

Other monitoring tools

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Other monitoring tools



Do we need other monitoring tools?

- There are lots of them, free to use
 - *ping, fping, OWAMP, SmokePing, pchar, iperf, bwctl, nuttcp, netperf, RUDE/CRUDE, ttcp, NDT, Thrulay, PsPing, Unix traceroute, tcptraceroute, LFT, mtr, tracepath, SmokeTrace, layer 2 traceroute, tcpdump, Wireshark, libtrace, Netdude, jnettop, tcptrace, Network Monitor (Windows), TCP Analyzer (Windows SDK)*
 - *take a look at comprehensive list: kb.pert.geant.net*

BUT You need

- time to deploy them
 - learn how to use
 - maintain hardware, configs
- = costs!



What if somebody will deploy the monitoring environment for you?

- For free
- Inside your network
- Maintain it
(you do need to worry about security patches, system maintenance etc.)
- Connect it into one big worldwide mesh
- Give you access to the whole mesh
- Provide easy to use interfaces: http, cli, api
- Collect statistics
- You can make measurement from any other point of measure

Two monitoring tools



NLNOG RING

- LINUX VM deployed inside your environment
- Tools: several monitoring commands available (ssh) + web statistics



RIPE ATLAS

- USB tiny device (probe)
- Web based interface: atlas.ripe.net



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What's NLNOG?



*This is where
It started!*

- Loosely connected group of Dutch network operators
- Drink beer once a year
- Active IRC channel
- mostly dormant mailing-list

Source: Job Snijders https://ripe65.ripe.net/presentations/105-RIPE65_NLNOG_RING_Job_Snijders.pdf

So, what's this RING thing?

Metaphysical definition:

“Awesome network debugging platform”

Foundation:

*Trust – I trust you with access to my resources,
as you trust me with access to your resources*

Source: Job Snijders https://ripe65.ripe.net/presentations/105-RIPE65_NLNOG_RING_Job_Snijders.pdf

NLNOG RING – Participants



- Organisations: **217**
- RING nodes: **243**
- ASNs: **218**
- Countries: **44**

2013/09

<https://ring.nlnog.net/participants/>

NLNOG RING - Motivation



- Debug network issues and troubleshoot 'from the outside'
- A point of view outside your network is absolutely essential
- Seeing what others see is a useful thing with a variety of network problems

Source: ring.nlnog.net

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- Provide a streamlined way of cooperating
- "NLNOG RING" – simple essence:
 - You make a (virtual) machine available to the RING,
 - You gain access on all servers which are part of the project, hence the name "RING".
 - Great example would be to launch a traceroute from 173 servers in different networks and quickly get the results instead of waiting till somebody has the time to run some tests for you.

NLNOG RING – how to use it



- CLI interface: ring scripts
 - *ring-all* – run commands on all servers
 - *ring-ping* – run commands from all servers
 - *ring-trace* - ICMP traceroutes from all servers
allows to create graphs which visualise traceroutes from a number of ring sources

- Distributed Smokeping
 - *Web based statistics*
 - *A smokeping Master/Slave setup has been created to graph latency between all nodes thus graphing nodes in context of a torus.*

- BGP Looking glass
 - *Web based on-line interface*

NLNOG RING examples

- CLI interface



```
ring-ping [-6v] host
```

Example:

```
poznan@poznan01:~$ ring-ping -v www.terena.org
```

```
sidn01: 3.934
```

```
fnutt01: 25.511
```

```
a2binternet01: 2.007
```

```
melbourne01: 16.713
```

```
digiweb01: 17.661
```

```
...
```

```
ring-ping www.terena.org
```

```
connect: Network is unreachable
```

```
www.terena.org - 173 servers: 44ms average
```

```
www.terena.org - unreachable via: nlnetlabs01
```

```
ssh connection failed: atrato01 bahnhof01 bci01 digmia01
```

```
occaid01 solnet01 teamix0
```

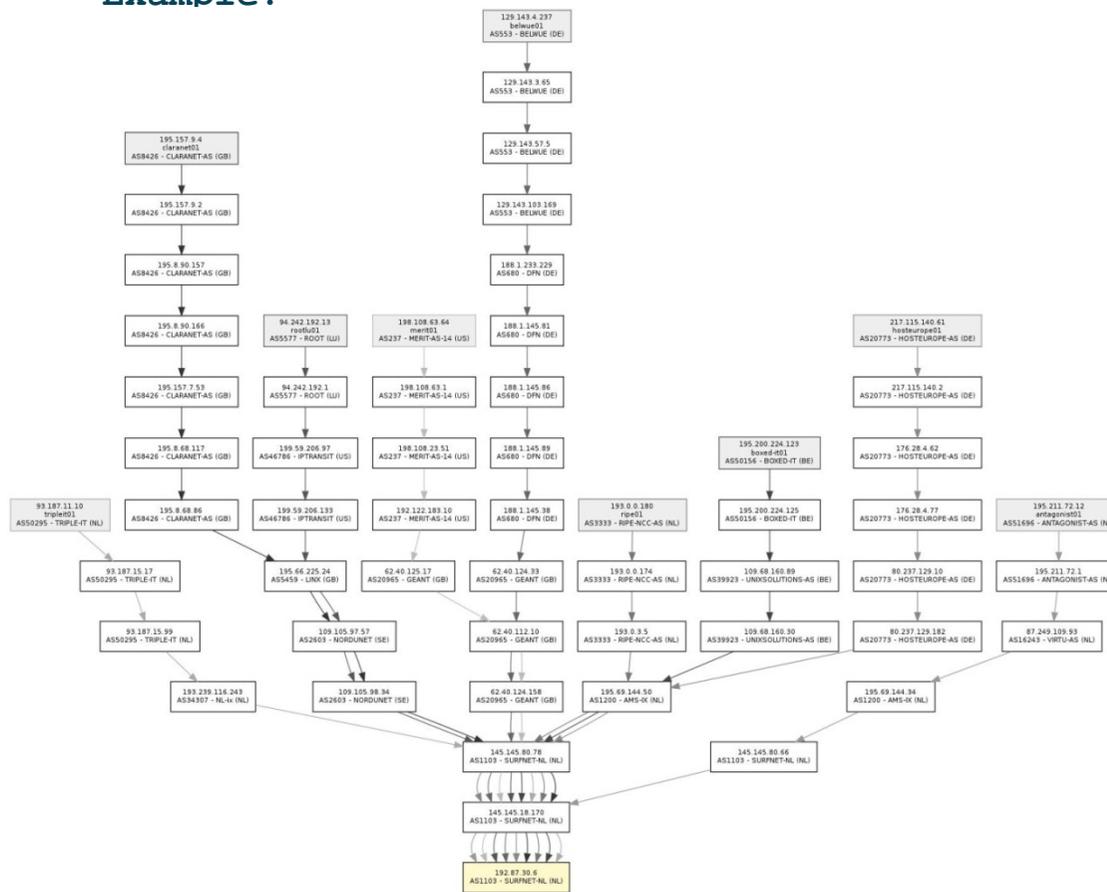
NLNOG RING examples

- CLI interface



ring-trace -c -B -n 10 www.terena.org

Example:



ring trace v1.0.1 by 13028735.6 - <http://ring.ohog.net>

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NLNOG RING examples

- Distributed Smokeping



- AMP (Active Measurement Project)
- Developed by WAND Network Research Group
- <http://amp.ring.nlnog.net/>
 - *Ping*
 - *Historic Traceroutes*
 - *MTU testing*
 - *Jitter*
 - *loss, etc*

NLNOG RING examples - Distributed Smokeping



AMP Measurements

amp.ring.nlnog.net/matrix.php/ipv4/latency/DI

Firefox prevented this page from automatically reloading.

WAND Network Research Group

NLNOG RING

THE UNIVERSITY OF WAIKATO

AMP Measurements

- Home
- Download Raw Data
- Add Event
- Performance Map
- Login
- Create Account

View Mode

- Source View
- Matrix View

Comparison List

No graphs selected

[View Comparisons >>](#)

[Reset Comparison List >>](#)

Matrix - Viewing ipv4 latency (10 min average) from DE to PL

DE to PL Update

ipv4 ipv6

latency loss hops mtu

Destination:

Source:	acsystemy01	hosteam01	inotel01	maverick01	poznan01
as250net01	56	45	47	54	44
belwue01	31				
claranet02	28				
filoo01	28				
fremaks01	48	19	35	46	30
hosteurope01	53	28	27	29	36
iabg01	42	33	33	36	24
isarnet01	104	113	99	115	60
man-da01	29	25	37	27	31
netion01	105	80	95	103	89

ring-as250net01 to ring-poznan01

	1 Hour (average)	24 Hour (average)	7 Day (average)
Latency (ms)	44	47	46
Packet Loss (%)	14	15	14

amp.ring.nlnog.net/graph.php?src=ring-as250net01&dst=ring-poznan01

46.137.152.118

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- Tiny device
- USB powered
- ETH RJ45 connector
- Run measurements and reports these to the data collection components
 - *Configuration with DHCP*
 - *IPv6 enabled, IPv4 required*
 - *4-6 Kbps of bandwidth*



RIPE Atlas



- Probes connected to RIPE Atlas: 3869
- Measurements currently running: 1862
- Intended to scale up to many thousands of measurement probes distributed around the globe



<https://atlas.ripe.net/results/maps/all-probes/>

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RIPE Atlas - measurements



- atlas.ripe.net - web interface to create measurements and access results
- Open access for all to public probes
- Two types of measurements:
 - *Built-in Measurements*
 - *User defined measurements (UDM)*

The screenshot shows the RIPE Atlas web interface. At the top, there is a navigation bar with links for "Site Map", "Contact", "Help", and "RIPE Database". Below this is a search bar and a navigation menu with tabs for "RIPE Database", "Statistics", "RIPE Labs", "DNS", and "RIPE Atlas". The "RIPE Atlas" tab is selected. Below the navigation menu, there are links for "RIPEstat", "Developer Documentation", "RIPE Atlas Home", and "About RIPE Atlas". A breadcrumb trail shows "You are here: Home > Data & Tools > RIPE Atlas". The main content area displays a table of measurement data.

ID	MAC	Descr...	Location	Role	Status	Si
12058	A0:F3:C1:C4:5C:51		uitsa Katkhanova, 168, Kenzhe, Kabardino-Bal...	Viewer	Never Conne...	
12059	A0:F3:C1:C4:5D:F9		Россия, Рязанская область, Рязань	Viewer	Connected	2015-08
12060	A0:F3:C1:C4:5F:7F		Elgin, IL	Viewer	Connected	2015-08
12061	A0:F3:C1:C4:4A:EA		Geneva, Switzerland	Viewer	Connected	2015-08
12063	A0:F3:C1:C4:5C:54	fi-kem...	Valtakatu 27, 94100 Kemi, Suomi	Viewer	Connected	2015-08
12064	A0:F3:C1:C4:41:66	2895...	Beukenhof 213, 8212 EK Lelystad, The Netherl...	Viewer	Never Conne...	
12065	A0:F3:C1:C4:4A:BF		Finland	Viewer	Never Conne...	

RIPE Atlas

- measurements



- Built-in Measurements
 - *Data available to everyone: maps, tables, public probes data and API to download raw data*
 - *Ping, traceroute, DNS queries towards root name servers and RIPE infrastructure*
- User defined measurements (UDM)
 - *Avialable for hosts and RIPE NCC members*
 - *Ping, Ping6, Traceroute, Traceroute6, DNS, DNS6, SSLCert, SSLCert6*
 - *You can make your UDM public*

RIPE Atlas - measurements



- User defined measurements (UDM)

The screenshot shows the RIPE Atlas website interface. At the top, there is a navigation bar with links for Site Map, Contact, Help, and RIPE Databases. Below this is a search bar with a 'Search' button. The main navigation area features tabs for RIPE Database, Statistics, RIPE Labs, DNS, and RIPE Atlas. Under the RIPE Atlas tab, there are links for RIPEstat, Developer Documentation, RIPE Atlas Home, About RIPE Atlas, Get Involved, Results, My Atlas: Bartosz Gajda, and Logout.

You are here: Home > Data & Tools > RIPE Atlas

Id	MAC	Descr...	Location	Role	Status	Si
12058	A0:F3:C1:C4:5C:51		ulitsa Katkhanova, 168, Kenzhe, Kabardino-Bal...	Viewer	Never Conne...	
12059	A0:F3:C1:C4:5D:F9		Россия, Рязанская область, Рязань	Viewer	Connected	2013-08
12060	A0:F3:C1:C4:5F:7F		Elgin, IL	Viewer	Connected	2013-08
12061	A0:F3:C1:C4:4A:EA		Geneva, Switzerland	Viewer	Connected	2013-08
12063	A0:F3:C1:C4:5C:54	fi-kem...	Valtakatu 27, 94100 Kemi, Suomi	Viewer	Connected	2013-08
12064	A0:F3:C1:C4:41:66	289S...	Beukenhof 213, 8212 EK Lelystad, The Netherl...	Viewer	Never Conne...	
12065	A0:F3:C1:C4:4A:BF		Finland	Viewer	Never Conne...	

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RIPE Atlas - measurements



- User defined measurements (UDM)

The screenshot shows the RIPE Atlas website interface. At the top, there is a navigation bar with links for Site Map, Contact, Help, and RIPE Database Search. Below this is a search bar with a 'Search' button. The main navigation menu includes RIPE Database, Statistics, RIPE Labs, DNS, RIPE Atlas, and RIPEstat. A secondary menu contains Developer Documentation, RIPE Atlas Home, About RIPE Atlas, Get Involved, and Results. A user-specific menu shows 'My Atlas: Bartosz Gajda' and a 'Logout' link.

The main content area displays the breadcrumb 'You are here: Home > Data & Tools > RIPE Atlas'. Below this, the measurement details for 'Rezopole Lyonix2' are shown, including a table of traceroute hops and their performance metrics, along with two bar charts showing the distribution of measurements over time.

		When	
Traceroute First Hop	77.95.64.175 77.95.64.175	1.765 ms / 1.793 ms / 1.840 ms 2013-09-12 12:49:40 UTC	
Traceroute Second Hop	77.95.70.148 77.95.70.148	2.076 ms / 16.621 ms / 45.578 ms 2013-09-12 12:49:40 UTC	
Ping (IPv4)	k.root-servers.net	15.636 ms / 18.321 ms / 23.628 ms	

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RIPE Atlas - measurements



- User defined measurements (UDM) – new measurement

The screenshot shows the RIPE Atlas web interface. A modal window titled "User-Defined Measurement" is open, displaying a dropdown menu for "UDM Type and target". The dropdown menu is open, showing a list of measurement types: Ping, Ping6, Traceroute, Traceroute6, DNS, DNS6, SSLCert, and SSLCert6. The "Ping" option is currently selected. Below the dropdown, there is a red text label "Measurement chosen". The background of the interface shows a table of existing measurements with columns for ID, Type, Origin, and Target. The table contains several rows of data, including one-off pings and traceroute measurements.

ID	Type	Origin	Target
1010799	One-Off Ping	Area:...	8.8.8.8
1010800	One-Off Pin...	Area:...	www.pl.ipv
1016225	Traceroute6	Area:...	plum.ipv6
1016226	One-Off Pin...	Area:...	plum.ipv6
1016227	Traceroute6	Area:...	2001:808
1016228	Traceroute6	Area:...	2001:808
1026502	One-Off Pin...	Area:...	www.pl.ipv

RIPE Atlas - measurements



- User defined measurements (UDM) – new measurement

The screenshot shows the RIPE Atlas web interface with a "User-Defined Measurement" dialog box open. The dialog box has a "UDM Type and target" section with a dropdown menu set to "Choose a measurement". Below this is a table with columns "Type", "Interval", "Description", and "Actions". A red message "No measurement chosen" is displayed. A "Ping" sub-dialog box is also open, showing configuration options for a ping measurement:

- Measurement interval (s): 240
- #Packets: 3
- Size: 48
- * Target: (empty dropdown)
- Resolve on probe:
- Public:
- Create RRD graphs:
- Description: (empty text field)

At the bottom of the "Ping" dialog are "Ok" and "Cancel" buttons. The background shows a table of existing measurements with columns for ID, Type, Origin, and Target.

ID	Type	Origin	Target
1010799	One-Off Ping	Area:...	8.8.8.8
1010800	One-Off Pin...	Area:...	www.pl.ipv
1016225	Traceroute6	Area:...	plum.ipv6
1016226	One-Off Pin...	Area:...	plum.ipv6
1016227	Traceroute6	Area:...	2001:808
1016228	Traceroute6	Area:...	2001:808
1026502	One-Off Pin...	Area:...	www.pl.ipv

RIPE Atlas - measurements



- User defined measurements (UDM) – new measurement

The screenshot shows the RIPE Atlas web interface. In the background, there is a table of existing measurements. In the foreground, a modal window titled "User-Defined Measurement" is open, showing the "Origin of UDMs" section. A dropdown menu is open, listing options: Area, Country, Probes, AS, Prefix, and Existing UDM. The "Area" option is selected. Below the dropdown, there is a field for the total number of probes, currently set to 0. The modal also includes "Previous" and "Next" navigation buttons.

ID	Type	Origin
1010799	One-Off Ping	Area:WW(100)
1010800	One-Off Pin...	Area:WW(100)
1016225	Traceroute6	Area:WW(1500)
1016226	One-Off Pin...	Area:WW(100)
1016227	Traceroute6	Area:WW(1500)
1016228	Traceroute6	Area:WW(1500)
1026502	One-Off Pin...	Area:WW(100)

RIPE Atlas - measurements



- User defined measurements (UDM) –measurement results

The screenshot shows the RIPE Atlas website interface. At the top, there is a navigation bar with links for Site Map, Contact, Help, and RIPE Database Search. Below this is a search bar with a 'Search' button. A secondary navigation bar contains links for RIPE Database, Statistics, RIPE Labs, DNS, RIPE Atlas, RIPEstat, and Developer Documentation. A breadcrumb trail indicates the current location: RIPE Atlas Home > About RIPE Atlas > Get Involved > Results > My Atlas: Bartosz Gajda > Logout. The main content area shows the path 'You are here: Home > Data & Tools > RIPE Atlas' and a tabbed interface with 'My measurements', 'Public measurements', and '1010799 - Quick Look Ping4 to 8.8.8.8'. The selected tab displays a table of measurement results for the specific measurement ID.

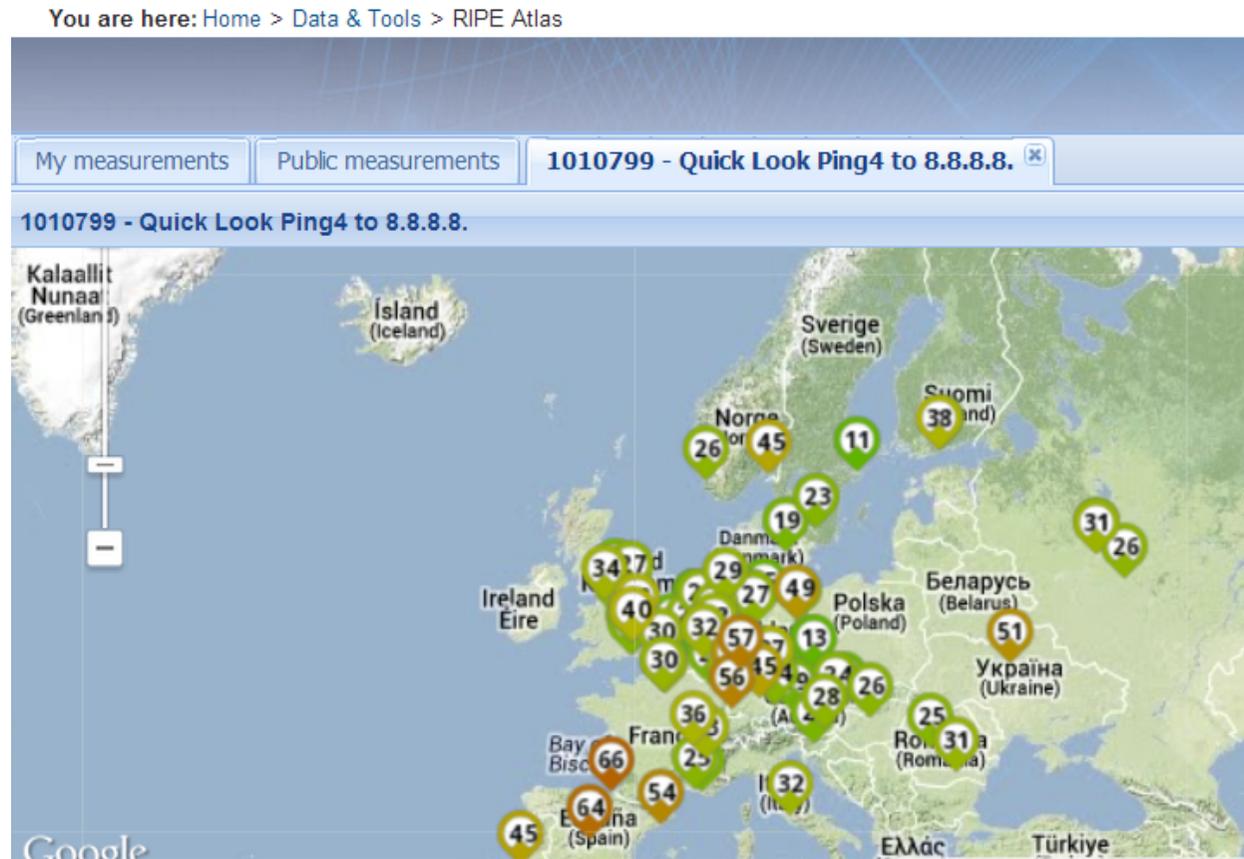
Probe	ASN (v4)	ASN (v6)		Time	RTT	
2123	7575		✓	2013-06-13 07:27	5.265	
2009	3333	3333		✓	2013-06-13 07:27	6.54
2277	2519		✓	2013-06-13 07:27	7.26	
2002	8283	8283		✓	2013-06-13 07:27	7.762
2074	33988	33988		✓	2013-06-13 07:27	8.119

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RIPE Atlas - measurements



- User defined measurements (UDM) –measurement results



Thank you!