



# Peering in Brazil

LACNIC XI / Salvador, BA - Brazil  
Interconnection Schemes and Strategies for ISPs Tutorial

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# Agenda

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- PTTmetro – All Locations Aggregated Bandwidth
- PTTmetro – Locations Relative Bandwidth (% Mbps)
- PTTmetro – Locations Relative Bandwidth (% Mbps) Without São Paulo
- São Paulo City and Neighbourhood
- Some Points that Slow Down Peering Development in Brazil

# Objective

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To present an overview about the IP traffic exchange situation in Brazil.

## Disclaimer

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This presentation is based only on its author experience and on public information available on the Internet.  
It does not reflect the opinion of any particular company or organization.

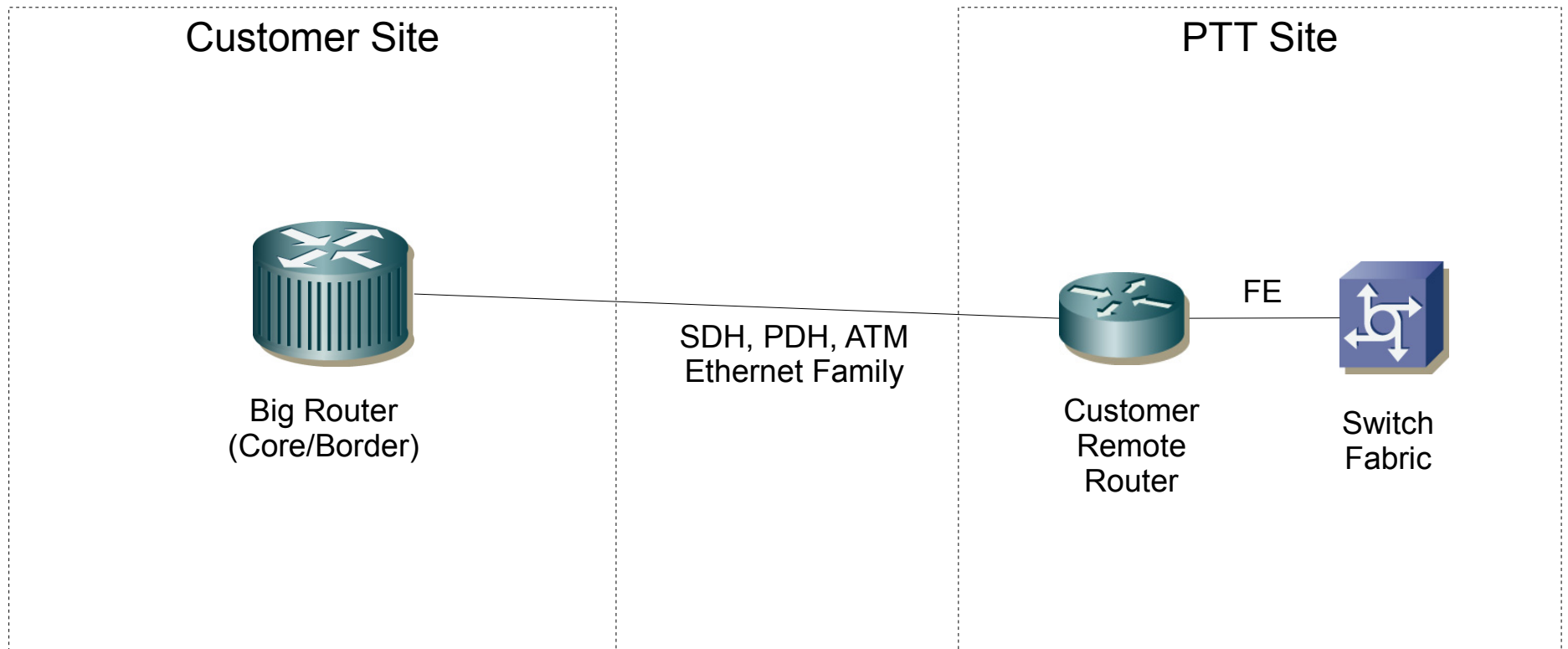
**IXP - Internet eXchange Point**

**PTT – Ponto de Troca de Tráfego**

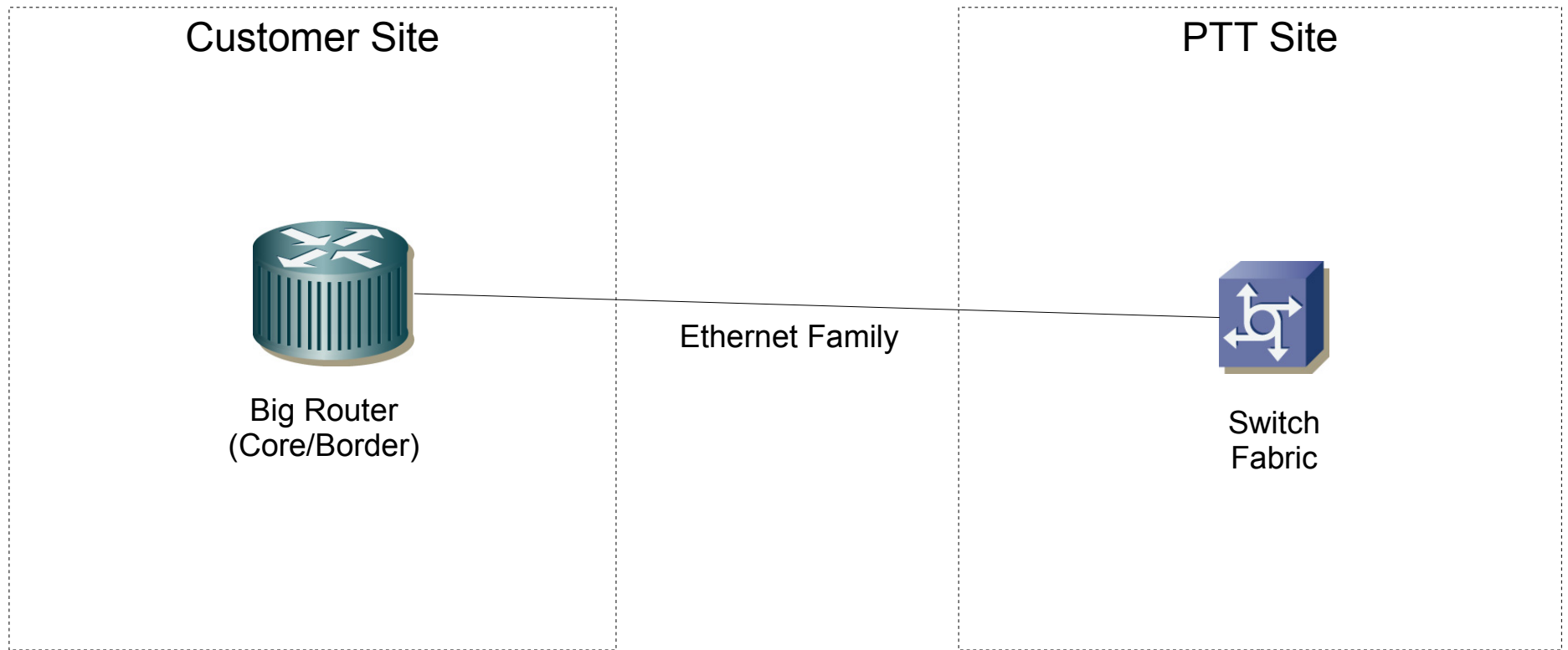
# Brazilian PTT History and Internet Key Points

Year	Location (City/State)	Event
1989	São Paulo / SP	.br TLD Activation
1991	São Paulo / SP	Brazil First Connection to Internet via FAPESP ( <i>Dawn of Brazil Internet</i> )
1996	São Paulo / SP	PTT ANSP/FAPESP Operation Start
1997	São Paulo / SP	Registro.br Operation Start (Brazil NIR)
2000	Porto Alegre / RS	PTT RSIX Operation Start (RNP UFRGS)
2000	São Paulo / SP	PTT OPTiX-LA Operation Start (Optiglobe Inc, now Tivit)
2002	Curitiba / PR	PTT PriX Operation Start (RNP UFPR)
2002	Brasilia / DF	PTT FIX Operation Start (RNP)
2004	São Paulo / SP	PTTMetro (CGI.br)
2004	Rio de Janeiro / RJ	PTTMetro (CGI.br)
2004	Brasilia / DF	PTT FIX move to PTTMetro (CGI.br)
2004	Barueri / SP	PTT ANSP/FAPESP moved to NAP do Brasil (Terremark Latin America)
2005	Curitiba / PR	PTT PRiX moved to PTTMetro (CGI.br)

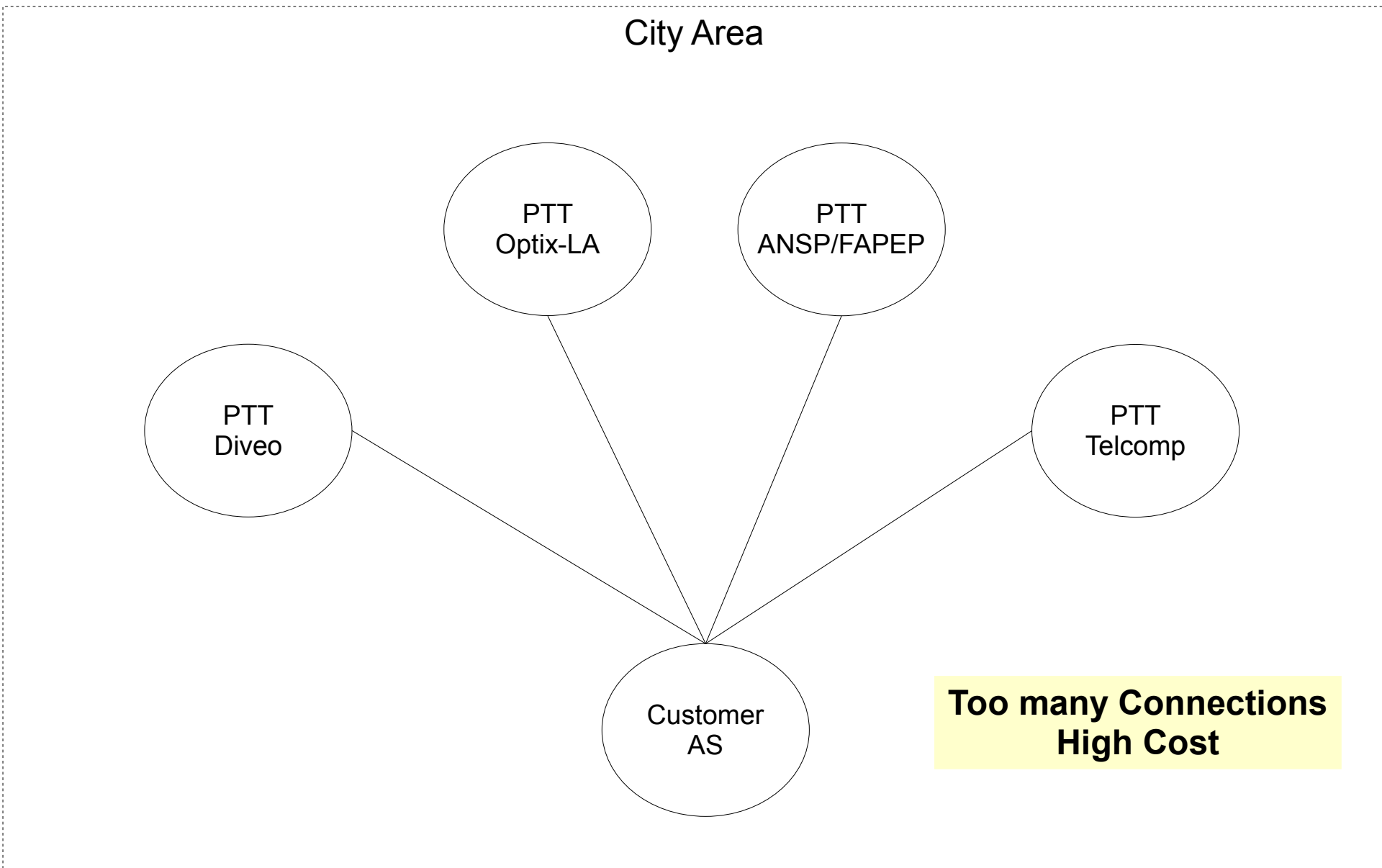
# PTT Connection – Traditional Model



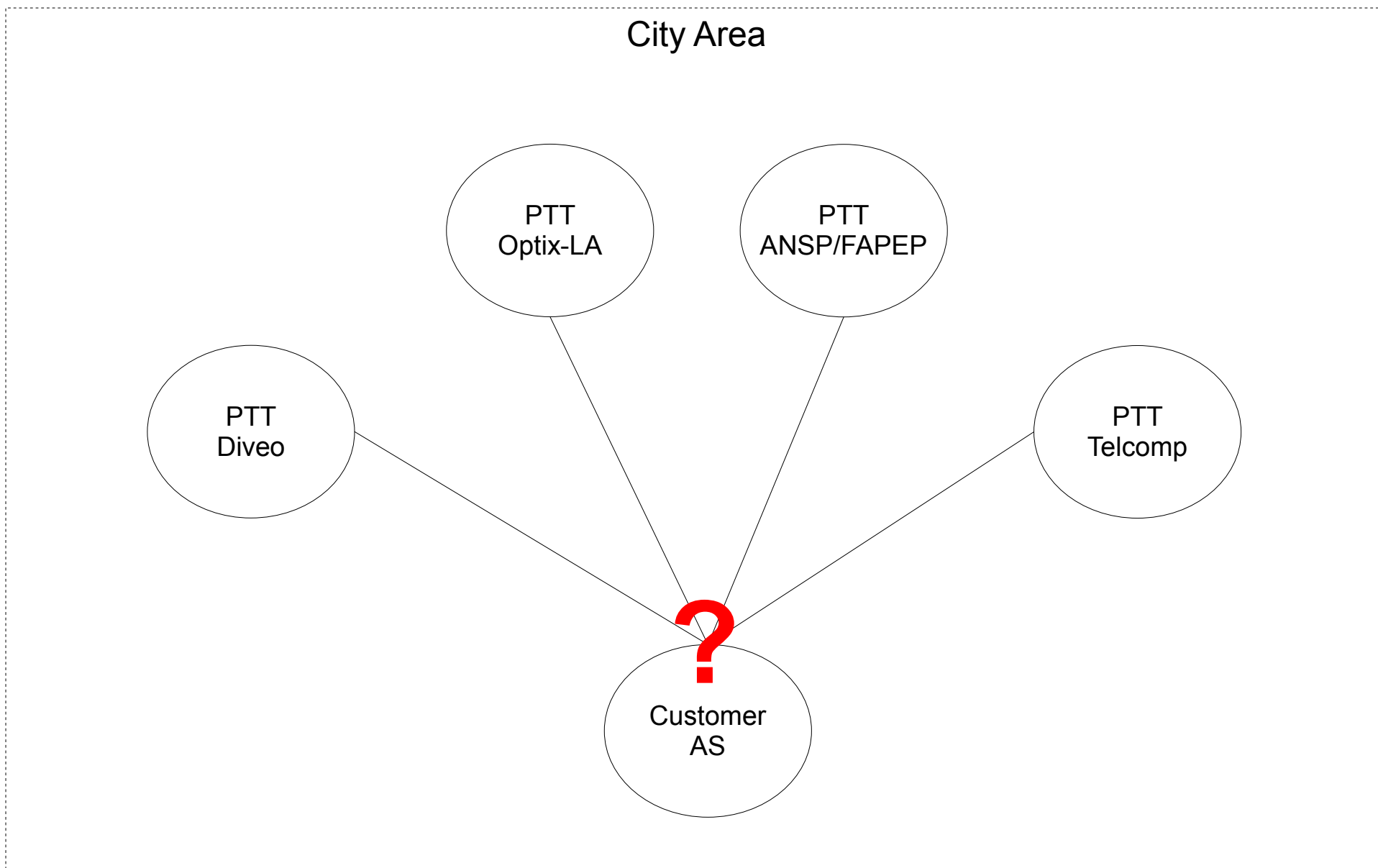
# PTT Connection – Nowadays Popular Model



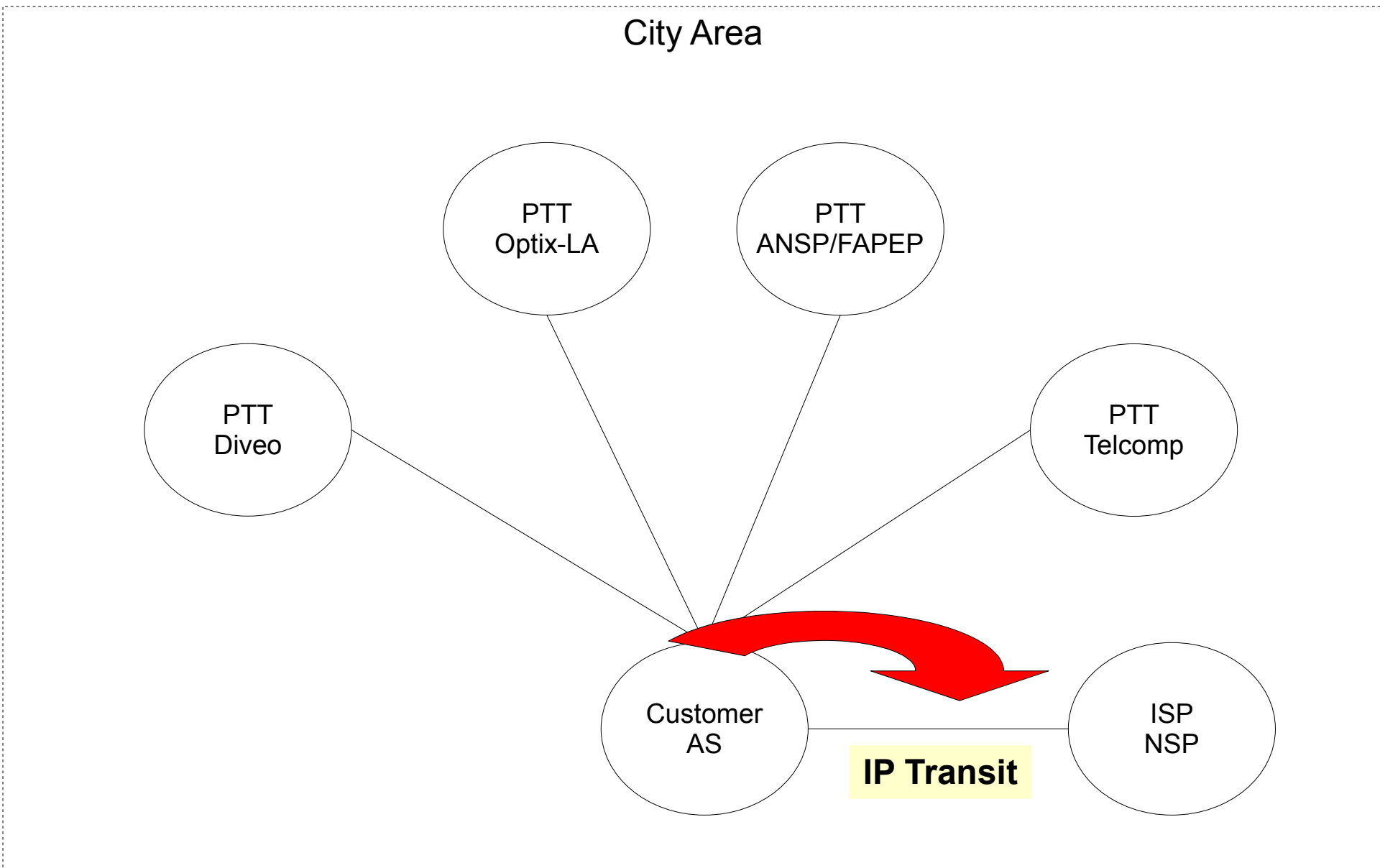
# PTT Close Proliferation Problem (e.g. São Paulo city in the past) - 1/3



# PTT Close Proliferation Problem (e.g. São Paulo city in the past) - 2/3



# PTT Close Proliferation Problem (e.g. São Paulo city in the past) - 3/3



The PTTMetro (PTT- Internet Exchange Point) is the project of the Brazilian Internet Steering Committee (CGI.br) that provides the necessary infrastructure for the direct interconnection between the diverse networks that operate in a metropolitan region.

*<http://cgi.br/>*

*<http://www.cgi.br/internacional/>*

*<http://ptt.br/>*

PTT Metro - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://ptt.br/cgi-bin/all

Google

Comitê Gestor da Internet no Brasil

NIC.br | CETIC.br | Antispam.br | **CEPTRO.br** Imprensa

ptt.br São Paulo

- Introdução
- Regras
- Adesão
- Participantes
- Tráfego
- Listas
- Contato

Busca

ok

NIC.br  Indicadores

PTT.br  Antispam.br

TRÁFEGO

Belo Horizonte - Brasília - Curitiba - Florianópolis  
Porto Alegre - Rio de Janeiro - Salvador - São Paulo

nic.br  
Núcleo de Informação e Coordenação

cgi.br  
Registro CERT.br

Traffego Total (todos PTTs) [Voltar](#)

Última atualização: 2008-05-22 07:00

Diario

Traffego Agregado PTTs - Diario

bits por segund

6.0 G  
5.0 G  
4.0 G  
3.0 G  
2.0 G  
1.0 G  
0.0

04 08 12 16 20 00 04

TOTAL IN - Maximum: 5.98 Gbps Average: 3.26 Gbps Current: 991.29 Mbps

TOTAL OUT Maximum: 5.97 Gbps Average: 3.25 Gbps Current: 991.17 Mbps

ROOTOOL / TOBI OETIKER

Done

# PTTmetro – Actual Project Covered Cities

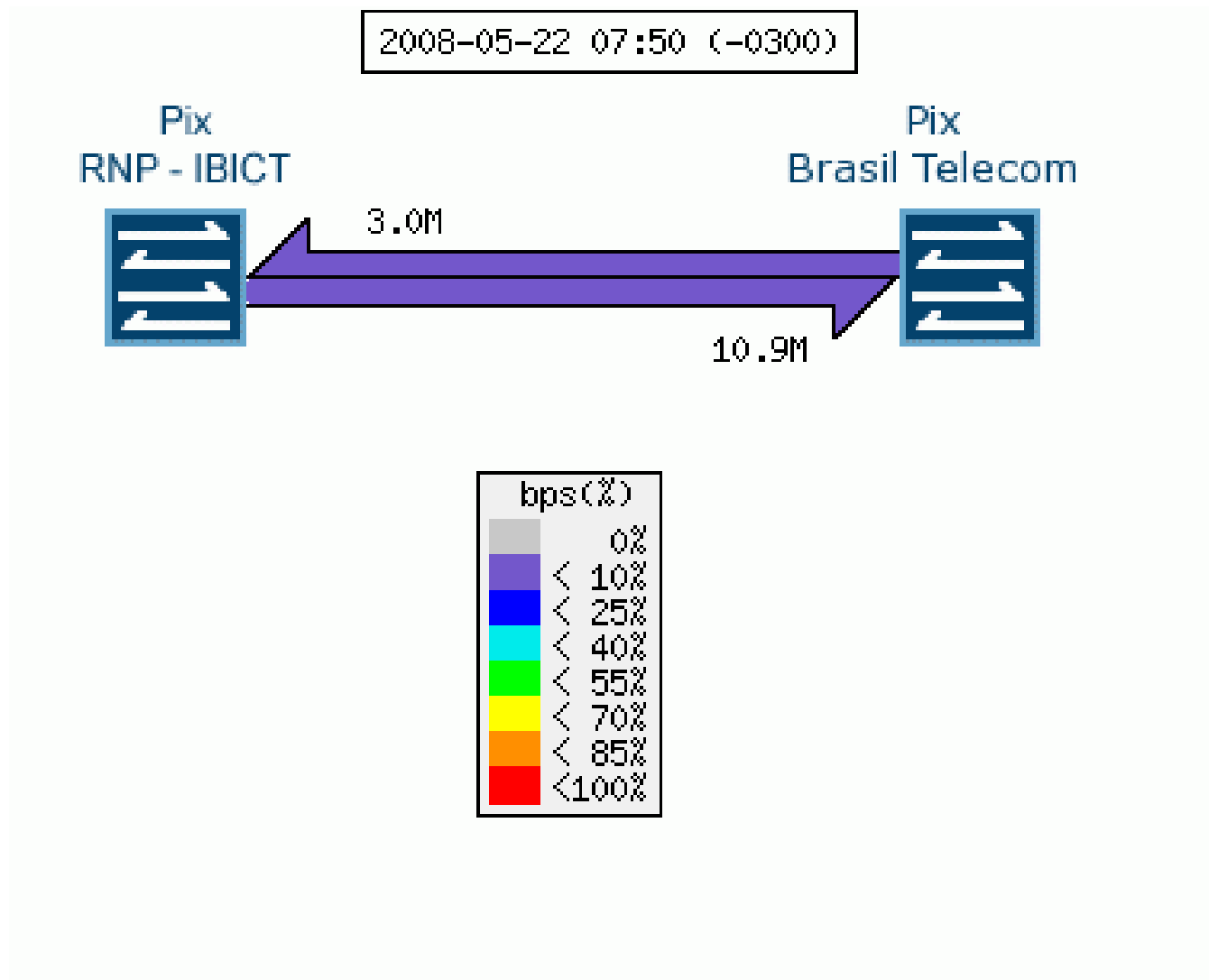


# PTTmetro – Structure – Belo Horizonte

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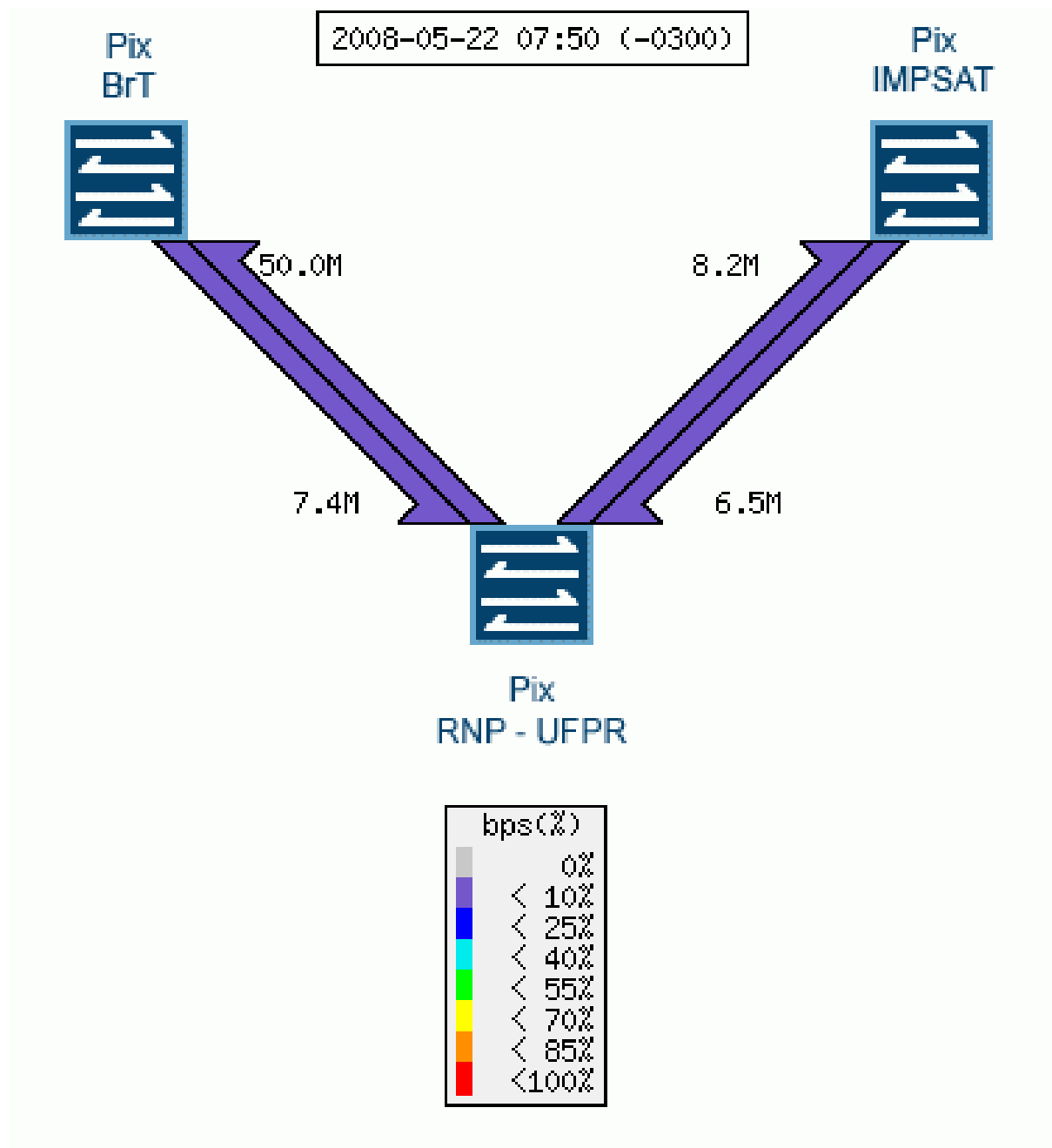
PIX  
RNP





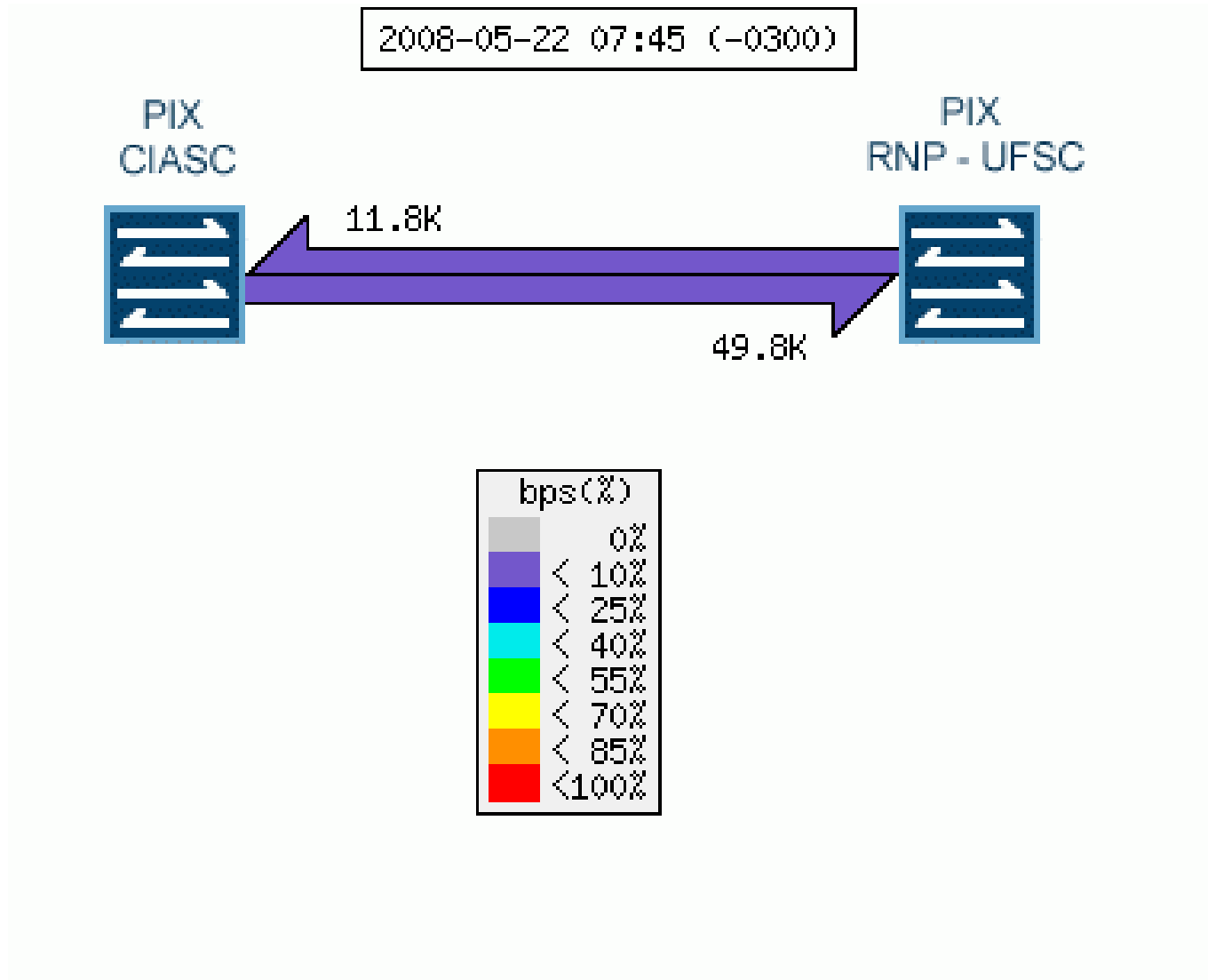
Link 1 Gbps

# PTTmetro – Structure – Curitiba

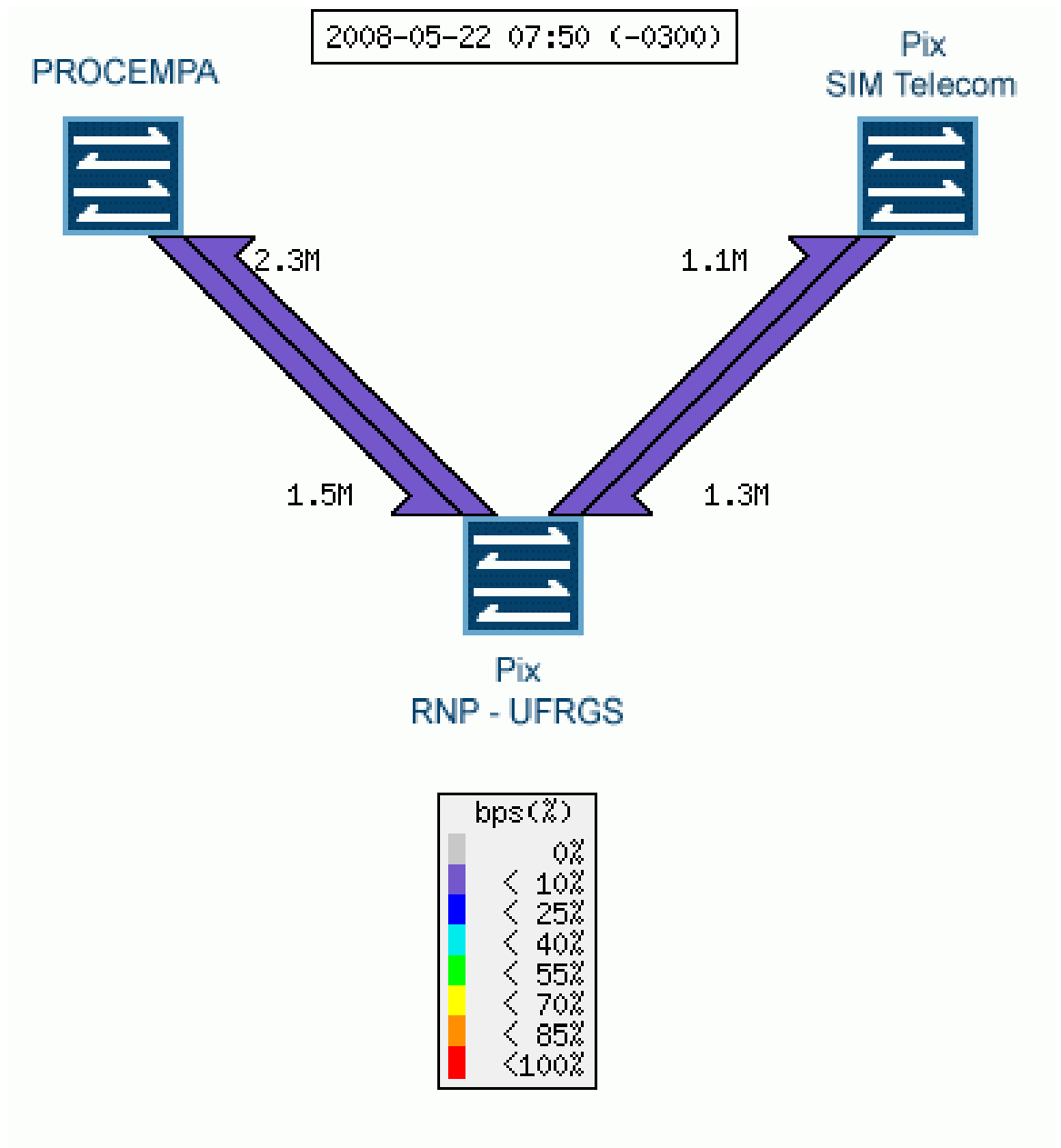


Links 1 Gbps

# PTTmetro – Structure – Florianópolis



# PTTmetro – Structure – Porto Alegre



Links 1 Gbps

# PTTmetro – Structure – Rio de Janeiro

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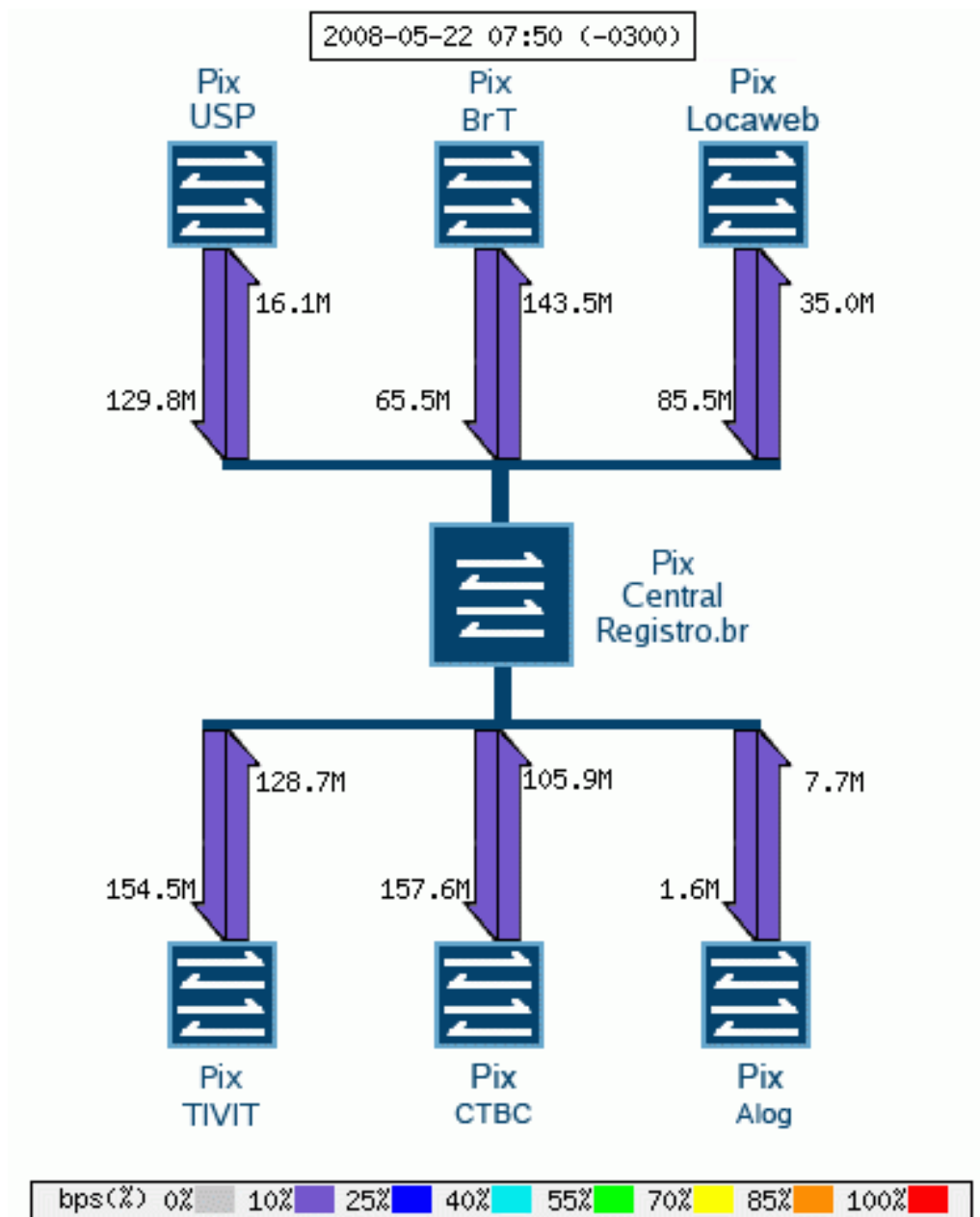
# PTTmetro – Structure – Salvador

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PIX  
RNP



# PTTmetro – Structure – São Paulo



Links 10 Gbps

# PTTmetro – Members Accounting

Location	Members	ATM	LG	IP Transit	IPV6
Belo Horizonte	3	3	1	0	0
Brasília	7	6	0	1	0
Curitiba	15	12	6	5	0
Florianópolis	7	7	7	1	0
Porto Alegre	19	18	18	6	3
Rio de Janeiro	5	4	2	1	0
Salvador	3	2	1	2	0
São Paulo	43	25	17	23	7

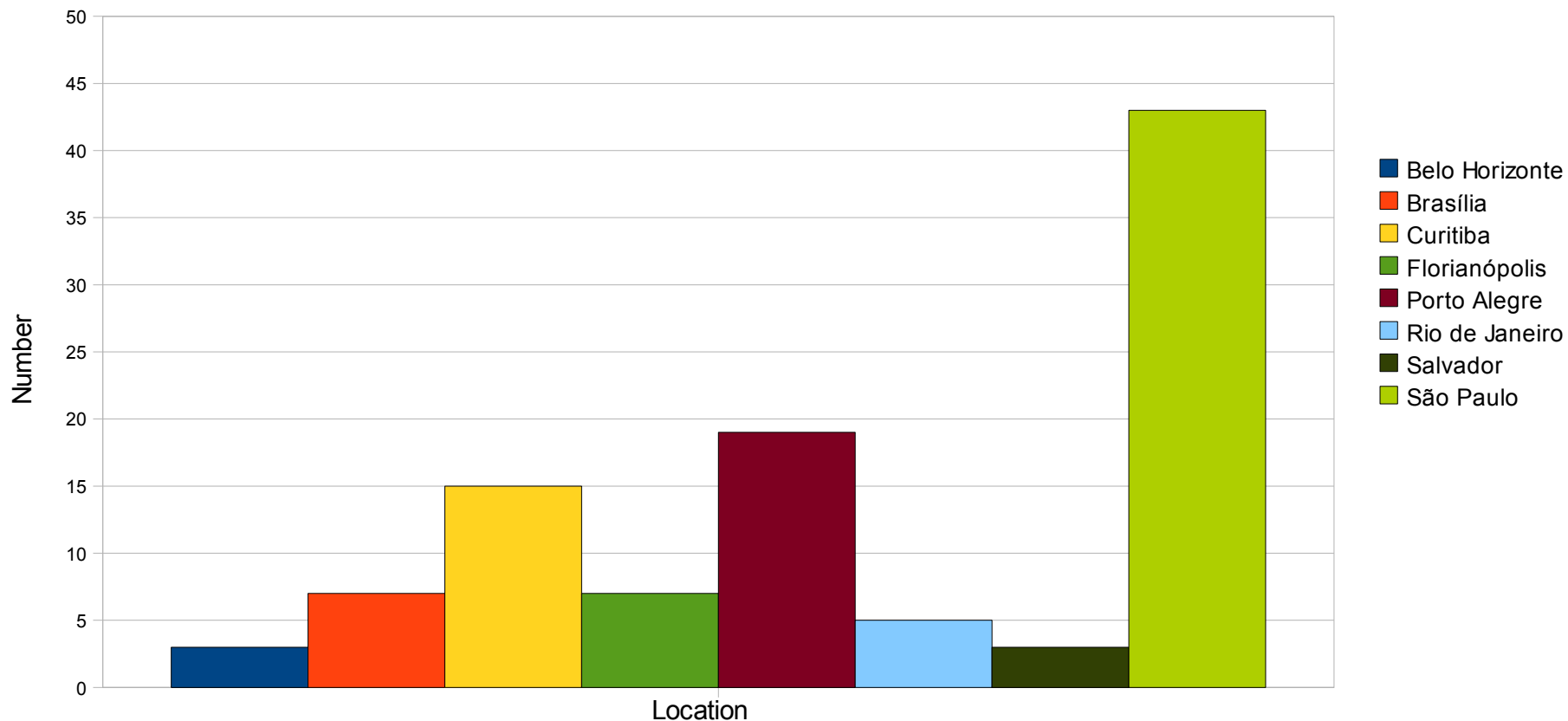
**ATM:** *Acordo de Troca de Tráfego Multilateral  
Multi-Lateral Peering Agreement ("MLPA")*

**LG:** *Looking Glass Feed*

*Data from 2008-05-18*

# PTTmetro – Members Accounting Graph

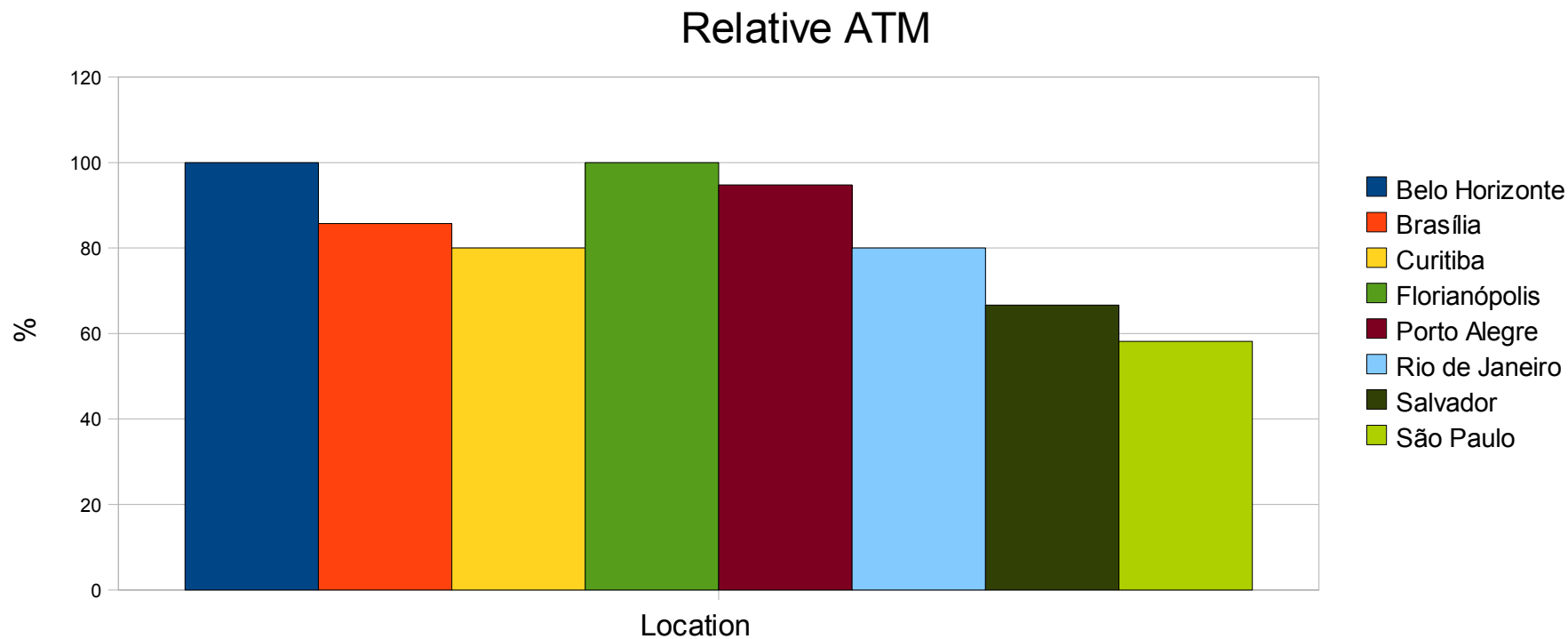
## Members



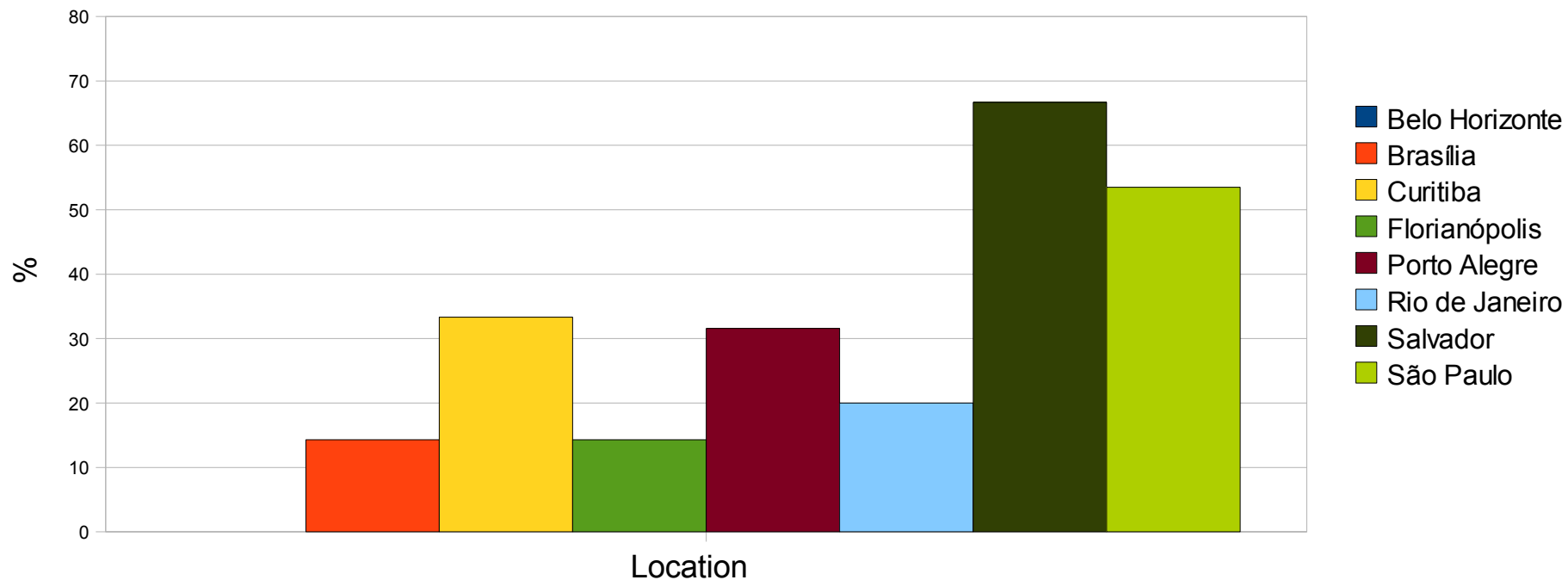
## PTTmetro – Members Relative Accounting

<b>Location</b>	<b>ATM (%)</b>	<b>Transit (%)</b>	<b>IPv6 (%)</b>	<b>LG (%)</b>
Belo Horizonte	100	0	0	33,33
Brasília	85,71	14,29	0	0
Curitiba	80	33,33	0	40
Florianópolis	100	14,29	0	100
Porto Alegre	94,74	31,58	15,79	94,74
Rio de Janeiro	80	20	0	40
Salvador	66,67	66,67	0	33,33
São Paulo	58,14	53,49	16,28	39,53

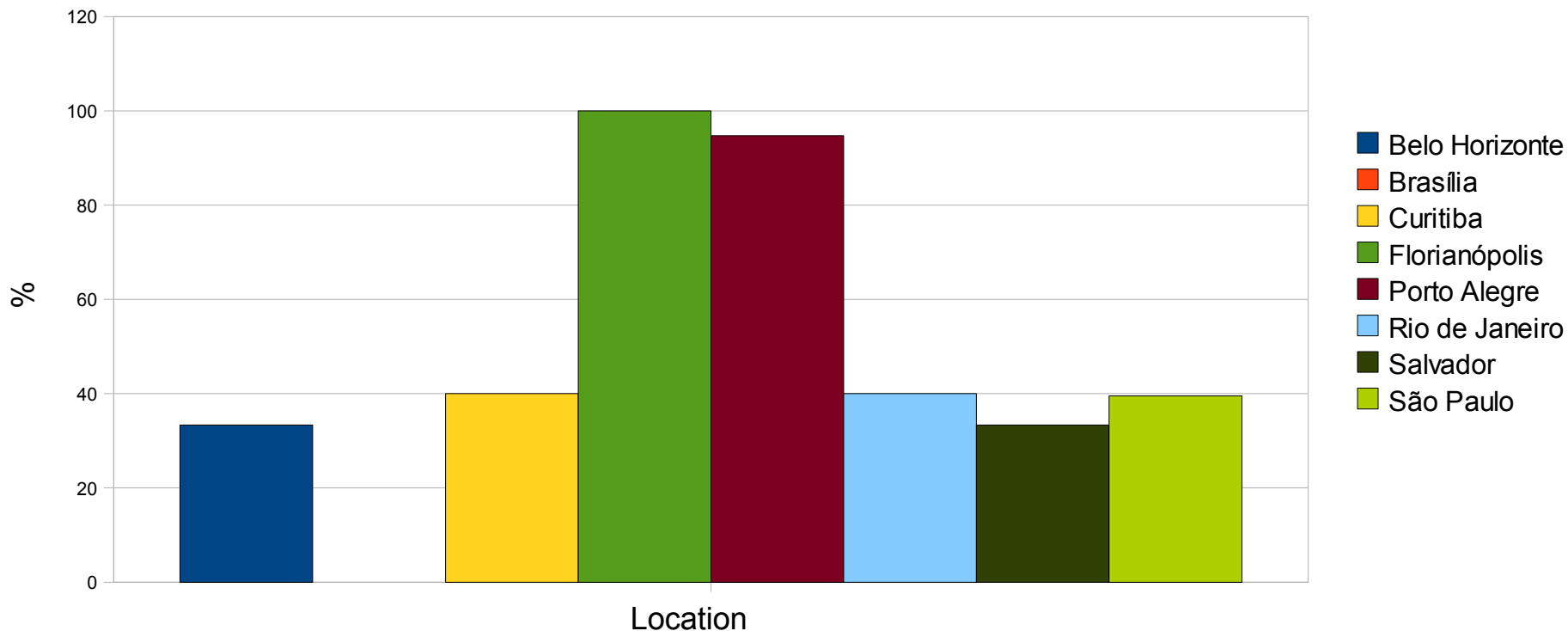
# PTTmetro – Members Relative Accounting Graph 1/4

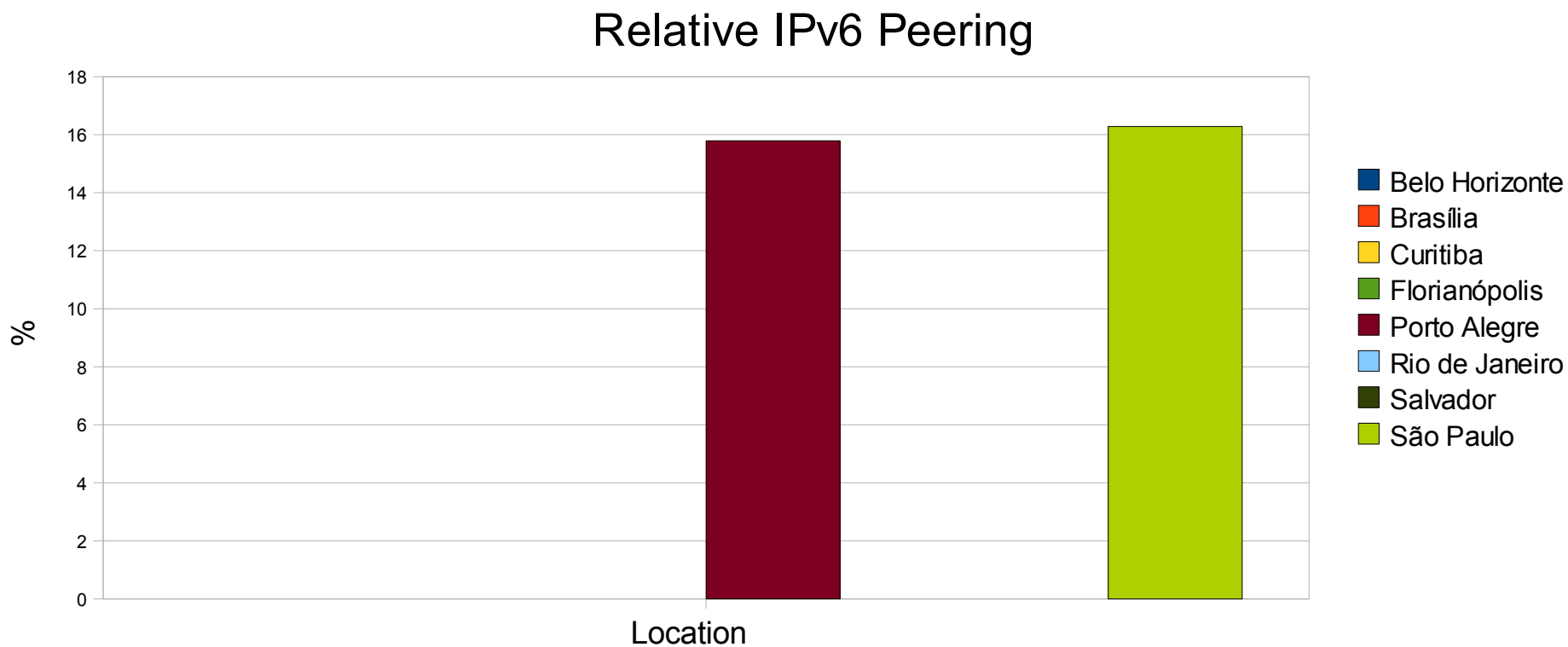


## Relative Transit

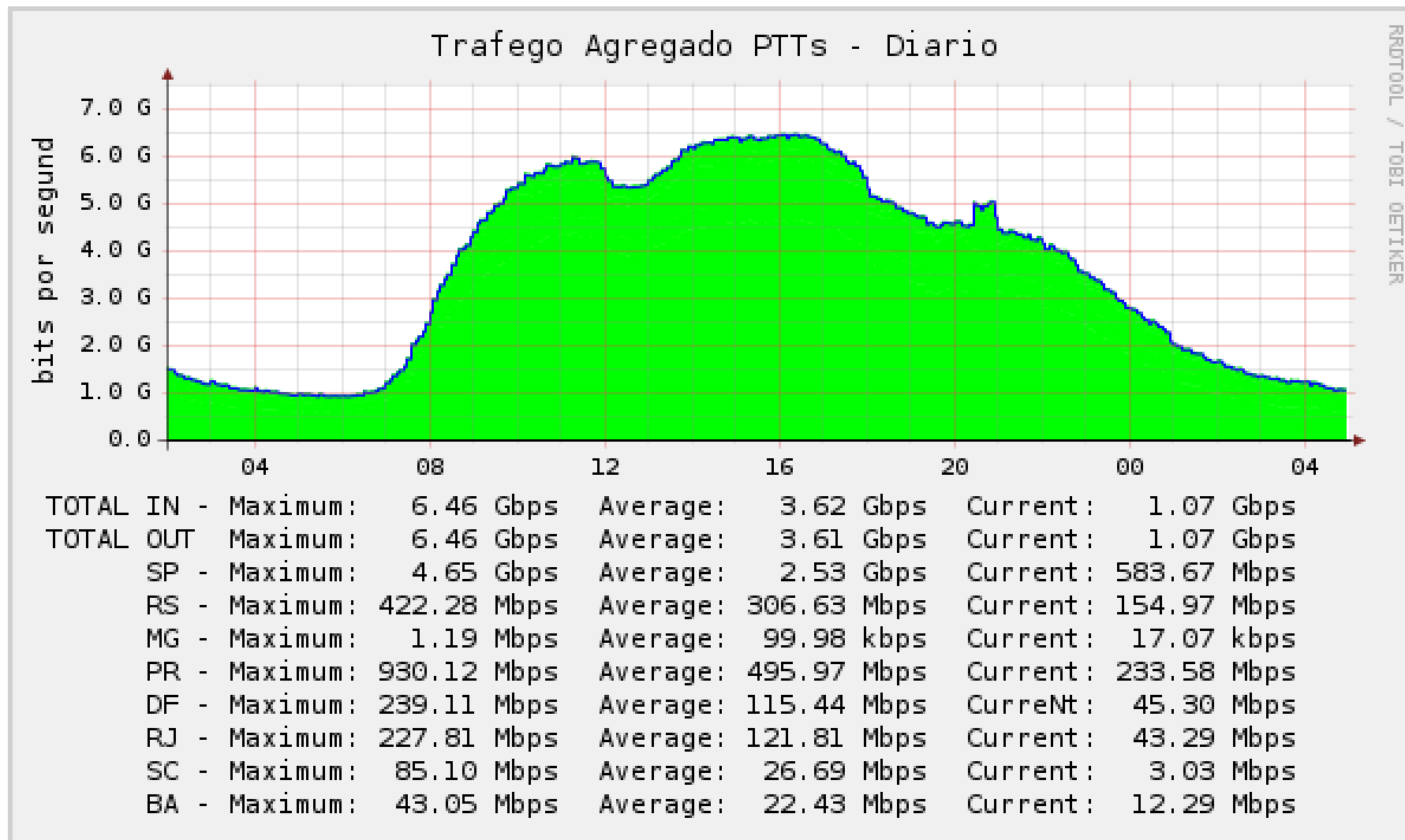


## Relative LG Feed

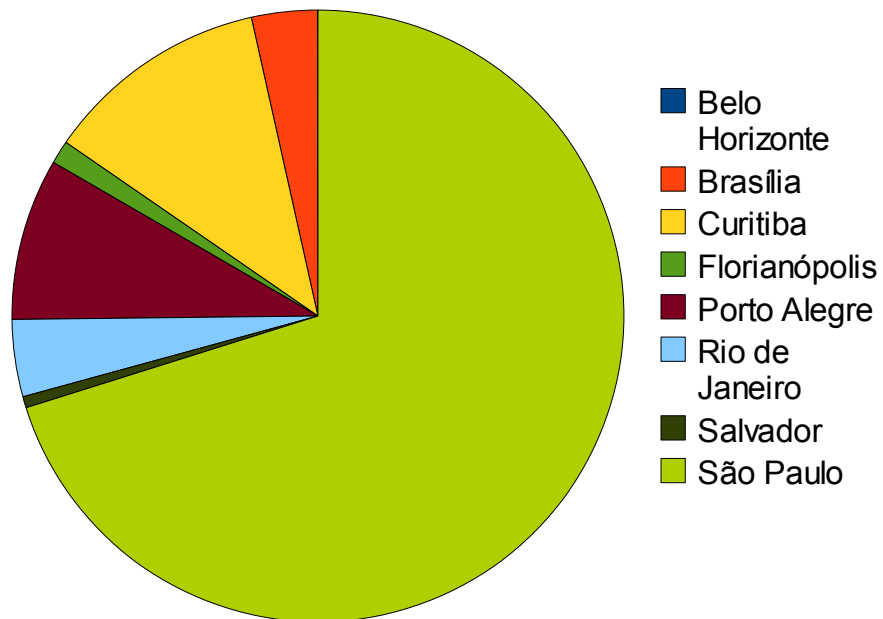




# PTTmetro – All Locations Aggregated Bandwidth



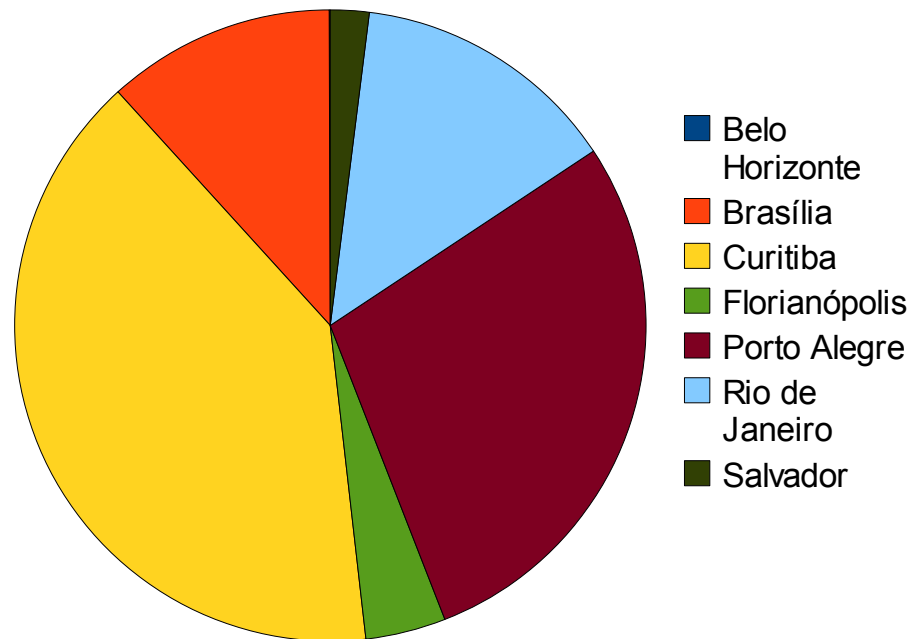
# PTTmetro – Locations Relative Bandwidth (% Mbps)



	Belo Horizonte	Brasília	Curitiba	Florianópolis	Porto Alegre	Rio de Janeiro	Salvador	São Paulo
<b>Average</b>	0,0164	3,4741	11,9106	1,2268	8,5577	4,0741	0,5906	70,1498
<b>STDEV</b>	0,0078	0,5182	1,0765	0,2489	2,9092	0,9162	0,0914	2,2217
<b>MAX</b>	0,0331	4,5843	14,0535	1,9217	19,6028	5,7303	0,9777	73,3236
<b>MIN</b>	0,0035	2,5834	9,9156	0,6699	6,0337	2,8116	0,4864	61,7779

Max Values from 20th April to 19th May, 2008

# PTTmetro – Locations Relative Bandwidth (% Mbps) Without São Paulo



	Belo Horizonte	Brasília	Curitiba	Florianópolis	Porto Alegre	Rio de Janeiro	Salvador
<b>Average</b>	0,0553	11,6808	40,0693	4,1158	28,3930	13,7000	1,9857
<b>STDEV</b>	0,0269	1,8141	4,1379	0,7961	7,6467	3,1516	0,3131
<b>MAX</b>	0,1157	15,4223	47,9378	5,8645	51,2866	19,0785	3,2024
<b>MIN</b>	0,0115	8,3493	25,9422	2,3684	20,3008	9,7594	1,3985

*Max Values from 20th April to 19th May, 2008*

São Paulo is the economically most important city in Brazil and probably as a consequence hosts most of the IP traffic exchanged in the country.

PTTmetro sites are spread over most bussiness concentration areas in the city.

NAP do Brasil (Terremark Latin America - PTT ANSP/FAPESP in the past) is located in Barueri city (São Paulo neighbourhood) and attracts a significative amount of AS interested in peering.

## Some Points that Slow Down Peering Development in Brazil

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- The existence of isolated IXP on areas with others IXP  
(*e.g. Terremark, Diveo, Telcomp, etc in São Paulo*)
- Private peerings between ISPs and NSPs
- High bandwidth equipments cost  
(*e.g. 10 Gigabit Ethernet*)

## References

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- <ftp://ftp.registro.br/pub/gter/gter08/gter-ptt.ppt>
- <ftp://ftp.registro.br/pub/gter/gter17/07-operacao-rsix.pdf>
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alberto-gomide-e-a-internet-ferramentas-competencia-e-muita-vontade/](http://www.nara.org.br/entrevistas/precursoros-da-internet-no-brasil/alberto-gomide-e-a-internet-ferramentas-competencia-e-muita-vontade/)

# Acknowledgments

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LACNIC  
Roque Gagliano

NIC.br  
Milton Kaoru Kashiwakura  
Oripide Cilento Filho  
Renan Marcelino Alves

Registro.br  
Frederico A C Neves

RNP  
Pedro Rodrigues Torres

*et al.*