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AAA Lab 8

Cisco CCNP

**Purpose:**

Log in to a router using a verified user after making sure it was not a verified user beforehand.

**Background information in lab concepts:**

AAA is an acronym for the three different components of network security. The first being authentication where the switch identifies users by login and password using responses before the user gains access to the network. The second component is Authorization meaning after the initial authentication, authorization sees what the authenticated user has access to do. RADIUS or TACACS+ security servers perform authorization so that they can receive specific privileges. The final piece is Accounting where the switch provides a way of collecting security information used for billing, auditing and reporting. For example, you could get a long of authorization with a list of names and authorization methods they used.

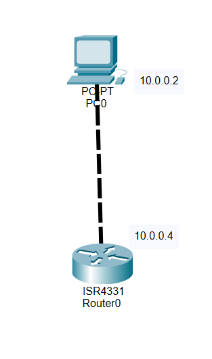
**Lab summary:**

Download a VM and a Linux server from Ubuntu. Configure the connection port an connect the router to the ethernet. Next enter the routers console and enable the interface. Then, install FreeRadius, access its users file and add the username and password you want. In FreeRadius client config, add the router IP address and default gateway. Then, assign a secret to the radius server. Access the router using the new verified user with username and password.

**Lab Commands:**

* Sudo apt install (name)
* radius server (name)
* sudo vim (file destination)

**Network Diagram with IP’s:**



**Config:**

**Router 1:**

version 16.9

service timestamps debug datetime msec

service timestamps log datetime msec

platform qfp utilization monitor load 80

platform punt-keepalive disable-kernel-core

hostname R1

boot-start-marker

boot-end-marker

vrf definition Mgmt-intf

address-family ipv4

exit-address-family

address-family ipv6

exit-address-family

aaa new-model

aaa group server radius Charles

server name Charles\_Server

aaa authentication login Charles group radius local

aaa session-id common

login on-success log

subscriber templating

multilink bundle-name authenticated

crypto pki trustpoint TP-self-signed-2667303412

enrollment selfsigned

subject-name cn=IOS-Self-Signed-Certificate-2667303412

revocation-check none

rsakeypair TP-self-signed-2667303412

crypto pki certificate chain TP-self-signed-2667303412

certificate self-signed 01

30820330 30820218 A0030201 02020101 300D0609 2A864886 F70D0101 05050030

31312F30 2D060355 04031326 494F532D 53656C66 2D536967 6E65642D 43657274

69666963 6174652D 32363637 33303334 3132301E 170D3232 30353233 31353339

32385A17 0D333030 31303130 30303030 305A3031 312F302D 06035504 03132649

4F532D53 656C662D 5369676E 65642D43 65727469 66696361 74652D32 36363733

30333431 32308201 22300D06 092A8648 86F70D01 01010500 0382010F 00308201

0A028201 0100B3C1 3BCB5712 1A093BE8 09EEC218 E3AFF7C3 59B99C5C 509D28B9

B19DA3C1 0D8A9662 1751A002 6BD6177F A4106C00 5464CA84 A9B47010 EFBC84BE

A4962027 0B4ABB54 B1EB5E09 8F279980 72D004BD 605F289F 63699A8C E804403A

DA83410F 5E337FC8 F014DABB 3003D8F9 D6CE39E1 5873C2C3 535F2A81 B7B44433

0001563E BF0D20EC B341546A 18891281 B239FAD6 6955E5CA A1B8AB46 33E768B6

757AFAB3 B7B60D41 5E8C6110 5DEEA6DA 5FF1B8CC 19696530 8B801B5F F2EADE1A

B2FF7532 BADD40B3 46D775A7 5D8788CB 046D06B8 20FFB861 5658F94E 34FC8EA7

E3246BB6 5313E2F9 024BC5F8 BAD34CD3 141A3039 84C5CECB C1A85D33 D7A0B56E

A9C656E8 6C290203 010001A3 53305130 0F060355 1D130101 FF040530 030101FF

301F0603 551D2304 18301680 1436AD8C D532959C CD53A3D6 EC44ADC6 FB026695

FF301D06 03551D0E 04160414 36AD8CD5 32959CCD 53A3D6EC 44ADC6FB 026695FF

300D0609 2A864886 F70D0101 05050003 82010100 985CC35C E9C6D2C7 47F02B30

75989647 B00B825E 4BFA544D 88B2932A CF26F8D0 3DECFF4B 8C52AC4D 44CF5B66

22FE4F57 F381D986 F20F00DA 7951D033 1F813C1B 97A5A32E BC36743B 4AFDF881

C759B9FC 421160F6 427ABBC5 36018BE7 274DC7FB 42027185 BAAFB66B 71800F60

6C54EF36 6A8B00C7 35627B5D 9B5DC157 9335BE44 FFEB22BD 2A0C1D34 B7340446

3F838F48 D41F06C1 AAB70FF2 8124E50F EA348DBB 480DBB6E E1856F91 4255DFFA

AF4B6C19 748FE3D9 82D989E3 24D16EFF 640922DD EFC7B3F8 81FCDFDF 7983298C

232074CA F6FD1AE6 1C7B5BEA 86EA41C3 60F30329 94C0BBA3 78EFA9A5 E8C23F2B

60066398 5B58844F BAC6DD72 940920DF 5FECA18D

quit

license udi pid ISR4321/K9 sn FLM2407011F

no license smart enable

diagnostic bootup level minimal

spanning-tree extend system-id

redundancy

mode none

interface GigabitEthernet0/0/0

ip address 10.0.0.1 255.255.255.0

negotiation auto

no shutdown

interface GigabitEthernet0/0/1

no ip address

shutdown

negotiation auto

interface GigabitEthernet0/1/0

no ip address

shutdown

negotiation auto

interface GigabitEthernet0/1/1

no ip address

shutdown

negotiation auto

interface GigabitEthernet0

vrf forwarding Mgmt-intf

no ip address

shutdown

negotiation auto

ip forward-protocol nd

ip http server

ip http authentication local

ip http secure-server

ip tftp source-interface GigabitEthernet0

radius server Charles\_Server

address ipv4 10.0.0.4 auth-port 1812 acct-port 1813

key letmein2

control-plane

line con 0

login authentication Charles

transport input none

stopbits 1

line aux 0

stopbits 1

line vty 0 4

end

**Server:**

sudo vi /etc/freeradius/3.0/Users

Aidan Cleartext-Password := "letmein"

graduation Cleartext-Password := "2022"

sudo vi /etc/freeradius/3.0/clients.conf

client 10.0.0.4 {

secret = letmein2

shortname = Router1

}

client localhost {

ipaddr = 1.1.1.1

**PROBLEMS:**

At first. I couldn’t connect the server to the router, and I thought that restarting the server might help. Later I realized that having my adapter ports open didn’t allow for the connection to be successful. After I switched one of the adapter ports off, it began to start working again. Another problem I had was when I was authorizing a user, I didn’t add them to the FreeRadius server properly, so I had to restart my server and rebegin. At the beginning I had a little problem where I installed the wrong version of Ubuntu, but I resolved that when I downloaded the compatible version that worked with the VM.

**CONCLUSION:**

I configured AAA using Ubuntu and a VM, where id attempt to login with an unverified user, fail, and then add them to the FreeRadius server, try again, and be a successful verified user.