Research on Wireless Network Security Model

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Abstract. Wireless network is an open architecture which is different form wired network. The open architecture is very convenient to communicate, but it also brings a lot of risk on network security problem. Therefore, this paper designed a new wireless network security model based on self-adjustment mechanism. It consists of three modules: detection module, safety model management module and backup module. After stimulate experiment in Swarm compared with traditional model PPDR, it shows the safety model designed in this paper can intercept dangerous data effectively.

Keywords: Software Engineering Education, Experience Based Approach.

1   Introduction

There is a trend that more and more people use their mobile devices on the way home or during waiting bus. The traditional wired network can't meet high demands on mobility, it's easy damaged, hard to locate and expand its network[1]. Therefore, smart mobile devices, such as smart phones, iPhone, android phone, tablets, iPad and so on, can meet the high demand on mobility network and become more and more popular in recent years. It's easy to bring and access to internet by wireless network, easy to be installed and low cost [2]. There are more and more corporations realize the importance of wireless network and add them to internet infrastructure. Now days, applications on wireless network are mainly based on the following area: traffic and travel services, public services, yard management, mobile office services, e commercial, smart community, and personal usage[3]. Enterprise and personal applications will take more and more important role in wireless network, and with the high development of wireless network and smart mobile devices, it will bring a deep revolution for people's life. Contract to the rapid development of wireless network applications, the network security is the bottleneck of wireless network. The wireless network has no physical connection node at all which is different with wired network. The data transferred in completely open environment, anybody can get the communication content by some specific tools in the coverage of wireless network[4]. The attacker can pretend to be a valid identity and then access to wireless network to attack and theft information. Wireless network is more dangerous than wired network for its open policy. Therefore, it's important and necessary to research on the security model on wireless network [5].

2   Wireless Network Synopsis

2.1   Wireless Network Overview

Wireless network are referring to all types of computer networks which is not connected by any kind of cables. People can use this method to connect network devices in home, enterprise, hotel and telecommunications networks. This method can avoid bring cables into a building which is costly or a cable connection among various equipment locations [6]. Wireless networks are commonly administered and implemented by using radio waves. This method takes place at physical layer level at the OSI seven layers network model.There are many wireless network standards in use, such as 802.11, 802.11b, 802.11g, Bluetooth, HomeRF, WiMax, 3G (WCDMA, TD-SCDMA, CMDA 2000), 4G(LTE, TD-LTE) and so on[7].

2.2   Current Wireless Network Security Model

Conventional wireless network security model is based on static and open loop control system. This method can't effective response to dynamic network security thread and the low robust of wireless network system. According to high development of wireless network technology, the closed loop control security system is becoming more and more popular for its high dynamic response; its working flow diagram is showed in figure 1.
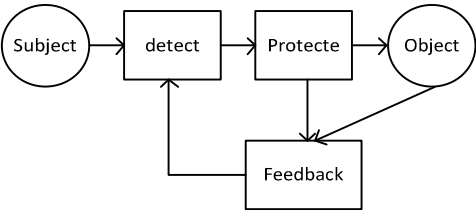

Fig. 1. Working flow of closed loop control system

There are many closed loop control system as PDR (protect, detection, and response) model, PPDR (polley, protect, detection, and response) model and APPDRR (analysis, polley, protect, detection, and response) mode.

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3.1   Security Model Architecture

Since the wireless network is dynamic, the security model is also need to be dynamic. The model needs to not only keep the wireless network security in basic level but also can adjust the model itself according to the network system working status and keep the wireless network working even under attack. It's necessary for wireless network take distributed security model because of the disadvantages of centralize security