

Herding Cats and Growing Regional IX's



Why growing regional IX's like herding cats?



- **Each cat network - autonomous piece of the global network delivering its own specific services to other networks and subscribers**
- **IX is a sort of bandwagon – the more cats is in it, the more will be willing to join in**
- **Peering values are rather principles than exact P&L figures**

IX peering values

Direct interaction with
more networks

=>

*More routes and
network sustainability*



Traffic / bandwidth
not billable

= >

*Unlimited traffic
across peers for
subscribers*



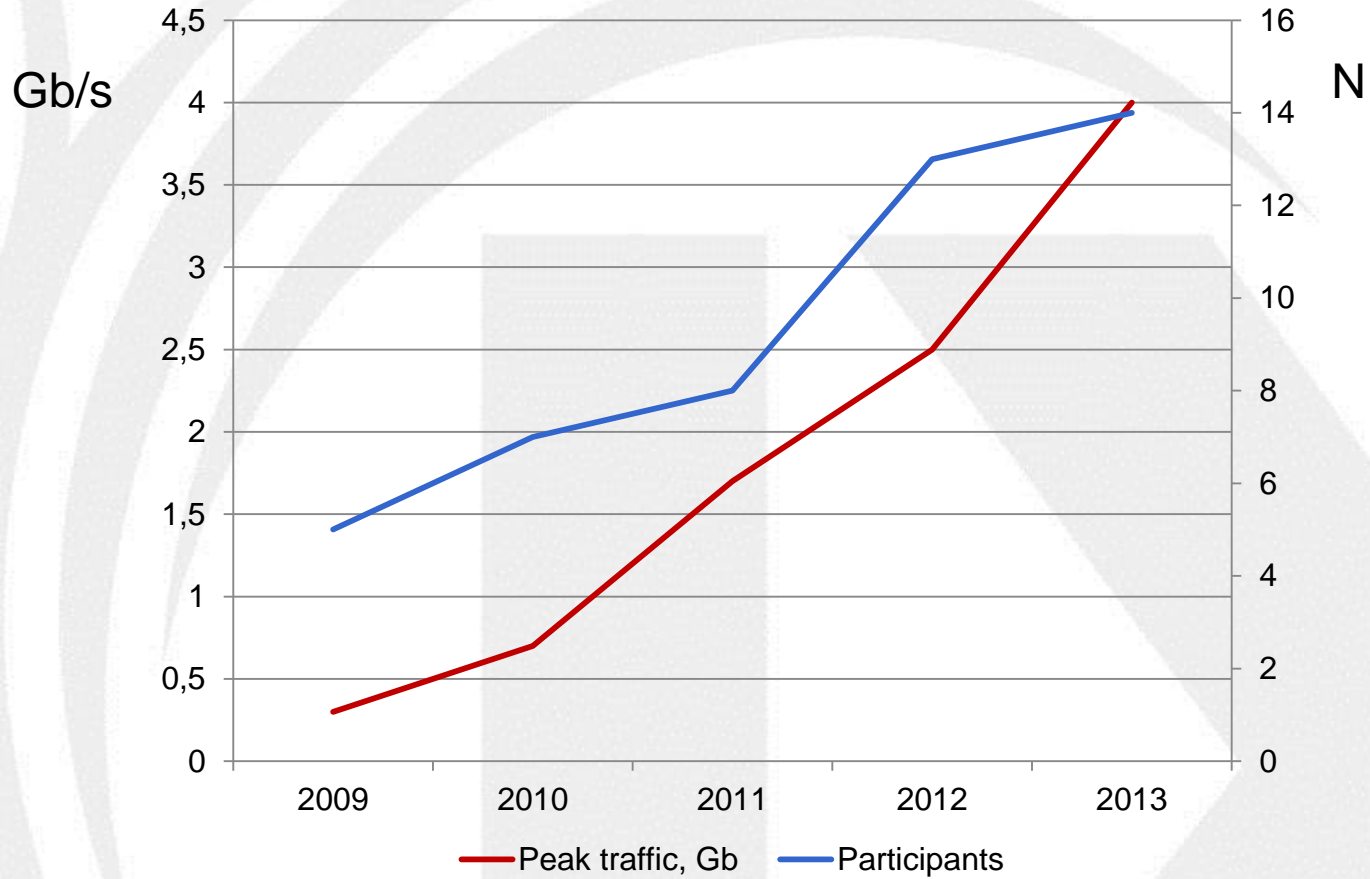
Costs cut through
competitive environment
and optimization

=>

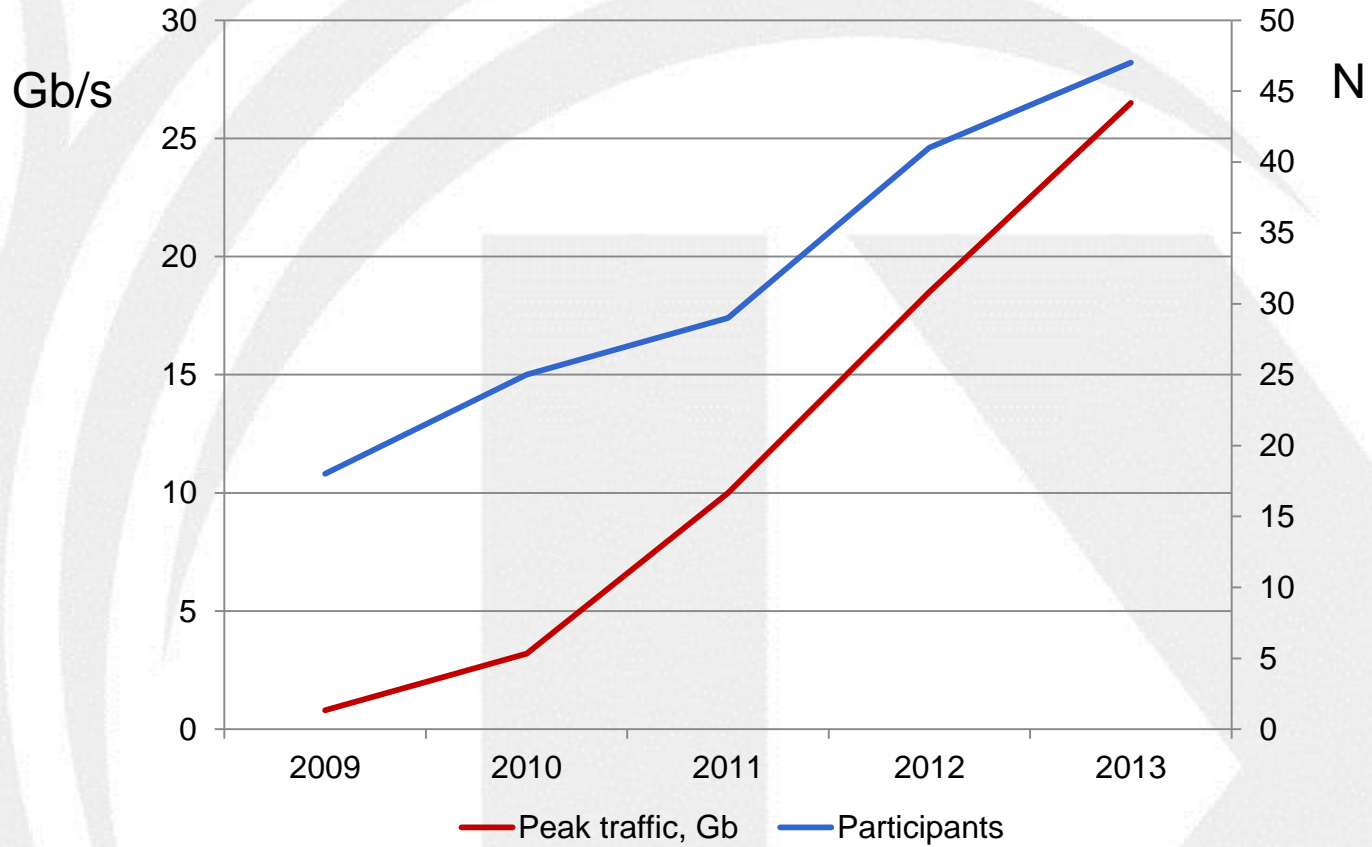
*More transit choices
\$transit >> \$peering
PNI costs cut via
peering at IXs*



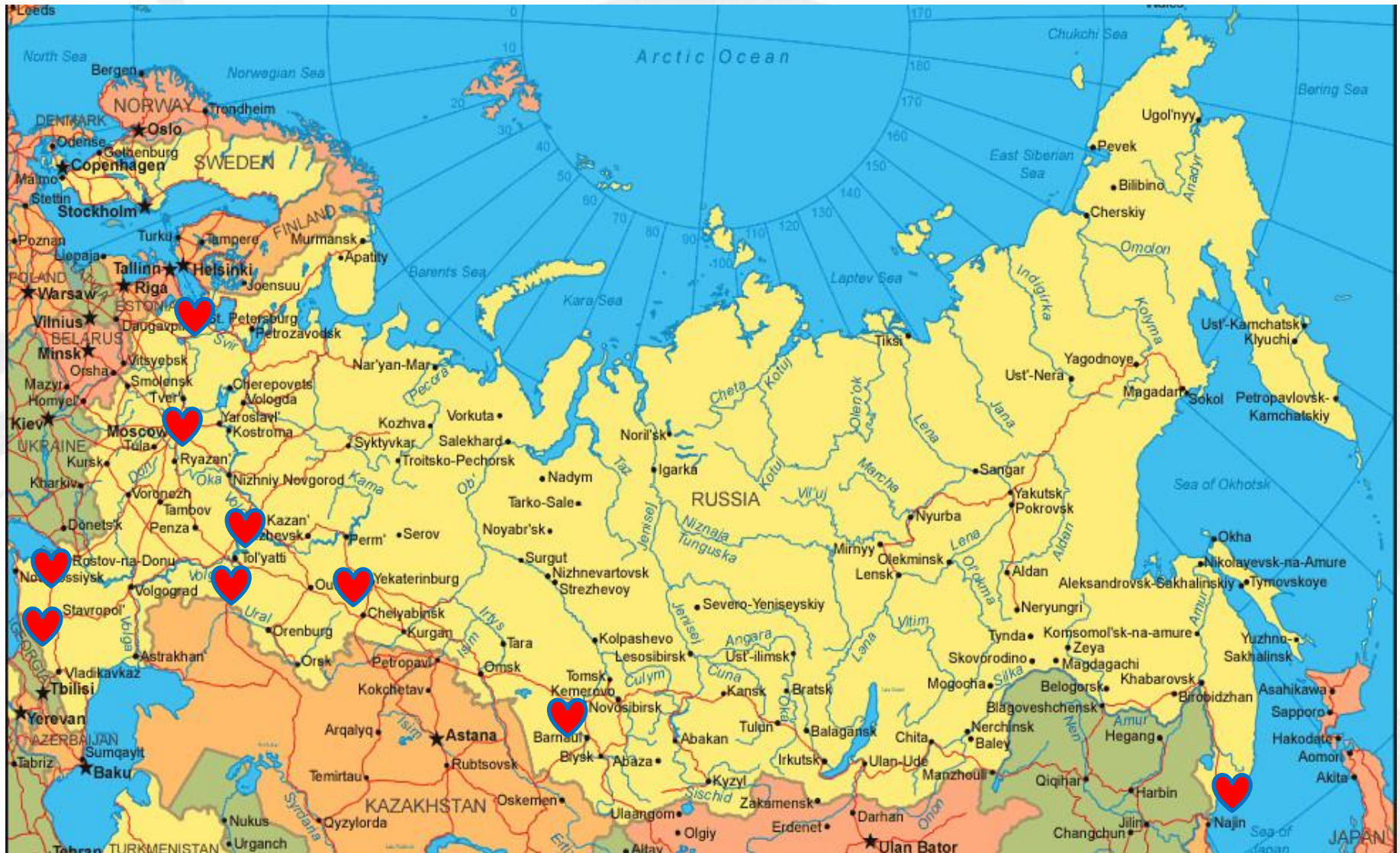
Small bandwagon RND-IX



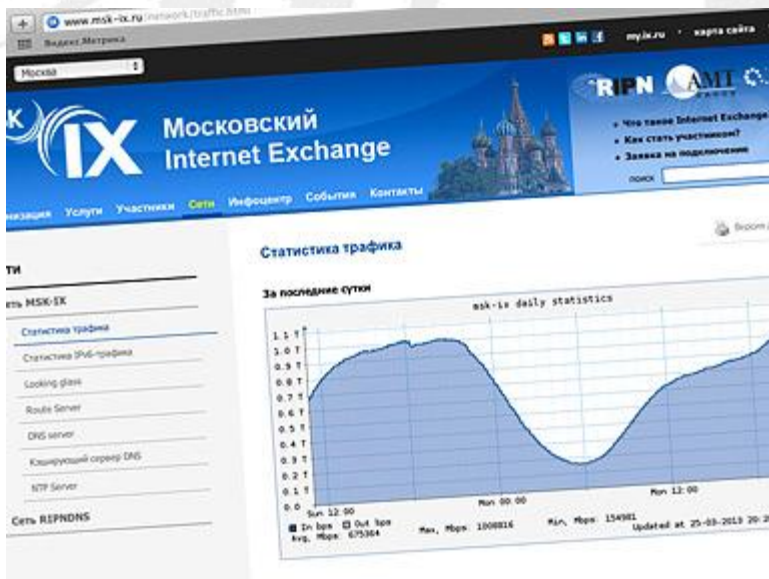
Mid bandwagon NSK-IX



MSK-IX on the map



MSK-IX



- Operating since **1995** in Moscow
- Currently **9** IX points across Russia:
 - St.–Petersburg SPB-IX
 - Moscow MSK-IX
 - Roston-on-Don RND-IX
 - Stavropol STW-IX
 - Samara SMR-IX
 - Kazan KZN-IX
 - Ekaterinburg EKT-IX
 - Novosibirsk NSK-IX
 - Vladivostok VLV-IX
- Moscow Internet Exchange with **373** ASN / 272 unique across Euro-IX over **1+ Tbps** peak traffic
- All MSK-IX' IXs: **500+** unique ASNs

Regional IX key components

Peering location

- Ideally it is neutral datacenter with free right-of-way and presence of at least 5 networks and easy reach of at least 5 more
- Standard colo (up to 5 kW per rack) with SLA and remotes hands services availability for newcomers.
- Transparent none-discriminated conditions and flexible x-connections service (PNIs).



Peering infrastructure

- Peering fabric and route server with sufficient switching and network capacity, port security features.
- Public information on services / traffic / connected networks / how to connect.
- Local licensing and interception requirements met



Peering coordinator and back office

- To keep talking to potential IX participants and ease communication between existing ones
- To keep up service running, value delivered, invoices paid



Challenges. Peering locations

Moscow / St.Petersburg

- MMTS-9 / Borovaya – unique overcrowded peering locations of the past century fully reliant on public infrastructure quality
- Datacenters – growing business with substantial new development. 10-20 providers per DC in average. Costly fiber to MMTS-9 / Borovaya.



Other major cities

- Lack of neutral up-to-date colo infrastructure. No standard remote hands service mostly.
- Transit more expensive than that in Moscow / St.Pet.
- Most of hosting, content and services far away (Moscow / St.Pet. / other countries)



Challenges. Continued

Peering infrastructure

- Short and changing in time list of vendors willing to delivery feature rich high performance hardware
- Costly upgrades / vendor replacement programs might be faced in the long run
- Interception requirements are very costly (x10 switching capacity = x10 costs)
- High level of availability and good customer service required

Peering coordinator and back office

- Consistent long term approach to ~~eat~~ market is a must
- All kinds of ~~eat~~ networks to be treated equally with respect to their specific needs
- Proper supporting paperwork to be prepared and issued

IX key components in reality

Peering location

- ~~Ideally it is neutral datacenter with free right-of-way and presence of at least 5 networks and easy reach of at least 5 more.~~ **Best fit existing facilities are being used**
- ~~Standard colo (up to 5 kW per rack) with SLA and remotes hands services availability for newcomers.~~ **Colo delivered using local UPS and service arrangements**
- ~~Transparent none-discriminated conditions and flexible x-connections service (PNIs).~~ **Multi-node distributed switching fabric eases access with cost implications**

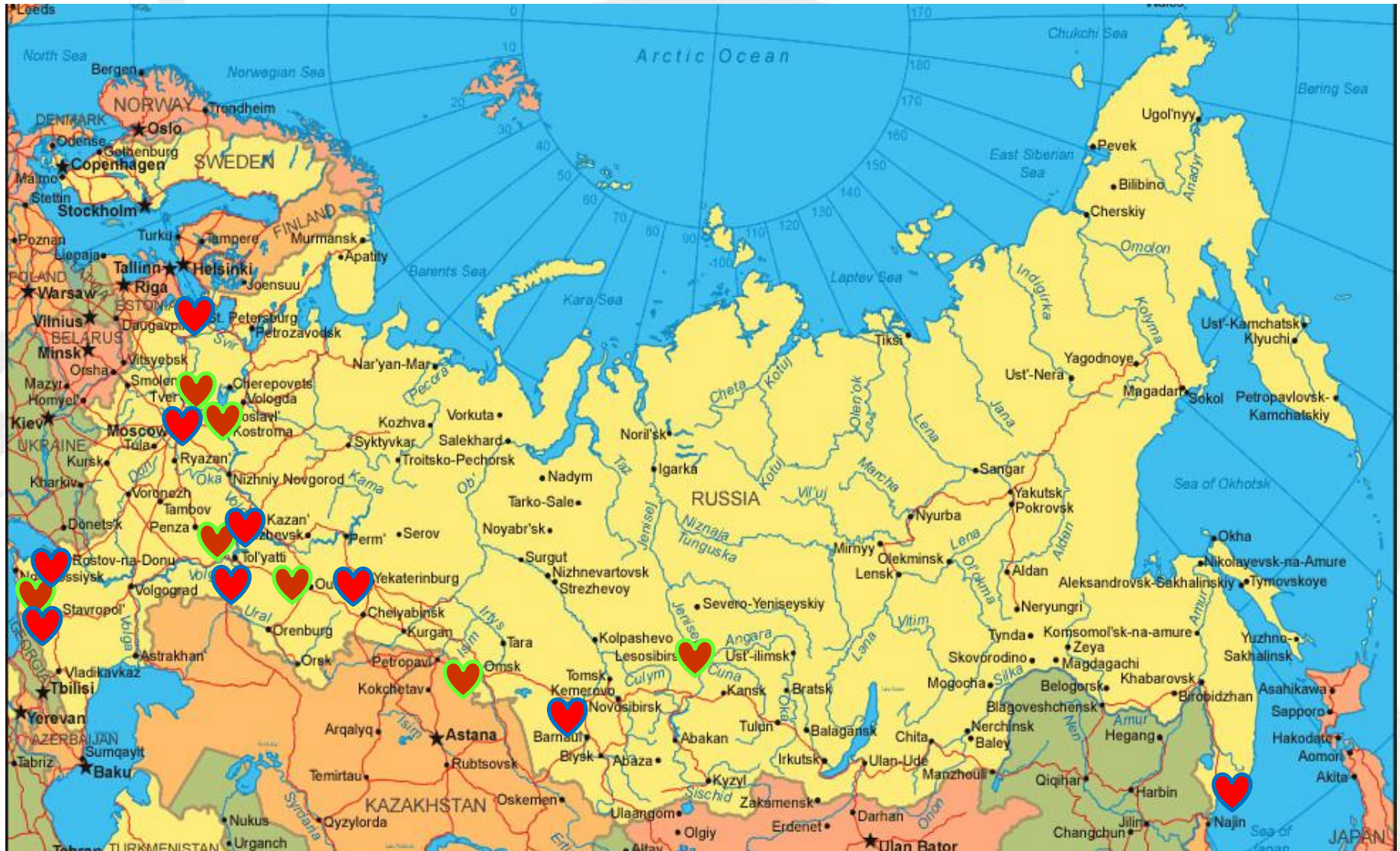
Peering infrastructure

- ~~Peering fabric and route server with sufficient switching and network capacity, port security features.~~ **Basic switching / routing hardware is used. Good to start with / costly upgrade may be faced in the future**
- ~~Public information on services / traffic / connected networks / how to connect.~~ **Could be developed in-house using standard software packages**
- ~~Local interception requirements at an expense of \$\$\$ for new neutral IX or \$ for ISP's backed IX~~

Peering coordinator and back office

- ~~To keep talking to potential IX participants and ease communication between existing ones.~~ **Part-time peering coordinator to start with is just fine**
- ~~To keep up service running, value delivered, invoices paid.~~ **Essential part of operation and relationships with eats customers**

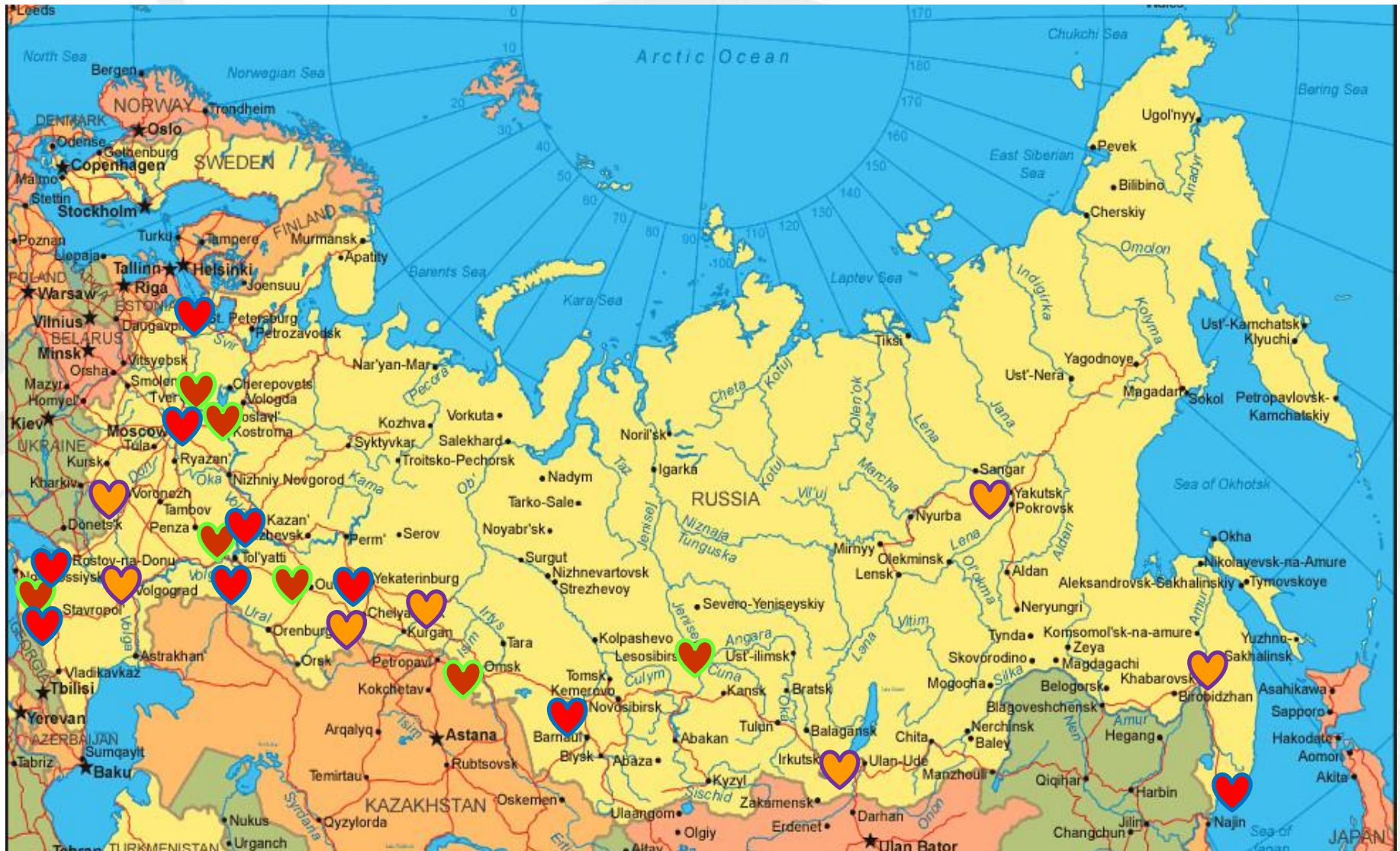
MSK-IX and other IXs on the map




 MSK-IX

 Other IXs

MSK-IX, others and candidates for IXs



 MSK-IX

 Other IXs

 Candidates for IXs

Two ways to start a new regional IX



MSK-IX' contribution into a new IX

	Expertise	Solution
Peering location		
▪ Datacenter / telehouse	MSK-IX	LOCAL
▪ Standard colo with remote hands	MSK-IX	LOCAL
▪ X-connections service	MSK-IX	LOCAL
Peering infrastructure		
▪ Peering fabric / route server	MSK-IX	MSK-IX
▪ Public information	MSK-IX	MSK-IX
▪ Local licensing and interception requirements	MSK-IX	LOCAL
Peering coordinator and back office		
▪ Talking to eats networks	MSK-IX	LOCAL
▪ Service running, value delivered, invoices issued	MSK-IX	MSK-IX

Thank you!



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