



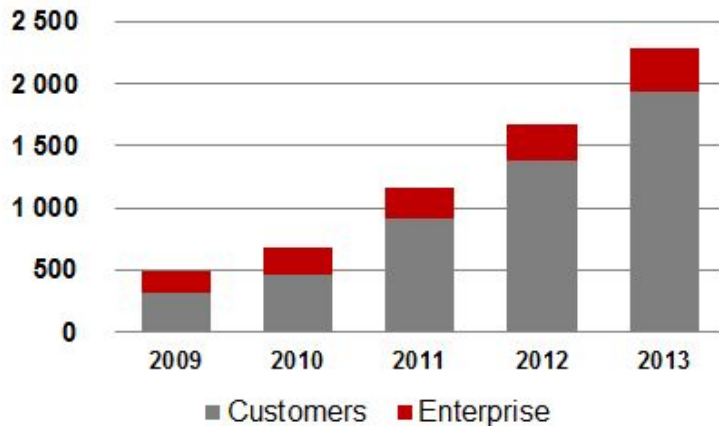
Responding the Challenges of Continuing IP Traffic Growth

Konstantin Novikov
Wholesale, CIS countries

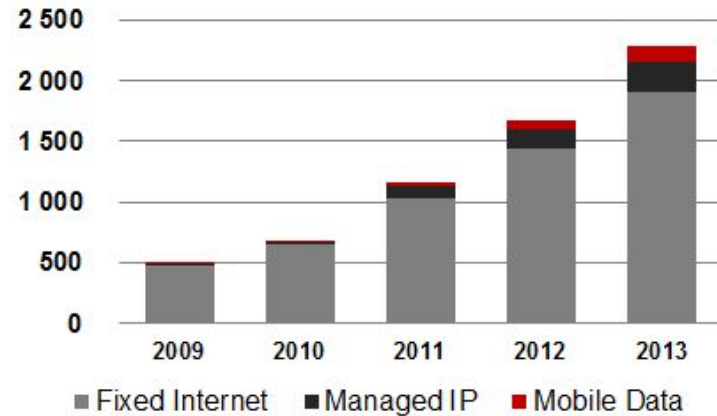
IP TRAFFIC DRIVERS IN CENTRAL & EASTERN EUROPE



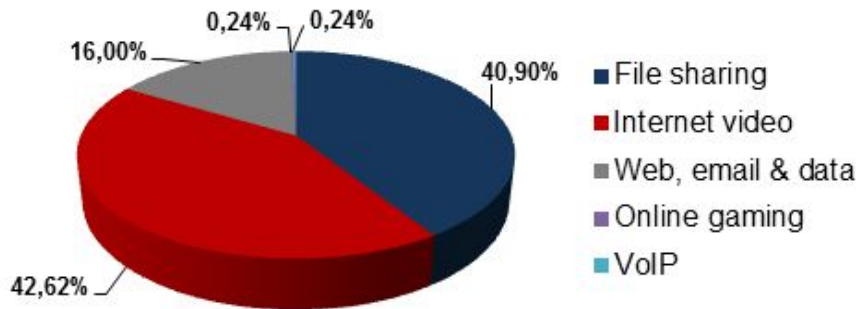
IP Traffic, PB per month



IP Traffic by Type, PB per month



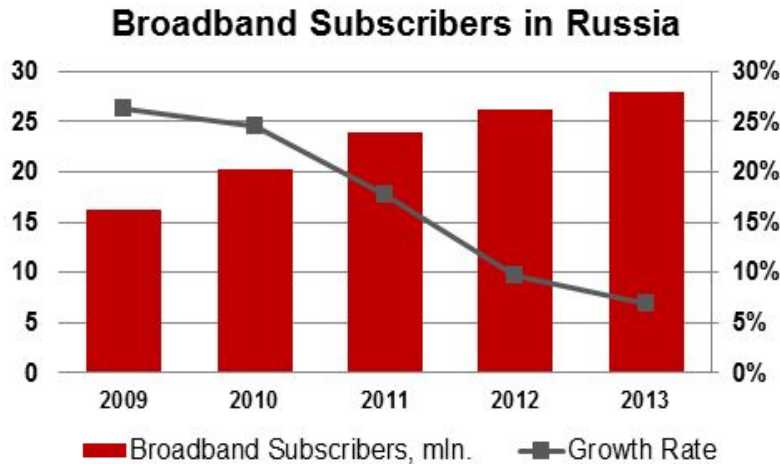
Customer Internet Segments, 2013



Source: Cisco, 2012

- ❑ For past five years IP grew 4.6 times in Central & Eastern Europe
- ❑ Private customers consume over 80% of total IP traffic
- ❑ Mobile data grow fast, but it is still on enfant stage in traffic volume
- ❑ Video is the contributor N°1 in traffic volume

BROADBAND SERVICES IN RUSSIA



Source: IKS Consulting

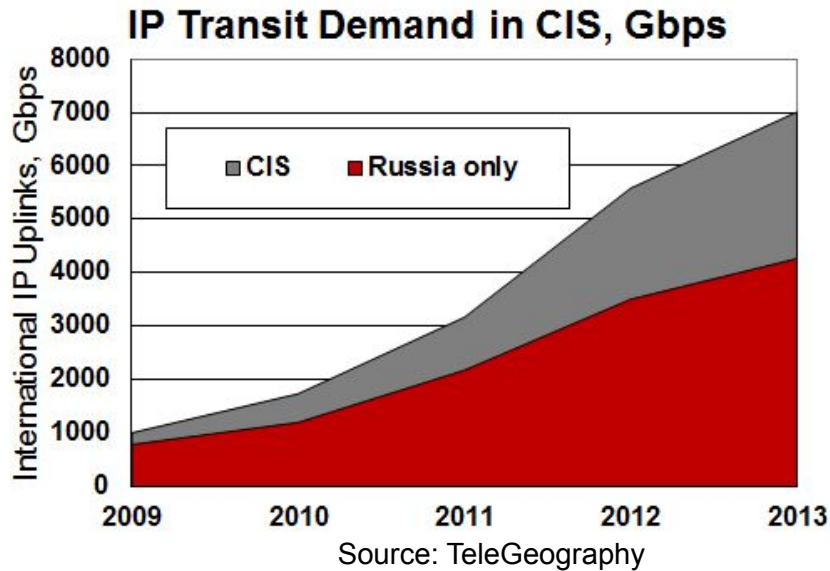
Russia: MB per Minute for Internet Video

	2009	2010	2011	2012	2013
High-Definition Video	11	13	14	16	18
Standard-Definition Video	6	6	7	7	8
Short-Form Video	3	3	3	4	5

Source: Cisco

- Penetration of broadband services will reach ~58% of total households that is closed to top limit
- While number of broadband subscribers is going to saturation, a “heavy” video supports total traffic growth
- As a result telecom carriers have to transit more and more IP traffic

IP TRANSIT VIA RUSSIA



- ❑ IP transit demand is fast growing segment, CAGR 80% in 2009 - 2013
- ❑ Russia generates 65% of total international IP uplinks in CIS
- ❑ ~ 50% of CIS countries uplinks (excluding Russia) go through Russia
- ❑ Geographically IP traffic is focused to:
 - Russia ~ 60 - 75%
 - Europe ~ 25 - 35%
 - Others < 3 - 5%



TTK AT GLANCE



Largest Fiber-Optic Backbone in Russia

- length – 75 000 km
- transmission capacity – up to 3200 Gbps
- over 1000 access nodes in 78 Russian regions
- 20 cross-border interconnections
- telecom bridge between Europe & Asia

Comprehensive Telecom Solutions

- layout of enterprise networks based on advanced technologies
- full spectrum of fixed voice services
- network security & monitoring
- building of telecom infrastructure
- wholesale services

Own Access Infrastructure

- local access networks in more than 180 Russian cities
- international gateways in London, Frankfurt, Amsterdam, Stockholm, Hong Kong, Tokyo

Guaranteed Quality

- certified services
- information security
- SLA

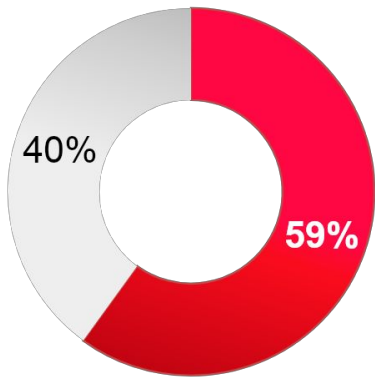


MARKET POSITIONS

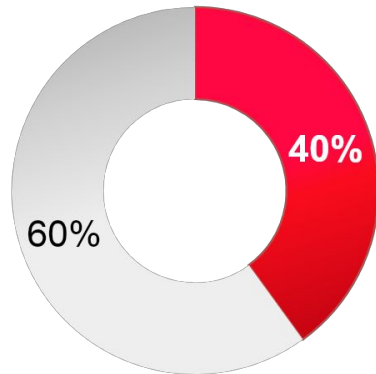


Market Share in the Russian Market

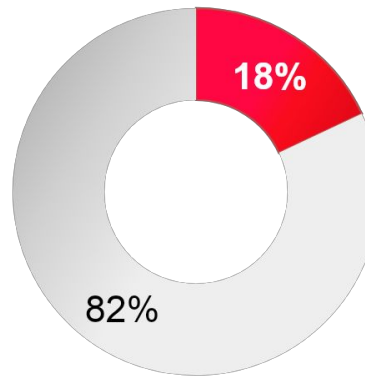
Europe – Asia Transit
(via Russia)



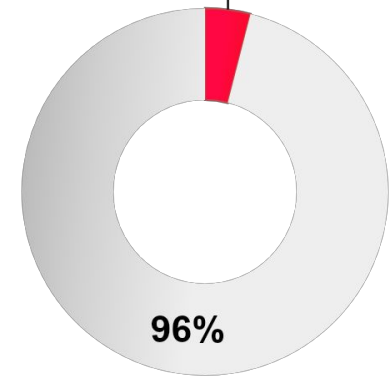
Telecom Carrier
Non-Voice Services



Enterprise
Networks



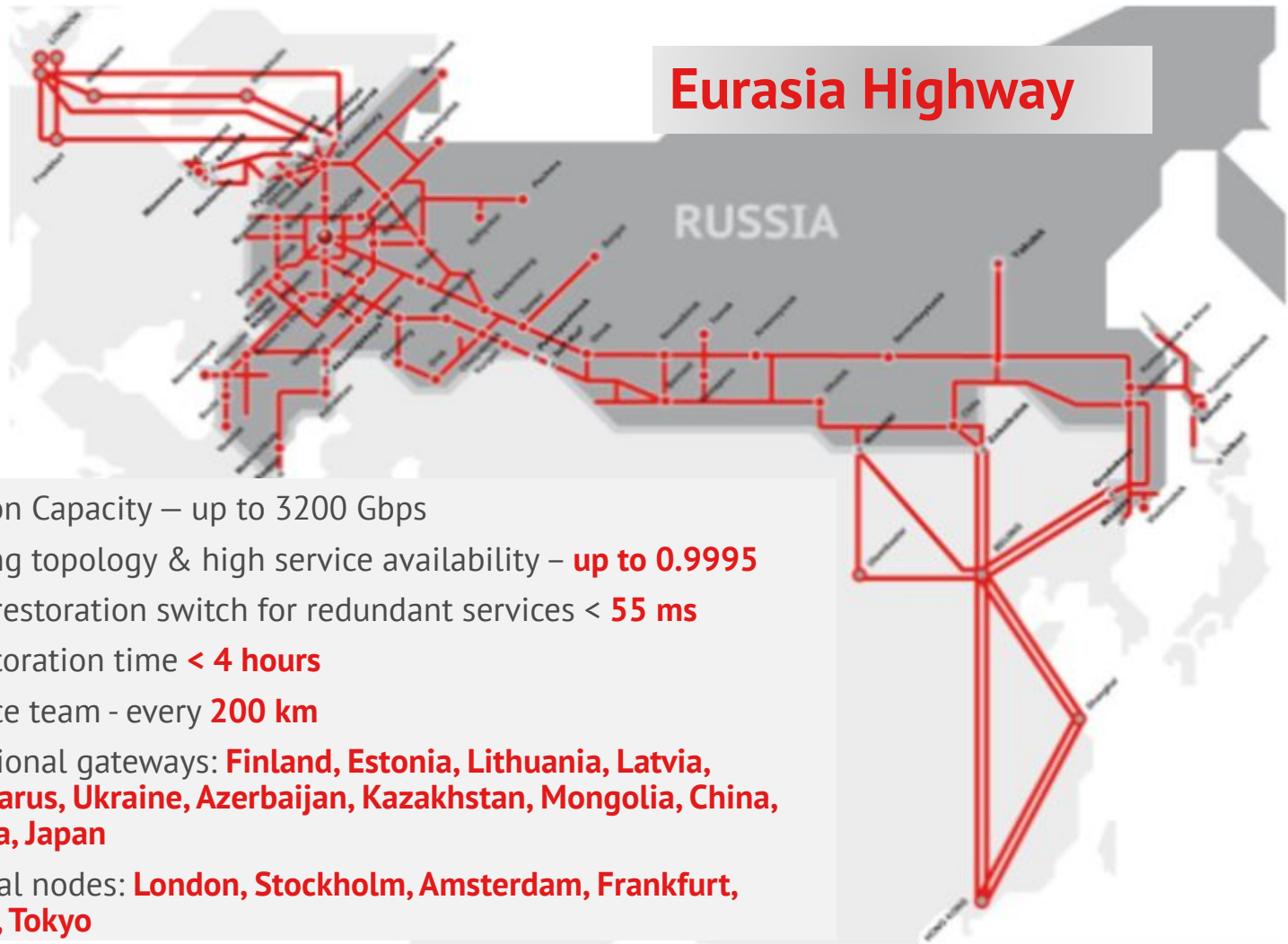
Enterprise
Long-Distance
Voice Services



Source: Direct Info, 2012

TTK is fifth largest telecom operator in Russia - CNews Analytics 2012

TTK BACKBONE



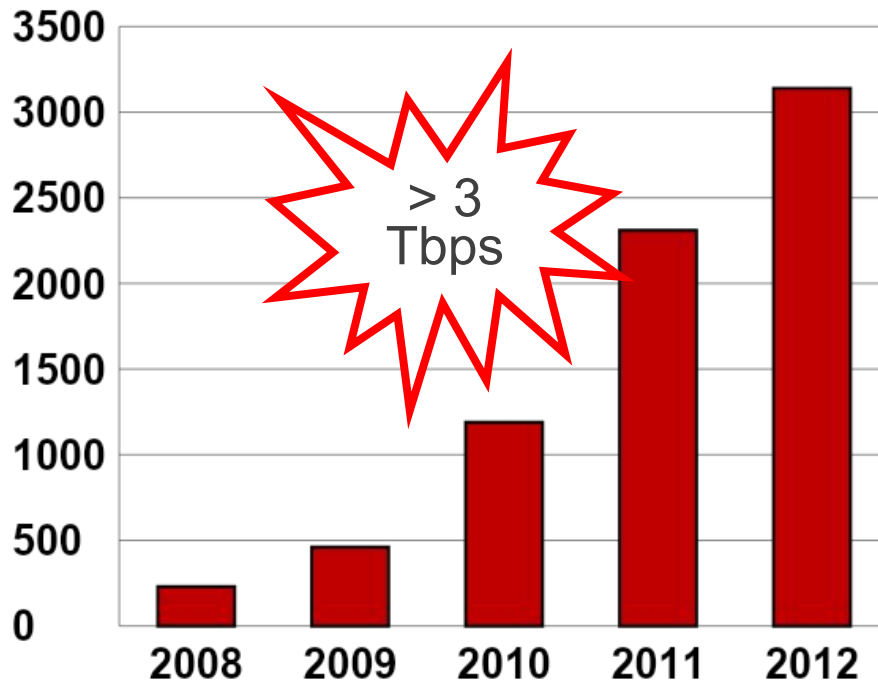
- Transmission Capacity – up to 3200 Gbps
- Multiple ring topology & high service availability – **up to 0.9995**
- Automatic restoration switch for redundant services < **55 ms**
- Service restoration time < **4 hours**
- Maintenance team - every **200 km**
- 22 international gateways: **Finland, Estonia, Lithuania, Latvia, Poland, Belarus, Ukraine, Azerbaijan, Kazakhstan, Mongolia, China, North Korea, Japan**
- International nodes: **London, Stockholm, Amsterdam, Frankfurt, Hong Kong, Tokyo**

Eurasia Highway

TTK CAPABILITIES



TTK Transit Capabilities (Central Russia), Gbps



Today TTK offers both IP transit and clear channels from the Russian border to major European destinations:

- London
- Amsterdam
- Frankfurt
- Stockholm
- Hong Kong
- Tokyo

Capacity – up to 10GE or 10G

Total transit TTK capabilities are exceeded 3 Tbps in Central Russia due to implementation of 10& 40G DWDM systems and development 10GE IP MPLS



Thank you for attention!

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