

DOTS WG

IETF97

Draft-teague-dots-protocol-01

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Motivation

- Protocol informed by our experience and concerns
- Low barrier to entry
- Emphasis on signal survivability during DDoS
- Emphasis on extensibility and compatibility
- Transport agnostic
- Expression of "Minimal Viable Capability"

Minimal Viable Capability

- Just the facts
 - “Resource X is being attacked – I need help”
- Additional needs around telemetry, flow filters etc. may be handled as extensions

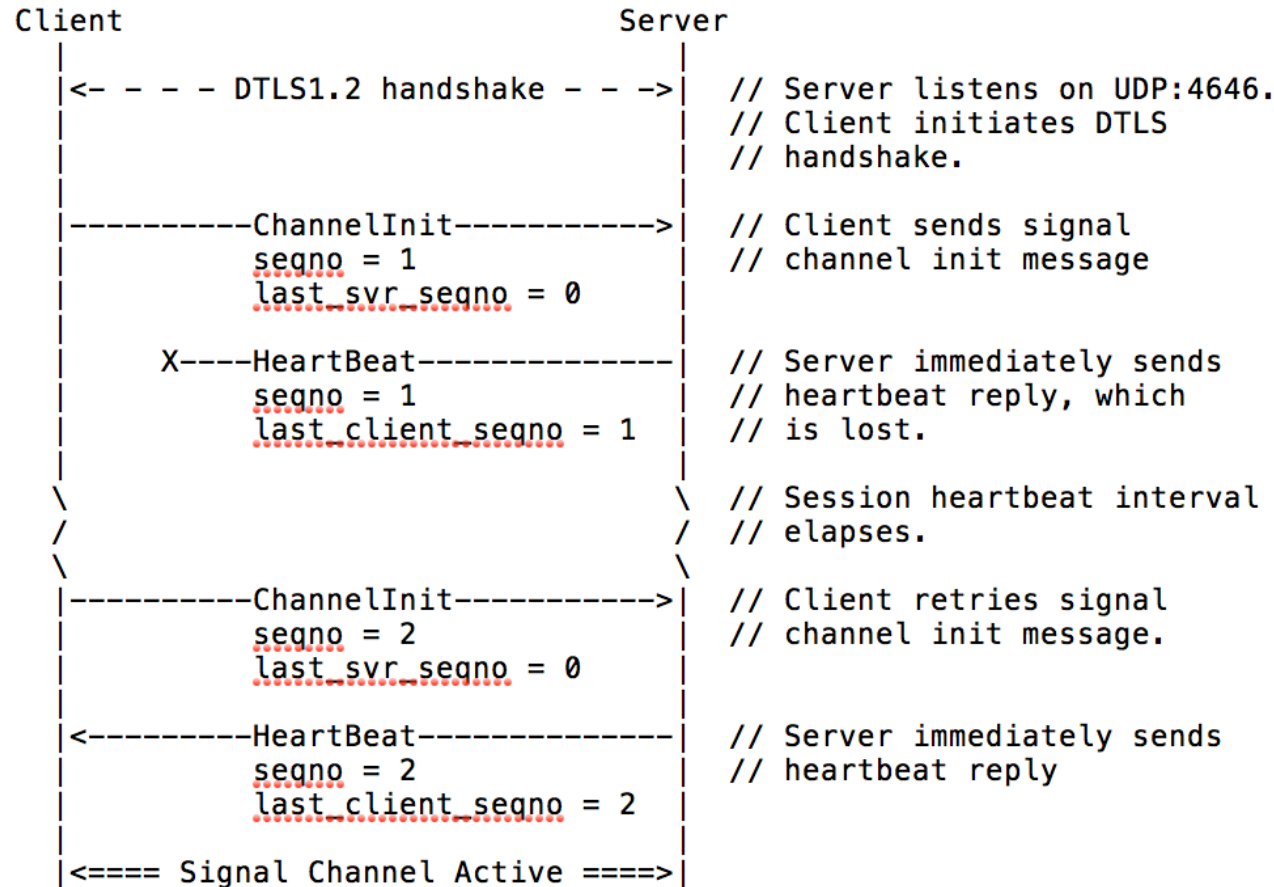
Data Channel – REST in Peace

- Let REST be REST
- Simple tooling and rapid deployment
- Bulk transfer and (re)provisioning
- Common across solutions

Signal - ProtoBuf

- Protocol Buffers (<https://developers.google.com/protocol-buffers/>)
- Decouples schema from data
- Efficient – compact wire format and reduced repetition of content
- Allows for loosely coupled bi-directional messaging
- Extensible
- Backwards compatible
- BUT!!!!...

Signal – Initialisation (example udp+dtls)



Signal - Heartbeat

```
1 message DOTSClientMessage {  
2   1 (seqno) = %;  
3   2 (last_svr_seqno) = %;  
4 }
```



```
1 message DOTSServerMessage {  
2   1 (seqno) = %;  
3   2 (last_cli_seqno) = %;  
4 }
```

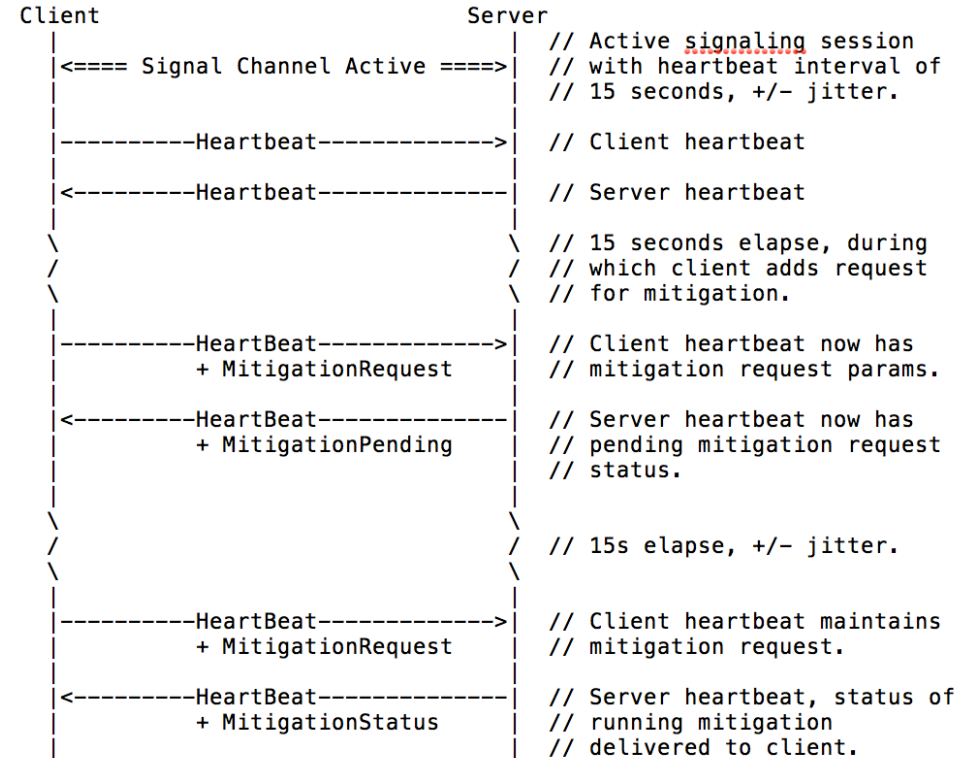
Client Signal - Just the facts!

```
1 {
2   "eventid": 1234,
3   "requested": 1,
4   "scope": "protected_net",
5   "lifetime": 1800,
6   "efficacy": 0.9,
7   "extension": [
8     {
9       "profile": "gre",
10    },
11    {
12      "vendor": "acme",
13    },
14  ]
15 }
```

```
1 message DOTSMitigation {
2   // Opaque client-generated event identifier
3   string eventid = 1;
4
5   // Toggle mitigation for the above scope
6   bool requested = 2;
7
8   // Mitigation scope as described in I-D.ietf-dots-requirements
9   string scope = 3;
10
11  // Lifetime of the requested mitigation.
12  uint32 lifetime = 4;
13
14  // Mitigation efficacy score as a float value between 0 and 1
15  float efficacy = 5;
16
17  repeated google.protobuf.Any extensions;
18 }
19
```


Signal – Mitigation Request

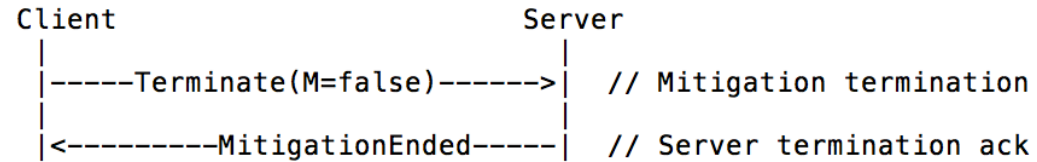
```
1 message DOTSClientMessage {
2   1 (seqno) = %;
3   2 (last_svr_seqno) = %;
4   3 (mitigations) = [
5     {
6       1 (eventid) = %;
7       2 (requested) = %;
8       3 (scope) = %;
9       4 (lifetime) = %;
10    }
11  ];
12 }
13
14 message DOTSServerMessage {
15   1 (seqno) = %;
16   2 (last_cli_seqno) = %;
17   4 (mitigations) = [
18     {
19       1 (eventid) = %;
20       2 (enabled) = true; // Mitigation request accepted
21     }
22  ]
23 }
```



Signal – Server Feedback

```
1 message DOTSServerMessage {
2     1 (seqno) = %;
3     2 (last_client_seqno) = %;
4     6 (mitigations) = [
5     {
6         1 (eventid) = %;
7         2 (enabled) = %;
8         3 (ttl) = %;
9         4 (bytes_dropped) = %;
10        5 (bps_dropped) = %;
11        6 (pkts_dropped) = %;
12        7 (pps_dropped) = %;
13        10 (filters_enabled) = true;
14    },
15 ];
16 }
```

Signal – Mitigation Withdrawal



```
1 message DOTSCliMessage {
2   1 (seqno) = %;
3   2 (last_svr_seqno) = %;
4   3 (mitigations) = [
5     {
6       1 (eventid) = %;
7       2 (requested) = false; // Terminate mitigation
8     }
9   ];
10 }
```

```
1 message DOTSServerMessage {
2   1 (seqno) = %;
3   2 (last_cli_seqno) = %;
4   6 (mitigations) = [
5     {
6       1 (eventid) = %;
7       2 (enabled) = false; // Mitigation terminated
8     }
9   ];
10 }
```

Thank You

<https://www.ietf.org/id/draft-teague-dots-protocol-01.txt>