Secure Routing

draft-chen-secure-routing-requirements-00

draft-chen-atomized-security-functions-00

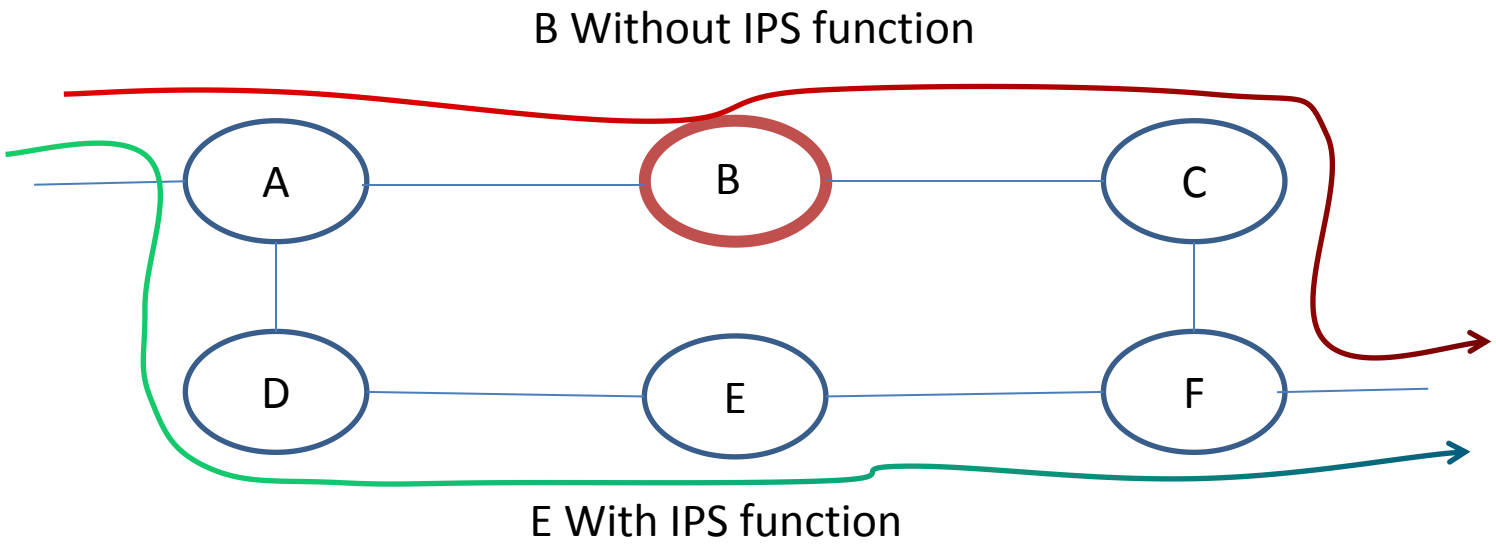
draft-chen-bgp-ls-security-capability-00

China Mobile

11/07/2022

What does secure routing do?

- Provide security services for user link transmission



<Src A, Dst F> traffic flow with IPS security requirements should avoid Node B.

Why secure routing is required?

- To network operators:

1. provide users with differentiated security capabilities/services.
2. Network defense, reduce malicious users' attacks on the network.

- To users: select the network path according to the business security requirements.

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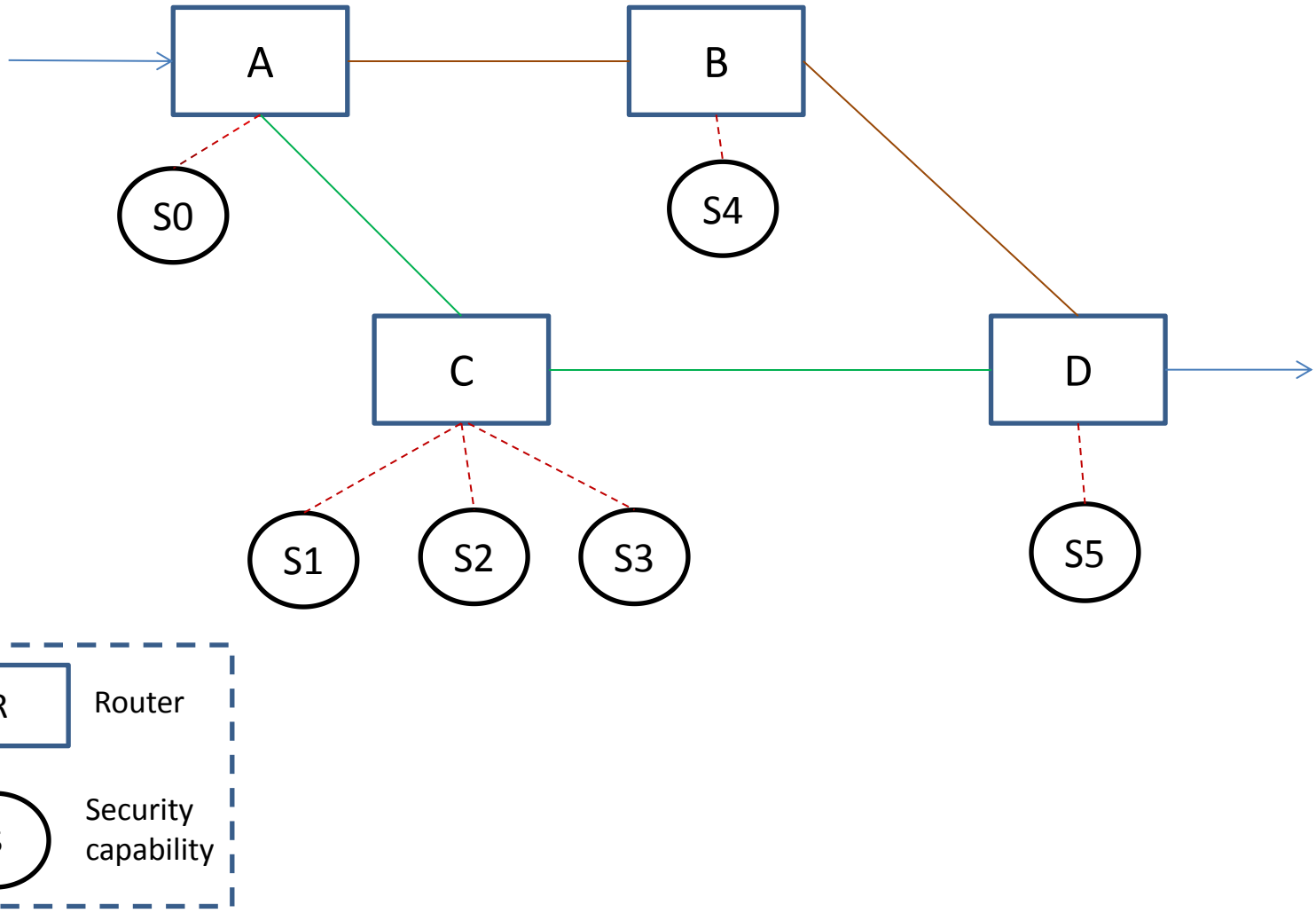
Why can't the existing technology do Secure Routing

- The management and use of existing security devices are separated from the IP network；
- Network routing strategy is independent of security;

Secure routing Model



What security capabilities are provided

- Anti-DDoS
- IPS
- IDS
- ...

According to the IPDRR model to classify the capabilities
of existing security products into 23 security capability categories.

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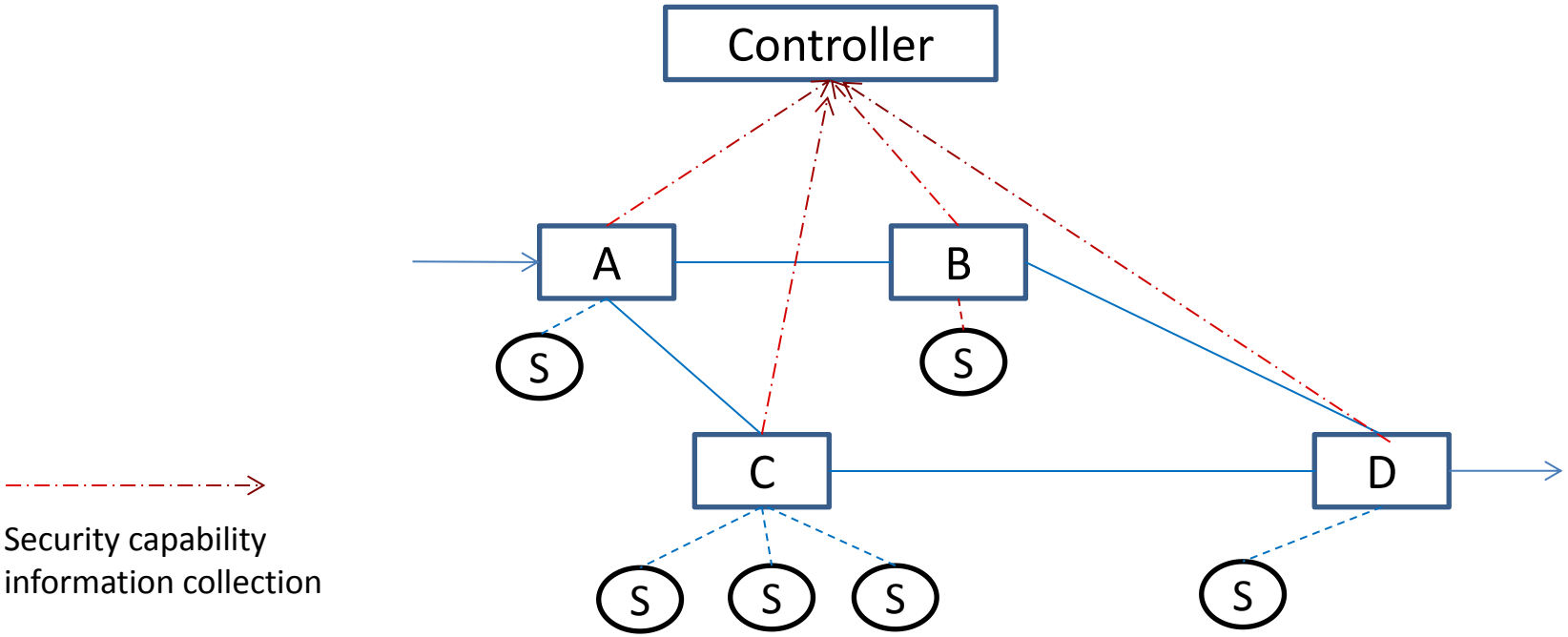
What to do for Secure Routing

- Get the node's security capability
- Form routing path according to user security requirements
- Issue the routing path, which is implemented through routing programming



How to get node's security capabilities

- Extended BGP-LS(RFC7752) protocol to carry the security capabilities of the node.

1. Carrying the security capability of the local node through the BGP-LS Node

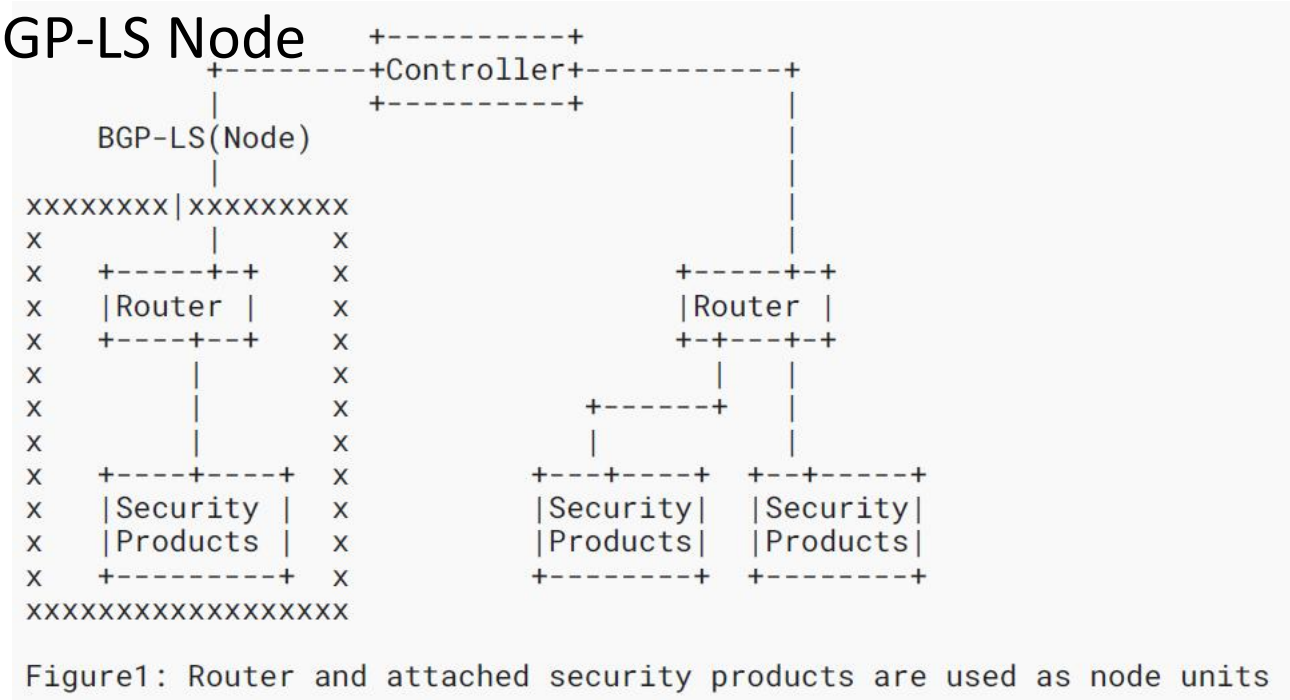


Figure1: Router and attached security products are used as node units

2. Carrying the security capability of the remote node through the BGP-LS Link

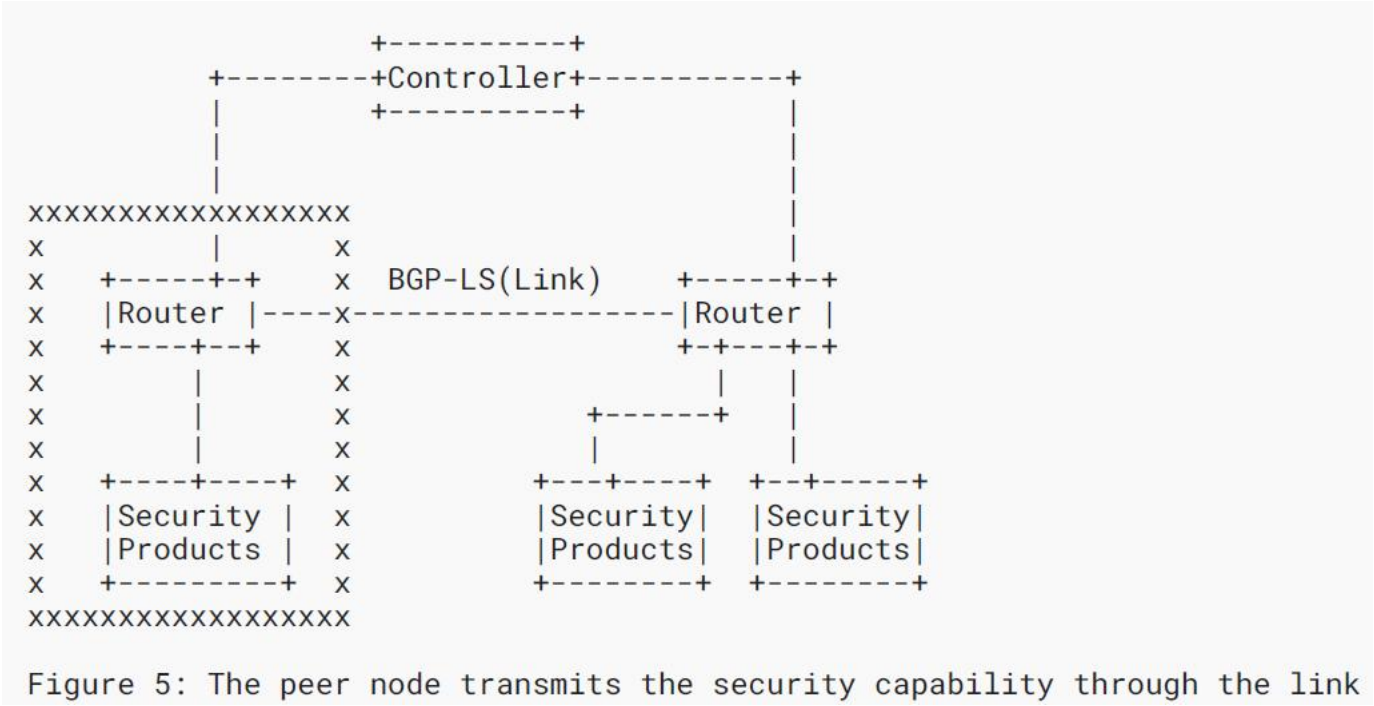


Figure 5: The peer node transmits the security capability through the link

3. Carrying the security capability of the AS through the BGP-LS Prefix

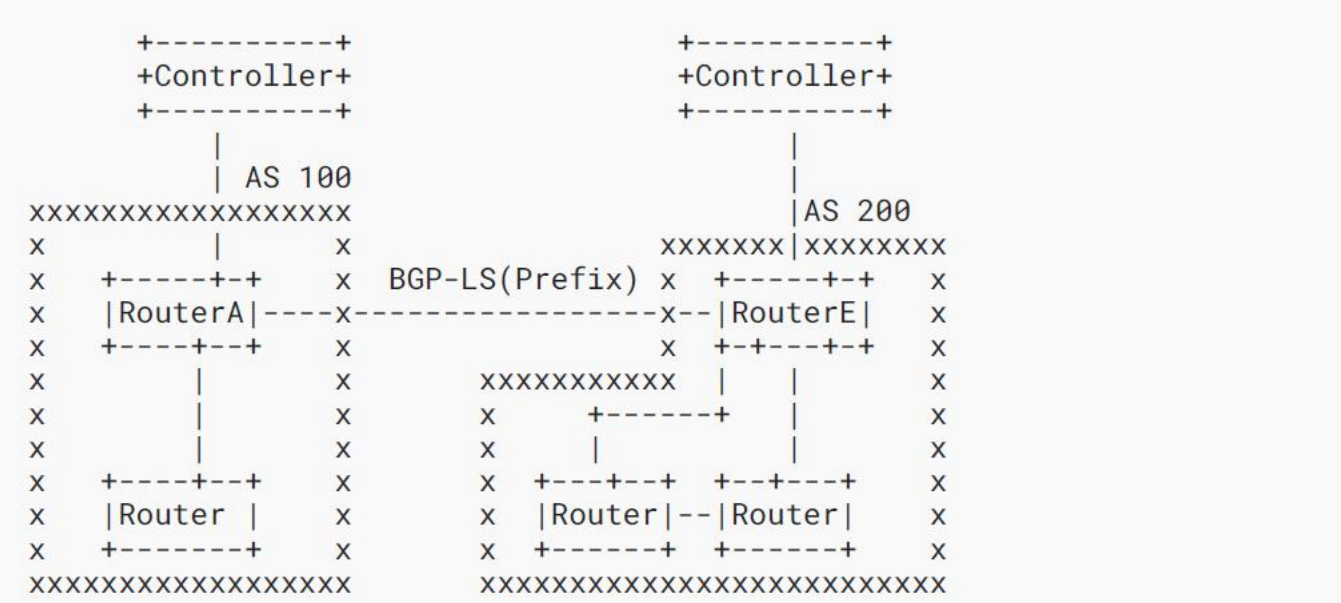


Figure 10: Security capability is transferred between ASs through Prefix

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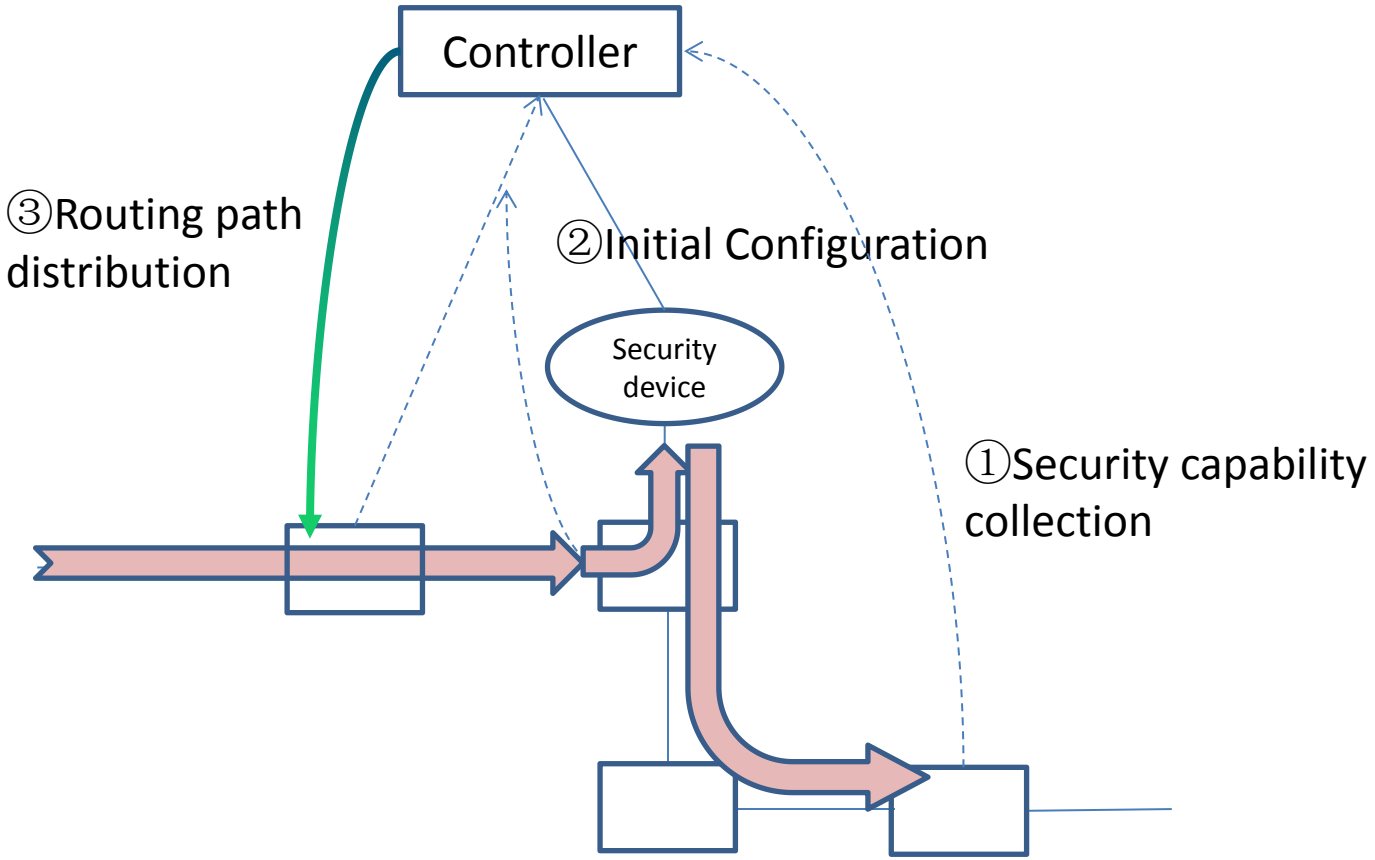
Interfaces


Controller
③Routing path distribution
②Initial Configuration
Security device
①Security capability collection
Security capability collection interface
Traffic flow

Next To Do

- This topic needs more discussion,
- No suitable WG in the Security Area?
- Apply for a special email list to discuss? Such as how to use these security capabilities except form secure routing path?
- How to timely and efficient schedule the use of security functions?