Pro Tools
AVoption|XL Guide

Version 6.1 on Windows or Macintosh
Version 5.3.x on Windows or Macintosh
Version 5.1.3 on Macintosh

digidesign

contents

chapter 1

Introduction to Pro Tools AVoption|XL

AVoption|XL combines the powerful audio post-production features of Pro Tools with integrated support for the import, capture, and playback of Avid video media.

AVoption|XL Components

AVoption|XL consists of software, a Meridien Digital Media Board (PCI card) that you install in a Pro Tools audio system, and a Breakout Box that connects to the PCI card. Pro Tools audio hardware provides digital audio recording, editing, mixing, and processing. AVoption|XL provides video capture and import, full-screen video playback on an external PAL or NTSC monitor, professional quality video compression, and the capability to record and play back uncompressed video.

AVoption|XL includes the following:

• Meridien Digital Media Board

• AVoption|XL Breakout Box

• Connector cable

• AVoption|XL Installer CD-ROM (includes FilmFrame)

• AVoption|XL iLok License Card for Pro Tools|HD systems

  – and –

• AVoption|XL Authorizer floppy disk for Pro Tools|24 MIX and Pro Tools|24 systems

AVoption|XL Capabilities

AVoption|XL lets you:

• Import and capture multiple NTSC or PAL video clips to the Movie track.

• Play the Movie track with near sample-accurate precision against audio tracks in a Pro Tools session.

• Spot or Slip video clips to a new time code location, and spot audio to video.

• Spot individual video clips to new locations in the Movie track.

• View video edits and clip definitions in the Movie track.

• View the Movie track as a series of picture frames.

• Play video on an external NTSC or PAL monitor.

You can also:

• Import JFIF video media files from Meridien-based Avid systems such as Media Composer, Symphony, and Xpress into the Movie track of a Pro Tools session.

• Capture JFIF format video media in the Movie track of a Pro Tools session, while recording audio simultaneously.

FilmFrame

The FilmFrame™ option enables support for true 24P and 25P (Progressive Scan) picture media in AVoption|XL. Using FilmFrame, you can import and play back 24P or 25P material created in Avid video workstations. 24P indicates 24 frames per second using progressive image storage, as opposed to interlaced fields. 25P indicates 25 frames per second using progressive image storage, as opposed to interlaced fields.

When using FilmFrame, all clips in the Movie track should be 24P or 25P. This is because the first frame in the Movie track sets the video engine to the appropriate speed. If the first clip is 24 fps or 25 fps, the entire Movie track will play at 24 fps or 25 fps. This will affect the playback speed of any subsequent clips of different speeds.

In Pro Tools 6.1, FilmFrame is installed with AVoption|XL, and is authorized with the AVoption|XL authorization. In Pro Tools 5.x, FilmFrame requires a separate authorization.

For examples of common FilmFrame Workflows, see Appendix B, "FilmFrame Workflows."

chapter 2

AVoption|XL Hardware Overview

AVoption|XL consists of two hardware components: a Meridien Digital Media Board that installs in a PCI slot in your computer, and an AVoption|XL Breakout Box that connects to the card in your computer. A Video I/O Board, installed in the AVoption|XL Breakout Box, provides video inputs and outputs from your computer to the rest of your video equipment.

AVoption|XL Hardware Capabilities

AVoption|XL hardware:

- Receives composite, component, S-video, or (optional) SDI video signal

- Digitizes incoming video

- Compresses digitized video using advanced JFIF compression

- Outputs composite, component, S-video, and (optional) SDI video signals

- Captures and plays back uncompressed video

JFIF Video Compression

The Meridien board captures and plays back video media in JPEG File Interchange Format (JFIF). JFIF compression levels provide variable levels of compression for your video project, depending on the recording input selected.

The available JFIF resolutions for capture and playback of interlaced frame rates (such as 25i or 30i) are:

- Single field:
  - 15:1s
  - 4:1s
  - 2:1s
- Dual field:
  - 20:1
  - 10:1
  - 3:1
  - 2:1
  - 1:1 (uncompressed)
- Multi-Cam (playback only):
  - 10:1m
  - 4:1m

The available JFIF resolutions for playback of progressive scan frame rates (such as 24P or 25P) are:

- 8:1m
- 3:1m
- 35:1
- 28:1
- 14:1
- 3:1
- 2:1
- 1:1 (uncompressed)

High JFIF compression ratios (such as 20:1 or 10:1) do not require as much storage space as low compression ratios (such as 3:1 or 2:1); however, video resolution is much better at low compression ratios.

JFIF Compression and Storage

File sizes for JFIF compressed video media will vary, depending on the selected video input.

The following tables list the approximate amount of video storage, in megabytes per second, required for each JFIF compression level.

Storage for Single-Field JFIF

JFIF level	30/25 FPS Storage (MB/second) (approximate)
15:1s	.7
4:1s	2.7
2:1s	5.5

Storage Required for Dual-Field JFIF

JFIF level	30/25 FPS Storage (MB/second) (approximate, except 1:1)
20:1	1.1
10:1	2.2
3:1	7.3
2:1	11
1:1	22

⚠ *1:1 (uncompressed) data storage levels are not approximate. The amount of data required to store 1:1 video is always the same, regardless of the video input used.*

Compatibility

Digidesign can only assure compatibility and provide support for hardware and software it has tested and approved.

For a list of Digidesign hardware systems, Digidesign-qualified computers, operating systems, and third-party devices and software, refer to the latest compatibility information available on the Digidesign Web site (www.digidesign.com/compato).

Supported Systems

The following Pro Tools TDM systems support AVoption|XL:

- Pro Tools|HD 6.1, 5.3.3, or 5.3.1 on Windows XP Professional Edition
- Pro Tools|HD 6.1 on Mac OS X
- Pro Tools|HD 5.3.1 on Mac OS 9.1 or 9.2
- Pro Tools|24 MIX 5.1.3 on Mac OS 9.1 or 9.2

Minimum System Requirements

- Digidesign-qualified computer
- At least 512 MB of RAM
- Digidesign-qualified expansion chassis (required for Macintosh, optional for Windows)
- Digidesign-qualified storage adapters (one for audio and one for video):
  - SCSI HBA: a Digidesign-qualified SCSI HBA (such as the ATTO UL3D) is required for 1:1 or 2:1 video)
  - FireWire (audio only)
  - Fiber Channel for Avid Unity™ MediaNetwork or MediaNet

Supported Computers

- IBM Z-Pro 6221
- IBM M-Pro 6850
- Compaq Evo 8000
- Power Macintosh G4 with a Digidesign-qualified expansion chassis
- Power Macintosh G3 (Blue & White) with a Digidesign-qualified expansion chassis

⚠ *Older G3 Macintosh systems (beige) are not supported.*

- Power Macintosh 9600 (Pro Tools|24 MIX 5.1.3 only)

3:1 Video Compression or Higher

Minimum AVoption|XL System Requirements

Item	Minimum Requirement
Computer	IBM Z-Pro 6221 or M-Pro 6850, Compaq Evo 8000,Power Macintosh G4, Blue & White G3, or 9600
PCI Expansion Chassis	Digidesign or Magma 13-Slot (optional on Windows, required for Macintosh)
SCSI accelerator	Digidesign-qualified SCSI accelerator (such as the ATTO UL3D); for more information, see the Digidesign Web site (www.digidesign.com).
SCSI hard drives	Digidesign-qualified hard drives are required; for more information, see the Digidesign Web site (www.digidesign.com).
Striped hard drives	Depending on the drive speed, a 2-way striped or 4-way striped drive may be necessary for video playback.
Avid Unity MediaNetwork or MediaNet (optional)	Qualified Fibre Channel PCI card (ATTO 3300, JNI FCE3210C, or JNI FCE3210N).
Sync peripheral	SYNC I/O with HD or MIX systems or Universal Slave Driver (USD) with MIX systems

2:1 Video Compression or 1:1 (Uncompressed)

Minimum AVoption|XL System Requirements

Item	Minimum Requirement
Computer	IBM M-Pro 6850 or Compaq 8000,Power Macintosh G4, Blue & White G3, or 9600
PCI Expansion Chassis	Digidesign or Magma 13-Slot (optional on Windows)
SCSI accelerator (video)	Digidesign-qualified SCSI accelerator (such as the ATTO UL3D); for more information, see the Digidesign Web site (www.digidesign.com).
SCSI accelerator (audio)	Digidesign-qualified SCSI accelerator (such as the ATTO UL3D); for more information, see the Digidesign Web site (www.digidesign.com).
SCSI hard drives	Digidesign-qualified hard drives are required; for more information, see the Digidesign Web site (www.digidesign.com).
Striped hard drives	Depending on the drive speed, a 2-way striped or 4-way striped drive may be necessary for video playback.
Avid Unity MediaNetwork or MediaNet (optional)	Qualified Fibre Channel PCI card (ATTO 3300, JNI FCE3210C, or JNI FCE3210N).
Sync peripheral	SYNC I/O with HD or MIX systems or Universal Slave Driver (USD) with MIX systems

⚠ *On Windows with Avid Unity, 1:1 video is not currently supported with an expansion chassis.*

Synchronization Hardware

Synchronization Peripheral

AVoption|XL requires SYNC I/O for use with Pro Tools|HD-series systems. AVoption|XL requires Universal Slave Driver (USD) or SYNC I/O for use with Pro Tools|24 MIX-series and Pro Tools|24 systems.

Sync Source

For accurate synchronization during capture and playback, a common video reference is required:

- Black burst
- House Sync source
- Local video source (such as the TBC video output of the machine)

Local Storage Hardware

SCSI Accelerators

To support the high transfer rates required by AVoption|XL video, a Digidesign-qualified dual-channel SCSI accelerator is required, with audio drives connected to one channel and video drives connected to the other channel. For 2:1 compression or 1:1 uncompressed video, two SCSI accelerators are required.

SCSI Hardware and Drives with Video Compression Level 3:1 or Higher

If you are using 3:1 video compression or higher at all times, then your system requires only a single dual channel SCSI accelerator, with audio drives connected to one channel and video drives connected to another. Qualified dual channel SCSI accelerators (such as the ATTO UL3D).

Using Two Hard Drives

For scenarios that do not require a high audio track count or a very long video segment, you may use two hard drives.

In this scenario, one drive is used to record, import, and play back audio data, and the other is used to do the same for video.

Using More Than Two Hard Drives

To get the highest possible performance from your AVoption|XL system, you can use more than two hard drives. In this scenario, you can use striped hard drives for video data. Striped volumes appear to AVoption|XL as a single volume.

⚠ *Striped drives are supported for video only. Striped drives are not supported for audio.*

Audio AVoption|XL can store audio data to multiple hard drives. You should allocate audio tracks to different hard drives manually. Round Robin disk allocation is not recommended in a system that includes video drives. For more information, see the *Pro Tools Reference Guide*.

Video AVoption|XL can capture a contiguous video track to multiple hard disks. This is useful if the length of your video session exceeds the storage space available on a single drive. For example, 26 minutes of video material, using 3:1 compression, requires approximately 11.1 GB of storage space.

SCSI Hardware and Drives with Video Compression Level 2:1 or 1:1

If you are using 2:1 or 1:1 video compression, your system requires two Digidesign-qualified SCSI accelerators (such as the ATTO UL3D)—one for audio and one for video.

Striped Drive Requirements

Striped drives are configured so that multiple hard drives behave as if they are one hard drive. This makes higher data throughput possible. Requirements will vary depending on the drives. For instance, the 5th-Generation Avid/DigiDrives™ (released November 2001) require 2-way striped drives when capturing or playing uncompressed (1:1) video. For earlier generations of drives, 4-way striped drives (4 drives acting as one) are required when capturing or playing uncompressed (1:1) video. 2-way striped drives (2 drives acting as one) are required when capturing or playing 2:1 compressed video.

2-way striped drives should be connected in pairs to the video accelerator, with 1 drive connected to each channel.

4-way striped drives should be connected in pairs to the video accelerator, with 2 or more drives connected (in even amounts) to each channel.

⚠ *Pro Tools with AVoption|XL does not support striped audio drives for local storage.*

▤ *For information on Avid Unity MediaNetwork or MediaNet, refer to your Avid documentation.*

chapter 3

Installing AVoption|XL

If you do not already have currently supported Pro Tools hardware installed, you must first install your Pro Tools software and hardware. For detailed installation information, refer to the *Getting Started Guide* that came with your Pro Tools system.

Be sure to follow the correct PCI slot placement of your Pro Tools cards according to the information in Appendix A, "Slot Configurations for AVoption|XL."

Once you have installed your Pro Tools system and verified that it is functioning correctly, proceed by installing the AVoption|XL hardware and software.

Be sure to install AVoption|XL hardware before installing AVoption|XL software.

Installing AVoption|XL Hardware

AVoption|XL PCI Slot Configurations

To install your AVoption|XL hardware, first determine the PCI slots where you will install the hardware. For detailed information, see Appendix A, "Slot Configurations for AVoption|XL."

Audio Hardware

Refer to the *Getting Started Guide* that came with your Pro Tools system for audio hardware installation information. You may be required to move hardware that is already installed to new PCI slot locations in your computer or expansion chassis, based on the information in Appendix A, "Slot Configurations for AVoption|XL."

Installing AVoption|XL Video Hardware

To install AVoption|XL video hardware:

1 Unplug and open your computer or expansion chassis according to the instructions included with it.

2 Release any static electricity by touching the power supply, or another grounded item.

3 Remove the Digital Media Board from the anti-static bag, being careful to handle it only by the edges.

4 Locate the PCI slot where you will install the Digital Media Board. To identify the proper PCI slot location, see Appendix A, "Slot Configurations for AVoption|XL."

5 Line up the Digital Media Board with the installation slot, and slide the card into place gently so the PCI connector is lined up with the PCI slot.
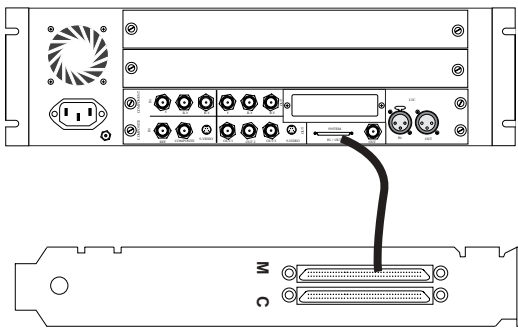
6 Press down firmly on the card with even pressure. The connector should click into place in the PCI slot.
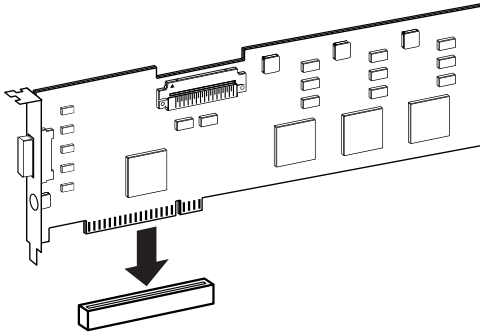
PCI card alignment and installation

7 Close the computer or expansion chassis.

8 Attach the connector cable from the Digital Media Board (connector labeled M) to the Computer connector on the AVoption|XL Breakout Box (see "AVoption|XL Breakout Box" on page 11).

Connecting the Digital Media Board to the Breakout Box

9 If you need to install a SCSI accelerator card, do so now (see "Installing the SCSI Accelerator" on page 18).

AVoption|XL Video Connections

The following video I/O capabilities are available with the AVoption|XL Breakout Box:

• Inputs for composite, component (Y, R-Y, B-Y), S-Video, and (optional) SDI.

• Outputs for composite, component (Y, R-Y, B-Y), S-Video, and (optional) SDI.

• Video Ref input to allow the video to be locked to an external source such as house sync or a blackburst generator.

Note that only one video input source can be used at a time. For more information, see "Recording Video" on page 25.

⚠ *The AVoption|XL Breakout Box can only output from either S-Video or Component outputs. You must set this option in your Movie track. See "Setting S-Video or Component Output" on page 26 for instructions.*

AVoption|XL Breakout Box

The following sections provide figures and tables that describe the function of the AVoption|XL Breakout Box.

AVoption|XL Breakout Box Front Panel Indicators

The front panel of the AVoption|XL Breakout Box (see Figure 1) has six indicators and a power switch. When you turn on the AVoption|XL Breakout Box, the indicators turn on and off as it goes through a power-on self-test (POST). After the POST, the POWER indicator remains lit.

Some indicators do not light, or do not indicate correctly (see illustration). To see the correct indications, use the indicators on your Digidesign SYNC I/O, USD, or the Pro Tools Session Setup window.
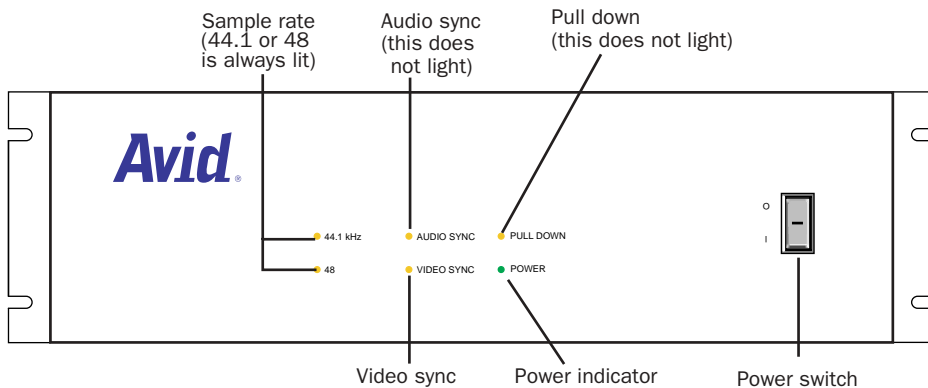

Figure 1. AVoption|XL Breakout Box front panel

⚠ *The sample rate indicator is not accurate for sessions with sample rates greater than 48 kHz.*
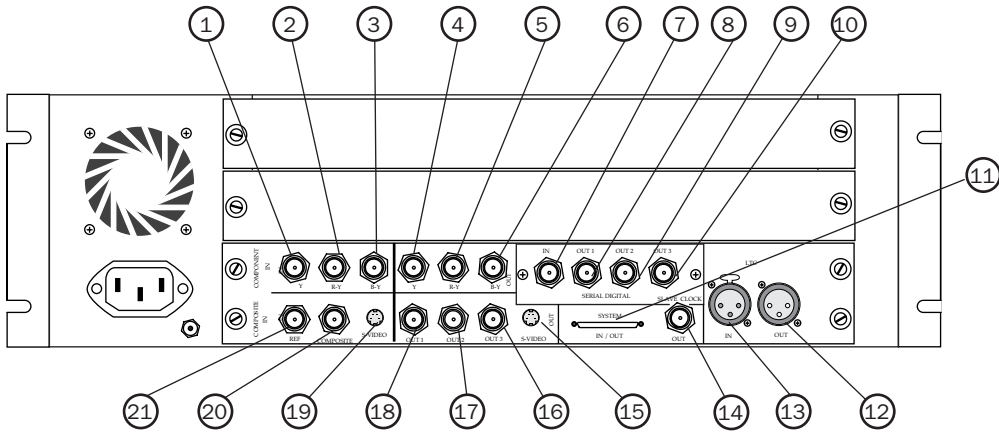
Video I/O Connectors

Figure 2. AVoption|XL Breakout Box back panel showing video connectors

Table 1. Video I/O Board Identifiers

| Number	Label	Function
1	COMPONENT Y IN	Video Y component input, BNC connector. Connects to analog video output of decks.
2	COMPONENT R-Y IN	Video R-Y component input, BNC connector. Connects to analog video output of decks.
3	COMPONENT B-Y IN	Video B-Y component input, BNC connector. Connects to analog video output of decks.
4	COMPONENT Y OUT	Video Y component (Betacam) output, BNC connector. Connects to analog video input of decks.
5	COMPONENT R-Y OUT	Video R-Y component (Betacam) output, BNC connector. Connects to analog video input of decks.
6	COMPONENT B-Y OUT	Video B-Y component (Betacam) output, BNC connector. Connects to analog video input of decks.
7	SDI IN (optional)	Serial digital input, BNC connector. Connects to a serial digital output from a digital video source.
8	SDI OUT1 (optional)	Serial digital output number 1, BNC connector. Connects to VTR input, a video monitor, or other serial digital device.

Table 1. Video I/O Board Identifiers(Continued)

| Number	Label	Function
9	SDI OUT2 (optional)	Serial digital output number 2, BNC connector. Connects to VTR input, a video monitor, or other serial digital device.
10	SDI OUT3 (optional)	Serial digital output number 3, BNC connector. Connects to VTR input, a video monitor, or other serial digital device.
11	SYSTEM	Audio and video I/O connector from the system interface board.
12	LTC OUT	Sends LTC time code out (not used).
13	LTC IN	Brings LTC time code in (not used).
14	SLAVE CLOCK OUT	Clock output, BNC connector (not used)
15	S-VIDEO OUT	Super-video output, 4-pin connector. Connects to analog video input of decks.
16	COMPOSITE OUT3	Composite video output, BNC connector. Connects to analog video input of decks or monitor.
17	COMPOSITE OUT2	Composite video output, BNC connector. Connects to analog video input of decks or monitor.
18	COMPOSITE OUT1	Composite video output, BNC connector. Connects to analog video input of decks or monitor.
19	S-VIDEO IN	Super-video input, 4-pin connector. Connects to analog video output of decks.
20	COMPOSITE IN	Composite video input, BNC connector. Connects to analog video output of decks.
21	Video Reference (REF)	Blackburst or house sync input, BNC connector. Synchronizes the system with the global clock source provided by the house sync or blackburst generator.

SYNC I/O Connections

The following illustrations show SYNC I/O connections for Pro Tools|HD and Pro Tools|24 MIX systems with AVoption|XL. The *SYNC I/O Guide* provides more specific information about this peripheral.
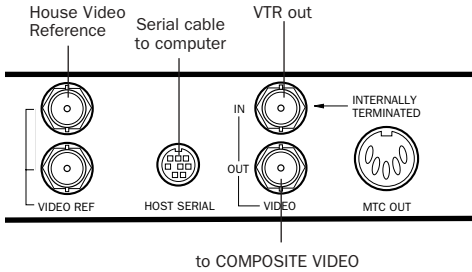
SYNC I/O video connections
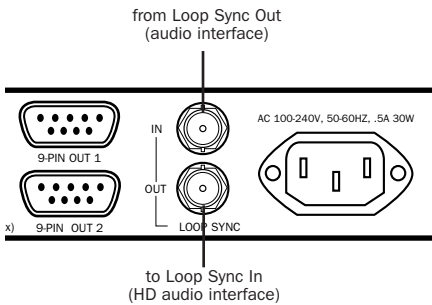
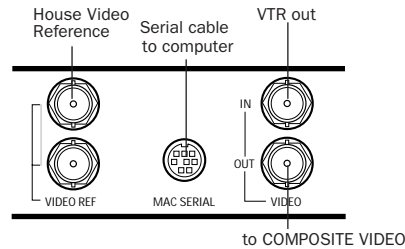*SYNC I/O connection to a Pro Tools|HD audio interface*
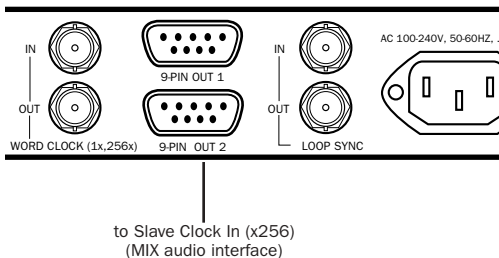
SYNC I/O connection to a Pro Tools|24 MIX audio interface
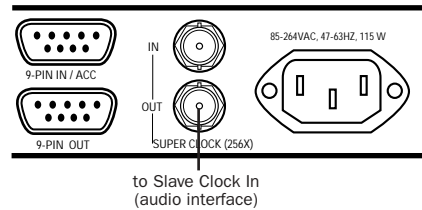
USD Connections

(Pro Tools|24 MIX or Pro Tools|24 Systems Only)

The following illustrations show USD connections. The *Universal Slave Driver User's Guide* provides more specific information about this peripheral.

USD video connections

USD connection to an audio interface

Connecting House Video Reference or Blackburst

In most AVoption|XL setups, three blackburst or house video reference (house sync) connections are required:

• To VIDEO REF IN on the SYNC I/O or USD

• To a video input on your VTR (a video reference input if available)

• To the VIDEO REF connector on the AVoption|XL Breakout Box

Read the documentation for your blackburst generator for more information.

Connecting a VTR

A VTR can be used to provide video input and to record video output from AVoption|XL. In most situations, there are three connections you need to make:

• Connect a blackburst or house sync output to a video input on your VTR (preferably a reference video input).

• Connect the AVoption|XL Breakout Box Composite IN, Component IN, S-Video IN, or SDI IN connectors to the corresponding output or outputs on your VTR.

• Connect the AVoption|XL Breakout Box Composite OUT, Component OUT, S-Video OUT, or SDI OUT connectors to the corresponding inputs on your VTR.

    – or –

• Connect the AVoption|XL Breakout Box Composite OUT or Component OUT connectors to the corresponding input on an NTSC or PAL video monitor, then connect the outputs from this monitor to the corresponding inputs on your VTR.

⚠ *The AVoption|XL Breakout Box can only output from either S-Video or Component outputs (S-Video is a type of Component output and you must choose which component output you want to use). You must set this option in your Movie track. See "Setting S-Video or Component Output" on page 26 for instructions.*

⚠ *For professional quality video layback, export audio from Pro Tools and import it into an Avid workstation with the video track. You can also layback the audio to video tape.*

Connecting an External Video Reference Monitor

Connect an external NTSC or PAL video reference monitor to a Composite, Component, S-Video, or SDI output.

Centralized Video Switching and Routing

Many professional facilities have centralized video switching and routing systems. These systems can be used to route AVoption|XL inputs and outputs to flexible input sources and output destinations.

Starting Up Your System

To ensure that the components of you Pro Tools AVoption|XL system communicate properly with each other, you need to start up your system in the correct order.

Start up your Pro Tools AVoption|XL system in the following order:

1 Turn on the Expansion Chassis, if any.

2 Turn on any external hard drives.

3 Turn on the SYNC I/O or USD.

4 Turn on the Pro Tools audio interfaces.

5 Turn on the AVoption|XL Breakout Box.

6 Start up your computer.

Installing AVoption|XL Software

To install AVoption|XL software on Windows:

1 Start your computer and log on to Windows with Administrator privileges.

2 Wait for the Found New Hardware Wizard dialog to appear and leave it open.

3 Leaving the Found New Hardware Wizard dialog open, insert the AVoption|XL Installer CD-ROM in your computer's CD-ROM drive. Locate and launch the Setup.exe file.

4 Click Next.

5 Click Yes.

6 Wait for the installer to finish installing all software components. When installation is complete, click Finish to restart your computer.

To install AVoption|XL software on Macintosh:

1 Start your computer. If you are running Mac OS X, be sure to log on with Administrator privileges.

2 Insert the AVoption|XL Installer CD-ROM in your computer's CD-ROM drive.

3 Locate and launch the AVoption|XL Installer file.

4 Follow the on screen instructions to install the AVoption|XL software.

5 When the installation is complete, quit the installer and restart your computer.

Authorizing AVoption|XL

Once you have installed your AVoption|XL software and hardware, launch Pro Tools to authorize AVoption|XL using the iLok USB Smart Key and the licence card (see "iLok" on page 16), or the authorizer key disk (see "Key Disk Authorization" on page 17).

iLok

AVoption|XL is authorized using the iLok USB Smart Key from PACE Anti Piracy. One iLok USB Smart Key is included with Pro Tools HD Core systems. This key can hold over 100 authorizations for all your iLok-enabled software. Once a software authorization is added to an iLok USB Smart Key, you can use the iLok to authorize that software on any computer.

Authorizations are added to an iLok using License Cards that have a small punch-out GSM plastic chip. License Cards are specific to each Pro Tools option or plug-in you purchase.

To add an authorization to an iLok:

1 Insert the iLok USB Smart Key into an available USB port on your computer.

2 Launch Pro Tools. You will be prompted to authorize AVoption|XL.

3 Follow the on-screen instructions until you are prompted to insert the License Card into the iLok USB Smart Key.

4 Separate the License Card from the larger protective card by pulling the cutout up and out with your thumb.

5 Insert the License Card into the iLok. You will be able to visually verify that the License Card makes contact with the iLok's metal card reader.

iLok USB Smart Key with License Card

6 With the iLok USB Smart Key inserted in any available USB port on your computer, click Authorize.

7 After authorization is complete, remove the License Card from the iLok USB Smart Key. (If you have to remove the iLok USB Smart Key to remove the License Card, be sure to re-insert the iLok USB Smart Key in any available USB port on your computer.)

Key Disk Authorization

(Pro Tools 5.1.3 Only)

You can also use an Authorizer diskette to authorize or deauthorize AVoption|XL. After you install the software from the CD-ROM, the Authorizer diskette permits you to authorize and use a single copy of AVoption|XL.

AVoption|XL software is installed in a specific location on your hard drive, and should not be moved or altered. The Authorizer diskette permits you to reclaim authorization from your hard drive if you want to install AVoption|XL on a different hard drive, or if you want to re-initialize or format your drive.

To authorize or deauthorize AVoption|XL:

1 Insert the Authorizer diskette into the floppy drive. (Pro Tools should NOT be launched during this process).

2 Click Authdeauthorizer in the pop-up window that appears.

3 Click Set-up Authorizer or Deauthorizer.

4 Choose Authorize or Remove. (If you are removing an authorization and a "?" appears over the application icon, the diskette you inserted is not the one you originally used for the authorization. You should see a gold key icon. If you continue through the deauthorization process with a "?", the application will be deauthorized, but an authorization will not credited back to the diskette for your next installation.)

5 Select disk location and click Authorize or Remove.

6 Quit.

Using NTSC and PAL

When switching between NTSC and PAL formats, settings must be changed in three places:

- In the Pro Tools Session Setup window, select the correct frame rate from the Frame Rate pop-up menu (25 FPS, 29.97 FPS, or 29.97 FPS Drop).

- In the Session Setup window, the SYNC I/O or USD must be set to the correct format (PAL or NTSC).

☼ *When a video clip is imported to the Movie track, Pro Tools 5.3.1 or later sets the correct format (PAL or NTSC) on the SYNC I/O automatically.*

- If you are going to capture video with AVoption|XL, select the correct video format (PAL or NTSC):
  - In Pro Tools 5.3.1 on Windows or Pro Tools 5.1.3 on the Macintosh, click the Track Options button on the Movie track and select the correct video format (PAL or NTSC) from the Video Format pop-up menu (see Figure 3 on page 23). This setting can be modified when the Movie track is armed for record.

  – or –
  - In Pro Tools 5.3.3 or later on Windows or Pro Tools 5.3.1 or later on Macintosh, select the correct video format (PAL or NTSC) from the Video Format pop-up menu in the Session Setup window.

- If you import an existing video file to the Movie track, the Video format is set automatically to NTSC or PAL according to the first frame of the imported video.

Installing the SCSI Accelerator

To install a SCSI Accelerator card:

1 Unplug and open your computer or expansion chassis according to the instructions included with it.

2 Release any static electricity by touching the power supply, or another grounded item.

3 Remove the SCSI accelerator card from the antistatic bag, being careful to handle it only by the edges.

4 Line up the SCSI accelerator card with the installation slot, and slide the card into place gently so the PCI connector is aligned with the PCI slot.

☼ *If installing the SCSI accelerator card in your computer, always install it in the highest numbered slot available. If installing the SCSI accelerator card in an expansion chassis, see Appendix A, "Slot Configurations for AVoption|XL" to determine the correct slot placement*

5 Press down firmly on the card with even pressure. The connector should click into place in the PCI slot.

6 Fasten the card in place using the included screw to attach the card bracket to the computer mounting bracket.

Updating the SCSI BIOS

(Windows Only)

When starting your computer, you will see which version of the ATTO SCSI BIOS is installed on the ROM of the ATTO SCSI card. If it is not version 1.6.6 or higher , you will need to flash the SCSI BIOS with 1.6.6 or higher ATTO SCSI BIOS. If the ATTO SCSI BIOS is already at version 1.6.6, proceed to installing the Windows device driver (see "Installing the Windows Device Driver" on page 19).

To update the BIOS on the ATTO SCSI card:

1 Insert a High Density PC formatted floppy disk.

2 Copy the DOS folder from the ATTO folder on the AVoption|XL Installer CD-ROM to the floppy disk.

3 Shut down your computer.

4 Disconnect any hard drives connected to the SCSI card.

5 Boot your computer with the floppy disk in the floppy drive.

6 When prompted, press Control+Z.

7 Press Enter.

8 Select Adapter Menu.

9 Select Update Flash ROM.

10 Press Enter twice.

The SCSI BIOS will be updated. This may take a few minutes.

11 Select Configure Adapter Channels.

12 Set Host Adapter BIOS to Scan Only.

13 Press the Esc key twice.

14 Select Save Parameters and Exit, and press Enter.

Installing the Windows Device Driver

(Windows Only)

Verify that the ATTO SCSI BIOS is version 1.6.6 or higher. If it not, you will need to update the SCSI BIOS (see "Updating the SCSI BIOS" on page 19).

To install the ATTO Windows device driver:

1 Start up your computer. Note the version of the ATTO SCSI BIOS when booting.

2 Insert the AVoption|XL Installer CD-ROM.

3 Launch the System control panel.

4 Select the Hardware tab.

5 Click Device Manager.

6 Select SCSI and RAID controllers.

7 Double-click the LSI PCI SCSI Adapter.

8 Select the Driver tab.

9 Click Update Driver.

10 Select "Install from specified location."

11 Select "Don't search, I'll choose the driver to install."

12 Click Next.

13 Click Have Disk.

14 Click Browse and navigate to the ATTO folder on the AVoption|XL Installer CD-ROM.

15 Select EXPRESS.INF and click Open.

16 Click OK.

17 Click Next.

18 Click Finish.

19 Click Close.

20 If you have a dual-channel SCSI card, repeat steps 7–19 for the second channel.

21 Click OK.

Formatting Hard Drives

(Windows Only)

On Windows, format your video and audio hard drives as NTFS or FAT32 with 32k clusters using Windows Disk Administrator or PartitionMagic. Striped drives are supported for video, but not for audio.

Flashing the ATTO HBA NVRAM

Mac OS 9

ExpressPro-Tools is supplied with Pro Tools 5.1 or later and every ATTO SCSI card. It allows you to flash the ROM on the SCSI card. Digidesign strongly recommends that the firmware be set on SCSI channels where audio storage is connected.

These settings are optimized for the size and frequency of SCSI transactions demanded by Pro Tools. If you have a dedicated SCSI card for video media, you do not need to apply these settings to it.

To update the ATTO host bus adapter firmware using ExpressPro-Tools:

1 Launch ExpressPro-Tools after booting your system and mounting all drives.

2 Double-click Media Drive.

3 From the Sync Rate pop-up menu, select the correct setting for your setup:
- EPCI-DC, SCSI64 with HD hardware: "20 (10)" (20 MB/sec at 10 MHz)
- UL2D with HD hardware: "80 (40)" (80 MB/sec at 40 MHz)

- UL3D with HD hardware: "160 (80)" (160 MB/sec at 80 MHz)
- EPCI-DC, SCSI64, EPCI-UL2D or EPCI-UL3D with MIX hardware: "20 (10)" (20 MB/sec at 10 MHz)

4 From the PCI Burst Rate pop-up menu, select the correct setting for your setup:
- EPCI-DC, SCSI64 with HD hardware: "32"
- UL2D with HD hardware: "128"
- UL3D with HD hardware: "128"
- EPCI-DC, SCSI64, EPCI-UL2D or EPCI-UL3D with MIX hardware: "32"

5 Click "Apply to All" (sets the card for all drive IDs on that bus).

6 Repeat if necessary for the other bus.

7 Quit ExpressPro-Tools.

8 Restart you computer.

Mac OS X

ATTO Configuration Tool is supplied with Pro Tools 6.0.1 or later and every ATTO SCSI card. It allows you to flash the ROM on the SCSI card. Digidesign strongly recommends that the firmware be set on SCSI channels where audio storage is connected.

To update the ATTO host bus adapter firmware using ATTO Configuration Tool:

1 Start up your computer.

2 Insert the Pro Tools Installer CD-ROM.

3 Locate and launch the ATTO Configuration Tool installer (in Pro Tools Installer/ATTO Utilities/ATTO Configuration Tool). Follow the on-screen instructions to install the application and drivers.

4 After installing the ATTO Configuration Tool, restart you computer.

5 Locate and launch the ATTO ExpressPCI application (in Applications/ExpressPCI Configuration Tool).

6 In the left pane, expand hosts to localhost:ExpressPCI.

7 Select the ExpressPCI.

8 In the right pane, click the Flash tab. The Flash options appear.

9 Click Browse and navigate to ATTO Utilities/ATTO Firmware Images on the Pro Tools Installer CD-ROM.

10 Select the appropriate firmware image (either the UL3D or EPCI-DC).

11 Click Update. A message box appears telling you to unmount all devices.

12 Click OK. The firmware updates. The update is finished when a message appears at the bottom of the ATTO Configuration Tool window.

13 Close all the open windows.

14 Restart your computer.

Initializing Hard Drives

(Macintosh Only)

The following is hard drive initialization information for three different scenarios: Pro Tools with no interchange, Avid to Pro Tools, and Pro Tools to Avid.

⚠ *Pro Tools and AVoption|XL do not support striped audio drives, but they do support stripped video drives.*

Pro Tools with No Interchange

In installations where Pro Tools will not be routinely sharing projects with Avid Media Composer systems, ExpressPro-Tools from ATTO (provided with Pro Tools 5.1 or later) should be

used to initialize all audio and video drives on Mac OS 9. Both HFS and HFS+ file systems are supported for audio drives on Mac OS 9 (HFS+ is recommended). On Mac OS X, use the Apple Disk Utility to format your drives Mac OS Extended. Select the Install Mac OS 9 Drivers option for compatibility with Mac OS 9 systems.

Avid to Pro Tools

For projects originating on an Avid Picture Authoring system, such as Media Composer, a single HFS drive initialized with either Avid Drive Utility (ADU) 2.1 or later is supported. This drive may contain either video or audio media files, or both. Pro Tools with AVoption|XL supports playback of audio and video tracks from a single drive, as long as track count does not exceed one stream of video (at a compression of 3:1 or higher) and a maximum of eight audio tracks.

When this drive is used in a Pro Tools session, additional audio tracks (beyond those imported from the Avid workstation) should not be added, for bandwidth reasons.

Video-only drives initialized as 2-way or 4-way stripe sets by Avid Drive Utility 2.1 (or later) are also supported. It is recommended that video drives be added to the SCSI channel dedicated for video in order to balance demands on the SCSI bus.

⚠ *Pro Tools can only recognize a maximum seven drives per SCSI channel.*

Pro Tools to Avid

When a drive is being sent from a Pro Tools system to an Avid picture workstation, the drive should be initialized as HFS or HFS+ using ExpressPro-Tools on Macintosh. When an Avid

system is inheriting files from Pro Tools, a "finder copy" of these files may be necessary to transfer them from the Pro Tools drive to a drive the Avid workstation will recognize.

If a drive is moved from a Pro Tools system to an Avid workstation, so that files from the Avid system can be copied and returned to the Pro Tools system, the drive should be initialized as HFS or HFS+ using ExpressPro-Tools on Mac OS 9 (HFS+ is recommended), or Mac OS Extended using the Apple Disk Utility on Mac OS X, before being mounted on the Avid workstation.

When formatting DigiDrives over 60 GB for use with Macintosh, it is recommended that you format the drives HFS+ rather than HFS. However, if you wish to format a drive HFS, you should partition the drive using partitions that are less than 69,695 MB.

Special Configuration Requirements

When you want compression levels of 2:1 or 1:1 (uncompressed), a second accelerator must be dedicated to video storage. Depending on your drives' performance, a 2-way stripe set across both SCSI channels may be required for 2:1 capability, and a 4-way stripe across both channels may be required for 1:1 (uncompressed) capability. Newer SCSI drives, like the 5th-Generation Avid/DigiDrive can record and play back 2:1 video from a single drive, and 1:1 video from a 2-way stripe set. It is not necessary to use stripe sets for 3:1 or higher.

To initialize hard drives on Mac OS:

1 Select the drives you want to dedicate to video and create your stripe set (if desired) by doing one of the following:

- On Mac OS X, initialize video drives using the ATTO ExpressStripe utility (optional software available from ATTO).

- On Mac OS 9, initialize video drives using the ATTO ExpressRAID utility (optional software available from ATTO).

2 Select the drives you want to dedicate to audio and do one of the following:

- On Mac OS X, initialize all audio drives using the Apple Disk Utility.

- On Mac OS 9, initialize all audio drives using ATTO ExpressPro-Tools (provided on the AVoption|XL Installer CD-ROM).

⚠ *Do not use ExpressRAID to initialize your audio drives. ExpressRAID is not supported with audio drives.*

Media Management

It is recommend that you dedicate one SCSI channel to audio drives and one SCSI channel to video drives. This configuration is adequate for AVoption|XL with compression levels of 3:1 or higher.

If you want compression levels of 2:1 or 1:1 (uncompressed), an additional dual-channel SCSI card is required for video drives.

If your Pro Tools system is mounting a drive initialized by an Avid picture workstation that contains video files, it is recommended that this drive be installed on the SCSI bus dedicated to video data.

If your Pro Tools system receives a drive initialized by an Avid picture workstation, it is recommended that you do not record additional audio files onto this drive.

chapter 4

Recording and Adding to the Movie Track

You can *capture* video files by recording the video through the inputs on your AVoption|XL Breakout Box. You can also import files captured with another Pro Tools system or created in a compatible Avid video workstation.

The Movie Track

The Movie track holds the video clips you capture or add into Pro Tools. A Pro Tools session can only contain one Movie track.

To create a new Movie track:

■ Choose Movie > New Avid Movie Track (New Movie Track in Pro Tools 6.0 or lower).

The new, empty Movie track appears in the Edit window.

To name the Movie track:

1 Double-click the Track Name button to open the Name and Comments dialog.

2 Type a name (and any optional comments), then click OK.

To select record drives:

1 Select Display > Edit Window Shows I/O view.

2 Select video record drives from the three Avid Video Drives pop-up menus (see Figure 3).

To select a compression ratio:

1 Select Display > Edit Window Shows I/O view.

2 Record enable the Movie track.

3 Select a compression ratio from the Compression Level pop-up menu (see Figure 3).
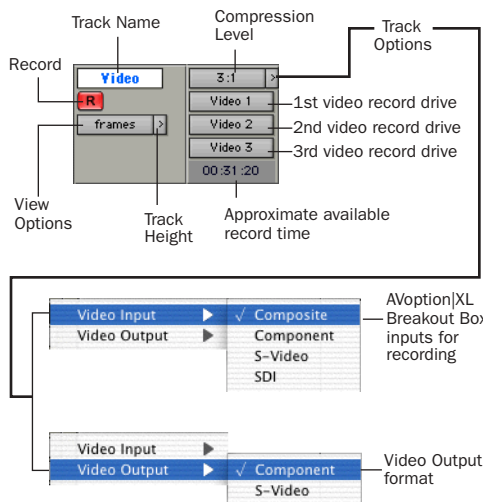
Figure 3. Movie track controls

💡 *In Pro Tools 5.3.1 on Windows and Pro Tools 5.1.3 on Macintosh, the Video Format pop-up menu is located in the Movie track's Track Options pop-up menu.*

To delete the Movie track:

1 Select the track by clicking the Track Name button in the Edit window.

2 Choose File > Delete Selected Tracks.

To clear all video from the Movie track:

■ Choose Movie > Clear Movie Track.

You cannot change names of clips after they have been added or recorded. When added, clips retain the name they were given by the original workstation. When recorded in Pro Tools, the clip name is derived from the Movie track's name. You can change the name of a new clip by renaming the Movie track.

Movie Track Options

The Movie track can be viewed in frames or in blocks. Frames allow you to see an overview of the actual video content in a session. Blocks allow you to see where clips begin and end, and the names of clips.

Frames

In Frames mode, video data is displayed as pictures in the Movie track. These pictures are computed based on the video image, and scale according to your track zoom and height settings. They do not provide a frame-accurate reference, but allow you to easily find a scene or sequence in the Movie track.
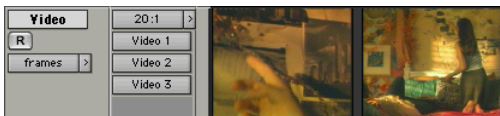
Movie track in Frames mode

Frames do not display properly if you change zoom settings during playback. Black frames are drawn until playback is stopped. You should stop playback before changing zoom settings if you want to view frames.

⚠ *If video pull-up or pull-down is enabled, Frames do not change position and are therefore not a useful reference.*

Blocks

Blocks mode displays the Movie track as blocks of compositional data. Blocks are outlined wherever clip boundaries exist. These block names indicate both the boundaries for clips defined in a video editing system and separate clips recorded into Pro Tools. Names from the original clips are retained, and new names are given to newly recorded material. For example, two clips edited together without any transitions or effects, and named "House Ext" and "House Int," will appear as two blocks bordering each other with those names.
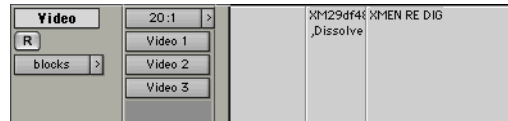
Movie track in Blocks mode

In Blocks mode, you can place the cursor on the Movie track, then press Tab to move to the next video edit in the track.

To set the view for the Movie track:

■ On the Movie track, select Frames or Blocks from the View Options pop-up menu.

⚠ *When switching from Blocks mode to Frames mode during playback, the movie track will not update to displaying frames until playback is stopped.*

Recording Video

You can record multiple video clips to multiple locations on a single Movie track.

To set video recording options:

1 Choose Movie > New Avid Movie Track (New Movie Track in Pro Tools 6.0 or lower) to create a new Movie track.

2 Select Display > Edit Window Shows I/O view.

3 In Pro Tools 5.3.3 or later on Windows, or 5.3.1 or later on Macintosh, select NTSC or PAL from the Video Format pop-up menu in the Session Setup window (Windows > Session Setup).
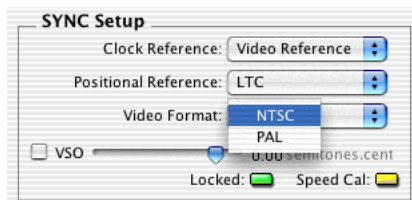
Video Format pop-up menu, Session Setup window

> 🔆 *Using Pro Tools 5.3.3 or later on Windows, or 5.3.1 or later on Macintosh, if you import an existing video file to the Movie track, the Video format is set automatically to NTSC or PAL according to first frame of the imported video.*

– or –

In Pro Tools 5.3.1 on Windows, or 5.1.3 on Macintosh, select a video format by clicking the Movie track's Track Options button, and then select NTSC or PAL Video Format.

> 🔆 *In Pro Tools 5.3.1 on Windows and Pro Tools 5.1.3 on Macintosh, the Video Format pop-up menu is located in the Movie track's Track Options pop-up menu.*

4 Select the video input from the Movie Track Options pop-up menu (Component or Composite input, or S-Video or SDI).

5 Set the compression level for the video capture from the Compression Level pop-up menu.

6 Select the target hard drive volumes for the video capture. Target volumes capture video in order, from the first (top) to the last (bottom). In the following illustration, Video 1 captures video first, followed by Video 2, then Video 3.
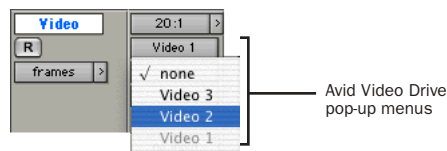
Selecting drives for video capture

As you add or remove volumes from the track, the available record time is updated to reflect available disk space and compression settings. The time displayed is approximate.

To record video:

1 Use your cursor to mark the point from where you want to start recording.

– or –

Make a selection on a Timebase Ruler or on a track to select a range of time for the recording. To make selection on a track, Operations > Link Edit and Timeline Selection must be enabled.

2 Record enable the Movie track by clicking the Record Enable button.

3 Click the Record button in the Transport window to enable recording.

4 Start playing the video source.

5 Click Play in the Transport window to begin recording.

6 Click Stop in the Transport window to stop recording.

⚠️ *If there are already clips on the Movie track, and you record over them, the overwritten material will be removed from the Movie track (although it will still remain intact in its original storage location). You can Undo Capture Clip and restore the original clips. For more information, refer to "Undo/Redo for Video Editing Commands" on page 29.*

💡 *Ctrl+period (Windows) or Command+period (Macintosh) will abort a clip capture in progress and restore the Movie track to the original clips.*

Capturing and Approximate Time Left

The Approximate Record Time Left in the I/O View of the Movie track is an estimate. AVoption|XL uses variable compression technologies, and record time varies based on the density of the material you are recording. The Approximate Record Time Left is intended to provide you a rough estimate and may not be an accurate reflection of your available record time.

The calculation of Approximate Record Time Left is a conservative estimate based on the highest data rate possible for that resolution. The approximation may vary by several minutes.

Pro Tools uses the Approximate Record Time Left value to allocate drive space before recording. Because of the approximate nature of the estimation process, you may find that you have available record time left after you thought you had filled the drive.

💡 *The Record Time Left value is not approximate if you are capturing video at a compression rate of 1:1 (uncompressed) in AVoption|XL. Since this video is uncompressed, it uses the same data rate, regardless of the image.*

Timebase Correction

AVoption|XL requires that all sources be timebase corrected. Most professional video decks have built-in timebase correction. To find out whether or not your video deck has built-in timebase correction, refer to the manufacturer's documentation.

Setting S-Video or Component Output

The AVoption|XL Breakout Box can output from either the S-Video or Component outputs. Composite out is always active regardless of whether S-video or Component is selected. This selection must be made in Pro Tools, and will determine which physical connections you use to output signals.

To select component video outputs in AVoption|XL:

1 On the Movie track, click the Track Options pop-up menu (see Figure 3 on page 23).

2 Use the Video Output pop-up menu to select the desired outputs: Component or S-Video.

MachineControl

You can use Digidesign MachineControl software to remotely control your external video deck during Pro Tools capture. Blocks mode is recommended when recording to the Movie track with MachineControl. MachineControl is a Pro Tools software option that can be purchased separately.

📄 *For more information, see the MachineControl Guide.*

Exporting Files from Avid Programs

If you already have a project that was created on an Avid video authoring system, you can export it to an AAF (Pro Tools 6.1 only) or OMFI 2.0 sequence so the material can be added into your AVoption|XL system. This exchange of data between systems is significantly faster and easier than other methods, such as laying off to tape and re-digitizing.

When an AAF or OMF sequence exported from an Avid workstation is imported into Pro Tools, the video track displays each of the video files as regions in the timeline. Generally, these regions reflect the regions on the Avid timeline, unless you have an effect which spans more than one video clip.

All video effects, including fades, must be *rendered* before they can be exported in an AAF or OMF sequence. Rendering means that a media file called a "precompute" is created. This precompute is what is exported and what appears in the Pro Tools timeline. For example, if there are three video clips in the Avid timeline and a title effect is laid across all three, the title would have to be rendered before export, creating a

single precompute file. Then, instead of seeing the three original video clips in the Pro Tools timeline, only the one precompute clip will be displayed.

DigiTranslator 2.0 Integrated Option

DigiTranslator 2.0 is included with your AVoption|XL package. Use DigiTranslator to convert AAF sequences (Pro Tools 6.1 only) and OMFI sequences and media files into Pro Tools session files. You can also use it to export audio material from Pro Tools sessions to AAF sequences (Pro Tools 6.1 only) or OMFI sequences and files for import into other systems.

📄 *For more information, refer to the DigiTranslator 2.0 Integrated Option Guide.*

Avid Unity

Pro Tools with AVoption|XL supports Avid Unity™ MediaNetwork or Media Net, and Media Manager. Avid Unity MediaNetwork and MediaNet provide integrated high-speed network storage systems for Avid (Media Composer®, Symphony™, Avid Xpress®, and NewsCutter®) and Pro Tools workstations. MediaManager is an Avid database product for tracking files on a MediaNetwork or MediaNet system. For detailed information on configuring your Pro Tools system with AVoption|XL as an Avid Unity MediaNetwork or MediaNet client, refer to Avid Unity MediaNetwork or MediaNet documentation.

Multi-Streams and AVoption|XL

While some Avid systems support simultaneous streams of real time video, AVoption|XL supports only one stream. For this reason, it is necessary to make sure that all multi-stream transitions and effects are rendered in the Avid sequence before you export.

If you add a sequence into Pro Tools that includes multi-stream effects, black frames will be substituted in their place.

AVoption|XL does not require the entire sequence to be rendered into one continuous clip (often referred to as a "video mixdown"). AVoption|XL can import and play sequences containing multiple single-stream clips.

Avid Multi-Cam Resolution Files

AVoption|XL supports all Avid Multi-Cam Resolution files for import and playback, but not for capture. Pro Tools will play the clip of an Avid Multi-Cam Resolution file that was being used as the main camera angle when the file was exported to an AAF or OMFI file.

Exporting from Media Composer

This section uses a Media Composer project as an example.

To prepare a Media Composer project for AAF or OMF export and use with AVoption|XL:

■ Make sure all media for the project is online.

■ Render all effects in advance. AAF or OMF export does not automatically render effects during the process, so if you want to see them, you must render effects before you export.

⚠ *Pro Tools 5.x does not support import of AAF sequences.*

To export an AAF or OMFI sequence with external media from Media Composer:

1 Select the sequence.

2 Choose Edit > Duplicate to make a copy of the sequence, so the original remains intact.

3 As desired, choose Clip > Consolidate to place a copy of the relevant media files (both audio and video) in a single hard drive location.

4 Choose File > Export. In the Export dialog, select AAF or OMFI Composition with the following options:

• For the OMFI file type, select Standard-AIFC.

• To specify which data is exported, select Video and Audio.

• For the OMFI version, select OMFI 2.0 and make sure With Media is deselected.

5 Click OK to export an OMFI file that will reference external media files.

To export an OMFI sequence with embedded media from Media Composer:

1 Choose Edit > Duplicate to make a copy of the sequence you are working with, so the original remains intact.

Consolidating also ensures that only the media used in the sequence is exported and embedded with the OMFI file.

2 Choose File > Export. In the Export dialog, select OMFI Composition with the following options:

• For the OMFI file type, select Standard-AIFC.

• To specify which media is exported, select Audio Only.

⚠ *Pro Tools supports embedded audio, but not embedded video.*

• For the OMFI version, select OMFI 2.0 and make sure With Media is selected.

3 Click OK to export an OMFI file with the audio media embedded. All audio contained in the OMFI file is written in the selected audio format.

Adding OMFI Video Clips

Using the Add Avid Movie command (Add Movie in Pro Tools 6.0 and 5.x), you can add several clips to a single Movie track.

If there are already clips on the Movie track and you add over them, the overwritten material will be removed from the Movie track. You can undo and restore the original clips. Refer to "Undo/Redo for Video Editing Commands" on page 29 for more information.

OMFI video and audio files can be managed, opened, and added just like other files if you have the DigiTranslator 2.0 Option installed.

To add OMFI video to the Avid Movie track:

1 If the Pro Tools session does not already have an Avid Movie Track, add one by choosing Movie > New Avid Movie Tack (New Movie Track in Pro Tools 6.0 or lower).

2 Choose Movie > Add Movie.

3 Select the desired OMF file and click OK.

💡 *For more sophisticated OMF import and export options with Pro Tools, use the Digi-Translator option.*

⚠ *Using the Import Movie command to import OMF video is not recommended because it clears the Movie track of its contents, replacing it with the imported video clip.*

Undo/Redo for Video Editing Commands

You can undo or redo the single most recent video editing command, including Add Movie, Clear Selection, Move Clip, Copy Clip, and Clip Capture. If there are already video clips on the Movie track, and you record or edit over them, the overwritten material is removed from the Movie track. You can undo the video editing command and restore the original clips.

⚠ *Undo/Redo works only for the single most recent video editing command.*

To undo the most recent video editing command:

■ Choose Movie > Undo.

– or –

To redo the command, choose Movie > Redo.

If you have captured, added or moved a clip over a pre-existing clip and consequently truncated it, Undo will also restore the trimmed clip to its original length.

chapter 5

Playing and Editing the Movie Track

Video plays back automatically when you play a session that includes a Movie track. There are several different options for viewing and synchronizing the video and audio tracks.

Movie Online

When the movie is online, the Movie track plays along with the audio session. The movie's frame location is updated every time you place your cursor in a new location, and the Movie track scrubs along with the audio tracks. The movie is online by default.

Online Edit and Selection Behavior

When Pro Tools is in Grid mode or set for Loop Playback, and the movie is online, Pro Tools will always place your cursor or Edit selection on legal frame boundaries. If you make a selection that is outside of frame boundaries, or you place your cursor outside a frame boundary, Pro Tools will move your cursor to the nearest frame boundary and play.

Movie Offline

If you temporarily do not want to view the movie or have the movie frame location updated, you can take the movie offline.

This is useful if you are working with audio and do not need to see the video.

To take the movie offline:

■ Deselect Movie > Movie Online.

To put the movie back online:

■ Select Movie > Movie Online.

SHIFT *The keyboard shortcut for Movie Online and Movie Offline is Shift+Ctrl+J (Windows) or Shift+Command+J (Macintosh).*

Playback Viewing

The AVoption|XL Breakout Box includes video outputs to connect an NTSC or PAL video monitor. You can connect a monitor that has Component, Composite, S-Video, or SDI video inputs.

The video card will display full-screen video on the playback monitor.

⚠ *The AVoption|XL Breakout Box can only output from either S-Video or Component outputs (Composite out is always active). You must set this option in your Movie track. See "Setting S-Video or Component Output" on page 26 for instructions.*

To connect a playback monitor:

■ Connect a Composite output, the Component outputs, the S-Video output, or and SDI output from the AVoption|XL Breakout Box to the proper input or inputs on the back of your video monitor.

Moving the Movie Track or Video Clips

You can use the Move Clip command to spot the entire Movie track, or individual video clips, to a new SMPTE frame location. When you move the Movie track, the whole track or sequence is moved to the new frame location you specify. When you move a clip, it is moved to the new location within the Movie track.

⚠ *If there are already clips on the Movie track, and you edit over them, the overwritten material will be removed from the Movie track. You can undo Move Clip and restore the original clips. For more information, see "Undo/Redo for Video Editing Commands" on page 29.*

To spot the entire Movie track to a new frame location:

1 Select Display > Time Code.

– or –

Select Time Code from the Main Location Indicator pop-up menu.
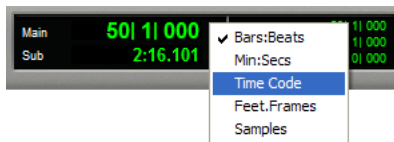
2 Enable Spot mode by clicking the Spot button.
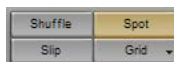
3 Shift-click the Movie track with the Grabber tool.

4 In the Spot dialog that appears, specify a new SMPTE frame number for the start of the Movie track. In this dialog, you can press plus or minus on the numeric keypad, enter a number, and press the Enter key to add or subtract that number of frames from the currently selected time field.
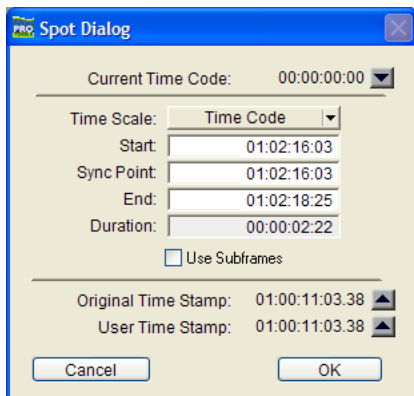
Spot dialog

5 Click OK when you are done.

To spot a video clip to a new frame location:

1 Select Display > Time Code.

– or –

Select Time Code from the Main Location Indicator pop-up menu.

2 Enable Spot mode by clicking the Spot button.

3 Click the clip on the Movie track with the Grabber tool.

4 In the Spot dialog, specify a new SMPTE frame number for the start of the clip. In this dialog, you can press plus or minus on the numeric keypad, enter a number, and press the Enter key to add or subtract that number of frames from the currently selected time field.

5 Click OK when you are done.

Copying Video Clips

You can copy video clips to a new SMPTE frame location within the Movie track.

To copy a video clip to a new frame location:

1 Select Display > Time Code.

– or –

Select Time Code from the Main Location Indicator pop-up menu.

2 Enable Spot mode by clicking the Spot button.

3 Alt-click (Windows) or Option-click (Macintosh) the clip on the Movie track with the Grabber tool.

4 In the Spot dialog, specify a new SMPTE frame number for the start of the clip. In this dialog, you can press plus or minus on the numeric keypad, enter a number, and press the Enter key to add or subtract that number of frames from the currently selected time field.

5 Click OK when you are done.

Clearing Selected Video Clips

You can clear material from the Movie track.

To clear a selection:

1 Using the Selector, click and drag in the Movie track to select the material you want to clear. You can also double-click to select an entire existing video clip.

2 Choose Movie > Clear Selection.

Locking the Movie Track

If you want to permanently associate your video clips with a certain location on your Movie track, you can lock it in place so that it cannot be moved accidentally.

To lock the Movie track:

1 Using the Grabber, select the Movie track.

2 Choose Edit > Lock Region/Unlock Region.

☐ *You can also lock the Movie track by triple-clicking in the Movie track (to select all clips), and then pressing Ctrl+L (Windows) Command+L (Macintosh).*

When the Movie track is locked, a small lock icon appears in the track, indicating that the Movie track has been locked and cannot be moved. If you attempt to move a locked region, you will receive an error message.

Once a Movie track is locked, you cannot Add video clips to it without first unlocking it. Locking the Movie track only prevents it from being moved. Recording still affects the clips in the Movie track.

Slot Configurations for AVoption|XL

This appendix documents slot configurations for AVoption|XL systems, with and without expansion chassis.

IBM IntelliStation Z Pro 6221 without Expansion Chassis
(Pro Tools|HD Systems Only)

Slot	Card
AGP Slot	Monitor card
CPU Slot 5 (32-bit)	HD Process card (if any)
CPU Slot 4 (64-bit)	HD Process card (if any)
CPU Slot 3 (64-bit)	HD Core card
CPU Slot 2 (64-bit)	ATTO 3300 Fibre Channel HBA (Unity systems only)
CPU Slot 1 (64-bit)	Avid Digital Video board

IBM IntelliStation M Pro 6850 without Expansion Chassis

(Pro Tools|HD Systems Only)

Slot	Card
CPU Slot 1	Monitor card
CPU Slot 2	FibreChannel card (Unity systems only)
CPU Slot 3	Avid Digital Video Board
CPU Slot 4	SCSI HBA
CPU Slot 5 (64-bit)	HD Core card
CPU Slot 6 (64-bit)	HD Process card (if any)

IBM M-Pro 6850 with 13-Slot Expansion Chassis

(Pro Tools|HD Systems Only)
SBS 13-Slot (serial numbers higher than 198487)

Slot	Card
CPU Slot 1	Monitor card
CPU Slot 2	Chassis Host card
CPU Slot 3	Empty
CPU Slot 4	SCSI HBA (Audio)
CPU Slot 5 (64-bit)	Empty
CPU Slot 6 (64-bit)	Empty
Backplane Chassis Slot	Chassis Controller card
Chassis Slot 1	HD Core card
Chassis Slots 2–7	HD Process cards (6 maximum)
Chassis Slots 8–11	Empty
Chassis Slot 12	Avid Digital Video Media Board
Chassis Slot 13	SCSI HBA (Video, optional) or FibreChannel card (Unity systems only)

⚠ *Expansion chassis slots are numbered sequentially from **left to right** when looking from the front.*

⚠ *On Avid Unity systems, 1:1 Video is not supported with an expansion chassis on Windows XP. Check the Digidesign Web site for the latest compatibility information and software updates.*

💡 *It is strongly recommended that you only use an expansion chassis if you have a Pro Tools|HD 3 system or greater.*

Compaq Evo W8000 without Expansion Chassis

(Pro Tools|HD Systems Only)

Slot	Card
CPU Slot 1	Monitor card
CPU Slot 2	FibreChannel card (Unity systems only)
CPU Slot 3	Avid Digital Video Board
CPU Slot 4	SCSI HBA
CPU Slot 5	HD Process card (if any)
CPU Slot 6 (64-bit)	HD Process card (if any)
CPU Slot 7 (64-bit)	HD Core card

Compaq Evo W8000 with 13-Slot Expansion Chassis

(Pro Tools|HD Systems Only)
SBS 13-Slot (serial numbers higher than 198487)

Slot	Card
CPU Slot 1	Monitor card
CPU Slot 2	Chassis Host card
CPU Slot 3	Empty
CPU Slot 4	SCSI HBA (Audio)
CPU Slot 5	Empty
CPU Slot 6 (64-bit)	Empty
CPU Slot 7 (64-bit)	Empty
Backplane Chassis Slot	Chassis Controller card
Chassis Slot 1	HD Core card
Chassis Slots 2–7	HD Process cards (6 maximum)
Chassis Slot 8	SCSI HBA (Video, optional)
Chassis Slots 9–11	Empty
Chassis Slot 12	Avid Digital Video Media Board
Chassis Slot 13	FibreChannel card (Unity systems only)

⚠ *Expansion chassis slots are numbered sequentially from **left to right** when looking from the front.*

⚠ *On Avid Unity systems, 1:1 Video is not supported with an expansion chassis on Windows XP. Check the Digidesign Web site for the latest compatibility information and software updates.*

💡 *It is strongly recommended that you only use an expansion chassis if you have a Pro Tools|HD 3 system or greater.*

G4 with 13-Slot Expansion Chassis

Pro Tools Expansion Chassis (serial numbers lower than NB0600100C)
Magma PCI–13–RX–400V

Slot	Card
CPU Slot 1	SCSI HBA (Audio)
CPU Slot 2	Chassis Host card
CPU Slot 3	Empty
CPU Slot 4	Empty
Backplane Chassis Slot	Chassis Controller card
Chassis Slot 1	SCSI HBA (Video, optional)
Chassis Slots 2–3	Empty
Chassis Slot 4	Avid Digital Video Board
Chassis Slots 5–7	Empty
Chassis Slot 8	HD Core or MIX Core card
Chassis Slots 9–13	Additional Pro Tools cards (6 maximum)

⚠ *Expansion chassis slots are numbered sequentially from **left to right** when looking from the front. These chassis require a supplemental cooling fan kit.*

⚠ *This combination is an exception to the usual slot order and card placement in that the SCSI HBA card does not go in the highest numbered slot in the CPU, but in the lowest, and the Chassis Host card does not go in the lowest numbered slot, but rather the second slot.*

⚠ *Pro Tools|HD and Pro Tools|24 MIX cards are not compatible and cannot be used in the same system.*

G4 with 13-Slot Expansion Chassis

Pro Tools Expansion Chassis (serial numbers higher than NB0600100C)
Magma PCI–13R

Slot	Card
CPU Slot 1	Chassis Host card
CPU Slot 2	Empty
CPU Slot 3	Empty
CPU Slot 4	SCSI HBA (Audio)
Bank 1: Backplane Chassis Slot	Chassis Controller card
Bank 1: Chassis Slot 4	HD Core or MIX Core card
Bank 1: Chassis Slots 5–9	Additional Pro Tools cards (6 maximum)
Bank 2: Chassis Slot 4	Avid Digital Video Media Board
Bank 2: Chassis Slot 5	SCSI HBA (Video, optional)
Bank 2: Chassis Slots 6–10	Empty

⚠ *Expansion chassis slots are numbered sequentially from **right to left** when looking from the front. Except for P13 and Digidesign chassis with serial numbers ending in 00G, these chassis require a supplemental cooling fan kit.*

⚠ *Pro Tools|HD and Pro Tools|24 MIX cards are not compatible and cannot be used in the same system.*

Blue & White G3 with 13-Slot Expansion Chassis

(Pro Tools|24 MIX and Pro Tools|24 Systems Only)
Pro Tools Expansion Chassis (serial numbers lower than NB0600100C)
Magma PCI–13RX–400V

Slot	Card
CPU Slot 1	Chassis Host card
CPU Slot 2	Empty
CPU Slot 3	SCSI HBA (Audio)
Backplane Chassis Slot	Chassis Controller card
Chassis Slot 1	SCSI HBA (Video)
Chassis Slots 2–3	Empty
Chassis Slot 4	Avid Digital Video Board
Chassis Slots 5–7	Empty
Chassis Slot 8	MIX Core card
Chassis Slots 9–13	Additional Pro Tools cards (6 maximum)

⚠ *Expansion chassis slots are numbered sequentially from **left to right** when looking from the front. These chassis require a supplemental cooling fan kit.*

Blue & White G3 with 13-Slot Expansion Chassis

(Pro Tools|24 MIX and Pro Tools|24 Systems Only)
Pro Tools Expansion Chassis (serial numbers higher than NB0600100C)
Magma PCI–13R

Slot	Card
CPU Slot 1	Chassis Host card
CPU Slot 2	Empty
CPU Slot 3	SCSI HBA (Audio)
Bank 1: Backplane Chassis Slot	Chassis Controller card
Bank 1: Chassis Slot 4	MIX Core card
Bank 1: Chassis Slots 5–9	Additional Pro Tools cards (6 maximum)
Bank 2: Chassis Slot 4	Avid Digital Video Media Board
Bank 2: Chassis Slot 5	SCSI HBA (Video)
Bank 2: Chassis Slots 6–10	Empty

⚠️ *Expansion chassis slots are numbered sequentially from **right to left** when looking from the front. Except for the P13 and Digidesign chassis with serial numbers ending in 00G, these chassis require a supplemental cooling fan kit.*

9500/9600 with 13-Slot Expansion Chassis

(Pro Tools|24 MIX and Pro Tools|24 Systems Only)
Pro Tools Expansion Chassis (serial numbers lower than NB0600100C)
Magma model PCI–13–RX–400V

Slot	Card
CPU Slot 1	Macintosh Monitor card
CPU Slot 2	Chassis Host card
CPU Slot 3	Empty
CPU Slot 4	SCSI HBA (Audio)
CPU Slot 5	Empty
CPU Slot 6	Empty
Backplane Chassis Slot	Chassis Controller card
Chassis Slot 1	SCSI HBA (Video)
Chassis Slots 2–3	Empty
Chassis Slot 4	Avid Digital Video Board
Chassis Slots 5–7	Empty
Chassis Slot 8	MIX Core card
Chassis Slots 9–13	Additional Pro Tools cards (6 maximum)

⚠ *CPU speed of 300 MHz or higher recommended.*

⚠ *Expansion chassis slots are numbered sequentially from **left to right** when looking from the front. These chassis require a supplemental cooling fan kit.*

appendix b

FilmFrame Workflows

The following are three workflow scenarios and the steps to complete them.

⚠ *Pro Tools 5.x does not support import of AAF files.*

Typical Usage

1 Edit your project in an Avid video workstation.

2 Export an AAF or OMFI sequence that references the media. Do not embed the video files in the sequence.

3 Choose File > Open in Pro Tools to open the AAF or OMFI sequence.

4 The video track will open and you can start working immediately.

Adding a Movie

1 Edit your project in an Avid video workstation.

2 Export a video-only AAF or OMFI sequence that references the media. Do not embed the video files in the sequence.

3 Import the video-only AAF or OMFI sequence into Pro Tools using the Import Movie menu item.

4 The video composition will be imported to the video track and you can start working immediately.

Importing a Video Track

In this scenario, the workflow is similar to the one for typical usage, except that you would only want the video from an AAF or OMFI sequence.

5 In Pro Tools 6.1, choose File > Import Session Data.

– or –

In Pro Tools 5.x, choose File > Import Tracks.

6 Select the AAF (Pro Tools 6.1 only) or OMFI sequence that contains the tracks you want to import.

7 The video composition will be imported to the video track and you can start working immediately.

Audio Layback to Video

Although you cannot output 24P video to a video recorder with Pro Tools, you can "Punch Down" by adding audio that has been posted to a 24P video clip in Pro Tools to videotape that was created on another video system.

Playing in Sync with 24 fps Video Tapes

You can play in sync with a video transport playing at 24 fps. To do so, in the Session Setup window, set the Frame Rate to 24 fps, and slave Pro Tools to the video transport. Or, if you have the MachineControl option, you can select the appropriate profile to control the video transport.

Playing in Sync with 29.97 fps (NTSC) Video Tapes

To play in sync with a 29.97 fps video created from a 24 fps source:

1 Slave Pro Tools to the VTR.

📄 *For more information on slaving Pro Tools to the VTR, see the Synchronization chapters of the Pro Tools Reference Guide.*

2 Choose Windows > Show Session Setup.

3 From the Frame Rate pop-up menu, select 29.97 FPS.

4 In Pro Tools 5.3.3 or later on Windows, or 5.3.1 or later on Macintosh, from the Audio Rate Pull Up/Down pop-up menu, select 0.1% Down.

   – or –

In Pro Tools 5.3.1 on Windows, or Pro Tools 5.1.3 on Macintosh enable Pull Down.

⚠ *Audio pull-down is required when you are posting to a 29.97 fps video clip made from a 24 fps source. This is because the 24 fps source is also "pulled down" by the telecine process which produces the 29.97 fps tape.*

24P Clips and Pull Down When the SYNC I/O or USD is set to pull down, the playback of the 24P clip is pulled down along with the audio. This way, when laying back audio to an NTSC video tape running at 29.97 fps, the Pro Tools video display and the output of the video deck will remain in sync. In Pro Tools 5.3.1 on Windows, or Pro Tools 5.1.3 on Macintosh, other types of video clips are not affected by pull down settings.

Playing in Sync with 25 fps (PAL) Video Tapes

(Pro Tools|HD Only)

To lay back a 24P session directly to a 25 fps (PAL) tape:

1 Select the Video Output from the Movie track's Track Options pop-up menu.

2 Choose Windows > Show Session Setup.

3 From the Frame Rate pop-up menu, select 25 FPS.

4 From the Audio Rate Pull Up/Down pop-up menu, select 4.0% Up.

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