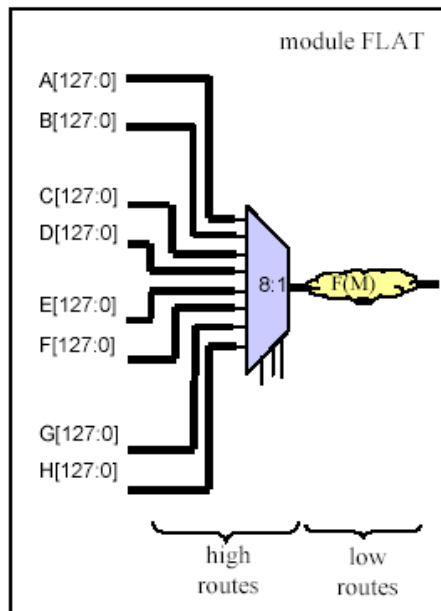


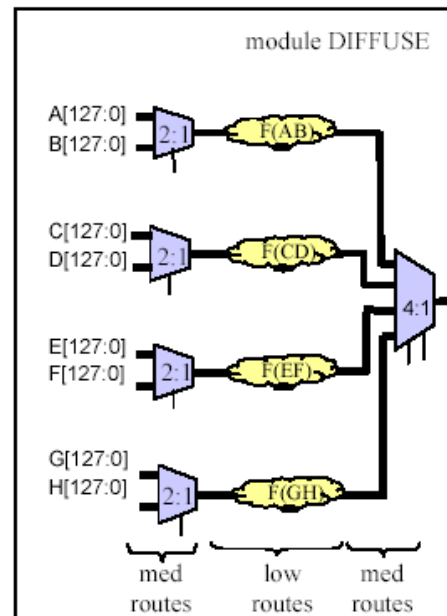
Dealing with design Hot Spots - II

The second solution assumes that the large mux is part of a flattened hierarchy (i.e. no hierarchy). Here overcoming cohesion effects within the physical placement so that the RTL solution actually improves the routability is based on the belief that the hot spot can be diffused by mixing the high density mux logic with the surrounding lower density combinational logic.

Hot Spot - Flat Centralized Mux



Solution - Flat Diffused Mux



Hot Spot - Flat Centralized Mux

```

module FLAT(...
function [127:0] F (input reg [127:0] data);
...
reg [127:0] M,OUT;
...
always@(A or B or C or D or E or F or G or H or SEL)
begin
case (SEL)
3'b000 : M = A;
3'b001 : M = B;
3'b010 : M = C;
3'b011 : M = D;
3'b100 : M = E;
3'b101 : M = F;
3'b110 : M = G;
3'b111 : M = H;
endcase
OUT = F(M);
endmodule

```

Solution - Flat Diffused Mux

```

module DIFFUSE(...
function [127:0] F (input reg [127:0] data);
...
reg [127:0] Q1,Q2,Q3,Q4,OUT;
...
always@(A or B or C or D or E or F or G or H or S0)
begin
if (S[0]) Q1 = B; else Q1 = A;
if (S[0]) Q2 = D; else Q2 = C;
if (S[0]) Q3 = F; else Q3 = E;
if (S[0]) Q4 = H; else Q4 = G;
end
always@(Z1 or Z2 or Z3 or Z4 or S12)
case (S[2:1])
2'b00 : OUT = F(Q1);
2'b01 : OUT = F(Q2);
2'b10 : OUT = F(Q3);
2'b11 : OUT = F(Q4);
endcase
endmodule

```