is the new IX

definitions

peering

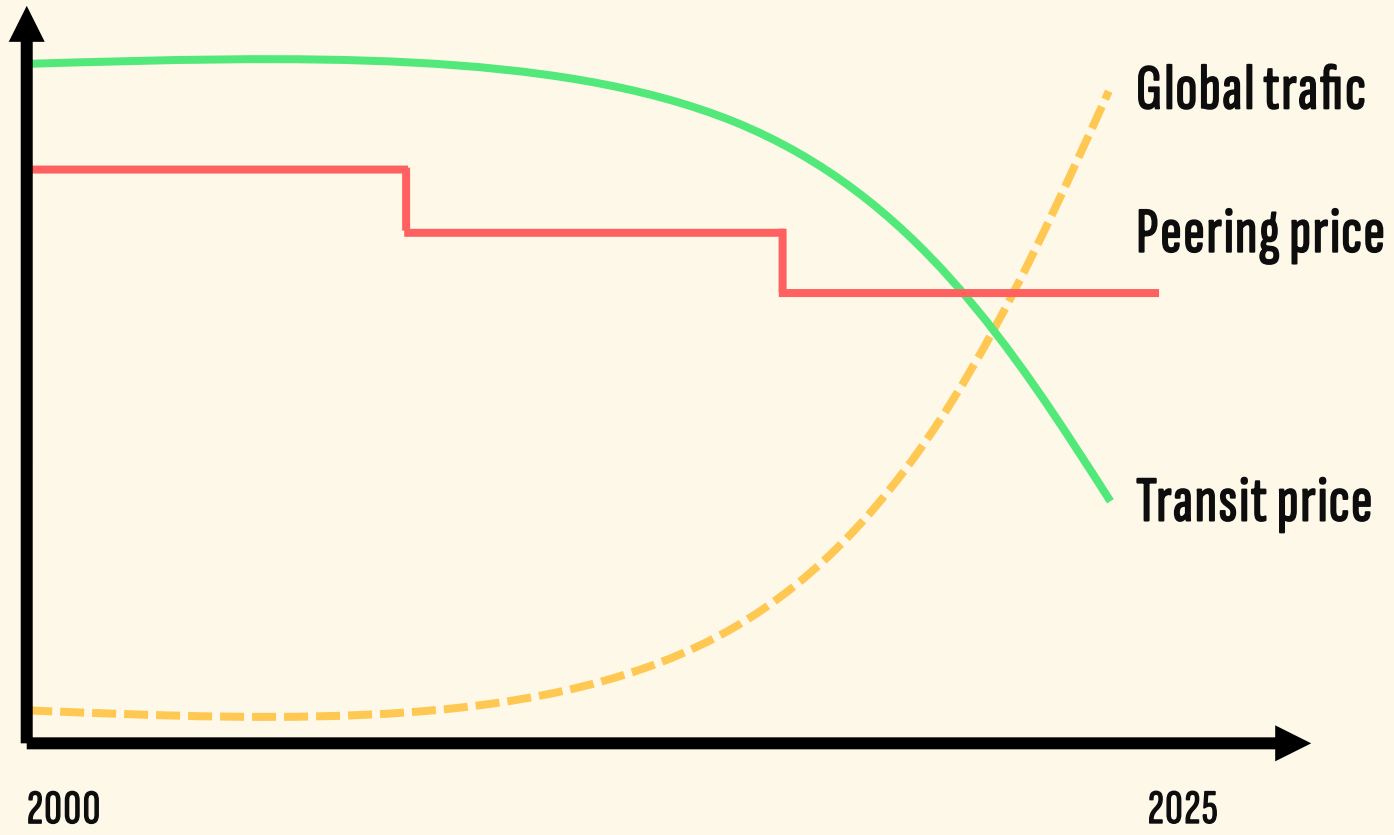
transit

problem

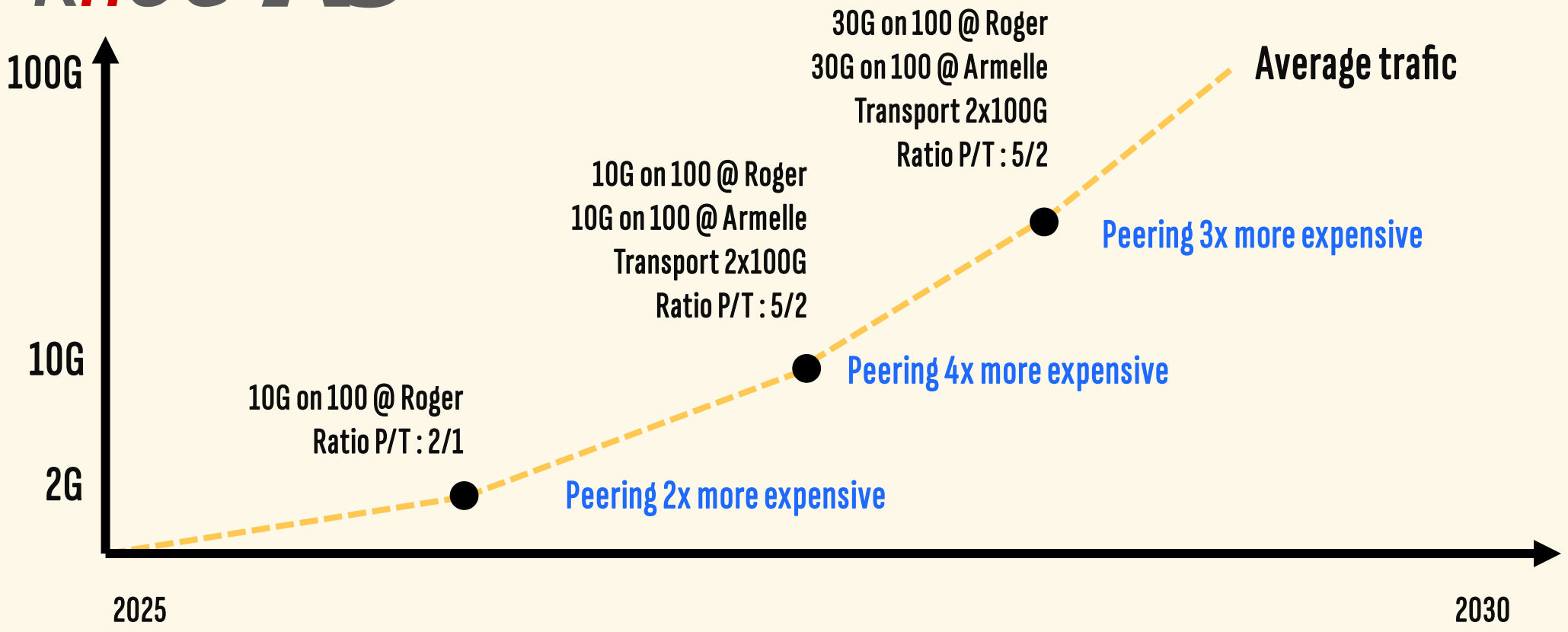
Peering

- Better latency
- Better predictability
- Democratic

- Cheaper ?



illustration



reasons & consequences

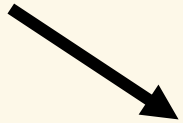
Not much of local competition

« the winner takes it all »

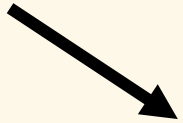
+

ix dispersion on metros

Lot of transport and peering costs



Prices go *ouch!*



Peering loses interest

Internet route quality decreases

solution

divide peering prices by a factor 3

&

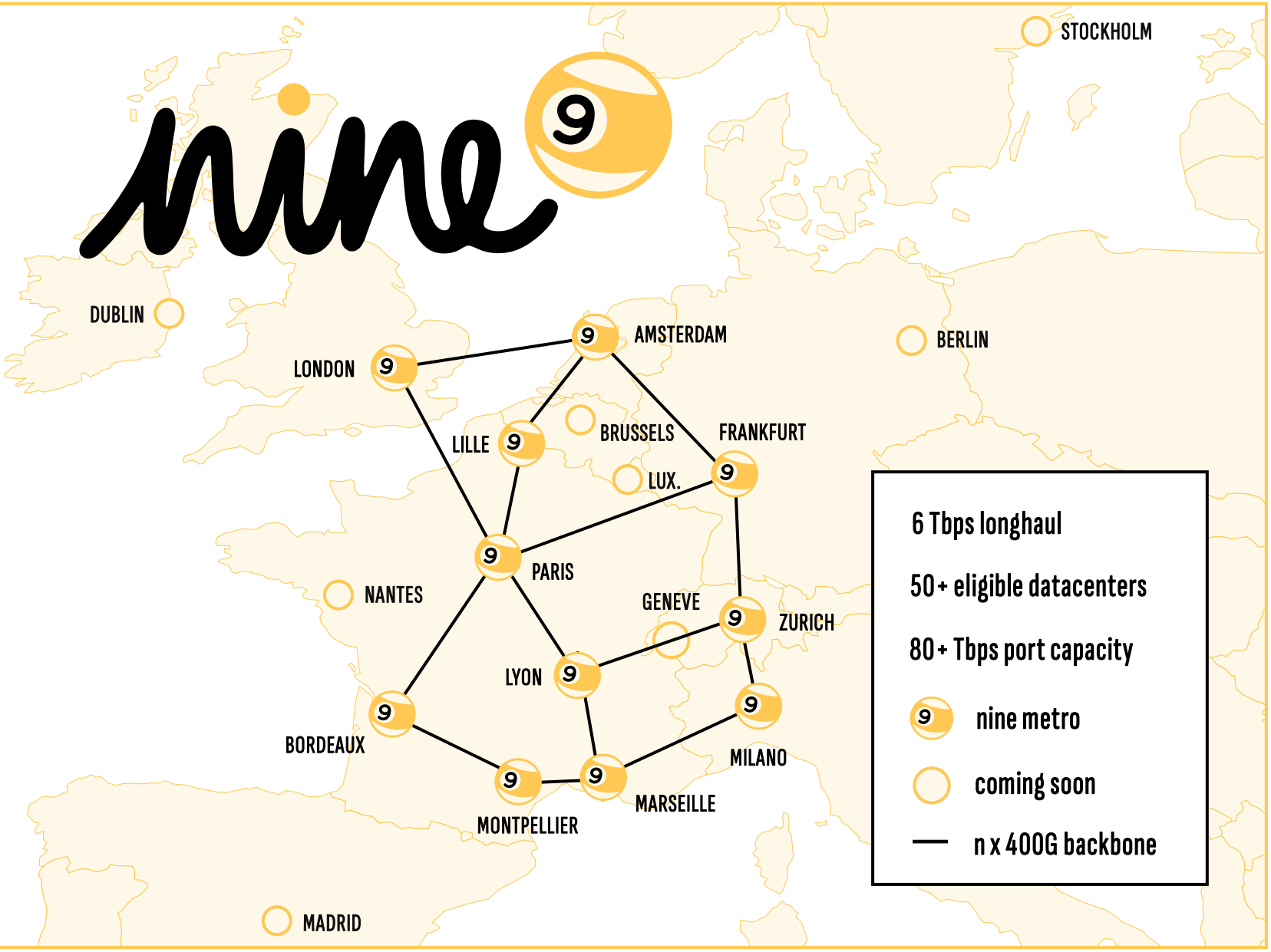
include transport to Europe in the product

Public peering via RS
with powerfull communities

+ Direct sessions
+ Ethernet circuits
+ Free marketplace

10 G
unmetered
250 € MRC

100 G
unmetered
1 000 € MRC



nine is the new IX

nine very first peers

nine under the hood

segment routing

Underlay IS-IS SR IGP network,
overloaded by SR-TE policies using BGP-SR.

evpn

eBGP EVPN VPWS overlay point-to-point ethernet circuits over the MPLS network
EVPN L2VPN for supporting peering exchanges

selective routing

tag MPLS color in EVPN to apply our SR-TE policies to incoming traffic.

- lowest latency on the network in normal condition
- packet loss-free network in case of congestion.

400G coh for metro

We use coherent 400G optics ready to be multiplexed on metropolitan networks where we operate our own dark fibers.

400G wave for longhaul

We have 400G waves ready to be scaled in bundles of several 400G waves for transport between metros.

automation

Our routers are provisioned using internal tools written in Python, based on the Netbox truth base. The configuration is stateless, allowing you to move from one atomic state to the next.

nine under the hood

circuit ethernet

Internet circuits are pure pseudowire that can carry Ethernet protocols including spanning-tree, 802.1ad, MPLS...
You can enable up to 64 circuits on port 10G and 128 circuits on port 100G.

circuit handshake

It is possible to make circuits between ports of the same tenant or of different tenants.
When one member requests a circuit, the second needs to accept the circuit to put it live.

large mtu

You can transport your packets up to 10 000 of MTU, to ensure the compatibility of **nine** transport with any of your IGPs.

ixp resale

If you have your own customers on your networks who want to join nine, you can order peering vlans on port 100G. This allows you to extend your connectivity services in your networks and data centres.

ix security

We implement all the following features to ensure the best possible protection for our peers, included blackhole communities, MAC filtering, RPKI, IRR route-filtering, IP antispoof.

nine peering tools

as31561

185.1.14.0/24

2001:7f8:12e::/64

main communities

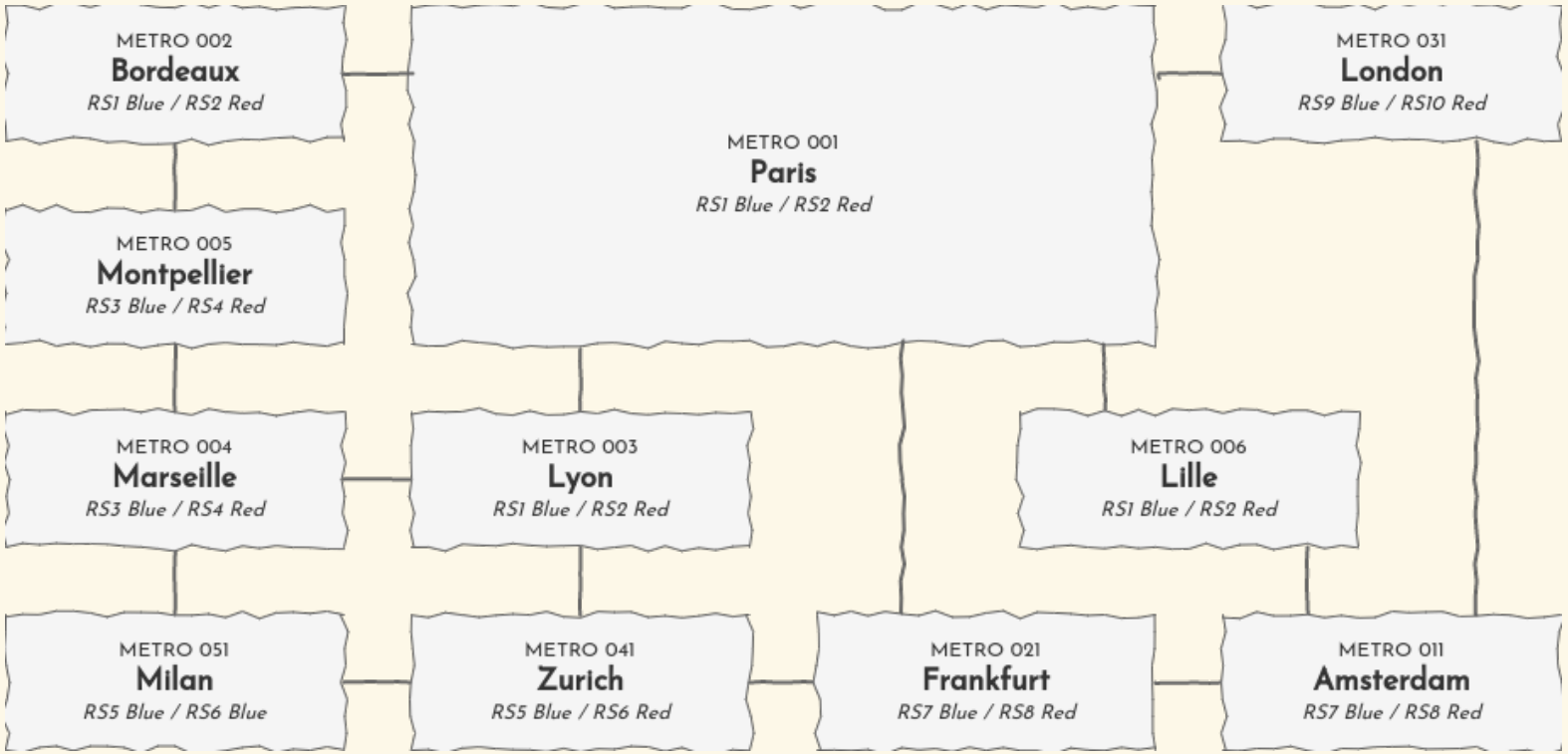
31561:31561	**Send to everyone**
0:PEER / 31561:0:PEER	Do not send to PEER
31561:2METRO:0	Do not send in METRO
31561:2METRO:PEER	Do not send to PEER in METRO
0:31561 / 31561:0:0	**Send to nobody**
31561:1METRO:31561	Send in METRO
31561:PEER / 31561:1000:PEER	Send to PEER
31561:1METRO:PEER	Send to PEER in METRO
31561:6550P	Prepend P times*
31561:1P000:PEER	Prepend P times to peer*
31561:1PMETRO:PEER	Prepend P times to peer in metro*
65000:0 / 65000:666	Send RTBH to everyone

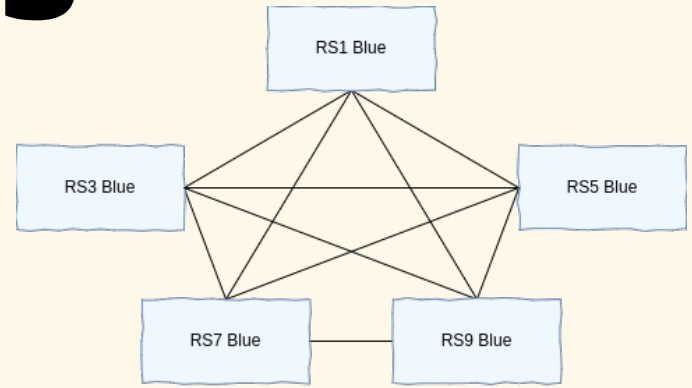
route servers

RS1 Blue
185.1.14.1
2001:7f8:12e::1:b
RS2 Red
185.1.14.2
2001:7f8:12e::1:f

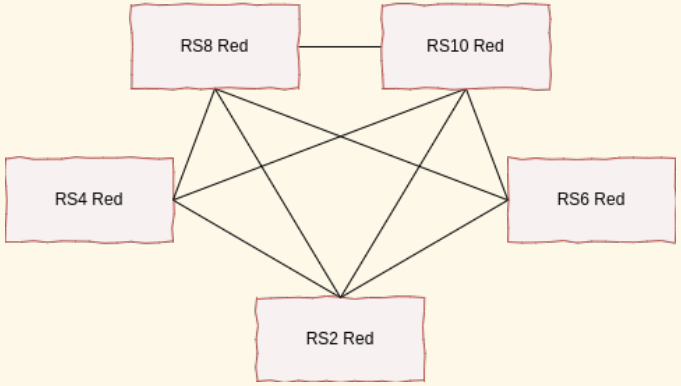
lg.nine-ix.net

nine route servers





BIRD



nine peering sanity

RFC8326

Please graceful shutdown ☺

BFD it

Because you are not directly connected between your peers

damp it!

Is it a flap? A burst? A non-clear fault?

RTBH

Play your part in safety, listen to your peers
Save 65000:666 !

clean it up

Because it's an IX, or rather a big switch, we have to do our best to clean up all this noise; STP, CDP, MNDP, LLDP...

1500

Yes, it is the MTU!

no enforce-first-as

Many BGP demons are now aware that if the AS is not in the path, it won't work!

nine roadmap

upgrade to /22

We hope to see lots of you there! So we're going to have to talk to the RIPE, and ask for an even bigger prefix!

WDM metro

Traffic is going to increase, and we're going to need to increase local capacity.

new POPs

Just launched, and you're already asking us for other cities... so we hope to be able to expand together soon!

Sflow monitoring

You're going to send IP packets, but where do they go? We're working to bring you ever more advanced monitoring on the platform.

L3 blackhole

With RTBH, we'll let you pass on your despair to your peers, but what if we helped you a bit more by letting you apply automatic ACLs at the edge?

congestion control

How can you check the state of your peers' ports? And if they are saturated, how can you avoid saturation? We'd like to offer you control communities to keep you informed about the load on your peers' ports!

nine very first peers