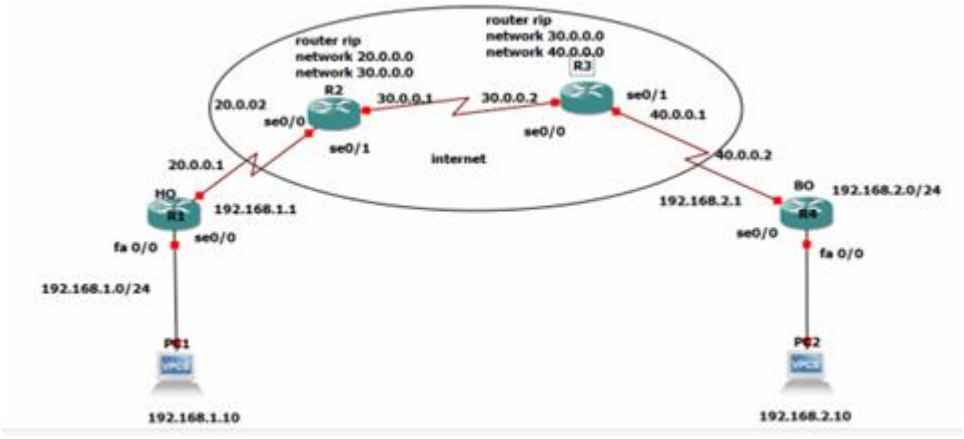
Prac 11 Configure Site-to-Site IPsec VPN Tunnel Between Routers



Configuration:

R1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#int fa 0/0
R1(config-if)#ip add 192.168.1.1 255.255.255.0
R1(config-if)#no shut
R1(config-if)#exit
R1(config)#
*Mar 1 00:01:17.443: LINK-3-UPDOWN: Interface FastEthernet0/0, changed state to up
*Mar 1 00:01:18.443: LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up
R1(config)#int se 0/0
R1(config-if)#ip add 20.0.0.1 255.0.0.0
R1(config-if)#clock rate 64000
R1(config-if)#encapsulation ppp
R1(config-if)#no shut
R1(config-if)#exit
R1(config)#
*Mar 1 00:02:44.367: LINK-3-UPDOWN: Interface Serial0/0, changed state to up

R2#conf t
Enter configuration commands, one per line. End with CNTL/Z
R2(config)#int se 0/0
R2(config-if)#ip add 20.0.0.2 255.0.0.0
R2(config-if)#encapsulation ppp
R2(config-if)#clock rate 64000
R2(config-if)#no shut
R2(config-if)#exit
R2(config)#
*Mar 1 00:03:58.847: LINK-3-UPDOWN: Interface Serial0/0, changed state to up
R2(config)#
*Mar 1 00:03:59.915: LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0, changed state to up
R2(config)#int se 0/1

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R2(config-if)#ip add 30.0.0.1 255.0.0.0
R2(config-if)#encapsulation ppp
R2(config-if)#clock rate 64000
R2(config-if)#no shut
R2(config-if)#exit
*Mar 1 00:05:34.399: LINK-3-UPDOWN: Interface Serial0/1, changed state to up
R2(config-if)#exit
R3(config)#int se 0/0
R3(config-if)#ip add 30.0.0.2 255.0.0.0
R3(config-if)#encapsulation ppp
R3(config-if)#clock rate 64000
R3(config-if)#no shut
R3(config-if)#exit
R3(config)#int se 0/1
R3(config-if)#ip add 40.0.0.1 255.0.0.0
R3(config-if)#encapsulation ppp
R3(config-if)#clock rate 64000
R3(config-if)#no shut
R3(config-if)#exit
R3(config)#
*Mar 1 00:07:58.071: LINK-3-UPDOWN: Interface Serial0/1, changed state to up
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R4# conf t
Enter configuration commands, one per line. End with CNTL/Z.
R4(config)# int fa 0/0
R4(config-if)# ip add 192.168.2.1 255.255.255.0
R4(config-if)# no shut
R4(config-if)# exit
R4(config)#
*Mar 1 00:08:58.771: %LINK-3-UPDOWN: Interface FastEthernet0/0, changed state to up
*Mar 1 00:08:59.771: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0,
changed state to up
R4(config)# int se 0/0
R4(config-if)# ip add 40.0.0.2 255.0.0.0
R4(config-if)# clock rate 64000
R4(config-if)# encapsulation ppp
R4(config-if)# no shut
R4(config-if)# exit
*Mar 1 00:09:47.759: %LINK-3-UPDOWN: Interface Serial0/0, changed state to up
*Mar 1 00:09:48.827: %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0, changed state
to up
R4(config)# exit
R2(config)# router rip
R2(config-router)# network 20.0.0.0
R2(config-router)# network 30.0.0.0
R2(config-router)# exit
R2(config)#
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*Mar 1 00:13:18.273: %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0, changed state to up
R3(config)# router rip
R3(config-router)# network 30.0.0.0
R3(config-router)# network 40.0.0.0
R3(config-router)# exit
R3(config)#
R1(config)# crypto isakmp enable
R1(config)# crypto isakmp policy 10
R1(config-isakmp)# authentication pre-share
R1(config-isakmp)# hash md5
R1(config-isakmp)# encryption des
R1(config-isakmp)# group 2
R1(config-isakmp)# lifetime 3600
R1(config-isakmp)# exit
R1(config)# crypto isakmp key security address 40.0.0.2 255.0.0.0
R1(config)# crypto ipsec transform-set hoset esp-des esp-md5-hmac
R1(cfg-crypto-trans)# exit
R1(config)# access-list 101 permit ip 192.168.1.0 0.0.0.255 192.168.2.0 0.0.0.255
R1(config)# crypto map homap 10 ipsec-isakmp
NOTE: This new crypto map will remain disabled until a peer
and a valid access list have been configured.
R1(config-crypto-map)# set peer 40.0.0.2
R1(config-crypto-map)# set transform-set hoset
R1(config-crypto-map)# match address 101
R1(config-crypto-map)# exit
R1(config)# int se 0/0
R1(config-if)# crypto map homap
R1(config-if)# exit
*Mar 1 00:28:57.987: %CRYPTO-6-ISAKMP_ON_OFF: ISAKMP is ON
R1(config-if)# exit
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R4(config)# crypto isakmp enable
R4(config)# crypto isakmp policy 10
R4(config-isakmp)# authentication pre-share
R4(config-isakmp)# hash md5
R4(config-isakmp)# encryption des
R4(config-isakmp)# group 2
R4(config-isakmp)# lifetime 3600
R4(config-isakmp)# exit
R4(config)# crypto isakmp key security address 20.0.0.1 255.0.0.0
R4(config)# crypto ipsec transform-set boset esp-des esp-md5-hmac
```

R4(cfg-crypto-trans)# exit

R4(config)# access-list 101 permit ip 192.168.2.0 0.0.0.255 192.168.1.0 0.0.0.255

R4(config)# crypto map bomap 10 ipsec-isakmp

% NOTE: This new crypto map will remain disabled until a peer and a valid access list have been configured.

R4(config-crypto-map)# set peer 20.0.0.1

R4(config-crypto-map)# set transform-set boset

R4(config-crypto-map)# match address 101

R4(config-crypto-map)# exit

R4(config)# int se 0/0

R4(config-if)# crypto map bomap

R4(config-if)# exit

*Mar 1 00:25:28.531: %CRYPTO-6-ISAKMP_ON_OFF: ISAKMP is ON

R4(config-if)# exit

R1(config)# ip route 0.0.0.0 0.0.0.0 20.0.0.2

R4(config)# ip route 0.0.0.0 0.0.0.0 40.0.0.1

R1# debug crypto ipsec R4# debug crypto ipsec

Crypto IPSEC debugging is on Crypto IPSEC debugging is on

R1# debug crypto isakmp R4# debug crypto isakmp

Crypto ISAKMP debugging is on Crypto ISAKMP debugging is on

PC1> ip 192.168.1.10 gateway 192.168.1.1

Checking for duplicate address...

PC1: 192.168.1.10 255.255.255.0 gateway 192.168.1.1

PC2> ip 192.168.2.10 gateway 192.168.2.1

Checking for duplicate address..

PC1: 192.168.2.10 255.255.255.0 gateway 192.168.2.1

Output:

PC2> ping 192.168.1.10

192.168.1.10 icmp_seq=1 timeout

192.168.1.10 icmp_seq=2 timeout

84 bytes from 192.168.1.10 icmp_seq=3 ttl=62 time=31.320 ms

84 bytes from 192.168.1.10 icmp_seq=4 ttl=62 time=31.312 ms

84 bytes from 192.168.1.10 icmp_seq=5 ttl=62 time=33.129 ms

PC1> ping 192.168.2.10

84 bytes from 192.168.2.10 icmp_seq=1 ttl=62 time=31.155 ms

84 bytes from 192.168.2.10 icmp_seq=2 ttl=62 time=30.848 ms

84 bytes from 192.168.2.10 icmp_seq=3 ttl=62 time=31.556 ms

84 bytes from 192.168.2.10 icmp_seq=4 ttl=62 time=30.431 ms