

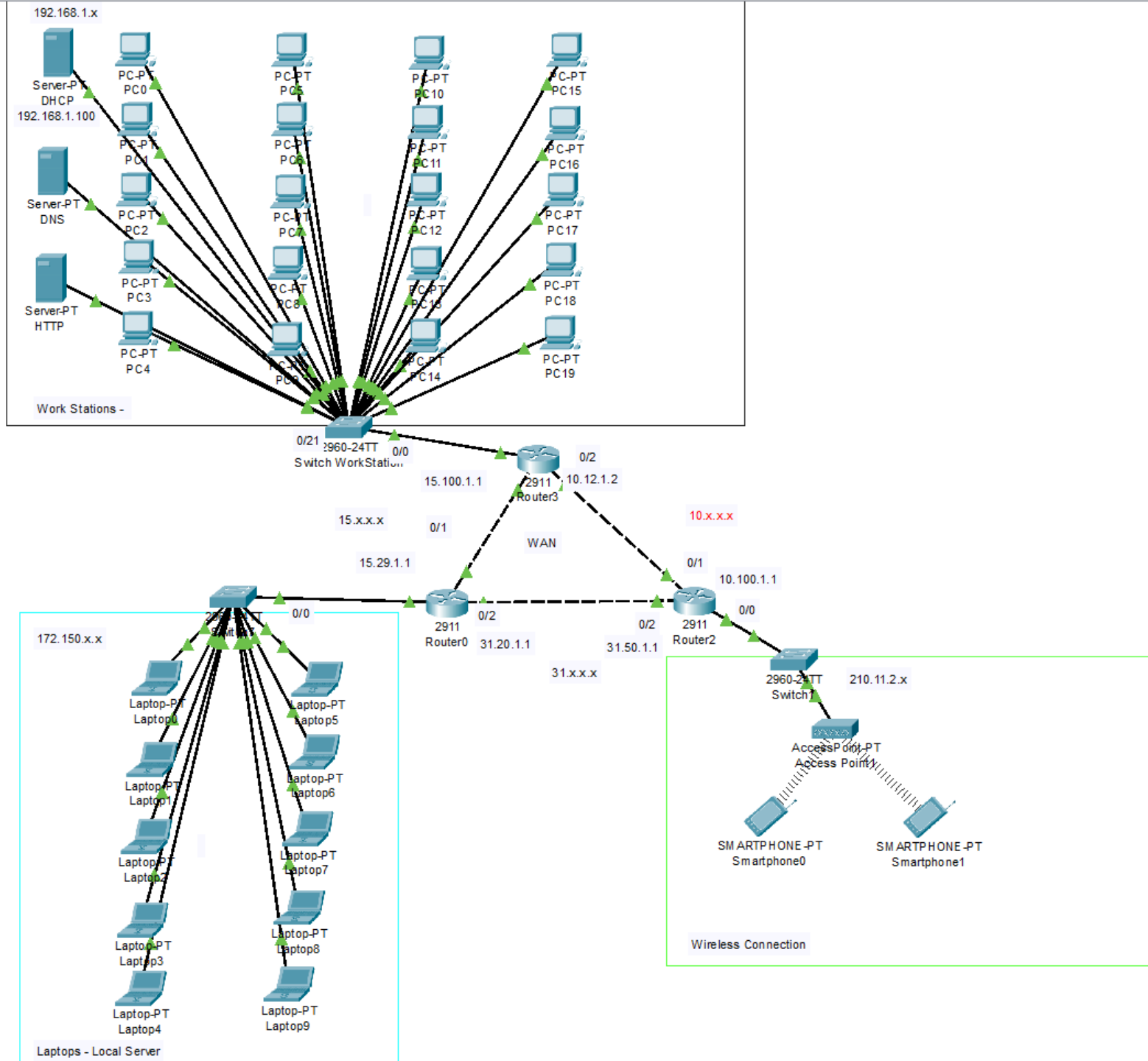


IT PLATFORM HOMEWORK – SIMPLE NETWORK

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This is the full design of my network

I have used :

20 work stations;

3 servers;

3 routers;

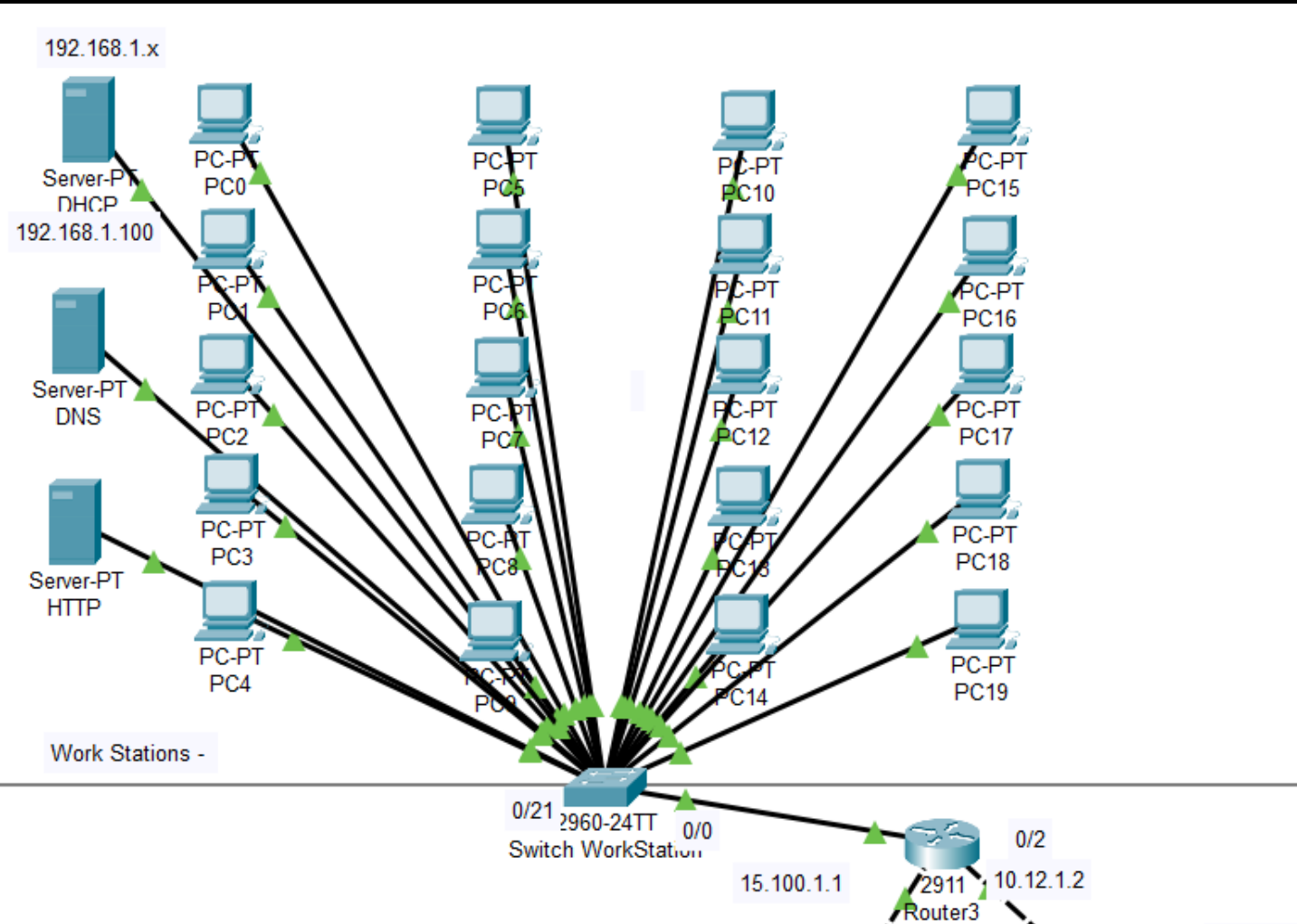
3 switches;

10 laptops;

1 wireless access point;

2 smartphones.

Working Station Zone



- This is my main network
- I have the DHCP server, the DNS server and the HTTP server, I also have the Work Stations here
- I also have a switch connected to all of them with a straight copper cable and this switch is connected to Router 3
- This area has a type C IP – 192.168.1.x

DHCP

Physical Config Services **Desktop** Programming Attributes

IP Configuration X

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 192.168.1.100

Subnet Mask 255.255.255.0

Default Gateway 192.168.1.1

DNS Server 192.168.1.254

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address /

Link Local Address FE80::2E0:8FFF:FEB5:45D7

Default Gateway

DNS Server

802.1X

☐ Use 802.1X Security

Authentication MD5

Username

Password

Working Station Zone - DHCP

- This is the Ip configuration page of the DHCP
- The Ip adress of the DHCP server is 192.168.1.100

Working Station Zone - DHCP

- These are the Configurations of my DHCP server;
- I added 3 Ip addresses, one for each square of my network:
 - serverPool -> 192.168.1.10 – C type Ip
 - serverPoolLaptops -> 172.150.1.1 – B type Ip
 - serverWireless -> 210.11.2.1 – C type Ip

Physical Config **Services** Desktop Programming Attributes

SERVICES

- HTTP
- DHCP**
- DHCPv6
- TFTP
- DNS
- SYSLOG
- AAA
- NTP
- EMAIL
- FTP
- IoT
- VM Management
- Radius EAP

DHCP

Interface: FastEthernet0 Service: ☒ On ☐ Off

Pool Name: serverPool

Default Gateway: 192.168.1.1

DNS Server: 192.168.1.254

Start IP Address: 192.168.1.10

Subnet Mask: 255.255.255.0

Maximum Number of Users: 100

TFTP Server: 0.0.0.0

WLC Address: 0.0.0.0

Add Save Remove

Pool Name	Default Gateway	DNS Server	Start IP Address	Subnet Mask	Max User	TFTP Server	WLC Address
serverPoolLaptops	172.150.1.1	192.168.1....	172.150.1....	255.255.0.0	156	0.0.0.0	0.0.0.0
serverWireless	210.11.2.1	192.168.1....	210.11.2.10	255.255.2...	246	0.0.0.0	0.0.0.0
serverPool	192.168.1.1	192.168.1....	192.168.1.10	255.255.2...	100	0.0.0.0	0.0.0.0

DNS

Physical Config Services **Desktop** Programming Attributes

IP Configuration X

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 192.168.1.254

Subnet Mask 255.255.255.0

Default Gateway 192.168.1.1

DNS Server 192.168.1.254

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address /

Link Local Address FE80::240:BFF:FE30:1EBB

Default Gateway

DNS Server

802.1X

☐ Use 802.1X Security

Authentication MD5

Username

Password

Working Station Zone - DNS

- This is the Ip configuration page of the DNS
- The Ip adress of the DNS server is 192.168.1.254 -> this appears in all of the devices Ip page, on the DNS Server area

Working Station Zone - DNS

- Inside the DNS server I need to put all of the desired website addresses.
- My website name is www.homework.com , you can Search it using either the name or the Ip adress – 192.168.1.

The screenshot shows a network management interface with the following components:

- Navigation Tabs:** Physical, Config, **Services**, Desktop, Programming, Attributes.
- SERVICES List:** HTTP, DHCP, DHCPv6, TFTP, **DNS**, SYSLOG, AAA, NTP, EMAIL, FTP, IoT, VM Management, Radius EAP.
- DNS Configuration:**
 - DNS Service:** ☒ On ☐ Off
 - Resource Records:**
 - Name:** [Empty text box]
 - Type:** A Record (dropdown menu)
 - Address:** [Empty text box]
 - Buttons:** Add, Save, Remove
 - Table:**

No.	Name	Type	Detail
0	www.homework.com	A Record	192.168.1.9

HTTP

Physical Config Services **Desktop** Programming Attributes

IP Configuration X

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 192.168.1.9

Subnet Mask 255.255.255.0

Default Gateway 192.168.1.1

DNS Server 192.168.1.254

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address /

Link Local Address FE80::2D0:BCFF:FE48:98A1

Default Gateway

DNS Server

802.1X

☐ Use 802.1X Security

Authentication MD5

Username

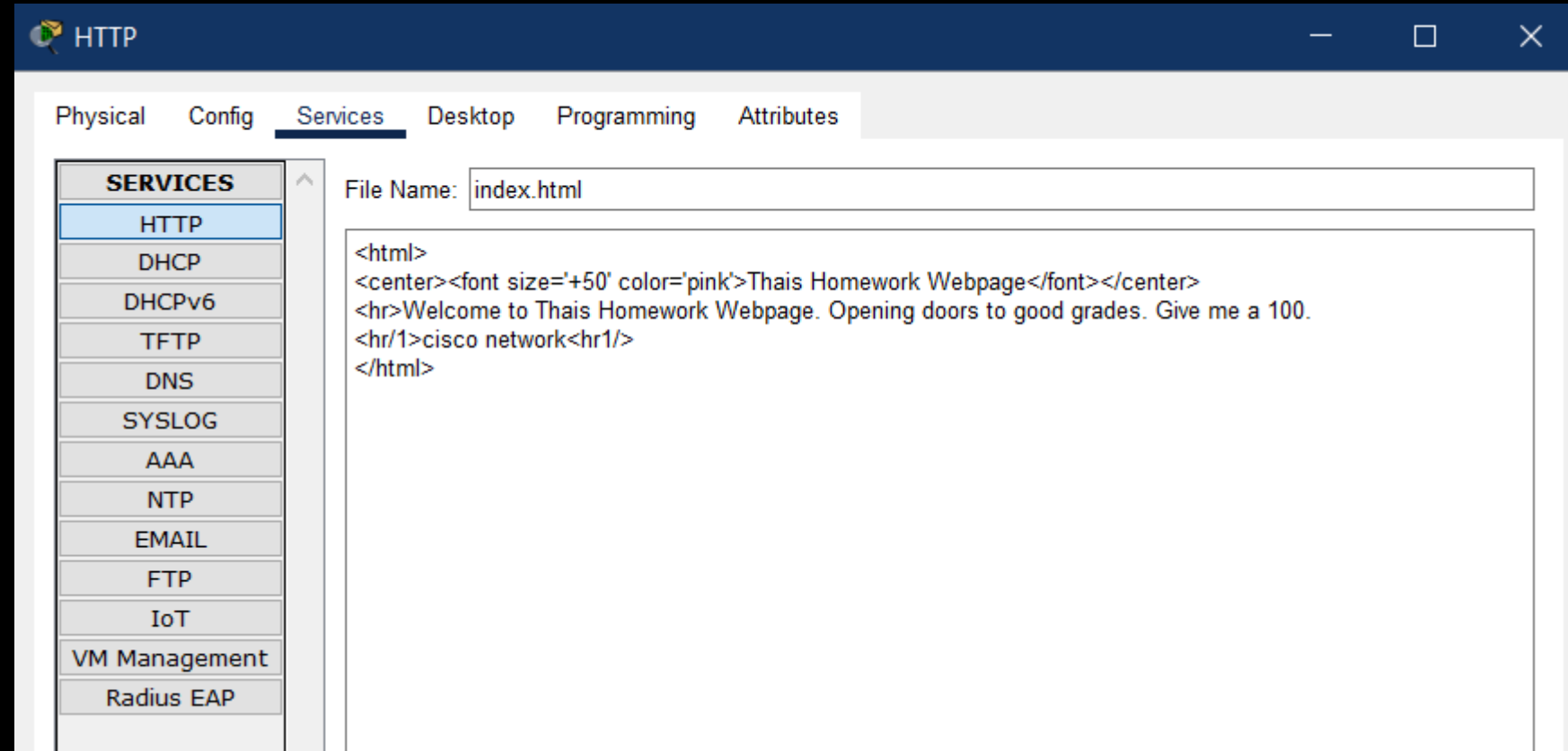
Password

Working Station Zone - HTTP

- This is the Ip configuration page of the HTTP
- The Ip adress of the HTTP server is 192.168.1.9

Working Station Zone - HTTP

- This is my code inside the HTTP – index slot



PC0

Physical Config **Desktop** Programming Attributes

IP Configuration X

Interface FastEthernet0

IP Configuration

☒ DHCP ☐ Static

IPv4 Address 192.168.1.30

Subnet Mask 255.255.255.0

Default Gateway 192.168.1.1

DNS Server 192.168.1.254

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address /

Link Local Address FE80::260:70FF:FE15:3110

Default Gateway

DNS Server

802.1X

☐ Use 802.1X Security

Authentication MD5

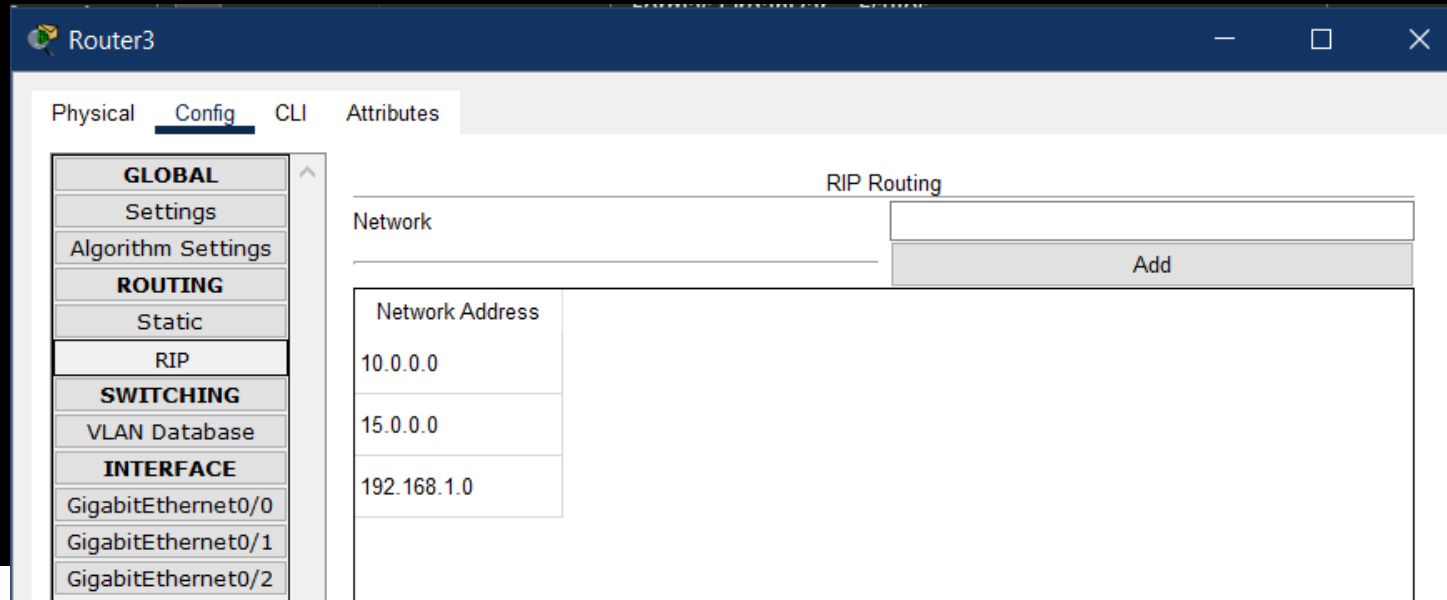
Username

Password

Working Station Zone - PC

- This is the Ip configuration page of a work station
- The Ip address is decided automatically by the DHCP

Working Station Zone – Router3



- This is the Router3 RIP configurations

```
Router>enable
Router#config t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface GigabitEthernet 0/0
Router(config-if)#ip helper-address 192.168.1.100
Router(config-if)#exit
Router(config)#interface GigabitEthernet 0/1
Router(config-if)#ip helper-address 192.168.1.100
Router(config-if)#exit
Router(config)#interface GigabitEthernet 0/2
Router(config-if)#ip helper-address 192.168.1.100
Router(config-if)#exit
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#copy running-config startup-config
Destination filename [startup-config]?
Building configuration...
[OK]
```

- This the code that I used inside all of the Routers so they would know from where to get the Ip addresses and where to send them
- I also had to code for the router to save the configurations

GigabitEthernet0/0

Port Status ☒ On

Bandwidth ☒ 1000 Mbps ☐ 100 Mbps ☐ 10 Mbps ☒ Auto

Duplex ☐ Half Duplex ☒ Full Duplex ☒ Auto

MAC Address 0001.C9A1.0601

IP Configuration

IPv4 Address 192.168.1.1

Subnet Mask 255.255.255.0

Tx Ring Limit 10

GigabitEthernet0/1

Port Status ☒ On

Bandwidth ☒ 1000 Mbps ☐ 100 Mbps ☐ 10 Mbps ☒ Auto

Duplex ☐ Half Duplex ☒ Full Duplex ☒ Auto

MAC Address 0001.C9A1.0602

IP Configuration

IPv4 Address 15.100.1.1

Subnet Mask 255.0.0.0

Tx Ring Limit 10

GigabitEthernet0/2

Port Status ☒ On

Bandwidth ☒ 1000 Mbps ☐ 100 Mbps ☐ 10 Mbps ☒ Auto

Duplex ☐ Half Duplex ☒ Full Duplex ☒ Auto

MAC Address 0001.C9A1.0603

IP Configuration

IPv4 Address 10.12.1.2

Subnet Mask 255.0.0.0

Tx Ring Limit 10

- This is the cable that is connected to the switch that is connected to the servers, so i had to put the ip address of the DHCP server – type C ip

- 192.168.1.x

- This is the cable that is connected to the Router0, so i had to create an address for the network between the two of them – type A ip

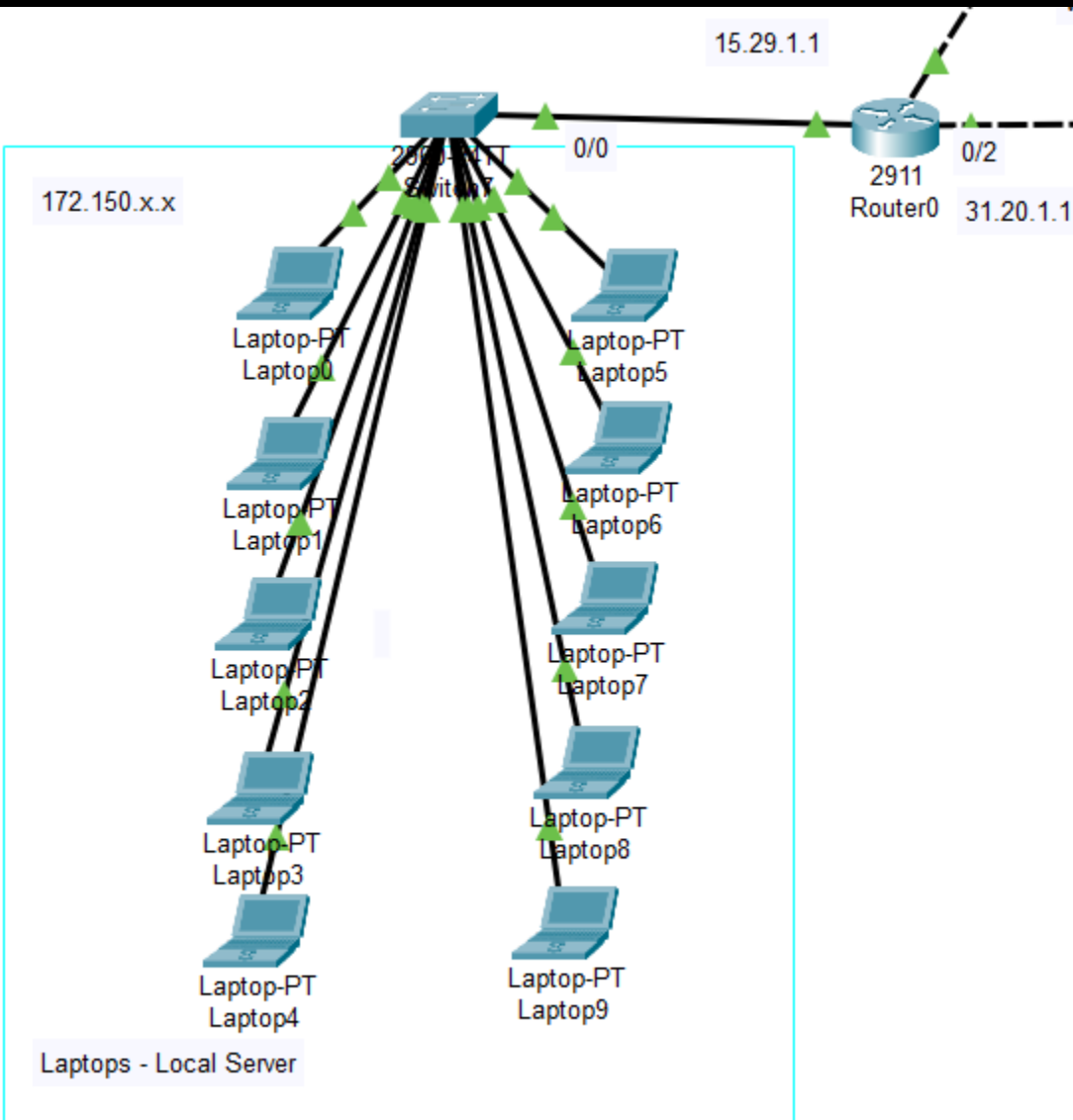
- 15.x.x.x

- This is the cable that is connected to the Router2, so i had to create an address for the network between the two of them – type A ip

- 10.x.x.x

ROUTER3

LAN



- This is my LAN
- I also have a switch connected to all of them with a straight copper cable and this switch is connected to Router 3
- This area has a type B IP – 172.150.x.x

Laptop0

Physical Config **Desktop** Programming Attributes

IP Configuration X

Interface FastEthernet0

IP Configuration

☒ DHCP ☐ Static

IPv4 Address 172.150.1.104

Subnet Mask 255.255.0.0

Default Gateway 172.150.1.1

DNS Server 192.168.1.254

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address /

Link Local Address FE80::290:CFF:FE1E:57BC

Default Gateway

DNS Server

802.1X

☐ Use 802.1X Security

Authentication MD5

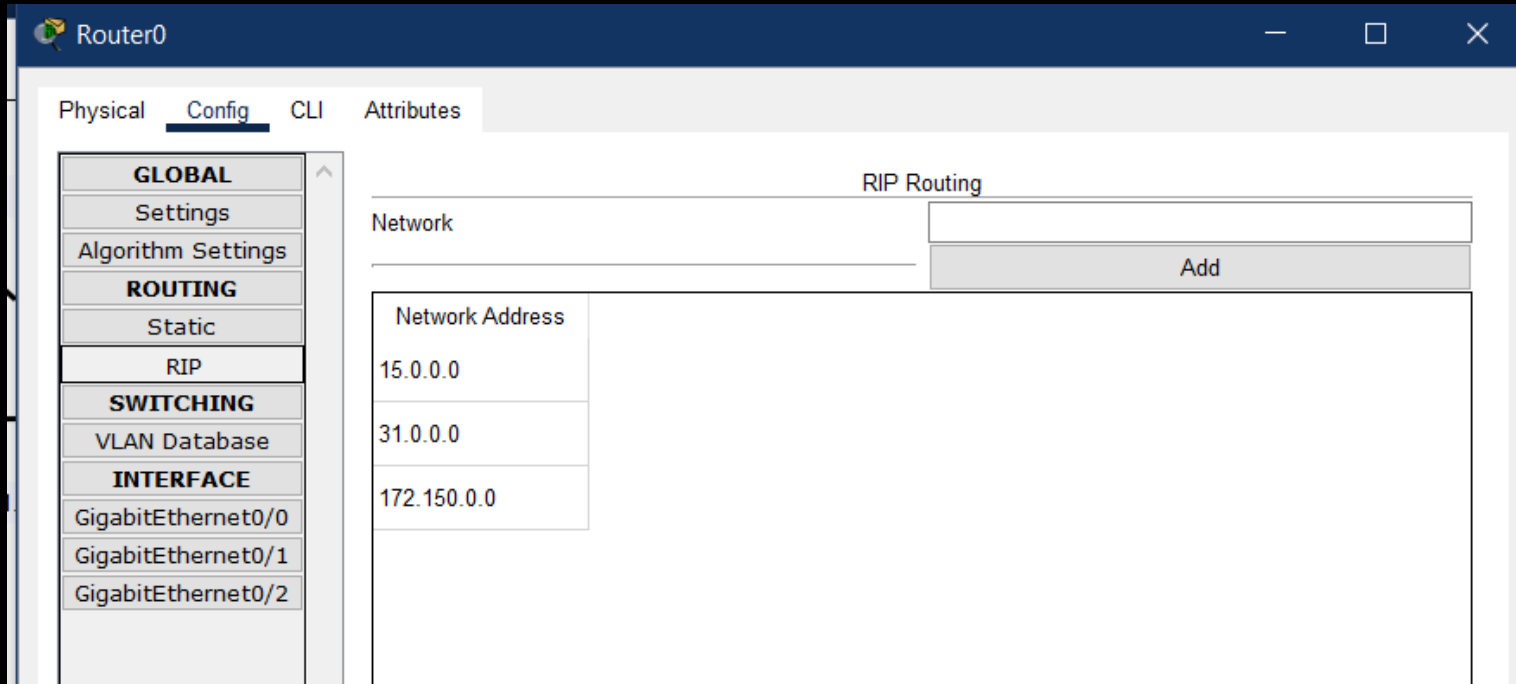
Username

Password

LAN - Laptop

- This is the Ip configuration page of a laptop
- The Ip address is decided automatically by the DHCP

ROUTER0



The screenshot shows the 'Router0' configuration window with the 'Config' tab selected. The left sidebar contains a tree view with categories: GLOBAL (Settings, Algorithm Settings), ROUTING (Static, RIP), SWITCHING (VLAN Database), and INTERFACE (GigabitEthernet0/0, GigabitEthernet0/1, GigabitEthernet0/2). The main area is titled 'RIP Routing' and features a 'Network' input field, an 'Add' button, and a table of configured network addresses.

Network Address
15.0.0.0
31.0.0.0
172.150.0.0

- This is the Router0 RIP configurations

GigabitEthernet0/0

Port Status ☒ On

Bandwidth ☒ 1000 Mbps ☐ 100 Mbps ☐ 10 Mbps ☒ Auto

Duplex ☐ Half Duplex ☒ Full Duplex ☒ Auto

MAC Address 000D.BD7C.C301

IP Configuration

IPv4 Address 172.150.1.1

Subnet Mask 255.255.0.0

Tx Ring Limit 10

GigabitEthernet0/1

Port Status ☒ On

Bandwidth ☒ 1000 Mbps ☐ 100 Mbps ☐ 10 Mbps ☒ Auto

Duplex ☐ Half Duplex ☒ Full Duplex ☒ Auto

MAC Address 000D.BD7C.C302

IP Configuration

IPv4 Address 15.29.1.1

Subnet Mask 255.0.0.0

Tx Ring Limit 10

GigabitEthernet0/2

Port Status ☒ On

Bandwidth ☒ 1000 Mbps ☐ 100 Mbps ☐ 10 Mbps ☒ Auto

Duplex ☐ Half Duplex ☒ Full Duplex ☒ Auto

MAC Address 000D.BD7C.C303

IP Configuration

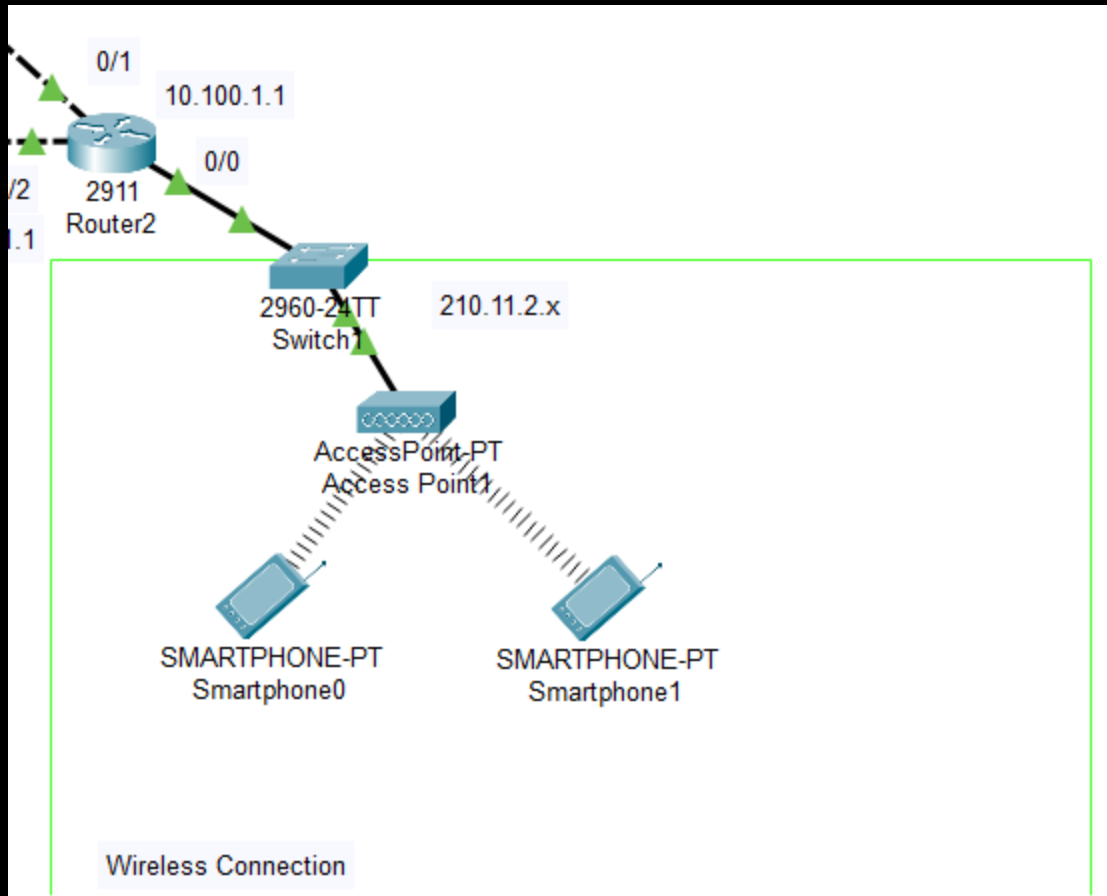
IPv4 Address 31.20.1.1

Subnet Mask 255.0.0.0

Tx Ring Limit 10

- This is the cable that is connected to the switch that is connected to the laptops, so i created a ip address for this area and I added it to the DHCP— type B ip
- 172.150.x.x
- This is the cable that is connected to the Router3, so i had to follow the ip decided before— type A ip
- 15.x.x.x
- This is the cable that is connected to the Router2, so i had to create an address for the network between the two of them — type A ip
- 31.x.x.x

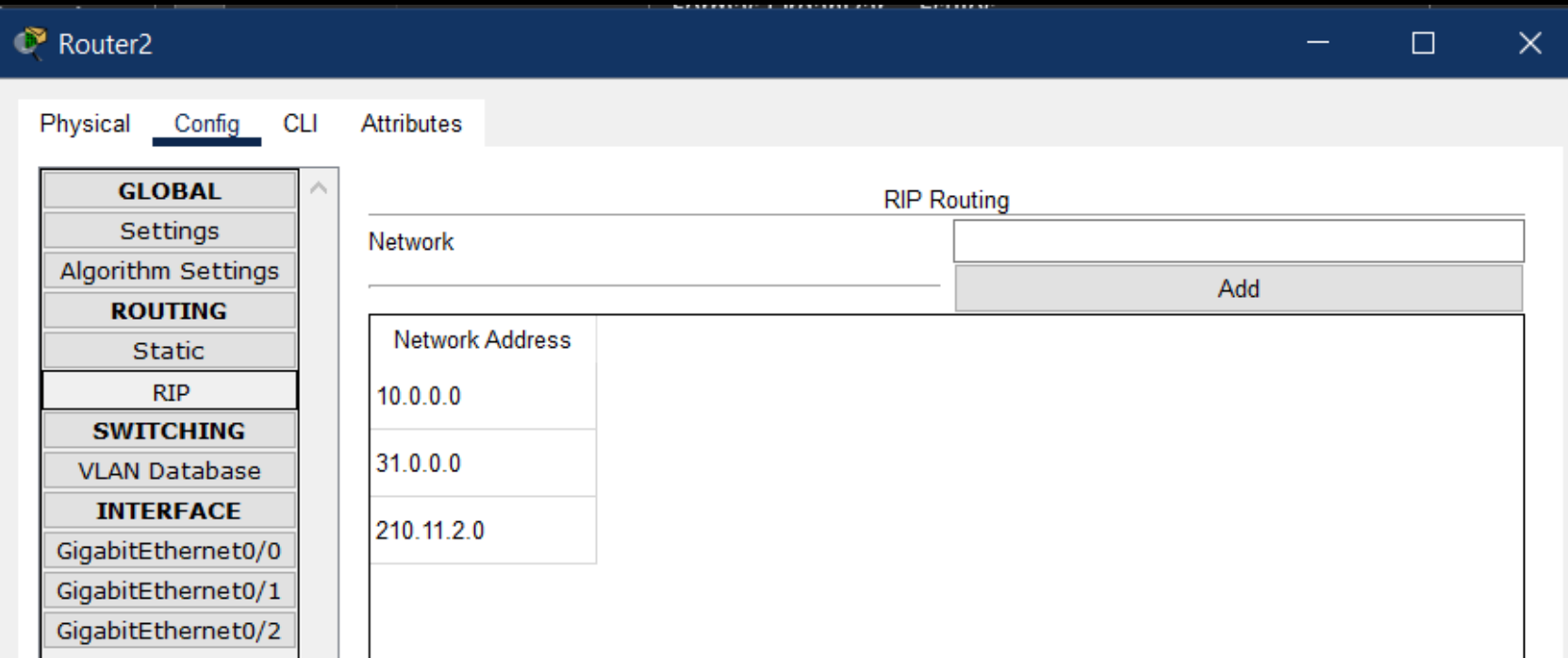
ROUTER0



Wireless Connection Area

- This is my Wireless Connection Network
- I have an access point connected to the switch
- This area has a type C IP – 210.11.2.x

Wireless Connection Area - ROUTER2



The screenshot shows the Router2 configuration window with the 'Config' tab selected. The left sidebar contains a tree view with categories: GLOBAL (Settings, Algorithm Settings), ROUTING (Static, RIP), SWITCHING (VLAN Database), and INTERFACE (GigabitEthernet0/0, GigabitEthernet0/1, GigabitEthernet0/2). The main area is titled 'RIP Routing' and features a 'Network' input field, an 'Add' button, and a table of configured networks.

Network Address
10.0.0.0
31.0.0.0
210.11.2.0

- This is the Router2 RIP configurations

GigabitEthernet0/0

Port Status ☒ On

Bandwidth ☒ 1000 Mbps ☐ 100 Mbps ☐ 10 Mbps ☒ Auto

Duplex ☐ Half Duplex ☒ Full Duplex ☒ Auto

MAC Address 0090.2BA8.C301

IP Configuration

IPv4 Address 210.11.2.1

Subnet Mask 255.255.255.0

Tx Ring Limit 10

GigabitEthernet0/1

Port Status ☒ On

Bandwidth ☒ 1000 Mbps ☐ 100 Mbps ☐ 10 Mbps ☒ Auto

Duplex ☐ Half Duplex ☒ Full Duplex ☒ Auto

MAC Address 0090.2BA8.C302

IP Configuration

IPv4 Address 10.100.1.1

Subnet Mask 255.0.0.0

Tx Ring Limit 10

GigabitEthernet0/2

Port Status ☒ On

Bandwidth ☒ 1000 Mbps ☐ 100 Mbps ☐ 10 Mbps ☒ Auto

Duplex ☐ Half Duplex ☒ Full Duplex ☒ Auto

MAC Address 0090.2BA8.C303

IP Configuration

IPv4 Address 31.50.1.1

Subnet Mask 255.0.0.0

Tx Ring Limit 10

- This is the cable that is connected to the switch that is connected to my access point, so i created a ip address for this area and I added it to the DHCP— type C ip
- 210.11.2.x
- This is the cable that is connected to the Router3, so i had to follow the ip decided before— type A ip
- 10.x.x.x
- This is the cable that is connected to the Router0, so i had to follow the ip decided before— type A ip
- 31.x.x.x

Wireless Connection Area - Smartphone

Smartphone0

Physical Config **Desktop** Programming Attributes

IP Configuration X

Interface Wireless0

IP Configuration

☒ DHCP ☐ Static DHCP request successful.

IPv4 Address 210.11.2.11

Subnet Mask 255.255.255.0

Default Gateway 210.11.2.1

DNS Server 192.168.1.254

IPv6 Configuration

☒ Automatic ☐ Static Ipv6 request failed.

IPv6 Address /

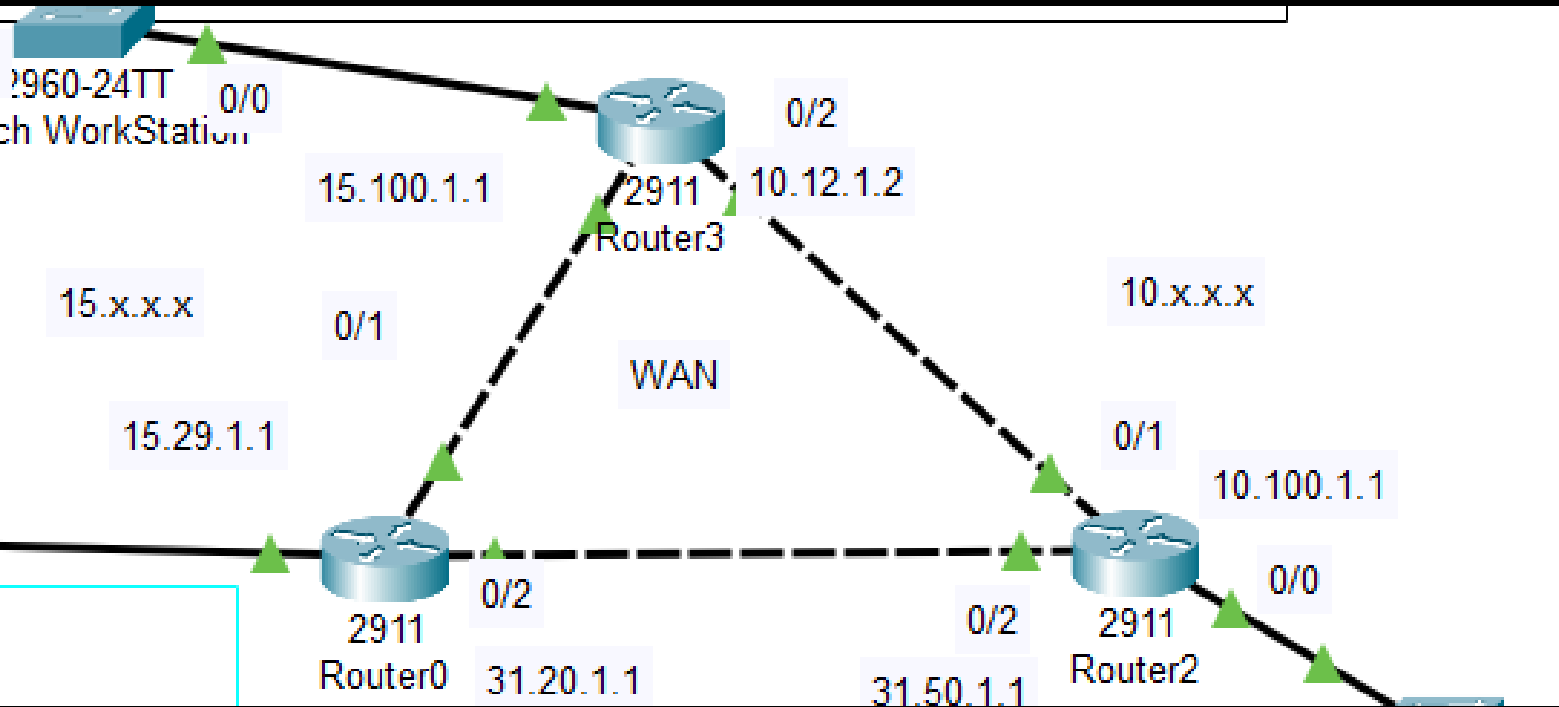
Link Local Address FE80::204:9AFF:FE6B:CB50

Default Gateway

DNS Server

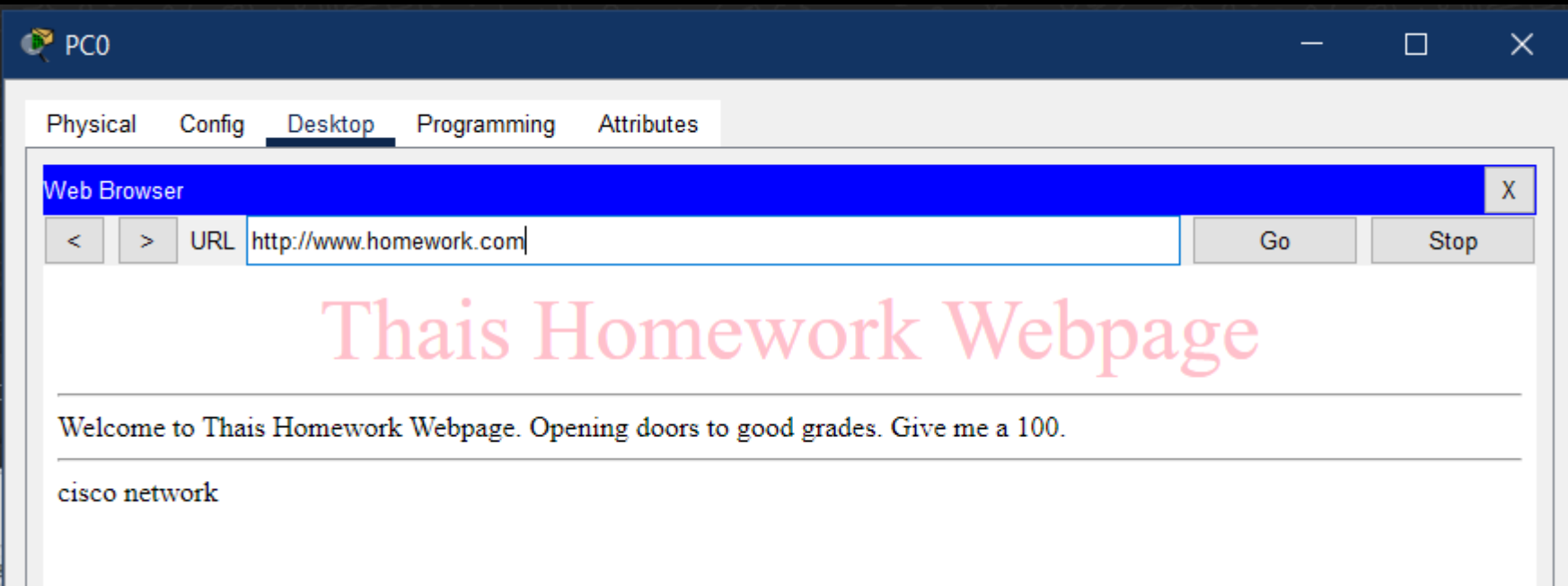
- This is the Ip configuration page of a smartphone
- The Ip address is decided automatically by the DHCP

WAN



- This is my WAN
- It has 3 networks, all of them are A type
- On the left side of the triangle it is – 15.x.x.x
- On the right side of the triangle it is – 10.x.x.x
- On the base of the triangle it is – 31.x.x.x

Web Server



- To access the web server you can either type www.homework.com or you can put the ip address 192.168.1.254