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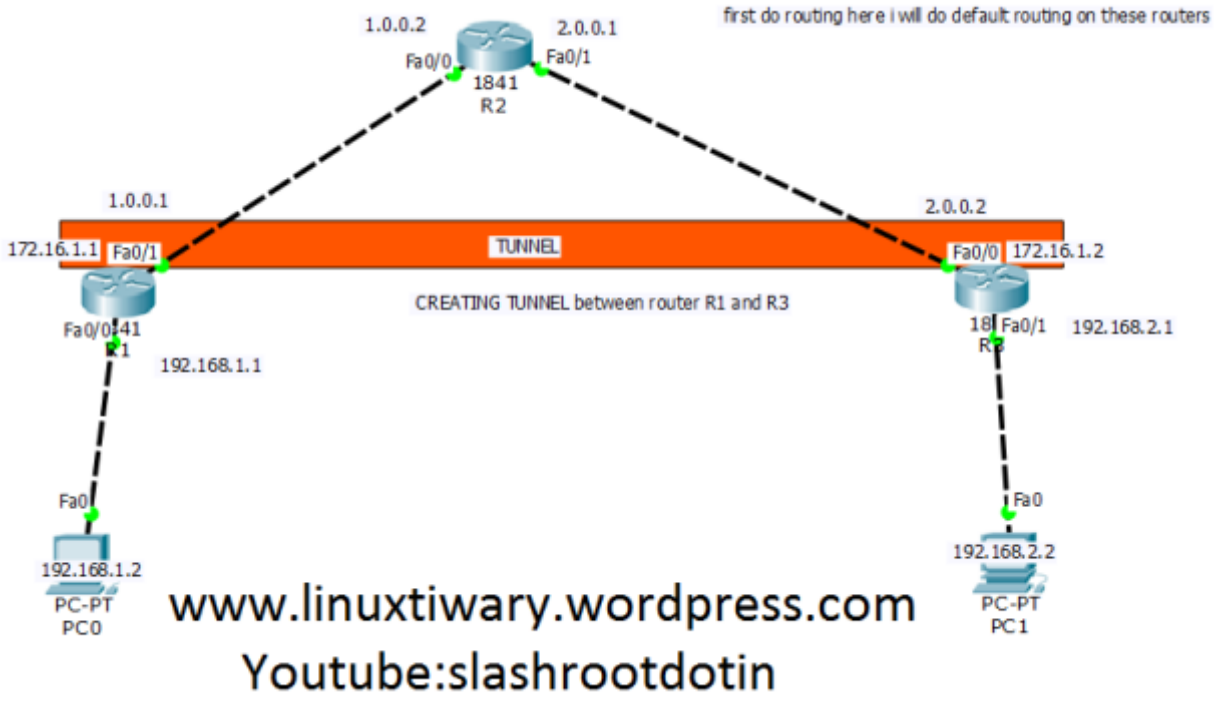
vpn configuration lab using routers in cisco packet tracer

Posted: 26 Mar 2016 in **CCNP**
Tags: **vpn**, **vpn configuration**, **vpn lab**, **vpn on routers**, **vpn tunnel**

5

In this tutorial we will learn how to configure and use vpn on routers.We will learn to create a vpn tunnel between routers for safe communication.



Now as you can clearly see i have taken three routers here for showing vpn configuration on routers.This is an example lab showing you how to configure vpn tunnel using cisco packet tracer.

Total network take here are 4.

network 192.168.1.0/24

network 192.168.2.0/24

network 1.0.0.0/8

network 2.0.0.0/8

Now first thing we will do here in this lab is to assign ip address on each and every interface of router and also assign ip address on computers taken here.

CONFIGURATION ON ROUTER R1:

```
Router>enable
Router#config t



Router(config)#host r1
r1(config)#int fa0/0
r1(config-if)#ip add 192.168.1.1 255.255.255.0
r1(config-if)#no shut



r1(config-if)#exit
r1(config)#int fa0/1
r1(config-if)#ip address 1.0.0.1 255.0.0.0
r1(config-if)#no shut
```

CONFIGURATION ON ROUTER R2:

```
Router>enable

Router#config t

Router(config)#host r2

r2(config)#int fa0/0

r2(config-if)#ip add 1.0.0.2 255.0.0.0

r2(config-if)#no shut

r2(config-if)#exit

r2(config)#int fa0/1

r2(config-if)#ip add 2.0.0.1 255.0.0.0

r2(config-if)#no shut
```

CONFIGURATION ON ROUTER R3:

```
Router>enable

Router#config t

Router(config)#host r3

r3(config)#int fa0/0

r3(config-if)#ip add 2.0.0.2 255.0.0.0

r3(config-if)#no shut

r3(config-if)#exit

r3(config)#int fa0/1

r3(config-if)#ip add 192.168.2.1 255.255.255.0

r3(config-if)#no shut
```

Now its time to do routing.here i am going to configure default routing.

DEFAULT ROUTING CONFIGURATION ON ROUTER R1:

```
r1>enable

r1#config t

Enter configuration commands, one per line. End with CNTL/Z.

r1(config)#ip route 0.0.0.0 0.0.0.0 1.0.0.2

r1(config)#
```

DEFAULT ROUTING CONFIGURATION ON ROUTER r3:

```
r3>enable

r3#config t

Enter configuration commands, one per line. End with CNTL/Z.

r3(config)#ip route 0.0.0.0 0.0.0.0 2.0.0.1

r3(config)#
```

Now check the connection by pinging each other.
First we go to router r1 and ping with router r3:

```
r1#ping 2.0.0.2

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 2.0.0.2, timeout is 2 seconds:

!!!!!

Success rate is 100 percent (5/5), round-trip min/avg/max = 26/28/33 ms
```

Now we go to router r3 and test network by pinging router r1 interface.

```
r3#ping 1.0.0.1

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 1.0.0.1, timeout is 2 seconds:

!!!!!

Success rate is 100 percent (5/5), round-trip min/avg/max = 25/28/32 ms
```

you can clearly see both router pinging each other successfully.

NOW CREATE VPN TUNNEL between R1 and R3:

FIRST CREATE A VPN TUNNEL ON ROUTER R3:

```
r1#config t

r1(config)#interface tunnel 10

r1(config-if)#ip address 172.16.1.1 255.255.0.0

r1(config-if)#tunnel source fa0/1

r1(config-if)#tunnel destination 2.0.0.2

r1(config-if)#no shut
```

NOW CREATE A VPN TUNNEL ON ROUTER R3:

```
r3#config t

r3(config)#interface tunnel 100

r3(config-if)#ip address 172.16.1.2 255.255.0.0

r3(config-if)#tunnel source fa0/0

r3(config-if)#tunnel destination 1.0.0.1

r3(config-if)#no shut
```

Now test communication between these two routers again by pinging eah other:

```
1#ping 172.16.1.2

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 172.16.1.2, timeout is 2 seconds:
```

```
!!!!!

Success rate is 100 percent (5/5), round-trip min/avg/max = 30/32/36 ms

r1#



r3#ping 172.16.1.1

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 172.16.1.1, timeout is 2 seconds:

!!!!!

Success rate is 100 percent (5/5), round-trip min/avg/max = 33/45/83 ms
```

Now Do routing for created VPN Tunnel on Both Router R and R3:

```
r1(config)#ip route 192.168.2.0 255.255.255.0 172.16.1.2
```

```
r3(config)#ip route 192.168.1.0 255.255.255.0 172.16.1.1
```

TEST VPN TUNNEL CONFIGURATION:

Now i am going to router R1 and test whether tunnel is created or not.

```
r1#show interfaces Tunnel 10

Tunnel10 is up, line protocol is up (connected)

Hardware is Tunnel

Internet address is 172.16.1.1/16

MTU 17916 bytes, BW 100 Kbit/sec, DLY 50000 usec,

reliability 255/255, txload 1/255, rxload 1/255

Encapsulation TUNNEL, loopback not set
```

```
Keepalive not set

Tunnel source 1.0.0.1 (FastEthernet0/1), destination 2.0.0.2

Tunnel protocol/transport GRE/IP

Key disabled, sequencing disabled

Checksumming of packets disabled

Tunnel TTL 255

Fast tunneling enabled

Tunnel transport MTU 1476 bytes

Tunnel transmit bandwidth 8000 (kbps)

Tunnel receive bandwidth 8000 (kbps)

Last input never, output never, output hang never

Last clearing of "show interface" counters never
```

```
Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops: 1

Queueing strategy: fifo

Output queue: 0/0 (size/max)

5 minute input rate 32 bits/sec, 0 packets/sec

5 minute output rate 32 bits/sec, 0 packets/sec

52 packets input, 3508 bytes, 0 no buffer

Received 0 broadcasts, 0 runts, 0 giants, 0 throttles

0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort

0 input packets with dribble condition detected

52 packets output, 3424 bytes, 0 underruns

0 output errors, 0 collisions, 0 interface resets

0 unknown protocol drops
```

```
0 output buffer failures, 0 output buffers swapped out
```

Now going to Router R3 and test VPN Tunnel Creation:

```
r3#show interface Tunnel 100

Tunnel100 is up, line protocol is up (connected)

Hardware is Tunnel

Internet address is 172.16.1.2/16

MTU 17916 bytes, BW 100 Kbit/sec, DLY 50000 usec,

reliability 255/255, txload 1/255, rxload 1/255

Encapsulation TUNNEL, loopback not set

Keepalive not set
```

```
Tunnel source 2.0.0.2 (FastEthernet0/0), destination 1.0.0.1

Tunnel protocol/transport GRE/IP

Key disabled, sequencing disabled

Checksumming of packets disabled

Tunnel TTL 255

Fast tunneling enabled

Tunnel transport MTU 1476 bytes

Tunnel transmit bandwidth 8000 (kbps)

Tunnel receive bandwidth 8000 (kbps)

Last input never, output never, output hang never

Last clearing of "show interface" counters never

Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops: 1
```

```
Queueing strategy: fifo

Output queue: 0/0 (size/max)

5 minute input rate 32 bits/sec, 0 packets/sec

5 minute output rate 32 bits/sec, 0 packets/sec

52 packets input, 3424 bytes, 0 no buffer

Received 0 broadcasts, 0 runts, 0 giants, 0 throttles

0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort

0 input packets with dribble condition detected

53 packets output, 3536 bytes, 0 underruns

0 output errors, 0 collisions, 0 interface resets

0 unknown protocol drops
```

HOW TO TRACE THE VPN TUNNEL PATH?

Now if you want to check what path vpn tunnel is using just go to any of the computer i.e pc and then ping anothr pc located in different network.And then trace the path using tracert. Its result will show the path followed by VPN Tunnel created by you.

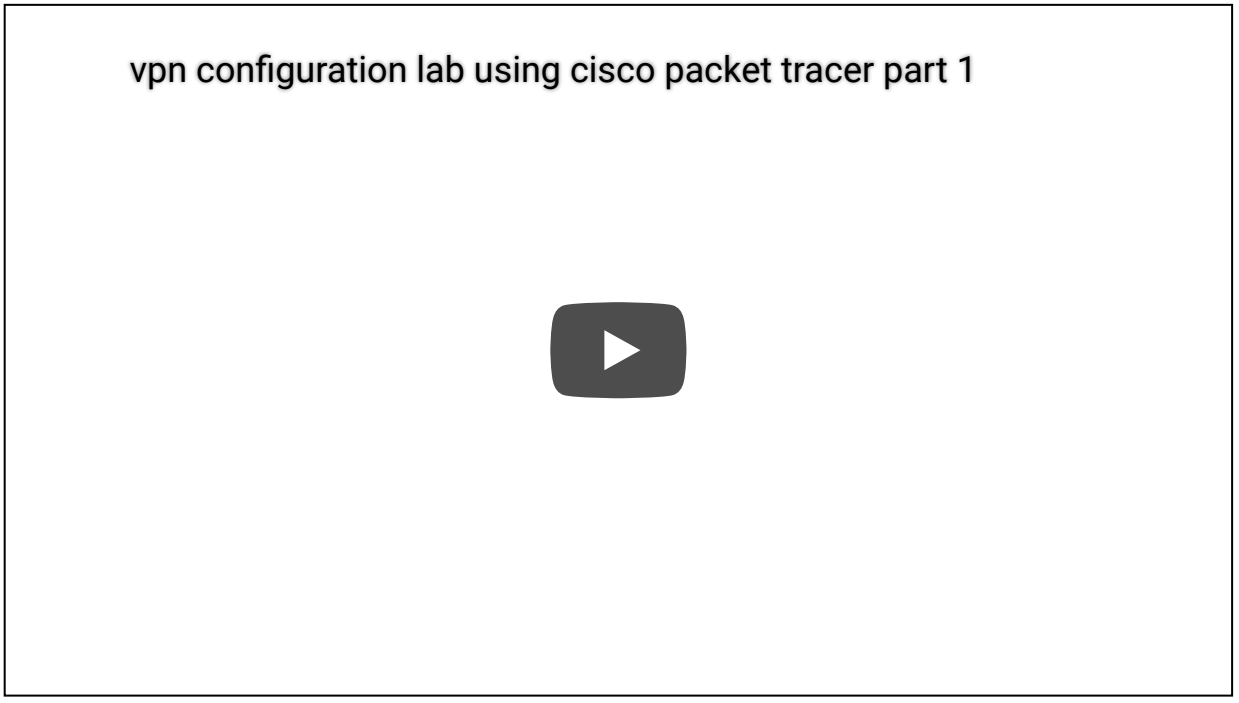
```
PC>ipconfig

FastEthernet0 Connection:(default port)

Link-local IPv6 Address.....: FE80::2E0:8FFF:FE0B:AEB2

IP Address.....: 192.168.2.2

Subnet Mask.....: 255.255.255.0

Default Gateway.....: 192.168.2.1



PC>ping 192.168.1.2

Pinging 192.168.1.2 with 32 bytes of data:

Reply from 192.168.1.2: bytes=32 time=61ms TTL=126

Reply from 192.168.1.2: bytes=32 time=55ms TTL=126

Reply from 192.168.1.2: bytes=32 time=55ms TTL=126
```

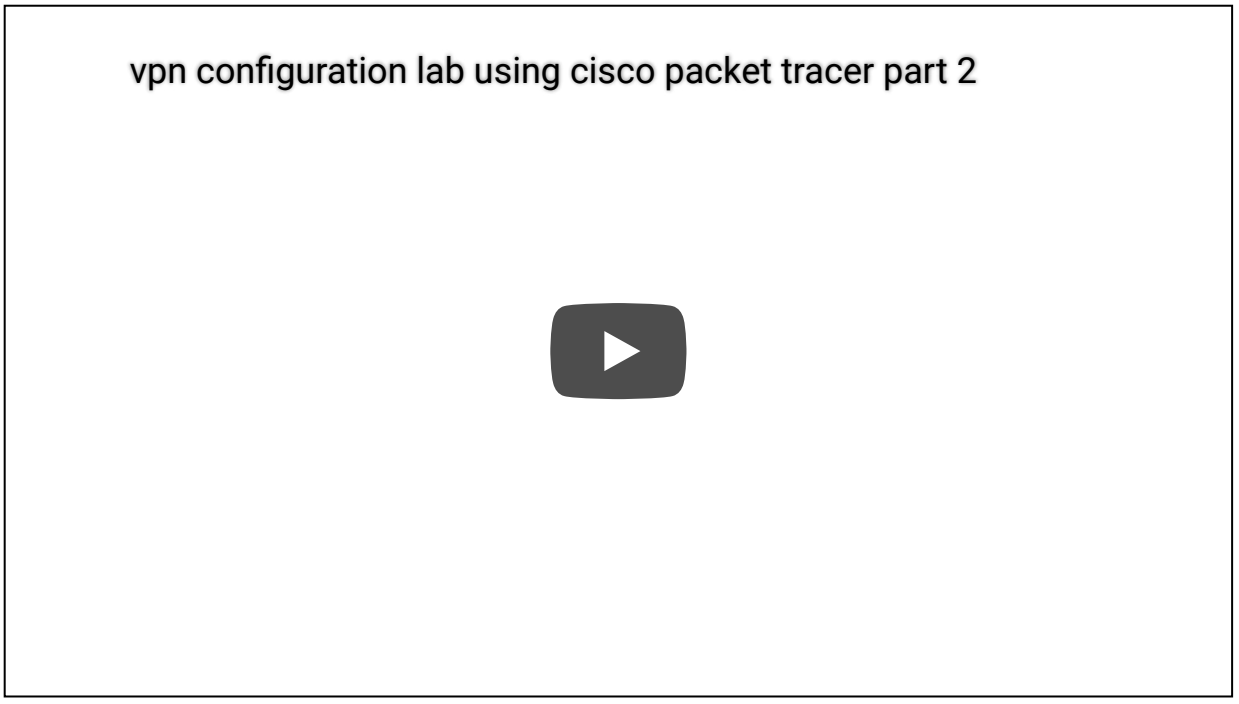
```
Reply from 192.168.1.2: bytes=32 time=57ms TTL=126

Ping statistics for 192.168.1.2:

Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),

Approximate round trip times in milli-seconds:
```

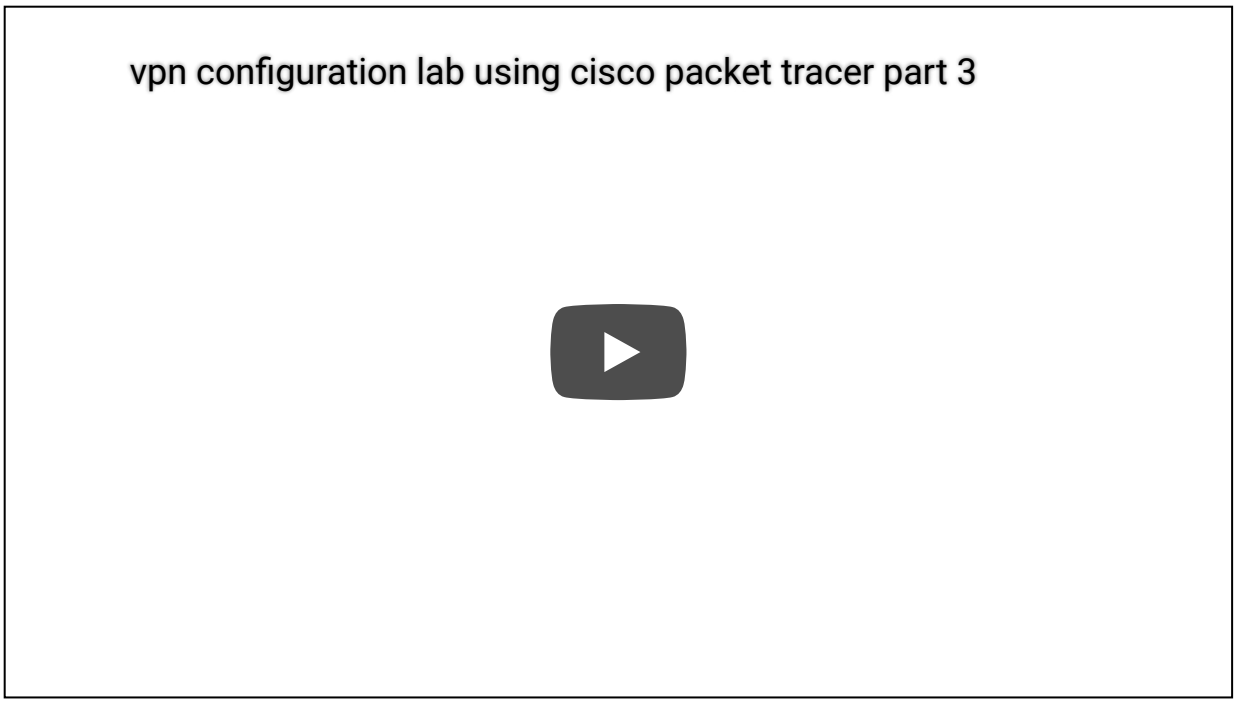
Minimum = 55ms, Maximum = 61ms, Average = 57ms

```
PC>tracert 192.168.1.2

Tracing route to 192.168.1.2 over a maximum of 30 hops:

1 3 ms 0 ms 18 ms 192.168.2.1

2 35 ms 30 ms 30 ms 172.16.1.1

3 65 ms 59 ms 60 ms 192.168.1.2

Trace complete.

PC>
```

If you find any Difficulty in configuring VPN you can take help from my Youtube Video:







Comments


Bonus Akantambira says:
18 Jul 2016 at 1:34 pm
Thenx Alot

I have tried it and it has work out correctly but pc's are not ping themselves. What could be the problem?
And what can i do for them to ping together.
Responce to: akantambirabonus8@gmail.com
Goodluck

Reply


Bonus Akantambira says:
18 Jul 2016 at 1:39 pm

I have tried it and come out correctly.
But, PC'S are not pinging themselves. wthat could be the problem and how can in solve it.
Thenx
Goodluck
Responce: akantambirabonus8@gmail.com

Reply

Chitrasen Singh says:
18 Jun 2017 at 6:32 am
Check ip route in both routers

Reply

Anh Ngo says:
28 Oct 2017 at 9:15 am
Beautiful guide! Its very clear and nice!

Reply

how to configure best comcast dsl best modem for xbox live says:
25 Mar 2018 at 3:47 pm
An outstanding share! I have just forwarded this onto a co-worker who was conducting a little homework on this. And he in fact ordered me dinner simply because I stumbled upon it for him… lol. So allow me to reword this…. Thank YOU for
the meal!! But yeah, thanx for spending the time to discuss this
topic here on your site.

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