Scope

- Extension of ALTO protocol and services for exchanging of footprint information between 2 CDNs
- Avoid boiling the planet and stick to the CDNi charter
  - Direct CDN interconnection only
  - Cascading of CDNs and redistribution of footprint information are out of the scope of the draft
Motivation

• When one CDN interconnects with several CDNs the motivations of the interconnections differs (inter-affiliate, geographic footprint extension, etc.; see draft-ietf-cdni-usecase);
• A dCDN has a specific agreement with each of the uCDNs it interconnects with.
• A uCDN has a specific agreement with each of the dCDNs it interconnects with.
• The footprint information that should be exchanged depends on each case.
• The draft specifies ALTO session-level services and parameters enabling the control and the customization of the Footprint information to exchange.
ALTO Session Extension Overview

Current ALTO

ALTO Info Services
- Map Filtering Service
- EndPoint Property Service
- EndPoint Cost Service

Map Service
- Network Map
- Cost Map

ALTO Session Extension

ALTO Info Services
- Cost Map Filtering Service
- Session Information Service
- Constraints Information Service

Map Service
- Network Map
- Cost Map
- Map Update Service
Session Extension Service

**Current ALTO**

**Session**
- No logical association
- No PIDs views

**Session Extension for CDN interconnection**

**Session**
- Interoperability requires standard session parameters that should be exchanged on the CDNi control interface
- uCDN doesn't want to be flooded with useless information. dCDN want to limit the information exposed.
- Need of session-level services and parameters to control and customize the information exchanged
ALTO Info Services

Current ALTO

- **EndPoint Cost Service**
  - Ranking information

- **EndPoint Property Service**
  - Information on UA

- **Network Map Filtering Service**
  - HTTP POST messages potentially redirected to HTTP GET of cached filtered Map

Cost Map Filtering Service

- 2 information services provide filtering, one with GET, the second with POST

Session Extension for CDN interconnection

- **EndPoint Cost Service**
  - Useless: already provided by RRI

- **EndPoint Property Service**
  - Useless, introduces privacy issues

- **Network Map Filtering Service**
  - Need of session-level PIDs selection to focus on the footprint of interest of uCDN (the ALTO client)

Cost Map Filtering Service

- Need of pre-configured cost map views

- Interoperability require a single service based on HTTP GET

3/30/12
## ALTO Map Services

<table>
<thead>
<tr>
<th>Current ALTO</th>
<th>Session Extension for CDN interconnection</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Network Map</strong></td>
<td><strong>Network Map</strong></td>
</tr>
<tr>
<td>• Includes all the PIDs</td>
<td>• Scalability requires session-level PIDs</td>
</tr>
<tr>
<td>• Includes all the details</td>
<td>selection and customization of the</td>
</tr>
<tr>
<td></td>
<td>default level of detail of the</td>
</tr>
<tr>
<td></td>
<td>information exchanged</td>
</tr>
<tr>
<td><strong>Cost Map</strong></td>
<td><strong>Cost Map</strong></td>
</tr>
<tr>
<td>• Includes the whole cost Map</td>
<td>• An uCDN needs only the Cost map for its</td>
</tr>
<tr>
<td>• Multi-cost</td>
<td>PIDs of interest.</td>
</tr>
<tr>
<td><strong>Map Update</strong></td>
<td>• Multi-cost maps will require the</td>
</tr>
<tr>
<td>• Require downloading all the maps</td>
<td>customization of the default level of</td>
</tr>
<tr>
<td>• Based on polling only</td>
<td>detail</td>
</tr>
<tr>
<td></td>
<td><strong>Map Update</strong></td>
</tr>
<tr>
<td></td>
<td>• Scalability requires an incremental</td>
</tr>
<tr>
<td></td>
<td>update and the customization of the</td>
</tr>
<tr>
<td></td>
<td>heart beat</td>
</tr>
<tr>
<td></td>
<td>• May require notification</td>
</tr>
</tbody>
</table>

3/30/12
Session Parameters

- **session_PIDs**: The PIDs of interest of the session (e.g. ipv4 and on-net, etc.).
- **pre_generated_cost_map**: The list of pre-generated cost maps of the session. A map is defined by a cost parameter and the name of the URI where the information is downloadable. As an example a value of pre_generated_cost_map sof { 'routingcost', www.NSP.com/rccm.html } means that at the initialization of the session the dCDN ALTO server will created the pre-generated cost map with the parameters 'routingcost' and make this map accessible to uCDN with the URI www.NSP.com/rccm.html.
- **network_map_level_of_details**: The default level of details of the network maps.
- **costmap_level_of_details**: The default level of details of the cost maps.
- **update_heartbeat**: The time scale of the update (e.g. minute, hour, day, week, month).
- **update_mode**:
  - **Synchronous**: dCDN sends an update or an notification when an information changed.
  - **Asynchronous**: dCDN downloads the maps using GET methods.
  - The rhythm must respect the update time scale given by update_heartbeat.
Drafts related to the same topic

- draft-seedorf-i2aex-alto-cdni-perpective
  - DC and CDNi info exposure
- draft-spp-cdni-rr-foot-cap-semantics
  - Footprint and capabilities semantics
- draft-previdi-cdni-footprint-advertisement
  - Footprint exposure using a BGP extension
- draft-jenkins-alto-cdn-use-cases
  - Use cases for ALTO within CDNs