And now… BGPSec

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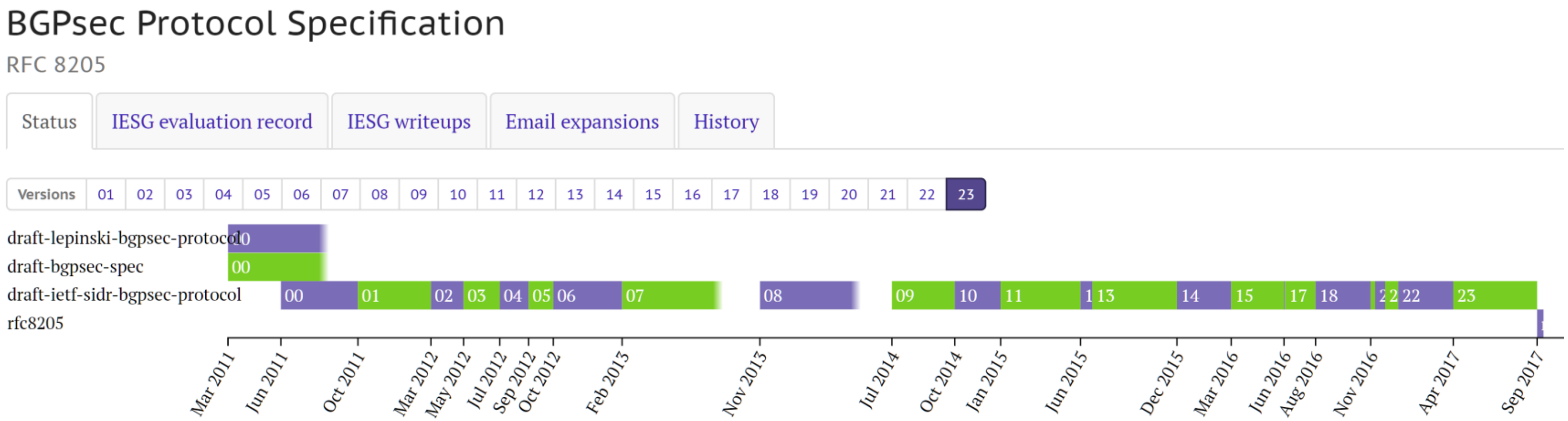
28.09.2017



BGPsec Protocol Specification

RFC 8205

RFC 8205: BGPsec Protocol Specification

RFC 8206: BGPsec Considerations for Autonomous System (AS) Migration

RFC 8207: BGPsec Operational Considerations

RFC 8208: BGPsec Algorithms, Key Formats, and Signature Formats

RFC 8209: A Profile for BGPsec Router Certificates, Certificate
Revocation Lists, and Certification Requests

RFC 8210: The Resource Public Key Infrastructure (RPKI) to Router

RFC 8211: Adverse Actions by a Certification Authority (CA) or
Repository Manager in the Resource Public Key
Infrastructure (RPKI)

Origin Validation

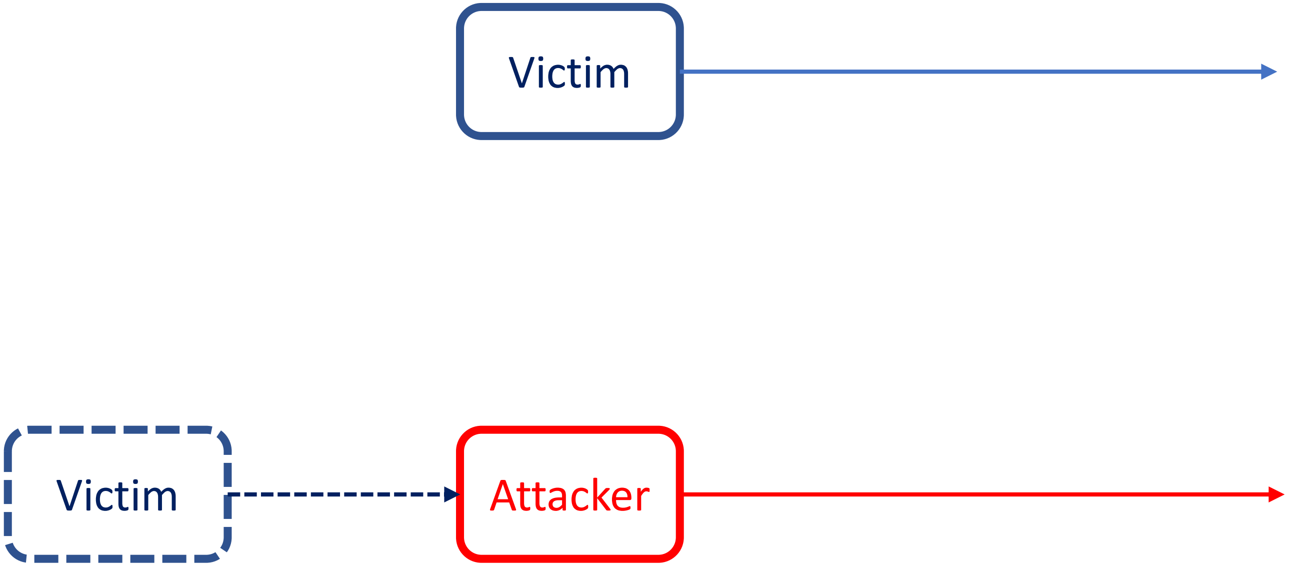
Route Objects:

- Not in all RIRs;
- AS-SET can’t be signed;
- Vulnerable to AS Path poisoning;

RPKI:

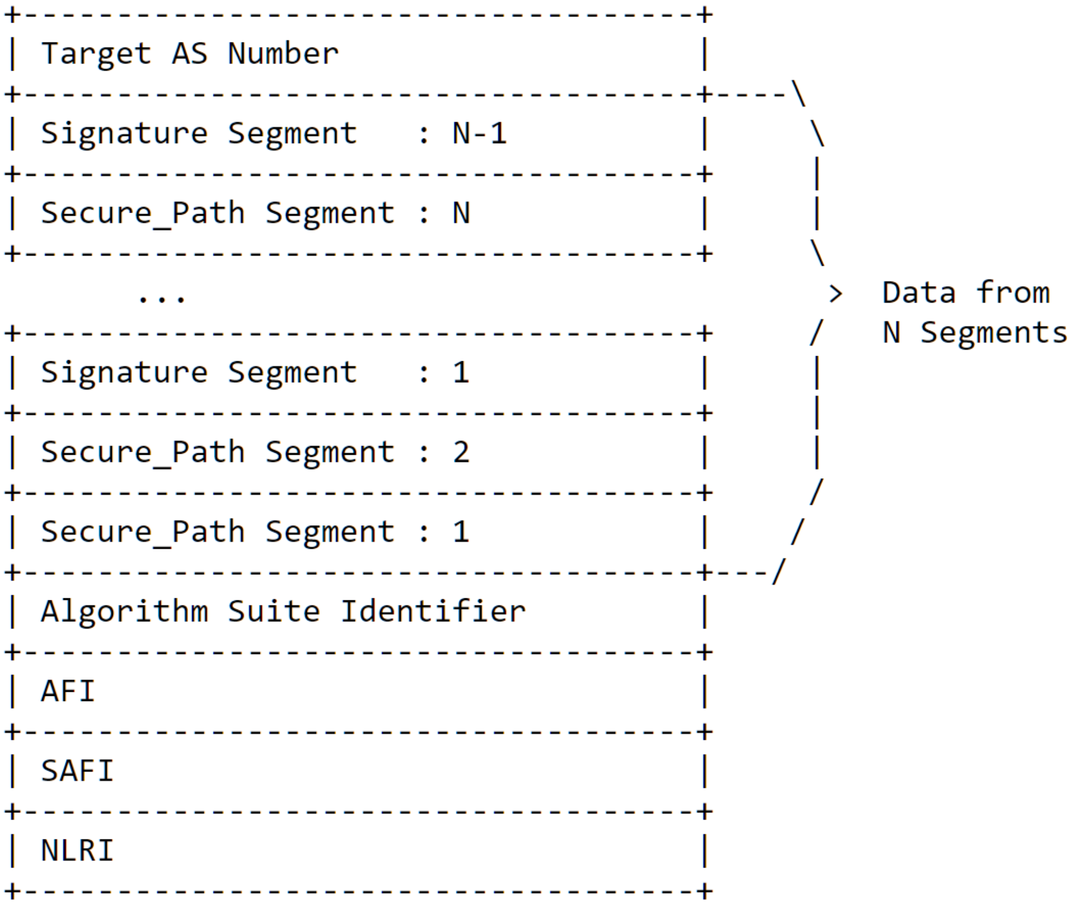
- Vulnerable to replay attacks.

AS Path Poisoning



Attacker prepends its path with victim's AS and… bypass any filters

BGPSec



```
+------------------------------------+
| Target AS Number                   |
+------------------------------------+----\
| Signature Segment   : N-1          |     \
+------------------------------------+     |
| Secure_Path Segment : N            |     |
+------------------------------------+     \
       ...                                  >  Data from
+------------------------------------+     /   N Segments
| Signature Segment   : 1            |     |
+------------------------------------+     |
| Secure_Path Segment : 2            |     |
+------------------------------------+     /
| Secure_Path Segment : 1            |    /
+------------------------------------+---/
| Algorithm Suite Identifier         |
+------------------------------------+
| AFI                                |
+------------------------------------+
| SAFI                               |
+------------------------------------+
| NLRI                               |
+------------------------------------+
```

Every segment + Target AS are signed, not AS Path Poisoning!