



Enhanced Serial Peripheral Interface (eSPI) ECN

Engineering Change Notice

TITLE	Clarify Flash Erase Length field for MAFS and SAFS
DATE	May 2020
AFFECTED DOCUMENT	eSPI Base Specification (Revision 1.0) eSPI Addendum for Server Platforms (Revision 0.7)
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ECN Motivation

The eSPI Base Specification (revision 1.0) and the eSPI Addendum for Server Platforms (revision 0.7) describe the Erase command length.

The feedback received is driving this spec clarification related to Erase command length. This ECN provides clarity on the Flash Erase Length field for both MAFS and SAFS.

Note: Refer to the EDS and PDG of the relevant platforms for details on SAFS support.

eSPI Base Specification (revision 1.0) describes the following related to the Flash Erase command Length field:

- Section 5.1.3 - Length
For Flash Erase, the least significant 3 bits of the length field specifies the size of the block to be erased with the encoding matches the value of the Flash Block Erase Size field of the Channel Capabilities and Configuration register.
- Section 5.2.4.1 - Master Attached Flash Sharing
The Address field specifies the beginning of the erase block and the least significant 3 bits of the length field specifies the size of the block to be erased. The encoding of the least significant 3 bits of the length field matches the value of the Flash Block Erase Size field of the Channel Capabilities and Configuration register.
- Section 7.2.1.7 – Offset 40h: Channel 3 Capabilities and Configurations

Bit	Type	Default	Description
4:2	RW	01b	Flash Block Erase Size: eSPI master sets this field to communicate the block erase size to the slave. This field is applicable only to master attached flash sharing scheme. 000b: Reserved 001b: 4 Kbytes 010b: 64 Kbytes 011b: Both 4 Kbytes and 64 Kbytes are supported 100b: 128 Kbytes 101b: 256 Kbytes 110b – 111b: Reserved

On the other hand, eSPI Addendum for Server Platforms (Revision 0.7) defines the following related to Flash Erase Length field:

- Section 2.6 – Slave Attached Flash Sharing Operation
The Address and Length fields ($\{Length1[3:0], Length0[7:0]\}$) of the standard eSPI packet format will have the definitions as specified in Table 2 7. The



Length field will specify the length of the write data to the flash device or requested size of the read data from the flash device (as described in the eSPI Base Specification). The only exception will be for the flash erase block sizes, where the length encodings are as listed in Table 2-7.

- Section 2.1.2 – Offset 44h: Channel 3 Capabilities and Configurations 2

Bit	Type	Default	Description
15:8	RO	HwInit	<p>Target Flash Erase Block Size for Master’s Regions: This field indicates the sizes of the erase commands the master may issue. If multiple bits are set then the master may issue an erase using any of the indicated sizes. If multiple regions are accessible by the master, this field advertises the common erase block sizes for these regions. This field is only applicable when slave attached flash sharing scheme is selected.</p> <p>Bit 0: 1 Kbytes EBS supported Bit 1: 2 Kbytes EBS supported Bit 2: 4 Kbytes EBS supported Bit 3: 8 Kbytes EBS supported Bit 4: 16 Kbytes EBS supported Bit 5: 32 Kbytes EBS supported Bit 6: 64 Kbytes EBS supported Bit 7: 128 Kbytes EBS supported</p>

- Table 2.7 – eSPI Flash Access Channel Packet Format for Master and Slave Attached Flash Configurations

Table 2-7. eSPI Flash Access Channel Packet Format for Master and Slave Attached Flash Configurations

Cycle Type [7:0]	Flash Command Type	Flash Operation	Address Size	Length [11:0] (3)	Slave Attached Flash Supported	Master Attached Flash Supported
02h	Standard	Erase	4 B	0h: 4 KB 1h: 32 KB 2h: 64 KB 3h – FFFh: Reserved	Yes (1)	Yes (1)

Due to conflicting description related to Flash Erase Length field, this ECN therefore clarifies the Flash Erase Length field for both MAFS and SAFS:

- For Master Attached Flash Sharing (MAFS), the least significant 3 bits of the Flash Erase Length field specifies the size of the block to be erased with the encoding matches the value of the Flash Block Erase Size field of the Channel Capabilities and Configuration register. However, length field encoding of “011” is not applicable for Flash Erase in MAFS.



- For Slave Attached Flash Sharing (SAFS), the Flash Erase Length field encoding is as defined in Table 2.7. For consistency with Table 2.7, Block Erase Size of 1KB, 2KB, 8KB and 16KB for SAFS are deprecated (reserved) in the Slave register.



ECN Description

Changes (as highlighted) to the eSPI Base Specification:

5.1.3 Length

~~For Flash Erase, the least significant 3 bits of the length field specifies the size of the block to be erased with the encoding matches the value of the Flash Block Erase Size field of the Channel Capabilities and Configuration register.~~

For Flash Erase length field definition, refer to the Master Attached Flash Sharing (MAFS), and Slave Attached Flash Sharing (SAFS) section for detail.

5.2.4.1 Master Attached Flash Sharing

Flash Erase is a non-posted request with no data. This command instructs the SPI Flash controller to erase a part of the region allocated to the eSPI slave. The Address field specifies the beginning of the erase block and the least significant 3 bits of the length field specifies the size of the block to be erased. The encoding of the least significant 3 bits of the length field matches the value of the Flash Block Erase Size field of the Channel Capabilities and Configuration register. The specified address must be aligned to the block erase size. The supported erase block size is programmable and is communicated by the eSPI master to the slave through the Channel Capabilities and Configuration register. ~~However, length field encoding of "011" is not applicable for Flash Erase in Master Attached Flash Sharing (MAFS).~~



Changes (as highlighted) to eSPI Addendum for Server Platforms:

2.1.2 Offset 44h: Channel 3 Capabilities and Configurations 2

Bit	Type	Default	Description
15:8	RO	HwInit	<p>Target Flash Erase Block Size for Master's Regions: This field indicates the sizes of the erase commands the master may issue. If multiple bits are set then the master may issue an erase using any of the indicated sizes. If multiple regions are accessible by the master, this field advertises the common erase block sizes for these regions. This field is only applicable when slave attached flash sharing scheme is selected.</p> <p>Bit 0: Reserved 1-Kbytes EBS supported Bit 1: Reserved 2-Kbytes EBS supported Bit 2: 4 Kbytes EBS supported Bit 3: Reserved 8-Kbytes EBS supported Bit 4: Reserved 16-Kbytes EBS supported Bit 5: 32 Kbytes EBS supported Bit 6: 64 Kbytes EBS supported Bit 7: 128 Kbytes EBS supported</p>

2.6 Slave Attached Flash Sharing Operation

Table 1-7. eSPI Flash Access Channel Packet Format for Master and Slave Attached Flash Configurations

Cycle Type [7:0]	Flash Command Type	Flash Operation	Address Size	Length [11:0] (3)	Slave Attached Flash Supported	Master Attached Flash Supported
02h	Standard	Erase	4 B	MAFS: 0h: Reserved 1h: 4 KB 2h: 64 KB 3h: Reserved 4h: 128 KB 5h: 256 KB 6h – FFFh: Reserved SAFS: 0h: 4 KB 1h: 32 KB 2h: 64 KB 3h: 128 KB 4h – FFFh: Reserved	Yes (1)	Yes (1)

