Software Design Description

Garcon

Version 1.0

METU CENG350 2018-2019 Spring

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Table of Contents

List of Figures **2**
List of Tables **3**
1 Introduction **4**
1.1 Purpose of the System 4
1.2 Scope 4
1.3 Stakeholders and their concerns 4
2 References **4**
3 Glossary **4**
4 Architectural Views **4**
4.1 Context View 4
4.2 Composition View 5
4.3 Information View 8
4.4 Interface View 8

List of Figures

Figure 1: Component Diagram 5
Figure 2: Deployment Diagram 7

List of Tables

1 Introduction

1.1 Purpose of the System
1.2 Scope
1.3 Stakeholders and their concerns

2 References

3 Glossary

4 Architectural Views

4.1 Context View

4.2 Composition View

This viewpoint shows the components and subcomponents of the system from a top-level perspective. More explained information will be at the component's relevant sections.

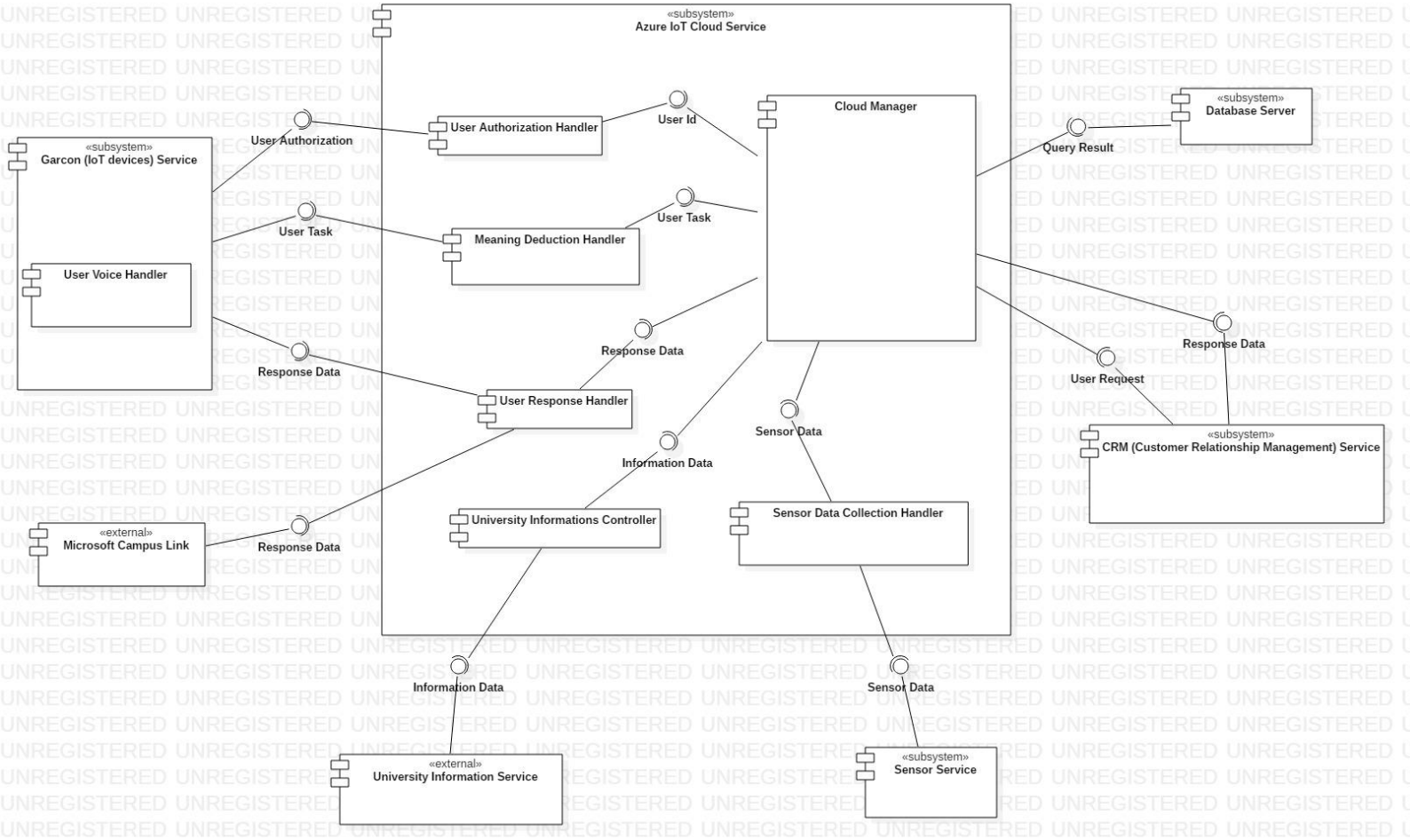

Figure 1: Component Diagram

Design Rationale:

- The most significant component of our system is Azure IoT Cloud Service. Actually, this is the main component and it realizes majority of the jobs for our system. It simply consists of different components, and these smaller components communicate with the remaining external or subsystem components to make system functionable as a whole.
- The core subcomponent of Azure IoT is Cloud Manager. It is mainly responsible for providing collaboration with among other Azure IoT subcomponents and realizing database related operations. Other Azure IoT subcomponents' specific jobs are resulted and returned back at this component. It also directly communicates with outer CRM service for ticket and booking related user requests.

- User Authorization Handler component is responsible for realizing authentication and authorization related jobs by using User Id.
- Meaning Deduction Handler is one of the most important component of our system since it decides what user wants from the system by realizing Natural Language Processing basically.
- User Response Handler is responsible for creating and distributing the system response to the user. It directly communicates with Garcon (IoT devices) service and Microsoft Campus Link Service for this purpose.
- University Informations Controller is another component for gathering university related information data from external University Information Service component.
- Sensor Data Collection Handler is responsible for gathering information from Sensor Service which communicates all sensors located at different points of the campus. It also responsible for maintenance and health of sensor system.
- Garcon (IoT devices) Service is another subsystem of our system and it is responsible for realizing in-device operations like voice-to-text translation and maintenance of the devices.
- CRM (Customer Relationship Management) Service is responsible for notifying real people (stuff, system admins etc.) about pending tasks (booking a table, cleaning a classroom etc.) as soon as possible according to commands that are taken from Azure IoT Cloud components.

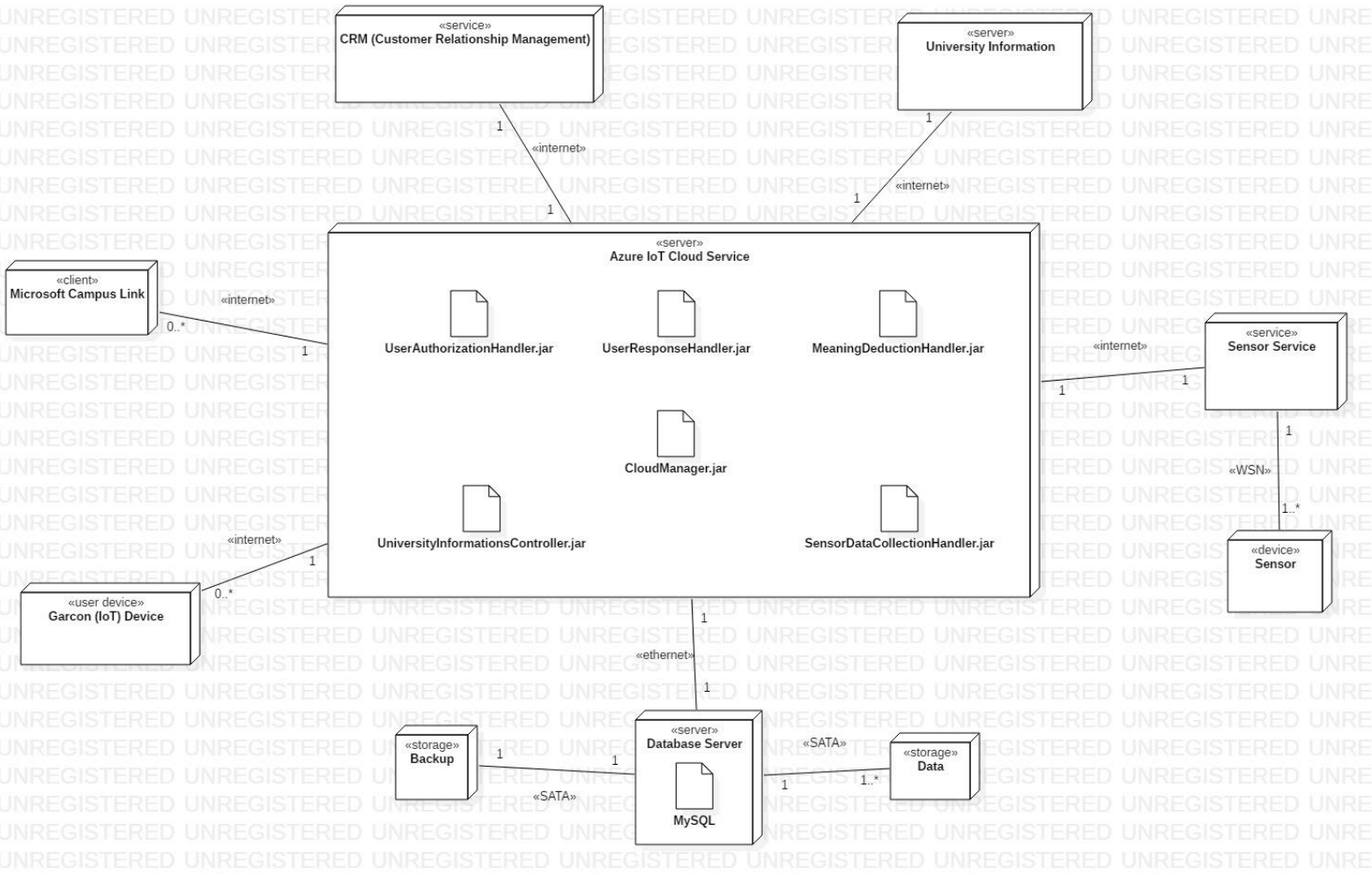

Figure 2: Deployment Diagram

Design Rationale:

- Since our project is basically an IoT project, all external components and other subsystems communicate with our Azure IoT Cloud service by internet.
- Internet based communications are realized with encrypted protocols due to security issues.
- About sensor system, there is a one Sensor Service that can gather data from all sensors from the campus. Although sensor service provide data to Cloud by internet, WSN (Wireless Sensor Network) are used between sensor devices and sensor service as a subset of IoT technology with faster manner.
- There will be two different database storage. One for the backup, and other for our regular data (user, ticket, booking, transaction log etc.).
- MySQL will be used as a relational database management system because of its easy-to-use properties.

4.3 Information View

4.4 Interface View