

Search under peer failures

- Choosing $r=2\log(N)$ suffices to maintain *lookup correctness* w.h.p.(i.e., ring connected)
 - Say 50% of nodes fail
 - $\Pr(\text{at given node, at least one successor alive})=$

$$1 - \left(\frac{1}{2}\right)^{2\log N} = 1 - \frac{1}{N^2}$$

- $\Pr(\text{above is true at all alive nodes})=$

$$\left(1 - \frac{1}{N^2}\right)^{N/2} = e^{-\frac{1}{2N}} \approx 1$$