DNCP Use Case
in a distributed video content delivery network

Aloÿs Augustin - July 22nd 2015 - IETF 93 - Homenet

CDN Principles

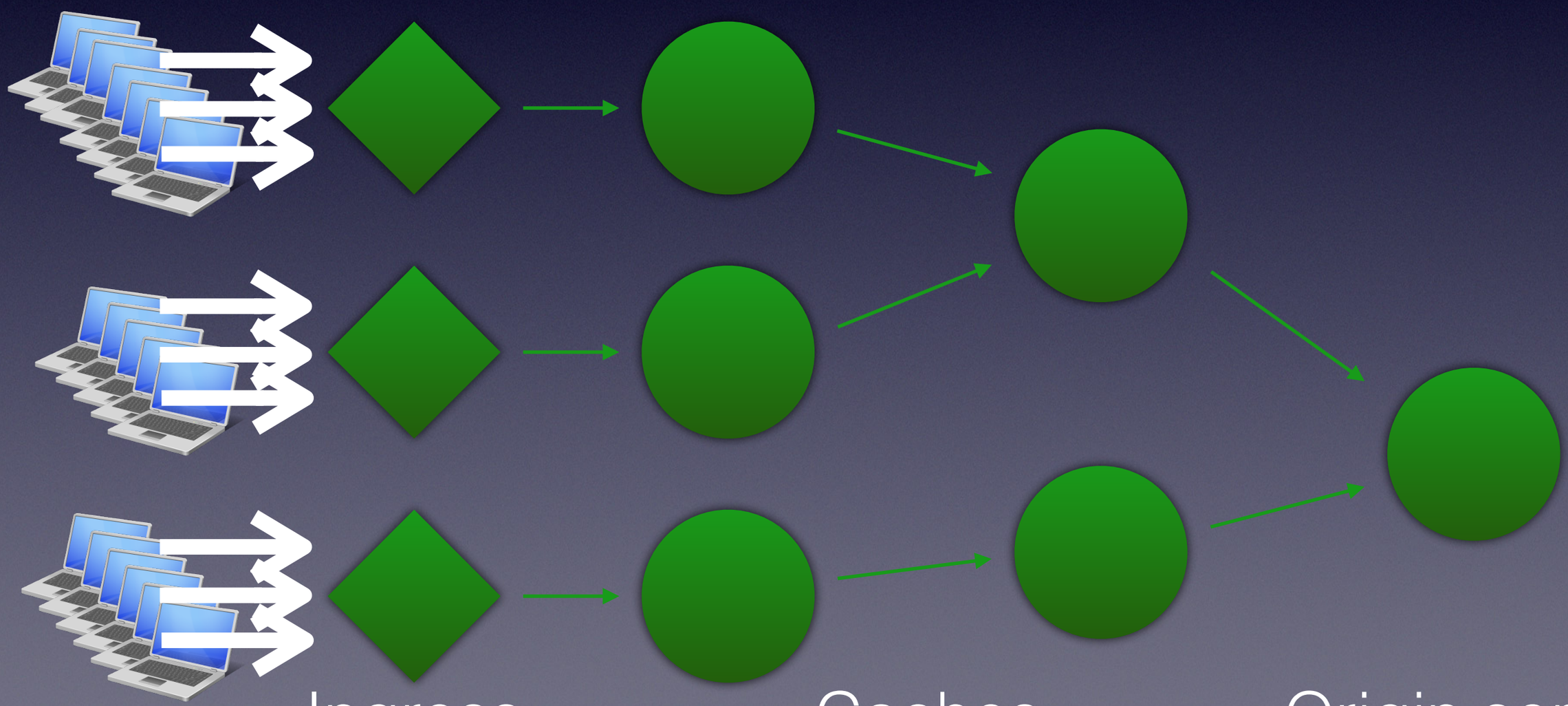
- 1 Video chunk = 1 IPv6 address

Example: 2001:bd8:a:b:1:0:1:234

Prefix (/64) | Video id | Seq nb

CDN Principles

- Segment routing between the caches



Issue

- Topology knowledge is needed by the ingress to insert “intelligent” SR Headers
- Automatic node commissioning / decommissioning?

Solution: DNCP!

- Simple profile adapted from homenet with 2 TLVs:
  - “Announce” TLV : server availability

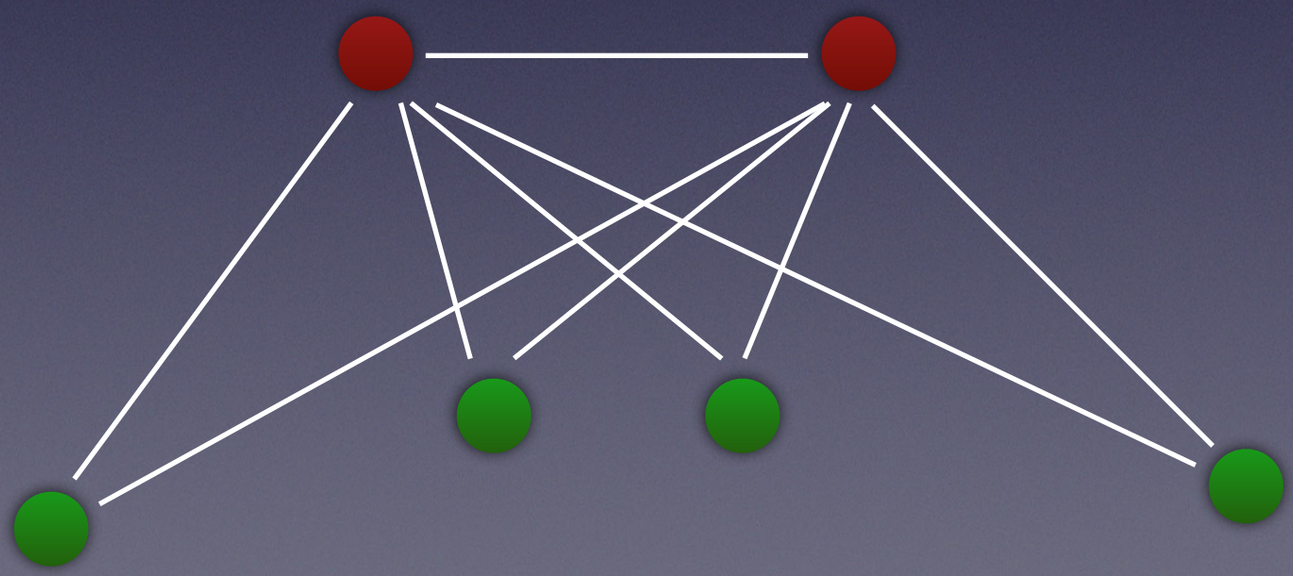
Node type (16 bits)	Node IPv6 (128 bits)

  - “Distance” TLV : distance between two nodes

Distance (32 bits)	Destination node ID (32 bits)

DNCP Topology

- Only multi-hop unicast UDP (no neighbour discovery)
- A few “relay” nodes with known IP addresses
- Every other node contacts only the relays



Implementation

- Using libdncp2 from hnetd
- ~900 lines of C++ (incl. 560 ripped from hnetd)
- Dumps state for use by a Python script that takes care of SR-Lists definition, server clustering, load balancing, etc.

Conclusion

- It works, converges fast enough and generates very little traffic once stable
- Come see it in action at the Bits’n’Bites!

Questions?