CDNI Request Routing with ALTO
draft-seedorf-cdni-request-routing-alto-01

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March 29/30, 2012

Introduction

- ALTO within CDNI
  - Can be part of CDNI Request Routing Interface
  - For now, ALTO considered for the "Footprint & Capabilities Advertisement" part of the CDNi Request Routing Interface (asynchronous advertisement)

- Renaming of draft since last IETF
  - Old: **draft-seedorf-alto-for-cdni-00**
    - Contains examples for actual redirection (synchronous operation)
  - New: **draft-seedorf-cdni-request-routing-alto-01**
    - New name reflects that discussion of this document is happening in CDNI
    - Focus is on Selection of Downstream CDN with ALTO

- Goal of **draft-seedorf-cdni-request-routing-alto-01**
  - Show how ALTO can be used for dCDN selection within CDNi request routing

Selection of a Downstream CDN with ALTO

- Footprint Advertisement with ALTO network map
  - dCDN provides ALTO network map
    - ALTO network map: group network locations into "PIDs"
    - Network map of dCDN contains footprint of dCDN grouped into PIDs
  - uCDN matches IP-addresses of user requests with network map
    - to see if a given dCDN can provider can in principle serve a given request

- ALTO cost maps for Downstream CDN Selection
  - dCDN provides ALTO cost map
    - ALTO cost map: contains network layer "costs" with a certain "cost type" between PIDs
    - a means for a downstream CDN provider to convey a multitude of dynamically changing information which the upstream CDN provider cannot measure itself
    - Examples for costs are latency, bandwidth, monetary costs, abstract operational costs, …
  - uCDN can select best dCDN based on ALTO cost map
    - uCDN can apply its internal algorithms on how to combine/weight different costs for dCDN selection

uCDN

ALTO-Client

ALTO-Server
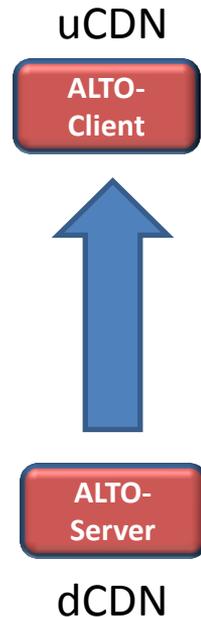
dCDN

Example of Selecting a Downstream CDN
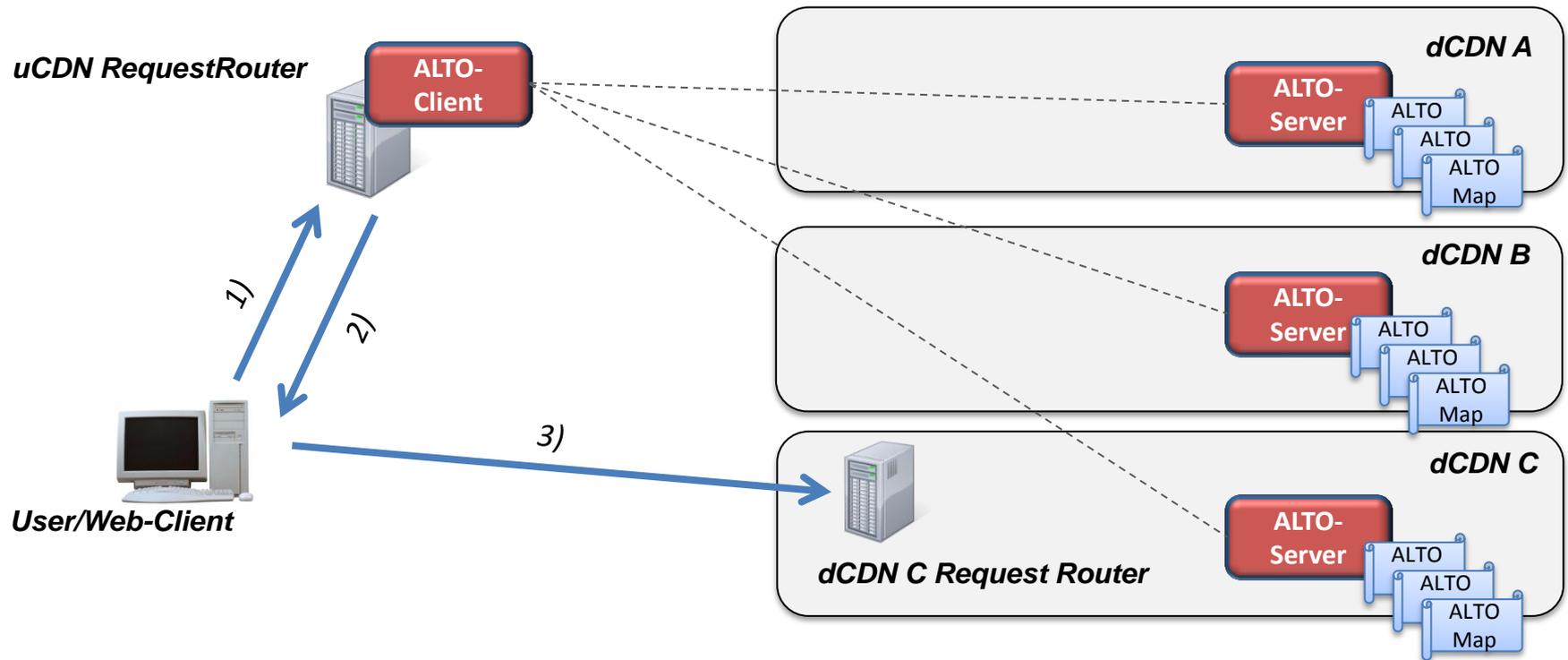
1) uCDN receives end user request from an IP address that indicates CDNI

2) uCDN uses the network map from each candidate dCDN to check if the footprint matches the IP-address of the end user request

3) uCDN uses the cost maps provided by the remaining (after step 2) candidate dCDNs to determin which is best (taking into account the cost types of interest to uCDN and using an uCDN specific algorithm)

4) uCDN redirects end user request to request router of best dCDN

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Advantages of using ALTO

- ALTO network maps are a straightforward way to express dCDN footprint

- ALTO cost maps facilitate sophisticated selection of a downstream CDN based on various metrics → increases flexibility to cover different use cases and business models for CDN interconnection

- ALTO maps provide integrity protection

Outlook / Next Steps

- Provide more concrete examples
  - E.g. samples and examples of how ALTO maps could look like

- Discuss potential ALTO extensions needed / useful
  - See I2AEX discussion

- Considering ALTO ECS Mode?
  - Would be a more synchronous type of operation …

- Discuss how to express other capabilities with ALTO maps?
  - E.g. resource capabilities such as supported range of delivery technologies

Acknowledgements

- Special thanks to Richard Yang for valuable contributions to this draft