

Latency, Performance, Security – Netzinfrastruktur für Games

IXP – the performance driver

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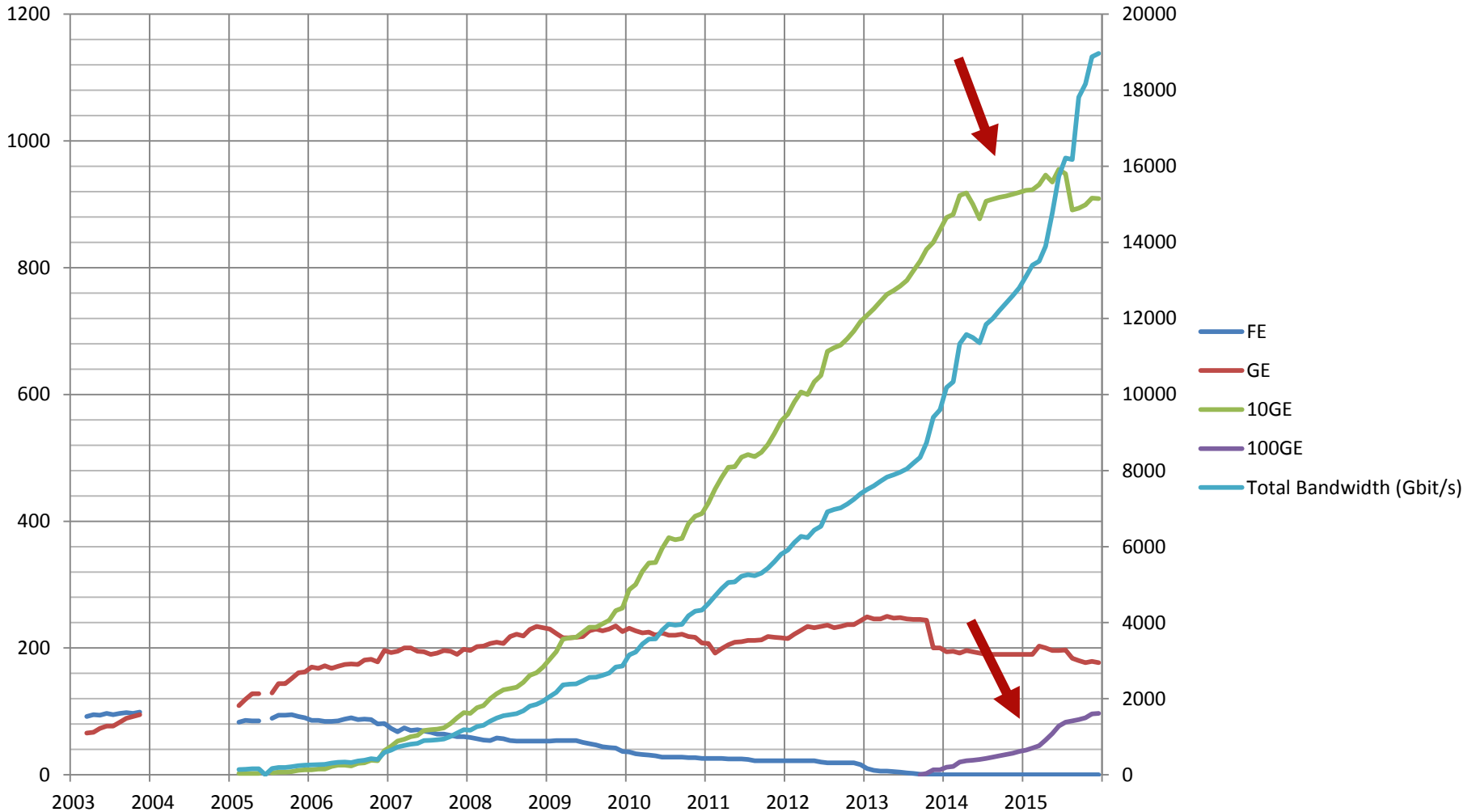
Agenda

- » Me, myself and I ✓
- » What's the problem?
- » Portentwicklung am DE-CIX
- » 10GE vs 100GE – ein Vergleich
- » Benefits of peering
- » What a research paper conclude
- » What a peer explored
- » Games on DE-CIX

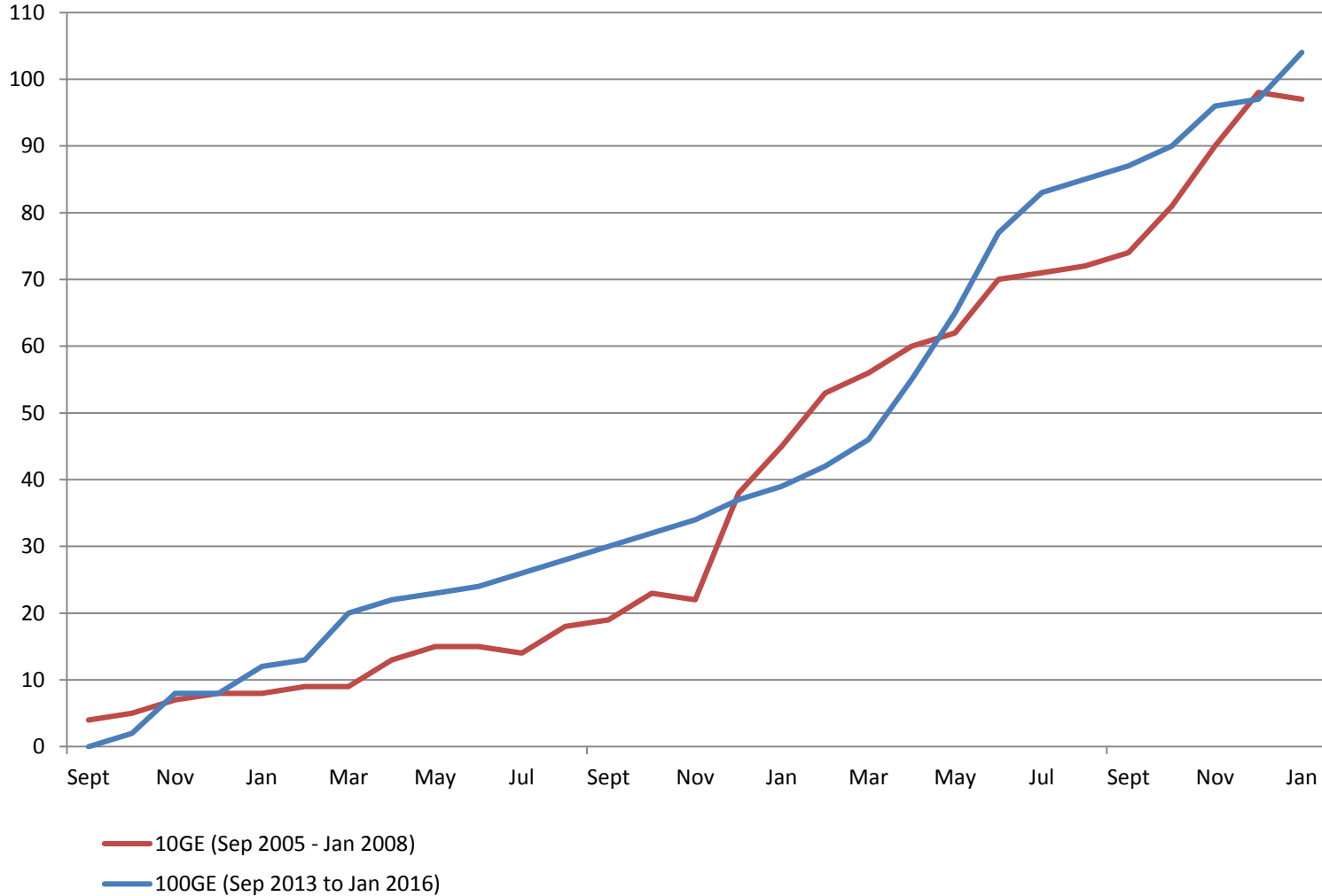
What's the problem?

- » Our visitors don't complain, if Booking.com is slow/doesn't work, they just try other website"
- » True for the gaming industry (f2play)?

Portentwicklung (Kundenports)



10 GE and 100 GE Port Growth at DE-CIX Frankfurt Comparison 2006-2008 to 2014-2016



Benefits of peering

- » Lowest latency path by interconnecting with neighboring networks
- » More control over routing
- » More flexibility to route around congested paths to prevent packet loss
 - » Cogent-only customers does no longer reach Google via ipv6
 - » UPC/ Swisscom customers can't use Netflix in CH, customers leaving UPC, SC
 - » UPC, SC wants Netflix to pay, fiber7 has happy Netflix customers
 - » Cogent is at court with DTAG for Tier1 PNI
- » Redundancy
 - » If peering sessions fail, the transit services provide backup connectivity to the peer networks
 - » If the transit connectivity fails, the peering connectivity is unaffected
- » Reduced network costs
- » Enhanced end user Internet experience
- » Marketing benefits
 - » A network diagram rich in interconnections is seen as proof of quality by customers

What reaserch says

- » “We investigated the role played by IXPs in the Italian Internet ecosystem. Our experiments put in evidence that peering arrangements that make use of IXPs have a positive effect on key performance indicators such as latency, hop count, packet loss and jitter. They also reduce the number of foreign ISPs traversed by the traffic between users located in Italy and critical Internet services like Banks and Public Administrations. “
 - » “Is It Really Worth Peering at IXPs? A Comparative Study , 2015
 - » Marco Di Hanolomeo*, Giuseppe Di Battista*. Roberto di Lallo*t and Claudio Squarcella, *Depanment 01‘ Engineering, Roma Tre University. Ituly,
 - » Email: {dibarlolomeo.gdb,dilallo,squarcel@dia,uniroma3.it
 - » https://labs.ripe.net/Members/roberto_di_lallo/is-it-really-worth-peering-at-ixps

What a peer explored

- » Is peering really faster?
 - » Latency is lower in most cases
 - » Better page/object load Tme visible in some cases
 - » Mostly stability/reliability improvements
 - » More or less similar results could be possibly achieved by replacing some transits with others and very fine traffic engineering
 - » “Faster” may also mean: less work needed to achieve better performance

- » Preso @ EPF by Grzegor Janoszka, former booking.com, now Liberty Global

Games on DE-CIX





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Thank you.