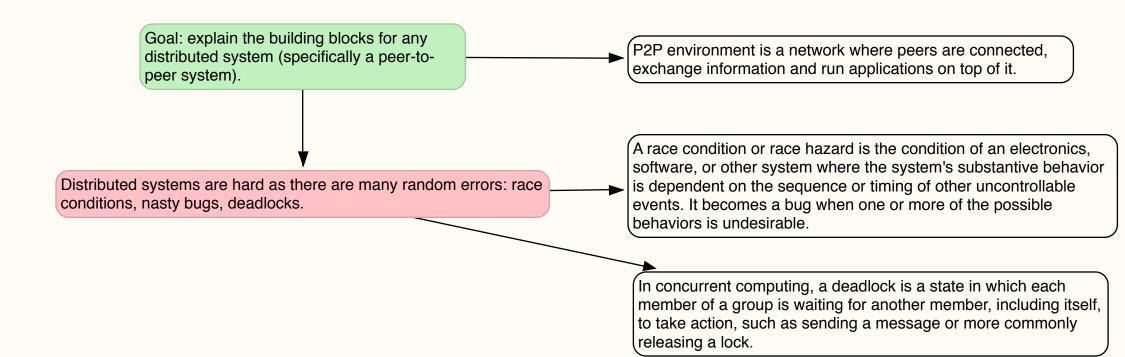
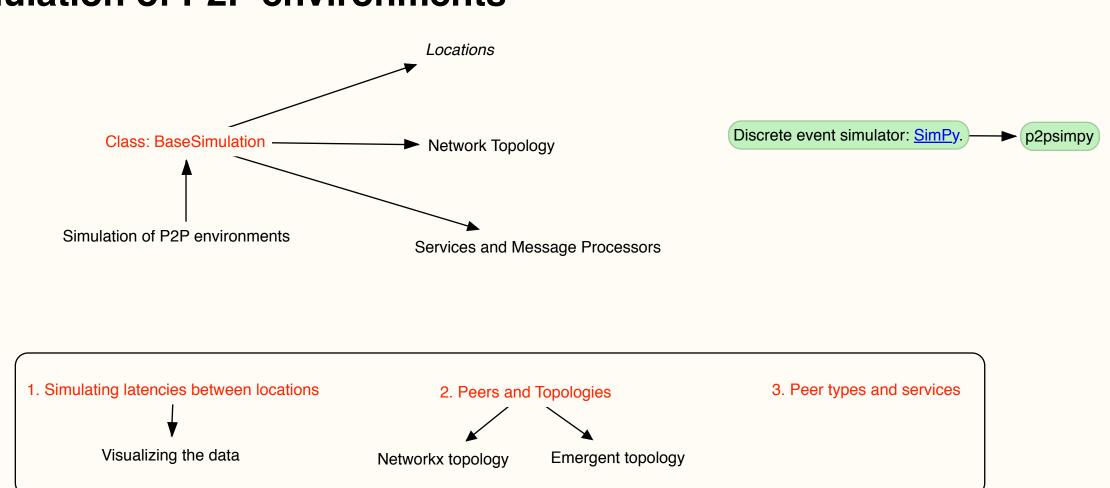
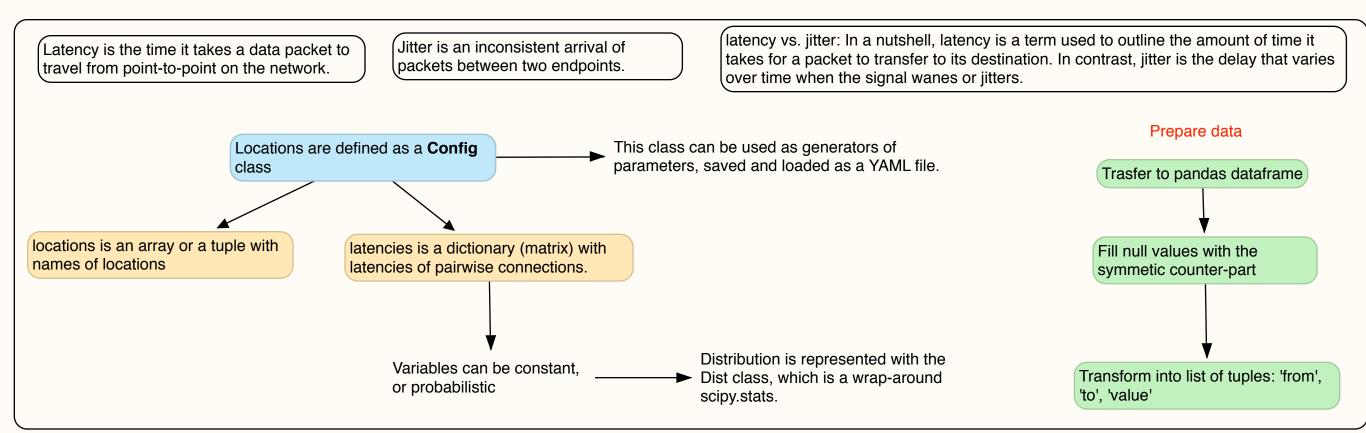
1. Introduction to Distributed Systems



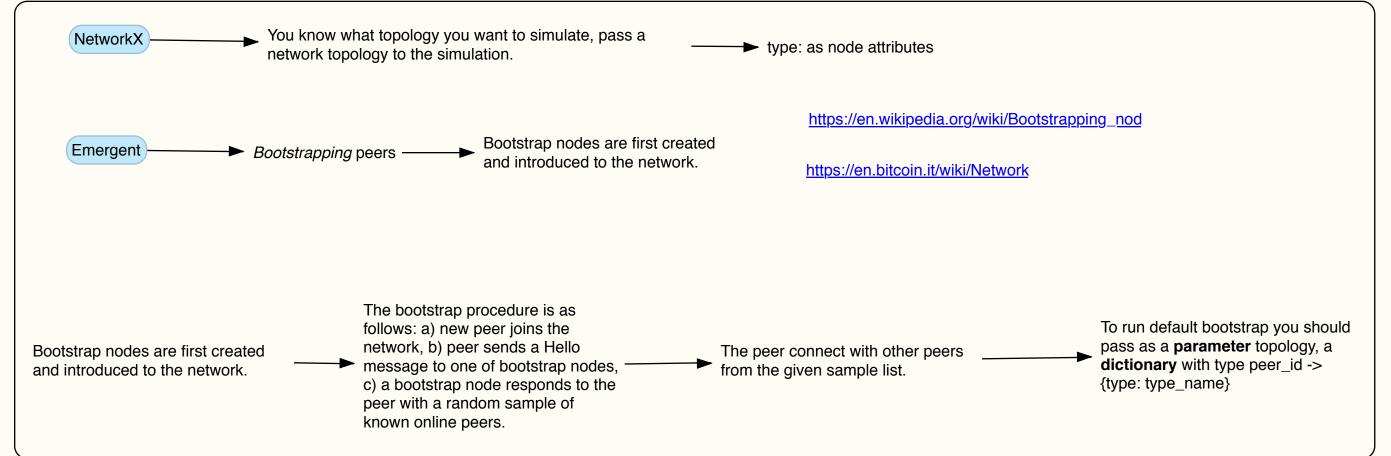
Simulation of P2P environments



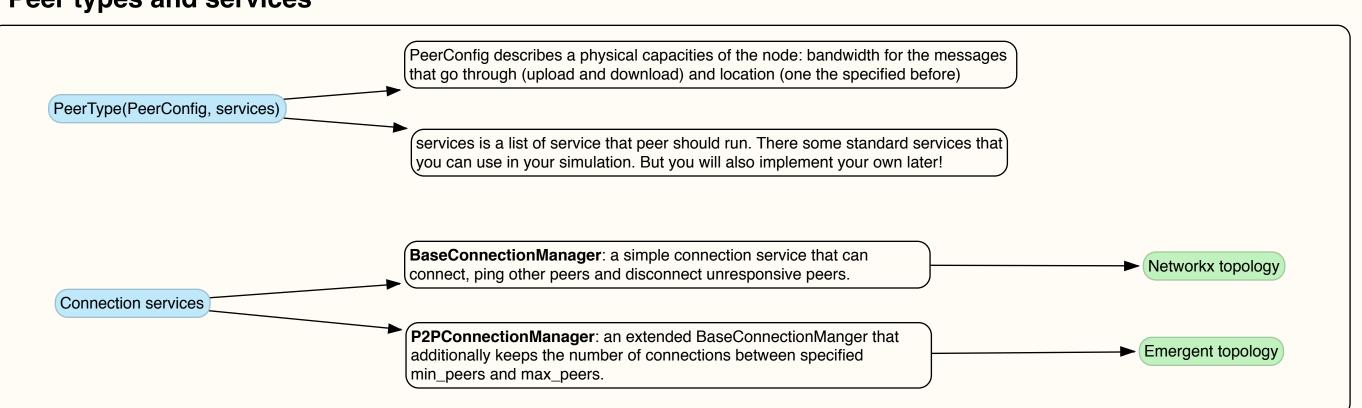
Simulating latencies between locations



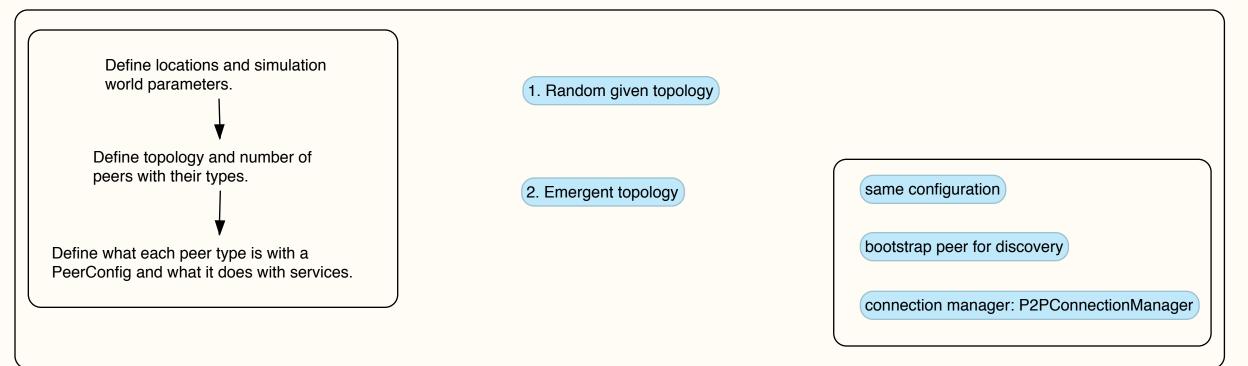
Peers and Topologies



Peer types and services

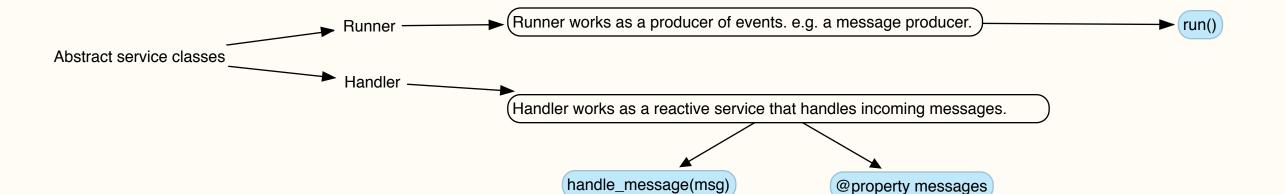


Putting it all together



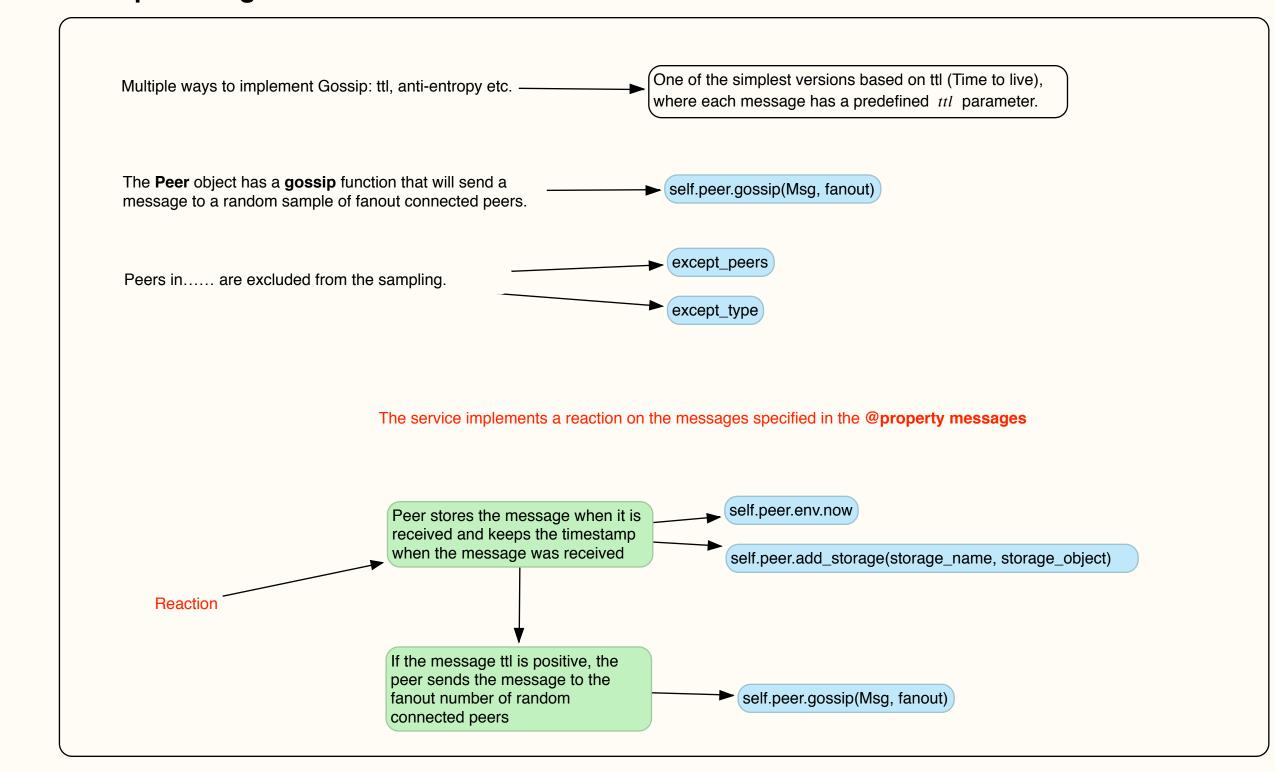
. Change the latency between the locations and look at the logs. 2. Change the rules for the discover

2. Adding Services to the Simulation(gossip)

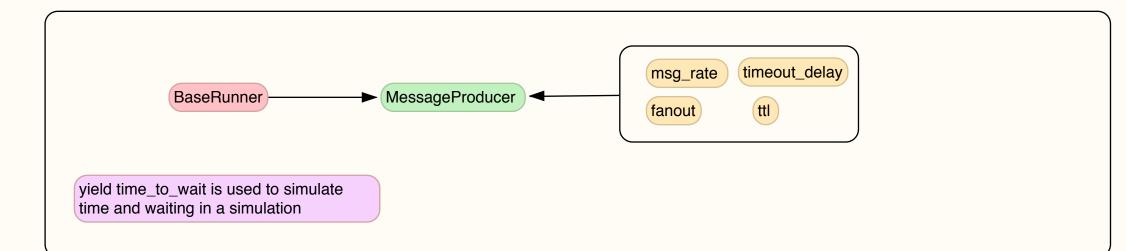


Creating new services

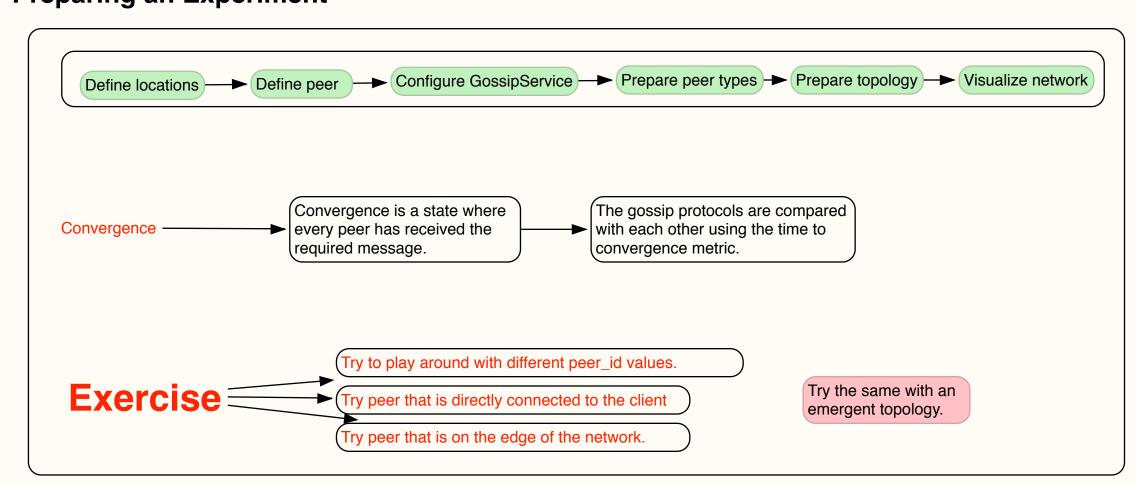
Gossip Message Handler



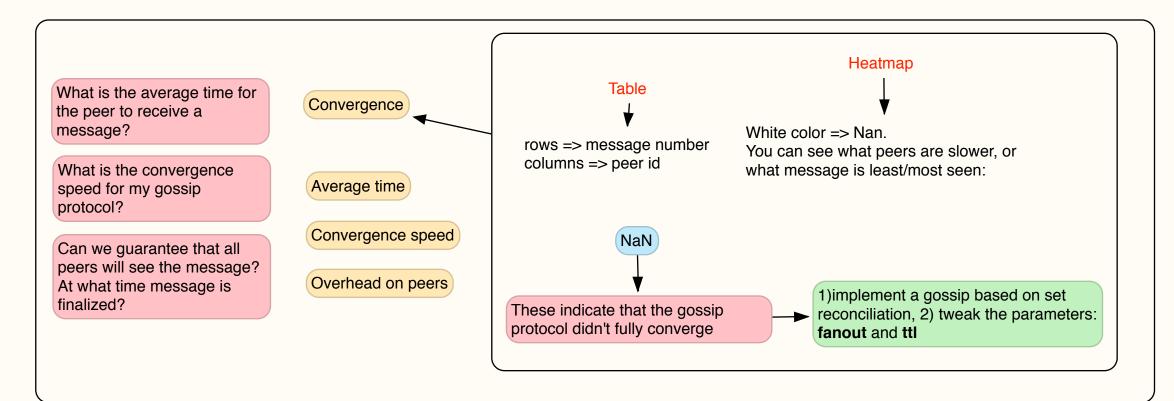
Message producer



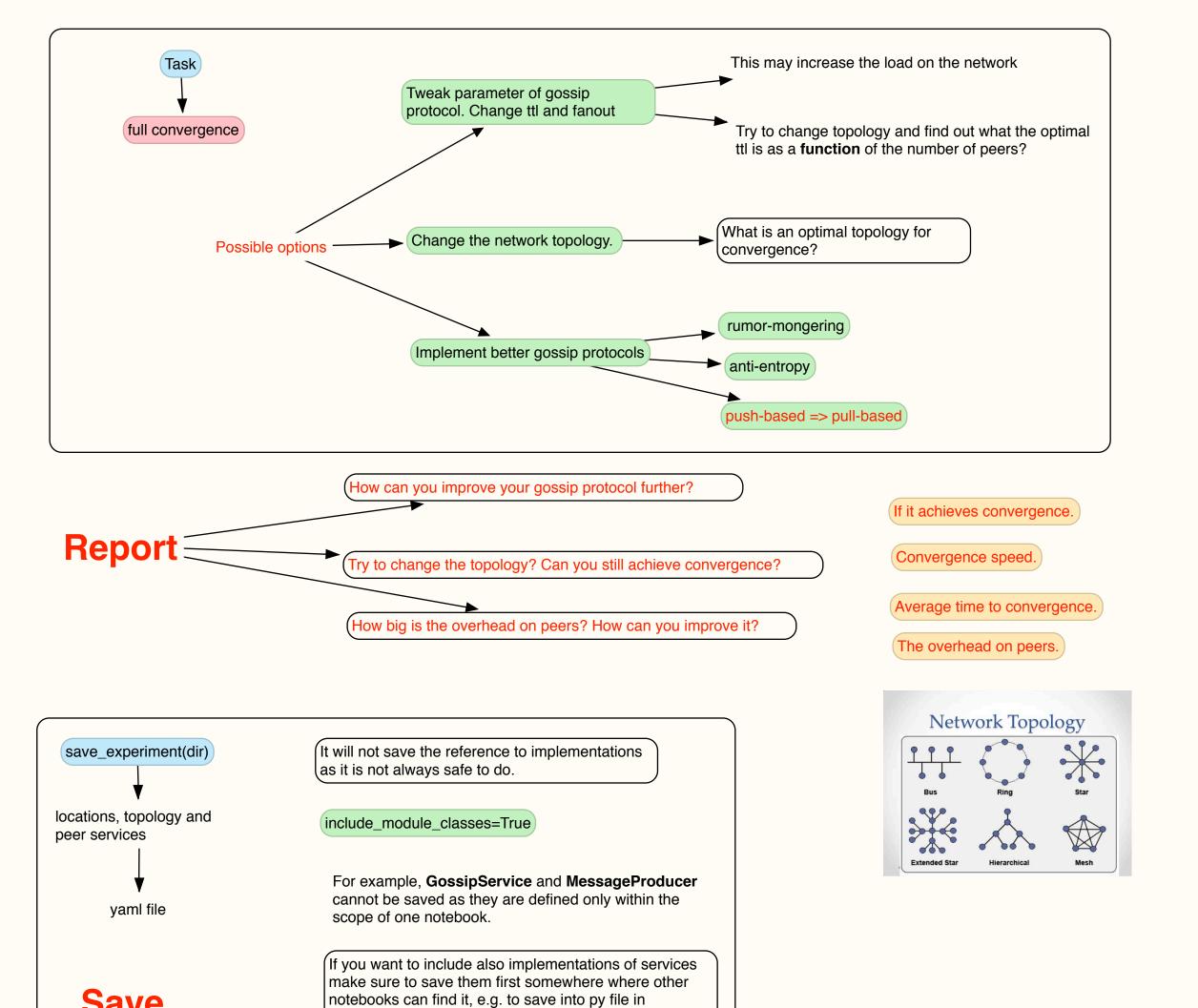
Preparing an Experiment



Analyze and visualize gossip

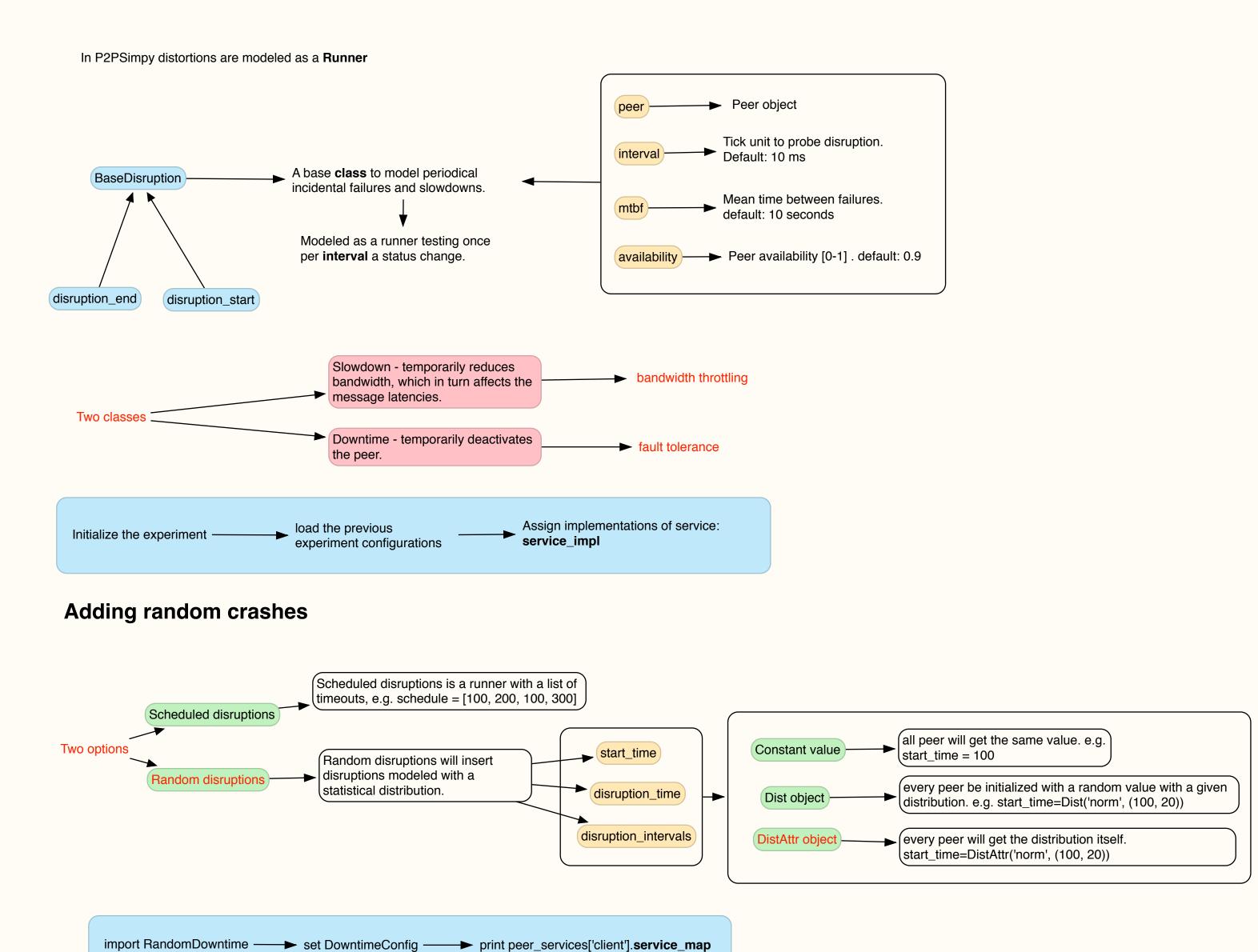


Achieving full convergence

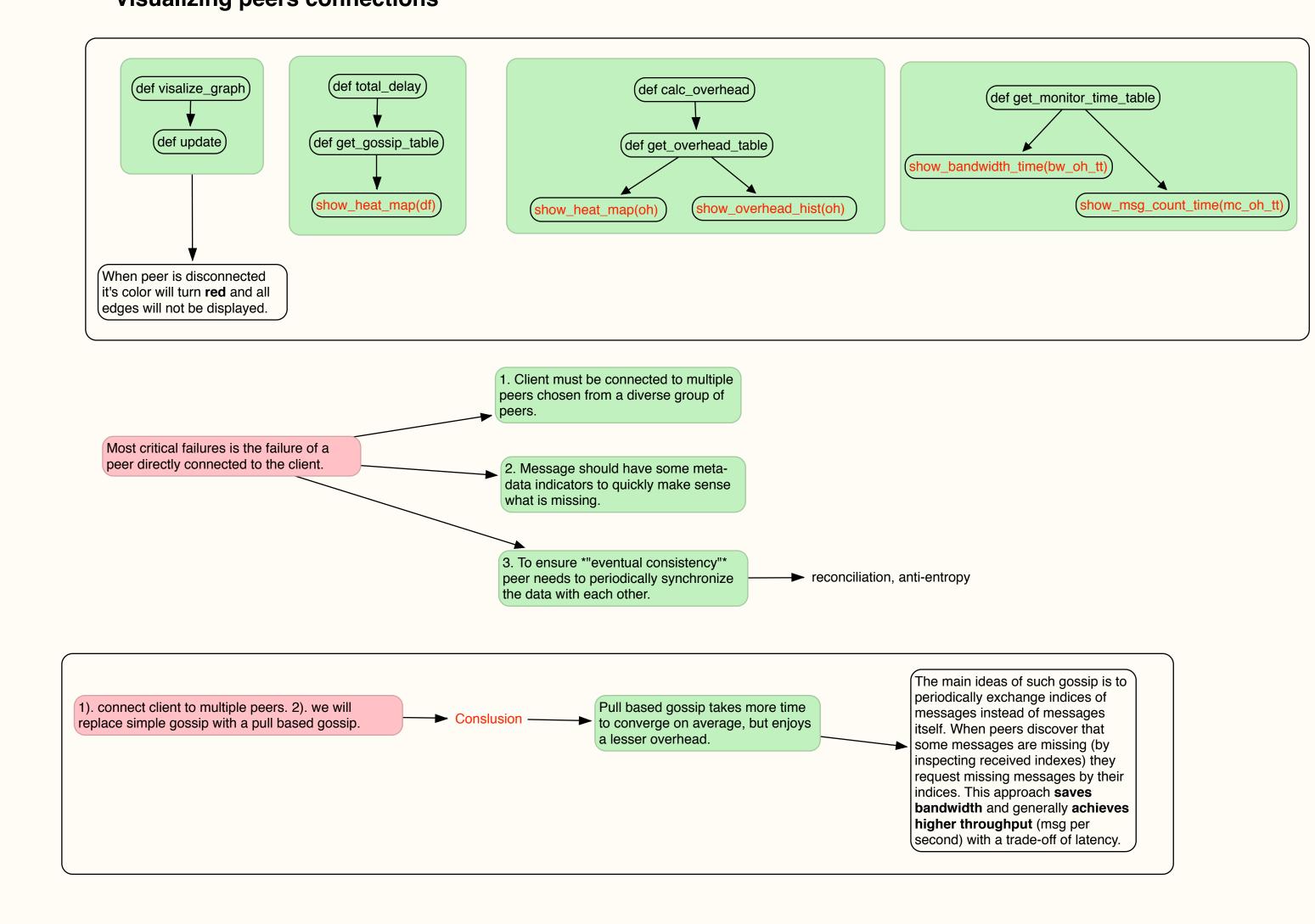


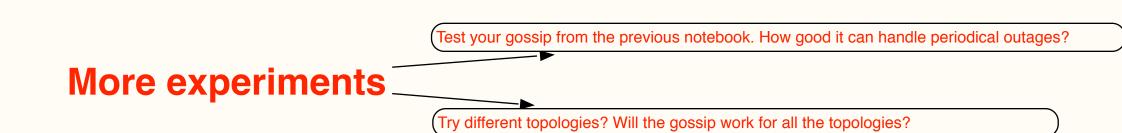
p2psimpy.services module.

3. Faults and Disruptions



Visualizing peers connections



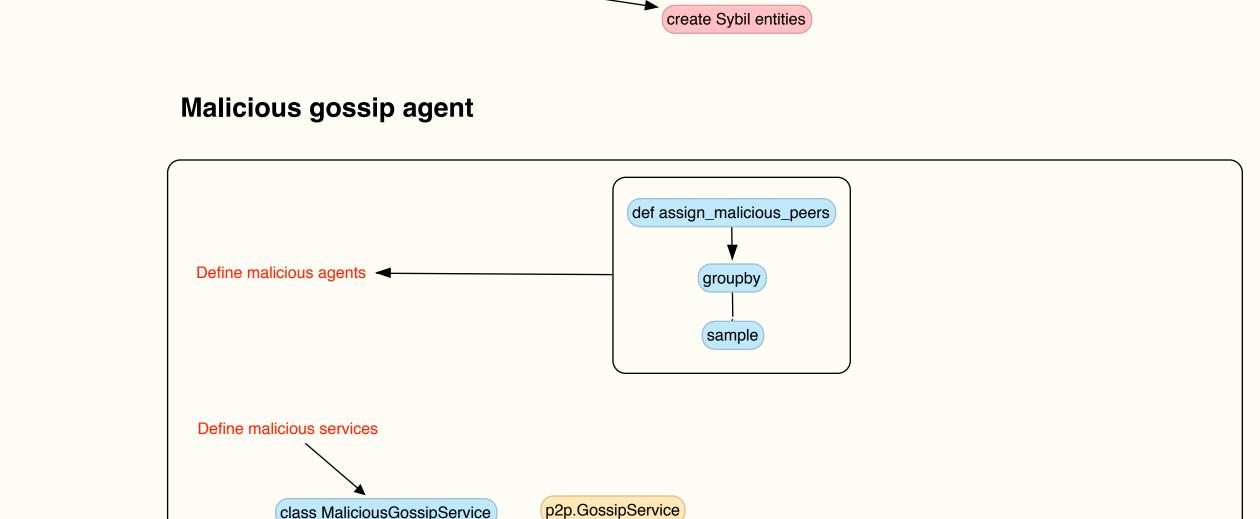


4. Beyond CFT: Attacks on the Network and Convergence

Change the message and send it to the other half

hide transactions

send bogus data



Send the original message to one

We deliberately keep malicious

nodes **uncrashable**.

half of the network



gossip_config → service_map

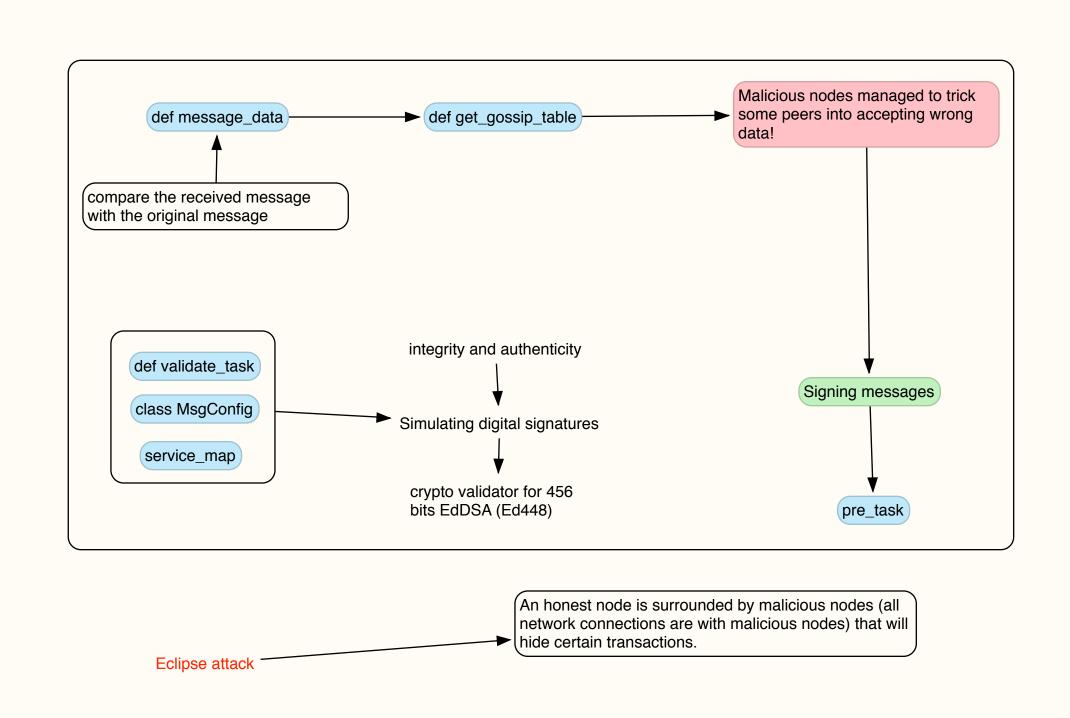
Beyond regular **crashes**, peer can behave in

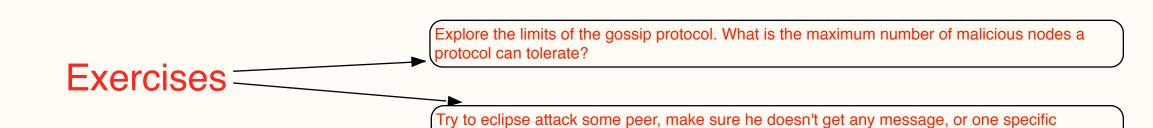
various ways violating the protocol.

Analyze the storage data

Add malicious type and services

peer_services



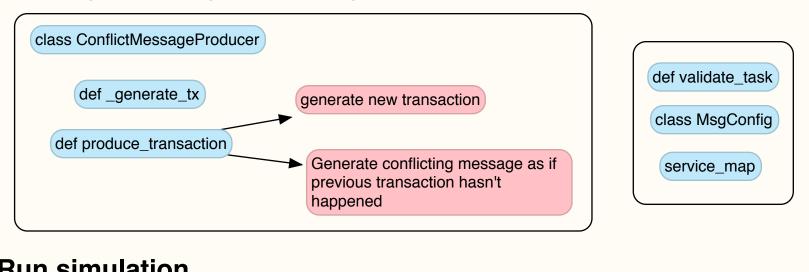


Sybil Attack ______One malicious node runs multiple instances and poisons

the whole network.

5. Conflicts and versions





Run simulation

```
peer_services → BaseSimulation → sim.run
```

Message analysis

