

FMAXNM (multiple and single vector)

Multi-vector floating-point maximum number by vector

Determine the maximum number value of floating-point elements of the second source vector and the corresponding floating-point elements of the two or four first source vectors and destructively place the results in the corresponding elements of the two or four first source vectors.

Regardless of the value of $FPCR.AH$, the behavior is as follows:

- Negative zero compares less than positive zero.
- If one element is numeric and the other is a quiet NaN, the result is the numeric value.
- When FPCR.DN is 0, if either element is a signaling NaN or if both elements are NaNs, the result is a quiet NaN.
- When FPCR.DN is 1, if either element is a signaling NaN or if both elements are NaNs, the result is Default NaN.

This instruction follows SME2 floating-point numerical behaviors corresponding to instructions that place their results in one or more SVE Z vectors.

This instruction is unpredicated.

It has encodings from 2 classes: **Two registers** and **Four registers**

Two registers (FEAT SME2)

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
1	1	0	0	0	0	0	1	!= 00	1	0	Zm	1	0	1	0	0	0	0	0	0	0	1	0	0	1	Zdn	0				
size																															

FMAXNM { <Zdn1>.<T>-<Zdn2>.<T> }, { <Zdn1>.<T>-<Zdn2>.<T> }, <Zm>.<T>

```
if !HaveSME2() then UNDEFINED;
constant integer esize = 8 << UInt(size);
integer dn = UInt(Zdn:'0');
integer m = UInt('0':Zm);
constant integer nreg = 2;
```

Four registers (FEAT SME2)

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
1	1	0	0	0	0	0	1	!= 00	1	0	Zm	1	0	1	0	1	0	0	1	0	0	0	1	Zdn	0	0					
size																															

```
FMAXNM { <Zdn1>.<T>-<Zdn4>.<T> }, { <Zdn1>.<T>-<Zdn4>.<T> }, <Zm>.<T>
```

```
if !HaveSME2() then UNDEFINED;
constant integer esize = 8 << UInt(size);
integer dn = UInt(Zdn:'00');
integer m = UInt('0':Zm);
constant integer nreg = 4;
```

Assembler Symbols

<Zdn1> For the two registers variant: is the name of the first scalable vector register of a multi-vector sequence, encoded as "Zdn" times 2.

For the four registers variant: is the name of the first scalable vector register of a multi-vector sequence, encoded as "Zdn" times 4.

<T> Is the size specifier, encoded in "size":

size	<T>
01	H
10	S
11	D

<Zdn4> Is the name of the fourth scalable vector register of a multi-vector sequence, encoded as "Zdn" times 4 plus 3.

<Zdn2> Is the name of the second scalable vector register of a multi-vector sequence, encoded as "Zdn" times 2 plus 1.

<Zm> Is the name of the second source scalable vector register Z0-Z15, encoded in the "Zm" field.

Operation

```
CheckStreamingSVEEnabled();
constant integer VL = CurrentVL;
constant integer elements = VL DIV esize;
array [0..3] of bits(VL) results;

for r = 0 to nreg-1
    bits(VL) operand1 = Z[dn+r, VL];
    bits(VL) operand2 = Z[m, VL];
    for e = 0 to elements-1
        bits(esome) element1 = Elem[operand1, e, esize];
        bits(esome) element2 = Elem[operand2, e, esize];
        Elem[results[r], e, esize] = FPMaxNum(element1, element2, FPCR[

for r = 0 to nreg-1
    Z[dn+r, VL] = results[r];
```

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Internal version only: isa v33.64, AdvSIMD v29.12, pseudocode
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