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OLSRV2- An Efficient Approach for Improving Network Load in MANET

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Abstract— MANET are decentralized & self-configured wireless network models which consists of various mobile nodes that work in distributed mode without the help of an administrator or access point. Its stand-alone topology allows the creation of non-permanent and specifically created networks that can operate in dense conditions. A MANET is a stand-alone collection of mobile users who communicate on narrow bandwidth wireless connections. This research paper proposes the OLSRV2 protocol that will reduce network load over OLSRV1

Keywords— MANETs, Multipath routing.

I. Introduction to Ad-hoc Network:

A network of wireless sensors may contain one or more washing nodes (base stations) for collected data collection and transmission to a central processing and storage system. Recent advances in microelectronic technology, wireless communications and digital electronics have resulted in the development of sensor nodes. A wireless sensor network (WSN) consists of a set of typically low performance nodes. They collaborate to perform detection activities in a given environment. A sensor node is usually powered by a battery and can be subdivided into three main functional units: a detection unit, a communication unit, and a processor. This brings the flourishing prospect of WSNs into practical feasibility.

II. Various Characteristics of MANETs:

i) **Distributed operation:** There is no network of funds for central control of network operations; network control is distributed between nodes. Nodes participating in a MANET must cooperate and communicate with each other and each network node acts as a relay whenever necessary to implement specific routing and security features.

ii) **Multi hop routing:** When a node attempts to send information to other nodes that are outside its communication range, the packet must be forwarded via one or more intermediate nodes.

iii) **Dynamic topology:** Nodes are free to move arbitrarily at different speeds; therefore, the network topology may change randomly and in unpredictable times. MANET nodes create and maintain dynamically the routes between them while they move around, setting their own network.

iv) **Terminals with Light Weight:** In the maximum cases, MANET nodes are produced with less CPU capacity, low power consumption and reduced size.

v) **Shared Physical Medium:** The wireless communication medium is accessible to any entity equipped with the right equipment and adequate resources. Consequently, channel accessibility can not be limited.

III. OLSR OVERVIEW

Optimized Link Status (OLSR) Routing is one of the most proactive routing protocols designed for MANET. Use periodic message exchange to keep topological information on the network in each node. The key concept of OLSR is the use of multipoint relay (MPR) to provide an efficient flood mechanism by reducing the number of transmissions required. MPR announces this information periodically in their control message. Only

the selected nodes as MPR nodes are responsible for the publicity as well as the list of MPR selectors advertised by other MPRs.

IV. Problem Formulation

MANET is considered to be a great solution to adapt to emergency situations, such as rescue or rescue operations, so as to provide reliable communication and contribute to the protection of human lives. However, the dynamic topology in which ad hoc networks normally work increases the complexity of protocol design. Nodes can join or leave the network instantly, while limited energy resources can cause bad disconnections. Link instability, generated by external factors such as propagation delay or interference, has a negative effect on the bit error rate, causing errors. In this context, the proposed challenge is an optimization problem, in which the routing protocol must formulate strategies to meet QoS, at the same time that it can be adapted to radical topology changes and maintain energy consumption satisfactory.

V. Proposed work

For implementation of proposed system steps to be followed are given below:

FLOWCHART

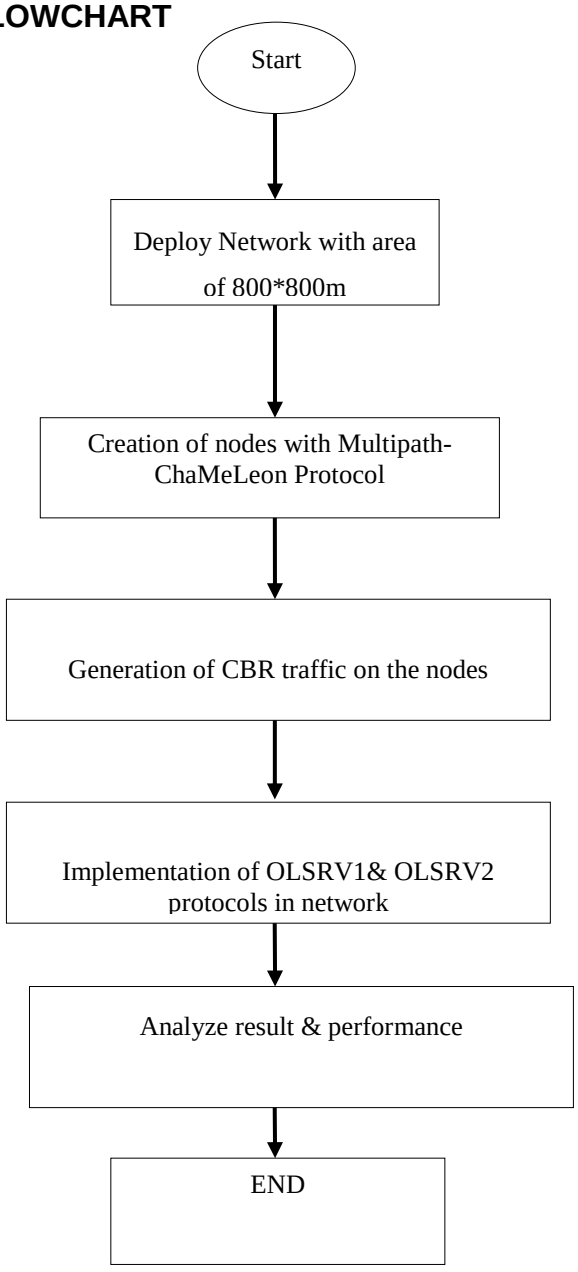

Figure 1 Proposed Work Flowchart

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Simulation Scenario

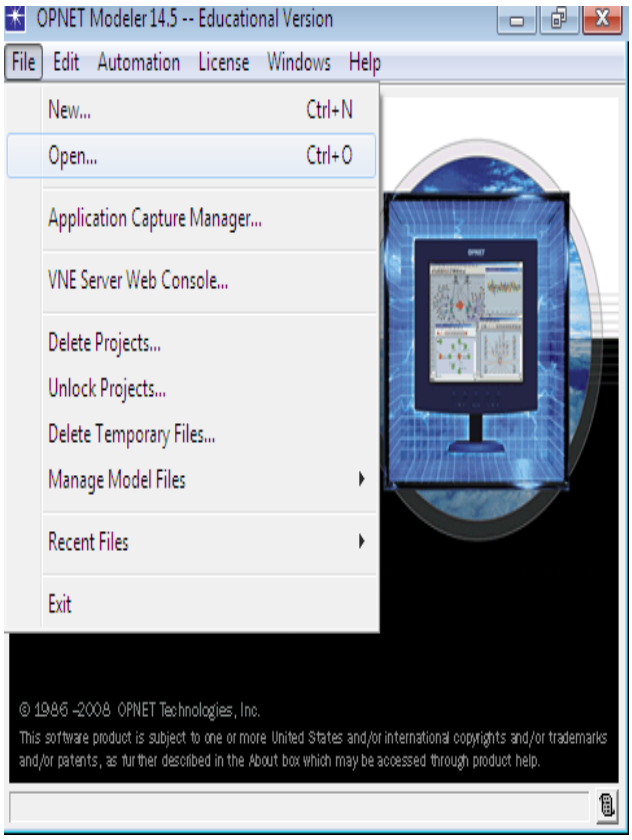

Fig 2: Opening file saved in a folder

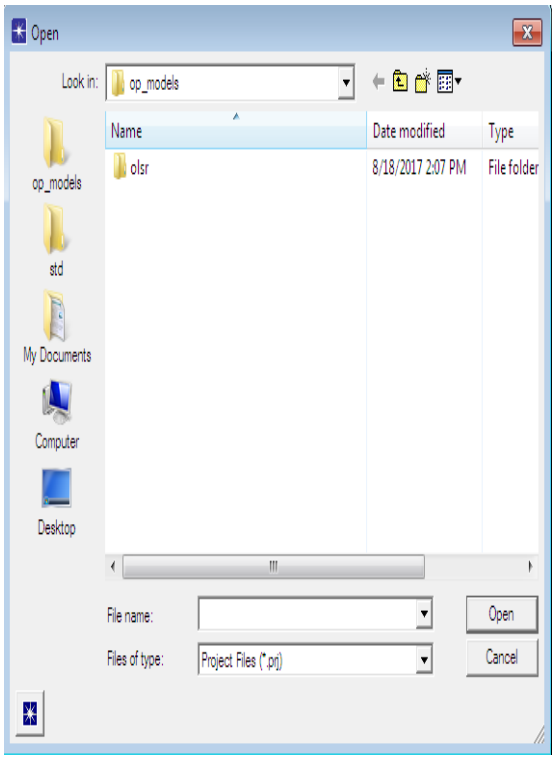

Fig 3 : OLSR file saved in a op_models

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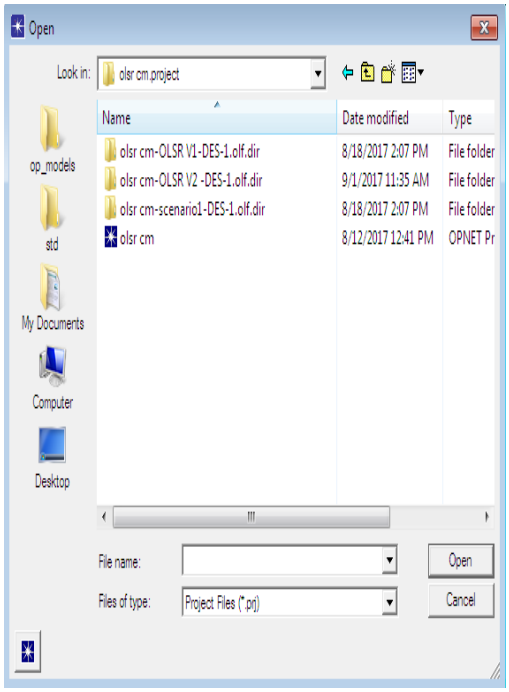

Fig 4: Name of OLSR file

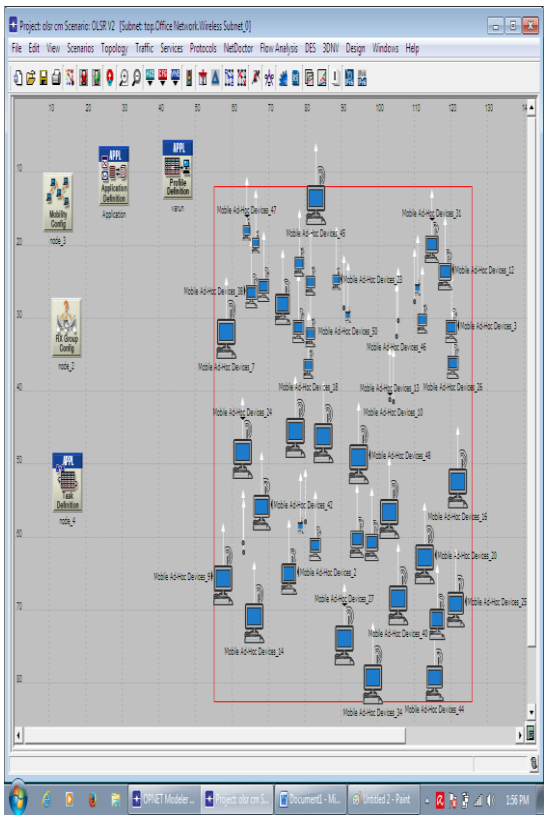

Fig 5: Scenario created for olsrv2

In this fig we use 50 nodes in this and run simulation after that compares the result of different parameters. Below figs. Shows the comparison of OLSRV1 and OLSRV2.

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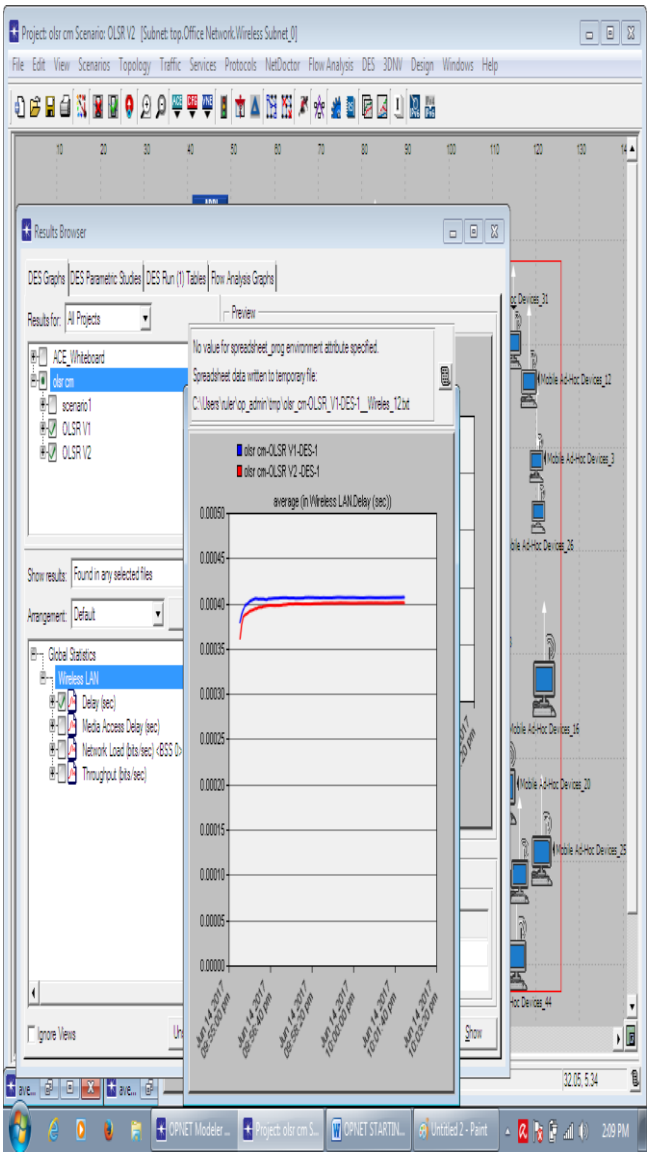

Fig 6: Delay comparison for OLSR V1 and OLSR V2

This fig. shows the delay time of OLSRV1 or OLSRV2.In this OLSRV2 has less delaying time period as compare to OLSRV1.The result values of OLSRV1 and OLSRV2 on the different time periods are :at the time period on 0.0 the value of OLSRV1 is 0.000379827746 and OLSRV2 is 0.00036064651.Furthermore the time period on 60.0 the value of OLSRV1 is 0.000404138345 and OLSRV2 is 0.00039684532.On the time period 100.0 the value of OLSRV1 is 0.000406060175 and OLSRV2 is 0.000397830658.Next time period is 300.0 the value of OLSRV1 is 0.000406138485 and OLSRV2is 0.000400211875 and the last time period is 396.0 the value of OLSRV1 is 0.000406594857 and OLSRV2 is 0.000400502335.From the above results of OLSRV1 and OLSRV2,we notice that the overall performance of delaying period of OLSRV2 is better than the performance of OLSRV1.

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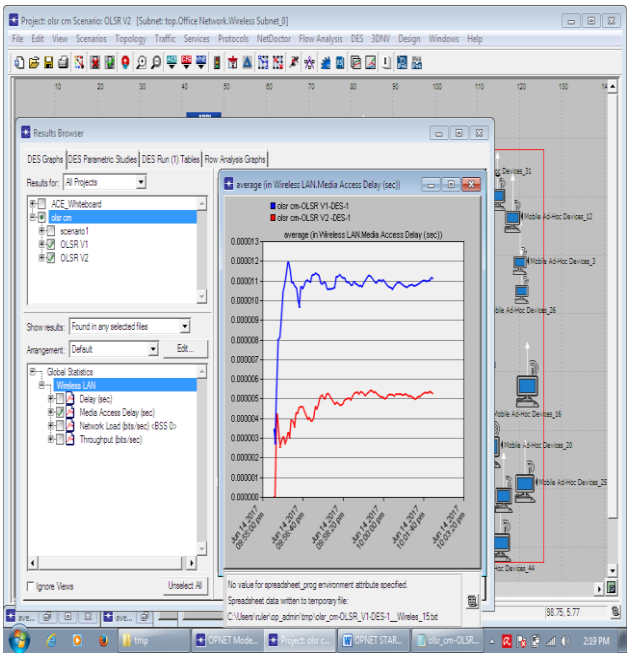

Fig 7: Media Access Delay comparison of OLSR V1 with OLSR V2

This fig. shows the Media Access Delay time of OLSRV1 or OLSRV2.In this OLSRV2 has less media delaying time period as compare to OLSRV1.The result values of OLSRV1 and OLSRV2 on the different time periods are :at the time period on 8.0 the value of OLSRV1 is 0.000005622548 and OLSRV2 is 0.000004249192.Furthermore the time period on 100.0 the value of OLSRV1 is 0.0000011287202 and OLSRV2 is 0.000004029734.On the time period 200.0 the value of OLSRV1 is 0.0000010976343 and OLSRV2 is 0.000005265672.Next time period is 300.0 the value of OLSRV1 is 0.0000010723333 and OLSRV2 is 0.000005123051 and the last time period is 396.0 the value of OLSRV1 is 0.0000011098334 and OLSRV2 is 0.000005254205.From the above results of OLSRV1 and OLSRV2,we notice that the overall performance of media access delaying period of OLSRV2 is better than the performance of OLSRV1.

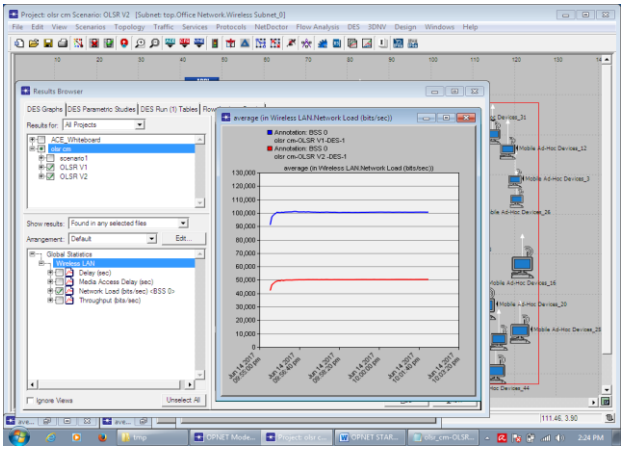

Fig 8: Network Load of OLSR V1 with OLSR V2

This fig. shows the Load Of Network of OLSRV1 or OLSRV2.In this OLSRV2 has less less network load as compare to OLSRV1.The result values of OLSRV1 and OLSRV2 on the different time periods are :at the time period on 0.0 the value of OLSRV1 is 91480 and OLSRV2 is 42376.Furthermore the time period on 100.0 the value of OLSRV1 is 100601.53846153847 and OLSRV2 is 50231.384615384617.On the time period 200.0 the value of OLSRV1 is 100333.17647058824 and OLSRV2 is 50234.98039215686.Next time period is 300.0 the value of OLSRV1 is 100519.89473684211 and OLSRV2 is 50276 and the last time period is 396.0 the value of OLSRV1 is 100546.8 and OLSRV2 is 50391.440000000002.From the above results of OLSRV1 and OLSRV2,we notice that the overall performance of network load of OLSRV2 is better than the performance of OLSRV1.

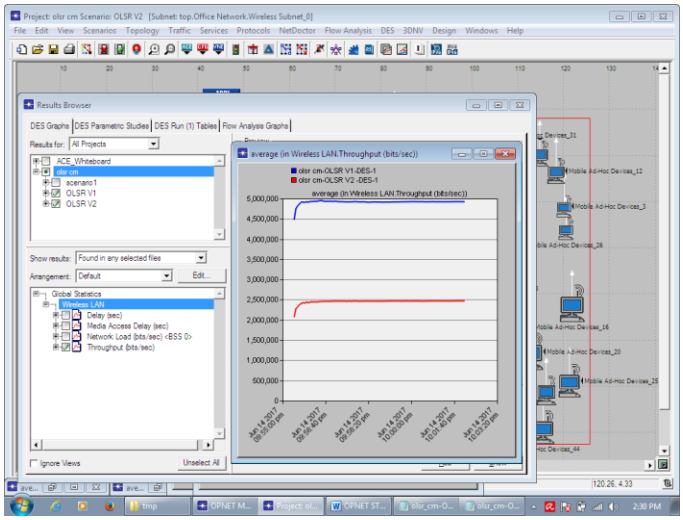

Fig 9: Throughput comparison of OLSR V1 with OLSR V2

In this fig, shows the Throughput of OLSRV1 and OLSRV2.In this Throughput of OLSRV1 is increase as compare to OLSRV2.

VI. Conclusion

A wireless ad-hoc network is a collection of mobile nodes that communicate with each other by forming a multi-hop radio network and maintaining connectivity management without an existing infrastructure. These kinds of networks are expected to have a very important role in military and civilian applications. To design a load balanced routing protocol to improve the QoS in the network is a challenging issue. The goal of this research is to provide load balancing in the network to enhance the QoS in the network. MANET is a type of network that is not centralized. IT will configure itself. In our work we have successfully developed a methodology for OLSRV2 which will improve the battery life of MANET when network load will decrease considerably. Hence we have clearly indicated that on implementing OLSRV2, the battery life of MANET will reenergized.

REFERENCES

[1] Aarti, Tyagi S.S. “Study of MANET: Characteristics, Challenges, Application”, IJCST Volume 3, Issue 5, pp. 252-257, May 2013.

[2] Gill A., Diwaker C. “Comparative Analysis of Routing in MANET”, Volume 2, Issue 7, pp.309-314, July 2012.

[3] Verma A.K., Jindal V., Bawa S., “How the two Adhoc networks can be different: MANET & WSNs”, IJCST Vol. 2, Issue 4, pp. 122-126, Oct-Dec. 2011.

[4] Singh G., “MANET” Issues and Behaviour Analysis of Routing Protocols”, International Journal of Advanced Research in Computer Science and Software Engineering (IJARCSSE), Volume 2, Issue 4, pp. 219-227, April 2012.

[5] Raja, J., and S. Santosh. "Comparative study of reactive routing protocol (AODV, DSR, ABR and TORA) in MANET." IJECS Volume 2, issue 3, 2013.

[6] Wen J., “Multiple Path Optimized Link State Routing (MP-OLSR)”,AnneeUniversitaire, pp. 1-44, 2012.

[7] Perkins C., Royer E.B., and Das S., “Ad-hoc on Demand Distance Vector (AODV) Routing”, Network Working Group, RFC-3561, pp. 1-11, July 2003.

[8] Tarique, Mohammed, Kemal E. Tepe, SasanAdibi, and ShervinErfani. "Survey of multipath routing protocols for mobile ad hoc networks." Journal of Network and Computer Applications 32, no. 6 (2009): 1125-1143.

[9] Pei G., Gerla M., and Chen T., “Fisheye State Routing in Mobile Ad-hoc Networks”, 2000.

[10] Clausen T., Jacquet P., "Optimized link state routing protocol (OLSR)", Internet Request For Comments RFC 3626, Internet Engineering Task Force, 2003.

[11] Ali H. M., Naimi A. M., “Signal strength based link sensing for mobile ad-hoc networks”, pp. 201-211, Springer 2009.

[12] Hirata K., Higami Y., “Residual energy-based OLSR in mobile ad hoc networks”, pp. 3214-3217, IEEE 2011.

[13] Alexandros L., Nikolaos P., Nuwan W., “Multipath Routing Approach to Enhance Resiliency and Scalability in Ad-hoc Networks” , IEEE-2016

[14] David B. J., Davd A.M., and Josh B., “DSR: The Dynamic Source Routing Protocol for Multi-Hop Wireless Ad-hoc Networks”, pp. 1-25, 2001.

[15] Rango F.G., Fotino M., “Energy Efficient OLSR Performance Evaluation under Energy aware Metrics”, pp. 193-198, IEEE, 2013.