CDNI Capability Advertising
draft-he-cdni-cap-info-advertising-01.txt

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Contents of the draft

• Identify criteria for selecting a dCDN.
  
  Note: Based on the assumption that the uCDN will only use the capability to select a ‘best’ dCDN, not any low-level cache inside a dCDN).

• Determine capabilities needed based on the criteria and define the semantics for them.

• Propose a protocol for capability advertisement: HTTP+JSON.
dCDN selection criteria

• One source of dCDN selection criteria is CDNI metadata
  – The CP may expect to control the content distribution of its delegated CDN (including the dCDN of the directly contracted CDN); it reflects its requirements via metadata, e.g. delivery service type of the content, geo-blocking etc.

• Another source of dCDN selection criteria is variant local administrative policy of uCDNs
  – Besides meeting the CP’s requirements, a uCDN may also take the local policy into account while selecting a dCDN, e.g. the lowest cost dCDN is preferred by a uCDN.
dCDN selection criteria detail

- Can serve end users on behalf of the uCDN at the time for content distribution
- Possess capabilities that CP required for content distribution
  - Note: can be determined when metadata API is finalized.
- Meet requirements of local policy (not exhaustive)
  - Best proximity to end users
  - Minimize load at the time of content distribution.
  - Minimize cost spent on uCDN for content distribution.
  - Optimize QoS for content distribution
Capability categories

To meet the previous identified dCDN selection criteria, the following categories of capability were identified:

– General information of dCDN like service status, IP version of which the dCDN can serve for endpoints, etc.
– Footprint of the downstream CDN representing the region that the dCDN can serve.
– Load status of resources of dCDN for a region.
– Cost information of dCDN to a region.
– Delivery capability of dCDN like delivery service type, user authentication method, etc of a region.

*Question to the WG: Are any other capability categories needed?*
Some highlights of capability

• Footprint can be advertised at a macro level e.g. country name or AS number, or at a finer granularity e.g. city name or a set of IP subnets with a abstract cost to reflect the proximity of dCDN to that region.

• Load status of resources, delivery capabilities, cost information, etc. are encapsulated into a footprint to express capabilities associated with that specific region.

• Load status of resources contains a binary indication to tell a uCDN whether the dCDN can or cannot serve end users from the perspective of load. It can also contains detailed load info, e.g. max and current used value of a resource.
POST http://contactaddress.ucdn.example/CdniCapReport HTTP/1.1
Content-Type: application/json
Content-Length: TBD

{
"ServiceStatus": "In",
"IPVersion": ["IPV4", "IPV6"],
"FootPrint": {
"Country": "China",
"State": "Beijing",
"City": "",
"LoadStatus": {
"ServeStatus": 1,
"MaxConnection": 5000,
"CurrentConnection": 1000,
"MaxBandWidth": "1500M",
"CurrentBandWidth": "1000M",
"MaxCacheStorage": "5000TB",
"CurrentCacheStorage": "3000TB"
},
"Cost": {
"CostType": "monetary",
"CostMode": "ordinal",
"CostValue": "1"
},
"AuthenCity": {
"AuthType": ["urlSigning", "urlToken"],
"Algo": ["MD5"],
"Symmetric": 1
},
"DeliveryType": ["HLS", "HSS", "HDS", "RTSP"]
}
Next steps

• Amend the draft and refine capability information based on feedback from the WG

• Ask for adoption as a WG draft