



núcleo de aplicações em redes avançadas



an Academic Network at São Paulo

Luis Fernandez Lopez

Center for Advanced Network Applications – University of São Paulo

Center for Internet Augmented Research and Assessment – Florida International University

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The State Of São Paulo

1. The State of São Paulo

- 7 major research universities (all public).
- 200.000 students (half at USP) – $\frac{1}{4}$ grad students.
- 40+ private universities and research centers (most public).
- 1 Science Foundation, pretty similar to NSF way of work – current budget ~ \$ 350 M.

2. ANSP (the Network)

- Project run by the Center for Advanced Network Applications of the Medical School of the University of São Paulo – I use to say ANSP is RNP in São Paulo.
- First links operational during the first half of 1988. First international link operational at the end of 1988.
- Officially inaugurated by FAPESP on February, 1989, as a project connected to Fermilab (then, the name *an Academic Network at São Paulo* – in English!).
- One of the first REN in the world to use TCP/IP (in production on february/1991)

2. ANSP (the Network)

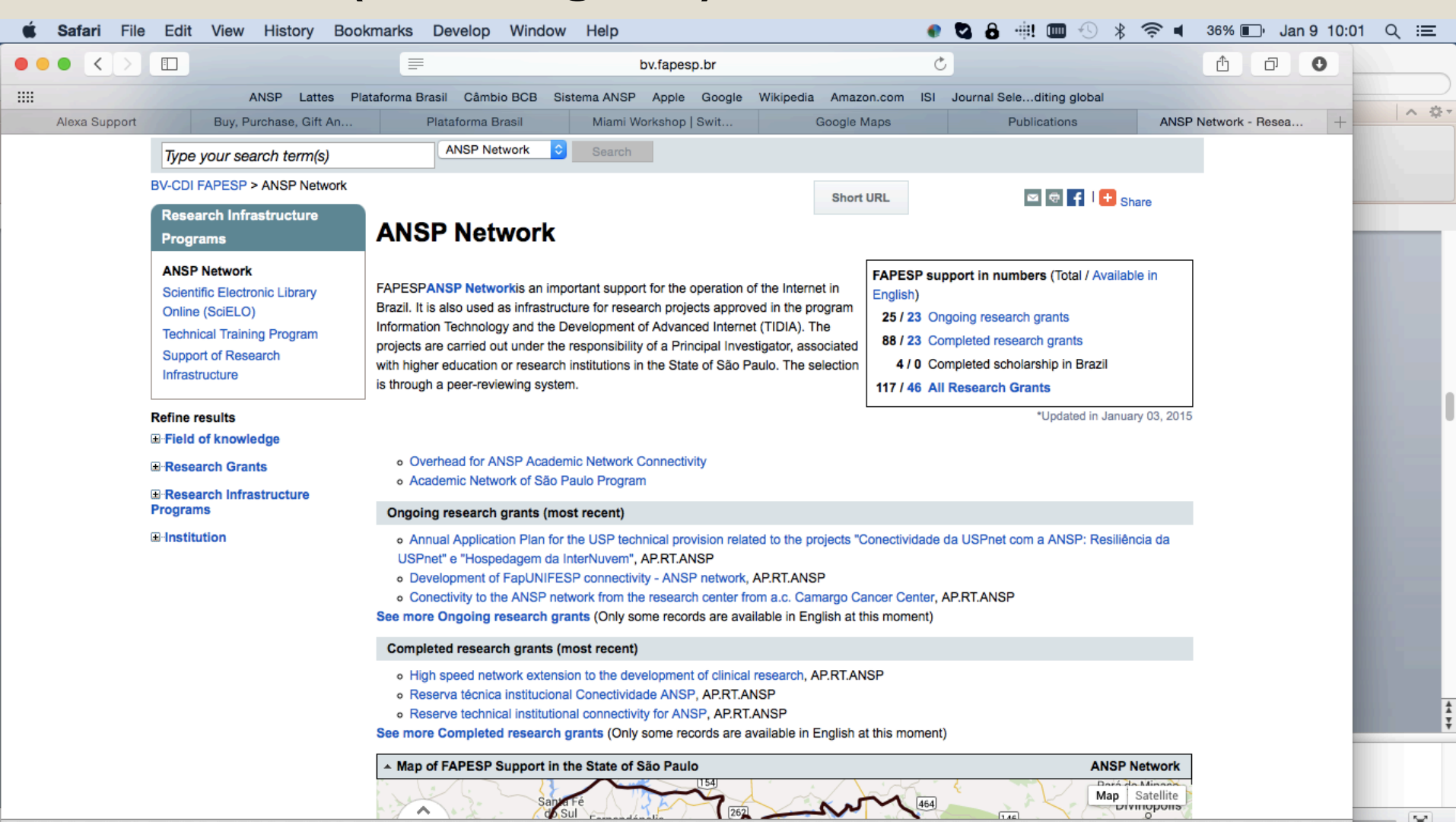
- Initially meant to link the Physics community in São Paulo (USP, Unicamp, Unesp, IPT) to their peers in US.
- Later, until 1994, the only access from Brazil to Internet, both for research & education and commercial purposes.
- Currently links 50 institutions from the State of São Paulo with bandwidths varying from 10 Mb/s to 100 Gb/s.
- In 2004 decided it should work with some institution in US in order to have a permanent reliable connectivity with the world research and education networks. FIU-CIARA was chosen.

3. ANSP (the Network – cont.)

- From 2004 to 2008 funded 80% of the links between Brazil and US (20% funded by the FIU project WHREN).
- Since 2009 funds 40% of the links connecting Brazil and Chile to US (other 40% funded by RNP and 20% funded by FIU projects Amlight and Amlight Express).
- ANSP is also a funding member of the **GLIF** (Global Lambda Integrated Facility) and operates the GLIF GOLE SouthernLight.
- ANSP hosts the PoP of red CLARA in São Paulo (the main red CLARA PoP).

3. ANSP (the Program)

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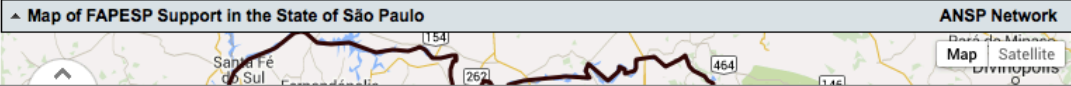
The screenshot shows a Safari browser window displaying the website bv.fapesp.br. The page title is "ANSP Network". The browser's address bar shows the URL, and the search bar contains "ANSP Network". The page content includes a search bar, a navigation menu, and a main content area with the following sections:

- Research Infrastructure Programs**
 - ANSP Network
 - Scientific Electronic Library Online (SciELO)
 - Technical Training Program
 - Support of Research Infrastructure
- Refine results**
 - Field of knowledge
 - Research Grants
 - Research Infrastructure Programs
 - Institution
- ANSP Network**

FAPESP ANSP Network is an important support for the operation of the Internet in Brazil. It is also used as infrastructure for research projects approved in the program Information Technology and the Development of Advanced Internet (TIDIA). The projects are carried out under the responsibility of a Principal Investigator, associated with higher education or research institutions in the State of São Paulo. The selection is through a peer-reviewing system.
- FAPESP support in numbers (Total / Available in English)**
 - 25 / 23 Ongoing research grants
 - 88 / 23 Completed research grants
 - 4 / 0 Completed scholarship in Brazil
 - 117 / 46 All Research Grants

*Updated in January 03, 2015
- Ongoing research grants (most recent)**
 - Overhead for ANSP Academic Network Connectivity
 - Academic Network of São Paulo Program
- Completed research grants (most recent)**
 - High speed network extension to the development of clinical research, AP.RT.ANSP
 - Reserva técnica institucional Conectividade ANSP, AP.RT.ANSP
 - Reserve technical institutional connectivity for ANSP, AP.RT.ANSP
- Map of FAPESP Support in the State of São Paulo**

ANSP Network



3. ANSP (the Program – cont.)

- ANSP's 2016 budget: ~ \$ 10M (1/3 transferred to the users for connectivity expenses)
- ANSP support its users financially to connect to the NAP but does not interfere in their technology or political choices. This is made in annual based calls.
- ANSP polices are defined by research needs, without interference of university's administration.

4. ANSP (some technical aspects)

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- Since 2004 ANSP runs only BGP(SDN) so that it is completely transparent to its users, who may have whichever peering/transit policies they want.
- ANSP accepts connections of 10 and 100 Mbps and 1, 10 and 100 Gbps.
- Currently, ANSP connects to Brazilian commercial networks and to the Brazilian NREN (RNP – Rede Nacional de Educação e Pesquisa) with a total capacity of 40 Gbps.
- Most of our bigger users connect also directly to RNP and Brazilian commercial internet.

4. ANSP (some technical aspects)

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- Internationally, ANSP works with FIU's CIARA and with RNP, providing four 240 Gbps of connectividade between São Paulo and Miami, with a stop in Santiago (Chile).
- ConnectS to the rest of the world through Atlantic Wave and Internet2 (AmLight Express).
- ANSP transports half of the research traffic of Brazil.

Ongoing work:

- AmLight Express *
- SDX *
- State of São Paulo Academic Cybersecurity Center
- Brazilian Army Collaboration

* See to the presentations by Julio Ibarra and Jeronimo Bezerra



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THANK YOU!