To: T10 Technical Committee
From: Rob Elliott, Compaq Computer Corporation (Robert.Elliott@compaq.com)
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Subject: T10/01-308r0 SMC-2 INITIALIZE ELEMENT STATUS WITH RANGE command

Revision History
Revision 0 (18 October 2001): first revision

Related Documents
smc2r01 - SCSI Media Changer Commands - 2 revision 1

Overview
Many media changers implement a command called INITIALIZE ELEMENT STATUS WITH RANGE with a vendor-specific opcode (E7h). This command should be standardized with a legal opcode.

Additionally, a rule is added requiring the INITIALIZE ELEMENT STATUS command and its new compatriot not return GOOD status before completing the initialization.

Suggested Changes to SMC-2

5.8 Element status maintenance requirements
When a media changer receives a valid READ ELEMENT STATUS command with a CURDATA bit of zero, the media changer shall be capable of reporting as command response data various data required by each page type (i.e., full, error, etc.). The media changer may maintain this information at all times or it may regenerate it after receiving a valid READ ELEMENT STATUS command. The optional INITIALIZE ELEMENT STATUS and INITIALIZE ELEMENT STATUS WITH RANGE commands may be used to force regeneration of this information.

Table 2 - Commands for independent media changers
[Add a row for:]
INITIALIZE ELEMENT STATUS WITH RANGE, nnh, O, 6.x

6.5 INITIALIZE ELEMENT STATUS command
The INITIALIZE ELEMENT STATUS command (see table 6) shall cause the media changer to check all assigned element addresses for volume and any other status relevant to that element address. The intent of this command is to enable the Initiator to get a quick response from a subsequent READ ELEMENT STATUS command. It may be useful to issue this command after a power failure, or if a volume has been changed by an operator, or if configurations have been changed. The device server shall not return GOOD status for this command until checking is complete.

Table x. INITIALIZE ELEMENT STATUS command

Byte/Bit	7	6	5	4	3	2	1	0
0	OPERATION CODE (07h)							
1	Reserved							
2	Reserved							
3	Reserved							
4	Reserved							
5	CONTROL							

Support for this command is optional for an independent media changer. This command has no command parameter data. No command response data is returned.

If an implementation does not support this command, the same function is provided in the READ ELEMENT STATUS command.

A reservation conflict shall occur if an INITIALIZE ELEMENT STATUS command is received from an initiator other than the one holding a logical unit or element reservation.

6.x INITIALIZE ELEMENT STATUS WITH RANGE command [new section]

The INITIALIZE ELEMENT STATUS WITH RANGE command (see table x) causes the media changer to check the specified elements for volume status and any other relevant status. The intent of this command is to enable the Initiator to get a quick response from a subsequent READ ELEMENT STATUS command. It may be useful to issue this command after a power failure, or if a volume has been changed by an operator, or if configurations have been changed. The device server shall not return GOOD status for this command until checking is complete.

Table x. INITIALIZE ELEMENT STATUS WITH RANGE command

Byte/Bit	7	6	5	4	3	2	1	0
0	OPERATION CODE (nnh)							
1	Rsvd	Rsvd	Rsvd	Rsvd	Rsvd	Rsvd	Rsvd	RANGE
2	STARTING ELEMENT ADDRESS							
3								
4	Reserved							
5	Reserved							
6	NUMBER OF ELEMENTS							
7								
8	Reserved							
9	CONTROL							

Support for this command is optional for an independent media changer. This command has no command parameter data. No command response data is returned.

A RANGE bit of zero indicates that all element addresses shall be checked and that the NUMBER OF ELEMENTS and STARTING ELEMENT ADDRESS fields are ignored. A RANGE bit of one indicates that the series of elements beginning at the specified STARTING ELEMENT ADDRESS for the specified NUMBER OF ELEMENTS shall be checked. If the NUMBER OF ELEMENTS field is zero, the range checked shall start with STARTING ELEMENT ADDRESS and continue through the last element address on the unit.

A reservation conflict shall occur if an INITIALIZE ELEMENT STATUS WITH RANGE command is received from an initiator other than the one holding a logical unit or element reservation.

NOTE nn: Prior to standardization, many medium changers implemented this command using vendor specific OPERATION CODE of E7h.
[Editor's note: include the opcode in the SPC-3 opcode lists. Also include this note about E7h.]

NOTE nn: Bits 7 and 6 of the CONTROL byte are vendor specific (see SAM-2). Many media changers use these bits to control whether barcode scanning is performed during element status checking.