GICV_AIAR, Virtual Machine Aliased Interrupt Acknowledge Register

The GICV_AIAR characteristics are:

Purpose

Provides the INTID of the signaled Group 1 virtual interrupt. A read of this register by the PE acts as an acknowledge for the interrupt.

This register corresponds to the physical CPU interface register GICC_AIAR.

Configuration

This register is present only when FEAT_GICv3_LEGACY is implemented and EL2 is implemented. Otherwise, direct accesses to GICV_AIAR are res0.

This register is available when the GIC implementation supports interrupt virtualization.

Attributes

GICV_AIAR 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																															
INTID																															

Bits [31:25]

Reserved, res0.

INTID, bits [24:0]

The INTID of the signaled interrupt.

Note

INTIDs 1020-1023 are reserved and convey additional information such as spurious interrupts.

When affinity routing is not enabled:

- Bits [23:13] are res0.
- For SGIs, bits [12:10] identify the CPU interface corresponding to the source PE. For all other interrupts these bits are res0.

The operation of this register is similar to the operation of GICV_IAR. When a vPE reads this register, the corresponding GICH_LR<n>.Group field is checked to determine whether the interrupt is in Group 0 or Group 1:

- If the interrupt is Group 0, the spurious INTID 1023 is returned and the interrupt is not acknowledged.
- If the interrupt is Group 1, the INTID is returned. The List register entry is updated to active state, and the appropriate bit in GICH_APR<n> is set to 1.

A read of this register returns the spurious INTID 1023 if any of the following are true:

- When the virtual CPU interface is enabled and GICH_HCR.En == 1:
  - There are no pending interrupts of sufficiently high priority value to be signaled to the PE.
  - The highest priority pending interrupt is in Group 0.
- Interrupt signaling by the virtual CPU interface is disabled.

Accessing GICV_AIAR

This register is used only when System register access is not enabled. When System register access is enabled:

- For AArch32 implementations, ICC_IAR1 provides equivalent functionality.
- For AArch64 implementations, ICC_IAR1_EL1 provides equivalent functionality.

This register is used for Group 1 interrupts only. GICV_IAR provides equivalent functionality for Group 0 interrupts.

When affinity routing is enabled, it is a programming error to use memory-mapped registers to access the GIC.

GICV_AIAR can be accessed through the memory-mapped interfaces:

Component	Offset	Instance
GIC Virtual CPU interface	0x0020	GICV_AIAR

This interface is accessible as follows:

- When GICD_CTLR.DS == 0, accesses to this register are **RO**.
- When an access is Secure, accesses to this register are **RO**.

- When an access is Non-secure, accesses to this register are **RO**.

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