DOTS
1st Interoperability Test

IETF 100 Hackathon
DOTS is now working!

• DDoS protection is one of the biggest issues of the Internet.

• DOTS (DDoS Open Threat Signaling) is:
  – Automation and Standardization of signaling for DDoS protection

• DOTS WG is aiming to make it standardized in this year
  – Now we have several individual implementations
    • go-dots (open-sourced project) from NTT
    • NCC’s private implementation
  – This 1st interoperability test at this hackathon is a giant step for it.
What happened in the Hackathon

• Drive 3 projects with 7 participants
  – include 3 remotely from Tokyo, London, Nanjing
• 3 Projects are:
  1. 1\textsuperscript{st} Interoperability test of 2 individual implementations
  2. Adding new features and extensions to the open-sourced implementation
  3. (Integration with a detection system of Mirai bot net)
# Result of the Interop Test

Purpose: Check interoperability of the messages on the signal channel

<table>
<thead>
<tr>
<th>Item #</th>
<th>Messages</th>
<th>CoAP Method</th>
<th>Interop Testing (client -&gt; server)</th>
<th>Internal Testing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>go-dots -&gt; ncc</td>
<td>ncc -&gt; go-dots</td>
</tr>
<tr>
<td>1</td>
<td>Mitigation Request</td>
<td>PUT</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>2</td>
<td>Mitigation Request Withdraw</td>
<td>DELETE</td>
<td>✔</td>
<td>△</td>
</tr>
<tr>
<td>3</td>
<td>Mitigation Request Status</td>
<td>GET</td>
<td>✔</td>
<td>△</td>
</tr>
<tr>
<td>4</td>
<td>Mitigation Request Status All</td>
<td>GET</td>
<td>✔</td>
<td>△</td>
</tr>
<tr>
<td>5</td>
<td>Mitigation Status Notify</td>
<td>observe</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>6</td>
<td>Efficacy Update</td>
<td>PUT</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>7</td>
<td>Session Configuration</td>
<td>PUT</td>
<td>✔</td>
<td>△</td>
</tr>
<tr>
<td>8</td>
<td>Session Configuration Delete</td>
<td>DELETE</td>
<td>△</td>
<td>△</td>
</tr>
<tr>
<td>9</td>
<td>Session Configuration Retrieve</td>
<td>GET</td>
<td>✔</td>
<td>△</td>
</tr>
<tr>
<td>10</td>
<td>Heartbeat</td>
<td>COAP ping</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
What we proved in the Interop

- We can start and handle a mitigation from each client over DOTS signal-channel (CoAP over DTLS)
- Plus, NCC’s implementation can act as a DOTS relay (gateway), so we proved that relayed mitigation requests can work over multiple organizations.
Feedback to DOTS WG

• Implementation Experiences
  – ex. most of the code modification was related to encode/decode of CoAP mapping
  – there were many implicit specifications we need to figure out and compromise
• Need more description of the content and code
• approx. 60% of the signal-channel spec has been proved to work
  – The rest will be done until the next IETF