DC CIGDPAPA, Clean and Invalidate of Data and Allocation Tags by PA to PoPA

The DC CIGDPAPA characteristics are:

Purpose

Clean and Invalidate data and Allocation Tags in data cache by physical address to the Point of Physical Aliasing.

Note

This instruction cleans and invalidates all copies of the Location specified in the Xt argument, irrespective of any MECID associated with the Location. Memory accesses resulting from the Clean operation use the MECID associated with the cache entry.

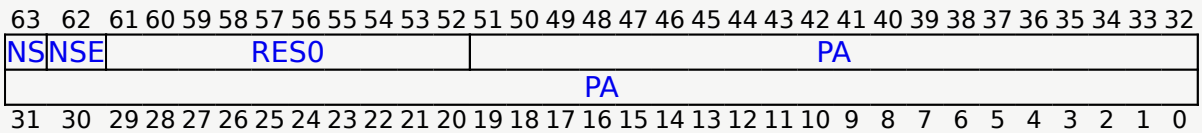
Configuration

This instruction is present only when FEAT_RME is implemented and FEAT_MTE2 is implemented. Otherwise, direct accesses to DC CIGDPAPA are undefined.

Attributes

DC CIGDPAPA is a 64-bit System instruction.

Field descriptions



NS, bit [63]

Together with the NSE field, this field specifies the target physical address space.

NSE	NS	Meaning
0b0	0b0	Secure.

NSE	NS	Meaning
0b0	0b1	Non-secure.
0b1	0b0	Root.
0b1	0b1	Realm.

If FEAT_SEL2 is not implemented, and {NSE, NS} == {0b0, 0b0}, then no cache entries are required to be cleaned or invalidated

NSE, bit [62]

Together with the NS field, this field specifies the target physical address space.

For a description of the values derived by evaluating NS and NSE together, see DC CIGDPAPA.NS.

Bits [61:52]

Reserved, res0.

PA, bits [51:0]

Physical address to use. No alignment restrictions apply to this PA.

Executing DC CIGDPAPA

- This instruction is not subject to any translation, permission checks, or granule protection checks.
- This instruction affects all caches in the Outer Shareable shareability domain.
- This instruction has the same ordering, observability, and completion behavior as VA-based cache maintenance instructions issued to the Outer Shareable shareability domain.

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

DC CIGDPAPA, <Xt>

op0	op1	CRn	CRm	op2
0b01	0b110	0b0111	0b1110	0b101

```
if PSTATE.EL == EL0 then
    UNDEFINED;
elsif PSTATE.EL == EL1 then
```

```
    UNDEFINED;
elsif PSTATE.EL == EL2 then
    UNDEFINED;
elsif PSTATE.EL == EL3 then
    DC_CIGDPAPA(X[t, 64]);
```

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