

# decode\_engine\_2

state machine 'sm'

State machine maintains 'is\_last' and 'is\_neighbor'. Detects end-of-sequence. Maintains a pointer (sreg\_ptr) that is the current decoding point. The 'sreg' is initially loaded with first word of stream in [188:126], second word in [125:64] and third in [63:0]. Chip ID and tags are decoded. Init ptr\_sreg = 188.

A decoding event consumes sreg bits (for hitmap, address or ToT bits. The ptr\_sreg is decreased by the number of bits used. While waiting for hitmap decoding, if ptr\_sreg is < 126 the the lower two words of the sreg are shifted 'up' and a new word is loaded into the third (lower) sreg word. This can be done twice while decoding the hitmap.

busy  
ready  
errors

reg\_en\_chip\_id  
reg\_en\_encode  
reg\_en\_tot  
reg\_en\_eos

dout\_chipid

dout\_tag

dout\_dv

sm\_rd\_fifo

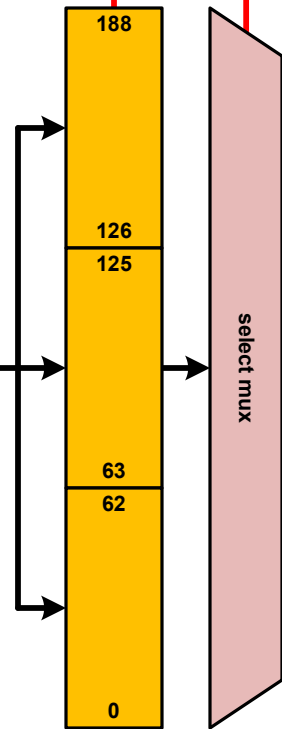
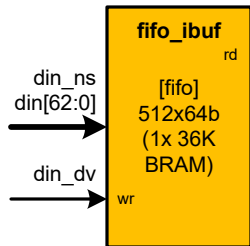
fifo\_ibuf\_dout[63]  
'ns'

sreg  
writes

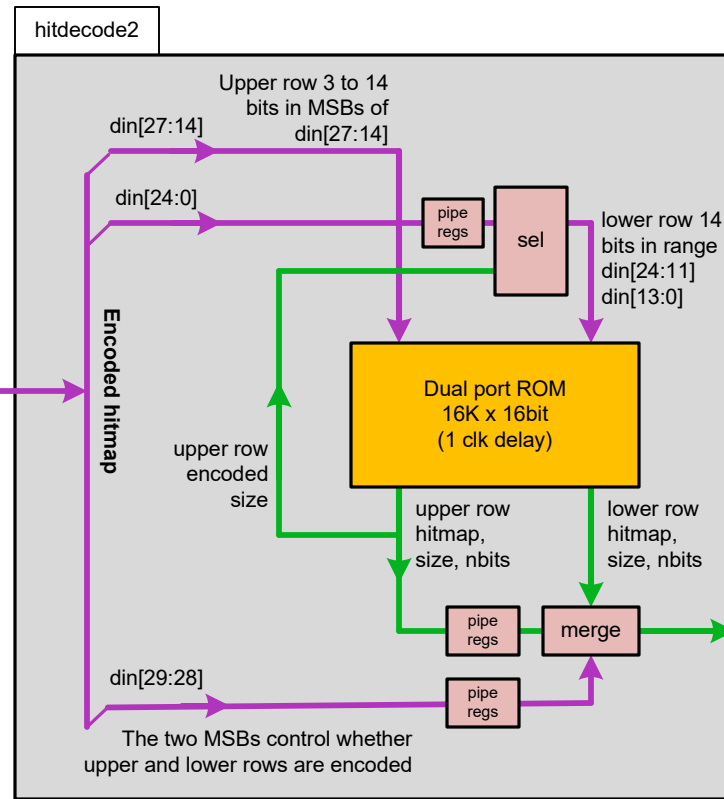
ptr\_sreg

'Encoded hitmap size'  
used to update ptr\_sreg.

'Number of bits set' used  
to select ToT bits from  
sreg and update ptr\_sreg



'sreg' holds three  
63bit words of  
stream data.



hitdecode2 pipeline delay = 5

Decoded hitmap[15:0]  
and number of bits set  
(1-16) and length of  
encoded hitmap (4 to 30)

dout\_hitmap

reg\_tot

dout\_tot

reg\_ccol

dout\_ccol

reg\_grow

dout\_grow