VIETNAM ACADEMY OF SCIENCE AND TECHNOLOGY
UNIVERSITY OF SCIENCE AND TECHNOLOGY OF HANOI

Network Simulation

Lecture 5: Implementing a simulation scenario in NS-3

Dr. NGUYEN Minh Huong

Lecture 5:

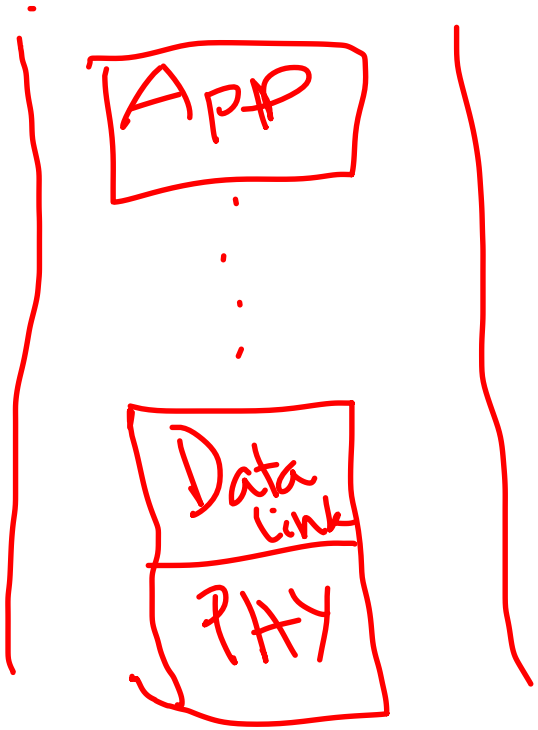
- Model and attribute selection
- Building network topology
- Application setup
- Data collection

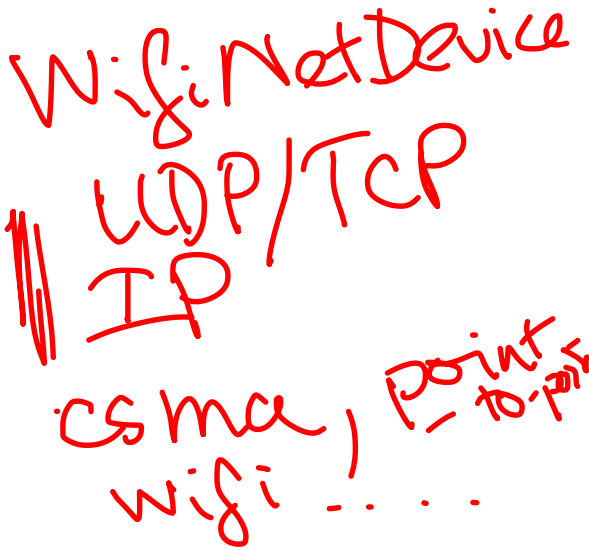
Scenario design

Model and attribute section

selection

- Designed scenario
- OSI model
- NS-3 model



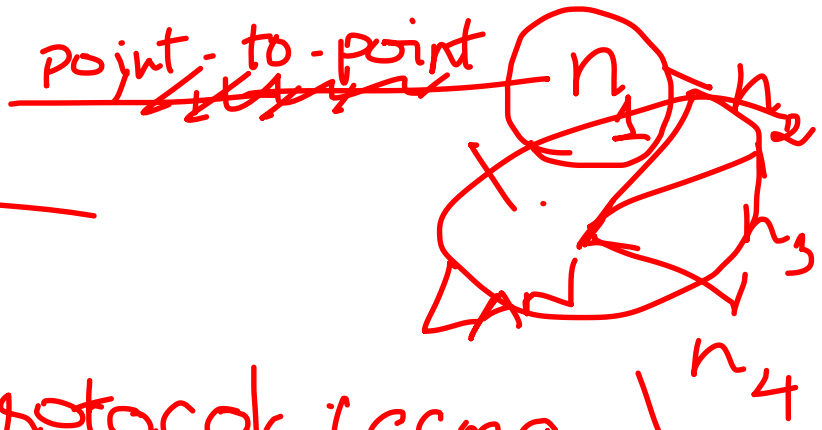


Example: second.cc

Designed scenario:

Implementing in NS-3

- Network topology:
  + 5 nodes



2
4

NodeContainer
p2pNodes
csmaNodes

  + protocols:
    - csma
    - point-to-point → line
    - Internet (IP, UDP) → InternetStackHelper (79, 81)
    - UDPEchoServer
    - UDPEchoClient

Channels
F6, FF
69, F0

  + Mobility: fixed stations

Network topology

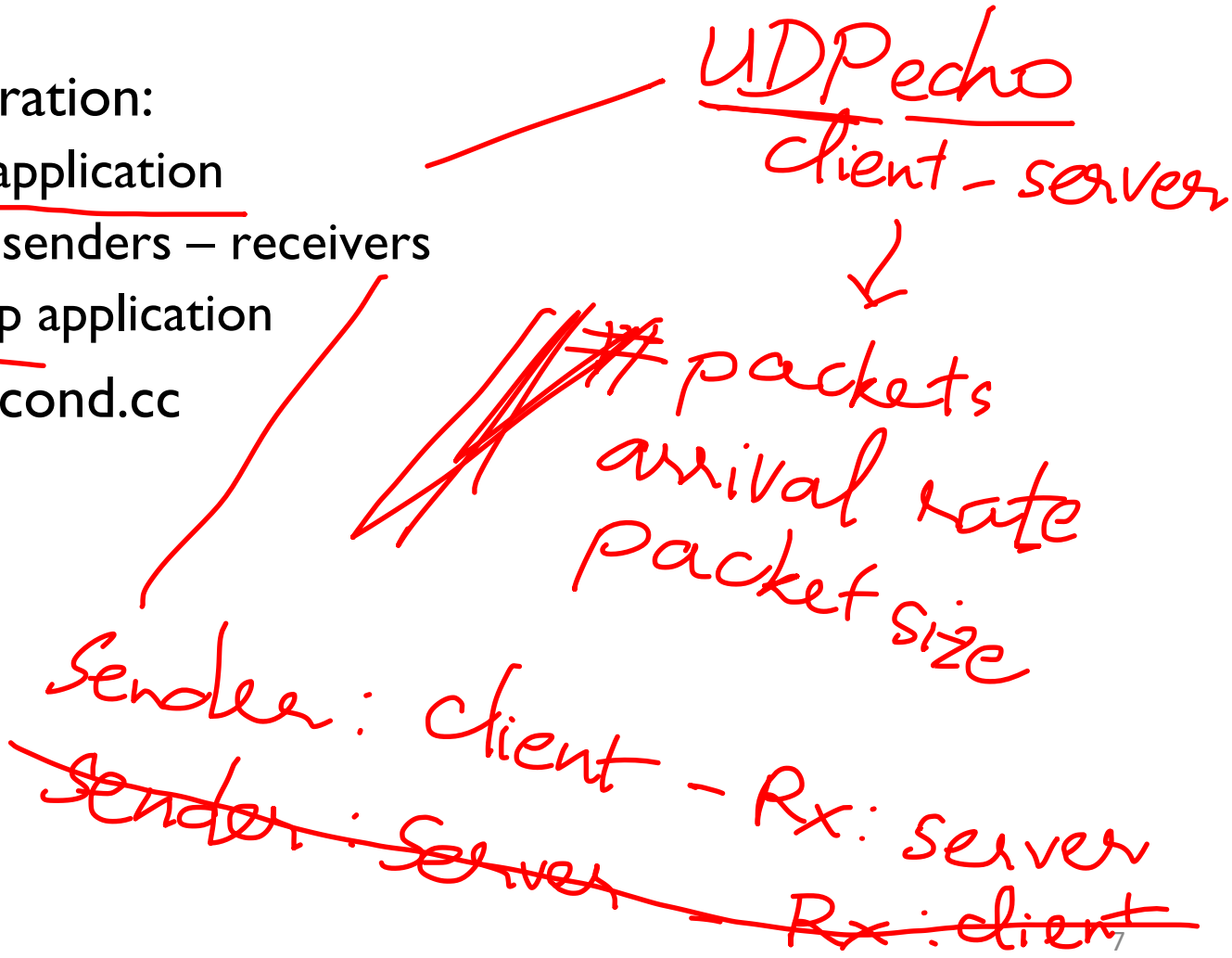
configuration

- Number of nodes
- How they are connected
- How they move
- Building network topology in NS-3

Example: second.cc

Application generation

- Traffic generation:
  - Type of application
  - Defining senders – receivers
  - Start/stop application
- Example: second.cc



Data Collection

- What data to be collected?
- Where to find them?
  - Available data
  - Unavailable data but existing trace source
  - New trace source

Example: second.cc

- Data: pcap traces
  + # received packets at each node
  + Time stamp for sending & receiving packets

↳ tools?

↳ Metrics:
  + packet delivery rate at server
  + Average delay of Rx packets at server

Run the simulation