



# Media Scanner<sup>TM</sup>

**Detect and map-out defective sectors  
on all re-writable storage devices and interfaces**

**Part of the Intech's SpeedTools<sup>TM</sup> Utilities for MacOS<sup>TM</sup> X**

## **User's Guide**



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## For One Computer

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# Table of Contents

- 1. Guide Introduction..... 1
  - About this Guide..... 1
  - Conventions Used in this Guide..... 1
  - User Registration ..... 1
  - Technical Information ..... 1
  
- 2. Media Scanner ..... 2
  - About Media Scanner ..... 2
  - Using Media Scanner..... 2
  - Important Definitions: "Block" vs. "Sector" vs. "Allocation Block" . . 2
  - Scan Files Mode ..... 3
  - Bad Sector Window Options ..... 4
  - Advice on Detecting Bad Sectors in File Scan Mode ..... 5
  - Scan Sectors Mode..... 6
  - Advice on Detecting Bad Sectors in Sector Scan Mode..... 7
  - Universal Testing Options..... 7
  - Viewing the Media Scanner Log ..... 7
  - System Requirements..... 7



# Guide Introduction

## About This Guide

The instructions and explanations in this guide assume that you understand how to operate your Macintosh computer. You should, for example, know how to choose, select, launch, and drag by using your mouse. In addition, you should also understand how the desktop, windows, dialog boxes, buttons and file/folders work within the Macintosh environment. For more information about these items, please refer to your Macintosh User's Guide.

## Conventions Used In This Guide



**Note:** This symbol calls your attention to important information about the adjacent text. A note will always appear in standard print.



**Warning:** This symbol calls your attention to procedures in the adjacent text which can cause harm to you, your data or computer system. A warning will always appear in bold print.

## User Registration

Please take a moment to register your copy of the SpeedTools™ software on-line via the Intech Software World Wide Web page at <http://www.SpeedTools.com>.

## Technical Information

If you received this software with the purchase of a drive subsystem and you require technical support, Intech has made special arrangements with your drive manufacturer to support this software directly via their technical support department. For customers who have purchased this software product as stand-alone, Intech provides technical information and other late-breaking information via its web site at <http://www.SpeedTools.com>.



# Using the Media Scanner Utility

## About Media Scanner

The SpeedTools™ Media Scanner application is designed to test the reliability of and potentially repair defective sectors on the volumes of local storage devices. Media Scanner provides two alternative methods to detect defective sectors: scanning the files on a volume or scanning the raw sectors on a volume. Both methods have distinct advantages and drawbacks which will be detailed in the next section.

## Using Media Scanner

To begin, a currently mounted volume belonging to a local storage device must be selected. This can be accomplished by dragging and dropping a disk volume icon onto the "Selected Volume" (upper) group box or selecting a volume from the "Selected Volume" popup menu located in the same group box.

## Important Definitions: "Block" vs. "Sector" vs. "Allocation Block"

Before proceeding any further, it is important to comprehend two terms which will be used extensively throughout this document and in the software: "Allocation Block" and "Sector." Strictly speaking, a "Block" and a "Sector" denote exactly the same thing: the smallest number of bytes that can be transferred to or from a physical storage device such as a hard disk drive (aka "Block Device"). However, an "Allocation Block" is something significantly different and needs to be clearly understood to fully appreciate the ramifications of reassigning defective areas of storage media.

Media Scanner 2.0 has introduced the ability to check individual files on all file systems supported by MacOS X. (Examples of supported file systems include HFS Extended, FAT32, UFS, UDF, CDDA, ISO 9660, etc.) This file-based approach requires the introduction of the concept of an "Allocation Block." An allocation block is similar to a physical block/sector but differs in a very important way: it represents the smallest number of bytes that can be transferred to or from a file located on a given volume. An allocation block is a logical grouping of one or more physical blocks/sectors on the storage device. Additionally, the size of an allocation block can vary widely from volume to volume.

Because a "Block" and an "Allocation Block" can so easily be confused, Intech has decided to always use the term "Sector" to denote the smallest number of bytes which a given block storage device can transfer. Likewise, Intech will always use

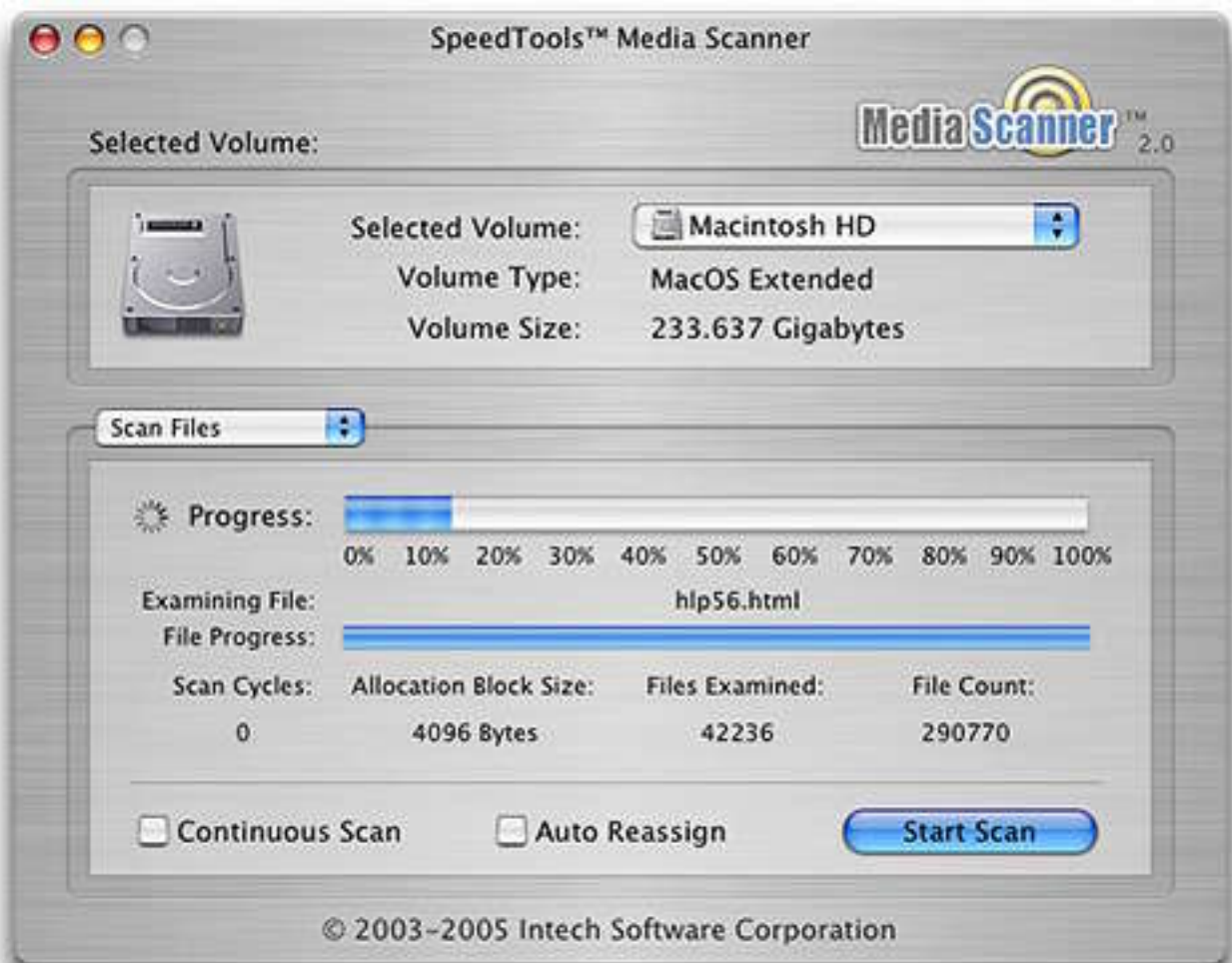


the term "Allocation Block" to denote the smallest number of bytes which a given volume's file system format can transfer.



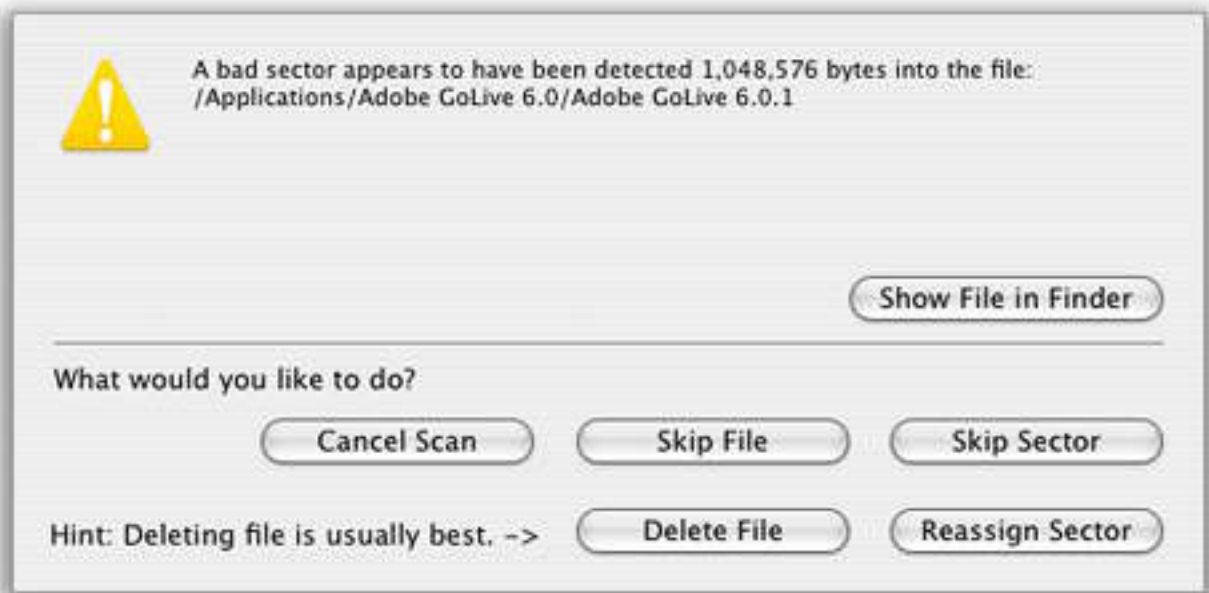
**Note:** Most read-only (i.e. write protected) volumes are supported for bad sector detection only. Defective sectors cannot be repaired on read-only media and you will only be provided with the option to skip over the defective sector. Additionally, in scan files mode, you will be able to view the affected file, cancel the scan, or skip over the sector or entire file.

## Scan Files Mode



**Figure 1. The Media Scanner Main Window - Scan Files Mode**

Figure 1 (above) shows the Media Scanner Window configured for a file scan. In this mode, Media Scanner will attempt to open every fork of every file on the currently selected volume and read in the data. If an error is detected, the file which contains the defective sector will be identified and several options will be presented (See Figure 2, next page).



**Figure 2. The Bad Sector Window - File Scan Mode**

### **Bad Sector Window Options:**

Option 1: "Show File in Finder." Clicking this button will cause the Finder to open the window containing the file with the defective sector and select it for easy follow up examination, if desired.

Option 2: "Cancel Scan." Clicking this button will stop the current scan and reset the file scanning starting point back to the beginning of the volume.

Option 3: "Skip File." Clicking this button will cause Media Scanner to stop the examination of the current file and continue with the file scan at the next file.

Option 4: "Skip Sector." Clicking this button will cause Media Scanner to skip over the current allocation block which contains the defective sector within the current file's fork and continue with the file scan.

Option 5: "Delete File." Clicking this button will cause Media Scanner to permanently delete the file with the defective sector and continue with the file scan. This is usually the best choice since reassigning the sector will put a blank "hole" in the file equal to the volume's allocation block size. (See "Reassign Sector" below for more information.)



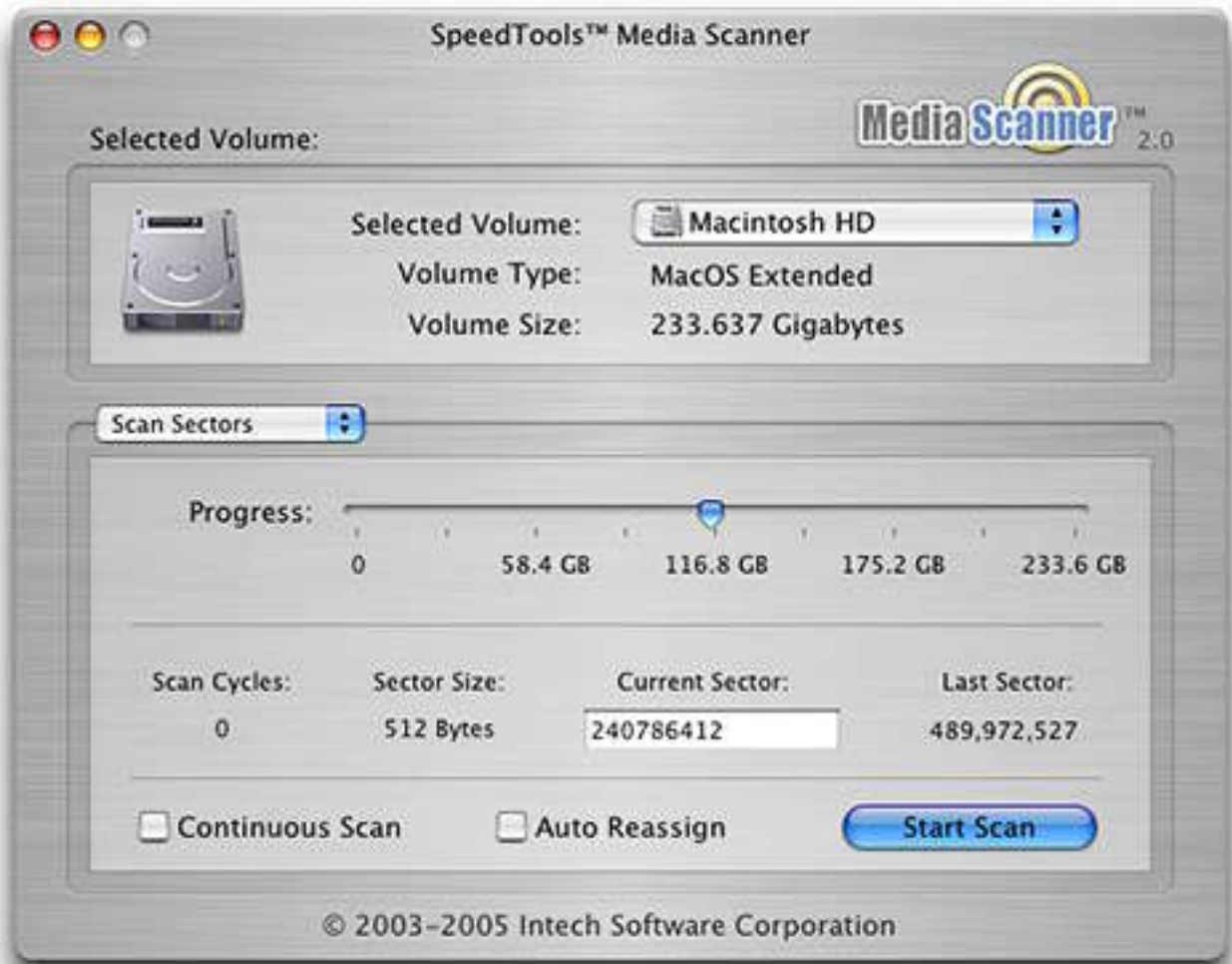
Option 6: "Reassign Sector." Clicking this button will cause Media Scanner to attempt to reassign the defective sector. But be aware that in file scan mode, one full allocation block will have to be blanked out in order to repair a single physical sector. For example, if the volume is HFS+, it very likely has a 4096 byte allocation block size. In this case, reassigning a single defective 512 byte sector will put a 4096 byte blank spot in the file. Such a blank spot in the file may lead to unpredictable behavior when the program which created the file tries to open it and read in its data. (Of course, since the sector is bad to begin with, the program which created the file will not be able to access the allocation block which contains the defective sector, either, so your options are rather limited. See Advice section below.)

### **Advice on Detecting Bad Sectors in File Scan Mode**

If the File Scan mode discovers a defective sector present in a file which you created, you have several options to try and minimize the loss of data:

- 1) Delete the file and replace it with your backup. (We presume you backup your important files, of course.)
- 2) If you don't have a recent enough backup to make this a viable option, you could try to open the file with the program which created it. There is always a chance that the defective sector is located in an allocation block within one of the file's forks which is not critical. You could then save a new copy of the file and delete the original.
- 3) Try Media Scanner in "Sector Scan" mode. Sector scan mode will find the same defective sector, but will almost always have the advantage of being able to leave a smaller "hole" in the file. In sector scan mode, only one physical sector is mapped out (usually only 512 bytes) instead of one full allocation block (usually 4096 bytes). That's 87.5% less data typically wiped out!

## Scan Sectors Mode



**Figure 3. The Media Scanner Main Window - Scan Sectors Mode**

Figure 3 (above) shows the Media Scanner Window configured for a sector scan. In this mode, Media Scanner will attempt to read every raw sector on the currently selected volume. If a defective sector is detected, Media Scanner will present two options: skip the sector or attempt to reassign it.

Be aware that if a sector has successfully been reassigned, a blank spot equal in size to the drive's physical sector size (usually 512 bytes) will exist where the defective sector used to be. In sector scan mode, Media Scanner does not know if the defective sector was being used in some application file or data file, but you certainly will not be any worse off than you were before you reassigned since the sector was bad, after all.

## Advice on Detecting Bad Sectors in Sector Scan Mode

Sector scanning tends to be quicker than file scanning, especially if your volume is rather full and/or contains a large number of small files. If you are in a hurry and you want to check for bad blocks quickly, sector scan mode is probably your best choice. If a bad sector is detected, you can always cancel the scan and switch to file scan mode. If file scan mode fails to detect a bad sector, then you can have a high degree of confidence that the defective sector can be safely reassigned without fear of any file being affected. On the other hand, if the defective sector resides within a file, at least you will know which file is affected and you can make a more informed choice about how to proceed.

## Universal Testing Options

The following options are available in both "Scan Files" and "Scan Sectors" modes.




**Continuous Scan** - Checking this box will cause Media Scanner to restart the scanning procedure each time one test cycle is completed, until the scan is cancelled manually.

**Auto Reassign** - Be careful with this option! Checking this box will cause Media Scanner to attempt to reassign all defective sectors detected during the scan. This option can be dangerous if your drive is reporting media errors for some reason other than actual bad sectors, such as excessive heat, excessive electrical noise, etc.

## Viewing the Media Scanner Log

Media Scanner will keep track of all detected bad sectors, regardless of whether it is being used in file scan mode or sector scan mode. All the information that was provided at the time of the scan will be entered into the log. To view the Media Scanner log file, go to the "Log" menu and select the "Open Log File..." item. The log file will automatically open in your default text viewer.

## System Requirements

-  MacOS X 10.2 or later
-  A disk drive which is local to your computer (not networked)
-  10 Megabytes of free RAM.