

TTM Improvements Discussion @ RIPE 60

Rubens Kühl

NIC.br

rubensk@nic.br

iNOC-DBA 22548*RKJ

CGI.br and NIC.br

- CGI.br is the Brazilian Internet steering committee, a multi-stakeholder IG body
- NIC.br is the not-for-profit organization that has legal constituency and carries out the policies established by CGI.br
- NIC.br has 100+ employees

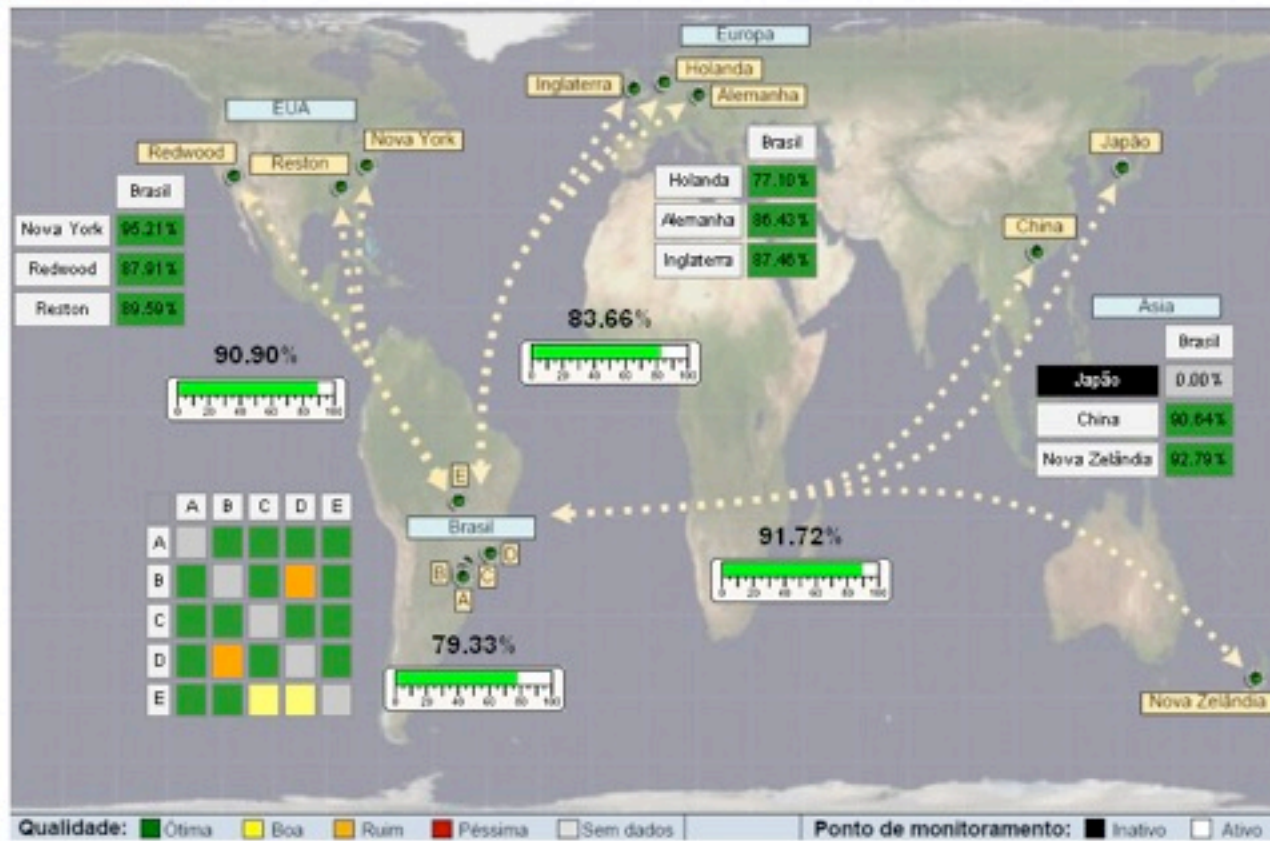
NIC.br

- ccTLD registry, National Internet Registry
- 2 million .br domains from 1.2 million domain registrants pay for the registry operation and projects of social interest (IPv6, NTP, CERT, statistics, [measurements](#), W3C)
- Secondary/anycast'd services for some ccTLDs and root servers
- 12 IXs, 26 Gbps peak, plans to 2x in 2010
- 5 TTM boxes (soon to be 6)

TTM improvement opportunities

- IPv4 MTU measurement
 - Tunneling is unfortunately common as ring restoration in South America
- Surviving power failures
 - In two cases configuration vanished
 - May be bug, may be procedures issue
 - In one case the server fsck'd
- Death of tt23 (Internet2 @ Ann Arbor)
 - Will more of the old TTM boxes be reaching lifetime ?

We miss tt23@Ann Arbor, but we moved on to Reston
<http://ceptro.br/mapa>



GPS


- €3500+ (n-1)* €2200 is a high cost for developing countries
- Trimble GPS requires outdoor installation
- Both factors prevented deployments one way or another
- We also had plans to do measurements of users broadband services (similar to OFCOM and ANACOM) in the order of hundreds

GPS (cont'd)

- One of the alternatives we found was Garmin 18x LVC
- US\$ 70 (FOB US)
- Nice sensitivity
- 5m cable length

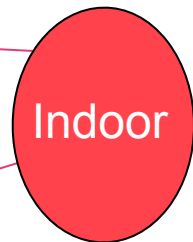


GPS saga continues

- Would like to have greater cable length
- Could we do it without full time satellite constellation coverage ?
- So... we've built our own GPS
 - ~2x Garmin 18x LVC unit price
- Based on U-Blox LEA-5T 
- High sensitivity
- GPS and GALILEO constellations
- 1-satellite timing after first fix

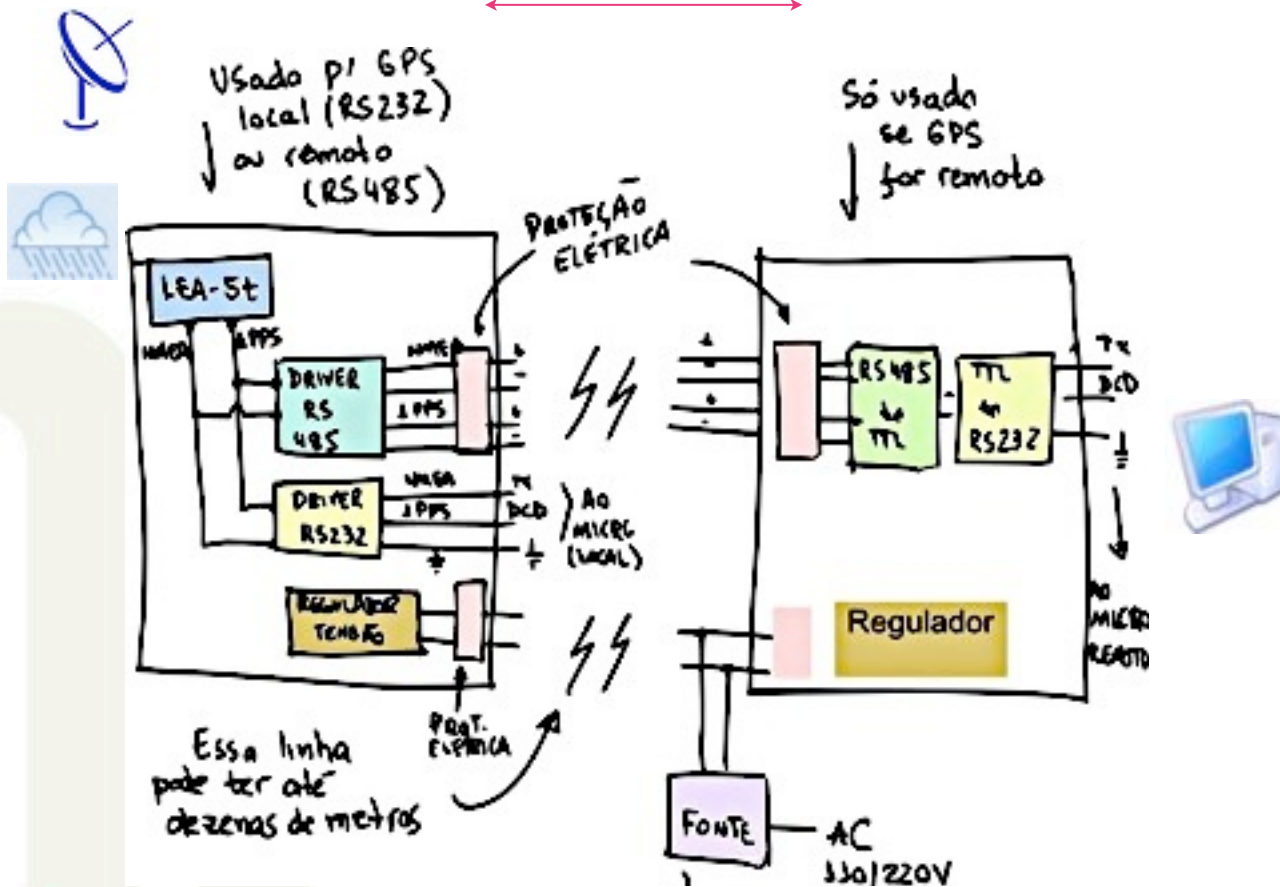
GPS saga continues

- Would like to have greater cable length
- Could we do it without full time satellite constellation coverage ?
- So... we've built our own GPS
 - ~2x Garmin 18x LVC unit price
- Based on U-Blox LEA-5T
- High sensitivity
- GPS and GALILEO constellations
- 1-satellite timing after first fix





NIC.br GPS block diagram

Tested to 50m



Comparing NIC.br to RIPE NCC GPS connection

	 <p>Núcleo de Informação e Coordenação do Ponto BR</p>	
Power to the GPS receiver	External AC adapter	PCI board
RS-422 to RS-232	External converter	PCI board
Electrical Protection	Surge Protection	Electrical Isolation

Gifts from distant land

