International Journal of Contemporary Research in Computer Science and Technology (IJCRCST) ISSN: 2395-5325
Volume 3, Special Issue 2 (March '2017)
Proceeding of - National Conference on Recent Trends in Information Technology and Communication,
Conference held at Velammal Engineering College,Chennai,India.

PROVIDING SMART SYSTEM ENVIRONMENT USING INTERNET OF THINGS (IOT)

Bhagyalakshmi.A,
Assistant professor,
Department of Computer Science and Engineering,
Velammal Engineering College,
Chennai, India.

Aishwarya.V,
Department of Computer Science and Engineering,
Velammal Engineering College,
Chennai, India.

Akshaya.D,
Department of Computer Science and Engineering,
Velammal Engineering College,
Chennai, India.

Nivethitha.B,
Department of Computer Science and Engineering,
Velammal Engineering College,
Chennai, India.

Abstract: Remote monitor and intelligent attachment of systems are fundamentals in a smart system environment. However, the heterogeneity of systems makes it difficult to build solutions for this purpose. This work aims to explain how to offer smart system environments using Smart Gateways, Restful Web Services, and Cloud Computing. In the proposed solution, a Smart Gateway is responsible for representing a given systems resources as Restful Web Services for clients and Web applications, sending monitored data to a perseverance service in a Cloud, while also allowing for the remote control of these systems. As a proof of concept, a smart system environment was urbanized from the consideration of a real case study of an systems. Functional testing and performance evaluation confirmed the feasibility of the solution in this case study.

I.INTRODUCTION

For the proper management of the system environment, it is required that user have access to accurate information about the operation of system and that they can control them when necessary. Therefore, the control and the remote monitoring of system systems are considered as essential functions in increasing system production.

Despite the importance of such mechanisms being recognized by the academy and by system environment, its design and implementation encounter problems due to the heterogeneity of systems. It is common in the apparel system environment to have different systems, from different manufacturers, which are using different communication standards. For that reason it is a challenge to develop an integrated solution that enables Machine to Machine (M2M) communication and the remote monitoring and control of system systems

The potential of the IoT is recognized for creating the possibility of smart environments through Smart Gateways. These Smart Gateways serve as a bridge to the integration of heterogeneous systems, and with services on the Internet, thus making them smart systems.

One proper way to provide M2M communications among heterogeneous machines, and ensuring remote monitoring and control is through the Internet of Things(IoT).The basic idea of the IoT consists of the fact that there is a pervasive presence of a variety of things (devices) which can, through unique addressing schemes, interact and cooperate with each other to reach a common goal.

The technological basis for providing an smart environments is based on the integration of sensors, actuators, and the Internet. In these Smart environments, generated information can be shared among different services and applications, enabling the control and the monitoring of certain things (devices).

The potential of the IoT is recognized for creating the possibility of Smart System environment through Smart Gateways.

These Smart Gateways serve as a bridge to the integration of heterogeneous systems, and with services on the Internet, thus making then smart systems.

Cloud Computing fulfils the concept of the IoT by providing ubiquitous sensing in smart environments. In a Cloud of Things (CoT), it is possible to run heavy computational tasks, because the processing and decision making are easily done by the computational capacity of the Cloud, while devices can focus on sensing and activity.

The remainder of this paper is structured as follows. Section II presents some related works. Section III describes the benefits of having smart system environment. The focus of Section IV is the description of the proposed architecture. The architecture diagram of the case study is described in Section V. Section VI represents the results as analyses of an experimental evaluation of the proposed solution.

II. RELATED WORK

Some systems do not have Internet connectivity or do not allow for remote control and monitoring through the Web. Until now, there has not been any identification of an apparel system which supports M2M communication, and uses Cloud Computing, to provide scalable and customizable infrastructure used for control and monitoring applications and for storing monitored data. Another aspect that needs attention in an system environment is the quality of the electricity consumed by the systems. In the system environment, the evaluation of electricity quality occurs only before the installation of their client's machine and after any event that causes a System stoppage or causes the malfunctioning, this allows for easy troubleshooting. Continuous monitoring is not currently provided due to the high cost of available solutions on the market, and this prevents the correct identification of the causes of failure.

To provide the continuous monitoring of electrical quantities, and to prevent, and correctly identify some of the causes of failure, the proposed architecture was used to develop the second usage case called a Smart Meter. The device used to measures electrical quantities was the DM6200 from Schneider Electric4, a digital measure that offers voltage values, concurrency, power factor, and frequency. Not allow for remote control and monitoring through the Web.M2M communication is not possible in the existing work. Continuous monitoring is not currently provided due to the high cost of available solutions on the market, and this prevents the correct identification of the causes of failure. Not have scalable and customizable infrastructure used for control and monitoring applications and for storing monitored data.The evaluation of electricity quality occurs only before the installation of their client's machine and after any event that causes a machine stoppage or causes the malfunctioning. Not Used In continuous monitoring of electrical quantities, and to prevent, and correctly identify some of the causes of failure the proposed architecture was used to develop the second usage case called a Smart Meter.

III. BENEFITS OF SMART SYSTEMS

It allows autonomous communication (M2M) among system machinery. Smart Gateway representing one machine communicates with the Smart Gateway serving two systems. Customizable infrastructure used for control and monitoring applications and for storing monitored data.To provide the continuous monitoring of electrical quantities, and to prevent, and correctly identify some of the causes of failure the proposed architecture was used to develop the second usage case called a Smart Meter. With all the read and calculated data, each group is parsed in a JSON format. Finally, the reading set is sent through the Restful API to the Cloud data persistence service.

IV. PROPOSED WORK

The proposed solution allows autonomous communication (M2M) among system machinery on the factory floor, in which an intermediate Smart Gateway representing one machine communicates with the Smart Gateway serving two systems.

Both Smart Gateways communicate with each other through Restful Web Services. In this proposed solution, the Cloud is used for:
Providing a Restful Web Service for receiving monitored data, storing the received data in a NoSQL database,
Providing a Platform-as-a-Service (PaaS) and the provisioning of Web applications.

The PaaS enables companies to develop customized web applications to remotely control and monitor system systems the data and the application will be hosted on the Cloud. The technical support/ assistance team for these system systems can make use of PaaS to create an application for the monitoring of their client's systems, and therefore, innovate by providing proactive support. With the Cloud, it is possible to have a scalable infrastructure which allows for the allocation of resources based on the demand of the web applications and to the data persistent service. In this model, Fig 1.2 clearly explains the ER diagram of an Smart System environment . To represent sent data between Smart Gateways and the Cloud, we used the JSON standard. The JSON is more suitable for use in embedded systems due to its nature of being less verbose and its use of less computational resources, than the standard XML. The proposed solution allows autonomous communication (M2M) among Systems. The application of remote monitoring and control will offer a pro-active support to systems. This support is based on monitoring data , which will indicate when there is a need for human servicing. This will help avoid unnecessary stoppages, increasing the efficiency of the system performance. As a result, there will be a support and maintenance cost reduction in the whole. The user can able to view the performance of the system using mobile phone. This architecture helps to prevent unnecessary stoppages and system crashes due to high volt power supply given to the particular system. In this proposed work, Fig 1.1 represents the architecture diagram of an Smart System environment .

V. SYSTEM ARCHITECTURE

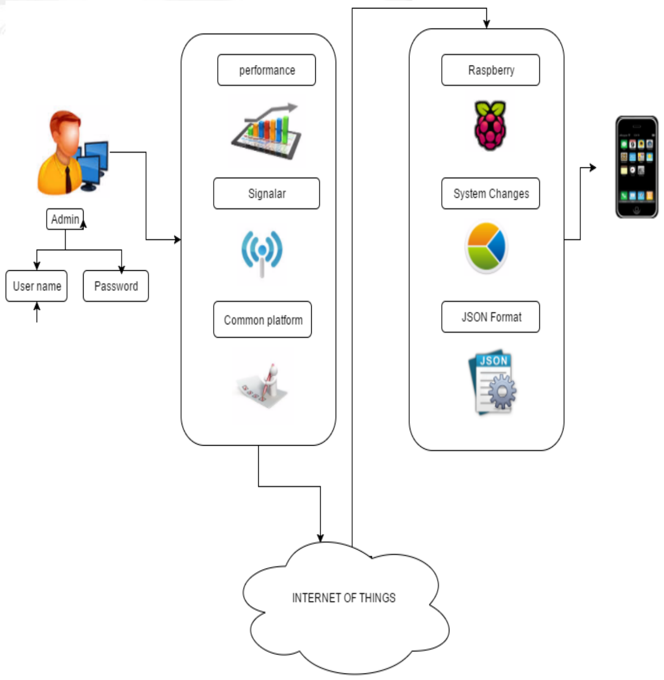

Figure 1.1 Smart System Architecture

ER REPRESENTATION

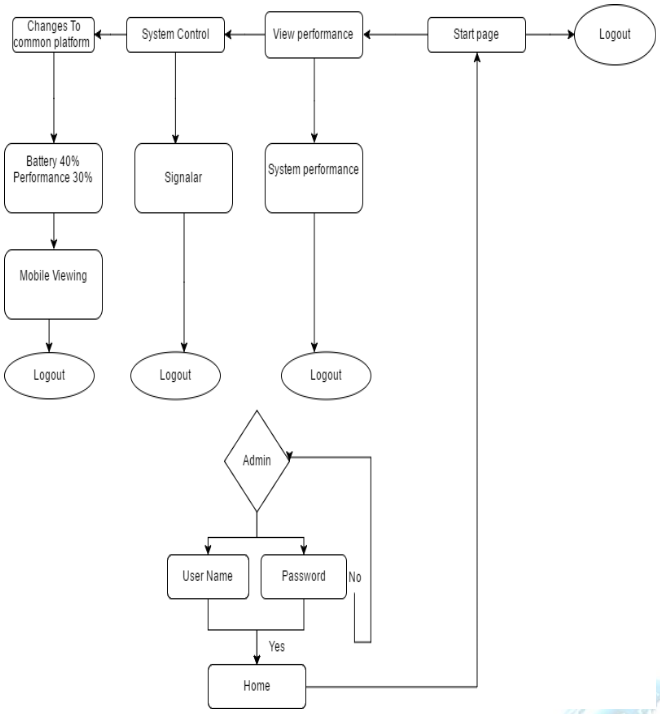

Figure 1.2 ER diagram for Smart System Environment

VI. MODULE DESCRIPTION

- **Login:** If you are an existing user you can use your own user id and password to login.
- **Registration:** If you are a new user you need to fill all the required fields to register yourself by getting own user id and password to login.
- **Performance:** User can able to view the system performance as notification on their own mobile phones.
- **Signalar:** By the use of signalar you can able to control system by your mobile phone.
- **Modification:** You can able to modify few features of the system as you wish.
- **Logout:** You can able to use secure access to your account by logging out.

VII. CONCLUSION

In smart system environments, systems gain active participation in the system process. They become capable of interacting and communicating, at any time and in any place, with several devices, the environment, services, and peoples. The systems can react autonomously to events, influencing the environment through processes that can dispatch commands for actions. The safety and the quality of the operations of systems can be improved once these smart environments allow for intervention and smart control. The applications of remote monitoring and control will offer a pro-active support to system systems. This support is based on monitoring data, which will indicate when there is a need for human servicing, this will help avoid unnecessary stoppages, increasing the efficiency of the productive process of the system environment. This will also increase machine lifespan, because maintenance will be demanded as it is needed and not just at regular intervals. As a result, there will be a support and maintenance cost reduction in the whole productive circle .The benefits that a smart system environment can bring in terms of support services provided to the systems are clear.

VIII. REFERENCE

[1]. Marlon C. Domenech, Leonardo P. Rauta, Marcelo Dornbusch Lopes, Paulo H. da Silva,

[2]. Rodrigo C. da Silva, Benjamin W. Mezger, Michelle S. Wangham "Providing a smart industrial environment with the web of things and cloud computing".

[3]. L. Atzori, A. Iera, and G. Morabito, "The internet of things: A survey," Computer Networks, vol. 54, no. 15, pp. 2787–2805, 2010.

[4]. C. Bo, Q. Xiuquan, W. Budan, W. Xiaokun, S. Ruisheng, and C. Junliang, "Restful web service mashup based coal mine safety monitoring and control automation with wireless sensor network," in Web Services (ICWS), 2012 IEEE 19th International Conference on, June 2012, pp. 620–622.

[5]. B. Cheng, X. Cheng, and J. Chen, "Lightweight monitoring and control system for coal mine safety using {REST} style," {ISA} Transactions, vol. 54, pp. 229 – 239, 2015. [Online]. Available: http://www.sciencedirect.com/science/article/pii/S0019057814001

[6]. M. C. Domenech, "An authentication and authorization infrastructure for the web of things," Master's thesis, Universidade do Vale do Itaja´ ı, feb 2015.

[7]. FashionUnited. (2014) Global fashion industry statistics international apparel. [Online]. Available: https://www.fashionunited. com/global-fashion-industry-statistics-international-apparel