
Wireless Ad Hoc Networks

Lab 5

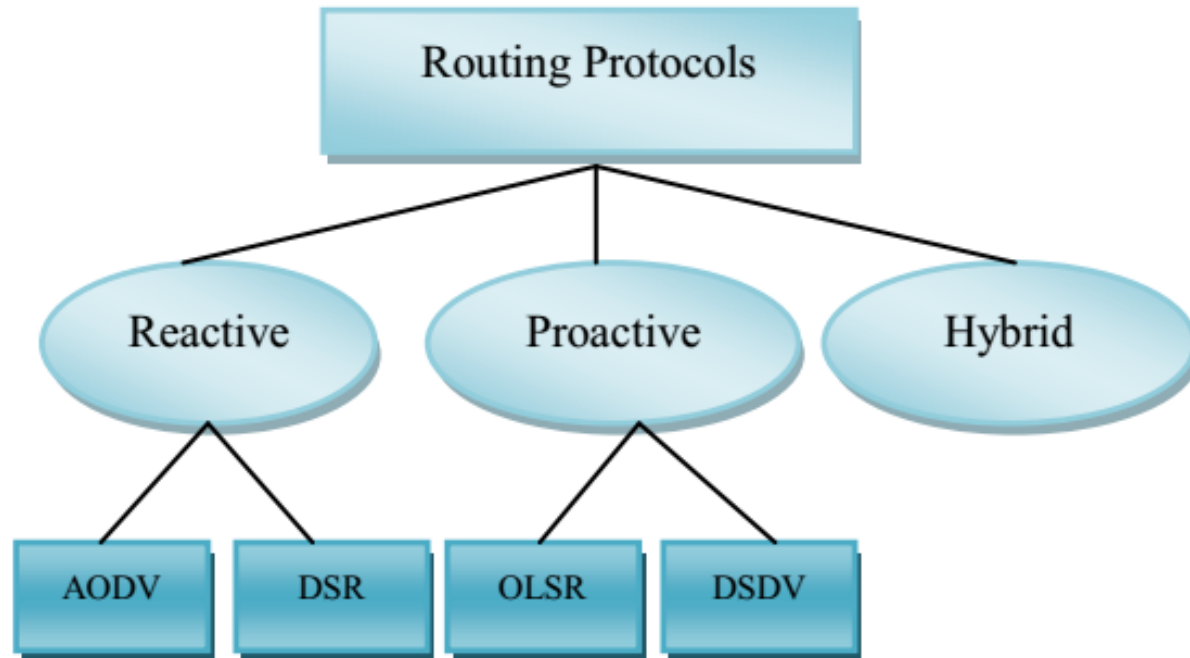
Network Simulator

NS3 Experiment (IV) – Adhoc Routing
Protocol

Introduction

■ Goal

- Use network simulator to familiar with Adhoc routing protocol – DSDV, AODV, OLSR, DSR



Introduction

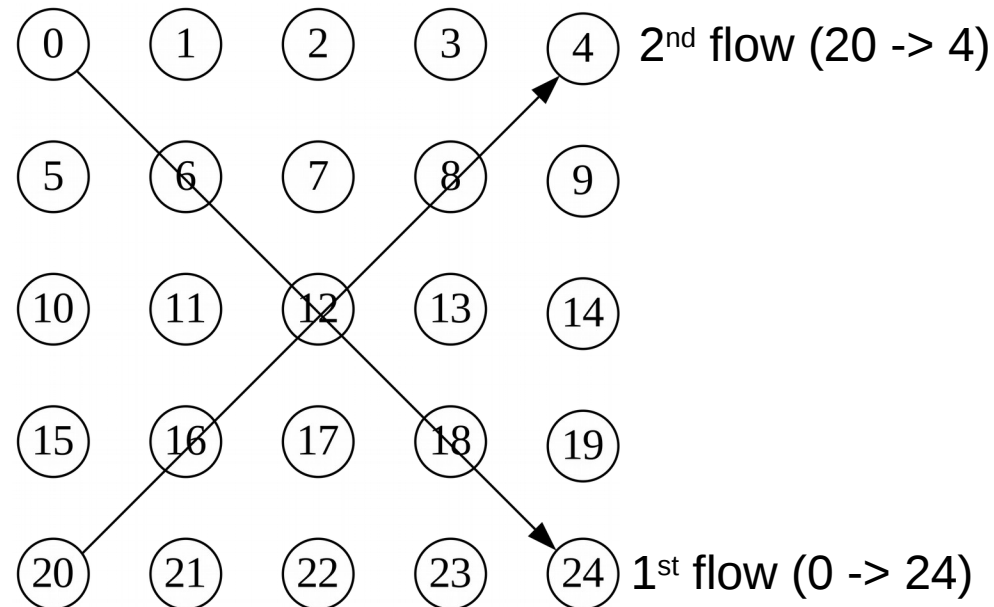
- Proactive Routing protocol
 - Table-driven
 - Floods the links by sending control message periodically
 - Drawback is overhead due to route update
 - DSDV, OLSR, etc
- Reactive / On-Demand Routing protocol
 - Source initiate a route discovery process
 - Drawback of delay in finding routes to new destination
 - DSR, AODV, etc

Introduction

- Modify **.cc** code to meet the scenario in the next slide
- Run Wireshark to observe the trace file
- Run simulation and write analysis to compute
 - End-to-end Delay
 - System Throughput
 - Packet Delivery Ratio

Simulation Environment

- Grid Topology = 5x5
- Node spacing = 500m
- Traffic Flow = 1 flow vs 2 flow



Simulation Environment

■ Network Scenario

- ❑ packet size = 500 bytes
- ❑ # of packets = 1 or 10000
- ❑ Data traffic (Give time for the routing protocol to converge)
 - Start at 31s
 - Stop at 100s
- ❑ Flow configuration as shown = 1 flow vs 2 flow
- ❑ Change the routing protocol = DSDV vs AODV

NS-3 Basic Tracing

- ASCII trace

- Similar to NS-2

```
AsciiTraceHelper ascii;  
pointToPoint.EnableAsciiAll (ascii.CreateFileStream ("myfirst.tr"));
```

- PCAP trace

```
pointToPoint.EnablePcapAll ("myfirst");
```

- Will produce “myfirst-0-0.pcap” and “myfirst-1-0.pcap” which are pcap traces for node 0-device 0 and node 1-device 0 respectively
 - Run wireshark and open the pcap file generated by NS-3

Adhoc Lab5 Experiment

- [Step 1] Open and modify .cc file according to the instructions
 - # of packets = 1 vs 10000
 - Routing protocol = DSDV vs AODV
 - Traffic flow = 1 flow vs 2 flow
 - Positionallocator
 - Flow monitor
- [Step 2] Modify the flowmonitor section to analyze:
 - end-to-end delay
 - system throughput
 - packet delivery ratio
- [Step 3] Run Wireshark and open the pcap trace
 - Can you find the actual route between source & destination
 - Observe the difference between each routing protocols

What you have to implement

- Set the position of points positionallocator
- Setup the transmission between $n_0 \rightarrow n_{24}$ and $n_{20} \rightarrow n_4$
- Flow monitor