Romanian Education Network

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RoEduNet – Organizational Status

- RoEduNet, as a separate institution under Romanian Ministry of Education and Research administration, was officially founded in August 1998, through a Romanian Government Decision (HG 515/August 21st, 1998).

- Official and complete name of RoEduNet is Office for Administration and Operation of Data Communication Infrastructure "RoEduNet", abbreviated as O.A.O.I.C.D. RoEduNet or simply RoEduNet.

- RoEduNet is funded through Romanian Ministry of Education by Romanian Government.

- Early, in 1997 through a Romanian Ministry of Education document, existing structure named Romanian Higher Education Data Network was restructured and renamed as RoEduNet.
RoEduNet Goals

- The main goal of RoEduNet is to provide a modern data communication infrastructure that connects all educational, research and cultural institutions in Romania
- Provide Internet connectivity for all connected institutions
- Provide a full range of IP services
- Initiate, support and participate in networking research
- Act as a testbed for new and upcoming networking technologies
- Offer expertise in computer networking and data communications
- Offer training courses in networking areas
RoEduNet History

- October 1990 – first pilot project for e-mail is functional at Politehnica University - Bucharest
- At the end of 1992 an X25 dedicated line is in usage between Bucharest and Germany (Deutsches Forschungsnetz)
- 1993 – first national connections Bucharest-Cluj and Bucharest-Iasi
- November 1993 – second international connection with EuropaNet (9.6 kbps Bucharest to Düsseldorf)
- November 1994 – Romanian Higher Education Data Network is officially stated as a service of Romanian Ministry of Education
- June 1995 – International connection is upgraded to 64 kbps (Bucharest to Amsterdam); all cities with universities has connections to Romanian Higher Education Data Network
- February 1996 – International connection with TaideNet operate at 256 kbps
- March 1997 – RoEduNet name is used for Romanian Education Network
- August 1998 – RoEduNet officially founded through a Romanian Government decision (HG 515/August 21)
RoEduNet – Data Traffic Evolution

- International traffic capacities evolution (red bars – traffic through GEANT)
- Total national traffic capacities evolution
RoEduNet Layered Structure

- RoEduNet is an organization and in the same time a layered data communication system:
- Layer 0 Backbone links (including Internet links) and RoEduNet NOCs (Network Operation Center):
  - Bucharest - Splaiul Independentei, Politehnica University, Rectorate Building, R506-507, +40 (2) 14101639
  - Iasi – Carol I, 11, Alexandru Ioan Cuza University, Building A, room 169, +40 (232) 201001
  - Tg. Mures – N. Iorga, 1, Technical University, room 204, +40 (265) 215843
  - Cluj Napoca – Baritiu, 26-28, Technical University, room 22, +40 (264) 194684
  - Timisoara – V.Parvan, 2, Technical University, room B251, +40 (256) 203876
  - Craiova – Lapusului 5, Craiova University, room 308, +40 (252) 436699
  - Galati – Domneasca 47, Dunarea de Jos University, Building Y, room 010, +40 (236) 414112
RoEduNet Layered Structure (cont.)

- Layer 1 RoEduNet POPs (Points of Operation) from all county capitals and communication lines between NOCs and POPs
  - Every RoEduNet NOC has a number of connected POPs, overall there are 33 distinct POPs
  - Each RoEduNet NOC act as POP for the county in which it is located
- Layer 2 RoEduNet connected institutions
  - Universities
  - High schools and schools
  - Research institutes
  - Other
RoEduNet Layered Structure (cont.)
RoEduNet - Most Important Services

RoEduNet offers connectivity to Internet using national communication infrastructure through GEANT to a number of approximate 460 institutions as follows:

- 38 Universities
- 32 Research Institutions
- 350 Colleges, High Schools and Schools
- 40 Other institutions

RoEduNet owns two Metropolitan Area Networks based on optic fiber (Iasi and Bucharest)

- Full range of access links for connected institutions (Gigabit, ATM, Ethernet, Radio, E3, E1, fractional E1 and leased lines)
- All range of IP services (DNS, mail relay, FTP, web hosting, NTP)

RoEduNet is the main actor in Cisco Networking Academy in Romania (all NOCs are Regional Academies, 4 of them offers CCNP training, one is CATC)

- IPv6 testbed from 1996, native services IPv6 services from 2002
- VoIP testbed since 2002
RoEduNet in R&D Programs - GEANT

- GÉANT (Gigabit European Academic Network) is providing a very high performance, advanced, pan-European networking service interconnecting services provided by Europe's National Research and Education Networks (NRENs).
- Project funding: IST-2000-26417, 200M€
- Participants: ACoNet, ARNES, BELNET, CESNET, CYNET, DANTE, DFN, EENET, FCCN, GRNET, HEAnet, HUNGARNET, IMCS LU, INFN, IUCC, KTU, NORDUnet, MCYT, PSNC, RENATER, RESTENA, RoEduNet, SURFNET, SWITCH, UKERNA, UNIV. MALTA
- Web site: http://www.dante.net/geant
RoEduNet in R&D Programs - SEEREN

- SEEREN - South Eastern European Research & Education Networking
- SEEREN's major objective is to establish the South-Eastern European segment of the Pan-European academic and research network, in accordance with the principles and practice used in the implementation of the GEANT network.
- Project funding: IST-2001-38830, 1.3 M€
- Participants: GRNET - Project Coordinator; HUNGARNET, RoEduNet, DANTE and TERENA - Principal Contractors and Subcontractors: AMREJ, BIHARNET, INIMA, ICTDA and MARNET
- Web site: http://www.seeren.org
RoEduNet in R&D Programs – NIG Bucharest

Gigabit Metropolitan Area Network

**Project objective:** create the framework for high speed metropolitan area network for Education and Research

**Project funding:** NATO Science Programme NIG 977546; 80k$

**Project Directors:** Constantin RAUTA – BMPCOE, Maryland, USA and Dr. Nicolae CUPCEA – Politehnica University; Bucharest, Romania

Romanian Education Network
RoEduNet in R&D Programs – NIG Iasi

- Consolidation of Romanian Education Network in N-E of Romania

- **Project objectives:** connect the main educational, cultural and non-profit institutions from N-E of Romania to the Romanian Education Network and build a metropolitan area network in Iasi city.

- **Project funding:** NATO Science Programme NIG 976328; 210k$

- **Project directors:**
  Dr. Florin Bogdan Manolache – Carnegie Mellon University, Pittsburgh, PA, USA and Dr. Octavian Rusu, RoEduNet, Iasi, Romania

- **Web site:**
  http://www.iasi.roedu.net/default.php?t=site&p gid=70
RoEduNet in R&D Programs – NIG
RENAM-RoEduNet Gateway

- RENAM-RoEduNet networks direct link and gateway construction
- **Project objectives:** Create a direct link between NRENs from Republic of Moldova and Romania, integration of Moldova with European informational space and create an opportunity for further connections with Ukraine and Russia
- **Project funding:** NATO Science Programme NIG 978385; 39k$
- **Project directors:** Dr. Erich Peplow - Fachhochschule Stralsund Hochschulrechenzentrum Stralsund, Germany; Dr, Grigore Secrieru – RENAM, Moldova and Dr. Octavian Rusu – RoEduNet, Iasi, Romania
RoEduNet and Cisco Networking Academy

RoEduNet – Framework for Cisco Networking Academy in Romania

- **RoEduNet Iasi** - CCNA Regional and Local Academy, CATC for Sponsored Curriculum and CCNP Local Academy
  - 9 Local Academies in Romania and 2 in Republic of Moldova coordinated

- **Targu-Mures** CCNA Regional
  - 6 Local Academies and graduated 12 instructors and more than 70 students

- **RoEduNet Cluj** CCNA Regional, Local Academy and CCNP Local Academy.

- **RoEduNet Timisoara** - CCNA Regional, CCNP Local, SC Regional and Local Academy,

- **RoEduNet Craiova** - CCNA Regional Academy
  - 12 Local Academies
RoEduNet – Future Plans

- Increase external bandwidth
- Install back-up external connection
- Increase internal total bandwidth
- Implement QoS and differentiated services
- Deploy VoIP to the entire infrastructure
- Implement multicast services
- Offer connectivity to GEANT for eastern european countries (a connection with Moldova Academic Network, RENAM, is under construction)
RoEduNet – 2003 Planned connections