To: INCITS Technical Committee T10

From: Kevin Butt, IBM

Date: October 2, 2006 9:35 am

Document: T10/05-423r2

Subject: SSC-3: Configurable Early Warning

1. Revisions

1. Took concept of Logical End of Partition Early Warning and made a proposal out of it. Added a query to get status of if the device is in early early warning.

2. Made modifications suggested during Sept SSC-3 WG. Changed early-early-warning term to programmable-early-warning.

2. Introduction

Computer Associates responded to a request from ISV's by the SSC and SMC working groups to provide input of functionality that ISV's would like to see added to the standards. CA's request was "Some device support allowing the Early Warning size to be set, but can this be made a standard. This would allow us to calculate how much space we will need at the end of a tape and make sure that there will be sufficient space for dumping our data to the tape before running out of space." This proposal's intent is to accomodate this request. It also allows for handling application client buffers.

3. Proposal

3.1 Add programmable-early-warning to definitions

3.1.16 programmable-early-warning (PEW): A configurable logical position used to establish a unit attention condition indicating that the logical position on the medium in the device is nearing end-of-partition (see 4.2.3+).

3.2 Add programmable-early-warning model clause (4.2.3+)

4.2.3+ Programmable early warning

When writing, the application client may need an indication that it is approaching the end of the permissible recording area when moving in a direction toward the end of the partition (see 4.2.4). Some application clients have buffers and may need an indication reported early enough for the application client to write any buffered logical objects in the application client buffer to medium

while still leaving enough room for additional recorded logical objects. This indication is called programmable-early-warning (PEW).

Application clients that need this indication are expected to set PEW to a value that allows sufficient recording space for the data that is in the application client buffer and the data that is in the device logical object buffer.

3.3 Add text to Write commands

In 5.6 WRITE(16) command, add:

If the device server encounters PEW during the processing of a WRITE(16) command, an attempt to finish processing the command shall be made. If all data that is to be written is successfully transferred to the medium, the device server shall establish a unit attention condition with an additional sense code set to END-OF-PARTITION/MEDIUM DETECTED.

Encountering PEW should not cause a synchronize operation.

> Fix to make it host side of buffer centric. Make sure finishes current write command.

In 5.7 WRITE FILEMARKS(16) command, add:

If the device server encounters PEW during the processing of a WRITE FILEMARKS(16) command, an attempt to finish writing any data shall be made. If all data that is to be written is successfully transferred to the medium, the device server shall establish a unit attention condition with an additional sense code set to END-OF-PARTITION/MEDIUM DETECTED.

In 6.8 WRITE(6) command, add:

If the device server encounters PEW during the processing of a WRITE(6) command, an attempt to finish writing any data shall be made. If all data that is to be written is successfully transferred to the medium, the device server shall establish a unit attention condition with an additional sense code set to END-OF-PARTITION/MEDIUM DETECTED.

Encountering PEW should not cause a synchronize operation.

In 6.9 WRITE FILEMARKS(6) command, add:

If the device server encounters PEW during the processing of a WRITE FILEMARKS(6) command, an attempt to finish writing any data shall be made. If all data that is to be written is successfully transferred to the medium, the device server shall establish a unit attention condition with an additional sense code set to END-OF-PARTITION/MEDIUM DETECTED.

3.4 Add Programmable Early Warning Field to Device Configuration Extension mode page

In 8.3.8 Device Configuration Extension mode page, add a new field called Programmable Early Warning to bytes 6 and 7 of Table 88 — Device Configuration Extension mode page.

6	(MSB)		
7		PEWS	(LSB)

The Programmable Early Warning Size (PEWS) field specifies the position on the medium that allows recording of the specified number of megabytes native capacity prior to the End of Partition (EOP). The device server shall establish a unit attention condition for all I_T nexuses with an additional sense code set to END-OF-PARTITION/MEDIUM DETECTED when crossing the programmable-early-warning logical position while recording logical objects to the medium. The PEWS field set to 0000h results in no unit attention condition being established for crossing the programmable early warning logical position.

Check with ISV's about UA vs No Sense.

3.5 Add an In Programmable Early Warning indicator to Read Position command

In SSC-3, 7.6 READ POSITION command, add the following In Programmable Early Warning indicator to the returned data in all forms.

In 7.6.2 READ POSITION data format, short form, Table 43 — READ POSITION data format, short form, make bit 0 of byte 0 IPEW. Add the following description of the IPEW bit.

The In Programmable Early Warning (IPEW) bit set to one indicates that the logical object location is between the PEW position and EOP. A IPEW bit set to zero indicates that the logical object location is not between the PEW position and EOP. This bit is not valid if the LOLU bit is set to one.

In 7.6.3 READ POSITION data format, long form, Table 44 — READ POSITION data format, long form, make bit 0 of byte 0 IPEW. Add the following description of the IPEW bit.

The In Programmable Early Warning (IPEW) bit set to one indicates that the logical object location is between the PEW position and EOP. A IPEW bit set to zero indicates that the logical object location is not between the PEW position and EOP. This bit is not valid if the LONU bit is set to one.

In 7.6.4 READ POSITION data format, extended form, Table 45 — READ POSITION data format, extended form, make bit 0 of byte 0 IPEW. Add the following description of the IPEW bit.

The In Programmable Early Warning (IPEW) bit set to one indicates that the logical object location is between the PEW position and EOP. A IPEW bit set to zero indicates that the logical object

location is not between the PEW position and EOP. This bit is not valid if the LOLU bit is set to one.

In the same table, bit 2 of byte 0 is incorrectly named LOPU. Correct the to LOLU.