

Project Proposal

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1. Description

1.1 Introduction

We will implement an Internet of Things Platform System. The Internet of things is based on the traditional network, which connects a wide variety of devices to achieve the business requirements of the upper application. With the rapid development of the Internet of things industry, the equipment of the Internet of things is increasing rapidly, which meets the needs of the business system to a large extent.

Therefore, the need for a unified material to achieve unified access service system networking platform. Networking platform can shield the differences of networking devices, providing a unified access platform for the development of the application, make the upper business system developers to achieve access to the device in the understanding of things the underlying equipment information under the condition of the business logic and the underlying implementation of phase separation purposes. Reduce the complexity of the development, improve the development efficiency and reduce the risk of development, so the research and application of the Internet of things platform is of great significance.

1.2 System Architecture

The overview of the architecture of Internet of Things Platform is shown in Figure 1.

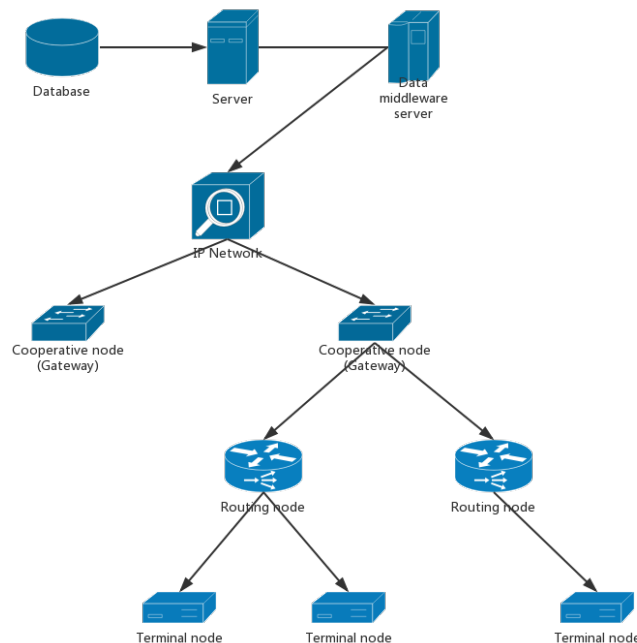


Figure 1. Overview of the architecture of Internet of Things Platform

According to the system architecture, the Internet of Things Platform system can be divided into six parts:

1. Server: Application server is the core of the whole system hardware and software, responsible for all equipment management, and equipment status monitoring and control of the equipment.
2. Data middleware server: The data middleware server is responsible for receiving and storing the data sent by each sensor node.
3. Database: It is responsible not only for storing the basic information of all devices and monitoring information, but also to save the data collected by each node information.
4. Collaboration node: Also known as gateway, which is responsible for the conversion of wireless network data and IP network data.
5. Routing node: the routing node plays the role of routing in wireless sensor networks, routing node can collect data and forward data.
6. Terminal node: The terminal node is responsible for collecting data and sending the data to the routing node or cooperative node. Terminal node cannot forward data.

2.Milestones

Date	Content
Mar 13 th	Submit project proposal
Mar 20 th	Submit software logical architecture
Mar 27 th	Submit physical properties model
Apr 3 rd	Add nominal mode
Apr 10 th	Add error models
Apr 17 th	Complete AGREE verification
Apr 24 th	Complete Resolute verification
May 1 st	Submit final project

3.Measures of qualities

3.1 Reliability

The system should be stable and reliable, with strong fault tolerance, local failure will not lead to global collapse. The system will run a long time without interruption, and has a complete data security measures.

3.2 Extensibility

The system is extensible, the user can not only increase or decrease the system configuration as needed, but also adjust the function according to the demand. All the changing requests does not affect the realization of the overall design scheme and the main function of the system. The function and system can continue to expand.

3.3 Security

The system has a high security requirements, all software development must meet the security requirements. The system has strict and flexible management mechanism, real-time recording and management of all operations. The system can achieve real-time data backup and update.

3.4 Maintainability

The system should be easy to analyze, to change, and to test. It should also use a modular structure.

3.5 Efficiency

Because of the large number of sensor nodes in wireless sensor networks and the large amount of data, it is necessary to improve the efficiency of data receiving and processing in order to meet the needs of the response time.

4.Outcomes

We are trying to develop an AADL model of the Internet of Things Platform. We will give the definition and implementation of the architecture, the detail definition and implementation of each models, the error modeling and related flows in the system. For the expected outcome, we hope we can design a reliability, extensibility, security, maintainability and efficiency Internet of Things Platform.