



S-38.3180: Quality of Service in Internet

Exercise 1: Rate Control and Queue Management



Exercise material

- Source files for the exercises can be downloaded from the web-server
 - www.netlab.hut.fi/opetus/s-38.3180/2005/harj/H1/



diffnet.tcl

- Main program file containing
 - policy definitions
 - *confDSEdges voip1 voip5 <rate> <bucket size> 29_app AF*
 - simulation
 - time controls
 - seeds



2q2p.tcl

- Configuration file containing necessary functions to setup appropriate queueing actions for each and every router.
- In the beginning of file there is a definitions for Random Early Detection parameters.
 - *set AF(in_min) 30*
 - *set AF(in_max) 60*
 - *set AF(in_prob) 0.05*
 - *set AF(out_min) 30*
 - *set AF(out_max) 60*
 - *set AF(out_prob) 0.05*
 - *set AF(qlimit) 100*

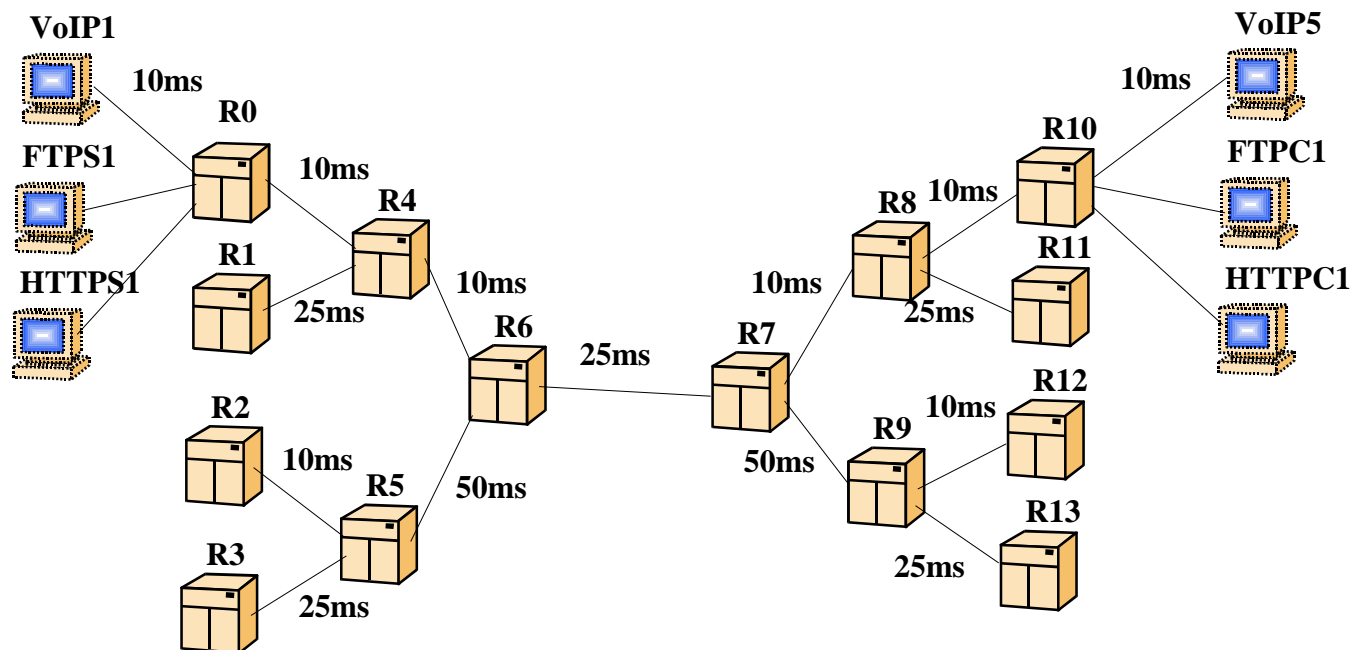


Files

- topology.tcl
 - contains the definitions for the network topology
- peer_setup.tcl
 - contains the definitions for setting the traffic sources up and running
- monitoring.tcl
 - contains functions needed to set up flow monitoring for each and every transfer within the network
- awk scripts to parse monitoring files
- shell scripts (*scr) to presentation of results



Topology





Running simulations

- In principle exercise requires that you
 - Make changes to the files
 - `diffnet.tcl` – rate control exercise
 - `2q2p.tcl` - queue management exercise
 - run the simulation program with command
 - `ns diffnet.tcl`
 - run the shell script with command
 - `source stats.scr`



Task (1/3)

- Your task is to see
 - what is the effect of rate control mechanisms to different traffic types.
 - how sensitive is the selection of token bucket parameters
 - What is the combination of parameters so that each client gets approximately 100kbps transmission rate



Task (2/3)

- How conventional RED operates
 - Set policies to form
 - *confDSEdges voip1 voip5 <rate> <bucket size> <application> BE*
 - Rate and bucket size have no meaning
 - Control of RED parameters is in 2q2p.tcl file BE section
 - See how throughputs change if set RED to be
 - Aggressive (low minimum and maximum threshold and large probability)
 - Conservative (large minimum and maximum threshold with low probability)



Task (3/3)

- How conventional RIO operates
 - Set policies to form
 - *confDSEdges voip1 voip5 <rate> <bucket size> <application> AF*
 - Rate and bucket sizes should follow following principle
 - » Voip rate 100000 size 1500
 - » Http rate 110000 size 40000
 - » Ftp rate 750000 size 100000
 - Control of RIO parameters is in 2q2p.tcl file AF section
 - Configure RIO parameters so that you attain best throughput with uniform service among similar clients



Documentation

- Write a report which answers the questions in previous slides.
- Also write your personal feeling of these mechanisms ability to control the part of quality they should.
- Your report should not exceed 5 pages
- Return it before 18.11.2005 / 1000
 - Course locker in G2-wing