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
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?