HSS'2004: Quality of Service in Internet

Exercise 2: 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-38.180/HSS/2004/exercises/Ex2/

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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 funtions needed to set up flow monitoring for each eand every transfer within the network
- awk scripts to parse monitoring files
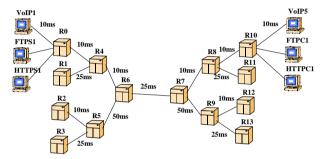- shell scripts (*scr) to presentation of results

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 to me