

American National Standard

Information technology - ATA/ATAPI-8 Command Set (ATA8-ACS) - Ammendment 1

Approved mm/dd/yyyy:

Secretariat: Information Technology Industry Council

American National Standard

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Replace a single row in Table 6:**Table 6 — Block Size By Command (part 1 of 2)**

Command	Words Transferred per Block
CFA TRANSLATE SECTOR	1256

Insert a single row into Table 3**Table 9 — Security Command Actions (part 3 of 4)**

Command	Locked	Disabled or Unlocked	Frozen
TRUSTED NON-DATA	Command aborted	Executable	Executable

Completely replace section 4.25 with the following text:**4.25 Trusted Computing feature set**

The Trusted Computing feature set provides an interface between a horizontal security product embedded in devices whose behavior may be authorized via interaction with a trusted host system.

The following commands are mandatory for devices implementing the Trusted Computing feature set:

- a) TRUSTED SEND;
- b) TRUSTED SEND DMA;
- c) TRUSTED RECEIVE;
- d) TRUSTED RECEIVE DMA; and
- e) TRUSTED NON-DATA.

TRUSTED SEND and TRUSTED SEND DMA may be used interchangeably. The two commands only differ by the type of data transport protocol used (i.e., PIO Data-Out Command or DMA Command). Similarly, TRUSTED RECEIVE and TRUSTED RECEIVE DMA are interchangeable (i.e., PIO Data-In Command or DMA Command). IDENTIFY DEVICE data word 48 bit 0 indicates whether or not this feature set is supported.

The DEVICE CONFIGURATION OVERLAY SET command provides a mechanism to remove support for this feature set.

The data streams and subsequent actions resulting from these commands are defined by the security protocol identified in the command parameters. These protocols may be defined by groups outside of this standard. The intent is to standardize the data content so it is identical across both ATA and SCSI interfaces.

Completely replace section 4.27 with the following text:**4.27 Write-Read-Verify feature set**

The optional Write-Read-Verify feature set allows a host to control Read After Write behavior in a device.

To enable or disable the feature of Write/Read/Verify, the host may issue a SET FEATURES command with one of two subcommand codes.

It is possible that the device may experience a performance degradation when the Write-Read-Verify feature set is enabled.

These commands are affected by this feature:

- a) WRITE DMA
- b) WRITE DMA EXT
- c) WRITE DMA FUA EXT
- d) WRITE DMA QUEUED
- e) WRITE DMA QUEUED EXT
- f) WRITE DMA QUEUED FUA EXT
- g) WRITE FPDMA QUEUED
- h) WRITE MULTIPLE
- i) WRITE MULTIPLE EXT
- j) WRITE MULTIPLE FUA EXT
- k) WRITE SECTOR(S)
- l) WRITE SECTOR(S) EXT

See 7.52.10 for a description of device behavior when this feature set is supported and enabled.

The IDENTIFY DEVICE command shall reflect the supported and enabled or disabled state of this feature set.

When the device's volatile write cache is enabled, the device may report command completion with no error to the host even if the data is in the device volatile write cache and not written and verified to the non-volatile media. This is important to reduce the performance degradation when the Write-Read-Verify feature set is enabled.

If:

- a) the volatile write cache is disabled and any write command is processed by the device;
- b) a forced unit access write command is processed by the device; or
- c) a flush cache command is processed by the device,

then the device shall only report command completion after the data has been verified.

If the Write-Read-Verify feature set is enabled and the device has not already verified the maximum number of logical sectors configured for this feature set, then after the device has written the sectors to the non-volatile media, the device shall read the data from the non-volatile media and verify that there are no errors. A read from the non-volatile media shall be performed before verification. The verification of sectors is defined as vendor specific.

If the Write-Read-Verify feature set is disabled, or if the device has already verified the maximum number of logical sectors configured for this feature set, then no verification by this feature set shall be performed after the device has written the sectors to the non-volatile media.

If an unrecoverable error condition is encountered by the device during the write, read, or verify operation, the device shall set the Device Fault bit (see 6.2.7) to one.

Completely replace section 7.48.10 with the following text:

7.48.10 Enable/Disable Write-Read-Verify feature set

Subcommand code 0Bh enables the Write-Read-Verify feature set.

Bits (7:0) of the LBA field in the SET FEATURES command specify the Write-Read-Verify mode. Table 1 defines the Write-Read-Verify modes.

Table 1 — Write-Read-Verify Modes

Mode	Description
00h ^a	Always enabled (i.e., the device shall perform a Write-Read-Verify for all logical sectors for all write commands).
01h ^a	The device shall perform a Write-Read-Verify on the first 65,536 logical sectors written by the host after: d) spin-up; or e) the device completes a SET FEATURES command setting the Write-Read-Verify mode without error.
02h ^a	The number of logical sectors on which a device performs a Write-Read-Verify is vendor specific.
03h	The device shall perform a Write-Read-Verify on the first (number specified by the Count field in the SET FEATURES command x 1,024) logical sectors written by the host after: a) spin-up; or b) the device completes a SET FEATURES command setting the Write-Read-Verify mode without error.
04h-FFh	Reserved
^a the Count field shall be ignored.	

Subcommand code 8Bh disables the Write-Read-Verify feature set.

A device shall set the Write-Read-Verify feature set to its factory default setting after processing of a power-on reset or if the Software Settings Preservation feature set is disabled and a hardware reset is processed. If the Software Settings Preservation feature set is enabled and a hardware reset is processed, the device shall not change the settings of the Write-Read-Verify feature set.

If a device is in the reverting to defaults enabled mode (see 7.48.16), then the device shall set the Write-Read-Verify feature set to its factory default setting after processing of a software reset.

If a device is in the reverting to defaults disabled mode (see 7.48.16), then the device shall not change the settings of the Write-Read-Verify feature set after processing of a software reset.

Completely replace section 7.49.6 with the following text:**7.49.6 SET MAX UNLOCK - F9h/03h, PIO Data-Out****7.49.6.1 Feature Set**

This 28-bit command is mandatory for devices that implement the HPA Security Extensions.

7.49.6.2 Description

This command requests a transfer of a single 512-byte block of data from the host. Table 59 defines the content of this data.

The password supplied in the data transferred shall be compared with the password set by the SET MAX SET PASSWORD command.

If the device is locked from HPA commands and the password compare fails, then the device shall return command aborted and decrement the HPA Security Extensions unlock counter. This counter shall be decremented for each password mismatch when SET MAX UNLOCK is issued and the device is locked from HPA commands. When this counter reaches zero in a device, then the device shall return command aborted for all subsequent SET MAX UNLOCK commands until after the device has processed a power-on reset.

NOTE 1 — The HPA Security Extensions unlock counter is not related to the Security feature set unlock counter.

If the device is HPA Locked, the HPA Security Extensions unlock counter is not zero, and the password compare matches, then the device is HPA Unlocked and all SET MAX commands shall be accepted.

This command should not be immediately preceded by a READ NATIVE MAX ADDRESS command. If this command is immediately preceded by a READ NATIVE MAX ADDRESS command, it shall be interpreted as a SET MAX ADDRESS command.

7.49.6.3 Inputs

Name	Description
Feature	03h
Count	N/A
LBA	N/A
Device	<p>Bit Description</p> <p>7 Obsolete</p> <p>6 N/A</p> <p>5 Obsolete</p> <p>4 Transport Dependent - See 6.2.11</p> <p>3:0 Reserved</p>
Command	7:0 F9h

7.49.6.4 Normal Outputs

See table 99.

7.49.6.5 Error Outputs

If a device is not HPA Locked, then the device shall return command aborted. A device may return command completion with the Error bit set to one if an Interface CRC error has occurred. See table 126.ee table 99.

7.49.6.6 Output From the Host to the Device Data Structure

See Table 59