

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

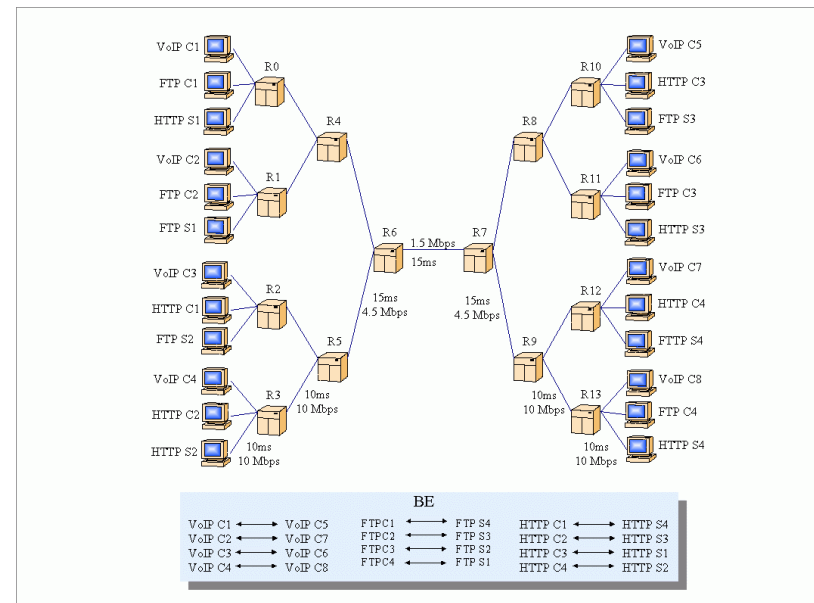
- Not much work in running the simulations
- Real work is in analyzing the results

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 (Best Effort)
 - AF (Assured Forwarding)
 - EF (Expedited Forwarding)
- 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
 - ♦ Would these settings be applicable in real networks?
 - And if so, what purposes would they serve?
 - ♦ Advantages and disadvantages of each scenario if used 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>
- Case study of simulating DiffServ:
 - ♦ <http://www.netlab.hut.fi/opetus/s38180/2004/...exercises/H3/diffnet.pdf>

Other

- Deadline: October 29th, 4pm
- Grading:
 - 0-5
- Returning the report
 - by E-mail (to below address) 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