The ISP Scene in Russia

Netnod Meeting

September 23-24, 2010

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Internet: integration of autonomous systems

- ~32,000 autonomous systems (AS) are routed in the Internet, ~2,500 AS are routed in the Russian segment.

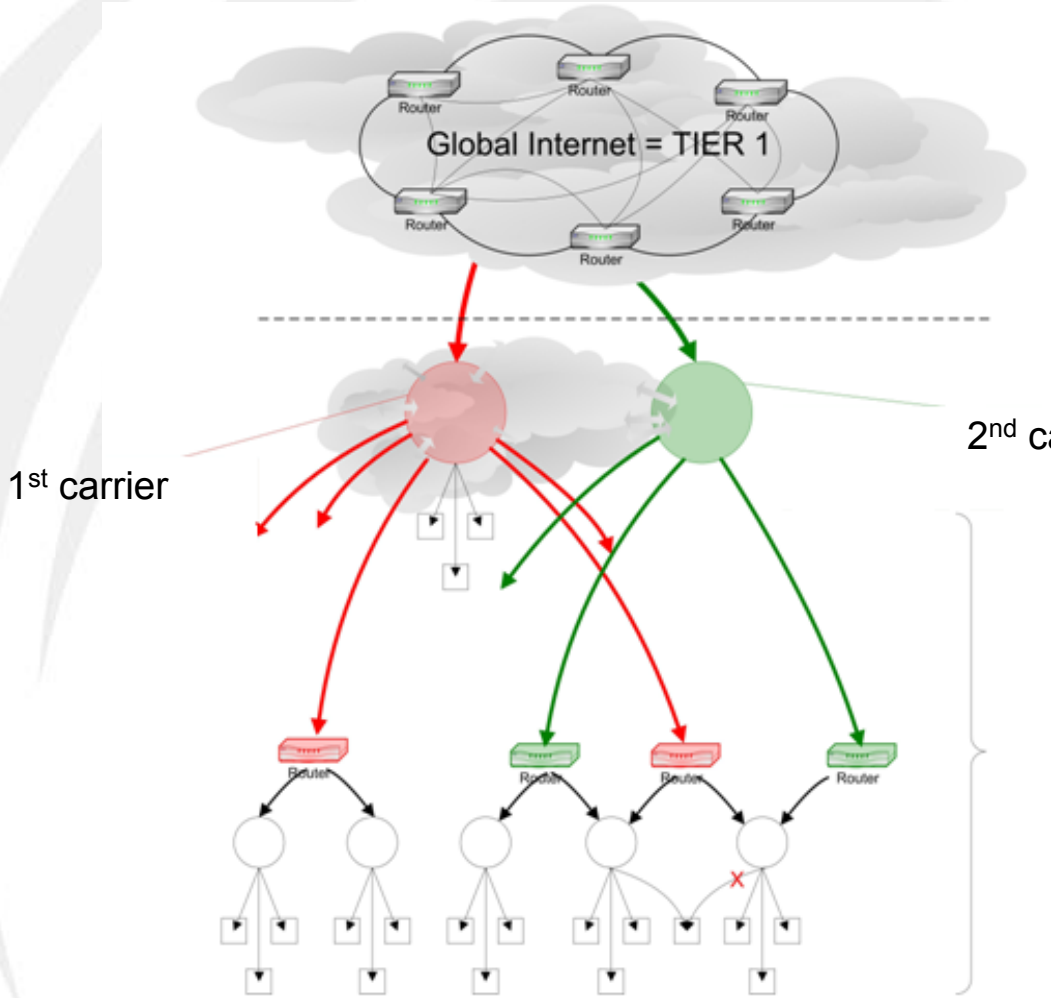
- Operators (internet, hosting, colocation, content, corporate, on-line services providers etc.) exchange traffic over IP, universal carrier for network services.

- Two types of operators interaction:
  - **Transit** (network-provider ensures traffic transit in/from Internet for network-customer)
  - **Peering** (peers exchange traffic of their own and customer's networks)

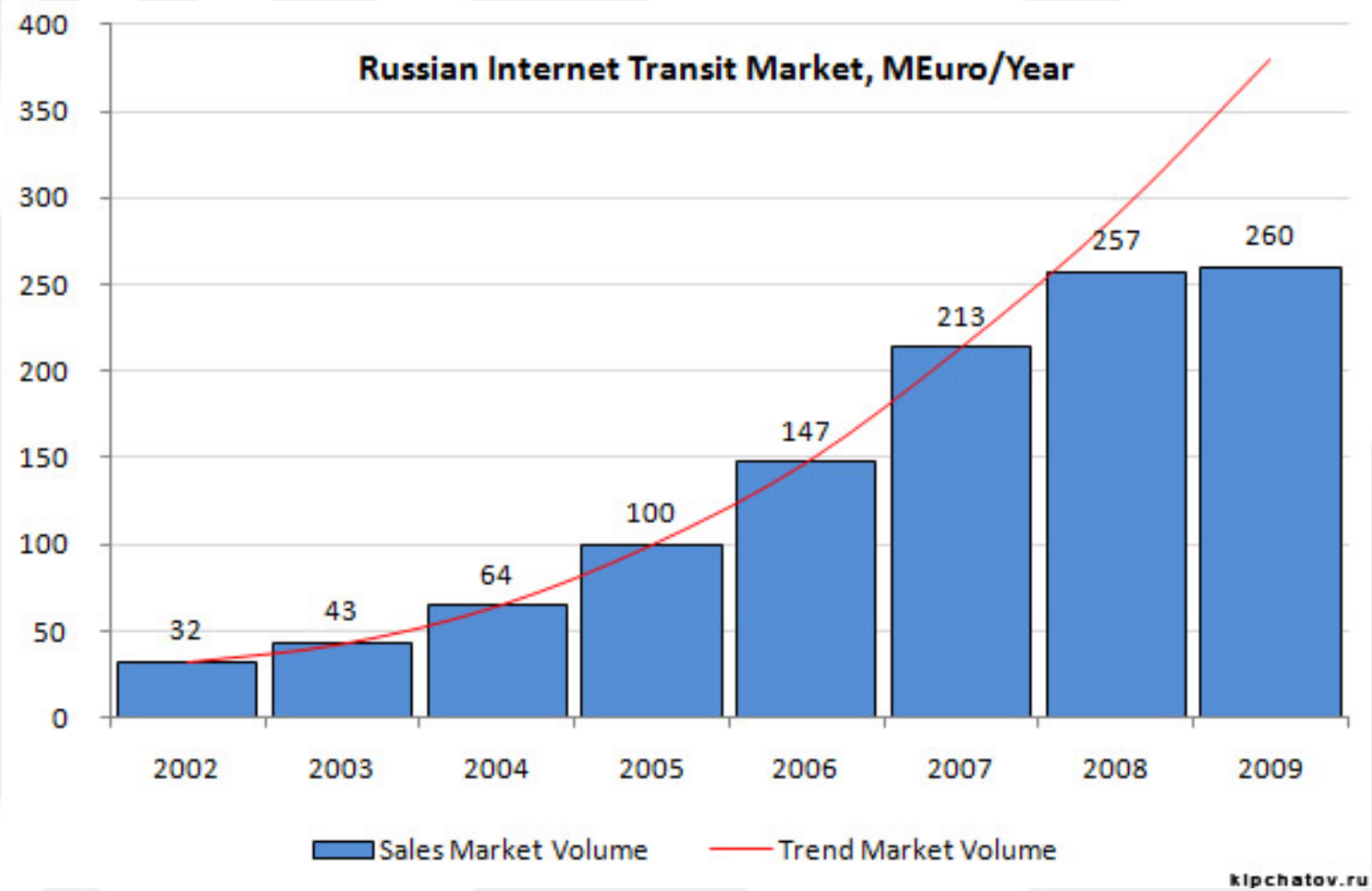
Internet Infrastructure in Russia

- History: (August 1990) *Relcom* and *Demos* at the Kurchatov Institute, Moscow established regular email routing with the Helsinki University over a paid voice line
- Today: 15,7 mln. households, 37 mln. broadband users
- The Russian ISP market can be divided in two parts:
- (i) Regional market: IP-transit + access networks
- (ii) Metropolitan market: Moscow + St. Petersburg
- Average price ~12€/Mbps is stabilized in two capitals and seems to be the upper limit.

Typical diagram of regional Runet



Russian Internet Transit Market



Telecom legislation

- ISP in Russia must have a license from the Ministry of Communications to provide telecom services (Telephony, Internet, …). A license is issued for 5 years and costs ~25 € per region (83 regions).
- Provision of services should comply with the Law on Communications and a lot of by-laws.
- Federal Security Service requires ISP to install hardware and provide connectivity to FSS offices.
- Life of ISPs in Russia is not easy :)

ФЕДЕРАЛЬНАЯ СЛУЖБА ПО НАДЗОРУ
В СФЕРЕ СВЯЗИ И МАССОВЫХ КОММУНИКАЦИЙ

ЛИЦЕНЗИЯ

№ 64327

Реквизиты лицензиата:

Закрытое акционерное общество

"Центр взаимодействия компьютерных сетей "МСК-IX"

Место нахождения (жительства):

125481, г. Москва, ул. Свободы, д. 91, корп. 2

Наименование услуг:

Услуги связи по передаче данных, за исключением услуг связи по передаче данных для целей передачи голосовой информации

Лицензия включает лицензионные условия на **2 листах**

Срок действия лицензии с 28.11.2008 до 28.11.2013

День начала оказания услуг (не позднее) 28.11.2010

Начальник Управления использования радиочастотного спектра и лицензирования в сфере связи **А.С. Стадинчук**

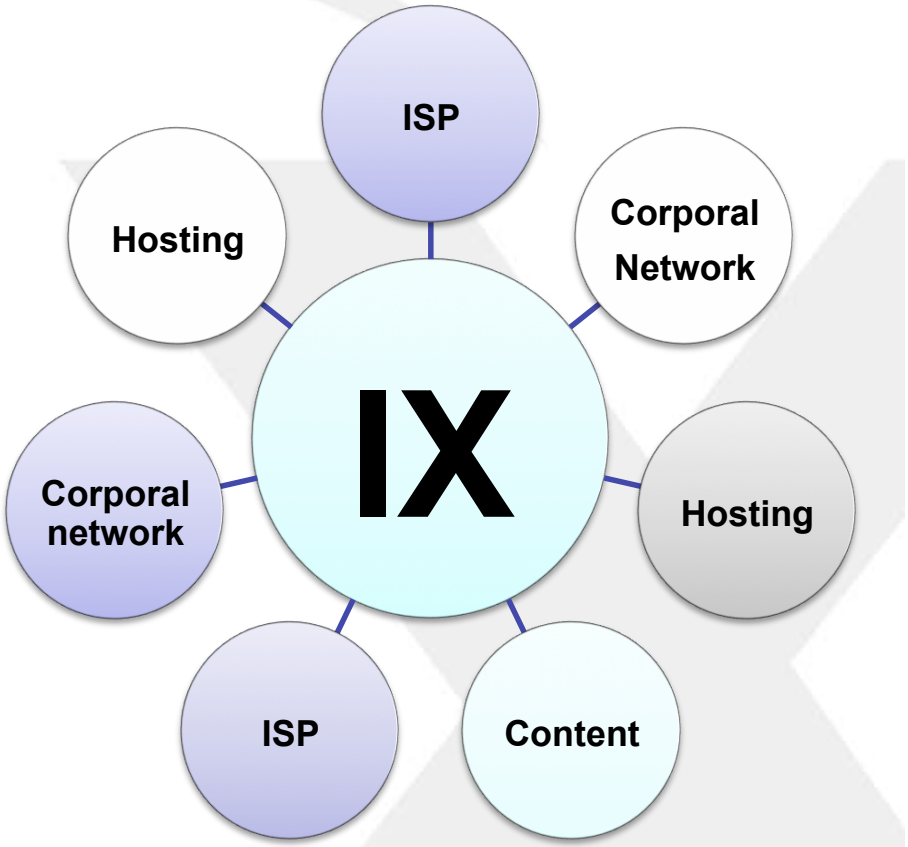
MSK-IX License for data transmission

What is an Internet Exchange?

Critical mass of connections arises in points of concentration of telecom sites.

Point-to-point connection between operators is obviously a scaling issue. The costs of ports, circuits, management grow nonlinearly.

Internet eXchange (IX) provides a shared switched network for easy interconnect and traffic exchange between operator's networks.



Peering infrastructure in Russia

- Moscow Internet Exchange (MSK-IX)
- Regional Internet Exchanges (IX.RU)
- Private peering (direct links)
- L2 Providers

Moscow Internet Exchange

IXP since 1995

11 sites in Moscow

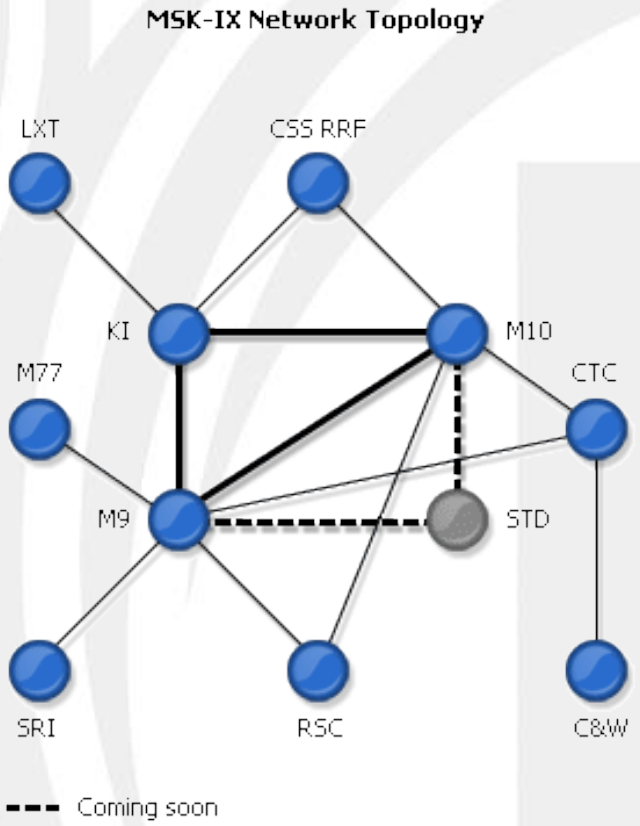
280G peak traffic, growth 250%/year

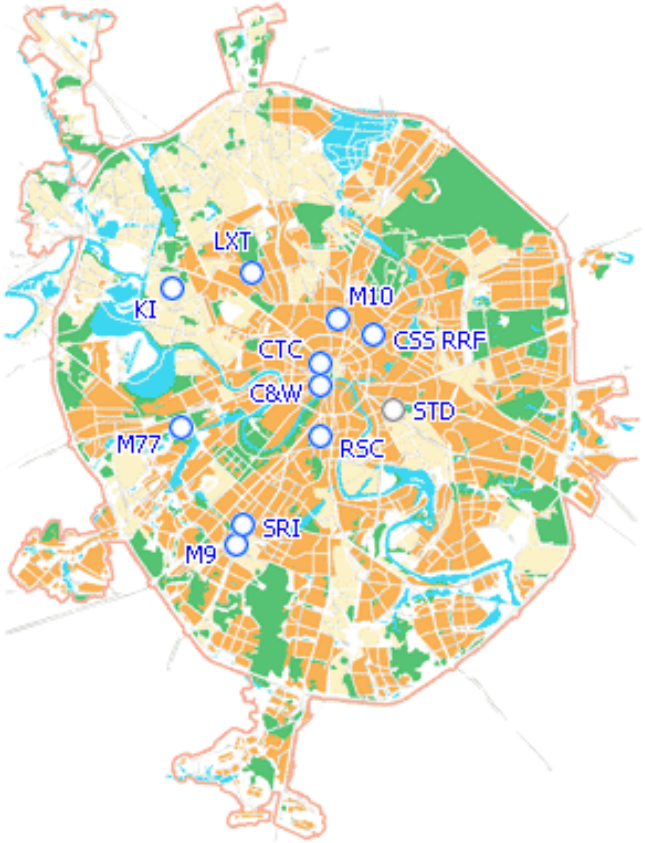
310+ members

IX operator in 7 Federal regions

South wall of Annapurna (7219м) © A.Emelyanov

Network Topology and Locations

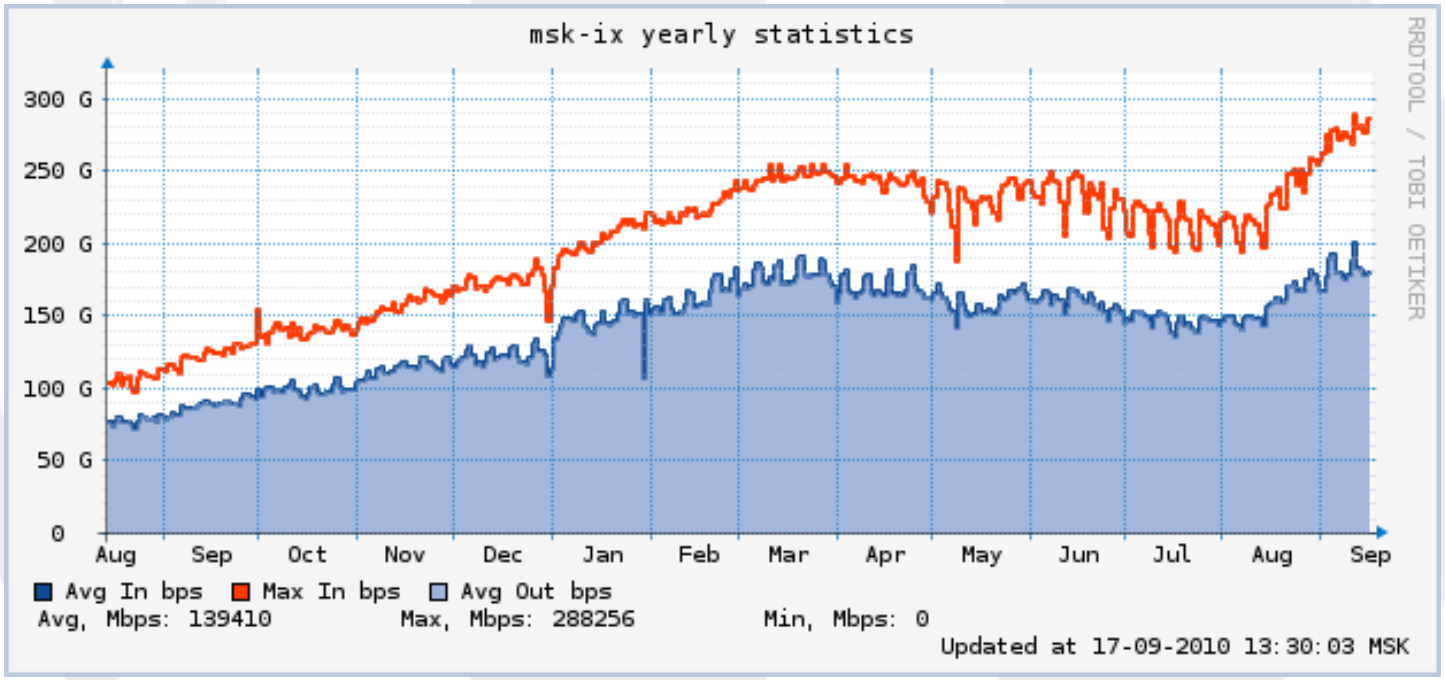




Membership and Traffic Stats

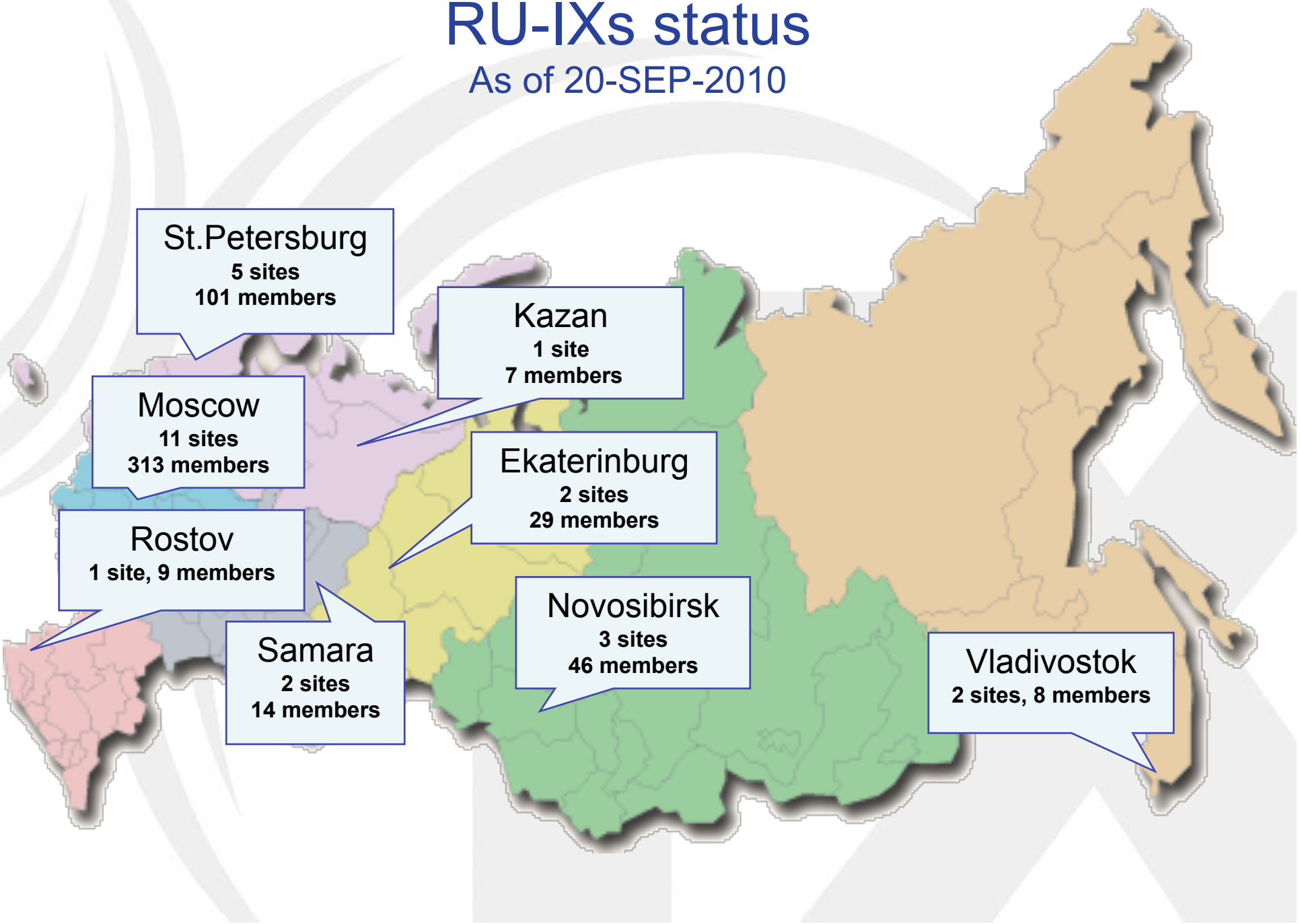
As of 09/2010:

- **313 members** (**90%** of them do not peer anywhere else)
- **182 Gb** daily average traffic
- **280 Gb** peak traffic
- **12000+** prefixes at the RS (comparable to largest national ISPs)



RU-IXs status

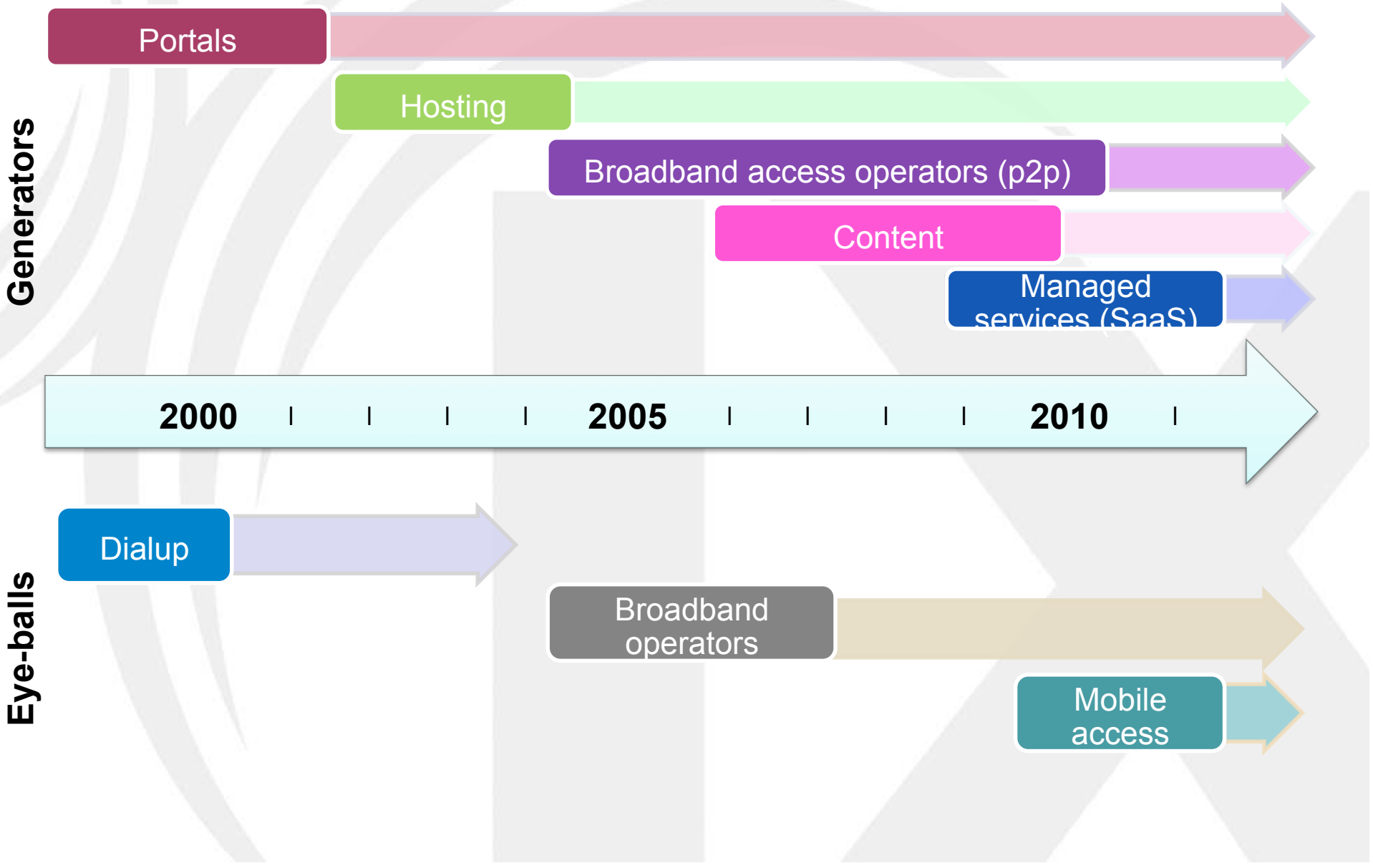
As of 20-SEP-2010

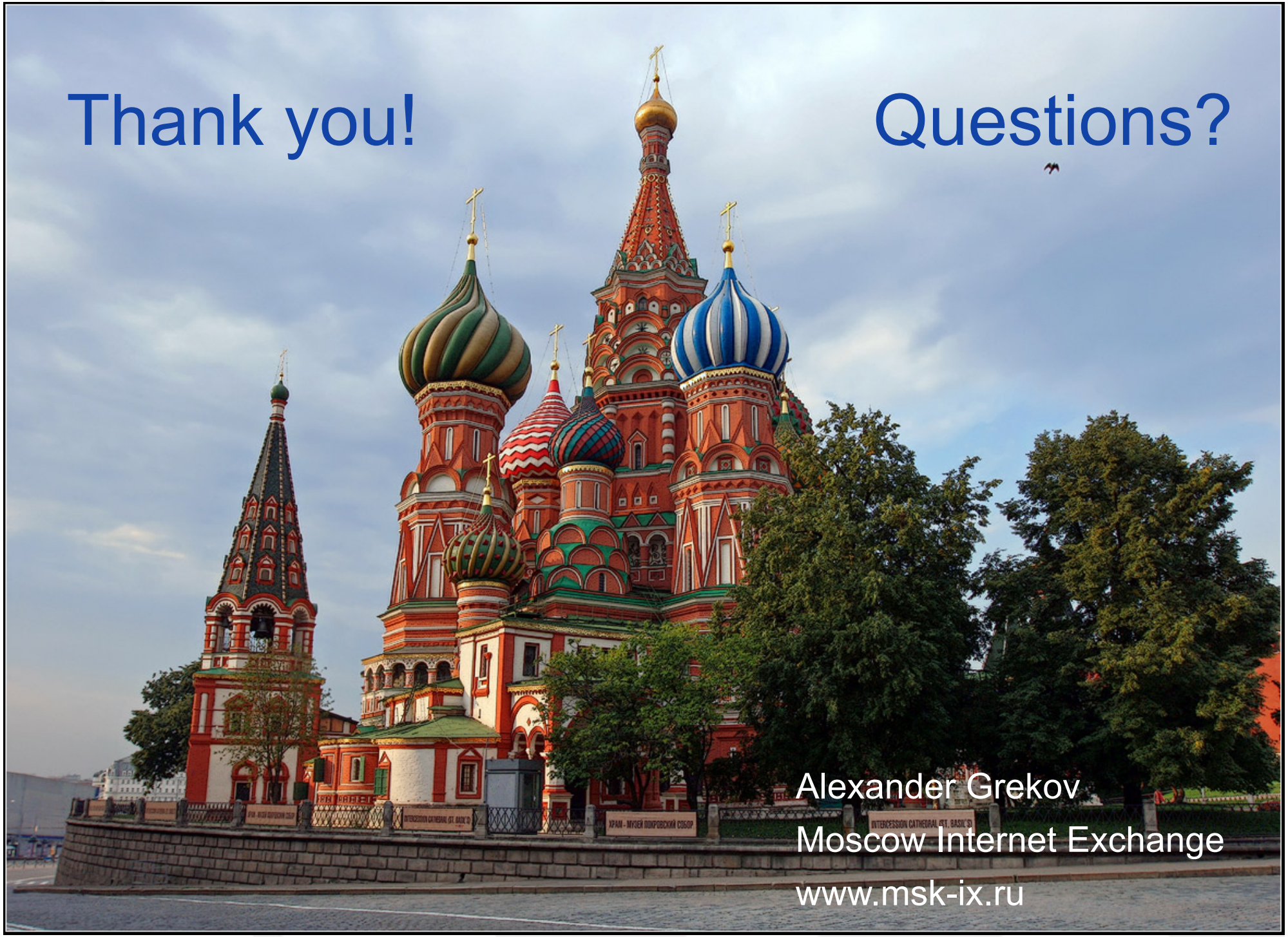


Russian Peering Fun Facts

- Russia ranks 2nd in the world for the quantity of AS numbers (~2,500).
- Public and private peering are comparable in terms of transferred traffic.
- Content has benefits from transit operators.
- Inter-regional traffic exchange is indistinguishable (because of centralized economy).
- High prices for transit stimulate peering between regional ISPs.

Evolution of Russian Peering




Thank you!
Questions?
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www.msk-ix.ru