

Introduction of ALTO-like activity

- P2P Network Experiment Council - in Japan

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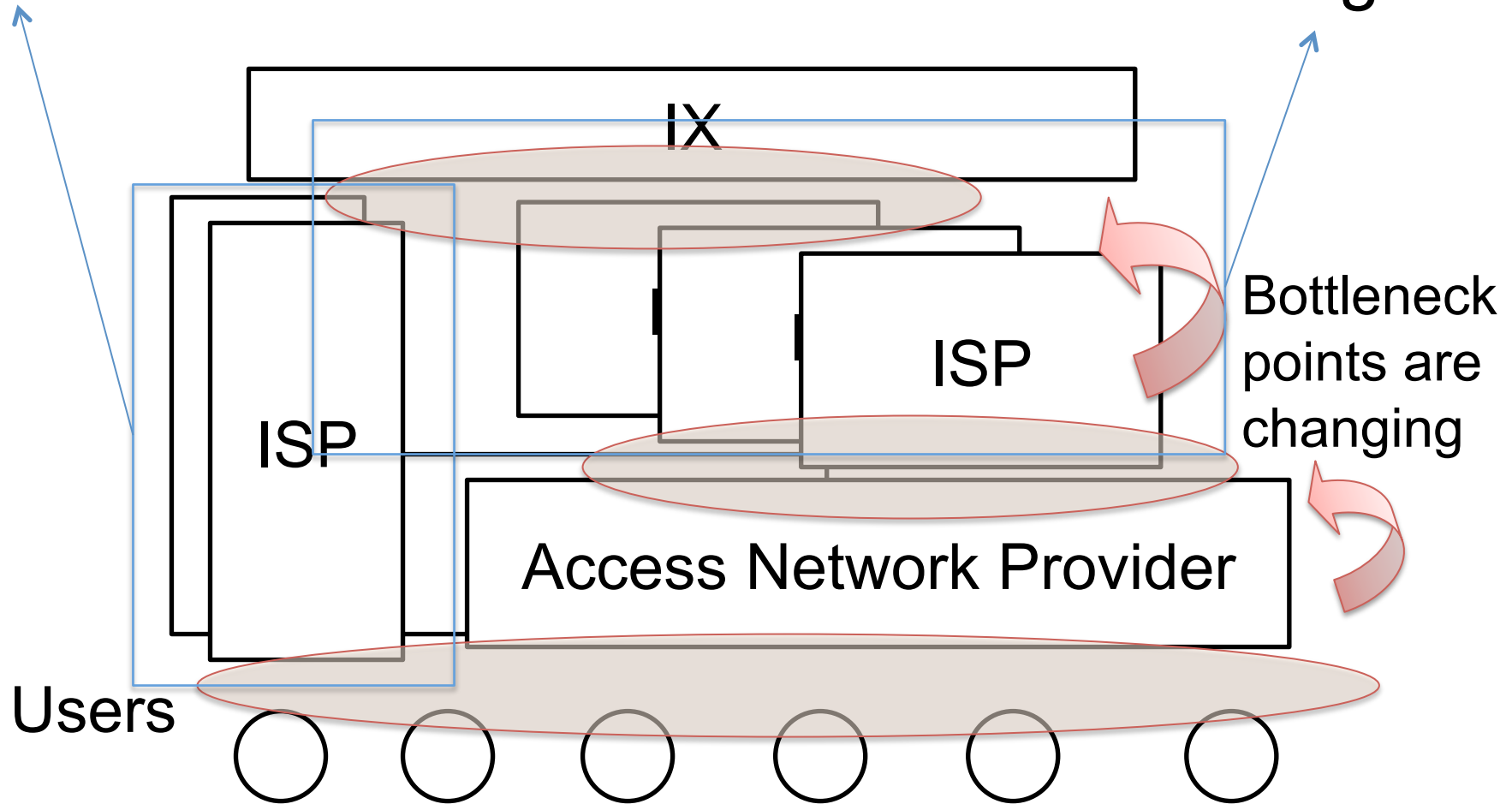
Background - P2P in Japan -

- Access Network Environment
 - Widely Spread Broadband Access Network (FTTH users are larger than DSL users from 2008 June)
- P2P Applications
 - Mostly used P2P File Sharing Applications (Winny, Share) were developed in Japan.
- ISP Operations
 - Many ISPs are shaping P2P file sharing traffic based on “Guideline for Packet Shaping (by ISP, CATV, Telecom Associations with MIC)”
- P2P Traffic
 - Still remains dominant traffic (about 60% in 2008).

Network Cost Structure in Japan

ALTO's main target

Our main target



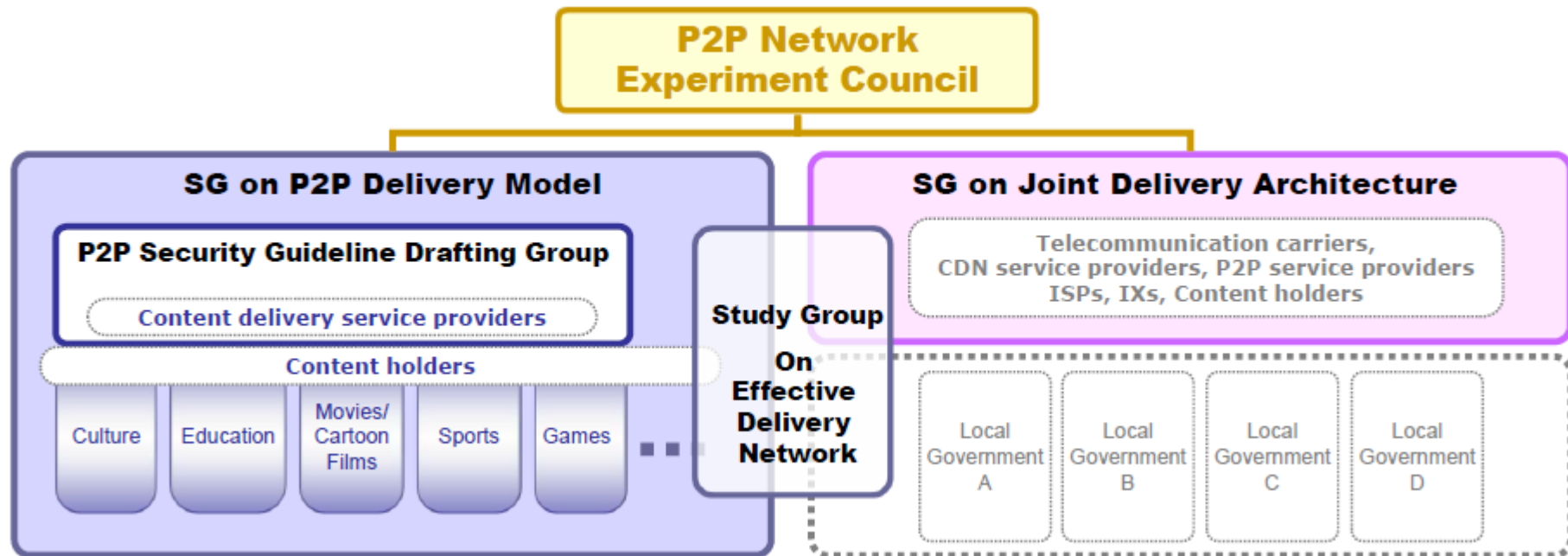
Network Neutrality and Competition Policy in Japan

- Network Neutrality
 - Equitable cost allocation of networks
 - Equal access to networks
 - in WG on Network Neutrality 2006-2007 by MIC

P2P traffic is threat on equitable cost allocation, but important technology for network scalability.

P2P Network Experiment Council

- Established in August 2007.
- Purpose: promoting new content delivery businesses, and spreading P2P services to regional areas.
- Contents Holder, P2P Provider, ISP, Carriers, w/ MIC as an observer



Experimental Environment ('07-'08)

- Dummy nodes
 - PCs in users environment
 - P2P applications are installed
 - Observing peer selections.
 - More than 40 nodes in Japan.
- Hint Server ('08)
 - Peer Select Assistant Server like ALTO approach.
 - It returns distance information based on AS and region.

44 dummy nodes in Japan

場所	ISP	1)	2)	3)	4)
札幌市	HOTnet	●	○	○	○
札幌市	NTTCom検証設備	-	●×2	●	-
札幌市	NTTCom北海道支店	-	-	○	○

場所	ISP	1)	2)	3)	4)
福井市	MiteneInternet	●	○	●	○
金沢市	インクル	●	●	●	○
金沢市	ネスク	△	△	△	△
富山市	コーラルネット	●	●	●	○
富山市	富山IX	-	●×2	-	-
富山市	FITWEB	-	●	-	-

場所	ISP	1)	2)	3)	4)
長野市	NTTCom信越支店	-	-	○	○
上越市	上越CATV	○	△	△	△

場所	ISP	1)	2)	3)	4)
山形市	CATV山形	●	●	●	○
仙台市	NTTCom東北支店	-	-	○	○
仙台市	キャベツ				
青森市	青森CATV				
秋田市	秋田CATV				
遠野市	遠野テレビ				

場所	ISP	1)	2)	3)	4)
倉敷市	倉敷CATV	●	●	●×2	○
岡山市	岡山IX	-	●	-	-
広島市	NTTCom中国支店	-	-	○	○
米子市	中海テレビ	△	△	△	△

場所	ISP	1)	2)	3)	4)
大手町	NTTCom検証設備	-	●×3	○	○
横浜市	横浜テレビ	△	△	△	△

場所	ISP	1)	2)	3)	4)
名古屋市	NTTCom東海支店	-	-	○	○
東海市	知多メディアス	●	●	●	○

場所	ISP	1)	2)	3)	4)
堂島	NTTCom検証設備	-	●×2	●	-
大阪市	NTTCom関西支店	-	-	○	○
大阪市	スマートコネク	-	●	●	○
京都市	???				

場所	ISP	1)	2)	3)	4)
福岡市	NTTCom検証設備	-	●	●	-
福岡市	NTTCom九州支店	-	-	○	○
大分市	大分CATV	△	△	△	△
鹿児島市	グッドコム	●	●	●	○

場所	ISP	1)	2)	3)	4)
松山市	愛媛CATV	●	●	●	○
高松市	NTTCom四国支店	-	-	○	○
高知市	高知IX	-	△	-	-

Peer Selection in Dummy nodes

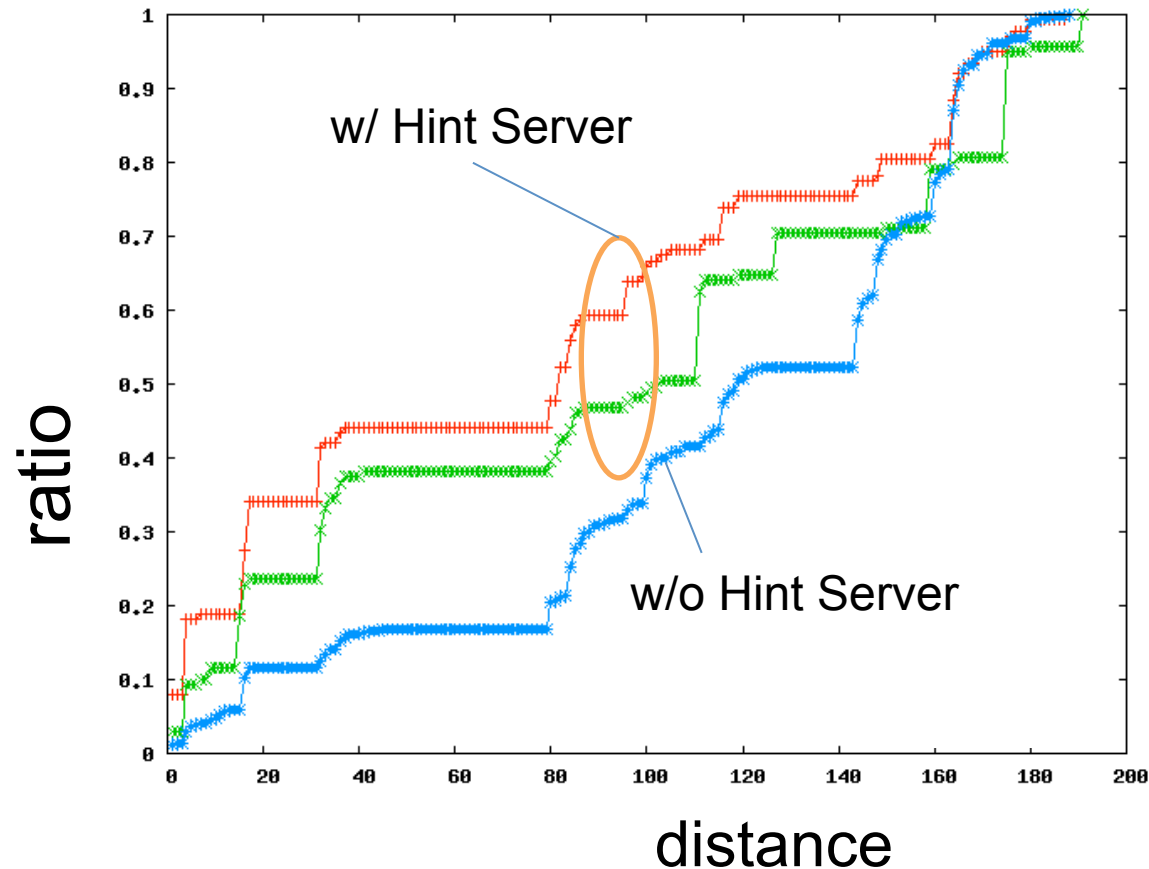
- Peer Selecting conditions

Condition	Ex1	Ex2
A: Selects Peer in same ISP	22%	29%
B: Selects Peer in same region	19%	23%
$A \wedge B$	5%	7%

- Each application will select peers by their own logic (t/p, connecting time, etc...), but it looks like random (in AS, region) selection.

Peer Selection with Hint Server

- Cumulative Distance Distribution



- 20%-40% distance reduction in average w/ Hint Server.

Hint Server '09

- w/ more P2P vendors (2 -> 6+) and contents.
- We'll extend our Hint Server.
 - Compatibility w/ ALTO reqs
 - (src, dst, cost)
 - Public and Private Hint Server
 - Public: For Traffic reduction
 - Private: For ISP specific purpose
 - Extensional Fields
 - (src, dst, cost, flag, ext-address)
 - Guide to Cache nodes, under-NAT nodes, non-Congestion nodes, and so on.
 - Statistical Information
 - Transfer rates, # of Peers, Controlled results, and so on.

Suggestions to ALTO

- We found the hierarchical structure is useful
 - through the field experiment in Japan Backbone (IX) bottlenecks and Access Network Providers
 - may also required in Wireless Environment
- Providing statistics is necessary to see how the system improved performance
 - It is difficult to estimate effectiveness of control in peer selection, and Statistical information are important.
- We're challenging cache/NAT solutions
 - We'll feedback them p2prg/alto in the future.