

MPAMVPM4_EL2, MPAM Virtual PARTID Mapping Register 4

The MPAMVPM4_EL2 characteristics are:

Purpose

MPAMVPM4_EL2 provides mappings from virtual PARTIDs 16 - 19 to physical PARTIDs.

[MPAMIDR_EL1](#).VPMR_MAX field gives the index of the highest implemented MPAMVPM<n>_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) > 3. Otherwise, direct accesses to MPAMVPM4_EL2 are undefined.

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

Attributes

MPAMVPM4_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
PhyPARTID19																PhyPARTID18															
PhyPARTID17																PhyPARTID16															
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

PhyPARTID19, bits [63:48]

Virtual PARTID Mapping Entry for virtual PARTID 19. PhyPARTID19 gives the mapping of virtual PARTID 19 to a physical PARTID.

The reset behavior of this field is:

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

PhyPARTID18, bits [47:32]

Virtual PARTID Mapping Entry for virtual PARTID 18. PhyPARTID18 gives the mapping of virtual PARTID 18 to a physical PARTID.

The reset behavior of this field is:

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

PhyPARTID17, bits [31:16]

Virtual PARTID Mapping Entry for virtual PARTID 17. PhyPARTID17 gives the mapping of virtual PARTID 17 to a physical PARTID.

The reset behavior of this field is:

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

PhyPARTID16, bits [15:0]

Virtual PARTID Mapping Entry for virtual PARTID 16. PhyPARTID16 gives the mapping of virtual PARTID 16 to a physical PARTID.

The reset behavior of this field is:

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

Accessing MPAMVPM4_EL2

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

MRS <Xt>, MPAMVPM4_EL2

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

```

if PSTATE.EL == EL0 then
    UNDEFINED;
elsif PSTATE.EL == EL1 then
    if EL2Enabled() && HCR_EL2.<NV2,NV> == '11' then
        X[t, 64] = NVMem[0x960];
    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] = MPAMVPM4_EL2;
    elsif PSTATE.EL == EL3 then
        X[t, 64] = MPAMVPM4_EL2;

```

MSR MPAMVPM4_EL2, <Xt>

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

```

if PSTATE.EL == EL0 then
    UNDEFINED;
elsif PSTATE.EL == EL1 then
    if EL2Enabled() && HCR_EL2.<NV2,NV> == '11' then
        NVMem[0x960] = 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
            MPAMVPM4_EL2 = X[t, 64];
    elsif PSTATE.EL == EL3 then
        MPAMVPM4_EL2 = X[t, 64];
```

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