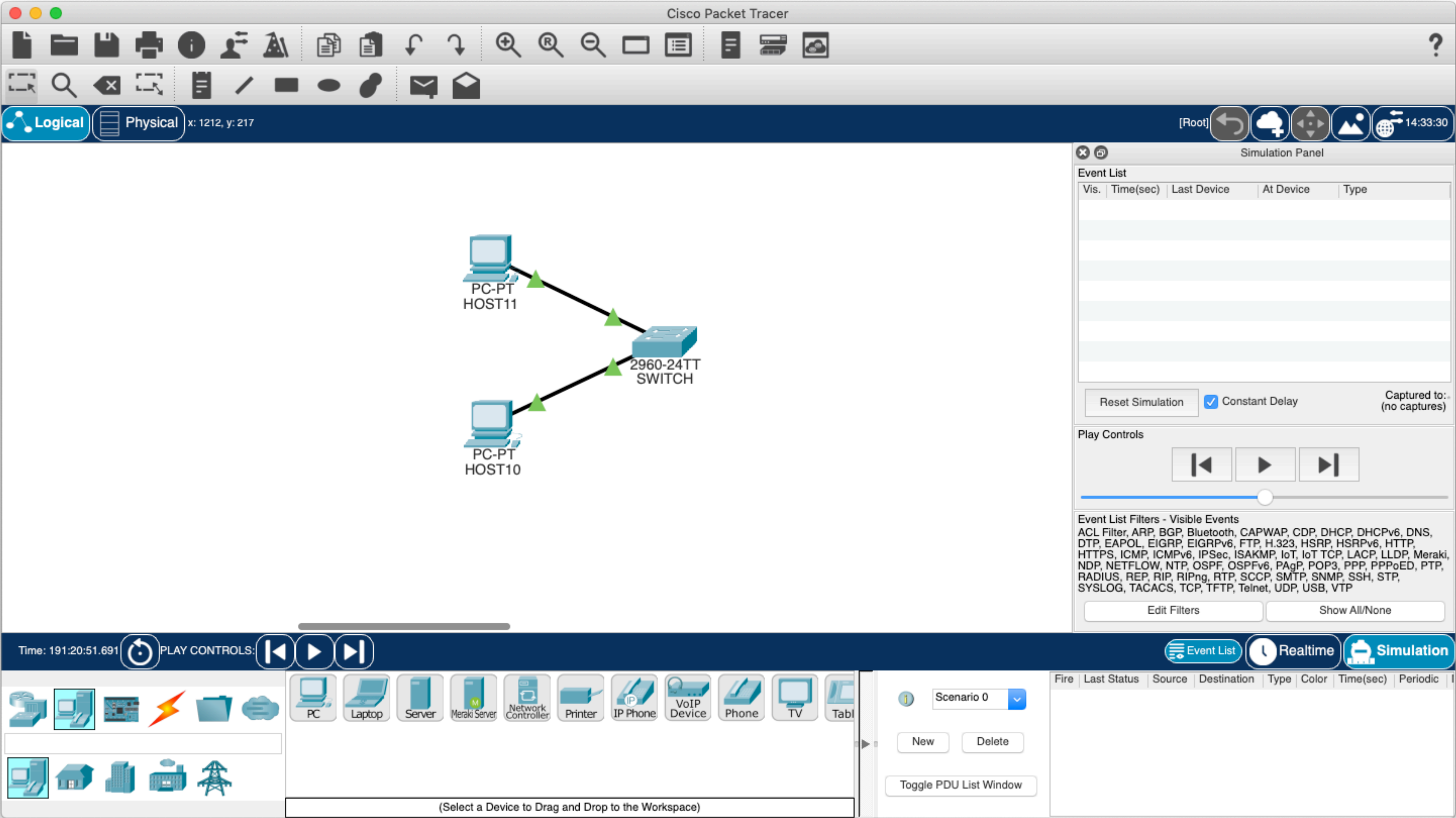


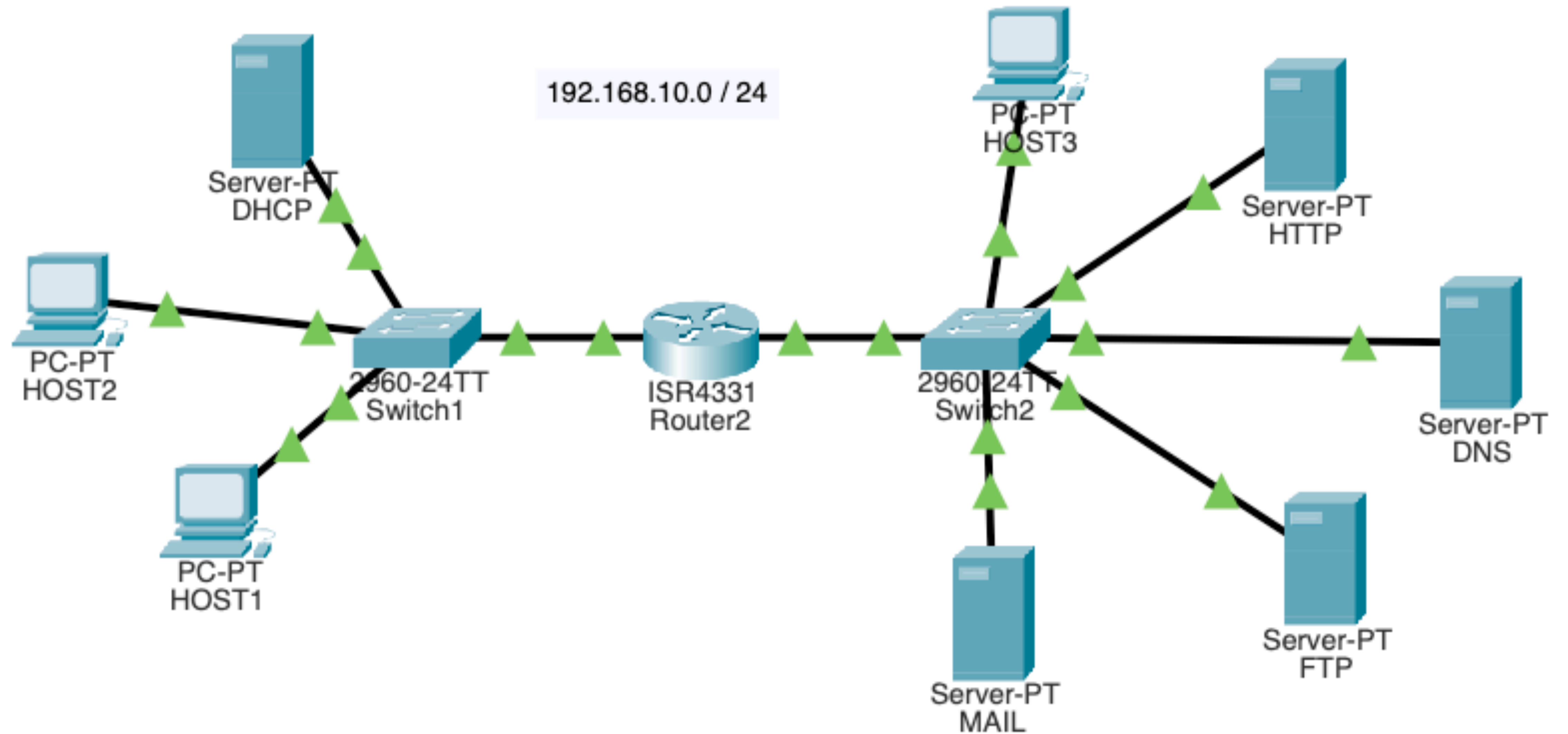
# Computer Networks

## week 12. Enterprise network.

**Packet Tracer** is a cross-platform visual simulation tool that allows users to create network topologies and imitate modern computer networks.

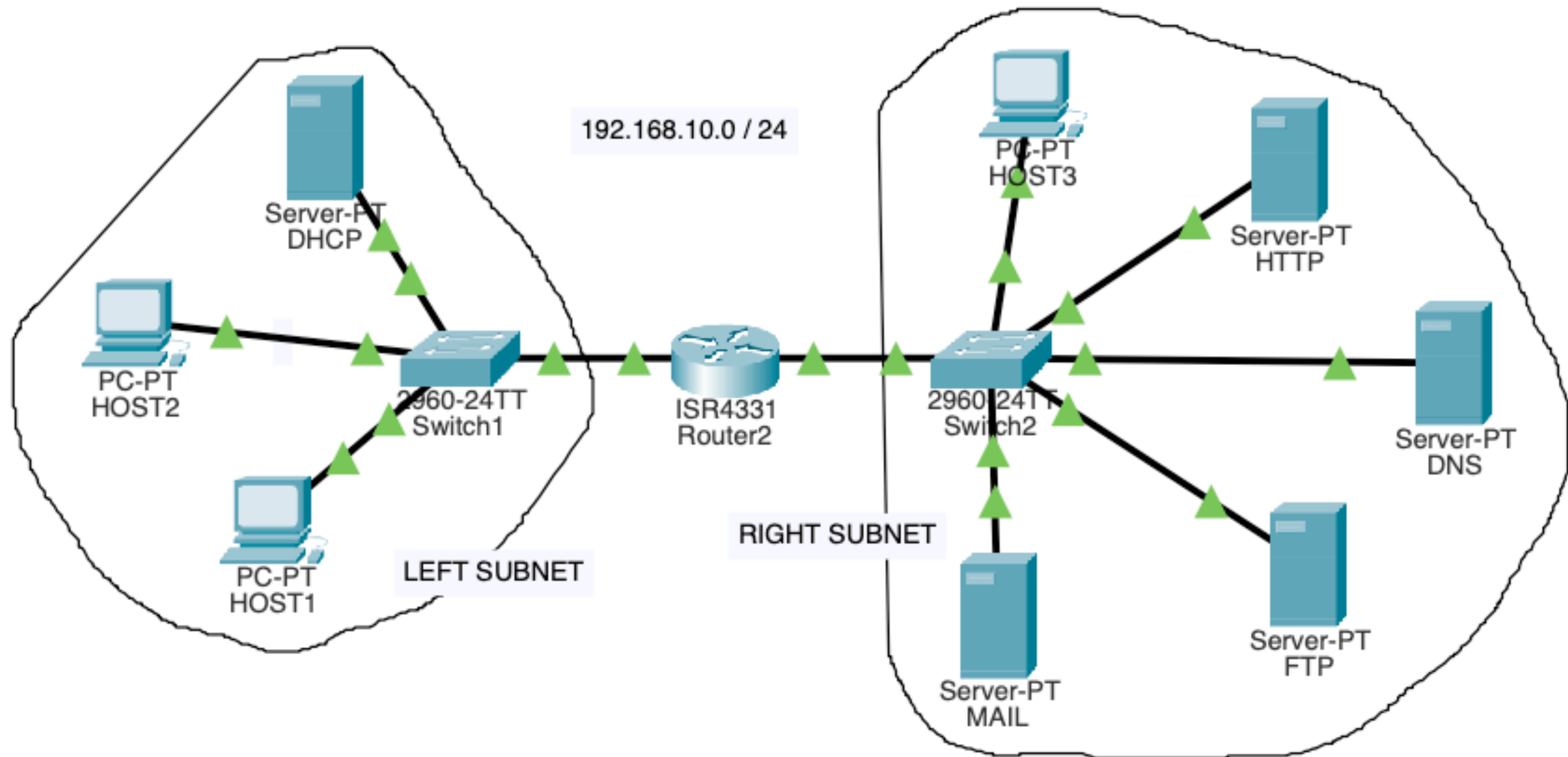


# Design an architecture



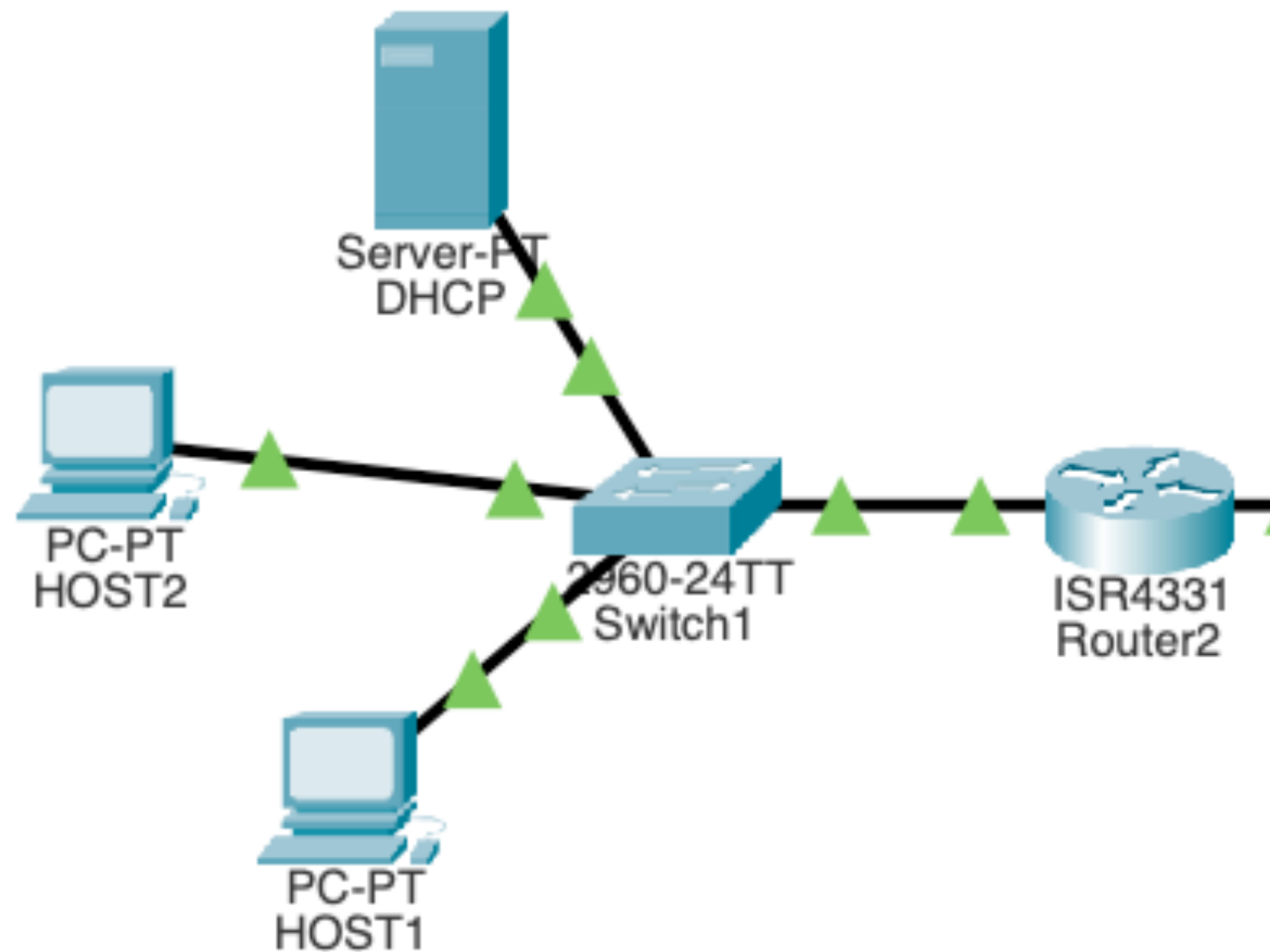
## TASK 1. Divide network into 2 subnets: LEFT and RIGHT

Select a suitable subnet mask, calculate subnet addresses, ip addresses range inside each subnet





## TASK 2. Configure the LEFT subnet



1. Add Router ISR 4331. Router will join LEFT and RIGHT subnets. Assign IP address and subnet mask.
2. Add Switch 2960.
3. Add server and Configure DHCP protocol.
4. Add PC hosts. Assign IP addresses using DHCP server.

# TASK 3. Configure DHCP server

- 1. Default Gateway
- 2. DNS Server
- 3. Start IP Address
- 4. Subnet Mask
- 5. Maximum Number of Users

example



SERVICES

HTTP

**DHCP**

DHCPv6

TFTP

DNS

SYSLOG

AAA

NTP

EMAIL

FTP

IoT

VM Management

Radius EAP

Physical

Config

**Services**

Desktop

Programming

Attributes

DHCP

Interface

FastEthernet0

Service

On

Off

Pool Name

serverPool

Default Gateway

192.168.10.129

DNS Server

192.168.10.2

Start IP Address :

192

168

10

200

Subnet Mask:

255

255

255

128

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
serverPool	192.168...	192.168...	192.168...	255.255...	50	0.0.0.0	0.0.0.0

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## TASK 4. Configure the Router

1. The first interface must 'belong' to the left subnet
2. The second interface must 'belong' to the right subnet

example

Router2

Physical **Config** CLI Attributes

GigabitEthernet0/0/0

Port Status ☒ On

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

Duplex ☐ Half Duplex ☒ Full Duplex ☒ Auto

MAC Address 000D.BD5B.3201

IP Configuration

IPv4 Address 192.168.10.129

Subnet Mask 255.255.255.128

Tx Ring Limit 10

Equivalent IOS Commands

```
Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface GigabitEthernet0/0/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/0/1
Router(config-if)#
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/0/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/0/0
Router(config-if)#
```

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## TASK 5. Check connections

1. Send ICMP request from server to gateway;
2. Send ICMP request from clients to DHCP server;
3. Send ICMP request from clients to gateway;

```
C:\>ping 192.168.10.201
```

```
Pinging 192.168.10.201 with 32 bytes of data:
```

```
Reply from 192.168.10.201: bytes=32 time=8ms TTL=128
```

```
Reply from 192.168.10.201: bytes=32 time=4ms TTL=128
```

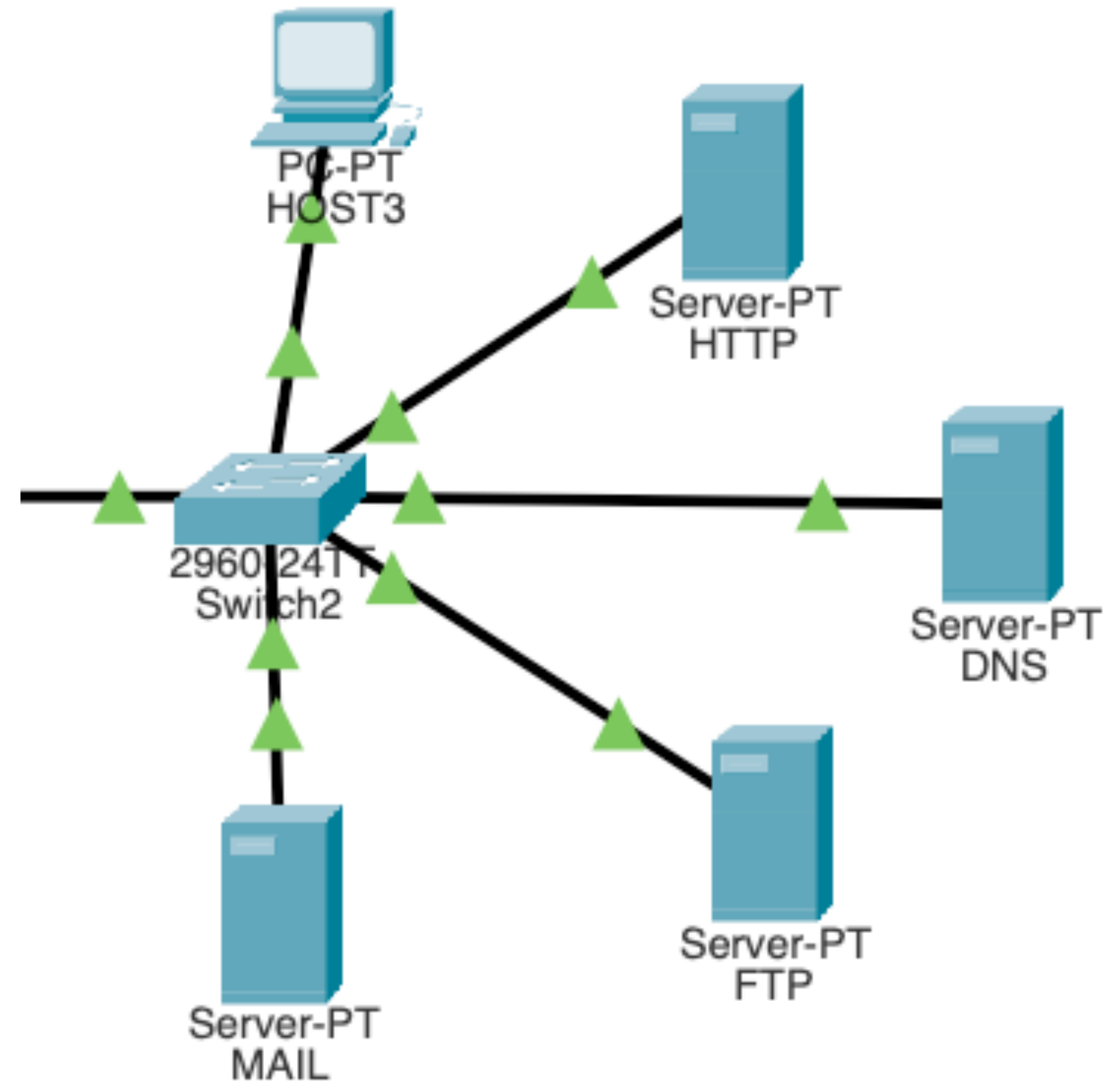
```
Reply from 192.168.10.201: bytes=32 time=4ms TTL=128
```

```
Reply from 192.168.10.201: bytes=32 time=3ms TTL=128
```



## TASK 6. Configure the RIGHT subnet

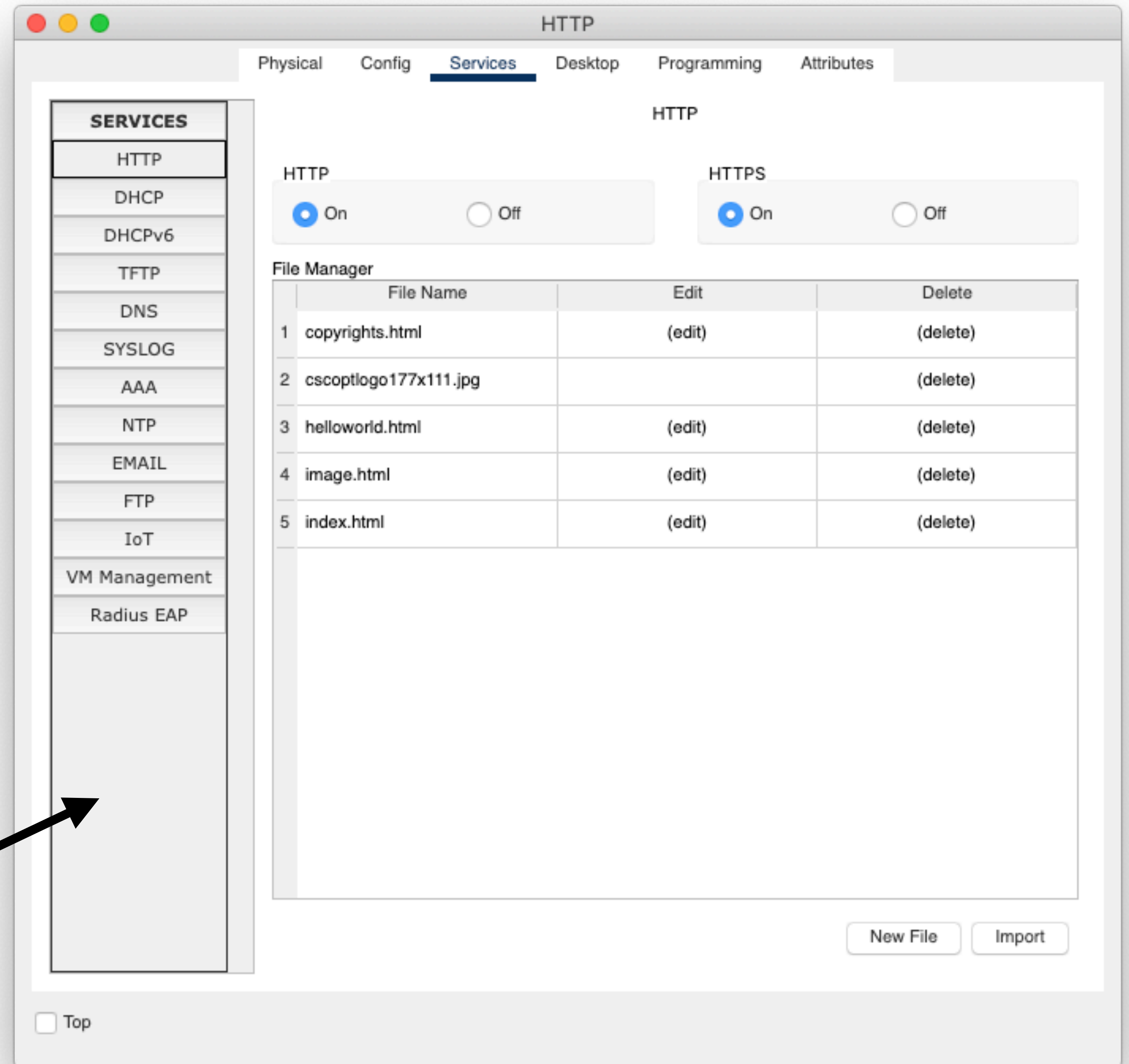
1. Add Switch 2960.
2. Add PC HOST 3. Assign IP address, mask, default gateway and default DNS.
3. Configure HTTP server.
4. Configure DNS server.
5. Configure FTP server.
6. Configure MAIL server



## TASK 7. Configure HTTP server

1. Edit index.html file. Put some information there
2. Create new .html file and include the link into index.html

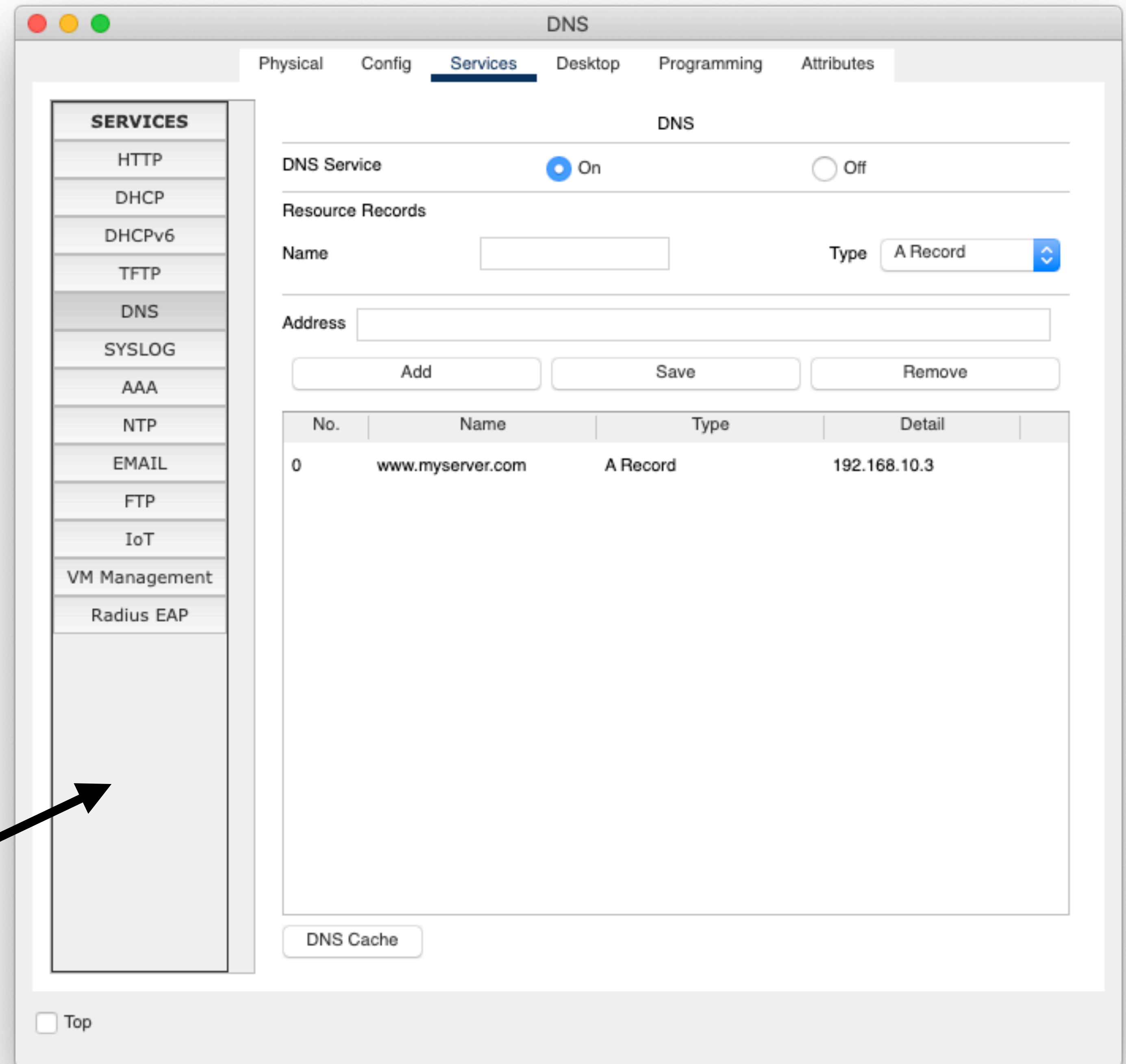
example



## TASK 8. Configure DNS server

1. Choose a domain name for your HTTP server
2. Choose a domain name for your MAIL server
3. Choose a domain name for your FTP server

example



The screenshot shows a web-based configuration interface for a DNS server. The 'Services' tab is selected, displaying a list of services on the left and configuration options on the right. The 'DNS Service' is turned 'On'. Under 'Resource Records', there is a table with one entry: 'www.myserver.com' of type 'A Record' pointing to '192.168.10.3'. An arrow points from the word 'example' to the 'DNS' service in the left-hand list.

No.	Name	Type	Detail
0	www.myserver.com	A Record	192.168.10.3

# TASK 9. Configure FTP server

example



PhysicalConfig**Services**DesktopProgrammingAttributes

SERVICES

HTTP

DHCP

DHCPv6

TFTP

DNS

SYSLOG

AAA

NTP

EMAIL

FTP

IoT

VM Management

Radius EAP

FTP

Service

On

Off

User Setup

Username

Password

☐ Write

☐ Read

☐ Delete

☐ Rename

☐ List

	Username	Password	Permission
1	USER	PASS	RWDNL
2	cisco	cisco	RWDNL

Add

Save

Remove

File

1	asa842-k8.bin
2	asa923-k8.bin
3	c1841-advipservicesk9-mz.124-15.T1.bin
4	c1841-ipbase-mz.123-14.T7.bin

Remove

☐ Top



# TASK 10. Configure MAIL server

example



MAIL

PhysicalConfigServicesDesktopProgrammingAttributes

SERVICES

HTTP

DHCP

DHCPv6

TFTP

DNS

SYSLOG

AAA

NTP

EMAIL

FTP

IoT

VM Management

Radius EAP

SMTP Service

☒ ON☐ OFF

POP3 Service

☒ ON☐ OFF

Domain Name:

Set

User Setup

User

Password

USER

+

-

Change

Password

☐ Top

## TASK 11. Check connections

1. Open the web page from clients web-browser;
2. Download file from FTP server;
3. Send email from one client to another