IRR & Routing Policy Configuration Considerations

<draft-mcpherson-irr-routing-policy-considerations-02>

Danny McPherson
Shane Amante
Eric Osterweil
Larry Blunk

Ack

- Thanks for the comments sent, we are planning to incorporate them
  - Wes George
  - John Heasley
  - Nick Hilliard
  - Andrei Robachevsky

What's our point?

- Catalog past issues influencing the efficacy of Internet Routing Registries (IRR) for inter-domain routing policy specification
  - and application in the global routing system over the past two decades
- Additionally, a discussion of which are ***still*** problematic in practice
  - Versus which are simply artifacts that are no longer applicable

Outline

- Background
- Accuracy and Integrity of Data Contained within the IRR
- Operation of the IRR Infrastructure
- Historical BGP Protocol Limitations
- Historical Limitations of Routers

Background

- One of the stated goals of IRRs:
  - Section 7 of [RFC1787]: stability and consistency of the Internet-wide routing could significantly benefit if the information about routing requirements … could be shared across organizational boundaries
- So, we look at what may have led to the current eroded confidence in IRRs and their data
- Note: when many say ``IRR'' they often conflate RPSL data and the operational IRR systems that serve it
  - These two facets of the IRR ecosystem have different issues

Accuracy and Integrity of Data Contained within the IRR

- Lack of Resource Certification
  - No way for an RP to determine authenticity of RPSL… Still an open issue
- Incentives to Maintain Data within the IRR
  - Not clear when/if data is being maintained (and where, re: above)
- Inability to remove old data
  - There are semantics to identify ownership, but this leaves the risk that removing objects affects reachability
- Lack of authoritative IRR for data
  - Without resource certification, it is hard to know which (of potentially many) versions of data authentic

Operation of the IRR Infrastructure

- Replication ushers in lots of issues:
  - Freshness, authenticity, etc

Historical Limitations

- Incremental updates to prefix filters
  - In the 90's support was uncommon, but today it is wide
- Storage
  - Used to be small and slow, today it is common to find non-volatile storage on routers that is significantly larger, faster, and with much longer MTBFs
- Updating configs
  - Has historically been rough, vendor dependent: telnet, ssh
  - Today we have efforts like NETCONF on the way (maybe RPKI to RTR)

Adoption?

- Can we make this a wg document and refine?