RNP Educação, Pesquisa e Inovação em Rede

RNP updates

SA3CC 2026

May/26

DAERO – Diretoria Adjunta de Engenharia e Operações
DEO – Diretoria de Engenharia e Operações

Conecta Program

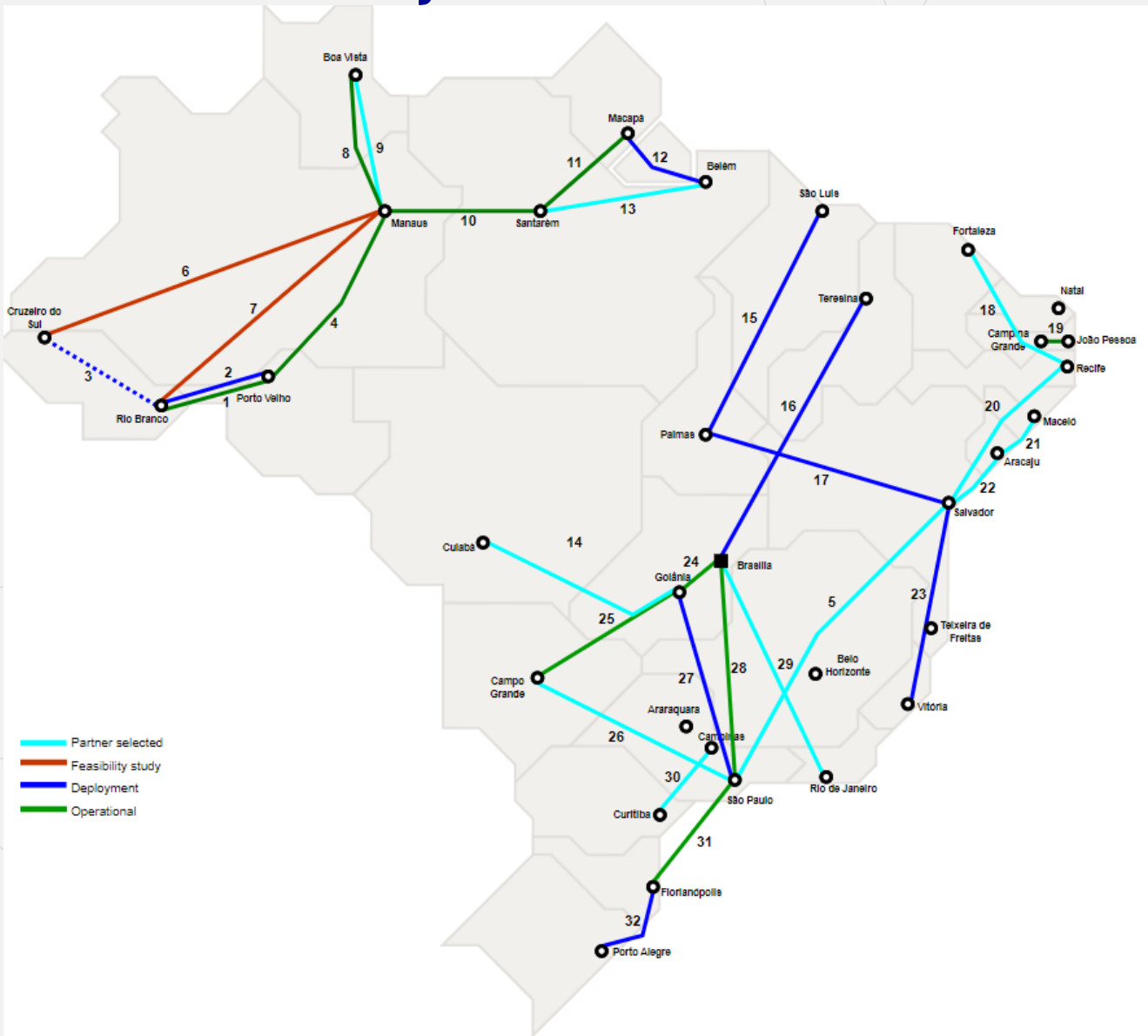
FNDCT (National Fund for Scientific and Technological Development) investments through the Conecta Program created the opportunity to broadly reimagine the network, bringing scalability, security, and end-to-end service standardization for organizations connected to RNP.

- National Infoway (National Backbone Network)
- e-Science Network
- State Infoways
- CND (RNP's datacenter project in partnership with DC operators)

Projeto Infovia Nacional (National Infoway)

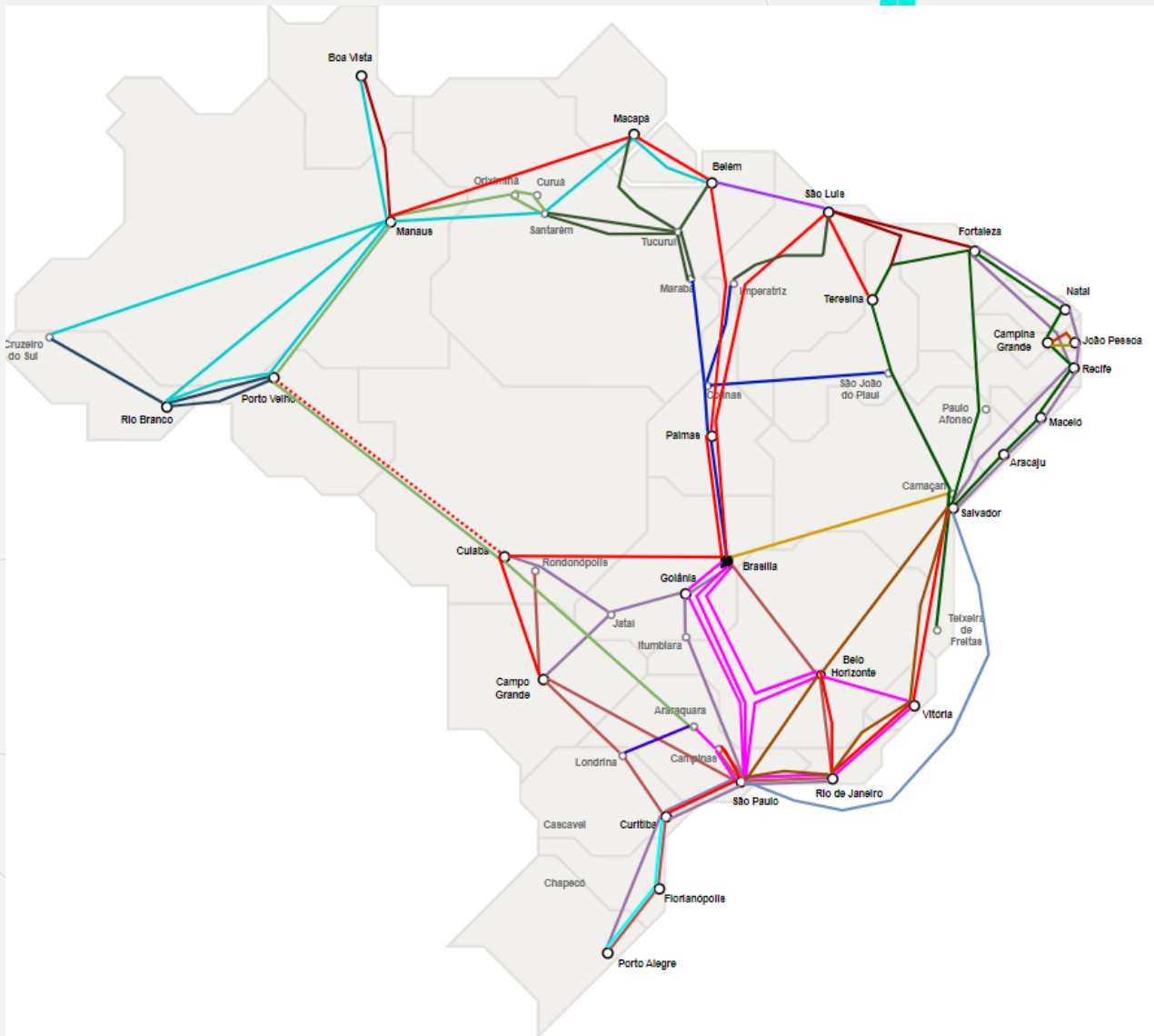
- 32 new backbone circuits (>100G)
  - 10 Operational
  - 09 Deployment
  - 11 Partner selected
  - 02 Feasibility study

- 12 partners (Power Utilities and Service Providers)
- High sinergy with e-Science Network and State Infoways projects



RNP backbone topology goal (all projects)

- RNP backbone is growing beyond Infovia Nacional Project goals
- High availability
- Path/Infrastruture diversity
  - Long haul
  - Back haul
- More capacity
- High effort on the North of Brazil

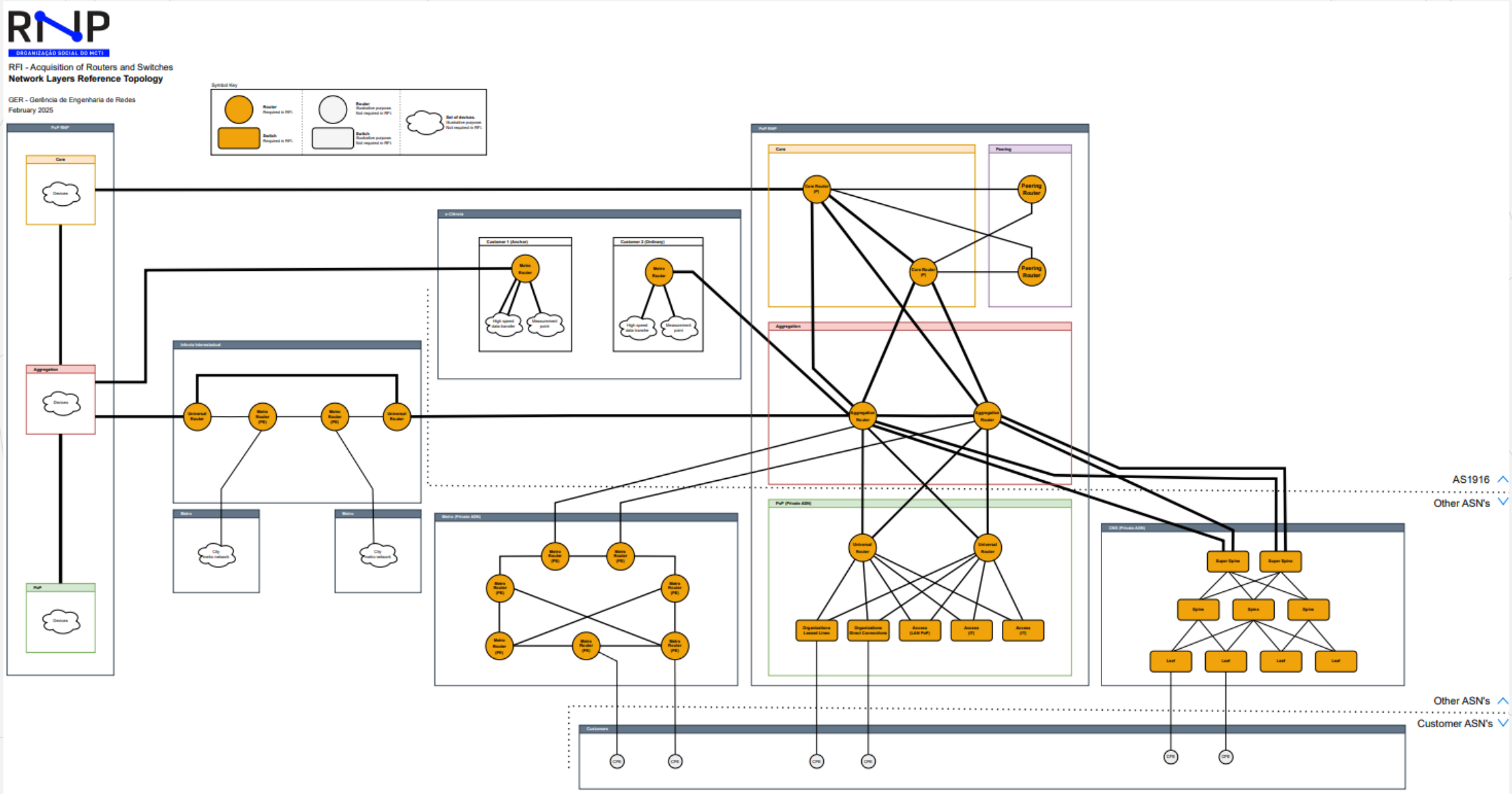


Projeto Infovia Nacional (National Infoway)

- 9 Datacenters of PoPs modernized
  - 2 completed projects (Espírito Santo and Mato Grosso do Sul)
  - 7 ongoing projects

- Renew all IP network equipment in the 27 PoPs (35+ sites)
- New newtork architecture
- Extensive time talking with vendors
- RFI done
- RFP done
  - Nokia won 3 lots (Core, Aggregation, Peering, Access)
  - Juniper won 1 lot (Metro routers)

RNP new network architecture

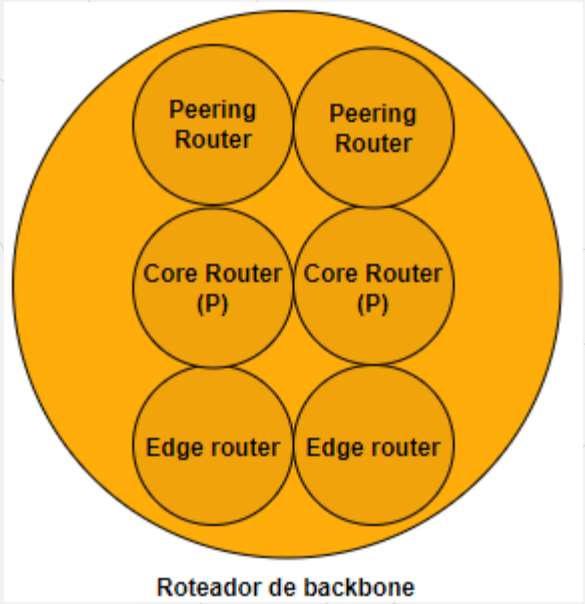


New architecture main goals

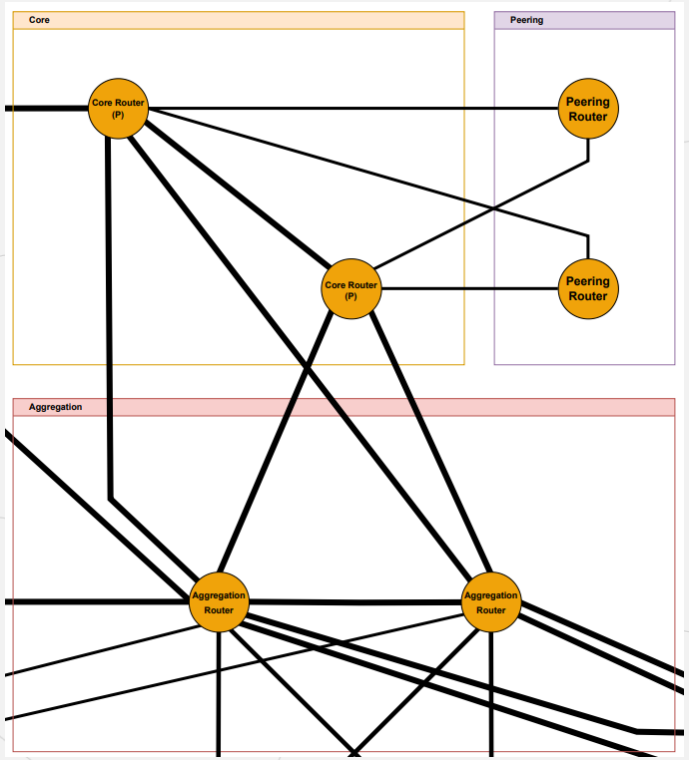
- Standardize the topologies, protocols, and configurations across the various networks that make up the RNP broad network
- Increase availability and minimize the impact of potential incidents/failures
- Duplicate same-layer equipment at the primary PoP
- Segregate network functions
- Consolidate investment efforts to strengthen the backbone while optimizing resources (avoiding duplication of network elements — e.g., Ipê and e-Ciência networks)
- Enable the creation of end-to-end services
- Facilitate broad and integrated monitoring
- Support the network automation and orchestration journey
- Ensure network security
- Enable service scalability for the next 5+ years

3 new network components of the RNP's ASN

Moving from this (swiss knife box)

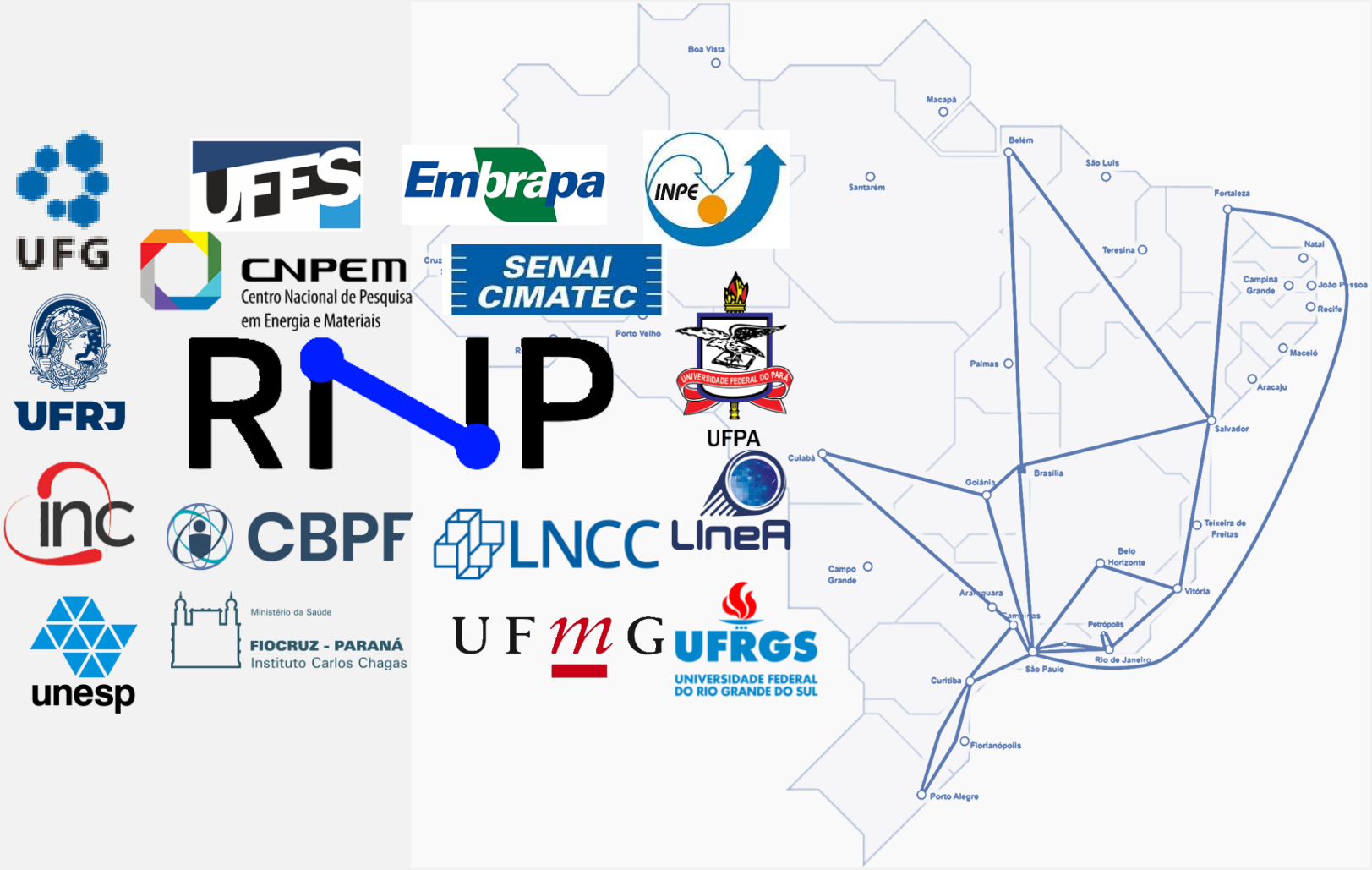


to that (specialized boxes)



E-Science Network

A secure, high-performance network designed to support scientific demands involving massive data transfers between participating institutions.



E-Science High level Topology 2025

DEMANDAS CIENTÍFICAS E CONEXÕES

1. **METEOROLOGIA**
   UFG - INPE CPTEC - INPE Cuiabá
   UFRGS - LNCC

2. **COSMOLOGIA e FÍSICA DE ALTAS ENERGIAS**
   Unesp – CBPF – UFES

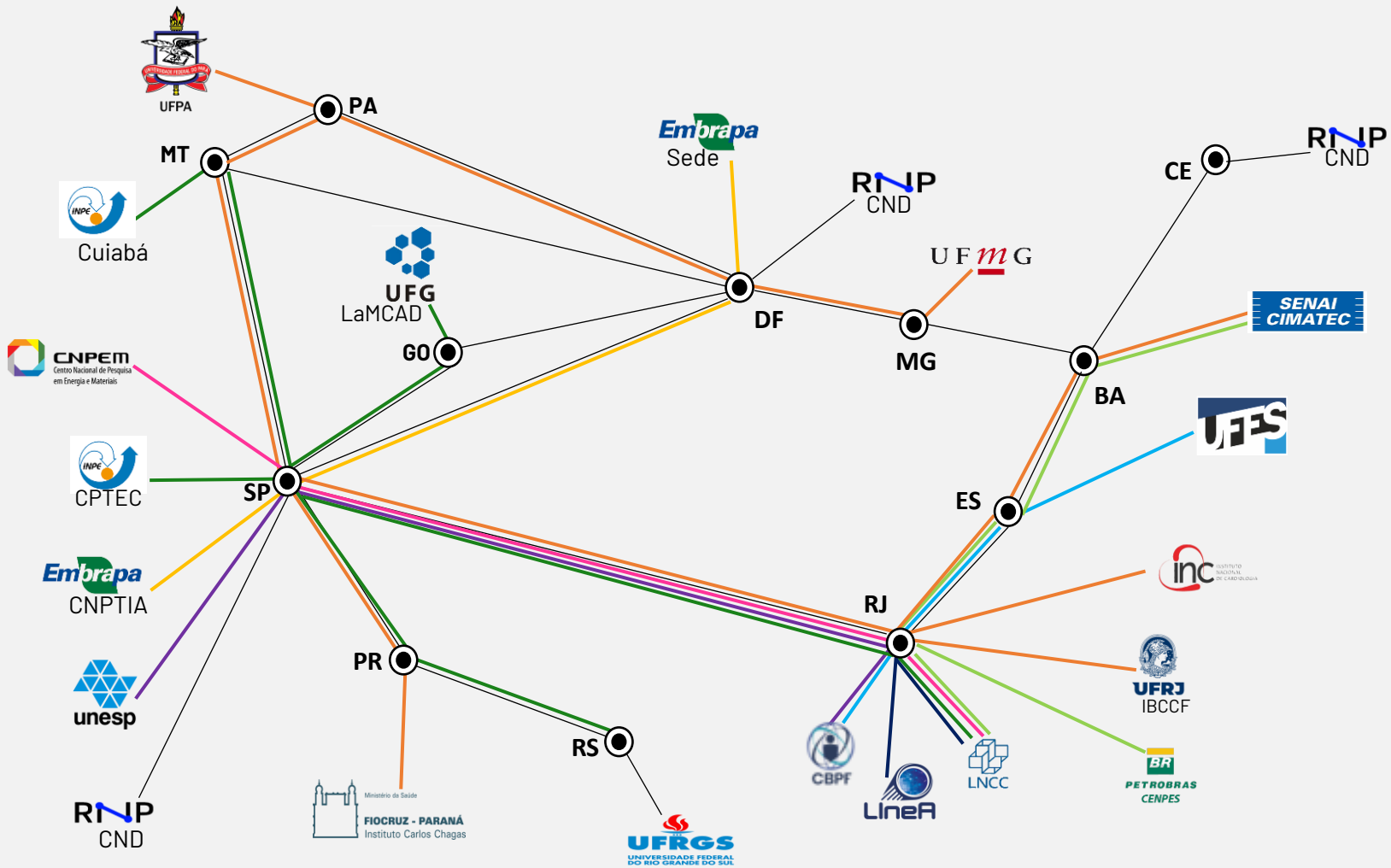
3. **ASTRONOMIA**
   LIneA/LNCC

4. **MULTIDISCIPLINAR: Física, Nanotecnologia, Biorrenováveis, Biologia**
   CNPEM – LNCC

5. **AGRICULTURA E GENÔMICA**
   Embrapa CNPTIA – Embrapa Sede

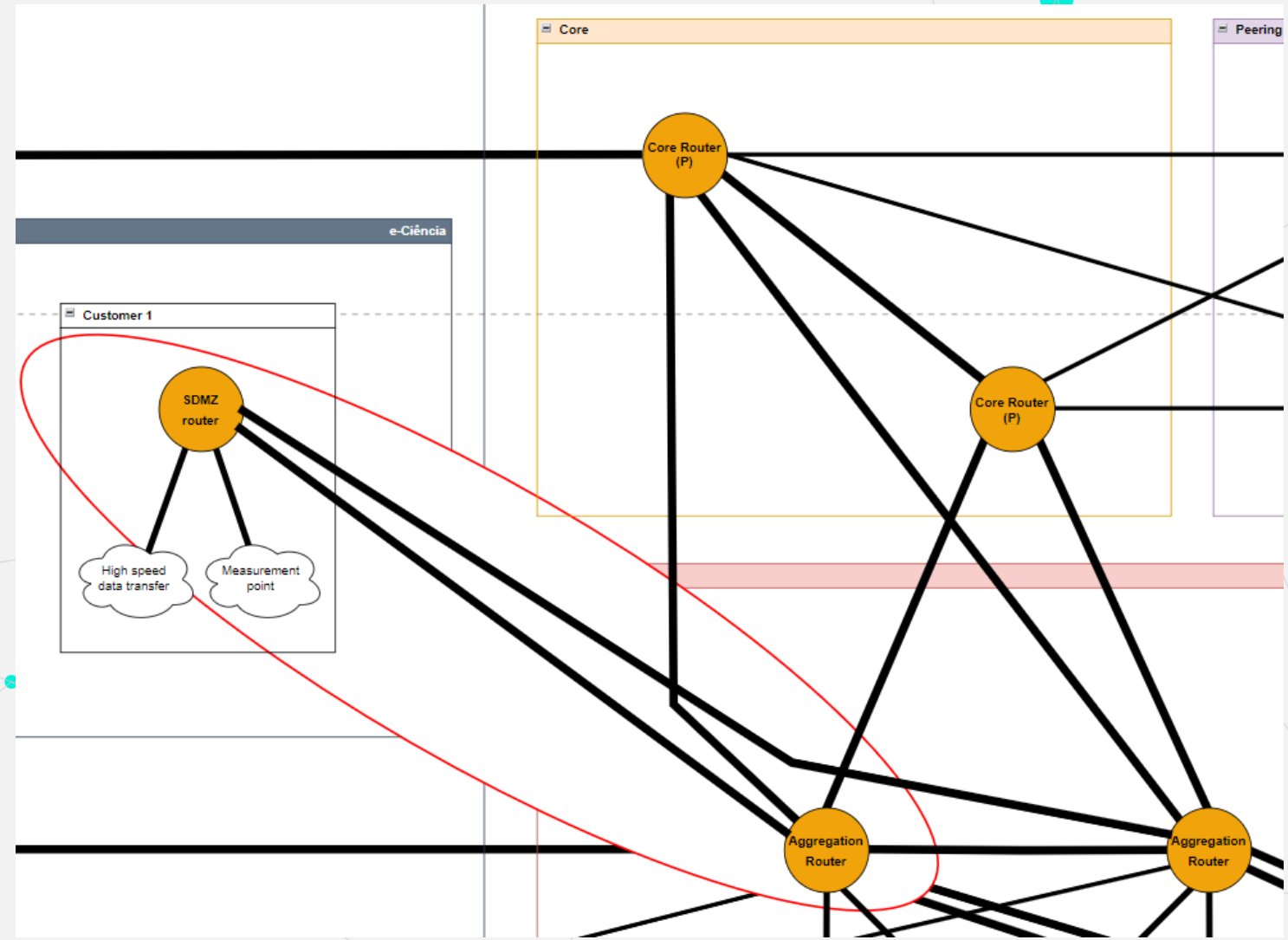
6. **GEOFÍSICA**
   LNCC – Cenpes – Senai-Cimatec

7. **SAÚDE**
   FIOCRUZ (PR) – UFMG – UFPA – UFRJ (IBCCF)
   INC – Senai-Cimatec



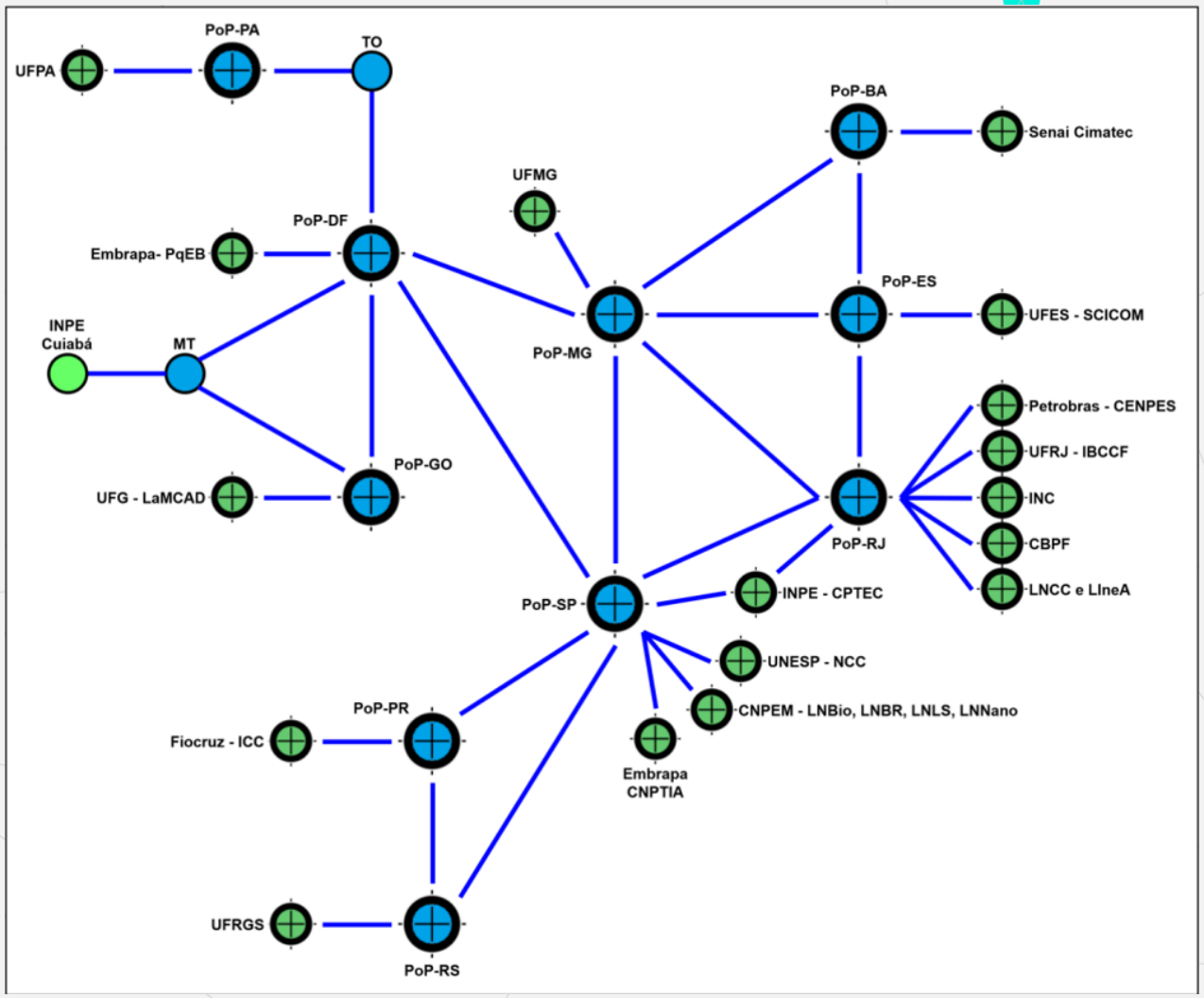
E-Science connections

- **Dedicated capacity of at least 100G to the RNP PoP**
- **400G shared capacity for internal connections**
- **Mix of dedicated capacity / shared capacity in the CORE**
- **Topology simplification by connecting institutions directly to the aggregation layer**
- **P2P secured connection between laboratories**
  - **DTN-to-DTN MACsec**

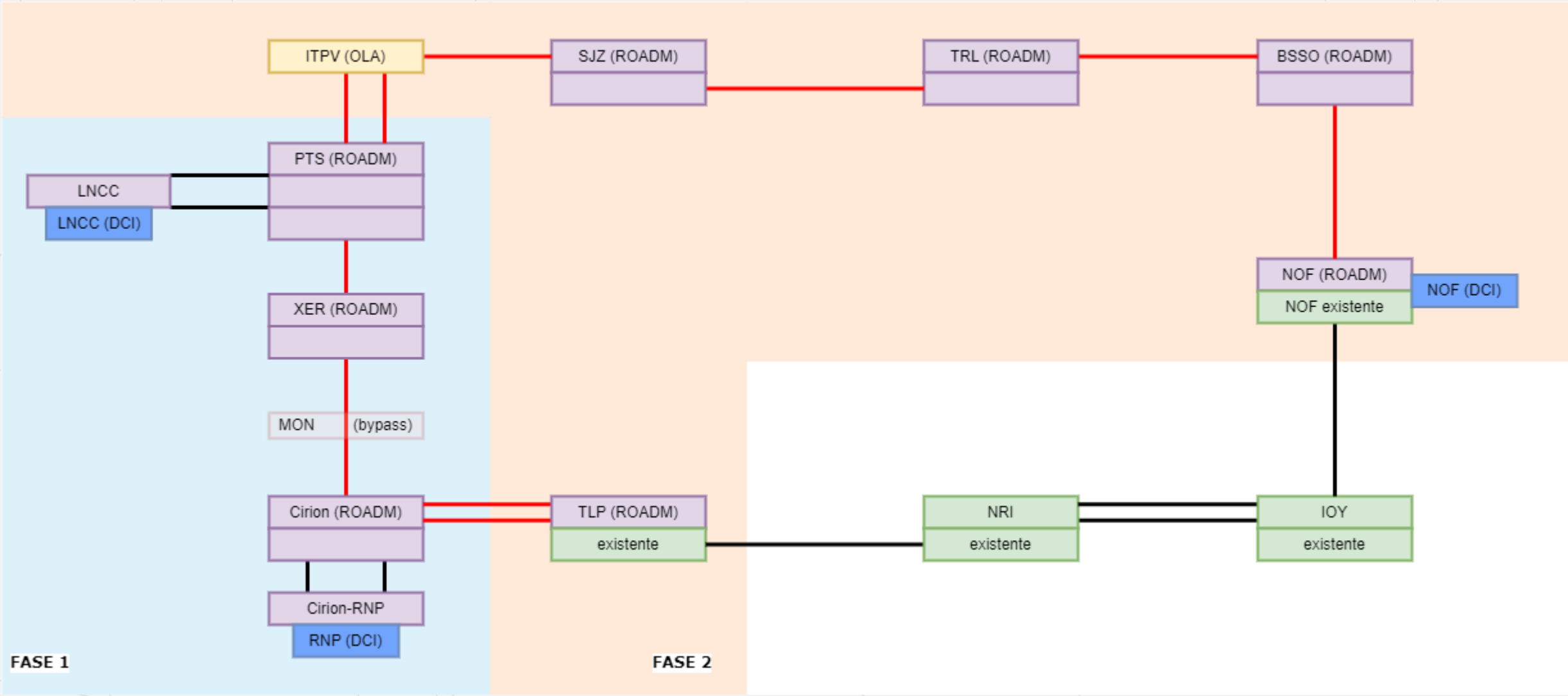


Perfsonar planned topology to e-Science Net

- 100G capable Perfsonar services in acquisition



High speed scalable connection to LNCC (anchor institution of e-Science Network)



400G connection (200G per path) from PoP-RJ-2/RNP to LNCC

Obrigado!

aluizio.hazin@rnp.br