S-38.180 - Quality of Service in Internet

Exercise 3: Differentiated Services

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Objectives of the Exercise

- To compare various PHB-profile configurations

- To see how applications with different traffic characteristics react to DiffServ-mechanisms

- To discover the problems in achieving the desired traffic behaviour by using DiffServ
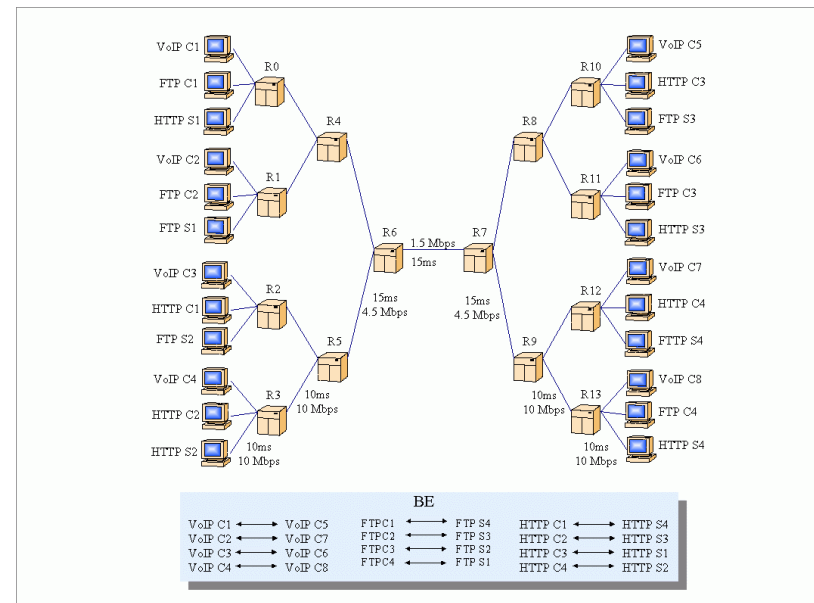
Assignment

Two parts

1. Simulations

   ➤ Not much work in running the simulations

   ➤ Real work is in analyzing the results

2. Essee

   ➤ General discussion on the possibilities of Differentiated Services

   ➤ The simulation results might be useful

1. Simulation: Topology

- Symmetrical topology
- Single bottle-neck link
- Equal amount of servers and clients on both sides of the BN-link

1. Simulation: Setting

- 5 simulation scenarios
- Each communication pair is given a PHB-class
  - BE, AF, EF
- Properties of the PHB-classes remain the same in all scenarios
- PHB-profiles change in different simulation scenarios, i.e. PHB-classes are distributed to communication pairs differently

1. Simulation: Scripts

- The simulation consists of 5 TCL-files
  - diffnet.tcl: The main control script
  - 2q2p.tcl: Sets up DiffServ-related parameters
  - peer_setup.tcl: Handles peer configuration
  - topology.tcl: Sets up topology
  - monitoring.tcl: Various monitoring sub-procs
- No need to modify any TCL-scripts!

1. Simulation: Analysis

- Scenarios are compared in terms of
  - Throughput
  - Average packet delay
  - Packet loss ratio
- Technical viewpoint
  - What happened in the simulation and why?
- Conclusions
  - How can each scenario be applied to real networks?
    - What purposes would they serve?
  - Advantages and disadvantages of each scenario in real networks

2. Essee

- Discuss the possibilities and difficulties of using DiffServ
  - From ISP's point of view
  - You can take either a technical or economical approach
  - Focus on the issues you find relevant!
- Material
  - Course material
  - Simulations
  - Internet
- Length 1-2 pages

Useful Material

- DiffServ in NS-2:

  ◆ http://www.isi.edu/nsnam/ns/ns-tutorial/tutorial-02/slides/diffserv-1.pdf

- Extended functionalities:

  ◆ http://www.netlab.hut.fi/opetus/s38180/s03/exercises/ex3/diffnet.pdf

- OTCL tutorial

  ◆ http://nestroy.wi-inf.uni-essen.de/Lv/gui/otcl

- TCL guide

  ◆ http://hegel.ittc.ukans.edu/topics/tcltk/tutorial-noplugin

Other

- Deadline: October 29th, 4pm
- Grading:
  - Excellent / Good / Satisfactory / Fail
- Returning the report
  - by E-mail in PDF-format or
  - paper in the course locker, 2nd floor, G-wing
- If you have any questions or problems:
  - news.tky.hut.fi: opinnot.sahko.s-38.tietoverkkotekniikka or
  - e-mail: tviipuri@netlab.hut.fi