SP_EL0, Stack Pointer (EL0)

The SP_EL0 characteristics are:

Purpose

Holds the stack pointer associated with EL0. At higher Exception levels, this is used as the current stack pointer when the value of SPSel.SP is 0.

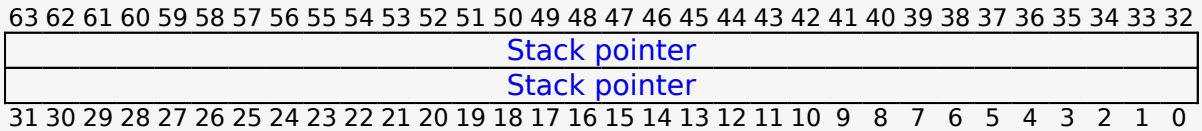
Configuration

There are no configuration notes.

Attributes

SP_EL0 is a 64-bit register.

Field descriptions



Bits [63:0]

Stack pointer.

The reset behavior of this field is:

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

Accessing SP_EL0

When the value of PSTATE.SP is 0, this register is accessible at all Exception levels as the current stack pointer.

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

MRS <Xt>, SP_EL0

op0	op1	CRn	CRm	op2
0b11	0b000	0b0100	0b0001	0b000

```
if PSTATE.EL == EL0 then
    UNDEFINED;
elsif PSTATE.EL == EL1 then
    if PSTATE.SP == '0' then
        UNDEFINED;
    else
        X[t, 64] = SP_EL0;
elsif PSTATE.EL == EL2 then
    if PSTATE.SP == '0' then
        UNDEFINED;
    else
        X[t, 64] = SP_EL0;
elsif PSTATE.EL == EL3 then
    if PSTATE.SP == '0' then
        UNDEFINED;
    else
        X[t, 64] = SP_EL0;
```

MSR SP_EL0, <Xt>

op0	op1	CRn	CRm	op2
0b11	0b000	0b0100	0b0001	0b000

```
if PSTATE.EL == EL0 then
    UNDEFINED;
elsif PSTATE.EL == EL1 then
    if PSTATE.SP == '0' then
        UNDEFINED;
    else
        SP_EL0 = X[t, 64];
elsif PSTATE.EL == EL2 then
    if PSTATE.SP == '0' then
        UNDEFINED;
    else
        SP_EL0 = X[t, 64];
elsif PSTATE.EL == EL3 then
    if PSTATE.SP == '0' then
        UNDEFINED;
    else
        SP_EL0 = X[t, 64];
```

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