

Abstract

Lately, the wireless technology is developing more rapidly, It proved with already established a new wireless technology that known as ZigBee (IEEE 802.15.4). ZigBee is a protocol in wireless technology that specialized in sensor devices. Originally, a ZigBee network has a coordinator that called sink. It serves as network analyzer, controlling, and arranging sensors in communicating each other. But there's a time when it can't be funcionate well, so it has to be search new sink to replaced it.

In this Final Task, researcher try to solve the problem exist by using steps in MT-HW algorithm in determining parent for new sink determine process. It needs event rate parameter to determine a parent. For ZigBee (IEEE 802.15.4) network modelling, it uses a simulator software which is NS-2 (Network Simulator 2) in a tree topology.

The simulation results that an event rate parameter is primary determining a node to be chosen as a new sink. The algorithm processing time in determining a new sink will be the object of analysis. And, the effects of new sink determining process which are Successful Association Rate (SAR), Orphaning Rate (OR), Orphaning Recovery Rate (ORR) and delay, are also be the objects of measurement.

The simulation results that traffic can reduce the value from SAR at the alternative sink amount to 1 and 5, but it doesn't happen at the alternative sink amount to 2, 3 and 4, it caused by possibility of node which conduct association phase more than once because if association failed, each node always will do association phase until it success connected with it's coordinator so the value from SAR increased. Traffic also can increase the value from orphaning rate between 12.22% - 75% and reduce the value from orphaning recovery rate between 12.5% - 22.22%.

Keywords : ZigBee, sink, event rate, MT-HW, NS-2