Design Document MP 2.1

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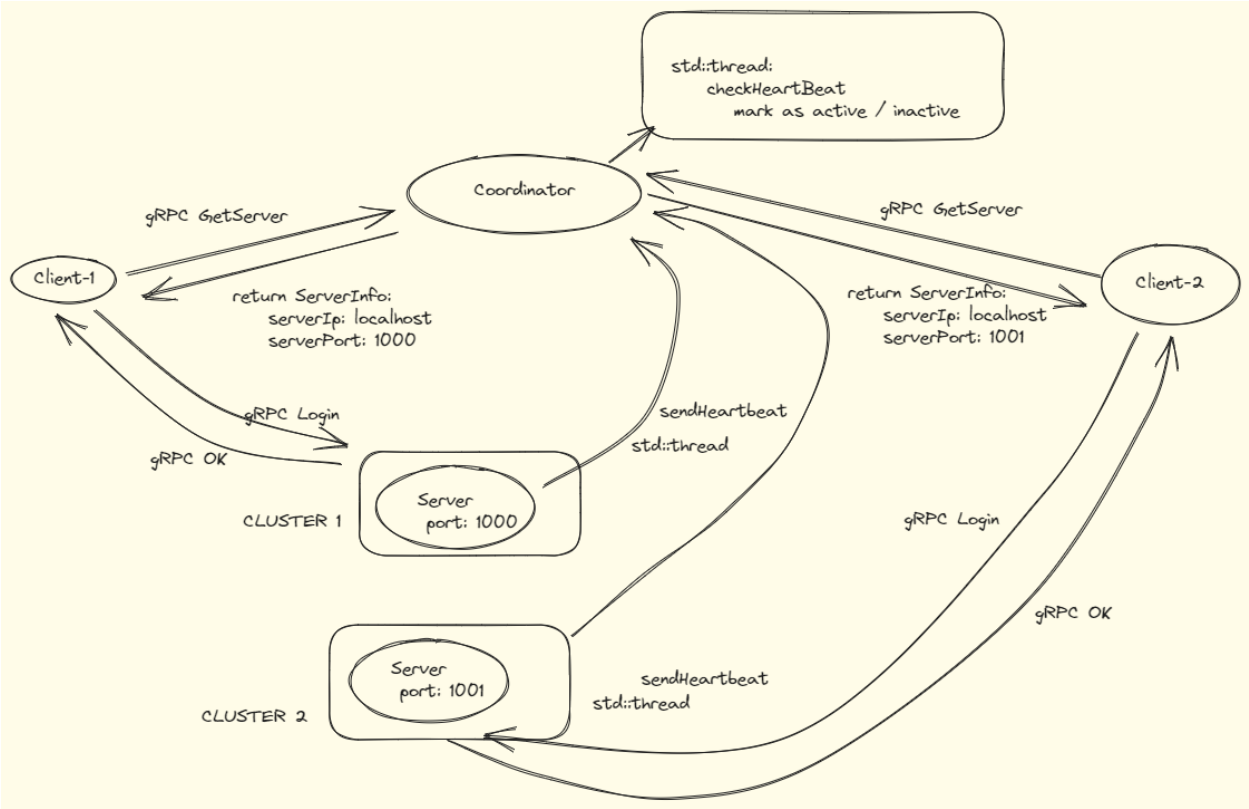
Commands to Start System

make

1. ./coordinator -p 9090
2. ./tsd -c 1 -s 1 -h localhost -k 9090 -p 10000
3. ./tsd -c 2 -s 1 -h localhost -k 9090 -p 10001
4. ./tsc -h localhost -k 9090 -u 1
5. ./tsc -h localhost -k 9090 -u 2

Flow Diagram



RPC Definitions

Coordinator

```
Heartbeat(ServerInfo serverInfo, Confirmation confirmation):
  1. Get cluster ID from serverInfo
  2. If a cluster doesn't exist in the routing table, return
     grpc::StatusCode::NOT_FOUND
  3. If cluster exists, sleep for 5 seconds
```

4. Get the corresponding node from the cluster (based on serverId)
5. Set this zNode's last heartbeat timestamp to the current time
6. Set the confirmation's status as true
7. return Status::OK

GetServer(ID id, ServerInfo serverInfo):

1. Computer cluster ID for the client's ID. Use (id-1)%3 + 1
2. In routing table check if cluster exists
3. Get the server, check if active, if active set the servers ip and port in the serverinfo and return grpc::Status OK
4. If not active return grpc::StatusCode::UNAVAILABLE

Server

sendHeartBeat(coordinatorClientStub):

1. Set server information into serverInfo variable
2. Start an infinite loop
3. Use the the stub and the serverInfo via gRPC
4. If grpc status is OK and confirmation status is true, continue
5. Else break and exit with -1

.. // Code

Main Thread:

1. Server Start
2. heartbeatThread.join()
   // Code
3. Exit

Client

1. Create coordinator stub
2. Set clientID in the ID Protobuf
3. Send the clientID via GetServer RPC // stub_.GetServer(ID id, ServerInfo serverInfo)
4. If grpc::Status is not OK, exit with -1 and error message.
5. If grpc::Status is OK, get serverIP and serverPort from the ServerInfo response
6. Create server stub based on this data
7. Connect and login to server using serverStub_.Login(..) RPC