

RIPE NCC Measurements and Tools Training Course

Solutions Booklet

August 2017

Introduction

This course material and available updates can be found under [http://
www.ripe.net/lir-services/training/courses](http://www.ripe.net/lir-services/training/courses)

Exercise A: Querying for a Resource

Tasks:

In this exercise, you are going to use RIPEstat to query for resources (IP address ranges, AS Numbers) and find out more details about them.

1. Go to the RIPEstat
<https://stat.ripe.net>

2. What network announces 140.78.50.90? **140.78/16 from AS1205**

3. Is 83.68.16.27 routed? **Yes, announced by XS4ALL AS3265**

4. In which country is 91.229.42.0/23 used? **Poland**

5. What is its corresponding INETNUM object? **91.229.42.0/22**

6. What widget provides real-time routing status? **Looking-Glass**

7. By what percent did the number of prefixes announced within Greece increase over the last two years?

2015-08-03 to 2017-07-24: 12%

ASN: 119 - 132 ~ 11%

IPv4: 705 - 790 ~ 12%

IPv6: 33 - 77 ~ 133%

8. How would you share interesting network events with a colleague?

After querying the resource in question, and setting the optimal zoom and/or timescale, use the “permalink” button on the result page or for an individual widget.

Exercise B: BGPlay

Tasks:

In this exercise use the BGPlay widget to find the answers

Go to RIPEstat (<https://stat.ripe.net>), after querying you can find the BGPlay widget on the 'Routing' tab.

1. Find the up-stream provider for AS1205:

Remember that if you type an ASN in the query field of RIPEstat you don't get a BGPwidget in the results.

You only get a BGPlay widget in the results if you type a IP range in the query field.

So you cannot just go to stat.ripe.net/bgplay and enter AS1205 and expect a BGPlay widget for with results for AS1205.

What you should do is: go to stat.ripe.net/bgplay and enter AS1205, in the results, go to the "Routing" tab, specifically to the "Routing History" widget. Choose one of the prefixes that is originated by AS1205.

For example: 140.78.0.0/16

Click on it.

RIPEstat now opens a new window with a new query for 140.78.0.0/16 this time, instead of AS1205.

This time, since it is an IP prefix, you get a BGPlay widget as a result, and you can see that:

Upstream is AS1853

2. Is 69.36.157.0/24 originated by only one or more ASNs?

3. It is originated by several ASNs.

4. Check the IPv6 connectivity of your own network Type in your IPv6 prefix and see if there are any networks connecting to your AS.

Exercise C: RIPEstat Quiz

1. Choose the correct answer!

What are the sources of the RIPEstat data?

a) RIPE Database, BGP routing data from RIS, 3rd party Geolocation, 3rd party Blacklist, Traffic measurements

b) RIPE Database, BGP routing data from RIS, 3rd party Geolocation, 3rd party Blacklist, RIPE Atlas measurements

c) RIPE Database, BGP routing data from RIS, 3rd party Geolocation, 3rd party Blacklist, RIPE Atlas measurements, Domain Registry Database

d) RIPE Database, Domain Registry Database, RIPE NCC Geolocation, 3rd party Blacklist, RIPE Atlas measurements

2. Choose the correct answer!

When you want to query RIPEstat what can you type into the RIPEstat query field??

a) IPv4 address, IPv6 address, IPv4 address range, AS Number, domain name, country (code)

b) IPv4 address, IPv6 address, IPv4 address range, IPv6 address range, AS Number, domain name, country (code), IGP protocol data

c) IPv4 address, IPv6 address, IPv4 address range, IPv6 address range, Port number, AS Number, Domain name, country (code),

d) IPv4 address, IPv6 address, IPv4 address range, AS Number. Geographical region, domain name, country (code)

e) IPv4 address, IPv6 address, IPv4 address range, AS Number, person's name, domain name, country (code)

f) IPv4 address, IPv6 address, IPv4 address range, AS Number, nic-hdl of person object, domain name, country (code)

3. Choose all correct answers!

What can you find out with the help of with RIPEstat??

- a) Who is announcing an IP address on the Internet?
- b) Who is using a certain IP address?
- c) who is the ISP contact person for a given IP address?
- d) Where is a certain IP address approximately located in the world?
- e) Which ISP was given a certain IP address by the RIPE NCC?
- f) Is the ISP that received a certain IP address still the one that is using it?
- g) What country's jurisdiction does a certain IP address belong to?

4. Choose the correct answer!

What are the result boxes for a RIPEstat query called?

- a) screens
- b) widgets
- c) panes
- d) result windows
- e) fidgets
- f) screams
- g) pains

5. True or false?

You get the same widgets whether you query an IPv4 address or an AS Number

6. True or false?

You get the same type of widgets in the result whether you query an IPv4 address or an IPv6 address.

7. True or false?

You get the same type of widgets in the result whether you query an IPv4 address range or a single IPv6 address

8. True or false?

When you find the contact person for an IP address range, then with one or two mouse clicks you can easily find out what other IP address ranges they are responsible for.

9. True or false?

When you find the contact person for an IP address range, then with one or two mouse clicks you can easily find out what IP address ranges they used to be responsible for previously.

10. Choose the correct answer!

If you want to find out all address ranges someone is responsible for, then ...?

- a)...you type in their name in the RIPEstat query field
- b)... you type in an address(range) you know they are responsible for, then click on their object in the registry browser
- c) ...you type in their nic-hdl in the RIPEstat query field
- d) ...then you type in the name of the organisation in the RIPEstat query field and find them in the Contact Persons widget

11. Choose the correct answer!

Imagine you are investigating an IP address range (assignment) that belongs to an organisation.

You want to find out from which the larger providers address range this assignments came from

What do you have to do?

- a)...go to the “ Database tab” and look for the “Registry Browser” widget
- b)...go to the “Routing Tab” and look for the “Related Prefixes “ widget
- c) ...go to the “Database Tab” and look for the “Address Space Hierarchy “ widget
- d)...go to the “Routing Tab” and look for the “Allocated Space Usage “ widget
- e)...go to the “At a Glance Tab” and look for the “Whois Matches” “ widget

12. Choose all correct answers!

What is RIS?

- a) Database with route objects
- b) That part of the RIPE Database that contains routing policy information
- c) A system that shows you almost real time what IP addresses are announced by whom on the Internet
- d) A system that shows you the historical information what IP addresses were announced by whom on the Internet
- e) A RIPE NCC system that collects information about what's really being announced on the Internet, via Route Collectors at major Internet Exchange Points all over the world.

13. Choose the correct answer!

What's the difference between RIS and the RIPE Database?

- a) RIS is run by IANA, the RIPE Database by the RIPE NCC
- b) Data in RIS is gathered and updated "live" from the Internet, Data in the RIPE DB is registered by people
- c) Nothing: it is different names for the same thing.
- d) RIS is routing information Database, RIPE Database is an IP Address Database

14. Choose the correct answer!

If RIS tells you a certain IP address is announced by network ASN1 and the Internet Routing Registry/RIPE Database tells you that that IP address is originated by the network ASN2, then:

- a) RIS is correct
- b) RIPE Database is correct
- c) It was registered by the ISP or the End User that the network ASN2 is announcing this IP address, but in reality it is the network of another ISP, network ASN1 that is announcing this IP address.
- d) The ISP or the End User registered this address range stating that

the network ASN1 is announcing this IP address, but in reality it is the network of another ISP, network ASN2 that is announcing this IP address.

e) RIPE NCC's records don't match with IANA's records

15. Choose the correct answer!

Where does the Information in the "Registry Browser" widget of RIPEstat come from?

a) RIS

b) RIPE Atlas

c) RIPE Database

d) 3rd Party

e) IANA

16. Choose the correct answer!

Where does the Information in the "Address Space Hierarchy" widget of RIPEstat come from?

a) RIS

b) RIPE Atlas

c) RIPE Database

d) 3rd Party

e) IANA

17. Choose all correct answers!

Where does the Information in the "Geolocation" widget of RIPEstat come from?

a) RIS

b) RIPE Atlas

c) RIPE Database

d) 3rd Party

e) IANA

18. Choose the correct answer!

Where does the information in the “Prefix Overview “ widget, whether an IP address (prefix) is announced and seen or otherwise not announced and not seen, come from?

- a) RIS
- b) RIPE Atlas
- c) RIPE Database
- d) 3rd Party
- e) IANA

19. Choose all correct answers!

When you create a MyView page with your favourite widgets.....

- a) you should be logged in with your RIPE Access account
- b) you should be on the main page of RIPEstat, BEFORE doing any query.
- c) you should be on the any page of RIPEstat, AFTER doing a query.
- d) It doesn't matter whether you are logged in or not

20. Choose all correct answers!

If you created a MyView page with your favourite widgets.....

- a) You will see it as an additional tab on every RIPEstat page
- b) You will see it only when you are logged in with you RIPE Access Account
- c) You will only see it when you do a similar type of query (like querying either an IP address or ASN number) exactly like the query you did before creating the MyView page
- d) You will see it as long as you don't close the browser.
- e) Whenever you are logged in with your RIPE NCC Access Account you'll always see your MyView page

Exercise X1 (Optional): Handling Abuse

Tasks:

1. In this exercise, you are going to find who to contact in case of abuse (hacking.spamming etc)
2. Who is the abuse contact for 193.0.20.22 ?

`abuse@ripe.net`

3. Who is the abuse contact for the hotel network ?

look up the network you see for “Your network” if you go to stat.ripe.net using the hotel network

4. Who is the abuse contact for your home network ?

look up an IP address from your prefix

5. Discussion: What can you do in these cases?

- No abuse contact found? find the webpage for the company that is holding this address space and try to find a contact there. With ripe-563 which makes having an abuse contact mandatory these cases are getting more rare but dealing with invalid abuse contacts or “getting no reply” cases are more frequent.
- No response on an abuse report? similar to the case before, finding the webpage of the company and trying other ways to contact the company. Some companies ignore emails sent to the abuse contact - this is a known problem.

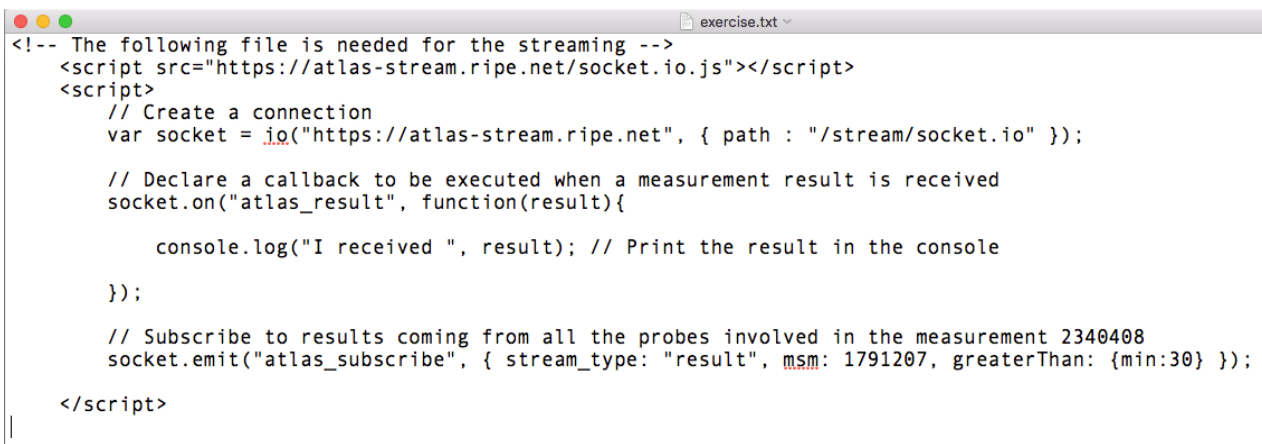
Exercise X2 (Optional): MyView

Tasks:

In this exercise, you are going to use the MyView feature of RIPEstat to select and arrange the widgets that you would like to have in your own personalised MyView tab.

1. Create a RIPE Access account (if you don't already have one)
<https://access.ripe.net>
2. Create a MyView for a prefix containing the following widgets:
 - Routing Status
 - Looking Glass
 - Routing History

Create a view and “drag’n’drop” the mentioned widgets (by their title) on the tab that represents the newly created view.



```
<!-- The following file is needed for the streaming -->
<script src="https://atlas-stream.ripe.net/socket.io.js"></script>
<script>
  // Create a connection
  var socket = .io("https://atlas-stream.ripe.net", { path : "/stream/socket.io" });

  // Declare a callback to be executed when a measurement result is received
  socket.on("atlas_result", function(result){

    console.log("I received ", result); // Print the result in the console

  });

  // Subscribe to results coming from all the probes involved in the measurement 2340408
  socket.emit("atlas_subscribe", { stream_type: "result", msm: 1791207, greaterThan: {min:30} });
</script>
```

3. Create another MyView with at least two widgets and give it a meaningful name

Exercise X3 (Optional): Comparing Results

Tasks :

In this exercise you test features to compare results in RIPEstat.

1. No login required
2. Go to the 'Use Cases' > 'Compare Results' menu item at the top of the RIPEstat page.
3. Add widgets AND input query for each widget (ASN or IP or...).
First select a widget from the drop down list, then enter a resource.
By hovering over the input box for the resource, you will see what resources are supported.
Click "Add" and the widget with the given resource will appear in the space below. The maximum of widgets to compare is 6.
4. You get a result page with widgets and query results
5. Share it via a permanent link
Use the permalink button to create the permalink then just copy it.

Exercise X4 (Optional): RIPEstat Use-Cases

Tasks :

In this exercise we discuss common use-cases that network operators can encounter and try to solve them using RIPEstat.

Depending on discussed use-cases.

Exercise D: Creating a Measurement

Prerequisite: You must have a RIPE NCC Account

You must have curl command installed

Exercise:

Create a ping measurement:

- Involving ten probes
- To a target of your choice
- Source is your country
- Duration of two days.

Task 1 : Warm-up: Create the measurement using the GUI

Task 2 : Create an API key (*Preparation for Task 3*)

Task 3 : Create the measurement using API

Task 1 : Warm-up: Create the measurement using the GUI

- a) log in to RIPE Atlas
- b) go to Measurements, Maps and Tools menu on the left >
Measurements submenu
- c) Click on the green +Create Measurement button
- d) i): choose type=PING,
 ii) then choose target = (host name or IP)
- e) Click “Create My Measurement(s)”

Task 2 : Create an API key (Preparation for Task 3)

- a) go to MyAtlas > API Keys
- b) click on CreateAPIkey button
fill out:
 - label (the name you give your key)
 - valid from and valid to fields
(UTC time! Make sure your key is valid from this moment on)
 - from a pull down menu select
“Schedule a new measurement” permission
- c) Don't click on “Add Grant”
- e) Click on “Save”
- f) You will need the UUID of the key for Task 3)

Task 3 : Create an measurement using API

- a) Create a measurement via the GUI as in Task1, but don't click on the “Create My Measurement(s)” button.
- b) Click on the “Measurement API Compatible Specification” button
- c) Copy all the text and paste it into a terminal window
- d) Replace the placeholder at the end of the text with you key UUID
- e) Enter!
- f) Check if your measurement has been created.

Exercise E: Using Streaming API

Prerequisite: Preconfigure web browser:

in Safari: Preferences > Advanced>Show Develop menu

Chrome or Firefox needs no reconfiguration.

Scenario: customers complain it takes a long time to reach your server

Action: -ping your server from 50 probes

- choose acceptable latency threshold

Task 1:

-Use the existing ping measurement ID 1791207

-Choose which threshold (e.g. greater than 30ms)

-Impose threshold on “min” (the minimum result of the three ping attempts)

Steps for Task1:

1) <http://atlas.ripe.net/webinar/streaming01.html>

Open it in the development console

(right click >“Inspect element” > “Console”)

2) Wait for results to arrive

3) Save the HTML file locally and **EDIT** the code

(Or save it as a text file, edit it, change extension to html)

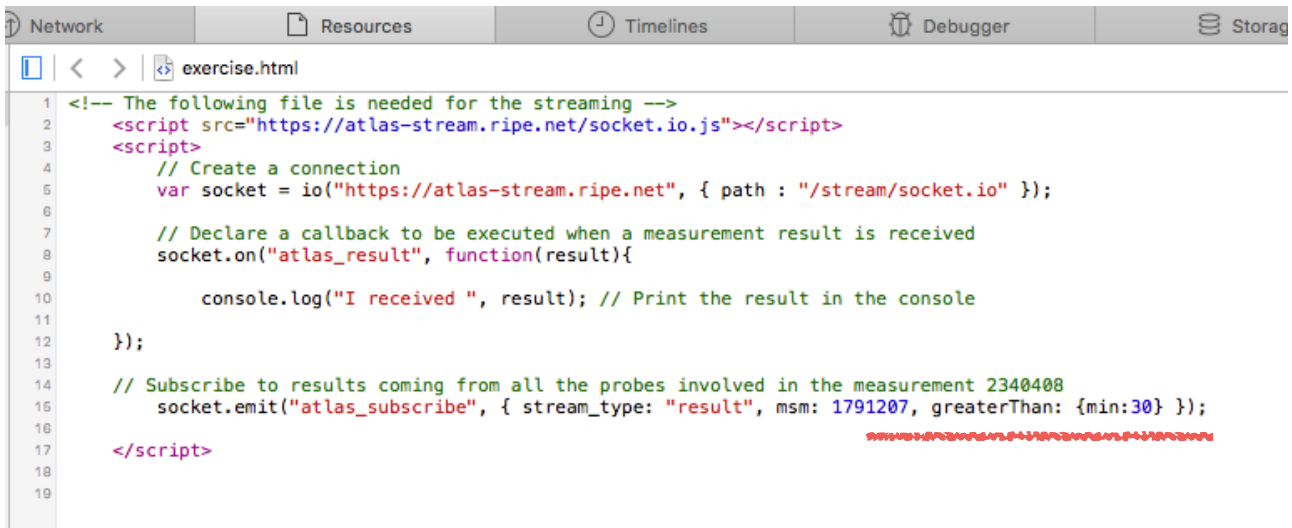
4) Open edited html file in Web browser

(right click >“Inspect element” > “Console”)

What to **EDIT** ? (step 3)

- In the “socket-emit” command add your threshold for the alarm:
- find parameter in doc for “**greater than**”: <https://atlas.ripe.net/docs/result-streaming/>
- express minimum of three ping attempts as: {min: value_of_threshold}

Solution:



```
1 <!-- The following file is needed for the streaming -->
2 <script src="https://atlas-stream.ripe.net/socket.io.js"></script>
3 <script>
4     // Create a connection
5     var socket = io("https://atlas-stream.ripe.net", { path : "/stream/socket.io" });
6
7     // Declare a callback to be executed when a measurement result is received
8     socket.on("atlas_result", function(result){
9
10        console.log("I received ", result); // Print the result in the console
11
12    });
13
14    // Subscribe to results coming from all the probes involved in the measurement 2340408
15    socket.emit("atlas_subscribe", { stream_type: "result", msm: 1791207, greaterThan: {min:30} });
16
17 </script>
18
19
```

Task 2:

-Same situation as in the exercise before, but you didn't schedule a measurement in advance, so

You don't have a measurement ID

-You want to get all the measurements reaching 216.58.212.227

-Now restrict the results to just include ping measurements

-Use documentation, to find correct syntax and parameters:

<https://atlas.ripe.net/docs/result-streaming/>

Solution:

```
socket.emit("atlas_subscribe", {  
  stream_type: "result",  
  type: "ping",  
  destinationAddress: "216.58.212.227"  
});
```

Exercise F: Using RIPEAtlas API

Prerequisites and Preparation

You must have a RIPE NCC Access Account

You must have an API key

Installation: (UNIX/LINUX/OSX:)

Terminal:

```
sudo easy_install pip
```

```
sudo pip install ripe-atlas-tools
```

choose “Install” in pop-up

```
ripe-atlas configure --set authorisation.create=MY_API_KEY
```

WINDOWS: Tools in GIT repository

Task :

Use the traceroute command to test the reachability of wikipedia.org on TCP port 443 from 20 probes in France

Solution:

- **ripe-atlas measure traceroute --protocol TCP --target wikipedia.org --port 443 --probes 20 --from-country fr**