Enabling Grids for E-science in Europe

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EGEE kick-off, April, 19th, 2004

The Russian Research Centre Kurchatov Institute

Partner Introduction

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RRC KI

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- RRC KI history, current activities
- Russian HEP institutes, networks
- RRC KI Network activity

History of the Kurchatov Institute

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- The Russian Research Centre Kurchatov Institute founded in 1943 has a rich history. All 55 years of the Institute life are marked with historically valuable events important not only for Russia but also for the whole present-day world. They have science, politics, particular human destinies got mixed up.
- Laboratory No.2 of the USSR Academy of Sciences - 12.04.1943

  100 persons
- Russian Research Center Kurchatov Institute -01.01.2002

  5300 persons:

  engineers - 1850
  Workes - 1050
  Research workers - 2400.
  RAS Members - 17
  Doctors and
  Candidates of Sciences - 1015

  - .....
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Main Direction of the R&D Activity

The Russian Research Centre Kurchatov Institute has available a high-capacity high-resource research and experimental basis which includes large and sophisticated installations (plasma thermonuclear installations, various-purpose nuclear reactors, various-type accelerators, test facilities and other unique research equipment) as well as designing basis, large pilot-scale production. This extensive basis permits a full cycle of studies from the birth of scientific idea to development of technology and fabrication of finished product to be accomplished.

- Safe development of Nuclear Power (Nuclear Power and its Fuel Cycle)
- Controlled Thermonuclear Fusion and Plasma Processes
- Nuclear Physics
- Solid State Physics and Superconductivity
- **Communications Network for science and ISP (RIPN, Relcom)**

Russian HEP Institutions

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REGIONAL CONNECTIVITY for RUSSIA HEP

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- *Moscow* 1 Gbps
- *IHEP* 8 Mbps (m/w), under construction 100 Mbps fiber-optic (Q1-Q2 2004?)
- *JINR* 45 Mbps, 100-155 Mbps (Q1-Q2 2004), Gbps (2004-2005)
- *INR RAS* 2 Mbps+2x4Mbps(m/w)
- *BINP* 1 Mbps, 45 Mbps (2004 ?), … *GLORIAD*
- *PNPI* 512 Kbps (commodity Internet), and 34 Mbps f/o but (!) budget is only for 2 Mbps

- **INTERNATIONAL CONNECTIVITY for RUSSIA HEP**

- USA NaukaNET 155 Mbps
- GEANT 155 Mbps basic link, plus(???) 155 Mbps additional link for GRID projects
- Japan through USA by FastNET, 512 Kbps Novosibirsk(BINP) – KEK(Belle)

RRC KI (networks's history)

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- Domains .su, .ru
- "childhood" of the Russian Internet (companies, staff)
- "parent" of Russian scientific networks (RIPN)
- GLORIAD
- RDIG

Russian Institute for Public Network

Russian Institute for Public Networks (RIPN) autonomus nonprofitable organization by RRC KI. The aims declared were the following:

- to develop computer communications in the interests of Research & Education (R&E);

- to coordinate IP networking in Russia;
- to promote research studies in the field of computer communications;
- to support R&E organizations in getting access to the Internet information resources via public networks.

RBNet general information

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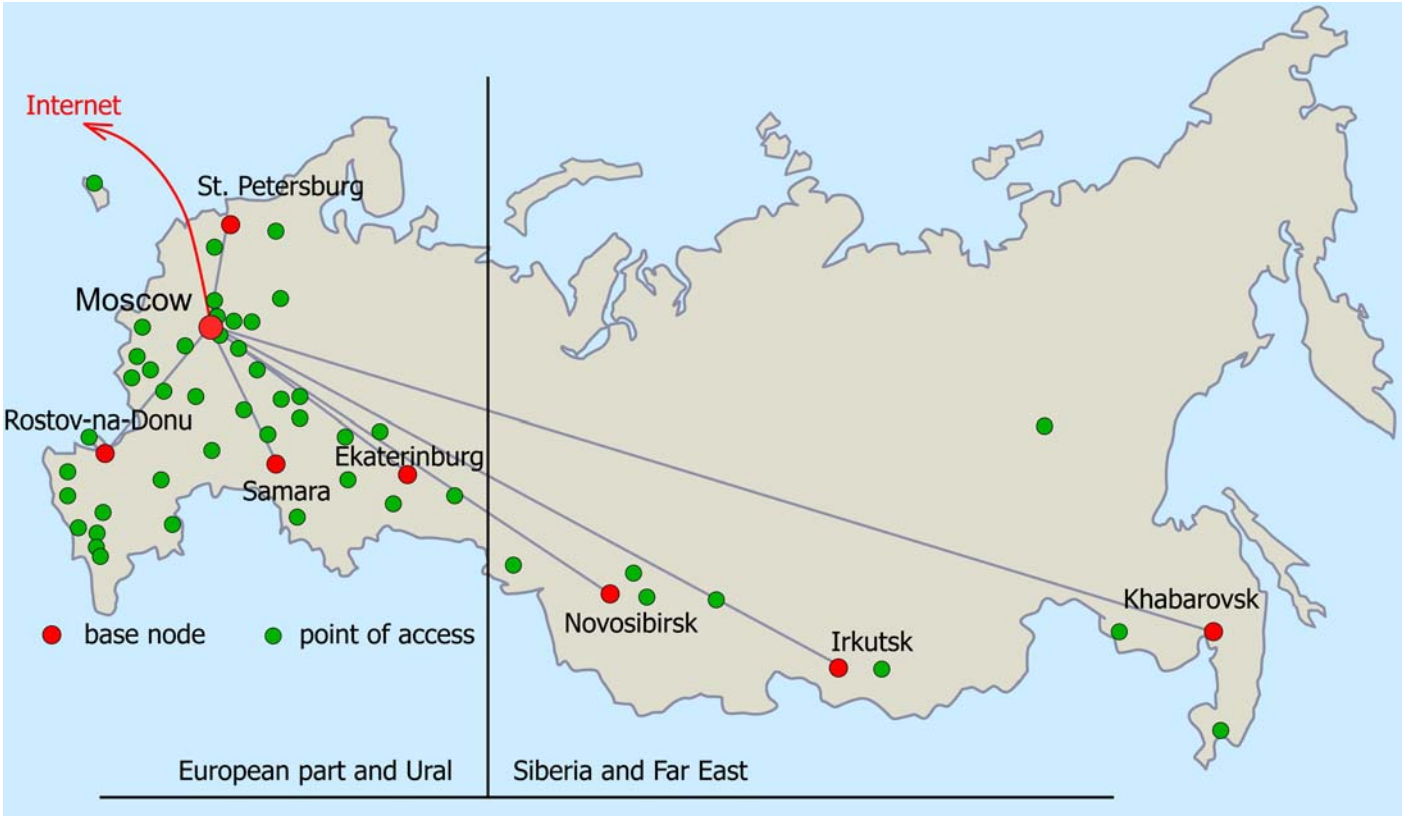
- About 50 points of presence around Russia
- Backbone services for R&E networks: regional, corporate, specialized …
- Two-level architecture
- Protocols supported:
  - IP
  - Frame relay
  - ATM
  - IP MPLS
- VPN services
- Support of regional Internet Exchanges

RBNet links


Internet
St. Petersburg
Moscow
Rostov-na-Donu
Samara
Ekaterinburg
Novosibirsk
Irkutsk
Khabarovsk
base node
point of access
European part and Ural
Siberia and Far East

Plan of development – 2004

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- International links:
  - 622 Mbps Moscow-Stockholm (RBNet POP)
  - 2x155 Mbps Stockholm-Chicago
    (connection to Star TAP/ StarLight via FASTNet)
  - 2x155 Mbps, connection to GEANT in Stockholm (or Ams?)

- Domestic
  - 155 Mbps Novosibirsk-Moscow
  - 90 Mbps Ekaterinburg-Moscow
  - 45 Mbps Khabarovsk-Novosibirsk
  - 45 Mbps Kazan-N.Novgorod-Moscow

RDIG

Six Russian HEP institutes participate in the EGEE project *(Enabling Grids for E-science in Europe – EU FP6 Contract 508833).*

This is an infrastructure project:

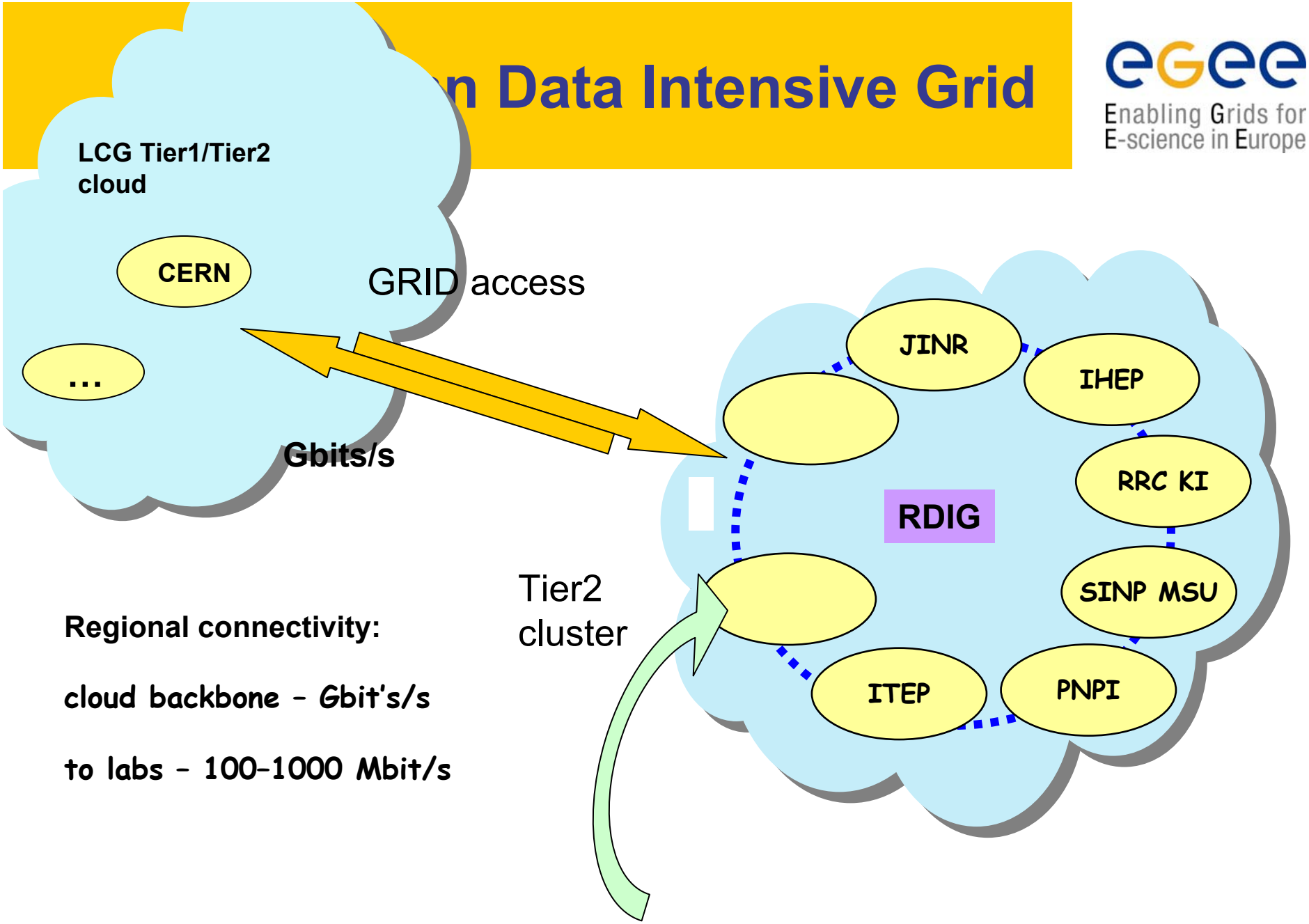
distributed Regional Operation Center (ROC, 24x7 service) – IHEP, ITEP, PNPI, IMPB RAS

Core Infrastructure Center (CIC) – SINP, plus some functions by JINR, RRC KI

Dissemination&Outreach – JINR, KIAM RAS

Major application – LHC computing (some 100%, at least in 2004), also pilot applications from Bioinformatics; FusionGrid.

n Data Intensive Grid



Regional connectivity:

cloud backbone – Gbit's/s

to labs – 100–1000 Mbit/s

- *Actual problem: get few-to-few connectivity with GEANT (GRID motivation) – MPLS (infrastructure INTAS project RuGNet)*

- RunNET (Moscow-St-Petersburg-Helsinki (NorduNET) – GEANT) 622 Mbps (soon 2.4 Gbps). *Some bandwidth can be used for HEP (LCG/DC04) applications.*

- *Some prospocts:*
- Project GLORIAD (global f/o ring Chicago-Amsterdam-Moscow-Novosibirsk-Khabarovsk-Beijing-Japan-Chicago), initiated by USA (NSF+DoE). Protocol was signed at official level by USA, Russia and China.
- In 2005 10 Gbps - LHC needs are recognized as major application!
- Now littleGLORIAD has started in January 2004 – (the circle of) 155 Mbps.

GLORIAD (Global Ring Network for Advanced Applications Development)

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RRC KI: Network support experience

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- NOC - Network operational center

- STAFF - 24x7 service
- Developers

NOC

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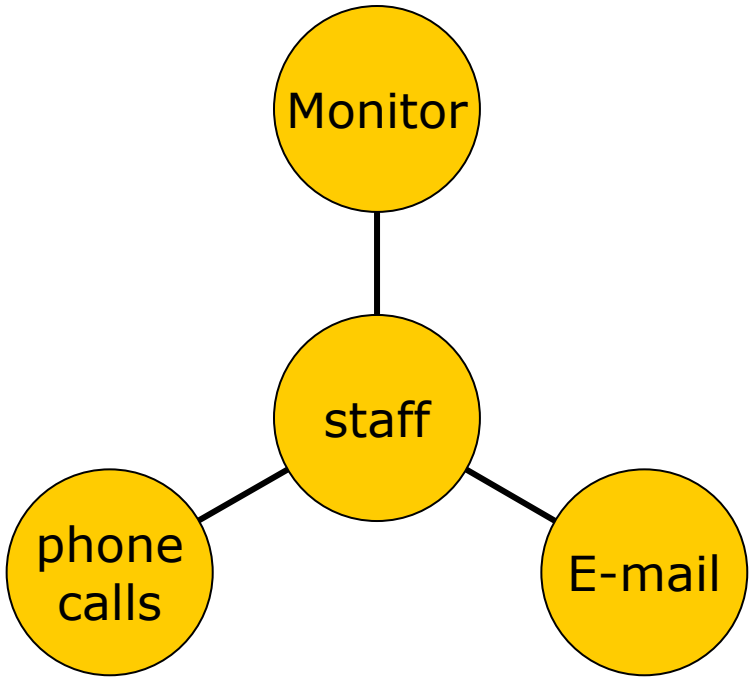
- Network engineers
- Abuse group (incident tracking team)
- IP-Service engineers
- Statistics

Operational interface

- 24h onduty service
- Front-office



RRC KI SA2 tasks and goals

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- To collaborate with CNRS and GRNET in SA2 tasks
- To provide requirements and conditions for Russians NRENs and ISPs to be a part of European infrastructure and serve EGEE needs.

RRC KI looks for effective cooperation

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Thank You!

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