

# APPLICATION OF NETWORKS

## TELECOM 2310 – PROJECT 2

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### INTRODUCTION:

Trace route to five different websites are to be found at different times of the day for multiple days. After collection of data, the results are examined to know the path to a particular destination is varied or remains constant.

### TRACE ROUTE:

The trace route determines the route taken to a destination by sending Internet Control Message Protocol (ICMP) echo packets with varying IP Time-To-Live (TTL) values to the destination. Each router along the path is required to decrement the TTL on a packet by at least 1 before forwarding it, so the TTL is effectively a hop count. When the TTL on a packet reaches 0, the router should send an ICMP Time Exceeded message back to the source computer.

Using trace route command, we obtain the round-trip time . This is the time required to send an echo packet, and get an answer back. The traceroute command is available on a number of modern operating systems. On Apple Mac OS, it is available by opening "Network Utilities" and selecting "Traceroute" tab, as well as by typing the "traceroute" command in the terminal. On other Unix systems, such as FreeBSD or Linux, it is available as a traceroute command in a terminal. On Microsoft Windows, it is named tracert.

### WEBSITES:

We are considering five e-commerce websites in USA for this project and they are tabulated in next page with their name and address. The readings are taken between 11/25/2016 to 1/12/2016 at various instances of time

S.NO	WEBSITE	ADDRESS
1	Bestbuy	<a href="http://www.bestbuy.com">www.bestbuy.com</a>
2	Home depot	<a href="http://www.homedepot.com">www.homedepot.com</a>
3	Kohls	<a href="http://www.kohls.com">www.kohls.com</a>
4	Macys	<a href="http://www1.macys.com">www1.macys.com</a>
5	Target	<a href="http://www.target.com">www.target.com</a>

## DATA COLLECTION & ANALYSIS:

[www.bestbuy.com](http://www.bestbuy.com)

11/25/2016 – Friday-11:30pm

C:\Users\ARUNKUMAR>tracert www.bestbuy.com

Tracing route to e1382.x.akamaiedge.net [23.66.162.183]

over a maximum of 30 hops:

```

1  7 ms  33 ms  14 ms  10.0.0.1
2  26 ms  37 ms  67 ms  96.120.62.169
3  19 ms  13 ms  12 ms  te-0-5-0-10-sur02.pittsburgh.pa.pitt.comcast.net [69.139.166.73]
4  17 ms  11 ms  20 ms  te-0-0-0-0-ar01.mckeesport.pa.pitt.comcast.net [68.86.147.109]
5  25 ms  30 ms  19 ms  be-7016-cr02.ashburn.va.ibone.comcast.net [68.86.91.25]
6  32 ms  25 ms  22 ms  hu-0-10-0-6-pe07.ashburn.va.ibone.comcast.net [68.86.86.50]
7  20 ms  23 ms  19 ms  dcx2-edge-01.inet.qwest.net [65.120.84.65]
8  34 ms  38 ms  39 ms  nyc2-edge-01.inet.qwest.net [205.171.134.38]
9  34 ms  98 ms  24 ms  a23-66-162-183.deploy.static.akamaitechnologies.com [23.66.162.183]

```

Trace complete.

HOPS	IP ADDRESS	AS NUMBER
1	10.0.0.1	4565
2	96.120.62.169	7922
3	69.139.166.73	7922
4	68.86.147.109	7922
5	68.86.91.25	7922
6	68.86.86.50	7922
7	65.120.84.65	209
8	205.171.134.38	209
9	23.66.162.183	16625

11/26/2016 – Saturday -5:30pm

C:\Users\ARUNKUMAR>tracert www.bestbuy.com

Tracing route to e1382.x.akamaiedge.net [23.66.162.183]

over a maximum of 30 hops:

```
 1  8 ms  9 ms  13 ms 10.0.0.1
 2  46 ms 18 ms 15 ms 96.120.62.169
 3  17 ms 16 ms 16 ms te-0-5-0-10-sur02.pittsburgh.pa.pitt.comcast.net [69.139.166.73]
 4  15 ms 23 ms 13 ms te-0-0-0-0-ar01.mckeesport.pa.pitt.comcast.net [68.86.147.109]
 5  23 ms 20 ms 25 ms be-7016-cr02.ashburn.va.ibone.comcast.net [68.86.91.25]
 6  22 ms 18 ms 21 ms hu-0-10-0-6-pe07.ashburn.va.ibone.comcast.net [68.86.86.50]
 7 117 ms 121 ms 218 ms dcx2-edge-01.inet.qwest.net [65.120.84.65]
 8  28 ms 24 ms 26 ms nyc2-edge-01.inet.qwest.net [205.171.134.38]
 9  24 ms 23 ms 24 ms a23-66-162-183.deploy.static.akamaitechnologies.com [23.66.162.183]
```

Trace complete.

HOPS	IP ADDRESS	AS NUMBER
1	10.0.0.1	4565
2	96.120.62.169	7922
3	69.139.166.73	7922
4	68.86.147.109	7922
5	68.86.91.25	7922
6	68.86.86.50	7922
7	65.120.84.65	209
8	205.171.134.38	209
9	23.66.162.183	16625

11/27/2016 – Sunday -1:30pm

C:\Users\ARUNKUMAR>tracert www.bestbuy.com

Tracing route to e1382.x.akamaiedge.net [23.192.19.170]

over a maximum of 30 hops:

```
 1  6 ms  6 ms  3 ms 10.0.0.1
 2  24 ms 65 ms 22 ms 96.120.62.169
 3  16 ms 17 ms 13 ms te-0-5-0-11-sur02.pittsburgh.pa.pitt.comcast.net [96.108.132.57]
```

4 14 ms 32 ms 15 ms te-0-0-0-0-ar01.mckeesport.pa.pitt.comcast.net [68.86.147.109]  
5 42 ms 95 ms 27 ms be-7016-cr02.ashburn.va.ibone.comcast.net [68.86.91.25]  
6 19 ms 18 ms 21 ms hu-0-11-0-2-pe04.ashburn.va.ibone.comcast.net [68.86.88.58]  
7 25 ms 27 ms 31 ms ae4.er2.iad10.us.zip.zayo.com [64.125.12.145]  
8 34 ms 25 ms 22 ms ae1.cr2.dca2.us.zip.zayo.com [64.125.20.121]  
9 24 ms 50 ms 24 ms ae27.cs2.dca2.us.eth.zayo.com [64.125.30.248]  
10 24 ms 28 ms 59 ms ae4.cs2.lga5.us.eth.zayo.com [64.125.29.30]  
11 30 ms 28 ms 28 ms ae27.cr2.lga5.us.zip.zayo.com [64.125.30.253]  
12 23 ms 30 ms 25 ms ae5.er2.lga5.us.zip.zayo.com [64.125.21.81]  
13 46 ms 33 ms 23 ms ae4.er1.lga5.us.zip.zayo.com [64.125.31.165]  
14 39 ms 40 ms 38 ms 208.185.22.10.IPYX-074089-910-ZYO.zip.zayo.com [208.185.22.10]  
15 32 ms 28 ms 23 ms a23-192-19-170.deploy.static.akamaitechnologies.com [23.192.19.170]

Trace complete.

HOPS	IP ADDRESS	AS NUMBER
1	10.0.0.1	4565
2	96.120.62.169	7922
3	96.108.132.57	7922
4	68.86.147.109	7922
5	68.86.91.25	7922
6	68.86.88.58	7922
7	64.125.12.145	6461
8	64.125.20.121	6461
9	64.125.30.248	6461
10	[64.125.29.30	6461
11	64.125.30.253	6461
12	64.125.21.81	6461
13	64.125.31.165	6461
14	208.185.22.10	6461
15	23.192.19.170	20940

11/28/2016 – Monday -11:30am

C:\Users\ARUNKUMAR>tracert www.bestbuy.com

Tracing route to e1382.x.akamaiedge.net [23.216.129.117]

over a maximum of 30 hops:

```

1  9 ms  14 ms  6 ms  10.0.0.1
2  13 ms  17 ms  15 ms  96.120.62.169
3  21 ms  20 ms  26 ms  te-0-4-0-10-sur01.pittsburgh.pa.pitt.comcast.net [68.86.101.137]
4  19 ms  12 ms  17 ms  te-8-3-ur01.wheeling.wv.pitt.comcast.net [68.86.100.26]
5  22 ms  20 ms  26 ms  te-0-0-0-0-ar01.mckeesport.pa.pitt.comcast.net [68.86.147.109]
6  15 ms  14 ms  18 ms  he-0-16-0-1-ar01.pittsburgh.pa.pitt.comcast.net [69.139.168.37]
7  14 ms  21 ms  24 ms  a23-216-129-117.deploy.static.akamaitechnologies.com
[23.216.129.117]

```

Trace complete.

HOPS	IP ADDRESS	AS NUMBER
1	10.0.0.1	4565
2	96.120.62.169	7922
3	68.86.101.137	7922
4	68.86.100.26	7922
5	68.86.147.109	7922
6	69.139.168.37	7922
7	23.216.129.117	35994

11/29/2016 – Tuesday -9:30am

C:\Users\ARUNKUMAR>tracert www.bestbuy.com

Tracing route to e1382.x.akamaiedge.net [104.97.98.16]

over a maximum of 30 hops:

```

1  7 ms  18 ms  3 ms  10.0.0.1
2  19 ms  36 ms  17 ms  96.120.62.169
3  19 ms  34 ms  27 ms  te-0-4-0-10-sur01.pittsburgh.pa.pitt.comcast.net [68.86.101.137]
4  15 ms  21 ms  17 ms  te-8-3-ur01.wheeling.wv.pitt.comcast.net [68.86.100.26]
5  17 ms  14 ms  14 ms  te-0-0-0-0-ar01.mckeesport.pa.pitt.comcast.net [68.86.147.109]
6  20 ms  20 ms  25 ms  be-7016-cr02.ashburn.va.ibone.comcast.net [68.86.91.25]
7  22 ms  38 ms  26 ms  hu-0-10-0-6-pe07.ashburn.va.ibone.comcast.net [68.86.86.50]
8  23 ms  40 ms  75 ms  50.242.149.254
9  27 ms  35 ms  36 ms  bu-ether13.asbnva1611w-bcr00.tbone.rr.com [66.109.6.168]
10 32 ms  27 ms  31 ms  bu-ether12.vinnva0510w-bcr00.tbone.rr.com [66.109.6.31]

```

11 41 ms 36 ms 28 ms bu-ether12.nwrknjmd67w-bcr00.tbone.rr.com [66.109.6.29]  
 12 30 ms 33 ms 25 ms bu-ether12.nycmny837aw-bcr00.tbone.rr.com [66.109.6.27]  
 13 24 ms 32 ms 27 ms ae-1-0.c1.buf00.tbone.rr.com [66.109.1.57]  
 14 26 ms 24 ms 25 ms a104-97-98-16.deploy.static.akamaitechnologies.com [104.97.98.16]

Trace complete.

HOPS	IP ADDRESS	AS NUMBER
1	10.0.0.1	4565
2	96.120.62.169	7922
3	68.86.101.137	7922
4	68.86.100.26	7922
5	68.86.147.109	7922
6	68.86.91.25	7922
7	68.86.86.50	7922
8	50.242.149.254	7922
9	66.109.6.168	7843
10	66.109.6.31	7843
11	66.109.6.29	7843
12	66.109.6.27	7843
13	66.109.1.57	7843
14	104.97.98.16	35994

11/30/2016 – Wednesday -10:30am

C:\Users\ARUNKUMAR>tracert www.bestbuy.com

Tracing route to e1382.x.akamaiedge.net [23.66.162.183]

over a maximum of 30 hops:

1 6 ms 9 ms 11 ms 10.0.0.1  
 2 17 ms 16 ms 14 ms 96.120.62.169  
 3 12 ms 12 ms 14 ms te-0-5-0-10-sur02.pittsburgh.pa.pitt.comcast.net [69.139.166.73]  
 4 16 ms 14 ms 19 ms te-0-0-0-0-ar01.mckeesport.pa.pitt.comcast.net [68.86.147.109]  
 5 19 ms 24 ms 19 ms be-7016-cr02.ashburn.va.ibone.comcast.net [68.86.91.25]  
 6 19 ms 29 ms 28 ms hu-0-10-0-6-pe07.ashburn.va.ibone.comcast.net [68.86.86.50]  
 7 31 ms 37 ms 25 ms dcx2-edge-01.inet.qwest.net [65.120.84.65]  
 8 24 ms 24 ms 24 ms nyc2-edge-01.inet.qwest.net [205.171.134.38]  
 9 30 ms 30 ms 25 ms a23-66-162-183.deploy.static.akamaitechnologies.com [23.66.162.183]

Trace complete.

HOPS	IP ADDRESS	AS NUMBER
1	10.0.0.1	4565
2	96.120.62.169	7922
3	69.139.166.73	7922
4	68.86.147.109	7922
5	68.86.91.25	7922
6	68.86.86.50	7922
7	65.120.84.65	209
8	205.171.134.38	209
9	23.66.162.183	35994

12/01/2016 – Thursday -8:30pm

C:\Users\ARUNKUMAR>tracert www.bestbuy.com

Tracing route to e1382.x.akamaiedge.net [23.66.162.183]

over a maximum of 30 hops:

```
1  3 ms  5 ms  14 ms  10.0.0.1
2  26 ms  14 ms  13 ms  96.120.62.169
3  17 ms  15 ms  29 ms  te-0-5-0-10-sur02.pittsburgh.pa.pitt.comcast.net [69.139.166.73]
4  15 ms  12 ms  19 ms  te-0-0-0-0-ar01.mckeesport.pa.pitt.comcast.net [68.86.147.109]
5  20 ms  25 ms  23 ms  be-7016-cr02.ashburn.va.ibone.comcast.net [68.86.91.25]
6  60 ms  27 ms  30 ms  hu-0-10-0-6-pe07.ashburn.va.ibone.comcast.net [68.86.86.50]
7  23 ms  21 ms  24 ms  dcx2-edge-01.inet.qwest.net [65.120.84.65]
8  22 ms  25 ms  30 ms  nyc2-edge-01.inet.qwest.net [205.171.134.38]
9  27 ms  25 ms  26 ms  a23-66-162-183.deploy.static.akamaitechnologies.com [23.66.162.183]
```

Trace complete.

HOPS	IP ADDRESS	AS NUMBER
1	10.0.0.1	4565
2	96.120.62.169	7922
3	69.139.166.73	7922
4	68.86.147.109	7922
5	68.86.91.25	7922
6	68.86.86.50	7922
7	65.120.84.65	209
8	205.171.134.38	209
9	23.66.162.183	35994

## DOMINANT PATH AT ROUTER LEVEL & AS LEVEL

IP ADDRESS	AS NUMBER
10.0.0.1	4565
96.120.62.169	7922
69.139.166.73	7922
68.86.147.109	7922
68.86.91.25	7922
68.86.86.50	7922
65.120.84.65	209
205.171.134.38	209
23.66.162.183	35994

[www.homedepot.com](http://www.homedepot.com)

11/25/2016 – Friday-11:30pm

C:\Users\ARUNKUMAR>tracert www.homedepot.com

Tracing route to a472.q.akamai.net [72.246.196.121]

over a maximum of 30 hops:

- 1 8 ms 3 ms 20 ms 10.0.0.1
- 2 15 ms 17 ms 16 ms 96.120.62.169
- 3 91 ms 18 ms 28 ms te-0-5-0-10-sur02.pittsburgh.pa.pitt.comcast.net [69.139.166.73]
- 4 103 ms 33 ms 15 ms te-0-0-0-0-ar01.mckeesport.pa.pitt.comcast.net [68.86.147.109]
- 5 22 ms 27 ms 25 ms be-7016-cr02.ashburn.va.ibone.comcast.net [68.86.91.25]
- 6 69 ms 86 ms 41 ms be-7922-ar03.audubon.nj.panjde.comcast.net [68.86.94.98]
- 7 29 ms 29 ms 32 ms he-0-9-0-0-ar03.plainfield.nj.panjde.comcast.net [68.85.35.21]
- 8 56 ms 29 ms 34 ms s121m.ddc.akamai.com [72.246.196.121]

Trace complete.

HOPS	IP ADDRESS	AS NUMBER
1	10.0.0.1	4565
2	96.120.62.169	7922
3	69.139.166.73	7922
4	68.86.147.109	7922
5	68.86.91.25	7922
6	68.86.94.98	7922
7	68.85.35.21	7922
8	72.246.196.121	33659



11/26/2016 – Saturday -5:30pm

C:\Users\ARUNKUMAR>tracert www.homedepot.com

Tracing route to a472.q.akamai.net [23.43.165.66]

over a maximum of 30 hops:

```
1  4 ms  6 ms  5 ms 10.0.0.1
2  21 ms 26 ms 17 ms 96.120.62.169
3  12 ms 12 ms 11 ms te-0-5-0-10-sur02.pittsburgh.pa.pitt.comcast.net [69.139.166.73]
4  15 ms 15 ms 14 ms te-0-0-0-0-ar01.mckeesport.pa.pitt.comcast.net [68.86.147.109]
5  18 ms 13 ms 13 ms 69.139.194.218
6  16 ms 15 ms 16 ms a23-43-165-66.deploy.static.akamaitechnologies.com [23.43.165.66]
```

Trace complete.

HOPS	IP ADDRESS	AS NUMBER
1	10.0.0.1	4565
2	96.120.62.169	7922
3	69.139.166.73	7922
4	68.86.147.109	7922
5	69.139.194.218	7922
6	23.43.165.66	7016

11/27/2016 – Sunday -1:30pm

C:\Users\ARUNKUMAR>tracert www.homedepot.com

Tracing route to a472.q.akamai.net [66.110.98.43]

over a maximum of 30 hops:

```
1  14 ms  9 ms  3 ms 10.0.0.1
2  21 ms 24 ms 25 ms 96.120.62.169
3  30 ms 22 ms 41 ms te-0-5-0-10-sur02.pittsburgh.pa.pitt.comcast.net [69.139.166.73]
4  27 ms 18 ms 12 ms te-0-0-0-0-ar01.mckeesport.pa.pitt.comcast.net [68.86.147.109]
5  23 ms 32 ms 26 ms be-7016-cr02.ashburn.va.ibone.comcast.net [68.86.91.25]
6  44 ms 19 ms 20 ms hu-0-11-0-1-pe07.ashburn.va.ibone.comcast.net [68.86.85.74]
7  30 ms 24 ms 22 ms as6453-2.ashburn.va.ibone.comcast.net [66.208.233.42]
8  27 ms 34 ms 24 ms if-ae-11-2.thar2.NJY-Newark.as6453.net [216.6.87.138]
```

9 39 ms 32 ms 32 ms if-ae-18-2.tcore2.NTO-New-York.as6453.net [66.198.111.7]

10 89 ms 39 ms 28 ms if-ae-12-2.tcore1.N75-New-York.as6453.net [66.110.96.5]

11 27 ms 25 ms 27 ms 66.110.98.43

HOPS	IP ADDRESS	AS NUMBER
1	10.0.0.1	4565
2	96.120.62.169	7922
3	69.139.166.73	7922
4	68.86.147.109	7922
5	68.86.91.25	7922
6	68.86.85.74	7922
7	66.208.233.42	7922
8	216.6.87.138	6453
9	66.198.111.7	6453
10	66.110.96.5	6453
11	66.110.98.43	6453

11/28/2016 – Monday -11:30am

C:\Users\ARUNKUMAR>tracert www.homedepot.com

Tracing route to a472.q.akamai.net [23.43.165.91]

over a maximum of 30 hops:

1 4 ms 3 ms 9 ms 10.0.0.1

2 12 ms 26 ms 26 ms 96.120.62.169

3 17 ms 13 ms 14 ms te-0-4-0-10-sur01.pittsburgh.pa.pitt.comcast.net [68.86.101.137]

4 15 ms 19 ms 16 ms te-0-1-0-11-sur01.pittsburgh.pa.pitt.comcast.net [68.86.100.26]

5 18 ms 14 ms 17 ms te-0-0-0-0-ar01.mckeesport.pa.pitt.comcast.net [68.86.147.109]

6 20 ms 17 ms 18 ms he-0-16-0-0-ar01.pittsburgh.pa.pitt.comcast.net [69.139.168.33]

7 20 ms 15 ms 13 ms a23-43-165-91.deploy.static.akamaitechnologies.com [23.43.165.91]

Trace complete.

HOPS	IP ADDRESS	AS NUMBER
1	10.0.0.1	4565
2	96.120.62.169	7922
3	68.86.101.137	7922
4	68.86.100.26	7922
5	68.86.147.109	7922
6	69.139.168.33	7922
7	23.43.165.91	35994

11/29/2016 – Tuesday -9:30am

C:\Users\ARUNKUMAR>tracert www.homedepot.com

Tracing route to a472.q.akamai.net [66.110.98.26]

over a maximum of 30 hops:

```
 1  7 ms  18 ms  3 ms 10.0.0.1
 2 12 ms  64 ms 13 ms 96.120.62.169
 3 17 ms  18 ms 13 ms te-0-5-0-10-sur02.pittsburgh.pa.pitt.comcast.net [69.139.166.73]
 4 15 ms  15 ms 19 ms te-0-0-0-0-ar01.mckeesport.pa.pitt.comcast.net [68.86.147.109]
 5 20 ms  27 ms 46 ms be-7016-cr02.ashburn.va.ibone.comcast.net [68.86.91.25]
 6 54 ms  38 ms 21 ms hu-0-10-0-3-pe07.ashburn.va.ibone.comcast.net [68.86.83.78]
 7 19 ms  44 ms 31 ms as6453-1.ashburn.va.ibone.comcast.net [66.208.233.38]
 8 26 ms  29 ms 161 ms if-ae-11-3.thar2.NJY-Newark.as6453.net [216.6.87.242]
 9 42 ms  27 ms 29 ms if-ae-14-14.tcore2.NTO-New-York.as6453.net [66.198.111.126]
10 67 ms  42 ms 106 ms if-ae-12-2.tcore1.N75-New-York.as6453.net [66.110.96.5]
11 32 ms  27 ms 44 ms 66.110.98.26
```

Trace complete.

HOPS	IP ADDRESS	AS NUMBER
1	10.0.0.1	4565
2	96.120.62.169	7922
3	69.139.166.73	7922
4	68.86.147.109	7922
5	68.86.91.25	7922
6	68.86.83.78	7922
7	66.208.233.38	7922
8	216.6.87.242	6453
9	66.198.111.126	6453
10	66.110.96.5	6453
11	66.110.98.26	6453

11/30/2016 – Wednesday -10:30am

C:\Users\ARUNKUMAR>tracert www.homedepot.com

Tracing route to a472.q.akamai.net [107.14.45.24]

over a maximum of 30 hops:

```

1  4 ms   6 ms   3 ms  10.0.0.1
2  16 ms  14 ms  14 ms  96.120.62.169
3  27 ms  17 ms  14 ms  te-0-4-0-11-sur01.pittsburgh.pa.pitt.comcast.net [68.86.102.57]
4  22 ms  14 ms  17 ms  te-0-1-0-11-sur01.pittsburgh.pa.pitt.comcast.net [68.86.100.26]
5  15 ms  26 ms  18 ms  te-0-0-0-0-ar01.mckeesport.pa.pitt.comcast.net [68.86.147.109]
6  23 ms  22 ms  25 ms  be-7016-cr02.ashburn.va.ibone.comcast.net [68.86.91.25]
7  29 ms  19 ms  27 ms  hu-0-10-0-5-pe07.ashburn.va.ibone.comcast.net [68.86.83.86]
8  20 ms  19 ms  19 ms  50.242.149.254
9  19 ms  28 ms  27 ms  bu-ether13.asbnva1611w-bcr00.tbone.rr.com [66.109.6.168]
10 18 ms  21 ms  27 ms  0.ae0.pr1.dca10.tbone.rr.com [107.14.17.200]
11 24 ms  24 ms  23 ms  107.14.45.24

```

Trace complete.

HOPS	IP ADDRESS	AS NUMBER
1	10.0.0.1	4565
2	96.120.62.169	7922
3	68.86.102.37	7922
4	68.86.100.26	7922
5	68.86.147.109	7922
6	68.86.91.25	7922
7	68.86.83.86	7922
8	50.242.149.254	7922
9	66.109.6.168	7843
10	107.14.17.200	7843
11	107.14.45.24	7843

12/01/2016 – Thursday -8:30pm

C:\Users\ARUNKUMAR>tracert www.homedepot.com

Tracing route to a472.q.akamai.net [208.37.9.59]

over a maximum of 30 hops:

```

1  4 ms   6 ms   3 ms  10.0.0.1
2  18 ms  13 ms  13 ms  96.120.62.169
3  19 ms  165 ms  29 ms  te-0-4-0-10-sur01.pittsburgh.pa.pitt.comcast.net [68.86.101.137]
4  13 ms  14 ms  18 ms  te-8-3-ur01.wheeling.wv.pitt.comcast.net [68.86.100.26]

```

5 19 ms 12 ms 18 ms te-0-0-0-0-ar01.mckeesport.pa.pitt.comcast.net [68.86.147.109]  
6 37 ms 21 ms 34 ms be-7016-cr02.ashburn.va.ibone.comcast.net [68.86.91.25]  
7 20 ms 18 ms 23 ms hu-0-10-0-7-pe04.ashburn.va.ibone.comcast.net [68.86.87.6]  
8 22 ms 22 ms 61 ms 50.242.151.190  
9 26 ms 23 ms 19 ms w059.z208037009.sjc-ca.dsl.cnc.net [208.37.9.59]

Trace complete.

HOPS	IP ADDRESS	AS NUMBER
1	10.0.0.1	4565
2	96.120.62.169	7922
3	68.86.101.137	7922
4	68.86.100.26	7922
5	68.86.147.109	7922
6	68.86.91.25	7922
7	68.86.87.6	7922
8	50.242.151.190	7922
9	208.37.9.59	2828

## DOMINANT PATH AT ROUTER LEVEL & AS LEVEL

IP ADDRESS	AS NUMBER
10.0.0.1	4565
96.120.62.169	7922
69.139.166.73	7922
68.86.147.109	7922
68.86.91.25	7922
68.86.85.74	7922
66.208.233.42	7922
216.6.87.138	6453
66.198.111.7	6453
66.110.96.5	6453
66.110.98.43 / 66.110.98.26	6453

[www.kohls.com](http://www.kohls.com)

11/25/2016 – Friday-11:30pm

C:\Users\ARUNKUMAR>tracert www.kohls.com

Tracing route to e8115.x.akamaiedge.net [23.212.170.177]

over a maximum of 30 hops:

```

1  20 ms  13 ms  6 ms  10.0.0.1
2  16 ms  22 ms  12 ms  96.120.62.169
3  21 ms  22 ms  19 ms  te-0-4-0-10-sur01.pittsburgh.pa.pitt.comcast.net [68.86.101.137]
4  20 ms  31 ms  43 ms  te-8-3-ur01.wheeling.wv.pitt.comcast.net [68.86.100.26]
5  26 ms  88 ms  19 ms  te-0-0-0-0-ar01.mckeesport.pa.pitt.comcast.net [68.86.147.109]
6  172 ms  160 ms  27 ms  be-7016-cr02.ashburn.va.ibone.comcast.net [68.86.91.25]
7  21 ms  20 ms  25 ms  hu-0-11-0-6-pe04.ashburn.va.ibone.comcast.net [68.86.85.106]
8  34 ms  28 ms  17 ms  23.30.206.206
9  30 ms  66 ms  27 ms  a23-212-170-177.deploy.static.akamaitechnologies.com
[23.212.170.177]

```

Trace complete.

HOPS	IP ADDRESS	AS NUMBER
1	10.0.0.1	4565
2	96.120.62.169	7922
3	68.86.101.137	7922
4	69.139.166.73	7922
5	68.86.147.109	7922
6	68.86.91.25	7922
7	68.86.85.106	7922
8	23.30.206.206	7922
9	23.212.170.177	3257

11/26/2016 – Saturday -5:30pm

C:\Users\ARUNKUMAR>tracert www.kohls.com

Tracing route to e8115.x.akamaiedge.net [23.66.178.97]

over a maximum of 30 hops:

```

1  5 ms  3 ms  9 ms  10.0.0.1
2  14 ms  11 ms  13 ms  96.120.62.169
3  14 ms  16 ms  18 ms  te-0-5-0-10-sur02.pittsburgh.pa.pitt.comcast.net [69.139.166.73]
4  19 ms  14 ms  21 ms  te-0-0-0-0-ar01.mckeesport.pa.pitt.comcast.net [68.86.147.109]
5  24 ms  20 ms  23 ms  be-7016-cr02.ashburn.va.ibone.comcast.net [68.86.91.25]
6  23 ms  24 ms  20 ms  hu-0-11-0-7-pe07.ashburn.va.ibone.comcast.net [68.86.85.206]

```

7 114 ms 115 ms 120 ms dcx2-edge-01.inet.qwest.net [65.120.84.65]  
 8 24 ms 26 ms 27 ms nyc2-edge-01.inet.qwest.net [205.171.134.38]  
 9 62 ms 68 ms 24 ms a23-66-178-97.deploy.static.akamaitechnologies.com [23.66.178.97]

Trace complete.

HOPS	IP ADDRESS	AS NUMBER
1	10.0.0.1	4565
2	96.120.62.169	7922
3	69.139.166.73	7922
4	68.86.147.109	7922
5	68.86.91.25	7922
6	68.86.85.206	7922
7	65.120.84.65	209
8	205.171.134.38	209
9	23.66.178.97	16625

11/27/2016 – Sunday -1:30pm

C:\Users\ARUNKUMAR>tracert www.kohls.com

Tracing route to e8115.x.akamaiedge.net [23.192.49.115]

over a maximum of 30 hops:

1 3 ms 3 ms 3 ms 10.0.0.1  
 2 14 ms 12 ms 18 ms 96.120.62.169  
 3 17 ms 11 ms 14 ms te-0-5-0-10-sur02.pittsburgh.pa.pitt.comcast.net [69.139.166.73]  
 4 15 ms 13 ms 23 ms te-0-0-0-0-ar01.mckeesport.pa.pitt.comcast.net [68.86.147.109]  
 5 21 ms 28 ms 21 ms be-7016-cr02.ashburn.va.ibone.comcast.net [68.86.91.25]  
 6 18 ms 21 ms 24 ms hu-0-10-0-4-pe04.ashburn.va.ibone.comcast.net [68.86.84.202]  
 7 23 ms 22 ms 22 ms ae4.er2.iad10.us.zip.zayo.com [64.125.12.145]  
 8 23 ms 22 ms 25 ms ae1.cr2.dca2.us.zip.zayo.com [64.125.20.121]  
 9 25 ms 27 ms 28 ms ae27.cs2.dca2.us.eth.zayo.com [64.125.30.248]  
 10 27 ms 31 ms 25 ms ae4.cs2.lga5.us.eth.zayo.com [64.125.29.30]  
 11 26 ms 28 ms 32 ms ae27.cr2.lga5.us.zip.zayo.com [64.125.30.253]  
 12 28 ms 27 ms 23 ms ae5.er2.lga5.us.zip.zayo.com [64.125.21.81]  
 13 59 ms 33 ms 32 ms ae4.er1.lga5.us.zip.zayo.com [64.125.31.165]

14 33 ms 27 ms 28 ms 208.185.22.10.IPYX-074089-910-ZYO.zip.zayo.com [208.185.22.10]  
 15 27 ms 42 ms 57 ms a23-192-49-115.deploy.static.akamaitechnologies.com [23.192.49.115]

Trace complete.

HOPS	IP ADDRESS	AS NUMBER
1	10.0.0.1	4565
2	96.120.62.169	7922
3	96.108.132.73	7922
4	68.86.147.109	7922
5	68.86.91.25	7922
6	68.86.88.202	7922
7	64.125.12.145	6461
8	64.125.20.121	6461
9	64.125.30.248	6461
10	64.125.29.30	6461
11	64.125.30.253	6461
12	64.125.21.81	6461
13	64.125.31.165	6461
14	208.185.22.10	6461
15	23.192.49.115	20940

11/28/2016 – Monday -11:30am

C:\Users\ARUNKUMAR>tracert www.kohls.com

Tracing route to e8115.x.akamaiedge.net [23.66.178.97]

over a maximum of 30 hops:

1 25 ms 3 ms 24 ms 10.0.0.1  
 2 13 ms 16 ms 71 ms 96.120.62.169  
 3 14 ms 18 ms 16 ms te-0-5-0-10-sur02.pittsburgh.pa.pitt.comcast.net [69.139.166.73]  
 4 15 ms 12 ms 24 ms te-0-0-0-0-ar01.mckeesport.pa.pitt.comcast.net [68.86.147.109]  
 5 26 ms 23 ms 20 ms be-7016-cr02.ashburn.va.ibone.comcast.net [68.86.91.25]  
 6 23 ms 22 ms 21 ms hu-0-11-0-7-pe07.ashburn.va.ibone.comcast.net [68.86.85.206]  
 7 165 ms 21 ms 20 ms dcx2-edge-01.inet.qwest.net [65.120.84.65]  
 8 37 ms 26 ms 25 ms nyc2-edge-01.inet.qwest.net [205.171.134.38]  
 9 29 ms 28 ms 25 ms a23-66-178-97.deploy.static.akamaitechnologies.com [23.66.178.97]

Trace complete.



HOPS	IP ADDRESS	AS NUMBER
1	10.0.0.1	4565
2	96.120.62.169	7922
3	69.139.166.73	7922
4	68.86.147.109	7922
5	68.86.91.25	7922
6	68.86.85.206	7922
7	65.120.84.65	209
8	205.171.134.38	209
9	23.66.178.97	16625

11/29/2016 – Tuesday -9:30am

C:\Users\ARUNKUMAR>tracert www.kohls.com

Tracing route to e8115.x.akamaiedge.net [104.87.134.107]

over a maximum of 30 hops:

```

1  8 ms  3 ms  4 ms 10.0.0.1
2  14 ms 11 ms 16 ms 96.120.62.169
3  18 ms 15 ms 39 ms te-0-4-0-11-sur01.pittsburgh.pa.pitt.comcast.net [68.86.102.57]
4  19 ms 17 ms 19 ms te-8-3-ur01.wheeling.wv.pitt.comcast.net [68.86.100.26]
5  30 ms 13 ms 27 ms te-0-0-0-0-ar01.mckeesport.pa.pitt.comcast.net [68.86.147.109]
6  23 ms 19 ms 25 ms be-7016-cr02.ashburn.va.ibone.comcast.net [68.86.91.25]
7  35 ms 19 ms 23 ms hu-0-10-0-4-pe07.ashburn.va.ibone.comcast.net [68.86.83.82]
8  25 ms 24 ms 19 ms 50.242.149.254
9  30 ms 22 ms 20 ms bu-ether13.asbnva1611w-bcr00.tbone.rr.com [66.109.6.168]
10 20 ms 18 ms 18 ms 0.ae0.pr1.dca10.tbone.rr.com [107.14.17.200]
11 28 ms 27 ms 23 ms a104-87-134-107.deploy.static.akamaitechnologies.com
[104.87.134.107]

```

Trace complete.

HOPS	IP ADDRESS	AS NUMBER
1	10.0.0.1	4565
2	96.120.62.169	7922
3	96.108.132.57	7922
4	68.86.100.26	7922
5	68.86.147.109	7922

6	68.86.91.25	7922
7	68.86.83.82	7922
8	50.242.149.254	7922
9	66.109.6.168	7843
10	107.14.17.200	7843
11	104.87.134.107	35994

11/30/2016 – Wednesday -10:30am

C:\Users\ARUNKUMAR>tracert www.kohls.com

Tracing route to e8115.x.akamaiedge.net [23.192.69.141]

over a maximum of 30 hops:

```

1  5 ms  5 ms  5 ms 10.0.0.1
2  20 ms 17 ms 16 ms 96.120.62.169
3  13 ms 19 ms 12 ms te-0-5-0-10-sur02.pittsburgh.pa.pitt.comcast.net [69.139.166.73]
4  59 ms 14 ms 15 ms te-0-0-0-0-ar01.mckeesport.pa.pitt.comcast.net [68.86.147.109]
5  22 ms 23 ms 24 ms be-7016-cr02.ashburn.va.ibone.comcast.net [68.86.91.25]
6  83 ms 22 ms 22 ms hu-0-10-0-5-pe04.ashburn.va.ibone.comcast.net [68.86.85.66]
7  20 ms 28 ms 25 ms ae4.er2.iad10.us.zip.zayo.com [64.125.12.145]
8  35 ms 24 ms 20 ms ae1.cr2.dca2.us.zip.zayo.com [64.125.20.121]
9  39 ms 24 ms 54 ms ae27.cs2.dca2.us.eth.zayo.com [64.125.30.248]
10 44 ms 26 ms 31 ms ae0.cs1.dca2.us.eth.zayo.com [64.125.29.228]
11 26 ms 56 ms 43 ms ae4.cs1.lga5.us.eth.zayo.com [64.125.29.202]
12 41 ms 41 ms 45 ms ae27.cr1.lga5.us.zip.zayo.com [64.125.30.251]
13 48 ms 44 ms 28 ms ae8.er1.lga5.us.zip.zayo.com [64.125.26.162]
14 35 ms 30 ms 31 ms 208.185.22.10.IPYX-074089-910-ZYO.zip.zayo.com [208.185.22.10]
15 26 ms 34 ms 24 ms a23-192-69-141.deploy.static.akamaitechnologies.com [23.192.69.141]

```

Trace complete.

HOPS	IP ADDRESS	AS NUMBER
1	10.0.0.1	4565
2	96.120.62.169	7922
3	69.139.166.73	7922
4	68.86.147.109	7922

5	68.86.91.25	7922
6	68.86.85.66	7922
7	64.125.12.145	6461
8	64.125.20.121	6461
9	64.125.30.248	6461
10	64.125.29.228	6461
11	64.125.29.202	6461
12	64.125.30.251	6461
13	64.125.26.162	6461
14	208.185.22.10]	6461
15	23.192.69.141	20940

12/01/2016 – Thursday -8:30pm

C:\Users\ARUNKUMAR>tracert www.kohls.com

Tracing route to e8115.x.akamaiedge.net [104.117.29.77]

over a maximum of 30 hops:

```

1  5 ms  6 ms  4 ms 10.0.0.1
2  18 ms 23 ms 13 ms 96.120.62.169
3  18 ms 18 ms 17 ms te-0-4-0-11-sur01.pittsburgh.pa.pitt.comcast.net [68.86.102.57]
4  17 ms 18 ms 29 ms te-8-3-ur01.wheeling.wv.pitt.comcast.net [68.86.100.26]
5  16 ms 30 ms 13 ms te-0-0-0-0-ar01.mckeesport.pa.pitt.comcast.net [68.86.147.109]
6  149 ms 34 ms 28 ms be-7016-cr02.ashburn.va.ibone.comcast.net [68.86.91.25]
7  24 ms 26 ms 20 ms hu-0-10-0-5-pe04.ashburn.va.ibone.comcast.net [68.86.85.66]
8  20 ms 20 ms 19 ms 50.242.151.190
9  136 ms 22 ms 26 ms a104-117-29-77.deploy.static.akamaitechnologies.com [104.117.29.77]

```

Trace complete.

HOPS	IP ADDRESS	AS NUMBER
1	10.0.0.1	4565
2	96.120.62.169	7922
3	68.86.101.137	7922
4	68.86.100.26	7922
5	68.86.147.109	7922
6	68.86.91.25	7922
7	68.86.87.6	7922
8	50.242.151.190	7922
9	104.117.29.77	2828

## DOMINANT PATH AT ROUTER LEVEL & AS LEVEL

IP ADDRESS	AS NUMBER
10.0.0.1	4565
96.120.62.169	7922
69.139.166.73	7922
68.86.147.109	7922
68.86.91.25	7922
68.86.85.206	7922
65.120.84.65	209
205.171.134.38	209
23.66.178.97	16625

www1.macys.com

11/25/2016 – Friday-11:30pm

C:\Users\ARUNKUMAR>tracert www1.macys.com

Tracing route to a796.r.akamai.net [23.43.165.42]

over a maximum of 30 hops:

- 1 17 ms 12 ms 25 ms 10.0.0.1
- 2 196 ms 27 ms 45 ms 96.120.62.169
- 3 16 ms 15 ms 15 ms te-0-4-0-10-sur01.pittsburgh.pa.pitt.comcast.net [68.86.101.137]
- 4 21 ms 41 ms 60 ms te-8-3-ur01.wheeling.wv.pitt.comcast.net [68.86.100.26]
- 5 34 ms 29 ms 24 ms te-0-0-0-0-ar01.mckeesport.pa.pitt.comcast.net [68.86.147.109]
- 6 15 ms 28 ms 27 ms 69.139.195.194
- 7 19 ms 23 ms 63 ms a23-43-165-42.deploy.static.akamaitechnologies.com [23.43.165.42]

Trace complete.

HOPS	IP ADDRESS	AS NUMBER
1	10.0.0.1	4565
2	96.120.62.169	7922
3	68.86.101.137	7922
4	68.86.100.26	7922
5	68.86.147.109	7922
6	69.139.195.194	7922
7	23.43.165.42	7016

11/26/2016 – Saturday -5:30pm

C:\Users\ARUNKUMAR>tracert www1.macys.com

Tracing route to a796.r.akamai.net [72.246.196.115]

over a maximum of 30 hops:

```
 1  8 ms   5 ms   4 ms 10.0.0.1
 2  92 ms  22 ms  29 ms 96.120.62.169
 3  26 ms  24 ms  24 ms te-0-5-0-10-sur02.pittsburgh.pa.pitt.comcast.net [69.139.166.73]
 4  21 ms  15 ms  14 ms te-0-0-0-0-ar01.mckeesport.pa.pitt.comcast.net [68.86.147.109]
 5  34 ms  21 ms  25 ms be-7016-cr02.ashburn.va.ibone.comcast.net [68.86.91.25]
 6  28 ms  31 ms  27 ms be-7922-ar03.audubon.nj.panjde.comcast.net [68.86.94.98]
 7  34 ms  31 ms  26 ms he-0-9-0-0-ar03.plainfield.nj.panjde.comcast.net [68.85.35.21]
 8  31 ms  31 ms  33 ms s115m.ddc.akamai.com [72.246.196.115]
```

Trace complete.

HOPS	IP ADDRESS	AS NUMBER
1	10.0.0.1	4565
2	96.120.62.169	7922
3	69.139.166.73	7922
4	68.86.147.109	7922
5	68.86.91.25	7922
6	68.86.94.98	7922
7	68.85.35.21	7922
8	72.246.196.115	35994

11/27/2016 – Sunday -1:30pm

C:\Users\ARUNKUMAR>tracert www1.macys.com

Tracing route to a796.r.akamai.net [72.246.196.113]

over a maximum of 30 hops:

```
 1  4 ms   4 ms   3 ms 10.0.0.1
 2  14 ms  15 ms  11 ms 96.120.62.169
 3  16 ms  26 ms  23 ms te-0-5-0-10-sur02.pittsburgh.pa.pitt.comcast.net [69.139.166.73]
 4  19 ms  13 ms  15 ms te-0-0-0-0-ar01.mckeesport.pa.pitt.comcast.net [68.86.147.109]
 5  25 ms  23 ms  23 ms be-7016-cr02.ashburn.va.ibone.comcast.net [68.86.91.25]
```

6 27 ms 31 ms 27 ms be-7922-ar03.audubon.nj.panjde.comcast.net [68.86.94.98]  
 7 27 ms 29 ms 27 ms he-0-9-0-0-ar03.plainfield.nj.panjde.comcast.net [68.85.35.21]  
 8 37 ms 35 ms 28 ms s113m.ddc.akamai.com [72.246.196.113]

Trace complete.

HOPS	IP ADDRESS	AS NUMBER
1	10.0.0.1	4565
2	96.120.62.169	7922
3	69.139.166.73	7922
4	68.86.147.109	7922
5	68.86.91.25	7922
6	68.86.94.98	7922
7	68.85.35.21	7922
8	72.246.196.113	35994

11/28/2016 – Monday -11:30am

C:\Users\ARUNKUMAR>tracert www1.macys.com

Tracing route to a796.r.akamai.net [72.246.196.113]

over a maximum of 30 hops:

1 3 ms 5 ms 3 ms 10.0.0.1  
 2 14 ms 13 ms 21 ms 96.120.62.169  
 3 17 ms 18 ms 15 ms te-0-5-0-10-sur02.pittsburgh.pa.pitt.comcast.net [69.139.166.73]  
 4 26 ms 13 ms 24 ms te-0-0-0-0-ar01.mckeesport.pa.pitt.comcast.net [68.86.147.109]  
 5 22 ms 27 ms 24 ms be-7016-cr02.ashburn.va.ibone.comcast.net [68.86.91.25]  
 6 30 ms 27 ms 26 ms be-7922-ar03.audubon.nj.panjde.comcast.net [68.86.94.98]  
 7 27 ms 26 ms 26 ms he-0-9-0-0-ar03.plainfield.nj.panjde.comcast.net [68.85.35.21]  
 8 27 ms 27 ms 34 ms s113m.ddc.akamai.com [72.246.196.113]

Trace complete.

HOPS	IP ADDRESS	AS NUMBER
1	10.0.0.1	4565
2	96.120.62.169	7922
3	69.139.166.73	7922
4	68.86.147.109	7922
5	68.86.91.25	7922
6	68.86.94.98	7922

7	68.85.35.21	7922
8	72.246.196.113	35994

11/29/2016 – Tuesday -9:30am

C:\Users\ARUNKUMAR>tracert www1.macys.com

Tracing route to a796.r.akamai.net [72.246.196.113]

over a maximum of 30 hops:

```

1  4 ms  3 ms  4 ms 10.0.0.1
2  25 ms 19 ms 15 ms 96.120.62.169
3  20 ms 15 ms 15 ms te-0-5-0-10-sur02.pittsburgh.pa.pitt.comcast.net [69.139.166.73]
4  18 ms 23 ms 16 ms te-0-0-0-0-ar01.mckeesport.pa.pitt.comcast.net [68.86.147.109]
5  97 ms 40 ms 20 ms be-7016-cr02.ashburn.va.ibone.comcast.net [68.86.91.25]
6  33 ms 30 ms 40 ms be-7922-ar03.audubon.nj.panjde.comcast.net [68.86.94.98]
7  41 ms 35 ms 32 ms he-0-9-0-0-ar03.plainfield.nj.panjde.comcast.net [68.85.35.21]
8  41 ms 64 ms 39 ms s113m.ddc.akamai.com [72.246.196.113]

```

Trace complete.

HOPS	IP ADDRESS	AS NUMBER
1	10.0.0.1	4565
2	96.120.62.169	7922
3	69.139.166.73	7922
4	68.86.147.109	7922
5	68.86.91.25	7922
6	68.86.94.98	7922
7	68.85.35.21	7922
8	72.246.196.113	35994

11/30/2016 – Wednesday -10:30am

C:\Users\ARUNKUMAR>tracert www1.macys.com

Tracing route to a796.r.akamai.net [107.14.40.57]

over a maximum of 30 hops:

```

1  6 ms  6 ms  5 ms 10.0.0.1
2  14 ms 13 ms 33 ms 96.120.62.169

```

3 17 ms 24 ms 14 ms te-0-5-0-10-sur02.pittsburgh.pa.pitt.comcast.net [69.139.166.73]  
 4 18 ms 17 ms 24 ms te-0-0-0-0-ar01.mckeesport.pa.pitt.comcast.net [68.86.147.109]  
 5 24 ms 20 ms 19 ms be-7016-cr02.ashburn.va.ibone.comcast.net [68.86.91.25]  
 6 24 ms 20 ms 31 ms hu-0-11-0-3-pe07.ashburn.va.ibone.comcast.net [68.86.88.106]  
 7 22 ms 24 ms 45 ms 50.242.149.254  
 8 28 ms 23 ms 22 ms bu-ether33.asbnva1611w-bcr00.tbone.rr.com [66.109.6.182]  
 9 19 ms 20 ms 18 ms 0.ae1.pr1.dca10.tbone.rr.com [107.14.17.202]  
 10 22 ms 19 ms 19 ms 107.14.40.57

Trace complete.

HOPS	IP ADDRESS	AS NUMBER
1	10.0.0.1	4565
2	96.120.62.169	7922
3	69.139.166.73	7922
4	68.86.147.109	7922
5	68.86.91.25	7922
6	68.86.88.106	7922
7	50.242.149.254	7922
8	66.109.6.182	7843
9	107.14.17.202	7843
10	107.14.40.57	7843

12/01/2016 – Thursday -8:30pm

C:\Users\ARUNKUMAR>tracert www1.macys.com

Tracing route to a796.r.akamai.net [72.246.196.96]

over a maximum of 30 hops:

1 6 ms 8 ms 6 ms 10.0.0.1  
 2 17 ms 17 ms 18 ms 96.120.62.169  
 3 12 ms 17 ms 28 ms te-0-5-0-11-sur02.pittsburgh.pa.pitt.comcast.net [96.108.132.57]  
 4 23 ms 14 ms 13 ms te-0-0-0-0-ar01.mckeesport.pa.pitt.comcast.net [68.86.147.109]  
 5 21 ms 24 ms 26 ms be-7016-cr02.ashburn.va.ibone.comcast.net [68.86.91.25]  
 6 46 ms 28 ms 26 ms be-7922-ar03.audubon.nj.panjde.comcast.net [68.86.94.98]  
 7 33 ms 43 ms 37 ms he-0-9-0-0-ar03.plainfield.nj.panjde.comcast.net [68.85.35.21]  
 8 32 ms 29 ms 37 ms a72-246-196-96.deploy.akamaitechnologies.com [72.246.196.96]



Trace complete.

HOPS	IP ADDRESS	AS NUMBER
1	10.0.0.1	4565
2	96.120.62.169	7922
3	96.108.132.57	7922
4	68.86.147.109	7922
5	68.86.91.25	7922
6	68.86.94.98	7922
7	68.85.35.21	7922
8	72.246.196.96	35994

## DOMINANT PATH AT ROUTER LEVEL & AS LEVEL

IP ADDRESS	AS NUMBER
10.0.0.1	4565
96.120.62.169	7922
69.139.166.73	7922
68.86.147.109	7922
68.86.91.25	7922
68.86.94.98	7922
68.85.35.21	7922
72.246.196.113	35994

[www.target.com](http://www.target.com)

11/25/2016 – Friday-11:30pm

C:\Users\ARUNKUMAR>tracert www.target.com

Tracing route to e10914.b.akamaiedge.net [23.216.150.121]

over a maximum of 30 hops:

```
1  4 ms  17 ms  10 ms  10.0.0.1
2  15 ms  20 ms  20 ms  96.120.62.169
3  102 ms  16 ms  31 ms  te-0-4-0-10-sur01.pittsburgh.pa.pitt.comcast.net [68.86.101.137]
4  13 ms  13 ms  12 ms  te-8-3-ur01.wheeling.wv.pitt.comcast.net [68.86.100.26]
5  15 ms  14 ms  14 ms  te-0-0-0-0-ar01.mckeesport.pa.pitt.comcast.net [68.86.147.109]
6  24 ms  17 ms  28 ms  69.139.195.194
7  102 ms  14 ms  30 ms  a23-216-150-121.deploy.static.akamaitechnologies.com
[23.216.150.121]
```

Trace complete.

HOPS	IP ADDRESS	AS NUMBER
1	10.0.0.1	4565
2	96.120.62.169	7922
3	68.86.101.137	7922
4	68.86.100.26	7922
5	68.86.147.109	7922
6	69.139.195.194	7922
7	23.216.150.121	35994

11/26/2016 – Saturday -5:30pm

C:\Users\ARUNKUMAR>tracert www.target.com

Tracing route to e10914.b.akamaiedge.net [23.192.73.71]

over a maximum of 30 hops:

```
1  5 ms  3 ms  19 ms 10.0.0.1
2  15 ms 13 ms 14 ms 96.120.62.169
3  14 ms 17 ms 13 ms te-0-4-0-10-sur01.pittsburgh.pa.pitt.comcast.net [68.86.101.137]
4  11 ms 19 ms 18 ms te-8-3-ur01.wheeling.wv.pitt.comcast.net [68.86.100.26]
5  28 ms 18 ms 20 ms te-0-0-0-0-ar01.mckeesport.pa.pitt.comcast.net [68.86.147.109]
6  21 ms 47 ms 21 ms be-7016-cr02.ashburn.va.ibone.comcast.net [68.86.91.25]
7  21 ms 22 ms 21 ms hu-0-11-0-5-pe04.ashburn.va.ibone.comcast.net [68.86.89.78]
8  19 ms 22 ms 26 ms ae4.er2.iad10.us.zip.zayo.com [64.125.12.145]
9  27 ms 18 ms 26 ms ae1.cr2.dca2.us.zip.zayo.com [64.125.20.121]
10 40 ms 70 ms 25 ms ae27.cs2.dca2.us.eth.zayo.com [64.125.30.248]
11 26 ms 27 ms 36 ms ae4.cs2.lga5.us.eth.zayo.com [64.125.29.30]
12 25 ms 27 ms 43 ms ae27.cr2.lga5.us.zip.zayo.com [64.125.30.253]
13 23 ms 24 ms 36 ms ae5.er2.lga5.us.zip.zayo.com [64.125.21.81]
14 25 ms 25 ms 70 ms ae4.er1.lga5.us.zip.zayo.com [64.125.31.165]
15 39 ms 26 ms 23 ms 208.185.22.10.IPYX-074089-910-ZYO.zip.zayo.com [208.185.22.10]
16 27 ms 29 ms 29 ms a23-192-73-71.deploy.static.akamaitechnologies.com [23.192.73.71]
```

Trace complete.

HOPS	IP ADDRESS	AS NUMBER
1	10.0.0.1	4565
2	96.120.62.169	7922
3	68.86.101.137	7922
4	68.86.100.26	7922
5	68.86.147.109	7922
6	68.86.91.25	7922
7	68.86.89.78	7922
8	64.125.12.145	6461
9	64.125.20.121	6461
10	64.125.30.248	6461
11	64.125.29.30	6461
12	64.125.30.253	6461
13	64.125.21.81	6461
14	64.125.31.165	6461
15	208.185.22.10	6461
16	23.192.73.71	20940

11/27/2016 – Sunday -1:30pm

C:\Users\ARUNKUMAR>tracert www.target.com

Tracing route to e10914.b.akamaiedge.net [23.216.150.121]

over a maximum of 30 hops:

```

1  3 ms  5 ms  5 ms 10.0.0.1
2  17 ms 18 ms 19 ms 96.120.62.169
3  14 ms 14 ms 26 ms te-0-4-0-10-sur01.pittsburgh.pa.pitt.comcast.net [68.86.101.137]
4  12 ms 21 ms 15 ms te-0-1-0-11-sur01.pittsburgh.pa.pitt.comcast.net [68.86.100.26]
5  113 ms 22 ms 13 ms te-0-0-0-0-ar01.mckeesport.pa.pitt.comcast.net [68.86.147.109]
6  15 ms 15 ms 16 ms 69.139.195.194
7  15 ms 18 ms 17 ms a23-216-150-121.deploy.static.akamaitechnologies.com
[23.216.150.121]
```

Trace complete

HOPS	IP ADDRESS	AS NUMBER
1	10.0.0.1	4565
2	96.120.62.169	7922
3	68.86.101.137	7922
4	68.86.100.26	7922

5	68.86.147.109	7922
6	69.139.195.194	7922
7	23.216.150.121	35994

11/28/2016 – Monday -11:30am

C:\Users\ARUNKUMAR>tracert www.target.com

Tracing route to e10914.b.akamaiedge.net [23.216.150.121]

over a maximum of 30 hops:

```

1  5 ms  4 ms  81 ms 10.0.0.1
2  13 ms 13 ms 15 ms 96.120.62.169
3  15 ms 37 ms 26 ms te-0-4-0-10-sur01.pittsburgh.pa.pitt.comcast.net [68.86.101.137]
4  16 ms 14 ms 15 ms te-0-1-0-11-sur01.pittsburgh.pa.pitt.comcast.net [68.86.100.26]
5  17 ms 22 ms 18 ms te-0-0-0-0-ar01.mckeesport.pa.pitt.comcast.net [68.86.147.109]
6  28 ms 18 ms 12 ms 69.139.195.194
7  14 ms 18 ms 19 ms a23-216-150-121.deploy.static.akamaitechnologies.com
[23.216.150.121]

```

Trace complete.

HOPS	IP ADDRESS	AS NUMBER
1	10.0.0.1	4565
2	96.120.62.169	7922
3	68.86.101.137	7922
4	68.86.100.26	7922
5	68.86.147.109	7922
6	69.139.195.194	7922
7	23.216.150.121	35994

11/29/2016 – Tuesday -9:30am

C:\Users\ARUNKUMAR>tracert www.target.com

Tracing route to e10914.b.akamaiedge.net [23.205.211.240]

over a maximum of 30 hops:

```

1  11 ms  3 ms  9 ms 10.0.0.1
2  16 ms 17 ms 22 ms 96.120.62.169
3  17 ms 13 ms 19 ms te-0-5-0-11-sur02.pittsburgh.pa.pitt.comcast.net [96.108.132.57]

```

```

4  16 ms  20 ms  19 ms  te-0-0-0-0-ar01.mckeesport.pa.pitt.comcast.net [68.86.147.109]
5  24 ms  24 ms  24 ms  be-7016-cr02.ashburn.va.ibone.comcast.net [68.86.91.25]
6  31 ms  27 ms  29 ms  be-7922-ar03.audubon.nj.panjde.comcast.net [68.86.94.98]
7  26 ms  30 ms  28 ms  he-0-9-0-0-ar03.plainfield.nj.panjde.comcast.net [68.85.35.21]
8  31 ms  28 ms  25 ms  a23-205-211-240.deploy.static.akamaitechnologies.com
[23.205.211.240]

```

Trace complete.

HOPS	IP ADDRESS	AS NUMBER
1	10.0.0.1	4565
2	96.120.62.169	7922
3	69.139.166.73	7922
4	68.86.147.109	7922
5	68.86.91.25	7922
6	68.86.94.98	7922
7	68.85.35.21	7922
8	23.205.211.240	35994

11/30/2016 – Wednesday -10:30am

C:\Users\ARUNKUMAR>tracert www.target.com

Tracing route to e10914.b.akamaiedge.net [23.205.211.240]

over a maximum of 30 hops:

```

1  3 ms  3 ms  3 ms  10.0.0.1
2  15 ms  20 ms  15 ms  96.120.62.169
3  14 ms  31 ms  18 ms  te-0-5-0-11-sur02.pittsburgh.pa.pitt.comcast.net [96.108.132.57]
4  26 ms  18 ms  20 ms  te-0-0-0-0-ar01.mckeesport.pa.pitt.comcast.net [68.86.147.109]
5  55 ms  27 ms  23 ms  be-7016-cr02.ashburn.va.ibone.comcast.net [68.86.91.25]
6  26 ms  25 ms  29 ms  be-7922-ar03.audubon.nj.panjde.comcast.net [68.86.94.98]
7  31 ms  28 ms  24 ms  he-0-9-0-0-ar03.plainfield.nj.panjde.comcast.net [68.85.35.21]
8  28 ms  28 ms  30 ms  a23-205-211-240.deploy.static.akamaitechnologies.com
[23.205.211.240]

```

Trace complete.

HOPS	IP ADDRESS	AS NUMBER
1	10.0.0.1	4565
2	96.120.62.169	7922
3	69.139.166.73	7922
4	68.86.147.109	7922
5	68.86.91.25	7922
6	68.86.94.98	7922
7	68.85.35.21	7922
8	23.205.211.240	35994

12/01/2016 – Thursday -8:30pm

C:\Users\ARUNKUMAR>tracert www.target.com

Tracing route to e10914.b.akamaiedge.net [104.87.135.221]

over a maximum of 30 hops:

```

1  9 ms  17 ms  5 ms  10.0.0.1
2  38 ms  17 ms  18 ms  96.120.62.169
3  18 ms  23 ms  28 ms  te-0-4-0-10-sur01.pittsburgh.pa.pitt.comcast.net [68.86.101.137]
4  26 ms  17 ms  13 ms  te-8-3-ur01.wheeling.wv.pitt.comcast.net [68.86.100.26]
5  13 ms  13 ms  18 ms  te-0-0-0-0-ar01.mckeesport.pa.pitt.comcast.net [68.86.147.109]
6  28 ms  20 ms  21 ms  be-7016-cr02.ashburn.va.ibone.comcast.net [68.86.91.25]
7  33 ms  25 ms  20 ms  hu-0-10-0-1-pe07.ashburn.va.ibone.comcast.net [68.86.83.70]
8  31 ms  53 ms  33 ms  50.242.149.254
9  23 ms  30 ms  34 ms  ge-7-0-0.a1.alb75.tbone.rr.com [66.109.1.46]
10 22 ms  21 ms  22 ms  0.ae2.pr1.dca10.tbone.rr.com [107.14.17.204]
11 20 ms  28 ms  26 ms  a104-87-135-221.deploy.static.akamaitechnologies.com
[104.87.135.221]

```

Trace complete.

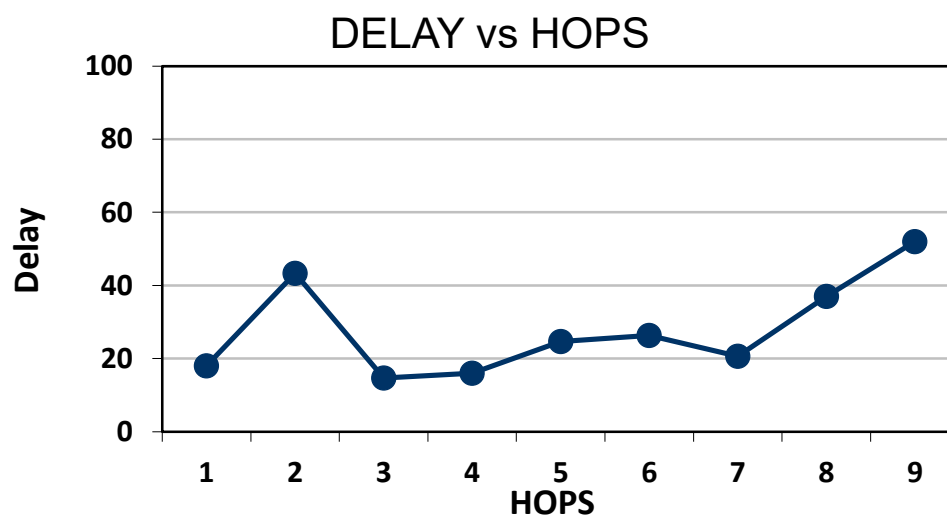
HOPS	IP ADDRESS	AS NUMBER
1	10.0.0.1	4565
2	96.120.62.169	7922
3	68.86.102.37	7922
4	68.86.100.26	7922
5	68.86.147.109	7922
6	68.86.91.25	7922
7	68.86.83.70	7922
8	50.242.149.254	7922
9	66.109.1.46	7843
10	107.14.17.204	7843
11	107.14.45.24	35994

## DOMINANT PATH AT ROUTER LEVEL & AS LEVEL

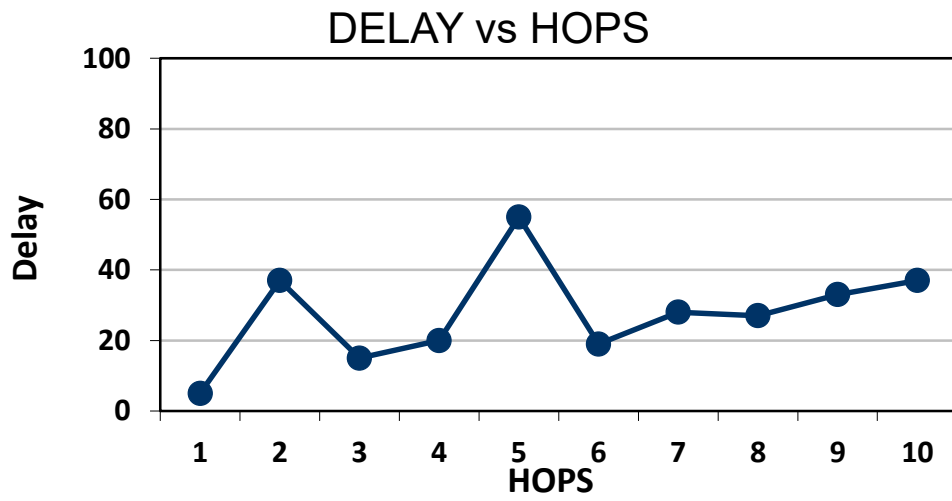
IP ADDRESS	AS NUMBER
10.0.0.1	4565
96.120.62.169	7922
68.86.101.137	7922
68.86.100.26	7922
68.86.147.109	7922
69.139.195.194	7922
23.216.150.121	35994

## DELAY IN ROUTING TO BESTBUY.COM

IN WEEKDAY

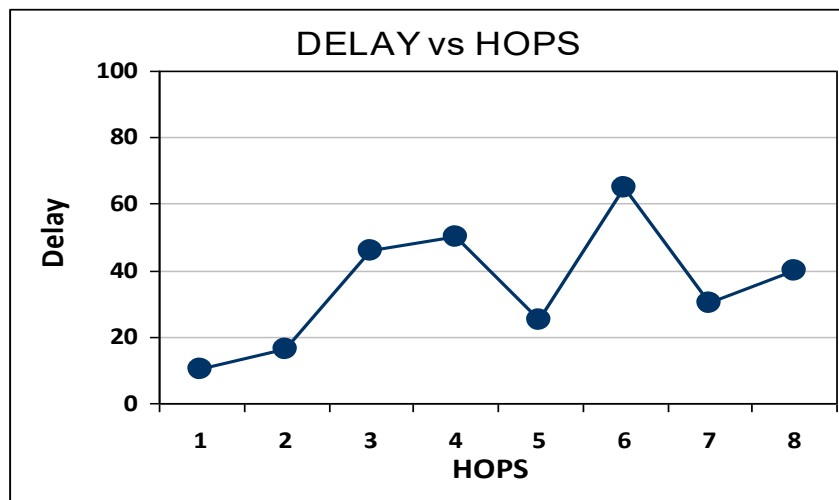


IN WEEKEND

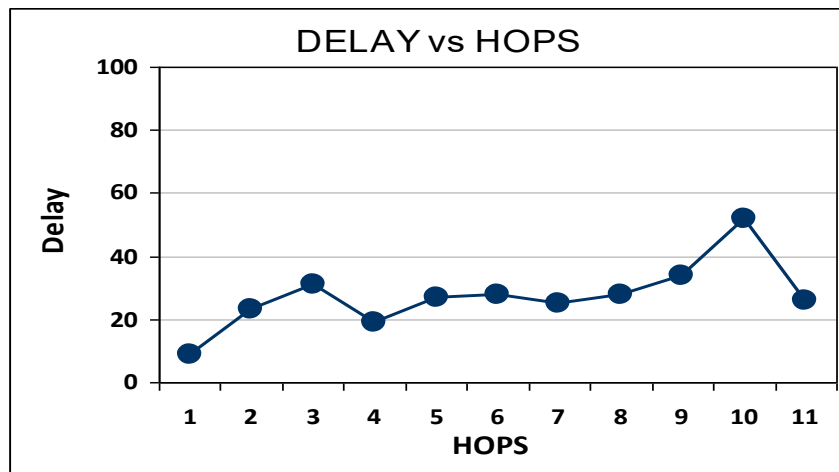


## DELAY IN ROUTING TO HOMEDEPOT.COM

IN WEEKDAY



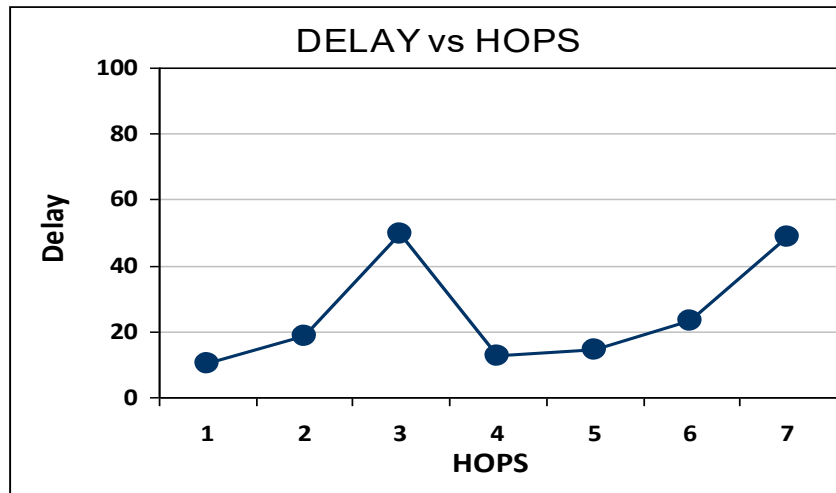
IN WEEKEND



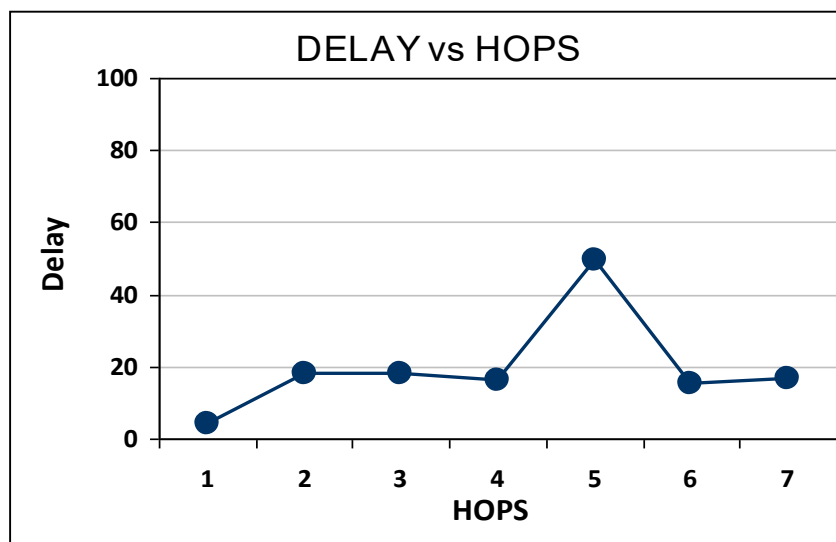


## DELAY IN ROUTING TO KOHLS.COM

IN WEEKDAY

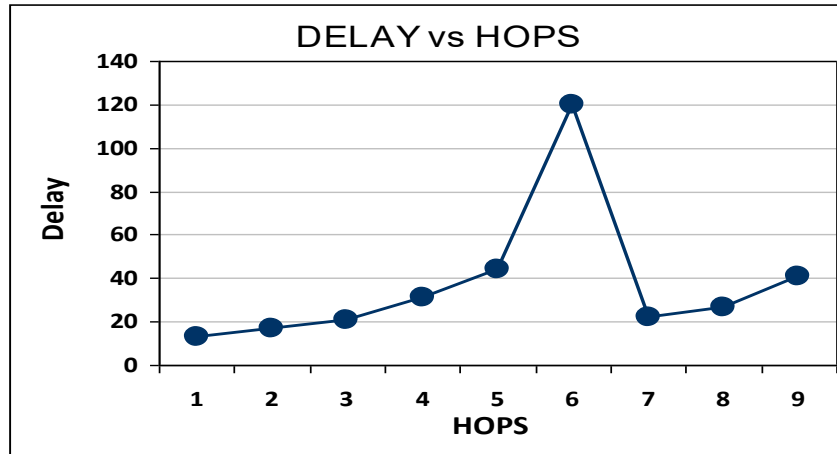


IN WEEKEND

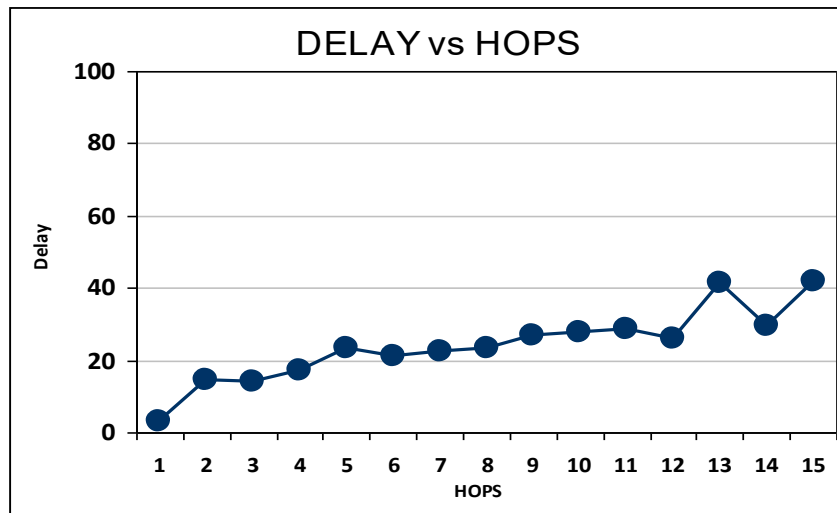


# DELAY IN ROUTING TO MACYS.COM

IN WEEKDAY

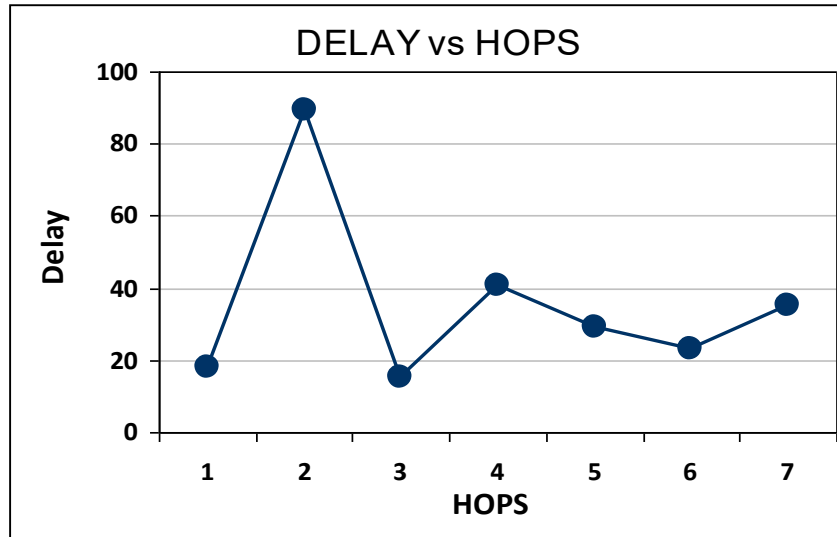


IN WEEKEND

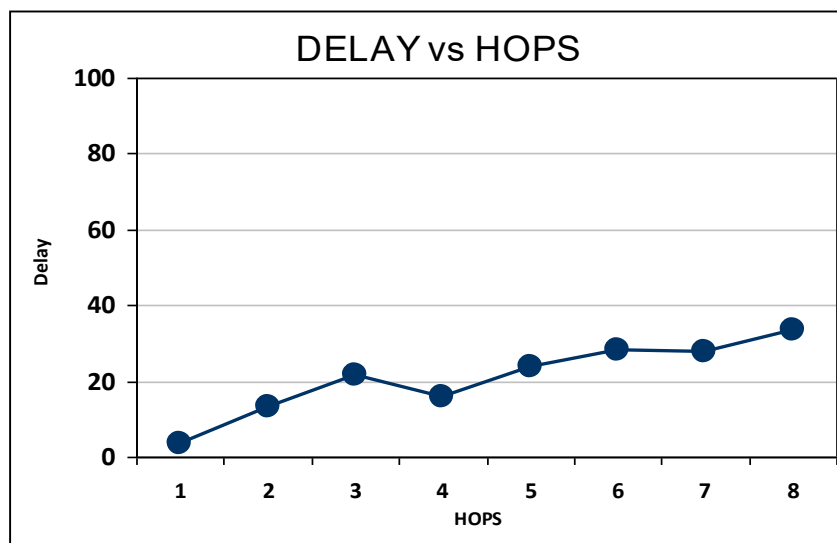


## DELAY IN ROUTING TO TARGET.COM

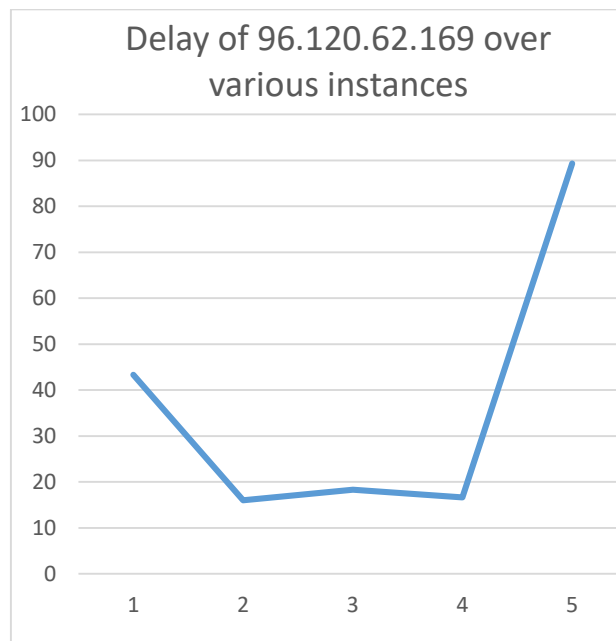
IN WEEKDAY



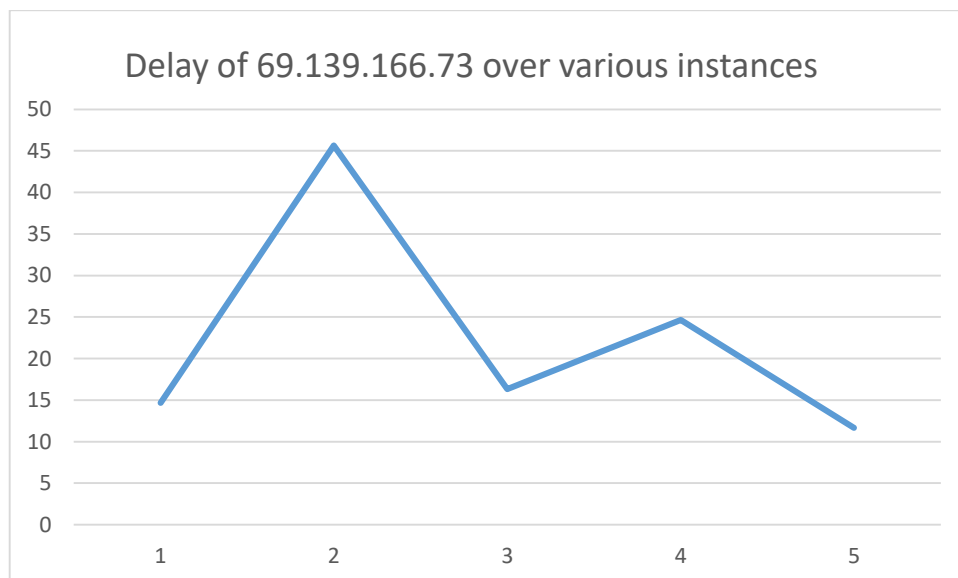
IN WEEKEND



### DELAY OF INDIVIDUAL HOP(from 96.120.62.169)



### DELAY OF INDIVIDUAL HOP(from 69.139.166.73)



**CONCLUSION:**

The IP address of the intermediate routers is used to obtain the AS number. The dominant path is calculated where there is more repetitions. The individual hop delays and the end to end delay are calculated with the help of the average delay. Thus the required metrics are obtained based on the collected data.