1.Connecting Two Host on the same network

Steps:

- Open Cisco Packet Tracer
- Create a new network by selecting File > New from the menu.
- From the device type selection box at the bottom, choose End Devices.
- Drag and drop one PC and one Laptop devices onto the workspace.
- Establish connection between them using a 'Copper Straight-Through' cable.
- Click on laptop
    - Go to the Desktop tab and select IP Configuration.
    - Set the IP Address to 192.168.1.7 and the Subnet Mask to 255.255.255.0.
- Repeat above step for PC, but this time set IP Address to 192.168.1.6
- To test the connectivity
    - Click on PC0.
    - Go to the Desktop tab and select Command Prompt.
    - Type ping 192.168.1.6 and press Enter.

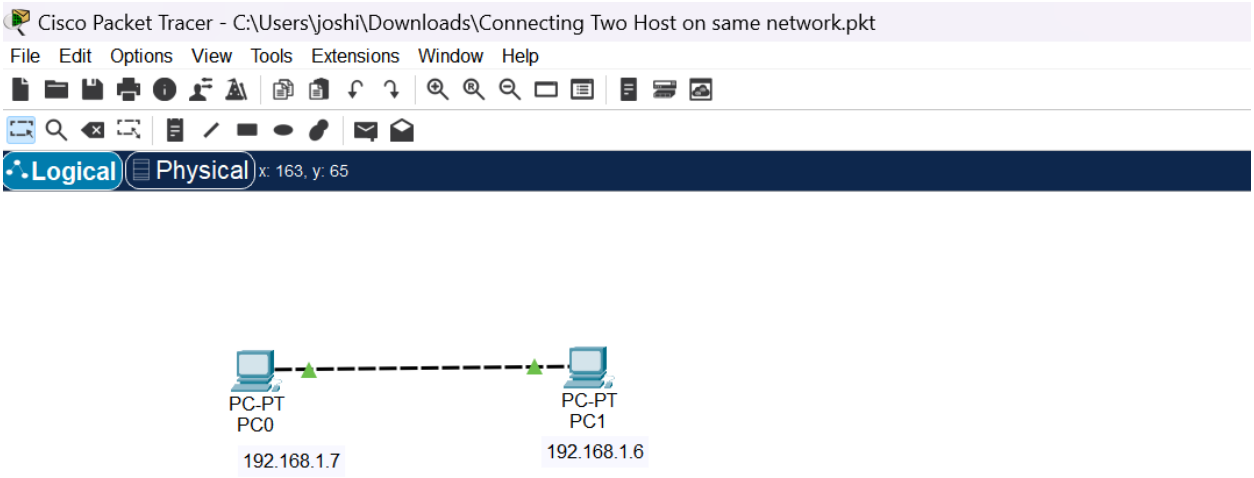


Fig:1

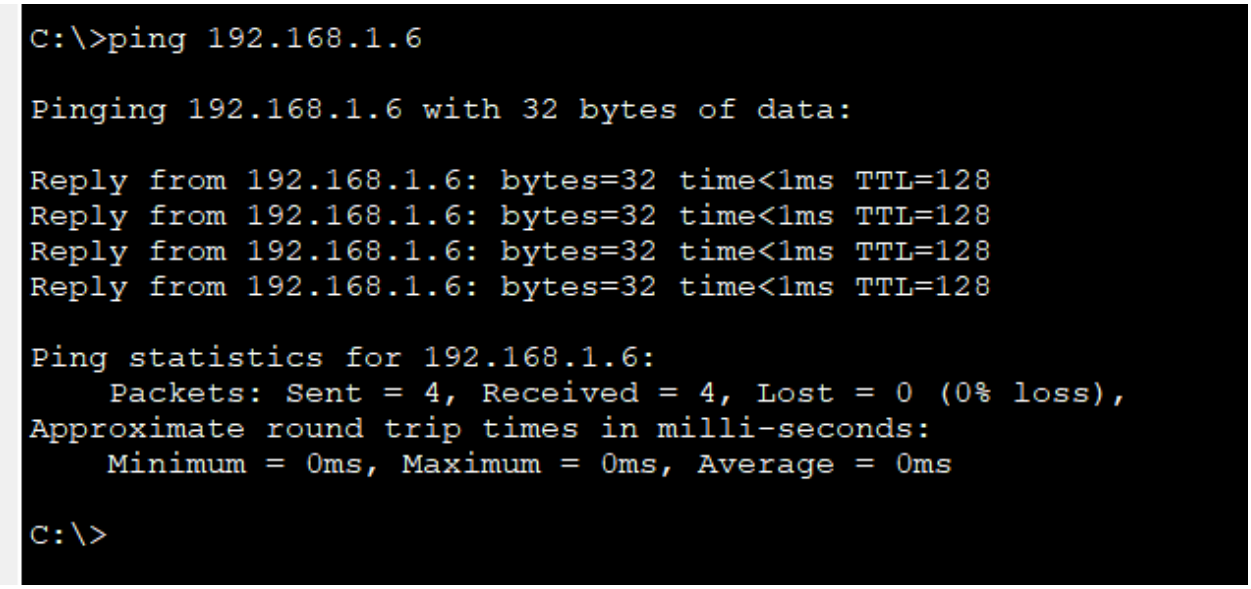

C:\>ping 192.168.1.6
Pinging 192.168.1.6 with 32 bytes of data:
Reply from 192.168.1.6: bytes=32 time<1ms TTL=128
Reply from 192.168.1.6: bytes=32 time<1ms TTL=128
Reply from 192.168.1.6: bytes=32 time<1ms TTL=128
Reply from 192.168.1.6: bytes=32 time<1ms TTL=128
Ping statistics for 192.168.1.6:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 0ms, Average = 0ms
C:\>

Fig:2

2.Simulate Connecting Hosts on Different Networks Using Packet Tracer

Steps:

- First add the 4 Laptops, 1 Router, 2 Switches to form network topology
- Connect devices
  - Connect Laptop0 and Laptop1 to Switch0
  - Connect Laptop2 and Laptop3 to Switch1
  - Connect Switch0 to Router (GigabitEthernet0/0)
  - Connect Switch1 to Router (GigabitEthernet0/1)

- Configure Laptop0 and Laptop1 to Switch0 and finally to router with IPv3 192.168.1.0. Assign IPs on the devices accordingly.
  - For laptop 0 (For example)
    - IP Address: 192.168.1.2
    - Subnet Mask: 255.255.255.0
    - Default Gateway: 192.168.1.1
- Configure Laptop2 and Laptop2 to Switch1 and finally to router with IPv3 11.12.1.0. Assign IPs on the devices accordingly.
- Enable Routing on Router
- Test the network
  - Open Command Prompt on Laptop0
  - Execute: ping 11.12.1.2

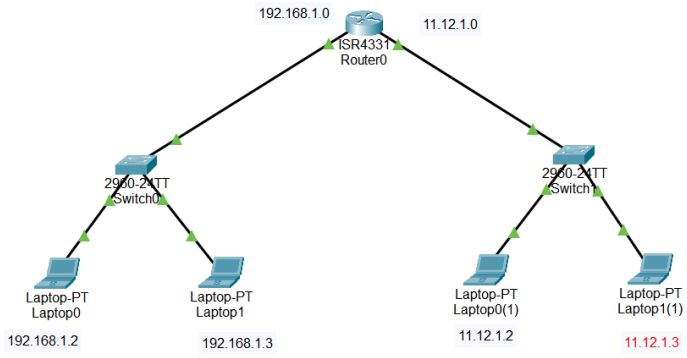

192.168.1.0
11.12.1.0
ISR4331
Router0
2960-24TT
Switch0
2960-24TT
Switch1
Laptop-PT
Laptop0
Laptop-PT
Laptop1
Laptop-PT
Laptop0(1)
Laptop-PT
Laptop1(1)
192.168.1.2
192.168.1.3
11.12.1.2
11.12.1.3

fig:3

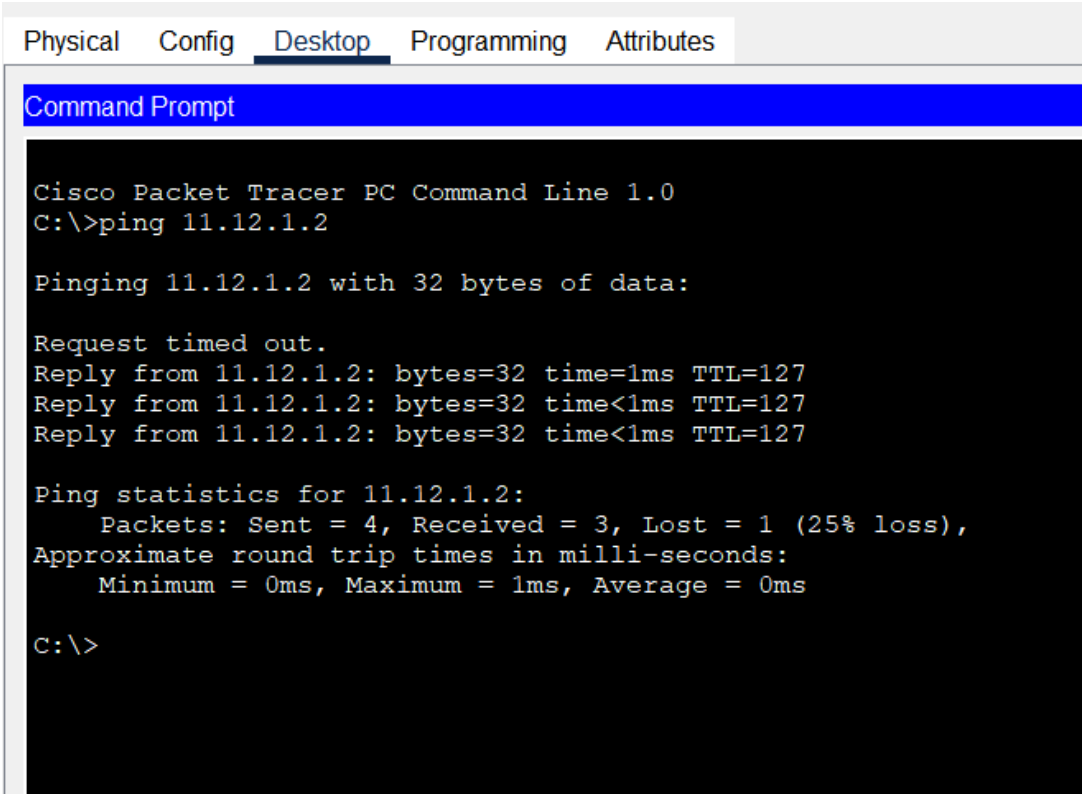

Physical
Config
Desktop
Programming
Attributes
Command Prompt
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 11.12.1.2
Pinging 11.12.1.2 with 32 bytes of data:
Request timed out.
Reply from 11.12.1.2: bytes=32 time=1ms TTL=127
Reply from 11.12.1.2: bytes=32 time<1ms TTL=127
Reply from 11.12.1.2: bytes=32 time<1ms TTL=127
Ping statistics for 11.12.1.2:
Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 1ms, Average = 0ms
C:\>

Fig:4

3.Configure DHCP on same Network

Steps

1. **Configure the DHCP Server:**
    - Click on the server (Server1).
    - Go to the "Config" tab.
    - Select the "DHCP" option from the left panel.
    - Enable the DHCP service by checking the "On" box.
    - Configure the DHCP pool:
        - **Pool Name**: Give it a name (e.g., "Pool1").
        - **Default Gateway**: Enter the IP address of the router or the switch's VLAN interface that acts as the gateway (e.g., 192.168.1.1).
        - **DNS Server**: If you have a DNS server, enter its IP address, otherwise, leave it blank.
        - **Start IP Address**: Enter the starting IP address for the DHCP pool (e.g., 192.168.1.10).
        - **Subnet Mask**: Enter the subnet mask (e.g., 255.255.255.0).
        - **Maximum Number of Users**: Set the number of IP addresses to allocate from the pool (e.g., 50).
    - Click "Add" to save the DHCP pool configuration.
    -
2. **Configure the PCs to Obtain IP Addresses Automatically:**
    - Click on each PC (PC0, PC1, PC2).
    - Go to the "Desktop" tab.
    - Click on "IP Configuration".
    - Select "DHCP" to enable the PC to obtain an IP address automatically from the DHCP server.

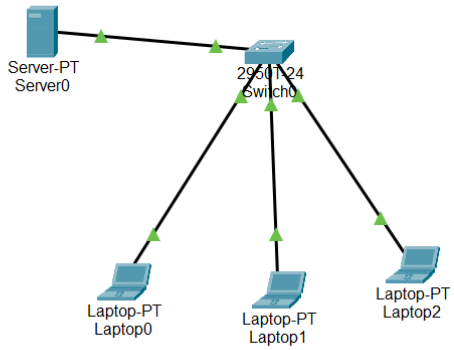


Fig:1

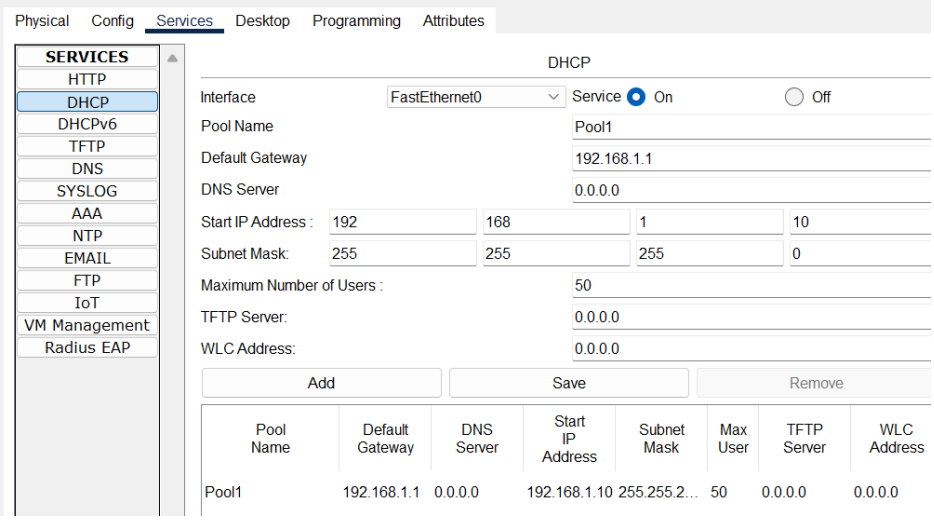

Physical
Config
Services
Desktop
Programming
Attributes
SERVICES
HTTP
DHCP
DHCPv6
TFTP
DNS
SYSLOG
AAA
NTP
EMAIL
FTP
IoT
VM Management
Radius EAP
DHCP
Interface
FastEthernet0
Service
On
Off
Pool Name
Pool1
Default Gateway
192.168.1.1
DNS Server
0.0.0.0
Start IP Address :
192
168
1
10
Subnet Mask:
255
255
255
0
Maximum Number of Users :
50
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
Pool1
192.168.1.1
0.0.0.0
192.168.1.10
255.255.2...
50
0.0.0.0
0.0.0.0

Fig:2

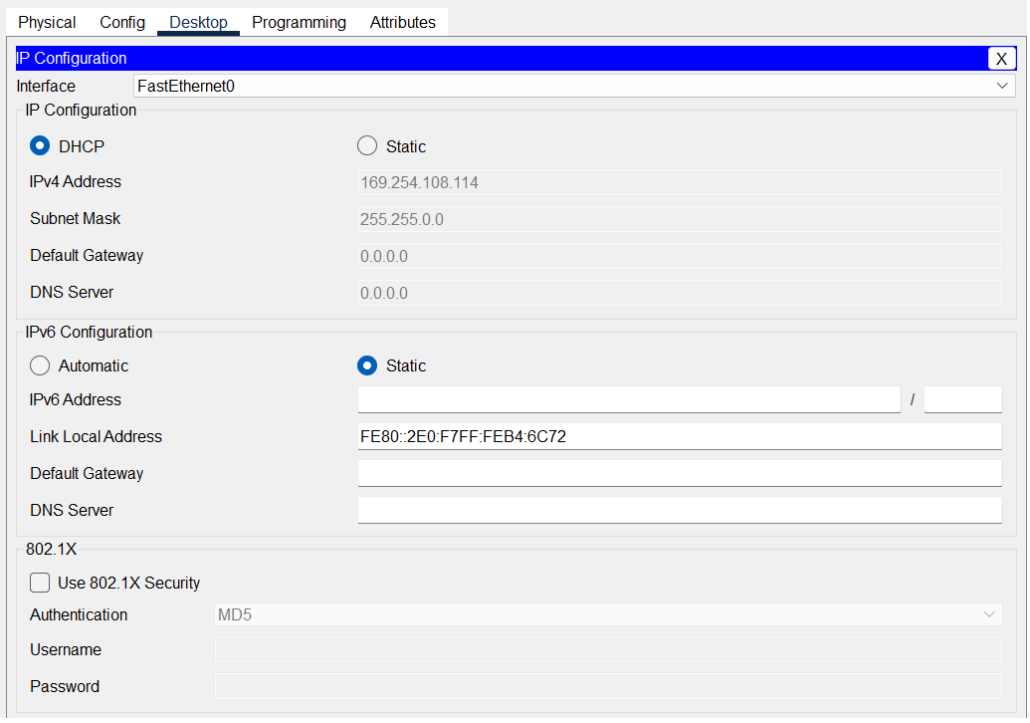

Physical
Config
Desktop
Programming
Attributes
IP Configuration
X
Interface
FastEthernet0
IP Configuration
DHCP
Static
IPv4 Address
169.254.108.114
Subnet Mask
255.255.0.0
Default Gateway
0.0.0.0
DNS Server
0.0.0.0
IPv6 Configuration
Automatic
Static
IPv6 Address
/
Link Local Address
FE80::2E0:F7FF:FEB4:6C72
Default Gateway
DNS Server
802.1X
Use 802.1X Security
Authentication
MD5
Username
Password

Fig:3

4) Configure DHCP on different Network

Step 1: Setting Up the Network

Open Cisco Packet Tracer and Create the Network Topology:

- Place the necessary devices on the workspace: a router, two or more switches, a server (for DHCP), and several PCs. Connect the devices appropriately using cables.

Step 2: Configuring the Router

Configure the Router Interfaces:

Router with two interfaces:

- GigabitEthernet0/0 (Subnet 1): 192.168.1.1/24
- GigabitEthernet0/1 (Subnet 2): 192.168.2.1/24

Step 3: Configuring the DHCP Server

Click on the server and go to the Desktop tab.

Click on IP Configuration

Static IP Configuration:

- IP Address: 192.168.1.2
- Subnet Mask: 255.255.255.0
- Default Gateway: 192.168.1.1

Go to Services tab and click on DHCP. Configure DHCP Pools for Each Subnet:

For Subnet 1:

- Pool Name: Subnet1
- Default Gateway: 192.168.1.1
- DNS Server: 8.8.8.8
- Starting IP Address: 192.168.1.10
- Subnet Mask: 255.255.255.0

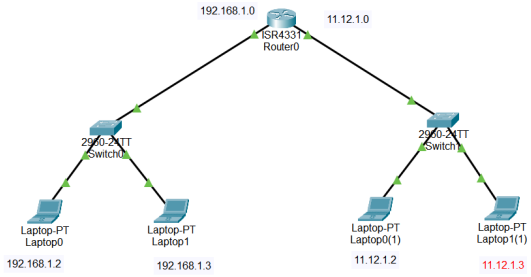
For Subnet 2:

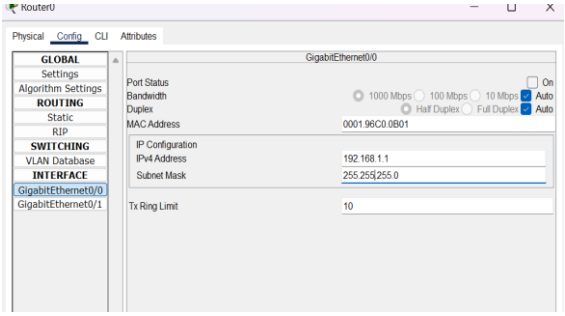
- Pool Name: Subnet2
- Default Gateway: 192.168.2.1
- DNS Server: 8.8.8.8
- Starting IP Address: 192.168.2.10
- Subnet Mask: 255.255.255.0

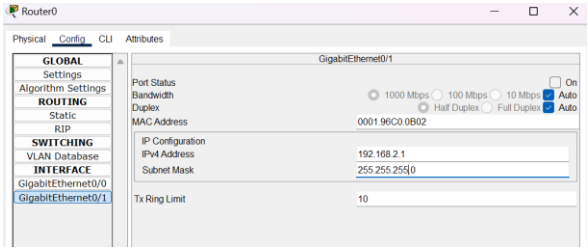
Step 4: Configuring the PCs

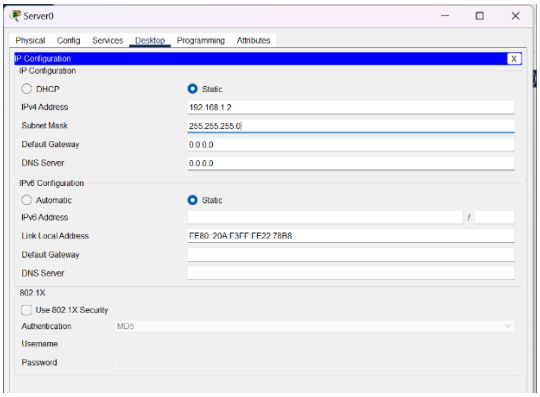
- Set Up the PCs to Obtain IP Addresses Automatically:
- Click on each PC and go to the Desktop tab.
- Click on IP Configuration.
- Select DHCP to automatically obtain an IP address.

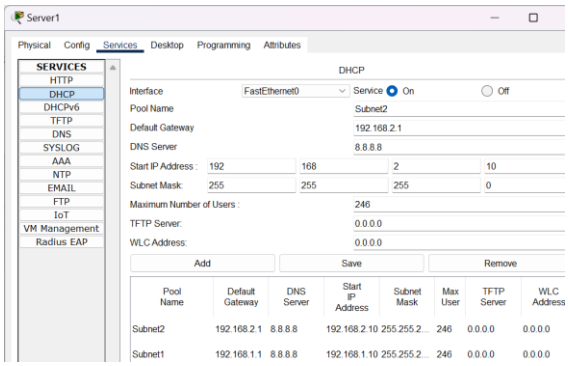
Screenshots of configuration is given below:

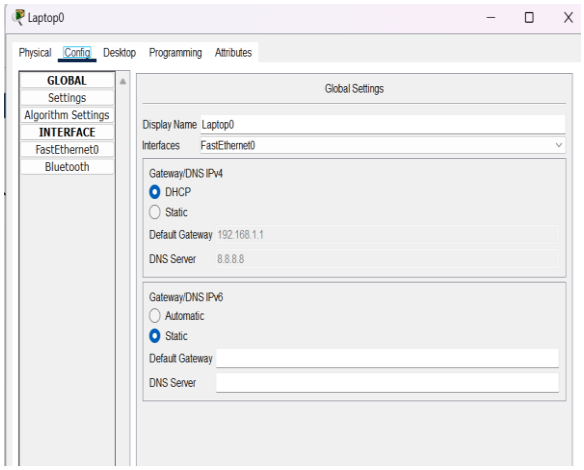

192.168.1.0
ISR4331
Router0
11.12.1.0
2960-24TT
Switch0
2960-24TT
Switch1
Laptop-PT
Laptop0
Laptop-PT
Laptop1
Laptop-PT
Laptop0(1)
Laptop-PT
Laptop1(1)
192.168.1.2
192.168.1.3
11.12.1.2
11.12.1.3


Router0
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
GigabitEthernet0/0
GigabitEthernet0/1
GigabitEthernet0/0
Port Status
On
Bandwidth
1000 Mbps
100 Mbps
10 Mbps
Auto
Duplex
Half Duplex
Full Duplex
Auto
MAC Address
0001.96C0.0B01
IP Configuration
IPv4 Address
192.168.1.1
Subnet Mask
255.255.255.0
Tx Ring Limit
10


Router0
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
GigabitEthernet0/0
GigabitEthernet0/1
GigabitEthernet0/1
Port Status
On
Bandwidth
1000 Mbps
100 Mbps
10 Mbps
Auto
Duplex
Half Duplex
Full Duplex
Auto
MAC Address
0001.96C0.0B02
IP Configuration
IPv4 Address
192.168.2.1
Subnet Mask
255.255.255.0
Tx Ring Limit
10


Server0
Physical
Config
Services
Desktop
Programming
Attributes
IP Configuration
IP Configuration
DHCP
Static
IPv4 Address
192.168.1.2
Subnet Mask
255.255.255.0
Default Gateway
0.0.0.0
DNS Server
0.0.0.0
IPv6 Configuration
Automatic
Static
IPv6 Address
Link Local Address
FE80::20A:F3FF:FE22:78B8
Default Gateway
DNS Server
802.1X
Use 802.1X Security
Authentication
MD5
Username
Password


Server1
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
Subnet2
Default Gateway
192.168.2.1
DNS Server
8.8.8.8
Start IP Address :
192
168
2
10
Subnet Mask:
255
255
255
0
Maximum Number of Users :
246
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
Subnet2
192.168.2.1
8.8.8.8
192.168.2.10
255.255.2...
246
0.0.0.0
0.0.0.0
Subnet1
192.168.1.1
8.8.8.8
192.168.1.10
255.255.2...
246
0.0.0.0
0.0.0.0


Laptop0
Physical
Config
Desktop
Programming
Attributes
GLOBAL
Settings
Algorithm Settings
INTERFACE
FastEthernet0
Bluetooth
Global Settings
Display Name
Laptop0
Interfaces
FastEthernet0
Gateway/DNS IPv4
DHCP
Static
Default Gateway
192.168.1.1
DNS Server
8.8.8.8
Gateway/DNS IPv6
Automatic
Static
Default Gateway
DNS Server