

**Experimental Report**

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| **Course**: | Computer Networking |
| **Semester**: | 2nd semester of the academic year **2020-2021** |
| **Major**: | Software Engineering |
| **Class**: | 2019.3 |
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**School of Computer and Information Science**

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| Name | | Configuring the web server | | | |
| Date | | 2021.4.21 | Type | | □Confirmatory  √ Design  √ Comprehensive |
| 1. **Objectives & Requirements**   1. Capturing TCP packets with wireshark | | | | | |
| 1. **Experimental environment (**platform and software**)**   wrieshark | | | | | |
| 1. **Experimental content and design** (Main Content, Procedure, Codes and Results)   1. IP: 192.168.1.102, port 1161  2. 128.119.245.12, port 80    4. 0, can determine that this is a SYN segment by the Flags being 0x002    5.SYN ACK: 0, Acknowledgement field: 1, Acknowledgement value is equal to the number of sequences + 1, flags: 0x012 marks a SYNACK segment    6. sequence number: 1    7. The sequence numbers of the first six TCP segments are 1, 566, 2026, 3486.4946 and 6406.The segment sending and receiving times are shown in the figure. The calculated values of RTT are 0.02746, 0.035557, 0.070059, 0.114428, 0.139894, 0.189645  EstRTT = 7/8 LastRTT + 1/8 SampRTT = 0.29      8. Subtract the previous one from the latter sequence number to get 565, 1460, 1460, 1460, 1460, 1460  9. Observe several consecutive packets and find that the receiver window size grows steadily until the window size reaches its maximum with no throttle  10. Observe the sequence number of the trace file and find that the sequence number has continued to rise, which indicates that no retransmitted segments.    11. As seen in the 199th packet, a total of 122 packets were acknowledged and assembled    12. 164090/5.4294=30.222, Use the total time divided by the total number of bytes  13. slowstart phase begins and ends here, no congestion avoidance | | | | | |
| 1. **Analysis and discussion of experiment results**（Analysis of experimental results, and summary of gains and the existing problems）   Through this experiment, I have gained a deeper understanding of the transport layer in network protocols. In this experiment, I performed TCP packet capture using wireshark and learned about the TCP protocol, including TCP sequence number and ACK mechanism by analyzing the packets. TCP is a transport layer protocol that uses pipelining mechanism, single acknowledgement, and ensures orderly packets and is widely used in the Internet. In this experiment, I completed some of the experimental tasks by having discussions with my classmates. | | | | | |
| Comments & Evaluation | Content & Design (A-E) | | |  | |
| Procedure & Codes (A-E) | | |  | |
| Results (A-E) | | |  | |
| Analysis & Discussion (A-E) | | |  | |
| Score (A-E):  Feedback comments: | | | | |