

Comparison Between WSN and WSAN

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Abstract: Wireless sensor and Actor network consist of more number of Sensor and Actor, linked by the wireless medium to perform timely action for the given input . In Wireless sensor each node has one or more sensors, embedded processors and low-power radios, and is normally battery operated. Typically, these nodes coordinate to perform a common task. This paper used to analysis the performance level and Co-ordination level between sensor and Actor nodes.

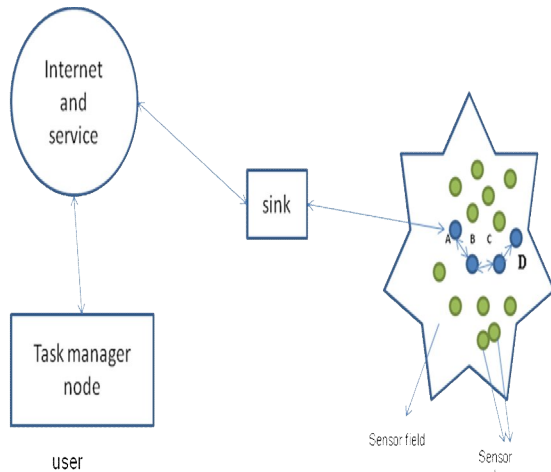
IndexTerms—Sensor,Actor,Performance level

I. INTRODUCTION

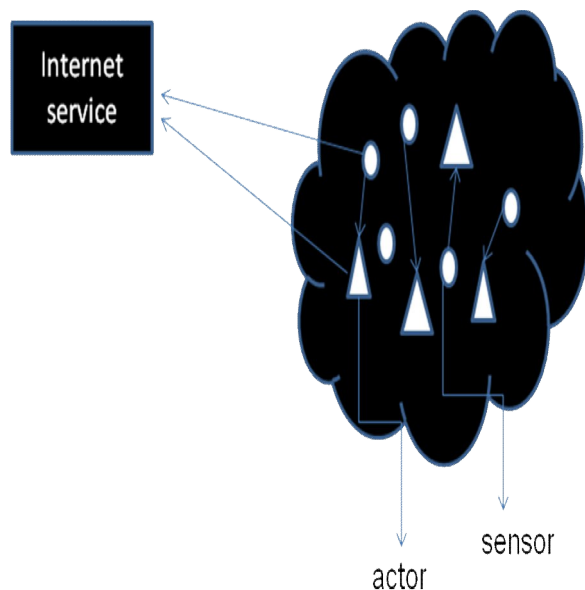
Wireless Sensor networks are a special category of Ad hoc Wireless networks that are used to provide a wireless Communication infrastructure among the sensor deployed in a specific application domain[1] .Recent advances in Wireless communication technology and research in ad hoc wireless networks have made smart sensing a reality .Sensor nodes are tiny devices that have the capability of sensing physical parameters ,processing the data gathered ,and communicating over the network to the monitoring station[5]. A sensor network is a collection of a large number of sensor nodes that are deployed in a particular region .The activity of sensing can be periodic or sporadic [16].An example for the periodic type is the sensing of environmental factors for the measurement of

parameters such as temperature, humidity ,and nuclear radiation. Some of the domains of application for sensor networks are military ,health care ,home security ,and environmental monitoring . Wireless Sensor and Actor node consist of more number of sensor with actor, it used for energy consumption and timely action[1]. The sensing and timely actions are performed by sensor and actor nodes, respectively. Sensors are low-cost, low power devices with limited sensing, computation, and wireless communication capabilities. Actors are resource rich nodes equipped with better processing capabilities, higher transmission powers and longer battery life. Moreover, the number of sensor nodes deployed in a target area may be in the order of hundreds or thousands where such a dense deployment is usually not necessary for actor nodes, since actors have higher capabilities and can act on large areas[5]. A WSAN is made of two kinds of nodes: sensors (the ‘computing’ entities) and actors (the controlling entities), with the density of sensor nodes much bigger than that of actor nodes. The sensors detect the events that occur in the field, gather them and transmit the collected data to the actors. The actors react to the events in the environment based on the received information. The sensor nodes are low-cost, low-power devices equipped with limited communication capabilities, while the actor nodes are usually mobile, more sophisticated and powerful devices compared to the sensor nodes.

WSN ARCHITECTURE



WSAN ARCHITECTURE



Co-Ordination of Sensor in Wireless sensor network:

Wireless sensor network consist of more number of sensors and then sink node that are called base station , sensors are low cot low power device with minimum sensing capabiity and low power devices ten the base sation are collecting the information from the all sensor nodes[2] .Sensor to sensor commuication having more time to send data through the network.In wireless sensor network the information will be send to the sink and then the data will be send to the appropriate destination[1]. In wireless sensor network the security and the energy efficiency will be important characteristics .Security will be provided by using any security algorithm then the energy will be saved due to the processig the data in a network.Sensing range of sensor is 100m per second ,so the environment will be monitored . The information will be send to the user or interenet service.

Co-Ordination of Sensor-to-Actor in Wireless sensor network:

Wireless sensor and actor network consist of sensors with actors in the monitoring environment.The Actor having the sensing range of 200 meter ,so the region will be monitored very easily with the help of actor[2].The actor –to –actor co-ordination is more efficient because the sensing level and the timely decision will be taken by the actor . Here the sink does not used for data transmission from the source so the time will be saved for energy efficiency.Each 100 sensor region having 1 actor ,the processing of actor is speed when compared with sensors.The energy will be saved for the future use with the help of sensing range and the time.

Real time co-ordination and Communication:

Actor is used for timely action for the given input of sensor. This process is motivated the real time process of fire incident, heart beat and pressure measuring .The actor and the sensor co ordination will be taken by the given input and then the data will be send to the another area through the actor node .The communication range of Actor is 300 meter per second.

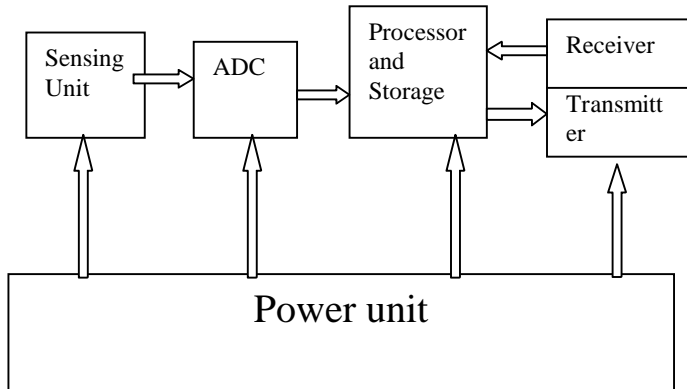
Energy efficiency:

Energy is most important criteria in Wireless sensor network ,it is achieved through the co-ordination of sensor to actor because the 100 sensor is equalized by the 1 actor [14].Here the environment will be separated due to the region of interest ,each region having the one actor so the sensor energy will be saved at the time of message dissemination.

Characteristics of Wireless sensor and Actor network

- Actors are high power device
- High Cost
- Small Size
- Long Distance communication

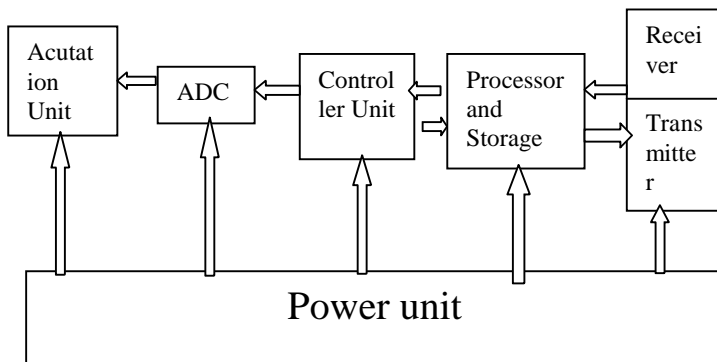
SENSOR COMPONENT



Energy level maintaining in WSAN:

Wireless sensor and actor network having minimum number of efficient actor for large environment monitoring. Here the node information will be maintained when that particular node will be come in to contact, then for energy saving other nodes are going to sleep mode ,whenever they are not in a communication range, in this process used for energy efficiency. In WSAN automated architecture is used ,due to this actor to actor and actor to sensor communication and coordination are doing directly, it will be used for energy efficiency. Then the node information will be stored in the main memory. Since actors are resource-rich nodes with high transmission power, actor-actor communication can be long-range unlike sensor-actor communication .Therefore, WSAN can be considered as the union of wireless sensor and ad-hoc networks.

ACTOR COMPONENT



Energy level maintaining in WSN:

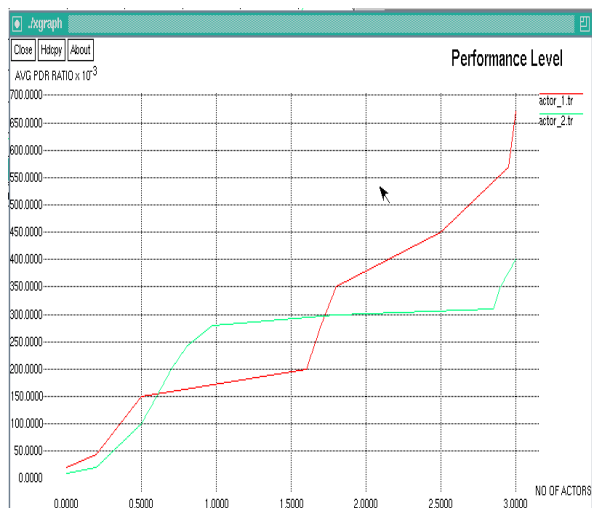
Wireless sensor having the more number of sensors that are used to monitor the network performance. In WSN semi-automated architecture is used due to this the node information will be passed to the local sink then it will passed to the destination. hence sensors are low power devices so the battery power will be maintained for 50% of the process only. so it will leads the network decredation. sensor to sensor communication only available at 100 meter per second, so it does not used for the real time application.

Characteristics of Wireless sensor network

- Low power device
- Small Size
- Short Distance communication
- Low cost

RESULT ANALYSIS

The simulation results were conducted with the help of the Network Simulator. The network is running on a laptop with intel3 core, Processor CPU and memory 3-GB RAM. The intention is to provide simulation results and make it easier to compare the results. In NS 2, the nominal configuration has 49 nodes in a flat space. The physical layer and the MAC layer are included in NS2 for providing a platform and link layer used to make communication with neighbour nodes. For a network every 100 sensor node requires 1 actor node with the sensing range of 200mx200m. The transmission range of sensor node is 20m/s and for actor node is 30m/s. The simulation results were measured and compare with parameters like Packet delivery ratio, and no.of.actors. Packet delivery ratio: Packet Delivery Ratio defines the ratio between the number of packets received by the target node and the number of packets sent by the source initiator node. Routing Analysis: Routing analysis defines the ratio between the amount of routing transmissions and with the routing related transmissions such as Route Request packet and Route Reply packet. Energy efficiency: However the data size is increase, the static energy will be maintained.



CONCLUSION AND FUTURE WORK

Wireless sensor and actor is the combination of wireless and adhoc network so the wireless sensor network needs will be satisfied .Then the energy level will be maintained through the OLSR routing protocol performs hop by hop routing (i.e) each node uses its most recent information to route a packet .Therefore, when a node is moving,its packet can be successfully delivered to it ,if its speed is such that its movement could be followed in its neighborhood, at least .The protocol thus supports a nodal mobility that can be traced through its local control messages,which depends upon the frequency of these messages.

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