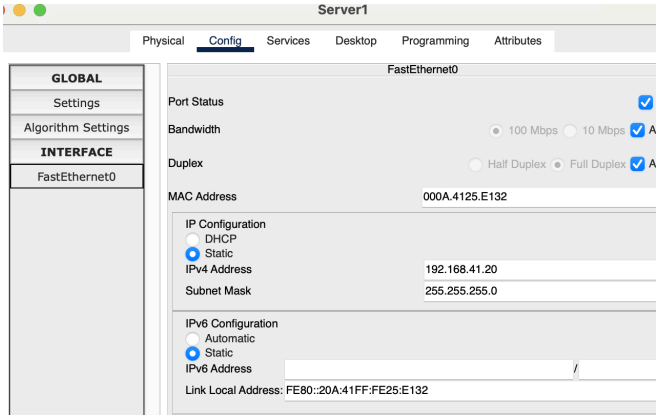
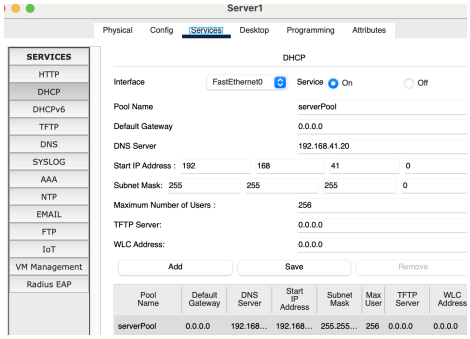
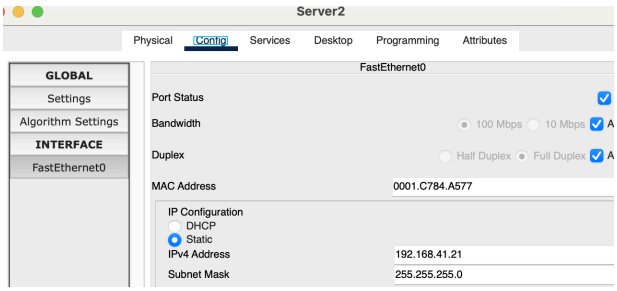
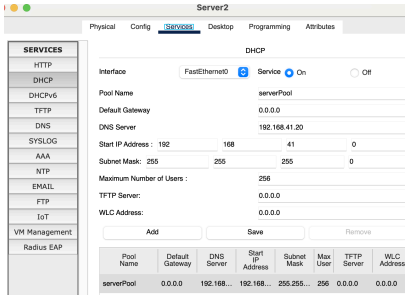
Lab Exercises

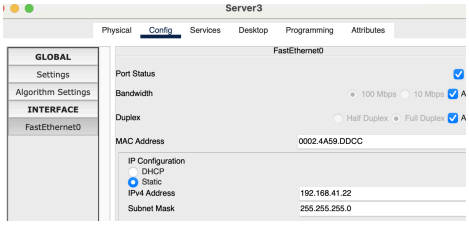
1. Create the following network with DHCP server. Send DNS packets in your network

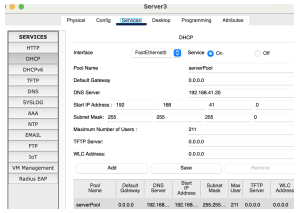


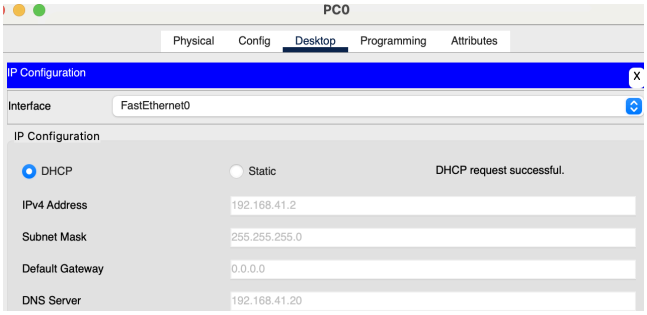


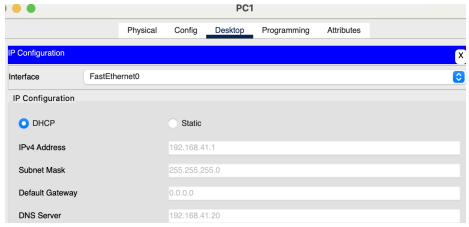


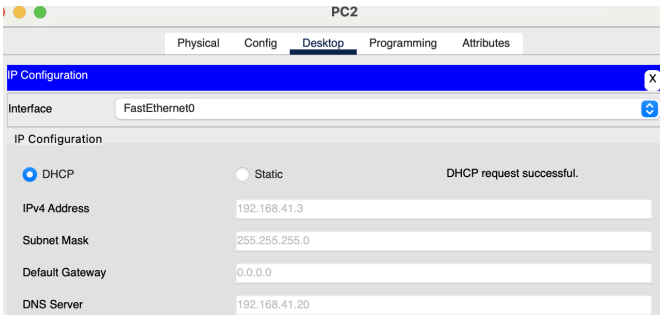


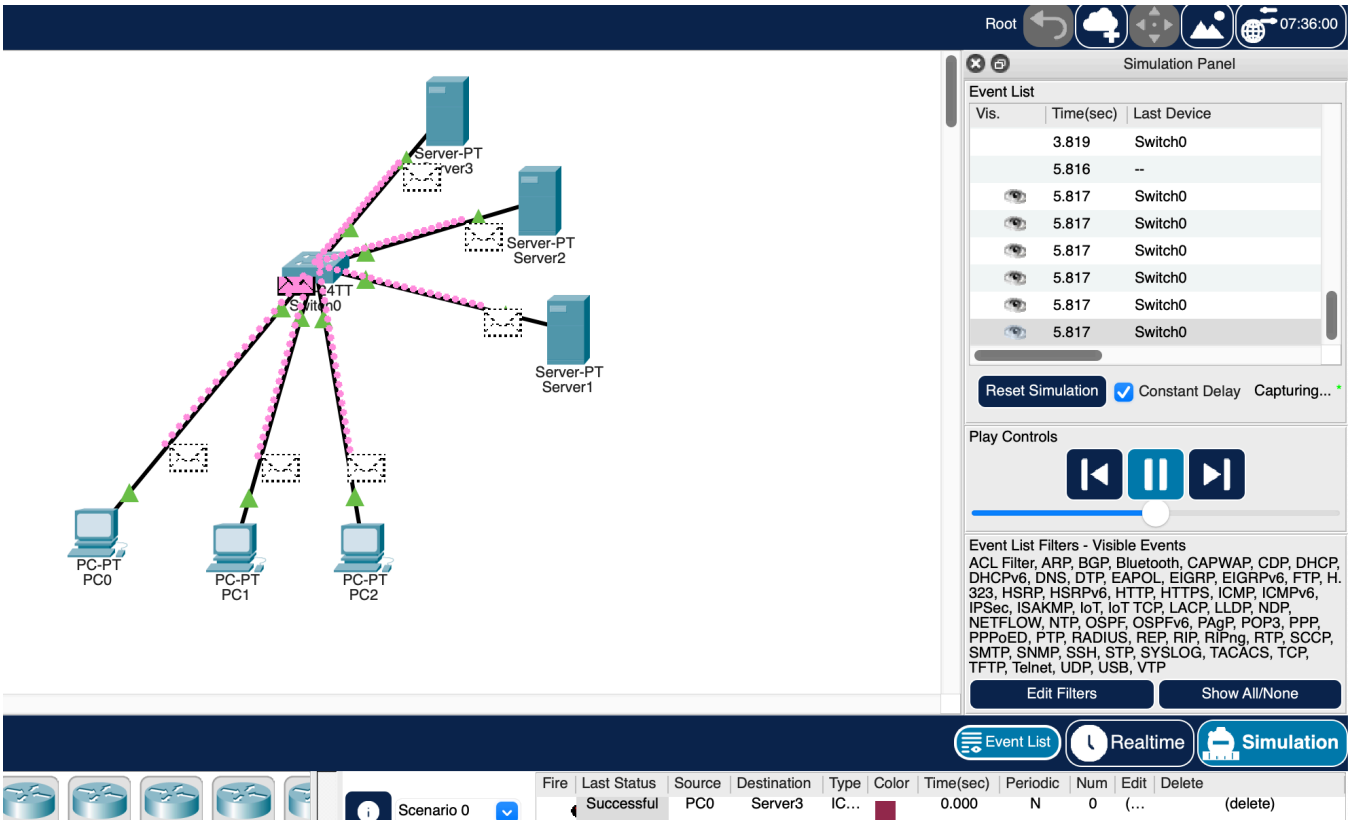




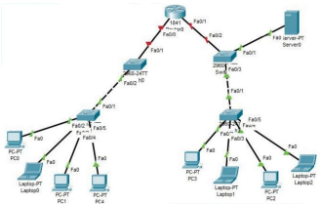


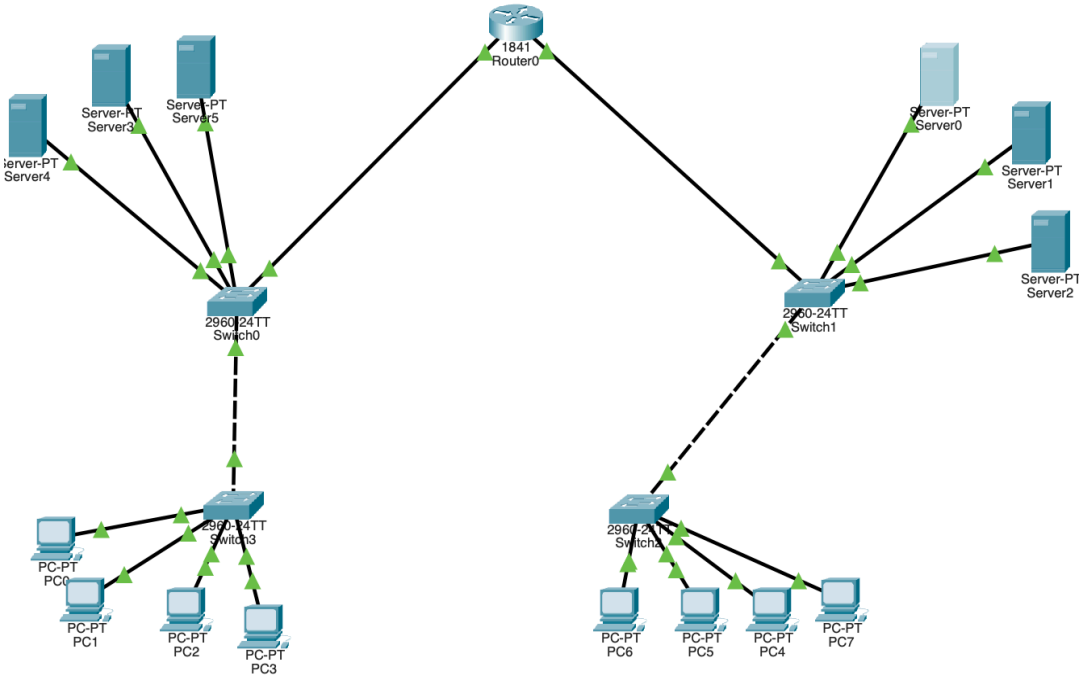


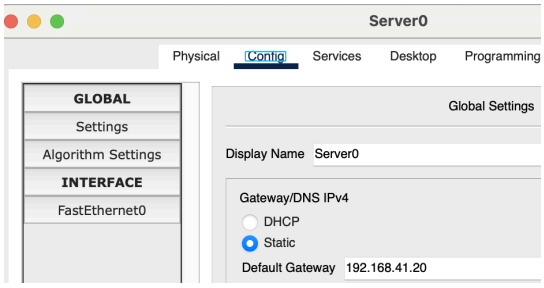

PC2
Physical
Config
Desktop
Programming
Attributes
IP Configuration
Interface
FastEthernet0
IP Configuration
DHCP
Static
DHCP request successful.
IPv4 Address
192.168.41.3
Subnet Mask
255.255.255.0
Default Gateway
0.0.0.0
DNS Server
192.168.41.20

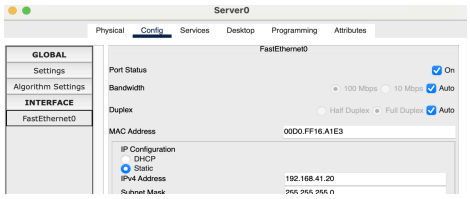

Root
07:36:00
Server-PT
Server3
Server-PT
Server2
Server-PT
Server1
PC-PT
PC0
PC-PT
PC1
PC-PT
PC2
Simulation Panel
Event List
Vis.
Time(sec)
Last Device
3.819 Switch0
5.816 --
5.817 Switch0
5.817 Switch0
5.817 Switch0
5.817 Switch0
5.817 Switch0
5.817 Switch0
Reset Simulation
Constant Delay
Capturing...
Play Controls
Event List Filters - Visible Events
ACL Filter, ARP, BGP, Bluetooth, CAPWAP, CDP, DHCP, DHCPv6, DNS, DTP, EAPOL, EIGRP, EIGRPv6, FTP, H.323, HSRP, HSRPv6, HTTP, HTTPS, ICMP, ICMPv6, IPSec, ISAKMP, IoT, IoT TCP, LACP, LLDP, NDP, NETFLOW, NTP, OSPF, OSPFv6, PAgP, POP3, PPP, PPPoED, PTP, RADIUS, REP, RIP, RIPng, RTP, SCCP, SMTP, SNMP, SSH, STP, SYSLOG, TACACS, TCP, TFTP, Telnet, UDP, USB, VTP
Edit Filters
Show All/None
Event List
Realtime
Simulation
Scenario 0
Fire
Last Status
Source
Destination
Type
Color
Time(sec)
Periodic
Num
Edit
Delete
Successful
PC0
Server3
IC...
0.000
N
0
(...
(delete)

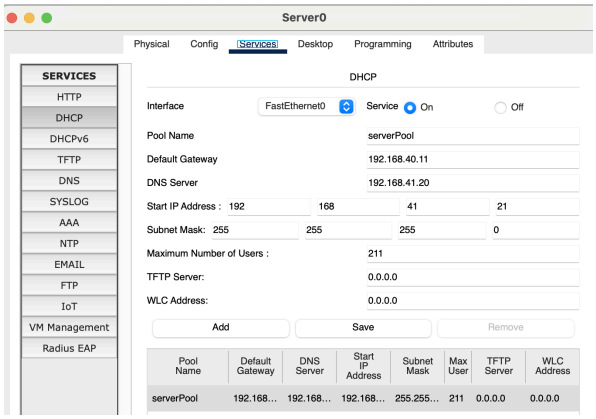
2. Implement the given topology. Add some web servers in your network. Implement DNS & add records of your web servers.

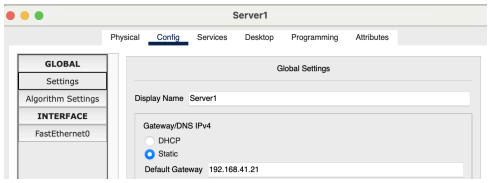


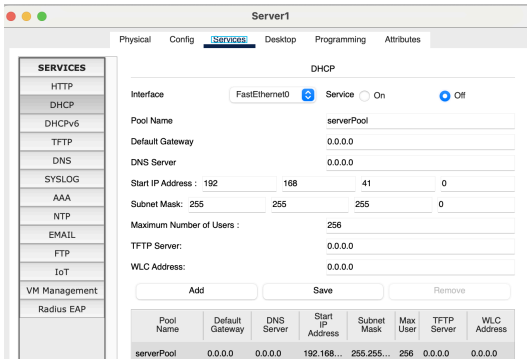


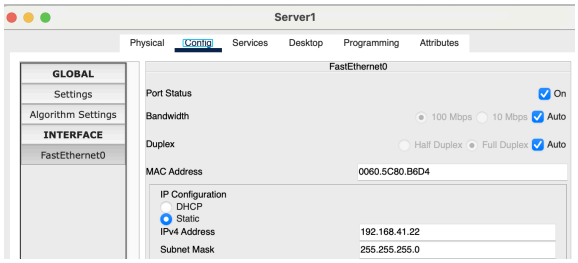


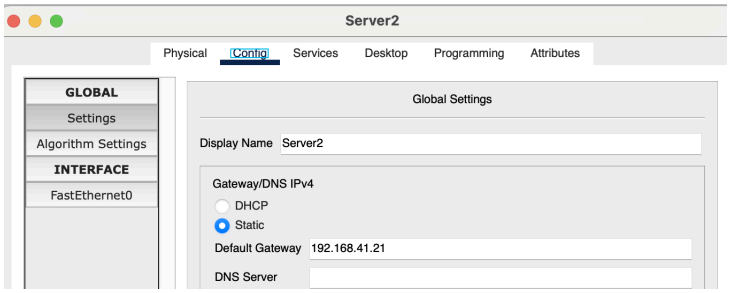


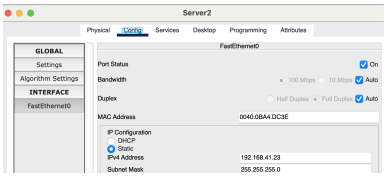

Server0
Physical
Config
Services
Desktop
Programming
Attributes
SERVICES
HTTP
DHCP
DHCPv6
TFTP
DNS
SYSLOG
AAA
NTP
EMAIL
FTP
IoT
VM Management
Radius EAP
DHCP
Interface
FastEthernet0
Service
On
Off
Pool Name
serverPool
Default Gateway
192.168.40.11
DNS Server
192.168.41.20
Start IP Address :
192
168
41
21
Subnet Mask:
255
255
255
0
Maximum Number of Users :
211
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
serverPool
192.168...
192.168...
192.168...
255.255...
211
0.0.0.0
0.0.0.0

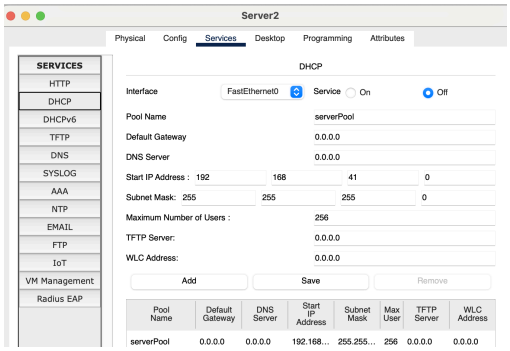

Server1
Physical
Config
Services
Desktop
Programming
Attributes
GLOBAL
Settings
Algorithm Settings
INTERFACE
FastEthernet0
Global Settings
Display Name
Server1
Gateway/DNS IPv4
DHCP
Static
Default Gateway
192.168.41.21

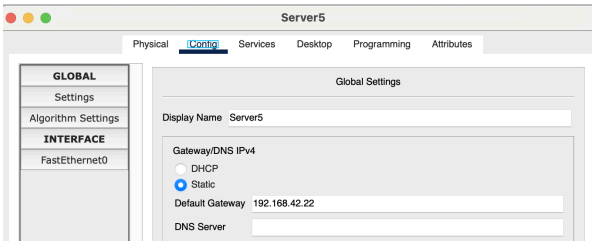

Server1
Physical
Config
Services
Desktop
Programming
Attributes
SERVICES
HTTP
DHCP
DHCPv6
TFTP
DNS
SYSLOG
AAA
NTP
EMAIL
FTP
IoT
VM Management
Radius EAP
DHCP
Interface
FastEthernet0
Service
On
Off
Pool Name
serverPool
Default Gateway
0.0.0.0
DNS Server
0.0.0.0
Start IP Address :
192
168
41
0
Subnet Mask:
255
255
255
0
Maximum Number of Users :
256
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
serverPool
0.0.0.0
0.0.0.0
192.168...
255.255...
256
0.0.0.0
0.0.0.0

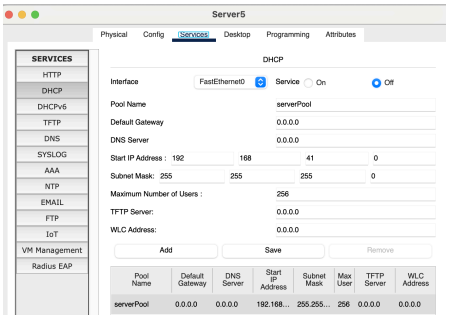

Server1
Physical
Config
Services
Desktop
Programming
Attributes
GLOBAL
Settings
Algorithm Settings
INTERFACE
FastEthernet0
FastEthernet0
Port Status
On
Bandwidth
100 Mbps
10 Mbps
Auto
Duplex
Half Duplex
Full Duplex
Auto
MAC Address
0060.5C80.B6D4
IP Configuration
DHCP
Static
IPv4 Address
192.168.41.22
Subnet Mask
255.255.255.0

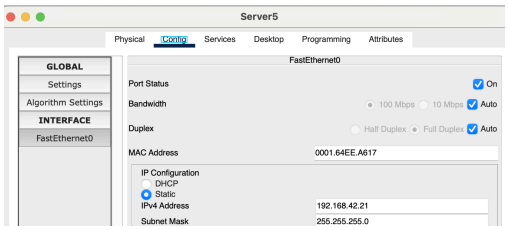

Server2
Physical
Config
Services
Desktop
Programming
Attributes
GLOBAL
Settings
Algorithm Settings
INTERFACE
FastEthernet0
Global Settings
Display Name
Server2
Gateway/DNS IPv4
DHCP
Static
Default Gateway
192.168.41.21
DNS Server

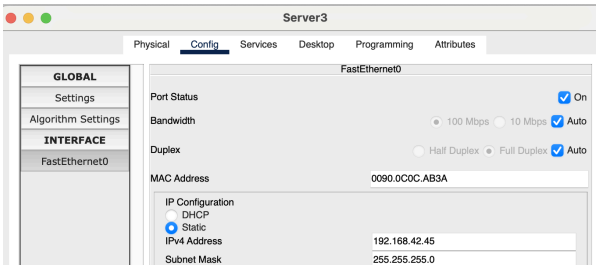

Server2
Physical
Config
Services
Desktop
Programming
Attributes
GLOBAL
Settings
Algorithm Settings
INTERFACE
FastEthernet0
FastEthernet0
Port Status
On
Bandwidth
Auto
Duplex
Auto
MAC Address
0040.0BA4.DC3E
IP Configuration
DHCP
Static
IPv4 Address
192.168.41.23
Subnet Mask
255.255.255.0

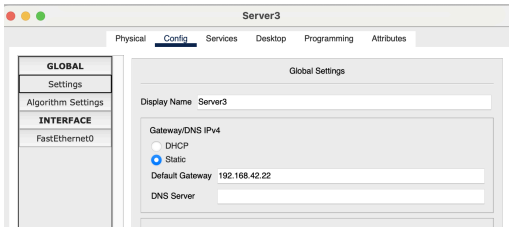

Server2
Physical
Config
Services
Desktop
Programming
Attributes
SERVICES
HTTP
DHCP
DHCPv6
TFTP
DNS
SYSLOG
AAA
NTP
EMAIL
FTP
IoT
VM Management
Radius EAP
DHCP
Interface
FastEthernet0
Service
On
Off
Pool Name
serverPool
Default Gateway
0.0.0.0
DNS Server
0.0.0.0
Start IP Address :
192
168
41
0
Subnet Mask:
255
255
255
0
Maximum Number of Users :
256
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
serverPool
0.0.0.0
0.0.0.0
192.168...
255.255...
256
0.0.0.0
0.0.0.0

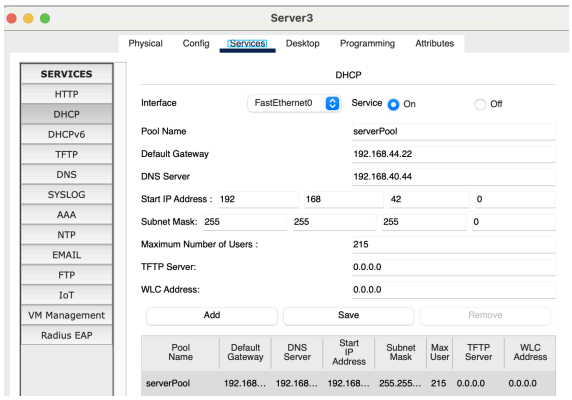

Server5
Physical
Config
Services
Desktop
Programming
Attributes
GLOBAL
Settings
Algorithm Settings
INTERFACE
FastEthernet0
Global Settings
Display Name
Server5
Gateway/DNS IPv4
DHCP
Static
Default Gateway
192.168.42.22
DNS Server

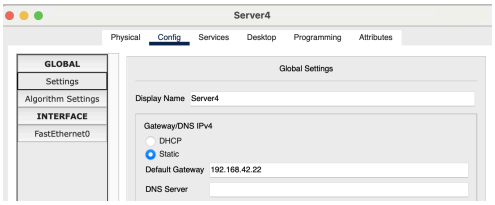

Server5
Physical Config Services Desktop Programming Attributes
SERVICES
HTTP
DHCP
DHCPv6
TFTP
DNS
SYSLOG
AAA
NTP
EMAIL
FTP
IoT
VM Management
Radius EAP
DHCP
Interface FastEthernet0 Service On Off
Pool Name serverPool
Default Gateway 0.0.0.0
DNS Server 0.0.0.0
Start IP Address : 192 168 41 0
Subnet Mask: 255 255 255 0
Maximum Number of Users : 256
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
serverPool | 0.0.0.0 | 0.0.0.0 | 192.168... | 255.255... | 256 | 0.0.0.0 | 0.0.0.0

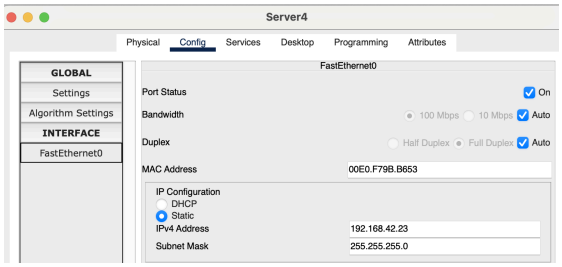

Server5
Physical Config Services Desktop Programming Attributes
GLOBAL
Settings
Algorithm Settings
INTERFACE
FastEthernet0
FastEthernet0
Port Status On
Bandwidth 100 Mbps 10 Mbps Auto
Duplex Half Duplex Full Duplex Auto
MAC Address 0001.64EE.A617
IP Configuration
DHCP
Static
IPv4 Address 192.168.42.21
Subnet Mask 255.255.255.0

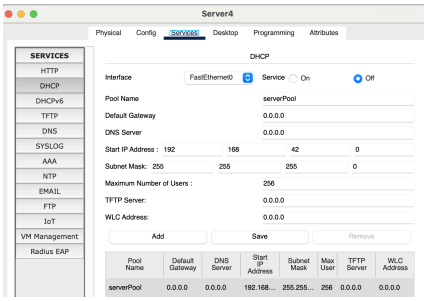

Server3
Physical Config Services Desktop Programming Attributes
GLOBAL
Settings
Algorithm Settings
INTERFACE
FastEthernet0
FastEthernet0
Port Status On
Bandwidth 100 Mbps 10 Mbps Auto
Duplex Half Duplex Full Duplex Auto
MAC Address 0090.0C0C.AB3A
IP Configuration
DHCP
Static
IPv4 Address 192.168.42.45
Subnet Mask 255.255.255.0

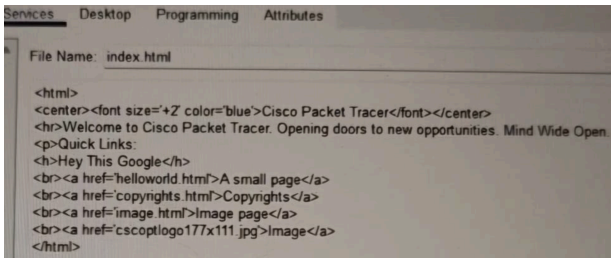

Server3
Physical Config Services Desktop Programming Attributes
GLOBAL
Settings
Algorithm Settings
INTERFACE
FastEthernet0
Global Settings
Display Name Server3
Gateway/DNS IPv4
DHCP
Static
Default Gateway 192.168.42.22
DNS Server


Server3
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 192.168.44.22
DNS Server 192.168.40.44
Start IP Address : 192 168 42 0
Subnet Mask: 255 255 255 0
Maximum Number of Users : 215
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
serverPool | 192.168... | 192.168... | 192.168... | 255.255... | 215 | 0.0.0.0 | 0.0.0.0


Server4
Physical Config Services Desktop Programming Attributes
GLOBAL
Settings
Algorithm Settings
INTERFACE
FastEthernet0
Global Settings
Display Name Server4
Gateway/DNS IPv4
DHCP
Static
Default Gateway 192.168.42.22
DNS Server


Server4
Physical Config Services Desktop Programming Attributes
GLOBAL
Settings
Algorithm Settings
INTERFACE
FastEthernet0
FastEthernet0
Port Status On
Bandwidth 100 Mbps 10 Mbps Auto
Duplex Half Duplex Full Duplex Auto
MAC Address 00E0.F79B.B653
IP Configuration
DHCP
Static
IPv4 Address 192.168.42.23
Subnet Mask 255.255.255.0


Server4
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 0.0.0.0
DNS Server 0.0.0.0
Start IP Address : 192 168 42 0
Subnet Mask: 255 255 255 0
Maximum Number of Users : 256
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
serverPool | 0.0.0.0 | 0.0.0.0 | 192.168... | 255.255... | 256 | 0.0.0.0 | 0.0.0.0

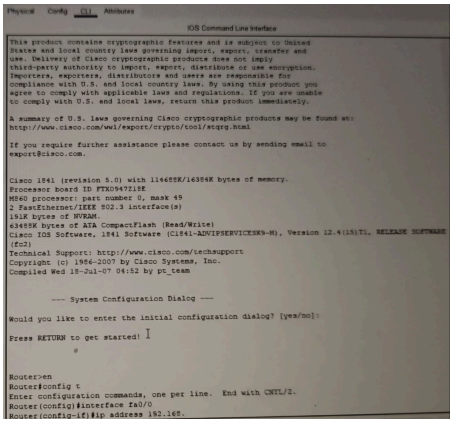

Services
Desktop
Programming
Attributes
File Name: index.html
<html>
Cisco Packet Tracer
<hr>Welcome to Cisco Packet Tracer. Opening doors to new opportunities. Mind Wide Open.
<p>Quick Links:
<h>Hey This Google</h>

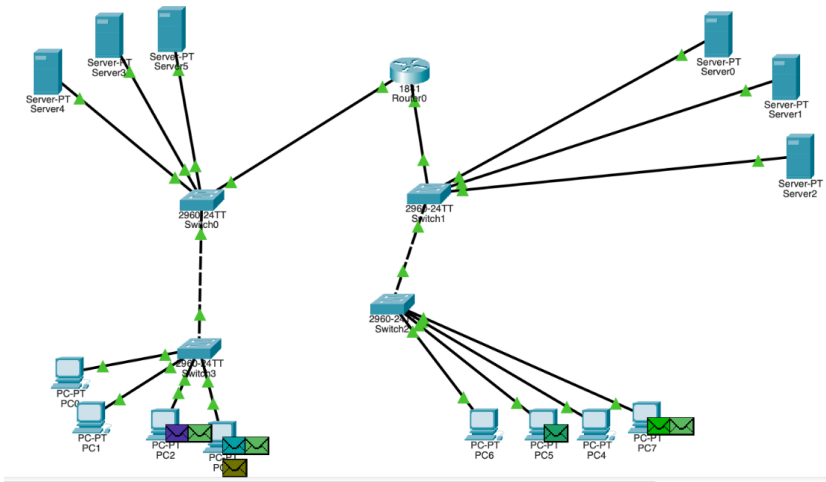
A small page

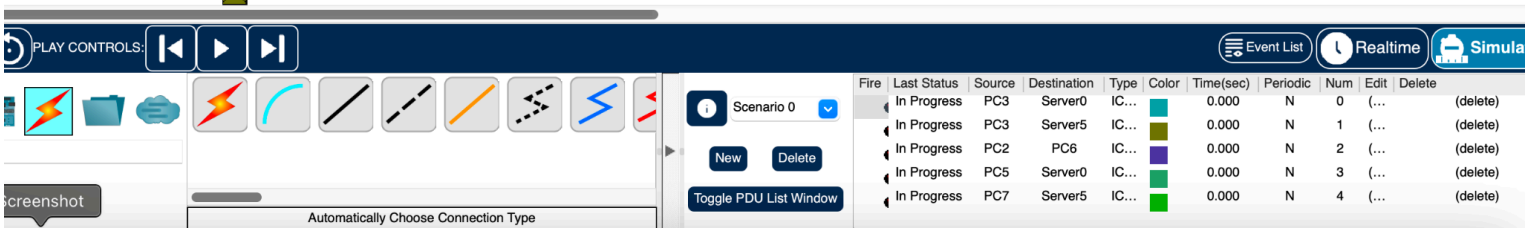
Copyrights

Image page

Image
</html>


IOS Command Line Interface
Cisco 1841 (revision 5.0) with 114688K/16384K bytes of memory.
Press RETURN to get started!
Router>en
Router#config t
Router(config)#interface fa0/0


Server-PT Server4
Server-PT Server3
Server-PT Server5
1841 Router0
Server-PT Server0
Server-PT Server1
Server-PT Server2
2960-24TT Switch0
2960-24TT Switch1
2960-24TT Switch2
2960-24TT Switch3
PC-PT PC0
PC-PT PC1
PC-PT PC2
PC-PT PC3
PC-PT PC6
PC-PT PC5
PC-PT PC4
PC-PT PC7


PLAY CONTROLS:
Event List
Realtime
Simula
Scenario 0
New
Delete
Toggle PDU List Window
Automatically Choose Connection Type
Fire | Last Status | Source | Destination | Type | Color | Time(sec) | Periodic | Num | Edit | Delete
In Progress | PC3 | Server0 | IC... | 0.000 | N | 0 | (...) | (delete)
In Progress | PC3 | Server5 | IC... | 0.000 | N | 1 | (...) | (delete)
In Progress | PC2 | PC6 | IC... | 0.000 | N | 2 | (...) | (delete)
In Progress | PC5 | Server0 | IC... | 0.000 | N | 3 | (...) | (delete)
In Progress | PC7 | Server5 | IC... | 0.000 | N | 4 | (...) | (delete)

3. In caching, what is the difference between the age header and expires?

- **Age Header**: Indicates the time in seconds since the resource was fetched from the origin server (used by caches to determine freshness).
- **Expires Header**: Specifies an absolute date/time after which the resource is considered stale.

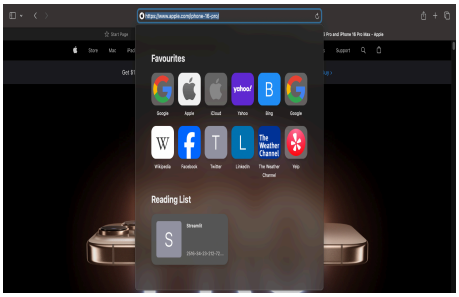
4. What are the four groupings of HTTP headers?

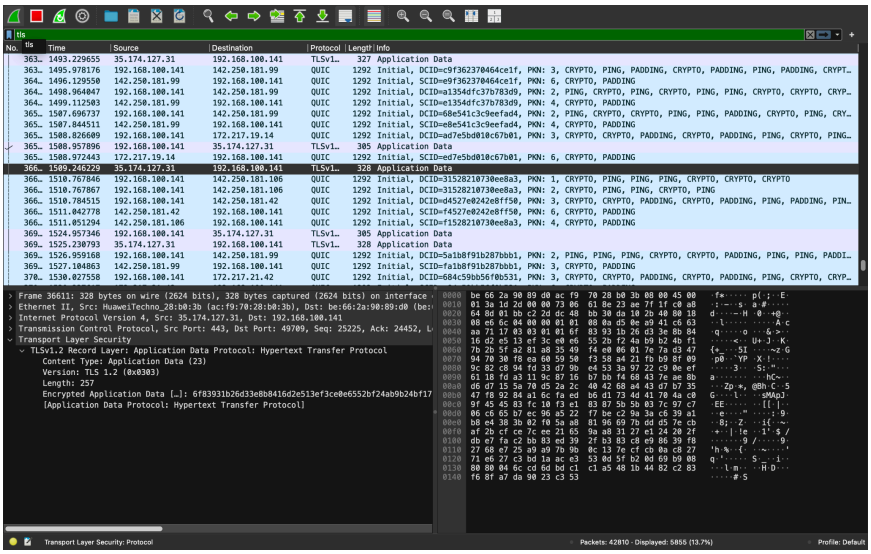
1. **General**: Apply to both requests and responses (e.g., Date, Cache-Control).
2. **Request**: Sent by the client (e.g., User-Agent, Accept).
3. **Response**: Sent by the server (e.g., Server, Content-Type).
4. **Entity**: Describe the content of the resource (e.g., Content-Length, Last-Modified).

Wireshark Lab Exercise

1. Follow the above step for HTTPS. Take Snapshot of each Step, and Submit in docx file/pdf with one line answer, what you understand here?

Explanation: HTTPS uses TLS/SSL encryption (port 443) to secure data between client and server.





2. Observe the difference between HTTP and HTTPS and answer in one line with proper snapshots?

- **HTTP**: Unencrypted (port 80), visible plaintext data.i.e Form item: "uname" = "test", Form item: "pass" = "test"
- **HTTPS**: Encrypted (port 443), uses TLS/SSL for security.