

TO: T10 Membership

From: Ron Roberts

RE: Get Configuration Command

Date: 10/22/97

### 0.1. GET CONFIGURATION Command

This command is intended to provide information to the initiator about the overall capabilities of the logical unit and the current capabilities of the logical unit. Configurations reported by logical units, for example, are used by the Initiator for Driver Identification/loading and other user presentation processes.

The GET CONFIGURATION command, Table 1, requests that the logical unit respond with the configuration of the logical unit and medium.

The configuration of the logical unit is described by the logical unit supported features. The currently defined features are list in Table 6. The maximum number of features is 65,536; and the maximum number of bytes that may be return, to describe its set of supported features, is 65,534. Feature lists longer than 65,534 bytes require multiple commands.

Persistent Prevent may be used to control when changes occur. If a Persistent Prevent is in place, the configuration should not change except under initiator control.

**Table 1 - GET CONFIGURATION Command Descriptor Block**

Bit Byte	7	6	5	4	3	2	1	0
0	OPERATION CODE (46h)							
1	Reserved			Reserved			RT	
2	(MSB) Starting Feature Number							
3	(LSB)							
4	Reserved							
5	Reserved							
6	Reserved							
7	(MSB) Allocation Length							
8	(LSB)							
9	Control							

The RT (Requested Type) (Table 2) field indicates the set of Feature Descriptors desired from the logical unit.

**Table 2 - RT Field definition**

RT Field	Description	Starting Feature Number (SFN) Usage
00b	Indicates that the logical unit shall return the Feature Header and all Feature Descriptors supported by the logical unit whether or not they are currently active.	The first Feature Descriptor returned shall have a feature number greater than or equal to the SFN.
01b	Indicates that the Feature Header and only those Feature Descriptors that have their Current bit set shall be returned.	
10b	Indicates that exactly one Feature Header and zero or one Feature Descriptors be returned. If the logical unit does not support the indicated feature, no Feature Descriptor is returned. Note: this may be used to request Feature 0, which is a list of Profiles.	The SFN specifies the Feature Descriptor that shall be returned.
11b	Reserved	

The Starting Feature Number field (SFN) indicates the first feature number to be returned. All supported feature numbers higher than the Starting Feature Number will be returned.

The Allocation Length field specifies the maximum length in bytes of the Get Configuration response data. An Allocation Length field of zero indicates that no data shall be transferred. This condition shall not be considered an error.

#### 0.1.1. GET CONFIGURATION response data

The GET CONFIGURATION response Data (Table 3) consists of a header field and zero or more variable length feature descriptors.

**Table 3 - GET CONFIGURATION response data format**

Bit Byte	7	6	5	4	3	2	1	0
0 - 7	Feature Header							
8 - n	Feature Descriptor(s)							

The Feature Header field returned is defined in Table 4.

**Table 4 - Feature Header**

Bit Byte	7	6	5	4	3	2	1	0
0	(MSB) Data Length (LSB)							
1								
2								
3								
4	Reserved							
5	Reserved							
6	(MSB) Current Profile (LSB)							
7								

The Data Length field indicates the amount of data available given a sufficient allocation length following this field. This length shall not be truncated due to an insufficient Allocation Length. If the Data Length is greater than 65,530 bytes, multiple Get Configuration commands with different Starting Feature Numbers will be required for the initiator to read all configuration data. This field is adjusted as appropriate for the given Starting Feature Number.

The Current Profile field shall indicate the logical unit's current profile. The logical unit shall choose the most appropriate current profile from the list of profiles (see Table 9) with their CurrentP bit set. If there are no profiles currently active, this field shall contain zero.

The Feature Descriptor(s) generic format returned is defined in Table 5. Each individual feature description is defined in the appropriate sub-clause. All feature descriptors shall be a multiple of four bytes long.

**Table 5 - Feature Descriptor generic format**

Bit Byte	7	6	5	4	3	2	1	0
0	(MSB) Feature Code (LSB)							
1								
2	Reserved		Version			Persistent	Current	
3	Additional Length							
4 - n	Feature Dependent Data							

The Feature Code field shall identify a feature supported by the logical unit. The Feature Code shall field contain the code number assigned to the feature. Refer to Table 6 for a list of feature numbers.

The Version field is reserved and shall be set to zero. Future versions of a feature will be backward compatible; incompatible changes will be included in a different feature.

The Persistent bit, when set to zero, shall indicate that this feature may change its current status. When set to one, it shall indicate that this feature is always active. The logical unit shall not set this bit to one if the Current bit is set to zero, or may become zero.

The Current bit, when set to zero, indicates that this feature is not currently active and that the Feature Dependent Data may not be valid. When set to one, this feature is currently active and the Feature Dependent Data is valid.

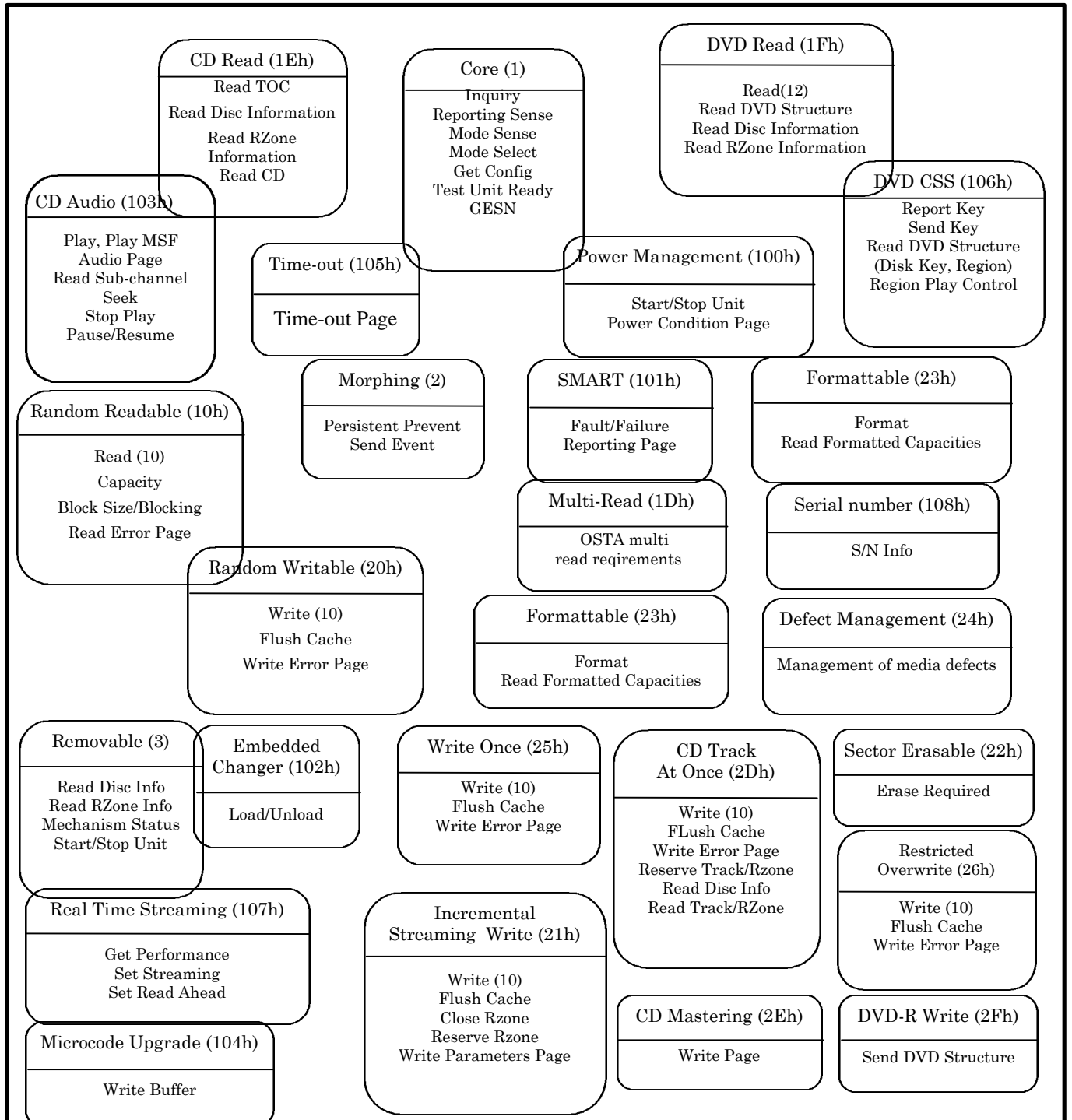
The Additional Length field indicates the number of Feature specific bytes that follow this header. This field shall be an integral multiple of 4.

### 0.1.2. Features

Features are the smallest set of commands, pages, and behavior that may be implemented. A list of features are shown in Table 6.

**Table 6 - Feature List**

Feature Number	Feature Name	Description
0000h	Profile List	A list of all profiles supported by the Logical Unit
0001h	Core	Mandatory behavior for all logical units
0002h	Morphing	Ability to notify initiator about operational changes and accept initiator requests to prevent operational changes.
0003h	Removable Medium	The medium may be removed from the logical unit
0004h - 000Fh	Reserved	
0010h	Random Readable	Read ability for storage devices with random addressing
0011h - 001Ch	Reserved	
001Dh	MultiRead	The logical unit can read all CD media types; based on OSTA MultiRead
001Eh	CD Read	The ability to read CD specific structures
001Fh	DVD Read	The ability to read DVD specific structures
0020h	Random Writable	Write support for randomly addressed writes
0021h	Incremental Streaming Writable	Write support for sequential recording
0022h	Sector erasable	Write support for erasable media and media that requires an erase pass before overwrite.
0023h	Formattable	Support for formatting of media.
0024h	Defect Management	Ability of the drive/media system to provide an apparently defect-free space.
0025h	Write Once	Write support for write once media that can be written in random order.
0026h	Restricted Overwrite	Write support for media that must be written in multiples of logical blocks.
0027h - 002Ch	Reserved	
002Dh	CD Track at Once	Ability to write CD with Track at Once recording
002Eh	CD Mastering	The ability to write CD with Session at Once or Raw write methods.
002Fh	DVD-R Write	The ability to write DVD specific structures
0030h - 00FFh	Reserved	
0100h	Power Management	Initiator and logical unit directed power management
0101h	S.M.A.R.T.	Self Monitoring Analysis and Reporting Technology (Failure prediction)
0102h	Embedded Changer	Single mechanism multiple disc changer
0103h	CD Audio analog play	Ability to play audio CDs via the drive's own analog output
0104h	Microcode Upgrade	Ability for the logical unit to accept new microcode via the interface
0105h	Time-out	Ability to respond to all commands within a specific time
0106h	DVD-CSS	Ability to perform DVD-CSS authentication and RPC
0107h	Real Time Streaming	Ability to read and write using initiator requested performance parameters
0108h	Logical Unit serial number	Logical unit has a unique identifier
0109h - FEFFh	Reserved	
FF00h - FFFFh	Vendor Unique	



**Figure 1 - Feature Relationships**

Figure 1 shows, in a graphic form, features that are defined in this specification. Each Feature is represented by a block in the diagram. Each Feature also shows an abbreviated list of the requirements for that Feature. Figure 1 serves as an example to help the reader understand the Features described in this specification, but should not be used as a reference for Feature implementation. For information on the exact features and their requirements refer to the appropriate sub-clause. In some cases, Features are dependent on other Features. This hierarchical relationship is shown in the diagram.

If a Feature is placed underneath another Feature, then the underlying Feature may require some of the functionality of the overlying Feature. Items in quotes indicate a functionality that is required but not a specific command or page.

### 0.1.3. Feature 0000h: Profile List

This feature identifies profiles supported by the logical unit. Profiles are defined as collections of features and provide a method to quickly determine the logical unit's type. This feature (see Table 7) is always current, even if none of the profiles listed is current.

**Table 7 - Feature 0000h; Profile List**

Bit Byte	7	6	5	4	3	2	1	0
0	(MSB) Feature Code = 0 (LSB)							
1								
2	Reserved		Version			Persistent = 1	Current = 1	
3	Additional Length							
4 - n	Profile Descriptor(s)							

The Feature Code field shall be set to zero.

The Version field is reserved and shall be set to zero. Future versions of a feature will be backward compatible; incompatible changes will be included in a different feature.

The Persistent bit shall be set to one to indicate that the reporting of the profile list is always supported.

The Current bit shall be set to one.

The Additional Length field shall be set to ((number of Profile Descriptors) \* 4).

The Profile Descriptors are shown in Table 8. All profiles supported by the logical unit shall be always reported. Profile descriptors are returned in the order of preferred operation - most desirable to least desirable. E.g. a DVD-ROM that could also read CD-ROM would list the DVD-ROM profile first and the CD-ROM profile second.

**Table 8 - Profile Descriptor**

Bit Byte	7	6	5	4	3	2	1	0
0	(MSB) Profile Number (LSB)							
1								
2	Reserved						Current	
3	Reserved							

The Profile Number identifies a profile to which the logical unit conforms. See Table 9 for a list of profiles.

The Current bit, when set to one, shall indicate that this profile is currently active. If no medium is present, no profile should be active. Multifunction logical units shall select the most appropriate profile(s), if any, to set as current. The most appropriate current profile is also reported in the Feature Header (see Table 5).

**Table 9 - Profile List**

Profile Number	Profile Name	Description
0000h	Reserved	
0001h	Non-removable disk	Re-writable disk, capable of changing behavior
0002h	Removable disk	Writeable capable; with removable media
0003h	MO Erasable	Magneto-Optical disk with sector erase capability
0004h	MO Write Once	Magneto-Optical write once
0005h - 0007h	Reserved	
0008h	CD-ROM	Read only Compact Disc capable
0009h	CD-R	Write once Compact Disc capable
000Ah	CD-RW	Re-writable Compact Disc capable
000Bh - 000Fh	Reserved	
0010h	DVD-ROM	Read only DVD
0011h	DVD-R	Write once DVD
0012h	DVD-RAM	Re-writable DVD
0013h - FFFEh	Reserved	
FFFFh	Logical Units Not Conforming to a Standard Profile	The logical unit does not conform to any profile.

**0.1.4. Feature 0001h: Core**

This feature (Table 10) identifies a logical unit that supports functionality common to all logical units.

**Table 10 - Core Feature**

Bit Byte	7	6	5	4	3	2	1	0
0	(MSB) Feature Code = 0001h (LSB)							
1								
2	Reserved	Version				Persistent	Current	
3	Additional Length (04h)							
4	(MSB) Physical Interface Standard (LSB)							
5								
6								
7								

The Feature Code field shall be set to 0001h.

The Persistent bit shall be set to one.

The Current bit shall be set to one.

The Additional Length field shall be set to 04h.

The Physical Interface Standard field shall be set to the current initiator to logical unit communication path as defined in Table 11.

**Table 11 - Physical Interface Standard**

Physical Interface Standard	Description	Application
00000000h	Unspecified	
00000001h	SCSI Family	See SCSI implementation
00000002h	ATAPI	See ATAPI implementation
00000003h	IEEE 1394 - 1995	See 1394 implementation
00000004h - FEh	Reserved	
0000FFFFh	Vendor Unique	
00010000 - 0001FFFFh	Defined by NCITS	
00020000h - 0002FFFFh	Defined by SFF	
00030000h - 0003FFFFh	Defined by IEEE	
00040000h - FFFFFFFFh	Reserved	

#### 0.1.5. Feature 0002h: Morphing

This feature (Table 12) indicates the ability to notify initiator about operational changes and accept initiator requests to prevent operational changes.

**Table 12 - Morphing Descriptor**

Bit Byte	7	6	5	4	3	2	1	0
0	(MSB) Feature Code = 00002h							
1	(LSB)							
2	Reserved		Version			Persistent	Current	
3	Additional Length = 04h							
4	Reserved						Async	
5	Reserved							
6	Reserved							
7	Reserved							

The Feature Code field shall be set to 0002h.

The Persistent bit shall be set to one.

The Current bit shall be set to one.

The Additional Length field shall be set to 4.

The Async bit, when set to zero, indicates that the logical unit supports only the polling implementation of GETEVENT/STATUS NOTIFICATION. When set to one, indicates that the logical unit supports both polling and asynchronous GETEVENT/STATUS NOTIFICATION.



**0.1.6. Feature 0003h: Removable MediumLo**

This feature (Table 13) identifies a logical unit that has a medium that is removable.

**Table 13 - Removable MediumLo Descriptor**

Bit Byte	7	6	5	4	3	2	1	0
0	(MSB) Feature Code = 0003h							
1	(LSB)							
2	Reserved		Version			Persistent	Current	
3	Additional Length = 04h							
4 - n	Feature Dependent Data							

The Feature Code field shall be set to 0003h.

The Persistent bit shall be set to one.

The Current bit shall be set to one.

The Additional Length field shall be set to 04h.

**Table 14 - Removable Medium**

Bit Byte	7	6	5	4	3	2	1	0
0	(MSB) Feature Code = 0003h							
1	(LSB)							
2	Reserved		Version			Persistent	Current	
3	Additional Length = 04h							
4	Loading Mechanism Type			Reserved	Eject	Pvnt Jmpr	Reserved	Lock
5	Reserved							
6	Reserved							
7	Reserved							

The Loading Mechanism Type field (Table 15) shall be set according to the Eject bit. The Eject bit, when set to zero, indicates that the logical unit cannot eject the medium or cartridge via the normal START/STOP command with the LoEj bit set. When set to one, indicates that the logical unit may eject the medium or cartridge.

The Prevent Jumper (Pvnt Jmpr) bit, when set to zero, shall indicate that the Prevent Jumper is present. The logical unit shall power up to the allow state and locking the logical unit with the Prevent/Allow command shall not prevent insertion of the media. When set to one, the Prevent Jumper is not present. The logical unit shall power up to the prevent state (locked) and shall not accept new media or allow the ejection of media already loaded until an allow command is issued.

The Pvnt Jmpr bit shall not change state, even if the physical jumper is added or removed during operation. Logical Units that do not have a Prevent Jumper available should set this bit to 0 to indicate that the Logical Unit behaves as described for a jumper being present.

The Lock bit, when set to zero, shall indicate that the medium cannot be locked into the logical unit. When set to one, shall indicate that the Prevent/Allow command is capable of actually locking the media into the logical unit.

**Table 15 - Loading Mechanism Type**

Bus Type	Description
000b	Caddy/Slot type loading mechanism
001b	Tray type loading mechanism
010b	Pop-up type loading mechanism
011b	Reserved
100b	Embedded changer with individually changeable discs
101b	Embedded changer using a cartridge mechanism
110b - 111b	Reserved

#### 0.1.7. Feature 0010h: Random Readable

This feature (Table 16) identifies a logical unit that can read data from logical blocks specified in a Read command. There is no requirement that the addresses in sequences of reads occur in any particular order.

**Table 16 - Random Readable**

Bit Byte	7	6	5	4	3	2	1	0
0	(MSB) Feature Code = 0010h							
1	(LSB)							
2	Reserved		Version			Persistent	Current	
3	Additional Length = 08h							
4	(MSB)							
5	Logical Block Size							
6								
7	(LSB)							
8	(MSB) Blocking							
9	(LSB)							
10	Reserved							PP
11	Reserved							

The Feature Code field shall be set to 0010h.

The Persistent bit is defined in Table 5. This bit shall be set to zero if the medium is removable.

The Current bit is defined in Table 5. This bit shall be set to zero if random readable media is not present.

The Additional Length field shall be set to 8.

The Logical Block Size shall be set to the number of bytes per logical block.

The Blocking field shall indicate the number of logical blocks per logical unit readable unit. Note: for most hard disks, this value is 1. For DVD logical units, this number is 10h. The Blocking field is used by the initiator only for performance optimization.

If there is more than one Blocking on the medium possible, the Blocking field shall be set to zero. Refer to the READ TRACK/RZONE INFORMATION command for more information.

The PP (Page Present) bit, when set to zero, shall indicate that the Read/Write Error Recovery page may not be present. When set to one, shall indicate that the Read/Write Error Recovery page is present.

**0.1.8. Feature 001Dh: MultiRead**

This feature (Table 17) identifies a logical unit that can read all CD media types. The logical unit shall conform to the OSTA Multi-Read specification 1.00, with the exception of CD Play capability (the CD Audio Feature is not required). Reading of CD Audio data via the READ CD command shall be supported.

**Table 17 - Multi-Read**

Bit Byte	7	6	5	4	3	2	1	0	
0	(MSB) Feature Code								
1	(LSB)								
2	Reserved		Version				Persistent	Current	
3	Additional Length = 00h								

**0.1.9. Feature 001Eh: CD Read**

This feature (Table 18) identifies a logical unit that can read CD specific information from the media and can read user data from all types of CD blocks.

**Table 18 - CD Read**

Bit Byte	7	6	5	4	3	2	1	0	
0	(MSB) Feature Code = 1Eh								
1	(LSB)								
2	Reserved		Version				Persistent	Current	
3	Additional Length = 00h								

The Feature Code field shall be set to 1Eh.

The Persistent bit is defined in Table 5. This bit shall be set to zero if the medium is removable.

The Current bit is defined in Table 5. This bit shall be set to zero if CD media is not present.

The Additional Length field shall be set to 00h.

**0.1.10. Feature 001Fh: DVD Read**

This feature (Table 19) identifies a logical unit that can read DVD specific information from the media.

**Table 19 - DVD Read**

Bit Byte	7	6	5	4	3	2	1	0	
0	(MSB) Feature Code = 1Fh								
1	(LSB)								
2	Reserved		Version				Persistent	Current	
3	Additional Length = 00h								

The Feature Code field shall be set to 001Fh.

The Persistent bit is defined in Table 5. This bit shall be set to zero if the medium is removable.

The Current bit is defined in Table 5. This bit shall be set to zero if DVD media is not present.

The Additional Length field shall be set to 00h.

**0.1.11. Feature 0020h: Random Writable**

This feature (Table 20) identifies a logical unit that can write data to logical blocks specified by a Write command. There is no requirement that the addresses in sequences of writes occur in any particular order.

**Table 20 - Random Writable**

Bit Byte	7	6	5	4	3	2	1	0
0	(MSB) Feature Code = 20h							
1	(LSB)							
2	Reserved		Version			Persistent	Current	
3	Additional Length = 04h							
4	(MSB)							
5	Last Logical Block Address							
6								
7	(LSB)							

The Feature Code field shall be set to 0020h.

The Persistent bit is defined in Table 5. This bit shall be set to zero if the medium is removable.

The Current bit is defined in Table 5. This bit shall be set to zero if randomly writable media is not present.

The Additional Length field shall be set to 04h.

The Last Logical Block Address is the logical block address of the last addressable block on the medium.

**0.1.12. Feature 0021h: Incremental Streaming Writable**

This feature (Table 21) identifies a logical unit that can write data to a contiguous region, and can append data to a limited number of locations on the media. On CD media, this is known as packet recording.

**Table 21 - Incremental Streaming - Writable**

Bit Byte	7	6	5	4	3	2	1	0
0	(MSB) Feature Code = 0021h							
1	(LSB)							
2	Reserved		Version			Persistent	Current	
3	Additional Length							
4	Reserved							
5	Reserved							
6	Reserved							
7	Number of Link Sizes							
8 - n	Link Size							
n - ?	Pad							

The Feature Code field shall be set to 21h.

The Persistent bit is defined in Table 5. This bit shall be set to zero if the medium is removable.

The Current bit is defined in Table 5. This bit shall be set to zero if sequential write media is not present.

The Additional Length field shall be set to 4 + (Number of Link Sizes) + (Number of Pad bytes).

The Number of Link Sizes shall specify the number of link sizes available for the current media. For CD media, this field should be 1. For DVD-R, this field should be 2.

Each Link Size field shall indicate the number of logical blocks per link. Links occur on sequentially written media between independent write operations. The link size does not include any logical blocks written by the logical unit to satisfy the writable unit specified by the Blocking field in the Random Readable feature. This field is 7 for CD-R media, and may be 0, 1, or 16 for DVD media. Link Size fields are reported by the logical unit in the logical unit's preferred order, most desirable first.

The Pad field shall contain zeros. The number of Pad bytes shall be  $4 * IP((\text{Number of Link Sizes} + 3)/4) - (\text{Number of Link Sizes})$ , where  $IP()$  is the integer part of the number. The Pad field is present to make the length of the Feature Descriptor a multiple of 4 bytes.

#### 0.1.13. Feature 0022h: Sector Erasable

This feature (Table 22) identifies a logical unit that supports erasable media and media that requires an erase pass before overwrite, such as some magneto-optical technologies.

**Table 22 - Sector Erasable**

Bit Byte	7	6	5	4	3	2	1	0
0	(MSB) Feature Code = 0022h							
1	(LSB)							
2	Reserved		Version			Persistent	Current	
3	Additional Length							

#### 0.1.14. Feature 0023h: Formattable

This feature (Table 23) identifies a logical unit that can format media into logical blocks.

**Table 23 - Formattable**

Bit Byte	7	6	5	4	3	2	1	0
0	(MSB) Feature Code = 0023h							
1	(LSB)							
2	Reserved		Version			Persistent	Current	
3	Additional Length = 00h							

The Feature Code field shall be set to 0023h.

The Persistent bit is defined in Table 5. This bit shall be set to zero if the medium is removable.

The Current bit is defined in Table 5. This bit shall be set to zero if non-formattable media is present.

The Additional Length field shall be set to 00h.

**0.1.15. Feature 0024h: Defect Management**

This feature (Table 24) identifies a logical unit that shall have defect management available to provide a defect-free contiguous address space.

**Table 24 - Defect Management**

Bit Byte	7	6	5	4	3	2	1	0
0	(MSB) Feature Code = 0024h							
1	(LSB)							
2	Reserved		Version			Persistent	Current	
3	Additional Length = 00h							

The Feature Code field shall be set to 24h.

The Persistent bit is defined in Table 5. This bit shall be set to zero if the medium is removable.

The Current bit is defined in Table 5. This bit shall be set to zero if non-managed media is not present. If the media is Defect Managed it may have no defects.

The Additional Length field shall be set to 00h.

**0.1.16. Feature 0025h: Write Once**

This feature (Table 25) identifies a logical unit that shall have the ability to record to any previously unrecorded logical block. The recording of logical blocks may occur in any order. Previously recorded blocks shall not be overwritten.

**Table 25 - Write Once**

Bit Byte	7	6	5	4	3	2	1	0
0	(MSB) Feature Code = 0025h							
1	(LSB)							
2	Reserved		Version			Persistent	Current	
3	Additional Length = 04h							
4	(MSB)							
5	Last Logical Block Address							
6								
7	(LSB)							

The Feature Code field shall be set to 0025h.

The Persistent bit is defined in Table 5. This bit shall be set to zero if the medium is removable.

The Current bit is defined in Table 5. This bit shall be set to zero if write once media is not present.

The Additional Length field shall be set to 04h.

The Last Logical Block is the logical block address of the last addressable block on the medium.

**0.1.17. Feature 0026h: Restricted Overwrite**

This feature (Table 26) identifies a logical unit that shall have the ability to overwrite logical blocks only in fixed sets at a time.

**Table 26 - Restricted Overwrite**

Bit Byte	7	6	5	4	3	2	1	0
0	(MSB) Feature Code = 0026h (LSB)							
1								
2	Reserved	Version				Persistent	Current	
3	Additional Length = 04h							
4	(MSB) Last Logical Block Address (LSB)							
5								
6								
7								

The Feature Code field shall be set to 0025h.

The Persistent bit is defined in Table 5. This bit shall be set to zero if the medium is removable.

The Current bit is defined in Table 5. This bit shall be set to zero if write once media is not present.

The Additional Length field shall be set to 04h.

The Last Logical Block is the logical block address of the last addressable block on the medium.

**0.1.18. Feature 002Dh: CD Track at Once**

This feature (Table 27) identifies a logical unit that can write data to a CD track.

**Table 27 - CD Track at Once**

Bit Byte	7	6	5	4	3	2	1	0
0	(MSB) Feature Code = 002Dh (LSB)							
1								
2	Reserved	Version				Persistent	Current	
3	Additional Length = 04h							
4	Reserved				Test Write	CD-RW	R-W Sub-code	
5	Reserved							
6	Reserved							
7	Reserved							

The Feature Code field shall be set to 002Dh.

The Persistent bit is defined in Table 5. This bit shall be set to zero if the medium is removable.

The Current bit is defined in Table 5. This bit shall be set to zero if CD-R or CD-RW media is not present.

The Additional Length field shall be set to 04h.

The following bits indicate feature support. If set to zero, the feature is not supported. If set to one, the feature is supported.

The Test Write bit, when set to zero, shall indicate that the logical unit is not capable of performing test writes. When set to one, the logical unit is capable of performing test writes. Refer to the Write Parameters Mode Page.

The CD-RW bit indicates support for overwriting a Track at Once track with another.

The R-W Sub-code bit indicates that the logical unit can record the R-W sub-channels with user supplied data.

**0.1.19. Feature 002Eh: CD Mastering**

This feature (Table 28) identifies a logical unit that can write a CD in Session at Once or Raw mode.

**Table 28 - CD Mastering**

Bit Byte	7	6	5	4	3	2	1	0
0	(MSB) Feature Code = 002Eh							
1	(LSB)							
2	Reserved		Version			Persistent	Current	
3	Additional Length = 04h							
4	Reserved		SAO	RAW MS	RAW	TEST WRITE	CD_RW	R-W
5	(MSB)							
6	Maximum Cue Sheet Length							
7	(LSB)							

The Feature Code field shall be set to 002Eh.

The Persistent bit is defined in Table 5. This bit shall be set to zero if the medium is removable.

The Current bit is defined in Table 5. This bit shall be set to zero if CD-R or CD-RW media is not present.

The Additional Length field shall be set to 04h.

The following bits indicate feature support. If set to zero, the feature is not supported. If set to one, the feature is supported.

The SAO bit shall indicate that the logical unit can record using the Session at Once write type.

The Raw MS bit shall indicate that the logical unit can record multi-session in raw mode.

The Raw bit shall indicate that the logical unit can record using the raw write type.

The Test Write bit indicates that the logical unit can perform test writes. Refer to the Write Parameters Mode Page.

The CD-RW bit shall indicate that the logical unit can overwrite previously recorded data.

The R-W bit shall indicate that the logical unit can record the R-W sub-channels with user supplied information.

The Maximum Cue Sheet Length field indicates the maximum length of a Cue Sheet that can be accepted by the logical unit for Session at Once recording. If the SAO bit is zero, this field shall be set to zero.



**0.1.20. Feature 002Fh: DVD-R Write**

This feature (Table 29) identifies a logical unit that can write data to DVD-R in Disc at Once mode.

**Table 29 - DVD-R Write**

Bit Byte	7	6	5	4	3	2	1	0
0	(MSB) Feature Code = 002Fh							
1	(LSB)							
2	Reserved		Version			Persistent	Current	
3	Additional Length = 04h							
4	Reserved				Test Write	Reserved		
5	Reserved							
6	Reserved							
7	Reserved							

The Feature Code field shall be set to 002Fh.

The Persistent bit is defined in Table 5. This bit shall be set to zero if the medium is removable.

The Current bit is defined in Table 5. This bit shall be set to zero if DVD-R media is not present.

The Additional Length field shall be set to 04h.

The Test Write bit, when set to zero, shall indicate that the logical unit is not capable of performing test writes. When set to one, the logical unit is capable of performing test writes. Refer to the Write Parameters Mode Page for a

**0.1.21. Feature 0100h: Power Management**

This feature (Table 30) identifies a logical unit that can perform initiator and logical unit directed power management.

**Table 30 - Power Management Descriptor**

Bit Byte	7	6	5	4	3	2	1	0
0	(MSB) Feature Code = 0100h							
1	(LSB)							
2	Reserved		Version			Persistent	Current	
3	Additional Length = 00h							

The Feature Code field shall be set to 0100h.

The Persistent bit shall be set to one.

The Current bit shall be set to one.

The Additional Length field shall be set to 00h.

**0.1.22. Feature 0101h: S.M.A.R.T.**

This feature (Table 31) identifies a logical unit that can perform Self Monitoring Analysis and Reporting Technology.

**Table 31 - S.M.A.R.T.**

Bit Byte	7	6	5	4	3	2	1	0
0	(MSB) Feature Code = 0101h							
1	(LSB)							
2	Reserved		Version			Persistent	Current	
3	Additional Length = 04h							
4	Reserved						PP	
5	Reserved							
6	Reserved							
7	Reserved							

The Feature Code field shall be set to 0101h.

The Persistent bit is defined in Table 5.

The Current bit is defined in Table 5.

The Additional Length field shall be set to 04h.

The PP (Page Present) bit, when set to zero, shall indicate that the S.M.A.R.T. page is not present. S.M.A.R.T. will use defaults defined in the Features section. When set to one, shall indicate that the S.M.A.R.T. page is present.

**0.1.23. Feature 0102h: Embedded Changer**

This feature (Table 32) identifies a logical unit that can move media from a storage area to the mechanism and back.

**Table 32 - Embedded Changer**

Bit Byte	7	6	5	4	3	2	1	0
0	(MSB) Feature Code = 0102h							
1	(LSB)							
2	Reserved		Version			Persistent	Current	
3	Additional Length = 04h							
2	Reserved			SCC	Reserved	SDP	Reserved	
3	Reserved							
3	Reserved							
2	Reserved			Highest Slot Number				

The Feature Code field shall be set to 0102h.

The Persistent bit is defined in Table 5.

The Current bit is defined in Table 5.

The Additional Length field shall be set to 04h.

The SCC (Side Change Capable) bit, when set to zero, shall indicate that the logical unit is not capable of selecting both sides of the media. When set to one, shall indicate that the logical unit is capable of selecting both sides of the media.

The SDP (Supports Disc Present) bit, when set to zero, shall indicate that the logical unit cannot report the contents of the slots after a reset or cartridge change. When set to one, shall indicate that the logical unit can report the contents of the slots after a reset or cartridge change and that the response to the Mechanism Status command will contain valid Disc is Present status information for all slots.

Highest Slot Number shall be set to the number of slots minus one.

#### 0.1.24. Feature 0103h: CD Audio analog play

This feature (Table 33) identifies a logical unit that can play CD Audio data directly to an analog output.

**Table 33 - CD Audio analog play**

Bit Byte	7	6	5	4	3	2	1	0
0	(MSB) Feature Code = 0103h							
1	(LSB)							
2	Reserved		Version			Persistent	Current	
3	Additional Length = 04h							
2	Reserved					SCM	SV	
3	Reserved							
3	(MSB) Number of Volume Levels							
4 - n	(LSB)							

The Feature Code field shall be set to 0103h.

The Persistent bit is defined in Table 5.

The Current bit is defined in Table 5.

The Additional Length field shall be set to 4.

The SCM (Separate Channel Mute) bit, when set to zero, shall indicate that all audio channels are muted simultaneously. When set to one, shall indicate that each audio channel can be independently muted.

The SV (Separate Volume) bit, when set to zero, shall indicate that all audio channels will have the same volume level. When set to one, shall indicate that audio channel volume may be set independently.

The Number of Volume Levels shall indicate the number of discrete volume levels supported by the logical unit. If the logical unit supports only turning audio on and off, the Number of Volume Levels field shall be set to 2.

#### 0.1.25. Feature 0104h: Microcode Upgrade

This feature (Table 34) identifies a logical unit that can upgrade its internal microcode via the interface.

**Table 34 - Microcode Upgrade**

Bit Byte	7	6	5	4	3	2	1	0
0	(MSB) Feature Code = 0104h							
1	(LSB)							
2	Reserved		Version			Persistent	Current	
3	Additional Length = 00h							

The Feature Code field shall be set to 0104h.

The Persistent bit shall be set to one.

The Current bit shall be set to one.

The Additional Length field shall be set to 00h.

**0.1.26. Feature 0105h: Time-out**

This feature (Table 35) identifies a logical unit that can always respond to commands within a set time period. If a command cannot complete normally within the allotted time, it completes with an error.

**Table 35 - Time-out**

Bit Byte	7	6	5	4	3	2	1	0
0	(MSB) Feature Code = 0105h (LSB)							
1								
2	Reserved		Version			Persistent	Current	
3	Additional Length = 00h							

The Feature Code field shall be set to 0105h.

The Persistent bit is defined in Table 5.

The Current bit is defined in Table 5.

The Additional Length field shall be set to 00h.

**0.1.27. Feature 0106h: DVD-CSS**

This feature (Table 36) identifies a logical unit that can perform DVD-CSS authentication and key management.

**Table 36 - DVD-CSS**

Bit Byte	7	6	5	4	3	2	1	0
0	(MSB) Feature Code 0106h (LSB)							
1								
2	Reserved		Version			Persistent	Current	
3	Additional Length = 04h							
4	Reserved							
5	Reserved							
6	Reserved							
7	CSS Version							

The Feature Code field shall be set to 0106h.

The Persistent bit is defined in Table 5.

The Current bit is defined in Table 5. This bit shall be set to zero if DVD-CSS media is not present.

The Additional Length field shall be set to 04h.

The CSS version shall be set to 01h.

**0.1.28. Feature 0107h: Real-Time Streaming**

This feature (Table 37) identifies a logical unit that can perform reading and writing within initiator specified (and drive verified) performance ranges.

**Table 37 - Real-Time Streaming**

Bit Byte	7	6	5	4	3	2	1	0
0	(MSB) Feature Code = 0107h							
1	(LSB)							
2	Reserved		Version			Persistent	Current	
3	Additional Length =00h							

The Feature Code field shall be set to 0107h.

The Persistent bit is defined in Table 5.

The Current bit is defined in Table 5.

The Additional Length field shall be set to 00h.

**0.1.29. Feature 0108h: Serial Number**

This feature (Table 38) identifies a logical unit that has a unique serial number. A logical unit can be uniquely identified by checking its vendor ID, model ID, and serial number.

**Table 38 - Serial Number**

Bit Byte	7	6	5	4	3	2	1	0
0	(MSB) Feature Code =0108h							
1	(LSB)							
2	Reserved		Version			Persistent	Current	
3	Additional Length							
4 - n	Serial Number							

The Feature Code field shall be set to 0108h.

The Persistent bit shall be set to one.

The Current bit shall be set to one.

The Additional Length field shall be set to a multiple of 04h.

The Serial Number shall be ASCII graphic codes (i.e. codes 20h - 7Eh). Any unused bytes in the Serial Number shall be padded with spaces. There should not be more than three pad bytes.