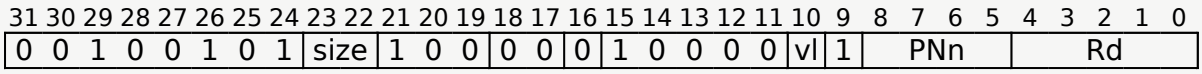
CNTP (predicate as counter)

Set scalar to count from predicate-as-counter

Counts the number of true elements in the source predicate and places the scalar result in the destination general-purpose register.

SVE2
(FEAT_SVE2p1)




```
CNTP <Xd>, <PNn>.<T>, <vl>
```

```
if !HaveSME2() && !HaveSVE2p1() then UNDEFINED;
constant integer esize = 8 << UInt(size);
integer n = UInt(PNn);
integer d = UInt(Rd);
constant integer width = 2 << UInt(vl);
```

Assembler Symbols

<Xd> Is the 64-bit name of the destination general-purpose register, encoded in the "Rd" field.

<PNn> Is the name of the first source scalable predicate register, with predicate-as-counter encoding, encoded in the "PNn" field.

<T> Is the size specifier, encoded in “size”:

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

<vl> Is the vl specifier, encoded in “vl”:

vl	<vl>
0	VLx2
1	VLx4

Operation

```
if HaveSVE2p1() then CheckSVEEnabled(); else CheckStreamingSVEEnabled();
constant integer VL = CurrentVL;
constant integer PL = VL DIV 8;
constant integer elements = VL DIV esize;
bits(PL) pred = P[n, PL];
bits(PL*4) mask = CounterToPredicate(pred<15:0>, PL*4);
bits(64) sum = Zeros(64);
constant integer limit = elements * width;

for e = 0 to limit-1
    if ActivePredicateElement(mask, e, esize) then
        sum = sum + 1;
X[d, 64] = sum;
```

Operational information

If PSTATE.DIT is 1:

- The execution time of this instruction is independent of:
  - The values of the data supplied in any of its registers.
  - The values of the NZCV flags.
- The response of this instruction to asynchronous exceptions does not vary based on:
  - The values of the data supplied in any of its registers.
  - The values of the NZCV flags.

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