

Mobile Computing based on Cloud (CLOUDIZE)

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Abstract— In the increasing field of technology, the needs and requirements of the people changes from time to time. The laptop computing era has changed to mobile computing; mobile devices are built with good number of useful applications. Cloud Computing is one such development which serves for many purposes like Software as a Service (SAAS), Platform as a service (PAAS) etc. Cloud computing is used for storing large amount of data, access and process the data from any corner of the world via internet [1][2]. We are proposing a concept with Cloud Technology and Mobile Computing, resulting in the services of Cloud Computing like SAAS, where the web application is deployed on the cloud which can facilitate storage also. We also focus on remote mobile administration if the device is misplaced or lost. These operations are performed through the web browser with the application installed on the mobile while the data can be stored on the remote server which is accessible through the Internet. The data which is been captured can be displayed on the web page.

Keywords- Mobile Computing, Cloud Computing, Mobile Theft, Tracking through Camera

I. INTRODUCTION

Every day we come across articles in the news papers or we hear about misplaced or stolen mobile handsets. As per the statistical analysis in figure 1 most of the mobile theft happens in public transport [3]. The existing system which was developed to reduce mobile theft involves tracking of devices only through GPS which would only indicate the area but not exact place. Considering all the above features, we have come out with a solution where an application could solve these issues. This paper mainly focuses on real time tracking of mobile devices through camera because tracking through GPS give us just the approximation of the area where the mobile device is located. The main objective of camera is to take photographs and capture videos, but if we could use this feature in real time tracking of mobile devices then we need not worry about the misplaced or stolen handsets at all. Cloudize application is effective only when this application runs in background like other system process.

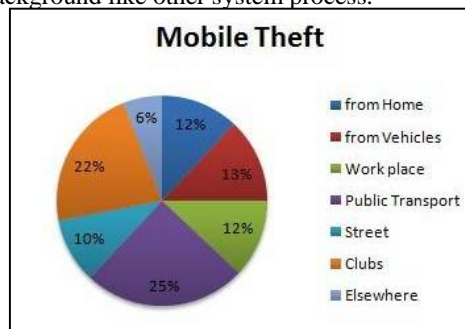


Fig: 1 A pie chart to show the statistics of mobile theft

II. LITERATURE REVIEW

A number of studies have done to use the characteristics and features of cloud computing through software-as-a-service, platform-as-a-service, infrastructure-as-a-service etc [4].

Xi Cheng and Xuejun[5] Liao have demonstrated an application of cloud computing in military intelligence fusion to share the data and application, combining the intelligence resource, massive data storage and management, processing the massive intelligence system software, providing security. It is an efficient way for data sharing and management over the cloud.

Pieter Simonens et.al[6] have also proposed an technique by which one can execute all application logic on a distant servers and smart phones act as a remote display. These deices capture user input and render display updates received from server .

III. FUNCTIONAL ANALYSIS

These days' devices like Smartphone are dominating the market; it could be an Windows OS, Apple ios, a Blackberry or Android OS. The basic concentration is on Android OS which supports Adobe Flash System and with processor of 1 GHZ or more as they are leading in today's world according to figure 2 [7].

The solution is successfully achieved when the mobile device is connected to any network through Wi-Fi (preferable) else through GPRS. Once the smarphone is connected to Cloudize service through the web, the application starts polling with the database every sec. During the polling the mobile application checks for any changes in the database. When the application is started for the first time then database contains:

Action	Camera	Device Lock	Backup	Message	Text
Value	0	0	0	0	NULL

When the user uses the web application to perform some action then the Boolean value of the operation is changed to 1. For example : When the user selects camera option on the web then the result changes to :

Action	Camera	Device Lock	Backup	Message	Text
Value	1	0	0	0	NULL

When the value is changed in the database then mobile application fetches the new value, switches on the camera to

capture the image and then transmit it to the web so that user can see the result. Once the operation is performed the database contains the following value:

Action	Camera	Device Lock	Backup	Message	Text
Value	0	0	0	0	NULL

On any Smartphone, the average time to set the camera and for the end user to click a photograph is around 20 sec. The user interfaces of the camera allow the user to invoke camera on the web.

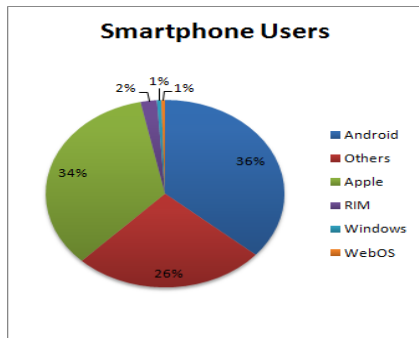


Fig: 2 A Pie chart to show the usage of Smartphone in the market

By invoking the camera through the web, it allows the user to view the Image or video on the web through Internet without even handling the mobile device physically. This also helps us in activating the microphone and accessing both camera and microphone in real time to track where the device is.

An flash supported web browser[7] is available on PC or Laptop System and Adobe Air on mobile devices the following codes can be implemented to attach the camera and microphone to the user interface for streaming the results[8][9] :

```
// To access camera and microphone of mobile device:
camera=Camera.getCamera();
microphone=Microphone.getMicrophone();
```

```
// To outstream the camera and microphone
outStream = new NetStream(connection);
outStream.attachCamera (camera);
outStream.attachAudio (microphone);
outStream.publish ("Testing");
outVideo = new Video ();
outVideo.attachCamera (camera);
```

```
// To wrap the outstream for the output from the mobile:
outVideoWrapper = new UIComponent;
outVideoWrapper.addChild (outVideo);
addElement (outVideoWrapper);
```

```
// To instream the camera and microphone data on the web:
inStream = new NetStream(connection);
inStream.play("Testing");
```

```
inVideo = new Video ();
inVideo.attachNetStream(inStream);
```

```
// To wrap the instream data
inVideoWrapper = new UIComponent ();
inVideoWrapper.addChild (inVideo);
addElement (inVideoWrapper);
inVideoWrapper.move (400, 0);
```

IV. PERFORMANCE ANALYSIS

Once the application is installed on the devices, it helps to reduce mobile theft and also perform lot many operations like Synchronization of mobile device, Message Transmission, Backup the device and lock the device. Figure 3 indicates the result of few operations like Camera access, Message Transmission and locking the device [10]. Every transaction which is performed over the web is logged into database. The performed operation which is tracked can be accessed at any point of time.

During the process of polling there would be lot of batter loss. It could be avoided once the server side push technology is incorporated in this system. On the successive installation of application, user can also set various flag-points where the application will take care of timely backup, close unwanted application and also intimate the user of Bluetooth and wifi ports if opened and unused.

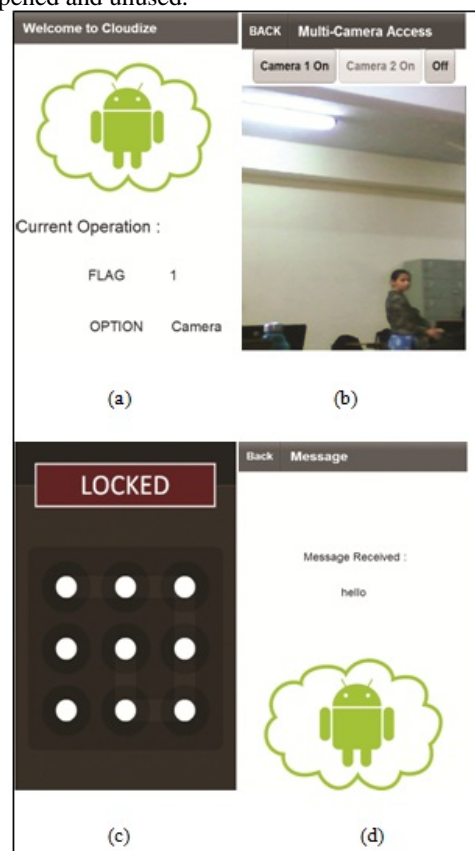


Fig: 3 Different operations (a) Home View (b) Camera (c) Lock (d) Message Transmission

V. IMPLICATION

The solution can be obtained efficiently if there is an website with all the facilities like to register a mobile device, to perform different operations based on username and password. International Mobile Equipment Identity (IMEI) is used to uniquely identify each mobile devices in a network [11][12]. With the help of IMEI we can different devices at a time. The data which is being transmitted from the mobile device to server can be deployed on different machines of the same user using the cloud services. Cloud Computing can also help us in tracking multiple devices of the same user if registered.

VI. CONCLUSION AND FUTURE DEVELOPMENT

Cloudize is a concept based on Cloud Computing and Mobile Computing, the delivery of computing as a service than a product. It can be used to store data of mobile device and helps in accessing it from anywhere on the world via internet. Cloudize is a platform independent mobile application which helps in real time tracking of device with the help of in built camera and microphone. It can also remotely administrate the mobile by operations like device lock and data backup. The mobile application uses a Wi-Fi network for its operations and it is also compatible with the latest mobile handsets available in the market. Cloudize can also be packaged for handsets like Blackberry and Apple if the processor and software meets the requirements.

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