CONTEXTIDR_EL2, Context ID Register (EL2)

The CONTEXTIDR_EL2 characteristics are:

Purpose

Identifies the current Process Identifier for EL2.

The value of the whole of this register is called the Context ID and is used by:

- The debug logic, for Linked and Unlinked Context ID matching.
- The trace logic, to identify the current process.

The significance of this register is for debug and trace use only.

Configuration

This register is present only when FEAT_VHE is implemented or FEAT_Debugv8p2 is implemented. Otherwise, direct accesses to CONTEXTIDR_EL2 are undefined.

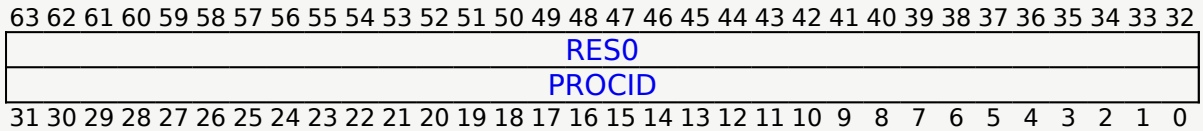
If EL2 is not implemented, this register is res0 from EL3.

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

Attributes

CONTEXTIDR_EL2 is a 64-bit register.

Field descriptions



Bits [63:32]

Reserved, res0.

PROCID, bits [31:0]

Process Identifier. This field must be programmed with a unique value that identifies the current process.

The reset behavior of this field is:

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

Accessing CONTEXTIDR_EL2

When HCR_EL2.E2H is 1, without explicit synchronization, access from EL2 using the mnemonic CONTEXTIDR_EL2 or CONTEXTIDR_EL1 are not guaranteed to be ordered with respect to accesses using the other mnemonic.

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

MRS <Xt>, CONTEXTIDR_EL2

op0	op1	CRn	CRm	op2
0b11	0b100	0b1101	0b0000	0b001

```
if PSTATE.EL == EL0 then
    UNDEFINED;
elsif PSTATE.EL == EL1 then
    if EL2Enabled() && HCR_EL2.NV == '1' then
        AArch64.SystemAccessTrap(EL2, 0x18);
    else
        UNDEFINED;
elsif PSTATE.EL == EL2 then
    X[t, 64] = CONTEXTIDR_EL2;
elsif PSTATE.EL == EL3 then
    X[t, 64] = CONTEXTIDR_EL2;
```

MSR CONTEXTIDR_EL2, <Xt>

op0	op1	CRn	CRm	op2
0b11	0b100	0b1101	0b0000	0b001

```
if PSTATE.EL == EL0 then
    UNDEFINED;
elsif PSTATE.EL == EL1 then
    if EL2Enabled() && HCR_EL2.NV == '1' then
        AArch64.SystemAccessTrap(EL2, 0x18);
    else
        UNDEFINED;
elsif PSTATE.EL == EL2 then
```

```
    CONTEXTIDR_EL2 = X[t, 64];
elsif PSTATE.EL == EL3 then
    CONTEXTIDR_EL2 = X[t, 64];
```

When FEAT_VHE is implemented

MRS <Xt>, CONTEXTIDR_EL1

op0	op1	CRn	CRm	op2
0b11	0b000	0b1101	0b0000	0b001

```
if PSTATE.EL == EL0 then
    UNDEFINED;
elsif PSTATE.EL == EL1 then
    if EL2Enabled() && HCR_EL2.TRVM == '1' then
        AArch64.SystemAccessTrap(EL2, 0x18);
    elsif EL2Enabled() &&
IsFeatureImplemented(FEAT_FGT) && (!HaveEL(EL3) ||
SCR_EL3.FGTEn == '1') && HFGRTR_EL2.CONTEXTIDR_EL1
== '1' then
        AArch64.SystemAccessTrap(EL2, 0x18);
    elsif EL2Enabled() && HCR_EL2.<NV2,NV1,NV> ==
'111' then
        X[t, 64] = NVMem[0x108];
    else
        X[t, 64] = CONTEXTIDR_EL1;
elsif PSTATE.EL == EL2 then
    if HCR_EL2.E2H == '1' then
        X[t, 64] = CONTEXTIDR_EL2;
    else
        X[t, 64] = CONTEXTIDR_EL1;
elsif PSTATE.EL == EL3 then
    X[t, 64] = CONTEXTIDR_EL1;
```

When FEAT_VHE is implemented

MSR CONTEXTIDR_EL1, <Xt>

op0	op1	CRn	CRm	op2
0b11	0b000	0b1101	0b0000	0b001

```
if PSTATE.EL == EL0 then
    UNDEFINED;
elsif PSTATE.EL == EL1 then
    if EL2Enabled() && HCR_EL2.TVM == '1' then
        AArch64.SystemAccessTrap(EL2, 0x18);
    elsif EL2Enabled() &&
```

```
IsFeatureImplemented(FEAT_FGT) && (!HaveEL(EL3) ||
SCR_EL3.FGTEn == '1') && HFGWTR_EL2.CONTEXTIDR_EL1
== '1' then
        AArch64.SystemAccessTrap(EL2, 0x18);
    elsif EL2Enabled() && HCR_EL2.<NV2,NV1,NV> ==
'111' then
        NVMem[0x108] = X[t, 64];
    else
        CONTEXTIDR_EL1 = X[t, 64];
elsif PSTATE.EL == EL2 then
    if HCR_EL2.E2H == '1' then
        CONTEXTIDR_EL2 = X[t, 64];
    else
        CONTEXTIDR_EL1 = X[t, 64];
elsif PSTATE.EL == EL3 then
    CONTEXTIDR_EL1 = X[t, 64];
```

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