Peering in the content world

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Intros

- Thanks for the invite! Honor to be here!
- Manage Network Engineering & Operations, Architecture/Planning @LinkedIn
- Peering coordinator
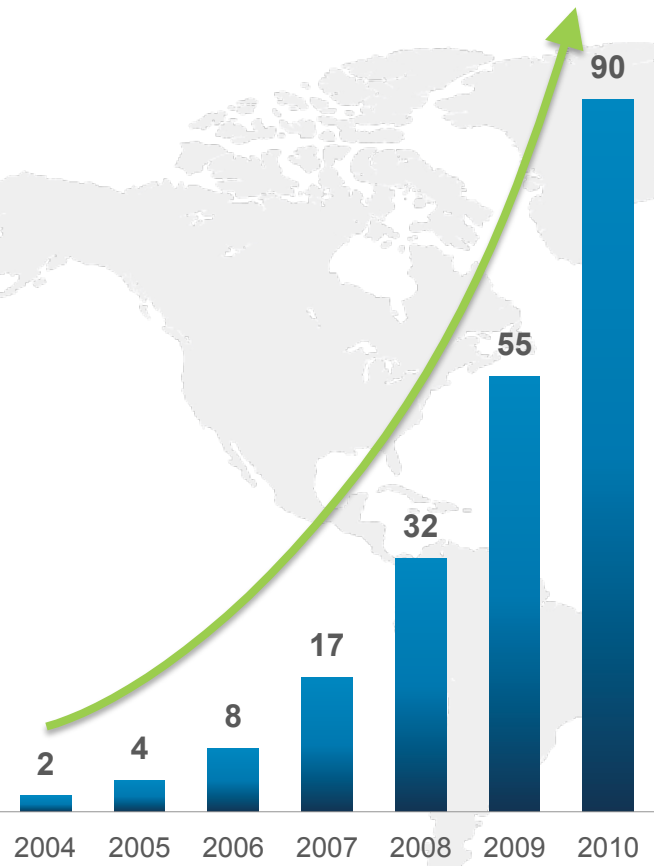- Chairman/President, SFBAY chapter of Internet Society

Personal experiences
An excursion of peering motivations

- **FIGNET (Fiji Internet Group)**
  - Very high ISP cost in monopoly environment
  - Lead to gravity pull of content exchange
  - Proxies to cache local content
- **WebEx**
  - Building backbone for real-time conferencing over quite unreliable networks
  - Lack of public exchanges lead to expensive point-to-point
- **LinkedIn**
  - Very different time
  - CDN's, IXP growth
  - End user experience the key motivation to get closer to eyeballs

Linked in.

The world's largest professional network

Over 60% of members are now international

150M+ [*]

Year	LinkedIn Members (Millions)
2004	2
2005	4
2006	8
2007	17
2008	32
2009	55
2010	90

LinkedIn Members (Millions)

75% [**]
Fortune 100 Companies use LinkedIn to hire

>2M [***]
Company Pages

~4.2B [***]
Professional searches in 2011

[*]as of February 9, 2012
[**]as of September 30, 2011
[***]as of December 31, 2011

About LinkedIn

- LinkedIn is currently available in sixteen languages: English, Czech, Dutch, French, German, Indonesian, Italian, Japanese, Korean, Malay, Portuguese, Romanian, Russian, Spanish, Swedish and Turkish.

- More than 50,000 developers are using LinkedIn APIs to create innovative tools and services for professionals, averaging over two billion API calls per month as of December 31, 2011.

- As of December 31, 2011, there are more than 300,000 unique domains actively using the LinkedIn Share button on their sites to send content into the LinkedIn platform.

- As of December 31, 2011, mobile page views account for more than 15 percent of total unique member visits to LinkedIn.

- LinkedIn ranked as the 36th most-visited website worldwide, according to comScore, up from 45th just one year ago. ComScore measured **7.6 billion page views** in the fourth quarter

A Content peer is different

- **Not very network heavy**
  - Lots of widgets, updates, sharing
  - Low bandwidth exchange, High transactions
- **All about end user experience**
- **Content optimization not a singular approach**
  - CDN's
  - Peering
  - Web acceleration, Mobile optimization

Page efficiency

ISP/NSP/CP	Approx Bandwidth	Approx page Views/Day
Major US broadband provider	50Mbps	8M+
Major Australian ISP	5Mbps	2.5M+
Major India ISP	6Mbps	3M+
Major Content Provider	100Mbps	10M+

Eyeballs like Content
Content likes Eyeballs
Content likes Content

Making peering decisions based on content

- NetFlow data
  - Analysis of Origin-AS
  - View of eyeball networks
  - View of Content synergies
- Page Views
  - Page views in relation to Origin-AS
  - Useful data to talk about
- Content synergies
  - MX, API calls, Ad Exchange, Content sharing between sites

Peering @LinkedIn

- Peering DB: http://20049.peeringdb.com

- Motivation: improving end user page performance, improving performance for API calls.

- Policy: Open

LinkedIn POP's
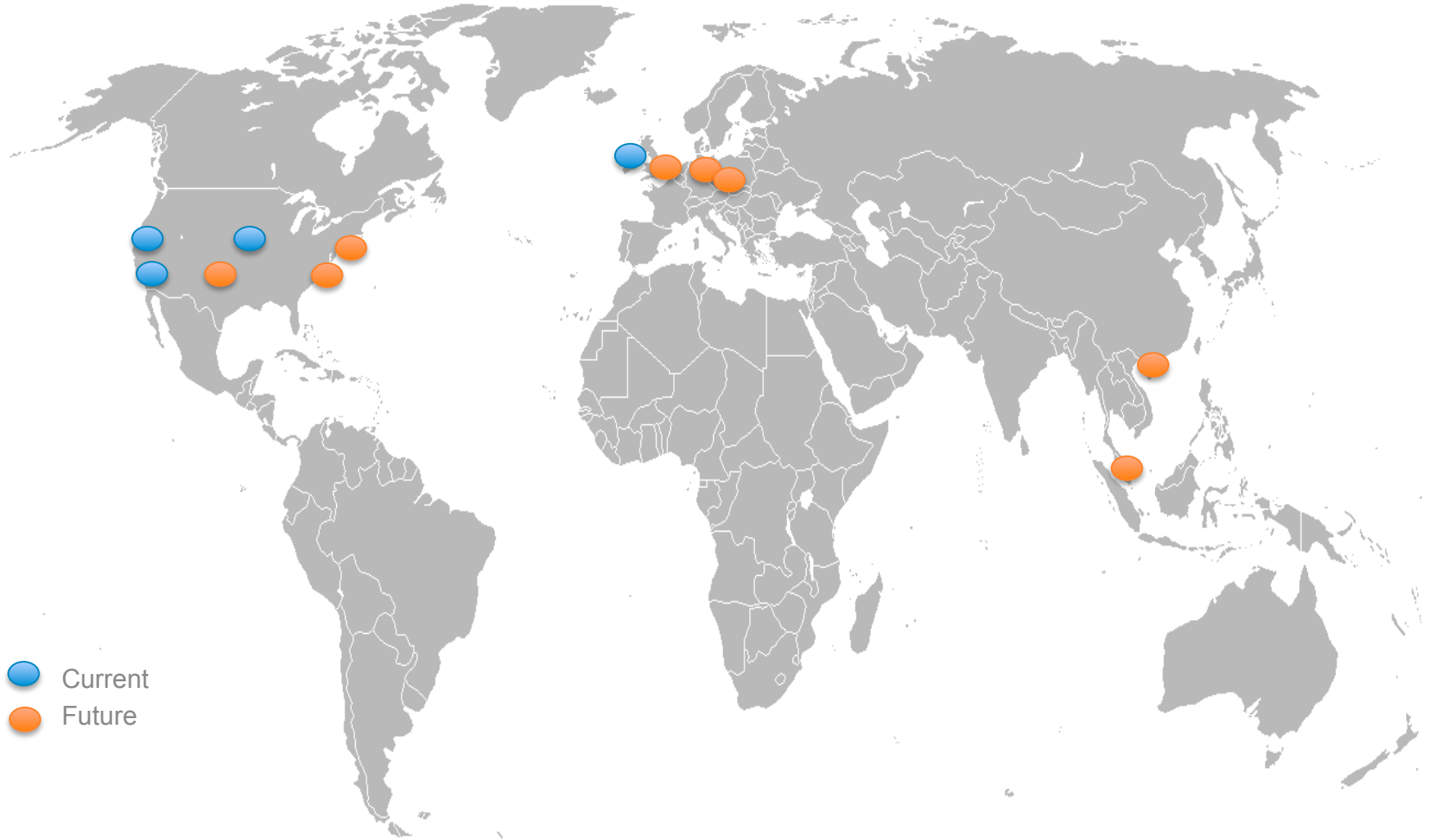
Current
Future

Stories/Tips

- Amsterdam network build
- Tip: easing into peering by picking a friendly peer. Case study with Hurricane Electric

Backup slides