

Foundation of Computer Networks - Project 1

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Format of messages sent by the application:

All communication happens in the form of strings of a specific format. All TCP communications write the string to the respective streams, and all UDP communications convert the string to a byte stream before sending them through. The format of the strings for various requests and responses are listed below:

Messages to/from the Client and Server:

Client Requests

Request to set the server time by an authorized client:

“-T [user] [pass] [time]”

[user] - username [pass] - password [time] - time to set

Request to get the server time by a client:

“-R ”

Server Responses

“[code] [optional responses]”

Code:

“1 (time)” - Server time reset successfully to (time)

“2 (time)” - Server time fetched successfully as (time)

“3 ” - Clients are not allowed to change server time

“4 ” - Client unauthorized to change server time

“5 ” - Request to fetch time failed. Server does not have time set

“6 ” - Request from client unrecognized by server

Optional Responses:

Each response contains one or more occurrences of the string *“-h (rtt)”*. Each *-h* represents a single hop, and the *rtt* is the round-trip time of that particular node. The client parses all these RTTs and generates a report that it displays along with the parsed response from the server.

Example Scenarios:

a) Client requests time successfully

Client requests the current time from server: "-R "
Server responds with the time and hop info: "2 5 -h 0"

b) Client requests time unsuccessfully

Client requests the current time from server: "-R "
Server responds with error code and hop info: "5 -h 0"

c) Client resets time successfully

Client requests the current time from server: "-T user pass 50 "
Server responds with new time and hop info: "1 50 -h 0"

d) Client resets time unsuccessfully

Client requests the current time from server: "-T wrong info 500"
Server responds with error code and hop info: "4 -h 0"

a) Proxy forwards packets between client and server

Client requests the current time from server: "-R "
Proxy forwards the request to the server: "-R "
Server responds with the time and hop info: "2 5 -h 0"
Proxy forwards response and hop info to client: "2 5 -h 0 -h 5"