



Mobile Computing – A Review

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ABSTRACT

As the people are adapting the various advancements brought by mobile computing, it is becoming essential to secure the mobile computing. In the recent decades the technology has resulted in the reduction of the size of machinery and has increased the performance. This development came up with a new concept which is Mobile Computing. Mobile Computing basically allows the data transfer through the Computers, without being connected to any of the fixed physical parameter. In this paper various threats and the issues associated with Mobile computing has been highlighted.

Keywords-- Mobile Computing, Mobile Security, Privacy in mobile computing, Security, Risks

reason for this is that the wireless communication occurs through the radio signals instead of the wires, due to which the communication channel can be intercepted easily. So, in order to overcome this problem it is required to adopt some security measures. There are various issues related to the security. Some of the issues/problems that are required to be taken care off are confidentiality, integrity, availability, legitimacy, and accountability. In recent years there is a great revolution in the field of telecommunication. These revolutions have resulted in the development of many light weighted, portable and compact computing devices such as the cell phones, laptops etc.

I. INTRODUCTION

“Mobile computing” – One of the emerging branch in the area of computing and information technology, basically allows the data transfer through the Computers, without being connected to any of the fixed physical parameter. Mobile computing as a generic term describing ability to use the technology to wirelessly connect to and use centrally located information and/or application software through the application of small, portable, and wireless computing and communication devices[1].

Mobile computing has three aspects: mobile communication, mobile hardware, and mobile software.[2] Mobile communication includes the various issues that are related to ad-hoc and infrastructure networks. The second aspect, Mobile Hardware, includes the data about the various hardware components of mobiles and the other devices. The last aspect is about the implementation of all the necessary data/files and computer into the file.

Since, the wireless communication forms the basis of mobile computing, it is important to provide a security to this communication or the transfer of data. The

II. DIFFERENT MOBILE SYSTEMS

Mobile computing and the distributed systems are very much similar to one another in some or the other way. To have the better understanding of the mobile systems it is important to know the differences and the similarities of a distributed system and mobile systems. Few of the parameters about the distributed systems and mobile systems are discussed below:

a. *Traditional Distributed System:*

In the traditional Distributed systems, there are fixed hosts which are required to be connected to the network for the normal functioning. If any of the host is found to be disconnected with the network, the functionality is considered to be as abnormal while in the case of mobile system it is not the same. Rather for mobile systems it is considered to be as normal. These systems are considered to be very powerful which is accommodated with large memory and high speed processors.

b. *Nomadic Distributed System:*

A number of mobile devices and an infrastructure, comprising of fixed and wired nodes, combines together to form the Nomadic type of distributed system. In this particular system, the mobile devices tend to move from one place to another and during their movement they

maintain a connection with the network, which is fixed in its nature.

Since the mobile host has its own home IP address and hence any of the packet which is required to be sent to the mobile host will be sent to the home network rather to the foreign network where the mobile host is present. This problem of sending the packets to the home address instead of the mobile host is managed with the help of mobile IP address. The mobile IP Address helps to forward the packet directly to the foreign network.

The main problem related to these systems is that the systems are more likely to disconnect due to the repeated movement of the mobile host.

III. SECURITY ISSUES

Mobile computing has come up with a treat to its users. Mobiles carry all kinds of information ranging from personal to corporate. More the information more is the necessity to provide security to these mobiles in order to protect the information which is personal from the hands of the corporate management. With the advancement in the technology, smart phones have taken their place in approximately every field of the technology. They are not only the tools for communication but also a vital part of work and personal life. Within the work, these technologies have resulted in the drastic change in the field of information systems and hence are resulting into a source of risk. So, it is the need of time to manage the information of the user so that the privacy can be maintained.

The smart phones are more prone to the security attacks. These attacks usually make the use of the different communication means as SMS's, MMS's, Wifi Networks.

Another key issues related to the same are confidentiality and authentication. Both these parameters point out towards protecting the authorized users from the threat of unauthorized users. The protocol for authentication aims at keeping an eye on the identity of the users before providing the access to any user.

To design a security protocol, some of the parameters are required to be considered. These are the low computational power of mobile users and the low bandwidth available. Hence, it is required to design a security protocol in order to minimize the message size and number of messages to be exchanged. Some of the authentication protocols that have been proposed to attain the security are based on the use of authentication certificates. These certificates are designed on the basis of cryptography. Some of the protocols are Secure Socket Layer (KSSL) protocol, which is an extension of Secure Socket Layer (SSL) protocol used for wired networks.

IV. SECURITY COUNTER MEASURES

The security in the field of information technology in context to the mobile computing is aimed at:

a. Confidentiality:

It enables the privacy mode. In this particular parameter, the unauthorized users are not allowed to gather the information from any of the authorized users.

b. Integrity:

It means that the integrity of the particular system is maintained, which means that the unauthorized users are unable to make any kind of changes.

c. Availability:

Since the main problem that is observed is the lack of network, at some locations, due to the movement of mobile host, the mobile security ensures that the maximum access may be provided to the authorized users.

d. Legitimacy:

It makes ensure that the access to the services is provided to the authorized users only.

e. Accountability:

As per this parameter, the users are considered to be responsible for the issues related to their security.

V. CONCLUSION

Mobile computing is an emerging technology that enables the mobile personnel to exchange the information within a fixed information system irrespective of the location of the mobile host. Mobile computing can be used in the various combinations of hardware, software and communication technology. In this paper, the various threats to the mobile computing were discussed along with the security solutions.

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