CMPT 371: Data Communications and Networking

Assignment (4)

Due: Nov 30, 2012

(P1 – 10 points) What is the count to infinity problem in the distance vector routing? If we decrease the cost of a link, will the count to infinity problem still occur? Why? How about if we connect two nodes which previously did not have a link?

(P2 – 10 points) Design an application layer protocol that maintains the host address of all hosts participating in a multicast group. Identify the network layer service used by your protocol and indicate whether your protocol is sending messages in-band or out-of-band. Why? Provide your design in description and in pseudo code.

(P3 – 30 points) ICMP PING!

We have previously discussed ping in the classroom. Ping is a popular networking application we use to test whether a particular host is up and running. Ping is performed from a remote host, and works by sending ICMP *echo request* packets to the target remote host and listening for the ICMP *echo response* replies. Ping measures the RTT, records packet loss, and calculates a statistical summary of multiple message exchanges between the two hosts.

For this assignment, using your socket programming knowledge, implement your own Ping application in Python. You do not need to follow RFC 1739, but you can definitely read it and learn from it. You need to implement you client side of the program, and it should be able to work with other ping server side applications already in use. You can use the skeleton code provided in the companion website of your textbook.