ERRDEVAFF, Device Affinity Register

The ERRDEVAFF characteristics are:

Purpose

For a group of error records that has affinity with a single PE or a group of PEs, ERRDEVAFF is a copy of MPIDR_EL1 or part of MPIDR_EL1:

- If the group of error records has affinity with a single PE, the affinity level is 0, then ERRDEVAFF reads the same value as MPIDR_EL1, and ERRDEVAFF.F0V reads-as-one to indicate affinity level 0.
- If the group of error records has affinity with a group of PEs, the affinity level is 1, 2, or 3, then parts of ERRDEVAFF reads the same value as parts of MPIDR_EL1, and the rest of ERRDEVAFF indicates the level.

For example, if the group of PEs is a subset of the PEs at affinity level 1 then all of the following are true:

- All the PEs in the group have the same values in MPIDR_EL1.{Aff3,Aff2}, and these values are equal to ERRDEVAFF.{Aff3,Aff2}.
- ERRDEVAFF.Aff1 is nonzero and not `0x80`, and ERRDEVAFF.{Aff0,F0V} read-as-zero, to indicate at least affinity level 1. The subset of PEs at level 1 that the group of error records has affinity with is indicated by the least-significant set bit in ERRDEVAFF.Aff1. In this example, if ERRDEVAFF.Aff1[2:0] is `0b100`, then the group of error records has affinity with the up-to 8 PEs that have MPIDR_EL1.Aff1[7:3] == ERRDEVAFF.Aff1[7:3].

Depending on the implementation defined nature of the system, it might be possible that ERRDEVAFF is read before system firmware has configured the group of error records and/or the PE or group of PEs that the group of error records has affinity with. When this is the case, ERRDEVAFF reads as zero.

If RAS System Architecture v1.1 is not implemented then ERRDEVAFF can only describe a group of error records that is affine with a single PE or all the PEs at an affinity level.

Configuration

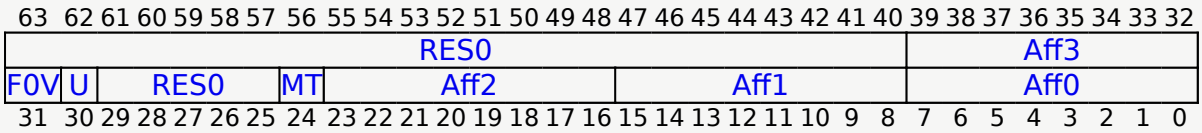
This register is present only when the group of error records has affinity with a PE or cluster of PEs. Otherwise, direct accesses to ERRDEVAFF are res0.

ERRDEVAFF is implemented only as part of a memory-mapped group of error records.

Attributes

ERRDEVAFF is a 64-bit register.

Field descriptions



Bits [63:40]

Reserved, res0.

Aff3, bits [39:32]

PE affinity level 3. The MPIDR_EL1.Aff3 field, viewed from the highest Exception level of the associated PE or PEs.

F0V, bit [31]

Indicates that the ERRDEVAFF.Aff0 field is valid.

F0V	Meaning
0b0	ERRDEVAFF.Aff0 is not valid, and the PE affinity is above level 0 or a subset of level 0.
0b1	ERRDEVAFF.Aff0 is valid, and the PE affinity is at level 0.

U, bit [30]
When ERRDEVAFF.F0V == 1:

Uniprocessor. The MPIDR_EL1.U field, viewed from the highest Exception level of the associated PE.

Otherwise:

Reserved, unknown.

Bits [29:25]

Reserved, res0.

MT, bit [24]
When ERRDEVAFF.F0V == 1:

Multithreaded. The MPIDR_EL1.MT field, viewed from the highest Exception level of the associated PE.

Otherwise:

Reserved, unknown.

Aff2, bits [23:16]
When affine with a PE or PEs at affinity level 2 or below:

PE affinity level 2. The MPIDR_EL1.Aff2 field, viewed from the highest Exception level of the associated PE or PEs.

When affine with a sub-set of PEs at affinity level 2:

PE affinity level 2. Defines part of the MPIDR_EL1.Aff2 field, viewed from the highest Exception level of the associated PEs.

Aff2	Meaning
0bxxxxxxx1	ERRDEVAFF.Aff2[7:1] is the value of MPIDR_EL1.Aff2[7:1], viewed from the highest Exception level of the associated PEs.
0bxxxxxx10	ERRDEVAFF.Aff2[7:2] is the value of MPIDR_EL1.Aff2[7:2], viewed from the highest Exception level of the associated PEs.
0bxxxxx100	ERRDEVAFF.Aff2[7:3] is the value of MPIDR_EL1.Aff2[7:3], viewed from the highest Exception level of the associated PEs.
0bxxxx1000	ERRDEVAFF.Aff2[7:4] is the value of MPIDR_EL1.Aff2[7:4], viewed from the highest Exception level of the associated PEs.

0bxxx10000	ERRDEVAFF.Aff2[7:5] is the value of MPIDR_EL1.Aff2[7:5], viewed from the highest Exception level of the associated PEs.
0bxx100000	ERRDEVAFF.Aff2[7:6] is the value of MPIDR_EL1.Aff2[7:6], viewed from the highest Exception level of the associated PEs.
0bx1000000	ERRDEVAFF.Aff2[7] is the value of MPIDR_EL1.Aff2[7], viewed from the highest Exception level of the associated PEs.

Otherwise:

PE affinity level 2. Indicates whether the PE affinity is at level 3.

Aff2	Meaning
0x80	PE affinity is at level 3.

All other values are reserved.

Aff1, bits [15:8]
When affine with a PE or PEs at affinity level 1 or below:

PE affinity level 1. The MPIDR_EL1.Aff1 field, viewed from the highest Exception level of the associated PE or PEs.

When affine with a sub-set of PEs at affinity level 1:

PE affinity level 1. Defines part of the MPIDR_EL1.Aff1 field, viewed from the highest Exception level of the associated PEs.

Aff1	Meaning
0bxxxxxxx1	ERRDEVAFF.Aff1[7:1] is the value of MPIDR_EL1.Aff1[7:1], viewed from the highest Exception level of the associated PEs.

0bxxxxxx10	ERRDEVAFF.Aff1[7:2] is the value of MPIDR_EL1.Aff1[7:2], viewed from the highest Exception level of the associated PEs.
0bxxxxx100	ERRDEVAFF.Aff1[7:3] is the value of MPIDR_EL1.Aff1[7:3], viewed from the highest Exception level of the associated PEs.
0bxxxx1000	ERRDEVAFF.Aff1[7:4] is the value of MPIDR_EL1.Aff1[7:4], viewed from the highest Exception level of the associated PEs.
0bxxx10000	ERRDEVAFF.Aff1[7:5] is the value of MPIDR_EL1.Aff1[7:5], viewed from the highest Exception level of the associated PEs.
0bxx100000	ERRDEVAFF.Aff1[7:6] is the value of MPIDR_EL1.Aff1[7:6], viewed from the highest Exception level of the associated PEs.
0bx1000000	ERRDEVAFF.Aff1[7] is the value of MPIDR_EL1.Aff1[7], viewed from the highest Exception level of the associated PEs.

Otherwise:

PE affinity level 1. Indicates whether the PE affinity is at level 2.

Aff1	Meaning
0x00	PE affinity is above level 2 or a subset of level 2.
0x80	PE affinity is at level 2.

Aff0, bits [7:0]
When affine with a PE at affinity level 0:

PE affinity level 0. The MPIDR_EL1.Aff0 field, viewed from the highest Exception level of the associated PE.

When affine with a sub-set of PEs at affinity level 0:

PE affinity level 0. Defines part of the MPIDR_EL1.Aff0 field, viewed from the highest Exception level of the associated PEs.

Aff0	Meaning
0bxxxxxxx1	ERRDEVAFF.Aff0[7:1] is the value of MPIDR_EL1.Aff0[7:1], viewed from the highest Exception level of the associated PEs.
0bxxxxxx10	ERRDEVAFF.Aff0[7:2] is the value of MPIDR_EL1.Aff0[7:2], viewed from the highest Exception level of the associated PEs.
0bxxxxx100	ERRDEVAFF.Aff0[7:3] is the value of MPIDR_EL1.Aff0[7:3], viewed from the highest Exception level of the associated PEs.
0bxxxx1000	ERRDEVAFF.Aff0[7:4] is the value of MPIDR_EL1.Aff0[7:4], viewed from the highest Exception level of the associated PEs.
0bxxx10000	ERRDEVAFF.Aff0[7:5] is the value of MPIDR_EL1.Aff0[7:5], viewed from the highest Exception level of the associated PEs.
0bxx100000	ERRDEVAFF.Aff0[7:6] is the value of MPIDR_EL1.Aff0[7:6], viewed from the highest Exception level of the associated PEs.

0bx1000000	ERRDEVAFF.Aff0[7] is the value of MPIDR_EL1.Aff0[7], viewed from the highest Exception level of the associated PEs.

Otherwise:

PE affinity level 0. Indicates whether the PE affinity is at level 1.

Aff0	Meaning
0x00	PE affinity is above level 1 or a subset of level 1.
0x80	PE affinity is at level 1.

Accessing ERRDEVAFF

ERRDEVAFF can be accessed through the memory-mapped interfaces:

Component	Offset	Instance
RAS	0xFA8	ERRDEVAFF

Accesses on this interface are **RO**.

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