AUTOMATIC ELECTRIC BOARD SYSTEM USING PUSH SERVER TECHNOLOGY

I.JoshuaSelwyn\textsuperscript{1} - UG Student, Department of Computer Science Engineering  
B.Aarth\textsuperscript{\text{"y}}\textsuperscript{2} – Assistant professor, Department of Computer Science Engineering  
VVCollegeofEngineering\textsuperscript{1,2}  
India

Abstract :

Internet services and mobiles have become an integral part of our daily life, enabling communication and the management of information from anywhere and at any time. The development in the area of android and push server technology has eased the lives of human being by reducing their effort. One such system is designed which reduces the human effort to a greater extent in any Electric Board. The proposed system consist of a dedicated web server which will be ready to process all the upcoming user’s requests. The two main features of the proposed system are register the user’s complaints and issue of notification based on publisher/ subscriber model. The system will have a login facility for two kinds of users namely the normal users and the admin users, security algorithms are embedded at the time of login to provide security and integrity. The users make a registration on the web-server in case of making complaints to the Electricity Board. The information’s published by the authenticated admin's are posted on the respective pages that will be fetched by the android mobiles of the users and the notification is issued based on user chosen subscription by using the concept of the push server technology. Thus making it easy for the users to make complaints to the Electric Board and getting notification regards the authenticated announcements provided by the Electricity Board.

Keywords: push notification, mobile technology.

1.INTRODUCTION

In this modern world, people are moving withot any idea about what they miss, and what they have to have an eye on, Under such circumstances the innovation of the push server technology notification system has greatly helped many people to have an eye on the most important things which they cant forget one example for this is a billing system, in any billing system the customer have to get notifed about the payments that he or she has to made in advance so that they can continue enjoying their service but unfortunately many people are loosing their services because they might have not known
about the payments that they have to pay this might happen due to many reasons, but the most important thing is that people are not giving importance to printed bills through couriers also there is a chance of late delivery of the bills by the querier. Under such circumstances this push server technology will effectively help people to monitor about the things they have to do [1]. And, our area is in the most important and the most valuable EB system, since there are so many reports saying that people are not paying their EB bills properly, also the complaints made by the people are not getting addressed within time.

In this paper we investigate the feature of a mobile app using the application of the push server technology, the app and the dedicated web service will pay a realtime feature to help and monitor the complaints and the notifications that has been issued from the electricity board. This system also has an authentication feature as its very essential [2] in any of the modern technology in the IT field.

2. MOBILE COMPUTING

Mobile computing is human–computer interaction by which a computer is expected to be transported during normal usage. Mobile computing involves mobilecommunication, mobile hardware, and mobile software.

Communication issues include ad hoc and infrastructure networks as well as communication properties, protocols, data formats and concrete technologies. Mobile deals with the characteristics and requirements of mobile applications. Display, collect, and transfer information from a mobile device to an information system using one or a combination of various data transfer methods. In the figure data communication technology component is wired connection with information system component [3]. Mobile computing device component is wireless connection with data communication technology component.

Fig.1 Mobile Communications

2.1 DEVICES OF MOBILE COMPUTING

Many types of mobile computers have been introduced since the 1990s including the,

- Personal digital assistant/enterprise
digital assistant
☐ Smartphone
☐ Tablet computer

2.2 SECURITY ISSUES INVOLVED IN MOBILE COMPUTING

Mobile security or mobile phone security has become increasingly important in mobile computing. It is of particular concern as it relates to the security of personal information now stored on the Smartphone [2]. Nowadays, the smartphones become the most important target of the attackers since they collect some sensitive information about each and everything of an individual.

All smart phones, as computers, are preferred targets of attacks. These attacks exploit weaknesses related to smart phones that can come from means of communication like SMS, MMS, Wi-Fi networks, and GSM. There are also attacks that exploit software vulnerabilities from both the web browser and operating system. Finally, there are forms of malicious software that rely on the weak knowledge of average users [2].

2.3 MOBILE DATA COMMUNICATION

Wireless data connections used in mobile computing take three general forms so. Cellular data service uses technologies such as GSM, CDMA or GPRS, and more recently 3G networks such as W-CDMA, EDGE or CDMA2000. These networks are usually available within range of commercial cell towers [2]. Wi-Fi connections offer higher performance, may be either on a private business network or accessed through public hotspots, and have a typical range of 100 feet indoors and up to 1000 feet outdoors. Satellite Internet access covers areas where cellular and Wi-Fi are not available and may be set up anywhere the user has a line of sight to the satellite's location, which for satellites in geostationary orbit means having an unobstructed view of the southern sky. Some enterprise deployments combine networks from multiple cellular networks or use a mix of cellular, Wi-Fi and satellite [5]. When using a mix of networks, a mobile virtual private network not only handles the security concerns, but also performs the multiple network logins automatically and keeps the application connections alive to prevent crashes or data loss during network transitions or coverage loss [3][4].

MOBILE APPLICATION DEVELOPMENT

Developing application software for mobile devices requires considering the constrains of these devices. Mobile devices run on battery and have less powerful
processors than personal computers. Developers also have to consider a lengthy array of screen sizes, hardware specifications and configurations because of intense competition in mobile software and changes within each of the platforms [5].

Mobile application development requires use of specialized integrated development environments made. Mobile applications are first tested within the development environment using emulators and later subjected to field testing. Emulators provide an inexpensive way to test applications on mobile phones to which developers may not have physical access [5].

In this project we are going to develop using the android studio IDE and the app is full a native library based using java as the source language.

3. MOBILE APPLICATION MANAGEMENT (MAM)
Mobile Application Management (MAM) describes software and services responsible for provisioning and controlling access to internally develop and commercially available mobile apps used in business settings on both company-provided and “bring your own” smart phones and computers. Mobile application management differs from mobile device management [3][5].

As the name suggests MAM focuses on application management it provides a lower degree of control over the device, but a higher level of control over applications. MDM solution manages the down to device firmware and configuration settings and can include management of all applications and application data [5]

4. ARCHITECTURE:
The proposed system has a well defined architecture, the system follows a hierarchial structure initially all the users of the system will have to get authenticated then only they can be able to avail for getting the service the block diagraom of the architecture is shown below as a reference.
4.1 NOTIFICATION:
The admin users login to the webserver and using their registered login credentials.

- The EB info module will then guide them to the registered sector by using the EB manager module
- Then the updates posted by the admin are posted on the respective directories on the webserver.
- This is then published to all the people within the sector of the admin's area.
- The android mobiles of the users monitor this activity and then post an update based on the subscription of the users.

4.2 COMPLAINTS:

To book a complaint a request will be sent from the users mobiles to the web server.

On receiving the request the webserver will make an authentication of the request by validating the login credentials.

Once the user gets validated successfully, the complaints module will guide them to the EB manager module.

The EB manager module will then make an analysis of the users sector (from where the EB connection belongs to)

The FTP server will then validate the info again by using the credentials from the DB.

ON successful completion of the validation the required complaint is then generated and is given to the Mail exchanger and the sms gateway.

4.3 WINDOWS PHONE PUSH NOTIFICATIONS

The Microsoft Push Notification Service in Windows Phone offers third-party developers a resilient, dedicated and persistent channel to send data to a Windows Phone app from a cloud service in a power-efficient way [8].

- Your app requests a push notification URI from the Push client service
- The Push client service negotiates with the Microsoft Push Notification Service (MPNS) - and MPNS returns a notification URI to the Push client service
- The Push client service returns the notification URI to your app
- Your app can then send the notification URI to your cloud service
When your cloud service has info to send to your app, it uses the notification URI to send a push notification to MPNS after a push notification is sent, indicating that the notification has been received and will be delivered to the device at the next possible opportunity [6]. However, MPNS doesn’t provide an end-to-end confirmation that your push notification was delivered from your cloud service to the phone [5].

Push notification and the payload attached to it, the info is delivered as raw data to the app and the app’s tile is visually updated, or a toast notification is displayed [5]. MPNS sends a response code to your cloud service

Fig 1 – login page

**Login page:**
The above figure represents the login page where the officials of the Electricity Board will sign in to view the complaints also they can able to post any updates regarding the EB power supply if he/she is the authorized manager of that particular sector. The login is done through a verification of the MD5 checksum of the users entered password and the registered ND5 checksum password in the DB.

Fig 2- Complaints page

**Complaints page:**
The above figure represents the page after the login happens, this figure describes about the complaints that has been bought to the sight of the manager of the Nazareth sector after it was not addressed by the wireman and the serviceman. This is done through the feedback received from the user who post the complaint within a time span of 24 hours. And the user is not allowed to post more than one complaint at a time.
Customer Notification:
The above figure shows the area where the officials/ the manager of the sector will post their notifications to the people for that sector, when the post button is clicked the information is transformed into a JSON string which can be easily interpreted by the android mobiles of the users, which can then be posted as a notification. (The information can be anything regarding power supply, paying bills etc...)

Making complaints:
After the customer gets login into the system, they can make complaints by simply click on the complaints option, the users are requested to make their complaints within 160 char in that text area, since the complaint has to be forwarded to the officials as a text message this must be expected to be in short, when the user click on the post button the complaint is fed to the DB and then sent to the serviceman of that sector to get addressed with 24 hours along with the user details. The figure 6 shows the acknowledgement when the complaints gets posted successfully.

if the complaint is not addressed by the serviceman and the wireman within 24 hours it will be forwarded to the manager of the sector, then the manager must take care of the problem by giving pressure to the wireman and the serviceman to solve the problem. The following figure 7 describes the scenario.
fig7 – Complaint lookup by manager

If the complaint has been processed successfully then it will be notified to the customer as shown in the figure 8

fig8 – Complaint process gets over

CONCLUSION:
Push technology are quite advanced and powerful methods for achieving web-based real time event notification. We have analyzed and compared representative scenarios and proposed an initial architecture for a mobile push system. The P/S interaction scheme is the basis for our architecture. It is a well-established solution for the asynchronous interaction between frequently unavailable devices. By using this idea we can solve the problems in the EB departments especially in the complaints and in the notification board, also this app provides a way to pay the bills using the web based clients installed by the TNEB.

REFERENCES: