FDOT (indexed)

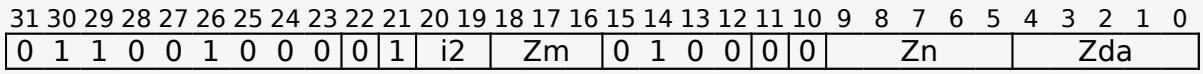
Half-precision floating-point indexed dot product

This instruction computes the fused sum-of-products of a pair of half-precision floating-point values held in each 32-bit element of the first source vector and a pair of half-precision floating-point values in an indexed 32-bit element of the second source vector, without intermediate rounding, and then destructively adds the single-precision sum-of-products to the corresponding single-precision element of the destination vector.

The half-precision floating-point pairs within the second source vector are specified using an immediate index which selects the same pair position within each 128-bit vector segment. The index range is from 0 to 3.

This instruction is unpredicated.

SVE2
(FEAT_SVE2p1)




```
FDOT <Zda>.S, <Zn>.H, <Zm>.H[<imm>]
```

```
if !HaveSME2() && !HaveSVE2p1() then UNDEFINED;
integer n = UInt(Zn);
integer m = UInt(Zm);
integer da = UInt(Zda);
integer index = UInt(i2);
```

Assembler Symbols

<Zda>	Is the name of the third source and destination scalable vector register, encoded in the "Zda" 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 Z0-Z7, encoded in the "Zm" field.
<imm>	Is the immediate index of a group of two 16-bit elements within each 128-bit vector segment, in the range 0 to 3, encoded in the "i2" field.

Operation

```
CheckSVEEnabled();
constant integer VL = CurrentVL;
constant integer PL = VL DIV 8;
constant integer elements = VL DIV 32;
```

```
constant integer eltspersegment = 128 DIV 32;
bits(VL) operand1 = Z[n, VL];
bits(VL) operand2 = Z[m, VL];
bits(VL) operand3 = Z[da, VL];
bits(VL) result;

for e = 0 to elements-1
    integer segmentbase = e - (e MOD eltspersegment);
    integer s = segmentbase + index;
    bits(16) elt1_a = Elem[operand1, 2 * e + 0, 16];
    bits(16) elt1_b = Elem[operand1, 2 * e + 1, 16];
    bits(16) elt2_a = Elem[operand2, 2 * s + 0, 16];
    bits(16) elt2_b = Elem[operand2, 2 * s + 1, 16];
    bits(32) sum = Elem[operand3, e, 32];

    sum = FPDotAdd(sum, elt1_a, elt1_b, elt2_a, elt2_b, FPCR[]);
    Elem[result, e, 32] = sum;

Z[da, 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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