

Yukon Mapping and the Use of Shapefiles

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Introduction



Introduction

David Sutton - Software Product Manager

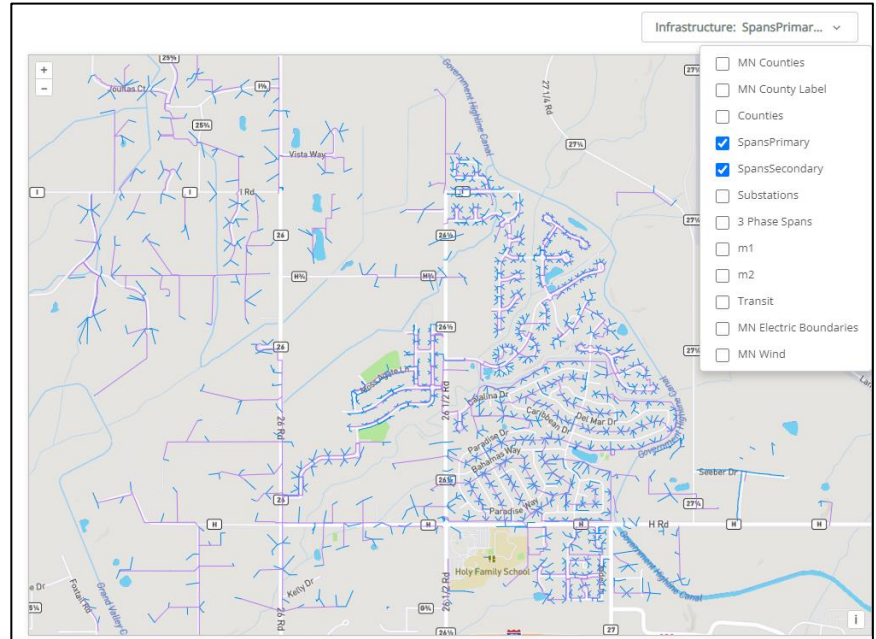
- Primary role
 - The prioritization of new feature sets and improvements into the Yukon software platform
- Email: davidsutton@eaton.com

Shapefiles

New in Yukon v9.4

Shapefiles

- The mapping visualization tools will now support the display of user provided shapefiles
 - System administrators can import single layer shapefiles into the platform and choose to optionally display them on the maps
 - Meta data within is displayed by clicking in the map



Mapping Improvements

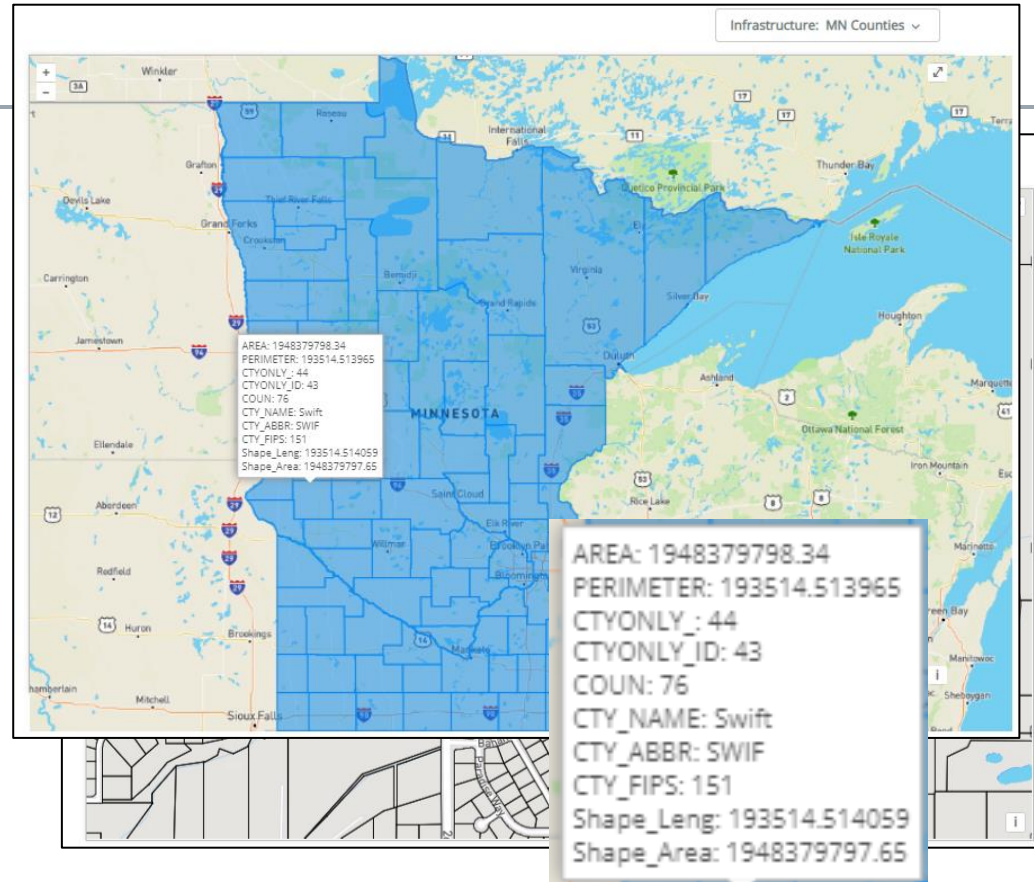
- Shapefile Configuration

- System administrators add shapefiles via the [Admin](#) menu, [Configuration](#) and [Mapping](#)
- From the Mapping page, click the [Add](#) button to bring in additional files
- Select the appropriate zip file and a color to render the contents with
- Contents are now available throughout Yukon from the Infrastructure drop down available in all mapping tools

The screenshot displays the 'Comprehensive Map' interface. At the top, there are filter controls: 'Filter By:' with three dropdown menus containing 'Fake Gateway X', 'Fake Gateway 2 X', and 'Fake Gateway 3 X'; 'Link Quality:' set to 'All'; 'Descendant Count:' set to 'All'; 'Hop Count:' set to 'All'; and 'Color Code By:' set to 'Gateway'. A blue 'Filter' button is on the right. Below the filters, it says 'Filtered Results: 27 device(s)'. On the right side, there is an 'Infrastructure: MN Counties' dropdown menu with a list of options: 'All Gateways', 'All Relays', 'All Primary Routes', 'Counties', 'SpansPrimary', 'SpansSecondary', 'Substations', '3 Phase Spans', 'MN Electric Boundaries', 'MN Wind', and 'MN Counties' (which is checked). The map itself shows a geographical view of Minnesota and surrounding areas, with various infrastructure elements overlaid in different colors and styles, including blue and green shapes representing gateways and relays.

Shapefiles

- Shapefile Examples
 - For the current process, files must be less than 30 MB with alpha numeric file names
 - Clicking on a point in the map will popup other data if included as part of the file



Comprehensive Map Review

Comprehensive Map Review

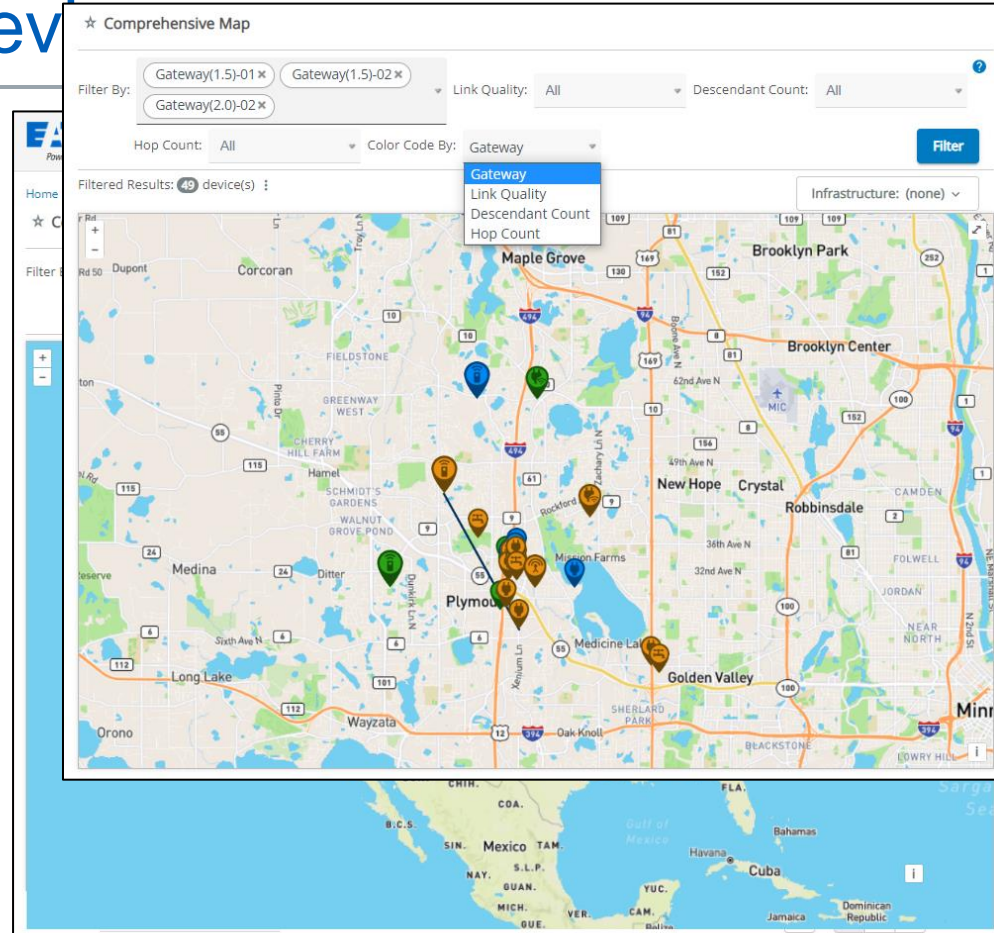
- The Comprehensive Map is a geo-visualization tool that allows the user to view device populations as they relate to each other on a map of their territory
- Access to the Comprehensive map is via the **Assets** menu, **Gateways** page
- **Actions** button
“Comprehensive Map”

The screenshot shows the Eaton Deployment Manager web interface. The top navigation bar includes 'AMI', 'Demand Response', 'Volt/Var', 'Assets', 'Tools', and 'Admin'. The 'Assets' menu is open, with 'Gateways' highlighted. Below this, the 'Gateways' page is displayed, featuring a table of gateway information and an 'Actions' button. The 'Actions' dropdown menu is open, with 'Comprehensive Map' highlighted.

Name ↑	Serial Number	IP Address	Firmware Version	Last Communication	
Gateway(1.5)-01	1560000749	10.106.46.102	9.7.0	Successful	
Gateway(1.5)-02	1560000751	10.106.46.127	9.7.0	Successful	
Gateway(2.0)-02	7800000023	10.106.46.140	9.7.0	Successful	100%
GWY-801 (7800002734)-2	7800002734	10.106.46.158	9.7.0	Successful	100%
GWY-801 (7800004284)-1	7800004284	10.106.46.139	9.7.0	Failed	100%
QA6200VGW	Virtual9	10.106.46.200	9.5.0	Failed	100%

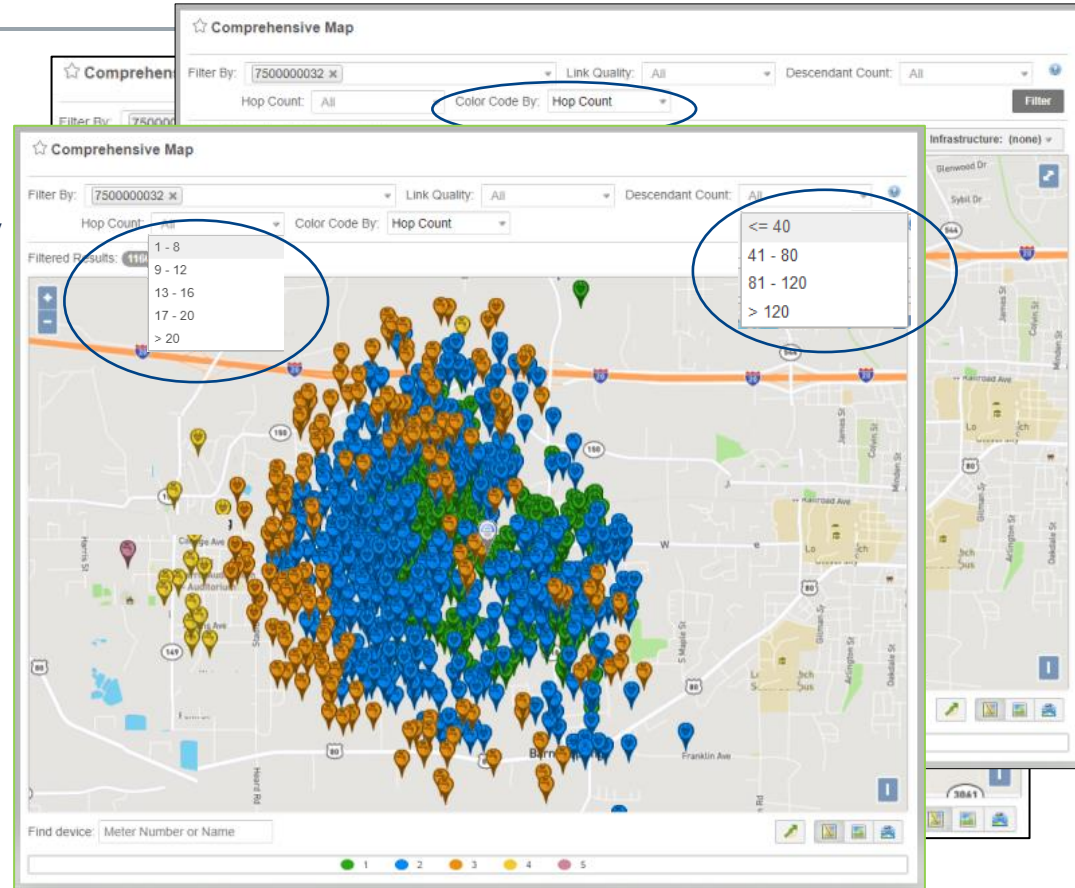
Comprehensive Map Review

- Select up to 5 gateways to review at one time
- Filter and color code the resulting pins by
 - Gateway
 - Link Quality
 - Descendant Count
 - Hop Count



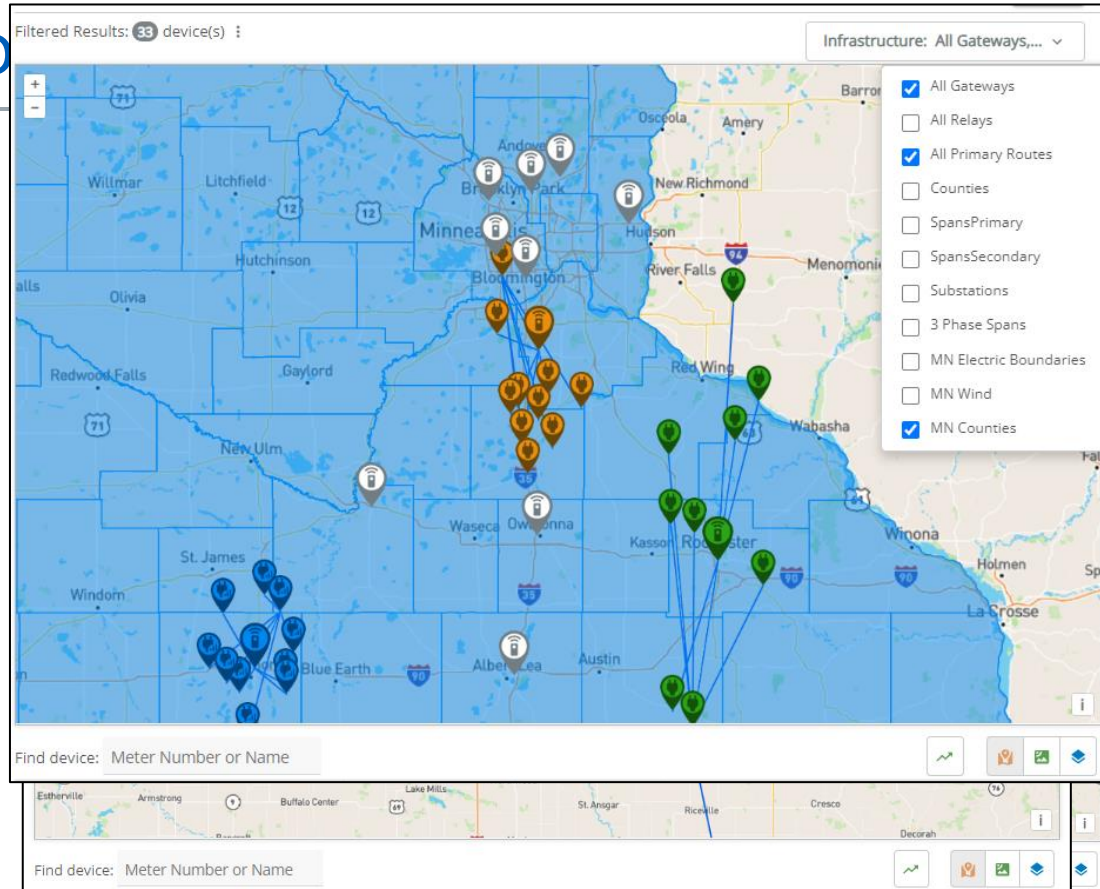
Comprehensive Map Review

- For example, select a single gateway to review on the map
- Color code by Hop Count to show the network rings around a single gateway
 - Notice the key at the bottom that displays what hop count each color represents
- Filter the results further by hop count to look at a subset of nodes
 - Select multiple gateways to review nodes greater than 15 hops away
- Filter further by descendant count to review possible high traffic problem areas



Comprehensive Map

- Returning to the main map, also notice the **Infrastructure** drop down
- Use the optional layers to further troubleshoot your system
 - All Gateways or Relays
 - All Primary Routes of your set of devices
 - Shapefile Layers



Comprehensive Map Review

- Individual device pop ups available by clicking on the pin
- Display data associated with the device in question
- Three dot menu provides addition functionality
 - View descendants, Neighbors or Primary Route

The image displays two screenshots of a map application. The top screenshot shows a map of the Minneapolis area with a single green pin. A pop-up window is open over the pin, displaying the following information:

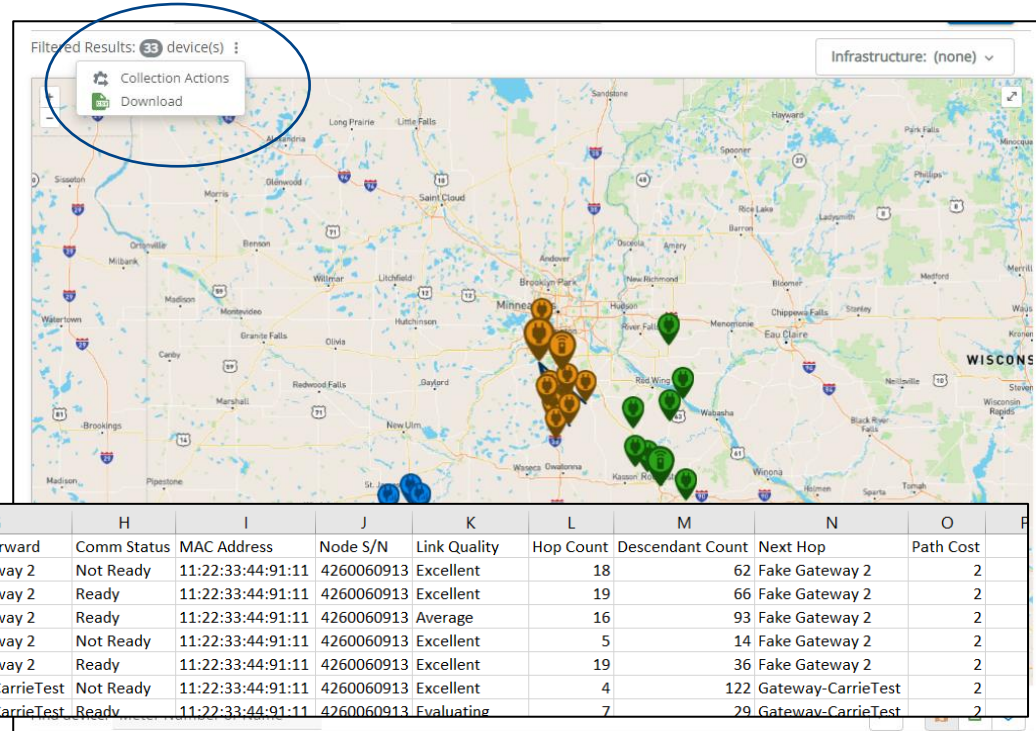
- Device: RFN-420FD 1000017
- Meter Number: Default
- Type: RFN-420FD
- Sensor S/N: 13043
- Primary Forward: Fake Gateway 2 (12)
- Node S/N: 4260060913
- Comm Status: Ready
- Path Cost: 2
- Hop Count: 10
- Descendant Count: 93
- Flags: Battery Route, Route start GC
- Distance to Next Hop: 17.3485 miles

To the right of the pop-up is a three-dot menu with the following options: Map Device, View Descendants, View Neighbors, View Primary Route, Create Note, and Delete Coordinates.

The bottom screenshot shows the same map area but with a network view overlay. It displays a central node (the device) connected to several other nodes (descendants) across the Minneapolis area. The nodes are represented by green pins, and the connections are shown as blue lines. The map interface includes a search bar at the bottom with the text "Find device: Meter Number or Name" and a dropdown menu for "Infrastructure: (none)".

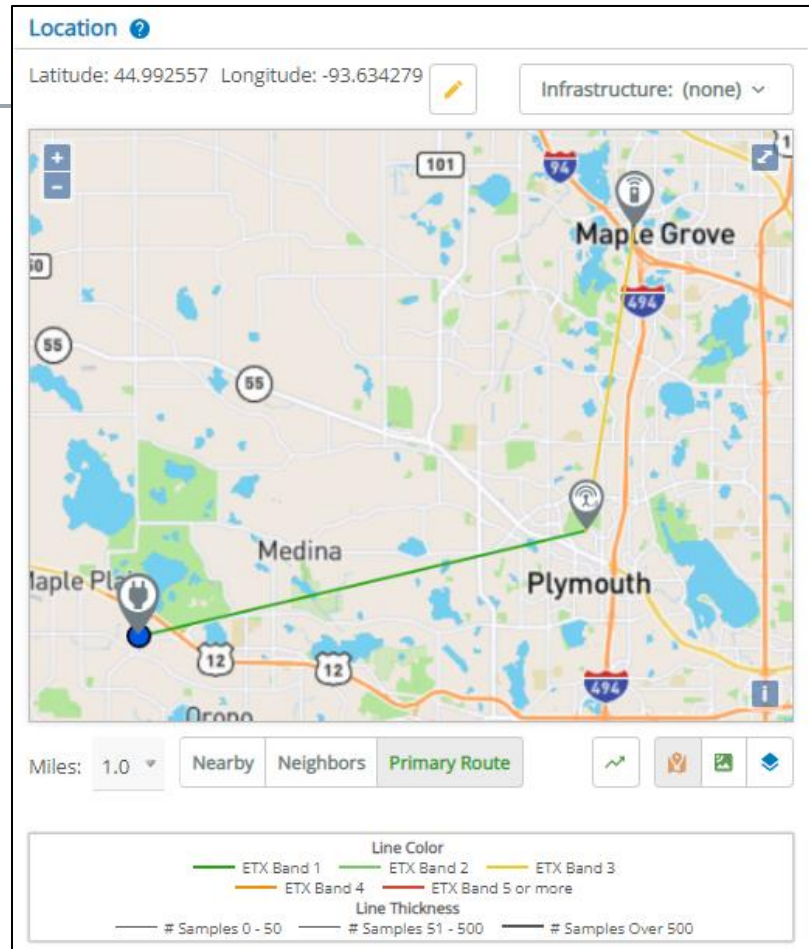
Comprehensive Map Review

- Export network data of the filtered option
- Produces a CSV of the selected devices containing helpful network information



Mapping Improvements

- Individual device mapping
- Hops within a node's primary path are colored by ETX band to indicate link quality
 - This will allow the user to review the link quality of every node in a meter's path back to the gateway to find the weakest area
 - From the [Meters Details](#) page, find the [Actions](#) button "Map Network"
 - Clicking on the [Primary Route](#) button on the Map Network page will result in the route lines being color coded by ETX Band.



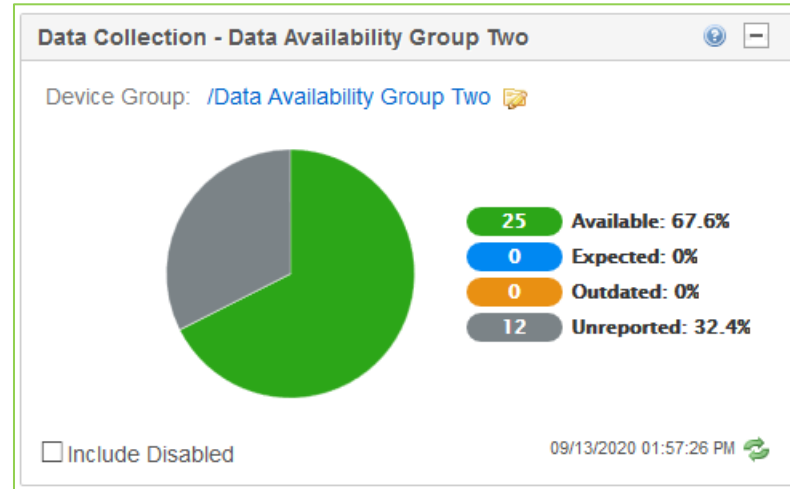


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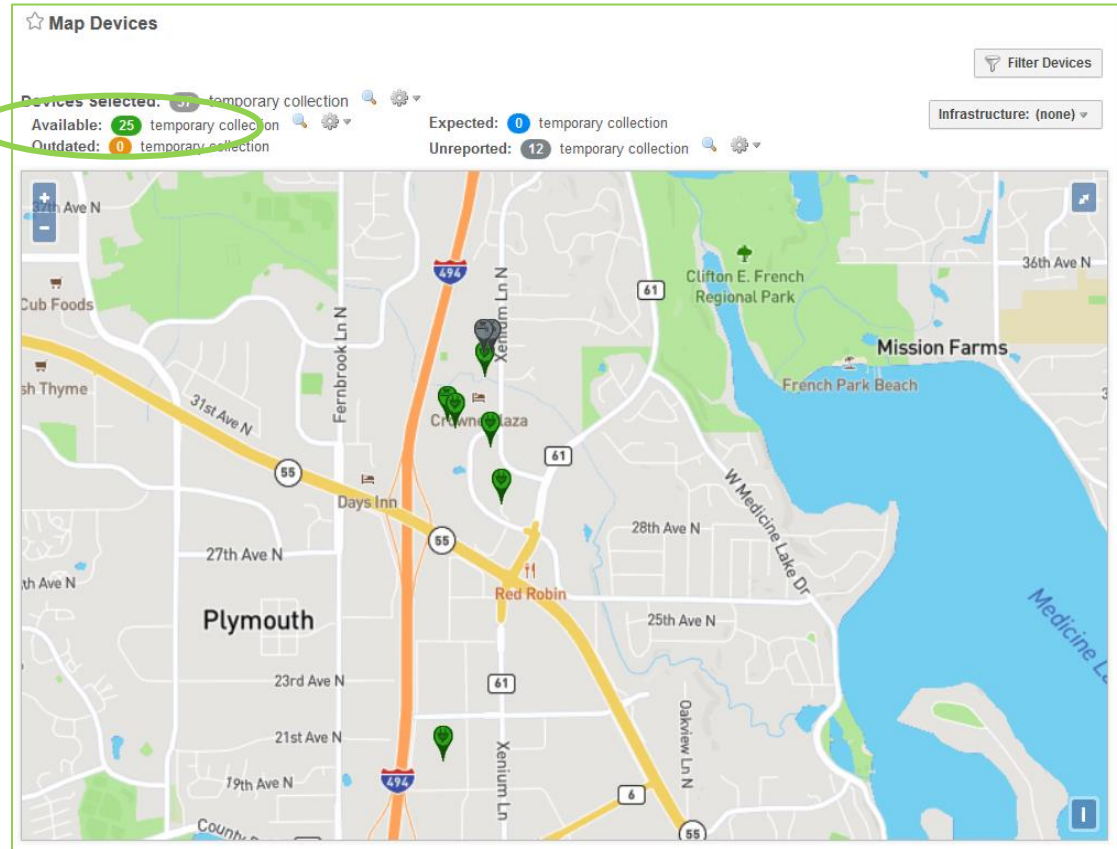
Mapping Visualization Improvements

- Color coded pins indicating the Data Collection widget category on the map



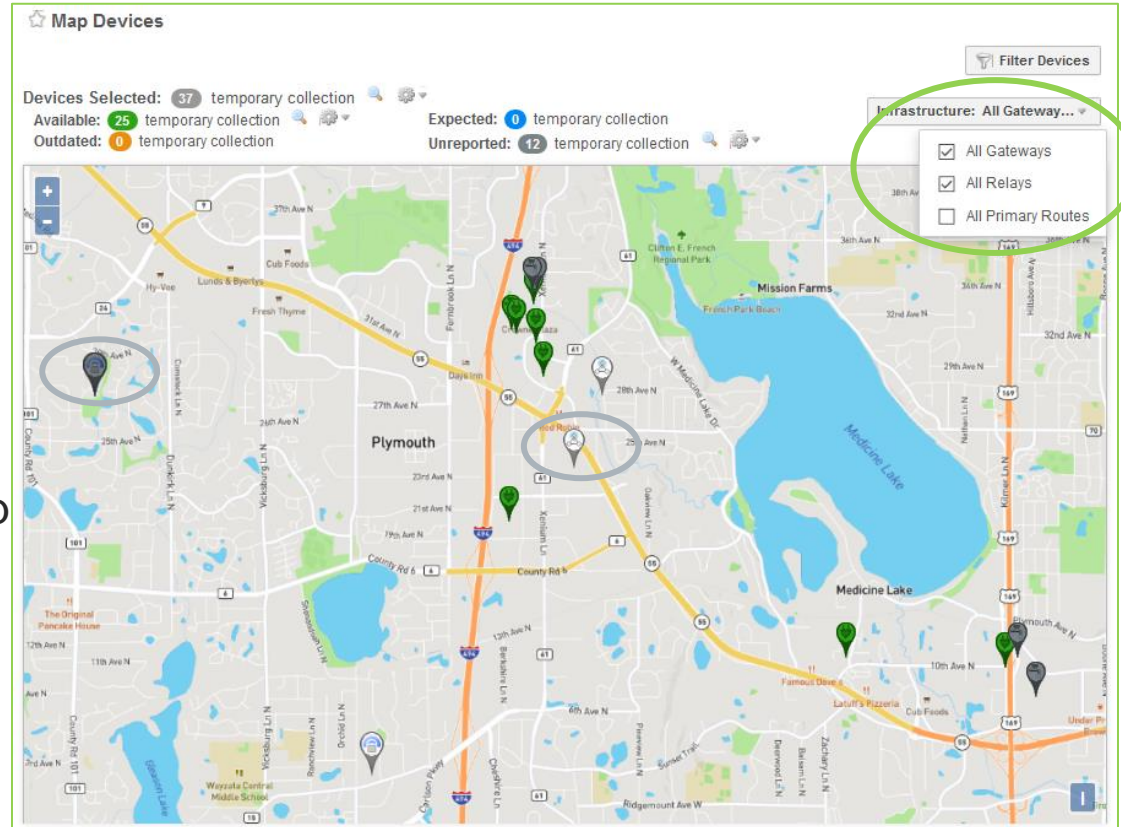
Mapping Visualization Improvements

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Mapping Visualization Improvements

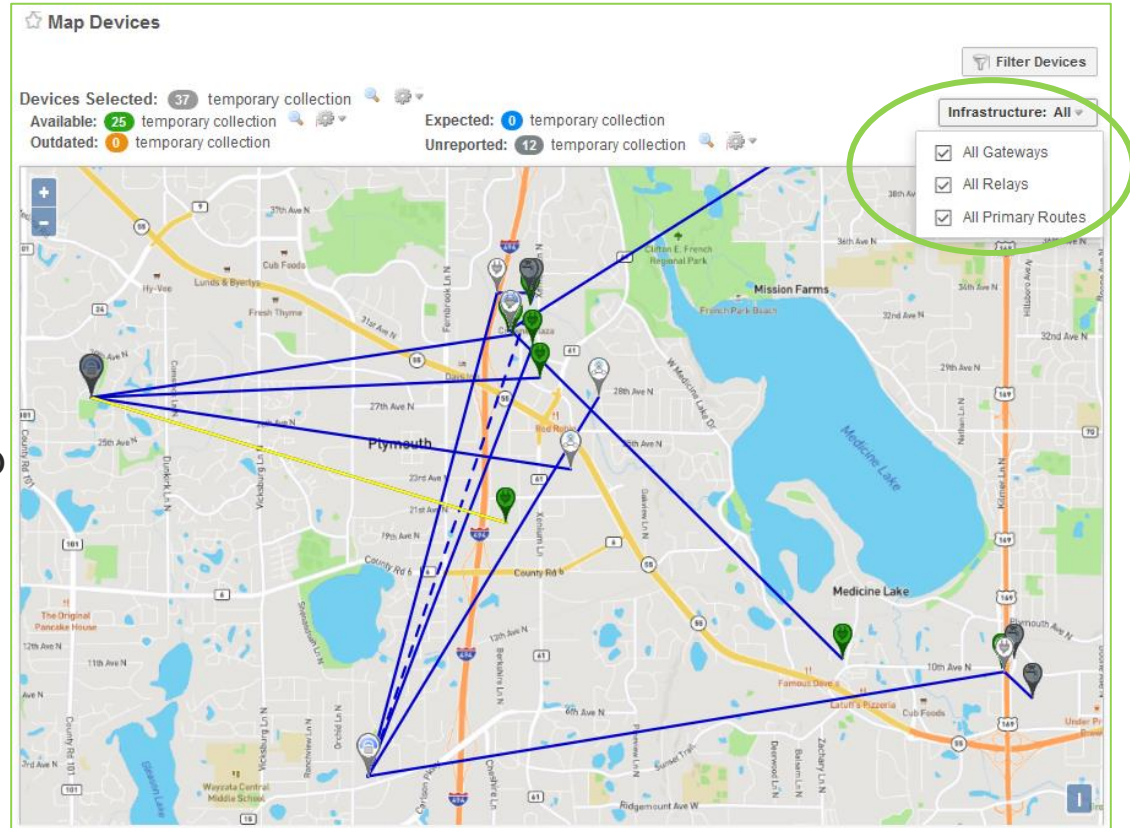
- Color coded pins indicating the Data Collection widget category on the map
- Clicking the 'Infrastructure' button provides the option to display all gateways and relays on the map



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Mapping Visualization Improvements

- Color coded pins indicating the Data Collection widget category on the map
- Clicking the 'Infrastructure' button provides the option to display all gateways and relays on the map
- Displaying Primary Routes provides a view of how other devices communicate in the area



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