Evaluating the Performance Characteristics of the Epidemic and Spray-and-Wait Routing Protocols During DOS Attacks

Oliver Mitchell psyom1@nottingham.ac.uk

School of Computer Science University of Nottingham

October 25th, 2018

Contents

1	Intr	roduction	1
2	Lite	erature Review	1
	2.1	Mobile Ad-Hoc Networks (MANETs)	1
	2.2	Vehicular Ad-Hoc Networks (VANETs)	1
	2.3	Delay Tolerant Networks (DTNs)	1
	2.4	Opportunistic Networks	1
	2.5	ONE Simulator	1
	2.6	Delay Tolerant Network Protocols	1
		2.6.1 Epidemic	2
		2.6.2 Spray-and-Wait	2
	2.7	DOS Attacks	2
		2.7.1 Black Hole Attack	2
		2.7.2 Flood Attack	2
3	Des	ign	2
4	Imp	lementation	2
5	Eva	luation	2
	5.1	Scenario 1 - Black Hole Attack	2
		5.1.1 Epidemic	2
		5.1.2 Spray-and-Wait	2
	5.2	Scenario 2 - Flood Attack	2
		5.2.1 Epidemic	3
		5.2.2 Spray-and-Wait	3
6	Con	nclusion	3
References			3

1 Introduction

Introduction

2 Literature Review

Literature Review

2.1 Mobile Ad-Hoc Networks (MANETs)

Mobile Ad-Hoc Networks (MANETs)

2.2 Vehicular Ad-Hoc Networks (VANETs)

Vehicular Ad-Hoc Networks (VANETs)

2.3 Delay Tolerant Networks (DTNs)

Delay Tolerant Networks (DTNs)

2.4 Opportunistic Networks

Opportunistic Networks

2.5 ONE Simulator

ONE Simulator

2.6 Delay Tolerant Network Protocols

Delay Tolerant Network Protocols

2.6.1 Epidemic

Epidemic

2.6.2 Spray-and-Wait

Spray-and-Wait

2.7 DOS Attacks

DOS Attacks

2.7.1 Black Hole Attack

Black Hole Attack

2.7.2 Flood Attack

Flood Attack

3 Design

Design

4 Implementation

Implementation

5 Evaluation

Evaluation

5.1 Scenario 1 - Black Hole Attack

Scenario 1 - Black Hole Attack

5.1.1 Epidemic

Epidemic

5.1.2 Spray-and-Wait

Spray-and-Wait

5.2 Scenario 2 - Flood Attack

Flood Attack

5.2.1 Epidemic

 ${\bf Epidemic}$

5.2.2 Spray-and-Wait

Spray-and-Wait

6 Conclusion

Conclusion

References

- [1] Huang, C., Lan, K., & Tsai, C. (2008). "A Survey of Opportunistic Networks". 22nd International Conference on Advanced Information Networking and Applications Workshops (aina workshops 2008), pp.1672-1677.
- [2] Jhaveri, R., Patel, S., & Jinwala, D. (2012). "DoS Attacks in Mobile Ad-Hoc Networks: A Survey". 2012 Second International Conference on Advanced Computing & Communication Technologies, pp.535-541.
- [3] Farrell, S., & Cahill, V. (2006) Delay- and Disruption-Tolerant Networking, Artech House, Inc., Norwood, MA.
- [4] Postel, J. (1981), "Transmission Control Protocol". RFC 793.