Sending Party Network Pays, or how Big Telco wants its termination monopoly back!

The upcoming questionnaire; background and major issues

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Stratix – independent consulting on network infrastructure and services

- Independent means – not aligned with specific telecom firms or vendors.

- Tactical and strategic advice on regulatory, financial and technical aspects of ICT

- Typical customers: Public sector, telecom firms, private sector, and investors

- Solutions that work in long term for our customer and other stakeholders

- Support and promote ideas, for the good of society, even if there's no client (yet)
  - FTTH → business models, promotion of ideas and broadband maps
  - Govroam → Eduroam in Dutch government
  - 112 over 4G → policy makers and sector unaware of issues with handsets and roaming
  - Internet interconnection ~ net neutrality ~ internet traffic

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Some recent work by Stratix that might interest you

- Datacenters – objective facts and figures (Metropolitan Region Amsterdam), Belgian market (BIPT)

- Internet of Things – Testing safety and security with Kiwa

- Submarine cables –"How to lay a cable to the Netherlands" and market research

- State and future of Internet and Telecom Standards

- Connectivity in municipalities and regions (FTTH/5G)

- Spectrum policy; digital microphones, dynamic spectrum management, private LTE and frequencies on the North Sea

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Internet traffic costs is a leitmotiv in my career

- **Twente Uni - Public Administration**: vice chair Campusnet. (1994- 10Mbps/room, 1998 100Mbps!)

- **Dutch-German Internet Exchange (NDIX):** internet off-campus was €5K/2Mbps in 2001! (Booking.com left)

- **Ministry Economic Affairs:** Report on net neutrality, transit and peering in 2006. AT&T wanted payment for pipes!

- **LogicaCMG** SIM-cards and high traffic/switching costs for IoT in 2009

- **OECD:** Initiated BEREC-OECD meeting on IP-interconnection in 2011 and 2012. ETNO wanted Sending Party Network Pays

- **Stratix:** Telecomcode: So much 5G traffic, that telco needs municipal lamp posts for small cell antenna's

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What makes me tick?

- I love the Internet; how it works, the people that run it and what it made possible

- The Internet Traffic Tax will kill the Internet and the innovation it brings

- I thought we won 10 years ago, I don't like this zombie to come from the grave.

- My clients are hurt by bad policy resulting from desinformation, bad research and bad data

    – False data on internet traffic growth and datacenters leads to bad strategy of electricity grid
    – Bad data on traffic growth leads to bad regulations on 5G
    – Gigabit Infrastructure Act → Municipal Cost Increase Act

I've been trying (and apparently failing) to explain transit and peering for 20 years
- Ars Technica: https://arstechnica.com/features/2008/09/peering-and-transit/
- Blog https://rudolfvanderberg.medium.com/
    – Asked for retraction "Netneutrality and high-speed broadband networks", Briglauer et. al.
    – Deutsche Telekom breaking the Dutch Internet for its customers
    – Bad science on energy use of data

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Paid and unpaid work on #internettraffictax

- Paid:
  - Google blogs on how the internet works and is paid for
  - Industry Association for Korean debate (to be published)
  - Telecom Regulator (internal briefings)
  - Local governements (internet traffic growth, energy use, datacenters)

- Unpaid:
  - NLNOG,
  - LINX,
  - INEX,
  - Twitter,
  - LinkedIN,
  - podcasts etc.

internet lab. podcast

If we pay telcos they won't fix their networks. They'll just say, it's the other guy's fault. That's what they have been doing for the last 20/25 years. There's no reason to reward bad behaviour.

RUDOLF van der BERG
Partner Stratix

Leaked EU Connectivity Document Sets off Alarm Bells

RUDOLF VAN DER BERG · FEBRUARY 21, 2023   SHARE

TAGS EU EUROPEAN COMMISSION INNOVATION INTERNET TRAFFIC TAX NETWORK INFRASTRUCTURE

Internet Traffic Growth Is Not Out of Control, and Nothing Like Telcos Want You To Believe

RUDOLF VAN DER BERG · NOVEMBER 28, 2022   SHARE

TAGS INTERNET TRAFFIC TAX ISPS NETWORK INFRASTRUCTURE

Fast Internet Doesn't Cost EU Telecom Operators Much at All

RUDOLF VAN DER BERG · FEBRUARY 1, 2023   SHARE

📌 Vastgemaakte Tweet
Rudolf van der Berg @internetthought · 14 dec. 2022
My ironic presentation at NLNOG on Big Tech vs Big Telco on #networkfees. Should Big Tech pay a #fairshare? Are Telcos #monopolists? How do telcos use internet #interconnection to squeeze money from research networks. #netneutrality

youtube.com
NLNOG 2022 - Rudolf van der Berg Big Telco vs Big Tech, or why telcos...

💬   ♻ 6   ♡ 18

6

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ETNO CEO's warn policy makers traffic growth unsustainable at 50%. Same firms (next slides) tell investors/regulators everything's fine!

Last updated on 09/01/2023

José María Álvarez-Pallete
Chairman & CEO Telefónica S.A.

Tim Höttges
CEO, Deutsche Telekom

Nick Read
CEO, Vodafone

Stéphane Richard
Chairman and CEO, Orange

🕐 3 min

With digital activities growing at breakneck speed, connectivity is simply vital for our society, our economy, and ultimately our everyday lives. Data traffic, increasing by up to 50% annually, is the critical determinant of the size and capacity of our networks.

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ETNO want €35 billion per year from Big Tech

The results produced by Frontier are shown below:

Network type	Incremental costs[25]	Total costs[26]
Fixed networks	€ 2-6 bln	€ 8-10 bln
Mobile networks	€ 13-22 bln	€ 28-30 bln
TOTAL	**€ 15-28 bln**	**€ 36-40 bln**

Exhibit 2.5: Total and incremental OTT-driven costs for EU telcos [Source: Frontier Economics]

- Simple math: Capex is €55B/year. Big Tech is 60% of bytes, so Big Tech needs to pay.

- Capex is including FTTH and 5G roll-out.. So they want someone else to pay for Capex, but keep the return on investment for 30 years.

Google 20.99%
Others 43.05%
FACEBOOK 15.39%
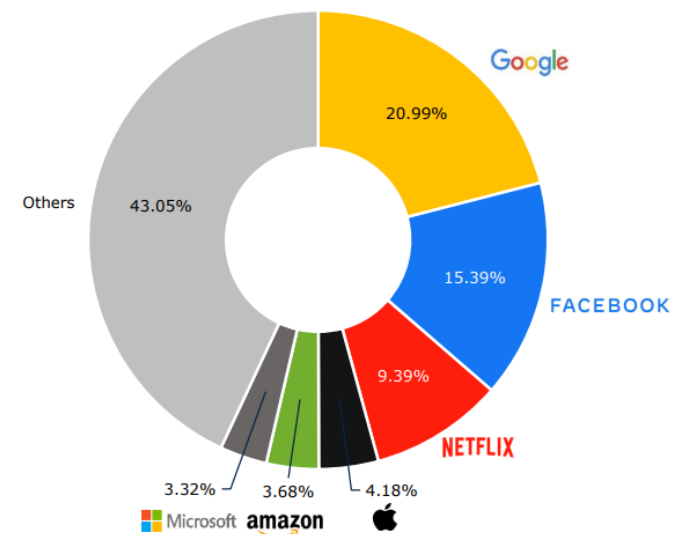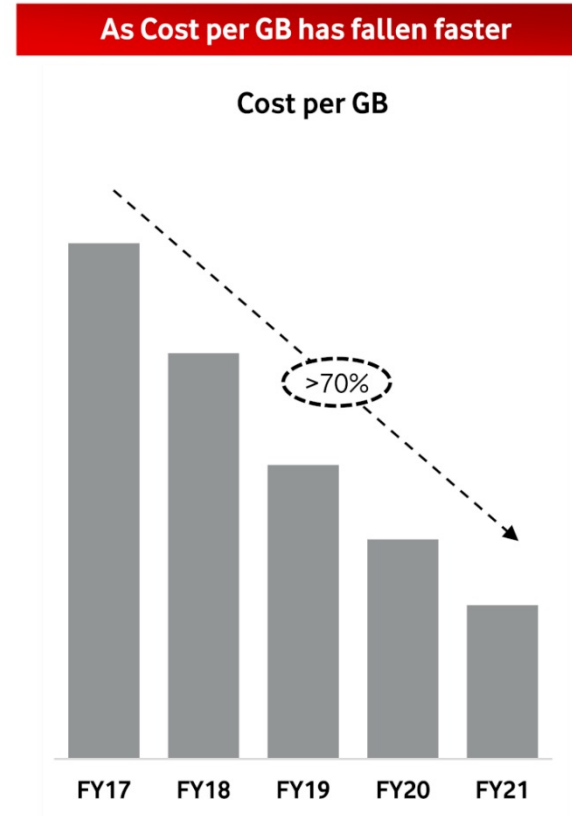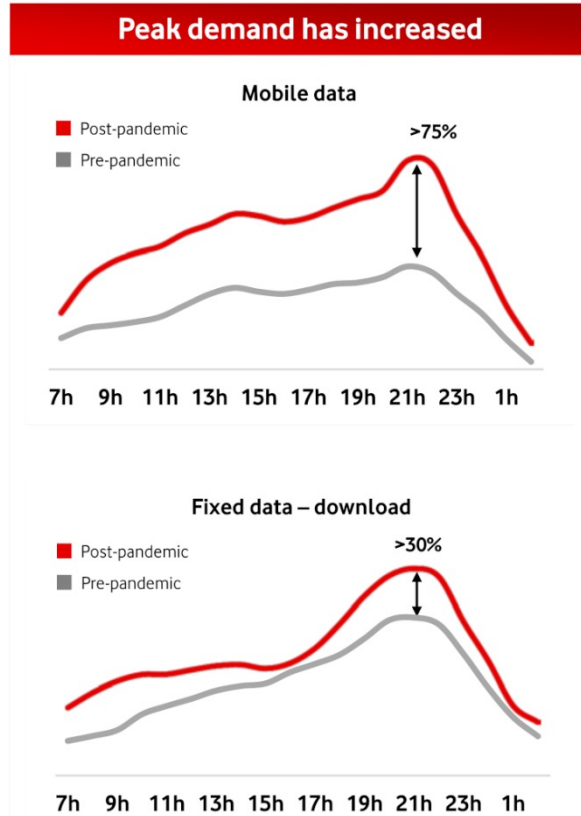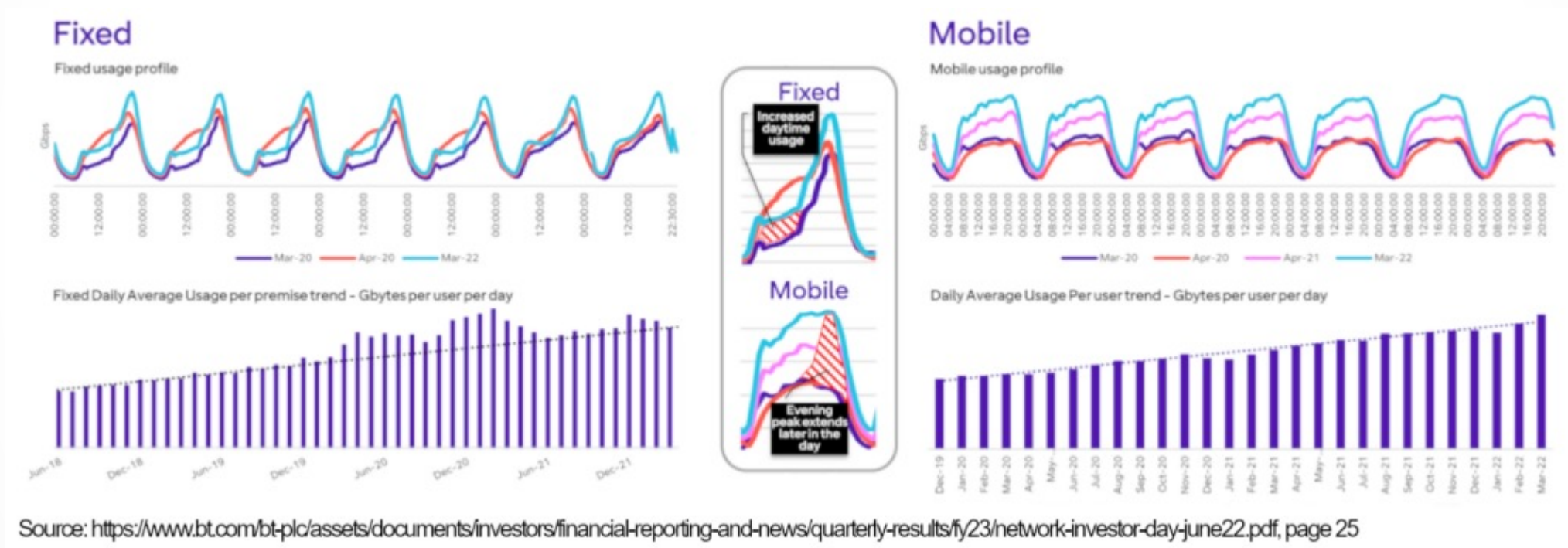9.39% NETFLIX
3.32% Microsoft
3.68% amazon
4.18%

Exhibit 2.2: Global traffic share of OTTs, 2021 [Source: Axon based on Sandvine[18]]. Note: The players specifically highlighted in this exhibit are the same as in Sandvine's report.

Traffic growth is 14% and 32%! It's getting cheaper! (Vodafone)

Peak demand has increased

Mobile data

■ Post-pandemic
■ Pre-pandemic

>75%

7h 9h 11h 13h 15h 17h 19h 21h 23h 1h

Fixed data – download

■ Post-pandemic
■ Pre-pandemic

>30%

7h 9h 11h 13h 15h 17h 19h 21h 23h 1h

As Cost per GB has fallen faster

Cost per GB

>70%

FY17 FY18 FY19 FY20 FY21

Source: https://investors.vodafone.com/sites/vodafone-ir/files/2021-06/vodafone-technology-investor-briefing-presentation.pdf, pages 12 and 38

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Dear investors, Gigabytes don't matter, Gigabits do! (BT)

Source: https://www.bt.com/bt-plc/assets/documents/investors/financial-reporting-and-news/quarterly-results/fy23/network-investor-day-june22.pdf, page 25

It's not about streaming, but burst, handled locally with CDNs

Website	Burst bandwidth use
ETNO video library	112 Mbps
Telefónica	50 Mbps
Deutsche Telekom	50 Mbps
Le Monde	50 Mbps
Video library of streaming service	50-200 Mbps
European Commission	30-50 Mbps

Streaming service	Average bandwidth use
Streaming a movie or series	5-20 Mbps
Video conferencing	3-5 Mbps
Smart doorbell with camera	0.5 Mbps

Proportion of peak time traffic offloaded via caching (up to 14-Jan-18)

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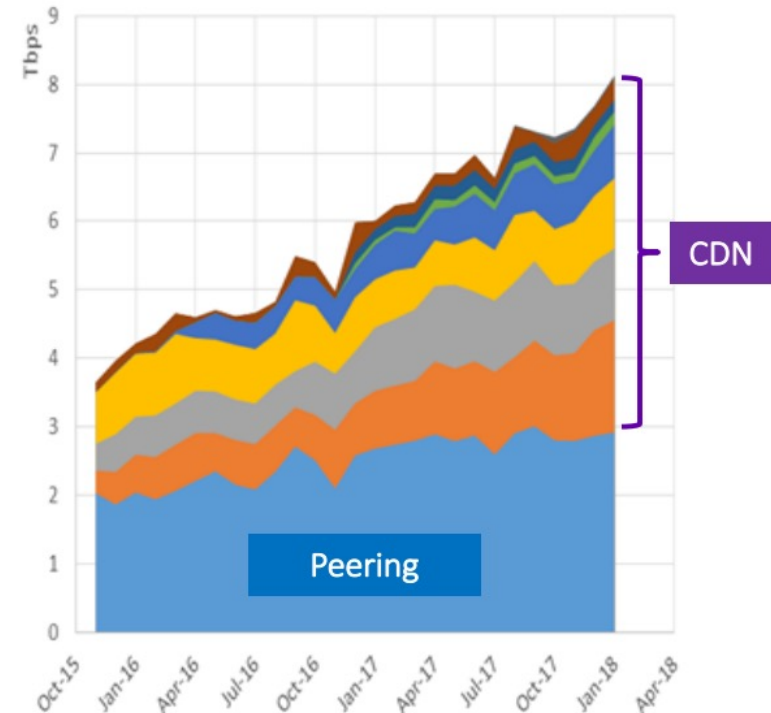
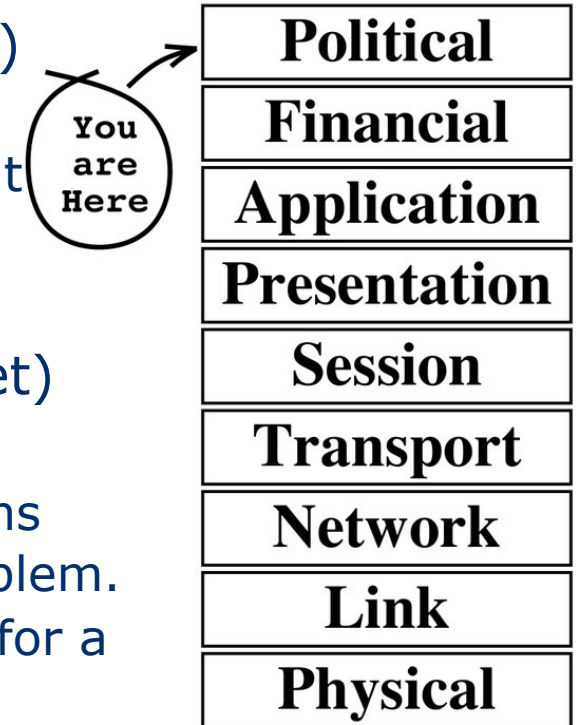## No competent telco CxO should worry about 30Tbps of peak traffic

- I assume I don't need to explain this at a LINX members meeting ☺
  - If your network can't handle current network loads, please raise your hand, all vendor sales people present will contact you after this session and for weeks to come!

- Traffic per FTTH subscriber according to KPN is at most 6Mbps/peak/sub including IP-TV with 21% growth, at least that is what their reference offer to regulator says.

- So what is this really about and what kind of effect will it have?

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EU proposals to make gigabit connectivity available for all by 2030 (or to make incumbents life easier?)

- Gigabit Infrastructure Act: Proposals that supposedly should make roll out of FTTH and 5G easier, except many countries are (almost) done
  - Magic single information portal, for all your FTTH/5G permit applications (sounds good??)
  - Also required of municipalities who are already done with major roll out
  - Municipalities have to deal with more infra
  - Hold-on! 3 month standstill to promote joint roll-out →. Incumbent can frustrate altnets!

- Gigabit Recommendation: Guidance for regulators on how to regulate big telco's
  - Hold on! No regulation if there is a <u>prospect</u> of infrastructure competition!
  - <u>https://radiobruxelleslibera.com/2023/02/23/the-european-commission-puts-an-end-to-competition-in-telecoms/</u>

- Consultation on the future of connectivity: A Questionnaire aimed to point at Big Tech as a source for investment and to make big telco bigger in name of a Single Market

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The Internet was the (unintended) result of EU Telecom policy

- Everyone knew the future was video, online shopping over ISDN
- The PTT would deliver it! Needed open markets in EU (GATT)
  - Aimed at pan-European B2B services
  - International billing and interconnection hadn't been figured out
  - Single market was for telcos, not the Internet!

- Academics had network of interconnected networks (Internet)
- Academic networks decided everyone pay their own costs
  - Many incompatible, experimental national telecom tech solutions
  - How you build and operate your (national) network is your problem.
  - Border Gateway Protocol enabled routing and economic model for a network of interconnected networks

- ISP's used EU regulation to connect modems and leased lines

You are here

Political
Financial
Application
Presentation
Session
Transport
Network
Link
Physical

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The Questionnaire doesn't want answers

- Mixes infrastructure (5G, fiber) with unrelated services (blockchain, geolocation) (consumers pay for

- Thinks only ETNO members invest. ETNO says its members invest less than alternative operators!

- Wants a single market with pan-European firms, which we have, but didn't result in pan-European offers

- Doesn't ask for hard data, but only relative percentages, making it incomparable.

- Manual needed to know how to answer and which people in the firm have the answers!

FIG 3.8 : *Cumulative FTTH capex per capita, ETNO and others, 2015–2022f*
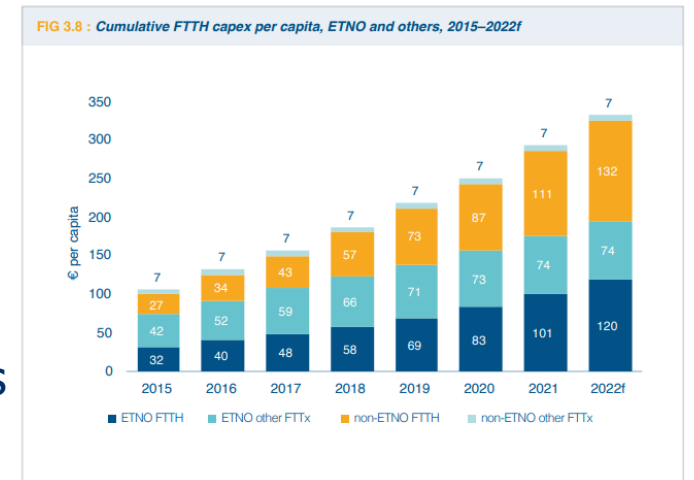
Source: Analysys Mason, 2022

Livebox Max Fibre

Jusqu'à ↓2 Gbit/s ↑800 Mbit/s Wifi 6E, jusqu'à 3 Répéteurs Wifi

Une connexion et un wifi premium pour se divertir et partager avec sérénité

34,99 €/mois

pendant 12 mois puis 54,99 €/mois

Engagement 12 mois

Tester l'éligibilité

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Surely the questionnaire can't be that bad?

- Question 40 is about how much networks invested to handle traffic growth. Question 42 then asks how much this exceeded the planned investments! No negative value!

42. Indicate how much the share of network investments that you indicated in response to Q40 has exceeded the investments you planned, including when they depended on regulatory obligations (e.g. radio spectrum), over the last 5 years.

For fixed network investment costs:
- 0 - 20%
- 21 - 40%
- 41 – 60%
- 61 - 80%
- Over 80%

For mobile network investment costs:
- 0 - 20%
- 21 - 40%

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# Internet (exchange points) are a logical result of the Internet

- Internet is a network of interconnected networks

- Innovation was that everybody pays for its own network. Royal Dutch Shell, Tax Service, DoD, Deutsche Telekom, Janet etc.

- To reach all 75K Autonomous Systems you need BGP and transit. Transit costs money, so to optimize costs you cooperate and innovate:
    - Peering, PNI, CDN, IXP's, compression, caching, global distribution etc.
    - The larger you are, the more creative you get: Netflix caches in 150 locations in the UK, yes please say UK telcos
    - Mutually beneficial! No use if it saves you money but costs her money

- There are telcos who are hard to deal with, but often you can work around them.
    - Some Big Tech deliver services the telco CEO and CEOs of important big firms in country want to, so there is a way to deal with them.
    - Still there are bad examples.

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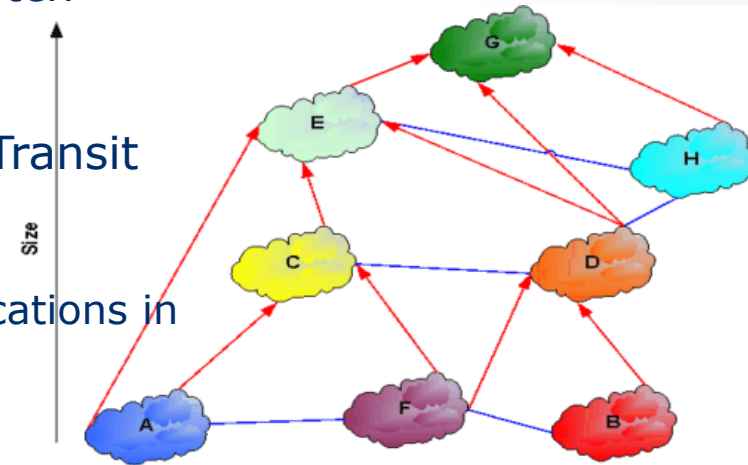
Sending Party Network Pays is a mess (ask the telephone guy)

- SPNP used for telephone interconnection. You pay whatever the network at the end demands. Orange in NL at one point, raised termination fee to €0.25/min!

- Termination fees are therefore regulated.

- Where they're high; international calls in developning nations, there is fraud

- You can't choose which transit provider to use. It is the terminating network that is boss

- No reason to optimise costs

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Bad behaviour – Covid: Deutsche Telekom uses 20% packet loss on DT's interconnection to Lumen and Telia to force DFN to buy transit
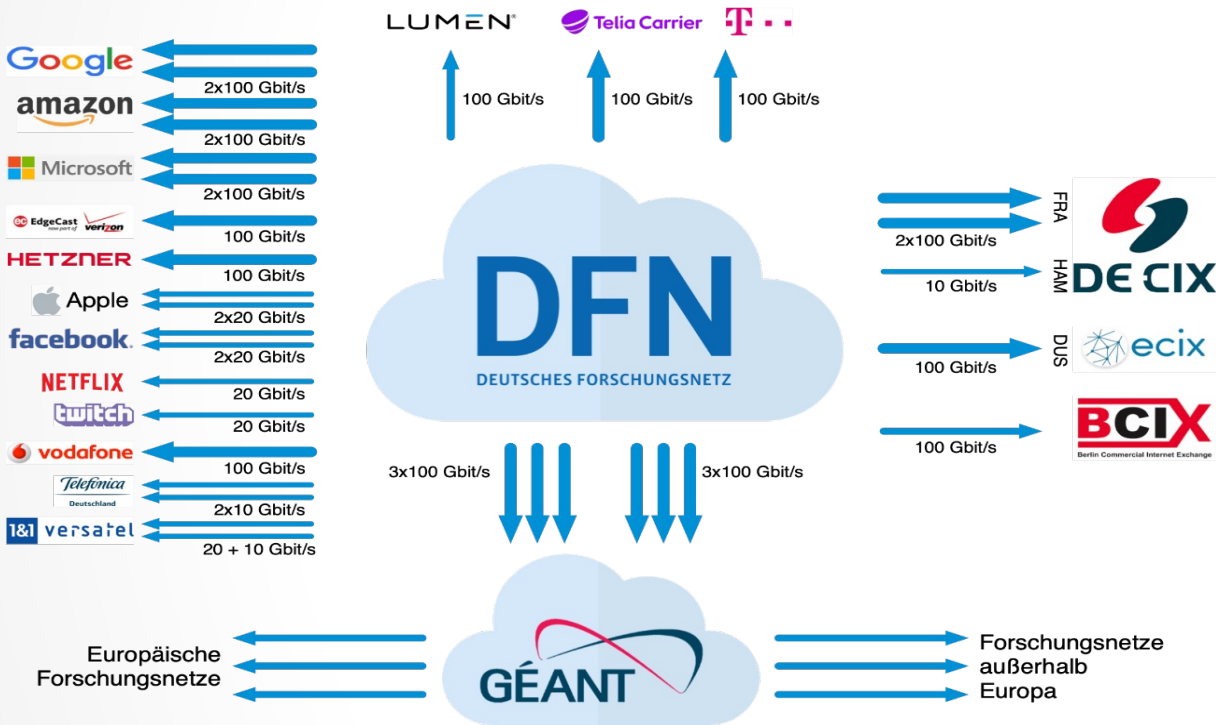
5.2.2.2 Deutsches Forschungsnetz/Deutsche Telekom

During the Corona pandemic, the Deutsches Forschungsnetz (German Research Network) was confronted with increasing data traffic due to increased home work and overloaded transfer points. The upstream service provider of the Deutsches Forschungsnetz was unable to find a short-term solution for the congested network transition with Deutsche Telekom. To improve connectivity, the association turned to another upstream service provider and also offered direct peering to Deutsche Telekom. This proposal was rejected by Deutsche Telekom. As a result, the association commissioned a chargeable "global upstream" with DT.[119] In contrast, the association was able to agree on a fee-free interconnection with the retail ISPs Liberty Global (UnityMedia), 1&1 Versatel, Telefónica Deutschland (O2) and Vodafone Deutschland (incl. Kabel Deutschland).

https://www.bundesnetzagentur.de/EN/Areas/Telecommunications/Companies/Digitisation/Peering/download.pdf?__blob=publicationFile&v=1

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What would ETNO proposal mean for you?

- Any ISP in Europe can demand payment from Big Tech
  - No idea what is exactly big tech, but lots of traffic is the idea

- Anyone will try not to look like Big Tech anymore
  - Every customer now is an independent network, instead of a CDN is one network
  - No it's not Akamai or AWS, but BBC and F1TV

- Transit routes become fixed, because it will have to be DT Wholesale or OpenTransit

- IXPs don't matter anymore, because it doesn't save money when the other guy can demand termination fee.

- Lawsuits, fights, nonsense... See Korea!

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Dear economists, the Internet isn't two-sided! NN doesn't mean zero price

If we look at consumer welfare, we also find tier-1 academic research in a working paper by Toulouse School of Economics. It states that, if done right, a fair contribution "can lead to lower overall prices and higher consumer welfare".

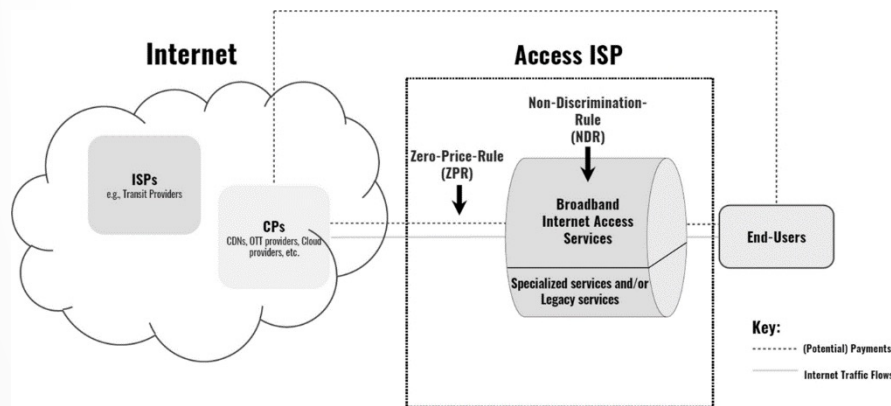### Fair cost sharing: big tech vs telcos*

Bruno Jullien†   Matthieu Bouvard‡

October 2022

This research has benefited from the financial support of Orange

Rudolf Van Der Berg
Nov 17, 2022 · 27 min read · ▶ Listen

Updated: Request for retraction of "Netneutrality and high-speed broadband networks: evidence from OECD countries", by Wolfgang Briglauer, Carlo Cambini, Klaus Gugler & Volker Stocker

[271] We are aware of some academic empirical evidence suggesting that net neutrality rules can exert a negative effect on network investments and other outcomes, although the scale of the impacts found and methodologies create some uncertainty about the probative value of these results (e.g. Briglauer W, Cambini C, Gugler K, & Stocker V, 2021, *Net Neutrality and High-Speed Broadband Networks: Evidence from OECD Countries*).

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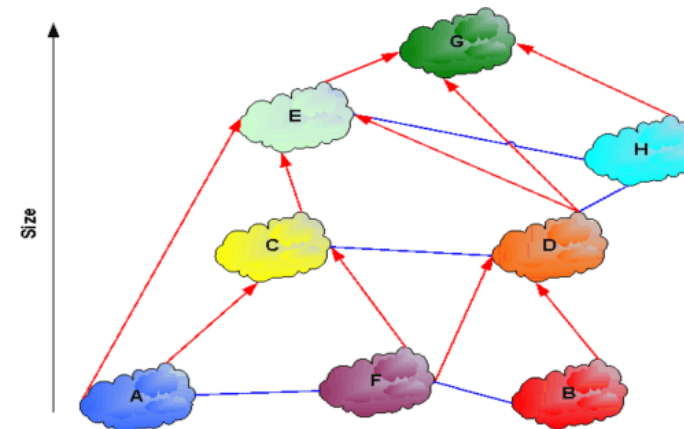
Good news! Dutch government sees how bad internet traffic tax is

Technology

3 minute read · February 27, 2023 6:21 AM GMT+1 · Last Updated 10 hours ago

Dutch warn against internet toll as EU looks to Big Tech to fund networks

By Foo Yun Chee

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Am I worried?

- Yes, I am worried.

- This is the first time when arguments don't seem to matter anymore

- Commissioners act like they are telco execs and vice versa

- Sending Party Network Pays really breaks the Internet and your business model

- Need to cooperate to stop this nonsense

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Disclaimer: I don't dislike telecom firms or their staff

- I like telecom, I like telecom firms.

- I like working with telecom firms.
  - The cooperation between the Programme manager 5G and Digital Connectivity of the Dutch Association of Municipalities (me), the Dutch mobile operators and the Dutch government was excellent: Example antenna policy, small cell policy, contracts, fees, processes etc.

- I greatly appreciate the positive reaction of ETNO and many others to the accessibility of 112 over VoLTE and VoNR- issue I raised together with EENA.

- I greatly appreciate the interactions with many colleagues in telecom firms, the help they give me and the smart debates we have.

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