Tools Used

1. Qualnet Simulator
2. TRMSim-WSN Simulator
3. SnetSim Simulator
4. EDX® SignalPro®
5. MATLAB® Software
Qualnet Simulator

Introduction

The QualNet® communications simulation platform (QualNet) is a product of Scalable Network Technologies, Culver city, CA, 90230, USA. It is a discrete event simulator and capable of simulating both the wired or wireless scenarios from simple to the cumbersome conditions. It is a planning, testing and training tool that "mimics" the behavior of a real communications network. Simulation is a cost-effective method for developing, deploying and managing network-centric systems throughout their entire lifecycle. Users can evaluate the basic behavior of a network, and test combinations of network features that are likely to work. QualNet provides a comprehensive environment for designing protocols, creating and animating network scenarios, and analyzing their performance.
QualNet provides an inclusive set of tools with all the components for custom network modeling and simulation projects. QualNet's unparalleled speed, scalability, and fidelity make it easy for modelers to optimize existing networks through quick model setup and in-depth analysis tools. Models in source form provide developers with a solid library on which to build and experiment with new network functionality. The end result is accurate prediction of network performance for a diverse set of application requirements and uses. From wired LANs and WANs, to cellular, satellite, WLANs and mobile ad hoc networks, QualNet's library is extensive. Because of its efficient kernel, QualNet models large scale networks with heavy traffic and mobility in reasonable simulation times. QualNet has several core components, as well as various add-on components. QualNet Simulator is a state-of-the-art simulator for large, heterogeneous networks and the distributed applications that execute on those networks. QualNet Simulator is an extremely scalable simulation engine, accommodating high-fidelity models of networks of tens of thousands of nodes. QualNet makes good use of computational resources and models large-scale networks with heavy traffic and mobility, in reasonable simulation times. QualNet Simulator has the following attractive features:

- Fast model set up with a powerful Graphical User Interface (GUI) for custom code development and reporting options
- Instant playback of simulation results to minimize unnecessary model executions
- Fast simulation results for thorough exploration of model parameters
- Scalable up to tens of thousands of nodes
- Real-time simulation for man-in-the-loop and hardware-in-the-loop models
- Multi-platform support
TRMSim-WSN Simulator

Introduction

TRMSim-WSN (Trust and reputation Models Simulator for Wireless Sensor Networks) was developed by the Department of Information and Communication Engineering, University of Murcia (Spain). It is a Java-based simulator aimed to test Trust and Reputation models for WSNs. It provides several Trust and Reputation models and new ones can be easily added. It allows researchers to test and compare their trust and reputation models against a wide range of WSNs. They can decide whether they want static or dynamic network, the percentage of fraudulent nodes, the percentage of nodes acting as clients or servers, etc. It has been designed to easily adapt and integrate a new model within the simulator.
SnetSim Simulator

Introduction

SnetSim Simulator is developed by Naval Science and Engineering Institute (Istanbul, Turkey). It is an event driven simulation program that runs on Windows based operating systems.

The simulator allows the researchers to simulate and represent random network distributions and provides statistics of different data dissemination policies including the provision to test different sensor node distribution strategies. Numerous decisions like node operations, events calculations, routing protocols evaluations etc. can be taken from it.
EDX® SignalPro®

**Introduction**

EDX® SignalPro® is the product of EDX Wireless, Eugene, 97401, U.S.A. The principal building block of EDX’s comprehensive line of wireless network engineering tools, it is appropriate for any system, including broadband wireless WiMAX, LTE, Wi-Fi, cellular, and other mobile radio systems.

It offers all of the study types you need to design a basic wireless network, including area studies, link/point-to-point studies and route studies.
MATLAB® Software

Introduction
MATLAB® is a high-level language and interactive environment for numerical computation, visualization, and programming. Using MATLAB, you can analyze data, develop algorithms, and create models and applications. The language, tools, and built-in math functions enable you to explore multiple approaches and reach a solution faster than with spreadsheets or traditional programming languages. It can be used in wide range of applications, including signal processing and communications, image and video processing, control systems, test and measurement, computational finance, and computational biology. More than a million engineers and scientists in industry and academia use MATLAB, the language of technical computing.