OSECCR_EL1, OS Lock Exception Catch Control Register

The OSECCR_EL1 characteristics are:

Purpose

Provides a mechanism for an operating system to access the contents of EDECCR that are otherwise invisible to software, so it can save/restore the contents of EDECCR over powerdown on behalf of the external debugger.

Configuration

AArch64 System register OSECCR_EL1 bits [31:0] are architecturally mapped to AArch32 System register DBGOSECCR[31:0].

AArch64 System register OSECCR_EL1 bits [31:0] are architecturally mapped to External register EDECCR[31:0].

If OSLSR_EL1.OSLK == 0, then OSECCR_EL1 returns an unknown value on reads and ignores writes.

Attributes

OSECCR_EL1 is a 64-bit register.

Field descriptions

When OSLSR_EL1.OSLK == 1:

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																															
EDECCR																															
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 [63:32]

Reserved, res0.

EDECCR, bits [31:0]

Used for save/restore to EDECCR over powerdown.

Reads or writes to this field are indirect accesses to EDECCR.

Accessing OSECCR_EL1

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

```
MRS <Xt>, OSECCR_EL1
```

op0	op1	CRn	CRm	op2
0b10	0b000	0b0000	0b0110	0b010

```
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.TDA == '1' then
        UNDEFINED;
    elsif EL2Enabled() &&
IsFeatureImplemented(FEAT_FGT) && (!HaveEL(EL3) ||
SCR_EL3.FGTEn == '1') && HDFGRTR_EL2.OSECCR_EL1 ==
'1' then
        AArch64.SystemAccessTrap(EL2, 0x18);
    elsif EL2Enabled() && MDCR_EL2.<TDE,TDA> != '00'
then
        AArch64.SystemAccessTrap(EL2, 0x18);
    elsif HaveEL(EL3) && MDCR_EL3.TDA == '1' then
        if Halted() && EDSCR.SDD == '1' then
            UNDEFINED;
        else
            AArch64.SystemAccessTrap(EL3, 0x18);
    elsif OSLSR_EL1.OSLK == '0' then
        X[t, 64] = bits(64) UNKNOWN;
    else
        X[t, 64] = OSECCR_EL1;
elsif PSTATE.EL == EL2 then
    if Halted() && HaveEL(EL3) && EDSCR.SDD == '1'
&& boolean IMPLEMENTATION_DEFINED "EL3 trap priority
when SDD == '1'" && MDCR_EL3.TDA == '1' then
        UNDEFINED;
    elsif HaveEL(EL3) && MDCR_EL3.TDA == '1' then
        if Halted() && EDSCR.SDD == '1' then
            UNDEFINED;
        else
            AArch64.SystemAccessTrap(EL3, 0x18);
    elsif OSLSR_EL1.OSLK == '0' then
        X[t, 64] = bits(64) UNKNOWN;
    else
        X[t, 64] = OSECCR_EL1;
elsif PSTATE.EL == EL3 then
    if OSLSR_EL1.OSLK == '0' then
        X[t, 64] = bits(64) UNKNOWN;
    else
        X[t, 64] = OSECCR_EL1;
```

MSR OSECCR_EL1, <Xt>

op0	op1	CRn	CRm	op2
0b10	0b000	0b0000	0b0110	0b010

```
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.TDA == '1' then
        UNDEFINED;
    elsif EL2Enabled() &&
IsFeatureImplemented(FEAT_FGT) && (!HaveEL(EL3) ||
SCR_EL3.FGTEn == '1') && HDFGWTR_EL2.OSECCR_EL1 ==
'1' then
        AArch64.SystemAccessTrap(EL2, 0x18);
    elsif EL2Enabled() && MDCR_EL2.<TDE,TDA> != '00'
then
        AArch64.SystemAccessTrap(EL2, 0x18);
    elsif HaveEL(EL3) && MDCR_EL3.TDA == '1' then
        if Halted() && EDSCR.SDD == '1' then
            UNDEFINED;
        else
            AArch64.SystemAccessTrap(EL3, 0x18);
    elsif OSLSR_EL1.OSLK == '0' then
        return;
    else
        OSECCR_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.TDA == '1' then
        UNDEFINED;
    elsif HaveEL(EL3) && MDCR_EL3.TDA == '1' then
        if Halted() && EDSCR.SDD == '1' then
            UNDEFINED;
        else
            AArch64.SystemAccessTrap(EL3, 0x18);
    elsif OSLSR_EL1.OSLK == '0' then
        return;
    else
        OSECCR_EL1 = X[t, 64];
elsif PSTATE.EL == EL3 then
    if OSLSR_EL1.OSLK == '0' then
        return;
    else
        OSECCR_EL1 = X[t, 64];
```


28/03/2023 16:01; 72747e43966d6b97dcbd230a1b3f0421d1ea3d94