BFCLAMP

BFloat16 floating-point clamp to minimum/maximum number

Clamp each BFloat16 element in the destination vector to between the BFloat16 minimum value in the corresponding element of the first source vector and the BFloat16 maximum value in the corresponding element of the second source vector and destructively place the clamped results in the corresponding elements of the destination vector.

Regardless of the value of FPCR.AH, the behavior is as follows for each mininum number and maximum number operation:

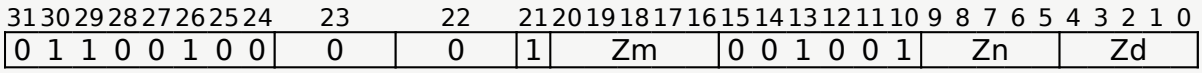
- Negative zero compares less than positive zero.
- If one value is numeric and the other is a quiet NaN, the result is the numeric value.
- When FPCR.DN is 0, if either value is a signaling NaN or if both values are NaNs, the result is a quiet NaN.
- When FPCR.DN is 1, if either value is a signaling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

This instruction follows SVE2.1 non-widening BFloat16 numerical behaviors.

This instruction is unpredicated.

ID_AA64ZFR0_EL1.B16B16 indicates whether this instruction is implemented.

SVE2
(FEAT_SVE_B16B16)




```
BFCLAMP <Zd>.H, <Zn>.H, <Zm>.H

if (!HaveSVE2() && !HaveSME2()) || !IsFeatureImplemented(FEAT_SVE_B16B1
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.
<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.

Operation

```
CheckSVEEnabled();
constant integer VL = CurrentVL;
constant integer PL = VL DIV 8;
constant integer elements = VL DIV 16;
bits(VL) result;
bits(VL) operand1 = Z[n, VL];
bits(VL) operand2 = Z[m, VL];
bits(VL) operand3 = Z[d, VL];

for e = 0 to elements-1
    bits(16) element1 = Elem[operand1, e, 16];
    bits(16) element2 = Elem[operand2, e, 16];
    bits(16) element3 = Elem[operand3, e, 16];
    Elem[result, e, 16] = BFMinNum(BFMaxNum(element1, element3, FPCR[]),
Z[d, VL] = result;
```

Operational information

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.
- 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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