TRCCNTVR<n>, Counter Value Register <n>, n = 0 - 3

The TRCCNTVR<n> characteristics are:

Purpose

This sets or returns the value of Counter <n>.

Configuration

AArch64 System register TRCCNTVR<n> bits [31:0] are architecturally mapped to External register TRCCNTVR<n>[31:0].

This register is present only when FEAT_ETE is implemented, FEAT_TRC_SR is implemented and UInt(TRCIDR5.NUMCNTR) > n. Otherwise, direct accesses to TRCCNTVR<n> are undefined.

Attributes

TRCCNTVR<n> 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																															
RES0																VALUE															
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 [63:16]

Reserved, res0.

VALUE, bits [15:0]

Contains the count value of Counter.

The reset behavior of this field is:

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

Accessing TRCCNTVR<n>

Must be programmed if TRCRSCTLR<a>.GROUP == `0b0010` and TRCRSCTLR<a>.COUNTERS[n] == 1.

Writes are constrained unpredictable if the trace unit is not in the Idle state.

Reads from this register might return an unknown value if the trace unit is not in either of the Idle or Stable states.

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

MRS <Xt>, TRCCNTVR<m> ; Where m = 0-3

op0	op1	CRn	CRm	op2
0b10	0b001	0b0000	0b10:m[1:0]	0b101

```
integer m = UInt(CRm<1:0>);

if m >= NUM_TRACE_COUNTERS then
    UNDEFINED;
elsif 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'" && CPTR_EL3.TTA == '1' then
        UNDEFINED;
    elsif CPACR_EL1.TTA == '1' then
        AArch64.SystemAccessTrap(EL1, 0x18);
    elsif EL2Enabled() && CPTR_EL2.TTA == '1' then
        AArch64.SystemAccessTrap(EL2, 0x18);
    elsif EL2Enabled() &&
IsFeatureImplemented(FEAT_FGT) && (!HaveEL(EL3) ||
SCR_EL3.FGTEn == '1') && HDFGRTR_EL2.TRCCNTVRn ==
'1' then
        AArch64.SystemAccessTrap(EL2, 0x18);
    elsif HaveEL(EL3) && CPTR_EL3.TTA == '1' then
        if Halted() && EDSCR.SDD == '1' then
            UNDEFINED;
        else
            AArch64.SystemAccessTrap(EL3, 0x18);
    else
        X[t, 64] = TRCCNTVR[m];
elsif PSTATE.EL == EL2 then
    if Halted() && HaveEL(EL3) && EDSCR.SDD == '1'
&& boolean IMPLEMENTATION_DEFINED "EL3 trap priority
when SDD == '1'" && CPTR_EL3.TTA == '1' then
        UNDEFINED;
    elsif CPTR_EL2.TTA == '1' then
        AArch64.SystemAccessTrap(EL2, 0x18);
    elsif HaveEL(EL3) && CPTR_EL3.TTA == '1' then
        if Halted() && EDSCR.SDD == '1' then
            UNDEFINED;
        else
            AArch64.SystemAccessTrap(EL3, 0x18);
```

```
    else
        X[t, 64] = TRCCNTVR[m];
elsif PSTATE.EL == EL3 then
    if CPTR_EL3.TTA == '1' then
        AArch64.SystemAccessTrap(EL3, 0x18);
    else
        X[t, 64] = TRCCNTVR[m];
```

MSR TRCCNTVR<m>, <Xt> ; Where m = 0-3

op0	op1	CRn	CRm	op2
0b10	0b001	0b0000	0b10:m[1:0]	0b101

```
integer m = UInt(CRm<1:0>);

if m >= NUM_TRACE_COUNTERS then
    UNDEFINED;
elsif 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'" && CPTR_EL3.TTA == '1' then
        UNDEFINED;
    elsif CPACR_EL1.TTA == '1' then
        AArch64.SystemAccessTrap(EL1, 0x18);
    elsif EL2Enabled() && CPTR_EL2.TTA == '1' then
        AArch64.SystemAccessTrap(EL2, 0x18);
    elsif EL2Enabled() &&
IsFeatureImplemented(FEAT_FGT) && (!HaveEL(EL3) ||
SCR_EL3.FGTEn == '1') && HDFGWTR_EL2.TRCCNTVRn ==
'1' then
        AArch64.SystemAccessTrap(EL2, 0x18);
    elsif HaveEL(EL3) && CPTR_EL3.TTA == '1' then
        if Halted() && EDSCR.SDD == '1' then
            UNDEFINED;
        else
            AArch64.SystemAccessTrap(EL3, 0x18);
    else
        TRCCNTVR[m] = X[t, 64];
elsif PSTATE.EL == EL2 then
    if Halted() && HaveEL(EL3) && EDSCR.SDD == '1'
&& boolean IMPLEMENTATION_DEFINED "EL3 trap priority
when SDD == '1'" && CPTR_EL3.TTA == '1' then
        UNDEFINED;
    elsif CPTR_EL2.TTA == '1' then
        AArch64.SystemAccessTrap(EL2, 0x18);
    elsif HaveEL(EL3) && CPTR_EL3.TTA == '1' then
        if Halted() && EDSCR.SDD == '1' then
            UNDEFINED;
        else
            AArch64.SystemAccessTrap(EL3, 0x18);
    else
```

```
        TRCCNTVR[m] = X[t, 64];
elsif PSTATE.EL == EL3 then
    if CPTR_EL3.TTA == '1' then
        AArch64.SystemAccessTrap(EL3, 0x18);
    else
        TRCCNTVR[m] = X[t, 64];
```

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