
# Fortray Cisco CCNA - 200-125

## BGP Configuration

## Step by Step Guide

Intellectual Property

# 1. Table of contents

## 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.

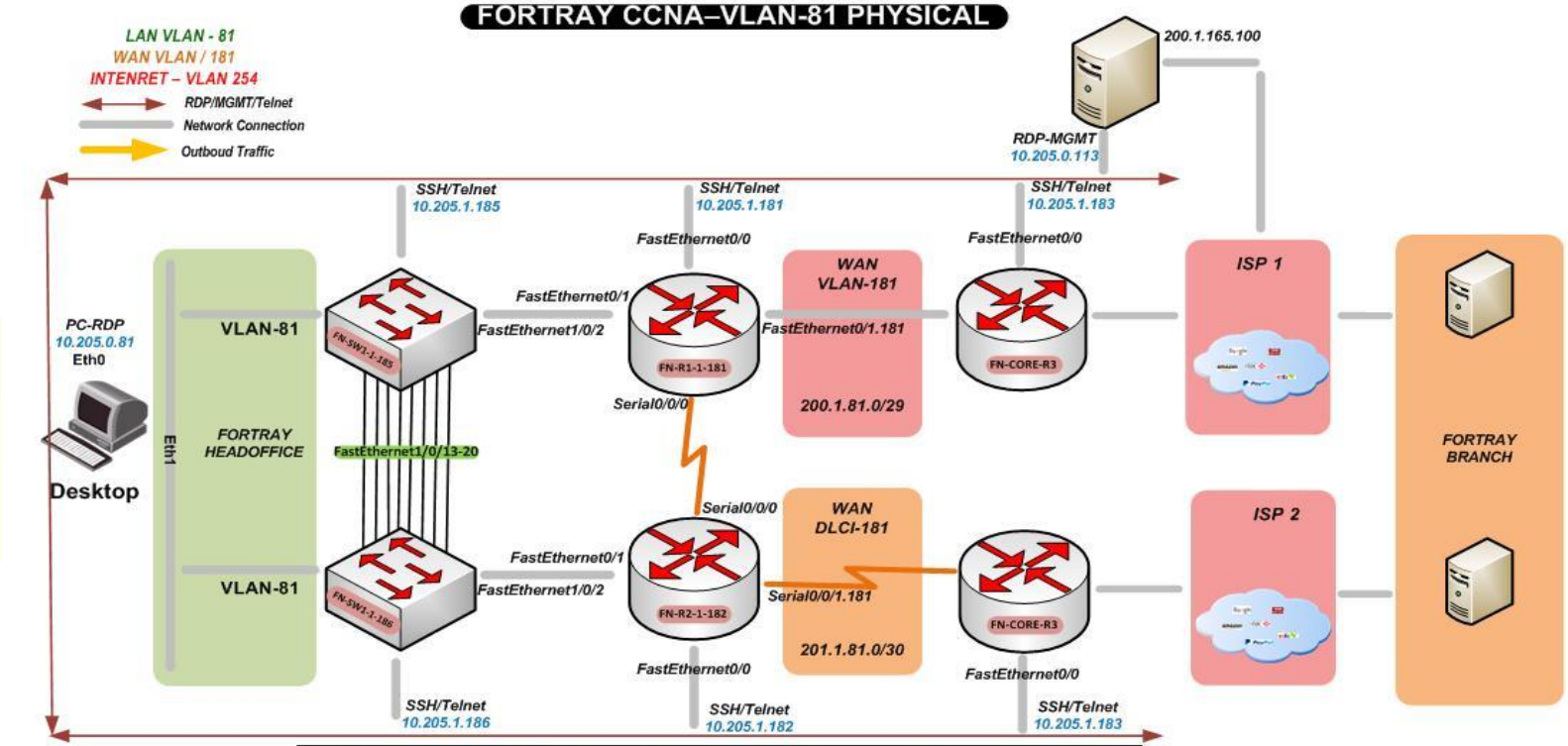
## 5. NOTE About Configuration Example

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.




| Device | Device type | MGMT IP | LAN interface | LAN IP | WAN Interface | LAN IP |
|---|---|---|---|---|---|---|
| TEST PC | VM PC | 10.205.0.81 | Eth1 | 10.1.81.1.100/24 | N/A | 10.1.81.1.100/24 |
| SW1 | 3700 SW | 10.205.1.185 | FastEth0/0/2 | N/A | N/A | N/A |
| SW2 | 3700 SW | 10.205.1.186 | FastEth0/0/2 | N/A | N/A | N/A |
| Router 1 | 1841 RTR | 10.205.1.181 | FastEth0/1.81 | 10.1.81.254/24 | FastEth0/1.181 | 200.1.81.1/29 |
| Router 2 | 1841 RTR | 10.205.1.182 | FastEth0/1.81 | 10.1.81.253/24 | S0/0/1.181 | 201.1.81.1/30 |

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CCIE – 20275 (RS & SP), CCSA, CCSE, PCNSE, NS4, NS5, JNCIS-SEC, CEH, CISSP

CCNA– VLAN-81 Topology

Fortray Networks Ltd
www.fortray.com

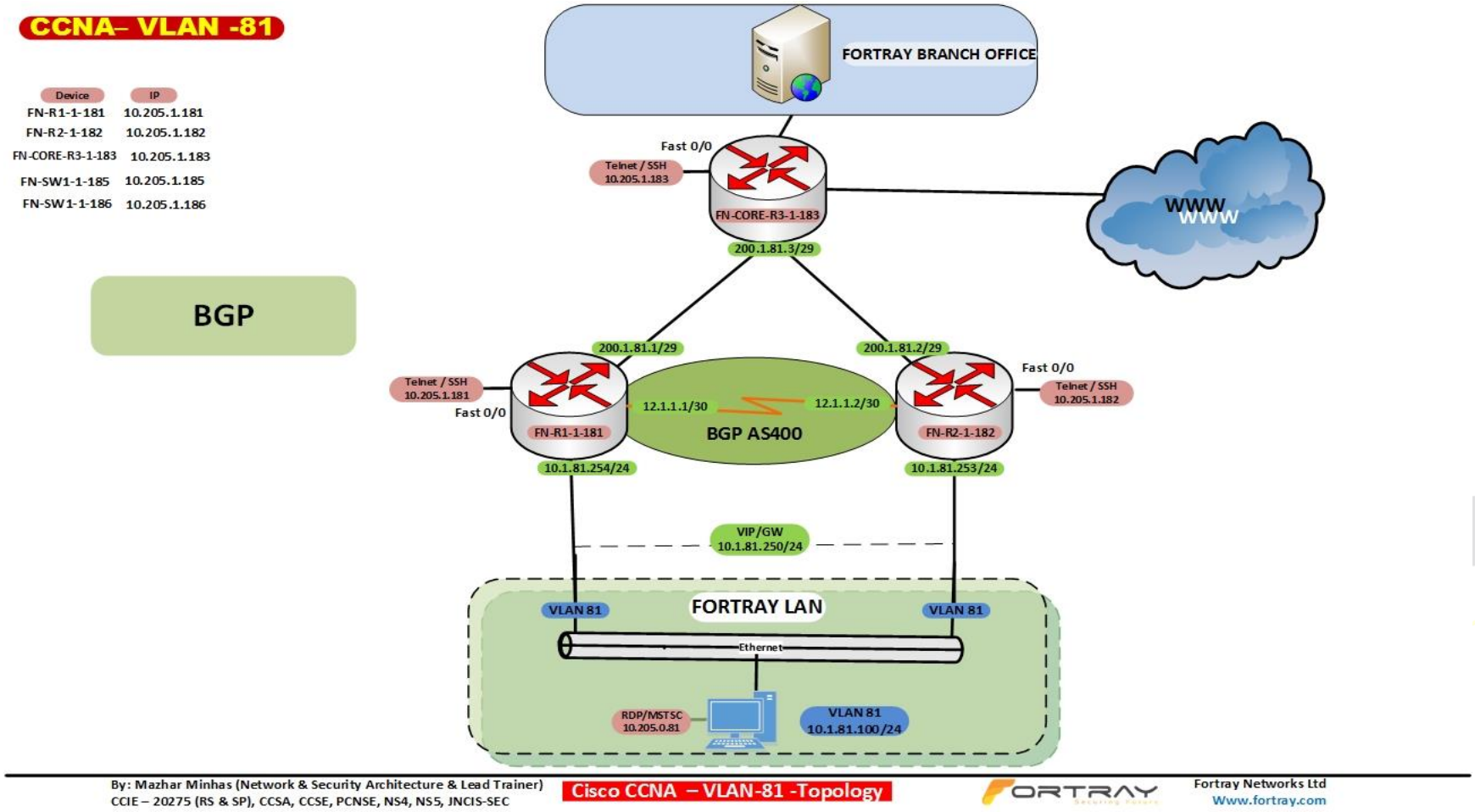
## 7. Fortray CCNA LAB Router & Switches MGMT Access

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.




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:-***

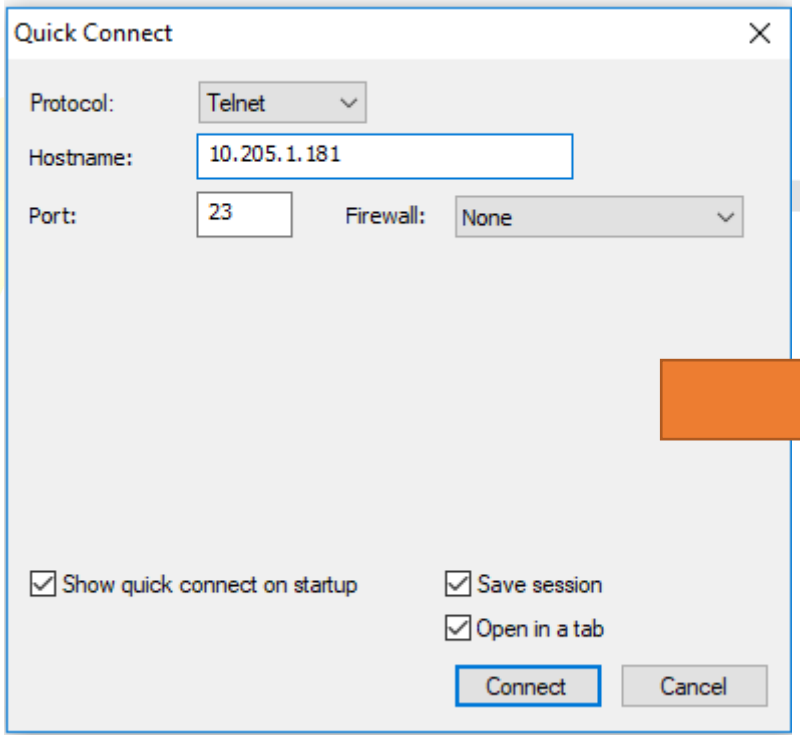
Steps needed to be done to accomplish this task is

- 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.




```
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.

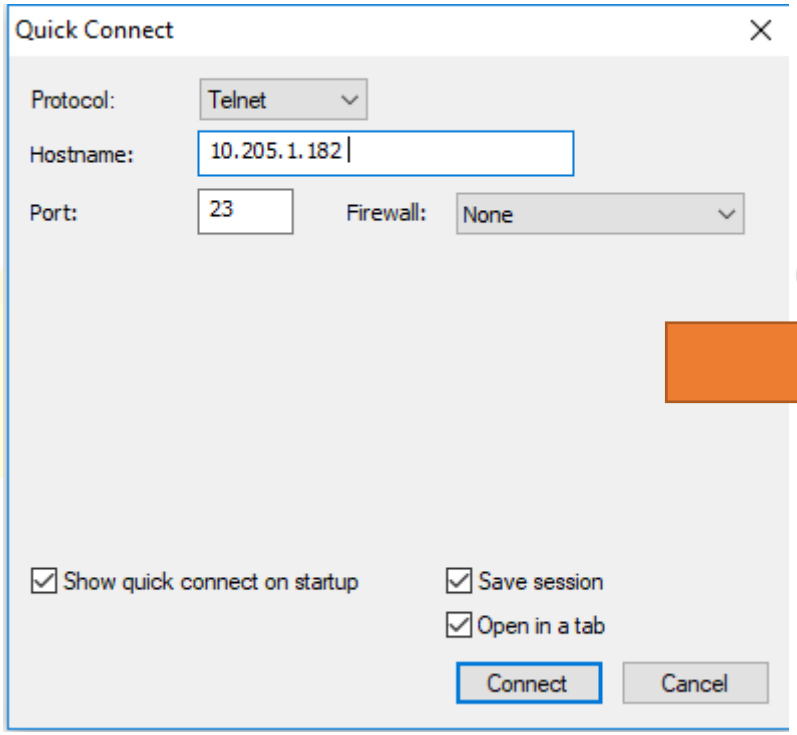
- Enable BGP protocol
- Advertise your LAN interface (refer to spreadsheet or Diagram)
- Advertise your WAN interface (refer to spreadsheet or Diagram)

```
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.

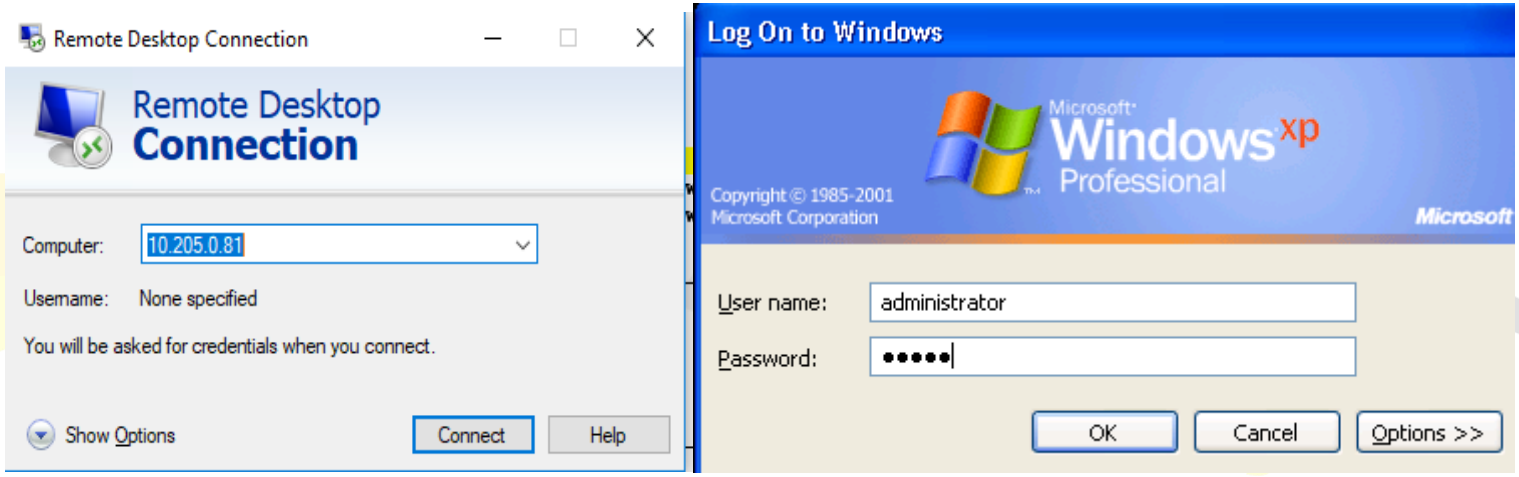
```
FN-CCNA-1-182#show ip  BGP
BGP table version is 8, local router ID is 150.1.1.1
Status codes: s suppressed, d damped, h history, * valid, > best, i - internal,
r RIB-failure, S Stale, m multipath, b backup-path, x best-external, f RT-Filter
Origin codes: i - IGP, e - EGP, ? - incomplete
Network          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

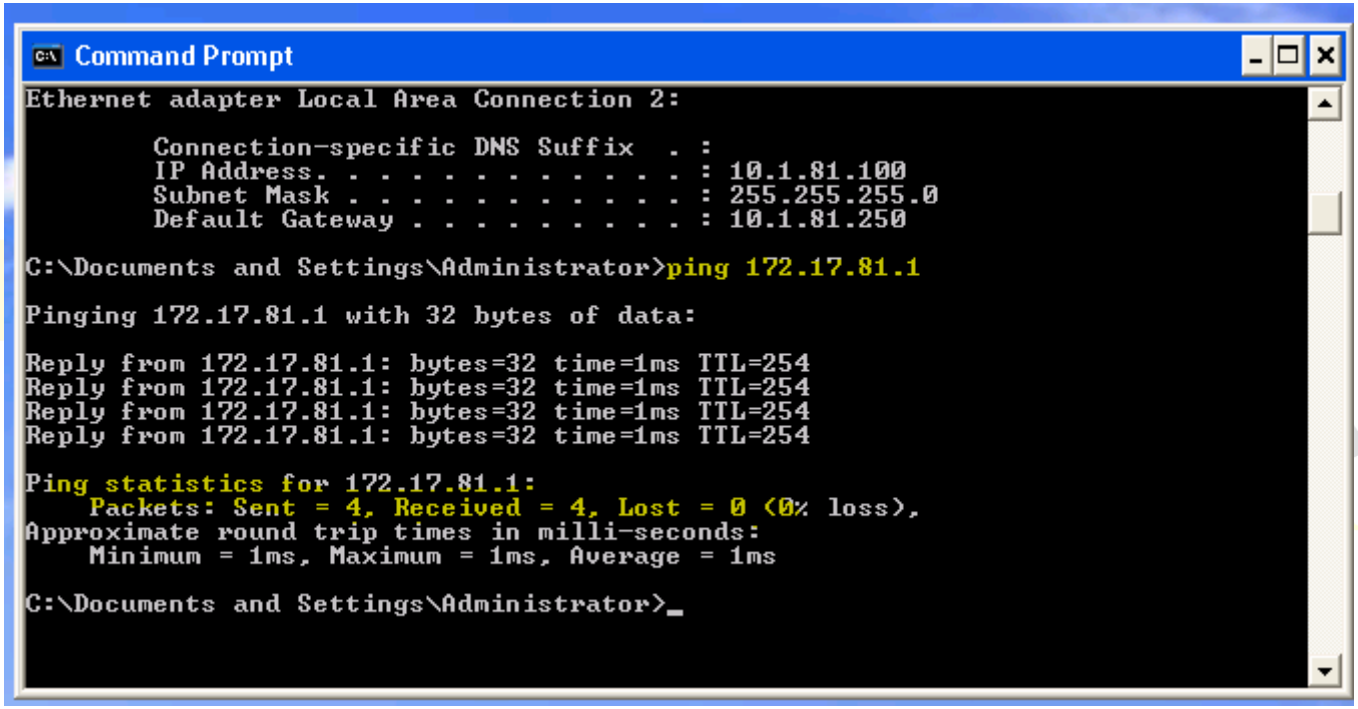
```
FN-CCNA-1-182#show ip protocols
  Routing Protocol is "bgp 64000"
  Outgoing update filter list for all interfaces is not set
  Incoming update filter list for all interfaces is not set
  IGP synchronization is disabled
  Automatic route summarization is disabled
  Neighbor(s):
    Address          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

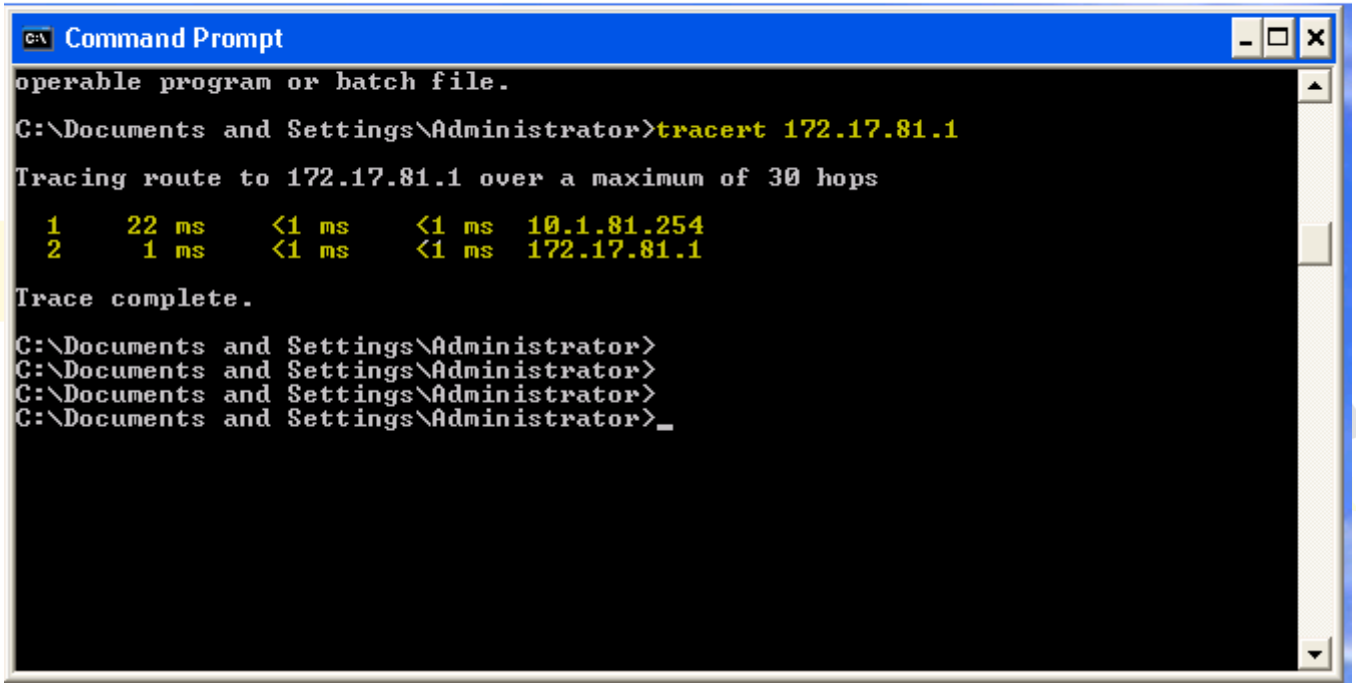
**Note**: Note down the IP & user/password of your desktop machine from spreadsheet and RDP to it.



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



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



# ***End of Document***

# Thanks, and Good Luck