

Introduction to NS2 Simulator

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1 Objectives

- Learn to use NS2 for qualitative analysis of TCP/IP and wireless networks:
 - install NS2;
 - configure a scenario;
 - run simulations;
 - use the graphical interface.
- Learn to use NS2 for quantitative analysis:
 - extract traces;
 - elaborate traces.
- A flavour of how to add new protocols to ns2.
- A flavour of general issues in simulations.
 - the importance of randomization;
 - generation of random variables;
 - confidence intervals;
 - variance reduction techniques;
 - transient and steady state.

The concepts above will be illustrated through examples mainly related to the following networking scenarios:

1. interacting TCP flows in a wired network;
2. packet forwarding in MANETs.

2 Plan

First lesson, 17/1/2008: 3.5 hours, Ibrahim (and Neglia)

- What is ns, what is used for, how to create a scenario, how to run it (CM 1.5h).
- Installing NS2, run an existing TCP scenario (TP 2h).

Second lesson, 24/1/2008: 3.5 hours, Neglia

- The OTcl language, the graphical interface, how to extract and elaborate traces, confidence intervals, the role of randomization (CM 1.5h).
- Write a scenario for interacting TCP flows, evaluating the results (TP 2h).

Third lesson, 31/1/2008: 3 hours, Ibrahim

- 802.11 MAC protocol, mobility models, how to generate random variables, transient and steady state (CM 3h).

Fourth lesson, 7/2/2008: 4 hours, Ibrahim

- Evaluate 802.11 performance (throughput, delay) with static and mobile nodes (TP 4h).

Fifth lesson, 14/2/2008 3 hours, Neglia

- How to add new protocols in ns2, variance reduction techniques (CM 3h).

Sixth lesson, 21/2/2008 4 hours, Neglia

- Implementing epidemic routing in ns2 (TP 4h).