

Network System Capstone

Homework 6

Report

- **HTTP/2 under dropped packets (5%)**

在mininet中執行我的http_2_0 server and client後，得出以下結果：

可以看到上面的圖，因為mininet把stream_id == 5的packet全部都drop掉了，而因為TCP的關係，就算stream_id 7的packet有送到，但因為前面的stream packet沒有送到，所以也用不了，因此最後只有收到file_dict裡面的第一個檔案(file_03.txt)的資料，其他都沒有。

- **HTTP/3 under dropped packets (15%)**

在mininet中執行我的http_3_0 server and client後，得出以下結果：

The top screenshot shows the initial state of the Mininet simulation. The server (Node: h1) receives a GET request for file_03.txt (stream_id 3) and responds with file_00.txt (stream_id 5). The client (Node: h2) receives the response and begins to read file_00.txt. The server's log shows that the stream_id 5 packet was dropped, and the client's log shows that it received the file_00.txt data.

The bottom screenshot shows the server (Node: h1) receiving a GET request for file_03.txt (stream_id 3) and responding with file_00.txt (stream_id 5). The client (Node: h2) receives the response and begins to read file_00.txt. The server's log shows that the stream_id 5 packet was dropped, and the client's log shows that it received the file_00.txt data.

可以看到上面的圖，因為mininet把stream_id == 5的packet全部都drop掉了，所以file_dict中的第2個檔案(file_03.txt)沒有收到data，但由於Http3.0用的是QUIC，所以後續第3個檔案(file_00.txt)的stream_id 7的data有送到，也有寫入，因此最後有收到file_dict裡面的第1個和第3個檔案(file_03.txt, file_00.txt)的資料。

- Describe why there was only one request received by the server.
Write your answers in the report. *Hints: The socket used is a TCP socket.*

因為Http2.0的傳輸是用tcp，而tcp有順序問題，所以當傳輸到dst的資料中間有packet loss，就算後續的資料有到且沒有錯誤，還是會因為tcp而把packet loss後的所有packet給drop掉。今天實驗由於是第2個檔案的packet被drop掉，因此就算第3個檔案有成功且正確的傳到，還是會因為第2個檔案的packet不見了而被drop掉。

- **Describe the differences between HTTP/3 and HTTP/2 according to experimental results. Write your answer in the report.**

Http3.0是基於QUIC, 而QUIC就是藉由UDP來傳輸的, 而UDP就沒有順序上前面packet未到而drop掉後面packet的問題, QUIC也能保證client可以將data以正確的順序重組。因此我們在實驗中看到, 就算第2個檔案的packet被drop掉, 它並不會影響到第3個檔案的傳輸, 因此第1跟第3個檔案的資料都正確且安全的抵達。