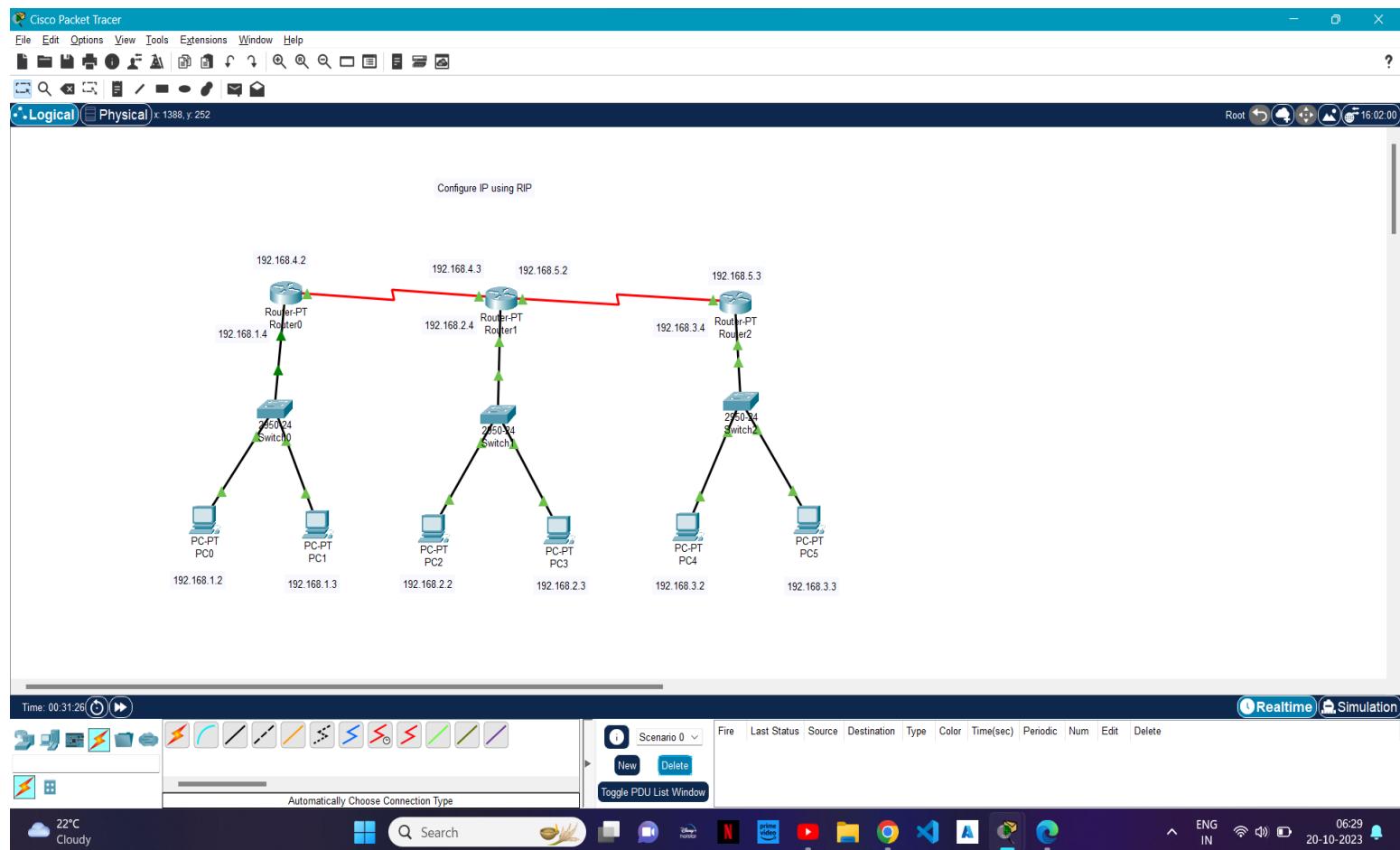


## Practical 2



## Practical 4

```
def valid_ip(ip_address):
    element = ip_address.split('.')
    print(element)
    if len(element) != 4:
        return False

    for elem in element:
        if not elem.isdigit():
            return False

        num = int(elem)

        if num < 0 or num > 255:
            return False

    return True

def get_ip_class(ip_address):
    components = ip_address.split('.')
    first_octet = int(components[0])

    if 1 <= first_octet <= 126:
        return "class A \nSubnetting mask is 255.0.0.0"

    elif 128 <= first_octet <= 191:
        return "class B \nSubnetting mask is 255.255.0.0"

    elif 192 <= first_octet <= 223:
        return "class C \nSubnetting mask is 255.255.255.0"
```

```
elif 224 <= first_octet <= 239:  
    return "class D \nSubnetting mask is not equipped with any subnet mask"  
elif 240 <= first_octet <= 255:  
    return "class E \nSubnetting mask is not equipped with any subnet mask"  
elif first_octet == 0 or 127:  
    return "network address"  
else:  
    return "unknown"
```

```
input = input("Enter your ip address: ")
```

```
if valid_ip(input):  
    print("Valid ip address")  
    ip_class = get_ip_class(input)  
    print("ip address belongs to ", ip_class)  
    print("")  
else:  
    print("Invalid ip address")
```

OUTPUT:

```
Enter your ip address: 192.168.0.1  
['192', '168', '0', '1']  
Valid ip address  
ip address belongs to class C  
Subnetting mask is 255.255.255.0  
  
...Program finished with exit code 0  
Press ENTER to exit console.
```

## PRACTICAL 4: LINK STATE ALGORITHM

```
def initial_graph():

    return {

        'A': {'B':1, 'C':4, 'D':2},
        'B': {'A':9, 'E':5},
        'C': {'A':4, 'F':15},
        'D': {'A':10, 'F':7},
        'E': {'B':3, 'J':7},
        'F': {'C':11, 'D':14, 'K':3, 'G':9},
        'G': {'F':12, 'I':4},
        'H': {'J':13},
        'I': {'G':6, 'J':7},
        'J': {'H':2, 'I':4},
        'K': {'F':6}
    }

    print(initial_graph())

initial = 'A'

path = {}

adj_node = {}

queue = []

graph = initial_graph()

for node in graph:

    path[node] = float("inf")
    adj_node[node] = None
    queue.append(node)

path[initial] = 0

while queue:

    # find min distance which wasn't marked as current
    key_min = queue[0]
```

```

min_val = path[key_min]

for n in range(1, len(queue)):

    if path[queue[n]] < min_val:

        key_min = queue[n]

        min_val = path[key_min]

    cur = key_min

    queue.remove(cur)

    #print(cur)

for i in graph[cur]:

    alternate = graph[cur][i] + path[cur]

    if path[i] > alternate:

        path[i] = alternate

        adj_node[i] = cur

x = str(input("Enter ending node: "))

print('The path between A to H')

print(x, end = '<-')

while True:

    x = adj_node[x]

    if x is None:

        print("")

        break

    print(x, end='<-')

```

OUTPUT:

```
{'A': {'B': 1, 'C': 4, 'D': 2}, 'B': {'A': 9, 'E': 5}, 'C': {'A': 4, 'F': 15}, 'D': {'A': 10, 'F': 7}}
Enter ending node: G
The path between A to G
G-<F-<D-<A-<
```

# Practical 6

## 1.TCP Client, TCP Server

```
import java.io.*;
import java.net.*;
class TCPClient {

    public static void main(String argv[]) throws Exception
    {
        String sentence;
        String modifiedSentence;

        BufferedReader inFromUser =
            new BufferedReader(new InputStreamReader(System.in));

        Socket clientSocket = new Socket("172.16.102.68", 6789);

        DataOutputStream outToServer =
            new DataOutputStream(clientSocket.getOutputStream());

        BufferedReader inFromServer =
            new BufferedReader(new InputStreamReader(clientSocket.getInputStream()));

        sentence = inFromUser.readLine();
```

```
        outToServer.writeBytes(sentence + '\n');

modifiedSentence = inFromServer.readLine();

System.out.println("FROM SERVER: " + modifiedSentence);

clientSocket.close();

    }

}
```

### TCP Server

```
import java.io.*;
import java.net.*;

class TCPServer {

    public static void main(String argv[]) {
        try {
            ServerSocket welcomeSocket = new ServerSocket(6789);

            while (true) {
                Socket connectionSocket = welcomeSocket.accept();

```

```
        new ClientHandler(connectionSocket).start();  
    }  
}  
}  
  
}  
  
static class ClientHandler extends Thread {  
  
    private final Socket clientSocket;  
  
    public ClientHandler(Socket socket) {  
        this.clientSocket = socket;  
    }  
  
    public void run() {  
        try {  
            BufferedReader inFromClient = new BufferedReader(new  
InputStreamReader(clientSocket.getInputStream()));  
            DataOutputStream outToClient = new  
DataOutputStream(clientSocket.getOutputStream());  
  
            String clientSentence = inFromClient.readLine();  
            String capitalizedSentence = clientSentence.toUpperCase() + '\n';  
  
            outToClient.writeBytes(capitalizedSentence);  
        } catch (IOException e) {  
            e.printStackTrace();  
        }  
    }  
}
```

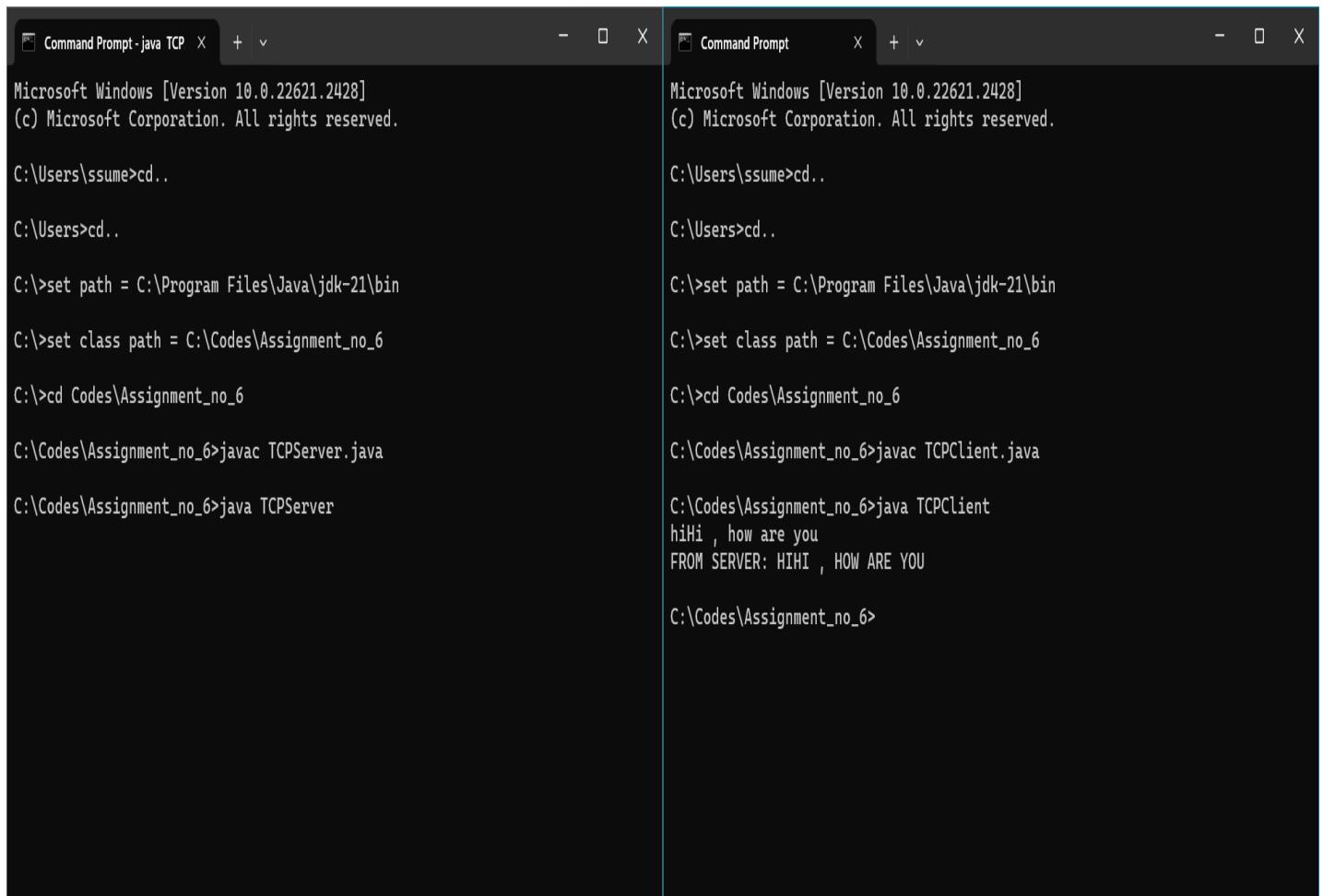
```
        clientSocket.close();

    } catch (IOException e) {

        e.printStackTrace();
    }
}

}
```

#### OUTPUT:



The image shows two separate Command Prompt windows running on Microsoft Windows 10. Both windows have a title bar labeled "Command Prompt".

**Left Window (TCP Server):**

- Output:

```
Microsoft Windows [Version 10.0.22621.2428]
(c) Microsoft Corporation. All rights reserved.

C:\Users\ssume>cd..
C:\Users>cd..
C:\>set path = C:\Program Files\Java\jdk-21\bin
C:\>set class path = C:\Codes\Assignment_no_6
C:\>cd Codes\Assignment_no_6
C:\Codes\Assignment_no_6>javac TCPServer.java
C:\Codes\Assignment_no_6>java TCPServer
```

**Right Window (TCP Client):**

- Output:

```
Microsoft Windows [Version 10.0.22621.2428]
(c) Microsoft Corporation. All rights reserved.

C:\Users\ssume>cd..
C:\Users>cd..
C:\>set path = C:\Program Files\Java\jdk-21\bin
C:\>set class path = C:\Codes\Assignment_no_6
C:\>cd Codes\Assignment_no_6
C:\Codes\Assignment_no_6>javac TCPClient.java
C:\Codes\Assignment_no_6>java TCPClient
hiHi , how are you
FROM SERVER: HIHI , HOW ARE YOU
C:\Codes\Assignment_no_6>
```

## 2. UDP Client, UDP Server

UDP Client

```
import java.io.*;
import java.net.*;

class UDPCClient
{
    public static void main(String args[]) throws Exception
    {
        BufferedReader inFromUser =
            new BufferedReader(new InputStreamReader(System.in));

        DatagramSocket clientSocket = new DatagramSocket();
        //Client Socket is created

        InetAddress IPAddress = InetAddress.getByName("localhost");
        //Gets the IP Address

        byte[] sendData = new byte[1024];
        byte[] receiveData = new byte[1024];
        System.out.print("Enter Message for server:");
        String sentence = inFromUser.readLine();

        sendData = sentence.getBytes();
```

```
//sends data

DatagramPacket sendPacket = new DatagramPacket(sendData, sendData.length,
IPAddress, 9876);

clientSocket.send(sendPacket);

DatagramPacket receivePacket = new DatagramPacket(receiveData, receiveData.length);

clientSocket.receive(receivePacket);

String modifiedSentence = new String(receivePacket.getData());

System.out.println("FROM SERVER:" + modifiedSentence);

clientSocket.close();

}

}
```

## UDP Server

```
import java.io.*;

import java.net.*;

class UDPServer

{

public static void main(String args[]) throws Exception

{

    DatagramSocket serverSocket = new DatagramSocket(9876);

    //Server Socekt Created
```

```
byte[] receiveData = new byte[1024];  
byte[] sendData = new byte[1024];  
  
while(true)  
{  
    DatagramPacket receivePacket = new DatagramPacket(receiveData,  
receiveData.length);  
  
    serverSocket.receive(receivePacket);  
  
    String sentence = new String( receivePacket.getData());  
  
    System.out.println("RECEIVED: " + sentence);  
  
  
    InetAddress IPAddress = receivePacket.getAddress();  
  
    int port = receivePacket.getPort();  
  
  
    String capitalizedSentence = sentence.toUpperCase();  
  
    //Change sentence to Capital letter  
  
    sendData = capitalizedSentence.getBytes();  
  
  
    DatagramPacket sendPacket =  
new DatagramPacket(sendData, sendData.length, IPAddress, port);  
  
    serverSocket.send(sendPacket);  
  
    //Send Capitalized data back to client  
  
}  
}  
}
```

## OUTPUT:

The image shows two separate Command Prompt windows running on Microsoft Windows 10. Both windows have a title bar labeled "Command Prompt".

**Left Window (Client Side):**

- Microsoft Windows [Version 10.0.22621.2428]  
(c) Microsoft Corporation. All rights reserved.
- C:\Users\ssume>cd..
- C:\Users>cd..
- C:\>set path = C:\Program Files\Java\jdk-21\bin
- C:\>set classpath = C:\Codes\Assignment\_no\_6  
Environment variable classpath C:\Codes\Assignment\_no\_6 not defined
- C:\>set classpath = C:\Codes\Assignment\_no\_6
- C:\>cd Codes\Assignment\_no\_6
- C:\Codes\Assignment\_no\_6>javac UDPClient.java
- C:\Codes\Assignment\_no\_6>
- C:\Codes\Assignment\_no\_6>java UDPClient  
Enter Message for server:Hi  
FROM SERVER:HI

**Right Window (Server Side):**

- Microsoft Windows [Version 10.0.22621.2428]  
(c) Microsoft Corporation. All rights reserved.
- C:\Users\ssume>cd..
- C:\Users>cd..
- C:\>set path = C:\Program Files\Java\jdk-21\bin
- C:\>set classpath = C:\Codes\Assignment\_no\_6
- C:\>cd Codes\Assignment\_no\_6
- C:\Codes\Assignment\_no\_6>javac UDPServer.java
- C:\Codes\Assignment\_no\_6>java UDPServer  
RECEIVED: Hi

## Practical 8

UDPC code

```
import java.io.BufferedReader;
import java.io.File;
import java.io.FileReader;
import java.net.DatagramPacket;
import java.net DatagramSocket;
import java.net.InetAddress;
import java.util.Scanner;

public class UDPCfile {

    public static void main(String[] args) throws Exception {
        // TODO Auto-generated method stub
        Scanner sc=new Scanner(System.in);
        DatagramSocket s=new DatagramSocket();
        InetAddress ia=InetAddress.getLocalHost();
        File f1=new File("C://Codes//");
        File[] files=f1.listFiles();

        StringBuilder sb=new StringBuilder("\n");
        int x=0;
        for(int i=0;i<files.length;i++)
        {
            if(files[i].canRead())
            {
                sb.append(files[i].getName()+""
                ,size"+files[i].length()+"bytes\n");
                x++;
            }
        }
    }
}
```

```

        }

    }

System.out.println(x+" Files found");

System.out.println(sb);

System.out.println(" Enter filename for download ");

String fname = sc.nextLine();

System.out.println(fname);

boolean flag = false;

int id= 0;

for(int i=0;i<files.length;i++) {

    if(files[i].getName().toString().equalsIgnoreCase(fname)) {

        flag = true;

        id = i;

        break;

    }

}

if(!flag) {

    System.out.println(fname + " does not exist!");

    return;

}

File filetocopy=new File(files[id].getAbsolutePath());

FileReader fileReader=new FileReader(filetocopy);

BufferedReader br=new BufferedReader(fileReader);

StringBuilder sb1=new StringBuilder();

String line;

while((line=br.readLine())!=null)

{

    sb1.append(line);

}

```

```

        sb1.append("\n");
    }

    System.out.println(sb1.toString());

    byte[] sentname=files[id].getName().getBytes();

    DatagramPacket p1=new
    DatagramPacket(sentname,sentname.length,ia,65535);

    s.send(p1);

    byte[] senttoserver=sb1.toString().getBytes();

    DatagramPacket p2=new
    DatagramPacket(senttoserver,senttoserver.length,ia,65535);

    s.send(p2);

    s.close();

}

}

```

#### UDPS Code

```

import java.io.File;
import java.io.PrintWriter;
import java.net.DatagramPacket;
import java.net.DatagramSocket;
import java.net.InetAddress;
import java.io.FileWriter;

public class UDPSfile {

    public static void main(String[] args) throws Exception{

        System.out.print("hello");

        DatagramSocket s=new DatagramSocket(65535);

```

```
InetAddress ia=InetAddress.getLocalHost();
byte[]filename=new byte[1000];
byte[]b=new byte[10000000];

//receiving name

DatagramPacket name=new DatagramPacket(filename,filename.length);
s.receive(name);
System.out.print("hello");
System.out.println(new String(name.getData()));

DatagramPacket p=new DatagramPacket(b,b.length);
s.receive(p);
System.out.print("hello");
System.out.println(new String(p.getData()));

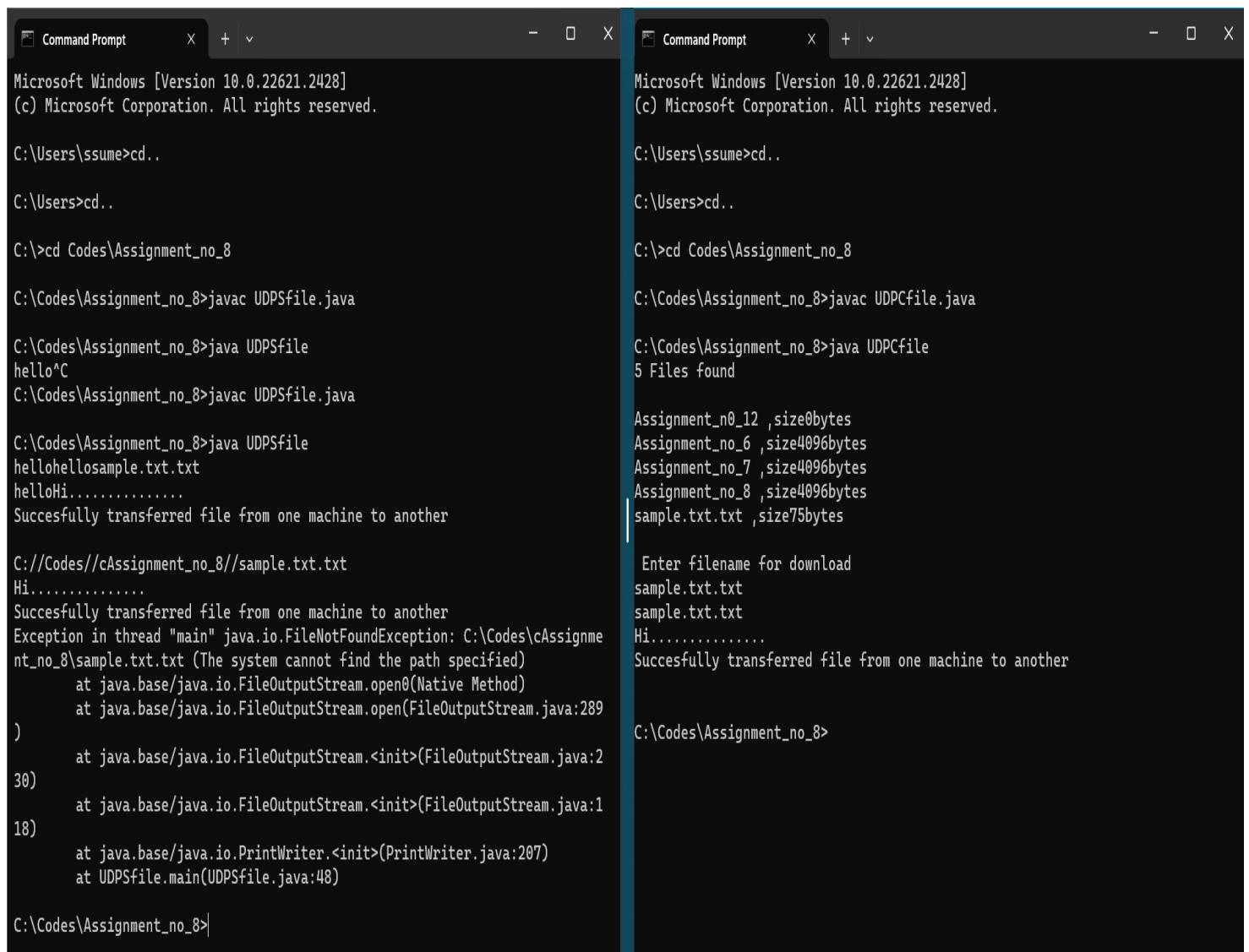
//String rec="Received your packet";
//byte[] b1=rec.getBytes();
//System.out.println(b1);
//DatagramPacket p1=new DatagramPacket(b1,b1.length,ia,p.getPort());
//s.send(p1);

String fname=new String(name.getData()).trim();
fname="C://Codes//cAssignment_no_8//"+fname;
System.out.println(fname);

String filedata=new String(p.getData()).trim();
System.out.println(filedata);
```

```
    PrintWriter pw = new PrintWriter(fname);
    pw.println(filedata);
    pw.close();
}
}
```

#### OUTPUT:



The image shows two separate Command Prompt windows running on Microsoft Windows 10. Both windows have a title bar 'Command Prompt' and a standard window control buttons (minimize, maximize, close).

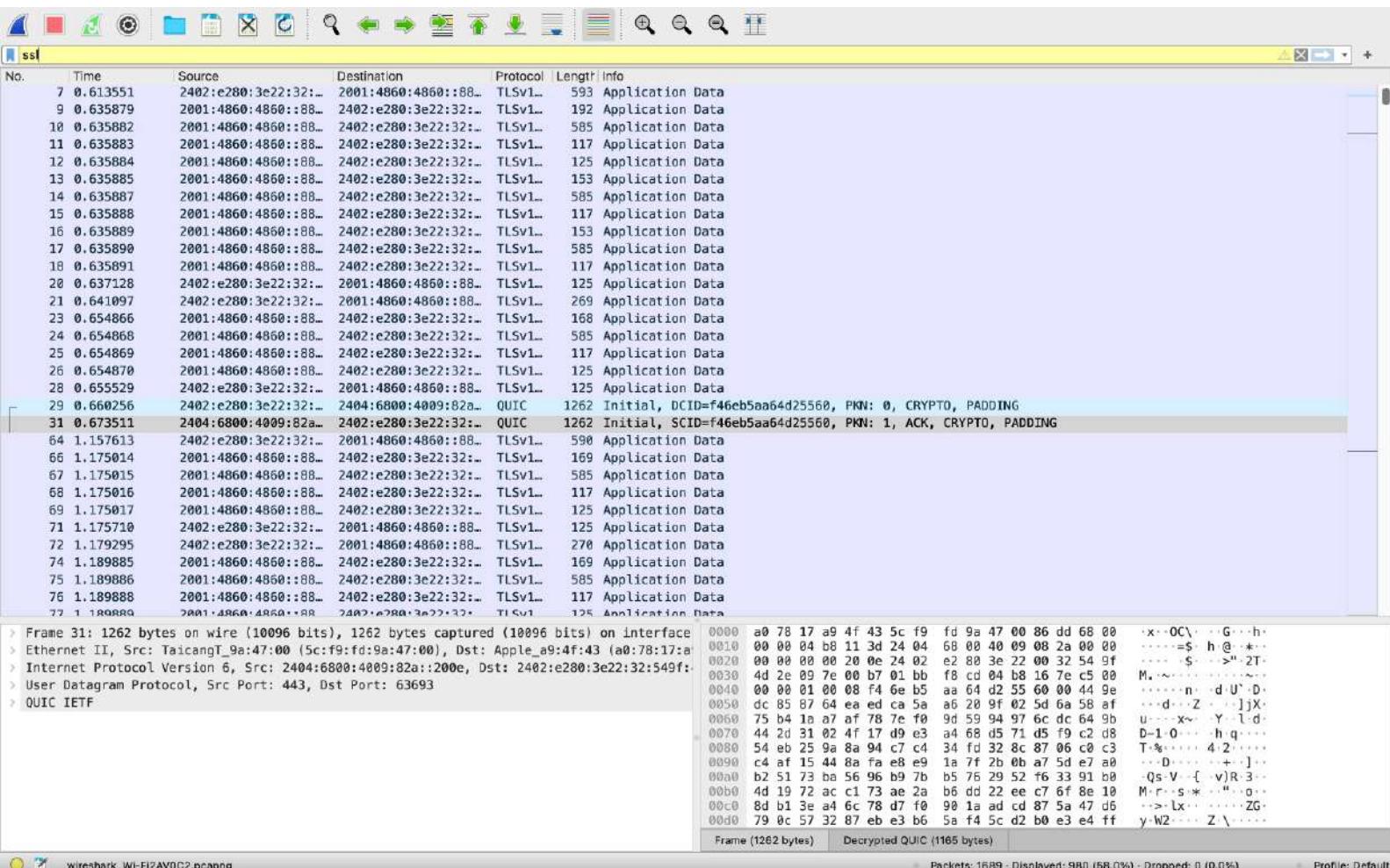
**Left Window (Client Side):**

- Shows the command sequence: `cd..`, `cd..`, `cd Codes\Assignment\_no\_8`, `javac UDPSfile.java`.
- Execution of `java UDPSfile` results in output:
  - Received file content: "Hello^C"
  - Message: "Successfully transferred file from one machine to another"
- Execution of `javac sample.txt` results in an exception:

```
Exception in thread "main" java.io.FileNotFoundException: C:\Codes\cAssignment_no_8\sample.txt.txt (The system cannot find the path specified)
at java.base/java.io.FileOutputStream.open0(Native Method)
at java.base/java.io.FileOutputStream.open(FileOutputStream.java:289)
at java.base/java.io.FileOutputStream.<init>(FileOutputStream.java:230)
at java.base/java.io.FileOutputStream.<init>(FileOutputStream.java:118)
at java.base/java.io.PrintWriter.<init>(PrintWriter.java:207)
at UDPSfile.main(UDPSfile.java:48)
```
- Final prompt: `C:\Codes\Assignment\_no\_8>`

**Right Window (Server Side):**

- Shows the command sequence: `cd..`, `cd..`, `cd Codes\Assignment\_no\_8`, `javac UDPCfile.java`.
- Execution of `java UDPCfile` results in output:
  - Received file content: "HelloHelloSample.txt.txt"
  - Message: "Successfully transferred file from one machine to another"
- Final prompt: `C:\Codes\Assignment\_no\_8>`



Network Mininet - Wireshark

udp

No. Time Source Destination Protocol Length Info

No.	Time	Source	Destination	Protocol	Length	Info
59	0.886888	2402:e280:3e22:32:..	2404:6800:4009:82a..	QUIC	93	Protected Payload (KP0), DCID=f46eb5aa64d25560
60	0.887405	2402:e280:3e22:32:..	2404:6800:4009:82a..	QUIC	93	Protected Payload (KP0), DCID=f46eb5aa64d25560
61	0.887875	2402:e280:3e22:32:..	2404:6800:4009:82a..	QUIC	93	Protected Payload (KP0), DCID=f46eb5aa64d25560
62	0.900203	2404:6800:4009:82a..	2402:e280:3e22:32:..	QUIC	85	Protected Payload (KP0)
63	0.929843	2402:e280:3e22:32:..	2404:6800:4009:831..	UDP	1098	55154 → 443 Len=1036
930	1.829843	2402:e280:3e22:32:..	2404:6800:4009:831..	UDP	323	55154 → 443 Len=261
931	1.838636	2402:e280:3e22:32:..	2404:6800:4009:831..	UDP	89	443 → 55154 Len=27
932	1.845306	2404:6800:4009:831..	2402:e280:3e22:32:..	UDP	86	443 → 55154 Len=24
933	1.875565	2404:6800:4009:831..	2402:e280:3e22:32:..	UDP	95	55154 → 443 Len=33
934	1.875764	2402:e280:3e22:32:..	2404:6800:4009:831..	UDP	130	443 → 55154 Len=68
935	1.918198	2404:6800:4009:831..	2402:e280:3e22:32:..	UDP	83	443 → 55154 Len=21
936	1.918201	2404:6800:4009:831..	2402:e280:3e22:32:..	UDP	95	55154 → 443 Len=33
937	1.918625	2402:e280:3e22:32:..	2404:6800:4009:831..	UDP	93	55154 → 443 Len=31
938	1.918821	2402:e280:3e22:32:..	2404:6800:4009:831..	UDP	93	55154 → 443 Len=31
939	1.919021	2402:e280:3e22:32:..	2404:6800:4009:831..	UDP	85	443 → 55154 Len=23
940	1.928117	2404:6800:4009:831..	2402:e280:3e22:32:..	UDP	91	54348 → 443 Len=29
941	2.949139	2402:e280:3e22:32:..	2404:6800:4009:832..	UDP	87	443 → 54348 Len=25
942	2.988991	2404:6800:4009:832..	2402:e280:3e22:32:..	UDP	423	443 → 54348 Len=361
943	3.056852	2404:6800:4009:832..	2402:e280:3e22:32:..	UDP	84	443 → 54348 Len=22
944	3.056853	2404:6800:4009:832..	2402:e280:3e22:32:..	UDP	100	54348 → 443 Len=38
945	3.057134	2402:e280:3e22:32:..	2404:6800:4009:832..	UDP	285	54348 → 443 Len=223
946	3.078621	2402:e280:3e22:32:..	2404:6800:4009:832..	UDP	90	443 → 54348 Len=28
947	3.088190	2404:6800:4009:832..	2402:e280:3e22:32:..	UDP	100	54348 → 443 Len=38
948	3.116531	2402:e280:3e22:32:..	2404:6800:4009:832..	UDP	129	443 → 54348 Len=67
949	3.303684	2404:6800:4009:832..	2402:e280:3e22:32:..	UDP	83	443 → 54348 Len=21
950	3.303685	2404:6800:4009:832..	2402:e280:3e22:32:..	UDP	100	54348 → 443 Len=38
951	3.304081	2402:e280:3e22:32:..	2404:6800:4009:832..	UDP	485	54348 → 443 Len=423
952	3.304371	2402:e280:3e22:32:..	2404:6800:4009:832..	UDP	129	54348 → 443 Len=67
953	3.307221	2402:e280:3e22:32:..	2404:6800:4009:832..	UDP	90	443 → 54348 Len=29
954	3.307325	2402:e280:3e22:32:..	2404:6800:4009:832..	UDP	0000	a0 78 17 a9 4f 43 5c f9 fd 9a 47 00 86 dd 68 00
955	3.316387	2404:6800:4009:832..	2402:e280:3e22:32:..	UDP	0010	00 00 00 1f 11 3d 24 04 68 00 40 09 08 2a 00 00
956	3.316387	2404:6800:4009:832..	2402:e280:3e22:32:..	UDP	0020	00 00 00 20 0e 24 02 e2 80 3e 22 00 32 54 9f
957	3.316387	2404:6800:4009:832..	2402:e280:3e22:32:..	UDP	0030	4d 2e 09 7e 00 b7 01 bb f8 cd 00 1f 43 c9 40 39
					0040	e8 b8 31 47 6f c9 a2 93 7f 8e 72 04 f7 43 cc 04
					0050	75 62 bc 69 89

Frame 63: 85 bytes on wire (680 bits), 85 bytes captured (680 bits) on interface en0, id 0x0000 a0 78 17 a9 4f 43 5c f9 fd 9a 47 00 86 dd 68 00

Ethernet II, Src: TaicangT\_9a:47:00 (5c:f9:fd:9a:47:00), Dst: Apple\_a9:4f:43 (a0:78:17:a9:47:00)

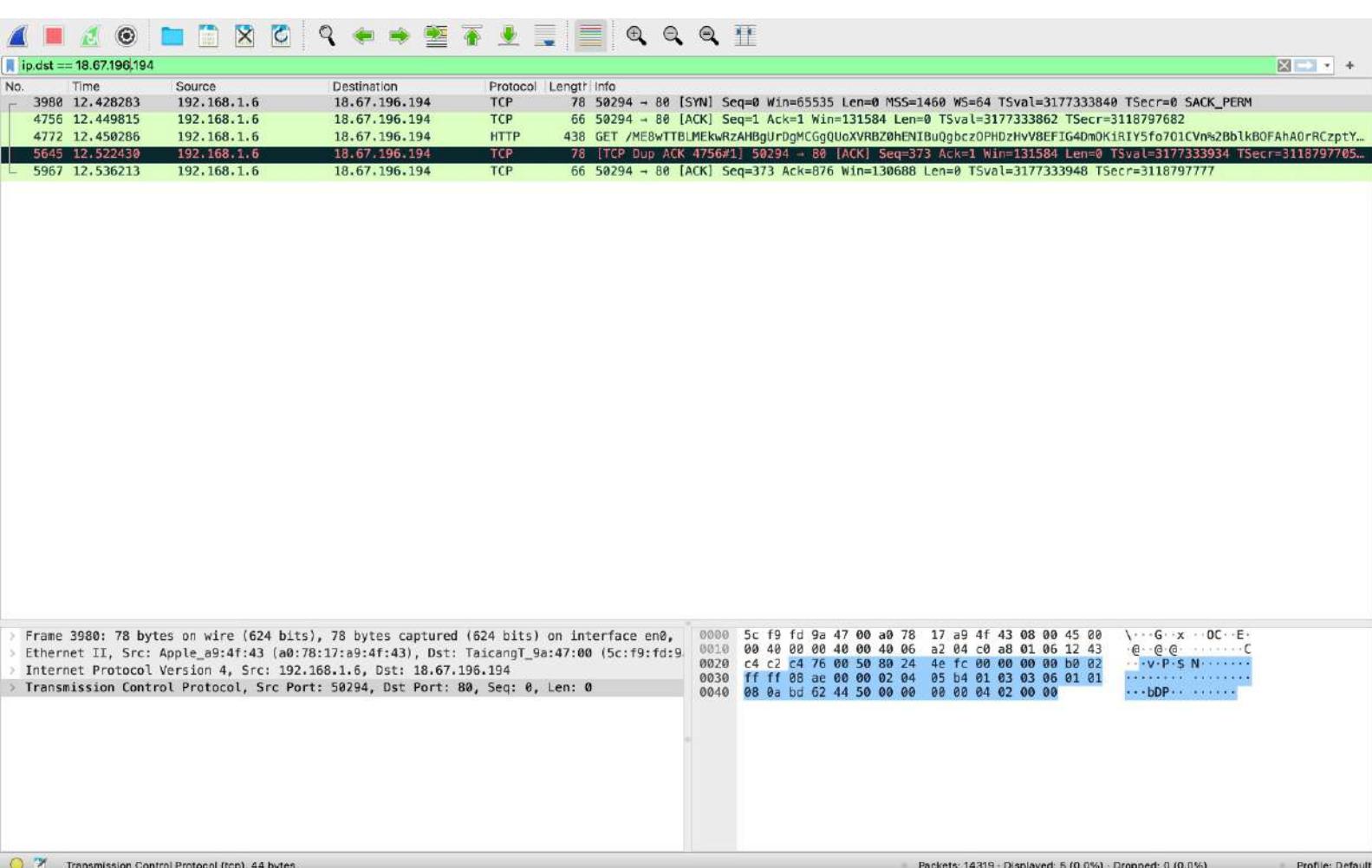
Internet Protocol Version 6, Src: 2404:6800:4009:82a::200e, Dst: 2482:e280:3e22:32:549f:

User Datagram Protocol, Src Port: 443, Dst Port: 63693

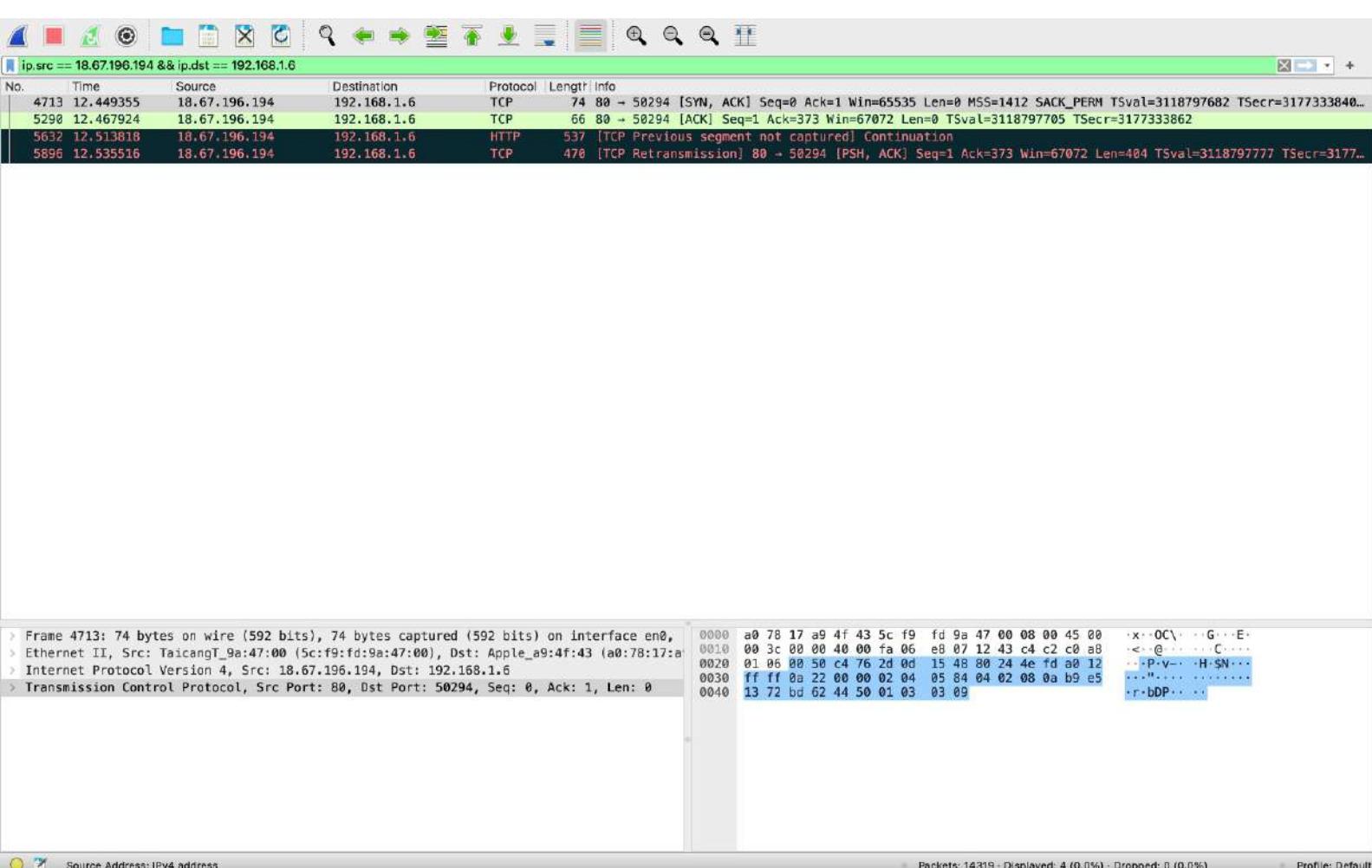
QUIC IETF

Packets: 1689 - Displayed: 72 (4.3%) - Dropped: 0 (0.0%)

No.	Time	Source	Destination	Protocol	Length	Info
92	1.218544	2402:e280:3e22:32:..	2600:140f:4:19f::3..	TCP	86	65165 → 443 [ACK] Seq=1 Ack=1 Win=131584 Len=0 TSval=1397441960 TSecr=3641294728
93	1.218546	2402:e280:3e22:32:..	2600:140f:4:19f::3..	TLSv1..	603	Client Hello
94	1.222176	2001:4860:4860::88..	2402:e280:3e22:32:..	TCP	86	443 → 65070 [ACK] Seq=5058 Ack=1574 Win=1045 Len=0 TSval=1317680914 TSecr=3618055593
95	1.228793	2600:140f:4:19f::3..	2402:e280:3e22:32:..	TCP	86	443 → 65165 [ACK] Seq=1 Ack=518 Win=64128 Len=0 TSval=3641294740 TSecr=1397441961
96	1.230616	2600:140f:4:19f::3..	2402:e280:3e22:32:..	TLSv1..	1486	Server Hello, Change Cipher Spec, Application Data
97	1.230618	2600:140f:4:19f::3..	2402:e280:3e22:32:..	TCP	1486	443 → 65165 [PSH, ACK] Seq=1401 Ack=518 Win=64128 Len=1400 TSval=3641294742 TSecr=1397441961 [TCP : 1486 bytes on wire (1188 bits), 1486 bytes captured (1188 bits) on interface en0, index 1 link-layer type IPv4 (0x800), Ethernet II Src: Taiyang_T_9a:47:00 (5c:f9:fd:9a:47:00), Dst: Apple_a9:4f:43 (a0:78:17:a9:4f:43) [ether]
98	1.230619	2600:140f:4:19f::3..	2402:e280:3e22:32:..	TLSv1..	802	Application Data, Application Data, Application Data
99	1.232116	2402:e280:3e22:32:..	2600:140f:4:19f::3..	TCP	86	65165 → 443 [ACK] Seq=518 Ack=3517 Win=131072 Len=0 TSval=1397441974 TSecr=3641294742
100	1.253652	2402:e280:3e22:32:..	2600:140f:4:19f::3..	TLSv1..	166	Change Cipher Spec, Application Data
101	1.265224	2600:140f:4:19f::3..	2402:e280:3e22:32:..	TCP	86	443 → 65165 [ACK] Seq=3517 Ack=598 Win=64128 Len=0 TSval=3641294776 TSecr=1397441996
102	1.265226	2600:140f:4:19f::3..	2402:e280:3e22:32:..	TLSv1..	357	Application Data
103	1.265228	2600:140f:4:19f::3..	2402:e280:3e22:32:..	TLSv1..	357	Application Data
104	1.265581	2402:e280:3e22:32:..	2600:140f:4:19f::3..	TLSv1..	368	Application Data
105	1.277486	2600:140f:4:19f::3..	2402:e280:3e22:32:..	TCP	86	443 → 65165 [ACK] Seq=4059 Ack=880 Win=64128 Len=0 TSval=3641294788 TSecr=1397442008
106	1.277489	2600:140f:4:19f::3..	2402:e280:3e22:32:..	TLSv1..	147	Application Data
107	1.277491	2600:140f:4:19f::3..	2402:e280:3e22:32:..	TLSv1..	117	Application Data
108	1.277786	2402:e280:3e22:32:..	2600:140f:4:19f::3..	TCP	86	65165 → 443 [ACK] Seq=880 Ack=4151 Win=130944 Len=0 TSval=1397442020 TSecr=3641294789
109	1.277793	2402:e280:3e22:32:..	2600:140f:4:19f::3..	TLSv1..	117	Application Data
110	1.279616	2600:140f:4:19f::3..	2402:e280:3e22:32:..	TLSv1..	343	Application Data
111	1.279720	2402:e280:3e22:32:..	2600:140f:4:19f::3..	TCP	86	65165 → 443 [ACK] Seq=911 Ack=4408 Win=130752 Len=0 TSval=1397442022 TSecr=3641294791
112	1.280008	2600:140f:4:19f::3..	2402:e280:3e22:32:..	TCP	1486	443 → 65165 [ACK] Seq=4408 Ack=880 Win=64128 Len=1400 TSval=3641294791 TSecr=1397442008 [TCP segment of a多重连接]
113	1.281010	2600:140f:4:19f::3..	2402:e280:3e22:32:..	TCP	1486	443 → 65165 [ACK] Seq=5808 Ack=880 Win=64128 Len=1400 TSval=3641294791 TSecr=1397442008 [TCP segment of a多重连接]
114	1.281011	2600:140f:4:19f::3..	2402:e280:3e22:32:..	TCP	1486	443 → 65165 [PSH, ACK] Seq=7208 Ack=880 Win=64128 Len=1400 TSval=3641294791 TSecr=1397442008 [TCP : 1486 bytes on wire (1188 bits), 1486 bytes captured (1188 bits) on interface en0, index 1 link-layer type IPv4 (0x800), Ethernet II Src: Taiyang_T_9a:47:00 (5c:f9:fd:9a:47:00), Dst: Apple_a9:4f:43 (a0:78:17:a9:4f:43) [ether]
115	1.281016	2600:140f:4:19f::3..	2402:e280:3e22:32:..	TCP	1486	443 → 65165 [ACK] Seq=8608 Ack=880 Win=64128 Len=1400 TSval=3641294791 TSecr=1397442008 [TCP segment of a多重连接]
116	1.281018	2600:140f:4:19f::3..	2402:e280:3e22:32:..	TCP	1486	443 → 65165 [ACK] Seq=10008 Ack=880 Win=64128 Len=1400 TSval=3641294791 TSecr=1397442008 [TCP segment of a多重连接]
117	1.281019	2600:140f:4:19f::3..	2402:e280:3e22:32:..	TCP	1486	443 → 65165 [PSH, ACK] Seq=11408 Ack=880 Win=64128 Len=1400 TSval=3641294791 TSecr=1397442008 [TCP : 1486 bytes on wire (1188 bits), 1486 bytes captured (1188 bits) on interface en0, index 1 link-layer type IPv4 (0x800), Ethernet II Src: Taiyang_T_9a:47:00 (5c:f9:fd:9a:47:00), Dst: Apple_a9:4f:43 (a0:78:17:a9:4f:43) [ether]
118	1.281021	2600:140f:4:19f::3..	2402:e280:3e22:32:..	TCP	1486	443 → 65165 [ACK] Seq=12808 Ack=880 Win=64128 Len=1400 TSval=3641294791 TSecr=1397442008 [TCP segment of a多重连接]
119	1.281023	2600:140f:4:19f::3..	2402:e280:3e22:32:..	TLSv1..	485	Application Data
120	1.281336	2402:e280:3e22:32:..	2600:140f:4:19f::3..	TCP	86	65165 → 443 [ACK] Seq=911 Ack=14607 Win=131072 Len=0 TSval=1397442024 TSecr=3641294791
121	1.288663	2600:140f:4:19f::3..	2402:e280:3e22:32:..	TCP	86	443 → 65165 [ACK] Seq=14607 Ack=911 Win=64128 Len=0 TSval=3641294800 TSecr=1397442020
122	1.321153	2402:e280:3e22:32:..	2001:4860:4860::88..	TLSv1..	591	Application Data



The screenshot displays a Wireshark capture of network traffic. The main window shows a list of 3467 captured frames, primarily TCP segments, spanning from 10:30:00 to 10:30:10. A specific session is selected where the destination IP is 192.168.1.6. This session includes a TLSv1.2 handshake (Frames 743-754), certificate exchange (Frames 3420-3467), and several TCP data transfers. The details pane provides a breakdown of the selected frame's structure, and the bytes pane shows the raw hex and ASCII representation of the captured data.



tcp.flags.syn==0

No.	Time	Source	Destination	Protocol	Length	Info
7	0.613551	2402:e280:3e22:32:..	2001:4860:4860::88..	TLSv1..	593	Application Data
8	0.632577	2001:4860:4860::88..	2402:e280:3e22:32:..	TCP	86	443 - 65070 [ACK] Seq=1 Ack=508 Win=1045 Len=0 TSval=1317680325 TSecr=3618055003
9	0.635879	2001:4860:4860::88..	2402:e280:3e22:32:..	TLSv1..	192	Application Data
10	0.635882	2001:4860:4860::88..	2402:e280:3e22:32:..	TLSv1..	585	Application Data
11	0.635883	2001:4860:4860::88..	2402:e280:3e22:32:..	TLSv1..	117	Application Data
12	0.635884	2001:4860:4860::88..	2402:e280:3e22:32:..	TLSv1..	125	Application Data
13	0.635885	2001:4860:4860::88..	2402:e280:3e22:32:..	TLSv1..	153	Application Data
14	0.635887	2001:4860:4860::88..	2402:e280:3e22:32:..	TLSv1..	585	Application Data
15	0.635888	2001:4860:4860::88..	2402:e280:3e22:32:..	TLSv1..	117	Application Data
16	0.635889	2001:4860:4860::88..	2402:e280:3e22:32:..	TLSv1..	153	Application Data
17	0.635890	2001:4860:4860::88..	2402:e280:3e22:32:..	TLSv1..	585	Application Data
18	0.635891	2001:4860:4860::88..	2402:e280:3e22:32:..	TLSv1..	117	Application Data
19	0.636369	2402:e280:3e22:32:..	2001:4860:4860::88..	TCP	86	65070 - 443 [ACK] Seq=508 Ack=1870 Win=2018 Len=0 TSval=3618055026 TSecr=1317680327
20	0.637128	2402:e280:3e22:32:..	2001:4860:4860::88..	TLSv1..	125	Application Data
21	0.641097	2402:e280:3e22:32:..	2001:4860:4860::88..	TLSv1..	269	Application Data
22	0.652356	2001:4860:4860::88..	2402:e280:3e22:32:..	TCP	86	443 - 65070 [ACK] Seq=1870 Ack=730 Win=1045 Len=0 TSval=1317680345 TSecr=3618055027
23	0.654866	2001:4860:4860::88..	2402:e280:3e22:32:..	TLSv1..	168	Application Data
24	0.654868	2001:4860:4860::88..	2402:e280:3e22:32:..	TLSv1..	585	Application Data
25	0.654869	2001:4860:4860::88..	2402:e280:3e22:32:..	TLSv1..	117	Application Data
26	0.654870	2001:4860:4860::88..	2402:e280:3e22:32:..	TLSv1..	125	Application Data
27	0.655103	2402:e280:3e22:32:..	2001:4860:4860::88..	TCP	86	65070 - 443 [ACK] Seq=730 Ack=2521 Win=2037 Len=0 TSval=3618055045 TSecr=1317680347
28	0.655529	2402:e280:3e22:32:..	2001:4860:4860::88..	TLSv1..	125	Application Data
30	0.669619	2001:4860:4860::88..	2402:e280:3e22:32:..	TCP	86	443 - 65070 [ACK] Seq=2521 Ack=769 Win=1045 Len=0 TSval=1317680362 TSecr=3618055045
64	1.157613	2402:e280:3e22:32:..	2001:4860:4860::88..	TLSv1..	590	Application Data
65	1.172425	2001:4860:4860::88..	2402:e280:3e22:32:..	TCP	86	443 - 65070 [ACK] Seq=2521 Ack=1273 Win=1045 Len=0 TSval=1317680865 TSecr=3618055547
66	1.175014	2001:4860:4860::88..	2402:e280:3e22:32:..	TLSv1..	169	Application Data
67	1.175015	2001:4860:4860::88..	2402:e280:3e22:32:..	TLSv1..	585	Application Data
68	1.175016	2001:4860:4860::88..	2402:e280:3e22:32:..	TLSv1..	117	Application Data
69	1.175017	2001:4860:4860::88..	2402:e280:3e22:32:..	TLSv1..	125	Application Data
70	1.175264	2402:e280:3e22:32:..	2001:4860:4860::88..	TCP	86	65070 - 443 [ACK] Seq=1273 Ack=3173 Win=2037 Len=0 TSval=3618055565 TSecr=1317680867
71	1.175710	2402:e280:3e22:32:..	2001:4860:4860::88..	TLSv1..	125	Application Data

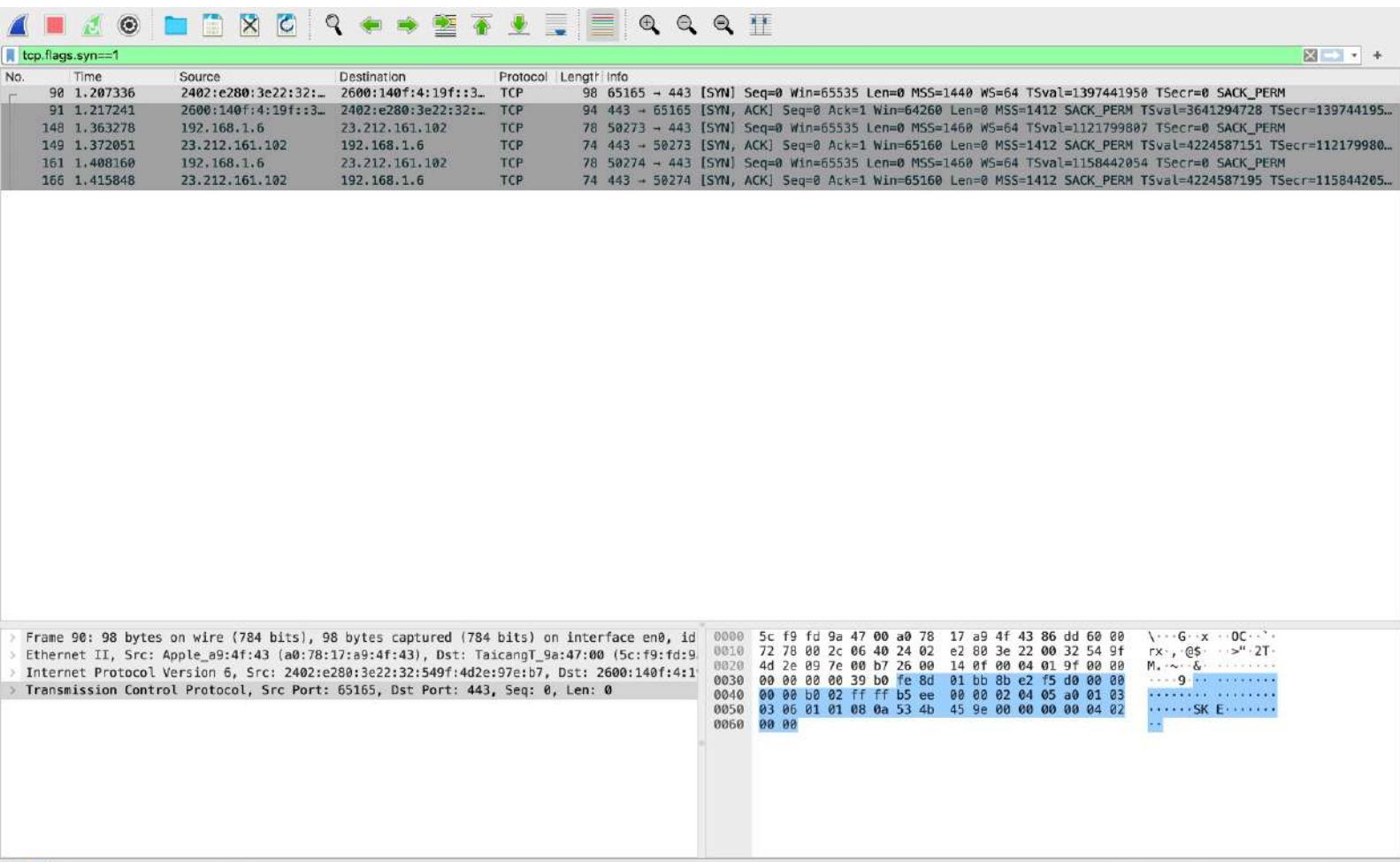
Frame 30: 86 bytes on wire (688 bits), 86 bytes captured (688 bits) on interface en0, id 0x0000 a0 78 17 a9 4f 43 5c f9 fd 9a 47 00 86 dd 68 0c  
 Ethernet II, Src: TaicangT\_9a:47:00 (5c:f9:fd:9a:47:00), Dst: Apple\_a9:4f:43 (a0:78:17:a9:4f:43)  
 Internet Protocol Version 6, Src: 2001:4860:4860::8844, Dst: 2402:e280:3e22:32:549f:4d2e  
 Transmission Control Protocol, Src Port: 443, Dst Port: 65070, Seq: 2521, Ack: 769, Len: 86

```

0000 a0 78 17 a9 4f 43 5c f9 fd 9a 47 00 86 dd 68 0c
0010 11 cf 00 20 06 7c 20 01 48 60 48 60 00 00 00 00
0020 00 00 00 88 44 24 02 e2 80 3e 22 00 32 54 9f
0030 4d 2e 09 7e 00 b7 01 bb fe 2e 80 cd 77 80 65 dc
0040 d8 ec 00 10 04 15 93 26 00 00 01 01 08 0a 4e 8a
0050 34 ea d7 a7 23 85

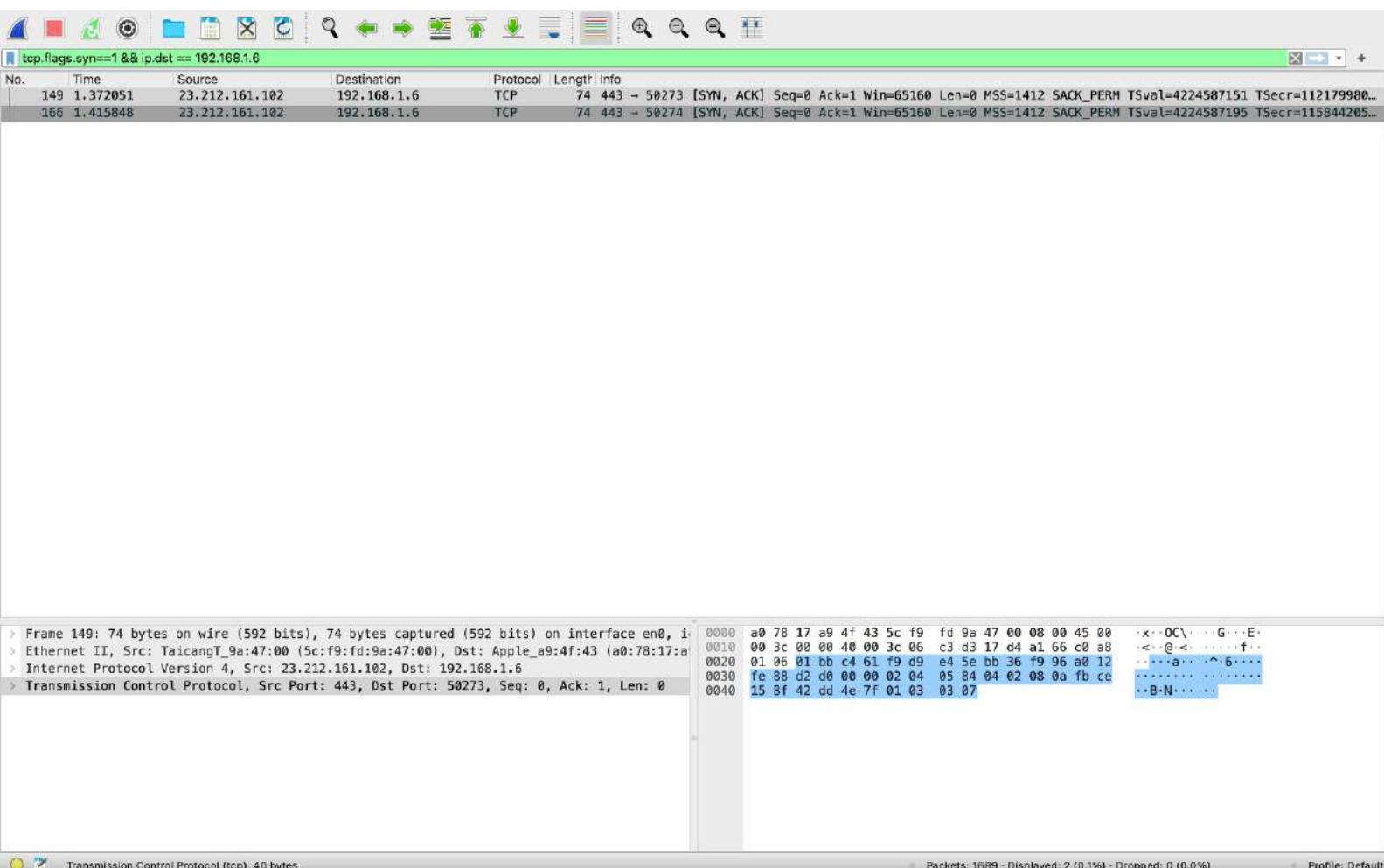
```

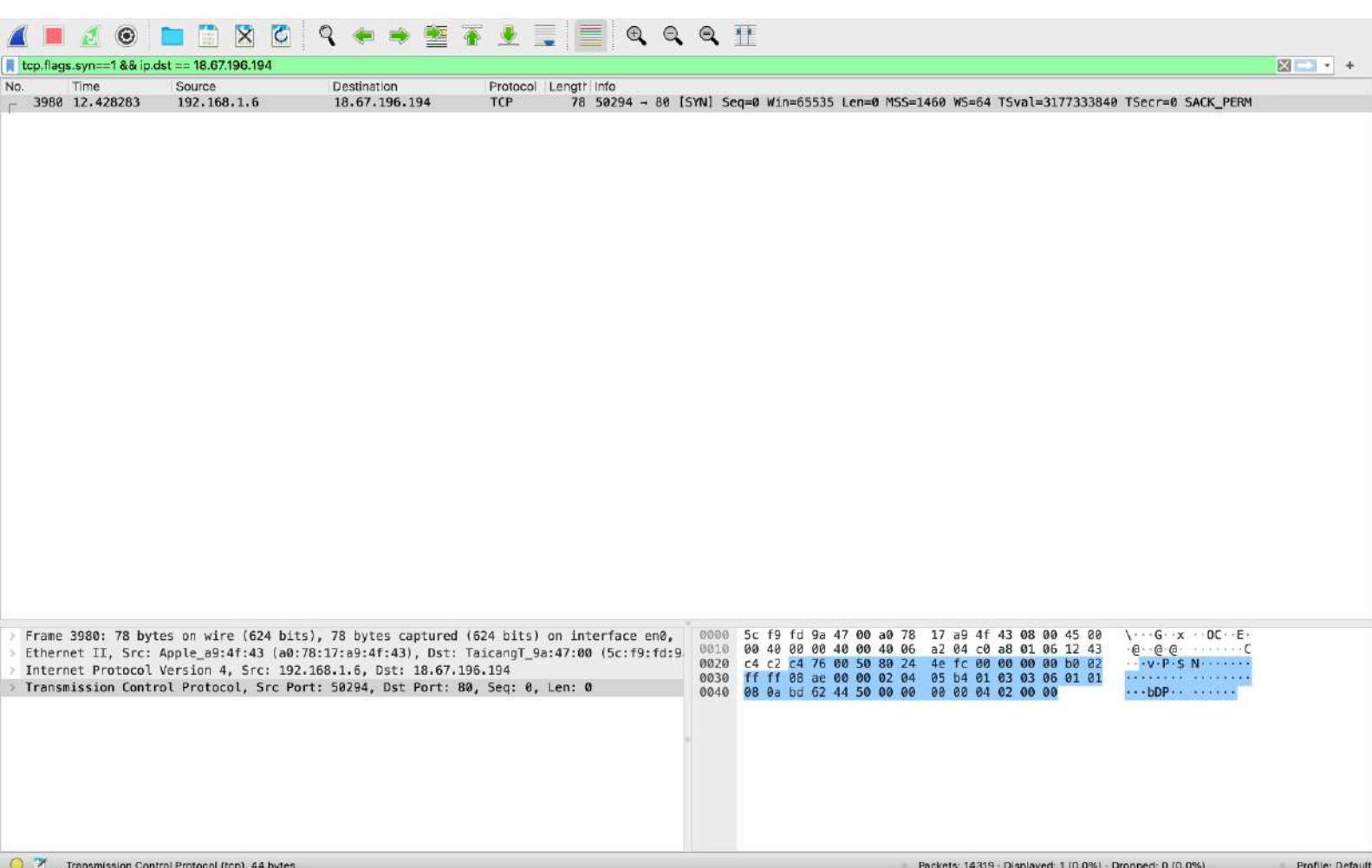
Packets: 1689 - Displayed: 1593 (94.3%) - Dropped: 0 (0.0%)



No.	Time	Source	Destination	Protocol	Length	Info
153	1.383819	23.212.161.102	192.168.1.6	TCP	66	443 → 50273 [ACK] Seq=1 Ack=518 Win=64768 Len=0 TStamp=4224587163 TSecr=1121799816
154	1.383822	23.212.161.102	192.168.1.6	TLSv1..	1466	Server Hello, Change Cipher Spec, Application Data
155	1.383824	23.212.161.102	192.168.1.6	TCP	1466	443 → 50273 [PSH, ACK] Seq=1401 Ack=518 Win=64768 Len=1400 TStamp=4224587163 TSecr=1121799816 [TCP :
156	1.383825	23.212.161.102	192.168.1.6	TCP	1362	443 → 50273 [PSH, ACK] Seq=2801 Ack=518 Win=64768 Len=1296 TStamp=4224587163 TSecr=1121799816 [TCP :
158	1.384890	23.212.161.102	192.168.1.6	TLSv1..	1186	Application Data, Application Data, Application Data
162	1.412294	23.212.161.102	192.168.1.6	TCP	66	443 → 50273 [ACK] Seq=5217 Ack=598 Win=64768 Len=0 TStamp=4224587191 TSecr=1121799846
163	1.412297	23.212.161.102	192.168.1.6	TLSv1..	353	Application Data
164	1.412298	23.212.161.102	192.168.1.6	TLSv1..	353	Application Data
169	1.423831	23.212.161.102	192.168.1.6	TCP	66	443 → 50273 [ACK] Seq=5791 Ack=950 Win=64512 Len=0 TStamp=4224587203 TSecr=1121799856
170	1.425679	23.212.161.102	192.168.1.6	TLSv1..	1231	Application Data
172	1.427194	23.212.161.102	192.168.1.6	TCP	66	443 → 50274 [ACK] Seq=1 Ack=518 Win=64768 Len=0 TStamp=4224587207 TSecr=1158442062
173	1.427889	23.212.161.102	192.168.1.6	TLSv1..	1466	Server Hello, Change Cipher Spec, Application Data
174	1.427890	23.212.161.102	192.168.1.6	TCP	1466	443 → 50274 [PSH, ACK] Seq=1401 Ack=518 Win=64768 Len=1400 TStamp=4224587208 TSecr=1158442062 [TCP :
175	1.427892	23.212.161.102	192.168.1.6	TCP	1362	443 → 50274 [PSH, ACK] Seq=2801 Ack=518 Win=64768 Len=1296 TStamp=4224587208 TSecr=1158442062 [TCP :
177	1.428998	23.212.161.102	192.168.1.6	TLSv1..	1186	Application Data, Application Data, Application Data
181	1.456417	23.212.161.102	192.168.1.6	TCP	66	443 → 50274 [ACK] Seq=5217 Ack=598 Win=64768 Len=0 TStamp=4224587235 TSecr=1158442092
182	1.456419	23.212.161.102	192.168.1.6	TLSv1..	353	Application Data
183	1.456419	23.212.161.102	192.168.1.6	TLSv1..	353	Application Data
185	1.466018	23.212.161.102	192.168.1.6	TCP	66	443 → 50274 [ACK] Seq=5791 Ack=952 Win=64512 Len=0 TStamp=4224587239 TSecr=1158442094
186	1.466020	23.212.161.102	192.168.1.6	TCP	1466	443 → 50274 [ACK] Seq=5791 Ack=952 Win=64512 Len=1400 TStamp=4224587240 TSecr=1158442094 [TCP segment
187	1.466021	23.212.161.102	192.168.1.6	TCP	1466	443 → 50274 [ACK] Seq=7191 Ack=952 Win=64512 Len=1400 TStamp=4224587240 TSecr=1158442094 [TCP segment
188	1.466022	23.212.161.102	192.168.1.6	TCP	1466	443 → 50274 [ACK] Seq=8591 Ack=952 Win=64512 Len=1400 TStamp=4224587240 TSecr=1158442094 [TCP segment
189	1.466024	23.212.161.102	192.168.1.6	TCP	1466	443 → 50274 [PSH, ACK] Seq=9991 Ack=952 Win=64512 Len=1400 TStamp=4224587240 TSecr=1158442094 [TCP :
190	1.466025	23.212.161.102	192.168.1.6	TCP	1466	443 → 50274 [ACK] Seq=11391 Ack=952 Win=64512 Len=1400 TStamp=4224587240 TSecr=1158442094 [TCP segment
191	1.466026	23.212.161.102	192.168.1.6	TCP	1466	443 → 50274 [ACK] Seq=12791 Ack=952 Win=64512 Len=1400 TStamp=4224587240 TSecr=1158442094 [TCP segment
192	1.466027	23.212.161.102	192.168.1.6	TCP	1466	443 → 50274 [ACK] Seq=14191 Ack=952 Win=64512 Len=1400 TStamp=4224587240 TSecr=1158442094 [TCP segment
193	1.466028	23.212.161.102	192.168.1.6	TCP	1466	443 → 50274 [PSH, ACK] Seq=15591 Ack=952 Win=64512 Len=1400 TStamp=4224587240 TSecr=1158442094 [TCP :
194	1.466029	23.212.161.102	192.168.1.6	TCP	1466	443 → 50274 [ACK] Seq=16991 Ack=952 Win=64512 Len=1400 TStamp=4224587240 TSecr=1158442094 [TCP segment
195	1.466030	23.212.161.102	192.168.1.6	TCP	1466	443 → 50274 [ACK] Seq=18391 Ack=952 Win=64512 Len=1400 TStamp=4224587240 TSecr=1158442094 [TCP segment
196	1.466031	23.212.161.102	192.168.1.6	TCP	1466	443 → 50274 [ACK] Seq=19791 Ack=952 Win=64512 Len=1400 TStamp=4224587240 TSecr=1158442094 [TCP segment
197	1.466032	23.212.161.102	192.168.1.6	TLSv1..	1072	Application Data

Frame 153: 66 bytes on wire (528 bits), 66 bytes captured (528 bits) on interface en0, interface	0000 a0 78 17 a9 4f 43 5c f9 fd 9a 47 00 08 00 45 00	x-0C\`-G-E-
Ethernet II, Src: Taicangt_9a:47:00 (5c:9f:fd:9a:47:00), Dst: Apple_a9:4f:43 (a0:78:17:a9)	0010 00 34 20 dd 40 00 03 06 a2 fe 17 d4 a1 66 c0 a8	-4-@<-f--
Internet Protocol Version 4, Src: 23.212.161.102, Dst: 192.168.1.6	0020 01 06 01 bb c4 61 f9 d9 e4 5f bb 36 fb 9b 80 10	-a-a--5-----
Transmission Control Protocol, Src Port: 443, Dst Port: 50273, Seq: 1, Ack: 518, Len: 0	0030 00 01 ff fb e1 00 00 01 01 08 0a fb ce 15 9b 42 dd	-----B-----
	0040 4e 88	N-----





No.	Time	Source	Destination	Protocol	Length	Info
3450	12.398923	2001:4860:4860::88..	2402:e280:3e22:32:..	TLSv1..	117	Application Data
3467	12.384515	52.208.123.107	192.168.1.6	TLSv1..	189	Server Key Exchange, Server Hello Done
3469	12.388273	2402:e280:3e22:32:..	2001:4860:4860::88..	TLSv1..	591	Application Data
3470	12.392439	2402:e280:3e22:32:..	2600:9000:264c:1a0..	TLSv1..	329	Application Data
3472	12.398924	2001:4860:4860::88..	2402:e280:3e22:32:..	TLSv1..	169	Application Data
3473	12.398925	2001:4860:4860::88..	2402:e280:3e22:32:..	TLSv1..	585	Application Data
3474	12.398925	2001:4860:4860::88..	2402:e280:3e22:32:..	TLSv1..	117	Application Data
3475	12.398926	2001:4860:4860::88..	2402:e280:3e22:32:..	TLSv1..	125	Application Data
3476	12.398926	2001:4860:4860::88..	2402:e280:3e22:32:..	TLSv1..	168	Application Data
3477	12.398927	2001:4860:4860::88..	2402:e280:3e22:32:..	TLSv1..	585	Application Data
3478	12.398927	2001:4860:4860::88..	2402:e280:3e22:32:..	TLSv1..	117	Application Data
3488	12.399462	2402:e280:3e22:32:..	2001:4860:4860::88..	TLSv1..	125	Application Data
3494	12.402337	2600:9000:264c:1a0..	2402:e280:3e22:32:..	TLSv1..	788	Application Data
3522	12.402430	2600:9000:264c:1a0..	2402:e280:3e22:32:..	TLSv1..	282	Application Data
3524	12.402524	2402:e280:3e22:32:..	2600:9000:264c:1a0..	TLSv1..	599	Application Data, Application Data
3567	12.405647	2600:9000:264c:1a0..	2402:e280:3e22:32:..	TLSv1..	984	Application Data
3623	12.406913	2600:9000:264c:1a0..	2402:e280:3e22:32:..	TCP	1294	443 - 65303 [PSH, ACK] Seq=15960077 Ack=10254 Win=92672 Len=1208 TStamp=1082768506 TSecr=830419594 [T]
3626	12.406974	2402:e280:3e22:32:..	2600:9000:264c:1a0..	TLSv1..	217	Application Data
3646	12.407794	2600:9000:264c:1a0..	2402:e280:3e22:32:..	TLSv1..	1261	Application Data, Application Data
3701	12.408922	2600:9000:264c:1a0..	2402:e280:3e22:32:..	TCP	1294	443 - 65303 [PSH, ACK] Seq=16877822 Ack=10254 Win=92672 Len=1208 TStamp=1082768507 TSecr=830419594 [T]
3756	12.409965	2600:9000:264c:1a0..	2402:e280:3e22:32:..	TLSv1..	863	Application Data, Application Data
3760	12.416285	2402:e280:3e22:32:..	2600:9000:264c:1a0..	TLSv1..	210	Application Data
3774	12.421303	2600:9000:264c:1a0..	2402:e280:3e22:32:..	TLSv1..	788	Application Data
3788	12.421318	2600:9000:264c:1a0..	2402:e280:3e22:32:..	TLSv1..	788	Application Data
3817	12.422677	2600:9000:264c:1a0..	2402:e280:3e22:32:..	TLSv1..	282	Application Data
3831	12.422686	2600:9000:264c:1a0..	2402:e280:3e22:32:..	TLSv1..	788	Application Data
3887	12.425718	2600:9000:264c:1a0..	2402:e280:3e22:32:..	TCP	1294	443 - 65303 [PSH, ACK] Seq=1899845 Ack=10898 Win=97792 Len=1208 TStamp=1082768524 TSecr=830419604 [T]
3941	12.426005	2001:4860:4860::88..	2402:e280:3e22:32:..	TLSv1..	153	Application Data
3942	12.426006	2001:4860:4860::88..	2402:e280:3e22:32:..	TLSv1..	585	Application Data
3943	12.426007	2001:4860:4860::88..	2402:e280:3e22:32:..	TLSv1..	117	Application Data
3947	12.427377	2600:9000:264c:1a0..	2402:e280:3e22:32:..	TCP	1294	443 - 65303 [PSH, ACK] Seq=1965077 Ack=10898 Win=97792 Len=1208 TStamp=1082768525 TSecr=830419611 [T]
Frame 3947: 1294 bytes on wire (10352 bits), 1294 bytes captured (10352 bits) on interface						
> Ethernet II, Src: TaicangT_9a:47:00 (5c:f9:fd:9a:47:00), Dst: Apple_a9:4f:43 (a0:78:17:a)						
> Internet Protocol Version 6, Src: 2600:9000:264c:1a00:1d:d7f6:39d3:7a61, Dst: 2402:e280:						
> Transmission Control Protocol, Src Port: 443, Dst Port: 65303, Seq: 1965077, Ack: 10898, Len: 1208 TStamp=1082768525 TSecr=830419611 [T]						
0030 4d 2e 09 7e 00 b7 01 bb ff 17 96 95 ac eb c8 1e M...~.....						
0040 d2 4c 80 18 00 bf 3e 3b 00 00 01 01 08 0a 4f 89 L...>.....@:						
0050 bc 8d 31 7f 32 9b 07 5b 6f 20 e5 90 cb 91 54 2a ..12;[o ...T*						
0060 2c f4 d4 e8 2a 67 a0 fd 25 d2 48 44 04 96 ae 27 ,...g % HD ..'						
0070 95 4f a0 d1 7d bf 26 fd f1 df a2 7e 0a 14 9f 0d .0..&..						
0080 5c 4e dc d0 41 3c 15 bc 7b 5b 54 78 4b 03 93 e9 VN..Ak ..{[Tx..						
0090 f5 84 e6 d0 11 9c 3e 97 94 cb b5 60 44 4d 82 ac ..>...DM..						
00a0 e5 fe 6d c3 34 4d 72 0f 92 80 36 0d 8e 4f f6 05 ..m:4M: ..6..0						
00b0 29 b3 9d b5 a2 3b de 58 db 76 04 ea 76 76 ad 4d )...:X ..vv:M						
00c0 b5 dd ee 19 f4 ba c1 24 9f cd c2 ee 6b d9 72 ff ..S ..k:r						
00d0 38 51 a1 58 ff 4e 03 33 b6 ee 47 e7 cc 2a 1d df 8Q..X..N..3 ..G..*..						
00e0 40 1e 81 d6 66 2d 3c 41 52 c8 55 88 d4 59 13 69 @...n..A..R...Y..i						
00f0 45 eb 65 8c 39 e5 bd d0 b5 b3 9e bb 76 82 cb 59 E..e..9...v..Y						
0100 a5 f0 98 8c 6a 8c 16 03 e9 98 03 72 0d 89 98 4f ..j...r..0						
0110 60 e5 25 2f fb a6 92 6a cb 11 56 36 8a 2d 1f c4 ..%/-j ..V6..-						

Transmission Control Protocol (tcp), 32 bytes

Packets: 14319 - Displayed: 2600 (18.2%) - Dropped: 0 (0.0%)

Profile: Default

tcp.flags.push==0

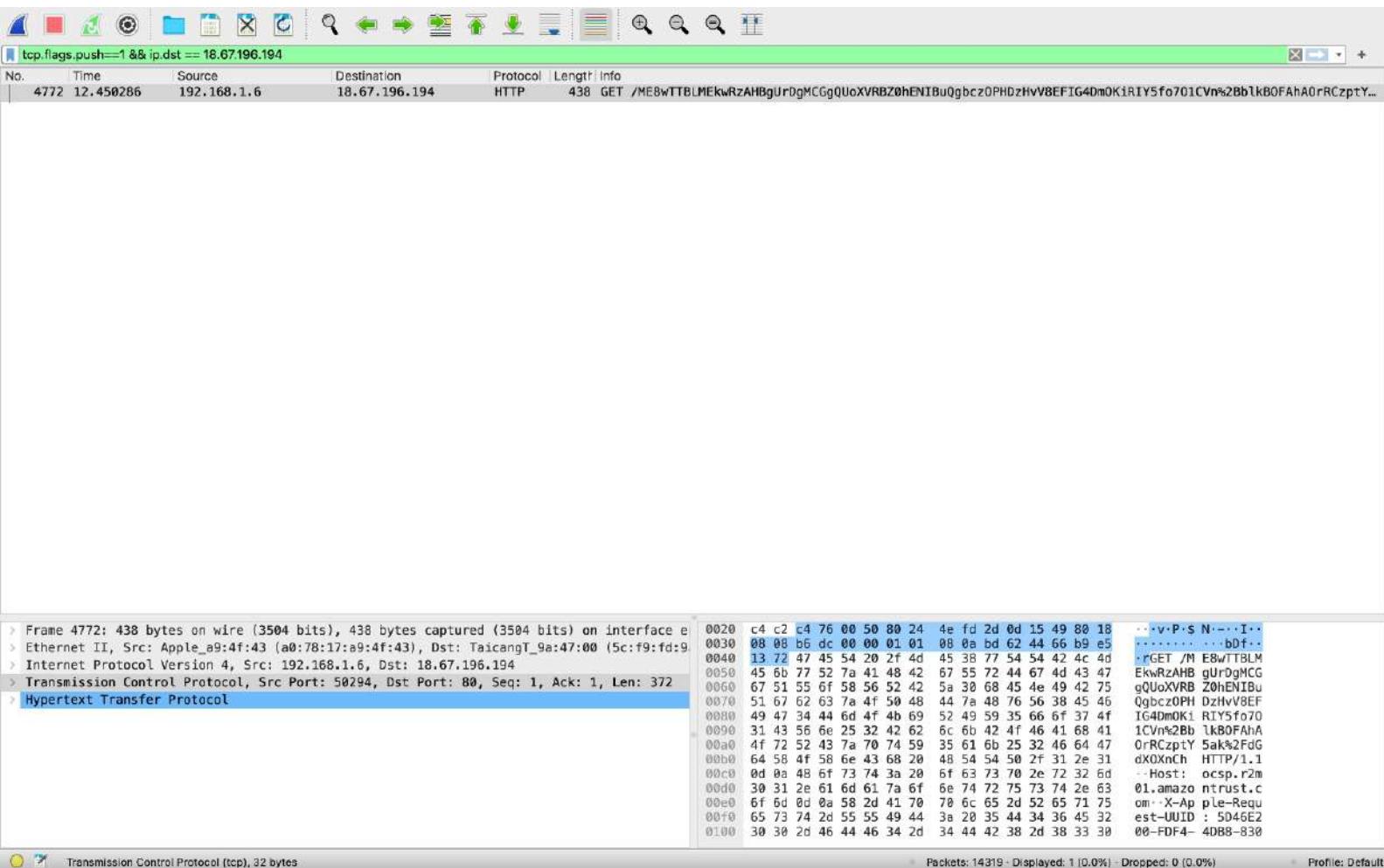
No.	Time	Source	Destination	Protocol	Length	Info
3914	12.425922	2600:9000:264c:1a0..	2402:e280:3e22:32..	TCP	1294	443 → 65303 [ACK] Seq=1932461 Ack=10898 Win=97792 Len=1208 TSval=1082768525 TSecr=830419611 [TCP st]
3915	12.425923	2600:9000:264c:1a0..	2402:e280:3e22:32..	TLSv1..	1294	Application Data
3916	12.425983	2600:9000:264c:1a0..	2402:e280:3e22:32..	TCP	1294	443 → 65303 [ACK] Seq=1934877 Ack=10898 Win=97792 Len=1208 TSval=1082768525 TSecr=830419611 [TCP st]
3917	12.425984	2600:9000:264c:1a0..	2402:e280:3e22:32..	TCP	1294	443 → 65303 [ACK] Seq=1935685 Ack=10898 Win=97792 Len=1208 TSval=1082768525 TSecr=830419611 [TCP st]
3918	12.425985	2600:9000:264c:1a0..	2402:e280:3e22:32..	TCP	1294	443 → 65303 [ACK] Seq=1937293 Ack=10898 Win=97792 Len=1208 TSval=1082768525 TSecr=830419611 [TCP st]
3919	12.425986	2600:9000:264c:1a0..	2402:e280:3e22:32..	TCP	1294	443 → 65303 [ACK] Seq=1938501 Ack=10898 Win=97792 Len=1208 TSval=1082768525 TSecr=830419611 [TCP st]
3920	12.425987	2600:9000:264c:1a0..	2402:e280:3e22:32..	TCP	1294	443 → 65303 [ACK] Seq=1939709 Ack=10898 Win=97792 Len=1208 TSval=1082768525 TSecr=830419611 [TCP st]
3921	12.425987	2600:9000:264c:1a0..	2402:e280:3e22:32..	TCP	1294	443 → 65303 [ACK] Seq=1940917 Ack=10898 Win=97792 Len=1208 TSval=1082768525 TSecr=830419611 [TCP st]
3922	12.425988	2600:9000:264c:1a0..	2402:e280:3e22:32..	TCP	1294	443 → 65303 [ACK] Seq=1942125 Ack=10898 Win=97792 Len=1208 TSval=1082768525 TSecr=830419611 [TCP st]
3923	12.425989	2600:9000:264c:1a0..	2402:e280:3e22:32..	TCP	1294	443 → 65303 [ACK] Seq=1943333 Ack=10898 Win=97792 Len=1208 TSval=1082768525 TSecr=830419611 [TCP st]
3924	12.425990	2600:9000:264c:1a0..	2402:e280:3e22:32..	TCP	1294	443 → 65303 [ACK] Seq=1944541 Ack=10898 Win=97792 Len=1208 TSval=1082768525 TSecr=830419611 [TCP st]
3925	12.425991	2600:9000:264c:1a0..	2402:e280:3e22:32..	TCP	1294	443 → 65303 [ACK] Seq=1945749 Ack=10898 Win=97792 Len=1208 TSval=1082768525 TSecr=830419611 [TCP st]
3926	12.425992	2600:9000:264c:1a0..	2402:e280:3e22:32..	TCP	1294	443 → 65303 [ACK] Seq=1946957 Ack=10898 Win=97792 Len=1208 TSval=1082768525 TSecr=830419611 [TCP st]
3927	12.425993	2600:9000:264c:1a0..	2402:e280:3e22:32..	TCP	1294	443 → 65303 [ACK] Seq=1948165 Ack=10898 Win=97792 Len=1208 TSval=1082768525 TSecr=830419611 [TCP st]
3928	12.425994	2600:9000:264c:1a0..	2402:e280:3e22:32..	TCP	1294	443 → 65303 [ACK] Seq=1949373 Ack=10898 Win=97792 Len=1208 TSval=1082768525 TSecr=830419611 [TCP st]
3929	12.425995	2600:9000:264c:1a0..	2402:e280:3e22:32..	TLSv1..	1294	Application Data
3930	12.425996	2600:9000:264c:1a0..	2402:e280:3e22:32..	TCP	1294	443 → 65303 [ACK] Seq=1951789 Ack=10898 Win=97792 Len=1208 TSval=1082768525 TSecr=830419611 [TCP st]
3931	12.425997	2600:9000:264c:1a0..	2402:e280:3e22:32..	TCP	1294	443 → 65303 [ACK] Seq=1952997 Ack=10898 Win=97792 Len=1208 TSval=1082768525 TSecr=830419611 [TCP st]
3932	12.425997	2600:9000:264c:1a0..	2402:e280:3e22:32..	TCP	1294	443 → 65303 [ACK] Seq=1954205 Ack=10898 Win=97792 Len=1208 TSval=1082768525 TSecr=830419611 [TCP st]
3933	12.425998	2600:9000:264c:1a0..	2402:e280:3e22:32..	TCP	1294	443 → 65303 [ACK] Seq=1955413 Ack=10898 Win=97792 Len=1208 TSval=1082768525 TSecr=830419611 [TCP st]
3934	12.425999	2600:9000:264c:1a0..	2402:e280:3e22:32..	TCP	1294	443 → 65303 [ACK] Seq=1956621 Ack=10898 Win=97792 Len=1208 TSval=1082768525 TSecr=830419611 [TCP st]
3935	12.426000	2600:9000:264c:1a0..	2402:e280:3e22:32..	TCP	1294	443 → 65303 [ACK] Seq=1957829 Ack=10898 Win=97792 Len=1208 TSval=1082768525 TSecr=830419611 [TCP st]
3936	12.426001	2600:9000:264c:1a0..	2402:e280:3e22:32..	TCP	1294	443 → 65303 [ACK] Seq=1959037 Ack=10898 Win=97792 Len=1208 TSval=1082768525 TSecr=830419611 [TCP st]
3937	12.426002	2600:9000:264c:1a0..	2402:e280:3e22:32..	TCP	1294	443 → 65303 [ACK] Seq=1960245 Ack=10898 Win=97792 Len=1208 TSval=1082768525 TSecr=830419611 [TCP st]
3938	12.426003	2600:9000:264c:1a0..	2402:e280:3e22:32..	TCP	1294	443 → 65303 [ACK] Seq=1961453 Ack=10898 Win=97792 Len=1208 TSval=1082768525 TSecr=830419611 [TCP st]
3939	12.426004	2600:9000:264c:1a0..	2402:e280:3e22:32..	TCP	1294	443 → 65303 [ACK] Seq=1962661 Ack=10898 Win=97792 Len=1208 TSval=1082768525 TSecr=830419611 [TCP st]
3940	12.426005	2600:9000:264c:1a0..	2402:e280:3e22:32..	TCP	1294	443 → 65303 [ACK] Seq=1963869 Ack=10898 Win=97792 Len=1208 TSval=1082768525 TSecr=830419611 [TCP st]
3944	12.426056	2402:e280:3e22:32..	2600:9000:264c:1a0..	TCP	86	65303 → 443 [ACK] Seq=11022 Ack=1934877 Win=960960 Len=0 TSval=830419627 TSecr=1082768525
3945	12.426078	2402:e280:3e22:32..	2600:9000:264c:1a0..	TCP	86	65303 → 443 [ACK] Seq=11022 Ack=1965077 Win=960960 Len=0 TSval=830419627 TSecr=1082768525
3946	12.426175	2402:e280:3e22:32..	2001:4860:4860::88..	TCP	86	65870 → 443 [ACK] Seq=11391 Ack=35855 Win=2048 Len=0 TSval=3619673886 TSecr=1319299182

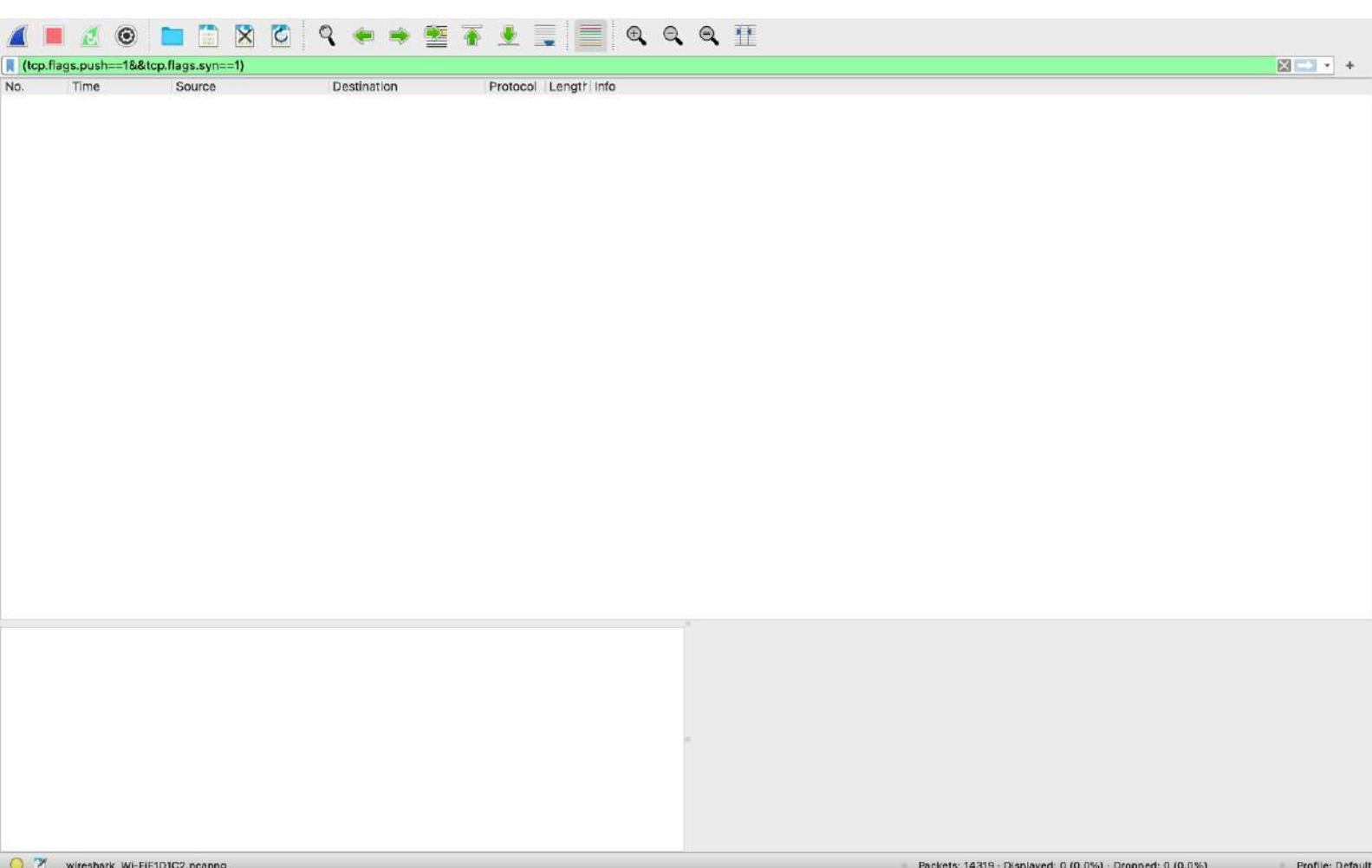
Frame 3946: 86 bytes on wire (688 bits), 86 bytes captured (688 bits) on interface en0, Ethernet II, Src: Apple\_a9:4f:43 (a0:78:17:a9:4f:43), Dst: TaicangT\_9a:47:00 (5c:f9:fd:9a:47:00), Internet Protocol Version 6, Src: 2402:e280:3e22:32:549f:4d2e:97e:b7, Dst: 2001:4860:4860, Transmission Control Protocol, Src Port: 65070, Dst Port: 443, Seq: 11391, Ack: 35855, L

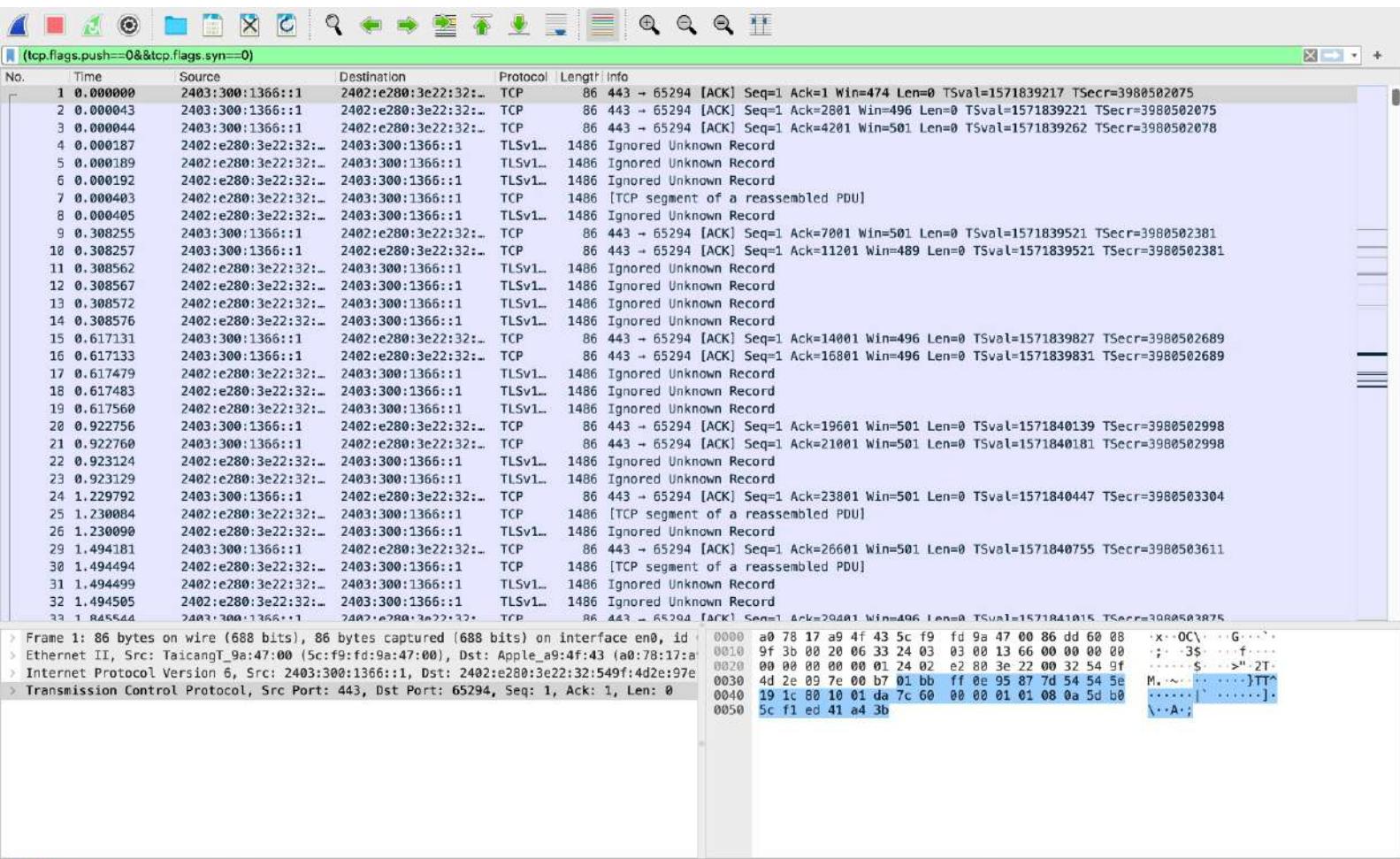
0000 5c f9 fd 9a 47 00 a0 78 17 a9 4f 43 86 dd 60 07 \...6 x ..OC..  
0010 25 32 00 20 06 40 24 02 e2 80 3e 22 00 32 54 9f %2-@\$->"2T-  
0020 4d 2e 09 7e 00 b7 20 01 48 60 48 60 00 00 00 00 M..~ H' H'...  
0030 00 00 00 00 88 44 fe 2e 01 bb 65 de 5d 79 80 d2 .....D.. e ly..  
0040 73 33 80 10 08 00 a7 a6 00 00 01 01 08 0a d7 bf s3.....  
0050 d7 1e 4e a2 e8 6e ..N..0

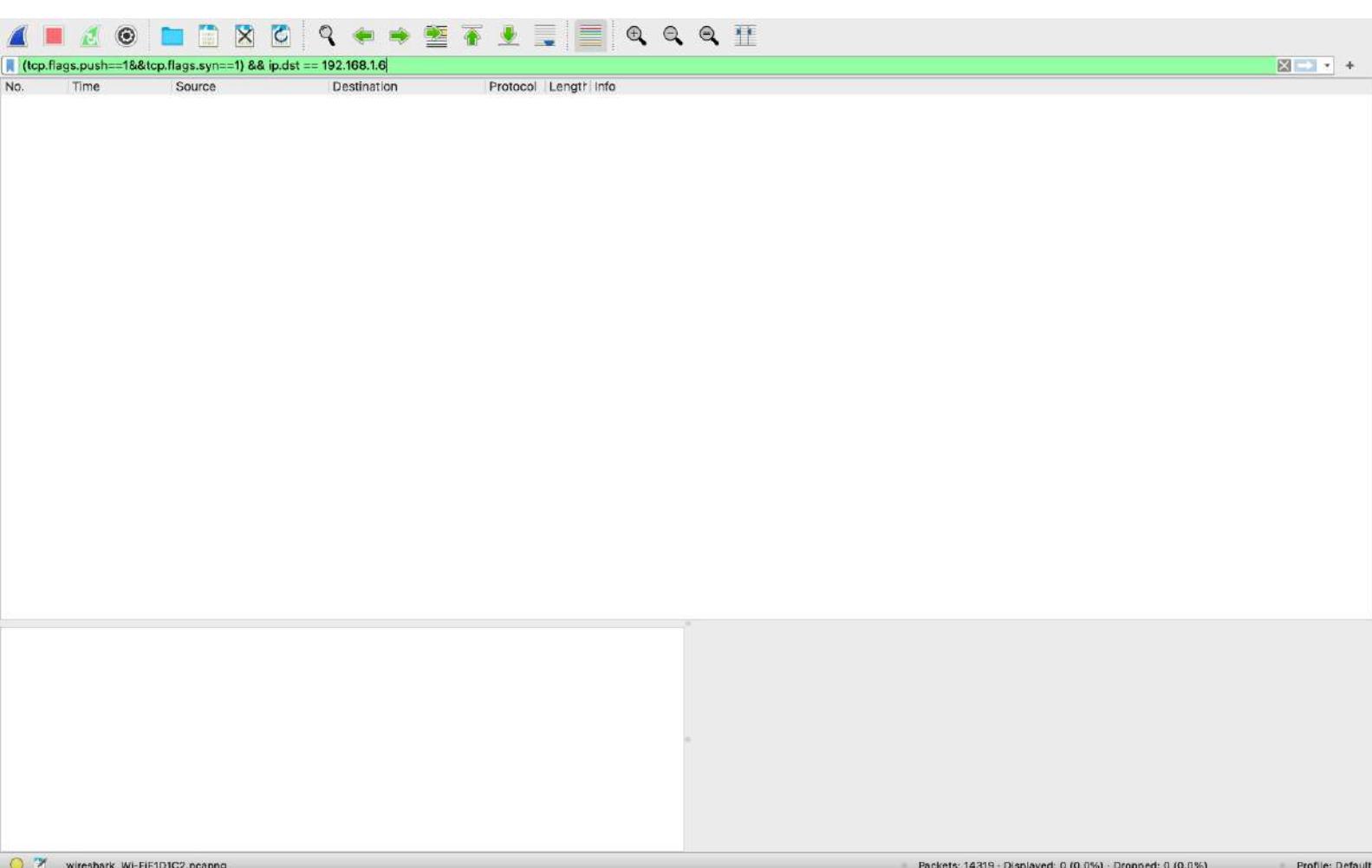
Transmission Control Protocol (tcp), 32 bytes Packets: 14319 - Displayed: 11240 (78.5%) - Dropped: 0 (0.0%) Profile: Default

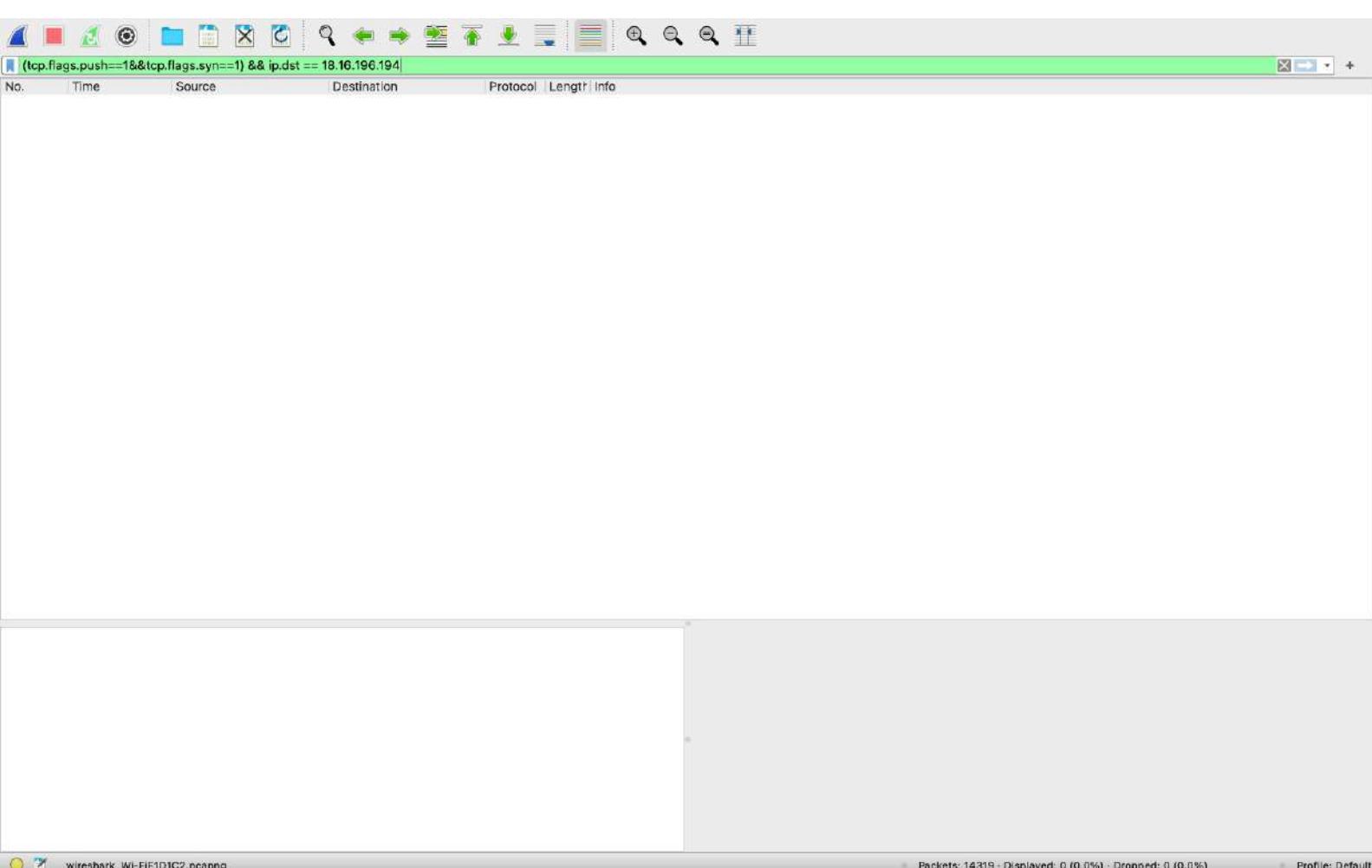
tcp.flags.push==1 && ip.dst == 192.168.1.6										
No.	Time	Source	Destination	Protocol	Length	Info				
685	10.497317	13.127.122.28	192.168.1.6	TCP	1466	443 -> 50290 [PSH, ACK] Seq=1401 Ack=518 Win=62080 Len=1400 TSval=3757944370 TSecr=3243578304 [TCP :				
686	10.497318	13.127.122.28	192.168.1.6	TLSv1..	1007	Application Data, Application Data, Application Data, Application Data				
700	10.512291	13.127.122.28	192.168.1.6	TLSv1..	127	Application Data				
713	10.523673	13.127.122.28	192.168.1.6	TLSv1..	101	Application Data				
714	10.523674	13.127.122.28	192.168.1.6	TLSv1..	97	Application Data				
722	10.527616	13.127.122.28	192.168.1.6	TLSv1..	206	Application Data				
723	10.527616	13.127.122.28	192.168.1.6	TLSv1..	646	Application Data				
734	10.537284	35.154.111.35	192.168.1.6	TCP	1466	443 -> 50291 [PSH, ACK] Seq=1401 Ack=518 Win=62208 Len=1400 TSval=2193114363 TSecr=2408307259 [TCP :				
735	10.537285	35.154.111.35	192.168.1.6	TLSv1..	440	Application Data				
746	10.563607	35.154.111.35	192.168.1.6	TLSv1..	107	Application Data				
747	10.563607	35.154.111.35	192.168.1.6	TLSv1..	92	Application Data				
749	10.569085	35.154.111.35	192.168.1.6	TLSv1..	417	Application Data				
750	10.569086	35.154.111.35	192.168.1.6	TLSv1..	301	Application Data				
751	10.569086	35.154.111.35	192.168.1.6	TLSv1..	351	Application Data				
752	10.569087	35.154.111.35	192.168.1.6	TLSv1..	455	Application Data				
753	10.569087	13.127.122.28	192.168.1.6	TLSv1..	109	Application Data				
755	10.569088	13.127.122.28	192.168.1.6	TLSv1..	655	Application Data				
758	10.570268	35.154.111.35	192.168.1.6	TLSv1..	420	Application Data				
965	11.829630	17.57.145.120	192.168.1.6	TLSv1..	426	Application Data				
3418	12.283602	44.215.134.47	192.168.1.6	TCP	1466	443 -> 50292 [PSH, ACK] Seq=1401 Ack=518 Win=62080 Len=1400 TSval=1846243745 TSecr=449379934 [TCP :				
3420	12.283604	44.215.134.47	192.168.1.6	TLSv1..	1466	Certificate				
3421	12.283605	44.215.134.47	192.168.1.6	TLSv1..	484	Certificate Status, Server Key Exchange, Server Hello Done				
3467	12.384515	52.208.123.107	192.168.1.6	TLSv1..	189	Server Key Exchange, Server Hello Done				
5632	12.513818	18.67.196.194	192.168.1.6	HTTP	537	[TCP Previous segment not captured] Continuation				
5637	12.516080	18.239.142.56	192.168.1.6	TCP	1466	443 -> 50295 [PSH, ACK] Seq=4201 Ack=518 Win=67072 Len=1400 TSval=2093933998 TSecr=3111554575 [TCP :				
5638	12.516081	18.239.142.56	192.168.1.6	TLSv1..	809	Application Data, Application Data, Application Data				
5895	12.535515	18.239.142.56	192.168.1.6	TLSv1..	212	Application Data				
5896	12.535516	18.67.196.194	192.168.1.6	TCP	470	[TCP Retransmission] 80 -> 50294 [PSH, ACK] Seq=1 Ack=373 Win=67072 Len=404 TSval=3118797777 TSecr=				
5897	12.535516	18.239.142.56	192.168.1.6	TLSv1..	128	Application Data				
6065	12.538884	18.239.142.56	192.168.1.6	TLSv1..	97	Application Data				
6066	12.538884	44.215.134.47	192.168.1.6	TLSv1..	117	Change Cipher Spec, Encrypted Handshake Message				
> Frame 3467: 189 bytes on wire (1512 bits), 189 bytes captured (1512 bits) on interface e1										
> Ethernet II, Src: TaicangT_9a:47:00 (5c:f9:fd:9a:47:00), Dst: Apple_a9:4f:43 (a0:78:17:a)										
> Internet Protocol Version 4, Src: 52.208.123.107, Dst: 192.168.1.6										
> Transmission Control Protocol, Src Port: 443, Dst Port: 50293, Seq: 5601, Ack: 518, Len: 1400										
> [2 Reassembled TCP Segments (338 bytes): #3466(224), #3467(114)]										
> Transport Layer Security										
> Transport Layer Security										
0000 a0 78 17 a9 4f 43 5c f9 fd 9a 47 00 08 00 45 00 x-OC\ ..G..E..										
0010 00 af ec a2 40 00 f5 06 26 bc 34 d0 7b 6b c0 a8 ..@. & 4-{k..										
0020 01 06 01 bb 25 75 21 ea ca ca 6d 29 21 d4 80 18 ..u!..m) ..Z										
0030 00 6e 16 a5 00 00 01 01 08 0a e2 d5 78 13 7f 5a ..n...` ..#..										
0040 78 dc 6a 3e 64 c9 58 e6 c5 3c 4d 0d 4c 27 22 ef x-j-d-X ..N-L''..										
0050 75 58 ab db ab 5c 1d 8e 72 f9 80 la 23 1b uX-\` ..D..										
0060 5d 08 83 4c a1 01 99 ce 10 85 06 44 e5 c5 f1 fa ]-N ..` ..8..										
0070 82 67 63 86 89 2f aa 8e a3 d1 ee 96 a8 38 88 cc ..g.. / ..H..										
0080 2d 65 a5 64 0d 48 75 5b 2c 2f 90 6f fd 45 d6 ae -e-d Hu[ ..o-E..										
0090 a4 7f 8b 03 c1 40 b3 81 91 8d ba 10 3d cc 5b 26 ....@. =-[S..										
00a0 3c eb 80 11 ce dd e6 07 7a c6 ad 16 b6 c8 2c 61 <- z ..,a										
00b0 f5 09 18 53 16 03 03 00 04 0e 00 00 00 00 S.....										
Frame (189 bytes)						Reassembled TCP (338 bytes)				

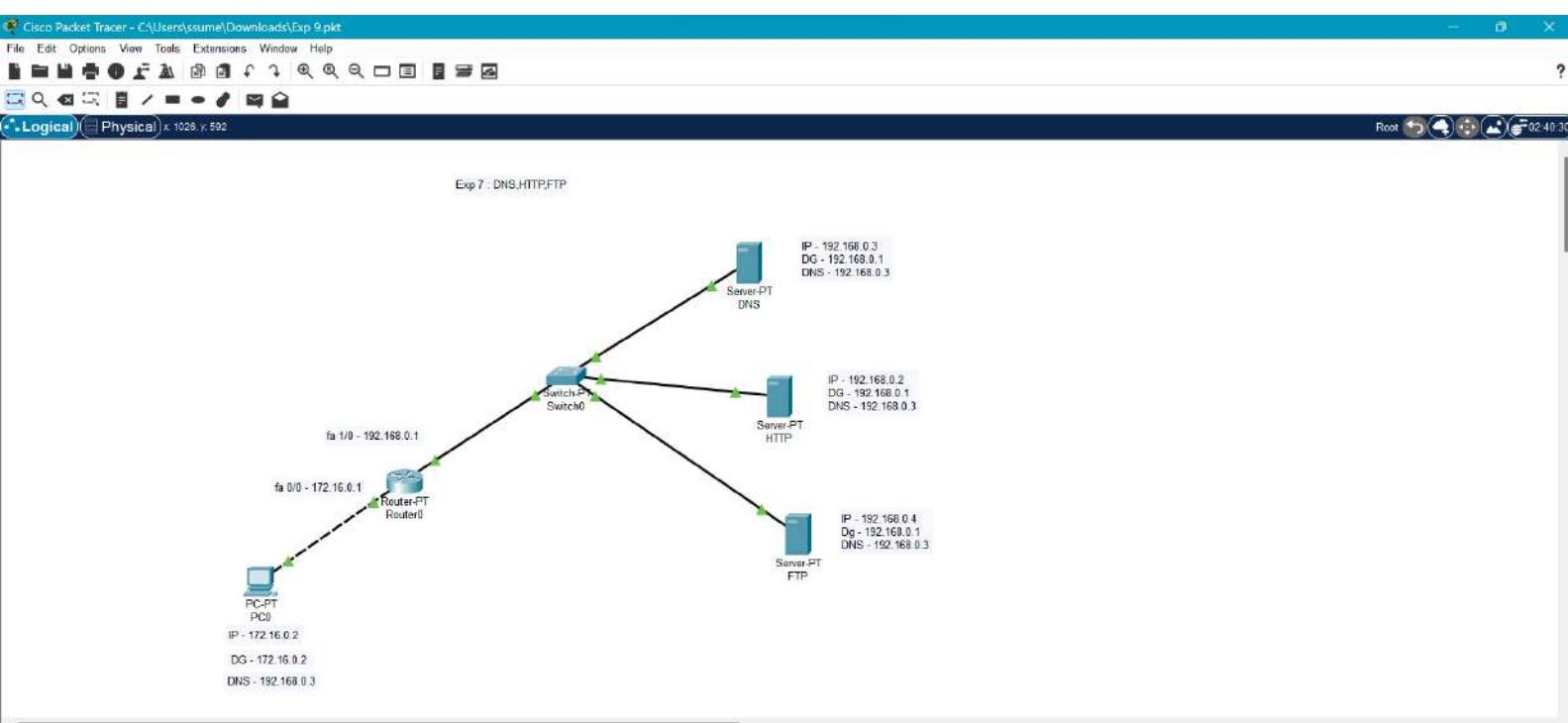












```
C:\>ftp 192.168.0.4
Trying to connect...192.168.0.4
Connected to 192.168.0.4
220- Welcome to PT Ftp server
Username:password
331- Username ok, need password
Password:
230- Logged in
(pассив mode On)
ftp>dir
Listing /ftp directory from 192.168.0.4:
0 : Nigga.txt                                22
1 : asa642-k9-bin                             5591684
2 : ASA-642-K9-128MB-128-15.T1.bin          5591684
3 : c1841-adviserouteervicesk9-mz.124-15.T1.bin 335517668
4 : c1841-ipbase-mz.123-14.T7.bin            136320392
5 : c1841-ipbasek9-mz.124-12.bin              16595160
6 : c1500-universalk9-mz.SPA.155-3.M4a.bin    335517668
7 : c2600-adviserouteicesk9-mz.124-15.T1.bin  335517668
8 : c2600-ipbasek9-mz.124-8.bin               5571584
9 : c2600mm-adviserouteicesk9-mz.124-15.T1.bin 13165700
10 : c2800mm-adviserouteicesk9-mz.124-15.T1.bin 50538004
11 : c2800nm-adviserouteicesk9-mz.151-4.M4.bin  335517668
12 : c2800nm-ipbase-mz.123-14.T7.bin          5571584
13 : c2800nm-ipbasek9-mz.124-8.bin             15522644
14 : c2900-universalk9-mz.SPA.155-3.M4a.bin    335517668
15 : c2950-16g4l2-mz.121-22.ZA4.bin           5058048
16 : c2950-16g4l2-mz.121-22.ZA6.bin           3117390
17 : c2960-1mbase-mz.122-20.ZX.bin            441448
18 : c2960-unibase-mz.122-20.ZE1.bin          4497455
19 : c2960-1mbase-mz.122-20.ZE1.bin           1609455
20 : c3560-adviserouteicesk9-mz.123-17.ZE1.bin 5662192
21 : c3560-adviserouteicesk9-mz.122-46.ZE1.bin 10713279
22 : c800-universalk9-mz.SPA.152-4.M4.bin     335517668
23 : c800-universalk9-mz.SPA.154-3.KKA.bin    53028236
24 : cat3k_caa-universalk9.16.03.02.SPA.bin   5051532949
25 : cgr1000-universalk9-mz.SPA.154-2.CG     156497552
26 : cgr1000-universalk9-mz.SPA.156-3.CG     104930330
27 : ir800-universalk9-bundle.SPA.156-3.M.bin 160968968
28 : ir800-universalk9-mz.SPA.155-3.M       61750062
29 : ir800-universalk9-mz.SPA.156-3.M       63773767
30 : ir800_yocto-1.7.2.tar                  2877440
31 : ir800_yocto-1.7.2_python-2.7.3.tar     6912000
32 : ptl1000-1-mz.122-20.bin                5571584
33 : pt3000-16q4l2-mz.121-22.ZA4.bin        3117390
ftp>put Nigga.txt
Putting file Nigga.txt to 192.168.0.4:
File transfer in progress...
[Transfer complete - 22 bytes]
```

```
PC0 Physical Config Desktop Programming Attributes

Command Prompt

22 bytes copied in 0.075 secs (293 bytes/sec)
ftp>dir

Listing /ftp directory from 192.168.0.4:
0 : Nigga.txt
1 : a8a903-k8.bin
2 : a8a903-k8.bin
3 : c1041-adviserServices.k9-mz.124-15.TI.bin
4 : c1041-adviserServices.k9-mz.124-15.TT.bin
5 : c1041-adviserServices.k9-mz.124-15.ZZ.bin
6 : c1900-universalx9-mz.RPA.155-3.M4s.bin
7 : c2600-adviserServices.k9-mz.124-15.TI.bin
8 : c2600-adviserServices.k9-mz.124-15.ZZ.bin
9 : c2600-1-mx.123-26.bin
10 : c2600nm-adviserServices.k9-mz.151-4.M4.bin
11 : c2600nm-adviserServices.k9-mz.151-4.M4.bin
12 : c2600nm-ipbase-mz.123-14.T7.bin
13 : c2600nm-ipbasek9-mz.124-8.bin
14 : c2900-universalx9-mz.RPA.155-3.M4s.bin
15 : c2930-16g912-mz.121-22.EA4.bin
16 : c2930-16g912-mz.121-22.EA5.bin
17 : c2940-1anbase-mz.122-25.FX.bin
18 : c2940-1anbase-mz.122-25.SEL.bin
19 : c2960-1anbasek9-mz.150-3.SE4.bin
20 : c3560-adviserServices.k9-mz.122-37.SEL.bin
21 : c3560-adviserServices.k9-mz.122-46.SE.bin
22 : c900-universalx9-mz.RPA.152-4.M4.bin
23 : c900-universalx9-mz.RPA.152-4.M4s.bin
24 : c9100-universalx9-mz.RPA.154-2.CS
25 : c9100-universalx9-mz.RPA.154-2.CS
26 : c9100-universalx9-mz.RPA.156-3.CS
27 : ix800-universalx9-humble.RPA.156-3.M.bin
28 : ix800-universalx9-mz.RPA.156-3.M
29 : ix800-universalx9-mz.RPA.156-3.M
30 : ix800_yonto-1.7.2.tar
31 : ix800_yonto-1.7.2_python-2.7.3.tar
32 : pc1000-1-mz.122-25.bin
33 : pt3000-i6q412-mz.121-22.EA4.bin
34 : pt3000-i6q412-mz.121-22.EA4.bin

ftp>delete Nigga.txt

Deleting file Nigga.txt from 192.168.0.4: ftp>
[Deleted file Nigga.txt successfully ]
ftp>put Nigga.txt

Writing file Nigga.txt to 192.168.0.4:
File transfer in progress...

[Transfer complete - 22 bytes]

22 bytes copied in 0.043 secs (511 bytes/sec)
ftp>dir

Listing /ftp directory from 192.168.0.4:
```

```
PC0

Physical Config Desktop Programming Attributes

Command Prompt

Listing /ftp directory from 192.168.0.4:
0 : Mioga.txt
1 : asa842-k8.bin
2 : asse520-k8.bin
3 : c1841-adviservicesk9-mz.124-15.T1.bin
4 : c1841-ipbase-mz.123-14.T7.bin
5 : c1841-ipbasek9-mz.124-12.bin
6 : c1890-universalk9-mz.SPA.155-3.M4a.bin
7 : c2600-adviservicesk9-mz.124-15.T1.bin
8 : c2600-1.mz.123-28.bin
9 : c2600-ipbasek9-mz.124-8.bin
10 : c2800nm-adviservicesk9-mz.124-15.T1.bin
11 : c2800nm-adviservicesk9-mz.151-4.M1.bin
12 : c2800nm-ipbase-mz.123-14.T7.bin
13 : c2800nm-ipbasek9-mz.124-8.bin
14 : c2900-universalk9-mz.SPA.155-3.M4a.bin
15 : c2950-16q412-mz.121-22.EA4.bin
16 : c2950-1tq412-mz.121-22.EA4.bin
17 : c2960-1tbase-mz.122-28.FX.bin
18 : c2960-1tbase-mz.122-28.SE11.bin
19 : c2960-1tbasek9-mz.150-2.JE4.bin
20 : c3560-adviservicesk9-mz.123-37.SB1.bin
21 : c3560-adviservicesk9-mz.124-24.SB1.bin
22 : c800-universalk9-mz.SPA.155-3.M4.bin
23 : c800-universalk9-mz.SPA.155-3.M6a.bin
24 : dat3k_cna-universalk9_16.03.02.SPA.bin
25 : img1000-universalk9-mz.SPA.154-2.CG
26 : img1000-universalk9-mz.SPA.156-3.CG
27 : ix800-universalk9-kbundle.SPA.155-3.M.bin
28 : ix800-universalk9-mz.SPA.155-3.N
29 : ix800-universalk9-mz.SPA.156-3.N
30 : ix800_yocto-1.7.2.tar
31 : ix800_yocto-1.7.2.python-2.7.3.tar
32 : pc1000-1-nx.123-28.bin
33 : pb3000-16q412-mz.121-22.EA4.bin
34 : tftp>

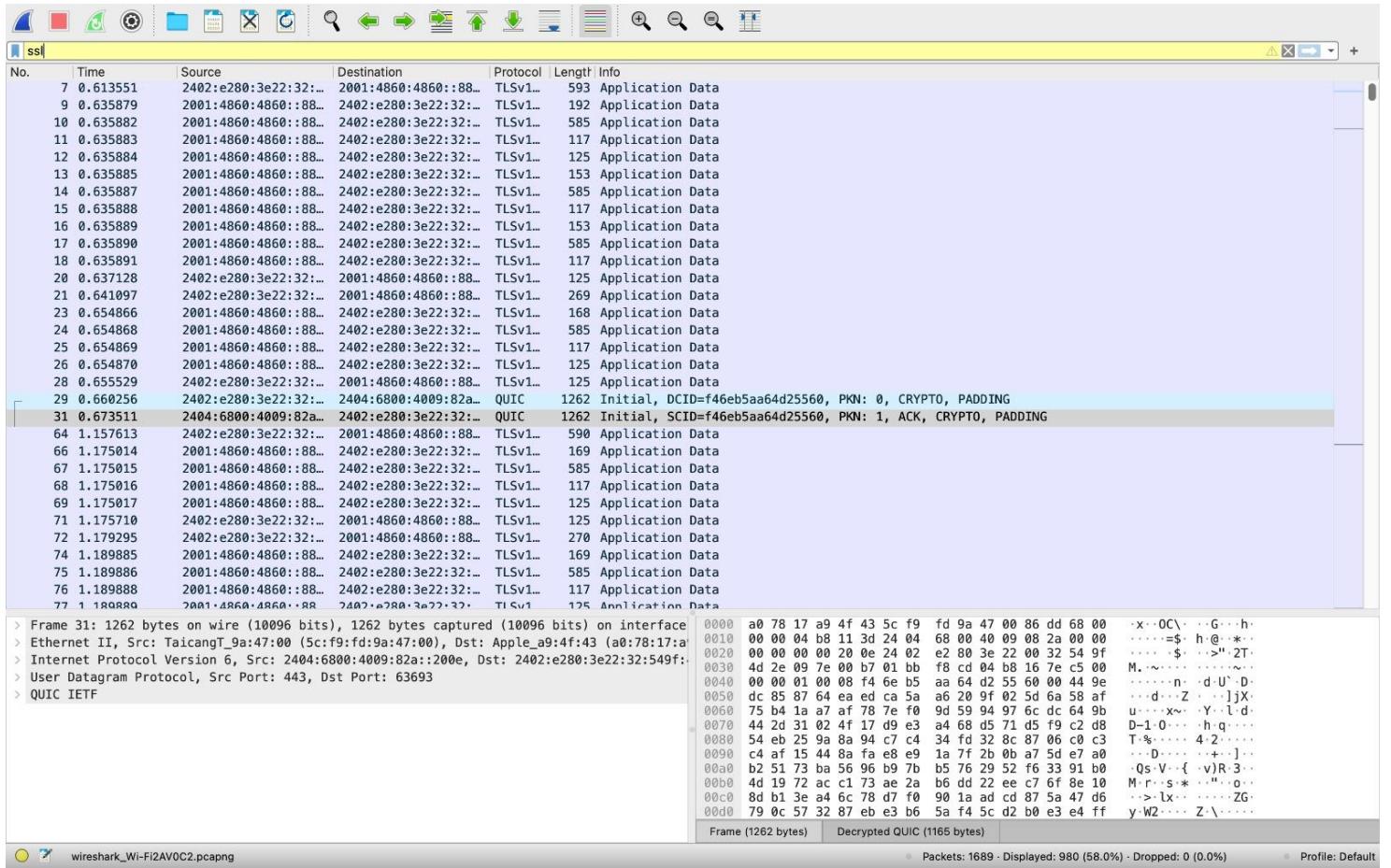
C:\>delete Mioga.txt
C:\>dir

Volume in drive C has no label.
Volume Serial Number is 5E12-4AP3
Directory of C:\

1/1/1970  5:30 PM           26      sampleFile.txt
          26 bytes           1 File(s)
C:\>ftp 192.168.0.4
Trying to connect...192.168.0.4
Connected to 192.168.0.4
220- Welcome to FT Ftp server
Usernameword
331- Username ok, need password
Password:
```

```
PC0
Physical Config Desktop Programming Attributes
Command Prompt
31 : c3560-advisorservicesk9-mz.122-46.SE.bin          10713279
32 : c800-universalk9-mz.SPA.152-4.M9.bin             33591768
33 : c800-universalk9-mz.SPA.154-3.Hea.bin            93029236
34 : cat3k_caa-universalk9.16.03.02.SPA.bin           505533849
35 : c81000-universalk9-mz.SPA.154-2.09               159407552
36 : c81000-universalk9-mz.SPA.156.05                184851138
37 : c81000-universalk9-mz.SPA.156.05                184851138
38 : ir800-universalk9-mz.SPA.156-3.H.bin             10713279
39 : ir800-universalk9-mz.SPA.156-3.H                 61750062
40 : ir800-universalk9-mz.SPA.156-3.H                63753767
41 : ir800_pcotc-1.7.2.taz                           2877440
42 : ir800_pcotc-1.7.2.python-2.7.3.tar             6512000
43 : pt1000-i-mz.122-28.bin                         5571584
44 : pt3000-i6q12-mz.121-22.EA4.bin                  3117390
ftp>
C:\>delete Nigga.txt
C:\>dir
Volume in drive C has no label.
Volume Serial Number is 5E12-4AF3
Directory of C:
1/1/1970   5:30 PM      26      sampleFile.txt
              26 bytes      1 File(s)
C:\>ftp 192.168.0.4
Trying to connect...192.168.0.4
Connected to 192.168.0.4.
220- Welcome to FT Ftp server
Username:password
331- Username ok, need password
Password:
332- Logged in
( passive mode On)
Ftp>get Nigga.txt
Reading file Nigga.txt from 192.168.0.4:
File transfer in progress...
(Transfer complete - 22 bytes)
22 bytes copied in 0.01 secs (2300 bytes/sec)
ftp>
C:\>dir
Volume in drive C has no label.
Volume Serial Number is 5E12-4AF3
Directory of C:
1/1/1970   5:30 PM      22      Nigga.txt
1/1/1970   5:30 PM      26      sampleFile.txt
              48 bytes      2 File(s)
C:\>
```

## Practical 10



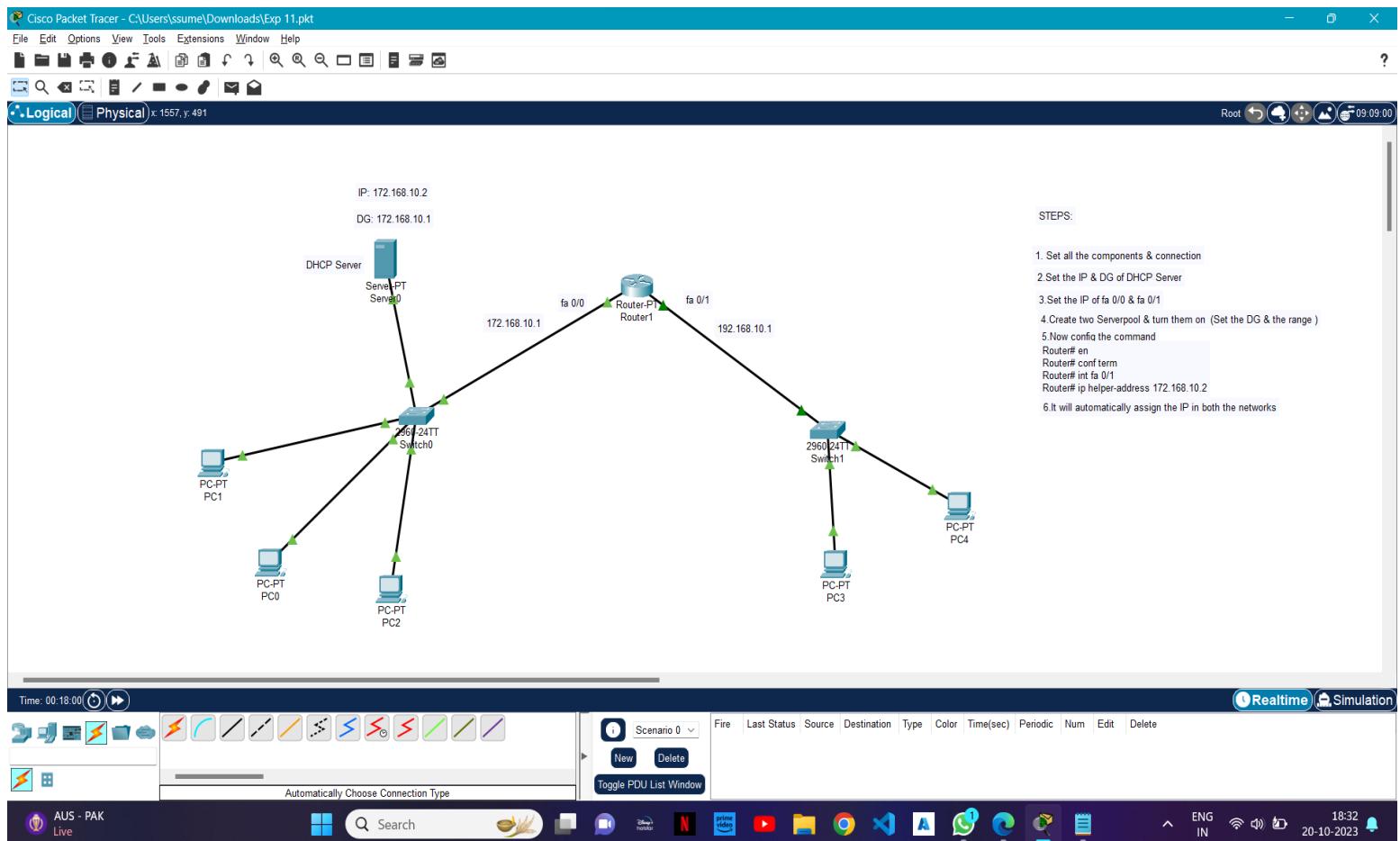
The screenshot shows a Wireshark capture of UDP traffic on interface en0. The packet list pane displays a large number of QUIC IETF frames (labeled as 'Protected Payload (KPO)'). The details pane shows the structure of the captured UDP packets, and the bytes pane shows the raw hex and ASCII data.

No.	Time	Source	Destination	Protocol	Length	Info
59	0.000173			QUIC	125	Protected Payload (KPO), DCID=f46eb5aa64d25560
60	0.086888	2402:e280:3e22:32::	2404:6800:4009:82a::	QUIC	93	Protected Payload (KPO), DCID=f46eb5aa64d25560
61	0.087405	2402:e280:3e22:32::	2404:6800:4009:82a::	QUIC	93	Protected Payload (KPO), DCID=f46eb5aa64d25560
62	0.088785	2402:e280:3e22:32::	2404:6800:4009:82a::	QUIC	93	Protected Payload (KPO), DCID=f46eb5aa64d25560
63	0.090203	2404:6800:4009:82a::	2402:e280:3e22:32::	QUIC	85	Protected Payload (KPO)
930	1.829843	2402:e280:3e22:32::	2404:6800:4009:831::	UDP	1098	55154 -> 443 Len=1036
931	1.830636	2402:e280:3e22:32::	2404:6800:4009:831::	UDP	323	55154 -> 443 Len=261
932	1.845306	2404:6800:4009:831::	2402:e280:3e22:32::	UDP	89	443 -> 55154 Len=27
933	1.875565	2404:6800:4009:831::	2402:e280:3e22:32::	UDP	86	443 -> 55154 Len=24
934	1.875764	2402:e280:3e22:32::	2404:6800:4009:831::	UDP	95	55154 -> 443 Len=33
935	1.918198	2404:6800:4009:831::	2402:e280:3e22:32::	UDP	130	443 -> 55154 Len=68
936	1.918201	2404:6800:4009:831::	2402:e280:3e22:32::	UDP	83	443 -> 55154 Len=21
937	1.918625	2402:e280:3e22:32::	2404:6800:4009:831::	UDP	95	55154 -> 443 Len=33
938	1.918821	2402:e280:3e22:32::	2404:6800:4009:831::	UDP	93	55154 -> 443 Len=31
939	1.919021	2402:e280:3e22:32::	2404:6800:4009:831::	UDP	93	55154 -> 443 Len=31
940	1.928117	2404:6800:4009:831::	2402:e280:3e22:32::	UDP	85	443 -> 55154 Len=23
943	2.949139	2402:e280:3e22:32::	2404:6800:4009:832::	UDP	91	54348 -> 443 Len=29
944	2.988991	2404:6800:4009:832::	2402:e280:3e22:32::	UDP	87	443 -> 54348 Len=25
945	3.056852	2404:6800:4009:832::	2402:e280:3e22:32::	UDP	423	443 -> 54348 Len=361
946	3.056853	2404:6800:4009:832::	2402:e280:3e22:32::	UDP	84	443 -> 54348 Len=22
947	3.057134	2402:e280:3e22:32::	2404:6800:4009:832::	UDP	100	54348 -> 443 Len=38
948	3.078621	2402:e280:3e22:32::	2404:6800:4009:832::	UDP	285	54348 -> 443 Len=23
949	3.088190	2404:6800:4009:832::	2402:e280:3e22:32::	UDP	90	443 -> 54348 Len=28
950	3.116531	2402:e280:3e22:32::	2404:6800:4009:832::	UDP	100	54348 -> 443 Len=38
951	3.303684	2404:6800:4009:832::	2402:e280:3e22:32::	UDP	129	443 -> 54348 Len=67
952	3.303685	2404:6800:4009:832::	2402:e280:3e22:32::	UDP	83	443 -> 54348 Len=21
953	3.304981	2402:e280:3e22:32::	2404:6800:4009:832::	UDP	100	54348 -> 443 Len=38
954	3.304371	2402:e280:3e22:32::	2404:6800:4009:832::	UDP	93	54348 -> 443 Len=31
955	3.307221	2402:e280:3e22:32::	2404:6800:4009:832::	UDP	485	54348 -> 443 Len=423
956	3.307325	2402:e280:3e22:32::	2404:6800:4009:832::	UDP	129	54348 -> 443 Len=67
957	3.316387	2404:6800:4009:832::	2402:e280:3e22:32::	UDP	90	443 -> 54348 Len=28

> Frame 63: 85 bytes on wire (680 bits), 85 bytes captured (680 bits) on interface en0, id 0000 a0 78 17 a9 4f fd 9a 47 00 86 dd 68 00 .x-OC\ ..G..h.  
> Ethernet II, Src: TaicangT\_9a:47:00 (5c:f9:4a:97:00), Dst: Apple\_a9:4f:43 (a0:78:17:a9)  
> Internet Protocol Version 6, Src: 2404:6800:4009:82a::200e, Dst: 2402:e280:3e22:32:549f:  
> User Datagram Protocol, Src Port: 443, Dst Port: 63693  
> QUIC IETF

No.	Time	Source	Destination	Protocol	Length	Info
92	1.218544	2402:e280:3e22:32:..	2600:140f:4:19f::3..	TCP	86	65165 - 443 [ACK] Seq=1 Ack=1 Win=131584 Len=0 TSval=1397441960 TSecr=3641294728
93	1.218546	2402:e280:3e22:32:..	2600:140f:4:19f::3..	TLSv1..	603	Client Hello
94	1.222176	2001:4860:4860:88:..	2402:e280:3e22:32:..	TCP	86	443 - 65070 [ACK] Seq=5058 Ack=1574 Win=1045 Len=0 TSval=1317680914 TSecr=3618055593
95	1.228793	2600:140f:4:19f::3..	2402:e280:3e22:32:..	TCP	86	443 - 65165 [ACK] Seq=1 Ack=518 Win=64128 Len=0 TSval=3641294740 TSecr=1397441961
96	1.230016	2600:140f:4:19f::3..	2402:e280:3e22:32:..	TLSv1..	1486	Server Hello, Change Cipher Spec, Application Data
97	1.230018	2600:140f:4:19f::3..	2402:e280:3e22:32:..	TCP	1486	443 - 65165 [PSH, ACK] Seq=1401 Ack=518 Win=64128 Len=1400 TSval=3641294742 TSecr=1397441961 [TCP : 1486]
98	1.230019	2600:140f:4:19f::3..	2402:e280:3e22:32:..	TLSv1..	802	Application Data, Application Data, Application Data
99	1.232116	2402:e280:3e22:32:..	2600:140f:4:19f::3..	TCP	86	65165 - 443 [ACK] Seq=518 Ack=3517 Win=131072 Len=0 TSval=1397441974 TSecr=3641294742
100	1.253652	2402:e280:3e22:32:..	2600:140f:4:19f::3..	TLSv1..	166	Change Cipher Spec, Application Data
101	1.265224	2600:140f:4:19f::3..	2402:e280:3e22:32:..	TCP	86	443 - 65165 [ACK] Seq=3517 Ack=598 Win=64128 Len=0 TSval=3641294776 TSecr=1397441996
102	1.265226	2600:140f:4:19f::3..	2402:e280:3e22:32:..	TLSv1..	357	Application Data
103	1.265228	2600:140f:4:19f::3..	2402:e280:3e22:32:..	TLSv1..	357	Application Data
104	1.265581	2402:e280:3e22:32:..	2600:140f:4:19f::3..	TLSv1..	368	Application Data
105	1.277486	2600:140f:4:19f::3..	2402:e280:3e22:32:..	TCP	86	443 - 65165 [ACK] Seq=4059 Ack=880 Win=64128 Len=0 TSval=3641294788 TSecr=1397442008
106	1.277489	2600:140f:4:19f::3..	2402:e280:3e22:32:..	TLSv1..	147	Application Data
107	1.277491	2600:140f:4:19f::3..	2402:e280:3e22:32:..	TLSv1..	117	Application Data
108	1.277786	2402:e280:3e22:32:..	2600:140f:4:19f::3..	TCP	86	65165 - 443 [ACK] Seq=880 Ack=4151 Win=130944 Len=0 TSval=1397442020 TSecr=3641294789
109	1.277939	2402:e280:3e22:32:..	2600:140f:4:19f::3..	TLSv1..	117	Application Data
110	1.279616	2600:140f:4:19f::3..	2402:e280:3e22:32:..	TLSv1..	343	Application Data
111	1.279720	2402:e280:3e22:32:..	2600:140f:4:19f::3..	TCP	86	65165 - 443 [ACK] Seq=911 Ack=4408 Win=130752 Len=0 TSval=1397442022 TSecr=3641294791
112	1.281008	2600:140f:4:19f::3..	2402:e280:3e22:32:..	TCP	1486	443 - 65165 [ACK] Seq=4408 Ack=880 Win=64128 Len=1400 TSval=3641294791 TSecr=1397442008 [TCP segment of a多重连接]
113	1.281010	2600:140f:4:19f::3..	2402:e280:3e22:32:..	TCP	1486	443 - 65165 [ACK] Seq=5808 Ack=884 Win=64128 Len=1400 TSval=3641294791 TSecr=1397442008 [TCP segment of a多重连接]
114	1.281011	2600:140f:4:19f::3..	2402:e280:3e22:32:..	TCP	1486	443 - 65165 [PSH, ACK] Seq=7208 Ack=880 Win=64128 Len=1400 TSval=3641294791 TSecr=1397442008 [TCP : 1486]
115	1.281016	2600:140f:4:19f::3..	2402:e280:3e22:32:..	TCP	1486	443 - 65165 [ACK] Seq=8608 Ack=880 Win=64128 Len=1400 TSval=3641294791 TSecr=1397442008 [TCP segment of a多重连接]
116	1.281018	2600:140f:4:19f::3..	2402:e280:3e22:32:..	TCP	1486	443 - 65165 [ACK] Seq=10008 Ack=880 Win=64128 Len=1400 TSval=3641294791 TSecr=1397442008 [TCP segment of a多重连接]
117	1.281019	2600:140f:4:19f::3..	2402:e280:3e22:32:..	TCP	1486	443 - 65165 [PSH, ACK] Seq=11408 Ack=880 Win=64128 Len=1400 TSval=3641294791 TSecr=1397442008 [TCP : 1486]
118	1.281021	2600:140f:4:19f::3..	2402:e280:3e22:32:..	TCP	1486	443 - 65165 [ACK] Seq=12808 Ack=880 Win=64128 Len=1400 TSval=3641294791 TSecr=1397442008 [TCP segment of a多重连接]
119	1.281023	2600:140f:4:19f::3..	2402:e280:3e22:32:..	TLSv1..	485	Application Data
120	1.281336	2402:e280:3e22:32:..	2600:140f:4:19f::3..	TCP	86	65165 - 443 [ACK] Seq=911 Ack=14607 Win=131072 Len=0 TSval=1397442024 TSecr=3641294791
121	1.288663	2600:140f:4:19f::3..	2402:e280:3e22:32:..	TCP	86	443 - 65165 [ACK] Seq=14607 Ack=911 Win=64128 Len=0 TSval=3641294800 TSecr=1397442020
122	1.321153	2402:e280:3e22:32:..	2001:4860:4860:88:..	TLSv1..	591	Application Data

# Practical 11



## Practical 13

```
import java.net.*;
import java.util.*;

public class IPDemo {
    public static void main(String[] args) {
        String host;
        Scanner ch = new Scanner(System.in);
        System.out.print("1. Enter Host Name\n2. Enter IP address\nChoice=");
        int choice = ch.nextInt();
        if (choice == 1) {
            Scanner input = new Scanner(System.in);
            System.out.print("\nEnter host name: ");
            host = input.nextLine();
            try {
                InetAddress address = InetAddress.getByName(host);
                System.out.println("IP address: " + address.getHostAddress());
                System.out.println("Host name: " + address.getHostName());
                System.out.println("Host name and IP address: " + address.toString());
            } catch (UnknownHostException ex) {
                System.out.println("Could not find " + host);
            }
        } else {
            Scanner input = new Scanner(System.in);
            System.out.print("\nEnter IP address: ");
            host = input.nextLine();
            try {
                InetAddress address = InetAddress.getByName(host);
                System.out.println("Host name: " + address.getHostName());
                System.out.println("IP address: " + address.getHostAddress());
            }
        }
    }
}
```

```
        System.out.println("Host name and IP address: " + address.toString());  
    } catch (UnknownHostException ex) {  
        System.out.println("Could not find " + host);  
    }  
}  
}
```

OUTPUT:

The screenshot shows a Windows Command Prompt window titled "Command Prompt". The command history and output are as follows:

```
C:\Users\ssume>cd..  
C:\Users>cd..  
C:\>cd Codes\Assignment_n0_12  
C:\Codes\Assignment_n0_12>javac IPDemo.java  
C:\Codes\Assignment_n0_12>java IPDemo  
1. Enter Host Name  
2. Enter IP address  
Choice=1  
  
Enter host name: www.google.co.in  
IP address: 172.217.167.163  
Host name: www.google.co.in  
Host name and IP address: www.google.co.in/172.217.167.163  
  
C:\Codes\Assignment_n0_12>java IPDemo  
1. Enter Host Name  
2. Enter IP address  
Choice=2  
  
Enter IP address: 172.217.167.163  
Host name: bom12s01-in-f3.1e100.net  
IP address: 172.217.167.163  
Host name and IP address: bom12s01-in-f3.1e100.net/172.217.167.163  
  
C:\Codes\Assignment_n0_12>
```