1. Networking Laboratory lab manual

In our Networking Laboratory in La Salle University, we teach Opnet basics to the students who study Telecommunications, Computer Science and Networking degrees. Almost 60 students do these first Opnet labs and they use a guided tutorial which has been designed by us. This tutorial gives them a basic OPNET knowledge, and the simulation concept is presented before it to achieve a global vision over OPNET software.

This tutorial is divided in three parts. The first one presents OPNET overview, showing some of the different things they can do with it, by going through different steps to obtain results from simulating with OPNET.

After the students have been in touch with the OPNET environment, they start to configure a basic network. This basic configuration lets them “play with” OPNET menus and lets them know which parameters can be parameterized in order to obtain different graphics. These results can tell them what happens in their network, or what could be wrong. Then, students are asked about some problems in this configuration and are invited to solve them. They also modify this basic configuration. Then, students are asked about changes in this topology to check their new knowledge and contrast their opinions.

The second part deals with traffic modeling techniques, such as queuing theory and elements involved in this process. Students learn how to use lower level editors, such as node editor, process and probe editor. Using them, students can model an own network model and check out its results.

Before leaving OPNET Modeler, there are some enhancement questions about OPNET environment and the students are also invited to create two more scenarios about queuing theory.

In the third part, ACE is used to provide students some skills to analyze the change of information in their network. First, a traffic capture is done with an ACE agent. Later, this capture is analyzed to see all the information it can provide: protocols involved in the communication, which workstations transmit packets...

![Figura 1: FTP capture created by ACE](image)