Hard Drive Requirements - Pro Tools|HD for Mac OS X

Storage Overview

Storage requirements have not changed from previous versions of Pro Tools. As with all Pro Tools systems, drive performance depends on a number of factors, including track count, edit density, CPU speed, single or dual processors, and the use of crossfades or processing like Beat Detective. For sessions with high edit density, we recommend the following configurations. Testing has been conducted using Digidesign's DigiDrives and Avid MediaDrives. Performance with other drives may vary.

- Dedicated audio drive or drives (internal or external). Recording to or playback from system drives is not supported.
- Support for SATA, IDE/ATA and FireWire drives, listed below.
- When using QuickTime movies with Pro Tools|HD systems, for reliable performance of 16 or more audio tracks, video should be stored on a separate drive.

Macintosh Journaled File System Recommended for Pro Tools

Mac OS X 10.4 incorporates a journaled file system, which will automatically log any file modifications. If your computer crashes badly enough to require a restart (or a restart from a power failure), the OS will then use the journal to aid in fixing any disk problems caused by the crash.

Mac OS X 10.4 ships with journaling on by default. Digidesign now recommends that customers format their media drives with journaling turned on. When using Apple"s Disk Utility program to format drives, Digidesign recommends choosing "Mac OS Extended (Journaled)" format, instead of "Mac OS Extended."

Note: Mac OS 10.4 includes two new formatting options:

- Mac OS Extended (Case-sensitive, Journaled)
- Mac OS Extended (Case-sensitive)

Digidesign has not tested these new formatting options with Pro Tools, and therefore these are not recommended. Please choose the following option for drive formatting:

- Mac OS Extended (Journaled)

Optional Digidesign & Avid Storage

SCSI

- Avid MediaDrive rS300/320 LVD
- Avid MediaDrive rS146/320 LVD
- Avid MediaDrive rS73/320 LVD
- Avid MediaDrive rS36/320 LVD
- Avid MediaDock Shuttle iS146/320 LVD
- Avid MediaDock Shuttle iS73/320 LVD
- Avid MediaDock Shuttle iS36/320 LVD
- Avid MediaDock Dual
- Avid MediaDock Dual+
- DigiDrive MediaDock
- DigiDrive SCSI Drives
- SCSI-128 Kit

Includes ATTO ExpressPCI-UL3D
Qualified for up to 192 tracks @48 kHz on Pro Tools|HD Accel systems
Power Mac G4 & G5 PCI Models Only (Not compatible with Power Mac G5 PCI Express models)
Not compatible with Power Mac G5 or tested with Pro Tools 6.9 and higher:

- SCSI-64 Kit/ATTO ExpressPCI-DC

Power Mac G5 PCI Express Models & Mac Pro Desktops

The following PCIe SCSI host adapter card is qualified with the Power Mac G5 PCI Express models and Mac Pro models:

- ATTO ExpressPCI UL5D - Dual-channel Ultra320 PCI Express SCSI Host Adapter

- With the following Mac OS X software from ATTO:
  - Mac OS 10.4.x – 10.5.x Driver: 4.20
  - Flash Bundle: 2007_09_05
  - Configuration Tool: 3.17
- Available from the ATTO website Downloads section

FireWire

- Avid MediaDrive rS250
- Avid MediaDrive rS80
- DigiDrive FireWire 80

Important Information for Avid rs80 and rs250 Users on Mac OS X

- Initio Firmware Update for Avid rs80 and rs250

SCSI Hard Drives

SCSI HBA Requirements
For SCSI card information, please see the following page:

- Qualified SCSI Host Bus Adapter Cards for Mac OS X

SCSI Drive Requirements

- SCSI interface: Wide single-ended or low-voltage differential (LVD or Ultra 160)
- Disk drive rotational speed: 10,000 RPM or faster
- Buffer Size: 512K or larger
- Drives must be dedicated for audio (internal or external)
- Mac OS file system: Mac OS Extended (also known as HFS+ format)
- Mac OS Standard (HFS) formatted drives can be used for transfer, but are not recommended for recording or playback
- Windows NTFS or FAT32 formatted drives supported on Mac OS X for transfer only
- Pro Tools does not support RAID technology. Please do not activate this feature on any Pro Tools recording drives.
- Supported formatting utility for IDE/ATA, SATA, FireWire, or SCSI drives: Apple Disk Utility, included with Mac OS X

Formatting Instructions

- Open from the following location: Applications->Utilities->Disk Utility, or in the Apple Menu when booted from the OS X installation CD.
- From the list of drives on the left, select the actual drive (the one on top, with the GB and drive manufacturer listed) rather than the user defined name of the drive below it.
- Choose either the Erase or Partition tab
- Choose Mac OS Extended (Journaled)

- If you plan on using your drive on both Mac OS 9 and Mac OS X, check the box next to "Install Mac OS 9 Drivers".

Note: partitioning is not an option using the Erase command. To increase performance and improve seek time Digidesign recommends that you allocate a portion of your hard drive for recording. In Pro Tools, Choose Setups/Preferences and click Operation. Under the Open Ended Record Allocation option, select Limit To and enter a number of minutes to be allocated.

Hard Drives

Hard drive families from the following manufacturers are recommended:

Manufacturer & Drive Family

- Digidesign DigiDrive*
- Avid rS, iS Plus, iS Pro
- Seagate Cheetah, Barracuda
- IBM Ultrastar

*First generation DigiDrives are not supported in LVD mode

IDE/ATA & SATA Hard Drives

SATA Hard Drives

Internal SATA drives are qualified for up to 32 tracks, 24 bit, 44.1/48 kHz with Pro Tools|HD systems on Power Mac G5 models.

- Dedicated recording drives only, recording to the startup drive is not supported.
- External SATA drives not tested

IDE/ATA Hard Drives

Up to 32 track, 24 bit, 48 KHz performance from one dedicated internal IDE/ATA audio drive is supported on qualified Pro Tools systems for Mac OS X.

Not Supported

eSATA Hard Drives

Although there have been no reported issues with eSATA drives, these have not been tested by Digidesign, and are therefore not supported.

USB 2.0 Hard Drives

USB hard drives are NOT recommended or supported for use as recording drives. Limited testing has shown that performance with USB drives is inferior to that of FireWire drives.

FireWire Drives

FireWire 400 Hard Drives

The Avid MediaDrive rS250. Avid MediaDrive rS80, DigiDrive FireWire 80, and third-party 7200 RPM FireWire 400 drives with the Oxford 911 chipset have been qualified with Pro Tools|HD and Pro Tools|HD Accel systems for the following:

- Supported track count (per drive): 24 tracks per drive at 48 KHz/24-bit @ 2000ms edit density
- Maximum 8 drives for a total of 192 tracks at 48 KHz/24-bit @ 2000ms edit density
- Pro Tools|HD Accel systems: maximum 192 tracks

For more information and specific requirements, see FireWire Drive Requirements for Mac OS.

FireWire 800 (or FireWire 400) Hard Drives

FireWire 800 (or FireWire 400) drives with the Oxford 912 or 924 chipset interface have been qualified for record and playback with the following systems on Mac OS X 10.4:

- Pro Tools|HD and Pro Tools|HD Accel Systems (with Pro Tools 6.9.2 or higher)
- Pro Tools LE Systems (with Pro Tools LE 6.9.2 or higher)
- Pro Tools M-Powered Systems (with Pro Tools M-Powered 6.8r2 or higher)
- Pro Tools Academic Systems
- Mac OS X 10.4 "Tiger" only (not tested on Mac OS X 10.3 and earlier)
- Please Note:
  - Hard drives using the Oxford 924 chipset interface have FW800, FW400, USB 2.0, and eSATA ports on them. (In our testing, Digidesign qualified Glyph GT Series Hard Drives with the Oxford 924 chipset)
  - Hard drives using the Oxford 912 chipset interface have USB 2.0, FW400 and FW800 ports on them.
  - Only the use of the FW800 or FW400 interface is supported on these drives with Pro Tools.
- Up to 4 FireWire 800 daisy-chained drives supported when used without other FireWire drives
- FireWire 400 and FireWire 800 drives ***should not be combined***

For more information and specific requirements, see FireWire Drive Requirements for Mac OS.

Requirements for IDE/ATA, SATA, FireWire or SCSI drives

- Minimum speed of 7200 RPM & average seek time of less than 10.0 ms
- Boot drives may be used for audio tracks, however performance/track count may vary
- Recording to boot drive not recommended or supported
- For 24-32 tracks, drives must be dedicated for audio (internal or external)
- Mac OS file system: Mac OS Extended (also known as HFS+ format)
- Mac OS Standard (HFS) formatted drives can be used for transfer, but are not recommended for recording or playback
- Windows NTFS or FAT32 formatted drives supported on Mac OS X for transfer only
- Pro Tools does not support RAID technology. Please do not activate this feature on any Pro Tools recording drives.
- Supported formatting utility for IDE/ATA, SATA, FireWire, or SCSI drives: Apple Disk Utility, included with Mac OS X

Additional Information

- Pro Tools has a single audio file size limit of 2048MB. This equates to about 4.5 hours at 24-bit, 44.1 kHz.
- High Speed Drives require manufacturer-approved enclosure to ensure correct heat dissipation, required for sustained drive reliability.

Known Issues

32-Bit vs. 64-Bit Chassis

- With a 32-bit expansion chassis, a –6042 error will occur at 192 kHz Sample Rate when playing over 20 tracks.
- The qualified 64-bit chassis will allow up to 36 tracks @ 192 kHz on Power Mac G4, and up to 24

tracks @ 192 kHz on Power Mac G5.

Important Note About Mixing Drive Types With Pro Tools|HD Systems

- You cannot spread audio files from one session across different types of drives. For example, if you have a session with audio files on SCSI drives, you cannot record or play back Pro Tools files from an IDE/ATA or FireWire drive.
- This applies to audio files only, video can be on a different type of drive, or the same type of drive as the audio files in a session.

SCSI Drives — Approximate Track Count

Test results with Avid & Digidesign SCSI Storage Options listed above. Performance with other drives may vary.

Power Mac G4, Dual 1.25 GHz model
(slower G4 models may have lower track/voice counts)

SCSI Drives	44.1/48 kHz	96 kHz	192 kHz 64-bit Chassis or No Chassis	192 kHz 32-bit Chassis
6	192	96	36	20
4	128	64	24	16
2	64	32	12	12
1	32	16	6	6

Power Mac G5
(Avid MediaDrive rS73/320 LVD used for testing)

SCSI Drives	44.1/48 kHz	96 kHz	192 kHz No Chassis	192 kHz 64-bit Chassis
6	192	96	36	24
4	128	64	24	24
2	64	32	12	12
1	32	16	6	6

FireWire Drives — Approximate Track Count

Test results with Avid MediaDrive rS250, Avid MediaDrive rS80, and DigiDrive FireWire 80. Performance with other drives may vary.

FireWire Drives	44.1/48 kHz	96 kHz	192 kHz
1	24	12	6
2	48	24	12
3	72	36	18
4	96	48	24
5	120	60	30

6	128	72	36
8	192	96	36