

memorandum



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To INCITS T10 Committee From Michael Banther, HP Subject SMC-3: DTE Prevented Medium Removal

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Revision History

Revision 0 – Initial proposal.

Background

At present a standard additional sense code does not exist to explain the failure of a MOVE MEDIUM command when:

1. The MOVE MEDIUM command specifies a Data Transport element in the SOURCE ADDRESS; and
2. The Data Transport element will not eject the medium due to prior execution of a PREVENT ALLOW MEDIUM REMOVAL command with the PREVENT field set to 01b or 11b.

HP knows of four different additional sense codes used in this situation in existing media changer products:

- a. MEDIA LOAD OR EJECT FAILED which customers generally interpret as a stuck tape;
- b. UNLOAD TAPE FAILURE which customers generally interpret as a stuck tape;
- c. MEDIUM REMOVAL PREVENTED which customers generally interpret as the library not allowing removal; and
- d. A vendor-specific code.

To encourage standard reporting of this situation, HP proposes adding a DATA TRANSPORT ELEMENT PREVENTED MEDIUM REMOVAL additional sense code to SMC-3 and SPC-4. The proposal also includes some clean-up of existing, but inconsistent, text.

Changes to SMC-3

6.4 EXCHANGE MEDIUM command

The SOURCE ADDRESS, the FIRST DESTINATION ADDRESS, and the SECOND DESTINATION ADDRESS fields may represent a storage element, an import/export element, a data transfer element, or a medium transport element. If the ~~element~~ address specified has not been assigned to a specific element of the media changer, the ~~logical-unit device server~~ shall return CHECK CONDITION status. The sense key shall be ILLEGAL REQUEST and the additional sense code INVALID ELEMENT ADDRESS.

If the SOURCE ADDRESS or the FIRST DESTINATION ADDRESS of an EXCHANGE MEDIUM command represents a data transfer element and removal of the medium from the corresponding data transfer device (see 5.3.5) does not occur due to a prevention of medium removal condition (see SPC-3) within the data transfer device, the device server shall return CHECK CONDITION status and shall set the sense key to ILLEGAL REQUEST and the additional sense code to DATA TRANSPORT ELEMENT PREVENTED MEDIUM REMOVAL.

An INV1 bit of one specifies that the volume shall be inverted prior to depositing the volume into the FIRST DESTINATION ADDRESS element. Support for this bit set to one is optional.

6.7 MOVE MEDIUM commands

The SOURCE ADDRESS and the DESTINATION ADDRESS fields may represent a storage element, an import/export element, a data transfer element, or a medium transport element. If the address specified has not been assigned to a specific element of the media changer, the device server shall return CHECK CONDITION status. The sense key shall be ILLEGAL REQUEST and the additional sense code INVALID ELEMENT ADDRESS.

If the SOURCE ADDRESS of a MOVE MEDIUM command represents a data transfer element and removal of the medium from the corresponding data transfer device (see 5.3.5) does not occur due to a prevention of medium removal condition (see SPC-3) within the data transfer device, the device server shall return CHECK CONDITION status and shall set the sense key to ILLEGAL REQUEST and the additional sense code to DATA TRANSPORT ELEMENT PREVENTED MEDIUM REMOVAL.

The Device Capabilities mode page (see 7.3.2), provides a matrix with the supported source element or destination element combinations for the MOVE MEDIUM and MOVE MEDIUM ATTACHED commands.



D.2 Additional Sense Codes

Table D.1 – ASC and ASCQ assignments (part 10 of 15)

ASC	ASCQ	D	T	L	P	W	R	O	M	A	E	B	K	V	F	Description
		D														DIRECT ACCESS BLOCK DEVICE (SBC-2)
		.	T													SEQUENTIAL ACCESS DEVICE (SSC-2)
		.		L												PRINTER DEVICE (SSC)
		.			P											PROCESSOR DEVICE (SPC-2)
		.			.	W										WRITE ONCE BLOCK DEVICE (SBC)
		.			.		R									CD/DVD DEVICE (MMC-2)
		.			.		.	O								OPTICAL MEMORY BLOCK DEVICE (SBC)
		.			.		.	.	M							MEDIA CHANGER DEVICE (SMC-2)
		.			.		.	.	.	A						STORAGE ARRAY DEVICE (SCC-2)
		.			.		.	.	.	.	E					ENCLOSURE SERVICES DEVICE (SES)
		.			.		.	.	.	.	.	B				SIMPLIFIED DIRECT-ACCESS DEVICE (RBC)
		.			.		.	.	.	.	.	.	K			OPTICAL CARD READER/WRITER DEVICE (OCRW)
		.			.		.	.	.	.	.	.	.	V		AUTOMATION/DRIVE INTERFACE (ADC)
		.			.		.	.	.	.	.	.	.	.	F	OBJECT-BASED STORAGE (OSD)
		
53h	02h	D	T			W	R	O	M			B	K			MEDIUM REMOVAL PREVENTED
53h	03h								M							DATA TRANSPORT ELEMENT PREVENTED MEDIUM REMOVAL
54h	00h				P											SCSI TO HOST SYSTEM INTERFACE FAILURE