

**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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| Name | | Configuring the web server | | | |
| Date | | 2021.4.21 | Type | | □Confirmatory  √ Design  √ Comprehensive |
| 1. **Objectives & Requirements**   1. Learning to use Wireshark to capture packets  2. Understanding HTTP and DNS packet content | | | | | |
| 1. **Experimental environment (**platform and software**)**   Wireshark | | | | | |
| 1. **Experimental content and design** (Main Content, Procedure, Codes and Results)   **Part1: HTTP**  1. We can see that the browser HTTP version is 1.1    2. The languages supported by the browser are Simplified Chinese, Chinese - TW, Chinese - HK, English-US    3. As we can see from the capture in the first question, the IP address of the local computer is 172.18.6.159 and the IP address for gaia.cs.umass.edu is 128.119.245.12  4. As we can see from the capture of the first question, two status codes are returned, 200 OK and 404 Not Found, of which the first 200 OK returned should be the normal situation  5. As you can see the last-modified is Sat, 08 May 2021 05:59:01 GMT    6. We can see 128 bytes of content returned to the browser    7. As shown in the capture, the selected part is the header within data    8. As shown in the diagram in question 7, there is no such content as IF-MODIFIED-SINCE  9. The server specifies the returned content, as the page content is included in the HTTP message    10. IF-MODIFIED-SINCE appears in the message returned by the second request, followed by a time    11. The status code returned is 304 Not Modified, the server did not return any substantial content, the browser read the data from the cache      12. There is only one HTTP request message, which is packet 79    13. Packet 97  14. 200 OK  15. As we can see from the diagram, 5 packets are required  16. Only one HTTP request was sent, to http://gaia.cs.umass.edu/wireshark-labs/HTTP-wireshark-file4.html    17. Parallel download, as you can see from the timing, the second image had already started downloading before the first one had finished  18. 401 Unauthourized    19. Included is the account number and password entered    **Part2: DNS:**  1. Try to get the IP address of gitee, it is 180.97.125.228  2. Try to get the authoritative DNS server for the University of Cambridge, which is primary.dns.cam.ac.uk  3. Using Cambridge's DNS to obtain Yahoo's IP address failed and was changed to use South West's DNS, which was successful, with the results shown in the capture    4. DNS query send over UDP    5. Both port 53    6. 202.202.96.33, This is the address of my local DNS server    7. Type: A, Yes    8. 3 answers, contains the fields name, type, class, time to live, data length, cname    9. The destination IP address of the subsequent TCP SYN packet corresponds to the source IP address raised in the DNS response message  10. No, only a partial resend of the new DNS query .  11. Both port 53      12. 202.202.96.33, This is the address of my local DNS server  13. Type A and type AAAA, Yes  14. 4 answers for AAAA and 3 answers for A, contains the fields name, type, class, time to live, data length, cname    16. 202.202.96.33, This is the address of my local DNS server    17. Type NS, Yes    18. Multiple name servers are provided and respond to the ip address of the namesake    20. 8.8.8.8, This is the DNS server address I set manually    21. Type A and AAAA, Yes    22. 2 answers for A, 4 answers for CNAME contains the fields name, type, class, time to live, data length, cname | | | | | |
| 1. **Analysis and discussion of experiment results**（Analysis of experimental results, and summary of gains and the existing problems）   Through this experiment, I have used wireshark extensively and gained a better understanding of its use, including narrowing down the data by filtering. More importantly, I gained an in-depth understanding of HTTP and DNS requests and responses. Through the experiment, I gained a practical understanding of HTTP and DNS requests and responses, what is involved and what the server does between the request and response, the port used, the type of return and various other things. The experiment was a big task and I gained a lot from it. | | | | | |
| Comments & Evaluation | Content & Design (A-E) | | |  | |
| Procedure & Codes (A-E) | | |  | |
| Results (A-E) | | |  | |
| Analysis & Discussion (A-E) | | |  | |
| Score (A-E):  Feedback comments: | | | | |