

T10/04-170 revision 0

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To: T10 Committee (SCSI)

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Subject: SAS 1.1: Number of Pad Bytes Fix

1 Overview

There are two problems in the description of how pad bytes are handled in SAS.

The first is that there is no indication as to what to do if there is a non-zero value in the NUMBER OF FILL bytes field.

The other is that SAS states that fill byte field should be set to zero for all command frames except for data frame. However, a Response IU is allowed to have fill bytes. The two conflicting statements are:

In Section 9.2.1 - SSP Frame Format states that:

"The NUMBER OF FILL BYTES field indicates the number of fill bytes between the INFORMATION UNIT field and the CRC field. The NUMBER OF FILL BYTES field shall be set to zero for all frame types except DATA frames (i.e., all other frame types are already four-byte aligned)."

However, Section 9.2.2.5.4 - Response Information Unit Sense Data Format states that:

"The value in the SENSE DATA LENGTH field need not be a multiple of four. If it is not, the NUMBER OF FILL BYTES field in the SSP frame header is non-zero and fill bytes are present."

2 Proposed fix

Change Section 9.2.1 - SSP Frame Format as follows:

The NUMBER OF FILL BYTES field indicates the number of fill bytes between the INFORMATION UNIT field and the CRC field. The NUMBER OF FILL BYTES field shall be ~~set to zero~~ [ignored](#) for all frame types except DATA frames [and RESPONSE frames](#) (i.e., all other frame types are already four-byte aligned).

Change section 9.2.2.4 DATA information unit as follows:

An SSP initiator port may set the NUMBER OF FILL BYTES field to a non-zero value in the last DATA frame that it transmits in response to a XFER_RDY. An SSP initiator port shall set the NUMBER OF FILL BYTES field in the frame header (see 9.2.1) to zero in all other DATA frames that it transmits. [The NUMBER OF FILL BYTES field shall be ignored by the SSP target port on all DATA frames except the last.](#)