MSMON_CFG_CSU_FLT, MPAM Memory System Monitor Configure Cache Storage Usage Monitor Filter Register

The MSMON CFG CSU FLT characteristics are:

Purpose

Configures PARTID and PMG to measure or count in the CSU monitor selected by MSMON CFG MON SEL.

MSMON_CFG_CSU_FLT_s sets filter conditions for the Secure cache storage usage monitor instance selected by the Secure instance of MSMON_CFG_CSU_CTL_ ns sets filter conditions for the Non-secure cache storage usage monitor instance selected by the Non-secure instance of MSMON_CFG_CSU_FLT_ rt sets the filter conditions for the Root PARTID selected by the Root instance of MSMON_CFG_CSU_FLT_ rl sets the filter conditions for the Realm PARTID selected by the Realm instance of MSMON_CFG_CSU_FLT_ rl sets the filter conditions for the Realm

If <u>MPAMF_IDR</u>.HAS_RIS is 1, the monitor instance filter configuration accessed is for the resource instance currently selected by <u>MSMON_CFG_MON_SEL</u>.RIS and the monitor instance of that resource instance selected by <u>MSMON_CFG_MON_SEL</u>.MON_SEL.

Configuration

This register is present only when FEAT_MPAM is implemented, MPAMF_IDR.HAS_MSMON == 1 and MPAMF_MSMON_IDR.MSMON_CSU == 1. Otherwise, direct accesses to MSMON CFG CSU FLT are res0.

The power and reset domain of each MSC component is specific to that component.

Attributes

MSMON_CFG_CSU_FLT is a 32-bit register.

Field descriptions

31	30 29 28 27 26 25 24	23 22 21 20 19 18 17 16	15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0
XCL	RES0	PMG	PARTID

XCL, bit [31]

When (FEAT_MPAMv0p1 is implemented or FEAT_MPAMv1p1 is implemented) and MPAMF CSUMON IDR.HAS XCL == 1:

Exclude Clean. The monitor instance does not count cache storage used by lines in an unmodified cache state.

XCL	Meaning
0b0	Monitor instance counts cache storage in modified and
	unmodified cache lines.
0b1	Monitor instance counts cache storage in modified cache lines
	only.

Otherwise:

Reserved, res0.

Bits [30:24]

Reserved, res0.

PMG, bits [23:16]

Performance monitoring group to filter cache storage usage monitoring.

If <u>MSMON_CFG_CSU_CTL</u>.MATCH_PMG is 0, this field is not used to match cache storage to a PMG and the contents of this field is ignored.

If <u>MSMON_CFG_CSU_CTL</u>.MATCH_PMG is 1 and <u>MSMON_CFG_CSU_CTL</u>.MATCH_PARTID is 1, the monitor instance selected by <u>MSMON_CFG_MON_SEL</u> measures or counts cache storage labeled with PMG equal to this field and PARTID equal to the PARTID field.

If <u>MSMON_CFG_CSU_CTL</u>.MATCH_PMG is 1 and <u>MSMON_CFG_CSU_CTL</u>.MATCH_PARTID is 0, the behavior of the monitor instance selected by <u>MSMON_CFG_MON_SEL</u> is constrained unpredictable. See <u>MSMON_CFG_CSU_CTL</u>.MATCH_PMG for more information.

PARTID, bits [15:0]

Partition ID to filter cache storage usage monitoring.

If <u>MSMON_CFG_CSU_CTL</u>.MATCH_PARTID is 0 and <u>MSMON_CFG_CSU_CTL</u>.MATCH_PMG is 0, the monitor measures all allocated cache storage.

If <u>MSMON_CFG_CSU_CTL</u>.MATCH_PARTID is 0 and <u>MSMON_CFG_CSU_CTL</u>.MATCH_PMG is 1, the behavior of the monitor is constrained unpredictable. See the description of <u>MSMON_CFG_CSU_CTL</u>.MATCH_PMG.

If <u>MSMON_CFG_CSU_CTL</u>.MATCH_PARTID is 1 and <u>MSMON_CFG_CSU_CTL</u>.MATCH_PMG is 0, the monitor selected by <u>MSMON_CFG_MON_SEL</u> measures or counts cache storage labeled with PARTID equal to this field.

If <u>MSMON_CFG_CSU_CTL</u>.MATCH_PARTID is 1 and <u>MSMON_CFG_CSU_CTL</u>.MATCH_PMG is 1, the monitor selected by <u>MSMON_CFG_MON_SEL</u> measures or counts cache storage labeled with PARTID equal to this field and PMG equal to the PMG field.

Accessing MSMON_CFG_CSU_FLT

This register is within the MPAM feature page memory frames.

In a system that supports Secure, Non-secure, Root, and Realm memory maps, there must be MPAM feature pages in all four address maps:

- MSMON_CFG_CSU_FLT_s must only be accessible from the Secure MPAM feature page.
- MSMON_CFG_CSU_FLT_ns must only be accessible from the Nonsecure MPAM feature page.
- MSMON_CFG_CSU_FLT_rt must only be accessible from the Root MPAM feature page.
- MSMON_CFG_CSU_FLT_rl must only be accessible from the Realm MPAM feature page.

MSMON_CFG_CSU_FLT_s, MSMON_CFG_CSU_FLT_ns, MSMON_CFG_CSU_FLT_rt, and MSMON_CFG_CSU_FLT_rl must be separate registers:

- The Secure instance (MSMON_CFG_CSU_FLT_s) accesses the PARTID and PMG matching for a cache storage usage monitor used for Secure PARTIDs.
- The Non-secure instance (MSMON_CFG_CSU_FLT_ns) accesses the PARTID and PMG matching for a cache storage usage monitor used for Non-secure PARTIDs.
- The Root instance (MSMON_CFG_CSU_FLT_rt) accesses the PARTID and PMG matching for a cache storage usage monitor used for Root PARTIDs.
- The Realm instance (MSMON_CFG_CSU_FLT_rl) accesses the PARTID and PMG matching for a cache storage usage monitor used for Realm PARTIDs.

When RIS is implemented, loads and stores to MSMON_CFG_CSU_FLT access the monitor configuration settings for the resource instance selected by MSMON_CFG_MON_SEL.RIS and the cache storage usage monitor instance selected by MSMON_CFG_MON_SEL.MON_SEL.

When RIS is not implemented, loads and stores to MSMON_CFG_CSU_FLT access the monitor configuration settings for the cache storage usage monitor instance selected by MSMON_CFG_MON_SEL.MON_SEL.

MSMON_CFG_CSU_FLT can be accessed through the memory-mapped interfaces:

Co	mponent	Frame	Offset	Instance
	MPAM	MPAMF_BASE_s	0x0810	MSMON_CFG_CSU_FLT_s

Accesses on this interface are RW.

Component	Frame	Offset	Instance	
MPAM	MPAMF_BASE_ns	0x0810	MSMON_CFG_CSU_FLT_ns	

Accesses on this interface are RW.

Component	Frame	Offset	Instance	
MPAM	MPAMF_BASE_rt	0x0810	MSMON_CFG_CSU_FLT_rt	

When FEAT RME is implemented, accesses on this interface are **RW**.

Component	Frame	Offset	Instance
MPAM	MPAMF_BASE_rl	0x0810	MSMON_CFG_CSU_FLT_rl

When FEAT RME is implemented, accesses on this interface are RW.

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<u>Registers</u>	<u>Registers</u>	<u>Instructions</u>	<u>Instructions</u>	Encoding

28/03/2023 16:02; 72747e43966d6b97dcbd230a1b3f0421d1ea3d94

External Registers

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