Thesis B.Sc.

Thesis M.Sc.

ROV + IRR: Are Authorized Routes Registered?

Motivation

The Border Gateway Protocol (BGP) is the foundation of the Internet and inter-AS communication but it was initially designed and build without security in mind.

Internet Routing Registries (IRR) [1] are decentralized databases, that seek to administer information about operators, ASes, prefix ownerships and route objects. These databases are often used by ASes to derive routing policies and verify BGP announcements. The main databases are provided by the five regional Internet registries (RIR) but also commercial services, e.g., RADb [2].

Besides IRR databases, an additional mechanism was established and is increasingly popular, namely Route Origin Validation (ROV) [3]. Based on Resource Public Key Infrastructure (RPKI), it allows to cryptographically fix addresses or prefixes to specific origin ASes using Route Origin Authorizations (ROA). If ROAs are available, the origin of prefix announcements can be verified.

While information between both systems should be consistent, this is not always the case. Furthermore, the deployment of new technologies in combination with critical systems such as BGP are often slow.

Your Task

- Analyze the current state of ROV and IRR
- Identify the amount of prefixes and announcements covered by each mechanism
- Analyze discrepancies between the two systems

Requirements

- Basic programming knowledge in Python or Go
- Familiarity with GIYF-Based work approaches

Bibliography

[1] http://www.irr.net/
[2] https://www.radb.net/
[3] https://www.manrs.org/2020/10/what-is-rov/

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