

Use Cases for ALTO within CDNs

draft-jenkins-alto-cdn-use-cases-01

Ben Niven-Jenkins

Grant Watson, Nabil Bitar, Jan Medved,
Stevano Previdi, Reinaldo Penno, Richard
Alimi, Richard Yang

Differences between P2P & CDN use cases

- With P2P
 - Exact location of peers is not important
 - Relative cost/distance from P2P client is sufficient
 - Only a small handful of PIDs are relevant to a single P2P client
 - E.g. “Same region as me”, “Same network as me”, “preferred peered networks”, “everyone else”
 - If PID names change it doesn’t affect the P2P client
 - P2P client typically controlled by different entity to ALTO server

Differences between P2P & CDN use cases

- With CDN
 - Location of peers is important
 - To enable CDN policies to be applied
 - E.g. “Only allow these regions to access this content”
 - Policies defined by CDN customers (Content Providers) as well as the CDN itself
 - Relative location is sufficient for cost calculations
 - Often requires complete network map
 - All PIDs in the map are relevant
 - Changing PID names adds complexity
 - Could break CDN policies that have been defined
 - Makes mapping PIDs to (CDN) network locations hard
 - CDN could be controlled by the same entity as ALTO server
 - Or an entity the network operator “trusts”
 - May be less concerned with hiding topology -> Even more PIDs
 - CDN may need to consolidate data from different ALTO servers controlled by different entities

Value of ALTO to CDNs

- Abstraction layer between network & application
 - Complexity of BGP, IGP, TE, etc. hidden from CDN
 - Can combine data from other systems/sources when constructing network map/costs provided to CDN
 - Enables additional policies to be overlaid on raw network topology
 - Preferences for CDN may be different than other services
 - Network & CDN may be operated by different entities
 - Even within the same operator
- Decouples the CDN application from the network

Use Cases for ALTO within CDNs

- Includes use cases extracted from draft-penno-alto-cdn
 - Resulting additional ALTO requirements planned for a separate draft
- General use case
 - Improve the selection of a CDN Surrogate or Origin.
 - Mapping Users* to network locations
 - Costs between (CDN) network locations & (User) network locations
- Specific use cases in the draft
 - Exposing NSP End User Reachability to a CDN
 - Exposing CDN End User Reachability to CSPs
 - CDN deployed within a Broadband network
 - CDN delivering Over-The-Top of a NSP's network
 - CDN acquiring content from multiple upstream sources (Origins)

NSP = Network Service Provider

CSP = Content Service Provider

*Origins can be thought of a special case of “Users”