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TO: X3T10 Committee (SCSI)

SUBJECT: Additional Write Protection functions for SSC

The SSC working group in May, 1996, discussed the addition of three additional write protect functions called : Associated Write Protect, Persistent Write Protect, and Permanent Write Protect. The SSC working group requested a complete proposal based on the functions outlined in the presentation. These three functions are included as optional additions to the SSC device configuration page. The only change is to byte 15 of this mode page. The recommended placement of the fields and draft text is included in the attachment.

Five additional ASC/ASCQ combinations are requested, with suggested values

27/01 HARDWARE WRITE PROTECTED
27/02 LOGICAL UNIT SOFTWARE WRITE PROTECTED
27/03 ASSOCIATED WRITE PROTECT
27/04 PERSISTENT WRITE PROTECT
27/05 PERMANENT WRITE PROTECT

These five ASC/ASCQ combinations are extensions of the existing 27/00 WRITE PROTECTED, which is the generic response, and the only response through SCSI-2. With the earlier addition of software write protect, it becomes necessary to distinguish the type, since there may be a software means to alter the write protected state of a logical unit or a volume.

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Attachment of 5 pages is part of this document

5.1.1 Physical elements

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Paragraph 8, “The write enabled or write protected state....”

Add the following sentence to this paragraph.

Four optional means of setting the write protected state, other than by physical means, are available to an initiator through the device configuration page: software write protect for the device server across several mounts, associated write protect for the currently mounted volume, persistent write protect of a volume across mounts, and permanent write protect of a volume also across mounts.

5.3.3.2 Device configuration page (revised)

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Table 1-1 Device configuration page

Bit	7	6	5	4	3	2	1	0
0	PS	Rsvd	Page code (10h)					
1	Page length (0Eh)							
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14								
15	Reserved					AssocWP	PerstWP	PermWP

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The Associated write protect (AssocWP) field indicates whether the currently mounted volume is to be logically write protected until the volume is demounted. This write protect function may be active independent of any other write protect function.

- The AssocWP field set to 1b indicates that the currently mounted volume is to be logically write protected, if not already write protected by other means, until the volume is demounted. This field shall be set to 0b in the device configuration page when the volume is demounted. This change of state of the field shall not cause a Unit Attention condition since setting this field to 1b can only be performed for the currently mounted volume.

Note: A demount causes a Unit Attention for the not ready transition which is sufficient to inform initiators of the change of state.

- The AssocWP field set to 0b indicates that the currently mounted volume is to not be write protected, unless already write protected by other means, while the volume is mounted. The device server shall set this field to 0b each time a volume is mounted.
- The state of the AssocWP field shall not be recorded on the medium. The device server shall not recall the state of this field when a volume is remounted. The AssocWP field may be changed at any logical position while a volume is mounted.

Note: This function can be used immediately after writing the last block and filemarks for a file, but before a REWIND to continue operations with the currently mounted volume. This protects the newly recorded data from accidental software attempts to write on the volume, but would permit shared read activity. Some other form of write protection would be needed, if important, when the volume is demounted. If this were temporary data, this method of write protection would be sufficient. This form of write protection is distinguished from the software write protect function which affects the entire device server, rather than a single volume.

- If an attempt is made to set this field to 1b while the device server is in the not ready state, the device server shall terminate the MODE SELECT command with CHECK CONDITION status. The sense key shall be set to NOT READY. The additional sense information shall be set to LOGICAL UNIT NOT READY, MANUAL INTERVENTION REQUIRED.
- If this page is saveable, this field shall be saved as 0b, regardless of its current setting.

Note: Saving mode pages for the device server is distinct from saving associated write protect indication about a single volume.

The Persistent write protect (PerstWP) field indicates whether the volume is to be logically write protected. This write protect function may be active independent of any other write protect function.

- The PerstWP field set to 1b indicates that the currently mounted volume is logically write protected, if not already write protected by other means.
- The PerstWP field set to 0b indicates that the currently mounted volume is to not be write protected, unless already write protected by other means.

- The state of the PerstWP field shall be recorded on the medium. This operation shall only be successful when the logical position is at BOP0. The resulting position shall be at BOP0. The state of PerstWP may be changed whenever the logical position is correct (see permanent write protect for a one time write protect state change). The device server shall determine the state of this field when a volume is mounted and fill in this field in the device configuration page. This change to a mode parameter shall not cause a Unit Attention condition since the transition to the ready state suffices to inform the initiators of the state change. The means of recording this information on the volume may be specified in another interchange standard or be vendor specific.
- If a valid MODE SELECT command is received that attempts to change the value of this field and the logical position of the device server is not at BOP0, the device server shall return CHECK CONDITION status. The sense key shall be set to DATA PROTECT and the additional sense information shall be set to SEQUENTIAL POSITIONING ERROR.
- If an attempt is made to set this field to 1b while the device server is in the not ready state, the device server shall terminate the MODE SELECT command with CHECK CONDITION status. The sense key shall be set to NOT READY. The additional sense information shall be set to LOGICAL UNIT NOT READY, MANUAL INTERVENTION REQUIRED.
- If this page is saveable, this field shall be saved as 0b, regardless of its current setting.

Note: Saving mode pages for the device server is distinct from saving the persistent write protect indication on the medium for a volume.

The Permanent write protect (PermWP) field indicates whether the volume is to be permanently write protected while recorded information remains on the volume. This write protect function may be active independent of any other write protect function.

- The PermWP field set to 1b indicates that the currently mounted volume is logically write protected, if not already write protected by other means.
- The PermWP field set to 0b indicates that the currently mounted volume is to not be write protected, unless already write protected by other means.

- The state of the PermWP field shall be recorded on the medium. This operation shall only be successful when the logical position is at BOP0. The resulting position shall be at BOP0. The device server shall determine the state of this field when a volume is mounted and fill in this field in the device configuration page. This change to a mode parameter shall not cause a Unit Attention condition since the transition to the ready state suffices to inform the initiators of the state change. The means of recording this information on the volume may be specified in another interchange standard or be vendor specific.
- If a valid MODE SELECT command is received that attempts to change the value of this field and the logical position of the device server is not at BOP0, the device server shall return CHECK CONDITION status. The sense key shall be set to DATA PROTECT and the additional sense information shall be set to SEQUENTIAL POSITIONING ERROR.
- Any attempt to change the setting of this field to 0b, once set to 1b shall be rejected with CHECK CONDITION status for the MODE SELECT command. The sense key shall be set to DATA PROTECT. The additional sense information shall be set to PERMANENTLY WRITE PROTECTED.
- If an attempt is made to set this field to 1b while the device server is in the not ready state, the device server shall terminate the MODE SELECT command with CHECK CONDITION status. The sense key shall be set to NOT READY. The additional sense information shall be set to LOGICAL UNIT NOT READY, MANUAL INTERVENTION REQUIRED.
- If this page is saveable, this field shall be saved as 0b, regardless of its current setting.

Note: Saving mode pages for the device server is distinct from saving the permanent write protect indication on the medium for a volume.