NETWORK DESIGN PROJECT PROPOSAL FOR NEUST TALAVERA OFF-CAMPUS

A Case Study
Presented to
the Faculty of the NEUST Municipal
Government of Talavera NUEVA ECIJA
UNIVERSITY OF SCIENCE AND TECHNOLOGY
Talavera Nueva Ecija

in Partial Fulfilment
of the Requirements
for the Degree in
Bachelor of Science in
Information Technology

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May 2024

Statement of the problem

The university's network infrastructure suffers from frequent disconnections and slow internet speeds, adversely impacting students' ability to access online resources, participate in virtual classes, and conduct research efficiently. So we proposed to have a wireless
network in Computer Laboratory and Student Center Office.

Project Objectives

This case study's targeted outcome is the development of a dependable network infrastructure for the NEUST-MGT. The planned outcome was the development of a network with a dependable and secure internet connection. The network offers users clear benefits in terms of effectiveness, security, and ease of use. The networking tools such as routers, switches, servers, were utilized to improve the network's department structure. With the use of Cisco-Packet Tracer application, I will construct this kind of network effectively.

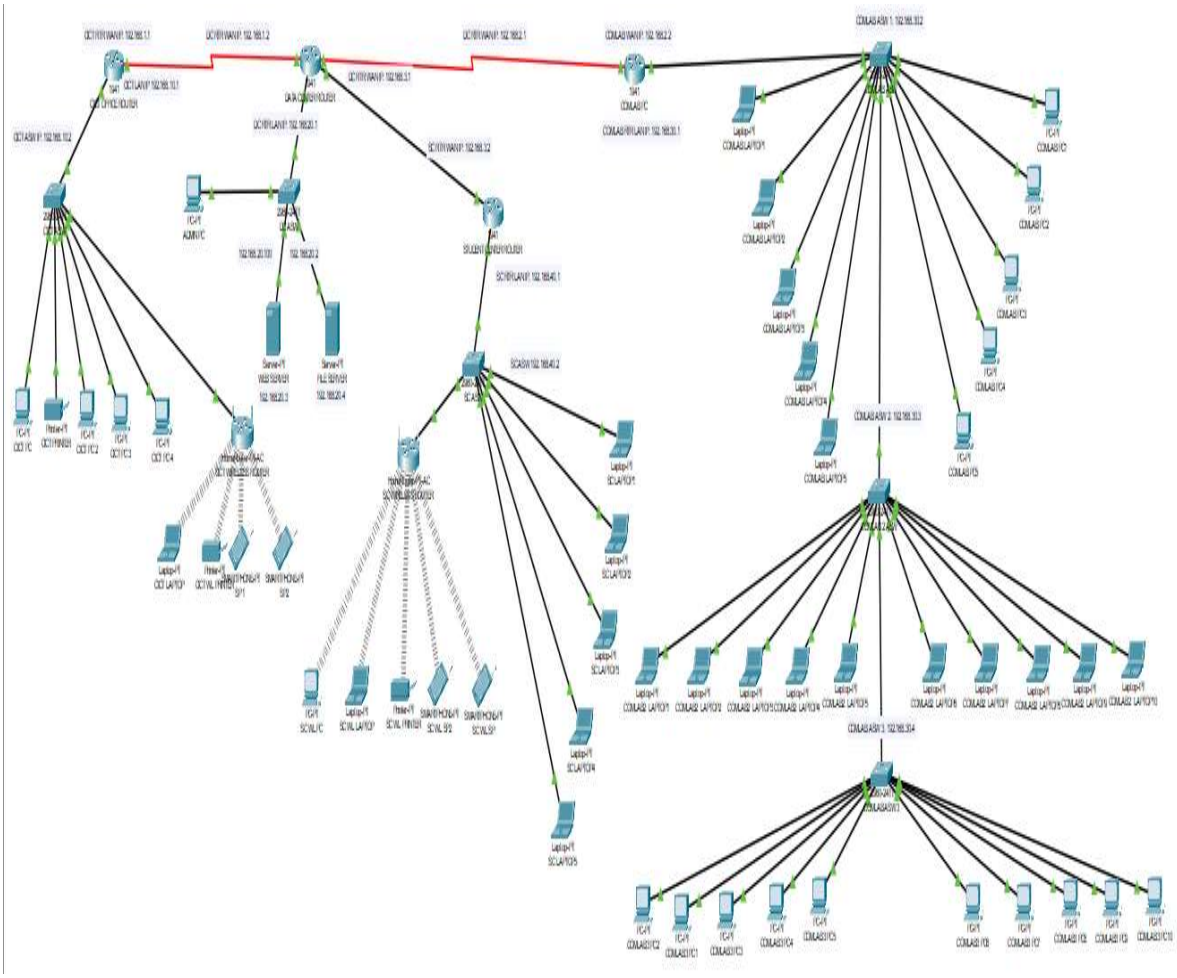
Project Scope

The goal of this project is to ensure that the NEUST-MGT has at least three locations which is the CICT Office, Student Center, Computer Laboratory and one Data center that have a connection that is efficient, secure, and well-maintained. As the facility grows and more people start to use it, a reliable and powerful connection is becoming increasingly important.

Expected Benefits

The main goal of this project was to develop a wired and wireless network that would give the administrative building's students, staff, and visitors access to the Internet. There will be a connection between the CICT office, Computer laboratory, and the NEUST students center. This effort will enable the CICT Office, the Laboratory, and the Student to conduct meetings, offer classes, and conduct research using their personal computers, laptops and their smartphones.

Network Diagram



IP Addressing Scheme

No.	Device	Model	Hostname	Location	IP Address
1.	Router	1941	CICT OFFICE ROUTER	CICT OFFICE	192.168.10.1
2.	Switch	2960	CICT OFFICE	CICT OFFICE	192.168.10.2
3.	Router	1941	DATA CENTER ROUTER	DATA CENTER OFFICE	192.168.20.1
4.	Switch	2960	DC ASW	DATA CENTER OFFICE	192.168.20.2
5.	PC	PC	ADMIN PC	DATA CENTER OFFICE	192.168.20.100
6.	Server	Server	FILE SERVER	DATA CENTER OFFICE	192.168.20.3
7.	Server	Server	WEB SERVER	DATA CENTER OFFICE	192.168.20.4
8.	Router	1941	COMLAB ROUTER	COMLAB OFFICE	192.168.30.1
9.	Switch	2960	COMLAB ASW	COMLAB OFFICE	192.168.30.2
10.	Switch	2960	COMLAB ASW2	COMLAB OFFICE	192.168.30.3
11.	Switch	2960	COMLAB ASW 3	COMLAB OFFICE	192.168.30.4
12.	Router	1941	STUDENT CENTER ROUTER	STUDENT OFFICE	192.168.40.1
13.	Switch	2960	SC ASW	STUDENT OFFICE	192.168.40.2

USERNAME	PASSWORD	ENABLE PASSWORD
admin	admin1234	admin1234
admin	admin1234	admin1234
student	student1234	student1234

CLI COMMMANDS

CICT OFFICE ROUTER

```
CICT_ROUTER#show run
Building configuration...

Current configuration : 1419 bytes
!
version 15.1
no service timestamps log datetime msec
no service timestamps debug datetime msec
service password-encryption
!
hostname CICT_ROUTER
!
!
!
enable secret 5 $1$mERr$o1YRSRaFfyl66XAQedal6.
!
!
ip dhcp excluded-address 192.168.10.1 192.168.10.50
!
ip dhcp pool CICT
network 192.168.10.0 255.255.255.0
default-router 192.168.10.1
dns-server 1.1.1.1
--More-- %DHCPD-4-PING_CONFLICT: DHCP address conflict: server
pinged 192.168.10.53.
!
!
!
ip cef
no ipv6 cef
!
!
!
!
username      admin      privilege      15      secret      5
$1$mERr$o1YRSRaFfyl66XAQedal6.
username      student      privilege      8      secret      5
$1$mERr$Mtnae.c6EqH/5TPd2pNKj0
!
!
license udi pid CISCO1941/K9 sn FTX1524GA7K-
!
!
!
!
```

```
!
!
!
!
!
!
!
spanning-tree mode pvst
!
!
!
!
!
!
interface GigabitEthernet0/0
no ip address
duplex auto
!
!
!
username      admin      privilege      15      secret      5
$1$mERr$o1YRSRaFfyl66XAQedal6.
username      student      privilege      8      secret      5
$1$mERr$Mtnae.c6EqH/5TPd2pNKj0
!
!
license udi pid CISCO1941/K9 sn FTX1524GA7K-
!
!
!
!
!
!
!
!
!
!
!
spanning-tree mode pvst
!
!
!
!
!
!
interface GigabitEthernet0/0
no ip address
duplex auto
speed auto
shutdown
!
```

```
interface GigabitEthernet0/1
description ***CONNECTION TO SWITCH***
ip address 192.168.10.1 255.255.255.0
duplex auto
speed auto
!
interface Serial0/0/0
ip address 192.168.1.1 255.255.255.0
!
interface Serial0/0/1
ip address 192.168.2.1 255.255.255.0
clock rate 2000000
!
interface Vlan1
no ip address
shutdown
!
router rip
!
ip classless
ip route 192.168.20.0 255.255.255.0 192.168.1.2
ip route 192.168.30.0 255.255.255.0 192.168.1.2
ip route 192.168.40.0 255.255.255.0 192.168.1.2
!
ip flow-export version 9
!
!
!
banner motd ^C
*****************************CICT-OFFICE-ROUTER***************
**********
^C
!

!
!
!
!
line con 0
login local
!
line aux 0
!
line vty 0 4
login local
!
!
!
end
```

CICT SWITCH

```
Building configuration...

Current configuration : 3573 bytes
!
version 15.0
no service timestamps log datetime msec
no service timestamps debug datetime msec
service password-encryption
!
hostname CICT_SWITCH
!
enable secret 5 $1$mERr$o1YRSRaFfyl66XAQedal6.
!
!
!
!
username admin secret 5 $1$mERr$o1YRSRaFfyl66XAQedal6.
username student secret 5 $1$mERr$Mtnae.c6EqH/5TPd2pNKj0
!
!
!
spanning-tree mode pvst
spanning-tree extend system-id
!
interface FastEthernet0/1
description ***PORT Number 1***
switchport mode access
switchport port-security
switchport port-security mac-address sticky
switchport port-security mac-address sticky 0060.473E.2202
spanning-tree portfast
!
interface FastEthernet0/2
switchport mode access
switchport port-security mac-address sticky
spanning-tree portfast
!
interface FastEthernet0/3
switchport mode access
switchport port-security mac-address sticky
spanning-tree portfast
!
interface FastEthernet0/4
switchport mode access
switchport port-security mac-address sticky
spanning-tree portfast
!
interface FastEthernet0/5
switchport mode access
```

```
switchport port-security mac-address sticky
spanning-tree portfast
!
interface FastEthernet0/6
switchport mode access
switchport port-security mac-address sticky
spanning-tree portfast
!
interface FastEthernet0/7
switchport mode access
switchport port-security mac-address sticky
spanning-tree portfast
!
interface FastEthernet0/8
switchport port-security mac-address sticky
spanning-tree portfast
shutdown
!
interface FastEthernet0/9
switchport port-security mac-address sticky
spanning-tree portfast
shutdown
!
interface FastEthernet0/10
switchport port-security mac-address sticky
spanning-tree portfast
shutdown
!
interface FastEthernet0/11
switchport port-security mac-address sticky
spanning-tree portfast
shutdown
!
interface FastEthernet0/12
switchport port-security mac-address sticky
spanning-tree portfast
shutdown
!
interface FastEthernet0/13
switchport port-security mac-address sticky
spanning-tree portfast
shutdown
!
interface FastEthernet0/14
switchport port-security mac-address sticky
spanning-tree portfast
shutdown
!
interface FastEthernet0/15
switchport port-security mac-address sticky
spanning-tree portfast
```

```
shutdown
!
interface FastEthernet0/16
switchport port-security mac-address sticky
spanning-tree portfast
shutdown
!
interface FastEthernet0/17
switchport port-security mac-address sticky
spanning-tree portfast
shutdown
!
interface FastEthernet0/18
switchport port-security mac-address sticky
spanning-tree portfast
shutdown
!
interface FastEthernet0/19
switchport port-security mac-address sticky
spanning-tree portfast
shutdown
!
interface FastEthernet0/20
switchport port-security mac-address sticky
spanning-tree portfast
shutdown
!
interface FastEthernet0/21
switchport port-security mac-address sticky
spanning-tree portfast
shutdown
!
interface FastEthernet0/22
switchport port-security mac-address sticky
spanning-tree portfast
shutdown
!
interface FastEthernet0/23
switchport port-security mac-address sticky
spanning-tree portfast
shutdown
!
interface FastEthernet0/24
switchport port-security mac-address sticky
spanning-tree portfast
shutdown
!
interface GigabitEthernet0/1
shutdown
!
interface GigabitEthernet0/2
```

```
shutdown
!
interface Vlan1
ip address 192.168.10.2 255.255.255.0
!
ip default-gateway 192.168.10.1
!
banner motd ^C
**********************************          CICT~OFFICE~SWITCH
**********************************
^C
!
!
!
line con 0
login local
!
line vty 0 4
login local
line vty 5 15
login
!
!
!
!
end
```

DATA CENTER ROUTER

```
Building configuration...

Current configuration : 1442 bytes
!
version 15.1
no service timestamps log datetime msec
no service timestamps debug datetime msec
service password-encryption
!
hostname DC_ROUTER
!
!
!
enable secret 5 $1$mERr$o1YRSRaFfyl66XAQedal6.
!
!
ip dhcp excluded-address 192.168.20.1 192.168.20.50
!
ip dhcp pool DC~ROUTER
network 192.168.20.0 255.255.255.0
default-router 192.168.20.1
dns-server 1.1.1.1
!
!
!
ip cef
no ipv6 cef
!
!
!
username      admin      privilege      15      secret      5
$1$mERr$o1YRSRaFfyl66XAQedal6.
username      student      privilege      8      secret      5
$1$mERr$Mtnae.c6EqH/5TPd2pNKj0
!
!
license udi pid CISCO1941/K9 sn FTX15248028-
!
!
!
!
!
!
!
!
!
!
!
!
spanning-tree mode pvst
!
```

```
!
!
!
!
!
interface GigabitEthernet0/0
ip address 192.168.40.1 255.255.255.0
duplex auto
speed auto
!
interface GigabitEthernet0/1
description ***CONNECTION TO SWITCH***
ip address 192.168.20.1 255.255.255.0
duplex auto
speed auto
!
interface Serial0/0/0
ip address 192.168.1.2 255.255.255.0
clock rate 2000000
!
interface Serial0/0/1
ip address 192.168.2.1 255.255.255.0
!
interface Vlan1
no ip address
shutdown
!
router rip
!
ip classless
ip route 192.168.10.0 255.255.255.0 192.168.1.1
ip route 192.168.30.0 255.255.255.0 192.168.2.2
ip route 192.168.40.0 255.255.255.0 192.168.3.2
!
ip flow-export version 9
!
!
!
banner motd ^C
**********************************                    DC~ROUTER
**********************************
^C
!
!
!
!
line con 0
login local
!
line aux 0
!
```

```
line vty 0 4
login local
!
!
!
End
```

DATA CENTER SWITCH

```
Building configuration...

Current configuration : 3155 bytes
!
version 15.0
no service timestamps log datetime msec
no service timestamps debug datetime msec
service password-encryption
!
hostname DC_SWITCH
!
enable secret 5 $1$mERr$o1YRSRaFfyl66XAQedal6.
!
!
!
!
username admin secret 5 $1$mERr$o1YRSRaFfyl66XAQedal6.
username student secret 5 $1$mERr$Mtnae.c6EqH/5TPd2pNKj0
!
!
!
spanning-tree mode pvst
spanning-tree extend system-id
!
interface FastEthernet0/1
description ***PORT Number 1***
switchport mode access
switchport port-security
switchport port-security mac-address sticky
switchport port-security mac-address sticky 0001.4232.D602
spanning-tree portfast
!
interface FastEthernet0/2
description ***PORT Number 2***
switchport mode access
switchport port-security mac-address sticky
spanning-tree portfast
!
interface FastEthernet0/3
switchport mode access
switchport port-security mac-address sticky
spanning-tree portfast
!
interface FastEthernet0/4
switchport mode access
switchport port-security mac-address sticky
spanning-tree portfast
!
interface FastEthernet0/5
```

```
switchport port-security mac-address sticky
shutdown
!
interface FastEthernet0/6
switchport port-security mac-address sticky
shutdown
!
interface FastEthernet0/7
switchport port-security mac-address sticky
shutdown
!
interface FastEthernet0/8
switchport port-security mac-address sticky
shutdown
!
interface FastEthernet0/9
switchport port-security mac-address sticky
shutdown
!
interface FastEthernet0/10
switchport port-security mac-address sticky
shutdown
!
interface FastEthernet0/11
switchport port-security mac-address sticky
shutdown
!
interface FastEthernet0/12
switchport port-security mac-address sticky
shutdown
!
interface FastEthernet0/13
switchport port-security mac-address sticky
shutdown
!
interface FastEthernet0/14
switchport port-security mac-address sticky
shutdown
!
interface FastEthernet0/15
switchport port-security mac-address sticky
shutdown
!
interface FastEthernet0/16
switchport port-security mac-address sticky
shutdown
!
interface FastEthernet0/17
switchport port-security mac-address sticky
shutdown
!
```

```
interface FastEthernet0/18
switchport port-security mac-address sticky
shutdown
!
interface FastEthernet0/19
switchport port-security mac-address sticky
shutdown
!
interface FastEthernet0/20
switchport port-security mac-address sticky
shutdown
!
interface FastEthernet0/21
switchport port-security mac-address sticky
shutdown
!
interface FastEthernet0/22
switchport port-security mac-address sticky
shutdown
!
interface FastEthernet0/23
switchport port-security mac-address sticky
shutdown
!
interface FastEthernet0/24
switchport port-security mac-address sticky
shutdown
!
interface GigabitEthernet0/1
description ***Connection to DC ROUTER***
switchport mode access
spanning-tree portfast
!
interface GigabitEthernet0/2
shutdown
!
interface Vlan1
ip address 192.168.20.2 255.255.255.0
!
ip default-gateway 192.168.20.1
!
banner motd ^C
**********************************                    DC~SWITCH
**********************************
^C
!
!
!
line con 0
login local
!
```

```
line vty 0 4
login local
line vty 5 15
login
!
!
!
!
end
```

COMLAB ROUTER

```
Building configuration...

Current configuration : 1425 bytes
!
version 15.1
no service timestamps log datetime msec
no service timestamps debug datetime msec
service password-encryption
!
hostname COMLAB_ROUTER
!
!
!
enable secret 5 $1$mERr$o1YRSRaFfyl66XAQedal6.
!
!
ip dhcp excluded-address 192.168.30.1 192.168.30.50
!
ip dhcp pool CICT
network 192.168.30.0 255.255.255.0
default-router 192.168.30.1
dns-server 1.1.1.1
!
!
!
ip cef
no ipv6 cef
!
!
!
username      admin      privilege      15      secret      5
$1$mERr$o1YRSRaFfyl66XAQedal6.
username      student      privilege      8      secret      5
$1$mERr$Mtnae.c6EqH/5TPd2pNKj0
!
!
license udi pid CISCO1941/K9 sn FTX15247BOK-
!
!
!
!
!
!
!
!
!
!
!
!
spanning-tree mode pvst
```

```
!
!
!
!
!
!
interface GigabitEthernet0/0
no ip address
duplex auto
speed auto
shutdown
!
interface GigabitEthernet0/1
description ***CONNECTION TO SWITCH***
ip address 192.168.30.1 255.255.255.0
duplex auto
speed auto
!
interface Serial0/0/0
no ip address
clock rate 2000000
shutdown
!
interface Serial0/0/1
ip address 192.168.2.2 255.255.255.0
clock rate 2000000
!
interface Vlan1
no ip address
shutdown
!
ip classless
ip route 192.168.10.0 255.255.255.0 192.168.2.1
ip route 192.168.20.0 255.255.255.0 192.168.2.1
ip route 192.168.40.0 255.255.255.0 192.168.2.1
!
ip flow-export version 9
!
!
!
banner motd ^C
**********************************                COMLAB~ROUTER
**********************************
^C
!
!
!
!
line con 0
login local
!
```

```
line aux 0
!
line vty 0 4
login local
!
!
!
end
```

COMLAB 1 SWITCH

```
Building configuration...

Current configuration : 3352 bytes
!
version 15.0
no service timestamps log datetime msec
no service timestamps debug datetime msec
service password-encryption
!
hostname COMLAB_SWITCH
!
enable secret 5 $1$mERr$o1YRSRaFfyl66XAQedal6.
!
!
!
!
username admin secret 5 $1$mERr$o1YRSRaFfyl66XAQedal6.
username student secret 5 $1$mERr$Mtnae.c6EqH/5TPd2pNKj0
!
!
!
spanning-tree mode pvst
spanning-tree extend system-id
!
interface FastEthernet0/1
description ***PORT Number 1***
switchport mode access
switchport port-security
switchport port-security mac-address sticky
switchport port-security mac-address sticky 0060.7095.0B02
spanning-tree portfast
!
interface FastEthernet0/2
switchport mode access
switchport port-security mac-address sticky
spanning-tree portfast
!
interface FastEthernet0/3
switchport mode access
switchport port-security mac-address sticky
spanning-tree portfast
!
interface FastEthernet0/4
switchport mode access
switchport port-security mac-address sticky
spanning-tree portfast
!
interface FastEthernet0/5
switchport mode access
```

```
switchport port-security mac-address sticky
spanning-tree portfast
!
interface FastEthernet0/6
switchport mode access
switchport port-security mac-address sticky
spanning-tree portfast
!
interface FastEthernet0/7
switchport mode access
switchport port-security mac-address sticky
spanning-tree portfast
!switchport port-security mac-address sticky
spanning-tree portfast
!
interface FastEthernet0/8
switchport mode access
switchport port-security mac-address sticky
spanning-tree portfast
!
interface FastEthernet0/9
switchport mode access
switchport port-security mac-address sticky
spanning-tree portfast
!
interface FastEthernet0/10
switchport mode access
switchport port-security mac-address sticky
spanning-tree portfast
!
interface FastEthernet0/11
switchport mode access
switchport port-security mac-address sticky
spanning-tree portfast
!
interface FastEthernet0/12
switchport port-security mac-address sticky
shutdown
!
interface FastEthernet0/13
switchport port-security mac-address sticky
shutdown
!
interface FastEthernet0/14
switchport port-security mac-address sticky
shutdown
!
interface FastEthernet0/15
switchport port-security mac-address sticky
shutdown
!
```

```
interface FastEthernet0/16
switchport port-security mac-address sticky
shutdown
!
interface FastEthernet0/17
switchport port-security mac-address sticky
shutdown
!
interface FastEthernet0/18
switchport port-security mac-address sticky
shutdown
!
interface FastEthernet0/19
switchport port-security mac-address sticky
shutdown
!
interface FastEthernet0/20
switchport port-security mac-address sticky
shutdown
!
interface FastEthernet0/21
switchport port-security mac-address sticky
shutdown
!
interface FastEthernet0/22
switchport port-security mac-address sticky
shutdown
!
interface FastEthernet0/23
switchport port-security mac-address sticky
shutdown
!
interface FastEthernet0/24
switchport port-security mac-address sticky
shutdown
!
interface GigabitEthernet0/1
switchport mode access
spanning-tree portfast
!
interface GigabitEthernet0/2
shutdown
!
interface Vlan1
ip address 192.168.30.2 255.255.255.0
!
ip default-gateway 192.168.30.1
!
banner motd ^C
**********************************                    COMLAB~SWITCH
**********************************
```

```
^C
!
!
!
line con 0
login local
!
line vty 0 4
login local
line vty 5 15
login
!
!
!
!
end
```

COMLAB2 SWITCH

```
Building configuration...

Current configuration : 2202 bytes
!
version 15.0
no service timestamps log datetime msec
no service timestamps debug datetime msec
service password-encryption
!
hostname COMLAB2_SWITCH
!
enable secret 5 $1$mERr$o1YRSRaFfyl66XAQedal6.
!
!
!
!
username admin secret 5 $1$mERr$o1YRSRaFfyl66XAQedal6.
username student secret 5 $1$mERr$Mtnae.c6EqH/5TPd2pNKj0
!
!
!
spanning-tree mode pvst
spanning-tree extend system-id
!
interface FastEthernet0/1
description ***PORT Number 1***
switchport mode access
spanning-tree portfast
!
interface FastEthernet0/2
switchport mode access
spanning-tree portfast
!
interface FastEthernet0/3
switchport mode access
spanning-tree portfast
!
interface FastEthernet0/4
switchport mode access
spanning-tree portfast
!
interface FastEthernet0/5
switchport mode access
spanning-tree portfast
!
interface FastEthernet0/6
switchport mode access
spanning-tree portfast
!
```

```
interface FastEthernet0/7
switchport mode access
spanning-tree portfast
!
interface FastEthernet0/8
switchport mode access
spanning-tree portfast
!
interface FastEthernet0/9
switchport mode access
spanning-tree portfast
!
interface FastEthernet0/10
switchport mode access
spanning-tree portfast
!
interface FastEthernet0/11
switchport mode access
spanning-tree portfast
!
interface FastEthernet0/12
shutdown
!
interface FastEthernet0/13
shutdown
!
interface FastEthernet0/14
shutdown
!
interface FastEthernet0/15
shutdown
!
interface FastEthernet0/16
shutdown
!
interface FastEthernet0/17
shutdown
!
interface FastEthernet0/18
shutdown
!
interface FastEthernet0/19
shutdown
!
interface FastEthernet0/20
shutdown
!
interface FastEthernet0/21
shutdown
!
interface FastEthernet0/22
```

```
shutdown
!
interface FastEthernet0/23
shutdown
!
interface FastEthernet0/24
shutdown
!
interface GigabitEthernet0/1
switchport mode access
spanning-tree portfast
!
interface GigabitEthernet0/2
switchport mode access
spanning-tree portfast
!
interface Vlan1
ip address 192.168.30.3 255.255.255.0
!
!
ip default-gateway 192.168.30.1
!
banner motd ^C
**********************************              COMLAB2~SWITCH
**********************************
^C
!
!
!
line con 0
login local
!
line vty 0 4
login local
line vty 5 15
login
!
!
!
!
end
```

COMLAB 3 SWITCH

```
Building configuration...

Current configuration : 2164 bytes
!
version 15.0
no service timestamps log datetime msec
no service timestamps debug datetime msec
service password-encryption
!
hostname COMLAB3_SWITCH
!
enable secret 5 $1$mERr$o1YRSRaFfyl66XAQedal6.
!
!
!
username admin secret 5 $1$mERr$o1YRSRaFfyl66XAQedal6.
username student secret 5 $1$mERr$Mtnae.c6EqH/5TPd2pNKj0
!
!
!
spanning-tree mode pvst
spanning-tree extend system-id
!
interface FastEthernet0/1
description ***PORT Number 1***
switchport mode access
spanning-tree portfast
!
interface FastEthernet0/2
switchport mode access
spanning-tree portfast
!
interface FastEthernet0/3
switchport mode access

spanning-tree portfast
!
interface FastEthernet0/4
switchport mode access
spanning-tree portfast
!
interface FastEthernet0/5
switchport mode access
spanning-tree portfast
!
interface FastEthernet0/6
switchport mode access
spanning-tree portfast
!
```

```
interface FastEthernet0/7
switchport mode access
spanning-tree portfast
!
interface FastEthernet0/8
switchport mode access
spanning-tree portfast
!
interface FastEthernet0/9
switchport mode access
spanning-tree portfast
!
interface FastEthernet0/10
switchport mode access
spanning-tree portfast
!
interface FastEthernet0/11
switchport mode access
spanning-tree portfast
!
interface FastEthernet0/12
shutdown
!
interface FastEthernet0/13
shutdown
!
interface FastEthernet0/14
shutdown
!
interface FastEthernet0/15
shutdown
!
interface FastEthernet0/16
shutdown
!
interface FastEthernet0/17
shutdown
!
interface FastEthernet0/18
shutdown
!
interface FastEthernet0/19
shutdown
!
interface FastEthernet0/20
shutdown
!
interface FastEthernet0/21
shutdown
!
interface FastEthernet0/22
```

```
shutdown
!
interface FastEthernet0/23
shutdown
!
interface FastEthernet0/24
shutdown
!
interface GigabitEthernet0/1
shutdown
!
interface GigabitEthernet0/2
switchport mode access
spanning-tree portfast
!
interface Vlan1
ip address 192.168.30.4 255.255.255.0
!
ip default-gateway 192.168.30.1
!
banner motd ^C
**********************************              COMLAB3~SWITCH
**********************************
^C
!
!
!
line con 0
login local
!
line vty 0 4
login local
line vty 5 15
login
!
!
!
!
end
```

STUDENT CENTER ROUTER

```
Building configuration...

Current configuration : 1279 bytes
!
version 15.1
no service timestamps log datetime msec
no service timestamps debug datetime msec
service password-encryption
!
hostname SC_ROUTER
!
!
!
enable secret 5 $1$mERr$o1YRSRaFfyl66XAQedal6.
!
!
ip dhcp excluded-address 192.168.40.1 192.168.40.50
!
ip dhcp pool SC
network 192.168.40.0 255.255.255.0
default-router 192.168.40.1
dns-server 1.1.1.1
!
!
!
ip cef
no ipv6 cef
!
!
!
username      admin      privilege      15      secret      5
$1$mERr$o1YRSRaFfyl66XAQedal6.
username      student      privilege      8      secret      5
$1$mERr$Mtnae.c6EqH/5TPd2pNKj0
!
!
license udi pid CISCO1941/K9 sn FTX1524NL8P-
!
!
!
!
!
!
!
!
!
!
!
!
spanning-tree mode pvst
```

```
!
!
!
!
!
!
interface GigabitEthernet0/0
ip address 192.168.20.1 255.255.255.0
duplex auto
speed auto
!
interface GigabitEthernet0/1
description ***CONNECTION TO SWITCH***
ip address 192.168.40.1 255.255.255.0
duplex auto
speed auto
!
interface Vlan1
no ip address
shutdown
!
ip classless
ip route 192.168.10.0 255.255.255.0 192.168.3.1
ip route 192.168.20.0 255.255.255.0 192.168.3.1
ip route 192.168.30.0 255.255.255.0 192.168.3.1
!
ip flow-export version 9
!
!
!
banner motd ^C
**********************************                    SC~ROUTER
**********************************
^C
!
!
!
!
line con 0
login local
!
line aux 0
!
line vty 0 4
login local
!
!
!
end
```

STUDENT CENTER SWITCH

```
Building configuration...

Current configuration : 3442 bytes
!
version 15.0
no service timestamps log datetime msec
no service timestamps debug datetime msec
service password-encryption
!
hostname SC_SWITCH
!
enable secret 5 $1$mERr$o1YRSRaFfyl66XAQedal6.
!
!
!
!
username admin secret 5 $1$mERr$o1YRSRaFfyl66XAQedal6.
username student secret 5 $1$mERr$Mtnae.c6EqH/5TPd2pNKj0
!
!
!
spanning-tree mode pvst
spanning-tree extend system-id
!
interface FastEthernet0/1
description ***PORT Number1***
switchport mode access
switchport port-security
switchport port-security mac-address sticky
switchport port-security mac-address sticky 0001.97CA.0802
spanning-tree portfast
!
interface FastEthernet0/2
description ***PORT Number2***
switchport mode access
switchport port-security mac-address sticky
spanning-tree portfast
!
interface FastEthernet0/3
description ***PORT Number3***
switchport mode access
switchport port-security mac-address sticky
spanning-tree portfast
!
interface FastEthernet0/4
description ***PORT Number4***
switchport mode access
switchport port-security mac-address sticky
spanning-tree portfast
```

```
!
interface FastEthernet0/5
description ***PORT Number5***
switchport mode access
switchport port-security mac-address sticky
spanning-tree portfast
!
interface FastEthernet0/6
description ***PORT Number6***
switchport mode access
switchport port-security mac-address sticky
spanning-tree portfast
!
interface FastEthernet0/7
description ***PORT Number7***
switchport port-security mac-address sticky
shutdown
!
interface FastEthernet0/8
description ***PORT Number8***
switchport port-security mac-address sticky
shutdown
!
interface FastEthernet0/9
description ***PORT Number9***
switchport port-security mac-address sticky
shutdown
!
interface FastEthernet0/10
description ***PORT Number10***
switchport port-security mac-address sticky
shutdownshutdown
!
!
interface FastEthernet0/11
switchport port-security mac-address sticky

interface FastEthernet0/12
switchport port-security mac-address sticky
shutdown
!
interface FastEthernet0/13
switchport port-security mac-address sticky
shutdown
!
interface FastEthernet0/14
switchport port-security mac-address sticky
shutdown
!
interface FastEthernet0/15
switchport port-security mac-address sticky
```

```
shutdown
!
interface FastEthernet0/16
switchport port-security mac-address sticky
shutdown
!
interface FastEthernet0/17
switchport port-security mac-address sticky
shutdown
!
interface FastEthernet0/18
switchport port-security mac-address sticky
shutdown
!
interface FastEthernet0/19
switchport port-security mac-address sticky
shutdown
!
interface FastEthernet0/20
switchport port-security mac-address sticky
shutdown
!
interface FastEthernet0/21
switchport port-security mac-address sticky
shutdown
!
interface FastEthernet0/22
switchport port-security mac-address sticky
shutdown
!
interface FastEthernet0/23
switchport port-security mac-address sticky
shutdown
!
interface FastEthernet0/24
switchport port-security mac-address sticky
shutdown
!
interface GigabitEthernet0/1
switchport mode access
spanning-tree portfast
!
interface GigabitEthernet0/2
shutdown
!
interface Vlan1
ip address 192.168.40.2 255.255.255.0
!
ip default-gateway 192.168.40.1
!
banner motd ^C
```

```
**********************************                    SC~SWITCH
**********************************
^C
!
!
!
line con 0
login local
!
line vty 0 4
login local
line vty 5 15
login
!
!
!
!
end
```

RALPH WARREN **CUNANAN**

BSIT 1B

Contact

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0966-245-1704

Ralphwarrencunanan@gmail.com

Skills

Good communication skills

Creativity

Leadership

About Me

Hardworking, good communication skills, have a knowledge about music, play instruments and also service crew of a fast food restaurant.

Education

Muñoz National SHS

2019-2020

Bachelor of Science in Information Technology

2024-present

Nueve Ecija University of Science and Technology. NEUST (MGT)

JHON EDWARD ***BALBER***

BSIT 1B

About Me

Hadworking, good communication skills , and playing baskketball.

Education

Sto Domingo Natonal Trade School

Bachelor of science information Technology

2024-Present

Nueva Ecija University of Science and Technology, NEUST. (MGT)

Contact

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Skills

Good communication skills

Creativity

Leadership

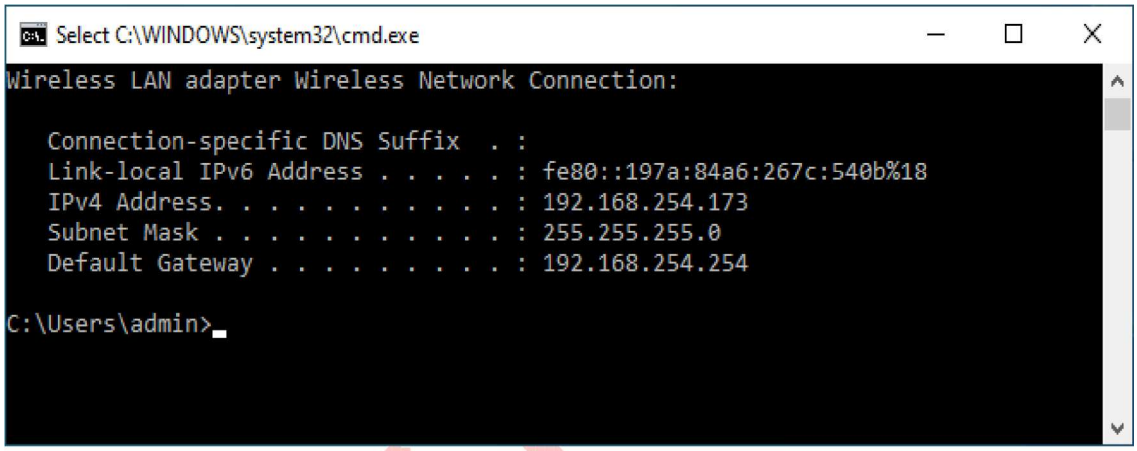
BASIC NETWORK TROUBLESHOOTING

PC Network Troubleshooting

How to check the Basic IP Address Details

PC Network Troubleshooting

How to check the Basic IP Address Details

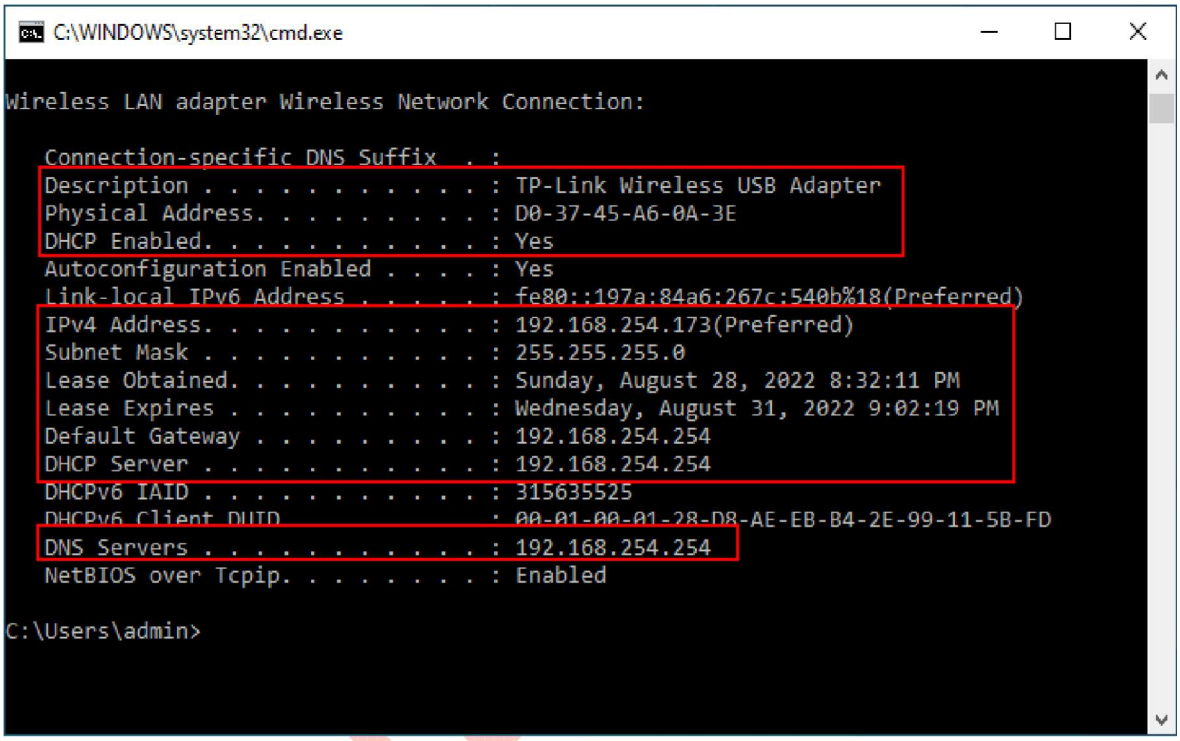


Right Click Window Key and type **cmd**

Click **OK**

Type **ipconfig**

How to display all of the IP Address Details



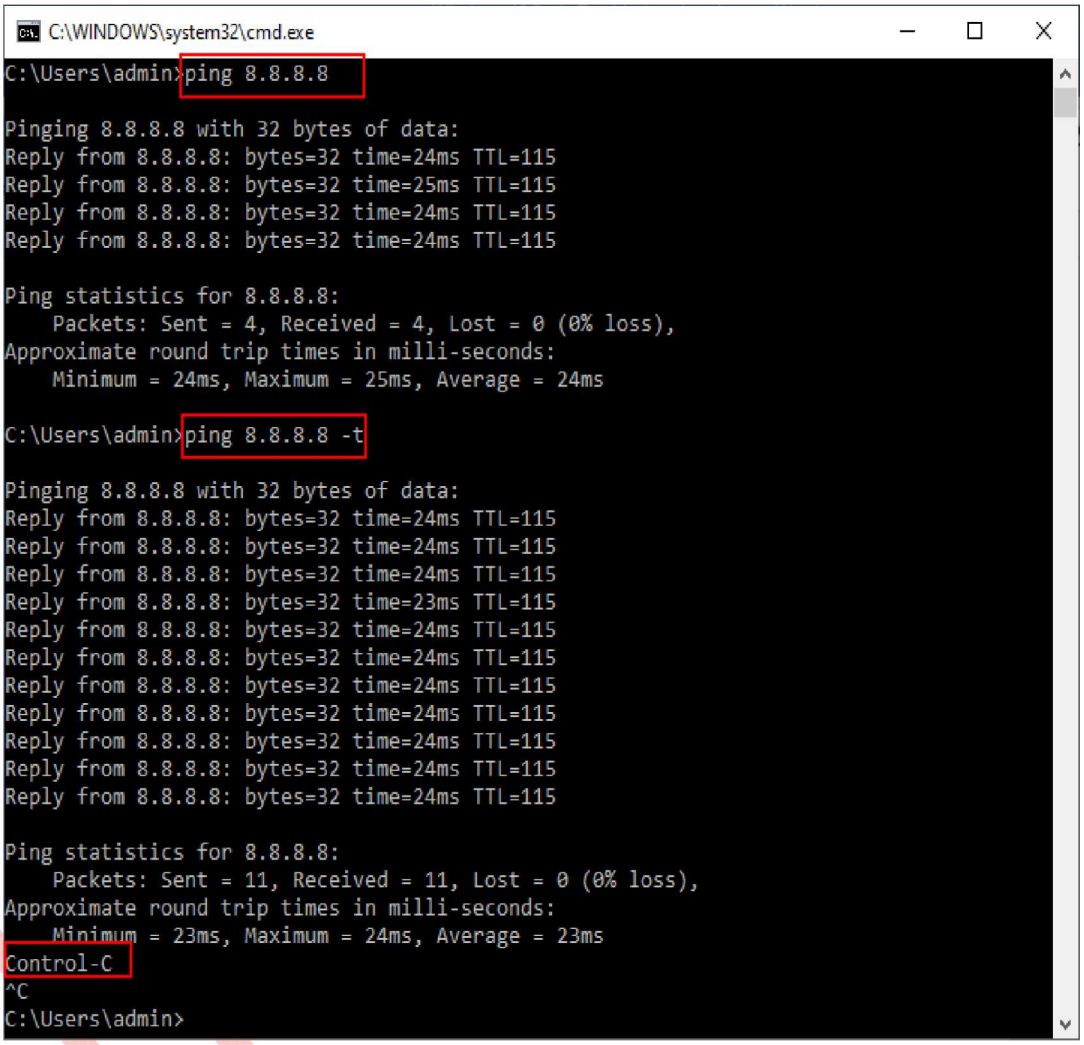
Right Click Window Key and type **cmd**

Click **OK**

Type **ipconfig /all**

Perform Ping Test

Basic command or script that allows a user to test and verify if a particular destination IP address exists and can accept requests



In the Command Prompt - Type ping “Destination IP Address”

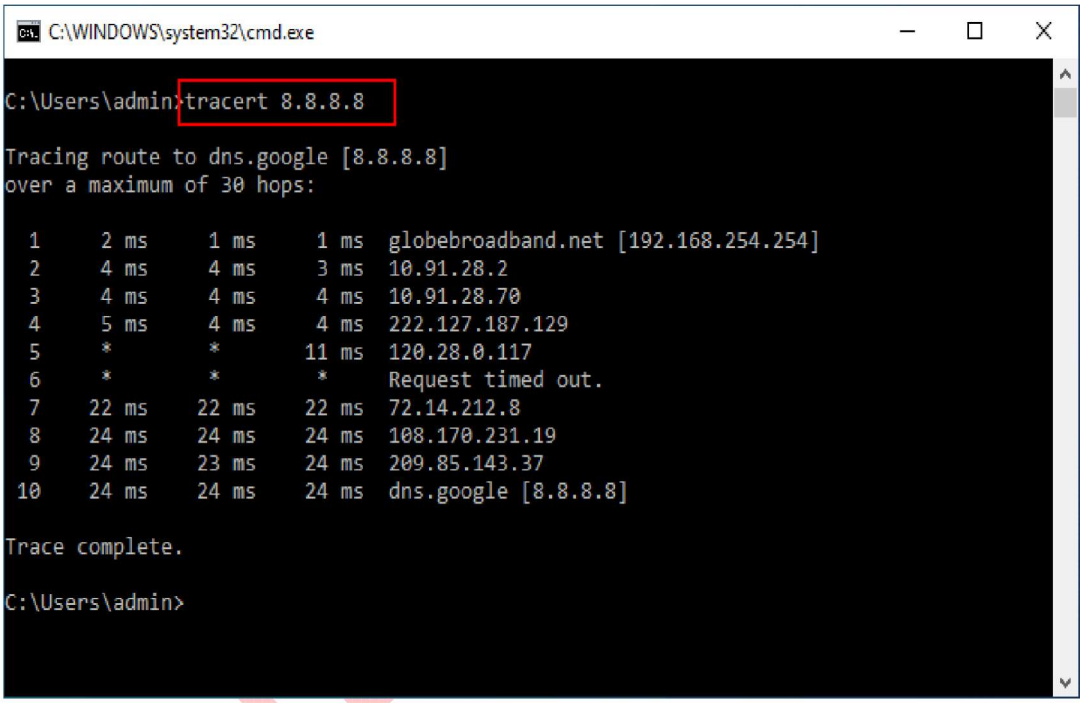
Example: **ping 8.8.8.8**

For continuous ping test, Type ping “Destination IP Address” -t

Example: **ping 8.8.8.8 -t** then hit the CTRL + C to terminate the continuous test

Perform Trace Route

Traceroute is a command you use to 'trace' the route that a packet takes when traveling to its destination



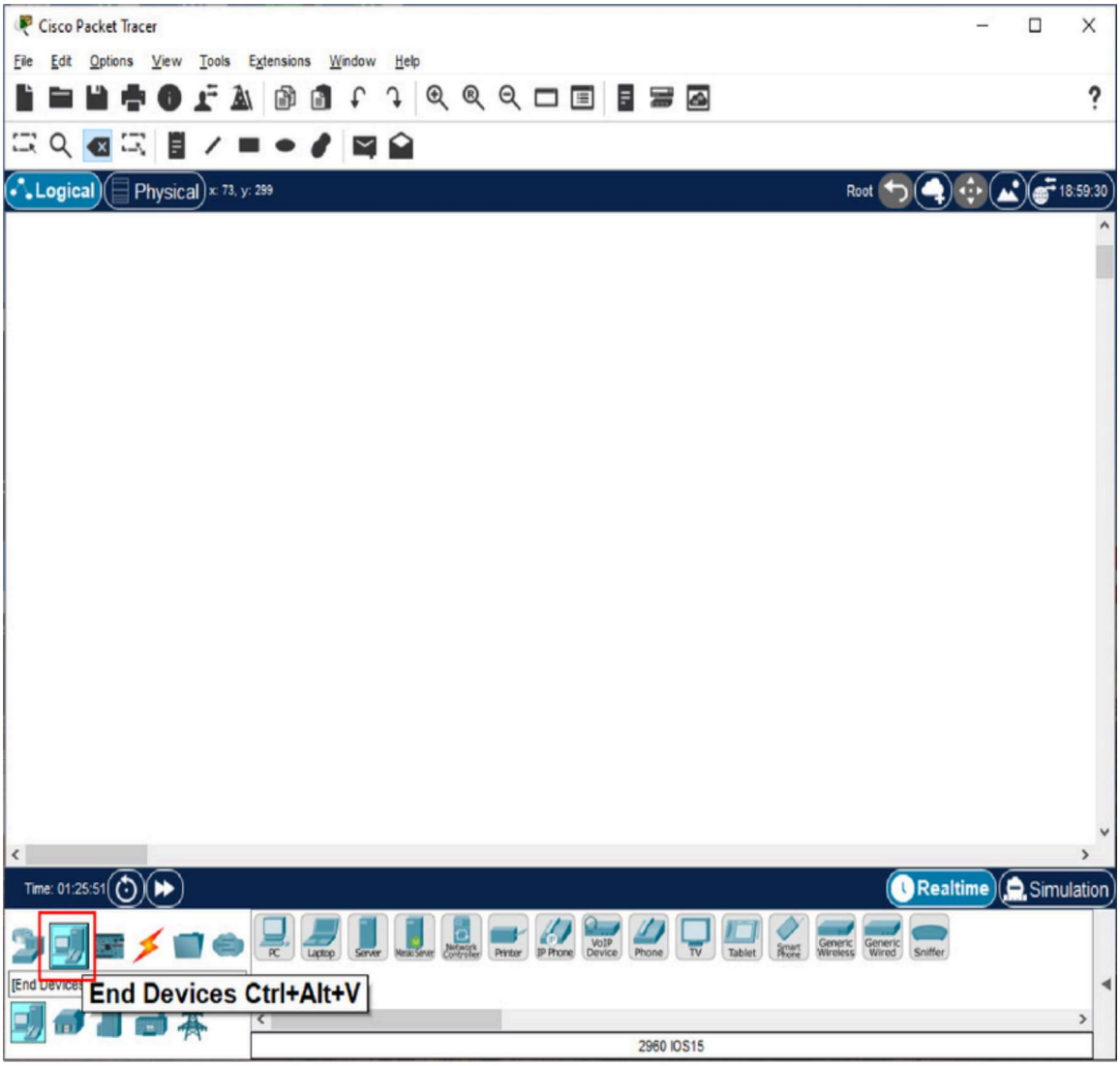
In the Command Prompt - Type tracert “Destination IP Address”

Example: **tracert 8.8.8.8**

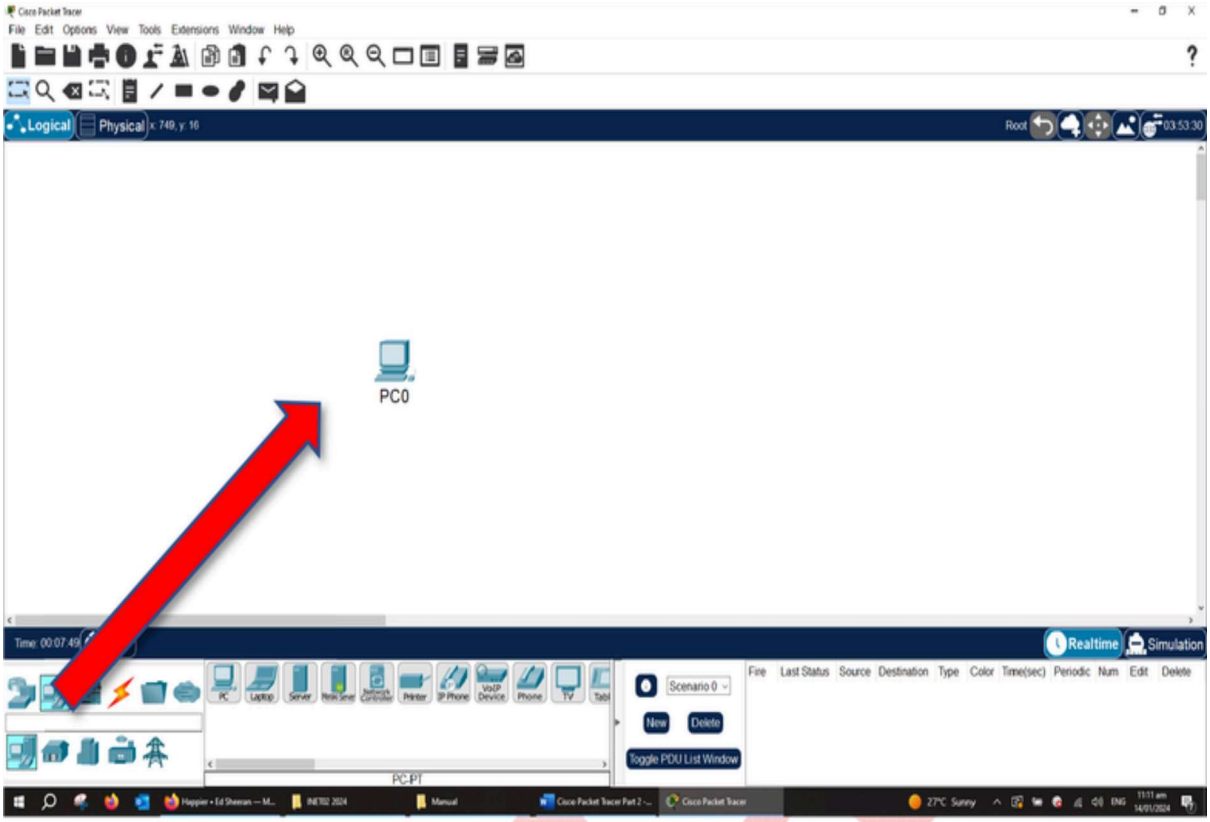
CISCO PACKET TRACER FUNDAMENTALS

How to ADD End Devices (PC)

Click **END DEVICES** on the Left Button part of the Screen.

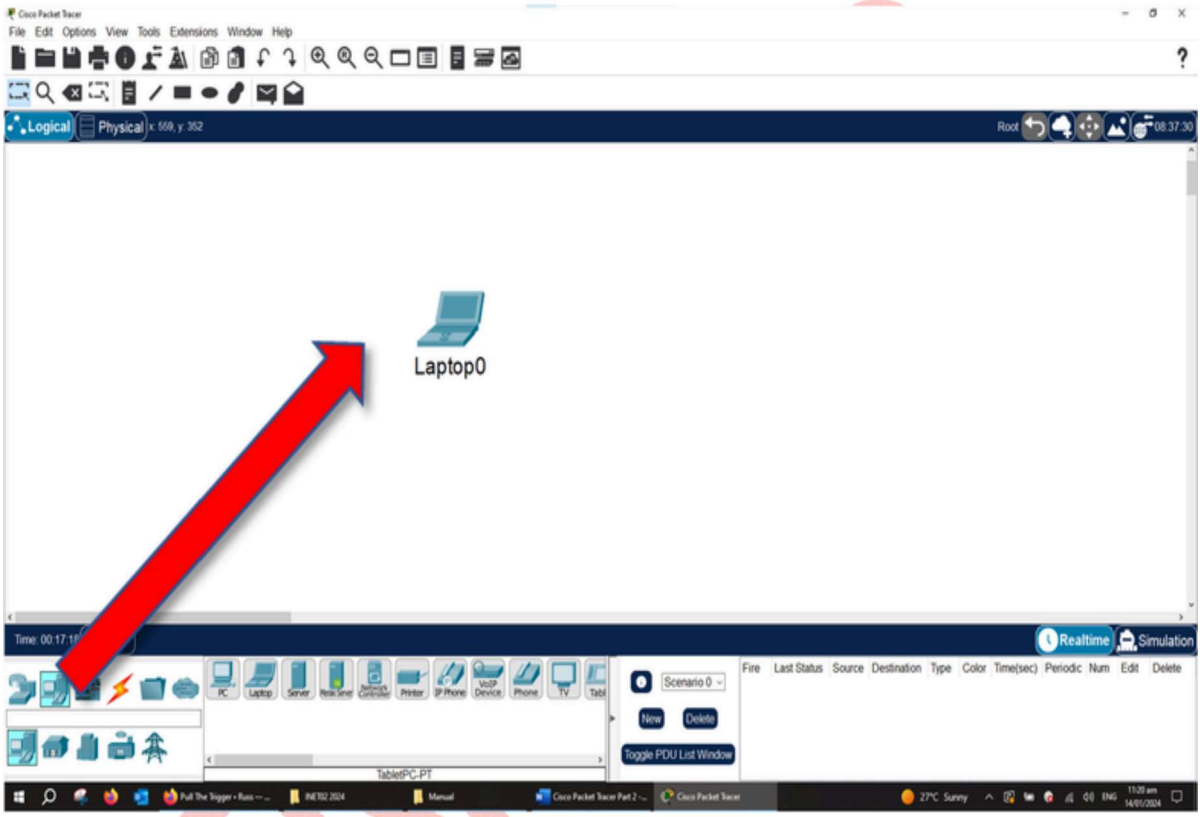


Click **PC.**


Cisco Packet Tracer
File Edit Options View Tools Extensions Window Help
Logical
Physical
Root
PC0
Realtime
Simulation
Scenario 0
New
Delete
Toggle PDU List Window
Fire Last Status Source Destination Type Color Time(sec) Periodic Num Edit Delete
PC-PT

How to ADD End Devices (Laptop)

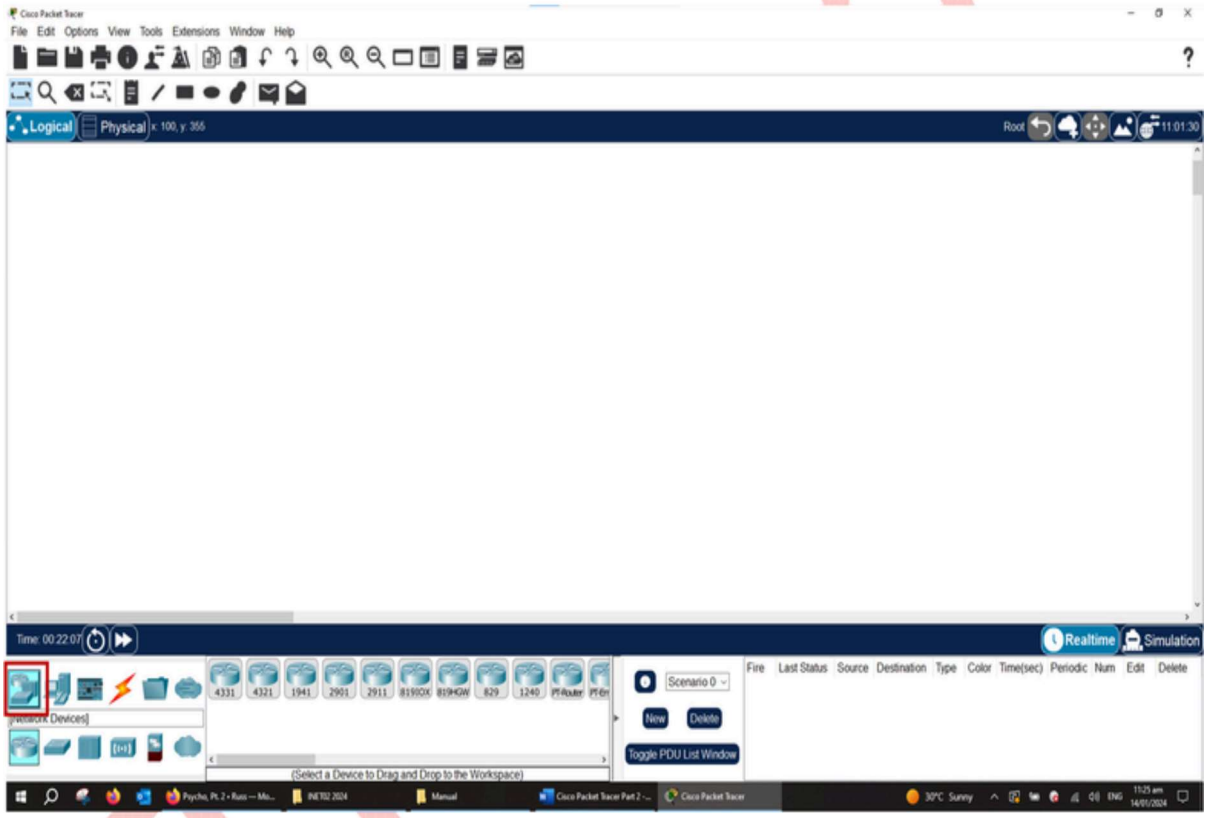
Click **END DEVICES** on the Left Button part of the Screen.



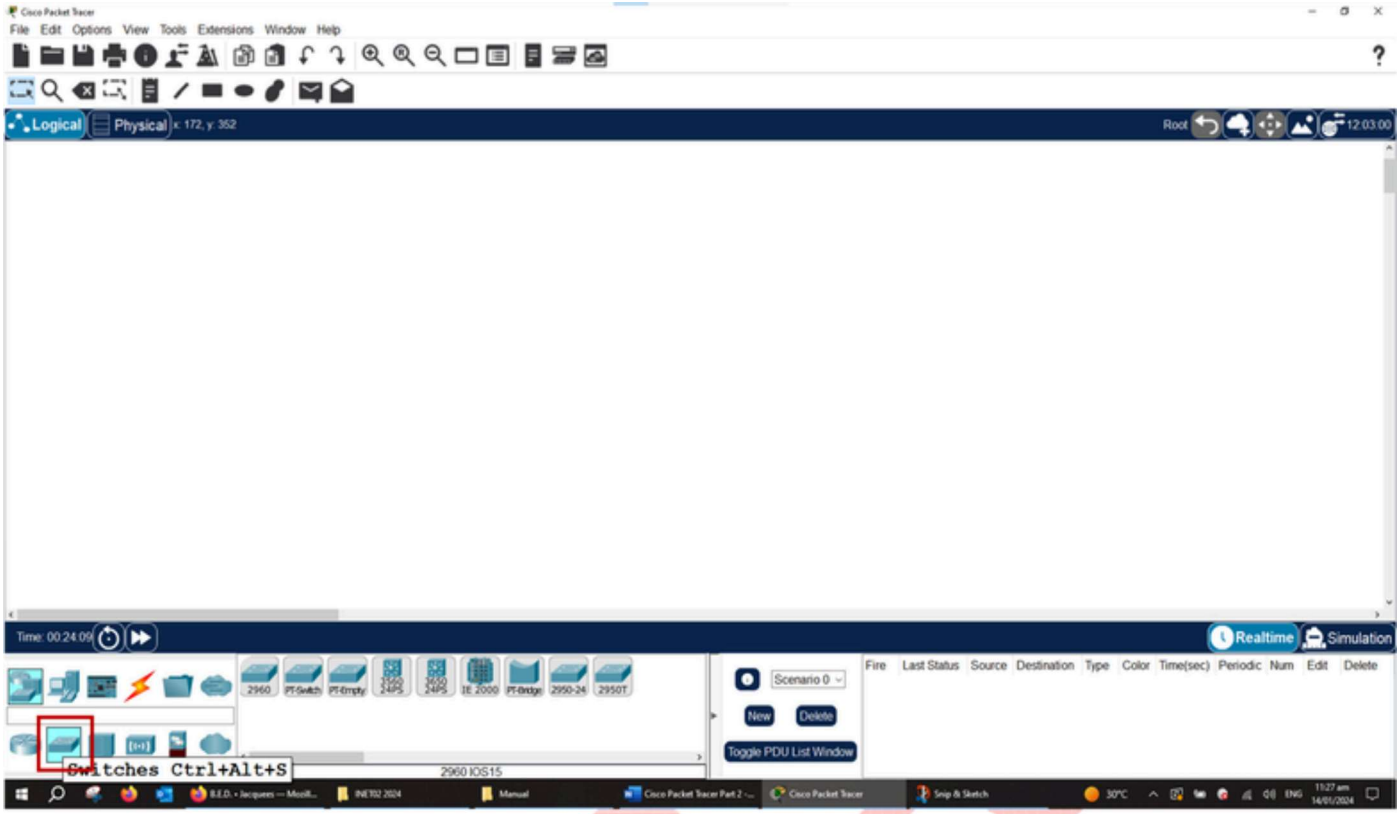
Click **Laptop.**

How to ADD End Devices (Switch)

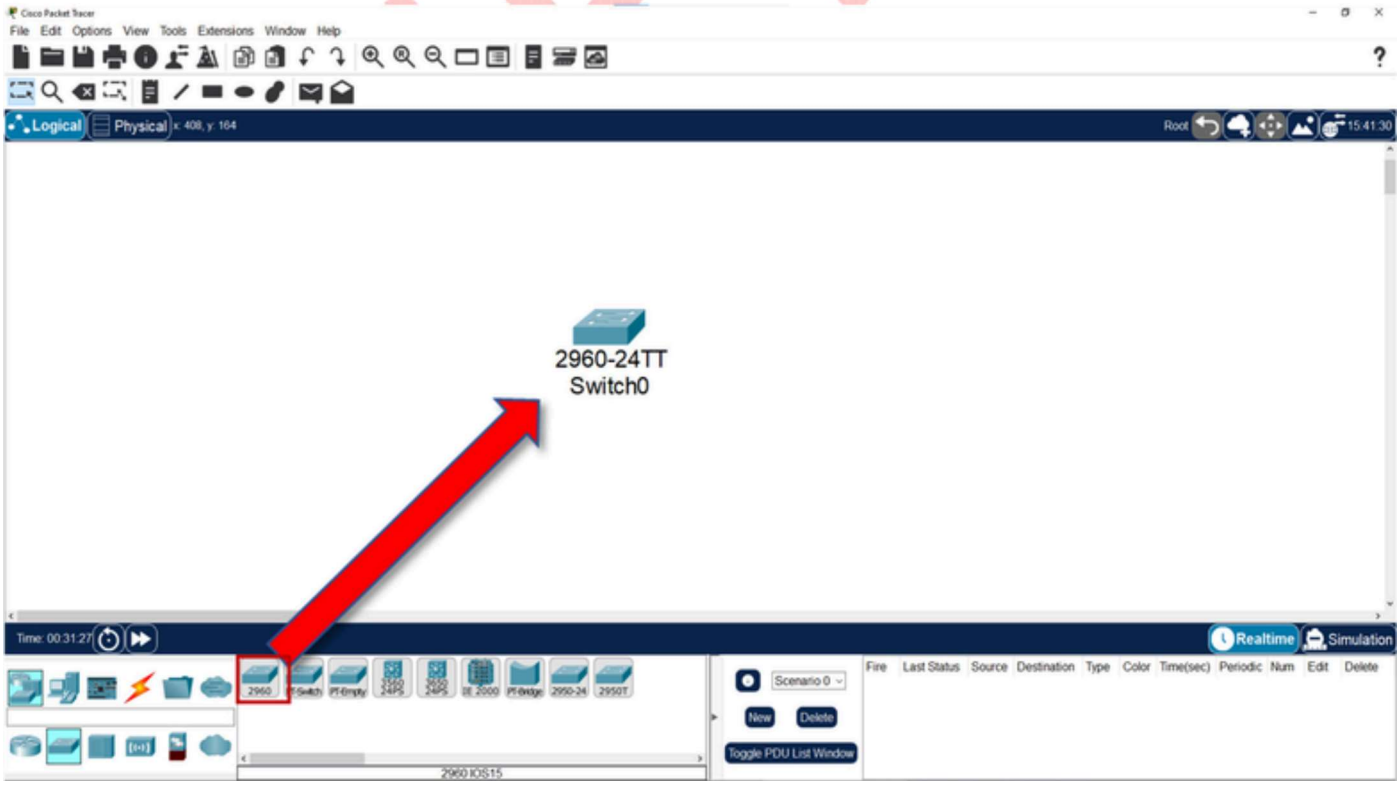
Click **END DEVICES** on the Left Button part of the Screen.



Click **Network Devices** or (**Ctrl + Alt + R**)

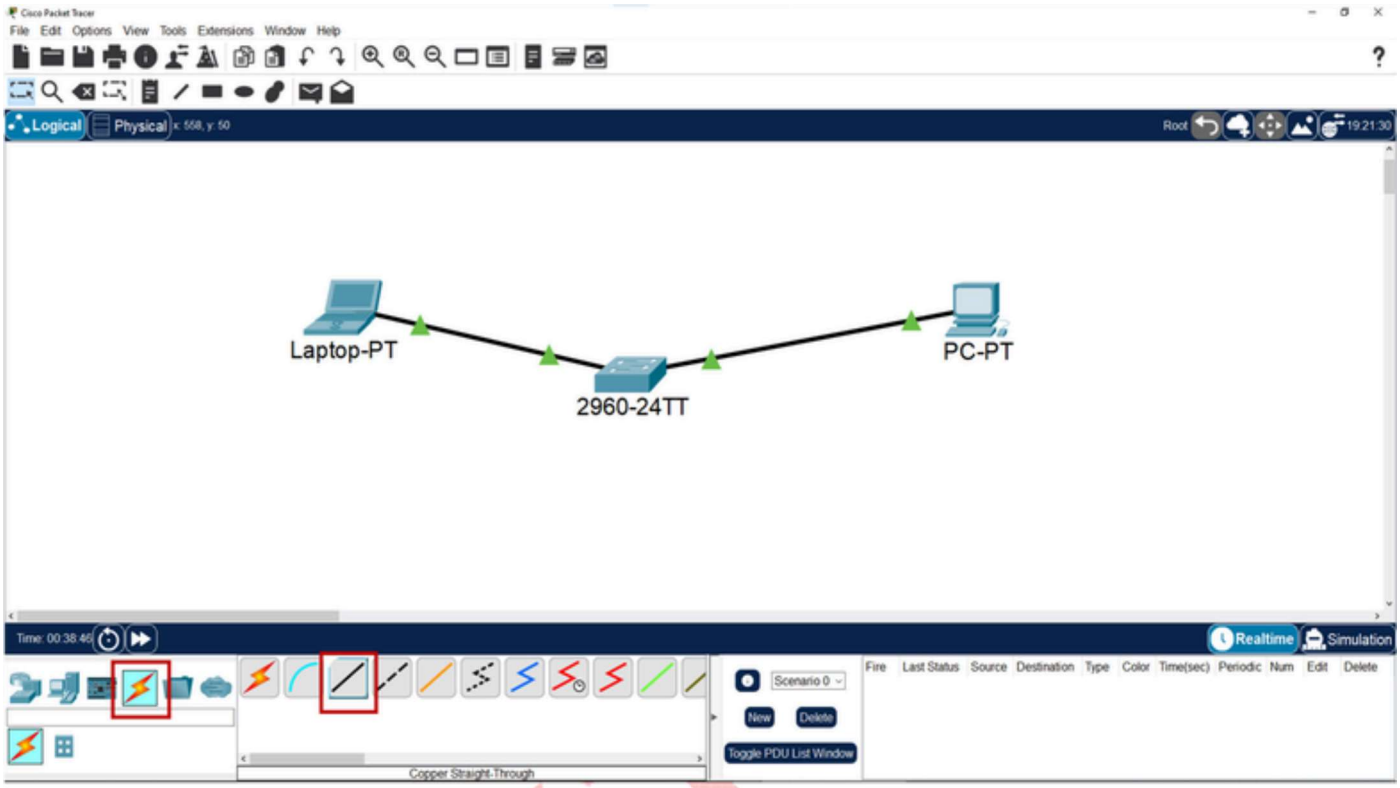


Click **Switch.**

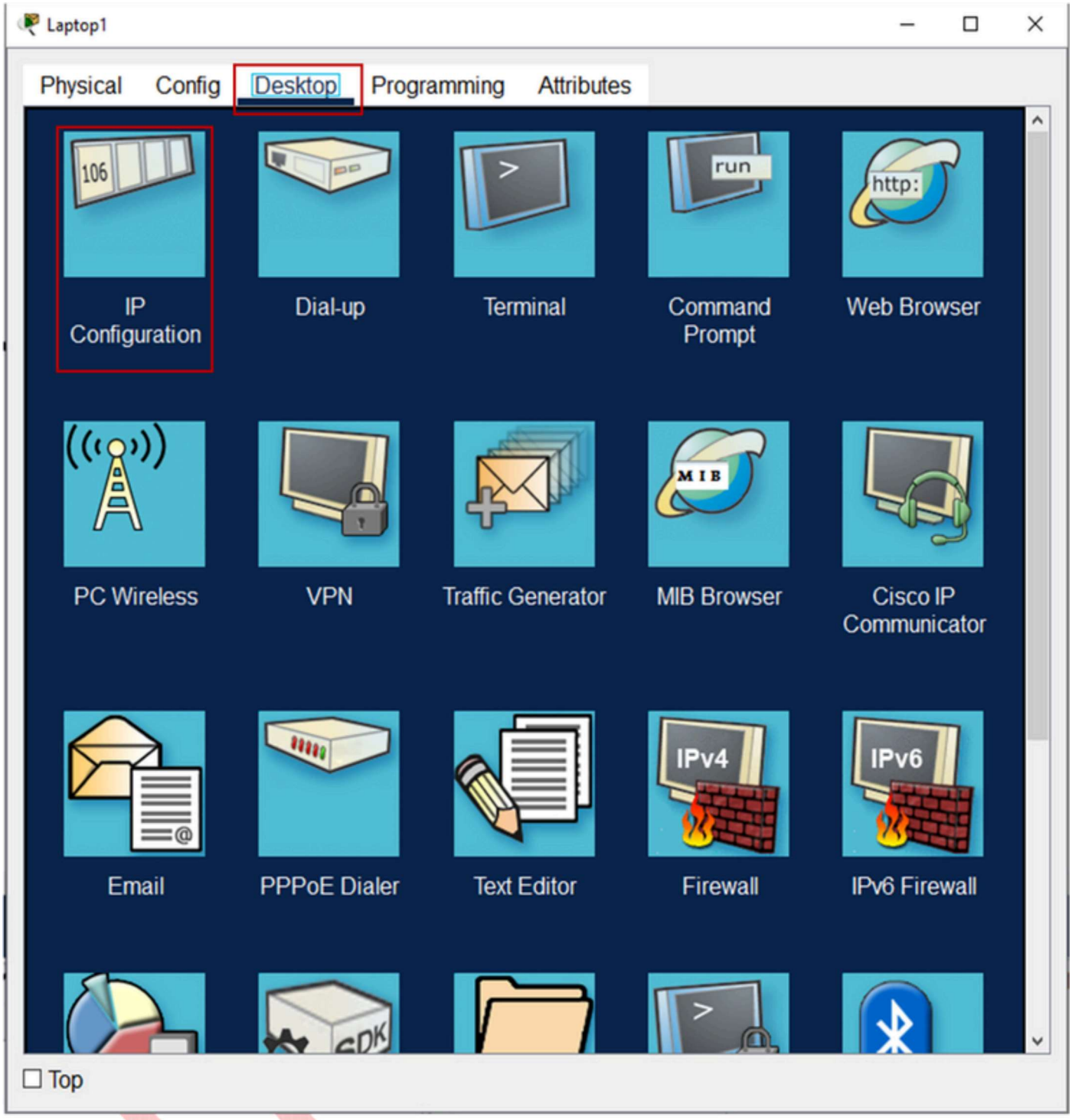


Click **Cisco 2960 Switch.**

Connect the 3 Devices using Straight-Through Cable



Click **Connections (Ctrl + Alt + O) then choose Copper Straight-Through**

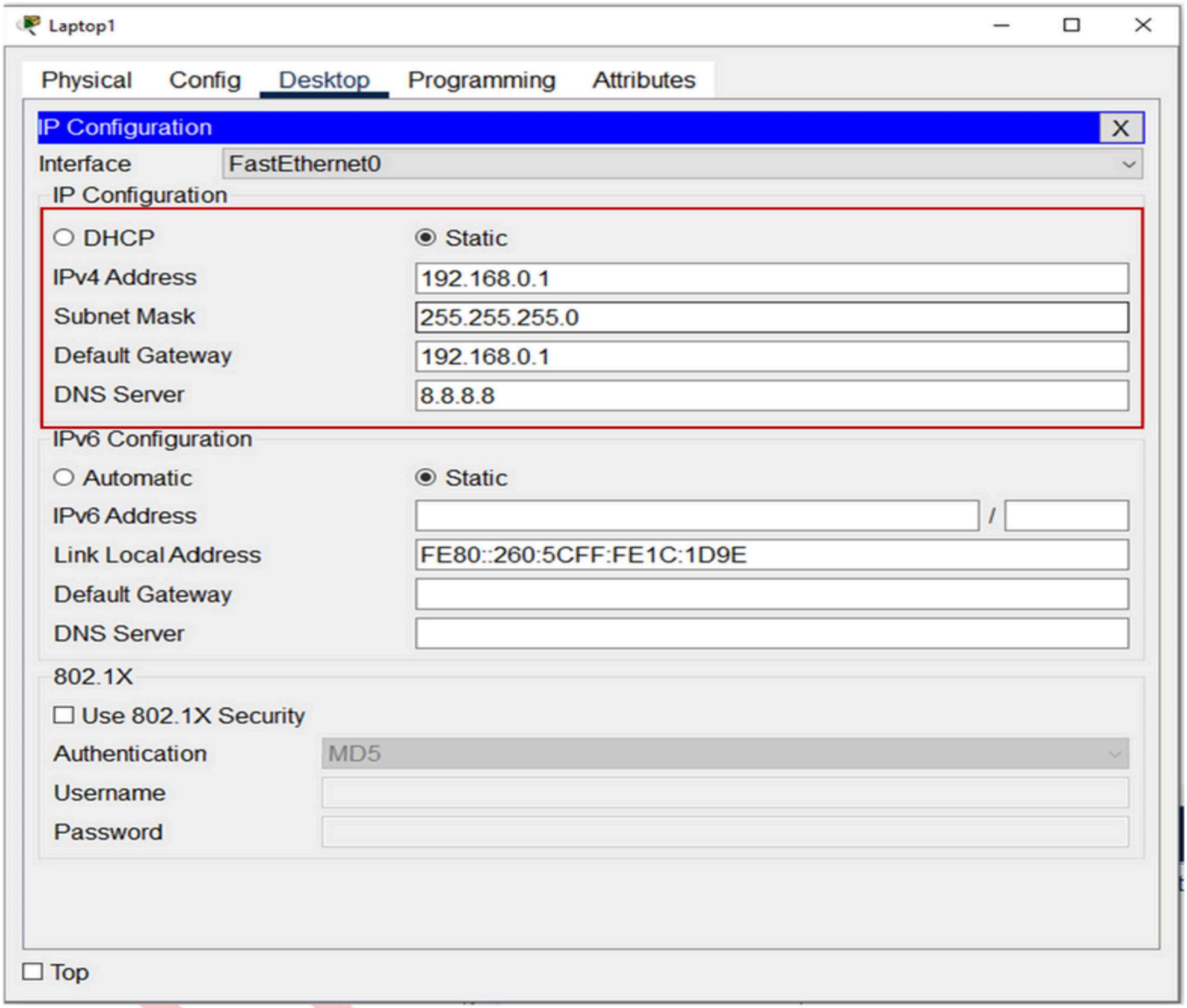


Click Laptop then choose Desktop.

Click IP Configuration Application

ubnet

lask



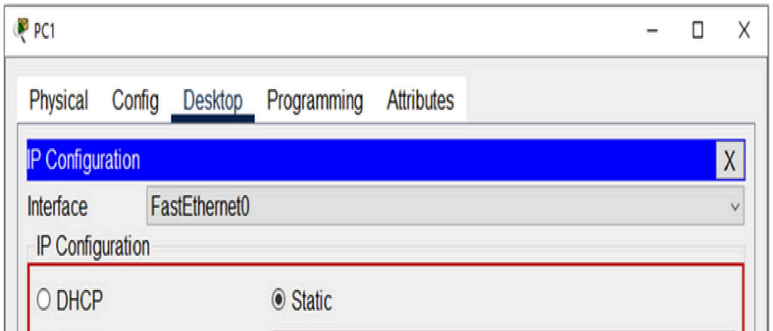
Assign the Laptop with the following static IP addresses.

IPv4 Address 192.168.0.1

55.255.255.0 Default Gateway

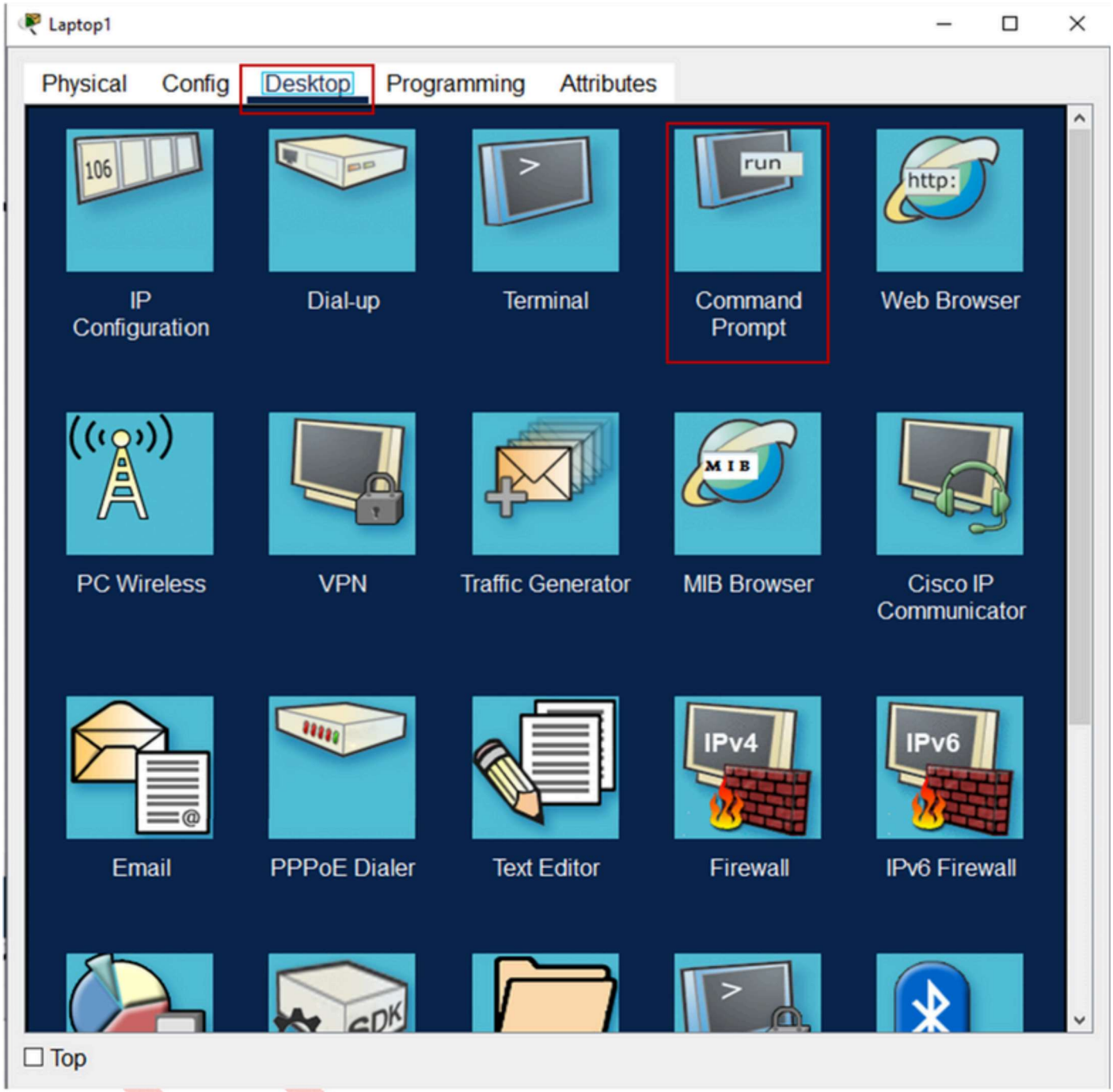
92.168.0.1

DNS Server 8.8.8.8

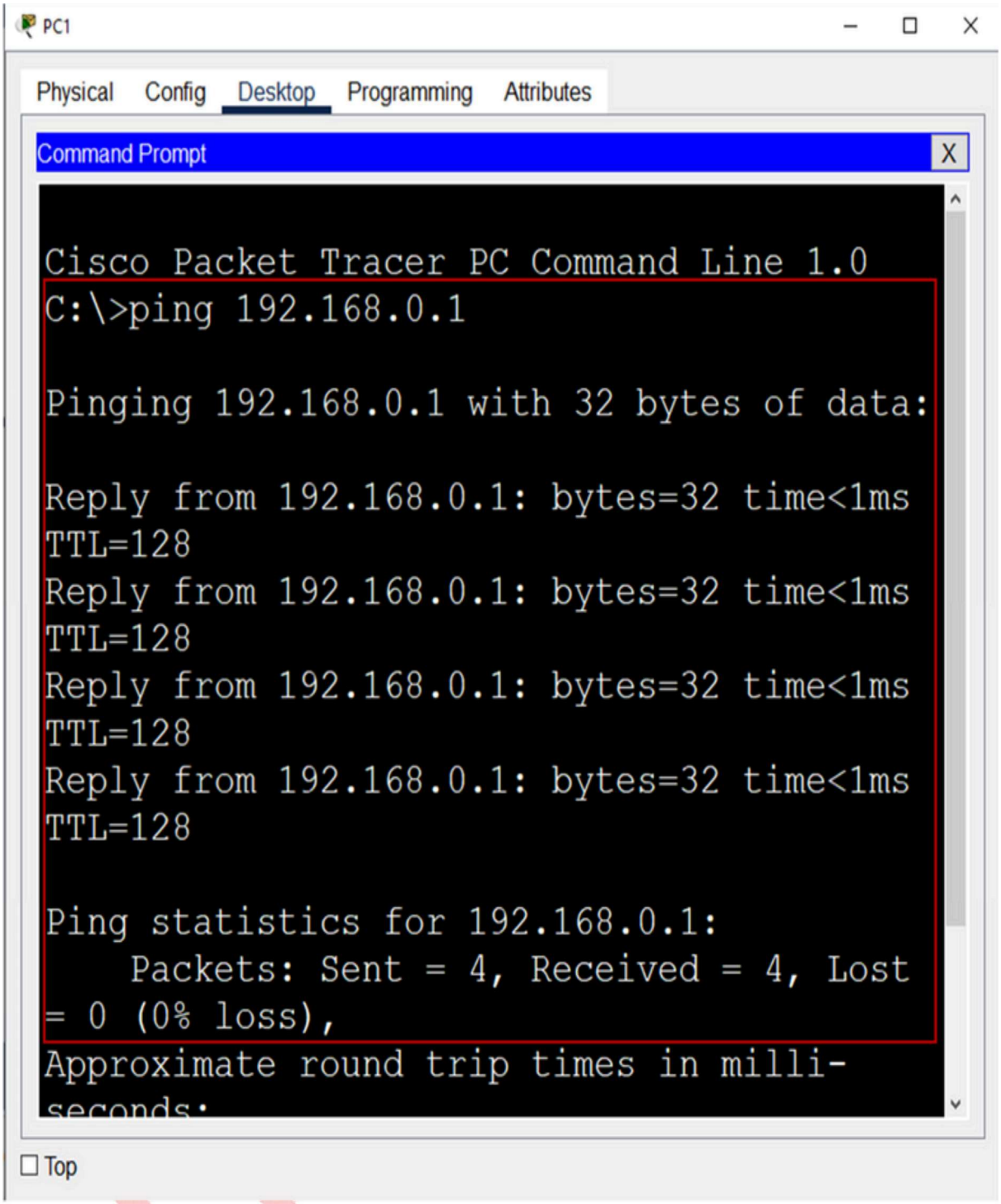


Default Gateway 192.168.0.2

DNS Server 8.8.8.8



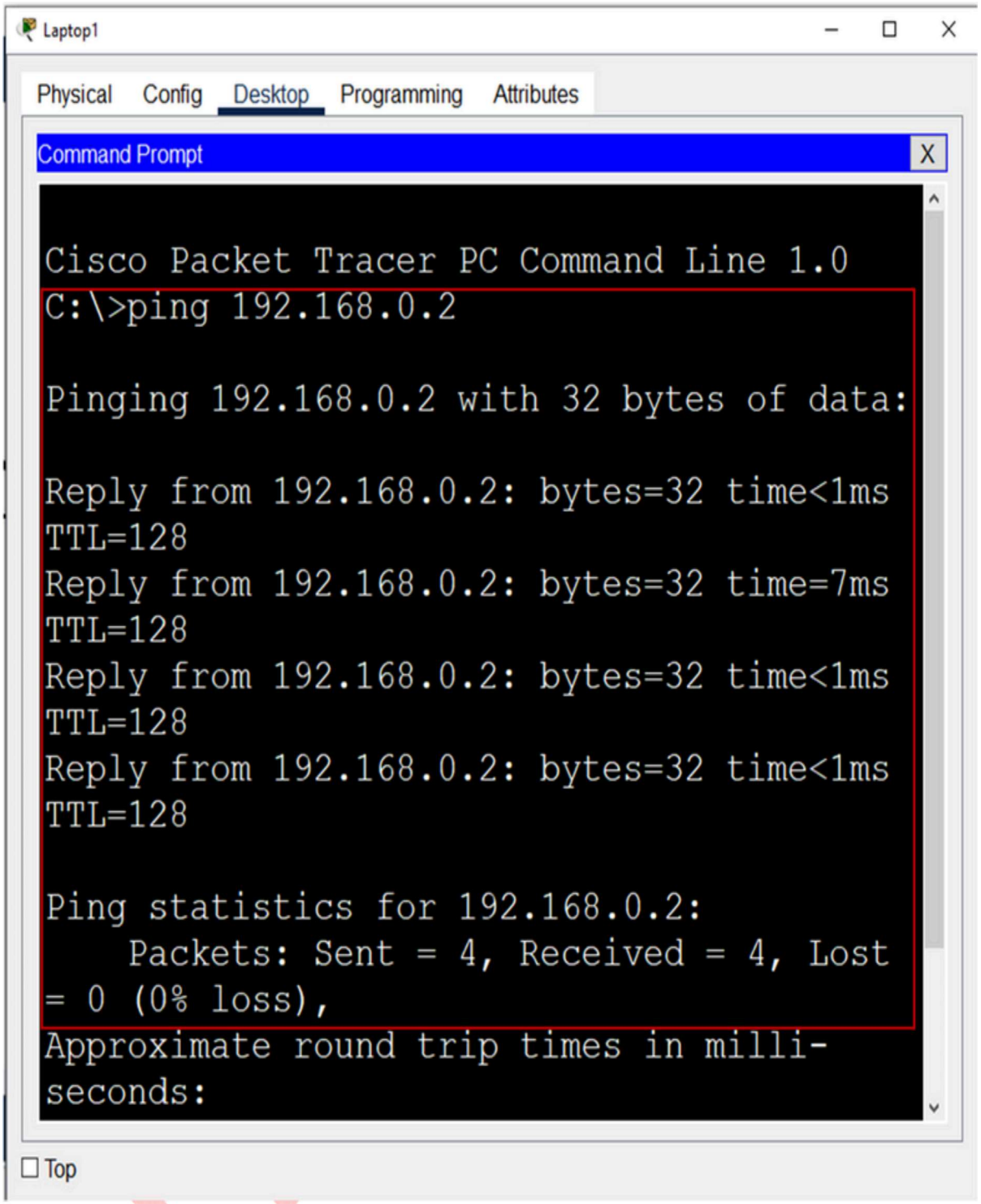
To test the connection of the end devices, open the Command Line Interface or Command Prompt.



Using the command prompt use the command *ping* for connection testing.

! from PC to laptop

ping 192.168.0.1



Using the command prompt use the command *ping* for connection testing.

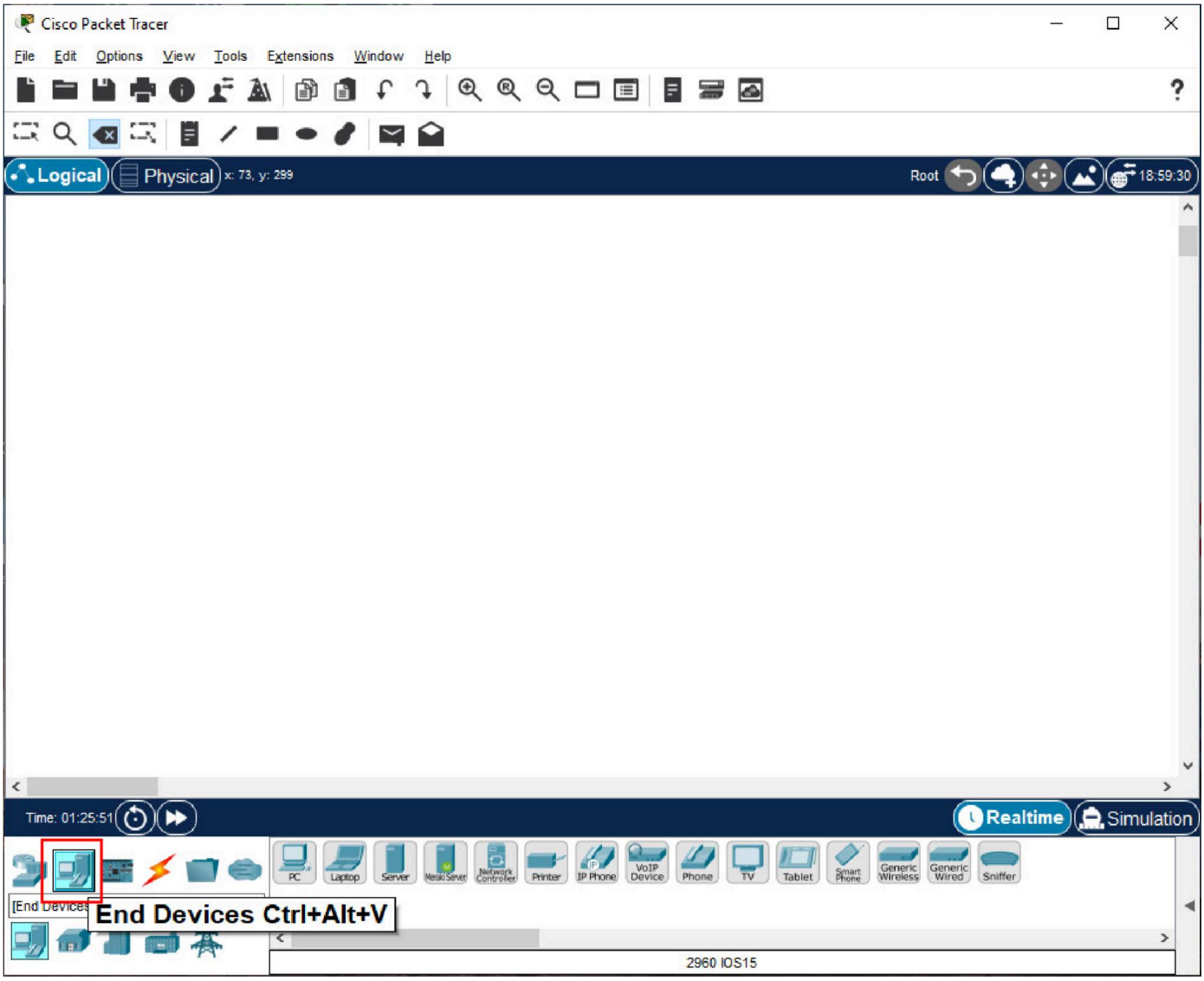
! from laptop to PC ping 192.168.0.2

CISCO PACKET TRACER FUNDAMENTALS

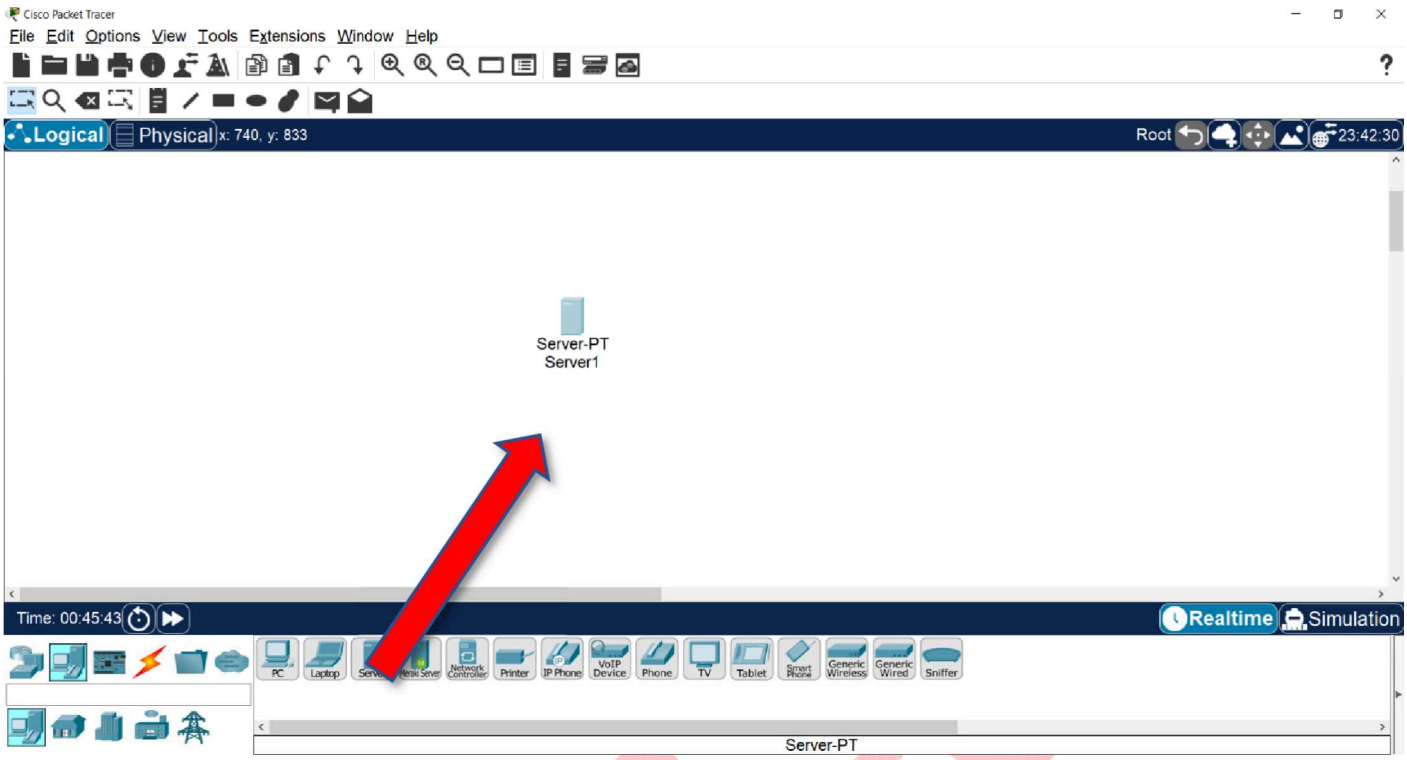
How to ADD DHCP Server

RUTH ANN SANTOS | PAUL JORDAN ELIGINO

Click **END DEVICES** on the Left Button part of the Screen.

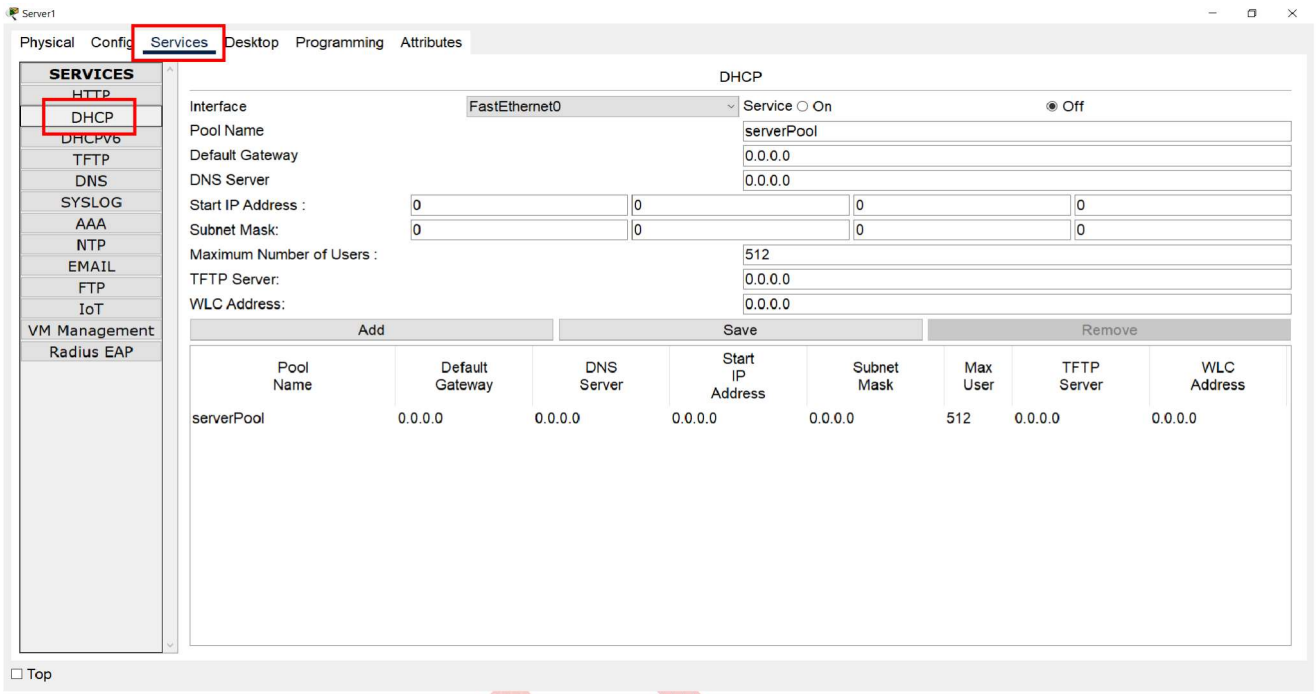


Click **Server**.

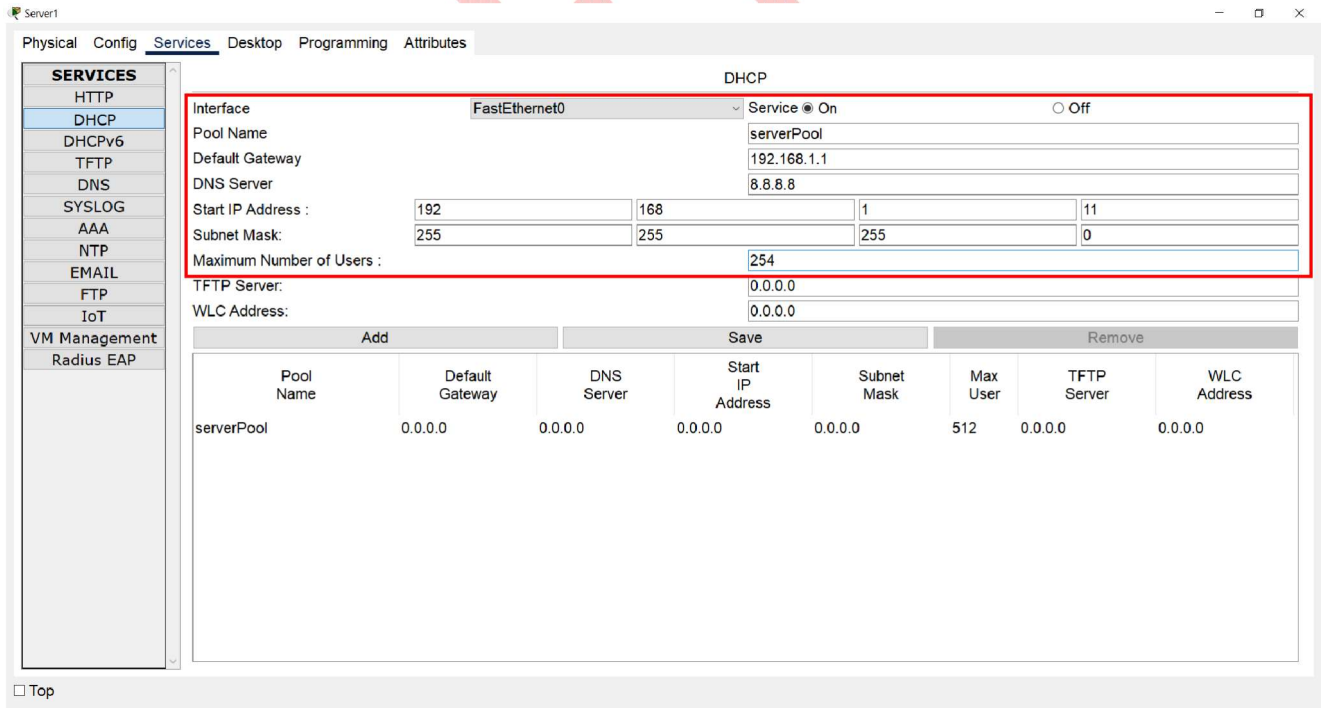


Note: Make sure to perform Static IP Addressing to the DHCP Server

How to Configure DHCP Pool

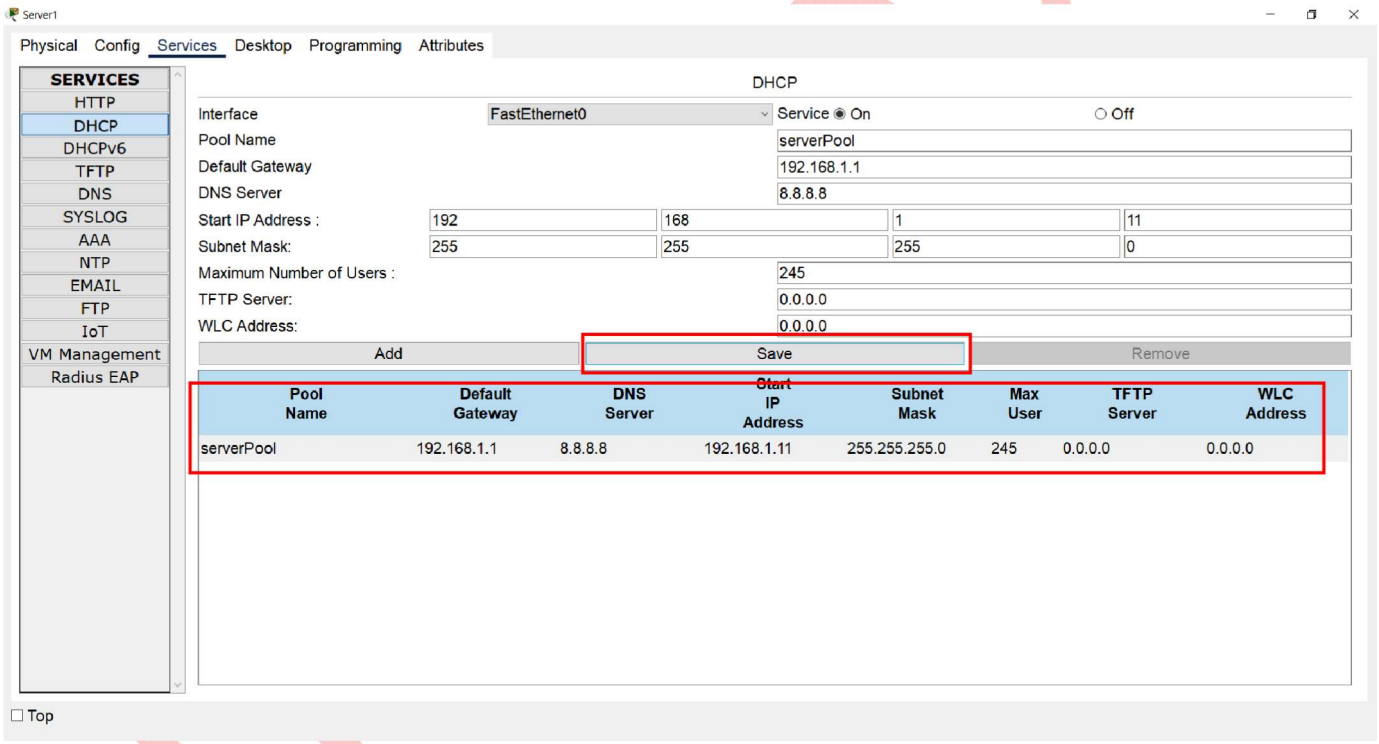


Choose Services and Click **DHCP**



Fill up the required fields:

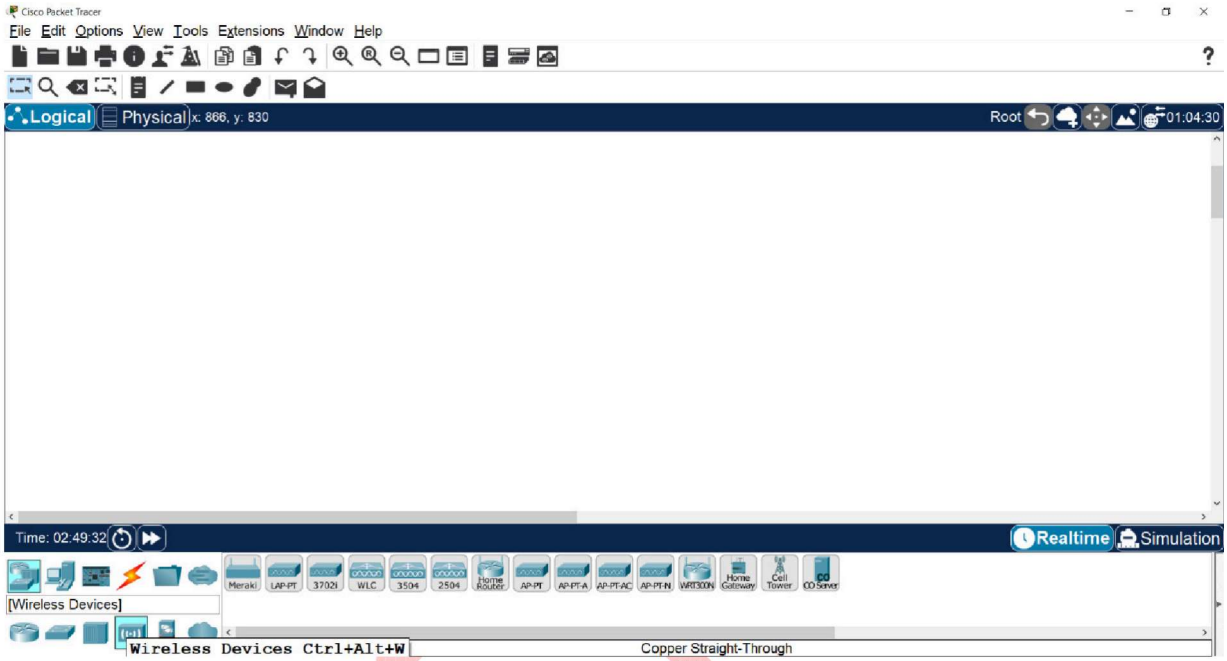
- Service: **ON**
- Pool Name: Set as **DEFAULT**
- Default Gateway: Router IP or Server (192.168.1.1 is only assume IP)
- DNS Server: DNS Server IP Address (8.8.8.8 is only assume Google DNS IP)
- Start IP Address: Start IP your required segment
- Subnet Mask: Segment Subnet
- Maximum Users: Required number of IP Address



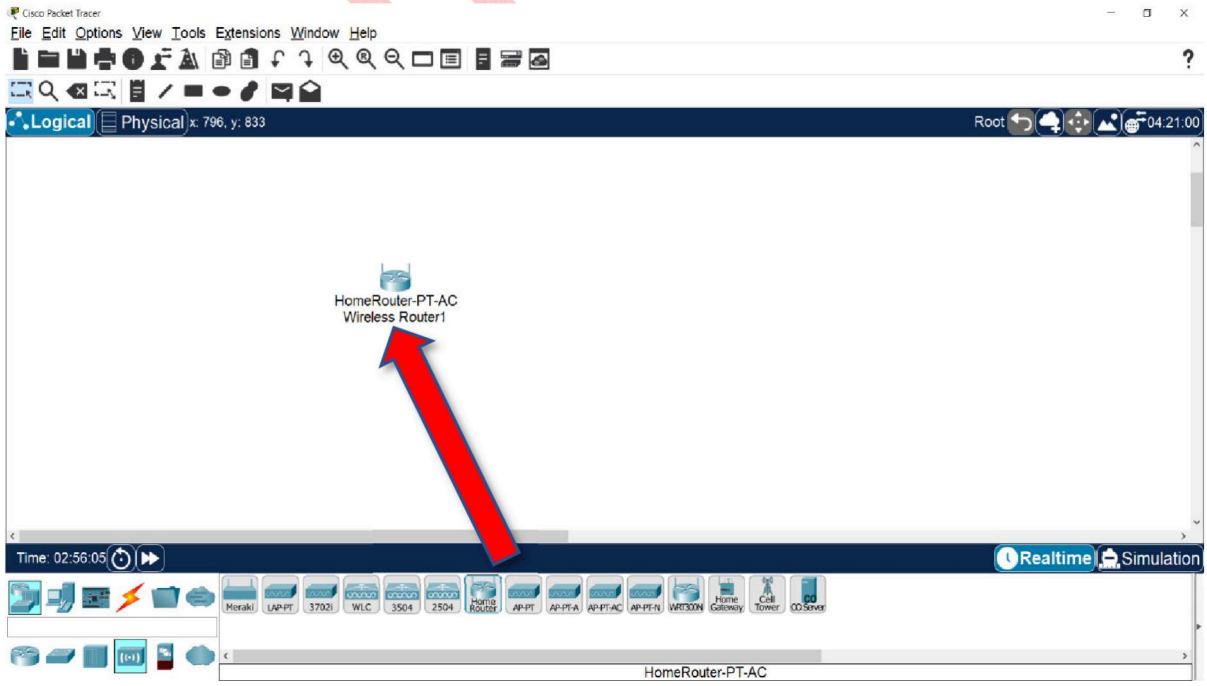
Click Save and Check the DHCP Pool details below.

How to ADD Wireless Access Point

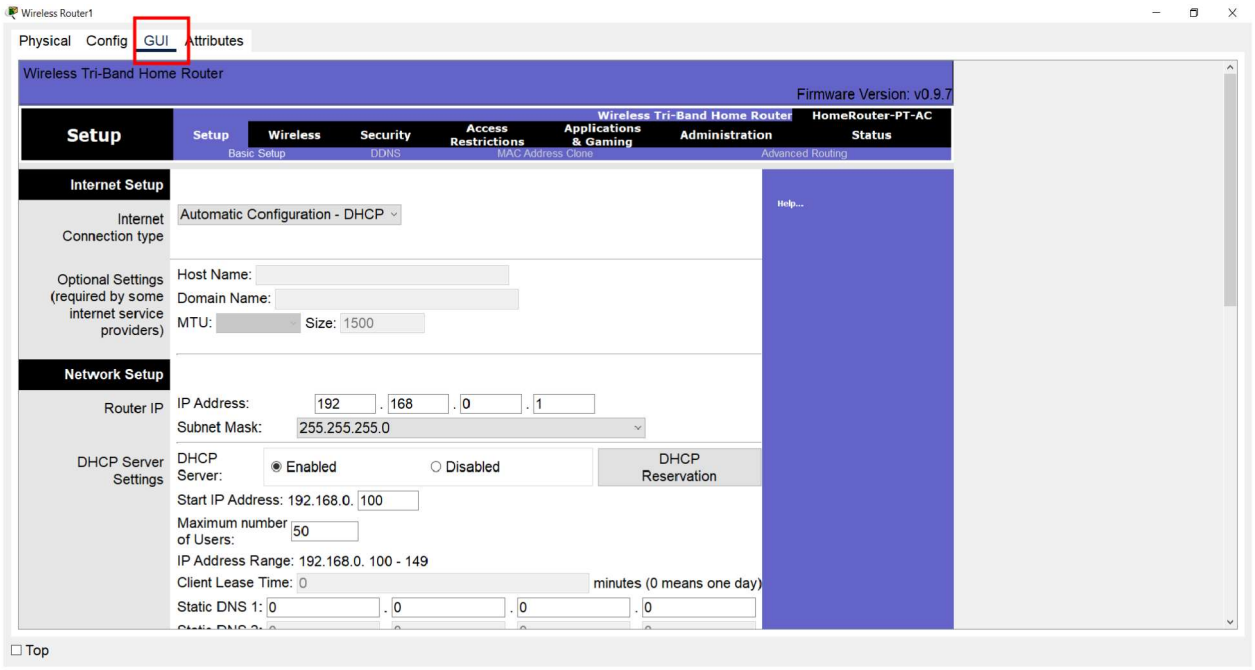
Click **NETWORK DEVICES** on the Left Button part of the Screen.



Click **Wireless Devices**

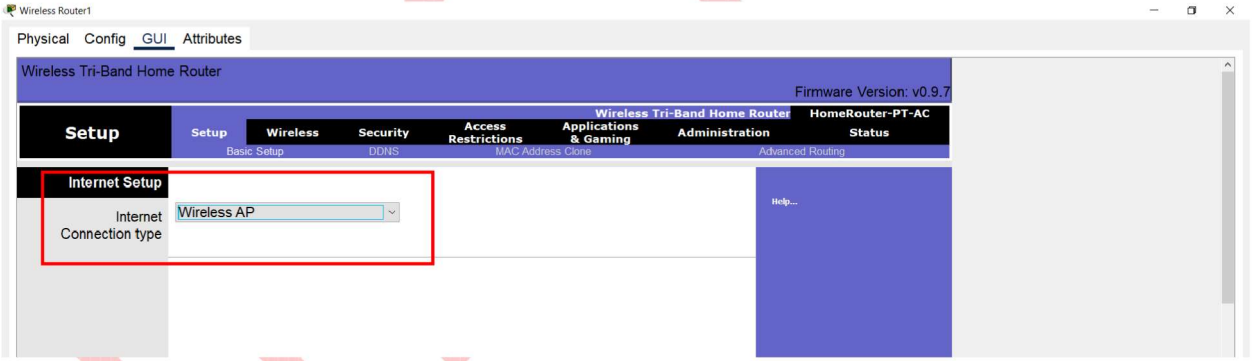


Choose **Home Router/Wireless Router**



Note: Do not forget to Save Settings

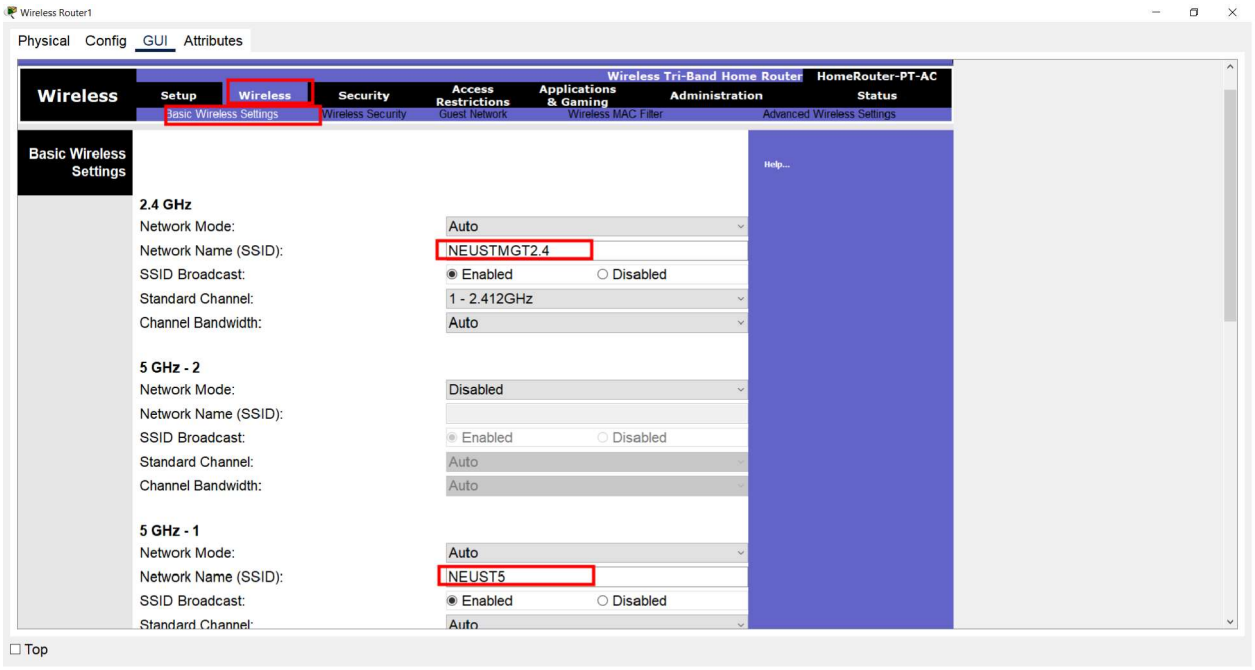
Double Click Router to open console and Choose GUI Tab



Click **Setup**

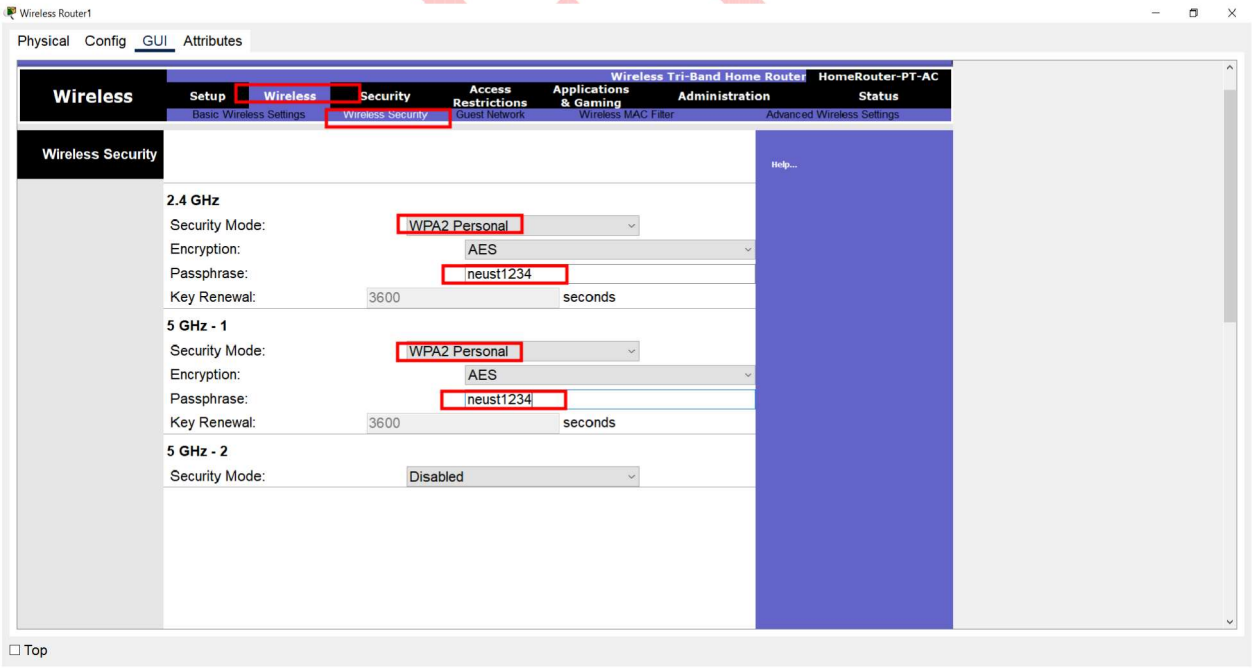
Choose **Wireless AP** for Internet Connection Type

Note: Do not forget to Save Settings



Choose **Wireless AP** >> Basic Wireless Settings

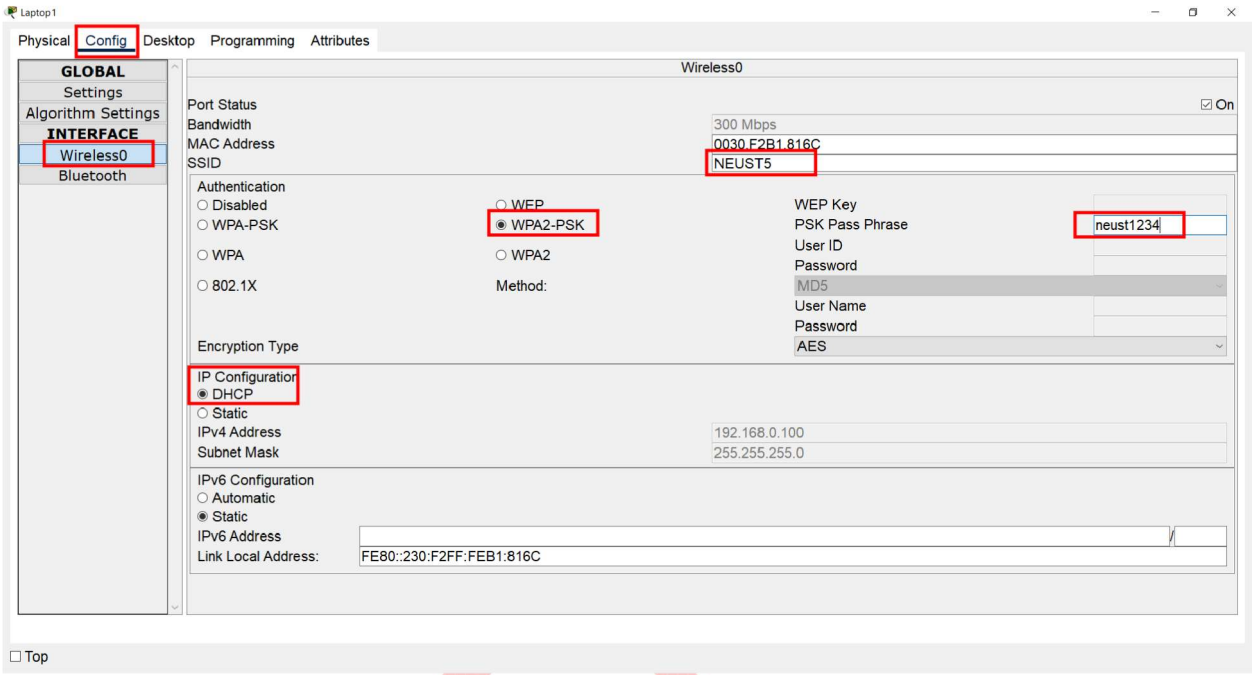
Fill up the required SSID for 2.4Ghz and 5.0Ghz >> Save Settings



Go to Wireless >> Wireless Security

Security Mode: WPA2 Personal >> Input Passphrase (minimum of 8 characters) >> Save Settings

Connecting Wireless Devices to WIFI



- Choose Config
- Click Wireless
- Input the SSID
- WPA2-PSK for Wireless Authentication
- Input Passphrase

BASIC CLI COMMANDS

CISCO FUNDAMENTALS

CLI Command Modes

Command Mode	Access Method	Prompt	Exit or Access Next Mode
User EXEC	This is the first level of access. (For the switch) Change terminal settings, perform basic tasks, and list system information.	`Switch>`	Enter the **logout** command. To enter privileged EXEC mode, enter the **enable** command.
		`Switch#`	
Privileged EXEC	From user EXEC mode, enter the **enable** command.		To exit to user EXEC mode, enter the **disable** command. To enter global configuration mode, enter the **configure** command.
Global configuration	From privileged EXEC mode, enter the **configure** [redacted] command.	`Switch(config)#`	To exit to privileged EXEC mode, enter the **exit** or **end** command, or press **Ctrl-Z**. To enter interface configuration mode, enter the **interface** configuration command.
Interface configuration	From global configuration mode, specify an	`Switch(config-if)#`	To exit to privileged EXEC mode, enter the end

	interface by entering the interface command followed by an interface identification.		command, or press Ctrl-Z. To exit to global configuration mode, enter the exit command.

Fundamentals – Basic Configuration

Command	*Description*
show version	Display information about IOS and router
show interfaces	Display physical attributes of the router's interfaces
show ip interface brief	Displays a summary of the status for each interface show running-config
Display the current configuration show startup-config	
Display the configuration at startup	
enable	Access Privilege mode
config terminal	Access Configuration mode
ip address <ip address> <mask>	Assign an IP address to the specified interface
interface <int>	Enter interface configuration
ip address <ip address> <mask> shutdown / no shutdown	Turn off or turn on an interface. Use both to reset description
Set a description to the interface	
show ip interface <type number>	Displays the usability status of the protocols for the interfaces
hostname <name>	Set a hostname for the Cisco device

enable secret <password> Set an “enable” secret password

copy running-config startup-config Saves the current (running)

configuration in the startup configuration into the NVRAM.

erase nvram Delete the current startup configuration files. The command returns the device to its factory default.

reload Reboot the device. The NVRAM will take the latest configuration

Description

Network Access

Command

cdp run / no cdp run	Display information about IOS and router show cdp
neighbors	Display all CDP neighbors show mac address-table
	Display all the MAC address entries in a table show vlan
Lists each VLAN and all interfaces assigned to that VLAN show vlan brief	
	Displays vlan information in brief
show interfaces switchport	Display configuration settings about all the switch port interfaces
show interfaces trunk	Display information about the operational trunks along with their VLANs
vlan <1-4094>	Enter VLAN configuration mode and create a VLAN with an associated number ID
name <name>	Within the VLAN configuration mode, assign a name to the VLAN
switchport mode access	In the interface configuration mode, the command assigns the interface link type as an access link.
switchport access vlan <>	Assign this interface to specific VLAN
interface range < >	Access interface range configuration mode from Interface Configuration.
no switchport access vlan <>	Remove VLAN assignment from interface. It returns to default VLAN 1
switchport mode trunk	An interface configuration mode. Set the interface link type as a trunk link.

	Description
switchport trunk allowed vlan	Allow specific VLANs on this trunk

IP Services

Command	
ip default-gateway <ip_address>	Set the default gateway for the router ip dhcp
excluded-address	The DHCP server should not assign to the DHCP client

Description

ip dhcp pool <name>	Enters the DHCP pool configuration mode and creates a new
network <network ID> <mask>	Inside the DHCP configuration mode. Define the address pool
default-router <IP address>	Set the default gateway IP address for the DHCP clients
dns-server <IP address>	Set the DNS server IP address for the DHCP clients.
ip helper-address <ip address>	Turns an interface into a DHCP bridge. The interface redirects
show ip dhcp pool	Display information about the DHCP pool
show ip dhcp binding	Display information about all the current DHCP bindings
ip dns server	Enable DNS service
show logging	Shows the state logging (syslog). Shows the errors, events, and
terminal monitor	Enables debug and system's error messages for the current terminal

<first-ip-address> <last-ip-address>

ip dhcp pool <name>

DHCP pool

network <network ID> <mask> for the DHCP server

Turns an ~~interf~~ace into a DHCP bridge. The interface redirects

DHCP broad~~cast pa~~ckets to a specific IP

Display information about all the current DHCP bindings

	Description
	Shows the state logging (syslog). Shows the errors, events, and host addresses. It also shows SNMP configuration and activity
	Enables debug and system's error messages for the current

Security

Command	
enable secret <password>	Set an "enable" secret password. Enable secret passwords are hashed via the MD5 algorithm.
line vty 0 4	A global configuration command to access the virtual terminal configuration. VTY is a virtual port used to access the device via SSH and Telnet. 0 4 to allow five simultaneous virtual connections
line console 0	A global configuration command to access the console configuration
password <password>	Once in line mode, set a password for those remote sessions with the "password" command

	Description
username <username> privilege <level> secret <password>	Require a username with a specific password
service password-encryption	Makes the device encrypt all passwords saved on the configuration file
switchport port-security	enable dynamic port security on the specific interface
switchport port-security maximum <max value>	Specify the max no. of secure MAC on the specific interface
switchport port-security mac-address sticky	Force a specific mac-address to the interface

Require a username with a specific password

Makes the device encrypt all passwords saved on the

enable dynamic port security on the specific interface

Specify the max no. of secure MAC on the specific interface

Description

Most used CLI Commands

show clock	Display clock
show version	Display information about IOS and router
show ip interface brief	Displays a summary of the status for each interface
show cdp neighbors	Display all CDP neighbors
show mac address-table	Display all the MAC address entries in a ***table***
config terminal	Access Configuration mode
hostname <name>	Set a hostname for the Cisco device
copy running-config startup-config	Saves the current (running) configuration in the startup configuration into the NVRAM.
reload	Enables debug and system's error messages for the

Sample Cisco Switch Baseline

! CLOCK SETTINGS CONFIGURATION

clock set **<hh:mm:ss> <day> <month> <year>**

Description

configure terminal

! HOSTNAME CONFIGURATION
hostname **CICT_SWITCH**

! CONFIGURE ENABLE PASSWORD
enable secret **neust1234**

! CONFIGURE LOCAL ACCOUNTS

! ENCRYPT PASSWORD
service password-encryption

! CREATING A BANNER
no banner motd
banner motd ^
********** **SWITCH** **********

UNAUTHORIZED personnel are allowed to access this network device.
FOR CICT STUDENTS TEST LABORATORY ONLY

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! MANAGEMENT INTERFACE CONFIGURATION
interface Vlan 1
ip address **192.168.1.2 255.255.255.0**

username **cict** privilege **15** secret **cict1234**

Description

^

! SWITCH DEFAULT GATEWAY
CONFIGURATION ip default-gateway
192.168.1.1

! ACCESS PORT INTERFACE
CONFIGURATION interface
FastEthernet0/1 description ***PORT
Number 1*** switchport mode access
spanning-tree portfast
no shutdown
exit

! ACCESS MANAGEMENT CONFIGURATION (CONSOLE)

line con 0

login local

exit

Description

```
exit
 end
```

Description

Sample Cisco Router Baseline

! CLOCK SETTINGS CONFIGURATION
clock set **<hh:mm:ss> <day> <month> <year>**

configure terminal

! HOSTNAME CONFIGURATION
hostname **CICT_ROUTER**

! CONFIGURE ENABLE PASSWORD
enable secret **neust1234**

! CONFIGURE LOCAL ACCOUNTS
username **cict** privilege **15** secret **cict1234**

! ENCRYPT PASSWORD
service password-encryption

! CREATING A BANNER
no banner motd
banner motd ^
********** **ROUTER** **********

UNAUTHORIZED personnel are allowed to access this network device.
FOR CICT STUDENTS TEST LABORATORY ONLY

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^C

Description

exit

! ACCESS MANAGEMENT CONFIGURATION (CONSOLE)

line con 0

login local

exit

! REMOTE MANAGEMENT CONFIGURATION (VTY)

line vty 0 4

login local

transport input

all

exit

end

! SAVING CONFIGURATION IN STARTUP

copy running-config startup-config

Description

Cisco Router DHCP Configuration

configure terminal

configure terminal

! ACCESS PORT INTERFACE CONFIGURATION WITH PORT SECURITY

interface range FastEthernet0/1 -24

switchport port-security maximum 1

switchport port-security mac-address sticky

switchport port-security

! DHCP CONFIGURATION

ip dhcp pool **CICT** network
192.168.1.0 255.255.255.0
default-router **192.168.1.1**
dns-server **8.8.8.8** exit

! IP RANGE EXCLUSION

ip dhcp excluded-address 192.168.1.1 192.168.1.20

exit Cisco Switch Configuration ~~with~~ Port Secu~~rity~~
exit

Description