

LHCOPN/LHCONE workshop



WLCG and LHCONE in Latin America



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CERN, 14/JAN/2020

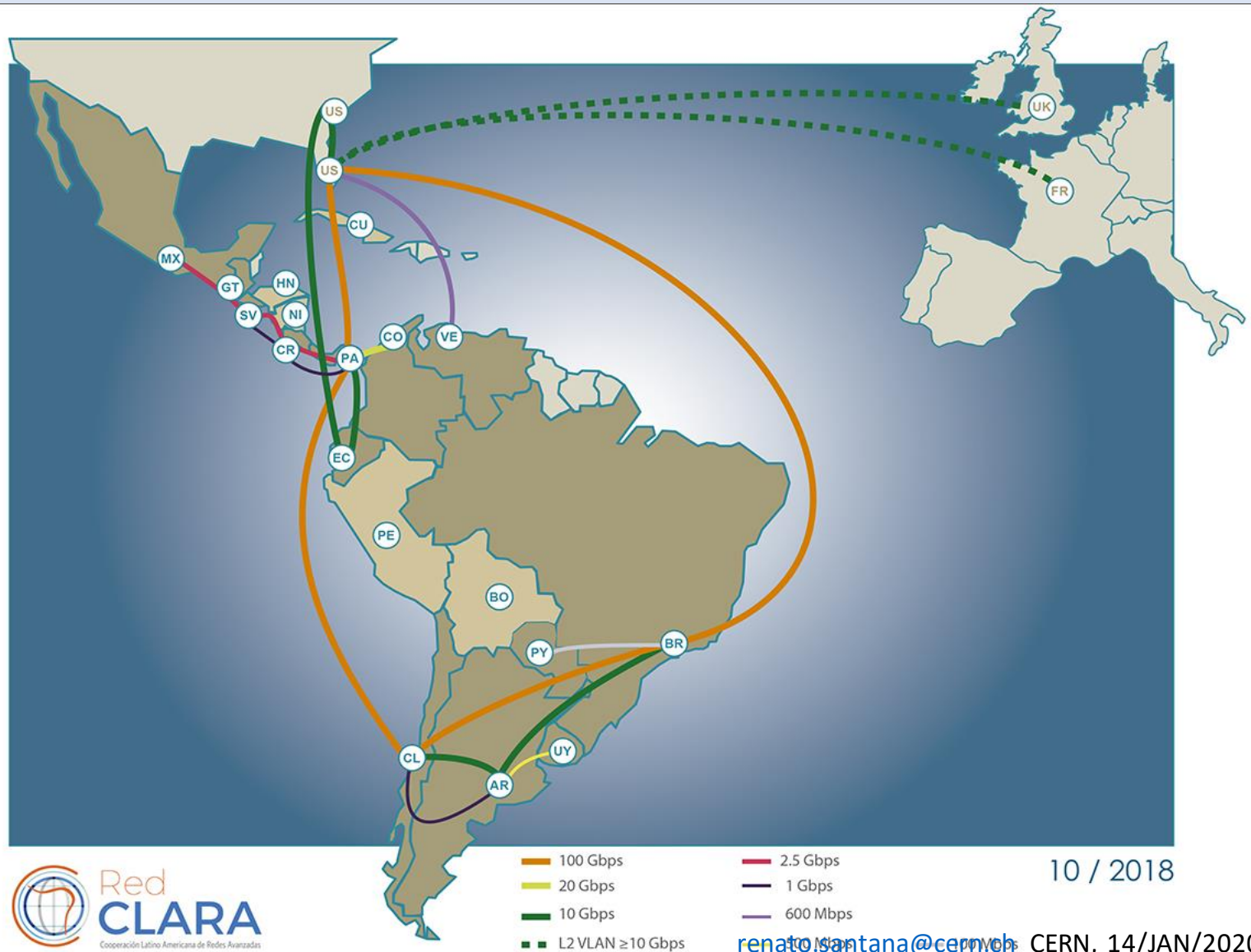
RedCLARA

Founded in 2003, RedCLARA was built to interconnect academic networks in all Latin America allowing global academic access.

RedCLARA's central service is the **connectivity** to its advanced academic backbone **for** the National Research and Education Networks **NRENs of Latin America** allowing affiliated networks to communicate with universities, research centers and scientific community worldwide and distribute the connectivity to their partner institutions.

This communication is done through an independent, dedicated, high-speed congestion-less network, segregated of the commercial Internet, assuring high quality, fast and safe transit for the academic data in the region.

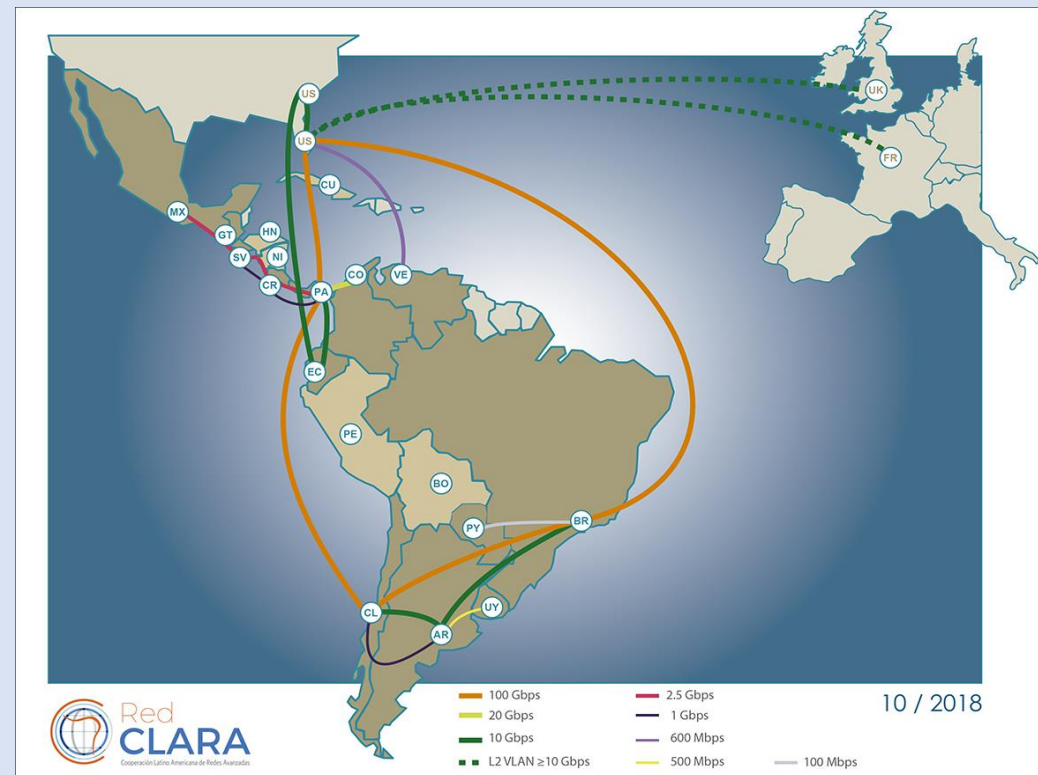
This map shows the current RedCLARA structure and it's network capacity.



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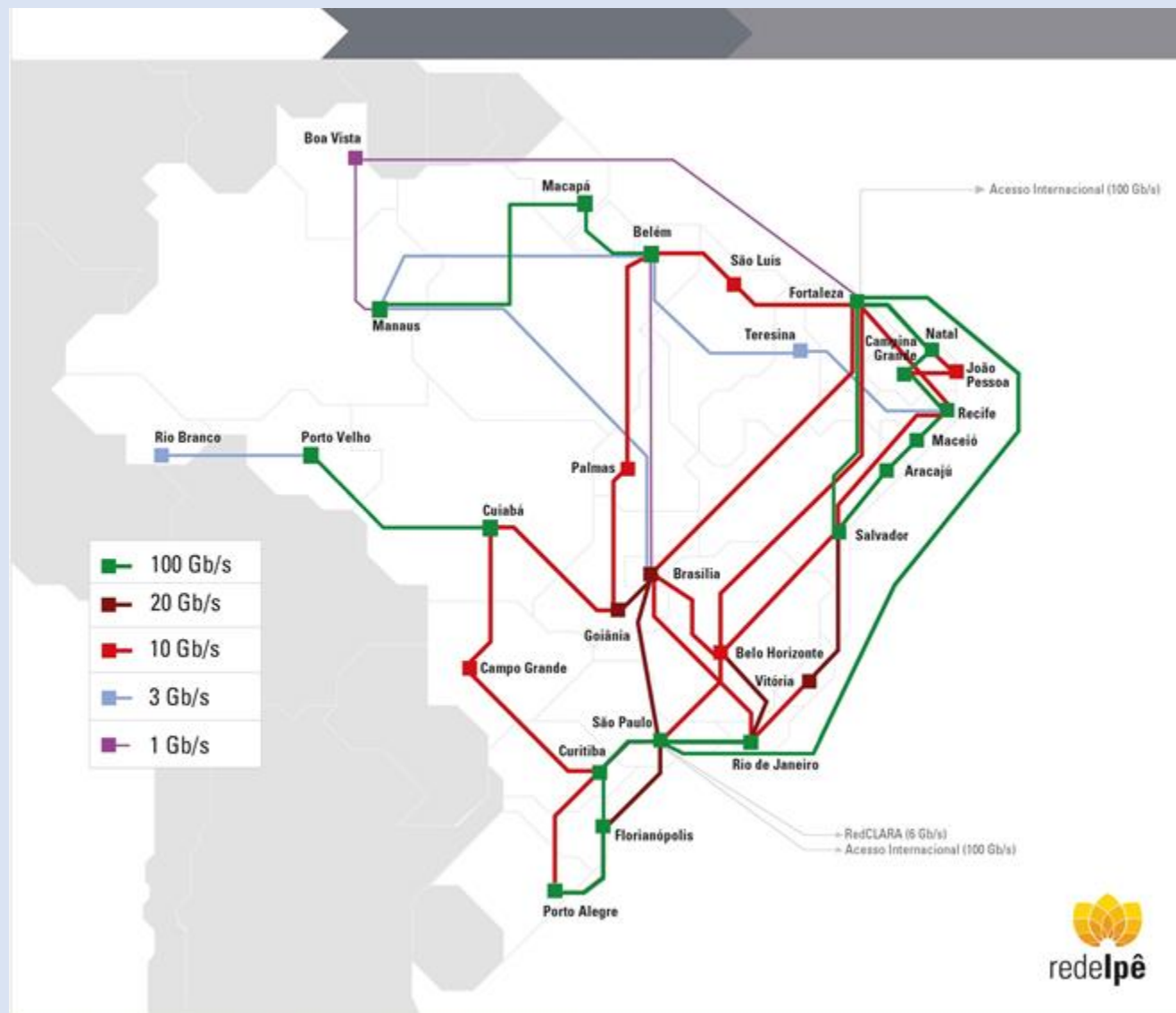
RedCLARA interconnects 11 Latin American countries (Argentina, Brazil, Chile, Colombia, Costa Rica, Ecuador, El Salvador, Guatemala, Mexico, Paraguay and Uruguay) with a backbone of an average capacity of 10Gbps. The NRENs of each country connects the main universities and research centers, interconnecting over 1,300 institutions within Latin America.

RedCLARA is interconnected to peer networks worldwide such as: GÉANT (Europe), Internet2 (USA), CANARIE (Canada), TEIN*CC (Asia), WACREN (West and Central Africa), UbuntuNet (East and South Africa), ASREN (Arab States)



The Brazilian Academic Research

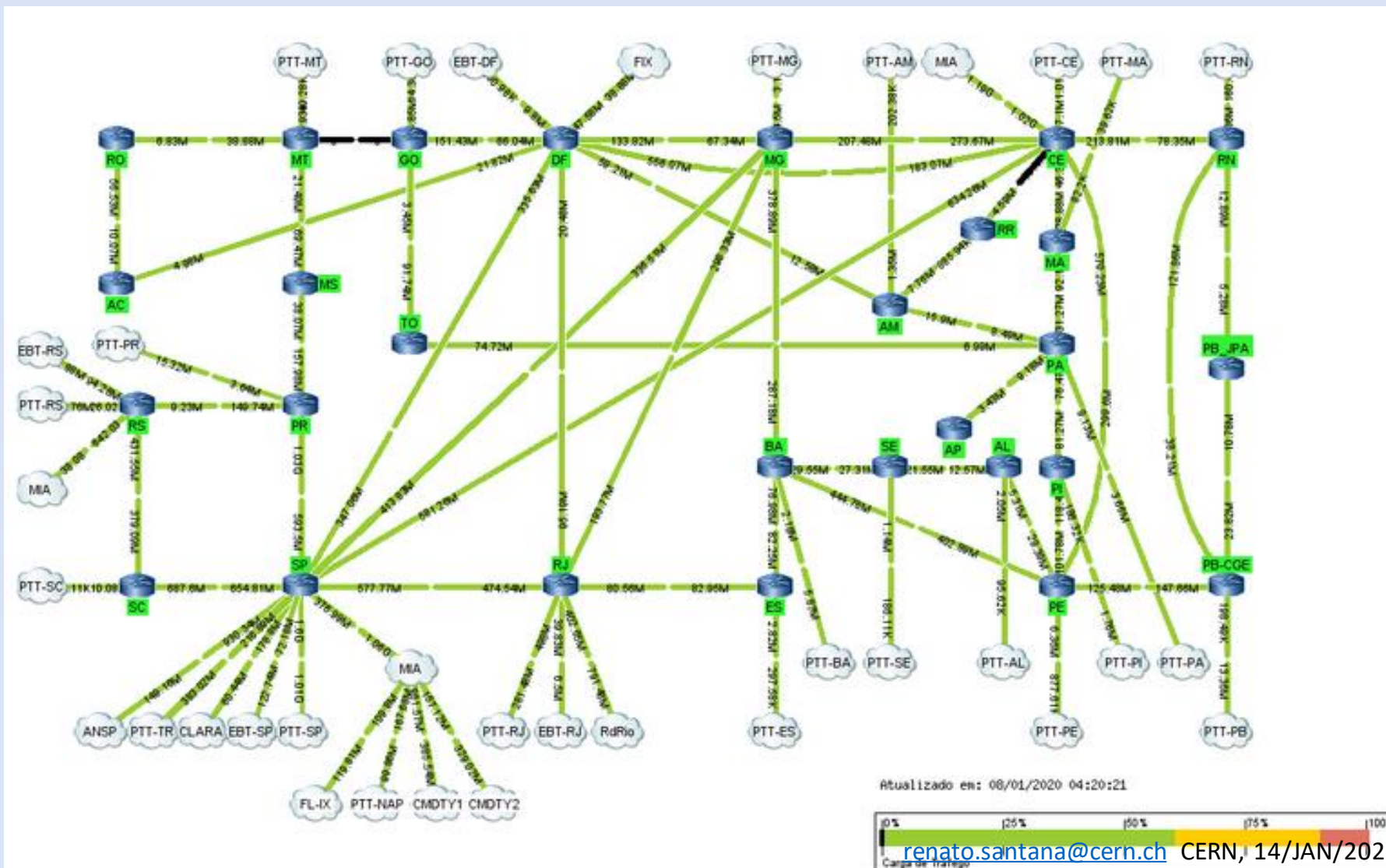
- **Plans, operates and maintains** the NREN, a national high-performance academic 100G-enabled academic optical infrastructure, present in the 27 PoPs in all States
- **Connects** 1,174 campuses and research institutions
- **Over 4 million users** benefit from an advanced network infrastructure for communication, computing, and experimentation
- **Over 500 municipalites** connected
- All the above comprises the **RNP System ("Sistema RNP")**



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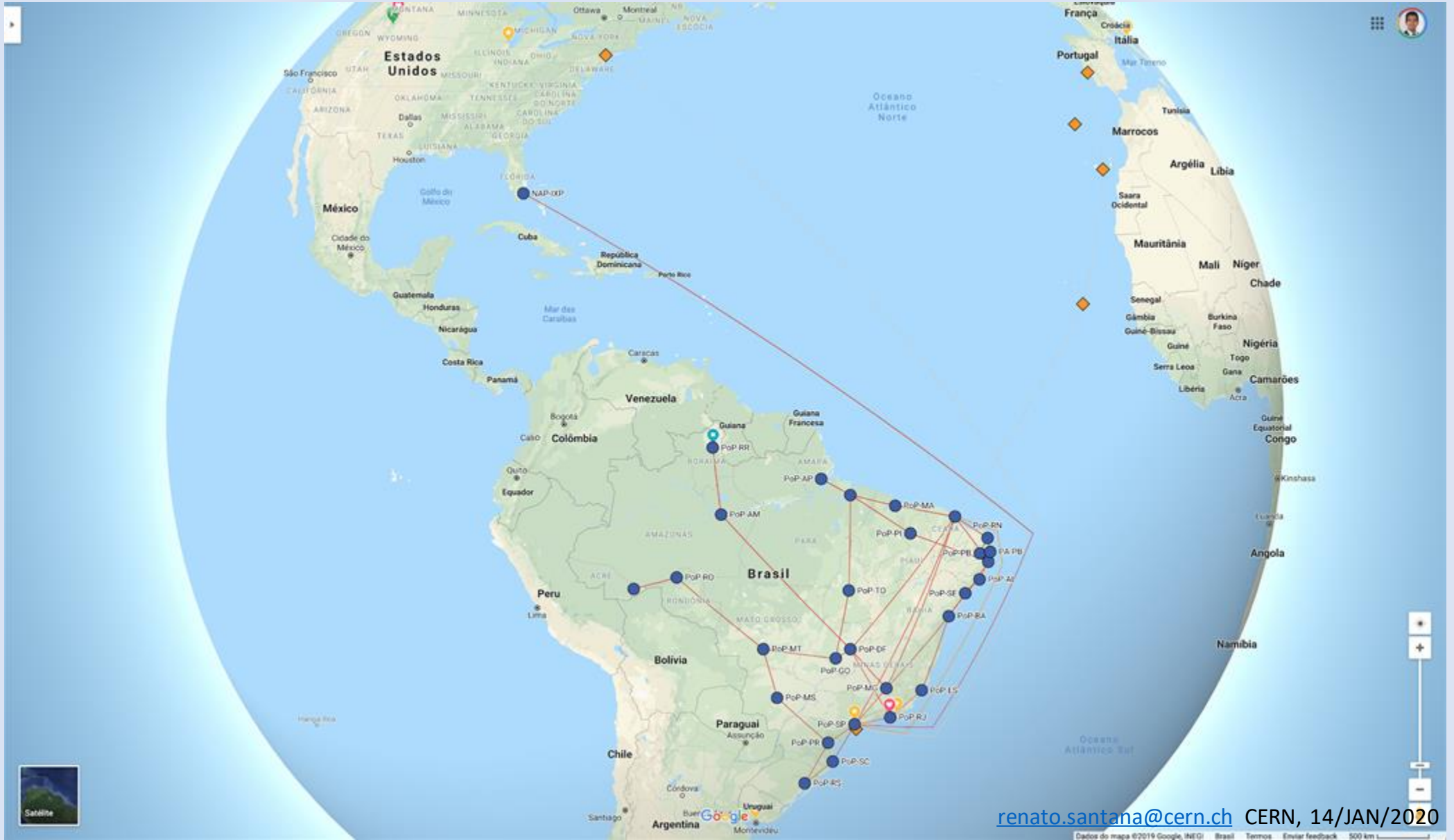
RNP Ipê network panorama

<http://bit.ly/rnp-panorama>



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RNP
Backbone



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New undersea cables to Brazil until 2020

US (3)

- BR-US (Telefonica Group)
- Monet (Google, Algar - BR, Angola Cables, Antel - UY)
- Seabras-1 (Seaborn - US)

Europe (1)

- EllaLink (ES, FR)

Africa (2)

- SAIL (Camtel, China Unicam)
- SACS (Angola Cables)

S. America (1)

- Tannat (Google, Antel - UY)

+ 2 new proposals SP and Argentina



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Near future (2020):

BELLA = BELLA-S (submarine) +
BELLA-T (terrestrial)

- **BELLA-S:** 40 channels in a new submarine cable with lifespan of ~25 years.
- Building progress: **almost 50% completed**
Est. 100% by end of 2020.
- Ellalink company created to build and operate the Ellalink cable between Portugal and Brasil.
- In the last round of funding to purchase the cable which will take 2 years to build
- BELLA-T: long term, ~10-15 years, lease of terrestrial spectrum in cables interconnecting main countries.
- Spectrum to be used by RedCLARA and NRENs that are participating in the consortium



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ROC-LA (Regional Operating Centre for Latin America)

EGI ROD Dashboard:

Site	↑↓	Downtimes	↑↓	Nagios critical	↑↓	Tickets	↑↓	Notepads	↑↓	Av	↑↓	Re	↑↓	Action	↑↓
SUPERCOMPUTO-UNAM				 2		 2				100.00		100.00		+ Ticket	+ Notepad
EELA-UTFSM										98.17		99.85		+ Ticket	+ Notepad
ICN-UNAM						 1				91.45		91.45		+ Ticket	+ Notepad
ATLAND						 1				87.75		87.75		+ Ticket	+ Notepad
CBPF						 1				98.43		98.43		+ Ticket	+ Notepad
GRID-UNAM						 1				0.00		0.00		+ Ticket	+ Notepad
SAMPA						 2				98.65		98.65		+ Ticket	+ Notepad
AstrogridPUC						 1				93.46		93.46		+ Ticket	+ Notepad

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CBPF

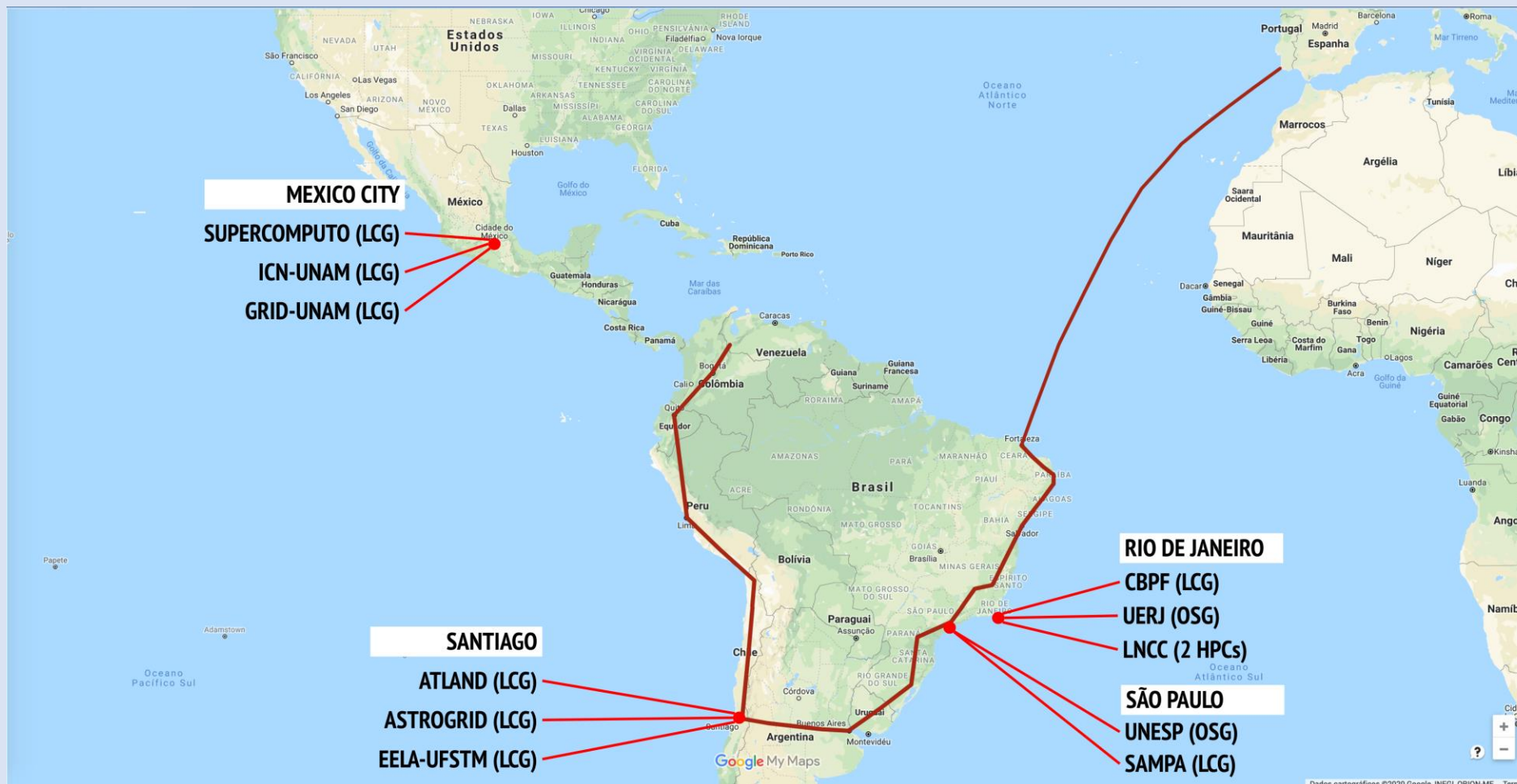
Centro Brasileiro de
Pesquisas Físicas



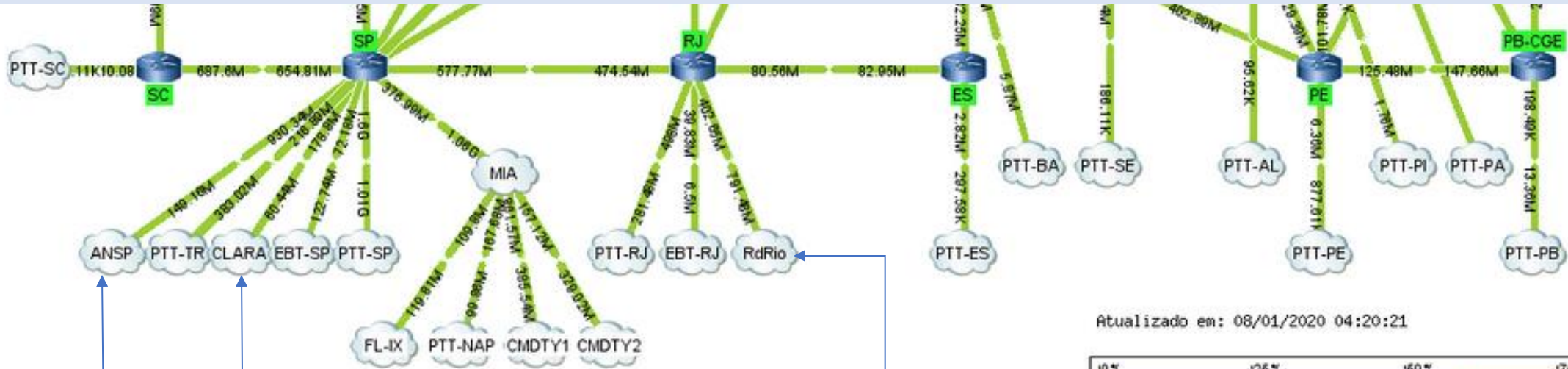
RNP

REDE NACIONAL DE
ENSINO E PESQUISA

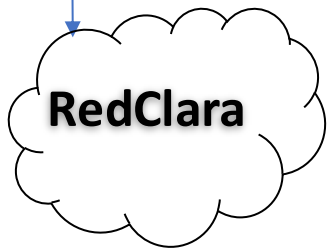
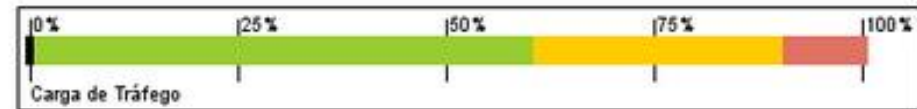
ROC-LA (Regional Operating Centre for Latin America)



WLCG - ROC-LA Brazilian Sites



Atualizado em: 08/01/2020 04:20:21



USP(LCG) + UNESP(OSG)

CBPF(LCG) + UERJ(OSG) + LNCC

WLCG - ROC-LA CBPF Site

- . 2000 core
- . ~.5 PB Data Storage
- . Supported VOs: LHCb*,
ALICE, ENMR, BIOMED,
FUSION, AUGER
- . 10Gbps

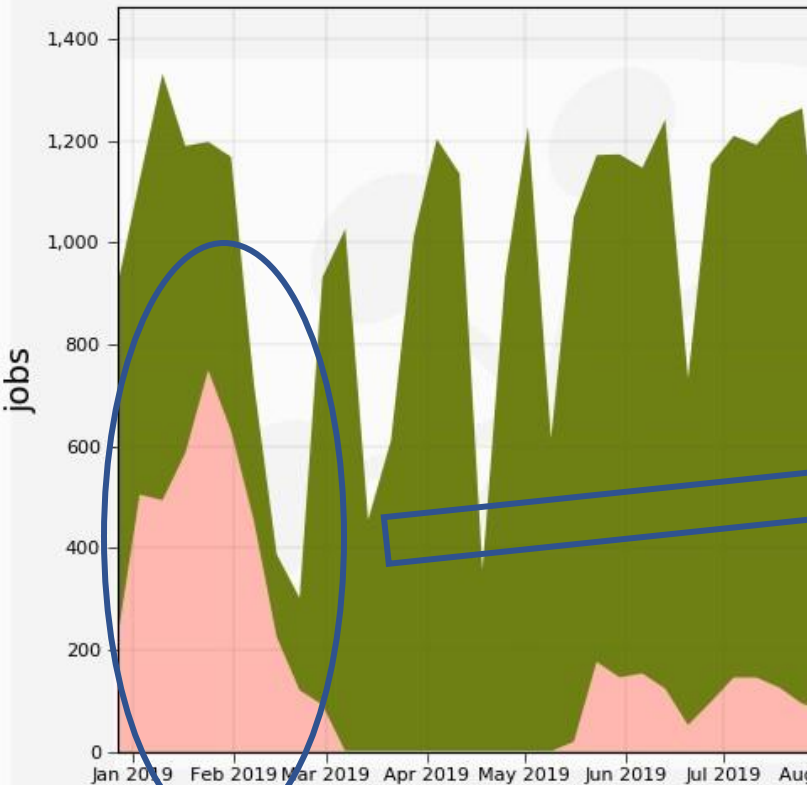
*LHCb T2-D



WLCG - ROC-LA CBPF Site: A real case issue

Running jobs by JobType

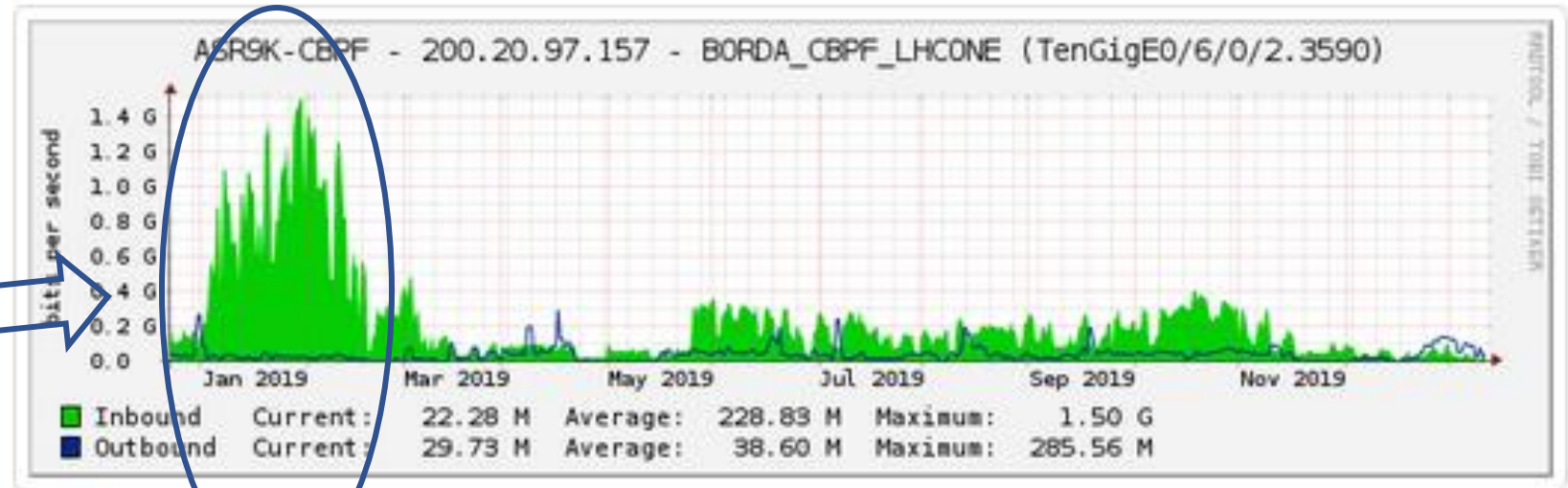
52 Weeks from Week 51 of 2018 to Week 51 of 2019



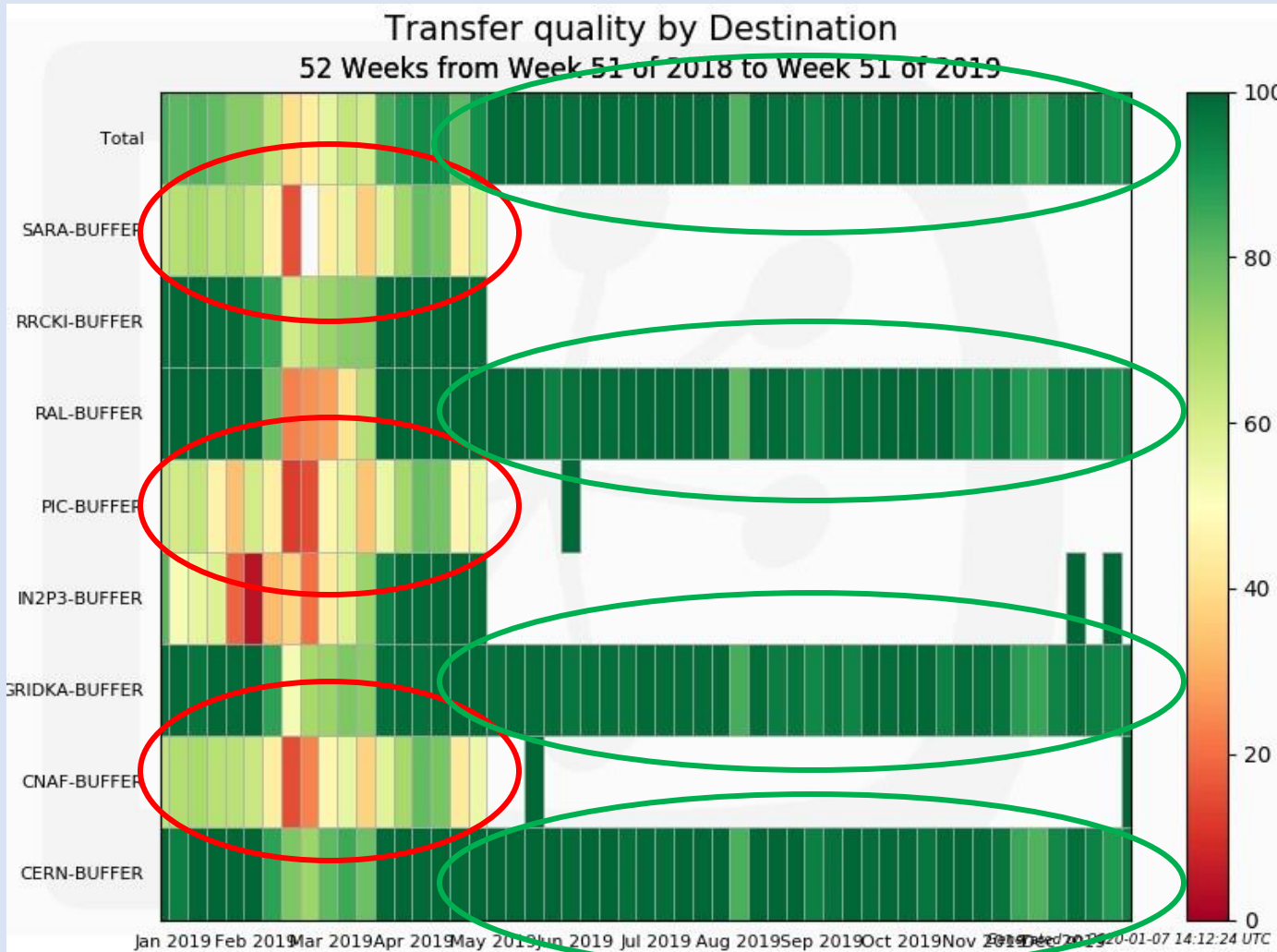
Max: 1,331, Min: 56.4, Average: 903, Current: 131

MCSimulation 84.9% MCFastSimulation 15.1%

Yearly (1 Day Average)



WLCG - ROC-LA CBPF Site: A real case issue



Low efficiency

High efficiency

Question:
Who takes care of it?



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THANK YOU!

QUESTIONS?
ANSWERS?

