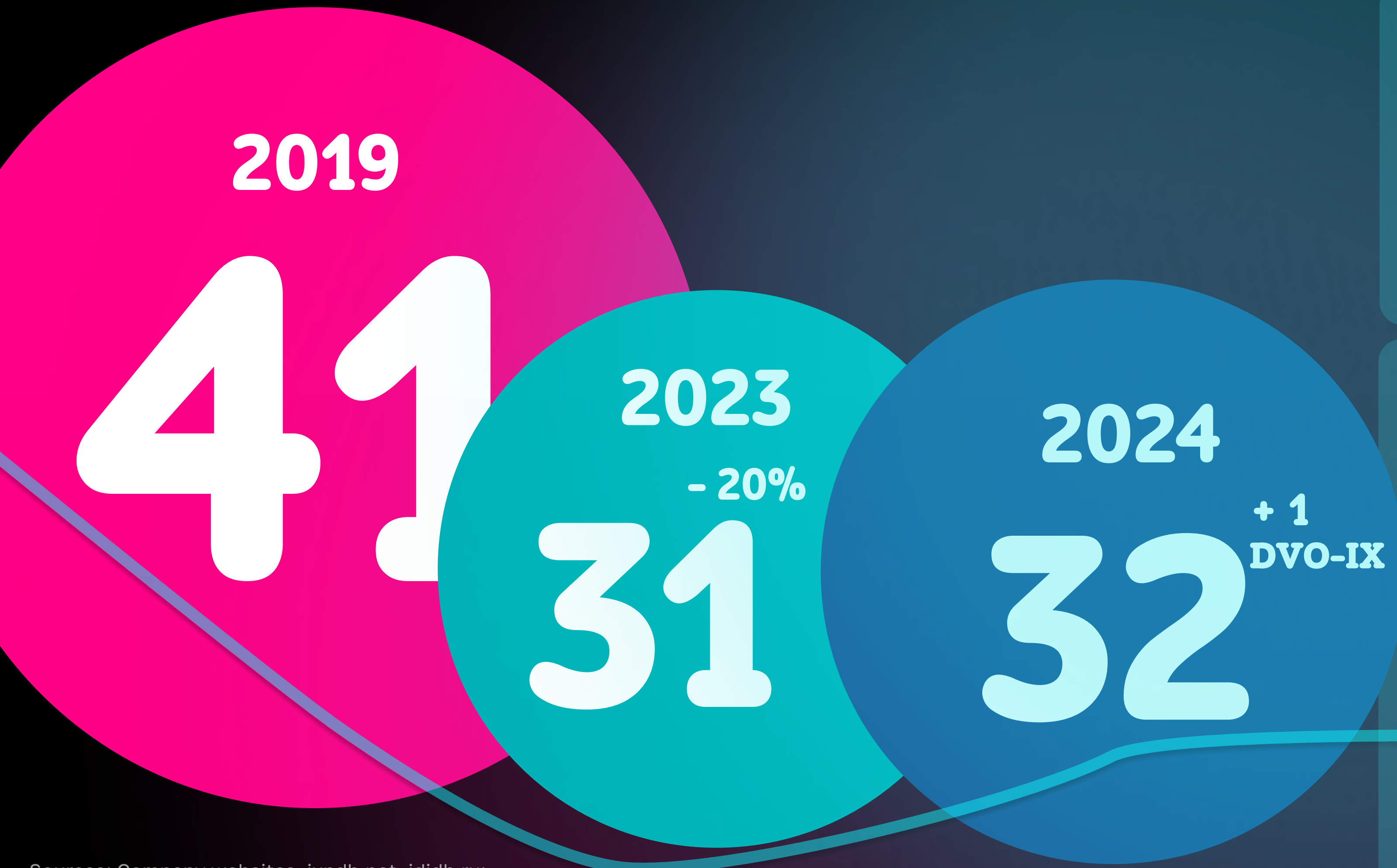




**New IXP as an option
to improve regional connectivity.
DVO-IX born story.**

Roman Zelinsky, IHome

IXPs of the Russian Federation



Allocated IXP	Rank	IXP Name	Location
	1	Data-IX	St Petersburg
	2	Piter-IX	St Petersburg
	3	W-IX (Home IX)	Moscow
	4	Cloud-IX	Moscow

Region IXP	Rank	IXP Name	Location
	5	Eurasia-Peering IX	Moscow
	6	SFO-IX	Barnaul
	7	Sea-IX	Krasnodar
	8	SIBIR-IX	Krasnoyarsk
	9	M-IX	Simferopol
	10	RED-IX (KRS-IX)	Krasnoyarsk
	11	BAIKAL-IX	Irkutsk
	12	RB-IX	Yekaterinburg
	13	Crimea-IX	Simferopol
	14	DVO-IX	Vladivostok/Khabarovsk

Local IXP	Rank	IXP Name	Location
	15	MSK-IX	Moscow
	16	SPB-IX	St Petersburg
	17	EKT-IX	Yekaterinburg
	18	NSK-IX	Novosibirsk
	19	TSK-IX	Tomsk
	20	RND-IX	Rostov-on-Don
	21	TSKIX – Томский	Tomsk
	22	PIRIX	St Petersburg
	23	SMR-IX	Samara
	24	ULN-IX	Ulyanovsk
	25	VLV-IX	Vladivostok
	26	IX-NNOV	Nizhny Novgorod
	27	Omsk-IX	Omsk
	28	PERM-IX	Perm
	29	VOLGA-IX	Yaroslavl
	30	KZN-IX	Kazan
	31	YAR-IX	Yaroslavl
	32	STW-IX	Stavropol

Sources: Company websites, ixpdb.net, ididb.ru; data for 2017 – article by D. Samsonov for nag.ru

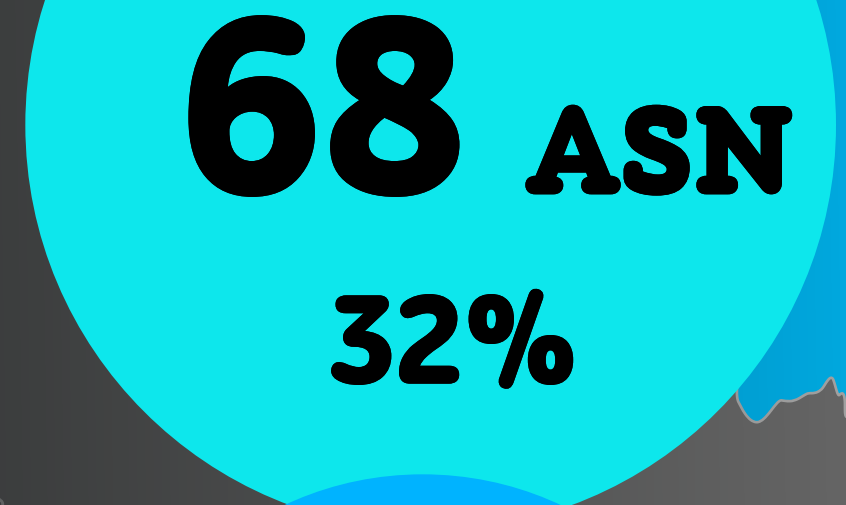
Which region has the least?



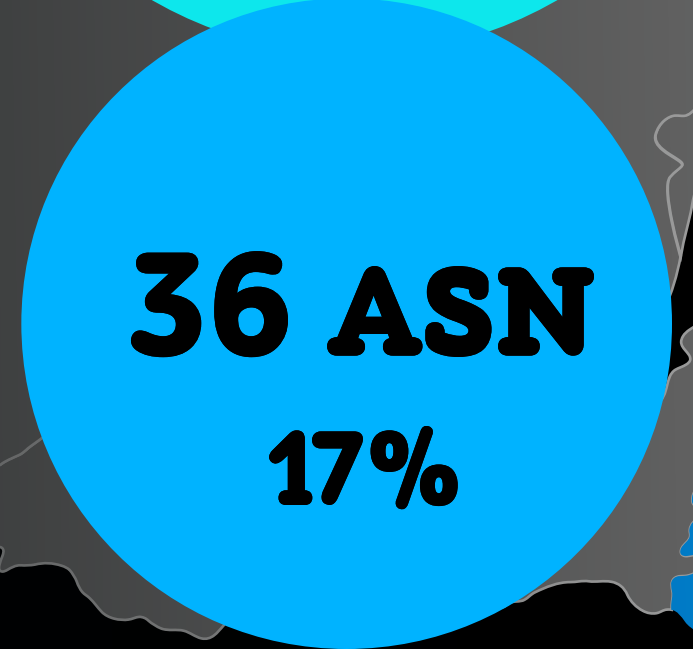
Chukotka



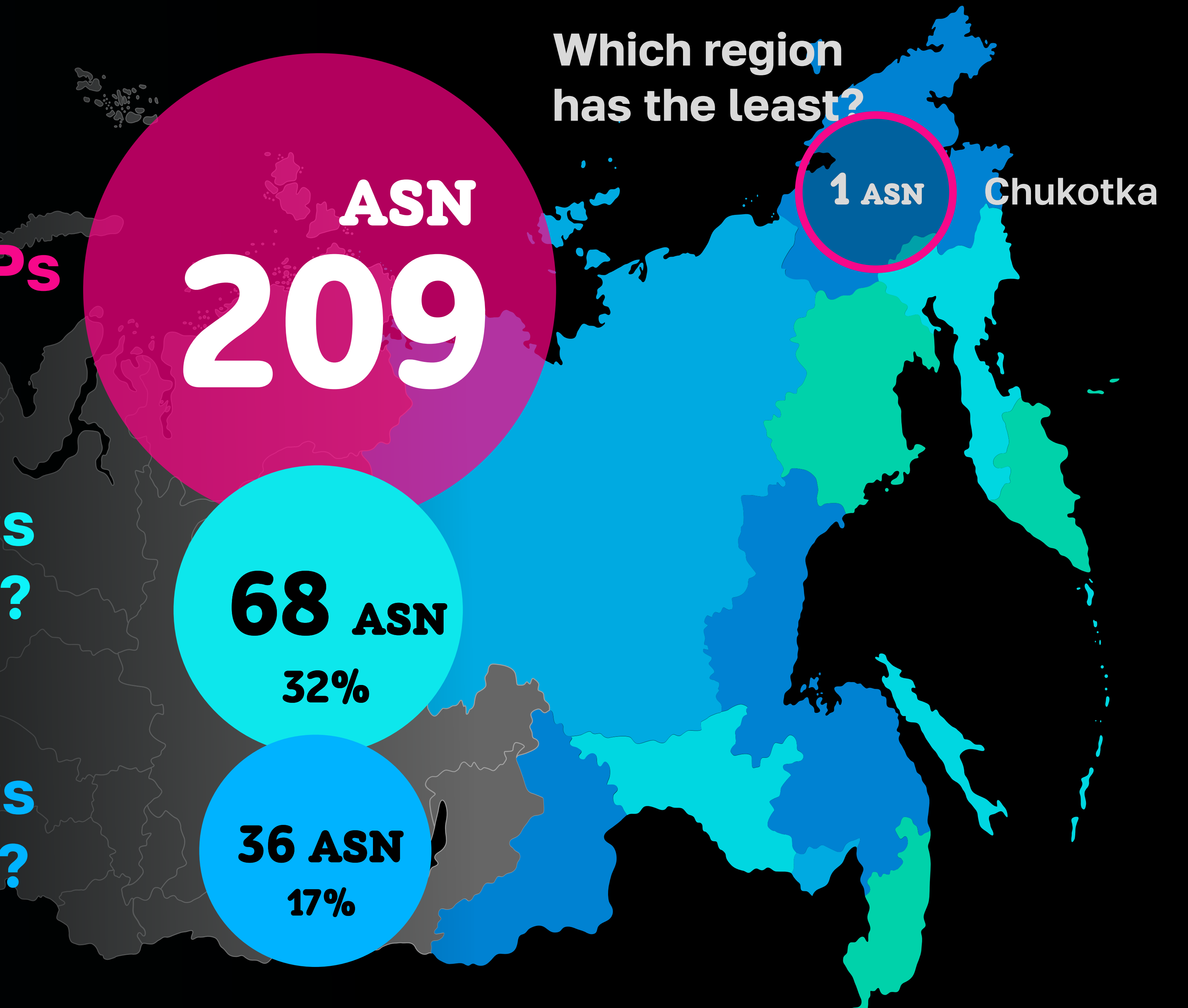
How many ISPs in Far East?



How many ISPs in Vladivostok?



How many ISPs in Khabarovsk?



Why another exchange point?

Russia

5 855 ASN

31 IXP ~0.5%

Far East

209 ASN

~ 4%

Primorsky Krai

68 ASN

~ 32%

Khabarovsk Krai

36 ASN

~ 17%

Sakhalin

26 ASN

~ 13%

The Far East is the most distance and isolated region that has strong potential to develop

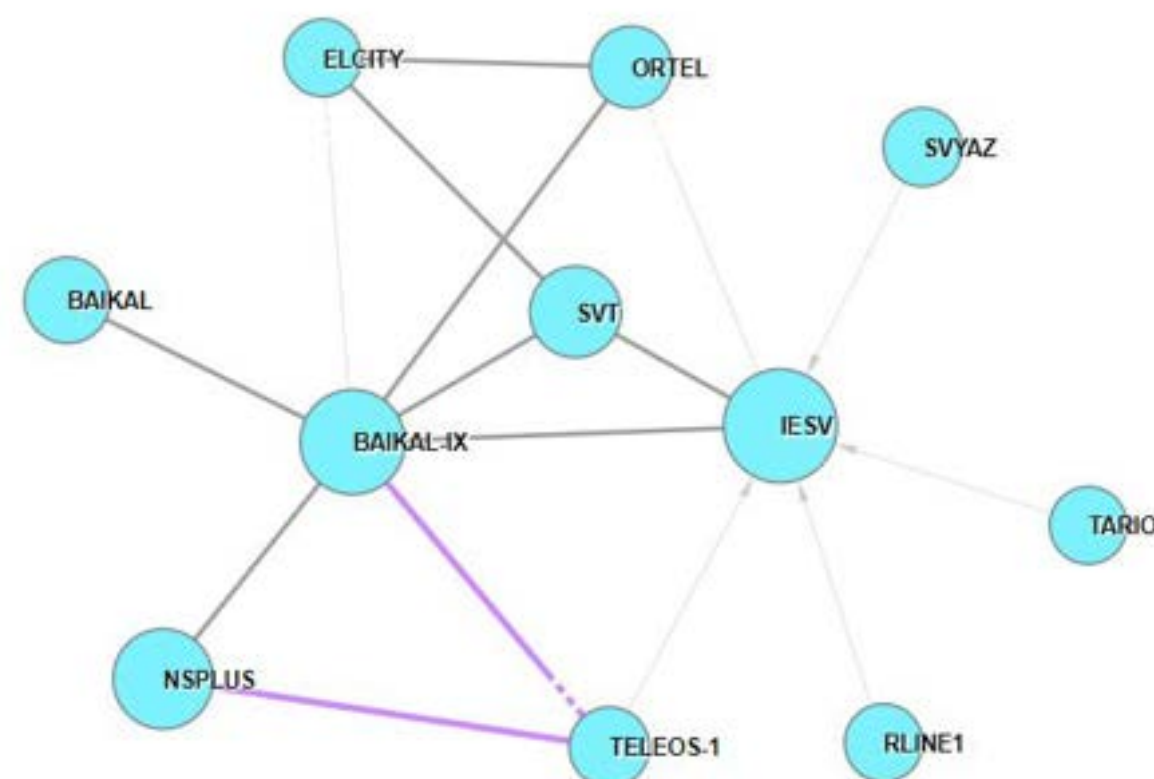
209 AS in the Far Eastern District

Active development of data center infrastructure

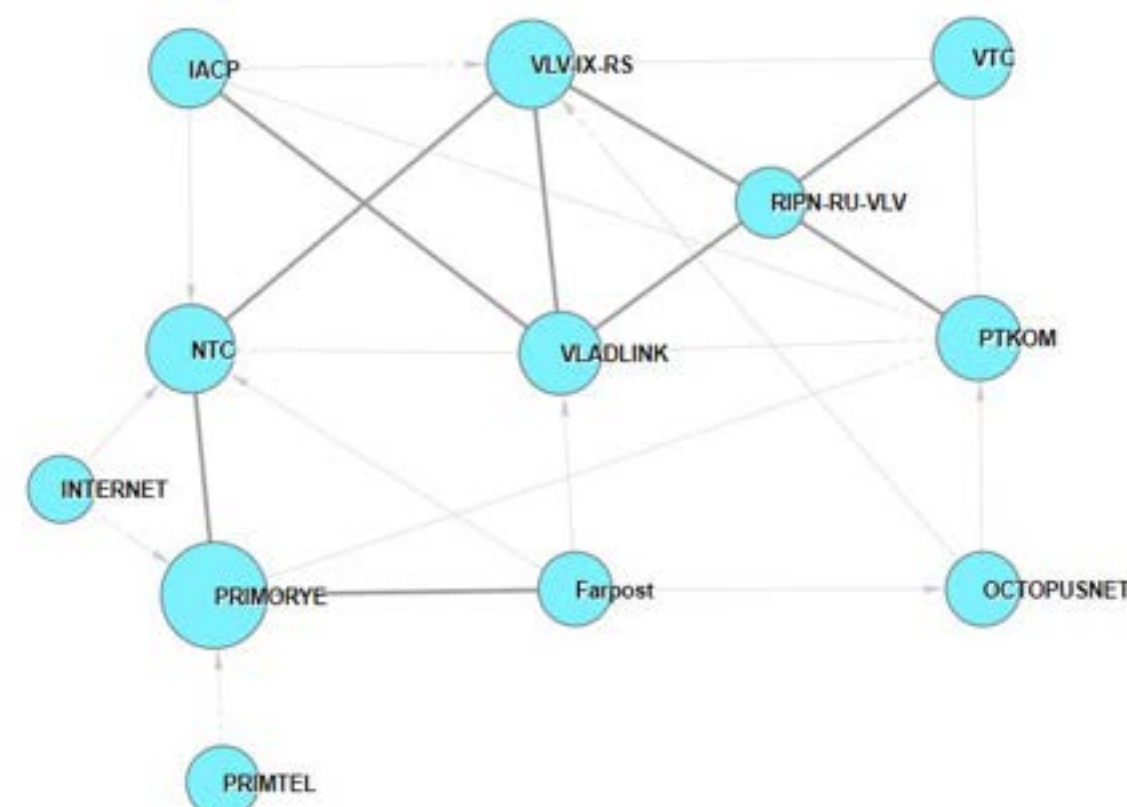


Primorsky Krai. Connectivity

Irkutsk - 60 ASN



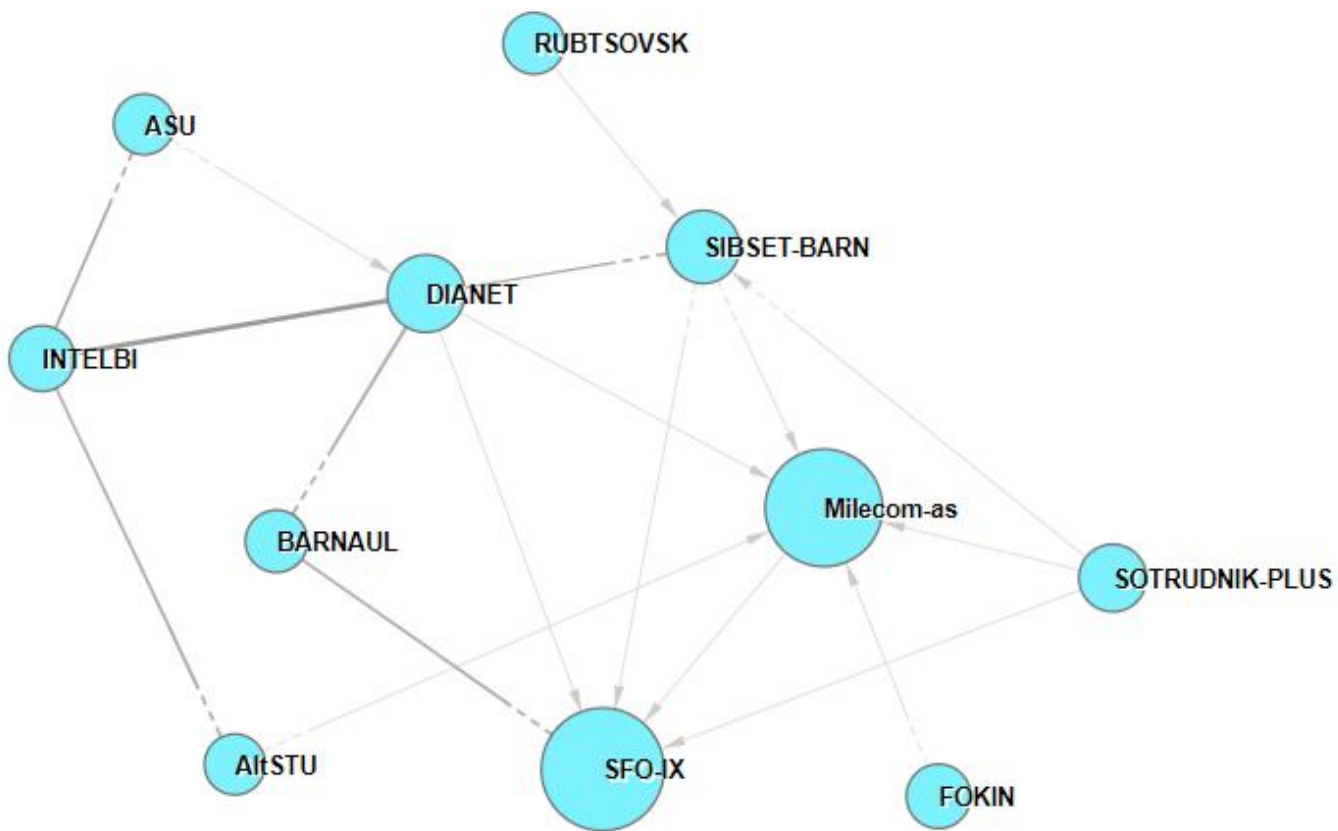
Vladivostok - 68 ASN



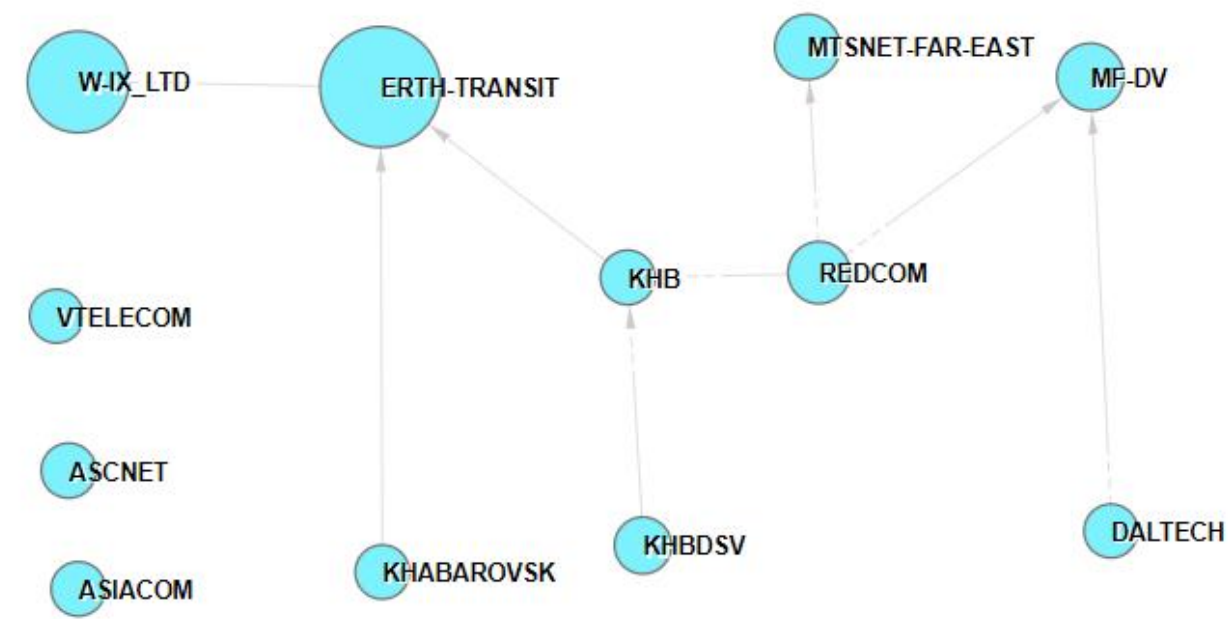
MACROSCOPIC
RESEARCH OF
INTERNET
INFRASTRUCTURE

Khabarovsk Krai. Connectivity

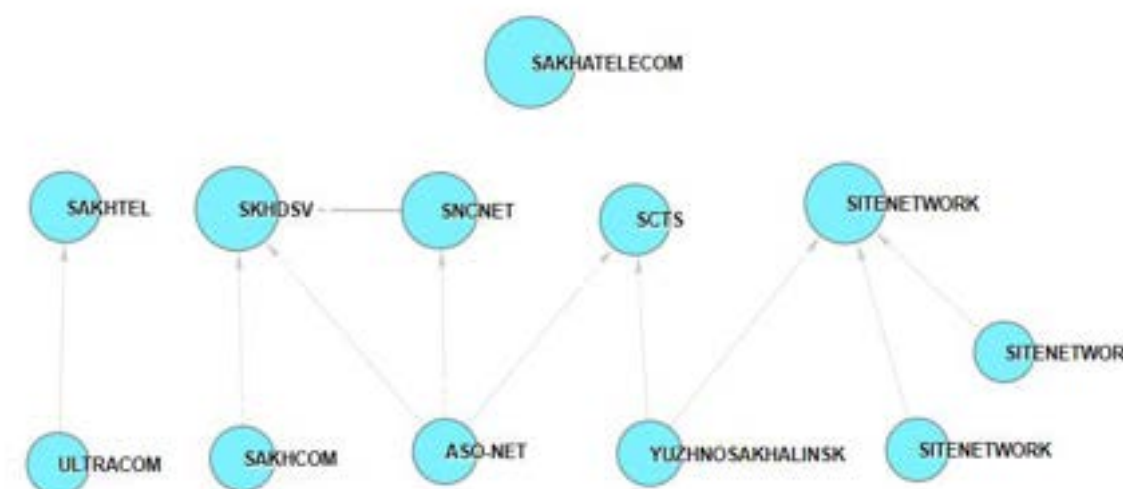
Barnaul - 33 ASN



Khabarovsk - 36 ASN



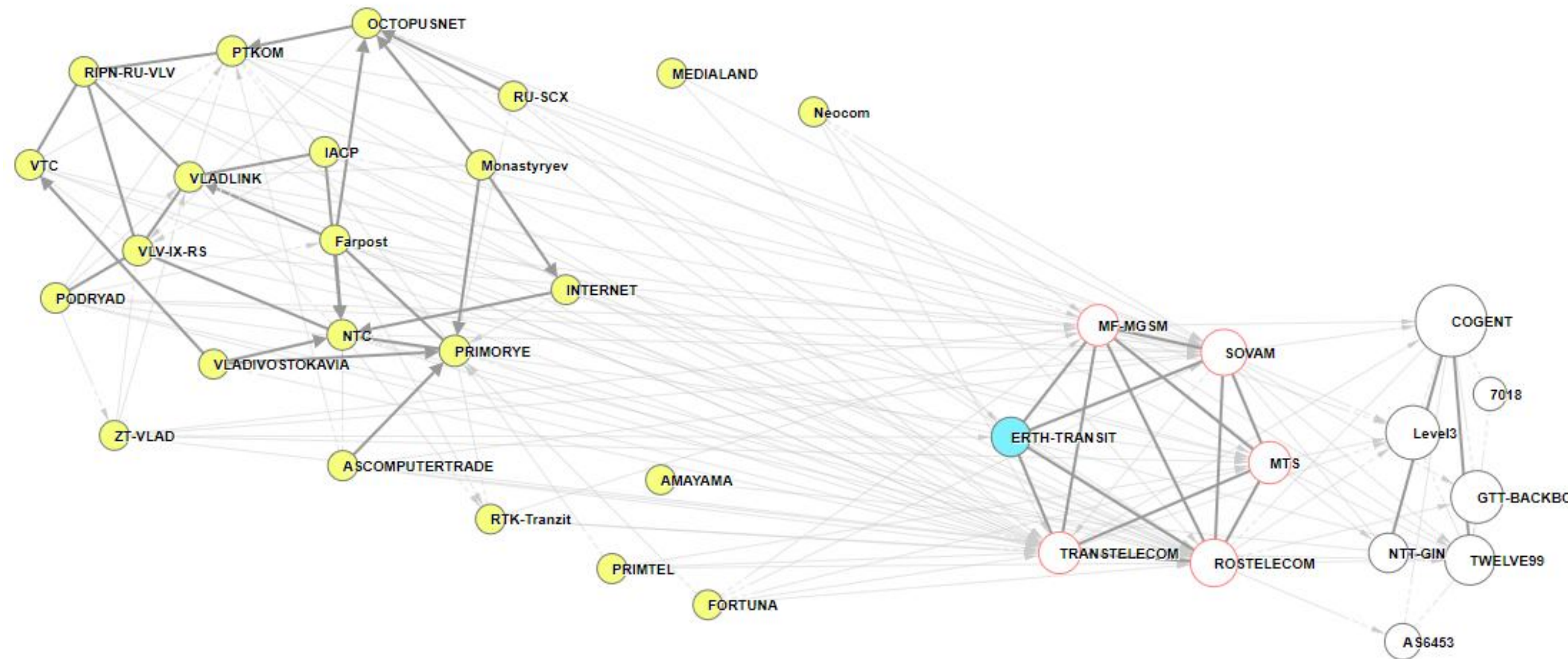
Sakhalin - 26 ASN



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RESEARCH OF
INTERNET
INFRASTRUCTURE

Far East. A look from the rest Internet

IS connectivity graph based on RIPE data

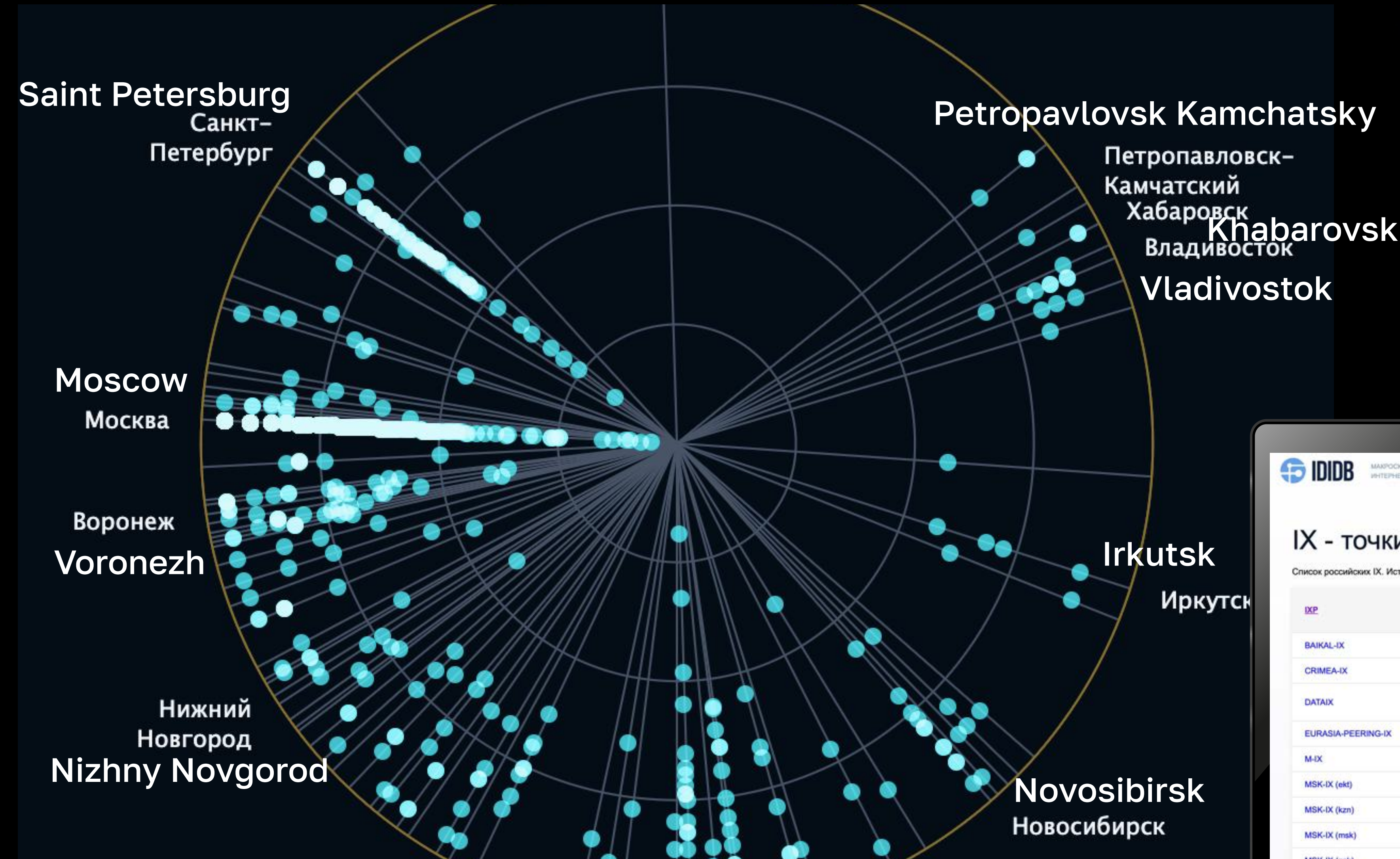


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INTERNET
INFRASTRUCTURE

Why another exchange point?



MACROSCOPIC
RESEARCH OF INTERNET
INFRASTRUCTURE



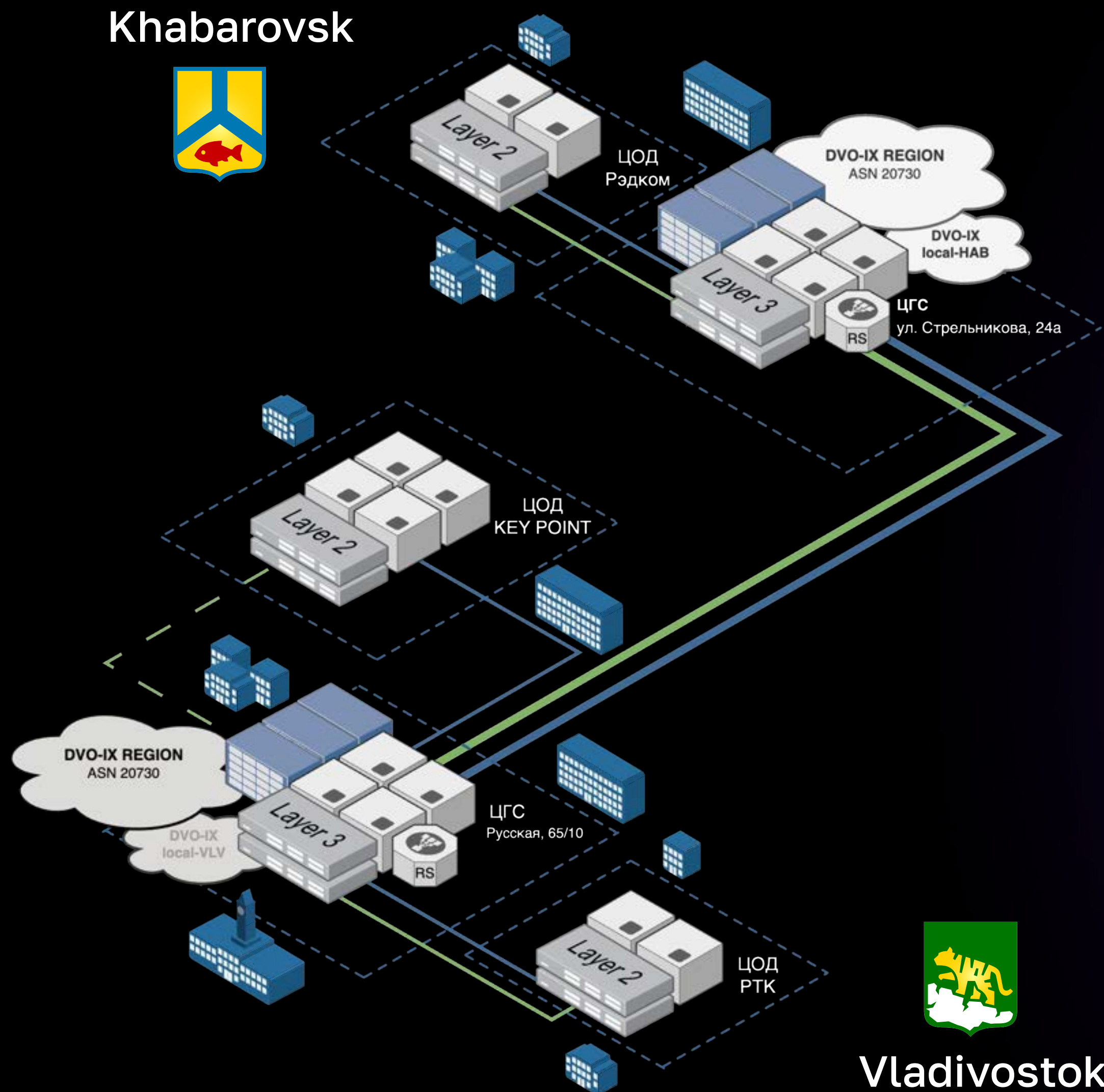
IX - точки обмена трафиком

Список российских IX. Источники данных - базы данных RIR.

IXP	Владелец	Регион присутствия	IXP aut-num	IXP as-set	Кон-во members в as-set
BAIKAL-IX	ZERO KILOMETER	38 Иркутск	AS48586	AS-BAIKAL-IX-PEERS	30
CRIMEA-IX	CRIMEACOM	91 Крым	AS43222	AS-CRIMEA-IX	82
DATAIX	GLOBALNET	77 Москва 78 С.-Петербург	AS50952	AS-DATAIX	594
EURASIA-PEERING-IX	IXcellerate	77 Москва	AS56931	AS-EURASIAPEERING_RS	178
M-IX	CRELCOM	91 Крым	AS39751	AS-M-IX	75
MSK-IX (ekt)	MSK-IX	66 Екатеринбург	AS43213	AS-EKTROUTESERVER	53
MSK-IX (kzn)	MSK-IX	16 Татарстан	AS50706	AS-KZNROUTESERVER	8
MSK-IX (msk)	MSK-IX	77 Москва	AS8631	AS-MSKROUTESERVER	481
MSK-IX (nsk)	MSK-IX	54 Новосибирск	AS42403	AS-NSKROUTESERVER	75
MSK-IX (rnd)	MSK-IX	61 Ростов-на-Дону	AS48216	AS-RNDROUTESERVER	26

The polar radius corresponds to the number of BGP neighbors

DVO-IX: IXP implementation scheme



Allocated DVO-IX

- 2 geo-distributed route servers, united by trunk channels between Khabarovsk and Vladivostok
- Connection points in 6 cities

Local DVO-IX local

Vladivostok

- 1 route server
- 3 geo-distributed connection points

Khabarovsk

- 1 route server
- 2 geo-distributed connection points

CDN-hub

- CDN solution - server per region
- Consolidation of content provider hosting sites and computing power

DVO-IX within the PIPE-IX infrastructure

Services

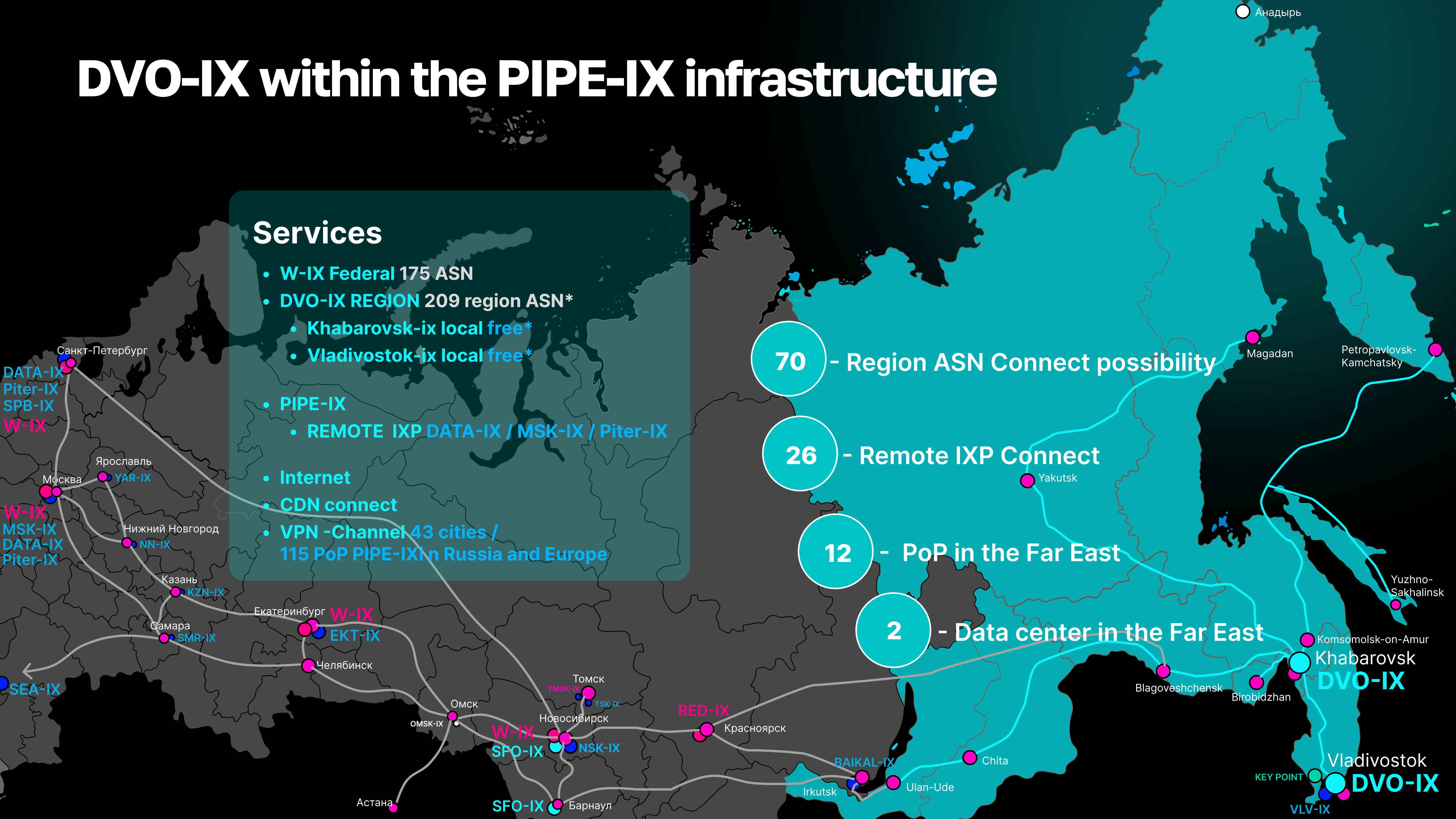
- W-IX Federal 175 ASN
- DVO-IX REGION 209 region ASN*
 - Khabarovsk-ix local free*
 - Vladivostok-ix local free*
- PIPE-IX
 - REMOTE IXP DATA-IX / MSK-IX / Piter-IX
- Internet
- CDN connect
- VPN -Channel 43 cities / 115 PoP PIPE-IX in Russia and Europe

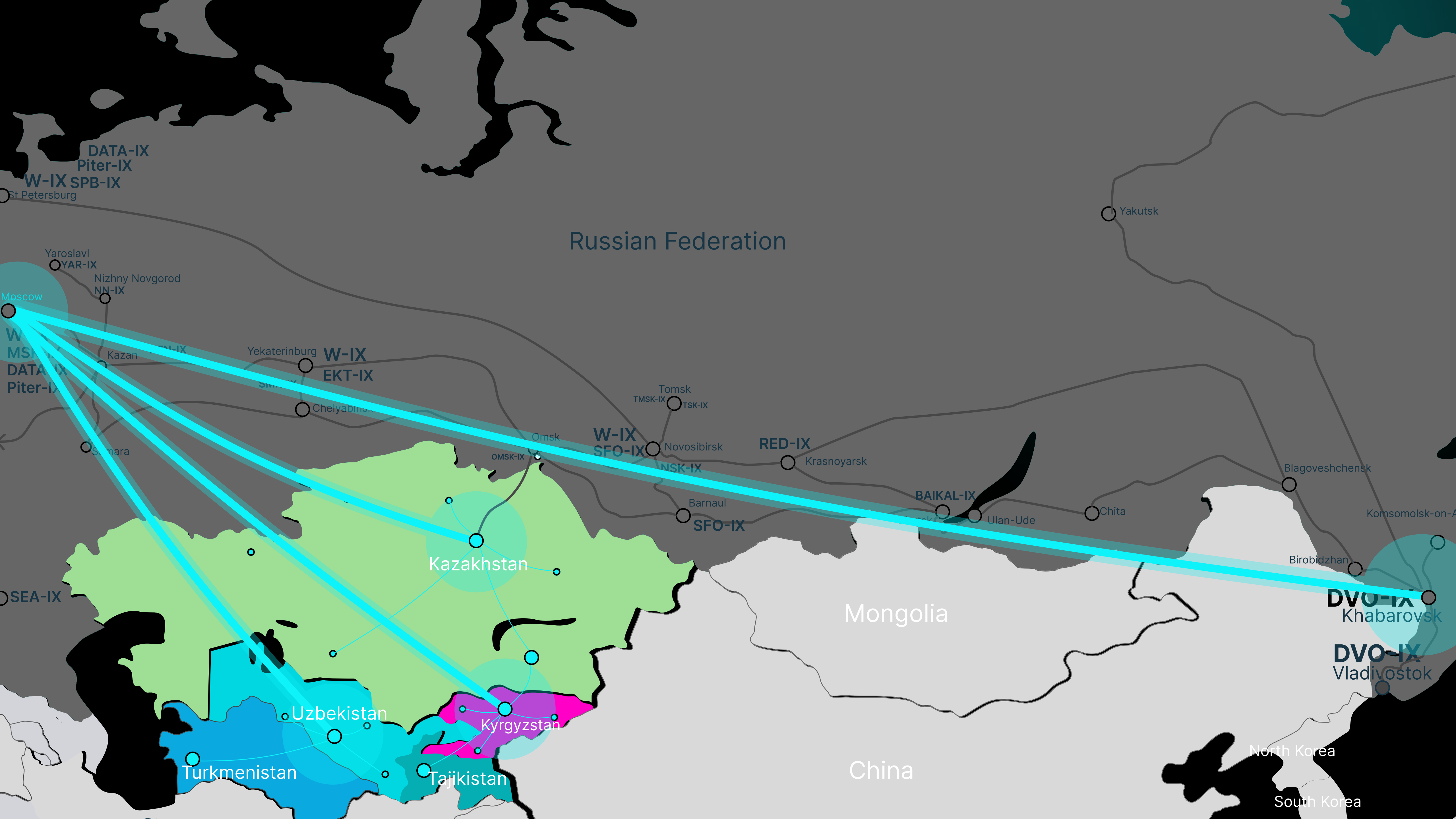
70 - Region ASN Connect possibility

26 - Remote IXP Connect

12 - PoP in the Far East

2 - Data center in the Far East





JUST DO IX.

Join the eXchange community



Superchat

All IXPs in one place,
communication,
incident analysis, information
exchange