

Tyler Frank
Zaf455
CS 6543
Program 2 Documentation

Trial 1.

No.	Time	Source	Destination	Protocol	Length	Info
8652	36.416877193	10.100.230.60	10.100.240.203	TCP	74	50872 → 5571 [SYN] Seq=0 Win=1152 Len=0 MSS=1460 SACK_PERM=1 TSval=3180742908 TSecr=0 WS=1
8653	36.417261785	10.100.240.203	10.100.230.60	TCP	74	5571 → 50872 [SYN, ACK] Seq=0 Ack=1 Win=28960 Len=0 MSS=1460 SACK_PERM=1 TSval=12982763 TSecr=3180742908
8654	36.417317138	10.100.230.60	10.100.240.203	TCP	66	50872 → 5571 [ACK] Seq=1 Ack=1 Win=1152 Len=0 TSval=3180742909 TSecr=12982763
8655	36.417428887	10.100.230.60	10.100.240.203	HTTP	184	GET /big.txt HTTP/1.1
8658	36.417715772	10.100.240.203	10.100.230.60	TCP	66	5571 → 50872 [ACK] Seq=1 Ack=119 Win=29056 Len=0 TSval=12982763 TSecr=3180742909
8662	36.418889266	10.100.240.203	10.100.230.60	HTTP	128	HTTP/1.1 200 OK
8663	36.418983403	10.100.230.60	10.100.240.203	TCP	66	50872 → 5571 [ACK] Seq=119 Ack=63 Win=1090 Len=0 TSval=3180742910 TSecr=12982763
8665	36.419087676	10.100.240.203	10.100.230.60	HTTP	530	Continuation
8666	36.419246671	10.100.240.203	10.100.230.60	HTTP	642	Continuation
8676	36.432336182	10.100.240.203	10.100.230.60	TCP	642	[TCP Retransmission] 5571 → 50872 [ACK] Seq=527 Ack=119 Win=29056 Len=576 TSval=12982767 TSecr=3180742910
8693	36.461021099	10.100.230.60	10.100.240.203	TCP	78	50872 → 5571 [ACK] Seq=119 Ack=1103 Win=50 Len=0 TSval=3180742953 TSecr=12982763 SLE=527 SRE=1103
8733	36.668322919	10.100.240.203	10.100.230.60	HTTP	116	[TCP Window Full] Continuation
8734	36.668354638	10.100.230.60	10.100.240.203	TCP	66	[TCP ZeroWindow] 50872 → 5571 [ACK] Seq=119 Ack=1153 Win=0 Len=0 TSval=3180743160 TSecr=12982826
8755	36.876398175	10.100.240.203	10.100.230.60	TCP	66	[TCP Keep-Alive] 5571 → 50872 [ACK] Seq=1152 Ack=119 Win=29056 Len=0 TSval=12982878 TSecr=3180743160
8756	36.876427861	10.100.230.60	10.100.240.203	TCP	66	[TCP ZeroWindow] 50872 → 5571 [ACK] Seq=119 Ack=1153 Win=0 Len=0 TSval=3180743368 TSecr=12982826
8832	37.292393789	10.100.240.203	10.100.230.60	TCP	66	[TCP Keep-Alive] 5571 → 50872 [ACK] Seq=1152 Ack=119 Win=29056 Len=0 TSval=12982882 TSecr=3180743368
8878	38.124374887	10.100.240.203	10.100.230.60	TCP	66	[TCP Keep-Alive] 5571 → 50872 [ACK] Seq=1152 Ack=119 Win=29056 Len=0 TSval=12983190 TSecr=3180743368
8879	38.124481166	10.100.230.60	10.100.240.203	TCP	66	[TCP ZeroWindow] 50872 → 5571 [ACK] Seq=119 Ack=1153 Win=0 Len=0 TSval=3180744616 TSecr=12982826
9233	39.792373879	10.100.240.203	10.100.230.60	TCP	66	[TCP Keep-Alive] 5571 → 50872 [ACK] Seq=1152 Ack=119 Win=29056 Len=0 TSval=12983607 TSecr=3180744616
9234	39.792484790	10.100.230.60	10.100.240.203	TCP	66	[TCP ZeroWindow] 50872 → 5571 [ACK] Seq=119 Ack=1153 Win=0 Len=0 TSval=3180746284 TSecr=12982826
9811	43.124439206	10.100.240.203	10.100.230.60	TCP	66	[TCP Keep-Alive] 5571 → 50872 [ACK] Seq=1152 Ack=119 Win=29056 Len=0 TSval=12984440 TSecr=3180746284
9812	43.124463368	10.100.230.60	10.100.240.203	TCP	66	[TCP ZeroWindow] 50872 → 5571 [ACK] Seq=119 Ack=1153 Win=0 Len=0 TSval=3180749615 TSecr=12982826
10144	45.429106129	10.100.230.60	10.100.240.203	TCP	66	[TCP Window Update] 50872 → 5571 [ACK] Seq=119 Ack=1153 Win=1152 Len=0 TSval=3180751920 TSecr=12982826
10145	45.429468448	10.100.240.203	10.100.230.60	HTTP	428	Continuation
10149	45.473051403	10.100.230.60	10.100.240.203	TCP	66	50872 → 5571 [ACK] Seq=119 Ack=1516 Win=789 Len=0 TSval=3180751964 TSecr=12985016
11007	49.434513681	10.100.230.60	10.100.240.203	TCP	66	50872 → 5571 [FIN, ACK] Seq=119 Ack=1516 Win=789 Len=0 TSval=3180755925 TSecr=12985016
11008	49.434866006	10.100.240.203	10.100.230.60	TCP	66	5571 → 50872 [ACK] Seq=1516 Ack=120 Win=29056 Len=0 TSval=12986017 TSecr=3180755925

Figure 1. Wireshark Output.


```
install@cs65438: ~/Desktop/Assignment_2
File Edit View Search Terminal Help

install@cs65438:~/Desktop/Assignment_2$ clear

install@cs65438:~/Desktop/Assignment_2$ python3 Wclient.py 10.100.240.203 5575 big.txt
-----The client is ready to send-----
('10.100.230.60', 34198)-->('10.100.240.203', 5575)
HTTP/1.1 200 OK
Date: 2/13/2022
Server: RoadRunnerServer

This is a really big file...
This is a really big file...
This is a really big file...
This is a really big file...
This is a really big file...
This is a really big file...
This is a really big file...
This is a really big file...
This is a really big file...
```

Figure 3. WebClient output.

Trial 2.

The figure consists of three overlapping screenshots. The top-left screenshot is a Wireshark packet capture showing a series of TCP and HTTP packets between 10.100.230.60 and 10.100.240.203. The top-right screenshot is a terminal window titled 'install@cs65438: ~/Desktop/Assignment_2' showing the output of the web server, which repeatedly prints 'This is a really big file...'. The bottom screenshot is a terminal window titled 'install@cs65438: ~/Desktop/Assignment_2' showing the output of the web client, which prints the same message as the server and includes additional details like 'HTTP/1.1 200 OK', 'Date: 2/13/2022', and 'Server: RoadRunnerServer'.

Figure 4. Output for Wireshark, the Web Server, and the Web Client.

Trial 3.

The figure displays three panels related to a network experiment. The top panel is a Wireshark packet capture for the filter 'tcp.port == 5576'. It shows a series of packets between 10.100.230.60 and 10.100.240.203, including SYN, ACK, GET, and HTTP responses. The bottom-left panel is a terminal window for the web server (WServer.py) showing it is listening on port 5576 and receiving a GET request for /big.txt. The bottom-right panel is a terminal window for the web client (Wclient.py) showing it is sending a GET request to the server and receiving a response.

No.	Time	Source	Destination	Protocol	Length	Info
2809	-32.792096722	10.100.230.60	10.100.240.203	TCP	74	58042 → 5576 [SYN] Seq=0 Win=1152 Len=0 MSS=1460 SACK_PERM=1 TSval=3422473830 TSecr=0 WS=1
2810	-32.791677167	10.100.240.203	10.100.230.60	TCP	74	5576 → 58042 [SYN, ACK] Seq=0 Ack=1 Win=28960 Len=0 MSS=1460 SACK_PERM=1 TSval=8620567 TSecr=3422473830 WS=128
2811	-32.791619009	10.100.230.60	10.100.240.203	TCP	66	58042 → 5576 [ACK] Seq=1 Ack=1 Win=1152 Len=0 TSval=3422473831 TSecr=8620567
2812	-32.791535197	10.100.230.60	10.100.240.203	HTTP	184	GET /big.txt HTTP/1.1
2813	-32.791244052	10.100.240.203	10.100.230.60	TCP	66	5576 → 58042 [ACK] Seq=1 Ack=119 Win=29056 Len=0 TSval=8620567 TSecr=3422473831
2816	-32.789982938	10.100.240.203	10.100.230.60	HTTP	128	HTTP/1.1 200 OK
2817	-32.789975046	10.100.230.60	10.100.240.203	TCP	66	58042 → 5576 [ACK] Seq=119 Ack=63 Win=1090 Len=0 TSval=3422473832 TSecr=8620567
2818	-32.789803298	10.100.240.203	10.100.230.60	HTTP	385	Continuation
2819	-32.789540284	10.100.240.203	10.100.230.60	HTTP	642	Continuation
2822	-32.781200304	10.100.230.60	10.100.240.203	TCP	66	[TCP Retransmission] 5576 → 58042 [ACK] Seq=382 Ack=119 Win=29056 Len=0 TSval=8620570 TSecr=3422473832
2835	-32.748105310	10.100.230.60	10.100.240.203	TCP	78	58042 → 5576 [ACK] Seq=119 Ack=958 Win=195 Len=0 TSval=3422473874 TSecr=8620567 SLE=382 SRE=958
2836	-32.741103532	10.100.240.203	10.100.230.60	HTTP	261	[TCP Window Full] Continuation
2884	-32.541072989	10.100.230.60	10.100.240.203	TCP	66	[TCP ZeroWindow] 58042 → 5576 [ACK] Seq=119 Ack=1153 Win=0 Len=0 TSval=3422474081 TSecr=8620630
2909	-32.333241071	10.100.240.203	10.100.230.60	TCP	66	[TCP Keep-Alive] 5576 → 58042 [ACK] Seq=1152 Ack=119 Win=29056 Len=0 TSval=8620682 TSecr=3422474081
2910	-32.333214297	10.100.230.60	10.100.240.203	TCP	66	[TCP ZeroWindow] 58042 → 5576 [ACK] Seq=119 Ack=1153 Win=0 Len=0 TSval=3422474289 TSecr=8620630
3111	-31.085163989	10.100.240.203	10.100.230.60	TCP	66	[TCP Keep-Alive] 5576 → 58042 [ACK] Seq=1152 Ack=119 Win=29056 Len=0 TSval=8620994 TSecr=3422474289
3112	-31.085137084	10.100.230.60	10.100.240.203	TCP	66	[TCP ZeroWindow] 58042 → 5576 [ACK] Seq=119 Ack=1153 Win=0 Len=0 TSval=3422475537 TSecr=8620630
4549	-23.778769358	10.100.230.60	10.100.240.203	TCP	66	[TCP Window Update] 58042 → 5576 [ACK] Seq=119 Ack=1153 Win=1152 Len=0 TSval=3422482843 TSecr=8620630
4550	-23.778343963	10.100.240.203	10.100.230.60	HTTP	428	Continuation
4552	-23.736085197	10.100.230.60	10.100.240.203	TCP	66	58042 → 5576 [ACK] Seq=119 Ack=1516 Win=789 Len=0 TSval=3422482885 TSecr=8622820
5981	-19.774656250	10.100.230.60	10.100.240.203	TCP	66	58042 → 5576 [FIN, ACK] Seq=119 Ack=1516 Win=789 Len=0 TSval=3422486846 TSecr=8622820
5982	-19.774339025	10.100.240.203	10.100.230.60	TCP	66	5576 → 58042 [ACK] Seq=1516 Ack=120 Win=29056 Len=0 TSval=8623821 TSecr=3422486846

```

install@cs65438: ~/Desktop/Assignment_2
File Edit View Search Terminal Help
zaf455@fox03:~/Networks/Assignment_1$ python3 WServer.py 5576
Ready to serve...
GET /big.txt HTTP/1.1
Host: 10.100.240.203
Accept: text/html
Connection: keep-alive
User-agent: RoadRunner/1.0

Ready to serve...
GET /big.txt HTTP/1.1
Host: 10.100.240.203
Accept: text/html
Connection: keep-alive
User-agent: RoadRunner/1.0

Ready to serve...

install@cs65438: ~/Desktop/Assignment_2
File Edit View Search Terminal Help
This is a really big file...
This is a really big file...
This is a really big file...
This is a really big file...
This is a really big file...

install@cs65438:~/Desktop/Assignment_2$ python3 Wclient.py 10.100.240.203 5576 big.tx
-----The client is ready to send-----
('10.100.230.60', 58042)-->('10.100.240.203', 5576)
HTTP/1.1 200 OK
Date: 2/23/2022
Server: RoadRunnerServer

This is a really big file...
This is a really big file...
This is a really big file...
This is a really big file...
This is a really big file...
This is a really big file...
This is a really big file...

```

Figure 5. Output for Wireshark, the Web Server, and the Web Client.