

Tension between P2P and Service Providers?

Internet traffic trends and player incentives

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P2P content delivery

Peer-to-peer (P2P) networks use direct communication between “peers” to support a service or application

- Alternative to client-server approach

Who uses P2P applications for content delivery?

- End users: use P2P to get content
- Content providers: use P2P to reduce distribution cost

Poorly designed P2P applications can cause

- Inefficient use of network resources
- Resource contention with other applications

Small number of users consume significant fraction of bandwidth

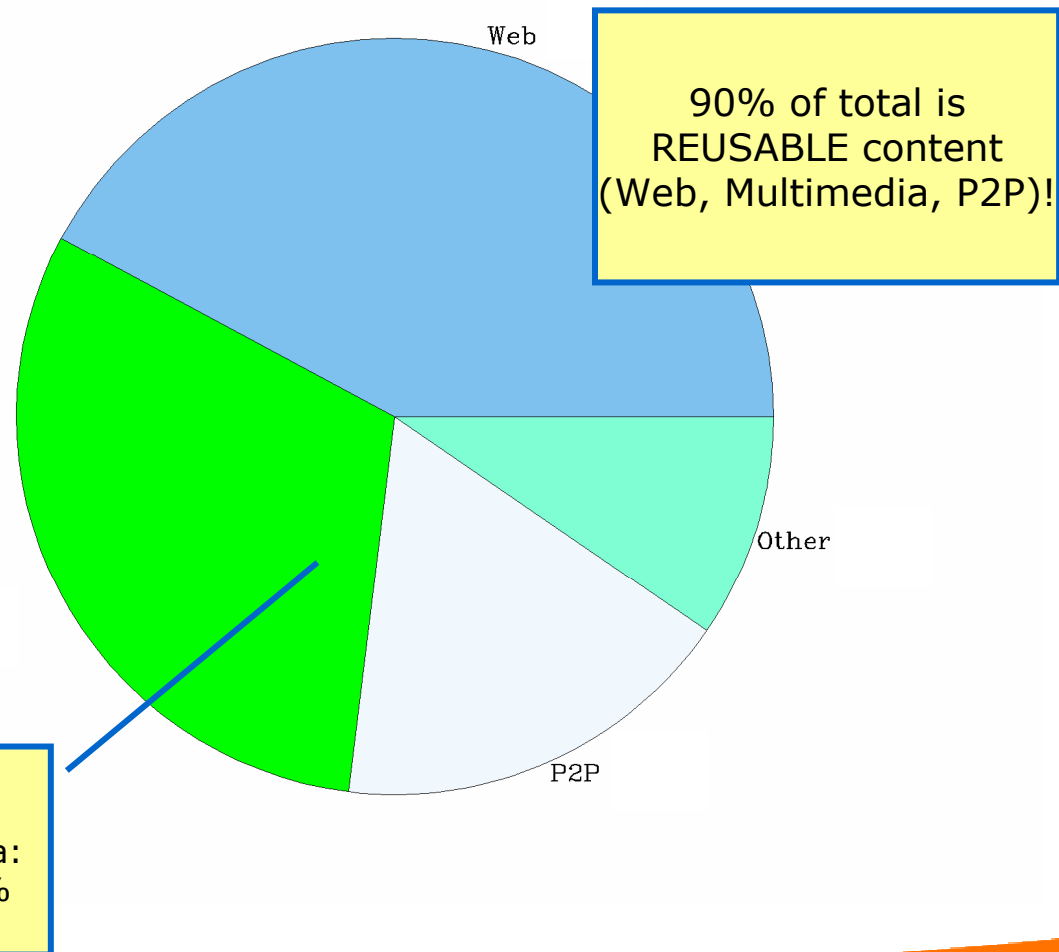
Current Application Mix on the Internet (U.S.)

Busy hour is 1/3 Explicit Multimedia

Web: HTTP traffic with a non-video mime type.

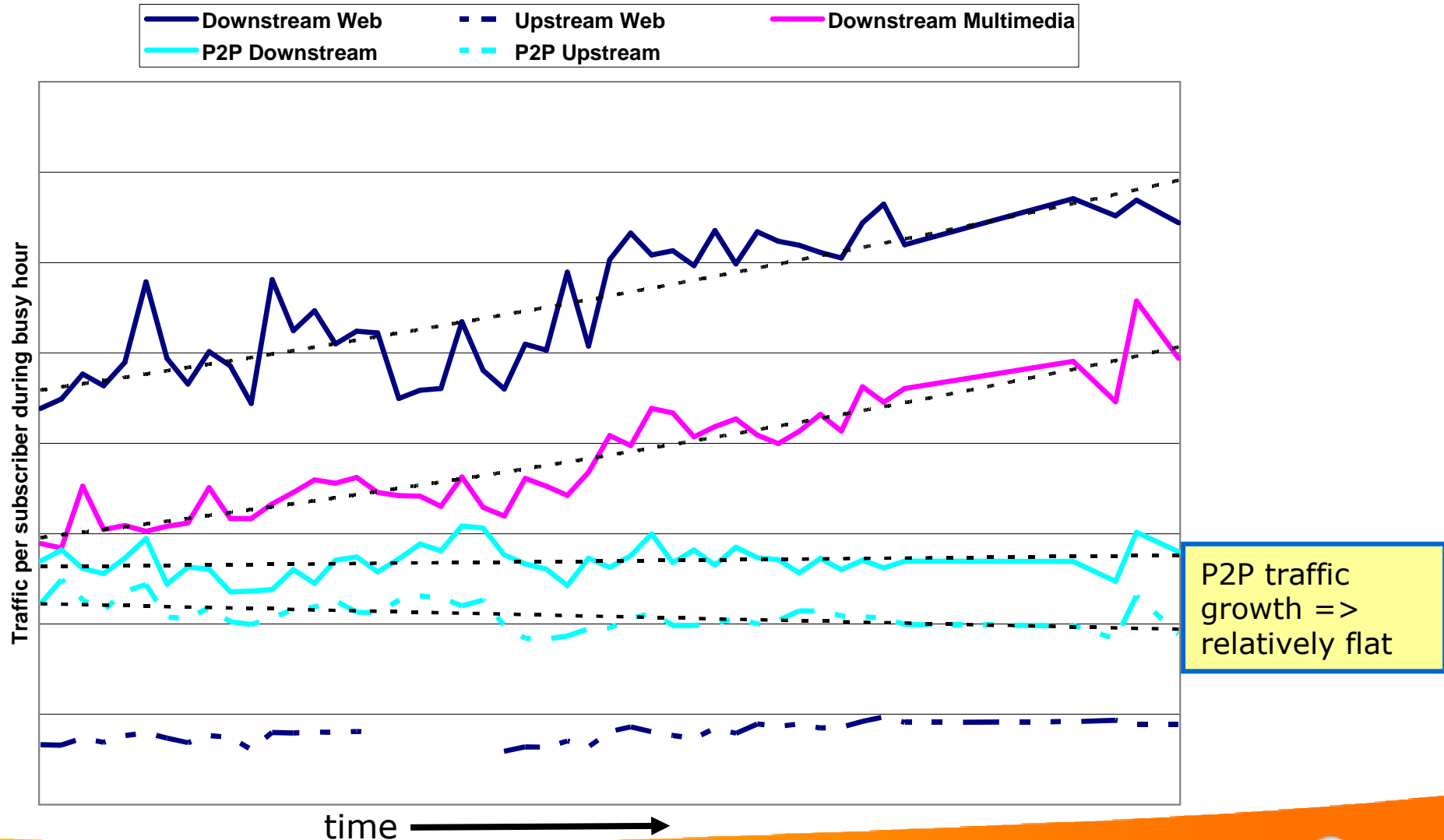
Explicit Multimedia: Video/Audio HTTP traffic and streaming video protocols such as RTSP, RTMP.

P2P: File Sharing applications such as BitTorrent, Gnutella, etc. (more than 50% video)

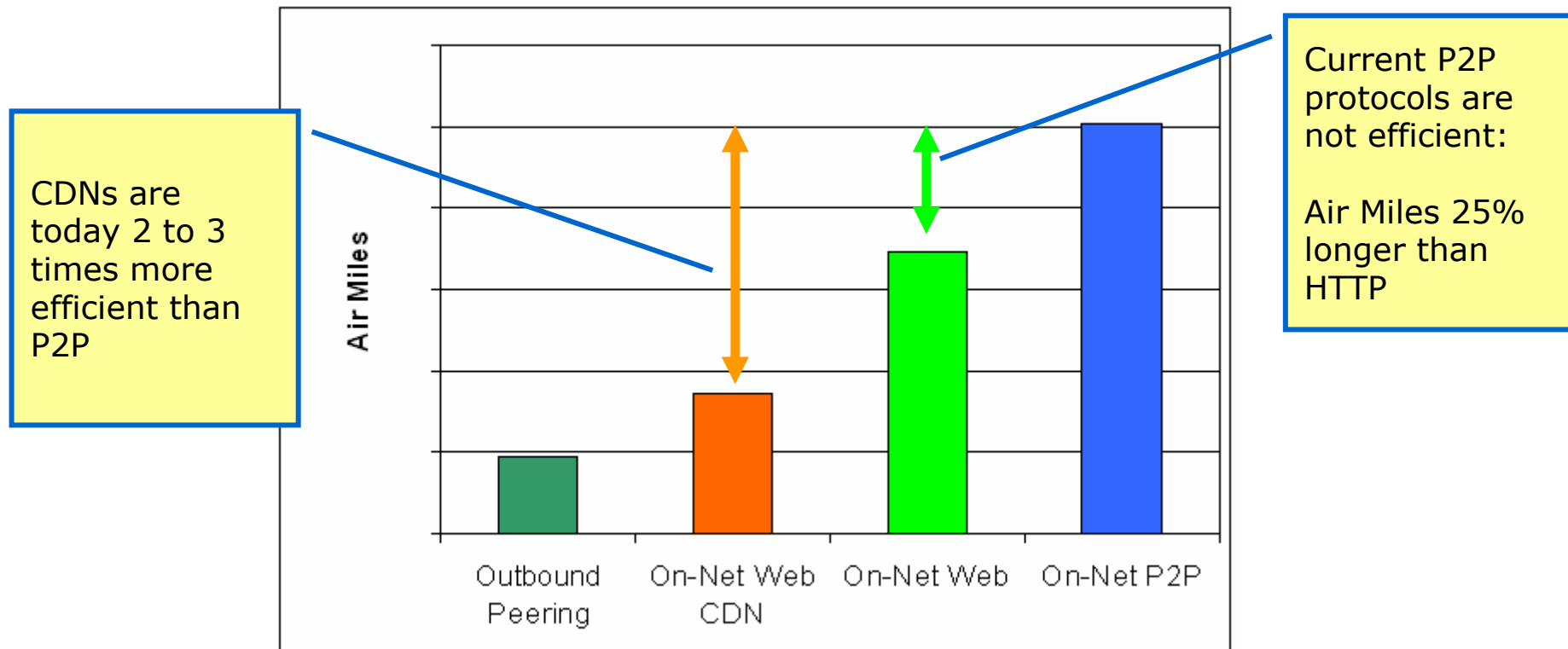


Content Growth over the last Year

Multimedia/sub: +86% CAGR



Efficiency of content delivery mechanisms



Average distance traveled by content on U.S. backbone

Player Incentives

End user

- Get interesting content, ease of use

Content provider

- Protect valuable assets

ISP

- Provide good service, manage cost

CDN

- Provide good service, manage cost

P2P application provider

- Attract users, provide good performance

P2P tracker operator

- Ad revenue

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Do proper incentives exist to improve P2P efficiency?