

NSCap hw6 report

HTTP/2 Under the Packet-dropping Condition

Based on the given information, the client is sending requests using the stream_id = 1, 3, 5, and 7 to the server. However, only two requests are received by the server instead of the expected four. The reason is the use of a TCP socket. TCP is a reliable and connection oriented protocol that guarantees the delivery of data in the order it was sent.

When the server does not receive the headers frame for stream 5, it does not recognize the subsequent requests sent on that stream. As a result, the server does not process those requests, leading to only two requests being received. The dropped headers frame disrupts the TCP connection's normal flow. As a consequence, the server is not able to correctly interpret the subsequent requests on stream 5 and stream 7.

```
root@p4:/home/p4/tutorials/exercises/http_drop# python3 http_2_0_server_demo.py
('10.0.2.2', 60584) is connected.
1 header frame send
1 data frame send
3 header frame send
3 data frame send finish
█
```

```
root@p4:/home/p4/tutorials/exercises/http_drop# python3 http_2_0_client_demo.py
1
3
../../target/file_03.txt begin
../../target/file_03.txt end
█
```

HTTP/3 Under the Packet-dropping Condition

In HTTP/3, all the requests can be received by the server despite the dropped headers frame in stream 5. This is because HTTP/3 and the underlying QUIC protocol provide mechanisms for retransmission, independent stream handling, and reliable delivery of data. Each stream in HTTP/3 operates independently. If there is a failure or packet loss in one stream, it does not affect the other streams. This means that even if the header frame in stream 5 is dropped, it does not impact the other streams.

```
root@p4:/home/p4/tutorials/exercises/http_drop# python3 http_3_0_server_demo.py
1
header frame send
data frame send
3
header send
5
header send
7
header send
data in file send finish
data in file send finish
data in file send finish
```

```
root@p4:/home/p4/tutorials/exercises/http_drop# python3 http_3_0_client_demo.py
1
3
../../../../target/file_03.txt begin
5
../../../../target/file_08.txt begin
7
../../../../target/file_00.txt begin
../../../../target/file_03.txt end
../../../../target/file_08.txt end
../../../../target/file_00.txt end
```