

ENOG 14 - 2017, Minsk

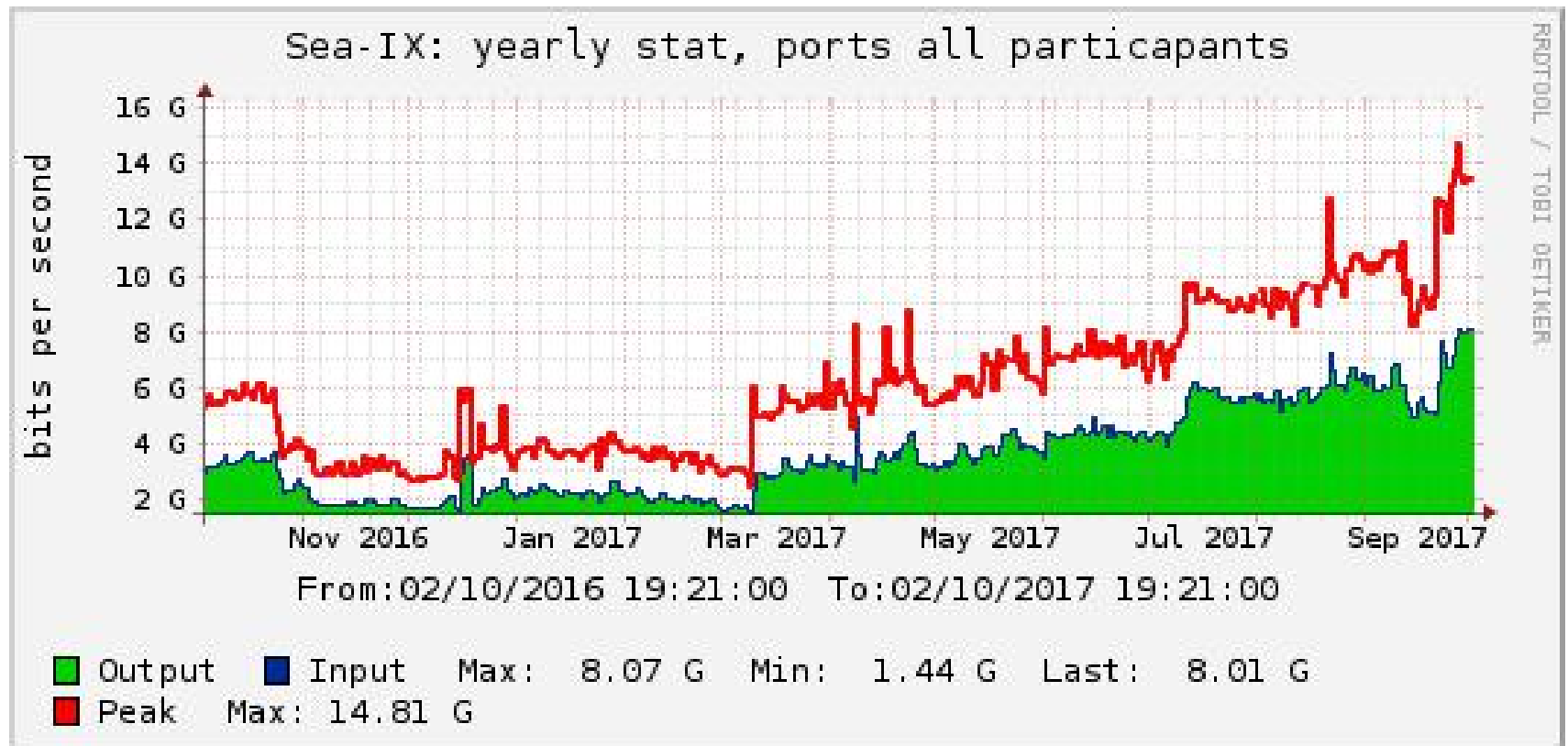
Observing the Russian IXP's through a Looking Glass

ru.map-ix.net



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The volume of traffic is an important indicator of IXP



Traffic is aggregated across all ports of participants

What else can you look at IXP from the side?

Amount and Names of Participants in the IXP

Usually, information is available in open access on a web server IXP.

Private peering (direct exchange of traffic in a separate VLAN)

No opportunity to observe. Strongly depends on the exchange point.

For example, from my own experience, on the Sea-IX for private peering today has 1/3 of the total volume of traffic.

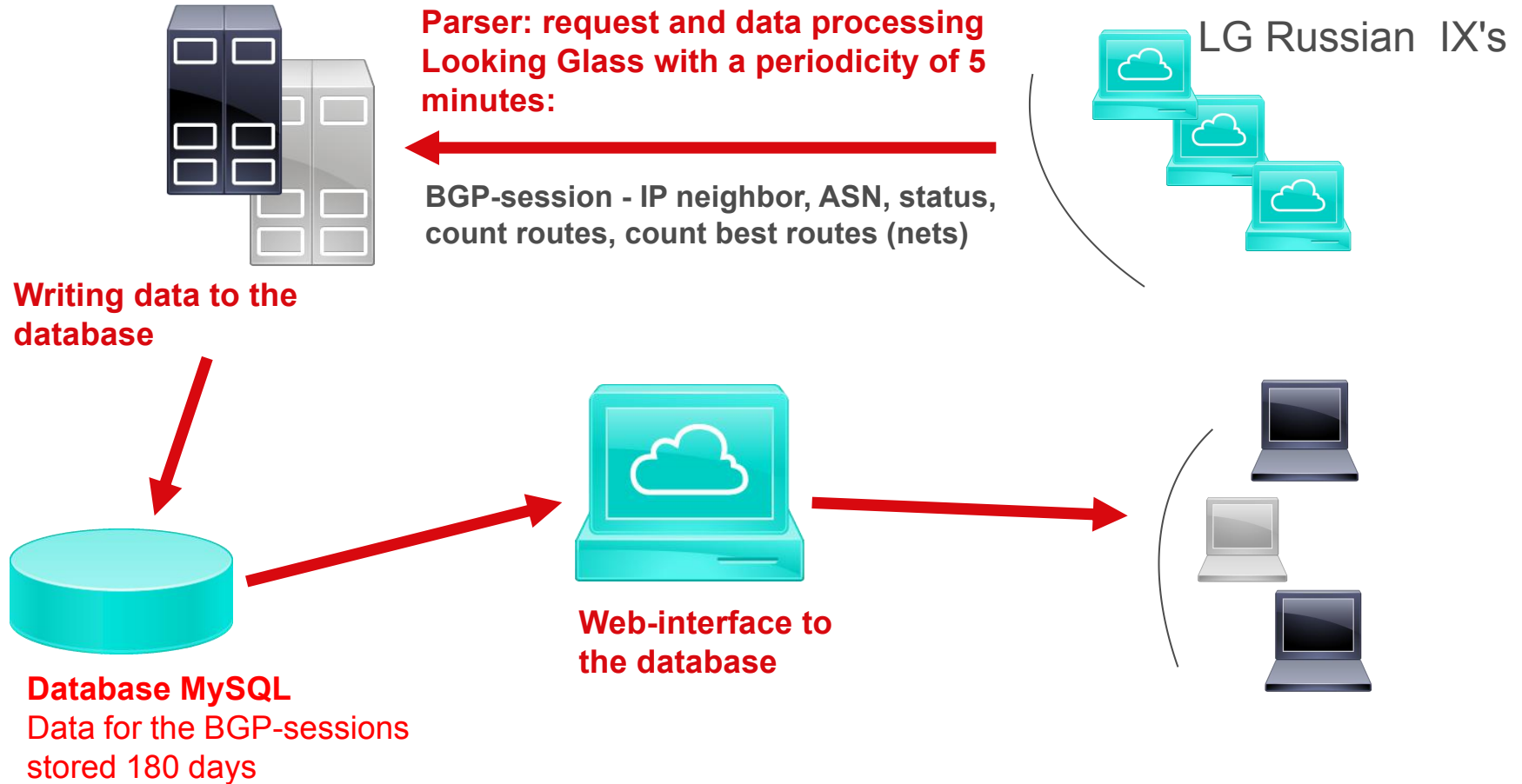
Public peering (peering VLAN)

Defined protocol BGP: neighbors and their AS, unique routes, AS-PATH and other parameters.

direct BGP-session - LG various participants, traceroute and etc. - to track is difficult and time-consuming;

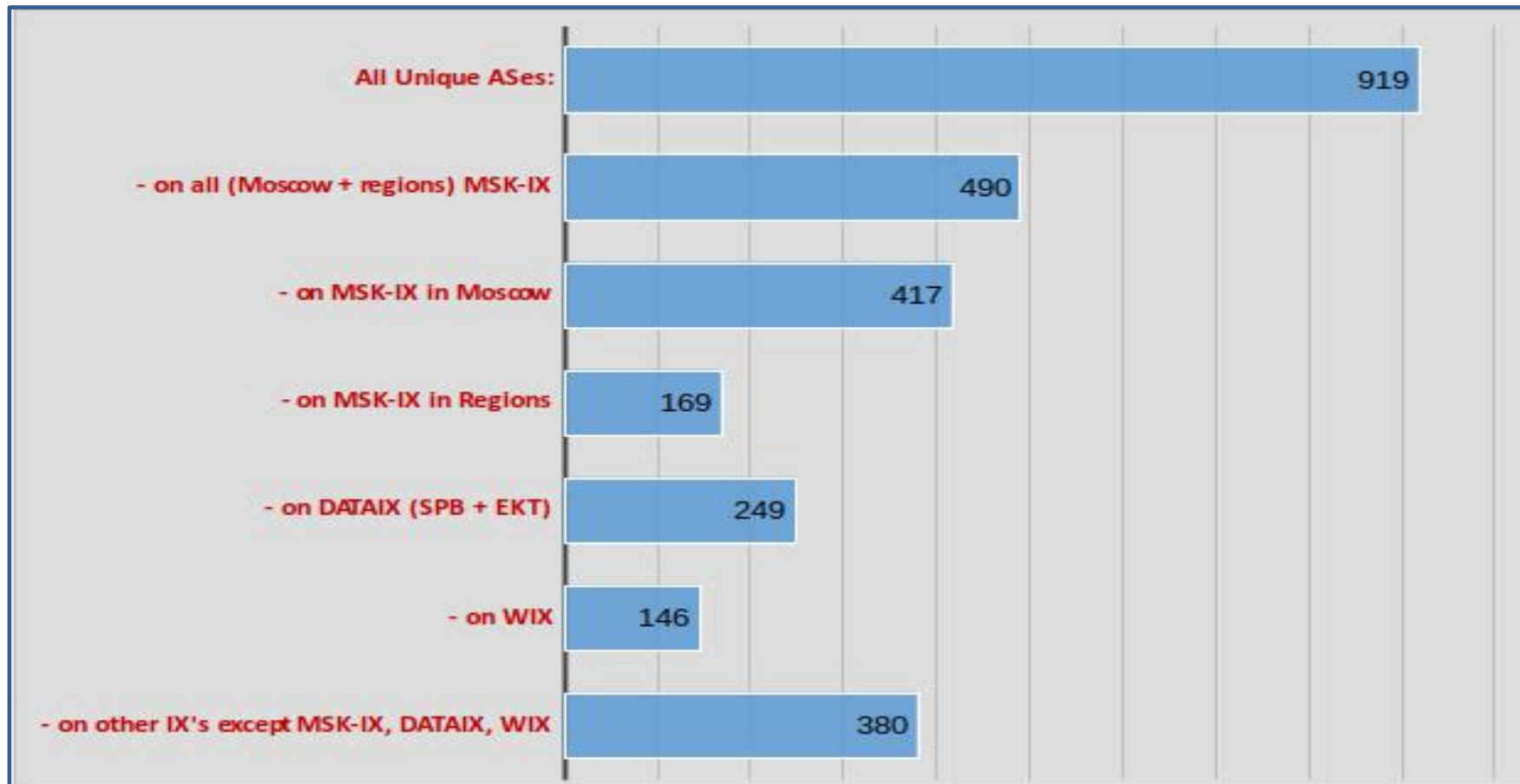
route server (RS) - Looking Glass is practically on each IX with "open" and "neutral" policy.

<http://ru.map-ix.net> - Russia Map IX's



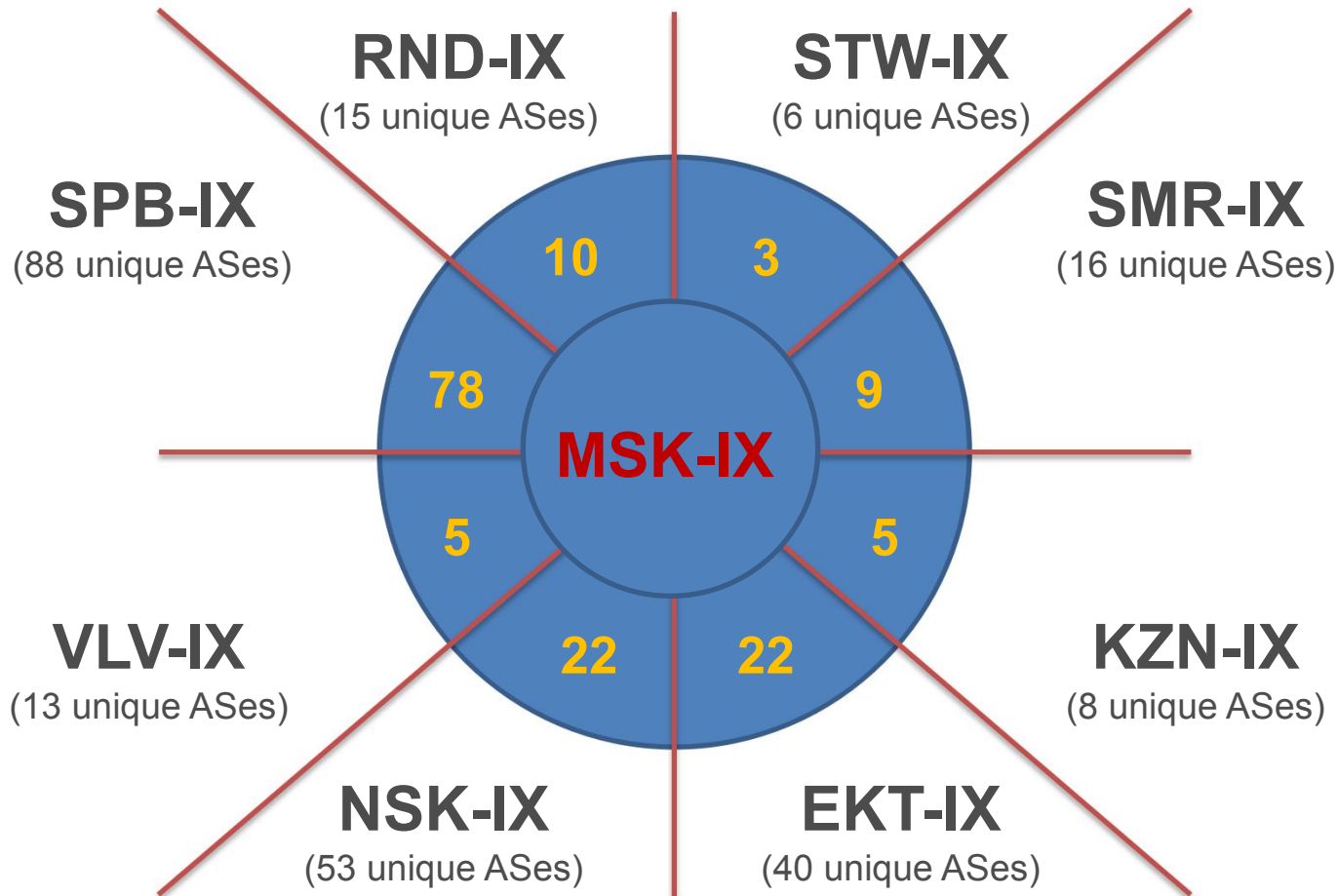
The service accept the data with 27 route-servers (Looking Glass) different Russian IXP's (as of October 2, 2017).

Russian IXP's: unique AS participants



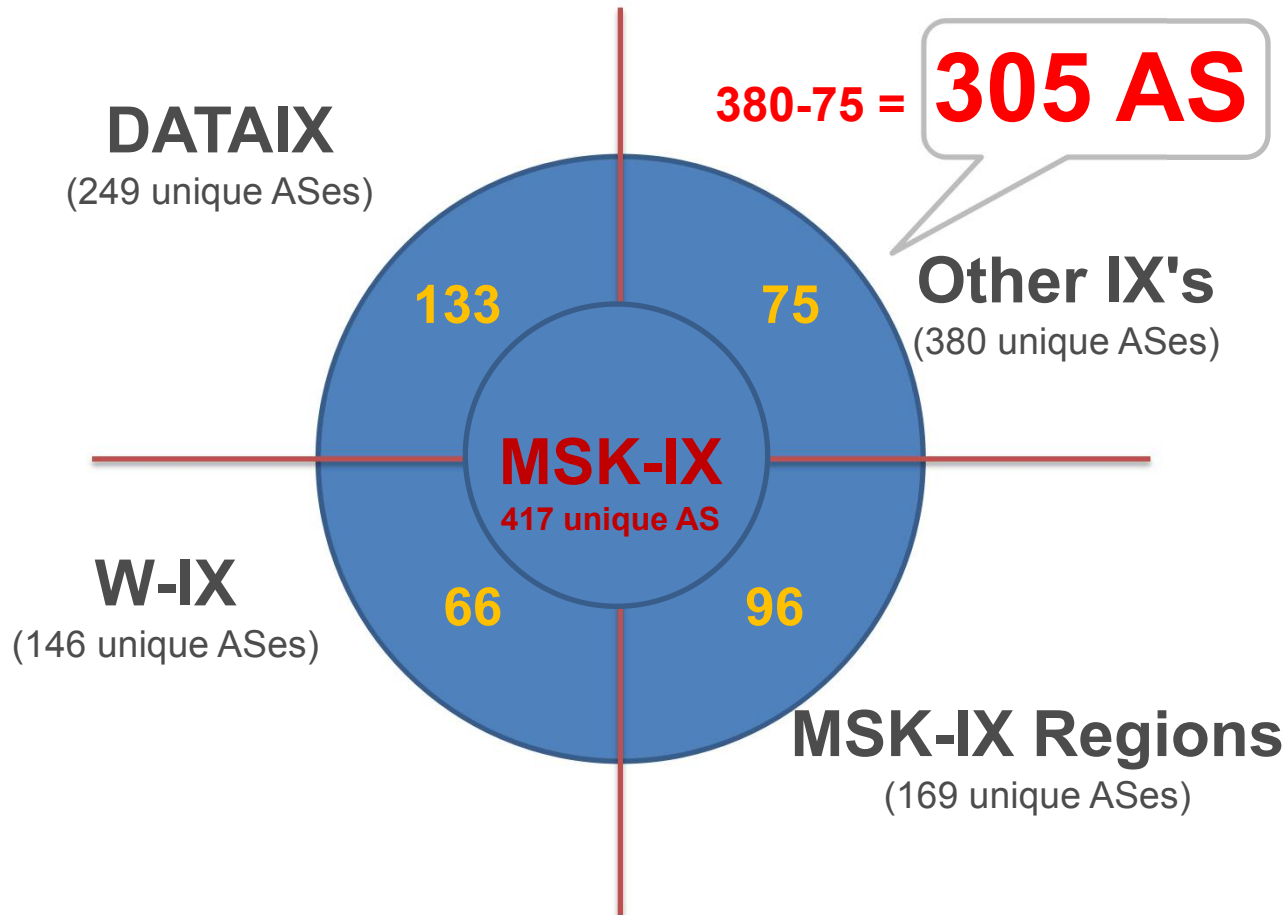
Accounting for unique AS - registered status of up (Established) by any of the BGP sessions of AS for the last month (as of October 2, 2017)

MSK-IX (Moscow) vs MSK-IX Regions: Identical AS participants



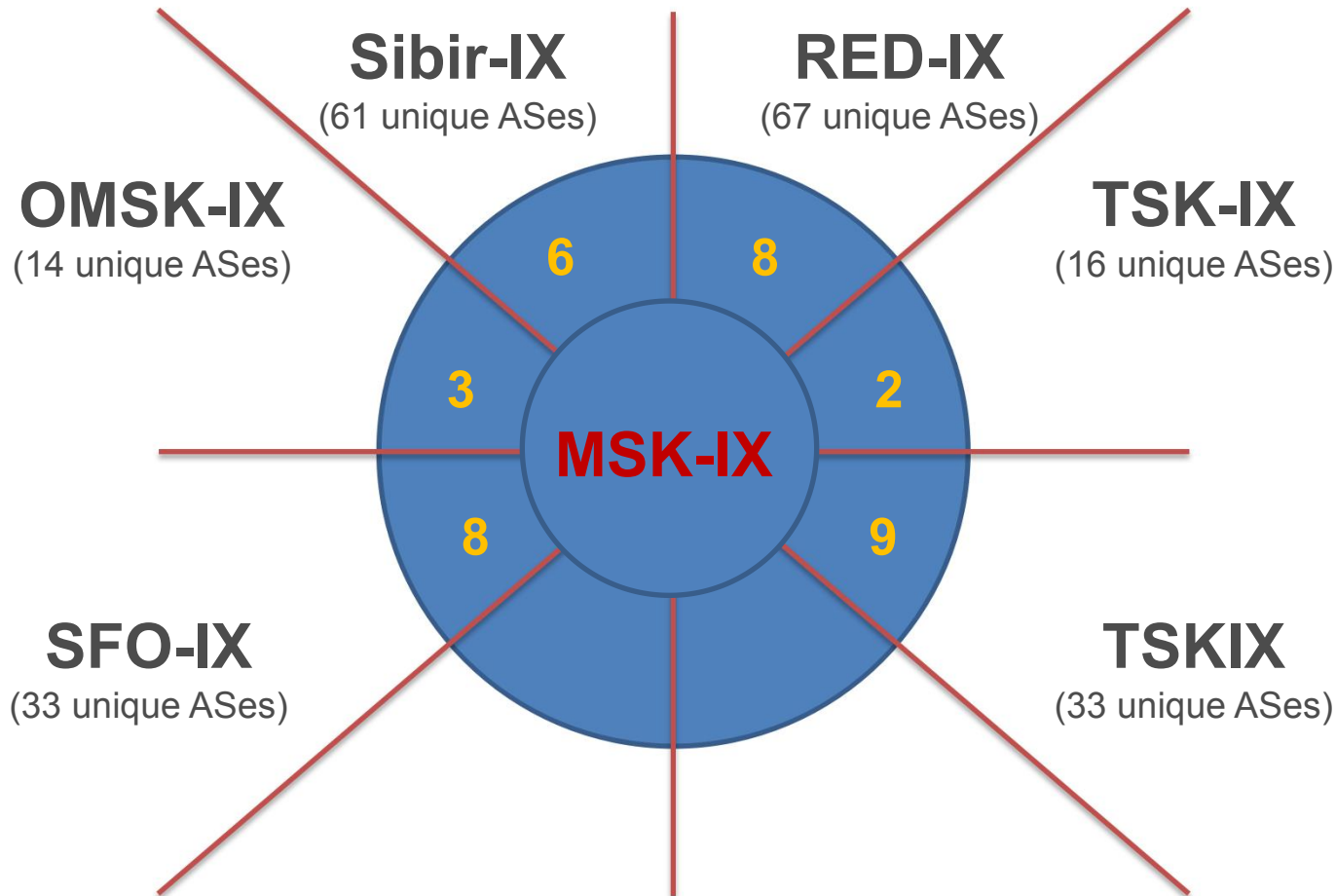
Accounting for unique AS - BGP peer with this AS had been seen in "established" state last month (as of October 2, 2017)

MSK-IX (Moscow) vs other IX's: Identical AS participants



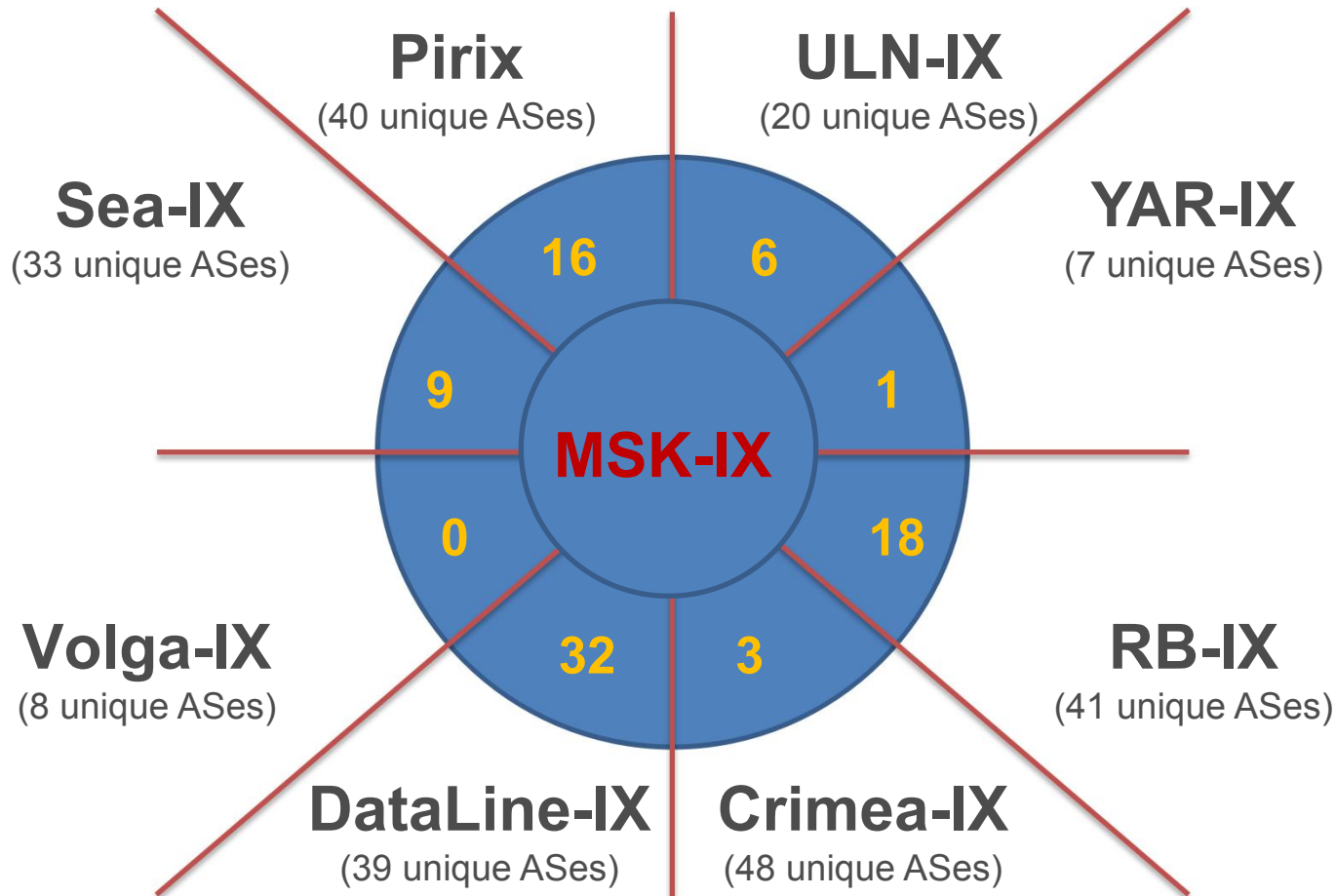
Accounting for unique AS - BGP peer with this AS had been seen in "established" state last month (as of October 2, 2017)

MSK-IX (Moscow) vs Asia IX's Russia: Identical AS participants



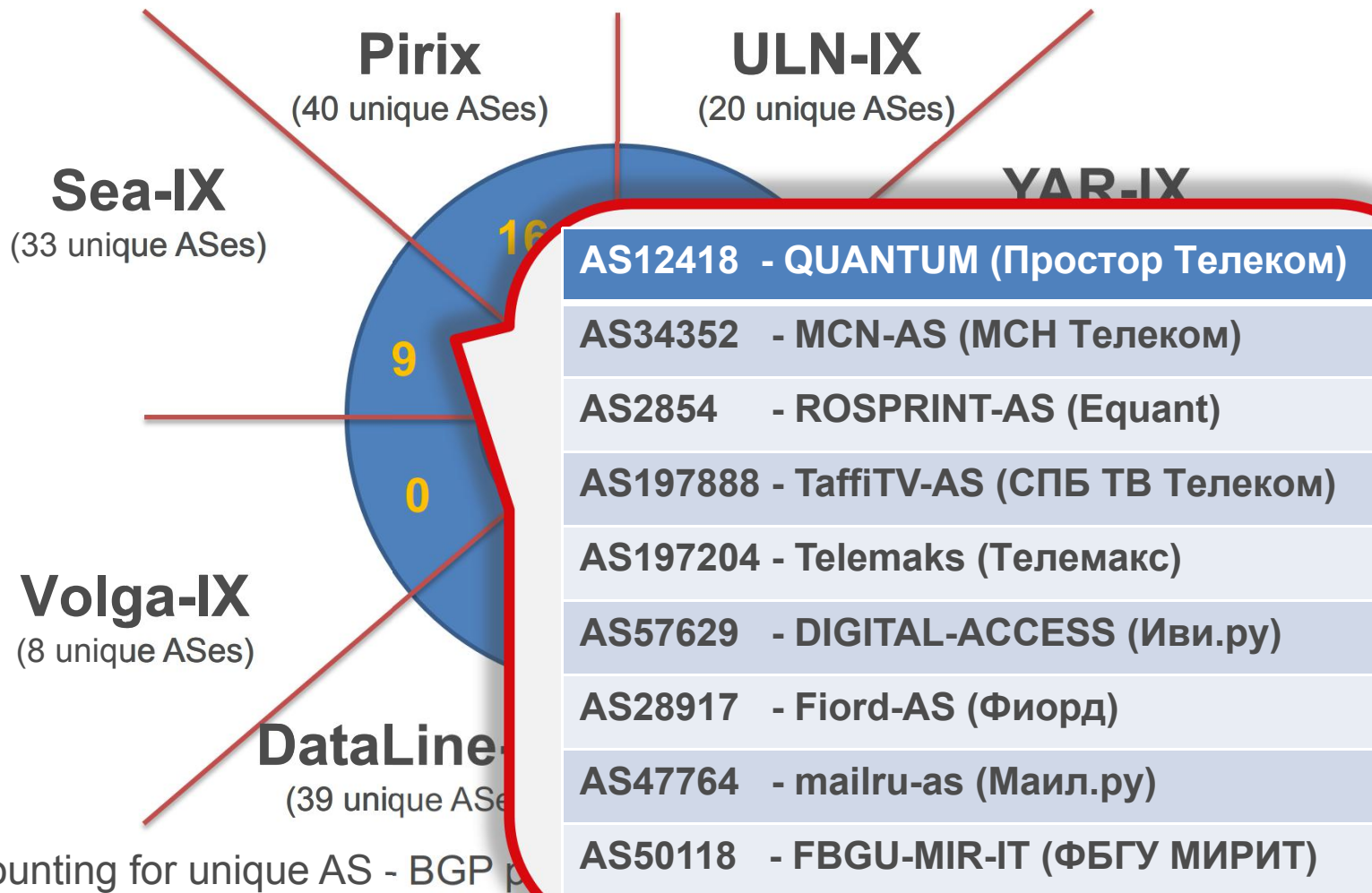
Accounting for unique AS - BGP peer with this AS had been seen in "established" state last month (as of October 2, 2017)

MSK-IX (Moscow) vs Europe IX's Russia: Identical AS participants



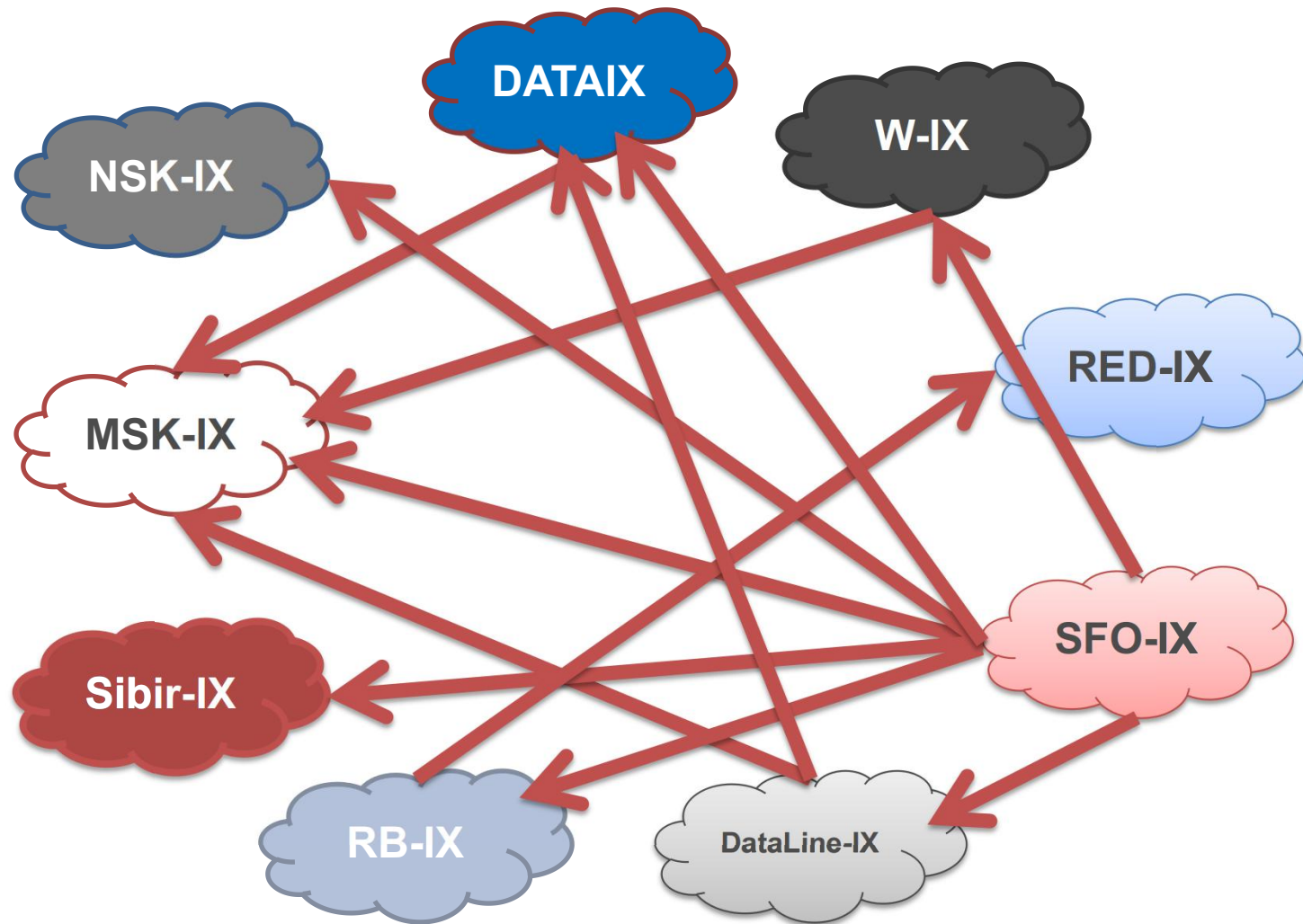
Accounting for unique AS - BGP peer with this AS had been seen in "established" state last month (as of October 2, 2017)

MSK-IX (Moscow) vs Europe IX's Russia: Identical AS participants



Accounting for unique AS - BGP p
state last month (as of October 2, 20

Announcements routes between of Russian IXP's



As of July 17, 2017 - [Current status](#)

Content and the CDN-network on the Russian IXP's

№	Name	AS	Route Servers IX"s
1	ivi.ru	57629	19
2	Yandex	13238	15
3	Google (without GGC on private AS)	15169, 36040, 11344	11
4	NGENIX (CCT-AS)	34879	10
5	Vk.com	47541, 47542, 28709	10
6	MegaFon + CDN	31133	8
7	SPB TV (TaffiTV-AS)	197888	7
8	Mail.ru	47764	7
9	CDNNOW	21030	7
10	Comfortel CMFT-CDN)	203139	5
11	GCORE (Wargame) + SKYPARK CDN	199524, 62026	5
12	Rambler	24638	5
13	CDNVideo	57363	5
14	Rutube (M-TECH-AS)	48061	5
15	Beget	198610	5

As of October 2, 2017

SELECTEL, AS49505

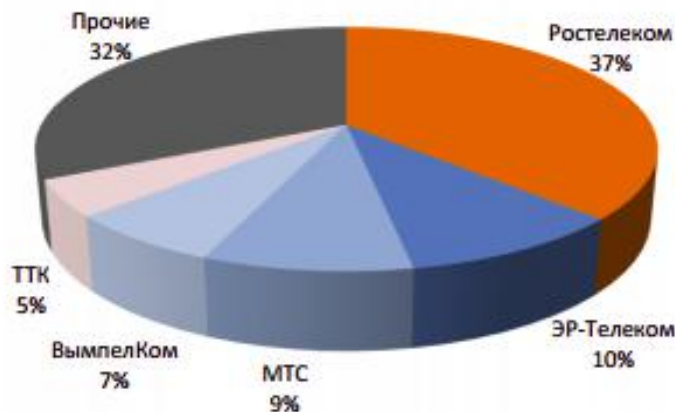
- ▶ Аплинки - ТТК, Rascom, RETN
- ▶ Пиринги - MSKIX, DATA-IX, Cloud-IX, DE-CIX, LINX etc

+ Pirix and DataLine-IX

[illegible]

Big providers not peering on regional Russian IXP's

Структура абонбазы по операторам (Россия)



ТОП-5 российских операторов ШПД, 2016

	Оператор	2016	2015	Рост, %
1	Ростелеком	11 674	10 914	7%
2	ЭР-Телеком	3 110	2 805	11%
3	МТС	2 835	2 630	8%
4	ВымпелКом*	2 190	2 200	0%
5	ТТК	1 500	1 438	4%

*с учетом абонентов FMC

По данным TMT Консалтинг

Ростелеком (Rostelecom)

	AS12389 AS-ROSTELECOM	AS44237 CTC-CORE-AS	AS8997 ASN-SPBNIT
MSK-IX	+	+	+
SPB-IX			+
SMR-IX	+		
NSK-IX	+		
ULN-IX	+		
SIBIR-IX	+		
RED-IX	+		
TSK-IX	+		

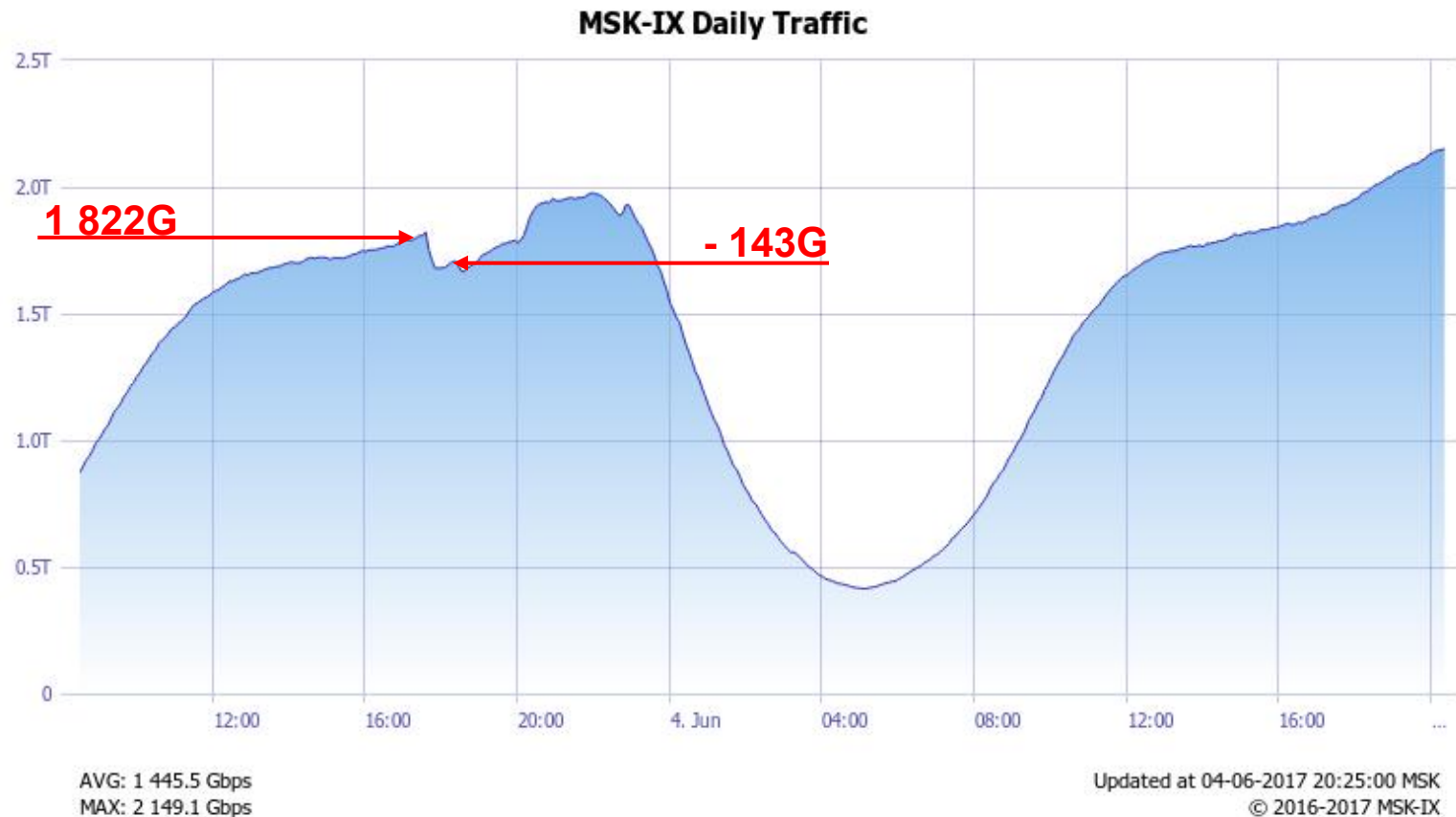
ЭР-Телеком (ER-Telecom)

AS9049 (ERTH-TRANSIT-AS):
MSK-IX, SPB-IX, RND-IX, SMR-IX,
EKT-IX, NSK-IX. Pirix, ULN-IX,
OMSK-IX, SIBIR-IX, W-IX, YAR-IX,
RED-IX, DATAIX, TSK-IX

15 Russian IXP's!!!

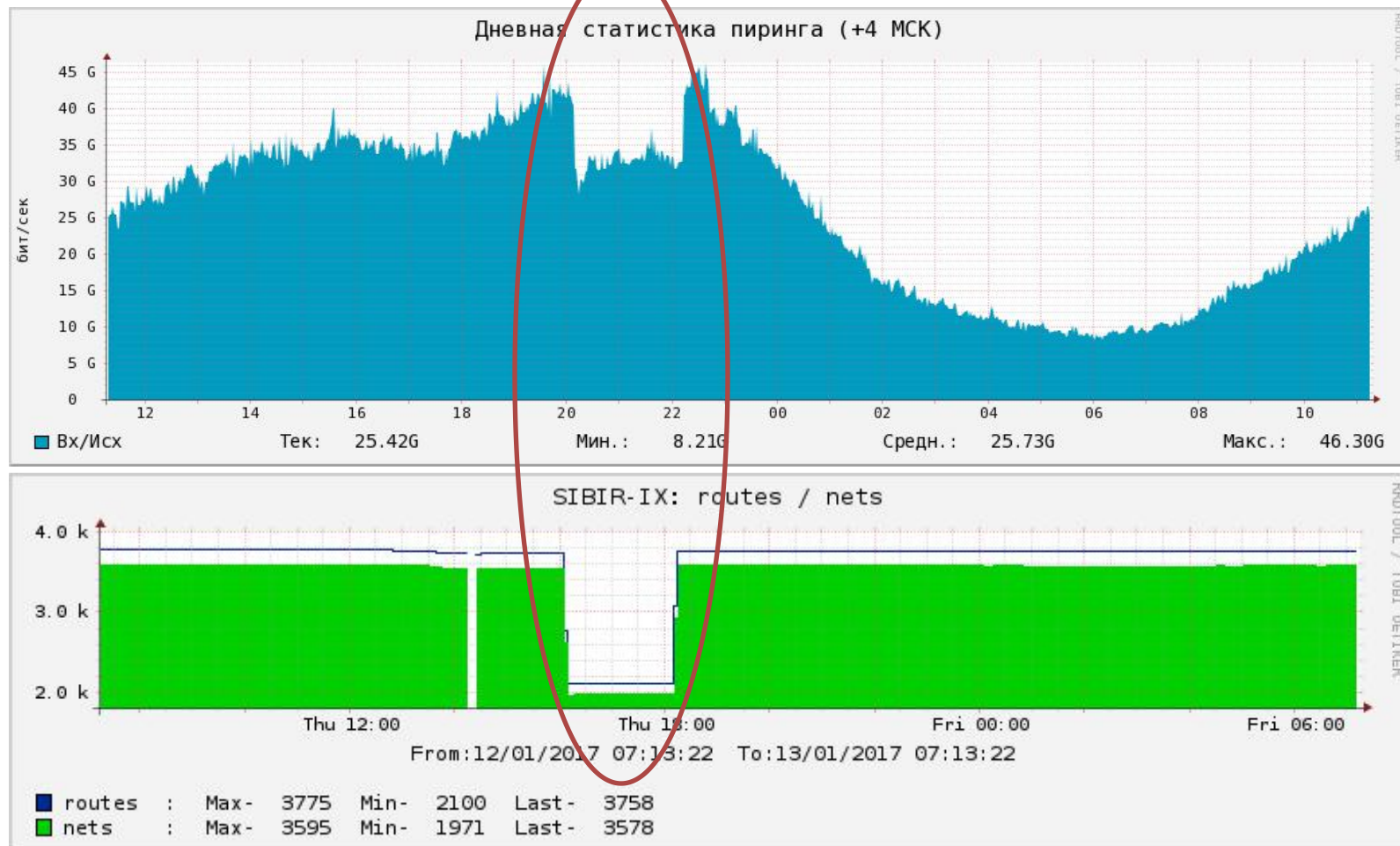
As of October 2, 2017

Rostelecom vs MSK-IX, June 3, 2017



Name BGP session	AS num	AS name	IP neighbor
03-06-2017 17:30-17:35 Down BGP-session:			
<i>cntrtel</i>	44237	CTC-CORE-AS	195.208.209.6
<i>cntrtel_2</i>	44237	CTC-CORE-AS	195.208.209.67
<i>rt_3</i>	12389	ROSTELECOM-AS	195.208.209.14
<i>sunet</i>	20655	e-Style/SP-AS	195.208.208.215

ER-Telecom vs Sibir-IX, January 12, 2017



Name BGP session	AS num	AS name	IP neighbor
12-01-2017 16:10-16:15 Down			
ERTELECOM	9049	ERTH-TRANSIT-AS	91.230.210.52

ER-Telecom vs Sibir-IX, January 12, 2017

The choice of Exchange Points and view options	The time offset
Go <input type="text" value="sibir-ix"/> show <input type="text" value="CHANGES IN THE NEIGHBORS"/>	<input type="button" value="<= Back in 20 minutes"/>
From <input type="text" value="2017-01-12"/> <input type="text" value="16:25"/> to -30 minutes	<input type="button" value="Forward in 20 minutes =>"/>
<input type="button" value="Submit"/>	

Exchange Point detailed view: sibir-ix

Long Name		Website	
City		Looking Glass	
Traffic Statistics			

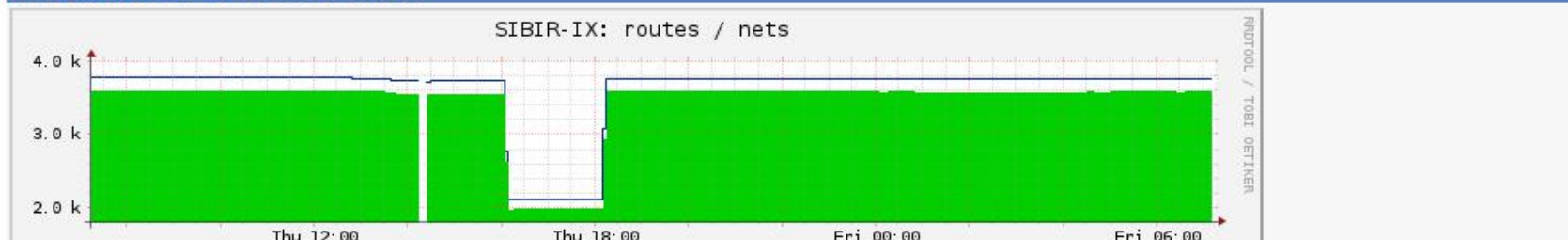
List of neighbors at sibir-ix (CHANGES IN THE NEIGHBORS): routes (↓ ↑ Δ) / nets

	15:55-16:00	16:00-16:05	16:05-16:10	16:10-16:15	16:15-16:20	16:20-16:25
91.230.210.13, MILECOM, AS13094 SFO-IX-AS	1435 / 1372	1435 / 1372	1436(↑1) / 1373	1436 / 1377	1467(↑31) / 1408	1467 / 1408
91.230.210.43, ISKRA, AS29071 RU-ISKRANET-AS	23 / 22	23 / 22	23 / 22	24(↑1) / 23	24 / 23	23(↓1) / 22
91.230.210.52, ERTELECOM, AS9049 ERTH-TRANSIT-AS	1646 / 1599	1646 / 1599	1646 / 1599	Err	Err	Err

The choice of period for RRD graphics

Show graphics per

RRD graph: sibir-ix - ROUTES / NETS



Providers on the Russian IXP's

№	Name	AS	Route Servers IX"s
1	ER-Telekom (ERTH-TRANSIT-AS)	9049	15
2	Equant (ROSPRINT-AS)	2854	12
3	Rostelecom	12389, 44237, 8997	8
4	NetByNet (TI-AS)	12714	8
5	Russian company (RUSCOMP-AS), Tyumen	15493	7
6	OBIT (OBIT-AS)	8492	6
7	Prostor Telecom (QUANTUM)	12418	6
8	Novotelecom (NTK), Novosibirsk	31200	6
9	Nizhnetagilskie Kompyuternye Seti (NTKS-AS), Nizhny Tagil	49218	6
10	MTT (MTT-AS)	49476	6
11	TK-Telecom, Samara	60764	6
12	Intersvyaz (INTERSVYAZ-AS), Chelyabinsk	8369	5
13	Motiv (YCC-AS), Ekaterinburg	31499	5
14	Norilsk Telecom, Norilsk	33871	5
15	P.A.K.T (PAKT-AS)	39087	5

As of October 2, 2017

You can still talk a lot, ...but time!

Thank you:

KUBAN-TELECOM - AS48479 (<http://www.kubtel.ru>) -
Equipment for server hardware



Datacenter Komsomolskaya 40 (Orbita) -
Hosted equipment

Fiord - AS28917 (<http://fiord.net>) -
Internet access



Questions?

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