

Why Optical Networking in the Brazil?

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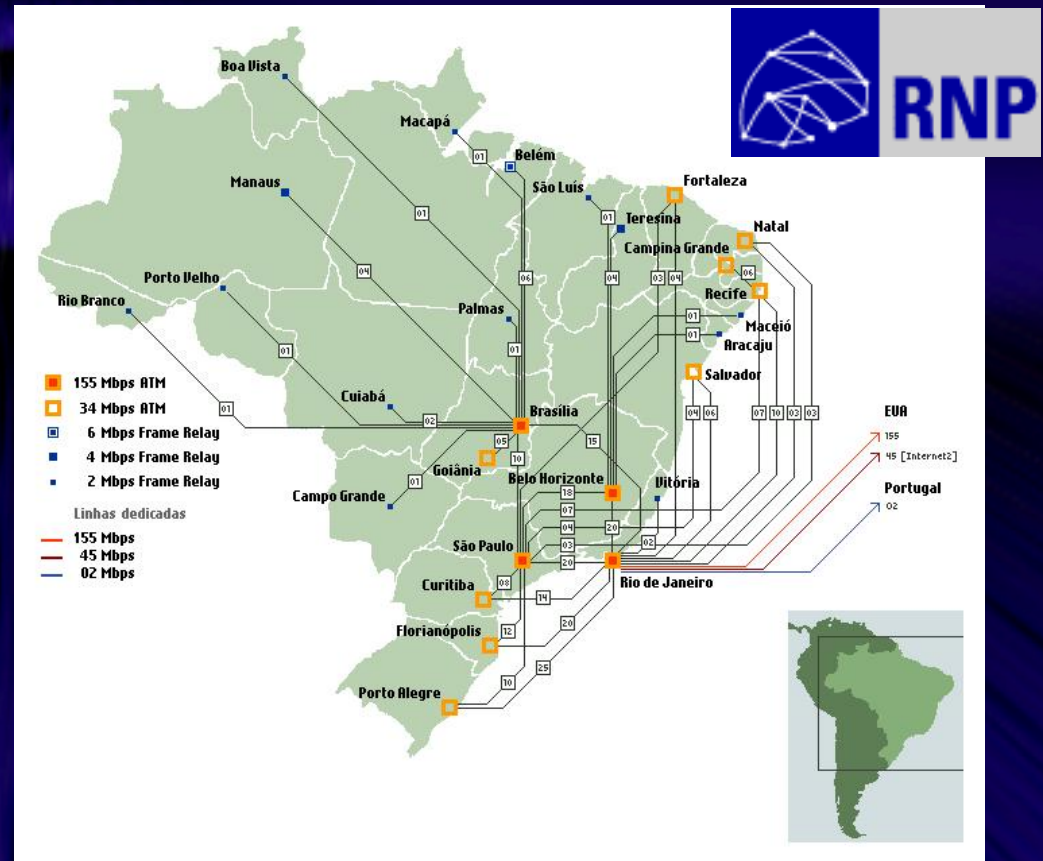
UNICAMP - IFGW, Optics and Photonics Research Center

Fapesp TIDIA Committee:

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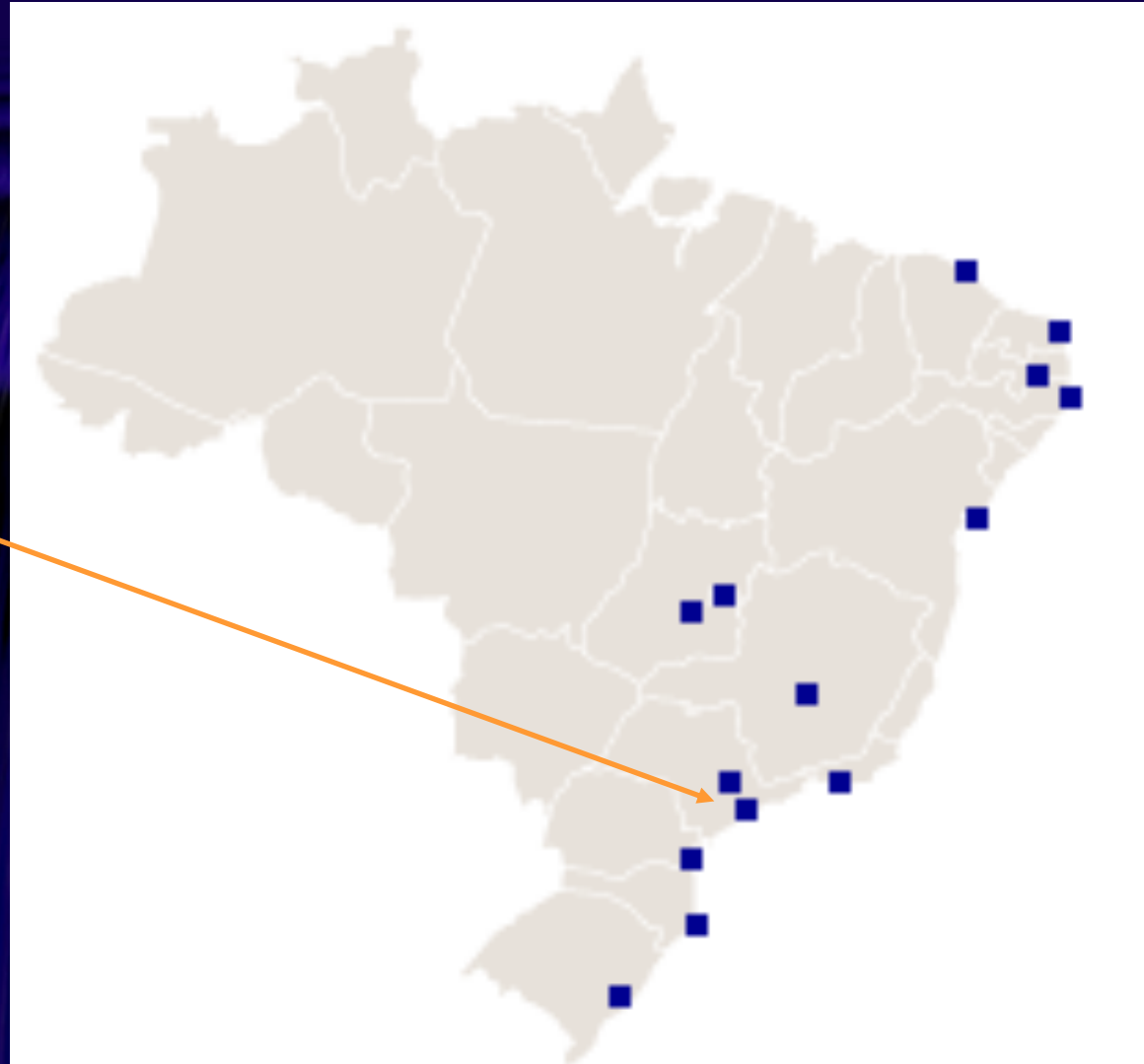
RNP Rede Nacional de Pesquisa

- Higher speeds - to 155 Mb/s
- REMAVs
 - Metropolitan Area Networks
 - Consortia - Industrial Partners
- Research
 - Tele-Medicine
 - Tele-Education
 - Internet Protocol IPv6
 - ...



REMAVs

- **Redes Metropolitanas de Alta Velocidade**
- **14 Cities,**
 - **2 in São Paulo State (São Paulo and Campinas)**



ANSP: Academic Network of São Paulo

RNP for São Paulo

Funded by FAPESP

87 Institutions

Internet Traffic Exchange



Advanced ANSP

**International:
155 Mb/s + 45
Mb/s (AMPATH)**

**In State:
155 Mb/s**

**USP-Fapesp:
dark fiber, GbE**



Vias da Internet 2



Identifying problems

- **Importance of efficient communications for development of Brazil**
 - Commerce, government, social inclusion,...
- **Commercial deficit**
 - Local production of ITC goods
 - Need qualified human resources 'in quantity'
- **Technological dependence**
 - Need innovators (PhDs)
- **Leased bandwidth problem**
 - Limitation for R&D and training of students

The Leased Bandwidth Problem

- Connection fees

bps	US k\$/annum
155 M	110
622 M	280
2.5 G	430

- ANSP + RNP: 11 million US\$/year in leased bandwidth

- No access to outside plant for researchers

- Research:

	Leased Bandwidth	Owned Fiber
Applications	limited	unlimited
Hardware/Field Test	NO	YES
COST - present	OK	affordable
COST - future	unaffordable	cheap

General Characteristics of FAPESP TIDIA program

Generate Human resources in quantity and quality

Generate knowledge, competence, expertise

Promote small business

Attract large industries for partnerships

Promote multidisciplinary research

The INTERNET as subject of research

Bids for local development

Opportunities

- **Technological opportunity**
- **Abundance of dark fiber**
- **Funding opportunities (Funds, Info Law,...)**
- **Government strongly interested**
- **Industries strongly interested**
- **Researchers strongly motivated**