YANA0318 Open Caching

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SVA

- *Collaboration between companies in the streaming video space*
- *Exchange ideas and challenges*
- *Common problems definitions*
- *Solution proposals*
- *Best practices*
- *PoC*

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Open Caching

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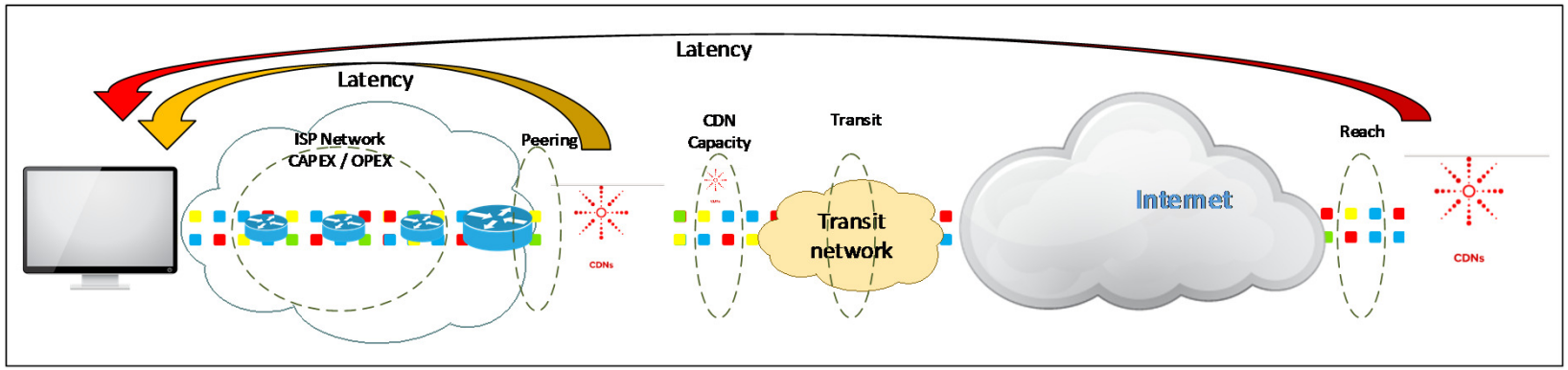
Challenges in existing CDN arch

- CDN Reachability
- High latency
  - Limits TCP connection bandwidth
  - Contribute to longer video startup time and re-buffering events
- Crossing many possible congestion points
  - Impact on QoE
- CDN Capacity
- ISP CAPEX and OPEX
- Peering costs
- Transit costs



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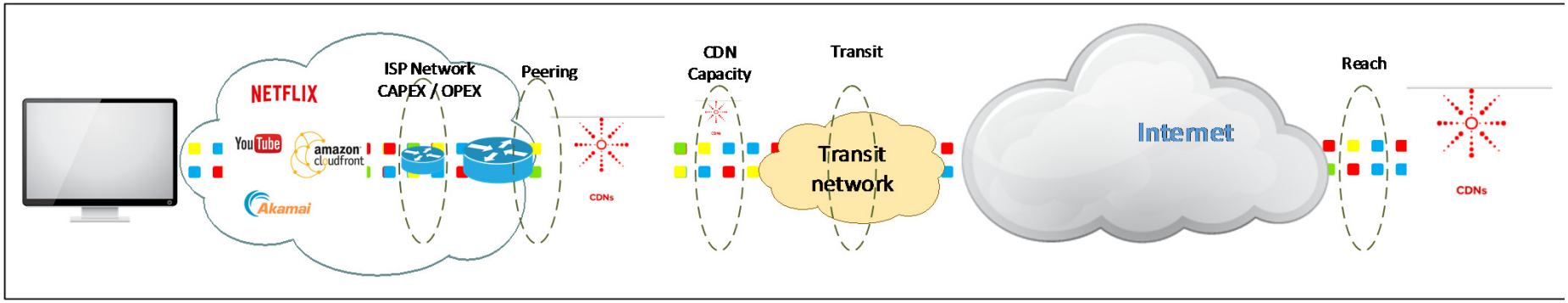
Edge caching

- Caching at the ISP edge solves all the above
- So why don't we have more networks looking like this ?



- Network ownership
- Incompatible technologies
- Legal and regularity reasons (e.g. net-neutrality)

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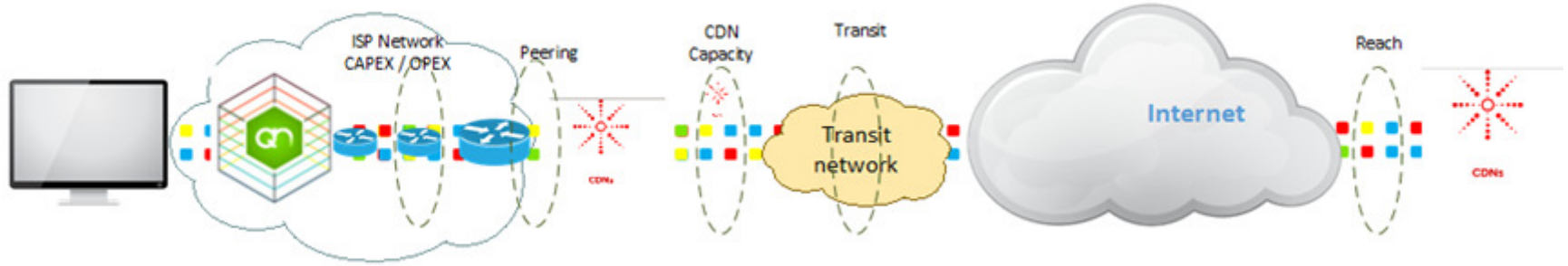
Open Caching architecture

- ISP deploy their own caches
- A set of functions and interfaces enable CDNs and CPs to delegate their traffic to the ISP caching layer
- ISP controls their own asset
- CDNs can decide to delegate depending on price and performance gain



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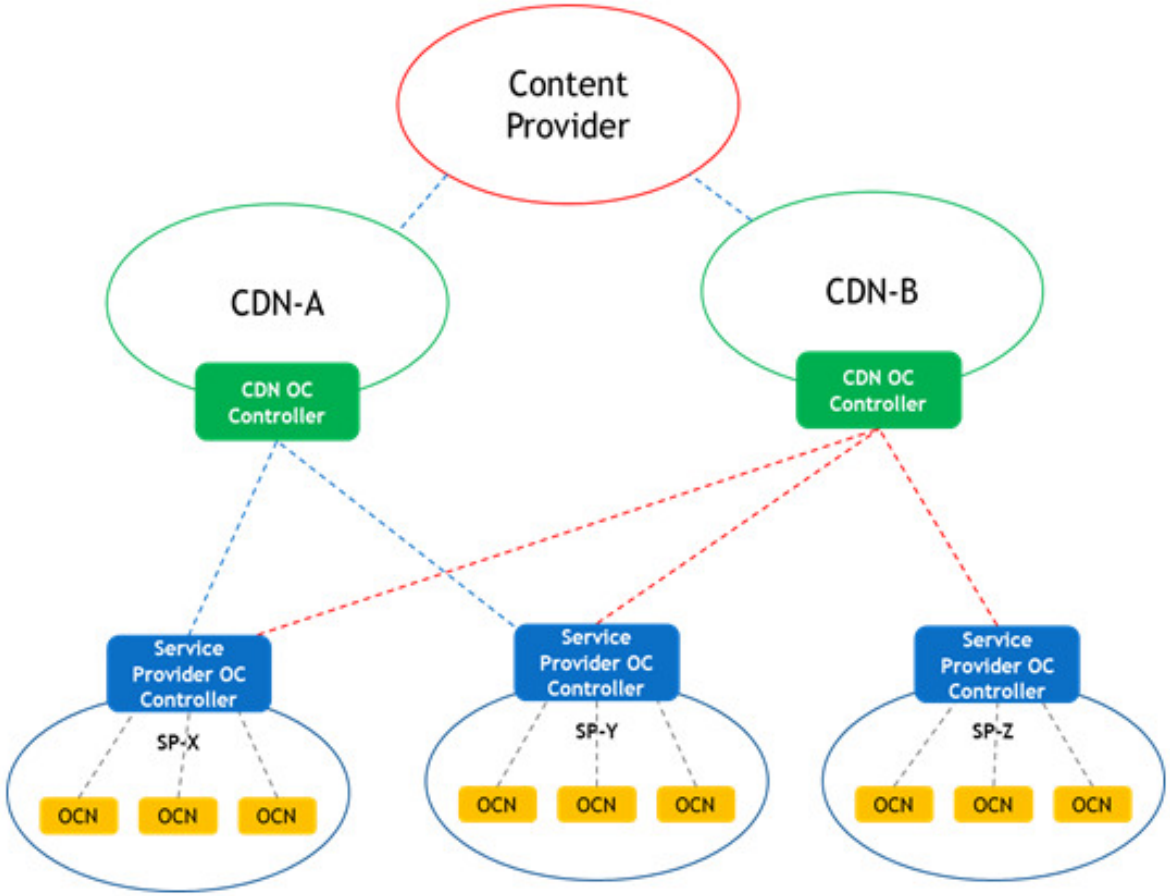
Open Caching architecture



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SVA Open Caching Approved Specifications

- Request routing
  - How requests are routed to Open Cache
- Service provisioning
  - Exchanging the information, configuration and footprint advertisement needed for the service to work
- Content management
  - Pre-position, purge, invalidation
- Logging
  - How transaction logs transferred from ISP to CDN

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Work in progress

- URI signing, cookie based authentication
- CORS
- POCs
  - Continuous POCs by: Verizon, Charter, Qwilt, LimeLight, BAMTech, ViaSat, ViaCom, more to be added
  - POC of VOD, Live, HTTP, HTTPS
  - Multicast ABR – promoted by the scaling working group
  - LTE-Broadcast – initial exploration
  - Home caching – pre-position at off-peak, initial exploration

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IETF work

- Open Caching is a specific case of CDNI
- Extending CDNI
  - Request routing (CDNI Metadata, FCI)
  - Content management (CDNI Triggers)
  - URI signing by relayed authentication
- IETF101 Hackathon – LURK demo using Nginx web server as LURK client and a PyLurk server for CDNI use case

Video Edge Caching Challenges

- HTTP redirect challenges
  - Clients not handling HTTP redirect properly
  - Usage of absolute manifests prevent proper delegation by HTTP redirect
  - Non sticky clients
  - Usage of cookie based auth for request signing and implication on HTTP redirect.
  - CORS unfriendliness to multiple domain redirects
- DNS delegation
  - EDNS0 client-subnet (in)availability
  - HTTP delegation of certs / private keys – possibly use LURK

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Video Edge Caching Challenges cont.

- Usage of multiple DRM keys and the implication on caches
  - Consider possible alternatives, that may require cooperation with cache but will allow holding single copy while still distribute to clients that holds different keys (for example proxy re-encryption)
- Private / hashed / tokenized URLs
  - Very hard to cache by 3rd party
  - Collaboration with ISP can lead to efficient edge caching

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More information

https://www.streamingvideoalliance.org

https://www.streamingvideoalliance.org/technical-work/working-groups/open-caching/

https://www.streamingvideoalliance.org/technical-work/working-group-output/

https://github.com/IETF-Hackathon/ietf101-project-presentations/blob/master/LURK_Hackathon_IETF101.pdf

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THANK YOU

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