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DCZID_EL0, Data Cache Zero ID Register

The DCZID_EL0 characteristics are:

Purpose

Indicates the block size that is written with byte values of 0 by the DC ZVA (Data Cache Zero by Address) System instruction.

If FEAT_MTE is implemented, this register also indicates the granularity at which the DC GVA and DC GZVA instructions write.

Configuration

There are no configuration notes.

Attributes

DCZID_EL0 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			DZP	BS

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 [63:5]

Reserved, res0.

DZP, bit [4]

Data Zero Prohibited. This field indicates whether use of DC ZVA instructions is permitted or prohibited.

If FEAT_MTE is implemented, this field also indicates whether use of the DC GVA and DC GZVA instructions are permitted or prohibited.

DZP	Meaning
0b0	Instructions are permitted.
0b1	Instructions are prohibited.

The value read from this field is governed by the access state and the values of the HCR_EL2.TDZ and SCTLR_EL1.DZE bits.

BS, bits [3:0]

Log_2 of the block size in words. The maximum size supported is 2KB, indicated by value `0b1001`.

If FEAT_MTE2 is implemented, the minimum size supported is 16 bytes, indicated by value `0b0010`.

Accessing DCZID_EL0

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

MRS <Xt>, DCZID_EL0

op0	op1	CRn	CRm	op2
0b11	0b011	0b0000	0b0000	0b111

```
if PSTATE.EL == EL0 then
    if EL2Enabled() && HCR_EL2.<E2H,TGE> != '11' &&
IsFeatureImplemented(FEAT_FGT) && (!HaveEL(EL3) ||
SCR_EL3.FGTEn == '1') && HFGRTR_EL2.DCZID_EL0 == '1'
then
        AArch64.SystemAccessTrap(EL2, 0x18);
    else
        X[t, 64] = DCZID_EL0;
elsif PSTATE.EL == EL1 then
    if EL2Enabled() &&
IsFeatureImplemented(FEAT_FGT) && (!HaveEL(EL3) ||
SCR_EL3.FGTEn == '1') && HFGRTR_EL2.DCZID_EL0 == '1'
then
        AArch64.SystemAccessTrap(EL2, 0x18);
    else
        X[t, 64] = DCZID_EL0;
elsif PSTATE.EL == EL2 then
    X[t, 64] = DCZID_EL0;
elsif PSTATE.EL == EL3 then
    X[t, 64] = DCZID_EL0;
```

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