

## Device Configuration Overlay Proposal

To: Technical Committee T13  
 From: Pete McLean  
 Maxtor Corporation  
 2190 Miller Drive  
 Longmont, CO 80501  
 303 678-2149  
[pete\\_mclean@maxtor.com](mailto:pete_mclean@maxtor.com)  
 Date: 1 September 2000

### Introduction

Today, the ATA standard defines many optional commands, modes, and feature sets. Each personal computer manufacturer desires different features and many personal computer manufacturers desire to have different features available on different systems that they manufacture. This leads to the need for many versions of the same disk product to meet the various system needs.

The Device Configuration Overlay proposal is intended to allow device manufacturers to build one version of a product to satisfy all customer needs and to allow personal computer manufacturers to buy one version to fill needs of all of their systems.

The response to an IDENTIFY DEVICE or IDENTIFY PACKET DEVICE command provides the host with an indication of the optional commands, modes, and features sets that a device supports. The Device Configuration Overlay proposal provides a set of commands that allow a utility program to modify some of the commands, modes and feature sets reported as supported by the IDENTIFY DEVICE or IDENTIFY PACKET DEVICE command response. This allows a device manufacturer or personal computer system manufacturer to modify the apparent features provided by a device.

### Proposed changes

The following additions are proposed for the ATA/ATAPI-6 standard based on the current ATA/ATAPI-6 rev 0a standard:

### 6.x Device Configuration Overlay feature set

The Device Configuration Overlay feature set allows a utility program to modify some of the optional commands, modes, and features sets that a device reports as supported in the IDENTIFY DEVICE or IDENTIFY PACKET DEVICE command response as well as the capacity reported.

Commands unique to the Device Configuration Overlay feature set use a single command code and are differentiated from one another by the value placed in the Features register. These commands are:

- ~~– DEVICE CONFIGURATION DISABLE~~
- DEVICE CONFIGURATION FREEZE LOCK
- DEVICE CONFIGURATION IDENTIFY
- ~~– DEVICE CONFIGURATION RESTORE~~
- DEVICE CONFIGURATION SET

The Device Configuration Overlay feature set may ~~effect~~ affect words 63, 82, 83, 84, and 88 of the IDENTIFY DEVICE and IDENTIFY PACKET DEVICE command responses. Certain bits in these

words that indicate that a command, mode, capacity, or feature set is supported and enabled may be cleared by a DEVICE CONFIGURATION SET command. For a particular command, mode, capacity, or feature set, when the ~~ea~~ bit is cleared indicating that the device does not support the feature, the device shall not provide the feature. Also, the maximum capacity of the device may be reduced. Since a host protected area may be lost if the capacity of the device is reduced, an attempt to modify the maximum capacity when a host protected area is set will cause the DEVICE CONFIGURATION SET command to return command aborted. The settings made by a DEVICE CONFIGURATION SET command are maintained over power-down and power-up.

A DEVICE CONFIGURATION IDENTIFY command indicates the selectable commands, modes, capacity, and feature sets that the device is capable of supporting. ~~since a~~ After the execution of a DEVICE CONFIGURATION SET command this information is no longer available from an IDENTIFY DEVICE or IDENTIFY PACKET DEVICE command.

A DEVICE CONFIGURATION ~~DISABLE-RESTORE~~ command disables an overlay that has been set by a DEVICE CONFIGURATION SET command and returns the IDENTIFY DEVICE or IDENTIFY PACKET DEVICE command response to that indicated by the DEVICE CONFIGURATION IDENTIFY command. If a DEVICE CONFIGURATION FREEZE LOCK command has been issued since the device powered-up, the DEVICE CONFIGURATION ~~DISABLE-RESTORE~~ command shall return command aborted.

A DEVICE CONFIGURATION FREEZE LOCK command prevents accidental modification of the state of the Device Configuration Overlay feature set. A device always powers-up with configuration freeze lock not set. After a successful DEVICE CONFIGURATION FREEZE LOCK command is executed, all DEVICE CONFIGURATION SET and DEVICE CONFIGURATION ~~DISABLE-RESTORE~~ commands are aborted by the device until the device is powered-down and powered-up again. The freeze locked state is not effected by hardware or software reset.

## In clause 8

### 8.X DEVICE CONFIGURATION

Individual Device Configuration Overlay feature set commands are identified by the value placed in the Features register. Table xx shows these Features register values.

**Table xx – Device Configuration Overlay Features register values**

Value	Command
C0h	DEVICE CONFIGURATION <del>DISABLE-RESTORE</del>
C1h	DEVICE CONFIGURATION FREEZE LOCK
C2h	DEVICE CONFIGURATION IDENTIFY
C3h	DEVICE CONFIGURATION SET
00h-BFh, C4h-FFh	Reserved

#### 8.X.1 DEVICE CONFIGURATION ~~DISABLERESTORE~~

##### 8.X.1.1 Command code

B1h with a Features register value of C0h.

##### 8.X.1.2 Feature set

Device Configuration Overlay feature set.

- Mandatory when the Device Configuration Overlay feature set is implemented.

**8.X.1.3 Protocol**

Non-data

**8.X.1.4 Inputs**

The Features register shall be set to C0h.

Register	7	6	5	4	3	2	1	0
Features	C0h							
Sector Count	na							
Sector Number	na							
Cylinder Low	na							
Cylinder High	na							
Device/Head	na			DEV	na			
Command	B1h							

Device/Head -  
DEV shall indicate the selected device.

**8.X.1.5 Normal outputs**

Register	7	6	5	4	3	2	1	0
Error	na							
Sector Count	na							
Sector Number	na							
Cylinder Low	na							
Cylinder High	na							
Device/Head	obs	na	obs	DEV	na			
Status	BSY	DRDY	DF	na	DRQ	na	na	ERR

Device/Head register -  
DEV shall indicate the selected device.

Status register -  
BSY shall be cleared to zero indicating command completion.  
DRDY shall be set to one.  
DF (Device Fault) shall be cleared to zero.  
DRQ shall be cleared to zero.  
ERR shall be cleared to zero.

**8.X.1.6 Error outputs**

If the device does not support this command or if DEVICE CONFIGURATION FREEZE LOCK is set, the device shall return command aborted.

Register	7	6	5	4	3	2	1	0
Error	na	na	na	na	na	ABRT	na	na
Sector Count	na							
Sector Number	na							
Cylinder Low	na							
Cylinder High	na							
Device/Head	obs	na	obs	DEV	na			
Status	BSY	DRDY	DF	na	DRQ	na	na	ERR

Error register -

ABRT shall be set to one if this command is not supported or if DEVICE CONFIGURATION FREEZE LOCK is set.

Device/Head register -

DEV shall indicate the selected device.

Status register -

BSY shall be cleared to zero indicating command completion.

DRDY shall be set to one.

DF (Device Fault) shall be set to one if a device fault has occurred.

DRQ shall be cleared to zero.

ERR shall be set to one if an Error register bit is set to one.

### 8.X.1.7 Prerequisites

DRDY set to one.

### 8.X.1.8 Description

The DEVICE CONFIGURATION **DISABLE-RESTORE** command disables any setting previously made by a DEVICE CONFIGURATION SET command and returns the content of the IDENTIFY DEVICE or IDENTIFY PACKET DEVICE command response to the original settings as indicated by the data returned from the execution of a DEVICE CONFIGURATION IDENTIFY command.

## 8.X.2 DEVICE CONFIGURATION FREEZE LOCK

### 8.X.2.1 Command code

B1h with a Features register value of C1h.

### 8.X.2.2 Feature set

Device Configuration Overlay feature set.

- Mandatory when the Device Configuration Overlay feature set is implemented.

### 8.X.2.3 Protocol

Non-data

### 8.X.2.4 Inputs

The Features register shall be set to C1h.

Register	7	6	5	4	3	2	1	0
Features	C1h							
Sector Count	na							
Sector Number	na							
Cylinder Low	na							
Cylinder High	na							
Device/Head	na			DEV	na			
Command	B1h							

Device/Head -

DEV shall indicate the selected device.

### 8.X.2.5 Normal outputs

Register	7	6	5	4	3	2	1	0
Error	na							
Sector Count	na							
Sector Number	na							
Cylinder Low	na							
Cylinder High	na							
Device/Head	obs	na	obs	DEV	na			
Status	BSY	DRDY	DF	na	DRQ	na	na	ERR

Device/Head register -

DEV shall indicate the selected device.

Status register -

BSY shall be cleared to zero indicating command completion.

DRDY shall be set to one.

DF (Device Fault) shall be cleared to zero.

DRQ shall be cleared to zero.

ERR shall be cleared to zero.

### 8.X.2.6 Error outputs

If the device does not support this command or the device has executed a previous DEVICE CONFIGURATION FREEZE LOCK command since power-up, the device shall return command aborted.

Register	7	6	5	4	3	2	1	0
Error	na	na	na	na	na	ABRT	na	na
Sector Count	na							
Sector Number	na							
Cylinder Low	na							
Cylinder High	na							
Device/Head	obs	na	obs	DEV	na			
Status	BSY	DRDY	DF	na	DRQ	na	na	ERR

Error register -

ABRT shall be set to one if this command is not supported.

Device/Head register -

DEV shall indicate the selected device.

Status register -

BSY shall be cleared to zero indicating command completion.

DRDY shall be set to one.

DF (Device Fault) shall be set to one if a device fault has occurred.

DRQ shall be cleared to zero.

ERR shall be set to one if an Error register bit is set to one.

### 8.X.2.7 Prerequisites

DRDY set to one.

### 8.X.2.8 Description

The DEVICE CONFIGURATION FREEZE LOCK command prevents accidental modification of the Device Configuration Overlay ~~features set~~ settings. After successful execution of a DEVICE

CONFIGURATION FREEZE LOCK command, all DEVICE CONFIGURATION SET, DEVICE CONFIGURATION FREEZE LOCK, DEVICE CONFIGURATION IDENTIFY, and DEVICE CONFIGURATION DISABLE-RESTORE commands are aborted by the device. The DEVICE CONFIGURATION FREEZE LOCK condition is shall be -cleared by a power-down. The DEVICE CONFIGURATION FREEZE LOCK condition shall not be cleared by hardware or software reset.

### 8.X.3 DEVICE CONFIGURATION IDENTIFY

#### 8.X.3.1 Command code

B1h with a Features register value of C2h.

#### 8.X.3.2 Feature set

Device Configuration Overlay feature set.

- Mandatory when the Device Configuration Overlay feature set is implemented.

#### 8.X.3.3 Protocol

PIO data-in

#### 8.X.3.4 Inputs

The Features register shall be set to C2h.

Register	7	6	5	4	3	2	1	0
Features	C2h							
Sector Count	na							
Sector Number	na							
Cylinder Low	na							
Cylinder High	na							
Device/Head	na		DEV		na			
Command	B1h							

Device/Head -

DEV shall indicate the selected device.

#### 8.X.3.5 Normal outputs

Register	7	6	5	4	3	2	1	0
Error	na							
Sector Count	na							
Sector Number	na							
Cylinder Low	na							
Cylinder High	na							
Device/Head	obs	na	obs	DEV	na			
Status	BSY	DRDY	DF	na	DRQ	na	na	ERR

Device/Head register -

DEV shall indicate the selected device.

Status register -

BSY shall be cleared to zero indicating command completion.

DRDY shall be set to one.

DF (Device Fault) shall be cleared to zero.

DRQ shall be cleared to zero.  
ERR shall be cleared to zero.

### 8.X.3.6 Error outputs

If the device does not support this command or the device has executed a previous DEVICE CONFIGURATION FREEZE LOCK command since power-up, the device shall return command aborted.

Register	7	6	5	4	3	2	1	0
Error	na	na	na	na	na	ABRT	na	na
Sector Count	na							
Sector Number	Na							
Cylinder Low	Na							
Cylinder High	na							
Device/Head	obs	na	obs	DEV	na			
Status	BSY	DRDY	DF	na	DRQ	na	na	ERR

Error register -

ABRT shall be set to one if this command is not supported.

Device/Head register -

DEV shall indicate the selected device.

Status register -

BSY shall be cleared to zero indicating command completion.

DRDY shall be set to one.

DF (Device Fault) shall be set to one if a device fault has occurred.

DRQ shall be cleared to zero.

ERR shall be set to one if an Error register bit is set to one.

### 8.X.3.7 Prerequisites

DRDY set to one.

### 8.X.3.8 Description

The DEVICE CONFIGURATION IDENTIFY command returns a 512 byte data structure via PIO data-in transfer. The content of this data structure indicates the selectable commands, modes, and feature sets that the device is capable of supporting. If a DEVICE CONFIGURATION SET command has been issued reducing the capabilities, the response to an IDENTIFY DEVICE or IDENTIFY PACKET DEVICE command will reflect the reduced set of capabilities, while the DEVICE CONFIGURATION IDENTIFY command will reflect the entire set of selectable capabilities.

The format of the Device Configuration Overlay data structure is shown in table yy.

Table yy – Device Configuration Identify data structure

Word	Content	
0	Data structure revision	
<del>21</del>	Multiword DMA modes supported	
	15-3	Reserved
	2	1 = Multiword DMA mode 2 and below are supported
	1	1 = Multiword DMA mode 1 and below are supported
	0	1 = Multiword DMA mode 0 is supported
<del>32</del>	Ultra DMA modes supported	
	15-5	Reserved
	5	1 = Ultra DMA mode 5 and below are supported
	4	1 = Ultra DMA mode 4 and below are supported
	3	1 = Ultra DMA mode 3 and below are supported
	2	1 = Ultra DMA mode 2 and below are supported
	1	1 = Ultra DMA mode 1 and below are supported
	0	1 = Ultra DMA mode 0 is supported
<del>43-76</del>	Maximum LBA address	
<del>87</del>	Command set/feature set supported	
	15-9	Reserved
	8	1 = 48-bit Addressing feature set supported
	7	1 = Host Protected Area feature set supported
	6	1 = Automatic acoustic management supported
	5	1 = READ/WRITE DMA QUEUED commands supported
	4	1 = Power-up in Standby feature set supported
	3	1 = Security feature set supported
	2	1 = SMART error log supported
	1	1 = SMART self-test supported
	0	1 = SMART feature set supported
<del>98-254</del>	Reserved	
255	Integrity word	
	15-8	Checksum
	7-0	Signature

**8.X.3.8.1 Word 0: Data structure revision**

Word 0 shall contain the value 0001h.

**~~8.X.3.8.2 Word 1: Device Configuration Overlay frozen flag~~**

~~Word 1 bit one shall be set to one when a DEVICE CONFIGURATION FREEZE LOCK command has been executed since power-up. Bits 15-1 of word 1 are reserved.~~

**8.X.3.8.3 Word ~~21~~: Multiword DMA modes supported**

Word 2 bits 2-0 contain the same information as contained in word 63 of the IDENTIFY DEVICE or IDENTIFY PACKET DEVICE command response (see 8.12.34). Bits 15-3 of word 2 are reserved.

**8.X.3.8.4 Word ~~32~~: Ultra DMA modes supported**

Word 3 bits 5-0 contain the same information as contained in word 88 of the IDENTIFY DEVICE or IDENTIFY PACKET DEVICE command response (see 8.12.47). Bits 15-6 of word 3 are reserved.

**8.X.3.8.5 Words ~~4-73-6~~: Maximum LBA address**



Words 4 through 7 define the maximum LBA address. This is the highest address accepted by the device in the factory default condition. If no DEVICE CONFIGURATION SET command has been executed modifying the factory default condition, this is the same value as that returned by a READ NATIVE MAX ADDRESS or READ NATIVE MAX ADDRESS EXT command.

#### **8.X.3.8.6 Word 87: Command/features set supported**

Word 8 bit 0 if set to one indicates that the device is capable of supporting the SMART feature set.

Word 8 bit 1 if set to one indicates that the device is capable of supporting SMART self-test including the self-test log.

Word 8 bit 2 if set to one indicates that the device is capable of supporting SMART error logging.

Word 8 bit 3 if set to one indicates that the device is capable of supporting the Security feature set.

Word 8 bit 4 if set to one indicates that the device is capable of supporting the Power-up in Standby feature set.

Word 8 bit 5 if set to one indicates that the device is capable of supporting the READ DMA QUEUED and WRITE DMA QUEUED commands.

Word 8 bit 6 if set to one indicates that the device is capable of supporting the Automatic Acoustic Management feature set.

Word 8 bit 7 if set to one indicates that the device is capable of supporting the Host Protected Area feature set.

Word 8 bit 8 if set to one indicates that the device is capable of supporting the 48-bit Addressing feature set.

Word 8 bits 9 through 15 are reserved.

#### **8.X.3.8.7 Words 98-254: Reserved**

#### **8.X.3.8.8 Word 255: Integrity word**

Bits 7:0 of this word shall contain the value A5h. Bits 15:8 of this word shall contain the data structure checksum. The data structure checksum shall be the two's complement of the sum of all byte in words 0 through 254 and the byte consisting of bits 7:0 of word 255. Each byte shall be added with unsigned arithmetic, and overflow shall be ignored. The sum of all bytes is zero when the checksum is correct.

### **8.X.4 DEVICE CONFIGURATION SET**

#### **8.X.4.1 Command code**

B1h with a Features register value of C3h.

### 8.X.4.2 Feature set

Device Configuration Overlay feature set.

- Mandatory when the Device Configuration Overlay feature set is implemented.

### 8.X.4.3 Protocol

PIO data out

### 8.X.4.4 Inputs

The Features register shall be set to C3h.

Register	7	6	5	4	3	2	1	0
Features	C3h							
Sector Count	na							
Sector Number	na							
Cylinder Low	na							
Cylinder High	na							
Device/Head					DEV	na		
Command	B1h							

Device/Head -

DEV shall indicate the selected device.

### 8.X.4.5 Normal outputs

Register	7	6	5	4	3	2	1	0
Error	na							
Sector Count	na							
Sector Number	na							
Cylinder Low	na							
Cylinder High	na							
Device/Head	obs	na	obs	DEV	na			
Status	BSY	DRDY	DF	na	DRQ	na	na	ERR

Device/Head register -

DEV shall indicate the selected device.

Status register -

BSY shall be cleared to zero indicating command completion.

DRDY shall be set to one.

DF (Device Fault) shall be cleared to zero.

DRQ shall be cleared to zero.

ERR shall be cleared to zero.

### 8.X.4.6 Error outputs

If the device does not support this command or if DEVICE CONFIGURATION FREEZE LOCK is set, the device shall return command aborted. If any of the bit modification restrictions described in 8.X.4.8 are violated, the device shall return command aborted.

Register	7	6	5	4	3	2	1	0
Error	na	na	na	na	na	ABRT	na	na
Sector Count	na							
Sector Number	Na							
Cylinder Low	Na							
Cylinder High	na							
Device/Head	obs	na	obs	DEV	na			
Status	BSY	DRDY	DF	na	DRQ	na	na	ERR

Error register -

ABRT shall be set to one if this command is not supported, if DEVICE CONFIGURATION FREEZE LOCK is set, or if any of the bit modification restrictions described in 8.X.4.8 are violated.

Device/Head register -

DEV shall indicate the selected device.

Status register -

BSY shall be cleared to zero indicating command completion.

DRDY shall be set to one.

DF (Device Fault) shall be set to one if a device fault has occurred.

DRQ shall be cleared to zero.

ERR shall be set to one if an Error register bit is set to one.

#### 8.X.4.7 Prerequisites

DRDY set to one.

#### 8.X.4.8 Description

The DEVICE CONFIGURATION SET command allows a device manufacturer or a personal computer system manufacturer to reduce the set of optional commands, modes, or feature sets supported by a device as indicated by a DEVICE CONFIGURATION IDENTIFY command. The DEVICE CONFIGURATION SET command transfers an overlay that modifies some of the bits set in words 63, 82, 83, 84, and 88 of the IDENTIFY DEVICE or IDENTIFY PACKET DEVICE command response. When the bits in these words are cleared, the device shall no longer support the indicated command, mode, or feature set. If a bit is set in the overlay transmitted by the device that is not set in the overlay received from a DEVICE CONFIGURATION IDENTIFY command, no action is taken for that bit.

The format of the overlay transmitted by the device is described in table zz. The restrictions on changing these bits is described in the text following table zz. If any of the bit modification restrictions described are violated, the device shall return command aborted.

Table zz – Device Configuration Overlay data structure

Word	Content	
0	Data structure revision	
<del>21</del>	Multiword DMA modes supported	
	15-3	Reserved
	2	1 = Multiword DMA mode 2 and below are supported
	1	1 = Multiword DMA mode 1 and below are supported
	0	1 = Multiword DMA mode 0 is supported
<del>32</del>	Ultra DMA modes supported	
	15-5	Reserved
	5	1 = Ultra DMA mode 5 and below are supported
	4	1 = Ultra DMA mode 4 and below are supported
	3	1 = Ultra DMA mode 3 and below are supported
	2	1 = Ultra DMA mode 2 and below are supported
	1	1 = Ultra DMA mode 1 and below are supported
	0	1 = Ultra DMA mode 0 is supported
<del>4-73-6</del>	Maximum LBA address	
<del>87</del>	Command set/feature set supported	
	15-9	Reserved
	8	1 = 48-bit Addressing feature set supported
	7	1 = Host Protected Area feature set supported
	6	1 = Automatic acoustic management supported
	5	1 = READ/WRITE DMA QUEUED commands supported
	4	1 = Power-up in Standby feature set supported
	3	1 = Security feature set supported
	2	1 = SMART error log supported
	1	1 = SMART self-test supported
	0	1 = SMART feature set supported
<del>98-254</del>	Reserved	
255	Integrity word	
	15-8	Checksum
	7-0	Signature

#### 8.X.4.8.1 Word 0: Data structure revision

Word 0 shall contain the value 0001h.

#### 8.X.4.8.2 Word 1: Reserved

#### 8.X.4.8.3 Word ~~21~~: Multiword DMA modes supported

Word ~~21~~ bits 15:3 are reserved.

Word ~~21~~ bit 2 is cleared to select no support for Multiword DMA mode 2 and has the effect of clearing bit 2 in word 63 of the IDENTIFY DEVICE or IDENTIFY PACKET DEVICE response. This bit shall not be cleared if Multiword DMA mode 2 is currently **enablselected**.

Word ~~21~~ bit 1 is cleared to select no support for Multiword DMA mode 1 and has the effect of clearing bit 1 in word 63 of the IDENTIFY DEVICE or IDENTIFY PACKET DEVICE response. This bit shall not be cleared if Multiword DMA mode 2 is supported or Multiword DMA mode 1 or 2 is **enablselected**.

Word ~~21~~ bit 0 shall not be cleared.

#### 8.X.4.8.4 Word **32**: Ultra DMA modes supported

Word **32** bits 15:6 are reserved.

Word **32** bit 5 is cleared to select no support for Ultra DMA mode 5 and has the effect of clearing bit 5 in word 88 of the IDENTIFY DEVICE or IDENTIFY PACKET DEVICE response. This bit shall not be cleared if Ultra DMA mode 5 is currently **enableselected**.

Word **32** bit 4 is cleared to select no support for Ultra DMA mode 4 and has the effect of clearing bit 4 in word 88 of the IDENTIFY DEVICE or IDENTIFY PACKET DEVICE response. This bit shall not be cleared if Ultra DMA mode 5 is supported or if Ultra DMA mode 5 or 4 is **enableselected**.

Word **32** bit 3 is cleared to select no support for Ultra DMA mode 3 and has the effect of clearing bit 3 in word 88 of the IDENTIFY DEVICE or IDENTIFY PACKET DEVICE response. This bit shall not be cleared if Ultra DMA mode 5 or 4 is supported or if Ultra DMA mode 5, 4, or 3 is **enableselected**.

Word **32** bit 2 is cleared to select no support for Ultra DMA mode 2 and has the effect of clearing bit 2 in word 88 of the IDENTIFY DEVICE or IDENTIFY PACKET DEVICE response. This bit shall not be cleared if Ultra DMA mode 5, 4, or 3 is supported or if Ultra DMA mode 5, 4, 3, or 2 is **enableselected**.

Word **32** bit 1 is cleared to select no support for Ultra DMA mode 1 and has the effect of clearing bit 1 in word 88 of the IDENTIFY DEVICE or IDENTIFY PACKET DEVICE response. This bit shall not be cleared if Ultra DMA mode 5, 4, 3, or 2 is supported or if Ultra DMA mode 5, 4, 3, 2, or 1 is **enableselected**.

Word **32** bit 0 is cleared to select no support for Ultra DMA mode 0 and has the effect of clearing bit 0 in word 88 of the IDENTIFY DEVICE or IDENTIFY PACKET DEVICE response. This bit shall not be cleared if Ultra DMA mode 5, 4, 3, 2, or 1 is supported or if Ultra DMA mode 5, 4, 3, 2, 1, or 0 is **enableselected**.

#### 8.X.4.8.5 Words **4-73-6**: Maximum LBA address

Words **43** through **76** define the maximum LBA address. This shall be the highest address accepted by the device after execution of the command. When this value is changed, the content of IDENTIFY DEVICE words 1, 54, 57, 60, 61 100, 101, 102, and 103 shall be changed as described in the SET MAX ADDRESS and SET MAX ADDRESS EXT command descriptions to reflect the maximum address set with this command. This value shall not be changed **and command aborted shall be returned** if a Host Protected Area has been established by the execution of a SET MAX ADDRESS or SET MAX ADDRESS EXT command **with an address value less than that returned by a READ NATIVE MAX ADDRESS or READ NATIVE MAX ADDRESS EXT command.** **Therefore, any data contained in the host protected area is maintained.**

#### 8.X.4.8.6 Word **87**: Command/features set supported

Word **87** bits 15:9 are reserved.

Word **87** bit 8 is cleared to select no support for the 48-bit Addressing feature set and has the effect of clearing bit ~~10~~ in word 83 and words 103:100 of the IDENTIFY DEVICE or IDENTIFY PACKET DEVICE response.

Word **87** bit 7 is cleared to select no support for the Host Protected Area feature set and has the effect of clearing bit 10 in word ~~83~~ and bit 8 in word 83 of the IDENTIFY DEVICE or IDENTIFY PACKET DEVICE response. ~~This bit shall not be cleared~~ if a host protected area has been

established by use of the SET MAX ADDRESS command, this bit shall not be cleared and the device shall return command aborted.

Word 87 bit 6 is cleared to select no support for the Automatic Acoustic Management feature set and has the effect of clearing bit 9 in word 83 and word 94 of the IDENTIFY DEVICE or IDENTIFY PACKET DEVICE response. This bit shall not be cleared if the Automatic Acoustic Management feature set has been enabled.

Word 87 bit 5 is cleared to select no support for the READ DMA QUEUED and WRITE DMA QUEUED commands and has the effect of clearing bit 1 in word 83 of the IDENTIFY DEVICE or IDENTIFY PACKET DEVICE response.

Word 87 bit 4 is cleared to select no support for the Power-up in Standby feature set and has the effect of clearing bits 5 and 6 in word 83 and word 94 of the IDENTIFY DEVICE or IDENTIFY PACKET DEVICE response. If Power-up in Standby has been enabled by a jumper, this bit shall not be cleared.

Word 87 bit 3 is cleared to select no support for the Security feature set and has the effect of clearing bit 1 in word 82 of the IDENTIFY DEVICE or IDENTIFY PACKET DEVICE response. This bit shall not be cleared if the Security feature set has been enabled.

Word 87 bit 2 is cleared to select no support for the SMART error logging.

Word 87 bit 1 is cleared to select no support for the SMART self-test.

Word 87 bit 0 is cleared to select no support for the SMART feature set and has the effect of clearing bit 0 in word 82 of the IDENTIFY DEVICE or IDENTIFY PACKET DEVICE response. This bit shall not be cleared if bits 1 and 2 of word 47 are not cleared or if a the SMART feature set has been enabled by use of the SMART ENABLE OPERATIONS command, this bit shall not be cleared and the device shall return command aborted.

#### **8.X.4.8.7 Words 98-254: Reserved**

#### **8.X.4.8.8 Word 255: Integrity word**

Bits 7:0 of this word shall contain the value A5h. Bits 15:8 of this word shall contain the data structure checksum. The data structure checksum shall be the two's complement of the sum of all byte in words 0 through 254 and the byte consisting of bits 7:0 of word 255. Each byte shall be added with unsigned arithmetic, and overflow shall be ignored. The sum of all bytes is zero when the checksum is correct.

## **8.12 IDENTIFY DEVICE**

Table 20

Word	F/V		
<u>83</u>	<u>F</u>	<u>n</u>	<u>1 = Device Configuration Overlay feature set supported.</u>
<u>86</u>	<u>V</u>	<u>n</u>	<u>1 = Device Configuration Overlay feature set enabled.</u>