1 Ns-allinone-2.35 is used in our simulations.

2 Implementation of DCTCP

The source codes and implementation of DCTCP can be found at DCTCP homepage: http://simula.stanford.edu/~alizade/Site/DCTCP.html

3 Implementation of LD-DCTCP

We have modified or added some files in NS2. All our modification is started and ended with a marking string "//whx". The modified or added files are as follows.

flowmon.h, red.cc,tcp.h,tcp.cc,tcp-full.cc,wrps.h,wrps.cc

flowmon.h: some codes are added to solve the bug in flow monitor.

red.cc: some code is added to avoid the syn packet to be dropped or marked.

tcp.h: some variables are defined for debugging or obtaining the data we want.

tcp.cc: bind the variables.

tcp-full.cc: adding some codes for debugging or obtaining the data we want.

wrps.h,wrps.cc: We added the two files to implement a weighted fairness queue.

3.1 Replace the previous flowmon.h, red.cc,tcp.h,tcp.cc,tcp-full.cc with the corresponding modified files.

3.2 Put wrps.h, wrps.cc into directory ./ns2/queue.

3.3 Enter the directory ./ns2, open the file: Makefile.

Modifiy the content:

adc/simple-intserv-sched.o queue/red.o \

as:

adc/simple-intserv-sched.o queue/red.o queue/ wrps.o\

3.4 Enter the directory ./ns2. Then, rebuild the ns by command: make.

4 Simulation script.

dctcp.tcl

ld-dctcp.tcl

5 Run the simulations.

ns dctcp.tcl

ns ld-dctcp.tcl

6 Simulation results

Some files will be produced by running the simulation.

trace_cmptime.tr: record the flow ID, start time, end time and completion time.

trace_longflowcwnd.tr: record the background long flows' cwnd.

trace_longflowthr.tr: record the background long flows' throughput.

trace_queue.tr: record the real time queue length of bottleneck link.

trace_sfcwnd.tr: record the maximum cwnds of all short flows during their transferring.

trace_utilization: record the utilization of bottleneck link. Record time, utilization, queue length and the number of dropped packet are recorded in the file.

trace_all: record all information in simulation if needed.