CNOT

Logically invert boolean condition in vector (predicated)

Logically invert the boolean value in each active element of the source vector, and place the results in the corresponding elements of the destination vector. Inactive elements in the destination vector register remain unmodified.
Boolean TRUE is any non-zero value in a source, and one in a result element. Boolean FALSE is always zero.

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
0	0	0	0	0	1	0	0	size		0	1	1	0	1	1	1	0	1	Pg			Zn					Zd				

CNOT <Zd>.<T>, <Pg>/M, <Zn>.<T>

```
if !HaveSVE() && !HaveSME() then UNDEFINED;
constant integer esize = 8 << UInt(size);
integer g = UInt(Pg);
integer n = UInt(Zn);
integer d = UInt(Zd);
```

Assembler Symbols

<Zd> Is the name of the destination scalable vector register, encoded in the "Zd" field.

<T> Is the size specifier, encoded in “size”:

size	<T>
00	B
01	H
10	S
11	D

<Pg> Is the name of the governing scalable predicate register P0-P7, encoded in the "Pg" field.

<Zn> Is the name of the source scalable vector register, encoded in the "Zn" field.

Operation

```
CheckSVEEnabled();
constant integer VL = CurrentVL;
constant integer PL = VL DIV 8;
constant integer elements = VL DIV esize;
bits(PL) mask = P[g, PL];
bits(VL) operand = if AnyActiveElement(mask, esize) then Z[n, VL] else
```

```
bits(VL) result = Z[d, VL];

for e = 0 to elements-1
    if ActivePredicateElement(mask, e, esize) then
        bits(esize) element = Elem[operand, e, esize];
        Elem[result, e, esize] = ZeroExtend(IsZeroBit(element), esize);

Z[d, VL] = result;
```

Operational information

If FEAT_SVE2 is implemented or FEAT_SME is implemented, then if PSTATE.DIT is 1:

- The execution time of this instruction is independent of:
  - The values of the data supplied in any of its operand registers when its governing predicate register contains the same value for each execution.
  - The values of the NZCV flags.
- The response of this instruction to asynchronous exceptions does not vary based on:
  - The values of the data supplied in any of its operand registers when its governing predicate register contains the same value for each execution.
  - The values of the NZCV flags.

This instruction might be immediately preceded in program order by a `MOVPRFX` instruction. The `MOVPRFX` instruction must conform to all of the following requirements, otherwise the behavior of the `MOVPRFX` and this instruction is unpredictable:

- The `MOVPRFX` instruction must be unpredicated, or be predicated using the same governing predicate register and source element size as this instruction.
- The `MOVPRFX` instruction must specify the same destination register as this instruction.
- The destination register must not refer to architectural register state referenced by any other source operand register of this instruction.

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