade the ISBs with the proper/latest software
- Create Workspaces

To upgrade the software:

1. Go to [https://IP address of System Director \(or virtual name\):5015](https://IP address of System Director (or virtual name):5015).
2. Log into the System Director.

 *The default Administrator password is blank.*

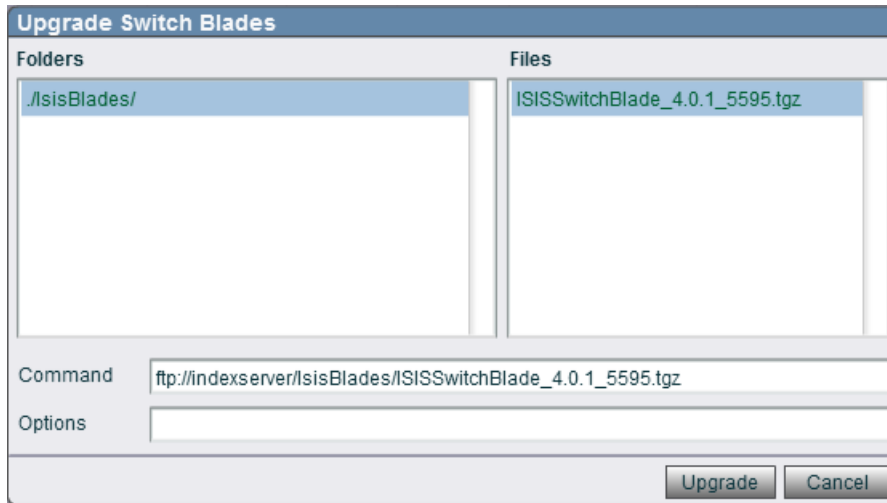
The ISIS Management Console opens.



3. Click Engine.
4. Select the all the Engines in the Engine list.

Home Engines		Related Links Storage Managers • Sw				
Serial Number	Status Time	Status	Available	Spare	Active	Stora
CR1534037	09/20/2012 11:05:42		0	0	16	16

5. Click Upgrade Switches.
- The Upgrade Switch Blades window opens.



6. Select the upgrade .tgz file, and click Upgrade.

After all the Switch Blades are updated, upgrade the Storage Blades.



Upgrading switches takes approximately 25 minutes for ISS1000 and IXS1000 switches, and 10 minutes for the v2.x switch hardware (ISS2000 and IXS2000). You should upgrade switches on all your engines at the same time.

7. Click Upgrade Blades.

The Upgrade Storage Blades window opens.

8. Select the upgrade .tgz file, and click Upgrade.

Each Storage Blade takes approximately 10 minutes.

9. Select the Engine and click Details.

The screenshot shows the 'Engines' management interface. At the top, there are navigation links: Home, Engines, Related Links, Storage Managers, Switch Blades, Help, and Logout. Below this is a toolbar with buttons: Refresh, Upgrade Blades, Upgrade Switches, Remove Status, and Details. The main area is divided into two panes. The left pane contains a table with the following data:

Serial Number	Status Time	Status	Available	Spare
CR1534037	09/20/2012 13:38:01		0	0

The right-hand pane has three sections:

- Details:** A list of engine properties for Serial Number CR1534037:

Serial Number	CR1534037
Status Time	09/20/2012 13:38:20
Status	
Available	0
Spare	0
Active	16
Storage Blades	16
Switch Blades	2
Power Blades	3
- Switches:** A table showing in-band IP addresses and their status times.

In band IP	Status Time	Status	Ve
10.105.138.19	09/20/2012 13:38:20		4
10.105.138.83	09/20/2012 13:38:20		4
- Storage Element Managers:** A table listing storage element managers (SM) and their associated ISB names and status times.

Name	ISB Name	Status Time	Sta
SM005	isb-138-72	09/20/2012 13:37:53	
SM006	isb-138-73	09/20/2012 13:38:08	
SM007	isb-138-74	09/20/2012 13:38:01	
SM008	isb-138-75	09/20/2012 13:38:11	
SM009	isb-138-76	09/20/2012 13:38:16	
SM010	isb-138-77	09/20/2012 13:38:11	
SM011	isb-138-78	09/20/2012 13:38:12	

At the bottom of the interface, there is a search bar with the text 'Serial Number' and a filter set to 'not contains'. There are also buttons for 'Filter', 'Clear', and '1 of 1'.

The Status for the upgrade is shown in the Details pane at the right of the window. Click the Refresh button whenever you want the updated upgrade Status. When the Status is empty, the upgrade is complete.



Other ways to view the installation status is to use the Monitor Tool, the color indicator in the System Overview Toolbar, and the Storage Blade Status column. Select the Engine Summary in the left pane for each engine and click the Upgrade button to see the install status graphically displayed.

Engine Does Not Appear in Add Engine List

If the engine did not appear in the Add/Remove chassis page (for more information, see [“Three- to Twelve-Engine Connections With v2.x Switches” on page 74](#)), you must stop and troubleshoot the problem. Once the engine appears in the list, continue adding any additional engines. Perform the following steps one at a time and wait for the Add Engine process to time-out before trying the next step.

To troubleshoot why an engine did not appear in Add/Remove page:

1. Reseat the interconnect cables; both sides of the interconnect should have a green solid link light when powered on. If not:
 - a. Remove the cable.
 - b. Click Add chassis.
 - c. Replace cable.
2. Reseat the ISS that is being added:
 - a. Remove the ISS.
 - b. Click Add chassis.
 - c. Reseat ISS.
3. Try a different IXS port:
 - a. Disconnect interconnect cable from IXS port.
 - b. Click Add chassis.
 - c. Attach interconnect to a new port on the IXS.
4. Try a different a new interconnect cable:
 - a. Disconnect interconnect cable.
 - b. Click Add chassis.
 - c. Replace interconnect cable.

Check Switch IP Address

Telnet to the newly added switch at the expected IP address.

If the switch cannot be reached, try the following:

1. On the IXS Switch Agent, view “System Overview.”
2. Click on the link for the newly added chassis. If Peth0-IP is not correct, Set switch back to the default.

If the IP address is correct, proceed to the next step.
3. Check the State Machines in “System Overview” under “Stack Port Status.” The state for the newly connect port should eventually become “SW_PORT_STACKED.” If it does not, try the following:
 - a. Reseat the interconnect cable.
 - b. Restart the newly connected switch.
 - c. Restart the IXS.

Loading Client Software

You can load the Client software in several ways:

- You can take the software kit to each client separately and load it from the USB.
- You can store the client software somewhere on the corporate network and allow everyone who needs the software to gain access to it and load it.
- You can use the a Browser to reach the ISIS Management Console and load it from the System Director because it was loaded during the previous installation of the Client Installers.

Keep in mind the following when connecting Avid ISIS clients.

- When installing Avid ISIS client software on Windows systems, make sure you are up-to-date with your Windows critical updates.
- Zone 1 clients must use 1 Gb connections to the ISS. The ISS does not negotiate 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, 3, or 4.

To install the client software using a browser:

1. Start your browser application.
2. Run your Windows Update and accept all “High-priority Updates.”
3. Type `https://IP address of System Director:5015` in your browser.



If your Avid ISIS network includes a Domain Name System (DNS), you can type the System Director's name in the browser (default Virtual name is AvidISIS).

The ISIS Management Console opens.

4. Type your ISIS user name and password.
5. Click the Installers icon.

An Installer Downloads screen opens.

IsisBlades
ISISStorageBlade_4.6.0_12075.tgz
ISISSwitchBlade_4.6.0_12075.tgz
ISISClient
AvidISISClient_AirSpeed_4.6.0_12075.iso
AvidISISClient_el6.x86_64_4.6.0_12075.bin
AvidISISClient_MacOSX_4.6.0.12075.dmg
AvidISISClient_Win32_4.6.0_12075.msi
AvidISISClient_Win64_4.6.0_12075.msi
AvidUnityISISClient_ILRE_4.6.0.20.tgz.des
ISISTools
<u>LDAP Sync Tool</u>
LDAPSyncTool_MacOSX_4.6.0_12155.dmg
LDAPSyncTool_Win32_4.6.0_12075.exe
LDAPSyncTool_Win64_4.6.0_12075.exe
<u>Monitoring Tool</u>
MonitoringTool_MacOSX_4.6.0_12155.dmg
MonitoringTool_Win32_4.6.0_12075.exe
MonitoringTool_Win64_4.6.0_12075.exe
<u>Toolbox</u>
Toolbox_MacOSX_4.6.0_12155.dmg
Toolbox_Win32_4.6.0_12075.exe
Toolbox_Win64_4.6.0_12075.exe
ThirdParty
flashplayer_11_2_linux_i386.tar.gz
flashplayer_11_2_linux_plugin.i386.rpm

6. Click the appropriate client installer.

The installer might ask if you want to save or run the installation software; either is acceptable.



If you were able to access the Management Console it means that your client already has Flash installed.

- For Windows clients, you need to uninstall the ISIS client using Windows Control Panel, restart, install ISIS client, and restart.

The ISIS installer splash screen includes a Windows client software installer. Selecting the “ISIS Windows Client” software package from the splash screen and clicking Apply, uninstalls the earlier version of the software without having to use the Windows Control Panel and installs the new software with a single click.

- For Macintosh clients, installing the new client software updates the previous version. Preferences are saved and you do not need to restart the client.



The Macintosh client software installs an Avid_Uninstall folder. Use this folder only when you want all of the Avid client files removed; including the preference files.

7. Install the client software following the on-screen prompts. Accept the defaults when uncertain of any choices.
8. Restart the client when prompted.

The client software starts automatically when restarted.

Configuring Client Software

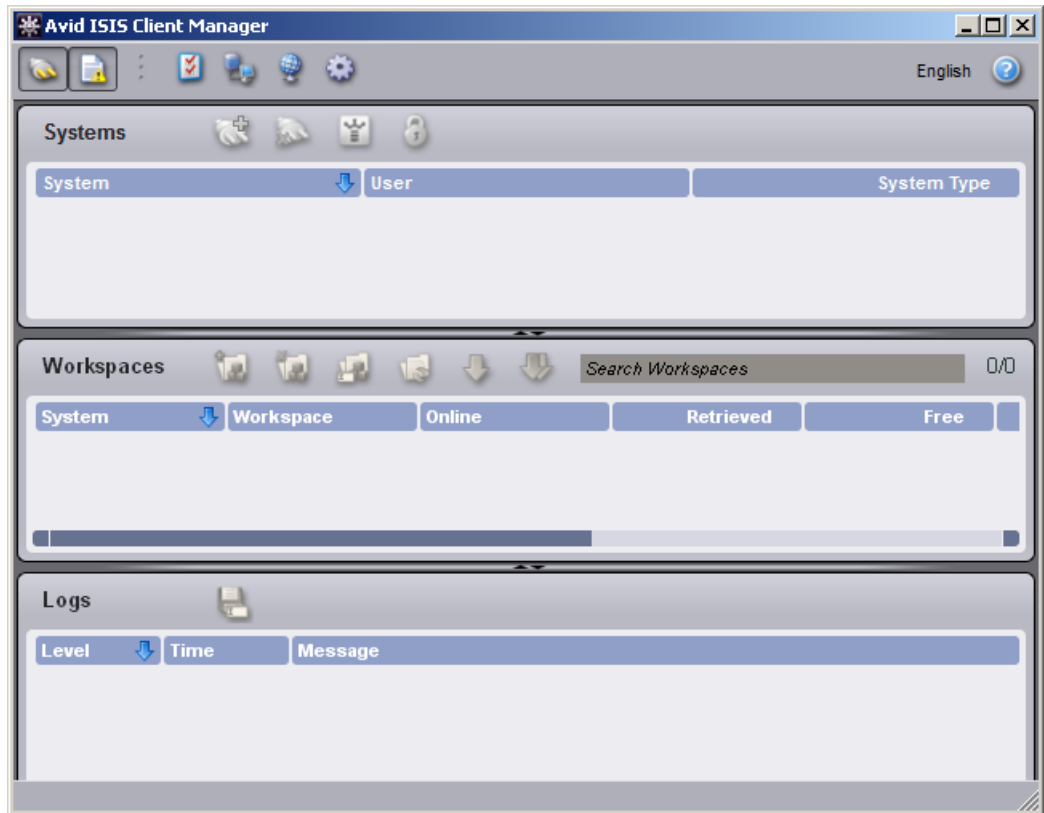
To mount workspaces on the client do the following:

1. Load the client software as explained in [“Loading Client Software” on page 96](#).
2. Do one of the following:



- ▶ (Windows) If the Client Manager icon is not available in the Windows taskbar, select Start > Programs > Avid > ISIS Client > ISISClientManager.
- ▶ (Windows) Click the Client Manager icon in the Windows taskbar.
- ▶ (Windows) Right-click the Client Manager icon and select Avid ISIS Client Manager.
- ▶ (Macintosh) If the Client Manager alias icon is not available, select Go > Applications, and then double-click the AvidISIS folder. In this folder, double-click the ISISClientManager.app file.

The ISIS Client Manager opens.



3. The first time you login, you might need to select a Remote Host (Avid ISIS system). For information adding a remote host, see the *Avid ISIS Client Manager Guide*.

4. Select the ISIS system in the Systems panel.



5. Click the Connect button in the Systems panel.

6. Login using the Username and Password assigned to you by the Avid ISIS administrator. Do one of the following:

- ▶ (Windows) Type your account name in the Username text box, and type your password in the Password text box.
- ▶ (Windows) If your ISIS system is configured to use the Windows user name and password for your local system, select OS Login. By default, the Username and Password text boxes are inactive when you select this option.

(Optional — Windows only) If you used the OS Login option, and you want to connect to the network automatically every time you start your system, select the Auto-Connect checkbox.

- ▶ (Macintosh) Type your Avid ISIS account name in the Username text box, and type your password in the Password text box.

When the connection is successful:

- Workspaces you have been given access to are listed in the Workspaces list.
- The Client Manager buttons become active.

Adding a Remote Host for Zone 3 and 4 Clients

If your client is not on the same subnet as the ISIS shared storage network, you need to add the name of your System Director in order for the Client Manager to connect to it. If your system does not use a DNS server to configure your network connections, you can also type the IP addresses of the remote host, but you cannot use the virtual server name or virtual IP addresses.



Clients on the same subnet as the ISIS System Director, automatically have the System Director listed in the toolbar of the Client Manager window.

To add a remote host:

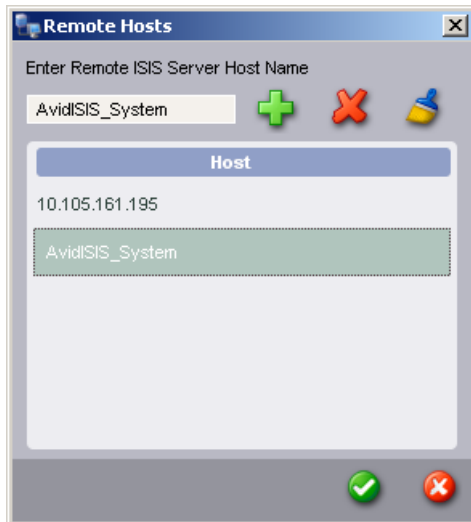
1. Open the Client Manager (see [“Configuring Client Software” on page 98](#)).

The Client Manager opens.



2. Click the Remote Host Settings button.

The Remote Hosts dialog box opens.



3. In the text box, type the actual server name or IP address of the Avid ISIS System Director to which you want to connect.

You cannot use the virtual server name or the virtual IP address of the remote host.



4. Click the Add button.

The Input dialog box opens.



The Client Manager user interface could take up to 30 seconds to display changes made in the Remote Host Settings.

5. Click the green check mark to apply the settings or the red X to close the dialog box without any changes.

Avid Interplay Authentication

Avid Interplay Authentication requires the Avid ISIS System Director to use a virtual name. The System Director's virtual name must not match the actual host name and must be entered in the General Configuration Options dialog box even if your Avid ISIS system configuration only has one System Director. For instructions on adding the virtual name, search the *Avid ISIS Administration Guide* for General Configuration Options.

Configuring a 10-Gb Link Aggregation Group

The 10-Gb link aggregation connection is done using the 10-Gb port on the ISS. You can make a 10-Gb link aggregation connection on the left, right or both subnets. The number of 10-Gb links you can create, depends on the number of 10-Gb ports available on your zone switch (Avid Production Network switch). The following procedure describes the process. For an overview of 10-Gb link aggregation, see [“10-Gb Link Aggregation Overview”](#) on page 44.

To create a 10-Gb link aggregation:

1. Configure your Avid Production Network switch for your 10-Gb link aggregation connections.

This process is not described in Avid documentation, see the documentation that comes with your switch. For additional information on configuring qualified switches, search the Knowledge Base for the *Avid ISIS Ethernet Switch Reference Guide*.



Avid Production Network switches need to be configured for Source Destination IP addresses in terms of link aggregation load balancing. This is the default both in Avid ISIS switches and the Avid Production Network switches that have been qualified, no other load balancing configurations are supported.



If you connect the 10-Gb link cables before you have configured the link aggregation in the ISIS Management Console, you will create network loops.

2. Open the Switch Blade Agent (see the *Avid ISIS Administration Guide*).

Click Switch Blade in the Management Console and double-click on the Switch Blade to open the switch agent page. The default password is **se-admin**.

3. Click the System tab if it is not already selected.

The System window opens.

4. In the 10 Gb Link Aggregation area, click “Create new group.”

The agent displays information for the type of group and network. A maximum of eight 10-Gb links can be in a group.

The screenshot shows the management console for 'Avid ISIS Integrated Ethernet Switch Blade II' with IP address '10.105.138.83 / iss2-single-user'. The 'System' tab is active. The left sidebar lists various system and configuration options. The main panel is titled 'Step 1. Select the type and network for the new link aggregation group'. It contains two form fields: 'Link Aggregation Group Type' with a radio button selected for '10 Gb', and 'Network' with radio buttons for 'Left' (selected) and 'Right'. A 'Continue' button is located below these fields.

5. Select either the Left (VLAN 10) or Right (VLAN 20) in the Network area of the window and click Continue.

The ISSs on either the left or right side of the stack are listed.

6. Select the serial number of the ISS you want to use for your new link aggregation group and click Continue.

A minimum of two ports must be selected.



If you make a mistake on your link aggregation group, click “Delete configuration” and select Left, Right, or Both to remove the link aggregation configuration.



Do not click Restart in the 10 Gb Link Aggregation area unless instructed to do so by an Avid representative.

7. Click Enable/Disable.

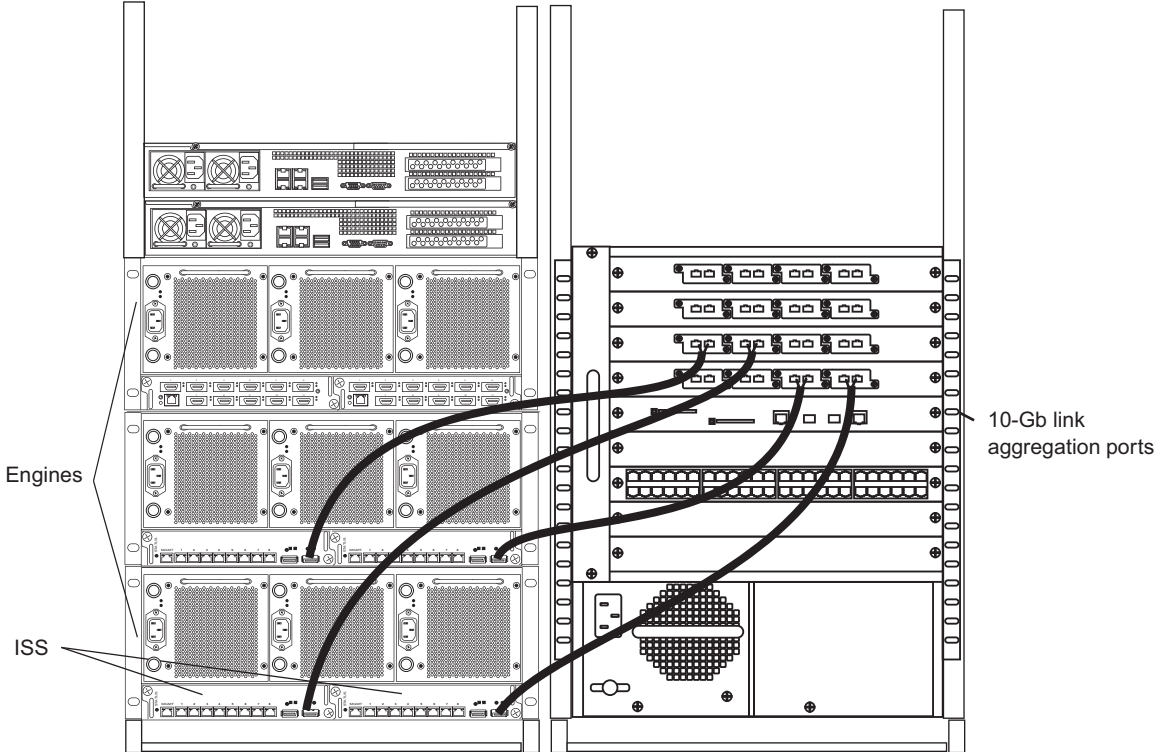
The top of the window displays the current 10-Gb link aggregation status.

8. Select Left, Right, or Both, and Enable, and then click Submit to enable the link aggregation that you just created.

9. (Option) Repeat step 3 through step 8 to create a link aggregation for the other side.

Link aggregation groups are created on the left and right sides individually. You can have a link aggregation just on one side if you want.

10. Connect the interconnect cable between the 10-Gb ports on the ISS switch you have configured.



4 Avid ISIS Software Licensing

When installing a new Avid ISIS system, you need to activate the ISIS software with the Avid License Control tool. If you have a dual System Director environment, you need to repeat the procedure for each System Director.



If you are upgrading from an earlier version of Avid ISIS software which uses the USB application key (dongle), you can continue to use that application key with your software upgrade. New ISIS software continues to support existing USB application keys. USB application keys are available as an option.



If you change your system configuration — for example, replacing a network adapter or upgrading your operating system — you must first deactivate your Avid software. For information on deactivation, see [Deactivating the License](#).

- New installations — if you are a new user and have never installed the Avid software on your system, use the following instructions.



Your network administrator might need to open a few ports that are used during the licence activation. The Avid License Control tool utilizes both port 3443 and port 443 for license request and response communication. Port 3443 is the primary port, but if this port is blocked, the Activation Service tries port 443 (which is more likely to be open for web communication).

- Existing installations — if you are upgrading from a previous version of the Avid ISIS software, your Avid ISIS software license remains activated. You do not need to reactivate your Avid ISIS software license as long as you've previously activated a licence or have a valid ISIS application key (dongle) connected.
- Host name changes — if you change the host name of your system Director you must first deactivate your license, delete the license binding file, and reactivate the license with the new name, see [“License Requirement with Host Name Change”](#) on page 111.

What You Need to Activate the ISIS Software License

Identification (ID) Numbers Where you can find them:

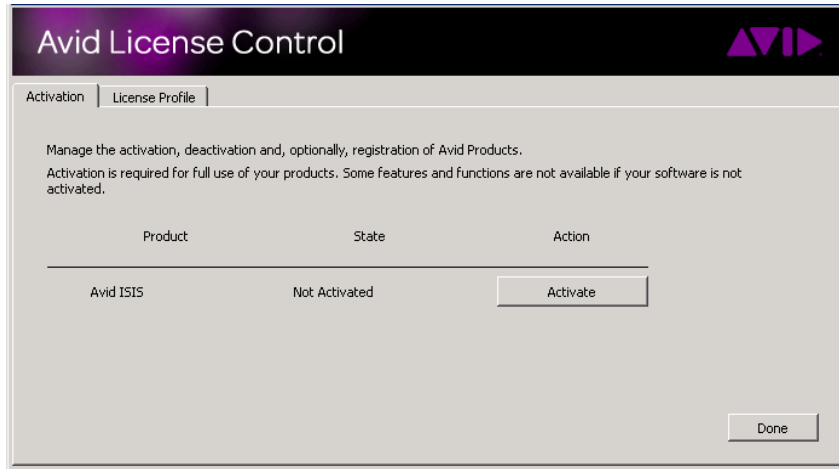
Activation ID	The Activation ID is provided on an Activation ID and System ID card shipped with your new ISIS system. The Activation ID is used to activate the software license and has been linked to your System ID.
System ID	<p>The System ID is provided on an Activation ID and System ID card shipped with your new ISIS system. The System ID is used for expediting warranty verification and customer service.</p> <p>Once activated, the License Profile tab of the Avid License Control tool displays information about your system. Click “Copy to Clipboard” to copy the information to your Clipboard. You can then cut and paste from the clipboard to an e-mail or create a text file. This is helpful if you need to save this information for your records or need to send system information to Avid Customer Support.</p>
Device ID	The Device ID is only needed if you are activating your software on a system that is not connected to the Internet. This is provided through the Avid License Control tool during activation.

License Activation Using an Internet Connection

To activate the ISIS software license from the System Director with an Internet connection:

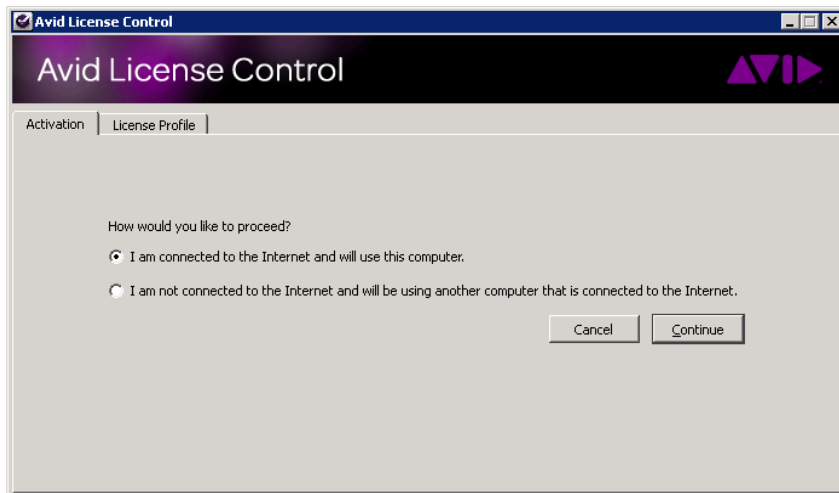
1. Locate your System ID and Activation ID card included with your new System Director.
2. Open the Avid License Control tool, click Start > Programs > Avid > Utilities > Avid License Control.


The Avid License Control tool opens.



 After your Avid software is activated, the License Profile tab displays your System ID, Activation ID, and Device ID.

3. Click Activate next to the Avid ISIS software.
4. Select “I am connected to the Internet and will use this computer” and then click Continue.



 If you select “I am not connected to the Internet and will be using another computer that is connected to the Internet” continue with “License Activation Without an Internet Connection” on page 108.

5. Enter your system identification number in the System ID text box.

6. Enter your activation identification number in the Activation ID text box.
7. Click Activate.

The Activation tool confirms your system information. When the activation is complete, a message informs you that your software has been successfully activated and the button changes to Deactivate.

8. (Option) If you are planning a dual System Director configuration, you need to repeat this procedure to Activate your software license on your second System Director.



If you have purchased a “failover” System Director for the ISIS 7500 / 7000, both System Directors use the same System ID in a dual System Director configuration. You do need a separate Activation ID for each System Director.

License Activation Without an Internet Connection

When you do an indirect activation, you are given a “.bin” activation file. This file is only good for a single activation. If you have done an indirect activation, and deactivate your license for any reason, you cannot use the same activation file to reactivate your license. You must repeat the “License Activation Without an Internet Connection” procedure and obtain a new “.bin” activation file.

To activate the ISIS software license from a separate computer:

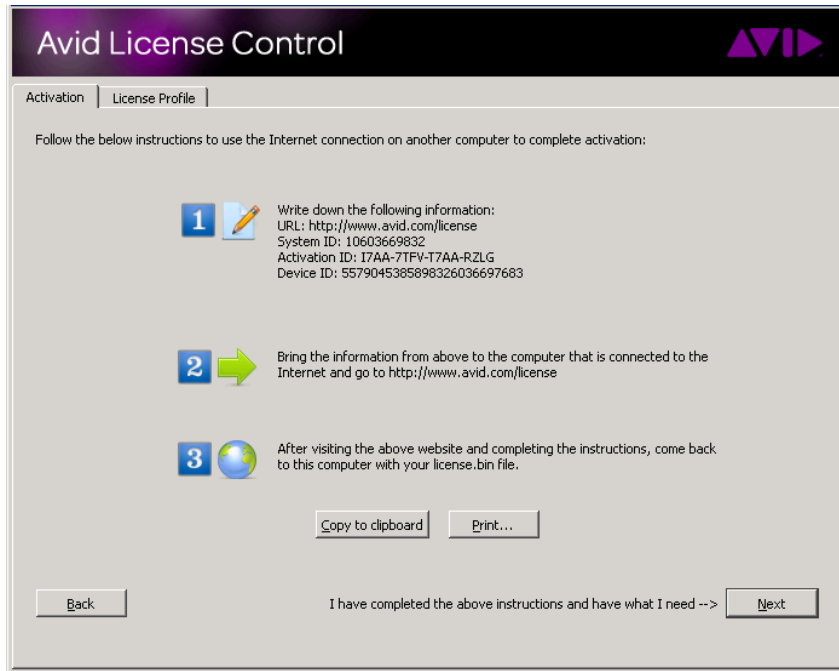
1. Locate your System ID and Activation ID card included with your new System Director.
2. Open the Avid License Control tool, click Start > Programs > Avid > Utilities > Avid License Control.

The Avid License Control tool opens.

3. Click Activate next to the Avid ISIS software.
4. Select “I am not connected to the Internet and will be using another computer that is connected to the Internet,” then click Continue.
5. Enter your system identification number in the System ID text box.
6. Enter your activation identification number in the Activation ID text box.
7. Click Next.
8. Follow the instructions in the Avid License Control tool, then click Next.



Your System ID, Activation ID, and Device ID are displayed on the Activation tab, write these numbers down to use later. These IDs are displayed in the License Profile tab after your Avid software is activated.



9. On a computer with an Internet connection, open a Web browser and navigate to <http://avid.com/license>.

10. Follow the onscreen instructions on the web page.

The website creates a license.bin file. This file contains license information needed to activate your Avid ISIS software.

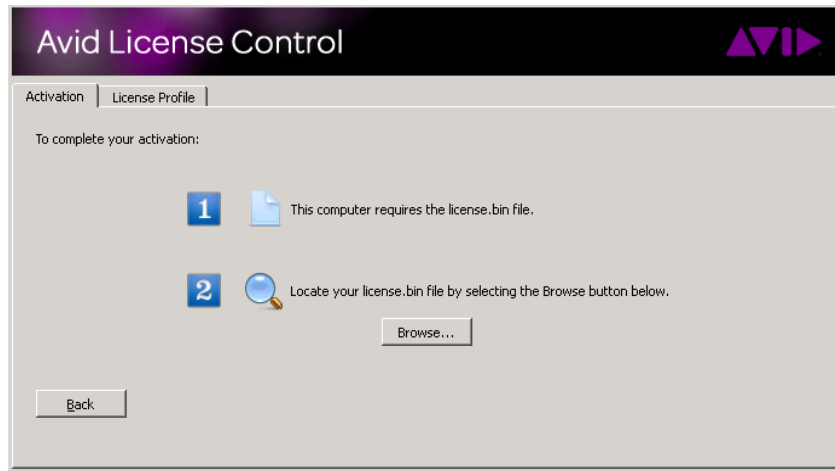
11. Copy the license.bin file to the ISIS System Director you want to activate.

A USB flash drive is a good method of moving the license.bin file to the System Director.

12. Close the Web browser on the computer with the Internet connection.

13. Return to the ISIS System Director where you left off in the Avid License Control tool (see the illustration in step 8) and click Next.

14. Click Browse and navigate to the license.bin file on your ISIS System Director, then click Open.



The Activation tool confirms your system information. When the activation is complete, a message informs you that your software has been successfully activated and the button changes to Deactivate.

15. (Option) If you are planning a dual System Director configuration, you need to repeat this procedure to Activate your software license on your second System Director.



If you have purchased a “failover” System Director for the ISIS 7500 / 7000, both System Directors use the same System ID in a dual System Director configuration. You do need a separate Activation ID for each System Director.

Deactivating the License

You must deactivate your ISIS software license when replacing the System Director so you can use the license on your new System Director. If you need to deactivate the ISIS software you must have an Internet connection to deactivate the software and its options.

Deactivating the ISIS System Director software:

1. Stop your Avid ISIS System Director.
2. Open the Avid License Control tool, click Start > Programs > Avid > Utilities > Avid License Control.

The Avid License Control tool opens.

3. Next to the Avid ISIS software, click Deactivate.
4. Click Yes.

The system deactivates and the button changes to Activate.

5. Click Done to close the window.

License Requirement with Host Name Change

If you want to change the host name of your System Director, you must deactivate your ISIS software license, delete the license binding file, and reactivate the license after changing the host name.

When changing the System Director host name:

1. Deactivate the Avid License on your Avid ISIS System Director (see [“Deactivating the License” on page 111](#)).
2. Browse to the following location on the System Director and delete the “binding.dat” file.
`c:\ProgramData\Avid\Common\binding.dat`
3. Change the System Director host name.
4. Restart the System Director.
5. Reactivate the Avid License on your Avid ISIS System Director (see [“What You Need to Activate the ISIS Software License” on page 106](#)).

5 Configuring Two Stacks of ISIS Engines

This chapter explains how to configure your ISIS engines into two Management Domains (stacks); typically when setting up your ISIS environment with more than twelve engines. The standard ISIS configuration supports up to twelve engines with one or two System Directors.



ISIS environments typically are configured with two System Directors for redundancy protection against data loss. For information on connecting and configuring two System Directors, see “Configuring the System for Failover” on page 122.

The following are the guidelines when planning two stacks of ISIS engines:

- Maximum number of engines in a stack is twelve engines; therefore all configurations larger than twelve engines must be configured for two Management Domains (two stacks)
- Each stack, regardless of the number of engines, is configured into two subnets (in this chapter, former VLAN 10 and VLAN 20 subnets are now VLAN 100 and VLAN 200 with a Subnet Mask of 255.255.252.0 to accommodate the possible IP addresses needed for 24 engines)
- When adding more than twelve engines you increase the amount of shared storage, the file and client counts are the same regardless of the number of engines and whether you have one or two stacks
- An Avid ISIS configuration with two Management Domains can be managed by a single Avid Interplay configuration
- Maximum Storage Group size is capped at twelve engines; you cannot increase the size of a Storage Group that already has twelve engines by adding an engine in a different Management Domain



Storage Groups cannot expand across Management Domains.

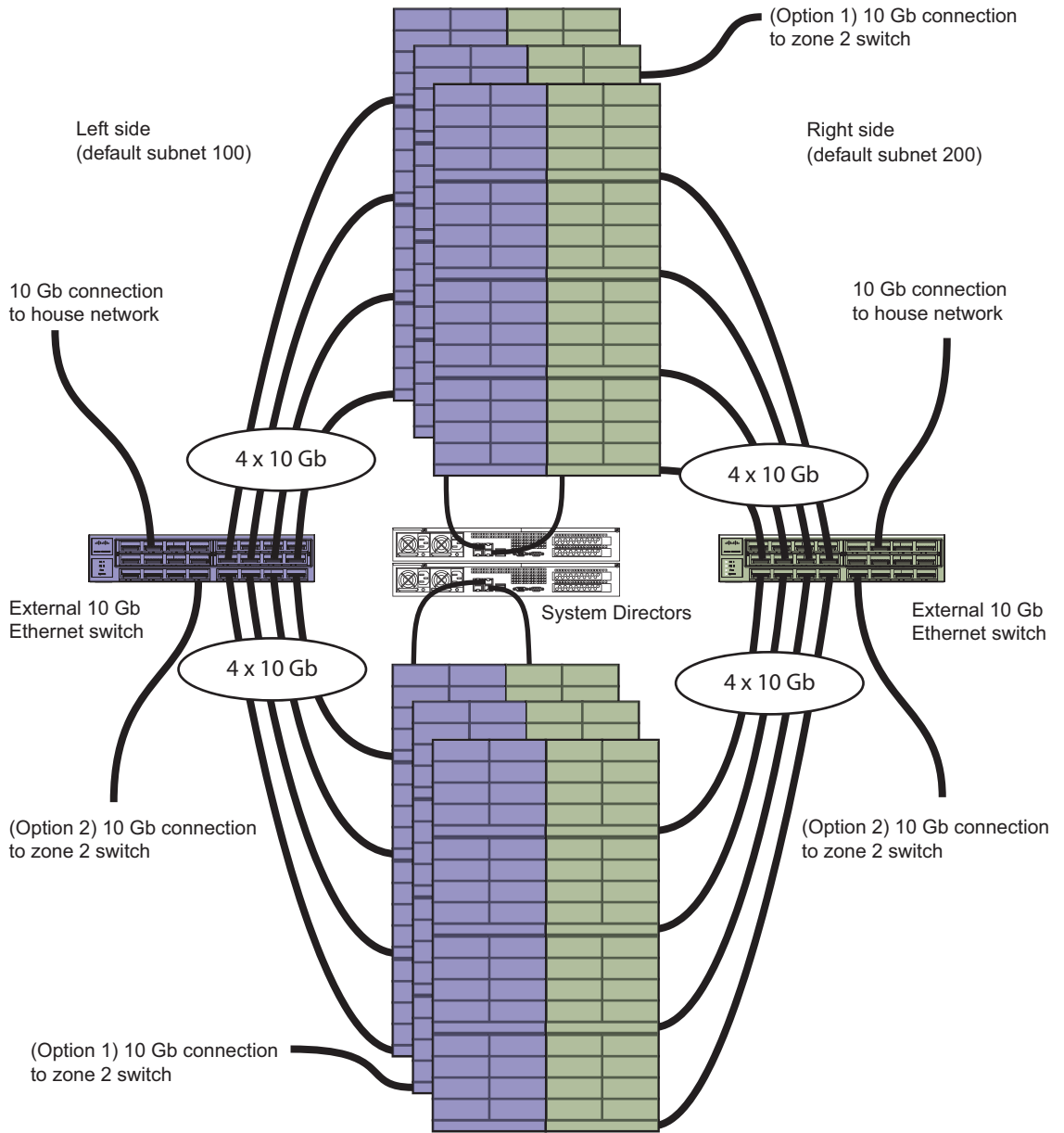
- Multiple Storage Groups are supported in each Management Domain, a minimum of two Storage Groups are required with more than twelve engines (or at least one Storage Group per stack)
- Configurations with more than twelve engines or two stacks require generation 2 hardware (ISS/IXS2000)
- Configurations with more than twelve engines or two stacks require the SR2500 or AS3000 System Directors. For information on updating your System Directors see “[Replacing the System Director](#)” on page 187

- Two stacks are linked by 10 Gb Ethernet connections using external switches (EXS)
For a list of supported external Ethernet switches, see the *Avid ISIS ReadMe*
- Each VLAN must use the same number of 10 Gb connections on the external switches between each stack

ISIS Two Stack Configuration

Each stack, regardless of the number of engines, is configured into two subnets (VLAN 100 and VLAN 200). The following illustration shows the division, and the 10-Gb Link Aggregation used to link the two Management Domains.

Two Stack Configuration



External Switch Link Aggregation Connection Guidelines

The following table provides the recommended number of 10-Gb link aggregation connections between ISIS Management Domains when configuring more than twelve engines. Typically, you would not use more than one stack if your site has twelve engines or less. If planning on more than twelve engines, it is recommended that you set up your initial ISIS environment with two stacks. Then when you expand to more than twelve engines, the additional engines can be added without reconfiguring your single stack environment and IP Address scheme. For information on 10-Gb link aggregation connections, see [“Configuring a 10-Gb Link Aggregation Group” on page 101](#).

For best performance each Management Domain should be balanced with the same number of engines in both stacks. A 10-Gb link aggregation connection goes from VLAN 100 of the first stack to the external switch and then another 10-Gb link aggregation connection goes from that external switch to VLAN 100 on the second stack. VLAN 200 has a 10-Gb link aggregation connection from the first stack to a second external switch and then another 10-Gb link aggregation connection that goes from the second external switch to VLAN 200 on the second stack. A diagram of these connections is shown in [“Two Stack Configuration” on page 114](#). These four connections are considered *one* 10-Gb link aggregation connection described in the following table. You must have the same number of 10-Gb link aggregation connections on both VLANs between the Management Domains. These connections are bidirectional (full duplex) between the Management Domains.

Each 10-Gb link aggregation connection provides 600 MB/s bandwidth. To get the best full bandwidth possible, you should make the 10-Gb link aggregation connections between the Management Domains as listed in the following table. For more details on the bandwidth between Management Domains, see the *Avid ISIS Performance and Redistribution Guide*.

Number of Engines in First Stack	Number of Engines in Second Stack	Number of 10-Gb Link Aggregation Connections per Subnet
Up to 12 engines	1 engines	One 10-Gb Link Aggregation
Up to 12 engines	2 or 3 engines	Two 10-Gb Link Aggregations
Up to 12 engines	4 engines	Three 10-Gb Link Aggregations
5 or more engines	5 or more engines	Four 10-Gb Link Aggregations

IP Address Classes

You need a subnet with enough IP addresses to accommodate the number of engines, clients, and devices you are connecting to your ISIS shared storage environment. A Class C network typically provides 254 usable addresses. Your shared storage environment might need a larger block of IP addresses than a Class C network provides. The pool of addresses in a Class B network would be much larger than required.

A 24 engine ISIS configuration uses a minimum of 408 IP addresses. If you plan on over 170 clients you need to use a /22 or larger Network range (a /22 can accommodate 1024 addresses). The subnet examples shown in this chapter use VLAN 100 and VLAN 200 with a Subnet Mask of 255.255.252.0 to accommodate the possible IP addresses needed for 24 engines. The other chapters in this guide use VLAN 10 and VLAN 20 with a Subnet Mask of 255.255.255.0 which does not include enough IP addressed for all the ISIS blades and maximum client count.

IP Addressing With Two Stacks

The IP addressing scheme engines are described in “[IP Addressing Overview](#)” on page 81. This section expands the system and configuration to include up to 24 engines. The first table provides a review of the engine numbering scheme. The second table is an example on the engines configured into two stacks.

Example of a Single Engine IP Address Assignments

ISB 0 192.168.100.10 (left side) 192.168.200.10 (right side)	ISB 1 192.168.100.11 (left side) 192.168.200.11 (right side)	ISB 2 192.168.100.12 (left side) 192.168.200.12 (right side)	ISB 3 192.168.100.13 (left side) 192.168.200.13 (right side)
ISB 4 192.168.100.14 (left side) 192.168.200.14 (right side)	ISB 5 192.168.100.15 (left side) 192.168.200.15 (right side)	ISB 6 192.168.100.16 (left side) 192.168.200.16 (right side)	ISB 7 192.168.100.17 (left side) 192.168.200.17 (right side)
ISB 8 192.168.100.18 (left side) 192.168.200.18 (right side)	ISB 9 192.168.100.19 (left side) 192.168.200.19 (right side)	ISB 10 192.168.100.20 (left side) 192.168.200.20 (right side)	ISB 11 192.168.100.21 (left side) 192.168.200.21 (right side)
ISB 12 192.168.100.22 (left side) 192.168.200.22 (right side)	ISB 13 192.168.100.23 (left side) 192.168.200.23 (right side)	ISB 14 192.168.100.24 (left side) 192.168.200.24 (right side)	ISB 15 192.168.100.25 (left side) 192.168.200.25 (right side)
Switch (ISS or IXS) 192.168.100.26		Switch (ISS or IXS) 192.168.200.26	

Each engine uses 17 IP addresses on two subnets. The following table shows an example of the starting and ending IP addresses for 24 engines on two VLANs.

Starting and Ending Engine IP Addresses for Two Stacks

VLAN 100 Subnet Stack 1	VLAN 220 Subnet Stack 1	VLAN 100 Subnet Stack 2	VLAN 200 Subnet Stack 2
Engine 1 192.168.100.10 192.168.100.26	Engine 1 192.168.200.10 192.168.200.26	Engine 1 192.168.101.10 192.168.101.26	Engine 1 192.168.201.10 192.168.201.26
Engine 2 192.168.100.27 192.168.100.43	Engine 2 192.168.200.27 192.168.200.43	Engine 2 192.168.101.27 192.168.101.43	Engine 2 192.168.201.27 192.168.201.43
Engine 3 192.168.100.44 192.168.100.60	Engine 3 192.168.200.44 192.168.200.60	Engine 3 192.168.101.44 192.168.101.60	Engine 3 192.168.201.44 192.168.201.60
Engine 4 192.168.100.61 192.168.100.77	Engine 4 192.168.200.61 192.168.200.77	Engine 4 192.168.101.61 192.168.101.77	Engine 4 192.168.201.61 192.168.201.77
Engine 5 192.168.100.78 192.168.100.94	Engine 5 192.168.200.78 192.168.200.94	Engine 5 192.168.101.78 192.168.101.94	Engine 5 192.168.201.78 192.168.201.94
Engine 6 192.168.100.95 192.168.100.111	Engine 6 192.168.200.95 192.168.200.111	Engine 6 192.168.101.95 192.168.101.111	Engine 6 192.168.201.95 192.168.201.111
Engine 7 192.168.100.112 192.168.100.128	Engine 7 192.168.200.112 192.168.200.128	Engine 7 192.168.101.112 192.168.101.128	Engine 7 192.168.201.112 192.168.201.128
Engine 8 192.168.100.129 192.168.100.145	Engine 8 192.168.200.129 192.168.200.145	Engine 8 192.168.101.129 192.168.101.145	Engine 8 192.168.201.129 192.168.201.145
Engine 9 192.168.100.146 192.168.100.162	Engine 9 192.168.200.146 192.168.200.162	Engine 9 192.168.101.146 192.168.101.162	Engine 9 192.168.201.146 192.168.201.162
Engine 10 192.168.100.163 192.168.100.179	Engine 10 192.168.200.163 192.168.200.179	Engine 10 192.168.101.163 192.168.101.179	Engine 10 192.168.201.163 192.168.201.179

VLAN 100 Subnet Stack 1	VLAN 220 Subnet Stack 1	VLAN 100 Subnet Stack 2	VLAN 200 Subnet Stack 2
Engine 11	Engine 11	Engine 11	Engine 11
192.168.100.180	192.168.200.180	192.168.101.180	192.168.201.180
192.168.100.196	192.168.200.196	192.168.101.196	192.168.201.196
Engine 12	Engine 12	Engine 12	Engine 12
192.168.100.197	192.168.200.197	192.168.101.197	192.168.201.197
192.168.100.213	192.168.200.213	192.168.101.213	192.168.201.213

Static IP Addresses Available

There are some unused IP addresses between the two stacks that could be used for other servers associated with the Avid ISIS environment. These IP addresses should be configured as static IP addresses so not to interfere with the ISIS engines. The following table demonstrates where the available IP addresses are located in the ISIS network. Your IP addresses depend on the address scheme you use to configure the ISIS network.

	IP Addresses Used VLAN 100	IP Addresses Used VLAN 200
First stack of twelve engines	Engine one 192.168.100.10 to Engine twelve 192.168.100.213	Engine One 192.168.200.10 to Engine twelve 192.168.200.213
Available static IP Address block	192.168.100.214 to 192.168.100.254	192.168.200.214 to 192.168.200.254
Second stack of twelve engines	Engine one 192.168.101.10 to Engine twelve 192.168.101.213	Engine One 192.168.201.10 to Engine twelve 192.168.201.213
Available static IP Address block	192.168.101.214 to 192.168.101.254	192.168.201.214 to 192.168.201.254
Available DHCP IP Address block	192.168.102.1 to 192.168.102.254	192.168.202.1 to 192.168.202.254

Connecting Two Stacks of Engines

The process of connecting multiple stacks of Engines to the Avid ISIS network starts with cabling and connecting single stacks as described in [“Configuration Overview” on page 84](#). First you logically configure the addresses for the engine, then you physically make the connection to complete the process. If you need to install software, see [“Installing Software and Configuring 10-Gb Link Aggregation” on page 81](#).

Setting-Up Two Stacks

Regardless of the number of engines you are planning in your Avid ISIS stack. The following procedure summarizes the tasks you need to do after you have decided on your IP address scheme with your Network administrator, see [“IP Addressing With Two Stacks” on page 116](#).

To setup two stacks of engines:

1. Setup and configure each stack separately as you would in a single stack configuration (see [“Connecting ISIS Hardware” on page 67](#).

Each for the two stacks connect to the same System Directors.

2. Once the two Management Domains are configured, set the appropriate 10-Gb Link Aggregation between the stacks with external switches (see [“Configuring a 10-Gb Link Aggregation Group” on page 101](#)).
3. Upgrade your software if you are currently on an earlier ISIS 7500 | 7000 software version before setting up the Storage Groups in the separate Management Domains (see [“Avid ISIS 7500 | 7000 Upgrade Guidelines” on page 141](#)).
4. See the *Avid ISIS Administration Guide* for setting up your Storage Groups and Workspaces. The two stacks of engines are identified using a Domain ID in the Storage Element page of the Management Console.



The two stacks cannot be part of the same Storage Group. Each stack must have at least one Storage Group.

Reconfiguring One Stack into Two Stacks

In many cases you do not have to delete your data if you are splitting your stack of engines into two Management Domains. If you have one large Storage Group and there is enough available space in your existing stack, you can remove engines, triggering a redistribution of the data to other engines, see [“Replacing an Engine” on page 184](#). This will make the chassis available to be moved to the other Management Domain where they can be made into a new Storage Group, or adding to an existing Storage Group in that Management Domain. If you added that engine to an existing Storage Group in the new Management Domain, a Redistribution will be incurred.

If you have several Storage Groups in your current stack, you can select the complete Storage Group by removing the engines with that Storage Group to start the new stack.

The following procedure summarizes the tasks you need to do if you have one stack configuration and want to break it into two Management Domains. First establish your IP address scheme with your Network administrator, see [“IP Addressing With Two Stacks” on page 116](#), then complete these tasks.

To disassemble the existing stack:

1. Upgrade to the latest ISIS software on the existing stack.
2. Remove all 10-Gb Link Aggregation cables (if needed).
3. Disable all 10-Gb Link Aggregation groups (“Enable/Disable”) in the stack, see [“Configuring a 10-Gb Link Aggregation Group” on page 101](#).
4. Delete all 10-Gb Link Aggregation groups (“Delete configuration”) in the stack, see [“Configuring a 10-Gb Link Aggregation Group” on page 101](#).
5. Remove the engines from stack by unplugging the engine interconnect cables.
6. Use the “Reset Local Chassis ID” command in the ISIS Switch Blade Agent Page to renumber the engines in the new Management Domain (see the *Avid ISIS Administration Guide*).
7. Avid recommends running the Switch Diagnostics on stack 1 to make sure there are no errors.
8. Create the 10-Gb Link Aggregation groups in the stack that will be used to connect to the external switches (EXS).
9. Connect to the EXS to each VLAN EXS after it is configured.



Make sure the ports on the EXS to which you are connecting these groups are configured for link aggregation, otherwise you will end up with a loop.

To assemble the new stack:

1. Access the switch management port on one of the new engines that will be added to the new stack (see [“Setting-Up Network Addresses In the Stack” on page 69](#)).
2. Go to System > Configuration > Basic page and update the IP configuration of the engines that were removed from the old stack (see [“Connecting ISIS Hardware” on page 67](#)).
3. Reset the IP address scheme for each new or reconfigured engine (see [“Setting-Up Network Addresses In the Stack” on page 69](#)).
4. Access the switch management port of one engines from the old stack.
5. Go to System > Configuration > Add/Remove chassis and update the IP configuration of the old stack
6. Use the “Reset Local Chassis ID” command in the ISIS Switch Blade Agent Page to renumber the engines that were removed from the old stack (see the *Avid ISIS Administration Guide*).
7. Repeat step 4, 5, and 6 until all chassis have been reconfigured.
8. Cable the engines for stack 2 using the engine interconnect cables that were removed from stack 1.

9. Avid recommends running the Switch Diagnostics on stack 2 to make sure there are no errors.
10. Create the 10-Gb Link Aggregation groups in the stack that will be used to connect to the external switches (EXS).
11. Connect to the EXS to each VLAN EXS after it is configured.



Make sure the ports on the EXS to which you are connecting these groups are configured for link aggregation, otherwise you will end up with a loop.

6 Configuring the System for Failover

This chapter explains how to enable the software for a failover using two System Directors.



For true redundancy it is recommended that you connect the second System Director to a different engine than the first System Director. The Active and the Standby System Directors must be the same model server, you cannot mix SR2500s and AS3000 servers.



This feature requires an Application Key or software licensing software be installed on both the Active and Standby System Directors.

System Director Failover

When using two System Directors, one is referred to as Active System Director and the other one is the Standby System Director. The File System on the Standby System Director is kept up-to-date with the Active System Director. There might be a brief interruption in client connectivity but all clients re-connect automatically when the Standby System Director becomes active. In an attempt to keep the procedure easy to use, we use the following nomenclature:

- When adding a new System Director to an existing Avid ISIS system or creating a failover system configuration, the original System Director is called the existing System Director and the new System Director is called new.
- When installing two new System Directors to create a failover system configuration, one System Director is called Active and the other Standby.

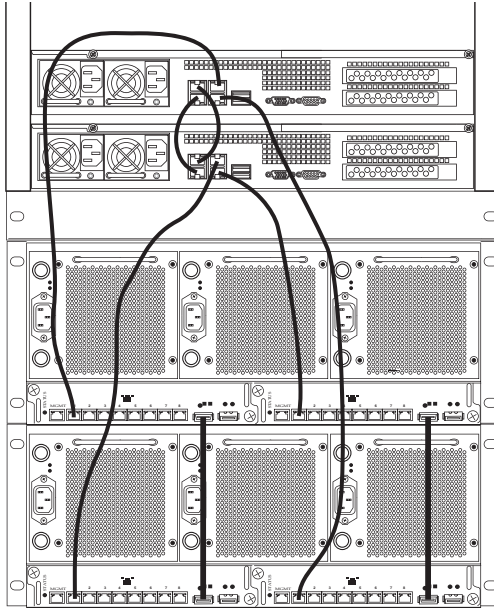
Each System Director must connect to right and left sides of the engine to allow both of the System Directors to reach the two internal subnets. Connect the two System Directions under the following conditions:

- After you have physically configured the system and loaded the Avid ISIS software on both System Directors.
- When the System Director service is stopped on both systems.
- Connect the Ethernet port of the Active System Director to connection 1 on the left side of the engine (from the rear). Connect the Ethernet port of the Standby System Director to connection 1 on the right side of the engine (from the rear).

Enabling a System Director

To enable a failover system for Avid ISIS:

1. Connect two System Directors (using straight or crossover cable) as shown in the following figure.



2. Enable the software on both systems, see [“Configuring the System for Failover” on page 122](#).



The configuration information for the notification service (SMTP information, contacts, and filters) is stored in the registry on the System Director. This information is not currently replicated to the failover System Director and must be entered manually on both System Directors. For information on setting up the notification service, see [Setting up Error Notification in the Avid ISIS Administration Guide](#).

Setting IP Addresses for Crossover Link

Avid recommends the System Director IP addresses for failover configurations that are listed below. If you use different addresses, be sure to note them and have them available before proceeding. You set the IP addresses in the Network Connections dialog box, which you access from the Windows Control Panel. For information on setting Windows IP addresses, see the documentation that came with your operating system.

To set IP addresses:

1. Go to Start > Control Panel > Network Connections for each System Director.
2. Set the Existing System Director to the following TCP/IP addresses for ports 1 and 2:
 - Onboard Ethernet port 1 (ETH1) - 192.168.1.1 netmask 255.255.255.0
 - Onboard Ethernet port 2 (ETH2) - 192.168.2.1 netmask 255.255.255.0
3. Set the New System Director to the following TCP/IP addresses for ports 1 and 2:
 - Onboard Ethernet port 1 (ETH1) - 192.168.1.2 netmask 255.255.255.0
 - Onboard Ethernet port 2 (ETH2) - 192.168.2.2 netmask 255.255.255.0

Configure a Failover Connection

Setting up the ISIS system for a System Director failover is done on two System Directors. The first System Director is referred to as the Active System Director and the second System Director is referred to as the Standby System Director.



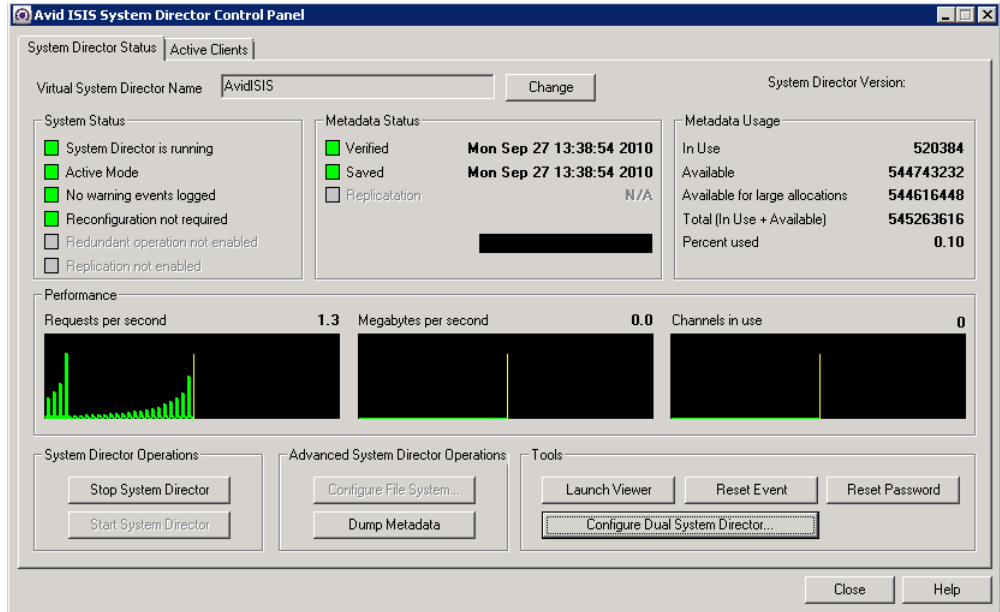
Make sure all clients are notified that you are stopping the System Director.

To set up a failover connection on the Active System Director:

1. Load the ISIS software on the Active System Director as described in [“Loading the Software” on page 85](#).



2. In the ISIS Launch Pad, click ISIS Control Panel icon or Start > Programs > Avid > ISIS System Director and select Control Panel.



3. Click Stop System Director.

The Configure File System button becomes active.

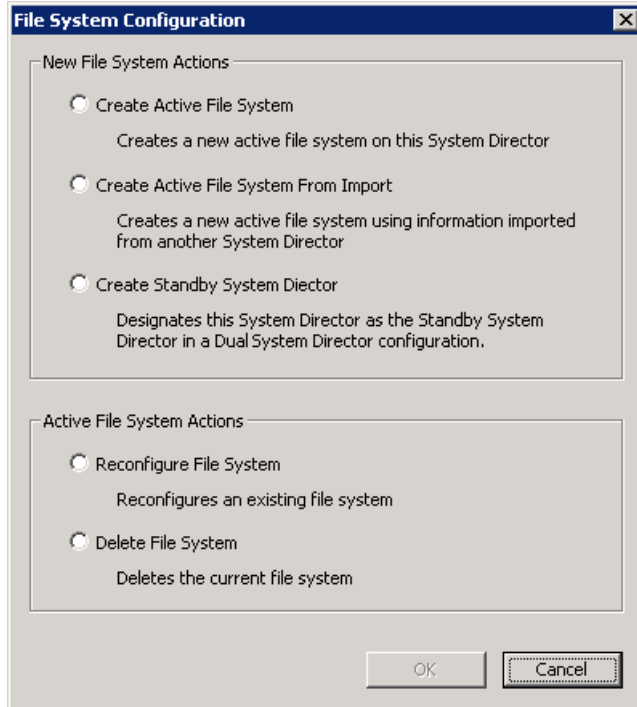
4. Click the Change button beside the Virtual System Director Name and type a name in the Virtual System Director Name text box and click OK.



The same virtual name must be assigned to both System Directors.

5. Click Configure File System.

The File System Configuration dialog box opens.



6. (First new System Director) Select Create Active File System and click OK.



If you already have a running System Director do not create a new file system and skip this step. If you create a new file system on a System Director that already has a file system all of your existing data will be lost.

The Avid ISIS System Director service automatically starts when complete. In the System Director Control Panel, the “System Director is running” display turns green.

7. Click Stop System Director.

The Configure Dual System Director button becomes active.

8. Click Configure Dual System Director.

The Dual System Director Configuration dialog box opens.

Enable Dual System Director Configuration

9. Select “Enable Dual System Director Configuration.”
10. Configure the Virtual Addresses on both systems by doing the following:
 - a. Choose two unused static IP address that are used as the Virtual IP addresses for both System Directors. This example uses 192.168.10.253 and 192.168.20.253.
 - b. Map the Virtual IP address to the corresponding real IP address for each of the System Directors. This example uses 192.168.10.100 and 192.168.20.100.
 - c. Register both of the Virtual IPs in DNS with the Virtual System Director Name.
11. In the Local Machine area leave the Monitor port set to 5000. If you have another application that uses port 5000, change the Monitor port to an available port number. This port number must be the same on both the existing and the new System Directors.
12. Set the Local Machine First Path IP address to local IP 1: 192.168.1.1.
13. Set the Local Machine Second Path IP address to local IP 2: 192.168.2.1.
14. Set the Remote Machine First Path IP address to: 192.168.1.2.
15. Set the Remote Machine Second Path IP address to: 192.168.2.2.

The Active System Director has now been configured. Leave the Active System Director as is; stopped and with the ISIS Control Panel and Dual System Director Configuration window open.

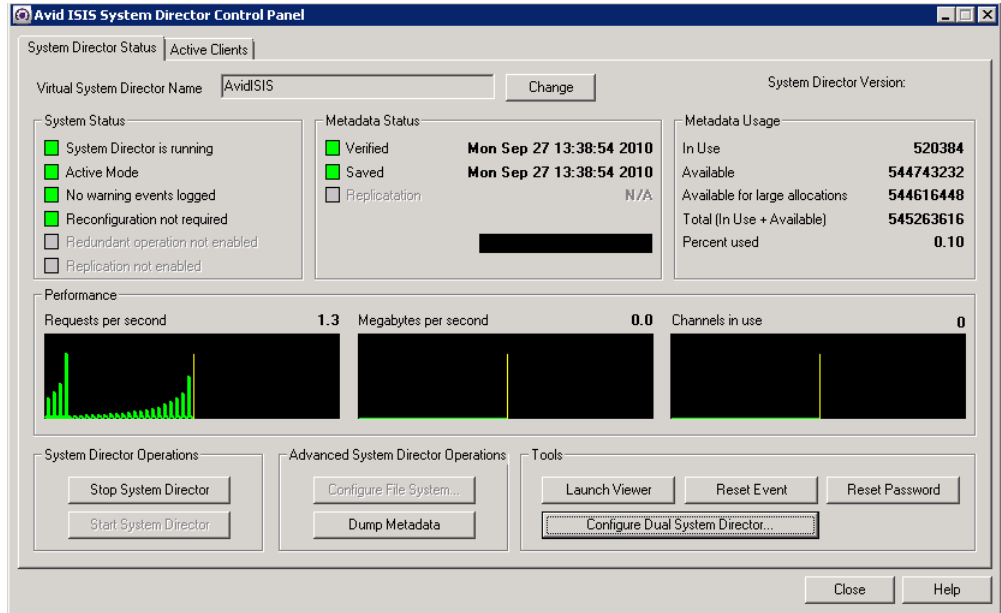
16. Continue with [“To set up the resiliency connection on the Standby System Director:”](#) on [page 128](#).

To set up the resiliency connection on the Standby System Director:

1. Load the ISIS software on the Standby System Director as described in “Loading the Software” on page 85.



2. Stop the Standby System Director, click System Director Control Panel from the ISIS Launch Pad or Start > Programs > Avid > ISIS System Director and select Control Panel.



3. Click Stop System Director.

The Configure Dual System Director button becomes active.

4. Click the Change button beside the Virtual System Director Name and type a name in the Virtual System Director Name text box and click OK.



The same virtual name must be assigned to both System Directors.

5. Click Configure Dual System Director.

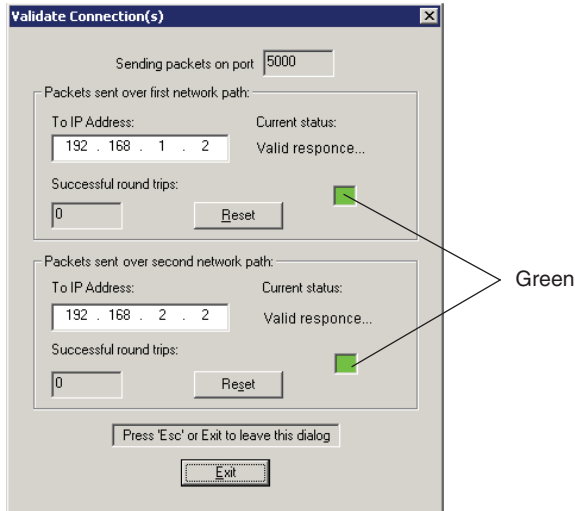
The Dual System Director Configuration dialog box opens.

Enable Dual System
Director Configuration

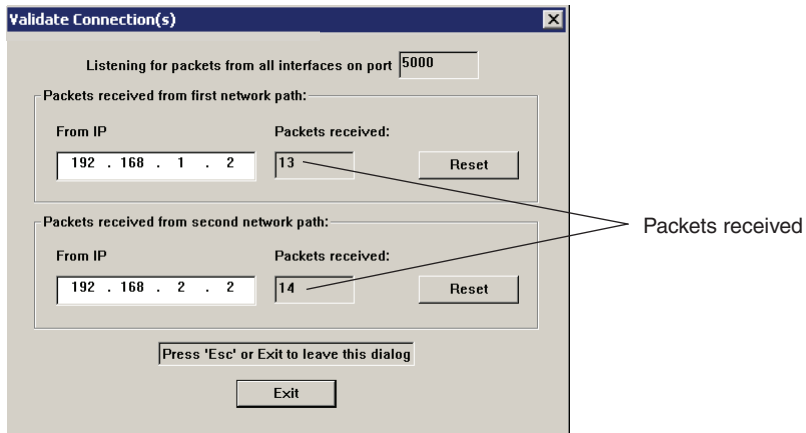
6. Select “Enable Dual System Director Configuration.”
 7. Configure the Virtual Addresses on both systems by doing the following:
 - a. Choose two unused static IP address that are used as the Virtual IP addresses for *both* System Directors. This example uses 192.168.10.253 and 192.168.20.253.
 - b. Map the Virtual IP address to the corresponding real IP address for each of the System Directors. This example uses 192.168.10.101 and 192.168.20.101.
 - c. Register both of the Virtual IPs in DNS with the Virtual System Director Name.
 8. In the Local Machine area leave the Monitor port set to 5000. If you have another application that uses port 5000, change the Monitor port to an available port number. This port number must be the same on both the existing and the new System Directors.
 9. Set the Local Machine First Path IP address to local IP 1: 192.168.1.2.
 10. Set the Local Machine Second Path IP address to local IP 2: 192.168.2.2.
 11. Set the Remote Machine First Path IP address to: 192.168.1.1.
 12. Set the Remote Machine Second Path IP address to: 192.168.2.1.
- The Standby System Director has now been configured. Leave the Standby System Director as is; stopped and with the ISIS Control Panel open.
13. Continue with [“To validate the connections:” on page 130.](#)

To validate the connections:

1. Validate the crossover connections by clicking Validate Send on the Active System Director and Validate Receive on the other System Director.
2. On the Sending System Director, you see the Red Box turn Green for each connection.



The numbers in the Packets Received boxes indicate the number of packets received from the first System Director. On the Receiving System Director you see the packets received number incrementing for each connection.



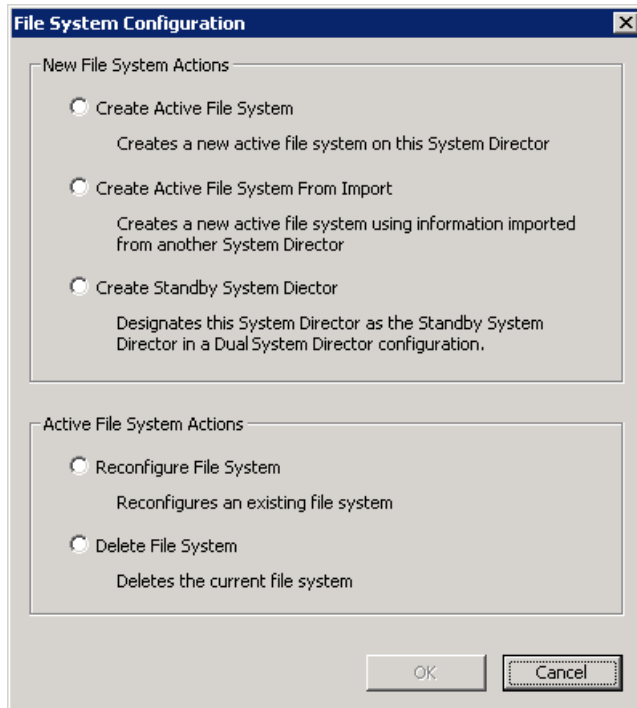
3. On each system, click Exit.

- Repeat this validation procedure clicking Validate Send on the Standby System Director and Validate Receive on the other System Director.

Verify you are getting the same results (green indicators and correct number of received packets).

- Click Configure File System on the Standby System Director.

The File System Configuration dialog box opens.



- Select Create Standby System Director and click OK.

The Avid ISIS System Director service automatically starts when complete. In the System Director Control Panel, the “System Director is running” display turns green.

- Click Start System Director on both the Active and Standby System Directors and close the ISIS Control Panels on each system.

Stopping and Restarting the System Directors

In a ISIS 7500 | 7000 failover configuration, you can stop the Active System Director and watch the Standby System Director become the Active System Director. When you restart the System Director that was previously Active, that System Director now becomes the Standby System Director. If you stop and restart the Standby System Director it remains the Standby System Director. The following procedures describes how you to stop and start the System Directors.



If you have a failed System Director, stop and restart that System Director. Very often a single stop and start of the System Director corrects the problem.

To stop and start the System Director using the Launch Pad:



1. If the ISIS Launch Pad is not displayed on the Avid ISIS System Director Desktop, click the ISIS Launch Pad icon in the Taskbar's System Tray to display or hide the Launch Pad.



You can also open other ISIS tools by clicking the icons in the Launch Pad.

The ISIS Launch Pad is displayed.

The screenshot shows the Avid ISIS Launch Pad interface for a System Director. The title bar reads "Avid ISIS Launch Pad" and "System Director". The interface is divided into several sections:

- Status:**
 - Running: ●
 - Check event log: ●
 - Reconfiguration not required: ●
 - Licenses in use: 9 of 330
 - Virtual name: stingrayui3
 - Version: 4.1.0.0
- Metadata:**
 - Loaded: ●
 - Status: N/A
 - In use: 0.92%
 - Save time: Mon Jul 16 15:47:33 2012
 - Verify time: Mon Jul 16 15:47:33 2012
- Redundancy:**
 - Enabled: No
 - Mode: Active
 - Replicate state: N/A
 - Replicate time: N/A
 - Path status not available: N/A
- Performance:**
 - Messages per second: 1.3
 - Write bandwidth (MB/s): 0.0
 - Read bandwidth (MB/s): 0.0
 - Open files: 0

2. Start or stop the System Director by clicking one of the following icons in the ISIS Launch Pad.

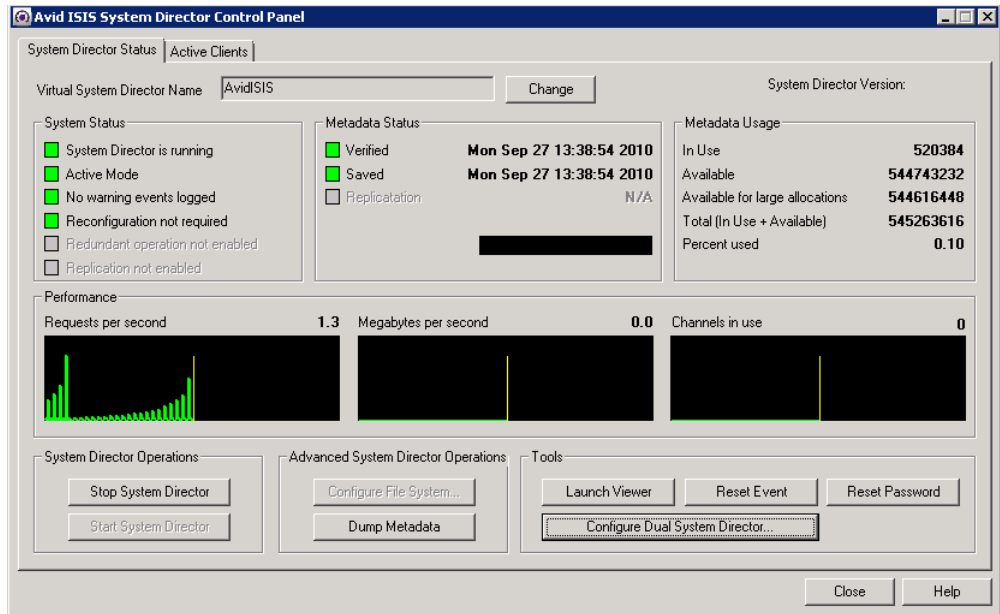


- ▶ Click the blue square icon to stop the System Director.
- ▶ Click the blue triangle icon to start the System Director.

To stop and start the System Director using the ISIS Control Panel:



1. Click Control Panel icon in the Launch Pad or Start > Programs > Avid > ISIS System Director and select Control Panel.



2. Start or stop the System Director by clicking the appropriate buttons in the ISIS Control Panel.
 - ▶ Click Stop System Director to stop the System Director.
 - ▶ Click Start System Director to start the System Director.

Binding Order for Health Monitoring

When you have your System Directors in a Failover configuration and use the Interplay Health Monitor with the Interplay Framework, the VLAN 10 and VLAN 20 network interface cards must be the first and second entries in the Network Interface Binding order to communicate properly.



If a network crossover connection is the first entry, the System Director Health Monitor will not display information regarding the System Director.

To set the network connection bindings order:

1. On the System Director, click Start > Settings > and double-click Network Connections.
2. Click the Advanced menu in the Network Connections window and select Advanced Settings.
3. Click the Adapters and Bindings tab.
4. If the connections for the VLAN 10 and VLAN 20 network interface cards are not in the first and second position, select them and press the Green Up arrow to move them to the top of the list.
5. Make sure the two crossover connections are at the bottom of the list.

7

Status LEDs and Stacking Problems

This chapter provides an explanation of the light-emitting diodes (LEDs) located on the different sections of the Avid ISIS engines. It also provides a information on how to recover from a stacking problem. The following sections are included:

- [LED Locations and Colors](#)
- [LED Summaries](#)
- [Recovering from Stacking Problems](#)

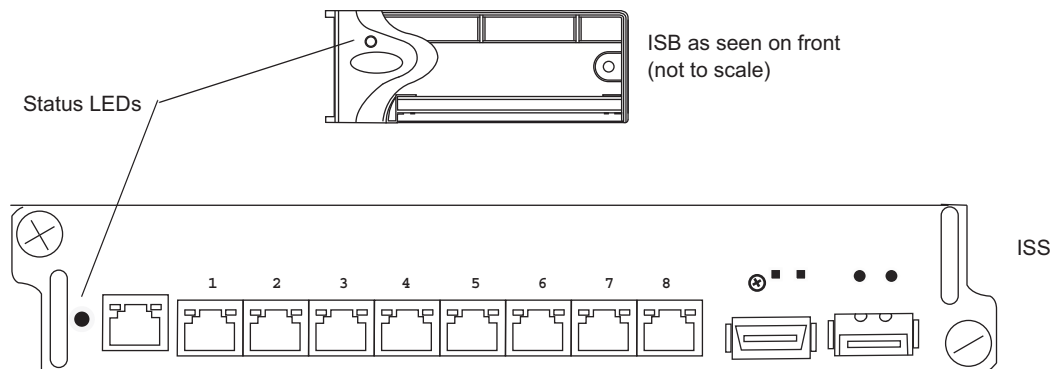
The ISS and IXS have activity and link LEDs for each port. The location of these LEDs are shown in [“Integrated Ethernet Switches” on page 29](#). These LEDs provide the following functions:

- Activity — The activity LED indicates that the port is in use.
- Link — The link LED indicates that there is an active connection on the port.

LED Locations and Colors

The status LEDs are used to indicate errors and provide status on the different phases of the software installation. The LED colors and blinking indicate the following functions:

- Green-blinking — System or section is getting ready or System is operation as expected
- Green-on solid — System or section is operation as expected and operational
- Amber-blinking — Minor failures occurring, but not fatal
- Amber-on solid — Fatal or almost fatal error has occurred, system or section is not operational.



LED Summaries

When determining errors, the status LED blinks at one of the following three rates or stays On (on solid).

- Slow: 0.5 Hz
- Medium: 2.0 Hz
- Fast: 5.0 Hz

The following table provides a description of the ISS status LEDs.

ISS LED Summary

Color and Blink Speed	Status
Green – slow	Starting the Operating System
Green – on with 50 ms of black each second	Master is operation as expected
Green – on with 50 ms of amber each second	Backup is operation as expected
Amber – fast	High temperature (> 60C) Temperature critical (> 70C) Waiting for temperature to drop
Amber – on solid	Temperature OK/Not booting yet Error ^a (followed by restart, but restart might not work)

a. Possible errors include: missing critical application, low level code problem, or temperature is critical.

The following table provides a description of the ISB status LEDs.

ISB LED Summary

Color and Blink Speed	Status
Green – slow	Starting the operating system
Green – fast	Degraded state
Green – on solid	System is operation as expected
Amber – slow, all ISBs asynchronously	No engine configuration
Amber – fast	High temperature (> 60C) Temperature critical (> 70C) waiting for temperature to drop
Amber – on solid	ISB has been taken offline in the user interface or Temperature OK/Not booting yet Error (followed by restart, if restart not working) Possible errors include: missing critical application, low level code boot problem, or temperature is critical.
Amber and Green – alternating fast flashing (irregular)	ISB cannot boot because of a memory failure The ISB needs to be replaced.

The following table provides a description of the Engine LEDs.

Engine LED Summary (Master ISS and All ISBs Synchronously)

Color and Blink Speed	Status
Green – slow	External request via ISS agent
Green – medium	Stacking failure (error or collision)
Green – medium	Engine error (anywhere)

The following table provides a summary of the Engine LEDs during software installations.

Software Installation LED Reporting

Color and Blink Speed	Status
Green – on solid	No installation in progress

Software Installation LED Reporting

Color and Blink Speed	Status
Amber – ½ second interval	Installation starting, installing in phase 0
Amber – 1 second interval	Installation in phase 1
Amber – 2 second interval	Installation in phase 2
Amber – 3 second interval	Installation in phase 3
Amber – fast	Installation failed

Recovering from Stacking Problems

If your Avid ISIS shared storage network has a serious problems as a result of the setup, it might necessary to recover the stack. Here are a few possible problems:

- Traffic loops were introduced
- Switch does not have the right IP address
- IP addresses seem to flipping; sometimes belonging to one switch, and then belonging to another switch

Set One Switch Back to Default

The problem might only be with one particular switch or engine. If you think this is the case (for example, a switch that was added does not have the right IP address), then perform the following.

To set a switch back to the default:

1. Disconnect the interconnect cables to both switches in the chassis of the problem switch. (If the problem switch is an IXS, disconnect all stacking cables from each switch in the chassis.)
2. In the Add/Remove Chassis page of the IXS, click Delete for the problem chassis.
3. Connect through the management port to the problem switch.
4. Use the management IP to go to the Switch Agent of the problem switch. For example <https://192.168.0.10:5015/>.
5. Navigate to the “Advanced” page.
6. Under Switch Blade, click “Reset to factory defaults.”
7. Enter the password when prompted to reset the switch to defaults.

The switch and storage blade password is `se-admin` and the System Director password is `is-admin`.

8. The switch restarts.

When the switch starts up, it has IP address “192.168.10.26” and the password is reset to default.

9. If the problem switch is an:

- IXS — Click Add from another IXS. If there is not another IXS, click Add from another ISS.
- ISS — Click Add from the IXS to which this switch will connect.

10. Connect the interconnect cable from the problem switch to the IXS.

- If the problem switch is an IXS, connect an interconnect cable to another ISS.
- If the problem has been resolved, connect the interconnect cable from the switch on the other VLAN subnet to the IXS on fixed subnet. If the problem switch was an IXS, re-connect all other interconnect cables in the engine.

Rebuilding the Stack

The following procedure summarizes how to rebuild the entire stack of engines.

To rebuild the stack:

1. Disconnect all interconnect cables between all switches.
2. Pull each switch by removing them from the engine.
This clears any traffic loop problems.
3. Reseat the first IXS in the engine and connect through the management port of the first IXS.
4. Use the management IP address to access the switch’s Agent Page (for example <https://192.168.0.10:5015/>).
5. Navigate to the Advanced Web page.
6. Under Switch Blade, click “Reset to factory defaults.”



The switch and storage blade password is `se-admin` and the System Director password is `is-admin`. The System Director Web Page Administrator default password is blank.

7. Enter the password when prompted to reset the switch to defaults.
8. The switch restarts.

When the switch starts, it has IP address “192.168.10.26” and the password is reset to the default. Through the Switch Agent, configure the switch with the proper IP address range, netmasks, time zone, passwords, see [“Setting-Up Network Addresses In the Stack” on page 69](#).

9. Perform the appropriate procedure for connecting your engines, see [“Connecting ISIS Hardware” on page 67](#).

8

Avid ISIS 7500 | 7000 Upgrade Guidelines

This appendix provides a summarized list of what tasks need to be performed when upgrading Avid ISIS 7500 | 7000. All Avid ISIS upgrades are to be performed by Avid ISIS Avid Certified Support Representatives (ACSR).

The following list provides the order in which tasks need to be performed.

- If you have not already noted the host names, passwords, IP address, and other important network details, see “[Preupgrade Information](#)” on page 158. Although this information needs to be gathered before you start, the pages that include the blank tables are at the end of this document.
- Do not perform an Avid ISIS system upgrade if your network is not in optimum working order, see “[Health Check](#)” on page 141.
- If you have documented the preupgrade information and your Avid ISIS is healthy, you can start the Avid ISIS system upgrade, see “[Software Upgrade](#)” on page 142.
- After you finish the upgrade, confirm everything is functioning properly, see “[Post Upgrade System Verification](#)” on page 155.

Health Check

Before any changes are made to the system, perform the following quick checks to verify that the system is in good working order. Do *not* perform an upgrade if there are any issues with the system. Correct all problems before performing the upgrade.

Things to check before upgrading:

1. Log into the ISIS Management Console and click Storage Elements. All Storage Elements should be green, investigate any error statuses. For details on troubleshooting Storage Elements error statuses, search the Knowledge Base at www.avid.com/online-support for “ISB Error Status Glossary.”
2. Open a command window and ping all switches in both stacks. All switches should be pingable and able to access the web pages for all switches. If running Avid ISIS v1.1B or later, you could alternatively run switch diagnostics and only select the connectivity tests. Access the switch diagnostics by clicking Advanced on the switch web page.

3. Ping each System Director on both subnets (left and right, *not* the crossover paths). Each System Director should be accessible via both paths from any client or switch on the Avid ISIS system.
4. Ping the default gateway on the left and right network from System Director and ISSs. This should be accessible from any point in the network. You can ping directly from and ISS/IXS from the Tools tab on the switch web page.
5. Log into each System Director and open the System Director's Control Panel. Both paths should be up, and standby should be receiving and replicating metadata. Check the Metadata Status tab in the System Director's Control Panel on the standby. The date stamp in the saved and replicated fields should be current and updating frequently. Standby instructions only apply if there is a failover machine present.
6. Check the system event logs on the System Directors for recent error events.
7. Perform a thorough physical inspection of the interconnection cables looking for:
 - Missing retainers, strains, sharp bends, signs of physical abuse.
 - Ensure that labels are visible, physically firmly in place, and legible.
 - Confirm that all fans and ventilation areas are free of obstructions, dirt, lint, and debris.
 - Ensure that there is clearance front and rear to allow components to be replaced without obstructions for their full chassis travel length.
 - Make sure cables are not zip tied to the power supplies or the switches.
8. Perform System Director Primary to Secondary Failover — Turn off one of the System Directors and verify in the System Director Control Panel that the Active Mode indicator has turned red. Turn the System Director back on and see that Active Mode displays Standby.
9. Check the system drive status on the System Director.
 - On the AS3000, click Start > Programs > Intel -> Intel Rapid Storage Technology right-click the Intel Rapid Storage Technology icon in the task bar. The icon should be a green check mark when the drives are healthy.
 - On the SR 2500, click Start > Programs > RAID Web Console 2 > Start UI and see that the Server Health is green. If not, search www.Intel.com and search for Intel® RAID Software User's Guide for corrective actions.

Software Upgrade

After noting the necessary network and system component information listed in “[Preupgrade Information](#)” on page 158 you are ready to upgrade the Avid ISIS. The following is a generalized procedure for upgrading an ISIS. Read the upgrade section in the ISIS ReadMe for specific upgrade details in that release.

To upgrade Avid ISIS 7500 | 7000 v2.1.1 and later, you need to upgrade the clients before you upgrade the infrastructure. This is necessary because ISIS client software before v2.1.1 is not supported in the ISIS v2.1.1 and later infrastructure. Although, v2.1.x client software is supported in v1.4 and later infrastructures. Once the clients have been upgraded, you can upgrade Avid ISIS infrastructure.

The clients are defined as follows:

- Avid editing applications
- Interplay Assist and Instinct
- Interplay Access
- Avid Approved Applications Initiative such as Pro Tools and Final Cut Pro

The infrastructure is defined as follows:

- System Director — System Director software and upgrade Storage Blades (ISBs) and Switch Blades (ISS/IXSs) in the Avid ISIS engines to the v2.1.1 firmware
- Interplay servers — Interplay Engine, Interplay Media Indexer, Interplay Transfer, and CaptureManager
- Capture devices — AirSpeed, AirSpeed Multi Stream, and Avid Interplay Low-Res Encoder



If updating from an ISIS v1.x infrastructure you must do a full redistribution on your workspace after you have updated the infrastructure to v2.x. A full redistribution is needed to take advantage of the performance improvements. The redistribution is required even if the system has zero (0) configuration changes listed.



Avid ISIS v2.1.1 SR2500 64-bit System Directors ship with an SD_X64_PIS21_MBS5000XALR_V05_DVD or later image on the internal RAID drives. The image version number can be found in the c:\IMAGE.TXT file on the System Director root directory. If upgrading your 64-bit System Director from Avid ISIS v2.0.1 or earlier Avid recommends you reimage the System Directors to reduce the number of updates required in this release. For instructions on how to reimage the System Director, see the “Reinstalling the Windows Storage Server 2008 R2 Operating System” on page 194.

If you are upgrading from Avid ISIS v2.0.1 or earlier, Avid suggests you consider reimaging the 64-bit System Director (see “[Reinstalling the Windows Storage Server 2008 R2 Operating System](#)” on page 194). Several configuration changes and driver versions have been updated in the 64-bit System Director and you might find it easier than following the referenced procedures listed in the following procedure. If you do decide to reimage, perform a failover, then reimage the Standby System Director first.

Component Requirements From Previous ISIS 7500 | 7000 Releases

The following is a list of items outside the ISIS software that you might need to update depending on the current version of your ISIS software. If you are on a version prior to 4.0, Avid recommends that you update your System Director Storage Blades (ISB's) and switches (ISS's and IXS's) to v4.2.x prior to updating to v4.6. If you are setting up a new ISIS system or updating an ISIS environment that is already at v4.0, continue with ISIS 7500 | 7000 Upgrades.

- If updating from ISIS v2.4 – v4.0 — update the ISIS 7000 System Director software before installing this release of ISIS 7000 software, see *Avid ISIS v4.0 ReadMe*.



Remember to copy your metadata to the new v4.x location, see ISIS 7500 | 7000 Upgrades.

- If updating from ISIS v2.0 – v2.0.6 to v2.4 — update the System Director Intel system BIOS on the 64-bit System Director (SR2500), see *Avid ISIS v2.2.2 ReadMe*.
- If updating from ISIS v2.0 – v2.0.6 to v2.4 — update the Intel RAID controller driver and registry key on the 64-bit System Director, see *Avid ISIS v2.2.2 ReadMe*.
- If updating from ISIS v2.0 – v2.0.3 to v2.4 — update the System Director to allow Windows Updates, see *Avid ISIS v2.2.2 ReadMe*.
- If updating from ISIS v2.0 – v2.0.1 to v2.4 — update the System Director application key (dongle), see *Avid ISIS v2.2.2 ReadMe*.
- If updating from ISIS v1.4 – v2.0.1 to v2.4 — you must first upgrade to Avid ISIS v2.1.1 before upgrading to v2.4, For instructions, see *Avid ISIS v2.1.1 ReadMe*.

ISIS 7500 | 7000 Upgrades

The following process summarizes the upgrade process to v4.6. Avid ISIS 7500 | 7000 v4.6 infrastructure software requires Avid ISIS v4.6 or later Client Manager software.



If you have a 32-bit System Director, you must upgrade to a 64-bit System Director before loading your new ISIS v4.x software.



If you are upgrading from a version earlier than Avid ISIS v4.0, you must first perform the updates documented in “Component Requirements From Previous ISIS 7500 | 7000 Releases” on page 144 before upgrading to v4.6 and later.

Here are few general comments on upgrading System Directors and the ISIS file system metadata:

- The preferred method of upgrading the file system metadata is using Partition0 and Partition1. These are copies of the in-memory file system and the most accurate accounting of the ISIS.
- The PartitionDump.bin file is a very different representation of what Avid believes to be the important parts of the file system that should persist. Do not be tempted to just import PartitionDump.bin, although this may be necessary if problems are seen with loading both Partition0 and Partition1. Since only the active System Director writes out PartitionDump.bin any PartitionDump.bin on the standby is out of date. **Never use the PartitionDump.bin from the standby System Director in an upgrade.**
- Sometimes one of the Partition files fails to load but the other succeeds. This is considered a successful upgrade and is still the preferred method of upgrading.
- There have been cases of loading old PartitionDump.bin files and losing data. Always contact your support team before attempting to import PartitionDump.bin.
- There is a bug in ISIS versions 3.1 through 4.5 where the tie breakers are deleted when importing PartitionDump.bin. When importing PartitionDump.bin it is important to manually record the tie breakers before beginning the upgrade and restore them after the upgrade completes.

Depending on what version you are upgrading from/to there are different steps required. This guide contains common setup and finishing steps but different steps in the middle based on the upgrade. Please read through once and identify your upgrade before beginning.

Common Setup Steps:

1. Download the ISIS v4.6 software kit from the Avid Download Center (www.avid.com/US/support/downloads) to your System Director.
2. Create a new “test” workspace in a storage group. (This will be used later to verify that the upgrade completed successfully.)
3. Log into Administrator account on the Standby System Director and open the System Director Control Panel. Wait for the indication that metadata changes have been received and saved. Allow this to happen twice. Stop the Standby System Director using the System Director Control Panel.
4. Log into active System Director and do the following:
 - a. Open the System Director Log Viewer
 - b. Stop the System Director using the System Director Control Panel



If there are any errors please stop and contact your support team.

5. Check the modify date time of the files Partition0, Partition1 and PartitionDump.bin. The Date Modified times should be identical or at most there can be a 1 minute difference. **If the times differ by more than a minute stop and contact your support team.** These times should also be very close to the current date/time. **If they are more than a few minutes old please stop and contact your support team.**

To upgrade from v2.4 to v4.2.1 on the same hardware:

1. Follow the steps in [“Common Setup Steps:” on page 145.](#)
2. Load the ISIS v4.x software kit on the Active System Director.
3. Double-click the Autorun.exe.



If the Package Selection menu does not allow you to select the software, click Quit and run the Autorun.exe again.

4. Once the install completes open the System Director Control Panel and stop the System Director.
5. Copy (not move) the following files from the v2.x folder to the v4.x folder:
Partition0 and Partition1
Old v2.x metadata location
D:\Program Files\Avid Technology\AvidUnityISISSystemDirectorx64
New v4.x metadata location
D:\Program Files\Avid\ISIS System Director
6. Open the System Director Log viewer.
7. In the System Director Control Panel select “Start System Director.” If there are problems with the upgrade of the Partition file stop and contact your support team.
8. Once the reconfigure completes the active System Director will be up and running. Proceed to [“Completing the Upgrade:” on page 148.](#)

To upgrade from 2.4 to v4.X and from an SR2400/SR2500 to an AS3000:

1. First check to see if you are moving from a 32-bit System Director:

In this upgrade the file system metadata files need to be moved from the SR2400/SR2500 to the AS3000. A network folder or memory stick can be used for this. The folder where the System Director software resides was changed starting in v4.0. The Partition files need to be copied manually. To do this correctly requires knowing whether the System Director is 32 bit or 64 bit. All SR2400 System Directors are 32 bit. There are some SR2500 System Directors that were configured as 32 bit so this needs to be checked. The following are the folder names and where they are located:

- From v2.X metadata location for a 32 bit System Director
 - D:\Program Files\Avid Technology\AvidUnityISISSystemDirector

- From v2.X metadata location for a 64 bit System Director
 - D:\Program Files\Avid Technology\AvidUnityISISSystemDirector64Bit
 - To v4.X metadata location
 - D:\Program Files\Avid\ISIS System Director (This folder is created on installation of the 4.x kit)
2. Follow the steps in [“Common Setup Steps:” on page 145.](#)
 3. Copy the following files from the v2.x folder to the network folder or memory stick.
 - a. Partition0
 - b. Partition1
 - c. PartitionDump.bin
 4. Load the ISIS v4.x software kit on the new AS3000 Active System Director.
 - a. Double click the Autorun.exe.
 5. Once the install completes open the System Director Control Panel and stop the System Director.
 6. Copy the following files from the network folder or memory stick to the v4.x folder:
 - a. Partition0
 - b. Partition1
 7. Open the System Director Log viewer.
 8. In the System Director, from the System Director Control Panel select Start System Director. **If there are problems with the upgrade of the Partition file please stop and contact your support team.**
 9. Since the memory footprint for the System Director is larger on the AS3000 the System Director Control Panel will have a status showing either “Reconfiguration possible” or “Reconfiguration required.” To reconfigure use the following steps:
 - a. Stop the System Director
 - b. Select Configure File System.
 - c. In the File System Configuration dialog select Reconfigure File System. If there are problems with the upgrade of the Partition file please stop and contact your support team.
 10. Once the reconfigure completes the active System Director will be up and running. Proceed to [“Completing the Upgrade:” on page 148.](#)

To upgrade from a 4.x to a newer v4.X:

1. Create a new folder on the D: drive and copy the following files to the new folder prior to installing the v4.x kit:
 - a. Partition0
 - b. Partition1
 - c. PartitionDump.bin (PartitionDump.bin is for use in case the normal Partition files fail to load)
2. Load the ISIS v4.x software kit on the Active System Director.
 - a. Double click the Autorun.exe.
3. After the kit install completes, open the System Director Log Viewer. **If there are problems upgrading the metadata please stop and contact your support team.**

Completing the Upgrade:

1. After the new Active System Director has started, log into the management console and check if the “test” workspace exists on the Workspaces page. **If it does not please stop the System Director and contact your support team.**
2. Upgrade the Standby System Director. Be sure that there are no Partition files in the v4.X directory as they are not needed. If you are upgrading on the same system then move these files to a temporary folder and do the following:
 - a. Load the ISIS v4.x software kit on Standby System Director.
 - b. Double-click the Autorun.exe file in the software kit.
 - c. Open the System Director Log Viewer.
 - d. Open the System Director Control Panel and stop the System Director.
 - e. Select Configure File System.
 - f. In the File System Configuration dialog select Create Standby System Director. **If there are problems creating the new Standby please contact your support team.**
 - g. Once the new Standby System Director starts it will receive a complete copy of the metadata from the Active Director.
3. The first replication between the active and standby System Directors copies the entire heap over and can take several minutes. Because this first replication takes so long you will see a message in the active System Director Log Viewer “Remote meta data save did not complete.” This is normal and does not indicate a problem with the upgrade. The System Director Control Panel on each system will indicate that the replication is in progress.
4. Once the initial replication between the System Directors is complete you can close the System Director Log Viewer on both System Directors.

Copying the Metadata to the New Default Location On the System Director

The ISIS v4.x software is installed in a different path and folders than in previous ISIS releases. After upgrading your System Director to the ISIS v4.x software, you must copy your metadata to the new location to get access to your existing data.

To copy the existing metadata to the new installation directory:

1. Install the ISIS 7000 v4.x software on your 64-bit System Director as previously described.
2. Stop the System Director Service.
3. Copy the files listed below from their old location and replace the files in the new location on drive D:
 - Partition0
 - Partition1
 - PartitionDump.bin

Old v2.x metadata location

D:\Program Files\Avid Technology\AvidUnityISISSystemDirectorx64

New v4.x metadata location

D:\Program Files\Avid\ISIS System Director

4. Start the System Director Service.



If there is an error upgrading the metadata, the System Director restarts and then fails again. Import the metadata as described in the following procedure.

To import the existing metadata to the new installation directory:

1. Start the Avid ISIS and click System Director Control Panel from the Launch Pad or Start > Programs > Avid > ISIS System Director and select Control Panel.
2. Click Stop System Director.
 - The Configure File System button becomes active.
3. Click Configure File System.
 - The File System Configuration dialog box opens.
4. Select Create Active File System From Import and click OK.
5. You are prompted to navigate to the PartitionDump.bin file.



Verify that the time stamp on ALL metadata files is current. These files must be up-to-date before importing them. Importing out-of-date metadata can result in media loss. Please contact Customer Success immediately if encountering any issues with importing metadata.

The old v2.x metadata location is:

D:\Program Files\Avid Technology\AvidUnityISISSystemDirectorx64

The file is copied to a location used by the Active System Director and its extension is changed from bin to import.

D:\Program\Avid\ISIS System Director\PartitionDump.import

The Active System Director creates a new file system and imports the metadata from the file. It may take a few minutes to import PartitionDump.bin depending on how much metadata you have. Once it finishes, you will see “COMPLETING SAVE AND IMPORT OPERATION (SUCCESS).”

6. Verify that the System Director is now running and Active. Start the Management Console and verify that all workspaces are listed. If not, call customer support before continuing.

Avid ISIS Software Installation From the USB Flash Drive

Avid ISIS Systems ship with one blank 8GB USB Drive that is intended to be used for storing the ISIS Software Kit. You need to download the ISIS software kit from download center (<http://www.avid.com/US/support/find-support/category/updates>) and copy it to this USB drive

The second blank 16GB USB drive is used to create a bootable recovery drive. This will be used when the server Operating System needs to be re-imaged.

If upgrading your software from an earlier release, download the software from the Avid Download Center (www.avid.com/US/support/downloads) to your System Director.



In the past Avid has instructed you stop the Standby System director, upgrade the Standby, and restart the Standby. Once the Standby was running you were instructed to update the Active System Director.

Avid has revised the upgrade process to stop the Standby System Director and upgrade the Active System Director first, then upgrade the Standby System Director. This process avoids replicating metadata between ISIS software versions.

To install your Avid ISIS software on new installs:

1. Log in to the Avid ISIS 7000 as Administrator (default password: `is-admin`).
2. Make a folder for the software kit on your root directory (C:\) of your Active System Director.

3. Insert the USB flash drive with software kit into any of USB ports on your Active System Director.



You can run the software installer from the USB flash drive. The advantage of copying the software kit to the Avid ISIS is that you have easy access to kit files if you should ever need them in the future.

If the USB flash drive does not automatically display:

- a. Double-click the computer icon on the desktop.
 - b. Double-click the USB flash drive icon in the window and copy the software kit into the new folder you created on the Avid ISIS system.
4. Double-click the Autorun.exe file in the software kit.

The installer detects the existing version of the installed software (if any) and displays the components that need to be upgraded in the splash screen.
 5. Select ISIS 7000 System Director from the “Select Software Package” menu.

The File Gateway selection is used when loading the Avid File Gateway server. The File Gateway software cannot be installed on the same server as the System Director software.
 6. Click Apply.
 7. Follow the screen prompts accepting the defaults and License agreement.
 8. Once the installation is complete, click Finish.
 9. Install the Application Key or apply your software license.
 10. Load the ISBs and ISS/IXSs firmware. Using the ISIS Management Console, select all the ISBs and click Upgrade Storage Blades and then select all your ISS/IXSs and click Upgrade Switch Blades. You do not need to wait for the ISBs to be finished, you can upgrade ISBs and ISS/IXSs at the same time.

You can watch the upgrade progress in your Monitoring tool.
 11. Open the ISIS Control Panel.
 12. Click Stop System Director.
 13. Click Configure File System.
 14. Open the Management Console.

Log in using the Administrator user name and the default password is blank.
 15. Select Create Active File System and click OK.
 16. Click the Storage Managers icon.
 17. Select your ISIS ISBs in the list and click Bind.
 18. Create a Storage Group, Workspaces, and add Users in the Management Console.

19. Repeat these steps if you are setting up a Standby System Director.
20. Install your Avid ISIS client software. For more information, see the *Avid ISIS 7000 Client Guide*.

Intel Network Driver and BIOS Update

Avid has qualified an Intel system BIOS upgrade on the 64-bit System Director (SR2500). This BIOS and Intel Pro driver upgrade combination corrects a condition where the network connection fails during a restart. The following sections describe the updates.



If you find it necessary to reimage the System Director, you need to updated the network driver again. The BIOS is not affected when you reimage your server.

64-bit System Director BIOS Upgrade

Avid is recommending you update the BIOS on the 64-bit System Director and File Gateway. To do that, you can visit the Intel web site and follow their instructions, or use the files and instructions posted on the Avid Download Center (<http://www.avid.com/US/support/downloads>).

The procedure on the Avid Download Center requires you to create an Intel Deployment Assistant DVD and use a USB flash drive to load the BIOS update package on the System Director and File Gateway. Instructions for running the Intel BIOS Upgrade Utility and installing the BIOS are included with the image for the utility and the BIOS package.



Check your current BIOS version before upgrading the BIOS. If your BIOS is at version 98, you have the recommended BIOS version for this release. Enter BIOS Setup by pressing the F2 Key during POST and the version is displayed as S5000.86B.12.00.0098 in the Main tab.

Intel RAID Controller Driver Update

This section describes the process for updating the Intel driver and registry key for the internal RAID controller on the Intel SR2500 server using the SROMBSAS18E Intel hardware RAID controller. This RAID controller is used in the Avid ISIS SR2500 System Director and the Avid Interplay 64-bit Media Indexer. This driver does not apply to the other SR2500 configurations using the embedded SATA RAID ESRTII.



The majority of the Intel SR2500 Avid ISIS System Directors use a 64-bit operating system. Avid did ship some Intel SR2500 System Directors with a 32-bit operating system before the 64-bit operating systems were released. All Avid ISIS System Directors using the Intel SR2500 server require this RAID controller driver update.

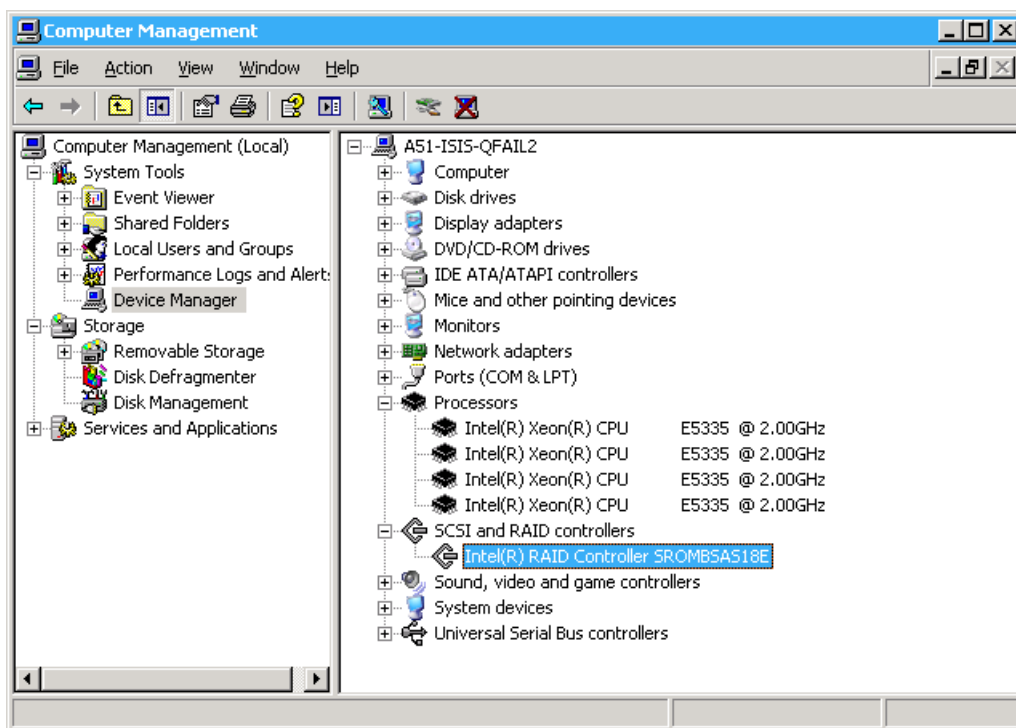
The RAID controller update requires a driver update and a registry change. Access the update package from one of the following locations. Create a new folder on the server that you are updating and place the update files in it.

This RAID controller driver is available from two locations:

- Download the Intel hardware RAID controller SROMBSAS18E update package from (<http://www.avid.com/US/support/downloads>).
- This version of the Intel driver has been added in the Avid ISIS software installer kit in \Firmware\ISIS 7000\Intel\SR2500_Intel_Disk_Controller_Driver\IntelSROMBSAS18E_Raid_Controller\Intel_Raid_v3.11.0.xx folder.

To upgrade the SROMBSAS18E Intel driver:

1. Access the Standby System Director and stop the System Director service using the ISIS Control Panel.
2. Right-click on My Computer and select Manage. The Computer Management Window opens.
3. Select Device Manager. The Device Manager opens.
4. Click the plus sign (+) next to SCSI and RAID Controllers.
5. Right-click on the Intel RAID Controller SROMBSAS18E and select Properties.



6. Click the Driver tab in the Properties window.

7. Click Update Driver in Driver tab.
8. In Hardware Update Wizard, do not let Windows select the driver:
 - a. Select “No, not at this time” and click Next.
 - b. Select “Install from a list of specific location (Advanced)” and click Next.
 - c. Select “Don’t search. I will choose the driver to install” and click Next.
 - d. Click “Have Disk.”
 - e. Click Browse and locate the `oemsetup.inf` file in the package you copied to the server.
 - 64-bit System Director and Media Indexer — IntelSROMBSAS18E_Raid_Controller\Intel_Raid_v3.11.0.xx\W2K3X64 folder
 - f. Click Open, in the Locate File dialog box.
 - g. Click OK, in the Install From Disk dialog box.
 - h. Click Next in the Hardware Update Wizard.
9. Once you complete the driver install, click No when prompted to restart the server.
10. Close the Properties window.
11. Apply the registry key by browsing to the `RegKey_Updates` folder in the package you copied to the server.

64-bit System Director — double-click the `w2k3.reg` file to apply the registry key change.

The following two entries are added to the 64-bit System Director registry location:
KEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\msas2k3\Parameters\Device

DriverParameters = flushrequest= 3
DriverParameter = flushrequest= 3
12. Restart the Standby System Director.
13. After the StandBy System Director has restarted, turn off the Active System Director to failover to the updated Standby System director. Repeat this procedure on the second System Director.

Record IP Addresses on the System Director

Before you update your Intel Pro network driver, Avid recommends you record the current IP address used on the System Directors. This precaution allows you to restore the IP addresses to the current settings if your network configuration is accidentally lost.

To record the current IP addresses used by the System Director:

1. Open a command window on the System Director. Click Start > Programs > Accessories > and select Command Prompt.
2. Type `ipconfig /all > c:\ip.txt` in the Command Prompt window.

This command saves a text file (named ip.txt) to the root directory on the System Director. Open this text file if need to reconfigure the IP addresses to the addresses used before performing this network configuration update.

Post Upgrade System Verification

After upgrading a system it is important to do a series of checks to verify that all upgraded components are functioning optimally.

To verify the upgrade:

1. Verify network connectivity for all components:
 - a. Ping *all* ISSs and IXSs on left and right stack.
 - b. From any client, ping Active System Director and Standby System Director on left and right sides.
 - c. Ping the virtual System Director on left and right side.
2. Verify both System Directors are functioning properly by checking the following:
 - a. Check if any new errors are getting generated in the event logs.
 - b. Both paths should be up and all green lights in System Director's Control Panel on both System Directors. If no failover, some lights will be blue.
 - c. Metadata should be replicating between the two System Directors. The Standby should be toggling between receiving and replicated. Check the Metadata Status tab on the standby. The date stamp in the saved and replicated fields should be current and updating frequently.
 - d. Check the RAID status on the System Directory.
 - On the AS3000, click Start > Programs > Intel -> Intel Rapid Storage Technology right-click the Intel Rapid Storage Technology icon in the task bar. The icon should be a green check mark when the drives are healthy.
 - On the SR 2500, click Start > Programs > RAID Web Console 2 > Start UI and see that the Server Health is green. If not, search www.intel.com and search for Intel® RAID Software User's Guide for corrective actions.
3. Perform System Director Primary to Secondary Failover — Turn off one of the System Directors and verify in the System Director Control Panel that the Active Mode indicator has turned red. Turn the System Director back on and see that Active Mode displays Standby.

4. Check all clients for proper operation using Path Diag. Run path diag on a couple of clients and verify consistent performance. To set PathDiag Tool:
 - a. Do one of the following.
 - (Windows) Select Start > All Programs > Avid > ISIS Client > PathDiag.
 - (Macintosh) Select Go > Applications > AvidISIS folder. In this folder, double-click the PathDiag.app file.



- b. Click Setup.
- c. Set "Path to Test" to a mounted ISIS workspace letter. (Check in my computer if not sure) Make sure its an ISIS workspace and not the internal C: drive.
- d. Set the duration to 10 minutes.
- e. Click Custom Test and set the following parameters:

Custom Test Settings	1 Gb client (not bandwidth limited)	10 Gb Client (not bandwidth limited)
File Access Method	Automatically select	Automatically select
Reads vs Writes	Writes, then Reads (Sequential)	Writes, then Reads (Sequential)
Transfer Size	4096	16384
Transfer Rate	Unlimited	Unlimited
Max File Size	1000	1000

- f. Click Ok and Start.
 - 1-Gb clients that are not bandwidth limited should expect at least 65 MB/sec in the Path Diag tool.
 - 10-Gb clients that are not bandwidth limited should expect at least 500 MB/sec for reads and at least 200 MB/sec for writes in the Path Diag tool.
5. While Path Diag is running check the system to make sure that there are no Network Degraded status indications. Check the following:
 - a. In the ISIS Management Console, click Storage Elements. All ISBs should be green and not displaying any Network Degraded states.
 - b. Spot check a couple ISBs by browsing to the ISB web page and click Statistics. Select the bottom network tab. None of the error columns should be incrementing. Press F5 to update the page a few times.

For details on troubleshooting Storage Elements error statuses, search the Knowledge Base at www.avid.com/online-support for “Troubleshooting the Network Degraded Status on ISIS 1.0-1.1” Tech Alert.
6. Run Switch Infrastructure Diagnostics:
 - a. Navigate to any switch agent web page (in the ISIS Management Console, click Chassis from the list on the left, click Details tab and then double-click on a switch IP address).
 - b. In switch web page, click Advanced tab.
 - c. Click Switch Infrastructure Diagnostics from the list on the left.
 - d. Click Select All under System Tests.
 - e. Select Both in Select Network section.
 - f. Select All chassis in Select Chassis menu.
 - g. Click Run Diagnostics.

Let the diagnostics run, when the Switch Diagnostics - Reported Result/System Overview displays, the results from all switches in both stacks should be available in the summary page.

- h. Click Switch Diagnostics Results Summary Page.
 - i. Any errors report as red and warning conditions are amber. Click headings to investigate any error or warning statuses. There should be no red statuses present.
7. Check all other zones in use for proper operation. If there are Zone 2 and 3 clients, each of these zones should be checked with clients running Path Diag:
- a. Run a Path Diag client for left and right side for each Zone 2 switch in place.
 - b. Run a couple of Zone 3 path diag clients and verify consistent performance.



A Zone 3 client might not have the bandwidth of a Zone 1 or 2 client.

Preupgrade Information

Gather the following information before the upgrade. This information is critical to troubleshooting an Avid ISIS.

- Current Avid ISIS software version
- Avid ISIS Administrator password
- Switch agent password
- Number of Avid ISIS engines
- ISB Size: 500 GB _____ 1 TB_____ 2 TB_____ 4 TB_____ 8 TB_____
- Number of Storage Groups
- Number and type of editing clients: (Windows or Macintosh, and using what zones)
- Number of AirSpeeds
- Other workgroup server details (for example Interplay; host names, passwords, and versions)

Zone 2 Switch Information

Note the following switch information:

- Type of switch (Cisco/Foundry)
- Number of switches
- Location of configuration files

System Director Information

Note the following System Director information:

Virtual Network Name and IP Addresses

Virtual IP Left

Virtual IP Right

Virtual ISIS Name

System Director 1

Host name

Administrator Password

IP address

Left ISIS IP Address

Left Default Gateway

Right ISIS IP Address

Right Default Gateway

First failover IP address

Second failover IP address

System Director 2

Host name

Administrator Password

IP Address

Left ISIS IP Address

Left Default Gateway

Right ISIS IP Address

Right Default Gateway

First failover IP address _____

Second failover IP address _____

ISIS Engine/Switch Information

Fill out the following engine and switch information for the on site equipment.

Are any engines using Link Aggregation on the 10-Gb links? _____

Note what engines that are using 10-Gb links and the configuration (a maximum of eight 10-Gb links are supported):

Engine #1, Serial Number _____

Left IXS/ISS IP:

Right IXS/ISS IP:

First Left ISB IP:

First Right ISB IP:

Left IXS IP:

Right IXS IP:

Engine #2, Serial Number _____

Left IXS/ISS IP:

Right IXS/ISS IP:

External Zone 2 switch
IP address (if attached):

External Zone 2 switch
IP address (if attached):

Engine #3, Serial Number _____

Left ISS IP:

Right ISS IP:

External Zone 2 switch
IP address (if attached):

External Zone 2 switch
IP address (if attached):

Engine #4, Serial Number _____

Left ISS IP:

Right ISS IP:

External Zone 2 switch
IP address (if attached):

External Zone 2 switch
IP address (if attached):

Engine #5, Serial Number

Left ISS IP:	Right ISS IP:
External Zone 2 switch IP address (if attached):	External Zone 2 switch IP address (if attached):

Engine #6, Serial Number

Left ISS IP:	Right ISS IP:
External Zone 2 switch IP address (if attached):	External Zone 2 switch IP address (if attached):

Engine #7, Serial Number

Left ISS IP:	Right ISS IP:
External Zone 2 switch IP address (if attached):	External Zone 2 switch IP address (if attached):

Engine #8, Serial Number

Left ISS IP:	Right ISS IP:
External Zone 2 switch IP address (if attached):	External Zone 2 switch IP address (if attached):

Engine #9, Serial Number

Left ISS IP:	Right ISS IP:
External Zone 2 switch IP address (if attached):	External Zone 2 switch IP address (if attached):

Engine #10, Serial Number

Left ISS IP:	Right ISS IP:
--------------	---------------

External Zone 2 switch
IP address (if attached):

External Zone 2 switch
IP address (if attached):

Engine #11, Serial Number

Left ISS IP:

Right ISS IP:

External Zone 2 switch
IP address (if attached):

External Zone 2 switch
IP address (if attached):

Engine #12, Serial Number

Left ISS IP:

Right ISS IP:

External Zone 2 switch
IP address (if attached):

External Zone 2 switch
IP address (if attached):

On Site Spares

List all Avid ISIS spare parts that are onsite:

Spare Components and Cables

Part	Quantity	Firmware Version (if known)
ISBs		
ISSs		v1.x or v2.x (ISS2000) hardware
IXSs		v1.x or v2.x (IXS2000) hardware
XFP, X2, and SFP+ (used with external switches)		N/A
Intel® network boards		
10-GB fiber cable		N/A
CAT5e/6 cable		N/A
Xenpack® (if Cisco)		
3rd party switches		
Additional Parts Available		

Spare Components and Cables (Continued)

Part	Quantity	Firmware Version (if known)

Spares Checklist

Use the following list to assure that you have the correct parts onsite when performing *any* Avid ISIS upgrade. This can be a mix of customer spares and parts brought onsite by upgrade technicians.

- 1 — IXS and IXS2000
- 1 — ISS and ISS2000
- 2 — ISBs
- 1 — XFP and SFP+ (used with external switches)

Additional spares for a comprehensive spares parts list:

- If Cisco switches are in use: 1 Xenpack, 1 SC-LC cable
- If Foundry switches are in use: 1 additional XFP, 1 LC-LC cable

9

Avid ISIS Upgrade Utility

This appendix describes the user interface of the Avid ISIS Upgrade Utility. The Avid ISIS Upgrade Utility (AvidUnityISISTools.msi) can be found on the Avid ISIS 7000 software kit in the \AvidISISUtilities\ISIS 7000\ folder. This utility is an application for upgrading the ISS and ISB firmware. It offers an alternative to the normal online upgrade utilities when the switching infrastructure cannot be maintained during the upgrade.



The original documented procedure for upgrading the ISS and ISB firmware is located on the Avid Web site under the name: Loading Firmware on Avid ISIS 7000 Switches. The original procedure is now replaced by this Avid ISIS Upgrade Utility.

Overview and Requirements

This stand-alone application allows field engineers to start and monitor the installation of switch and ISB upgrades from a laptop connected to Avid ISIS through the management port. This utility does not replace the current software upgrade process. Its primary function is for upgrading a switch or a pair of switches that is incompatible with an existing stacked network. Insertion of these switches into the network before the upgrade could disrupt or compromise the network's operation.

Functional Description

The Avid ISIS Upgrade Utility is a Windows based application that provides the following functions:

- Provides a self-configuring FTP service.
- Picks up the install packages via a browse window.
- Discovers all the existing devices (switches and blades) on the network via broadcasting and displays the information in a table.
- Displays the existing version, status, and package version already installed on each device.
- Provides the capability of issuing the firmware install command to one or more of the displayed devices at the same time.

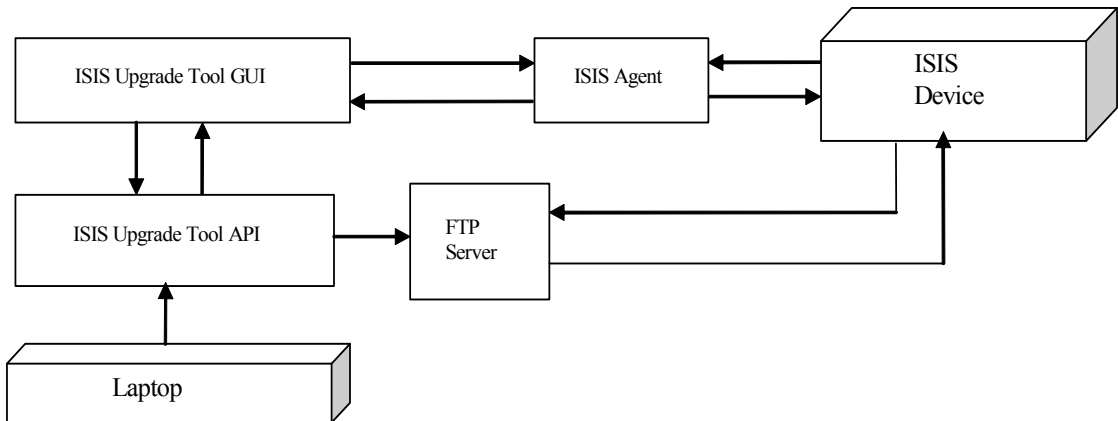
- Provides the capability of monitoring the install status of every device currently in install process.
- Provides the capability of viewing the install log information of each device individually.

Software Component Design

The Avid ISIS Upgrade Utility is composed of the following components:

- The GUI Component — provides the Graphical User Interface of the application
- The Avid ISIS Upgrade Utility application programming interface (API) handles the low level functions such as:
 - Configure and start the FTP server thread.
 - Discover available Avid ISIS systems connected to the network.
 - Manage and monitor the various Avid ISIS install threads.
 - Manage the command requests and responses between the Avid ISIS Upgrade Utility and the Avid ISIS agent.
- FTP Server — provides the file transfer service necessary for the devices to retrieve the install package.

Avid ISIS Upgrade Utility Components

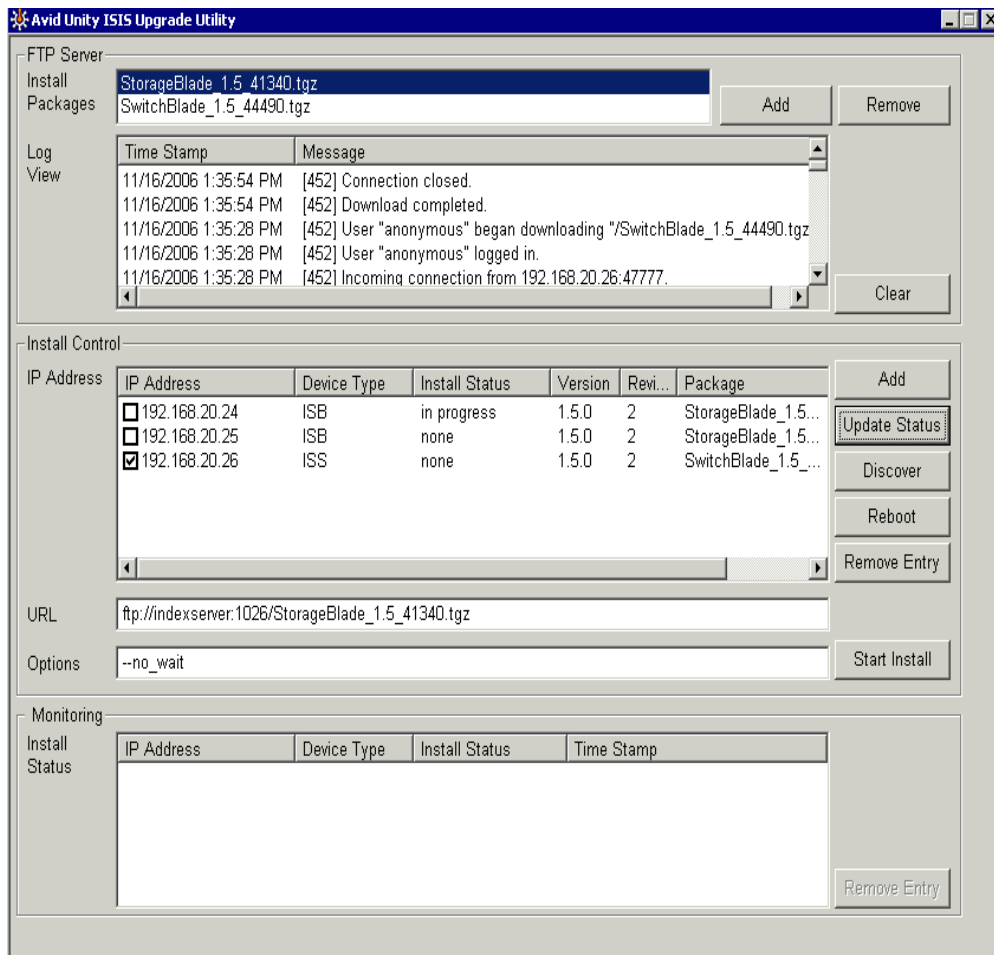


Software Interface

The software interfaces with the storage devices through the switch agents with HTTP requests. The application is provided with a graphical user interface which is described in the following sections. The Avid ISIS Upgrade Utility main window displays when the application is started and is divided into three sections:

- FTP Server section provides the function of managing the install packages and displaying FTP related activities.
- Install Control section displays the storage device information table, performs a variety of operations on the element table and of instantiating the install process.
- Monitoring section is the section where the Device Upgrade status is asynchronously displayed every 2 seconds for monitoring the status for the installation.

Avid ISIS Upgrade Utility Window



FTP Server Section

The FTP Server Section contains the following functions:

- Add installer package to the FTP root directory
- Remove installer from the FTP root directory
- Select installer to be sent to the storage device
- Display FTP Log information.

Install Control Section

The Install Control Section contains the following functions:

- The device information table:
 - IP Address
 - Device type
 - Install Status
 - Version
 - Revision
 - Current version of the firmware package running on the device
- Table operation buttons:
 - Add button adds new entries to Device Information table.
 - Update Status button reloads status, version, and packages information of the selected device entries in the table.
 - Discover button retrieves and displays information on all the devices that respond to the application broadcast.
 - Reboot button sends a restart command to the selected device entries in the table.
 - Remove Entry button removes all the devices entries that are selected in the table.
 - Start Install button issues the command that starts installing the selected package to the selected devices.

This button is enabled when an install package is selected from the Install Packages list and at least one device entry is selected from the device information table.
- Install Operation Command is composed of the following items:
 - URL field displays the command text that is passed to the device.
 - Option field displays the options associated with the command.

Monitoring Section

The Monitoring section contains the following functions:

- Install Status Monitoring table displays the upgrade status of the devices currently upgrading.
- Remove Entry button removes the selected entries from the Install Status table.

Running the Avid ISIS Upgrade Utility

The Avid ISIS software kit includes the Avid ISIS Upgrade Utility application and runs on the Avid ISIS System Director.

To install an upgrade package:

1. Insert the USB with the Avid ISIS software into a laptop and double-click AvidUtilityISISTool.msi located in the following location.

drive:\AvidISISUtilities\ISIS 7000

The installer file, installs the application on your laptop.

2. After the installation has completed, removed the USB and click Start > Programs > AvidUnityISIS > Unity ISIS Upgrade Utility from your laptop.

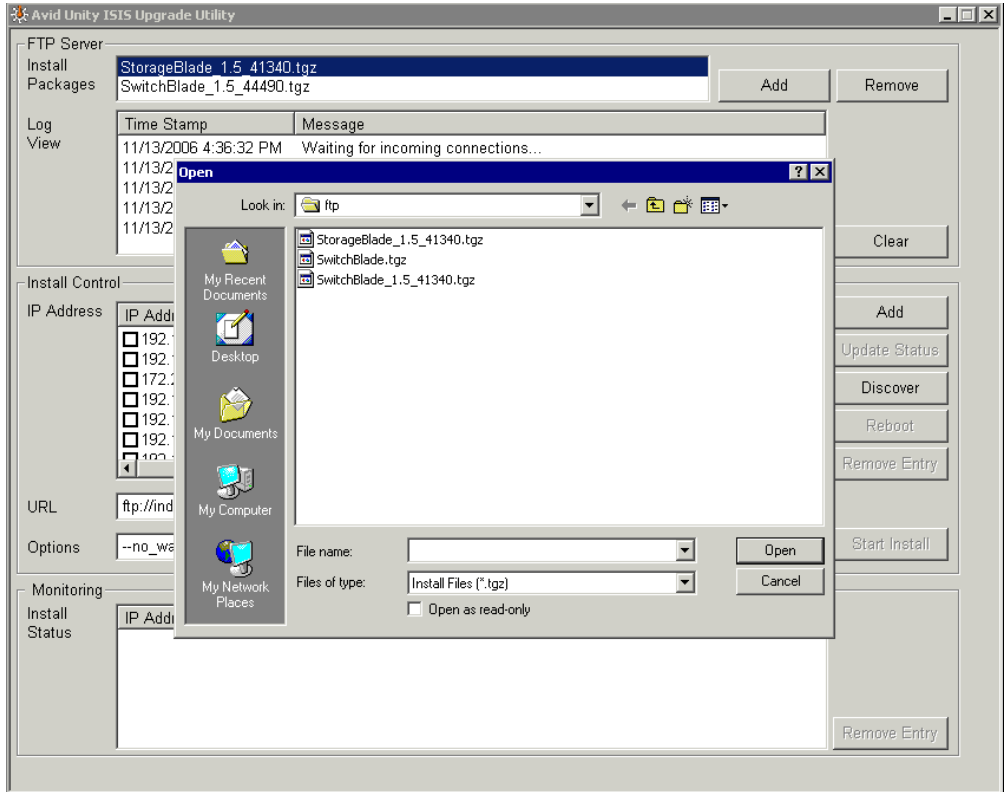
The Avid ISIS Upgrade Utility Window opens.

3. Click Add in the FTP Server section of the window.

A browser dialog box opens.

4. Browse to the location where the new (or old) install package is located.
5. Select the package you want added and click Open.

The dialog box closes and the selected package is added to the Install Package list.



6. Click Discover to retrieve information on all the available devices.
7. Select the devices you want to update. (Click the check-box beside the IP Address device entries in the table.)
8. Click Start Install to begin installing the selected package to the selected devices.



The Start Install button is only enabled when an install package and at least one device entry are selected.

The Install Status is displayed in the Monitoring section of the window. After the Install Status shows complete, you can close the Avid ISIS Upgrade Utility.

To remove a package from the Install Package list:

1. Select the package you want to remove from the Install Package list.
2. Click Remove.

10 Avid ISIS Recommended Maintenance

The following maintenance recommendations are not meant to be a troubleshooting guide but more of a care and monitoring checklist for Avid ISIS. Typically the Avid ISIS does not need to be power cycled. All components of the ISIS stack can individually be replaced or restarted without interfering with the operation of ISIS stack.



Power cycling the entire stack (all the components at the same time) could risk the stability of the ISIS stack.

For information on using the tools described in this section, see the *Avid ISIS Administration Guide*.

Minimum Storage Space Requirement

The recommended amount space you must maintain for background functionality and failures is 7% of free space in each Storage Group. In other words, you should not fill Storage Group more than 93% full. Exceeding 93% used space can produce severe performance issues in some situations.

To calculate the right amount of free space, log into the ISIS management Console and navigate to the Storage Group window. For each Storage Group, take the Effective number and multiply by 0.07. This will be your recommended free space in GBs. To assure that you Storage Group never exceeds the recommended space, create a new workspace in this Storage Group with the same size and label it “Headroom” and do not give anyone access to this workspace.

Daily Maintenance

The following contains a list of items you should do on a daily basis. It is estimated to take 15 minutes to perform these functions.

- Check the Storage Elements status: Open the ISIS Management Console and click Storage Elements.
 - You should see a green circle beside the storage blade in the Name column
 - Check the Status column for errors or Network Degraded

The Status column in the Storage Elements report the status of the storage element logged by the System Director. (The Status line in the Details area reports the same information.) When the storage element maintains a working status, the Administrator tool displays no entries in the Status field. If a problem arises, or when the status of the storage element changes, the Administrator tool updates the Storage Elements dialog box.

- Check the Storage Blade Status and Switch Blade Status: Open the ISIS Management Console and click Chassis.

- You should see a green circle beside each chassis in the Serial Number column
- Check the both Status columns for errors

When the chassis, switches and storage elements maintain a working status, the ISIS Management Console displays no entries in the status field. If a problem arises, or when the status changes, the ISIS Management Console updates the status column and the Details area.

- Start the Monitor Tool and check the front (ISBs) and back (ISSs, IXSs, and power supplies) for errors.

You can hover your mouse pointer over a component and status details are displayed. Errors display as red or yellow components, or as a warning icon on the component.

- Check System Director Control Panel on the *Active* System Director for errors. On the System Director Status tab, make sure there are no red indicators in the status box.

- Check for green indicators beside the “System Director is running” and “Both paths are up”
- Check that a blue or green indicator is displayed beside “Replicated” on the *Active* System Directory
- If the event log indicator is not green, check the Windows Event logs on the *Active* System Director

- Check System Director Control Panel on the *Standby* System Director for errors.

- Verify the Standby System Director is “Started” and in “Standby” Mode. Check for green indicators beside the “System Director is running” and “Both paths are up”
- Check that a blue or green indicator is displayed beside “Receiving”

- If the event log indicator is not green, check the Windows Event logs on the *Standby* System Director
- Check that the Avid ISIS Workspaces have “Free Space” available: Open the ISIS Management Console and click Workspaces, see “[Minimum Storage Space Requirement](#)” on page 171.

Weekly Maintenance

The following contains a list of items you should do on a weekly basis. It is estimated to take 30 minutes to perform these functions.

- Review Windows Event logs on the Active and Standby System Directors
- Check the ISB network connections between the ISBs using the ISB Connection Analyzer. All Storage Elements should be green.
- In the Avid ISIS Switch Blade Agent, run the Switch Infrastructure Diagnostics located in the Advanced tab. Select all tests, both the left and right networks, and all chassis.



Do not run the switch diagnostics during heavy usage or critical network production times. Some tests burden the system’s bandwidth and resources.

In the results page, save the diagnostic results by clicking the Download link and save the file using the date as part of the file name.

- Check the RAID status on the System Director.
 - On the AS3000, click Start > Programs > Intel -> Intel Rapid Storage Technology right-click the Intel Rapid Storage Technology icon in the task bar. The icon should be a green check mark when the drives are healthy.
 - On the SR 2500, click Start > Programs > RAID Web Console 2 > Start UI and see that the Server Health is green. If not, search www.Intel.com and search for Intel® RAID Software User’s Guide for corrective actions.
- Make sure you have at least one storage element worth of free space (depending on the size of your storage blades) for each storage group, see “[Minimum Storage Space Requirement](#)” on page 171. If a storage blade should fail, you need enough space to remove the failed storage blade.

Monthly Maintenance

You should test a failover on a monthly basis. It is estimated to take 1 hour to perform this function.

- Take a snapshot — The ISIS Snapshot tool collects information currently displayed by the ISIS Management Console and the Avid ISIS System Director Control Panel. Open the ISIS Management Console and click Logging > ISIS Snapshot in the Advanced section. Select Create new snapshot.
- Perform System Director Primary to Secondary Failover — Turn off one of the System Directors and verify in the System Director Control Panel that the Active Mode indicator has turned red. Turn the System Director back on and see that Active Mode displays Standby.

Before you turn off either System Director, verify that the metadata date stamp in the Metadata Status tab in the saved and replicated. Fields should be current and updating frequently.

- Check the Redistribution status: Open the ISIS Management Console and click Workspaces.
 - The Redistribution column for each workspace should be blank, and have less than 10 configuration changes (see Config Changes column)
 - If you have 10 or more configuration changes, the status is highlighted in yellow and displays “Requires Full Redistribution” in the Redistribution column

You should do a full redistribution at the next maintenance interval. Schedule a time when the system is not heavily used, as this will allow the full redistribution to complete in the shortest amount of time.

Redistribution Guidelines

Do not perform an ISB firmware upgrade while a Redistribution is in process. Make sure all firmware upgrades are completed before any redistribution is started. The following events trigger redistribution:

- Moving a Workspace
- Clicking “Full Redistribution” on a Workspace
- Adding a Storage Element to a Storage Group
- Removing a Storage Element from a Storage Group
- Changing the state of a Workspace to mirrored or unmirrored

If a firmware upgrade must be done and a redistribution in progress, do the following:

1. Suspend the active redistribution using the Advanced Commands in Workspace window.
2. Verify that the Workspace displays “redistribution suspended” in the Status column and all other workspaces do not have “redistribution in progress” displayed.
3. Perform the firmware upgrade on the ISB(s) that must be upgraded.
4. Wait until the firmware upgrade is completed successfully.
5. Resume the redistribution using the Workspace window.

Saving ISIS Metadata

This procedure describes how to save the metadata stored on the system drives for the data drives. You would typically only need to do this in a hardware replacement scenario, where both System Director system drives are not going to stay with the data drives.

Regardless of how many Engines you have, all the metadata for all the data drives, in all of the Engines, are saved on the System Director. The Engines do not store any metadata.

To save the System Director metadata:

1. Stop the System Director service using the ISIS Control Panel.



The System Director is constantly writing metadata. Metadata files are always open and locked, so the best way to copy the metadata files is to stop the System Director service so the files are closed.

2. Copy the Partition0 and Partition1 files from the following location on the System Director:

D:\Program Files\Avid\ISISSystemDirector



There is also a PartitionDump.bin file. This file is also helpful when identifying the data on the data drives. If possible, include this file with the two Partition metadata files.

The following are a couple suggested ways of saving the Partition0 and Partition1 PartitionDump.bin files.

- Use a USB flash drive that has the capacity for the Partitionx files (4 GB recommended).
 - Create a network share on a client system on the network and copy the Partitionx files to that shared folder.
3. Verify that you have the current copy of the Metadata by comparing the date in the Metadata tab of the ISIS control Panel.
 4. Start the System Director service using the ISIS Control Panel.

Available Utilities

The following is a list of headings in the *Avid ISIS Administration Guide* that describe other utilities and tools for monitoring and troubleshooting.

- Avid ISIS System Director Control Panel
- ISIS Management Console
 - Changing the Administration Password
 - Setting up Error Notification
 - Avid ISIS Snapshot Tool
 - Using the Profile Tool
- System Statistics
- System Logging
 - Accessing the Logging Window
 - Viewing Event Logs
- Avid ISIS Log Aggregator Tool
- Avid ISIS Disk Tester Tool
- Avid ISIS ISB Connection Analyzer Tool
- Avid ISIS Switch Manager Tool
- Avid ISIS Agents
 - Agent Tools
 - Log Viewer Tool
 - Switch Infrastructure Diagnostics
- Avid ISIS System Monitor Tool
- System Director event message meanings

Client Manager Maintenance

If you suspect a poor connection between your client system and a mounted workspace, you can test the Avid ISIS shared storage network connection between each client system and the shared storage network using the Avid PathDiag tool. This tool informs you if there is sufficient

read/write throughput for read and write operations needed by the client system. For more information on using the Avid PathDiag tool see, *Avid ISIS 7000 Client Manger Guide*. This guide also describes the following Administrative tasks:

- Clearing Cached Data
- Using Logs and Messages

Status Indicators and Troubleshooting

If the LEDs on the ISSs or ISBs are indicating a problem, identify the problem using the information under, “[Status LEDs and Stacking Problems](#)” on page 135.

Complete Server Room Shutdown

There is no requirement to power cycle the entire Avid infrastructure but, if the need arises to turn off *all* the equipment (such as a relocating the server room), turn off the components in the following order. When turning on the component, use the reverse order.

To shut down the entire Avid network (server room):

1. Shutdown all Avid editing system and attached media I/O equipment, for example Avid Mojo and Avid Adrenalines.
2. Shutdown all capture and playout servers such as AirSpeeds.
3. Shutdown CaptureManager Server.
4. Shutdown Interplay Transfer Server.
5. Shutdown Avid Interplay Media Services and Providers.
6. Shutdown Interplay Engine and Avid Interplay Archive Engine.
7. Shutdown Media Indexers — Do not stop the Media Indexer while it is indexing storage.
8. Shutdown Systems running Interplay Framework Multicast Repeaters.
9. Shutdown Systems running the Interplay Framework Lookup Service.
10. Invoke Failover on Avid ISIS System Directors.
11. Shutdown Standby Avid ISIS System Director.
12. Shutdown Primary Avid ISIS System Director.
13. Shutdown Avid ISIS Engines.
14. Shutdown the network switches.



Power up the entire rack of equipment in reverse order and verify all clients have mounted the necessary ISIS Workspaces.

False Link Aggregation Alerts

The following sections explain false link alerts caused by a slow Link Aggregation and provides a procedure for correcting the issue.

Symptoms

If you experience problems with Link Aggregation during a power up, or if all the ISIS Engines are restarting, the following could be happening.

- **Slow Link Aggregation (Trunking) setup** — When the Link Aggregation feature is taking a longer than expected to complete. This setup process can viewed by opening to the Avid ISIS Switch Blade Agent page > System tab, and click on the “View current settings” in the left pane. When the process is complete, the status message “Enabled Fully Operational” should be displayed for any VLAN that has a correctly defined and enabled Link Aggregation (trunk) group.

While the Link Aggregation is setting up, the ISIS ports that are in the Link Aggregation group form an open loop in the network that can cause problems with the connecting Ethernet switches. When using the Cisco 4900, the longer the Link Aggregation feature takes to come up, the longer the loop exists and is more likely to cause a problem.

- **Fake Link Alert** — A link alert is a message sent to the ISIS agent page and the Management Console letting you know that the given 10 Gig port is not functioning as expected. A fake link alert is when this link alert message is display when the port is working correctly. This could also be thought of a false positive. This fake link alert can occur in ISIS 7000 v 2.4 and earlier, this fix in the ISIS v4.0 release an later.

Displayed Link Alert Message

Use the following methods to determine if the displayed link alert message is a real problem or a false positive.

To verify the link alert message:

1. Run diagnostics, and look at the “Details for test: (18) port link information.” The information in this section of the diagnostic output comes directly from the hardware and tells you the correct status on whether the switch port is up or down for all the ports in the stack.
2. Check the stacking data for the Engine displaying the link alert message. The information in the stacking display comes directly from the hardware and tells you the correct status on whether the switch port is up or down for the port in question.
 - a. Go to the ISIS Switch Blade Agent page.
 - b. Click System tab.
 - c. Click Overview in the left pane.

- d. Click on the chassis (Engine) that is displaying the link alert message.
- e. Scroll down to the stacking information. See the following example.

Example of the stacking data

Switch Slot	State	Master	Collisions	Failures	10 Gb port Map	Hi Gb Port Map
0	Ready	No	None	None	0X1	0X0
1	Ready	No	None	None	0X1	0X0

Switch slot 0 is the left side of the Engine, and switch slot 1 is the right side of the Engine. Look in the 10 Gb Port Map column:

- If “0X1” is displayed, the port is up.
- If “0X0” is displayed the port is down.

So if the right side of a Engine is reporting a link alert message, and “0X1” is displayed for Switch slot 1. The port is up, and this is a fake link alert. If the right side of a Engine is reporting a link alert message, and “0X0” is displayed for Switch slot 1. The port is down, and this is a real link alert.

Restart All Procedure

The following procedure is a two part procedure used to correctly and safely restart all of the Engines, as well as power cycling all of the Engines.

Part 1 gets the Engine correctly up and running, however it triggers the fake link alert problem. You can to use the ISIS after you have completed part 1, however the link alerts you see are fake. Part 2 corrects the fake link alert messages. When using part 2 of the procedure, wait until it is complete before you use the ISIS.

Part 1 — Restart or power cycle all of the Engines:

1. Telnet into the connecting Ethernet switches (Cisco 4900’s) and use the “shut” command to shut down all ports that connect to the ISIS stack (Currently there is no reason to shut down the ports that connect one 4900 to the another 4900). The act of shutting down the ports connected to the ISIS causes a link alert message to be displayed. This is a real alert message because the ports have been shut down.
2. Restart all the Engines (or power cycle them). Allow all Engines to come up.
3. Go to the ISIS Switch Blade Agent page, and every few seconds select the Overview display. This updates the Overview display with the latest information.
4. Watch the request busy entry, and wait for it to go to “No.”
5. Watch the Request state column, and wait for every state to go to “Done.”

6. Go to the “view current setting” display and watch the information in the column labeled “10 Gb Link Aggregation Current Configuration State.” This step takes several minutes. Every few seconds select the “View current settings” to update the display with the latest information. Continue watching until the “Enabled Fully operational” message is displayed for the VLANs (left and right sides) that have a Link Aggregation group defined and enabled. Once the “Enabled Fully operational” messages are displayed, continue to the next step.
7. Again telnet into the connecting Ethernet switches and one by one, enter the command “no shut” to each one of the ports that are connected to the ISIS.

Part 2 — To remove the fake link alert messages:

1. Each switch displaying the fake link alert must have the Chassis Manager restarted. This can be done using one of the following methods:
 - ▶ Restart the Engine – ISIS Switch Blade Agent page > System tab and click “Reboot a chassis.”
 - ▶ Restart the local host (switch) – ISIS Switch Blade Agent page > Advanced tab and click “Reboot.”
 - ▶ Restating the Chassis Manager – ISIS Switch Blade Agent page > Advanced tab and click “Restart Chassis manager.”
 - ▶ Telnet into the switch and enter the “reboot” command.
2. Each time you restart the Chassis Manager (step 1), you must watch for the stack (VLAN) to come back up correctly. This can be done by following steps 3, 4, 5, and 6 of Part 1 procedure.

After you complete Part 1 and Part 2 the ISIS stack, including Link Aggregation should be up and running.

11 Adding and Replacing Hardware

This appendix provides procedures for adding and replacing components in your Avid ISIS. Avid ISIS hardware additions and replacements are to be performed by Avid ISIS Avid Certified Support Representatives (ACSR).

Do *not* add any hardware if there are any issues with the system. Correct all problems before adding new hardware and making changes to the system, perform a quick checks to be verify that the system is in good working order, see “[Health Check](#)” on page 141.

Adding Hardware

Use the following guidelines if a switch replacement is required. Typically hardware replacement be performed *after* the software upgrade to avoid unnecessary downgrade and upgrades of the firmware.

Be aware that all switch firmware is not compatible. Incompatible firmware does not stack together and therefore cannot be upgraded in the normal manner. As a general rule, v1.0x firmware switches do not stack with v1.1, v1.2, v1.3 and later switches and vice versa. Older v1.1x switches will usually stack with newer rev 1.1x switches.

Avid ISIS ships with a standalone firmware Avid ISIS Upgrade Utility which is suitable for upgrading (or downgrading) any firmware version of switch. This utility should be on hand for any upgrade if the normal upgrade procedure fails for any reason. This utility can be found in the Avid ISIS software kit in a folder called `\AvidISISUtilities\ISIS 7000\`. For details on the use of this utility, see “[Running the Avid ISIS Upgrade Utility](#)” on page 169.

For more details on compatibility between firmware versions, search the online Knowledge Base at www.avid.com/US/support for “ISIS firmware matrix.”

If you are replacing an existing switch in the stack, you do *not* need to add/remove chassis or do anything to the stack. Use the following procedure to swap a switch.

Adding an Engine

This section covers the simplest configuration on adding an engine to a system (1 engine, 2 switches and 16 ISBs). If you are expanding a system with v1.x hardware, see the v2.1.1 (or earlier) *Avid ISIS Setup Guide* for detailed procedures.



You must disable link aggregation before creating or modifying your Avid ISIS stack. After your stack has been created, reconfigure your Link Aggregation Groups.

To add an engine:

1. Rack engine in proper position.
2. Install power supplies, switches, and ISBs.
3. Apply power to the engine.
4. Allow chassis to boot fully, about 2 minutes.
5. Update the firmware on each switch if necessary (see [“Replacing an Engine Switch” on page 183](#)).
6. Add the left switch to the stack:
 - a. Open the switch web page on *any* switch on the left stack.
 - b. Click add/remove chassis. You should see the existing stack with the same number of chassis as are currently in the system.
 - c. Click add chassis and then click OK. Wait for the request to get to all switches (all bars turn green). Then immediately attach the stacking cable from the left IXS to the switch. This should be at the ready state before clicking OK.
 - d. Wait up to 5 minutes.
 - If the stacking procedure is successful, the new chassis (verify by serial number) is now listed in the chassis list.
 - If you do not see it listed there after waiting and pressing F5 a few times, disconnect the stacking cable and repeat steps c and d until chassis is successfully added to the stack.
7. Once the left switch is added to the stack, verify that the new switch is at the expected IP address by pinging the new switch from another switch (not management IP). You can get the IP address from the ISIS Management Console and click Chassis from the list on the left and then click the Details tab on the new chassis serial number.
8. Attach the stacking cable to right switch and verify that the new switch is at the expected IP address by pinging the new switch from another switch (not management IP).

9. Once the switches are added and confirmed okay, update the ISB firmware and add the ISBs to the filesystem.
 - a. Highlight new chassis in ISIS Management Console Chassis window and click Upgrade Storage Blades,
 - b. Once upgraded, add the new ISBs to the filesystem. When added they become Storage Elements listed as a Spare in the Type column.
 - c. Select all the new Storage Elements and add them to the Storage Group. Once in a Storage Group they become Active in the Type column and a redistribution is initiated. This can take several hours. The upgrade and client activity can continue during this process.



Do not go through the add chassis procedure a second time. The chassis has already been added to the stack.

Replacing an Engine Switch

To replace an ISS or IXS switch:

1. Disconnect all network interconnect cables and remove old switch. (Power remains on at all times.)
2. Insert new switch but do *not* attach the stacking cable yet.
3. Update switch to correct firmware (if necessary) using the Avid ISIS Upgrade Utility, see [“Avid ISIS Upgrade Utility” on page 164](#).
 - a. Install Avid ISIS Upgrade Utility on a spare computer or laptop.
 - b. Load the firmware package on your spare computer or laptop that matches the firmware on your Avid ISIS.
 - c. Assign IP address on Laptop to 192.168.0.100.
 - d. Connect the Ethernet cable to the Management Port of the new switch.
 - e. Start the Avid ISIS Upgrade Utility. In the Install packages section select add and browse to correct firmware package that you loaded on your spare computer or laptop.
 - f. The utility should detect the switch on 192.168.0.10 automatically. If not, you can put in the IP address manually.
 - g. Check the switch and select Start Install.
 - h. Monitor the upgrade via the Avid ISIS Upgrade Utility until complete. This takes about 20 minutes.
4. Once the switch is at the correct firmware and restarted, the stacking cable can be attached.

5. Verify that the switch is pingable via the correct stack IP address from another switch on the same side of the stack (subnet).

Replacing an Engine

Use the following procedure when replacing an ISIS engine. For purposes of this procedure, the engine to be replaced is referred to as “old chassis” and the replacement engine as “new chassis.”

To replace an ISIS engine:

1. Note the engine serial number on the front of the old chassis. Serial numbers are adhered on the rack-mount ears of the Avid ISIS Engine (under the plastic screw covers, if installed).



If you have not already noted the host names, passwords, IP address, and other important network details, see “Preupgrade Information” on page 158.

2. Log into the ISIS Management Console and get details on the old chassis (use the serial number that you record on the front) and note the left and right IP addresses.
3. Disconnect the CX-4 interconnect cables from the old chassis.
4. Disconnect the 1-Gb connections and any 10-Gb (optical) connections from old chassis.
5. Open a Switch Agent Web page of any Zone 1 client on the left side.



Open the Switch Agent page via the Info button on the engines details page. For more details, see the Avid ISIS Administration Guide.

- a. Click Switch Blade in the Management Console.
 - b. Select the Switch Blade in the Switch Blade page and click Show Info.
 - c. Log into the Switch Agent page (se-admin is the default password).
6. Click the System tab > Add/Remove chassis.
 7. Find the serial number of the old chassis in the Serial Number list and click the “Delete” button for that chassis.

Add a chassis
Submit a request to add a chassis into the system

Remove a chassis

Serial Number	Chassis ID	Action
CRI544048	0	<input type="button" value="Delete"/>
CRI550026	1	<input type="button" value="Delete"/>
CRI550014	2	<input type="button" value="Delete"/>
YRI735031	3	<input type="button" value="Delete"/>
CRI625100	4	<input type="button" value="Delete"/>
YRI735027	5	<input type="button" value="Delete"/>

8. Wait for the operation to be completed (all chassis in the list displays green and “The configuration request completed successfully” is displayed).

The old chassis serial number should no longer be listed in the Serial Number list.

9. Power-off the old chassis by pulling a single power cord and then pulling the remaining two power cords simultaneously.
10. Carefully remove all ISBs from the old chassis and put them in a safe place.
11. Carefully remove both switches from the old chassis, noting from which side of the chassis each switch was removed. Put them in a safe place.
12. Carefully remove all three power supplies from the old chassis and put them in a safe place.
13. Remove the old chassis from the rack.
14. Install the new chassis into the rack (without the ISBs, switches, and power supplies).
15. Carefully reinsert all ISBs.
16. Carefully reinsert the three power supplies.
17. Carefully reinsert both switches into the original position in which they were in on the old chassis. Do not reconnect any cables at this time.

All thumb screws should be secured and snug.

18. Power-on the new chassis by simultaneously inserting two of the power cords and then the third.
Give the new chassis at least 3 minutes to initialize and when all ISBs have solid green LEDs.



After 3 minutes if the ISBs are all blinking green in unison, call Avid Customer Support.

19. Reattach the CX-4 interconnect cables to the left and right switches
20. Go back to the Switch Agent Web page (use any left switch other than the one being added). Select Configuration > Add/Remove chassis. The new chassis serial number should now be listed in the Serial Number list.
21. Go to tools and select ping. Enter the left IP address noted in step 1. Both switches in the new chassis should now be pingable.
22. Reconnect any 1-Gb and 10-Gb cables that were disconnected earlier.
23. Verify the proper operation of both stacks by running the Path Diag from a client in each of the following locations: Zone 1 left, Zone 1 right, Zone 2 left, Zone 2 right, and Zone 3.

Replacing an Internal System Director Drive

There are two system drives installed in the Avid ISIS Engines. The two drives are mirrored and accessible from the rear of the Engine. If you have a failure on either one of the two system drives you can pull the failed drive out of the Engine and install a replacement without turning off the Avid ISIS Engines. The Avid ISIS continues to run properly if one of the two system drives are removed.

As soon as you install a replacement system drive into the vacant system drive slot, the system begins the process of creating a mirror of the original drive on the new drive. All Avid ISIS operations continue to run uninterrupted.



The drive carriers for the system drives are locked to avoid them from opening during shipment. The plastic drive carrier key is mounted on the rear of the Engine beside the system drives.

To replace the System Director drive:

1. Remove the failed drive from the front of the System Director by releasing the drive latch on the front of the drive and pulling the drive from the chassis.
2. Insert the new drive completely into the open drive slot and close the drive latch.

The new drive initiates and completes the repair with no other intervention.

Replacing the System Director

Use the following procedure if you are replacing your System Director to a newer model server. This includes updating from a 32-bit System Director to a 64-bit System Director, or updating the Intel® SR2400 or SR2500 to the AS3000. Before you start the System Director replacement procedure:

- Install the new System Director into the rack. If planning a Standby System Director, also install the second System Director into the rack.



The new Standby System Director is configured after this new Active System Director is running, see “[Configure a Failover Connection](#)” on page 124.

- Install the Avid ISIS v2.0 or later software on the new System Director, see “[Software Upgrade](#)” on page 142.
- Make sure your existing Active and Standby System Directors are healthy, verify that the system is in good working order. Do *not* upgrade to the new System Director if there are issues with the old System Director, see “[Health Check](#)” on page 141.
- Update the software on existing Active and Standby System Directors to the same Avid ISIS version as the new System Director, see “[Software Upgrade](#)” on page 142.

Avid has shipped the Intel SR2500 System Director with a 32-bit operating system and 9 MB of memory. If you have this model System Director and want to upgrade to a 64-bit operating system, you must purchase a Windows 64-bit operating system license and re-image the 32-bit Intel SR2500 System Director.

- Save your current version of the metadata, see “[On the old servers that are being removed:](#)” on page 187.
- Load the Windows operating system, see “[Reinstalling the Windows Storage Server 2008 R2 Operating System](#)” on page 194. This is not necessary if you have purchased a new System Director.
- Import the current version of the metadata, see “[On the new server that is to become the active System Director:](#)” on page 188.

On the old servers that are being removed:

1. Identify the existing Standby System Director and stop the System Director service via the ISIS Control Panel.
2. Identify the existing Active System Director and stop the System Director service via the ISIS Control Panel.
3. On the Active System Director, locate and preserve the “PartitionDump.bin” file.

This file is an exported version of the metadata.

v2.x metadata location

D:\Program Files\Avid Technology\AvidUnityISISSystemDirectorx64

v4.x metadata location

D:\Program Files\Avid\ISIS System Director

4. Copy the PartitionDump.bin file into a temporary directory on the new System Director that is to become the new Active System Director.

The Avid System Director software prevents you from creating a shared folder on the System Directors. The following are a couple suggested ways of moving the PartitionDump.bin file.

- Use a USB flash drive that has the capacity to move the PartitionDump.bin file.
- Create a network share on a client system on the network and copy the PartitionDump.bin file to that shared folder. From the new System Director copy the PartitionDump.bin file into the temporary folder.

On the new server that is to become the active System Director:

1. Verify that you have the current copy of the PartitionDump.bin file from the old Active System Director.
2. Start the Avid ISIS and click System Director Control Panel from the Launch Pad or Start > Programs > Avid > ISIS System Director and select Control Panel.
3. Configure the virtual name and IP address on the new Active System Director to match the old Active System Director.

Configure the virtual name and IP address using the functions in the Configuration tab of the ISIS System Director Control Panel.

4. If using the same IP addresses as the old System Director, make sure to shut down the old System Director first to prevent an IP conflict.



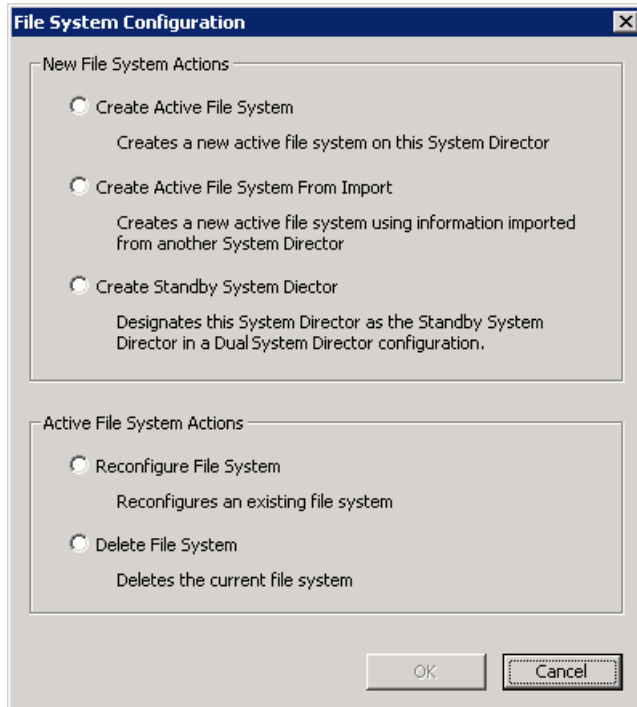
It is acceptable to change the IP address scheme of the new System Director. It is not recommended that you change the virtual ISIS name.

5. Click Stop System Director.

The Configure File System button becomes active.

6. Click Configure File System.

The File System Configuration dialog box opens.



7. Select Create Active File System From Import and click OK.
8. You are prompted to navigate to the `PartitionDump.bin` file you saved on the Active new System Director.
 The file is copied to a location used by the Active System Director and its extension is changed from `bin` to `import`.
`D:\Program\Avid\ISIS System Director\PartitionDump.import`
 The Active new System Director creates a new file system and imports the metadata from the file.
9. Deactivate the Avid software license or move the Application Key (dongle) from the old System Director to the new System Director.
10. Verify that the System Director is now running and Active. Start the Management Console and verify that all workspaces are listed. If not, call customer support before continuing.
11. Configure the new Standby System Director, see [“Configure a Failover Connection” on page 124](#).

Replacing the Network Switch

If replacing a switch in the ISIS environment, the following are a few suggestions you need to consider before removing the switch.

- Have a backup copy of the switch configuration file.
- Disable any Link Aggregation that might be set in your ISIS 7000 environment. This prevents odd network behavior and the inevitable trunking errors.
- Disable any trunking to other switches before removing the switch. Any trunking involved with the switch would be part of the configuration file and would help when reconfiguring the trunk on the new switch.
- You do not have to shutdown the System Director or Engines when replacing a switch, particularly if you have a redundant switch configuration.

To replace a switch you will need a console connection to the switch and a tftp server. The following are high level steps that assumes the failed switch is still capable of making a tftp backup. If the switch is completely dead, the configuration will need to either be restored from a previous backup or manually configured.

To capture the switch configuration file:

1. Copy the startup configuration of the failed switch to the tftp server.
2. Install the replacement switch.
3. Configure a temporary interface on the new switch to connect to the tftp server (best to use a no switchport interface with IP address on same subnet as TFTP server).
4. Copy the backup copy of the old switch startup configuration to the new switch (copy tftp startup-config).
5. Reload the switch configuration and old switch configuration should be restored on the new switch.

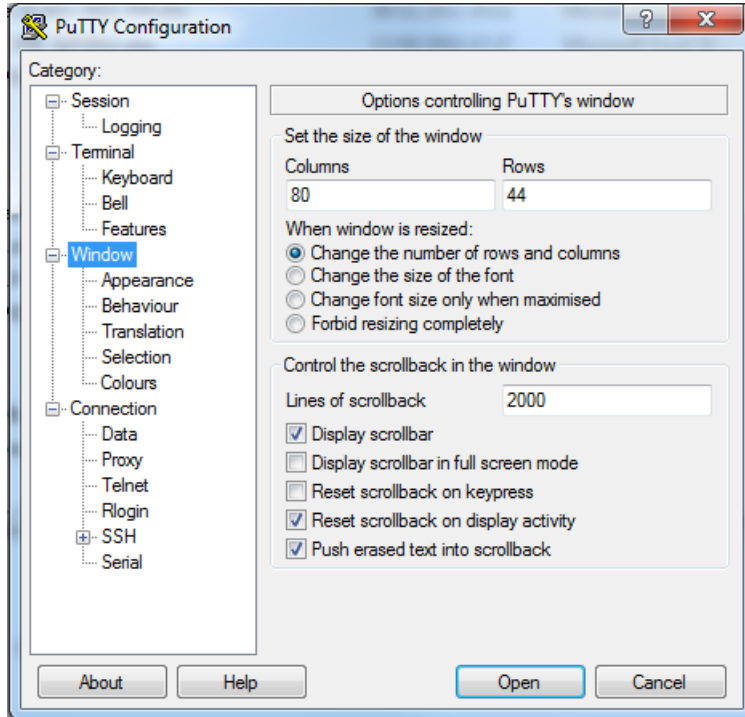
The specific commands will be different between Cisco and Force10 but they all should be in the switch configuration guide.

If a TFTP server is not available:

- ▶ Use a console/telnet client such as PUTTY to list the configuration and copy it to a text file, which can then be pasted back into the new switch and save to NVRAM.



The PUTTY scroll back buffer needs to be increased from the default 200 to at least 2000. If you increase it to 50000 and make the screen longer and wider you can capture “show tech-support” output,



To replace a switch:

1. Disconnect all network cables.
2. Pull out the power cables from the back of the switch.
3. Replace the failed switch with a new switch in the rack.
4. Replace the power cables in the back of the switch to power the switch on.
5. (Option) If you have transceivers in the failed switch, move the working transceivers into the new switch.
6. (Option) If you have modified Avid's default Force10 switch configuration, you need to Telnet or HyperTerminal into switch.

Avid ships Force10 switches configured for ISIS 5000 configurations. Any changes you have made to the default configuration would have to be reapplied.

Avid provides sample Cisco switch configurations in the ISIS software kit. Any changes you have made need reapplied.

7. Reconnect all network cables in the front of the switch.

12 Using the Product Recovery USB for 64-bit System Directors

This section describes the procedures to recover your Avid ISIS system drive by reinstalling Windows Storage Server 2008 and Avid specific additions and changes.

This procedure restores only the Windows operating system and the hardware drivers. It does not restore the Avid ISIS software. The Avid ISIS software must be reinstalled separately, after the operating system recovery is complete. The version number of the image can be found in the C:\IMAGE.TXT file on the root directory of the system drive.



The Avid ISIS ships with a backup product recovery image USB flash drive provided with your Avid ISIS.



After reimaging the server the Administrator password is set to is-admin.

You might need to reinstall the Windows Storage Server 2008 operating system on your Avid ISIS System Director if you are directed to do so by Avid Customer Support. The reinstallation offers you two options:

- Perform a Windows Storage Server 2008 R2 installation to the *entire* system. This replaces all the data from all the available partitions on your system drive. You can perform this operation if you are initializing your system drive.



You lose metadata if you restore all the partitions of the drive.

- Perform this operation to replace only the operating system on your system drive. Typically this removes the *first partition* (C:); the other partitions are not changed.

Creating a Product Recovery USB Flash Drive

Avid highly recommends you copy the image to the 16 GB USB flash drive provided with your Avid ISIS as part of your initial setup. The following procedure describes how to create the product recovery USB flash drive. The product recovery image is included in the C:\Image folder of the system drive.

Once you have created the bootable USB flash drive using the Product Recovery tool, use the USB flash drive to reinstall the operating system image (and associated drivers) to the original state as when it was shipped from Avid.



When you perform a full product recovery of the Avid ISIS system drive using the product recovery USB flash drive, you lose the product recovery image in the C:\Image folder of the system drive.

To create a product recovery USB flash drive:

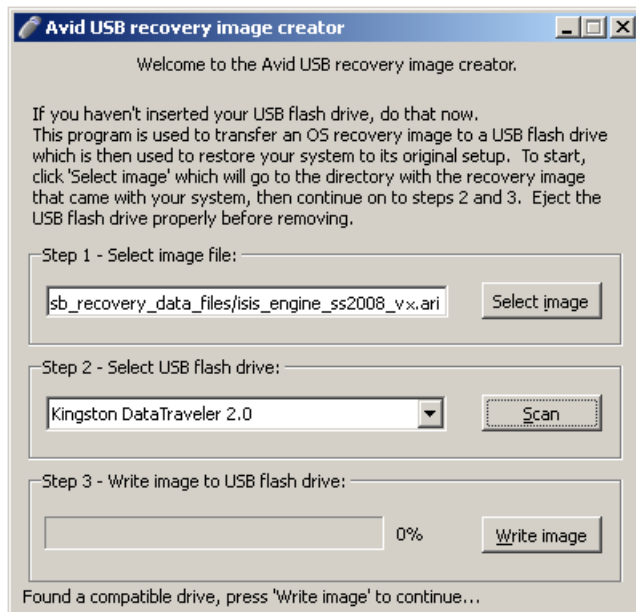
1. Locate the 16 GB USB flash drive Avid provided with the Avid ISIS and insert it into the front USB port.
2. Click “Create Recovery USB Drive” from the installer splash screen or double-click the AvidRecoveryImageTool.exe file included in the software installer kit from the following location:

\AvidISISUtilities\



A direct link to this file is included in the software install splash screen (Create Recovery USB Drive).

The Avid USB recovery image creator window opens.



3. Click Select Image to locate the product recovery image from the C:\Image folder of the Avid ISIS system drive (you need to browse to the location of the .ari file).

4. Select the .ari file.

The Scan button becomes active when you select the image file. The “Select USB flash drive” menu lists USB devices that are installed and capable of accepting the image file. If the inserted USB flash drive does not appear in the drop down menu, verify the capacity of the USB flash drive.

5. Click Scan.
6. Select the USB flash drive from the “Select USB flash drive” menu.

The Write image button becomes active when you select the USB flash drive.

7. Click Write image.



Creating the product recovery image on the USB flash drive can take 18 to 45 minutes depending on the capabilities of the USB flash drive.

8. Click OK to acknowledge the warning about losing all previous data on the USB flash drive.

The Write image button becomes a Cancel button when the image is being created. If you cancel the write image process, the process starts over from the beginning on the next undertaking.

9. Click Ok when process is completed.
10. The USB flash drive appears in the taskbar as an icon. Remove the USB flash drive as follows:
 - a. Double-click the USB icon in the taskbar. A pop-up menu appears with a list of attached USB devices.
 - a. Select the USB flash drive with the product recovery image.
 - b. Click Stop.
 - c. Click OK to remove the selected USB device.
 - d. Remove the USB flash drive from the Avid ISIS.

Reinstalling the Windows Storage Server 2008 R2 Operating System

To reinstall the Windows Storage Server 2008 R2 operating system from the Avid Product Recovery flash drive:

1. Make sure all clients stop any activity and unmount their workspaces.
2. All clients need to exit Client Manager.
3. Locate the Product Recovery Image USB flash drive with the Avid ISIS image.

4. Use the System Director Control Panel to stop the System Director.
5. Insert USB flash drive into the USB port in the system.



You must enter the BIOS with USB flash drive plugged-in to set correct drive boot order.

6. Select Start > Shut Down.
The Shut Down Windows dialog box opens.
7. Select Restart, and click OK.
The Windows Storage Server 2008 R2 operating system restarts.
8. Press the **Delete** key several times during startup until you see “Entering Setup.”
9. Set the USB Drive to boot first. Navigate to the Boot tab > Hard Disk Drives > 1st Drive and select the default USB setting detected by the BIOS. The 2nd Drive setting changes to the “RAID: Intel Volume.”



Depending on the manufacturer of the USB flash drive, this USB selection in the BIOS changes.

10. Select the Advanced tab > CPU Configuration, make sure the hyper thread option “Intel HT Technology” is [Disabled].
11. Select the Advanced tab > IPMI Configuration, make sure “Restore on Power Loss” is set to [Last State].
12. Press **F10** to Exit and Save your changes.
The system continues to start from the USB flash drive.
Wait until two windows appear, click on the blue window and select one of the available options:
 - Recover only the OS partition.
 - Recover the entire system disk.
 - Exit without doing a recovery.
13. At the prompt, type the number of the operation you want to perform:
 - ▶ If you type **1** or **2**, a warning screen opens, informing you that you are about to recover the operating system. Continue with step 14.
 - ▶ If you type **3**, the recovery quits to the Main menu. You need to type **3** again to get to command window. Press **Ctrl+Alt+Delete** to quit in any of these windows.
14. A yellow screen appears type **Y**.
15. A red screen appears type **Y**.

The reimaging takes 20 to 30 minutes.



Do not remove the USB flash drive while performing the product recovery. If you remove the USB flash drive an error is displayed stating it cannot write the Ghosterr.txt file. If the USB flash drive was removed, you cannot continue the process by re-installing the USB flash drive. You would have to start the recovery process from the beginning.

16. A gray screen prompts you to reboot. Type **R**, and quickly remove the USB flash drive from the system.

Configure the operating system as described in the following section. The Apply Computer Setup message is displayed for 3 to 5 minutes.

Configuring the System Drive Using Windows 2008 Storage Server Setup

After you recover the Windows Storage Server 2008 R2 operating system, several system parameters are set including a system Disk Check. The system restarts, and you are prompted to enter the Windows activation key. This number is on the Windows Certificate located on the right-side of the Engine top cover. You need this Windows number in the following procedure.

To set up the Windows operating system:

1. (If removed) Reconnect all the network Ethernet cables.
2. When the Product Key screen opens, type the Product Key from the Certificate of Authenticity in the Product Key text box. The certificate is on the top of the Avid ISIS Engine.



The Product Key Authenticity is verified with Microsoft through an Internet connection. If you do not have the Avid ISIS connected to an in-house network, you need to phone in your Product Key and get an Authenticity number back from Microsoft.

The Windows Storage Server 2008 R2 Setup utility starts, and the a dialog box opens showing the License Agreement screen.

3. Select “I accept the agreement.”
4. Click Next.

The Avid ISIS Engine restarts (potentially more than once).

5. Log on as **Administrator** and **is-admin** as the password.
6. After your system restarts for the last time, customize the system and local settings. See the Windows documentation for more information.
 - ▶ If you are outside the United States, customize the system and local settings.
 - ▶ You might want to create a new *system administrator name* and password.

- ▶ Company Name and Organization.
- ▶ Date and Time Settings.
- ▶ Network Workgroup and Computer Domain settings.



When the operating system is restored in the Avid ISIS Engine, a unique computer host name is created based on the MAC ID of the system board. Each time you re-image your Avid ISIS Engine, the same name will be generated. Although if you have changed the computer host name of your Avid ISIS Engine, you need to reapply your computer host name again.

7. Start the system and install Avid ISIS software, see [“Loading the Software”](#) on page 85.

13 Specifications and Notices

This section provides information on the dimensions and weight, the environmental, the electrical, and the power cord specifications for the Avid AS3000 when used as the ISIS 7000 System Director. It also recommends the use of an Uninterruptible Power Supply and supported network cabling.

Dimensions and Weight

The following table lists the dimensions and weight.

Component Dimensions and Weight

Component	Height	Width	Depth	Weight
AS3000 System Director	1.75 in (44.4 mm)	19 in (482.6 mm)	27 in (685.8 mm)	40.0 lb (18.1 kg) with drives installed

Environment

The following table lists the environmental specifications.

Environmental Specifications

Component	Operating Temperature	Operating Humidity	Storage Temperature
AS3000 System Director	32°F to 104°F (0°C to 40°C)	5% to 95% (at 38°C) non-condensing	-4°F to 140°F (-20°C to 60°C)

Electrical

The following table lists the electrical specifications.

Electrical Specifications

Component	Voltage	Frequency	Watts (Max. U.S.)
AS3000 System Director	100 to 240 Vac Two hot-swap redundant AC power supplies	50 to 60 Hz	650 W

Uninterruptible Power Supply (UPS)

Avid highly recommends you create a separate derived power system for your ISIS 7000 System Director. This provides protection against sudden power surges or losses that could cause you to lose files or experience data corruption. The power outlets need to be from the same distribution panel. This helps prevent ground loops that can be caused by plugging equipment into power sources with different ground potentials. Make sure there is adequate, dedicated power for the UPSs.



You should have all the electrical work at your site done by a licensed electrician. The electrical changes must meet country, state, and local electrical codes.

The ISIS 7000 System Director supports UPS devices that are connected using network connections, USB connections, and serial connections. Install the software from the UPS manufacturer for advanced shutdown behavior, calibrate the UPS device. These software packages also allow for a connected Windows server to send alerts to other Windows servers to perform actions.

If your ISIS 7000 System Director is connected to a network, network policy settings might also prevent you from completing this procedure. Make sure there is adequate power and the correct receptacle type for each hardware component, the rack power strips, and the UPSes. Do not use extension cords to plug in any of the hardware components.

Supported Cabling

Avid supports the following cable types for connecting an ISIS 7000 System Director system.



If you need run your cable greater distances, call Avid Customer Support for supported cable and accessory information.

Supported Cables

Cable Connection Type	Function	Connector Style and Maximum Cable Length
Avid engine interconnect CX-4 cable. Only available from Avid.	Connect engines. See “Removing the Avid Engine Interconnect Cable” on page 43 for proper removal.	CX-4 connector There are three supported lengths at this time: 1, 3, and 5 meters
Ethernet network cable, CAT5e, CAT6, or CAT6a	Connects: Ethernet Avid ISIS clients System Directors and clients to 1 Gb ports Avid Interplay servers to shared storage networks Avid AirSpeed capture and playback servers to shared storage networks	RJ45 connector 100 Meters; If using CAT5e the cable must be rated for 350 MHz for maximum length. The minimum GigE cable length for Avid network products is 6 feet or 2 meter.

Supported Cables

Cable Connection Type	Function	Connector Style and Maximum Cable Length
Optical cables	Connects: 10-Gb port of switch to optical 10-Gb port on the Avid ISIS Engine. 10-Gb optical port to switch port 10-Gb optical port to 10-Gb Ethernet Client 10-Gb Client to 10 Gb Switch port 10-Gb Ethernet switch to 10-Gb Ethernet Switch	The maximum length for 10 Gb Ethernet cable is defined by the core diameter (measured in microns) and modal bandwidth (in units of MHz*km). Avid supports multi-mode fiber cable using 850 nm transceivers (short distances). Specifications for these cables can be found in the ISO 11801 structured cabling document. MMF 62.5 micron cable Modal Bandwidth of: (Overfilled Launch (OFL) Bandwidth, typical of OM1 cable) <ul style="list-style-type: none"> • 160 MHz*km at 26 meters • 200 MHz*km at 33 meters MMF 50 micron cable Modal Bandwidth of: <ul style="list-style-type: none"> • 500 MHz*km at 82 meters (Overfilled Launch Bandwidth, typical of OM2 cable) • 2000 MHz*km at 300 meters (Effective Modal Bandwidth, typical of OM3 cable) Avid supports single-mode fiber cable using 1310 nm transceivers (long distances): <ul style="list-style-type: none"> • SMF ITU G.652.A/B 9 micron cable up to 10 km







When connecting to the 10 Gb port, it is important to follow two rules:

- Ensure that the cable has the required modal bandwidth for the distance of the run.
- Make sure that all multimode cables between an switch port and the other end of the cable run are of the same diameter (for example, 50/125 um or 62.5/125 um).



Single mode transceivers are Class 1 laser product per IEC 60825-1 Amendment 2(2001) and IEC 60825-2 1997. Operating this product in a manner inconsistent with intended usage and specification may result in hazardous radiation exposure.

Supported Cables

Cable Connection Type	Function	Connector Style and Maximum Cable Length
Avid ISIS X2 optical transceivers	Transceiver used in: Cisco® 4948 and 4900M	SC connector X2 = Cisco X2-10GB-SR for MMF X2 = Cisco X2-10GB-LR for SMF  <i>The minimum cable length for -LR and -SR transceivers is 2 Meters.</i>
Avid ISIS XFP optical transceivers	Transceiver used in: Force10 S60 switches ISIS 7000 (ISS1000)	LC connector XFP = 10G-XFP-SR for MMF XFP = 10G-XFP-LR for SMF XFP = 10G-XFP-SR or Picolight XXL-SC-S45-21 for MMF XFP = 10G-XFP-LR or Bookham 10G-BASE-LR for SMF  <i>The minimum cable length for -LR and -SR transceivers is 2 Meters.</i>
Avid ISIS SFP+ optical transceivers	Transceiver used in: ISIS 7000 (ISS2000) ISIS 2000 (System Director) Force10 S4810 switches	LC connector <ul style="list-style-type: none"> • SFP+ multi-mode short range (SR) 850nm JDS – PLRXPL-SC-S43-21-N JDS – PLRXPL-SC-S43-22-N Avago – AFBR-700SDZ Avago – AFBR-703SDZ • SFP+ long range (LR) Finisar FTLX1471D3BCL for SMF Avago AFCT-701SDZ for SMF JDSU JSH-01LWAA1 for SMF  <i>The minimum cable length for -LR and -SR transceivers is 2 Meters.</i>
Avid ISIS SFP optical transceivers	Transceiver used in: Force10 optical switch	LC connector <ul style="list-style-type: none"> • SFP 1000BASE-SX short range (SR) Force10 GP-SFP2-1S  <i>The minimum cable length for -LR and -SR transceivers is 2 Meters.</i>

A Safety and Regulatory Information

This document contains safety and regulatory information for Avid hardware.

- [Warnings and Cautions](#)
- [FCC Notice](#)
- [Canadian Notice \(Avis Canadien\)](#)
- [LED Safety Notices](#)
- [European Union Declaration of Conformity](#)
- [Disposal of Waste Equipment by Users in the European Union](#)
- [Argentina Conformity](#)
- [Australia and New Zealand EMC Regulations](#)
- [Japan EMC Regulations](#)
- [Korean EMC Regulations](#)
- [Taiwan EMC Regulations](#)

Warnings and Cautions



This equipment is intended only for installation in a RESTRICTED ACCESS LOCATION.



Never install equipment if it appears damaged.



Disconnect the power cord before servicing unit.



Only perform the services explicitly described in this document. For services or procedures not outlined in this document, speak with authorized Avid service personnel.



Follow all warnings and cautions in the procedures.



Operate the device within its marked electrical ratings and product usage instructions.



If you need to replace a battery in an Avid hardware unit, be sure to use the correct battery type. There might be a risk of explosion if a battery is replaced by an incorrect type. Dispose of used batteries according to the manufacturer's instructions.



For products with a power switch the main power switch should remain accessible after installation.

(Hebrew Warnings and Cautions)

הנחיות זהירות


אין להתקין ציוד הנראה פגום. 

יש לנתק את כבל החשמל לפני הטיפול ביחידה. 

יש לבצע אך ורק את הטיפולים המתוארים במפורש במסמך זה. עבור טיפולים או הליכים שאינם מתוארים במסמך זה, יש לפנות לאיש שירות מוסמך ומורשה של Avid. 

בביצוע ההליכים, יש להישמע לכל הנחיות הזהירות. 

יש להפעיל את המכשיר במסגרת הדירוגים החשמליים והנחיות השימוש במוצה. 

אם יש צורך להחליף את הסוללה ביחידת חומרה של Avid, יש להקפיד להשתמש בסוג הסוללה הנכון. קיים סיכון להתפוצצות אם הסוללה מוחלפת בסוללה מסוג שגוי. יש להשליך סוללות משומשות בהתאם להנחיות היצרן. 

FCC Notice

Part 15 of the Federal Communication Commission Rules and Regulations has established Radio Frequency (RF) emission limits to provide an interference free radio frequency spectrum. Many electronic devices produce RF energy incidental to their intended purpose.

Class A Equipment

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at personal expense.

Modifications

The FCC requires the user to be notified that any changes or modifications made to Avid hardware that are not expressly approved by Avid Technology may void the user's authority to operate the equipment.

Cables

Connections to Avid hardware must be made with shielded cables with metallic RFI/EMI connector hoods in order to maintain compliance with FCC Rules and Regulations.

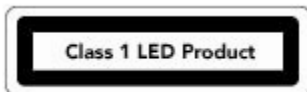
Canadian Notice (Avis Canadien)

Class A Equipment

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

LED Safety Notices



Avid hardware might contain LED or Laser devices for communication use. These devices are compliant with the requirements for Class 1 LED and Laser Products and are safe in the intended use. In normal operation the output of these laser devices does not exceed the exposure limit of the eye and cannot cause harm.

Standard to which conformity is declared: (Class 1 LED Product per IEC 60825-1:2007)

(Hebrew LED Safety Notices)

הוראות בטיחות של נורות LED



חומרת Avid עשויה לכלול נורות LED או התקני ליזר לצורך תקשורת. התקנים אלה תואמים לדרישות עבור נורות LED ומוצרי ליזר מסוג Class 1, והינם בטוחים לשימוש כראוי. בהפעלה רגילה, הפלט של התקן ליזר זה אינו חורג ממגבלת החשיפה של העין, ואינו יכול לגרום לנזק.

תקן ההתאמה המוצהר: (בטיחות עין מסוג Class 1 לפי דרישות
(CDRH / 1-60825 IEC

European Union Declaration of Conformity



Declaration of conformity
Konformitätserklärung
Déclaration de conformité
Declaración de Confomidad
Verklaring de overeenstemming
Dichiarazione di conformità

We/Wir/Nous/WIJ/Noi:

Avid Technology
75 Network Drive
Burlington, MA, 01803 USA

European Contact: Nearest Avid Sales and Service Office or
Avid Technology International B.V.
Sandyford Industrial Estate
Unit 38, Carmanhall Road
Dublin 18, Ireland

declare under our sole responsibility that the product,
erklären, in alleniniger Verantwortung, daß dieses Produkt,
déclarons sous notre seule responsabilité que le produit,
declaramos, bajo nuestra sola responsabilidad, que el producto,
verklaren onder onze verantwoordelijkheid, dat het product,
dichiariamo sotto nostra unica responsabilità, che il prodotto,

Product Name(s): ISIS 7000

Model Number(s): 7020-30088-XX

Product Option(s): This declaration covers all options for the above product(s).

to which this declaration relates is in conformity with the following standard(s) or other normative documents.

auf das sich diese Erklärung bezieht, mit der/den folgenden Norm(en) oder Richtlinie(n) übereinstimmt.

auquel se réfère cette déclaration est conforme à la (aux) norme(s) ou au(x) document(s) normatif(s).

al que se refiere esta declaración es conforme a la(s) norma(s) u otro(s) documento(s) normativo(s).

waarnaar deze verklaring verwijst, aan de volende norm(en) of richtlijn(en) beantwoordt.
a cui si riferisce questa dichiarazione è conforme alla/e seguente/i norma/o documento/i normativo/i.

The requirements of the European Council:

Safety: Directive 2006/95/EC

UL 60950-1, 2nd edition
CAN/CSA-C22.2 No. 60950-1-07; 2007
IEC 60950-1, 2nd edition
EN 60950-1:2006

EMC: Directive 2004/108/EC

EN55022:2006 /A1:2007
EN55024:1998 /A1:2001 /A2:2003
EN61000-3-2:2006
EN61000-3-3:2008

Gerrett Durling, VP of Engineering, Shared Services

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Disposal of Waste Equipment by Users in the European Union



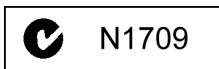
This symbol on the product or its packaging indicates that this product must not be disposed of with other waste. Instead, it is your responsibility to dispose of your waste equipment by handing it over to a designated collection point for the recycling of waste electrical and electronic equipment. The separate collection and recycling of your waste equipment at the time of disposal will help conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for recycling, please contact your local city recycling office or the dealer from whom you purchased the product.

Argentina Conformity



Made in USA

Australia and New Zealand EMC Regulations



Ken Hopkins
Avid Technology (Aust) Pty Ltd
c/o – Elliot House
Suite 810, Level 8
140 Arther St
North Sydney
NSW – 2060

Japan EMC Regulations

Class A Equipment

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take corrective actions. VCCI-A

この装置は、クラスA情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。 VCCI-A

Korean EMC Regulations

Class A Equipment

Please note that this equipment has obtained EMC registration for commercial use. In the event that it has been mistakenly sold or purchased, please exchange it for equipment certified for home use.

이 기기는 업무용(A급) 전자파적합기기로서 판매자 또는 사용자는 이 점을 주의하시기 바라며, 가정외의 지역에서 사용하는 것을 목적으로 합니다.

Taiwan EMC Regulations

Taiwan EMC Regulations BSMI Class A EMC Warning

警告使用者:

這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。

Warning Statement

1. UV ray radiation

- Following statement or equivalent:

警告：開啟前請先關閉UV燈

- Following marking or other equivalent marking:



2. Operator touchable area protection

Operation manual should have following statement and statement should be shown on device, or put on similar sentence:

警告

危險可動部位

請遠離手指及身體其他部位

3. Heat-related hazards

Injury may result from high temperatures under normal operating conditions, causing:

- Burns due to contact with hot accessible parts
- Degradation of insulation and of safety-critical components
- Ignition of flammable liquids

Examples of measures to reduce risks include:

- Taking steps to avoid high temperature of accessible parts
- Avoiding temperatures above the ignition point of liquids
- Provision of marking to warn USERS where access to hot parts is unavoidable

High temperature warning marking — you may use the following high temperature warning marking:



4. Mechanical hazards

Injury may result from:

- Sharp edges and corners
- Moving parts which have the potential to cause injury
- Equipment instability
- Flying particles from imploding cathode ray tubes and exploding high pressure lamps

Examples of measures to reduce risks include:

- Rounding of sharp edges and corners
- Guarding
- Provision of SAFETY INTERLOCKS
- Providing sufficient stability to free-standing equipment
- Selecting cathode ray tubes and high pressure lamps that are resistant to implosion and explosion respectively
- Provision of markings to warn USERS where access is unavoidable

5. Radiation

Injury to USERS and to SERVICE PERSONS may result from some forms of radiation emitted by equipment.

Examples are sonic (acoustic), radio frequency, infra-red, ultraviolet and ionizing radiation, and high intensity visible and coherent light (lasers).

Examples of measures to reduce risks include:

- Limiting the energy level of potential radiation sources
- Screening radiation sources
- Provision of SAFETY INTERLOCKS
- Provision of markings to warn USERS where exposure to the radiation hazard is unavoidable

6. Chemical hazards

Injury may result from contact with some chemicals or from inhalation of their vapors and fumes.

Examples of measures to reduce risks include:

- Avoiding the use of constructional and consumable materials likely to cause injury by contact or inhalation during intended and normal conditions of use
- Avoiding conditions likely to cause leakage or vaporization
- Provision of markings to warn USERS about the hazards

7. Safety warning statement for equipment that is under hazardous voltages

8. Equipment with touch current exceeding 3.5 mA

One of the following labels, or a label with similar wording, shall be affixed adjacent to the equipment AC MAINS SUPPLY connection:

警告

高漏電流

在連接電源前須確實接地

- 9. An EUT that provides TELECOMMUNICATIONS NETWORK connection ports for connection of multiple items of other telecommunications equipment shall not create a hazard for USERS and TELECOMMUNICATIONS NETWORK SERVICE PERSONS due to summation of TOUCH CURRENT**

警告

高漏電流

在連接電信網路

前須確實接地

警告

高接觸電流

在連接電信網路

前須確實接地

10. Replaceable batteries

If an equipment is provided with a replaceable battery, and if replacement by an incorrect type could result in an explosion (for example, with some lithium batteries), the following applies:

- If the battery is placed in an OPERATOR ACCESS AREA, there shall be a marking close to the battery or a statement in both the operating and the servicing instructions
- If the battery is placed elsewhere in the equipment, there shall be a marking close to the battery or a statement in the servicing instructions

The marking or statement shall include the following or similar text:

警 告

本電池如果更換不正確會有爆炸的危險

請依製造商說明書處理用過之電池

11. Warning to service persons

Suitable markings shall be provided on the equipment or a statement shall be provided in the servicing instructions to alert a SERVICE PERSON to a possible hazard, where both of the following conditions exist:

- Where a fuse is used in the neutral of single-phase equipment either permanently connected or provided with a non-reversible plug
- Where, after operation of the fuse, parts of the equipment that remain energized might represent a hazard during servicing

The following or similar wording is regarded as suitable:

注意

雙極性 / 中性線已接熔線

Index

Numerics

- 10-Gb cable [29](#)
- 1-Gb cable [29](#)

A

- Access to system [51](#)
- Activating software [106](#)
 - without Internet connection [108](#)
- Activation ID [106](#)
- Adding an engine [182](#)
- Adding hardware [181](#)
- Adding remote host [100](#)
- Addresses
 - virtual [127](#), [129](#)
- Administrator
 - password [192](#)
 - password (Management Console) [90](#)
- After [196](#)
- Application key
 - install [87](#)
 - installed [87](#)
 - see Licence key [87](#)
- Argentina Conformity [208](#)
- Australia EMC regulations [208](#)
- Auto-connect (Client Manager) [99](#)
- Autorun.exe file [85](#), [151](#)
- Avago, SFP+ [202](#)
- Avid
 - online support [13](#)
 - training services [14](#)

B

- Bind Storage Elements [89](#)
- Binding order [133](#)

- Boards, space for changing [51](#)
- Button
 - NMI [25](#)
 - power [26](#)
 - system reset [25](#), [25](#)

C

- Cable
 - 10-Gb [29](#)
 - CX-4 [200](#)
 - interconnect [29](#)
 - length [200](#)
 - micron [201](#)
 - multi-mode fiber [201](#)
 - OM2, OM3 [201](#)
 - optical [201](#)
 - remove interconnect [43](#)
 - specifications [201](#)
- Cables
 - Category 5 or 6 [200](#)
 - connecting [43](#)
 - described [43](#)
 - space for connecting [51](#)
 - supported [199](#)
- Canadian
 - interference causing equipment regulations [205](#), [209](#), [209](#)
- Category 5 or 6 cables [200](#)
- Chassis *See* Engine
- Checklist
 - health of system [141](#), [181](#)
 - new install [18](#)
 - preupgrade [158](#)
 - software [15](#)
- Chunk sizes [30](#)
- Cisco [202](#), [202](#), [202](#), [202](#)

Clearance 51

Client

- architecture 35
- maximum 35

Client Manager

- auto-connect 99
- connecting from Zone clients 100
- documentation 13
- Preferences dialog box 100

Client Manager maintenance 176

Complete shutdown 177

Components, space for changing 51

Configure

- System Director Control Panel 88, 124, 128, 133, 188
- virtual name 88, 124, 128, 133, 188
- Windows operating system 196

Configure the Virtual Addresses 127, 129

Connecting cables 43, 51

Connector

- interconnect 29
- USB 25

Control panel

- System Director 88, 124, 128, 188

Control panel, System Director 25, 172

Create

- New Active file system 89, 126, 131, 149, 189

Create New Active 88, 124, 128, 133, 188

Crossover connection validation 130

CX-4 cable 200

D

Daily maintenance 171

Deactivate License software 111

Device ID 106

Diagnostics

- switch 173
- switch infrastructure 157

Dimensions 198

Documentation

- client software 13

Drive

- activity 26
- flash 192

Dump metadata 88, 124, 128, 133, 188

E

EIA rack units 50

Engine

- adding 182
- front view 27
- interconnect 29
- interconnect cable removal 43
- power supplies 28
- rear view 28
- replacement 184

Environmental requirements 198

Ethernet switches 29

European Union notice 206

F

Failover

- binding order 133
- described 26
- System Director 174

Fans 28

FCC notice 204

File system 19

Firmware

- incompatible 181
- utility 164

Flash drive

- recovery 192

Flash software 97

Force10

- connectors and cables 202

Foundry 29

Front panel controls, System Director 24

Full Redistribution 174, 174

G

Green LEDs 25

H

Hardware

- adding components 181

Health check 141, 181

Health Monitor 133

Host 100

Host name change, System Director [111](#)

I

Image version file [143](#)
 Indirect license activation [108](#)
 Infrastructure diagnostics [157](#), [173](#)
 Installation, in a rack [50](#)
 Integrated switch [29](#)
 Interconnect
 cable [29](#)
 connectors [29](#)
 Internal
 space for changing drives [51](#)
 Interplay Framework [133](#)
 ISB (ISIS Storage Blade)
 described [22](#)
 function [27](#), [27](#)
 password [70](#), [75](#)
 slot positions [27](#)
 ISS (ISIS Integrated Switch)
 described [22](#)
 LED [29](#)
 location [28](#)
 IXS (ISIS Expansion Switch)
 described [22](#), [29](#)
 function [27](#)
 LEDs [29](#)
 location [28](#)

J

JDSU [202](#)
 JDSU, SFP+ [202](#), [202](#)

K

KVM switch [62](#)

L

Launch pad icon [90](#), [132](#)
 LED
 IXS (ISIS Expansion Switch) [29](#)
 system drive [26](#)
 system ID [26](#)
 system status [25](#)

Length, cable [200](#)
 License key
 activation [87](#)
 License software
 activation [106](#)
 deactivate [111](#)
 host name change [111](#)
 Log in [90](#), [90](#)

M

Maintenance
 check system health [141](#), [181](#)
 Client Manager [176](#)
 daily [171](#)
 monthly [174](#)
 weekly [173](#)
 Management connection [29](#)
 Management Console
 bind [89](#)
 password [90](#)
 Maximum
 number of clients [35](#)
 storage [30](#)
 Maximum length [200](#)
 Micron cable [201](#)
 Modal bandwidth [201](#)
 Monitor
 VGA connector [62](#)
 Monthly maintenance [174](#)
 Multi-mode fiber cable [201](#)

N

Naming convention [21](#)
 Network
 activity LEDs [25](#)
 zones [36](#)
 Network connection
 binding order [133](#)
 New install checklist [18](#)
 New Zealand EMC regulations [208](#)
 NMI (non-maskable interrupt) button [25](#)
 Nomenclature [21](#)

O

- Online support 13
- Operating system
 - configure 196
 - reinstall 194
- Optical cable 29, 201
- Optical transceivers 202, 202, 202

P

- Packets received 130
- Password
 - administrator 192
 - ISB 70, 75
 - Management Console 90
 - storage blade 139
 - switch 139
 - System Director 24, 69, 139
- PathDiag Tool 156
- Picolight 29
- Port, management 29
- Power
 - button 26
 - cord connection 65
 - specifications 198
- Power supply
 - described 28
 - location 28
- Preferences (Client Manager) 100
- Preupgrade information 158
- Product descriptions 21
- Product recovery, flash drive 192

R

- Rack
 - installation 58
 - mounting instructions 50
 - position 52
 - rack units 52
 - requirements 51
- Rack-mount
 - installation 50
 - requirements 51
- Rear panel, System Director 26
- Received packets 130

- Recommended maintenance 171
- Recovery flash drive 192
- Recreating file system 19
- Red LED 25
- Redistribution 174, 174
- Regulatory information 204
- Reinstall Windows 194
- Remote Host 100
- Replace
 - engine 184
 - switch 183, 191
- Requirements for rack mounting 51

S

- Safety information 204
- Server room shutdown 177
- Servicing, space for 51
- SFP+ 29, 202, 202, 202, 202, 202, 202
- Shutdown server room 177
- Snapshot tool 174
- Software
 - Flash 97
 - license 106
- Software upgrade 15, 142
- Space for changing components 51
- Specifications
 - dimensions and weights 198
 - environmental 198
 - power 198
- Status messages
 - storage elements 172
- Stop System Director 88, 124, 128, 133, 188
- Stop/Start server 88, 149, 188
- Storage blade password 70, 75, 139
- Storage elements 30
 - See also* ISB
 - status 172
- Storage Groups
 - adding ISBs 31
 - moving workspaces 31
 - size 30
- Storage limit 30
- Supported cables 199
- Switch
 - adding 181
 - described 29

- diagnostics [157](#)
- firmware utility [164](#)
- infrastructure diagnostics [173](#)
- KVM [62](#)
- replacement [181](#), [183](#), [191](#)
- Switch Agent page [184](#)
- Switch blade password [139](#)
- System
 - drive LED [26](#)
 - ID LED [26](#)
 - reset button [25](#), [25](#)
 - status LED [25](#)
- System Director
 - 2U rack size [24](#)
 - Control Panel [88](#), [124](#), [128](#), [133](#), [172](#), [188](#)
 - Create New Active file system [89](#), [126](#), [131](#), [149](#), [189](#)
 - failover [174](#)
 - front control panel [25](#)
 - front panel [24](#)
 - host name change [111](#)
 - image version [143](#)
 - log in [90](#), [90](#)
 - password [24](#), [69](#), [90](#), [90](#), [139](#)
 - rear panel [26](#)
 - recovery [192](#)
 - second [26](#)
 - stop/start service [88](#), [149](#), [188](#)
- System disk [24](#)
- System error [25](#)
- System ID [106](#)

T

- Taiwan EMC regulations [209](#)
- Task bar icon [90](#), [132](#)
- Training services [14](#)
- Transceivers [29](#), [201](#), [202](#), [202](#)
- Troubleshooting [13](#)
 - check health [141](#), [181](#)
 - recommended maintenance [171](#)

U

- Upgrade
 - checklist [15](#)
 - firmware utility [164](#)

- post upgrade verification [155](#)
- preupgrade checklist [158](#)
- procedure [142](#)
 - See also* Upgrade Utility
 - software [15](#), [142](#)
- Upgrade utility
 - functional description [164](#)
 - location [169](#)
 - main window [166](#)
 - overview [164](#)
 - procedure for running [169](#)
 - software interface [166](#)
- USB (universal serial bus)
 - connector [25](#)
 - flash drive [192](#)
 - keyboard and mouse [62](#)
 - port described [25](#)
- Utility
 - list of available tools [176](#)
 - upgrade firmware [164](#)

V

- Validate crossover connection [130](#)
- Verification of upgrade [155](#)
- Version of image [143](#)
- VGA monitor [62](#)
- Virtual Addresses, configure [127](#), [129](#)
- Virtual name [88](#), [124](#), [128](#), [133](#), [188](#)

W

- Weekly maintenance [173](#)
- Weight [198](#)
- Windows
 - event logs [173](#)
 - reinstall [194](#)
- Windows Update [96](#)

X

- XFP [29](#)
- XFP transceivers [202](#)

Z

- Zone

examples 36
Zone clients 100



Avid
75 Network Drive
Burlington, MA 01803-2756 USA

Technical Support (USA)
Visit the Online Support Center at
www.avid.com/support

Product Information
For company and product information,
visit us on the web at www.avid.com