Route Origin Validation Lab

Part-1: Installing RPKI Validator (Routinator)

VM Details

```
[192.168.30.13]
......
[192.168.30.20]
```

Login Details

- Username `apnic` and password `training`.

Preinstalled packages

To save time, the following essential packages have been preinstalled on the containers:

- `GCC (GNU C toolchain)`
- `rsync`

Lab Setup

For this lab, we will use Routinator from NLnetLabs as the RPKI validator.

1. Login to your server (SSH from the jumphost to your container using the `username` and `password` given above), where `X` is your VM number:

   ```
   ssh apnic@192.168.30.X
   ```

2. Update the repository

   ```
   sudo apt update && sudo apt upgrade
   ```

   Note: Since Routinator is written in `rust`, first install `rust` using `rustup` (which is a rust installer and version management tool) from the official release channels.

3. Run the following `curl` command which will download a script that downloads `rustup` and

installs `rust`

```
curl --proto '=https' --tlsv1.2 -sSf https://sh.rustup.rs | sh

# -f: fail silently (HTTP)
# -sS: show errors if it fails
```

4. Follow the onscreen instructions to install rust:

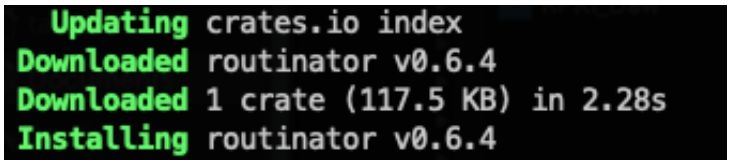
   - we will go with the default installation option `1`

5. Make sure to set the PATH environment variable as shown in the onscreen instruction:

```
source $HOME/.cargo/env
```

6. Now use `cargo` (the rust package manager) to install Routinator.

```
cargo install routinator
```



   - ***Note***: To update an exisiting installation, do:

     - Rust

       ```
       rustup update
       ```

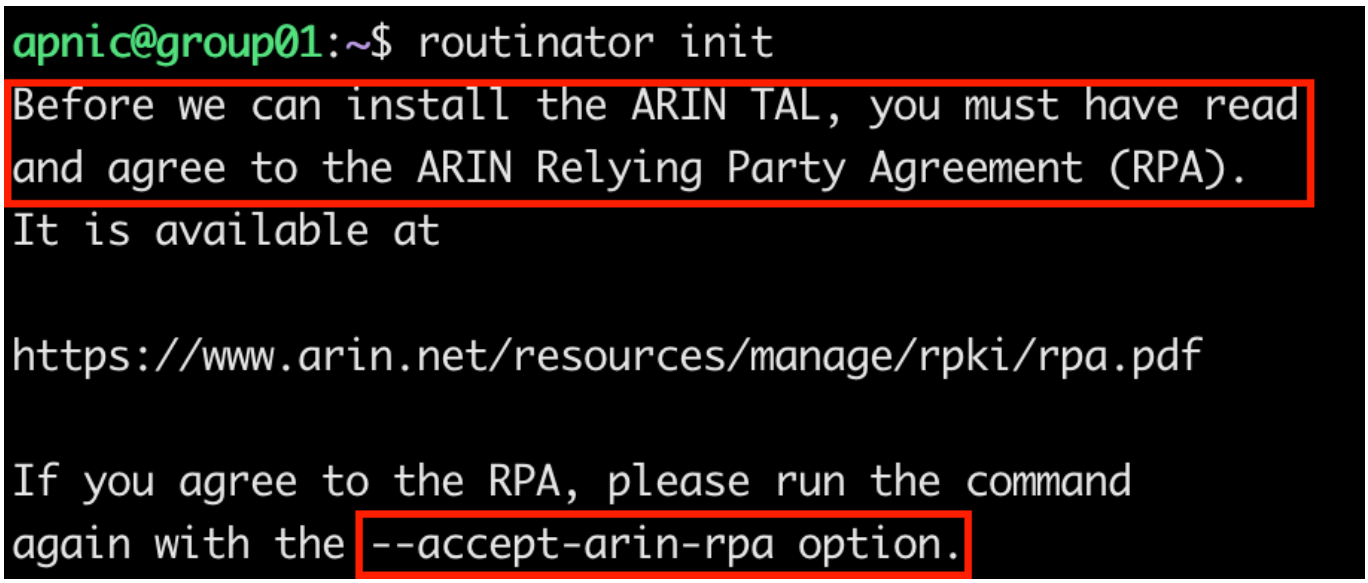
     - Routinator

       ```
       cargo install -f routinator
       ```

7. Before running Routinator for the first time, we need to prepare its working environment (directory for the local RPKI cache as well as Trust Anchor Locator - TAL).

   ```
   routinator init
   ```

   Note: Since this is the first time we are using Routinator, it will complain that ARIN's TAL is missing as shown below:



8. If we agree to Arin's relying party agreement, reissue the command with the `--accept-arin-rpa` option as shown below:

```
routinator init --accept-arin-rpa
```

```
apnic@group01:~$ routinator init --accept-arin-rpa
Created local repository directory /home/apnic/.rpki-cache/repository
Installed 5 TALs in /home/apnic/.rpki-cache/tals
```

Note: This will create the local rpki cache directory as well as download the TALs (from the five RIRs) and save it in the relevant directory.

9. Do a test run with the following command to pull and list the validated ROA payloads (origin ASN, prefix, max prefix-length).

   Note: Since it will rsync/rrdp the whole RPKI repo to the local machine (`/home/apnic/.rpki-cache/repository/`), it will take a while, so dont worry. Instead of printing to standard output, we can write it to a file with the `o` option:

```
routinator -v vrps -o routinator.csv
```

   - Have a look at the validated ROA payload (VRP):

```
more routinator.csv
```

10. **[Optional]** If you have two separate Validators installed (for redundancy/code diversity), compare the validated ROA payload outputs for consistency:

    - Example: `diff -u routinator.csv octo.csv`

      - Discuss any differences with your group mates

Now your validator is ready to feed the validated cache to BGP speaking routers through the RTR (RPKI-to-Router) protocol.

Part-2: RTR session

Validator side

Routinator can act as an RTR server as specified in RFC8210, that periodically fetches RPKI data, verifies/validates it and allows RPKI enabled routers to connect to it to fetch the validated data (ROA cache).

- ***Note:*** IANA has specified a standard port `323` for RTR, which would require running Routinator as a root.

1. To run Routinator as a RTR server listening on `192.168.30.X` (where X is your VM number) and port `3323` :

   ```
   routinator server --rtr 192.168.30.X:3323 --refresh=300 --detach
   ```

   - If you dont specify the ***refresh*** time, by default the local repo will be updated and re-validated every 600 seconds (10 minutes). The example above uses a `300secs (5 mins)` refresh time.

   Note: If you have IPv6 address configured on routinator, you can listen on both:

   ```
   routinator server --rtr 192.168.30.X:3323 --rtr [2001:0DB8::X]:3323 --refresh=
   300 --detach
   ```