
P2P – ISP Killer ?

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Presentation for CoolTech Club

August 21, 2008

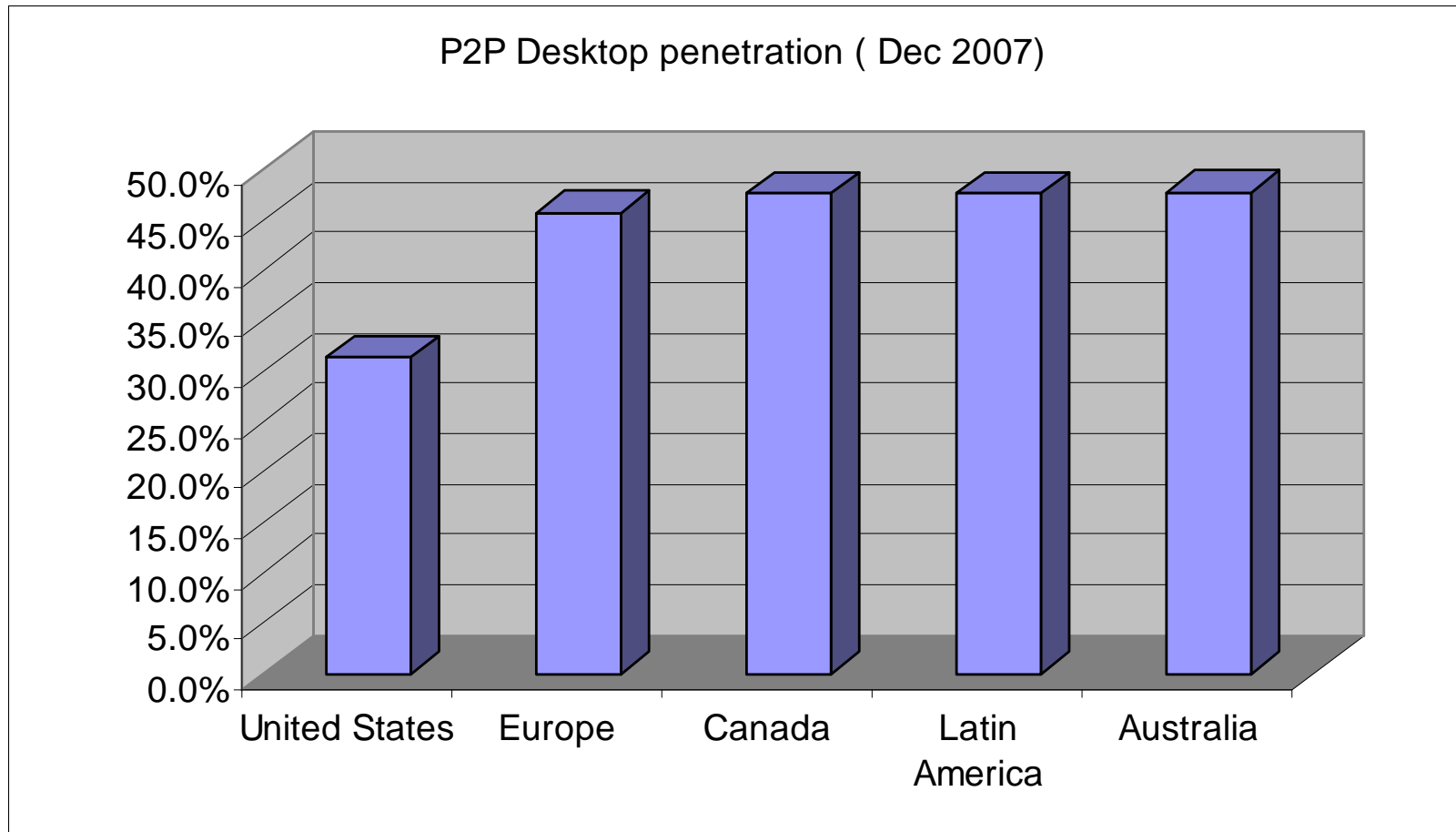
Agenda

- P2P (file sharing) applications
- Impact on Internet and Broadband ISPs
- What should ISP do ?

P2P (File sharing) applications

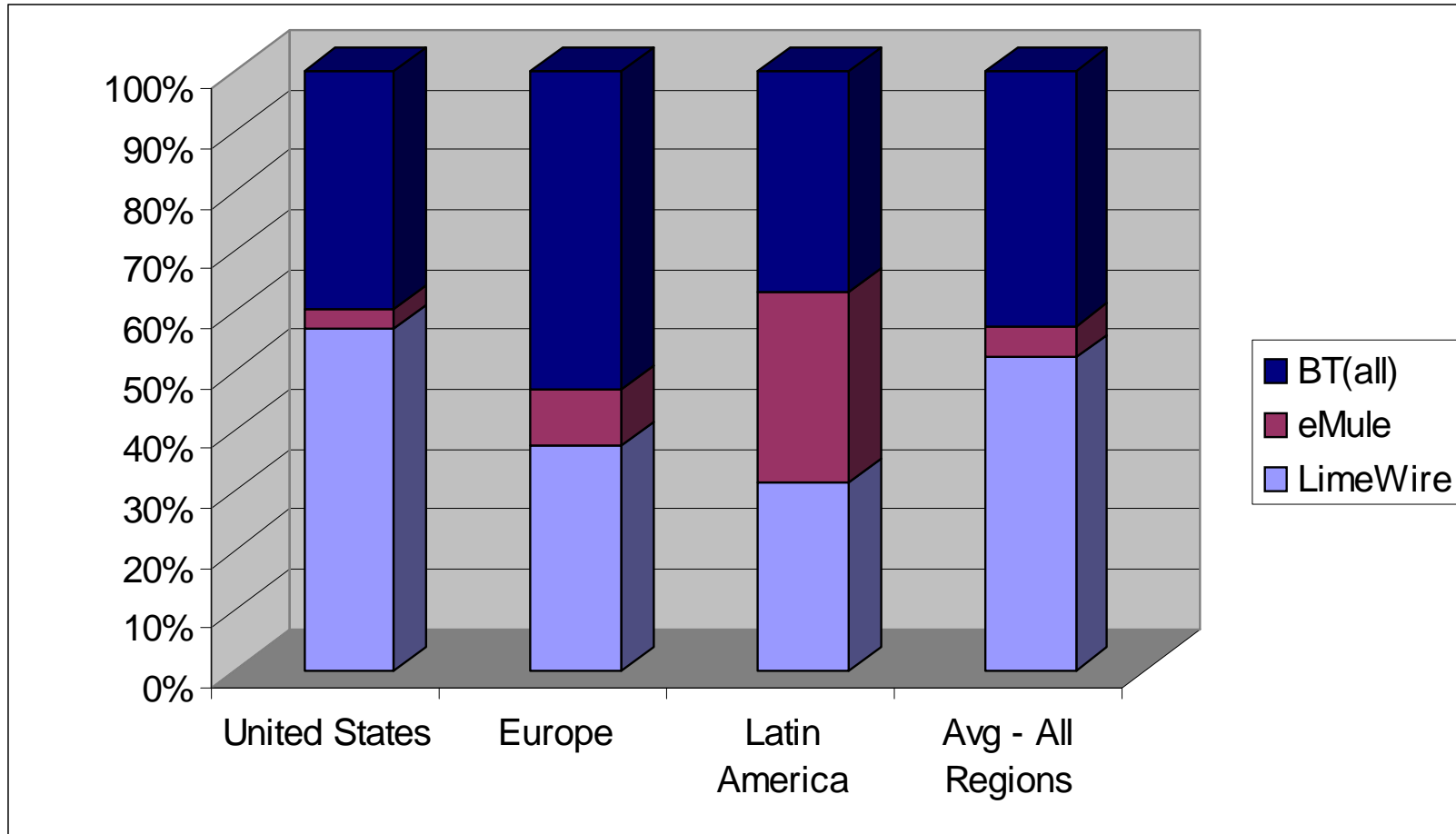


P2P(file sharing) application popularity



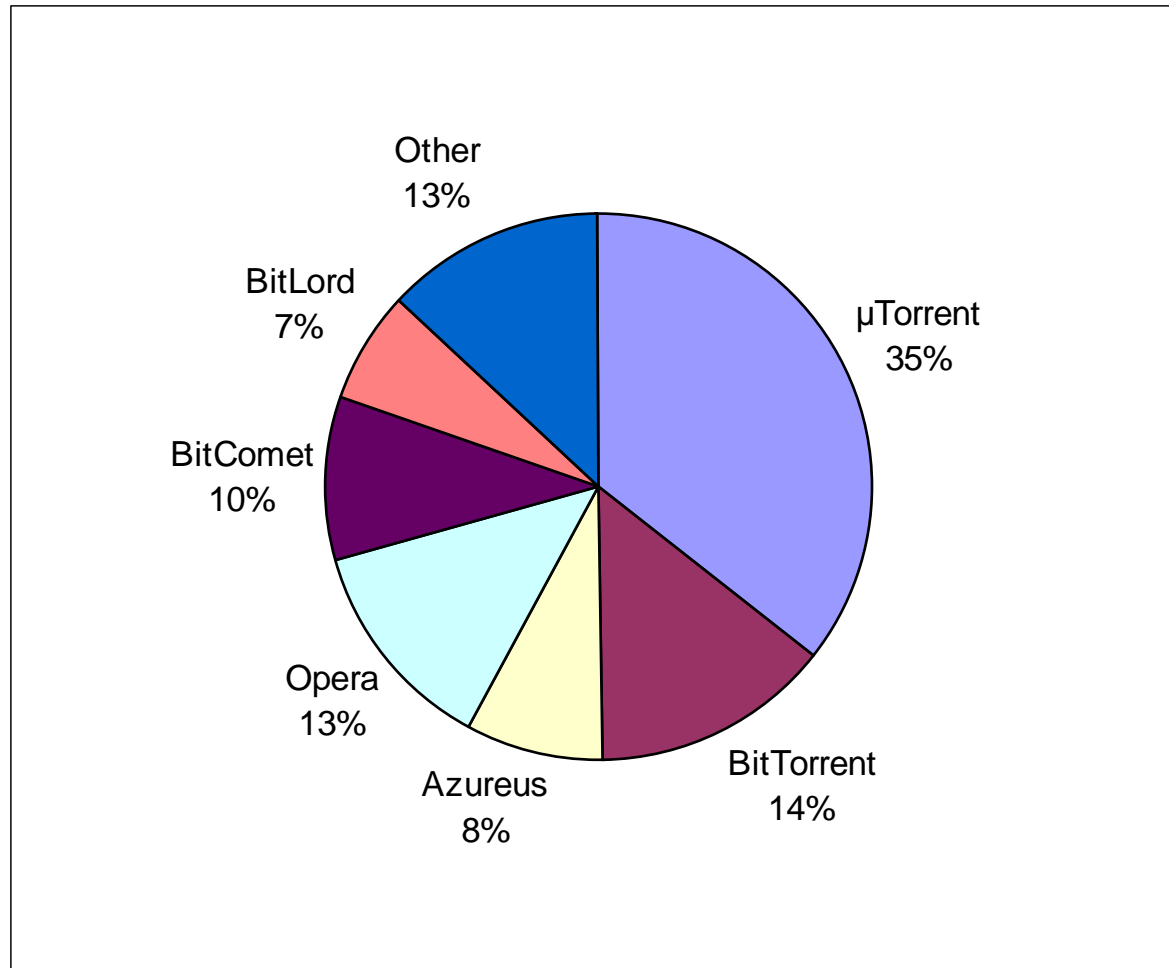
From Digital Media Desktop Report, Q4/2007

P2P network popularity (by installations)



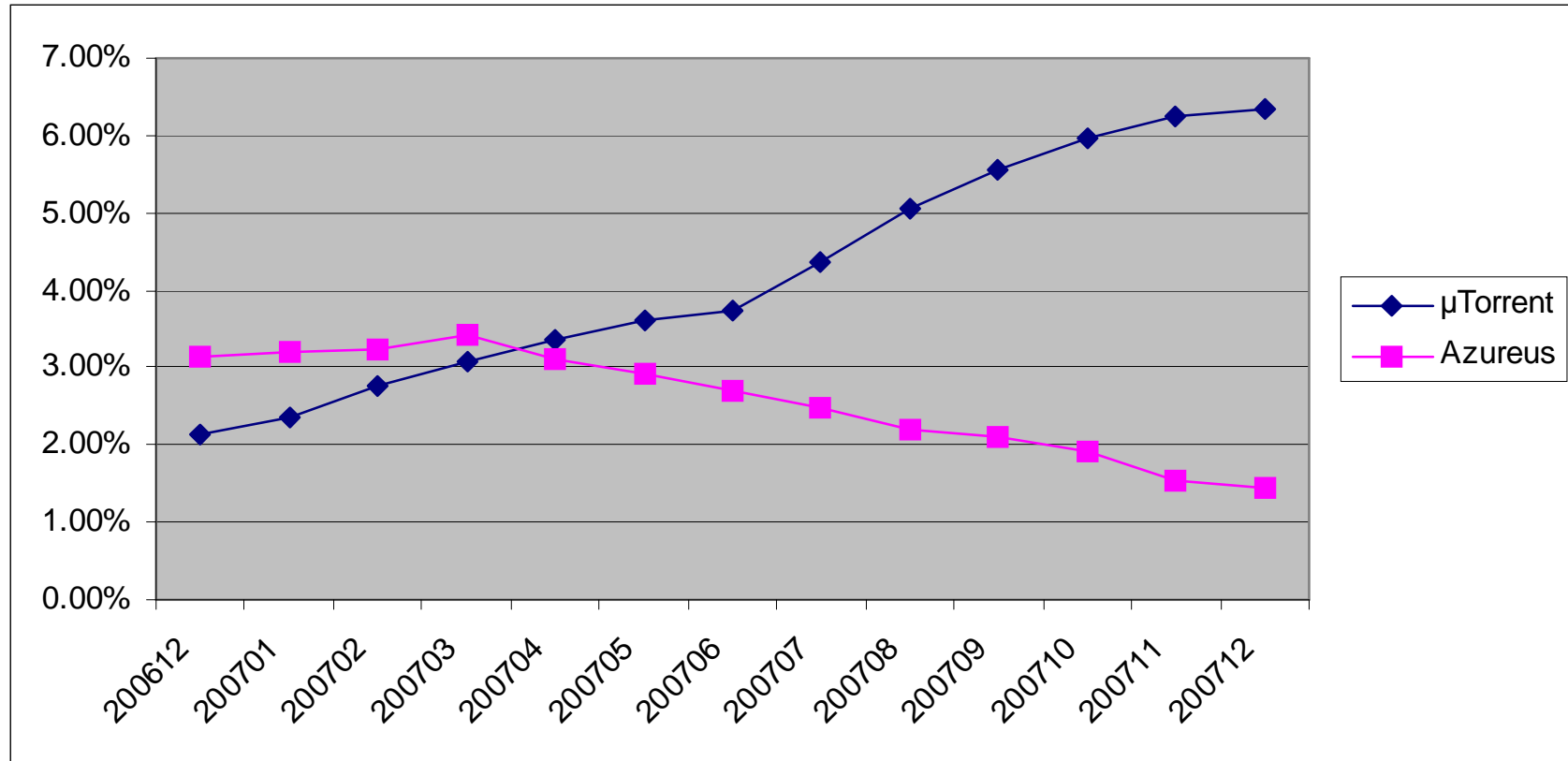
From Digital Media Desktop Report, Q4/2007

BitTorrent clients market shares



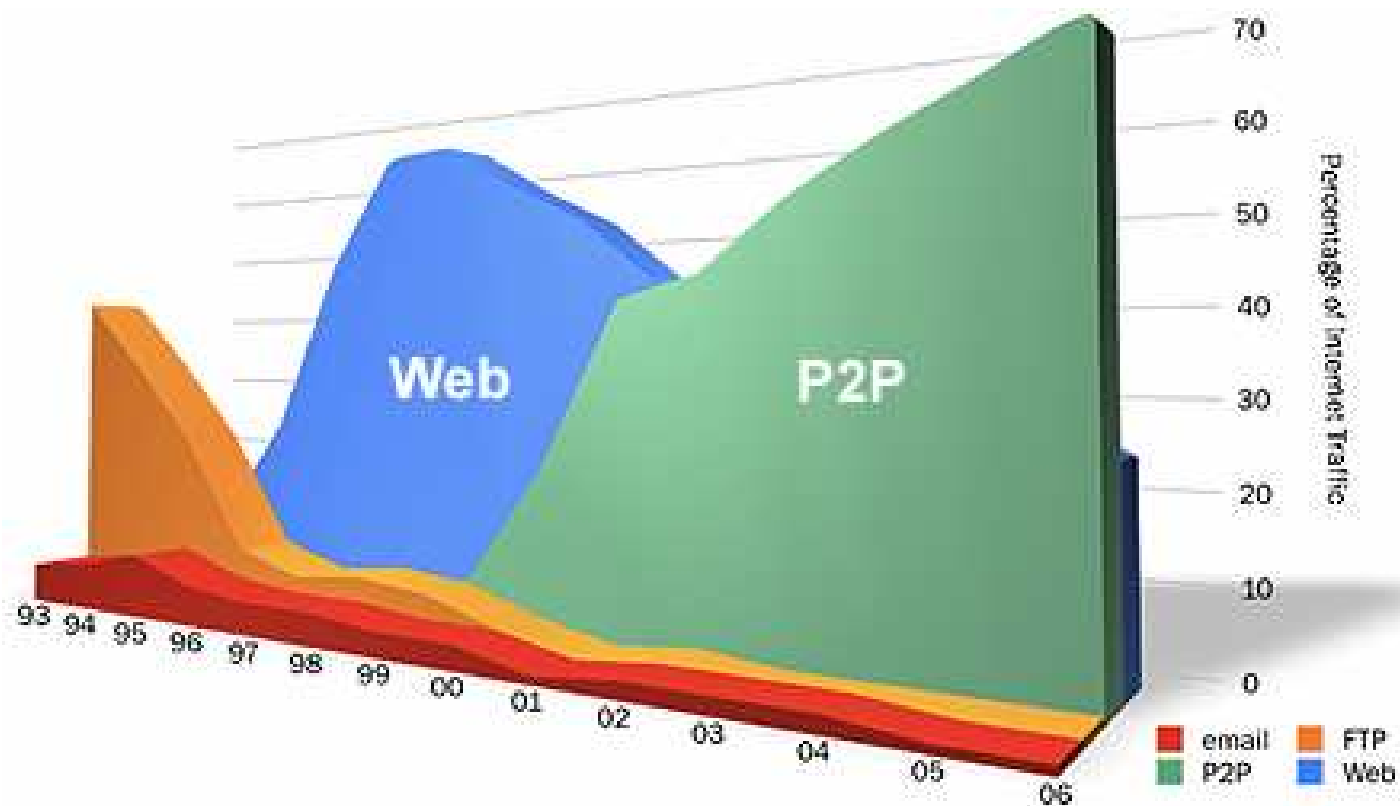
From Digital Media Desktop Report, Q4/2007

Application churn dynamic

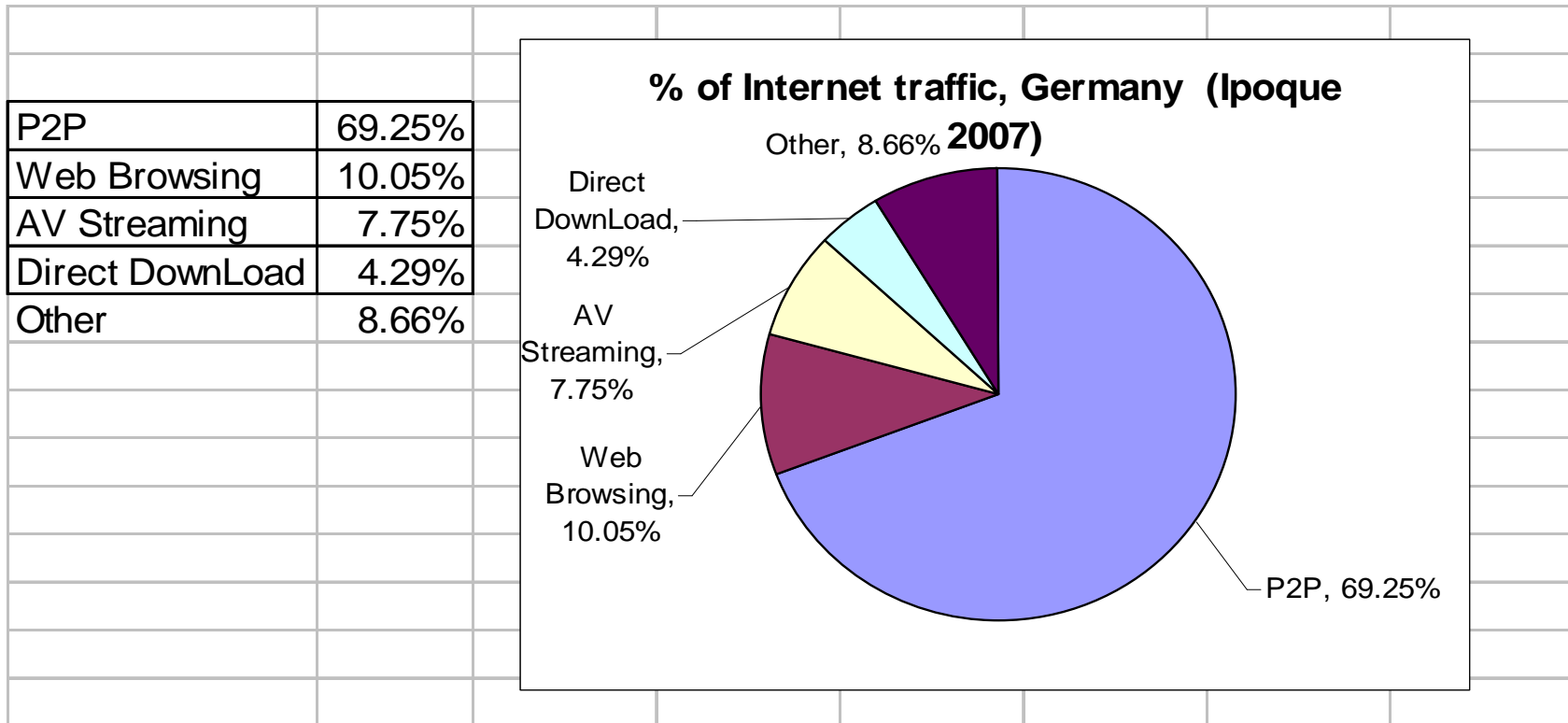


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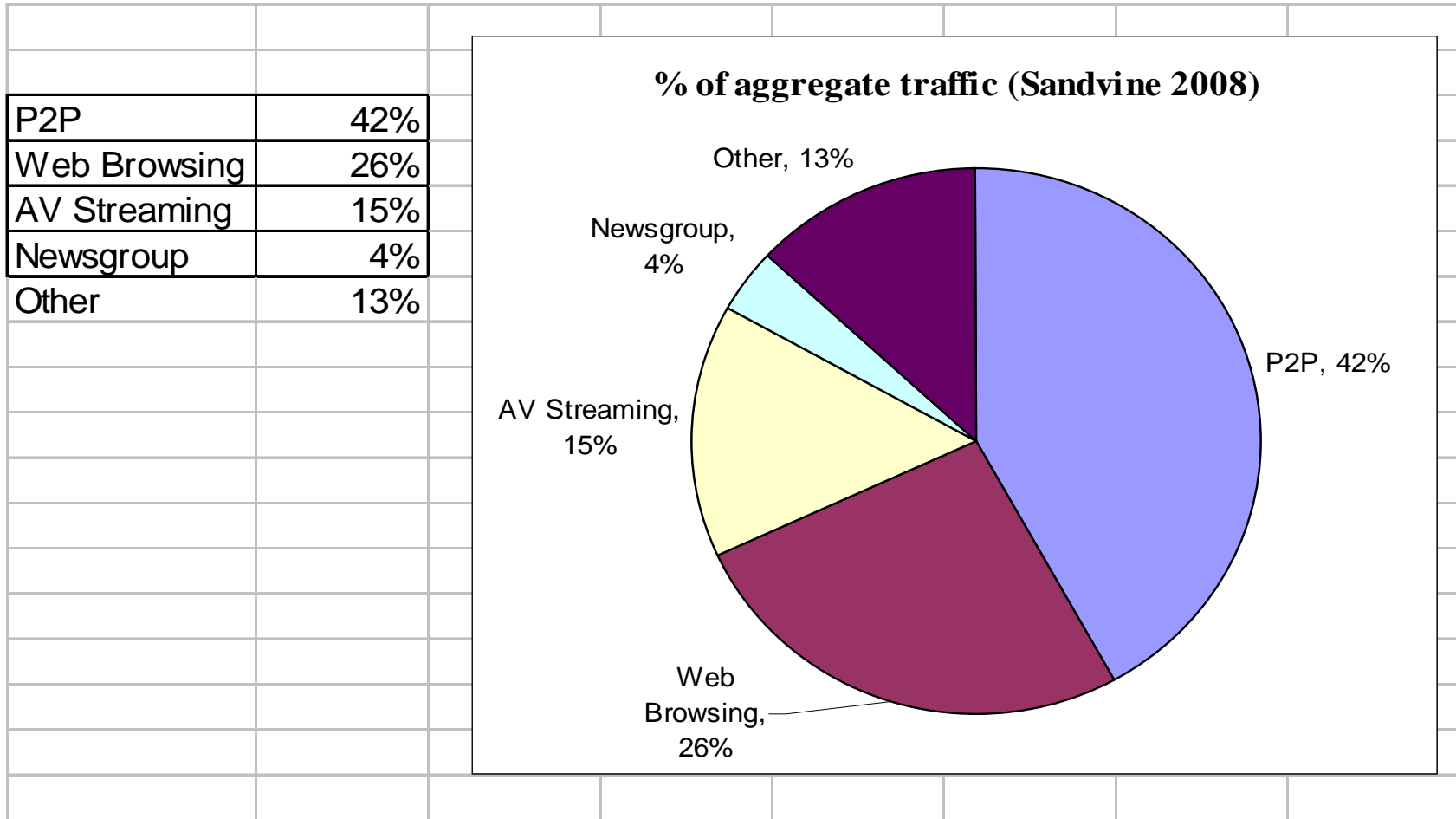
Global traffic consumption (CacheLogics 2006)



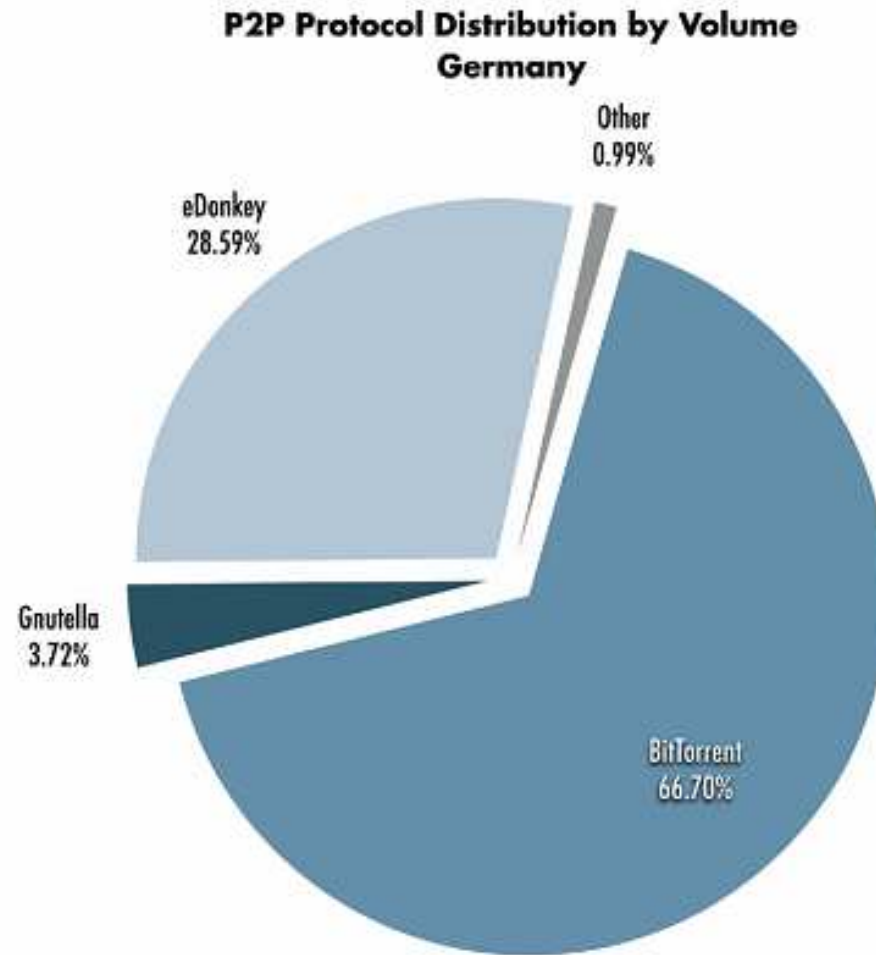
Backbone traffic consumption (Ipoque)



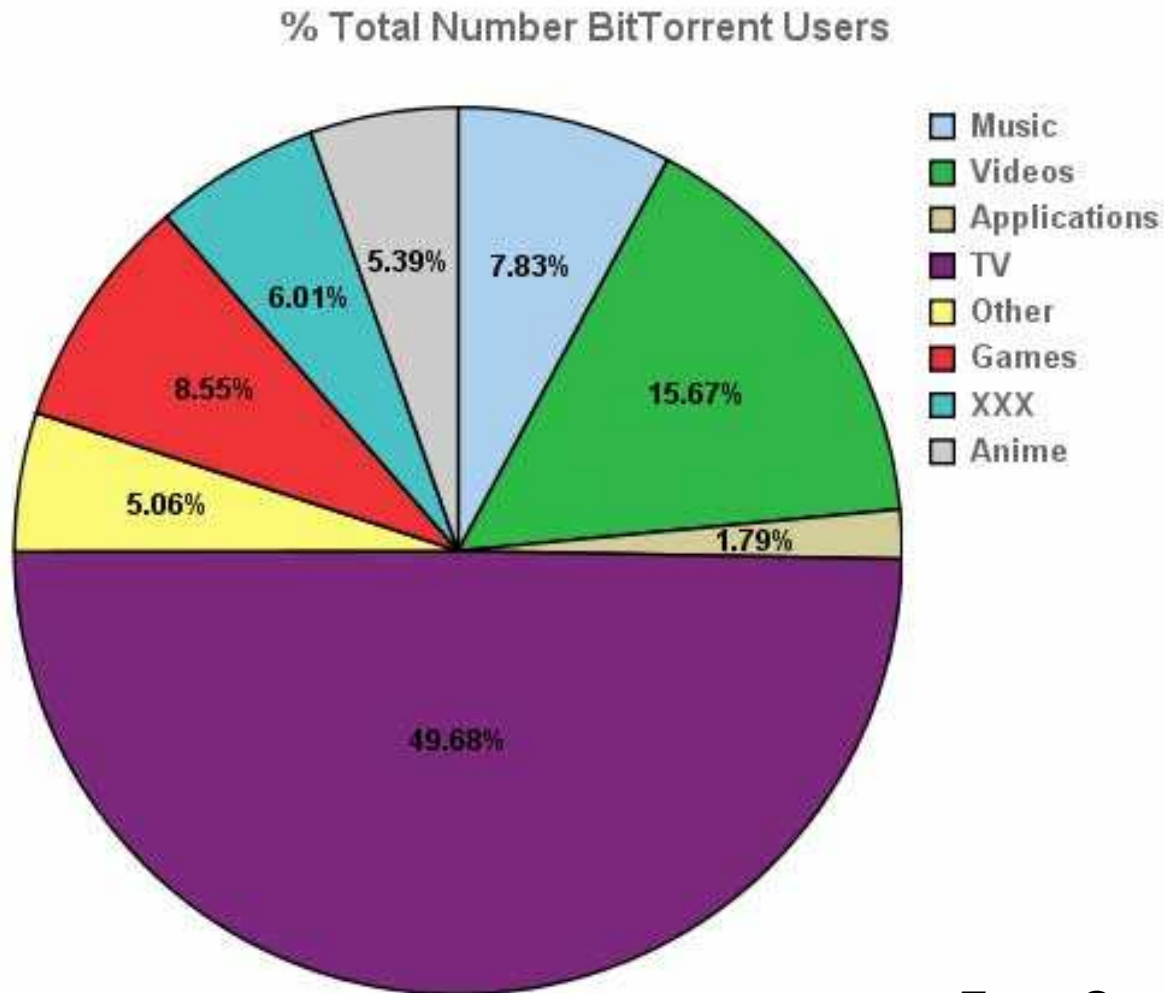
ISP traffic consumption



P2P network popularity (Germany 2007)

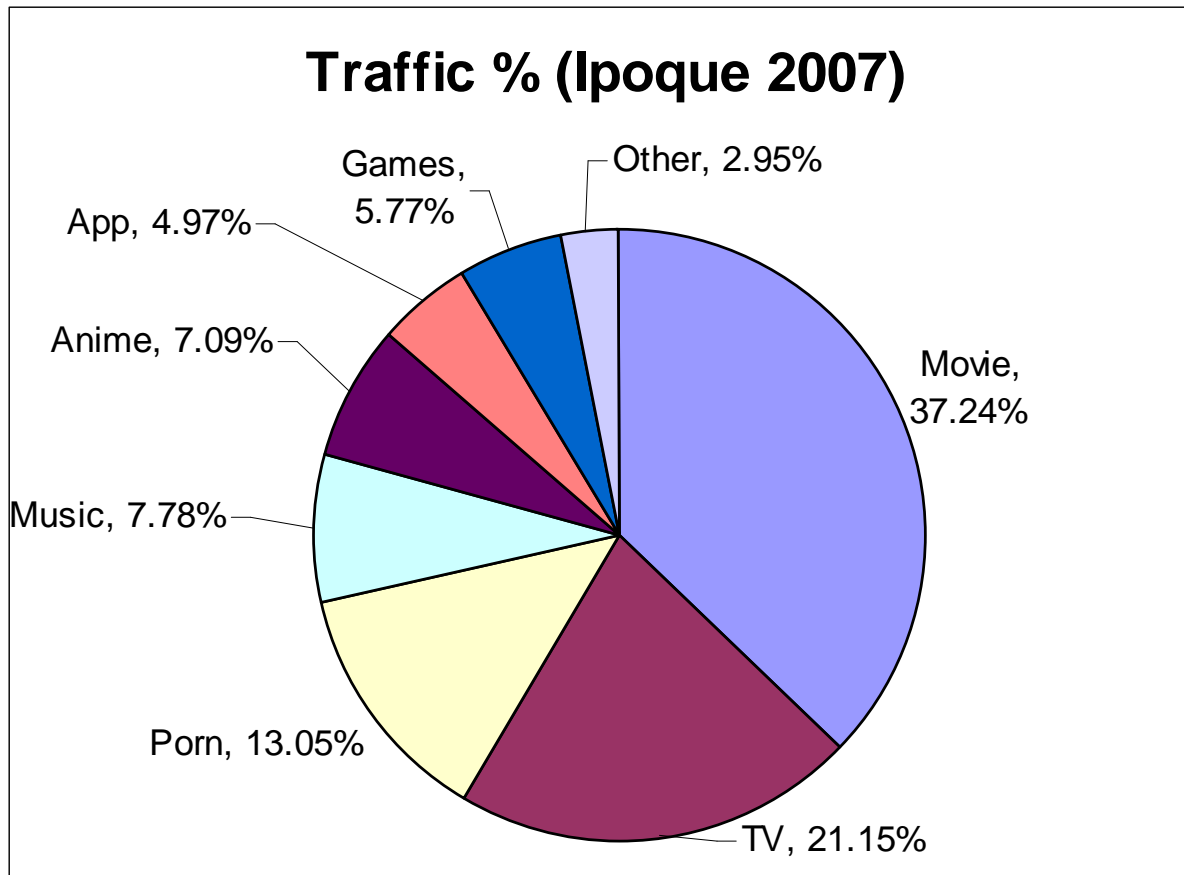


Content Popularity by downloads



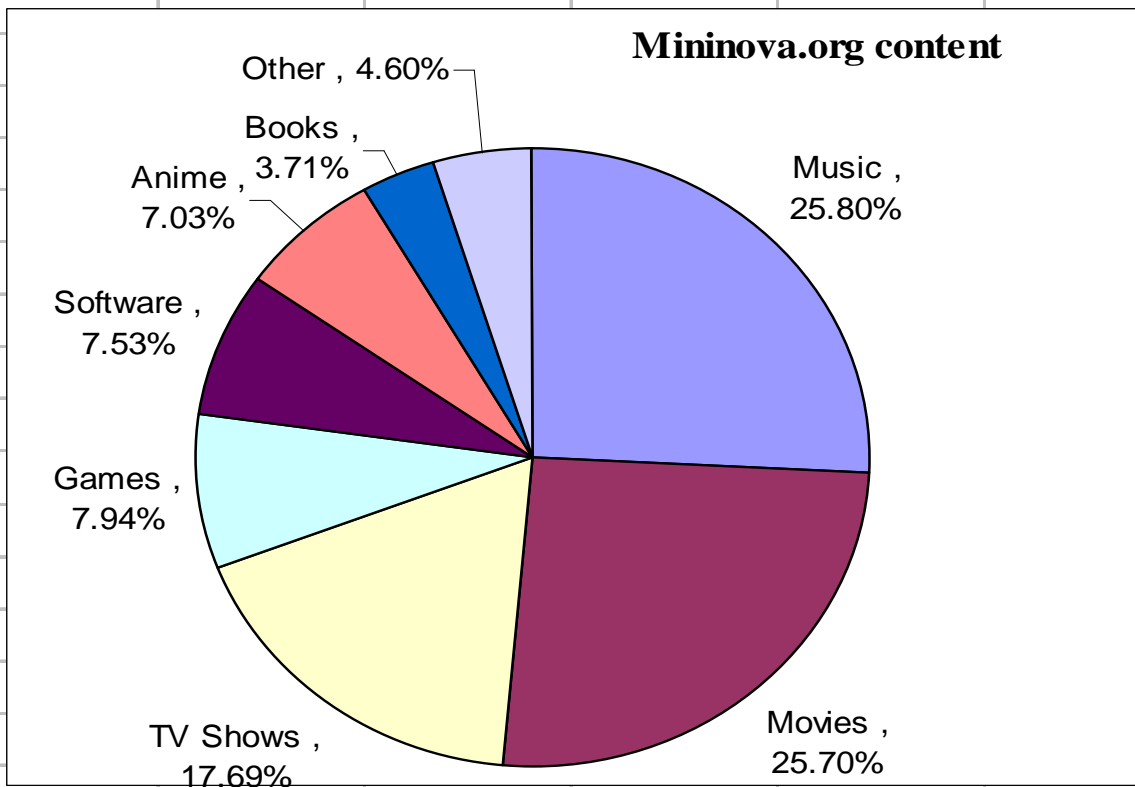
From SumoTorrent , 2008

Content popularity by consumed BW (Ipoque report for Germany)

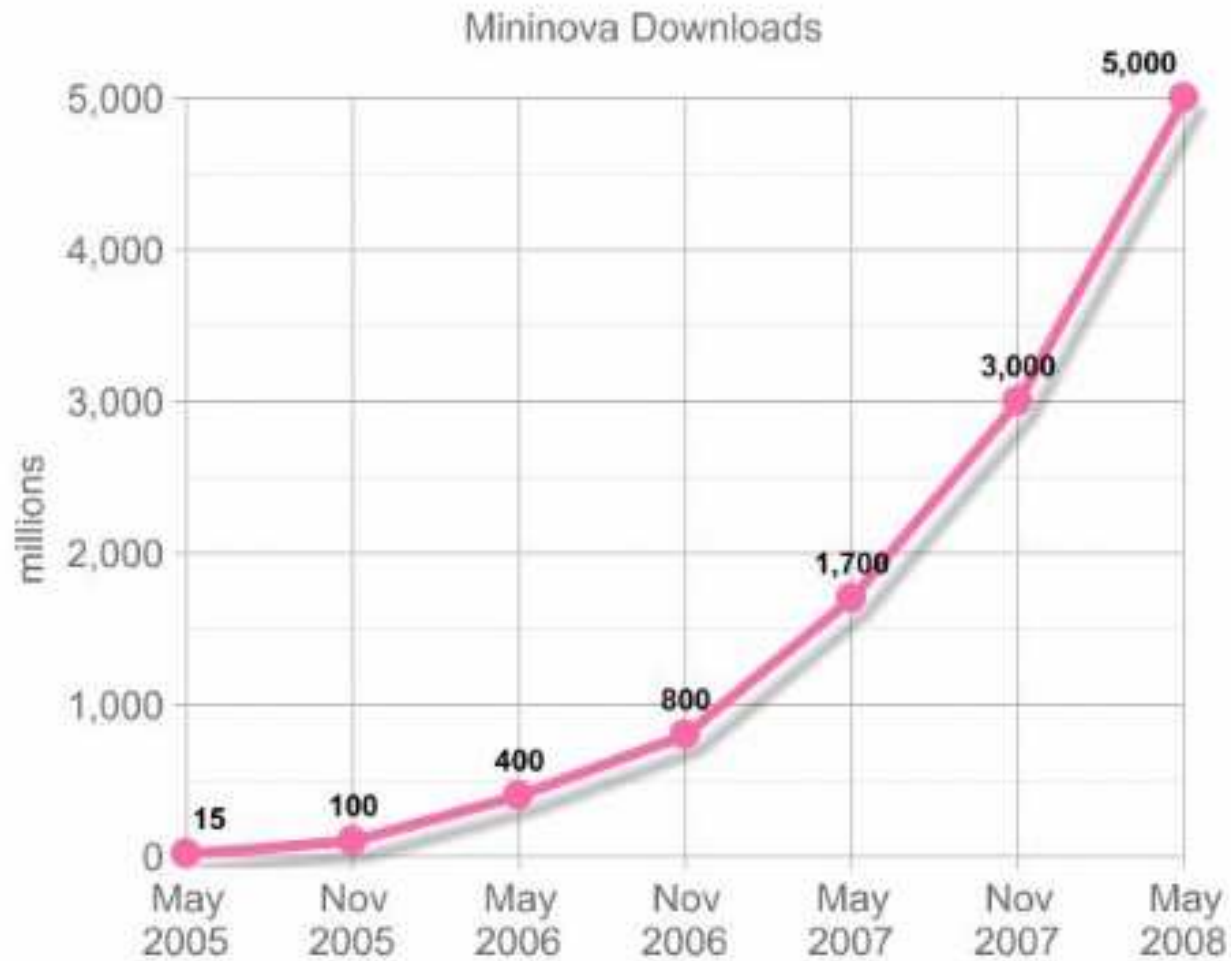


BitTorrent Catalog (June 2008)

Category	Torrents	
Music	180,526	25.80%
Movies	179,845	25.70%
TV Shows	123,789	17.69%
Games	55,561	7.94%
Software	52,702	7.53%
Anime	49,174	7.03%
Books	25,996	3.71%
Other	32,221	4.60%
Total	699,814	



BitTorrent dynamics (Mininova.org)



Impact of P2P on broadband ISP

- **Transit cost**
- **Edge network congestions (up-stream)**
- **Core network traffic increase**
- **VoIP Jitter**
- **Lost of VoD revenues**

- **“Perfect Storm” is just coming – HDTV, STB, IPTV...**

What Should ISP Do?

- **Usage-based pricing (“Metered Internet”)**
 - “manage people, not protocols “
- **Traffic Mitigation (throttling)**
 - Comcast/Sandvine story...
- **Caching**
 - PeerApp, Oversi
- **Intelligent P2P routing**
 - P4P, ALTO,etc.....

More details in separate presentation

Metered Internet

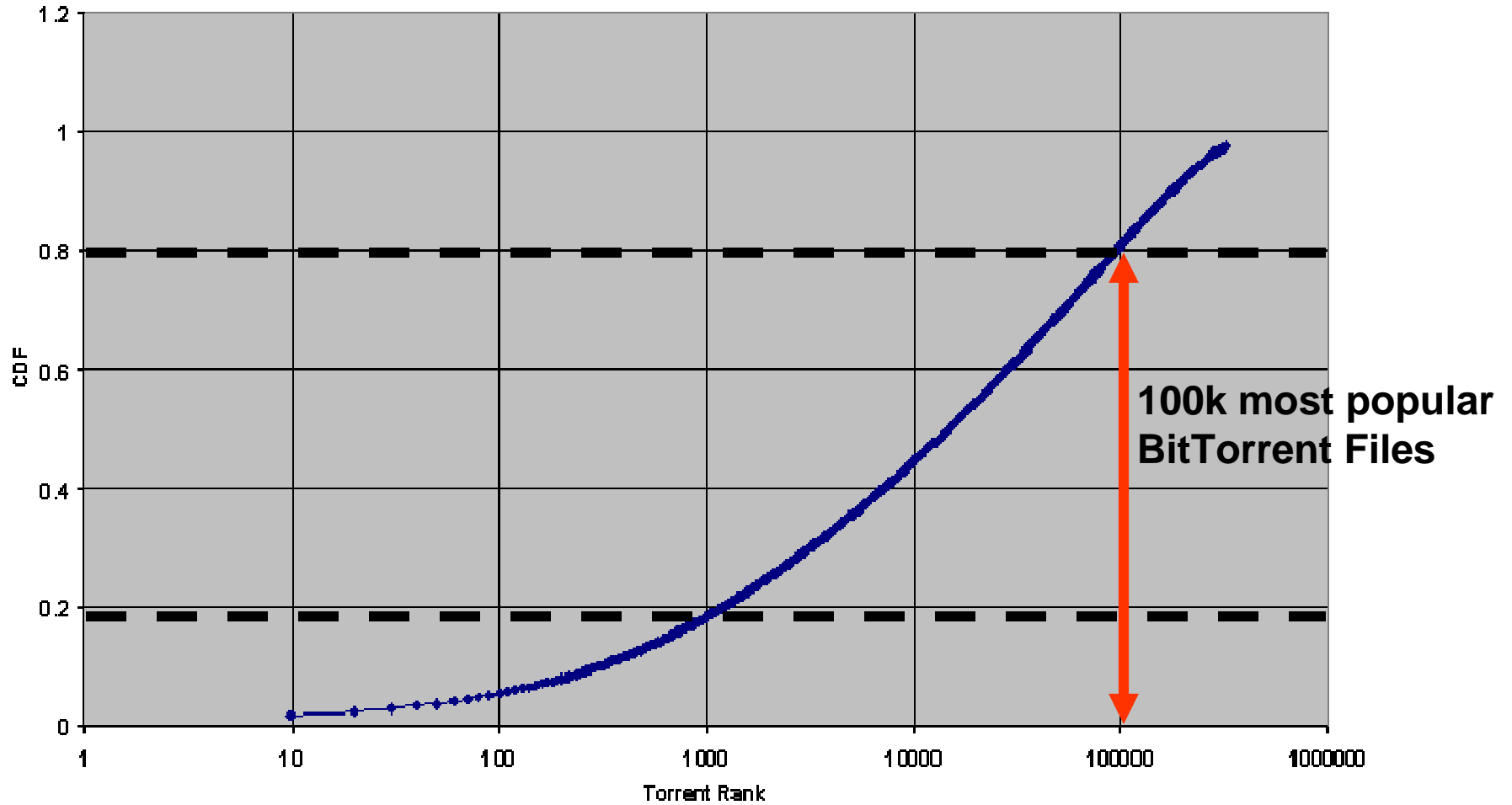
- Flat rate + Monthly Cap – inefficient
- Time-based – confusing for customers (but used in some countries)
- Full scale “Usage Based Billing” – hard/expensive to implement

Traffic mitigation (throttling)

- In USA – under scrutiny (huge litigation discussion right now)
- Hard to implement – P2P protocols are morphing and hiding quite fast.
- DPI – outdated, had to be replaced by other technology (behavioral ?)
- Need to be implemented on wire speed – 50G and above...

Caching – will not work on the large scale

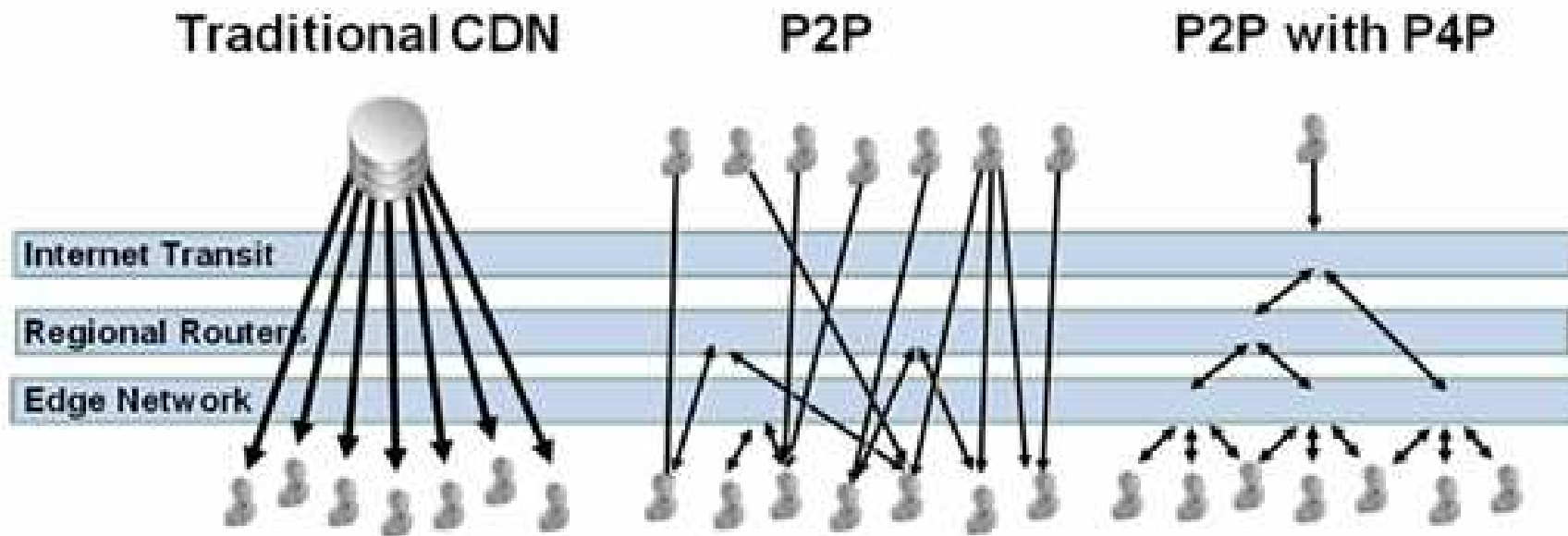
Cumulative Distribution (log)



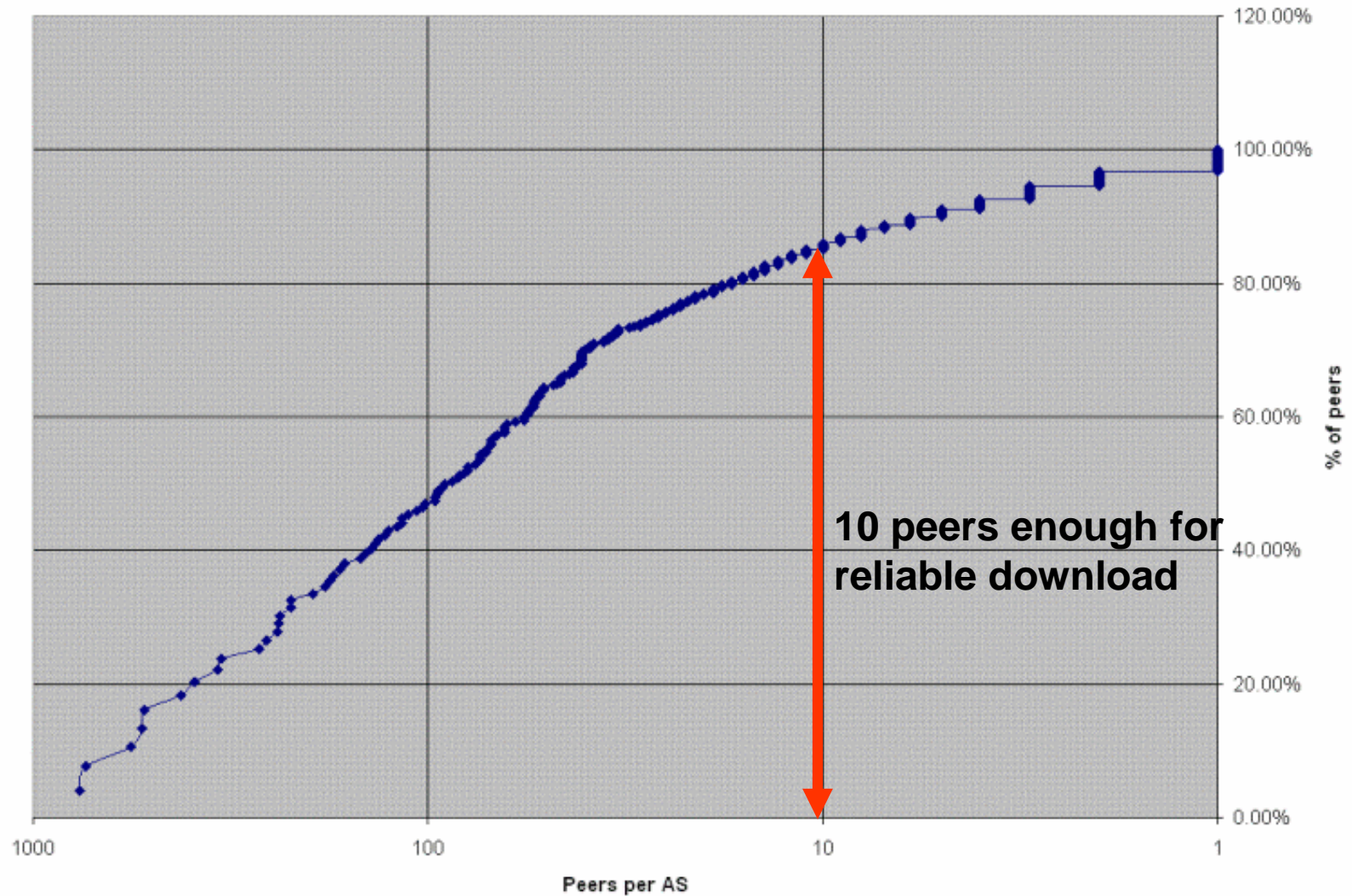
Caching – will not work on the large scale

- 100k torrents per cache server
- Or 140 Tb per server
- Or about \$500k in NetApp prices.

Intelligent P2P routing (P4P/ALTO)



ALTO feasibility : “Hellboy 2” test(20k peers)



Shameless Advertisement:

KHIRMAN & SON

OPEN FOR BUSINESS

- Help in technology research & development
- Help in startup bootstrapping and VC funding
- Major areas of interest: P2P, CDN, VoD, DPI, VoIP, etc...

Q&A