

WDC Caviar Configuration Help

Utility Help

[Overview](#)

[Configuration Options](#)

Driver Help

[Introduction](#)

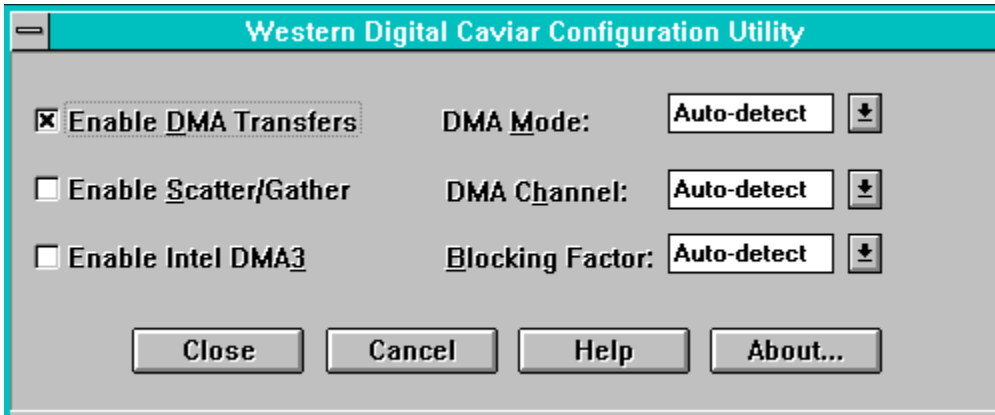
[Installation](#)

[Features](#)

Configuration Utility Overview

This program allows the user to change the operating mode of the WDC Caviar Fastdisk driver for Windows 3.1. This program automates the process of selecting the desired operating modes for the Fastdisk driver. This automation simplifies the configuration process and prevents the user from choosing incorrect option values for the various modes. Help is also provided on each option to assist the user in understanding the meaning and effect of the various options.

Configuration Options



Western Digital Caviar Configuration Utility

Enable DMA Transfers DMA Mode: Auto-detect ↓

Enable Scatter/Gather DMA Channel: Auto-detect ↓

Enable Intel DMA3 Blocking Factor: Auto-detect ↓

Close Cancel Help About...

The image shows a configuration utility window titled "Western Digital Caviar Configuration Utility". It contains three rows of settings. The first row has a checked checkbox for "Enable DMA Transfers" and a dropdown menu for "DMA Mode" set to "Auto-detect". The second row has an unchecked checkbox for "Enable Scatter/Gather" and a dropdown menu for "DMA Channel" set to "Auto-detect". The third row has an unchecked checkbox for "Enable Intel DMA3" and a dropdown menu for "Blocking Factor" set to "Auto-detect". At the bottom, there are four buttons: "Close", "Cancel", "Help", and "About...".

Enable DMA

If you enable DMA transfers, the Fastdisk driver will automatically perform DMA transfers, when possible. The Fastdisk driver may not use DMA transfers on all transfers even when DMA is enabled. Transfers that occur on odd addresses or that require Scatter/Gather type transfers when such hardware does not exist in the computer system will cause the Fastdisk driver to, temporarily, not use DMA transfers for that request.

Enable Scatter/Gather

Scatter/Gather is an optimization of the normal DMA transfer mode. The Windows operating system cannot always maintain disk buffers on adjacent addresses. What this means is that all the blocks for a particular read or write operation may not be in areas of memory that are next to one another. If Scatter/Gather is not enabled, the Fastdisk driver must resort to non-DMA (or PIO) transfer modes when this situation occurs. Scatter/Gather transfer mode effectively enables the DMA hardware to combine or gather all of these scattered disk buffers into a single DMA operation automatically. Special DMA hardware is required in your computer to allow this mode. Please be sure your computer hardware supports this feature before enabling it.

Note: This feature is not enabled in version 2.3 and earlier of the Fastdisk driver because of hardware problems in current hardware. When fully operational Scatter/Gather DMA hardware becomes available a new Fastdisk driver with this feature fully implemented and tested will be made available.

Enable Intel DMA3

This option enables use of DMA channel 3 on some Intel motherboards. This is also often referred to as the CSL option.

DMA Mode

This allows you to select the DMA hardware mode to use. You can always select the "Auto-detect" option which will automatically determine the correct DMA mode to use for your computer system. Selecting one of the modes listed in the DMA Mode list-box will pick your preferred DMA mode but this driver can still choose a lesser mode if the mode you selected is not available on your computer. For example, if you selected mode F on a computer without mode F DMA capability the driver would use DMA mode B automatically. However, if you chose mode B and your hardware supported mode F the driver would not automatically switch to Mode F since that is a higher performance DMA mode.

DMA Channel

This allows you to select the DMA channel the Fastdisk driver use. This also has an auto-detect option that will automatically determine the correct DMA channel. It is recommended that you choose the auto-detect option. Choosing the incorrect DMA channel may result in loss of data. Letting the Fastdisk driver automatically determine the DMA channel is the safest method for DMA channel selection.

Blocking Factor

Block mode is a special PIO transfer mode. Rather than generating interrupts for every disk sector transferred block mode generates interrupt for every block of disk sectors transferred. The blocking factor allows you to choose the number of disk sectors per block to be utilized. If you choose the auto-detect option the Fastdisk driver will use either the current blocking factor if the drive is currently operating in block mode. Many new computer systems can operate Caviar drives in block mode and this is the blocking factor that the Fastdisk driver will detect when it starts. It is often a good idea to use the blocking factor chosen by the computer system manufacturer. If block mode is not enabled and the auto-detect option is chosen then the Fastdisk driver will use the default blocking factor read from the Caviar drives connected. Choosing any value other than Auto-detect will force the Fastdisk driver to use that blocking factor if it is supported by the drive. When you exit Windows the Fastdisk driver will reset the blocking factor to the original value it had when you entered Windows.

Close

This will save the changes you made, if any, to the drive configuration. It will then ask if you wish to restart Windows or return to Windows. You must restart Windows for any changes you made to take effect. The Fastdisk driver only configures operating modes during Windows startup time. If you want to try the new option settings immediately you should choose the Restart Windows option button which will cause Windows to be shut-down and automatically restarted. You may have to close any open applications or DOS sessions before the shut-down can be completed. If you choose the Return To Windows option button then Windows will not be shut-down and you may continue operating Windows normally. The changes you made are not in effect and your Caviar drive is operating with the options that were in effect when you started Windows. The next time you restart Windows the new option settings will take effect.

Cancel

When you choose this option you are choosing to not save any selections you made in the configuration. Anything changes you made are lost and the original state of the option settings is preserved.

Help

This button displays the help information you are currently viewing.

About

This button displays the application name, copyright, and version information for the Caviar configuration utility.

Fastdisk Driver Introduction

The WDC Caviar Fastdisk driver allows optimal operation of the Western Digital Corp. Caviar IDE drives with Microsoft Windows 3.1. This Fastdisk driver enables Windows 3.1 to operate in 32-bit disk transfer mode when running on a i386 or higher processor in Windows Enhanced mode. A Fastdisk driver such as the WDC Caviar driver provides several benefits to the user.

The first benefit is increasing the number of DOS sessions that can be open at once. Without a Fastdisk driver program the number of DOS sessions is by the amount of physical memory. Swap space provided by a permanent or temporary swap file is not usable by these DOS sessions. The Fastdisk driver allows DOS sessions to utilize virtual memory.

The second benefit is increased performance in many cases. The WDC Caviar Fastdisk driver utilizes advanced DMA and PIO transfer modes provided by the latest WDC Caviar drives. Since many PC system BIOS do not support these advanced transfer modes the data transfer rates will be increased substantially under Windows when running with this Fastdisk driver.

The third benefit is faster switching between applications. Since the Fastdisk driver allows disk transfers such as overlay operations to occur in 32-bit enhanced mode less switching between protected and real modes is required to perform disk transfers. This is most noticeable between multiple DOS sessions.

Fastdisk Driver Installation

Installation of the WDCDRV.386 Fastdisk driver requires editing the SYSTEM.INI file. The Western Digital Setup program can perform this automatically. However, if you choose to perform this activity yourself the procedure involves making some minor edits in the [386enh] section of SYSTEM.INI file. You can use any editor capable of editing standard DOS text files such as the EDIT program that comes with MS-DOS 5.0 and later.

In [386enh] section replace line:

device=*wdctrl

with:

device=wdcdrv.386

Start Windows 3.1 and verify that the WDCDRV.386 sign-on message appears indicating the version and other information for the Fastdisk driver program.

Features

The Western Digital Corp. Fastdisk driver for Windows 3.1 implements the following features:

1. Support of advanced PIO and DMA transfer modes for WDC Caviar drives.
2. Use of PIO block mode transfers on WDC Caviar drives.
3. Uses scatter/gather DMA transfers, when supported by system hardware.
4. Automatic determination of DMA mode and channel.
5. Automatic determination of current blocking factor for block mode.

Disk Buffers

Disk buffers are special areas of memory allocated by the operating system to temporarily store information being read from or written to the hard disk.

DMA

DMA is an acronym for Direct Memory Access. What this means is that the transfer is performed using specialized hardware that directly accesses system memory. No intervention by the microprocessor is required after it sets up the transfer. Some event, usually an interrupt, informs the microprocessor when the transfer has completed.

DOS Sessions

DOS sessions are created when the user requests an MS-DOS command prompt window for full-screen sessions from within Windows or when a non-Windows application is started from within Windows.

Mode B DMA

This is an EISA/ISA DMA transfer mode that provides up to 4 megabytes per second.

Mode F DMA

This is a higher performance DMA mode available on PCI based machines. It is available even though the IDE drive is not connected to a PCI slot. It provides DMA transfer rates from 6 to 8 megabytes per second.

Physical Memory

Physical memory is memory actually physically installed in your computer system. Physical memory is usually installed as SIMM (or Single Inline Memory Modules) on your system motherboard.

PIO

PIO is an acronym for Programmed I/O. PIO is the opposite of DMA and requires the microprocessor to be involved in the transfer of each individual piece of data. This is the original mode of transfer implemented by the IDE/ATA interface. It is capable of up to 11 megabytes per second transfer rates.

Virtual Memory

Virtual memory is a mechanism used by Windows to simulate the existence of more memory than is physically installed in the computer. By using part of the hard disk space as a temporary work area, called a swap file, Windows can move data not currently being accessed to disk. This frees memory for use by applications that would otherwise not be available.

Windows Enhanced Mode

This is the default mode for Windows to use on 386 or higher computer systems with at least 2 megabytes of physical memory. It allows multiple DOS sessions and virtual memory to be used by applications for Windows.

