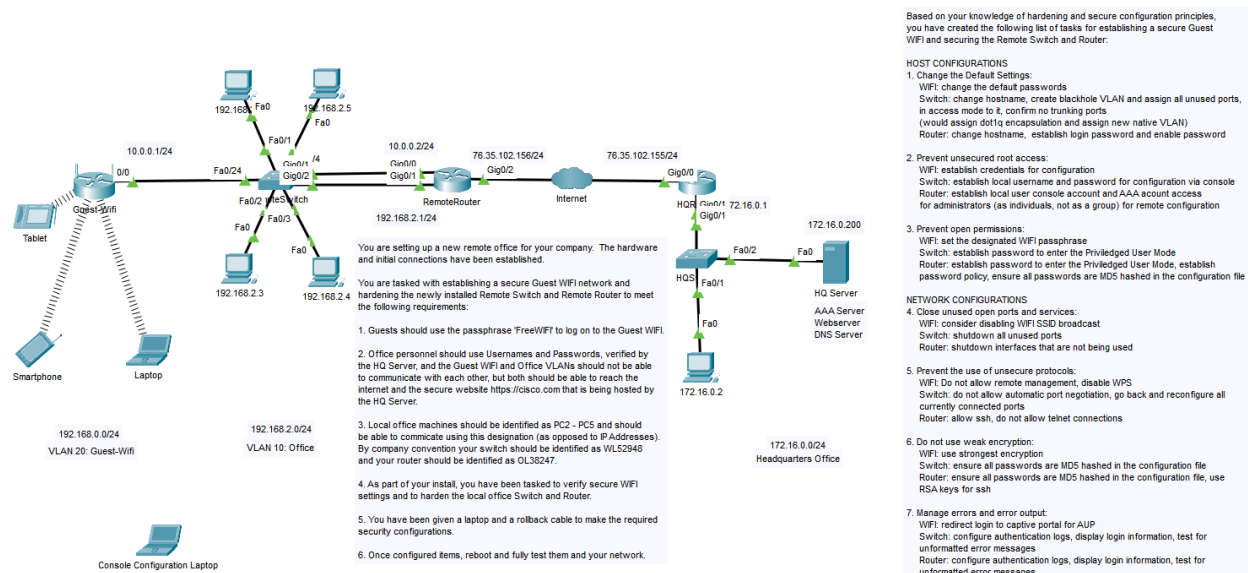


This is the solution for the Packet Tracer Lab “Network Security Configuration”



WiFi Configuration

Access the Wireless Router GUI interface from Laptop Browser: <http://10.0.0.1>

Default credentials are **admin:admin**

Since we will be configuring the Wireless Router, conducting the configuration changes from a machine that is using that WiFi signal will cause a break in signal, when changes are saved. In order to prevent this, conduct the remainder of the configuration directly from the Router GUI.

GUI -> Administration

Set Router Password to: **jrOut3r1@3**

Save Settings -> use new credentials: **admin:jrOut3r1@3**

Ensure Remote Management is Disabled

GUI -> Wireless – Basic Wireless Settings

Set SSID to: **Guest WIFI**

Set Network Mode to: **Wireless-N Only**

Radio Band: Standard – **20 MHz Channel**

Standard Channel: **6 – 2.437 GHz**

Save Settings

GUI -> Wireless – Wireless Security

Set Security Mode to: **WPA2 Personal**

Set Encryption to: **AES**

Set Passphrase to: **FreeWIFI**

Save Settings

Manually configure the Tablet, Smartphone and Laptop to connect with the new WIFI settings

DNS Configuration

On the 172.16.0.200 DNS Sever -> Services -> DNS

Enter A Records for PC2 – PC5 at addresses 192.168.2.2 – 192.168.2.5

Ensure DNS service is: On

Test configuration by ping-ing between workstations: ping pc2, ping pc3, ping pc4, ping pc5, etc

Switch Configuration

Connect the Console Configuration Laptop to the RemoteSwitch via a Console Cable (Rollover Cable) from RS232 -> Console

Configure the RemoteSwitch via the Terminal on the Console Configuration Laptop

Switch>enable

Switch#configure terminal

Enter configuration commands, one per line. End with CNTL/Z.

CHANGE HOSTNAME

Switch(config)#hostname WL52948

ENABLE LOGGING

WL52948(config)#logging buffered 40960

WL52948(config)#service timestamps log datetime msec

SET LOCAL CREDENTIALS

WL52948(config)#username jslocal secret 09876

SET ENABLE PASSWORD

WL52948(config)#enable secret 1999

SET CONSOLE LOCAL CREDENTIALS

```
WL52948(config)#line console 0
```

```
WL52948(config-line)#login local
```

```
WL52948(config-line)#username jsconsole secret 09876
```

```
WL52948(config-line)#exit
```

DISABLE VTY CONNECTIONS

```
WL52948(config)#line vty 0 15
```

```
WL52948(config-line)#no exec
```

CREATE BLACKHOLE VLAN

```
WL52948(config)#vlan 999
```

```
WL52948(config-vlan)#name BlackHole
```

```
WL52948(config-vlan)#exit
```

```
WL52948(config)#exit
```

```
*Mar 01, 00:04:32.044: SYS-5-CONFIG_I: Configured from console by console
```

CHECK VLAN SETUP

```
WL52948#show vlan brief
```

VLAN Name Status Ports

```
-----  
1 default active Fa0/5, Fa0/6, Fa0/7, Fa0/8  
Fa0/9, Fa0/10, Fa0/11, Fa0/12  
Fa0/13, Fa0/14, Fa0/15, Fa0/16  
Fa0/17, Fa0/18, Fa0/19, Fa0/20  
Fa0/21, Fa0/22, Fa0/23  
10 Office active Fa0/1, Fa0/2, Fa0/3, Fa0/4  
Gig0/2  
20 Guest-Wifi active Fa0/24, Gig0/1  
999 BlackHole active  
1002 fddi-default active  
1003 token-ring-default active  
1004 fddinet-default active  
1005 trnet-default active
```

```
WL52948#config t
```

```
Enter configuration commands, one per line. End with CNTL/Z.
```

SELECT ALL UNUSED INTERFACES AND MOVE THEM TO VLAN 999

```
WL52948(config)#interface range fa0/5-23
```

```
WL52948(config-if-range)#switchport mode access
```

```
WL52948(config-if-range)#switchport access vlan 999
```

```
WL52948(config-if-range)#shutdown
```

```
WL52948(config-if-range)#exit
```

CHECK TRUNKING CONFIGURATION

```
WL52948(config)#show interfaces trunk
```

NOTE: ENCAPSULATION, AUTONEGOTIATE, AND NATIVE VLAN WOULD BE CONFIGURED IF A TRUNKING PORT WAS ACTIVE

CHECK RECONFIGURED VLAN SETUP

```
WL52948(config-if-range)#exit
```

```
WL52948(config-if-range)#exit
```

```
WL52948#show vlan brief
```

SHOW LOGGING

```
WL52948#show logging
```

SAVE CONFIGURATION

```
WL52948#copy running-config startup-config
```

Destination filename [startup-config]?

Building configuration...

[OK]

Configure the AAA Server on the HQ Server

Turn on the Radius Service and add the following credential

Network Configuration

```
RemoteRouter 76.35.102.156 Radius R0ut3r!@#
```

Add

```
jrad:Pa$$w0rd1@3
```

Add

Turn Service On

Configure the RemoteRouter

Router>enable

Router#configure terminal

Enter configuration commands, one per line. End with CNTL/Z.

CHANGE HOSTNAME

Router(config)#hostname OL38247

ENABLE LOGGING

OL38247(config)#logging buffered 40960

OL38247(config)#service timestamps log datetime msec

SET LOCAL CREDENTIALS

OL38247(config)#username jrlocal secret 09876

SET ENABLE PASSWORD

OL38247(config)#enable secret 1999

CONFIGURE RADIUS AAA MODEL

OL38247(config)#aaa new-model

CONFIGURE AUTHENTICATION TO RADIUS SERVER FIRST, THEN LOCAL

OL38247(config)#aaa authentication login default group radius local

CONFIGURE SHELL AUTHORIZATION TO RADIUS SERVER FIRST, THEN LOCAL

OL38247(config)#aaa authorization exec default group radius local

IDENTIFY AAA SERVER INFORMATION TO ROUTER

OL38247(config)#radius-server host 172.16.0.200

OL38247(config)#radius-server key R0ut3r!@#

SET DOMAIN FOR CONFIGURATION

OL38247(config)#ip domain-name secplus.com

GENERATE AN RSA KEY FOR SSH

OL38247(config)#crypto key generate rsa

The name for the keys will be: OL38247.secplus.com

Choose the size of the key modulus in the range of 360 to 2048 for your General Purpose Keys. Choosing a key modulus greater than 512 may take a few minutes.

How many bits in the modulus [512]: **1024**

% Generating 1024 bit RSA keys, keys will be non-exportable...[OK]

ENABLE SSH VERSION 2

OL38247(config)#ip ssh version 2

*Mar 1 0:26:19.255: %SSH-5-ENABLED: SSH 1.99 has been enabled

CONFIGURE AUTHENTICATION FOR ALL VTY INPUTS: 0 4 AND 5 15

OL38247(config)#line vty 0 15

OL38247(config-line)#login authentication default

ENABLE SSH ONLY (NOT TELNET)

OL38247(config-line)#transport input ssh

OL38247(config-line)#exit

CONFIGURE CONSOLE PORT LOGIN

OL38247(config)#line console 0

OL38247(config-line)#login authentication default

OL38247(config-line)#exit

DISABLE AUX 0 PORT (DIAL UP)

OL38247(config)#line aux 0

OL38247(config-line)#no exec

SET PASSWORD POLICY

OL38247(config)#security passwords min-length 8

OL38247(config)#login block-for 180 attempts 5 within 60

OL38247(config)#login on-failure log

OL38247(config)#login on-success log

OL38247(config)#exit

SAVE CONFIGURATION

OL38247#copy running-config startup-config

Destination filename [startup-config]?

Building configuration...

[OK]

Test SSH Connections from both sides of the router (AAA authentication)

C:\>ssh -l jrad 192.168.2.1

enable -> show run

C:\>ssh -l jrad 76.35.102.156

enable -> show run

Disable the interface connecting the local and remote routers: on HQRouter

Router>enable

Router#

Router#configure terminal

Enter configuration commands, one per line. End with CNTL/Z.

Router(config)#interface GigabitEthernet0/0

Router(config-if)#shutdown

Router(config-if)#

%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to administratively down

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to down

Router(config-if)#

SSH to router using local credentials (local authentication)

Fast Forward 10 minutes

C:\>ssh -l jrlocal 192.168.2.1

enable -> show run

NETWORK CONFIGURATION

NEED TO SET UP ACL TO PREVENT WIRELESS USERS FROM CONNECTING TO OFFICE LAN

```
Router>enable
```

```
Router#config t
```

Enter configuration commands, one per line. End with CNTL/Z.

```
Router(config)#
```

```
Router(config)#ip access-list standard BlockGuests
```

```
Router(config-std-nacl)#deny 10.0.0.0 0.0.0.255
```

```
Router(config-std-nacl)#permit any
```

```
Router(config-std-nacl)#exit
```

```
Router(config)#exit
```

```
Router#
```

```
%SYS-5-CONFIG_I: Configured from console by console
```

```
Router#show access-lists
```

```
Standard IP access list BlockGuests
```

```
10 deny 10.0.0.0 0.0.0.255
```

```
20 permit any
```

```
Router#config t
```

```
Router(config)#interface gig0/1
```

```
Router(config-if)#ip access-group BlockGuests out
```

```
Router(config-if)#exit
```

```
Router(config)#exit
```

```
Router#
```

```
%SYS-5-CONFIG_I: Configured from console by console
```