PoP/AS Visualization

User Guide

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Introduction to PoP/AS Visualization

The POP/AS visualization system is a visual, easy-to-use interface to the NetDimes database, providing PoP-level PoP-AS geographic information. It allows querying the DB and viewing the results on an interactive map.

Getting started

Enter the website http://b6.evergrow.iucc.ac.il/PoPVisualizer.

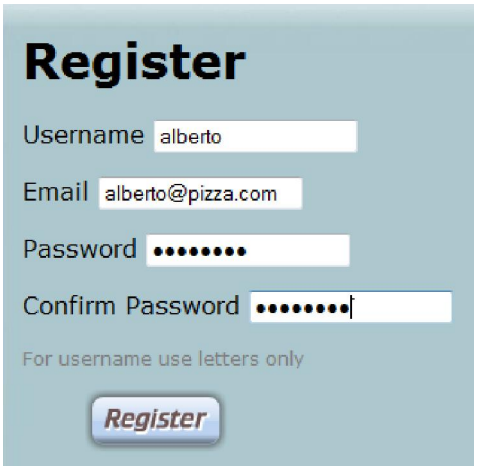
Registration

The registration process takes two steps:

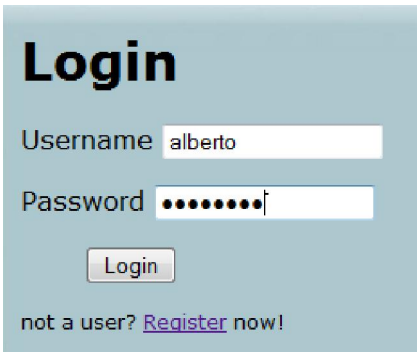
- Step 1 – register to the site. The user's registration request is sent to the administrator.
- Step 2 – the administrator decides to accept or deny the registration request. An email is sent to the user announcing the decision.

Registering to the site requires to enter the following details:

- username – the user's identification to the system. After registration process the user will login with the username.
- Email – a valid email address. An email is sent to this address after the administrator accepts or denies the request.
- Password – at the login the user needs to enter this password.
- Confirm password – re-enter the password to prevent mistakes.



Login



Enter the website http://b6.evergrow.iucc.ac.il/PoPVisualizer.

Enter the username and password chosen at registration.

After login the user is redirected to the

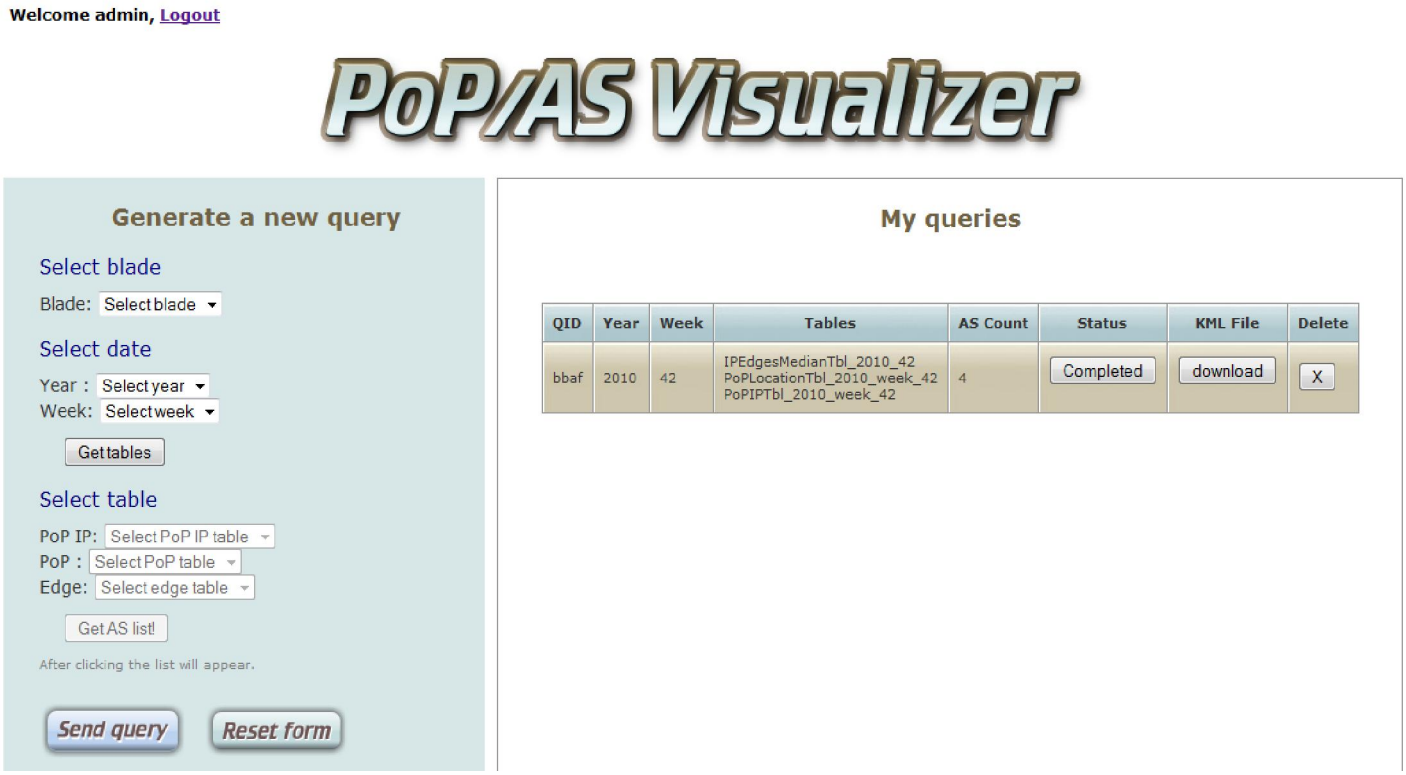
personalized user page.

Personalized User Page

After login you will reach your personalized page.

it divides to two parts –

- Generate a new query
- My queries



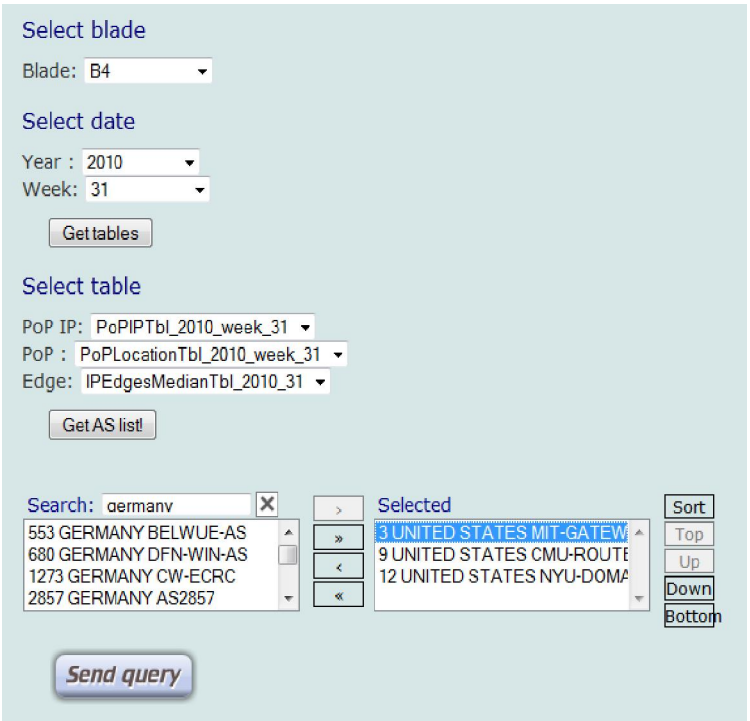
Generating a new query

Use the dropdown menus to select parameters to the query. After each selection the next menu will be updated accordingly. Click on the 'send query' button to send your query to the server.

Form's parameters:

- Blade – the DIMES database blade to retrieve information from.
- Date – the year and week that the user takes an interest in. The options presented are dates that have all three types of tables.
- Tables – the tables from the specified blade that match the dates chosen.
    - PoP IP – choose table that will be used for matching a given IP address to its corresponding PoP [1].
    - PoP – choose the table that will be used for geo-locating each PoP [2].
    - Edge – choose the table that will be used for assessing the connectivity between different PoPs [3].
- AS list – all ASs that were active during the specified date and appear in the selected tables.

  The information in the selection box is the AS number, country and ISP name. Use the search bar to filter the options.

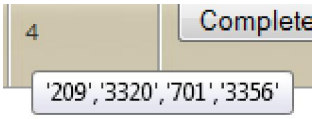


My queries

QID	Year	Week	Tables	AS Count	Status	KML File	Delete
bbaf	2010	42	IPEdgesMedianTbl_2010_42 PoPLocationTbl_2010_week_42 PoPIPTbl_2010_week_42	4	Completed	download	X

This frame shows all the user's queries, information about them and management options.

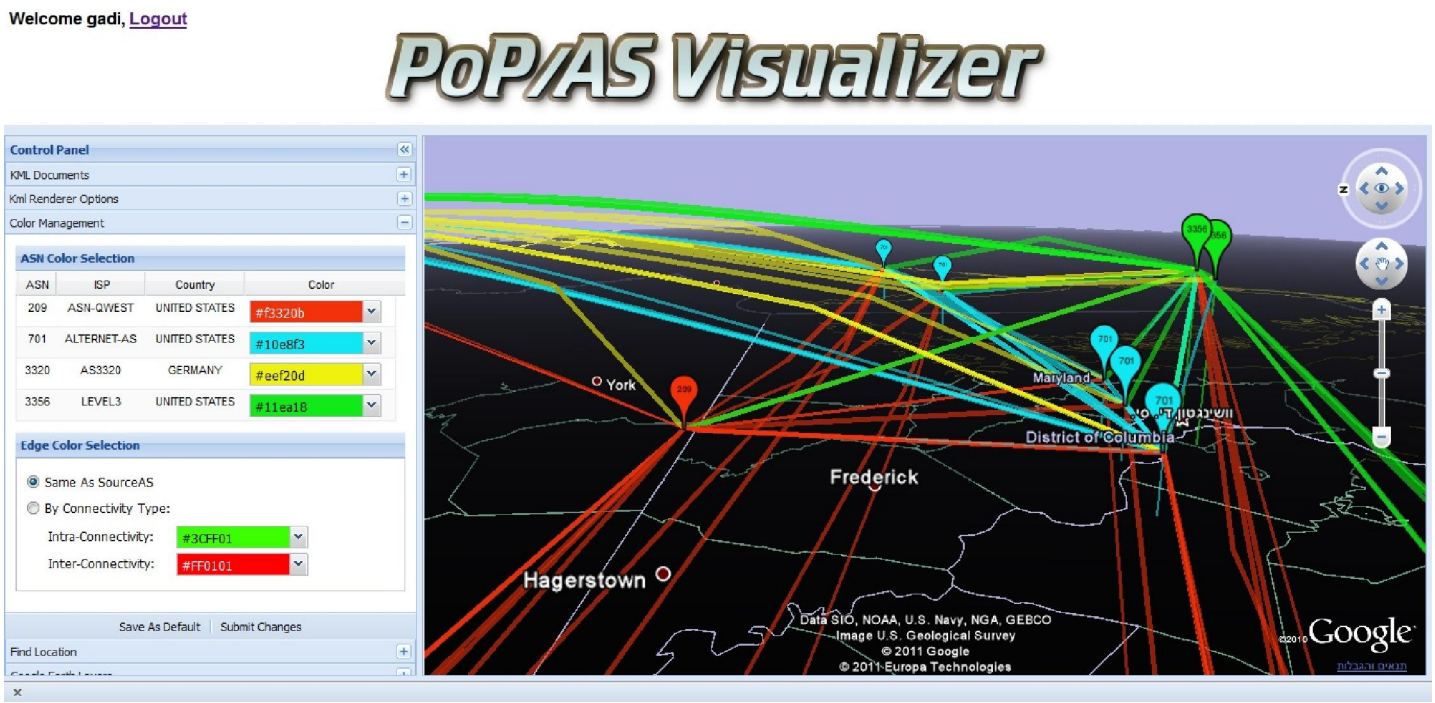
Special attributes are:

- QID – 4 last notes of the query ID. Allows distinguishing between similar queries.
- AS Count – the total number of ASs in the query. Hover the number to view the full AS list. 

- Status – the current status of the query.
    - Running - the server is still working on the query.
    - Checking - the system checks if your query has finished.
    - Completed - the query is completed - click the 'Completed' button and the visualization page with the query's data will open.
    - Error - there is a problem with the query. Requires to run the query again.
- KML File – download the file directly without opening the visual front end. Hover the download button to view the file size.
- Delete – by clicking the delete button the user erases the query from the queries list.

  Be careful, there is no way to retrieve the query after deletion.

Visualization page



On this page you can view and manipulate the geographic results from the query.

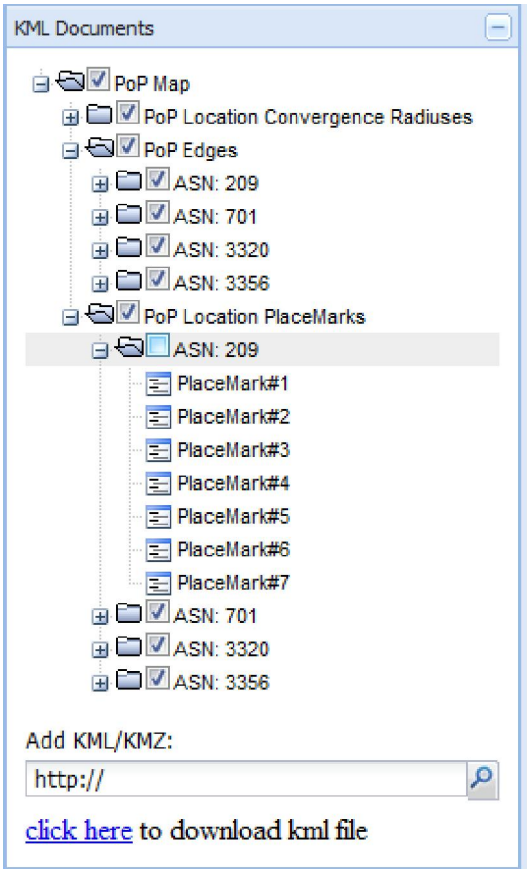
This page is accessed by pressing the “complete” button of a query on “My Queries” frame.

On the right side of the page you can view the PoP-level map in a Google earth plugin.

On the left side of the page you can manipulate the visualization of the results using the control panel, consistent with the following panels:

KML documents

The PoP level map is KML based .In this panel you can add or remove elements from the map according to their KML entity. For example, unchecking the 'ASN: 209' box will hide its placemarks from the map.



At this panel you can also load an existing KML\KMZ file, or save the current KML file.

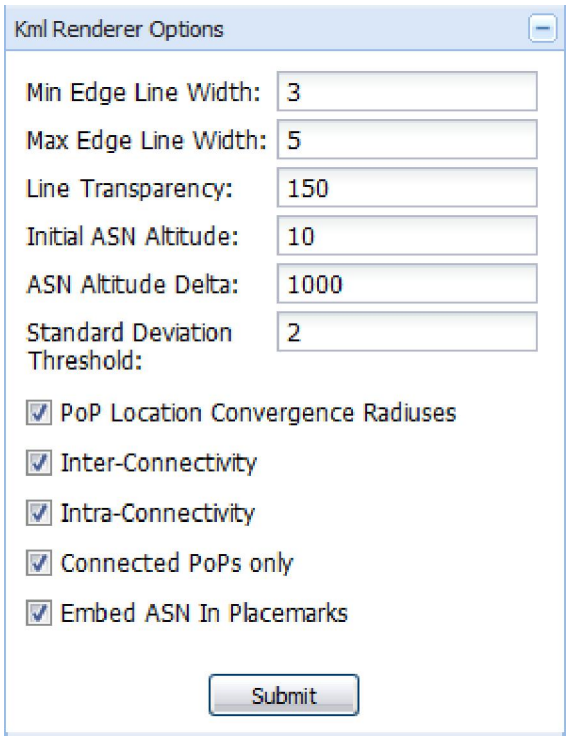
KML renderer options

This panel allows to manage the way entities appear in the map. You can control the line transparency, ASN altitude etc. Furthermore, several PoP-AS relations checkboxes are available:

- Pop location convergence radiuses – shows the convergence radius of the pop location. Drawn as a circle around the pop's placemark, this visual element signifies the accuracy of the pin-pointed location of the given pop. Accuracy is measured by taking into account all the locations of the different IP addresses associated with this pop. The longer the radius, the lower the accuracy (real location of the pop can be up to the outskirts of the surrounded area).
- Inter-connectivity – shows the PoP-level connectivity between different ASs.
- Inter-connectivity – shows the PoP-level connectivity inside an AS.

- Connected PoPs only – shows only the PoPs that have a connection to other PoPs (not a standalone).
- Embed ASN in placemarks – shows the AS number inside the PoP's placemark

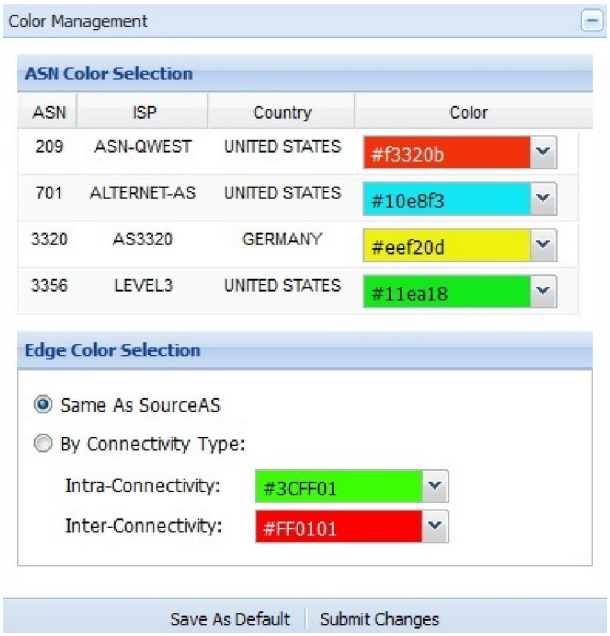
Clicking the submit button will render the requested map.



Color management

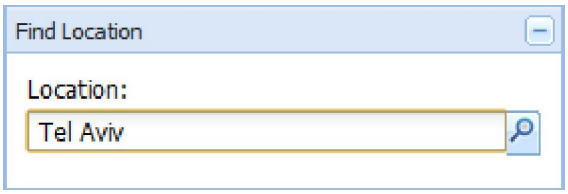
At this panel you can choose your own set of AS colors.

Pay attention that the default view selects the edge color to be identical to the source AS, so edges color is affected as well.



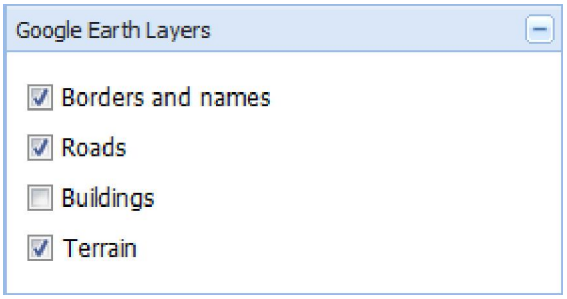
Find location

Enter any location (e.g. Tel Aviv) and the Google earth plugin will zoom the map on that location.



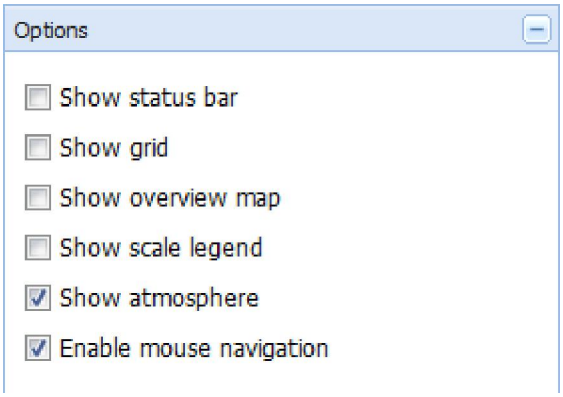
Google earth layers

This panel enables more map layers such as roads, borders etc.

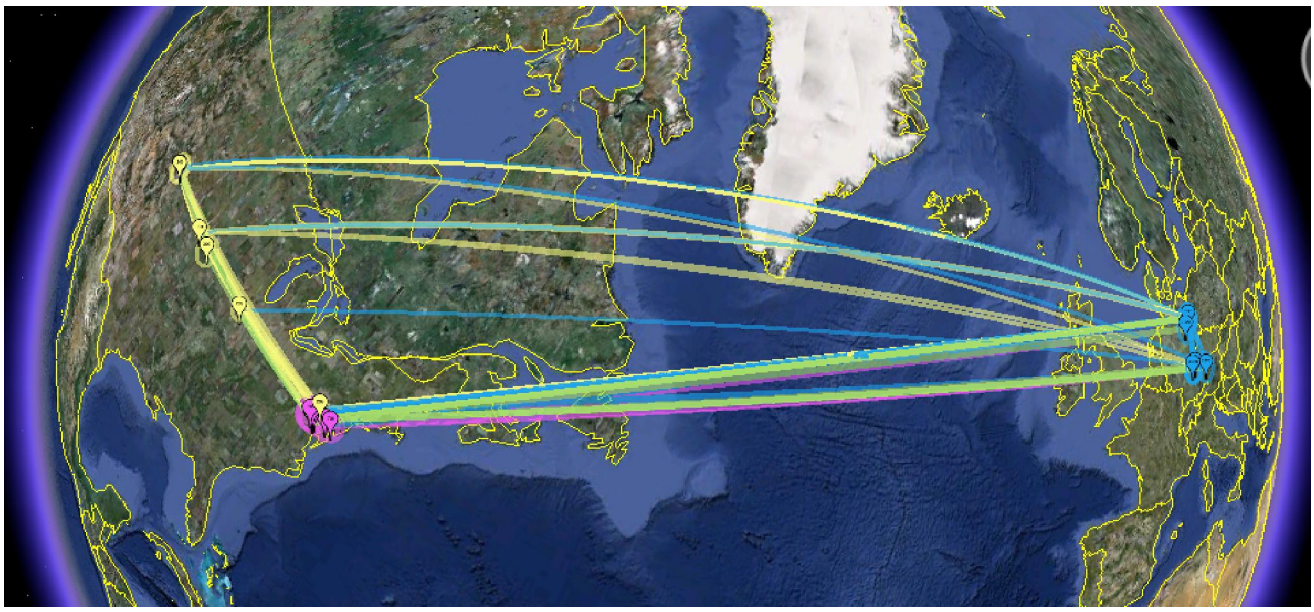


Options

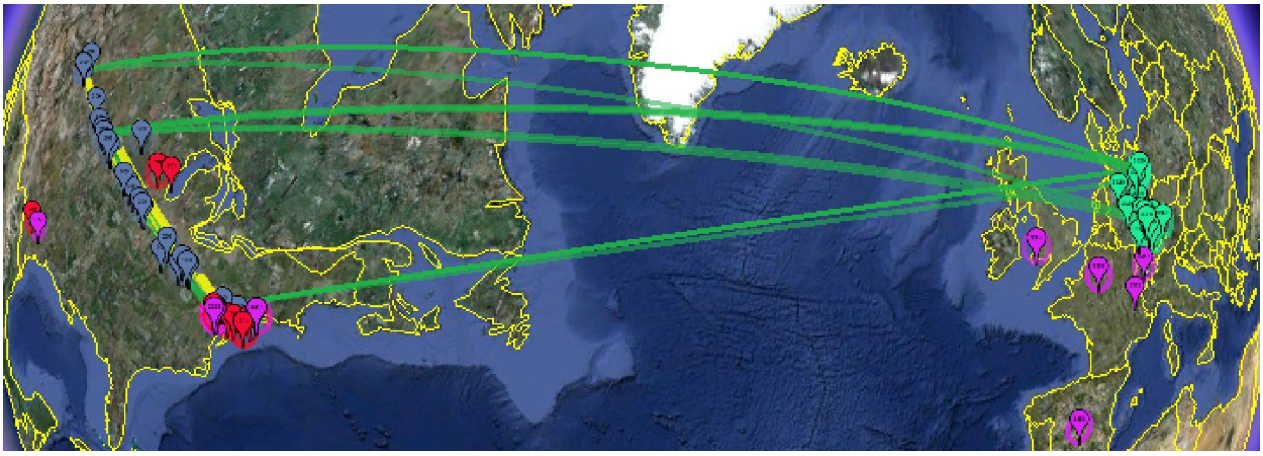
This panel enables more map options. These options are Google Earth generic.


Options
Show status bar
Show grid
Show overview map
Show scale legend
Show atmosphere
Enable mouse navigation

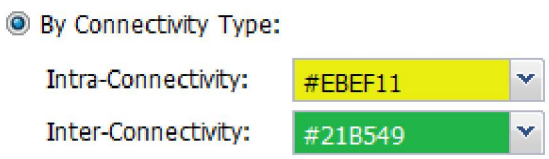
Visualization examples

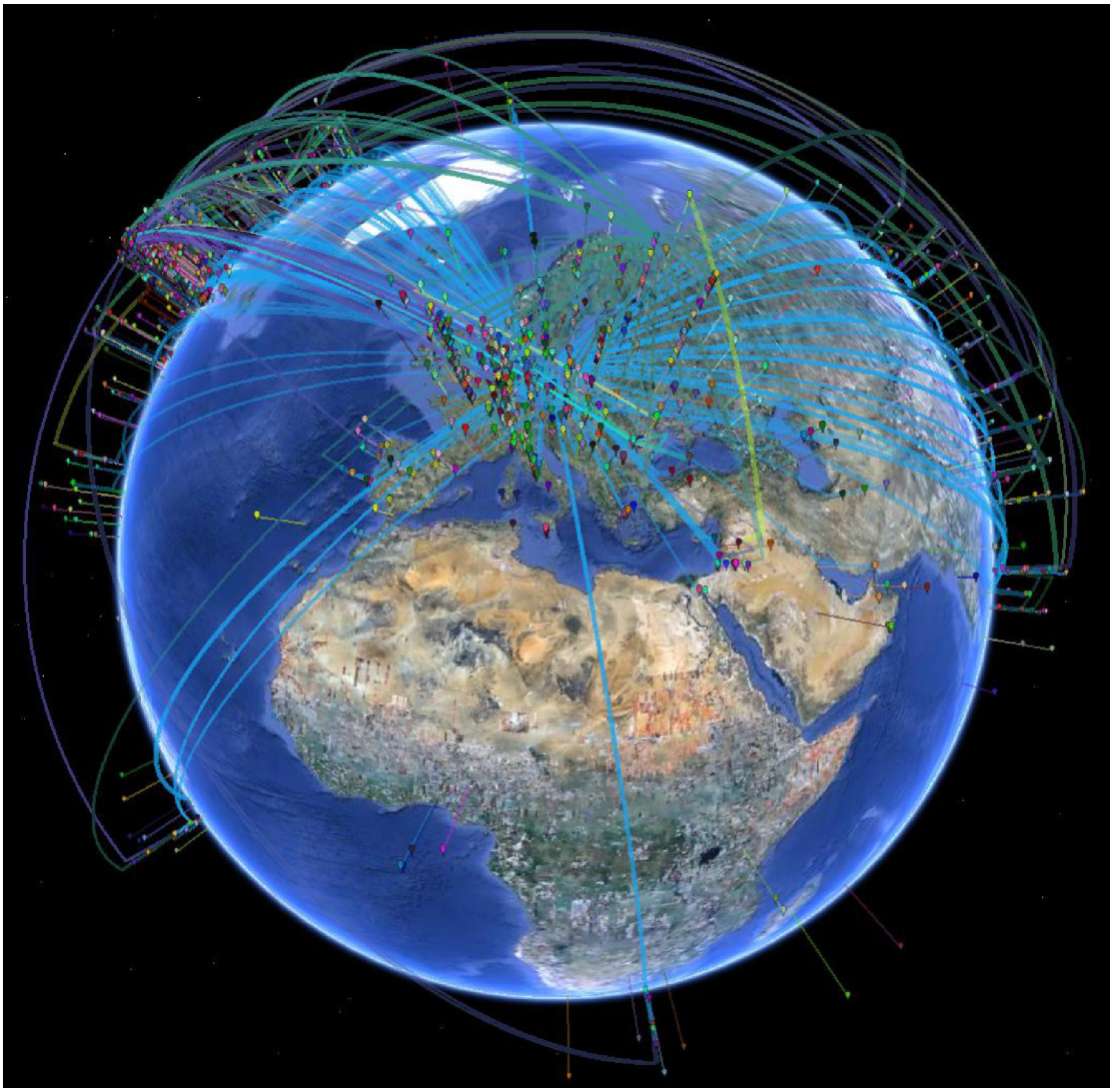


A sparse example of links between Europe and the USA. Only 4 ASs are shown on the globe. All PoPs of the same AS are colored the same. The edges colors are identical to the source AS color.



A similar query, where the edge color was set by connectivity type.





An example of a query from 2010 week 42, where all ASs available were chosen. Default colors are used, e.g. AS color is given randomly, edge color is the same as the source AS. Most of the AS's connectivity In this example is hidden (ticked-off in the place-mark manager) , to avoid congestion/overcrowding of visual elements.

Notes & Remarks

- [1] – PoP IP Table must contain (At Least) the following fields:
    - IP – a valid IPV4 address in a standard dot-decimal notation.
    - PoPID – a valid PoP identification in a dot-decimal format XXXXXX.XXXXXXXXXX where the first block of 6 decimals indicates the AS Number and the second block of 10 decimals indicates the PoP number. For e.g. '003356.0067195174' indicates ASN: 3356 & PoP#: 67195174.

- [2] – PoP Table must contain at least the following fields:
    - PoPID – PoP Identification (same format as listed above)
    - ASN – The AS Number that the given PoP belongs to.
    - LAT2 - Latitude of the given PoP in degrees (between +90 to –90).
    - LNG2 – Longitude of the given PoP in degrees (between +180 to –180).
    - Accuracy2 – this field is used for calculating the radius of convergence of the pin-pointed location represented by the given LAT & LNG values. This value is also given in degrees (between +180 to –180).

- [3] – Edge Table must contain at least the following fields:
    - Edgeid – Edge/Link identification Number.
    - SourceIP – Source IP Address of the given link.
    - DestIP – Desetnation IP Address of the given Link.
    - SourceAS – Source AS number.
    - DestAS – Dest AS number.