DDoS mitigation offload use-case and YANG module expansion in signal channel

draft-h-dots-mitigation-offload-expansion-00

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Summary

- We wrote an I-D about DDoS mitigation offload use-case and signal channel expansion based on our report at IETF102.

- We extended YANG module of signal channel so that DOTS can send attacker information (top talker).

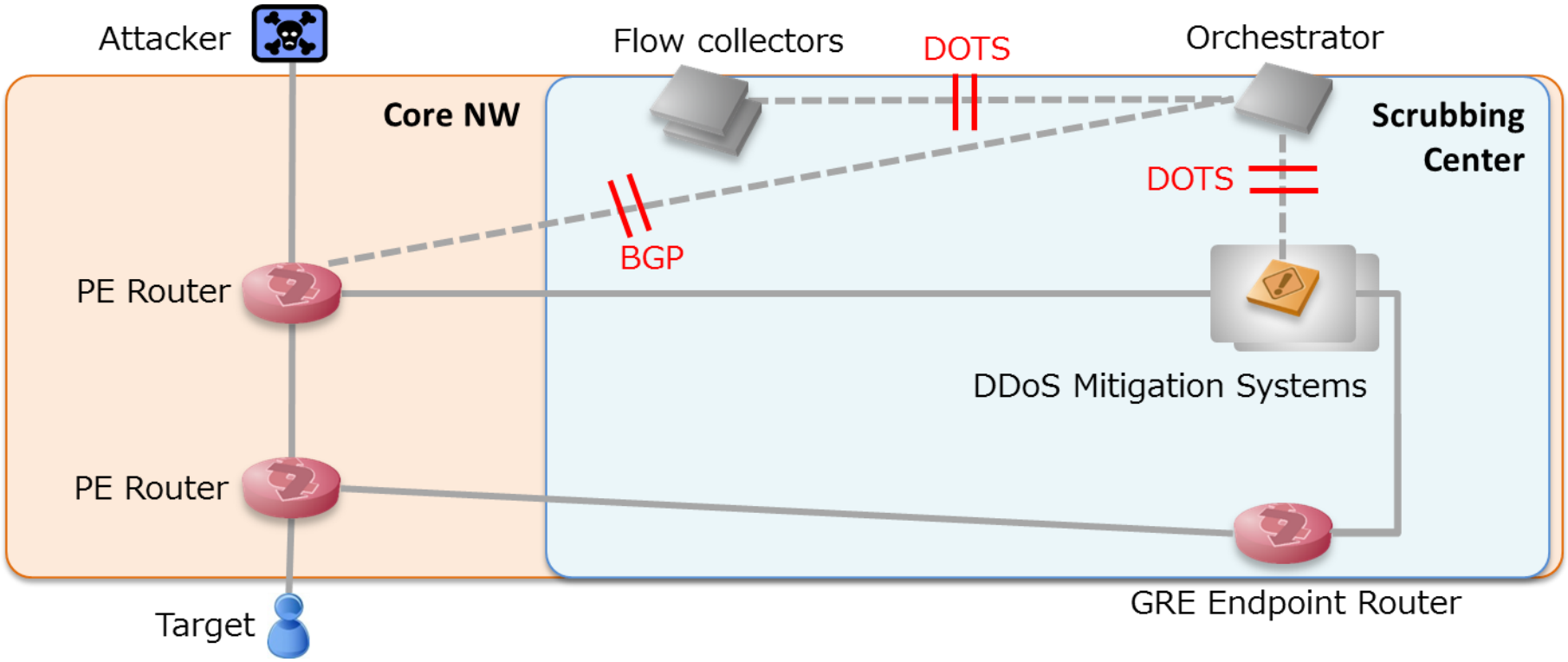
Our report at IETF102

Features

- Intra-domain DDoS Orchestration
- Using go-dots

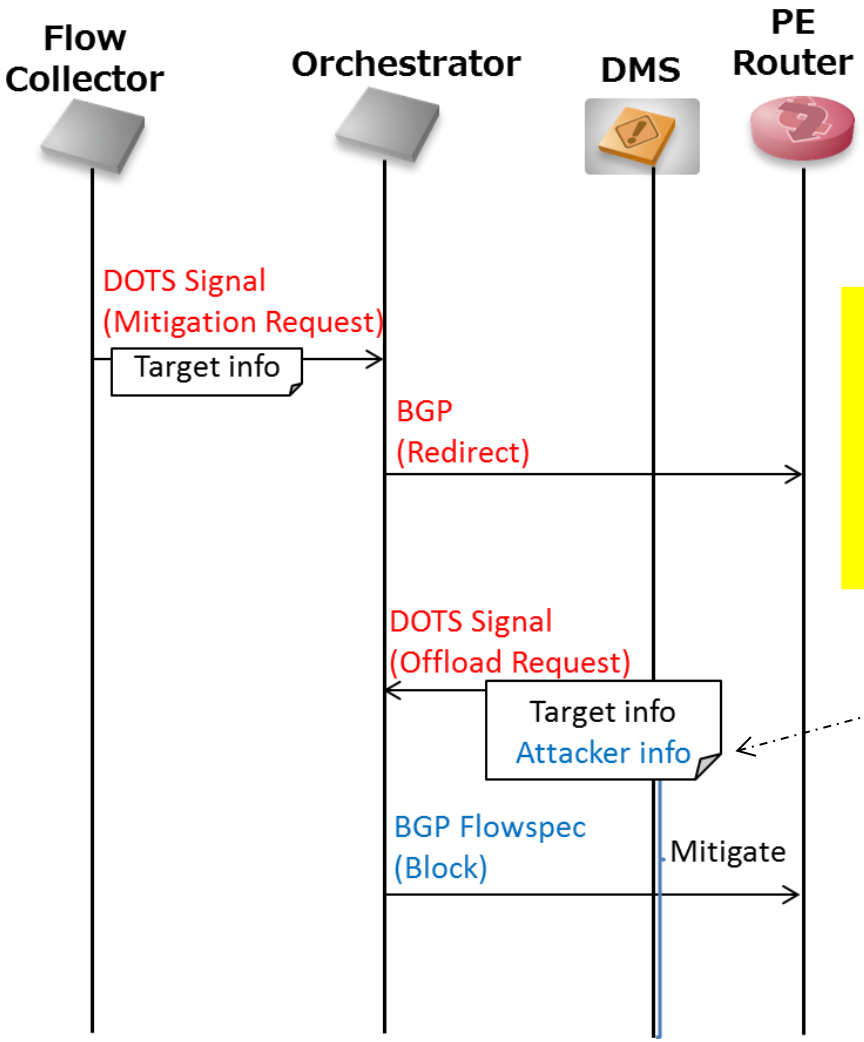
Action

- Detect DDoS at the Flow collectors
- Redirect attack traffic to DMS
- Detect DDoS at DMS
- RTBH at PE routers



slides-102-dots-poc-report-on-the-intra-domain-orchestration-use-case-01

Our report at IETF102



Requirement:
We want DOTS Clients to send attacker information (e.g. top talker) to block attack traffic at PE routers more correctly.

slides-102-dots-poc-report-on-the-intra-domain-orchestration-use-case-01

Feedback from WG

[**Feedback**]
- The signal channel should be frozen at a certain point.
- DOTS WG can do some extensions after the core things are done.

[**Our Impression**]
Signal-channel‘s WG state : “Submitted to IESG for Publication”.
It is good time to discuss some extension of signal channel in WG.

[**Feedback**]
- Please write a draft.

[**Our work**]
We’ve written a new I-D about the extension.

Summary of the draft

Use-case: Component diagram

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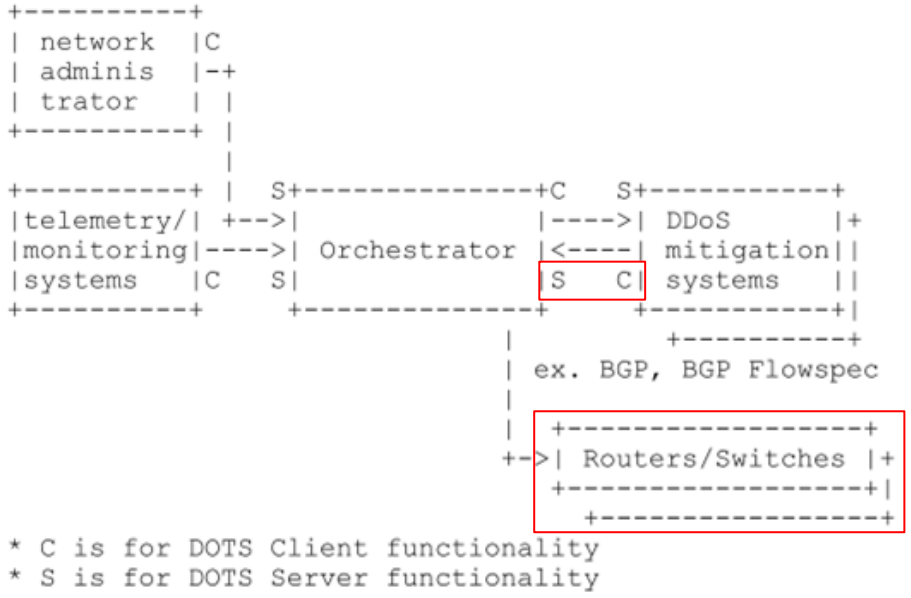

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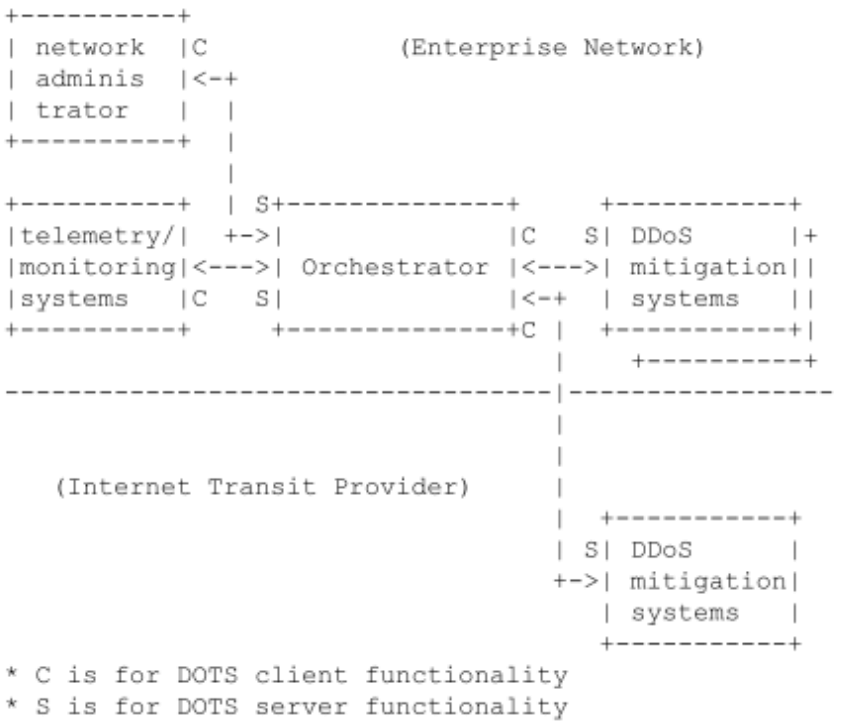

The difference

- DMS have a client function
- Routers/Switches collaborate

Summary of the draft

Usecase: Sequence diagram

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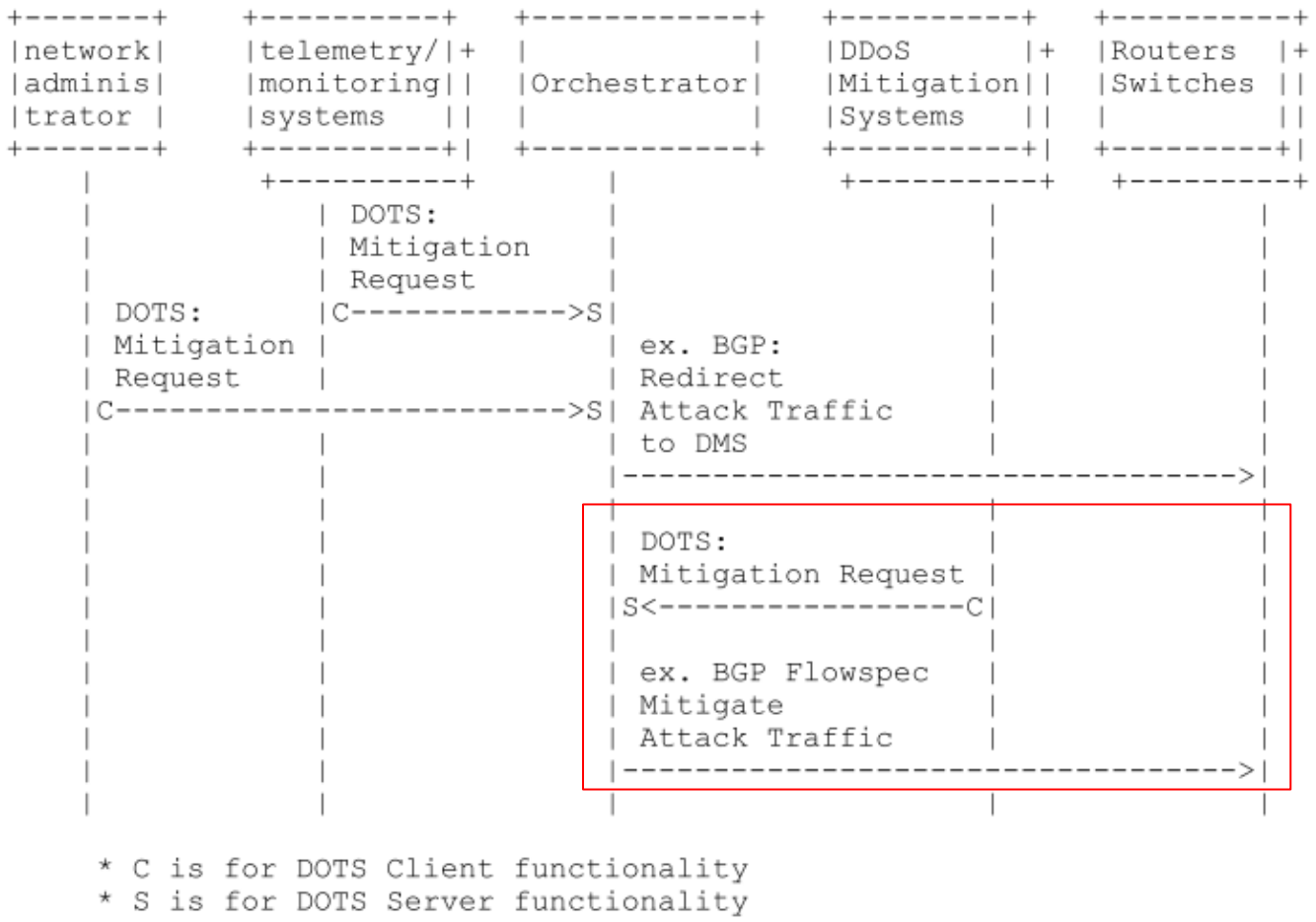

DDoS offload action

(It offloads mitigation from DMS to Routers/Switches.)

Summary of the draft

Extension of Signal Channel (Structure)

draft-ietf-dots-signal-channel-25

```
module: ietf-dots-signal-channel
 +--rw dots-signal
    +--rw (message-type)?
       +--:(mitigation-scope)
       |  +--rw scope* [cuid mid]
       |     +--rw cdid?                    string
       |     +--rw cuid                     string
       |     +--rw mid                      uint32
       |     +--rw target-prefix*           inet:ip-prefix
       |     +--rw target-port-range* [lower-port upper-port]
       |     |  +--rw lower-port            inet:port-number
       |     |  +--rw upper-port            inet:port-number
       |     +--rw target-protocol*         uint8
       |     +--rw target-fqdn*             inet:domain-name
       |     +--rw target-uri*              inet:uri
       |     +--rw alias-name*              string
       |     +--rw lifetime?                int32
       |     +--rw trigger-mitigation?      boolean
       :
```

augment

draft-h-dots-mitigation-offload-expansion-00

```
module ietf-dots-signal-channel-mitigation-offload-expansion {
     yang-version 1.1;

     namespace "urn:ietf:params:xml:ns:yang:
                ietf-dots-signal-channel:mitigation-offload-expansion";

     :

    /*
     * Groupings
     */
     grouping attacker {
       description
         "Specifies the attackers of the mitigation request.";
       leaf-list attacker-top-talker-prefix {
         type inet:ip-prefix;
         description
           "IPv4/IPv6 prefix identifying the top-talker in attackers.";
       }
     }

    /*
     * Main Container for DOTS Signal Channel Expansion
     */
     augment "/signal:dots-signal/signal:scope/"{
       uses attacker;
     }
   }
```

use

" The augment statement allows a module or submodule to add to a schema tree defined in an external module, or in the current module and its submodules, and to add to the nodes from a grouping in a uses statement. " [RFC7950 The YANG 1.1 Data Modeling Language]

Summary of the draft

Extension of Signal Channel (Content)

draft-h-dots-mitigation-offload-expansion-00

```
module ietf-dots-signal-channel-mitigation-offload-expansion {
     yang-version 1.1;

     namespace "urn:ietf:params:xml:ns:yang:
                ietf-dots-signal-channel:mitigation-offload-expansion";

      ⋮

    /*
     * Groupings
     */
     grouping attacker {
       description
         "Specifies the attackers of the mitigation request.";
       leaf-list attacker-top-talker-prefix {
         type inet:ip-prefix;
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       }
     }

    /*
     * Main Container for DOTS Signal Channel Expansion
     */
     augment "/signal:dots-signal/signal:scope/"{
       uses attacker;
     }
   }
```
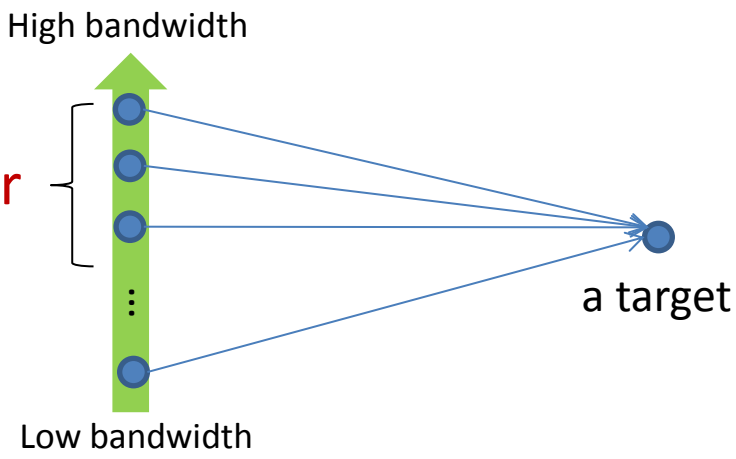

Top *N* talker



DDoS attackers

(sorted in terms of bandwidth)