AS Migration

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The problem

- BGP-speaking networks merge, acquire, split, reconfigure
  - this usually requires routers to change ASNs
  - Confederations not always a good solution
- Difficult for operators to coordinate ASN changes with eBGP peers
  - Each router moved to new ASN must have all eBGP peers reconfigure remote-as **simultaneously** or BGP sessions won’t come up
  - doesn’t scale to thousands of PE routers with hundreds of sessions each
- Mid-migration AS-Path lengthening creates undesirable traffic shifts
The Solution

• Vendors implemented BGP knobs that allow manipulation of ASN inside PE’s BGP
  – Local-AS to masquerade as old ASN to eBGP peers
  – Replace-AS to remove second ASN from AS_PATH to restore expected AS_PATH length

• Looks like normal spec-compliant eBGP session external to the router

• Requires no coordination/reconfiguration from eBGP peers
  – Remote-side migration can be asymmetric and long duration
Why does SIDR need to care?

• AS migration manipulates the current ASN and the AS_PATH across a management domain/trust boundary (SP <-> Customer/peer)
  – BGPSec Path Validation is designed to prevent intentional AS_PATH manipulations, even when they’re not malicious

• AS Migration tools widely used by operators

• draft-ga-idr-as-migration published to standardize the vendor knobs so it’s not a non-spec BGP hack anymore

• Minor operational considerations to make it work with Origin Validation
Requirements

Assuming IDR adopts ga-idr-as-migration:

• BGPSec MUST support AS-migration
  – SHOULD do it without reducing BGPSec’s protections

• MUST NOT require any reconfiguration on the remote eBGP neighbor (CE)

• MUST NOT lengthen AS Path during migration

• MUST operate with existing trust boundaries
  – e.g. can’t expect remote side to accept pcount=055 from untrusted/non-confed neighbor
Draft updates (for pending -01)

• Draft-george-sidr-as-migration needs more reviewers and comments (draft-ga-idr does too)
• Currently discusses problem, no solutions/req’s
  – Are SIDR considerations (Section 3) accurate/complete?
• Plan to add req’s from slide 5, clarifications based on Sandy’s review
• Sandy’s possible solution (discussed @ AMS interim, can review now if necessary)
  – Right solution?
  – Add to this draft?
  – Add to protocol spec draft?