



## BGP Configuration

Network topology:

Router A: Lan subnet 192.168.2.0/24, WAN ip address: 192.168.1.118

Router B: Lan subnet 192.168.3.0/24, WAN ip address: 192.168.1.120

Router C: Lan subnet 192.168.1.0/24, Router A and Router B's WAN ports connect to Router C.

1. Check the route before config BGP.

|                 |
|-----------------|
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### Routes

The following rules are currently active on this system.

### ARP

| IPv4-Address  | MAC-Address       |
|---------------|-------------------|
| 192.168.2.100 | 3c:07:54:76:91:5e |
| 192.168.1.120 | 90:22:06:00:06:9e |
| 192.168.1.1   | 90:22:06:80:53:62 |

### Active IPv4-Routes

| Network | Target         | IPv4-Gateway |
|---------|----------------|--------------|
| wan     | 0.0.0.0/0      | 192.168.1.1  |
| wan     | 192.168.1.0/24 |              |
| wan     | 192.168.1.1    |              |
| lan     | 192.168.2.0/24 |              |

2. Enable BGP on Router A. Open page Network→Dynamic Routing, check enable of zebra, and enable of BGP, then click button “Save & Apply”



## Dynamic Routing

### Zebra

Enable

Password



### BGP

Enable

Password



3. Config firewall. Open page Network→Firewall → Traffic Rules.

The screenshot shows the 'Firewall - Traffic Rules' configuration page. The left sidebar contains a navigation menu with 'Firewall' selected. The main content area has tabs for 'General Settings', 'Port Forwards', 'Traffic Rules', 'Source NAT', 'DMZ', and 'Security'. Below the tabs, there is a title 'Firewall - Traffic Rules' and a subtitle 'Traffic rules define policies for packets traveling between different zones, for example to reject traffic between certain hosts'. A table lists the configured traffic rules:

| Name                | Match   | Action         | Enable                              |
|---------------------|---|----------------|-------------------------------------|
| Allow-All-LAN-Ports | Any traffic<br>From <i>any host</i> in wan<br>To <i>any host</i> , ports 1-65535 in lan                                 | Accept forward | <input type="checkbox"/>            |
| Allow-DHCP-Renew    | IPv4-UDP<br>From <i>any host</i> in wan<br>To <i>any router IP</i> at port 68 on <i>this device</i>                     | Accept input   | <input checked="" type="checkbox"/> |
| Allow-Ping-WAN      | IPv4-ICMP with type <i>echo-request</i><br>From <i>any host</i> in wan<br>To <i>any router IP</i> on <i>this device</i> | Accept input   | <input checked="" type="checkbox"/> |
| Allow-IGMP          | IPv4-IGMP<br>From <i>any host</i> in wan<br>To <i>any router IP</i> on <i>this device</i>                               | Accept input   | <input checked="" type="checkbox"/> |

4. Scroll down, Open ports 179 on router, input name (BGP ) and external port (179) , then click button “Add”. Then click button “Save & Apply”.



|                      |  |   |                                     |
|----------------------|--|---|-------------------------------------|
| Allow-ICMPv6-Forward | IPv6-ICMP with types <i>echo-request, echo-reply, destination-unreachable, packet-too-big, time-exceeded, bad-header, unknown-header-type</i><br>From <i>any host</i> in <i>wan</i><br>To <i>any host</i> in <i>any zone</i> | Accept forward and limit to 1000 pkts. per second | <input checked="" type="checkbox"/> |
|----------------------|--|---|-------------------------------------|

  

**Open ports on router:**

| Name                             | Protocol                             | External port                    |                                    |
|----------------------------------|--------------------------------------|----------------------------------|------------------------------------|
| <input type="text" value="BGP"/> | <input type="text" value="TCP+UDP"/> | <input type="text" value="179"/> | <input type="button" value="Add"/> |

  

**New forward rule:**

| Name  | Source zone                      | Destination zone                 |  |
|---|----------------------------------|----------------------------------|--|
| <input type="text" value="New forward rule"/> | <input type="text" value="lan"/> | <input type="text" value="wan"/> | <input type="button" value="Add and edit..."/> |

  

5. telnet to router to config BGP



```
-----  
dentydeMacBook-Pro-3:~ apple$ telnet 192.168.2.1 2605  
Trying 192.168.2.1...  
Connected to 192.168.2.1.  
Escape character is '^]'.  
  
Hello, this is Quagga (version 0.99.22.4).  
Copyright 1996-2005 Kunihiro Ishiguro, et al.
```

#### User Access Verification

```
Password:  
TR-1815-LTE> en  
TR-1815-LTE# con  
TR-1815-LTE# configure ter  
TR-1815-LTE# configure terminal  
TR-1815-LTE(config)# router bgp 100  
TR-1815-LTE(config-router)# bgp router-id 192.168.1.118  
TR-1815-LTE(config-router)# network 192.168.2.0/24  
TR-1815-LTE(config-router)# neighbor 192.168.1.120 remote-as 200  
TR-1815-LTE(config-router)# neighbor 192.168  
TR-1815-LTE(config-router)# neighbor 192.168.1.120 desc  
TR-1815-LTE(config-router)# neighbor 192.168.1.120 description test-v4  
TR-1815-LTE(config-router)# end  
TR-1815-LTE# write f  
TR-1815-LTE# write file  
Configuration saved to /etc/quagga/bgpd.conf  
TR-1815-LTE# q  
Connection closed by foreign host.  
dentydeMacBook-Pro-3:~ apple$ █
```

6. config Router B' traffic rules as same as Router A, then config BGP:

```
CM685V_W(config-router)# bgp router-id 192.168.1.120  
CM685V_W(config-router)# network 192.168.3.0/24  
CM685V_W(config-router)# neighbor 192.168.1.118 remote-as 100  
CM685V_W(config-router)# neighbor 192.168.1.118 desc  
CM685V_W(config-router)# neighbor 192.168.1.118 description testv4  
CM685V_W(config-router)# end  
CM685V_W# write file  
Configuration saved to /etc/quagga/bgpd.conf  
CM685V_W# q  
Connection closed by foreign host.
```

7. check route in CLI.



```

root@CM685V_W:~# route
Kernel IP routing table
Destination      Gateway          Genmask         Flags Metric Ref    Use Iface
default          192.168.1.1    0.0.0.0         UG    0      0      0 eth0.2
192.168.1.0     *               255.255.255.0   U      0      0      0 eth0.2
192.168.2.0     192.168.1.118 255.255.255.0   UG    0      0      0 eth0.2
192.168.3.0     *               255.255.255.0   U      0      0      0 br-lan
root@CM685V_W:~#

```

```

root@IK-1815-LTE:~# route
Kernel IP routing table
Destination      Gateway          Genmask         Flags Metric Ref    Use Iface
default          192.168.1.1    0.0.0.0         UG    0      0      0 eth0.2
192.168.1.0     *               255.255.255.0   U      0      0      0 eth0.2
192.168.1.1     *               255.255.255.255 UH    0      0      0 eth0.2
192.168.2.0     *               255.255.255.0   U      0      0      0 br-lan
192.168.3.0     192.168.1.120 255.255.255.0   UG    0      0      0 eth0.2
root@TR-1815-LTE:~#

```

8. check route on GUI.

**Status**

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**System**

**Services**

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**Logout**

## Routes

The following rules are currently active on this system.

## ARP

| IPv4-Address  | MAC-Address       |
|---------------|-------------------|
| 192.168.1.1   | 90:22:06:80:53:63 |
| 192.168.1.120 | 90:22:06:00:06:9e |

## Active IPv4-Routes

| Network | Target         | IPv4-Gateway  |
|---------|----------------|---------------|
| wan     | 0.0.0.0/0      | 192.168.1.1   |
| wan     | 192.168.1.0/24 |               |
| wan     | 192.168.1.1    |               |
| lan     | 192.168.2.0/24 |               |
| wan     | 192.168.3.0/24 | 192.168.1.120 |



|                 |
|-----------------|
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## Routes

The following rules are currently active on this system.

## ARP

| IPv4-Address  | MAC-Address       |
|---------------|-------------------|
| 192.168.1.118 | 90:22:06:c0:53:50 |
| 192.168.1.1   | 90:22:06:80:53:63 |
| 192.168.3.100 | 3c:07:54:76:91:5e |

## Active IPv4-Routes

| Network | Target         | IPv4-Gateway  |
|---------|----------------|---------------|
| wan     | 0.0.0.0/0      | 192.168.1.1   |
| wan     | 192.168.1.0/24 |               |
| wan     | 192.168.2.0/24 | 192.168.1.118 |
| lan     | 192.168.3.0/24 |               |

- 9. check ping and traceroute

```
dentydeMacBook-Pro-3:~ apple$ ping 192.168.2.1
PING 192.168.2.1 (192.168.2.1): 56 data bytes
54 bytes from 192.168.2.1: icmp_seq=0 ttl=63 time=1.800 ms
54 bytes from 192.168.2.1: icmp_seq=1 ttl=63 time=1.311 ms
^C
--- 192.168.2.1 ping statistics ---
2 packets transmitted, 2 packets received, 0.0% packet loss
round-trip min/avg/max/stddev = 1.311/1.555/1.800/0.245 ms
dentydeMacBook-Pro-3:~ apple$ traceroute 192.168.2.1
traceroute to 192.168.2.1 (192.168.2.1), 64 hops max, 52 byte packets
 1  cm685v_w (192.168.3.1)  0.974 ms  0.716 ms  0.682 ms
 2  192.168.2.1 (192.168.2.1)  1.482 ms  1.571 ms  1.512 ms
dentydeMacBook-Pro-3:~ apple$
```