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**FUJITSU**

Date:       22 April 1988

To:         X3T9.2 Committee Members

From:       Robert Liu

Subject:    Mode Select/Sense Cache Control Page

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Attached for your review is a proposal for a Mode Select/Sense Cache
control page. This new page enables the initiator to specify the
Read-ahead caching operation. This parameter page may be retained for
each initiator and for each logical unit independently. The value of
each parameter for each initiator and for each logical unit could be
different. The cache control bits in the CDB (FUA and DPO) are not
applied for this read-ahead caching.

83

|        |   | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|--------|---|---|---|---|---|---|---|---|---|
| Byte   | 0 | Page Code |||||||| 
|        | 1 | X'06' (Page Length) |||||||| 
|        | 2 | CE | Reserved ||||||| 
|        | 3 | Maximum Prefetch Ratio |||||||| 
|        | 4 | Minimum Prefetch Blocks (MSB) |||||||| 
|        | 5 | Minimum Prefetch Blocks (LSB) |||||||| 
|        | 6 | Reserved |||||||| 
|        | 7 | Reserved |||||||| 

A CE bit of one indicates that Read-ahead caching is enabled.  A CE
bit of zero indicates that Read-ahead caching is disabled.

The Maximum Prefetch Ratio indicates to the Target, on read operation,
how full the data buffer shall be after completion of READ or READ
EXTEND command.  This parameter is a numerator of a fractional
multiplier that has 256 as its denominator.  A value of zero indicates
that the target should not prefetch any data after completion of READ
or READ EXTENDED command.  This condition shall not be considered as
an error.

The Minimum Prefetch Blocks indicates to the Target, on read
operation, how many data blocks shall be prefetched into the data
buffer prior to attempting execution of the next command.  If the
target has stacked or queued command, the target shall execute the
next command after completion of prefetching the minimum prefetch data
blocks.


If the Read-ahead caching it enabled, the target shall continue
reading logical data blocks that follow the last logical data block
specified by the command.  If the subsequent READ or READ EXTENDED
command specifies any logical data block that has already prefetched
in the data buffer, the target shall transfer data blocks immediately
from the data buffer to the host, without access to the medium.

84

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After completion of the prefetching for the minimum prefetch data blocks, the target shall continue reading logical data blocks until the following conditions occurs:

1. The amount of data blocks specified by Maximum Prefetch Ratio have been prefetched.

2. A command from any initatior has been accepted during prefetching.

3. A hard RESET condition or a BUS DEVICE RESET message has been received.

4. An error condition occurred which requires data re-reading or re-positioning for error recovery.

The target may continue prefetching data when an error condition occurred, if the early correction is enabled by MODE SELECT parameter (EER=1, DCR=0).

The target may be rounding-up or rounding-down the Maximum Prefetch Ratio if the specified value does not match the internal boundary for the present logical data block size.  If the value of data blocks specified by the Maximum Prefetch Ratio is smaller than the value specified by the Minimum prefetch block, the target shall ignore the value specified by the Minimum prefetch block.  This condition shall not be considered as an error condition.

The hard RESET condition and BUS DEVICE RESET message shall not effect to the data in the data buffer.