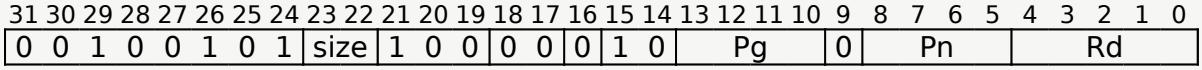
## CNTP (predicate)

Set scalar to count of true predicate elements

Counts the number of active and true elements in the source predicate and places the scalar result in the destination general-purpose register. Inactive predicate elements are not counted.




```
CNTP <Xd>, <Pg>, <Pn>.<T>
```

```
if !HaveSVE() && !HaveSME() then UNDEFINED;
constant integer esize = 8 << UInt(size);
integer g = UInt(Pg);
integer n = UInt(Pn);
integer d = UInt(Rd);
```

### Assembler Symbols

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

<Pg> Is the name of the governing scalable predicate register, encoded in the "Pg" field.

<Pn> Is the name of the source scalable predicate register, encoded in the "Pn" field.

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

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

### Operation

```
CheckSVEEnabled();
constant integer VL = CurrentVL;
constant integer PL = VL DIV 8;
constant integer elements = VL DIV esize;
bits(PL) mask = P[g, PL];
bits(PL) operand = P[n, PL];
bits(64) sum = Zeros(64);

for e = 0 to elements-1
    if ActivePredicateElement(mask, e, esize) && ActivePredicateElement
```

```
        sum = sum + 1;
X[d, 64] = sum;
```

**Operational information**

If FEAT_SVE2 is implemented or FEAT_SME is implemented, then if PSTATE.DIT is 1:

- The execution time of this instruction is independent of:
  - The values of the data supplied in any of its operand registers when its governing predicate register contains the same value for each execution.
  - 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 operand registers when its governing predicate register contains the same value for each execution.
  - The values of the NZCV flags.

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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