



**RIPE**  
**NCC**

## **Tutorial: Using RIPEstat**

---

Christian Teuschel  
Research & Development

- Basics
  - 3 layers of RIPEstat
  - RIPEstat Web
    - Result page
    - Customize the result page
    - Compare results
    - Handling abuse
    - Work with BGPlay

- Advanced
  - Work with widgets
    - Create a dashboard
  - RIPEstat Data API
    - Using Javascript to work with raw data
  - Nagios check





# RIPEstat

---

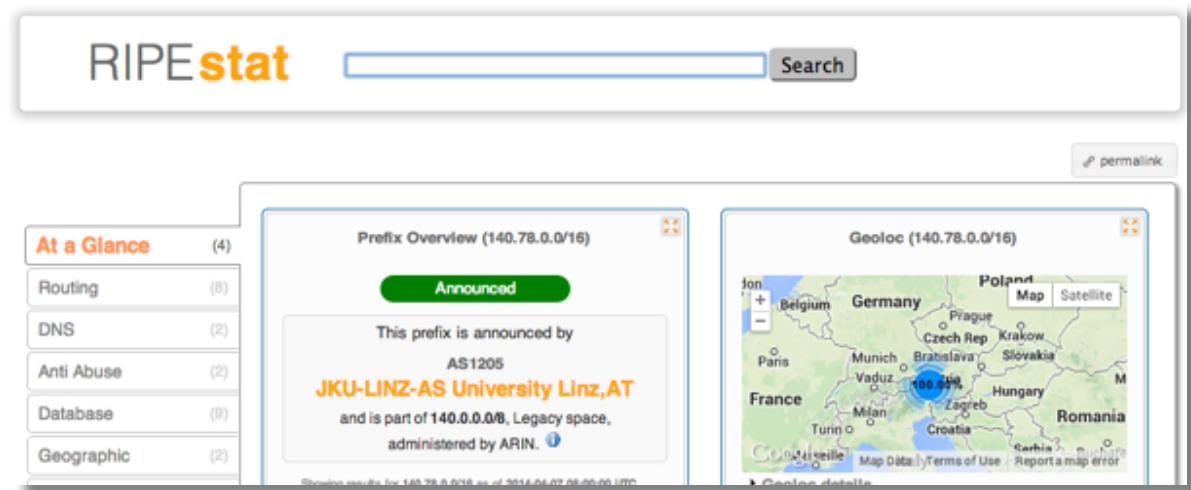
## Basics



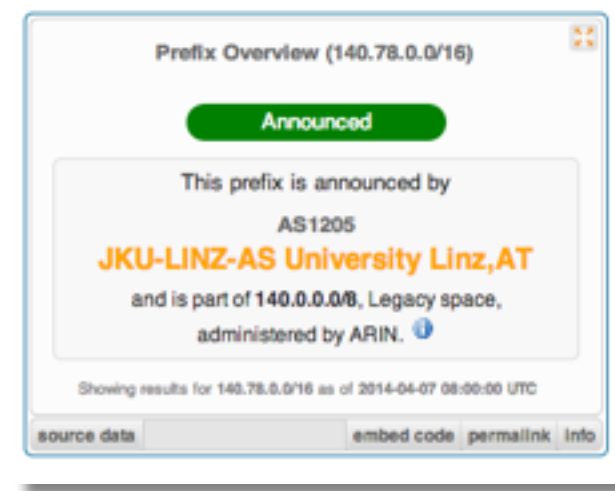
**RIPE**  
NCC

- Information system for Internet number resources
- Data
  - Routing data
    - Collected by RIS: <http://ris.ripe.net>
    - Registration data (whois)
      - RIPE Database & other RIR databases
    - MaxMind's geolocation data
    - Blacklist data
    - And many more: <https://stat.ripe.net/data-sources>

- RIPEstat Web  
<http://stat.ripe.net>



- RIPEstat Widget API



- RIPEstat Data API / RIPEstat Text API
  - <https://stat.ripe.net/data/routing-status/data.json?resource=...>

- Finding information on RIPEstat

The screenshot shows the RIPEstat web interface. At the top, there is a navigation bar with links: RIPEstat Home, About RIPEstat, Documentation, Use Cases, and Logout (Christian Teuschel). Below this, a breadcrumb trail reads: You are here: Home > Data & Tools > RIPEstat. A yellow search bar with the text 'Search RIPEstat' is prominent. A callout bubble labeled 'Search input' points to this bar. Below the search bar, there is a text input field with placeholder text 'Your network: AS3333, 2001:67c:2e8::48' and a note 'e.g.: IPv4 prefix/range, IPv6, ASN'. To the left of the main content area, a callout bubble labeled 'Recent new features' points to a section titled 'BGPlay is back!' which displays a network diagram and statistics. To the right, a 'Quick Links' sidebar contains links to 'Looking For Abuse Information', 'FAQ', 'Feedback', 'Documentation', 'Mobile Version', and 'Widget List'. A callout bubble labeled 'Links to most used features' points to this sidebar. Below the main content area, there are three columns of links under the headings 'About RIPEstat', 'Documentation', and 'Use Cases'. Each column has a 'LEARN MORE' button. A callout bubble labeled 'RIPEstat related articles on RIPE Labs' points to a section on the right titled 'On RIPE Labs' which lists recent articles with dates.

Search input

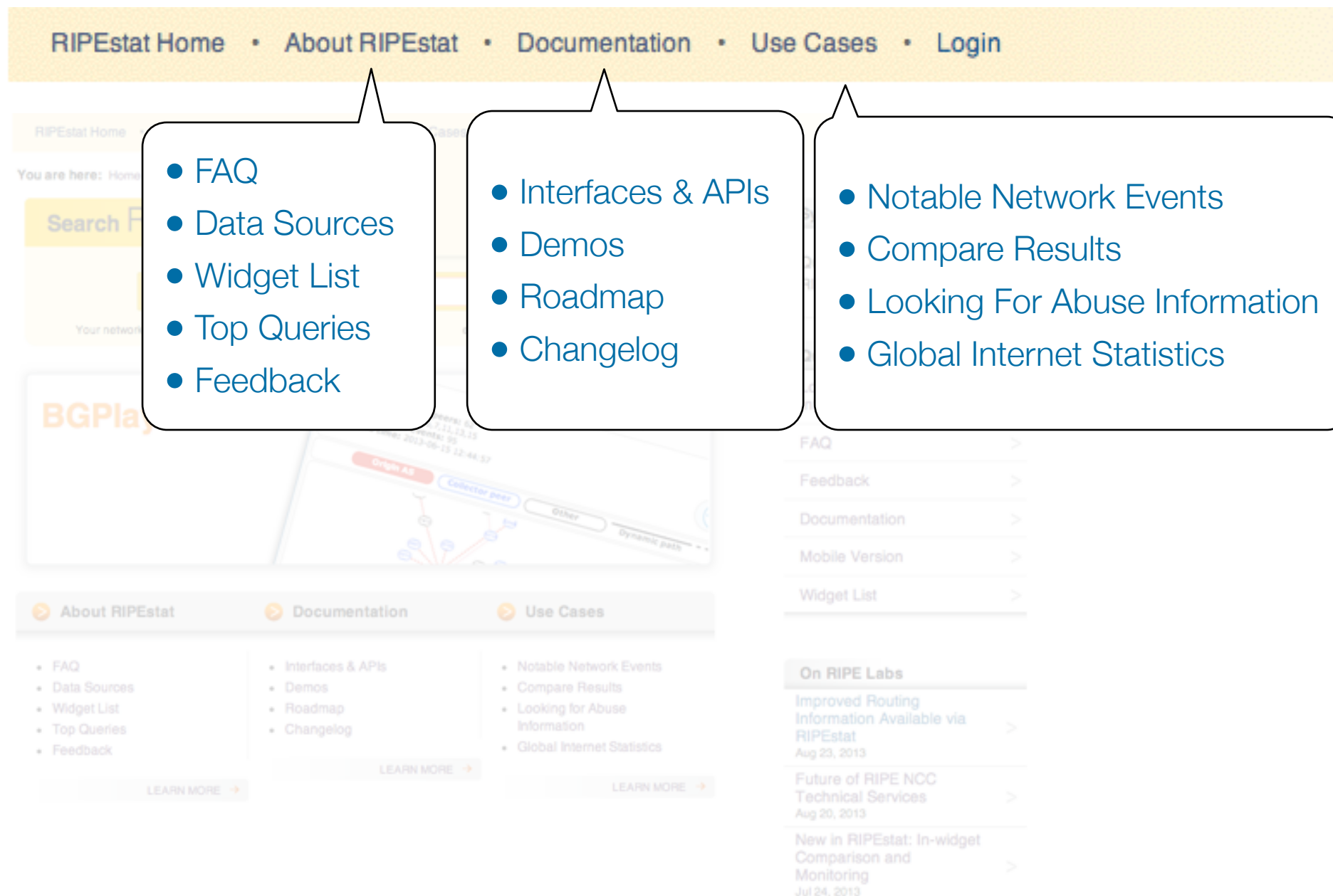
Recent new features

Links to most used features

RIPEstat related articles on RIPE Labs



- Information structure on RIPEstat





# 1. Querying for a Resource (Web)

- Task: Enter “AS3333” in the search box



# 1. Querying for a Resource (Web)

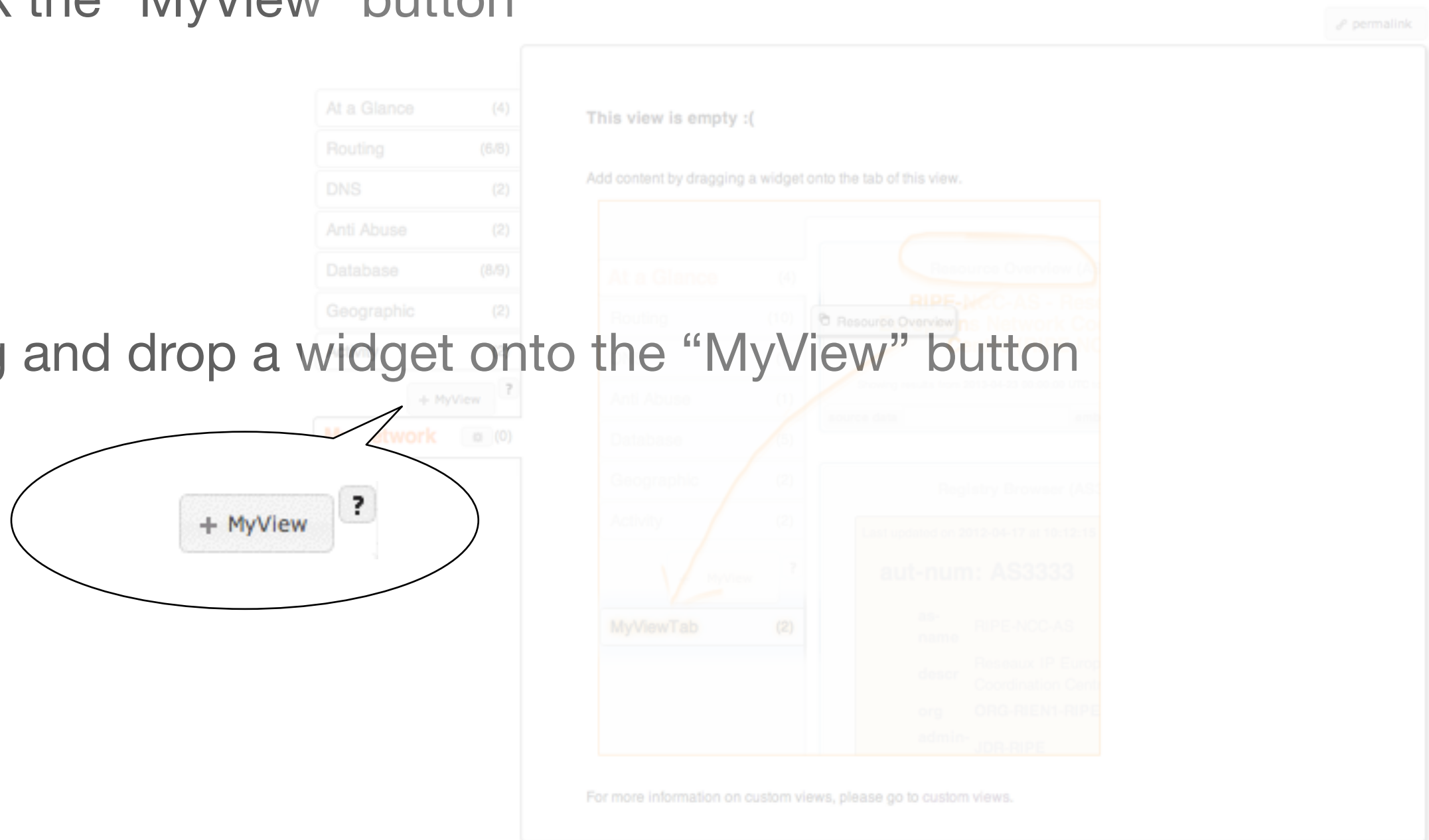
- Result page

The screenshot shows the RIPEstat interface for AS3333. At the top, a breadcrumb trail reads 'You are here: Home > Data & Tools > RIPEstat > AS3333'. Below this is the RIPEstat logo and a search bar with a 'Search' button. A callout bubble points to the search bar with the text 'Search box'. On the left, a sidebar titled 'At a Glance' lists various categories: Routing (9/10), DNS (1), Anti Abuse (1), Database (5), and Geographic (2). A callout bubble points to this sidebar with the text 'Widgets grouped into thematic tabs'. The main content area displays four widgets: 'AS Overview (AS3333)' showing 'RIPE-NCC-AS - Reseaux IP Europeens Network Coordination Centre (RIPE NCC)', 'Geoloc (AS3333)' with a map of Europe, 'Registry Browser (AS3333)' showing details for 'aut-num: AS3333' (as-name: RIPE-NCC-AS, descr: Reseaux IP Europeens Network Coordination Centre (RIPE NCC), org: ORG-RIEN1-RIPE, admin-c: JDR-RIPE, admin-c: BRD-RIPE, tech-c: OPS4-RIPE, mnt-by: RIPE-NCC-END-MNT, mnt-by: RIPE-NCC-MNT), and 'Routing Status (AS3333)' showing 'AS3333 is visible by 97%' and '99% of 102 IPv6 RIS'. A callout bubble points to the Routing Status widget with the text 'Widgets display different types of information'.

- Tasks
  - What network announces 140.78.50.90?
  - Is 193.3.4.2 routed?
  - In which country is 91.229.42.0/23 used?
  - What is its corresponding INETNUM object?
  - What widget provides real-time routing status?
  - By what percent did the number of prefixes announced within Poland increased over the last two years?
  - How would you share interesting network events with a colleague?

- Create custom views
  - Click the “MyView” button

- Drag and drop a widget onto the “MyView” button





# 2.MyViews (Web)

Newly created MyView

At a Glance (4)

Routing (6/8)

DNS (2)

Anti Abuse (2)

Database (8/9)

Geographic (2)

Activity (2)

+ MyView ?

**My Network** (0)

This view is empty :(

Add content by dragging a widget onto the tab of this view.

At a Glance (4)

Routing (10)

DNS (1)

Anti Abuse (1)

Database (5)

Geographic (2)

Activity (2)

MyView ?

**MyViewTab** (2)

Resource Overview (AS)

RIPE-NCC-AS - Res

Network Co

Centre (RIPE NC

Showing results from 2013-04-23 00:00:00 UTC to

source data emb

Registry Browser (AS)

Last updated on 2012-04-17 at 10:12:15

aut-num: AS3333

as-name RIPE-NCC-AS

descr Reseaux IP Europ

Coordination Cent

org ORG-RIEN1-RIPE

admin-JDR-RIPE

For more information on custom views, please go to custom views.

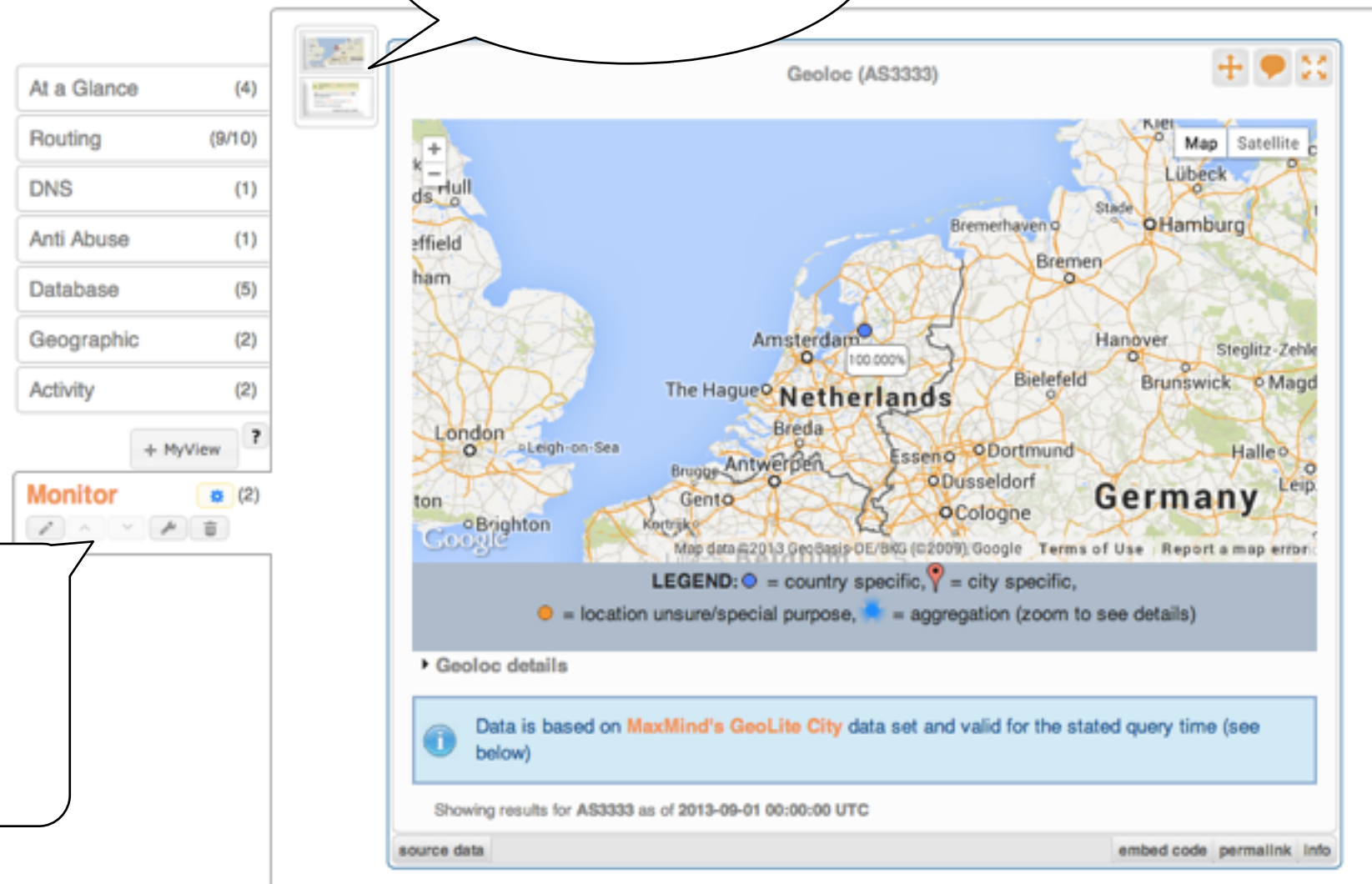
permalink

MyViews are only visible to you. An option to share your views will be available soon!

- Customise MyViews

Re-order widgets as you like

- Rename
- Re-order
- Control visibility
- Remove



- Tasks
  - Go to “<https://stat.ripe.net>” and click on “Login”
  - “...click here to create one.”

**Create a new RIPE NCC  
Access account.**

RIPE NCC Access enables you to sign into various RIPE NCC services using one password.  
Already have an account? Then [click here to manage it.](#)

First name



Last name

Email

Password (minimum length: 8)

Confirm Password

Enter the words you see in the box below

[Privacy & Terms](#)

- Tasks
  - Create a MyView for a prefix containing the following widgets:
    - Routing Status
    - Looking Glass
    - Routing History
  - Create another MyView with a least two widgets and give it a meaningful name

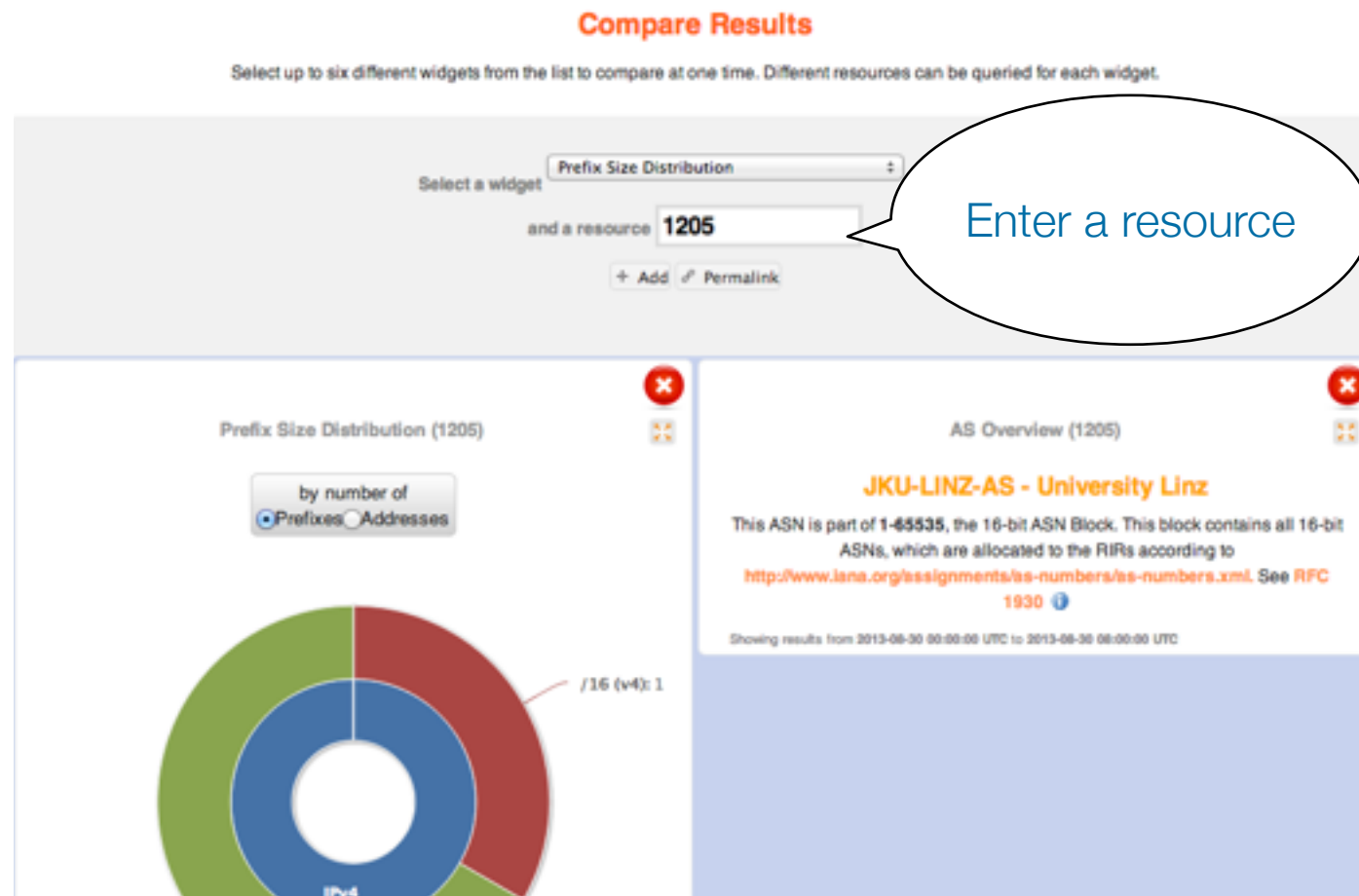


- Compare results in different widgets

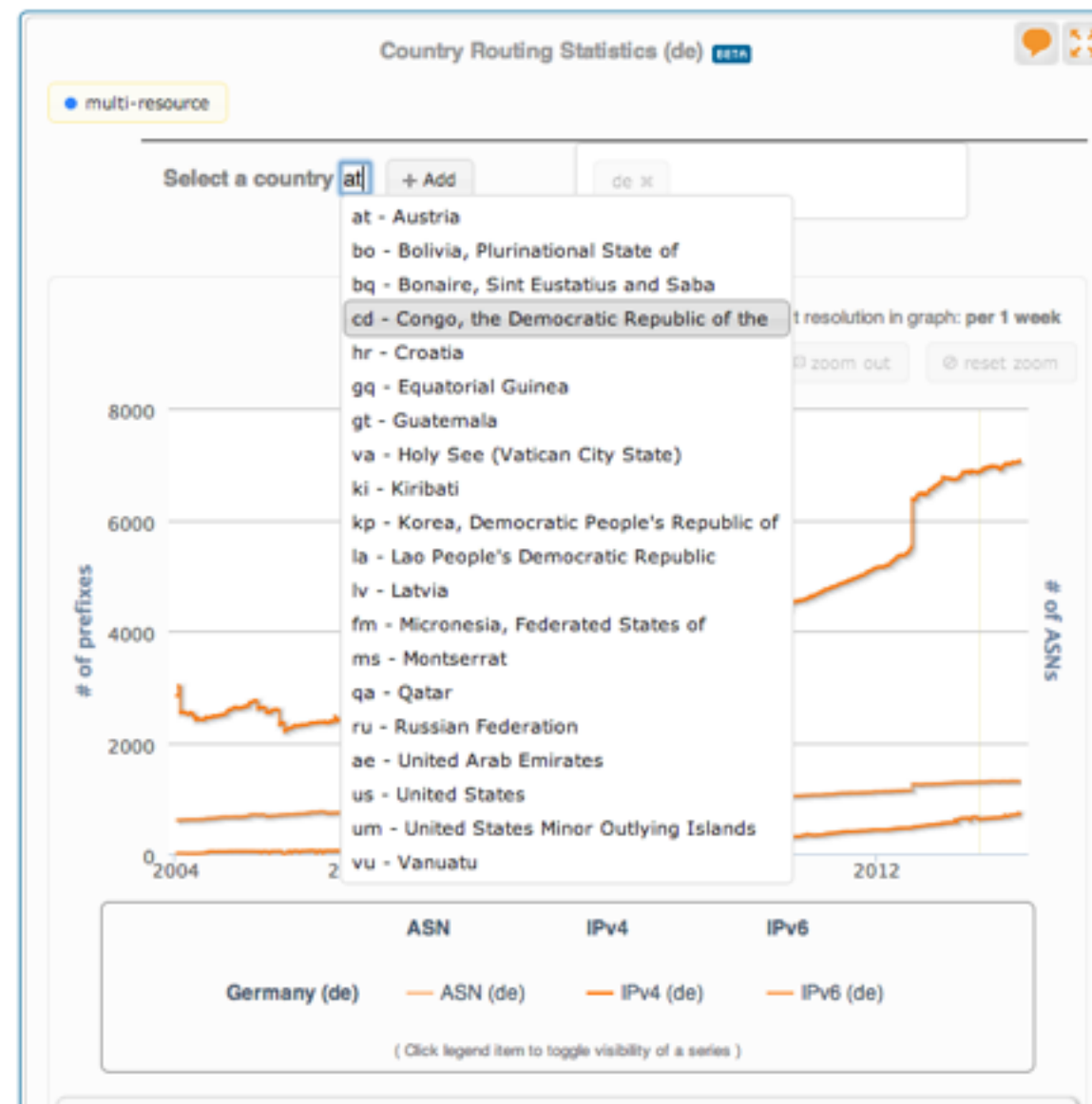
The screenshot shows the RIPEstat website's navigation bar at the top with links: RIPEstat Home • About RIPEstat • Documentation • Use Cases. A speech bubble points to the 'Use Cases' link with the text 'Go to “Use Cases” > “Compare Results”'. A large downward arrow indicates the next step. Below the arrow, the breadcrumb trail reads: 'You are here: Home > Data & Tools > RIPEstat > Use Cases > Data Comparator'. The main heading is 'Compare Results' in orange. Below it, a subtext says: 'Select up to six different widgets from the list to compare at one time. Different resources can be queried'. The main content area has a light gray background and contains a 'Select a widget' label next to a dropdown menu. A speech bubble points to the dropdown with the text 'Select a widget'. Below the dropdown are two buttons: '+ Add' and 'Permalink'.

# 3.Compare Resources (Web)

- Compare results in different widgets
  - Select the “Prefix Size Distribution” widget
  - Enter “AS1205”



- In-widget comparison
  - Country Routing Statistics



- Tasks
  - Compare the number of announced prefixes for two networks over the past two years using the widget comparison page
  - How does the Internet in Poland compare to the UK? Use in-widget comparison!



- Take action in an abuse case with the Abuse Contact Finder

The screenshot shows the RIPEstat Abuse Contact Finder interface. At the top, a navigation bar includes links for RIPEstat Home, About RIPEstat, Documentation, and Use Cases. A callout bubble points to the 'Use Cases' link, stating: "Go to 'Use Cases' > 'Looking For Abuse Information'". Below the navigation bar is a breadcrumb trail: "You are here: Home > Data & Tools > RIPEstat > Use Cases > Looking For Abuse Information". The main heading is "RIPEstat Abuse Contact Finder". Below this, a paragraph explains the tool's purpose: "The RIPEstat Abuse Contact Finder may be able to help you find the email address that should be used to report network abuse originating from a particular IP address." Two informational boxes follow: the first mentions learning about network abuse on the RIPE NCC's Abuse Information page, and the second mentions learning about the tool's operation in a tutorial on RIPE Labs. A callout bubble points to these boxes, stating: "In-depth information about abuse". Below these boxes is the "Abuse Contact Finder" widget, which includes the RIPEstat logo, a "BETA" label, and a text input field labeled "Enter an IP address". A callout bubble points to this field, stating: "Enter the IP address". At the bottom of the widget are links for "embed code", "permalink", and "info". A final note at the bottom states: "For regular RIPEstat users: this widget, of course, can also be found on the regular result page in the 'Anti Abuse' tab."

The screenshot shows the 'Abuse Contact Finder' interface for the IP address 2001:67c:2e8::/48. It displays an email contact 'abuse@ripe.net' and a quality rating of 5 stars (5/5). Callouts highlight these features: 'Email contact to report abuse to' points to the email address, and 'Rating of the contact' points to the star rating. Below the rating, it states 'Contact can be used to report abuse.' The interface also includes checkboxes for 'Show Complete Details' and 'Info for Resource Holders', a timestamp 'Showing results for 2001:67c:2e8::/48 as of 2013-08-30 14:39:00 UTC', a beta status warning, and navigation links at the bottom: 'source data', 'embed code', 'permalink', and 'info'.

Abuse Contact Finder (2001:67c:2e8::/48) **BETA**

Email-Contact

**abuse@ripe.net**

Quality-Rating

★★★★★ (5/5)

Contact can be used to report abuse.

☐ Show Complete Details  
☐ Info for Resource Holders

Showing results for 2001:67c:2e8::/48 as of 2013-08-30 14:39:00 UTC

**BETA** Beta status: Please note that even highly rated contacts can be incorrect

source data embed code permalink info

# 4.Handling Abuse (Web)

Abuse Contact Finder (2001:67c:2e8::/48) **BETA**

Email-Contact

**abuse@ripe.net**

Contact-Quality-Rating

★★★★★ (5/5)

This contact can be used to report abuse.

☐ Show Complete Details  
☐ Info for Resource Holders

Showing results for 2001:67c:2e8::/48 as of 2013-08-30 14:39:00 UTC

**BETA** Beta status: Please note that even highly rated contacts can be incorrect

source data embed code permalink info

Details about the resource and abuse contact:

☒ Show Complete Details

Details

- Results for

**193.0.18.0-193.0.21.255** <sup>12</sup>  
abuse@ripe.net from abuse-contact role

- Special Network Resource Information

This resource has been identified to be related to this information:  
RIPE NCC PI Allocation

Held by:  
**n.a.** <sup>12</sup>

- RIR Information

RIR	RIPE NCC	RIPE's Whois	<a href="https://apps.db.ripe.net/search/query.html">https://apps.db.ripe.net/search/query.html</a>
-----	----------	--------------	---

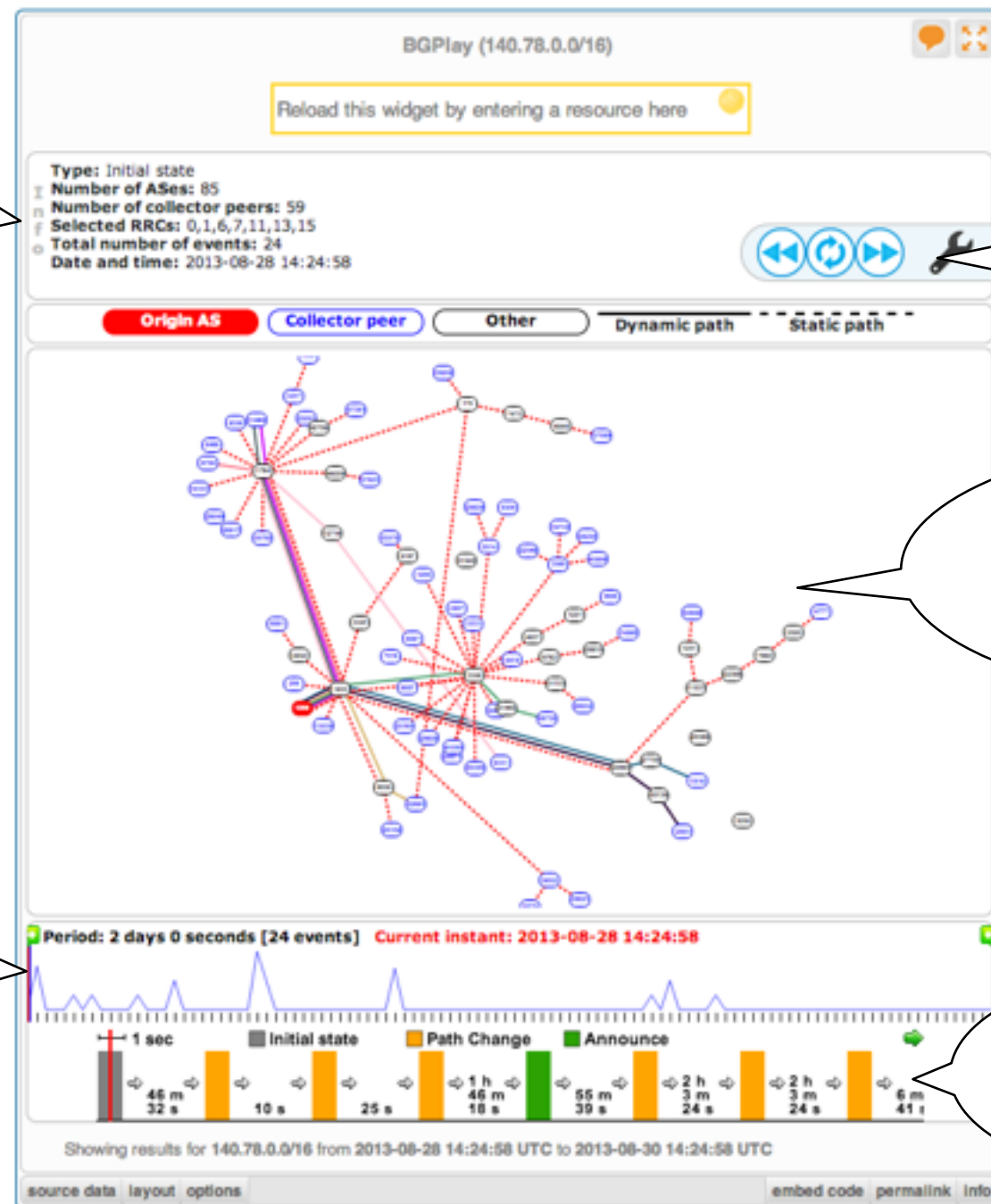
- Tasks
  - What is the abuse contact for 193.0.20.22 or the hotel network?
  - Check an IP address from your home network
- **Discussion:**
  - What can you do in these cases?
    - No abuse contact found
    - No response on an abuse report



- Use BGPlay to see how your network is routed
  - BGPlay is a tool that show the routing state in an animated and highly-interactive manner
  - Go to: <https://stat.ripe.net/widget/bgplay>

# 5.Let's BGPlay! (Web)

BGP event, ASN or  
ASN path details



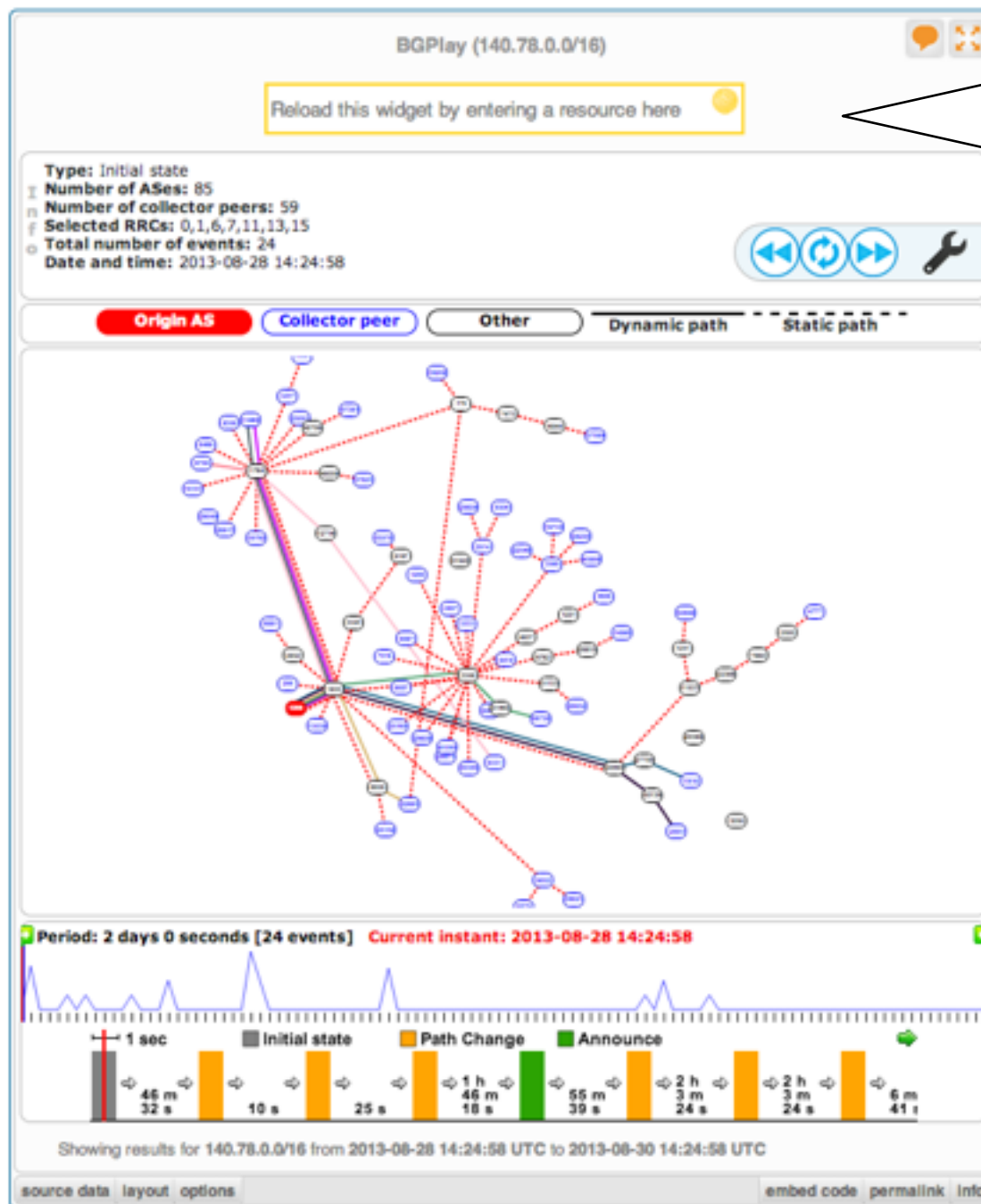
Control panel:  
- Covered time period  
- RRC selection

Interactive graph visualisation

Control timeline

Selection timeline

# 5.Let's BGPlay! (Web)



## Examples:

- Prefix with announcements & withdrawals:  
84.205.64.0/24
- Check IPv6 connectivity:  
2001:67c:2e8::/48
- Multi-homed prefix:  
199.7.80.0/24

- Task
  - Find the up-stream provider for AS1205
  - Is AS3333 multi-homed?
  - Check the IPv6 connectivity of your own network



# RIPEstat

---

Advanced



**RIPE**  
NCC

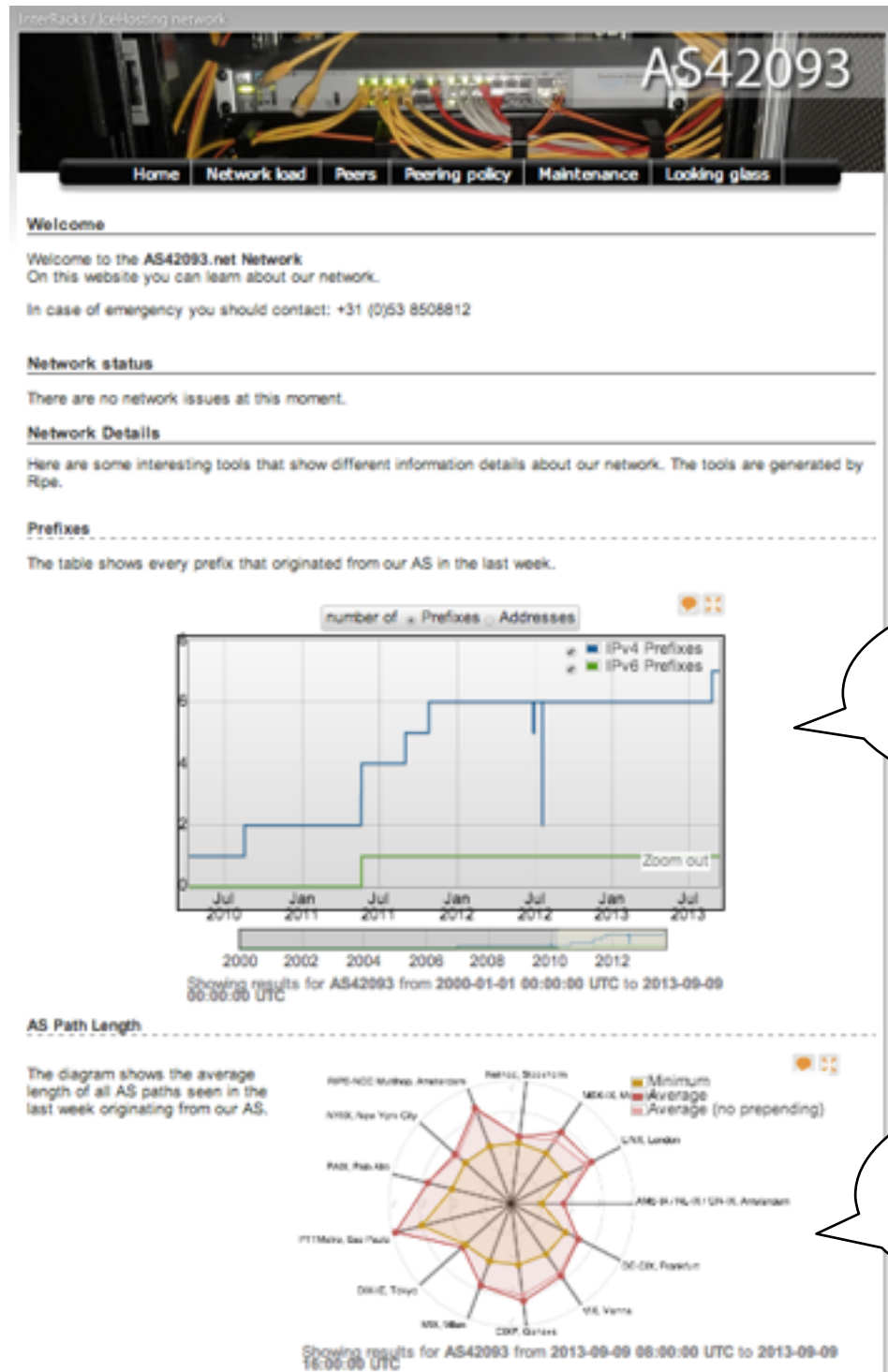


- Visualising raw data
  - What is the concept?
    - The RIPEstat Widget API uses the RIPEstat Data API (or any other RESTful-API) to create visualisations helping to make the data more understandable
    - Build on top of open web standards (HTML, CSS, Javascript)
    - RIPEstat widget API documentation:  
[https://stat.ripe.net/docs/widget\\_api](https://stat.ripe.net/docs/widget_api)



# 6.Embedding Widgets On Your Site

This ISP embedded widgets on its page.



- Task
  - Create a simple dashboard page to monitor your network
    - Create a simple HTML page
      - Download the sample page:  
[https://stat.ripe.net/widgets/demo/widget\\_home.html](https://stat.ripe.net/widgets/demo/widget_home.html)
    - Embed three widgets of your choice
    - Make the widget smaller and remove the RIPEstat logo

```
ripestat.init(  
  widget-type  
  [, { loading-parameters } ]  
  [, html-element-id ]  
  [, { styling-parameters } ]  
  [, load-callback() ]  
)
```

- Using raw data output
  - What is the concept?
    - The RIPEstat Data API provides the lowest level of access to data. This data can be fed into custom applications or just used for scripting.
  - RIPEstat data API documentation:  
[https://stat.ripe.net/docs/data\\_api](https://stat.ripe.net/docs/data_api)

- Tasks
  - Use your browser to retrieve all announced prefixes for AS6714

- Tasks

- A simple check on a resource of your choice if it is seen on the Internet
  - Create a simple script using resource-overview or routing-status

[https://stat.ripe.net/widgets/demo/script\\_me.html](https://stat.ripe.net/widgets/demo/script_me.html)

```
var prefix = "140.78/16";
var dataAPIUrl = "https://stat.ripe.net/data/prefix-overview/data.json?resource=" + prefix;
jQuery.ajax({
  url: dataAPIUrl,
  error: function() {
    alert("error");
  },
  success: function( response ) {
    alert("success");

    // get announcement status
    var aStatus = response["data"]["announced"];

    // display result
    var container = jQuery("#announcement-status");
    container.html(prefix + " is announced: " + aStatus);
  },
  dataType: "jsonp"
});
```

- Create a Nagios check using the RIPEstat Data API
  - Nagios is a monitoring tool that supports the development of custom checks (like other monitoring tools)
  - Result codes for a check show the state:

State	Result Code
Ok	0
Warning	1
Error	2



## Example of a Python based check:

```
if args.transit:
    transit = args.transit.split(',')
origin = args.origin.split(',')
nagios_status = 0
origin_errors = 0
transit_errors = 0
nagios_message = ""
url = "https://%s/data/looking-glass/data.json?resource=%s" % (args.statserver, urllib2.quote(args.prefix, ''))
lookingglass_raw = urllib2.urlopen(url)
lookingglass_json = json.load(lookingglass_raw)
if lookingglass_json['data_call_status'] != "supported":
    print "WARN: %s is under maintance " % (args.statserver)
    sys.exit(1)
for rrc in lookingglass_json['data']['rrcs']:
    for peer in lookingglass_json['data']['rrcs'][rrc]['entries']:
        aspath = peer['as_path'].split()
        details = peer['details'][0].split()
        peer_addr = details[0]
        nexthop = details[2]
        router_id = details[3]

        if len(aspath) > args.minpath:
            if aspath[-1] not in origin :
                origin_errors += 1
                nagios_message = nagios_message + ( "Origin mismatch %s (%s): %s; " % (rrc, peer_addr, aspath[-1]))
            if args.transit:
                if aspath[-2] not in transit :
                    transit_errors += 1
                    nagios_message = nagios_message + ( "Transit mismatch %s (%s): %s; " % (rrc, peer_addr, aspath[-2]))

if origin_errors == 0 and transit_errors == 0:
    nagios_message = "OK: %s Origin is %s " % (args.prefix, args.origin)
    if args.transit:
        nagios_message = "%s and all transits match %s" % (nagios_message, args.transit)
elif origin_errors >= args.crit or transit_errors >= args.crit:
    nagios_status = 2
    nagios_message = "ERROR: " + nagios_message
elif origin_errors >= args.warn or transit_errors >= args.warn:
    nagios_status = 1
    nagios_message = "WARN: " + nagios_message
```

