

Exercise for the lecture
Distributed Storage and Computer Forensic
Winter 2011/12
Sheet 10

EXERCISE 10:

Consider a network of computers using a Reed-Solomon code where 16 blocks are re-encoded into 32 code blocks on a file to secure it against failure. Each computer holds exactly one fragment of the file. The independent annual failure probability of each computer is p . Assume that the replacement of all lost hosts are only done on new years eve.

1. Give a formula for the survival of this system for x years with n computers.
2. Simulate the survival time for at most 1000 years, for 3200 hosts and $p = 0.99$ as well as $p = 0.98$. Provide min/average/max survival years over the course of 1000 experiments.
3. Change the simulation to be unable to regain code blocks once they are lost. Instead of replacing hosts of a lost codeblock on new years eve, distribute these hosts evenly among the rest of the code blocks. What min/average/max survival years do you get now?