

CDN Interconnect (CDNI) Problem Space: Drivers and Enablers

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Outline

- Use cases:
 - Intra-CDN provider CDNI
 - Inter-CDN provider CDNI
- CDNI Key Enablers

Use Case 1: Intra-CDN provider CDNI

- Driver: Leverage all provider CDN assets and provide for optimum content delivery
- An intra-CDN provider CDNI interconnects two autonomous (standalone) CDNs owned and operated by the same CDN provider
- Autonomous CDNs in a single provider network may arise as a result of
 - mergers and acquisitions
 - co-existence of multi-vendor CDN solutions for business or legacy reasons
 - autonomous organizations/entities within the same CDN provider, each operating its own CDN

Use Case 2: Inter-CDN Provider CDNI

- CDN generic goal: improved user experience and distribution efficiency by caching and delivering content to a user agent as close to the agent as possible
- An inter-CDN provider CDNI interconnects two CDNs owned and operated by two different CDN providers
- Inter-provider CDNI drivers:
 - Enable a CDN provider to extend its CDN geographic coverage via CDN interconnects with other downstream CDN providers
 - Alternative to expanding its own CDN for operational and/or cost reasons
 - Value proposition to CSPs – one/few CDN providers for geographic coverage
 - Enable a CDN provider to provide CDN services to upstream CDNs to:
 - Optimize its backbone bandwidth utilization
 - Get in the content delivery value chain

CDN Interconnects – Key Missing Enablers

- Ability to exchange information necessary for enabling various aspects of the interconnect (e.g., policies, capabilities, type/frequency of accounting information exchange)
- Ability of a CDN to request action from its upstream CDN or downstream CDN (e.g., pre-position content from an upstream CDN in a downstream CDN, purge previously downloaded content, etc.)
- Ability of interconnected CDNs to exchange information about congestion state/load conditions at different granularity levels subject to CDN confidentiality policies – assist request routing
- Ability of a CDN to inform a downstream CDN how and where to acquire content from

CDN Interconnects – Key Missing Enablers

- Ability of a CDN to report to an upstream CDN redirection request rejections – part of request routing
- Ability of a CDN to communicate content distribution policies to the downstream CDN (e.g., content time-availability window, geo-blocking information, purge rules, authorization/authentication)
- Ability of a downstream CDN to report accounting information to an upstream CDN for settlement purposes between the interconnected CDNs or an upstream CDN and a CSP
- Ability of a downstream CDN to report events and other logging information