

ΑΝΑΦΟΡΑ ΓΙΑ ΤΟ 5^ο ΕΡΓΑΣΤΗΡΙΟ ΣΤΑ ΔΙΚΤΥΑ

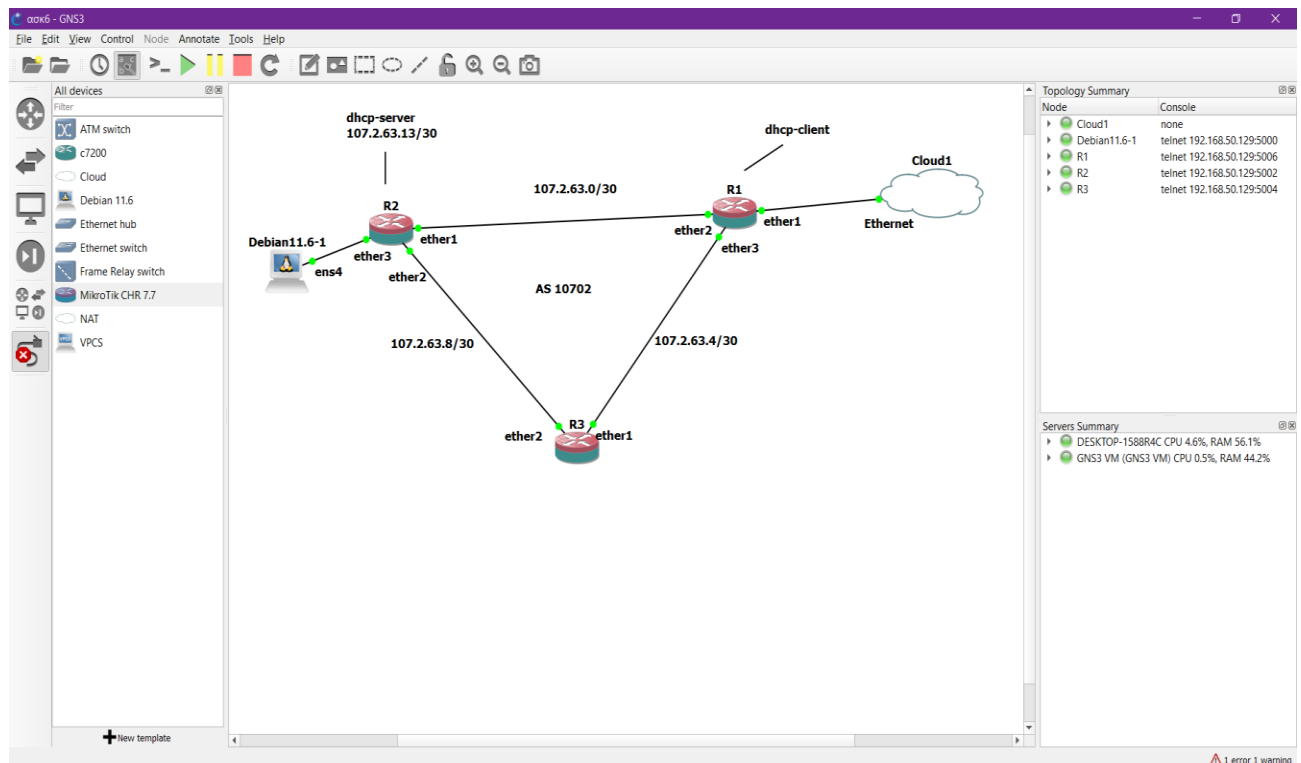
ΥΠΟΛΟΓΙΣΤΩΝ

ΑΜ = 1070263

Ον/μο = ΣΠΥΡΟ ΣΟΥΛΙ

Έτος = 6^ο

Υλοποίηση



***Δεν ξερω αν πήρατε τις απαντήσεις αλλα τις ανεβάζω και εδώ για το κομμάτι

Από το τερματικό Debiab 11.6.1 εκτελέστε τις παρακάτω εντολές:

```
wget https://github.com/kyrg/gns3-test/raw/main/5th\_Ergasia.sh.x
```

```
chmod ogu+x 5th_Ergasia.sh.x
```

```
sudo ./5th_Ergasia.sh.x
```

Το πρόβλημα είναι ότι ενώ τα κάνει όλα στο τέλος γράφει

curl: (6) Could not resolve host: nextcloud.com.gr

```
Debian GNU/Linux 11 debian ttyS0
debian login: debian
Password:
Linux debian 5.10.0-20-cloud-amd64 #1 SMP Debian 5.10.158-2 (2022-12-13) x86_64

The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
Last login: Wed May 24 11:36:18 UTC 2023 on ttyS0
[ 49.598384] systemd-journald[196]: File /var/log/journal/9d415c24ad1f434f88ee16e616fc6b37/user-1000.journal corrupted or uncleanly shut down, renaming a
nd replacing.
debian@debian:~$ sudo -s
root@debian:/home/debian# chmod ogu+x 5th_Ergasia.sh.x
root@debian:/home/debian# sudo ./5th_Ergasia.sh.x
Give your Arithmo Mitroou/Δώστε τον αριθμο μητρώου (7ψήφιο) σας: 1070263
your ip address: 107.2.63.14 and your gateway: 107.2.63.13
Calculating IPs of: R1,R2,R4,debian 2, local/remote AS and all subnet network numbers.
Telnet to 107.2.63.1 (R1). Getting ip route tables.
Warning: Permanently added '107.2.63.1' (RSA) to the list of known hosts.
admin@107.2.63.1's password:
Connection to 107.2.63.1 closed.
Subnet 107.2.63.0/30 Found
Subnet 107.2.63.4/30 Found
Subnet 107.2.63.8/30 Found
Subnet 107.2.63.12/30 Found
Connection to 0.0.0.0/0 Found
Subnet 108.2.63.0/30 Failed
Subnet 108.2.63.4/30 Failed
Subnet 108.2.63.8/30 Found
Subnet 108.2.63.12/30 Found
Telnet to 107.2.63.1 (R1). Get BGP connection info.
admin@107.2.63.1's password:
Connection to 107.2.63.1 closed.
BGP connection exists: SUCCESS
BGP connection is active: SUCCESS
Found Remote AS: 10802
Found BGP link remote address: 192.168.5.2
BGP link remote address (192.168.5.2) found in R1 tables: SUCCESS
Remote AS is not correct. Should be 10826: FAILED
Found local AS: 10702
Found local BGP link local address: 192.168.5.1
Calculating BGP subnet network:
192.168.5.0/30
BGP subnet network (192.168.5.0/30) found in R1 tables: SUCCESS
```

```
Debian x Debian1 R1 R2 R3 R4 R5 R6 | + - □ ×
Connection to 107.2.63.1 closed.
Subnet 107.2.63.0/30 Found
Subnet 107.2.63.4/30 Found
Subnet 107.2.63.8/30 Found
Subnet 107.2.63.12/30 Found
Connection to 0.0.0.0/0 Found
Subnet 108.2.63.0/30 Failed
Subnet 108.2.63.4/30 Failed
Subnet 108.2.63.8/30 Found
Subnet 108.2.63.12/30 Found
Telnet to 107.2.63.1 (R1). Get BGP connection info.
admin@107.2.63.1's password:
Connection to 107.2.63.1 closed.
BGP connection exists: SUCCESS
BGP connection is active: SUCCESS
Found Remote AS: 10802
Found BGP link remote address: 192.168.5.2
BGP link remote address (192.168.5.2) found in R1 tables: SUCCESS
Remote AS is not correct. Should be 10826: FAILED
Found local AS: 10702
Found local BGP link local address: 192.168.5.1
Calculating BGP subnet network:
192.168.5.0/30
BGP subnet network (192.168.5.0/30) found in R1 tables: SUCCESS
Local AS is not correct. Should be 10726: FAILED
Telnet to 107.2.63.1 (R1). Get interfaces info.
admin@107.2.63.1's password:
Connection to 107.2.63.1 closed.
Starting traceroute to Debian 2 (max hops set to 7)
traceroute to 108.2.63.14 (108.2.63.14), 7 hops max, 60 byte packets
 1 107.2.63.13  4.131 ms  5.813 ms  5.808 ms
 2 107.2.63.1  3.471 ms  3.740 ms *
 3 192.168.5.2 17.952 ms 18.020 ms 18.325 ms
 4 108.2.63.2 18.503 ms 18.735 ms 18.798 ms
 5 108.2.63.14 18.971 ms 19.069 ms 19.214 ms
Traceroute to Debian 2 reach: you reach 108.2.63.14 in 5 hops
Testing IPs of hops:
ip address (107.2.63.1) of R1 found in path: SUCCESS
BGP remote address (192.168.5.2) found in path: SUCCESS
Begin ping to 8.8.8.8: ping to 8.8.8.8: CORRECT
Begin ping to google.com: : google.com: Temporary failure in name resolution
sh: 348: [: -eq: unexpected operator
ping to google.com: FAILED
Start traceroute to 8.8.8.8 with ICMP: SUCCESS : you reach 8.8.8.8 in 13 hops
Submit result: y/n ? y
entered yes. uploading results....good bye
curl: (6) Could not resolve host: nextcloud.com.gr
root@debian:/home/debian#
```

solarwinds | Solar-PuTTY free tool © 2019 SolarWinds Worldwide, LLC. All rights reserved.

ip/route/print

R1

```
Change your password
new password> *****
repeat new password> *****

Password changed
[admin@ikrotalk] > /system identity set name=R1
[admin@R1] > /interface bridge add name=loopback0
[admin@R1] > /ip address add address=10.255.255.1/32 interface=loopback0
[admin@R1] > routing/id/ print
Flags: D, I - INACTIVE
Columns: NAME, DYNAMIC-ID, SELECT-DYNAMIC-ID, SELECT-FROM-VRF
# NAME DYNAMIC-ID SELECT-DYNAMIC-ID SELECT-FROM-VRF
0 D main 192.168.1.77 only-vrf main
[admin@R1] > routing/id/ print
Flags: D, I - INACTIVE
Columns: NAME, DYNAMIC-ID, SELECT-DYNAMIC-ID, SELECT-FROM-VRF
# NAME DYNAMIC-ID SELECT-DYNAMIC-ID SELECT-FROM-VRF
0 D main 192.168.1.77 only-vrf main
[admin@R1] > /interface bridge add name=loopback0
failure: already have interface with such name
[admin@R1] > /ip address add address=107.2.63.1/30 interface=ether2
[admin@R1] > /ip address add address=107.2.63.5/30 interface=ether3
[admin@R1] > ip route print
Flags: D - DYNAMIC; A - ACTIVE; c, d, y - COPY
Columns: DST-ADDRESS, GATEWAY, DISTANCE
DST-ADDRESS GATEWAY DISTANCE
DA0 0.0.0.0/0 192.168.1.254 1
DAC 10.255.255.1/32 loopback0 0
DAC 107.2.63.0/30 ether2 0
DAC 107.2.63.4/30 ether3 0
DAC 192.168.1.0/24 ether1 0
[admin@R1] > ip address print
Flags: D - DYNAMIC
Columns: ADDRESS, NETWORK, INTERFACE
# ADDRESS NETWORK INTERFACE
0 D 192.168.1.77/24 192.168.1.0 ether1
1 10.255.255.1/32 10.255.255.1 loopback0
2 107.2.63.1/30 107.2.63.0 ether2
3 107.2.63.5/30 107.2.63.4 ether3
[admin@R1] >
```

```
DAC 10.255.255.1/32 loopback0 0
DAC 107.2.63.0/30 ether2 0
DAC 107.2.63.4/30 ether3 0
DAC 192.168.1.0/24 ether1 0
[admin@R1] > ip address print
Flags: D - DYNAMIC
Columns: ADDRESS, NETWORK, INTERFACE
# ADDRESS NETWORK INTERFACE
0 D 192.168.1.77/24 192.168.1.0 ether1
1 10.255.255.1/32 10.255.255.1 loopback0
2 107.2.63.1/30 107.2.63.0 ether2
3 107.2.63.5/30 107.2.63.4 ether3
[admin@R1] > ping 107.2.63.6
  SEQ HOST                               SIZE TTL TIME          STATUS
  0 107.2.63.6                             56 64 1ms505us
  1 107.2.63.6                             56 64 891us
  2 107.2.63.6                             56 64 643us
  sent=3 received=3 packet-loss=0% min-rtt=643us avg-rtt=1ms13us max-rtt=1ms505us

[admin@R1] > ping 107.2.63.2
  SEQ HOST                               SIZE TTL TIME          STATUS
  0 107.2.63.2                             56 64 1ms389us
  1 107.2.63.2                             56 64 1ms72us
  sent=2 received=2 packet-loss=0% min-rtt=1ms72us avg-rtt=1ms230us max-rtt=1ms389us

[admin@R1] > ping 107.2.63.9
  SEQ HOST                               SIZE TTL TIME          STATUS
  0 107.2.63.9                             timeout
  1 107.2.63.9                             timeout
  sent=2 received=0 packet-loss=100%

[admin@R1] > ping 107.2.63.14
  SEQ HOST                               SIZE TTL TIME          STATUS
  0 107.2.63.14                            timeout
  1 107.2.63.14                            timeout
  sent=2 received=0 packet-loss=100%

[admin@R1] > ping 8.8.8.8
  SEQ HOST                               SIZE TTL TIME          STATUS
  0 8.8.8.8                                 56 116 128ms871us
  1 8.8.8.8                                 56 116 24ms362us
  sent=2 received=2 packet-loss=0% min-rtt=24ms362us avg-rtt=76ms616us max-rtt=128ms871us
[admin@R1] >
```

Κάνει ping σε αντικριστά ενώ δεν κάνει σε ΜΗ αντικριστά και σε εξ. δίκτυο

R2

```

Debian11.6-1  R1  R2  R3

Change your password
new password> *****
repeat new password> *****

Password changed
[admin@R2] > /system identity set name=R2
[admin@R2] > /interface bridge add name=loopback0
[admin@R2] > /ip address add address=10.255.255.2/32 interface=loopback0
[admin@R2] > /ip address add address=107.2.63.2/30 interface=ether1
[admin@R2] > /ip address add address=107.2.63.9/30 interface=ether2
[admin@R2] > /ip address add address=107.2.63.14/30 interface=ether3
[admin@R2] > ip route print
Flags: D - DYNAMIC; A - ACTIVE; c, y - COPY
Columns: DST-ADDRESS, GATEWAY, DISTANCE
DST-ADDRESS    GATEWAY    DISTANCE
DAC 10.255.255.2/32  loopback0    0
DAC 107.2.63.0/30   ether1       0
DAC 107.2.63.8/30   ether2       0
DAC 107.2.63.12/30  ether3       0
[admin@R2] > ip address ping
bad command name ping (line 1 column 12)
[admin@R2] > ip address print
Columns: ADDRESS, NETWORK, INTERFACE
# ADDRESS      NETWORK    INTERFACE
0 10.255.255.2/32 10.255.255.2 loopback0
1 107.2.63.2/30   107.2.63.0 ether1
2 107.2.63.9/30   107.2.63.8 ether2
3 107.2.63.14/30  107.2.63.12 ether3
[admin@R2] >

```

```

DAC 10.255.255.2/32  loopback0    0
DAC 107.2.63.0/30   ether1       0
DAC 107.2.63.8/30   ether2       0
DAC 107.2.63.12/30  ether3       0
[admin@R2] /ip/route> ip address print
bad command name ip (line 1 column 1)
[admin@R2] /ip/route> /
[admin@R2] > ip address print
Columns: ADDRESS, NETWORK, INTERFACE
# ADDRESS      NETWORK    INTERFACE
0 10.255.255.2/32 10.255.255.2 loopback0
1 107.2.63.2/30   107.2.63.0 ether1
2 107.2.63.9/30   107.2.63.8 ether2
3 107.2.63.14/30  107.2.63.12 ether3
[admin@R2] > ping 107.2.63.1
SEQ HOST          SIZE TTL TIME          STATUS
0 107.2.63.1      56 64 800us
1 107.2.63.1      56 64 676us
sent=2 received=2 packet-loss=0% min-rtt=676us avg-rtt=738us max-rtt=800us
[admin@R2] > ping 107.2.63.10
SEQ HOST          SIZE TTL TIME          STATUS
0 107.2.63.10     56 64 1ms455us
1 107.2.63.10     56 64 809us
sent=2 received=2 packet-loss=0% min-rtt=809us avg-rtt=1ms132us max-rtt=1ms455us
[admin@R2] > ping 107.2.63.5
SEQ HOST          SIZE TTL TIME          STATUS
0                          no route to host
1                          no route to host
2                          no route to host
sent=3 received=0 packet-loss=100%
[admin@R2] > ping 107.2.63.6
SEQ HOST          SIZE TTL TIME          STATUS
0                          no route to host
1                          no route to host
2                          no route to host
sent=3 received=0 packet-loss=100%
[admin@R2] > ping 107.2.63.10
SEQ HOST          SIZE TTL TIME          STATUS
0 107.2.63.10     56 64 759us
1 107.2.63.10     56 64 944us
sent=2 received=2 packet-loss=0% min-rtt=759us avg-rtt=851us max-rtt=944us
[admin@R2] > ping 107.2.63.14
SEQ HOST          SIZE TTL TIME          STATUS
0 107.2.63.14     56 64 50us
1 107.2.63.14     56 64 36us
sent=2 received=2 packet-loss=0% min-rtt=36us avg-rtt=43us max-rtt=50us
[admin@R2] >

```

Κάνει ping σε αντικριστά ενώ δεν κάνει σε ΜΗ αντικριστά

Change your password

new password> *****
repeat new password> *****

Password changed

```
[admin@tikretik] > /system identity set name=R3
[admin@R3] > /interface bridge add name=loopback0
[admin@R3] > /ip address add address=10.255.255.3/32 interface=loopback0
[admin@R3] > /ip address add address=107.2.63.6/30 interface=ether1
[admin@R3] > /ip address add address=107.2.63.10/30 interface=ether2
[admin@R3] > ip route print
Flags: D - DYNAMIC; A - ACTIVE; c, y - COPY
Columns: DST-ADDRESS, GATEWAY, DISTANCE
  DST-ADDRESS  GATEWAY  DISTANCE
DAc 10.255.255.3/32  loopback0  0
DAc 107.2.63.4/30  ether1     0
DAc 107.2.63.8/30  ether2     0
[admin@R3] > ip address print
Columns: ADDRESS, NETWORK, INTERFACE
# ADDRESS      NETWORK      INTERFACE
0 10.255.255.3/32 10.255.255.3 loopback0
1 107.2.63.6/30  107.2.63.4  ether1
2 107.2.63.10/30 107.2.63.8  ether2
[admin@R3] >
```

Change your password

new password> *****
repeat new password> *****

Password changed

```
[admin@tikretik] > /system identity set name=R3
[admin@R3] > /interface bridge add name=loopback0
[admin@R3] > /ip address add address=10.255.255.3/32 interface=loopback0
[admin@R3] > /ip address add address=107.2.63.6/30 interface=ether1
[admin@R3] > /ip address add address=107.2.63.10/30 interface=ether2
[admin@R3] > ip route print
Flags: D - DYNAMIC; A - ACTIVE; c, y - COPY
Columns: DST-ADDRESS, GATEWAY, DISTANCE
  DST-ADDRESS  GATEWAY  DISTANCE
DAc 10.255.255.3/32  loopback0  0
DAc 107.2.63.4/30  ether1     0
DAc 107.2.63.8/30  ether2     0
[admin@R3] > ip address print
Columns: ADDRESS, NETWORK, INTERFACE
# ADDRESS      NETWORK      INTERFACE
0 10.255.255.3/32 10.255.255.3 loopback0
1 107.2.63.6/30  107.2.63.4  ether1
2 107.2.63.10/30 107.2.63.8  ether2
[admin@R3] > ping 107.2.63.5
  SEQ HOST      SIZE TTL TIME      STATUS
    0 107.2.63.5    56  64 883us
    1 107.2.63.5    56  64 984us
  sent=2 received=2 packet-loss=0% min-rtt=883us avg-rtt=933us max-rtt=984us

[admin@R3] > ping 107.2.63.9
  SEQ HOST      SIZE TTL TIME      STATUS
    0 107.2.63.9    56  64 678us
    1 107.2.63.9    56  64 915us
  sent=2 received=2 packet-loss=0% min-rtt=678us avg-rtt=796us max-rtt=915us

[admin@R3] > ping 107.2.63.1
  SEQ HOST      SIZE TTL TIME      STATUS
    0
    1
  sent=2 received=0 packet-loss=100%
  no route to host
  no route to host

[admin@R3] > ping 107.2.63.14
  SEQ HOST      SIZE TTL TIME      STATUS
    0
    1
  sent=2 received=0 packet-loss=100%
  no route to host
  no route to host

[admin@R3] >
```

Κάνει ping σε αντικριστά ενώ δεν κάνει σε ΜΗ αντικριστά

Παραμετροποίηση ospf δρομολόγησης.

R1

```
[admin@11] /routing/ospf/instance> add name=default router-id=10.255.255.1 originate-default-if-installed redistribute=ospf,bgp
[admin@11] /routing/ospf/instance> add name=default router-id=10.255.255.1 originate-default-if-installed redistribute=ospf,bgp
[admin@11] /routing/ospf/instance> add name=default router-id=10.255.255.1 originate-default-if-installed redistribute=ospf,bgp
[admin@11] /routing/ospf/instance> add name=default router-id=10.255.255.1 originate-default-if-installed redistribute=ospf,bgp
[admin@11] /routing/ospf/instance> print
Flags: X - disabled, I - inactive
0 name="default" version=2 vrf=main router-id=10.255.255.1 originate-default=if-installed redistribute=static,ospf,bgp
[admin@11] /routing/ospf/instance> /routing/ospf/area/
[admin@11] /routing/ospf/area> add name=backbone area-id=0.0.0.0 instance=default
[admin@11] /routing/ospf/area> /routing/ospf/interface-template
[admin@11] /routing/ospf/interface-template> add
area:
[admin@11] /routing/ospf/interface-template> print
Flags: X - disabled, I - inactive
0 area=backbone instance-id=0 type=broadcast retransmit-interval=5s transmit-delay=1s hello-interval=10s dead-interval=40s p
riority=128 cost=1
[admin@11] /routing/ospf/interface-template> remove 0
[admin@11] /routing/ospf/interface-template> print
Flags: X - disabled, I - inactive
[admin@11] /routing/ospf/interface-template> add network=107.2.63.0/30 area=backbone
[admin@11] /routing/ospf/interface-template> add interface=ether2 area=backbone
[admin@11] /routing/ospf/interface-template> add network=107.2.63.4/30 area=backbone
[admin@11] /routing/ospf/interface-template> add interface=ether3 area=backbone
[admin@11] /routing/ospf/interface-template> print
Flags: X - disabled, I - inactive
0 area=backbone instance-id=0 networks=107.2.63.0/30 type=broadcast retransmit-interval=5s transmit-delay=1s hello-interval=
10s dead-interval=40s
priority=128 cost=1
1 area=backbone interfaces=ether2 instance-id=0 type=broadcast retransmit-interval=5s transmit-delay=1s hello-interval=10s d
ead-interval=40s
priority=128 cost=1
2 area=backbone instance-id=0 networks=107.2.63.4/30 type=broadcast retransmit-interval=5s transmit-delay=1s hello-interval=
10s dead-interval=40s
priority=128 cost=1
3 area=backbone interfaces=ether3 instance-id=0 type=broadcast retransmit-interval=5s transmit-delay=1s hello-interval=10s d
ead-interval=40s
priority=128 cost=1
[admin@11] /routing/ospf/interface-template> ip firewall nat add action=masquerade chain=srcnat out-interface=ether1
bad command name ip (line 1 column 1)
[admin@11] /routing/ospf/interface-template> /
[admin@11] > ip firewall nat add action=masquerade chain=srcnat out-interface=ether1
[admin@11] > ping 107.2.63.9
SEQ HOST SIZE TTL TIME STATUS
0 107.2.63.9 56 64 685us
1 107.2.63.9 56 64 628us
sent=2 received=2 packet-loss=0% min-rtt=628us avg-rtt=656us max-rtt=685us
[admin@11] >
```

R2

```

0 10.255.255.2/32 10.255.255.2 loopback0
1 107.2.63.2/30 107.2.63.0 ether1
2 107.2.63.9/30 107.2.63.8 ether2
3 107.2.63.14/30 107.2.63.12 ether3
[admin@R2] > /ip/address/
[admin@R2] /ip/address> remove 3
[admin@R2] /ip/address> /ip address add address=109.45.49.5/30 interface=ether3
[admin@R2] /ip/address> remove 3
no such item (4)
[admin@R2] /ip/address> print
Columns: ADDRESS, NETWORK, INTERFACE
# ADDRESS NETWORK INTERFACE
0 10.255.255.2/32 10.255.255.2 loopback0
1 107.2.63.2/30 107.2.63.0 ether1
2 107.2.63.9/30 107.2.63.8 ether2
3 109.45.49.5/30 109.45.49.4 ether3
[admin@R2] /ip/address> remove 3
[admin@R2] /ip/address> /ip address add address=107.2.63.13/30 interface=ether3
[admin@R2] /ip/address> print
Columns: ADDRESS, NETWORK, INTERFACE
# ADDRESS NETWORK INTERFACE
0 10.255.255.2/32 10.255.255.2 loopback0
1 107.2.63.2/30 107.2.63.0 ether1
2 107.2.63.9/30 107.2.63.8 ether2
3 107.2.63.13/30 107.2.63.12 ether3
[admin@R2] /ip/address> /routing/ospf/interface-template
[admin@R2] /routing/ospf/interface-template> add network=107.2.63.12/30 area=backbone
[admin@R2] /routing/ospf/interface-template> add interface=ether3 area=backbone
[admin@R2] /routing/ospf/interface-template> /
[admin@R2] > ip route print
Flags: 0 - DYNAMIC; A - ACTIVE; c, o, y - COPY
Columns: DST-ADDRESS, GATEWAY, DISTANCE
DST-ADDRESS GATEWAY DISTANCE
DA0 0.0.0.0/0 107.2.63.1%ether1 110
DAc 10.255.255.2/32 loopback0 0
DAc 107.2.63.0/30 ether1 0
DA0 107.2.63.4/30 107.2.63.1%ether1 110
DAc 107.2.63.8/30 ether2 0
DAc 107.2.63.12/30 ether3 0
[admin@R2] > /ip address print
Columns: ADDRESS, NETWORK, INTERFACE
# ADDRESS NETWORK INTERFACE
0 10.255.255.2/32 10.255.255.2 loopback0
1 107.2.63.2/30 107.2.63.0 ether1
2 107.2.63.9/30 107.2.63.8 ether2
3 107.2.63.13/30 107.2.63.12 ether3
[admin@R2] > ping 107.2.63.5
SEQ HOST SIZE TTL TIME STATUS
0 107.2.63.5 56 64 776us
1 107.2.63.5 56 64 832us
sent=2 received=2 packet-loss=0% min-rtt=776us avg-rtt=804us max-rtt=832us
[admin@R2] >

```

R3

```

[admin@R3] > ping 107.2.63.1
SEQ HOST SIZE TTL TIME STATUS
0 no route to host
1 no route to host
sent=2 received=0 packet-loss=100%

[admin@R3] > ping 107.2.63.14
SEQ HOST SIZE TTL TIME STATUS
0 no route to host
1 no route to host
sent=2 received=0 packet-loss=100%

[admin@R3] > /routing/ospf/instance/
[admin@R3] /routing/ospf/instance> add name=default router-id=10.255.255.3 originate-default=if-installed redistribute=ospf,bgp
syntax error (line 1 column 90)
[admin@R3] /routing/ospf/instance> add name=default router-id=10.255.255.3 originate-default=if-installed redistribute=ospf,bgp
;static
[admin@R3] /routing/ospf/instance> print
Flags: X - disabled, I - inactive
0 name="default" version=2 vrf=main router-id=10.255.255.3 originate-default=if-installed redistribute=static,ospf,bgp
[admin@R3] /routing/ospf/instance> /routing/ospf/area/
[admin@R3] /routing/ospf/area> add name=backbone area-id=0.0.0.0 instance=default
expected end of command (line 1 column 19)
[admin@R3] /routing/ospf/area> add name=backbone area-id=0.0.0.0 instance=default
[admin@R3] /routing/ospf/area> /routing/ospf/interface-template
[admin@R3] /routing/ospf/interface-template> add network=107.2.63.4/30 area=backbone
[admin@R3] /routing/ospf/interface-template> add interface=ether1 area=backbone
[admin@R3] /routing/ospf/interface-template> add network=107.2.63.8/30 area=backbone
[admin@R3] /routing/ospf/interface-template> add interface=ether2 area=backbone
[admin@R3] /routing/ospf/interface-template> print
Flags: X - disabled, I - inactive
0 area=backbone instance-id=0 network=107.2.63.4/30 type=broadcast retransmit-interval=5s transmit-delay=1s
hello-interval=10s dead-interval=40s priority=128 cost=1
1 area=backbone interfaces=ether1 instance-id=0 type=broadcast retransmit-interval=5s transmit-delay=1s hello-interval=10s
dead-interval=40s priority=128 cost=1
2 area=backbone instance-id=0 networks=107.2.63.8/30 type=broadcast retransmit-interval=5s transmit-delay=1s
hello-interval=10s dead-interval=40s priority=128 cost=1
3 area=backbone interfaces=ether2 instance-id=0 type=broadcast retransmit-interval=5s transmit-delay=1s hello-interval=10s
dead-interval=40s priority=128 cost=1
[admin@R3] /routing/ospf/interface-template> /
[admin@R3] > ping 107.2.63.1
SEQ HOST SIZE TTL TIME STATUS
0 107.2.63.1 56 64 1ms119us
1 107.2.63.1 56 64 888us
2 107.2.63.1 56 64 1ms180us
sent=3 received=3 packet-loss=0% min-rtt=888us avg-rtt=1ms62us max-rtt=1ms180us
[admin@R3] >

```

ip/route/print

R1


```

area:
[admin@t1] /routing/ospf/interface-template> print
Flags: X - disabled, I - inactive
0 area=backbone instance-id=0 type=broadcast retransmit-interval=5s transmit-delay=1s hello-interval=10s dead-interval=40s d
priority=128 cost=1
[admin@t1] /routing/ospf/interface-template> remove 0
[admin@t1] /routing/ospf/interface-template> print
Flags: X - disabled, I - inactive
[admin@t1] /routing/ospf/interface-template> add network=107.2.63.0/30 area=backbone
[admin@t1] /routing/ospf/interface-template> add interface=ether2 area=backbone
[admin@t1] /routing/ospf/interface-template> add network=107.2.63.4/30 area=backbone
[admin@t1] /routing/ospf/interface-template> add interface=ether3 area=backbone
[admin@t1] /routing/ospf/interface-template> print
Flags: X - disabled, I - inactive
0 area=backbone instance-id=0 networks=107.2.63.0/30 type=broadcast retransmit-interval=5s transmit-delay=1s hello-interval=
10s dead-interval=40s
priority=128 cost=1
1 area=backbone interfaces=ether2 instance-id=0 type=broadcast retransmit-interval=5s transmit-delay=1s hello-interval=10s d
ead-interval=40s
priority=128 cost=1
2 area=backbone instance-id=0 networks=107.2.63.4/30 type=broadcast retransmit-interval=5s transmit-delay=1s hello-interval=
10s dead-interval=40s
priority=128 cost=1
3 area=backbone interfaces=ether3 instance-id=0 type=broadcast retransmit-interval=5s transmit-delay=1s hello-interval=10s d
ead-interval=40s
priority=128 cost=1
[admin@t1] /routing/ospf/interface-template> ip firewall nat add action=masquerade chain=srcnat out-interface=ether1
bad command name ip (line 1 column 1)
[admin@t1] /routing/ospf/interface-template> /
[admin@t1] > ip firewall nat add action=masquerade chain=srcnat out-interface=ether1
[admin@t1] > ping 107.2.63.9
SEQ HOST SIZE TTL TIME STATUS
0 107.2.63.9 56 64 685us
1 107.2.63.9 56 64 628us
sent=2 received=2 packet-loss=0% min-rtt=628us avg-rtt=656us max-rtt=685us

[admin@t1] > ip/route/print
Flags: D - DYNAMIC; A - ACTIVE; c, o, d, y - COPY; + - ECMP
Columns: DST-ADDRESS, GATEWAY, DISTANCE
DST-ADDRESS GATEWAY DISTANCE
DAo 0.0.0.0/0 192.168.1.254 1
DAc 10.255.255.1/32 loopback0 0
DAc 107.2.63.0/30 ether2 0
DAc 107.2.63.4/30 ether3 0
DAo+ 107.2.63.8/30 107.2.63.6%ether3 110
DAo+ 107.2.63.8/30 107.2.63.2%ether2 110
DAo 107.2.63.12/30 107.2.63.2%ether2 110
DAc 192.168.1.0/24 ether1 0
[admin@t1] >

```

R2

```

# ADDRESS NETWORK INTERFACE
0 10.255.255.2/32 10.255.255.2 loopback0
1 107.2.63.2/30 107.2.63.0 ether1
2 107.2.63.0/30 107.2.63.8 ether2
3 109.45.49.5/30 109.45.49.4 ether3
[admin@t2] /ip/address> remove 3
[admin@t2] /ip/address> /ip address add address=107.2.63.13/30 interface=ether3
[admin@t2] /ip/address> print
Columns: ADDRESS, NETWORK, INTERFACE
# ADDRESS NETWORK INTERFACE
0 10.255.255.2/32 10.255.255.2 loopback0
1 107.2.63.2/30 107.2.63.0 ether1
2 107.2.63.0/30 107.2.63.8 ether2
3 107.2.63.13/30 107.2.63.12 ether3
[admin@t2] /ip/address> /routing/ospf/interface-template
[admin@t2] /routing/ospf/interface-template> add network=107.2.63.12/30 area=backbone
[admin@t2] /routing/ospf/interface-template> add interface=ether3 area=backbone
[admin@t2] /routing/ospf/interface-template> /
[admin@t2] > ip route print
Flags: D - DYNAMIC; A - ACTIVE; c, o, y - COPY
Columns: DST-ADDRESS, GATEWAY, DISTANCE
DST-ADDRESS GATEWAY DISTANCE
DAo 0.0.0.0/0 107.2.63.1%ether1 110
DAc 10.255.255.2/32 loopback0 0
DAc 107.2.63.0/30 ether1 0
DAo 107.2.63.4/30 107.2.63.1%ether1 110
DAc 107.2.63.8/30 ether2 0
DAc 107.2.63.12/30 ether3 0
[admin@t2] > ip address print
Columns: ADDRESS, NETWORK, INTERFACE
# ADDRESS NETWORK INTERFACE
0 10.255.255.2/32 10.255.255.2 loopback0
1 107.2.63.2/30 107.2.63.0 ether1
2 107.2.63.0/30 107.2.63.8 ether2
3 107.2.63.13/30 107.2.63.12 ether3
[admin@t2] > ping 107.2.63.5
SEQ HOST SIZE TTL TIME STATUS
0 107.2.63.5 56 64 776us
1 107.2.63.5 56 64 832us
sent=2 received=2 packet-loss=0% min-rtt=776us avg-rtt=804us max-rtt=832us

[admin@t2] > ip/route/print
Flags: D - DYNAMIC; A - ACTIVE; c, o, y - COPY; + - ECMP
Columns: DST-ADDRESS, GATEWAY, DISTANCE
DST-ADDRESS GATEWAY DISTANCE
DAo 0.0.0.0/0 107.2.63.1%ether1 110
DAc 10.255.255.2/32 loopback0 0
DAc 107.2.63.0/30 ether1 0
DAo+ 107.2.63.4/30 107.2.63.10%ether2 110
DAo+ 107.2.63.4/30 107.2.63.1%ether1 110
DAc 107.2.63.8/30 ether2 0
DAc 107.2.63.12/30 ether3 0
[admin@t2] >

```

R3

```

sent=2 received=0 packet-loss=100%
[admin@13] > /routing/ospf/instance/
[admin@13] /routing/ospf/instance> add name=default router-id=10.255.255.3 originate-default-if-installed redistribute=ospf,bgp
static
syntax error (line 1 column 98)
[admin@13] /routing/ospf/instance> add name=default router-id=10.255.255.3 originate-default-if-installed redistribute=ospf,bgp
,static
[admin@13] /routing/ospf/instance> print
Flags: X - disabled, I - inactive
0 name="default" version=2 vrf=main router-id=10.255.255.3 originate-default-if-installed redistribute=static,ospf,bgp
[admin@13] /routing/ospf/instance> /routing/ospf/area/
[admin@13] /routing/ospf/area> add name=backbone area-id=0.0.0.0 instance=default
expected end of command (line 1 column 19)
[admin@13] /routing/ospf/area> add name=backbone area-id=0.0.0.0 instance=default
[admin@13] /routing/ospf/area> /routing/ospf/interface-template
[admin@13] /routing/ospf/interface-template> add network=107.2.63.4/30 area=backbone
[admin@13] /routing/ospf/interface-template> add interface=ether1 area=backbone
[admin@13] /routing/ospf/interface-template> add network=107.2.63.8/30 area=backbone
[admin@13] /routing/ospf/interface-template> add interface=ether2 area=backbone
[admin@13] /routing/ospf/interface-template> print
Flags: X - disabled, I - inactive
0 area=backbone instance-id=0 networks=107.2.63.4/30 type=broadcast retransmit-interval=5s transmit-delay=1s
hello-interval=10s dead-interval=40s priority=128 cost=1
1 area=backbone interfaces=ether1 instance-id=0 type=broadcast retransmit-interval=5s transmit-delay=1s hello-interval=10s
dead-interval=40s priority=128 cost=1
2 area=backbone instance-id=0 networks=107.2.63.8/30 type=broadcast retransmit-interval=5s transmit-delay=1s
hello-interval=10s dead-interval=40s priority=128 cost=1
3 area=backbone interfaces=ether2 instance-id=0 type=broadcast retransmit-interval=5s transmit-delay=1s hello-interval=10s
dead-interval=40s priority=128 cost=1
[admin@13] /routing/ospf/interface-template> /
[admin@13] > ping 107.2.63.1
SEQ HOST SIZE TTL TIME STATUS
0 107.2.63.1 56 64 1ms119us
1 107.2.63.1 56 64 888us
2 107.2.63.1 56 64 1ms180us
sent=3 received=3 packet-loss=0% min-rtt=888us avg-rtt=1ms62us max-rtt=1ms180us
[admin@13] > ip/route/print
Flags: D - DYNAMIC; A - ACTIVE; c, o, y - COPY; + - ECMF
Columns: DST-ADDRESS, GATEWAY, DISTANCE
DST-ADDRESS GATEWAY DISTANCE
DAo 0.0.0.0/0 107.2.63.5%ether1 110
DAC 10.255.255.3/32 loopback0 0
DAo+ 107.2.63.0/30 107.2.63.9%ether2 110
DAo+ 107.2.63.0/30 107.2.63.5%ether1 110
DAC 107.2.63.4/30 ether1 0
DAC 107.2.63.8/30 ether2 0
DAo 107.2.63.12/30 107.2.63.9%ether2 110
[admin@13] >

```

Υπάρχει από όλους να

Traceroute

```

Subnet 108.2.63.12/30 found
Telnet to 107.2.63.1 (R1). Get BGP connection info.
admin@107.2.63.1's password:
Connection to 107.2.63.1 closed.
BGP connection exists: SUCCESS
BGP connection is active: SUCCESS
Found Remote AS: 10802
Found BGP link remote address: 192.168.5.2
BGP link remote address (192.168.5.2) found in R1 tables: SUCCESS
Remote AS is not correct. Should be 10826: FAILED
Found local AS: 10702
Found local BGP link local address: 192.168.5.1
Calculating BGP subnet network:
192.168.5.0/30
BGP subnet network (192.168.5.0/30) found in R1 tables: SUCCESS
Local AS is not correct. Should be 10726: FAILED
Telnet to 107.2.63.1 (R1). Get interfaces info.
admin@107.2.63.1's password:
Connection to 107.2.63.1 closed.
Starting traceroute to Debian 2 (max hops set to 7)
traceroute to 108.2.63.14 (108.2.63.14), 7 hops max, 60 byte packets
 1 107.2.63.13 4.131 ms 5.813 ms 5.808 ms
 2 107.2.63.1 3.471 ms 3.740 ms *
 3 192.168.5.2 17.952 ms 18.020 ms 18.325 ms
 4 108.2.63.2 18.503 ms 18.735 ms 18.798 ms
 5 108.2.63.14 18.971 ms 19.069 ms 19.214 ms
Traceroute to Debian 2 reach: you reach 108.2.63.14 in 5 hops
Testing IPs of hops:
ip address (107.2.63.1) of R1 found in path: SUCCESS
BGP remote address (192.168.5.2) found in path: SUCCESS
Begin ping to 8.8.8.8: ping to 8.8.8.8: CORRECT
Begin ping to google.com: : google.com: Temporary failure in name resolution
sh: 348: [: -eq: unexpected operator
ping to google.com: FAILED
Start traceroute to 8.8.8.8 with ICMP: SUCCESS : you reach 8.8.8.8 in 13 hops
Submit result: y/n ? y
entered yes. uploading results...good bye
curl: (6) Could not resolve host: nextcloud.com.gr
root@debian:/home/debian# ^C
root@debian:/home/debian# traceroute 107.2.63.1
traceroute to 107.2.63.1 (107.2.63.1), 30 hops max, 60 byte packets
 1 107.2.63.13 (107.2.63.13) 0.741 ms 0.567 ms 0.371 ms
 2 107.2.63.1 (107.2.63.1) 1.465 ms 1.292 ms 1.795 ms
root@debian:/home/debian# traceroute 107.2.63.5
traceroute to 107.2.63.5 (107.2.63.5), 30 hops max, 60 byte packets
 1 107.2.63.13 (107.2.63.13) 1.508 ms 1.441 ms 1.428 ms
 2 107.2.63.5 (107.2.63.5) 2.800 ms 2.751 ms 2.738 ms
root@debian:/home/debian#

```

Μετά την εκτέλεση διαπιστώνουμε ότι όντως μόνο ο R1 έχει πρόσβαση στο εξ.δίκτυο

R1

```
[admin@R1] /routing/ospf/instance> add name=default router-id=10.255.255.1 originate-default-if-installed redistribute=ospf,bgp,static
Failure: such name already exists
[admin@R1] /routing/ospf/instance> print
Flags: X - disabled, I - inactive
0 name="default" version=2 vrf=main router-id=10.255.255.1 originate-default-if-installed redistribute=static,ospf,bgp
[admin@R1] /routing/ospf/instance> /routing/ospf/interface-template
[admin@R1] /routing/ospf/interface-template> print
Flags: X - disabled, I - inactive
0 name=backbone instance-id=0 networks=107.2.63.0/30 type=broadcast retransmit-interval=5s transmit-delay=1s hello-interval=10s dead-interval=40s
priority=128 cost=1
1 area=backbone interfaces=ether2 instance-id=0 type=broadcast retransmit-interval=5s transmit-delay=1s hello-interval=10s dead-interval=40s
priority=128 cost=1
2 area=backbone instance-id=0 networks=107.2.63.4/30 type=broadcast retransmit-interval=5s transmit-delay=1s hello-interval=10s dead-interval=40s
priority=128 cost=1
3 area=backbone interfaces=ether3 instance-id=0 type=broadcast retransmit-interval=5s transmit-delay=1s hello-interval=10s dead-interval=40s
priority=128 cost=1
[admin@R1] /routing/ospf/interface-template> /
[admin@R1] > ping 107.2.63.1
      SIZE TTL TIME          STATUS
SEQ HOST
0 107.2.63.1          56 64 186us
1 107.2.63.1          56 64 38us
2 107.2.63.1          56 64 100us
sent=3 received=3 packet-loss=0% min-rtt=38us avg-rtt=108us max-rtt=186us

[admin@R1] > ping 107.2.63.9
      SIZE TTL TIME          STATUS
SEQ HOST
0 107.2.63.9          56 64 1ms52us
1 107.2.63.9          56 64 775us
2 107.2.63.9          56 64 994us
sent=3 received=3 packet-loss=0% min-rtt=775us avg-rtt=940us max-rtt=1ms52us

[admin@R1] > ping 8.8.8.8
      SIZE TTL TIME          STATUS
SEQ HOST
0 8.8.8.8             56 116 37ms702us
1 8.8.8.8             56 116 23ms986us
sent=3 received=2 packet-loss=0% min-rtt=23ms986us avg-rtt=30ms844us max-rtt=37ms702us

[admin@R1] > ping 8.8.8.8
      SIZE TTL TIME          STATUS
SEQ HOST
0 8.8.8.8             56 116 24ms326us
1 8.8.8.8             56 116 25ms220us
2 8.8.8.8             56 116 24ms138us
sent=3 received=3 packet-loss=0% min-rtt=24ms138us avg-rtt=24ms561us max-rtt=25ms220us

[admin@R1] > █
```

R2

```

may/22/2023 18:02:25 system,error,critical router was rebooted without proper shutdown
may/22/2023 18:04:12 system,error,critical router was rebooted without proper shutdown
may/22/2023 18:07:28 system,error,critical router was rebooted without proper shutdown

[admin@R2] > ping 8.8.8.8
  SEQ HOST                                SIZE TTL TIME                        STATUS
    0 8.8.8.8                             56 115 24ms912us
    1 8.8.8.8                             56 115 24ms614us
    2 8.8.8.8                             56 115 25ms500us
    3 8.8.8.8                             56 115 25ms689us
sent=4 received=4 packet-loss=0% min-rtt=24ms614us avg-rtt=25ms178us max-rtt=25ms689us

[admin@R2] > ping 8.8.8.8
  SEQ HOST                                SIZE TTL TIME                        STATUS
    0 8.8.8.8                             56 115 25ms213us
    1 8.8.8.8                             56 115 56ms892us
    2 8.8.8.8                             56 115 25ms538us
    3 8.8.8.8                             56 115 25ms284us
sent=4 received=4 packet-loss=0% min-rtt=25ms213us avg-rtt=33ms231us max-rtt=56ms892us

[admin@R2] > ping 8.8.8.8
  SEQ HOST                                SIZE TTL TIME                        STATUS
    0 8.8.8.8                             timeout
    1 8.8.8.8                             timeout
sent=2 received=0 packet-loss=100%

[admin@R2] > █

```

R3

```

may/22/2023 18:02:25 system,error,critical router was rebooted without proper shu
tdown
may/22/2023 18:04:12 system,error,critical router was rebooted without proper shu
tdown
may/22/2023 18:07:27 system,error,critical router was rebooted without proper shu
tdown

[admin@R3] > ping 8.8.8.8
SEQ HOST                                SIZE TTL TIME                        STATUS
0 8.8.8.8                                56 115 24ms833us
1 8.8.8.8                                56 115 24ms955us
sent=2 received=2 packet-loss=0% min-rtt=24ms833us avg-rtt=24ms894us max-rtt=24ms955us

[admin@R3] > ping 8.8.8.8
SEQ HOST                                SIZE TTL TIME                        STATUS
0 8.8.8.8                                56 115 24ms788us
1 8.8.8.8                                56 115 24ms888us
2 8.8.8.8                                56 115 25ms197us
sent=3 received=3 packet-loss=0% min-rtt=24ms788us avg-rtt=24ms931us max-rtt=25ms197us

[admin@R3] > ping 8.8.8.8
SEQ HOST                                SIZE TTL TIME                        STATUS
0 8.8.8.8                                56 115 24ms788us
1 8.8.8.8                                56 115 24ms888us
sent=2 received=0 packet-loss=100%
timeout
timeout

[admin@R3] >

```

Πρόσθεση στατικής Διαδρομής μόνο στον R2

R1

```

1 area=backbone interfaces=ether2 instance-id=0 type=broadcast retransmit-interval=5s transmit-delay
priority=128 cost=1
2 area=backbone instance-id=0 networks=107.2.63.4/30 type=broadcast retransmit-interval=5s transmit-
priority=128 cost=1
3 area=backbone interfaces=ether3 instance-id=0 type=broadcast retransmit-interval=5s transmit-delay
priority=128 cost=1
[admin@R1] /routing/ospf/interface-template> /
[admin@R1] > ping 107.2.63.1
SEQ HOST                                SIZE TTL TIME                        STATUS
0 107.2.63.1                                56 64 186us
1 107.2.63.1                                56 64 38us
2 107.2.63.1                                56 64 100us
sent=3 received=3 packet-loss=0% min-rtt=38us avg-rtt=108us max-rtt=186us

[admin@R1] > ping 107.2.63.9
SEQ HOST                                SIZE TTL TIME                        STATUS
0 107.2.63.9                                56 64 1ms52us
1 107.2.63.9                                56 64 775us
2 107.2.63.9                                56 64 994us
sent=3 received=3 packet-loss=0% min-rtt=775us avg-rtt=940us max-rtt=1ms52us

[admin@R1] > ping 8.8.8.8
SEQ HOST                                SIZE TTL TIME                        STATUS
0 8.8.8.8                                56 116 37ms702us
1 8.8.8.8                                56 116 23ms986us
sent=2 received=2 packet-loss=0% min-rtt=23ms986us avg-rtt=30ms844us max-rtt=37ms702us

[admin@R1] > ping 8.8.8.8
SEQ HOST                                SIZE TTL TIME                        STATUS
0 8.8.8.8                                56 116 24ms326us
1 8.8.8.8                                56 116 25ms220us
2 8.8.8.8                                56 116 24ms138us
sent=3 received=3 packet-loss=0% min-rtt=24ms138us avg-rtt=24ms561us max-rtt=25ms220us

[admin@R1] > ip route print
Flags: D - DYNAMIC; A - ACTIVE; c, o, d, y - COPY; + - ECMP
Columns: DST-ADDRESS, GATEWAY, DISTANCE
DST-ADDRESS GATEWAY DISTANCE
DA0 0.0.0.0/0 192.168.1.254 1
DAc 10.255.255.1/32 loopback0 0
DAc 107.2.63.0/30 ether2 0
DAc 107.2.63.4/30 ether3 0
DAo+ 107.2.63.8/30 107.2.63.2%ether2 110
DAo+ 107.2.63.8/30 107.2.63.6%ether3 110
DAo 107.2.63.12/30 107.2.63.2%ether2 110
DAc 192.168.1.0/24 ether1 0
[admin@R1] >

```

R2

```
Flags: D - DYNAMIC; A - ACTIVE; c, s, o, y - COPY; + - ECMP
Columns: DST-ADDRESS, GATEWAY, DISTANCE
# DST-ADDRESS GATEWAY DISTANCE
0 s 0.0.0.0/0 107.2.63.1 112
DAo 0.0.0.0/0 107.2.63.1%ether1 110
DAc 10.255.255.2/32 loopback0 0
DAc 107.2.63.0/30 ether1 0
DAo+ 107.2.63.4/30 107.2.63.1%ether1 110
DAo+ 107.2.63.4/30 107.2.63.10%ether2 110
DAc 107.2.63.8/30 ether2 0
DAc 107.2.63.12/30 ether3 0
[admin@R2] > ip route print
Flags: D - DYNAMIC; A - ACTIVE; c, s, o, y - COPY; + - ECMP
Columns: DST-ADDRESS, GATEWAY, DISTANCE
# DST-ADDRESS GATEWAY DISTANCE
0 s 0.0.0.0/0 107.2.63.1 112
DAo 0.0.0.0/0 107.2.63.1%ether1 110
DAc 10.255.255.2/32 loopback0 0
DAc 107.2.63.0/30 ether1 0
DAo+ 107.2.63.4/30 107.2.63.1%ether1 110
DAo+ 107.2.63.4/30 107.2.63.10%ether2 110
DAc 107.2.63.8/30 ether2 0
DAc 107.2.63.12/30 ether3 0
[admin@R2] > ip address print
Columns: ADDRESS, NETWORK, INTERFACE
# ADDRESS NETWORK INTERFACE
0 10.255.255.2/32 10.255.255.2 loopback0
1 107.2.63.2/30 107.2.63.0 ether1
2 107.2.63.9/30 107.2.63.8 ether2
3 107.2.63.13/30 107.2.63.12 ether3
[admin@R2] > ip address print
Columns: ADDRESS, NETWORK, INTERFACE
# ADDRESS NETWORK INTERFACE
0 10.255.255.2/32 10.255.255.2 loopback0
1 107.2.63.2/30 107.2.63.0 ether1
2 107.2.63.9/30 107.2.63.8 ether2
3 107.2.63.13/30 107.2.63.12 ether3
[admin@R2] > ip route print
Flags: D - DYNAMIC; A - ACTIVE; c, s, o, y - COPY; + - ECMP
Columns: DST-ADDRESS, GATEWAY, DISTANCE
# DST-ADDRESS GATEWAY DISTANCE
0 s 0.0.0.0/0 107.2.63.1 112
DAo 0.0.0.0/0 107.2.63.1%ether1 110
DAc 10.255.255.2/32 loopback0 0
DAc 107.2.63.0/30 ether1 0
DAo+ 107.2.63.4/30 107.2.63.1%ether1 110
DAo+ 107.2.63.4/30 107.2.63.10%ether2 110
DAc 107.2.63.8/30 ether2 0
DAc 107.2.63.12/30 ether3 0
[admin@R2] >
```

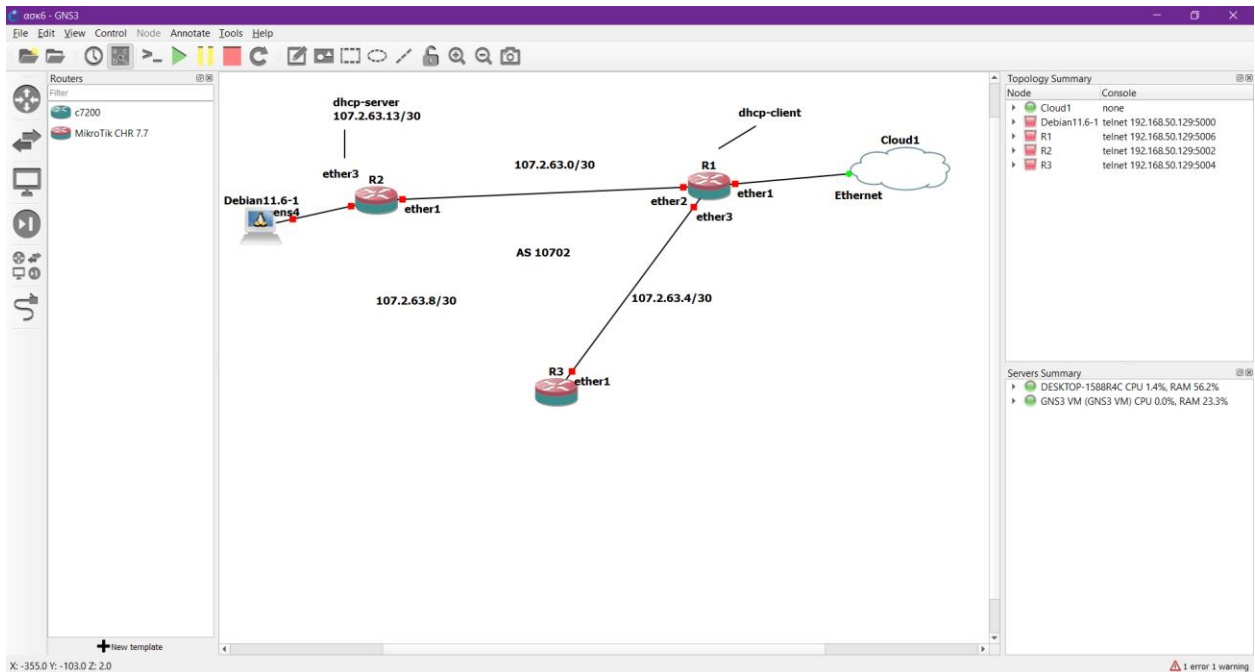
R3

```
[admin@R3] >
[admin@R3] >
[admin@R3] > ip address print
Columns: ADDRESS, NETWORK, INTERFACE
# ADDRESS NETWORK INTERFACE
0 10.255.255.3/32 10.255.255.3 loopback0
1 107.2.63.6/30 107.2.63.4 ether1
2 107.2.63.10/30 107.2.63.8 ether2
[admin@R3] > ip address print
Columns: ADDRESS, NETWORK, INTERFACE
# ADDRESS NETWORK INTERFACE
0 10.255.255.3/32 10.255.255.3 loopback0
1 107.2.63.6/30 107.2.63.4 ether1
2 107.2.63.10/30 107.2.63.8 ether2
[admin@R3] > ip address print
Columns: ADDRESS, NETWORK, INTERFACE
# ADDRESS NETWORK INTERFACE
0 10.255.255.3/32 10.255.255.3 loopback0
1 107.2.63.6/30 107.2.63.4 ether1
2 107.2.63.10/30 107.2.63.8 ether2
[admin@R3] > ip address print
Columns: ADDRESS, NETWORK, INTERFACE
# ADDRESS NETWORK INTERFACE
0 10.255.255.3/32 10.255.255.3 loopback0
1 107.2.63.6/30 107.2.63.4 ether1
2 107.2.63.10/30 107.2.63.8 ether2
[admin@R3] > ip address print
Columns: ADDRESS, NETWORK, INTERFACE
# ADDRESS NETWORK INTERFACE
0 10.255.255.3/32 10.255.255.3 loopback0
1 107.2.63.6/30 107.2.63.4 ether1
2 107.2.63.10/30 107.2.63.8 ether2
[admin@R3] > ip route print
Flags: D - DYNAMIC; A - ACTIVE; c, o, y - COPY; + - ECMP
Columns: DST-ADDRESS, GATEWAY, DISTANCE
# DST-ADDRESS GATEWAY DISTANCE
DAo 0.0.0.0/0 107.2.63.5%ether1 110
DAc 10.255.255.3/32 loopback0 0
DAo+ 107.2.63.0/30 107.2.63.9%ether2 110
DAo+ 107.2.63.0/30 107.2.63.5%ether1 110
DAc 107.2.63.4/30 ether1 0
DAc 107.2.63.8/30 ether2 0
DAo 107.2.63.12/30 107.2.63.9%ether2 110
[admin@R3] >
```

κίνηση από τον R3 προς 8.8.8.8

```
# ADDRESS          NETWORK    INTERFACE
0 10.255.255.3/32  10.255.255.3 loopback0
1 107.2.63.6/30    107.2.63.4  ether1
2 107.2.63.10/30   107.2.63.8  ether2
[admin@R3] > ip address print
Columns: ADDRESS, NETWORK, INTERFACE
# ADDRESS          NETWORK    INTERFACE
0 10.255.255.3/32  10.255.255.3 loopback0
1 107.2.63.6/30    107.2.63.4  ether1
2 107.2.63.10/30   107.2.63.8  ether2
[admin@R3] > ip address print
Columns: ADDRESS, NETWORK, INTERFACE
# ADDRESS          NETWORK    INTERFACE
0 10.255.255.3/32  10.255.255.3 loopback0
1 107.2.63.6/30    107.2.63.4  ether1
2 107.2.63.10/30   107.2.63.8  ether2
[admin@R3] > ip address print
Columns: ADDRESS, NETWORK, INTERFACE
# ADDRESS          NETWORK    INTERFACE
0 10.255.255.3/32  10.255.255.3 loopback0
1 107.2.63.6/30    107.2.63.4  ether1
2 107.2.63.10/30   107.2.63.8  ether2
[admin@R3] > ip address print
Columns: ADDRESS, NETWORK, INTERFACE
# ADDRESS          NETWORK    INTERFACE
0 10.255.255.3/32  10.255.255.3 loopback0
1 107.2.63.6/30    107.2.63.4  ether1
2 107.2.63.10/30   107.2.63.8  ether2
[admin@R3] > ip route print
Columns: DST-ADDRESS, GATEWAY, DISTANCE
Flags: D - DYNAMIC; A - ACTIVE; c, o, y - COPY; + - ECMP
Columns: DST-ADDRESS, GATEWAY, DISTANCE
DAc 0.0.0.0/0      107.2.63.5%ether1 110
DAc 10.255.255.3/32 loopback0 0
DAc+ 107.2.63.0/30 107.2.63.9%ether2 110
DAc+ 107.2.63.0/30 107.2.63.5%ether1 110
DAc 107.2.63.4/30 ether1 0
DAc 107.2.63.8/30 ether2 0
DAc 107.2.63.12/30 107.2.63.9%ether2 110
[admin@R3] > ping 8.8.8.8
  SEQ HOST                                     SIZE TTL TIME                            STATUS
  --  --  --
0 8.8.8.8                                     56 115 65ms185us
1 8.8.8.8                                     56 115 24ms753us
2 8.8.8.8                                     56 115 24ms443us
3 8.8.8.8                                     56 115 25ms7us
4 8.8.8.8                                     56 115 25ms135us
sent=5 received=5 packet-loss=0% min-rtt=24ms443us avg-rtt=32ms904us max-rtt=65ms185us
[admin@R3] >
```

Αφαιρέστε την σύνδεση R3-R2, κίνηση από τον R3 προς 8.8.8.8



Press F1 for help

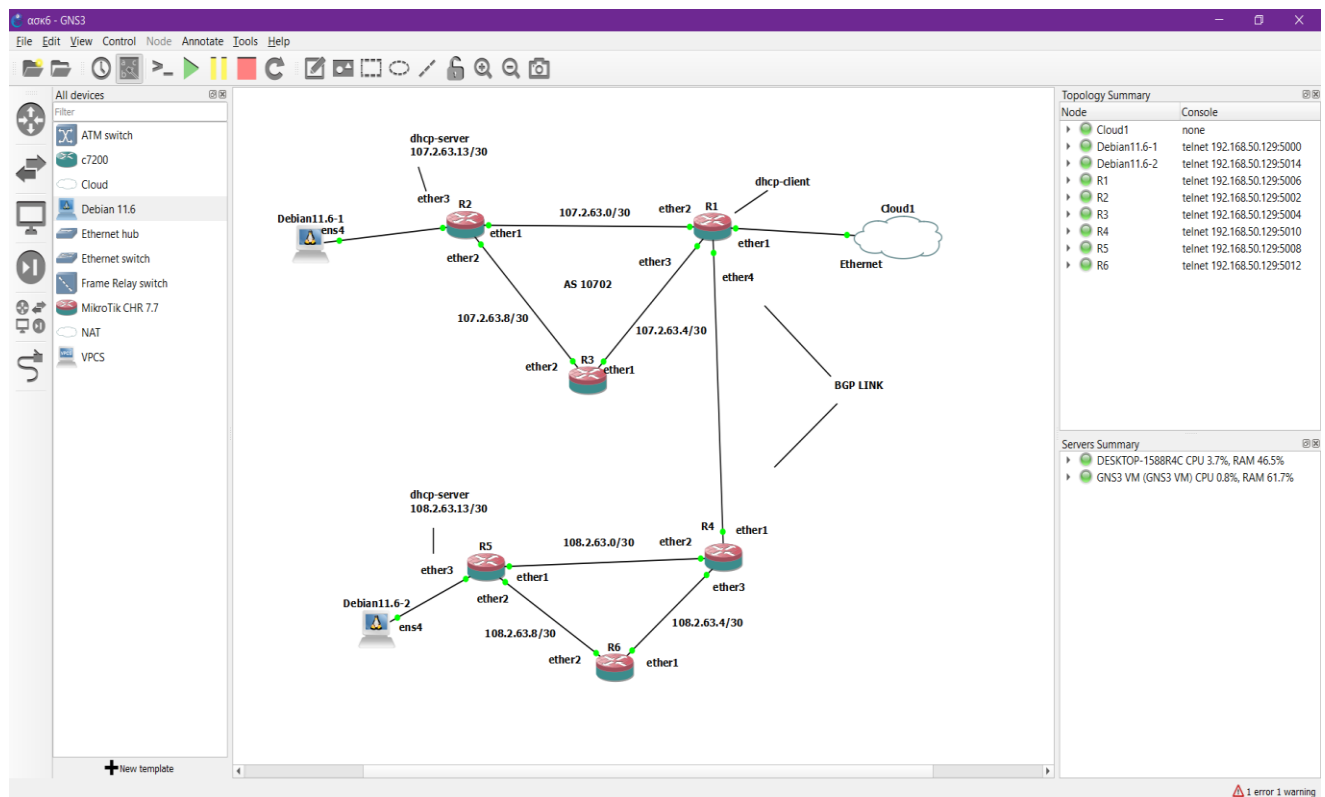
```
may/22/2023 18:02:25 system,error,critical router was rebooted without proper shu
tdown
may/22/2023 18:04:12 system,error,critical router was rebooted without proper shu
tdown
may/22/2023 18:07:27 system,error,critical router was rebooted without proper shu
tdown
may/22/2023 18:33:27 system,error,critical router was rebooted without proper shu
tdown

[admin@13] > ping 8.8.8.8
  SEQ HOST                SIZE TTL TIME          STATUS
    0
    1
    2
    3
sent=4 received=0 packet-loss=100%
```

[admin@13] > █

Υλοποίηση διασύνδεσης δικτύων με χρήση του Border Gateway Protocol.

Υλοποίηση



Όπως βλέπουμε και στην εικόνα κάνουμε ping από R1 προς όλα τα interface και αυτό γίνεται με επιτυχία

```
transmit-delay=1s hello-interval=10s dead-interval=40s priority=128 cost=1

2 area=backbone instance-id=0 networks=107.2.63.4/30 type=broadcast retransmit-interval=5s
transmit-delay=1s hello-interval=10s dead-interval=40s priority=128 cost=1

3 area=backbone interfaces=ether3 instance-id=0 type=broadcast retransmit-interval=5s
transmit-delay=1s hello-interval=10s dead-interval=40s priority=128 cost=1
[admin@R1] /routing/ospf/interface-template> /
[admin@R1] > ping 108.2.63.1
SEQ HOST                                SIZE TTL TIME                STATUS
0 108.2.63.1                            56  52 142ms120us
1 108.2.63.1                            56  52 140ms806us
sent=2 received=2 packet-loss=0% min-rtt=140ms806us avg-rtt=141ms463us max-rtt=142ms120us

[admin@R1] > ping 108.2.63.5
SEQ HOST                                SIZE TTL TIME                STATUS
0 108.2.63.5                            56  51 162ms749us
1 108.2.63.5                            56  51 152ms334us
sent=2 received=2 packet-loss=0% min-rtt=152ms334us avg-rtt=157ms541us max-rtt=162ms749us

[admin@R1] > ping 108.2.63.13
SEQ HOST                                SIZE TTL TIME                STATUS
0 108.2.63.13                           56  51 150ms398us
1 108.2.63.13                           56  51 153ms373us
sent=2 received=2 packet-loss=0% min-rtt=150ms398us avg-rtt=151ms885us max-rtt=153ms373us

[admin@R1] > ping 108.2.63.9
SEQ HOST                                SIZE TTL TIME                STATUS
0 108.2.63.9                            56  51 155ms928us
1 108.2.63.9                            56  51 163ms666us
sent=2 received=2 packet-loss=0% min-rtt=155ms928us avg-rtt=159ms797us max-rtt=163ms666us

[admin@R1] > ping 107.2.63.9
SEQ HOST                                SIZE TTL TIME                STATUS
0 107.2.63.9                            56  63 1ms743us
1 107.2.63.9                            56  63 1ms751us
sent=2 received=2 packet-loss=0% min-rtt=1ms743us avg-rtt=1ms747us max-rtt=1ms751us

[admin@R1] > ping 107.2.63.13
SEQ HOST                                SIZE TTL TIME                STATUS
0 107.2.63.13                           56  64 880us
1 107.2.63.13                           56  64 749us
sent=2 received=2 packet-loss=0% min-rtt=749us avg-rtt=814us max-rtt=880us

[admin@R1] > █
```

Το ίδιο συμβαίνει και με το R2 και R3

```

may/23/2023 15:36:32 system,error,critical router was rebooted without proper shu
tdown
may/23/2023 15:42:06 system,error,critical router was rebooted without proper shu
tdown
may/23/2023 15:43:47 system,error,critical router was rebooted without proper shu
tdown
may/23/2023 16:06:38 system,error,critical router was rebooted without proper shu
tdown
may/23/2023 16:26:51 system,error,critical router was rebooted without proper shu
tdown
may/24/2023 11:07:20 system,error,critical router was rebooted without proper shu
tdown
may/24/2023 11:36:02 system,error,critical router was rebooted without proper shu
tdown
may/24/2023 11:39:01 system,error,critical router was rebooted without proper shu
tdown

[admin@10] > ping 107.2.63.1
  SEQ HOST                       SIZE TTL TIME          STATUS
    0 107.2.63.1                   56  64 706us
    1 107.2.63.1                   56  64 789us
  sent=2 received=2 packet-loss=0% min-rtt=706us avg-rtt=747us max-rtt=789us

[admin@12] > ping 107.2.63.9
  SEQ HOST                       SIZE TTL TIME          STATUS
    0 107.2.63.9                   56  64 96us
    1 107.2.63.9                   56  64 34us
  sent=2 received=2 packet-loss=0% min-rtt=34us avg-rtt=65us max-rtt=96us

[admin@10] > ping 108.2.63.1
  SEQ HOST                       SIZE TTL TIME          STATUS
    0 108.2.63.1                   56  51 165ms133us
    1 108.2.63.1                   56  51 165ms133us
  sent=1 received=1 packet-loss=0% min-rtt=165ms133us avg-rtt=165ms133us max-rtt=165ms133us

[admin@12] > ping 108.2.63.5
  SEQ HOST                       SIZE TTL TIME          STATUS
    0 108.2.63.5                   56  50 153ms693us
    1 108.2.63.5                   56  50 153ms430us
  sent=2 received=2 packet-loss=0% min-rtt=153ms430us avg-rtt=153ms561us max-rtt=153ms693us

[admin@10] > ping 108.2.63.9
  SEQ HOST                       SIZE TTL TIME          STATUS
    0 108.2.63.9                   56  62 1ms929us
    1 108.2.63.9                   56  62 1ms666us
    2 108.2.63.9                   56  62 2ms195us
  sent=3 received=3 packet-loss=0% min-rtt=1ms666us avg-rtt=1ms930us max-rtt=2ms195us

[admin@12] > █

```

```

tdown
may/23/2023 16:06:36 system,error,critical router was rebooted without proper shu
tdown
may/23/2023 16:26:49 system,error,critical router was rebooted without proper shu
tdown
may/24/2023 11:07:19 system,error,critical router was rebooted without proper shu
tdown
may/24/2023 11:36:05 system,error,critical router was rebooted without proper shu
tdown
may/24/2023 11:39:00 system,error,critical router was rebooted without proper shu
tdown

[admin@10] > ping 107.2.63.1
  SEQ HOST                       SIZE TTL TIME          STATUS
    0 107.2.63.1                   56  64 1ms322us
    1 107.2.63.1                   56  64 1ms63us
  sent=2 received=2 packet-loss=0% min-rtt=1ms63us avg-rtt=1ms192us max-rtt=1ms322us

[admin@10] > ping 109.2.63.1
  SEQ HOST                       SIZE TTL TIME          STATUS
    0 109.2.63.1                   56  64 1ms322us
    1 109.2.63.1                   56  64 1ms63us
  sent=1 received=0 packet-loss=100% min-rtt=1ms63us avg-rtt=1ms192us max-rtt=1ms322us

[admin@10] > ping 108.2.63.1
  SEQ HOST                       SIZE TTL TIME          STATUS
    0 108.2.63.1                   56  51 142ms231us
    1 108.2.63.1                   56  51 144ms951us
  sent=2 received=2 packet-loss=0% min-rtt=142ms231us avg-rtt=143ms591us max-rtt=144ms951us

[admin@10] > ping 108.2.63.5
  SEQ HOST                       SIZE TTL TIME          STATUS
    0 108.2.63.5                   56  50 152ms525us
    1 108.2.63.5                   56  50 153ms880us
  sent=2 received=2 packet-loss=0% min-rtt=152ms525us avg-rtt=153ms202us max-rtt=153ms880us

[admin@10] > ping 108.2.63.9
  SEQ HOST                       SIZE TTL TIME          STATUS
    0 108.2.63.9                   56  62 1ms609us
    1 108.2.63.9                   56  62 1ms955us
  sent=2 received=2 packet-loss=0% min-rtt=1ms609us avg-rtt=1ms782us max-rtt=1ms955us

[admin@10] > ping 108.2.63.13
  SEQ HOST                       SIZE TTL TIME          STATUS
    0 108.2.63.13                  56  62 1ms827us
    1 108.2.63.13                  56  62 1ms709us
  sent=2 received=2 packet-loss=0% min-rtt=1ms709us avg-rtt=1ms768us max-rtt=1ms827us

[admin@10] > █

```

```

SEQ HOST                SIZE TTL TIME          STATUS
0 107.2.63.6            56 64 631us          timeout
1 107.2.63.6            56 64 736us          timeout
sent=2 received=0 packet-loss=100%

[admin@k4] > ping 107.2.63.5
SEQ HOST                SIZE TTL TIME          STATUS
0 107.2.63.5            56 64 631us          56 64 736us
1 107.2.63.5            56 64 736us          56 64 1ms10us
2 107.2.63.5            56 64 1ms10us
sent=3 received=3 packet-loss=0% min-rtt=631us avg-rtt=792us max-rtt=1ms10us

[admin@k4] > ping 107.2.63.1
SEQ HOST                SIZE TTL TIME          STATUS
0 107.2.63.1            56 64 822us          56 64 779us
1 107.2.63.1            56 64 779us
sent=2 received=2 packet-loss=0% min-rtt=779us avg-rtt=800us max-rtt=822us

[admin@k4] > ping 107.2.63.5
SEQ HOST                SIZE TTL TIME          STATUS
0 107.2.63.5            56 64 674us          56 64 902us
1 107.2.63.5            56 64 902us
sent=2 received=2 packet-loss=0% min-rtt=674us avg-rtt=788us max-rtt=902us

[admin@k4] > ping 107.2.63.9
SEQ HOST                SIZE TTL TIME          STATUS
0 107.2.63.9            56 63 1ms456us        56 63 1ms387us
1 107.2.63.9            56 63 1ms387us
sent=2 received=2 packet-loss=0% min-rtt=1ms387us avg-rtt=1ms421us max-rtt=1ms456us

[admin@k4] > ping 107.2.63.13
SEQ HOST                SIZE TTL TIME          STATUS
0 107.2.63.13           56 63 1ms85us         56 63 1ms791us
1 107.2.63.13           56 63 1ms791us
sent=2 received=2 packet-loss=0% min-rtt=1ms85us avg-rtt=1ms438us max-rtt=1ms791us

[admin@k4] > ping 108.2.63.9
SEQ HOST                SIZE TTL TIME          STATUS
0 108.2.63.9            56 64 933us          56 64 1ms71us
1 108.2.63.9            56 64 1ms71us
sent=2 received=2 packet-loss=0% min-rtt=933us avg-rtt=1ms2us max-rtt=1ms71us

[admin@k4] > ping 108.2.63.13
Columns: SEQ, HOST, SIZE, TTL, TIME
SEQ HOST                SIZE TTL TIME
0 108.2.63.13           56 64 589us

[admin@k4] >

```

R4

```

[admin@k4] > ip route print
Flags: D - DYNAMIC; A - ACTIVE; C, O, Y - COPY; + - ECMP
Columns: DST-ADDRESS, GATEWAY, DISTANCE
DST-ADDRESS    GATEWAY        DISTANCE
DAc 10.255.255.4/32 loopback0      0
DAc 108.2.63.0/30 ether2          0
DAc 108.2.63.4/30 ether3          0
DAo+ 108.2.63.8/30 108.2.63.6%ether3 110
DAo+ 108.2.63.8/30 108.2.63.2%ether2 110
DAo 108.2.63.12/30 108.2.63.2%ether2 110
DAc 192.168.5.2/32 ether1          0

[admin@k4] >
[admin@k4] > ping 107.2.63.1
SEQ HOST                SIZE TTL TIME          STATUS
0                          no route to host
1                          no route to host
sent=2 received=0 packet-loss=100%

[admin@k4] > ping 108.2.63.9
SEQ HOST                SIZE TTL TIME          STATUS
0 108.2.63.9            56 63 1ms148us        56 63 1ms130us
1 108.2.63.9            56 63 1ms130us
sent=2 received=2 packet-loss=0% min-rtt=1ms130us avg-rtt=1ms139us max-rtt=1ms148us

[admin@k4] > ping 108.2.63.13
SEQ HOST                SIZE TTL TIME          STATUS
0 108.2.63.13           56 64 653us          56 64 735us
1 108.2.63.13           56 64 735us
sent=2 received=2 packet-loss=0% min-rtt=653us avg-rtt=694us max-rtt=735us

[admin@k4] > ping 107.2.63.5
SEQ HOST                SIZE TTL TIME          STATUS
0                          no route to host
1                          no route to host
sent=2 received=0 packet-loss=100%

[admin@k4] >

```

R5

```
(2 messages not shown)
may/23/2023 15:28:42 system,error,critical router was rebooted without proper shu
tdown
may/23/2023 15:36:34 system,error,critical router was rebooted without proper shu
tdown
may/23/2023 15:43:49 system,error,critical router was rebooted without proper shu
tdown
may/23/2023 16:06:41 system,error,critical router was rebooted without proper shu
tdown
may/23/2023 16:26:51 system,error,critical router was rebooted without proper shu
tdown
may/24/2023 11:07:21 system,error,critical router was rebooted without proper shu
tdown
may/24/2023 11:36:03 system,error,critical router was rebooted without proper shu
tdown
may/24/2023 11:39:02 system,error,critical router was rebooted without proper shu
tdown

[admin@R5] > ping 108.2.63.1
SEQ HOST                                SIZE TTL TIME                        STATUS
0 108.2.63.1                            56 64 636us
1 108.2.63.1                            56 64 557us
sent=2 received=2 packet-loss=0% min-rtt=557us avg-rtt=596us max-rtt=636us

[admin@R5] > ping 107.2.63.1
SEQ HOST                                SIZE TTL TIME                        STATUS
0 107.2.63.1                            56 64 636us
sent=1 received=0 packet-loss=100%

[admin@R5] > ping 107.2.63.5
SEQ HOST                                SIZE TTL TIME                        STATUS
0 107.2.63.5                            56 64 636us
sent=1 received=0 packet-loss=100%

[admin@R5] > ping 107.2.63.5
SEQ HOST                                SIZE TTL TIME                        STATUS
0 107.2.63.5                            56 64 636us
1 107.2.63.5                            56 64 636us
sent=2 received=0 packet-loss=100%

[admin@R5] > ping 107.2.63.9
SEQ HOST                                SIZE TTL TIME                        STATUS
0 107.2.63.9                            56 64 636us
1 107.2.63.9                            56 64 636us
sent=2 received=0 packet-loss=100%

[admin@R5] >
```

R6

```
tdown
may/23/2023 16:06:41 system,error,critical router was rebooted without proper shu
tdown
may/23/2023 16:26:53 system,error,critical router was rebooted without proper shu
tdown
may/24/2023 11:07:20 system,error,critical router was rebooted without proper shu
tdown
may/24/2023 11:36:04 system,error,critical router was rebooted without proper shu
tdown
may/24/2023 11:39:02 system,error,critical router was rebooted without proper shu
tdown

[admin@R6] > ping 107.2.63.1
SEQ HOST                                SIZE TTL TIME                        STATUS
0 107.2.63.1                            56 64 636us
1 107.2.63.1                            56 64 636us
sent=2 received=0 packet-loss=100%

[admin@R6] > ping 107.2.63.5
SEQ HOST                                SIZE TTL TIME                        STATUS
0 107.2.63.5                            56 64 636us
sent=1 received=0 packet-loss=100%

[admin@R6] > ping 107.2.63.9
SEQ HOST                                SIZE TTL TIME                        STATUS
0 107.2.63.9                            56 64 636us
1 107.2.63.9                            56 64 636us
sent=2 received=0 packet-loss=100%

[admin@R6] > ping 108.2.63.1
SEQ HOST                                SIZE TTL TIME                        STATUS
0 108.2.63.1                            56 63 1ms162us
1 108.2.63.1                            56 63 1ms341us
sent=2 received=2 packet-loss=0% min-rtt=1ms162us avg-rtt=1ms251us max-rtt=1ms341us

[admin@R6] > ping 108.2.63.5
SEQ HOST                                SIZE TTL TIME                        STATUS
0 108.2.63.5                            56 64 711us
1 108.2.63.5                            56 64 876us
sent=2 received=2 packet-loss=0% min-rtt=711us avg-rtt=793us max-rtt=876us

[admin@R6] > ping 108.2.63.9
SEQ HOST                                SIZE TTL TIME                        STATUS
0 108.2.63.9                            56 64 526us
1 108.2.63.9                            56 64 676us
sent=2 received=2 packet-loss=0% min-rtt=526us avg-rtt=601us max-rtt=676us

[admin@R6] >
```

ip/route/print

R1

```
Debi Debi R1 x R2 R3 R4 R5 R6 + - □ x

SEQ HOST                               SIZE TTL TIME STATUS
0 108.2.63.13                          56 51 150ms398us
1 108.2.63.13                          56 51 153ms373us
sent=2 received=2 packet-loss=0% min-rtt=150ms398us avg-rtt=151ms885us max-rtt=153ms373us

[admin@R1] > ping 108.2.63.9
SEQ HOST                               SIZE TTL TIME STATUS
0 108.2.63.9                          56 51 155ms928us
1 108.2.63.9                          56 51 163ms666us
sent=2 received=2 packet-loss=0% min-rtt=155ms928us avg-rtt=159ms797us max-rtt=163ms666us

[admin@R1] > ping 107.2.63.9
SEQ HOST                               SIZE TTL TIME STATUS
0 107.2.63.9                          56 63 1ms743us
1 107.2.63.9                          56 63 1ms751us
sent=2 received=2 packet-loss=0% min-rtt=1ms743us avg-rtt=1ms747us max-rtt=1ms751us

[admin@R1] > ping 107.2.63.13
SEQ HOST                               SIZE TTL TIME STATUS
0 107.2.63.13                         56 64 880us
1 107.2.63.13                         56 64 749us
sent=2 received=2 packet-loss=0% min-rtt=749us avg-rtt=814us max-rtt=880us

[admin@R1] > /routing/bgp/template/
[admin@R1] /routing/bgp/template> print
Flags: * - default; X - disabled, I - inactive
0 * name="default" routing-table=main as=65530
1 name="bgp-template" routing-table=main router-id=10.255.255.1 as=10702
output.redistribute=static,ospf,bgp
[admin@R1] /routing/bgp/template> /
[admin@R1] > ip/route/print
Flags: D - DYNAMIC; A - ACTIVE; c, o, d, y - COPY; + - ECMP
Columns: DST-ADDRESS, GATEWAY, DISTANCE
DST-ADDRESS GATEWAY DISTANCE
DAAd 0.0.0.0/0 192.168.1.254 1
DAc 10.255.255.1/32 loopback0 0
DAc 107.2.63.0/30 ether2 0
DAc 107.2.63.4/30 ether3 0
DAo+ 107.2.63.8/30 107.2.63.6%ether3 110
DAo+ 107.2.63.8/30 107.2.63.2%ether2 110
DAo 107.2.63.12/30 107.2.63.2%ether2 110
DAc 192.168.1.0/24 ether1 0
DAc 192.168.5.1/32 ether4 0
[admin@R1] > []

solarwinds Solar-PuTTY free tool © 2019 SolarWinds Worldwide, LLC. All rights reserved.
```

R2

```

may/22/2023 18:04:12 system,error,critical router was rebooted without proper shu
tdown
may/22/2023 18:07:28 system,error,critical router was rebooted without proper shu
tdown
may/22/2023 18:34:34 system,error,critical router was rebooted without proper shu
tdown
may/22/2023 18:45:59 system,error,critical router was rebooted without proper shu
tdown
may/22/2023 19:08:20 system,error,critical router was rebooted without proper shu
tdown

[admin@R2] > /routing/ospf/interface-template
[admin@R2] /routing/ospf/interface-template> print
Flags: X - disabled, I - inactive
0 area=backbone instance-id=0 networks=107.2.63.0/30 type=broadcast retransmit-interval=5s
transmit-delay=1s hello-interval=10s dead-interval=40s priority=128 cost=1

1 area=backbone interfaces=ether1 instance-id=0 type=broadcast retransmit-interval=5s
transmit-delay=1s hello-interval=10s dead-interval=40s priority=128 cost=1

2 area=backbone instance-id=0 networks=107.2.63.8/30 type=broadcast retransmit-interval=5s
transmit-delay=1s hello-interval=10s dead-interval=40s priority=128 cost=1

3 area=backbone interfaces=ether2 instance-id=0 type=broadcast retransmit-interval=5s
transmit-delay=1s hello-interval=10s dead-interval=40s priority=128 cost=1

4 area=backbone instance-id=0 networks=107.2.63.12/30 type=broadcast retransmit-interval=5s
transmit-delay=1s hello-interval=10s dead-interval=40s priority=128 cost=1

5 area=backbone interfaces=ether3 instance-id=0 type=broadcast retransmit-interval=5s
transmit-delay=1s hello-interval=10s dead-interval=40s priority=128 cost=1
[admin@R2] /routing/ospf/interface-template> /
[admin@R2] > ip route print
Flags: D - DYNAMIC; A - ACTIVE; c, s, o, y - COPY; + - ECMP
Columns: DST-ADDRESS, GATEWAY, DISTANCE
# DST-ADDRESS GATEWAY DISTANCE
DAo 0.0.0.0/0 107.2.63.1%ether1 110
s 0.0.0.0/0 107.2.63.1 112
DAc 10.255.255.2/32 loopback0 0
DAc 107.2.63.0/30 ether1 0
DAo+ 107.2.63.4/30 107.2.63.10%ether2 110
DAo+ 107.2.63.4/30 107.2.63.1%ether1 110
DAc 107.2.63.8/30 ether2 0
DAc 107.2.63.12/30 ether3 0
[admin@R2] >

```

R3

```

may/22/2023 18:02:25 system,error,critical router was rebooted without proper shu
tdown
may/22/2023 18:04:12 system,error,critical router was rebooted without proper shu
tdown
may/22/2023 18:07:27 system,error,critical router was rebooted without proper shu
tdown
may/22/2023 18:34:34 system,error,critical router was rebooted without proper shu
tdown
may/22/2023 18:45:55 system,error,critical router was rebooted without proper shu
tdown
may/22/2023 19:08:18 system,error,critical router was rebooted without proper shu
tdown

[admin@R3] > ip route print
Flags: D - DYNAMIC; A - ACTIVE; c, o, y - COPY; + - ECMP
Columns: DST-ADDRESS, GATEWAY, DISTANCE
# DST-ADDRESS GATEWAY DISTANCE
DAo 0.0.0.0/0 107.2.63.5%ether1 110
DAc 10.255.255.3/32 loopback0 0
DAo+ 107.2.63.0/30 107.2.63.5%ether1 110
DAo+ 107.2.63.0/30 107.2.63.9%ether2 110
DAc 107.2.63.4/30 ether1 0
DAc 107.2.63.8/30 ether2 0
DAo 107.2.63.12/30 107.2.63.9%ether2 110
[admin@R3] >

```

R4

```
[admin@R4] /ip/address> print
Columns: ADDRESS, NETWORK, INTERFACE
# ADDRESS NETWORK INTERFACE
0 10.255.255.4/32 10.255.255.4 loopback0
1 108.2.63.1/30 108.2.63.0 ether2
2 108.2.63.5/30 108.2.63.4 ether3
3 192.168.5.2/30 192.168.5.0 ether1
[admin@R4] /ip/address> /routing/bgp/connection/print
Flags: D - dynamic, X - disabled, I - inactive
0 I ;; missing or disabled template
   ;; reserved AS value
   name="toR1"
   remote.address=192.168.5.1 .port=179 .as=10702
   local.port=179 .role=ebgp
   connect=yes listen=yes routing-table=main templates=*3 keepalive-time=1m
   output.default-originate=if-installed

1 name="toR1"
  remote.address=192.168.5.1 .port=179 .as=10702
  local.port=179 .default-address=192.168.5.2 .role=ebgp
  connect=yes listen=yes routing-table=main router-id=10.255.255.4 templates=default as=10802 keepalive-time=1m
  output.redistribute=static,ospf,bgp .default-originate=if-installed
[admin@R4] /ip/address> /
[admin@R4] > ping 107.2.63.1
SEQ HOST SIZE TTL TIME STATUS

0 107.2.63.1 56 64 881us
1 107.2.63.1 56 64 749us
sent=2 received=2 packet-loss=0% min-rtt=749us avg-rtt=815us max-rtt=881us

[admin@R4] > ip route print
Flags: D - DYNAMIC; A - ACTIVE; c, b, o, y - COPY; + - ECMP
Columns: DST-ADDRESS, GATEWAY, DISTANCE
DST-ADDRESS GATEWAY DISTANCE
DAb 0.0.0.0/0 192.168.5.1 20
DAC 10.255.255.4/32 loopback0 0
DAb 107.2.63.8/30 192.168.5.1 20
DAb 107.2.63.12/30 192.168.5.1 20
DAC 108.2.63.0/30 ether2 0
DAC 108.2.63.4/30 ether3 0
DAo+ 108.2.63.8/30 108.2.63.2%ether2 110
DAo+ 108.2.63.8/30 108.2.63.6%ether3 110
DAo 108.2.63.12/30 108.2.63.2%ether2 110
DAC 192.168.5.0/30 ether1 0
[admin@R4] >
```

R5

```
may/22/2023 19:08:21 system,error,critical router was rebooted without proper shu
tdown
may/23/2023 15:22:53 system,error,critical router was rebooted without proper shu
tdown
may/23/2023 15:28:42 system,error,critical router was rebooted without proper shu
tdown
may/23/2023 15:36:34 system,error,critical router was rebooted without proper shu
tdown
may/23/2023 15:43:49 system,error,critical router was rebooted without proper shu
tdown
may/23/2023 16:06:41 system,error,critical router was rebooted without proper shu
tdown
may/23/2023 16:26:51 system,error,critical router was rebooted without proper shu
tdown
may/24/2023 11:07:21 system,error,critical router was rebooted without proper shu
tdown

[admin@R5] > ip route print
Flags: D - DYNAMIC; A - ACTIVE; c, o, y - COPY; + - ECMP
Columns: DST-ADDRESS, GATEWAY, DISTANCE
DST-ADDRESS GATEWAY DISTANCE
DAo 0.0.0.0/0 108.2.63.1%ether1 110
DAC 10.255.255.5/32 loopback0 0
DAo 107.2.63.8/30 108.2.63.1%ether1 110
DAo 107.2.63.12/30 108.2.63.1%ether1 110
DAC 108.2.63.0/30 ether1 0
DAo+ 108.2.63.4/30 108.2.63.1%ether1 110
DAo+ 108.2.63.4/30 108.2.63.10%ether2 110
DAC 108.2.63.8/30 ether2 0
DAC 108.2.63.12/30 ether3 0
[admin@R5] >
```

```

(1 messages not shown)
may/22/2023 19:09:01 system,error,critical login failure for user admin via local
may/23/2023 15:22:53 system,error,critical router was rebooted without proper shu
tdown
may/23/2023 15:28:42 system,error,critical router was rebooted without proper shu
tdown
may/23/2023 15:36:33 system,error,critical router was rebooted without proper shu
tdown
may/23/2023 15:43:48 system,error,critical router was rebooted without proper shu
tdown
may/23/2023 16:06:41 system,error,critical router was rebooted without proper shu
tdown
may/23/2023 16:26:53 system,error,critical router was rebooted without proper shu
tdown
may/24/2023 11:07:20 system,error,critical router was rebooted without proper shu
tdown

[admin@R6] > ip route prin
Flags: D - DYNAMIC; A - ACTIVE; c, o, y - COPY; + - ECMP
Columns: DST-ADDRESS, GATEWAY, DISTANCE
DST-ADDRESS GATEWAY DISTANCE
DAo 0.0.0.0/0 108.2.63.5%ether1 110
DAc 10.255.255.6/32 loopback0 0
DAo 107.2.63.8/30 108.2.63.5%ether1 110
DAo 107.2.63.12/30 108.2.63.5%ether1 110
DAo+ 108.2.63.0/30 108.2.63.5%ether1 110
DAo+ 108.2.63.0/30 108.2.63.9%ether2 110
DAc 108.2.63.4/30 ether1 0
DAc 108.2.63.8/30 ether2 0
DAo 108.2.63.12/30 108.2.63.9%ether2 110
[admin@R6] >

```

Υπάρχει διαδρομή προς το εξωτερικό δίκτυο (0.0.0.0/0) από όλους τους δρομολογητές

Traceroute debian2


```

Debian GNU/Linux 11 debian
ttyS0

debian login: debian
Password:
Linux debian 5.10.0-20-cloud-amd64 #1 SMP Debian 5.10.158-2 (2022-12-13) x86_64

The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
debian@debian:~$ sudo -s
root@debian:/home/debian# ping 107.2.63.1
ping: connect: Network is unreachable
root@debian:/home/debian# traceroute 8.8.8.8
traceroute to 8.8.8.8 (8.8.8.8), 30 hops max, 60 byte packets
connect: Network is unreachable
root@debian:/home/debian# ping 8.8.8.8
PING 8.8.8.8 (8.8.8.8) 56(84) bytes of data.
64 bytes from 8.8.8.8: icmp_seq=1 ttl=113 time=62.7 ms
64 bytes from 8.8.8.8: icmp_seq=2 ttl=113 time=25.8 ms
^C
--- 8.8.8.8 ping statistics ---
2 packets transmitted, 2 received, 0% packet loss, time 1002ms
rtt min/avg/max/mdev = 25.772/44.243/62.715/18.471 ms
root@debian:/home/debian# traceroute 8.8.8.8
traceroute to 8.8.8.8 (8.8.8.8), 30 hops max, 60 byte packets
 1  108.2.63.13 (108.2.63.13)  0.929 ms  0.622 ms  0.439 ms
 2  108.2.63.1 (108.2.63.1)  1.787 ms  1.627 ms  1.446 ms
 3  192.168.5.1 (192.168.5.1)  1.792 ms  1.617 ms  1.551 ms
 4  192.168.1.254 (192.168.1.254)  4.734 ms  3.783 ms  4.608 ms
 5  10.13.255.65 (10.13.255.65)  12.121 ms  11.966 ms  11.262 ms
 6  62.169.240.246 (62.169.240.246)  11.090 ms  9.136 ms  8.931 ms
 7  62.169.241.164 (62.169.241.164)  13.283 ms  13.130 ms  14.396 ms
 8  62.169.224.67 (62.169.224.67)  14.243 ms  185.3.220.117 (185.3.220.117)  14.113 ms  14.955 ms
 9  10.13.255.1 (10.13.255.1)  14.309 ms  * *
10  185.3.220.118 (185.3.220.118)  14.395 ms  15.283 ms  16.747 ms
11  * * *
12  142.251.92.65 (142.251.92.65)  24.733 ms  108.170.250.177 (108.170.250.177)  26.777 ms  142.251.92.65
    (142.251.92.65)  24.826 ms
13  142.251.52.87 (142.251.52.87)  24.234 ms  142.250.60.19 (142.250.60.19)  25.416 ms  26.193 ms
14  8.8.8.8 (8.8.8.8)  25.765 ms  24.990 ms  25.106 ms
root@debian:/home/debian#

```

Traceroute apo debian2 se debian1

```

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
debian@debian:~$ sudo -s
root@debian:/home/debian# ping 107.2.63.1
ping: connect: Network is unreachable
root@debian:/home/debian# traceroute 8.8.8.8
traceroute to 8.8.8.8 (8.8.8.8), 30 hops max, 60 byte packets
connect: Network is unreachable
root@debian:/home/debian# ping 8.8.8.8
PING 8.8.8.8 (8.8.8.8) 56(84) bytes of data.
64 bytes from 8.8.8.8: icmp_seq=1 ttl=113 time=62.7 ms
64 bytes from 8.8.8.8: icmp_seq=2 ttl=113 time=25.8 ms
^C
--- 8.8.8.8 ping statistics ---
2 packets transmitted, 2 received, 0% packet loss, time 1002ms
rtt min/avg/max/mdev = 25.772/44.243/62.715/18.471 ms
root@debian:/home/debian# traceroute 8.8.8.8
traceroute to 8.8.8.8 (8.8.8.8), 30 hops max, 60 byte packets
 1 108.2.63.13 (108.2.63.13) 0.929 ms 0.622 ms 0.439 ms
 2 108.2.63.1 (108.2.63.1) 1.787 ms 1.627 ms 1.446 ms
 3 192.168.5.1 (192.168.5.1) 1.792 ms 1.617 ms 1.551 ms
 4 192.168.1.254 (192.168.1.254) 4.734 ms 3.783 ms 4.608 ms
 5 10.13.255.65 (10.13.255.65) 12.121 ms 11.966 ms 11.262 ms
 6 62.169.240.246 (62.169.240.246) 11.090 ms 9.136 ms 8.931 ms
 7 62.169.241.164 (62.169.241.164) 13.283 ms 13.130 ms 14.396 ms
 8 62.169.224.67 (62.169.224.67) 14.243 ms 185.3.220.117 (185.3.220.117) 14.113 ms 14.955 ms
 9 10.13.255.1 (10.13.255.1) 14.309 ms * *
10 185.3.220.118 (185.3.220.118) 14.395 ms 15.283 ms 16.747 ms
11 * * *
12 142.251.92.65 (142.251.92.65) 24.733 ms 108.170.250.177 (108.170.250.177) 26.777 ms 142.251.92.65
   (142.251.92.65) 24.826 ms
13 142.251.52.87 (142.251.52.87) 24.234 ms 142.250.60.19 (142.250.60.19) 25.416 ms 26.193 ms
14 8.8.8.8 (8.8.8.8) 25.765 ms 24.990 ms 25.106 ms
root@debian:/home/debian# traceroute debian1
debian1: Temporary failure in name resolution
Cannot handle "host" cmdline arg `debian1' on position 1 (argc 1)
root@debian:/home/debian# traceroute 107.2.63.14
bash: traceroute: command not found
root@debian:/home/debian# traceroute 107.2.63.14
traceroute to 107.2.63.14 (107.2.63.14), 30 hops max, 60 byte packets
 1 108.2.63.13 (108.2.63.13) 1.387 ms 1.250 ms 1.234 ms
 2 108.2.63.1 (108.2.63.1) 4.490 ms 4.477 ms 4.394 ms
 3 192.168.5.1 (192.168.5.1) 4.343 ms 11.204 ms 11.191 ms
 4 107.2.63.2 (107.2.63.2) 11.181 ms 11.165 ms 11.153 ms
 5 107.2.63.14 (107.2.63.14) 11.134 ms 11.122 ms 11.111 ms
root@debian:/home/debian# █

```

ΤΕΛΟΣ