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SURVEY ON DELAY MITIGATION USING LINK STATE DYNAMIC ROUTING PROTOCOL TECHNIQUES

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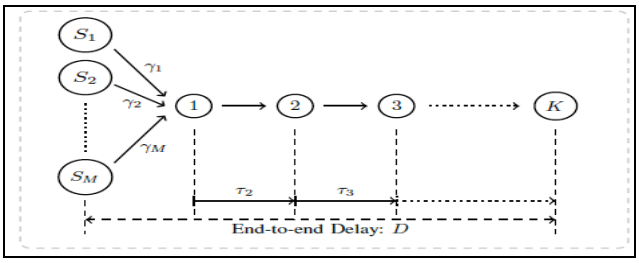
ABSTRACT**:** *Wireless network is a new standard specifically designed for real-time and reliable communication between sensors and sink devices for industrial process monitoring and control applications. End-to-end communication delay analysis for Wireless networks is required to determine the schedulability of real-time data flows from sensors to sink for the purpose of acceptance test or workload adjustment in response to network dynamics. In this paper, we consider a network model based on Wireless, and map the scheduling of real-time periodic data flows in the network to real-time multiprocessor scheduling. We then exploit the response time analysis for multiprocessor scheduling and propose a novel method for the delay analysis that establishes an upper bound of the end-to-end communication delay of each real-time flow in the network. Simulation studies based on both random topologies and real network topologies of a node physical wireless sensor network test demonstrate that our analysis provides safe and reasonably tight upper bounds of the end-to-end delays of real-time flows, and hence enables effective schedulability tests for Wireless networks.*

Keywords : End To End Delay, Routing Protocols, Wireless Sensor Network (WSN)

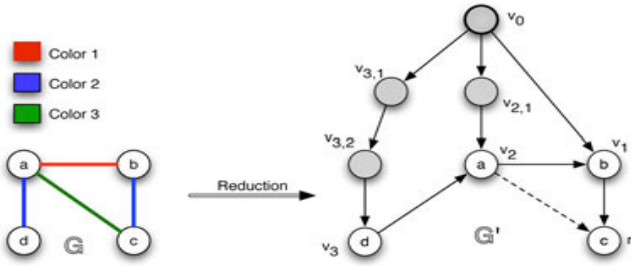
I. INTRODUCTION

Sensor nodes in WSN are battery based, low-power, and low-cost devices with minimum sensing, data processing, transmission range, memory, and communication capabilities.WSNs operate in a difficult real-time, real world noisy environment. In such conditions their occur several challenges for WSNs design due to the fickleness of wireless communication medium and the real-time requirements of control applications. So the, WSNs not only share wireless communication challenges with observe on sensor-to-sensor communication, but also introduce their own unique challenges. In day to day life, most principles and protocols for WSNs lack the support of real-time requirements and sensitivity to delays. This limits the usefulness and applicability of these principles in WSNs and hence, large scale deployments are hard or inefficient. In this research, the qualities of service parameters of network paths are also added to develop trust in the connections to protect from various attacks. Moreover, a relative analysis of delay, congestion, packet losses, transit time between source and destination is illustrated in AODV and OLSR. In simulation time, packet drop-outs and link failures for packets are examined and analyzed under network attack.



II. LITURATURE SURVEY

Abusayeed Saifullah et al. Has analysed the end-to-end delay problem for the analysis of continuous flow from sensors to actuators for any network that is modelled based in Wireless HART. The Wireless HART is simply works on the basis of TDMA.The upper bounds of the end-to-end delays is derived in which the flow under decided priority scheduling where the each transmissions flow which is associated are depend on the fixed priority of the network. Fixed priority scheduling are the common class of real-time policies for scheduling. At the time of design and for online admission control analytical delay bounds can be used to test, that a set of real-time flows can be assembled for all the deadlines. An end-to-end delay analysis is highly desirable in process monitoring and control applications as compared to extensive testing and simulations as the real-time performance requires guarantees. It is also used for the adjustment of workload in response to network changes. As when any channel gets blacklisted or some routes are recalculated, the delay analysis can be used to rapidly decide whether some flow has to be removed or some paths has to be updated[1].



Y.Chen et. Al propose a novel end-to-end delay analysis for fixed priority transmission scheduling in wirelesshart networks. The proposed analysis calculates a safe and tight upper bound of the end-to-end delay of every real-time periodic data flow in pseudo polynomial time. Furthermore, we extend the pseudo polynomial time analysis to a polynomial time method that provides slightly looser bounds but can calculate the bounds more quickly. We evaluate our analysis through simulations based on both random network topologies and the real network topologies of a wireless sensor network testbed consisting[2]. You Xu et al suggested a problem of end-toend delay in a wirelesshart network for periodic real-time flows from sensors to actuators. The focus is done on delay analysis for the priority scheduling when real-time flow are scheduled based on fixed priorities the transmissions associated are assigned to these flows. Fixed priority scheduling is commonly adopted scheduling strategy in now a days An upper bound of the end-to-end delay for the periodic flow is derived. The end-to-end delay analysis are used to test,at design time and also at the time of online admission control. The analytical delay bounds are highly expected in Process monitoring and for controlling applications that require realtime performance than Compared to extensive testing and simulations, They are also use for the adjustment of workload in networks. A key analysis is done to map the realtime transmission scheduling in wirelesshart networks with the Real-time multiprocessor scheduling. This kind of mapping allows us to state a delay analysis in real-time flows through wirelesshart networks [3]. D. Chen et al proposed that WIRELESS Sensor-Actuator Networks (wsans) are the sources of communication infrastructure for monitoring and for controlling applications in process industries. For any feedback control system where the network control loops are Closed through a WSAN, the sensor devices regularly send data to the base station, and then the control input data are delivered to the actuators through these network. To continue the stability and performance, the industrialmonitoring and their control applications impose tough end to- end delay requirements for the communication of data between sensors and actuators [4]. C. Lu et.al proposed that wirelesshart is an open standard used in wsans for many process in industries In the transmission of real-time scheduling problem in a set of cyclic data flows with end-to-end deadlines beteween sensors to actuators in a wirelesshart network. To solve this problem various contributions are addressed

- the transmission scheduling problem is analysed which is based on the wirelesshart networks characteristics also this problem is NP-hard it was proved.
- an essential condition for scheduling in the wirelesshart networks which could be used for effective Reduction in the search space to get an optimal solution and also provide a near to well efficient heuristic based Solution.
- an optimal scheduling algorithm is also proposed that is based on branch-and-bound technique.
- We design a practical heuristic-based algorithm was also designed known as Conflict-aware Least Laxity First (C-LLF) that is used to tackle dynamic changes in network topologies [5]. D.D.Chaudhary et al. Have concentrated on the industry based applictions of WSN. In any industry the quality service is most important. The essential aspects for this are the end to end delay, energy consumption, output, packet delivery ratio. Requirement of timing is also very important. Even a fraction of delay may cause a big chances of delay and also failure. During transmission the energy requirement is very much stringent because if their is failure in the battery the whole network will get fail. The two major issues that is end to end delay and energy consumption are discussed These two issues are introduce in the each layer of WSN. The delays and energy consumption takes place at routing layer and medium access control (MAC) layer . The IEEE 802.11 application uses MAC protocol which is extensively used as a low cost protocol in WSN for industrial application. The implementation of AODV and DSDV routing protocols are broadly used The energy consumption and end-to-end delay for a single sink environment in industry is analysed as a MAC, AODV and DSDV routing protocols by consideration of IEEE 802.11 at different traffic load by the use of NS-2 [6]. K. Karenos et al has tried to solve the problem in sensor networks for real-time traffic management system. They propose a decentralized method that uses a synergistic scheduling and traffic regulation mechanism to the support for real–time flows in any sensor networks. The main implementation was the regulation in the ral time traffic for controlling the congestion and proper schedule of end to end application for appropriate requirements. The scheduling component at each node projects the expected packet sojourn times and schedules the packet transmissions based on each packet's urgency (indicated by its laxity value). The traffic regulation component, in turn,

attempts to meet the packets' required delays by dynamically controlling the forwarding rates of the nodes. This is fully controlled and adopted by the SUPPORT approach that enables the integration by multiple routing protocols that are achieved through effectively adjustment in incoming packet. After a detail analysis on SUPPORT it was shown that it can hold dynamic flows in any Network, also there is reduction in fidelity that are compromise by consideration Of per-hop needed delay flow, it also rejects packets having negative values in reduction of energy wastage [7]. J. A. Stankovic has contributed, a real-time communication architecture in large-scale wireless sensor networks that is shortly known as RAP. It describes a set of suitable, high-level query and services for real-time distributed micro-sensing applications. The services of query and event are based on location-addressed communication of novel models that are supported by a scalable and light weight stack of network. RAP is also contributed for a novel Velocity Monotonic Scheduling (VMS) policy used for scheduling the packet in sensor networks. VMS is based on a concept of packet requested velocity. Each packet in a network is likely to make its end-to-end deadline through the destination for the requested velocity, which Detects its local urgency. With a Comparision with non priority packet scheduling, VMS enhances the deadline Miss ratios in sensor networks by generating higher priority and higher requested velocities to packets.The study of simulation to the real-time performance of multiple routing protocols and packet scheduling algorithms in any sensor network is discussed in details. The simulation experiments had given result that, if a sensors is long distance from base station, RAP reduces the miss ratio from 90.0% to 17.9%, with comparison to the wireless communication systems[8]. Laila Afify et al has discussed that in WSN the sensor nodes are distributed in a specific area to sense the surrounding environment. In such condition, nodes are capable of sensing and forwarding it,also they are able to carry out some calculations. The performance of wireless sensor networks with an random vacation of time distribution is evaluated. A relay network is being admired that holds the measurement for a data sink node. The analysis of maximum hop count is analysed by maximum end to end delay the probability of dropping packet, that arises if any sensor packets do not remain that the expected delay threshold is constraint [9].

III. PROPOSED SYSTEM

The end-to-end delay for fixed priority transmission scheduling in Wireless HART networks, to enhance the end-to-end reliability,both upstream and downstream communications are scheduled based on graph routing .It calculatesa safe and tight upper bound of the end-to-end delay ofevery real-time periodic data flow in pseudo polynomialtime. Furthermore, we extend the pseudo polynomial time analysis to a polynomial time method that provides slightly looser bounds but can calculate the bounds more quickly. By this the end–end to delay will reduce.

IV. CONCLUSION

The various protocols that are discussed in the literature survey focus only on providing various protection to the data sources, destination, routes. Most of the routing protocols provides number of protection with increase in delay and consumes the bandwidth of the data set nodes. The proposed system aims to reduce the delay using the efficient routing technique.

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