NRENUM.net on the Portuguese NREN (VoIP@RCTS)

RIPE-59, Lisbon

9th, October 2009
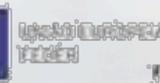
rui.ribeiro@fccn.pt

- **What is NRENum.net?**
  - A temporary alternative to e164.arpa.
  - NRENum.net provides countries, where the Golden ENUM Tree (e164.arpa) is not (yet) available, with the possibility to publish ENUM data.
  - NRENum.net is an effort of National Research and Education Networks (NREN).

- **Why Create NRENum.net?**
  - ENUM isn't available yet in some countries.
  - NREN projects demanding a way to interconnect.
  - Why not?

NRENum.net pilot service
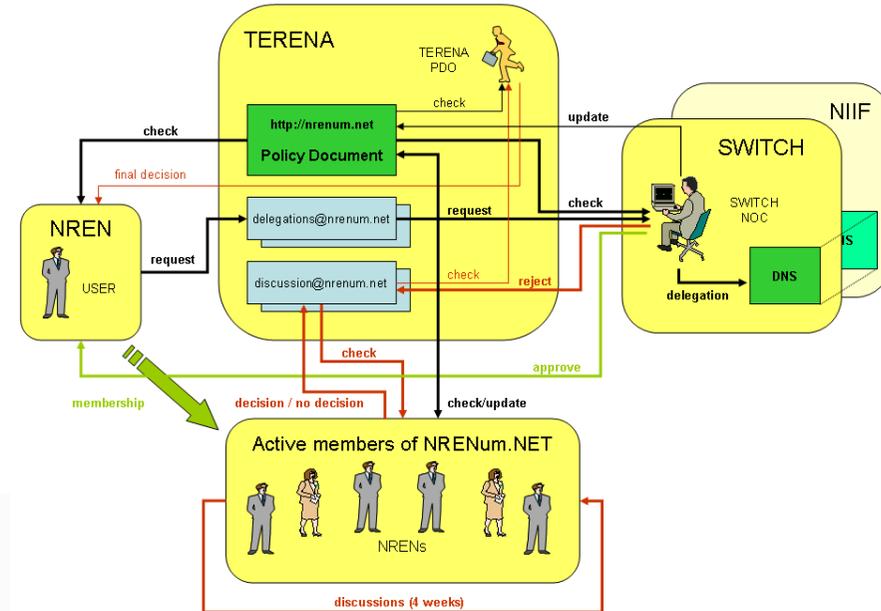
- **Who Manages NRENum.net?**
  - TERENA (Administrative)
    - http://www.terena.nl
  - SWITCH (Technical)
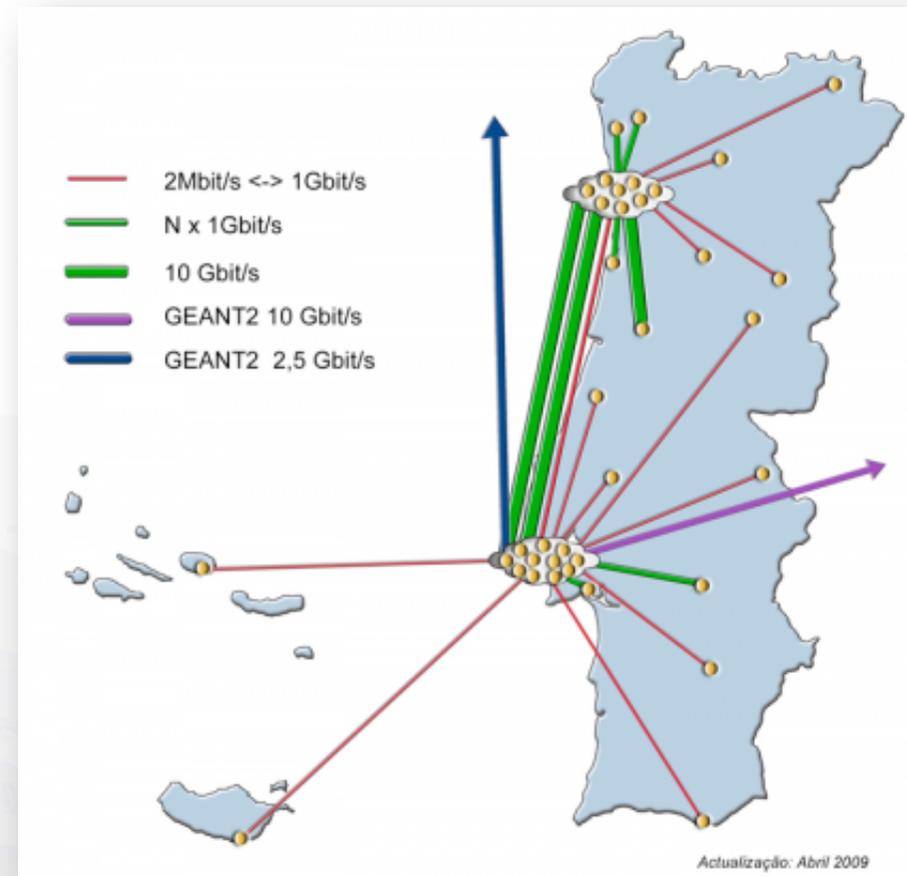   - http://www.switch.ch

- **NRENum.net vs. ENUM ?**
  - No!
  - Query order:
    - e164.arpa
    - nrenum.net
- **Who is participating in NRENum.net?**
  - Populating: 10 countries
  - Querying: 13 countries (and others…)
- **How can I get more information?**
  - http://www.nrenum.net/

4

Fundação para a Computação

Científica Nacional

- Non profit, private institution, founded in January 1987.

- Planning and management of RCTS. The National Research Education Network (NREN)

- Management of the ccTLD .pt

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- More than 100 Instituitions of R&D and High Education;

- FCCN offer value added services over FCCN;

  - Videoconference

  - WebCast

  - ...

- Potential Universe: 400.000 users

2Mbit/s <-> 1Gbit/s
N x 1Gbit/s
10 Gbit/s
GEANT2 10 Gbit/s
GEANT2 2,5 Gbit/s

Actualização: Abril 2009

- **Description**
  - To deploy the infrastructures needed for VoIP on the RCTS Network in a environment that is convergent, integrated and secure.
    - Public High Education
    - R&D public institutions

1) Voice over IP network implementation. Interconnect all the "traditional"

   PBX present at diferent institutions present on RCTS.

   - 220 media gateways , 80 iPBX, 40 Session Border Controllers.

   - 44 VoIP domains, ex. sip:218440100@voip.fccn.pt

2) Proof of concept and pre-trial project for ENUM.

   - Using: 1.5.3.nrenum.net.

   - Querying: e164.arpa, nrenum.net, e164.org

3) VoIP Delivery to Operators via SIP trunks

   - Dedicated circuits for VoIP between Operators and RCTS.

   - SIP trunks established between each operator equipment and each SBC on the
     institutions.

   - TDM Failover / Emergency Calls.

- Dec 2007 – Apr 2008 – Purchase Process of VoIP Equipment

- Jun 2008 – Nov 2008 – Purchase Process for Voice Service

    - Operators:
        - Landline
            - PTPrime – emergency, national and international calls
        - Mobile
            - TMN – 96*
            - Sonaecom – 93*
            - Vodafone – 91*

- **Jul 2008 – nrenum.net joining.**

- Jan 2009 –VoIP@RCTS service started

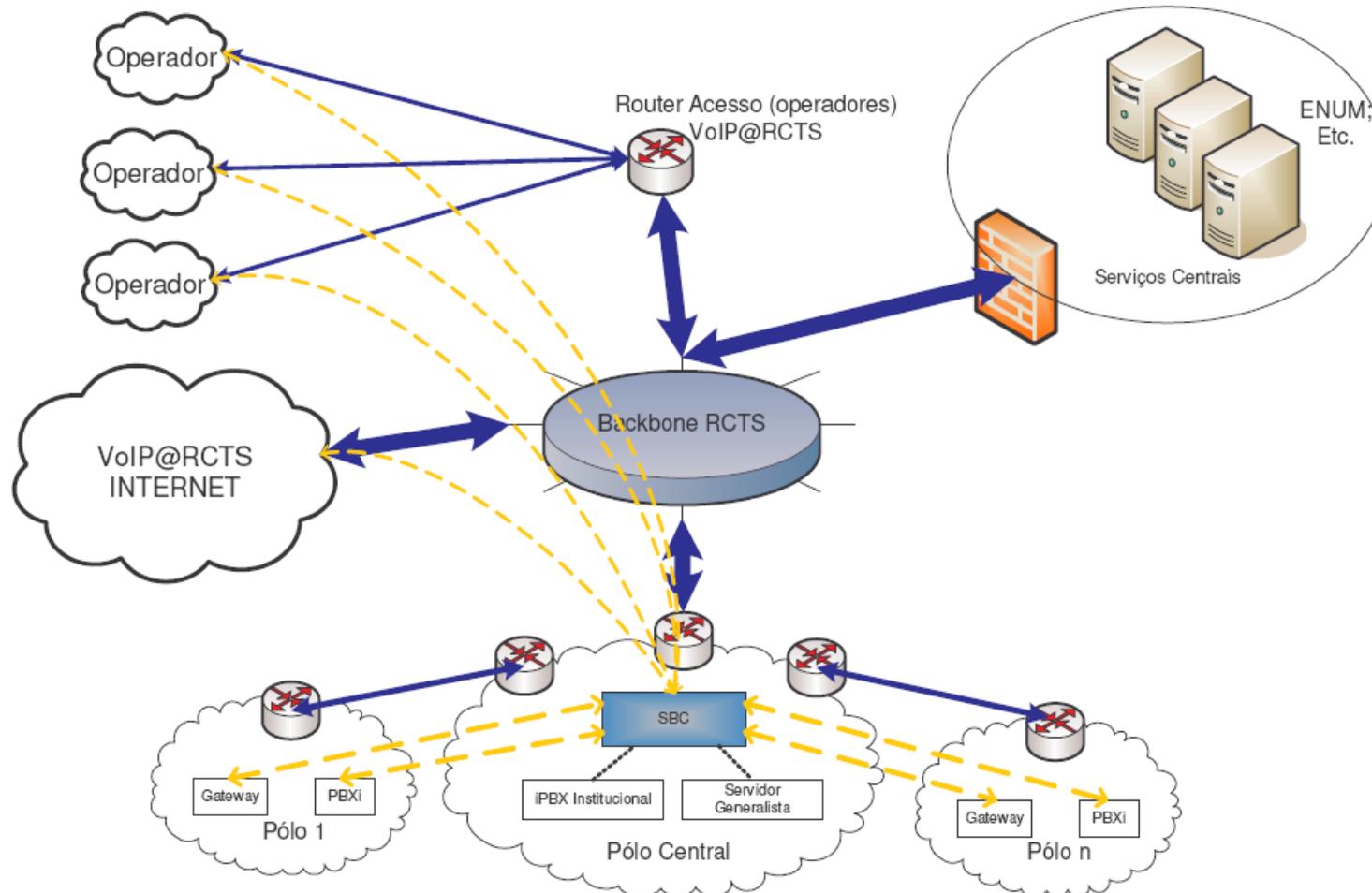- Oct 2009 – On going deploy (80% of numbering)

Figura 1: Arquitectura da solução técnica

For each Institution there are 4 distinct components:

- **Session Border Controler:** VoIP interface between the Private VoIP Service and any external VoIP Network (Operators / Internet).

- **Media Gateway(s):** interface between TDM backup lines, Legacy PBX and VoIP networks. It's at this point that most decisions are made!
    - ENUM query
    - Call routing (IP/TDM)
    - Call establishement / failover
    - PC based, one per each Legacy PBX (ISDN interface)

- **iPBX:** Call server IP. VoIP Extensions and Telephony Services.

- **General Server:** Accounting, Billing e QoS Report of all components.

- 44 Institutions:
  - 40 Session Borders Controllers
  - 80 iPBX
  - 40 General Servers
  - ~220 Media Gateways
- ENUM Service – 1.5.3.nrenum.net:
  - ~ (27.000/32.000) DDIs registred

(estrapulated from sampled data)
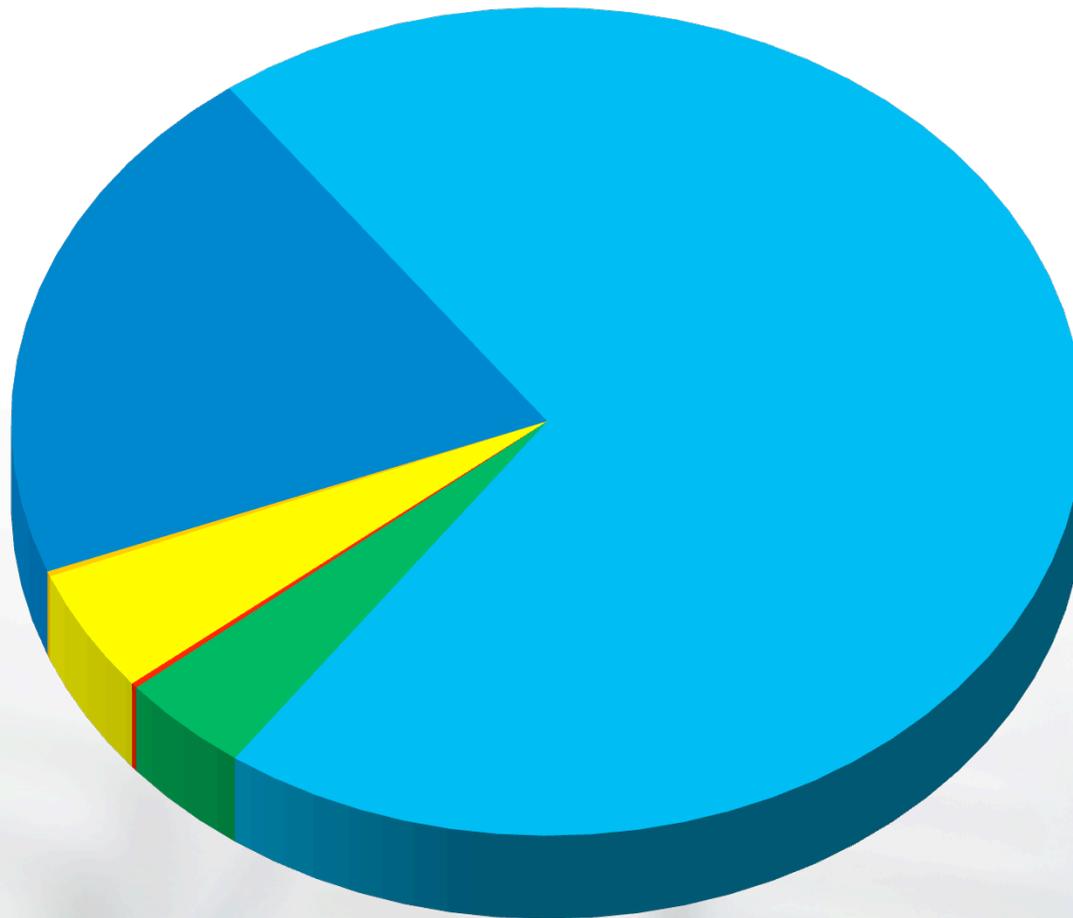
- ENUM
- nrenum.net - National
- nrenum.net - International
- Landline
- Mobile
- International

- VoIP@RCTS

  – One of the biggest NREN VoIP deployment Worldwide

  – IP Trunks to operators (landline and mobile)

  – 32000 DDIs

- NRENum.net

  – Yet to be unleashed by NREN's

- ENUM

  – NRENs as critical mass

Questions?

Thank you !