

CS 447: Networks and Data Communications

Homework #03

Assigned Date : Monday, November 17, 2014

Due Date : Wednesday, December 03, 2014 @ 02:59:59 p.m.

Instructions

- This is an individual assignment. **Do your own work.** Acts of academic misconduct (plagiarism, use of illegal solutions manuals, etc.) will be strictly monitored and will be subjected to one or more of the penalties outlined in the course syllabus.
- Your answers should be produced using a word processing application.
- Handover a printed, stapled copy of your solutions to the instructor at the beginning of class on due date. Make sure to include your name and the last 3 digits of your SIUE ID in the first page of your solutions sheet.
- A moodle dropbox will become available the day before the due date as a secondary submission option. Ensure to submit a PDF document if you decide to use the moodle dropbox. **DO NOT** email your solutions to the instructor.
- Make proper arrangements, after consulting the instructor, to deliver your solutions **BEFORE** the due date, if you have a planned absence on the due date.
- Answer all questions
- Your assignment is due on **Wednesday, December 03, 2014 @ 02:59:59 p.m.**
- Total points: **[145 points]**

Questions

- Q1. **[10 points]** Consider distributing a file of size $F = 30Gbits$ to N peers (clients). The server has an upload rate of $u_s = 60Mbps$, each peer has a download rate of $d_i = 2Mbps$, and an upload rate of u . For $N = 10, 100, \text{ and } 1000$, and $u = 300Kbps, 700Kbps, \text{ and } 2Mbps$, prepare a chart giving the minimum distribution time for each of the combinations of N and u for both client-server distribution and P2P distribution.
- Q2. **[10 points]** Compare and contrast LS and DV algorithms.
- Q3. **[5 points]** Explain what is an **Autonomous system**.
- Q4. **[5 points]** Explain (at least) 2 situations why a router running a DV-based algorithm may need to update its current “shortest” paths (to even “shorter” paths)
- Q5. **[8 points]** Name and explain 4 advantages of OSPF
- Q6. **[5 points]** Explain how BGP routers use AS-PATH attribute to detect and prevent routing loops
- Q7. **[5 points]** What is HOL Blocking?
- Q8. **[12 points]** P1 on page 416 of KR6e
- Q9. **[16 points]** P4 on page 417 of KR6e

- Q10. **[10 points]** P10 on page 419 of KR6e
- Q11. **[10 points]** P12 on page 420 of KR6e
- Q12. **[12 points]** P17 on page 421 of KR6e
- Q13. **[9 points]** P26 on page 422 of KR6e
- Q14. **[12 points]** P30 on page 423 of KR6e
- Q15. **[16 points]** P37 on page 424 of KR6e