

ATA Protected Area Proposal

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Scope

This document presents a proposal for a set of commands that allow system BIOS to create a protected area on disk drives.

Revision History

Revision 0 - Initial Draft

Overview

A reserved area for data storage outside the normal operating system file system is required for several specialized applications. Systems may wish to store configuration data or save memory to disk data in a location that operating systems can not change. This proposal includes two commands to allow a system BIOS to set aside disk capacity for non-file system uses. The Read Native Max Address command returns the full size of the disk. The Set Max Address command sets the maximum address for commands.

Typical use of these commands would be:

On Reset

1. BIOS receives control after a system reset.
2. BIOS issues a Read Native Max Address command to find the max capacity of the drive.
3. BIOS issues a Set Max Address command to the values returned by Read Native Max Address.
4. BIOS reads configuration data from the highest area on the disk.
5. BIOS issues a Read Native Max Address command followed by a Set Max Address command to reset the drive to the size of the file system.

On Save to Disk

1. BIOS receives control prior to shut down.
2. BIOS issues a Read Native Max Address command to find the max capacity of the drive.
3. BIOS issues a Set Max Address command to the values returned by Read Native Max Address
4. Memory is copied to the reserved area
5. Shut down completes.

These commands are intended for use only by system BIOS or other low level boot time process. Using these commands outside BIOS controlled boot or shutdown may result in damage to file systems on the drive.

Proposed Changes to ATA/ATAPI-4**8.* READ NATIVE MAX ADDRESS**

OPCODE - F8h

TYPE - Optional

PROTOCOL -Non data command

INPUTS -

Register	7	6	5	4	3	2	1	0
Features								
Sector Count								
Sector Number								
Cylinder Low								
Cylinder High								
Device/Head	1	LBA	1	D				
Command	F8h							

NORMAL OUTPUTS -

The data returned in the sector number, cylinder low, cylinder high and device/head registers is the maximum drive size that may be set with the Set Max Address command. These values are not affected by the Set Max ADDRESS command.

Register	7	6	5	4	3	2	1	0
Error								
Sector Count								
Sector Number	Max Sector number or LBA							
Cylinder Low	Max Cylinder Low or LBA							
Cylinder High	Max Cylinder High or LBA							
Device/Head	1		1	D	Max Head Number or LBA			
Status	BSY	DRDY	DMA RDY	SERV	DRQ	COR R	IDX	ERR

ERROR OUTPUTS -

Status register				Error register				
DRDY	DF	CORR	ERR	BBK	UNC	IDNF	ARBT	AMNF
V			V				V	

PREREQUISITES -DRDY set equal to one.

DESCRIPTION - This command returns the maximum values that may be set using the Set Max Address command.

8.* SET MAX ADDRESS

OPCODE - F9h

TYPE - Optional

PROTOCOL - Non-data command

INPUTS -

Register	7	6	5	4	3	2	1	0
Features								
Sector Count								B
Sector Number	Set Max Sector Number or LBA							
Cylinder Low	Set Max Cylinder Low or LBA							
Cylinder High	Set Max Cylinder High or LBA							
Device/Head	1	LBA	1	D	Set Max Dev/Hd or LBA			
Command	F9h							

B - Volatility option bit. B=1, drive max address setting is preserved over reset. B=0, drive max address is set to value returned by the Read Native Max Address on reset.

NORMAL OUTPUTS -

Register	7	6	5	4	3	2	1	0
Error								
Sector Count								
Sector Number	Set Max Sector number or LBA							
Cylinder Low	Set Max Cylinder Low or LBA							
Cylinder High	Set Max Cylinder High or LBA							
Device/Head	1		1	D	Set Max Head Number or LBA			
Status	BSY	DRDY	DMA RDY	SERV	DRQ	COR R	IDX	ERR

ERROR OUTPUTS -

Status register				Error register				
DRDY	DF	CORR	ERR	BBK	UNC	IDNF	ARBT	AMNF
V			V				V	

PREREQUISITES - A successful Read Native Max Address must precede a Set Max Address command. DRDY set equal to one.

DESCRIPTION - After successful completion of this command, all read and write access attempts to LBA's or CHS addresses greater than specified in the Sector Count, Cylinder High, Cylinder Low and Drive/Head registers will be rejected with an IDNF error. Identify command data words 1,3,6,54,55,56,57,58,60,61 reflect the maximum address set with this command.