A proactive and collaborative DDoS mitigation strategy for the Dutch critical infrastructure

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A Few DDoS Trends

- Volume at 1+ Tbps, likely going up (Dyn 1.2 Tbps, GitHub 1.3 Tbps)
- Many widely distributed sources (Mirai: 600K, all over the world)
- Bots spreading quickly (Mirai: 75-minute doubling time)
- Easier to launch through booters/stressers (Mirai)
- Combination of direct and reflection attacks (Mirai)

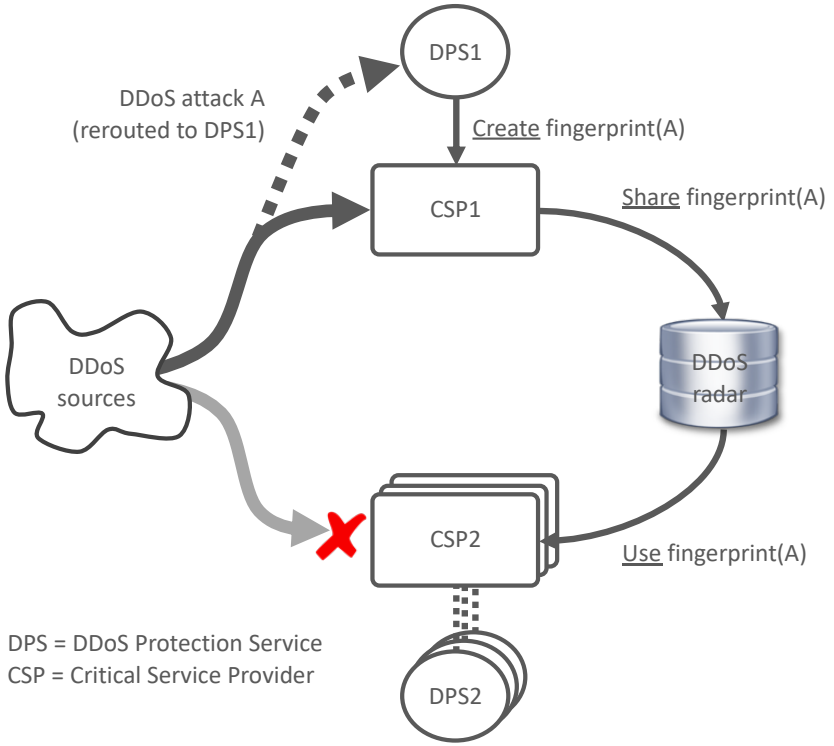
➔ At the same time, increased dependency on network services

Netherlands Critical Infrastructure

- Services whose “failure or disruption … would result in severe social disruption and poses a threat to national security” (NL gov’t)
- Providers protect their services through (3rd party) DDoS mitigation systems (e.g., scrubbing)
- Limited DDoS information sharing, focuses on person-to-person comms during attacks (reactive)
- Trigger to change: estimated 40 Gbps DDoS attacks in January 2018, resulting in various service outages

New: DDoS Information Sharing in NL

- Continuous and automatic sharing of “DDoS fingerprints” buys providers time (proactive)
- Extends DDoS protection services that critical service providers use and does not replace them
- Improves attribution, allowing for better prosecution and increased deterrent effects
- Open to all critical providers in the Netherlands (Internet, financial, energy, water, etc.)



DDoS Fingerprints

- Summary of DDoS traffic
  - Domain names used
  - Source IP addresses
  - Protocol
  - Packet length
- Created from traffic capture files like PCAPs
- Victim IP addresses not part of fingerprint
- Challenge: creation at high speed (10s of Gbps)

Status

- System part of a coalition of 25 players from industry (ISPs, xSPs, IXPs, banks, not-for-profit DPS) and gov't (ministries and agencies)

- Including various existing collaborative anti-DDoS initiatives, such as the Dutch Continuity Board (DCB), NoMoreDDoS, and Nawas

- Working groups:
  - Clearing house
  - Cross-industry information sharing
  - Outreach
  - Ground rules and incident response
  - Exercises

- Facilitated by Dutch National Cyber Security Center (NCSC-NL)

Next Steps

- Agree on and flesh out charter/manifesto
- Develop clearing house, using existing components
  - DDoS-DB of the University of Twente (ddosdb.org)
  - NaWas' DDoS pattern recognition system (ddos-patterns.net)
- Pilot system with several partners
  - Including development of a "cookbook" to run system elsewhere
  - Operational, legal, financial, and governance aspects
  - Part of the work taking place in an EU cybersecurity research project
- Envisioned growth paths
  - Netherlands → Europe → global
  - Extend to "non-critical" service providers

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