



Summer Term 2008

PS Telematik Projekt: Embedded Sensor Web

Introduction

Outline

1. Introduction
2. Layer 2
3. Layer 3
4. Layer 4
5. Layer 5
6. Layer 7
7. Attacker

1 - Introduction

Goals of the project

- , The HomeAutomationCompany™‘
- Wireless Sensor Network (WSN):
 - wireless network consisting of autonomous devices
 - monitoring of physical and environmental conditions (e.g. temperature, humidity, ...) at different locations
- monitoring, managing(, setting up and installing) a wireless sensor network should be easy for an untrained person new to the domain of wireless sensor networks
- Integration of an user application and the WSN Software
 - browser based (management and)monitoring application
 - each node

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Idea – How to set up a wireless sensor network?

- What do we need?
 - a graphical user interface
 - a realization of getting the data that we want to display
 - a mechanism for transporting data
 - a routing mechanism
 - a mechanism for building the network
- referring almost to ISO/OSI reference model
- layer 1 is given with the hardware:
 - scatterweb with MSB 430 scatterweb nodes

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- since we refer to ISO/OSI reference model, the functionalities of the individual layers are obvious
- no need of layer 5 or 6, just 2, 3, 4, 7 and furthermore a JAVA application for the GUI
- one global structure – netpacket_t
 - layers can work independantly from each other using a kind of common interface
 - up_to_layerX, down_to_layerX
 - each layer uses a pointer (netpacket_t*) and the size of netpacket_t and hands them both to according layer, after working on the data
 - specialty:
 - layer 2 builds the complete packet in its buffer and sends it
 - layer 2 also deconstructs received packets and hands them to the respective layer
 - here we differ from ISO/OSI

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- group of 9
- 4 teams, consisting of 2 persons each and one potential attacker
 - team 1 (Silke Rieger and Alexander Ende) – layer 2 and 4
 - team 2 (Henning Heinhold and Matthias Philipp) – layer 3
 - team 3 (Sebastian Dill and Wojciech Polcwiartek) – layer 7
 - team 4 (Onur Kilic and Ivo Köhler) – Java Application
 - attacker (Thorsten Reinhardt)

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Lets go on with team 1 and their layer 2 realization ...