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 Sponsored by the FCC and DHS  
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### Problem Statement

- We were tasked with the project to develop a network reliability and security dashboard to serve the requirements of both the FCC and the DHS.
- Currently, the FCC receive information regarding communications reliability and situational awareness directly from communications providers (such as Verizon and AT&T).
- The issue that arises when retrieving this data from providers is that, the data models can be hard to change for administrative and legal reasons, making the data anachronistic.
- Communications situational awareness at DHS and the FCC would benefit from a variety of data sources.

### Objective

Develop a user friendly dashboard

Construct a method in which raw data is able to load into the dashboard

Discuss the different options for types of diagrams and determine which is most useful to the client

Consider the different types of threats affecting the client and how various data should be displayed

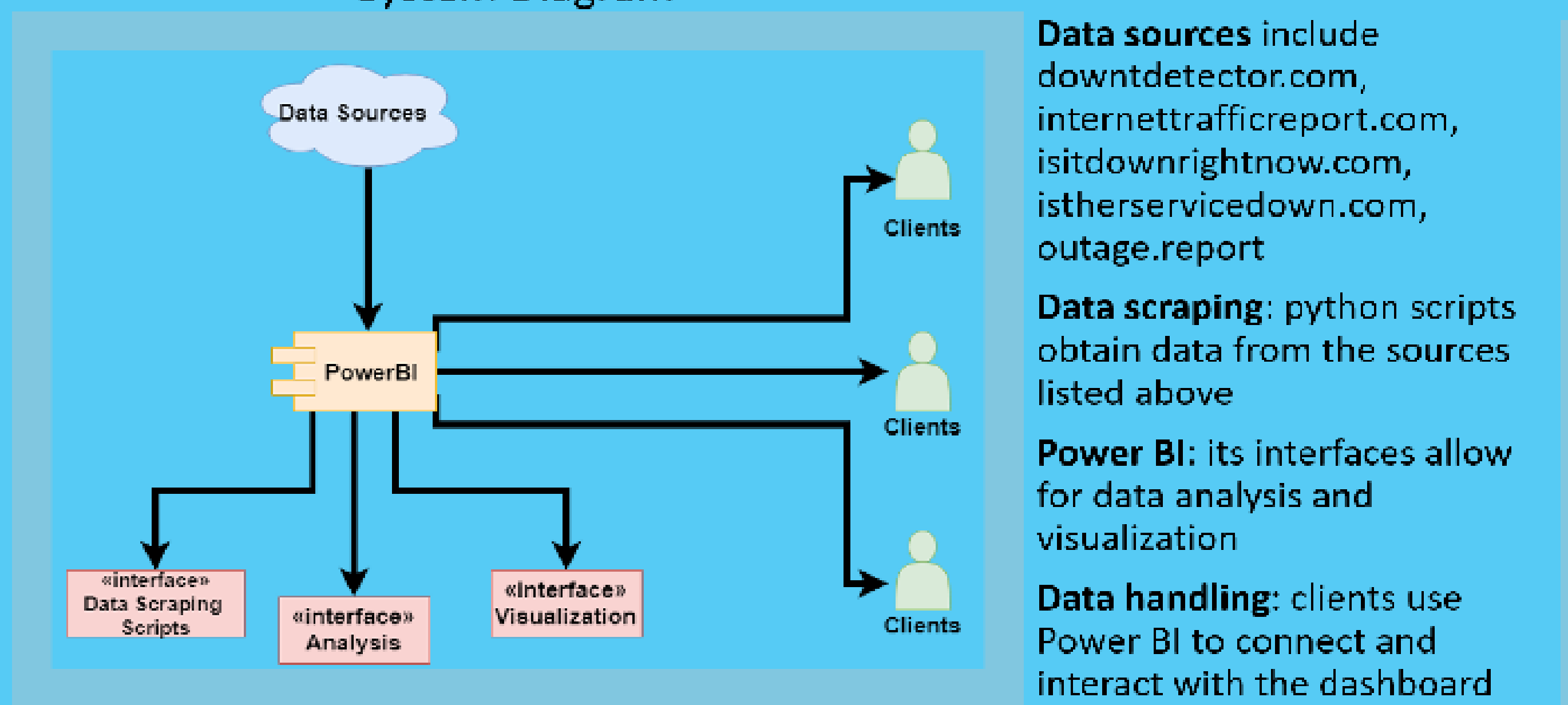
Discuss the different methods of parsing data into the Dashboard and determine where the data is sourced from

Discuss the costs and resources involved with completing the task

### Approach

- In order to address this issue, our team has developed a dashboard using open-source data that displays the requested network metrics in near real-time.
- To acquire the necessary data from our open-sources, we will be using Python scripts in order to scrape websites containing the necessary metrics our client is interested in.
- The success of our project will be measured by the accuracy of the data retrieved, how well the dashboard integrates into our client environments, and the visual appeal of our dashboard.

#### System Diagram



### Results

We were able to obtain data from three different sites.

These sites include:

- [isitdownrightnow.com](http://isitdownrightnow.com)
- [istheservicedown.com](http://istheservicedown.com)
- [Outage.report](http://outage.report).

From these sites, we have been able to successfully scrape different types of data to send to the dashboard. Some of the data types we were able to obtain include the name of providers, issue type, issue percentage, location, and much more. Upon comparing our dashboard with our initial framework, we were able to address all the requirements. Shown below are two pages from our dashboard.

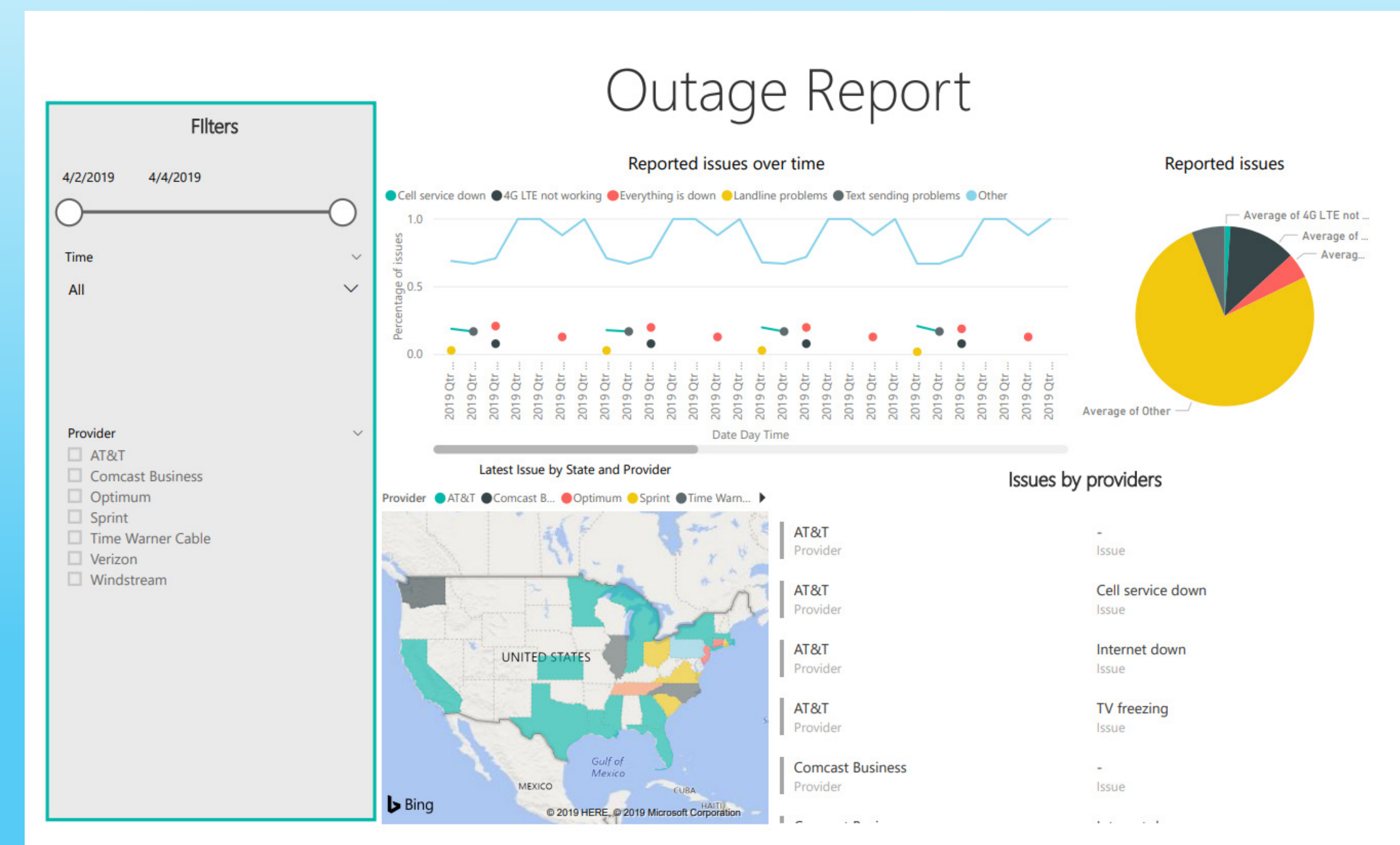


Figure 1 above shows the dashboard page with data that was obtained from Outage Report. The data includes a Issue Location, provider, and number or reported issues.

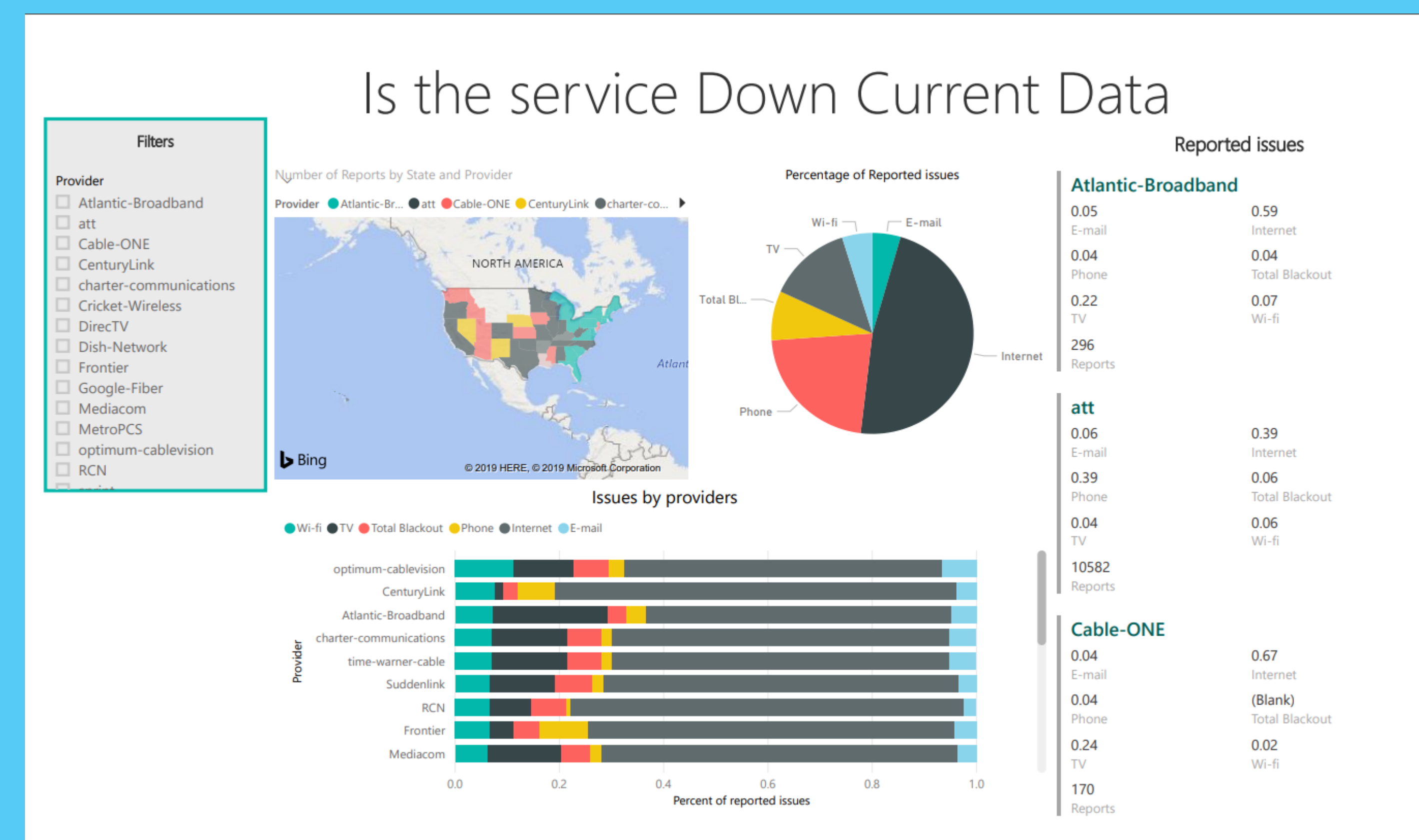


Figure 2 above shows the dashboard page with data that was scraped from is the service down. The data shown here shows different types of issues by providers and overall percentage total. As well as location of the issues.

### Data Collection Methods

- We collected data using Python scripts.
- We used the following Python modules:
  - Pandas to make tables
  - BeautifulSoup, to extract HTML code from the website
  - Requests to open the website.
- We then used regular expressions to filter out information we needed.
- The data was then saved to a csv file which can be opened by Power BI.

### Conclusion

- Our dashboard solution covers nearly all of the aspects and requirements laid out by the FCC and DHS.
- One of the main issues our client was concerned with regarded to stale data models from providers. We decided to address this issue by ensuring that our dashboard layout would draw from a variety of sources.
- Another issue that we made sure to address related to the collection of our data. The data that we decided to collect originated from open-sources, as stated earlier this will allow the data to be more readily available, as opposed to receiving data directly from service providers, which can require cumbersome rulemakings.
- Our method of acquiring data proved to be successful throughout the entire process, with minor difficulties along the way.
- We decided to acquire data using python scripts; the data was then organized and uploaded into our visualization software (Power BI).
- Overall our dashboard incorporates the necessary metrics with an easy to use layout that allows the FCC and DHS to efficiently locate mission critical data.

### Acknowledgements

We would like to thank all of our Sponsors:

- Jeffery Goldthorp from the FCC
- Olga Livingston from the DHS

As well as our SME:

- Kurian Jacob from the FCC

Additional thanks to our professors:

- Gino Manzo
- Rock Sabetto.

This project would not be possible without the help we have received from everyone

### References

- [1] [isitdownrightnow.com](http://isitdownrightnow.com). [Online]. Available: <https://www.isitdownrightnow.com/>. [Accessed: 2018].
- [2] [istheservicedown.com](http://istheservicedown.com). [Online]. Available: <https://istheservicedown.com/>. [Accessed: 2018].
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