Practical Report Group #: End Device | Broker | Cloud

**Internet of Things (2IMN15) 2016-2017, Eindhoven University of Technology**

(Note: Example of title: “Practical Report Group 1: End Device” or “Practical Report Group 2: Broker” or “Practical Report Group 3: Cloud”. Update the title and date on the document’s header and update the table of content by right clicking on it and click “Update Field”. Remove all the notes in the template on your final report)

# Group Members

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No** | **Name** | **Student ID** | **Email** | **Master Program** |
| 1 |  |  |  |  |
| 2 |  |  |  |  |
|  |  |  |  |  |

# Group Partners

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **No** | **Group Partner No** | **Part** **(End Device/ Broker/ Cloud)** | **Group Member’s Name and Email** | **Student ID** | **Master Program** |
| 1 |  |  |  |  |  |
|  |  |  |
| 2 |  |  |  |  |  |
|  |  |  |

Table of Contents

[Group Members 1](#_Toc471327964)

[Group Partners 1](#_Toc471327965)

[System Description 4](#_Toc471327966)

[System Interfaces 4](#_Toc471327967)

[Implementation 4](#_Toc471327968)

[Testing 4](#_Toc471327969)

[Discussion of Extra‐functional Properties 4](#_Toc471327970)

[Evaluation 5](#_Toc471327971)

[Reflection 5](#_Toc471327972)

[Contribution 5](#_Toc471327973)

# System Description

An overall description of your system. You may use architecture views for that. It must include the deployment of the system as you have used it. It should also describe design decisions that you make or architectural or design patterns that you use.

# System Interfaces

Description of system interfaces between different parts (end devices, broker and cloud).

# Implementation

Description of your implementation setup (used tools, libraries or frameworks and their organization) and your overall experience during implementation: why did you choose that setup, how long did it take to learn to use the LWM2M framework such as Wakaama and Leshan, how long did it take to implement your part of the system, what were the steps you go through for implementing your part of the system, what were the difficulties that you encounter during implementation, what were the notable programming limitations of the chosen tools/libraries/frameworks, what are your suggestion as a programmer for better experience in implementing IoT application.

# Testing

Test results of the system interfaces and summary of result during the plug fest. Screenshots of relevant run‐time situations.

# Discussion of Extra‐functional Properties

A discussion of extra‐functional properties. Refer to the lecture slides on “Architecture” (<http://www.win.tue.nl/~johanl/educ/2IMN15/IoT-03-Architecture.pdf>) for the list.

Qualitative analysis is sufficient for discussion in this section, however, any performance measurement or any quantitative analysis will lead to bonus points for all groups.

A performance property that can be measured for the red group (optional, bonus point) is time to light. Time to light can be measured for the “Adaptive Lighting Based on Presence” use case, both for distributed behavior deployment and for centralized behavior deployment (if implemented). Time to light is the delay it takes from sending a sensor data about desk occupancy, to the time a light changes its setting. Please mention the procedure of measuring time to light, for example: You can print out a timestamp before calling the function that sends a sensor data and print out a time stamp after calling the function to change light setting, then subtract the two timestamps. The time zone in the Raspberry Pi has been set and it synchronizes its time when it connects to the Internet.

Another performance property that can be measured (optional, bonus point for the red group) is the response time for updating new lighting behavior, which is the delay it takes from receiving firmware update command from the broker, to the time the new software runs. Please mention the measuring procedure and which machine you download the new software from (the machine where you place the new software update).

# Evaluation

A discussion of alternatives and an evaluation of what you have.

# Reflection

Reflection and lessons learned of the overall practical assignment, as well as a reflection on the collaboration between group partners.

# Contribution

Per person: who did what.