Update on the BAR-SAV Draft

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"Source Address Validation Using BGP UPDATEs, ASPA, and ROA (BAR-SAV),"
https://datatracker.ietf.org/doc/draft-ietf-sidrops-bar-sav/

Changes in v-07 relative to v-06

- Added a new Section 5.2 on

  “Co-ordination of BAR-SAV with FIB/RIB-In and RPKI”

- It tries to address the synchronization issue per “Inter-domain scaling considerations for source address validation (SAV)” https://datatracker.ietf.org/doc/draft-haas-savnet-inter-domain-scaling/
- Dynamics of BGP and RPKI are considered for the SAV table updates

Co-ordination of BAR-SAV with FIB/RIB-In and RPKI

- Coordinated with the FIB/RIB-In to ensure that any route that may be received on the router interface in consideration (and eligible for best path selection) is considered in the SAV table computation.
- Coordination is necessary for achieving zero blocking of legitimate traffic [I-D.haas-savnet-inter-domain-scaling].
- When BGP session is started or restarted, the SAV table computation and the subsequent enforcement of SAV on the interface must be delayed to allow for routing convergence to complete.

Co-ordination of BAR-SAV with FIB/RIB-In and RPKI

- If BGP Updates arrive during the SAV table computation, those Updates should be used to update the SAV table as quickly as possible.
- If a BGP Withdraw message is received, hysteresis must be applied as described in Section 6.5.2.
- Computation of the SAV table is a continuous process, and it accommodates the dynamics of BGP (arrival and withdrawal of Updates) following the initial convergence.
- BAR-SAV requires that the SAV table also stays coordinated with the dynamics in RPKI (ROAs and ASPAs) and is updated promptly in response to the changes in ROAs and ASPAs.

Customer Cone Size (# Prefixes) = SAV Table Size

Type of ISP	Measured Customer Cone Size in # Prefixes (in turn this is an estimate for RPF list size on line card)
Very Large Global ISP	32392
Very Large Global ISP	29528
Large Global ISP	20038
Mid-size Global ISP	8661
Regional ISP (in Asia)	1101

Table 1
RFC 8704

References:

1. K. Sriram and R. Bush, "Estimating CPU Cost of BGPSEC on a Router", Presented at RIPE-63; also at IETF-83 SIDR WG Meeting, March 2012.
2. CAIDA AS ranking, http://as-rank.caida.org/

Thank you!

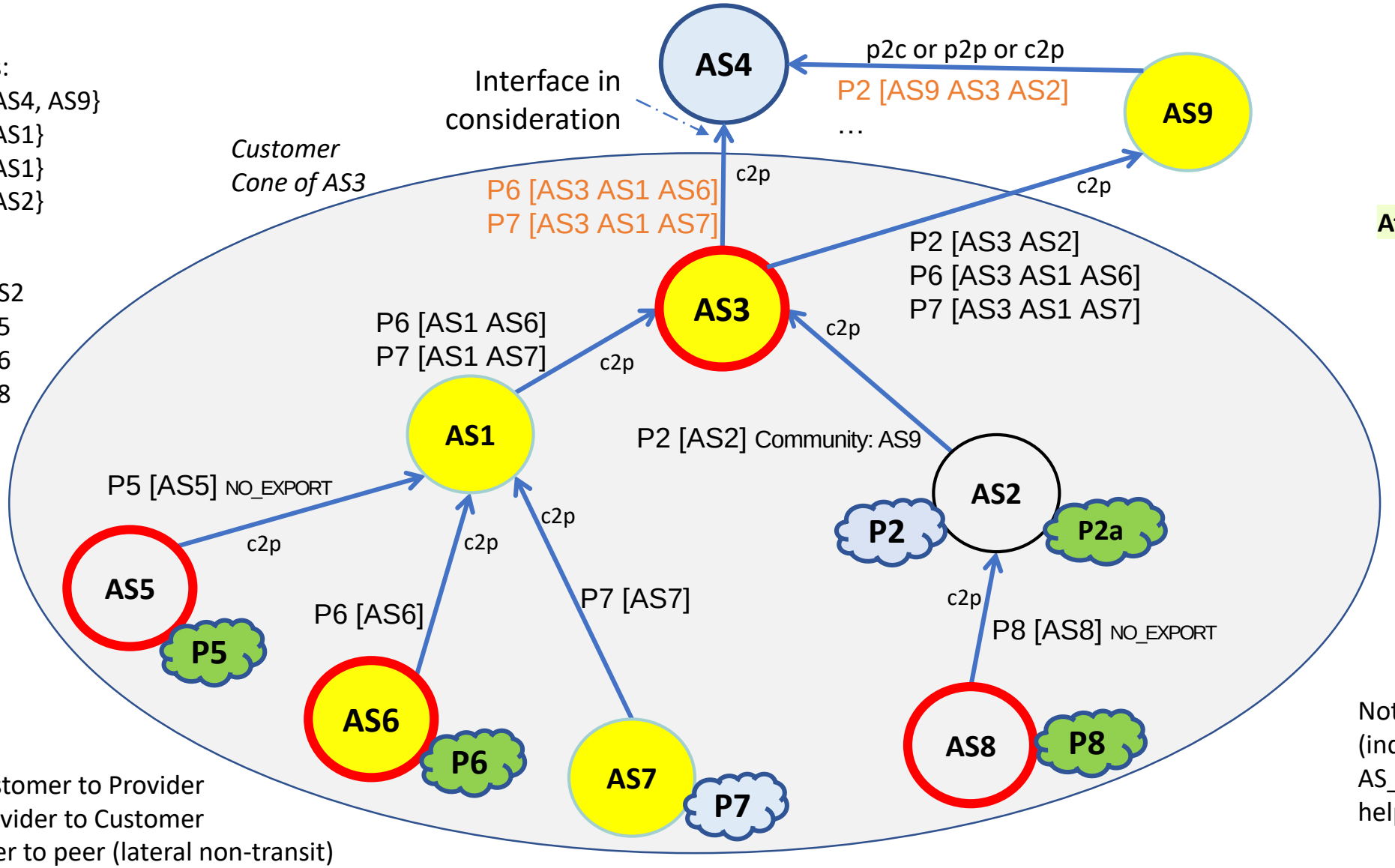
Q & A

Backup slides

How BAR-SAV Works
Finding **All** ASes and Prefixes in Customer's (or Peer's) Customer Cone Using BGP Announcements (as seen at AS4), ASPA, and ROA

ASPAs:
AS3 {AS4, AS9}
AS5 {AS1}
AS6 {AS1}
AS8 {AS2}

ROAs:
P2a AS2
P5 AS5
P6 AS6
P8 AS8



Has ROA Pn

No ROA Pn

At AS4's interface with AS3:

Visible in ASPA and AS_PATH ASn

Visible only in AS_PATH ASn

Visible only in ASPA ASn

Not visible in ASPA (indirectly visible in AS_PATH; BAR-SAV helps find it) ASn

c2p: Customer to Provider
p2c: Provider to Customer
p2p: peer to peer (lateral non-transit)

Illustration of BAR-SAV-PI

ROAs:
p1, AS1
p2, AS2
p3, AS3
p4, AS4

ASPAs:
AS1, {AS4}
AS2, {AS4}
AS3, {AS6, AS8}
AS4, {AS6}

p1 and p4 are deleted using the criteria on the previous slide

p2, p3, and p5 do not meet the criteria and are allowed