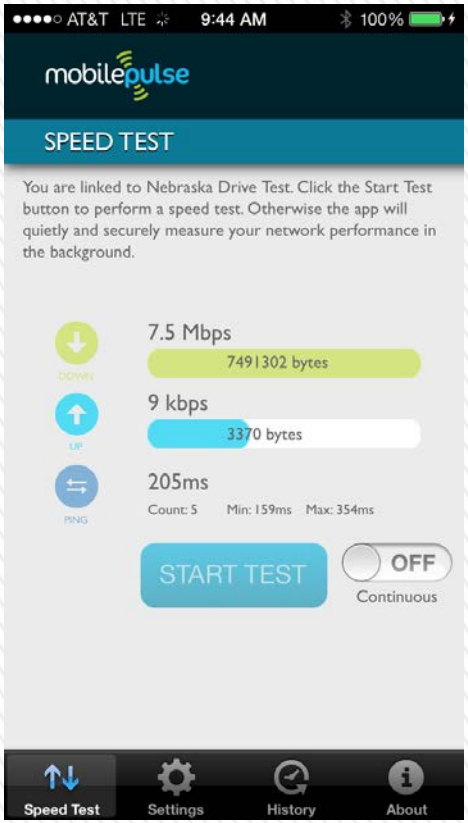
Mobile Pulse

Measuring Mobile Broadband Performance

Nebraska Public Service Commission

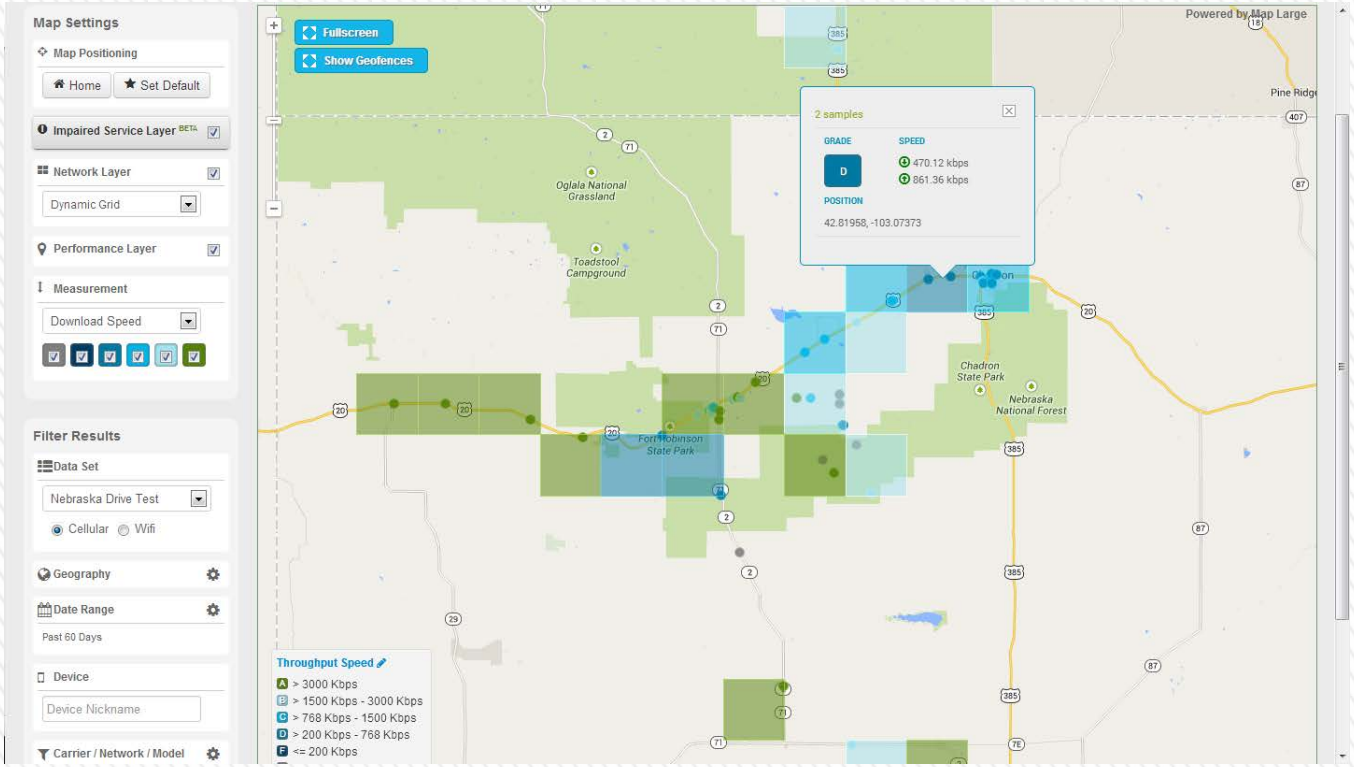
What is Mobile Pulse?

- Crowd sourcing application running on mobile devices
- Free of charge for users
- Runs in the background
- Available on most mobile platforms
  - Apple iOS, Android, Windows Mobile, etc.
- Tests download and upload speeds at unique locations on carrier networks and/or wi-fi



» What does it do?

- > Performs performance tests on the devices' network (Cellular or wi-fi)
- > Collects data anonymously
- > Uploads data to Mobile Pulse's secure site
- > On Mobile Pulse site, several options are available for analysis



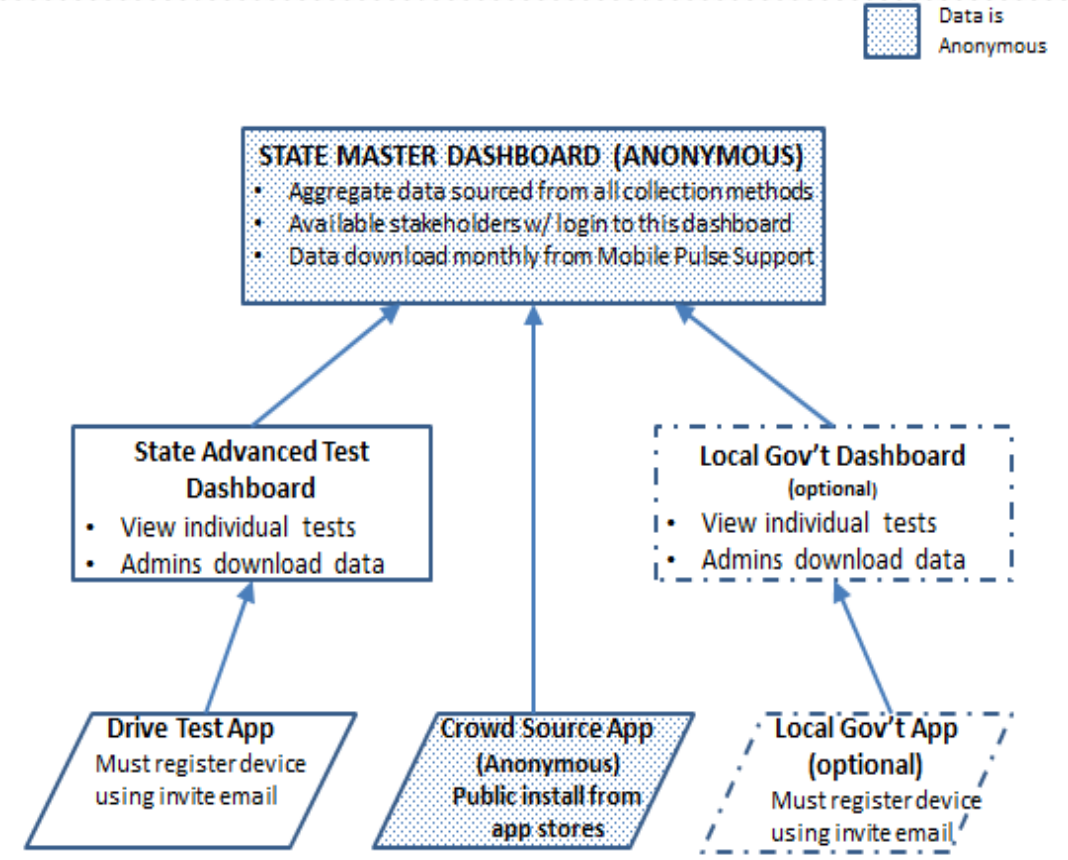
» Two “versions” of Mobile Pulse

- > Public App
  - + Free
  - + Anonymous
  - + Limited data collected
    - – Carrier
    - – Speed
  - + 100 MB/month cap
- > Advanced App
  - + Free, but limited licenses available
    - – PSC – 200 licenses
    - – Partners – 25 licenses/partner + Dashboard access
  - + Data usage can be set by the administrator

	Public	**Advanced**
Cost to User	Free	Free
Information collected	Anonymous	No personal information
# of Licenses	Unlimited	25
Data used	up to 100 MB/mo	Admin. Programmable
Granularity	App. 1/4 mile	Point data

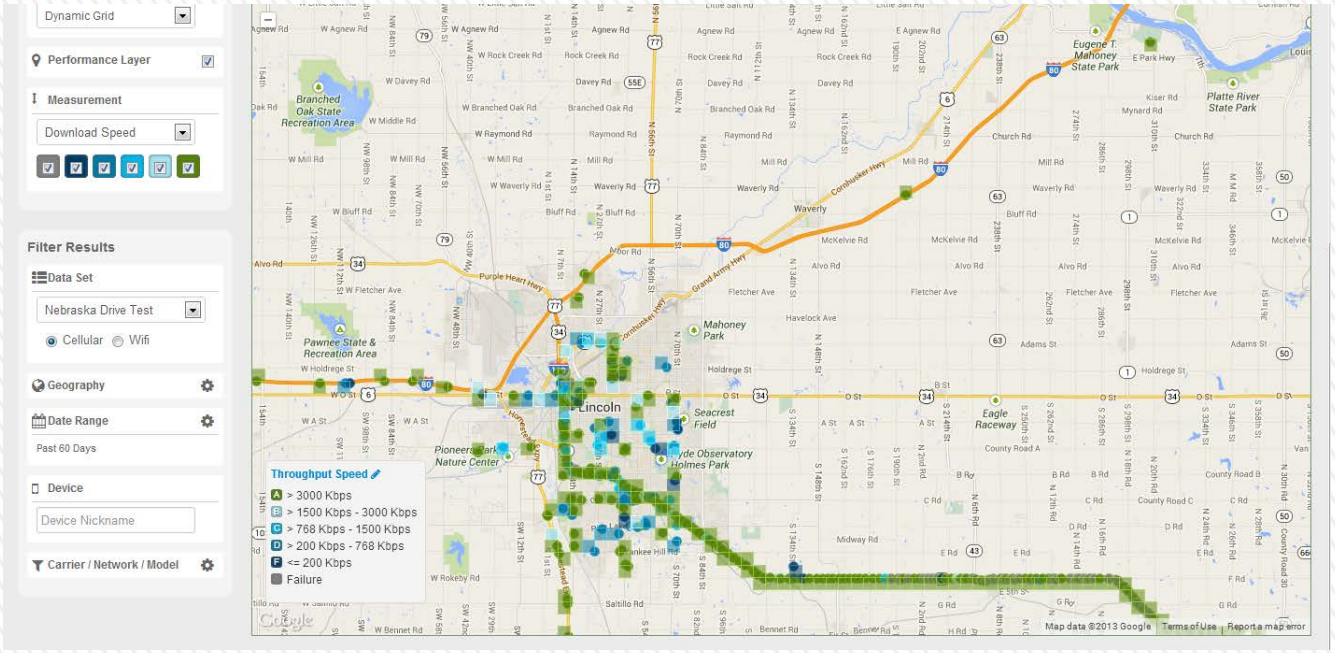
» What does being a “partner” mean?

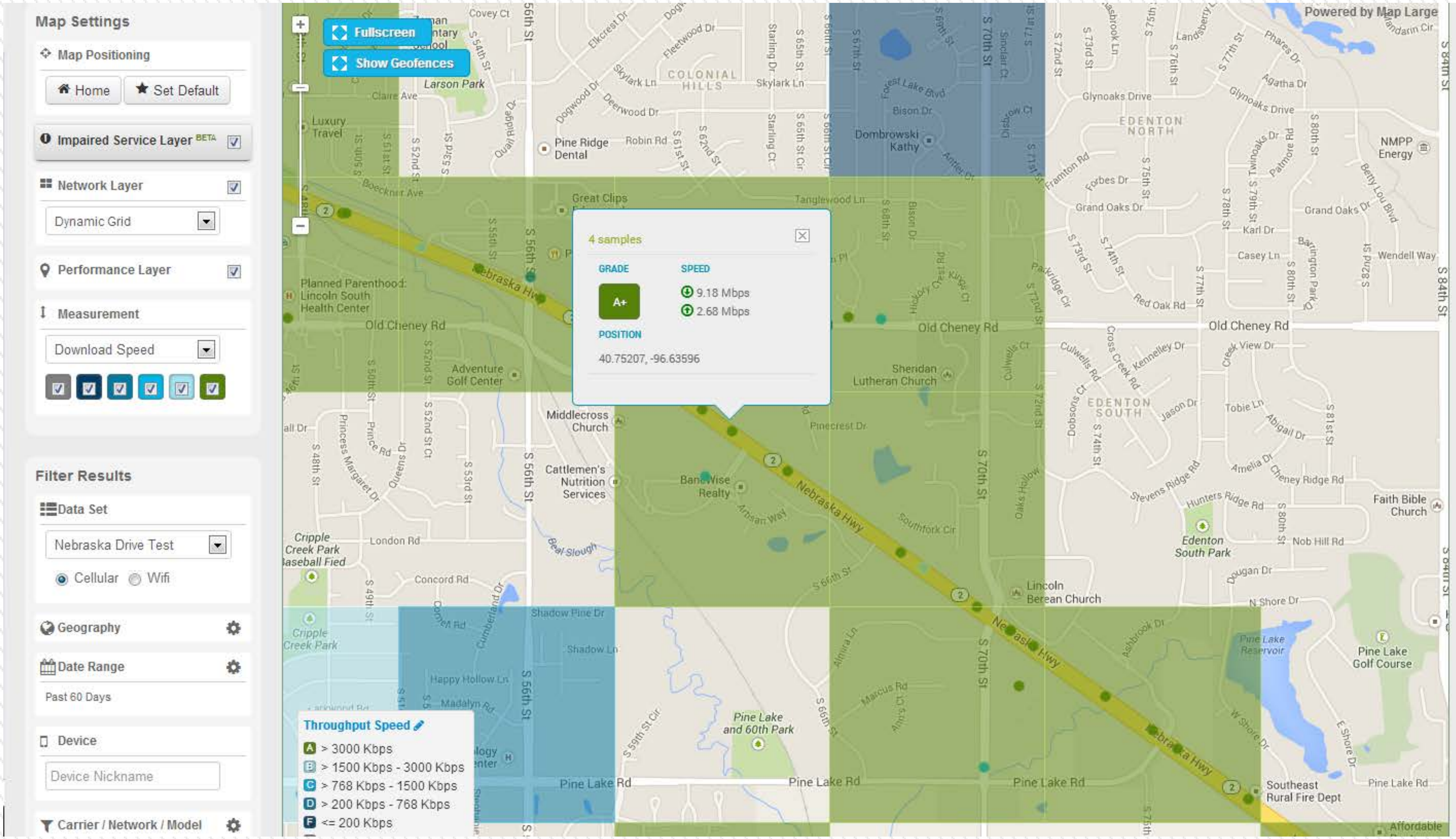
- > Access to a dashboard showing data for their advanced versions
- > Ability to distribute 25 advanced apps
- > Access to underlying data, if desired
  - + Tabular



» Dashboard functionality

- > View data by:
  - + Download Speed
  - + Upload Speed
  - + Signal Strength
  - + Latency
  - + Cellular or Wi-fi networks
  - + Sortable by date/carrier/network
  - + Date Range
- > Individual measurements viewable

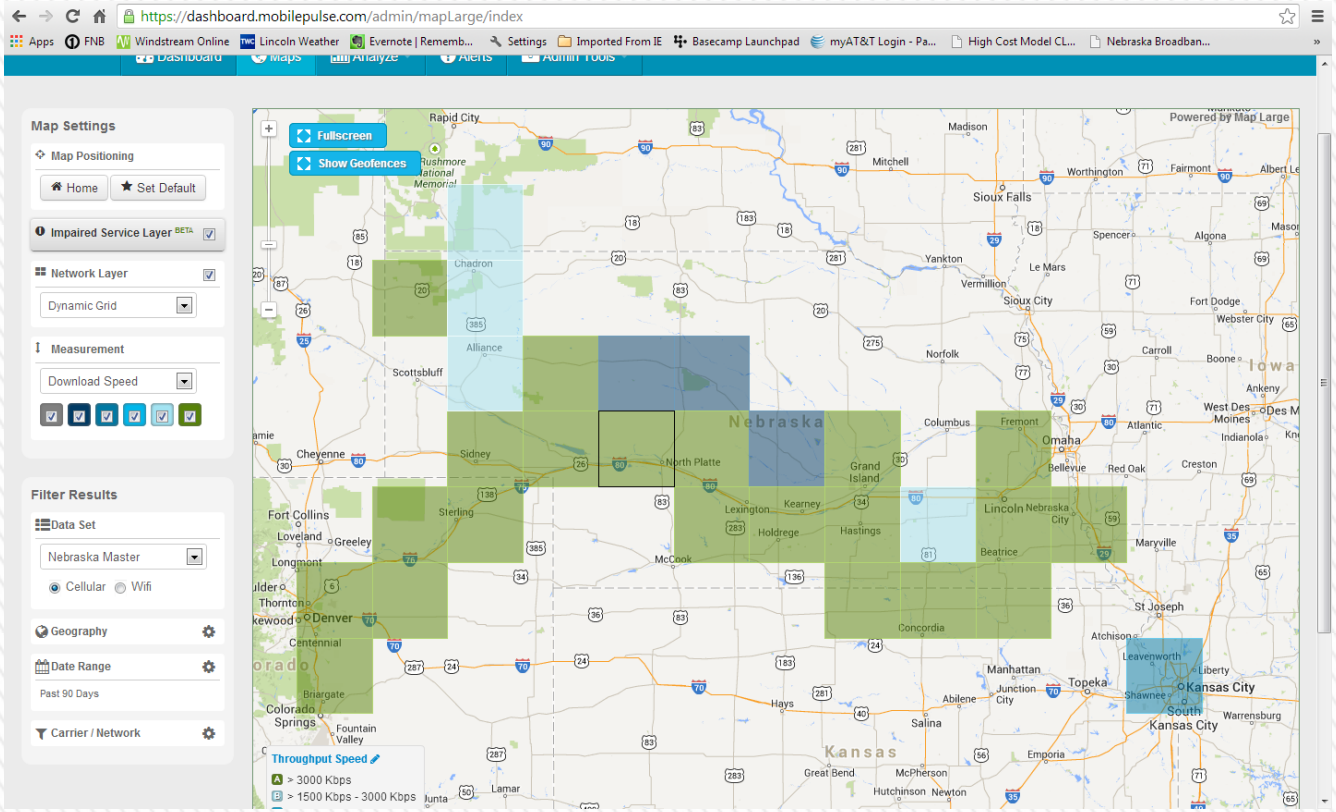




Map Settings
Map Positioning
Home
Set Default
Impaired Service Layer BETA
Network Layer
Dynamic Grid
Performance Layer
Measurement
Download Speed
Filter Results
Data Set
Nebraska Drive Test
Cellular
Wifi
Geography
Date Range
Past 60 Days
Device
Device Nickname
Carrier / Network / Model
Fullscreen
Show Geofences
Powered by Map Large
4 samples
GRADE
A+
SPEED
9.18 Mbps
2.68 Mbps
POSITION
40.75207, -96.63596
Throughput Speed
A > 3000 Kbps
B > 1500 Kbps - 3000 Kbps
C > 768 Kbps - 1500 Kbps
D > 200 Kbps - 768 Kbps
F <= 200 Kbps
Old Cheney Rd
Nebraska Hwy
Pine Lake Rd
S 56th St
S 70th St

» What are we looking for?

- > Groups that would want to become a partner and utilize a dashboard (we have 5 available to distribute)
  - + Person/persons able to distribute/administer licenses - up to 25 users
    - – May be able to obtain more if necessary
  - + No financial obligation through Sep. - 2014



Who will run the app?

Mobile Pulse provides public relations kits and support in educating and recruiting the following groups:

- Local governments (Free Public App and Advance Testing App)
- Mobile state employees (Free Public App and Advance Testing App)
- Broadband program employees, stakeholders, drive testers, field workers (Advance Testing App)
- Special interest groups (Free Public App)
- Chamber of commerce staff (Free Public App)
- College/universities (Free Public App)
- General public (Free Public App)

Reason Local Governments Benefit:

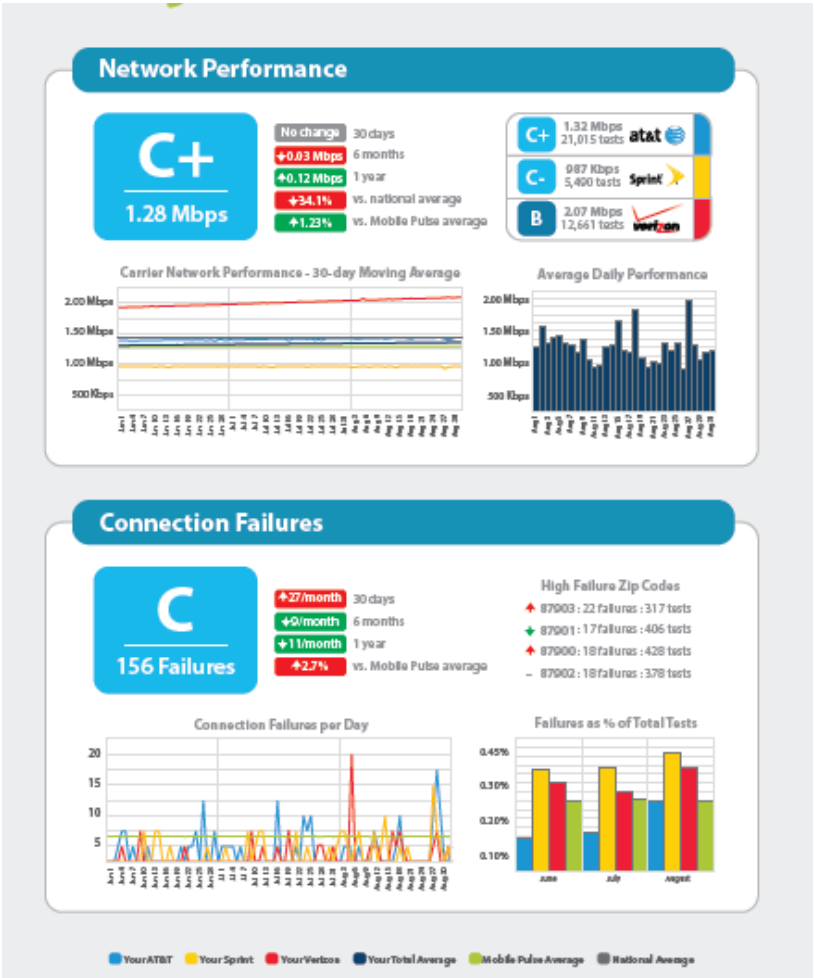
State and local governments are making **expensive contractual decisions** based on **unreliable** and often **misleading** information

They rely on mobile networks for **mission critical** public safety applications

Carriers **don't provide the data** or **tools** to proactively address these **public safety needs**

Measure. Compare. Save.

Actionable Results for Governments



Action Items

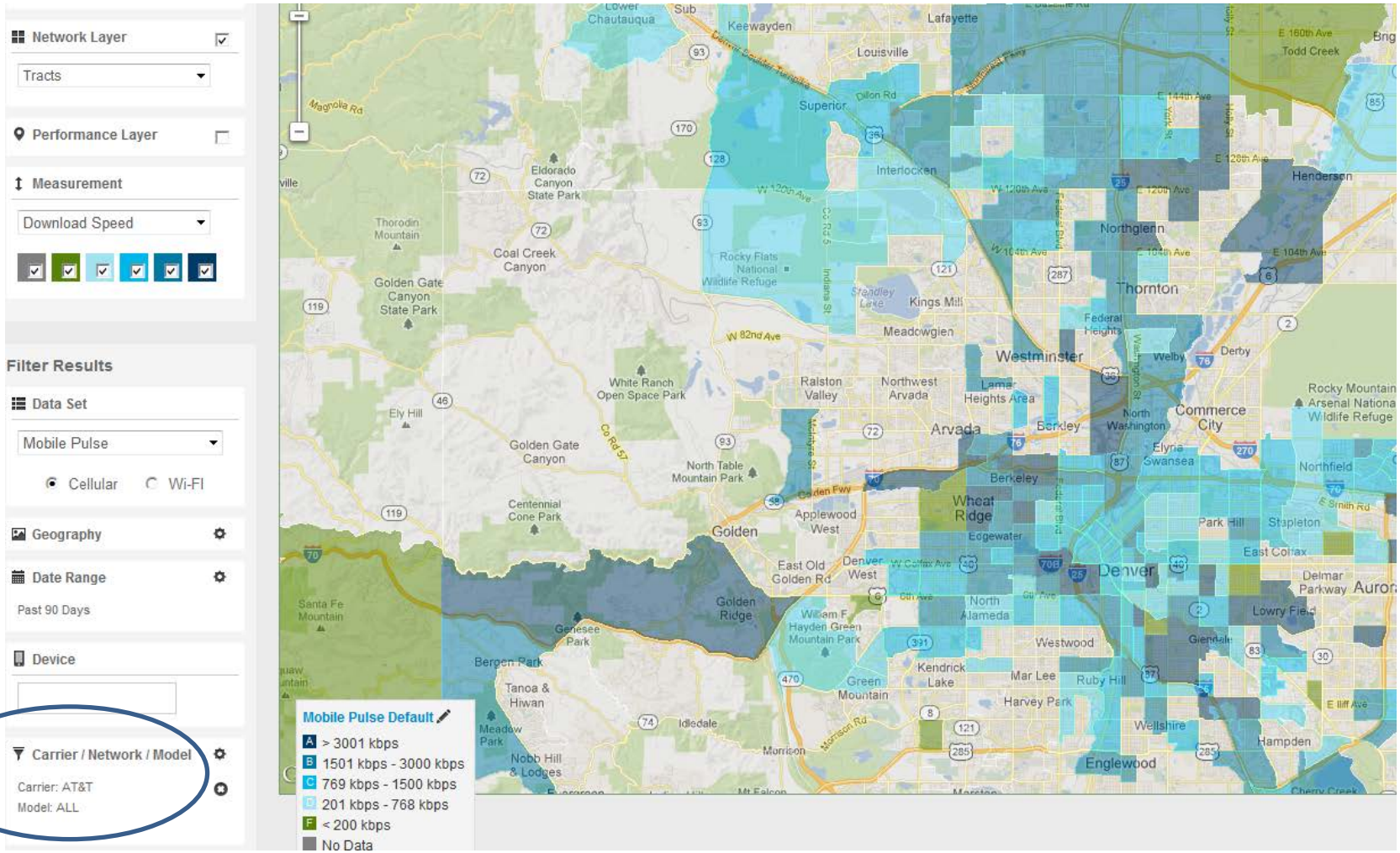
We have flagged the following issues as items to investigate.

- On August 5th, you had 20 connection failures on Verizon in the 87903 zip code. Confirm with Verizon that there was a network issue.
- Your average speed in Los Angeles, CA was 1.31 Mbps on AT&T and Verizon. Moving to Verizon would potentially increase your speed 158% to 2.07 Mbps.
- Your average speed in Chicago, IL was 768 Kbps on Sprint. Moving to AT&T would potentially increase your speed 270% to 2.0 Mbps.
- 1 Motorola Atrix device was idle 31 days in August. Investigate if this device is in use.

Remember to login to dashboard.mobilepulse.com for your full set of analytical tools.

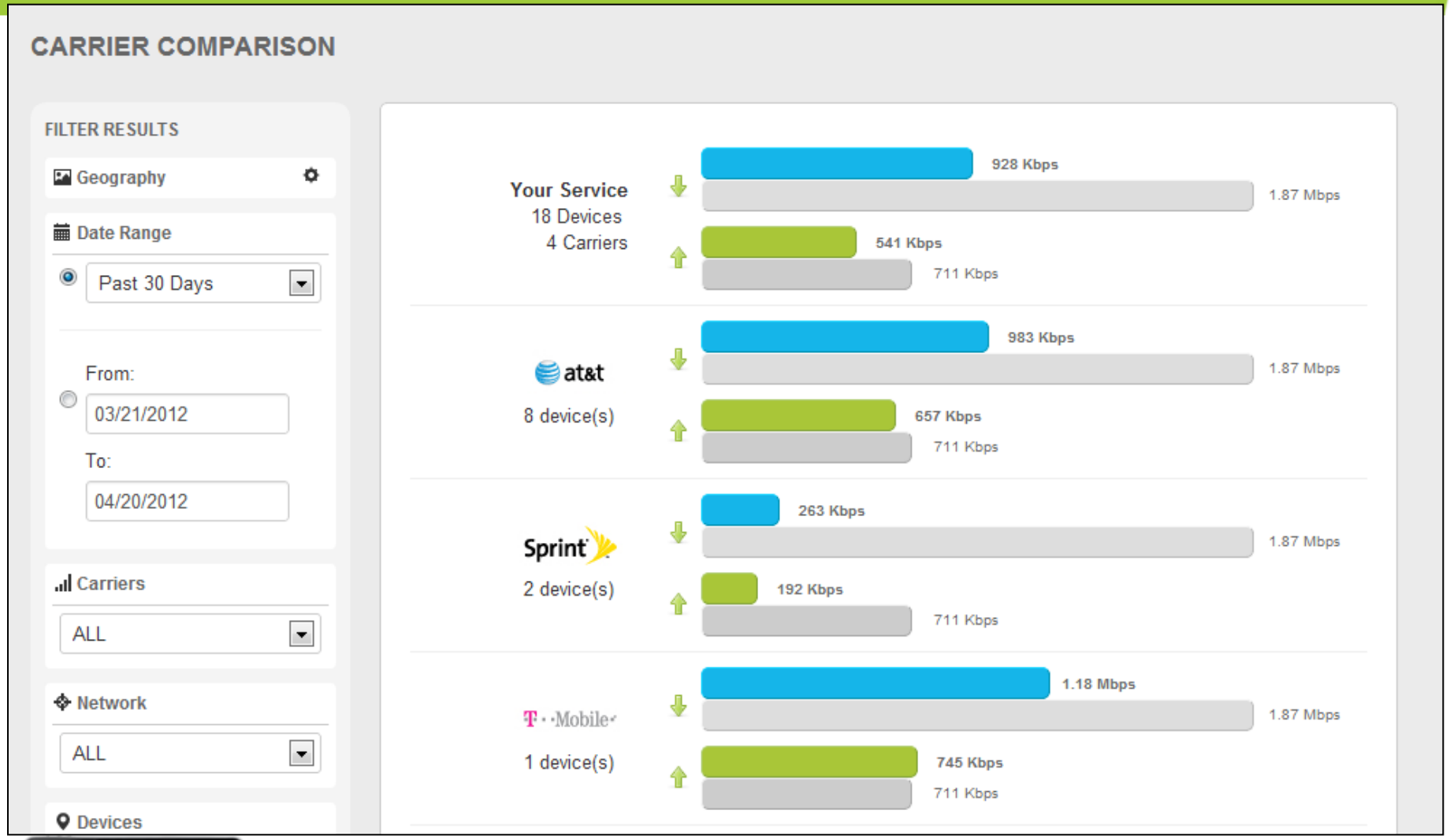
Measure. Compare. Save.

Dashboard: Detailed Performance Analysis



Measure. Compare. Save.

Carrier Comparisons- using your data



Measure. Compare. Save.

Privacy a Priority

- **No personal identification**– No capture of phone number, phone name, email
- **Secure socket layer** – All Mobile Pulse clients use SSL for all http transactions for speed test and API interaction
- **Private API key** – All Mobile Pulse clients use a private API login key. Interaction with the Mobile Pulse API is only available with a key.
- **Configuration and log security** – All Mobile Pulse client local configuration and logs are password protected

Anonymous, Raw Data for Download

Field	Description	Example Value
GPS Accuracy	Accuracy of the location in meters	32
Latitude	Latitude	39.70 (rounded)
Longitude	Longitude	-104.96 (rounded)
Latency	Results of latency test	Contains the max, min and average latency results based on ping results to the configured URL
Device Model	Device model	DROIDX
Carrier	Cellular carrier provider	Verizon Wireless
Cellular Network	Network type	EvDo rev. A
Network Type	Network technology	CDMA
Signal Strength	Signal strength (RSSI) in dB	-66
Download Speed	Result of the download test in kbps	20.122
Upload Speed	Result of the upload test in kbps	121.588

Summary of Solution for States

- On-going, real-time mobile testing for whole state
- Control of data (raw data for analysis/map)
- Accurate, real-world results
- Enterprise solution for drive tests
- Benefit to all levels of government, public safety, and FirstNet planning
- Easy deployment
- Cost effective solution

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