ALTO Extension for Overlay Routing
draft-song-alto-overlay-routing-00

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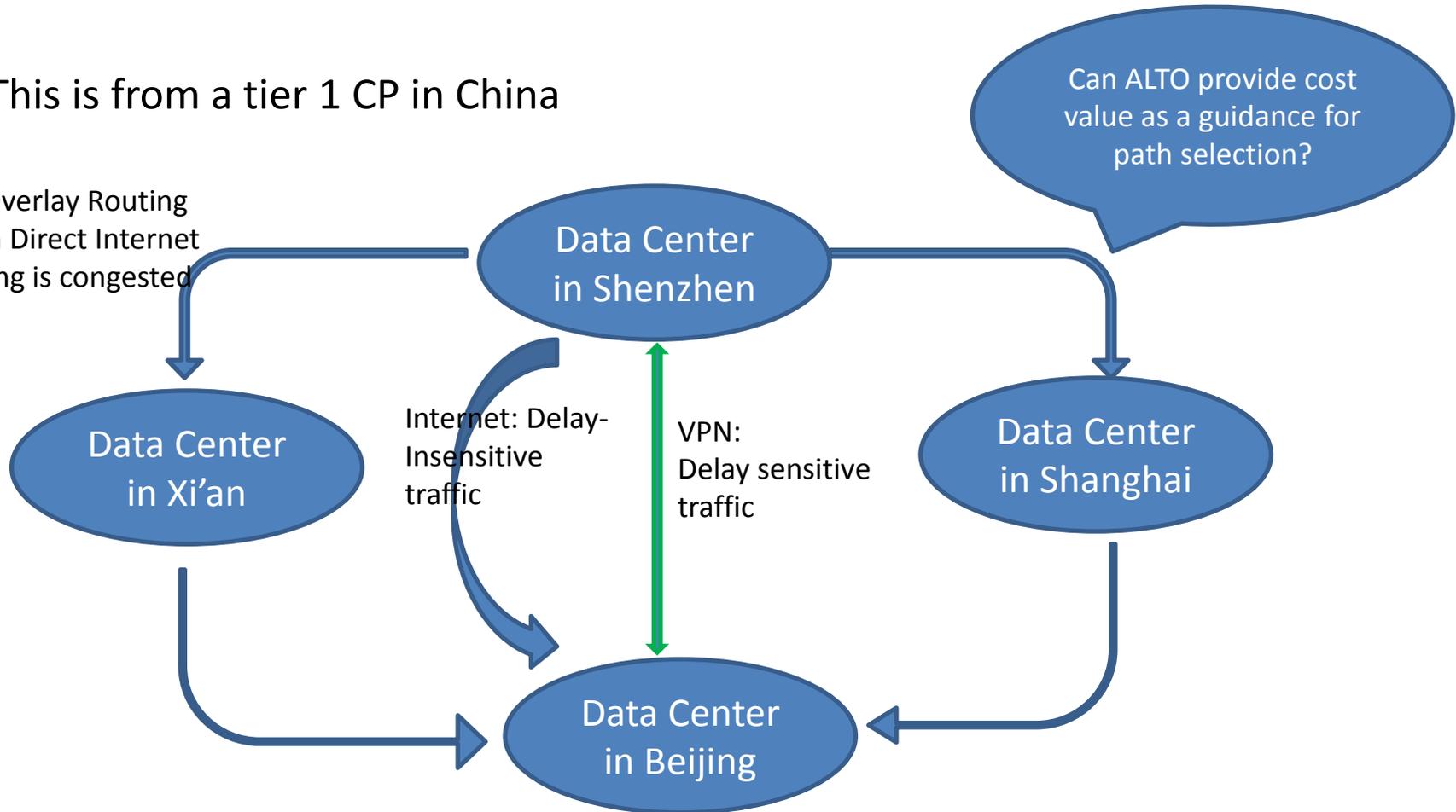
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History

- Overlay routing use case was documented in draft-song-alto-use-case-extension, and was discussed at IETF 87th

- This document specifies the detailed protocol extension for it
  - A very simple service extension

An real use case

This is from a tier 1 CP in China

Can ALTO provide cost value as a guidance for path selection?

Use Overlay Routing
When Direct Internet
Routing is congested

Data Center
in Shenzhen

Data Center
in Xi'an

Internet: Delay-Insensitive traffic

VPN:
Delay sensitive traffic

Data Center
in Shanghai

Data Center
in Beijing

When Internet congestion occurs between Shenzhen&Beijing, the content provider usually use the data center in Xi'an or Shanghai as the Relay Node

New Service: Overlay Routing Cost

- In a request, besides the source and destination IP addresses, a client can specify the RELAY nodes' addresses, and whether DRR and VPN cost should be returned
  - DRR: direct routing
  - VPN: The cost will be returned if (1) a VPN tunnel exists between a source<->destination (2) in the request, the value for "vpn" is true
  - Relays: the relay nodes between the source and destination

Example: request

POST /overlayroutingcost/lookup HTTP/1.1
Host: alto.example.com
Content-Length: TBA
Content-Type: application/alto-overlayroutingcostparams+json
Accept: application/alto-overlayroutingcost+json,application/alto-error+json

```
  {
    "cost-type": {"cost-mode" : "ordinal",
              "cost-metric" : "routingcost"},
    "endpoints" : {
     "srcs": [ "ipv4:1.1.1.1" ],
     "dsts": ["ipv4:2.2.2.2", "ipv4:3.3.3.3",],
     "drr": false,
     "vpn": true,
      "relays": [ "ipv4:6.6.6.6",  "ipv4:7.7.7.7"]
    }
  }
```

Example: response

```
HTTP/1.1 200 OK
Content-Length: TBA
Content-Type: application/alto-overlayroutingcost+json

{
 "meta" : {   "cost-type": {"cost-mode" : "ordinal", "cost-metric" : "routingcost" }   },
 "overlay-routing-cost-map" : {
  "ipv4:1.1.1.1": {
   "ipv4:2.2.2.2": {
     "ipv4:6.6.6.6": 1,   "ipv4:7.7.7.7": 2,
    },
    "ipv4:3.3.3.3": { "ipv4:6.6.6.6": 2,   "ipv4:7.7.7.7": 3   }
   }
  }
  "vpncost": {
   "ipv4:1.1.1.1": {"ipv4:2.2.2.2": 0   }
  }
 }
```

Next step

- Feedback from the list
- Update document to address comments
  - VPN relays
- Ask for adoption when appropriate