

ASSIGNMENT-3

Ans 1) a) network topology is created with routers from : R1-R6.

Cost of the link is changed to : 5.

```
yash@LAPTOP-JSHLQ76B: /mnt/c/Users/YASH_KANOJIA/Desktop/cn/A4/tarball/ns-allinone-3.31/ns-3.31$ ./waf --run "scratch/topology --printRoutingTables"
Waf: Entering directory `/mnt/c/Users/YASH_KANOJIA/Desktop/cn/A4/tarball/ns-allinone-3.31/ns-3.31/build'
[2793/2843] Compiling scratch/topology.cc
[2804/2843] Linking build/scratch/topology
Waf: Leaving directory `/mnt/c/Users/YASH_KANOJIA/Desktop/cn/A4/tarball/ns-allinone-3.31/ns-3.31/build'
Build commands will be stored in build/compile_commands.json
'build' finished successfully (18.381s)
PING 10.0.16.4 - 1024 bytes of data - 1052 bytes including ICMP and IPv4 headers.
```

```
173     ripRouting.ExcludeInterface (R6, 2);
174     ripRouting.SetInterfaceMetric (R3, 3, 5);
175     ripRouting.SetInterfaceMetric (R4, 4, 5);
176
177     InternetStackHelper internet;
```

b)

```
NS_LOG_INFO ("Assign IPv4 Addresses.");
Ipv4AddressHelper ipv4;

ipv4.SetBase (Ipv4Address ("10.0.0.0"), Ipv4Mask ("255.255.255.0"));
Ipv4InterfaceContainer iic1 = ipv4.Assign (ndc1);

ipv4.SetBase (Ipv4Address ("10.0.1.0"), Ipv4Mask ("255.255.255.0"));
Ipv4InterfaceContainer iic2 = ipv4.Assign (ndc2);

ipv4.SetBase (Ipv4Address ("10.0.2.0"), Ipv4Mask ("255.255.255.0"));
Ipv4InterfaceContainer iic3 = ipv4.Assign (ndc3);

ipv4.SetBase (Ipv4Address ("10.0.3.0"), Ipv4Mask ("255.255.255.0"));
Ipv4InterfaceContainer iic4 = ipv4.Assign (ndc4);

ipv4.SetBase (Ipv4Address ("10.0.4.0"), Ipv4Mask ("255.255.255.0"));
Ipv4InterfaceContainer iic5 = ipv4.Assign (ndc5);

ipv4.SetBase (Ipv4Address ("10.0.5.0"), Ipv4Mask ("255.255.255.0"));
Ipv4InterfaceContainer iic6 = ipv4.Assign (ndc6);
ipv4.SetBase (Ipv4Address ("10.0.6.0"), Ipv4Mask ("255.255.255.0"));
Ipv4InterfaceContainer iic7 = ipv4.Assign (ndc7);

ipv4.SetBase (Ipv4Address ("10.0.7.0"), Ipv4Mask ("255.255.255.0"));
Ipv4InterfaceContainer iic8 = ipv4.Assign (ndc8);

ipv4.SetBase (Ipv4Address ("10.0.8.0"), Ipv4Mask ("255.255.255.0"));
Ipv4InterfaceContainer iic9 = ipv4.Assign (ndc9);

ipv4.SetBase (Ipv4Address ("10.0.9.0"), Ipv4Mask ("255.255.255.0"));
Ipv4InterfaceContainer iic10 = ipv4.Assign (ndc10);

ipv4.SetBase (Ipv4Address ("10.0.10.0"), Ipv4Mask ("255.255.255.0"));
Ipv4InterfaceContainer iic11 = ipv4.Assign (ndc11);

ipv4.SetBase (Ipv4Address ("10.0.11.0"), Ipv4Mask ("255.255.255.0"));
Ipv4InterfaceContainer iic12 = ipv4.Assign (ndc12);

ipv4.SetBase (Ipv4Address ("10.0.12.0"), Ipv4Mask ("255.255.255.0"));
Ipv4InterfaceContainer iic13 = ipv4.Assign (ndc13);
```

c)

```
if (verbose)
{
    LogComponentEnableAll (LogLevel (LOG_PREFIX_TIME | LOG_PREFIX_NODE));
    LogComponentEnable ("RipSimpleRouting", LOG_LEVEL_INFO);
    LogComponentEnable ("Rip", LOG_LEVEL_ALL);
    LogComponentEnable ("Ipv4Interface", LOG_LEVEL_ALL);
    LogComponentEnable ("Icmpv4L4Protocol", LOG_LEVEL_ALL);
    LogComponentEnable ("Ipv4L3Protocol", LOG_LEVEL_ALL);
    LogComponentEnable ("ArpCache", LOG_LEVEL_ALL);
    LogComponentEnable ("V4Ping", LOG_LEVEL_ALL);
}

if (SplitHorizon == "NoSplitHorizon")
{
    Config::SetDefault ("ns3::Rip::SplitHorizon", EnumValue (RipNg::NO_SPLIT_HORIZON));
}
else if (SplitHorizon == "SplitHorizon")
{
    Config::SetDefault ("ns3::Rip::SplitHorizon", EnumValue (RipNg::SPLIT_HORIZON));
}
else
{
    Config::SetDefault ("ns3::Rip::SplitHorizon", EnumValue (RipNg::POISON_REVERSE));
}
```

```
void TearDownLink (Ptr<Node> nodeA, Ptr<Node> nodeB, uint32_t interfaceA, uint32_t interfaceB)
{
    nodeA->GetObject<Ipv4> ()->SetDown (interfaceA);
    nodeB->GetObject<Ipv4> ()->SetDown (interfaceB);
}
```

```
// Simulator::Schedule (Seconds (40), &TearDownLink, b, d, 3, 2);
Simulator::Schedule (Seconds (25), &TearDownLink, R3, R4, 3, 2);
```

d) a to k:

```
10.0.7.0      10.0.15.1      255.255.255.0  UGS  3      -      -      3
10.0.2.0      10.0.15.1      255.255.255.0  UGS  4      -      -      3
10.0.1.0      10.0.15.1      255.255.255.0  UGS  4      -      -      3
10.0.0.0      10.0.15.1      255.255.255.0  UGS  4      -      -      3
10.0.11.0     10.0.15.1      255.255.255.0  UGS  3      -      -      3
10.0.13.0     10.0.15.1      255.255.255.0  UGS  3      -      -      3
10.0.16.0     10.0.15.1      255.255.255.0  UGS  2      -      -      3
10.0.14.0     10.0.15.1      255.255.255.0  UGS  2      -      -      3
10.0.12.0     10.0.15.1      255.255.255.0  UGS  2      -      -      3
10.0.9.0      0.0.0.0         255.255.255.0  U     1      -      -      1
10.0.10.0     0.0.0.0         255.255.255.0  U     1      -      -      2
10.0.15.0     0.0.0.0         255.255.255.0  U     1      -      -      3
```

```
--- 10.0.16.1 ping statistics ---
79 packets transmitted, 75 received, 5% packet loss, time 79000ms
rtt min/avg/max/mdev = 22/22/22/0 ms
```

g to h:

| TERMINAL | PROBLEMS | 14 | OUTPUT | DEBUG CONSOLE |
|-----------|-----------|---------------|--------|---------------|
| 10.0.8.0 | 10.0.15.1 | 255.255.255.0 | UGS | 3 - - 3 |
| 10.0.7.0 | 10.0.15.1 | 255.255.255.0 | UGS | 3 - - 3 |
| 10.0.2.0 | 10.0.15.1 | 255.255.255.0 | UGS | 4 - - 3 |
| 10.0.1.0 | 10.0.15.1 | 255.255.255.0 | UGS | 4 - - 3 |
| 10.0.0.0 | 10.0.15.1 | 255.255.255.0 | UGS | 4 - - 3 |
| 10.0.11.0 | 10.0.15.1 | 255.255.255.0 | UGS | 3 - - 3 |
| 10.0.13.0 | 10.0.15.1 | 255.255.255.0 | UGS | 3 - - 3 |
| 10.0.16.0 | 10.0.15.1 | 255.255.255.0 | UGS | 2 - - 3 |
| 10.0.14.0 | 10.0.15.1 | 255.255.255.0 | UGS | 2 - - 3 |
| 10.0.12.0 | 10.0.15.1 | 255.255.255.0 | UGS | 2 - - 3 |
| 10.0.9.0 | 0.0.0.0 | 255.255.255.0 | U | 1 - - 1 |
| 10.0.10.0 | 0.0.0.0 | 255.255.255.0 | U | 1 - - 2 |
| 10.0.15.0 | 0.0.0.0 | 255.255.255.0 | U | 1 - - 3 |

```
--- 10.0.10.0 ping statistics ---
79 packets transmitted, 0 received, 100% packet loss, time 79000ms
```



```
AsciiTraceHelper ascii;
csma.EnableAsciiAll (ascii.CreateFileStream ("rip-simple-routing.tr"));
csma.EnablePcapAll ("rip-simple-routing", true);

//Simulator::Schedule (Seconds (40), &TearDownLink, b, d, 3, 2);
//Simulator::Schedule (Seconds (25), &TearDownLink, R3, R4, 3, 2);

/* Now, do the actual simulation. */
NS_LOG_INFO ("Run Simulation.");
Simulator::Run ();
simulator::Stop(90);
Simulator::Destroy ();
NS_LOG_INFO ("Done.");
```

Tracing

Ans 2: a) a node:

| No. | Time | Source | Destination | Protocol | Length | Info |
|-----|-----------|-----------|-------------|----------|--------|---|
| 11 | 4.793885 | 10.0.0.1 | 10.0.16.1 | ICMP | 1070 | Echo (ping) request id=0x0000, seq=4/1024, ttl=64 (no response found!) |
| 12 | 4.816157 | 10.0.16.1 | 10.0.0.1 | ICMP | 1070 | Echo (ping) reply id=0x0000, seq=4/1024, ttl=62 |
| 13 | 5.793885 | 10.0.0.1 | 10.0.16.1 | ICMP | 1070 | Echo (ping) request id=0x0000, seq=5/1280, ttl=64 (no response found!) |
| 14 | 5.816157 | 10.0.16.1 | 10.0.0.1 | ICMP | 1070 | Echo (ping) reply id=0x0000, seq=5/1280, ttl=62 |
| 15 | 6.793885 | 10.0.0.1 | 10.0.16.1 | ICMP | 1070 | Echo (ping) request id=0x0000, seq=6/1536, ttl=64 (no response found!) |
| 16 | 6.816157 | 10.0.16.1 | 10.0.0.1 | ICMP | 1070 | Echo (ping) reply id=0x0000, seq=6/1536, ttl=62 |
| 17 | 7.793885 | 10.0.0.1 | 10.0.16.1 | ICMP | 1070 | Echo (ping) request id=0x0000, seq=7/1792, ttl=64 (no response found!) |
| 18 | 7.816157 | 10.0.16.1 | 10.0.0.1 | ICMP | 1070 | Echo (ping) reply id=0x0000, seq=7/1792, ttl=62 |
| 20 | 8.793885 | 10.0.0.1 | 10.0.16.1 | ICMP | 1070 | Echo (ping) request id=0x0000, seq=8/2048, ttl=64 (no response found!) |
| 21 | 8.816157 | 10.0.16.1 | 10.0.0.1 | ICMP | 1070 | Echo (ping) reply id=0x0000, seq=8/2048, ttl=62 |
| 22 | 9.793885 | 10.0.0.1 | 10.0.16.1 | ICMP | 1070 | Echo (ping) request id=0x0000, seq=9/2304, ttl=64 (no response found!) |
| 23 | 9.816157 | 10.0.16.1 | 10.0.0.1 | ICMP | 1070 | Echo (ping) reply id=0x0000, seq=9/2304, ttl=62 |
| 24 | 10.793885 | 10.0.0.1 | 10.0.16.1 | ICMP | 1070 | Echo (ping) request id=0x0000, seq=10/2560, ttl=64 (no response found!) |
| 25 | 10.816157 | 10.0.16.1 | 10.0.0.1 | ICMP | 1070 | Echo (ping) reply id=0x0000, seq=10/2560, ttl=62 |

Frame 11: 1070 bytes on wire (8560 bits) 1070 bytes captured (8560 bits)

node g)

| No. | Time | Source | Destination | Protocol | Length | Info |
|-----|------|--------|-------------|----------|--------|------|
|-----|------|--------|-------------|----------|--------|------|

Node h)

| No. | Time | Source | Destination | Protocol | Length | Info |
|-----|------|--------|-------------|----------|--------|------|
|-----|------|--------|-------------|----------|--------|------|

Node k)

| No. | Time | Source | Destination | Protocol | Length | Info |
|-----|------|--------|-------------|----------|--------|------|
|-----|------|--------|-------------|----------|--------|------|

b) node a) :

| No. | Time | Source | Destination | Protocol | Length | Info |
|-----|----------|-------------------|-------------------|----------|--------|----------------------------------|
| 2 | 0.006215 | 00:00:00_00:00:02 | Broadcast | ARP | 64 | Who has 10.0.0.1? Tell 10.0.0.2 |
| 3 | 0.006215 | 00:00:00_00:00:01 | 00:00:00_00:00:02 | ARP | 64 | 10.0.0.1 is at 00:00:00:00:00:01 |
| 6 | 0.196268 | 00:00:00_00:00:01 | Broadcast | ARP | 64 | Who has 10.0.0.2? Tell 10.0.0.1 |
| 7 | 0.200473 | 00:00:00_00:00:02 | 00:00:00_00:00:01 | ARP | 64 | 10.0.0.2 is at 00:00:00:00:00:02 |

Node g) :

| No. | Time | Source | Destination | Protocol | Length | Info |
|-----|----------|-------------------|-------------------|----------|--------|----------------------------------|
| 2 | 0.009000 | 00:00:00_00:00:0d | Broadcast | ARP | 64 | Who has 10.0.6.2? Tell 10.0.6.1 |
| 3 | 0.013206 | 00:00:00_00:00:0e | 00:00:00_00:00:0d | ARP | 64 | 10.0.6.2 is at 00:00:00:00:00:0e |
| 6 | 0.285948 | 00:00:00_00:00:0e | Broadcast | ARP | 64 | Who has 10.0.6.1? Tell 10.0.6.2 |
| 7 | 0.285948 | 00:00:00_00:00:0d | 00:00:00_00:00:0e | ARP | 64 | 10.0.6.1 is at 00:00:00:00:00:0d |

Node h)

| No. | Time | Source | Destination | Protocol | Length | Info |
|-----|----------|-------------------|-------------------|----------|--------|----------------------------------|
| 2 | 0.007214 | 00:00:00_00:00:10 | Broadcast | ARP | 64 | Who has 10.0.7.1? Tell 10.0.7.2 |
| 3 | 0.007214 | 00:00:00_00:00:0f | 00:00:00_00:00:10 | ARP | 64 | 10.0.7.1 is at 00:00:00:00:00:0f |
| 6 | 0.127000 | 00:00:00_00:00:0f | Broadcast | ARP | 64 | Who has 10.0.7.2? Tell 10.0.7.1 |
| 7 | 0.131206 | 00:00:00_00:00:10 | 00:00:00_00:00:0f | ARP | 64 | 10.0.7.2 is at 00:00:00:00:00:10 |

Node k)

| No. | Time | Source | Destination | Protocol | Length | Info |
|-----|----------|-------------------|-------------------|----------|--------|-----------------------------------|
| 2 | 0.011214 | 00:00:00_00:00:16 | Broadcast | ARP | 64 | Who has 10.0.10.1? Tell 10.0.10.2 |
| 3 | 0.011214 | 00:00:00_00:00:15 | 00:00:00_00:00:16 | ARP | 64 | 10.0.10.1 is at 00:00:00:00:00:15 |
| 6 | 0.059834 | 00:00:00_00:00:15 | Broadcast | ARP | 64 | Who has 10.0.10.2? Tell 10.0.10.1 |
| 7 | 0.064039 | 00:00:00_00:00:16 | 00:00:00_00:00:15 | ARP | 64 | 10.0.10.2 is at 00:00:00:00:00:16 |

c) routing tables at 10 s.

Node: 15, Time: +10.0s, Local time: +10.0s, Ipv4ListRouting table
Priority: 0 Protocol: ns3::Rip

Node: 15, Time: +10.0s, Local time: +10.0s, IPv4 RIP table

| Destination | Gateway | Genmask | Flags | Metric | Ref | Use | Iface |
|-------------|-----------|---------------|-------|--------|-----|-----|-------|
| 10.0.3.0 | 10.0.16.1 | 255.255.255.0 | UGS | 3 | - | - | 4 |
| 10.0.4.0 | 10.0.16.1 | 255.255.255.0 | UGS | 3 | - | - | 4 |
| 10.0.5.0 | 10.0.16.1 | 255.255.255.0 | UGS | 3 | - | - | 4 |
| 10.0.6.0 | 10.0.16.1 | 255.255.255.0 | UGS | 3 | - | - | 4 |
| 10.0.9.0 | 10.0.16.1 | 255.255.255.0 | UGS | 3 | - | - | 4 |
| 10.0.10.0 | 10.0.16.1 | 255.255.255.0 | UGS | 3 | - | - | 4 |
| 10.0.14.0 | 10.0.13.1 | 255.255.255.0 | UGS | 2 | - | - | 3 |
| 10.0.11.0 | 10.0.13.1 | 255.255.255.0 | UGS | 2 | - | - | 3 |
| 10.0.0.0 | 10.0.13.1 | 255.255.255.0 | UGS | 3 | - | - | 3 |
| 10.0.1.0 | 10.0.13.1 | 255.255.255.0 | UGS | 3 | - | - | 3 |
| 10.0.2.0 | 10.0.13.1 | 255.255.255.0 | UGS | 3 | - | - | 3 |
| 10.0.12.0 | 10.0.16.1 | 255.255.255.0 | UGS | 2 | - | - | 4 |
| 10.0.15.0 | 10.0.16.1 | 255.255.255.0 | UGS | 2 | - | - | 4 |
| 10.0.7.0 | 0.0.0.0 | 255.255.255.0 | U | 1 | - | - | 1 |
| 10.0.8.0 | 0.0.0.0 | 255.255.255.0 | U | 1 | - | - | 2 |
| 10.0.13.0 | 0.0.0.0 | 255.255.255.0 | U | 1 | - | - | 3 |
| 10.0.16.0 | 0.0.0.0 | 255.255.255.0 | U | 1 | - | - | 4 |

Node: 13, Time: +10.0s, Local time: +10.0s, Ipv4ListRouting table
Priority: 0 Protocol: ns3::Rip

Node: 13, Time: +10.0s, Local time: +10.0s, IPv4 RIP table

| Destination | Gateway | Genmask | Flags | Metric | Ref | Use | Iface |
|-------------|-----------|---------------|-------|--------|-----|-----|-------|
| 10.0.3.0 | 10.0.14.2 | 255.255.255.0 | UGS | 3 | - | - | 3 |
| 10.0.4.0 | 10.0.14.2 | 255.255.255.0 | UGS | 3 | - | - | 3 |
| 10.0.5.0 | 10.0.14.2 | 255.255.255.0 | UGS | 3 | - | - | 3 |
| 10.0.6.0 | 10.0.14.2 | 255.255.255.0 | UGS | 3 | - | - | 3 |
| 10.0.9.0 | 10.0.14.2 | 255.255.255.0 | UGS | 3 | - | - | 3 |
| 10.0.10.0 | 10.0.14.2 | 255.255.255.0 | UGS | 3 | - | - | 3 |
| 10.0.8.0 | 10.0.13.2 | 255.255.255.0 | UGS | 2 | - | - | 2 |
| 10.0.7.0 | 10.0.13.2 | 255.255.255.0 | UGS | 2 | - | - | 2 |
| 10.0.16.0 | 10.0.14.2 | 255.255.255.0 | UGS | 2 | - | - | 3 |
| 10.0.15.0 | 10.0.14.2 | 255.255.255.0 | UGS | 2 | - | - | 3 |
| 10.0.12.0 | 10.0.14.2 | 255.255.255.0 | UGS | 2 | - | - | 3 |
| 10.0.2.0 | 10.0.11.1 | 255.255.255.0 | UGS | 2 | - | - | 1 |
| 10.0.1.0 | 10.0.11.1 | 255.255.255.0 | UGS | 2 | - | - | 1 |
| 10.0.0.0 | 10.0.11.1 | 255.255.255.0 | UGS | 2 | - | - | 1 |
| 10.0.11.0 | 0.0.0.0 | 255.255.255.0 | U | 1 | - | - | 1 |
| 10.0.13.0 | 0.0.0.0 | 255.255.255.0 | U | 1 | - | - | 2 |
| 10.0.14.0 | 0.0.0.0 | 255.255.255.0 | U | 1 | - | - | 3 |

Node: 11, Time: +10.0s, Local time: +10.0s, Ipv4ListRouting table
Priority: 0 Protocol: ns3::Rip

Node: 11, Time: +10.0s, Local time: +10.0s, IPv4 RIP table

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


```

Node: 16, Time: +10.0s, Local time: +10.0s, Ipv4ListRouting table
  Priority: 0 Protocol: ns3::Rip
Node: 16, Time: +10.0s, Local time: +10.0s, IPv4 RIP table

```

| Destination | Gateway | Genmask | Flags | Metric | Ref | Use | Iface |
|-------------|-----------|---------------|-------|--------|-----|-----|-------|
| 10.0.3.0 | 10.0.15.1 | 255.255.255.0 | UGS | 3 | - | - | 3 |
| 10.0.4.0 | 10.0.15.1 | 255.255.255.0 | UGS | 3 | - | - | 3 |
| 10.0.5.0 | 10.0.15.1 | 255.255.255.0 | UGS | 3 | - | - | 3 |
| 10.0.6.0 | 10.0.15.1 | 255.255.255.0 | UGS | 3 | - | - | 3 |
| 10.0.8.0 | 10.0.15.1 | 255.255.255.0 | UGS | 3 | - | - | 3 |
| 10.0.7.0 | 10.0.15.1 | 255.255.255.0 | UGS | 3 | - | - | 3 |
| 10.0.2.0 | 10.0.15.1 | 255.255.255.0 | UGS | 4 | - | - | 3 |
| 10.0.1.0 | 10.0.15.1 | 255.255.255.0 | UGS | 4 | - | - | 3 |
| 10.0.0.0 | 10.0.15.1 | 255.255.255.0 | UGS | 4 | - | - | 3 |
| 10.0.11.0 | 10.0.15.1 | 255.255.255.0 | UGS | 3 | - | - | 3 |
| 10.0.13.0 | 10.0.15.1 | 255.255.255.0 | UGS | 3 | - | - | 3 |
| 10.0.16.0 | 10.0.15.1 | 255.255.255.0 | UGS | 2 | - | - | 3 |
| 10.0.14.0 | 10.0.15.1 | 255.255.255.0 | UGS | 2 | - | - | 3 |
| 10.0.12.0 | 10.0.15.1 | 255.255.255.0 | UGS | 2 | - | - | 3 |
| 10.0.9.0 | 0.0.0.0 | 255.255.255.0 | U | 1 | - | - | 1 |
| 10.0.10.0 | 0.0.0.0 | 255.255.255.0 | U | 1 | - | - | 2 |
| 10.0.15.0 | 0.0.0.0 | 255.255.255.0 | U | 1 | - | - | 3 |

```

Node: 14, Time: +10.0s, Local time: +10.0s, Ipv4ListRouting table
  Priority: 0 Protocol: ns3::Rip
Node: 14, Time: +10.0s, Local time: +10.0s, IPv4 RIP table

```

| Destination | Gateway | Genmask | Flags | Metric | Ref | Use | Iface |
|-------------|-----------|---------------|-------|--------|-----|-----|-------|
| 10.0.13.0 | 10.0.14.1 | 255.255.255.0 | UGS | 2 | - | - | 2 |
| 10.0.11.0 | 10.0.14.1 | 255.255.255.0 | UGS | 2 | - | - | 2 |
| 10.0.0.0 | 10.0.14.1 | 255.255.255.0 | UGS | 3 | - | - | 2 |
| 10.0.1.0 | 10.0.14.1 | 255.255.255.0 | UGS | 3 | - | - | 2 |
| 10.0.2.0 | 10.0.14.1 | 255.255.255.0 | UGS | 3 | - | - | 2 |
| 10.0.7.0 | 10.0.16.2 | 255.255.255.0 | UGS | 2 | - | - | 4 |
| 10.0.8.0 | 10.0.16.2 | 255.255.255.0 | UGS | 2 | - | - | 4 |
| 10.0.10.0 | 10.0.15.2 | 255.255.255.0 | UGS | 2 | - | - | 3 |
| 10.0.9.0 | 10.0.15.2 | 255.255.255.0 | UGS | 2 | - | - | 3 |
| 10.0.6.0 | 10.0.12.1 | 255.255.255.0 | UGS | 2 | - | - | 1 |
| 10.0.5.0 | 10.0.12.1 | 255.255.255.0 | UGS | 2 | - | - | 1 |
| 10.0.4.0 | 10.0.12.1 | 255.255.255.0 | UGS | 2 | - | - | 1 |
| 10.0.3.0 | 10.0.12.1 | 255.255.255.0 | UGS | 2 | - | - | 1 |
| 10.0.12.0 | 0.0.0.0 | 255.255.255.0 | U | 1 | - | - | 1 |
| 10.0.14.0 | 0.0.0.0 | 255.255.255.0 | U | 1 | - | - | 2 |
| 10.0.15.0 | 0.0.0.0 | 255.255.255.0 | U | 1 | - | - | 3 |
| 10.0.16.0 | 0.0.0.0 | 255.255.255.0 | U | 1 | - | - | 4 |

```

Node: 16, Time: +10.0s, Local time: +10.0s, Ipv4ListRouting table
  Priority: 0 Protocol: ns3::Rip
Node: 16, Time: +10.0s, Local time: +10.0s, IPv4 RIP table

```

| Destination | Gateway | Genmask | Flags | Metric | Ref | Use | Iface |
|-------------|-----------|---------------|-------|--------|-----|-----|-------|
| 10.0.3.0 | 10.0.15.1 | 255.255.255.0 | UGS | 3 | - | - | 3 |
| 10.0.4.0 | 10.0.15.1 | 255.255.255.0 | UGS | 3 | - | - | 3 |
| 10.0.5.0 | 10.0.15.1 | 255.255.255.0 | UGS | 3 | - | - | 3 |
| 10.0.6.0 | 10.0.15.1 | 255.255.255.0 | UGS | 3 | - | - | 3 |
| 10.0.8.0 | 10.0.15.1 | 255.255.255.0 | UGS | 3 | - | - | 3 |
| 10.0.7.0 | 10.0.15.1 | 255.255.255.0 | UGS | 3 | - | - | 3 |
| 10.0.2.0 | 10.0.15.1 | 255.255.255.0 | UGS | 4 | - | - | 3 |
| 10.0.1.0 | 10.0.15.1 | 255.255.255.0 | UGS | 4 | - | - | 3 |
| 10.0.0.0 | 10.0.15.1 | 255.255.255.0 | UGS | 4 | - | - | 3 |
| 10.0.11.0 | 10.0.15.1 | 255.255.255.0 | UGS | 3 | - | - | 3 |
| 10.0.13.0 | 10.0.15.1 | 255.255.255.0 | UGS | 3 | - | - | 3 |
| 10.0.16.0 | 10.0.15.1 | 255.255.255.0 | UGS | 2 | - | - | 3 |
| 10.0.14.0 | 10.0.15.1 | 255.255.255.0 | UGS | 2 | - | - | 3 |
| 10.0.12.0 | 10.0.15.1 | 255.255.255.0 | UGS | 2 | - | - | 3 |
| 10.0.9.0 | 0.0.0.0 | 255.255.255.0 | U | 1 | - | - | 1 |
| 10.0.10.0 | 0.0.0.0 | 255.255.255.0 | U | 1 | - | - | 2 |
| 10.0.15.0 | 0.0.0.0 | 255.255.255.0 | U | 1 | - | - | 3 |

At 40 s:

```
Node: 14, Time: +40.0s, Local time: +40.0s, Ipv4ListRouting table
  Priority: 0 Protocol: ns3::Rip
Node: 14, Time: +40.0s, Local time: +40.0s, IPv4 RIP table
Destination      Gateway      Genmask      Flags Metric Ref    Use Iface
10.0.13.0        10.0.14.1    255.255.255.0 UGS    2      -      -    2
10.0.11.0        10.0.14.1    255.255.255.0 UGS    2      -      -    2
10.0.0.0         10.0.14.1    255.255.255.0 UGS    3      -      -    2
10.0.1.0         10.0.14.1    255.255.255.0 UGS    3      -      -    2
10.0.2.0         10.0.14.1    255.255.255.0 UGS    3      -      -    2
10.0.7.0         10.0.16.2    255.255.255.0 UGS    2      -      -    4
10.0.8.0         10.0.16.2    255.255.255.0 UGS    2      -      -    4
10.0.10.0        10.0.15.2    255.255.255.0 UGS    2      -      -    3
10.0.9.0         10.0.15.2    255.255.255.0 UGS    2      -      -    3
10.0.6.0         10.0.12.1    255.255.255.0 UGS    2      -      -    1
10.0.5.0         10.0.12.1    255.255.255.0 UGS    2      -      -    1
10.0.4.0         10.0.12.1    255.255.255.0 UGS    2      -      -    1
10.0.3.0         10.0.12.1    255.255.255.0 UGS    2      -      -    1
10.0.12.0        0.0.0.0      255.255.255.0 U       1      -      -    1
10.0.14.0        0.0.0.0      255.255.255.0 U       1      -      -    2
10.0.15.0        0.0.0.0      255.255.255.0 U       1      -      -    3
10.0.16.0        0.0.0.0      255.255.255.0 U       1      -      -    4
```

```
Node: 15, Time: +10.0s, Local time: +10.0s, Ipv4ListRouting table
  Priority: 0 Protocol: ns3::Rip
Node: 15, Time: +10.0s, Local time: +10.0s, IPv4 RIP table
Destination      Gateway      Genmask      Flags Metric Ref    Use Iface
10.0.3.0         10.0.16.1    255.255.255.0 UGS    3      -      -    4
10.0.4.0         10.0.16.1    255.255.255.0 UGS    3      -      -    4
10.0.5.0         10.0.16.1    255.255.255.0 UGS    3      -      -    4
10.0.6.0         10.0.16.1    255.255.255.0 UGS    3      -      -    4
10.0.9.0         10.0.16.1    255.255.255.0 UGS    3      -      -    4
10.0.10.0        10.0.16.1    255.255.255.0 UGS    3      -      -    4
10.0.14.0        10.0.13.1    255.255.255.0 UGS    2      -      -    3
10.0.11.0        10.0.13.1    255.255.255.0 UGS    2      -      -    3
10.0.0.0         10.0.13.1    255.255.255.0 UGS    3      -      -    3
10.0.1.0         10.0.13.1    255.255.255.0 UGS    3      -      -    3
10.0.2.0         10.0.13.1    255.255.255.0 UGS    3      -      -    3
10.0.12.0        10.0.16.1    255.255.255.0 UGS    2      -      -    4
10.0.15.0        10.0.16.1    255.255.255.0 UGS    2      -      -    4
10.0.7.0         0.0.0.0      255.255.255.0 U       1      -      -    1
10.0.8.0         0.0.0.0      255.255.255.0 U       1      -      -    2
10.0.13.0        0.0.0.0      255.255.255.0 U       1      -      -    3
10.0.16.0        0.0.0.0      255.255.255.0 U       1      -      -    4
```

```
Node: 13, Time: +40.0s, Local time: +40.0s, Ipv4ListRouting table
  Priority: 0 Protocol: ns3::Rip
Node: 13, Time: +40.0s, Local time: +40.0s, IPv4 RIP table
Destination      Gateway      Genmask      Flags Metric Ref    Use Iface
10.0.3.0         10.0.14.2    255.255.255.0 UGS    3      -      -    3
10.0.4.0         10.0.14.2    255.255.255.0 UGS    3      -      -    3
10.0.5.0         10.0.14.2    255.255.255.0 UGS    3      -      -    3
10.0.6.0         10.0.14.2    255.255.255.0 UGS    3      -      -    3
10.0.9.0         10.0.14.2    255.255.255.0 UGS    3      -      -    3
10.0.10.0        10.0.14.2    255.255.255.0 UGS    3      -      -    3
10.0.8.0         10.0.13.2    255.255.255.0 UGS    2      -      -    2
10.0.7.0         10.0.13.2    255.255.255.0 UGS    2      -      -    2
10.0.16.0        10.0.14.2    255.255.255.0 UGS    2      -      -    3
10.0.15.0        10.0.14.2    255.255.255.0 UGS    2      -      -    3
10.0.12.0        10.0.14.2    255.255.255.0 UGS    2      -      -    3
10.0.2.0         10.0.11.1    255.255.255.0 UGS    2      -      -    1
10.0.1.0         10.0.11.1    255.255.255.0 UGS    2      -      -    1
10.0.0.0         10.0.11.1    255.255.255.0 UGS    2      -      -    1
10.0.11.0        0.0.0.0      255.255.255.0 U       1      -      -    1
10.0.13.0        0.0.0.0      255.255.255.0 U       1      -      -    2
10.0.14.0        0.0.0.0      255.255.255.0 U       1      -      -    3
```



```

Node: 12, Time: +40.0s, Local time: +40.0s, IPv4 RIP table
Priority: 0 Protocol: ns3::Rip
Node: 12, Time: +40.0s, Local time: +40.0s, IPv4 RIP table
Destination Gateway Genmask Flags Metric Ref Use Iface
10.0.9.0 10.0.12.2 255.255.255.0 UGS 3 - - 5
10.0.10.0 10.0.12.2 255.255.255.0 UGS 3 - - 5
10.0.8.0 10.0.12.2 255.255.255.0 UGS 3 - - 5
10.0.7.0 10.0.12.2 255.255.255.0 UGS 3 - - 5
10.0.2.0 10.0.12.2 255.255.255.0 UGS 4 - - 5
10.0.1.0 10.0.12.2 255.255.255.0 UGS 4 - - 5
10.0.0.0 10.0.12.2 255.255.255.0 UGS 4 - - 5
10.0.11.0 10.0.12.2 255.255.255.0 UGS 3 - - 5
10.0.13.0 10.0.12.2 255.255.255.0 UGS 3 - - 5
10.0.16.0 10.0.12.2 255.255.255.0 UGS 2 - - 5
10.0.15.0 10.0.12.2 255.255.255.0 UGS 2 - - 5
10.0.14.0 10.0.12.2 255.255.255.0 UGS 2 - - 5
10.0.3.0 0.0.0.0 255.255.255.0 U 1 - - 1
10.0.4.0 0.0.0.0 255.255.255.0 U 1 - - 2
10.0.5.0 0.0.0.0 255.255.255.0 U 1 - - 3
10.0.6.0 0.0.0.0 255.255.255.0 U 1 - - 4
10.0.12.0 0.0.0.0 255.255.255.0 U 1 - - 5

Node: 15, Time: +40.0s, Local time: +40.0s, Ipv4ListRouting table
Priority: 0 Protocol: ns3::Rip
Node: 15, Time: +40.0s, Local time: +40.0s, IPv4 RIP table
Destination Gateway Genmask Flags Metric Ref Use Iface
10.0.3.0 10.0.16.1 255.255.255.0 UGS 3 - - 4
10.0.4.0 10.0.16.1 255.255.255.0 UGS 3 - - 4
10.0.5.0 10.0.16.1 255.255.255.0 UGS 3 - - 4
10.0.6.0 10.0.16.1 255.255.255.0 UGS 3 - - 4
10.0.9.0 10.0.16.1 255.255.255.0 UGS 3 - - 4
10.0.10.0 10.0.16.1 255.255.255.0 UGS 3 - - 4
10.0.14.0 10.0.13.1 255.255.255.0 UGS 2 - - 3
10.0.11.0 10.0.13.1 255.255.255.0 UGS 2 - - 3
10.0.0.0 10.0.13.1 255.255.255.0 UGS 3 - - 3
10.0.1.0 10.0.13.1 255.255.255.0 UGS 3 - - 3
10.0.2.0 10.0.13.1 255.255.255.0 UGS 3 - - 3
10.0.12.0 10.0.16.1 255.255.255.0 UGS 2 - - 4
10.0.15.0 10.0.16.1 255.255.255.0 UGS 2 - - 4
10.0.7.0 0.0.0.0 255.255.255.0 U 1 - - 1
10.0.8.0 0.0.0.0 255.255.255.0 U 1 - - 2
10.0.13.0 0.0.0.0 255.255.255.0 U 1 - - 3
10.0.16.0 0.0.0.0 255.255.255.0 U 1 - - 4

Node: 16, Time: +40.0s, Local time: +40.0s, Ipv4ListRouting table
Priority: 0 Protocol: ns3::Rip
Node: 16, Time: +40.0s, Local time: +40.0s, IPv4 RIP table
Destination Gateway Genmask Flags Metric Ref Use Iface
10.0.3.0 10.0.15.1 255.255.255.0 UGS 3 - - 3
10.0.4.0 10.0.15.1 255.255.255.0 UGS 3 - - 3
10.0.5.0 10.0.15.1 255.255.255.0 UGS 3 - - 3
10.0.6.0 10.0.15.1 255.255.255.0 UGS 3 - - 3
10.0.8.0 10.0.15.1 255.255.255.0 UGS 3 - - 3
10.0.7.0 10.0.15.1 255.255.255.0 UGS 3 - - 3
10.0.2.0 10.0.15.1 255.255.255.0 UGS 4 - - 3
10.0.1.0 10.0.15.1 255.255.255.0 UGS 4 - - 3
10.0.0.0 10.0.15.1 255.255.255.0 UGS 4 - - 3
10.0.11.0 10.0.15.1 255.255.255.0 UGS 3 - - 3
10.0.13.0 10.0.15.1 255.255.255.0 UGS 3 - - 3
10.0.16.0 10.0.15.1 255.255.255.0 UGS 2 - - 3
10.0.14.0 10.0.15.1 255.255.255.0 UGS 2 - - 3
10.0.12.0 10.0.15.1 255.255.255.0 UGS 2 - - 3
10.0.9.0 0.0.0.0 255.255.255.0 U 1 - - 1
10.0.10.0 0.0.0.0 255.255.255.0 U 1 - - 2
10.0.15.0 0.0.0.0 255.255.255.0 U 1 - - 3

```

At 80 s:

Node: 16, Time: +80.0s, Local time: +80.0s, Ipv4ListRouting table

Priority: 0 Protocol: ns3::Rip

Node: 16, Time: +80.0s, Local time: +80.0s, IPv4 RIP table

| Destination | Gateway | Genmask | Flags | Metric | Ref | Use | Iface |
|-------------|-----------|---------------|-------|--------|-----|-----|-------|
| 10.0.3.0 | 10.0.15.1 | 255.255.255.0 | UGS | 3 | - | - | 3 |
| 10.0.4.0 | 10.0.15.1 | 255.255.255.0 | UGS | 3 | - | - | 3 |
| 10.0.5.0 | 10.0.15.1 | 255.255.255.0 | UGS | 3 | - | - | 3 |
| 10.0.6.0 | 10.0.15.1 | 255.255.255.0 | UGS | 3 | - | - | 3 |
| 10.0.8.0 | 10.0.15.1 | 255.255.255.0 | UGS | 3 | - | - | 3 |
| 10.0.7.0 | 10.0.15.1 | 255.255.255.0 | UGS | 3 | - | - | 3 |
| 10.0.2.0 | 10.0.15.1 | 255.255.255.0 | UGS | 4 | - | - | 3 |
| 10.0.1.0 | 10.0.15.1 | 255.255.255.0 | UGS | 4 | - | - | 3 |
| 10.0.0.0 | 10.0.15.1 | 255.255.255.0 | UGS | 4 | - | - | 3 |
| 10.0.11.0 | 10.0.15.1 | 255.255.255.0 | UGS | 3 | - | - | 3 |
| 10.0.13.0 | 10.0.15.1 | 255.255.255.0 | UGS | 3 | - | - | 3 |
| 10.0.16.0 | 10.0.15.1 | 255.255.255.0 | UGS | 2 | - | - | 3 |
| 10.0.14.0 | 10.0.15.1 | 255.255.255.0 | UGS | 2 | - | - | 3 |
| 10.0.12.0 | 10.0.15.1 | 255.255.255.0 | UGS | 2 | - | - | 3 |
| 10.0.9.0 | 0.0.0.0 | 255.255.255.0 | U | 1 | - | - | 1 |
| 10.0.10.0 | 0.0.0.0 | 255.255.255.0 | U | 1 | - | - | 2 |
| 10.0.15.0 | 0.0.0.0 | 255.255.255.0 | U | 1 | - | - | 3 |

Node: 15, Time: +80.0s, Local time: +80.0s, Ipv4ListRouting table

Priority: 0 Protocol: ns3::Rip

Node: 15, Time: +80.0s, Local time: +80.0s, IPv4 RIP table

| Destination | Gateway | Genmask | Flags | Metric | Ref | Use | Iface |
|-------------|-----------|---------------|-------|--------|-----|-----|-------|
| 10.0.3.0 | 10.0.16.1 | 255.255.255.0 | UGS | 3 | - | - | 4 |
| 10.0.4.0 | 10.0.16.1 | 255.255.255.0 | UGS | 3 | - | - | 4 |
| 10.0.5.0 | 10.0.16.1 | 255.255.255.0 | UGS | 3 | - | - | 4 |
| 10.0.6.0 | 10.0.16.1 | 255.255.255.0 | UGS | 3 | - | - | 4 |
| 10.0.9.0 | 10.0.16.1 | 255.255.255.0 | UGS | 3 | - | - | 4 |
| 10.0.10.0 | 10.0.16.1 | 255.255.255.0 | UGS | 3 | - | - | 4 |
| 10.0.14.0 | 10.0.13.1 | 255.255.255.0 | UGS | 2 | - | - | 3 |
| 10.0.11.0 | 10.0.13.1 | 255.255.255.0 | UGS | 2 | - | - | 3 |
| 10.0.0.0 | 10.0.13.1 | 255.255.255.0 | UGS | 3 | - | - | 3 |
| 10.0.1.0 | 10.0.13.1 | 255.255.255.0 | UGS | 3 | - | - | 3 |
| 10.0.2.0 | 10.0.13.1 | 255.255.255.0 | UGS | 3 | - | - | 3 |
| 10.0.12.0 | 10.0.16.1 | 255.255.255.0 | UGS | 2 | - | - | 4 |
| 10.0.15.0 | 10.0.16.1 | 255.255.255.0 | UGS | 2 | - | - | 4 |
| 10.0.7.0 | 0.0.0.0 | 255.255.255.0 | U | 1 | - | - | 1 |
| 10.0.8.0 | 0.0.0.0 | 255.255.255.0 | U | 1 | - | - | 2 |
| 10.0.13.0 | 0.0.0.0 | 255.255.255.0 | U | 1 | - | - | 3 |
| 10.0.16.0 | 0.0.0.0 | 255.255.255.0 | U | 1 | - | - | 4 |

Node: 14, Time: +80.0s, Local time: +80.0s, Ipv4ListRouting table

Priority: 0 Protocol: ns3::Rip

Node: 14, Time: +80.0s, Local time: +80.0s, IPv4 RIP table

| Destination | Gateway | Genmask | Flags | Metric | Ref | Use | Iface |
|-------------|-----------|---------------|-------|--------|-----|-----|-------|
| 10.0.13.0 | 10.0.14.1 | 255.255.255.0 | UGS | 2 | - | - | 2 |
| 10.0.11.0 | 10.0.14.1 | 255.255.255.0 | UGS | 2 | - | - | 2 |
| 10.0.0.0 | 10.0.14.1 | 255.255.255.0 | UGS | 3 | - | - | 2 |
| 10.0.1.0 | 10.0.14.1 | 255.255.255.0 | UGS | 3 | - | - | 2 |
| 10.0.2.0 | 10.0.14.1 | 255.255.255.0 | UGS | 3 | - | - | 2 |
| 10.0.7.0 | 10.0.16.2 | 255.255.255.0 | UGS | 2 | - | - | 4 |
| 10.0.8.0 | 10.0.16.2 | 255.255.255.0 | UGS | 2 | - | - | 4 |
| 10.0.10.0 | 10.0.15.2 | 255.255.255.0 | UGS | 2 | - | - | 3 |
| 10.0.9.0 | 10.0.15.2 | 255.255.255.0 | UGS | 2 | - | - | 3 |
| 10.0.6.0 | 10.0.12.1 | 255.255.255.0 | UGS | 2 | - | - | 1 |
| 10.0.5.0 | 10.0.12.1 | 255.255.255.0 | UGS | 2 | - | - | 1 |
| 10.0.4.0 | 10.0.12.1 | 255.255.255.0 | UGS | 2 | - | - | 1 |
| 10.0.3.0 | 10.0.12.1 | 255.255.255.0 | UGS | 2 | - | - | 1 |
| 10.0.12.0 | 0.0.0.0 | 255.255.255.0 | U | 1 | - | - | 1 |
| 10.0.14.0 | 0.0.0.0 | 255.255.255.0 | U | 1 | - | - | 2 |
| 10.0.15.0 | 0.0.0.0 | 255.255.255.0 | U | 1 | - | - | 3 |
| 10.0.16.0 | 0.0.0.0 | 255.255.255.0 | U | 1 | - | - | 4 |

Node: 13, Time: +80.0s, Local time: +80.0s, Ipv4ListRouting table
Priority: 0 Protocol: ns3::Rip

Node: 13, Time: +80.0s, Local time: +80.0s, IPv4 RIP table

| Destination | Gateway | Genmask | Flags | Metric | Ref | Use | Iface |
|-------------|-----------|---------------|-------|--------|-----|-----|-------|
| 10.0.3.0 | 10.0.14.2 | 255.255.255.0 | UGS | 3 | - | - | 3 |
| 10.0.4.0 | 10.0.14.2 | 255.255.255.0 | UGS | 3 | - | - | 3 |
| 10.0.5.0 | 10.0.14.2 | 255.255.255.0 | UGS | 3 | - | - | 3 |
| 10.0.6.0 | 10.0.14.2 | 255.255.255.0 | UGS | 3 | - | - | 3 |
| 10.0.9.0 | 10.0.14.2 | 255.255.255.0 | UGS | 3 | - | - | 3 |
| 10.0.10.0 | 10.0.14.2 | 255.255.255.0 | UGS | 3 | - | - | 3 |
| 10.0.8.0 | 10.0.13.2 | 255.255.255.0 | UGS | 2 | - | - | 2 |
| 10.0.7.0 | 10.0.13.2 | 255.255.255.0 | UGS | 2 | - | - | 2 |
| 10.0.16.0 | 10.0.14.2 | 255.255.255.0 | UGS | 2 | - | - | 3 |
| 10.0.15.0 | 10.0.14.2 | 255.255.255.0 | UGS | 2 | - | - | 3 |
| 10.0.12.0 | 10.0.14.2 | 255.255.255.0 | UGS | 2 | - | - | 3 |
| 10.0.2.0 | 10.0.11.1 | 255.255.255.0 | UGS | 2 | - | - | 1 |
| 10.0.1.0 | 10.0.11.1 | 255.255.255.0 | UGS | 2 | - | - | 1 |
| 10.0.0.0 | 10.0.11.1 | 255.255.255.0 | UGS | 2 | - | - | 1 |
| 10.0.11.0 | 0.0.0.0 | 255.255.255.0 | U | 1 | - | - | 1 |
| 10.0.13.0 | 0.0.0.0 | 255.255.255.0 | U | 1 | - | - | 2 |
| 10.0.14.0 | 0.0.0.0 | 255.255.255.0 | U | 1 | - | - | 3 |

Node: 12, Time: +80.0s, Local time: +80.0s, Ipv4ListRouting table
Priority: 0 Protocol: ns3::Rip

Node: 12, Time: +80.0s, Local time: +80.0s, IPv4 RIP table

| Destination | Gateway | Genmask | Flags | Metric | Ref | Use | Iface |
|-------------|-----------|---------------|-------|--------|-----|-----|-------|
| 10.0.9.0 | 10.0.12.2 | 255.255.255.0 | UGS | 3 | - | - | 5 |
| 10.0.10.0 | 10.0.12.2 | 255.255.255.0 | UGS | 3 | - | - | 5 |
| 10.0.8.0 | 10.0.12.2 | 255.255.255.0 | UGS | 3 | - | - | 5 |
| 10.0.7.0 | 10.0.12.2 | 255.255.255.0 | UGS | 3 | - | - | 5 |
| 10.0.2.0 | 10.0.12.2 | 255.255.255.0 | UGS | 4 | - | - | 5 |
| 10.0.1.0 | 10.0.12.2 | 255.255.255.0 | UGS | 4 | - | - | 5 |
| 10.0.0.0 | 10.0.12.2 | 255.255.255.0 | UGS | 4 | - | - | 5 |
| 10.0.11.0 | 10.0.12.2 | 255.255.255.0 | UGS | 3 | - | - | 5 |
| 10.0.13.0 | 10.0.12.2 | 255.255.255.0 | UGS | 3 | - | - | 5 |
| 10.0.16.0 | 10.0.12.2 | 255.255.255.0 | UGS | 2 | - | - | 5 |
| 10.0.15.0 | 10.0.12.2 | 255.255.255.0 | UGS | 2 | - | - | 5 |
| 10.0.14.0 | 10.0.12.2 | 255.255.255.0 | UGS | 2 | - | - | 5 |
| 10.0.3.0 | 0.0.0.0 | 255.255.255.0 | U | 1 | - | - | 1 |
| 10.0.4.0 | 0.0.0.0 | 255.255.255.0 | U | 1 | - | - | 2 |
| 10.0.5.0 | 0.0.0.0 | 255.255.255.0 | U | 1 | - | - | 3 |
| 10.0.6.0 | 0.0.0.0 | 255.255.255.0 | U | 1 | - | - | 4 |
| 10.0.12.0 | 0.0.0.0 | 255.255.255.0 | U | 1 | - | - | 5 |

Node: 11, Time: +80.0s, Local time: +80.0s, Ipv4ListRouting table
Priority: 0 Protocol: ns3::Rip

Node: 11, Time: +80.0s, Local time: +80.0s, IPv4 RIP table

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

Ans 3) Observation is that link is getting break because of which the is increasing and which leads to the change in the routes of the packets.

