Regional Seminar on the economic and financial aspects of telecommunications Study Group 3 Regional Group for Latin America and the Caribbean (SG3RG-LAC)

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Results from the ITU/BDT study on Broadband and the international Internet connectivity

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First Level

T1

- 1,544Mbs
- Tier One
- Between peers
  - Interconnection Between Peers
  - Free Interconnection
  - Submarine Networks
  - High capacity terrestrial

Submarine Cables

Some of the T1 companies that Operate Submarine Cables

Alba1	Américas I
Cable & Wireless	Columbus Networks
Américas II	Antel-Telecom
GCN	Global Crossing
Atlantis	GT&T y Telesur
Globenet	San Andrés
Internexa	LA Nautilus
Tiws	Unisur

Some of the T1 Companies that operate Submarine Cables

Maya Networks

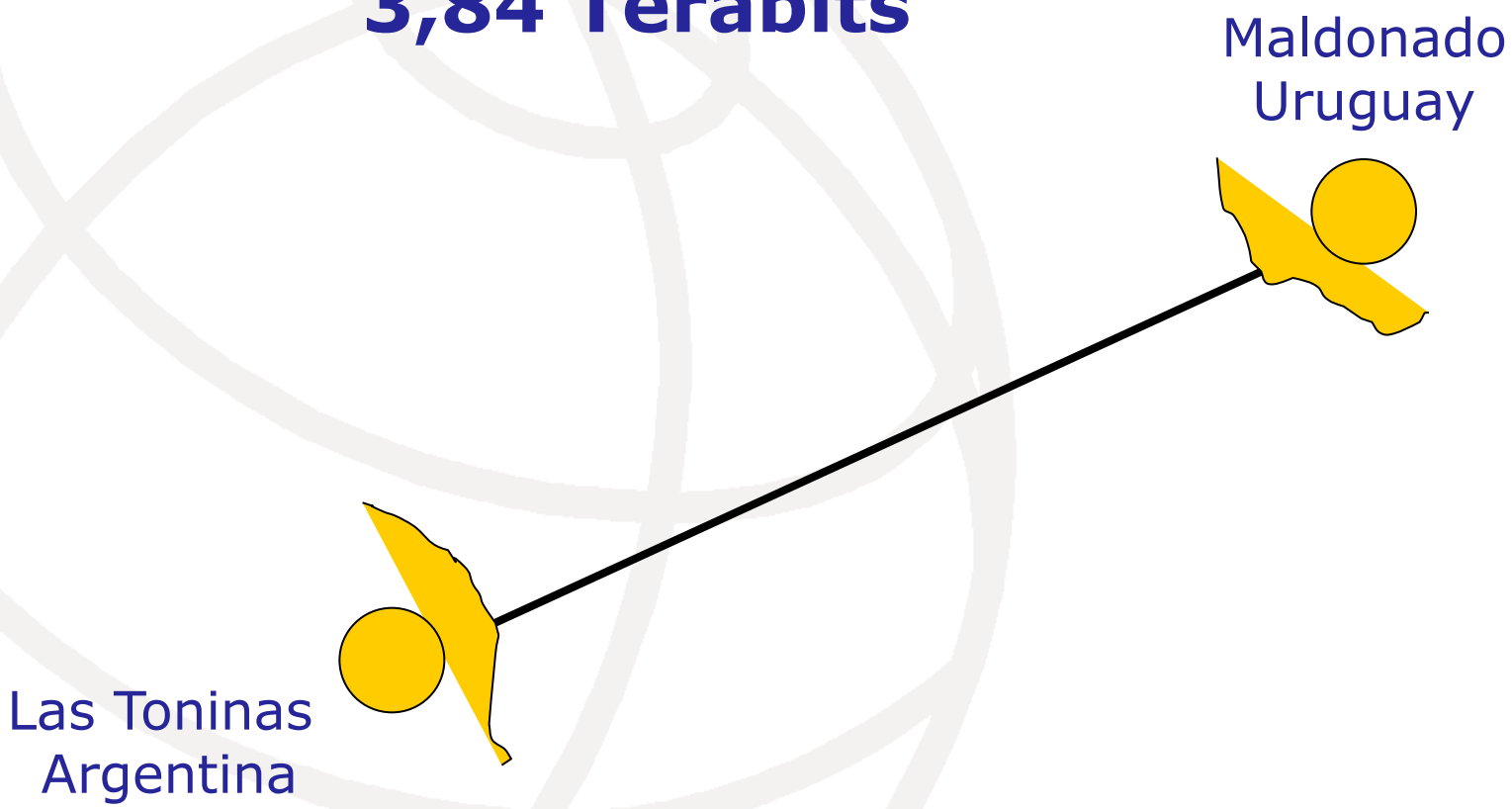
Panamericano

Submarine Cable Venezuela / Cuba

Submarine Cable Dominican Republic/Jamaica/Virgin Isles

Submarine Cable - Uruguay Argentina

Being Test – 250 Km.
3,84 Terabits



updates in submarine cables

Operator		
Globalnet	End of 2011 goes from 360 to 560 Kbps, and 2012 reached 1.2 Tbps	It offers value added premium services
Tiws	Complete its expansion to 1.92 Tbps	Sla, Cloud, Data center
Global Crossing	Backbone Updates	Data centers and cloud networking applications

Second Level

- T2

- Terrestrial Network Operators
- Regional Networks
- Local Networks

T2 Networks

Ampath	AT&T
Clara	Columbus
Auris	Br Telecom
BT	Cybernet
Centenial	Entel
Digicel	Global Carib
Esnet	GBLX
Grant	IFX

T2 Networks

GBnrt	Gilat
Internap	Internet 2
Level 3	Metrored
FT	Savvis
Navega Newcom	NTT
Seabone	Sprint
Orange	Techtel
TATA	Tnet

T2 Networks

Telecom
Twis

Telesiwch
Verison

Telga
OX

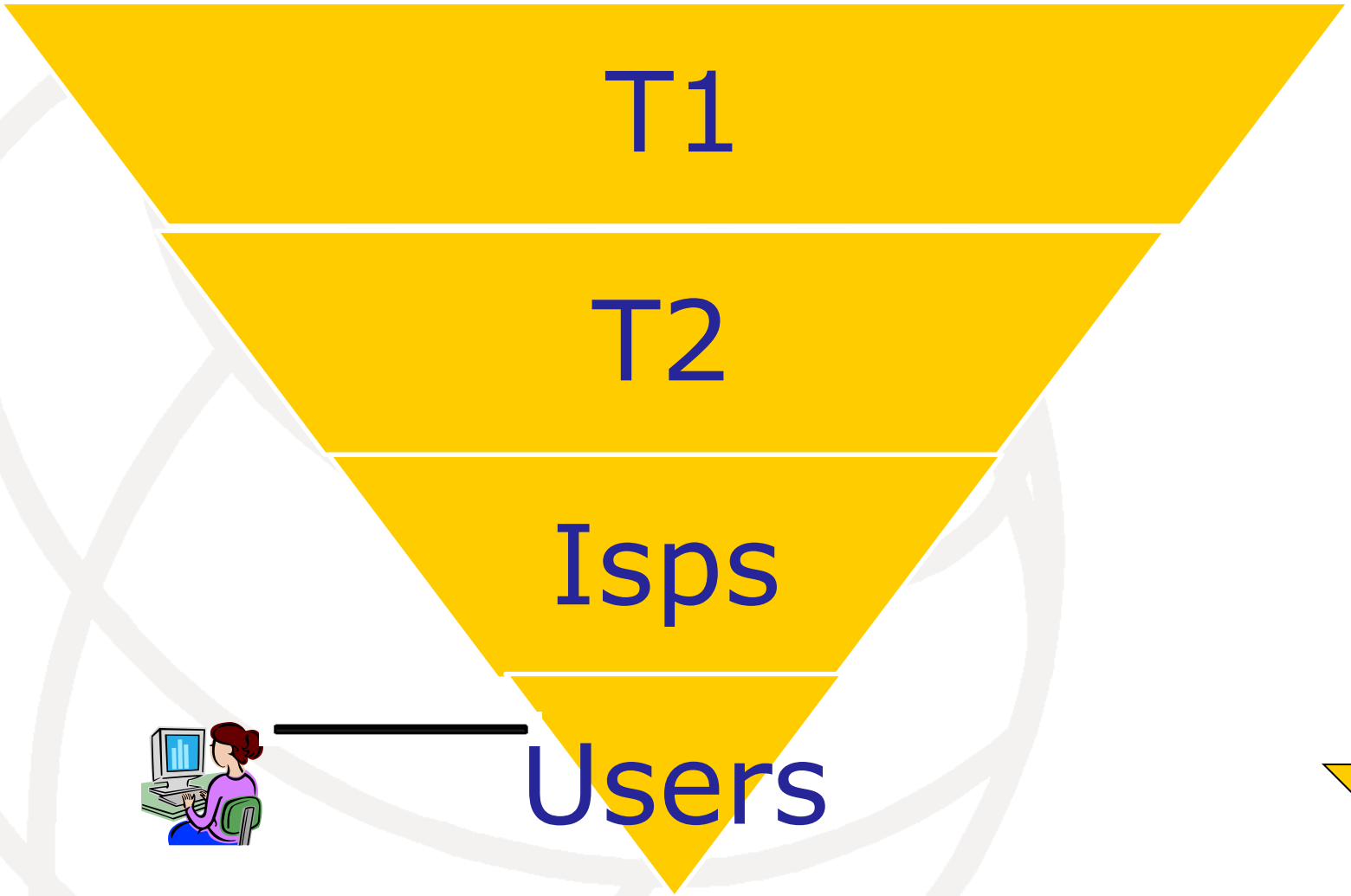
Terramark

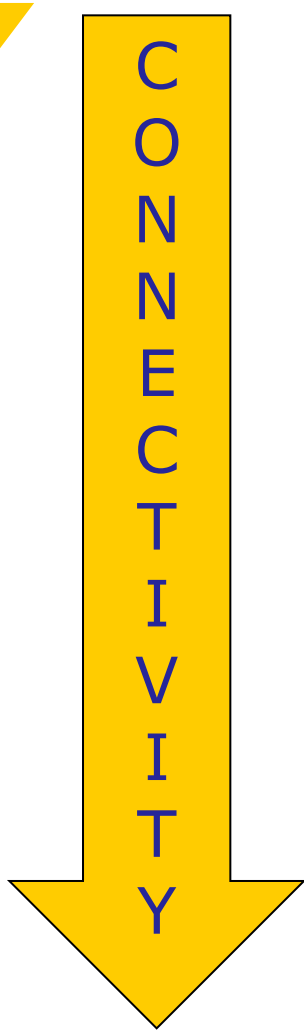
Level 3

ISPs –Internet Service Providers

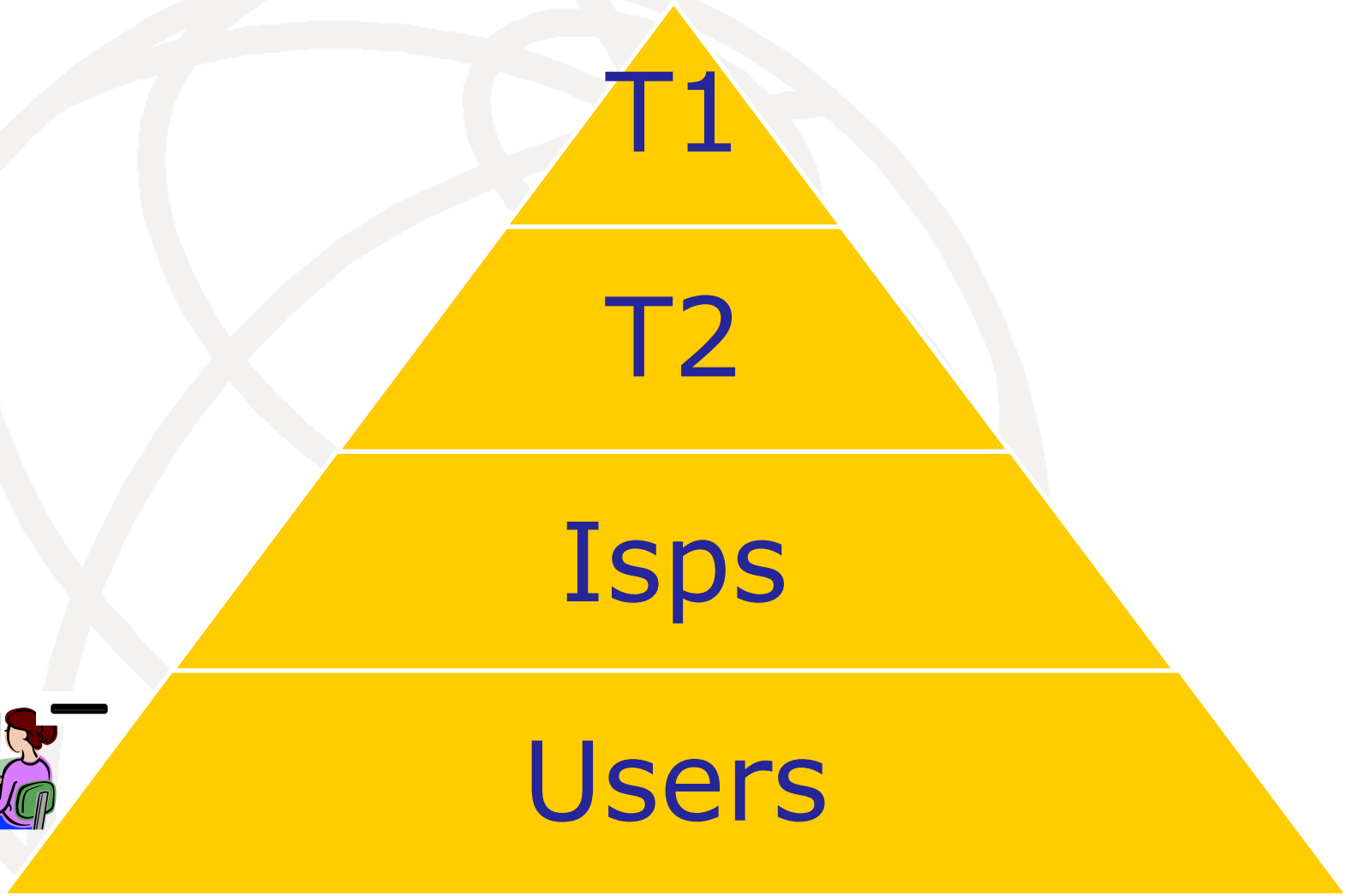
- Provide Connectivity to End Users
- Provide Services to End Users
- Home - Corporate

Traffic Scheme





Cash Flow in the Broadband



The Terrestrial Broadband Market in Latin America and the Caribbean

- 2 Countries 1 Provider 100%
  - Residual 0%

Costa Rica
Cuba

- 5 Countries 2 Providers 96,54%
  - Residual 3,46%

Jamaica - Perú
Nicaragua – Uruguay
Trinidad and Tobago

The Terrestrial Broadband Market in Latin America and the Caribbean

- 5 Countries 3 providers 93.44%
  - Residual 6,56%

Ecuador – El Salvador
Guatemala – Panama
Dominican Republic

- 5 Countries 4 Providers 90,55%
  - Residual 9,45%

Argentina – Bolivia
Brazil – Chile
Colombia

The Terrestrial Broadband Market in Latin America and the Caribbean

- 2 Countries 5 Providers 89,40%
  - Residual 10,6%

Honduras
Mexico

Mergers and acquisitions

Brasil		Adquirido	U$S
	Embratel	NET Servicios	2.600
	Telefónica	Portugal Telecom	7.500
	Vivendi	GVT	2.900
	Tim	Intelig	287,3+70
	Tim	AES Atimus	700
	Embratel	Star One	20% Rest.
Mexico			
	Televisa	Lusacell	37,5 +1.565
	Alfa	Alestra	49%
Paraguay	Copaco	Vox	3
Bolivia	Cotel	Supercanal	7
Argentina	Telecom Italia	Telecom Argentina	10% = 50%

Mergers and acquisitions

Regional	Contax	Allus	205,6
Regional	America Movil	Digicel Hond/Salv	S/D
Regional	L3 Comunications	Global Crossing	3.000
Bahamas	Cable & Wireless	BTC	210

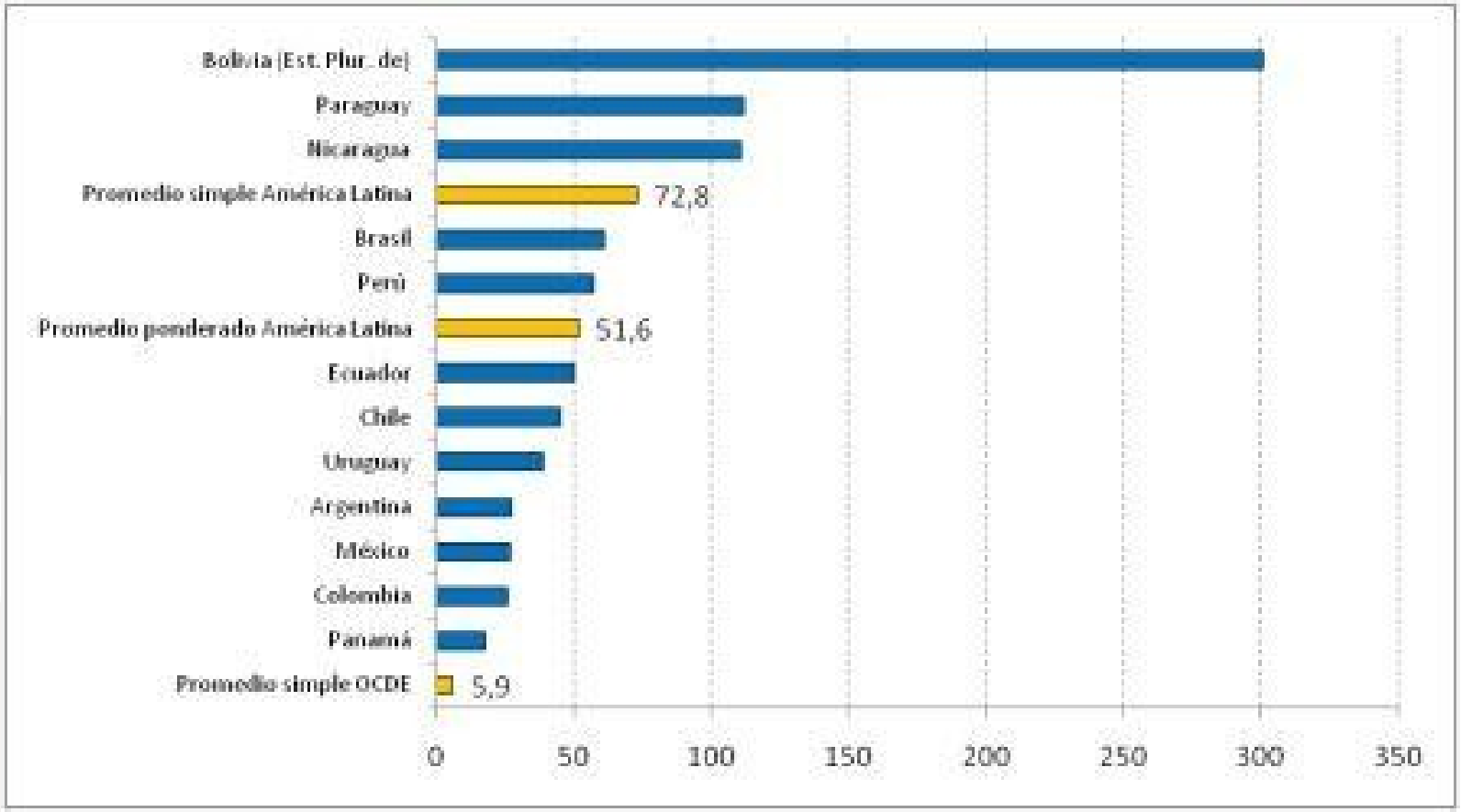
The Terrestrial Broadband Market in Latin America and the Caribbean

- The 10 most Important Operators concentrate aprox. 36 Million Users
- América Móvil takes first place with aprox. 15 million users
- Megacable is last with 600 thousand users

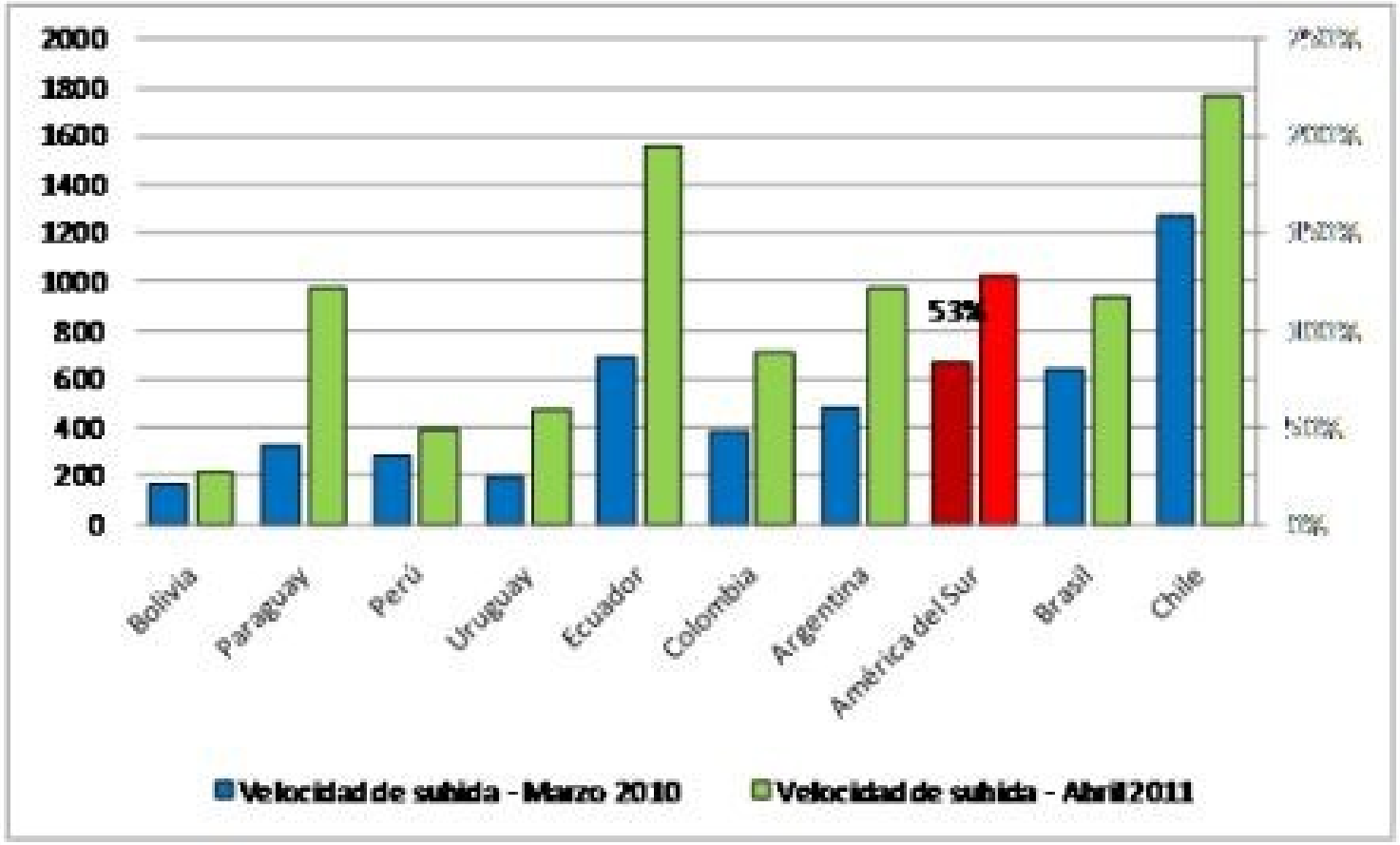
Broadband Penetration

Country	Average local penetration		National Penetration	Average local penetration	
Argentina June 2009	Capital Federal San Luis Neuquen	46.20% 12.90% 11.50%	9.30%	Mendoza Córdoba Santa Fe Jujuy	6.90% 5.20% 3.70% 0.20%
Brazil Diecember 2009	Sao Paulo South Southeast Center West	11.40% 7.00% 6.30% 6.10%	6.00%	North Northeast	3.50% 1.40%
Colombia June 2009	Bogotá Antioquia Boyacá	12.30% 6.40% 5.905%	4.70%	Coffee Belt Cundinamarca Valle-Choco-Nariño	4.10% 3.30% 2.20%
Chile March 2010	Antofagasta region Metropolitan region Valparaíso region	13.70% 12.90% 10.70%	9.90%	Atacama region Bio Bio region Lib. O´higgins region Maule region	8.10% 7.70%& 5.30% 4.30% 4.30%
Perú Diecember 2009	Lima Arequipa Tacna	6.20% 3.50% 3.50%	2.90%	La Libertad Ica Moquegua Lambayeque	2.7% 2.30% 2.10% 2.10%

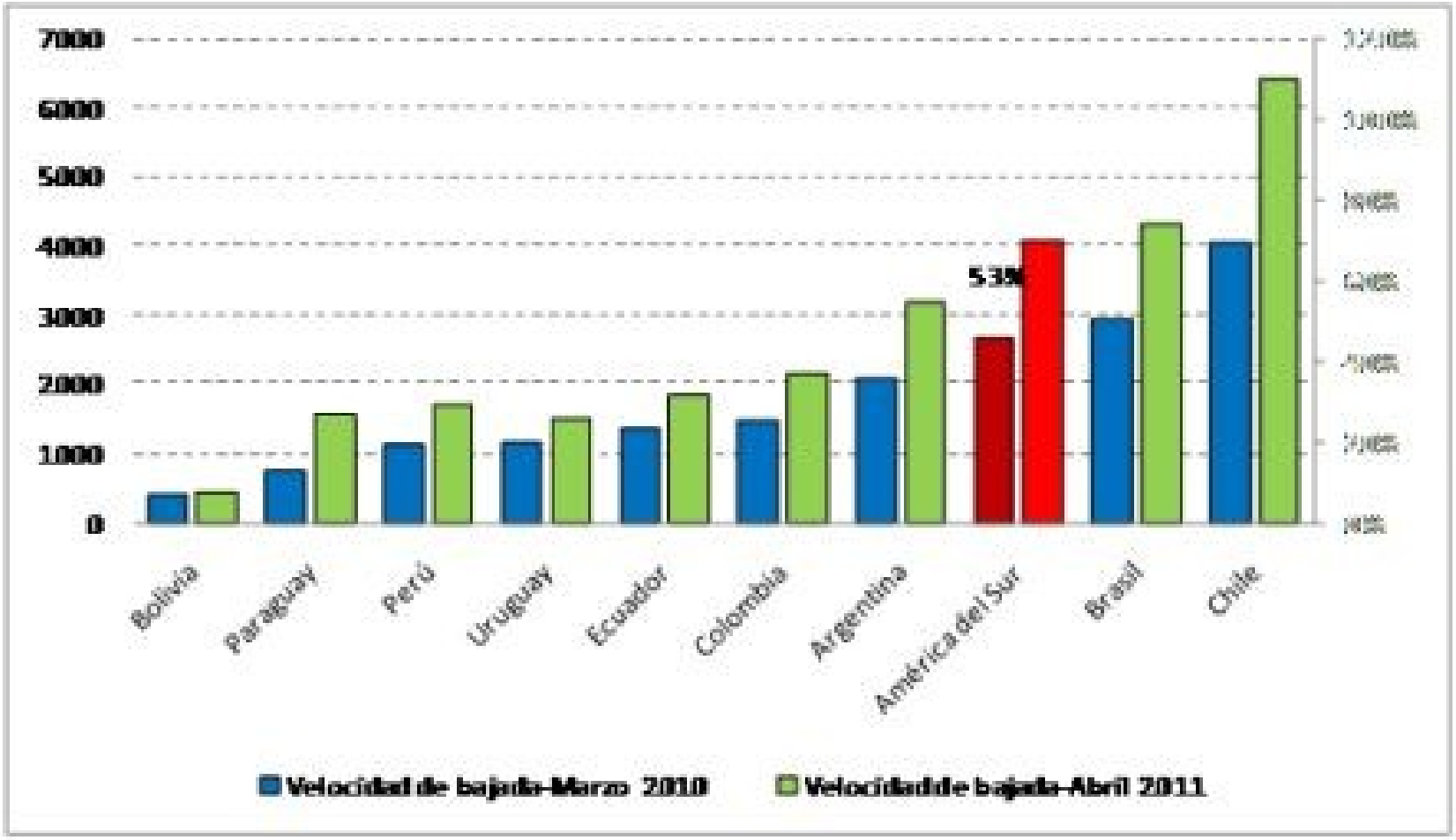
PPP dollar tariffs for 1 Mbps, fixed Broadband. March 2011



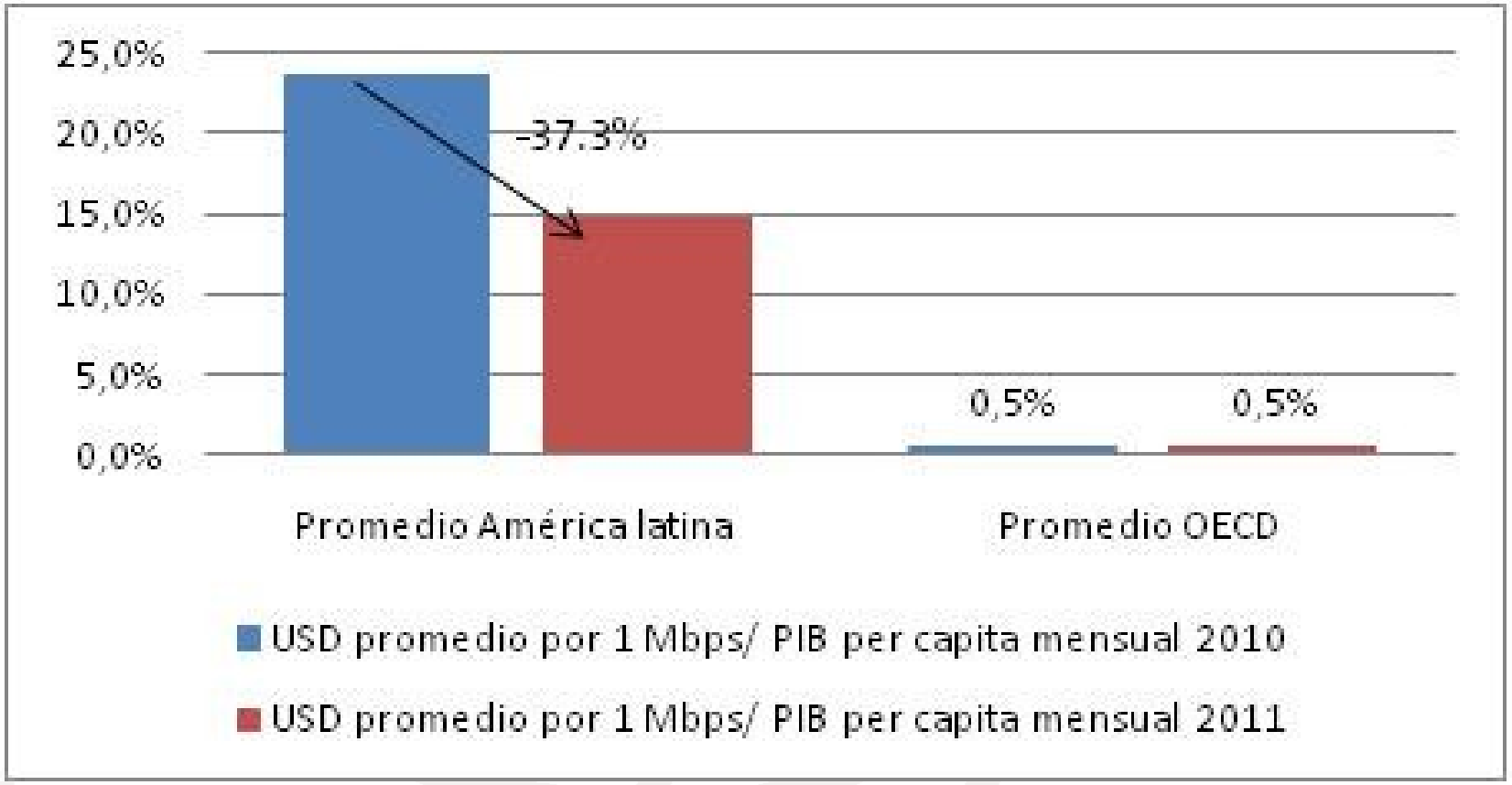
Evolution of the broadband uplink speed



Evolution of the broadband downlink speed

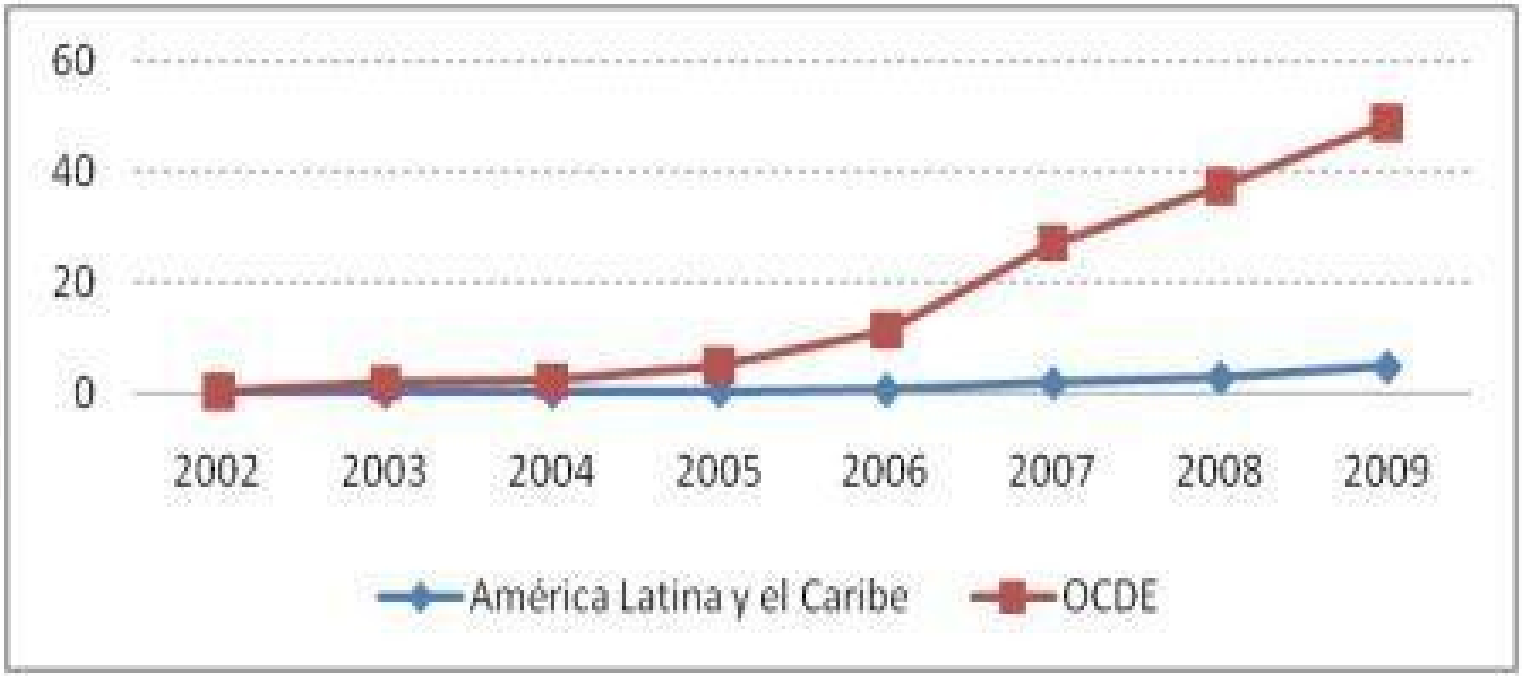


USD average for 1 Mbps/PIB per capita monthly



Comparison

Percentage of mobile broadband subscribers vis-a-vis total population, 2002-2009



ISPs

- The pure ISPs – Dispute the residual market each country
- Some 4000 are active in Brazil
- Approx. 1800 are active in Argentina
- The residual segment is between 3.46 to 10.6 %

Barriers to Development

- High Cost of the interconnection
  - National & International
  - Low Bandwidth availability
  - Poor Level of Service to End User
  - Difficulties for market growth

Some Reasons

- Lack of investment in updating and enlarging basic telecommunications infrastructure – Fiber Optics :Fundamental Cornerstone of Interconnection

- Market concentration in a few companies, which means low competition in the different market segments.

Some more reasons

- Economic financial situation with serious difficulties globally, and particularly with respect to the companies in this sector.

- Almost exponential growth in the worldwide usage of Broadband, and the pressure this puts on the incumbents and large companies, who cannot keep up with this growth.

pISPs – Options for Network Deployment

- WiFi Networks
- WiMax Networks
- Video Cable Networks
- Third Party Networks
- Last Mile Provider
- Interconnection Provider

Regional Objectives

Options & Solutions

- Broadband Development
- Development of NAPs
- Development of Regional Backbone

Actors

- ITU – Committed to connect the World Study Commission 3–LAC Group
- CITEL-CCP1

  Economic Affairs Relatories and Relatory on Internet
- CEPAL

  The Economic Commission for Latin America

Actors

- CABASE

  Argentina Internet Chamber

- LACNIC

  Latin America and Caribbean Internet Addresses Registry

- eCom-Lac

  Latin America and Caribbean Federation of Internet and Electronic Commerce

Actors

- Bid

  Inter-Ameican Developmen Bank
- ISOC

  Internet Society
- IXLac

  International Association of Internet Traffic Exchange Point Operators
- NAPLA

  Annual NAPs event

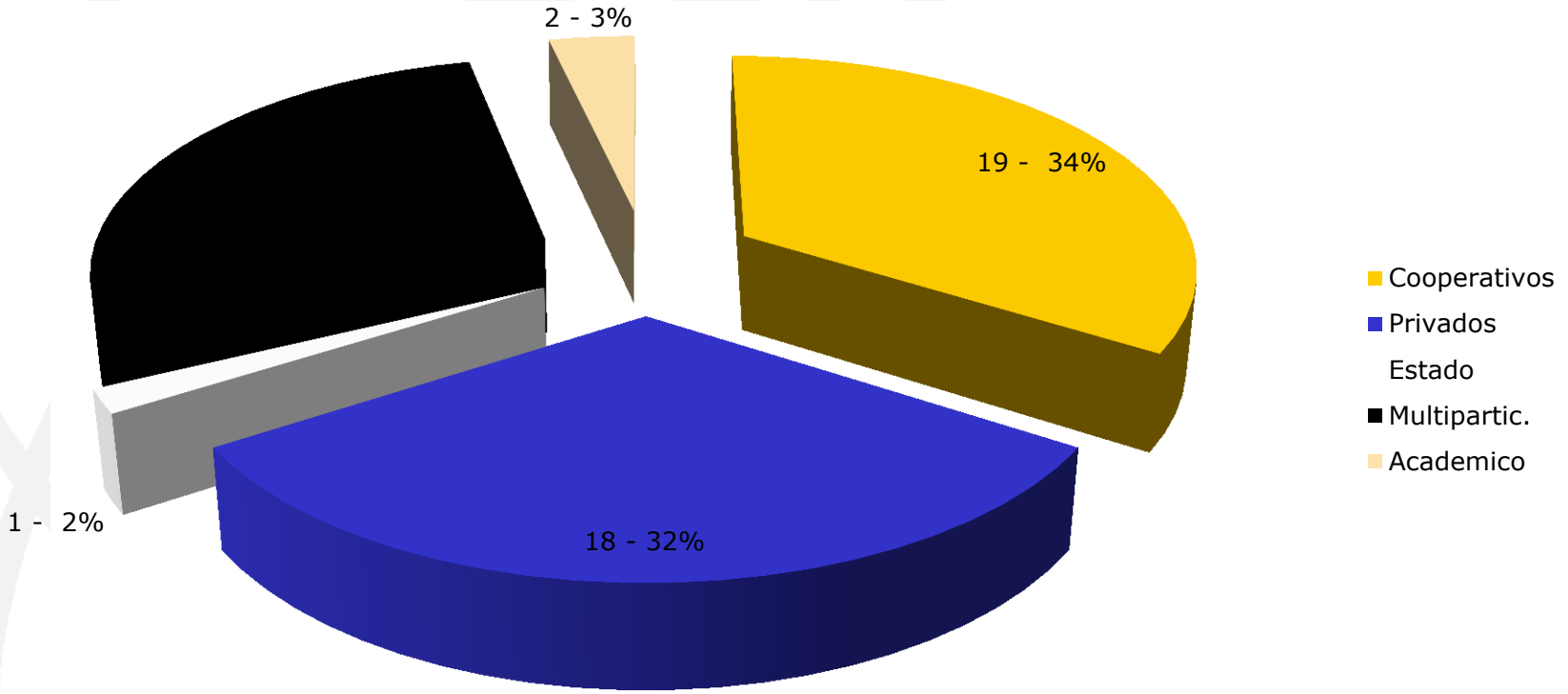
Minimum Expected

- Network Capilarity (Infrastructure)
- Competitive National and International Interconnect Costs for ISPs
- Inclusive Quality and Price for the End User

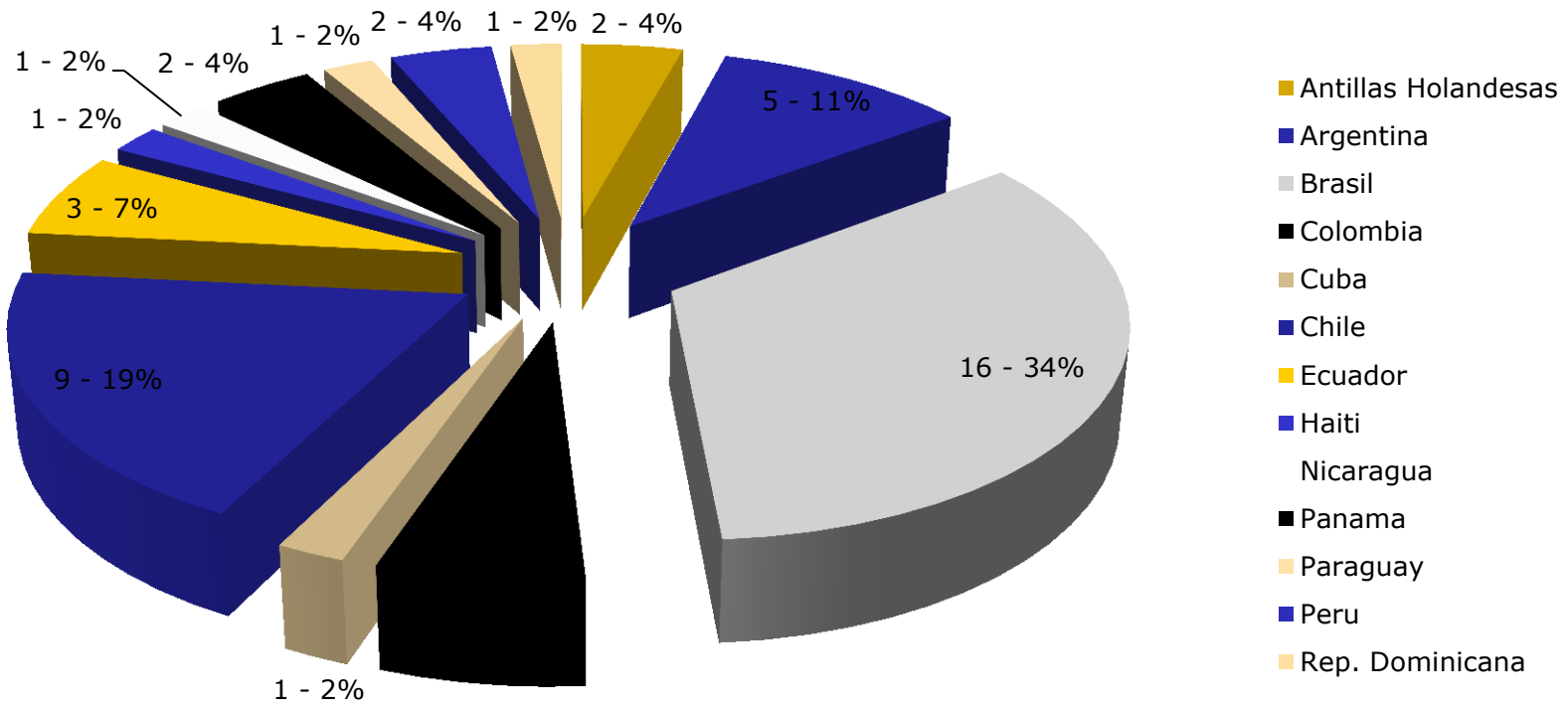
The Reason for NAPs

- Increased geographic area coverage of Internet Services (Capilarity)
- Reduction of Bandwidth cost to the providers, in some cases significant amounts.
- Improved quality of service provided.
- Possibility of providing Broadband service to locations remote from urban centers.

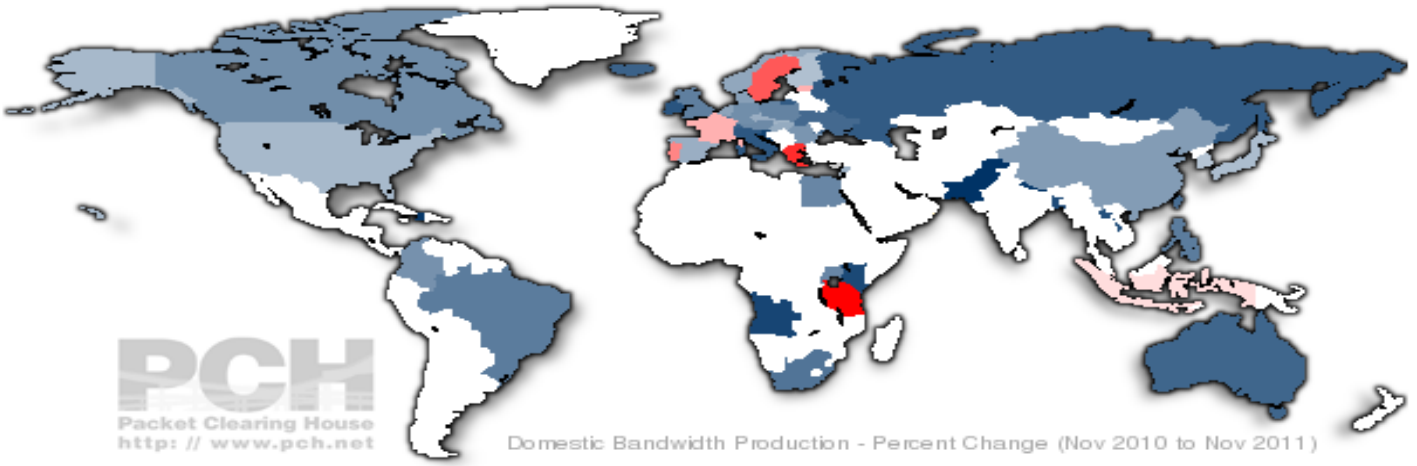
Institutional Constitution of the NAPs



Quantity of NAPs per Country

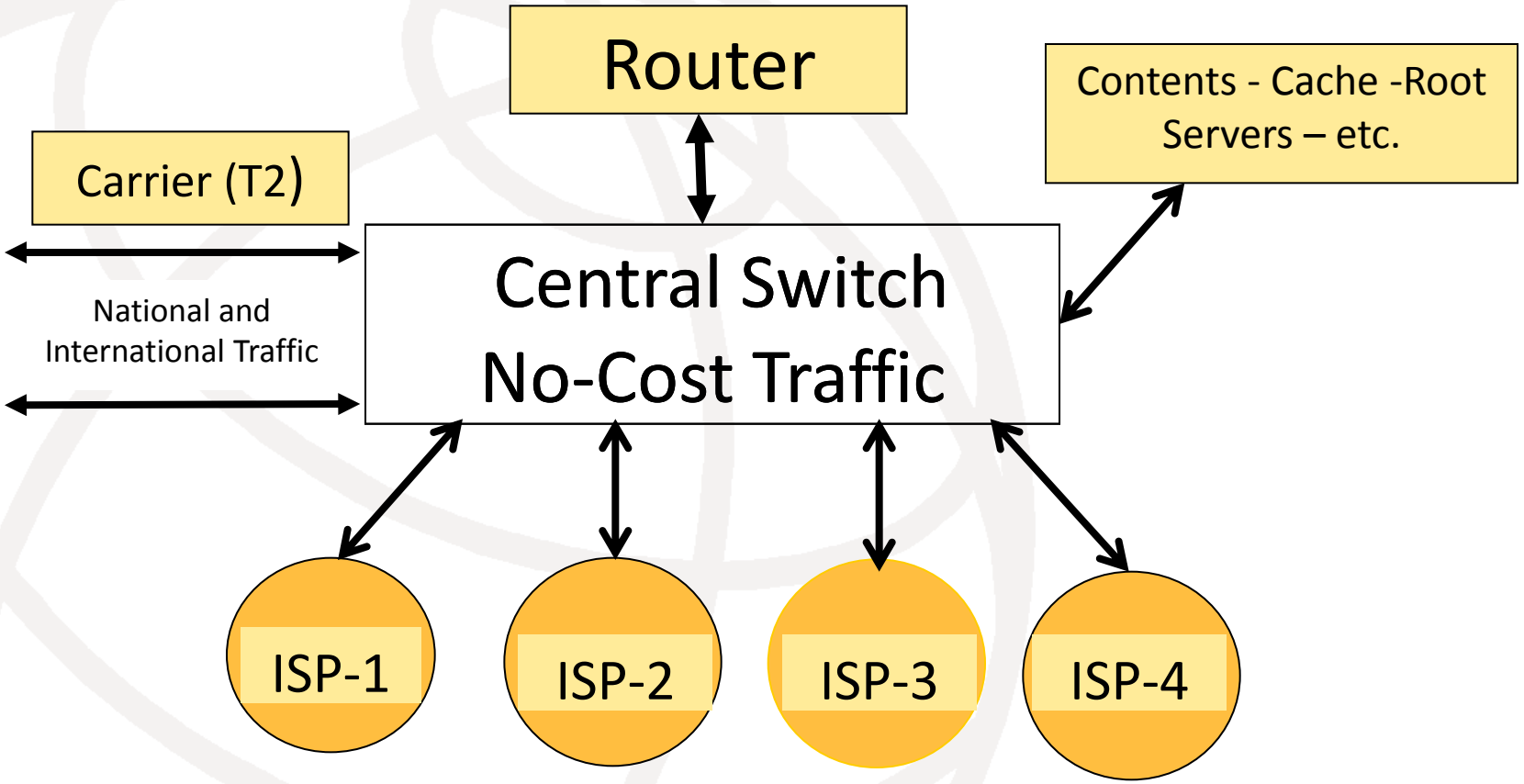


Internet Exchange Point Growth



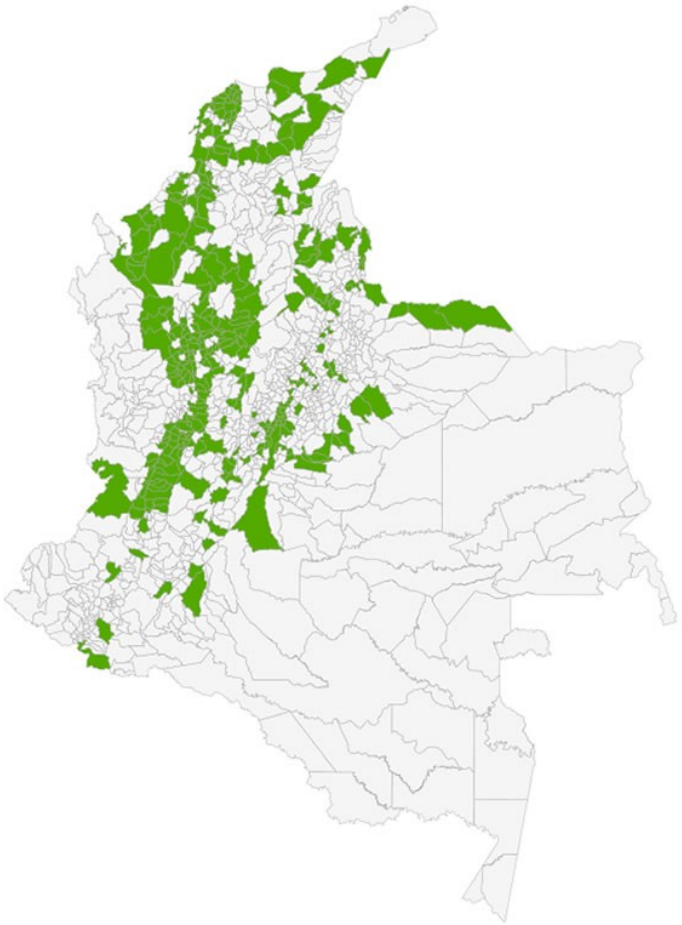
Region	Internet Exchange Points				Domestic Bandwidth Production			
	Nov 2010	Nov 2011	Net Change	Percent Change	Nov 2010	Nov 2011	Net Change	Percent Change
Africa	21	21			3.23G	5.67G	+2.43G	+75%
Asia-Pacific	74	76	+2	+3%	1.15T	1.25T	+98.1G	+9%
Europe	138	138			5.42T	7.66T	+2.23T	+41%
Latin America	33	34	+1	+3%	59.8G	91.4G	+31.7G	+53%
North America	85	88	+3	+4%	836G	929G	+93.1G	+11%
Total	**351**	**357**	**+6**	**+2%**	**7.47T**	**9.93T**	**+2.46T**	**+25%**

Layout of a Nap



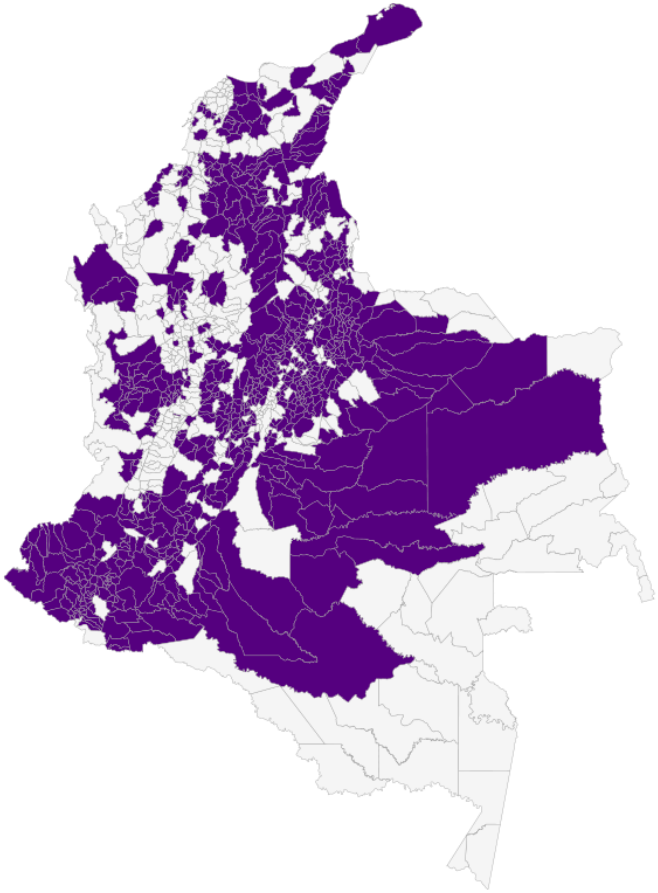
Projects in the region

Colombia



Municipalities to be connected by fiber optics will be 325. The project will be implemented in three phases and completed in the year 2014.

Colombia – National Fiber Optic Project



Map of National coverage of the project, wherein 753 locations will be connected with fiber optics. Regarding the time frames, these are within the 2012/2014 period.

Brazil –National Broadband Plan

- 300 cities within country
- The program objectives are:
- 30 million fixed broadband connections
- 60 million mobile connections by 2014
- 70.000 schools
- 100.000 new community telecommunication centers

Argentina
Project: Argentina connected

First phase
13.000 Km of
Fiber

Second phase
8.600 Km of
Fiber

REGIONAL BACKBONE

Units of measurement for data

TB = Terabyte (1000 GB)
PB = Petabyte (1000 TB)
EB = Exabyte (1000 PB)

Network 2011 - 2015

Consumer

- Web and Other Data
- Video
- File Sharing
- Online Gaming
- Video Communications
- Voice Communications

Business

- Data

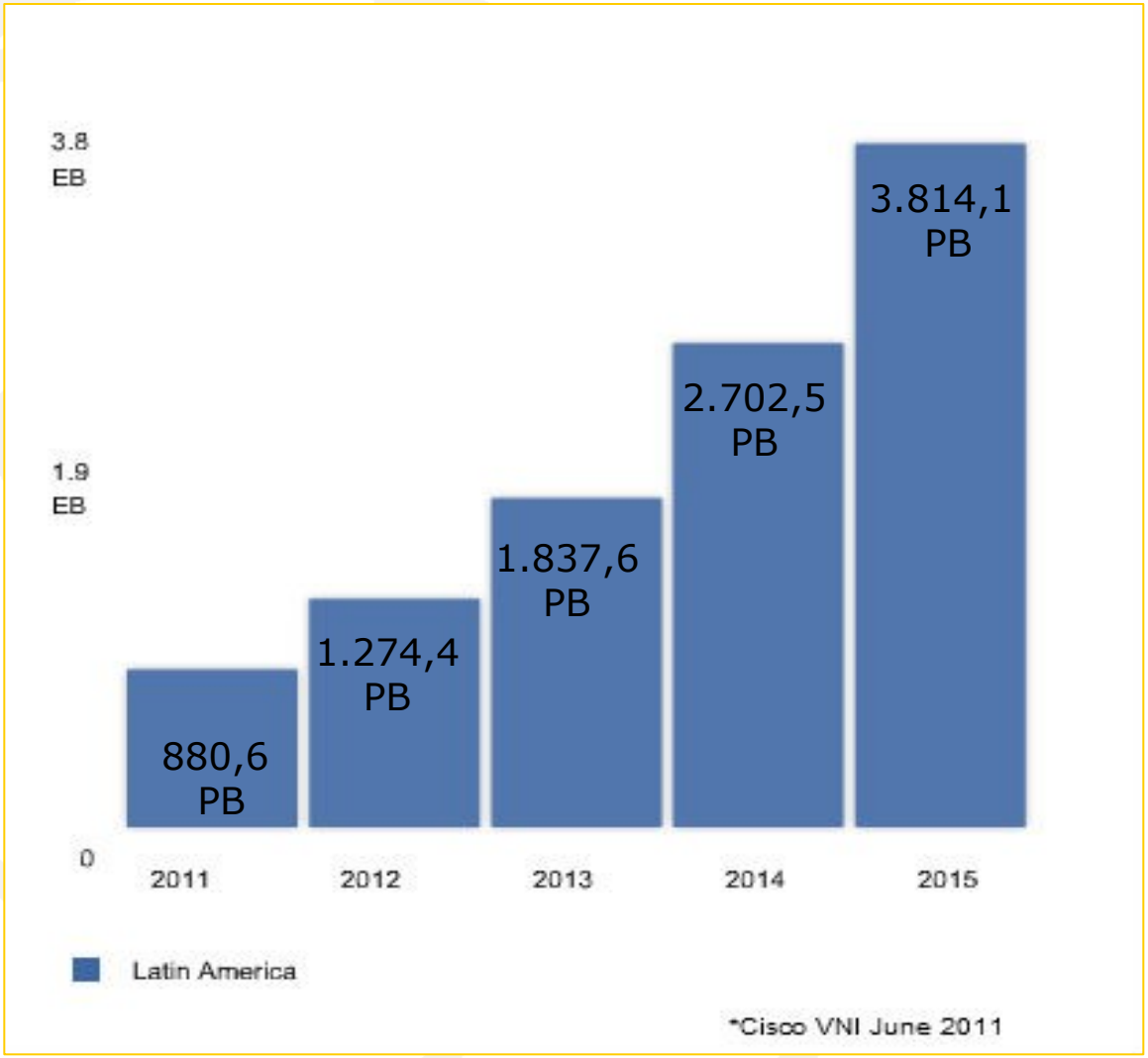
Network Type:

- Internet - Fixed

Segment:

- Consumer
- Business

Monthly Traffic



Conclusions

- Governments
- Cooperate in adopting policies that enable free competition, an indispensable tool for the development of SMEs.

- Both governments and multilateral credit institutions together with the private sector, must generate regional backbones in order to achieve an increase in the internal traffic of each region.

- In parallel with the previous point, they should support the creation of traffic exchange points (NAPs/IXPs) where studies support this need.

Conclusions

Private sector

- It has been proven that ISP Associations can generate solutions for the development of broadband, by means of the creation of traffic exchange points, or merely by associating and becoming a broadband purchasing group.

- It is also important to note that the creation of traffic exchange points, is an important factor in the definition of a backbone.

Thank you

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