To: INCITS Technical Committee T10
From: Kevin Butt
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Document: T10/08-388r0— SSC-3: Resolution to LB IBM-027

1. Revisions

1. 08-388r0 Initial revision (23 September 2008)

2. Introduction

During SSC-3 letter ballot IBM submitted Letter Ballot comment 027 that reads:

> Is it better to make sure REW is set or not. In addition "REW bit" is referred in read/space/verify command also. I think it is better to make sure how programable early warning affect these command.

This proposal intends to resolve that that comment.

In the course of examining the behavior and interaction with the REW bit and the various commands I found that:

a) the Erase commands should be removed from interaction with the PEWZ; and
b) the description of the REW bit in the device configuration mode page needed to have the intent clarified.

Key:

~~Deleted Text~~

Added Text

3. Proposal

4.2.5 Programmable early warning

When writing, the application client may need an indication that it is approaching early warning (see 4.2.4) while there is enough space in the partition for the application client to write any buffered logical objects in the application client buffer to medium.

Application clients that need this indication may set the PEWS field (see 8.3.8) to a value that creates a PEWZ that allows sufficient recording space for the data that is in the application client buffer.

If the PEWZ is entered and exited before the PROGRAMMABLE EARLY WARNING DETECTED additional sense code is returned, the device server does not report PROGRAMMABLE EARLY WARNING DETECTED CHECK CONDITION.

The REW bit in the Device Configuration mode page (see 8.3.3) shall have no effect on the device server behavior in the PEWZ.

The device server shall return CHECK CONDITION status, with the sense key set to NO SENSE, the EOM bit set to one and the additional sense code set to PROGRAMMABLE EARLY WARNING DETECTED at the completion of a command that causes the medium to transition into the PEWZ if that command is:

a) a WRITE(6);
b) a WRITE(16);
c) a WRITE FILEMARKS(6); or
d) a WRITE FILEMARKS(16).

~~At the completion of a WRITE(6), WRITE(16), WRITE FILEMARKS(6), WRITE FILEMARKS(16), ERASE(6), or ERASE(16) command that causes the medium to transition into the PEWZ the device server shall return CHECK CONDITION status, with the sense key set to NO SENSE, the EOM bit set to one and the additional sense code set to PROGRAMMABLE EARLY WARNING DETECTED.~~ Encountering the PEWZ shall not cause the device server to perform a synchronize operation or terminate the command. If processing this command results in any other exception condition, the CHECK CONDITION status associated with that exception condition shall be reported instead. If the PROGRAMMABLE EARLY WARNING DETECTED additional sense was not reported, the next write in PEWZ that completes with GOOD status, shall return the programmable-early-warning CHECK CONDITION instead.

The PEWZ shall have no effect on commands not listed in this subclause.

Editors Note 1 - KDB: This change removed the ERASE(6) and ERASE(16) command from the list of commands that apply to the PEWZ. They do not transfer data and it does not make sense for them to return this check condition as they would ALWAYS cause this check condition to occur if they did a long erase.

Editors Note 2 - KDB: This LB comment specifically asks about several read typ commands including VERIFY. Since VERIFY with BYTCMP set to one transfers data from the application client to the device server it is worth taking a close look at.
I think that an application client verifying data on the medium should know when the data ends so I think in this case there is no valid reason to include this in PEWZ.

8.3.3 Device Configuration mode page

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A report early-warning (REW) bit of zero specifies the device server shall not report the early-warning condition for read operations and it shall report early-warning at or before any medium-defined early-warning position during write operations. Application clients should set the REW bit to zero.

A REW bit of one is intended for compatibility with application clients using old tape formats that require an early-warning indication during read operations. A REW bit of one specifies the device server shall return CHECK CONDITION status~~. The~~ with the additional sense code ~~shall be~~ set to END-OF-PARTITION/MEDIUM DETECTED, and the EOM bit set to one in the sense data when the early-warning position is encountered during read and write operations. If the REW bit is one and the SEW bit is zero, the device server shall return CHECK CONDITION status with the sense key set to VOLUME OVERFLOW when early-warning is encountered during write operations.

NOTE 59 - ~~A REW bit of one is intended for compatibility with application clients using old tape formats that require an early-warning indication during read operations. Other application clients should set this bit to zero to avoid potential data loss when interchanging tapes between devices.~~