TO: T10 Membership
FROM: Paul A. Suhler, Seagate Removable Storage Solutions, LLC
DATE: 21 March 2003
SUBJECT: T10/03-087r1, ADC Data Transfer Device Status Masking

Revision 1:
- No need to have a special command
- Clause for model section
- Mode parameter field to enable/disable the feature
- Automation AER IU field to inform DTD when media access attempt is abandoned by automation

Revision 0:
MASK UNMASK SENSE command.

Discussion:

An open question at the end of the 10 – 11 March WG meeting was whether to control this feature via a mode page. I believe that we should be able to turn off any behavior that causes the drive to behave differently from a standalone drive.

I've added a model section since this is a separate behavior and I think that it needs a separate explanation, rather than just covering it as part of the discussion of the relevant parameter fields.

If this still needs too much work and is not likely to be needed, then all but the FAIL field of the Automation AER IU could be deferred until ADI-2.

New model clause:

4.2.x Sense data masking

In the process of loading a medium into a data transfer device, it may be necessary to retry the operation in order to overcome transient failures. This may require removing and re-inserting the medium into the data transfer device. If an initiator is testing the status of the device, it may see an initial failure and abandon a backup even though the loading eventually succeeds and the MOVE MEDIUM command returns GOOD status.

If the drive's status is masked during automation-initiated loads – i.e., failures are not reported – the automation device will be able to retry the load without causing an unnecessary failure of the backup.

While in masking mode, the data transfer device shall report SCSI statuses and sense data consistent with a normal loading operation. These values are vendor-unique.

Sense data masking is controlled by the MSKSNS field in the stream device mode descriptor. When the bit is set and the data transfer device begins loading a medium, the device shall enter masking mode. The device shall exit masking mode when any of the following events occur:

- Loading succeeds

- Loading fails and for a time of SM_TOV (SENSE MASKING TIMEOUT VALUE) the automation device issues no media access commands and does not remove the medium

- The automation device sends an Automation AER IU with the FAIL field set to one

During the SM_TOV period, if the automation device either issues a media access command or removes the medium, then the data transfer device shall remain in masking mode.

New field in Stream Device mode descriptor, byte 8, bit 2:

Table 26 - Stream Device descriptor parameters

Byte \ Bit	7	6	5	4	3	2	1	0
6	MLUN		Reserved				OFFLINE	ENABLE
7	Reserved		AUH	SUHO	AMO	AUTOLOAD MODE		
8	FUE	DRMODE	Reserved			MSKSNS	DENOVR	WP
9	CURRENT DENSITY							
10	SELECT WRITE DENSITY							
11	SENSE MASKING TIMEOUT VALUE (SM_TOV)							
12	Reserved							

If the Mask Sense (MSKSNS) field is set to one, then the device shall enter sense data masking mode when loading of a medium begins. Implementation of the MSKSNS field is optional.

The value in the SENSE MASKING TIMEOUT VALUE (SM_TOV) field shall be interpreted as described in Table y:

Table y – SM_TOV Values

SM_TOV	Timeout Value
0	Vendor-unique timeout value
1 – 254	Timeout value in seconds
255	Infinite timeout

Implementation of the MSKSNS and SM_TOV fields is optional.

Automation AER IU change (this IU is primarily described in T10/03-077r4):

Table x -- Automation AER information unit

Byte \ Bit	7	6	5	4	3	2	1	0
0	Reserved							FAIL
1	Reserved		ADLE	BUASDV	READY	RSC	IDC	MPC
2	BROADCAST UNIT ATTENTION ASC							
3	BROADCAST UNIT ATTENTION ASCQ							

The FAIL field is set to one to notify the DTD of the failure of an operation being performed by the automation device. For example, if a MOVE MEDIUM command has failed because of an inability to load a medium into the DTD, then an Automation AER IU with this field set to one can be interpreted by the DTD as a signal to report a load failure to imitators connected through a primary interface port.