

TO: T10 Members
FROM: Paul Suhler, Seagate Technology
SUBJECT: ADI SCSI Commands (T10/02-106r2)
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1 Introduction

This is revision 2 of the list of SCSI commands for Automation Drive Interface devices. It's based upon discussions at the last ADI WG meeting and it attempts to resolve a number of issues:

- Allowing the library application client to avoid conflicts with reservations placed on the device by "regular" application clients.
- Avoiding clearing of Log parameters for "regular" application clients by the library application client.
- Enumerating which Mode parameters may be altered by the library application client and which may not.
- Avoiding access to medium auxiliary memory Host attributes.

The following issues are not addressed in this revision. They remain in the ADC commands table as notes.

- The READ POSITION command can cause a buffer flush.
- SEND DIAGNOSTIC operations.
- WRITE BUFFER buffers which are permitted.

1.1 *Avoiding Reservation Conflicts*

In this version, the ADP interface shall allow access to two logical units, one an ADC device server and the other an SSC device server. The ADC device server implements four classes of commands:

- Commands which are mandatory for all device types – INQUIRY, TEST UNIT READY, and REQUEST SENSE.
- Commands which must always ignore reservations placed by other initiators – such as LOAD UNLOAD.
- Commands which must ignore reservations for some values of command parameters, such as MODE SELECT.
- Vendor unique commands; the device vendor is responsible for avoiding reservation conflicts.

Commands outside of these four categories are forbidden to be implemented by an ADC device server. No restrictions are placed on which commands may be implemented by the SSC device server.

1.2 *Log Parameters*

We identified the issue that reading Log pages on the ADC device server must not clear the information on the SSC device server, and vice-versa. I've proposed text for this.

1.3 *Mode Parameters*

The approach I've taken is to state that only those mode parameters which must be changeable by the library without regard to reservations may be changed by the ADC device server. Changing any other parameters must be done by MODE SELECT to the LUN implementing the SSC device server.

There is another issue, how to report through one device server changes made by a MODE SELECT command to the other. I've proposed text that places a requirement to generate a Unit Attention on the other device server. We need a ruling on whether this violates SAM.

1.4 *Medium Auxiliary Memory*

There is text below to prohibit an ADC device server from modifying Host type attributes.

2 **Commands for ADC Devices**

An ADC device server shall not implement any command defined in a SCSI command set standard other than those in the following table. Vendor unique commands may be implemented.

| Command | Required | Doc | Notes |
|---|----------|-------|-------|
| INQUIRY | M | SPC-3 | |
| LOAD UNLOAD | M | SSC-2 | |
| LOG SELECT | O | SPC-3 | |
| LOG SENSE | M | SPC-3 | |
| MODE SELECT(6) | O | SPC-3 | |
| MODE SELECT(10) | O | SPC-3 | |
| MODE SENSE(6) | O | SPC-3 | |
| MODE SENSE(10) | O | SPC-3 | |
| READ ATTRIBUTE | O | SPC-3 | |
| READ BUFFER | O | SSC-2 | |
| READ POSITION | O | SSC-2 | 1 |
| RECEIVE DIAGNOSTIC RESULTS | O | SPC-3 | |
| REPORT DENSITY SUPPORT | O | SSC-2 | |
| REPORT LUNS | O | SPC-3 | |
| REPORT SUPPORTED OPERATION CODES | O | SPC-3 | |
| REQUEST SENSE | M | SPC-3 | |
| SEND DIAGNOSTIC | O | SPC-3 | 2 |
| TEST UNIT READY | M | SPC-3 | |
| WRITE ATTRIBUTE | O | SPC-3 | |
| WRITE BUFFER | O | SPC-3 | 3 |
| <p>1 Need to clarify this scenario if this forces a buffer flush.</p> <p>2 Self test at a minimum; vendor specific as to support involving media.</p> <p>3 Only buffers 4 and 5 shall be implemented by an ADC device server.</p> | | | |

3 **Parameters for ADC Devices**

3.1 *Diagnostic Parameters*

TBD

3.2 *Log Parameters*

Changes in Log Parameters caused by a LOG SELECT command to the SSC device server shall not be reflected by changes in the corresponding parameters reported by the ADC device server. Changes in Log Parameters caused by a LOG SELECT command to the ADC device server shall not be reflected by changes in the corresponding parameters reported by the SSC device server.

3.3 *Medium Auxiliary Memory attributes*

ADC device servers shall not modify attributes of type Host. If the library needs to modify one of these attributes, it shall issue the command to the SSC logical unit.

3.4 Mode Parameters

The following mode parameters may be changeable for an ADC device. Other parameters shall not be changeable.

| Mode Page | Parameter |
|--|---------------|
| Control Mode Page (0Ah) | AUTOLOAD MODE |
| <i>Other changeable parameters TBD</i> | |

A change of a mode parameter by an ADC device server shall cause the SSC device server to generate a unit attention condition for all initiators. A change of a mode parameter by an SSC device server shall cause the ADC device server to generate a unit attention condition for all initiators.

4 Commands for SSC Devices Accessed via ADP

Some of the commands listed as Mandatory by the SSC and SSC-2 standards are Optional when the command is received via an ADP port.

| Command | Required | Doc |
|------------------------------|----------|-------|
| ACCESS CONTROL IN | O | SPC-3 |
| ACCESS CONTROL OUT | O | SPC-3 |
| CHANGE ALIASES | O | SPC-3 |
| ERASE(6) | O | SSC-2 |
| ERASE(16) | O | SSC-2 |
| EXTENDED COPY | O | SPC-3 |
| FORMAT MEDIUM | O | SSC-2 |
| INQUIRY | M | SPC-3 |
| LOAD UNLOAD | M | SSC-2 |
| LOCATE(10) | O | SSC-2 |
| LOCATE(16) | O | SSC-2 |
| LOG SELECT | O | SPC-3 |
| LOG SENSE | M | SPC-3 |
| MODE SELECT(6) | O | SPC-3 |
| MODE SELECT(10) | O | SPC-3 |
| MODE SENSE(6) | O | SPC-3 |
| MODE SENSE(10) | O | SPC-3 |
| PERSISTENT RESERVE IN | O | SPC-3 |
| PERSISTENT RESERVE OUT | O | SPC-3 |
| PREVENT ALLOW MEDIUM REMOVAL | O | SSC-2 |
| READ(6) | O | SSC-2 |
| READ(16) | O | SSC-2 |
| READ ATTRIBUTE | O | SPC-3 |
| READ BLOCK LIMITS | O | SSC-2 |
| READ BUFFER | O | SSC-2 |
| READ POSITION | O | SSC-2 |
| READ REVERSE(6) | O | SSC-2 |
| READ REVERSE(16) | O | SSC-3 |
| RECEIVE COPY RESULTS | O | SPC-3 |
| RECEIVE DIAGNOSTIC RESULTS | O | SPC-3 |
| RECOVER BUFFERED DATA | O | SSC-2 |
| RELEASE(6) | O | SPC-3 |
| RELEASE(10) | O | SPC-3 |
| REPORT ALIASES | O | SPC-3 |
| REPORT IDENTIFIER | O | SPC-3 |

| Command | Required | Doc |
|----------------------------------|-----------------|------------|
| REPORT DENSITY SUPPORT | O | SSC-2 |
| REPORT LUNS | O | SPC-3 |
| REPORT SUPPORTED OPERATION CODES | O | SPC-3 |
| REPORT TARGET PORT GROUPS | O | SPC-3 |
| REQUEST SENSE | M | SPC-3 |
| RESERVE(6) | O | SPC-3 |
| RESERVE(10) | O | SPC-3 |
| REWIND | O | SSC-2 |
| SEND DIAGNOSTIC | O | SPC-3 |
| SEND DEVICE IDENTIFIER | O | SPC-3 |
| SET CAPACITY | O | SSC-2 |
| SET TARGET PORT GROUPS | O | SPC-3 |
| SPACE(6) | O | SSC-2 |
| SPACE(16) | O | SSC-2 |
| TEST UNIT READY | M | SPC-3 |
| VERIFY(6) | O | SSC-2 |
| VERIFY(16) | O | SSC-2 |
| WRITE(6) | O | SSC-2 |
| WRITE(16) | O | SSC-2 |
| WRITE ATTRIBUTE | O | SPC-3 |
| WRITE BUFFER | O | SPC-3 |
| WRITE FILEMARKS(6) | O | SSC-2 |
| WRITE FILEMARKS(16) | O | SSC-2 |

5 Parameters for SSC Devices Accessed via ADP

5.1 Diagnostic Parameters

TBD

5.2 Log Parameters

Changes in Log Parameters caused by a LOG SELECT command to the SSC device server shall not be reflected by changes in the corresponding parameters reported by the ADC device server. Changes in Log Parameters caused by a LOG SELECT command to the ADC device server shall not be reflected by changes in the corresponding parameters reported by the SSC device server.

5.3 Mode Parameters

A change of a mode parameter by an ADC device server shall cause the SSC device server to generate a unit attention condition for all initiators. A change of a mode parameter by an SSC device server shall cause the ADC device server to generate a unit attention condition for all initiators.