

Working with CDNs : towards BCOP.



Florence Lavroff, Maurice Dean
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Primary Challenges for CDNs?

- Optimisation of content delivery :
 - Serving content on shortest, reliable path to user
 - Balancing load across server infrastructure
 - Delivery cost efficiency - particularly for media & unpredictable traffic spikes
- Create long term, win-win working relationship with ISPs

Goal of this presentation

- Propose topics that could form basis for BCOP

- Regardless of interconnect type

 - (embedded caches / peering / transit)

- 3 challenges to solve :

 - Optimal load balancing & overflow

 - Optimal geo targeting / mapping to end user

 - Optimal capacity planning

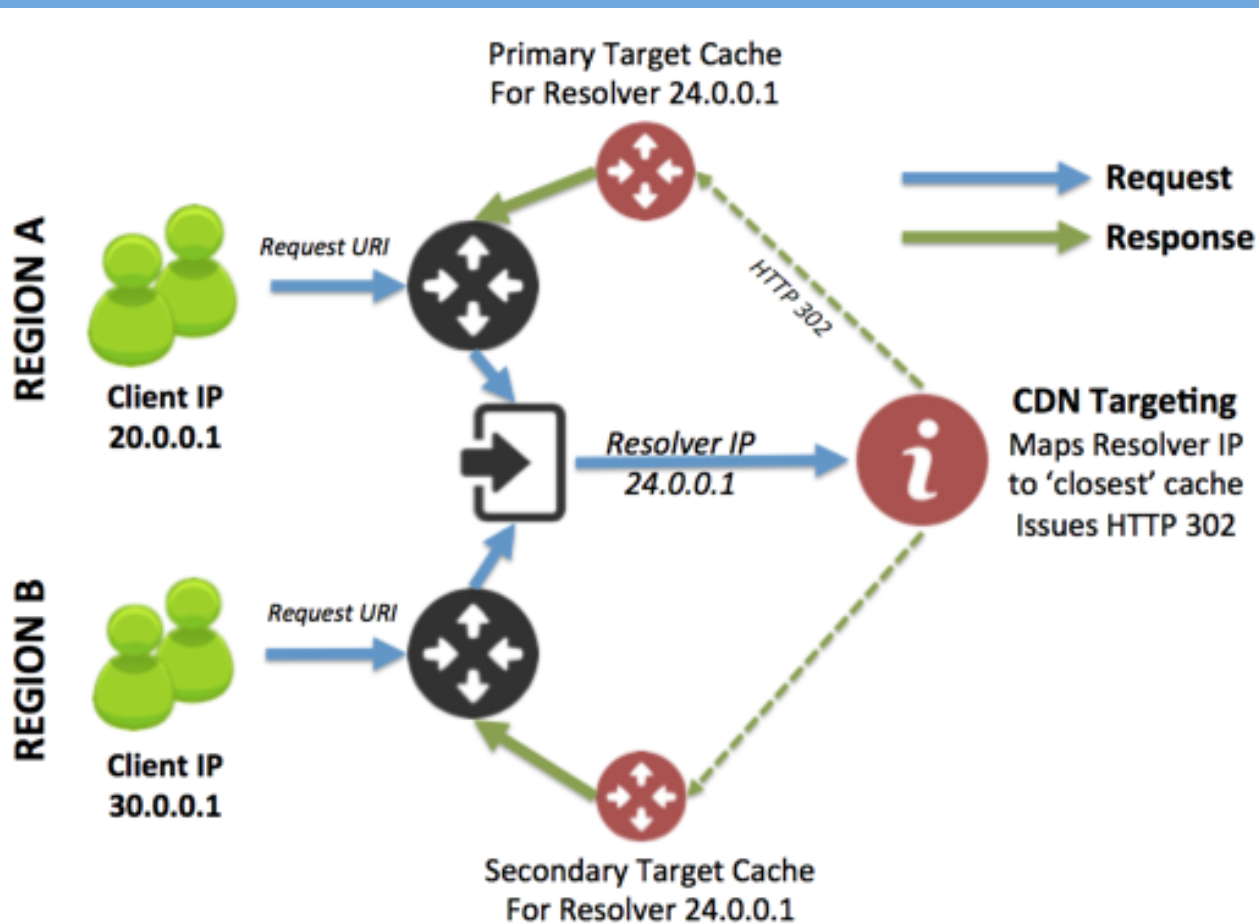
Why Suboptimal Mapping Occurs: Simple Example

Simple CDN Targeting method may use resolver IP to target 'closest' responding node.

Problem: multiple regions using single Resolver IP

Solutions?

- Regionalised DNS infra
- Client-subnet in EDNS0 is potential solution



Advanced Targeting: Additional Signal Source

Routing Protocol - BGP Prefixes

- AS-path
- Communities
- MEDs

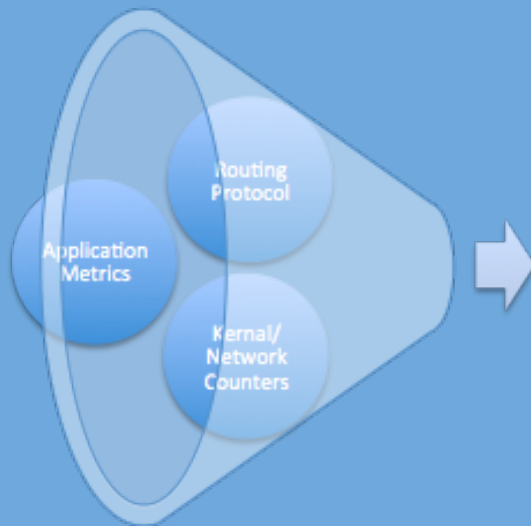
Kernel / Network Counters

- Latency
- Packet loss as congestion indicator
- Window size variance as congestion

indicator

Application Level Performance Metrics

- Throughput optimality (historical network QoE)
- Application level e.g. ABR rate change
- DNS resolver to client-subnet mapping



Output: Mapping & Targeting Decisions

ISPs' capacity planning for CDNs

- Scale capacity + provisioning of interconnects :
(embedded caches / peering / transit)
- Plan failover between hosted caches, peering or transit
- Observe potential congestion of transit
- Management of peak traffic
- Load balancing, path diversity
- Position network assets



Should we work toward a BCOP?



Example focus areas/takeaways:

- BGP prefix announcements : Announce them all (customer, internal, BB & DNS Resolvers) to your interconnect with CDNs.
- Traffic Engineering: Use MED, communities, AS-path to express your preferred locations. Don't withdraw prefixes.
- Discuss your overall strategy (capacity planning) with CDN.
- Let us know where we got it wrong (incorrect geo-targeting, failover locations).

**Thanks for your attention.
Any question ?**

