Some Ideas on Origin Validation Testing

Tim Bruijnzeels <timbru@ripe.net>
Randy Bush <randy@psg.com>
General Pieces

- CA Interoperation: can my CA be a child of RIPE, ARIN, NTT, and root 1918?
- Do caches (AKA validators) all produce the same results?
- Do caches fetch from each if the global RPKI is not reachable?
- Do routers produce consistent results when using multiple caches?
- Do routers actually validate, log, SNMP, ...?
Certificate Authority Testing
Do Dragon Labs, RIPE, ARIN, AfriNIC, ... CAs Interoperate?
Today we have a three deep CA, RIPE->RGnet->X. But what if we should be testing this Q1 2017 and report on it in Chicago.
Validators/Caches

Do they produce consistent results?
Now all implementation do everything in one, but consider

- Multiple redundant fetchers with access to the global internet that get RRDP data
- One active validator, and one standby (avoid race conditions) getting the RRDP data and validating it
- Multiple caches with validated data that routers can contact
Router Testbed

Test if a router correctly performs RPKI-Based Origin Validation

Measure Semantics, not Speed, etc.

Testbed for Regression Testing so that fixed bugs do not reappear
Test Harness

- RPKI-Rtr Server
- Zebra BGP Inject
- Test Management & Analysis
- Control
- Measure
- Test Definitions
- Tests
- Results
- Reports

130912 Router Testing
Assumptions

• The RPKI implementation itself is tested
• The RPKI cache is tested
• The RPKI-Rtr Protocol Service is tested
• We can control cache content change at a very fine granularity
• We can control BGP content change at a very fine granularity
• A little more detail at https://psg.com/131007.origin-test.pdf
How to test these things reproducibly and constantly to insure against regression etc.?
How do we organize such a set of activities?