

Part B-1a

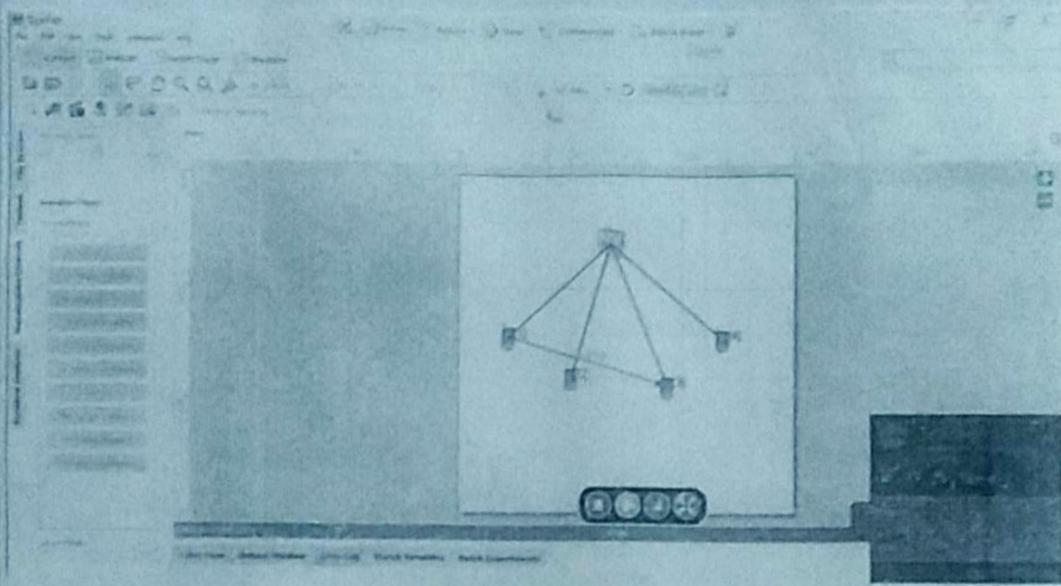


Fig 1

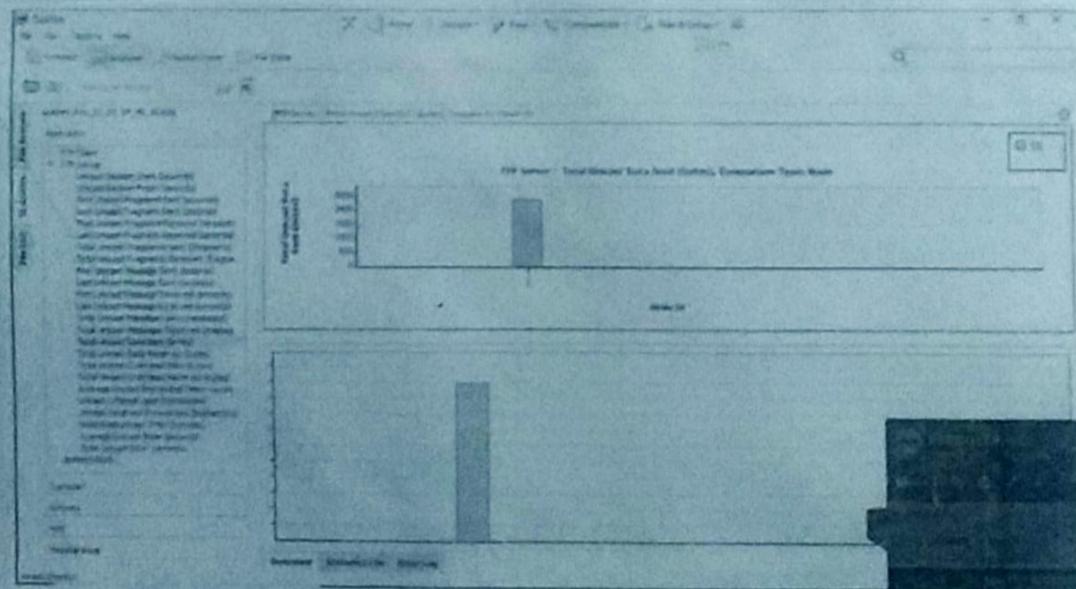


Fig 2

Part-B

- 1) Setup an IEEE 802.3 network with
- a) Hub b) Switch c) Hierarchy of switch. Apply the FTP, Telnet applications between nodes. Vary the number of nodes. Vary the bandwidth, queue size and observe the packet drop probability.

Fig 1: Network architecture with 4 devices and a switch
Device 1 and Device 3 exchange packets using FTP.

Fig 2: Total Unicast data sent (in bytes) by FTP server.

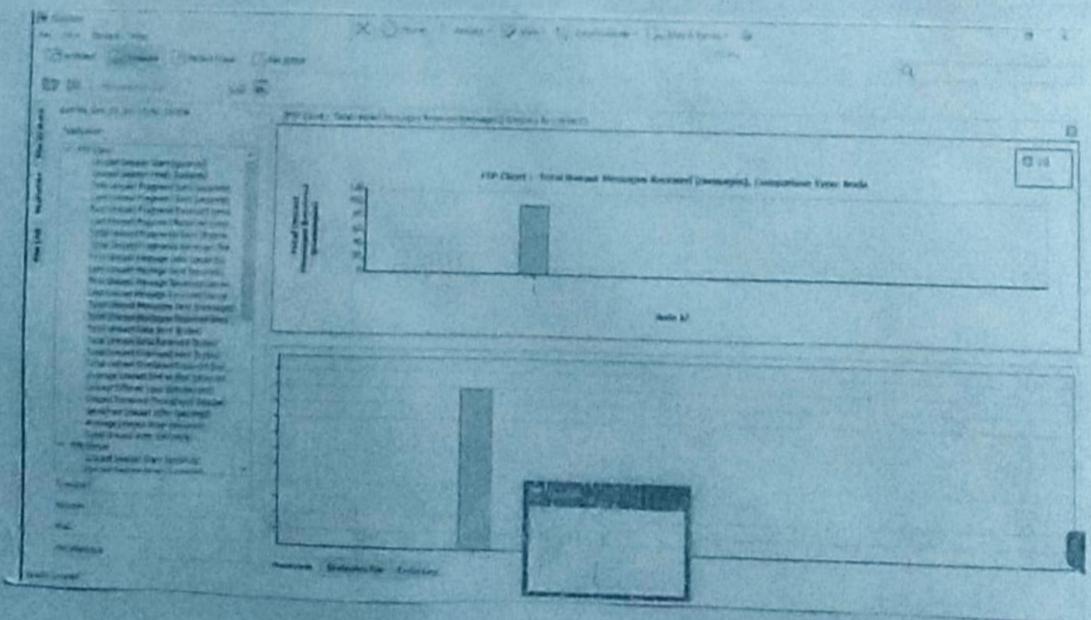
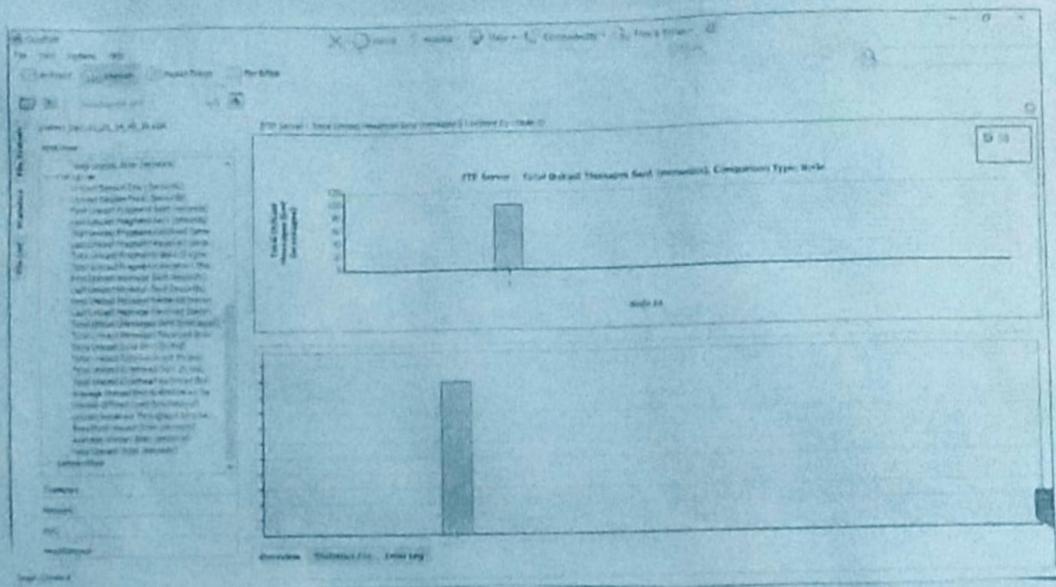
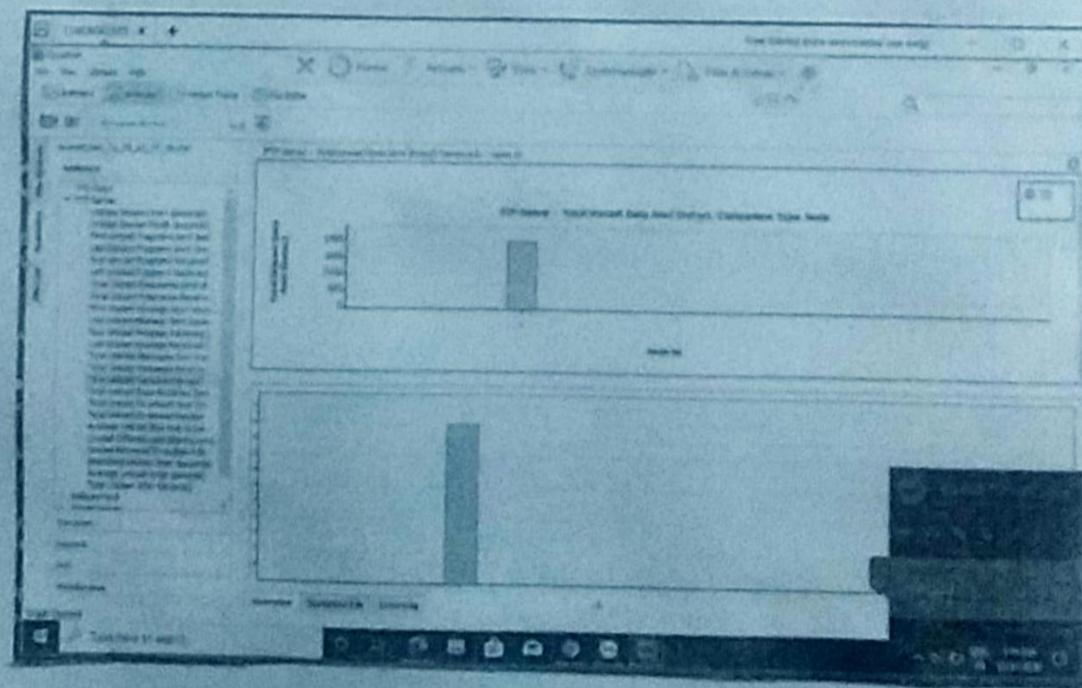
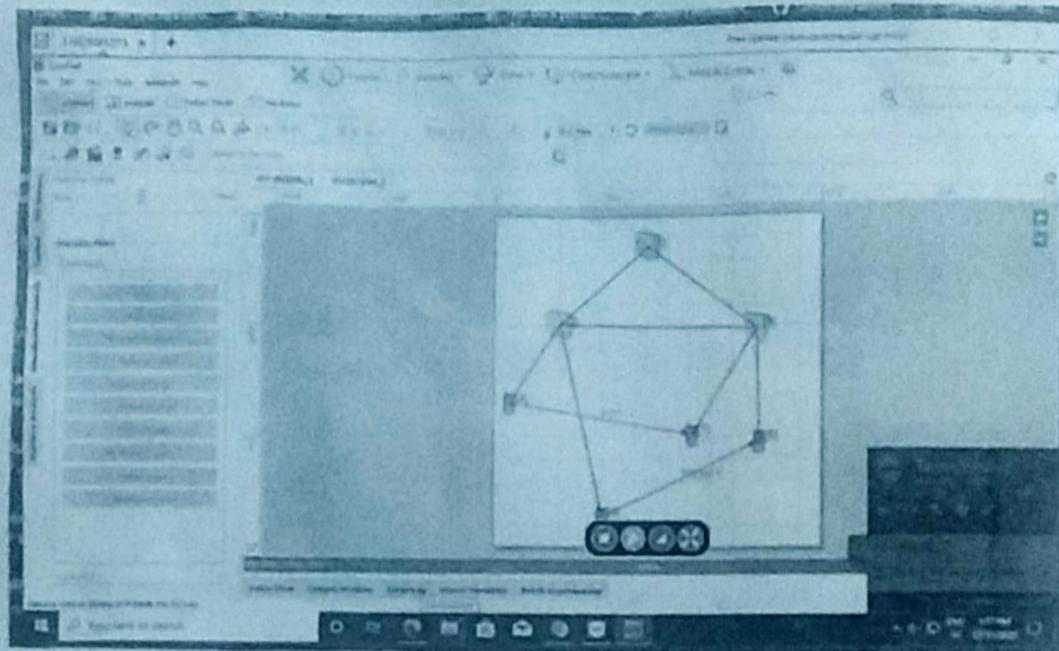


Fig3 : Total Unicast messages sent by FTP Server

Fig4 : Total Unicast messages received by TCP Client

Part B - 1b



9

Q1: Network architecture with

Fig1: Network architecture with two hierarchy of switch and client. There is FTP communication between device 4 and 7 and TELNET communication between devices 5 and 6.

Fig 2: Total unique data (in bytes) sent by FTP server

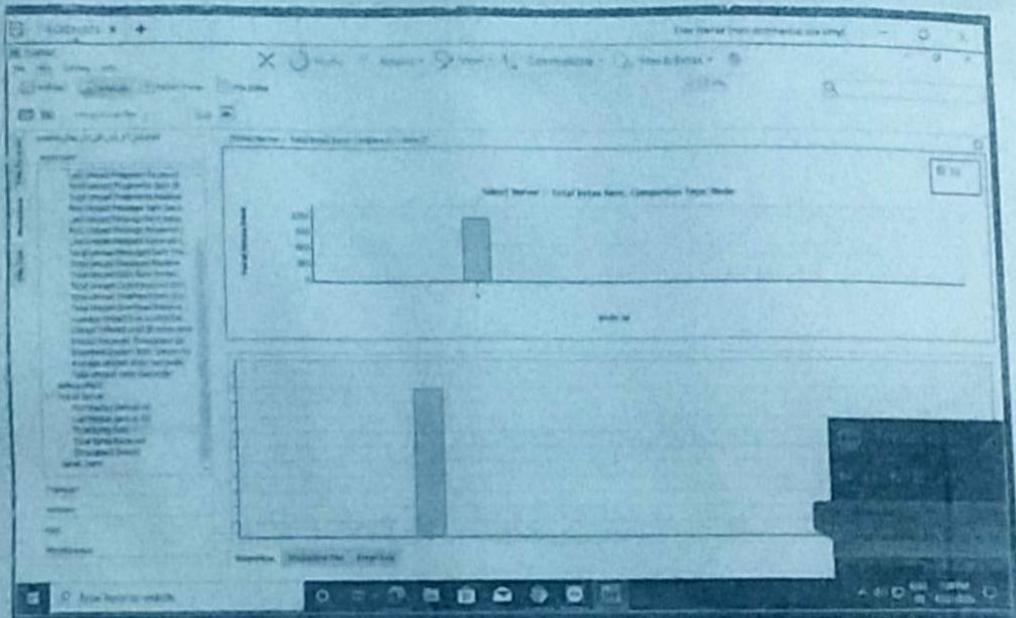


Fig. 3.

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Fig 3: Total bytes sent by Telnet server.

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PartB - 2

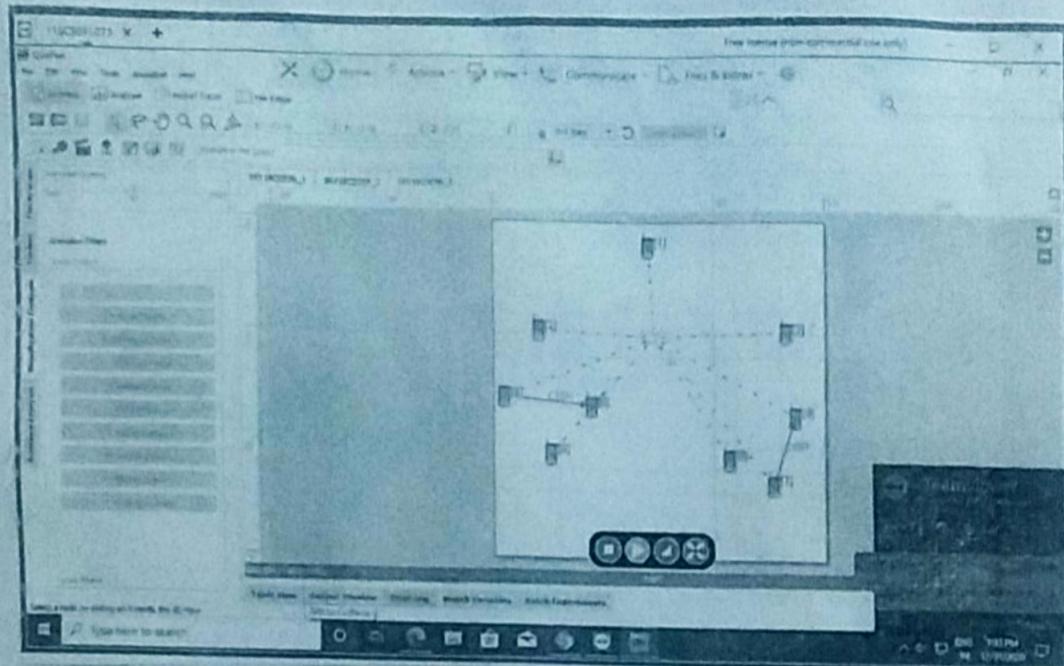


Fig1

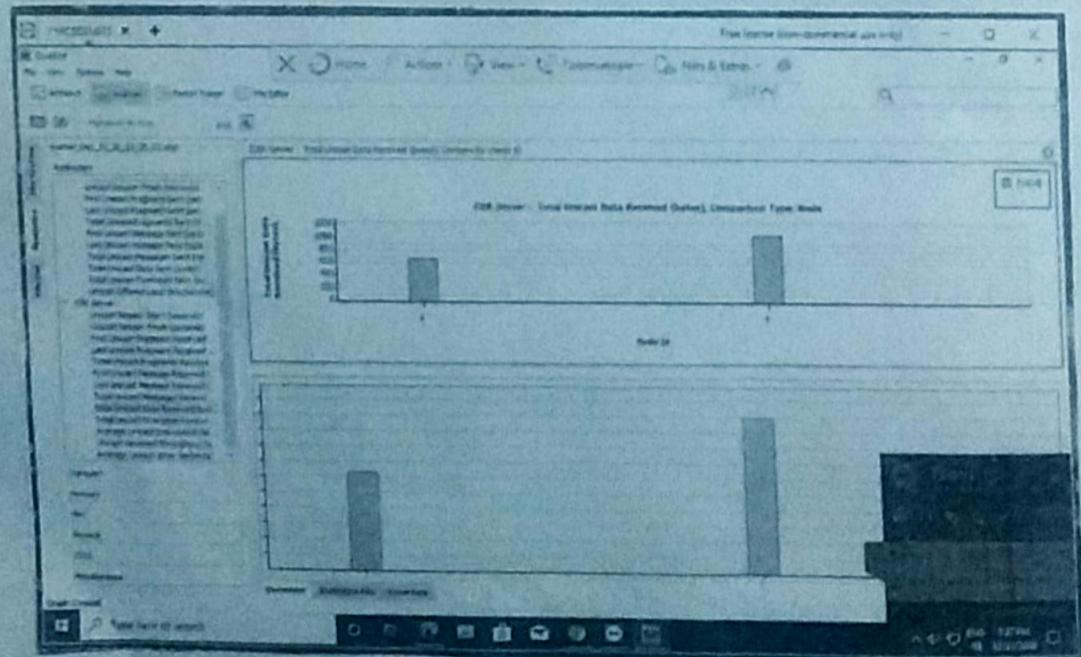
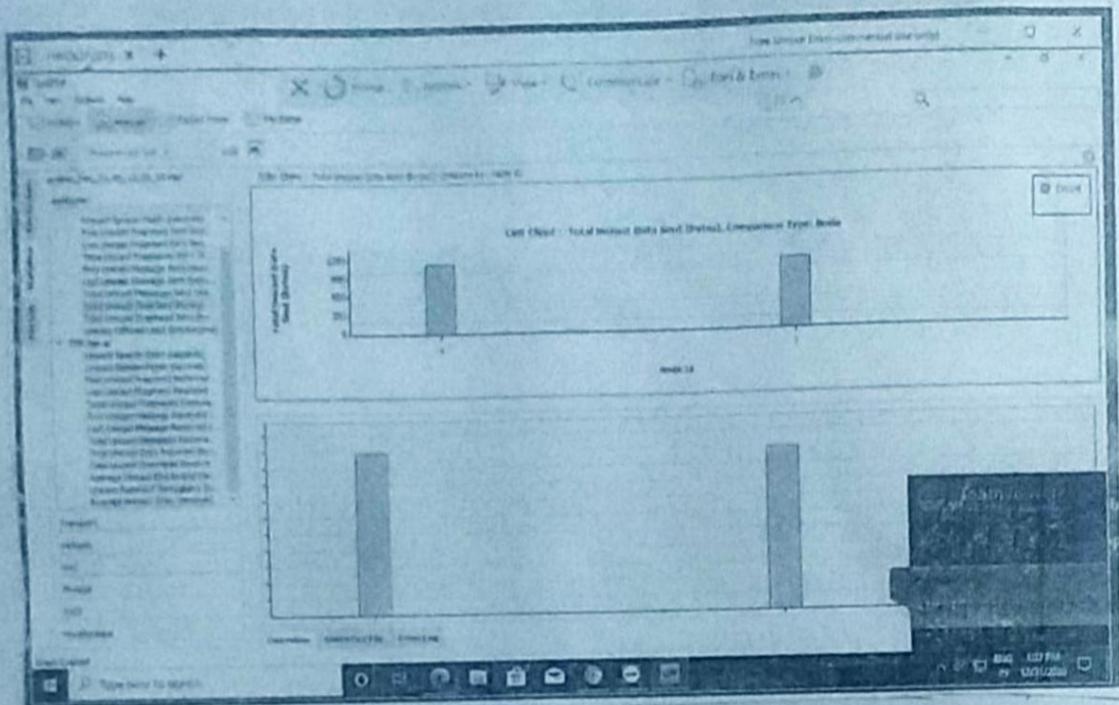


Fig2

- 2) Set up a wireless sensor network with atleast two devices i.e. coordinator and nodes. Provide Constant Bit Rate(CBR), Variable Bit Rate(VBR) applications between several nodes. Increase the number of coordinators and nodes in the same area and observe the performance at physical and MAC layers.

Fig1 : network architecture of wireless LAN. Here device 1 is the coordinator, devices 2 and 3 are PAN coordinator

Fig2 : Total Unicast data Received (Byte) by CBR Service.



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Fig 3: Total Unicast data sent (bytes) by CBRclient

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Part B - 3

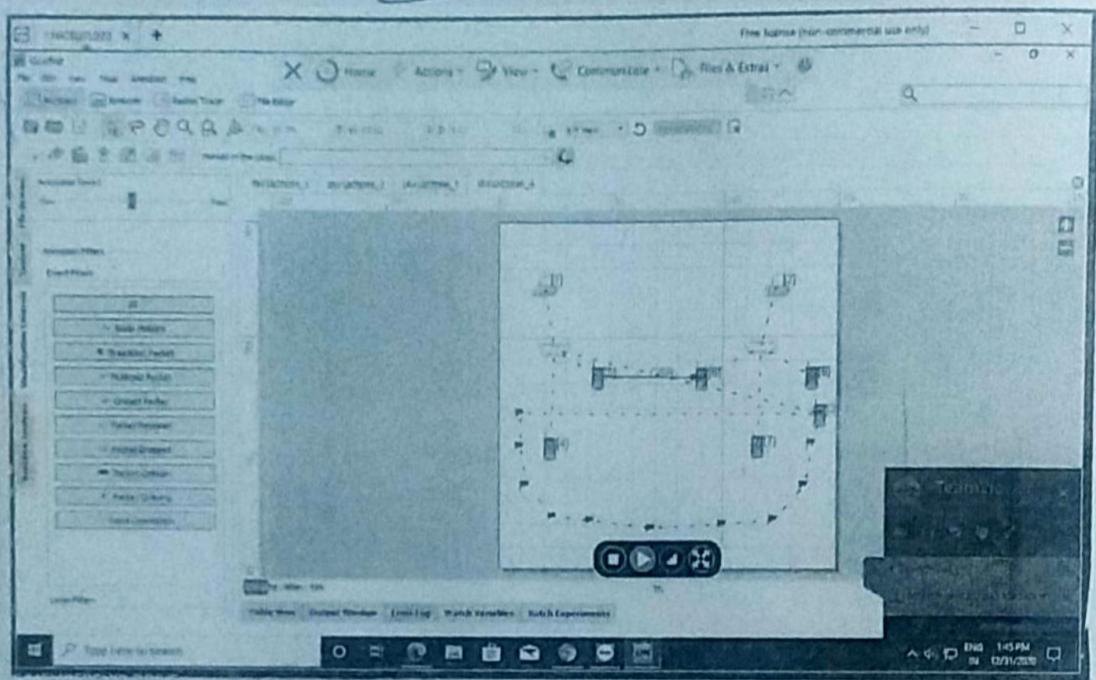


Fig 1

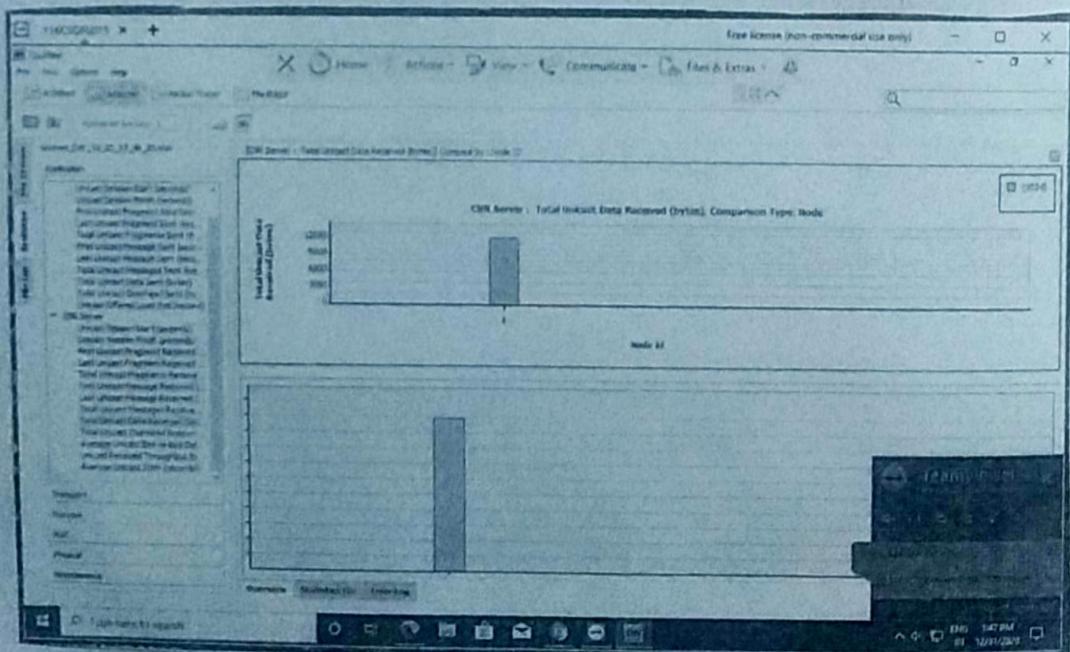


Fig 2

5) Setup an IEEE 802.11 network with at least two access points.

Apply the CBR, VBR applications between devices belonging to same access points and different access points. Periodically scanning of any device, vary the numbers of access points and devices. Find out the delay in MAC layer, packet drop probability.

Fig1: Network architecture of IEEE 802.11 wireless LAN. It has two access points.

Fig2: Total amount data received (in bytes) by CBR server.

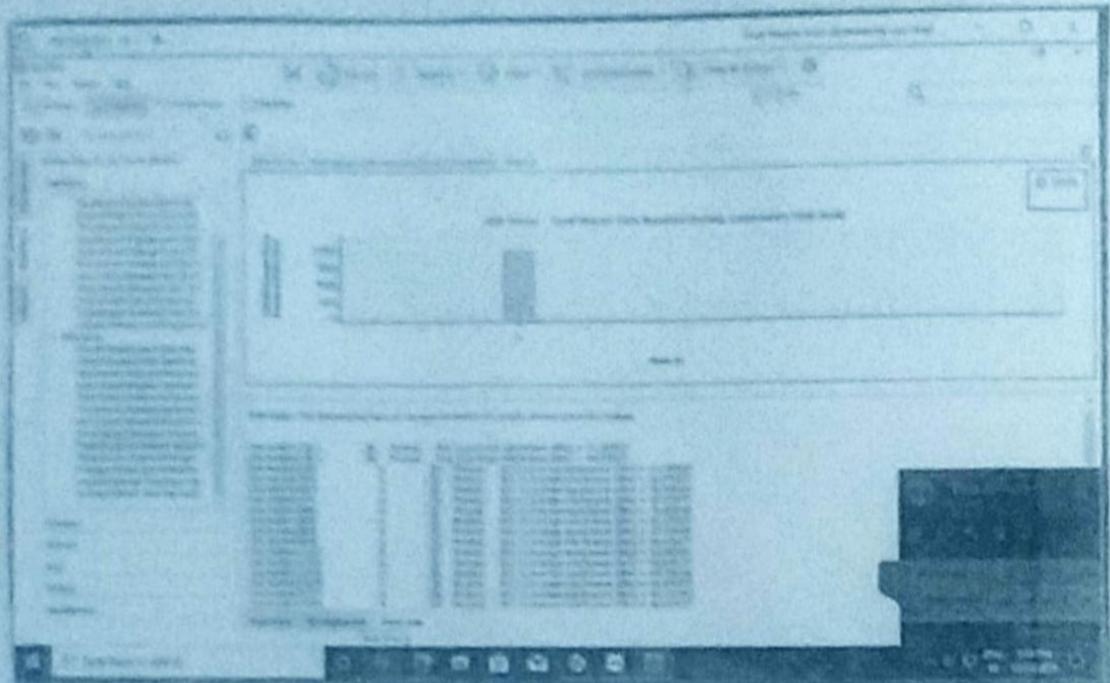


Fig. 1

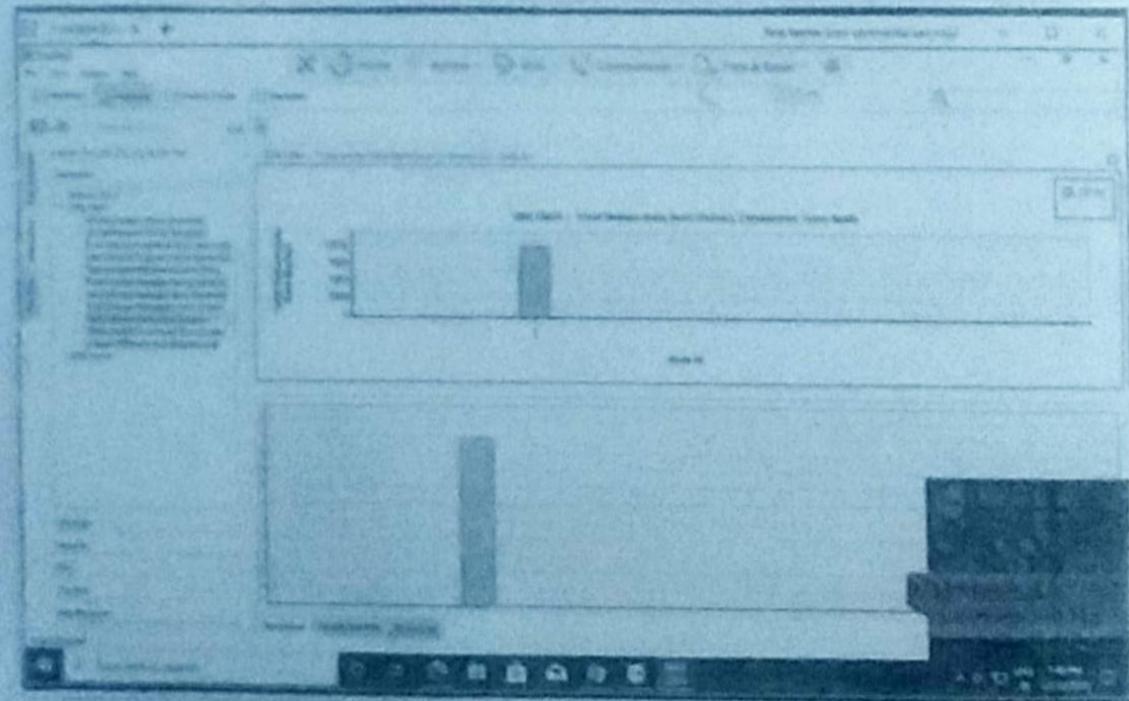
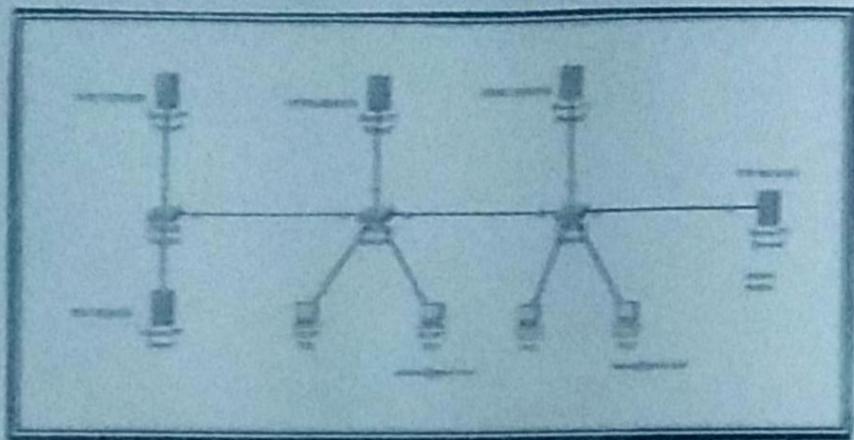


Fig. 2

Fig3: Total Unicast Data Received (bytes) by CBR source

Fig4: Total Unicast data sent (bytes) by CBR client

Topology A



Commands used:

DHCP: subnet mask

default gateway

DNS: domain name

IP address

Email: Domain username, followed by

Incoming and outgoing Mail server

FTP: $50\% \text{ file size}$

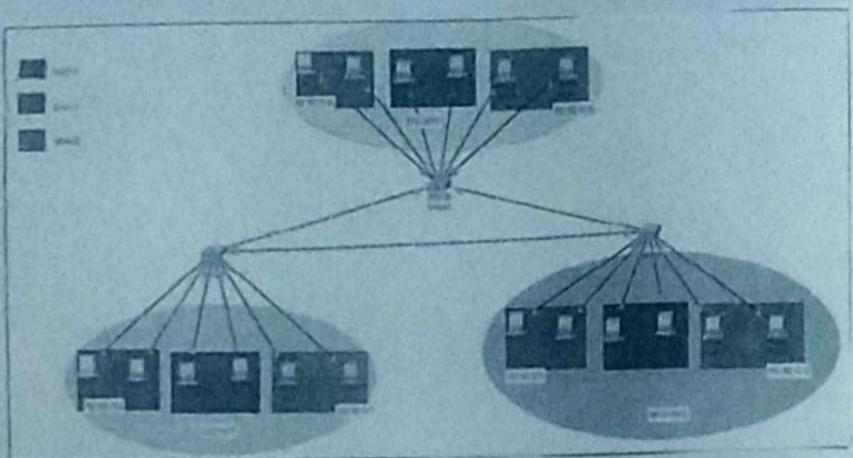
$f4 > d3$

4) Carefully configure routers using Cisco packet tracer

InterVLAN communication

VLAN is a subnetwork which can group together collections of devices on separate physical local area network (LANs). A LAN is a group of computers and devices and share or communicates line or wireless link to a server within the same geographical area.

Topology B



commands are

switch > enable

switch # configure terminal

Enter configuration commands, one per line. End with enter/z

switch (config) # vlan 10

switch (config-vlan) # name V10

switch (config-vlan) # exit

switch (config) # vlan 11

switch (config-vlan) # name V11

switch (config) # vlan 12

switch (config-vlan) # name V12

switch (config) # int fa 0/1

switch (config-if) # no m a

switch (config-if) # enc a vlan 10

switch (config) # int fa 0/2

switch (config-if) # enc a vlan 11

switch (config-if) # vid fa 0/3

switch (config-if) # enc a vlan 12

switch (config-if) # int fa 0/7

switch (config-if) # int fa 0/7 mt

switch (config) # int fa 0/7

switch (config-if) # mt

* LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/7,

changed to state up

switch (config-if) # no negotiate

Screenshots of Simulation

©HCP

A screenshot of the Microsoft Project ribbon. The 'Search' tab is selected, indicated by a blue background. To the left, there is a vertical search bar containing the text 'Search'. The ribbon tabs include File, Home, Insert, Design, Format, Project, and View.

The screenshot shows the WinSCP graphical user interface. On the left is a sidebar titled 'SERVICES' containing a list of protocols: WinSCP, DNS, SSH, DAS, SFTP, CRMD, WebDAV, and S3. The 'SFTP' item is highlighted with a yellow background. Below the sidebar is the main session configuration window. At the top right of this window are two radio buttons: 'SFTP' (selected) and 'SCP'. Below them is a 'Session' section with a 'Name' field containing 'User-Root' and a 'Protocol' dropdown set to 'SFTP'. Underneath are several checkboxes: 'Write', 'Read', 'Delete', 'Rename', and 'List'. To the right of these checkboxes are three tabs: 'General', 'Advanced', and 'Permissions', with 'General' selected. The main area contains two sections: 'Local' and 'Remote'. Each section has a 'Path' field, a 'File list' table, and a 'Details' table. The 'Local' section shows a single file 'index.html' with size 1024 bytes. The 'Remote' section shows a single file 'index.html' with size 1024 bytes. At the bottom right of the main window is a 'File' menu.

DNS

FTP

Phase	Color	Source	Description	Time	Unit
Initial	Green	Self	Initial setup	00:00:00	hrs
Preparation	Yellow	Self	Preparation	00:00:00	hrs
Execution	Red	Self	Execution	00:00:00	hrs
Review	Green	Self	Review	00:00:00	hrs
Final	Green	Self	Final	00:00:00	hrs
Total	Green	Self	Total	00:00:00	hrs

EMAIL

Phase	Color	Source	Description	Time	Unit
Initial	Green	Self	Initial setup	00:00:00	hrs
Preparation	Yellow	Self	Preparation	00:00:00	hrs
Execution	Red	Self	Execution	00:00:00	hrs
Review	Green	Self	Review	00:00:00	hrs
Total	Green	Self	Total	00:00:00	hrs

Phase	Color	Source	Description	Time	Unit
Initial	Green	Self	Initial setup	00:00:00	hrs
Preparation	Yellow	Self	Preparation	00:00:00	hrs
Execution	Red	Self	Execution	00:00:00	hrs
Review	Green	Self	Review	00:00:00	hrs
Total	Green	Self	Total	00:00:00	hrs

Phase	Color	Source	Description	Time	Unit
Initial	Green	Self	Initial setup	00:00:00	hrs
Preparation	Yellow	Self	Preparation	00:00:00	hrs
Execution	Red	Self	Execution	00:00:00	hrs
Review	Green	Self	Review	00:00:00	hrs
Total	Green	Self	Total	00:00:00	hrs

Printed: 2023-01-01

Phase	Color	Source	Description	Time	Unit	Duration	Weight	Var	Std
Initial	Green	Self	Initial setup	00:00:00	hrs	0:00:00	0	0	0
Preparation	Yellow	Self	Preparation	00:00:00	hrs	0:00:00	0	0	0
Execution	Red	Self	Execution	00:00:00	hrs	0:00:00	0	0	0
Review	Green	Self	Review	00:00:00	hrs	0:00:00	0	0	0
Total	Green	Self	Total	00:00:00	hrs	0:00:00	0	0	0

output

VLAN	Name	Status	Ports							
1	default	active	Fa0/9, Fa0/10, Fa0/11, Fa0/12 Fa0/13, Fa0/14, Fa0/15, Fa0/16 Fa0/17, Fa0/18, Fa0/19, Fa0/20 Fa0/21, Fa0/22, Fa0/23, Fa0/24							
10	V10	active	Fa0/1, Fa0/6							
11	V11	active	Fa0/2, Fa0/5							
12	V12	active	Fa0/3, Fa0/4							
1002	fddi-default	active								
1003	token-ring-default	active								
1004	fdдинet-default	active								
1005	trnet-default	active								
VLAN	Type	SAID	MTU	Parent	RingNo	BridgeNo	Stp	BridMode	Trans1	Trans2
1	enet	100001	1500	-	-	-	-	-	0	0
10	enmt	100010	1500	-	-	-	-	-	0	0
11	enet	100011	1500	-	-	-	-	-	0	0
12	enet	100012	1500	-	-	-	-	-	0	0
1002	fddi	101002	1500	-	-	-	-	-	0	0

```
Traceroute to Command Line 1.0
C:\> ping 192.168.10.7

Pinging 192.168.10.7 with 32 bytes of data:
Reply from 192.168.10.7: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.10.7:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\> ping 192.168.10.15

Pinging 192.168.10.15 with 32 bytes of data:
Reply from 192.168.10.15: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.10.15:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms
```