

ns3 for beginners

A guide towards running Hyrax simulations

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Chapter 1

Introduction

1.1 Installing

1.2 Configurations

1.3 Running a simulation

Chapter 2

Simulations

2.1 Overlay Simulation

2.1.1 Objectives

2.1.2 Parameters

2.1.3 Examples

2.2 Technologies Experiment

2.2.1 Objectives

2.2.2 Parameters

Running:

```
./waf --run="scratch/Experiment/Experiment --Nodes=1 --Servers=1 --Scenario=3 --Seed=$RANDOM --ExclusiveServers"
```

Parameters:

Nodes: Number of Nodes to be used in the simulation

Servers: Number of Servers to be used in the simulation

Scenario: Scenario to run

- * 1: 1 Server + AP + n Nodes
- * 2: AP + m Mobile Servers + n Nodes ($m_j=n$)
- * 3: AP + TDLS + m Mobile Servers + n Nodes ($m_j=n$)
- * 41: WD + GO as Server + n Nodes
- * 42: WD + GO + m Mobile Servers + n Nodes ($m_j=n$)
- * 43: WD + m Mobile Servers + n Nodes ($m_j=n$) No groups formed in the beginning
- * 51: WD + Legacy AP as Server + n Nodes
- * 52: WD + Legacy AP + m Mobile Servers + n Nodes ($m_j=n$)
- * 6: WD + GO + TDLS + m Mobile Servers + n Nodes ($m_j=n$)

FileSize: File Size to be shared

Debug: Debug socket callbacks

ShowPackets: Show every packet received

ShowData: Show Send/Receive instead of the time a transfer took

Seed: Seed to be used

ExclusiveServers: Use Exclusive Server. (Server Don't act as Client)

SegmentSize: TCP Socket Segment Size

2.2.3 Examples

2.3 CMU Review App Simulation

2.3.1 Objectives

2.3.2 Parameters

2.3.3 Examples

Chapter 3

Post-Processing

3.1 Overlay Simulation

3.2 Technologies Experiment

3.3 CMU Review App Simulation

Chapter 4

Code

4.1 Network Configurations

4.2 *VirtualDiscovery*

4.3 TDLS

4.4 Wifi-Direct

4.5 Mobility

Chapter 5

Advanced

5.1 Developing a new simulation from scratch

5.2 Tracing

5.3 Parallel Execution

5.4 Direct Code Execution

Bibliography

- [1] Mathieu Lacage and Thomas R Henderson. Yet another network simulator. In *Proceeding from the 2006 workshop on ns-2: the IP network simulator*, page 12. ACM, 2006.
- [2] ns-3 project. *ns-3 Manual*. ns-3 project, September 2015.