

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

ASPA-07	ASPA-08
Alexander Azimov	Ben Maddison
Randy Bush	Claudio Jeker
Ties de Kock	Tim Bruijnzeels
Russ Housley	Job Snijders*



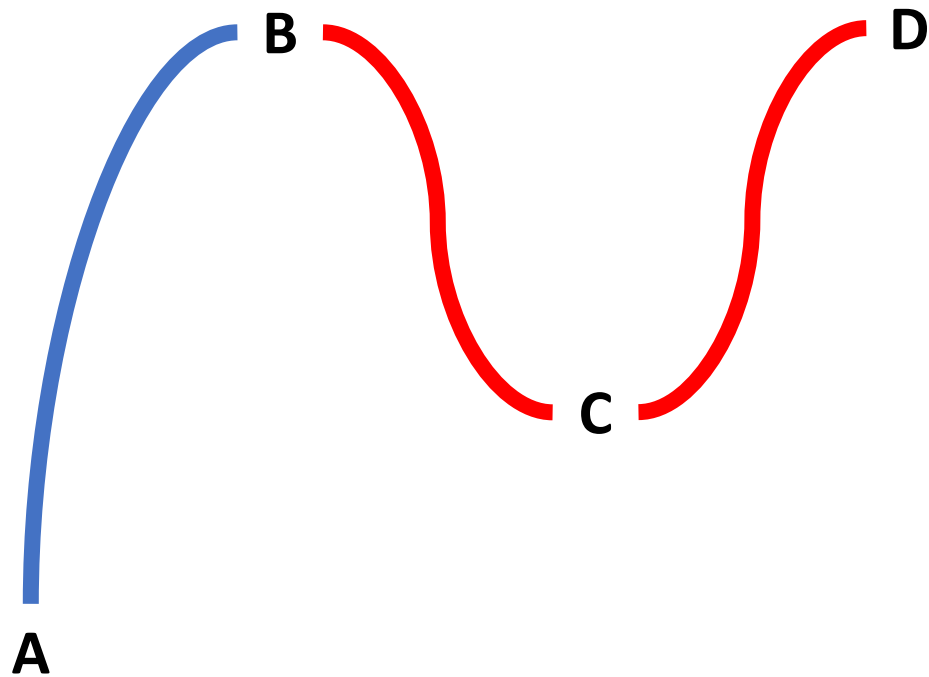
Intercop

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



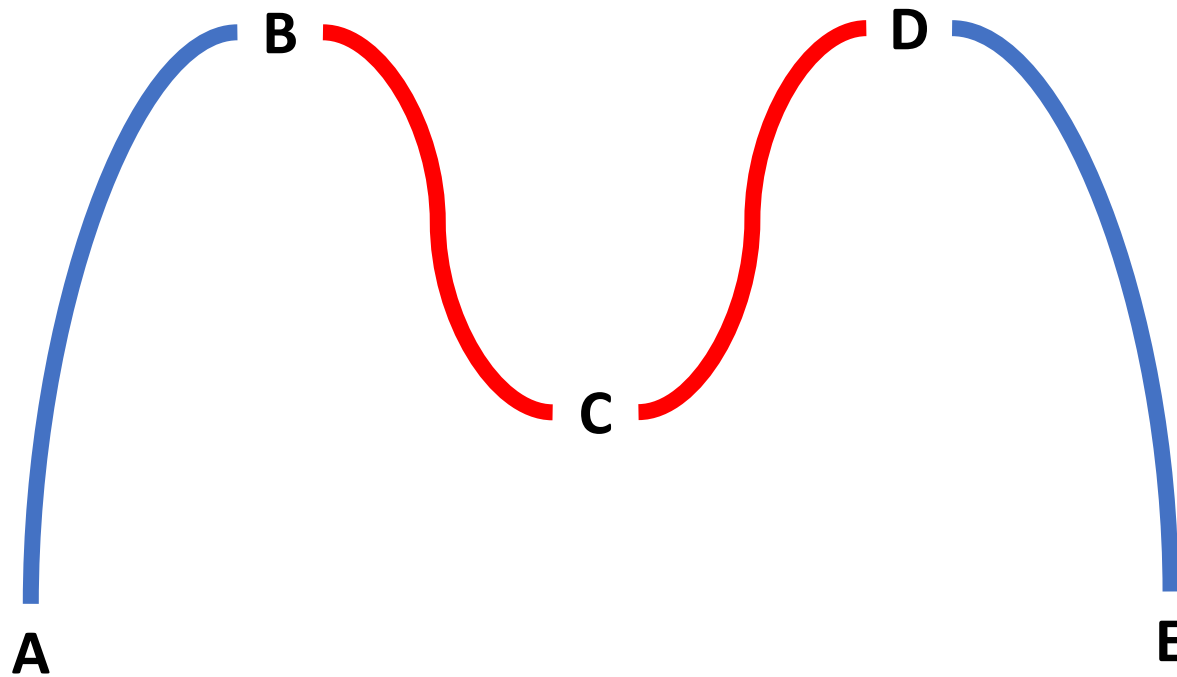
$\text{len}(AB) = \text{Invalid Index}$

Leak detection: $\text{Invalid Index} < \text{len}(\text{AS_PATH})$

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



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

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

The Unknown Path

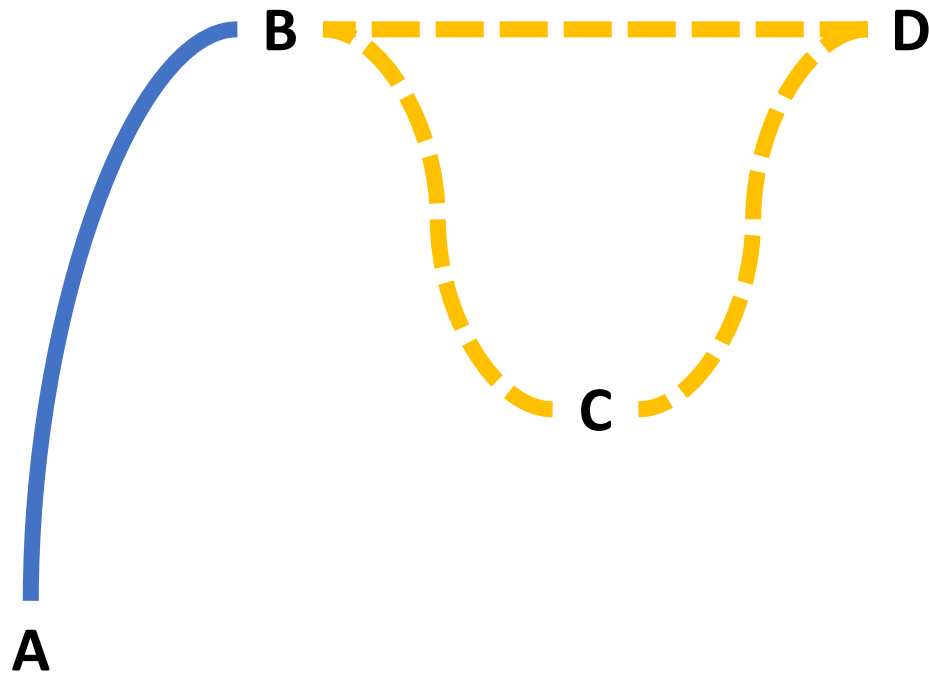
The path that MAY have been leaked

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`.

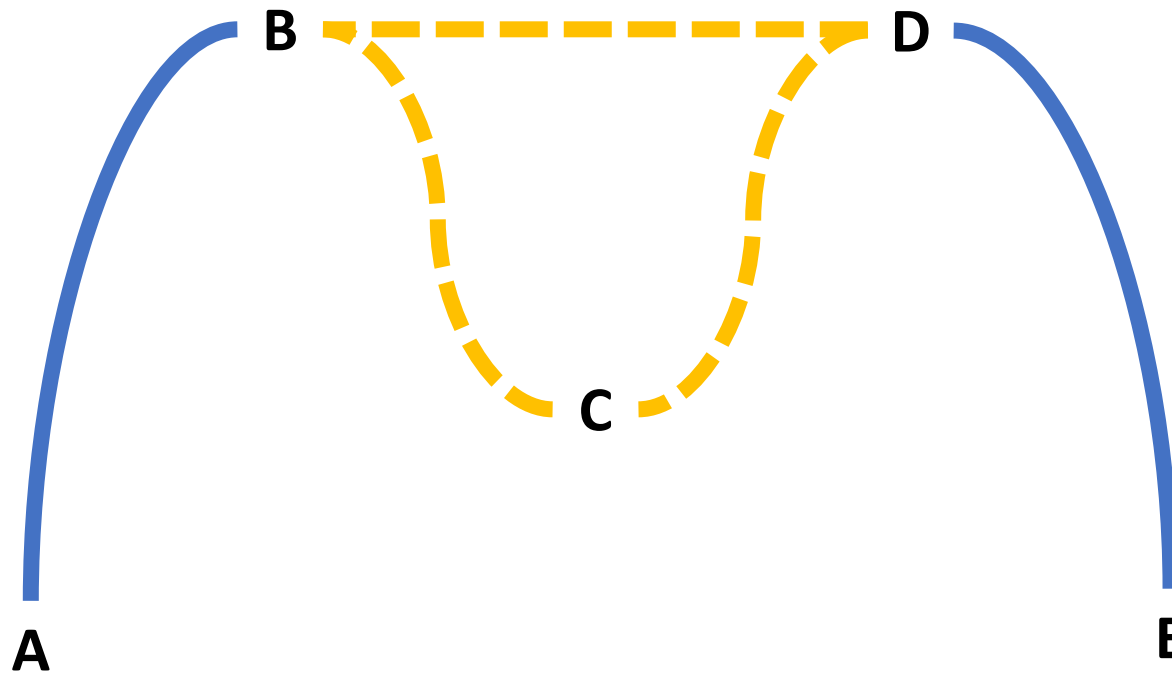
Unknown Detection at Peer, Provider, IX



$\text{len}(AB) = \text{Unknown Index}$

Unknown detection: $\text{Unknown Index} < \text{len}(\text{AS_PATH})$

Unknown Detection at Customer



$\text{len}(AB) = \text{Unknown Index}$
 $\text{len}(DE) = \text{Reverse Unknown Index}$

Unknown detection: $\text{Unknown Index} + \text{Reverse Unknown Index} < \text{len}(\text{AS_PATH})$

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/>