

CN | HW4

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Simulation scenario: .cc file attached

Tracing:

Q1: PCAP:

a. ICMP packets:

- i. A: 4
- ii. G: 4
- iii. H: 4
- iv. K: 4

b. ARP packets

- i. A: 143
- ii. G: 164
- iii. H: 152
- iv. K: 126

Q2: Run the .cc file with -printRoutingTables argument

Q3:

Node: 14, Time: +10s, Local time: +10s, Ipv4ListRouting table

Priority: 0 Protocol: ns3::Rip

Node: 14, Time: +10s, Local time: +10s, IPv4 RIP table

Destination	Gateway	Genmask	Flags	Metric	Ref	Use	Iface
10.0.7.0	10.0.8.1	255.255.255.0	UGS	2	-	-	1
10.0.6.0	10.0.8.1	255.255.255.0	UGS	2	-	-	1
10.0.5.0	10.0.8.1	255.255.255.0	UGS	2	-	-	1
10.0.4.0	10.0.8.1	255.255.255.0	UGS	2	-	-	1
10.0.14.0	10.0.9.1	255.255.255.0	UGS	3	-	-	2
10.0.13.0	10.0.9.1	255.255.255.0	UGS	3	-	-	2
10.0.10.0	10.0.9.1	255.255.255.0	UGS	2	-	-	2
10.0.2.0	10.0.9.1	255.255.255.0	UGS	3	-	-	2
10.0.1.0	10.0.9.1	255.255.255.0	UGS	3	-	-	2
10.0.0.0	10.0.9.1	255.255.255.0	UGS	3	-	-	2
10.0.3.0	10.0.9.1	255.255.255.0	UGS	2	-	-	2
10.0.16.0	10.0.12.2	255.255.255.0	UGS	2	-	-	4
10.0.15.0	10.0.12.2	255.255.255.0	UGS	2	-	-	4
10.0.8.0	0.0.0.0	255.255.255.0	U	1	-	-	1
10.0.9.0	0.0.0.0	255.255.255.0	U	1	-	-	2
10.0.11.0	0.0.0.0	255.255.255.0	U	1	-	-	3
10.0.12.0	0.0.0.0	255.255.255.0	U	1	-	-	4

Node: 14, Time: +40s, Local time: +40s, Ipv4ListRouting table

Priority: 0 Protocol: ns3::Rip

Node: 14, Time: +40s, Local time: +40s, IPv4 RIP table

Destination	Gateway	Genmask	Flags	Metric	Ref	Use	Iface
10.0.7.0	10.0.8.1	255.255.255.0	UGS	2	-	-	1
10.0.6.0	10.0.8.1	255.255.255.0	UGS	2	-	-	1
10.0.5.0	10.0.8.1	255.255.255.0	UGS	2	-	-	1
10.0.4.0	10.0.8.1	255.255.255.0	UGS	2	-	-	1
10.0.14.0	10.0.11.2	255.255.255.0	UGS	6	-	-	3
10.0.13.0	10.0.11.2	255.255.255.0	UGS	6	-	-	3
10.0.10.0	10.0.11.2	255.255.255.0	UGS	6	-	-	3
10.0.2.0	10.0.11.2	255.255.255.0	UGS	8	-	-	3
10.0.1.0	10.0.11.2	255.255.255.0	UGS	8	-	-	3
10.0.0.0	10.0.11.2	255.255.255.0	UGS	8	-	-	3
10.0.3.0	10.0.11.2	255.255.255.0	UGS	7	-	-	3
10.0.16.0	10.0.12.2	255.255.255.0	UGS	2	-	-	4
10.0.15.0	10.0.12.2	255.255.255.0	UGS	2	-	-	4
10.0.8.0	0.0.0.0	255.255.255.0	U	1	-	-	1
10.0.11.0	0.0.0.0	255.255.255.0	U	1	-	-	3
10.0.12.0	0.0.0.0	255.255.255.0	U	1	-	-	4

Path to 10.0.9.0 is no longer available (a link between R3 and R4 is broken)

Metrics of various paths have increased as routing g=has to be done via R3 now

Node: 14, Time: +80s, Local time: +80s, Ipv4ListRouting table

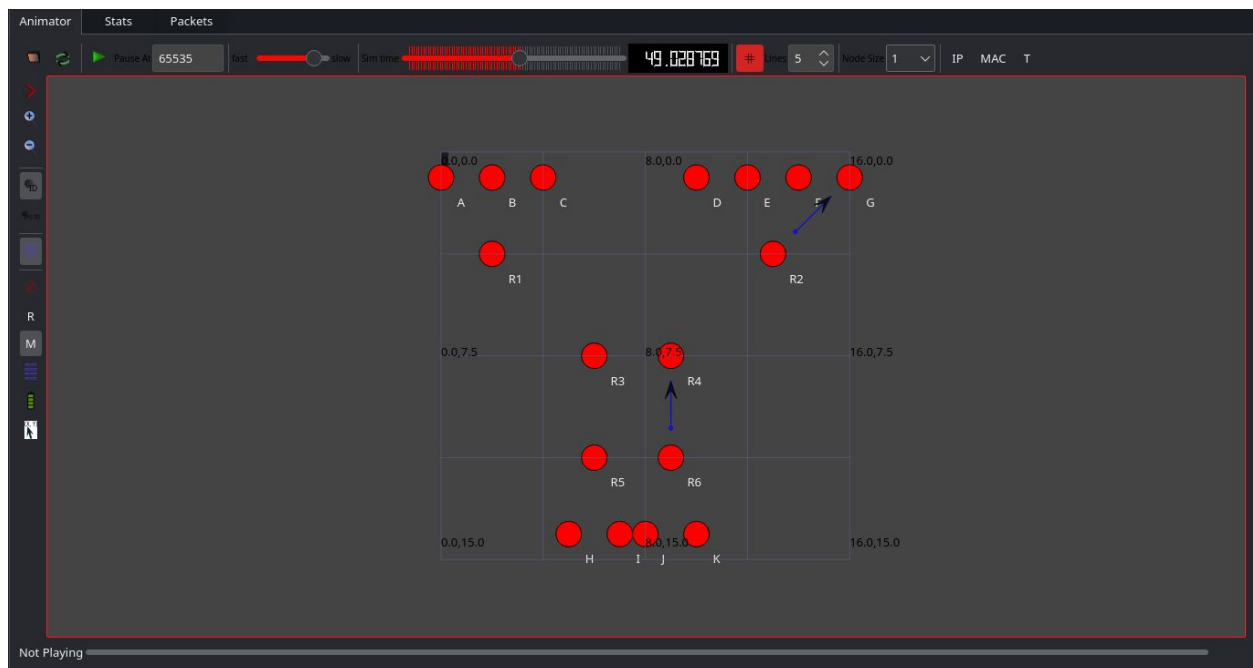
Priority: 0 Protocol: ns3::Rip

Node: 14, Time: +80s, Local time: +80s, IPv4 RIP table

Destination	Gateway	Genmask	Flags	Metric	Ref	Use	Iface
10.0.7.0	10.0.8.1	255.255.255.0	UGS	2	-	-	1
10.0.6.0	10.0.8.1	255.255.255.0	UGS	2	-	-	1
10.0.5.0	10.0.8.1	255.255.255.0	UGS	2	-	-	1
10.0.4.0	10.0.8.1	255.255.255.0	UGS	2	-	-	1
10.0.14.0	10.0.11.2	255.255.255.0	UGS	6	-	-	3
10.0.13.0	10.0.11.2	255.255.255.0	UGS	6	-	-	3
10.0.10.0	10.0.11.2	255.255.255.0	UGS	6	-	-	3
10.0.2.0	10.0.11.2	255.255.255.0	UGS	8	-	-	3
10.0.1.0	10.0.11.2	255.255.255.0	UGS	8	-	-	3
10.0.0.0	10.0.11.2	255.255.255.0	UGS	8	-	-	3
10.0.3.0	10.0.11.2	255.255.255.0	UGS	7	-	-	3
10.0.16.0	10.0.12.2	255.255.255.0	UGS	2	-	-	4
10.0.15.0	10.0.12.2	255.255.255.0	UGS	2	-	-	4
10.0.8.0	0.0.0.0	255.255.255.0	U	1	-	-	1
10.0.9.0	10.0.11.2	255.255.255.0	UGS	16	-	-	3
10.0.11.0	0.0.0.0	255.255.255.0	U	1	-	-	3
10.0.12.0	0.0.0.0	255.255.255.0	U	1	-	-	4

Path to R3 has been found vis R5 but due to poison reverse, it's cost is 16 (maximum in split horizon + RIP)

Visualization:



The path taken by ping packets from A to K before $t = 25$ is $A \rightarrow R1 \rightarrow R3 \rightarrow R4 \rightarrow R6 \rightarrow K$ and after $t = 25$ is $A \rightarrow R1 \rightarrow R3 \rightarrow R5 \rightarrow R4 \rightarrow R6 \rightarrow K$

The path taken by ping packets from G to H before $t = 25$ is $G \rightarrow R2 \rightarrow R4 \rightarrow R3 \rightarrow R5 \rightarrow H$ and after $t = 25$ is $G \rightarrow R2 \rightarrow R4 \rightarrow R5 \rightarrow H$

Sources:

<https://stackoverflow.com/questions/62543669/how-to-set-node-position-in-netanim-i-always-get-use-setconstantposition-if-it>

<https://www.youtube.com/watch?v=1FBSAghbjNM>

<https://www.nsnam.org/docs/models/html/animation.html>