LINUX BASED ACTIVE DIRECTORY SERVICE WITH RFID AUTHENTICATION

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ABSTRACT

Linux users are growing rapidly today in residences, offices, and school laboratories. Linux alone as an operating system is fast and seldom encounters crashes and instability but when considering the hardware, it can slow down production because of some hardware troubles and a certain workstation is inaccessible or very slow. Users can transfer to other workstations in a situation such as this but the files are no longer accessible. Taken from the concept of Active Directory Service in windows where user accounts are in a server and can be accessed by users from any workstation in the domain, this can be implemented in a Linux-based environment. With this system available in Linux, users can roam around different workstations within the same domain to access their own user accounts. RFID is also an option as an additional source of authentication for the user.

Keywords:
Network, Security, RFID, Linux

CHAPTER 1: INTRODUCTION

1.1 BACKGROUND OF THE STUDY

Linux is an open-source operating system that is commonly used by many users. Linux is used in residential PCs, schools and even corporations and other large businesses because the windows operating system is expensive. One of the factors why Windows is being used is because of the Active Directory Service that makes it very convenient for multiple users working in a single domain. Incorporating this Active Directory Service in the Linux environment greatly increases the reputation of the Linux OS.

In addition to security for the Linux operating system, RFID can be a great source of security. Integrating the functions and features of the RFID to the authentication of users in the Active Directory Service creates a more secured system. RFID services or features are triggered when RFID tags are within the range of the RFID receivers. This limitedness of range of the RFID can be used as an advantage for security purposes.

1.2 STATEMENT OF THE PROBLEM

The present study seeks to answer the following general problem:

How can RFID Authentication enhance the security of the Active Directory service in a Linux Network?

Specifically, it seeks to answer the following questions:

- To what network environments is Active Directory being used?
- How can RFID enhance security?

1.3 OBJECTIVES OF THE STUDY

The general objective of this research is to develop LINUX BASED ACTIVE DIRECTORY SERVICE WITH RFID AUTHENTICATION. The specific objectives are:

- To identify how the Windows Active Directory Service concept can be incorporated to Linux
- To evaluate the advantages and disadvantages of the concepts that will be used
- To add RFID data to the authentication of the Active Directory Service

1.4 SCOPE AND LIMITATIONS OF THE STUDY

The study will focus on the Linux-based networks. The study will cover not the entire features of the Active Directory service but only access to the users' desktop. It shall be implemented in the Ateneo de Davao University computer labs for testing of the validity and stability of the active directory for Linux that is being proposed.

1.5 SIGNIFICANCE OF THE STUDY

This study is significant to Linux users or Linux based networks. With the use of the Windows Active Directory Service Concept that will be implemented in Linux with RFID authentication, users will be more secured and comfortable in using any workstation within the domain that suits their needs and to reduce the troubles caused by hardware failures of certain workstations.

1.6 DEFINITION OF TERMS

Authentication - Determines a user's identity, as well as determining what a user is authorized to access, eg a financial database or a support knowledgebase. The most common form of authentication is user name and password, although this also provides the lowest level of security. VPNs use digital certificates and digital signatures to more accurately identify the user. In computer security, verification of the identity of a user or the user's eligibility to access an object.

Client – In computing, a client is a system that accesses a (remote) service on another computer by some kind of network. The term was first applied to devices that were not capable of running their own stand-alone programs, but could interact with remote computers via a network. These dumb terminals were clients of the time-sharing mainframe computer.

LDAP – Lightweight Directory Access Protocol. LDAP is a software protocol for enabling anyone to locate organizations, individuals, and other resources such as files and devices in a network, whether on the public Internet or on a corporate intranet. LDAP is a "lightweight" (smaller amount of code) version of Directory Access Protocol (DAP), which is part of X.500, a standard for directory services in a network.

RFID – Radio Frequency identification (RFID) refers to the technology that uses devices attached to objects that transmit data to an RFID receiver. It is an alternative to bar coding. Advantages include data capacity, read/write capability, and no line-of-sight requirements. RFID is a method of remotely storing and retrieving data using devices called RFID tags/transponders. An RFID tag is a small object, such as an adhesive sticker, that can be attached to or incorporated into a product. RFID tags contain antennas to enable them to receive and respond to radio-frequency queries from an RFID transceiver.

RFID Tag – Small RFID devices attached to objects.

RFID reader – is a device that is used to interrogate an RFID tag. The reader has an antenna that emits radio waves; the tag responds by sending back its data.

Security – Computer security is the effort to create a secure computing platform, designed so that agents (users or programs) can only perform actions that have been allowed. This involves specifying and implementing a security policy. The actions in question can be reduced to operations of access, modification and deletion. Computer security can be seen as a subfield of security engineering, which looks at broader security issues in addition to computer security.

Server – A computer that delivers information and software to other computers linked by a network