MPAMCFG_CASSOC, MPAM Cache Maximum Associativity Partition Configuration Register

The MPAMCFG_CASSOC characteristics are:

Purpose

The MPAMCFG_CASSOC is a 32-bit read/write register that controls the maximum fraction of the cache associativity that the PARTID selected by MPAMCFG_PART_SEL is permitted to allocate.

MPAMCFG_CASSOC_s controls the cache maximum associativity for the Secure PARTID selected by the Secure instance of MPAMCFG_PART_SEL. MPAMCFG_CASSOC_ns controls the cache maximum associativity for the Non-secure PARTID selected by the Non-secure instance of MPAMCFG_PART_SEL. MPAMCFG_CASSOC_rl controls the cache maximum associativity for the Realm PARTID selected by the Realm instance of MPAMCFG_PART_SEL. MPAMCFG_CASSOC_rt controls the cache maximum associativity for the Root PARTID selected by the Root instance of MPAMCFG_PART_SEL.

If MPAMF_IDR.HAS_RIS is 1, the control settings accessed are those of the resource instance currently selected by MPAMCFG_PART_SEL.RIS and the PARTID selected by MPAMCFG_PART_SEL.PARTID_SEL.

Configuration

This register is present only when MPAMF_IDR.HAS_CCAP_PART == 1, (FEAT_MPAMv0p1 is implemented or FEAT_MPAMv1p1 is implemented) and MPAMF_CCAP_IDR.HAS_CASSOC == 1. Otherwise, direct accesses to MPAMCFG_CASSOC are res0.

Attributes

MPAMCFG_CASSOC 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
RES0	CASSOC

Bits [31:16]

Reserved, res0.

CASSOC, bits [15:0]

Maximum cache associativity usage in fixed-point fraction format by the partition selected by MPAMCFG_PART_SEL. The fraction represents the portion of the cache associativity that the PARTID is permitted to allocate. CASSOC controls the fraction of associativity in each associativity grouping of the cache. In a set associative cache, CASSOC applies to the fraction of the ways in each set.

The implemented width of the fixed-point fraction is given in MPAMF_CCAP_IDR.CASSOC_WD. Unimplemented bits within the field are RAZ/WI. The implemented bits of the CASSOC field are always the most significant bits of the field.

The fixed-point fraction CASSOC is less than 1. The implied binary point is between bits 15 and 16. This representation has as the largest fraction of the cache that can be represented in an implementation with w implemented bits is 1.0 minus one half to the power w.

Accessing MPAMCFG_CASSOC

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:

- MPAMCFG_CASSOC_s must only be accessible from the Secure MPAM feature page.
- MPAMCFG_CASSOC_ns must only be accessible from the Non-secure MPAM feature page.
- MPAMCFG_CASSOC_rt must only be accessible from the Root MPAM feature page.
- MPAMCFG_CASSOC_rl must only be accessible from the Realm MPAM feature page.

MPAMCFG_CASSOC_s, MPAMCFG_CASSOC_ns, MPAMCFG_CASSOC_rt, and MPAMCFG_CASSOC_rl must be separate registers:

- The Secure instance (MPAMCFG_CASSOC_s) accesses the cache maximum associativity partitioning used for Secure PARTIDs.
- The Non-secure instance (MPAMCFG_CASSOC_ns) accesses the cache maximum associativity partitioning used for Non-secure PARTIDs.
- The Root instance (MPAMCFG_CASSOC_rt) accesses the cache maximum associativity partitioning used for Root PARTIDs.
- The Realm instance (MPAMCFG_CASSOC_rl) accesses the cache maximum associativity partitioning used for Realm PARTIDs.

When RIS is implemented, loads and stores to MPAMCFG_CASSOC access the cache maximum associativity partitioning configuration settings for the cache resource instance selected by

MPAMCFG_PART_SEL.RIS and the PARTID selected by MPAMCFG_PART_SEL.PARTID_SEL.

When RIS is not implemented, loads and stores to MPAMCFG_CASSOC access the cache maximum associativity partitioning configuration settings for the PARTID selected by MPAMCFG_PART_SEL.PARTID_SEL.

When PARTID narrowing is implemented, loads and stores to MPAMCFG_CASSOC access the cache maximum associativity partitioning configuration settings for the internal PARTID selected by MPAMCFG_PART_SEL.PARTID_SEL, and MPAMCFG_PART_SEL.INTERNAL must be 1.

When PARTID narrowing is not implemented, loads and stores to MPAMCFG_CASSOC access the cache maximum associativity partitioning configuration settings for the request PARTID selected by MPAMCFG_PART_SEL.PARTID_SEL, and MPAMCFG_PART_SEL.INTERNAL must be 0.

MPAMCFG_CASSOC can be accessed through the memory-mapped interfaces:

Component	Frame	Offset	Instance
MPAM	MPAMF_BASE_s	0x0118	MPAMCFG_CASSOC_s

Accesses on this interface are **RW**.

Component	Frame	Offset	Instance
MPAM	MPAMF_BASE_ns	0x0118	MPAMCFG_CASSOC_ns

Accesses on this interface are **RW**.

Component	Frame	Offset	Instance
MPAM	MPAMF_BASE_rt	0x0118	MPAMCFG_CASSOC_rt

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

Component	Frame	Offset	Instance
MPAM	MPAMF_BASE_rl	0x0118	MPAMCFG_CASSOC_rl

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