

Asymmetrical routing protocol issue experienced at an Applied Methodologies client before a major routing protocol migration. This was discovered before their routing protocols were migrated and issues such as this corrected.

A trace on the serial link **DC1CORE2 s6/4** to **TLC's serial s5/3** shows one of the top talker conversations between 158.57.48.245(**q050-fw1 - a server**) and 158.57.248.165. The majority of the conversations on this link are one direction meaning mostly traffic from q050-fw1 to various other workstations via a slower T-1 link out of the TLC3NE router instead of using POS, thus causing the high level of interface load on s5/3(as of this writing 244/255). On first observation most of the traffic was HTTP based.

This is happening elsewhere in the enterprise and is causing other issues. We first saw this with the Byers analysis.

Applied Methodologies, Inc. will have a full report of the trace and logging results later today or tomorrow.

There are some ways to alleviate this issue and AMI is still researching. Some examples are:

- **Live with it until a complete migration to one protocol is complete(you have been and it's no impact so we just have to watch those links more carefully)**
- **Catalog routes affected and manipulate via routing protocol options, distribute lists, admin distances, redistribution re-configuration, weighted static routes et al. (These options could introduce new issues and are not tested, plus the sourcing of unnumbered may be an issue)**
- **Shut down slower links (simplest and lowest impact, must be tested and traffic patterns observed)good consideration Paul....**

**The following trace routes validate and show this behavior.**

Our test case end point is 158.57.248.165  
This workstation is located at Eastview

From the Eastview router to the q050-fw1

EASTVIEW>trace 158.57.48.245

Type escape sequence to abort.

Tracing the route to 158.57.48.245

1	158.57.159.172	128 msec	32 msec	60 msec	<b>DC1CORE2</b>
2	158.57.159.173	32 msec	28 msec	56 msec	<b>DC2CORE1</b>
3	158.57.33.2	76 msec	80 msec	72 msec	<b>POS TLC3NE</b>
4	158.57.48.245	56 msec	96 msec	76 msec	<b>q050-fw1</b>

From the TLC router back to the workstation

TLC3NE>trace 158.57.248.165

Type escape sequence to abort.

Tracing the route to 158.57.248.165

1	158.57.159.172	28 msec	28 msec	16 msec	<b>DC1CORE2 via S5/3 to 6/4</b>
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```
2 158.57.248.171 44 msec 56 msec 36 msec
3 158.57.248.165 44 msec 68 msec 64 msec
```

**EASTVIEW**  
**End workstation**

Since some of the subnets are not in the EIGRP tables (missed redistribution) the return packets take the only known path and that is via RIP thus resulting in poor application performance and unnecessary router utilization.

An example of the EIGRP topology tables is below...

In DC1CORE2 the EIGRP Topology tables shows the following for the **Eastview** subnet

```
DC1CORE2>sh ip eigrp top 158.57.248.165
Route not in topology table Can use RIP and it does, not really needed though, since it is directly connected to a serial link 6/6 to Eastview
```

In the TLC router the EIGRP Topology tables show the following for the **Eastview** subnet

```
TLC3NE>sh ip eigrp top 158.57.248.0 255.255.255.0
Route not in topology table So you see it cannot use the POS EIGRP bandwidth/delay metrics thus using RIP, relying on the HOP count and since the RIP entry in TLC to the Eastview subnet is: R 158.57.248.0/24 [120/2] via 158.57.159.172, 00:00:07 Serial5/3, two hops away, it is chosen over no RIP based route to a next hop subnet 158.57.159. etc or those RIP based routes to 4IP are more than two hops away.
```

In DC1CORE2 the EIGRP Topology tables shows the following for the **q050-fw1** subnet

```
DC1CORE2>sh ip eigrp top 158.57.48.0 255.255.255.0
IP-EIGRP topology entry for 158.57.48.0/24
State is Passive, Query origin flag is 1, 1 Successor(s), FD is 33280
Routing Descriptor Blocks:
 158.57.159.173 (FastEthernet1/1), from 158.57.159.173, Send flag is 0x0 to go upsatirs to POS router
  Composite metric is (33280/30720), Route is Internal
  Vector metric:
    Minimum bandwidth is 100000 Kbit
    Total delay is 300 microseconds
    Reliability is 248/255
    Load is 2/255
    Minimum MTU is 1500
    Hop count is 2
 158.57.9.171 (Serial6/4), from 158.57.9.171, Send flag is 0x0
  Composite metric is (2176768/28160), Route is Internal
  Vector metric:
    Minimum bandwidth is 1540 Kbit
    Total delay is 20100 microseconds
    Reliability is 255/255
    Load is 1/255
    Minimum MTU is 1500
    Hop count is 1
 158.57.75.171 (Serial5/7), from 158.57.75.171, Send flag is 0x0
  Composite metric is (2184448/35840), Route is Internal
  Vector metric:
    Minimum bandwidth is 1540 Kbit
```

```

Total delay is 20400 microseconds
Reliability is 248/255
Load is 43/255
Minimum MTU is 1500
Hop count is 4
158.57.100.1 (TokenRing0/0/0), from 158.57.100.1, Send flag is 0x0
Composite metric is (181248/30720), Route is Internal
Vector metric:
Minimum bandwidth is 16000 Kbit
Total delay is 830 microseconds
Reliability is 248/255
Load is 2/255
Minimum MTU is 1500
Hop count is 2
158.57.192.1 (Serial4/7), from 158.57.192.1, Send flag is 0x0
Composite metric is (2184448/35840), Route is Internal
Vector metric:
Minimum bandwidth is 1540 Kbit
Total delay is 20400 microseconds
Reliability is 248/255
Load is 3/255
Minimum MTU is 1500
Hop count is 4
158.57.100.2 (TokenRing0/0/0), from 158.57.100.2, Send flag is 0x0
Composite metric is (183808/33280), Route is Internal
Vector metric:
Minimum bandwidth is 16000 Kbit
Total delay is 930 microseconds
Reliability is 248/255
Load is 2/255
Minimum MTU is 1500
Hop count is 3
158.57.100.9 (TokenRing0/0/0), from 158.57.100.9, Send flag is 0x0
Composite metric is (183808/33280), Route is Internal
Vector metric:
Minimum bandwidth is 16000 Kbit
Total delay is 930 microseconds
Reliability is 248/255
Load is 2/255
Minimum MTU is 1500
Hop count is 3
DC1CORE2>

```

In **TLC3NE** the EIGRP Topology tables shows the following for the **q050-fw1** subnet

```

TLC3NE>sh ip eigrp top 158.57.48.0 255.255.255.0
IP-EIGRP topology entry for 158.57.48.0/24
State is Passive, Query origin flag is 1, 1 Successor(s), FD is 28160
Routing Descriptor Blocks:
0.0.0.0 (FastEthernet4/0/0), from Connected, Send flag is 0x0 Local
Composite metric is (28160/0), Route is Internal
Vector metric:
Minimum bandwidth is 100000 Kbit
Total delay is 100 microseconds

```

Reliability is 255/255  
Load is 1/255  
Minimum MTU is 1500  
Hop count is 0

**158.57.159.172 (Serial5/3), from 158.57.159.172, Send flag is 0x0 loop backup path?????**

Composite metric is (2181888/33280), Route is Internal

Vector metric:

Minimum bandwidth is 1540 Kbit  
Total delay is 20300 microseconds  
Reliability is 248/255  
Load is 91/255  
Minimum MTU is 1500  
Hop count is 3

158.57.148.2 (TokenRing1/0), from 158.57.148.2, Send flag is 0x0

Composite metric is (178688/28160), Route is Internal

Vector metric:

Minimum bandwidth is 16000 Kbit  
Total delay is 730 microseconds  
Reliability is 255/255  
Load is 1/255  
Minimum MTU is 1500  
Hop count is 1