MSMON_MBWU_L_CAPTURE, MPAM Long Memory Bandwidth Usage Monitor Capture Register

The MSMON_MBWU_L_CAPTURE characteristics are:

Purpose

Accesses the captured MSMON_MBWU_L monitor instance selected by MSMON_CFG_MON_SEL.

MSMON_MBWU_L_CAPTURE_s is the Secure long memory bandwidth usage monitor capture instance selected by the Secure instance of MSMON_CFG_MON_SEL. MSMON_MBWU_L_CAPTURE_ns is the Non-secure long memory bandwidth usage monitor capture instance selected by the Non-secure instance of MSMON_CFG_MON_SEL. MSMON_MBWU_L_CAPTURE_rt is the Root long memory bandwidth usage monitor capture instance selected by the Root instance of MSMON_CFG_MON_SEL. MSMON_MBWU_L_CAPTURE_rl is the Realm long 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 long 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, MPAMF_MBWUMON_IDR.HAS_CAPTURE == 1 and MPAMF_MBWUMON_IDR.HAS_LONG == 1. Otherwise, direct accesses to MSMON_MBWU_L_CAPTURE are res0.

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

Attributes

MSMON_MBWU_L_CAPTURE is a 64-bit register.

Field descriptions

When MPAMF_MBWUMON_IDR.LWD == 0:

63 62 61 60 59 58 57 56 55 54 53 52 51 50 49 48 47 46 45 44 43 42 41 40 39 38 37 36 35 34 33 32

NRDY	RES0	VALUE
VALUE		

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, bit [63]

Not Ready. Indicates whether the monitor has possibly inaccurate data.

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

Bits [62:44]

Reserved, res0.

VALUE, bits [43:0]

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

VALUE is the captured 44-bit count of bytes transferred since the monitor instance was last reset that met the criteria set in MSMON_CFG_MBWU_FLT and MSMON_CFG_MBWU_CTL for the monitor instance selected by MSMON_CFG_MON_SEL.

When MPAMF_MBWUMON_IDR.LWD == 1:

63 62 61 60 59 58 57 56 55 54 53 52 51 50 49 48 47 46 45 44 43 42 41 40 39 38 37 36 35 34 33 32

NRDY	VALUE
VALUE	

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, bit [63]

Not Ready. Indicates whether the monitor has possibly inaccurate data.

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

VALUE, bits [62:0]

The captured long memory bandwidth usage counter value if MSMON_MBWU_L_CAPTURE.NRDY is 0. Invalid if MSMON_MBWU_L_CAPTURE.NRDY is 1.

VALUE is the captured 63-bit count of bytes transferred since the monitor instance was last reset that met the criteria set in MSMON_CFG_MBWU_FLT and MSMON_CFG_MBWU_CTL for the monitor instance selected by MSMON_CFG_MON_SEL.

Accessing MSMON_MBWU_L_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_L_CAPTURE_s must only be accessible from the Secure MPAM feature page.
- MSMON_MBWU_L_CAPTURE_ns must only be accessible from the Non-secure MPAM feature page.
- MSMON_MBWU_L_CAPTURE_rt must only be accessible from the Root MPAM feature page.
- MSMON_MBWU_L_CAPTURE_rl must only be accessible from the Realm MPAM feature page.

MSMON_MBWU_L_CAPTURE_s, MSMON_MBWU_L_CAPTURE_ns, MSMON_MBWU_L_CAPTURE_rt, and MSMON_MBWU_L_CAPTURE_rl must be separate registers:

- The Secure instance (MSMON_MBWU_L_CAPTURE_s) accesses the captured long memory bandwidth usage monitor used for Secure PARTIDs.
- The Non-secure instance (MSMON_MBWU_L_CAPTURE_ns) accesses the captured long memory bandwidth usage monitor used for Non-secure PARTIDs.
- The Root instance (MSMON_MBWU_L_CAPTURE_rt) accesses the captured long memory bandwidth usage monitor used for Root PARTIDs.

- The Realm instance (MSMON_MBWU_L_CAPTURE_rl) accesses the captured long memory bandwidth usage monitor used for Realm PARTIDs.

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

MSMON_MBWU_L_CAPTURE can be accessed through the memory-mapped interfaces:

Component	Frame	Offset	Instance
MPAM	MPAMF_BASE_s	0x0890	MSMON_MBWU_CAPTURE_s

Accesses on this interface are **RW**.

Component	Frame	Offset	Instance
MPAM	MPAMF_BASE_ns	0x0890	MSMON_MBWU_CAPTURE_ns

Accesses on this interface are **RW**.

Component	Frame	Offset	Instance
MPAM	MPAMF_BASE_rt	0x0890	MSMON_MBWU_CAPTURE_rt

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

Component	Frame	Offset	Instance
MPAM	MPAMF_BASE_rl	0x0890	MSMON_MBWU_CAPTURE_rl

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

28/03/2023 16:02; 72747e43966d6b97dcbd230a1b3f0421d1ea3d94