

# EE 706: Communication Networks

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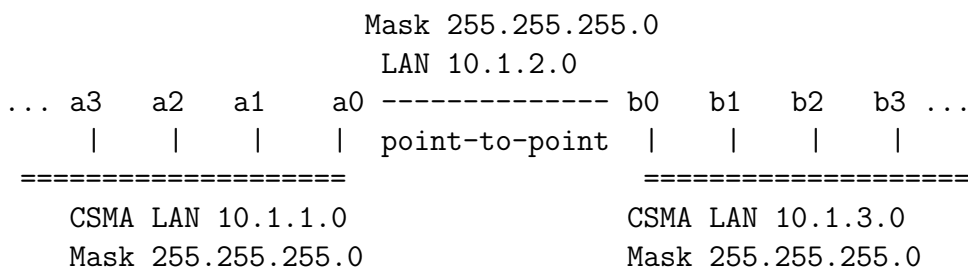
Indian Institute of Technology Bombay

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Assignment 4 : **20 points**

**Due date:** April 11, 2012

1. Write a ns-3 program in C++ to simulate the following topology. Your program should support command line parameters which specify the number<sup>1</sup> of nodes in the LANs (two separate parameters). Setup a `UdpEchoServer` on a node other than `b0` in LAN 10.1.3.0. On every node except `a0` in LAN 10.1.1.0, setup a `UdpEchoClient` to send 10 packets of 1200 bytes to the `UdpEchoServer` in LAN 10.1.3.0 with inter-packet time of 100ms. Create a PCAP trace file for the node containing the `UdpEchoServer` and check using Wireshark that all the packets sent by the clients have been received. Let the data rate of the point-to-point link be 10Mbps with a delay of 1 milliseconds. Let the data rate of the CSMA LANs be 100Mbps with a delay of 6 microseconds.



[10 points]

2. Write a ns-3 program in C++ to simulate the topology shown in Figure 1. The access point is at a fixed position (0,0). The mobile nodes are at fixed positions (0,10), (10,0) and (10,10). Setup a `UdpEchoClient` on node `Y` and a `UdpEchoServer` on the access point. Send a single 1024 byte UDP echo packet from node `Y` to the access point. Use `examples/tutorial/third.cc` for guidance and all unspecified parameters.

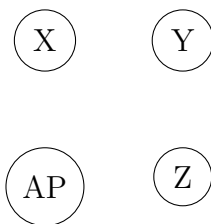


Figure 1: An IEEE 802.11 network consisting of three mobile nodes X, Y, Z and an access point

This assignment needs to be uploaded on Moodle. There is a link on the Moodle course page which allows two files to be uploaded. Upload only the C++ files. Don't upload compressed archives.

<sup>1</sup>Assume that the number of nodes in each of these LANs is between 2 and 254.