

To: INCITS Technical Committee T10

From: Kevin Butt, IBM

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Subject: SSC-3: Configurable Early Warning

## 1. Revisions

1. 05-423r1 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.
3. Changed the PEW sense from Unit Attention to Check Condition. Add a new additional sense code.
4. (May 2, 2007) Make PEW into a zone
5. (May 8, 2007) Make changes in SSC-3 Working group.
6. (June 8, 2007) Incorporate comments from Paul Entzel. Make Read Position report when in PEW or EW (i.e. between EOD - PEWS and EOD)

## 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 zone within the partition which has it's EOP side established at early warning and extends towards BOP for a distance indicated by the PEWS field (see 8.3.8). See 4.2 x (PEW model subclause).

## 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 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 PEWS (see 8.3.8) to a value that creates a PEW that allows sufficient recording space for the data that is in the application client buffer.

If the PEW 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.

At the completion of a write type command that causes the medium to transition into the PEW the device server shall return CHECK CONDITION status, with the sense key set to NO SENSE, and the additional sense code shall be set to PROGRAMMABLE EARLY WARNING DETECTED. Encountering the PEW shall not cause the device server to perform a synchronize operation or terminate the write type 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 PEW that completes with GOOD status, shall return the programmable-early-warning CHECK CONDITION instead.

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**Editors Note: PROGRAMMABLE EARLY WARNING DETECTED is a new ASC/ASCQ (I suggest 00/07)**

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## 3.3 Add text to Write commands

### In 5.6 WRITE(16) command, add:

See 4.2.x (PEW model subclause) for a description of the effect of PEW on the completion of the WRITE(16) command.

### In 5.7 WRITE FILEMARKS(16) command, add:

See 4.2.x (PEW model subclause) for a description of the effect of PEW on the completion of the WRITE FILEMARKS(16) command.

### In 6.8 WRITE(6) command, add:

See 4.2.x (PEW model subclause) for a description of the effect of PEW on the completion of the WRITE(6) command.

### In 6.9 WRITE FILEMARKS(6) command, add:

See 4.2.x (PEW model subclause) for a description of the effect of PEW on the completion of the WRITE FILEMARKS(6) command.

## 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 Size to bytes 6 and 7 of Table 88 — Device Configuration Extension mode page.

6	(MSB)	PEWS	(LSB)
7			

The Programmable Early Warning Size (PEWS) field specifies the number of megabytes native capacity to use in establishing PEW (see 3.1.16). See 4.2.3+ (Programmable early warning clause) for a description of how PEWS is used.

## 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 BPEW. Add the following description of the BPEW bit.

The Beyond Programmable Early Warning (BPEW) bit set to one indicates that the logical object location is in PEW or EW. A BPEW bit set to zero indicates that the logical object location is not in PEW or EW. 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 BPEW. Add the following description of the BPEW bit.

The Beyond Programmable Early Warning (BPEW) bit set to one indicates that the logical object location is in PEW or EW. A BPEW bit set to zero indicates that the logical object location is not in PEW or EW. 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 BPEW. Add the following description of the BPEW bit.

The Beyond Programmable Early Warning (BPEW) bit set to one indicates that the logical object location is in PEW or EW. A BPEW bit set to zero indicates that the logical object location is not in PEW or EW. 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.

## 4. SPC-4 Changes

Add the new additional sense code of PROGRAMMABLE EARLY WARNING DETECTED (e.g. I suggest 00/07).