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Extract Narrow. This instruction reads each vector element from the source SIMD&FP register, narrows each value to half the original width, places the result into a vector, and writes the vector to the lower or upper half of the destination SIMD&FP register. The destination vector elements are half as long as the source vector elements.

The XTN instruction writes the vector to the lower half of the destination register and clears the upper half, while the XTN2 instruction writes the vector to the upper half of the destination register without affecting the other bits of the register.

Depending on the settings in the *CPACR_EL1*, *CPTR_EL2*, and *CPTR_EL3* registers, and the current Security state and Exception level, an attempt to execute the instruction might be trapped.

```
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 0 0 1 1 1 1 0 size 1 0 0 0 0 1 0 1 0 1 0 Rn Rd
```

```
XTN{2} < Vd > . < Tb > , < Vn > . < Ta >
```

```
integer d = UInt(Rd);
integer n = UInt(Rn);

if size == '11' then UNDEFINED;
constant integer esize = 8 << UInt(size);
constant integer datasize = 64;
integer part = UInt(Q);
integer elements = datasize DIV esize;</pre>
```

Assembler Symbols

2

Is the second and upper half specifier. If present it causes the operation to be performed on the upper 64 bits of the registers holding the narrower elements, and is encoded in "Q":

Q	2
0	[absent]
1	[present]

<Vd>

Is the name of the SIMD&FP destination register, encoded in the "Rd" field.

<Tb>

Is an arrangement specifier, encoded in "size:Q":

size	Q	<tb></tb>
00	0	8B
00	1	16B
01	0	4H
01	1	8H
10	0	2S
10	1	4S
11	X	RESERVED

<Vn>

Is the name of the SIMD&FP source register, encoded in the "Rn" field.

<Ta>

Is an arrangement specifier, encoded in "size":

size	<ta></ta>
0.0	8H
01	4S
10	2D
11	RESERVED

Operation

```
CheckFPAdvSIMDEnabled64();
bits(2*datasize) operand = V[n, 2*datasize];
bits(datasize) result;
bits(2*esize) element;

for e = 0 to elements-1
    element = Elem[operand, e, 2*esize];
    Elem[result, e, esize] = element<esize-1:0>;
Vpart[d, part, datasize] = result;
```

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.

 $Internal\ version\ only: is a\ v33.64,\ AdvSIMD\ v29.12,\ pseudocode\ no_diffs_2023_09_RC2,\ sve\ v2023-06_rel\ ;\ Build\ timestamp:\ 2023-09-18T17:56$

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