



rednesp

Research and Education Network of São Paulo

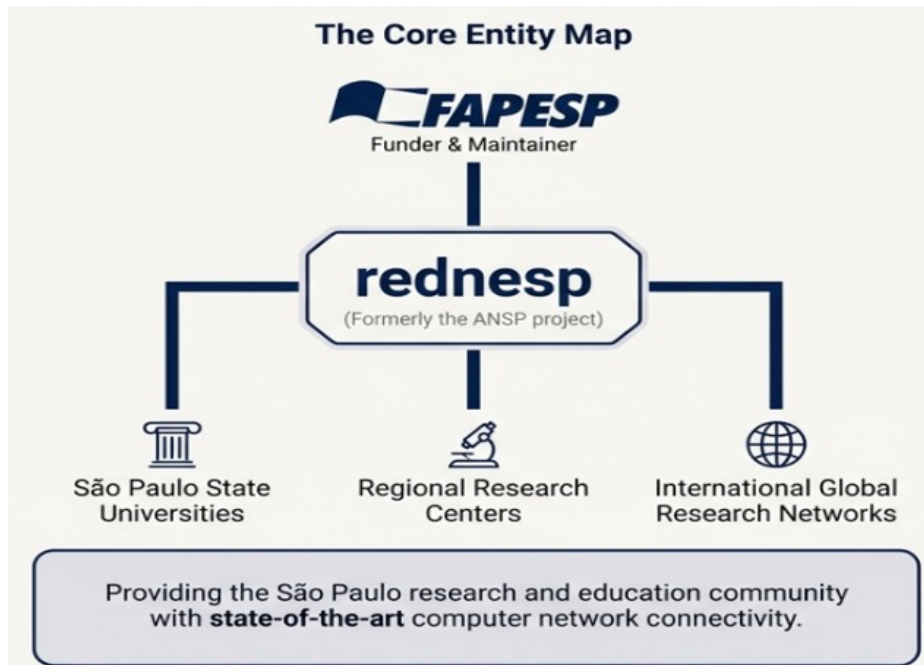
SA3CC Meeting
May 19-20, 2026

Agenda: current rednesp efforts

Prof. Dr. Ney Lemke
(São Paulo State University - UNESP)
ney.lemke@unesp.br

rednesp: The State of the Art in Academic Connectivity

Executive Summary: Structure, Governance and New Coordination

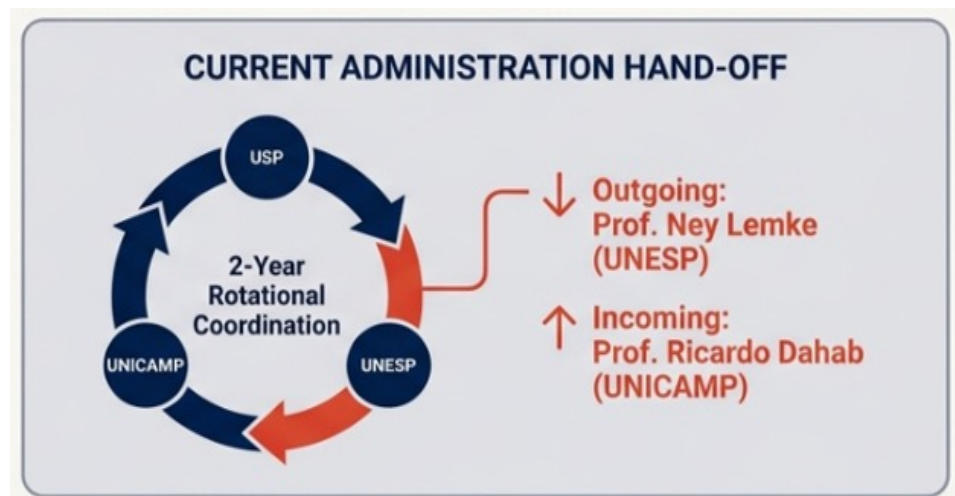


Executive Board of rednesp:

Prof. Fátima Nunes (USP)

Prof. Ney Lemke (UNESP)

Prof. Ricardo Dahab (UNICAMP)



Financial Investment

- USD 5 M by year in last 16 years
for providing Atlantic and Pacific links (orange lines)
in the AmLight cooperation and rednesp
connections.
- **Funded by FAPESP**
(The Sao Paulo Research Foundation)
<http://fapesp.br/en>



management of international connections



Resilient Links (2 x 100 Gbps)

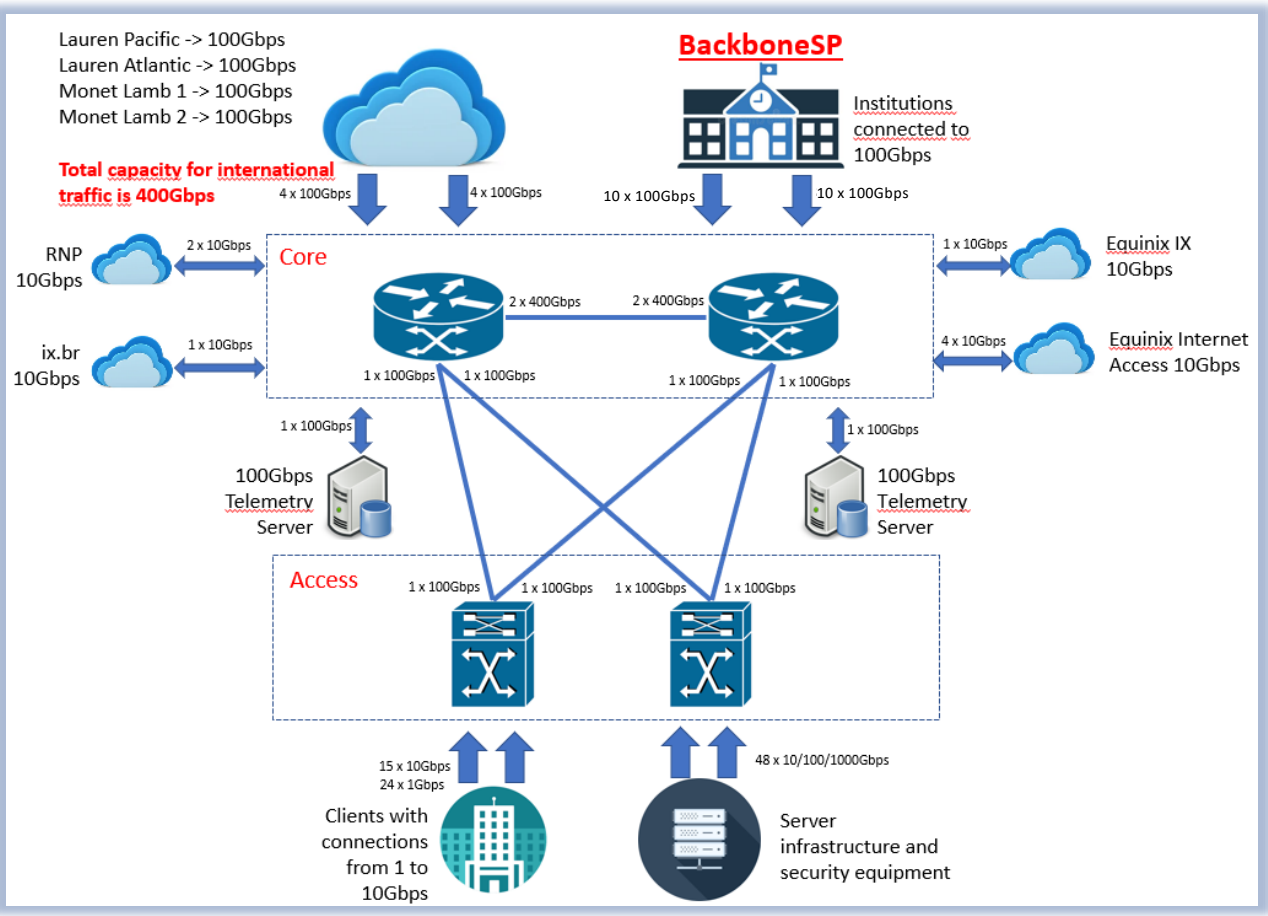
Funded by FAPESP-rednesp and provided by Lauren

Monet Link (2x 100 Gbps)

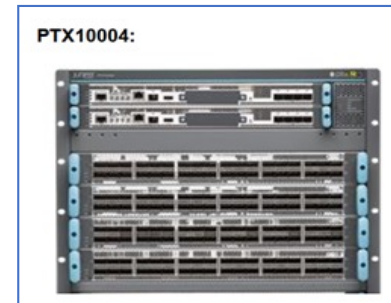
Provided by AmLight cooperation

Ella link (Bella Programme)

Provided by European effort and RNP management in Brazil



New infrastructure - 400Gbps



State-of-the-art Juniper equipment
 - capacity of up to 14.4Tbps per slot
 - PTX10004 has 4 slots totaling 57.6Tbps

Investment of USD 500 thousand

Infrastructure evolution

New cage - Equinix

front view



background view



Integrating academic institutions by Backbone-SP



- High availability connectivity infrastructure using 100Gbps for supporting teaching and research in the State of São Paulo
- Backbone for state and international connection using high speed
- Protocol-transparent point-to-point links
- Alternative for interconnection of research centers in the State of São Paulo
- Backbone for integration of HPC servers
- 2 New institutions in 2025

Backbone-SP 2026



Integrating 10 academic institutions
at 100Gbps in the State of Sao Paulo

✓ 2 new academic institutions integrated in 2025

Kytos-ng

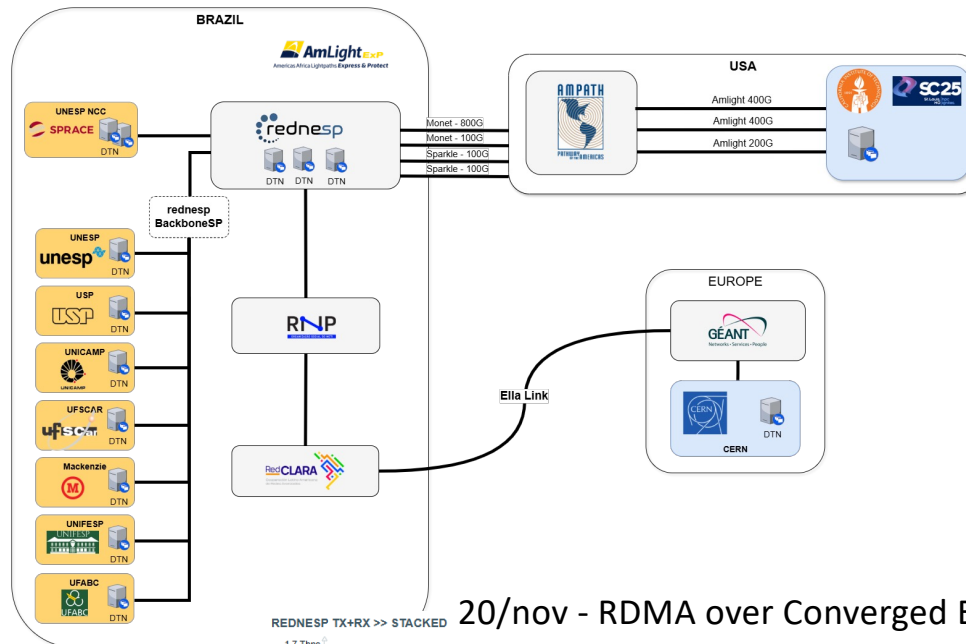
- SDN platform
 - SDN Controller
 - orchestration of SDN switches of the Pacific/Atlantic ring connecting São Paulo/BR to Florida/US
 - Multi-component architecture
 - Framework to develop Network Applications (NApps)
 - E-Line (Point-to-Point Ethernet virtual circuits)
 - LLDP network topology discovery
 - Pathfinder for computing constrained best paths
 - Bidirectional Forwarding Detection (BFD)
 - INT In-band network telemetry
 - Controlled by REST APIs or Web UI
- Open source code available at Github repository
 - [<https://kytos-ng.github.io/releases/2025.2/2025.2.html>]
 - Source-code and release notes are publicly available



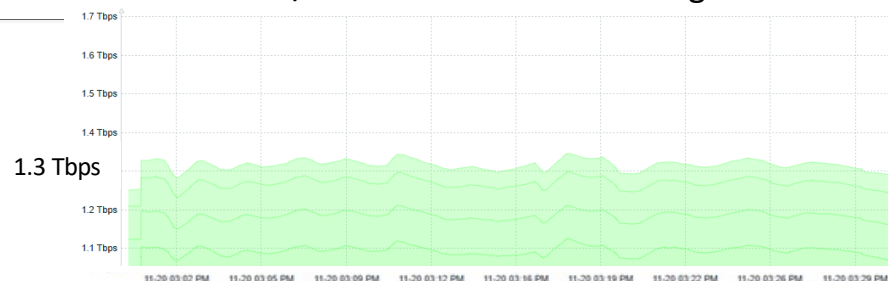
SC 2025 experiment



Supercomputing 2025 (SC 2025) <https://sc25.supercomputing.org/>



REDNESP TX+RX >>> STACKED 20/nov - RDMA over Converged Ethernet



Adding projects

- **Observatory - Cherenkov Telescope Array (CTA)** <https://www.cta-observatory.org/>

Prof. Luiz Vitor de Souza Filho – PI FAPESP in the CTA cooperation grant

the main goal: linking the observatory from Chile to Europe for study the extreme environments of the universe through detection of the **highest known energy radiation** such as the explanation of dark matter , the possibility of breaking of Lorentz invariance and understanding how supermassive black holes operate.

- **Integrating High Performance Computing Centers in Sao Paulo**

the main goal: provide the Scientific and Technological Cooperation Agreement between FAPESP, MCTI and MCom (fapesp.br/8388) - USD 20 M.

rednesp-FAPESP teams and Partners

FAPESP

Prof. Dr. Marco Antonio Zago - President

Administrative-Technical Board (ATB)

- Prof. Carlos Frederico de Oliveira – Director of ATB
- Prof. Márcio de Castro Silva Filho – Scientific Director
- Prof. Antonio Jose de Almeida Meirelles – Administrative Director

rednesp university committee:

- Prof. João Paulo Gois / UFABC
- Prof. Calebe de Paula Bianchini / Mackenzie
- Prof. Paulo Bandiera Paiva / UNIFESP
- Prof. Hermes Senger / UFSCar
- Profa. Cecilia de Azevedo Castro Cesar/ITA
- Prof. Daniel Batista Macedo/USP
- Prof. Ney Lemke / UNESP
- Prof. Ricardo Dahab / UNICAMP

rednesp executive committee

- **Prof. Ricardo Dahab (UNICAMP)** – Coordinator
- Prof. Ney Lemke (UNESP)
- Profa. Fatima Nunes (USP)

rednesp technical team

- Prof. Carlos Antônio Ruggiero
- Bruno Ferreira Baldim
- Paulo Sérgio Simionato
- Rogério Motitsuki
- Geraldo Teodoro da Silva
- Ana Maria Dias Cerqueira

USP collaborators

- Jorge Marcos de Almeida
- Mauro César Nernardes

Partners - Backbone SP



Partners





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Thanks!

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