RIP

Routing Information Protocol (RIP) is a dynamic routing protocol which uses hop count as a routing metric to find the best path between the source and the destination network. It is a distance vector routing protocol which has AD value 120 and works on the application layer of OSI model. RIP uses port number 520.

Hop Count :

Hop count is the number of routers occurring in between the source and destination network. The path with the lowest hop count is considered as the best route to reach a network and therefore placed in the routing table. RIP prevents routing loops by limiting the number of hopes allowed in a path from source and destination. The maximum hop count allowed for RIP is 15 and hop count of 16 is considered as network unreachable.

Features of RIP :

1. Updates of the network are exchanged periodically.
2. Updates (routing information) are always broadcast.
3. Full routing tables are sent in updates.
4. Routers always trust on routing information received from neighbor routers. This is also known as *Routing on rumour*.

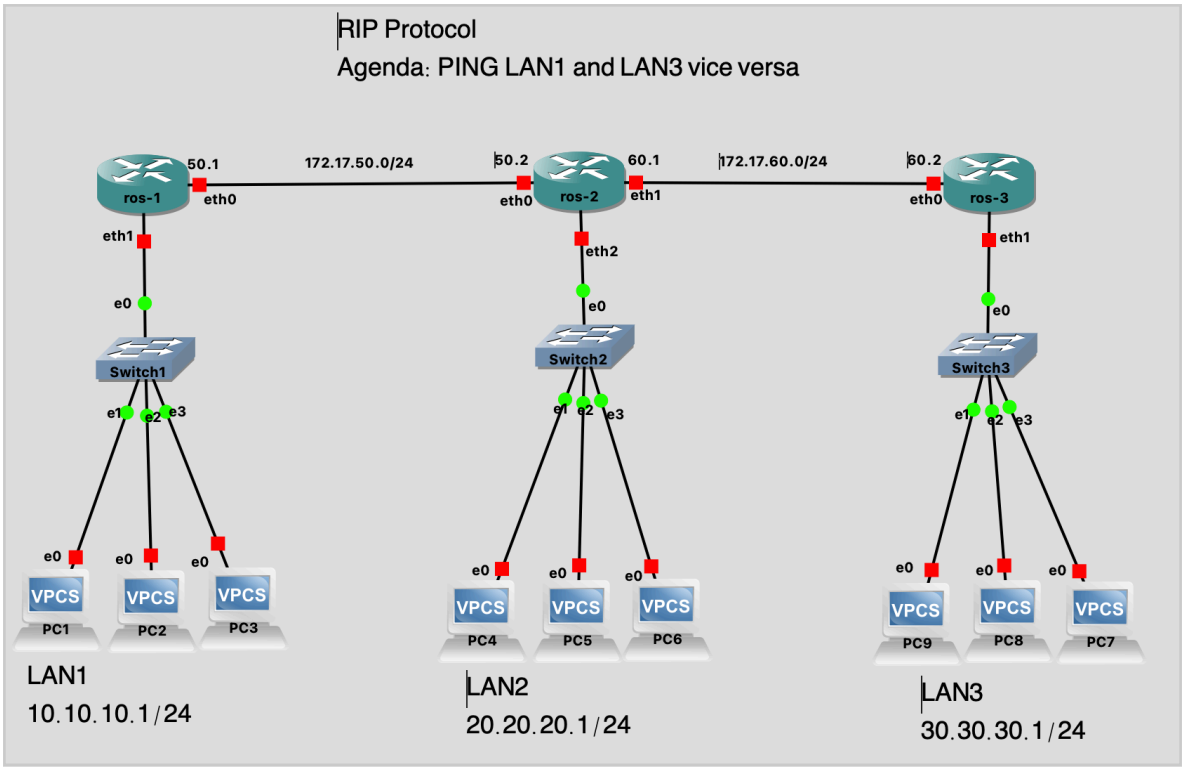
RIP versions :

There are three versions of routing information protocol – **RIP Version1**, **RIP Version2**, and **RIPng**.

==========

RIP on ROS

==========



Agenda is to connect : LAN 3 to LAN1 and vice versa

Make VPC in DHCP mode
****

Start and Label name of router
****

[admin@MikroTik] > system identity set name=ROS_1
[admin@ROS_1] >

[admin@MikroTik] > system identity set name=ROS_2
[admin@ROS_2] >

[admin@MikroTik] > system identity set name=ROS_3
[admin@ROS_3] >

Remove DHCP client for router

****
[admin@ROS_1] > ip dhcp-client remove **numbers**=0

[admin@ROS_2] > ip dhcp-client remove **numbers**=0

[admin@ROS_3] > ip dhcp-client remove **numbers**=0

Set the IP address respected to ROS connectivity(3 wota router lai connect garne)
****

[admin@ROS_1] > ip address add **address**=172.17.50.1/24 **interface**=ether1
[admin@ROS_1] > ip address set interface=ether3 **numbers**=0

[admin@ROS_2] > ip address add **address**=172.17.60.1/24 **interface**=ether2

[admin@ROS_3] > ip address add **interface**=ether1 **address**=172.17.60.2/24

Check ROS ping
****

[admin@ROS_1] > ping 172.17.50.2

SEQ	HOST	SIZE	TTL	TIME	STATUS
0	172.17.50.2	56	64	3ms	
1	172.17.50.2	56	64	2ms	

[admin@ROS_1] > ping 172.17.60.1

SEQ	HOST	SIZE	TTL	TIME	STATUS
0					no route to host
1					no route to host

[admin@ROS_2] > ping 172.17.50.1

SEQ	HOST	SIZE	TTL	TIME	STATUS
0	172.17.50.1	56	64	1ms	
1	172.17.50.1	56	64	2ms	

```
[admin@ROS_2] > ping 172.17.60.1
 SEQ HOST                                     SIZE TTL TIME  STATUS
   0 172.17.60.1                               56  64 0ms
   1 172.17.60.1                               56  64 1ms

[admin@ROS_2] > ping 172.17.60.2
 SEQ HOST                                     SIZE TTL TIME  STATUS
   0 172.17.60.2                               56  64 2ms
   1 172.17.60.2                               56  64 2ms
```

Set LAN IP

****

```
[admin@ROS_1] > ip address add address=10.10.10.1/24 interface=ether2

[admin@ROS_2] > ip address add address=20.20.20.1/24 interface=ether3

[admin@ROS_3] > ip address add address=30.30.30.1/24 interface=ether2
```

LAN PING

****

```
[admin@ROS_1] > ping 10.10.10.1
 SEQ HOST                                     SIZE TTL TIME  STATUS
   0 10.10.10.1                                56  64 1ms
   1 10.10.10.1                                56  64 1ms
   sent=2 received=2 packet-loss=0% min-rtt=1ms avg-rtt=1ms max-rtt=1ms

[admin@ROS_1] > ping 20.20.20.1
 SEQ HOST                                     SIZE TTL TIME  STATUS
   0                                                 no route to host
   1                                                 no route to host
   sent=2 received=0 packet-loss=100%
```

```
[admin@ROS_2] > ping 20.20.20.1
 SEQ HOST                          SIZE TTL TIME  STATUS
   0 20.20.20.1                      56  64 0ms
   1 20.20.20.1                      56  64 1ms
   sent=2 received=2 packet-loss=0% min-rtt=0ms avg-rtt=0ms max-rtt=1ms

[admin@ROS_2] > ping 10.10.10.1
 SEQ HOST                          SIZE TTL TIME  STATUS
   0                                      no route to host
   1                                      no route to host
   sent=2 received=0 packet-loss=100%

[admin@ROS_2] > ping 30.30.30.1
 SEQ HOST                          SIZE TTL TIME  STATUS
   0                                      no route to host
   1                                      no route to host
   sent=2 received=0 packet-loss=100%
```

```
[admin@ROS_3] > ping 30.30.30.1
 SEQ HOST                          SIZE TTL TIME  STATUS
   0 30.30.30.1                      56  64 2ms
   1 30.30.30.1                      56  64 3ms
   sent=2 received=2 packet-loss=0% min-rtt=2ms avg-rtt=2ms max-rtt=3ms

[admin@ROS_3] >
[admin@ROS_3] >
[admin@ROS_3] >
[admin@ROS_3] > ping 20.20.20.1
 SEQ HOST                          SIZE TTL TIME  STATUS
   0                                      no route to host
   1                                      no route to host
   sent=2 received=0 packet-loss=100%

[admin@ROS_3] > ping 10.10.10.1
 SEQ HOST                          SIZE TTL TIME  STATUS
   0                                      no route to host
```

```
  1                                    no route to host
  sent=2 received=0 packet-loss=100%
```

Working with RIP, check commands
****

```
[admin@ROS_1] > routing rip print
```

```
[admin@ROS_1] > routing rip route print
Flags: C - connect, S - static, R - rip, O - ospf, B - bgp
 #   DST-ADDRESS       GATEWAY       FROM            METRIC
```

```
[admin@ROS_1] > routing rip neighbor print
Flags: X - disabled
 #   ADDRESS
```

```
[admin@ROS_1] > routing rip network print
Flags: X - disabled
 #   NETWORK
```

Now advertise the both LAN and WAN network(no GW) and check ping sequentially
****

```
[admin@ROS_1] > routing rip network add network=172.17.50.0/24
[admin@ROS_1] > routing rip network add network=10.10.10.0/24
[admin@ROS_1] > ping 20.20.20.1
  SEQ HOST                          SIZE TTL TIME  STATUS
    0                                      no route to host
    1                                      no route to host
```

```
[admin@ROS_2] > ip address print
Flags: X - disabled, I - invalid, D - dynamic
```

```
 #   ADDRESS          NETWORK        INTERFACE
 0   172.17.60.1/24   172.17.60.0    ether2
 1   172.17.50.2/24   172.17.50.0    ether1
 2   20.20.20.1/24    20.20.20.0     ether3
[admin@ROS_2] > routing rip network add network=172.17.50.0/24
[admin@ROS_2] > routing rip network add network=20.20.20.0/24
[admin@ROS_2] > ping 10.10.10.1
  SEQ HOST                                     SIZE TTL TIME  STATUS
    0 10.10.10.1                                56  64 20ms


[admin@ROS_1] > ping 20.20.20.1
  SEQ HOST                                     SIZE TTL TIME  STATUS
    0 20.20.20.1                                56  64 2ms
    1 20.20.20.1                                56  64 16ms
    2 20.20.20.1                                56  64 11ms









[admin@ROS_1] > routing rip network print
Flags: X - disabled
 #   NETWORK
 0   172.17.50.0/24
 1   10.10.10.0/24


[admin@ROS_3] > ping 20.20.20.1
  SEQ HOST                                     SIZE TTL TIME  STATUS
    0                                               no route to host

[admin@ROS_2] > ping 30.30.30.1
  SEQ HOST                                     SIZE TTL TIME  STATUS
    0                                               no route to host
    1                                               no route to host


[admin@ROS_2] > routing rip network add network=172.17.60.0/24


[admin@ROS_3] > ip address print
Flags: X - disabled, I - invalid, D - dynamic
```

```
 #   ADDRESS          NETWORK       INTERFACE
 0   172.17.60.2/24    172.17.60.0    ether1
 1   30.30.30.1/24     30.30.30.0     ether2
[admin@ROS_3] >
[admin@ROS_3] > routing rip network add network=172.17.60.0/24
[admin@ROS_3] > routing rip network add network=30.30.30.0/24
```

```
[admin@ROS_2] > ping 10.10.10.1
  SEQ HOST                                     SIZE TTL TIME  STATUS
    0 10.10.10.1                                56  64 5ms
    sent=1 received=1 packet-loss=0% min-rtt=5ms avg-rtt=5ms max-rtt=5ms

[admin@ROS_2] > ping 30.30.30.1
  SEQ HOST                                     SIZE TTL TIME  STATUS
    0 30.30.30.1                                56  64 2ms
    1 30.30.30.1                                56  64 2ms
```

```
[admin@ROS_3] > ping 10.10.10.1
  SEQ HOST                                     SIZE TTL TIME  STATUS
    0 10.10.10.1                                56  63 5ms
    1 10.10.10.1                                56  63 5ms
```

```
[admin@ROS_1] > ping 20.20.20.1
  SEQ HOST                                     SIZE TTL TIME  STATUS
    0 20.20.20.1                                56  64 5ms
    1 20.20.20.1                                56  64 2ms
```

Check rip route , and ip route

****

```
[admin@ROS_2] > routing rip route print
Flags: X - connect, S - static, R - rip, O - ospf, B - bgp
 #   DST-ADDRESS        GATEWAY         FROM            METRIC
 0 R 10.10.10.0/24                   172.17.50.1            2
 1 R 20.20.20.0/24                                          1
 2 R 30.30.30.0/24                   172.17.60.2            2
 3 R 172.17.50.0/24                                         1
 4 R 172.17.60.0/24                                         1
[admin@ROS_2] >
[admin@ROS_2] >
[admin@ROS_2] >
[admin@ROS_2] > ip route print
Flags: X - disabled, A - active, D - dynamic,
C - connect, S - static, r - rip, b - bgp, o - ospf, m - mme,
B - blackhole, U - unreachable, P - prohibit
 #     DST-ADDRESS        PREF-SRC        GATEWAY         DISTANCE
 0 ADr  10.10.10.0/24                     172.17.50.1            120
 1 ADC  20.20.20.0/24      20.20.20.1      ether3                   0
 2 ADr  30.30.30.0/24                     172.17.60.2            120
 3 ADC  172.17.50.0/24     172.17.50.2     ether1                   0
 4 ADC  172.17.60.0/24     172.17.60.1     ether2                   0
```

```
[admin@ROS_1] > routing rip route print
Flags: X - connect, S - static, R - rip, O - ospf, B - bgp
 #   DST-ADDRESS        GATEWAY         FROM            METRIC
 0 R 10.10.10.0/24                                          1
 1 R 20.20.20.0/24                   172.17.50.2            2
 2 R 30.30.30.0/24                   172.17.50.2            3
 3 R 172.17.50.0/24                                         1
 4 R 172.17.60.0/24                  172.17.50.2            2
[admin@ROS_1] >
[admin@ROS_1] >
[admin@ROS_1] >
[admin@ROS_1] >
[admin@ROS_1] >
[admin@ROS_1] > ip route print
Flags: X - disabled, A - active, D - dynamic,
C - connect, S - static, r - rip, b - bgp, o - ospf, m - mme,
B - blackhole, U - unreachable, P - prohibit
```

#	DST-ADDRESS	PREF-SRC	GATEWAY	DISTANCE
0	**ADC** 10.10.10.0/24	10.10.10.1	ether2	0
1	**ADr** 20.20.20.0/24		172.17.50.2	120
2	**ADr** 30.30.30.0/24		172.17.50.2	120
3	**ADC** 172.17.50.0/24	172.17.50.1	ether3	0
4	**ADr** 172.17.60.0/24		172.17.50.2	120

[admin@ROS_3] > routing rip route print
Flags: **C** - connect, **S** - static, **R** - rip, **O** - ospf, **B** - bgp

#	DST-ADDRESS	GATEWAY	FROM	METRIC
0	**R** 10.10.10.0/24	172.17.60.1		3
1	**R** 20.20.20.0/24	172.17.60.1		2
2	**R** 30.30.30.0/24			1
3	**R** 172.17.50.0/24	172.17.60.1		2
4	**R** 172.17.60.0/24			1

[admin@ROS_3] >
[admin@ROS_3] >
[admin@ROS_3] >
[admin@ROS_3] >
[admin@ROS_3] >
[admin@ROS_3] > ip route print
Flags: **X** - disabled, **A** - active, **D** - dynamic,
C - connect, **S** - static, **r** - rip, **b** - bgp, **o** - ospf, **m** - mme,
B - blackhole, **U** - unreachable, **P** - prohibit

#	DST-ADDRESS	PREF-SRC	GATEWAY	DISTANCE
0	**ADr** 10.10.10.0/24		172.17.60.1	120
1	**ADr** 20.20.20.0/24		172.17.60.1	120
2	**ADC** 30.30.30.0/24	30.30.30.1	ether2	0
3	**ADr** 172.17.50.0/24		172.17.60.1	120
4	**ADC** 172.17.60.0/24	172.17.60.2	ether1	0

==========
SUCESS PING HAPPRS FROM
LAN1 to LAN3 and vice versa ,

and LAN2 to both LAN1 and LAN3
==========

DHCP server
****

[admin@ROS_1] > ip dhcp-server setup

/ip dhcp-server
add address-pool=dhcp_pool0 disabled=no **interface**=ether2 name=dhcp1
/ip dhcp-server network
add address=10.10.10.0/24 dns-server=8.8.8.8 gateway=10.10.10.1

[admin@ROS_2] > ip dhcp-server setup

/ip dhcp-server
add address-pool=dhcp_pool0 disabled=no **interface**=ether3 name=dhcp1
/ip dhcp-server network
add address=20.20.20.0/24 gateway=20.20.20.1

[admin@ROS_3] > ip dhcp-server setup

/ip dhcp-server
add address-pool=dhcp_pool0 disabled=no **interface**=ether2 name=dhcp1
/ip dhcp-server network
add address=30.30.30.0/24 dns-server=8.8.8.8 gateway=30.30.30.1

==========
Exporting routing setting

Ppl for lazy works ..

Risk savior

Just copy paste
==========

ROS1
****
[admin@ROS_1] > export
jun/30/2021 01:52:11 by RouterOS 6.47.1
software id =
#
#
#
/interface wireless security-profiles
set [find **default**=yes] supplicant-identity=MikroTik
/ip pool
add name=dhcp_pool0 **ranges**=10.10.10.2-10.10.10.254
/ip dhcp-server
add address-pool=dhcp_pool0 disabled=no **interface**=ether2 name=dhcp1
/ip address
add **address**=172.17.50.1/24 **interface**=ether3 network=172.17.50.0
add **address**=10.10.10.1/24 **interface**=ether2 network=10.10.10.0
/ip dhcp-server network
add address=10.10.10.0/24 dns-server=8.8.8.8 gateway=10.10.10.1
/routing rip network
add **network**=172.17.50.0/24
add **network**=10.10.10.0/24
/system identity
set name=ROS_1

ROS2

****

```
[admin@ROS_2] > export
# jun/30/2021 01:53:10 by RouterOS 6.47.1
# software id =
#
#
#
/interface ethernet
set [ find default-name=ether2 ] name=ether1
set [ find default-name=ether3 ] name=ether2
set [ find default-name=ether1 ] name=ether3
/interface wireless security-profiles
set [ find default=yes ] supplicant-identity=MikroTik
/ip pool
add name=dhcp_pool0 ranges=20.20.20.2-20.20.20.254
/ip dhcp-server
add address-pool=dhcp_pool0 disabled=no interface=ether3 name=dhcp1
/ip address
add address=172.17.60.1/24 interface=ether2 network=172.17.60.0
add address=172.17.50.2/24 interface=ether1 network=172.17.50.0
add address=20.20.20.1/24 interface=ether3 network=20.20.20.0
/ip dhcp-client
add disabled=no interface=ether1
/ip dhcp-server network
add address=20.20.20.0/24 gateway=20.20.20.1
/routing rip network
add network=172.17.50.0/24
add network=20.20.20.0/24
add network=172.17.60.0/24
/system identity
set name=ROS_2
```

ROS3

****

```
[admin@ROS_3] > export
# jun/30/2021 01:53:37 by RouterOS 6.47.1
# software id =
#
#
#
/interface ethernet
set [ find default-name=ether3 ] name=ether1
set [ find default-name=ether1 ] name=ether2
set [ find default-name=ether2 ] name=ether3
/interface wireless security-profiles
set [ find default=yes ] supplicant-identity=MikroTik
/ip pool
add name=dhcp_pool0 ranges=30.30.30.2-30.30.30.254
/ip dhcp-server
add address-pool=dhcp_pool0 disabled=no interface=ether2 name=dhcp1
/ip address
add address=172.17.60.2/24 interface=ether1 network=172.17.60.0
add address=30.30.30.1/24 interface=ether2 network=30.30.30.0
/ip dhcp-server network
add address=30.30.30.0/24 dns-server=8.8.8.8 gateway=30.30.30.1
/routing rip network
add network=172.17.60.0/24
add network=30.30.30.0/24
/system identity
set name=ROS_3
```

==========
==========
X
==========
==========
Make
****