ASPA-08+

With special thanks to Ben Maddison and Sriram Kotikalapudi
The ASPA Profile-07

ASProviderAttestation ::= SEQUENCE {
    version [0] ASPAVersion DEFAULT v0,
    aFI  AddressFamilyIdentifier,
    customerASID  ASID,
    providerASSET  SEQUENCE (SIZE(1..MAX)) OF ASID 
}
The ASPA Profile-08

ASProviderAttestation ::= SEQUENCE {
  version [0] ASPAVersion DEFAULT v0,
  customerASID ASID,
  providers ProviderASSet }

ProviderASSet ::= SEQUENCE (SIZE(1..MAX)) OF ProviderAS

ProviderAS ::= SEQUENCE {
  providerASID ASID,
  afiLimit AddressFamilyIdentifier OPTIONAL }
Yet Another ASPA Object

ASProviderAttestation ::= SEQUENCE {
    version [0] ASPAVersion DEFAULT v0,
    aFI    AddressFamilyIdentifier OPTIONAL,
    customerASID  ASID,
    providerASSET  SEQUENCE (SIZE(1..MAX)) OF ASID }

Considerations

We can’t drop AFI, can we?

• ASPA records in different AFIs will be separate at the level of router;
• ASPA records in different AFIs will be separate at the level of RTR;
• **ASPA records in different AFIs will be separate at the level of RPKI?**
## Voting

<table>
<thead>
<tr>
<th>ASPA-07</th>
<th>ASPA-08</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alexander Azimov</td>
<td>Ben Maddison</td>
</tr>
<tr>
<td>Randy Bush</td>
<td>Claudio Jeker</td>
</tr>
<tr>
<td>Ties de Kock</td>
<td>Tim Bruijnzeels</td>
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<tr>
<td>Russ Housley</td>
<td>Job Snijders*</td>
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</tbody>
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Intercop
Invalid Indexes

Invalid Index is as a minimal I for which (AS(I), AS(I+1), AFI) returns Invalid. If I index doesn't exist, we put the length of AS_PATH in its value.

Reverse Invalid Index is Invalid Index defined for reverse AS_PATH.
Route Leak Detection at Peer, Provider, IX

\[ \text{len}(AB) = \text{Invalid Index} \]

Leak detection: Invalid Index < \text{len}(AS\_PATH)
Route Leak Detection at RS, RS-Client

• If a non-transparent IX – register the RS AS in ASPA;
• RS uses Provider/Peer procedure;
• RS-client uses Provider/Peer procedure too!
Route Leak Detection at Customer

Leak detection: Invalid Index + Reverse Invalid Index < len(AS_PATH)
The Unknown Path

The path that MAY have been leaked
Unknown Indexes

**Unknown Index** is a minimal I for which (AS(I), AS(I+1), AFI) returns Unknown. If I is greater than Invalid Index or I doesn't exist we equate its value to the value of Invalid Index.

**Reverse Unknown Index** is Invalid Index defined for reverse AS_PATH.
Unknown Detection at Peer, Provider, IX

len(AB) = Unknown Index

Unknown detection: Unknown Index < len(AS_PATH)
Unknown Detection at Customer

len(AB) = Unknown Index
len(DE) = Reverse Unknown Index

Unknown detection: Unknown Index + Reverse Unknown Index < len(AS_PATH)
All Together at Peer, Provider, IX

• Invalid Index < \text{len}(\text{AS\_PATH}) – Invalid;
• Unknown Index < \text{len}(\text{AS\_PATH}) – Unknown;
• Otherwise, Valid.
All Together at Customer

- Invalid Index + Reverse Invalid Index < len(AS_PATH) – Invalid;
- Unknown Index + Reverse Unknown Index < len(AS_PATH) – Unknown;
- Otherwise, Valid.
Considerations

• What is the fate of deprecate-as-set-confed-set?
• Should routes with AS_SET in the middle be marked as Invalid?
• Should routes with AS_SET in the beginning be marked as Invalid?
• Volunteers to read?
• Volunteers to code?

https://github.com/QratorLabs/ASPA/