VIT-AP UNIVERSITY, ANDHRA PRADESH

Lab Sheet 12 : Simulation & Analysis of Transport Layer Protocol (TCP) and User Datagram Protocol (UDP) using CISCO packet tracer.

Academic year: 2020-2021 **Branch/ Class:** B.Tech
Semester: Winter **Date:** 24/04/21
Faculty Name: Dr. HUSSAIN SYED **School:** SCOPE
Student name: M. NAVEEN **Reg. no.:** 19bcn7185

TCP is connection oriented – once a connection is established, data can be sent bidirectional. **UDP** is a connectionless Internet protocol. Multiple messages are sent as packets in chunks using UDP.

Sr. No.	Key	TCP (Transmission Control Protocol)	UDP (User Datagram Protocol)
1	Definition	It is a communications protocol, using which the data is transmitted between systems over the network. In this, the data is transmitted into the form of packets. It includes error-checking, guarantees the delivery and preserves the order of the data packets.	It is same as the TCP protocol except this doesn't guarantee the error-checking and data recovery. If you use this protocol, the data will be sent continuously, irrespective of the issues in the receiving end.
2	Design	TCP is a connection-oriented protocol.	UDP is a connection less protocol.
3	Reliable	As TCP provides error checking support and also guarantees delivery of data to the destination router this make it more reliable as compared to UDP.	While on other hand UDP does provided only basic error checking support using checksum so the delivery of data to the destination cannot be guaranteed in UDP as compared to that in case of TCP.
4	Data transmission	In TCP the data is transmitted in a particular sequence which means that packets arrive in-order at the receiver.	On other hand there is no sequencing of data in UDP in order to implement ordering it has to be managed by the application layer.

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5	Performance	TCP is slower and less efficient in performance as compared to UDP. also TCP is heavy-weight as compared to UDP.	On other hand UDP is faster and more efficient than TCP.
6	Retransmissio n	Retransmission of data packets is possible in TCP in case packet get lost or need to resend.	On other hand retransmission of packets is not possible in UDP.
7	Examples	World Wide Web (HTTP), E-mail (SMTP TCP), File Transfer Protocol (FTP), Secure Shell (SSH), DNS is TCP for Zone transfers	DNS, Streaming media applications such as movies, Online multiplayer games, Voice over IP (VoIP), Trivial File Transfer Protocol (TFTP)

There are many of the companies shifting to the multi-server environment because of high reliability and proficiency of their businesses. There are many reasons, you should use the multi-server environment for your business. In this article, I would discuss some benefits of multi-server environment for your business and what are the best multi server services option available in the market. The use of multi-server system in the business generally helps guarantee high performance and uptime, sustain security, and enables more efficient resource allocation. There are many other benefits of dividing the resources onto many servers, and on each server running changed operating systems. Web apps can be typically divided into application and web tiers if needed. All of the servers are configured and provisioned based on the demands of the function.

resources server splitting to run various functions on mult i servers. This allows to make more connections and reduce the dependability on a single server. This rapidly turns out to be the most cost-effective way to confirm system performance and reliability and it is also an indicator of the mature network. Eventually, agencies and enterprises with huge networks may end up with a separate server for each function to reduce the redundancy

the major benefits you can get from multi-server environment.

1. Effective Resource Monitoring
2. More Security
3. Improves Server Performance
4. Cost Effective

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5. Reduce Dependency

6. Improves Database Functions

7. Solutions for multi-server environment

Execution:

https://www.youtube.com/watch?v=14ym4xOYSyw&t=245s

https://www.youtube.com/watch?v=bj5j4boOk3Q

1. Drag and drop 1 Server-PT, 1 Switch-PT, 4 PC-PTs. Give names to all devices as Multiserver, Switch0, HTTP client, FTP Client, DNS Client, E-mail Client respectively
2. Establish connections b/w devices
3. While connecting E-mail client we get connection error.
   to rectify that error:
   go to Switch0→physical→ off the switch→select PT-SWITCH-NM-1CE→drag and drop ETHERNET 0 Link in the 3rd empty slot
   Now connect PC to Switch0
   Or
   If you take switch 2950T-24 we won't get connection error and connect this switch to Gigabitethernet0/1 by selecting straight through cable multiserver→FastEthernet0/1

4. Configuration: check status on for all devices
   Multi-Server: IP Address:192.162.1.254
   HTTP Server: IP:192.162.1.1
   DNS Server: 192.162.1.254
   FTP Server: IP:192.162.1.2
   DNS Server: 192.162.1.254
   DNS Server: IP:192.162.1.3
   DNS Server: 192.162.1.254
   E-mail Server: IP:192.162.1.4

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DNS Server: 192.162.1.254

Multiserver→services→http(on)
→DNS→name: multiserver.pt.ptu→address:192.162.1.254→Add→
→Email→domain name: multiserver.pt.ptu→username: vitap, password:123→'+'
→ username: cisco, password:123→'+'
→FTP(on)

Simulation:
Click on simulation panel:
Click on server→c:/>ping -n 1 192.162.1.255(single broadcast message to all four instead of four PDUs we get four replies instead of 16)
Click on HTTP Client→ desktop →Web Browser→192.162.1.254/255→go→we will get links→do not close minimize the window

Click on FTP client→ desktop →command prompt→C:>ping 192.162.1.254→we will get the reply from server→ ftp 192.162.1.254-->username: cisco, password:cisco→C changes to ftp>➔minimize the window

Click on DNS Client→desktop→command prompt→nslookup multiserver.pt.ptu→enter→displays server and DNS info→minimize the window

Click on E-mail Client→ desktop→Email→desktop→configure mail→Your name: cisco, Email address: cisco@multiserver.pt.ptu, Incoming mail server: multiserver.pt.ptu, outgoing mail server: multiserver.pt.ptu, username:cisco, password: 123→save→compose→To: vitap@ multiserver.pt.ptu, subject: hi cisco→send→ configure mail→Your name: vitap, Email address: vitap@ multiserver.pt.ptu, Incoming mail server: multiserver.pt.ptu, outgoing mail server: multiserver.pt.ptu, username:vitap, password: 123→save→receive→the mails which are received will be displayed below

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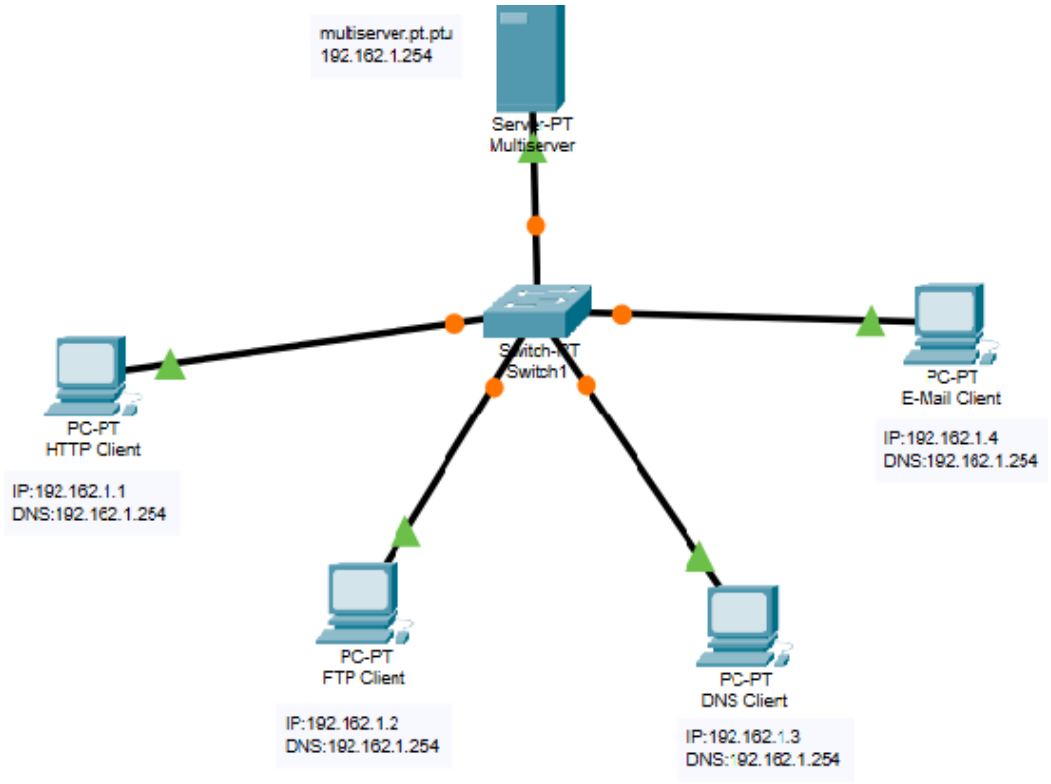

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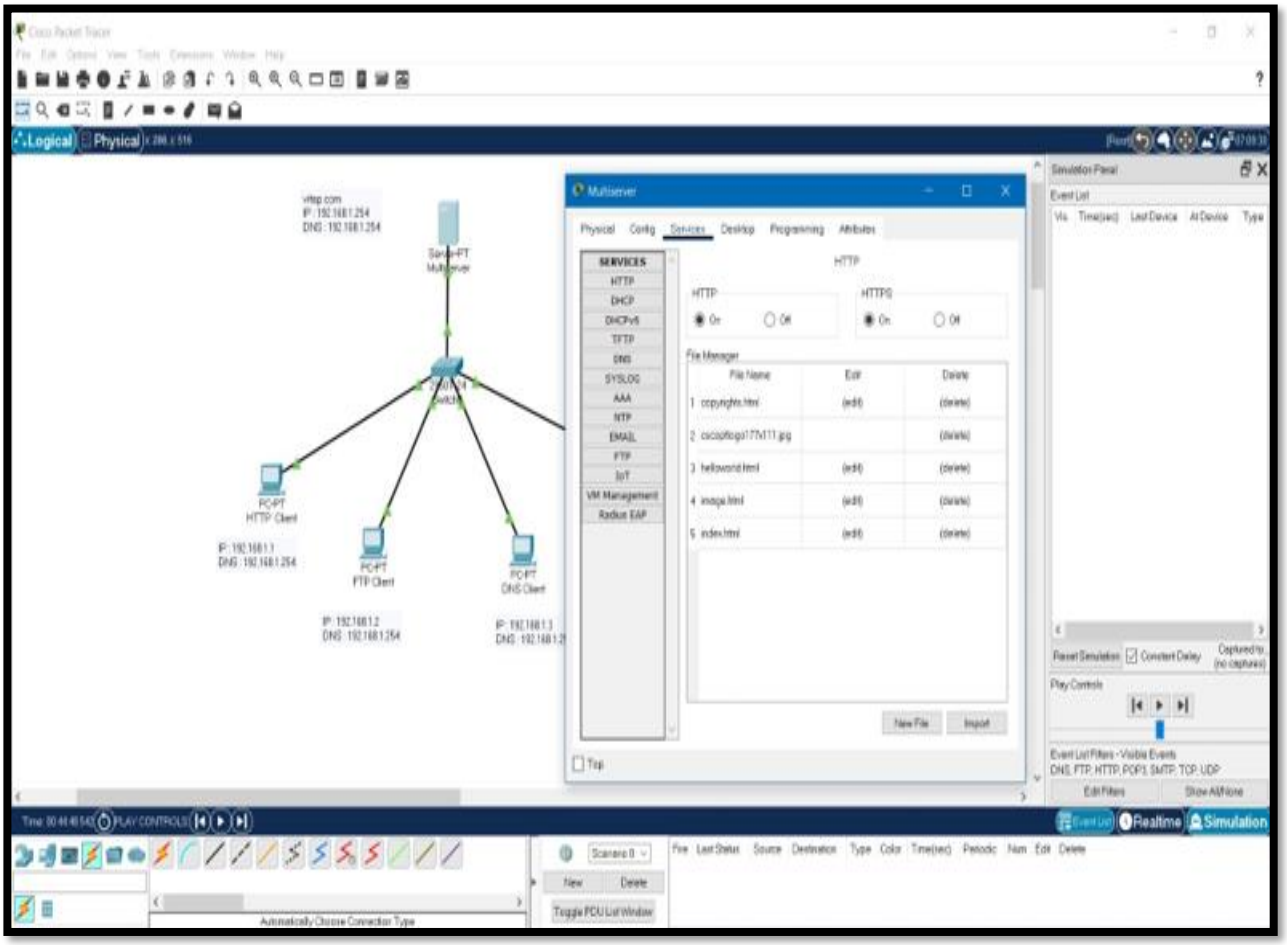
Configuration of Multiserver :

HTTP



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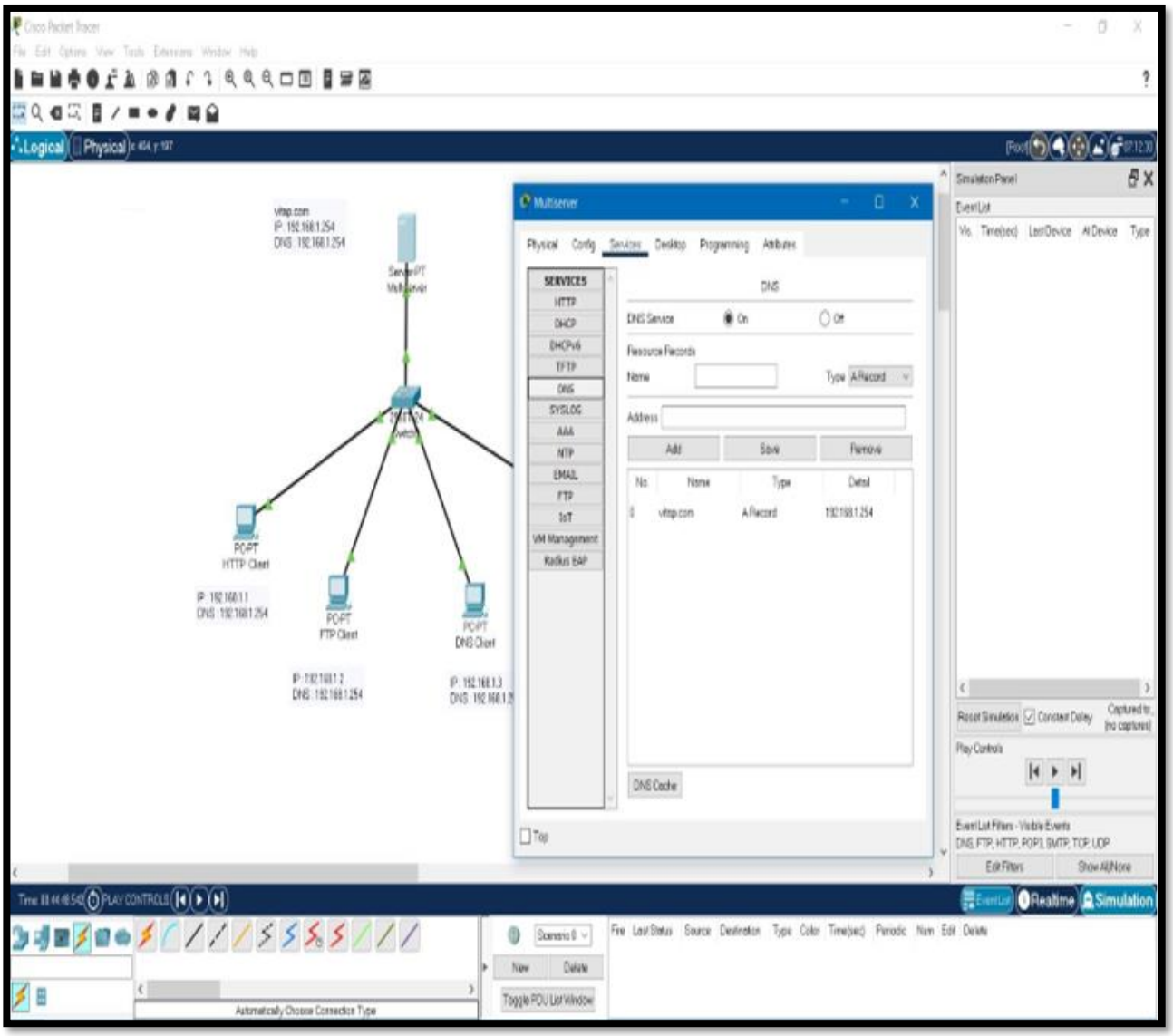
DNS



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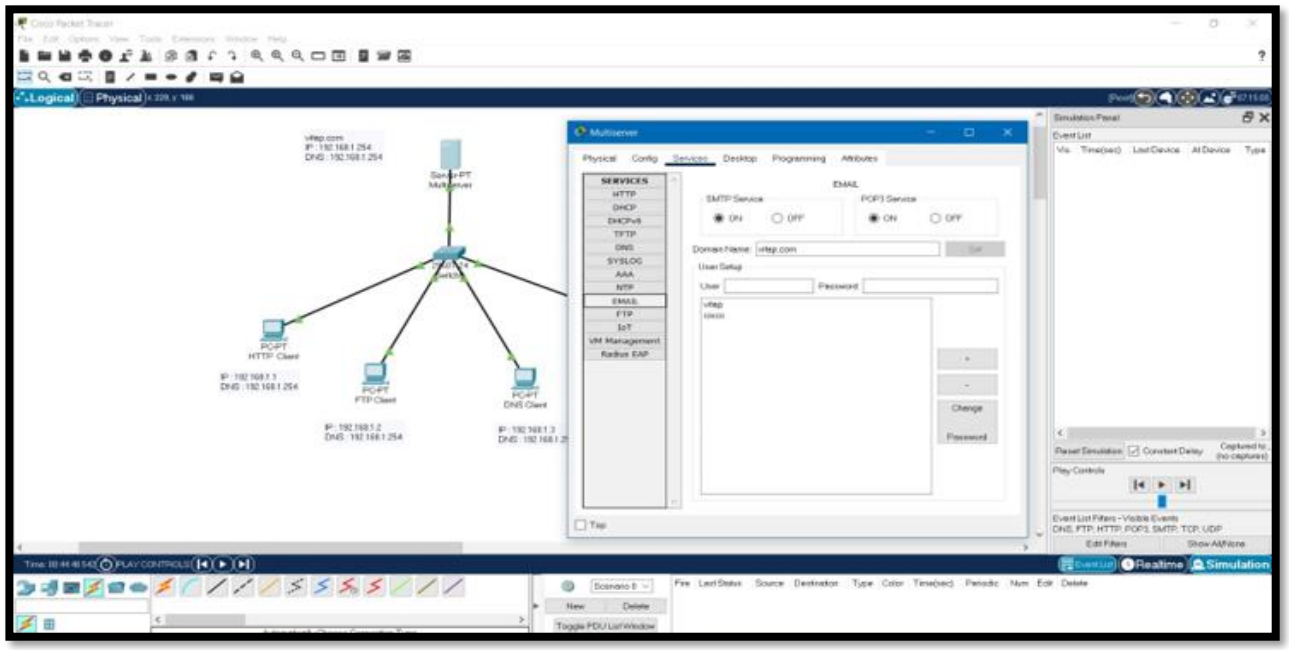
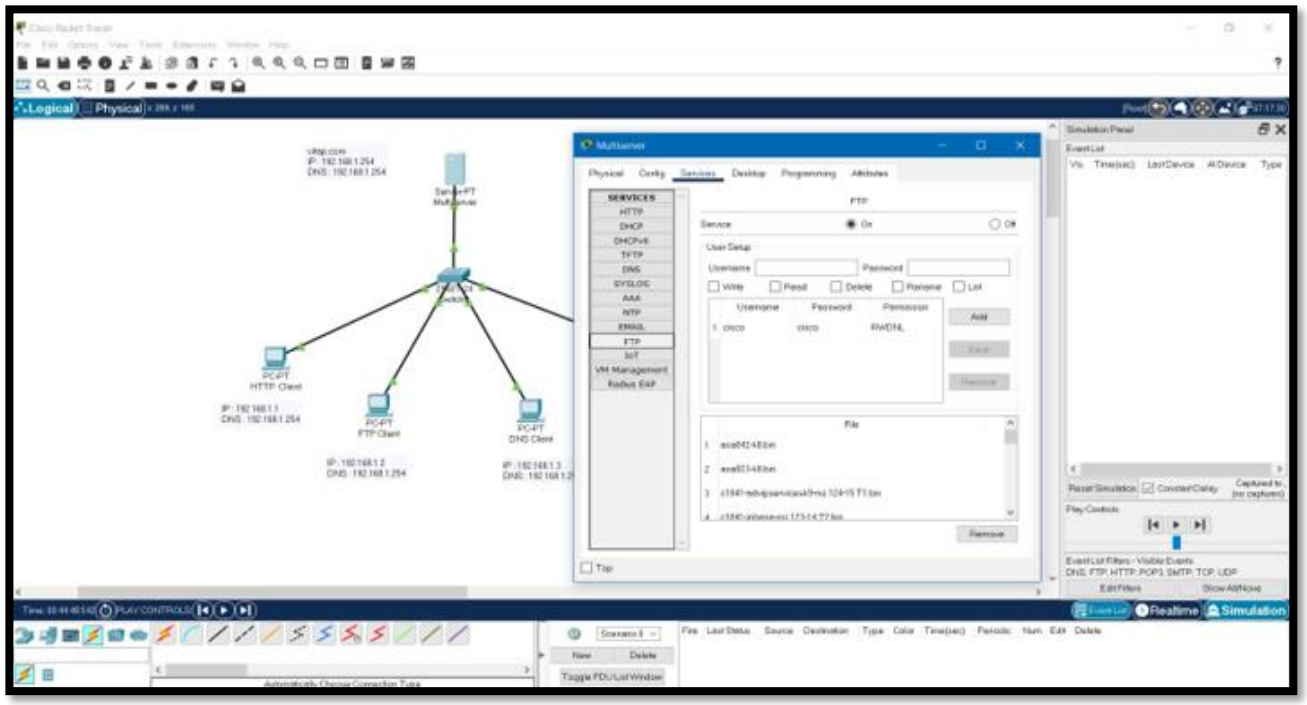
Email



FTP



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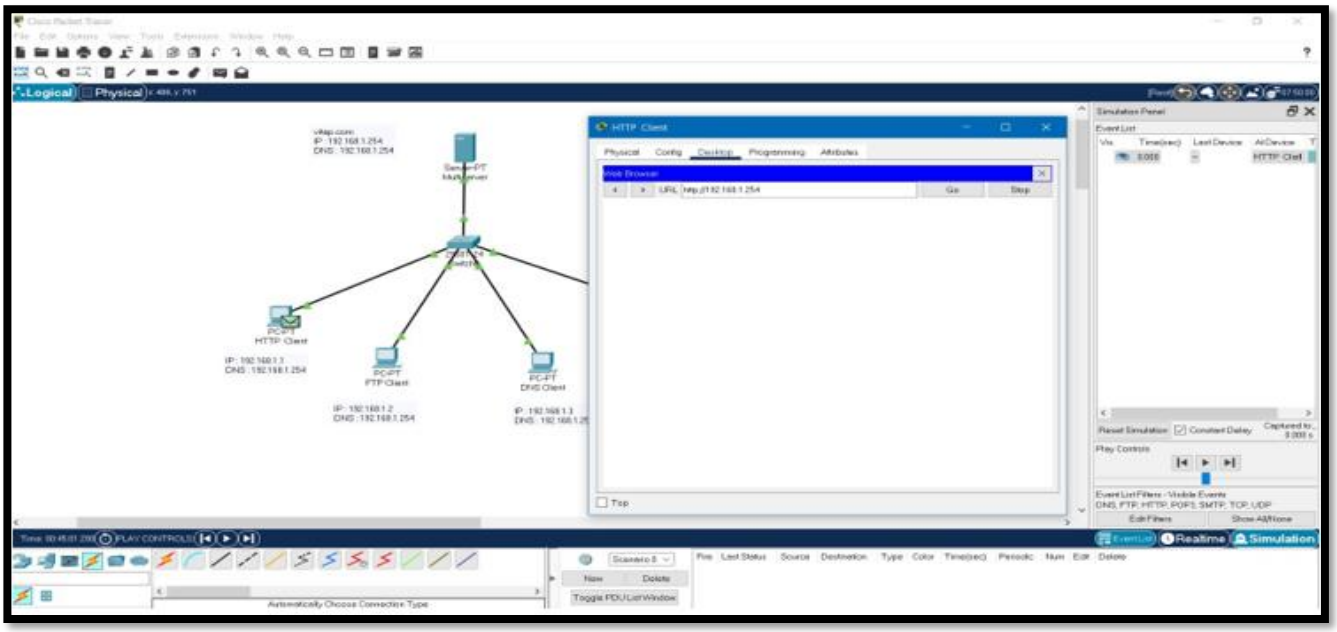
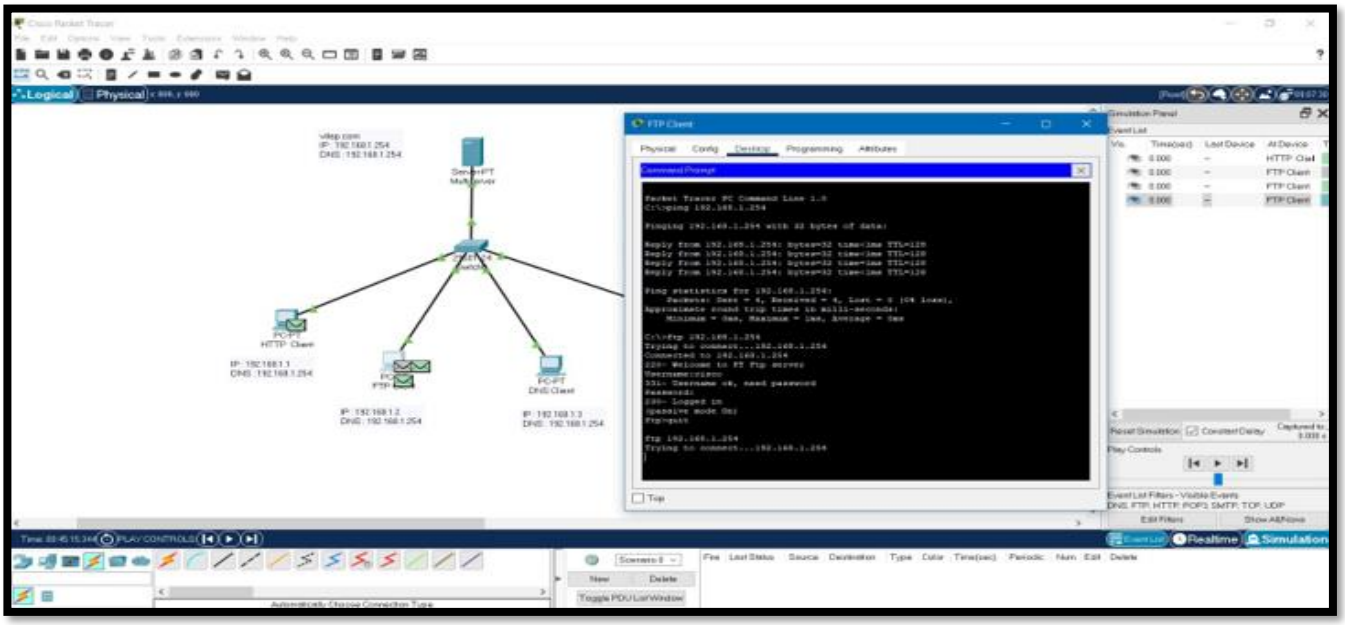
Simulation :

HTTP



FTP



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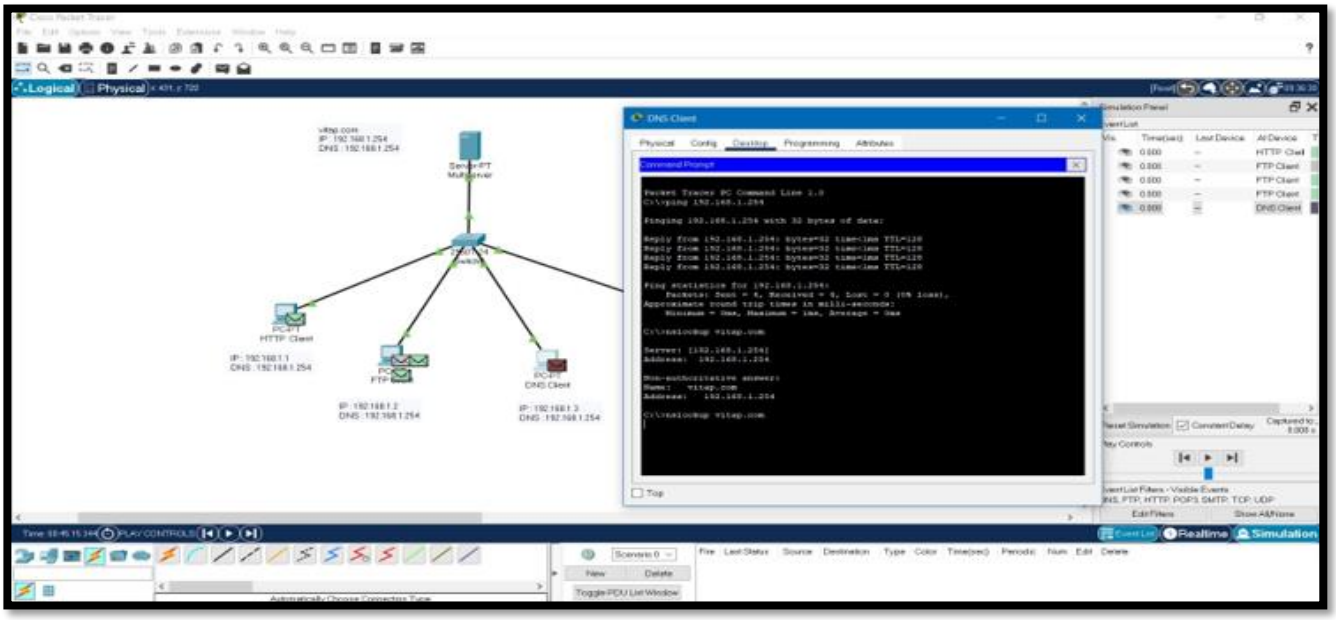
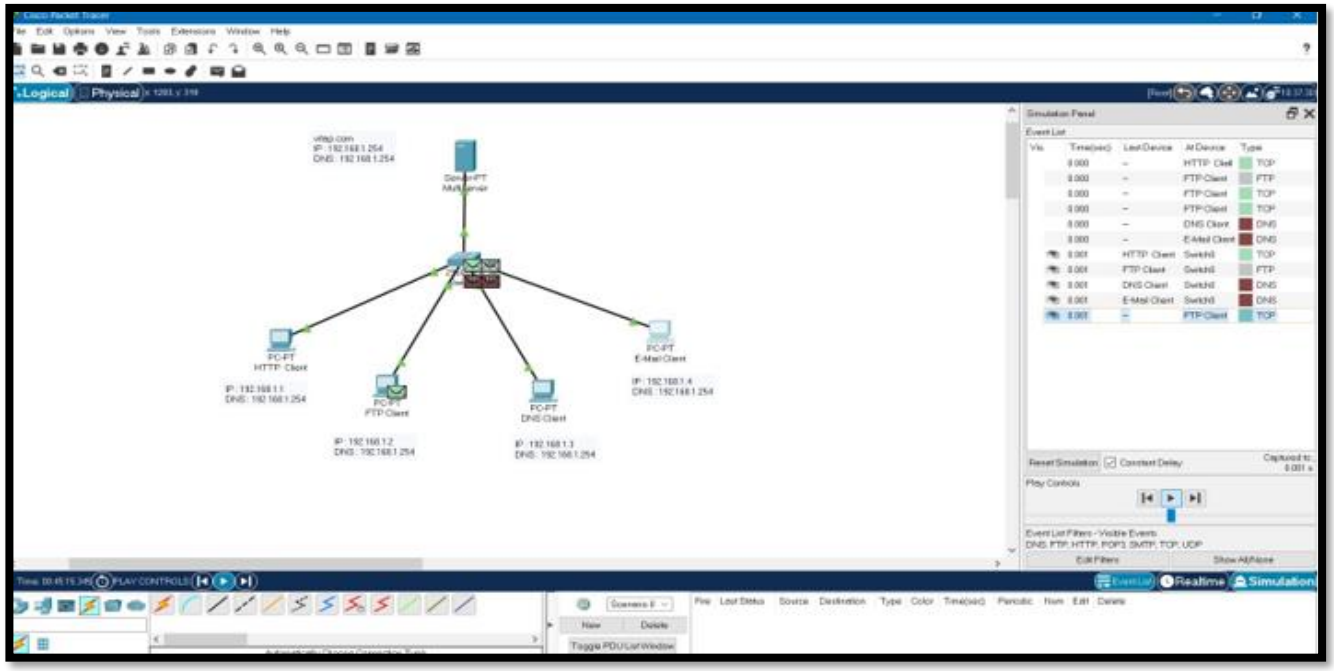
DNS



TOTAL SIMULATION :



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