Networking and GRID Infrastructure in Georgia

Prof. Ramaz Kvatadze

Executive Director

Georgian Research and Educational Networking Association - GRENA

ramaz@grena.ge

www.grena.ge

Georgian Research and Educational Networking Association - GRENA founded in 1999

- **Tbilisi State University**
- **Georgian Technical University**
- **Ilia State University**
- **Tbilisi State Medical University**
- **Georgian State Agricultural University**
- **Georgian National Academy of Sciences**
- **Open Society - Georgia Foundation**

Goals of GRENA

- **Development, construction and maintenance of the computer networking infrastructure in Georgia to connect educational and research institutions into unique information system.**

- **Providing connectivity to international networks.**

- **Support of development of the information systems in educational and research institutions.**

- **Co-ordinate and support of National Grid Initiative.**

- **User training and support, certificated education.**

- **Organizing of conferences and special thematic workshops for network users from research and educational community of Georgia.**

Connected Institutions

- **Universities**
- **Research institutes**
- **Secondary schools**
- **Libraries**
- **Academic hospitals**
- **International and local organizations working in research and education and their programs**

GRENA
Georgian Research and
Educational Networking
Association

GRENA Network

- **GRENA is providing Information Technology services (including commodity Internet) using his own infrastructure to approximately 110 institutions in Tbilisi, Kutaisi, Batumi and Telavi via different technology (fiber-optic, DSL and wireless connection).**

- **According to the Ministry of Education and Science project Maintenance of the Georgian Educational Information-Communication Network GRENA is providing Network Operation Center services (VPN network) to secondary schools of Georgia. Currently 1280 schools are connected.**

GRENA Network

- **Backbone capacity:**
  Tbilisi – 1 Gbps
  To Kutaisi and Batumi – 10 Mbps
  To Telavi – 2 Mbps
- **International connectivity:**
  E3 Channel to GÉANT EC BSI project
  50 Mbps from local provider Caucasus Online
  30 Mbps from Magticom (dedicated to the secondary schools)

GRENA Network in Tbilisi
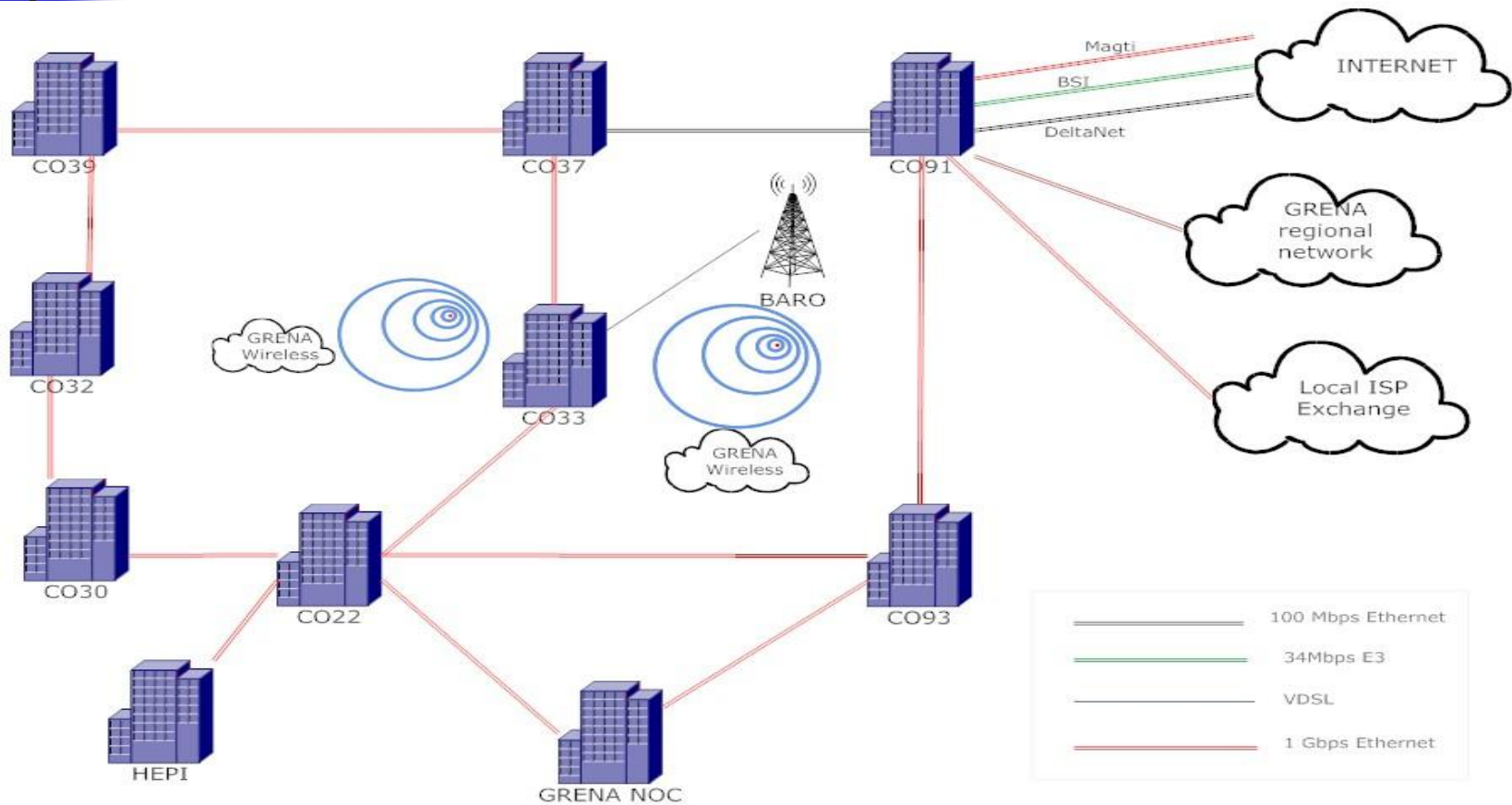
Services Provided to Users

- **Internet connectivity**
- **GEANT connectivity**
- **E-mail, Web-hosting, FTP**
- **Virtual Private Network (VPN)**
- **H.323 based videoconferences**
- **Computer Emergency Response Team - CERT-GE**
- **Monitoring and analyses of traffic including different type of services**
- **Technical support – hot-line**

Network Security

- **CERT Georgia (CERT-GE) was established in 2006 at GRENA according to the NATO Networking Infrastructure project and mostly supports organizations which are connected to the GRENA network. CERT-GE team is providing the following services: customer traffic monitoring by Netflow, incident handling, incident response support, information dissemination and hotline.**

- **GRENA is planning to install Intrusion Detection System (IDS) and rise Internet security awareness in Georgia by creation of dedicated Web-portal.**

Education Program

- **In 2006 GRENA obtained status of the Regional Cisco Networking Academy and is supporting 3 Local Academies in Georgia and 1 in Armenia.**

- **GRENA is providing courses on CCNA, Network Security and CCNP.**

- **GRENA is also providing courses on LINUX operation system for school IT managers and system administrators.**

- **In 2009 GRENA established Pearson VUE Authorized Center for student's certification in IT field.**

- **GRENA started implementation of distance learning program for secondary schools and universities.**

Current Projects

- **MES Georgia – Maintenance of the Georgian Educational Information-Communication Network.**
- **MES Georgia – Training of School IT Managers in Linux and Windows Operation Systems.**
- **EC FP7 – Black Sea Interconnection (BSI).**
- **EC FP7 – European Grid Initiative: Integrated Sustainable Pan-European Infrastructure for Researchers in Europe (InSPIRE).**
- **EC FP7 – High-Performance Computing Infrastructure for South East Europe's Research Communities (HP-SEE).**
- **NATO – Improvement of Security and Development of Infrastructure of the GRENA Network.**
- **ISTC – Development of Armenian-Georgian Grid Infrastructure and Applications in the Fields of High Energy Physics, Astrophysics and Quantum Physics (A-1606).**
- **OSGF – Maintenance and Development of the Georgian Research and Educational Computer Network.**
- **OSGF – Establishment of Distance Learning in Georgian Research and Educational Network.**

GRENA
Georgian Research and Educational Networking Association

GRID Activity - GRENA

- **First GRID site <u>GE-01-GRENA</u> in Georgia is located at GRENA. Installation of the site and its connection to the GEANT network was accomplished at the beginning of April 2009.**

- **The site consists of computing element, storage element, user interface, monitoring PC computer and 4 worker nodes. The total available CPUs (Cores) is 16 and storage resources is 0.75 TB.**

- **According to the EGI request GRENA also installed core services MS, LB, BDII, VOMS and planning to install Myproxy and LFC.**

GRENA
Georgian Research and Educational Networking Association
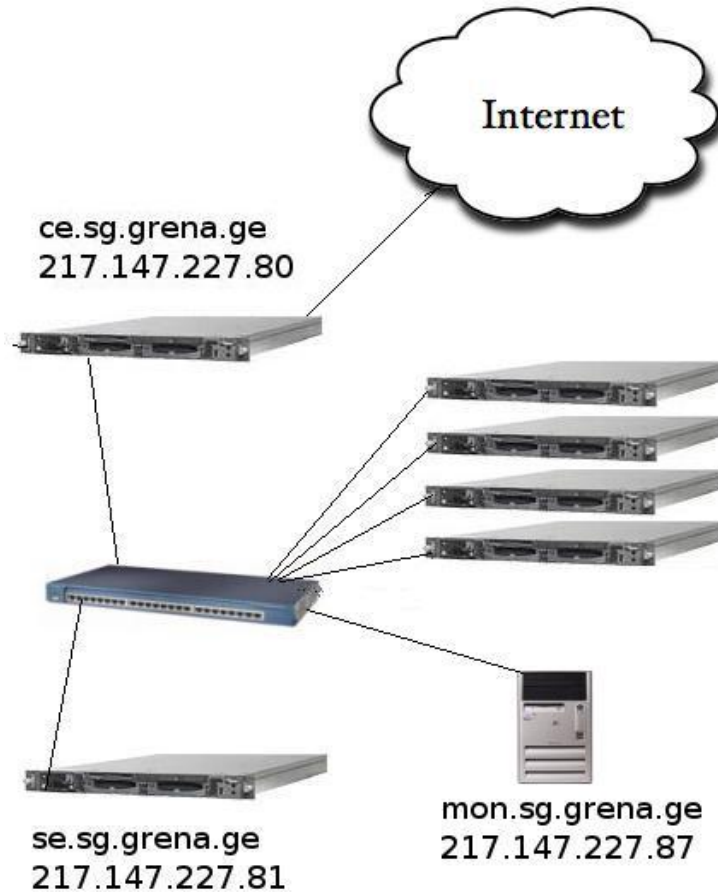
GE-01-GRENA Site

Application

- **In the framework of EC SEE-GRID-SCI project Advanced Research WRF (ARW) modeling system for the weather research and forecasting was installed at <u>GE-01-GRENA</u>. Simulations were performed using set of 2 domains with resolutions of 15 and 5 km.**

GRID Activity – HEPI TSU

- **According to the ISTC A-1606 project another GRID site <u>GE-02-HEPI</u> was installed at the High Energy Physics Institute of Tbilisi State University. The site consists of computing element, storage element, user interface, monitoring computer and 7 worker nodes. The total available CPUs (Cores) is 56 and storage resources is 3.0 TB.**

- **Site is connected to the Georgian research and education network by fiber-optic cable.**

- **8 KW uninterruptible power supply (UPS) system was installed.**
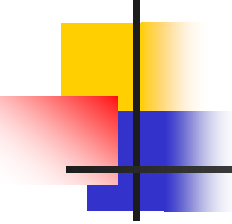
GE-02-HEPI Site

Application

- **Modeling of some biochemical processes with the purpose of realization of their thin and purposeful synthesis. The solution of this problem is directly connected to application of modern methods of quantum chemistry (DFT- Density Function Theory) and molecular mechanics. The scientific group of biophysical chemistry of TSU is engaged in research of modeling of transformations of biochemical macromolecular systems (amino acids, proteins and DNA) with the use of the appropriate computer programs (Programs package „Priroda – 04", P6, P32 - MSU).**

National GRID Initiative

- **Memorandum of Understanding between Georgian research groups participating in GRID projects has been signed in 2008 - High Energy Physics Institute of Tbilisi State University, Georgian E.Kharadze National Astrophysical Observatory of Ilia State University and Georgian Research and Educational Networking Association GRENA.**

- **Hydrometeorology Institute joined the MoU in 2010.**

Support from Government for the farther development of NREN computer networking infrastructure and GRID activities is essential for the integration of Georgian research and educational potential to Europe.

Thank you for attention!