



## ***Fortray Cisco CCNA - 200-125***

***BGP Configuration***

***Step by Step Guide***

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**1. Table of contents**

1. Table of contents ..... 3

2. Version ..... 4

3. Reference Document ..... 4

4. Assumption ..... 4

5. NOTE About Configuration Example ..... 5

6. Network Topology ..... 6

7. Fortray CCNA LAB Router & Switches MGMT Access..... 7

8. BGP Configuration Task ..... 9

9. Fortray CCNA – BGP Configuration Task..... 10

9.1 Step1 > Connecting Router 1 (FN-CCNA-1-181) ..... 10

9.2 Step2> Configure BGP on Router R1 (FN-CCNA-1-181)..... 11

9.3 Step 3> Connect Router R2 (FN-CCNA-1-182) ..... 12

9.4 Step4> Configure BGP on Router R2 (FN-CCNA-1-182)..... 13

10. Verification Steps..... 14

10.1 Steps -1> Verify the BGP Neighbours on R1 - commands ..... 14

10.2 Step 2> verify the BGP protocol on R1 – Commands ..... 15

10.3 Step 3> Verify the BGP Routes from the Core routers. .... 16

10.4 Steps -4> Verify the BGP Neighbours on R2- commands ..... 16

10.5 Step 5> Verify the BGP Routes from the Core routers on R2..... 17

10.6 Step 6> verify the BGP protocol on R2 – Commands ..... 18

10.7 Step 7> Verify from the TEST PC..... 19

10.8 Step 8> Open the command prompt and ping the BGP route received from the core ..... 20

10.9 Step 9> Trace to your BGP route from branch office ..... 21

**2. Version**

Version	Date	Notes	Creation By	Authorized By
1	09/03/19	N/A	Mazhar Minhas	Initial Release
2	22/05/19	N/A	Shahid Ghias	Final

**3. Reference Document**

[Click for the Reference document](#)

**4. Assumption**

- ✦ We understand that delegate already Basic Layer 1,2 and Cisco Command Line
- ✦ The delegate already knows the “**Fortray Networks – Cisco CCNA RS**” physical and logical connection.
- ✦ The delegate already has basis Troubleshooting skill, such as ping and trace.
- ✦ The delegate already has access to the “**Fortray Networks – Cisco CCNA RS**” Spreadsheet encompassing the Basic Layer, 2, 3 and allocated subnet information. For more details refer to the “**Student Folder**”.
- ✦ This document is created to show an example for one topology only. The candidate needs to refer to his own topology and follow this step by step guide.
- ✦ We assume that delegate already have installed the VPN software and him/she has VPN user / Password. If any issue, contact our Technical team.
- ✦ Our VPN software is supported by PC, MAC, Android, and IOS devices.
- ✦ It’s also assumed that delegate has access to PC/Laptop i5 with 4GB RAM.
- ✦ For optimal connectivity, we recommend at least 10MB Internet connection.

## 5. NOTE About Configuration Example



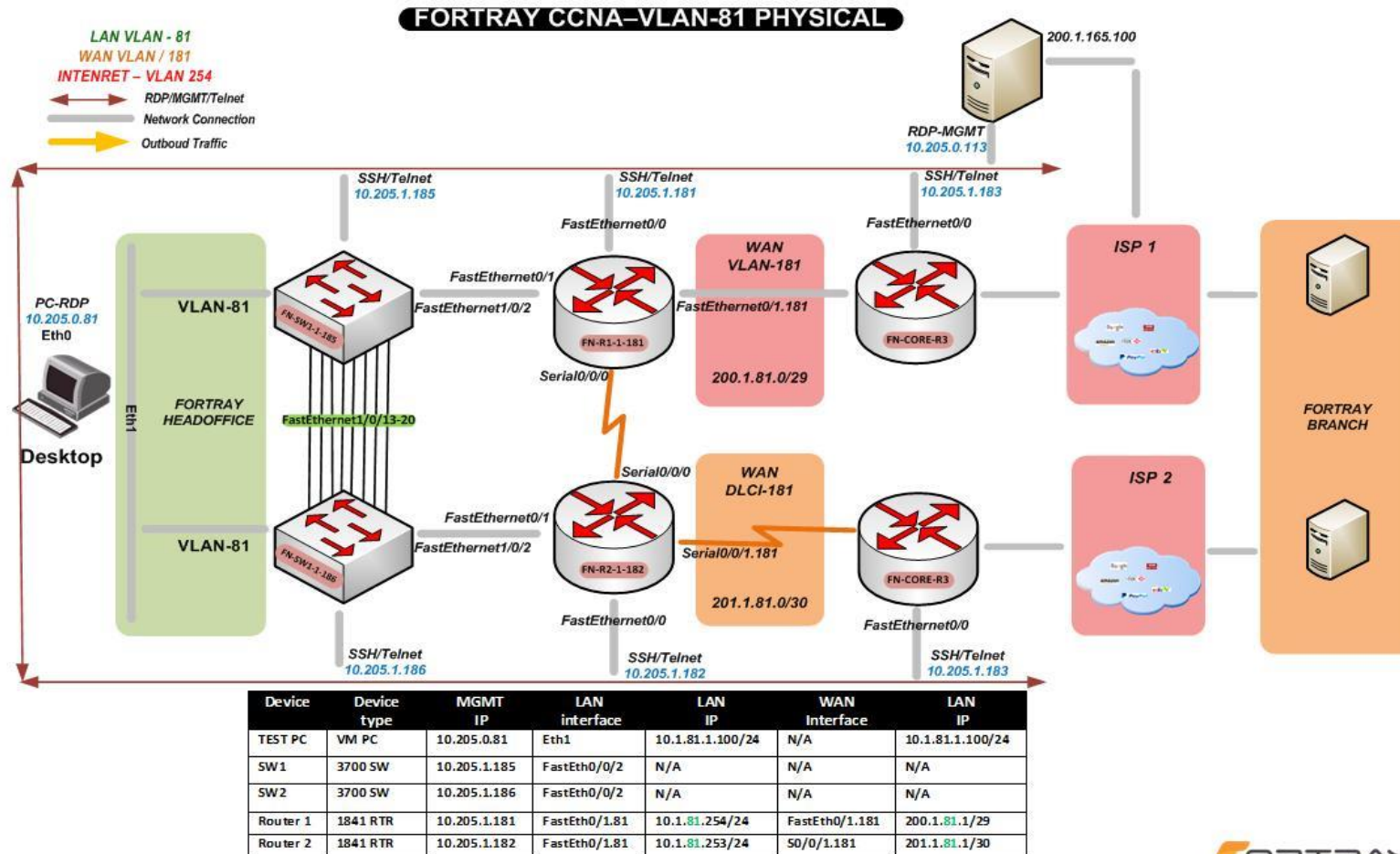
The configuration example is based in the “**VLAN-81**”.

Please refer to “**Student Spread Sheet**” and complete your task based on your Network Topology & Task list assigned.



### 6. Network Topology

The below network topology is just for information purpose only. Please refer to your student folder and your designated topology. If any doubt, please ask your instructor.



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**CCNA– VLAN-81 Topology**



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## 7. Fortray CCNA LAB Router & Switches MGMT Access

Refer to below table and login to router, switches and Test machine.

**Note:** Each delegate has his /her own test machine, refer to the spreadsheet provided in the student shared folder

Device Name	Type	IP	Access method	User	Password	Enable password	Comments
FN-R1-1-181	Router	10.205.1.181	Telnet port 23	N/A	cisco	cisco	
FN-R2-1-182	Router	10.205.1.182	Telnet port 23	N/A	cisco	cisco	
FN-SW1-1-185	Switches	10.205.1.185	Telnet port 23	N/A	cisco	cisco	
FN-SW2-1-186	Switches	10.205.1.186	Telnet port 23	N/A	cisco	cisco	
FN-PC-0-81	Test Machine	10.205.0.81	RDP	Administrator	cisco	N/A	Refer to spreadsheet



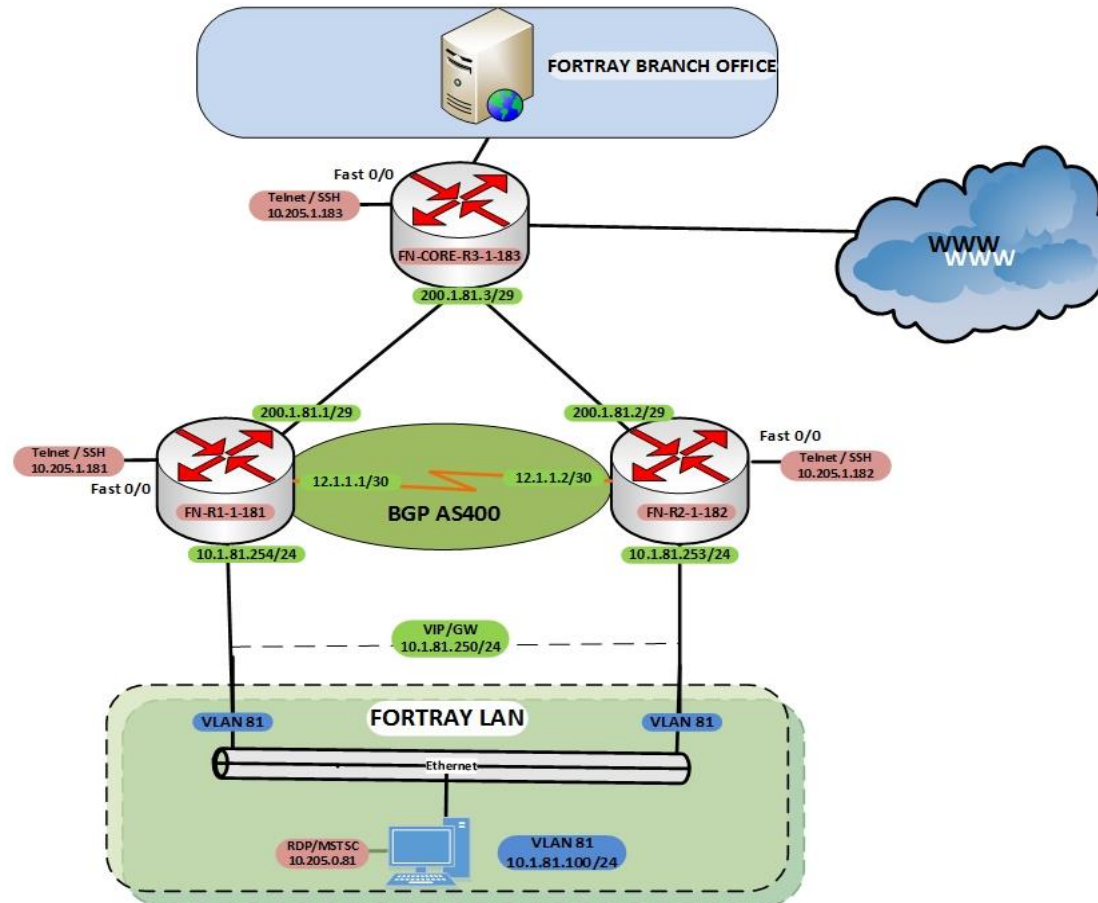
**Warning:** Please don't change the above password for any devices.

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## CCNA– VLAN -81

Device	IP
FN-R1-1-181	10.205.1.181
FN-R2-1-182	10.205.1.182
FN-CORE-R3-1-183	10.205.1.183
FN-SW1-1-185	10.205.1.185
FN-SW1-1-186	10.205.1.186

### BGP



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Cisco CCNA – VLAN-81 -Topology



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Please refer to “**Student Spread Sheet**” and complete your task based on your Network Topology, & Task list assigned.



## 8. BGP Configuration Task

Fortray Networks head office “**Network Administrator**” would like to establish communication between head office LAN & branch office LAN connected via the WAN & Core routers. Head office LAN is in the range of 10.1.X.0/24 (where X is user VLAN) Branch office is in the range of 172.17.X.1/32

A solution has been proposed to run the Dynamic Routing protocol BGP. we will be using the WAN IP address 200.1.X.1/29 on R1 and 201.1.X.1/29 (where X is your VLAN) to configure the BGP protocol. We need to ensure that we can reach to Branch LAN from Router as well Test machine at the Fortray Head office LAN.



In this example we are configuring the BGP between R1/R2 & Core Routers so both the LAN can be connected.

**Summary steps to be done by network administrator are mentioned below:-**

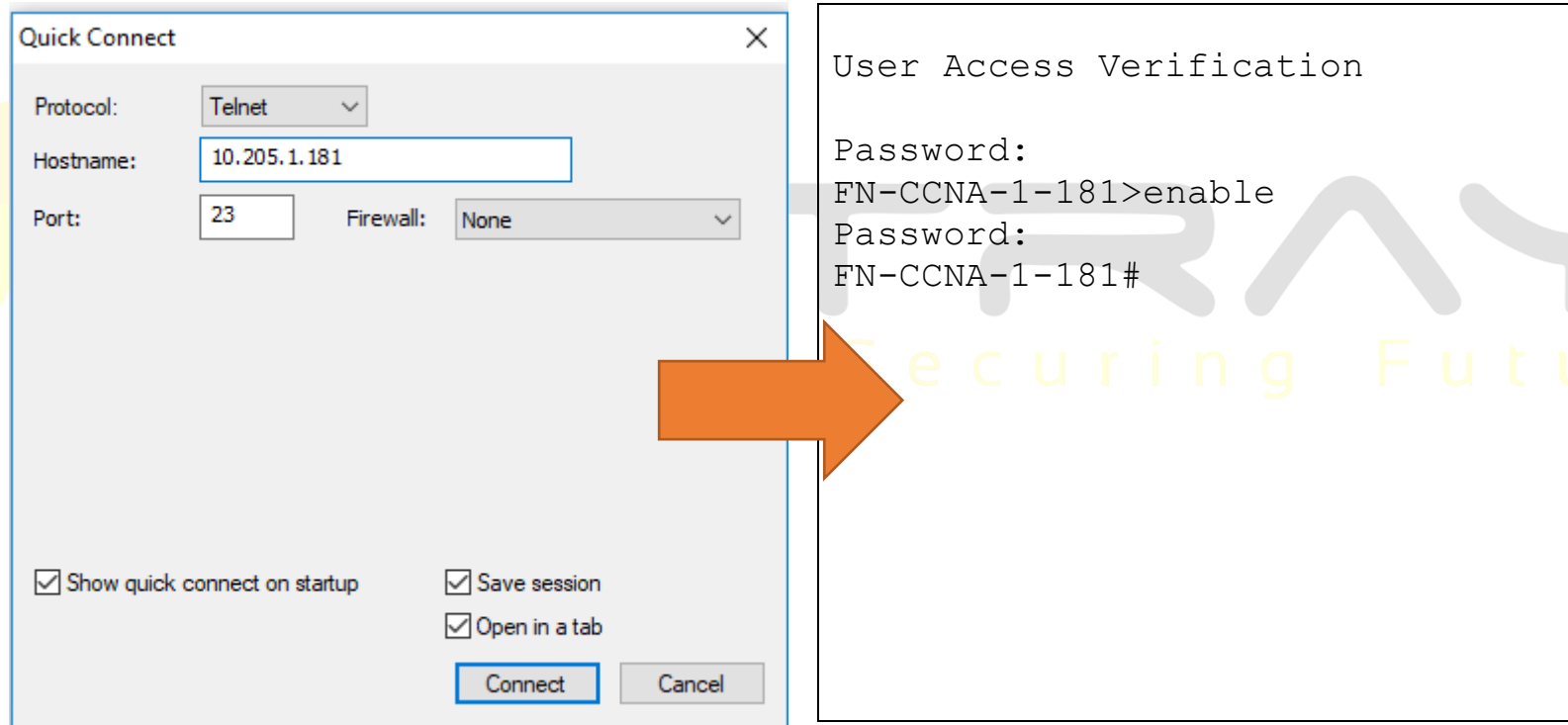
Steps needed to be done to accomplish this task is

- ✚ Connecting R1 (FN-CCNA-1-181) via Telnet /SSH
- ✚ Configure / Advertise LAN /WAN networks inside the BGP domain. (Refer to diagram)
- ✚ Connecting R2 (FN-CCNA-1-182) via Telnet /SSH
- ✚ Configure / Advertise LAN /WAN networks inside the BGP domain (Refer to diagram)
- ✚ Verify the BGP configuration on both the Routers
- ✚ Verify the BGP configuration via the TEST Machine

## 9. Fortray CCNA – BGP Configuration Task

### 9.1 Step1 > Connecting Router 1 (FN-CCNA-1-181)

Connect using any telnet client (i.e., Secure CRT or Putty), Login to Router 1. Provide a password if required.



The image shows a 'Quick Connect' dialog box on the left and a terminal window on the right. An orange arrow points from the 'Connect' button in the dialog box to the terminal window.

**Quick Connect Dialog Box:**

- Protocol: Telnet
- Hostname: 10.205.1.181
- Port: 23
- Firewall: None
- Options:  Show quick connect on startup,  Save session,  Open in a tab
- Buttons: Connect, Cancel

**Terminal Window:**

```
User Access Verification
Password:
FN-CCNA-1-181>enable
Password:
FN-CCNA-1-181#
```

## 9.2 Step2> Configure BGP on Router R1 (FN-CCNA-1-181)

Configure the following parameters.

- Enable BGP protocol
- Advertise your LAN interface (refer to spreadsheet or Diagram)
- Advertise your WAN interface (refer to spreadsheet or Diagram)

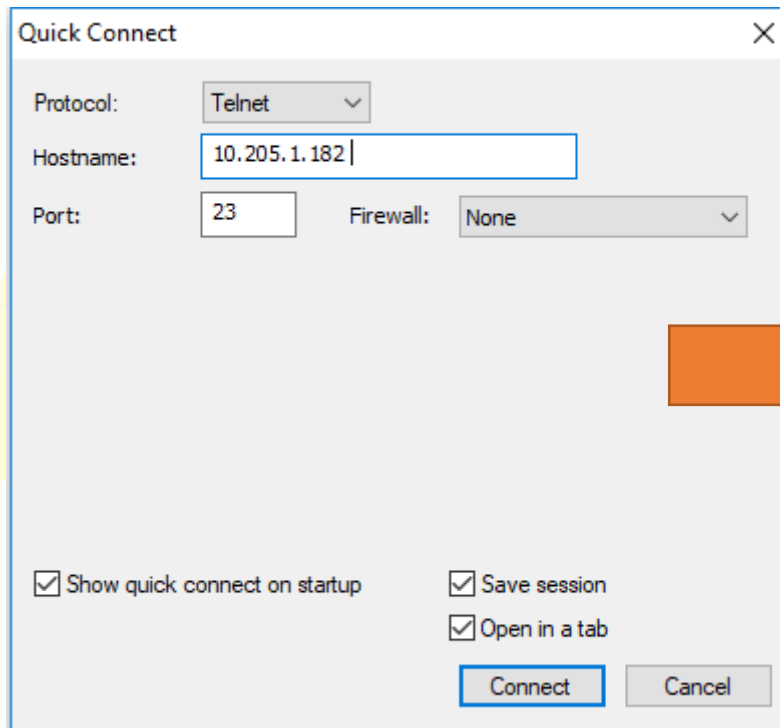
```
FN-CCNA-1-181#configure terminal
!
router bgp 64000
network 10.1.81.0 mask 255.255.255.0
neighbor 200.1.81.2 remote-as 65000
```



**Note:** Please refer to your own BGP diagram & spread sheet. Above example is only for VLAN 81.

## 9.3 Step 3> Connect Router R2 (FN-CCNA-1-182)

Connect using any telnet client (i.e., Secure CRT or Putty), Login to Router2. Provide a password if required.



User Access Verification

Password:  
FN-CCNA-2-182>enable  
Password:  
FN-CCNA-2-182#

9.4 Step4> Configure BGP on Router R2 (FN-CCNA-1-182)

```
FN-CCNA-1-182#configure terminal
!  
router bgp 64000  
network 10.1.81.0 mask 255.255.255.0  
neighbor 201.1.81.2 remote-as 65000
```



## 10. Verification Steps

In this section, you will verify your configurations made in previous steps.

Below is a summary of the commands to verify the BGP configuration

Show running  
 Show ip BGP summary  
 Show ip protocol  
 Show ip bgp

### 10.1 Steps -1> Verify the BGP Neighbours on R1 - commands

**FN-CCNA-1-181#show ip bgp summary**

```
BGP router identifier 150.1.1.1, local AS number 64000
BGP table version is 4, main routing table version 4
3 network entries using 408 bytes of memory
3 path entries using 168 bytes of memory
2/2 BGP path/bestpath attribute entries using 256 bytes of memory
1 BGP AS-PATH entries using 24 bytes of memory
0 BGP route-map cache entries using 0 bytes of memory
0 BGP filter-list cache entries using 0 bytes of memory
```

```
BGP using 856 total bytes of memory
BGP activity 3/0 prefixes, 3/0 paths, scan interval 60 secs
```

Neighbor	V	AS	MsgRcvd	MsgSent	TblVer	InQ	OutQ	Up/Down	State/PfxRcd
200.1.81.2	4	65000	59	59	4	0	0	00:49:10	1

10.2 Step 2> verify the BGP protocol on R1 – Commands

**FN-CCNA-1-181#show ip protocols**

```
Routing Protocol is "bgp 64000"
Outgoing update filter list for all interfaces is not set
Incoming update filter list for all interfaces is not set
IGP synchronization is disabled
Automatic route summarization is disabled

Neighbor(s):

Address          FiltIn FiltOut DistIn DistOut Weight RouteMap

200.1.81.2

Maximum path: 1

Routing Information Sources:

Gateway          Distance      Last Update

200.1.81.2       20            23:58:37
```

```
Distance: external 20 internal 200 local 200
```

## 10.3 Step 3> Verify the BGP Routes from the Core routers.

**FN-CCNA-1-181#show ip BGP**

**BGP table version is 8, local router ID is 150.1.1.1**

Status codes: s suppressed, d damped, h history, \* valid, > best, i - internal,  
r RIB-failure, S Stale, m multipath, b backup-path, x best-external, f RT-Filter

Origin codes: i - IGP, e - EGP, ? - incomplete

Network	Next Hop	Metric	LocPrf	Weight	Path
---------	----------	--------	--------	--------	------

*> 10.1.81.0/24	0.0.0.0	0		32768	i
-----------------	---------	---	--	-------	---

*> 172.17.81.0/24	200.1.81.2	0		0 65000	i
-------------------	------------	---	--	---------	---

## 10.4 Steps -4> Verify the BGP Neighbours on R2- commands

**FN-CCNA-1-182#show ip bgp summary**

```
BGP router identifier 150.1.1.1, local AS number 64000
BGP table version is 4, main routing table version 4
3 network entries using 408 bytes of memory
```



```

3 path entries using 168 bytes of memory
2/2 BGP path/bestpath attribute entries using 256 bytes of memory
1 BGP AS-PATH entries using 24 bytes of memory
0 BGP route-map cache entries using 0 bytes of memory
0 BGP filter-list cache entries using 0 bytes of memory
BGP using 856 total bytes of memory
BGP activity 3/0 prefixes, 3/0 paths, scan interval 60 secs
    
```

Neighbor	V	AS	MsgRcvd	MsgSent	TblVer	InQ	OutQ	Up/Down	State/PfxRcd
201.1.81.2	4	65000	30	30	4	0	0	00:49:10	1

10.5 Step 5> Verify the BGP Routes from the Core routers on R2.

**FN-CCNA-1-182#show ip BGP**

BGP table version is 8, local router ID is 150.1.1.1

Status codes: s suppressed, d damped, h history, \* valid, > best, i - internal, r RIB-failure, S Stale, m multipath, b backup-path, x best-external, f RT-Filter

Origin codes: i - IGP, e - EGP, ? - incomplete

Network	Next Hop	Metric	LocPrf	Weight	Path
*> 10.1.81.0/24	0.0.0.0	0		32768	i
*> 172.17.81.0/24	201.1.81.2	0		0 65000	i

10.6 Step 6> verify the BGP protocol on R2 – Commands

**FN-CCNA-1-182#show ip protocols**

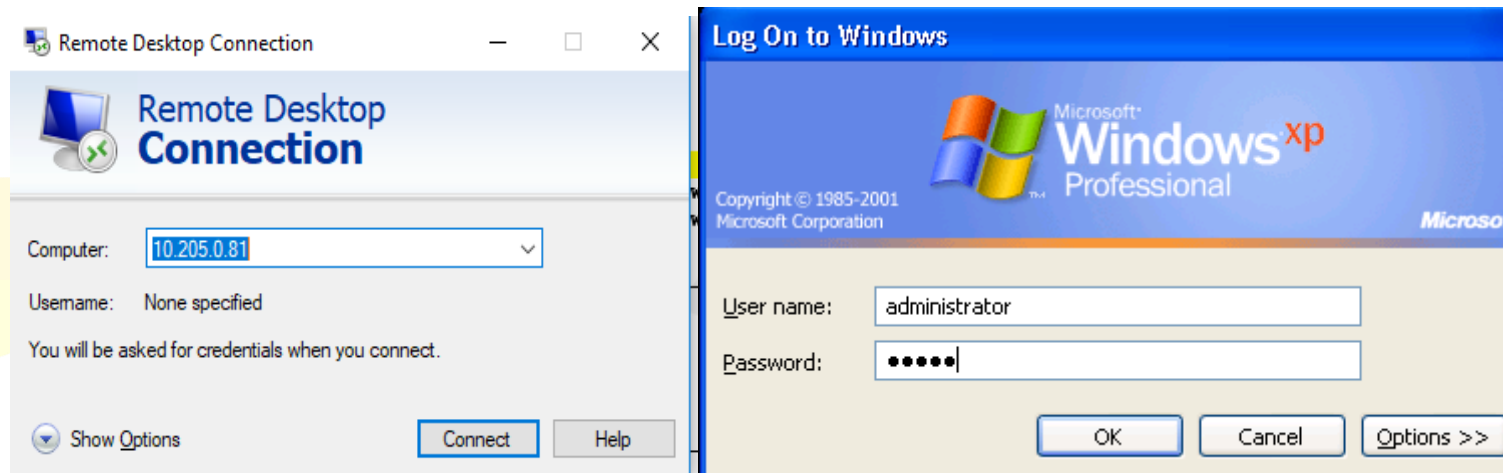
```

Routing Protocol is "bgp 64000"
Outgoing update filter list for all interfaces is not set
Incoming update filter list for all interfaces is not set
IGP synchronization is disabled
Automatic route summarization is disabled
Neighbor(s):
  Address      FiltIn FiltOut DistIn DistOut Weight RouteMap
  201.1.81.2
Maximum path: 1
Routing Information Sources:
  Gateway      Distance    Last Update
  201.1.81.2   20          21:56:32
Distance: external 20 internal 200 local 200
    
```

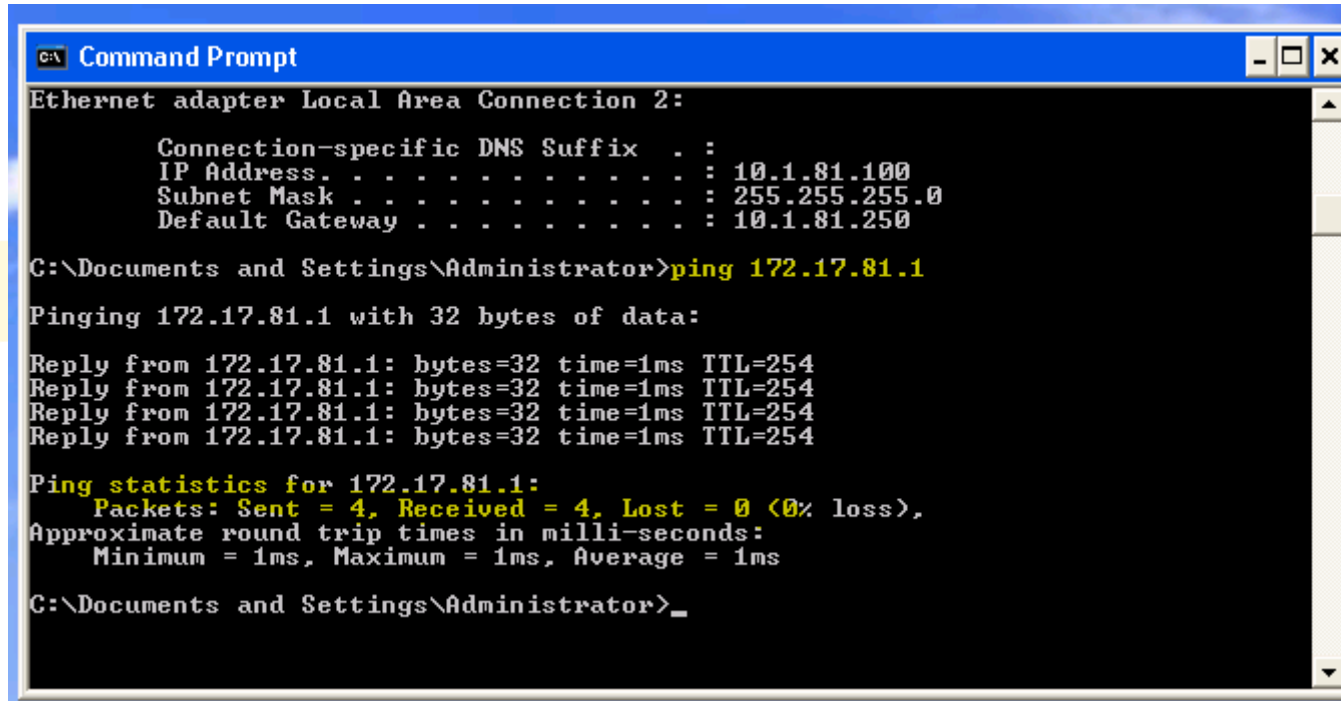


## 10.7 Step 7> Verify from the TEST PC

**Note:** Note down the IP & user/password of your desktop machine from spreadsheet and RDP to it.



10.8 Step 8> Open the command prompt and ping the BGP route received from the core



```
c:\ Command Prompt
Ethernet adapter Local Area Connection 2:

    Connection-specific DNS Suffix  . : 
    IP Address . . . . . : 10.1.81.100
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 10.1.81.250

C:\Documents and Settings\Administrator>ping 172.17.81.1

Pinging 172.17.81.1 with 32 bytes of data:

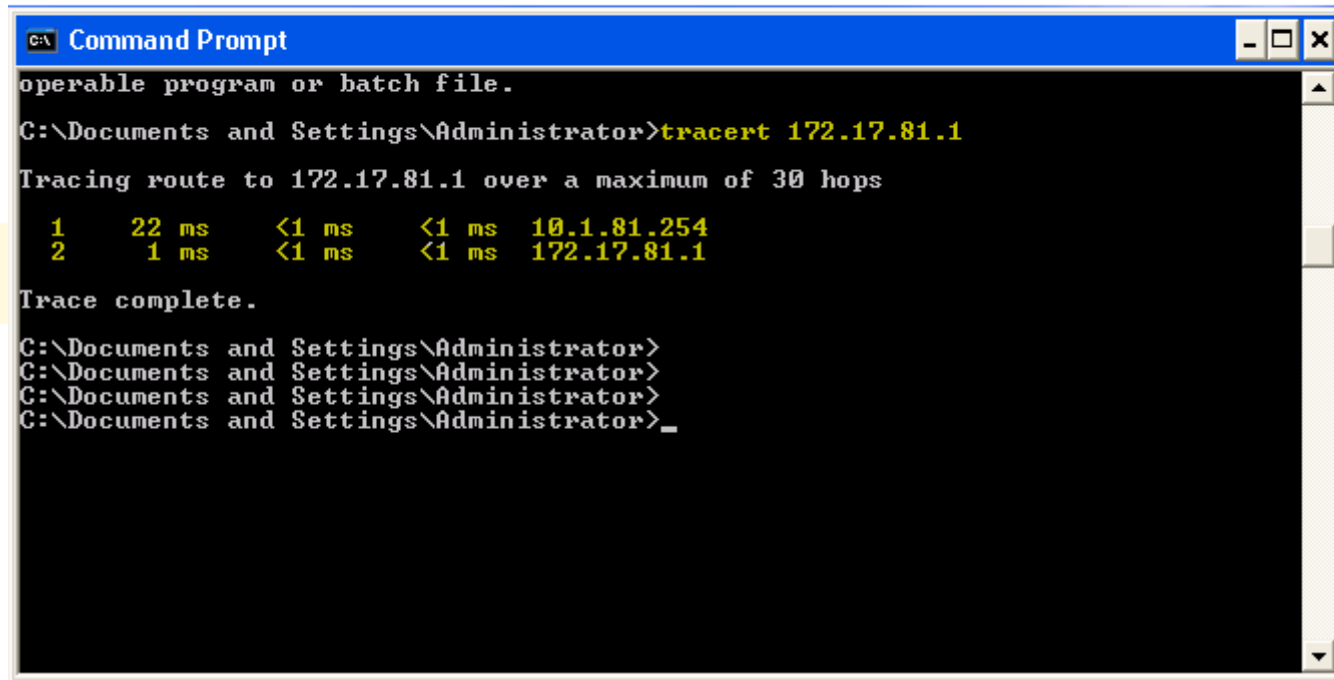
Reply from 172.17.81.1: bytes=32 time=1ms TTL=254
Reply from 172.17.81.1: bytes=32 time=1ms TTL=254
Reply from 172.17.81.1: bytes=32 time=1ms TTL=254
Reply from 172.17.81.1: bytes=32 time=1ms TTL=254

Ping statistics for 172.17.81.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 1ms, Average = 1ms

C:\Documents and Settings\Administrator>_
```



10.9 Step 9> Trace to your BGP route from branch office



```
C:\ Command Prompt
operable program or batch file.
C:\Documents and Settings\Administrator>tracert 172.17.81.1
Tracing route to 172.17.81.1 over a maximum of 30 hops
  1    22 ms    <1 ms    <1 ms    10.1.81.254
  2     1 ms    <1 ms    <1 ms    172.17.81.1
Trace complete.
C:\Documents and Settings\Administrator>
C:\Documents and Settings\Administrator>
C:\Documents and Settings\Administrator>
C:\Documents and Settings\Administrator>_
```



**\*\*\*End of Document\*\*\***



# Thanks, and Good Luck

