

**IPT**

Instituto de Pesquisas Tecnológicas

**USP**

Universidade de São Paulo  
BRASIL

# Transpor obstáculos: o papel da Força Tarefa IPv6 do Brasil e dos Pontos de Presença (PoP) da Internet

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**2<sup>nd</sup> ICTng**

Workshop Internacional 2007

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## IPv6 Startup @ USP (University of São Paulo)

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- **First experience with BR6Bone through the National Education and Research Network (Rede Nacional de Ensino e Pesquisa – RNP) (february 2003)**
  - allocated a prefix 3FFE
  - created a small testbed at CCE LInt (Electronic Computing Center – Interop Lab)
  - established tunnel with RNP and Ampath



## IPv6 Startup @ USP

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- **Enable some services to test (2003)**
  - web server with a very simple homepage
  - academic content (streaming video) distributed via VideoLan (VLC)
  - realized some tests using DVTS



# IPv6 Startup @ USP

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- **Global IPv6 Service Launch Event (december 2003)**
  - tests realized with Telefonica Spain, Telefonica Brazil and RNP



## IPv6 next step @ USP

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- **Obtain a IPv6 prefix (2005)**
  - IPv6 prefix /32 allocated by LACNIC
  - IPv6 prefix /38 allocated by RNP

# IPv6 next step @ USP

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- Specify and acquire an IPv6 enabled routers **(2004)**
- Receive and configure an IPv6 enabled routers **(2006)**





## IPv6, some questions @ USP

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- **Some problems!!!**
  - only main core are IPv6 enabled
    - Juniper M-Series





## IPv6, some questions @ USP



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- **Some problems!!!**
  - lan campus core don't offer support to IPv6
    - Foundry 1st gen hardware – BI15K
  - lan campus distribution don't offer full support to IPv6 (IPv6 software implementation and performance affected in dual stack environments)



## IPv6, new scenario @ USP

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- **coming up next 2008**
  - establish IPv6 peering with 
  - establish IPv6 peering with 
  - install new equipments acquired in 2007 through USP Campi (capital and interior)
    - 18 Foundry MLX (IPv6 compliance)
    - estimate to complete installation in 1st quarter 2008
  - start in 3rd quarter 2008 IPv6 network allocations to admins/users



## IPv6, proposals @ USP

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- **possible ideas!**
  - incentivate use of IPv6 in
    - labs
    - classrooms
    - adoption in USP Internet Data Center by implement dual stack in web servers, mail servers and other corporative services
  - IPTV USP ([www.iptv.usp.br](http://www.iptv.usp.br))
  - Academic hotspot, USPnet Sem Fio ([www.sem fio.usp.br](http://www.sem fio.usp.br))
  - and many others services ...



## IPv6, wishlist @ USP

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- **old constraints, permanent wishlist!**
  - access devices (switches, access points, etc) managed through IPv6
  - VoIP (gateways, softswitches and endpoints) in IPv6
  - Videoconference terminals ready to IPv6



# Thanks

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# USP (University of São Paulo) in numbers

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- **Public** university, founded in 1934, has:
  - 7 campi (city of São Paulo – 17 million and other cities in the interior)
  - 72 units
  - 80,500 students (undergraduate, graduate and specialization)
  - 5,000 professors.
  - 214 undergraduate programs.
  - 229 graduate programs.





# CCE in numbers

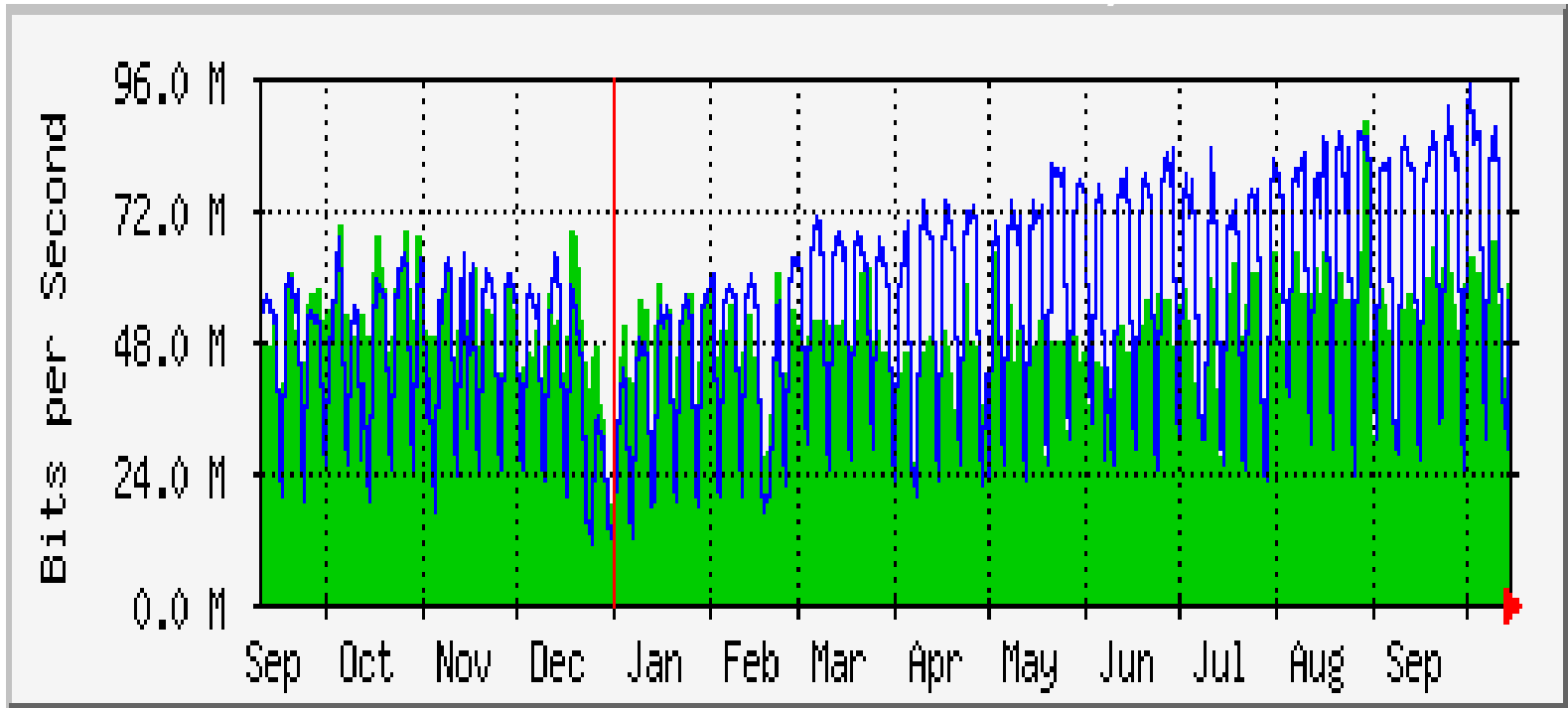
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- **Multimedia Studio (2006 Oct):**
  - Video Transmission (70 with 414 hours)
  - Videoconference (122 with 377 hours)
  - Support to Audiovisual (131 from 26 university units)
- **Telephony (2007 Oct):**
  - Numbers of PABX – **22 (Capital – 13)**
  - Number of terminal:
    - Capital 10604; Interior 6200
- **Network (2007 Oct):**
  - Number of network connections:
    - Capital 25.000; Interior 12.000



# Análise do tráfego da RNP

The statistics were last updated Wednesday, 17 October 2007 at 10:21



**GREEN ###**

Incoming Traffic in Bits per Second

**BLUE ###**

Outgoing Traffic in Bits per Second



## Análise do tráfego da RNP

	Max	Average	Current
In (Chegada do trafego proveniente da RNP)	88.2 Mbits/s (8.8%)	45.8 Mbits/s (4.6%)	57.8 Mbits/s (5.8%)
Out (Saída do tráfego p/ RNP)	93.4 Mbits/s (9.3%)	52.1 Mbits/s (5.2%)	52.1 Mbits/s (5.2%)



**GREEN ###**

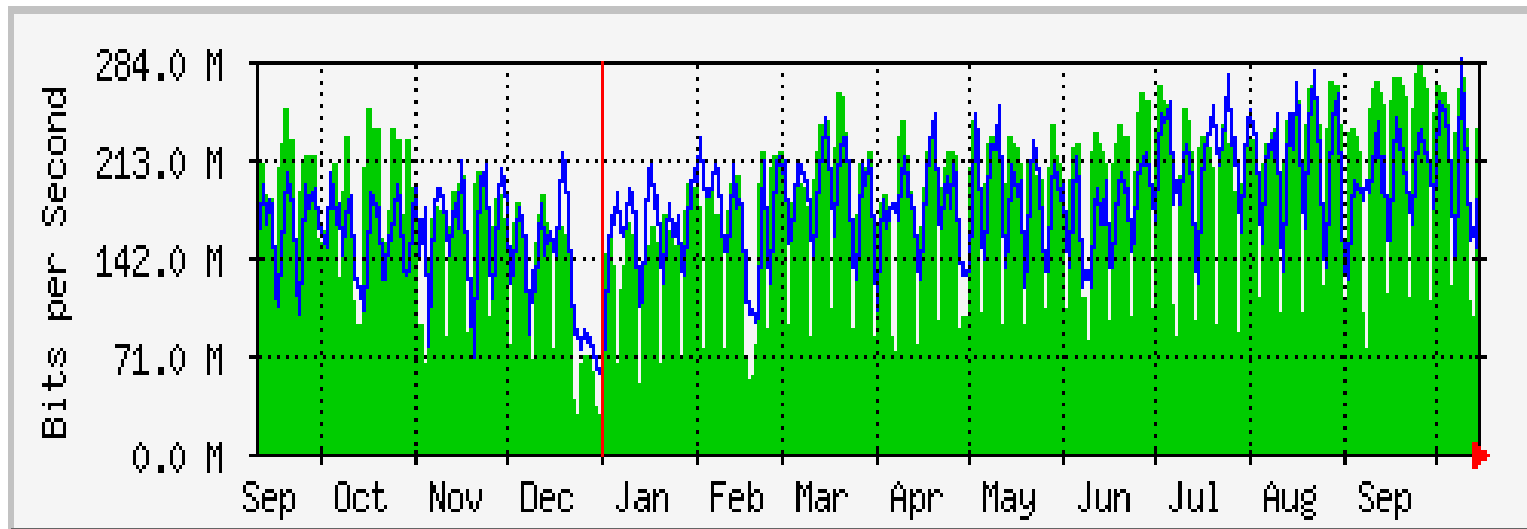
Incoming Traffic in Bits per Second

**BLUE ###**

Outgoing Traffic in Bits per Second

# Análise do tráfego USP/NAP (ANSP)

The statistics were last updated  
Wednesday, 17 October 2007 at 10:21,



**GREEN ###**

Incoming Traffic in Bits per Second

**BLUE ###**

Outgoing Traffic in Bits per Second





## Análise do tráfego USP/NAP(ANSP)

	Max	Average	Current
In (Chegada do trafego proveniente da FAPESP)	280.7 Mbits/s (28.1%)	163.6 Mbits/s (16.4%)	235.6 Mbits/s (23.6%)
Out (Saída do tráfego p/ FAPESP)	283.0 Mbits/s (28.3%)	176.2 Mbits/s (17.6%)	210.4 Mbits/s (21.0%)



**GREEN ###**

Incoming Traffic in Bits per Second

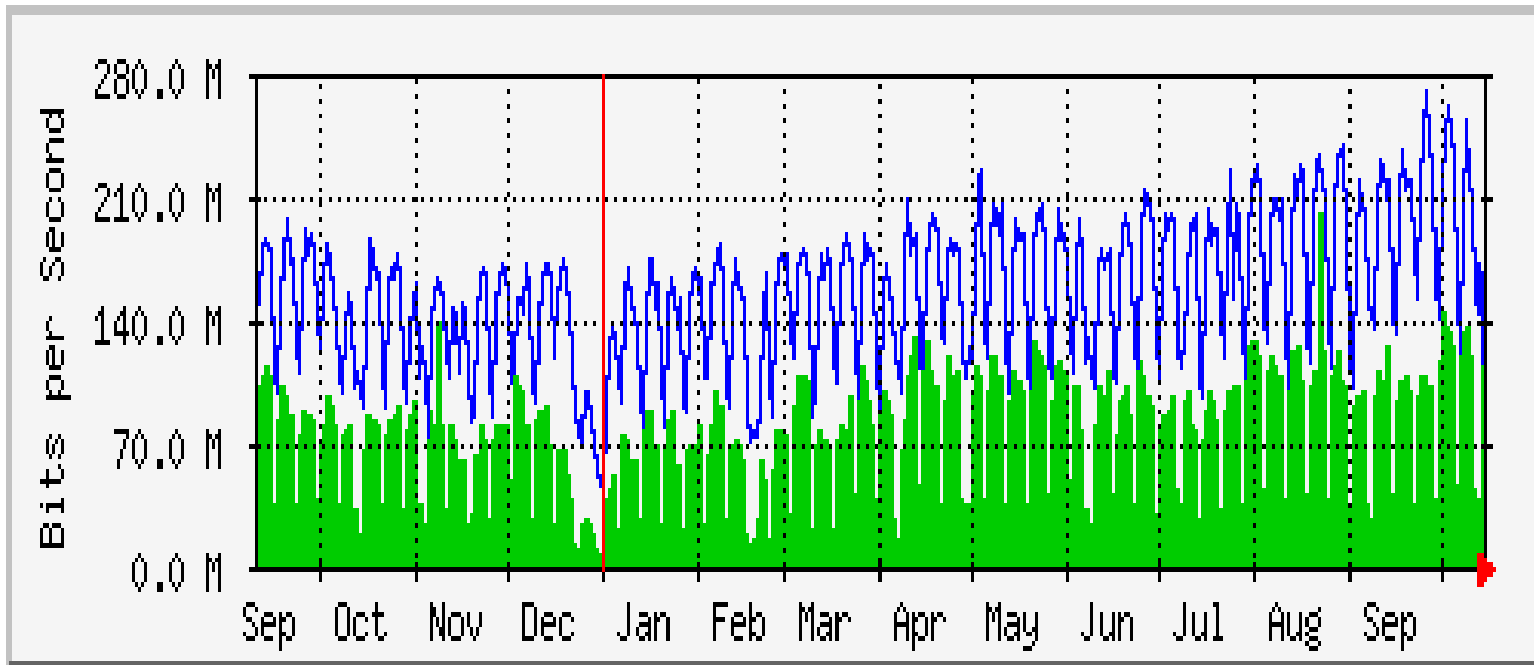
**BLUE ###**

Outgoing Traffic in Bits per Second



# Análise do tráfego do PTT

The statistics were last updated **Wednesday, 17 October 2007 at 10:32,**



**GREEN ###**

Incoming Traffic in Bits per Second

**BLUE ###**

Outgoing Traffic in Bits per Second



## Análise do tráfego do PTT

	Max	Average	Current
In (Chegada do trafego proveniente do PTT)	288.8 Mbits/s (28.9%)	123.9 Mbits/s (12.4%)	233.2 Mbits/s (23.3%)
Out (Saída do tráfego p/ PTT)	386.9 Mbits/s (38.7%)	222.7 Mbits/s (22.3%)	305.9 Mbits/s (30.6%)



**GREEN ###**

Incoming Traffic in Bits per Second

**BLUE ###**

Outgoing Traffic in Bits per Second



## Volume de tráfego que a USPnet troca com a Internet

	Max	Average	Current
In (Chegada do trafego proveniente dos peerings)	569.5 Mbits/s	287.5 Mbits/s	468.8 Mbits/s
Out (Saída do tráfego p/ os peerings)	669.9 Mbits/s	398.9 Mbits/s	516.3 Mbits/s





# CCE in numbers

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- **Wireless USPnet (2007 Oct):**
  - Number of Active Users: 1158.
  - Number of Potential Users: 24.692.
  - Number of Accesses: 293/day.
  
- **Remote Access (2007 Oct):**
  - ADSL Users (Speedy – Telefônica): 474.
  - Number of ADSL Accesses: 293/day.
  - Number of Dialing Accesses: 12/day.
  
- **Number of registered Internet domains (2007 Oct):**
  - Primary Domains: 62
  - Secondary Domains: 69





# CCE in numbers

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- **Electronic Mail - @usp.br:**
  - Number of registered accounts – 24.692
  - Received and sent messages:
    - Received:
      - Total: 840.000/day
      - Spam Filters: 440.000/day
      - Attachment Filters: 250.000/day
      - Valid e-mail: 150.000/day
    - Sent: 174.000/day





# CCE in numbers

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- **Security:**

- Number of answered incidents: 80/month.

- **VPN (Private Connection):**

- Number of external active users: 1459.
- External Accesses: 226/day.



- **Permanent stored data:**

- Immediate Access: 4 Tbytes.
- Back-Up Access: 21 Tbytes.



cgi.br  
registro.br

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ansp