PMSSCR_EL1, Performance Monitors Snapshot Status and Capture Register

The PMSSCR_EL1 characteristics are:

Purpose

Holds status information about the captured counters and provides a mechanism for software to initiate a sample.

Configuration

AArch64 System register PMSSCR_EL1 bits [63:0] are architecturally mapped to External register PMU.PMSSCR_EL1[63:0].

This register is present only when FEAT_PMUv3_SS is implemented. Otherwise, direct accesses to PMSSCR_EL1 are undefined.

Attributes

PMSSCR_EL1 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
RES0	NC
RES0	SS

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

Bits [63:33]

Reserved, res0.

NC, bit [32]

No Capture. Indicates whether the PMU counters have been captured.

NC	Meaning
0b0	PMU counters captured.
0b1	PMU counters not captured.

The reset behavior of this field is:

- On a Warm reset, this field resets to 1.

Bits [31:1]

Reserved, res0.

SS, bit [0]

Snapshot Capture and Status.

SS	Meaning
0b0	On a read, the Capture event has completed.
0b1	On a read, the Capture event has not completed. On a write, request a Capture event.

A write of 0 to this field is ignored.

It is constrained unpredictable whether a Capture event has completed if this field is modified when the Capture event is ongoing.

The reset behavior of this field is:

- On a Warm reset, this field resets to 0.

Accessing this field has the following behavior:

- When Capture events are disabled, access to this field is **RO**.
- Otherwise, access to this field is **RW**.

Accessing PMSSCR_EL1

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

MRS <Xt>, PMSSCR_EL1

op0	op1	CRn	CRm	op2
0b11	0b000	0b1001	0b1101	0b011

```
if PSTATE.EL == EL0 then
    UNDEFINED;
elsif PSTATE.EL == EL1 then
    if Halted() && HaveEL(EL3) && EDSCR.SDD == '1'
&& boolean IMPLEMENTATION_DEFINED "EL3 trap priority
when SDD == '1'" && MDCR_EL3.EnPMSS == '0' then
        UNDEFINED;
    elsif EL2Enabled() &&
```

```
IsFeatureImplemented(FEAT_FGT2) && HaveEL(EL3) &&
SCR_EL3.FGTEn2 == '0' then
        AArch64.SystemAccessTrap(EL2, 0x18);
    elsif EL2Enabled() &&
IsFeatureImplemented(FEAT_FGT2) &&
HDFGRTR2_EL2.nPMSSCR_EL1 == '0' then
        AArch64.SystemAccessTrap(EL2, 0x18);
    elsif HaveEL(EL3) && MDCR_EL3.EnPMSS == '0' then
        if Halted() && EDSCR.SDD == '1' then
            UNDEFINED;
        else
            AArch64.SystemAccessTrap(EL3, 0x18);
    else
        X[t, 64] = PMSSCR_EL1;
elsif PSTATE.EL == EL2 then
    if Halted() && HaveEL(EL3) && EDSCR.SDD == '1'
&& boolean IMPLEMENTATION_DEFINED "EL3 trap priority
when SDD == '1'" && MDCR_EL3.EnPMSS == '0' then
        UNDEFINED;
    elsif HaveEL(EL3) && MDCR_EL3.EnPMSS == '0' then
        if Halted() && EDSCR.SDD == '1' then
            UNDEFINED;
        else
            AArch64.SystemAccessTrap(EL3, 0x18);
    else
        X[t, 64] = PMSSCR_EL1;
elsif PSTATE.EL == EL3 then
    X[t, 64] = PMSSCR_EL1;
```

MSR PMSSCR_EL1, <Xt>

op0	op1	CRn	CRm	op2
0b11	0b000	0b1001	0b1101	0b011

```
if PSTATE.EL == EL0 then
    UNDEFINED;
elsif PSTATE.EL == EL1 then
    if Halted() && HaveEL(EL3) && EDSCR.SDD == '1'
&& boolean IMPLEMENTATION_DEFINED "EL3 trap priority
when SDD == '1'" && MDCR_EL3.EnPMSS == '0' then
        UNDEFINED;
    elsif EL2Enabled() &&
IsFeatureImplemented(FEAT_FGT2) && HaveEL(EL3) &&
SCR_EL3.FGTEn2 == '0' then
        AArch64.SystemAccessTrap(EL2, 0x18);
    elsif EL2Enabled() &&
IsFeatureImplemented(FEAT_FGT2) &&
HDFGWTR2_EL2.nPMSSCR_EL1 == '0' then
        AArch64.SystemAccessTrap(EL2, 0x18);
    elsif HaveEL(EL3) && MDCR_EL3.EnPMSS == '0' then
        if Halted() && EDSCR.SDD == '1' then
            UNDEFINED;
        else
```

```
            AArch64.SystemAccessTrap(EL3, 0x18);
    else
        PMSSCR_EL1 = X[t, 64];
elsif PSTATE.EL == EL2 then
    if Halted() && HaveEL(EL3) && EDSCR.SDD == '1'
&& boolean IMPLEMENTATION_DEFINED "EL3 trap priority
when SDD == '1'" && MDCR_EL3.EnPMSS == '0' then
        UNDEFINED;
    elsif HaveEL(EL3) && MDCR_EL3.EnPMSS == '0' then
        if Halted() && EDSCR.SDD == '1' then
            UNDEFINED;
        else
            AArch64.SystemAccessTrap(EL3, 0x18);
    else
        PMSSCR_EL1 = X[t, 64];
elsif PSTATE.EL == EL3 then
    PMSSCR_EL1 = X[t, 64];
```

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