Tutorial 7

ELEC3506/9506 – Communication Networks

1. What is an advantage of a hierarchical name space over a flat name space for a system the size of the Internet?

2. What is the difference between a primary and a secondary DNS?

3. Why do we need POP3 or IMAP for electronic mail?

4. What is the purpose of FTP?

5. What anonymous FTP?

6. How is HTTP related to WWW?

7. What is a URL and what are its components?

8. What is a proxy server and how is it related to HTTP?

9. What does HTML stand for and what is its function?

10. What are the SNMP components?

11. List the SNMP v1 and v2 message types and their function

12. Consider a network setup as below in which you would like to assess the benefit of using web caching, assuming cache hit rate is 0.4: 40% requests satisfied at the cache, 60% requests satisfied at the origin.

Scenario:

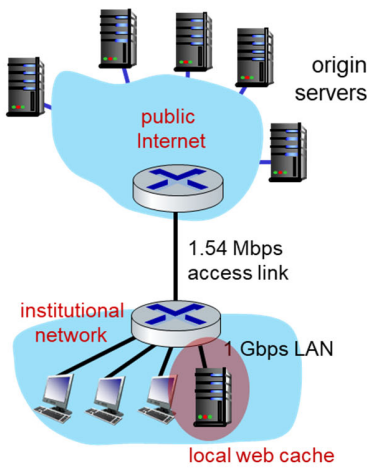
- access link rate: R=1.54 Mbps
- RTT from public router to server: 2 sec
- Web object size: L=100K bits
- Avg request rate from browsers to origin servers: 15/sec
  - avg data rate to browsers: 1.50 Mbps

Performance:

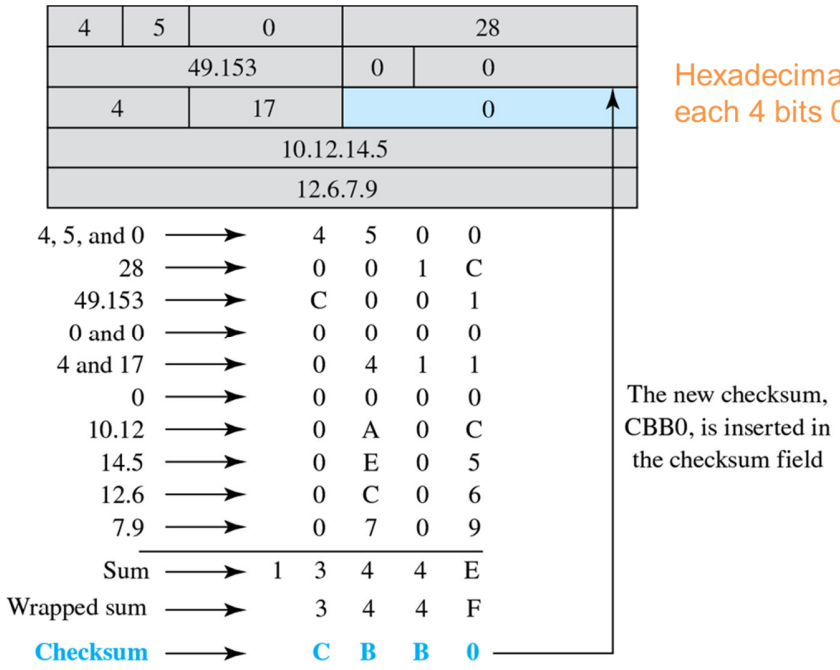
- LAN utilization: .?
- access link utilization = ?
- average end-end delay = ?

How to compute link utilization, delay?

Cost: web cache (cheap!)



13. Consider the below TCP headers considered in the lecture. Please verify that the sum, wrapped sum and checksum calculation is correct.



Hexadecimal representation for each 4 bits 0-15 → 0-F

14. Consider two TCP headers, E666 and D555, please calculate its sum, wrapped sum and checksum. What happen when the received headers are now E665 and D556. Can the error be detected?

15. Plaintext consists of lowercase letters and ciphertext consists of uppercase letters. Assign a numerical value to each letter. Create a shift cipher for “hello” with key=20