

# GTR: GLOBAL WEB-BASED VISUAL TRACEROUTE

CSE 594 Project Presentation  
Kelong Wang

# AGENDA

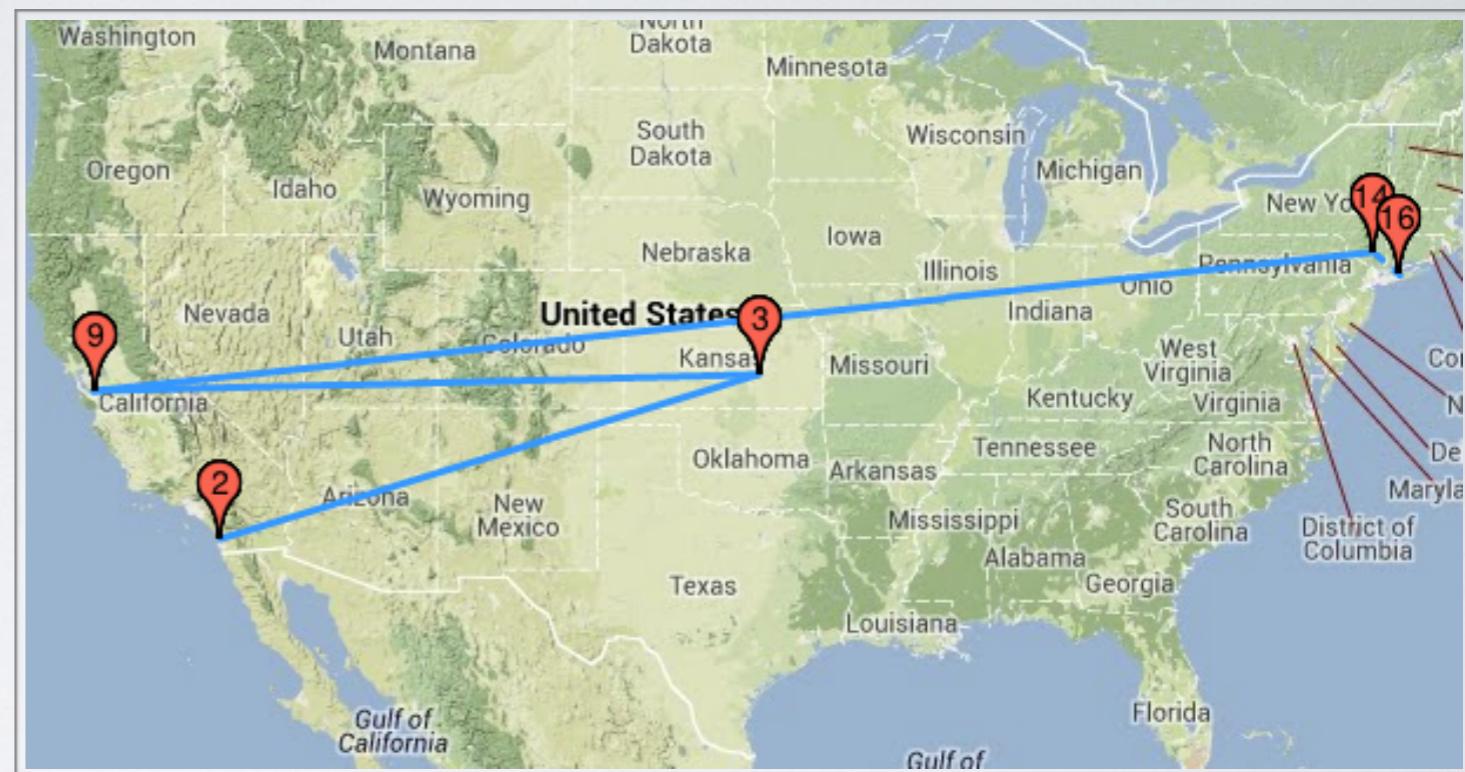
- Goals & Challenges
- Implementation
- Demo

```
0 192.168.1.113 0
1 192.168.1.1 3.5ms
2 66.27.64.1 13.8ms
3 76.166.9.161 11.8ms
4 72.129.1.78 18.0ms
5 72.129.1.2 21.2ms
6 107.14.17.134 19.0ms
..
..
10 72.52.92.121 21.4ms
11 72.52.92.225 86.4ms
..
14 64.72.64.110 82.9ms
15 *
16 129.49.7.82 85.0ms
```

# VISUALIZATION

IP list ==> Plotting on Maps

0	192.168.1.113	0
1	192.168.1.1	3.5ms
2	66.27.64.1	13.8ms
3	76.166.9.161	11.8ms
4	72.129.1.78	18.0ms
5	72.129.1.2	21.2ms
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14	64.72.64.110	82.9ms
15	*	
16	129.49.7.82	85.0ms

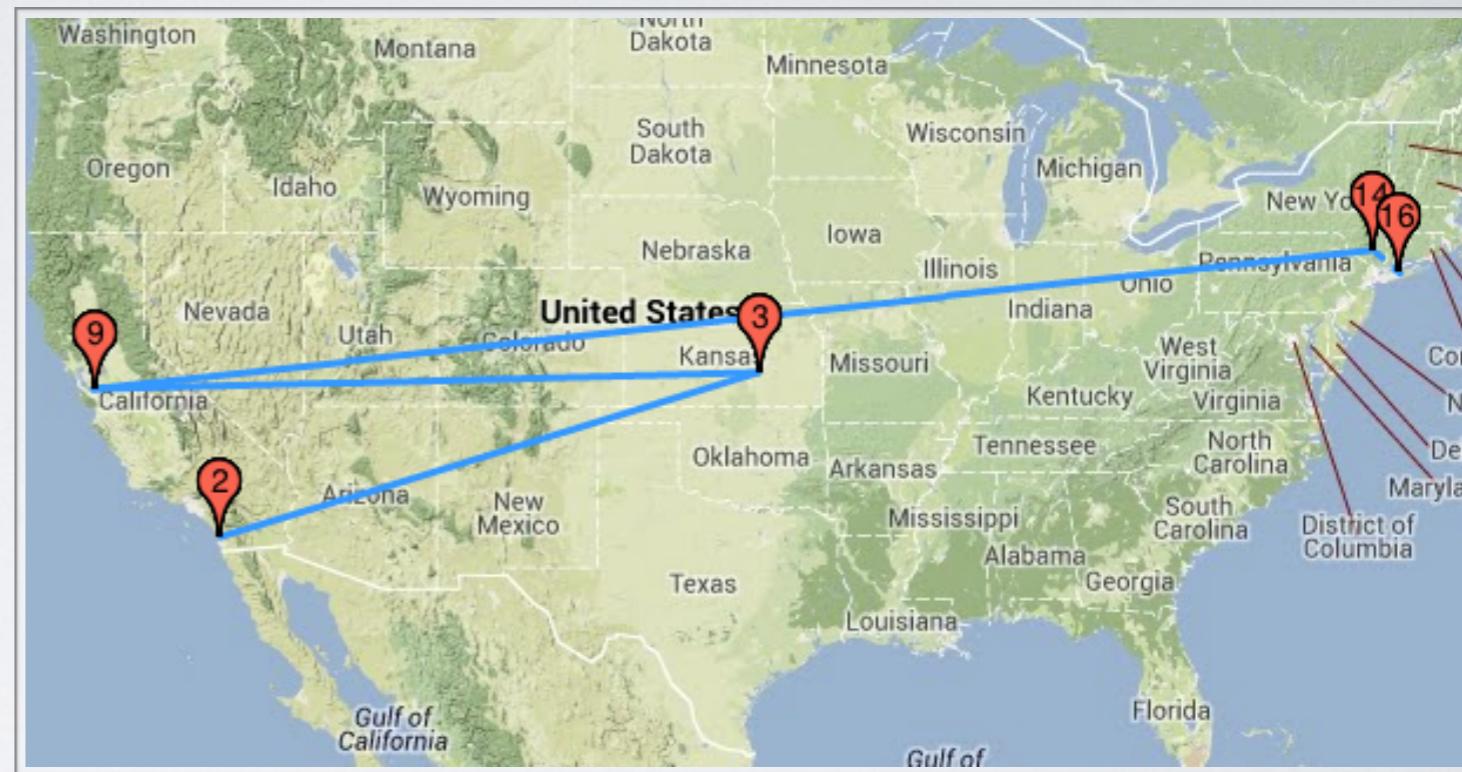


# VISUALIZATION

IP list ==> Plotting on Maps

## Private IP

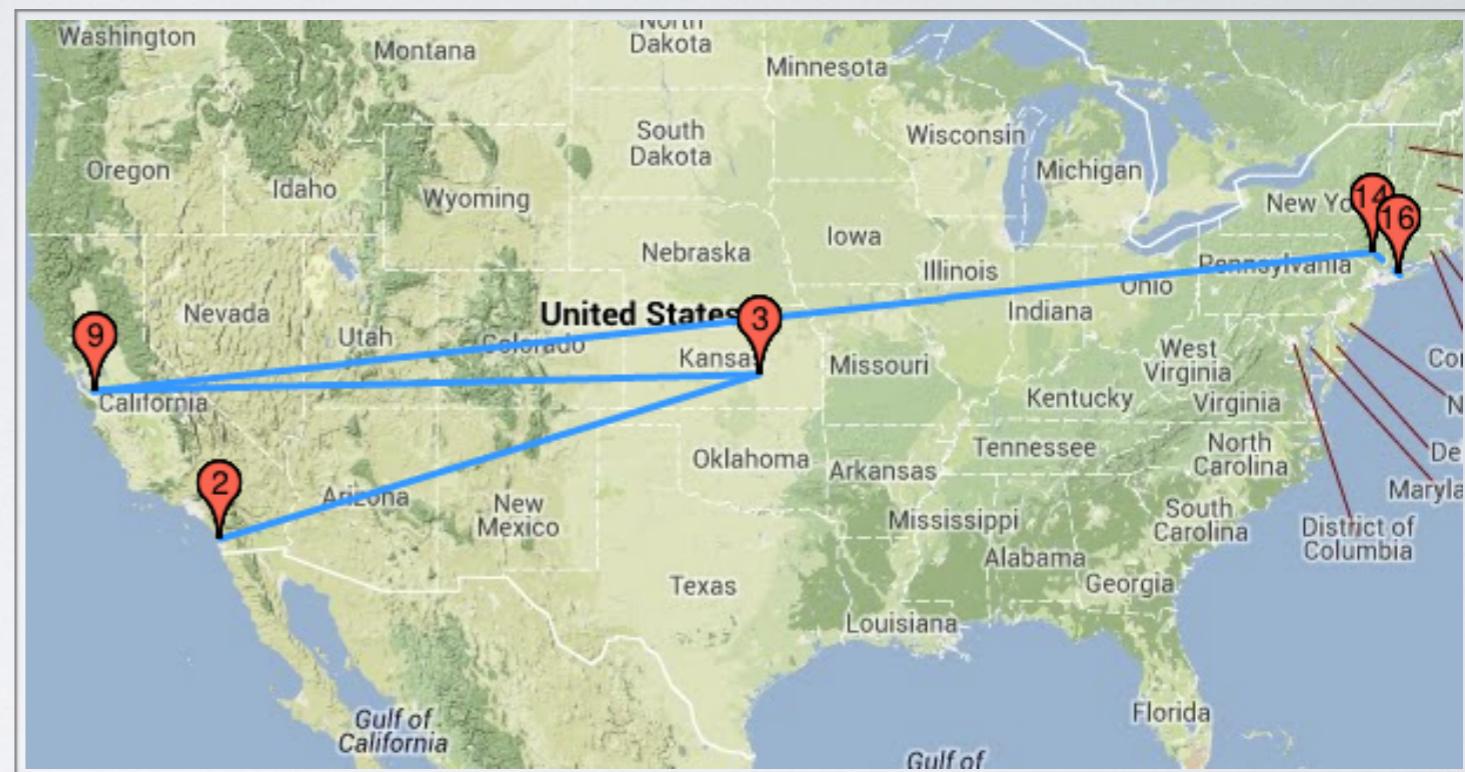
0	192.168.1.113	0
1	192.168.1.1	3.5ms
2	66.27.64.1	13.8ms
3	76.166.9.161	11.8ms
4	72.129.1.78	18.0ms
5	72.129.1.2	21.2ms
6	107.14.17.134	19.0ms
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11	72.52.92.225	86.4ms
..		
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15	*	
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14	64.72.64.110	82.9ms
15	*	
16	129.49.7.82	85.0ms



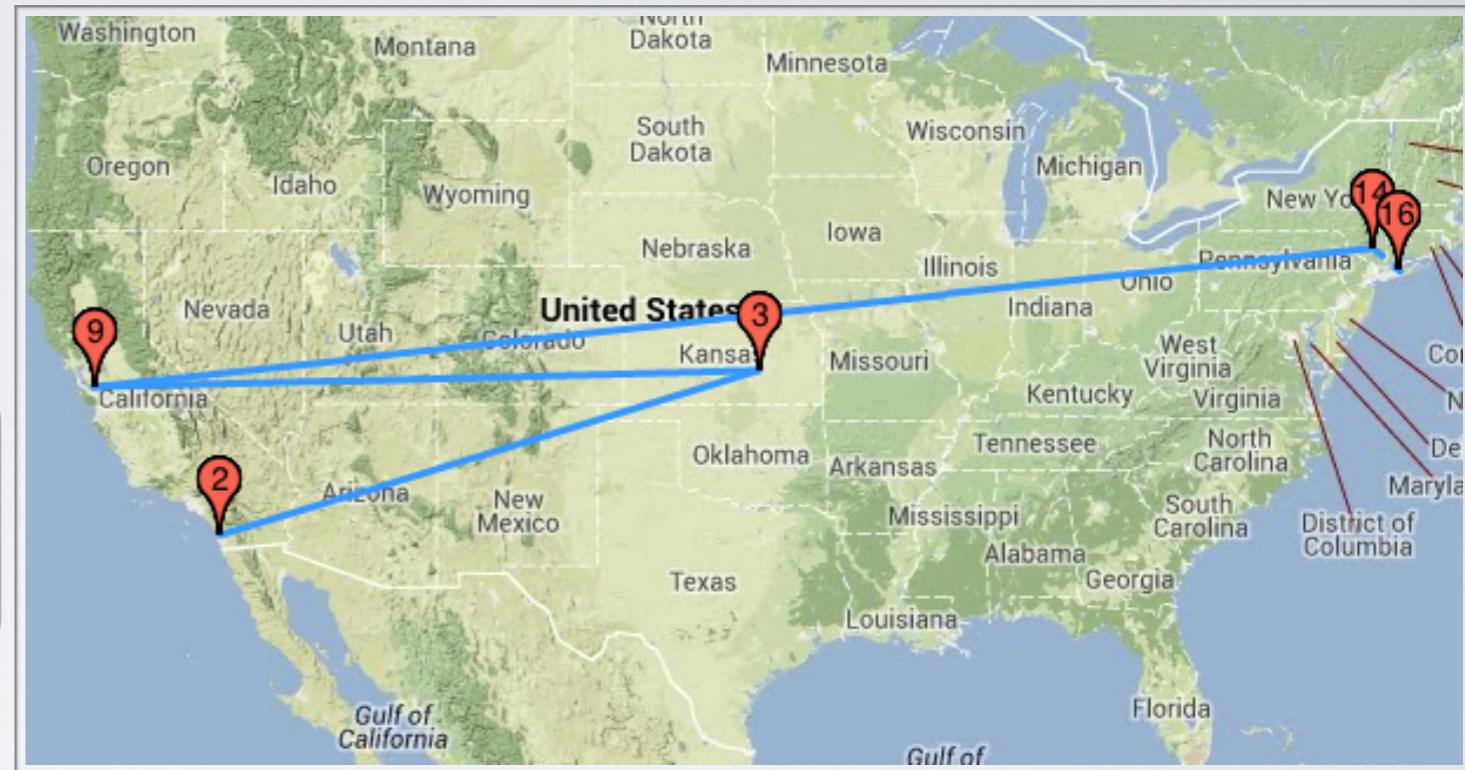
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0	192.168.1.113	0
1	192.168.1.1	3.5ms
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11	72.52.92.225	86.4ms
..		
14	64.72.64.110	82.9ms
15	*	
16	129.49.7.82	85.0ms

RTT Jump

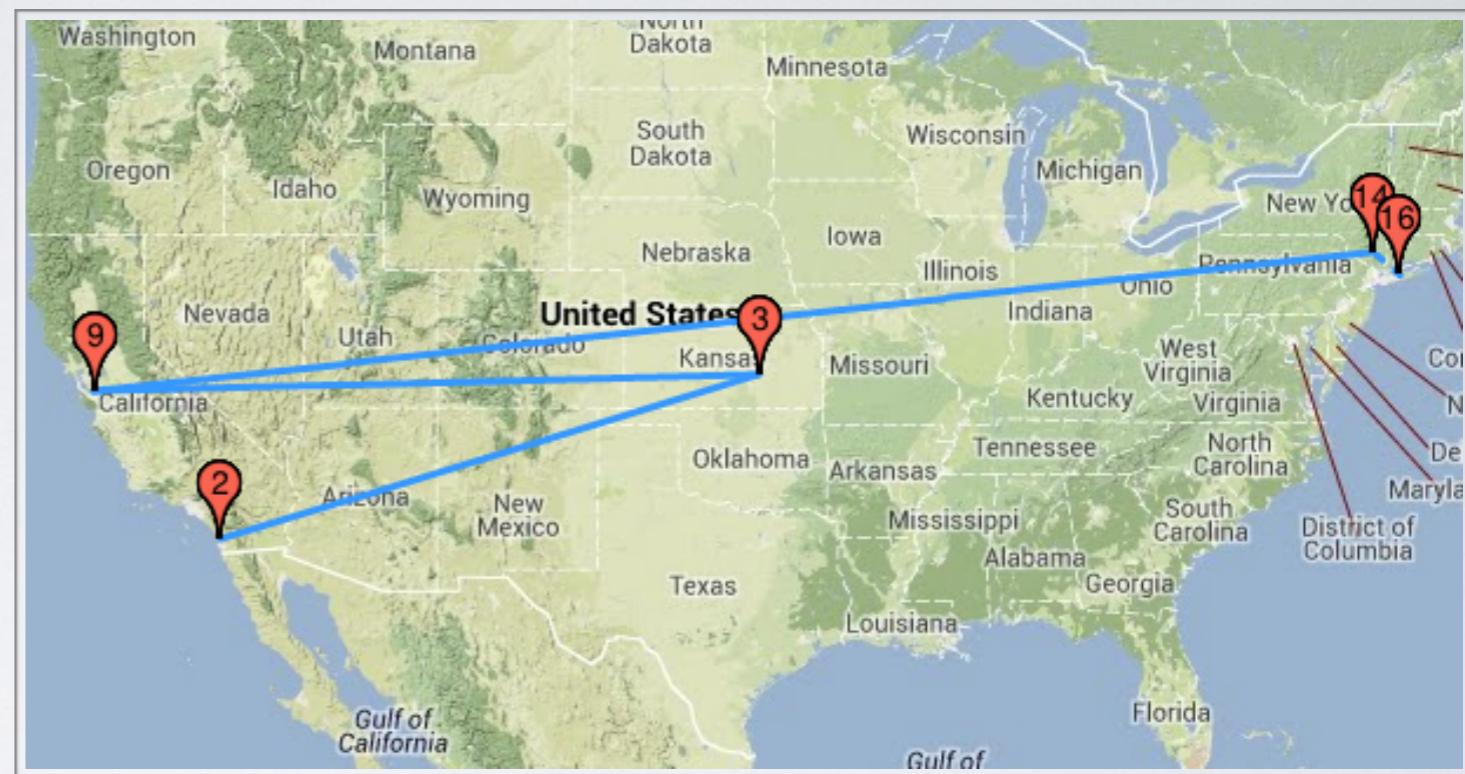
21.4ms  
86.4ms



# VISUALIZATION

IP list ==> Plotting on Maps

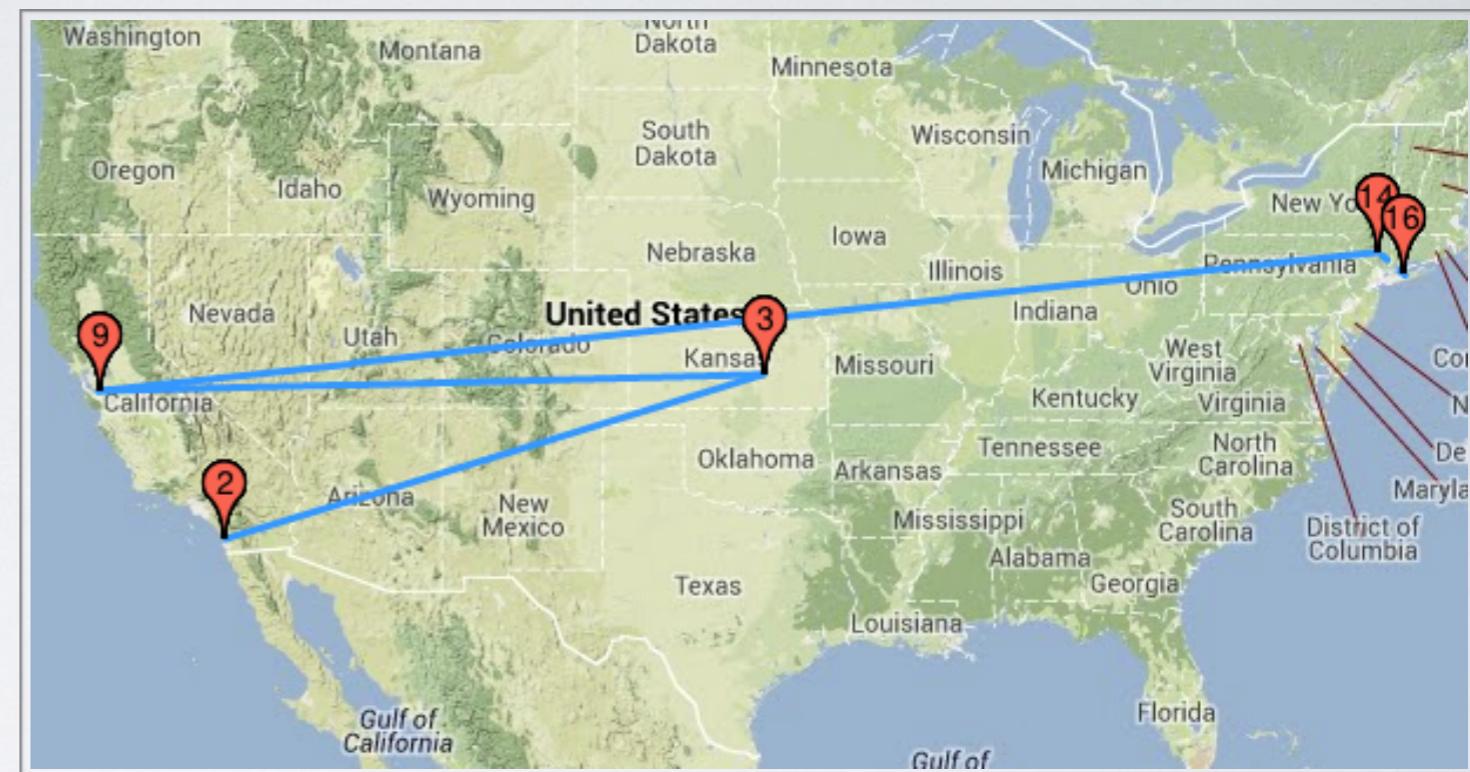
0	192.168.1.113	0
1	192.168.1.1	3.5ms
2	66.27.64.1	13.8ms
3	76.166.9.161	11.8ms
4	72.129.1.78	18.0ms
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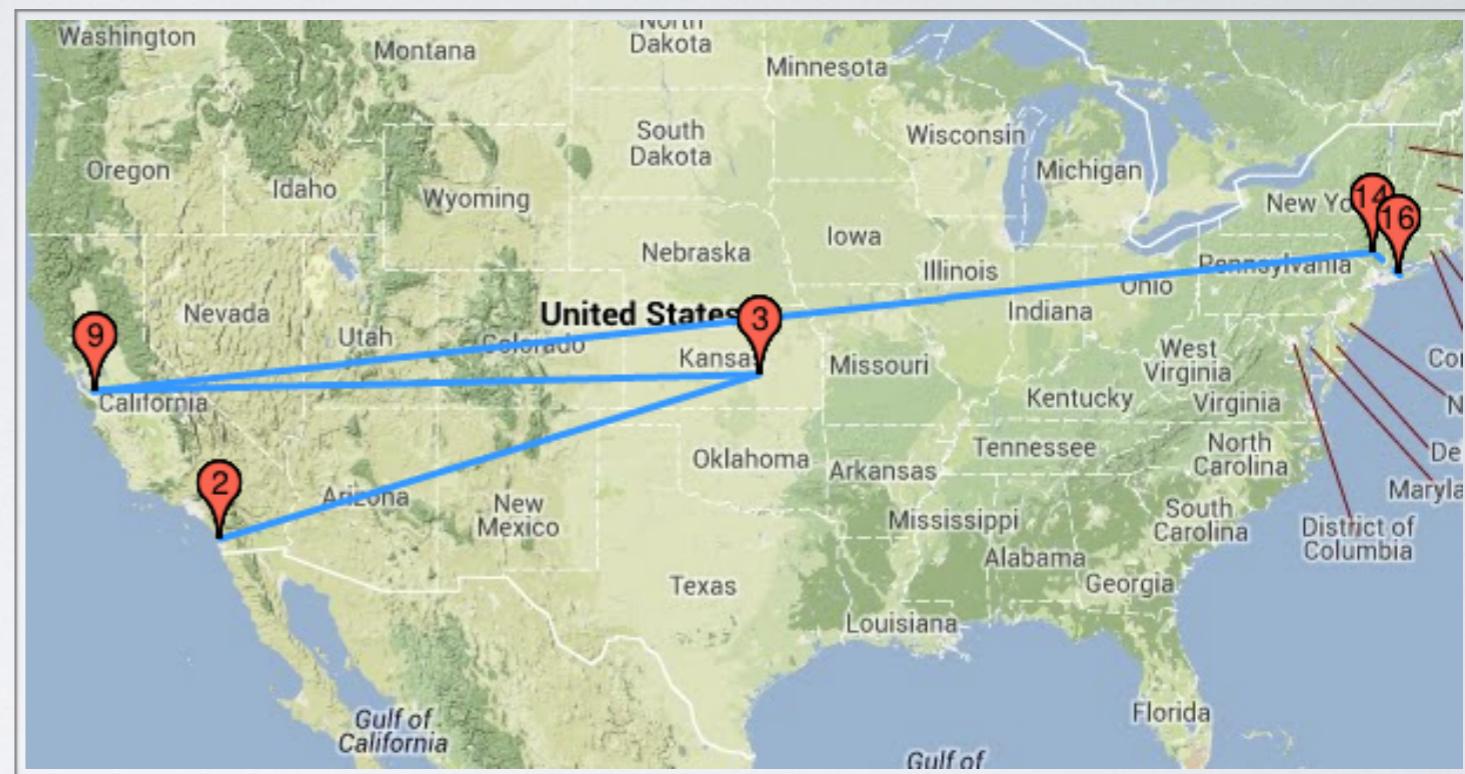
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11	72.52.92.225	86.4ms
..		
14	64.72.64.110	82.9ms
15	*	Hop Gaps
16	129.49.7.82	85.0ms



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2	66.27.64.1	13.8ms
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11	72.52.92.225	86.4ms
..		
14	64.72.64.110	82.9ms
15	*	
16	129.49.7.82	85.0ms

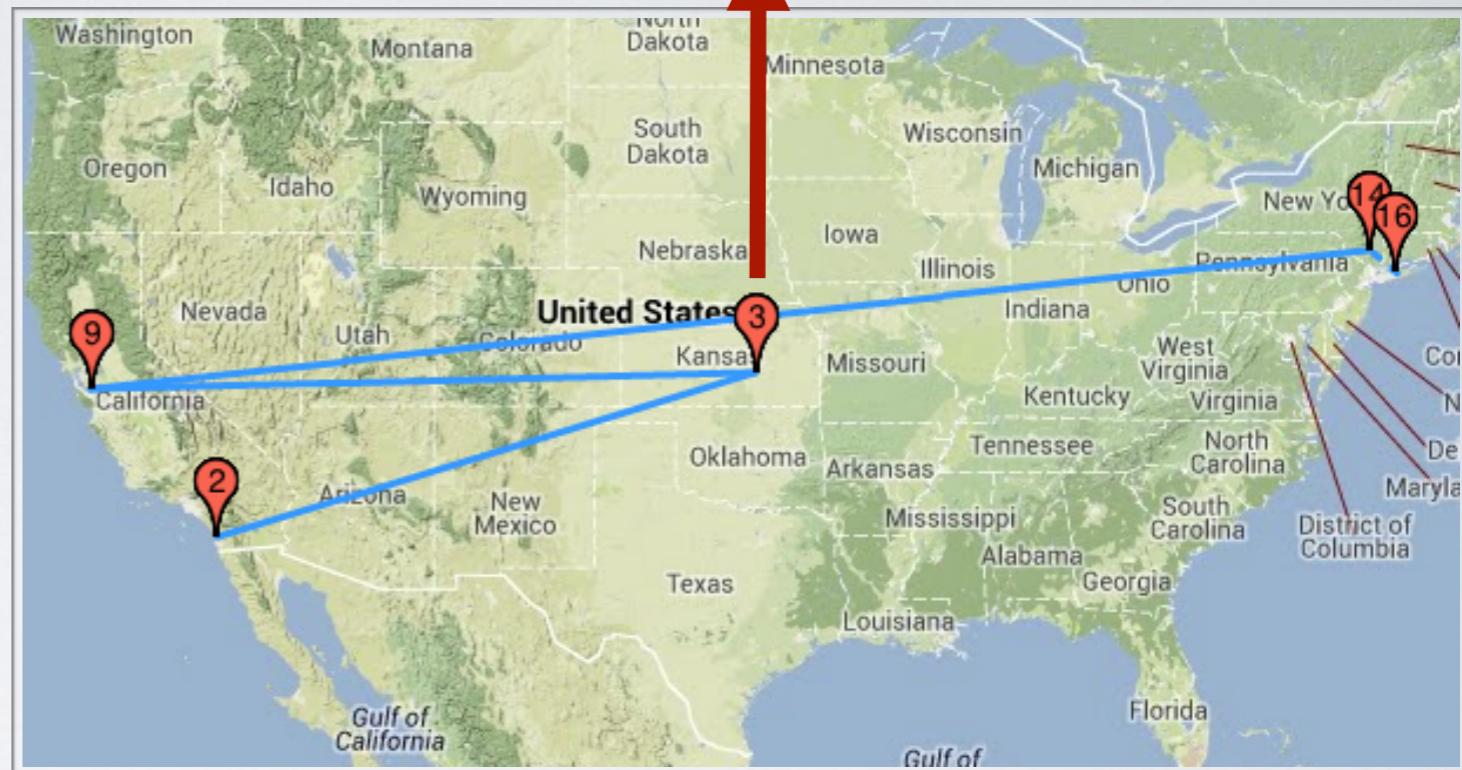


# VISUALIZATION

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2	66.27.64.1	13.8ms
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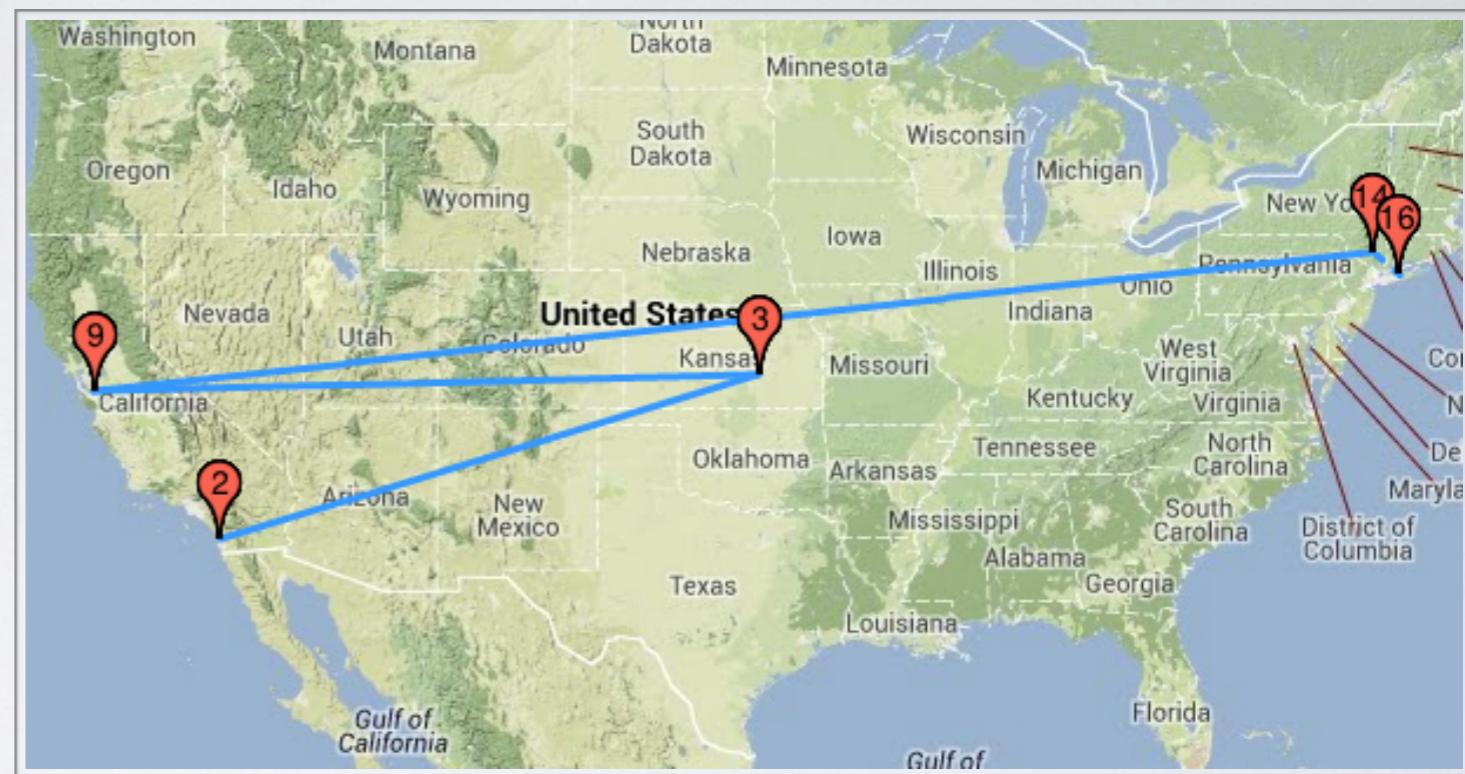
Inaccurate  
Location



# VISUALIZATION

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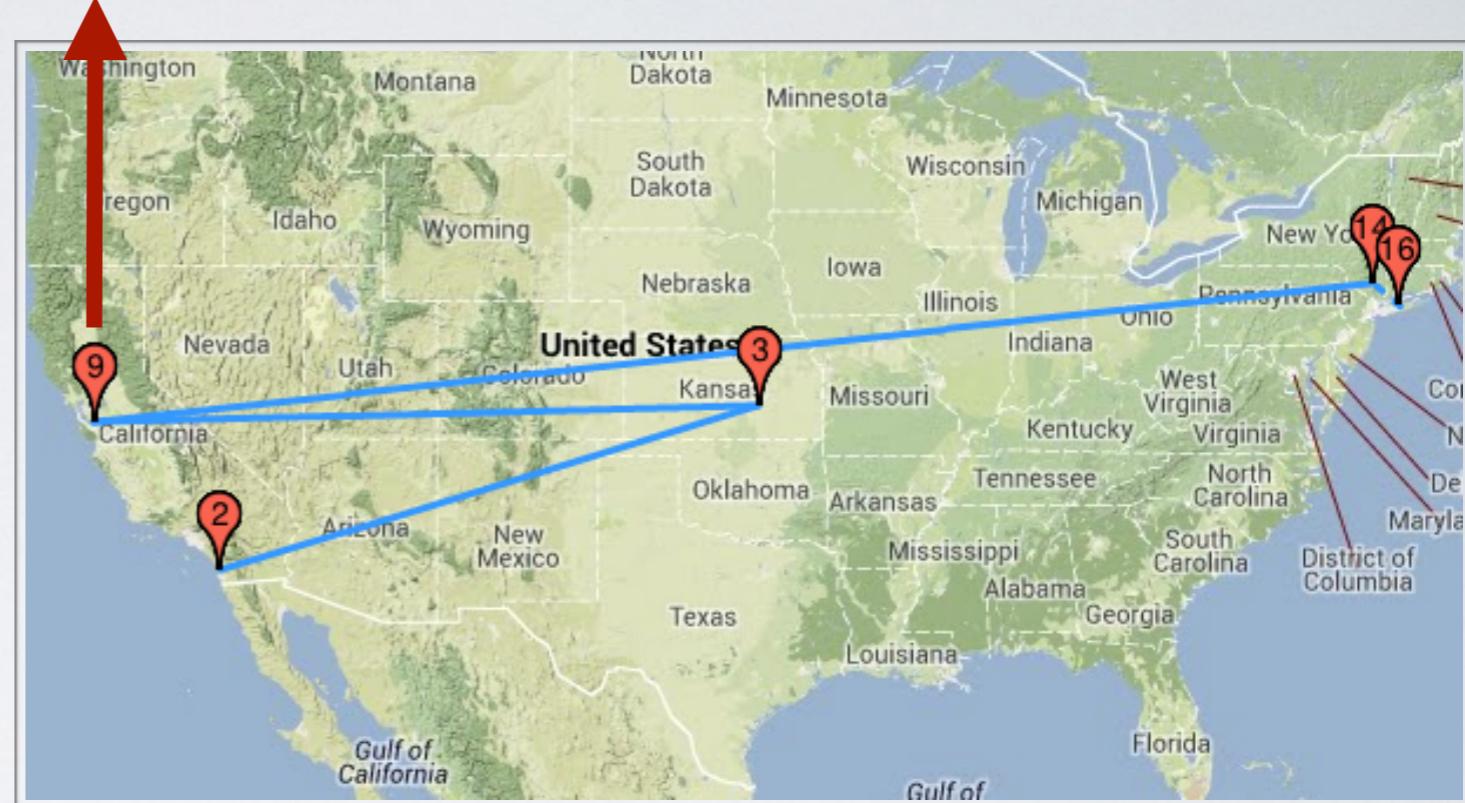


# VISUALIZATION

IP list ==> Plotting on Maps

## Markers Overlap

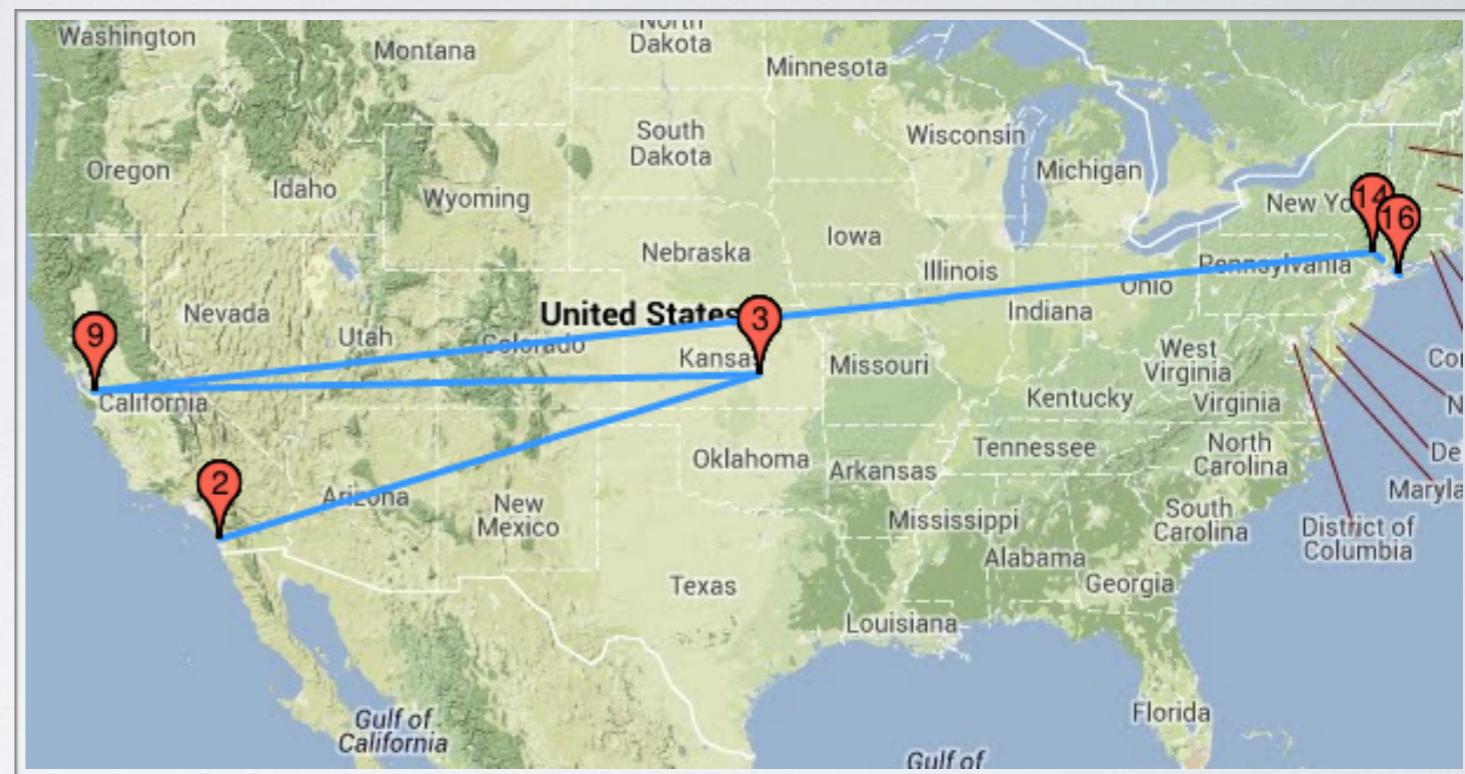
0	192.168.1.113	0
1	192.168.1.1	3.5ms
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14	64.72.64.110	82.9ms
15	*	
16	129.49.7.82	85.0ms



# VISUALIZATION

IP list ==> Plotting on Maps

# GLOBAL WEB-BASED

- Ripe Atlas Probes spanning all over the world

<b>Source</b>	<input type="text" value="CA: Toronto, Ontario, Canada"/>
<b>Destination</b>	<input type="text" value="IP / Hostname"/>
	<input type="button" value="Submit"/>

## Source

- ✓ AT: (unknown location)
  - AT: Vienna, Wien, Austria
  - AU: 152 Sturt Street, Southbank VIC 3006, Australia
  - AU: Brisbane, Queensland, Australia
  - AU: Canberra, Australian Capital Territory, Australia
  - AU: (unknown location)
- BE: Athus, Walloon Region, Belgium
  - BE: (unknown location)
  - BE: 4432 Alleur, Belgium
- BR: (unknown location)
  - BR: Sao Paulo – São Paulo, Brazil
  - BR: Rio de Janeiro, Brazil
- CA: Toronto, Ontario, Canada
  - CA: (unknown location)
  - CA: Temple, Calgary, AB, Canada
  - CA: Calgary, Alberta, Canada
  - CA: 863 Topsail Road, St. John's, NL, Canada
  - CN: (unknown location)
  - CN: Beijing, China

# GLOBAL WEB-BASED

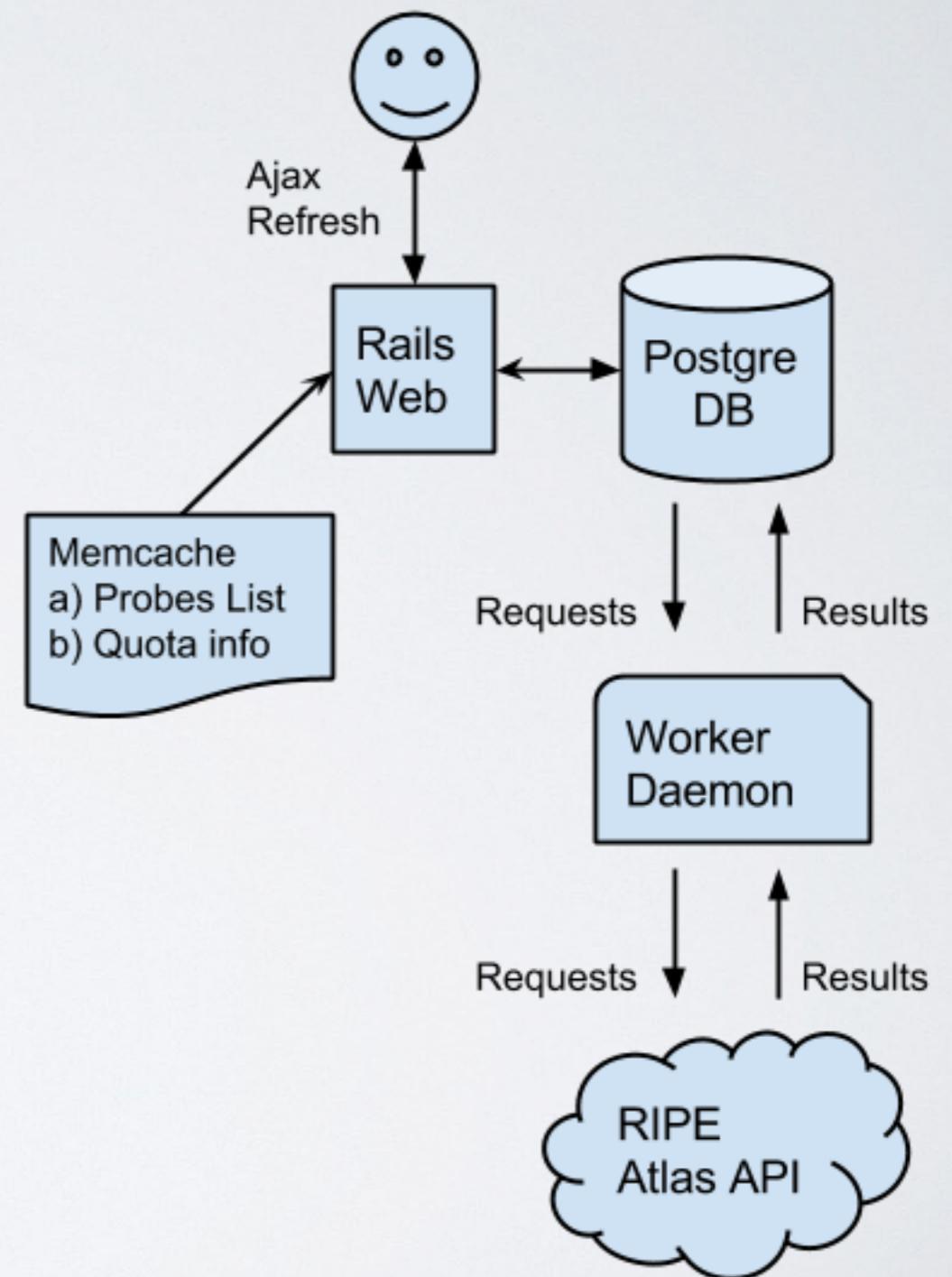
- Ripe Atlas Probes spanning all over the world
  - Each Traceroute takes about 20 seconds, may fail

<b>Source</b>	CA: Toronto, Ontario, Canada
<b>Destination</b>	IP / Hostname
<b>Submit</b>	

## Source

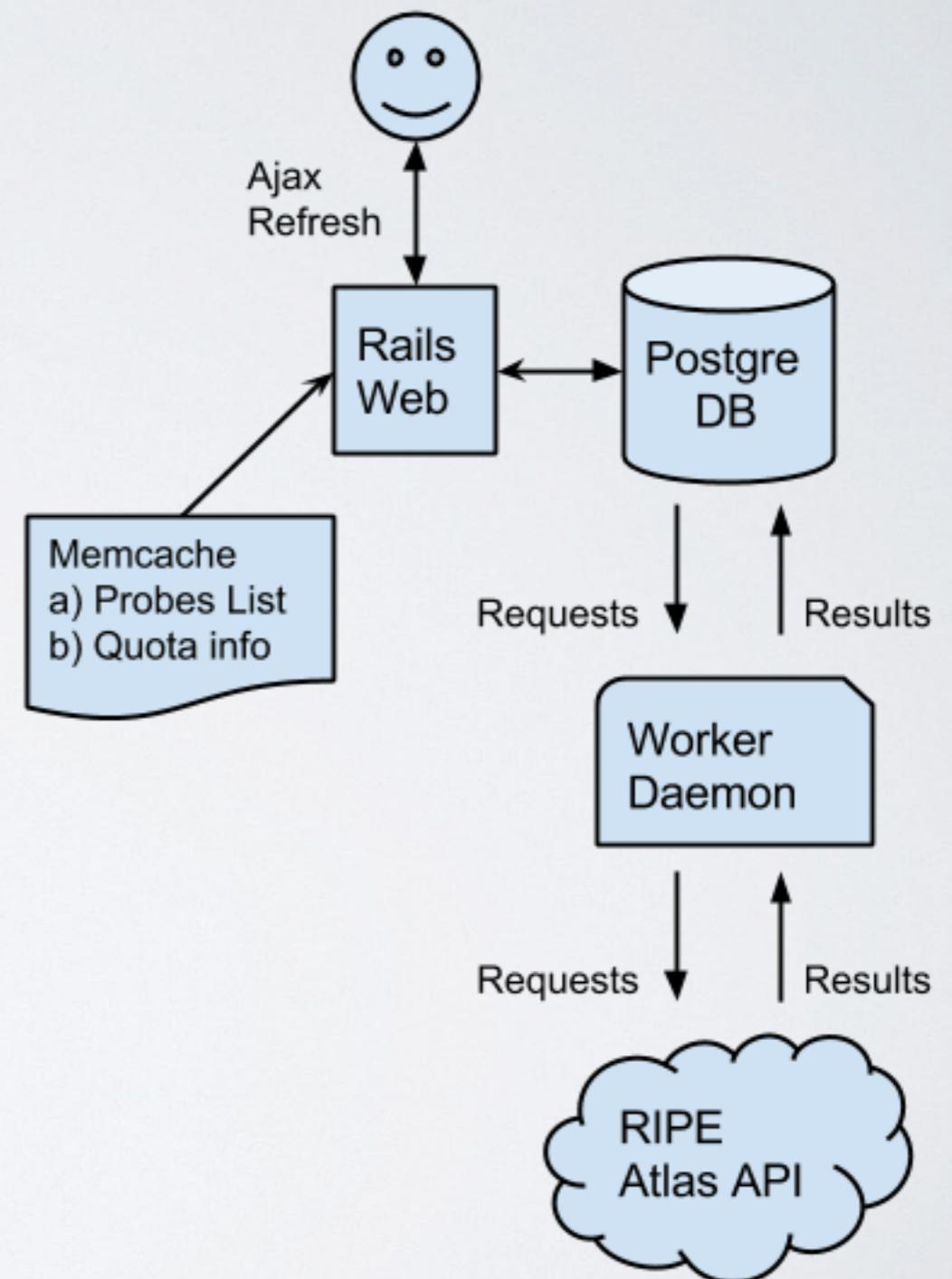
- ✓ AT: (unknown location)
  - AT: Vienna, Wien, Austria
  - AU: 152 Sturt Street, Southbank VIC 3006, Australia
  - AU: Brisbane, Queensland, Australia
  - AU: Canberra, Australian Capital Territory, Australia
  - AU: (unknown location)
- BE: Athus, Walloon Region, Belgium
  - BE: (unknown location)
  - BE: 4432 Alleur, Belgium
- BR: (unknown location)
  - BR: Sao Paulo – São Paulo, Brazil
  - BR: Rio de Janeiro, Brazil
- CA: Toronto, Ontario, Canada
  - CA: (unknown location)
  - CA: Temple, Calgary, AB, Canada
  - CA: Calgary, Alberta, Canada
  - CA: 863 Topsail Road, St. John's, NL, Canada
  - CN: (unknown location)
  - CN: Beijing, China

# ASYNC QUERYING



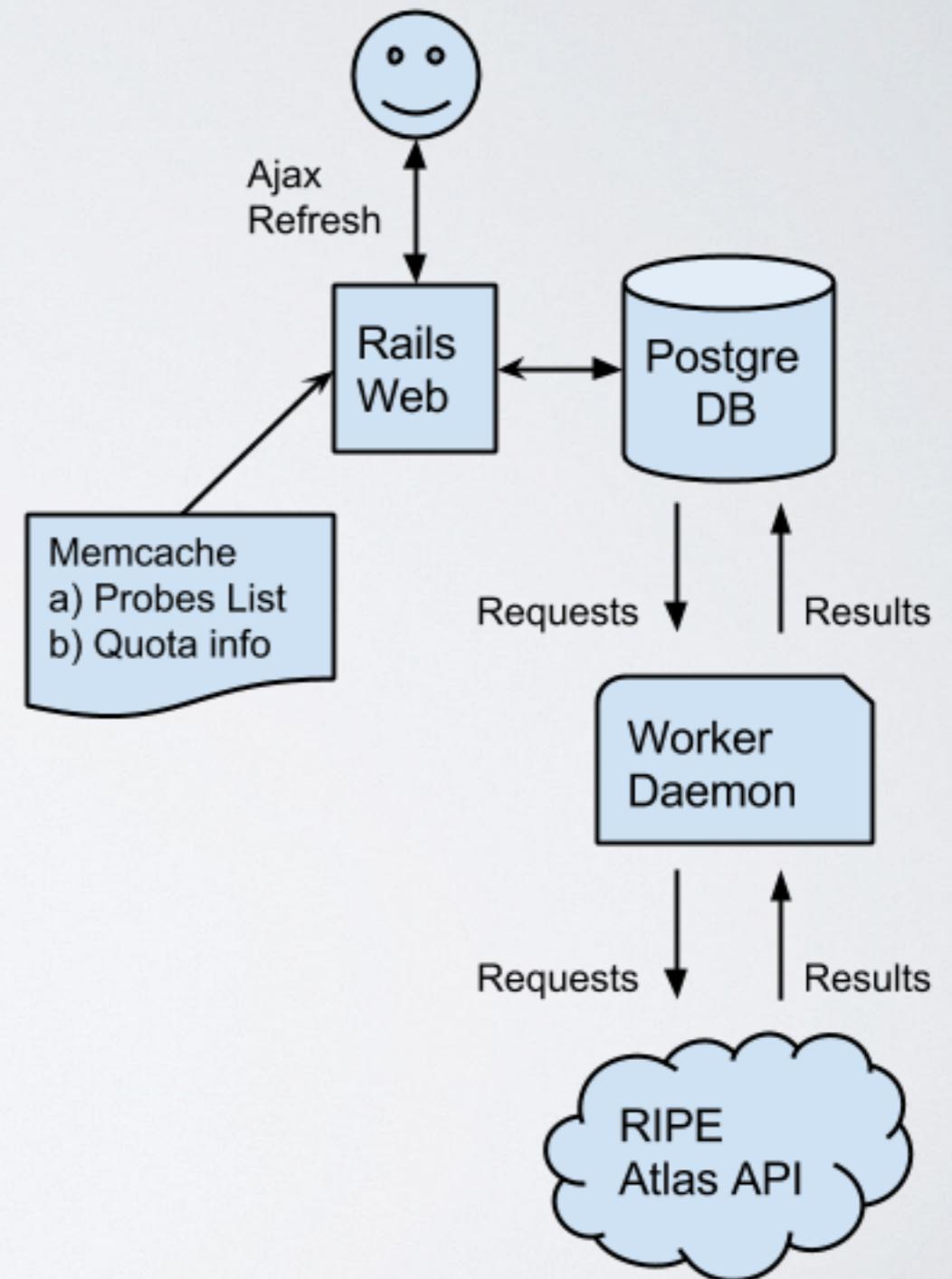
# ASYNC QUERYING

- Source probe list preloading



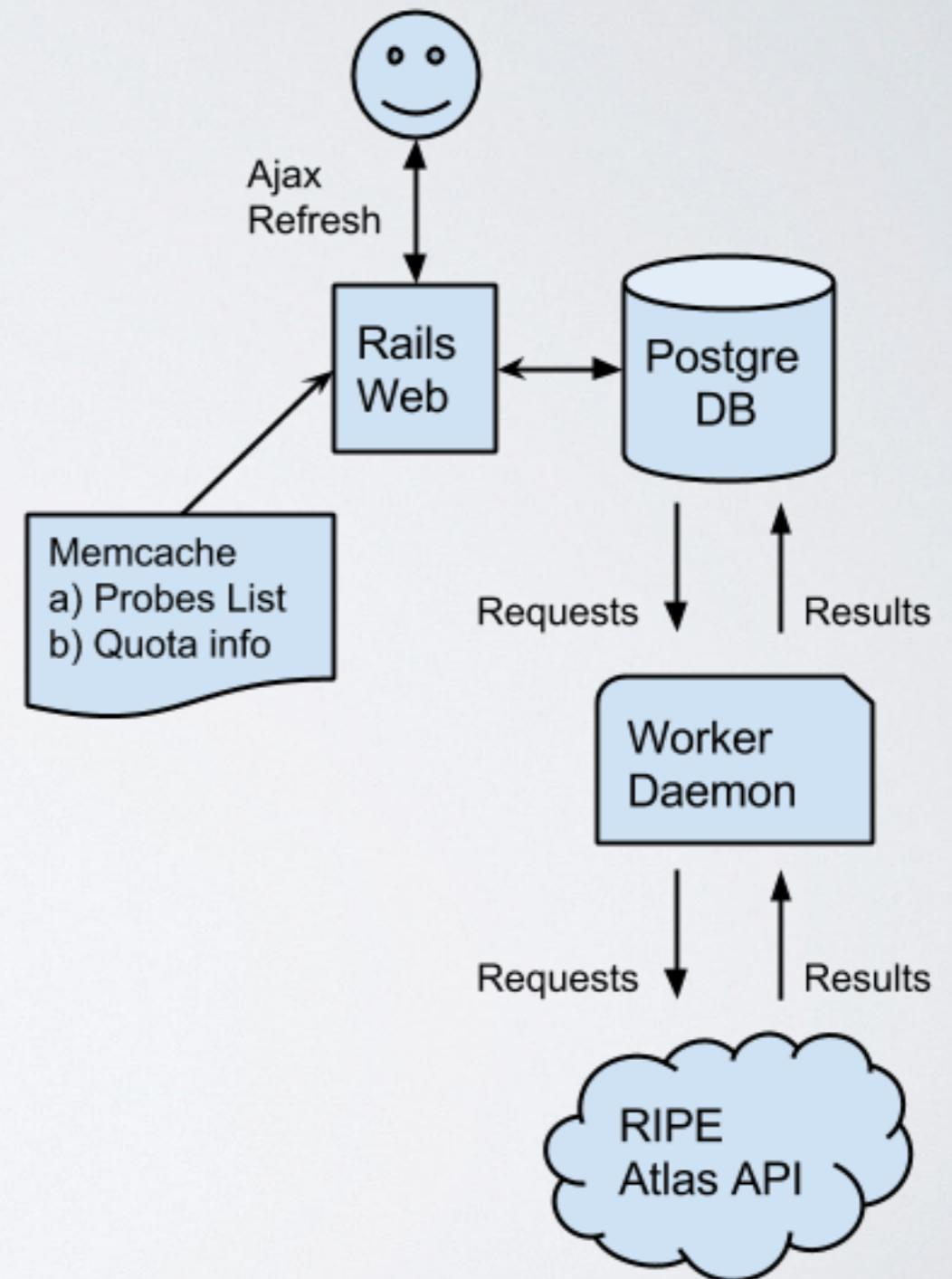
# ASYNC QUERYING

- Source probe list preloading
- User submit, then AJAX refresh



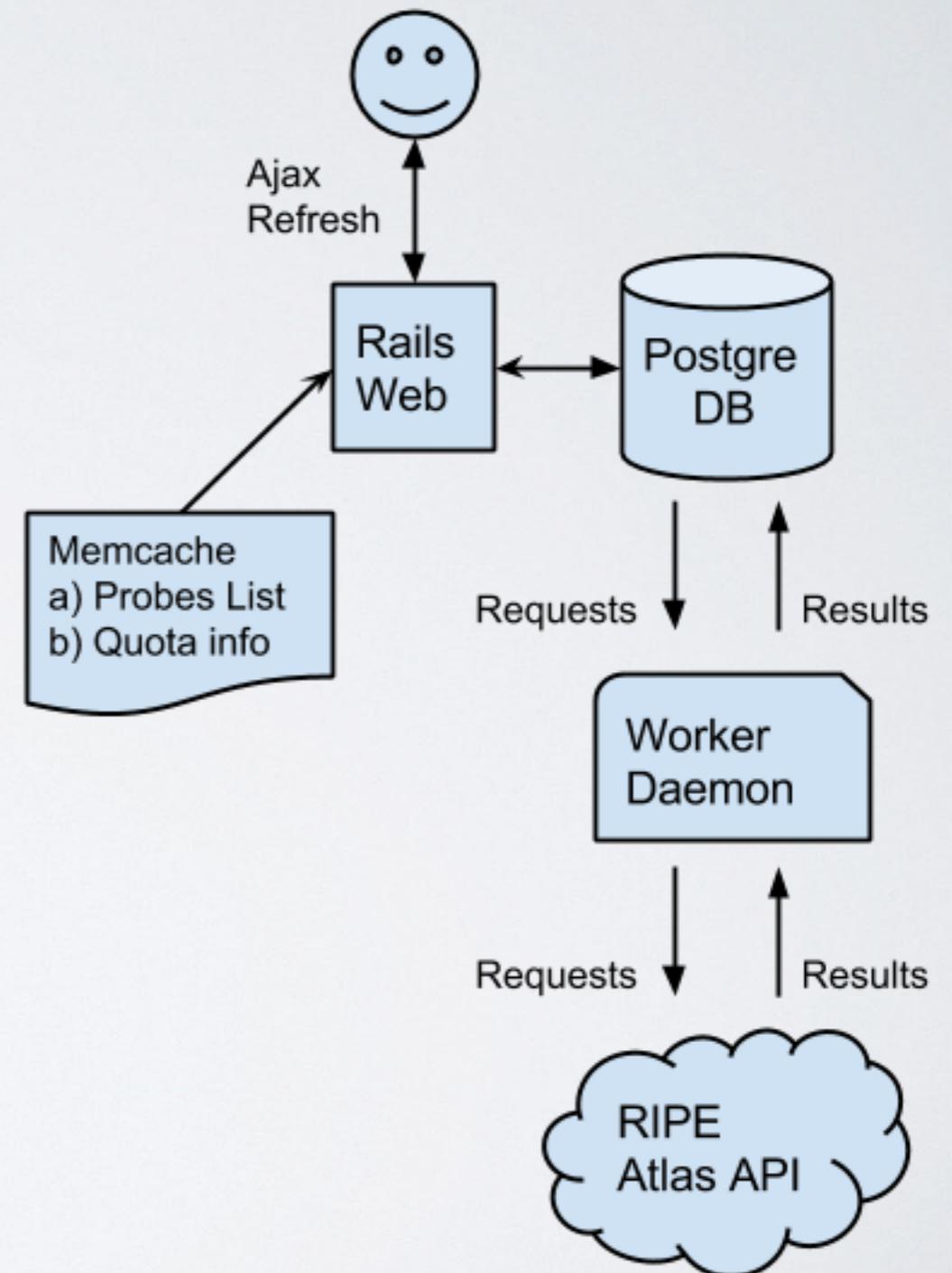
# ASYNC QUERYING

- Source probe list preloading
- User submit, then AJAX refresh
- Daemons also maintain task state
  - submitted / available / failed
  - timeout after 10 minutes



# ASYNC QUERYING

- Source probe list preloading
- User submit, then AJAX refresh
- Daemons also maintain task state
  - submitted / available / failed
  - timeout after 10 minutes
- DB store results permanently



# QUOTA LIMIT

GTR

Home

IP Lookup

## Global Visual Tra



127.0.0.1:3000 上的网页显示：

You submit too frequently. Please try later.

确定

# PLOTTING

# PLOTTING

- Information of IP comes from MaxMind™ GeoDB

# PLOTTING

- Information of IP comes from MaxMind™ GeoDB
  - Latitude / Longitude

# PLOTTING

- Information of IP comes from MaxMind™ GeoDB
  - Latitude / Longitude
  - Country / Region / City

# PLOTTING

- Information of IP comes from MaxMind™ GeoDB
  - Latitude / Longitude
  - Country / Region / City
  - AS

# PLOTTING

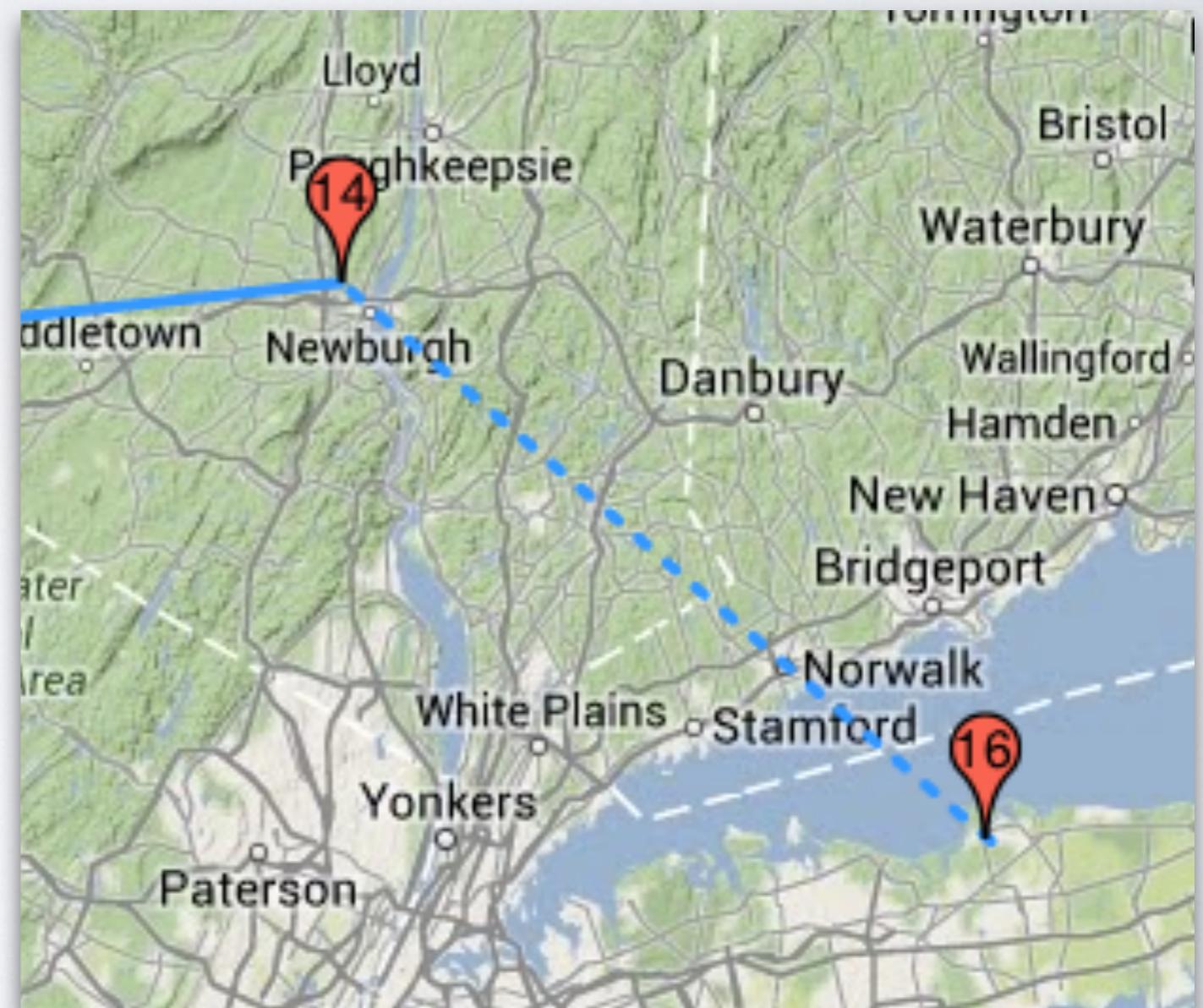
- Information of IP comes from MaxMind™ GeoDB
  - Latitude / Longitude
  - Country / Region / City
  - AS
- Plotting via Google Maps Javascript API

# PLOTTING

- Information of IP comes from MaxMind™ GeoDB
  - Latitude / Longitude
  - Country / Region / City
  - AS
- Plotting via Google Maps Javascript API
  - Marker / Line / InfoWindow

# PLOTTING - HOP GAPS

14	64.72.64.110	82.9ms
15	*	
16	129.49.7.82	85.0ms



# PLOTTING - RTT COLOR



Default Color

7	152.179.50.30	33.231 ms
8	141.136.109.162	121.05 ms
9	77.67.75.178	122.773 ms
10	95.167.92.71	161.607 ms

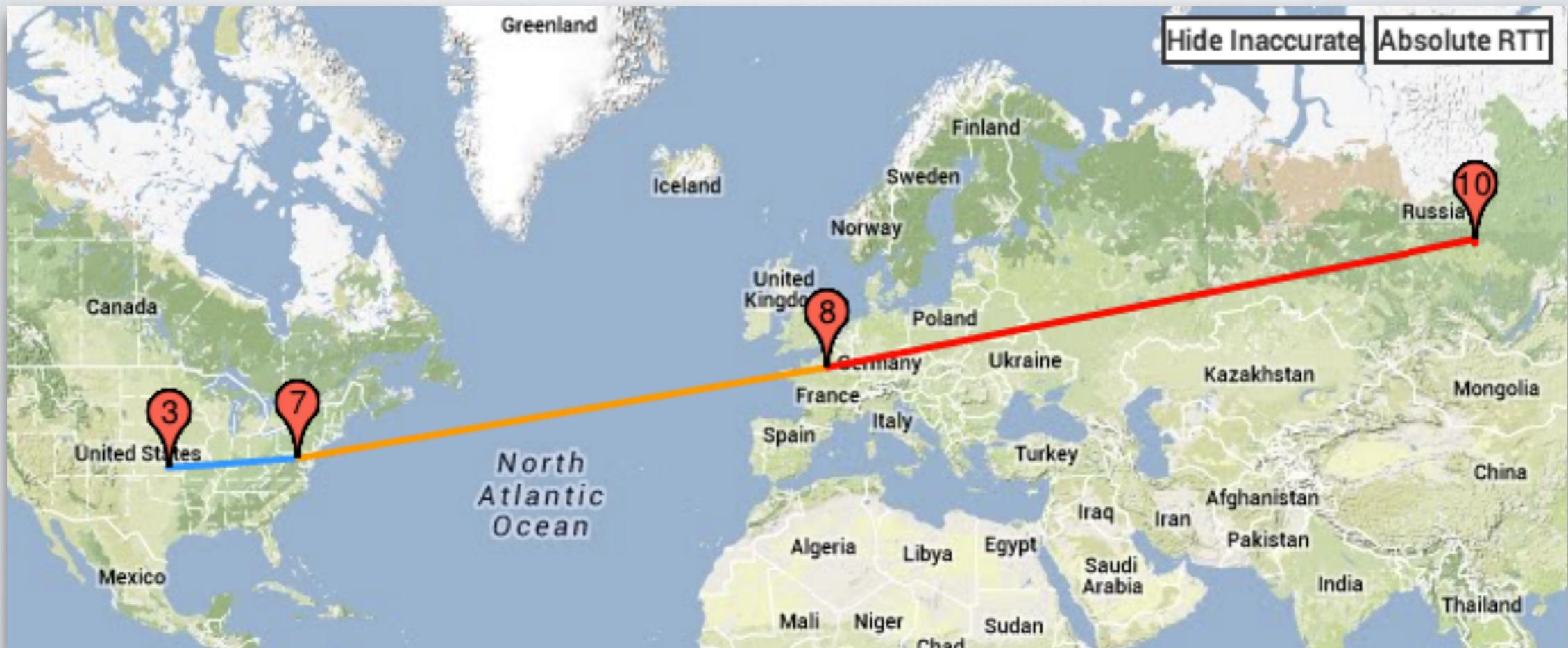
# PLOTTING - RTT COLOR



Relative RTT Mode

7	152.179.50.30	33.231 ms
8	141.136.109.162	121.05 ms
9	77.67.75.178	122.773 ms
10	95.167.92.71	161.607 ms

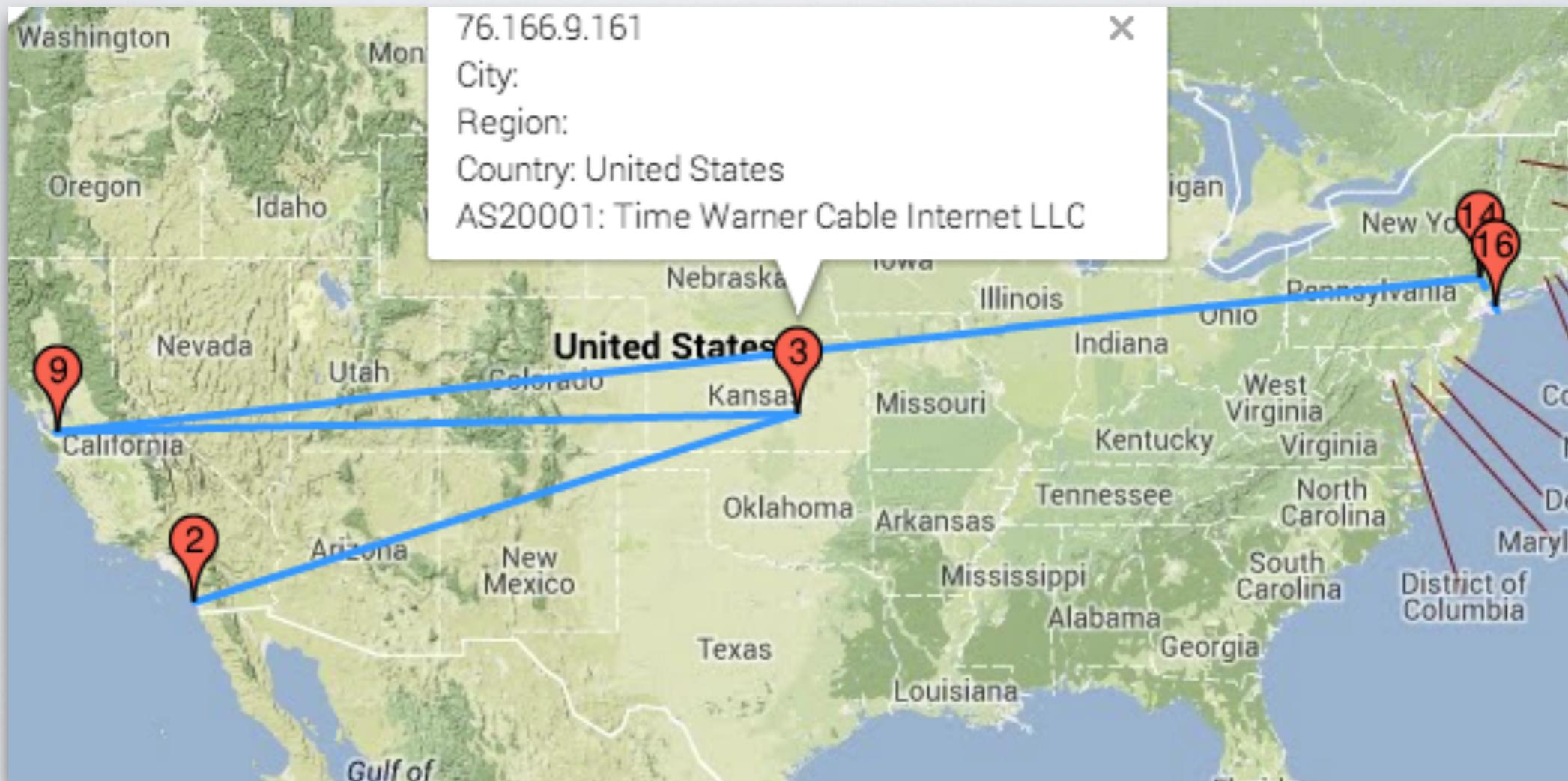
# PLOTTING - RTT COLOR



Absolute RTT Mode

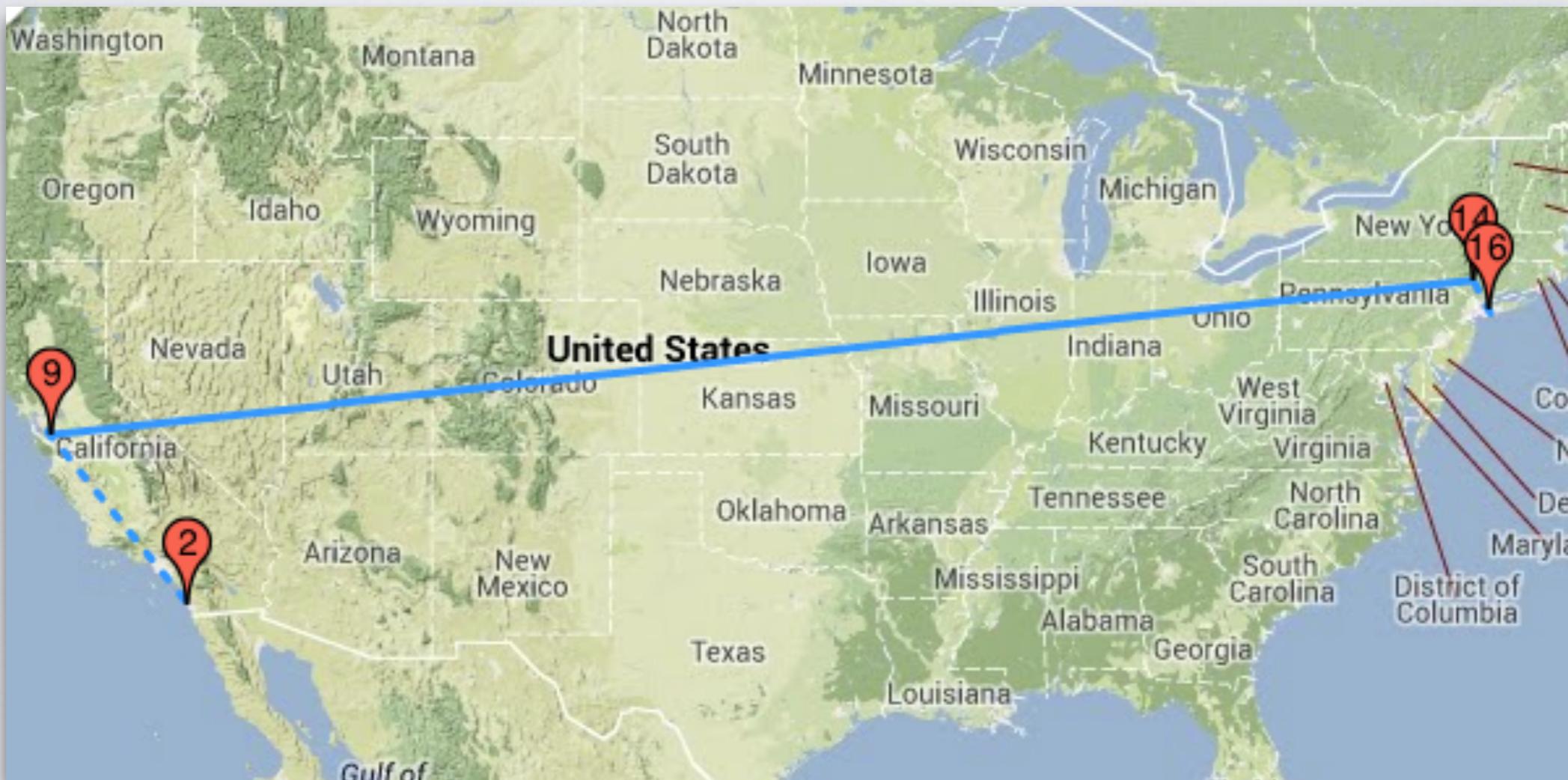
7	152.179.50.30	33.231 ms
8	141.136.109.162	121.05 ms
9	77.67.75.178	122.773 ms
10	95.167.92.71	161.607 ms

# PLOTTING - HIDE INACCURATE



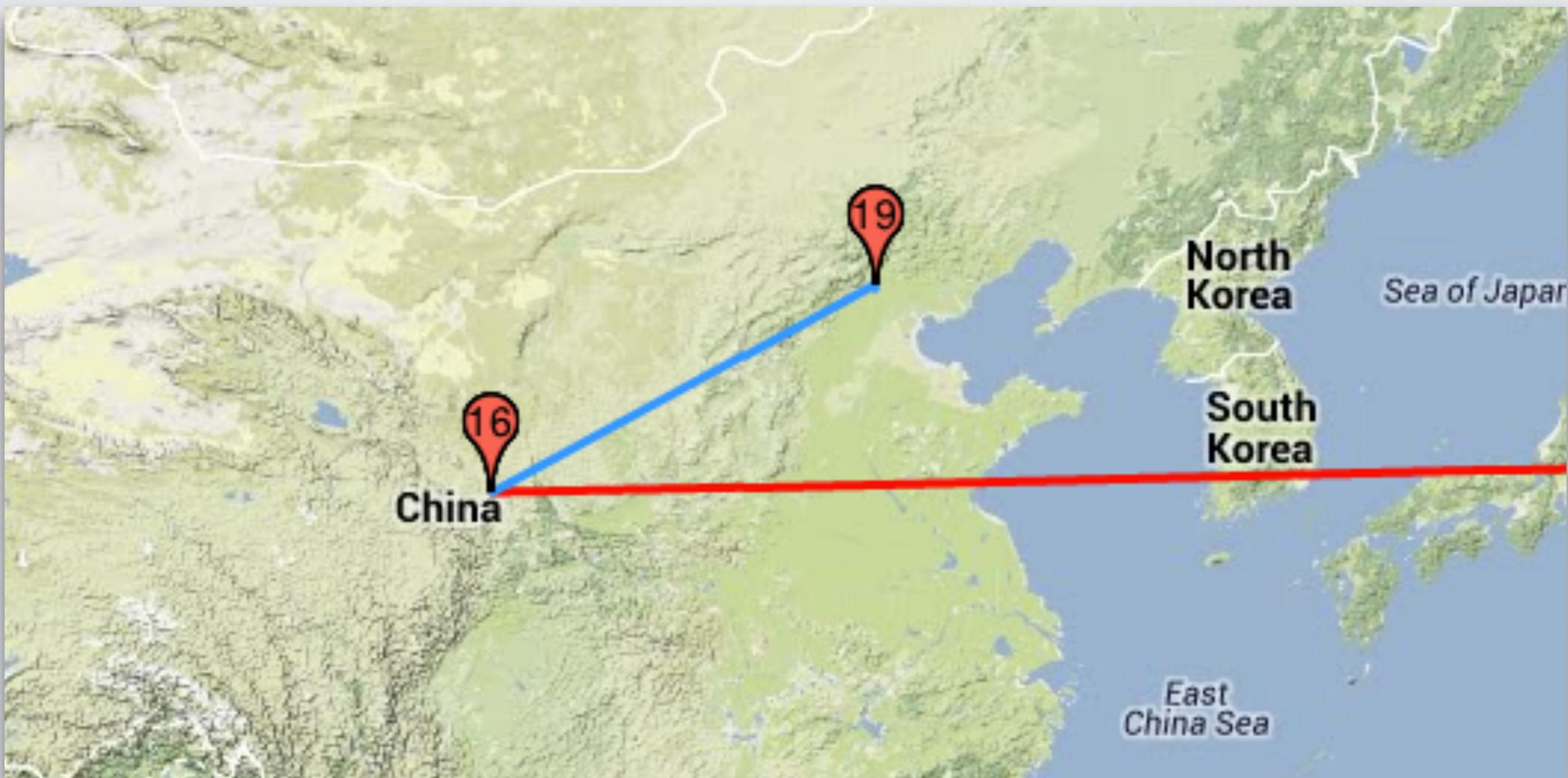
Inaccurate hops have no region/city information

# PLOTTING - HIDE INACCURATE



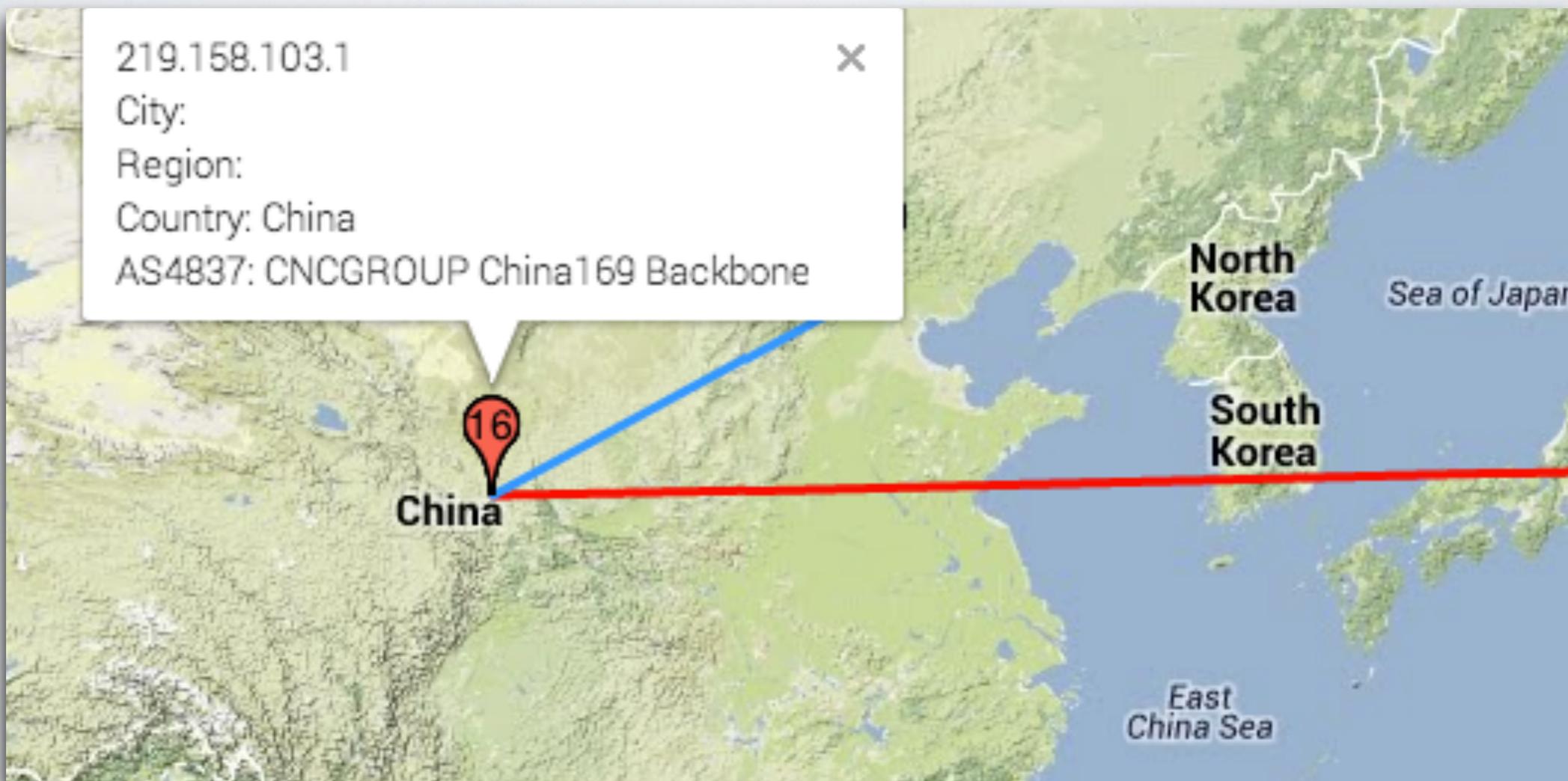
Skip it  
Draw a dash line instead

# PLOTTING - HIDE INACCURATE



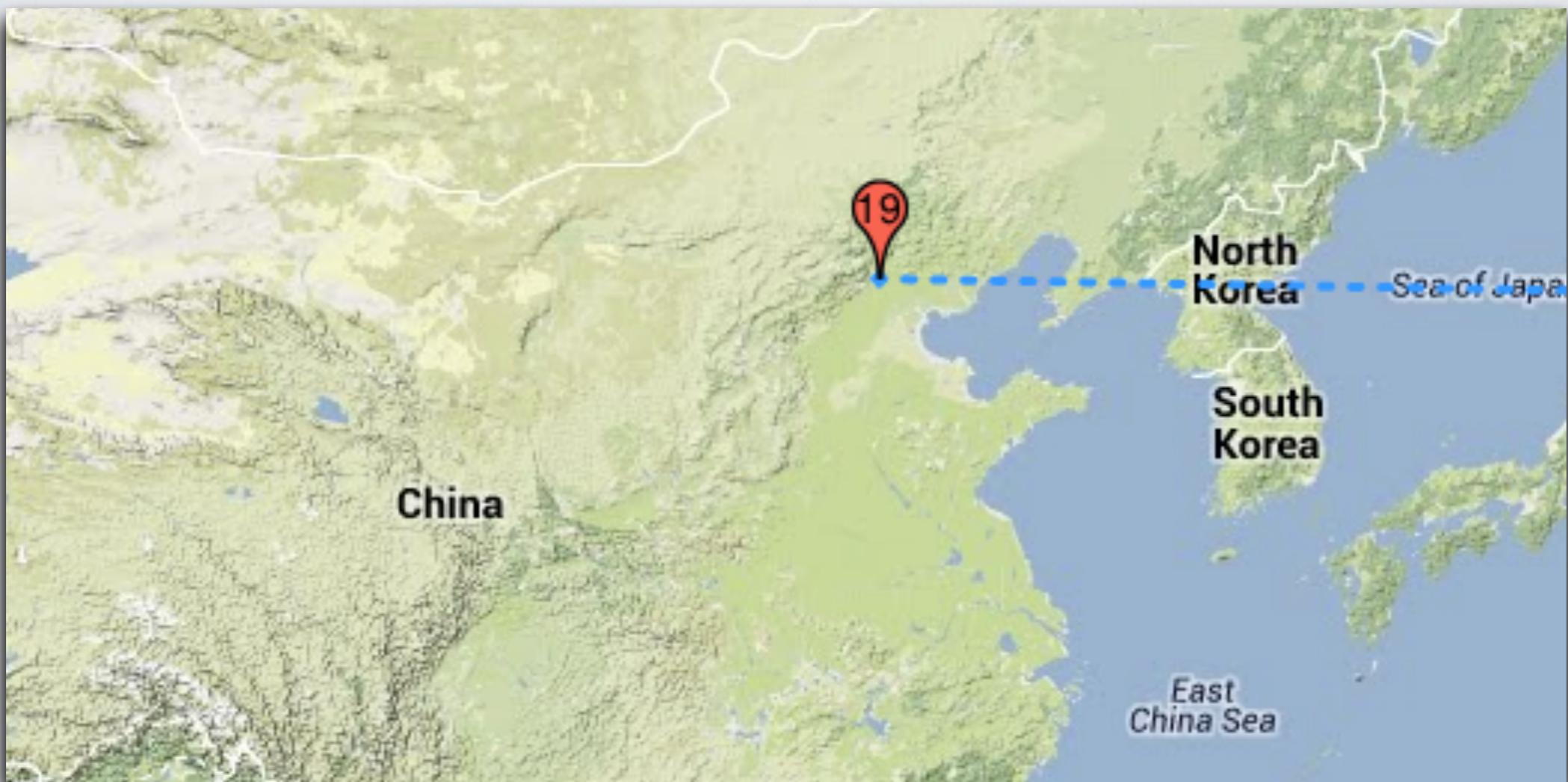
More examples

# PLOTTING - HIDE INACCURATE



More examples

# PLOTTING - HIDE INACCURATE



More examples

# PLOTTING - NAVIGATE



2	<a href="#">66.27.64.1</a>	US	AS20001	13.815
3	<a href="#">76.166.9.161</a>	US	AS20001	11.843
4	<a href="#">72.129.1.78</a>	US	AS20001	18.051
5	<a href="#">72.129.1.2</a>	US	AS20001	21.236
6	<a href="#">107.14.17.134</a>	US	AS7843	19.077
7	<a href="#">66.109.6.4</a>	US	AS7843	17.64

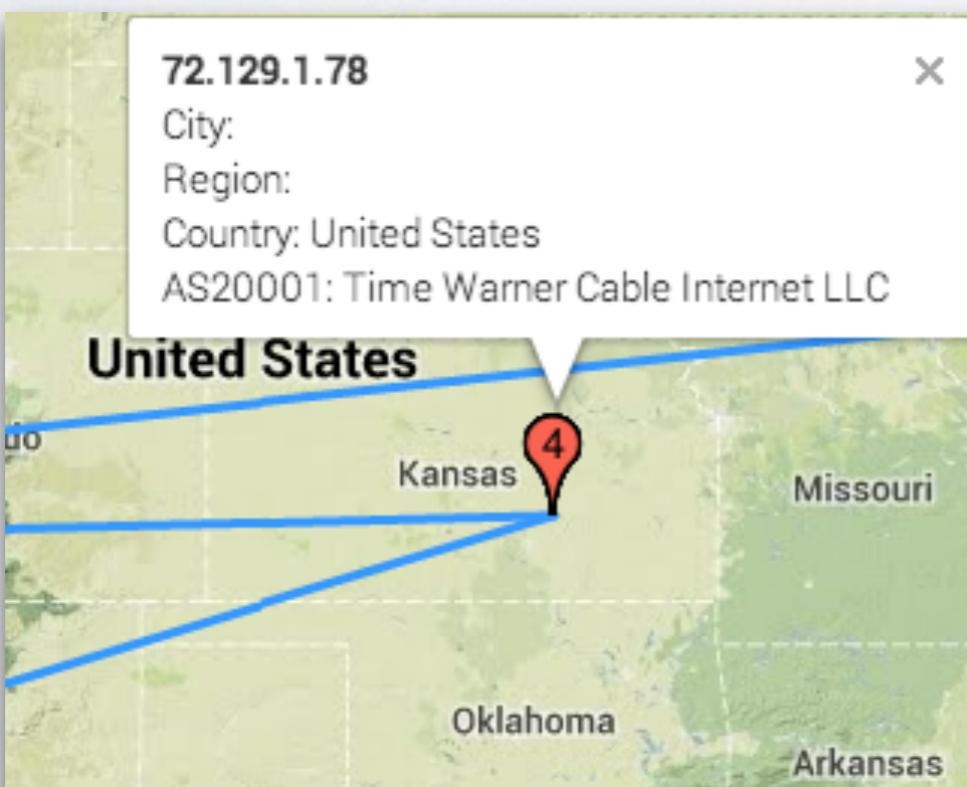
Click  
To  
Draw

# PLOTTING - NAVIGATE



2	<a href="#">66.27.64.1</a>	US	AS20001	13.815
3	<a href="#">76.166.9.161</a>	US	AS20001	11.843
4	<a href="#">72.129.1.78</a>	US	AS20001	18.051
5	<a href="#">72.129.1.2</a>	US	AS20001	21.236
6	<a href="#">107.14.17.134</a>	US	AS7843	19.077
7	<a href="#">66.109.6.4</a>	US	AS7843	17.64

Click  
To  
Draw



0	<a href="#">192.168.1.113</a>	n/a	n/a	0
1	<a href="#">192.168.1.1</a>	n/a	n/a	3.533
2	<a href="#">66.27.64.1</a>	US	AS20001	13.815
3	<a href="#">76.166.9.161</a>	US	AS20001	11.843
4	<a href="#">72.129.1.78</a>	US	AS20001	18.051
5	<a href="#">72.129.1.2</a>	US	AS20001	21.236
6	<a href="#">107.14.17.134</a>	US	AS7843	19.077
7	<a href="#">66.109.6.4</a>	US	AS7843	17.64

# MISC

- Show the AS only

				Original	AS only
1	AS21844	US	ThePlanet.com Internet Services, Inc.		
5	AS36351	US	SoftLayer Technologies Inc.		
12	AS2516	JP	KDDI CORPORATION		

# MISC

- Paste your own result

Paste your Traceroute output

```
4 70.87.255.69 1.531 ms 1.500
5 173.192.18.230 1.377 ms 1.300
```

[Draw](#) [Clear](#)

DEMO

Q/A?

THANKS!