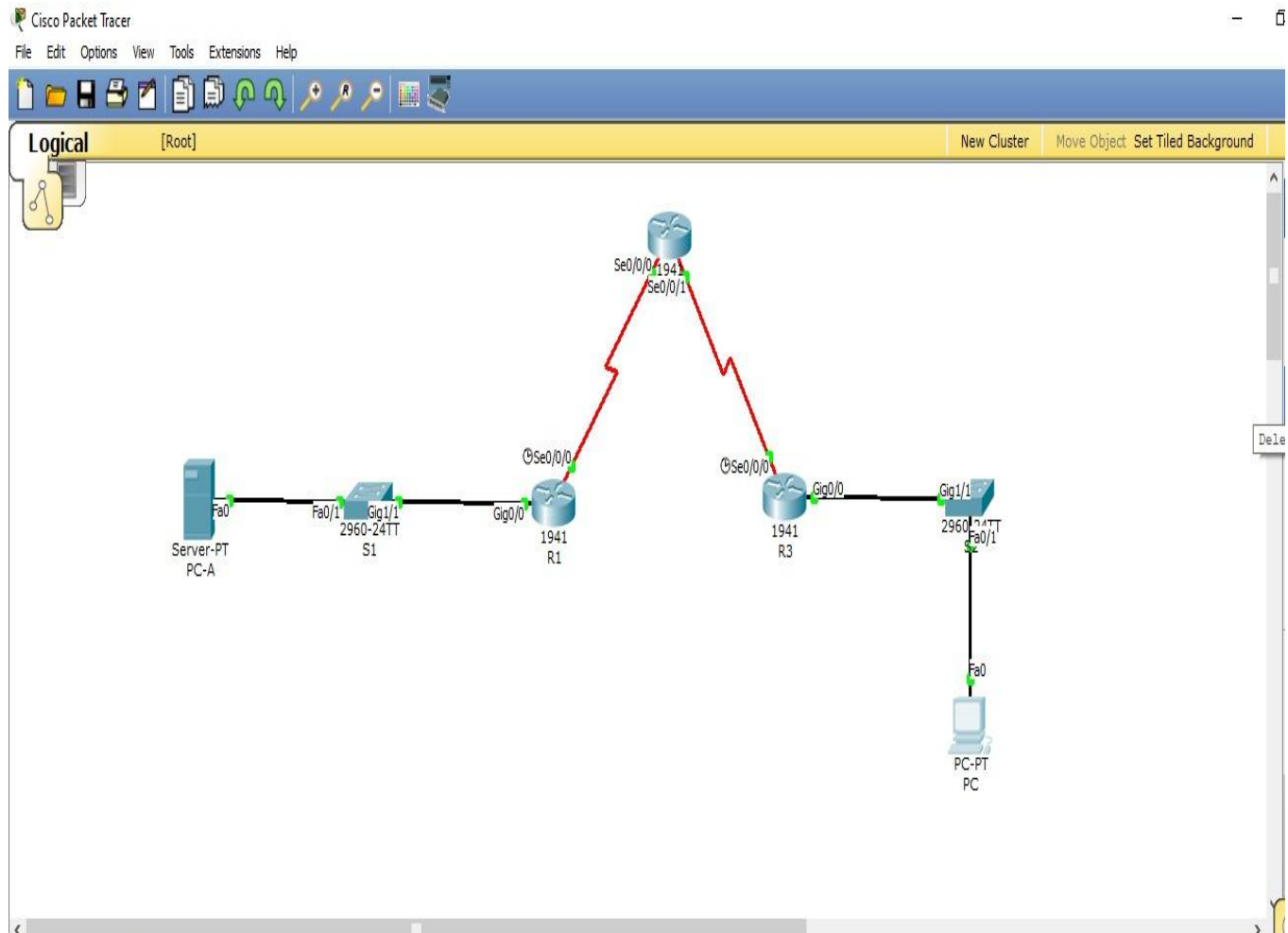


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- **Aim:- Configure IP ACLs to Mitigate Attacks**
- **Topology Diagram**



- **Assign IP Addresses**

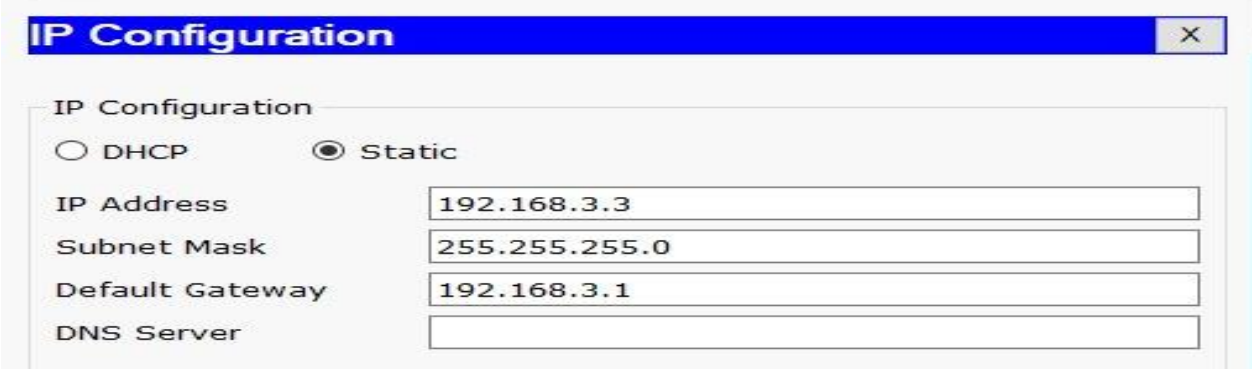
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IT21036

Security In Computing

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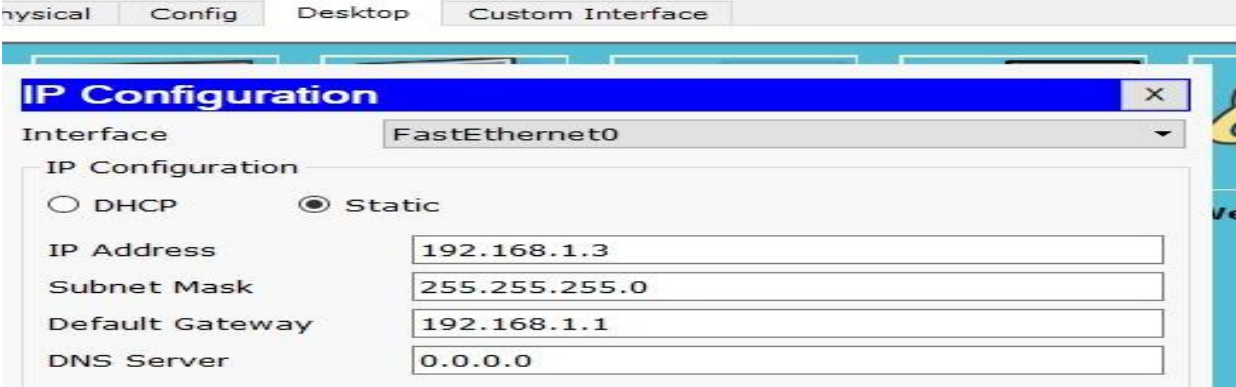
PC



The image shows a screenshot of a network configuration window titled "IP Configuration" with a blue header bar and a close button (X) in the top right corner. The window contains a section labeled "IP Configuration" with two radio buttons: "DHCP" (unselected) and "Static" (selected). Below the radio buttons are four text input fields: "IP Address" containing "192.168.3.3", "Subnet Mask" containing "255.255.255.0", "Default Gateway" containing "192.168.3.1", and "DNS Server" which is empty.

Field	Value
IP Address	192.168.3.3
Subnet Mask	255.255.255.0
Default Gateway	192.168.3.1
DNS Server	

PC-A



The image shows a screenshot of a network configuration window titled "IP Configuration" with a blue header bar and a close button (X) in the top right corner. The window has a tabbed interface with tabs labeled "Physical", "Config", "Desktop", and "Custom Interface". The "Config" tab is active. Below the tabs, there is a dropdown menu labeled "Interface" with "FastEthernet0" selected. The "IP Configuration" section has two radio buttons: "DHCP" (unselected) and "Static" (selected). Below the radio buttons are four text input fields: "IP Address" containing "192.168.1.3", "Subnet Mask" containing "255.255.255.0", "Default Gateway" containing "192.168.1.1", and "DNS Server" containing "0.0.0.0".

Field	Value
Interface	FastEthernet0
IP Address	192.168.1.3
Subnet Mask	255.255.255.0
Default Gateway	192.168.1.1
DNS Server	0.0.0.0

```
R1>en
R1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#host R1
R1(config)#interface Serial0/0/0
R1(config-if)#ip address 10.1.1.1 255.255.255.252
R1(config-if)#no shut
R1(config-if)#interface GigabitEthernet0/0
R1(config-if)#ip address 192.168.1.1 255.255.255.0
R1(config-if)#no shut
R1(config-if)#^Z
R1#
%SYS-5-CONFIG_I: Configured from console by console
exit
```

 R2

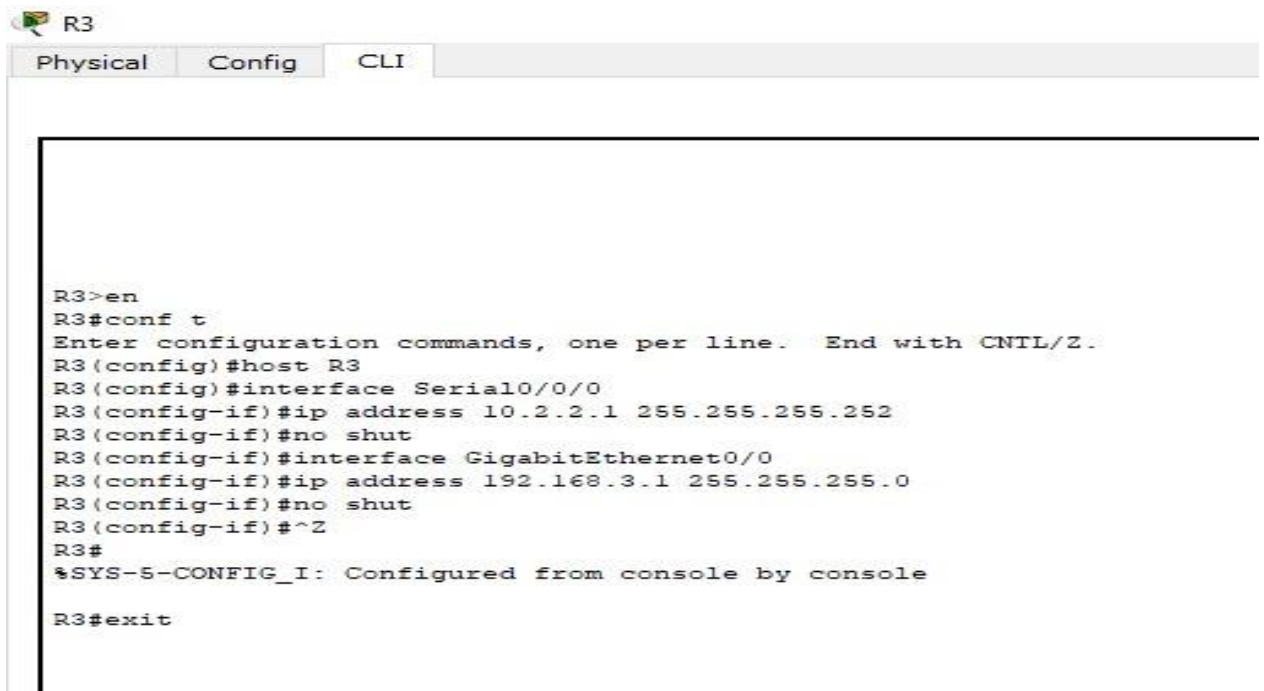
```
R2>en
R2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R2(config)#host R2
R2(config)#interface Serial0/0/0
R2(config-if)#ip address 10.1.1.2 255.255.255.252
R2(config-if)#no shut
R2(config-if)#interface Serial0/0/1
R2(config-if)#ip address 10.2.2.2 255.255.255.252
R2(config-if)#no shut
R2(config-if)#int loopback1

R2(config-if)#
%LINK-5-CHANGED: Interface Loopback1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback1, changed state to up
ip address 192.168.2.1 255.255.255.0
R2(config-if)#no shut
R2(config-if)#^Z
R2#
%SYS-5-CONFIG_I: Configured from console by console
exit
```

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```
R3>en
R3#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R3 (config)#host R3
R3 (config)#interface Serial0/0/0
R3 (config-if)#ip address 10.2.2.1 255.255.255.252
R3 (config-if)#no shut
R3 (config-if)#interface GigabitEthernet0/0
R3 (config-if)#ip address 192.168.3.1 255.255.255.0
R3 (config-if)#no shut
R3 (config-if)#^Z
R3#
%SYS-5-CONFIG_I: Configured from console by console
R3#exit
```

✧ Displaying IP Address Details of Routers

```
R1>show ip interface brief
Interface                IP-Address      OK? Method Status      Protocol
GigabitEthernet0/0       192.168.1.1     YES manual up           up
GigabitEthernet0/1       unassigned      YES unset  administratively down down
Serial0/0/0              10.1.1.1        YES manual up           up
Serial0/0/1              unassigned      YES unset  administratively down down
Serial0/1/0              unassigned      YES unset  administratively down down
Serial0/1/1              unassigned      YES unset  administratively down down
Vlan1                    unassigned      YES unset  administratively down down
R1>
```

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```
R2>show ip interface brief
Interface                IP-Address      OK? Method Status      Protocol
GigabitEthernet0/0      unassigned      YES unset  administratively down  down
GigabitEthernet0/1      unassigned      YES unset  administratively down  down
Serial0/0/0             10.1.1.2        YES manual up                up
Serial0/0/1             10.2.2.2        YES manual up                up
Serial0/1/0             unassigned      YES unset  administratively down  down
Serial0/1/1             unassigned      YES unset  administratively down  down
Loopback1               192.168.2.1     YES manual up                up
Vlan1                   unassigned      YES unset  administratively down  down
R2>
```

```
R3>show ip interface brief
Interface                IP-Address      OK? Method Status      Protocol
GigabitEthernet0/0      192.168.3.1     YES manual up                up
GigabitEthernet0/1      unassigned      YES unset  administratively down  down
Serial0/0/0             10.2.2.1        YES manual up                up
Serial0/0/1             unassigned      YES unset  administratively down  down
Serial0/1/0             unassigned      YES unset  administratively down  down
Serial0/1/1             unassigned      YES unset  administratively down  down
Vlan1                   unassigned      YES unset  administratively down  down
R3>
```

➤ Configure RIP on routers

```
R1>en
R1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#router rip
R1(config-router)#network 192.168.1.0
R1(config-router)#network 10.1.1.0
R1(config-router)#^Z
R1#
%SYS-5-CONFIG_I: Configured from console by console
exit
```

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```
R2>en
R2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R2(config)#router rip
R2(config-router)#network 10.1.1.0
R2(config-router)#network 10.2.2.0
R2(config-router)#network 192.168.2.0
R2(config-router)#^Z
R2#
%SYS-5-CONFIG_I: Configured from console by console

R2#exit
```

```
R3>
R3>en
R3#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R3(config)#router rip
R3(config-router)#network 10.2.2.0
R3(config-router)#network 192.168.3.0
R3(config-router)#^Z
R3#
%SYS-5-CONFIG_I: Configured from console by console
exit
```

➤ Displaying routing table of routers

```
R1>show ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

    10.0.0.0/8 is variably subnetted, 3 subnets, 2 masks
C       10.1.1.0/30 is directly connected, Serial0/0/0
L       10.1.1.1/32 is directly connected, Serial0/0/0
R       10.2.2.0/30 [120/1] via 10.1.1.2, 00:00:02, Serial0/0/0
    192.168.1.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.1.0/24 is directly connected, GigabitEthernet0/0
L       192.168.1.1/32 is directly connected, GigabitEthernet0/0
R       192.168.2.0/24 [120/1] via 10.1.1.2, 00:00:02, Serial0/0/0
R       192.168.3.0/24 [120/2] via 10.1.1.2, 00:00:02, Serial0/0/0
R1>
```


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```
R2>show ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

    10.0.0.0/8 is variably subnetted, 4 subnets, 2 masks
C       10.1.1.0/30 is directly connected, Serial0/0/0
L       10.1.1.2/32 is directly connected, Serial0/0/0
C       10.2.2.0/30 is directly connected, Serial0/0/1
L       10.2.2.2/32 is directly connected, Serial0/0/1
R       192.168.1.0/24 [120/1] via 10.1.1.1, 00:00:27, Serial0/0/0
       192.168.2.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.2.0/24 is directly connected, Loopback1
L       192.168.2.1/32 is directly connected, Loopback1
R       192.168.3.0/24 [120/1] via 10.2.2.1, 00:00:04, Serial0/0/1
R2>
```

```
R3>show ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

    10.0.0.0/8 is variably subnetted, 3 subnets, 2 masks
R       10.1.1.0/30 [120/1] via 10.2.2.2, 00:00:03, Serial0/0/0
C       10.2.2.0/30 is directly connected, Serial0/0/0
L       10.2.2.1/32 is directly connected, Serial0/0/0
R       192.168.1.0/24 [120/2] via 10.2.2.2, 00:00:03, Serial0/0/0
R       192.168.2.0/24 [120/1] via 10.2.2.2, 00:00:03, Serial0/0/0
       192.168.3.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.3.0/24 is directly connected, GigabitEthernet0/0
L       192.168.3.1/32 is directly connected, GigabitEthernet0/0
R3>
```

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➤ Configure SSH on R2

```
~
R2>en
R2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R2(config)#ip domain-name securityincomputing.com
R2(config)#username admin secret pwd
R2(config)#line vty 0 4
R2(config-line)#login local
R2(config-line)#transport input ssh
R2(config-line)#crypto key zeroizersa
^
% Invalid input detected at '^' marker.

R2(config-line)#crypto key zeroize rsa
% No Signature RSA Keys found in configuration.

R2(config)#crypto key generate rsa
The name for the keys will be: R2.securityincomputing.com
Choose the size of the key modulus in the range of 360 to 2048 for your
General Purpose Keys. Choosing a key modulus greater than 512 may take
a few minutes.

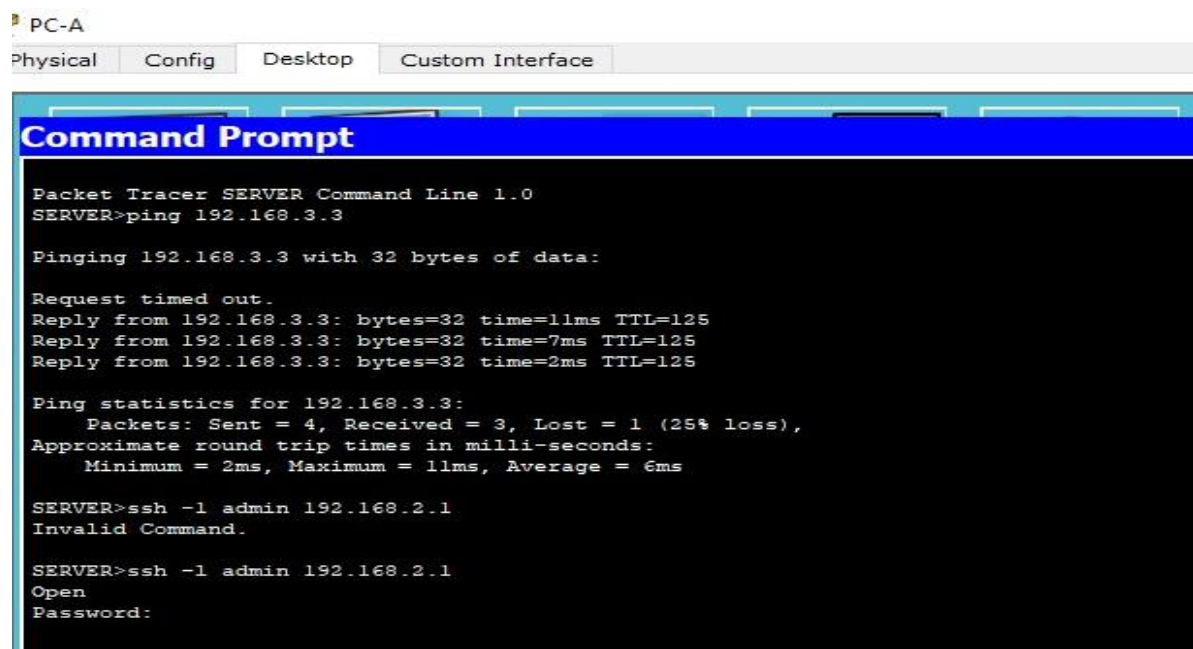
How many bits in the modulus [512]: 1024
% Generating 1024 bit RSA keys, keys will be non-exportable...[OK]

R2(config)#ipssh time-out 90
*Mar 2 0:49:12.552: %SSH-5-ENABLED: SSH 1.99 has been enabled
^
% Invalid input detected at '^' marker.

R2(config)#ip ssh time-out 90
R2(config)#ipssh authentication-retries 2
^
% Invalid input detected at '^' marker.

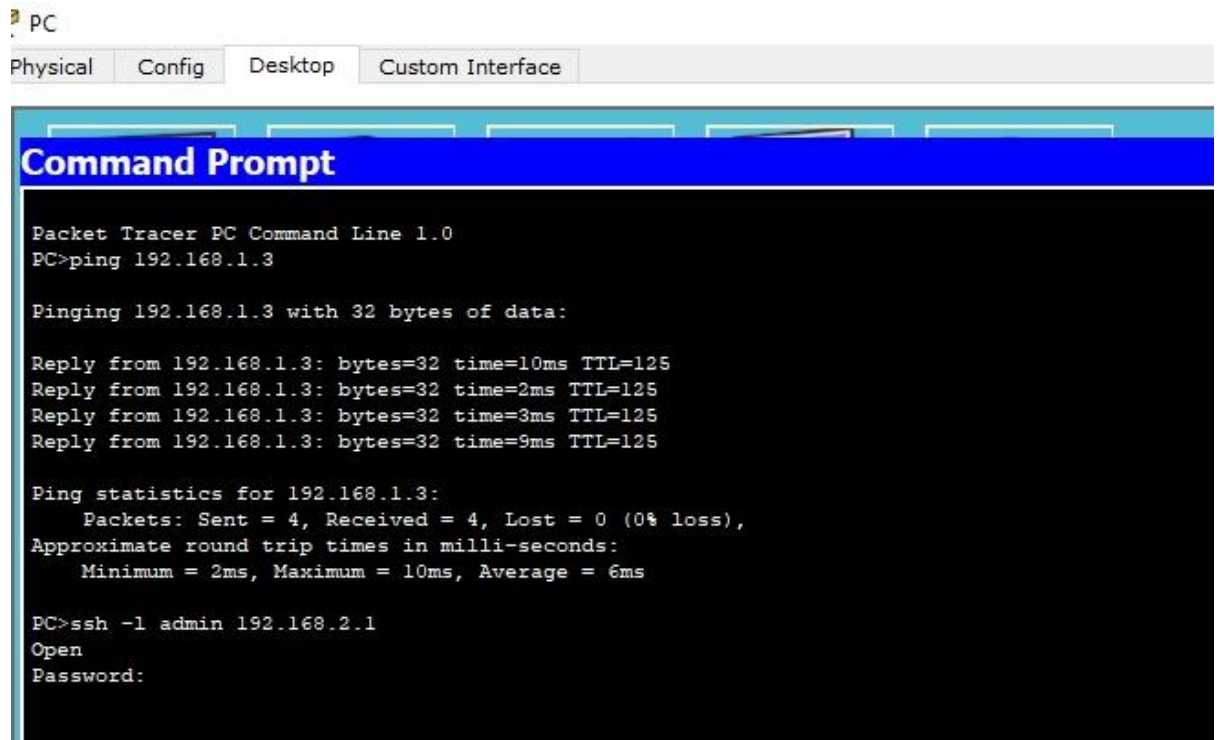
R2(config)#ip ssh authentication-retries 2
R2(config)#ip ssh version 2
R2(config)#^Z
R2#
%SYS-5-CONFIG_I: Configured from console by console
exit
```

◆ Verify Basic Network Connectivity before ACL Configuration



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Practical no :- 4



The screenshot shows the Packet Tracer PC Command Line interface. At the top, there are tabs for 'Physical', 'Config', 'Desktop', and 'Custom Interface'. The 'Command Prompt' window is open, displaying the following text:

```
Packet Tracer PC Command Line 1.0
PC>ping 192.168.1.3

Pinging 192.168.1.3 with 32 bytes of data:

Reply from 192.168.1.3: bytes=32 time=10ms TTL=125
Reply from 192.168.1.3: bytes=32 time=2ms TTL=125
Reply from 192.168.1.3: bytes=32 time=3ms TTL=125
Reply from 192.168.1.3: bytes=32 time=9ms TTL=125

Ping statistics for 192.168.1.3:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 2ms, Maximum = 10ms, Average = 6ms

PC>ssh -l admin 192.168.2.1
Open
Password:
```