

RESEARCH ARTICLE

WIRELESS NETWORK SECURITY WITH AAA PROTOCOL

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ABSTRACT

This wireless network security with AAA protocol also used authentication, authorization and accounting of the users intending to get access to the Internet through a secured network. The RADIUS protocol is used to encapsulate the packets of the, MSCHAPv1, and MSCHAPv2 legacy authentication protocols, while the MD4, MD5, salted MD5 and SHA-1 hashing. Algorithms are used to provide an enhanced security for the user passwords. The AAA-RADIUS solution is implemented using the 8950 AAA software from Alcatel-Lucent. It has obvious advantage to adopt 802.1x authentications for network access control. This paper analyzes 802.1x protocol, EAP protocol and RADIUS protocol, and constructs AAA which is based on 802.1x authentications at the end. Using software the messages of the whole authentication process have been captured. According to AAA mechanism it analyzes EAP messages and RADIUS messages detailed. The analysis of these messages provides technology strongly for particular research and further improvement, and it has important value for research and application.

Key words: AAA server; RADIUS; MSCHAPv1; MSCHAPv2; MD4; MD5; salted MD5; SHA-1; 8950 AAA; Policy Flow; TAL; SQL; database; IP 802.1x authentication; EAP protocol; RADIUS protocol; AAA; analysis of these messages.

INTRODUCTION

Security is an essential feature to ensure the proper functioning of computer networks. Therefore, the operations of authentication, authorization and accounting of users intending to connect to certain networks, have certainly become a necessity. Thus, the RADIUS, Diameter and TACACS protocols have been developed to provide the respective functions of the networks. Also, the above mentioned operations can be referred to with the acronym "AAA" which means "Authentication, Authorization and Accounting". The paper concerns the implementation of an AAA server solution that serves several created scenarios. The solution is applied using a simulation program (software simulator) and also all the Authentication, Authorization and Accounting scenarios are also designed using this software. The solution that is presented in this paper, regards the authentication, authorization and accounting of users intending to connect to the network. Through RADIUS protocol the static allocation of IPv4 and IPv6 information is provided for the users intending to gain access to a certain network by sending authentication requests using the, MSCHAPv1 and MSCHAPv2 legacy authentication protocols. Some user passwords are hashed using the MD4, MD5, salted MD5 and SHA-1 hashing algorithms and finally, accounting requests are transmitted. User authentication is based on IP addresses and port numbers. This is the final solution to be developed. After conducting authentication, authorization is made for certain authenticated users. RADIUS is one of the most widely used protocols to facilitate user access control, service authorization and charging by using the Authentication, Authorization and Accounting mechanism. It was introduced in the nineties, in order to solve authentication issues induced by millions of users that intended to reach their Internet Service Provider through modems, dealing with the PPP protocol.

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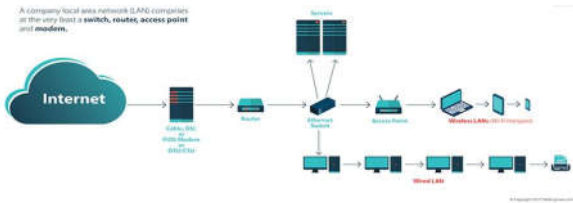
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Even if RADIUS is considered an obsolete protocol designed to support a specific kind of user and access technology (i.e., dial-up PPP) it is largely used nowadays by many Internet Service Providers. The specific scenarios use an Authentication, Authorization and Accounting program to respond to the RADIUS requests. This AAA program can be modeled through two states graphs called Policy Flows. Authorization and Accounting client) which passes the packets between the user and the server, and the RADIUS server (or Authentication, Authorization and Accounting server) which decides whether or not the user is authenticated. The solution development is based on certain concepts, software programs and network equipment. Authentication authorization and accounting operations can be accomplished for connecting users to the secured network. The authentication operation is performed using the MSCHAPv1 and MSCHAPv2 authentication protocols. These four legacy authentication protocols are using only the user's password and not the digital certificates. The Extensible Authentication Protocol is an example of authentication protocol that uses certificates.

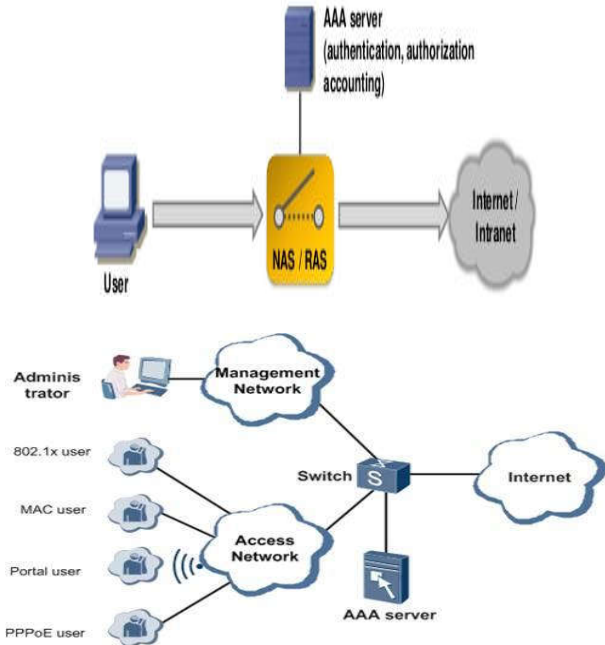
Existing system

Literature survey

In Implementing an AAA-RADIUS Solution Based on Legacy Authentication Protocols. This server solution can be used in the user's authentication via legacy protocols using hashed passwords. The accomplishment of authentication, authorization and accounting scenarios for educational purposes. In Research of AAA messages Based on 802.1x authentication. 802.1x defines a protocol which is called port based network access control. The port may be physical port, and may be also logical port. In A Scalability Study of AAA Support in heterogeneous networking environments with global Roaming Support. A typical reference system was created and studied in terms of performance in many aspects.

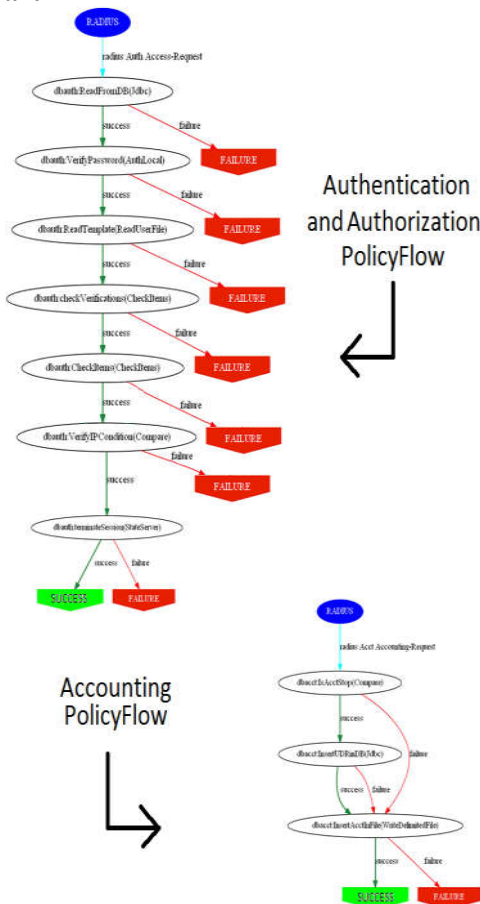


Proposed system



Wi-Fi networks supporting WPA2 were identified as most demanding application, AAA performance wise, among commonly used technologies.

Flowchart



Goals

- Enhancing customer experience.
- Capture data using social login.
- Connect with an existing account
- Fill out survey

Objectives

- Result display in graphical format
- Using RADIUS accounting, the Hospitality WiFi Control Panel keeps track of user activity – time on, time off, and data transferred.
- AAA is used in scenarios where a NAS (network access server) or a RAS (remote access server) acts like a switch granting or denying access to the Internet or Intranet for a user based on AAA authentication and authorization.

Advantages

- It has a more robust accounting system, Because of this system; It is very common for user connections such as remote access the network.
- Client-Server model
- Network Security
- Flexible

Conclusion

In the design and implementation performed using the 8950 AAA program, it is clear that the simulator can model up To 100% a real Authentication, Authorization and Accounting scenario. The implementation of the special Authentication, Authorization and Accounting program using the Triple-A Language. The accomplishment of authentication, authorization and accounting scenarios for educational purposes.

Future scope

In future we are planning of making this system more accurate and user friendly. Also we used wife devices connected in wireless network. Wi-Fi will play enhanced strategic role for enhanced and customers alike.

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