

RPKI Hands-On, Admin GUI to Router Origin Validation

Rob Austein <sra@isc.org>

Randy Bush <randy@psg.com>

Steve Bellovin <smb@cs.columbia.edu>

Michael Elkins <Michael.Elkins@cobham.com>

... and a lot of help from our friends

APRICOT 2011, 19 February 2011

What We Plan To Do

RPKI
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Admin GUI to
Router Origin
Validation

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Overview

Download

GUI

Router
Commands

rpkidemo

Questions

Basic steps

- Set up RPKI
- Set up routers
- Generate ROAs
- See result in routers

Three Ways to do RPKI

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Hands-On,
Admin GUI to
Router Origin
Validation

www.rpki.net

Overview

Download

GUI

Router
Commands

rpkidemo

Questions

There are three ways you can generate RPKI objects

- 1 Simple: Just use GUI in lab with borrowed prefixes
- 2 Closer to real: same, but keep generated keys and configuration on your laptop, ready for real software install once you get home
- 3 Serious power user: install everything right now. . . perhaps not

At the moment our software does not run on Windows, so if all you have is Windows, you can only do 1.

Using GUI on `demo.rpki.net`

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Hands-On,
Admin GUI to
Router Origin
Validation

www.rpki.net

Overview

Download

GUI

Router
Commands

`rpkidemo`

Questions

`demo.rpki.net` is just an install of our Django-based GUI

This is just the GUI that ships with our code. We configured this instance of the GUI to support lab work and demos. For approaches 1 and 2, we set up an account for you on <https://demo.rpki.net/rpki/>.

Approach 1

Randy just delegates prefix(es) to you, you log into the <https://demo.rpki.net/rpki/> GUI, and away you go.

Approach 2

You download source tarball, run the `rpkidemo` script, it sets everything up for you, you log into the <https://demo.rpki.net/rpki/> GUI, and away you go.

Doing It All Yourself

RPKI
Hands-On,
Admin GUI to
Router Origin
Validation

www.rpki.net

Overview

Download

GUI

Router
Commands

rpkidemo

Questions

Approach 3

You download tarball and follow the installation instructions. . . but you may not finish this morning

Lab Topology

RPKI
Hands-On,
Admin GUI to
Router Origin
Validation

www.rpki.net

Overview

Download

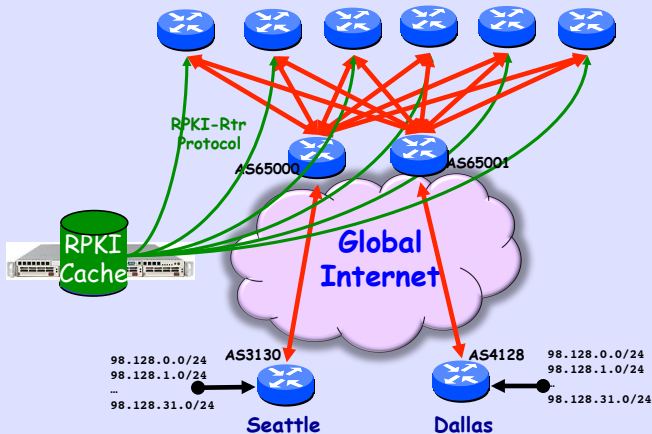
GUI

Router
Commands

rpkidemo

Questions

Lab Topology



Remember The Goal

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Hands-On,
Admin GUI to
Router Origin
Validation

www.rpki.net

Overview

Download

GUI

Router
Commands

rpkidemo

Questions

In all cases, our goals are

- Build ROAs
- See them affect routing policy

Where to get the software

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Hands-On,
Admin GUI to
Router Origin
Validation

www.rpki.net

Overview

Download

GUI

Router
Commands

rpkidemo

Questions

Download the tarball

<http://www.rpki.net/sources-apricot-2011.tgz>

Or check out from Subversion repository

<http://subvert-rpki.hactrn.net/>

Logging into the GUI

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Hands-On,
Admin GUI to
Router Origin
Validation

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Overview

Download

GUI

Router
Commands

rpkidemo

Questions

32 Lab Accounts on `demo.rpki.net`

- Usernames “labuser01”...“labuser32”
- Passwords are all “fnord”

Connect to

`https://demo.rpki.net/rpki/`

Login Screen

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Admin GUI to
Router Origin
Validation

www.rpki.net

[Overview](#)

[Download](#)

GUI

[Router
Commands](#)

[rpkidemo](#)

[Questions](#)

Username	<input type="text" value="epilogue"/>
Password	<input type="password" value="*****"/>
<input type="button" value="login"/>	

[Log In](#)

Done



Main Screen (1)

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Hands-On,
Admin GUI to
Router Origin
Validation

www.rpki.net

Overview

Download

GUI

Router
Commands

rpkidemo

Questions

Handle: [epilogue](#) | [export identity](#) | [select](#)

Logged in as epilogue | [Log Out](#)

Parents

- [arin](#)

Accepted Resource	Not Before	Not After
128.224.0.0/16	Feb. 17, 2011, 1:44 a.m.	Feb. 17, 2012, 1:18 a.m.
147.11.0.0/16	Feb. 17, 2011, 1:44 a.m.	Feb. 17, 2012, 1:18 a.m.
192.103.52.0/22	Feb. 17, 2011, 1:44 a.m.	Feb. 17, 2012, 1:18 a.m.
192.124.127.0/24	Feb. 17, 2011, 1:44 a.m.	Feb. 17, 2012, 1:18 a.m.
192.73.222.0/24	Feb. 17, 2011, 1:44 a.m.	Feb. 17, 2012, 1:18 a.m.

Children

-- none --

Export (csv): [asns](#) | [prefixes](#)

My ROA [request]s

Prefix	ASN
--------	-----

Done

Main Screen (2)

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Hands-On,
Admin GUI to
Router Origin
Validation

www.rpki.net

Overview

Download

GUI

Router
Commands

rpkidemo

Questions

192.73.222.0/24

Feb. 17, 2011, 1:44 a.m.

Feb. 17, 2012, 1:18 a.m.

Children

-- none --

Export (csv): [asns](#) | [prefixes](#)

My ROA [request]s

Prefix	ASN
• 128.224.1.0/24	3130

[export \(csv\)](#)

Unallocated Resources

- [128.224.0.0/16](#) (missing: 128.224.0.0/24, 128.224.2.0-128.224.255.255) | [give](#) | [split](#) | [roa](#)
- [147.11.0.0/16](#) | [give](#) | [split](#) | [roa](#)
- [192.73.222.0/24](#) | [give](#) | [split](#) | [roa](#)
- [192.103.52.0/22](#) | [give](#) | [split](#) | [roa](#)
- [192.124.127.0/24](#) | [give](#) | [split](#) | [roa](#)

Done

Prefix Split Screen

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Hands-On,
Admin GUI to
Router Origin
Validation

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Overview

Download

GUI

Router
Commands

rpkidemo

Questions

Handle: [epilogue](#)

Logged in as epilogue | [Log Out](#)

Prefix View

Range:	128.224.0.0/16
Received from:	arin
Validity:	Feb. 17, 2011, 1:44 a.m. - Feb. 17, 2012, 1:18 a.m.

Suballocations

- [128.224.1.0/24](#)

Unallocated

- 128.224.0.0/24
- 128.224.2.0-128.224.255.255

Edit

Prefix: CIDR or range

[Submit Query](#)

Action:

[split](#)
[give to child](#)
[roa](#)

Done



ROA Generation Screen

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Admin GUI to
Router Origin
Validation

www.rpki.net

Overview

Download

GUI

Router
Commands

rpkidemo

Questions

Handle: [epilogue](#)

Logged in as epilogue | [Log Out](#)

Prefix View

Range:	128.224.0.0/16
Received from:	arin
Validity:	Feb. 17, 2011, 1:44 a.m. - Feb. 17, 2012, 1:18 a.m.

Suballocations

- [128.224.1.0/24](#)

Unallocated

- 128.224.0.0/24
- 128.224.2.0-128.224.255.255

Edit

Asns: Comma-separated list of ASNs

Max length:

[Submit Query](#)

Action:

[split](#)
[give to child](#)

Done

Peering with a Cache

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Admin GUI to
Router Origin
Validation

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Overview

Download

GUI

Router
Commands

rpkidemo

Questions

```
router bgp 3130
  bgp router-id 147.28.7.1
  distance bgp 200 200 200
  bgp log-neighbor-changes
  no synchronization
  no auto-summary
  bgp deterministic-med
  !distance mbgp 15 15 150
  redistribute static route-map static4-to-bgp
  redistribute connected route-map
    connected-to-bgp
  bgp rpki-cache 198.180.150.1
    port-number 42420
    refresh-time 600
```

Looking at a Prefix

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Hands-On,
Admin GUI to
Router Origin
Validation

www.rpki.net

Overview

Download

GUI

Router
Commands

rpkidemo

Questions

```
r0.sea#show ip bgp 198.180.152.0
BGP routing table entry for 198.180.152.0/24,
      version 234514
  Refresh Epoch 1
    2914 4128
      199.238.113.9 from 199.238.113.9
        (129.250.0.19)
        Origin IGP, metric 63, localpref 100,
        valid, external
        Community: 2914:410 2914:1004
                   2914:2000 2914:3000
                   3130:380
        path 0BBA7980 RPKI State valid
```


RPKI Data in Router

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Admin GUI to
Router Origin
Validation

www.rpki.net

Overview

Download

GUI

Router
Commands

rpkidemo

Questions

```
r0.sea#show ip bgp rpki-table
```

```
84 BGP sovc network entries
```

```
using 7392 bytes of memory
```

```
89 BGP sovc record entries
```

```
using 1780 bytes of memory
```

Network	Maxlen	Origin-AS	Neighbor
64.18.0.0/20	24	15169	198.180.150.
64.233.160.0/19	32	15169	198.180.150.
66.102.0.0/20	24	15169	198.180.150.
66.102.0.0/20	20	15169	198.180.150.
66.249.80.0/20	24	15169	198.180.150.
67.21.36.0/24	24	3970	198.180.150.
69.166.11.0/24	24	3970	198.180.150.
72.14.192.0/18	24	15169	198.180.150.
74.125.0.0/16	16	15169	198.180.150.

Apply Policy

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Hands-On,
Admin GUI to
Router Origin
Validation

www.rpki.net

Overview

Download

GUI

Router
Commands

rpkidemo

Questions

```
route-map rpki-policy permit 10
  match rpki valid
  set localpref 140
route-map rpki-policy permit 20
  match rpki incomplete
  set localpref 100
```

Then apply route-map to peerings

rpkidemo Startup

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Admin GUI to
Router Origin
Validation

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Overview

Download

GUI

Router
Commands

rpkidemo

Questions

```
bash-3.2$ $stop/scripts/rpkidemo
```

```
Using /opt/local/bin/openssl
```

```
I need to know your username and password on  
the Django GUI server to proceed
```

```
Username: epilogue
```

```
Password:
```

rpkidemo Upload (and wait...)

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Hands-On,
Admin GUI to
Router Origin
Validation

www.rpki.net

Overview

Download

GUI

Router
Commands

rpkidemo

Questions

Uploading entitydb/identity.xml to ...

Waiting for response to upload.

This may require action by a human
being on the server side, so it may
take a while, please be patient.

Questions?

RPKI
Hands-On,
Admin GUI to
Router Origin
Validation

www.rpki.net

[Overview](#)

[Download](#)

[GUI](#)

[Router
Commands](#)

[rpkidemo](#)

[Questions](#)