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To: T10 Committee (SCSI)

From: Rob Basham (IBM)

Subject: Explicit Block Address Model State Diagram

1. Introduction

1.1 Author Information

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1.2 Change History

1.2.1 Revision 0

- Initial Proposal

1.3 Purpose

The Explicit and Implicit Block Address models for SSC-2 are described in T10-00-318 revision 2 with exceptions as noted in the December 6 SSC-2 meeting minutes. In the December 6 SSC-2 meeting, it was noted that T10/00-318 revision 2 did not include an Explicit Address model state diagram. This document addresses that shortcoming.

2. Explicit Address Model

There are only three Explicit Address model states: Read Capable, Write Capable, and Neutral. Commands have been classified three ways: write type, read type and commands allowed in all states (see T10/00-318, revision 2, Table 1). When in the Read Capable state, the device is allowed to execute two types of commands: read type commands and commands that are allowed in all states. When in the Write Capable state, the device is allowed to execute two types of commands: write type commands and commands that are allowed in all states. When in the Neutral state, the device is allowed to execute non-queued write type commands, non-queued read type commands, commands that are allowed in all states.

2.1 Explicit Address Model Command Set

The explicit address command set is listed in the table below:

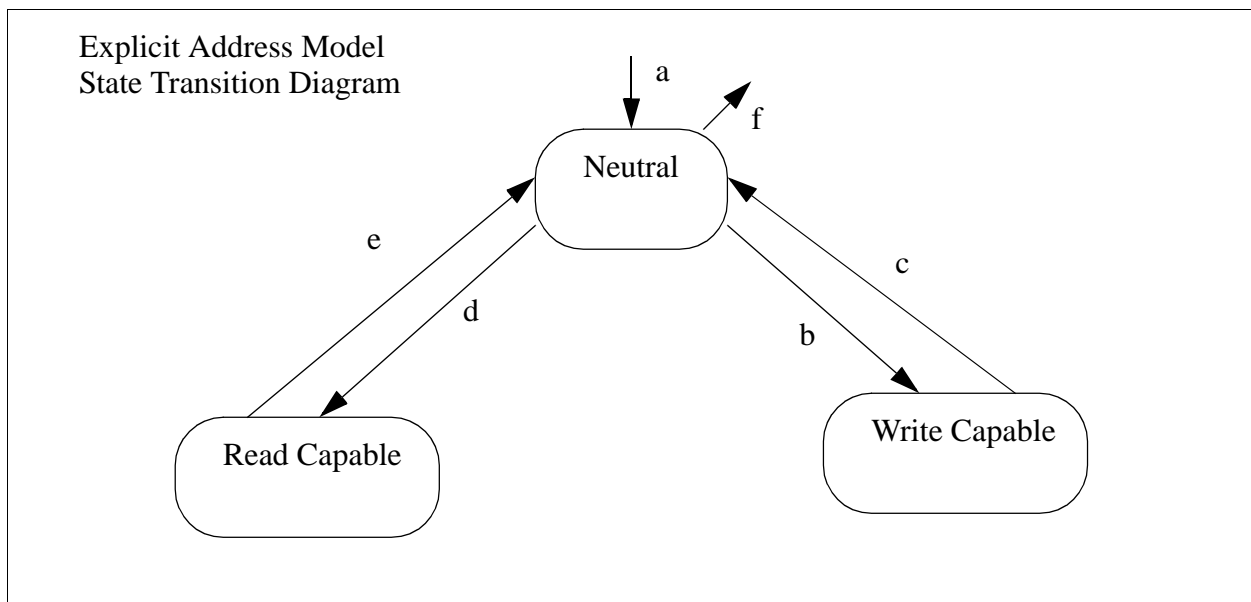
Table 1 - Explicit Address Commands Set

Command Name	Operation code	Command type	Type
ERASE (16)		Write type	M
FORMAT MEDIUM		Write type	O
INQUIRY			O
LOAD UNLOAD			O
LOCATE (16)			O
LOG SELECT			O
LOG SENSE			O
MODE SELECT (6)		Neutral type ¹	M
MODE SELECT (10)		Neutral type ¹	O
MODE SENSE (6)			M
MODE SENSE (10)			O
MOVE MEDIUM			O
MOVE MEDIUM ATTACHED			O
PERSISTENT RESERVE IN			O
PERSISTENT RESERVE OUT		Neutral type	O
PREVENT ALLOW MEDIA REMOVAL			O
READ (16)		Read type	M
READ BLOCK LIMITS			M
READ BUFFER			O
READ ELEMENT STATUS			O
READ ELEMENT STATUS ATTACHED			O
READ POSITION			M
READ REVERSE (16)		Read type	O
RECEIVE DIAGNOSTIC RESULTS			O
RECOVER BUFFERED DATA		Read type	O
RELEASE(6)		Neutral type	M
RELEASE(10)		Neutral type	M
REPORT DENSITY SUPPORT			M
REPORT LUNS			M
REQUEST SENSE			M
RESERVE(6)		Neutral type	M
RESERVE(10)		Neutral type	M
REWIND			M
SEND DIAGNOSTIC		Neutral type ¹	M
SET CAPACITY		Write type	O
TEST UNIT READY			M
VERIFY (16)			O
WRITE (16)		Write type	M
WRITE BUFFER			O
WRITE FILEMARKS (16)		Write type	M
<p>Key: M = Command implementation is mandatory. O = Command implementation is optional.</p> <p>Notes: 1. If there is any motion involved with this command then it is Neutral type. Where no motion is involved, this restriction does not apply.</p>			

All commands that are not queued may be executed while in the Neutral state. Queued commands of any type may also be received while in the Neutral state, although Read type and Write type commands effect a transition to another state (see next section). Both queued and unqueued commands that are classified as Read type or that are not classified as Write type or Neutral type may be executed while in the Read Capable state. Both queued and unqueued commands that are classified as Write type or that are not classified as Read type or Neutral type may be executed while in the Write Capable state.

2.2 State Diagram for Explicit Address Model

The diagram below shows the Explicit Address model state transition diagram. There are only three states, with no direct transition between the Read Capable state and the Write Capable state. The Neutral state is the intermediate state with transitions to and from both other states and it is the initial state for the Explicit Address model.



The actions that can effect various transitions are listed below:

Transition 'a'

- Power up
- Receive a MODE SELECT command, with setting set to select the Explicit Address model
- Explicit Address model unique command received while at Beginning Of Tape

Transition 'b'

- Receive a queued Write type command

Transition 'c'

- Receive a LOAD UNLOAD, REWIND, or LOCATE command

Transition 'd'

- Receive a queued Read type command

Transition 'e'

- Receive a LOAD UNLOAD, REWIND, or LOCATE command

Transition 'f'

- Receive a MODE SELECT command, with setting set to select the Implicit Address model
- Implicit Address model unique command received while at Beginning Of Tape