MPAMVPM2_EL2, MPAM Virtual PARTID Mapping Register 2

The MPAMVPM2_EL2 characteristics are:

Purpose

MPAMVPM2_EL2 provides mappings from virtual PARTIDs 8 - 11 to physical PARTIDs.

MPAMIDR_EL1.VPMR_MAX field gives the index of the highest implemented MPAMVPM0_EL2 to MPAMVPM7_EL2 registers. VPMR_MAX can be as large as 7 (8 registers) or 32 virtual PARTIDs. If MPAMIDR_EL1.VPMR_MAX == 0, there is only a single MPAMVPM<n>_EL2 register, MPAMVPM0_EL2.

Virtual PARTID mapping is enabled by MPAMHCR_EL2.EL1_VPMEN for PARTIDs in MPAM1_EL1 and by MPAMHCR_EL2.EL0_VPMEN for PARTIDs in MPAM0_EL1.

A virtual-to-physical PARTID mapping entry, PhyPARTID<n>, is valid only when the MPAMVPMV_EL2.VPM_V bit in bit position n is set to 1.

Configuration

This register is present only when FEAT_MPAM is implemented, MPAMIDR_EL1.HAS_HCR == 1 and UInt(MPAMIDR_EL1.VPMR_MAX) > 1. Otherwise, direct accesses to MPAMVPM2_EL2 are undefined.

This register has no effect if EL2 is not enabled in the current Security state.

Attributes

MPAMVPM2_EL2 is a 64-bit register.

Field descriptions

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
PhyPARTID11	PhyPARTID10
PhyPARTID9	PhyPARTID8
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

PhyPARTID11, bits [63:48]

Virtual PARTID Mapping Entry for virtual PARTID 11. PhyPARTID11 gives the mapping of virtual PARTID 11 to a physical PARTID.

The reset behavior of this field is:

- On a Warm reset, this field resets to an architecturally unknown value.

PhyPARTID10, bits [47:32]

Virtual PARTID Mapping Entry for virtual PARTID 10. PhyPARTID10 gives the mapping of virtual PARTID 10 to a physical PARTID.

The reset behavior of this field is:

- On a Warm reset, this field resets to an architecturally unknown value.

PhyPARTID9, bits [31:16]

Virtual PARTID Mapping Entry for virtual PARTID 9. PhyPARTID9 gives the mapping of virtual PARTID 9 to a physical PARTID.

The reset behavior of this field is:

- On a Warm reset, this field resets to an architecturally unknown value.

PhyPARTID8, bits [15:0]

Virtual PARTID Mapping Entry for virtual PARTID 8. PhyPARTID8 gives the mapping of virtual PARTID 8 to a physical PARTID.

The reset behavior of this field is:

- On a Warm reset, this field resets to an architecturally unknown value.

Accessing MPAMVPM2_EL2

Accesses to this register use the following encodings in the System register encoding space:

```
MRS <Xt>, MPAMVPM2_EL2
```

op0	op1	CRn	CRm	op2
0b11	0b100	0b1010	0b0110	0b010

```
if PSTATE.EL == EL0 then
    UNDEFINED;
elsif PSTATE.EL == EL1 then
    if EL2Enabled() && HCR_EL2.<NV2,NV> == '11' then
        X[t, 64] = NVMem[0x950];
    elsif EL2Enabled() && HCR_EL2.NV == '1' then
        if HaveEL(EL3) && MPAM3_EL3.TRAPLOWER == '1'
then
            if Halted() && EDSCR.SDD == '1' then
                UNDEFINED;
            else
                AArch64.SystemAccessTrap(EL3, 0x18);
        else
            AArch64.SystemAccessTrap(EL2, 0x18);
    else
        UNDEFINED;
elsif PSTATE.EL == EL2 then
    if HaveEL(EL3) && MPAM3_EL3.TRAPLOWER == '1' then
        if Halted() && EDSCR.SDD == '1' then
            UNDEFINED;
        else
            AArch64.SystemAccessTrap(EL3, 0x18);
    else
        X[t, 64] = MPAMVPM2_EL2;
elsif PSTATE.EL == EL3 then
    X[t, 64] = MPAMVPM2_EL2;
```

MSR MPAMVPM2_EL2, <Xt>

op0	op1	CRn	CRm	op2
0b11	0b100	0b1010	0b0110	0b010

```
if PSTATE.EL == EL0 then
    UNDEFINED;
elsif PSTATE.EL == EL1 then
    if EL2Enabled() && HCR_EL2.<NV2,NV> == '11' then
        NVMem[0x950] = X[t, 64];
    elsif EL2Enabled() && HCR_EL2.NV == '1' then
        if HaveEL(EL3) && MPAM3_EL3.TRAPLOWER == '1'
then
            if Halted() && EDSCR.SDD == '1' then
                UNDEFINED;
            else
                AArch64.SystemAccessTrap(EL3, 0x18);
        else
            AArch64.SystemAccessTrap(EL2, 0x18);
    else
        UNDEFINED;
elsif PSTATE.EL == EL2 then
    if HaveEL(EL3) && MPAM3_EL3.TRAPLOWER == '1' then
        if Halted() && EDSCR.SDD == '1' then
            UNDEFINED;
```

```
            else
                AArch64.SystemAccessTrap(EL3, 0x18);
        else
            MPAMVPM2_EL2 = X[t, 64];
    elsif PSTATE.EL == EL3 then
        MPAMVPM2_EL2 = X[t, 64];
```

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