

Comparing the Performance of Routing Protocols on Mobile Ad Hoc Networks (MANETs)

Ethan Ridd Supervisor: Carlene Campbell| University of Wales Trinity Saint David Email: eridd.144898@student.uwtsd.ac.uk

What is a Mobile Ad Hoc Network ?

A Mobile Ad Hoc Network or a MANET is a group of interconnected wireless devices that have no defined network architecture. This grants a MANET the ability to be more mobile as no designated router would be needed as each device store its own routing data thus allowing the devices to move freely within the network, this is best illustrated in figure 1. MANETs so far have been utilized in many industries from the entertainment industry to the emergency services such as police and firefighting[1]. MANETs can use numerous routing protocols each belonging to one of 3 sub categories as seen in figure 2 Proactive such as OLSR, Reactive such as AODV and Hybrid as seen in the EIGRP Protocol. MANETs will most likely start becoming a more everyday sight with the increased popularity of IoT.

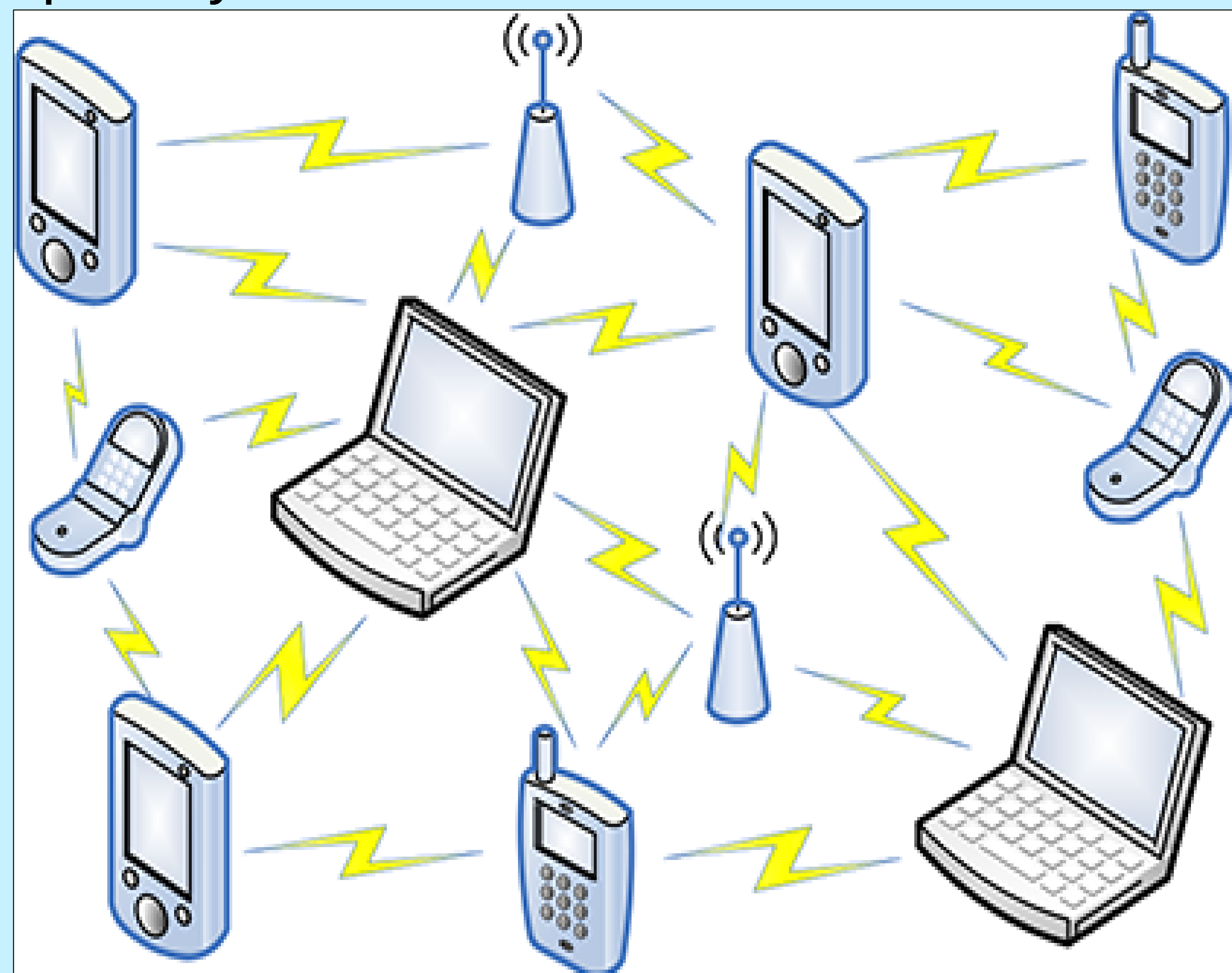


Figure 1[2] illustration of a MANET

Aim of the project

The aim of this research is to perform an analysis of the routing protocols used in a typical MANET in a two environments one with the best possible scenario for routing using a simulation and the second in real time with physical hardware. The most efficient will be the routing protocols which performed well in both scenarios.

Objectives

The current objectives for this project are as follows :

1. Investigate the current research that has been performed and the ongoing research in this area.
2. Create a simulation of a MANET in Netsim and run with multiple routing protocols.
3. Create a MANET with physical hardware and test the Routing protocols in real life.
4. Come to a judgement on the most efficient and stable routing protocol based on the results analysed.

Potential Risks

There are numerous potential risks to this research and experiment some of which include:

- Loss of simulation data.
- Damage/loss to the physical hardware.
- License issues with the simulation software.
- Limited access to the simulation software.

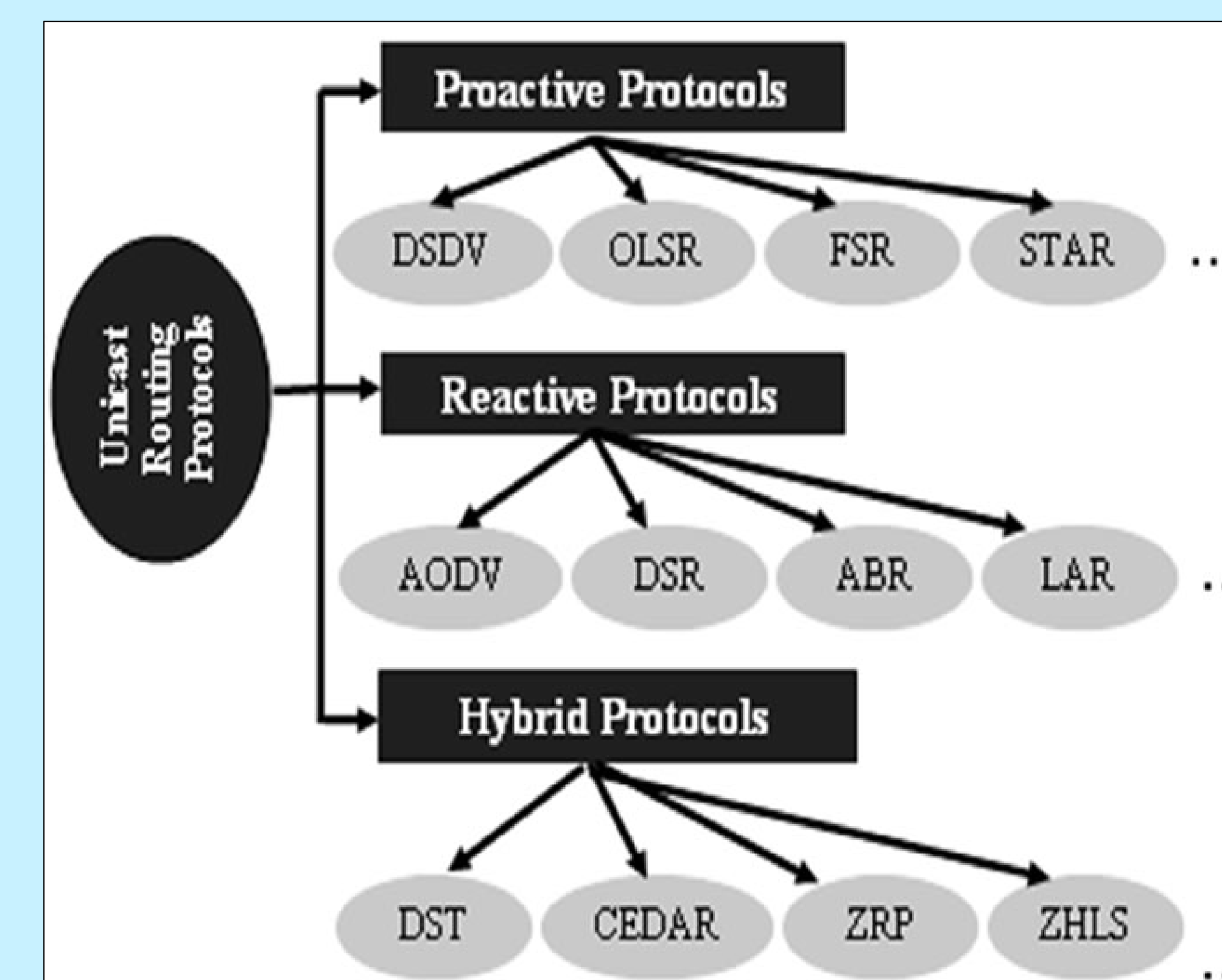


Figure 2 Illustration of a MANET Routing Protocols and Sub categories[3].

Resources

In order to test the network in a simulated environment, a network simulation software will be needed. Netsim[4] is the most appropriate software due to availability and the numerous features within the software. When creating the real world experiment, access to the necessary space and hardware is vital. The current plan is to use standard mobile devices that have wireless capabilities running a Linux based environment.

Works Cited

- [1] J. Hoebeke, I. Moerman, B. Dhoedt, and P. Demeester, "An Overview of Mobile Ad Hoc Networks: Applications and Challenges."
- [2] R. Bruzgiene, L. Narbutaite, and T. Adomkus, "MANET Network in Internet of Things System," in *Ad Hoc Networks*, InTech, 2017.
- [3] S. Lalar and A. K. Yadav, "ORIENTAL JOURNAL OF Comparative Study of Routing Protocols in MANET," 2017.
- [4] "NetSim-Network Simulator & Emulator | Home." [Online]. Available: <http://www.tetcos.com/>. [Accessed: 04-Oct-2017].