Report for Milestone 3 and Extra Credits

First of all, we finished the Milestion3 and extra credits for reliable transfer.

We have designed 4 types of packets, heartbeat packet, data packet, ack packet, and reset packet. The size of each packet is 6 bytes.

According to the assignment requirements, upon a connection establishment between the proxies, cproxy will send a heartbeat to sproxy, then sproxy sends a heartbeat to cproxy. Heartbeat packet format is

0 “h” Identifier letter

1 “0” Identifier number for heartbeat packet

2 “+” or “-” ‘+’for cproxy, another for sproxy

3 “~”

4 “~”

5 “~”

The size of our proxies read or write is 1 byte each time from the select pipeline. Each data packet transferred between cproxy and sproxy contains an its own sequence number. Data packet format is

0 “d” Identifier letter

1-4 “sequence number” The second to fourth position are 32 bits for its

own sequence number

5 “data” The last position is data need to be transferred

When any proxy received a data packet from the other proxy, it will send back a ack packet containing ack number, whose value same as sequence number of data packet, to tell the proxy sending the data packet that I received the data you sent. Ack packet format is

0 “a” Identifier letter

1-4 “sequence number” The second to fourth position are 32 bits for

ack number

5 “~” Just a symbol

We consider a situation that telnet exits after cproxy changes IP before two proxies reconnection. In this situation, sproxy cannot know what happened on cproxy and telnet session cause the connection is gone between cproxy and sproxy. For solve this situation, we use reset packet to let cproxy tell sproxy that sproxy needs to reconnect telnet daemon, and sproxy will send back a reset packet to tell cproxy that I got you after sproxy receive a cproxy’s reset packet. Then two proxies clean up the cached data, and get ready for new telnet session. Reset packet format is

0 “r” Identifier letter

1-4 “sequence number” The second to fourth position are 32 bits for

ack number

5 “~” Just a symbol

For the use of time to determine whether cproxy changed IP, we record the last heartbeat sending and receiving time. In addition to following the ideas in the FAQ file, we update the receiving time when we receive any data packet from other proxy cause received packet means communication is OK.

Reliable transfer is implemented according to the requirements of the project description. Use linked list to store data messages that have been sent out but not acknowledged yet. After the connection is re-established, a data message is sent from the head of the linked list.