Practica 3: Pexpect SSH / Telnet

Oscar Andrés Rosas Hernández *Instituto Politécnico Nacional, Escuela Superior de Cómputo, CDMX*

I. Practica 3

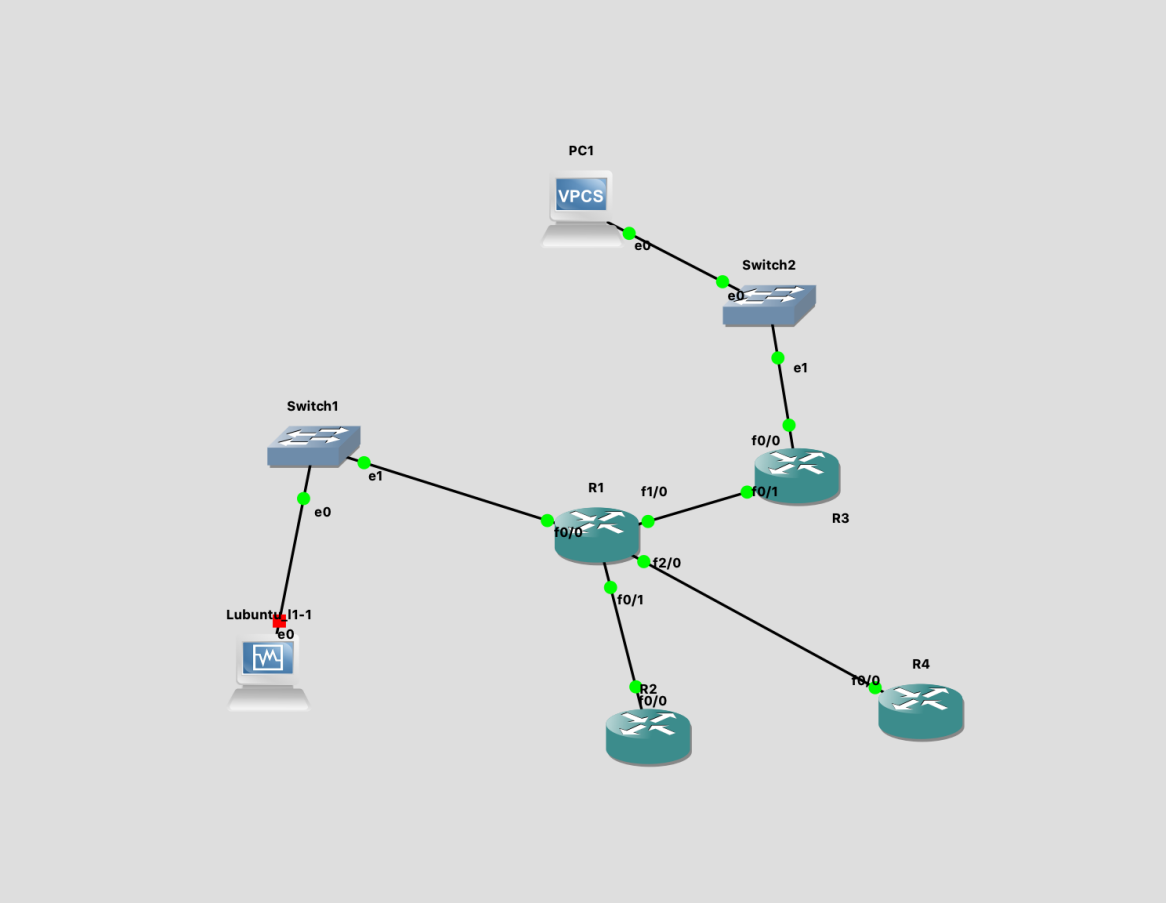
Lista de pasos realizados:

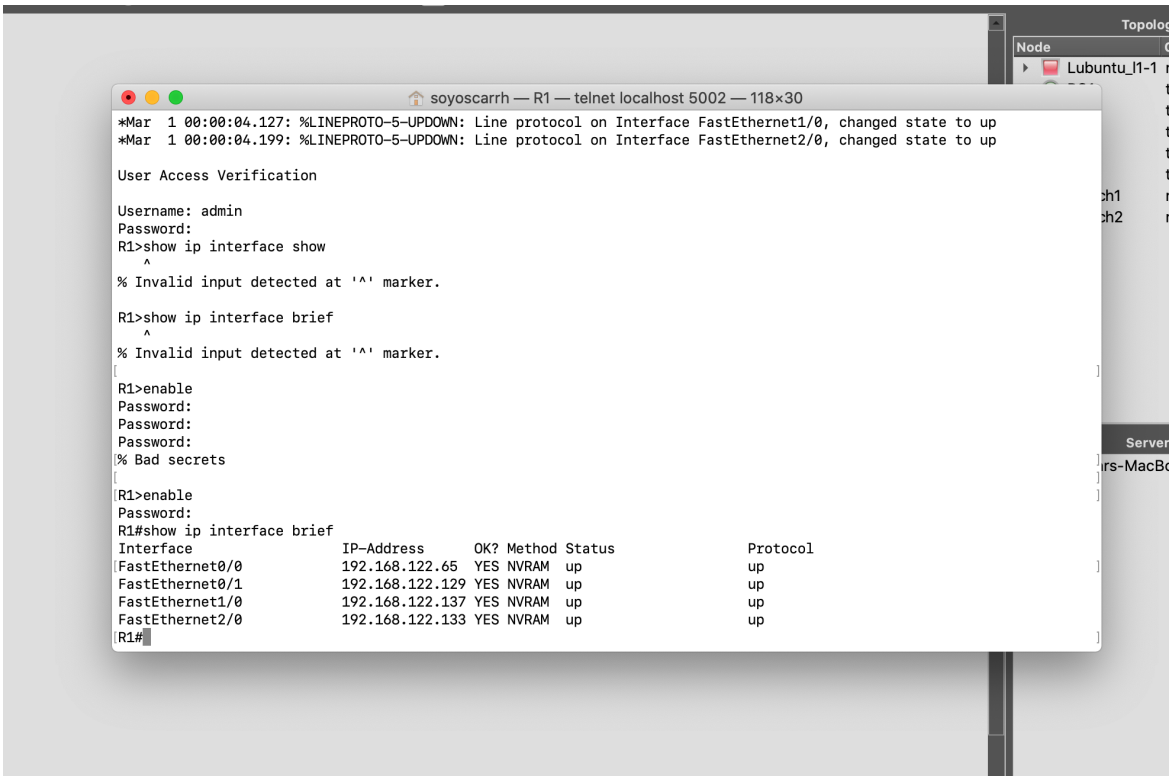
```
1) Realizar conexiones
2) Abrir consola del router 1
    # Para la PC
    enable
    configure terminal
    interface FastEthernet 0/0
    ip address 192.168.122.65 255.255.255.192
    no shutdown
    end

    # Para R2
    enable
    configure terminal
    interface FastEthernet 0/1
    ip address 192.168.122.129 255.255.255.252
    no shutdown
    end

    # Para R3
  enable
    configure terminal
    interface FastEthernet 1/0
    ip address 192.168.122.137 255.255.255.252
    no shutdown
    end

    # Para R4
  enable
    configure terminal
    interface FastEthernet 2/0
    ip address 192.168.122.133 255.255.255.252
    no shutdown
    end

3) Abrir consola del router 2
    enable
    configure terminal
    interface FastEthernet 0/0
    ip address 192.168.122.130 255.255.255.252
    no shutdown
    end

4) Abrir consola del router 3
    enable
    configure terminal
    interface FastEthernet 0/0
    ip address 192.168.122.1 255.255.255.192
    no shutdown
    end

    enable
    configure terminal
    interface FastEthernet 0/1
    ip address 192.168.122.138 255.255.255.252
    no shutdown
    end

5) Abrir consola del router 4
    enable
    configure terminal
    interface FastEthernet 0/0
    ip address 192.168.122.134 255.255.255.252
    no shutdown
```

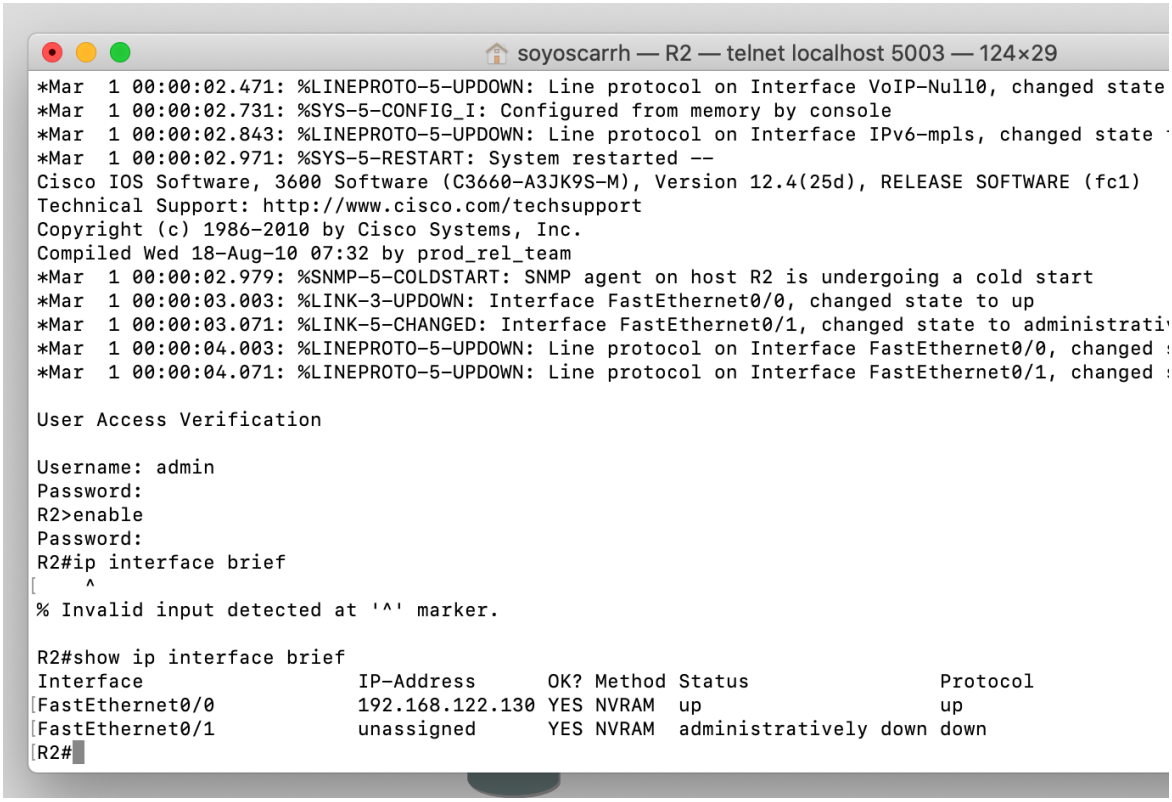
```
    end

show ip interface brief

# ================================================

6) Añadir ip a la pc de gns3
    ip 192.168.122.50 /26 192.168.122.1

7) Añadir ip a la maquina virtual
    192.168.122.100 / 26 -> gateway 192.168.122.65


8) Enruteo estático del router 1
    enable
    configure terminal
    ip route 192.168.122.0 255.255.255.192 f1/0
    end
9) Enruteo estático del router 2
    enable
    configure terminal
    ip route 192.168.122.0 255.255.255.192 f0/0
    ip route 192.168.122.64 255.255.255.192 f0/0

    ip route 192.168.122.136 255.255.255.252 f0/0
    ip route 192.168.122.132 255.255.255.252 f0/0
    end
10) Enruteo estático del router 3
    enable
    configure terminal
    ip route 192.168.122.64 255.255.255.192 f0/1

    ip route 192.168.122.128 255.255.255.252 f0/1
    ip route 192.168.122.132 255.255.255.252 f0/1
    end
11) Enruteo estático del router 4
    enable
    configure terminal
    ip route 192.168.122.0  255.255.255.192 f0/0
    ip route 192.168.122.64 255.255.255.192 f0/0

    ip route 192.168.122.128 255.255.255.252 f0/0
    ip route 192.168.122.136 255.255.255.252 f0/0
    end


10) Usuario, Telnet 1, 2, 3, 4
    enable
    configure terminal
    username admin priv 0 password admin01
    enable password 1234
    enable secret 12345678
    service password-encryption
    line console 0
    login local
    exit
    line vty 0 4
    password 1234
    login
    exit
    end

//Desde una pc
telnet "gateway router a conectar"
(va a pedir la contraseña para ingresar al router)
enable
(va a pedir la contraseña secret)

//Desde una pc
ssh -l "usuario" "gateway router a conectar"
(va a pedir la contraseña)
enable
(va a pedir la contraseña secret)

Sources
https://www.youtube.com/watch?v=ryf9oZy58Bo&t=903s
https://www.youtube.com/watch?v=veQf3vXf6Ew
```

```
https://www.petenetlive.com/KB/Article/0001245
```

Evidencias


PC1
VPCS
e0
Switch2
e0
e1
Switch1
e1
e0
f0/0
f0/1
R3
R1
f1/0
f0/0
f2/0
f0/1
e0
R2
f0/0
R4
f0/0

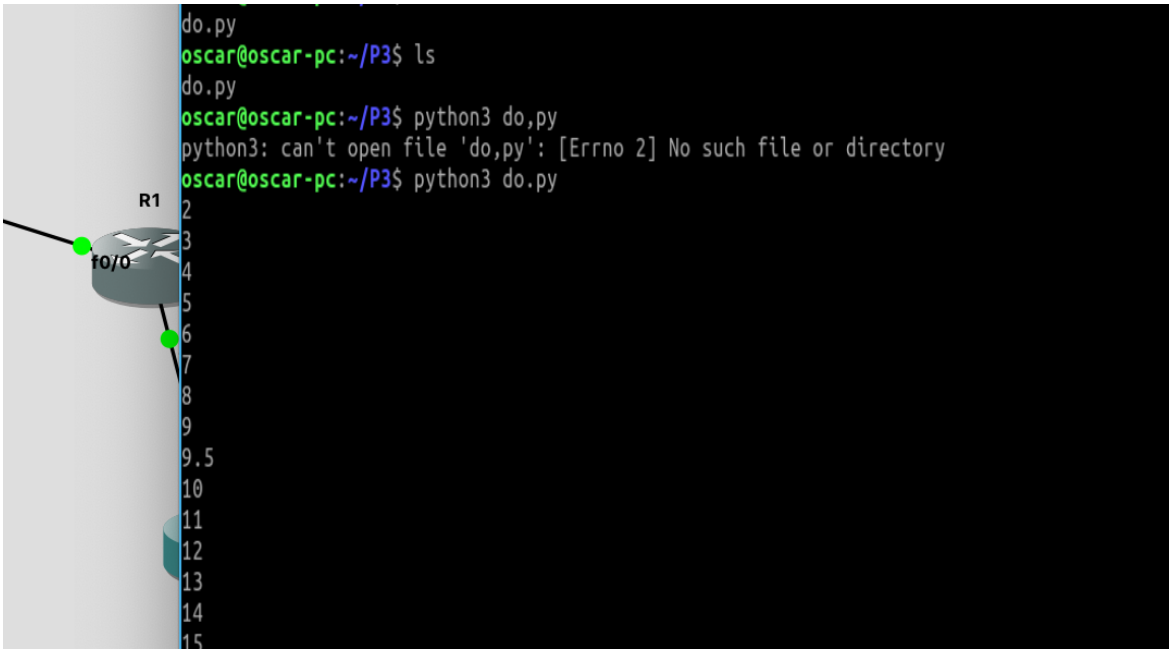

Topolog
Node
Lubuntu_l1-1
soyoscarrh — R1 — telnet localhost 5002 — 118×30
*Mar 1 00:00:04.127: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet1/0, changed state to up
*Mar 1 00:00:04.199: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet2/0, changed state to up
User Access Verification
Username: admin
Password:
R1>show ip interface show
^
% Invalid input detected at '^' marker.
R1>show ip interface brief
^
% Invalid input detected at '^' marker.
R1>enable
Password:
Password:
Password:
% Bad secrets
R1>enable
Password:
R1#show ip interface brief
Interface IP-Address OK? Method Status Protocol
FastEthernet0/0 192.168.122.65 YES NVRAM up up
FastEthernet0/1 192.168.122.129 YES NVRAM up up
FastEthernet1/0 192.168.122.137 YES NVRAM up up
FastEthernet2/0 192.168.122.133 YES NVRAM up up
R1#
Server

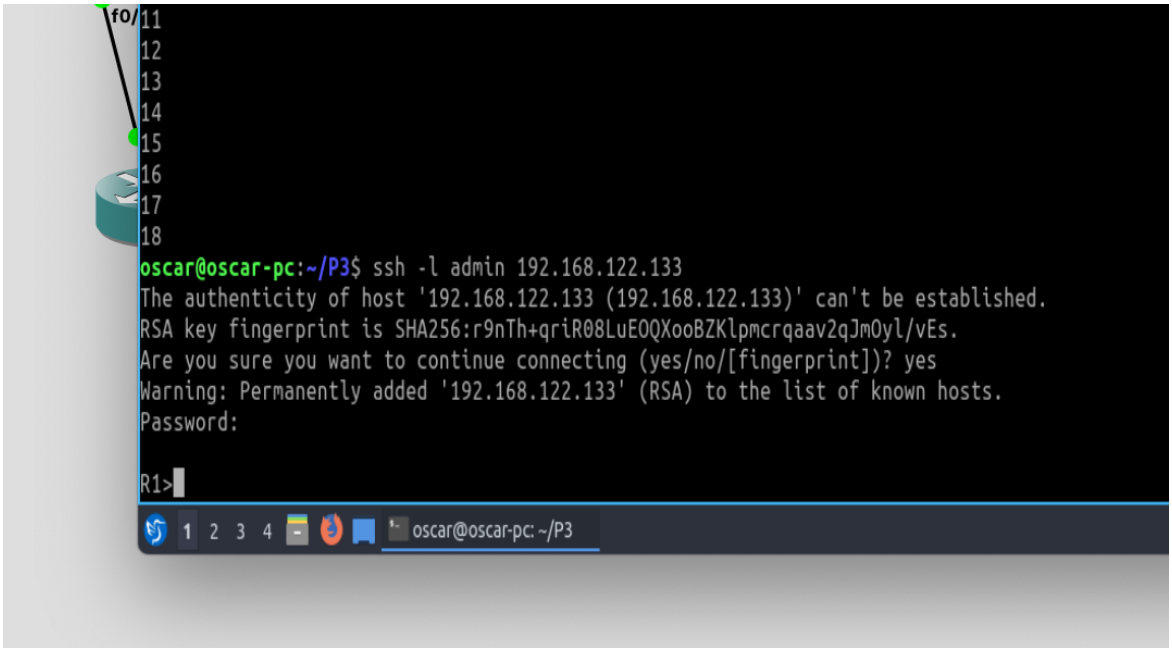

soyoscarrh — R2 — telnet localhost 5003 — 124×29
*Mar 1 00:00:02.471: %LINEPROTO-5-UPDOWN: Line protocol on Interface VoIP-Null0, changed state
*Mar 1 00:00:02.731: %SYS-5-CONFIG_I: Configured from memory by console
*Mar 1 00:00:02.843: %LINEPROTO-5-UPDOWN: Line protocol on Interface IPv6-mpls, changed state
*Mar 1 00:00:02.971: %SYS-5-RESTART: System restarted --
Cisco IOS Software, 3600 Software (C3660-A3JK9S-M), Version 12.4(25d), RELEASE SOFTWARE (fc1)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2010 by Cisco Systems, Inc.
Compiled Wed 18-Aug-10 07:32 by prod_rel_team
*Mar 1 00:00:02.979: %SNMP-5-COLDSTART: SNMP agent on host R2 is undergoing a cold start
*Mar 1 00:00:03.003: %LINK-3-UPDOWN: Interface FastEthernet0/0, changed state to up
*Mar 1 00:00:03.071: %LINK-5-CHANGED: Interface FastEthernet0/1, changed state to administrati
*Mar 1 00:00:04.003: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed
*Mar 1 00:00:04.071: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed
User Access Verification
Username: admin
Password:
R2>enable
Password:
R2#ip interface brief
^
% Invalid input detected at '^' marker.
R2#show ip interface brief
Interface IP-Address OK? Method Status Protocol
FastEthernet0/0 192.168.122.130 YES NVRAM up up
FastEthernet0/1 unassigned YES NVRAM administratively down down
R2#

```
                    ^
% Invalid input detected at '^' marker.

R3#show ip interface brief
Interface                  IP-Address      OK? Method Status                Protocol
FastEthernet0/0            192.168.122.1   YES NVRAM  up                    up
FastEthernet0/1            192.168.122.138 YES NVRAM  up                    up
R3#
```

```
22.133 YES NVRA
64 bytes from 192.168.122.133: icmp_seq=1 ttl=255 time=12.1 ms
64 bytes from 192.168.122.133: icmp_seq=2 ttl=255 time=9.57 ms
64 bytes from 192.168.122.133: icmp_seq=3 ttl=255 time=3.83 ms
^C
--- 192.168.122.133 ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2003ms
rtt min/avg/max/mdev = 3.834/8.507/12.119/3.464 ms
oscar@oscar-pc:~$ ping 192.168.122.137
PING 192.168.122.137 (192.168.122.137) 56(84) bytes of data.
64 bytes from 192.168.122.137: icmp_seq=1 ttl=255 time=1.95 ms
64 bytes from 192.168.122.137: icmp_seq=2 ttl=255 time=4.85 ms
64 bytes from 192.168.122.137: icmp_seq=3 ttl=255 time=3.45 ms
^C
--- 192.168.122.137 ping statistics ---
4 packets transmitted, 3 received, 25% packet loss, time 3006ms
rtt min/avg/max/mdev = 1.954/3.418/4.848/1.181 ms
oscar@oscar-pc:~$
1 2 3 4  oscar@oscar-pc: ~
```

```
fo/0
^C
--- 192.168.122.137 ping statistics ---
4 packets transmitted, 3 received, 25% packet loss, time 3006ms
rtt min/avg/max/mdev = 1.954/3.418/4.848/1.181 ms
oscar@oscar-pc:~$ telnet 192.168.122.133
Trying 192.168.122.133...
Connected to 192.168.122.133.
Escape character is '^]'.


User Access Verification

Password:
R1>exit
Connection closed by foreign host.
oscar@oscar-pc:~$ ssh -l admin 192.168.122.133
ssh: connect to host 192.168.122.133 port 22: Connection refused
oscar@oscar-pc:~$
1 2 3 4  oscar@oscar-pc: ~
```


R1
fo/0
do.py
oscar@oscar-pc:~/P3$ ls
do.py
oscar@oscar-pc:~/P3$ python3 do,py
python3: can't open file 'do,py': [Errno 2] No such file or directory
oscar@oscar-pc:~/P3$ python3 do.py
2
3
4
5
6
7
8
9
9.5
10
11
12
13
14
15


fo/
11
12
13
14
15
16
17
18
oscar@oscar-pc:~/P3$ ssh -l admin 192.168.122.133
The authenticity of host '192.168.122.133 (192.168.122.133)' can't be established.
RSA key fingerprint is SHA256:r9nTh+qriR08LuEOQXooBZKlpmcrqaav2qJmOyl/vEs.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '192.168.122.133' (RSA) to the list of known hosts.
Password:
R1>
1 2 3 4
oscar@oscar-pc: ~/P3

Script realizado:

```
import pexpect

devices = [('R1', '192.168.122.65'), ('R2', '192.168.122.130'),
           ('R3', '192.168.122.138'), ('R4', '192.168.122.134'), ]

for name, ip in devices:
    child = pexpect.spawn('telnet ' + ip)

    child.expect('Password:')
    child.sendline("1234")
    print("2")

    child.expect(f"{name}>")
    child.sendline("enable")
    print("3")

    child.expect('Password:')
    child.sendline("12345678")
    print("4")

    child.expect(f"#")
    child.sendline("configure terminal")
    print("5")

    child.expect(f"#")
    child.sendline("hostname " + name)
    print("6")

    child.expect(f"#")
    child.sendline(f"ip domain-name {name}.LOCAL")
    print("7")

    child.expect(f"#")
    child.sendline(f"crypto key generate rsa")
    print("8")

    child.expect(":")
    child.sendline("yes")
    print("9")

    child.expect(":")
    child.sendline("2048")
    print("9.5")

    child.expect(f"#")
    child.sendline("ip ssh time-out 10")
    print("10")

    child.expect(f"#")
    child.sendline(f"ip ssh authentication-retries 3")
    print("11")

    child.expect(f"#")
    child.sendline(f"ip ssh version 2")
    print("12")

    child.expect(f"#")
    child.sendline(f"line vty 0 4 ")
    print("13")

    child.expect(f"#")
    child.sendline("transport input ssh telnet")
    print("14")

    child.expect(f"#")
    child.sendline("login local")
    print("15")

    child.expect(f"#")
    child.sendline("exit")
    print("16")

    child.expect(f"#")
    child.sendline("exit")
    print("17")
```

```
    child.expect(f"#")
    child.sendline('exit')
    print("18")
```