

SQDECP (scalar)

Signed saturating decrement scalar by count of true predicate elements

Counts the number of true elements in the source predicate and then uses the result to decrement the scalar destination. The result is saturated to the source general-purpose register's signed integer range. A 32-bit saturated result is then sign-extended to 64 bits.

It has encodings from 2 classes: [32-bit](#) and [64-bit](#)

32-bit

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	1	0	0	1	0	1	size	1	0	1	0	1	0	1	0	0	0	1	0	0	Pm	Rdn								
D U										sf																					

SQDECP <Xdn>, <Pm>.<T>, <Wdn>

```
if !HaveSVE() && !HaveSME() then UNDEFINED;
constant integer esize = 8 << UInt(size);
integer m = UInt(Pm);
integer dn = UInt(Rdn);
boolean unsigned = FALSE;
constant integer ssize = 32;
```

64-bit

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	1	0	0	1	0	1	size	1	0	1	0	1	0	1	0	0	0	1	1	0	Pm				Rdn					
D U										sf																					

SQDECP <Xdn>, <Pm>.<T>

```
if !HaveSVE() && !HaveSME() then UNDEFINED;
constant integer esize = 8 << UInt(size);
integer m = UInt(Pm);
integer dn = UInt(Rdn);
boolean unsigned = FALSE;
constant integer ssize = 64;
```

Assembler Symbols

- <Xdn> Is the 64-bit name of the source and destination general-purpose register, encoded in the "Rdn" field.
- <Pm> Is the name of the source scalable predicate register, encoded in the "Pm" field.

<T>

Is the size specifier, encoded in "size":

size	<T>
00	B
01	H
10	S
11	D

<Wdn>

Is the 32-bit name of the source and destination general-purpose register, encoded in the "Rdn" field.

Operation

```
CheckSVEEnabled();
constant integer VL = CurrentVL;
constant integer PL = VL DIV 8;
constant integer elements = VL DIV esize;
bits(ssize) operand1 = X[dn, ssize];
bits(PL) operand2 = P[m, PL];
bits(ssize) result;
integer count = 0;

for e = 0 to elements-1
    if ActivePredicateElement(operand2, e, esize) then
        count = count + 1;

integer element = Int(operand1, unsigned);
(result, -) = SatQ(element - count, ssize, unsigned);
X[dn, 64] = Extend(result, 64, unsigned);
```

Operational information

If FEAT_SME is implemented and the PE is in Streaming SVE mode, then any subsequent instruction which is dependent on the general-purpose register written by this instruction might be significantly delayed.

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