IPsec in BGP model (draft-ietf-idr-bgp-model-14)

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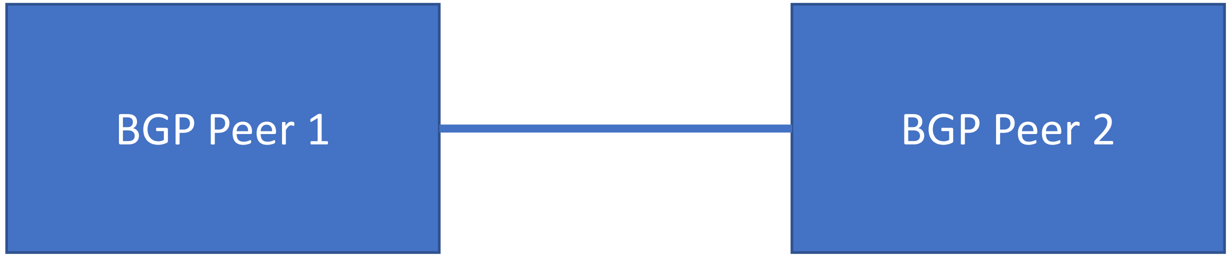
BGP Peers



BGP Peer 1

BGP Peer 2

Secure Link with
IP sec

BGP Model Use – in peer group structure

```
container secure-session { when "../secure-session-enable = 'true’”;
description
               "Container for describing how a particular BGP session
                is to be secured.";

               choice option {
                 case ao {
                 }
                 case md5 {
                 }
                 case ipsec {
                   leaf sa {
                     type string;
                     description
                       "Security Association (SA) name.";
                      }
                      description
                        "Currently, the IPsec/IKE YANG model has no
                         grouping defined that this model can use. When
                         such a grouping is defined, this model can import
                         the grouping to add the key parameters
                         needed to kick of IKE.";
                  }
                 description
                   "Choice of authentication options.";
               }
             }
```

Uses tcp:ao +
Adds ao-keychain

Uses tcp:md5
Adds ao-keychain

BGP Requirements

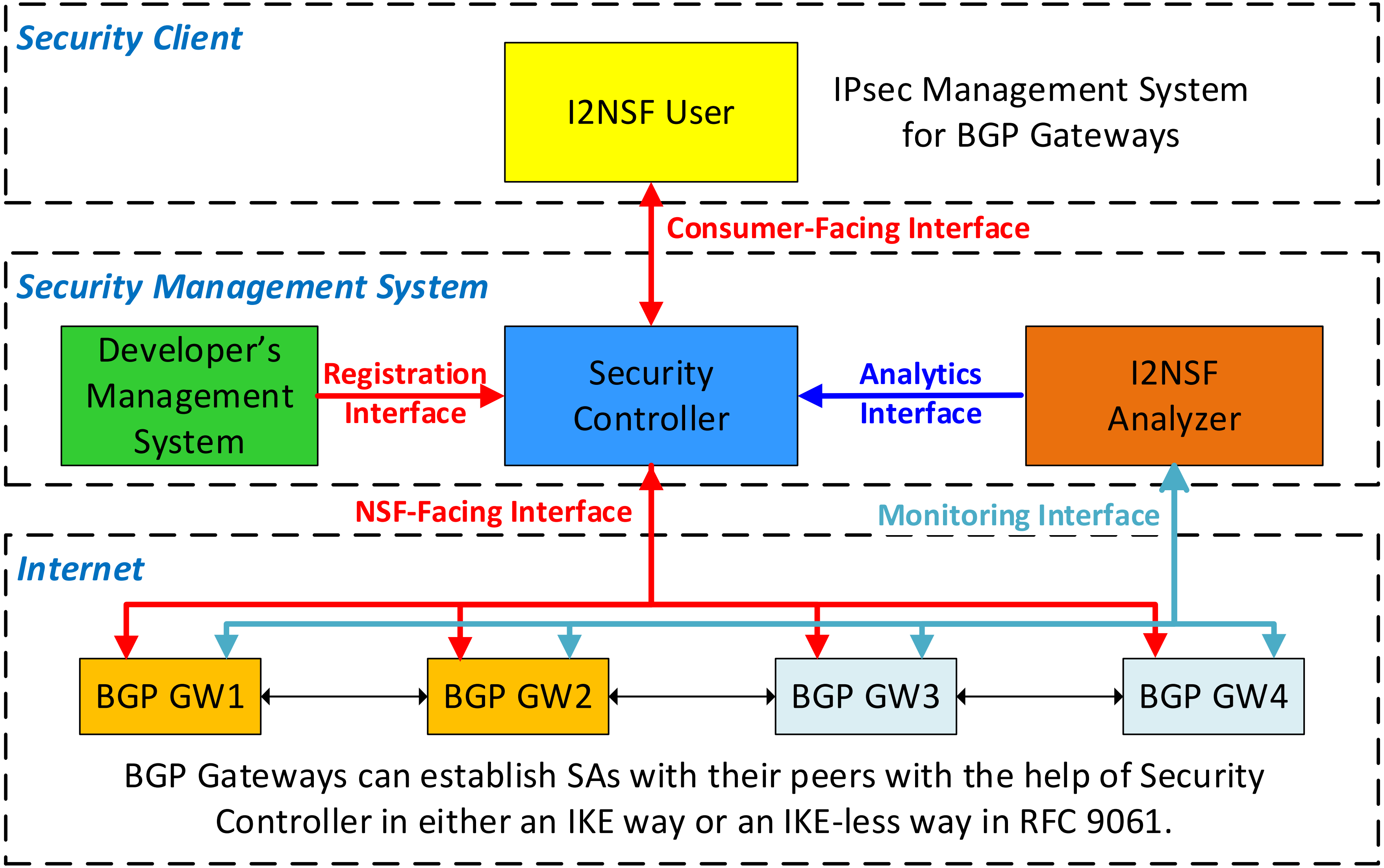
- Configuration – with rotation of keys
- Operational state

Motivation to Interface to IPsec for BGP over IPsec

- The scenarios are between two BGP routers as follows:
  - The type of IPsec connections between BGP routers can be:
    - within a trusted cloud (same administrative domain, same trust cloud),
    - across a physically secure private link,
    - across the open Internet (where attacks happen).

- There needs to have an Interface to IPsec Management for BGP Routers.
  - This interface can facilitate the IPsec Session Management between BPG Peers.
  - I2NSF is a good candidate to provide such an interface to BGP.

I2NSF Interface to IPsec for BGP over IPsec (1/2)



BGP Gateways can establish SAs with their peers with the help of Security Controller in either an IKE way or an IKE-less way in RFC 9061.

RFC 9061: A YANG Data Model for IPsec Flow Protection Based on Software-Defined Networking (SDN)

I2NSF Interface to IPsec for BGP over IPsec (2/2)

- RFC 9061 can be used for the IPsec interface for BGP over IPsec.
  - RFC 9061: A YANG Data Model for IPsec Flow Protection Based on Software-Defined Networking (SDN)
    - https://datatracker.ietf.org/doc/html/rfc9061

- IPsec Management for BGP with RFC 9061
  - BGP routers can be regarded as NSFs.
  - We can run either IKE or IKE-less approach.
  - With IPsec sessions between BGP routers, BGP messages can be protected, such as Path Attributes (e.g., AS_PATH and NEXT_HOP).

Open Discussion

- Do we need to extend RFC 9061 for the IPsec interface for BGP over IPsec?

- What I2NSF YANG data models can be made for this extension for IPsec in BGP model?

- Please suggest any ideas and opinions.

Thanks for any pointers