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.

Message example

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"
     },
    "Authenticity":{
      "AuthType":["urlSigning","urlToken"],
      "Algo":["MD5"],
      "Symmetric":1
    },
    "DeliveryType":["HLS","HSS","HDS","RTSP"]
  }
}

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Next steps

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

- Ask for adoption as a WG draft