SEL (vectors)

Conditionally select elements from two vectors

Select elements from the first source vector where the corresponding vector select predicate element is true, and from the second source vector where the predicate element is false, placing them in the corresponding elements of the destination vector.

This instruction is used by the alias MOV (vector, predicated).

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	1	size	1	Zm	1	1	Pv	Zn	Zd

```
SEL <Zd>.<T>, <Pv>, <Zn>.<T>, <Zm>.<T>
```

```
if !HaveSVE() && !HaveSME() then UNDEFINED;
constant integer esize = 8 << UInt(size);
integer v = UInt(Pv);
integer n = UInt(Zn);
integer m = UInt(Zm);
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

<Pv> Is the name of the vector select predicate register, encoded in the "Pv" field.

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

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

Alias Conditions

Alias	Is preferred when
MOV (vector, predicated)	`Zd == Zm`

Operation

```
CheckSVEEnabled();
constant integer VL = CurrentVL;
constant integer PL = VL DIV 8;
constant integer elements = VL DIV esize;
bits(PL) mask = P[v, PL];
bits(VL) operand1 = if AnyActiveElement(mask, esize) then Z[n, VL] else
bits(VL) operand2 = if AnyActiveElement(NOT(mask), esize) then Z[m, VL]
bits(VL) result;

for e = 0 to elements-1
    if ActivePredicateElement(mask, e, esize) then
        Elem[result, e, esize] = Elem[operand1, e, esize];
    else
        Elem[result, e, esize] = Elem[operand2, e, 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 registers.
    - 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 registers.
    - The values of the NZCV flags.

Internal version only: isa v33.64, AdvSIMD v29.12, pseudocode no_diffs_2023_09_RC2, sve v2023-06_rel ; Build timestamp: 2023-09-18T17:56