PRÁCTICA: SSH y Telnet

FECHA: 29/05/2024

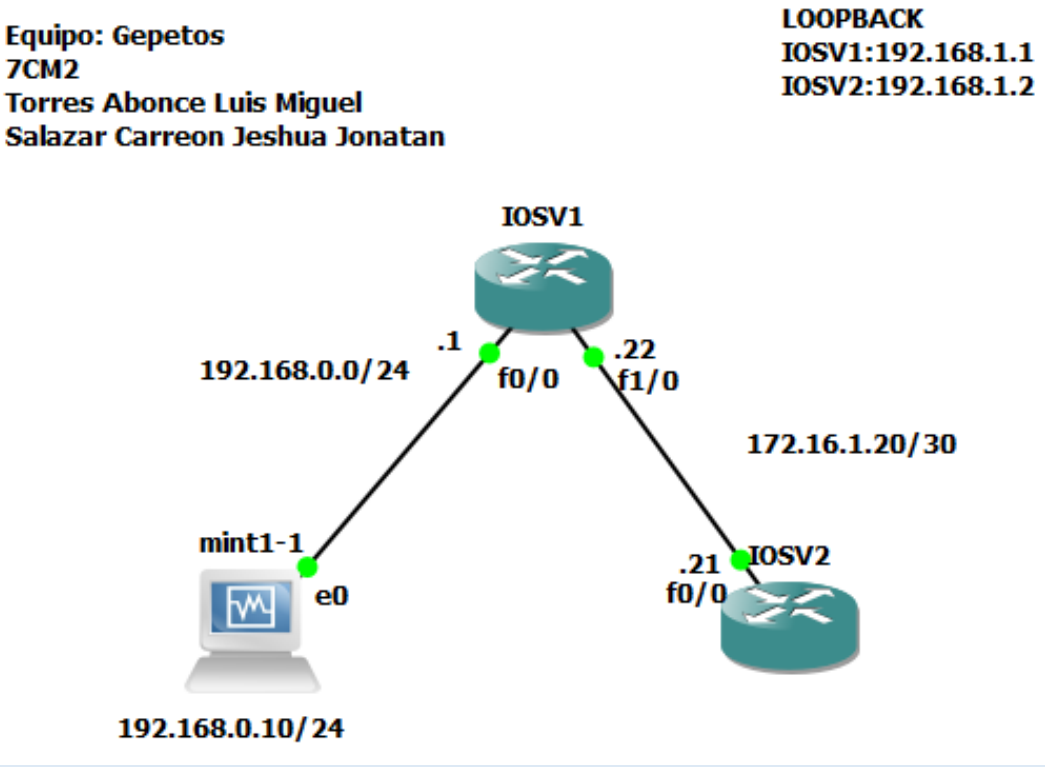
GRUPO: 7CM2

NOMBRE DEL EQUIPO: Gepetos

Integrantes:

Torres Abonce Luis Miguel
Salazar Carreón Jeshua Jonathan

Configuración de la topología en GNS3



Configuración del router IOSV1 configuración de las interfaces y configuración de ssh y telnet

```
IOSV-1#enable
IOSV-1#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
IOSV-1(config)#interface f0/0
IOSV-1(config-if)#ip address 192.168.0.1 255.255.255.0
IOSV-1(config-if)#no shutdown
IOSV-1(config-if)#
*May 31 15:21:25.303: %LINK-3-UPDOWN: Interface FastEthernet0/0, changed state to up
IOSV-1(config-if)#
*May 31 15:21:25.303: %ENTITY_ALARM-6-INFO: CLEAR INFO Fa0/0 Physical Port Administrative State Down
*May 31 15:21:26.303: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up
IOSV-1(config-if)#interface f1/0
IOSV-1(config-if)#ip address 172.16.1.22 255.255.255.252
IOSV-1(config-if)#no shutdown
IOSV-1(config-if)#
*May 31 15:21:35.831: %LINK-3-UPDOWN: Interface FastEthernet1/0, changed state to up
IOSV-1(config-if)#router ospf 1
IOSV-1(config-router)#
*May 31 15:21:35.831: %ENTITY_ALARM-6-INFO: CLEAR INFO Fa1/0 Physical Port Administrative State Down
*May 31 15:21:36.831: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet1/0, changed state to up
IOSV-1(config-router)#network 192.168.0.0 0.0.0.255 area 0
IOSV-1(config-router)#
IOSV-1(config-router)#
IOSV-1(config-router)#network 172.16.1.20 0.0.0.3 area 0
IOSV-1(config-router)# end
IOSV-1#config t
Enter configuration commands, one per line.  End with CNTL/Z.
IOSV-1(config)#enable secret 1234
IOSV-1(config)#service password-encryption
IOSV-1(config)#interface loopback0
IOSV-1(config-if)#
*May 31 15:23:57.075: %LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback0, changed state to up
IOSV-1(config-if)#description loopback0
IOSV-1(config-if)#ip address 192.168.1.1 255.255.255.255
IOSV-1(config-if)#no shutdown
IOSV-1(config-if)#interface fastEthernet0/0
IOSV-1(config-if)#ip address 192.168.0.1 255.255.255.0
IOSV-1(config-if)# no shutdown
IOSV-1(config-if)#interface fastEthernet1/0
IOSV-1(config-if)#ip address 172.16.1.22 255.255.255.252
IOSV-1(config-if)#no shutdown
IOSV-1(config-if)#exit
IOSV-1(config)#router ospf 1
IOSV-1(config-router)#passive-interface loopback0
IOSV-1(config-router)#passive-interface fastEthernet0/0
IOSV-1(config-router)#network 172.16.1.20 0.0.0.3 area 0
IOSV-1(config-router)#network 192.168.0.0 0.0.0.255 area 0
IOSV-1(config-router)#exit
IOSV-1(config)#ip domain-name adminredes.escom.ipn.mx
IOSV-1(config)#crypto key generate rsa usage-keys label sshkey modulus 1024
The name for the keys will be: sshkey

% The key modulus size is 1024 bits
% Generating 1024 bit RSA keys, keys will be non-exportable...[OK]
% Generating 1024 bit RSA keys, keys will be non-exportable...[OK]

IOSV-1(config)#
*May 31 15:25:11.151: %SSH-5-ENABLED: SSH 1.99 has been enabled
IOSV-1(config)#ip ssh version 2
IOSV-1(config)#ip ssh time-out 30
IOSV-1(config)#ip ssh authentication-retries 3
IOSV-1(config)#line vty 0 15
IOSV-1(config-line)#password cisco
IOSV-1(config-line)#login local
IOSV-1(config-line)#transport input ssh telnet
IOSV-1(config-line)#exit
IOSV-1(config)#username cisco privilege 15 password cisco
IOSV-1(config)#end
```

Para el IOSV2 configuración de las interfaces y configuración de ssh y telnet

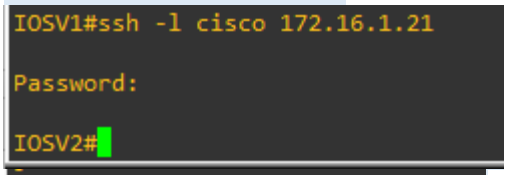
```
IOSV-2#enable
IOSV-2#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
IOSV-2(config)#interface f0/0
IOSV-2(config-if)#ip address 172.16.1.21 255.255.255.252
IOSV-2(config-if)#no shutdown
IOSV-2(config-if)#
*May 31 15:21:42.703: %LINK-3-UPDOWN: Interface FastEthernet0/0, changed state to up
IOSV-2(config-if)#
*May 31 15:21:42.703: %ENTITY_ALARM-6-INFO: CLEAR INFO Fa0/0 Physical Port Administrative State Down
*May 31 15:21:43.703: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up
IOSV-2(config-if)#$on Interface GigabitEthernet4/0, changed state to down
.771: %LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet4/0, change^d state to down
```

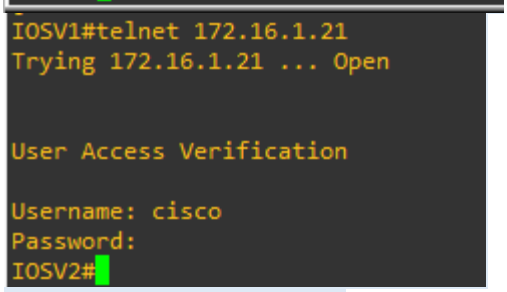
```
IOSV-2(config-if)#router ospf 1
IOSV-2(config-router)#network 172.16.1.20 0.0.0.3 area 0
IOSV-2(config-router)#end
IOSV-2#
*May 31 15:22:08.315: %SYS-5-CONFIG_I: Configured from console by console
IOSV-2#show ip ospf ne
IOSV-2#show ip ospf neighbor
```

```
IOSV-2#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
IOSV-2(config)#enable secret 1234
IOSV-2(config)#service password-encryption
IOSV-2(config)#interface loopback0
IOSV-2(config-if)#
*May 31 15:27:22.955: %LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback0, changed state to up
IOSV-2(config-if)#description loopback0
IOSV-2(config-if)#ip address 192.168.1.1 255.255.255.255
IOSV-2(config-if)#no shutdown
IOSV-2(config-if)#interface fastEthernet0/0
IOSV-2(config-if)#ip address 172.16.1.21 255.255.255.252
IOSV-2(config-if)#no shutdown
IOSV-2(config-if)#exit
IOSV-2(config)#router ospf 1
IOSV-2(config-router)#passive-interface loopback0
IOSV-2(config-router)#passive-interface fastEthernet0/0
IOSV-2(config-router)#network 172.16.1.20 0.0.0.3 area 0
IOSV-2(config-router)#exit
IOSV-2(config)#ip domain-name adminredes.escom.ipn.mx
IOSV-2(config)#crypto key generate rsa usage-keys label sshkey modulus 1024
The name for the keys will be: sshkey

% The key modulus size is 1024 bits
% Generating 1024 bit RSA keys, keys will be non-exportable...[OK]
% Generating 1024 bit RSA keys, keys will be non-exportable...[OK]

IOSV-2(config)#
*May 31 15:29:00.119: %SSH-5-ENABLED: SSH 1.99 has been enabled
IOSV-2(config)#ip ssh version 2
IOSV-2(config)#ip ssh time-out 30
IOSV-2(config)#ip ssh authentication-retries 3
IOSV-2(config)#line vty 0 15
IOSV-2(config-line)#password cisco
IOSV-2(config-line)#login local
IOSV-2(config-line)#transport input ssh telnet
IOSV-2(config-line)#exit
IOSV-2(config)#username cisco privilege 15 password cisco
IOSV-2(config)#end
```

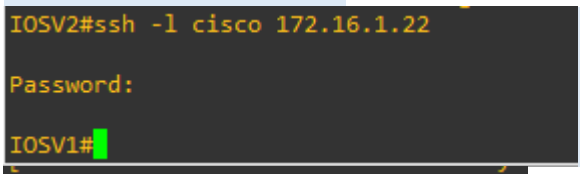
Prueba de conexiones ssh y telnet

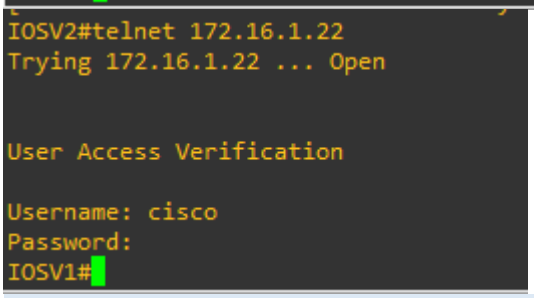
De IOSV1 a IOSV2:





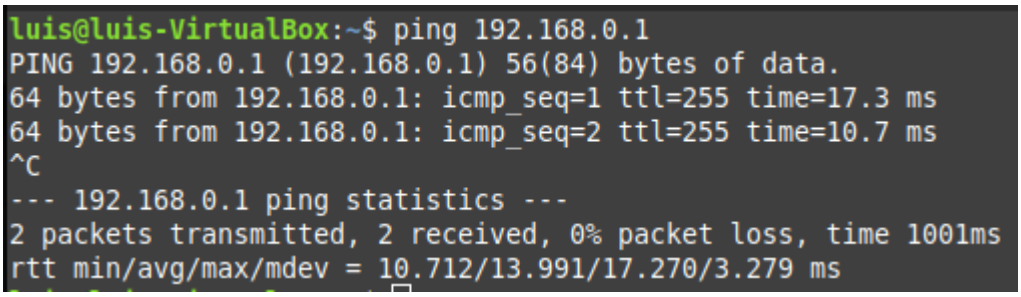
De IOSV2 a IOSV1:





Configuración de la maquina virtual para utilizar ssh y telnet correctamente

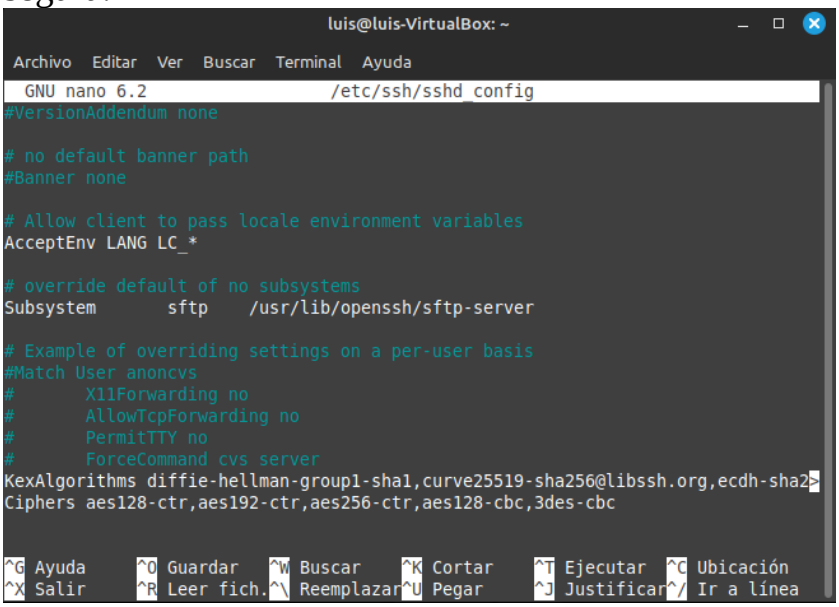
Verificamos la conectividad con un ping:



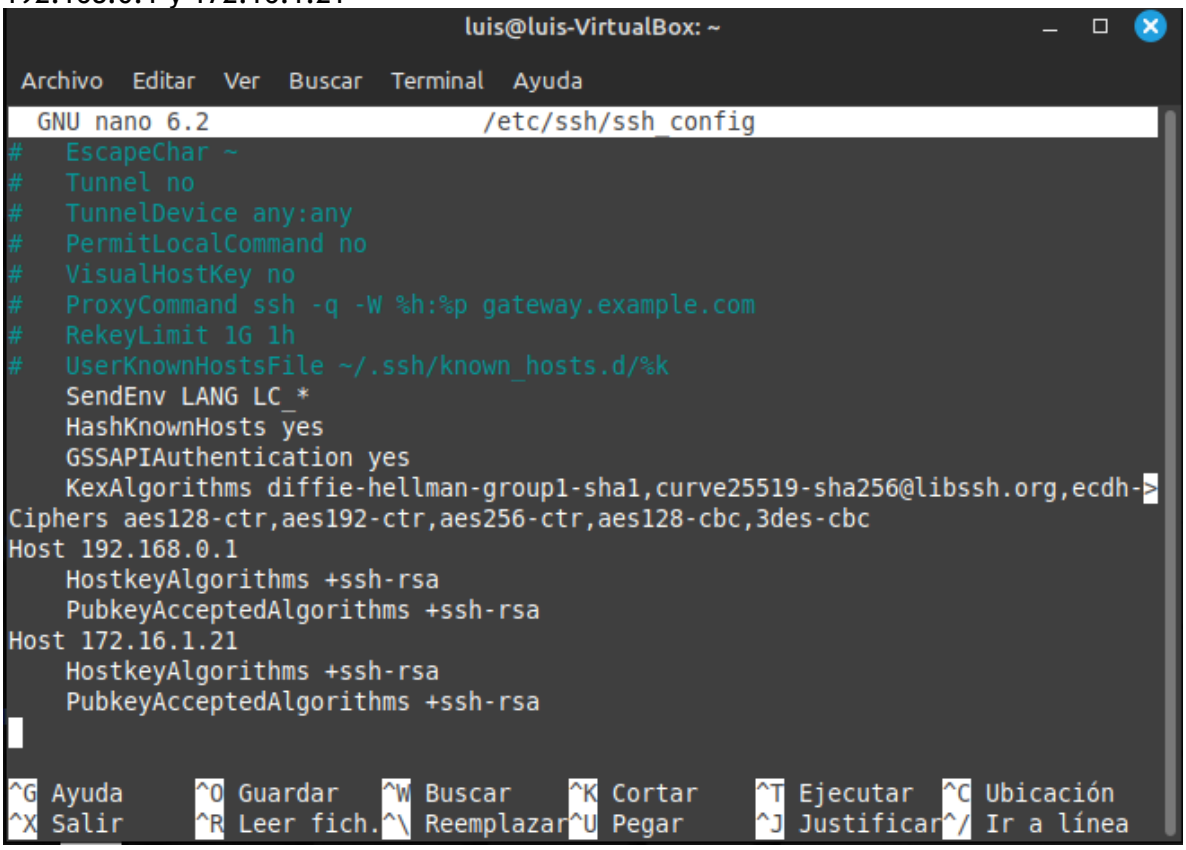
Ahora nos conectamos al router usando telnet:

```
luis@luis-VirtualBox:~$ telnet 192.168.1.1
Trying 192.168.1.1...
Connected to 192.168.1.1.
Escape character is '^]'.


User Access Verification

Username: cisco
Password:
IOSV1#exit
Connection closed by foreign host.
luis@luis-VirtualBox:~$ telnet 172.16.1.21
Trying 172.16.1.21...
Connected to 172.16.1.21.
Escape character is '^]'.


User Access Verification

Username: cisco
Password:
IOSV2#
```

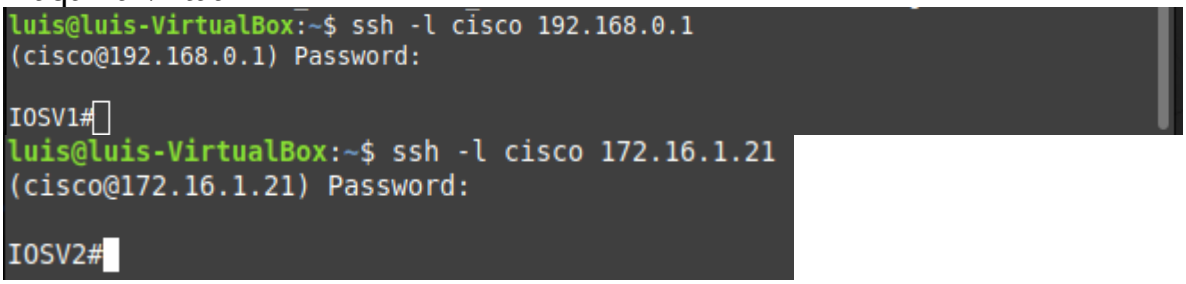
Ahora para usar telnet configuramos en el archivo /etc/ssh/sshd_config y al final del archivo pegamos lo siguiente esto para intercambiar claves de manera segura:



Y en el archivo nano /etc/ssh/ssh_config agregamos los hosts: 192.168.0.1 y 172.16.1.21

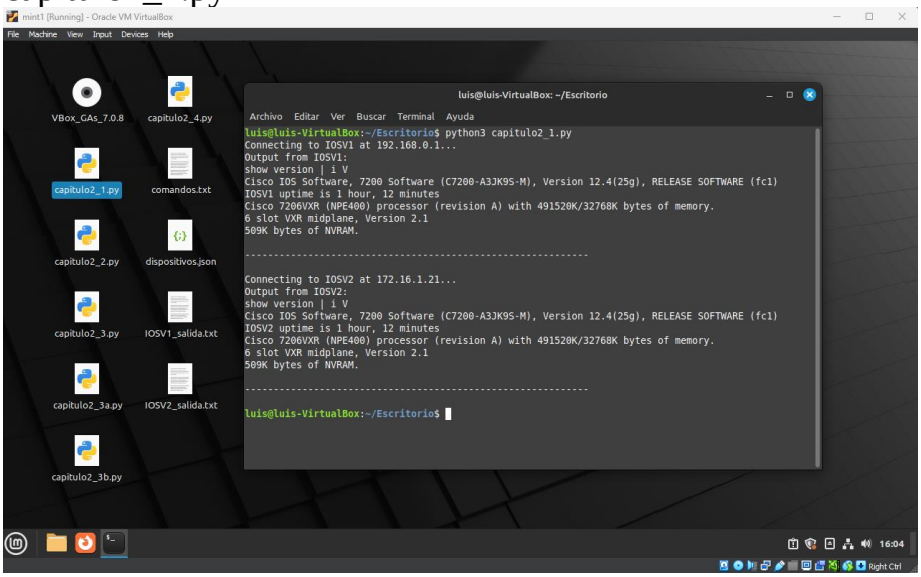


Ahora si finalmente podemos usar ssh para conectarnos a los routers desde la máquina virtual

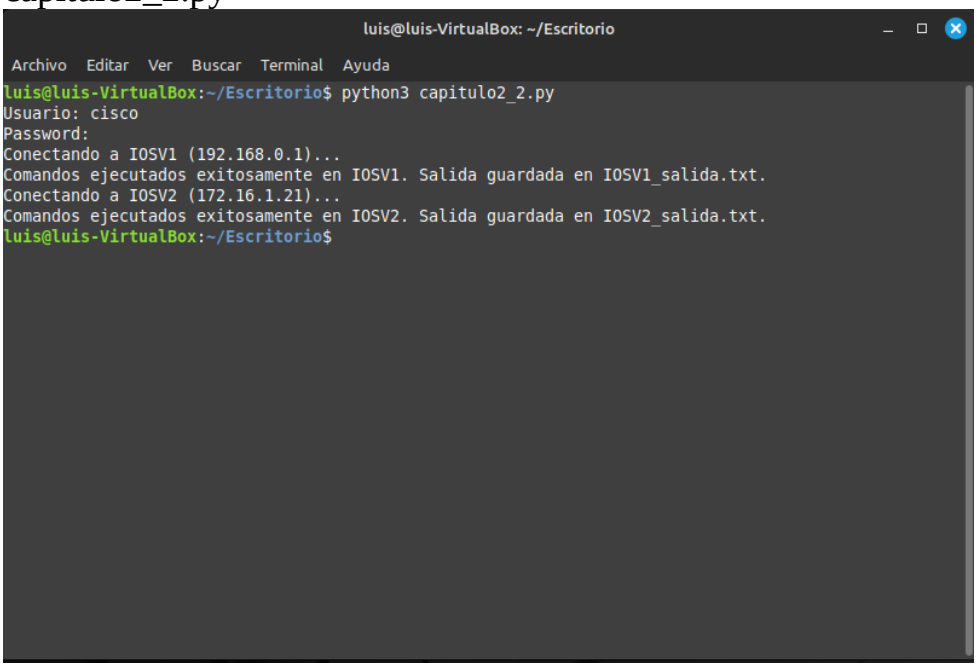


Prueba de los programas de python con formato arreglado

capitulo2_1.py



capitulo2_2.py



Salida archivo 1:

IOSV1_salida.txt

```
term length 0
IOSV1#show version
Cisco IOS Software, 7200 Software (C7200-A3JK9S-M), Version 12.4(25g), RELEASE SOFTWARE (fc1)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2012 by Cisco Systems, Inc.
Compiled Wed 22-Aug-12 11:45 by prod_rel_team

ROM: ROMMON Emulation Microcode

IOSV1 uptime is 1 hour, 13 minutes
System returned to ROM by unknown reload cause - suspect boot_data[BOOT_COUNT] 0x0, BOOT_COUNT 0, BOOTDATA 19
System image file is "tftp://255.255.255.255/unknown"


This product contains cryptographic features and is subject to United
States and local country laws governing import, export, transfer and
use. Delivery of Cisco cryptographic products does not imply
third-party authority to import, export, distribute or use encryption.
Importers, exporters, distributors and users are responsible for
compliance with U.S. and local country laws. By using this product you
agree to comply with applicable laws and regulations. If you are unable
to comply with U.S. and local laws, return this product immediately.

A summary of U.S. laws governing Cisco cryptographic products may be found at:
http://www.cisco.com/wwl/export/crypto/tool/stqrg.html

If you require further assistance please contact us by sending email to
export@cisco.com.

Cisco 7206VXR (NPE400) processor (revision A) with 491520K/32768K bytes of memory.
Processor board ID 4279256517
R7000 CPU at 150MHz, Implementation 39, Rev 2.1, 256KB L2 Cache
6 slot VXR midplane, Version 2.1

Last reset from power-on

PCI bus mb0_mb1 (Slots 0, 1, 3 and 5) has a capacity of 600 bandwidth points.
Current configuration on bus mb0_mb1 has a total of 1600 bandwidth points.
The set of PA-2FE, PA-POS-2OC3, and I/O-2FE qualify for "half
bandwidth points" consideration, when full bandwidth point counting
results in oversubscription, under the condition that only one of the
two ports is used. With this adjustment, current configuration on bus
mb0_mb1 has a total of 1200 bandwidth points.
This configuration has oversubscripted the PCI bus and is not a
supported configuration.

PCI bus mb2 (Slots 2, 4, 6) has a capacity of 600 bandwidth points.
```

Salida archivo 2:

IOSV2_salida.txt

```
term length 0
IOSV2#show version
Cisco IOS Software, 7200 Software (C7200-A3JK9S-M), Version 12.4(25g), RELEASE SOFTWARE (fc1)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2012 by Cisco Systems, Inc.
Compiled Wed 22-Aug-12 11:45 by prod_rel_team

ROM: ROMMON Emulation Microcode

IOSV2 uptime is 1 hour, 13 minutes
System returned to ROM by unknown reload cause - suspect boot_data[BOOT_COUNT] 0x0, BOOT_COUNT 0, BOOTDATA 19
System image file is "tftp://255.255.255.255/unknown"


This product contains cryptographic features and is subject to United
States and local country laws governing import, export, transfer and
use. Delivery of Cisco cryptographic products does not imply
third-party authority to import, export, distribute or use encryption.
Importers, exporters, distributors and users are responsible for
compliance with U.S. and local country laws. By using this product you
agree to comply with applicable laws and regulations. If you are unable
to comply with U.S. and local laws, return this product immediately.

A summary of U.S. laws governing Cisco cryptographic products may be found at:
http://www.cisco.com/wwl/export/crypto/tool/stqrg.html

If you require further assistance please contact us by sending email to
export@cisco.com.

Cisco 7206VXR (NPE400) processor (revision A) with 491520K/32768K bytes of memory.
Processor board ID 4279256517
R7000 CPU at 150MHz, Implementation 39, Rev 2.1, 256KB L2 Cache
6 slot VXR midplane, Version 2.1

Last reset from power-on

PCI bus mb0_mb1 (Slots 0, 1, 3 and 5) has a capacity of 600 bandwidth points.
Current configuration on bus mb0_mb1 has a total of 1600 bandwidth points.
The set of PA-2FE, PA-POS-2OC3, and I/O-2FE qualify for "half
bandwidth points" consideration, when full bandwidth point counting
results in oversubscription, under the condition that only one of the
two ports is used. With this adjustment, current configuration on bus
mb0_mb1 has a total of 1400 bandwidth points.
This configuration has oversubscripted the PCI bus and is not a
supported configuration.

PCI bus mb2 (Slots 2, 4, 6) has a capacity of 600 bandwidth points.
```

capitulo2_3.py

```
luis@luis-VirtualBox:~/Escritorio$ python3 capitulo2_3.py
Usuario: cisco
Password:
Output from IOSV1 for command 'show version':
show version
Cisco IOS Software, 7200 Software (C7200-A3JK9S-M), Version 12.4(25g), RELEASE SOFTWARE (fc1)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2012 by Cisco Systems, Inc.
Compiled Wed 22-Aug-12 11:45 by prod_rel_team

ROM: ROMMON Emulation Microcode

IOSV1 uptime is 1 hour, 15 minutes
System returned to ROM by unknown reload cause - suspect boot_data[BOOT_COUNT] 0x0, BOOT_COUNT 0, BOOTDATA 19
System image file is "tftp://255.255.255.255/unknown"


This product contains cryptographic features and is subject to United
States and local country laws governing import, export, transfer and
use. Delivery of Cisco cryptographic products does not imply
third-party authority to import, export, distribute or use encryption.
Importers, exporters, distributors and users are responsible for
compliance with U.S. and local country laws. By using this product you
agree to comply with applicable laws and regulations. If you are unable
to comply with U.S. and local laws, return this product immediately.

A summary of U.S. laws governing Cisco cryptographic products may be found at:
http://www.cisco.com/wwl/export/crypto/tool/stqrg.html

If you require further assistance please contact us by sending email to
export@cisco.com.

Cisco 7206VXR (NPE400) processor (revision A) with 491520K/32768K bytes of memory.
Processor board ID 4279256517
R7000 CPU at 150MHz, Implementation 39, Rev 2.1, 256KB L2 Cache
6 slot VXR midplane, Version 2.1

Last reset from power-on

PCI bus mb0_mb1 (Slots 0, 1, 3 and 5) has a capacity of 600 bandwidth points.
Current configuration on bus mb0_mb1 has a total of 1600 bandwidth points.
The set of PA-2FE, PA-POS-2OC3, and I/O-2FE qualify for "half
bandwidth points" consideration, when full bandwidth point counting
results in oversubscription, under the condition that only one of the
two ports is used. With this adjustment, current configuration on bus
mb0_mb1 has a total of 1200 bandwidth points.
This configuration has oversubscripted the PCI bus and is not a
supported configuration.

PCI bus mb2 (Slots 2, 4, 6) has a capacity of 600 bandwidth points.
Current configuration on bus mb2 has a total of 1000 bandwidth points
The set of PA-2FE, PA-POS-2OC3, and I/O-2FE qualify for "half
bandwidth points" consideration, when full bandwidth point counting
```

```
IOSV2#
------------------------------------------------------------

Output from IOSV2 for command 'show run':
show run
Building configuration...

Current configuration : 1824 bytes
!
version 12.4
service timestamps debug datetime msec
service timestamps log datetime msec
service password-encryption
!
hostname IOSV2
!
boot-start-marker
boot-end-marker
!
enable secret 5 $1$e0X9$S0oBuoa0eyMixP3.3CATY1
!
no aaa new-model
no ip icmp rate-limit unreachable
!
!
ip cef
no ip domain lookup
ip domain name adminredes.escom.ipn.mx
!
!
!
!
!
!
!
!
!
!
!
!
!
!
!
!
username cisco privilege 15 password 7 02050D480809
!
!
Menú synwait-time 5
ip ssh time-out 30
```

capitulo2_3a.py

```
luis@luis-VirtualBox:~/Escritorio$ python3 capitulo2_3a.py
Salida inicial:

IOSV1#
------------------------------------------------------------

Salida del comando 'show version':
show version
Cisco IOS Software, 7200 Software (C7200-A3JK9S-M), Version 12.4(25g), RELEASE SOFTWARE (fc1)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2012 by Cisco Systems, Inc.
Compiled Wed 22-Aug-12 11:45 by prod_rel_team

ROM: ROMMON Emulation Microcode

IOSV1 uptime is 1 hour, 17 minutes
System returned to ROM by unknown reload cause - suspect boot_data[BOOT_COUNT] 0x0, BOOT_COUNT 0, BOOTDATA 19
System image file is "tftp://255.255.255.255/unknown"


This product contains cryptographic features and is subject to United
States and local country laws governing import, export, transfer and
use. Delivery of Cisco cryptographic products does not imply
third-party authority to import, export, distribute or use encryption.
Importers, exporters, distributors and users are responsible for
compliance with U.S. and local country laws. By using this product you
agree to comply with applicable laws and regulations. If you are unable
to comply with U.S. and local laws, return this product immediately.

 --More--
------------------------------------------------------------

luis@luis-VirtualBox:~/Escritorio$
```

capitulo2_3b.py

Este programa utiliza una RSAKey y la versión de router no permite utilizarla por lo que este programa no se puede ejecutar

capitulo2_4.py

```
luis@luis-VirtualBox:~/Escritorio$ python3 capitulo2_4.py
Usuario: cisco
Password:
Output from IOSV1 for command 'show version':
show version
Cisco IOS Software, 7200 Software (C7200-A3JK9S-M), Version 12.4(25g), RELEASE SOFTWARE (fc1)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2012 by Cisco Systems, Inc.
Compiled Wed 22-Aug-12 11:45 by prod_rel_team

ROM: ROMMON Emulation Microcode

IOSV1 uptime is 1 hour, 19 minutes
System returned to ROM by unknown reload cause - suspect boot_data[BOOT_COUNT] 0x0, BOOT_COUNT 0, BOOTDATA 19
System image file is "tftp://255.255.255.255/unknown"


This product contains cryptographic features and is subject to United
States and local country laws governing import, export, transfer and
use. Delivery of Cisco cryptographic products does not imply
third-party authority to import, export, distribute or use encryption.
Importers, exporters, distributors and users are responsible for
compliance with U.S. and local country laws. By using this product you
agree to comply with applicable laws and regulations. If you are unable
to comply with U.S. and local laws, return this product immediately.

A summary of U.S. laws governing Cisco cryptographic products may be found at:
http://www.cisco.com/wwl/export/crypto/tool/stqrg.html

If you require further assistance please contact us by sending email to
export@cisco.com.

Cisco 7206VXR (NPE400) processor (revision A) with 491520K/32768K bytes of memory.
Processor board ID 4279256517
R7000 CPU at 150MHz, Implementation 39, Rev 2.1, 256KB L2 Cache
6 slot VXR midplane, Version 2.1

Last reset from power-on

PCI bus mb0_mb1 (Slots 0, 1, 3 and 5) has a capacity of 600 bandwidth points.
Current configuration on bus mb0_mb1 has a total of 1600 bandwidth points.
The set of PA-2FE, PA-POS-2OC3, and I/O-2FE qualify for "half
bandwidth points" consideration, when full bandwidth point counting
results in oversubscription, under the condition that only one of the
two ports is used. With this adjustment, current configuration on bus
mb0_mb1 has a total of 1200 bandwidth points.
This configuration has oversubscripted the PCI bus and is not a
supported configuration.

PCI bus mb2 (Slots 2, 4, 6) has a capacity of 600 bandwidth points.
Current configuration on bus mb2 has a total of 1000 bandwidth points
The set of PA-2FE, PA-POS-2OC3, and I/O-2FE qualify for "half
bandwidth points" consideration, when full bandwidth point counting
results in oversubscription, under the condition that only one of the
```

```
IOSV2#
------------------------------------------------------------

Output from IOSV2 for command 'show run':
show run
Building configuration...

Current configuration : 1824 bytes
!
version 12.4
service timestamps debug datetime msec
service timestamps log datetime msec
service password-encryption
!
hostname IOSV2
!
boot-start-marker
boot-end-marker
!
enable secret 5 $1$e0X9$S0oBuoa0eyMixP3.3CATY1
!
no aaa new-model
no ip icmp rate-limit unreachable
!
!
ip cef
no ip domain lookup
ip domain name adminredes.escom.ipn.mx
!
!
!
!
!
!
!
!
!
!
!
!
!
!
!
!
username cisco privilege 15 password 7 02050D480809
!
!
ip tcp synwait-time 5
ip ssh time-out 30
ip ssh rsa keypair-name sshkey
ip ssh version 2
!
!
```

Conclusiones

En esta práctica si tuvo su grado de dificultad esto debido a la configuración de la máquina virtual ya que se nos complico la parte de configuración del ssh, para usar ssh-rsa esto para la autenticación de claves públicas, además de los hosts ya que no los encontraba ya que estos se tienen que agregar en el archivo de ssh_config. También se tuvimos problemas con la configuración de los routers ya que solo configuramos un router, por lo tanto, no funcionaba el telnet y ssh, pero lo logramos arreglar