

Tutorial: Using RIPEstat

MENOG 13

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Recap From the RIPEstat Presentation

- Information system for Internet number resources

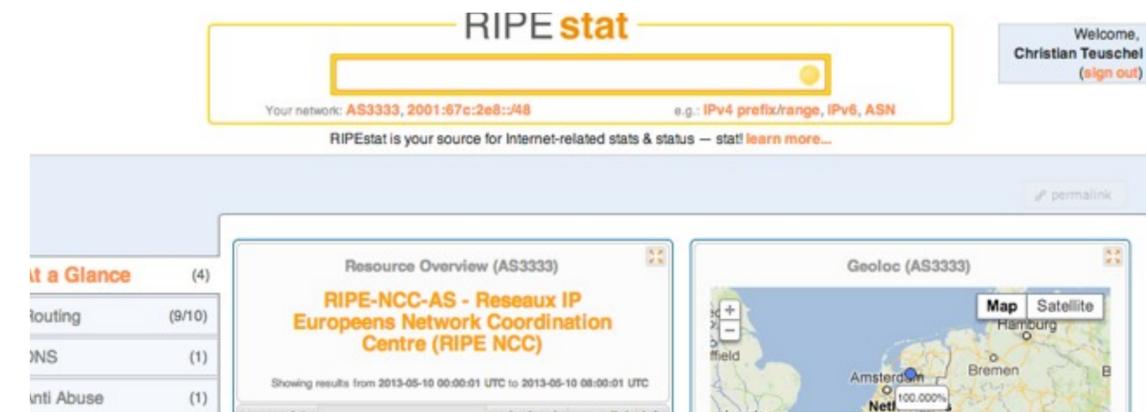
- Data

- 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>

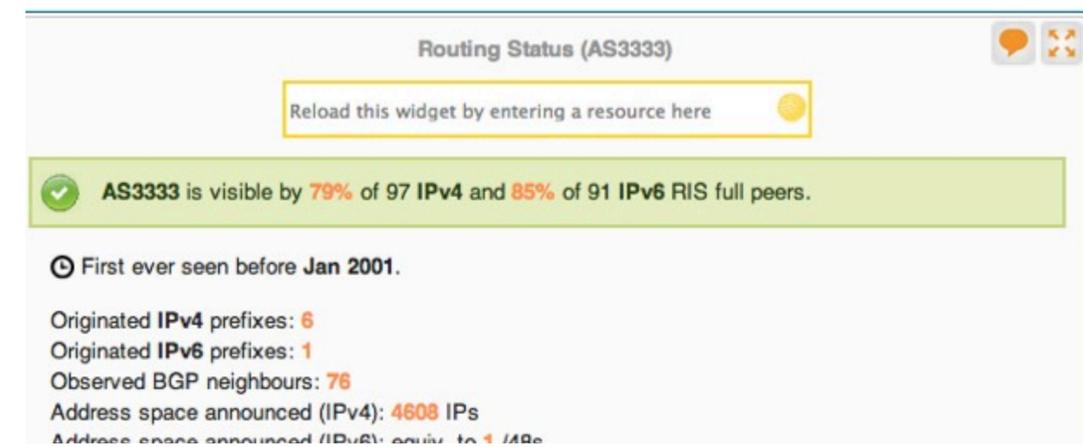
The screenshot displays the RIPEstat interface for AS3333. At the top, a breadcrumb trail reads "You are here: Home > Data & Tools > RIPEstat > AS3333". Below this is the "RIPEstat" logo and a search bar. A sidebar on the left lists various data categories: "At a Glance" (4), "Routing" (9/10), "DNS" (1), "Anti Abuse" (1), "Database" (5), "Geographic" (2), and "Activity" (2). The main content area is divided into several panels: "AS Overview (AS3333)" showing "RIPE-NCC-AS - Reseaux IP Europeens Network Coordination Centre (RIPE NCC)" with a date range of 2013-08-30; "Registry Browser (AS3333)" showing "aut-num: AS3333" and "as-name RIPE-NCC-AS" with a last update date of 2012-04-17; "Geoloc (AS3333)" featuring a map of Europe with a location pin in the Netherlands; and "Routing Status (AS3333)".

Three Interfaces of RIPEstat

RIPEstat Web Interface



RIPEstat Widget API



RIPEstat Data API / RIPEstat Text

<https://stat.ripe.net/data/routing-status/data.json?resource=AS3333>

RIPEstat Web Interface

- Finding Information on RIPEstat

The screenshot shows the RIPEstat web interface with several callouts:

- Search input:** A callout bubble points to the search bar in the top navigation area.
- Recent new features:** A callout bubble points to the "BGPlay is back!" banner, which features a network diagram and statistics like "Number of ASes: 87" and "Selected collector peers: 62".
- Links to most used features:** A callout bubble points to the "Quick Links" sidebar, which includes items like "Looking For Abuse Information", "FAQ", "Feedback", "Documentation", "Mobile Version", and "Widget List".
- RIPEstat related articles on RIPE Labs:** A callout bubble points to the "On RIPE Labs" section, which lists articles such as "Improved Routing Information Available via RIPEstat" (Aug 23, 2013) and "Future of RIPE NCC Technical Services" (Aug 20, 2013).

RIPEstat Web Interface

- Information structure on RIPEstat

The screenshot shows the RIPEstat web interface with a yellow navigation bar at the top containing links: RIPEstat Home, About RIPEstat, Documentation, Use Cases, and Login. Below the navigation bar is a search bar with the text "Search RIPE" and a search input field. A callout box points to the search bar with the following list:

- FAQ
- Data Sources
- Widget List
- Top Queries
- Feedback

Another callout box points to the search input field with the following list:

- Interfaces & APIs
- Demos
- Roadmap
- Changelog

A third callout box points to the main content area with the following list:

- Notable Network Events
- Compare Results
- Looking For Abuse Information
- Global Internet Statistics

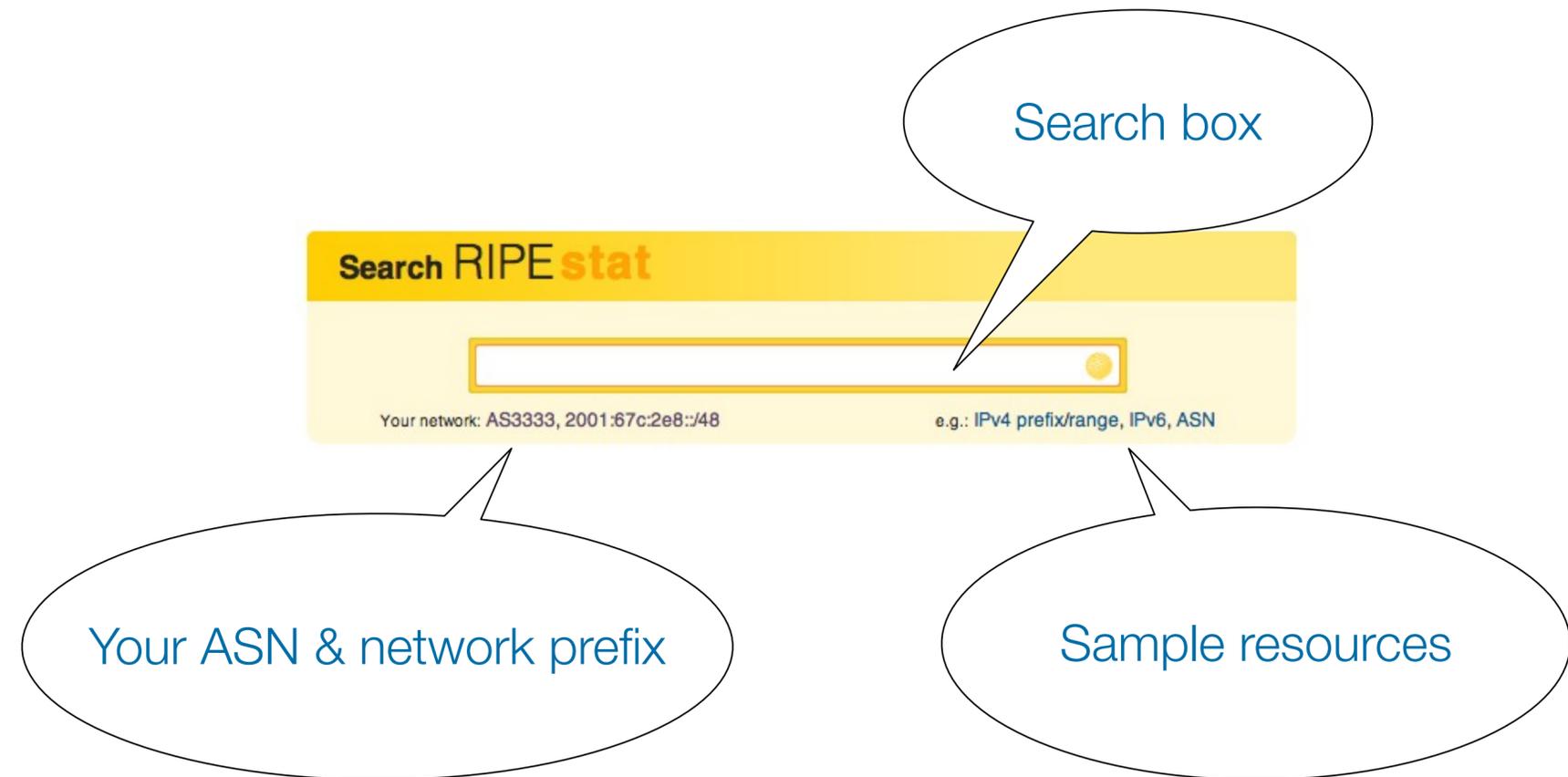
The main content area features a "BGPlay is back!" banner and a "Quick Links" sidebar with the following items:

- Looking For Abuse Information
- FAQ
- Feedback
- Documentation
- Mobile Version
- Widget List

At the bottom, there are three main sections: "About RIPEstat", "Documentation", and "Use Cases", each with a list of links. The "About RIPEstat" section includes: FAQ, Data Sources, Widget List, Top Queries. The "Documentation" section includes: Interfaces & APIs, Demos, Roadmap, Changelog. The "Use Cases" section includes: Notable Network Events, Compare Results, Looking for Abuse Information.

1. Querying for a Resource (Web Interface)

Example: Enter “AS3333” in the search box



1. Querying for a Resource (Web Interface)

Result page

Widgets grouped into thematic tabs

Search box

Widgets display different types of information

You are here: Home > Data & Tools > RIPEstat > AS3333

RIPEstat Search

permalink

At a Glance (4)
Routing (9/10)
DNS (1)
Anti Abuse (1)
Database (5)
Geographic (2)
Activity (2)
+ MyView ?

AS Overview (AS3333)
RIPE-NCC-AS - Reseaux IP Europeens Network Coordination Centre (RIPE NCC)
Showing results from 2013-06-30 00:00:00 UTC to 2013-06-30 08:00:00 UTC
source data embed code permalink info

Geoloc (AS3333)
Showing results for AS3333 as of 2013-06-01 00:00:00 UTC
source data embed code permalink info

Registry Browser (AS3333)
Last updated on 2012-04-17 at 10:12:15 UTC.
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
Showing results for AS3333 as of 2013-06-30 14:44:20 UTC
source data embed code permalink info

Routing Status (AS3333)
AS3333 is visible by 97% of 107 IPv4 and 99% of 102 IPv6 RIS full peers.
First ever seen before Jan 2001.
Originated IPv4 prefixes: 6
Originated IPv6 prefixes: 1
Observed BGP neighbours: 160
Address space announced (IPv4): 4608 IPs
Address space announced (IPv6): equiv. to 1 /48s
Compare to 1 week earlier
Showing results for AS3333 as of 2013-06-29 00:00:00 UTC
source data embed code permalink info

1. Querying for a Resource (Web Interface)

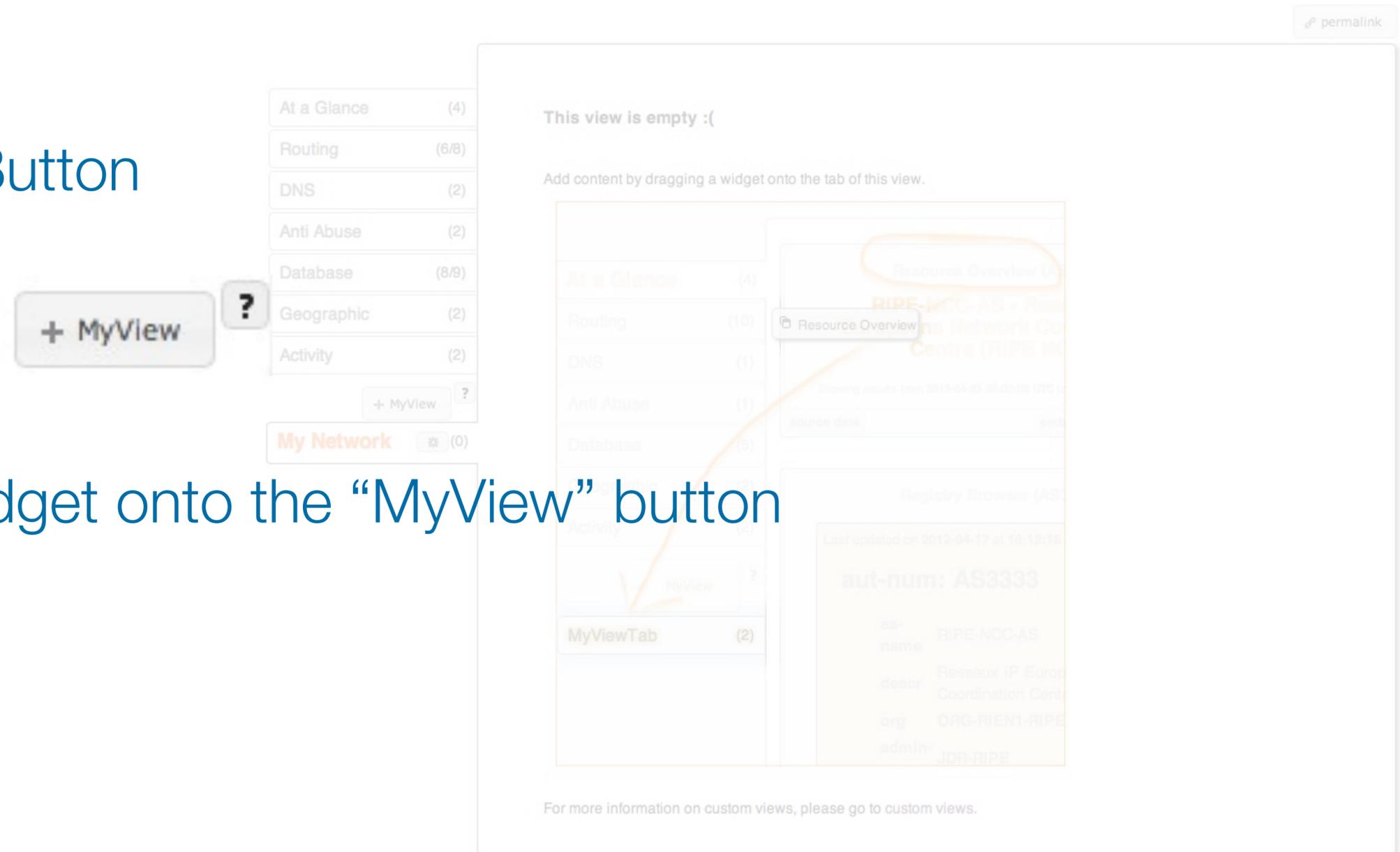
Tasks:

- What network announces 140.78.50.90?
- Is 192.3.4.2 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 by Kuwait increase over the last two years?
- How would you share interesting network events with a colleague?

2. MyViews

Create custom views:

- Click the “MyView” Button



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

2. MyViews

Newly created MyView

The screenshot shows the RIPEstat interface with a sidebar on the left containing various categories: At a Glance (4), Routing (6/8), DNS (2), Anti Abuse (2), Database (8/9), Geographic (2), and Activity (2). Below these is a '+ MyView ?' button and a 'My Network * (0)' button. The main content area is titled 'This view is empty :('. Below this, it says 'Add content by dragging a widget onto the tab of this view.' A 'MyViewTab (2)' is visible at the bottom of the sidebar. A 'Resource Overview' widget is being dragged from a sidebar of widgets into the main view. The widget shows 'RIPE-NCC-AS - Res...ns Network Co... Centre (RIPE N...'. Below the widget, there is a 'Registry Browser (AS3...)' section with details for 'aut-num: AS3333', including 'as-name: RIPE-NCC-AS', 'descr: Reseaux IP Europ... Coordination Cent...', 'org: ORG-RIEN1-RIPE', and 'admin: JDR-RIPE'. A 'permalink' button is in the top right corner. At the bottom, it says 'For more information on custom views, please go to custom views.'

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

2. MyViews

Customise MyViews

Re-order widgets as you like

The screenshot displays the RIPEstat MyViews interface. On the left is a sidebar with a list of widgets: 'At a Glance (4)', 'Routing (9/10)', 'DNS (1)', 'Anti Abuse (1)', 'Database (5)', 'Geographic (2)', and 'Activity (2)'. Below these is a '+ MyView ?' button and a 'Monitor' section with a gear icon and '(2)' next to it. The main area shows a map titled 'Geoloc (AS3333)' with a legend and details. The legend indicates: a blue circle for 'country specific', a red pin for 'city specific', an orange circle for 'location unsure/special purpose', and a blue star for 'aggregation (zoom to see details)'. The details section contains an information icon and text: 'Data is based on MaxMind's GeoLite City data set and valid for the stated query time (see below)'. At the bottom, it says 'Showing results for AS3333 as of 2013-09-01 00:00:00 UTC' and has links for 'source data', 'embed code', 'permalink', and 'info'.

- Rename
- Re-order
- Control visibility
- Remove

2. MyViews

Tasks:

- Create a RIPE Access account (if you don't already have one!)
- Create a MyView for a prefix containing the following widgets:
 - Routing Status
 - Looking Glass
 - Routing History
- Create another MyView with at least two widgets, and give it a meaningful name

3. Comparing Resources (Web Interface)

- Compare results in different widgets

The screenshot shows the RIPEstat web interface. At the top, a navigation bar contains links: RIPEstat Home, About RIPEstat, Documentation, and Use Cases. A callout bubble points to the 'Use Cases' link with the text 'Go to "Use Cases" > "Compare Results"'. Below this is a large downward-pointing arrow. Further down, a breadcrumb trail reads 'You are here: Home > Data & Tools > RIPEstat > Use Cases > Data Comparator'. The main heading is 'Compare Results' in orange. Below the heading, a text prompt says 'Select up to six different widgets from the list to compare at one time. Different resources can be qu'. A form area contains a dropdown menu labeled 'Select a widget' with a callout bubble saying 'Select a widget'. Below the dropdown are two buttons: '+ Add' and 'Permalink'.

3. Comparing Resources (Web Interface)

- Compare results in different widgets

Compare Results

Select up to six different widgets from the list to compare at one time. Different resources can be queried for each widget.

Select a widget: Prefix Size Distribution

and a resource: 1205

+ Add Permalink

Enter a resource

Prefix Size Distribution (1205)

by number of
 Prefixes Addresses

IPv4

/16 (v4): 1

AS Overview (1205)

JKU-LINZ-AS - University Linz

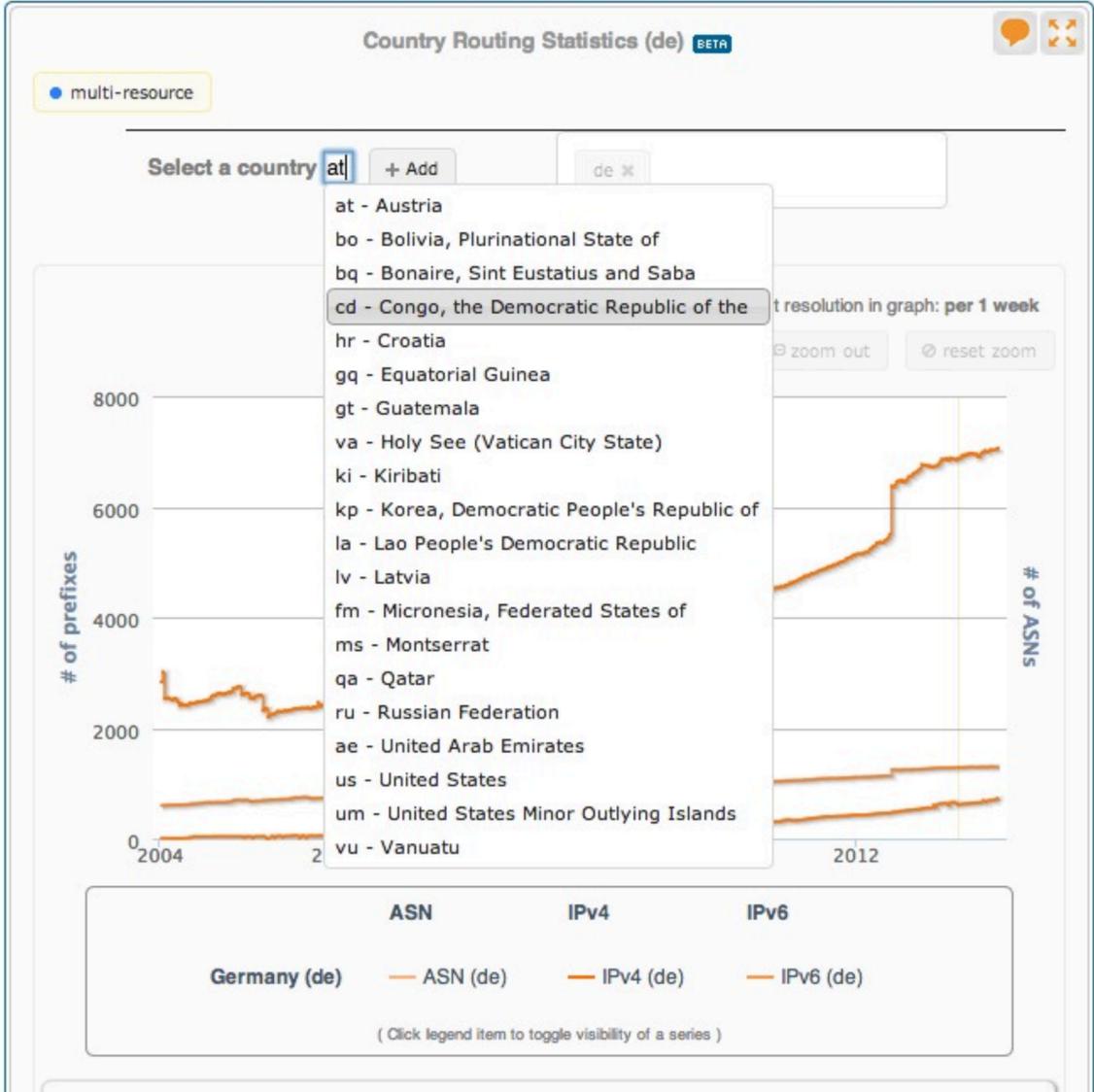
This ASN is part of 1-65535, the 16-bit ASN Block. This block contains all 16-bit ASNs, which are allocated to the RIRs according to <http://www.iana.org/assignments/as-numbers/as-numbers.xml>. See RFC 1930

Showing results from 2013-08-30 00:00:00 UTC to 2013-08-30 08:00:00 UTC

- Select the “Prefix Size Distribution” widget
- Enter “AS1205”

3. Comparing Resources (Web Interface)

In-widget comparison



3. Comparing Resources (Web Interface)

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 Kuwait compare to the UK? Use in-widget comparison!

4. Finding Abuse Contacts & Reporting Abuse

Take action in an abuse case with the Abuse Contact Finder

The screenshot shows the navigation path: RIPEstat Home > About RIPEstat > Documentation > Use Cases. A callout bubble points to 'Use Cases' with the text: 'Go to "Use Cases" > "Looking For Abuse Information"'. Below this is a large downward arrow. The main interface shows the breadcrumb: 'You are here: Home > Data & Tools > RIPEstat > Use Cases > Looking For Abuse Information'. The title is 'RIPEstat Abuse Contact Finder'. Below the title is a description: '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.' There are two information boxes: the first says 'You can learn more about network abuse in general and what you can do to stop it on the RIPE NCC's Abuse Information page.' and the second says 'You can learn more about how the RIPEstat Abuse Contact Finder works and how to report abuse in this tutorial on RIPE Labs.' Below these is the 'Abuse Contact Finder BETA' widget, which has a search input field with the placeholder text 'Enter an IP address'. A callout bubble points to this field with the text: 'Enter the IP address'. Another callout bubble points to the information boxes with the text: 'In-depth information about abuse'. At the bottom right of the widget, there are links for 'embed code' and 'permissions'.

For regular RIPEstat users: this widget, of course, can also be found on the regular result page in the "Anti Abuse" tab.

4. Finding Abuse Contacts & Reporting Abuse

The screenshot shows the 'Abuse Contact Finder' interface for the IP address 2001:67c:2e8::/48. The interface displays the following information:

- Email-Contact:** abuse@ripe.net
- Contact-Quality-Rating:** 5 stars (5/5)
- Text:** This contact can be used to report abuse.
- Options:** Show Complete Details, Info for Resource Holders
- Timestamp:** Showing results for 2001:67c:2e8::/48 as of 2013-08-30 14:39:00 UTC
- Warning:** Beta status: Please note that even highly rated contacts can be incorrect
- Footer:** source data, embed code, permalink, info

Two callouts are present:

- A callout pointing to the 5-star rating: "Rating of the contact"
- A callout pointing to the email address: "Email contact to report abuse to"

4. Finding Abuse Contacts & Reporting Abuse

The screenshot shows the 'Abuse Contact Finder' interface. At the top, it says 'Abuse Contact Finder (2001:67c:2e8::/48) BETA'. Below this is a search bar labeled 'Email-Contact' containing 'abuse@ripe.net'. Underneath is a 'Contact-Quality-Rating' section showing five stars and '(5/5)'. A note below the stars says 'This contact can be used to report abuse.' At the bottom left, there are two checkboxes: 'Show Complete Details' (checked) and 'Info for Resource Holders' (unchecked). Below these is a timestamp: 'Showing results for 2001:67c:2e8::/48 as of 2013-08-30 14:39:00 UTC'. A blue banner at the bottom contains an information icon, the word 'BETA', and the text 'Beta status: Please note that even highly rated contacts can be incorrect'. At the very bottom, there are links for 'source data', 'embed code', 'permaInk', and 'Info'.

Details about the resource and abuse contact:

This block shows the detailed information for the resource and abuse contact. It starts with a checked checkbox for 'Show Complete Details'. Below this is a 'Details' section. The first part is '- Results for' which shows '193.0.18.0-193.0.21.255' with an external link icon, and 'abuse@ripe.net from abuse-contact role'. The second part is '- Special Network Resource Information' which states 'This resource has been identified to be related to this information: RIPE NCC PI Allocation'. Below this is 'Held by: n.a.' with an external link icon. The third part is '- RIR Information' which shows a table with two columns: 'RIR' and 'RIR's Whois'. The first row shows 'RIPE NCC' and the URL 'https://apps.db.ripe.net/search/query.html'.

| RIR | RIR's Whois |
|----------|---|
| RIPE NCC | https://apps.db.ripe.net/search/query.html |

4. Finding Abuse Contacts & Reporting Abuse

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?

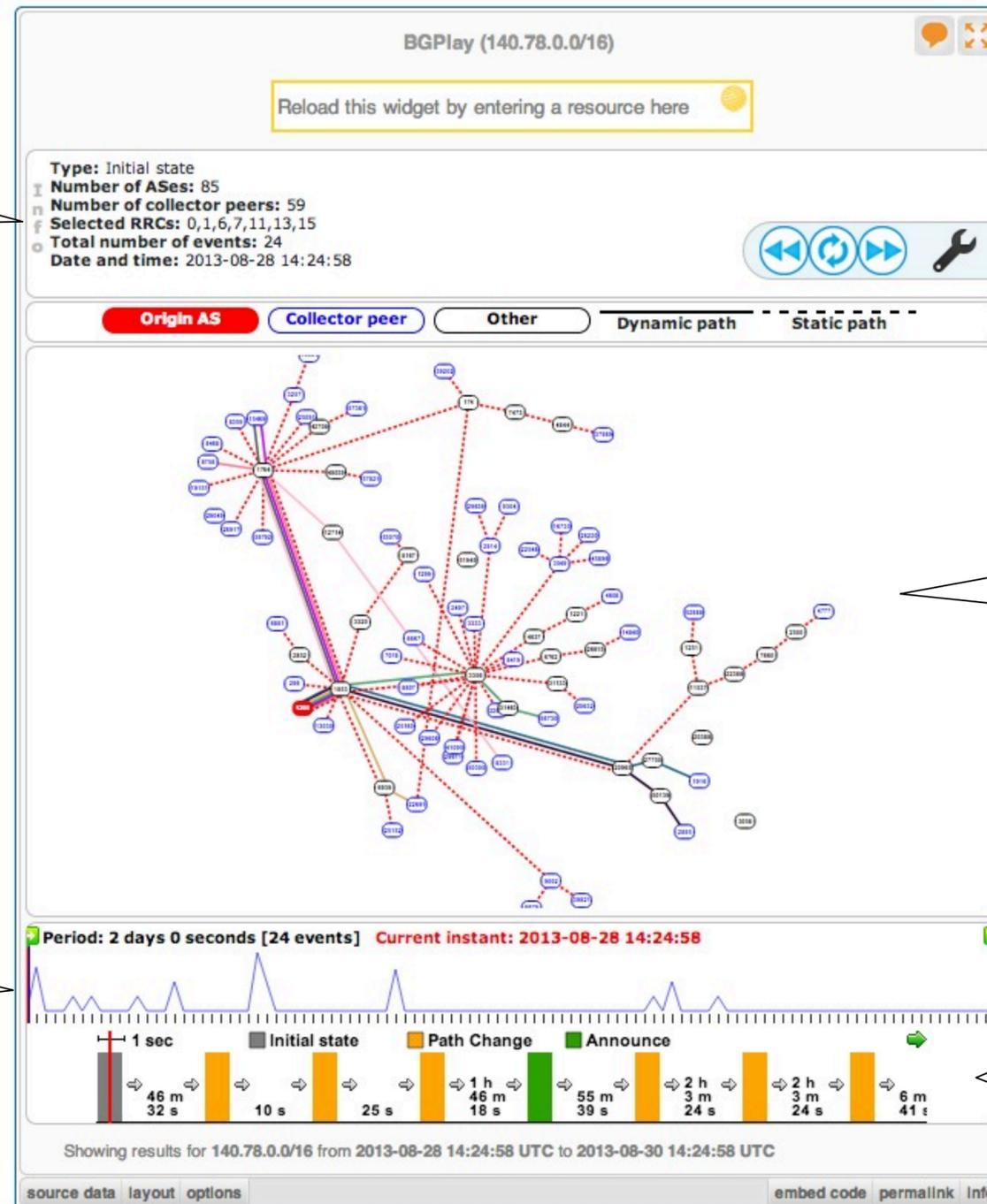
- No abuse contact found
- No response on an abuse report

5. Let's BGPlay!

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

5. Let's BGPlay!

BGP event, ASN or ASN path details



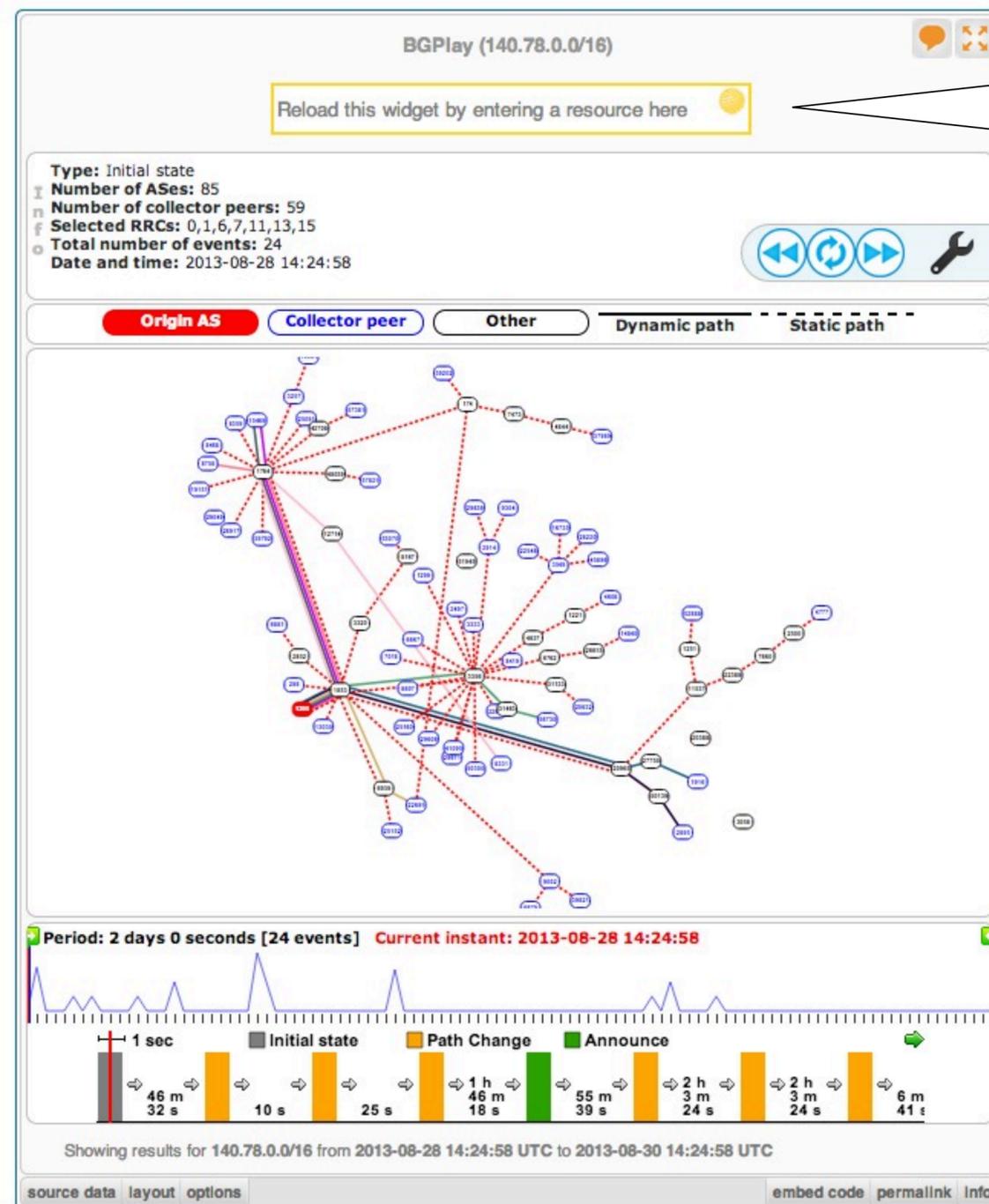
Control panel:
- Covered time period
- RRC selection

Interactive graph visualisation

Control timeline

Selection timeline

5. Let's BGPlay!



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

5. Let's BGPlay!

Tasks:

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

6. Embedding Widgets On Your Own Site

Embedding widgets

- What is the concept?

Widgets are based purely on web standards and were developed with embeddability in mind. Every widget available via the RIPEstat web interface can be embedded on your own site.

- RIPEstat Widget API documentation:
https://stat.ripe.net/docs/widget_api

6. Embedding Widgets On Your Own Site

The screenshot shows the website for AS42093, titled "InterRacks / IceHosting network". The page includes a navigation menu with links for Home, Network load, Peers, Peering policy, Maintenance, and Looking glass. Below the navigation, there is a "Welcome" section, a "Network status" section, and a "Network Details" section. The "Prefixes" section features a line graph showing the number of IPv4 and IPv6 prefixes over time. The "AS Path Length" section features a radar chart showing the average length of AS paths to various destinations.

Prefix Count widget

AS Path Length widget

This ISP embedded widgets on its page.

Prefix Count widget

AS Path Length widget

6. Embedding Widgets On Your Own Site (*Task*)

Tasks:

- Create a simple dashboard page to monitor your network
 - Create a simple HTML page
 - download the sample page:
https://stat.ripe.net/widgets/menog/widget_home.html
 - Embed three widgets of your choice
 - Make the widget smaller and remove the RIPEstat logo

7. Create a Nagios check (optional)

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

| State | Result Code |
|---------|-------------|
| Ok | 0 |
| Warning | 1 |
| Error | 2 |

7. Create a Nagios check (optional)

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
```

