TCP – Congestion Control Algorithms Network programming in C

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1 System Characterization

1.1 System Overview

1.1.1 About the System

'TCP – Congestion Control Algorithms Network programming' - like the name of the assignment our program reflects the communication between sender and receiver according to two congestion control algorithms (cubic, reno) while sending the file.

The Sender will send a message in this message will be a file, with at least 1MB size of a file, and the Receiver will receive it and measure the time it took for his program to receive the file. The receiver doesn't really care about saving the file itself (or its content). He just cares about the Data-Frame that he gets.

The file will be sent in two parts first half and second half, each half will be sent according to one of the CC algorithms we learned in the lectures.

The first half will be sent according to CUBIC algorithms and second half will be sent according to RENO algorithm. By this, and because the size of the two half is the same, we can see based on the result which algorithm is better for this present purpose.

In addition, we will use packet lost tools on Linux which is known as TC. We can see the communication and the packet lost by using Wireshark.

1.1.2 CC – Algorithm

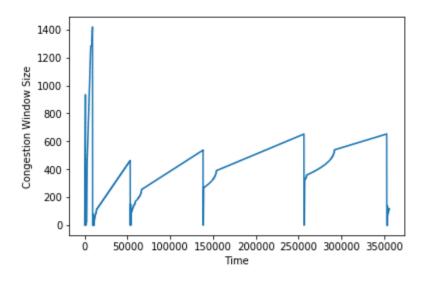
At first let's explain about congestion control, congestion on the internet happens when the computers send more packets to a particular link than that link can handle. If a link is receiving more packets than can fit on the wire, it will begin queueing up those packets, and if the link's queues fill up, the link will begin dropping those packets.

Therefore we have the CC - Algorithm. In this program we use the cubic and reno CC – Algorithm.

RENO:

The traditional approaches to congestion control in TCP, named Tahoe and Reno, operate by increasing the congestion window size, which you can think of as the "rate" at which senders send packets, exponentially until some threshold is reached. After that threshold is reached, they begin increasing linearly.

Once they experience drops, they will aggressively drop the window size, and then enter "slow start" mode again, where they increase exponentially until they hit the threshold. Once the threshold is hit, they will increase linearly again.



The approaches Tahoe and Reno were developed in the late 80s and 90s, and worked then, but the internet has changed a lot since. Notably, there now exist longer, and higher bandwidth networks (long, fat networks). To fully take

advantage of these networks, TCP senders need to send with much higher congestion windows.

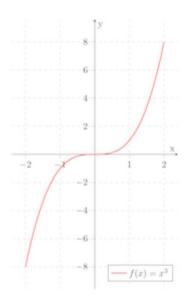
Since Tahoe & Reno grow linearly after crossing the slow start threshold, if a lot more bandwidths become available on a link, it'll take a long time for these algorithms to "discover" that available bandwidth.

CUBIC:

It turns out that to achieve better performance on "long, fat networks", these congestion control algorithms need to do a better job of "exploring" for more bandwidth.

However, we don't want to overload a network, or aggressively steal away available bandwidth from other senders on the same network.

It turns out that there's a mathematical function for growing the congestion window that satisfies both constraints, the cubic function:



Observe a very powerful property of a cubic function: that as x is lower, t function grows very quickly, and then slows down as it approaches a particular point (the inflection point), and then after crossing that point begins growing quickly again.

Therefore, it's took advantage of this property when designing a congestion control algorithm:

If the congestion window is grown as a cubic function of time since the last packet drop, and the inflection point is set to be the size of the congestion window at the last drop, the window has the following behavior:

- 1. Start growing fast
- 2. As the algorithm approaches the window at the last drop, the congestion window begins growing more slowly
- 3. If the congestion window gets to the point at which drops occurred the last time, and does not experience a drop, begin growing slowly again, but then increase more quickly

The concave portion of this, where the window begins growing quickly but then slows down, and the convex portion of this can be thought of two different phases. During the concave phase, the congestion window is catching up to where a packet was lost last time and slows down its growth to be fair to traditional TCP senders. If the algorithm gets there without experiencing drops, it can move into an "exploratory" phase, in which it grows quickly to discover newly available bandwidth.

1.1.3 How to Install and Run the Program

To test the system for yourself, you would need a Linux based operating system.

Instructions:

- 1. Download the following files:
 - a. Sender.c
 - b. Receiver.c
 - c. Makefile
 - d. 1mb.txt
- 2. Put all of the above files in a single directory.
- 3. Open said directory in your Linux terminal.
- 4. Run the following commands:
 - a. sudo apt install build-essential
 - b. Make
 - c. ./Receiver
- 5. Open the same directory in a second Linux terminal.
- 6. Run the following command:
 - a. ./Sender
- 7. Once the sending is completed, you'll be asked if you'd like to resend the file. Type "Y" for 'yes' or "N" for 'no' and press Enter.
- 8. To terminate the program type "N" when a sending session is completed.

1.2 System Functionality

1.2.1 Code Description

IMPORTANT!

We assume that the input is correct and that the user will not repeat sending the file more than 1000 times.

Order of operations: sender's side.

File handling:

1. Open the file in order to perform certain functions on it.

```
// (1)
//open a file
FILE *f = fopen(FILE_TO_SEND, "r");
//checking
if (f == NULL) {
    fprintf(stderr, "Error opening file");
    return 1;
}
```

2. calculate and save file size (used for sending the files in two parts of equal size).

```
// (2)
//calculate the file size
fseek(f, 0, SEEK_END);
int fileSize = (int) ftell(f);
fseek(f, 0, SEEK_SET);
```

3. store file contents in char array - preparing for sending

```
// (3)
//put the file in char array
char filedata[fileSize];
fread(filedata, sizeof(char), fileSize, f);
```

4. close the file

```
// (4)
//close the file
fclose(f);
```

Socket handling:

5. Open a socket from which to send the file.

```
int sock = socket(AF_INET, SOCK_STREAM, IPPROTO_TCP);
   printf("Could not create socket : %d", errno);
} else printf("New socket opened\n");
struct sockaddr_in serverAddress;
memset(&serverAddress, 0, sizeof(serverAddress));
serverAddress.sin_family = AF_INET;
serverAddress.sin_port = htons(SERVER_PORT);
int rval = inet_pton(AF_INET, (const char *) SERVER_IP_ADDRESS, &serverAddress.sin_addr);
if (rval <= 0) {
   printf("inet_pton() failed");
```

connect said socket to server side using the known server address. (in this case: local host).

```
// (6)

// Make a connection to the server with socket SendingSocket.
int connectResult = connect(sock, (struct sockaddr *) &serverAddress, sizeof(serverAddress));

//checking
if (connectResult == -1) {
    printf("connect() failed with error code : %d", errno);
    close(sock);
    return -1;
} else printf("connected to receiver\n");
```

Preparing for sending:

7. initialize agreed upon sign ("signal") which would indicate that the receiving side (server side) acquired the file size information. Then, send the file size using send() method (see explanation below).

```
// (7)
int signal = 0; //agreed upon sign
send(sock, &fileSize, sizeof(int), 0); //send the filesize to the receiver
```

8. receive the agreed upon sign ("signal") from the receiver's side.

```
// (8)
recv(sock, &signal, sizeof(int), 0);//receiving the the agreed sign from "receiver" side
```

Sending both parts and authenticating:

9. set the CC algorithm to "cubic" using setsockopt() function

```
// (9)
char cc_algo[BUFFER_SIZE]; //char array for changing the algorithem
strcpy(cc_algo, "cubic"); //copy the string "cubic" into cc_algo
socklen_t len = strlen(cc_algo); //saving the size of the str in the cc_algo in socklen_t variable
//checking & defult the cubic algorithem
if (setsockopt(sock, IPPROTO_TCP, TCP_CONGESTION, cc_algo, len) == -1) {
    perror("setsockopt");
    return -1;
}
```

10.send part A of the file (determined by setting the length of data to send to (filesize/2)).

```
// (10)
//send the first half of the file
bytesSent = send(sock, filedata, (fileSize / 2), 0);
//checking
if (bytesSent == -1) printf("send() failed with error code : %d", errno);
else if (bytesSent == 0) printf("peer has closed the TCP connection prior to send().\n");
else if (bytesSent < (fileSize / 2))
    printf("sent only %ld bytes from the required %d.\n", bytesSent, (fileSize / 2));
else printf("Sent %ld bytes\n", bytesSent);</pre>
```

11.initialize certain value (in this case: xor(2421, 7494) – last four digits of our ID) then, receive value from receiver and compare for authentication (determining that we sent the first part of the file to the desired receiver).

```
// (11)
int sender_xor = 2421 ^ 7494; //the sender xor for the authentication
int receiver_xor;//the xor that the sender get from the receiver

//receiv the xor from the receiver
recv(sock, &receiver_xor, sizeof(int), 0);
//checking
if (receiver_xor == sender_xor) printf("Part A was successfully sent\n");
else printf("client: something went wrong\n");
```

12.set the CC algorithm to "reno" using setsockopt() function and repeat step

```
// (12)
strcpy(cc_algo, "reno"); //copy the string "reno" into cc_algo
len = strlen(cc_algo); //saving the size of the str in the cc_algo in socklen_t variable
//checking & defult the cubic algorithem
if (setsockopt(sock, IPPROTO_TCP, TCP_CONGESTION, cc_algo, len) != 0) {
    perror("setsockopt");
    return -1;
}

printf("Sending part B using reno CC algorithm\n");

//send the second half of the file
bytesSent = send(sock, filedata + (fileSize / 2) - 1, (fileSize / 2), 0);
//checking
if (bytesSent == -1) printf("send() failed with error code : %d", errno);
else if (bytesSent <= 0) printf("peer has closed the TCP connection prior to send().\n");
else if (bytesSent < (fileSize / 2))
    printf("sent only %ld bytes from the required %d.\n", bytesSent, (fileSize / 2));
else printf("Sent %ld bytes\n", bytesSent);

printf("Part B was successfully sent\n");</pre>
```

13.ask user if he wants to repeat the sending process or end the connection.

```
// (13)
char choose; //the user decision
printf("Send again? Y = yes, N = no\n");
scanf(" %c", &choose);
```

14.repeat process (while loop) as long as the user answers "yes".

Order of operations: receiver's side.

Handle socket

 Open a server socket and initialize using sockarddr_in struct (see below functionality of other functions in use). We also set the enable reuse option using setsockopt() function. This allows reusing the same port for receving multiple sending attempts.

```
int listeningSocket = socket(AF_INET, SOCK_STREAM, IPPROTO_TCP);
if (listeningSocket == -1) {
    printf("Could not create listening socket : %d", errno);
    return 1;
int enableReuse = 1;
int ret = setsockopt(listeningSocket, SOL_SOCKET, SO_REUSEADDR, &enableReuse, sizeof(int));
if (ret < 0) {</pre>
   printf("setsockopt() failed with error code : %d", errno);
struct sockaddr_in serverAddress;
memset(&serverAddress, 0, sizeof(serverAddress));
serverAddress.sin_family = AF_INET;
serverAddress.sin_addr.s_addr = INADDR_ANY;
serverAddress.sin_port = htons(SERVER_PORT); // network order (makes byte order consistent)
```

2. Bind the socket

```
// (2)
// Bind the socket to the port with any IP at this port
int bindResult = bind(listeningSocket, (struct sockaddr *) &serverAddress,
sizeof(serverAddress));
// checking
if (bindResult == -1) {
    printf("Bind failed with error code : %d", errno);
    close(listeningSocket);
    return -1;
} else printf("executed Bind() successfully\n");
```

3. Make socket listen to incoming connections.

```
// (3)
// Make the socket listen.
// 500 is a Maximum size of queue connection requests
// number of concurrent connections = 3
int listenResult = listen(listeningSocket, 3);
//checking
if (listenResult == -1) {
    printf("listen() failed with error code : %d", errno);
    close(listeningSocket);
    return -1;
} else printf("Waiting for incoming TCP-connections...\n");
```

4. Accept incoming connections using accept() method, on a new socket (file descriptor).

```
// (4)
  // accept a connection on a socket
  int clientSocket = accept(listeningSocket, (struct sockaddr *) &clientAddress,
&len_clientAddress);
  // checking
  if (clientSocket == -1) {
      printf("listen failed with error code : %d", errno);
      close(listeningSocket);
      return -1;
  } else printf("A new client connection accepted\n");
```

5. Receive file size info from sender and return agreed upon sign which indicates that the file size is known and the file can be sent.

```
// (5)
int fileSize; // the file size that we receiv from the sender
int signal = 0; // agreed sign

// receive the file size from the sender
recv(clientSocket, &fileSize, sizeof(int), 0);
//send the agreed sign to the sender
send(clientSocket, &signal, sizeof(int), 0);
```

Initialize arrays to store the time data of each attempt at receiving the file,and a counter variable to count the number of attempts.

```
// (6)
long timeOfPartA[1000]; // long array to save the run time of sending partA
bzero(timeOfPartA, 1000); // make a zero array
long timeOfPartB[1000]; // long array to save the run time of sending partB
bzero(timeOfPartB, 1000); // make a zero array
long counter = 0; // present the number of sending the whole file

int running = 1; // stop condition
while (running) {
```

Receiving part A:

7. Set the CC algorithm in the listening socket to "cubic" using setsockopt() method (see explanation below) for the retrieval of the first part.

```
// (7)
char cc_algo[BUFFER_SIZE]; // char array for changing the algorithem
printf("Changing to cubic...\n");
strcpy(cc_algo, "cubic"); // copy the string "cubic" into cc_algo
socklen_t len = strlen(cc_algo); // saving the size of the str in the cc_algo in socklen_t variable
// checking & defult the cubic algorithem

if (setsockopt(listeningSocket, IPPROTO_TCP, TCP_CONGESTION, cc_algo, len) == -1) {
    perror("setsockopt");
    return -1;
}
```

8. Initialize buffer with the correct size for receiving the desires part of the file, and initialize a variable to keep track of the number of bytes that were received.

```
// (8)
char buffer[fileSize / 2]; // char array for receiving the half of the file
int totalbytes = 0; // present the bytes that have been received
printf("Waiting for part A...\n");
```

9. Calculate time at the beginning of receiving process.

```
// (9)
struct timeval current_time;//struct for saving current time
gettimeofday(&current_time, NULL);//saving the current time
long before_partA_sec = current_time.tv_sec;//time in second
long before_partA_mic = current_time.tv_usec;//time in microsecond
long total_time_before_partA = before_partA_sec * 1000000 + before_partA_mic;//total time befor
```

10. Receive the bytes sent from "sender" using recv() method (see explanation below. If the connection was lost for some reason than the entire process will be terminated (determined by checking the "running" variable).

```
// (10)
while (totalbytes < (fileSize / 2)) {
    //receive the first part of the file
    int bytesgot = recv(clientSocket, buffer + totalbytes, sizeof(char), 0);
    totalbytes += bytesgot;
    //checking
    if (bytesgot == 0) {
        printf("Connection with sender closed, exiting...\n");
        running = 0;
        break;
    }
}
if (running == 0) break; // quit the program if somthing wrong</pre>
```

11. Calculate time at the end of receiving process.

```
// (11)
gettimeofday(&current_time, NULL); // saving the current time
long after_partA_sec = current_time.tv_sec; // time in second
long after_partA_mic = current_time.tv_usec; // time in microsecond
long total_time_after_partA = after_partA_sec * 1000000 + after_partA_mic; // total time after
long total_time_partA = total_time_after_partA - total_time_before_partA; // tatal time that took part A
timeOfPartA[counter] = total_time_partA; // saving the time in the array

printf("Got part A\n");

printf("Sending authntication check\n");
```

12. Send agreed upon sign for authentication xor(2421 ^ 7494).

```
// (12)
int receiver_xor = 2421 ^ 7494; //the receiver xor
send(clientSocket, &receiver_xor, sizeof(int),
          0);//the receiver send his xor to the sender for the authentication
printf("Authortication sent\n");
```

Receiving part B:

13. Changing CC algorithm to Reno in the listening socket, and repeating steps 8-11 for the retrieval of part B.

```
// (13)
printf("Changeing to reno..\n");

strcpy(cc_algo, "reno");//copy the string "reno" into cc_algo
len = strlen(cc_algo);//saving the size of the str in the cc_algo in socklen_t variable
//checking & defult the cubic algorithem
if (setsockopt(listeningSocket, IPPROTO_TCP, TCP_CONGESTION, cc_algo, len) == -1) {
    perror("setsockopt");
    return -1;
}
```

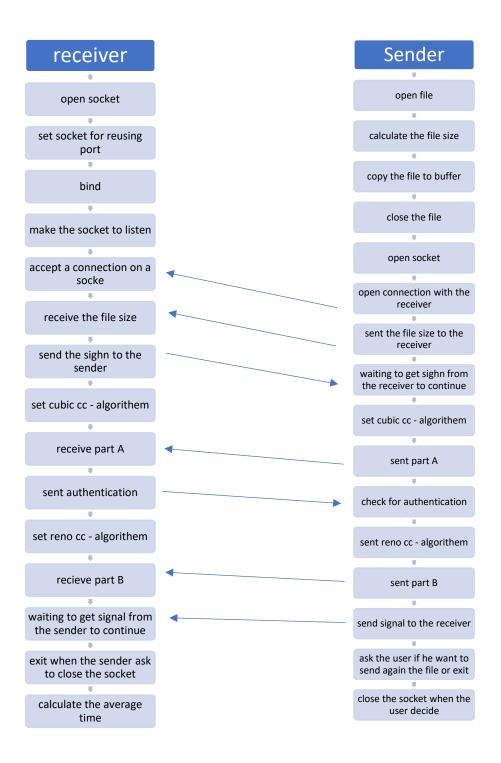
14. Close the connection.

```
printf("Exit\n");
close(clientSocket);//close the clientSocket
close(listeningSocket);//listeningSocket
```

15. Calculate the total time it took to receive each part.

16. Calculate the average receive time for each part using the "counter" variable which indicates the number of times the file was sent.

1.2.2 Flowchart



1.2.3 Output

Sending the file 5 times.

```
executed Bind() successfully
Waiting for incoming TCP-connections...
A new client connection accepted
Changing to cubic...
Waiting for part A...
Got part A
Sending authntication check
Authortication sent
Changeing to reno..
Waiting for part B...
Got part B
Changing to cubic...
Waiting for part A...
Got part A
Sending authntication check
Authortication sent
Changeing to reno..
Waiting for part B...
Got part B
Changing to cubic...
Waiting for part A...
Got part A
Sending authntication check
Authortication sent
Changeing to reno..
Waiting for part B...
Got part B
Changing to cubic...
Waiting for part A...
Got part A
Sending authntication check
Authontication sent
Changeing to reno..
Waiting for part B...
Got part B
Changing to cubic...
Waiting for part A...
Got part A
Sending authntication check
Authortication sent
Changeing to reno..
Waiting for part B...
Got part B
Changing to cubic...
Waiting for part A...
Connection with sender closed, exiting...
```

```
New socket opened
connected to server
Sending part A using cubic CC algorithm
Sent 528258 bytes
Part A was successfully sent
Sending part B using reno CC algorithm
Sent 528258 bytes
Part B was successfully sent
Send again? Y = yes, N = no
Sending part A using cubic CC algorithm Sent 528258 bytes
Part A was successfully sent
Sending part B using reno CC algorithm
Sent 528258 bytes
Part B was successfully sent
Send again? Y = yes, N = no
Sending part A using cubic CC algorithm
Sent 528258 bytes
Part A was successfully sent
Sending part B using reno CC algorithm
Sent 528258 bytes
Part B was successfully sent
Send again? Y = yes, N = no
Sending part A using cubic CC algorithm
Sent 528258 bytes
Part A was successfully sent
Sending part B using reno CC algorithm
Sent 528258 bytes
Part B was successfully sent
Send again? Y = yes, N = no
Sending part A using cubic CC algorithm
Sent 528258 bytes
Part A was successfully sent
Sending part B using reno CC algorithm
Sent 528258 bytes
Part B was successfully sent
Send again? Y = yes, N = no
```

1.2.4 Functions

Sender function:

1.To read the file we created we used the following functions:

stream open functions-

FILE *fopen(const char *pathname, const char *mode);

The fopen() function opens the file whose name is the string pointed to by pathname and associates a stream with it.

r - Open text file for reading. The stream is positioned at the beginning of the file.

Upon successful completion fopen(), return a FILE pointer. Otherwise, NULL is returned and errno is set to indicate the error.

• Reposition a stream-

int fseek(FILE *stream, long offset, int whence);

The fseek() function sets the file position indicator for the stream pointed to by stream. The new position, measured in bytes, is obtained by adding offset bytes to the position specified by whence. If whence is set to SEEK_SET, SEEK_CUR, or SEEK_END, the offset is relative to the start of the file, the current position indicator, or end-of-file, respectively. Upon successful completion fseek() return 0.

• Reposition a stream-

long ftell(FILE *stream);

The ftell() function obtains the current value of the file position indicator for the stream pointed to by stream.

Upon successful completion, ftell() returns the current offset. Otherwise, -1 is returned and errno is set to indicate the error.

• Binary stream input/output-

size_t fread(void *ptr, size_t size, size_t nmemb, FILE *stream);

The function fread() reads nmemb items of data, each size bytes long, from the stream pointed to by stream, storing them at the location given by ptr. On success, fread() return the number of items read or written. This number equals the number of bytes transferred only when size is 1. If an error occurs, or the end of the file is reached, the return value is a short

item count (or zero). The file position indicator for the stream is advanced by the number of bytes successfully read or written.

fread() does not distinguish between end-of-file and error, and callers must use feof(3) and ferror(3) to deter-mine which occurred.

Close a stream -

int fclose(FILE *stream);

The fclose() function flushes the stream pointed to by stream and closes the underlying file descriptor. The behavior of fclose() is undefined if the stream parameter is an illegal pointer, or is a descriptor already passed to a previous invocation of fclose().

Upon successful completion, 0 is returned. Otherwise, EOF is returned and errno is set to indicate the error. In either case, any further access (including another call to fclose()) to the stream results in undefined behavior.

The fclose() function may also fail and set errno for any of the errors specified for the routines close(2), write(2), or fflush(3).

- 2. To create a TCP Connection between the sender and receiver we used the following functions:
 - Create an endpoint for communication-

int socket(int domain, int type, int protocol);

socket() creates an endpoint for communication and returns a file descriptor that refers to that endpoint. The file descriptor returned by a successful call will be the lowest-numbered file descriptor not currently open for the process.

The domain argument specifies a communication domain; this selects the protocol family which will be used for communication:

AF_INET - IPv4 Internet protocols.

The socket has the indicated type, which specifies the communication semantics. Currently defined types are:

SOCK_STREAM - Provides sequenced, reliable, two-way, connection-based byte streams. An out-of-band data transmission mechanism may be supported.

The protocol specifies a particular protocol to be used with the socket.

Normally only a single protocol exists to support a particular socket type

within a given protocol family, in which case protocol can be specified as 0. However, it is possible that many protocols may exist, in which case a particular protocol must be specified in this manner. In our case is IPPROTO_TCP.

On success, a file descriptor for the new socket is returned. On error, -1 is returned, and errno is set appropriately.

• Fill memory with a constant byte-

void *memset(void *s, int c, size_t n);

The memset() function fills the first n bytes of the memory area pointed to by s with the constant byte c.

The memset() function returns a pointer to the memory area s.

Convert values between host and network byte order-

uint16_t htons(uint16_t hostshort);

The htons() function converts the unsigned short integer hostshort from host byte order to network byte order.

Convert IPv4 and IPv6 addresses from text to binary form int inet_pton(int af, const char *src, void *dst);

This function converts the character string src into a network address structure in the af address family, then copies the network address structure to dst. The af argument must be either AF_INET or AF_INET6. dst is written in network byte order.

In our case the following address families are currently supported:

AF_INET src points to a character string containing an IPv4 network address in dotted-decimal format, "ddd.ddd.ddd.ddd", where ddd is a decimal number of up to three digits in the range 0 to 255. The address is converted to a struct in_addr and copied to dst, which must be sizeof(struct in_addr) (4) bytes (32bits) long.

inet_pton() returns 1 on success (network address was successfully converted). 0 is returned if src does not contain a character string representing a valid network address in the specified address family. If af does not contain a valid address family, -1 is returned and errno is set to EAFNOSUPPORT.

 Initiate a connection on a socketint connect(int sockfd, const struct sockaddr *addr, socklen_t addrlen); The connect() system call connects the socket referred to by the file descriptor sockfd to the address specified by addr. The addrlen argument specifies the size of addr. The format of the address in addr is determined by the address space of the socket sockfd.

If the socket sockfd is of type SOCK_DGRAM, then addr is the address to which datagrams are sent by default, and the only address from which datagrams are received. If the socket is of type SOCK_STREAM or SOCK_SEQPACKET, this call attempts to make a connection to the socket that is bound to the address specified by addr.

If the connection or binding succeeds, zero is returned. On error, -1 is returned, and errno is set appropriately.

- 3. To Send the first and the second part of the file and to check for authentication we used the following functions:
 - Send a message on a socket-

ssize_t send(int sockfd, const void *buf, size_t len, int flags);

send() are used to transmit a message to another socket.

The send() call may be used only when the socket is in a connected state.

The argument sockfd is the file descriptor of the sending socket.

The message is found in buf and has length len.

If the message is too long to pass atomically through the underlying protocol, the error EMSGSIZE is returned, and the message is not transmitted.

No indication of failure to deliver is implicit in a send(). Locally detected errors are indicated by a return value of -1.

When the message does not fit into the send buffer of the socket, send() normally blocks, unless the socket has been placed in nonblocking I/O mode. In nonblocking mode, it would fail with the error EAGAIN or EWOULDBLOCK in this case.

The flags argument is the bitwise OR of zero or more flags. in our case is 0 flag.

On success, these calls return the number of bytes sent. On error, -1 is returned, and errno is set appropriately.

Receive a message from a socket -

ssize_t recv(int sockfd, void *buf, size_t len, int flags);

recv() used to receive messages from a socket. They may be used to receive data on both connectionless and connection-oriented sockets. This page first describes common features of all three system calls, and then describes the differences between the calls.

If no messages are available at the socket, the receive calls wait for a message to arrive, unless the socket is nonblocking, in which case the value -1 is returned and the external variable errno is set to EA-GAIN or EWOULDBLOCK. The receive calls normally return any data available, up to the requested amount, rather than waiting for receipt of the full amount requested.

These calls return the number of bytes received, or -1 if an error occurred. In the event of an error, errno is set to indicate the error.

When a stream socket peer has performed an orderly shutdown, the return value will be 0 (the traditional "end-of-file" return).

Datagram sockets in various domains (e.g., the UNIX and Internet domains) permit zero-length datagrams. When such a datagram is received, the return value is 0.

The value 0 may also be returned if the requested number of bytes to receive from a stream socket was 0.

4.To change the CC Algorithm -

Copy a string -

char *strcpy(char *dest, const char *src);

The strcpy() function copies the string pointed to by src, including the terminating null byte ('\0'), to the buffer pointed to by dest. The strings may not overlap, and the destination string dest must be large enough to receive the copy.

The strcpy() functions return a pointer to the destination string dest.

Calculate the length of a string -

size_t strlen(const char *s);

The strlen() function calculates the length of the string pointed to by s, excluding the terminating null byte ('\0'). The strlen() function returns the number of bytes in the string pointed to by s.

Set options on sockets -

int setsockopt(int sockfd, int level, int optname, const void *optval,

socklen_t optlen);

setsockopt() manipulate options for the socket referred to by the file descriptor sockfd. Options may exist at multiple protocol levels. When manipulating socket options, the level at which the option resides, and the name of the option must be specified. To manipulate options at the sockets API level, level is specified as SOL_SOCKET. To manipulate options at any other level the proto-col number of the appropriate protocol controlling the option is supplied.

The arguments optval and optlen are used to access option values.

The argument should be nonzero to enable a boolean option, or zero if the option is to be disabled.

On success, zero is returned for the standard options. On error, -1 is returned, and errno is set appropriately.

5.To Close the TCP connection we used the following functions:

 Close a file descriptorclose() closes a file descriptor, so that it no longer refers to any file and may be reused.

Receiver function:

- 1. to Create a TCP Connection between the sender and receiver we used the following functions:
 - Create an endpoint for communicationint socket(int domain, int type, int protocol); (see the explanation above)
 - Set options on sockets int setsockopt(int sockfd, int level, int optname, const void
 *optval,

socklen_t optlen);

(see the explanation above)

appropriately.

- Fill memory with a constant bytevoid *memset(void *s, int c, size_t n); (see the explanation above)
- Convert values between host and network byte orderuint16_t htons(uint16_t hostshort);
 (see the explanation above)
- Bind a name to a socket -When a socket is created with socket(), it exists in a name space (address family) but has no address assigned to it. bind() assigns the address specified by addr to the socket referred to by the file descriptor sockfd. addrlen specifies the size, in bytes, of the address structure pointed to by addr. Traditionally, this operation is called "assigning a name to a socket". It is normally necessary to assign a local address using bind() before a SOCK_STREAM socket may receive connections. On success, zero is returned. On error, -1 is returned, and errno is set
- Listen for connections on a socket int listen(int sockfd, int backlog);
 listen() marks the socket referred to by sockfd as a passive socket, that is,
 as a socket that will be used to accept incoming connection requests using
 accept().

The sockfd argument is a file descriptor that refers to a socket of type SOCK STREAM or SOCK SEQPACKET.

The backlog argument defines the maximum length to which the queue of pending connections for sockfd may grow.

If a connection request arrives when the queue is full, the client may receive an error with an indication of ECONNREFUSED or, if the underlying protocol supports retransmission, the request may be ignored so that a later reattempt at connection succeeds.

On success, zero is returned. On error, -1 is returned, and errno is set appropriately.

2.To get a connection from the sender we used the following functions:

accept a connection on a socket

int accept(int sockfd, struct sockaddr *addr, socklen_t *addrlen);
The accept() system call is used with connection-based socket types
(SOCK_STREAM, SOCK_SEQPACKET). It extracts the first connection
request on the queue of pending connections for the listening socket,
sockfd, creates a new connected socket, and returns a new file descriptor
referring to that socket. The newly created socket is not in the listening
state. The original socket sockfd is unaffected by this call.

The argument sockfd is a socket that has been created with socket(), bound to a local address with bind(), and is listening for connections after a listen().

The argument addr is a pointer to a sockaddr structure. This structure is filled in with the address of the peer socket, as known to the communications layer. The exact format of the address returned addr is determined by the socket's address family. When addr is NULL, nothing is filled in; in this case, addrlen is not used, and should also be NULL.

The addrlen argument is a value-result argument: the caller must initialize it to contain the size (in bytes) of the structure pointed to by addr; on return it will contain the actual size of the peer address.

The returned address is truncated if the buffer provided is too small; in this case, addrlen will return a value greater than was supplied to the call. If no pending connections are present on the queue, and the socket is not marked as nonblocking, accept() blocks the caller until a connection is

present. If the socket is marked nonblocking and no pending connections arenpresent on the queue, accept() fails with the error EAGAIN or EWOULDBLOCK.

- 3. To receive the first and the second part of the file we used the following functions:
 - Receive a message from a socket ssize_t recv(int sockfd, void *buf, size_t len, int flags);
- 4. To measure the time, it took to receive the first and the second part we used the following functions:
 - Get time int gettimeofday(struct timeval *tv, struct timezone *tz);
 The functions gettimeofday() can set the time as well as a timezone.
- 5. To send back the authentication to the sender we used the following functions:
 - Send a message on a socketssize_t send(int sockfd, const void *buf, size_t len, int flags);
- 6. To change the CC Algorithm we used the following functions:
 - Copy a string char *strcpy(char *dest, const char *src);
 (see the explanation above)
 - Calculate the length of a string size_t strlen(const char *s);
 (see the explanation above)

(see the explanation above)

4.To Close the TCP connection we used the following functions:

• Close a file descriptor-

int close(int fd);

close() closes a file descriptor, so that it no longer refers to any file and may be reused.

1.2.5 Interfaces

- stdio.h is the header file for the standard input/output library in C. It provides functions for reading from and writing to the standard input and output streams (e.g., printf and scanf).
 - In this project: Used for printing process steps and output information.
- stdlib.h is the header file for the standard library in C. It provides functions for performing general-purpose tasks (e.g., malloc, free, and exit).
 In this project: Used for handling buffers etc.
- sys/socket.h is the header file for the socket interface in C. It provides functions for creating and manipulating sockets (e.g., socket, bind, listen, and accept).
 - In this project: Used for handling sockets and connections.
- arpa/inet.h is the header file for the internet address manipulation library in C. It provides functions for converting internet addresses between their binary and text representations (e.g., inet_aton and inet_ntoa).
 In this project: Used for converting IP from binary to text form.
- netinet/in.h is the header file for the internet address family in C. It provides definitions for internet-related data types, such as struct sockaddr_in which is used to represent internet addresses.
 In this project: Used for initializing socket data using sockaddr_in struct.
- netinet/tcp.h is the header file for the TCP (Transmission Control Protocol) implementation in C. It provides definitions for TCP-related data types and constants, such as TCP_NODELAY which disables the Nagle algorithm for reducing the number of small packets sent over the network.
- string.h is the header file for the string library in C. It provides functions for manipulating strings (e.g., strlen, strcpy, and strcmp).
 In this project: Used for setting up CC algorithms variables for the setsockopt() function and more, determining string lengths and more.

- errno.h is the header file for the global errno variable in C. errno is set by various functions to indicate an error, and the errno.h header provides definitions for the different possible values of `.
 In this project: Used for specifying the error tha may have occurred and terminated the program.
- The time.h: provides functions for manipulating time values. It includes
 definitions for the time_t data type, which represents a calendar time, as
 well as functions for converting between time_t values and strings (e.g.,
 ctime and asctime). It also provides functions for measuring the time
 elapsed between two points in time (e.g., clock and difftime).
 In this project: Used for calculating sending times using gettimeofday()
 func.

2 Research findings

2.1 Wireshark

2.1.1 0% lost

Sending number 1:

ochania ii	<u> </u>				
1 0.000000000	127.0.0.1	127.0.0.1	TCP	74	55680 - 5080 [SYN] Seq-0 NIn-65495 Len-0 MSS-65495 SACK_PERM TSval-3200971646 TSecr-0 NS-128
2 0.000031761	127.0.0.1	127.0.0.1	TCP		5080 + 55680 [SNN, ACK] Seq-8 Ack-1 NIn-65483 Len-8 MSS-65495 SACK_PERM TSVe1-2200971646 TSecr-3200971646 NS-128
3 0.000055623	127.0.0.1	127.0.0.1	TCP	66	
4 0.000354152	127.0.0.1	127.0.0.1	TCP		55680 + 5080 [PSH, ACK] Seq=1 Ack=1 Win=65536 Len=4 TSval=3200971647 TSecr=3200971646
5 0.000371484	127.0.0.1	127.0.0.1	TCP	66	5080 + 55680 [ACK] Seg-1 Ack-5 Nin-65536 Len-0 TSval-3200971647 TSecr-3200971647
6 0.000407437	127.0.0.1	127.0.0.1	TCP	78	5080 + 55680 [PSH, ACK] Seq-1 Ack-5 Win-65536 Len-4 TSval-3200971647 TSecr-3200971647
	467-9-9-4	467-9-9-4	192		200 4 201 1841 2852 8452 8452 8452 8452 8452 8452 8452
8 0.001652053	127.0.0.1	127.0.0.1	TCP	32834	55680 + 5080 (ACK) Sec-5 Ack-5 Win-65536 Len-22768 T5val-3200971648 TSecr-3200971647
9 0.006948912	127.0.0.1	127.0.0.1	TCP	32834	
10 0.006924254					[TCP ZeroNindow] 5888 + 55688 [ACK] Seq-5 Ack-65541 Win-8 Len-8 TSval-3288971653 TSecr-3288971648
11 0.044906479	127.0.0.1	127.0.0.1	TCP		[TCP Mindow Update] 5888 + 55680 [ACK] Seq-5 Ack-65541 Min-48512 Len-0 TSvol-3200971691 TSecr-3200971648
12 0.044924994	127.0.0.1	127.0.0.1	TCP	37834	55680 + 5680 [ACK] Seq-65541 Ack-5 Win-65536 Len-32768 TSval-3200971691 Tsecr-3200971691
13 0.084950243	127.0.0.1	127.0.0.1	TCP		
14 0.098063006	127.0.0.1	127.0.0.1	TCP	66	[TCP Window Update] 5080 + 55680 [ACK] Seq-5 Ack-98309 Win-65536 Len-0 TSval-3200971745 TSecr-3200971691
15 0.098077427	127.0.0.1	127.0.0.1	TCP	32834	55680 + 5880 [PSH, ACK] Seq-98309 Ack-5 Win-65536 Len-32768 T5vel-3200971745 TSecr-3200971745
16 0.098085053	127.0.0.1	127.0.0.1	TCP	32834	[TCP Mindow Full] 55680 + 5080 [ACK] Seq-131077 Ack+5 Win+65536 Len-22768 TSvzl-3200971745 TSecr-2200971745
17 0.098097278		127.0.0.1			[TCP ZeroMindow] 5080 → 55680 [ACK] Seq-5 Ack-163845 Min-0 Len-0 TSvzl-3200571745 TSecr-3200971745
18 0.145719924	127.0.0.1	127.0.0.1	TCP		[TCP Window Updste] 5888 - 55688 [ACK] Seq-5 Ack-163845 Win-48512 Len-0 TSvsl-3200971792 TSecr-3200971745
19 0.145738282	127.0.0.1	127.0.0.1	TCP	32834	55680 + 5080 [PSH, ACK] Seq-163845 Ack-5 Win-65536 Len-22768 TSval-3200971792 TSecr-3200971792
20 0.189496296	127.0.0.1	127.0.0.1	TCP		5080 + 55680 [ACK] Seq-5 Ack-196613 Win-15744 Len-0 TSval-3200971836 TSecr-3200971792
21 0.263230141	127.0.0.1	127.0.0.1	TCP	66	[TCP Window Update] 5080 → 55680 [ACK] Seq-5 Ack-196613 Win-65536 Len-0 TSvsl-3200971910 TSecr-3200971792
22 0.263248629	127.0.0.1	127.0.0.1	TCP	32834	55680 + 5080 [ACK] Seq-196613 Ack-5 Win-65536 Len-32768 TSval-3200971910 TSecr-3200971910
23 0.263443972	127.0.0.1	127.0.0.1	TCP	32834	[TCP Window Full] 55680 + 5080 [PSH, ACK] Seq-229381 Ack-5 Win-65536 Len-32768 TSvel-3200971910 TSecr-3200971910
24 0.263476833					
25 0.290777942	127.0.0.1	127.0.0.1	TCP	66	[TCP Window Update] 5080 + 55680 [ACK] Seq-5 Ack-262149 Win-48512 Len-0 TSvel-3200971937 TSecr-3200971910
26 0.290791318	127.0.0.1	127.0.0.1	TCP	32834	55680 + 5080 [ACK] Seq-262149 Ack-5 Win-65536 Len-32768 TSvel-3200971937 TSecr-3200971937
27 0.332729245	127.0.0.1	127.0.0.1	TCP	66	5080 + 55680 [ACK] Seq-5 Ack-294917 Win-15744 Len-0 TSval-3200971979 TSecr-3200971937
28 0.341070868	127.0.0.1	127.0.0.1	TCP	66	[TCP Window Update] 5000 + 55600 [ACK] Seq-5 Ack-294917 Win-65536 Len-0 TSvel-3200971980 TSecr-3200971937
29 0.341080440	127.0.0.1	127.0.0.1	TCP	32834	55680 → 5080 [PSH, ACK] Seq-294917 Ack-5 Win-65536 Len-32768 TSval-3200971988 TSecr-3200971988
30 0.341086480	127.0.0.1	127.0.0.1	TCP	32834	[TCP Window Full] 55680 + 5080 [ACK] Seq-327685 Ack-5 Win-65536 Len-32768 TSval-3200971988 TSecr-3200971988
31 0.341101988					
32 0.380021492	127.0.0.1	127.0.0.1	TCP	66	[TCP Window Update] 5080 + 55680 [ACK] Seq-5 Ack-360453 Win-48512 Len-0 TSval-3200972026 TSecr-3200971988
33 0.380040115	127.0.0.1	127.0.0.1	TCP		55680 + 5080 [PSH, ACK] Seq-360453 Ack-5 Win-65536 Len-32768 TSval-3200972026 TSecr-3200972026
34 0.418108941	127.0.0.1	127.0.0.1	TCP	66	5080 + 55680 [ACK] Seq-5 Ack+393221 Win-15744 Len+0 TSval-3200972065 TSecr-3200972026
35 0.437565399	127.0.0.1	127.0.0.1	TCP	66	
36 0.437580918	127.0.0.1	127.0.0.1	TCP		55680 + 5080 [ACK] Seq-393221 Ack-5 Win-65536 Len-32760 TSvel-3200972084 TSecr-3200972084
37 0.437587131	127.0.0.1	127.0.0.1	TCP		[TCP Window Full] 55680 + 5080 [PSH, ACK] Seq-425989 Ack-5 Win-65536 Len-32768 T5val-3200972084 T5ecr-3200972084
38 0.437735158 39 0.474395056	127.0.0.1	127.0.0.1	TCP		[TCP ZeroMindow] 5888 + 55688 [ACK] Seq-5 Ack-458757 Min-8 Len-8 TSvsl-3208972884 TSecr-3208972884
40 0.474409493	127.0.0.1	127.0.0.1	TCP		[TCP Nindow Update] 5880 + 55680 [ACK] Seq-5 Ack=458757 Nin=48512 Len=0 TSval=3200972121 TSecr=3200972084 55680 + 5880 [ACK] Seq-458757 Ack=5 Nin=65536 Len=32768 TSval=3200972121 TSecr=3200972121
41 0.516821668			ICP	32034	5080 + 55680 [ACK] Seq=5 Ack=491525 Win=15744 Len=0 TSval=3200972163 TSecr=3200972121
			TCD	66	
	127.0.0.1	127.0.0.1	TCP		
42 0.543395920	127.0.0.1	127.0.0.1	TCP	66	[TCP Window Update] 5080 + 55680 [ACK] Seq-5 Ack-491525 Win-65536 Len-0 TSvel-3200972190 TSecr-3200972121
				66 32834	[TCP Nindow Update] 5000 + 55600 (ACX) Seq-5 Ack-401525 Nin-65360 Len-0 T3val-3200072190 T5ecr-3200072121 55600 - 5000 [PSH, ACX] Seq-401525 Ack-5 Nin-65366 Len-32760 T5val-3200072100 T5ecr-3200072100
42 0.543395920 43 0.543409046	127.0.0.1 127.0.0.1	127.0.0.1 127.0.0.1	TCP TCP	66 32834	[TCP Window Update] 5080 + 55680 [ACK] Seq-5 Ack-491525 Win-65536 Len-0 TSvel-3200972190 TSecr-3200972121
42 0.543395920 43 0.543409046	127.0.0.1 127.0.0.1	127.0.0.1 127.0.0.1	TCP TCP	66 32834	[TCP Nindow Update] 5000 + 55600 (ACX) Seq-5 Ack-401525 Nin-65360 Len-0 T3val-3200072190 T5ecr-3200072121 55600 - 5000 [PSH, ACX] Seq-401525 Ack-5 Nin-65366 Len-32760 T5val-3200072100 T5ecr-3200072100
42 0.543395920 43 0.543409046	127.0.0.1 127.0.0.1 127.0.0.1	127.0.0.1 127.0.0.1	TCP TCP	66 22834 4036	[TCP Nindow Update] 5000 + 55600 (ACX) Seq-5 Ack-401525 Nin-65360 Len-0 T3val-3200072190 T5ecr-3200072121 55600 - 5000 [PSH, ACX] Seq-401525 Ack-5 Nin-65366 Len-32760 T5val-3200072100 T5ecr-3200072100
42 0.54395920 43 0.543409046 44 0.543412161	127.0.0.1 127.0.0.1 127.0.0.1	127.0.0.1 127.0.0.1 127.0.0.1	TCP TCP TCP	66 22834 4036	[TCP Window Update] 5000 + 55000 [ACK] Seq-5 Ack-401525 Win-65536 Len-0 T5vxl-320097190 T5ecr-320097121 55000 - 5000 [PSH, ACK] Seq-4051515 Ack-5 Win-65536 Len-3076 T5vxl-320097130 T5ecr-320097130 55000 - 5000 [PSH, ACK] Seq-534293 Ack-5 Win-65536 Len-3070 T5vxl-320097130 T5ecr-320097130
42 0.54395920 43 0.543409046 44 0.543412161	127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1	127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1	TCP TCP TCP	66 21834 4036 53 21824 21824	[TO Mindow Update] 5888 + 55880 [ACK] Seq.5 Act.401525 Min-65536 Len-8 TSval-2200972190 TSecr-2200972121 55880 + 5880 [SNL, ACK] Seq.401525 Act.5 Min-65536 Len-270 TSval-2200972100 TSecr-2100972100 55880 + 5880 [SNL, ACK] Seq.40152 Act.5 Min-65536 Len-2700 TSval-2200972100 TSecr-2100972100 6580 - 5860 [ACK] Seq. 400 Act.5 Min-65536 Len-2700 TSval-2200972100 TSecr-2100972100 6580 - 5860 [ACK] Seq. 400 Act.5 Min-65536 Act.5 Min-65536 Act.5 Min-65536 Act.5 Min-65536 Min-65536 Len-270072100 6580 - 5860 [ACK] Seq210243 Act.5 Min-65536 Min-65536 Len-27024 TSecr-2200972124 [[CP Mindow Milk] S5680 - 5800 [CSw, ACK] Seq.558031 Act.5 Min-65536 Len-27048 TSval-2700972224 TSecr-2200972224
42 0.543355220 43 0.54340946 44 0.554421161 45 0.573214475 47 0.577214876 48 0.57721870 49 0.57725870 50 0.69245949	127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1	127.e.e.1 127.e.e.1 127.e.e.1 127.e.e.1 127.e.e.1 127.e.e.1 127.e.e.1 127.e.e.1	TCP TCP TCP TCP TCP TCP TCP TCP TCP	66 22834 4036 56 73 72834 22334 65	[TO Window Update] 5000 + 55600 [ACX] Seq-5 Act=091525 Win-6536 Lem-276 Toval=200072190 Tisecr=200072120 55600 + 5000 [PM, ACX] Seq-4091525 Accis Win-6536 Lem-276 Toval=200072100 Tisecr=200072100 55600 + 5000 [ACX] Seq-4091525 Accis Win-6536 Lem-276 Toval=200072100 Tisecr=200072100 55600 + 5000 [ACX] Seq-40000 Accis Win-6536 Lem-276 Toval=200072100 Tisecr=200072100 55600 + 5000 [ACX] Seq-410000 Accis Win-6536 Lem-2760 Tisval=200072224 Tisecr=200072224 [TO Window Fall] 55600 + 55600 [ACX] Seq-5 Accis Sim-0
42 0.54325920 43 0.54349846 44 0.54411161 45 4.5431161 46 0.57712476 47 0.57712476 48 0.57712476 49 0.57712476 50 0.69726929 51 0.69926929	127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1	127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1	TCP TCP TCP TCP TCP TCP TCP TCP TCP	66 21834 406 	[TO Window Update] 5000 + 55600 [ACK] Sequit Act-401525 Win-65506 Len-8 Townl-200077190 Tiser-2200077121 55600 + 5000 [SNI, ACK] Seq-401525 Act-5 Win-65506 Len-276 Townl-200077190 Tiser-2100077190 55600 + 5000 [SNI, ACK] Seq-401525 Act-5 Win-65506 Len-276 Townl-200077190 Tiser-2100077190 55600 + 5000 [SNI, ACK] Seq-51000 Act-5 Win-65506 Len-2700 Townl-200077100 Tiser-2100077100 55600 + 5000 [SNI, Seq-51000] Act-5 Win-65506 Len-2760 Townl-200077100 Tiser-2100077100 [TO Window Will] 55600 + 5000 [SNI, ACK] Sequit-5000 Min-85506 Len-2760 Tiser-2100077120 Tiser-2100077120 [TO Window Will] 55600 + 5000 [SNI, ACK] Sequit-5000 Min-85506 Len-80 [SNI-1200077120 Tiser-2100077120 Tiser-2100077120 [TO Window Will] 55600 + 5000 [SNI, ACK] Sequit-5000 Min-85506 Len-80 [SNI-1200077120 Tiser-2100077120 Tiser-2100077120 Tiser-210077120 Tiser-2100077120 T
42 0.54239920 43 0.54249946 44 0.54241216 5 0.577216475 47 0.577216475 48 0.577726970 49 0.577726970 50 0.69025949 51 0.69026923 52 0.69026923 52 0.69026923	127.0.0.1 127.0.0.1 127.0.0.1 137.0.0.1 137.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1	127, e. e. 1 127, e. e. 1	TCP	66 22834 4036 53 32834 66 66 22834 66	[TO Minfow Update] 5080 - 55600 [ACK] Seep-8 Act-893525 Min-65326 Len-9 Tsw1-200977210 Tater-2200977210 55680 - 5000 [PSH, ACK] Seep-6031253 Act-5 Min-65336 Len-12706 Tsw1-2200977210 Tater-2200977210 55680 - 5000 [ACK] Seep-503125 Act-5 Min-65336 Len-12706 Tsw1-2200977210 Tater-2200977210 55680 - 5000 [ACK] Seep-503125 Act-6 Min-65336 Len-12706 Tsw1-2200977210 Tseer-2200977210 55680 - 5000 [ACK] Seep-503125 Act-6 Min-65336 Len-12706 Tsw1-2200977210 Tseer-2200977210 55680 - 5000 [ACK] Seep-503125 Act-6 Min-65336 Len-12706 Min-65336 Min-65336 Len-12706 Min-65336 Len-12706 Min-65336 Min-65336 Len-12706 Min-65336 Len-12706 Min-65336 Min-
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42 0.542305920 43 0.542409406 44 0.154409406 45 0.154409406 46 0.15441216 47 0.577216475 48 0.577272670 49 0.577216475 59 0.69026233 50 0.690265949 51 0.690265949 51 0.690265949 52 0.652469416 53 0.77625351 55 0.77625922 56 0.77625921 57 0.77626922 58 0.77625921 59 0.77625921 50 0.	127, 0, 0, 1 127, 0, 0, 1	127, 8, 9, 1 127, 8, 9, 1	TCP	66 22834 4036 66 22834 22834 22834 66 66 22834 66 66 22834 66 22834 66 22834 66 66 32834 66 32834 66 32834 66 32834 66 32834 66 32834 66 66 32834 66 66 32834 66 66 66 32834 66 66 66 66 66 68 68 68 68 68 68 68 68	[TO Minfow Update] 5888 - 55888 [ACK] Sergé Ancie5155 Len-12768 Total-200972190 Titer-200972190
42 0.542305920 43 0.542409046 44 0.154241216 45 0.15421216 47 0.57711475 48 0.777218070 49 0.777218070 49 0.777218070 49 0.777218070 49 0.777218070 40 0.69225549 51 0.690225549 51 0.690225549 52 0.455244816 53 0.457245922 54 0.477289221 55 0.477289221 56 0.477289221 57 0.77952900 58 0.77529211 59 0.75522111 60 0.819586721 61 0.819586721 62 0.81958721 63 0.819527216 64 0.88881646 67 0.919586728 68 0.919586728 69 0.919586728 71 0.919586897 71 0.919586897 71 0.91858897	127, 0.0.1 127, 0.0.1	127, e.e. 1 127, e.e. 1	TCP	66 22834 4036 66 32834 22834 66 66 22834 66 66 32834 66 22834 66 22834 66 22834 66 22834 66 66 22834 66 66 22834 66 66 22834 66 66 66 66 66 66 66 66 66 66 66 66 66	[TO Minfrow Update] 5088 - 55688 [ACK] Sergé Active[5125 Mem-5536 Lem-1276 Total-200977190 Total-200977190
42 0.542305920 43 0.542305920 44 0.54240546 44 0.54241216 47 0.577216475 48 0.577216475 49 0.577226270 49 0.577216475 50 0.690255949 51 0.690255949 51 0.690255949 52 0.670255949 53 0.77655358 57 0.767508090 58 0.77655358 57 0.767508090 58 0.77655358 57 0.767508090 58 0.767553511 60 0.815902140 61 0.815902140 62 0.815902140 63 0.815902140 64 0.888814614 65 0.888816416 67 0.915902170 68 0.915902170 69 0.915902170 69 0.915902170 71 0.915902170 72 0.915902170 73 0.915902170 74 0.915902170 75 0.915902270 76 1.93052070 77 0.98022706 77 1.93052070 77 1.93052070 77 1.930520706 77 1.930520706 77 1.930520706 77 1.930520706 77 1.930520706 77 1.930520706 77 1.930520706 77 1.930520706 77 1.930520706 77 1.930520706 77 1.930520706 77 1.930520706 77 1.930520706 77 1.930520706 77 1.930520706 77 1.930520706 77 1.930520706 77 1.930520706 77 1.930520706 77 1.9305207070 77 1.930520706 77 1.930520706 77 1.930520706 77 1.930520706 77 1.930520706 77 1.930520706 77 1.9305207070 77 1.9305207070 77 1.9305207070 77 1.9305207070 77 1.9305207070	127, 0.0.1 127, 0.0.1	127, 8, 9, 1 127, 8, 9, 1	TCP	66 72834 4036 66 72834 7	TOO Mindow Update 5888 5588 EAC Sepa Assistant Sepa Assistant Separation Town-1208977219 Times-2208977219 Times-2
42 0.543205920 43 0.543409406 44 0.15441216 45 0.154409406 46 0.15451216 47 0.577216475 48 0.777226970 49 0.777226970 49 0.777226970 49 0.77762595 51 0.66922595 51 0.66922595 52 0.65224816 53 0.67242595 55 0.672426922 56 0.672426922 56 0.672426922 56 0.672426922 57 0.777269900 58 0.777225911 59 0.755223111 60 0.119569271 61 0.119569271 62 0.119569271 63 0.119569271 64 0.119569271 65 0.119569271 66 0.119569271 77 0.11952271 78 0.11952555 79 0.442216276 79 0.119526937 71 0.119526937 71 0.119526937 71 0.119526937 72 0.119526937 73 0.119526937 74 1.1193261694 75 1.1193262770 76 1.1193262770 77 0.119525721 78 1.1193265721 78 1.1193265721 78 1.1193265721 78 1.1193265721 78 1.1193265721 78 1.1193265721	127, 0.0.1 127, 0.0.1	127, e.e. 1 127, e.e. 1	TCP	66 22834 4036 66 22834 66 66 66 22834 66 66 66 22834 66 66 66 22834 66 66 66 22834 66 66	[TO Mindow Update] 5888 - 55888 [ACK] Serge Ant-MESISS Min-6536 Lem-1708 Titles-1208977219 Titles-1208977219
42	127, 0.0.1 127, 0.0.1	127, e.e. 1 127, e.e. 1 129, e.e. 1	TCP	66 22834 4056 66 22834 22834 66 66 22834 66 66 22834 66 22834 66 22834 66 66 22834 66 66 22834 66 66 22834 66 66 22834 66 66 22834 66 66 22834	[TO Mindow Update] 5088 55888 [ACK] Sery A Act-691525 Min-6536 Lem-1706 Tivel-12009772190 Tiver-22009772190
42 0.542305920 43 0.54240546 44 0.15440546 45 0.15440546 46 0.15451116 47 0.577216475 48 0.577272670 49 0.577216475 59 0.669266233 50 0.669266233 51 0.669266233 52 0.652464616 53 0.77625351 55 0.77625692 56 0.77625921 57 0.77626921 58 0.77625921 59 0.77625921 50 0.852464616 50 0.815566721 61 0.815566721 62 0.815566721 63 0.815566721 64 0.815566721 65 0.86654436 66 0.88881636 67 0.916922264 68 0.916966930 69 0.91696274 70 0.9666930 71 0.962626677 72 0.9666930 73 0.9666930 74 1.93365180 75 1.933628110 76 1.933628110 77 1.9336518110 77 1.9336518110 77 1.9336518110 77 1.9336518110 77 1.9336518110 77 1.9336518110 77 1.9336518110 77 1.9336518110 77 1.9336518110 77 1.9336518110 77 1.9336518110 77 1.9336518110 77 1.9336518110 77 1.933655721 78 1.107676960	127, 0.0.1 127, 0.0.1	127, 8, 9, 1 127, 8, 9, 1	TCP	66 22834 4036 66 22834 22824 66 66 22834 6283 6283 6383 6483 6483 6583 6684 6685 22834 6686 22834 6686 22834 6686 22834 6686 22834 6686 6696 6696 6696 6696 6696 6696 669	[TO Minfow Update] 5888 - 55888 [ACK] Sergé Ancie51525 Min-6536 Lem-1708 Tixel-200977219 Tixer-200977219
42 0.542305920 43 0.542405040 44 0.54241210 45 0.577216475 47 0.577216475 48 0.577228070 49 0.577228070 40 0.577228070 40 0.577228070 40 0.577228070 40 0.677228070 41 0.677228070 42 0.677228070 43 0.677228070 45 0.677228070 46 0.677228070 47 0.777228070 48 0.777228071 49 0.877228071 40 0.878228071 41 0.878228071 42 0.878228070 43 0.878228071 44 0.848256071 45 0.888280771 46 0.888280771 47 0.878228071 48 0.878228071 49 0.878228071 40 0.878228071 40 0.878228071 41 0.878228071 42 0.878228071 43 0.87828071 44 0.87828071 45 0.87828071 46 0.87828071 47 0.87828071 48 0.87828071 49 0.87828071 40 0.8782807	127, 0.0.1 127, 0.0.1	127, e.e. 1 127, e.e. 1	TCP	66 22834 4036 66 22834 4036 66 66 22834 66 66 23834 66 23834 66 23834 66 23834 66 23834 66 23834 66 66 23834 66 66 23834 66 66 23834 66 66 23834 66 23834 66 66 23834 66 66 23834 66 66 23834 66 66 23834 66 66 66 23834 66 66 66 66 66 66 66 66 66 66 66 66 66	[TO Mindow Update] 5080 - 55600 [ACK] Sergé Ant-05150 [Ant-05364 Len-1706 Total-1200977210 Total-7200977210
42 0.542305920 43 0.542405406 44 0.54241216 45 0.54241216 47 0.577216475 48 0.577226278 49 0.577226273 50 0.600255459 51 0.600255459 51 0.600255459 52 0.600255459 53 0.77655325 55 0.77655325 56 0.77655325 57 0.707508090 58 0.77655325 58 0.77655325 59 0.755523131 60 0.8135622463 61 0.8135622463 62 0.8135622463 63 0.8135622463 64 0.888816466 65 0.888816466 67 0.915522137 68 0.815522463 68 0.915562363 69 0.9155222463 69 0.915562363 69 0.9156236363 69 0.9156236363 69 0.9156236363 69 0.9156236363 69 0.9156236363 69 0.91562372 69 0.9156	127, 0.0.1 127, 0.0.1	127, 8, 9, 1 127, 8, 9, 1	TCP	66 72834 4036 66 72834 7	
42 0.542305920 43 0.542409406 44 0.54241216 45 0.57216475 47 0.577216475 48 0.577272677 49 0.577272677 49 0.577272677 49 0.57726275 51 0.60926233 52 0.65245646 53 0.67242593 55 0.67242593 56 0.67242593 57 0.77726900 58 0.77252511 59 0.87242513 50 0.87242513 50 0.87242513 51 0.87242513 52 0.87242513 53 0.87242513 54 0.87242513 55 0.87242513 56 0.87242513 57 0.77726900 58 0.88524673 59 0.88524673 50 0.88524673 50 0.88524673 51 0.88522673 52 0.88524673 53 0.88522673 54 0.885252673 55 0.885252673 56 0.885252673 57 0.88526573 58 0.88526573 59 0.88526673 59 0.88526673 50 0.8852673 50 0.8852673 50 0.8852673 51 0.8852673 52 0.8852673 53 0.8852673 54 0.8852673 57 0.88526673 58 0.8852673 59 0.88526673 59 0.88526673 59 0.88526673 50 0.88526673 50 0.88526673 50 0.8852673 50 0.8852673 50 0.885267	127, 0.0.1 127, 0.0.1	127, 8, 9, 1 127, 8, 9, 1	TCP	66 72834 4036 66 72834 7	[TO Mindow Update] 5088 - 55688 [ACK] Sergé Active[5125 Min-6536 Lem-1706 Title=1-200977219 Title=1-200977219
42 0.542305920 43 0.542405406 44 0.54241216 45 0.54241216 47 0.577216475 48 0.577226278 49 0.577226273 50 0.600255459 51 0.600255459 51 0.600255459 52 0.600255459 53 0.77655325 55 0.77655325 56 0.77655325 57 0.707508090 58 0.77655325 58 0.77655325 59 0.755523131 60 0.8135622463 61 0.8135622463 62 0.8135622463 63 0.8135622463 64 0.888816466 65 0.888816466 67 0.915522137 68 0.815522463 68 0.915562363 69 0.9155222463 69 0.915562363 69 0.9156236363 69 0.9156236363 69 0.9156236363 69 0.9156236363 69 0.9156236363 69 0.91562372 69 0.9156	127, 0.0.1 127, 0.0.1	127, 8, 9, 1 127, 8, 9, 1	TCP	66 22834 4036 66 22842 22244 66 66 66 22844 22844 66 66 22844 66 66 22844 66 66 22844 66 66 22844 66 66 22844 66 66 22844 66 66 22844 66 66 22844 66 66 22844 66 66 22844 66 66 22844 66 66 22844 66 66 66 22844 66 66 66 66 66 66 66 66 66 66 66 66 6	

Sending number 5:

	15.346294917	127.0.0.1	127.0.0.1	TCP	70
326 327	15.346307723	127.0.0.1	127.0.0.1	TCP	00 5080 + 5080 [ALK] 560-21 ACK-422085 MIR-64800 Len-8 TSV81-3200980993 TSecr-3200980993 32834 55680 + 5080 [ACK] 560-4220085 Ack-21 Wir-65536 Len-32768 TSv81-3200980993 TSecr-3200980993
328	15.346371969	127.0.0.1	127.0.0.1	TCP	66 5080 + 55680 [ACK] Seq-21 Ack-4258853 Win-48512 Len-0 TSval-3200986993 TSecr-3200986993
329	15.346533884	127.0.0.1	127.0.0.1	TCP	32834 55680 + 5880 [PSH, ACK] Seq-4258853 Ack-21 Min-65536 Len-32768 TSval-3200986993 TSecr-3200986993
	15.388729578	127.0.0.1	127.0.0.1	TCP	66 5080 + 55680 [ACK] Seq-21 Ack-4291621 Win-15744 Len-0 TSvel-3200987035 TSecr-3200986993
331 332	15.426547008 15.426561834	127.0.0.1	127.0.0.1	TCP	66 [TCP Window Update] S000 + 55600 [ACK] Seq-21 Ack-4291621 Win-65536 Len-0 TSvel-3200987073 TSecr-3200986993 32834 55600 + 5000 [ACK] Seq-4291621 Ack-21 Win-65536 Len-32768 TSvel-3200987073 TSecr-3200987073
333	15.426568749	127.0.0.1	127.0.0.1	TCP	32834 [TCP Window Full] 55680 + 5080 [PSH, ACK] Seq-4324389 Ack-21 Win-65536 Len-32768 TSvsl-3200987073 TSecr-320098707
335	15.454135864 15.454150178	127.0.0.1	127.0.0.1	TCP	66 [TCP Nindow Update] 5888 + 55688 [ACK] Seq-21 Ack-4357157 Nin-48512 Len-8 Tsvzl-3208987101 TSecr-3208987073 33834
336 337	15.4541501/8	127.0.0.1	127.0.0.1	TCP TCP	32834 55680 + 5680 [ACK] Seq-4357157 Ack-21 Win-65536 Len-32768 T5v21-3200987101 TSecr-3200987101 66 5080 + 55680 [ACK] Seq-21 Ack-4389925 Win-15744 Len-0 T5v21-3200987143 TSecr-3200987101
338	15.511123843	127.0.0.1	127.0.0.1	TCP	66 [TCP Window Update] 5080 + 55680 [ACK] Seq-21 Ack-4389925 Win-65536 Len-0 TSval-3280987158 TSecr-3280987101
339	15.511137638	127.0.0.1	127.0.0.1	TCP	32834 55680 + 5880 [PSH, ACK] Seq-4389925 Ack-21 Win-65536 Len-32768 TSval-2200987158 TSecr-3200987158
	15.511144926 15.511161277	127.0.0.1	127.0.0.1		32834 [TCP Window Full] 55680 + 5880 [ACK] Seq-4422693 Ack-21 Win-65536 Lem-32768 TSvzl-3200987158 TSecr-3200987158 66 [TCP ZeroWindow] 5880 + 55680 [ACK] Seq-41 Ack-4455461 Win-6 Lem-0 TSvzl-3200987158 TSecr-3200987158
342	15.540063024	127.0.0.1	127.0.0.1	TCP	66 [TCP Window Update] 5980 + 55680 [ACK] Seq=21 Ack=4455461 Win=8512 Len=0 TSvz1=3200987187 TSecr=3200987188
343	15.540165366	127.0.0.1	127.0.0.1	TCP	32834 S5680 - 5080 [PSH, ACK] Seq-4455461 Ack-21 Win-65536 Len-22768 T5vzl-3200987187 TSecr-3200987187
	15.580671396	127.0.0.1	127.0.0.1	TCP	66 5080 + 55680 [ACK] Seq-21 Ack-4488229 Win-15744 Len-0 TSval-3200987227 TSecr-3200987187
345 346	15.611393339 15.611439184	127.0.0.1	127.0.0.1	TCP	66 [TCP Window Update] 5080 + 55680 [ACK] Seq-21 Ack-4488229 Win-65536 Len-0 T5val-3200987258 T5ecr-3200987187 32834 55680 + 5080 [ACK] Seq-4488229 Ack-21 Win-65536 Len-32768 T5val-3200987258 TSecr-3200987258
347	15.611459924	127.0.0.1	127.0.0.1	TCP	32834 TXP Mindow Full] S5680 + 5080 [PSH, ACK] Seq=4520997 Ack=21 Min=65536 Len=32768 TXVel=3200987258 TSecr=320098725
					66 [TCP ZeroMindow) 5080 + 55680 [ACK] Seq-21 Ack-4553765 Win-0 Len-0 T5v31-3200987258 TSecr-3200987258
349	15.645791302	127.0.0.1	127.0.0.1	TCP	66 [TCP Window Update] 5080 + 55680 [ACK] Seq-21 Ack-4553765 Win-48512 Len-0 TSvel-3200987292 TSecr-3200987258
350 351	15.645806317 15.689397929	127.0.0.1	127.0.0.1	TCP TCP	32834 55680 + 5680 [ACK] Seq-4553765 Ack-21 Win-65536 Len-32768 T5vsl-3200987292 T5ecr-3200987292 66 5080 + 55680 [ACK] Seq-21 Ack-4586533 Win-15744 Len-0 T5vsl-3200987336 T5ecr-3200987292
352	15.706940028	127.0.0.1	127.0.0.1	TCP	66 [TCP Window Update] 5888 + 55688 [ACK] 5eq-21 Ack-4586533 Win-65536 Len-0 Tsval-3200987353 Tsecr-3200987292
353	15.706954075	127.0.0.1	127.0.0.1	TCP	32834 55680 + 5080 [PSH, ACK] Seq-450533 Ack-21 Min-65536 Len-32768 TSval-3200987353 TSecr-3200987353
354	15.706961837	127.0.0.1	127.0.0.1	TCP	32834 [TCP Window Full] 55680 + 5880 [ACK] Seq-4619301 Ack-21 Win-65536 Len-32768 TSval-3280987353 TSecr-3280987353
355 356	15.706975291 15.733053225	127.0.0.1	127.0.0.1	TCP	66 [TCP ZeroMindow] 5080 + 55680 [ACK] Seq-21 Ack-4652069 Min-0 Len-0 T3vzl-3200987353 T5ecr-3200987353 66 [TCP Mindow Update] 5080 + 55680 [ACK] Seq-21 Ack-4652069 Min-48512 Len-0 T5vzl-3200987379 T5ecr-3200987353
357	15.733033223	127.0.0.1	127.0.0.1	TCP	32834 55680 + 5080 [PSH, ACK] Seq=4652069 Ack=21 Win=65536 Len=32768 TSval=3200987380 TSecr=3200987379
358	15.776722535	127.0.0.1	127.0.0.1	TCP	66 5888 + 55688 [ACK] Seq-21 Ack-4684837 Win-15744 Len-8 TSvel-3200987423 TSecr-3200987388
359	15.784746864	127.0.0.1	127.0.0.1	TCP	66 [TCP Window Update] 5080 + 55680 [ACK] Seq-21 Ack-4684837 Win-65536 Len-0 TSvsl-3200987431 TSecr-3200987380
360	15.784823668	127.0.0.1	127.0.0.1	TCP	22834 55680 + 5080 [ACK] Seq=4684837 Ack=21 Win=65536 Len=32768 T5vsl=2200987431 TSecr=3200987431 22834 ITCD Window Full1 55680 + 5080 IDSH ACK1 Sen=4717605 Ack=21 Win=65536 Len=32768 T5vsl=3200987431 TSecr=320098743
	15.784849737	127.0.0.1	127.0.0.1		32834 [TCP Kindow Full] 55680 + 5880 [PSH, ACK] Seq=4717605 Ack=21 Nin-65536 Len-32768 TSvzi=3200987431 TSecr=320098743 66 [TCP ZeroNindow] 5880 + 55680 [ACK] Seq=21 Ack=4756373 Nin-9 Len-0 TSvzi=3200987431 TSecr=3200987431
363	15.810999384	127.0.0.1	127.0.0.1	TCP	66 [TCP Window Update] 5080 + 55680 [ACK] Seq-21 Ack-4758373 Win-48512 Len-0 TSvel-3200987457 TSecr-3200987431
364	15.811010113	127.0.0.1	127.0.0.1	TCP	4036 55680 + 5080 [PSH, ACK] Seq=4750373 Ack=21 Win=65536 Len=3970 TSvzl=3200987457 TSecr=3200987457
265	15 0/07/0070	127 0 0 1	127 0 0 1	770	66 - 5880 - 5580 FACKT Sec. 24 Apr. A7547A7 Mar. 65576 Locus TC:=1.2300087A87 TC===.2300087A57
367	15.840846777	127.0.0.1	127.0.0.1	TCP	32834 55680 → 5000 [ACK] Seq=4754343 Ack=25 Win=65536 Len=32768 T5vsl=3200987487 T5ecr=3200987487
368	15.841008064	127.0.0.1	127.0.0.1	TCP	32834 [TCP Window Full] 55680 + 5880 [PSH, ACK] Seq-4787111 Ack-25 Win-65536 Len-32768 TSval-3200987487 TSecr-320098748
369	15.841229744	127.0.0.1	127.0.0.1	TCP	66 [TCP ZeroWindow] 5080 + 55680 [ACK] Seq-25 Ack-4819879 Win-0 Len-0 TSvel-3200987488 TSecr-3200987487
370 371	15.879432568 15.879446693	127.0.0.1	127.0.0.1	TCP TCP	66 [TCP Window Update] 5000 + 55000 [ACK] Seq-25 Ack-4819879 Win-48512 Len-0 TSvel-3200987326 TSecr-3200987487 32834 55000 + 5000 [ACK] Seq-4819879 Ack-25 Win-65536 Len-32768 TSvel-3200987526 TSecr-3200987526
	15.920625372	127.0.0.1	127.0.0.1	TCP	66 5080 + 55680 [ACK] Seq-25 Ack-4852647 Win-15744 Len-0 TSval-2200987567 TSecr-3200987526
373	15.948926781	127.0.0.1	127.0.0.1	TCP	66 [TCP Window Update] 5080 + 55680 [ACK] Seq-25 Ack-4852647 Win-65536 Len-0 TSval-3200987595 TSecr-3200987526
374	15.948947851	127.0.0.1	127.0.0.1	TCP	32834 55680 → 5080 [PSH, ACK] Seq-4852647 Ack-25 Min-65536 Len-32768 TSval-3200987595 TSecr-3200987595
	15.948956672 15.948970654	127.0.0.1	127.0.0.1 127.0.0.1		32834 [TCP Mindow Full] 55680 + 5080 [ACK] Seq=4885415 Ack=25 Min=65536 Len=32768 T5vxl=3200987595 T5ecr=3200987595 66 [TCP ZeroMindow] 5880 + 55680 [ACK] Seq=25 Ack=4918183 Min=0 Len=0 T5vxl=3200987595 T5ecr=3200987595
377	15.975820368	127.0.0.1	127.0.0.1	TCP	66 [TCP Mindow Update] 5080 + 55680 [ACK] Seq-25 Ack-4918183 Min-48512 Len-0 TSvel-3200987622 TSecr-3200987595
378	15.975904875	127.0.0.1	127.0.0.1	TCP	32834 55680 + 5880 [PSH, ACK] Seq-4918183 Ack-25 Nin-65536 Len-32768 T5val-3200987622 TSecr-3200887622
379	16.016636667	127.0.0.1	127.0.0.1	TCP	66 5080 + 55600 [ACK] Seq-25 Ack-4950051 Win-15744 Len-0 TSval-2200987663 TSecr-3200987622
380 381	16.028795160 16.028805884	127.0.0.1	127.0.0.1	TCP	66 [TCP Window Update] 5080 + 55680 [ACK] Sep-25 Ack-4950951 Win-65536 Len-0 TSval-3200987675 TSecr-3200987622
382			127 0 0 1		
	16.028812315	127.0.0.1	127.0.0.1 127.0.0.1	TCP	12234 55680 - 5080 [ACK] Seq-0950951 Ack-125 Min-65380 Len-12768 T5val-2200987675 T5ecr-1200987675 T5ecr-120
	16.028824976	127.0.0.1 127.0.0.1	127.0.0.1 127.0.0.1	TCP TCP	22824 55680 + 5680 [ACK] Seq-4959951 Ack-25 Min-65536 Len-22768 TSvel-3209987675 TSecr-3209987675 22834 [TCP Window Full] 55680 + 5680 [FSH, ACK] Seq-5983719 Ack-25 Win-65536 Len-32768 TSvel-320987675 TSecr-320998767 666 [TCP ZeroWindow] 5680 + 55680 [ACK] Seq-25 Ack-5816487 Win-0 Len-0 TSvel-320987675 TSecr-3209987675
383 384	16.028824976 16.053954065	127.0.0.1 127.0.0.1 127.0.0.1	127.0.0.1 127.0.0.1 127.0.0.1	TCP TCP	32824 55680 + 5680 [ACK] Seq-4956951 Ack-25 Min-65336 Len-22768 TSvzl-3200987675 TSecr-3200987675 32824 [TCP Mindow Full] 55680 + 5680 [PSH, ACK] Seq-4983719 Ack-25 Min-65536 Len-32768 TSvzl-3200987675 TSecr-3200987675 66 [TCP ZeroMindow] 5680 + 55680 [ACK] Seq-25 Ack-5816487 Min-0 TSvzl-3200987675 TSecr-3200987675 66 [TCP Mindow Update] 5680 + 55680 [ACK] Seq-25 Ack-5816487 Min-0 TSvzl-3200987769 TSecr-3200987675
383 384 385	16.028824976 16.053954065 16.053968125	127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1	127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1	TCP TCP TCP	32834 55688 + 5880 [ACX] Seq-4959951 Ack-25 Win-65536 Len-22768 T5val-3209987675 Tsecr-3209987675 32834 [TCP Window Full] 55568 + 5880 [584] ACX] Seq-4582789 Ack-25 Win-65536 Len-22768 T5val-320987675 Tsecr-320998767 66 [TCP ZeroWindow] 5880 - 55680 [ACX] Seq-25 Ack-5816487 Win-0 Len-0 T5val-320997675 Tsecr-3209987675 66 [TCP Window Update] 5880 - 55680 [ACX] Seq-25 Ack-5816487 Win-0 Len-0 T5val-320997780 Tsecr-3209987675 32834 55680 + 5880 [ACX] Seq-5816487 Ack-25 Win-65536 Len-32768 T5val-3209987780 Tsecr-3209987780
383 384 385 386	16.028824976 16.053954065	127.0.0.1 127.0.0.1 127.0.0.1	127.0.0.1 127.0.0.1 127.0.0.1	TCP TCP	32824 55680 + 5680 [ACK] Seq-4956951 Ack-25 Min-65336 Len-22768 TSvzl-3200987675 TSecr-3200987675 32824 [TCP Mindow Full] 55680 + 5680 [PSH, ACK] Seq-4983719 Ack-25 Min-65536 Len-32768 TSvzl-3200987675 TSecr-3200987675 66 [TCP ZeroMindow] 5680 + 55680 [ACK] Seq-25 Ack-5816487 Min-0 TSvzl-3200987675 TSecr-3200987675 66 [TCP Mindow Update] 5680 + 55680 [ACK] Seq-25 Ack-5816487 Min-0 TSvzl-3200987769 TSecr-3200987675
383 384 385 386	16.028824976 16.053954065 16.053968125 16.104932003	127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1	127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1	TCP TCP TCP TCP	22824 55680 + 5680 [ACK] Seq-4959951 Ack-25 Min-5530 Len-22768 TSval-3200987075 Tsecr-3200987075 32824 [TCP Mindow Full] 55680 + 5680 [FSH, ACK] Seq-4958719 Ack-25 Min-5530 Len-32768 TSval-3200987075 Tsecr-3200987075 66 [TCP Zerddindow] 5680 - 55680 [ACK] Seq-25 Ack-5801467 Min-0 Len-0 TSval-3200987075 Tsecr-3200987075 66 [TCP Mindow Update] 5680 - 55680 [ACK] Seq-25 Ack-5801467 Min-185131 Len-0 TSval-3200987080 Tsecr-3200987075 22834 55680 - 5680 [ACK] Seq-25 Ack-5801467 Min-65304 Len-32768 Tsval-32009877080 Tsecr-32009877080 66 5080 - 55680 [ACK] Seq-25 Ack-5804255 Min-655304 Len-02768 Tsval-32009877080 Tsecr-32009877080
383 384 385 386 387 388 389	16.02824976 16.053954065 16.053968125 16.104932003 16.104952254 16.104960435 16.104984275	127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1	127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1	TCP TCP TCP TCP TCP TCP TCP	32834 55688 + 5880 [ACK] Seq-4959951 Ack-25 Min-65536 Len-22768 T5val-3209987675 Tsecr-3209987675 32834 [TCP Mindow Full] 55680 + 5880 [EMA, ACK] Seq-4952795 Ack-25 Min-65536 Len-22768 T5val-320987675 Tsecr-3209987675 66 [TCP Window J0581] 5880 + 55680 [ACK] Seq-25 Ack-5866487 Min-0 Len-0 T5val-3209987675 Tsecr-3209987675 66 [TCP Window J0581] 5880 + 55680 [ACK] Seq-58 Ack-5866487 Min-0 Len-0 T5val-3209987760 Tsecr-3209987675 22834 55680 + 5880 [ACK] Seq-58 Ack-586487 Min-05536 Len-22768 T5val-3209987780 Tsecr-3209987780 66 5880 + 55880 [ACK] Seq-58 Ack-5864827 Sid-65536 Len-22768 T5val-3209987781 Tsecr-3209987781 22834 55680 + 5880 [ACK] Seq-58 Ack-5864827 Min-65536 Len-22768 T5val-3209987781 Tsecr-3209987751 22834 [TCP Mindow Full] 55680 + 5880 [ACK] Seq-688203 Ack-25 Min-65536 Len-22768 T5val-3209987751 Tsecr-3209987751 66 [TCP ZeroMindow] 5880 + 55880 [ACK] Seq-688203 Ack-25 Min-65536 Len-22768 T5val-3209987751 Tsecr-3209987751
383 384 385 386 387 388 389	16.028824976 16.053954065 16.053968125 16.104932003 16.104952254 16.104960435 16.104984275 16.137932937	127.8.8.1 127.8.8.1 127.8.8.1 127.8.8.1 127.8.8.1 127.8.8.1 127.8.8.1 127.8.6.1	127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1	TCP	32834 55688 + 5680 [ACK] Seq-4959951 Ack-25 Win-65536 Len-32768 TSval-3200987075 Tsecr-3200987075 32834 [TCP Window Full] 55680 + 5680 [FSH, ACK] Seq-4698719 Ack-25 Win-55536 Len-32768 TSval-3200987075 Tsecr-3200987075 66 [TCP Zerodindow] 5680 - 55680 [ACK] Seq-25 Ack-58016479 Win-85530 Len-32768 TSval-3200987075 Tsecr-3200987075 66 [TCP Window Update] 5680 - 55680 [ACK] Seq-25 Ack-58016478 Win-85530 Len-32768 TSval-3200987708 TSecr-3200987076 32834 55680 - 5680 [ACK] Seq-25 Ack-58049255 Win-65530 Len-32768 TSval-3200987751 Tsecr-3200987709 32834 55680 - 5680 [ESH, ACK] Seq-2600323 Ack-25 Win-65530 Len-32768 TSval-3200987751 Tsecr-3200987751 32834 [TCP Window Full] 55680 + 5680 [ACK] Seq-25 Ack-514751 Win-65530 Len-32768 TSval-3200987751 Tsecr-3200987751 66 [TCP Zerodindow] 5680 - 55680 [ACK] Seq-25 Ack-514751 Win-65530 Len-32768 Tsval-3200987751 Tsecr-3200987751 66 [TCP Window Full] 55680 + 5680 [ACK] Seq-25 Ack-514751 Win-65530 Len-32768 Tsval-3200987751 Tsecr-3200987751
383 384 385 386 387 388 389 399	16.02824976 16.053954065 16.053968125 16.104932003 16.104952254 16.104960435 16.104984275	127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1	127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1	TCP TCP TCP TCP TCP TCP TCP	32834 55688 + 5880 [ACK] Seq-4959951 Ack-25 Min-65536 Len-22768 T5val-3209987675 Tsecr-3209987675 32834 [TCP Mindow Full] 55680 + 5880 [EMA, ACK] Seq-4952795 Ack-25 Min-65536 Len-22768 T5val-320987675 Tsecr-3209987675 66 [TCP Window J0581] 5880 + 55680 [ACK] Seq-25 Ack-5866487 Min-0 Len-0 T5val-3209987675 Tsecr-3209987675 66 [TCP Window J0581] 5880 + 55680 [ACK] Seq-58 Ack-5866487 Min-0 Len-0 T5val-3209987760 Tsecr-3209987675 22834 55680 + 5880 [ACK] Seq-58 Ack-586487 Min-05536 Len-22768 T5val-3209987780 Tsecr-3209987780 66 5880 + 55880 [ACK] Seq-58 Ack-5864827 Sid-65536 Len-22768 T5val-3209987781 Tsecr-3209987781 22834 55680 + 5880 [ACK] Seq-58 Ack-5864827 Min-65536 Len-22768 T5val-3209987781 Tsecr-3209987751 22834 [TCP Mindow Full] 55680 + 5880 [ACK] Seq-688203 Ack-25 Min-65536 Len-22768 T5val-3209987751 Tsecr-3209987751 66 [TCP ZeroMindow] 5880 + 55880 [ACK] Seq-688203 Ack-25 Min-65536 Len-22768 T5val-3209987751 Tsecr-3209987751
383 384 385 386 387 388 389 390 391	16.028824976 16.053954065 16.0539580125 16.104932003 16.104952254 16.104984275 16.137932937 16.1379349773	127.8.8.1 127.8.8.1 127.8.8.1 127.8.8.1 127.8.8.1 127.8.8.1 127.8.8.1 127.8.8.1 127.8.8.1	127.8.8.1 127.8.8.1 127.8.8.1 127.8.8.1 127.8.8.1 127.8.8.1 127.8.8.1 127.8.8.1 127.8.8.1	TCP	22834 55688 + 5080 [ACK] Seq-40550951 Ack-25 Win-65536 Len-22768 T5val-3200987675 TSecr-3200987675 22834 [TCP Mindow Full] 55680 + 5080 [FSM, ACK] Seq-4083729 Ack-25 Win-65536 Len-27768 T5val-3200987675 TSecr-3200987675 66 [TCP ZeroRindow) 5080 + 55680 [ACK] Seq-25 Ack-5816487 Win-0 Len-0 T5val-3200987675 TSecr-3200987675 66 [TCP Window Update] 5080 + 55680 [ACK] Seq-25 Ack-5816487 Win-0 Len-0 T5val-32009877675 TSecr-3200987675 22834 55680 + 5080 [ACK] Seq-25 Ack-581647 Ack-25 Win-65536 Len-032768 T5val-3200987769 TSecr-3200987769 66 5080 + 55680 [ACK] Seq-25 Ack-5845255 Win-65536 Len-032768 T5val-3200987751 TSecr-3200987769 22834 55680 + 5080 [ESM, ACK] Seq-26049255 Ack-25 Win-65536 Len-2768 T5val-3200987751 TSecr-3200987751 66 [TCP Window Full] 55680 + 5080 [ACK] Seq-58 Ack-531679 Win-65536 Len-32768 T5val-3200987751 TSecr-3200987751 66 [TCP Window Violate] 5080 + 55680 [ACK] Seq-58 Ack-531679 Win-65536 Len-32768 T5val-3200987751 TSecr-3200987751 67 [TCP Window Violate] 5080 + 55680 [ACK] Seq-58 Ack-531679 Win-65536 Len-32768 T5val-3200987784 TSecr-3200987751
383 384 385 386 387 388 389 390 391	16.028924976 16.053954065 16.053958115 16.104932003 16.104952254 16.104994275 16.137932937 16.137932937 16.137949773 16.178400949 16.202687851 16.202789574	127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1	127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1	TCP	22834 55688 + 5080 [ACK] Seq-40550951 Ack:-25 Win-65536 Len-22768 T5val-3200987675 T5ecr-3200987675 22834 51688 + 5080 [ACK] Seq-40550951 Ack:-25 Win-65536 Len-22768 T5val-3200987675 T5ecr-3200987675 22834 51688 + 5080 [CAK] Seq-25 Ack:-5016487 Win-0 Len-0 T5val-3200987675 T5ecr-3200987675 22834 55680 + 5080 [ACK] Seq-25 Ack:-5016487 Win-0 Len-0 T5val-3200987675 T5ecr-3200987675 22834 55680 + 5080 [ACK] Seq-25 Ack:-5045255 Win-65536 Len-22768 T5val-3200987708 T5ecr-3200987708 22834 55680 + 5080 [ACK] Seq-25 Ack:-5045255 Win-65536 Len-22768 T5val-3200987708 T5ecr-3200987709 22834 55680 + 5080 [EM], ACK] Seq-25 Ack:-5045255 Win-65536 Len-22768 T5val-3200987751 T5ecr-3200987751 22834 [TCP Window Full] 55680 + 5080 [ACK] Seq-260203 Ack-35 Win-65536 Len-22768 T5val-3200987751 T5ecr-3200987751 22834 [TCP Window Update] 5080 + 5080 [ACK] Seq-26 Ack-531473 Win-0 Len-0 T5val-3200987751 T5ecr-3200987751 22834 55680 + 5080 [ACK] Seq-25 Ack-5314731 Win-0 Len-0 T5val-3200987731 T5ecr-3200987751 22834 55680 + 5080 [ACK] Seq-25 Ack-5314731 Win-0 Len-0 T5val-3200987784 T5ecr-3200987781 22834 55680 + 5080 [ACK] Seq-25 Ack-5314731 Win-0 Len-0 T5val-3200987784 T5ecr-3200987784 22834 55680 + 5080 [ACK] Seq-25 Ack-5314731 Win-0 Len-0 T5val-3200987784 T5ecr-3200987784 22834 55680 + 5080 [ACK] Seq-25 Ack-5314731 Ack-25 Win-65536 Len-22768 T5val-320098784 T5ecr-3200987784 22834 55680 + 5080 [ACK] Seq-25 Ack-53147359 Win-65536 Len-22768 T5val-320098784 T5ecr-3200987784
383 384 385 386 387 388 389 391 392 393 394	16.028924976 16.053954065 16.053958125 16.104932003 16.104952254 16.104952254 16.104984275 16.137932937 16.137945773 16.128409249 16.202687851 16.202687851 16.202687851	127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1	127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1	TCP	22834 55688 + 5880 [ACK] Seq.4056951 Ack.25 Win-65536 Len-22768 TSval-3200987675 TSecr-3200987675 22836 [TCP Mindow Fd13] 55688 + 5880 [F3M, ACK] Seq.4582739 Ack.25 Win-65536 Len-2768 TSval-3200987675 TSecr-3200987675 66 [TCP Zerokindow] 5880 + 55800 [ACK] Seq.25 Ack.5616487 Win-0 Len-0 TSval-3200987675 TSecr-3200987675 66 [TCP Window Update] 5880 + 55800 [ACK] Seq.25 Ack.5616487 Win-0 Len-0 TSval-3200987706 TSecr-3200987675 22834 55680 + 5880 [ACK] Seq.5016487 Ack.25 Win-65536 Len-22768 TSval-3200987700 TSecr-32009877075 22834 55680 + 5880 [ACK] Seq.25 Ack.5840255 Win-65536 Len-0 ETsval-3200987701 TSecr-3200987701 22834 [TCP Window Fd13] 55680 + 5800 [ACK] Seq.408255 Ack.25 Win-65536 Len-22768 TSval-3200987751 TSecr-3200987751 66 [TCP Window Fd13] 55680 + 5800 [ACK] Seq.4082023 Ack.25 Win-65536 Len-32768 TSval-3200987751 TSecr-3200987751 66 [TCP Window Update] 5800 + 5800 [ACK] Seq.25 Ack.5114791 Win-05536 Len-32768 TSval-3200987751 TSecr-3200987751 66 [TCP Window Update] 5800 + 5800 [ACK] Seq.25 Ack.5114791 Win-05536 Len-22768 TSval-3200987784 TSecr-3200987751 66 [TCP Window Update] 5800 + 5800 [ACK] Seq.25 Ack.5114791 Win-05536 Len-32768 TSval-3200987784 TSecr-3200987784 66 [TCP Window Update] 5800 + 5800 [ACK] Seq.25 Ack.5114791 Win-05536 Len-32768 TSval-3200987784 TSecr-3200987784 66 [TCP Window Update] 5800 + 58600 [ACK] Seq.25 Ack.51147559 Win-05536 Len-32768 TSval-3200987784 TSecr-3200987784 67 [TCP Window Update] 5800 + 58600 [ACK] Seq.25 Ack.51147559 Win-05536 Len-32768 TSval-320098784 TSecr-3200987784 68 [TCP Window Update] 5800 + 58600 [ACK] Seq.25 Ack.51147559 Win-05536 Len-32768 TSval-320098784 TSecr-3200987784 69 [TCP Window Update] 5800 + 58600 [ACK] Seq.25 Ack.51147559 Win-05536 Len-32768 TSval-320098784 TSecr-3200987784 40 [TCP Window Update] 5800 + 58600 [ACK] Seq.25 Ack.51147559 Win-05536 Len-32768 TSval-320098784 TSecr-320098784 TSecr-320098784
383 384 385 386 387 388 389 390 391 392 393	16.028924976 16.053954065 16.053958115 16.104932003 16.104952254 16.104994275 16.137932937 16.137932937 16.137949773 16.178400949 16.202687851 16.202789574	127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1	127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1	TCP	22834 55688 + 5080 [ACK] Seq-40550951 Ack:-25 Win-65536 Len-22768 T5val-3200987675 T5ecr-3200987675 22834 51688 + 5080 [ACK] Seq-40550951 Ack:-25 Win-65536 Len-22768 T5val-3200987675 T5ecr-3200987675 22834 51688 + 5080 [CAK] Seq-25 Ack:-5016487 Win-0 Len-0 T5val-3200987675 T5ecr-3200987675 22834 55680 + 5080 [ACK] Seq-25 Ack:-5016487 Win-0 Len-0 T5val-3200987675 T5ecr-3200987675 22834 55680 + 5080 [ACK] Seq-25 Ack:-5045255 Win-65536 Len-22768 T5val-3200987708 T5ecr-3200987708 22834 55680 + 5080 [ACK] Seq-25 Ack:-5045255 Win-65536 Len-22768 T5val-3200987708 T5ecr-3200987709 22834 55680 + 5080 [EM], ACK] Seq-25 Ack:-5045255 Win-65536 Len-22768 T5val-3200987751 T5ecr-3200987751 22834 [TCP Window Full] 55680 + 5080 [ACK] Seq-260203 Ack-35 Win-65536 Len-22768 T5val-3200987751 T5ecr-3200987751 22834 [TCP Window Update] 5080 + 5080 [ACK] Seq-26 Ack-531473 Win-0 Len-0 T5val-3200987751 T5ecr-3200987751 22834 55680 + 5080 [ACK] Seq-25 Ack-5314731 Win-0 Len-0 T5val-3200987731 T5ecr-3200987751 22834 55680 + 5080 [ACK] Seq-25 Ack-5314731 Win-0 Len-0 T5val-3200987784 T5ecr-3200987781 22834 55680 + 5080 [ACK] Seq-25 Ack-5314731 Win-0 Len-0 T5val-3200987784 T5ecr-3200987784 22834 55680 + 5080 [ACK] Seq-25 Ack-5314731 Win-0 Len-0 T5val-3200987784 T5ecr-3200987784 22834 55680 + 5080 [ACK] Seq-25 Ack-5314731 Ack-25 Win-65536 Len-22768 T5val-320098784 T5ecr-3200987784 22834 55680 + 5080 [ACK] Seq-25 Ack-53147359 Win-65536 Len-22768 T5val-320098784 T5ecr-3200987784
383 384 385 386 387 388 389 390 391 392 393 394 395	16.02822976 16.053954065 16.0539568125 16.104932003 16.10493204 16.104950415 16.104960415 16.137932937 16.137932937 16.178400949 16.202687851 16.202687851 16.202623524	127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1	127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1	TCP	32834 55688 + 5880 [ACK] Seq-4959951 Ack-25 Win-65536 Lem-32768 T5val-320997675 Tsecr-320997675 32834 [TCP Mindow Full] 55686 + 5880 [F8M, ACK] Seq-4582759 Ack-25 Min-65536 Lem-32768 T5val-320987675 Tsecr-320997675 66 [TCP Pindow Update] 5880 - 55680 [ACK] Seq-25 Ack-5816487 Win-0 Lem-0 T5val-3209987675 Tsecr-3209987675 66 [TCP Window Update] 5880 - 55680 [ACK] Seq-25 Ack-5816487 Win-0 Lem-0 T5val-3209987767 Tsecr-3209987675 22834 55680 - 5980 [ACK] Seq-5016487 Ack-25 Win-65536 Lem-22768 T5val-3209987780 Tsecr-3209987780 66 5980 - 55680 [ACK] Seq-5016487 Ack-25 Win-65536 Lem-22768 T5val-3209987781 Tsecr-3209987780 55680 - 55680 EACK] Seq-5016487 Ack-25 Win-65536 Lem-22768 T5val-3209987751 Tsecr-3209987751 560 [TCP Mindow Update] 5680 - 5680 [ACK] Seq-584023 Ack-25 Win-65536 Lem-32768 T5val-3209987751 Tsecr-3209987751 66 [TCP Mindow Update] 5680 - 55680 [ACK] Seq-25 Ack-5114791 Win-0 Lem-0 T5val-3209987751 Tsecr-3209987751 67 [TCP Window Update] 5680 - 55680 [ACK] Seq-25 Ack-5114791 Win-0 Lem-0 T5val-3209987751 Tsecr-3209987751 68 [TCP Window Update] 5680 - 55680 [ACK] Seq-25 Ack-5114791 Win-0 Lem-0 T5val-320998784 Tsecr-3209987784 69 5880 - 55680 [ACK] Seq-5147595 Win-65536 Lem-32768 T5val-320998784 Tsecr-320998784 60 5880 - 55680 [ACK] Seq-5147595 Ack-514755 Win-65536 Lem-32768 T5val-320998784 Tsecr-320998784 60 5880 - 55680 [ACK] Seq-5147595 Ack-514755 Win-65536 Lem-32768 T5val-3209987849 Tsecr-320998784 60 5880 - 55680 [ACK] Seq-5147595 Ack-5147550 Win-65536 Lem-32768 T5val-3209987849 Tsecr-320998784 61 [TCP Window Update] 5680 - 55680 [ACK] Seq-51547550 Win-65536 Lem-32768 T5val-3209987849 Tsecr-320998784 62 [TCP Window Update] 5680 - 55680 [ACK] Seq-5147550 Win-65536 Lem-32768 T5val-3209987849 Tsecr-3209987849 63 [TCP Window Update] 5680 - 55680 [ACK] Seq-5147550 Win-65536 Lem-32768 T5val-3209987849 Tsecr-3209987849
383 384 385 386 387 388 399 390 391 392 393 394 395 396 397	16.028924976 16.053954065 16.053958115 16.104932093 16.1049505415 16.1049505415 16.1049505415 16.1079505415 16.10795073 16.178400049 16.202687851 16.202789574 16.202789574 16.202789574 16.202789574	127, 6, 6, 1 127, 6, 6, 1	127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1	TCP	22834 55688 + 5080 [ACK] Seq.40550951 Ack.25 Win-65536 Len-22768 T5val-3200987675 Tsecr-3200987675 22834 (TCP Mindow Fall) 55680 + 5080 [F8M, ACK] Seq.4083778 Acks25 Win-65536 Len-32768 T5val-3200887675 Tsecr-3200987675 66 [TCP Zerokindow) 5080 + 55680 [ACK] Seq.25 Acks-50164687 Mindo Len-8 T5val-3200987675 Tsecr-3200987675 66 [TCP Mindow Update] 5080 + 55680 [ACK] Seq.25 Acks-50164687 Mindo Len-8 T5val-3200987675 Tsecr-3200987675 22834 55680 + 5080 [ACK] Seq.25 Acks-504255 Win-65536 Len-22768 T5val-3200987767 Tsecr-3200987767 22834 55680 + 5080 [ESK], ACK] Seq.25 Acks-504255 Win-65536 Len-22768 T5val-3200987751 Tsecr-3200987751 22834 55680 + 5080 [ESK], ACK] Seq.25 Acks-504255 Win-65536 Len-22768 T5val-3200987751 Tsecr-3200987751 22834 55680 + 5080 [ESK], ACK] Seq.25 Acks-504258 Win-65536 Len-22768 T5val-3200987751 Tsecr-3200987751 22834 55680 + 5080 [ESK], ACK] Seq.25 Acks-514758 Win-65536 Len-22768 T5val-3200987751 Tsecr-3200987751 22834 55680 + 5080 [ESK], ACK] Seq.25 Acks-514758 Win-65536 Len-22768 T5val-3200987751 Tsecr-3200987751 22834 55680 + 5080 [ESK], ACK] Seq.25 Acks-514758 Win-65536 Len-22768 T5val-3200987784 Tsecr-3200987751 22834 55680 + 5080 [ESK], ACK] Seq.25 Acks-514758 Win-65536 Len-22768 T5val-3200987784 Tsecr-3200987784 22834 55680 + 5080 [ESK], ACK] Seq.25 Acks-514758 Win-65536 Len-32768 T5val-3200987784 Tsecr-3200987784 22834 55680 + 5080 [ESK], ACK] Seq.25 Acks-514758 Win-65536 Len-32768 T5val-320098784 Tsecr-3200987784 22834 55680 + 5080 [ACK] Seq.25 Acks-514758 Win-65536 Len-32768 T5val-320098784 Tsecr-3200987784 22834 55680 + 5080 [ACK] Seq.25 Acks-514758 Win-65536 Len-32768 T5val-3200987849 Tsecr-3200987784 22834 55680 + 5080 [ACK] Seq.25 Acks-514758 Win-65536 Len-32768 T5val-3200987849 Tsecr-3200987849 22834 55680 + 5080 [ACK] Seq.25 Acks-324300 Win-85536 Len-32768 T5val-3200987849 Tsecr-3200987849 22834 55680 + 5080 [ACK] Seq.25 Acks-324300 Win-85536 Len-32768 T5val-3200987849 Tsecr-3200987849 22835 55680 + 5080 [ACK] Seq.25 Acks-324300 Win-85536 Len-32768 T5val-
383 384 385 386 387 389 391 391 392 394 394 395 396 397 398	16. 028924976 16. 053954065 16. 053954065 16. 104952254 16. 104952254 16. 104952254 16. 1159540315 16. 117940973 1	127,6,6,1 127,6,6,1 127,6,6,1 127,6,6,1 127,6,6,1 127,6,6,1 127,6,6,1 127,6,6,1 127,6,6,1 127,6,6,1 127,6,6,1 127,6,6,1 127,6,6,1 127,6,6,1 127,6,6,1	127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1 127.0.0.1	TCP	22834 55688 + 5080 [ACK] Seq.4950951 Ack.25 Win-65536 Len-22768 TSval-3200987675 TSecr-3200987675 12836 [TOP Mindow Publis 5080 + 5080 [F8M, ACK] Seq.4083778 Acks25 Win-65536 Len-2768 TSval-3200987675 TSecr-3200987675 66 [TCP Mindow Update] 5080 + 55680 [ACK] Seq.25 Acks-504687 Win-0 Len-0 Tsval-3200987675 TSecr-3200987675 66 [TCP Mindow Update] 5080 + 55680 [ACK] Seq.25 Acks-504687 Min-0 Len-0 Tsval-3200987675 TSecr-3200987675 22834 55680 + 5080 [ACK] Seq.25 Acks-5046255 Win-65536 Len-22768 TSval-3200987769 TSecr-3200987769 66 5080 + 55680 [ACK] Seq.25 Acks-5046255 Win-65536 Len-22768 TSval-3200987751 TSecr-3200987761 22834 55680 + 5080 [EM, ACK] Seq.25 Acks-5045255 Win-65536 Len-22768 TSval-3200987751 TSecr-3200987751 66 [TCP Window Update] 5080 + 55680 [ACK] Seq.25 Acks-514759 Win-65536 Len-22768 TSval-3200987751 TSecr-3200987751 66 [TCP Window Update] 5080 + 55680 [ACK] Seq.25 Acks-514759 Win-Min-65536 Len-22768 TSval-3200987751 TSecr-3200987751 67 [TCP Window Update] 5080 + 55680 [ACK] Seq.25 Acks-514759 Win-Min-65536 Len-22768 TSval-3200987764 TSecr-3200987751 68 [TCP Window Update] 5080 + 55680 [ACK] Seq.25 Acks-514759 Win-Min-65536 Len-22768 TSval-3200987764 TSecr-3200987764 69 [TCP Window Update] 5080 + 55680 [ACK] Seq.25 Acks-514759 Win-65536 Len-22768 TSval-3200987784 TSecr-3200987784 20 55680 + 5080 [ACK] Seq.25 Acks-514759 Win-55536 Len-22768 TSval-3200987849 TSecr-3200987784 20 55680 + 5080 [ACK] Seq.254759 Acks-25 Win-65536 Len-22768 TSval-3200987849 TSecr-3200987849 20 55680 + 5080 [ACK] Seq.254759 Acks-25 Win-65536 Len-22768 TSval-3200987857 TSecr-3200987849 20 55680 + 5080 [ACK] Seq.2547595 Acks-255 Win-65536 Len-22768 TSval-3200987859 TSecr-3200987849 20 55680 + 5080 [ACK] Seq.25468 Win-65536 Len-22768 TSval-3200987859 TSecr-3200987849 20 55680 + 5080 [ACK] Seq.25468 Win-65536 Len-22768 TSval-3200987859 TSecr-3200987849 20 55680 + 5080 [ACK] Seq.25468 Win-65536 Len-22768 TSval-3200987875 TSecr-3200987859 20 55680 + 5080 [ACK] Seq.25468 Win-65536 Len-22768 TSval-3200987875
183 384 385 387 388 389 391 391 392 394 393 394 395 396 496 491	16.028924976 16.053954065 16.053954065 16.053954065 16.104952254 16.104952254 16.104954275 16.104964275 16.1379439773 16.1379439773 16.126408429 16.202687851 16.202687851 16.202687851 16.202687851 16.2026872554 16.2026922554 16.2026922554 16.2026922554 16.2026922554 16.2026922554	127.6.6.1 127.6.6.1 127.6.6.1 127.6.6.1 127.6.6.1 127.6.6.1 127.6.6.1 127.6.6.1 127.6.6.1 127.6.6.1 127.6.6.1 127.6.6.1 127.6.6.1 127.6.6.1 127.6.6.1 127.6.6.1	127, 0, 0, 1 127, 0, 0, 1	109 109 109 109 109 109 109 109 109 109	22834 55688 + 5888 [ACK] Seq-4959951 Ack-25 Win-65536 Len-22768 TSval-3200987675 TSecr-3200987675 22834 55688 + 5888 [ACK] Seq-49569951 Ack-25 Win-65536 Len-22768 TSval-3200987675 TSecr-3200987675 TSecr-3200987675 66 [TCP Mindow Update] 5888 + 55688 [ACK] Seq-25 Ack-5816487 Win-0 Len-0 TSval-3200987675 TSecr-3200987675 22834 55688 + 5888 [ACK] Seq-5866487 Ack-25 Kin-65536 Len-22768 TSval-3200987676 TSecr-3200987675 22834 55688 + 5888 [ACK] Seq-25 Ack-5845255 Win-65536 Len-22768 TSval-3200987769 TSecr-3200987769 22834 55688 + 5888 [EM] ACK] Seq-4085457 Ack-25 Win-65536 Len-22768 TSval-3200987769 TSecr-3200987769 22834 [TCP Window Full] 55688 + 5888 [ACK] Seq-58 Ack-5814731 Win-0 Len-0 TSval-3200987751 TSecr-3200987751 22834 [TCP Window Full] 55688 + 5888 [ACK] Seq-58 Ack-5814731 Win-0 Len-0 TSval-3200987751 TSecr-3200987751 22834 [TCP Window Update] 5889 - 55688 [ACK] Seq-58 Ack-5814731 Win-0 Len-0 TSval-3200987731 TSecr-3200987751 22834 [TCP Window Update] 5889 - 55688 [ACK] Seq-58 Ack-5814731 Win-0 Len-0 TSval-3200987784 TSecr-3200987784 22834 55688 - 5888 [PSH, ACK] Seq-58 Ack-58147359 Win-15744 Len-0 TSval-3200987784 TSecr-3200987784 22834 55688 - 5888 [ACK] Seq-25 Ack-58147359 Ack-25 Win-65536 Len-2768 TSval-320098784 TSecr-3200987784 22834 55688 - 5888 [ACK] Seq-25 Ack-58147559 Win-15744 Len-0 TSval-320098784 TSecr-320098784 22834 55688 - 5888 [ACK] Seq-25 Ack-58147559 Win-15734 Len-2768 TSval-320098784 TSecr-320098784 TSecr-320098784 22834 55688 - 5888 [ACK] Seq-25 Ack-58147559 Win-65536 Len-2768 TSval-320098784 TSecr-320098784 TSecr-320098784 22834 55688 - 5888 [ACK] Seq-25 Ack-58147559 Win-65536 Len-2768 TSval-320098785 TSecr-3200987849 TSecr-320098785 22834 55688 - 5868 [ACK] Seq-25 Ack-58147559 Win-65536 Len-2768 TSval-320098785 TSecr-320098785 TSecr-320098785 22834 55688 - 5868 [ACK] Seq-25 Ack-58147559 Win-65536 Len-2768 TSval-3200987875 TSecr-3200987875 TSecr-3200987875 22834 55688 - 5868 [ACK] Seq-25 Ack-58147559 Win-65536 Len-2768 TSval-3200987875 TSecr-3200987875 TSecr-32009878
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383 384 385 387 389 390 391 392 393 394 395 397 399 400 401	16.028924976 16.053954065 16.053954065 16.053954065 16.104952294 16.104952254 16.104952254 16.1079409773 16.137949773 16.137949773 16.20267851 16.20267851 16.20267851 16.2022789574 16.2022789574 16.2022789574 16.20232554	127, 6, 6, 1 127, 6, 6, 1	127.0.0.1 127.0.0.1	TCP	12834 55688 + 5888 ACK Seq.4959951 Ack.25 Win-65536 Len-32768 TSval-3200987675 TSecr-3200987675
383 384 385 387 389 399 391 392 393 394 395 399 400 401 402 403	16. 028924976 16. 053954065 16. 053954065 16. 105392003 16. 104952254 16. 1104952254 16. 1104952255 16. 1179439977 16. 1179439977 16. 129249773 16. 2022739574 16. 2022739574 16. 2022739574 16. 2022739574 16. 2022739574 16. 20232554 16. 20232554 16. 20232554 16. 202325574 16. 202325574	127, 6, 6, 1 127, 6, 6, 1	127, 0, 0, 1 127, 0, 0, 1	TCP	22834 55688 + 5888 [ACK] Seq-4959951 Ack-25 Win-65536 Len-22768 TSval-3200987675 TSecr-3200987675 22834 [TCP Mindow Update] 5888 - 55888 [CRX] Seq-25 Ack-580478 Ack-25 Min-65536 Len-27768 TSval-3200987675 TSecr-3200987675 66 [TCP Mindow Update] 5888 - 55888 [ACK] Seq-25 Ack-5804687 Min-0 Len-0 TSval-3200987675 TSecr-3200987675 66 [TCP Mindow Update] 5888 - 55888 [ACK] Seq-25 Ack-5804687 Min-0 Len-0 TSval-3200987675 TSecr-3200987675 32834 55688 - 5888 [ACK] Seq-25 Ack-58049255 Min-65536 Len-2768 TSval-3200987708 TSecr-32009877675 32834 55688 - 5888 [CRY] Seq-25 Ack-58049255 Min-65536 Len-0 ET Varl-3200987751 TSecr-3200987751 32834 [TCP Window Update] 5888 - 5888 [ACK] Seq-25 Ack-5814751 Min-65536 Len-2768 TSval-3200987751 TSecr-3200987751 66 [TCP Window Update] 5888 - 5588 [ACK] Seq-25 Ack-5814751 Min-65536 Len-2768 TSval-3200987751 TSecr-3200987751 66 [TCP Window Update] 5888 - 5588 [ACK] Seq-25 Ack-5814751 Min-65536 Len-2768 TSval-3200987751 TSecr-3200987751 66 [TCP Window Update] 5888 - 5588 [ACK] Seq-25 Ack-5814751 Min-65536 Len-2768 TSval-3200987754 TSecr-3200987754 67 Se88 - 5588 [EKK] Seq-25 Ack-58147551 Ack-25 Min-65536 Len-2768 TSval-3200987784 TSecr-3200987784 68 Se89 - 55888 [EKK] Seq-25 Ack-58147551 Ack-25 Min-65536 Len-2768 TSval-3200987784 69 TCP Window Update] 5888 - 5888 [ACK] Seq-25 Ack-58147559 Min-65536 Len-2768 TSval-320098784 TSecr-3200987784 60 [TCP Window Update] 5888 - 5588 [ACK] Seq-25 Ack-58147559 Min-65536 Len-2768 TSval-320098784 TSecr-320098784 57 Sep - 57 S
383 384 385 386 387 389 391 391 392 394 395 396 496 491 492 493	16. 028824976 16. 053954065 16. 053954065 16. 104952254 16. 116954015 16. 116954215 16. 117940773 16. 137932937 16. 137932937 16. 137945773 16. 12840949 16. 202487851 16. 202287851 16. 202287851 16. 202287857 16. 202325524	127, 6, 6, 1 127, 6, 6, 1	127.0.0.1 127.0.0.1	TCP	22834 55688 - 5080 [ACK] Seq4950951 Ack25 Win-65536 Len-22768 TSval-3200987675 TSecr-3200987675 22834 (TCP Mindow Publis 5688 - 56808 [SRM, ACK] Seq6583729 Acks-25 Min-65536 Len-2768 TSval-3200987675 TSecr-3200987675 66 (TCP Mindow Update) 5080 - 55680 [ACK] Seq25 Acks-5016487 Min-0 Len-8 TSval-3200987675 TSecr-3200987675 22834 55680 - 5680 [ACK] Seq25 Acks-5046487 Min-0 Star-32768 TSval-3200987676 TSecr-3200987675 22834 55680 - 5680 [ACK] Seq25 Acks-5046255 Min-65536 Len-22768 TSval-3200987769 TSecr-3200987761 22834 55680 - 5680 [ACK] Seq25 Acks-5046255 Min-65536 Len-22768 TSval-3200987751 TSecr-3200987751 22834 55680 - 5680 [ACK] Seq25 Acks-504255 Min-65536 Len-22768 TSval-3200987751 TSecr-3200987751 22834 55680 - 5680 [ACK] Seq25 Acks-504255 Min-65536 Len-22768 TSval-3200987751 TSecr-3200987751 22834 55680 - 5680 [ACK] Seq25 Acks-504255 Min-65536 Len-22768 TSval-3200987751 TSecr-3200987751 22834 55680 - 5680 [ACK] Seq25 Acks-5042759 Min-65536 Len-22768 TSval-3200987751 TSecr-3200987751 22834 55680 - 5680 [ACK] Seq25 Acks-514759 Min-65536 Len-22768 TSval-3200987764 TSecr-3200987751 22834 55680 - 5680 [ACK] Seq25 Acks-514759 Min-65536 Len-22768 TSval-3200987764 TSecr-3200987784 22834 55680 - 5680 [ACK] Seq514759 Acks-514759 Min-65536 Len-22768 TSval-3200987849 TSecr-3200987784 22834 55680 - 5680 [ACK] Seq514759 Acks-25 Min-65536 Len-22768 TSval-3200987849 TSecr-3200987849 22834 55680 - 5680 [ACK] Seq514759 Acks-25 Min-65536 Len-22768 TSval-3200987849 TSecr-3200987849 22834 55680 - 5680 [ACK] Seq514759 Acks-25 Min-65536 Len-22768 TSval-3200987849 TSecr-3200987849 22834 55680 - 5680 [ACK] Seq514759 Acks-25 Min-65536 Len-22768 TSval-3200987849 TSecr-3200987849 22834 55680 - 5680 [ACK] Seq514759 Acks-25 Min-65536 Len-22768 TSval-3200987849 TSecr-3200987849 22834 55680 - 5680 [ACK] Seq514759 Acks-25 Min-65536 Len-22768 TSval-3200987879 TSecr-3200987875 22834 55680 - 5680 [ACK] Seq5246306 Min-65536 Len-22768 TSval-3200987979 TSecr-3200987875 22834 55680 -

Zoom in:

First part, second part.

Open connection in line 1, 2.

```
74 55680 → 5080 [SYN] Seq=0 Win=65495 Len=0 MSS=65495 SACK_PERM TSval=3200971646 TSecr=0 WS=128
74 5080 → 55680 [SYN, ACK] Seq=0 Ack=1 Win=65483 Len=0 MSS=65495 SACK_PERM TSval=3200971646 TSecr=3200971646 WS=128
```

The "[TCP Window Full]" message from Wireshark means that the system sending this TCP segment has filled up the receive window of the other end with the tcp segment in this packet. Or put differently: the last received window size of the other end is equal to the length of the TCP segment in this packet

Zero Window means that the receiver of the packets waves a "white flag" towards the sender, telling it to stop sending because there is no more buffer space for incoming packets. This is in almost all cases a sign of the receiver being too slow to process the incoming packets in time.

A packet marked "TCP Window Update" simply **indicates that the sender's TCP receive buffer space has increased**. Look at the previous packet from the sender - note the Window Size value in the TCP header.

```
32834 [TCP Window Full] 55680 → 5080 [PSH, ACK] Seq=32773 Ack=5 Win=65536 Len=32768 TSval=3200971653 TSecr=3200971647
66 [TCP ZeroWindow] 5080 → 55680 [ACK] Seq=5 Ack=65541 Win=0 Len=0 TSval=3200971653 TSecr=3200971648
66 [TCP Window Update] 5080 → 55680 [ACK] Seq=5 Ack=65541 Win=48512 Len=0 TSval=3200971691 TSecr=3200971648
```

Checking for authentication in line 46, we can see that the receiver sent it after he get the first half of the file, and that the packet length of the is 4 (int)

```
70 5080 → 55680 [PSH, ACK] Seq=5 Ack=528263 Win=65536 Len=4 TSval=3200972224 TSecr=3200972190
```

close the socket 406, 407, 408

```
66 55680 → 5080 [FIN, ACK] Seq=5282605 Ack=25 Win=65536 Len=0 TSval=3200993513 TSecr=3200993513
66 5080 → 55680 [FIN, ACK] Seq=25 Ack=5282606 Win=65536 Len=0 TSval=3200993514 TSecr=3200993513
66 55680 → 5080 [ACK] Seq=5282606 Ack=26 Win=65536 Len=0 TSval=3200993514 TSecr=3200993514
```

2.1.2 10% lost

Sending number 1:

1	0.000000000	127.0.0.1	127.0.0.1	TCP	34 MINA - SEE (DW) Sect worders taken will-start such that initiating theory will
2	0.000015750	127.0.0.1	127.0.0.1	TCP	74 5000 + 30150 (500, ACT) Sampl Actor) NEW-SIMEN Law-0 MEN-SIMEN SACCURENT FRONT-TREND-TIMEN TRANS-TREND-TR
	0.000018115	127.0.0.1	127.0.0.1	TCP	20
	0.000067162	127.0.0.1	127.0.0.1	TCP	66 5000 - 34154 (ACK) 500-1 Act-5 Mid-65336 Lem-8 TS:ws1-3201145139 TScc2201146519
6	0.000471975	127.0.0.1	127.0.0.1	TCP	70 2000 - 34154 (75%, ACK) Sec-1 Ack-5 Win-65750 Lan-4 Threal-200146519 Tascr-220146519
7	0.000479263	127.0.0.1	127.0.0.1	TCP	65 34154 - 5000 (ACX) Sep-5 Acx-5 Min-65330 Len-8 TSus1-352145520 Tier-2201145330
	e.eee975982 e.e27788536	127.0.0.1	127.0.0.1	TCP	20294 34134 - 5888 (ACC) Sec-5 Anci-5 Win-65356 Len-10786 Tokal-702144518 Taer-722114519 58 5888 - 34134 (ACC) Sec-5 Anci-10779 Win-65356 Len-0 Tokal-722114577 Taer-722114519
10	0.027727726	127.0.0.1	127.0.0.1	TCP	35554 [TO Mindow Soil] [TO Frescon segment not controls] 54554 - 5882 [ACC] Sep-65541 Anni-5 Min-85755 [An-37765 Titel-1585148547 Tear-1585148547
11					78 (TDF Cus ACX 995) 5800 = 24154 (ACX) Sas-5 Acx-12773 NG-455105 Len-2 Torat-1287349547 TSas-7-2287348520 SCC-63540 SRT-88289
12					13834 [TUP Ont-OP-Orace] 14154 = 5888 [PSJ, ACK] Seq-17773 Act-5 MIT-05556 [An-13756 Toxis-1385145567 Tear1385146567
13	0.055495030 0.056516556	127.0.0.1	127.0.0.1	TCP TCP	55 5889 - 14154 (ACT) Sep-5 Act-94000 NE-48512 Len-0 Toni-100144570 Toni-100144577 2024 - 34024 - 34024 (7804, ACT) Sep-64000 Act-5 NE-45000 Len-10704 Toni-100144570 Toni-100144570
15	0.103201394	127.0.0.1	127.0.0.1	TCP	55 3008 - 2015 (ACT) Sen-5 ACT-10077 NI5550 Lan-8 Thus-1-201140517 Ter10014076
16	0.102201727	127.0.0.1	127.0.0.1	TCP	32334 34154 5880 (ACK) See-131077 Ack-5 Nin-05336 Len-23768 Töxel-23761148523 Töser-23201148523
17	0.100010025	127.0.0.1	127.0.0.1	TCP	nda — [75 nose fai] nu - nu (50, 20) decinu act nechi lecinu uctiu uctiu uctiu
19	0.102224130	127.0.0.1	127.0.0.1	TCP	55 [TCP Investigated] 5500 = 14154 [ACK] Sang-1 Act-155013 Win-0 Lan-0 Town-1551146523 Tax-r-1551146523 55 [TCP Windows Updates] 5500 = 14154 [ACK] Sang-1 Act-155013 Win-04512 Lan-0 Town-1-7551146523 Tax-r-1551146523 56 [TCP Windows Updates] 5500 = 14154 [ACK] Sang-1 Act-155013 Win-04512 Lan-0 Town-1-7551146523 Tax-r-1551146523
20	0.359154015	127.0.0.1	127.0.0.1	TCP	2021 - Auto- communication of the Communication of
21	0.359221931	127.0.0.1	127.0.0.1	TCP	65 5888 - 34154 (ACK) See-5 Act-120901 NIT-48511 Len-8 T5/k1-1205114879 TSec1201148779
22	0.509006300	127.0.0.1	127.0.0.1	TCP	20254 34154 - 5000 (754, ACK) Seq-202003 ARH-5 Min-65750 Len-20760 Tivel-2020140700 Teer-202014870
23	0.589424510	127.0.0.1	127.0.0.1	TCP	65 3889 - 34154 (ACM) Sep-5 Acc-101149 Non-48011 Lan-8 Thesi-1001149108 Taser-1001149108
24 25	0.589451683 0.640194961	127.0.0.1	127.0.0.1	TCP	20214 - 20214 - 2020 (ACC) Sep-202140 Acc-5 VIC-40250 (ac-12700 Total-1202140100 Total-1202140100 202 - 20214 (ACC) Sep-3 ACC-224427 VIC-12744 (ac-0 Total-1202140100 Total-1202140200
25	0.850181879	127.0.0.1	127.0.0.1	TCP	1989 [70 stoom [61]] 1884 - 1889 [70, 50] Mac-24877 And streetly law-1744 Teat-18814979 Take-18814919
27	0.660437737	127.0.0.1	127.0.0.1	TCP	56 5696 - 3415 (AC) Sect Act-10801 Not-17881 Not-17881 Not-17881 Not-17881 Not-1788
26	0.850477785	127.0.0.1	127.0.0.1	TCP	17880 34154 - 2000 (780, ACC) San-218051 Ann-5 Win-05350 (an-17804 Towal-188144979 Time-188144979
29	0.850495765 0.850815240	127.0.0.1	127.0.0.1	TCP	20214 - 24254 - 25802 (ACT) Emp-127625 Act-5 Win-62526 Lam-12762 Tabul-1282149279 TEac1282149279 555 - 24824 (ACT) Emp-1 Act-5 2682-5 Act-526845 Win-7256 Lam-6 Tabul-1282149288 TEAC-7282149279
20	0.920921331	127.0.0.1	127.0.0.1	TCP	50 5000 - 3115 (CCT) 500-7 500 - 310-7 (CCT) 500-7 100
22	0.920035663	127.0.0.1	127.0.0.1	TCP	20294 34154 - 5888 (PGW, ACK) Sec-208453 ARC-5 Win-65556 Len-22768 Tövel-2020140440 Tiser-2020140440
22	0.920842278	127.0.0.1	127.0.0.1	TCP	Hits come full lette - 840 (AC) and Hit and discuss the fills that installed the considered
24	0.921125162 0.961679245	127.0.0.1	127.0.0.1	TCP	55 [TC Terminand 500 + 2014 [AC] Sept. Act-01000 bin-4 Lev. Timi-12010040 Terr-12010040 55 [TC Biness (cents) 500 + 2014 [AC] Sept. Act-01000 bin-4011 Lev. Timi-1201040 Terr-12010440
25 26	0.951579845 0.951789343	127.0.0.1	127.0.0.1	TCP	50 [TOW Manness opposite] 50000 - 34110 [ACC] 3420 ACC-21000 MIN-40211 [AC-0 TOWN-INSTITUTE-120104000] Tear-1201040000 120204 - 34114 - 5000 [PUM, ACC] Sec-21000 Acc-5 MIN-402010 [AC-0 TOWN-INSTITUTE-120104000] Tear-1201040000 120204 - 34114 - 5000 [PUM, ACC] Sec-21000 Acc-5 MIN-402010 [AC-0 TOWN-INSTITUTE-12010400] Tear-1201040000 120204 [AC-0 TOWN-INSTITUTE-12010400] Tear-120104000 [AC-0 TOWN-INSTITUTE-12010400] Tear-120104000 120204 [AC-0 TOWN-INSTITUTE-12010400] Tear-120104000 [AC-0 TOWN-INSTITUTE-12010400] Tear-120104000 120204 [AC-0 TOWN-INSTITUTE-12010400] Tear-12010400 [AC-0 TOWN-INSTITUTE-12010400] Tear-120104000 120204 [AC-0 TOWN-INSTITUTE-12010400] Tear-120104000 [AC-0 TOWN-INSTITUTE-12010400] Tear-120104000 120204 [AC-0 TOWN-INSTITUTE-12010400] Tear-120104000 120204 [AC-0 TOWN-INSTITUTE-12010400] Tear-12010400 120204 [AC-0 TOWN-INSTITUTE-120104000] Tear-12010400 120204 [AC-0 TOWN-INSTITUTE-12010400] Tear-12010400 120204 [AC-0 TOWN-INSTITUTE-12010400
27	1.000409426	127.0.0.1	127.0.0.1	TCP	66 5888 - 34154 (ACK) Sen-1 Arc-458737 NIT-65336 Lan-8 TS/NIT-203146937 TSen-7328149433
20	1.008425809	127.0.0.1	127.0.0.1	TCP	NAME (TO NAMES FAIL) (TO FOREIGN REQUEST NOT CONTINUE) NAME (NAME AND
29	1.008431830				78 [TOP Day ACC 2701] 1888 - 20154 [ACC) Sec-1 Acc-495737 Not-55735 (ac-2 Town)-202114957 Tase202114945 SE05135 SEC-15033
40	1.006789189	127.0.0.1	127.0.0.1		1000 Automotion 10104 - 1000 (ACC) Sep-00000 Acc-0 1000 Con-10000 Tent-10001-00000 Tent-10001-00000 Tent-10001-00000 Tent-10001-00000 Tent-10001-00000 Tent-10001-00000 Tent-10001-00000
42	1.225116266	127.0.0.1	127.0.0.1	TCP	68 [TO Gase-Alive] 34154 - 5080 (ACC) Sec-10022 Acc-5 MIX-65355 Len-9 TOM1-202140744 Tasc-202140518
43	1.225162877	127.0.0.1	127.0.0.1	TCP	66 [TOP Mindow Update] 5000 - 34154 [ADV] 542-5 ANX-514100 MIN-65556 Len-8 TS/41-1202149744 TSexy-2021149518
44	1.225182146	127.0.0.1	127.0.0.1	TCP	4836 34154 - 5880 (754, ACK) Sep-134032 Abx-5 Win-65356 Lem-3970 Towal-380140744 Tear-3201140744
45 46	1.225225369	127.0.0.1	127.0.0.1	TCP	55 5889 - 34154 (RCC) Sep-5 App-51825 NEW-SINES NEW-SINES Law-0 Tool-1082149744 Tapy-1082149744 78 5889 - 34154 (RSA, ACC) Sep-5 App-10825 NEW-SINES NEW-SINES Law-0 Tool-1082149795 Tapy-1082149794
47	1.230845585	127.0.0.1	127.0.0.1	TCP	20234 34124 - 5000 (ACT) Sec-150203 Act-0 NIT-05030 Len-20706 Tout-2000140758 Tout-200140778
49	1.141051695	117.0.0.1	127.0.0.1	TCP	20294 (107 Windows Full) 34134 - 3680 (564, ACM) Sep-501801 Ann-5 Win-52366 Len-22766 Times-2280146776 Times-2280146776
49					56 [TCP Involution] 5989 - 34154 [ACM] Seq0 Acc-532799 Nin-8 (ar-3 Town)-2021149781 Taer2321149788
50 51	1.500143634	127.0.0.1	127.0.0.1	TCP TCP	55 [TC7 Minosa Update] 5000 - 14124 [ACC] Sec-9 Act-02070 Min-4511 Len-6 Timal-1201104010 Tace-1201104015 20144 - 5000 [ACC] Sec-500709 Act-0 Min-45050 Len-22708 Tamil-1201104011 Tace-1201104010
52	1.512340127	127.0.0.1	127.0.0.1	TCP	50 300 - 2016 (AC) Ser-9 AND SECTION WITHOUT CONTROL TENTROL TENTROL TENTROL TO THE SECTION OF T
53	1.512251696	127.0.0.1	127.0.0.1	TCP	32834 34154 5888 (754, AC) Sec-02857 Acc-3 Win-65356 Len-32768 Towal-328138821 Taxer-328138821 Taxer-328138821
54	1.565509424	127.0.0.1	127.0.0.1	TCP	66 5000 - 34354 [ACK] See-3 Act-650335 Nin-13744 Len-3 Thusi-3703150005 Tear-3203150001
55	1.791573885	117.0.0.1	127.0.0.1	TCP	19638 [109 Munico Fall] 3458 - 5988 [590, ACC] Sections And Notettia Lectific Toxic-18618931 Teac-788118985
56 57	1.791645385	127.0.0.1	127.0.0.1	TCP TCP	55 1888 - 14154 (ACT) Zen-9 Act-070879 Win-17880 Len-6 Tows-18011178211 Theor-180115011 17890 14154 - 5880 (789, ACT) Zen-070879 Act-9 Win-05550 Len-18204 Tows-180115011 Theor-1801150111
56	1.791708973	127.0.0.1	127.0.0.1	TCP	31234 34154 - 3582 (75%, AC) Seq-671105 Acc-3 Min-65352 (ac-12765 Total-305115831) Tear-3051158311
59	1.792583853	127.0.0.1	127.0.0.1	TCP	50 5000 - 34155 (ACC) Sep-9 AD-774973 WIN-7706 Len-0 Tows-3201150721 TSer-7201150721
60	1.855853848	127.0.0.1	127.0.0.1	TCP	55 [TO Mindes Update] 5588 - 34215 [ACC] Sep-2 Acc-74407 Mm-65354 Mm-67536 Lev-2 Thesi-1261118971 Tax2261188911
61 62	1.856859478	127.0.0.1	127.0.0.1	TCP	20214 - 24254 - 5482 (ACT) Sep-774471 Act-0 MIN-45250 Len-12764 Total-128215257 Total-128215257 20214 - [179 MINSES SEL] 24254 - 5482 (Sep, ACS) Sep-27528 Act-0 MIN-55255 Len-22764 Total-128215277 Total-128215275
63	1.050533536				55 [TO Resultant] SHE - MILES (ACC MAN NO. ACC MAN THE CONTROL THE CONTROL THE CONTROL SHE SHE
64	2.072364692	127.0.0.1	127.0.0.1	TCP	55 [TOP Gasg-Alliva] 34154 - 5660 [ACK] Sep-700405 App-0 min-65156 Lan-8 Total-200105555 Tear-1201155076
	2.072423647	127.0.0.1	127.0.0.1	TCP	55 [TCP Minness Updates] 1886 - 34124 [ACN] 582-9 AGN-780407 NET-61556 Len-8 Threat-23821188915 Tagn-73821188915
66	2.072450294	127.0.0.1	127.0.0.1	TCP	12014 14194 - 1888 (ECC) Sec-19847 Acco Rec-45196 Lec-11785 Tent-12011991 Text-12011991 Text-12011991 Text-12011991 Text-12011991 Text-12011991 Text-12011991 Text-12011991
44	2.072515427	127.0.0.1	127.0.0.1	TCP	de sel - bill (c) sel
69	2.126642020	127.0.0.1	127.0.0.1	TCP	66 5000 - 34154 (ACT) Sec-9 Act-855043 NCT-48511 Len-0 Tivel-1201150804 TSec-2201150901
78	2.126651254	127.0.0.1	127.0.0.1	TCP	30394 34554 - 3880 (ACT) Sec-85594 Act-0 HIT-65596 Lem-21706 Tixel-1301138646 Tixer-1301138646
71 72	2.165727257 2.165856882	127.0.0.1	127.0.0.1	TCP	66 1889 - 1415 (ACT) Sap-0 Act-188711 Min-65550 Lan-0 Toxid-1881158865 Taxir-1881158866 1884 - 14154 - 1888 (PSA, ACT) Sap-048711 Act-0 Min-65550 Lan-01764 Toxid-1881158865 Taxir-1881158865
72	2.165864524	117.0.0.1	127.0.0.1	TCP	
74					55 [TOT Sarminosmo] 5588 - 34154 [ACC] Sacrif Acc-Strict North Labor Tone-1189118885 Tear-0189118885
75	2.200021375	127.0.0.1	127.0.0.1	TCP	65 [TOP NAMESON Update] 5880 - 14114 (ACM) 582-9 ACM-054437 NAM-48111 Law-0 Thost-1301158710 TRace-1301158885
76	2.200041855	127.0.0.1	127.0.0.1	TCP	20224 24154 - 26256 (260, ACC) Sen-Distor Acc-3 Non-Distor Lan-Direct Towal-Josephine Theori-Distoration Throat-Distoration Thr
77 78	2.239767215	127.0.0.1	127.0.0.1	TCP	55 3000 - 30150 (ACT) Sec-9 Acc-547013 VIII-05550 Lan-0 TOVAL-100136770 Taber-100136770 20014 30150 - 3000 (ACT) Sec-907013 Acc-507013 Lan-05700 Lan-05700 Toval-100136770 Taber-1000136770
79	2.240049956	127.0.0.1	117.0.0.1	TCP	11814 [TCD NESSES AND [14114 - 1888 [25], ACC] SAC-181713 ACC-2 NES-1818 (NES-1818 TSAI-181818719 TARY-181818719
60					55 [TDF Imministrated 5800 - 34134 [ACK] Dated Act-1813151 Nov-0 Named Total-1281318707 Tater-128131879
61	2.272605296	127.0.0.1	127.0.0.1	TCP	66 (TOP Window Update) 1888 - 14114 (ADT) Sac-9 Ann-185151 Win-48513 (am-8 Town)-1851518793 Tann-1851518793
82 83	2.272616514	127.0.0.1	127.0.0.1	TCP	4010 34134 - 5000 (504, ACX) Sec-1013511 Adx-0 Non-65550 Lem-3070 Total-1201350702 Taxer-1201350702 55 5000 - 34134 (ACX) Sec-2 Acx-1405511 Non-45550 Lem-0 Total-120135020 Taxer-1201350702
	2.052745590	127.0.0.1	127.0.0.1	TCP	************************************
					<u> </u>

Sending number 5:

15 1,10,100 175,		341	13.165112	127.0.0.1	127.0.0.1	TCP	66	[TCP Window Update] 5080 + 34154 [ACK] Seq=21 Ack=4389925 Win=48512 Len=0 TSval=3201161684 TSecr=3201161637
March 1976						TCP		
1		343	13.210251	127.0.0.1	127.0.0.1	TCP	66	5080 → 34154 [ACK] Seq=21 Ack=4422693 Win=15744 Len=0 TSval=3201161729 TSecr=3201161684
10		344	13.230735	127.0.0.1	127.0.0.1	TCP	66	[TCP Window Update] 5080 + 34154 [ACK] Seq=21 Ack=4422693 Win=65536 Len=0 TSval=3201161750 TSecr=3201161684
10 1.0.0.000.		345	13.230746	127.0.0.1	127.0.0.1	TCP	32834	34154 + 5080 [ACK] Seq=4422693 Ack=21 Win=65536 Len=32768 TSval=3201161750 TSecr=3201161750
10 13.0000. 10.00000. 10.								
19 1,1860.00 17 18 18 18 18 18 18 18								
15 1.0.1001. 1.0.2001.								
15. 15.00 15.00 15.00 10.								
10 1.0								
10.000.000.000.0000.0000.0000.0000.000								
10 1.0								
15. 1.1.1.1.1. 17.		354	13.351377	127.0.0.1	127.0.0.1	TCP	32834	[TCP Window Full] [TCP Previous segment not captured] 34154 + 5080 [PSH, ACK] Seq-4586533 Ack-21 Win=65536 Len=32768 TSval=3201161870 TSecr=3201161870
1.5 1.5	- 1			127.0.0.1	127.0.0.1			[TCP Dup ACK 353#1] 5080 + 34154 [ACK] Seq-21 Ack-4553765 Win=65536 Len=0 TSval=3201161870 TSecr=3201161845 SLE=4586533 SRE=4619301
15.000.000.000.000.000.000.000.000.000.0								
17.5 17.5								
19. 19.								
14. 1. 1. 1. 1. 1. 1. 1.								
13 1.17.0.5.1								
14.1279.5. 17.9.0.4 17.9.0.		362	14.006334	127.0.0.1	127.0.0.1	TCP	32834	34154 → 5080 [PSH, ACK] Seq=4652069 Ack=21 Win=65536 Len=32768 TSval=3201162525 TSecr=3201162087
12.20.00.00 12.40.		363	14.006350	127.0.0.1	127.0.0.1	TCP	66	5080 → 34154 [ACK] Seq=21 Ack=4684837 Win=48512 Len=0 TSval=3201162525 TSecr=3201162525
12.00.00 12.00.00								,,,,,
15. 1.7.2014. 17.4.0.1 17								
19. 19.								
17.0 17.0								
17. 14.4, 17.2, 17. 0.4								
17.2 14.46402. 17.8.6.1 17.8.6.2 1								
17.2 1.4.6.0014. 17.8.6.1								
15 16 16 16 16 16 16 16		372	14.640354	127.0.0.1	127.0.0.1	TCP		
1.77 1.77		373	14.640482	127.0.0.1	127.0.0.1	TCP	32834	[TCP Window Full] 34154 → 5080 [PSH, ACK] Seq=4787111 Ack=25 Win=65536 Len=32768 TSval=3201163160 TSecr=3201163159
179 14,79329. 127,8,0.1 127,8,0.1 107 1323 14354 - 100 [CIC Security Pin Act 14555 16555 127,8,0.1 127,8,0.1 107 66 69 98 14314 [CIC Security S			14.640484	127.0.0.1	127.0.0.1			[TCP ZeroNindow] 5080 → 34154 [ACK] Seq=25 Ack=4819879 Nin=0 Len=0 TSval=3201163160 TSecr=3201163159
177 17,74999. 177,8,0.1 177,8,0.1 177 66 989 9.115 (207.5 \$\frac{1}{2} 10.5 10.								
187 187								
13.76.16.00.00.00.00.00.00.00.00.00.00.00.00.00								,,,
14 70 15 15 15 15 15 15 15 1		379	14.766282	127.0.0.1	127.0.0.1	TCP		
147-707712 177-0-0.1 177-0-0.1 179-0.1 179 65 110 247-2010-1 1903 3414 4.05132 140-075 247-2010-1 127-0-0.1 179 66 170 2414 4.05132 140-075 247-2010-1 150-075 247-2010-1 247-2010				127.0.0.1	127.0.0.1			[TCP Dup ACK 377#1] 5080 + 34154 [ACK] Seq-25 Ack-4852647 Win=65536 Len=0 TSval=3201163285 TSecr=3201163224 SLE=4885415 SRE=4918183
14.55397								
14.653377 127.0.0.1 127.0.0.1 170.0.1 170 65 880 - 3151 (15 502358 Level.276 Envel.376 Envel.3								
14.671855. 127.0.0.1 127.0.0.1 170 65 5800 + 315.6 [ACK] Sec. 25 Ack-4899951 Min-1574 (Level Towal-20116392) TSCC-201163972								
\$81 15.032444. \$127.0.0.1 \$127.0.0.1 \$10.0.0 \$10						TCP		
15.03242, 127.0.0.1 127.0.		886	15.032398	127.0.0.1	127.0.0.1	TCP	66	[TCP Window Update] 5080 + 34154 [ACK] Seq-25 Ack-4950951 Win-65536 Len=0 TSval=3201163551 TSecr=3201163372
15.061972_ 127.0.0.1 127								
15.061991. 127.0.0.1 127.0.0.1 107.0.1 107 70 71 71 70 72 72 72 72 72 72 72 72 72 72 72 72 72								
15.002011 17.0.0.1						TCP		
15.060212_ 127.0.0.1 127.0.0.1 127.0.0.1 129 1284 110 Oct-0f-Order) 1414 + 2000 1297.0.01 127.0.0.1 127.0.								
15.094686. 127.0.0.1 127.0.0.1 TCP 66 TCP Window Update] 5080 + 34154 [ACK] Seq-25 Ack+5080255 kin-85312 Len-0 TSval-3201163614 T5ccr-3201163614 396 15.094631. 127.0.0.1 TCP 32834 34154 + 5080 [PSH, ACK] Seq-25 Ack+50802635 Ack+25 kin-65356 Len-32766 TSval-3201163026 T5ccr-3201163014 397 15.398633. 127.0.0.1 127.0.0.1 TCP 32834 [TCP Retrosolations of PSH, ACK] Seq-26 Mode State 1.0 PSH, ACK] Seq-25 Ack+5080223 kin-65356 Len-32766 TSval-3201163028 T5ccr-3201163028 398 15.398667. 127.0.0.1 127.0.0.1 TCP 32834 34154 + 5080 [ACK] Seq-25 Ack+5080223 Aki-65536 Len-32766 TSval-3201163028 T5ccr-3201163028 399 15.398677. 127.0.0.1 127.0.0.1 TCP 66 5980 + 34154 [ACK] Seq-25 Ack+508023 Aki-65536 Len-32766 TSval-3201163028 T5ccr-3201163028 400 15.531347. 127.0.0.1 127.0.0.1 TCP 32834 34154 + 5080 [PSH, ACK] Seq-25 Ack+5114791 [Ack+25] Len-0 TSval-3201163028 T5ccr-3201163028 401 15.531468. 127.0.0.1 127.0.0.1 TCP 32834 34154 + 5080 [PSH, ACK] Seq-25 Ack+5114791 [Ack+25] Len-0 TSval-3201164090 T5ccr-3201163028 402 15.531456. 127.0.0.1 127.0.0.1 TCP 32834 34154 + 5080 [ACK] Seq-5147559 Ack+3518027 kin-65536 Len-32766 TSval-3201164050 T5ccr-3201164050 403 15.531456. 127.0.0.1 127.0.0.1 TCP 32834 34154 + 5080 [ACK] Seq-5147559 Ack+3518027 kin-65536 Len-32766 TSval-3201164050 404 15.653073. 127.0.0.1 127.0.0.1 TCP 65 5980 + 34154 [ACK] Seq-25 Ack+318027 kin-15744 Len-0 TSval-3201164050 T5ccr-3201164050 405 15.663001. 127.0.0.1 TCP 65 5980 + 34154 [ACK] Seq-25 Ack+318027 kin-15744 Len-0 TSval-3201164050 T5ccr-3201164050 406 15.663001. 127.0.0.1 TCP 65 5980 + 34154 [ACK] Seq-25 Ack+318027 kin-15744 Len-0 TSval-3201164050 T5ccr-3201164050 407 15.666202. 127.0.0.1 127.0.0.1 TCP 65 5980 + 34154 [ACK] Seq-25 Ack+318027 kin-15744 Len-0 TSval-3201164050 T5ccr-3201164050 408 15.666202. 127.0.0.1 127.0.0.1 TCP 66 5980 + 34154 [ACK] Seq-25 Ack+328680 kin-45556 Len-32766 TSval-3201164102 T5ccr-3201164205 410 15.666202. 127.0.0.1 127.0.0.1 TCP 66 5980 + 34154 [ACK] Seq-25 Ack+328680 kin-45556 Len-0 TSval-3201164205 T5ccr-320116	1			127.0.0.1	127.0.0.1			[TCP Out-Of-Order] 34154 + 5080 [PSH, ACK] Seq-4983719 Ack-25 Win=65536 Len=32768 TSval=3201163581 TSecr=3201163581
15.094631. 127.0.0.1 127.0.0.1 TCP 32834 34154 + 5080 [PSH, ACK] Seq=5049255 Ack=25 Min=65536 Len=32768 TSval=3201163614 TSccr=3201163614 305 15.388659. 127.0.0.1 127.0.0.1 TCP 32834 TCP PERTANSISSION] 34154 + 5080 [PSH, ACK] Seq=5049255 Ack=25 Min=65536 Len=32768 TSval=3201163828 TSccr=3201163614 306 15.388697. 127.0.0.1 127.0.0.1 TCP 32834 34154 + 5080 [ACK] Seq=50482623 Ack=25 Min=65536 Len=32768 TSval=3201163828 TSccr=3201163828 309 15.388707. 127.0.0.1 127.0.0.1 TCP 32834 34154 + 5080 [ACK] Seq=50482623 Ack=25 Min=65536 Len=32768 TSval=3201163828 TSccr=3201163828 400 15.531450. 127.0.0.1 127.0.0.1 TCP 66 5080 + 34154 [ACK] Seq=25 Ack=514759 Min=46531 Len=32768 TSval=3201164950 TSccr=3201164950 402 15.531450. 127.0.0.1 127.0.0.1 TCP 66 5080 + 34154 [ACK] Seq=25 Ack=514759 Min=46532 Len=0 TSval=3201164950 TSccr=3201164950 404 15.63073. 127.0.0.1 127.0.0.1 TCP 66 5080 + 34154 [ACK] Seq=25 Ack=514759 Min=46532 Len=0 TSval=3201164950 TSccr=3201164950 405 15.66080. 127.0.0.1 127.0.0.1 TCP 66 5080 + 34154 [ACK] Seq=25 Ack=514759 Min=46532 Len=0 TSval=3201164950 TSccr=3201164950 406 15.66091. 127.0.0.1 127.0.0.1 TCP 66 FOR SMALL Seq=14759 Ack=25 Min=65536 Len=32768 TSval=3201164950 TSccr=3201164950 407 15.66091. 127.0.0.1 127.0.0.1 TCP 66 [TCP Mindow Update] 5080 + 34154 [ACK] Seq=25 Ack=5180927 Min=65536 Len=32768 TSval=3201164182 TSccr=3201164950 408 15.66091. 127.0.0.1 127.0.0.1 TCP 32834 34154 + 5080 [PSH, ACK] Seq=25 Ack=528680 Min=65536 Len=32768 TSval=3201164182 TSccr=3201164950 409 15.66092. 127.0.0.1 127.0.0.1 TCP 32834 34154 + 5080 [PSH, ACK] Seq=25 Ack=528680 Min=65536 Len=32768 TSval=3201164182 TSccr=3201164192 409 15.66092. 127.0.0.1 127.0.0.1 TCP 32834 34154 + 5080 [PSH, ACK] Seq=25 Ack=528680 Min=65536 Len=32768 TSval=3201164205 TSccr=3201164205 410 15.66092. 127.0.0.1 127.0.0.1 TCP 66 5080 + 34154 (ACK) Seq=25 Ack=528680 Min=65536 Len=0 TSval=3201164205 TSccr=3201164205 411 15.80480. 127.0.0.1 127.0.0.1 TCP 66 5080 + 34154 (ACK) Seq=25 Ack=5282606 Min=65536 Len=0 TSval=3201164205 TScc						TCP		
15.308659. 127.0.0.1 127.0.0.1 TCP 32834 [TCP Retransmission] 34154 + 5080 [PSH, ACK] Seq=5049255 Ack=25 Nin=65536 Len=37768 TSval=320116328 TSccr=320116328 St=5082023 [TCP Retransmission] 34154 + 5080 [PSH, ACK] Seq=25 Ack=5082023 Nin=65536 Len=32768 TSval=320116328 TSccr=320116328 St=5082023 Nin=65536 Len=32768 TSval=320116328 Nin=65536 Len=32768 TSval=320116432 TSccr=320116432 TSccr=320116432 Nin=65536 Len=32768 TSval=320116432 TSccr=320116432 Nin=65536 Len=32768 TSval=320116432 TSccr=320116432 TSccr=320116432 Nin=65536 Len=32768 TSval=320116432 TSccr=320116432 Nin=65536 Le								
15.38683. 127.0.0.1 127.0.0.1 TCP 78 5080 + 34154 [ACK] Seq-25 Ack-5082823 Min-e5536 Len-0 TSval-3201163828 TSecr-3201163828 SLE-5082923 398 15.308697. 127.0.0.1 127.0.0.1 TCP 32834 34154 + 5080 [ACK] Seq-5082023 Ack-25 Min-e5536 Len-0 TSval-3201163828 TSecr-3201163828 400 15.531347. 127.0.0.1 127.0.0.1 TCP 32834 34154 + 5080 [PSH, ACK] Seq-5184759 Min-e45312 Len-0 TSval-3201164050 TSecr-3201163828 401 15.531468. 127.0.0.1 127.0.0.1 TCP 32834 34154 + 5080 [PSH, ACK] Seq-25 Ack-514759 Min-e45312 Len-0 TSval-3201164050 TSecr-3201164050 402 15.531468. 127.0.0.1 127.0.0.1 TCP 32834 34154 (ACK] Seq-25 Ack-5180327 Min-e45312 Len-0 TSval-3201164050 TSecr-3201164050 403 15.531468. 127.0.0.1 127.0.0.1 TCP 32834 34154 (ACK] Seq-25 Ack-5180327 Min-e45312 Len-0 TSval-3201164050 TSecr-3201164050 404 15.653073. 127.0.0.1 127.0.0.1 TCP 32834 34154 (ACK] Seq-25 Ack-5180327 Min-e4532 Len-0 TSval-3201164050 TSecr-3201164050 405 15.663073. 127.0.0.1 127.0.0.1 TCP 32834 34154 (ACK] Seq-25 Ack-5180327 Min-e5536 Len-0 TSval-3201164050 406 15.663073. 127.0.0.1 127.0.0.1 TCP 32834 34154 (ACK] Seq-25 Ack-5180327 Min-e5536 Len-0 TSval-3201164050 407 15.663070. 127.0.0.1 127.0.0.1 TCP 32834 34154 (ACK] Seq-25 Ack-5245063 Min-e65316 Len-32768 TSval-3201164050 408 15.663076. 127.0.0.1 127.0.0.1 TCP 32834 34154 (ACK] Seq-25 Ack-5245063 Min-e65316 Len-32768 TSval-3201164050 409 15.663020. 127.0.0.1 127.0.0.1 TCP 32834 34154 (ACK) Seq-25 Ack-5245063 Min-e65316 Len-32768 TSval-3201164050 409 15.663020. 127.0.0.1 127.0.0.1 TCP 32834 34154 (ACK) Seq-25 Ack-5245063 Min-e65316 Len-32768 TSval-3201164050 409 15.663020. 127.0.0.1 127.0.0.1 TCP 32834 34154 (ACK) Seq-25 Ack-5245063 Min-e65316 Len-32768 TSval-3201164050 409 15.663020. 127.0.0.1 127.0.0.1 TCP 32834 34154 (ACK) Seq-25 Ack-5245063 Min-e65316 Len-32768 TSval-3201164050 410 15.660201. 127.0.0.1 127.0.0.1 TCP 32834 34154 (ACK) Seq-25 Ack-5245060 Min-e65316 Len-32768 TSval-3201164050 410 15.660201. 127.0.0.1 127.0.0.1 TCP 66 5080 + 34154 (ACK) Seq-25 Ack-5282060 Min-e55316 Len-0 TSval-3201164						TCD		
15.38687. 127.0.0.1 127.0.0.1 TCP 32834 34154 + 5080 [ACK] Seq=5082023 Ack=25 Min=6536 Len=32768 T5val=3201163828 T5ecr=3201163828 399 15.386707. 127.0.0.1 127.0.0.1 TCP 66 5980 + 34154 [ACK] Seq=25 Ack=514791 Min=48512 Len=0 T5val=3201163828 400 15.531408. 127.0.0.1 127.0.0.1 TCP 32834 34154 + 5080 [PSH, ACK] Seq=25 Ack=514759 Min=48512 Len=0 T5val=3201164050 T5ecr=3201164050 401 15.531408. 127.0.0.1 127.0.0.1 TCP 65 5080 + 34154 [ACK] Seq=25 Ack=514759 Min=48512 Len=0 T5val=3201164050 402 15.531456. 127.0.0.1 127.0.0.1 TCP 32834 34154 + 5080 [ACK] Seq=25 Ack=518759 Min=48512 Len=0 T5val=3201164050 403 15.531481. 127.0.0.1 17.0.0.1 TCP 66 5080 + 34154 [ACK] Seq=25 Ack=5180327 Min=5536 Len=32768 T5val=3201164050 404 15.663073. 127.0.0.1 127.0.0.1 TCP 66 [TCP Mindow Update] Seq=36 Ack=5180327 Min=5536 Len=32768 T5val=3201164050 405 15.663091. 127.0.0.1 127.0.0.1 TCP 32834 34154 + 5080 [PSH, ACK] Seq=25 Ack=5180327 Min=6536 Len=32768 T5val=3201164050 406 15.663091. 127.0.0.1 127.0.0.1 TCP 32834 34154 + 5080 [PSH, ACK] Seq=5180327 Ack=25 Min=6536 Len=32768 T5val=3201164050 407 15.66620. 127.0.0.1 127.0.0.1 TCP 32834 34154 + 5080 [PSH, ACK] Seq=525 Ack=5180327 Min=5536 Len=32768 T5val=3201164020 408 15.663092. 127.0.0.1 127.0.0.1 TCP 32834 34154 + 5080 [PSH, ACK] Seq=525 Ack=5245803 Min=48512 Len=0 T5val=3201164205 T5ecr=3201164182 409 15.686261. 127.0.0.1 127.0.0.1 TCP 32834 34154 + 5080 [PSH, ACK] Seq=525 Ack=528601 Min=6536 Len=0 T5val=3201164205 T5ecr=3201164205 409 15.686271. 127.0.0.1 170 65 5080 + 34154 [ACK] Seq=25 Ack=5282601 Min=6536 Len=0 T5val=3201164205 T5ecr=3201164205 410 15.80116. 127.0.0.1 TCP 66 5080 + 34154 [ACK] Seq=25 Ack=5282601 Min=6536 Len=0 T5val=3201164205 411 15.80116. 127.0.0.1 TCP 66 5080 + 34154 [ACK] Seq=25 Ack=5282601 Min=6536 Len=0 T5val=3201164205 412 16.904802. 127.0.0.1 TCP 66 54154 + 5608 [PSH, ACK] Seq=525 Ack=5282601 Min=6536 Len=0 T5val=3201164205 413 16.904932. 127.0.0.1 TCP 66 54154 + 5608 [PSH, ACK] Seq=2582606 Min=65536 Len=0 T5val=32011654						TCP		
409 15.53147. 127.0.0.1 127.0.0.1 TCP 32834 34154 + 5080 [PSH, ACK] Seq=514759 Ack=25 Min=65536 Len=32768 TSval=3201164950 TSecr=3201164950 [PSH, ACK] Seq=514759 Ack=25 Min=65536 Len=32768 TSval=3201164950 [PSH, ACK] Seq=514759 Ack=25 Min=65536 Len=32768 TSval=320116495 [PSH, ACK] Seq=514759 Ack=25 Min=65536 Len=32768 TSval=320116495 [PSH, ACK] Seq=514759 Ack=25 Min=65536 Len=32768 TSval=3201164205 [PSH, ACK] Seq=514759 Ack=25 Min=65536 Len=0 TSval=3201164205 [PSH, ACK] Seq=514		398	15.308697	127.0.0.1	127.0.0.1	TCP		
401 15.531408 127.0.0.1 127.0.0.1 TCP 66 5080 + 34154 [ACK] Seq=25 Ack=514759 Min=48512 Len=0 TSval=3201164050 Tsecr=3201164050 Tsecr=32011		399	15.308707	127.0.0.1	127.0.0.1	TCP	66	5080 → 34154 [ACK] Seg=25 Ack=5114791 Win=48512 Len=0 TSval=3201163828 TSecr=3201163828
402 15.531456 127.0.0.1 127.0.0.1 TCP 32834 34154 + 5080 [ACK] Seq=3147559 ACK=25 Min=65336 Len=32768 TSval=3201164950 TSecr=3201164950 403 15.531481 127.0.0.1 127.0.0.1 TCP 66 5800 + 34154 [ACK] Seq=25 ACK=5180327 Min=15744 Len=0 TSval=3201164950 TSecr=3201164950 404 15.663903 127.0.0.1 127.0.0.1 TCP 66 [TCP Mindow Update] 50800 + 34154 [ACK] Seq=25 ACK=5180327 Min=65356 Len=0 TSval=3201164950 405 15.663901 127.0.0.1 127.0.0.1 TCP 32834 34154 + 5080 [PSN, ACK] Seq=3180327 Ack=25 Min=65336 Len=32768 TSval=3201164950 406 15.663100 127.0.0.1 127.0.0.1 TCP 32834 34154 + 5080 [PSN, ACK] Seq=3180327 Ack=25 Min=65336 Len=32768 TSval=3201164950 407 15.666262 127.0.0.1 127.0.0.1 TCP 32834 34154 + 5080 [PSN, ACK] Seq=5246863 Ack=25 Min=65336 Len=32768 TSval=3201164182 408 15.666278 127.0.0.1 127.0.0.1 TCP 32834 34154 + 5080 [PSN, ACK] Seq=5246863 Ack=25 Min=65336 Len=32768 TSval=3201164205 TSecr=3201164205 409 15.666281 127.0.0.1 127.0.0.1 TCP 32834 34154 + 5080 [PSN, ACK] Seq=5246863 Ack=25 Min=65336 Len=32768 TSval=3201164205 TSecr=3201164205 410 15.666291 127.0.0.1 127.0.0.1 TCP 4036 34154 + 5080 [PSN, ACK] Seq=524686] Ack=25 Min=65336 Len=3780 TSval=3201164205 TSecr=3201164205 410 15.666291 127.0.0.1 127.0.0.1 TCP 66 S080 + 34154 [ACK] Seq=25 Ack=522660 Min=1776 Len=0 TSval=3201164205 TSecr=3201164205 410 15.666291 127.0.0.1 127.0.0.1 TCP 66 S080 + 34154 [ACK] Seq=25 Ack=522660 Min=6536 Len=0 TSval=3201164205 TSecr=3201164205 410 15.664081 127.0.0.1 127.0.0.1 TCP 66 S080 + 34154 [ACK] Seq=25 Ack=522660 Min=6536 Len=0 TSval=3201164207 TSecr=3201164205 411 15.694083 127.0.0.1 127.0.0.1 TCP 66 S080 + 34154 [ACK] Seq=25 Ack=522660 Min=6536 Len=0 TSval=3201165424 TSecr=3201165424 415 16.90453 127.0.0.1 127.0.0.1 TCP 66 S080 + 34154 [ACK] Seq=25 Ack=522660 Min=6536 Len=0 TSval=3201165424 TSecr=3201165424 416 16.90525 127.0.0.1 127.0.0.1 TCP 66 S080 + 34154 [ACK] Seq=25 Ack=522660 Min=65365 Len=0 TSval=3201165424 TSecr=3201165424 415 16.90525 127.0.0.1 127.0.0.1 TCP 66 S080 +	4	100	15.531347	127.0.0.1		TCP	32834	34154 → 5080 [PSH, ACK] Seq=5114791 Ack=25 Win=65536 Len=32768 TSval=3201164050 TSecr=3201163828
403 15.531481. 127.0.0.1 127.0.0.1 TCP 66 5080 + 34154 [ACK] Seq=25 Ack=5180327 Nin=15744 Len=0 TSval=3201164950 TSecr=3201164050 405 15.663073. 127.0.0.1 127.0.0.1 TCP 66 [TCP Mindow Update] 5080 + 34154 [ACK] Seq=25 Ack=5180327 Nin=65536 Len=0 TSval=3201164182 TSecr=3201164050 405 15.663091. 127.0.0.1 127.0.0.1 TCP 3283 434154 + 5080 [PSH, ACK] Seq=5180327 Ack=25 Min=65536 Len=0 TSval=3201164182 TSecr=3201164050 406 15.663091. 127.0.0.1 127.0.0.1 TCP 3283 434154 + 5080 [PSH, ACK] Seq=5180327 Ack=25 Min=65536 Len=32768 TSval=3201164182 TSecr=3201164182 407 15.663262. 127.0.0.1 127.0.0.1 TCP 66 5080 + 34154 [ACK] Seq=25 Ack=5245863 Nin=48512 Len=0 TSval=3201164205 TSecr=3201164182 408 15.663278. 127.0.0.1 127.0.0.1 TCP 32834 34154 + 5080 [PSH, ACK] Seq=5245863 Ack=25 Nin=65536 Len=32768 TSval=3201164205 TSecr=3201164205 409 15.666281. 127.0.0.1 127.0.0.1 TCP 4036 34154 + 5080 [PSH, ACK] Seq=5245863 Ack=25 Nin=65536 Len=32768 TSval=3201164205 TSecr=3201164205 410 15.686291. 127.0.0.1 127.0.0.1 TCP 4036 34154 + 5080 [PSH, ACK] Seq=5245863 Nin=48512 Len=0 TSval=3201164205 TSecr=3201164205 411 15.801116. 127.0.0.1 127.0.0.1 TCP 66 5080 + 34154 [ACK] Seq=25 Ack=5282601 Min=1776 Len=0 TSval=3201164205 TSecr=3201164205 412 16.904803. 127.0.0.1 127.0.0.1 TCP 66 5080 + 34154 [ACK] Seq=25 Ack=5282606 Min=65536 Len=0 TSval=3201164205 TSecr=3201164205 413 16.904803. 127.0.0.1 127.0.0.1 TCP 66 5080 + 34154 [ACK] Seq=25 Ack=5282606 Min=65536 Len=0 TSval=3201164205 TSecr=3201164205 414 16.904913. 127.0.0.1 TCP 66 5080 + 34154 [ACK] Seq=25 Ack=5282606 Min=65536 Len=0 TSval=3201165424 TSecr=3201165424 415 16.905253. 127.0.0.1 TCP 66 5080 + 34154 [FIN, ACK] Seq=25 Ack=5282606 Min=65536 Len=0 TSval=3201165424 TSecr=3201165424 416 16.905253. 127.0.0.1 TCP 66 5080 + 34154 [FIN, ACK] Seq=25 Ack=5282606 Min=65536 Len=0 TSval=3201165424 TSecr=3201165424								
404 15.663091. 127.0.0.1 127.0.0.1 TCP 66 [TCP Window Update] 5800 + 34154 [ACK] Seq=25 Ack=5180327 Win=65536 Len=0 TSval=3201164182 TSecr=3201164182 TSecr=320								
405 15.663091. 127.0.0.1 127.0.0.1 TCP 32834 34154 + 5080 [PSH, ACK] Seq=5180327 ACK-25 Win-65536 Len=32768 TSval=3201164182 TSecr=3201164182 Tsecr=320116420								
406 15.663108 127.0.0.1 127.0.0.1 TCP 32834 [TCP Window Full] 34154 + 5080 [ACK] Seq=5213095 Ack=25 Win=65536 Len=32768 T5val=3201164182 Tsecr=3201164182 Tsecr=3201164205 Ts								
407 15.686262. 127.0.0.1 127.0.0.1 TCP 66 5080 + 34154 [ACK] Seq=25 Ack=\$245863 Win=48512 Len=0 TSval=3201164205 Tsecr=3201164102 408 15.686278. 127.0.0.1 127.0.0.1 TCP 32834 34154 + 5080 [PSH, ACK] Seq=2545863 Ack=25 Win=65536 Len=32768 Tsval=3201164205 Tsecr=3201164205 409 15.686281. 127.0.0.1 127.0.0.1 TCP 403 34154 + 5080 [PSH, ACK] Seq=2545863 Ack=25 Win=65536 Len=32768 Tsval=3201164205 Tsecr=3201164205 410 15.686291. 127.0.0.1 127.0.0.1 TCP 66 5080 + 34154 [ACK] Seq=25 Ack=5282601 Win=1776 Len=0 Tsval=3201164205 Tsecr=3201164205 411 15.801116. 127.0.0.1 127.0.0.1 TCP 66 [TCP Window Update] 5080 + 34154 [ACK] Seq=25 Ack=5282601 Win=65536 Len=0 Tsval=3201164205 Tsecr=3201164205 412 16.904893. 127.0.0.1 127.0.0.1 TCP 67 34154 + 5080 [PSH, ACK] Seq=2526260 Win=65536 Len=0 Tsval=3201164205 Tsecr=3201164205 413 16.904993. 127.0.0.1 127.0.0.1 TCP 66 5080 + 34154 [ACK] Seq=25 Ack=282605 Win=65536 Len=0 Tsval=3201165424 Tsecr=3201164205 414 16.904913. 127.0.0.1 127.0.0.1 TCP 66 5080 + 34154 [FIN, ACK] Seq=252605 Ack=25 Min=65536 Len=0 Tsval=3201165424 Tsecr=3201165424 415 16.905253. 127.0.0.1 127.0.0.1 TCP 66 5080 + 34154 [FIN, ACK] Seq=2526066 Win=65536 Len=0 Tsval=3201165424 Tsecr=3201165424								
409 15.686281 127.0.0.1 127.0.0.1 TCP 4036 34154 + 5080 [PSh, ACK] Seq=5278631 Ack=25 Win=65536 Len=3970 TSval=3201164205 Tsecr=3201164205 410 15.686291 127.0.0.1 127.0.0.1 TCP 66 5080 → 34154 [ACK] Seq=25 Ack=5282601 Win=1776 Len=0 TSval=3201164205 TSecr=3201164205 411 15.80116 127.0.0.1 127.0.0.1 TCP 66 [TCP Window Update] 5080 → 34154 (ACK] Seq=25 Ack=5282601 Win=65536 Len=0 TSval=320116420 TSecr=3201164205 412 16.904880 127.0.0.1 127.0.0.1 TCP 70 34154 + 5080 [PSh, ACK] Seq=25 Ack=5282601 Win=65536 Len=0 TSval=3201165424 TSecr=320116420 413 16.904893 127.0.0.1 127.0.0.1 TCP 66 5080 → 34154 [ACK] Seq=25 Ack=5282609 Ack=25 Win=65536 Len=0 TSval=3201165424 TSecr=3201165424 TSec	4							
410 15.886291 127.0.0.1 127.0.0.1 TCP 66 5080 + 34154 [ACK] Seq=25 Ack=5282601 Min=11776 Len=0 TSval=3201164205 Tsecr=3201164205 411 15.801116 127.0.0.1 127.0.0.1 TCP 66 5080 + 34154 [ACK] Seq=25 Ack=5282601 Min=65536 Len=0 TSval=3201164205 412 16.904803 127.0.0.1 127.0.0.1 TCP 70 34154 + 5080 [Psh, ACK] Seq=25 Ack=5282601 Ack=25 Min=65536 Len=0 TSval=3201165424 Tsecr=3201164320 413 16.904893 127.0.0.1 127.0.0.1 TCP 66 5080 + 34154 [Seq=25 Ack=5282605 Min=65536 Len=0 TSval=3201165424 Tsecr=3201165424 Tsecr=3201165424 414 16.904913 127.0.0.1 127.0.0.1 TCP 66 5080 + 34154 [Fin, ACK] Seq=25282605 Ack=25 Min=65536 Len=0 TSval=3201165424 Tsecr=3201165424 415 16.905253 127.0.0.1 127.0.0.1 TCP 66 5080 + 34154 [Fin, ACK] Seq=25282605 Min=65536 Len=0 TSval=3201165424 Tsecr=3201165424	4	108	15.686278			TCP	32834	34154 → 5080 [PSH, ACK] Seq=5245863 Ack=25 Win=65536 Len=32768 TSval=3201164205 TSecr=3201164205
411 15.801116 127.0.0.1 127.0.0.1 TCP 66 [TCP Window Update] 5800 + 34154 [ACK] Seq=25 Ack=5282601 Win=65536 Len=0 TSval=3201164320 Tsecr=3201164320 Tsecr=3								
412 16.994888 127.0.0.1 127.0.0.1 TCP 70 34154 + 5080 [PSH, ACK] Seq=5282601 Ack~25 Win=65536 Len=0 TSval=3201165424 TSecr=3201165424 TSecr								
413 16.904893 127.0.0.1 127.0.0.1 TCP 66 5080 → 34154 [ACK] Seg~25 Ack~5282605 Min~65536 Len+0 TSval~3201165424 Tsecr~3201165424 Tsecr~320								
414 16.984913 127.0.0.1 127.0.0.1 TCP 66 34154 + 5080 [FIN, ACK] Seq=5282605 Ack+25 Win+65536 Len+0 TSval=3201165424 TSecr+3201165424 Tecr+3201165424 TSecr+3201165424 TSecr								
416 16.905266 127.0.0.1 127.0.0.1 TCP 66 34154 + 5080 [ACK] Seg=5282606 Ack=26 Win=65536 Len=0 TSval=3201165424 TSecr=3201165424								
	4	116	16.905266	127.0.0.1	127.0.0.1	TCP	66	34154 + 5080 [ACK] Seq=5282606 Ack=26 Win=65536 Len=0 TSval=3201165424 TSecr=3201165424

Zoom in:

Now we will see more packets that gets lost.

Open connection

```
74 34154 → 5080 [SYN] Seq=0 Win=65495 Len=0 MSS=65495 SACK_PERM TSval=3201148519 TSecr=0 WS=128

74 5080 → 34154 [SYN, ACK] Seq=0 Ack=1 Win=65483 Len=0 MSS=65495 SACK_PERM TSval=3201148519 TSecr=3201148519 WS=128

66 34154 → 5080 [ACK] Seq=1 Ack=1 Win=65536 Len=0 TSval=3201148519 TSecr=3201148519
```

Lost packets:

"tcp previous segment not captured" is an expert message created by Wireshark when it didn't see a packet that should have been in the trace; this warning was previously called "tcp previous segment lost".

Dup ACK means that you capture at the source of the data (not the receiving side). That is quite normal if the packet loss occurs somewhere in the path to the receiver.

TCP out-of-order means that particular frame was received in a different order from which it was sent (after a later packet in the sequence). It is not generally a problem. It probably indicates there are multiple paths between source and destination - and one travels a through a longer path.

```
32834 [TCP Window Full] [TCP Previous segment not captured] 34154 → 5080 [ACK] Seq=65541 Ack=5 Win=65536 Len=32768 TSval=3201148547 TSecr=3201148547
78 [TCP Dup ACK 9#1] 5080 → 34154 [ACK] Seq=5 Ack=32773 Win=65536 Len=0 TSval=3201148547 TSecr=3201148520 SLE=65541 SRE=98309
32834 [TCP Out-Of-Order] 34154 → 5080 [PSH, ACK] Seq=32773 Ack=5 Win=65536 Len=32768 TSval=3201148547 TSecr=3201148547
```

TCP Retransmission occurs when the sender retransmits a packet after the expiration of the acknowledgement

396 15... 127... TCP 32834 [TCP Retransmission] 34154 → 5080 [PSH, ACK] Seq=5049255 Ack=25 Win=65536 Len=32768 TSval=3201163828 TSecr=3201163814

Close connection lines 414, 415, 416

414 16 127 127 TCP	66 34154 → 5080 [FIN, ACK] Seq=5282605 Ack=25 Win=65536 Len=0 TSval=3201165424 TSecr=3201165424
415 16 127 127 TCP	66 5080 → 34154 [FIN, ACK] Seq=25 Ack=5282606 Win=65536 Len=0 TSval=3201165424 TSecr=3201165424
416 16 127 127 TCP	66 34154 → 5080 [ACK] Seq=5282606 Ack=26 Win=65536 Len=0 TSval=3201165424 TSecr=3201165424

2.1.3 15% lost

open connection in lines 1 2

1 0.000 127.0 127.0 TCP	74 46476 → 5080 [SYN] Seq=0 Win=65495 Len=0 MSS=65495 SACK PERM TSVal=3201261410 TSecr=0 WS=128
2 1.010 127.0 127.0 TCP	74 [TCP Retransmission] [TCP Port numbers reused] 46476 + 5080 [SYN] Seq=0 Win=65495 Len=0 MSS=65495 SACK PERM TSval=3201262421 TSecr=0 WS=128
3 1.010 127.0 127.0 TCP	74 5080 + 46476 [SYN, ACK] Seq=0 Ack=1 win=65483 Len-0 MSS-65495 SACK PERM TSval=3201262421 TSecr=3201261410 WS=128
4 1.016 127.0 127.0 TCP	74 [TCP Retransmission] 5080 + 46476 [SVH, ACK] Seq=0 Ack=1 Win=65483 Len=0 MSS=65495 SACK_PERM TSval=3201262427 TSecr=3201261410 WS=128
5 1.016 127.0 127.0 TCP	66 46476 → 5080 [ACK] Seq=1 Ack=1 Win=65536 Len=0 TSval=3201262427 TSecr=3201262421
6 1.016 127.0 127.0 TCP	66 [TCP Dup ACK 5#1] 46476 + 5080 [ACK] Seq=1 Ack=1 Win=65536 Len=0 TSval=3201262427 TSecr=3201262421
7 1.029 127.0 127.0 TCP	70 46476 + 5080 [PSH, ACK] Seq=1 Ack=1 Win=65536 Len=4 TSval=3201262440 TSecr=3201262421
8 1.029 127.0 127.0 TCP	66 5080 → 46476 [ACK] Seq=1 Ack=5 Win=65536 Len=0 TSVal=3201262440 TSecr=3201262440
9 1.030 127.0 127.0 TCP	70 5080 + 46476 [PSH, ACK] Seq=1 Ack=5 Win=65536 Len=4 TSval=3201262440 TSecr=3201262440
10 1.030 127.0 127.0 TCP	66 46476 → 5080 [ACK] Seq=5 Ack=5 Win=65536 Len=0 TSval=3201262441 TSecr=3201262440
11 1.033 127.0 127.0 TCP	32834 46476 → 5080 [ACK] Seq=5 Ack=5 Win=65536 Len=32768 Tsval=3201262443 TSecr=3201262440
12 1.033 127.0 127.0 TCP	32834 [TCP Window Full] 46476 → 5080 [PSH, ACK] Seq=32773 Ack=5 Win=65536 Len=32768 TSval=3201262443 TSecr=3201262440
13 1.034 127.0 127.0 TCP	66 [TCP ZeroMindow] 5080 → 46476 [ACK] Seq-5 Ack-65541 Win=0 Len=0 TSval=3201262444 TSecr=3201262443
14 1.082 127.0 127.0 TCP	66 [TCP Window Update] 5880 + 46476 [AcK] Seq-5 Ack-65541 Win-48512 Len-0 TSval-3201262493 TSecr-3201262443
15 1.082 127.0 127.0 TCP 16 1.120 127.0 127.0 TCP	32834 46476 + 5088 [ACK] Seq=65541 ACk=5 Win=65536 Len=32768 TSval=3201262493 TSecr=3201262493 66 5080 + 46476 [ACK] Seq=5 ACk=98309 Win=15744 Len=0 TSval=3201262531 TSecr=3201262493
16 1.126 127.0 127.0 TCP	00 3080 + 0.04/0 [A.K.] 30273 ACC79309 WILTO/44 Letter 15041=3/01/02/31 EUCT=2/01/02/32 SECT=3/01/02/32 66 TCP Window Uodate 5080 + 0.4676 ACK1 Sect=3 ACC49300 Window5536 Letne Tsval=3/01/02/592 Tsect=3/01/02/393
17 1.182 127.0 127.0 1CP	388 [TCP Window FDIBLE] 1909 Previous segment not captured] 46476 + 5888 [KK] 582-33877 Ack: **min65536 Len=32768 TSval=3201262592 TSecr=3201262592
19 1.182 127.0 127.0 TCP	36039 [Fee Billion VIII.] [Fee Fredom Segment in Octahuleus word + Josep [Ench] Seq. 33010/2592 [Sec. 33010/2592] Sec. 33010/2592 [Sec. 33010
20 1.196 127.0 127.0 TCP	32834 [TCP Retransmission] 46476 + 5080 [PSH, ACK] Seq-98309 Ack-5 Min-65536 Len-32768 [Sval=3201262607 TSecr=3201262592
21 1.196 127.0 127.0 TCP	66 [TCP ZeroNindow] 5080 → 46476 [ACK] Seq=5 Ack=163845 Win=0 Len=0 TSVa]=3201262607 TSecr=3201262607
22 1.227 127.0 127.0 TCP	66 [TCP Window Update] 5080 + 46476 [ACK] Seq=5 Ack=163845 Win=48512 Len=0 TSval=3201262638 TSecr=3201262607
23 1.227 127.0 127.0 TCP	32834 46476 → 5080 [PSH, ACK] Seq=163845 Ack=5 Win=65536 Len=32768 TSval=3201262638 TSecr=3201262638
24 1.269 127.0 127.0 TCP	66 5080 → 46476 [ACK] Seq=5 Ack=196613 Win=15744 Len=0 TSval=3201262679 TSecr=3201262638
25 1.280 127.0 127.0 TCP	66 [TCP Window Update] 5080 → 46476 [ACK] Seq=5 Ack=196613 Win=65536 Len=0 TSval=3201262691 TSecr=3201262638
26 1.280 127.0 127.0 TCP	32834 46476 → 5080 [ACK] Seq=196613 Ack=5 Win=65536 Len=32768 TSval=3201262691 TSecr=3201262691
27 2,225 127.0 127.0 TCP	32834 [TCP Window Full] 46476 + 5080 [PSH, ACK] Seq=229381 Ack=5 Win=65536 Len=32768 TSval=3201263635 TSecr=3201262691
28 2.225 127.0 127.0 TCP	66 5080 → 46476 [ACK] Seq=5 Ack=262149 Win=48512 Len=0 TSval=3201263635 TSecr=3201263635
29 2.225 127.0 127.0 TCP	32834 46476 → 5080 [ACK] Seq=262149 Ack=5 Win=65536 Len=32768 TSval=3201263635 TSecr=3201263635
30 2.225 127.0 127.0 TCP	66 5080 → 46476 [ACK] Seq=5 Ack=294917 Win=15744 Len=0 TSval=3201263635 TSecr=3201263635
30 2.225 127.0 127.0 TCP 31 2.318 127.0 127.0 TCP	66 5080 + 46476 [ACK] Seq-5 Ack-294917 Win-15744 Len-0 TSval-3201263635 TSecr-3201263635 66 [TCP Window Update] 5080 + 46476 [ACK] Seq-5 Ack-294917 Win-65536 Len-0 TSval-3201263728 TSecr-3201263635
30 2.225 127.0 127.0 TCP 31 2.318 127.0 127.0 TCP 32 2.318 127.0 127.0 TCP	66 5080 + 46476 [ACK] Seq=5 Ack=294917 Win=15744 Len+0 TSval=3201263635 TSecr=3201263635 66 [TCP Window Update] 5080 + 46476 [ACK] Seq=5 Ack=294917 Win=65536 Len=0 TSval=3201263728 TSecr=3201263635 32834 46476 + 5080 [PSH, ACK] Seq=294917 Ack=5 Win=65536 Len=32768 TSval=3201263728 TSecr=3201263728
30 2.225 127.0 127.0 TCP 31 2.318 127.0 127.0 TCP 32 2.318 127.0 127.0 TCP 33 2.318 127.0 127.0 TCP	66 5080 + 46476 [ACK] Seq-5 Ack-294917 Win-15744 Len-0 Tsval=3201263635 TSecr=3201263635 66 [TCP Window Update] 5080 + 46476 [ACK] Seq-5 Ack-294917 Win-65536 Len-0 TSval=3201263728 TSecr=3201263635 32834 46476 - 5680 [PSH, ACK] Seq-294917 Ack-5 Win-65536 Len-0 TSval=3201263728 TSecr=3201263728 32834 [TCP Window Full] 46476 + 5080 [Ack] Seq-32768 TSck-5 Win-65536 Len-32768 TSval=3201263728 TSecr=3201263728
30 2.225 127.0 127.0 TCP 31 2.318 127.0 127.0 TCP 32 2.318 127.0 127.0 TCP 33 2.318 127.0 127.0 TCP 34 2.339 127.0 127.0 TCP	66 5080 + 46476 [ACK] Seq-5 Ack-294917 Win-15744 Len-0 Tsval=3201263635 Tsecr=3201263635 66 [TCP Window Update] 5080 + 46476 [ACK] Seq-5 Ack-294917 Win-65536 Len-0 Tsval=3201263728 Tsecr=3201263635 32834 46476 + 5080 [PSH, ACK] Seq-294917 Ack-5 Win-65536 Len-32768 Tsval=3201263728 Tsecr=3201263728 32834 [TCP Window Full] 46476 + 5080 [ACK] Seq-57685 Ack-5 Win-65536 Len-32768 Tsval=3201263728 Tsecr=3201263728 66 5080 + 46476 [ACK] Seq-5 Ack-360453 Win-48512 Len-0 Tsval=3201263749 Tsecr=3201263728
30 2.225. 127.0. 127.0. TCP 31 2.318. 127.0. 127.0. TCP 32 2.318. 127.0. 127.0. TCP 32 3.318. 127.0. 127.0. TCP 34 2.339. 127.0. 127.0. TCP 35 2.339. 127.0. 127.0. TCP	66 5080 + 46476 [ACK] Seq=S Ack=294917 Win=15744 Len=0 TSval=3201263635 TSecr=3201263635 66 [TCP Window Update] 5080 + 46476 [ACK] Seq=5 Ack=294917 Win=65536 Len=0 TSval=3201263728 TSecr=3201263635 32834 46476 + 5080 [PSH, ACK] Seq=294917 Ack=5 Win=65536 Len=32768 TSval=3201263728 TSecr=3201263728 32834 [TCP Window Full] 46476 + 5080 [ACK] Seq=327685 Ack=5 Win=65536 Len=32768 TSval=3201263728 TSecr=3201263728 66 5080 + 46476 [ACK] Seq=5 Ack=360453 Min=48512 Len=0 TSval=3201263749 TSecr=3201263728 32834 46476 + 5080 [PSH, ACK] Seq=360453 Ack=5 Win=65536 Len=32768 TSval=3201263749 TSecr=3201263749
30 2.225. 127.0. 127.0. TCP 31 2.318. 127.0. 127.0. TCP 32 2.318. 127.0. 127.0. TCP 33 2.310. 127.0. 127.0. TCP 34 2.339. 127.0. 127.0. TCP 35 2.339. 127.0. 127.0. TCP 36 2.381. 127.0. 127.0. TCP	66 5080 + 46476 [ACK] Seq=5 Ack=294917 Win=15744 Len=0 Tsval=3201263635 TSecr=3201263635 66 [TCP Window Update] 5080 + 46476 [ACK] Seq=5 Ack=294917 Win=65536 Len=0 Tsval=3201263728 TSecr=3201263728 32834 46476 - 5680 [PSH, ACK] Seq=294917 Ack=5 Win=65536 Len=32768 TSecl=3201263728 Secr=3201263728 32834 [TCP Window Full] 46476 + 5000 [ACK] Seq=327608 Ack=5 Win=65536 Len=32768 TSval=3201263728 TSecr=3201263728 66 5080 + 46476 [ACK] Seq=5 Ack=360453 Win=68512 Len=0 Tsval=3201263749 TSecr=3201263749 32834 46476 - 5680 [PSH, ACK] Seq=360453 Ack=5 Win=65536 Len=0 TSval=3201263749 TSecr=3201263749
30 2.225. 127.0. 127.0. TCP 31 2.318. 127.0. 127.0. TCP 32 2.318. 127.0. 127.0. TCP 33 7.316. 127.0. 127.0. TCP 34 2.339. 127.0. 127.0. TCP 35 2.339. 127.0. 127.0. TCP	66 5080 + 46476 [ACK] Seq=S Ack=294917 Win=15744 Len=0 TSval=3201263635 TSecr=3201263635 66 [TCP Window Update] 5080 + 46476 [ACK] Seq=5 Ack=294917 Win=65536 Len=0 TSval=3201263728 TSecr=3201263635 32834 46476 + 5080 [PSH, ACK] Seq=294917 Ack=5 Win=65536 Len=32768 TSval=3201263728 TSecr=3201263728 32834 [TCP Window Full] 46476 + 5080 [ACK] Seq=327685 Ack=5 Win=65536 Len=32768 TSval=3201263728 TSecr=3201263728 66 5080 + 46476 [ACK] Seq=5 Ack=360453 Min=48512 Len=0 TSval=3201263749 TSecr=3201263728 32834 46476 + 5080 [PSH, ACK] Seq=360453 Ack=5 Win=65536 Len=32768 TSval=3201263749 TSecr=3201263749
30 2.225. 127.0. 127.0. TCP 31 2.318. 127.0. 127.0. TCP 32 2.318. 127.0. 127.0. TCP 33 2.318. 127.0. 127.0. TCP 34 2.339. 127.0. 127.0. TCP 35 2.339. 127.0. 127.0. TCP 36 2.381. 127.0. 127.0. TCP 37 2.381. 127.0. 127.0. TCP	66 5080 + 46476 [ACK] Seq-5 Ack-294917 Win-15744 Len-0 Tsval=3201263635 Tsccr=3201263635 66 [TCP Window Update] 5080 + 46476 [ACK] Seq-5 Ack-294917 Win-65536 Len-0 Tsval=3201263728 Tsccr=3201263728 32834 46476 + 5080 [PSH, ACK] Seq-294917 Ack-5 Win-65536 Len-32768 Tsval=3201263728 Tsccr=3201263728 32834 [TCP Window Full] 46476 + 5080 [ACK] Seq-27685 Ack-5 Win-65536 Len-32768 Tsval=3201263728 66 5080 + 46476 [ACK] Seq-5 Ack-360453 Win-88512 Len-0 Tsval=3201263749 Tsccr=3201263728 32834 46476 + 5080 [PSH, ACK] Seq-360453 Ack-5 Win-65536 Len-32768 Tsval=3201263749 Tsccr=3201263749 66 5080 + 46476 [ACK] Seq-5 Ack-3930212 Win-65536 Len-10 Tsval=320126379 Tsccr=3201263749 32834 46476 + 5080 [PSH, ACK] Seq-360453 Ack-5 Win-65536 Len-32768 Tsval=3201263792 Tsccr=3201263749
36 2.225. 127.0. 127.0. TCP 31 2.318. 127.0. 127.0. TCP 32 2.318. 127.0. 127.0. TCP 33 2.318. 127.0. 127.0. TCP 34 2.339. 127.0. 127.0. TCP 35 2.339. 127.0. 127.0. TCP 36 2.381. 127.0. 127.0. TCP 37 2.381. 127.0. 127.0. TCP	66 5080 + 46476 [ACK] Seq-5 Ack-294917 Min-15744 Len-0 Tsval=3201263615 TSecr=3201263635 66 [TCP Mindow Update] 5080 + 46476 [ACK] Seq-5 Ack-294917 Min-65536 Len-0 TSval=3201263728 TSecr=3201263738 32834 46476 + 5080 [FSH, ACK] Seq-294917 Ack-5 Min-65536 Len-32768 TSval=3201263728 TSecr=3201263728 33834 [TCP Mindow FBI]] 46476 + 5080 [ACK] Seq-32767836 Len-29768 TSval=3201263749 TSecr=3201263728 32834 46476 + 5080 [FSH, ACK] Seq-366453 Ack-5 Min-65536 Len-0 TSval=3201263749 TSecr=3201263749 66 5080 + 46476 [ACK] Seq-9 50c4536 Ack-5 Min-65536 Len-0 TSval=3201263749 TSecr=3201263749 32834 46476 + 5080 [ACK] Seq-9 50c4536 Len-0 TSval=3201263792 TSecr=3201263749 32834 46476 + 5080 [ACK] Seq-93221 Ack-5 Min-65536 Len-0 TSval=3201263792 TSecr=3201263792 32834 [TCP Mindow FBI]] 46476 + 5080 [PSH, ACK] Seq-47598 Ack-5 Min-65536 Len-32768 TSval=3201263792 TSecr=3201263792
30 2.225. 127.0. 127.0. TCP 31 2.318. 127.0. 127.0. TCP 32 2.318. 127.0. 127.0. TCP 33 2.310. 127.0. 127.0. TCP 34 2.339. 127.0. 127.0. TCP 36 2.381. 127.0. 127.0. TCP 37 2.381. 127.0. 127.0. TCP 38 2.381. 127.0. 127.0. TCP 39 2.381. 127.0. 127.0. TCP	66 5080 + 46476 [ACK] Seq=5 Ack-294917 Win=15744 Len=0 Tsval=3201263635 Tsccr=3201263635 66 [TCP Window Update] 5080 + 46476 [ACK] Seq=5 Ack-294917 Win=65536 Len=0 Tsval=3201263728 Tsccr=3201263728 32834 46476 - 5080 [PsH, ACK] Seq=294917 Ack-59 Win=65536 Len=32768 Tsval=3201263728 Tsccr=3201263728 32834 46476 - 5080 [PsH, ACK] Seq=326473 Ack-58 Win=65536 Len=32768 Tsval=3201263728 Tsccr=3201263728 65 5080 + 46476 [ACK] Seq=5 Ack-360453 Win=48512 Len=0 Tsval=3201263749 Tsccr=3201263728 32834 46476 + 5080 [PsH, ACK] Seq=68453 Ack-58 Win=65536 Len=0 Tsval=3201263792 Tsccr=3201263749 32834 46476 + 5080 [PsH, ACK] Seq=5 Ack-369536 Len=0 Tsval=3201263792 Tsccr=3201263749 32834 46476 + 5080 [ACK] Seq=5 Ack-393221 Win=65536 Len=0 Tsval=3201263792 Tsccr=3201263792 32834 [TCP Window Tull] 46476 + 5080 [PsH, ACK] Seq=5 Ack-58877 Win=0 Len=0 Tsval=3201263792 Tsccr=3201263792 66 [TCP ZeroWindow] 5080 + 46476 [ACK] Seq=5 Ack-45877 Win=0 Len=0 Tsval=3201263792 Tsccr=3201263792
30 2.225. 127.0. 127.0. TCP 31 2.318. 127.0. 127.0. TCP 32 2.318. 127.0. 127.0. TCP 33 2.318. 127.0. 127.0. TCP 34 2.319. 127.0. 127.0. TCP 35 2.339. 127.0. 127.0. TCP 36 2.381. 127.0. 127.0. TCP 37 2.381. 127.0. 127.0. TCP 38 2.381. 127.0. 127.0. TCP 39 2.381. 127.0. 127.0. TCP	66 5080 + 46476 [ACK] Seq-5 Ack-294917 Win-15744 Len-0 Tsval=3201263635 Tsccr=3201263635 66 [TCP Window Update] 5080 + 46476 [ACK] Seq-5 Ack-294917 Win-65536 Len-0 Tsval=3201263728 Tsccr=3201263728 32834 46476 + 5080 [PSH, ACK] Seq-294917 Ack-5 Win-65536 Len-32768 Tsval=3201263728 Tsccr=3201263728 32834 [TCP Window Full] 46476 + 5080 [ACK] Seq-27685 Ack-5 Win-65536 Len-32768 Tsval=201263728 66 5080 + 46476 [ACK] Seq-3 Ack-304053 Win-48512 Len-0 Tsval=3201263749 Tsccr=3201263728 32834 46476 + 5080 [PSH, ACK] Seq-360453 Win-48512 Len-0 Tsval=3201263794 Tsccr=3201263749 66 5080 + 46476 [ACK] Seq-3 Ack-304053 Win-65536 Len-0 Tsval=3201263797 Tsccr=3201263749 32834 46476 + 5080 [ACK] Seq-393221 Ack-5 Win-65536 Len-0 Tsval=3201263792 Tsccr=3201263792 32834 [TCP Window Full] 46476 + 5080 [PSH, ACK] Seq-445988 Ack-5 Win-65536 Len-32768 Tsval=3201263792 66 [TCP Zeroxindow] 5080 + 46476 [ACK] Seq-5 Ack-458757 Win-65536 Len-32768 Tsval=3201263792 67 [TCP Zeroxindow] 5080 + 46476 [ACK] Seq-5 Ack-458757 Win-65536 Len-32768 Tsval=3201263792 68 [TCP Zeroxindow] 5080 + 46476 [ACK] Seq-5 Ack-458757 Win-65536 Len-5 Tsval=3201263792
30 2.225. 127.0. 127.0. TCP 31 2.318. 127.0. 127.0. TCP 32 2.318. 127.0. 127.0. TCP 33 2.318. 127.0. 127.0. TCP 34 2.339. 127.0. 127.0. TCP 36 2.381. 127.0. 127.0. TCP 37 2.381. 127.0. 127.0. TCP 38 2.381. 127.0. 127.0. TCP 39 2.381. 127.0. 127.0. TCP 40 2.402. 127.0. 127.0. TCP 40 2.402. 127.0. 127.0. TCP	66 5080 + 46476 [ACK] Seq-5 Ack-294917 Min-15744 Len-0 Tsval=3201263635 Tsccr=3201263635 66 [TCP Mindow Update] 5080 + 46476 [ACK] Seq-5 Ack-294917 Min-65536 Len-0 Tsval=3201263728 Tsccr=3201263738 32834 46476 - 5080 [Fst], ACK] Seq-294917 Ack-5 Win-65536 Len-32768 Tsval=3201263738 Secr=3201263728 32834 (ETP Mindow Fall] 46476 + 5080 [ACK] Seq-326785 Ack-5 Win-65536 Len-32768 Tsval=3201263728 Tsccr=3201263728 66 5080 + 46476 [ACK] Seq-5 Ack-360453 Win-465312 Len-0 Tsval=3201263749 Tsccr=3201263728 32834 46476 - 5080 [Pst], ACK] Seq-360453 Ack-5 Win-65536 Len-22768 Tsval=3201263749 66 5080 + 46476 [ACK] Seq-5 Ack-390321 Win-65536 Len-0 Tsval=3201263792 Tsccr=3201263749 32834 46476 + 5080 [ACK] Seq-3804 (Ack-5 Win-65536 Len-32768 Tsval=3201263792 Tsccr=3201263792 32834 [TCP Mindow Full] 46476 + 5080 [Pst], ACK] Seq-475980 Ack-5 Win-65536 Len-32768 Tsval=3201263792 Tsccr=3201263792 66 [TCP Zerokindow] 5080 + 46476 [ACK] Seq-5 Ack-488757 Win-80512 Len-0 Tsval=3201263792 Tsccr=3201263792 66 [TCP Mindow Update] 5080 + 46476 [ACK] Seq-5 Ack-488757 Win-80512 Len-0 Tsval=3201263792 Tsccr=3201263792 32834 46476 + 5080 [ACK] Seq-458757 Ack-5 Win-65536 Len-0 Tsval=3201263812 Tsccr=3201263792
30 2.225. 127.0. 127.0. TCP 31 2.318. 127.0. 127.0. TCP 32 2.318. 127.0. 127.0. TCP 33 2.310. 127.0. 127.0. TCP 34 2.339. 127.0. 127.0. TCP 36 2.381. 127.0. 127.0. TCP 37 2.381. 127.0. 127.0. TCP 39 2.381. 127.0. 127.0. TCP 40 2.402. 127.0. 127.0. TCP 40 2.402. 127.0. 127.0. TCP 41 2.402. 127.0. 127.0. TCP	66 5080 + 46476 [ACK] Seq-5 Ack-294917 Win-15744 Len-0 Tsval=3201263635 Tsccr=3201263635 66 [TCP Window Update] 5080 + 46476 [ACK] Seq-5 Ack-294917 Win-65536 Len-0 Tsval=3201263728 Tsccr=3201263728 32834 46476 - 5080 [Psk], ACK] Seq-294917 Ack-5 Win-65536 Len-32768 Tsval=3201263728 Tsccr=3201263728 32834 46476 - 5080 [Psk], ACK] Seq-294917 Ack-5 Win-65536 Len-32768 Tsval=3201263728 Tsccr=3201263728 66 5080 + 46476 [ACK] Seq-5 Ack-360433 Win-68512 Len-0 Tsval=3201263749 Tsccr=3201263728 32834 46476 - 5080 [Psk], ACK] Seq-364053 Ack-5 Win-65536 Len-32768 Tsval-3201263749 66 5080 + 46476 [ACK] Seq-5 Ack-393221 Win-65536 Len-0 Tsval=3201263792 Tsccr=3201263749 32834 46476 + 5080 [Sex, Cscr=320126374] Ack-5 Win-65536 Len-0 Tsval=3201263792 Tsccr=3201263749 32834 [TCP Window Full] 46476 + 5080 [Psk], ACK] Seq-5 Ack-458757 Win-10 Len-0 Tsval=3201263792 Tsccr=3201263792 66 [TCP Zerokindow] 5080 + 46476 [ACK] Seq-5 Ack-458757 Win-45512 Len-0 Tsval=3201263179 Tsccr=3201263792 66 [TCP Window Update] 5080 + 46476 [ACK] Seq-5 Ack-458757 Win-45512 Len-0 Tsval=3201263812 Tsccr=3201263792 32834 46476 - 5080 [ACK] Seq-648757 Ack-548757 Win-45512 Len-0 Tsval=3201263812 Tsccr=3201263792 66 [TCP Window Update] 5080 + 46476 [ACK] Seq-5 Ack-458757 Win-45512 Len-0 Tsval=3201263812 Tsccr=3201263792 52834 46476 [ACK] Seq-5 Ack-4585757 Win-65536 Len-32768 Tsval=3201263812 Tsccr=3201263812
30 2.225. 127.0. 127.0. TCP 31 2.318. 127.0. 127.0. TCP 32 2.318. 127.0. 127.0. TCP 33 2.310. 127.0. 127.0. TCP 34 2.339. 127.0. 127.0. TCP 36 2.381. 127.0. 127.0. TCP 37 2.381. 127.0. 127.0. TCP 39 2.381. 127.0. 127.0. TCP 40 2.402. 127.0. 127.0. TCP 41 2.402. 127.0. 127.0. TCP 42 2.463. 127.0. 127.0. TCP 43 2.463. 127.0. 127.0. TCP 44 2.463. 127.0. 127.0. TCP 45 2.463. 127.0. 127.0. TCP 46 2.463. 127.0. 127.0. TCP	66 5080 + 46476 [ACK] Seq-5 Ack-294917 Win-15744 Len-0 Tsval=3201263635 Tsccr=3201263635 66 [TCP Window Update] 5080 + 46476 [ACK] Seq-5 Ack-294917 Win-65536 Len-0 Tsval=3201263728 Tsccr=3201263728 32834 46476 - 5080 [PSH, ACK] Seq-294917 Ack-5 Win-65536 Len-32768 Tsval=3201263728 Tsccr=3201263728 32834 46476 - 5080 [PSH, ACK] Seq-36453 Min-48512 Len-0 Tsval=3201263749 Tsccr=3201263728 65 5080 + 46476 [ACK] Seq-5 Ack-360453 Min-48512 Len-0 Tsval=3201263749 Tsccr=3201263729 65 5080 + 46476 [ACK] Seq-5 Ack-360453 Min-48512 Len-0 Tsval=3201263749 Tsccr=3201263749 32834 46476 + 5080 [PSH, ACK] Seq-5 Ack-369536 Len-91768 Tsval=3201263792 Tsccr=3201263749 32834 46476 + 5080 [ACK] Seq-5 Ack-393221 Win-65536 Len-91768 Tsval=3201263792 Tsccr=3201263749 32834 46476 + 5080 [ACK] Seq-5 Ack-36957 Min-85958 Len-32768 Tsval=3201263792 Tsccr=3201263792 66 [TCP Zerokindow] 5080 + 46476 [ACK] Seq-5 Ack-458757 Min-8512 Len-0 Tsval=3201263792 Tsccr=3201263792 66 [TCP Window Update] 5080 + 46476 [ACK] Seq-5 Ack-458757 Min-8512 Len-0 Tsval=3201263812 Tsccr=3201263812 32834 46476 + 5080 [ACK] Seq-4548757 Ack-5 Min-65536 Len-32768 Tsval=3201263812 Tsccr=3201263812 32834 46476 + 5080 [ACK] Seq-4548757 Ack-5 Min-65536 Len-32768 Tsval=3201263813 Tsccr=3201263813 4036 46476 + 5080 [PSH, ACK] Seq-54685 Min-65536 Len-32768 Tsval=3201263873 Tsccr=3201263873 4036 46476 + 5080 [PSH, ACK] Seq-54685 Min-65536 Len-3760 Tsval=3201263873 Tsccr=3201263873 6 5080 + 46476 [ACK] Seq-5 Ack-528263 Min-35952 Len-0 Tsval=3201263873 Tsccr=3201263873
36 2.225. 127.0. 127.0. TCP 31 2.318. 127.0. 127.0. TCP 32 2.318. 127.0. 127.0. TCP 33 2.319. 127.0. 127.0. TCP 34 2.339. 127.0. 127.0. TCP 36 2.381. 127.0. 127.0. TCP 37 2.381. 127.0. 127.0. TCP 38 2.381. 127.0. 127.0. TCP 39 2.381. 127.0. 127.0. TCP 40 2.402. 127.0. 127.0. TCP 41 2.402. 127.0. 127.0. TCP 42 2.463. 127.0. 127.0. TCP 43 2.463. 127.0. 127.0. TCP 44 2.466. 127.0. 127.0. TCP 45 2.463. 127.0. 127.0. TCP 46 2.603. 127.0. 127.0. TCP	66 5889 + 46476 [ACK] Seq-5 Ack-294917 Min-15744 Len-0 Tsval=3201263615 Tsccr=3201263635 66 [TCP Mindow Update] 5889 + 46476 [ACK] Seq-5 Ack-294917 Min-65536 Len-0 Tsval=3201263728 Tsccr=3201263738 32834 46476 - 5868 [PSH, ACK] Seq-294917 Ack-5 Min-65536 Len-32768 Tsval=3201263728 Tsccr=3201263728 32834 46476 - 5868 [PSH, ACK] Seq-36453 Min-85836 Len-32768 Tsval=320126373 Tsccr=3201263728 32834 46476 - 5868 [PSH, ACK] Seq-366453 Ack-5 Min-65536 Len-29768 Tsval=3201263749 Tsccr=3201263749 66 5880 + 46476 [ACK] Seq-5 Ack-398212 Min-65536 Len-0 Tsval=3201263792 Tsccr=3201263749 32834 46476 - 5868 [PSH, ACK] Seq-36453 Min-6536 Len-0 Tsval=3201263792 Tsccr=3201263749 32834 46476 - 5868 [ACK] Seq-392212 Ack-5 Min-65536 Len-0 Tsval=3201263792 Tsccr=3201263792 32834 [TCP Window Full] 46476 + 5880 [PSH, ACK] Seq-425989 Ack-5 Min-65536 Len-29768 Tsval=3201263792 Tsccr=3201263792 66 [TCP Window Update] 5880 + 46476 [ACK] Seq-5 Ack-488757 Min-08152 Lene-0 Tsval=3201263792 Tsccr=3201263792 67 [TCP Window Update] 5880 + 46476 [ACK] Seq-5 Ack-488757 Min-08152 Lene-0 Tsval=3201263792 32834 46476 + 5880 [ACK] Seq-486757 Ack-5 Min-65536 Lene-0 Tsval=3201263812 Tsccr=3201263792 32834 46476 + 5880 [ACK] Seq-486757 Ack-5 Min-65536 Lene-0 Tsval=3201263817 Tsccr=3201263812 32834 46476 + 5880 [PSH, ACK] Seq-491255 Ack-5 Min-65536 Lene-0 Tsval=3201263817 Tsccr=3201263812 32834 46476 + 5880 [PSH, ACK] Seq-491255 Ack-5 Min-65536 Lene-0 Tsval=3201263817 Tsccr=3201263813 32834 46476 + 5880 [PSH, ACK] Seq-491255 Ack-5 Min-65536 Lene-0 Tsval=3201263817 Tsccr=3201263813 32834 46476 + 5880 [PSH, ACK] Seq-491255 Ack-5 Min-65536 Lene-0 Tsval=3201263817 Tsccr=3201263813 32834 46476 + 5880 [PSH, ACK] Seq-491255 Ack-5 Min-65536 Lene-0 Tsval=3201263817 Tsccr=3201263813 32834 46476 + 5880 [PSH, ACK] Seq-491255 Ack-5 Min-65536 Lene-0 Tsval=3201263817 Tsccr=3201263813 32834 46476 + 5880 [PSH, ACK] Seq-5 Ack-528263 Min-65536 Lene-0 Tsval=3201263817 Tsccr=3201263817 32834 46476 - 5880 [PSH, ACK] Seq-54263 Min-65536 Lene-0 Tsval=3201263817 Tsccr=320126381
30 2.225. 127.0. 127.0. TCP 31 2.318. 127.0. 127.0. TCP 32 2.318. 127.0. 127.0. TCP 33 2.318. 127.0. 127.0. TCP 34 2.339. 127.0. 127.0. TCP 36 2.381. 127.0. 127.0. TCP 37 2.381. 127.0. 127.0. TCP 38 2.381. 127.0. 127.0. TCP 39 2.381. 127.0. 127.0. TCP 40 2.402. 127.0. 127.0. TCP 40 2.402. 127.0. 127.0. TCP 41 2.402. 127.0. 127.0. TCP 42 2.463. 127.0. 127.0. TCP 44 2.463. 127.0. 127.0. TCP 45 2.463. 127.0. 127.0. TCP 46 2.693. 127.0. 127.0. TCP 47 2.604. 127.0. 127.0. TCP	66 5080 + 46476 [ACK] Seq-5 Ack-294917 Min-15744 Len-0 Tsval-3201263635 Tsccr-3201263635 66 [TCP Mindow Update] 5080 + 46476 [ACK] Seq-5 Ack-294917 Min-65536 Len-0 Tsval-3201263728 Tsccr-3201263728 32834 46476 - 5080 [Psi, ACK] Seq-3247685 Ack-3 Min-65536 Len-32768 Tsval-3201263728 Tsccr-3201263728 65 5080 + 46476 [ACK] Seq-5 Ack-360433 Min-68512 Len-0 Tsval-3201263749 Tsccr-3201263728 65 5080 + 46476 [ACK] Seq-5 Ack-360433 Min-68512 Len-0 Tsval-3201263749 Tsccr-3201263749 66 5080 + 46476 [ACK] Seq-5 Ack-360433 Min-68512 Len-0 Tsval-3201263749 Tsccr-3201263749 66 5080 + 46476 [ACK] Seq-5 Ack-360433 Min-65536 Len-32768 Tsval-3201263749 Tsccr-3201263749 32834 46476 + 5080 [ACK] Seq-5 Ack-36045 Min-65536 Len-32768 Tsval-3201263792 Tsccr-3201263749 32834 (TCP Mindow Full] 46476 + 5080 [Psi, ACK] Seq-452988 Ack-5 Min-65536 Len-32768 Tsval-3201263792 Tsccr-3201263792 66 [TCP Zerokindow] 5080 + 46476 [ACK] Seq-5 Ack-458757 Min-84512 Len-0 Tsval-3201263792 Tsccr-3201263792 67 [TCP Window Update] 5080 + 46476 [ACK] Seq-5 Ack-458757 Min-84512 Len-0 Tsval-3201263792 Tsccr-3201263792 68 [TCP Window Update] 5080 + 46476 [ACK] Seq-5 Ack-458757 Min-84512 Len-0 Tsval-320126379 Tsccr-3201263792 32834 46476 + 5080 [ACK] Seq-458757 Ack-5 Min-65536 Len-32768 Tsval-3201263812 Tsccr-3201263812 66 5080 + 46476 [ACK] Seq-4 Sck-458755 Min-65536 Len-32768 Tsval-3201263812 Tsccr-3201263812 67 5080 + 46476 [ACK] Seq-4 Sck-458755 Min-65536 Len-32768 Tsval-3201263813 32834 46476 + 5080 [Psi, ACK] Seq-451525 Min-65536 Len-32768 Tsval-3201263817 Tsccr-3201263873 4036 46476 + 5080 [Psi, ACK] Seq-5 Ack-458755 Min-65536 Len-32768 Tsval-3201263873 5080 + 46476 [ACK] Seq-5 Ack-52263 Min-65536 Len-32768 Tsval-3201263873 5080 + 46476 [Psi, ACK] Seq-5 Ack-52263 Min-65536 Len-32768 Tsval-3201263873 5080 + 46476 [Psi, ACK] Seq-5 Ack-52263 Min-65536 Len-32768 Tsval-3201263873 5080 + 46476 [Psi, ACK] Seq-5 Ack-52263 Min-65536 Len-32768 Tsval-3201263873
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36 2.225. 127.0. 127.0. TCP 31 2.318. 127.0. 127.0. TCP 32 2.318. 127.0. 127.0. TCP 33 2.318. 127.0. 127.0. TCP 34 2.339. 127.0. 127.0. TCP 35 2.339. 127.0. 127.0. TCP 36 2.381. 127.0. 127.0. TCP 37 2.381. 127.0. 127.0. TCP 38 2.381. 127.0. 127.0. TCP 40 2.402. 127.0. 127.0. TCP 41 2.402. 127.0. 127.0. TCP 42 2.463. 127.0. 127.0. TCP 43 2.463. 127.0. 127.0. TCP 44 2.463. 127.0. 127.0. TCP 45 2.463. 127.0. 127.0. TCP 46 2.603. 127.0. 127.0. TCP 47 7.604. 127.0. 127.0. TCP 48 2.603. 127.0. 127.0. TCP 49 2.604. 127.0. 127.0. TCP	66 5889 + 46476 [ACK] Seq-5 Ack-294917 Min-15744 Len-0 Tsval=3201263615 Tsccr=3201263635 66 [TCP Mindow Update] 5889 + 46476 [ACK] Seq-5 Ack-294917 Min-65536 Len-0 Tsval=3201263728 Tsccr=3201263728 32834 46476 - 5680 [PSH, ACK] Seq-294917 Ack-5 Min-65536 Len-32768 Tsval=3201263728 Tsccr=3201263728 66 5889 + 46476 [ACK] Seq-5 Ack-368453 Min-48512 Len-0 Tsval=3201263749 Tsccr=3201263728 32834 46476 - 5680 [PSH, ACK] Seq-366453 Ack-5 Min-65536 Len-0 2768 Tsval=3201263749 Tsccr=3201263749 66 5889 + 46476 [ACK] Seq-5 Ack-392212 Min-65536 Len-0 Tsval=3201263749 Tsccr=3201263749 32834 46476 - 5680 [PSH, ACK] Seq-36453 Ack-5 Min-65536 Len-0 Tsval=3201263792 Tsccr=3201263749 32834 [TCP Mindow Full] 46476 + 5080 [PSH, ACK] Seq-452980 Ack-5 Min-65536 Len-0 2768 Tsval=3201263792 Tsccr=3201263792 66 [TCP Zerodindow] 5889 + 46476 [ACK] Seq-4 Ack-458757 Min-48512 Len-0 Tsval=3201263792 Tsccr=3201263792 66 [TCP Window Update] 5889 + 46476 [ACK] Seq-5 Ack-458757 Min-48512 Len-0 Tsval=3201263792 Tsccr=3201263792 32834 46476 + 5080 [ACK] Seq-458757 Ack-5 Min-65536 Len-0 32768 Tsval=320126379 Tsccr=3201263792 32834 46476 + 5080 [ACK] Seq-458757 Ack-5 Min-65536 Len-0 32768 Tsval=320126373 Tsccr=3201263792 32834 46476 + 5080 [PSH, ACK] Seq-5 Ack-458757 Min-45812 Len-0 Tsval=320126373 32834 46476 + 5080 [PSH, ACK] Seq-5 Ack-458755 Min-65536 Len-0 3768 Tsval=3201263873 32834 46476 - 5080 [PSH, ACK] Seq-458252 Min-65536 Len-0 3768 Tsval=3201263873 Tsccr=3201263873 32834 46476 - 5080 [PSH, ACK] Seq-5 Ack-52263 Min-65536 Len-0 3768 Tsval=3201263873 Tsccr=3201263873 32834 46476 - 5080 [PSH, ACK] Seq-5 Ack-52263 Min-65536 Len-0 3768 Tsval=3201263873 Tsccr=3201263873 32834 [TCP Out-0f-0rder] 46476 + 5080 [ACK] Seq-9 Ack-52263 Min-65536 Len-0 15val=3201263873 Tsccr=3201263873 32834 [TCP Out-0f-0rder] 46476 + 5080 [ACK] Seq-9 Ack-52263 Min-65536 Len-0 15val=3201263873 Tsccr=3201263873 32834 [TCP Out-0f-0rder] 46476 + 5080 [ACK] Seq-9 Ack-52263 Min-65536 Len-0 15val=3201263873 Tsccr=3201263873 Stcc-3201263873 Stcc-3201263873 Stcc-3201263873 St
30 2.225. 127.0. 127.0. TCP 31 2.318. 127.0. 127.0. TCP 32 2.318. 127.0. 127.0. TCP 33 2.318. 127.0. 127.0. TCP 34 2.339. 127.0. 127.0. TCP 36 2.381. 127.0. 127.0. TCP 37 2.381. 127.0. 127.0. TCP 39 2.381. 127.0. 127.0. TCP 40 2.402. 127.0. 127.0. TCP 40 2.402. 127.0. 127.0. TCP 41 2.402. 127.0. 127.0. TCP 42 2.463. 127.0. 127.0. TCP 43 2.463. 127.0. 127.0. TCP 44 2.463. 127.0. 127.0. TCP 45 2.463. 127.0. 127.0. TCP 46 2.693. 127.0. 127.0. TCP 47 2.604. 127.0. 127.0. TCP 48 2.694. 127.0. 127.0. TCP 49 2.604. 127.0. 127.0. TCP 40 2.604. 127.0. 127.0. TCP 41 2.405. 127.0. 127.0. TCP	66 5080 + 46476 [ACK] Seq-5 Ack-294917 Min-15744 Len-0 Tsval-3201263635 Tsccr-3201263635 66 [TCP Mindow Update] 5080 + 46476 [ACK] Seq-5 Ack-294917 Min-65536 Len-0 Tsval-3201263728 Tsccr-3201263635 32834 46476 - 5080 [Pst], ACK] Seq-324768 Ack-294917 Min-65536 Len-0 37081 [Pst] ACK Seq-324768 Ack-294917 Min-65536 Len-32768 Tsval-3201263728 32834 46476 - 5080 [Pst], ACK] Seq-327685 Ack-3 Min-65536 Len-32768 Tsval-3201263728 65 5080 + 46476 [ACK] Seq-5 Ack-360453 Min-68512 Len-0 Tsval-3201263749 Tsccr-3201263749 66 5080 + 46476 [ACK] Seq-5 Ack-330453 Min-65536 Len-32768 Tsval-3201263749 32834 46476 + 5080 [ACK] Seq-32212 Ack-5 Min-65536 Len-32768 Tsval-3201263792 Tsccr-3201263749 32834 (TCP Mindow Full] 46476 + 5080 [Pst], ACK] Seq-45895 Ack-5 Min-65536 Len-32768 Tsval-3201263792 Tsccr-3201263792 66 [TCP Zerokindow] 5880 + 46476 [ACK] Seq-5 Ack-458757 Min-84512 Len-0 Tsval-3201263792 Tsccr-3201263792 67 [TCP Window Update] 5080 + 46476 [ACK] Seq-5 Ack-458757 Min-84512 Len-0 Tsval-3201263792 Tsccr-3201263792 68 [TCP Window Update] 5080 + 46476 [ACK] Seq-5 Ack-458757 Min-84512 Len-0 Tsval-3201263792 Tsccr-3201263792 32834 46476 + 5080 [ACK] Seq-458757 Ack-5 Min-65536 Len-32768 Tsval-3201263812 Tsccr-3201263792 32834 46476 + 5080 [Pst], ACK] Seq-458757 Ack-5 Min-65536 Len-32768 Tsval-3201263812 Tsccr-3201263812 66 5080 + 46476 [ACK] Seq-458757 Ack-5 Min-65536 Len-32768 Tsval-3201263812 Tsccr-3201263812 67 5080 + 46476 [ACK] Seq-405125 Ack-5 Min-65536 Len-32768 Tsval-3201263813 Tsccr-3201263813 32834 46476 + 5080 [Pst], ACK] Seq-5 Ack-458758 Min-65536 Len-32768 Tsval-3201263873 4036 46476 + 5080 [Pst], ACK] Seq-5 Ack-52863 Min-65536 Len-32768 Tsval-3201263873 32834 [TCP Mindow Full] [TCP Previous seggent not captured] 46476 + 5080 [Pst], ACK] Seq-5 Ack-52863 Min-65536 Len-32768 Tsval-3201264105 Tsccr-3201263873 32834 [TCP Mindow Full] [TCP Previous seggent not captured] 46476 + 5080 [Pst], ACK] Seq-550131 Ack-9 Min-65536 Len-32768 Tsval-3201264105 Tsccr-3201263873 32834 [TCP Mindow Full] [TCP Previous seggent not cap
30 2,225. 127.0. 127.0. TCP 31 2,318. 127.0. 127.0. TCP 32 2,318. 127.0. 127.0. TCP 33 2,318. 127.0. 127.0. TCP 34 2,339. 127.0. 127.0. TCP 36 2,381. 127.0. 127.0. TCP 37 2,381. 127.0. 127.0. TCP 39 2,381. 127.0. 127.0. TCP 39 2,381. 127.0. 127.0. TCP 40 2,402. 127.0. 127.0. TCP 41 2,402. 127.0. 127.0. TCP 42 2,463. 127.0. 127.0. TCP 43 2,463. 127.0. 127.0. TCP 44 2,463. 127.0. 127.0. TCP 45 2,463. 127.0. 127.0. TCP 46 2,693. 127.0. 127.0. TCP 47 2,694. 127.0. 127.0. TCP 48 2,694. 127.0. 127.0. TCP 49 2,694. 127.0. 127.0. TCP	66 5080 + 46476 [ACK] Seq-5 Ack-294917 Win-15744 Len-0 Tsval=3201263635 Tsccr=3201263635 66 [TCP Window Update] 5080 + 46476 [ACK] Seq-5 Ack-294917 Win-65536 Len-0 Tsval=3201263728 Tsccr=3201263635 32834 46476 - 5080 [Psh, ACK] Seq-294917 Ack-5 Win-65536 Len-32768 Tsval=3201263728 Tsccr=3201263728 32834 46476 - 5080 [Psh, ACK] Seq-36453 Min-48512 Len-0 Tsval=3201263749 Tsccr=3201263728 65 5080 + 46476 [ACK] Seq-5 Ack-364053 Min-48512 Len-0 Tsval=3201263749 Tsccr=3201263749 65 5080 + 46476 [ACK] Seq-5 Ack-364053 Min-48512 Len-0 Tsval=3201263749 Tsccr=3201263749 32834 46476 + 5080 [Psh, ACK] Seq-5 Ack-36453 Min-65536 Len-32768 Tsval-3201263792 Tsccr=3201263749 32834 46476 + 5080 [Psh, ACK] Seq-5 Ack-36576 Len-32768 Tsval-3201263792 Tsccr=3201263749 32834 46476 + 5080 [ACK] Seq-36453 Ack-5 Min-65536 Len-32768 Tsval-3201263792 Tsccr=3201263749 32834 46476 + 5080 [ACK] Seq-5 Ack-36577 Min-65536 Len-32768 Tsval-3201263792 Tsccr=3201263792 66 [TCP Zerokindow] 5080 + 46476 [ACK] Seq-5 Ack-458757 Min-45512 Len-0 Tsval-3201263792 Tsccr=3201263792 66 [TCP Window Update] 5080 + 46476 [ACK] Seq-5 Ack-458757 Min-45512 Len-0 Tsval-320126312 Tsccr=3201263792 32834 46476 + 5080 [ACK] Seq-648577 Ack-5 Min-65536 Len-32768 Tsval-3201263812 Tsccr=3201263812 32834 46476 + 5080 [Psh, ACK] Seq-5 Ack-458757 Min-45536 Len-32768 Tsval-3201263812 Tsccr=3201263873 4036 46476 + 5080 [Psh, ACK] Seq-642639 Ack-5536 Len-0 Tsval-3201263873 Tsccr=3201263873 4036 46476 + 5080 [Psh, ACK] Seq-642639 Ack-5536 Len-32768 Tsval-3201263873 Tsccr=3201263873 4036 46476 [ACK] Seq-5 Ack-528263 Min-45952 Len-0 Tsval-3201263873 Tsccr=3201263873 4036 46476 [ACK] Seq-5 Ack-528263 Min-45952 Len-0 Tsval-3201263873 Tsccr=3201263873 4036 46476 [ACK] Seq-5 Ack-528263 Min-459536 Len-3768 Tsval-3201263873 Sec-3201263873 4036 46476 [ACK] Seq-5 Ack-528263 Min-65536 Len-0 Tsval-3201264105 Tsccr=3201263873 4036 46476 [ACK] Seq-5 Ack-528263 Min-65536 Len-0 Tsval-3201264105 Tsccr=3201263873 Sec-3201264105 Sec-3201264105 40 TCP Mindow Update] 5080 + 46476 [ACK] Seq-9 Ack-539
30 2.225. 127.0. 127.0. TCP 31 2.318. 127.0. 127.0. TCP 32 2.318. 127.0. 127.0. TCP 33 2.318. 127.0. 127.0. TCP 34 2.339. 127.0. 127.0. TCP 35 2.339. 127.0. 127.0. TCP 36 2.381. 127.0. 127.0. TCP 37 2.381. 127.0. 127.0. TCP 38 2.381. 127.0. 127.0. TCP 40 2.402. 127.0. 127.0. TCP 41 2.402. 127.0. 127.0. TCP 42 2.463. 127.0. 127.0. TCP 44 2.463. 127.0. 127.0. TCP 45 2.463. 127.0. 127.0. TCP 46 2.604. 127.0. 127.0. TCP 47 2.604. 127.0. 127.0. TCP 48 2.604. 127.0. 127.0. TCP 49 2.604. 127.0. 127.0. TCP 40 2.604. 127.0. 127.0. TCP 41 2.604. 127.0. 127.0. TCP 42 2.604. 127.0. 127.0. TCP 43 2.604. 127.0. 127.0. TCP 44 2.604. 127.0. 127.0. TCP 45 2.604. 127.0. 127.0. TCP 46 2.604. 127.0. 127.0. TCP 47 2.604. 127.0. 127.0. TCP 48 2.604. 127.0. 127.0. TCP 49 2.604. 127.0. 127.0. TCP 40 2.604. 127.0. 127.0. TCP 41 2.731. 127.0. 127.0. TCP	66 5889 + 46476 [ACK] Seq-5 Ack-294917 Min-15744 Len-0 TSval=3201263615 TSecr=3201263635 66 [TCP Mindow Update] 5889 + 46476 [ACK] Seq-5 Ack-294917 Min-65536 Len-0 TSval=3201263728 TSecr=3201263728 32834 46476 + 5688 [PSH, ACK] Seq-294917 Ack-59487 Min-65536 Len-32768 TSval=3201263728 TSecr=3201263728 66 5889 + 46476 [ACK] Seq-5 Ack-36463 Min-48512 Len-0 TSval=3201263749 TSecr=3201263728 32834 46476 + 5688 [PSH, ACK] Seq-366453 Ack-5 Min-65536 Len-0 2768 TSval=3201263749 TSecr=3201263749 66 5889 + 46476 [ACK] Seq-5 Ack-36463 Min-46536 Len-0 TSval=3201263792 TSecr=3201263749 66 5889 + 46476 [ACK] Seq-5 Ack-392121 Min-65536 Len-0 TSval=3201263792 TSecr=3201263749 32834 46476 + 5688 [PSH, ACK] Seq-392121 Min-65536 Len-0 TSval=3201263792 TSecr=3201263792 46 [TCP Window Full] 46476 + 5688 [PSH, ACK] Seq-4458757 Min-481512 Lene-0 TSval=3201263792 TSecr=3201263792 66 [TCP Window Update] 5889 + 46476 [ACK] Seq-5 Ack-485757 Min-481512 Lene-0 TSval=3201263792 TSecr=3201263792 67 [TCP Window Update] 5889 + 46476 [ACK] Seq-5 Ack-485757 Min-481512 Lene-0 TSval=3201263792 32834 46476 + 5688 [ACK] Seq-5 Ack-485757 Min-65536 Lene-32768 TSval=3201263812 66 5889 + 46476 [ACK] Seq-5 Ack-485757 Min-65536 Lene-32768 TSval=3201263812 32834 46476 + 5688 [PSH, ACK] Seq-5 Ack-485855 Lene-0 TSval=3201263873 TSecr=3201263812 46476 + 5688 [PSH, ACK] Seq-5 Ack-485255 Min-65536 Lene-32768 TSval=3201263873 TSecr=3201263873 4036 46476 + 5688 [PSH, ACK] Seq-54Cx-53263 Min-65536 Lene-32768 TSval=3201263873 TSecr=3201263873 79 588 + 46476 [PSH, ACK] Seq-5 Ack-485263 Min-65536 Lene-3768 TSval=3201263873 TSecr=3201263873 79 588 + 46476 [PSH, ACK] Seq-5 Ack-485263 Min-65536 Lene-3768 TSval=3201263873 TSecr=3201263873 178 174 Pun Mindow Full] [TCP Previous segment not captured] 46576 + 5688 [RSL] Seq-54676 Sep-54676 Min-5556 Lene-3768 TSval=3201263873 TSecr=3201263873 178 174 Pun Lene-1 Sep-546476 Sep-546476 Sep-546476 Sep-546476 Sep-546476 Sep-54676 Min-5556 Lene-3768 TSval=3201263873 TSecr=3201263873 TSecr=3201263873 TSecr=32012
30 2,225. 127.0. 127.0. TCP 31 2,318. 127.0. 127.0. TCP 32 2,318. 127.0. 127.0. TCP 33 2,318. 127.0. 127.0. TCP 34 2,339. 127.0. 127.0. TCP 36 2,381. 127.0. 127.0. TCP 37 2,381. 127.0. 127.0. TCP 39 2,381. 127.0. 127.0. TCP 39 2,381. 127.0. 127.0. TCP 40 2,402. 127.0. 127.0. TCP 41 2,402. 127.0. 127.0. TCP 42 2,463. 127.0. 127.0. TCP 43 2,463. 127.0. 127.0. TCP 44 2,463. 127.0. 127.0. TCP 45 2,463. 127.0. 127.0. TCP 46 2,693. 127.0. 127.0. TCP 47 2,694. 127.0. 127.0. TCP 48 2,694. 127.0. 127.0. TCP 49 2,694. 127.0. 127.0. TCP	66 5080 + 46476 [ACK] Seq-5 Ack-294917 Win-15744 Len-0 Tsval=3201263635 Tsccr=3201263635 66 [TCP Window Update] 5080 + 46476 [ACK] Seq-5 Ack-294917 Win-65536 Len-0 Tsval=3201263728 Tsccr=3201263635 32834 46476 - 5080 [Psh, ACK] Seq-294917 Ack-5 Win-65536 Len-32768 Tsval=3201263728 Tsccr=3201263728 32834 46476 - 5080 [Psh, ACK] Seq-36453 Min-48512 Len-0 Tsval=3201263749 Tsccr=3201263728 65 5080 + 46476 [ACK] Seq-5 Ack-364053 Min-48512 Len-0 Tsval=3201263749 Tsccr=3201263749 65 5080 + 46476 [ACK] Seq-5 Ack-364053 Min-48512 Len-0 Tsval=3201263749 Tsccr=3201263749 32834 46476 + 5080 [Psh, ACK] Seq-5 Ack-36453 Min-65536 Len-32768 Tsval-3201263792 Tsccr=3201263749 32834 46476 + 5080 [Psh, ACK] Seq-5 Ack-36576 Len-32768 Tsval-3201263792 Tsccr=3201263749 32834 46476 + 5080 [ACK] Seq-36453 Ack-5 Min-65536 Len-32768 Tsval-3201263792 Tsccr=3201263749 32834 46476 + 5080 [ACK] Seq-5 Ack-36577 Min-65536 Len-32768 Tsval-3201263792 Tsccr=3201263792 66 [TCP Zerokindow] 5080 + 46476 [ACK] Seq-5 Ack-458757 Min-45512 Len-0 Tsval-3201263792 Tsccr=3201263792 66 [TCP Window Update] 5080 + 46476 [ACK] Seq-5 Ack-458757 Min-45512 Len-0 Tsval-320126312 Tsccr=3201263792 32834 46476 + 5080 [ACK] Seq-648577 Ack-5 Min-65536 Len-32768 Tsval-3201263812 Tsccr=3201263812 32834 46476 + 5080 [Psh, ACK] Seq-5 Ack-458757 Min-45536 Len-32768 Tsval-3201263812 Tsccr=3201263873 4036 46476 + 5080 [Psh, ACK] Seq-642639 Ack-5536 Len-0 Tsval-3201263873 Tsccr=3201263873 4036 46476 + 5080 [Psh, ACK] Seq-642639 Ack-5536 Len-32768 Tsval-3201263873 Tsccr=3201263873 4036 46476 [ACK] Seq-5 Ack-528263 Min-45952 Len-0 Tsval-3201263873 Tsccr=3201263873 4036 46476 [ACK] Seq-5 Ack-528263 Min-45952 Len-0 Tsval-3201263873 Tsccr=3201263873 4036 46476 [ACK] Seq-5 Ack-528263 Min-459536 Len-3768 Tsval-3201263873 Sec-3201263873 4036 46476 [ACK] Seq-5 Ack-528263 Min-65536 Len-0 Tsval-3201264105 Tsccr=3201263873 4036 46476 [ACK] Seq-5 Ack-528263 Min-65536 Len-0 Tsval-3201264105 Tsccr=3201263873 Sec-3201264105 Sec-3201264105 40 TCP Mindow Update] 5080 + 46476 [ACK] Seq-9 Ack-539

Close the connection in lines 256, 257, 258

203 13.0176 127.0.0 127.0.0 TCP	65549 46476 → 5080 [ACK] Seq=3763306 Ack=21 Win=65536 Len=65483 TSval=3201274428 TSecr=3201274426
204 13.0179 127.0.0 127.0.0 TCP	66 5080 → 46476 [ACK] Seq=21 Ack=3828789 Win=1964032 Len=0 TSval=3201274428 TSecr=3201274427
205 13.0179 127.0.0 127.0.0 TCP	65549 [TCP Previous segment not captured] 46476 → 5080 [ACK] Seq-3894272 Ack-21 Win-65536 Len-65483 TSval-3201274428 TSecr-3201274428
206 13.0179 127.0.0 127.0.0 TCP	65549 46476 → 5080 [ACK] Seq=3959755 Ack=21 Win=65536 Len=65483 TSval=3201274428 TSecr=3201274428
207 13.0180 127.0.0 127.0.0 TCP	78 [TCP Dup ACK 204#1] 5080 → 46476 [ACK] Seq-21 Ack-3828789 Win-1964032 Len-0 TSval-3201274428 TSecr-3201274427 SLE-3894272 SRE-3959755
208 13.0180 127.0.0 127.0.0 TCP	65549 46476 → 5080 [ACK] Seq-4025238 Ack=21 Win=65536 Len=65483 TSval=3201274428 TSecr=3201274428
209 13.0180 127.0.0 127.0.0 TCP	78 [TCP Dup ACK 204#2] 5080 → 46476 [ACK] Seq=21 Ack=3828789 Win=1964032 Len=0 TSval=3201274428 TSecr=3201274427 SLE=3894272 SRE=4025238
210 13.0180 127.0.0 127.0.0 TCP	65549 46476 → 5080 [ACK] Seq-4090721 Ack-21 Win-65536 Len-65483 TSval-3201274428 TSecr-3201274428
211 13.0180 127.0.0 127.0.0 TCP	78 [TCP Dup ACK 20483] 5980 + 46476 [ACK] Seg-21 Ack-3828799 Win-1964032 Lene® TSval-32012774428 TSecr-3201274427 SEE-3894272 SRE-4090721
212 13.0181 127.0.0 127.0.0 TCP 213 13.0184 127.0.0 127.0.0 TCP	65549 [TCP Fast Retransmission] 46476 → 5080 [ACK] Seq-3828789 Ack-21 Win-65536 Len-65483 TSval-3201274428 TSecr-3201274428 66 5080 → 46476 [ACK] Seq-21 Ack-4156204 Win-1636736 Len-0 TSval-3201274428 TSecr-3201274428
214 13.0184 127.0.0 127.0.0 TCP	00 3000 + 40010 [RLK] Seg=21 RCK=130200 WIN=10307.30 Lenre 13741=2/012/14426 13et(==2/012/14426
215 13.0184 127.0.0 127.0.0 TCP	4460 46476 + 5880 [PSH, ACK] Seg-4221687 Ack-21 Min-65536 Len-4394 TSval-3201274429 TSecr-3201274428
216 13.0444 127.0.0 127.0.0 TCP	4460 [TG Retransiation] 4647-** 5880 [PSH, ACK] Seq.*21687 Ack-21 Jun-05-32 Letters 1541-55536 Letters 2512174455 TSecr-3201274428
217 13.2490 127.0.0 127.0.0 TCP	65549 [TCP Retransmission] 46476 - 5989 [ACK] Seq-4155204 Ack-21 Win-65536 Len-65648 TSval-32012/4659 TSecr-3201274428
218 13.2490 127.0.0 127.0.0 TCP	78 5080 + 46476 [ACK] Seg=21 Ack=4226081 Win=1798144 Len=0 TSval=3201274659 TSecr=3201274455 SLE=4156204 SRE=4221687
219 14.7118 127.0.0 127.0.0 TCP	70 46476 → 5080 [PSH, ACK] Seg-4226081 Ack-21 Win-65536 Len-4 TSval-3201276122 TSecr-3201274659
220 14.7118 127.0.0 127.0.0 TCP	66 5080 + 46476 [ACK] Seg=21 Ack=4226085 Win=2028032 Len=0 TSval=3201276122 TSecr=3201276122
221 14.7121 127.0.0 127.0.0 TCP	65549 46476 → 5080 [ACK] Seq-4226085 Ack-21 Win-65536 Len-65483 TSval-3201276122 TSecr-3201276122
222 14.7121 127.0.0 127.0.0 TCP	66 5080 → 46476 [ACK] Seq=21 Ack=4291568 Win=1997440 Len=0 TSval=3201276122 TSecr=3201276122
223 14.7121 127.0.0 127.0.0 TCP	65549 46476 → 5080 [ACK] Seq=4291568 Ack=21 Win=65536 Len=65483 TSval=3201276122 TSecr=3201276122
224 14.7123 127.0.0 127.0.0 TCP	66 5080 → 46476 [ACK] Seq=21 Ack=4357051 Win=1964672 Len=0 TSval=3201276122 TSecr=3201276122
225 14.7123 127.0.0 127.0.0 TCP	65549 46476 → 5080 [ACK] Seq=4357051 Ack=21 Win=65536 Len=65483 TSval=3201276123 TSecr=3201276122
226 14.7123 127.0.0 127.0.0 TCP	66 5080 → 46476 [ACK] Seq=21 Ack=4422534 Win=1932032 Len=0 TSval=3201276123 TSecr=3201276123
227 14.7124 127.0.0 127.0.0 TCP	65549 46476 → 5080 [ACK] Seq=4422534 Ack=21 Win=65536 Len=65483 TSval=3201276123 TSecr=3201276122
228 14.7125 127.0.0 127.0.0 TCP	66 5080 → 46476 [ACK] Seq-21 Ack-4488017 Win-1899264 Len-0 TSval-3201276123 TSecr-3201276123
229 14.7125 127.0.0 127.0.0 TCP	65549 46476 + 5080 [ACK] Seq=4488017 Ack=21 Win=65536 Len=65483 TSval=3201276123 TSecr=3201276122
230 14.7125 127.0.0 127.0.0 TCP	65549 [TCP Previous segment not captured] 46476 → 5080 [ACK] Seq=4618983 Ack=21 Win=65536 Len=65483 TSval=3201276123 TSecr=3201276123
231 14.7125 127.0.0 127.0.0 TCP	78 5080 → 46476 [ACK] Seq=21 Ack=4553500 Win=1866496 Len=0 TSval=3201276123 TSecr=3201276123 SLE=4618983 SRE=4684466
232 14.7125 127.0.0 127.0.0 TCP	65549 46476 → 5080 [ACK] Seq-4684466 Ack-21 Win-65536 Len-65483 TSval-3201276123 TSecr-3201276123
233 14.7125 127.0.0 127.0.0 TCP	4460 46476 → 5080 [PSH, ACK] Seq=4749949 Ack=21 Win=65536 Len=4394 TSval=3201276123 TSecr=3201276123
234 14.7126 127.0.0 127.0.0 TCP	78 [TCP Dup ACK 231#1] 5080 + 46476 [ACK] Seq-21 Ack-4553500 Win-1866496 Len-0 TSval-3201276123 TSecr-3201276123 SLE-4618983 SRE-4749949
235 14.7126 127.0.0 127.0.0 TCP	65549 [TCP Out-Of-Onder] 46476 - 5080 [ACK] Seq-4553500 Ack-21 Win-65536 Len-65483 TSval-3201276123 TSecr-3201276123
236 14.7126 127.0.0 127.0.0 TCP	78 [TCP Dup ACK 231#2] 5080 + 46476 [ACK] Seq-21 Ack-4553500 Win-1866496 Len-0 TSval-3201276123 TSecr-3201276123 SLE-4618983 SRE-4754343
237 14.7126 127.0.0 127.0.0 TCP 238 15.2343 127.0.0 127.0.0 TCP	66 5888 + 46476 [ACK] Seq-21 Ack-4754343 Win-1655644 Len-0 TSval-3201276123 TSecr-3201276123
239 15.2350 127.0.0 127.0.0 TCP	70 5080 → 46476 [PSH, ACK] Seq=21 Ack=4754343 Win=2028032 Len=4 TSval=3201276644 TSecr=3201276123 65549 46476 → 5080 [ACK] Seq=4754343 Ack=25 Win=65536 Len=65483 TSval=3201276645 TSecr=3201276644
240 15.2350 127.0.0 127.0.0 TCP	03349 40470 9 0000 [RLK] 30044733433 AKK#23 WLIND03303D LEIND3403 13044752012/0043 13041752012/0044 66 5080 + 46476 [ACK] Seq=25 Ack#4819826 WINT=1997440 Lene-0 TSV41=3201276645 TSccr=23201276645
240 15.2356 127.0.0 127.0.0 TCP	00 3000 * 40476 [M.K.] 364723 M.K.=4013620 M.IN=1591440 Edit=0 13201270031 13241-3201270043 65549 46476 \$-5808 [ACK] Seq-481926 Ack-25 Win-65536 Len-65483 TSval-3201276646 TSecr-3201276644
242 15.2359 127.0.0 127.0.0 TCP	66 5080 + 46476 [ACK] Seg-25 Ack=4885309 Win=1964032 Len=0 TSV31=3201276646 TSecr=3201276646
243 15.2361 127.0.0 127.0.0 TCP	65549 46476 + 5889 [Ack] Seg-4885389 Ack=25 Min=65536 Len=65483 TSval=3201276646 TSecn=3201276645
244 15.2362 127.0.0 127.0.0 TCP	65549 46476 + 5889 [ACK] Seg-4958792 ACK-25 Min-65543 T5val-3201276646 TSecr-3201276645
245 15.2362 127.0.0 127.0.0 TCP	66 5080 + 46476 [ACK] Seg=25 Ack=5016275 Win=1897344 Len=0 TSval=3201276646 TSecr=3201276646
246 15.2363 127.0.0 127.0.0 TCP	65549 46476 → 5080 [ACK] Seq=5016275 Ack=25 Win=65536 Len=65483 TSval=3201276646 TSecr=3201276646
247 15.2363 127.0.0 127.0.0 TCP	65549 46476 + 5080 [ACK] Seq=5081758 Ack=25 Win=65536 Len=65483 TSval=3201276646 TSecr=3201276646
248 15.2363 127.0.0 127.0.0 TCP	66 5080 → 46476 [ACK] Seq-25 Ack-5081758 Win-1831936 Len-0 TSval-3201276646 TSecr-3201276646
249 15.2363 127.0.0 127.0.0 TCP	66 5080 + 46476 [ACK] Seq=25 Ack=5147241 Win=1798528 Len=0 TSval=3201276646 TSecr=3201276646
250 15.2365 127.0.0 127.0.0 TCP	4460 [TCP Previous segment not captured] 46476 + 5080 [PSH, ACK] Seq-5278207 Ack-25 Win-65536 Len-4394 TSval-3201276646 TSecr-3201276646
251 15.2365 127.0.0 127.0.0 TCP	78 [TCP Dup ACK 249#1] 5080 → 46476 [ACK] Seq-25 Ack-5147241 Win=1798528 Len-0 T5val=3201276647 T5ecr-3201276646 SLE-5278207 SRE-5282601
252 15.2365 127.0.0 127.0.0 TCP	65549 [TCP Out-Of-Order] 46476 + 5080 [ACK] Seq-5147241 Ack-25 Win-65536 Len-65483 TSval-3201276647 TSecr-3201276647
253 15.2365 127.0.0 127.0.0 TCP	78 5080 → 46476 [ACK] Seq-25 Ack-5212724 Win-1733120 Len-0 TSval-3201276647 TSecr-3201276647 SLE-5278207 SRE-5282601
254 15.2366 127.0.0 127.0.0 TCP	65549 [TCP Out-Of-Onder] 46476 + 5080 [ACK] Seq-5212724 Ack=25 Win=65536 Len=65483 TSval=3201276647 TSecr=3201276647
255 15.2367 127.0.0 127.0.0 TCP	66 5080 + 46476 [ACK] Seq-25 Ack-5282601 Win-1663360 Len-0 TSval-3201276647 TSecr-3201276647
256 17.1930 127.0.0 127.0.0 TCP	70 46476 → 5080 [FIN, PSH, ACK] Seq=5282601 Ack=25 Win=65536 Len=4 TSval=3201278603 TSecr=3201276647
257 17.1933 127.0.0 127.0.0 TCP	66 5880 → 46476 [FIN, ACK] Seq=25 Ack=5282606 Win=2028032 Len=0 TSval=3201278603 TSecr=3201278603
258 17.1933 127.0.0 127.0.0 TCP	66 46476 → 5080 [ACK] Seq=5282606 Ack-26 Win-65536 Len-0 TSval-3201278603 TSecr=3201278603

Here we can see one more problem that accrue:

TCP Fast Retransmission occurs when the sender retransmits a packet before the expiration of the acknowledgement timer

212 13... 127... 127... TCP 65549 [TCP Fast Retransmission] 46476 → 5080 [ACK] Seq=3828789 Ack=21 Win=65536 Len=65483 TSval=3201274428 TSecr=3201274428

2.1.4 20% lost

open connection in lines 1 2

			F0000 - F000 F010	
1 0.00 12] Seq=0 Win=65495 Len=0 MSS=65495 SACK_PERM TSval=3201356783 TSecr=0 WS=128
2 0.00 12				, ACK] Seq=0 Ack=1 Win=65483 Len=0 MSS=65495 SACK_PERM TSval=3201356783 TSecr=3201356783 WS=128
3 0.00 12] Seq-1 Ack=1 Win=65536 Len=0 TSval=3201356783 TSecr=3201356783
4 0.00 12				, ACK] Seq=1 Ack=1 Win=65536 Len=4 TSval=3201356784 TSecr=3201356783
5 0.00 12			-] Seq=1 Ack=5 Win=65536 Len=0 TSval=3201356784 TSecr=3201356784
6 0.00_ 12				, ACK] Seq=1 Ack=5 Win=65536 Len=4 TSval=3201356784 TSecr=3201356784
7 0.00 12] Seq=5 Ack=5 Win=65536 Len=0 TSval=3201356784 TSecr=3201356784
8 0.00_ 12] Seq=5 Ack=5 Win=65536 Len=32768 TSval=3201356784 TSecr=3201356784
9 0.02_ 12				58890 → 5080 [PSH, ACK] Seq=32773 Ack=5 Win=65536 Len=32768 TSval=3201356808 TSecr=3201356784
10 0.02_ 12	and the same of	1000		5080 → 58890 [ACK] Seq=5 Ack=65541 Win=0 Len=0 TSval=3201356808 TSecr=3201356784
11 0.03 12				e] 5080 + 58890 [ACK] Seq=5 Ack=65541 Win=48512 Len=0 TSval=3201356816 TSecr=3201356784
12 0.03 12] Seq=65541 Ack=5 Win=65536 Len=32768 TSval=3201356816 TSecr=3201356816
13 0.11_ 12] Seq=5 Ack=98309 Win=65536 Len=0 TSval=3201356898 TSecr=3201356816
14 0.11 12				, ACK] Seq=98309 Ack=5 Win=65536 Len=32768 TSval=3201356898 TSecr=3201356898
15 0.11. 12				58890 + 5080 [ACK] Seq=131077 Ack=5 Win=65536 Len=32768 TSval=3201356898 TSecr=3201356898
16 0.11 12				5080 → 58890 [ACK] Seq=5 Ack=163845 Win=0 Len=0 TSval=3201356898 TSecr=3201356898
17 0.15 12				e] 5080 + 58890 [ACK] Seq=5 Ack=163845 Win=48512 Len=0 TSval=3201356934 TSecr=3201356898
18 0.15 12				, ACK] Seq=163845 Ack=5 Win=65536 Len=32768 TSval=3201356934 TSecr=3201356934
19 0.19 12] Seq=5 Ack=196613 Win=15744 Len=0 TSval=3201356979 TSecr=3201356934
20 0.20 12				e] 5080 + 58890 [ACK] Seq=5 Ack=196613 Win=65536 Len=0 TSval=3201356988 TSecr=3201356934
21 0.20 12			*] Seq=196613 Ack=5 Win=65536 Len=32768 TSval=3201356989 TSecr=3201356988
22 0.20_ 12				58890 → 5080 [PSH, ACK] Seq=229381 Ack=5 Win=65536 Len=32768 TSval=3201356989 TSecr=3201356988
23 0.20 12				5080 → 58890 [ACK] Seq=5 Ack=262149 Win=0 Len=0 TSval=3201356989 TSecr=3201356989
24 0.23 12				e] 5080 → 58890 [ACK] Seq=5 Ack=262149 Win=48512 Len=0 TSval=3201357018 TSecr=3201356989
25 0.23 12] Seq=262149 Ack=5 Win=65536 Len=32768 TSval=3201357018 TSecr=3201357018
26 0.27 12] Seq=5 Ack=294917 Win=15744 Len=0 TSval=3201357057 TSecr=3201357018
27 0.49 12				58890 → 5080 [PSH, ACK] Seq=294917 Ack=5 Win=65536 Len=15744 TSval=3201357282 TSecr=3201357057
28 0.49 12			and the second second second second] Seq=5 Ack=310661 Win=57088 Len=0 TSval=3201357283 TSecr=3201357282
29 0.49 12			-	, ACK] Seq=310661 Ack=5 Win=65536 Len=17024 TSval=3201357283 TSecr=3201357283
30 0.49 12] Seq=327685 Ack=5 Win=65536 Len=32768 TSval=3201357283 TSecr=3201357283
31 0.49 12] Seq=5 Ack=360453 Win=7296 Len=0 TSval=3201357283 TSecr=3201357283
32 0.64 12				e] 5080 + 58890 [ACK] Seq=5 Ack=360453 Win=65536 Len=0 TSval=3201357428 TSecr=3201357283
33 0.64 12				, ACK] Seq=360453 Ack=5 Win=65536 Len=32768 TSvel=3201357428 TSecr=3201357428
34 0.66 12] Seq=5 Ack=393221 Win=65536 Len=0 TSval=3201357450 TSecr=3201357428
35 0.66 12				[TCP Previous segment not captured] 58890 + 5080 [PSH, ACK] Seq=425989 Ack=5 Win=65536 Len=32768 TSval=3201357450 TSecr=3201357450
36 0.66 12] 5888 → 58890 [ACK] Seg=5 Ack=393221 Win=5536 Len=0 TSval=3201357456 TSecr=3201357428 SLE=425989 SRE=458757
37 0.66 12				on] 58899 + 5080 [ACK] Seq=393221 Ack=5 Win=65536 Len=32768 TSval=3201357451 Tsecr=3201357450
38 0.66 12		200		5080 + 58890 [ACK] Seq=5 Ack=458757 Win=0 Len=0 TSval=3201357451 TSecr=3201357451
39 0.69 12				e] 5080 + 58890 [ACK] Seq=5 Ack=458757 Win=48512 Len=0 TSval=3201357478 TSecr=3201357451
40 0.69 12] Seq=458757 Ack=5 Win=65536 Len=32768 TSval=3201357478 TSecr=3201357478
41 0.73 12] Seq=5 Ack=491525 Win=15744 Len=0 TSval=3201357519 TSecr=3201357478
42 0.73 12				e] 5080 + 58890 [ACK] Seq=5 Ack=491525 Win=65536 Len=0 TSval=3201357521 TSecr=3201357478
43 0.78_ 12				ment not captured] 58890 → 5080 [PSH, ACK] Seq=524293 Ack=5 Win=65536 Len=3970 TSval=3201357564 TSecr=3201357521
44 0.78 12] 5080 → 58890 [ACK] Seq=5 Ack=491525 win=65536 Len=0 TSval=3201357564 TSecr=3201357478 SLE=524293 SRE=528263
45 0.78 12				an] 58890 → 5080 [PSH, ACK] Seq=491525 Ack=5 Win=65536 Len=32768 TSval=3201357564 TSecn=3201357564
46 0.78 12] Seq=5 Ack=528263 Win=45952 Len=0 TSval=3201357564 TSecr=3201357564
47 1.03_ 12				, ACK] Seq=5 Ack=528263 Win=65536 Len=4 TSval=3201357816 TSecr=3201357564
48 1.03 12] Seq=528263 Ack=9 Win=65536 Len=32768 TSval=3201357816 TSecr=3201357816
49 1.03 12] Seg=9 Ack=561031 Win=48512 Len=0 TSval=3201357816 TSecr=3201357816
-0 1 00 10	 	23021	ranno . rono faci	000 C-0000 Annual Manager (122-2074) Text-1-20413 Text-1-

Close the connection in lines 342, 343, 344

299 34.3. 127 127 TCP 6559 58890 + 5880 [AcK] Sequ-145624 Ack-21 Minne5536 Lenne5483 TSVal=3201391096 Tsccr=3201391096 391 34.3. 127 127 TCP 65 5800 - 58800 [AcK] Sequ-21 Ack-4212687 Minne2224356 Lenne3 TSVal=3201391096 Tsccr=3201391096 393 34.5. 127 127 TCP 65 5800 - 58800 [AcK] Sequ-21 Ack-4212687 Minne2224256 Lenne3 TSVal=3201391095 Tsccr=3201391096 394 34.5. 127 127 TCP 4460 58000 - 5800 [PSH, AcK] Sequ-212687 Ack-21 Minne5536 Lenne334 TSVal=320139112 Tsccr=3201391096 395 35.3. 127 127 TCP 4460 TCP Retrammission] 58000 - 5800 [PSH, AcK] Sequ-212687 Ack-21 Minne5536 Lenne334 TSVal=320139112 Tsccr=3201391096 396 37.1. 127 127 TCP 75 5800 - 58000 [PSH, ACK] Sequ-212687 Ack-21 Minne5536 Lenne334 TSVal=320139112 Tsccr=3201391096 396 37.1. 127 127 TCP 76 58000 - 58000 [PSH, ACK] Sequ-4226081 Minre3536 Lenne TSVal=32013939112 TSccr=320139112 TSccr=3201391096 397 37.1. 127 127 TCP 79 58000 - 58000 [PSH, ACK] Sequ-4226081 Ack-21 Minne5536 Lenne34 TSVal=3201393900 TSccr=3201393910 398 37.1. 127 127 TCP 65 5800 - 58000 [Ack] Sequ-4226085 Ack-21 Minne5536 Lenne4 TSVal=3201393900 TSccr=3201393900 398 37.1. 127 127 TCP 65 5800 - 58000 [Ack] Sequ-4226085 Ack-21 Minne5536 Lenne4 TSVal=3201393900 TSccr=3201393900 399 37.1. 127 127 TCP 65540 TCP Provious segment not captured [58000 - 5800 [Ack] Sequ-422540 Ack-421 Minne5536 Lenne5483 TSVal=3201394032 Tsccr=3201393900 391 37.2. 127 127 TCP 75 5800 - 58000 [Ack] Sequ-422606 [Ack-321 Minne5536 Lenne5483 TSVal=3201394032 Tsccr=3201393900 Stccr=3201393900 Stccr=3201394032 Tsccr=3201393900 Stccr=3201393900 Stccr=3201394032 Tsccr=3201393900 Stccr=3201394032 Tsccr=3201393900 Stccr=3201394032 Tsccr=3201393900 Stccr=3201394032 Tsccr=3201393900 Stccr=3201394032 Tsccr=3201393900 Stccr=3201394032 Tsccr=3201393900 Stccr=3201394022 Tsccr=3201393900 Stccr=3201394022 Tsccr=3201393900 Stccr=3201394022 Tsccr=3201394022 Tsccr=3201394022 Tsccr=3201394022 Tsccr=3201394022 Tsccr=3201394022 Tsccr=3201394022 Tsccr=3201394022 Tsc
301 34.3. 127. 127. TCP 65 5880 + 58890 [ACK] Seq=21 Ack=4221687 kin=2224256 Lene® T5val=3201391096 T5ccr=3201391096 302 34.5. 127. 127. TCP 4466 58890 + 58890 [ACK] Seq=4221687 Ack=21 kin=6556 Lene#394 T5val=3201391096 303 34.8. 127. 127. TCP 4466 58890 + 58890 [ACK] Seq=4221687 Ack=21 kin=65556 Lene#394 T5val=3201391015 T5ecr=3201391096 304 35.3. 127. 127. TCP 4460 [TCP Retransisisin] 58890 + 5880 [Psh, ACK] Seq=42221687 Ack=21 kin=65556 Lene#394 T5val=3201392112 T5ecr=3201391096 305 35.3. 127. 127. TCP 4660 TCP Retransisisin] 58890 + 5880 [Psh, ACK] Seq=42226881 Ack=21 kin=65556 Lene#394 T5val=3201392112 T5ecr=3201391096 305 37.1. 127. 127. TCP 78 58800 + 58890 [ACK] Seq=4226681 Ack=21 kin=65556 Lene#4 T5val=32013993980 T5ecr=3201392112 307 37.1. 127. 127. TCP 65549 58890 ACK] Seq=4226681 Ack=21 kin=65556 Lene# T5val=32013993980 T5ecr=32013993980 308 37.1. 127. 127. TCP 65549 58890 ACK] Seq=4226681 Ack=21 kin=65585 Tsen=42013993980 T5ecr=32013993980 309 37.1. 127. 127. TCP 65549 58890 ACK] Seq=4226681 Ack=21 kin=65586 Tsen=42013993980 T5ecr=32013993980 310 37.2. 127. 127. TCP 65549 TCP Previous Segment not captured S8800 + 5880 ACK] Seq=4226681 Ack=21 kin=65586 Tsen=528013993980 311 37.2. 127. 127. TCP 65549 [TCP Previous Segment not captured S8800 + 5880 ACK] Seq=4226684 Ack=21 kin=65586 Lene# T5val=3201394932 T5ecr=3201394932 T5ecr=32013949
302 34.5. 127 127 TCP 4460 58890 + 5080 [PSH, ACK] Seq=4221687 Ack=21 Win=5536 Len=4394 TSval=3201391367 TSccr=3201391096 303 34.5. 127 127 TCP 4460 [TCP Retransmission] 58890 + 5080 [FSH, ACK] Seq=4221687 Ack=21 Win=5536 Len=4394 TSval=3201391215 TSccr=3201391096 305 35.3. 127 127 TCP 76 5880 + 58890 [ACK] Seq=21 Ack=4226081 Win=255584 Lene of TSval=3201392112 Size=3201392112 Size=320139212 Size=320139212 TSccr=320139208 306 37.1. 127 127 TCP 76 5880 + 58890 [ACK] Seq=21 Ack=4226081 Win=255584 Lene of TSval=320139212 TSccr=3201392108 307 37.1. 127 127 TCP 6580 + 58890 [ACK] Seq=21 Ack=4226081 Win=255584 Lene of TSval=3201392980 TSccr=3201393980 308 37.1. 127 127 TCP 6580 + 58890 [ACK] Seq=21 Ack=4226081 Win=255584 Lene of TSval=3201393980 TSccr=3201393980 309 37.1. 127 127 TCP 6580 + 58890 [ACK] Seq=21 Ack=4226081 Win=255584 Lene of TSval=3201393980 TSccr=3201393980 309 37.1. 127 127 TCP 6580 + 58890 [ACK] Seq=21 Ack=4226081 Win=255584 Lene of TSval=3201393980 TSccr=3201393980 310 37.2. 127 127 TCP 6580 + 58890 [ACK] Seq=21 Ack=4226081 Win=255584 Lene of TSval=3201393980 TSccr=3201393980 TSccr=320139403 TScc
303 34.8. 127 127 TCP 4460 [TCP Retransmission] 58890 + 5080 [PSH, ACK] Seq=4221687 Ack=21 Wine5536 Lene4394 Tsval=3201391615 TSecr=3201391096 304 35.3. 127 127 TCP 4460 [TCP Retransmission] 58890 + 5080 [PSH, ACK] Seq=4221687 Ack=21 Wine5536 Lene4394 Tsval=32013912112 TSecr=3201391096 305 35.3. 127 127 TCP 78 58890 + 5080 [ACK] Seq=42 Ack=422680 Ack=22 Mine55356 Lene4 Tsval=3201393980 TSecr=3201392112 SLE=4221687 SRE=422681 306 37.1. 127 127 TCP 65 58890 + 5080 [PSH, ACK] Seq=4226685 Wine235584 Lene Tsval=3201393980 TSecr=3201393980 307 37.1. 127 127 TCP 65 58890 + 5080 [ACK] Seq=4226685 Wine235584 Lene Tsval=3201393980 TSecr=3201393980 308 37.1. 127 127 TCP 65 5880 + 58890 [ACK] Seq=4226685 Ack=21 Wine5536 Lene65483 Tsval=3201393980 TSecr=3201393980 310 37.2. 127 127 TCP 65 5880 + 58890 [ACK] Seq=41 Ack=4226868 Wine245684 Lene Tsval=3201393980 TSecr=3201393980 310 37.2. 127 127 TCP 65 5880 + 58890 [ACK] Seq=41 Ack=4226868 Wine245684 Lene Tsval=320139482 TSecr=3201394080 311 37.2. 127 127 TCP 65549 [TCP Previous segment not captured] 58890 + 5080 [ACK] Seq=4425544 Ack=21 Wine5536 Lene65483 Tsval=320139482 TSecr=3201394082 313 37.2. 127 127 TCP 65549 [TCP Retransmission] 58890 + 5080 [ACK] Seq=44291568 Mine245684 Lene Tsval=3201394032 TSecr=3201394032 313 37.2. 127 127 TCP 65549 [TCP Retransmission] 58890 + 5080 [ACK] Seq=43291568 Ack=21 Wine5536 Lene65483 Tsval=3201394032 TSecr=3201394032 314 40.7. 127 127 TCP 65549 [TCP Retransmission] 58890 + 5080 [ACK] Seq=4357051 Ack=21 Wine5536 Lene65483 Tsval=3201397491 TSecr=3201394032 314 40.7. 127 127 TCP 65549 [TCP Retransmission] 58890 + 5080 [ACK] Seq=4357051 Ack=21 Wine5536 Lene65483 Tsval=3201397491 TSecr=3201394032 315 37.4. 127 127 TCP 65549 [TCP Retransmission] 58890 + 5080 [ACK] Seq=4357051 Ack=21 Wine5536 Lene65483 Tsval=3201397491 TSecr=3201394032 316 38.6. 127 127 TCP 65549 [TCP Retransmission] 58890 + 5080 [ACK] Seq=4357051 Ack=21 Wine5536 Lene65483 Tsval=320139749
304 35.3. 127 127. 127. 127
305 35.3. 127 127 1CP 78 5080 + 58800 [ACK] Seq=11 Ack=4226081 Win=2355584 Len=0 Tsval=3201392112 TSecr=3201392112 SLE=4221687 SRE=4226081 306 37.1. 127 127 1CP 79 58809 + 5080 [PSH, ACK] Seq=4226081 Ack=2210813 Len=4 Tsval=3201393980 TSecr=3201393980 37.1. 127 127 1CP 65 5080 + 50809 [ACK] Seq=21 Ack=4226081 Ack=4226081 Ack=4225081 Ack=4226081 A
306 37.1. 127 127 TCP 76 5889 + 5880 FSH, ACK Seq=422681 Ack=21 Win=65536 Len=4 TSval=320139380 TSecr=3201393112 307 37.1. 127 127 TCP 65 5889 + 5889 FACK Seq=21 Ack=422685 Ack=21 Win=65536 Len=0 TSval=3201393980 TSecr=320139380 308 37.1. 127 127 TCP 65549 \$889 + 5889 FACK Seq=21 Ack=4291568 Win=2355684 Len=0 TSval=3201393980 TSecr=320139380 310 37.2. 127 127 TCP 65549 TCP Previous segment not captured 58890 + 5889 FACK Seq=21 Ack=4291568 Win=2456684 Len=0 TSval=3201394932 TSecr=3201393980 TSecr=3201393980 TSecr=3201393980 310 37.2. 127 127 TCP 65549 TCP Previous segment not captured 58890 + 58896 FACK Seq=21 Ack=4291568 Win=2456684 Len=0 TSval=3201394932 TSecr=3201394932 TSecr=3201393980 TSecr=3201394932 TSecr=32
307 37.1. 127 127 TCP 66 5080 + 58890 [ACK] Seq=21 Ack=422685 Win=2355584 Len=0 TSval=3201393980 TSecr=3201393980 TSecr=3
308 37.1. 127 TCP 65549 58890 FACK Seq=4226885 Ack=21 Win=5536 Len=65483 TSval=3201399380 TSccr=3201399380 37.1. 127 TCP 65 58890 [ACK] Seq=21 Ack=4291568 Win=245664 Len=0 TSval=3201399380 TSccr=3201399380 310 37.2. 127 TCP 65549 [TCP Previous segment not ceptured] 58890 + 5080 [ACK] Seq=4422534 Ack=21 Win=65536 Len=65483 TSval=3201399380 311 37.2. 127 TCP 65549 [TCP Previous segment not ceptured] 58890 + 5080 [ACK] Seq=21 Ack=4291568 Win=245664 Len=0 TSval=3201394032 TSccr=3201393980 SLE=4422534 SRE=4488017 312 37.2. 127 TCP 65549 [TCP Previous segment not ceptured] 58890 + 5080 [ACK] Seq=21 Ack=4291568 Win=245664 Len=0 TSval=3201394032 TSccr=3201393980 SLE=4422534 SRE=4488017 312 37.2. 127 TCP 65549 [TCP Retransmission] 58890 + 5080 [ACK] Seq=21 Ack=4357051 Win=65536 Len=65483 TSval=3201394032 TSccr=3201394032 TSccr=3201394032 313 77.2. 127 TCP 65549 [TCP Retransmission] 58890 + 5080 [ACK] Seq=4357051 Ack=21 Win=65536 Len=65483 TSval=3201394032 TSccr=3201394032 313 74. 127 127 TCP 65549 [TCP Retransmission] 58890 + 5080 [ACK] Seq=4357051 Ack=21 Win=65536 Len=65483 TSval=3201394032 TSccr=3201394032 314 40.7. 127 127 TCP 65549 [TCP Retransmission] 58890 + 5080 [ACK] Seq=4357051 Ack=21 Win=65536 Len=65483 TSval=3201397403 TSccr=3201394032 314 40.7. 127 127 TCP 65549 S8890 + 5080 [ACK] Seq=21 Ack=4553500 Win=2489472 Len=0 TSval=3201397492 TSccr=3201397492 TS
309 37.1 127 TCP 66 5080 + 58890 [ACK] Seq=21 Ack=4291568 Win=2456064 Len=0 TSval=3201393980 TSecr=3201393980 310 37.2 127 TCP 65549 [TCP Previous segment not captured] 58890 + 5080 [ACK] Seq=4422534 Ack=21 Win=65536 Len=65483 TSval=3201394032 TSecr=3201393980 311 37.2 127 127 TCP 78 [TCP Dup ACK 30981] 5080 + 5080 [ACK] Seq=4291568 Win=2456064 Len=0 TSval=3201394032 TSecr=3201393980 SLE=4422534 SRE=4488017 312 37.2 127 127 TCP 65549 [TCP Retransmission] 58890 + 5080 [ACK] Seq=4291568 Ack=21 Win=65536 Len=65483 TSval=3201394032 TSecr=3201394032 313 37.2 127 127 TCP 78 5080 + 5080 [ACK] Seq=4488017 Ack=21 Win=65536 Len=0 TSval=3201394032 TSecr=3201394032 SLE=442534 SRE=4488017 314 37.2 127 127 TCP 65549 [TCP Retransmission] 58890 + 5080 [ACK] Seq=4357651 Ack=21 Win=65536 Len=65483 TSval=3201394032 TSecr=3201394032 316 38.8. 127 127 TCP 65549 [TCP Retransmission] 58890 + 5080 [ACK] Seq=4357651 Ack=21 Win=65536 Len=65483 TSval=3201394932 TSecr=3201394032 317 40.7. 127 127 TCP 65549 [TCP Retransmission] 58890 + 5080 [ACK] Seq=4357651 Ack=21 Win=65536 Len=65483 TSval=320139493 TSecr=3201394032 318 40.7. 127 127 TCP 65549 [TCP Retransmission] 58890 + 5080 [ACK] Seq=4357651 Ack=21 Win=65536 Len=65483 TSval=320139491 TSecr=3201394032 319 40.7. 127 127 TCP 65549 [TCP Retransmission] 58890 + 5080 [ACK] Seq=4357651 Ack=21 Win=65536 Len=65483 TSval=320139491 TSecr=3201394032 319 40.7. 127 127 TCP 65549 [TCP Retransmission] 58890 + 5080 [ACK] Seq=4555580 Win=2459472 Len=0 TSval=3201397492 TSecr=3201397491 TSecr=3201397492 320 40.7. 127 127 TCP 65549 S8890 + 5080 [ACK] Seq=4555580 Win=245947501 Ack=21 Win=65536 Len=65483 TSval=3201397492 TSecr=3201397492 321 40.7. 127 TCP 65549 S8890 + 5080 [ACK] Seq=44684866 Len=0 TSval=3201397492 TSecr=3201397492 322 40.7. 127 TCP 78 5080 + 50880 [ACK] Seq=44684869 Win=2459484 Len=0 TSval=3201397492 TSecr=3201397492 323 40.7. 127 TCP 78 5080 + 50800 [ACK] Seq=44684869 Win=245948 Win=2456664 Len=0 TSval=3201397492 TSecr=3201397492 324 40.7.
310 37.2. 127 TCP 65549 [TCP Previous segment not captured] 58890 + 5080 [ACK] Seq=4422534 Ack=21 Win=65536 Len=65483 TSval=3201394032 TSecr=3201393980 SLE=4422534 SRE=4488017 7 8 [TCP Dup ACK 30891] 5880 + 5889 [ACK] Seq=21 Ack=4291568 Min=2456064 Len=0 TSval=3201394032 TSecr=3201393980 SLE=4422534 SRE=4488017 7 8 [TCP Dup ACK 30891] 5880 + 5889 [ACK] Seq=21 Ack=4291568 Min=2456064 Len=0 TSval=3201394032 TSecr=3201394032 TSe
311 37.2. 127 TCP 78 TCP Dup ACK 309#1] 5080 + 58890 [ACK] Seq=21 Ack=4291568 Min=2456864 Len=0 Tsval=3201394032 TSecr=3201393980 SLE=4422534 SRE=4488017 312 37.2. 127 TCP 65549 [TCP Retransmission] \$8890 + 5880 [ACK] Seq=21 Ack=4291568 Ack=21 Min=65536 Len=65483 Tsval=3201394032 TSecr=3201394032 TSecr=3201394032 315 37.2. 127 127 TCP 65549 58890 + 5880 [ACK] Seq=4488017 Ack=21 Min=65536 Len=65483 Tsval=3201394032 TSecr=3201394032 315 37.4. 127 127 TCP 65549 58890 + 5880 [ACK] Seq=4488017 Ack=21 Min=65536 Len=65483 Tsval=3201394032 TSecr=3201394032 316 38.8. 127 127 TCP 65549 [TCP Retransmission] \$8890 + 5880 [ACK] Seq=4357651 Ack=21 Min=65536 Len=65483 Tsval=3201394032 317 40.7. 127 TCP 65549 [TCP Retransmission] \$8890 + 5880 [ACK] Seq=4357651 Ack=21 Min=65536 Len=65483 Tsval=3201394032 318 40.7. 127 TCP 65549 [TCP Retransmission] \$8890 + 5880 [ACK] Seq=4357651 Ack=21 Min=65536 Len=65483 Tsval=3201394032 318 40.7. 127 TCP 65549 [TCP Retransmission] \$8890 + 5880 [ACK] Seq=4357651 Ack=21 Min=65536 Len=65483 Tsval=3201394259 SLE=4457651 SRE=4422534 319 40.7. 127 TCP 78 5080 + 58890 [ACK] Seq=4555360 Min=2489472 Len=0 Tsval=3201397492 TSecr=3201394259 SLE=4457651 SRE=4422534 310 40.7. 127 TCP 65549 \$8890 + 5880 [ACK] Seq=4553580 Min=2489472 Len=0 Tsval=3201397492 TSecr=3201397492 TSecr=3201397492 320 40.7. 127 TCP 55549 [TCP Previous segment not capture] Septem Tsval=3201397492 TSecr=3201397492 SLE=4684466 SRE=4749949 321 40.7. 127 TCP 78 5080 + 58890 [ACK] Seq=21 Ack=4618983 Min=2456664 Len=0 Tsval=3201397492 TSecr=3201397492 SLE=4684466 SRE=4749949 322 40.7. 127 TCP 4460 58890 + 5880 [ACK] Seq=21 Ack=4618983 Min=2456664 Len=0 Tsval=3201397492 TSecr=3201397492 SLE=4684466 SRE=4749949 323 40.7. 127 TCP 4460 58890 + 58800 [ACK] Seq=21 Ack=4618983 Min=2456664 Len=0 Tsval=3201397492 TSecr=3201397492 324 40.7. 127 TCP 56549 58800 + 58800 [ACK] Seq=21 Ack=4749494 Ack=21 Min=65536 Len=65483 Tsval=3201397492 TSecr=3201397492 325 40.7. 127 TCP 65549 5800 + 58800 [ACK] Seq=4814749494 A
312 37.2. 127 TCP 65549 [TCP Retransmission] 58890 + 5080 [ACK] Seq=4291568 Ack=21 Win=65536 Lenne55433 TSval=3201394032 TSecr=3201394032 T
313 37.2. 127 12
314 37.2. 127 TCP 65549 58890 + 5080 [ACK] Seq=4488017 Ack=21 Win=65536 Len=65483 TSval=3201394032 Tsecr=3201394032 315 37.4. 127 TCP 65549 [TCP Retransmission] 58890 + 5080 [ACK] Seq=4357051 Ack=21 Win=65536 Len=65483 TSval=3201394259 Tsecr=3201394032 316 38.8. 127 127 TCP 65549 [TCP Retransmission] 58890 + 5080 [ACK] Seq=4357051 Ack=21 Win=65536 Len=65483 TSval=3201394032 317 40.7. 127 TCP 65549 [TCP Retransmission] 58890 + 5080 [ACK] Seq=4357051 Ack=21 Win=65536 Len=65483 TSval=3201394032 318 40.7. 127 TCP 65549 S890 + 5080 [ACK] Seq=4155350 Win=2489472 Len=0 TSval=3201397492 Tsecr=3201394259 SLE=4357051 SRE=4422534 319 40.7. 127 TCP 65549 S890 + 5080 [ACK] Seq=4553590 Win=2489472 Len=0 TSval=3201397492 Tsecr=3201394259 SLE=4557051 SRE=4422534 319 40.7. 127 TCP 65549 S890 + 5080 [ACK] Seq=4553500 Win=2489472 Len=0 TSval=3201397492 Tsecr=3201397492 Tsecr=3201397492 310 40.7. 127 TCP 65549 S890 + 5080 [ACK] Seq=4553500 Win=2486466 Ack=21 Win=65536 Len=65483 TSval=3201397492 Tsecr=3201397492 310 40.7. 127 TCP 65549 S890 + 5080 [ACK] Seq=21 Ack=4618983 Win=2456064 Len=0 TSval=3201397492 Tsecr=3201397492 Tsecr=3201397492 310 40.7. 127 TCP 4460 S890 + 5080 [ACK] Seq=21 Ack=4618983 Win=2456064 Len=0 Tsval=3201397492 Tsecr=3201397492 Tsecr=3201397492 310 40.7. 127 TCP 4460 S890 + 5080 [ACK] Seq=21 Ack=4618983 Win=2456064 Len=0 Tsval=3201397492 Tsecr=3201397492 Tsecr=3201397492 310 40.7. 127 TCP 4460 S890 + 5080 [ACK] Seq=21 Ack=4749494 Ack=21 Win=65536 Len=0 Tsval=3201397492 Tsecr=3201397492 Tsecr=3201397492 311 40.7. 127 TCP 5540 S800 + 5080 [ACK] Seq=4749949 Ack=21 Win=65536 Len=0 Tsval=3201397492 Tsecr=3201397492 312 40.7. 127 TCP 5540 S800 + 5080 [ACK] Seq=21 Ack=4754343 Win=2456464 Len=0 Tsval=3201397492 Tsecr=3201397492 313 40.7. 127 TCP 5540 S800 + 5080 [ACK] Seq=21 Ack=4754343 Win=2456472 Len=0 Tsval=3201397492 Tsecr=3201397492 314 40.7. 127 TCP 5540 S800 + 5080 [ACK] Seq=24 Ack=4754343 Win=2456472 Len=0 Tsval=3201397492 Tsecr=3201397492 315 40.7. 127 TCP 5540 S800 + 5080
315 37.4. 127 127 TCP 65549 [TCP Retransmission] 58890 + 5080 [ACK] Seq=4357051 Ack=21 Win=65536 Len=65483 TSval=3201394259 TSecr=3201394032 316 40.7. 127 127 TCP 65549 [TCP Retransmission] 58890 + 5080 [ACK] Seq=4357051 Ack=21 Win=65536 Len=65483 TSval=3201397491 TSecr=3201394032 318 40.7. 127 127 TCP 65549 [TCP Retransmission] 58890 + 5080 [ACK] Seq=4357051 Ack=21 Win=65536 Len=65483 TSval=3201397491 TSecr=3201394032 319 40.7. 127 127 TCP 78 5980 + 58890 [ACK] Seq=21 Ack=4555360 Win=24593472 Len=0 TSval=3201397492 TSecr=3201397492 TSecr=3201397492 310 40.7. 127 127 TCP 65549 58890 + 5080 [ACK] Seq=45553500 Ack=21 Win=65536 Len=65483 TSval=3201397492 TSecr=3201397492 310 40.7. 127 127 TCP 65549 [TCP Previous segment not captured] 58890 + 5080 [ACK] Seq=4684466 Ack=21 Win=65536 Len=65483 TSval=3201397492 TSecr=3201397492 310 40.7. 127 127 TCP 78 5080 + 58890 [ACK] Seq=4749949 Ack=21 Win=65536 Len=65483 TSval=3201397492 TSecr=3201397492 310 40.7. 127 127 TCP 4460 58890 + 5080 [ACK] Seq=4749949 Ack=21 Win=65536 Len=64843 TSval=3201397492 TSecr=3201397492 311 40.7. 127 127 TCP 78 5080 + 58890 [ACK] Seq=4749949 Ack=21 Win=65536 Len=6483 TSval=3201397492 TSecr=3201397492 312 40.7. 127 127 TCP 78 5080 + 58890 [ACK] Seq=4749949 Ack=21 Win=65536 Len=6483 TSval=3201397492 TSecr=3201397492 TSecr=3201397492 313 40.7. 127 127 TCP 65549 [TCP Retransmission] 58890 + 5080 [ACK] Seq=46184883 Ack=21 Win=655483 TSval=3201397492 TSecr=3201397492 314 40.7. 127 127 TCP 65549 [TCP Retransmission] 58890 + 5080 [ACK] Seq=46184883 Ack=21 Win=655483 TSval=3201397492 TSecr=3201397492 315 40.7. 127 TCP 65549 [TCP Retransmission] 58890 + 5080 [ACK] Seq=46184884 Ack=21 Win=655483 TSval=3201397653 TSecr=3201397492 316 40.8. 127 127 TCP 65549 [TCP Retransmission] 58890 + 5080 [ACK] Seq=46184884 Ack=21 Win=655483 TSval=3201397653 TSecr=3201397492 317 40.8. 127 127 TCP 65549 58890 + 5080 [ACK] Seq=4754434 Ack=4754343 Win=2489472 Len=65483 TSval=3201397653 TSecr=3201397653
316 38.8. 127 127 TCP 65549 [TCP Retransmission] 58890 + 5080 [ACK] Seq=4357051 Ack=21 Win=65536 Len=65483 TSval=3201397691 Tsccr=3201394032 317 40.7. 127 127 TCP 65549 [TCP Retransmission] 58890 + 5080 [ACK] Seq=4357051 Ack=21 Win=65536 Len=65483 TSval=3201397491 Tsccr=3201394082 318 40.7. 127 127 TCP 78 5080 + 58890 [ACK] Seq=21 Ack=4553500 Win=24057051 Ack=21 Win=65536 Len=65483 TSval=3201397491 Tsccr=3201397492 320 40.7. 127 127 TCP 65549 [TCP Previous segment not captured] 58890 + 5080 [ACK] Seq=4564466 Ack=21 Win=65536 Len=65483 TSval=3201397492 Tsccr=3201397492 321 40.7. 127 127 TCP 65549 [TCP Previous segment not captured] 58890 + 5080 [ACK] Seq=41 Ack=456480 Win=2405604 Len=0 TSval=3201397492 Tsccr=3201397492 322 40.7. 127 127 TCP 4460 58890 + 5080 [PSH, ACK] Seq=4749949 Ack=21 Win=65536 Len=4394 TSval=3201397492 Tsccr=3201397492 SLE=4684466 SRE=4749949 323 40.7. 127 127 TCP 78 [TCP DUP ACK] S2181] 5880 + 58890 [ACK] Seq=21 Ack=4618938 Win=2456604 Len=0 TSval=3201397492 Tsccr=3201397492 SLE=4684466 SRE=4754343 324 40.7. 127 127 TCP 55540 [TCP Previous segment Not captured] 58890 Ack=21 Win=65536 Len=65483 TSval=3201397492 Tsccr=3201397492 325 40.7. 127 127 TCP 65540 [TCP Ack=4754343 Win=2388352 Len=0 TSval=3201397492 Tsccr=3201397492 326 40.8. 127 127 TCP 65800 + 58890 [ACK] Seq=21 Ack=4754343 Win=2388352 Len=0 TSval=3201397693 Tsccr=3201397492 327 40.8. 127 127 TCP 65800 + 58890 [ACK] Seq=21 Ack=4754343 Win=2388352 Len=0 TSval=3201397693 Tsccr=3201397492 328 40.8. 127 127 TCP 65800 + 58890 [ACK] Seq=4754343 Ack=25 Win=65583 Len=65483 TSval=3201397653
317 40.7. 127 127 TCP 65549 TCP Retransmission] 58890 + 5880 [ACK] Seq=4357051 Ack=21 Win=65536 Len=65483 TSval=3201397491 TSecr=3201394032 318 40.7. 127 127 TCP 78 5980 + 58890 [ACK] Seq=21 Ack=4553590 Win=2489472 Len=0 TSval=3201397492 TSecr=3201397492 SLE=4357051 SRE=4422534 319 40.7. 127 127 TCP 65549 58890 + 5080 [ACK] Seq=24553590 Ack=21 Win=65536 Len=65483 TSval=3201397492 TSecr=3201397492 TSecr=3201397493
318 48.7. 127 TCP 78 5880 + 58890 [ACK] Seq=21 Ack=4553500 Win=2489472 Len=0 Tsval=3201397492 Tsecr=3201397492 SLE=4357851 SRE=4422534 319 40.7. 127 127 TCP 65549 58890 + 5880 [ACK] Seq=4553590 Ack=21 Win=65536 Len=65483 Tsval=3201397492 Tsecr=3201397492 321 40.7. 127 127 TCP 65549 [TCP Previous segment not captured] 58890 + 5880 [ACK] Seq=4684466 Ack=21 Win=65536 Len=65483 Tsval=3201397492 Tsecr=3201397492 321 40.7. 127 127 TCP 78 5880 + 58890 [ACK] Seq=21 Ack=4618983 Win=2456064 Len=0 Tsval=3201397492 Tsecr=3201397492 322 40.7. 127 127 TCP 4460 58890 + 58800 [ACK] Seq=21 Ack=4618983 Win=2456064 Len=0 Tsval=3201397492 Tsecr=3201397492 SLE=4684466 SRE=474949 323 40.7. 127 127 TCP 65549 [TCP Poup Ack 32181] 5080 + 58890 [ACK] Seq=21 Ack=4618983 Win=2456064 Len=0 Tsval=3201397492 Tsecr=3201397492 SLE=4684466 SRE=4754343 324 40.7. 127 127 TCP 65549 [TCP Retransmission] 58890 + 5880 [ACK] Seq=321 Ack=4618983 Win=248064 Len=0 Tsval=3201397492 Tsecr=3201397492 SLE=4684466 SRE=4754343 325 40.7. 127 127 TCP 65549 [TCP Retransmission] 58890 + 5880 [ACK] Seq=4634898 Ack=21 Win=65536 Len=65483 Tsval=3201397492 Tsecr=3201397492 326 40.8. 127 127 TCP 65800 + 58890 [ACK] Seq=21 Ack=4754343 Win=2388352 Len=0 Tsval=3201397492 Tsecr=3201397492 327 40.8. 127 127 TCP 65800 + 58890 [ACK] Seq=4754343 Ack=25 Win=65548 Tsecr=3201397653 328 40.8. 127 127 TCP 65549 58890 + 5880 [ACK] Seq=4754343 Ack=25 Win=65548 Tsecr=3201397653
318 48.7. 127 TCP 78 5880 + 58890 [ACK] Seq=21 Ack=4553500 Win=2489472 Len=0 Tsval=3201397492 Tsecr=3201397492 SLE=4357851 SRE=4422534 319 40.7. 127 127 TCP 65549 58890 + 5880 [ACK] Seq=4553590 Ack=21 Win=65536 Len=65483 Tsval=3201397492 Tsecr=3201397492 321 40.7. 127 127 TCP 65549 [TCP Previous segment not captured] 58890 + 5880 [ACK] Seq=4684466 Ack=21 Win=65536 Len=65483 Tsval=3201397492 Tsecr=3201397492 321 40.7. 127 127 TCP 78 5880 + 58890 [ACK] Seq=21 Ack=4618983 Win=2456064 Len=0 Tsval=3201397492 Tsecr=3201397492 322 40.7. 127 127 TCP 4460 58890 + 58800 [ACK] Seq=21 Ack=4618983 Win=2456064 Len=0 Tsval=3201397492 Tsecr=3201397492 SLE=4684466 SRE=474949 323 40.7. 127 127 TCP 65549 [TCP Poup Ack 32181] 5080 + 58890 [ACK] Seq=21 Ack=4618983 Win=2456064 Len=0 Tsval=3201397492 Tsecr=3201397492 SLE=4684466 SRE=4754343 324 40.7. 127 127 TCP 65549 [TCP Retransmission] 58890 + 5880 [ACK] Seq=321 Ack=4618983 Win=248064 Len=0 Tsval=3201397492 Tsecr=3201397492 SLE=4684466 SRE=4754343 325 40.7. 127 127 TCP 65549 [TCP Retransmission] 58890 + 5880 [ACK] Seq=4634898 Ack=21 Win=65536 Len=65483 Tsval=3201397492 Tsecr=3201397492 326 40.8. 127 127 TCP 65800 + 58890 [ACK] Seq=21 Ack=4754343 Win=2388352 Len=0 Tsval=3201397492 Tsecr=3201397492 327 40.8. 127 127 TCP 65800 + 58890 [ACK] Seq=4754343 Ack=25 Win=65548 Tsecr=3201397653 328 40.8. 127 127 TCP 65549 58890 + 5880 [ACK] Seq=4754343 Ack=25 Win=65548 Tsecr=3201397653
319 40.7. 127 17 17 17 17 17 17
320 40.7. 127 127 TCP 65549 [TCP Previous segment not captured] 58890 + 5080 [ACK] Seq=4684466 Ack=21 Win=65536 Len=65483 TSval=3201397492 TSecr=3201397492 321 40.7. 127 127 TCP 78 5080 + 58890 [ACK] Seq=21 Ack=4618983 Win=2456664 Len=0 TSval=3201397492 TSecr=3201397492 Ste=-4684466 SRE=4749949 322 40.7. 127 127 TCP 4460 58890 + 5080 [PSH, ACK] Seq=4749949 Ack=2 Win=65536 Len=0 TSval=3201397492 TSecr=3201397492 323 40.7. 127 127 TCP 78 [TCP Dup ACK 32181] 5080 + 50800 [ACK] Seq=21 Ack=4618983 Win=2456664 Len=0 TSval=3201397492 TSecr=3201397492 Ste=-4684466 SRE=4754343 324 40.7. 127 127 TCP 65549 [TCP Retransmission] 58890 + 5080 [ACK] Seq=4618983 Ack=21 Win=65536 Len=65483 TSval=3201397492 TSecr=3201397492 325 40.7. 127 TCP 6590 + 58800 + 5880 [ACK] Seq=21 Ack=4754343 Win=2368352 Len=0 TSval=3201397492 TSecr=3201397492 326 40.8. 127 127 TCP 79 5080 + 5080 [ACK] Seq=21 Ack=4754343 Win=2368352 Len=0 TSval=3201397492 TSecr=3201397492 327 40.8. 127 127 TCP 65549 58890 + 5080 [ACK] Seq=41 Ack=4754343 Win=236834 TSval=3201397653 TSecr=3201397653 328 40.8. 127 127 TCP 65549 58890 + 5080 [ACK] Seq=4819826 Ack=25 Win=65536 Len=65483 TSval=3201397653 TSecr=3201397653
321 40.7. 127 TCP 78 5080 + 58890 [ACK] Seq=21 Ack=4618983 Win=2456064 Len=0 TSval=3201397492 TSecr=3201397492 SLE=4684466 SRE=4749949 322 40.7. 127 TCP 4469 58890 + 5080 [PSH, ACK] Seq=24749949 Ack=21 Win=65536 Len=4394 TSval=3201397492 TSecr=3201397492 TSecr=3201397492 SLE=4684466 SRE=4754343 324 40.7. 127 TCP 65549 [TCP Retransmission] S8890 + 5080 [ACK] Seq=21 Ack=4618983 Win=2456064 Len=0 TSval=3201397492 TSecr=3201397492 SLE=4684466 SRE=4754343 325 40.7. 127 TCP 65540 [TCP Retransmission] S8890 + 5080 [ACK] Seq=21 Ack=4754343 Win=2301397492 TSecr=3201397492 TSecr=3201397492 326 40.8. 127 127 TCP 65540 S8890 (ACK] Seq=21 Ack=4754343 Win=2301397492 TSecr=3201397492 327 40.8. 127 127 TCP 65540 58890 + 5080 [ACK] Seq=4754343 Win=2301397492 Len=0 TSval=3201397493 TSecr=3201397492 328 40.8. 127 127 TCP 65540 58890 + 5080 [ACK] Seq=4818926 Ack=25 Win=65536 Len=65483 TSval=3201397653 TSecr=3201397653 328 40.8. 127 127 TCP 65540 58890 + 5080 [ACK] Seq=4819026 Ack=25 Win=65536 Len=65483 TSval=3201397653 TSecr=3201397653
322 40.7. 127. 127. 127. 127. 127. 127. 127. 1
323 40.7. 127 TCP 78 [TCP Dup ACK 32181] 5088 + 58890 [ACK] Seq=21 Ack=4618983 Win=2456864 Len=0 Tsval=3201397492 TSecr=3201397492 TSecr=320
324 40.7. 127 TCP 65549 [TCP Retransmission] 58890 + 5880 [ACK] Seq=4618983 Ack=21 Win=65536 Len=65483 Tsval=3201397492 Tsecr=3201397492 Tse
325 40.7 127 TCP 66 5080 + 58890 [ACK] Seq=21 Ack=4754343 Win=2388352 Len=0 TSval=3201397492 TSecr=3201397492 326 40.8 127 TCP 70 5080 + 58890 [FSH, ACK] Seq=21 Ack=4754343 Win=2489472 Len=4 TSval=3201397653 TSecr=3201397492 327 40.8 127 127 TCP 65549 58890 + 5890 [ACK] Seq=4754343 Ack=275 Win=5535 Len=65483 TSval=3201397653 TSecr=3201397653 328 40.8 127 127 TCP 65549 58890 + 5080 [ACK] Seq=4819026 Ack=25 Win=65536 Len=65483 TSval=3201397653 TSecr=3201397653
326 40.8. 127 127 TCP 70 5080 → 58890 PSH, ACK] Seq=21 Ack=4754343 Win=2489472 Len=4 TSval=3201397653 TSecr=3201397492 327 40.8. 127 127 TCP 65549 58890 → 5080 [ACK] Seq=4754343 Ack=25 Win=65536 Len=65483 TSval=3201397653 TSecr=3201397653 328 40.8. 127 127 TCP 65549 58890 → 5080 [ACK] Seq=4819826 Ack=25 Win=65536 Len=65483 TSval=3201397653 TSecr=3201397653
327 40.8 127 TCP 65549 58890 → 5080 [ACK] Seq=4754343 Ack=25 Win=65536 Len=65483 TSval=3201397653 Tsecr=3201397653 328 40.8 127 TCP 65549 58890 → 5080 [ACK] Seq=4819826 Ack=25 Win=65536 Len=65483 TSval=3201397653 Tsecr=3201397653
328 40.8 127 127 TCP 65549 58890 + 5080 [ACK] Seq=4819826 Ack=25 Win=65536 Len=65483 TSval=3201397653 Tsecr=3201397653
229 40.0" 17." 17." ICL 00 2000 4 20030 [McK] 264=73 MCK=4003003 MII=7457030 FBI=276123/022 126CL=276123/022
330 40.8. 127. 127. TCP 65549 58890 → 5080 [ACK] Seg=4885309 Ack=25 Win=65536 Len=65483 TSval=3201397653 TSecr=3201397653
330 40.6. 127 127 1CP 03349 30070 7 3000 [MK] 34[44050329 MK/HZ2 MKH2250 LEHIO3403 13448-1344] 13448-1345137(033 13448-1344) 13448-1345137(033 13448-1344) 13448-1345137(033 13448-1344) 13448-1345137(033 13448-1344) 13448-1345137(033 13448-1344) 13448-1345137(033 13448-1344) 13448-1345137(033 13448-134
333 40.8. 127 127 TCP 65549 58890 + 5680 [ACK] Seq=5016275 Ack=25 Win=65536 Len=65433 TSval=3201397653 TSecr=3201397653
334 40.8. 127 TCP 66 5080 + 58890 [ACK] Seq=25 Ack=5081758 Win=2324480 Len=0 TSval=3201397653 TSecr=3201397653
335 40.8 127 127 TCP 65549 [TCP Previous segment not captured] 58890 + 5080 [ACK] Seq=5147241 Ack=25 Win=65536 Len=65483 TSval=3201397653 TSecr=3201397653
336 48.8. 127 1CP 78 [TCP Dup ACK 334#1] 5880 + 58890 [ACK] Seq=25 Ack=5081758 Win=2324480 Len=0 TSval=3201397653 TSecr=3201397653 SLE=5147241 SRE=5212724
337 40.8 127 127 TCP 65549 58890 → 5880 [ACK] Seq=5212724 Ack=25 Win=65536 Len=65433 TSval=3201397653 TSecr=3201397653
338 48.8. 127 127 TCP 78 [TCP Dup ACK 334#2] 5880 - 58890 [ACK] Seq=25 Ack=5081758 Win=2324480 Len=0 TSval=3201397653 TSecr=3201397653 Ste=5147241 SRE=5278207
339 40.8. 127 TCP 4460 58890 → 5080 [PSH, ACK] Seq=5278207 Ack=25 Win=65536 Len=4394 TSval=3201397653 TSecr=3201397653
340 40.8. 127 TCP 78 [TCP Dup ACK 334#3] 5080 → 58890 [ACK] Seq=25 Ack=5081758 Win=2324480 Len=0 TSval=3201397653 TSecr=3201397653 SLE=5147241 SRE=5282601
341 40.8 127 TCP 65549 [TCP Fast Retransmission] 58890 → 5880 [ACK] Seq=5081758 Ack=25 Win=65536 Len=65483 TSval=3201397653 TSecr=3201397653
342 43.2. 127 127 TCP 70 58890 + 5080 [FIN, PSH, ACK] Seq=5282601 Ack=25 Win=65536 Len=4 TSval=3201400065 TSecr=3201397653

2.2 Average sending times comparisons

2.2.1 0% lost

```
Run time of part A, number 1 : (0 second,382514 microseconed)
Run time of part B, number 1 : (0 second,364848 microseconed)
Run time of part A, number 2 : (0 second,397440 microseconed)
Run time of part B, number 2 : (0 second,353881 microseconed)
Run time of part A, number 3 : (0 second,449981 microseconed)
Run time of part B, number 3 : (0 second,404768 microseconed)
Run time of part A, number 4 : (0 second,412190 microseconed)
Run time of part B, number 4 : (0 second,432812 microseconed)
Run time of part A, number 5 : (0 second,385328 microseconed)
Run time of part B, number 5 : (0 second,396392 microseconed)
The average time of part A is: (0 second,396392 microseconed)
The average time of part B is: (0 second,390540 microsecond)
```

we can see in this picture that the average time of sending part A according to CUBIC algorithm and the average time of sending part B according to RENO algorithm is very tight because we have 0% of packets, so the difference is minor.

2.2.2 10% lost

```
Run time of part A, number 1 : (0 second,348695 microseconed)
Run time of part B, number 1 : (1 second,191670 microseconed)
Run time of part A, number 2 : (0 second,364939 microseconed)
Run time of part B, number 2 : (0 second,370341 microseconed)
Run time of part A, number 3 : (0 second,368599 microseconed)
Run time of part B, number 3 : (0 second,350846 microseconed)
Run time of part A, number 4 : (0 second,383747 microseconed)
Run time of part B, number 4 : (0 second,370831 microseconed)
Run time of part A, number 5 : (0 second,366258 microseconed)
Run time of part B, number 5 : (0 second,366258 microseconed)
The average time of part A is: (0 second,366447 microsecond)
The average time of part B is: (0 second,526675 microsecond)
```

we can see in this picture that the average time of sending part A according to CUBIC algorithm is smaller than average time of sending part B according to RENO algorithm. Now we have 10% packets lost therefore the gap is bigger than in 0% packets lost.

2.2.3 15% lost

```
Run time of part A, number 1: (0 second,655956 microseconed)
Run time of part B, number 1: (1 second,105410 microseconed)
Run time of part A, number 2: (0 second,396812 microseconed)
Run time of part B, number 2: (0 second,387765 microseconed)
Run time of part A, number 3: (0 second,408344 microseconed)
Run time of part B, number 3: (0 second,382666 microseconed)
Run time of part A, number 4: (0 second,386477 microseconed)
Run time of part B, number 4: (0 second,388138 microseconed)
Run time of part A, number 5: (0 second,408206 microseconed)
Run time of part B, number 5: (0 second,381959 microseconed)
The average time of part A is: (0 second,529187 microsecond)
The average time of part B is: (0 second,529187 microsecond)
```

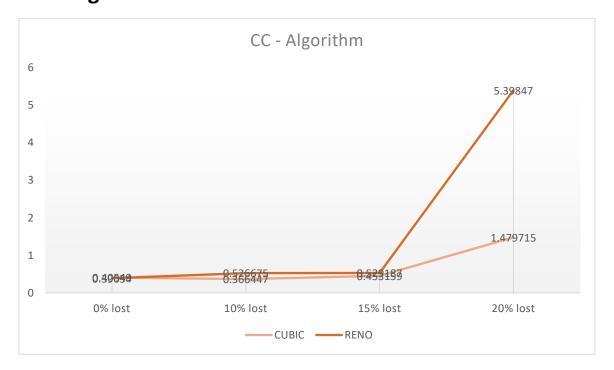
We can see the difference of the average time

2.2.4 20% lost

```
Run time of part A, number 1: (0 second,986824 microseconed)
Run time of part B, number 1: (3 second,671700 microseconed)
Run time of part A, number 2: (1 second,751704 microseconed)
Run time of part B, number 2: (3 second,86643 microseconed)
Run time of part A, number 3: (0 second,492068 microseconed)
Run time of part B, number 3: (15 second,507689 microseconed)
Run time of part A, number 4: (0 second,389429 microseconed)
Run time of part B, number 4: (0 second,364943 microseconed)
Run time of part A, number 5: (3 second,778553 microseconed)
Run time of part B, number 5: (2 second,568264 microseconed)
The average time of part A is: (1 second,479715 microsecond)
The average time of part B is: (5 second,39847 microsecond)
```

We can see the difference of the average time

2.3 Diagram



2.4 Conclusions

We can understand from the previous pages that sending the first half of the file according to CUBIC CC – Algorithm is faster than sending the second half of the file according to RENO CC – Algorithm.

This can be seen in all five sending of the file, and this is the reason we send five times -> to be assured that our results are reliable.

According to the diagram: the more packets we have that are lost, then the gap between the times of sending first half to sending the second half increases. Also, we can see that the more packets we have that are lost, then the time to send the file is getting longer.

In Wireshark's recording we can see the difference between the 0% lost to 10% lost to 15% lost and to 20% lost. The more losses we have the more 'black packets' appear in Wireshark.

In addition, it is possible to see in Wireshark's recording the principles that we learned in class about the TCP algorithm actualize, such as:

Increasing the receiver's window when it is full and decreasing the window when it reaches the thresholdy

And we can see in the receiver's ACK messages, the principle of Cumulativeness, which means that the receiver sends the last ACK that he received, which contains all the ACK before it.

2.5 Bibliography

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https://www.youtube.com/watch?v=cunJcNgtxMk&feature=youtu.be

About the functions

'man' command on vs terminal

For many things

ChatGPT: Optimizing Language Models for Dialogue (openai.com)

https://www.google.com/search?gs_ssp=eJzj4tTP1TcwMU02T1JgNGB0YPBiS8_PT_89JBQBASQXT&q=google&oq=googlr&aqs=chrome.1.69i57j46i10i131i199i433i46_5i512j0i10i131i433i512l4j69i60j69i65.3825j0j4&sourceid=chrome&ie=UTF-8