Symbiosis University of Applied Sciences

Front Page of Answer Book

Enrollment Number:	2	0	1	9	B	T	C	S	0	8	8

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Name of Program: B. TECH **Year/Semester: 2ND YEAR/4TH SEMESTER**

Name of Paper: Computer Networks **Paper Code: BTCS03CCB5**

Date: 26TH-JULY-2021 **Day: MONDAY** **Time: 09:30 AM – 10:30 AM**

Total No. of Pages.: 06

Instructions for Examinees

1. Fill up all entries required in this page.
2. Merge this doc page with your scanned answer sheets as a first page in a single PDF file.
3. Write your answers on A4 Ruled Sheets/Register Pages.
4. Write End after the last attempted question.
5. Write the page number on every page and mentioned Total No. of Pages on front Page.
6. **If the content in the Answer Book of two students or more has found similar, in that case all copied answer will stand cancelled.**

PRACTICAL ACTIVITY

Configure and simulate: Physical Addressing MAC Address

Q. Physical Addressing MAC address

TITLE: MAC addressing & Physical Addressing

↳ A (MAC) Media Access Control address is the Hardware address of the Network Interface Card (NIC) of your computer. You must Have it on hand to register for any Mobile Access network & campus-wide DHCP Services. This webpage also helps for locating & identifying it via registering NIC for the network.

Physical Addressing ↳ In computing, a physical address (also known as Real address, or Binary Address), is a memory address that is represented in the form of a binary Number on the address bus circuitry in order to enable the data bus to access a particular storage cell of main memory or a register of memory-mapped I/O device.

- Ways for finding MAC address:

(1) Windows: 1. Click Start then Run.
2. Enter: cmd → will open Command Prompt
3. Enter: ipconfig/all ; If the output scrolls off your screen, the we can use ipconfig/all | more
4. The Physical address it our MAC address. it will look like 00-15-E9-2B-99-3C. You will Have a physical address for each Network connection in our PC.

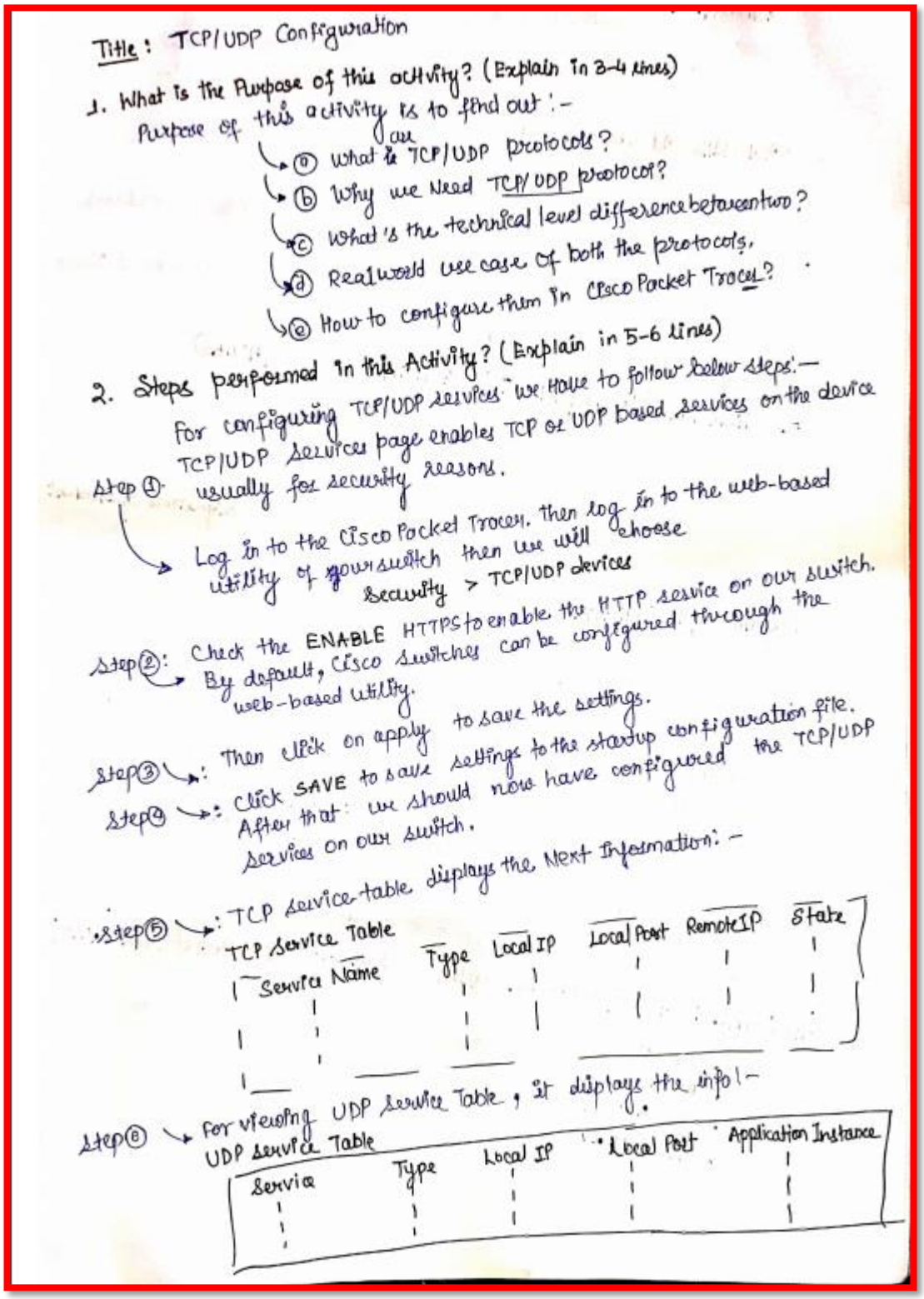
(2) Linux: 1. Become root using "su" (superuser)
2. Enter: ifconfig -a ↳ // all
3. The ethernet devices are called as eth0, eth1 & so on. The MAC address is in the first line of the O/P labelled HWaddr it is 00:XX:YY:ZZ:AB:CD

```
C:\>ipconfig /all

Windows IP Configuration

   Host Name . . . . . . . . . . . . : DESKTOP-L6E7BTN
   Primary Dns Suffix  . . . . . . . :
   Node Type . . . . . . . . . . . . : Hybrid
   IP Routing Enabled. . . . . . . . : No
   WINS Proxy Enabled. . . . . . . . : No

Ethernet adapter Ethernet:

   Connection-specific DNS Suffix  . :
   Description . . . . . . . . . . . : Intel(R) PRO/1000 MT Desktop Adapter
   Physical Address. . . . . . . . . : 08-00-27-38-26-F9
   DHCP Enabled. . . . . . . . . . . : Yes
   Autoconfiguration Enabled . . . . : Yes
   Link-local IPv6 Address . . . . . : fe80::890e:b4e7:e929:1b7a%4(Preferred)
   IPv4 Address. . . . . . . . . . . : 10.0.2.15(Preferred)
   Subnet Mask . . . . . . . . . . . : 255.255.255.0
   Lease Obtained. . . . . . . . . . : 26 July 2021 09:52:34
   Lease Expires . . . . . . . . . . : 27 July 2021 09:52:36
   Default Gateway . . . . . . . . . : 10.0.2.2
   DHCP Server . . . . . . . . . . . : 10.0.2.2
   DHCPv6 IAID . . . . . . . . . . . : 218628135
   DHCPv6 Client DUID. . . . . . . . : 00-01-00-01-28-4C-09-B5-08-00-27-38-26-F9
   DNS Servers . . . . . . . . . . . : 192.168.1.1
   NetBIOS over Tcpip. . . . . . . . : Enabled

C:\>
```

```
Activities  Terminal                                   Mon 09:58
                                                  root@localhost:~
File  Edit  View  Search  Terminal  Help
[root@localhost ~]# ifconfig -a
enp0s3: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        inet 10.0.2.15  netmask 255.255.255.0  broadcast 10.0.2.255
        inet6 fe80::4758:e67f:ee3d:be18  prefixlen 64  scopeid 0x20<link>
        ether 08:00:27:2a:28:e6  txqueuelen 1000  (Ethernet)
        RX packets 68945  bytes 102493349 (97.7 MiB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 8458  bytes 519456 (507.2 KiB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING>  mtu 65536
        inet 127.0.0.1  netmask 255.0.0.0
        inet6 ::1  prefixlen 128  scopeid 0x10<host>
        loop  txqueuelen 1000  (Local Loopback)
        RX packets 0  bytes 0 (0.0 B)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 0  bytes 0 (0.0 B)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

virbr0: flags=4099<UP,BROADCAST,MULTICAST>  mtu 1500
        inet 192.168.122.1  netmask 255.255.255.0  broadcast 192.168.122.255
        ether 52:54:00:e5:a4:b6  txqueuelen 1000  (Ethernet)
        RX packets 0  bytes 0 (0.0 B)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 0  bytes 0 (0.0 B)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

virbr0-nic: flags=4098<BROADCAST,MULTICAST>  mtu 1500
        ether 52:54:00:e5:a4:b6  txqueuelen 1000  (Ethernet)
        RX packets 0  bytes 0 (0.0 B)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 0  bytes 0 (0.0 B)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

[root@localhost ~]#
```

SKILL ACTIVITY

Configure and Analyze headers of protocols: TCP & UDP



Title : TCP/UDP Configuration

1. What is the Purpose of this activity? (Explain in 3-4 lines)

Purpose of this activity is to find out :-

- (a) What are TCP/UDP protocols?
- (b) Why we Need TCP/UDP protocol?
- (c) What's the technical level difference between two?
- (d) Real world use case of both the protocols,
- (e) How to configure them in Cisco Packet Tracer?

2. Steps performed in this Activity? (Explain in 5-6 lines)

For configuring TCP/UDP services we have to follow below steps:-

TCP/UDP Services page enables TCP or UDP based services on the device usually for security reasons.

Step ①: Log in to the Cisco Packet Tracer. then log in to the web-based utility of your switch then we will choose Security > TCP/UDP devices

Step ②: Check the ENABLE HTTPS to enable the HTTP service on our switch. By default, Cisco Switches can be configured through the web-based utility.

Step ③: Then click on apply to save the settings.

Step ④: Click SAVE to save settings to the startup configuration file. After that we should now have configured the TCP/UDP services on our switch.

Step ⑤: TCP service table displays the Next Information:-

TCP Service Table

Service Name	Type	Local IP	Local Port	Remote IP	State

Step ⑥: For viewing UDP Service Table, it displays the info!-

UDP Service Table

Service	Type	Local IP	Local Port	Application Instance

3. What Resources/ Materials/Equipments/Tools did you use for this activity?
   a. This lab is based on Cisco Packet Tracer 8.0
   b. 1 - Webserver, 4 Client Nodes ; 4 Copper straight-Through cables ; 1 Switch
   c. Ubuntu 20.04 LTS OS where ciscopacket Tracer is installed.

4. What skills did you acquire?
   a. Configuring TCP/UDP Suite in Webserver
   b. Difference between both (TCP vs UDP)
   c. Real world use case of TCP & UDP such as in Apache httpd web server & nginx(Haproxy) etc.
   d. How to configure TCP & UDP services on our Cisco Business 250 or 350 series switch.

5. Time Taken to complete this Activity? 02:00 (HOURS)

Yupta

Signature of Student

Details of the Activity:

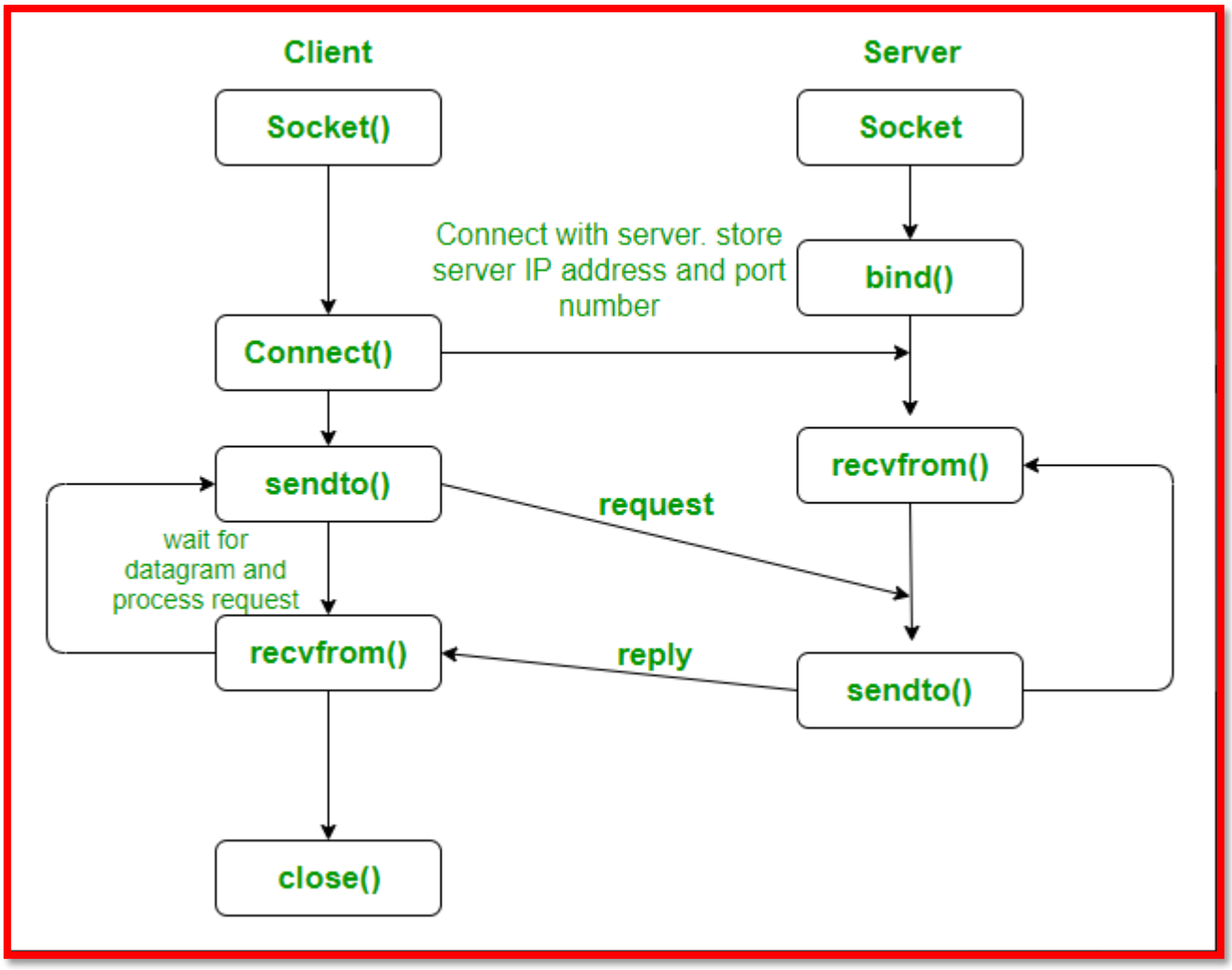
TCP → Transmission Control Protocol & UDP → User Datagram Protocol are transportation protocols which are some of the core protocols of the Internet Protocol Suite. Both TCP and UDP work at the transport layer of the TCP/IP model. TCP uses a 3-way HandsHake to establish the reliable connection, whereas UDP is unreliable but faster when compared to TCP. The network device offers some of the services which use either TCP or UDP for easy management of the device. The services can be enabled or disabled based on the requirement.

Applicable Devices / Software Version {w.r.t Cisco Packet Tracer V8.0}

- CBS 250
- CBS 350
- CBS 350-2X
- CBS 350-4X

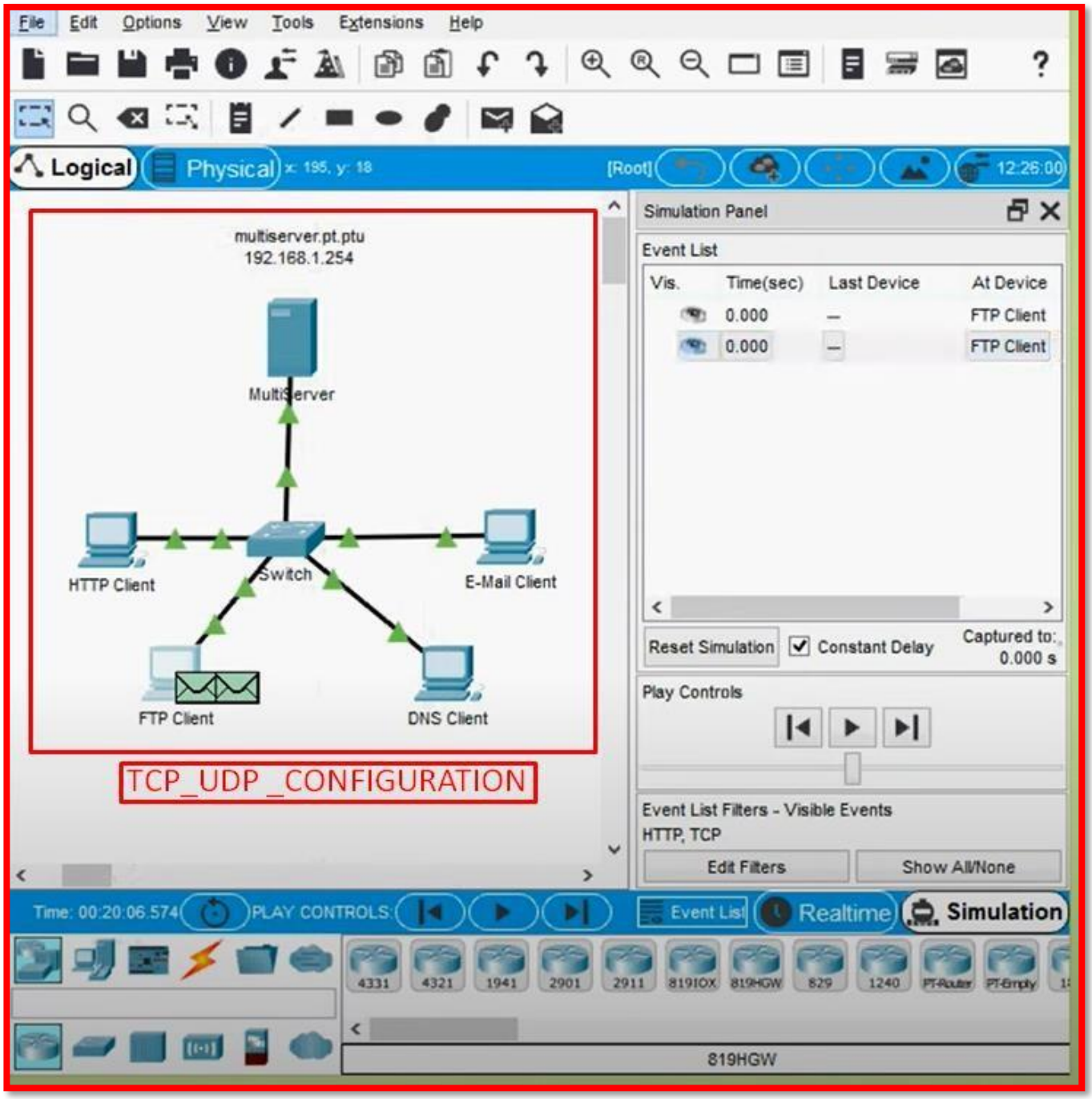
→ These are typical cisco business suites

Flowchart behind the working of UDP Connection



Algorithm of UDP Connection

```
1 int connect(int sockfd, const struct sockaddr *servaddr,
2                         socklen_t addrlen);
3 returns : 0 if OK -1 on error
4 arguments :
5 sockfd : File descriptor of socket to be connected.
6 struct sockaddr *servaddr : server address structure.7addrlen
: length of server address structure.
```


File Edit Options View Tools Extensions Help
Logical
Physical
[Root]
12:26:00
multiserver.pt.ptu
192.168.1.254
MultiServer
HTTP Client
Switch
E-Mail Client
FTP Client
DNS Client
TCP_UDP _CONFIGURATION
Simulation Panel
Event List
Vis.
Time(sec)
Last Device
At Device
0.000
FTP Client
Reset Simulation
Constant Delay
Captured to:
0.000 s
Play Controls
Event List Filters - Visible Events
HTTP, TCP
Edit Filters
Show All/None
Time: 00:20:06.574
PLAY CONTROLS:
Event List
Realtime
Simulation
4331
4321
1941
2901
2911
819IOX
819HGW
829
1240
PT-Router
PT-Empty
819HGW
