NET3720 - Fall 2021 – Jenkins

Lab 2 - WPA2-PSK Security

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Lab Objectives:

- Configure AP
- Create SSID for AP

Hardware needed:
- Cisco Aironet 3700 AP
- ZYCEL PoE Switch
- USB to RS232 cable
- Computer

Software:
- Console application
    - PuTTY http://the.earth.li/~sgtatham/putty/latest/x86/putty.exe
    - Instructions on how to download PuTTY
        - https://www.weber.edu/CS/remote-access.html

Instructions:
In this lab you will learn how to configure a Cisco AP unit using the CLI. You will also learn how to create an SSID so people can

Method:
Internet is connected to the ZYXEL switch with Cat.6 cables. The switch is then connected to the Cisco AP unit with Cat.6 cables. In order to configure the AP it needs to be controlled by a computer. You are able to do this with USB to RS232 + VGA to RJ-45. Green light on the AP unit means its on, when you are connected to the AP successfully it will turn blue.

Connections:
Get Cat.6 cable connect one end to modem and other to ZYXEL switch **port 5**. connect the power to the switch. Get Cat.6 cable and connect one end to **port 1** on switch and the other end to **Ethernet** port on the Cisco switch. The RJ-45 end connect to **Console** connect the VGA to RS232, then the USB to a USB port on the computer. See Figure *1* for layout of how things are connected.
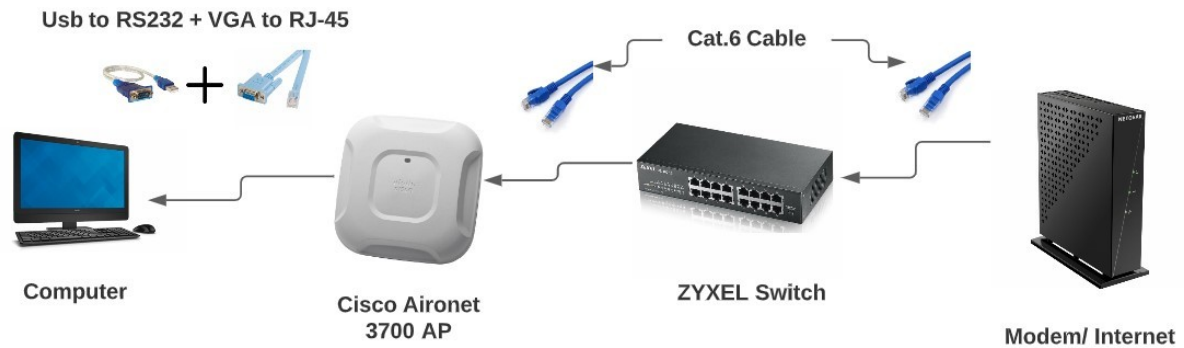
Figure 1

Turn on the **ZYXEL swtich** on, and make sure the USB is plug and play and picks up on the computer.
Go to the **Start** menu on your windows computer
click on the **Device Manager**
Go down on ports for my device it is on (**COM4**)

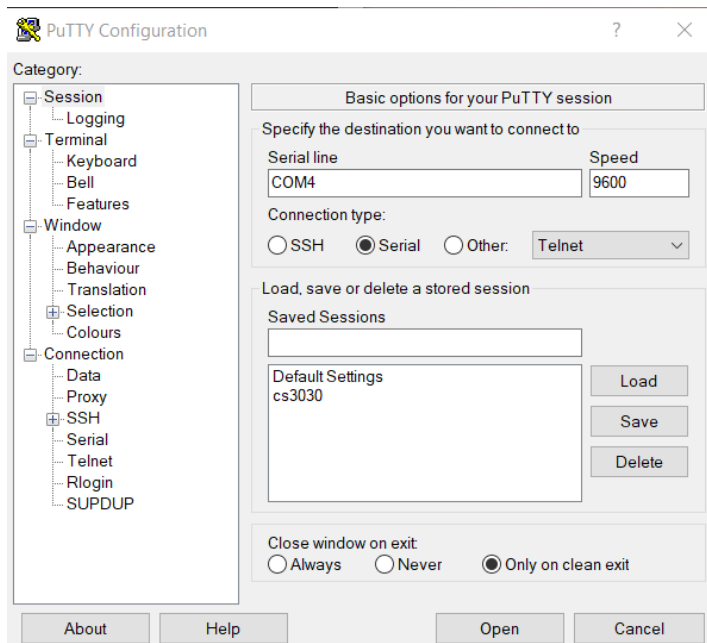Figure 2

Open **PuTTY Configuration**

Figure 3

Access Cisco AP
Click on **Serial**
on Serial line you put **COM4** (or whatever yours says)
Speed **9600**
Then click on **Open**

This is what will show up press **Enter**

Figure 4

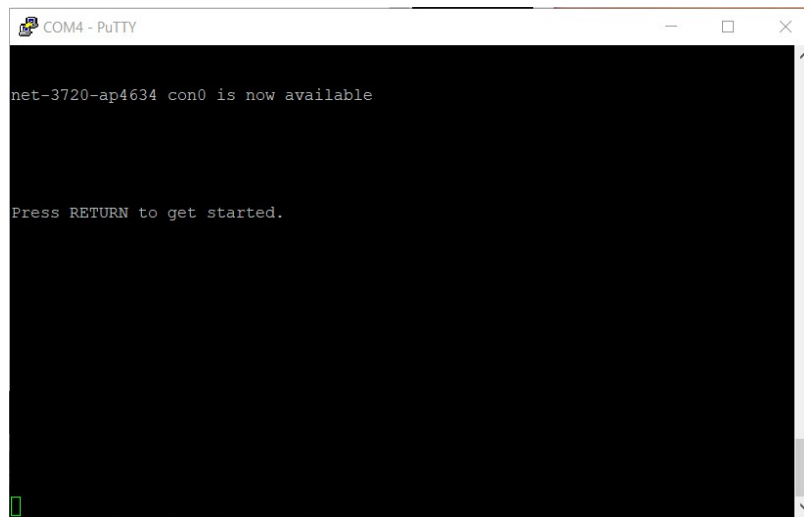This is what will show up when you Press **Enter**

net-3720-ap4634 con0 is now available

Press RETURN to get started.

Figure 5

Type in password: `class`

then type `enable`
```
net-3720-ap4634> enable
password: class
```

```
net-3720-ap4634# sh ip interface brief
```

```
net-3720-ap4634#sh ip interface brief
Interface                IP-Address      OK? Method Status                  Prot
ocol
BVI1                     192.168.0.43    YES DHCP    up                      up

Dot11Radio0              unassigned      YES NVRAM   administratively down down

Dot11Radio1              unassigned      YES NVRAM   administratively down down

GigabitEthernet0         unassigned      YES NVRAM   up                      up

net-3720-ap4634#
```
Figure 6

```
net-3720-ap4634#sh running-config
```

Output:

```
Building configuration...

Current configuration : 1646 bytes
!
version 15.3
no service pad
service timestamps debug datetime msec
service timestamps log datetime msec
service password-encryption
!
hostname net-3720-ap4634
!
!
logging rate-limit console 9
enable secret 5 $1$7llL$bTev5wtQCeNqXp.lrmdRo0
enable password 7 10400C0D5640405B412C2F392A293D312709
!
```

```
no aaa new-model
no ip source-route
no ip cef
!
!
!
!
dot11 pause-time 100
dot11 syslog
!
!
no ipv6 cef
!
!
username Cisco password 7 032752180500
!
!
bridge irb
!
!
!
interface Dot11Radio0
 no ip address
 shutdown
 antenna gain 0
 station-role root
 bridge-group 1
 bridge-group 1 subscriber-loop-control
 bridge-group 1 spanning-disabled
 bridge-group 1 block-unknown-source
 no bridge-group 1 source-learning
 no bridge-group 1 unicast-flooding
!
interface Dot11Radio1
 no ip address
 shutdown
 antenna gain 0
 peakdetect
 no dfs band block
 channel dfs
```

```
 station-role root
 bridge-group 1
 bridge-group 1 subscriber-loop-control
 bridge-group 1 spanning-disabled
 bridge-group 1 block-unknown-source
 no bridge-group 1 source-learning
 no bridge-group 1 unicast-flooding
!
interface GigabitEthernet0
 no ip address
 duplex auto
 speed auto
 bridge-group 1
 bridge-group 1 spanning-disabled
 no bridge-group 1 source-learning
!
interface BVI1
 mac-address 5c83.8f44.4634
 ip address dhcp client-id GigabitEthernet0
 ipv6 address dhcp
 ipv6 address autoconfig
 ipv6 enable
!
ip forward-protocol nd
no ip http server
no ip http secure-server
ip http help-path
http://www.cisco.com/warp/public/779/smbiz/prodconfig/help/eag
!
!
bridge 1 route ip
!
!
!
line con 0
 password 7 045807071C32
 login
line vty 0 4
 login local
 transport input all
```

```
!
end
```

```
net-3720-ap4634#configure terminal
net-3720-ap4634(config)#interface bvI 1
net-3720-ap4634(config-if)#ip address 192.168.0.43 255.255.255.0
net-3720-ap4634(config-if)#exit
net-3720-ap4634(config)#
```

Creating the SSID

```
net-3720-ap4634(config)#ip default-gateway 192.168.0.1

net-3720-ap4634(config)#exit
net-3720-ap4634#sh ip interface brief
```

```
net-3720-ap4634#sh ip interface brief
Interface              IP-Address      OK? Method Status                Protocol
BVI1                   192.168.0.43    YES manual up                    up
Dot11Radio0            unassigned      YES NVRAM  administratively down down
Dot11Radio1            unassigned      YES NVRAM  administratively down down
GigabitEthernet0       unassigned      YES NVRAM  up                    up
net-3720-ap4634#
```

Figure 7

Note: BVI1 is now saying Manual Up instead of DHCP

```
net-3720-ap4634#config terminal

net-3720-ap4634(config)#dot11 ssid net3720-Hernandez

net-3720-ap4634(config-ssid)#guest-mode

net-3720-ap4634(config-ssid)#authentication open

net-3720-ap4634(config-ssid#authentication key-managment wpa version
2
```

```
net-3720-ap4634(config-ssid)#wpa-psk ascii Cisco2021
net-3720-ap4634(config-ssid)#exit
```

Enable Encryption to 4.2GHz Radio Interface

```
net-3720-ap4634(config)#interface dot11Radio 0
net-3720-ap4634(config-if)#encription mode ciphers aes-ccm
net-3720-ap4634(config-if)#ssid net3720-Hernandez
net-3720-ap4634(config-if)#channelleast-congestied
net-3720-ap4634(config-if)#no shutdown
net-3720-ap4634(config-if)#exit
net-3720-ap4634(config)#exit
```

Now you are ready to connect to the WiFi--
Password: Cisco2021

⌂ net3720-Hernandez

Edit

Properties

SSID:	net3720-Hernandez
Protocol:	Wi-Fi 4 (802.11n)
Security type:	WPA2-Personal
Network band:	2.4 GHz
Network channel:	8
Link-local IPv6 address:	fe80::f098:41e:cc4:c803%26
IPv4 address:	192.168.0.33
IPv4 DNS servers:	192.168.0.1
	205.171.3.25
Manufacturer:	Intel Corporation
Description:	Intel(R) Wi-Fi 6 AX200 160MHz
Driver version:	22.20.0.6
Physical address (MAC):	94-E6-F7-E2-96-0E

Copy

```
Figure 8


net-3720-ap4634#show tech-support
```

```
------------------ show dot11 associations all-client ------------------


Address          : 94e6.f7e2.960e     Name            : net-3720-ap4634
IP Address       : 192.168.0.33       IPv6 Address     : FE80::F098:41E:CC4:C803

Gateway Address  : 0.0.0.0
Netmask Address  : 0.0.0.0            Interface       : Dot11Radio 0
Bridge-group      : 1
reap_flags_1       : 0x0     ip_learn_type        : 0x0        transient_static_ip : 0x0
Device           : ccx-client         Software Version : NONE
CCX Version      : 4                  Client MFP      : Off

State            : Assoc              Parent          : self
SSID             : net3720-Hernandez
VLAN             : 0
Hops to Infra    : 1                  Association Id  : 1
Clients Associated: 0                 Repeaters associated: 0
Tunnel Address   : 0.0.0.0
Key Mgmt type    : WPAv2 PSK          Encryption       : AES-CCMP
Current Rate     : m15-2              Capability       : WMM ShortHdr ShortSlot 11h
Supported Rates  : 1.0 2.0 5.5 11.0 6.0 9.0 12.0 18.0 24.0 36.0 48.0 54.0 m0-2 m1-2 m2-2 m3-2
m4-2 m5-2 m6-2 m7-2 m8-2 m9-2 m10-2 m11-2 m12-2 m13-2 m14-2 m15-2
Voice Rates      : disabled           Bandwidth       : 20 MHz
Signal Strength  : -24  dBm           Connected for    : 294 seconds
Signal to Noise  : 60   dB            Activity Timeout : 29 seconds
Power-save       : Off                Last Activity    : 21 seconds ago
Apsd DE AC(s)    : NONE


Packets Input    : 1419               Packets Output  : 213
Bytes Input      : 329313             Bytes Output    : 55013
Duplicates Rcvd  : 2                  Data Retries    : 1
Decrypt Failed   : 0                  RTS Retries     : 0
MIC Failed       : 0                  MIC Missing     : 0
Packets Redirected: 0                 Redirect Filtered: 0
IP source guard failed : 0            PPPoE passthrough failed : 0
DAI failed : IP mismatch  : 0          src MAC mismatch : 0             target MAC mismatch
: 0
Existing IP failed :  0            New IP failed :  0
Client Vlan      : 0
11w Status       : Off
Client SGT          : 0
Session timeout   : 0 seconds
Reauthenticate in : never
```

Figure 9

When you are connected the Cisco AP will go from Green to Blue.

References

IT Support People. (2020, December 29). Configure Cisco Access Point using CLI with WPAv2
        Authentication [Video]. Retrieved from https://www.youtube.com/watch?v=JkUfTXuwj2U