



# RIPE

## Fair contribution by all digital players

---

A RIPE Cooperation Working Group community response to a part of the European Commission consultation:

The future of the electronic communications sector and its infrastructure



# History / context

---

- ITU World Conference on International Telecommunications (2012)
- BEREC report ‘An assessment of IP interconnection in the context of Net Neutrality’ (2012)
- European Commissioner Neelie Kroes: “Adapt or die” (2014)
- ...
  
- What’s new? We thought this idea had died...

# Why this 'exploratory' consultation?

---

Inspiration, a political consensus in the EU (January 2022) that:

'We commit to developing adequate frameworks so that all market actors benefiting from the digital transformation assume their social responsibilities and make a fair and proportionate contribution to the costs of public goods, services and infrastructures, for the benefit of all people living in the EU.'

# What is this 'exploratory' consultation about?

---

# Why is it relevant to the RIPE community?

---

- Following the European Declaration, a call from ETNO members Telefonica, Deutsche Telekom, Vodafone and Orange (February 2022):
  - ‘Digital platforms are profiting from hyper scaling business models at little cost while network operators shoulder the required investments in connectivity. At the same time our retail markets are in perpetual decline in terms of profitability.’
  - ‘We very much welcome the European Commission’s recent commitment to develop adequate frameworks so that “all market players benefiting from the digital transformation (...) make a fair and proportionate contribution to the costs of public goods, services and infrastructures”. We now urgently call upon legislators to introduce rules at EU level to make this principle a reality.’
- Supported by ETNO report ‘Europe’s internet ecosystem: socio-economic benefits of a fairer balance between tech giants and telecom operators’ (May 2022)

# Why is this relevant to the RIPE community?

---

- For anyone who cares about the Open Internet, they believe that the concept of a “fair share” can have huge negative consequences on the Internet ecosystem
- Interconnection is voluntarily agreed – it is based on the mutual agreement to exchange traffic.
- It is a low-cost and best effort arrangement that has worked for decades without the need for any regulatory intervention.

# Why is this relevant to the RIPE community?

---

- Autonomous networks should be free to peer with other networks based on local needs - the “fair share” seeks to change this.
- In the Internet no network is - or is supposed to be - more important than another. Yet, the “fair share” considers access networks more important, creating the conditions to reinstate “termination monopoly” that existed under the telephone system.

# Why is this relevant to the RIPE community?

---

- Currently, there is a necessary financial and market separation of concerns between the functions of connectivity from the delivery of an application
- Each layer in the digital network pays for itself ( this may differ )
- It is a concern where cross-subsidies occur. e.g. from an application revenue to a lower layer connectivity function.
- This creates market distortions, unfair competition, user capture, failure to serve innovation as well as arbitrary technical damage.



# Timeline

---

- European Declaration on Digital Rights and Principles (January 2022)
- Telco's/incumbents call for contribution by large content providers (February 2022)
- ETNO commissioned report on fairer balance between tech giants and telecom operators (May 2022)
- EC Consultation (23 February 2023 – 19 May 2023) **Uploaded**
- Following the consultation: EC Recommendations? (TBD)
- New EC: legislative proposal? (TBD)

# RIPE Cooperation Working Group: small task team:

---

- Patrik Fältström
- Frode Sørensen
- Konstantinos Komaitis
- Thomas Lohninger
- Carsten Schiefner
- Alex de Joode
- Christian de Larrinaga
- Chaired by Desiree Miloshevic, support by Bastiaan Goslings

# Agenda

---

- Core Principles (Alex)
- Question 54 (Frode)
- Technical perspective on the Internet wholesale connectivity ecosystem (Carsten/Christian)
- How Traffic and Money flows (Patrik)

# Core Principles

---

## 3 core principles for internet traffic exchange

- Netneutrality Principle
  - No discrimination of certain traffic (all traffic is equal)
- Network resilience Principle
  - A diverse set of networks, traffic can route around disturbances
- Internet model with Autonomous Networks
  - Every network is responsible for it's own network: **also** for the financial part!



# Q54 of Commission's Exploratory Consultation

---

- The European Declaration on Digital Rights and Principles states that all digital players benefiting from the digital transformation should contribute in a fair and proportionate manner to the costs of public goods, services and infrastructures to the benefit of all people living in the EU. Some stakeholders have suggested a mandatory mechanism of direct payments from CAPs/LTGs to contribute to finance network deployment. Do you support such suggestion and if so why? If no, why not?
- CAPs = Content and Application Providers
- LTGs = Large Traffic Generators

# Answer Q54 of Commission's Exploratory Consultation

---

- The quote “contribute in a fair and proportionate manner to the costs of public goods, services and infrastructures”
  - does not only indicate that CAPs might contribute to ISPs (“infrastructures”),
  - but also indicates that ISPs might contribute to CAPs (“good, services”).
  - It is necessary to take the whole internet ecosystem into account.
  - ISPs and CAPs are mutually dependent on each other.
  - CAPs contribute content and applications, as well as platforms and network infrastructure.
  - Finally, end-users contribute through their internet access subscriptions.
- In case a “mandatory mechanism of direct payments” were introduced, a termination monopoly will emerge, which ISPs with end-users connected may exploit, such market development will need regulatory oversight, and regulatory intervention may be needed (ref. termination monopoly in telephony networks).
- For these reasons, among others, there should be no such mandatory payment mechanism.

# A technical perspective on Internet wholesale (1/2)

---

- The Internet architecture is different from the traditional Telco model: the architecture is layered with a multitude of competing wholesale providers being available to whoever is ultimately responsible for the Internet access for the end user: the so-called Internet Access Provider (IAP).
- Each of the involved parties is solely responsible for fully funding whatever they are doing. They are free to choose whether they would be implementing each piece of the puzzle or whether they would get it on a wholesale basis.
- The RIPE community is of the opinion that there's no failure in the Internet interconnection market. It needs to be recognised that the Internet interconnection market is based on a very specific financial model.
  - 1) The Internet works. And it works on a basis of "permissionless innovation."
  - 2) The result is a rich diversity of applications.
  - 3) It should be seen as a sign of a healthy network infrastructure if the share of revenue flows of the networks is much lower than those of services and applications running over them.

# A technical perspective on Internet wholesale (2/2)

---

- It seems anti-competitive that one part of the industry, the fixed and cellular based IAPs, should claim a revenue share from all the other industries of the world just because they provide some of the infrastructure to enable those industries.
- Cross-subsidising from applications into networks increases the risk of damaging interconnectivity of Internet networks regionally by breaking current mechanisms for establishing local traffic valuations between networks.
- It also intervenes in content and service delivery which adds risk by eroding "permissionless innovation".
- Given there are already working financial incentives and well established mechanisms for charging to access the Internet, the case for inventing an artificial incentive by cross subsidies is not convincing.
- Any kind of contributions from the CAPs towards the business costs of IAPs would likely result in CAPs to transfer to or recoup these future costs from the end-users who are already paying for their service provisioning, e.g. an access to CAPs' content and its services.



# RIPE



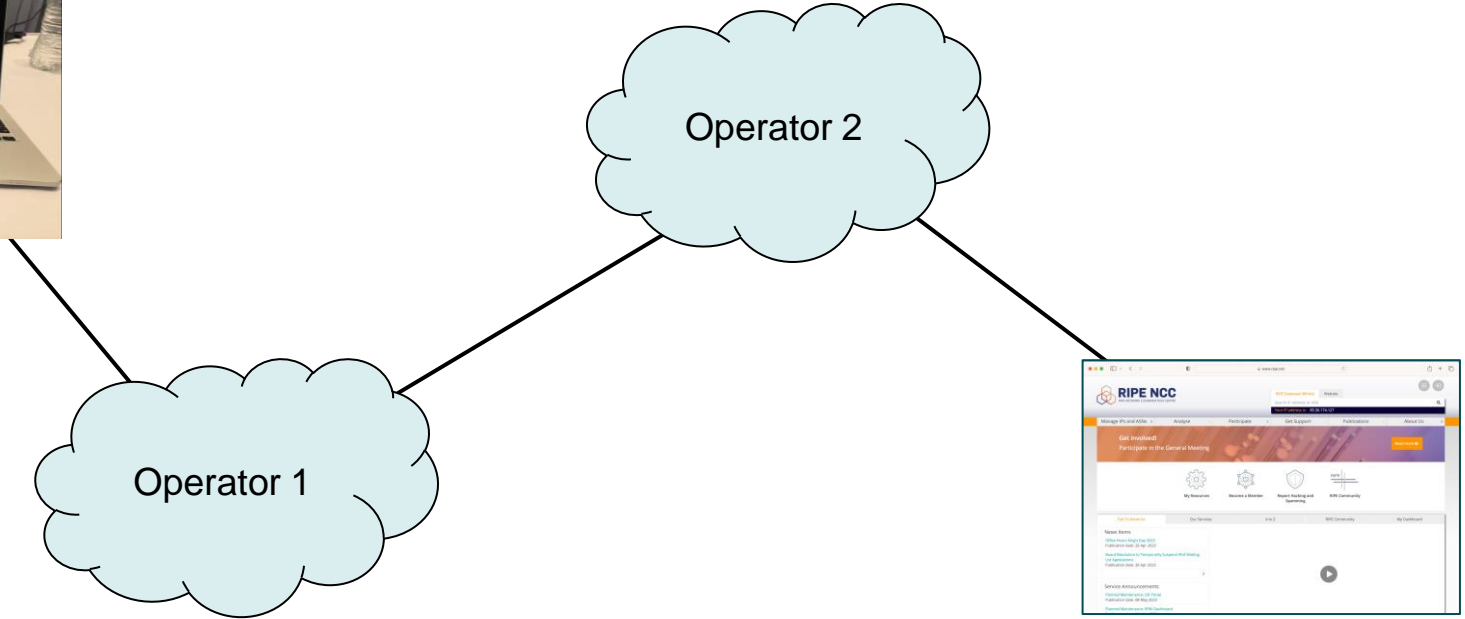
## How traffic and money flows on the internet

---

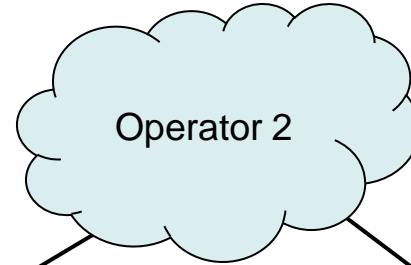
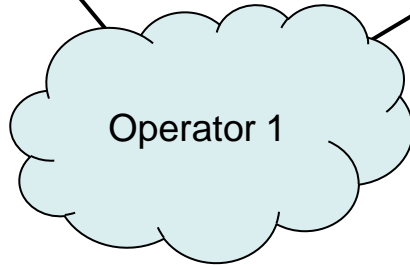
Cooperation Working Group Small Task Team



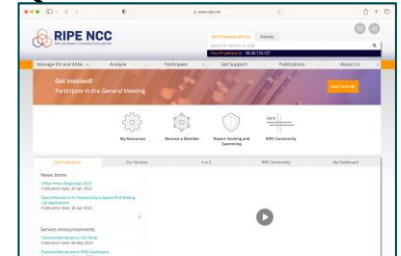
# Traffic flow on the Internet



# Traffic flow on the Internet

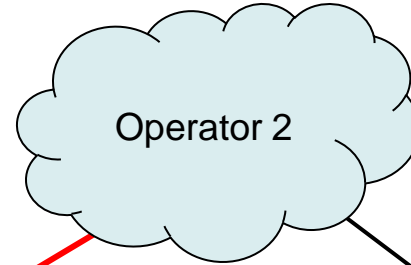
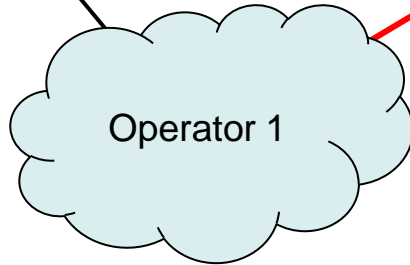


Company pays for this!



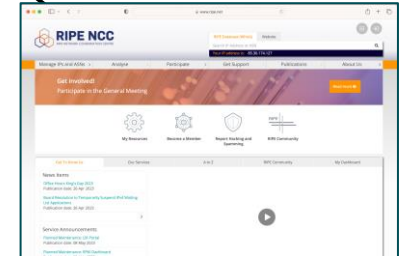
End user pays this!

# Traffic flow on the Internet



Company pays for this!

How do operators agree on this transaction?



End user pays this!

# Why exchange traffic in the first place?

---

- One provider can never have all customers
  - Providers will also have different customer segments, eyeballs, companies, colocation, banks etc
- Situations will occur when a provider with a limited footprint wants to exchange traffic with a provider with a larger footprint
- A simplified model is:
  - **Peering** is exchange of traffic for free
  - **Transit** is exchange of traffic for a fee
    - Money flows in one direction only

# Why pay for traffic?

---

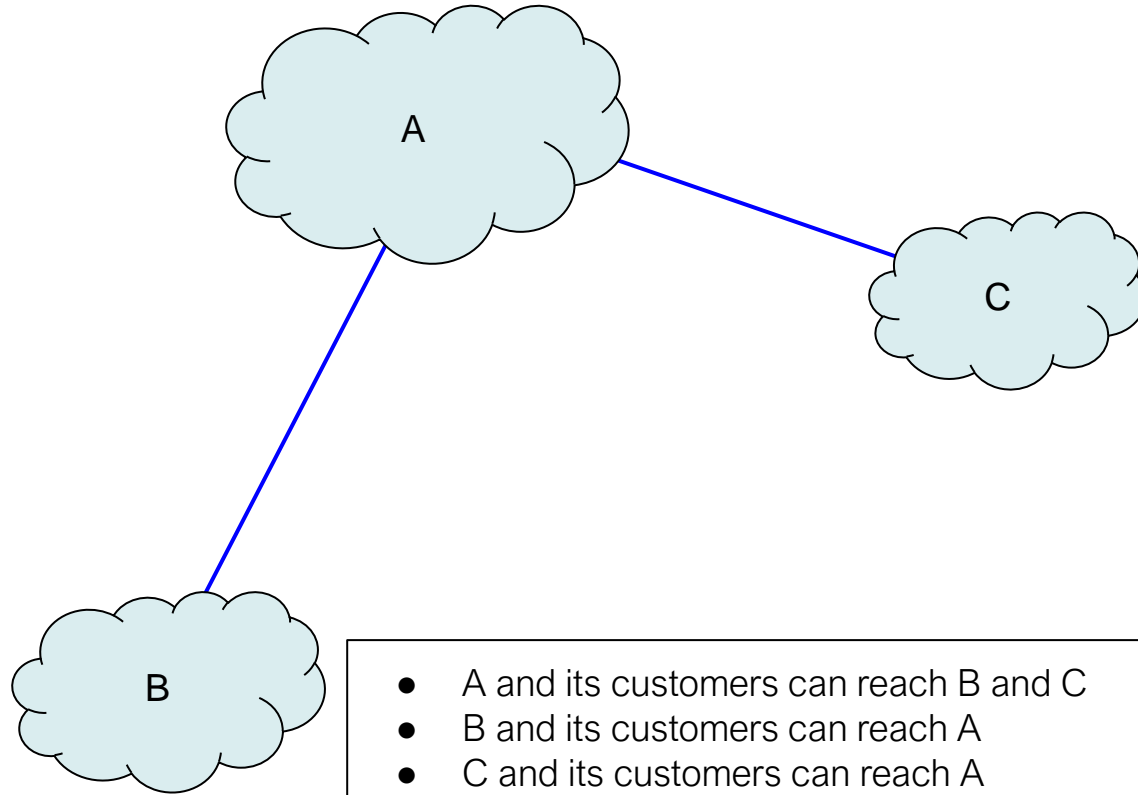
- An operator with a larger footprint will have to transport the traffic over a longer distance
- The cost for maintaining the larger network is higher
  - In principle the transit charges are comparable to transport costs
- An operator with a significantly larger customer base have had larger costs for building out infrastructure
  - Traffic fees are paid from the smaller to the larger

# Why **not** pay for traffic?

---

- If two providers consider their network footprint, cost, and traffic volumes more or less equal, sending invoices in one or both directions are unnecessary under the assumption they will be of equal monetary value
- If you have multiple parties that are equal - a free exchange of traffic - peering will lower your transit costs
- Money saved on transit can be invested in better peering infrastructure for the benefit of end users

# Peering

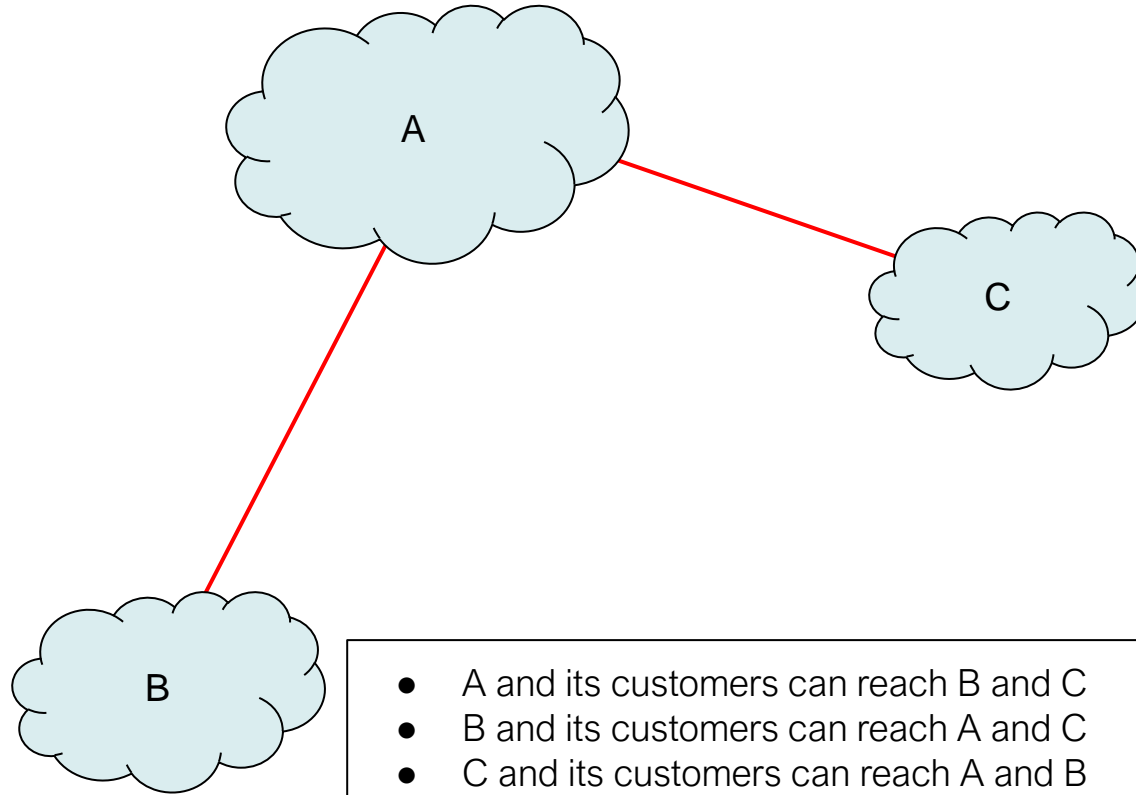


— Peering  
— Transit

- A and its customers can reach B and C
- B and its customers can reach A
- C and its customers can reach A



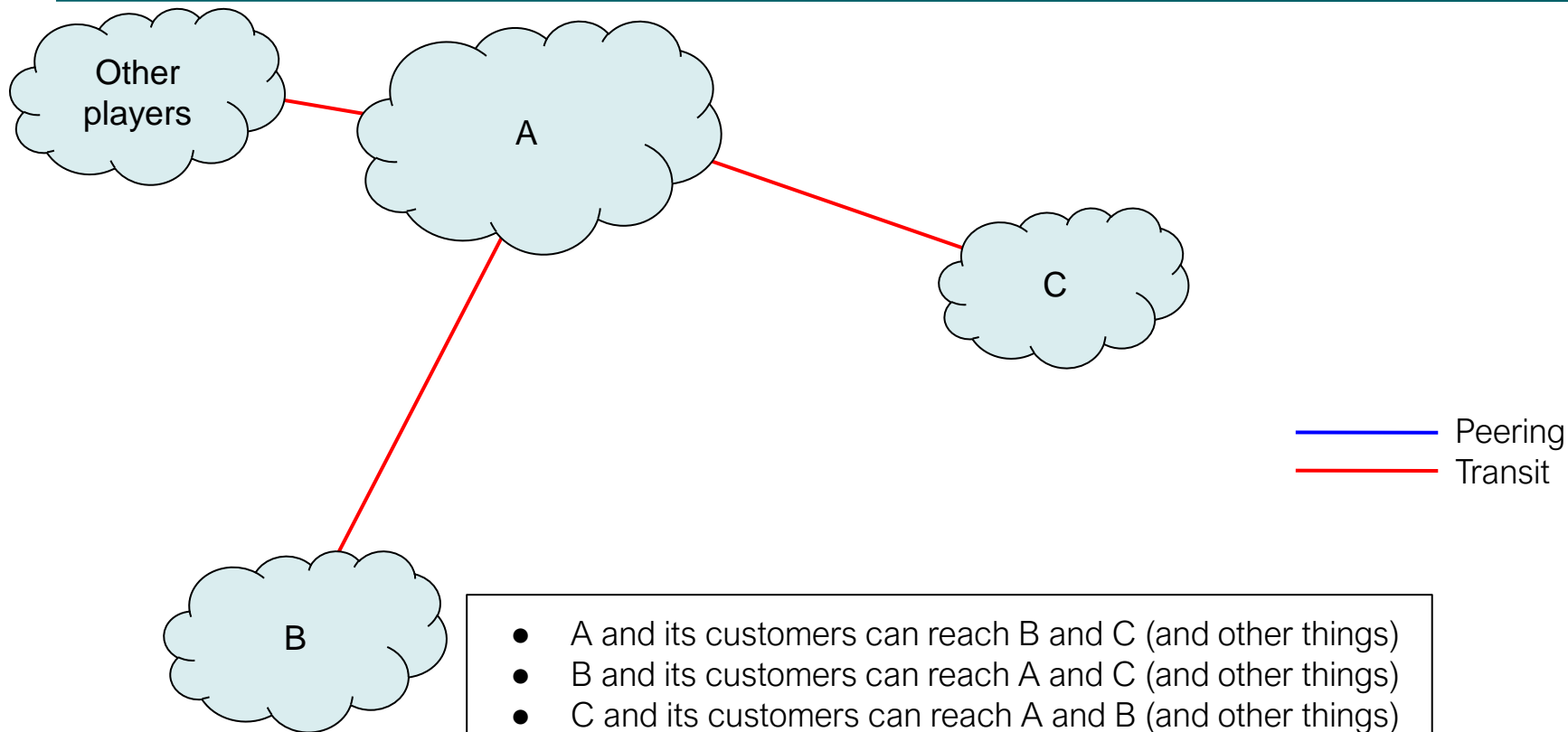
# Transit



— Peering  
— Transit

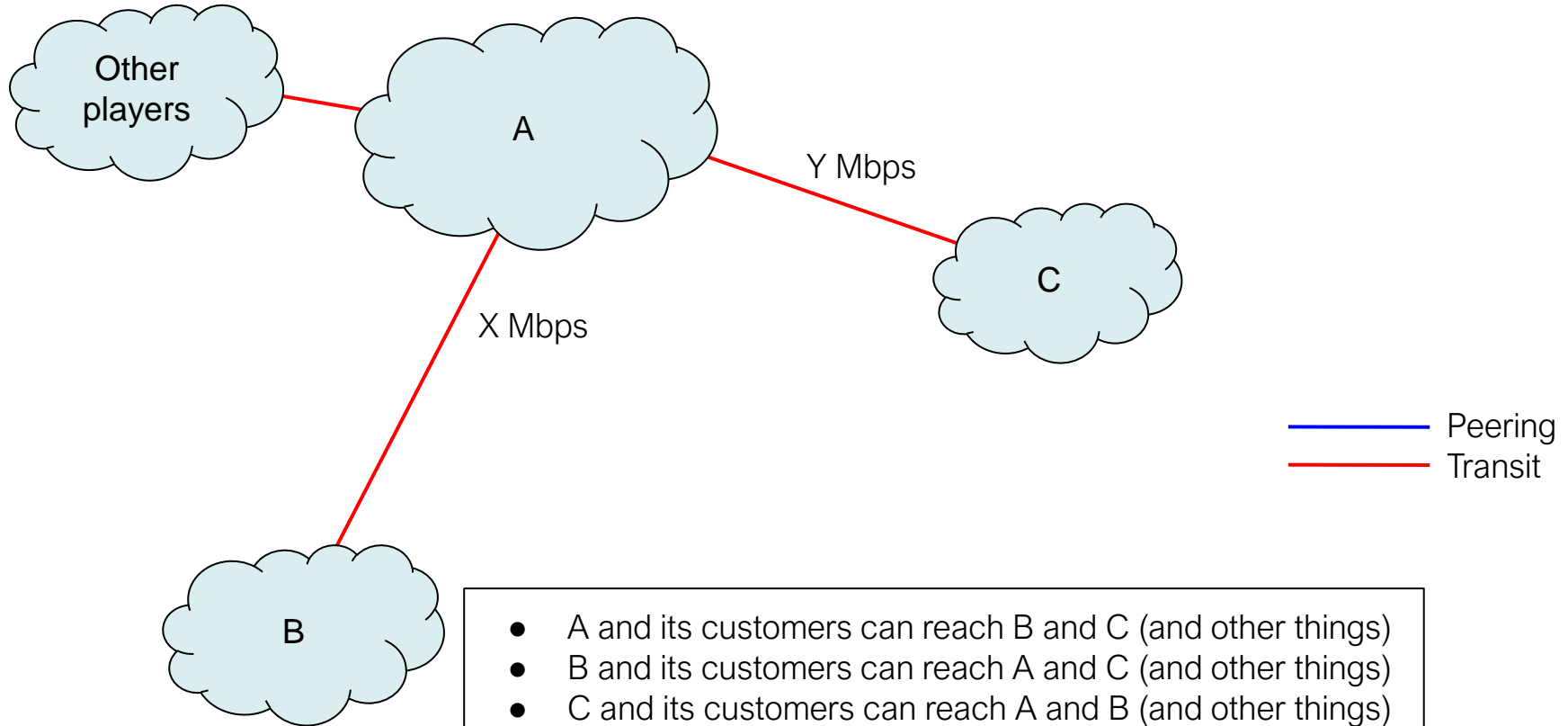
- A and its customers can reach B and C
- B and its customers can reach A and C
- C and its customers can reach A and B

# In reality



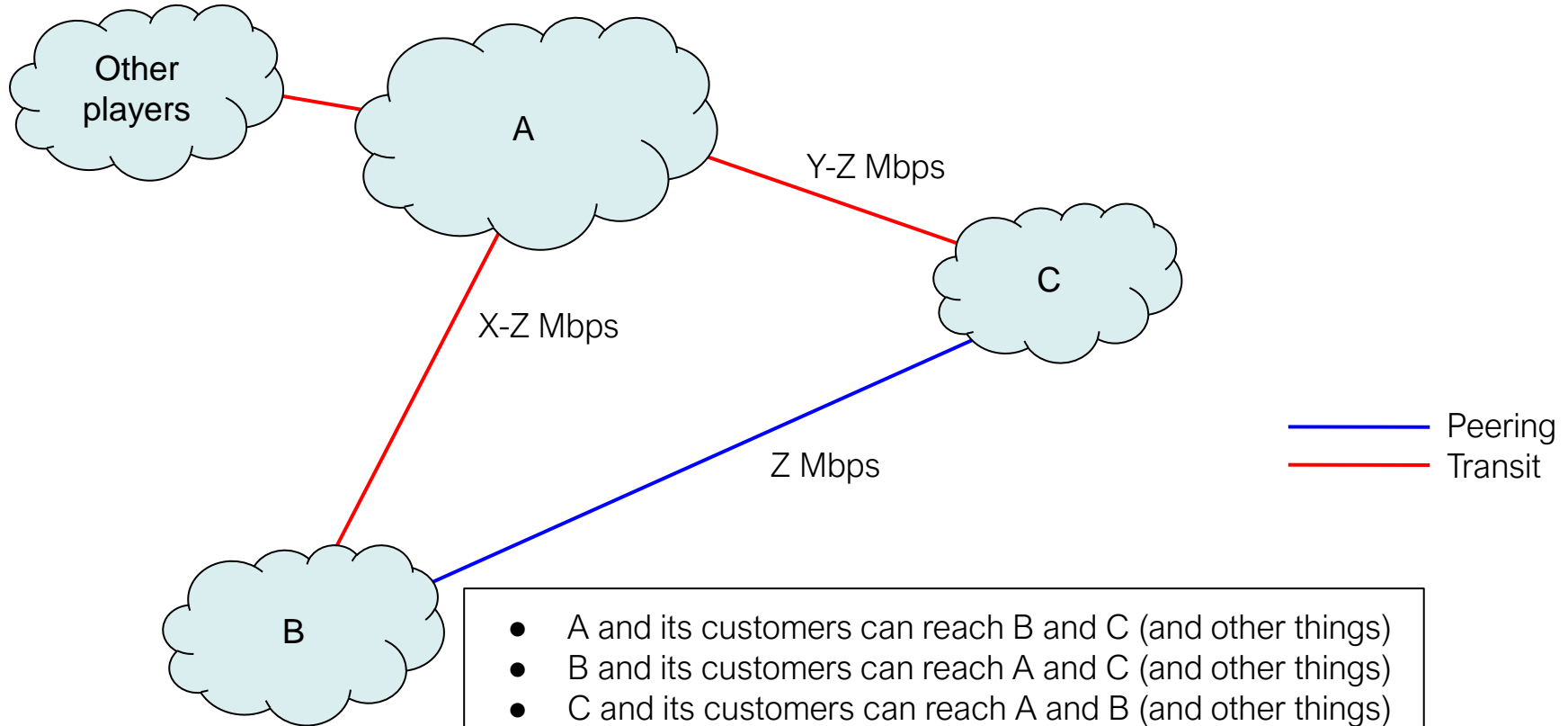
- A and its customers can reach B and C (and other things)
- B and its customers can reach A and C (and other things)
- C and its customers can reach A and B (and other things)

# Payments / traffic



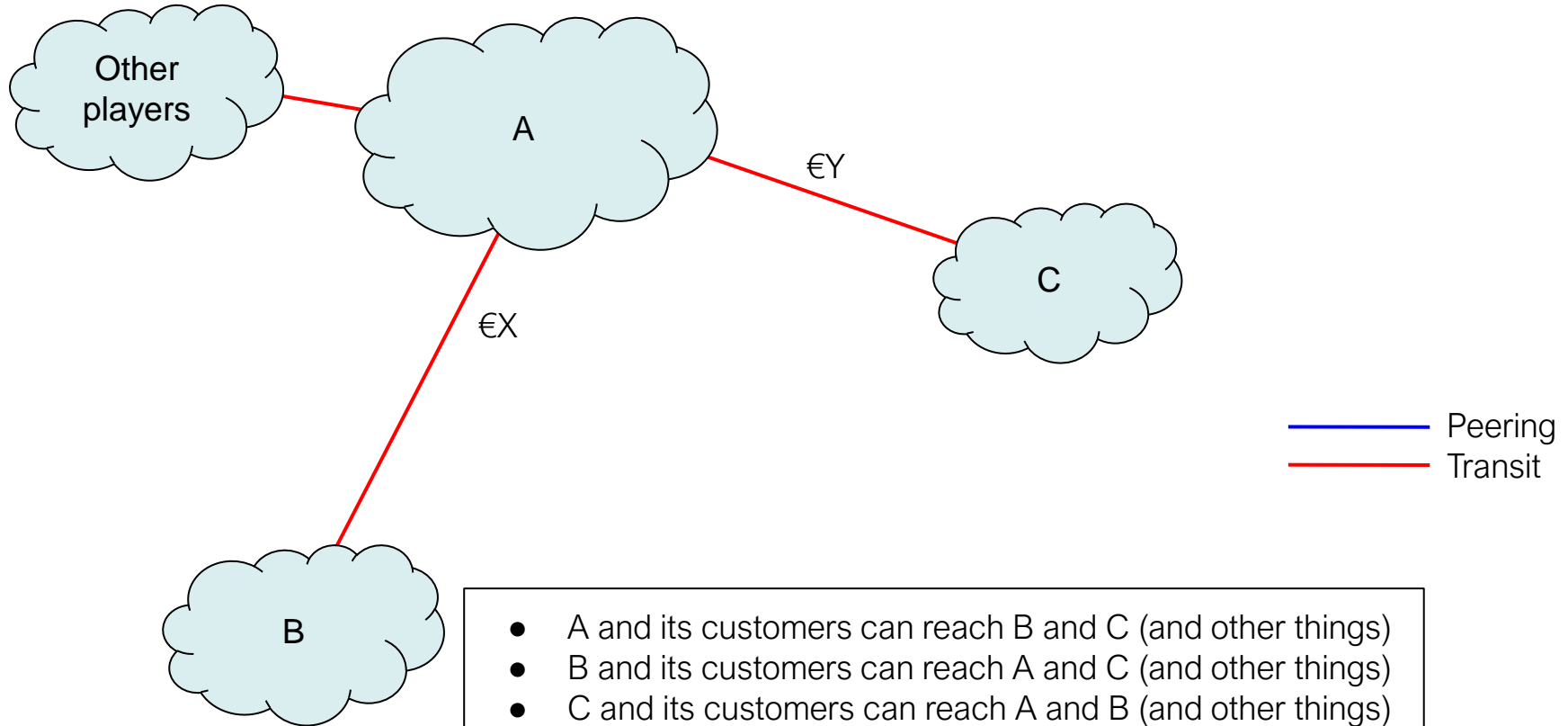
- A and its customers can reach B and C (and other things)
- B and its customers can reach A and C (and other things)
- C and its customers can reach A and B (and other things)

# Payments / traffic



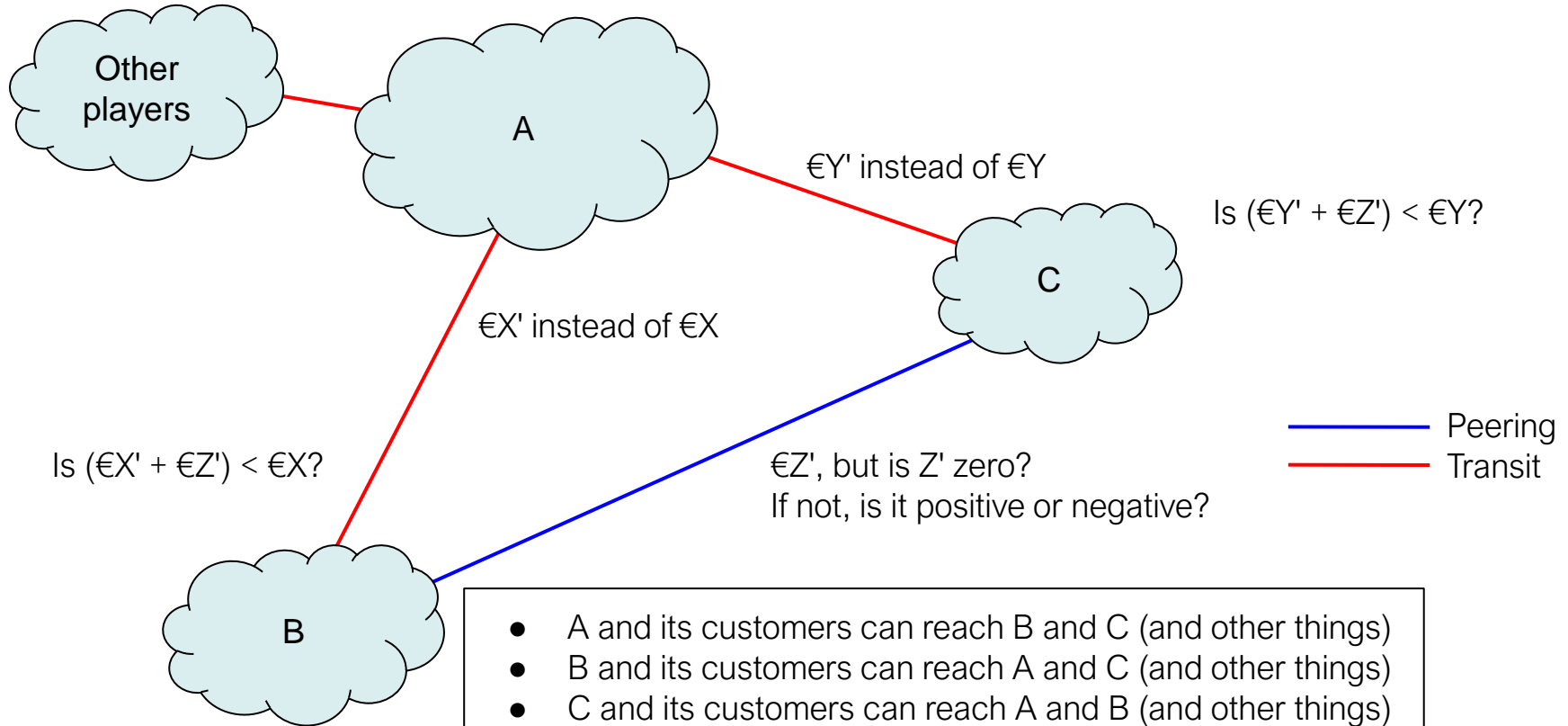
- A and its customers can reach B and C (and other things)
- B and its customers can reach A and C (and other things)
- C and its customers can reach A and B (and other things)

# Payments / traffic



- A and its customers can reach B and C (and other things)
- B and its customers can reach A and C (and other things)
- C and its customers can reach A and B (and other things)

# Payments / traffic



- A and its customers can reach B and C (and other things)
- B and its customers can reach A and C (and other things)
- C and its customers can reach A and B (and other things)

# Hybrid models

---

- There are also hybrid models, for example “paid peering”
  - When a single dominant player (mostly current or former monopolies) charges others operators for sending and receiving traffic to the dominant players customers
  - The cost is lower - and access is limited to the dominant players customers - not the rest of the Internet

# The value of traffic

---

- In peering discussions it mostly comes down to valuing traffic in each direction
  - The first criteria often used is that in/out should be in balance - but this depends on the peer
- For peers with content (rather than large number of eyeballs) localization of traffic might have value in itself
  - But content is also often considered potential customers
- **IMPORTANT: *The internet model of payment settlement is only based on value of traffic***



# Traffic flow on the Internet



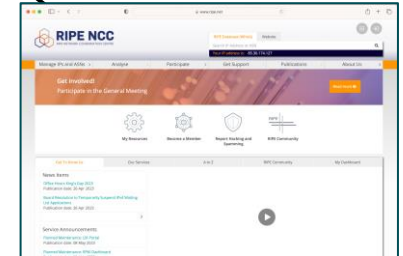
Based on value of traffic

Operator 2

Company pays for this!

Operator 1

End user pays this!



# Traffic flow on the Internet



Based on value of traffic

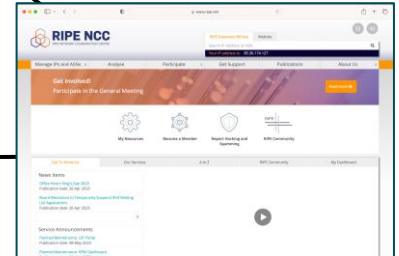
Operator 2

Company pays for this!

Operator 1

End user pays this!

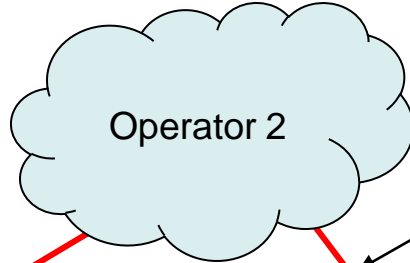
Who pays for this?



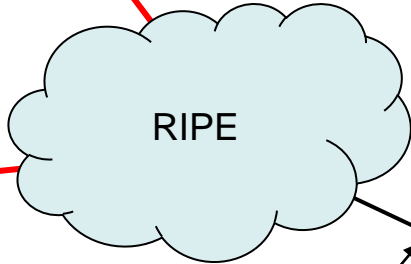
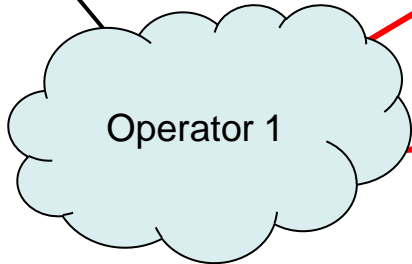
# Traffic flow on the Internet, in reality



Based on value of traffic



Based on value of traffic



End user pays this!

Based on value of traffic

Company pays for this!



Questions?

