

Database Update

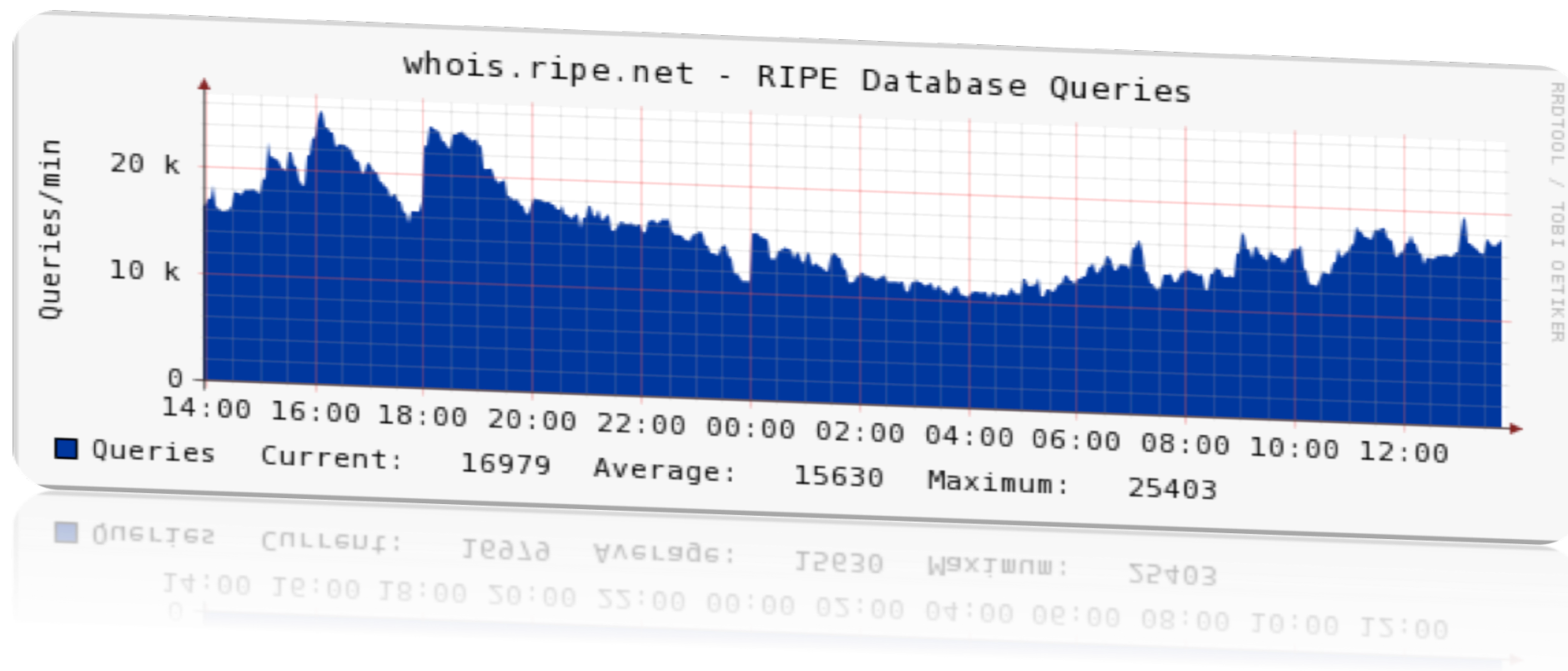
Kaveh Ranjbar

Database Department Manager, RIPE NCC



RIPE Database statistics

- Operational stats:
 - <https://www.ripe.net/data-tools/stats/ripe-database>



On reporting issues and change mgmt

- Full transparency, everything is announced on:
 - <http://www.ripe.net/lir-services/service-announcements>
- Public release notes are available at:
 - <https://www.ripe.net/data-tools/db/release-notes>
- Issues with significant impact on our users are always announced on mailing lists

Progress

What we did?

Redevelopment of Whois

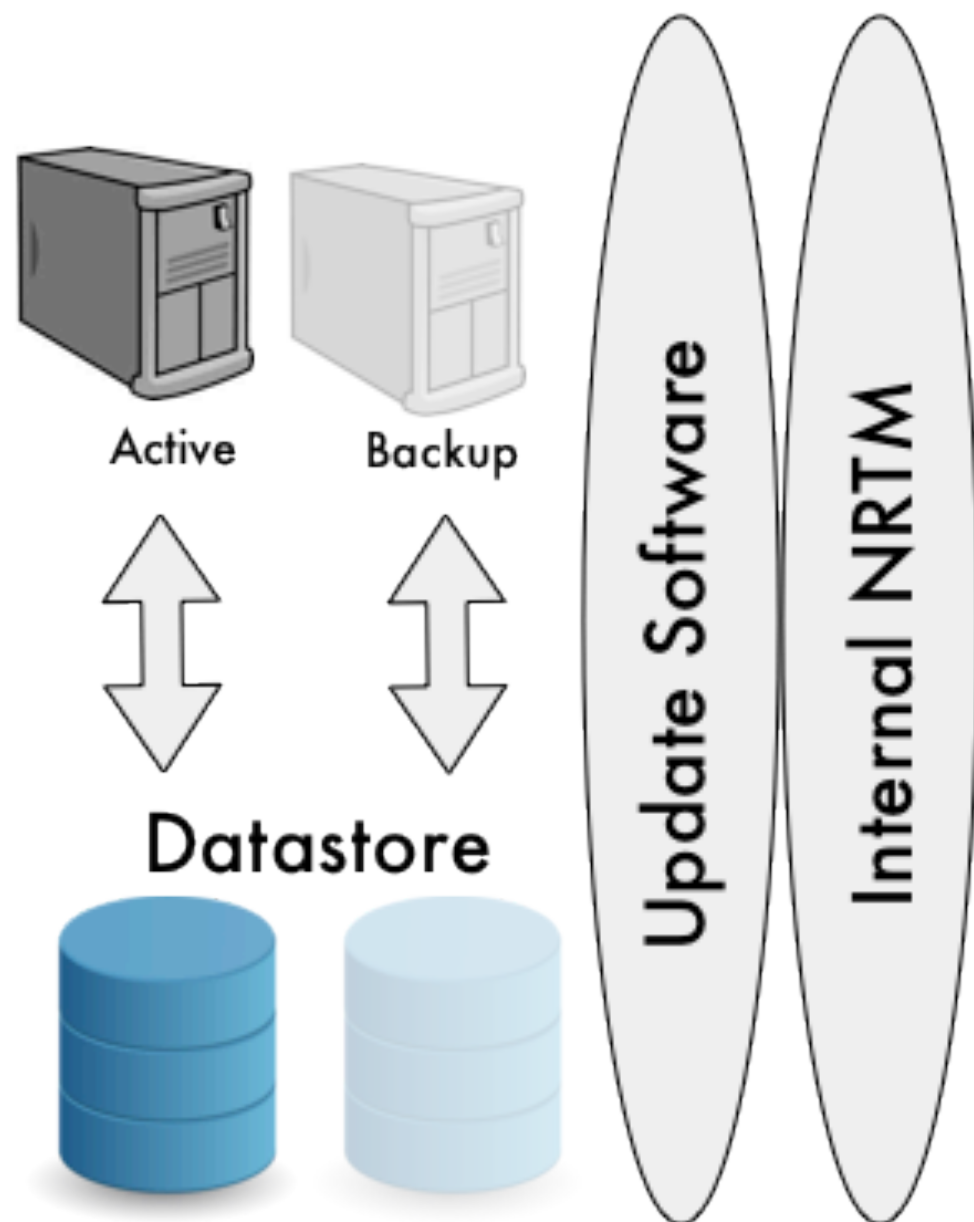
- Redevelopment of whois backend was finished on Q1 2013
- All RIPE Database operations are handled by new software, old platform is fully decommissioned
- New system has helped us to deploy a fault tolerant and easy to maintain infrastructure

New whois benefits

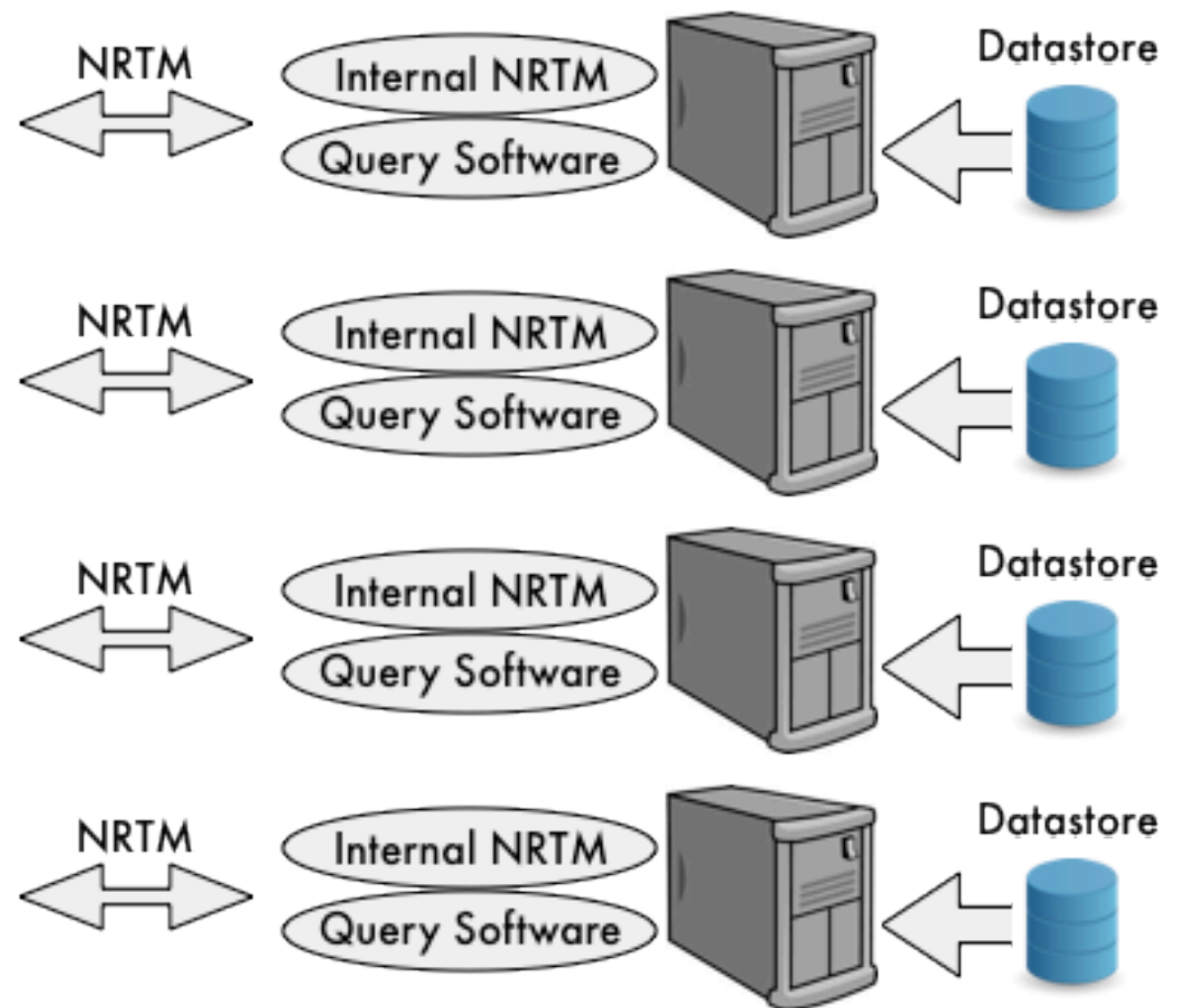
- Fast, simple and a lot more flexible
 - Changes and new features are implemented much faster
 - Well tested code, provides quick feedback on possible impact of any change
 - Verbose logging, live management
 - Simple hardware, easy to deploy, no special dependency, easy failover and easy to scale

Example infrastructure change - BEFORE

Update Servers



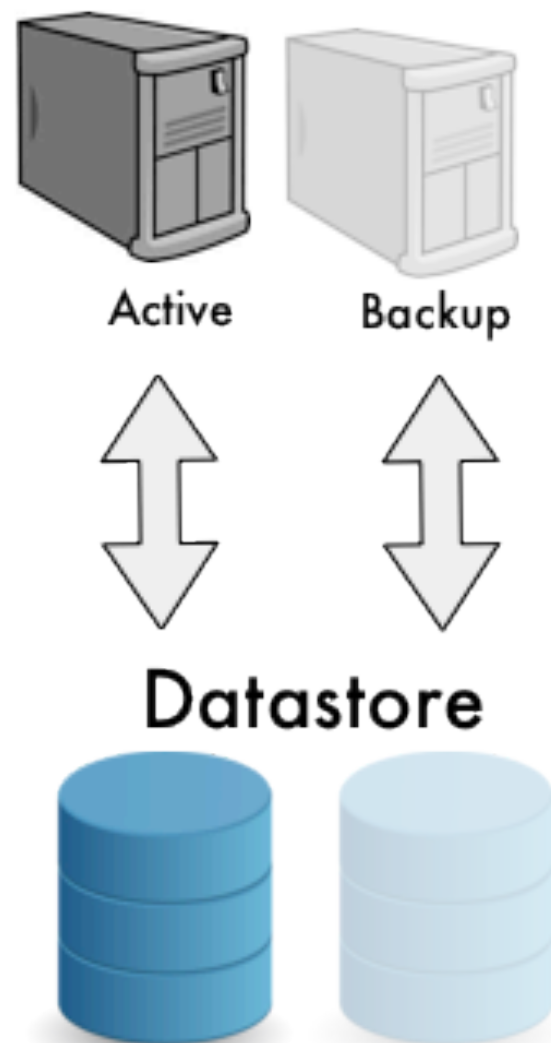
Query Servers



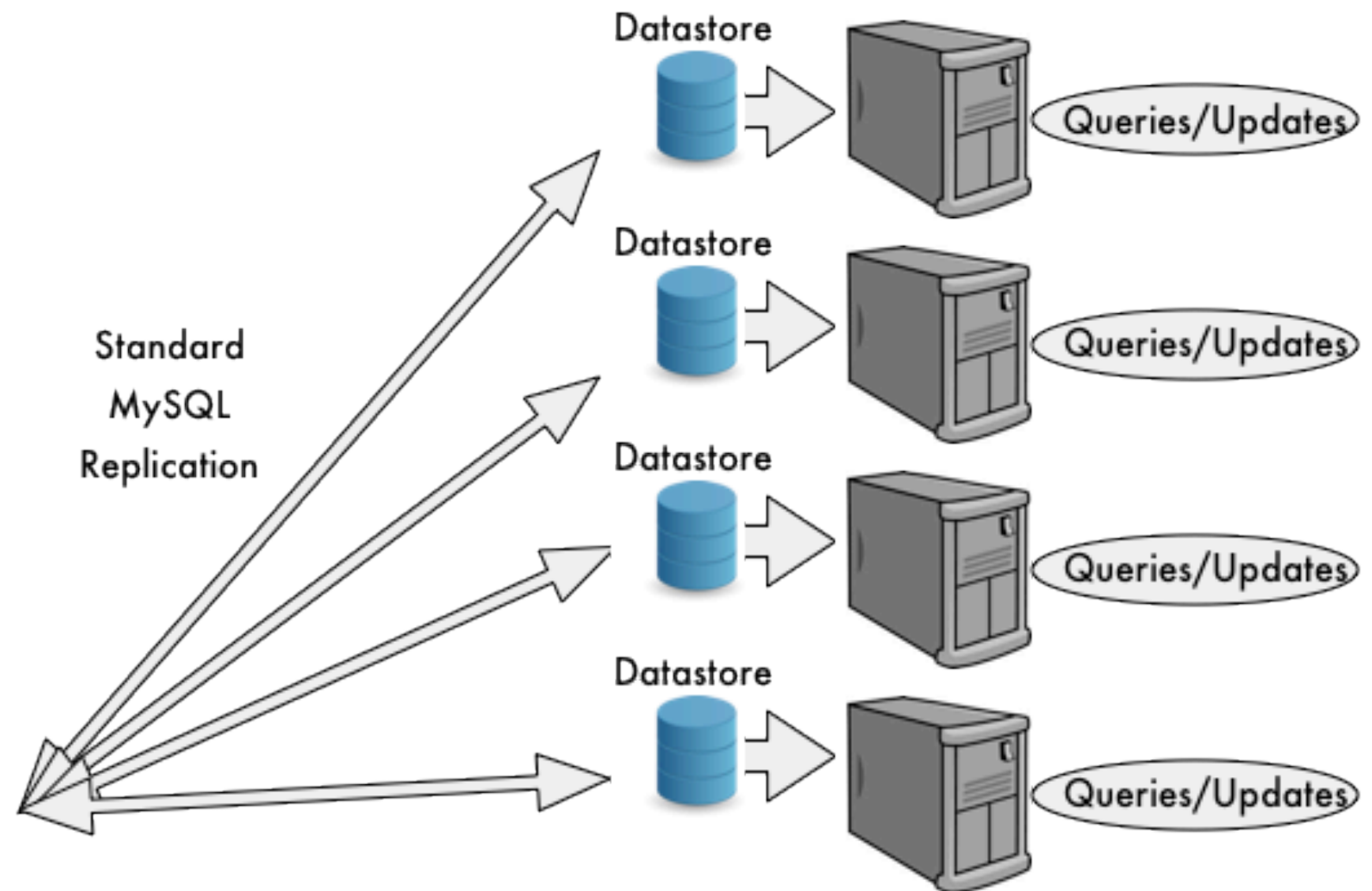
Home grown protocol, hard to maintain, not scalable

Example infrastructure change - AFTER

Update Servers



Query Servers



Standard based, Easy to maintain and upgrade approach

Integrated system

- No hacks! The system runs as a configurable, single entity
- We have been able to easily automate complex processes like reclaim functionality
- Proper management and reporting API (internal)
- Hot deployment to cluster with no downtime, implementing long options along with deployment took half a day for one engineer

Open source

- Code is available at:
 - <https://www.github.com/RIPE-NCC/whois>
- BSD License, easy to install and change
- 229K lines of code, 139K of it are tests!
- No dependencies, no container:
 - Java runtime and MySQL to run
 - Java SDK, MySQL, git and maven to build
- Proposing to provide Drop-in VM

Action Items

Denis Walker

Database Business Analyst, RIPE NCC



AP65.1: ORG Object changes

- With the new code in place NCC proposed changes were not required:
 - All resource objects already have an ORG Reference:
 - PA Objects have the LIR ORG on them
 - PI Objects have (or will have) LIR or ENDUSER organisation object on them
 - Same model is used for abuse-c implementation
 - With tagging it can even improve!
- Policy proposal to add sponsoring ORG

AP65.2: Raise interest in Geo Location

- Alex Band

AP65.3: Personal data in Object History

- DB Service is in Beta (more details on further slides)
 - No personal data objects (person/role) are returned through the service
- Legal department cleared the service
- No deleted objects shown, should we show them?

AP65.4: Document 2011-06 before impl.

- Implementation plan and impact analysis published on:
 - <https://labs.ripe.net/Members/kranjbar/implementation-details-of-policy-2011-06>
- Detailed explanation published on:
 - <https://labs.ripe.net/Members/denis/creating-and-finding-abuse-contacts-in-the-ripe-database>
- Announcements were sent to ncc-announce, ncc-services, db-wg and anti-abuse-wg
- Now in service with an already good utilisation:
25% of v4 allocations (35.8% in total alloc. size)

On Goings

What we are working on

API

- We have re-developed the API code
- Backward compatible, but queries are handled directly from whois core instead of parsing RPSL results
 - Much faster
 - More consistent and is for all services
 - Streaming of results
 - Self documenting

History of objects

- Useful for change management, recovery, investigation and research
- Was released in April as beta
- History of all objects (except person and role) are available with a query option
- Available through API and WEB as well as port 43

Example History Query

```
$whois -h whois.ripe.net -- "--list-versions ORG-RIEN1-RIPE"
% This is the RIPE Database query service.
% The objects are in RPSL format.
%
% The RIPE Database is subject to Terms and Conditions.
% See http://www.ripe.net/db/support/db-terms-conditions.pdf

% Note: this output has been filtered.
%       To receive output for a database update, use the "-B" flag.

% Version history for object "ORG-RIEN1-RIPE"
% You can use "--show-version rev#" to get an exact version of the object.
```

rev#	Date	Op.
1	2012-03-09 14:21	ADD/UPD
2	2012-03-09 14:24	ADD/UPD
3	2012-03-09 15:06	ADD/UPD
4	2012-03-09 15:30	ADD/UPD
5	2012-03-09 16:04	ADD/UPD
6	2012-03-09 16:04	ADD/UPD
7	2012-03-09 16:07	ADD/UPD
8	2012-03-16 11:23	ADD/UPD
9	2012-03-19 17:32	ADD/UPD
10	2012-03-20 13:15	ADD/UPD
11	2012-04-16 14:48	ADD/UPD
12	2012-04-18 09:44	ADD/UPD
13	2012-04-25 09:58	ADD/UPD
14	2012-04-25 09:59	ADD/UPD
15	2012-04-25 10:02	ADD/UPD
16	2012-05-03 16:54	ADD/UPD
17	2012-06-28 10:29	ADD/UPD
18	2012-08-10 15:41	ADD/UPD
19	2012-08-10 15:57	ADD/UPD
20	2012-08-10 16:00	ADD/UPD
21	2012-08-10 16:19	ADD/UPD
22	2013-03-19 17:10	ADD/UPD

```
% This query was served by the RIPE Database Query Service version 1.57.1
```

```
$ whois -h whois.ripe.net -- "--show-version 1 ORG-RIEN1-RIPE"
% This is the RIPE Database query service.
% The objects are in RPSL format.
%
% The RIPE Database is subject to Terms and Conditions.
% See http://www.ripe.net/db/support/db-terms-conditions.pdf

% Note: this output has been filtered.
%       To receive output for a database update, use the "-B" flag.

% Version 1 of object "ORG-RIEN1-RIPE"
% This version was a UPDATE operation on 2012-03-09 14:21
% You can use "--list-versions" to get a list of versions for an object.

% Information related to 'ORG-RIEN1-RIPE'

organisation:  ORG-RIEN1-RIPE
org-name:      Reseaux IP Europeens Network Coordination Centre (RIPE NCC)
org-type:      RIR
descr:         RIPE NCC Operations
address:       Singel 258
               1016 AB Amsterdam
               NETHERLANDS
phone:         +31205354444
fax-no:        +31205354445
mnt-ref:       RIPE-NCC-HM-MNT
mnt-by:        RIPE-NCC-HM-MNT
source:        RIPE # Filtered

% This query was served by the RIPE Database Query Service version 1.57.1
```

Proposal: Improvements on Dummification

- We currently remove all personal data from nightly dumps using a ‘greedy’ approach
 - But we also remove all links between the objects
 - And data was replaced with static values
 - Made it useless for researchers
- New proposal: Making the dummification algorithm more smart
 - Keep parts of phone numbers, email addresses and addresses visible while maintaining the links

<https://labs.ripe.net/Members/kranjbar/proposed-improvements-to-dummification-of-personal-data-in-the-ripe-database>

Example Dummification

Current Structure

```
inetnum:      193.0.0.0 - 193.0.7.255
netname:      RIPE-NCC
descr:        RIPE Network Coordination Centre
descr:        Amsterdam, Netherlands
remarks:      Used for RIPE NCC infrastructure.
country:      NL
admin-c:      JDR-RIPE
admin-c:      BRD-RIPE
tech-c:       OPS4-RIPE
status:       ASSIGNED PI
source:       RIPE
mnt-by:       RIPE-NCC-MNT
mnt-lower:    RIPE-NCC-MNT
changed:      hostmaster@ripe.net 20090203
changed:      bit-bucket@ripe.net 20110217
```



```
inetnum:      193.0.0.0 - 193.0.7.255
netname:      RIPE-NCC
descr:        RIPE Network Coordination Centre
descr:        Amsterdam, Netherlands
remarks:      Used for RIPE NCC infrastructure.
country:      NL
admin-c:      DUMY-RIPE
tech-c:       DUMY-RIPE
status:       ASSIGNED PI
source:       RIPE
mnt-by:       RIPE-NCC-MNT
mnt-lower:    RIPE-NCC-MNT
changed:      unread@ripe.net 20110217
remarks:      *****
remarks:      * THIS OBJECT IS MODIFIED
remarks:      * Please note that all data that :
remarks:      * data has been removed from this
remarks:      * To view the original object, pl
remarks:      * http://www.ripe.net/whois
remarks:      *****
```

Proposed Structure

```
inetnum:      193.0.0.0 - 193.0.7.255
netname:      RIPE-NCC
descr:        RIPE Network Coordination Centre
descr:        Amsterdam, Netherlands
remarks:      Used for RIPE NCC infrastructure.
country:      NL
admin-c:      JDR-RIPE
admin-c:      BRD-RIPE
tech-c:       OPS4-RIPE
notify:       ncc@ripe.net
status:       ASSIGNED PI
source:       RIPE
mnt-by:       RIPE-NCC-MNT
mnt-lower:    RIPE-NCC-MNT
changed:      bit-bucket@ripe.net 20110217
```



```
inetnum:      193.0.0.0 - 193.0.7.255
netname:      RIPE-NCC
descr:        RIPE Network Coordination Centre
descr:        Amsterdam, Netherlands
remarks:      Used for RIPE NCC infrastructure.
country:      NL
admin-c:      JDR-RIPE
admin-c:      BRD-RIPE
tech-c:       OPS4-RIPE
notify:       ***@ripe.net
status:       ASSIGNED PI
source:       RIPE
mnt-by:       RIPE-NCC-MNT
mnt-lower:    RIPE-NCC-MNT
changed:      ***@ripe.net 20110217
```



Proposal: Tags

- New proposal to optionally provide operational metadata along with updates
 - System will tag resources, for example all RIPE Region resources as %RIPE_Region
 - Results can be filtered based on tags
 - Can be extended to cover any other service, objects marked for automatic cleanup, lameness check results, assisted registry check markers, etc.
 - Very useful for data clean up
 - No change to existing behavior

Vision

Longer term plans and ideas for improving the
RIPE Database

Plan: Unref. Object Automatic Cleanup

- Person/Role/Maintainer/Key-cert/ORG objects with no reference will be automatically deleted after 90 days
- a TAG will show users if an object is a candidate for automatic cleanup and when
- Next step is to look into cluster of objects - ROLE referring a PERSON and same MNTNER – no other references to these three objects

Proposal: Placeholder cleanup

- A lot of placeholder objects with no real benefit (e.g. 0/0 and AS-BLOCKS) except for internal software consistency
- With proper tagging and authorisation business rules we can remove all of them
 - We already import all other RIR public data, now we tag the data based on their published “stat” file
 - All resources, globally, allocated/assigned are tagged
 - Database search (with --all-sources option) will show proper matches without placeholders clutter

Idea: RIPE Easy Whois

- Simple to use web interface for searching on resources
 - Will always show single results, with clear indication of which RIR is responsible for a resource and who is the data maintainer
 - Will provide data in easy to understand form, RPSL data will be available with a single click
- Clear indication of responsible entities for each piece of data

Proposal: Route object cleanup proposal

- Changing the Auth. requirements for ROUTE object from IP Address holder AND ASN holder to only IP address holder
 - Route statement says this network MIGHT be advertised from that ASN
 - Why do we need the ASN to auth. that?
 - Same behavior already exists in ROA creation, only IP address holder needs to authorise
- Will help improve usability

Idea: Single Sign On Integration

- Will be backwards compatible
- New auth type in maintainer:
 - auth: SSO sso_registered_email
- Should work both ways, maintain SSO access for a maintainer from RIPE Access control panel or by editing the maintainer object
- Added value for web tools, will provide a maintainer based view on web updates

Plan: Documentation

- We are working on streamlining DB Documentation and RIPE Database's webpages
 - Easy to read, short and concise set of documentation in only three document sets:
 - Accessing Data
 - Updating Data
 - Developer Documentation
 - Will always be linked to a version of the code
 - Work with TS to produce additional material

Questions?

