Design Document

Usage

Our makefile is included. Please use “make” to compile the proto file as well as the cpp file. Please use “sh run.sh” to start the system. Our system includes 8 master/slave servers and 3 clients. If you want to start up with the different number of machines and clients, you can simply modify the script “run.sh”. You can use “kill” to make the master server crash in Linux.

Content

The objective of this assignment is to develop the next version of the Tiny SNS that is fault-tolerant and highly available. Our deployment is shown in Figure 1, which is a very typical design provided in the homework description. Based on this design, we do not need to change the provided source code too much but need to add more server roles.

In Homework 2, we only have two roles, client and server, while in this homework, we need four different server roles as is shown in Figure 1. And we list them and their functions below, respectively.

Routing Server: A routing server will gather information from all master servers. And any client will first connect to this server to request a master server. This routing server never crashes and returns a valid hostname and port number to the client, helping the client choose an available server. Pay attention that our routing server is default 3010 port.

Master Server: A master server has all functions of an ordinary server in Homework 2, which handles commands from clients. The difference is that a master server will first connect to the routing server and let the routing server know that this master server is available during its initialization.

Available Server: An available server is also a master server that is chosen by the routing server and handles requests from all clients.

Slave Server: A slave server spawns and monitors a master server. And when the master server crashes, the slave server will observe this condition, wait for 25 seconds and automatically reboot the master server by creating a new process using “fork()” in Linux.

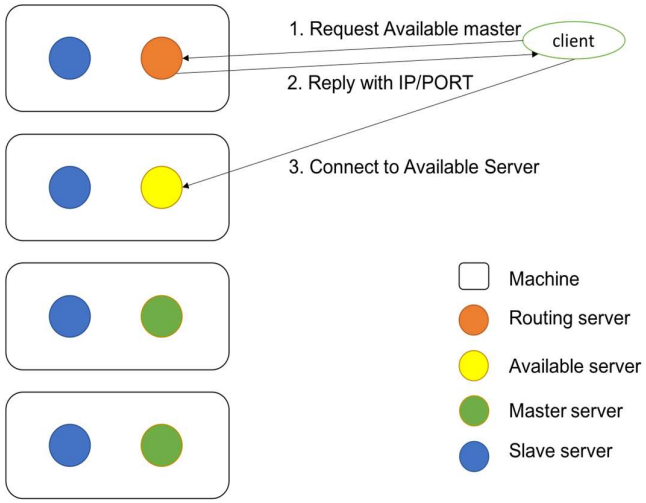

Figure 1. Diagram of our design