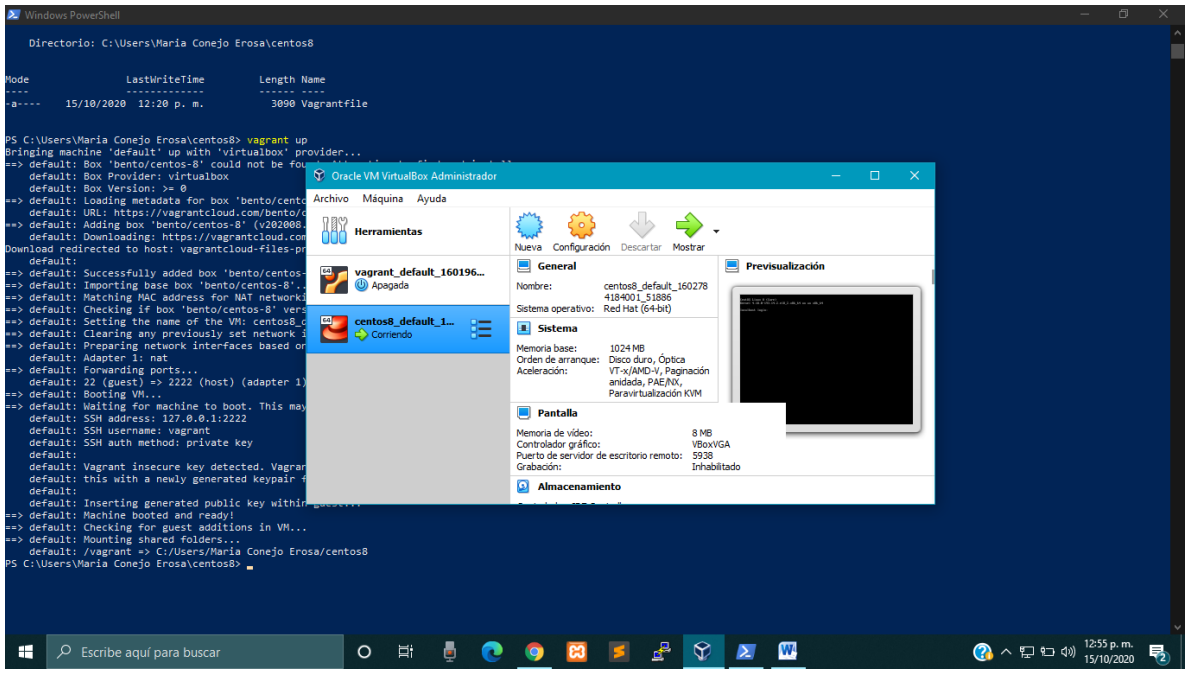
ITC

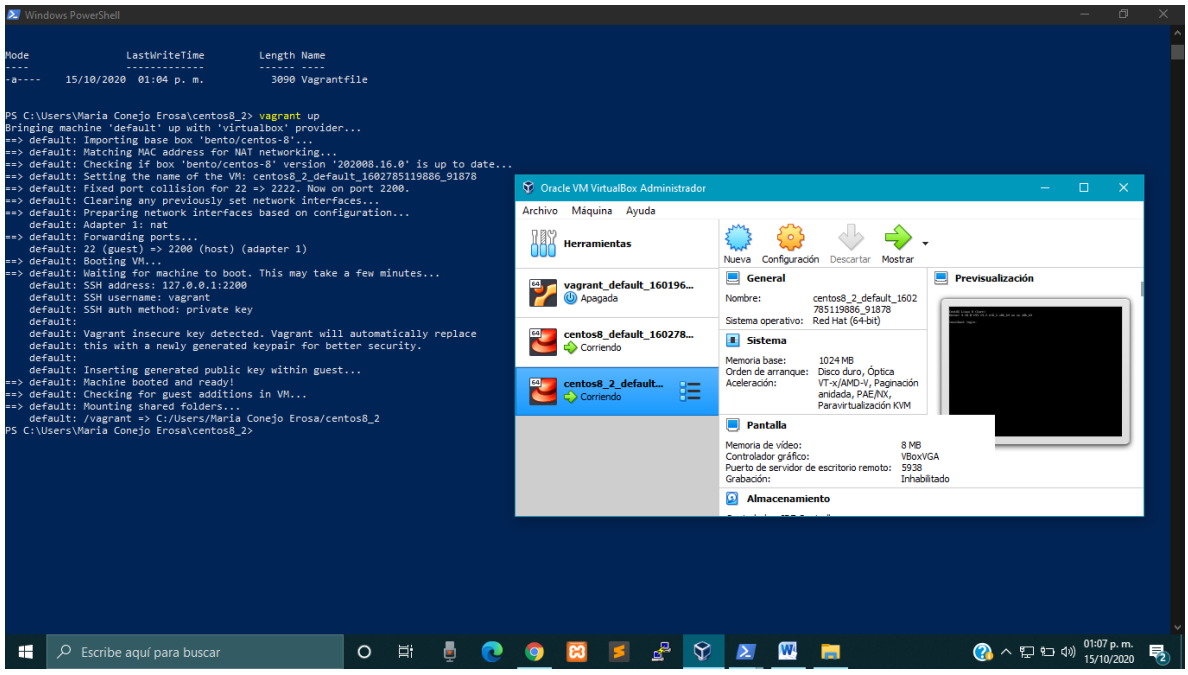
Instituto Tecnológico de Cancún

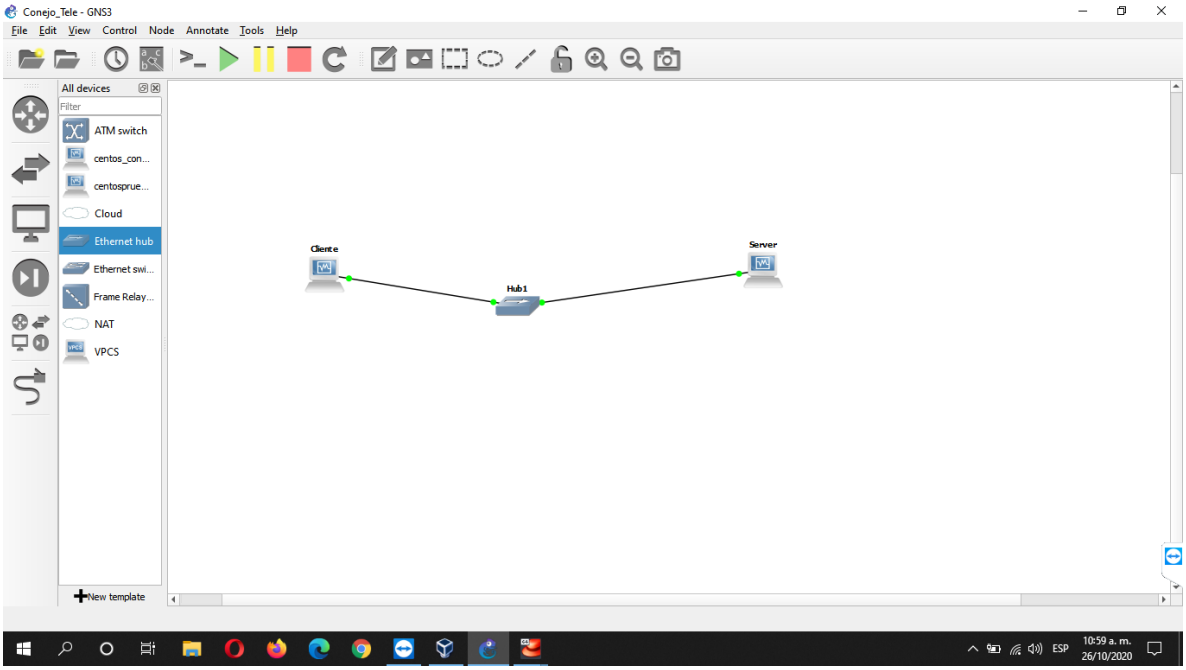
Conejo Erosa
Jesús Gustavo

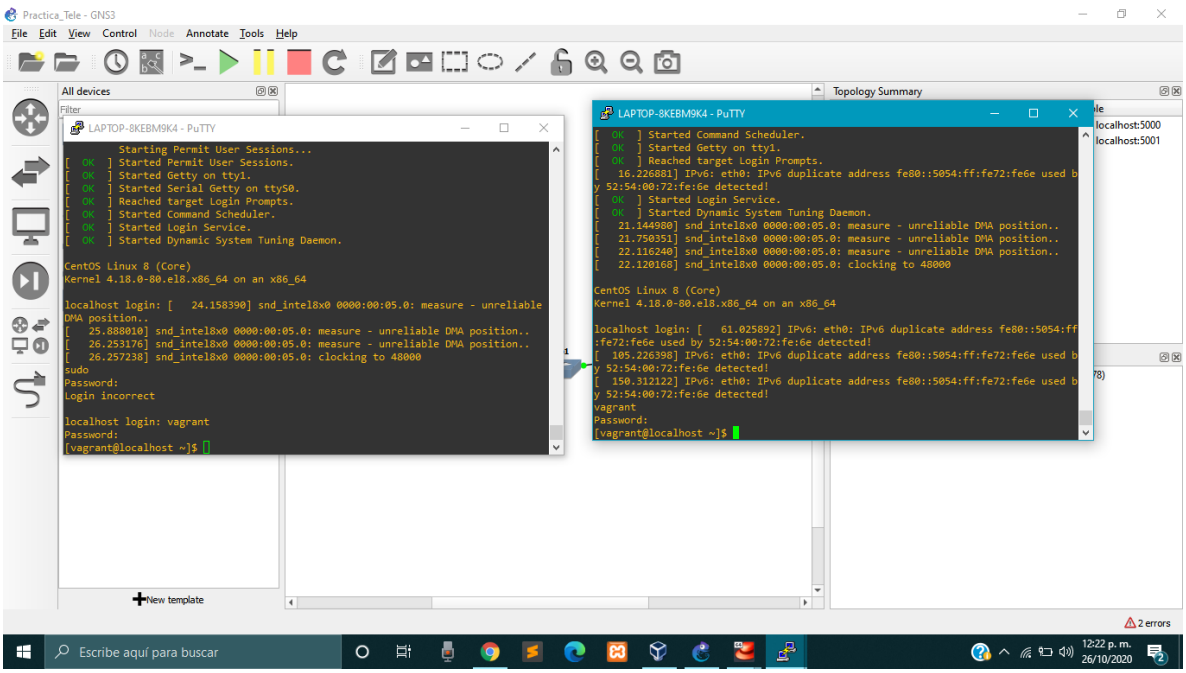
❖ FUNDAMENTOS DE TELECOMUNICACION

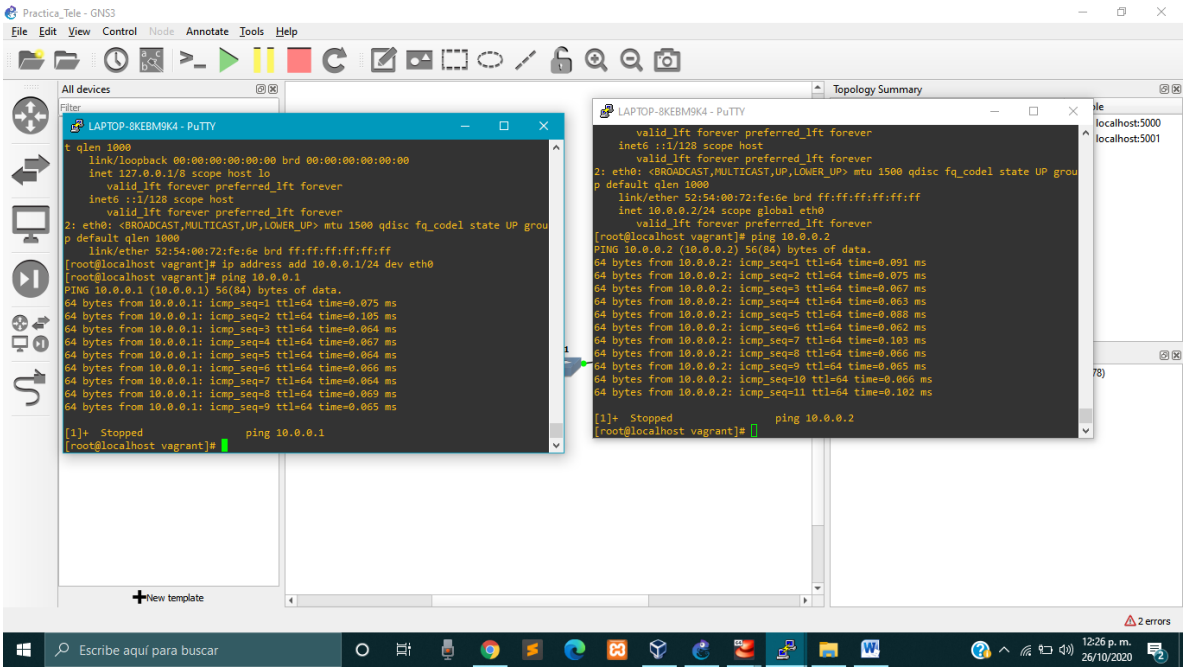
Proyecto Sistema de comunicación

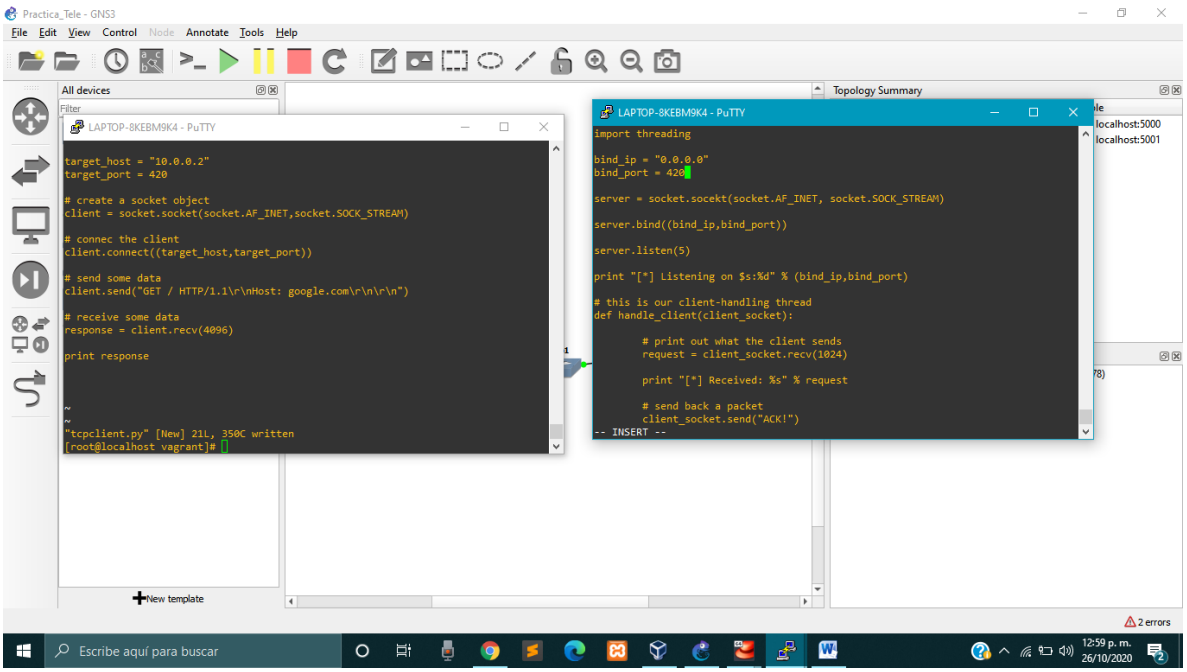


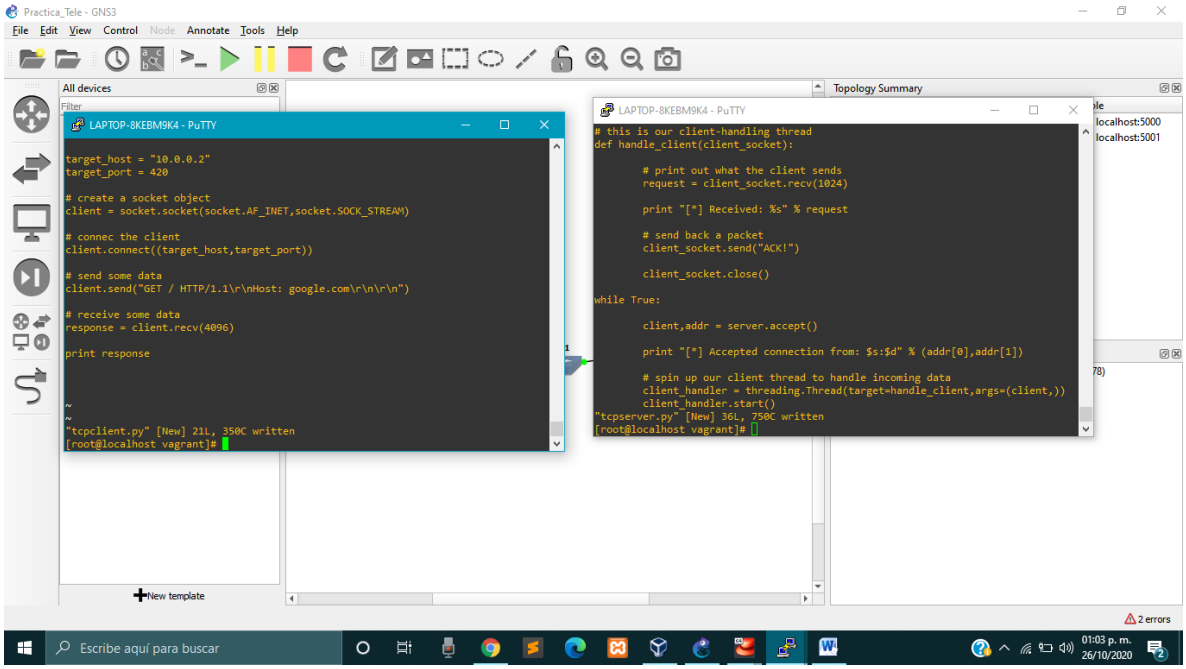


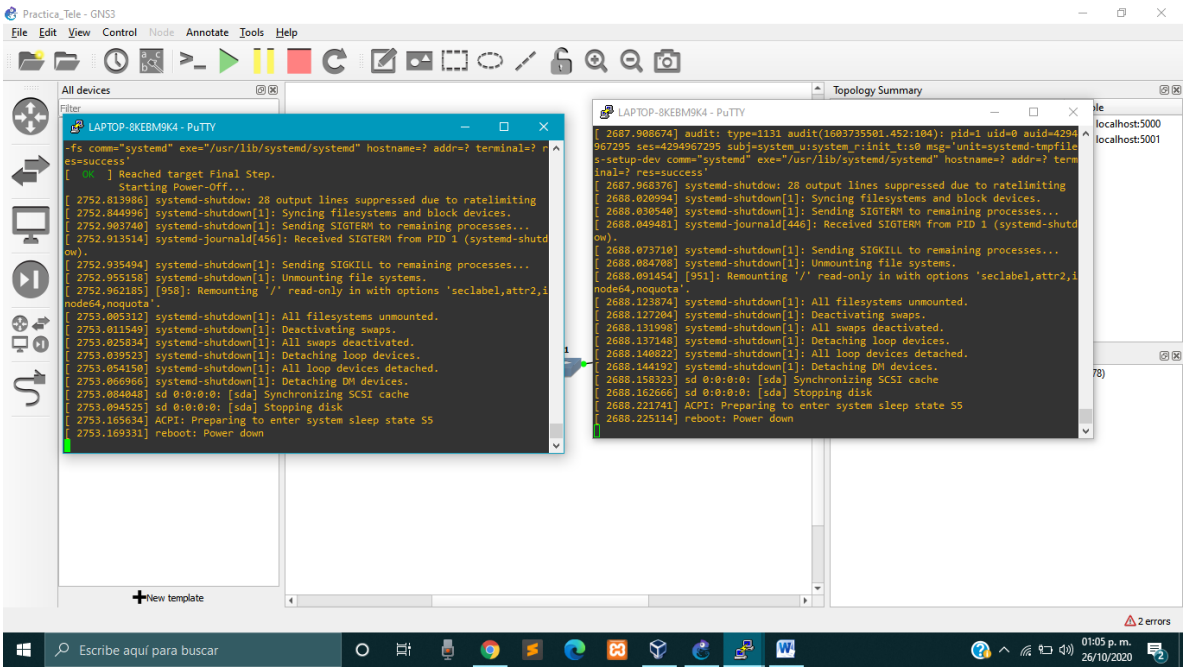

Conejo_Tele - GNS3
File Edit View Control Node Annotate Tools Help
All devices
Filter
ATM switch
centos_con...
centosprue...
Cloud
Ethernet hub
Ethernet swi...
Frame Relay...
NAT
VPCS
New template
Cliente
Hub1
Server
ESP
10:59 a. m.
26/10/2020

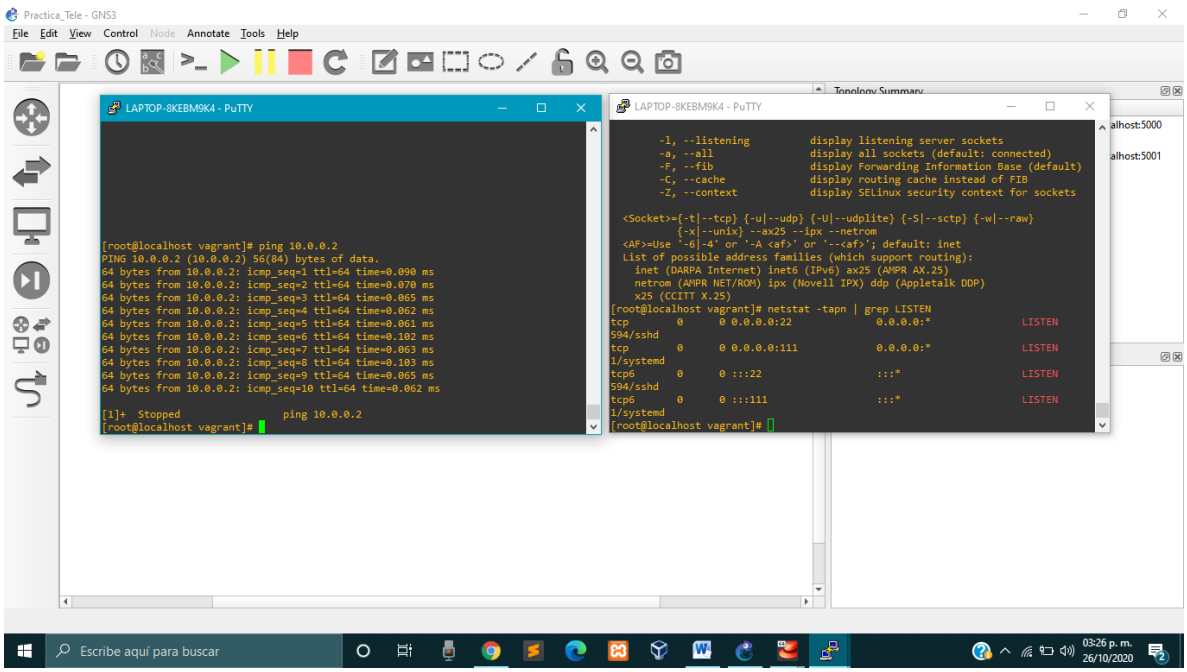

Practica_Tele - GNS3
File Edit View Control Node Annotate Tools Help
All devices
Filter
New template
Topology Summary
localhost:5000
localhost:5001
2 errors
LAPTOP-8KEBM9K4 - PuTTY
Starting Permit User Sessions...
[OK] Started Permit User Sessions.
[OK] Started Getty on tty1.
[OK] Started Serial Getty on ttyS0.
[OK] Reached target Login Prompts.
[OK] Started Command Scheduler.
[OK] Started Login Service.
[OK] Started Dynamic System Tuning Daemon.
CentOS Linux 8 (Core)
Kernel 4.18.0-80.el8.x86_64 on an x86_64
localhost login: [24.158390] snd_intel8x0 0000:00:05.0: measure - unreliable DMA position..
[25.888010] snd_intel8x0 0000:00:05.0: measure - unreliable DMA position..
[26.253176] snd_intel8x0 0000:00:05.0: measure - unreliable DMA position..
[26.257238] snd_intel8x0 0000:00:05.0: clocking to 48000
sudo
Password:
Login incorrect
localhost login: vagrant
Password:
[vagrant@localhost ~]$
LAPTOP-8KEBM9K4 - PuTTY
[OK] Started Command Scheduler.
[OK] Started Getty on tty1.
[OK] Reached target Login Prompts.
[16.226881] IPv6: eth0: IPv6 duplicate address fe80::5054:ff:fe72:fe6e used by 52:54:00:72:fe:6e detected!
[OK] Started Login Service.
[OK] Started Dynamic System Tuning Daemon.
[21.144980] snd_intel8x0 0000:00:05.0: measure - unreliable DMA position..
[21.750351] snd_intel8x0 0000:00:05.0: measure - unreliable DMA position..
[22.116240] snd_intel8x0 0000:00:05.0: measure - unreliable DMA position..
[22.120168] snd_intel8x0 0000:00:05.0: clocking to 48000
CentOS Linux 8 (Core)
Kernel 4.18.0-80.el8.x86_64 on an x86_64
localhost login: [61.025892] IPv6: eth0: IPv6 duplicate address fe80::5054:ff:fe72:fe6e used by 52:54:00:72:fe:6e detected!
[105.226398] IPv6: eth0: IPv6 duplicate address fe80::5054:ff:fe72:fe6e used by 52:54:00:72:fe:6e detected!
[150.312122] IPv6: eth0: IPv6 duplicate address fe80::5054:ff:fe72:fe6e used by 52:54:00:72:fe:6e detected!
vagrant
Password:
[vagrant@localhost ~]$
Escribe aquí para buscar
12:22 p. m.
26/10/2020

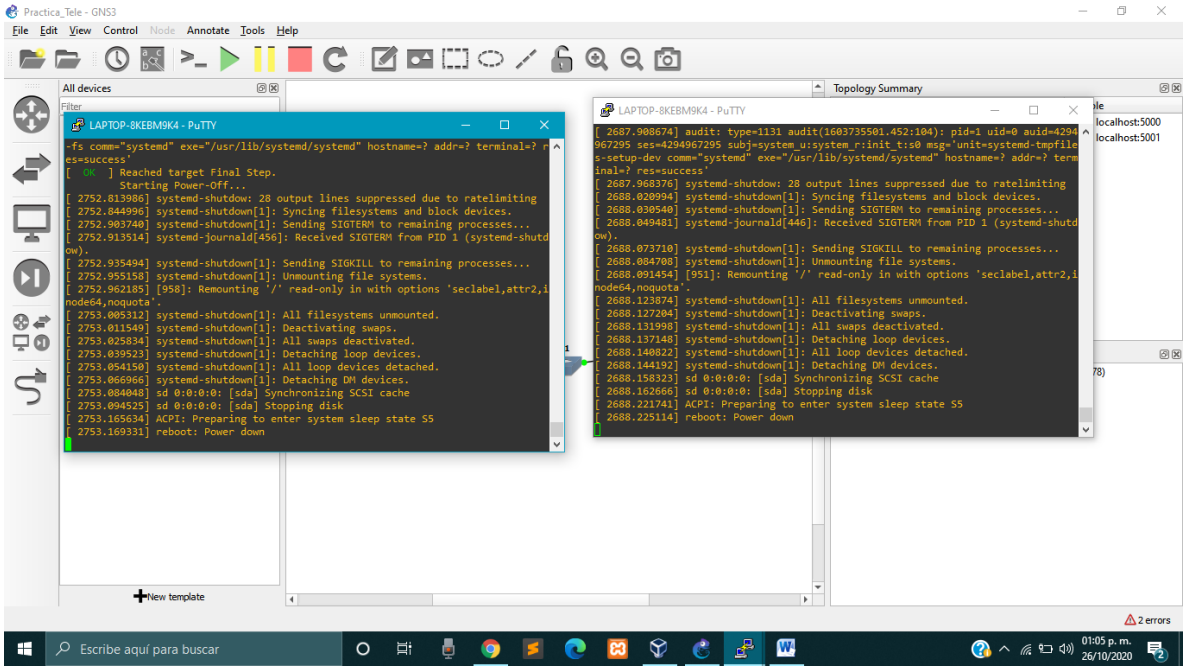

Practica_Tele - GNS3
File Edit View Control Node Annotate Tools Help
All devices
Topology Summary
LAPTOP-8KEBM9K4 - PuTTY
t qlen 1000
link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
inet 127.0.0.1/8 scope host lo
valid_lft forever preferred_lft forever
inet6 ::1/128 scope host
valid_lft forever preferred_lft forever
2: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP grou
p default qlen 1000
link/ether 52:54:00:72:fe:6e brd ff:ff:ff:ff:ff:ff
[root@localhost vagrant]# ip address add 10.0.0.1/24 dev eth0
[root@localhost vagrant]# ping 10.0.0.1
PING 10.0.0.1 (10.0.0.1) 56(84) bytes of data.
64 bytes from 10.0.0.1: icmp_seq=1 ttl=64 time=0.075 ms
64 bytes from 10.0.0.1: icmp_seq=2 ttl=64 time=0.105 ms
64 bytes from 10.0.0.1: icmp_seq=3 ttl=64 time=0.064 ms
64 bytes from 10.0.0.1: icmp_seq=4 ttl=64 time=0.067 ms
64 bytes from 10.0.0.1: icmp_seq=5 ttl=64 time=0.064 ms
64 bytes from 10.0.0.1: icmp_seq=6 ttl=64 time=0.066 ms
64 bytes from 10.0.0.1: icmp_seq=7 ttl=64 time=0.064 ms
64 bytes from 10.0.0.1: icmp_seq=8 ttl=64 time=0.069 ms
64 bytes from 10.0.0.1: icmp_seq=9 ttl=64 time=0.065 ms
[1]+ Stopped ping 10.0.0.1
[root@localhost vagrant]#
LAPTOP-8KEBM9K4 - PuTTY
valid_lft forever preferred_lft forever
inet6 ::1/128 scope host
valid_lft forever preferred_lft forever
2: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP grou
p default qlen 1000
link/ether 52:54:00:72:fe:6e brd ff:ff:ff:ff:ff:ff
inet 10.0.0.2/24 scope global eth0
valid_lft forever preferred_lft forever
[root@localhost vagrant]# ping 10.0.0.2
PING 10.0.0.2 (10.0.0.2) 56(84) bytes of data.
64 bytes from 10.0.0.2: icmp_seq=1 ttl=64 time=0.091 ms
64 bytes from 10.0.0.2: icmp_seq=2 ttl=64 time=0.075 ms
64 bytes from 10.0.0.2: icmp_seq=3 ttl=64 time=0.067 ms
64 bytes from 10.0.0.2: icmp_seq=4 ttl=64 time=0.063 ms
64 bytes from 10.0.0.2: icmp_seq=5 ttl=64 time=0.088 ms
64 bytes from 10.0.0.2: icmp_seq=6 ttl=64 time=0.062 ms
64 bytes from 10.0.0.2: icmp_seq=7 ttl=64 time=0.103 ms
64 bytes from 10.0.0.2: icmp_seq=8 ttl=64 time=0.066 ms
64 bytes from 10.0.0.2: icmp_seq=9 ttl=64 time=0.065 ms
64 bytes from 10.0.0.2: icmp_seq=10 ttl=64 time=0.066 ms
64 bytes from 10.0.0.2: icmp_seq=11 ttl=64 time=0.102 ms
[1]+ Stopped ping 10.0.0.2
[root@localhost vagrant]#
localhost:5000
localhost:5001
New template
2 errors
Escribe aquí para buscar
12:26 p. m.
26/10/2020

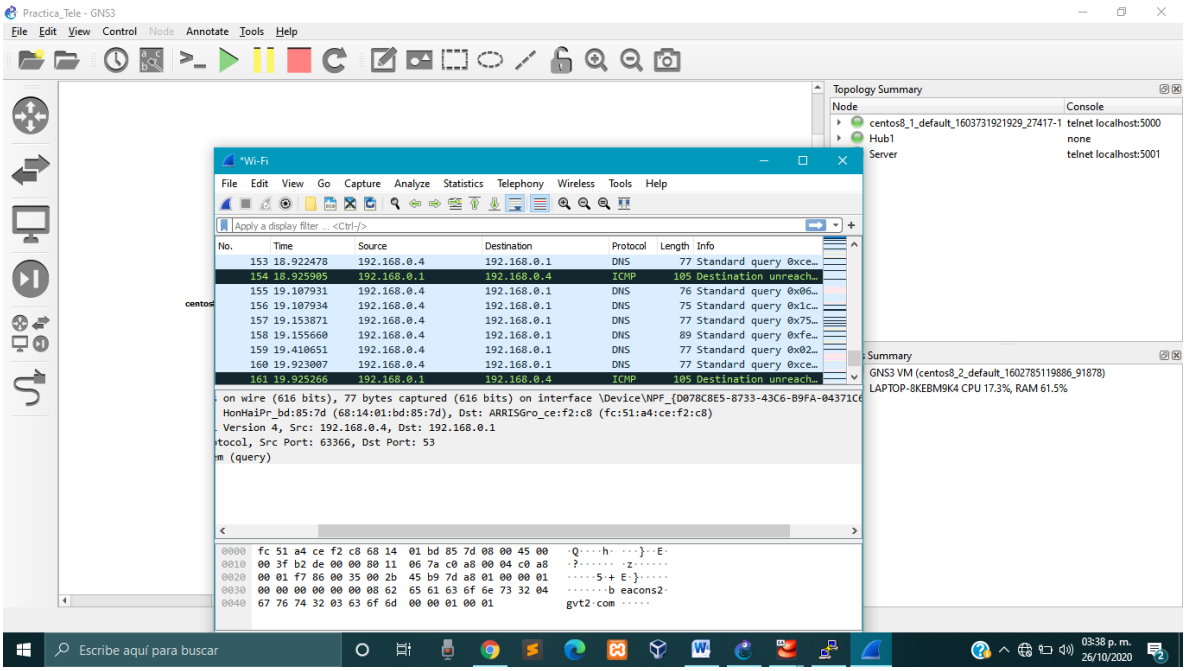

Practica_Tele - GNS3
File Edit View Control Node Annotate Tools Help
All devices
Topology Summary
LAPTOP-8KEBM9K4 - PuTTY
target_host = "10.0.0.2"
target_port = 420
# create a socket object
client = socket.socket(socket.AF_INET,socket.SOCK_STREAM)
# connec the client
client.connect((target_host,target_port))
# send some data
client.send("GET / HTTP/1.1\r\nHost: google.com\r\n\r\n")
# receive some data
response = client.recv(4096)
print response
~
~
"tcpclient.py" [New] 21L, 350C written
[root@localhost vagrant]#
LAPTOP-8KEBM9K4 - PuTTY
import threading
bind_ip = "0.0.0.0"
bind_port = 420
server = socket.socekt(socket.AF_INET, socket.SOCK_STREAM)
server.bind((bind_ip,bind_port))
server.listen(5)
print "[*] Listening on $s:%d" % (bind_ip,bind_port)
# this is our client-handling thread
def handle_client(client_socket):
# print out what the client sends
request = client_socket.recv(1024)
print "[*] Received: %s" % request
# send back a packet
client_socket.send("ACK!")
-- INSERT --
localhost:5000
localhost:5001
New template
2 errors
Escribe aquí para buscar
12:59 p. m.
26/10/2020


Practica_Tele - GNS3
File Edit View Control Node Annotate Tools Help
All devices
Topology Summary
LAPTOP-8KEBM9K4 - PuTTY
target_host = "10.0.0.2"
target_port = 420
# create a socket object
client = socket.socket(socket.AF_INET,socket.SOCK_STREAM)
# connec the client
client.connect((target_host,target_port))
# send some data
client.send("GET / HTTP/1.1\r\nHost: google.com\r\n\r\n")
# receive some data
response = client.recv(4096)
print response
"tcpclient.py" [New] 21L, 350C written
[root@localhost vagrant]#
LAPTOP-8KEBM9K4 - PuTTY
# this is our client-handling thread
def handle_client(client_socket):
# print out what the client sends
request = client_socket.recv(1024)
print "[*] Received: %s" % request
# send back a packet
client_socket.send("ACK!")
client_socket.close()
while True:
client,addr = server.accept()
print "[*] Accepted connection from: %s:%d" % (addr[0],addr[1])
# spin up our client thread to handle incoming data
client_handler = threading.Thread(target=handle_client,args=(client,))
client_handler.start()
"tcpserver.py" [New] 36L, 750C written
[root@localhost vagrant]#
localhost:5000
localhost:5001
New template
2 errors
Escribe aquí para buscar
01:03 p. m.
26/10/2020


Practica_Tele - GNS3
File Edit View Control Node Annotate Tools Help
All devices
Topology Summary
LAPTOP-8KEBM9K4 - PuTTY
-fs comm="systemd" exe="/usr/lib/systemd/systemd" hostname=? addr=? terminal=? r
es=success'
[OK] Reached target Final Step.
Starting Power-Off...
[2752.813986] systemd-shutdow: 28 output lines suppressed due to ratelimiting
[2752.844996] systemd-shutdown[1]: Syncing filesystems and block devices.
[2752.903740] systemd-shutdown[1]: Sending SIGTERM to remaining processes...
[2752.913514] systemd-journald[456]: Received SIGTERM from PID 1 (systemd-shutd
ow).
[2752.935494] systemd-shutdown[1]: Sending SIGKILL to remaining processes...
[2752.955158] systemd-shutdown[1]: Unmounting file systems.
[2752.962185] [958]: Remounting '/' read-only in with options 'seclabel,attr2,i
node64,noquota'.
[2753.005312] systemd-shutdown[1]: All filesystems unmounted.
[2753.011549] systemd-shutdown[1]: Deactivating swaps.
[2753.025834] systemd-shutdown[1]: All swaps deactivated.
[2753.039523] systemd-shutdown[1]: Detaching loop devices.
[2753.054150] systemd-shutdown[1]: All loop devices detached.
[2753.066966] systemd-shutdown[1]: Detaching DM devices.
[2753.084048] sd 0:0:0:0: [sda] Synchronizing SCSI cache
[2753.094525] sd 0:0:0:0: [sda] Stopping disk
[2753.165634] ACPI: Preparing to enter system sleep state S5
[2753.169331] reboot: Power down
LAPTOP-8KEBM9K4 - PuTTY
[2687.908674] audit: type=1131 audit(1603735501.452:104): pid=1 uid=0 auid=4294
967295 ses=4294967295 subj=system_u:system_r:init_t:s0 msg='unit=systemd-tmpfile
s-setup-dev comm="systemd" exe="/usr/lib/systemd/systemd" hostname=? addr=? term
inal=? res=success'
[2687.968376] systemd-shutdow: 28 output lines suppressed due to ratelimiting
[2688.020994] systemd-shutdown[1]: Syncing filesystems and block devices.
[2688.030540] systemd-shutdown[1]: Sending SIGTERM to remaining processes...
[2688.049481] systemd-journald[446]: Received SIGTERM from PID 1 (systemd-shutd
ow).
[2688.073710] systemd-shutdown[1]: Sending SIGKILL to remaining processes...
[2688.084708] systemd-shutdown[1]: Unmounting file systems.
[2688.091454] [951]: Remounting '/' read-only in with options 'seclabel,attr2,i
node64,noquota'.
[2688.123874] systemd-shutdown[1]: All filesystems unmounted.
[2688.127204] systemd-shutdown[1]: Deactivating swaps.
[2688.131998] systemd-shutdown[1]: All swaps deactivated.
[2688.137148] systemd-shutdown[1]: Detaching loop devices.
[2688.140822] systemd-shutdown[1]: All loop devices detached.
[2688.144192] systemd-shutdown[1]: Detaching DM devices.
[2688.158323] sd 0:0:0:0: [sda] Synchronizing SCSI cache
[2688.162666] sd 0:0:0:0: [sda] Stopping disk
[2688.221741] ACPI: Preparing to enter system sleep state S5
[2688.225114] reboot: Power down
localhost:5000
localhost:5001
New template
2 errors
Escribe aquí para buscar
01:05 p. m.
26/10/2020


Practica_Tele - GNS3
File Edit View Control Node Annotate Tools Help
LAPTOP-8KEBM9K4 - PuTTY
[root@localhost vagrant]# ping 10.0.0.2
PING 10.0.0.2 (10.0.0.2) 56(84) bytes of data.
64 bytes from 10.0.0.2: icmp_seq=1 ttl=64 time=0.090 ms
64 bytes from 10.0.0.2: icmp_seq=2 ttl=64 time=0.070 ms
64 bytes from 10.0.0.2: icmp_seq=3 ttl=64 time=0.065 ms
64 bytes from 10.0.0.2: icmp_seq=4 ttl=64 time=0.062 ms
64 bytes from 10.0.0.2: icmp_seq=5 ttl=64 time=0.061 ms
64 bytes from 10.0.0.2: icmp_seq=6 ttl=64 time=0.102 ms
64 bytes from 10.0.0.2: icmp_seq=7 ttl=64 time=0.063 ms
64 bytes from 10.0.0.2: icmp_seq=8 ttl=64 time=0.103 ms
64 bytes from 10.0.0.2: icmp_seq=9 ttl=64 time=0.065 ms
64 bytes from 10.0.0.2: icmp_seq=10 ttl=64 time=0.062 ms
[1]+ Stopped ping 10.0.0.2
[root@localhost vagrant]#
LAPTOP-8KEBM9K4 - PuTTY
-l, --listening display listening server sockets
-a, --all display all sockets (default: connected)
-F, --fib display Forwarding Information Base (default)
-C, --cache display routing cache instead of FIB
-Z, --context display SELinux security context for sockets
<Socket>={-t|--tcp} {-u|--udp} {-U|--udplite} {-S|--sctp} {-w|--raw}
{-x|--unix} --ax25 --ipx --netrom
<AF>=Use '-6|-4' or '-A <af>' or '--<af>'; default: inet
List of possible address families (which support routing):
inet (DARPA Internet) inet6 (IPv6) ax25 (AMPR AX.25)
netrom (AMPR NET/ROM) ipx (Novell IPX) ddp (Appletalk DDP)
x25 (CCITT X.25)
[root@localhost vagrant]# netstat -tapn | grep LISTEN
tcp 0 0 0.0.0.0:22 0.0.0.0:* LISTEN
594/sshd
tcp 0 0 0.0.0.0:111 0.0.0.0:* LISTEN
1/systemd
tcp6 0 0 :::22 :::* LISTEN
594/sshd
tcp6 0 0 :::111 :::* LISTEN
1/systemd
[root@localhost vagrant]#
Topology Summary
localhost:5000
localhost:5001
Escribe aquí para buscar
03:26 p. m.
26/10/2020


Practica_Tele - GNS3
File Edit View Control Node Annotate Tools Help
All devices
Topology Summary
LAPTOP-8KEBM9K4 - PuTTY
-fs comm="systemd" exe="/usr/lib/systemd/systemd" hostname=? addr=? terminal=? r
es=success'
[OK] Reached target Final Step.
Starting Power-Off...
[2752.813986] systemd-shutdown: 28 output lines suppressed due to ratelimiting
[2752.844996] systemd-shutdown[1]: Syncing filesystems and block devices.
[2752.903740] systemd-shutdown[1]: Sending SIGTERM to remaining processes...
[2752.913514] systemd-journald[456]: Received SIGTERM from PID 1 (systemd-shutd
ow).
[2752.935494] systemd-shutdown[1]: Sending SIGKILL to remaining processes...
[2752.955158] systemd-shutdown[1]: Unmounting file systems.
[2752.962185] [958]: Remounting '/' read-only in with options 'seclabel,attr2,i
node64,noquota'.
[2753.005312] systemd-shutdown[1]: All filesystems unmounted.
[2753.011549] systemd-shutdown[1]: Deactivating swaps.
[2753.025834] systemd-shutdown[1]: All swaps deactivated.
[2753.039523] systemd-shutdown[1]: Detaching loop devices.
[2753.054150] systemd-shutdown[1]: All loop devices detached.
[2753.066966] systemd-shutdown[1]: Detaching DM devices.
[2753.084048] sd 0:0:0:0: [sda] Synchronizing SCSI cache
[2753.094525] sd 0:0:0:0: [sda] Stopping disk
[2753.165634] ACPI: Preparing to enter system sleep state S5
[2753.169331] reboot: Power down
LAPTOP-8KEBM9K4 - PuTTY
[2687.908674] audit: type=1131 audit(1603735501.452:104): pid=1 uid=0 auid=4294
967295 ses=4294967295 subj=system_u:system_r:init_t:s0 msg='unit=systemd-tmpfile
s-setup-dev comm="systemd" exe="/usr/lib/systemd/systemd" hostname=? addr=? term
inal=? res=success'
[2687.968376] systemd-shutdown: 28 output lines suppressed due to ratelimiting
[2688.020994] systemd-shutdown[1]: Syncing filesystems and block devices.
[2688.030540] systemd-shutdown[1]: Sending SIGTERM to remaining processes...
[2688.049481] systemd-journald[446]: Received SIGTERM from PID 1 (systemd-shutd
ow).
[2688.073710] systemd-shutdown[1]: Sending SIGKILL to remaining processes...
[2688.084708] systemd-shutdown[1]: Unmounting file systems.
[2688.091454] [951]: Remounting '/' read-only in with options 'seclabel,attr2,i
node64,noquota'.
[2688.123874] systemd-shutdown[1]: All filesystems unmounted.
[2688.127204] systemd-shutdown[1]: Deactivating swaps.
[2688.131998] systemd-shutdown[1]: All swaps deactivated.
[2688.137148] systemd-shutdown[1]: Detaching loop devices.
[2688.140822] systemd-shutdown[1]: All loop devices detached.
[2688.144192] systemd-shutdown[1]: Detaching DM devices.
[2688.158323] sd 0:0:0:0: [sda] Synchronizing SCSI cache
[2688.162666] sd 0:0:0:0: [sda] Stopping disk
[2688.221741] ACPI: Preparing to enter system sleep state S5
[2688.225114] reboot: Power down
New template
2 errors
Escribe aquí para buscar
01:05 p. m.
26/10/2020


Practica_Tele - GNS3
File Edit View Control Node Annotate Tools Help
Topology Summary
Node
Console
centos8_1_default_1603731921929_27417-1
telnet localhost:5000
Hub1
none
Server
telnet localhost:5001
*Wi-Fi
File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help
Apply a display filter ... <Ctrl-/>
No. Time Source Destination Protocol Length Info
153 18.922478 192.168.0.4 192.168.0.1 DNS 77 Standard query 0xce...
154 18.925905 192.168.0.1 192.168.0.4 ICMP 105 Destination unreach...
155 19.107931 192.168.0.4 192.168.0.1 DNS 76 Standard query 0x06...
156 19.107934 192.168.0.4 192.168.0.1 DNS 75 Standard query 0x1c...
157 19.153871 192.168.0.4 192.168.0.1 DNS 77 Standard query 0x75...
158 19.155660 192.168.0.4 192.168.0.1 DNS 89 Standard query 0xfe...
159 19.410651 192.168.0.4 192.168.0.1 DNS 77 Standard query 0x02...
160 19.923007 192.168.0.4 192.168.0.1 DNS 77 Standard query 0xce...
161 19.925266 192.168.0.1 192.168.0.4 ICMP 105 Destination unreach...
on wire (616 bits), 77 bytes captured (616 bits) on interface \Device\NPF_{D078C8E5-8733-43C6-B9FA-04371C6
HonHaiPr_bd:85:7d (68:14:01:bd:85:7d), Dst: ARRISGro_ce:f2:c8 (fc:51:a4:ce:f2:c8)
Version 4, Src: 192.168.0.4, Dst: 192.168.0.1
tocol, Src Port: 63366, Dst Port: 53
m (query)
0000 fc 51 a4 ce f2 c8 68 14 01 bd 85 7d 08 00 45 00 ·Q····h· ···}··E·
0010 00 3f b2 de 00 00 80 11 06 7a c0 a8 00 04 c0 a8 ·?····· ·z····
0020 00 01 f7 86 00 35 00 2b 45 b9 7d a8 01 00 00 01 ·····5·+ E·}·····
0030 00 00 00 00 00 00 08 62 65 61 63 6f 6e 73 32 04 ·····b eacons2·
0040 67 76 74 32 03 63 6f 6d 00 00 01 00 01 gvt2·com ·····
Summary
GNS3 VM (centos8_2_default_1602785119886_91878)
LAPTOP-8KEBM9K4 CPU 17.3%, RAM 61.5%
Escribe aquí para buscar
03:38 p. m.
26/10/2020

REPORTE DE CONCLUSIONES

Dada la información previamente analizada, se adquiere una noción más detallada de la utilización de la herramienta Wireshark, como un recurso para el análisis del tráfico de paquetes entre dos hosts conectados mediante el protocolo TCP, siendo este el protocolo que permite una conexión fiable.

Conforme a los resultados obtenidos a través de la práctica se ha logrado comprender el significado que adquiere cada uno de los campos que componen a las capas de Acceso, Red y Transporte.