# ZeroMQ Notes

1. Sockets
   1. Context should be singleton, and should create all of the sockets in the process
   2. Sockets should only be used from one thread
   3. REQ
      1. Round-robin to connected nodes
      2. **Blocks when queue is full**
   4. REP
      1. Fair-queued
      2. **Drops messages when queue is full**
   5. DEALER
      1. Round-robin for outgoing
      2. Fair-queued for incoming
      3. **Blocks when queue is full**
   6. ROUTER
      1. Fair-queued for incoming
      2. **Drops messages when queue is full**
   7. PUB
      1. One-way, to SUB sockets only
      2. Sends to all connected SUB sockets
      3. **Drops messages when queue is full**
   8. SUB
      1. One-way, from PUB sockets only
      2. Fair-queued when receiving from multiple PUBs
      3. **Drops messages when queue is full**
   9. PUSH
      1. One-way, to PULL sockets only
      2. Round-robin
      3. **Blocks when queue is full**
   10. PULL
       1. One-way, from PUSH sockets only
       2. Fair-queued
   11. PAIR
       1. Meant for inproc
       2. Connect to one other PAIR only
       3. **Blocks when queue is full**
2. Demos
   1. REQ/REP
      1. Client could connect to multiple servers, in which case it would round-robin
      2. Server issues the Bind call, is unaware of the clients connecting to it
   2. PUB/SUB
      1. The subscriber must subscribe before it will receive messages
   3. Pipeline
      1. Any number of PUSH and PULL nodes can be created
      2. PUSH will round-robin amongst the connected sockets
      3. Notice that the sink binds, instead of connecting to the workers
   4. Scaling
      1. Imagine we needed to scale the number of servers we have processing requests because we now have a large number of clients.
      2. One possibility is to have every client connect to all servers, in which case the REQ socket would round-robin amongst the servers.
      3. Every time a server is added or removed the clients would have to be updated.
      4. Instead, ZeroMQ provides a proxy, which enables us to add and remove servers at any time.