University of the Saarland
Department 6.2 - Informatik
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Computer Architecture III - WS 03

(due: 01/16/2004)

Excercise 1: (Congestion) **(5 points)**

Choose destinations randomly. Let $\alpha > 0$. Show

$$Prob(cong \leq O(\alpha p) + o(\alpha log n)) \geq 1 - N^{-\alpha}.$$

Hint: in the proof of theorem 1 set $r = 2ep\alpha$ respectively $r = \frac{2e\alpha logN}{log\frac{logN}{p}}$.

Excercise 2: (Random Key Protocol) **(8 points)**

Choose destinations and keys randomly. Let $\alpha > 0$. Show

$$Prob(time \leq logN + o(logN) + O(p)) \geq 1 - N^{-\alpha}.$$

Hint: use exercise 1; in the proof of theorem 2 substitute $s = \alpha s'$ and $K = \alpha K'$.