MSMON_MBWU_CAPTURE, MPAM Memory Bandwidth Usage Monitor Capture Register

The MSMON_MBWU_CAPTURE characteristics are:

Purpose

Accesses the captured MSMON_MBWU monitor instance selected by MSMON_CFG_MON_SEL.

MSMON_MBWU_CAPTURE_s is the Secure memory bandwidth usage monitor capture instance selected by the Secure instance of MSMON_CFG_MON_SEL. MSMON_MBWU_CAPTURE_ns is the Non-secure memory bandwidth usage monitor capture instance selected by the Non-secure instance of MSMON_CFG_MON_SEL. MSMON_MBWU_CAPTURE_rt is the Root memory bandwidth usage monitor capture instance selected by the Root instance of MSMON_CFG_MON_SEL. MSMON_MBWU_CAPTURE_rl is the Realm memory bandwidth usage monitor capture instance selected by the Realm instance of MSMON_CFG_MON_SEL.

If MPAMF_IDR.HAS_RIS is 1, the monitor instance capture register accessed is for the resource instance currently selected by MSMON_CFG_MON_SEL.RIS and the monitor instance of that resource instance selected by MSMON_CFG_MON_SEL.MON_SEL.

Configuration

This register is present only when FEAT_MPAM is implemented, MPAMF_IDR.HAS_MSMON == 1, MPAMF_MSMON_IDR.MSMON_MBWU == 1 and MPAMF_MBWUMON_IDR.HAS_CAPTURE == 1. Otherwise, direct accesses to MSMON_MBWU_CAPTURE are res0.

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

Attributes

MSMON_MBWU_CAPTURE 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
NRDY																															
VALUE																															

NRDY, bit [31]

Not Ready. The captured NRDY bit from the corresponding instance of MSMON_MBWU. This bit indicates whether the captured monitor value has possibly inaccurate data.

NRDY	Meaning
0b0	The captured monitor instance was ready and the MSMON_MBWU_CAPTURE.VALUE field is accurate.
0b1	The captured monitor instance was not ready and the contents of the MSMON_MBWU_CAPTURE.VALUE field might be inaccurate or otherwise not represent the actual memory bandwidth usage.

VALUE, bits [30:0]

Captured memory bandwidth usage counter value if MSMON_MBWU_CAPTURE.NRDY is 0. Invalid if MSMON_MBWU_CAPTURE.NRDY is 1.

VALUE is the captured VALUE field from the corresponding instance of MSMON_MBWU, the count of bytes transferred since the monitor was last reset that meet the criteria set in MSMON_CFG_MBWU_FLT and MSMON_CFG_MBWU_CTL for the monitor instance selected by MSMON_CFG_MON_SEL.

VALUE captures the MSMON_MBWU.VALUE and preserves any scaling that had been performed on the VALUE field in that register.

Accessing MSMON_MBWU_CAPTURE

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_MBWU_CAPTURE_s must only be accessible from the Secure MPAM feature page.
- MSMON_MBWU_CAPTURE_ns must only be accessible from the Non-secure MPAM feature page.
- MSMON_MBWU_CAPTURE_rt must only be accessible from the Root MPAM feature page.
- MSMON_MBWU_CAPTURE_rl must only be accessible from the Realm MPAM feature page.

MSMON_MBWU_CAPTURE_s, MSMON_MBWU_CAPTURE_ns, MSMON_MBWU_CAPTURE_rt, and MSMON_MBWU_CAPTURE_rl must be separate registers:

- The Secure instance (MSMON_MBWU_CAPTURE_s) accesses the captured memory bandwidth usage monitor used for Secure PARTIDs.
- The Non-secure instance (MSMON_MBWU_CAPTURE_ns) accesses the captured memory bandwidth usage monitor used for Non-secure PARTIDs.
- The Root instance (MSMON_MBWU_CAPTURE_rt) accesses the captured memory bandwidth usage monitor used for Root PARTIDs.
- The Realm instance (MSMON_MBWU_CAPTURE_rl) accesses the captured memory bandwidth usage monitor used for Realm PARTIDs.

When RIS is implemented, reads and writes to MSMON_MBWU_CAPTURE access the monitor instance for the bandwidth resource instance selected by MSMON_CFG_MON_SEL.RIS and the memory bandwidth usage monitor instance selected by MSMON_CFG_MON_SEL.MON_SEL.

When RIS is not implemented, reads and writes to MSMON_MBWU_CAPTURE access the monitor instance for the memory bandwidth usage monitor instance selected by MSMON_CFG_MON_SEL.MON_SEL.

MSMON_MBWU_CAPTURE can be accessed through the memory-mapped interfaces:

Component	Frame	Offset	Instance
MPAM	MPAMF_BASE_s	0x0868	MSMON_MBWU_CAPTURE_s

Accesses on this interface are **RW**.

Component	Frame	Offset	Instance
MPAM	MPAMF_BASE_ns	0x0868	MSMON_MBWU_CAPTURE_ns

Accesses on this interface are **RW**.

Component	Frame	Offset	Instance
MPAM	MPAMF_BASE_rt	0x0868	MSMON_MBWU_CAPTURE_rt

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

Component	Frame	Offset	Instance
MPAM	MPAMF_BASE_rl	0x0868	MSMON_MBWU_CAPTURE_rl

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

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