

## TSIN02 Internetworking

### Exercise class 5 solutions

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Exercise 1:

a)  $m=3$ .

b)  $r=500$ .

c)  $m = 3 \geq 2n - 1 = 2 \cdot 2 - 1 = 3$ , so the network is non-blocking.

d) We want to maintain the non-blocking property in (c). At the same time, we want to reduce the number of switch connections of the 500 x 500-middle switches. One choice is a  $(n, m, r) = (2, 3, 250)$ -Clos network.

Exercise 2: See the example in lecture 7.

Exercise 3: You need 2 input switches of size 4 x 4, 4 middle switches of size 2 x 2, and 2 output switches of size 4 x 4.

Exercise 4:

a) No, because the two available switch sizes do not fulfill the strict-sense non-blocking condition, i.e.,  $m \geq 2n - 1$ .

b) The re-arrangeably non-blocking condition ( $m \geq n$ ) is fulfilled by the two available switch sizes.

c) You need 3 input switches of size 2 x 2, 2 middle switches of size 3 x 3, and 3 output switches of size 2 x 2. The total cost of the network will be 1500 SEK.