RESEARCH PAPER | Engineering | Volume : 4 | Issue : 5 | May 2014 | ISSN - 2249-555X

Improvement of Throughput in Manet Using RSS in Aodv By Cross Layer Design

KEYWORDS: MANET, AODV, CLD, RSS

Mazher Khan	Siddiqui Uruj	Dr. Sayyad Ajij D.
Electronics and communication Department Marathwada Institute of Technology Beed by pass , Aurangabad.	Electronics and communication Department Marathwada Institute of Technology Beed by pass , Aurangabad.	Electronics and communication Department Marathwada Institute of Technology Beed by pass , Aurangabad.

ABSTRACT *Layered architectures are not flexible enough to cope with the dynamics of wireless dominated next generation communications. Cross-layer architectures may provide a more flexible solution: breaks the traditional structure by allowing interactions between two or more non-adjacent layers. This paper shows implementation of cross layered designed in MANET Through AODV Routing Protocol Using Received Signal Strength From Physical Layer. As A result Improvement in Throughput of system.*

1. INTRODUCTION

1.1. What is Cross-Layer Networking?

Designs of communication systems are generally based on logical layers, the so-called protocol layers. One major goal has been to achieve maximum independence: Any one layer should not have to know about the internal details of other layers, similar to the principles of object-oriented software design. The layers have a well defined interface to the "outside world" but their internal implementation is shielded. While the layering paradigm has had tremendous success for implementing and managing e.g. the wired Internet, the model is not necessarily the best for networks employing wireless communication and access. Hence, it is proposed to work on co-optimized designs across protocol layers, from now on referred to as cross layer designs. Cross layer design (CLD) touches not just communications and networking, but is also intimately connected to concepts related to communications architecture [19]. Layered architectures have served to make the protocol design activity systematic and modular. Potential performance gains can always motivate a designer to not follow the layered architectures and do cross-layer design.

1.2 The importance of architecture

Architecture in system design pertains to breaking down a system into modular components, and systematically specifying the interactions between the components. The importance of architecture is difficult to overemphasize. Modularity provides the abstractions necessary for designers to understand the overall system. It accelerates development of both design and implementation by enabling parallelization of effort. Designers can focus their effort on a particular subsystem with the assurance that the entire system will interoperate.

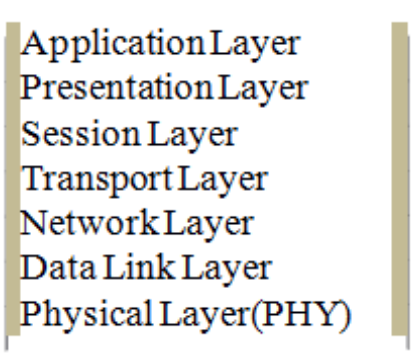


fig.1 : Cross Layer Design between

1.3 Architectural considerations for wireless networks

The success of the layered architecture for wired networks has had just such a great impact on network design paradigms. It has become the default architecture for designing wireless networks as well. However, it is not at all obvious that this architecture is a priori appropriate for wireless networks. The reason all this needs re-examination is because the wireless medium allows modalities of communication that are nonexistent for wired networks. Therefore it is necessary to re-examine from scratch the whole architectural basis for wireless networks. This will allow to understand where layering stands.

1.4. Why Cross-Layering?

Cross-layer design can therefore play an important role for the next generation wireless systems, featured by all IP-based protocol stack, heterogeneous access networks, and multimedia data traffic. We can look at the motivation for cross layering in communications in two ways, from a general communications viewpoint and then from a more targeted wireless viewpoint.

2.Existing Cross-layer architectures

Research on cross-layer networking is still at a very early stage, and no consensus exists on a generic cross layer infrastructure or architecture. However, the importance of a good and sound architecture to handle the proliferation of cross-layer operations in wireless as well other communications media is clear, especially in autonomic systems for which properties need to be specified and maintained with minimal manual configuration and intervention [14]. A number of proposals for cross layer designs and their corresponding architectures have been published in the literature. Most of these proposals are based on one of basic categories mentioned in [1]. In this paper we are interested in looking at cross-layering architectures in terms of how and from where they gather different cross-layer and optimization related information. The possible candidates are: (i) Architectures based on local information and (ii) Architectures based on local and global information (from a single node, its different layers, and the states of its neighbors).

Volume : 4 | Issue : 5 | May 2014 | ISSN - 2249-555X

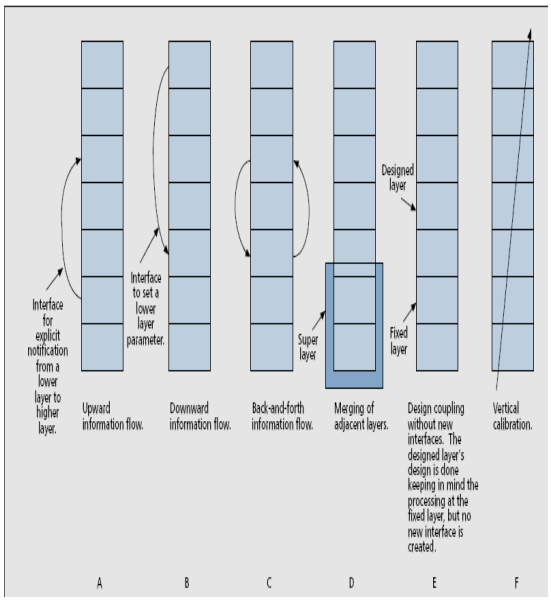


fig.2 : Different Cross layer Design

3. Implementation of cross layered designed in MANET Through AODV Routing Protocol Using Received Signal Strength:

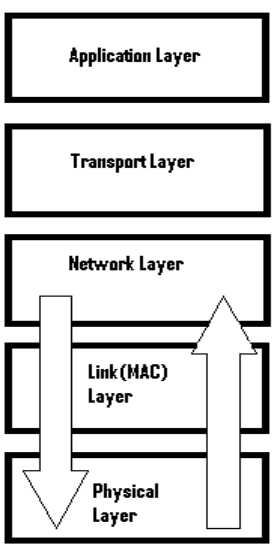


fig.3 : Cross Layer Design between Network and Physical Layer

3.1 AODV Protocol Design:

AODV implementation is based on a recent draft of the AODV specification.

All the essential functionality of AODV including:
RREQ and RREP messages (for route discovery) RERR messages, HELLO messages, and precursor lists (for route maintenance) Sequence numbers Hop counts Expanding ring search

Some functionality described in the specification has been omitted, such as Gratuitous RREP messages, RREP acknowledgements, and multicast support, because they are either not essential to the algorithm, or inapplicable given our network model.

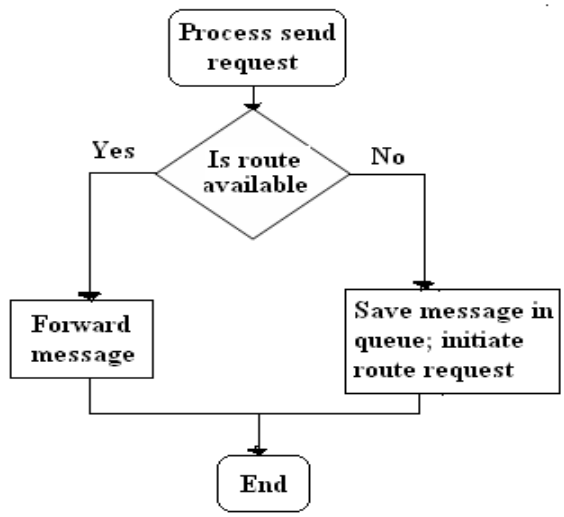


fig.4.Route Discovery in AODV

3.2.Modified AODV Using RSS

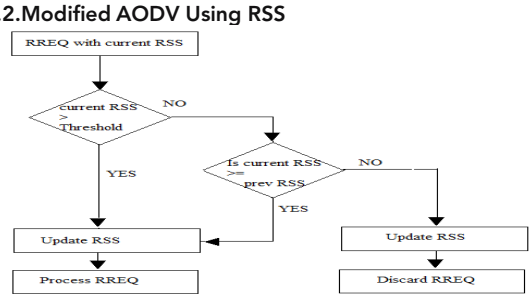


fig.5 : MAODV Process Request.

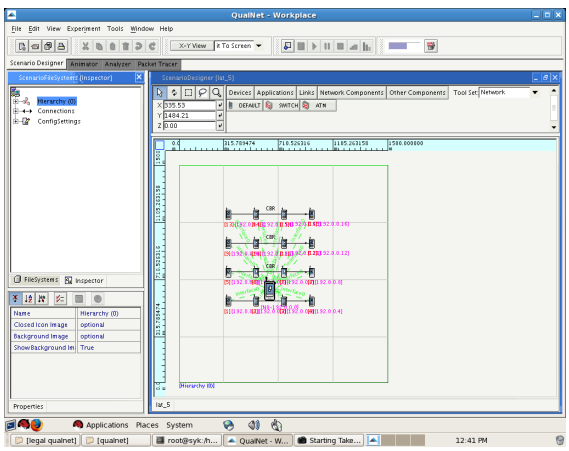
4.Simulation and Results:
4.1.Simulation setup

Routing Protocol fo	AODV
• Net Diameter (ma	35
• Node Traversal T	40MS
• Active Route Tim	3S
• My Route Timeou	6S
• Hello Interval *	1S
• Allowed Hello Los	2
• RREQ Retries *	2

ARAMETER	VALUE
Terrain Dimension	1500* 1500 meters
Temperature	290 K
Number of Nodes	10
Simulation Time	105seconds
Frequency	2.4 GHz
Noise Factor	10
Mobility Model	Random Waypoint
Propagation Model	Statistical
Path Loss Model	Free Space/Two Ray
Shadowing Model	None/constant/Log normal
Fading Model	None
MAC Protocol	802.11
Network Protocol	IPv4
Routing Protocol	AODV

Volume : 4 | Issue : 5 | May 2014 | ISSN - 2249-555X

Source	1
Destination	4
Items to Send *	10000
Item Size (bytes) *	512
Interval *	0.005S
Start Time *	0.1S
End Time *	50S
Enable Rsvp-Te?	No



4.2.Simulation Results:

fig.6 :Simulation Result

5. CONCLUSION AND FUTURE WORK

The worldwide success of the Internet has led to the domination of the layered architecture, but a strict layered design is not flexible enough to cope with the dynamics of next-generation communications which will be dominated by wireless. Careful exploitation of some cross-layer protocol interactions can lead to more efficient performance of the transmission stack (and hence better application layer performances) in different wireless networking scenarios.

In this paper we have described existing cross-layering approaches in next generation communications and modified AODV for Improvement in Throughput of system.

In future CLD will b use to optimize wireless characteristics parameters, like Throughput. So using CLD, speed, Capacity will increase. Further develop an efficient path metric that takes into account the current state of the channel and the quality of the link and to explore opportunistic routing strategies that a cross layer approach can make possible.

REFERENCE

[1] Frank Aune, “Cross-Layer Design Tutorial”, Norwegian University of Science and Technology, Norway, 26.11.2004. | [2] James F. Kurose and Keith W. Ross, “Computer Networking A Top-Down | | Approach Featuring the Internet”, Pearson | | Education, Inc., Third Edition, 2006. | | [3] Kaustubh S. Phanse, “Policy-Based Quality of Service Management in Wireless Ad Hoc Networks”, Virginia Polytechnic Institute and State University, 2003. | [4] M.A. Haleem and R. Chandramouli, “Adaptive Downlink Scheduling and Rate Selection: A Cross Layer Design” IEEE Journal on Selected Areas in Communications, vol. 23, No. 6,pp.1287 – | 1297,June 2005. | | [5] Mihaela van der Schaar and Murat Tekalp, “Integrated multi-objective cross-layer optimization for wireless multimedia transmission”, 0-7803-8834-8/05, IEEE, pp. | 3543-3546, 2005. | | [6] Mohammed Tarique, Kemal E. Tepe and Mohammad Naserian, “ A Cross-Layer Design for Passive Forwarding Node Selection in Wireless Ad Hoc Networks”, | 2005 International Conference on Wireless Networks, Communications and Mobile Computing, 0-7803-9305-8/05, IEEE, pp. | 802-807, 2005. | | [7] Peter Alzén, “Multi-cell Performance of IEEE | | 802.11a Wireless LANs”, Luleå University of Technology, 2004. | [8] “QualNet 4.0 API Reference Guide”, Scalable Network Technologies, Inc., Los Angeles, January 24, 2007. | | [9] “QualNet 4.0 Programmer’s Guide”, Scalable Network Technologies, Inc., Los Angeles, November, 2006 | | [10] “QualNet 4.0 User’s Guide”, Scalable Network Technologies, Inc., Los Angeles, January 24, 2007 | [11] S. Shakkottai, T. S. Rappaport, and P. C. | | Karlsson, “Cross-Layer Design for Wireless Networks,” IEEE Communications Magazine, vol. 41, no. 10, pp. 74–80, Oct. | 2003. | | [12] V. Kawadia and P. R. Kumar, “A Cautionary Perspective on Cross Layer Design” IEEE Wireless Communications Magazine, vol. | 12, no. 1, pp.3 – 11, Feb. 2005. | | [13] V. Srivastava and M. Motani, "Cross-Layer Design: A Survey and the Road Ahead,"IEEE Comm. Mag., pp. 112 – 119, Dec. 2005. | [14] Wing Ho Yuen, Heung-no Lee and Timothy | | D. Andersen, “A Simple and Effective Cross | | Layer Networking System for Mobile Ad hoc Networks”, 0-7803-7589-0/02, IEEE, pp. 1952-1956, 2002. | [15] Yin Min, Tang Yao and Yu Quan, “Cross- Layer Ideas in Wireless Network Designs”, | 2005 IEEE International Symposium on Microwave, Antenna, Propagation and EMC Technologies for Wireless Communications Proceedings, O-7803-9128-4/05, IEEE, pp. | 891-894, 2005. | | [16] William Stallings, “Data and Computer | | Communications”, Sixth Edition, Pearson Education Inc., 2002. | [17] V. Srivastava and M. Motani, Cross-layer design: A survey and the road ahead, IEEE Communications | Magazine, Vol. 43, No. 12, pp. 112–119, Dec. | | 2005. |