

## SDOT (2-way, vectors)

Signed integer dot product

The signed integer dot product instruction computes the dot product of a group of two signed 16-bit integer values held in each 32-bit element of the first source vector multiplied by a group of two signed 16-bit integer values in the corresponding 32-bit element of the second source vector, and then destructively adds the widened dot product to the corresponding 32-bit element of the destination vector.

This instruction is unpredicated.

### SVE2

(FEAT\_SVE2p1)

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	1	0	0	0	1	0	0	0	0	0	Zm			1			1	0	0	1	0	Zn			Zda												
																						U															

**SDOT** <Zda>.S, <Zn>.H, <Zm>.H

```
if !HaveSME2() && !HaveSVE2p1() then UNDEFINED;
constant integer esize = 32;
integer n = UInt(Zn);
integer m = UInt(Zm);
integer da = UInt(Zda);
```

### 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, encoded in the "Zm" field.

### Operation

```
CheckSVEEnabled();
constant integer VL = CurrentVL;
constant integer PL = VL DIV 8;
constant integer elements = VL DIV esize;
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
    bits(esize) res = Elem[operand3, e, esize];
```

```

    for i = 0 to 1
        integer element1 = SInt(Elem[operand1, 2 * e + i, esize DIV 2])
        integer element2 = SInt(Elem[operand2, 2 * e + i, esize DIV 2])
        res = res + element1 * element2;
    Elem[result, e, esize] = res;

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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