Peering and CDNs

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Google
Imagine you’re a Content Provider
Imagine you’re a Content Provider

User

ISP

Content Provider
Imagine you’re a Content Provider
Imagine you’re a Content Provider

Content Provider

Transit Provider

ISP

User

Transit Provider

ISP

User

User
If you are very successful ...
Peering

- Peering is the direct interconnection between two networks for the exchange of traffic.
Public Peering

- Public Peering
  - Done in Internet Exchange Points
  - Better when traffic is low to many individual peers and aggregation of traffic creates an economical incentive
Public Peering - IXP

- Content Provider
- L2 Switch
- ISP
- User
- ISP
- User
IXP governance models

- Private vs non-profit
- Membership-based vs other
- Government sponsored/operated vs non-gov. spon./oper.
- Closed vs. Open
What about too much traffic to just a few peers in the IXP?
Private Peering

- Private Peering
  - Done in private links or in carrier houses
  - Better control of traffic flows
  - Better when individual traffic is high
Private Peering

ISP 1

ISP 2

Content Provider
Private Peering in colo facility

Meet Me Room / Patch panel

Content Provider

ISP

User

ISP

User
Private Peering in colo facility

Meet Me Room / Patch panel

Content Provider

cross-connection

User

ISP

User

ISP
Private peering vs Public Peering

- Both are good solutions aimed to different needs
- Small-medium ISPs/Content providers generally use more Public Peering
- Very large ISPs/Content providers generally use more private peering to other large peers and public to small-medium
The next step to scale and grow your content ...

Content Distribution Network (CDN)
What is a CDN (Content Delivery Network)?

- Distributed delivery platform for content
- Servers content closer to end-users
- Improve performance for users
- Lower cost for content and access provider
Example of CDNs

- **Traditional and Telco CDNs**
  - Akamai
  - Cloudflare
  - Level3
  - Limelight Networks

- **Content Provider own CDNs**
  - Google
  - Netflix
Benefits of Peering & CDN relationships

● For users:
  ○ Lower latency
  ○ Higher reliability
  ○ Better performance

● For network operators:
  ○ Lower costs
  ○ Higher reliability
  ○ More predictable routing
  ○ Better performance for customers
  ○ No third parties involved
  ○ Mutually beneficial relationship with partner
El caso de negocio del Peering

- ¿Cómo convencer al CFO de hacer peering?
- No hablar sobre BGP, routing, mejora de latencia, etc., etc.
- Haz un análisis de Costo-Beneficio
### Análisis Costo-Beneficio

**Comparación Costo Monetario**

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<td><strong>Costo de Puerto en IXP/x-connect</strong></td>
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Comparación Costos

Peering vs Transit

Cost of Peering

Peering Break Even Point
Unit Peering Cost = Price of Transit

Effective Peering Bandwidth

Transit Price

Peering Risk

Effective Peering Range

Fuente: Dr Peering
http://drpeering.net/white-papers/A-Business-Case-For-Peering.php
El Caso de Negocio de Peering

- By Dr. Peering
  - [http://drpeering.net/white-papers/A-Business-Case-For-Peering.php](http://drpeering.net/white-papers/A-Business-Case-For-Peering.php)
Assumptions

- **Transit**
  - Cost of transit 5 USD per Mbit per month

- **Peering (10G)**
  - Local transport: 2,000 USD per month (10G)
  - Colocation fee: 1,000 USD per month
  - IX port: 2,000 USD per month
  - Equipment: 8,000 USD per month (router amortized at 36 months)
  - Total: 13,000 USD total per month
Peering break even

● Break even point in BW
  ○ Cost of peering / Transit cost
  ○ \((13,000 \text{ MRC}) / (5 \text{ USD/Mbps/MRC})\)
  ○ \(= 2.6G\)

● Cost of peering at maximum efficiency
  ○ Cost of peering / BW
  ○ \(13,000 / 10,000\)
  ○ \(= 1.3 \text{ Mbps per USD per Month}\)
Thank you
and happy
peering