ENSC 427 Demo Simulation of UMTS vs. Wi-Fi in ns-2

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Introduction

Universal Mobile Telecommunication System (UMTS)

•3G mobile cellular technology

•Based on GSM

•High speed quality networks

Wireless Fidelity (Wi-Fi)

•Exchange data wirelessly over computer network

Introduction continue

Project goal
- Compare UMTS and Wi-Fi in NS-2 simulation
  - Download bit rate
  - End to end delay
  - Multiple nodes simulation
  - Mobile nodes
- Tools:
  - ns-2
  - E.U.R.A.N.E
  - MATLAB
  - PASCAL script
  - Gnuplot
  - GAWK

Implementation

Included multiple nodes

•**Total of four nodes starting at a different time**

•**Each node are placed at certain distance from BS**

Implemented mobile nodes (Only UMTS)

•**Each node is moving in a speed of 3km/hr**

Gnuplot

•**Download bitrate**

•**End to end delay**

NS-2 Reference Model

E.U.R.A.N.E UMTS Extension in NS-2

Included:

•**Radio Network Controller (RNC)**

•**Base Station (BS)**

•**User Equipment (UE)**

Supported:

•Forward access Channel (FACH)

•Random access Channel (RACH)

•Dedicated Channel (DCH)

•High-Speed Downlink Shared Channel (HS-DSCH)