

ITU-T Kaleidoscope 2009 Innovations for Digital Inclusion

Discrimination in NGN service markets: opportunity or barrier to digital inclusion?

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Questions

- How will discriminatory actions by NGN platforms affect access to and use of telecommunication services?
- What forms does discrimination adopt and how are their impact on consumer's welfare?
- To what extent can discrimination deter or accelerate the inclusion of some tiers of society into the knowledge economy?

What the world's operators are doing?

- First announced in 2005, Dutch operator KPN is about to launch its all-IP network in 2010.
- In 2008 Australia announced a project to build and operate a new super-fast national broadband net.
- BT's 21st Century Network (21CN) is a migration of its network to NGN.
- Recently BT has decided to step back from this vision of a complete replacement of its PSTN and replaced it when needed.
- In March 2009, New Zealand's incumbent Telecom made its first official IP call. It says NGN will replace its PSTN at some point before 2020.

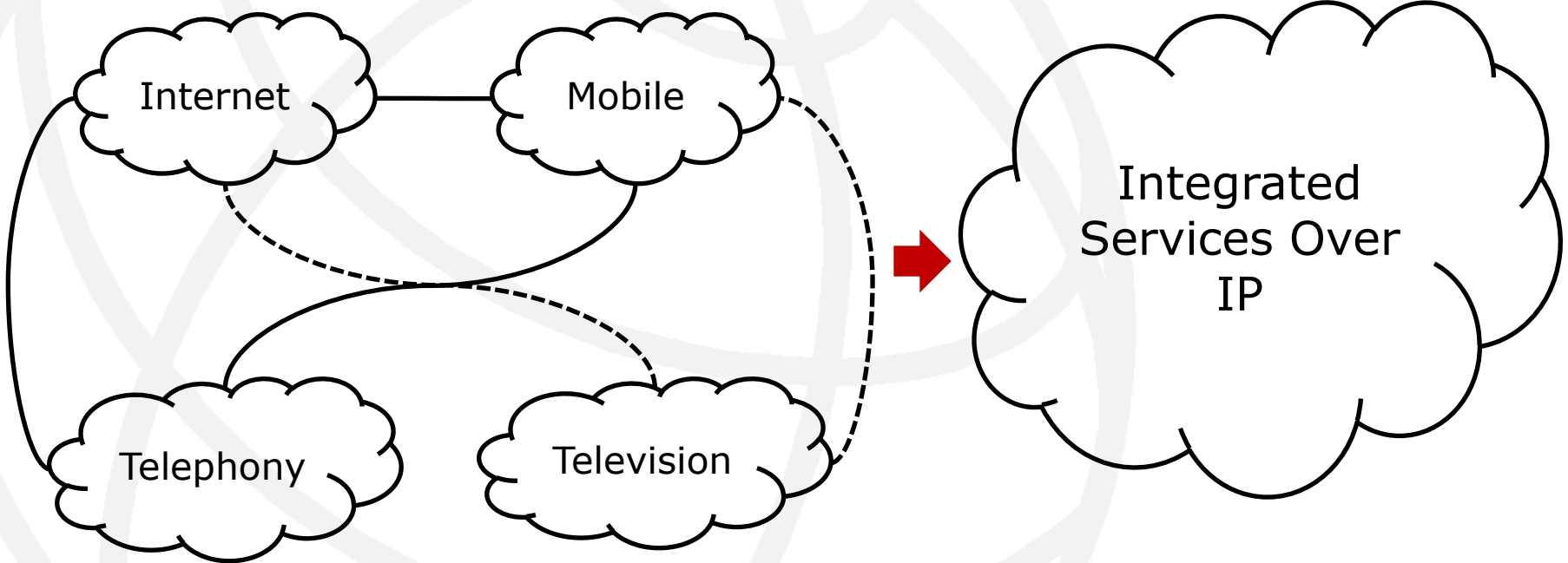
Recent Disputes

- In 2007, Comcast was accused of blocking P2P traffic on its networks.
- In 2004, Madison River Communications obstructed the use of the VoIP service from Vonage to Madison's DSL customers.
- Canadian operator, Shaw, intentionally "reduced the quality" of VoIP services to its competitors forcing their users to buy additional services provided by Shaw.
- Telefónica CTC Chile locked access to the ISPs' operating VoIP on its platform MegaVía. Affected ISP RedVoiss filed a complaint against Telefónica for anticompetitive behavior.

Migration to NGN

Current
Landscape

NGN



Challenges to regulation

PSTN

- Retail price levels
- Interconnection agreements
- Access and termination charges
- Cost proxy models
- Universal service

NGN

- Network neutrality
- Price discrimination
- Traffic discrimination
- QoS
- Who pays? Originator or receiver?
- Price structure

Network Neutrality (I)

The network neutrality principle requires any operator not to discriminate against content that travels on its network, or against particular websites and devices used to access the Internet.

Network Neutrality (II)

For

- More competition (non barriers)
- More investment in networks and innovation
- Discourage blocking
- Equal access to the internet

Against

- Need to provide quality-based services
- Bandwidth management
- Detection of some traffic like malware, and spam
- Differentiate services

[Wu and Yoo, 2007]

Discrimination (I)

Discrimination can be defined as the unequal treatment of applications and content from whoever manages or handles the network, seeking individual benefit, without the consent of all market participants.

Discrimination (II)

NGNs may exert four different types of discriminatory activities:

- ➔ **Price discrimination:** different prices for the same services
- ➔ **Access tiering:** differentiated access services
- ➔ **Blocking:** direct blocking by address or content type
- ➔ **Service quality discrimination:** different priority to different packets.

[Marsden and Cave, 2007]

Two-Sided Markets (I)

- A platform enables interactions between end-users and content providers
- Platform engages the two groups by appropriately charging the members of each group.
- Relevant measure is the structure of prices, not the level of prices.
- This model defines a rational basis for platform discrimination between markets.

[Rochet and Tirole, 2005]

Two-Sided Markets (II)

- TSM unifies multi-product and network externalities.
- Network neutrality may be seen as an attempt to forbid the platform to exploit the new relation between prices (structure of prices)
- Network neutrality may also be seen as a barrier to take advantage of the possible welfare-enhancing role of discrimination

[Faratin and Wilkening, 2007]

A model of competition(I)

A model of competition between two NGN platforms.

Platforms serve two basic types of users: content providers and end-user customers.

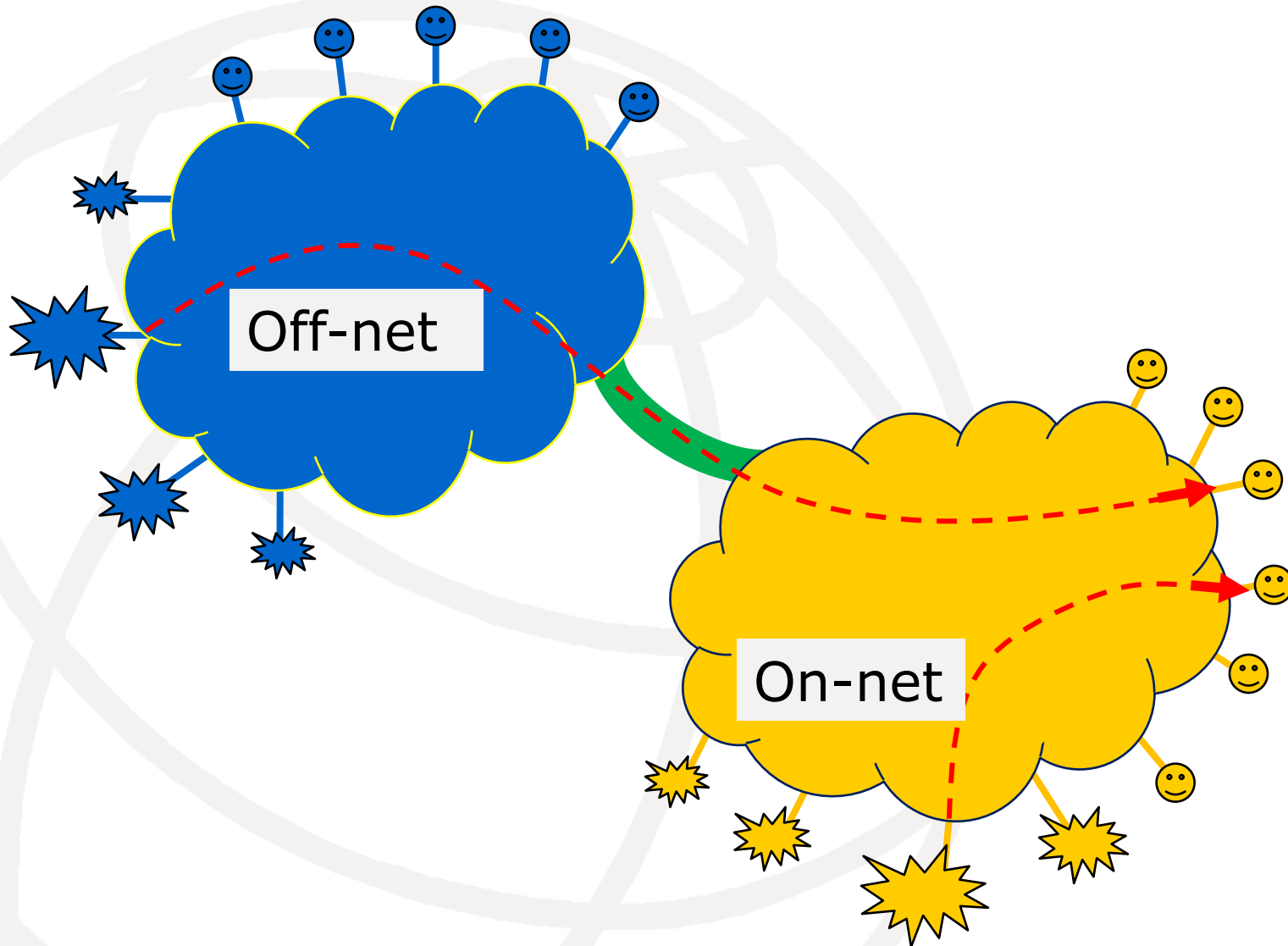
The pricing structure used by the platforms is a two-part tariff; it includes subscription charge and usage charge.

Two services are provided: voice and data.

Platforms compete in prices for some time periods.

[Beltrán and Sharkey, 2008]

A model of competition(II)



Discrimination scenarios

As a matter of example, we consider two discrimination scenarios:

- Price discrimination
- Traffic blocking

and evaluate their impact on consumer's welfare, content providers' profits and platforms' profits.

[Beltrán and Sharkey, 2008]

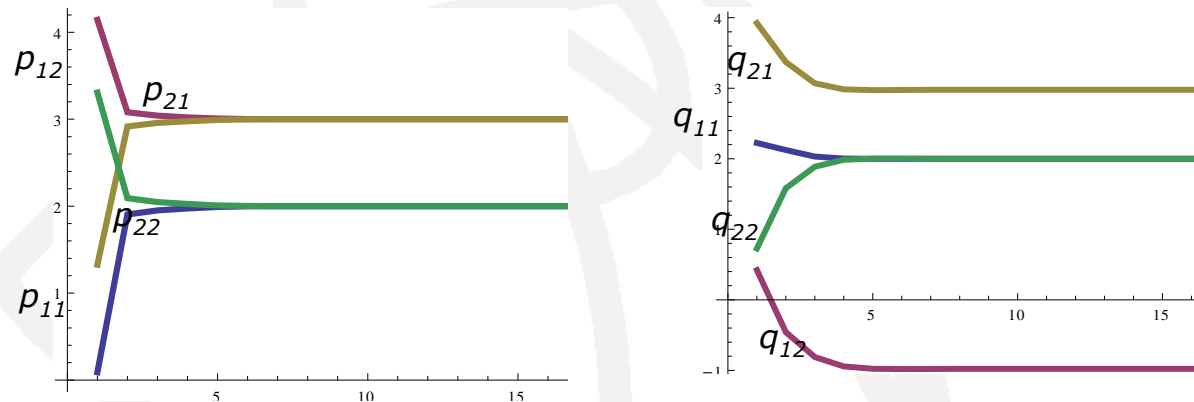
Results - Blocking

- In blocking a platform doesn't carry data traffic from the other platform. Thus, data traffic is only between end-users and content providers that are part of the same platform.

		Total surplus	Consumers	Providers	Platform
Competition	Default inputs	13112	2859	3584	6669
Blocking	Default inputs	11911	1306	4987	5617

Results – Price discrimination

- Platforms discriminate between on-net and off-net traffic.



- Platform 1 subsidizes (q_{12}) data traffic for its subscribers who request content from a provider on Platform 2.
- Platform 2 charges an off-net price (q_{21}) for data traffic that is greater than the marginal cost of termination.

Results – Price discrimination

- Platform-based price discrimination has the potential to raise content providers surplus.
- It might provide a signal for content providers to invest, thus increasing innovation in service offer.

		Total surplus	Consumers	Providers	Platform
Competition	Default inputs	13108	15	2320	10772
Price discrimination	Default inputs	13013	2	2994	10017

Conclusions (I)

- Discrimination can be harmful or beneficial depending on its use and policy objectives.
 - ➔ Model reveals a welfare-reducing effect of blocking.
 - ➔ It also reveals a non welfare-reducing effect brought about by traffic discrimination.
 - ➔ In fact, its effect on one platform consumer-type (content provider) is surplus-enhancing.

Conclusions (II)

- Discrimination has proven to have positive and negative effects
- Given the incentives platforms have to exert discrimination, it is necessary to balance its effects on society's welfare
- Policies that promote or deter discrimination must account for the effects on those adversely affected as they may lag behind and be excluded