



Network Neutrality

What is discussed – what are the issues?

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Most important issues!

- **Customer must not be disappointed**
- **Provider must not be disappointed**
- **Competition is to be enabled**
- **Innovation both at edge and in core**

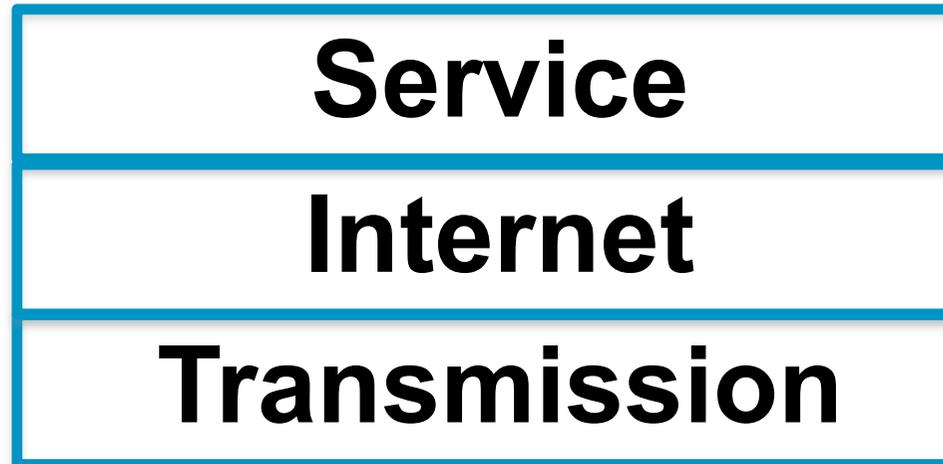
This is not the USA!

- **This is not about AT&T or Google**
- **We have 13.216.148 domains in .DE**
- **We have 912.925 domains in .SE**
- **We have Skype, BBC and Spotify**
- **It is about consumer choice, and ability for anyone to innovate**

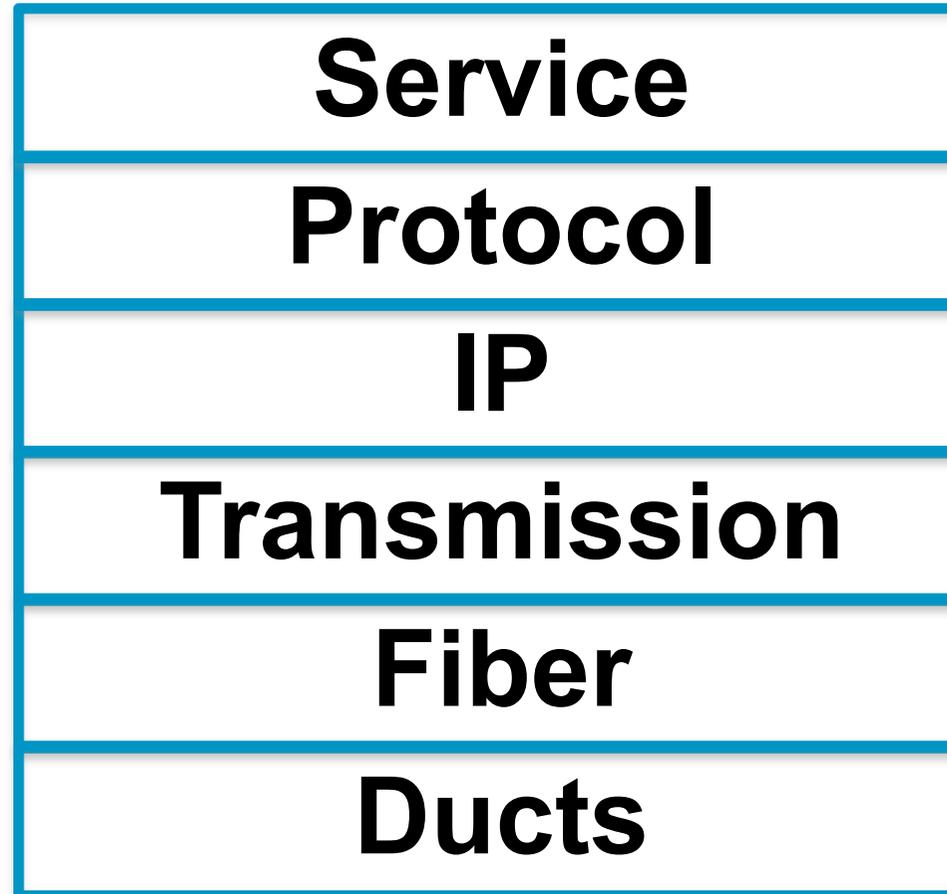
Architecture



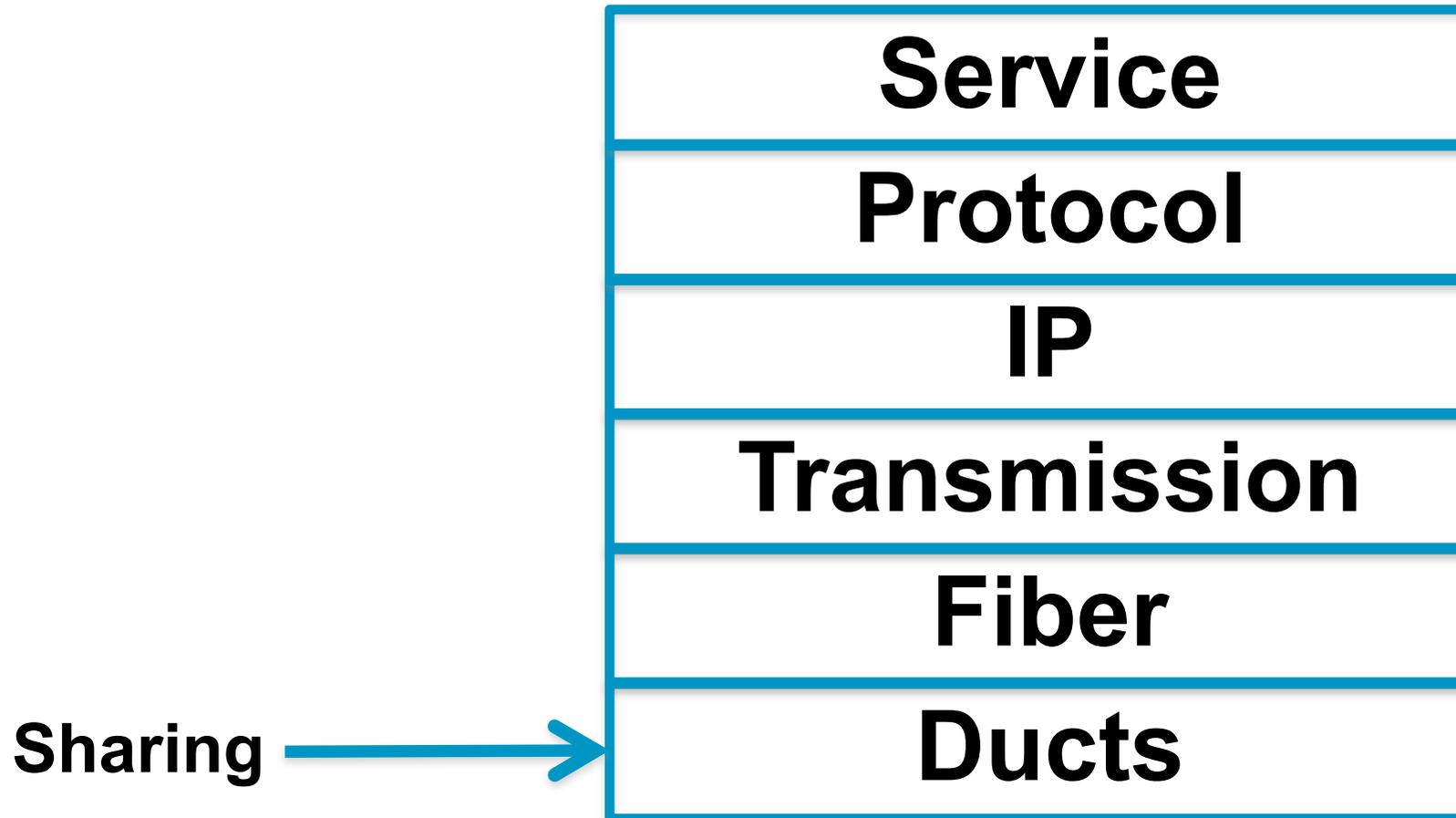
Architecture



Boundary moves...



Boundary moves...



Boundary moves...

Competition



Service

Protocol

IP

Transmission

Fiber

Sharing

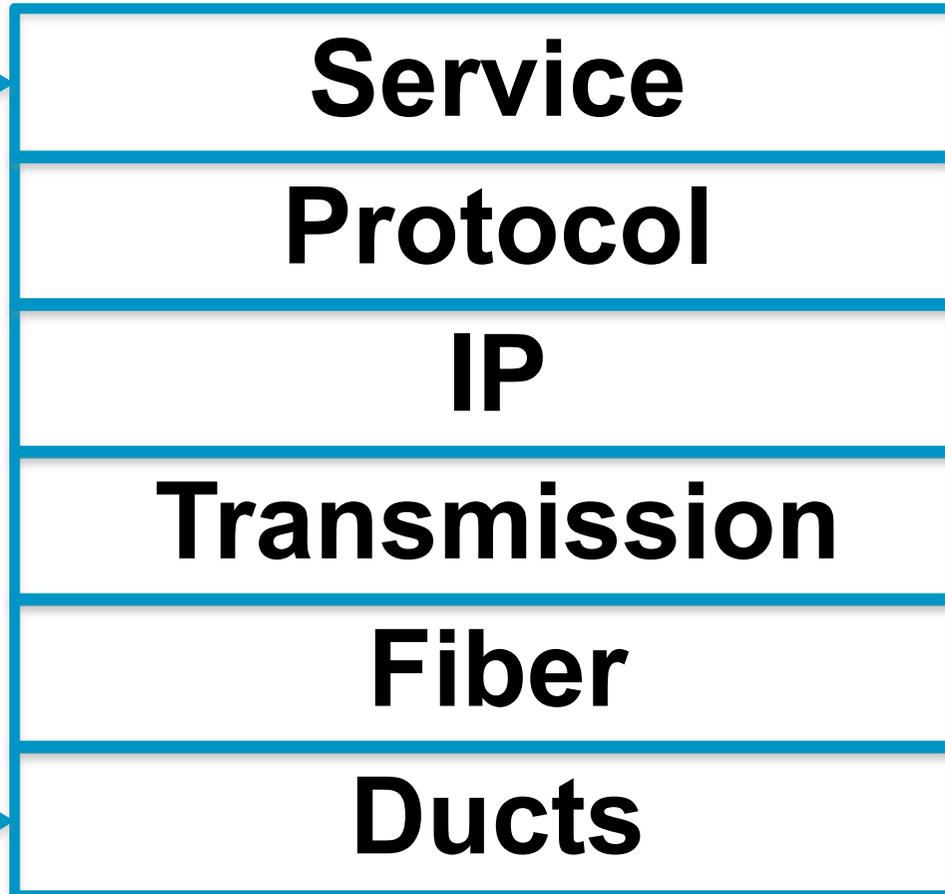


Ducts

Boundary moves...

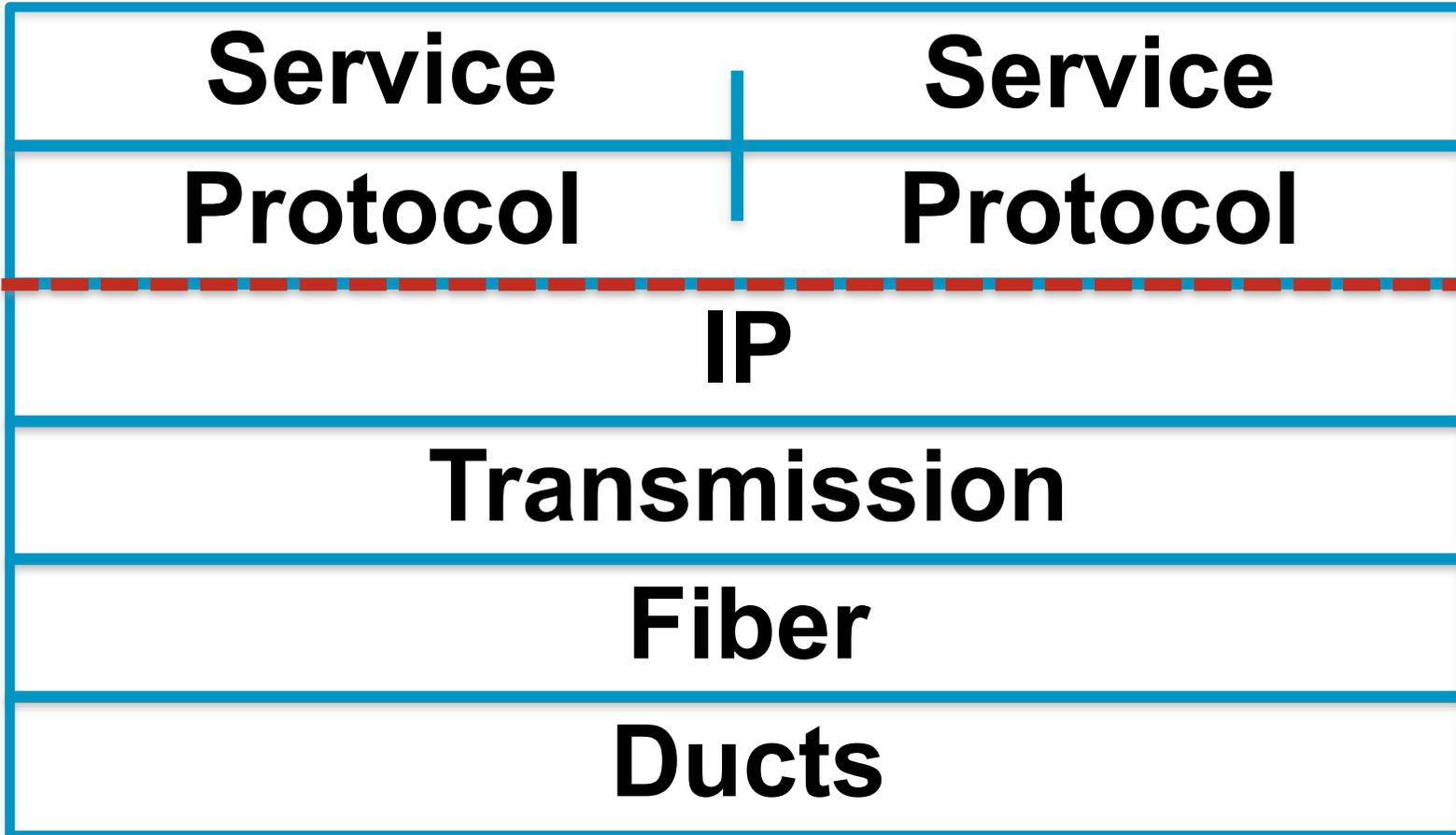
Competition →

Boundary?

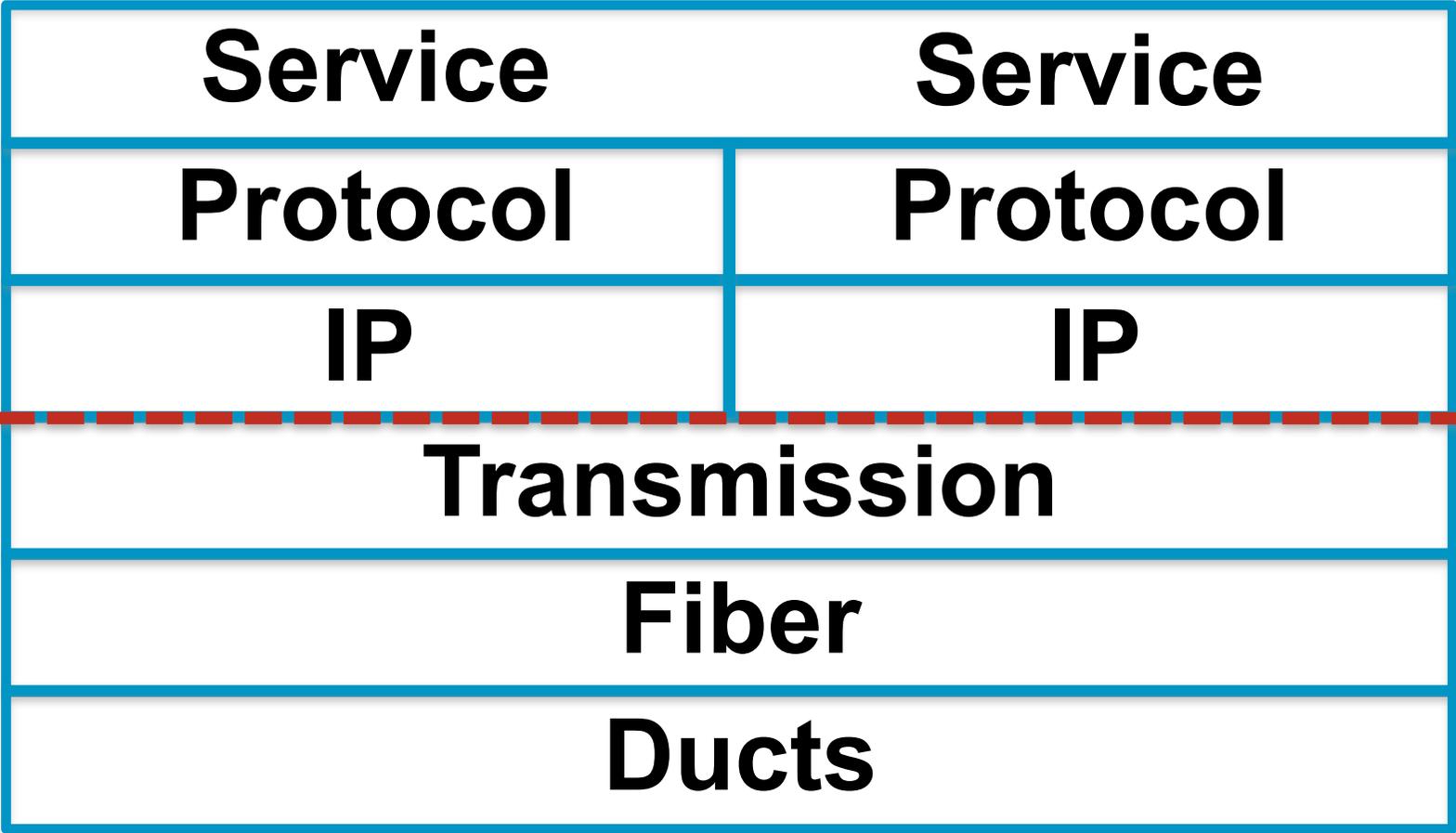


Sharing →

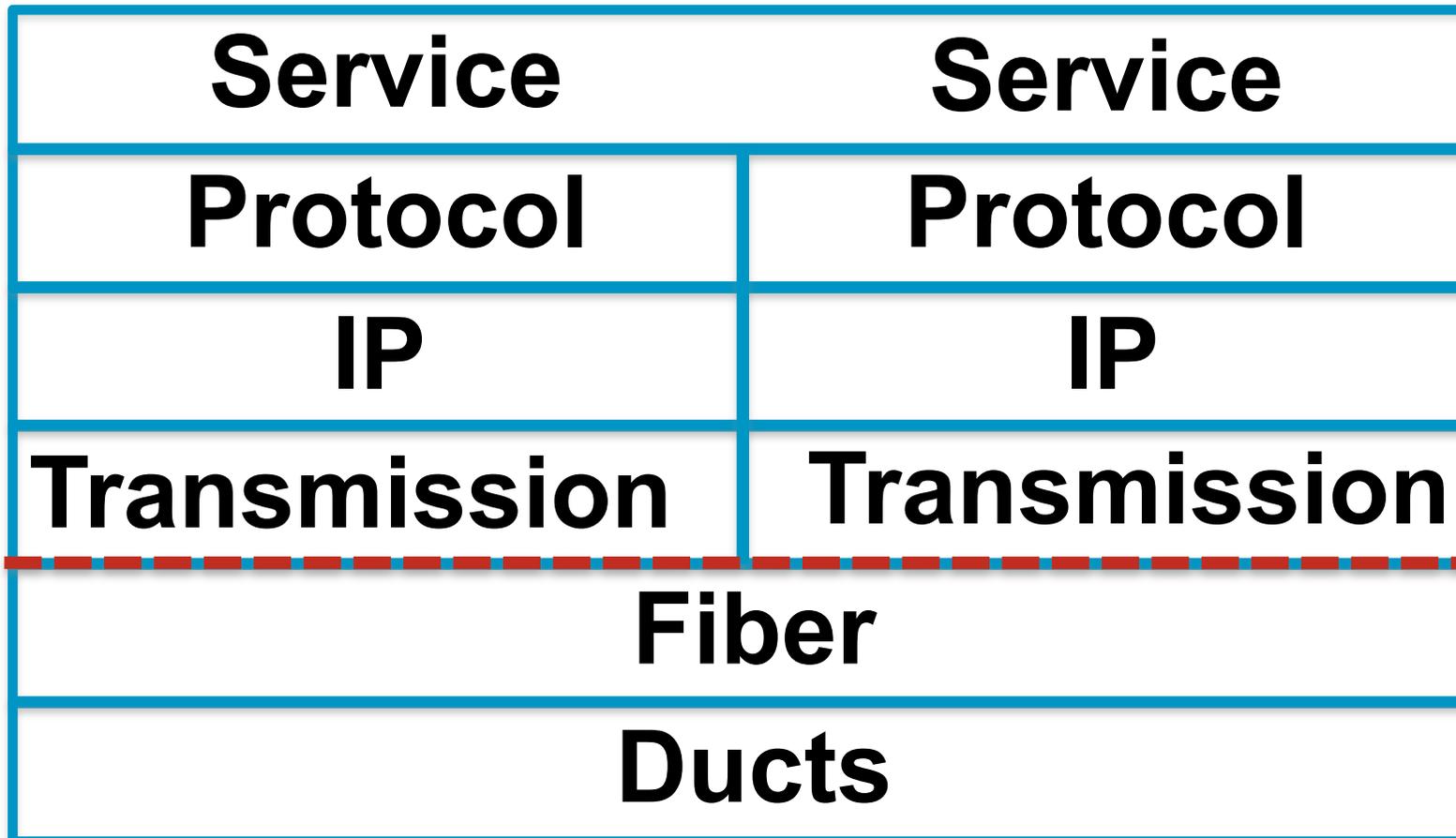
Share ISP



Share transmission



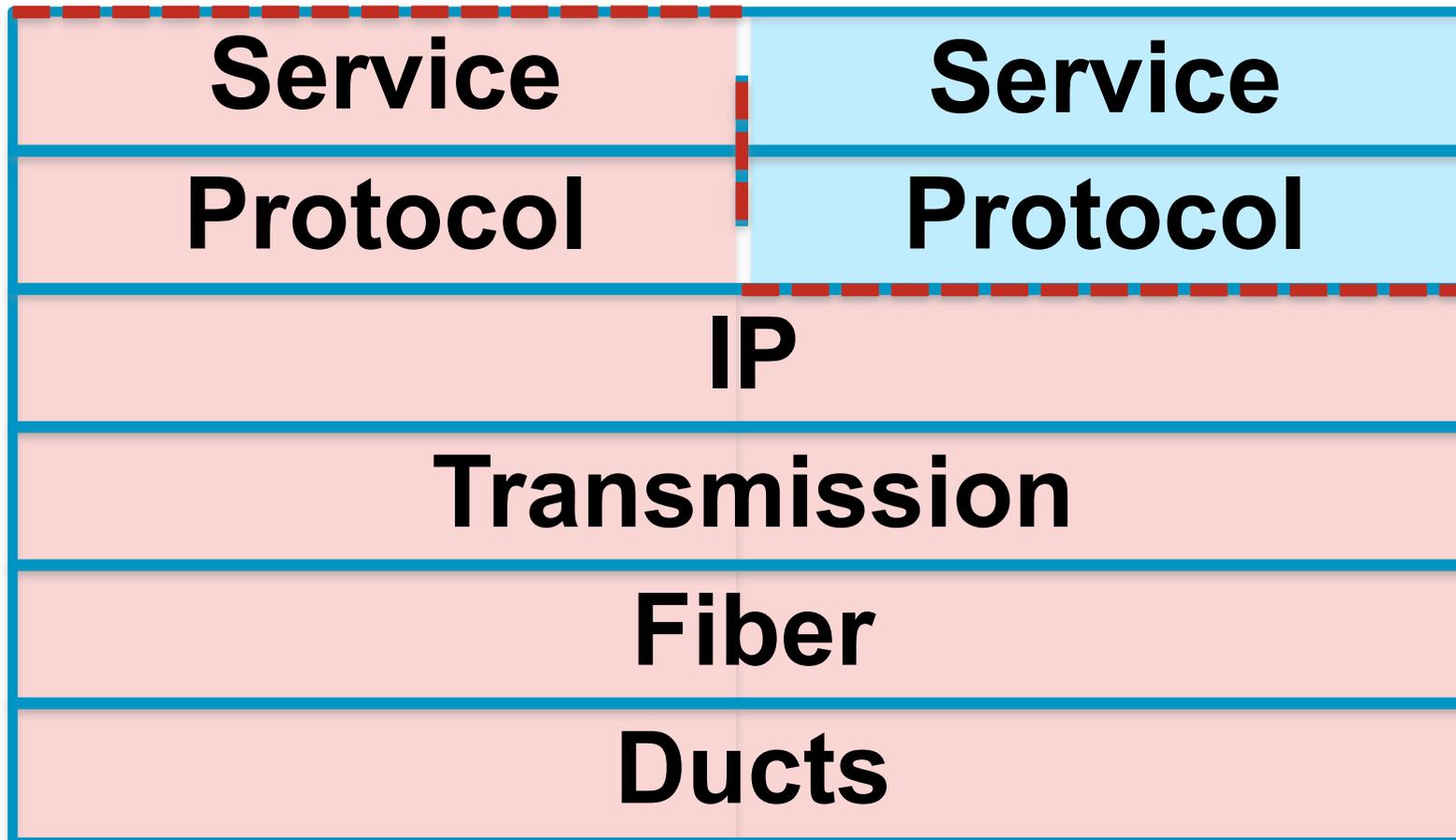
Share fiber



Share duct

Service	Service
Protocol	Protocol
IP	IP
Transmission	Transmission
Fiber	Fiber
Ducts	

Complicated(?) example



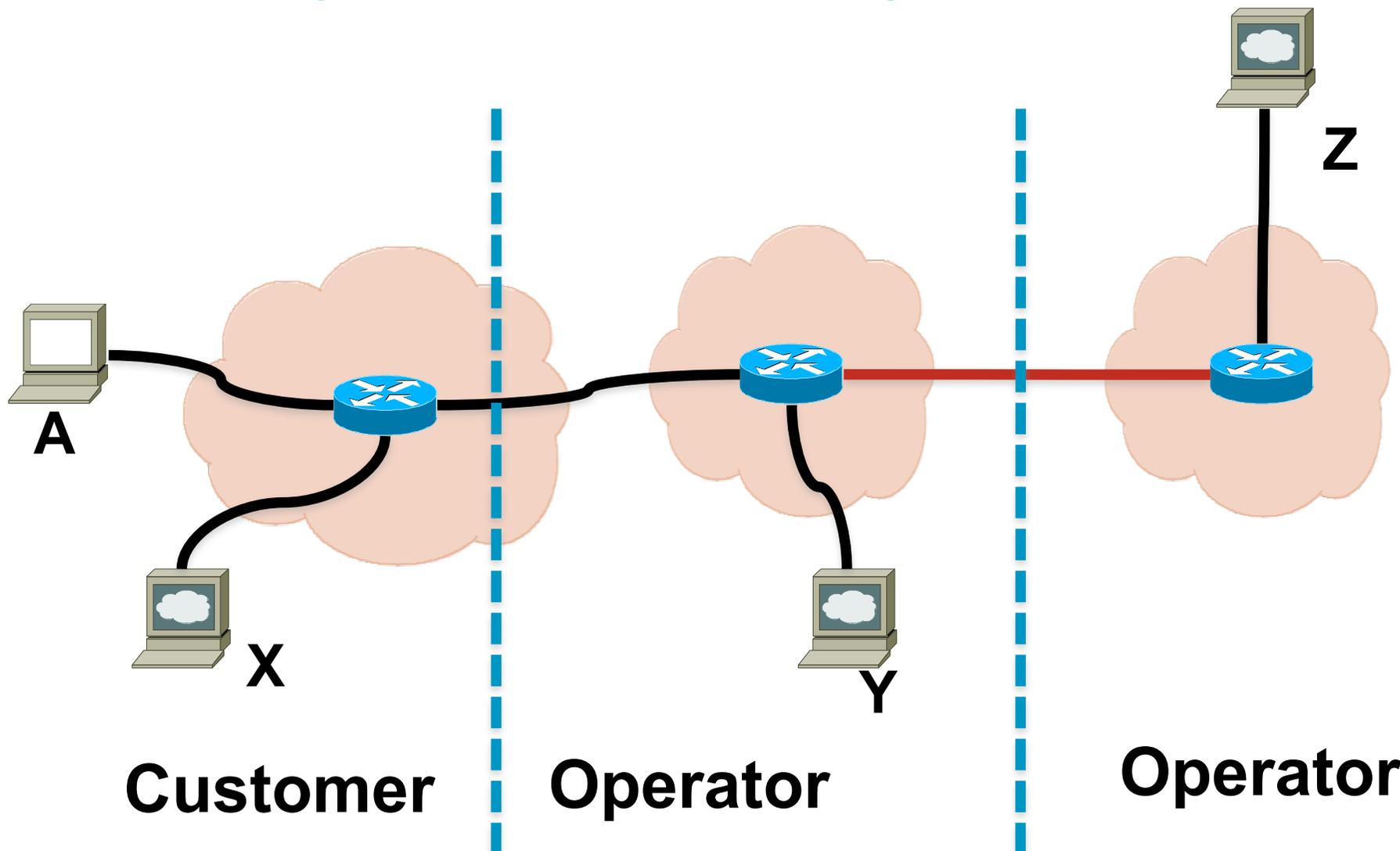
What is discussed?

- 1. Blocking**
- 2. Prioritization**
- 3. Transparency**
- 4. Predictability**
- 5. Regulation**

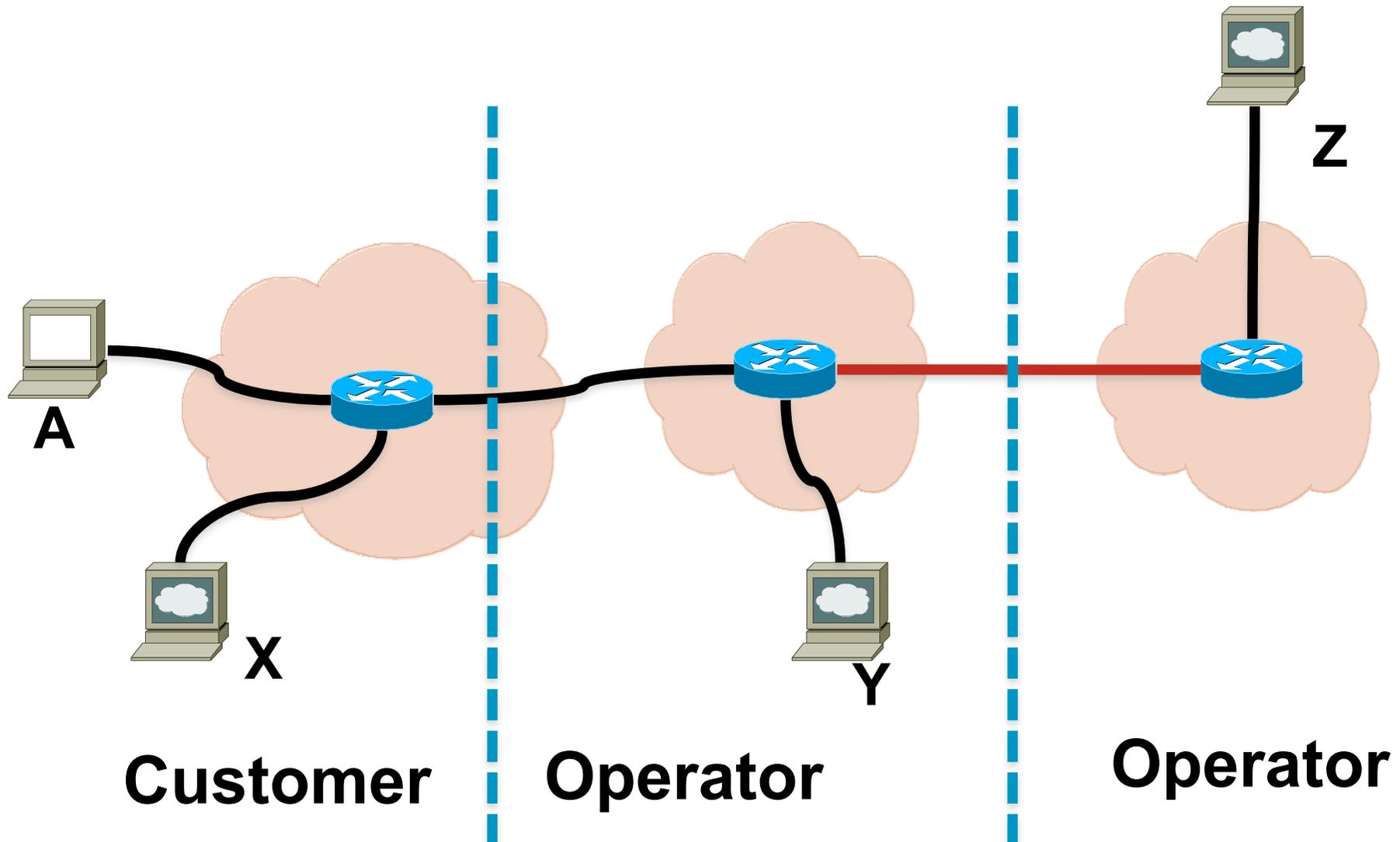
1. Blocking

- **Ability to communicate?**
 - **Connect whatever one want?**
 - **Use any kind of traffic?**
 - **Communicate with anyone?**
- **Lawful content and services?**

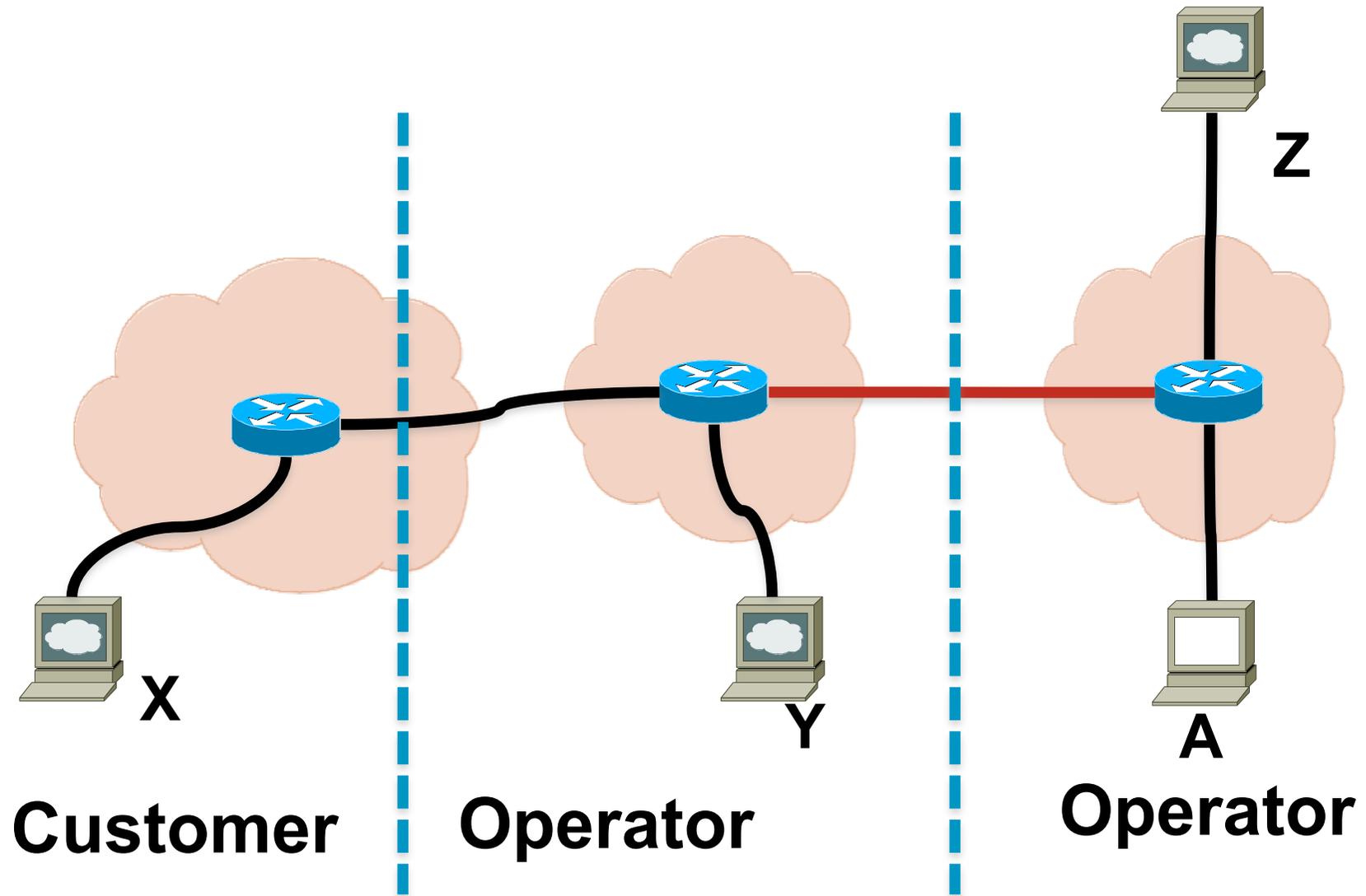
Ability to access any service



Ability to access from anywhere



Ability to access from anywhere

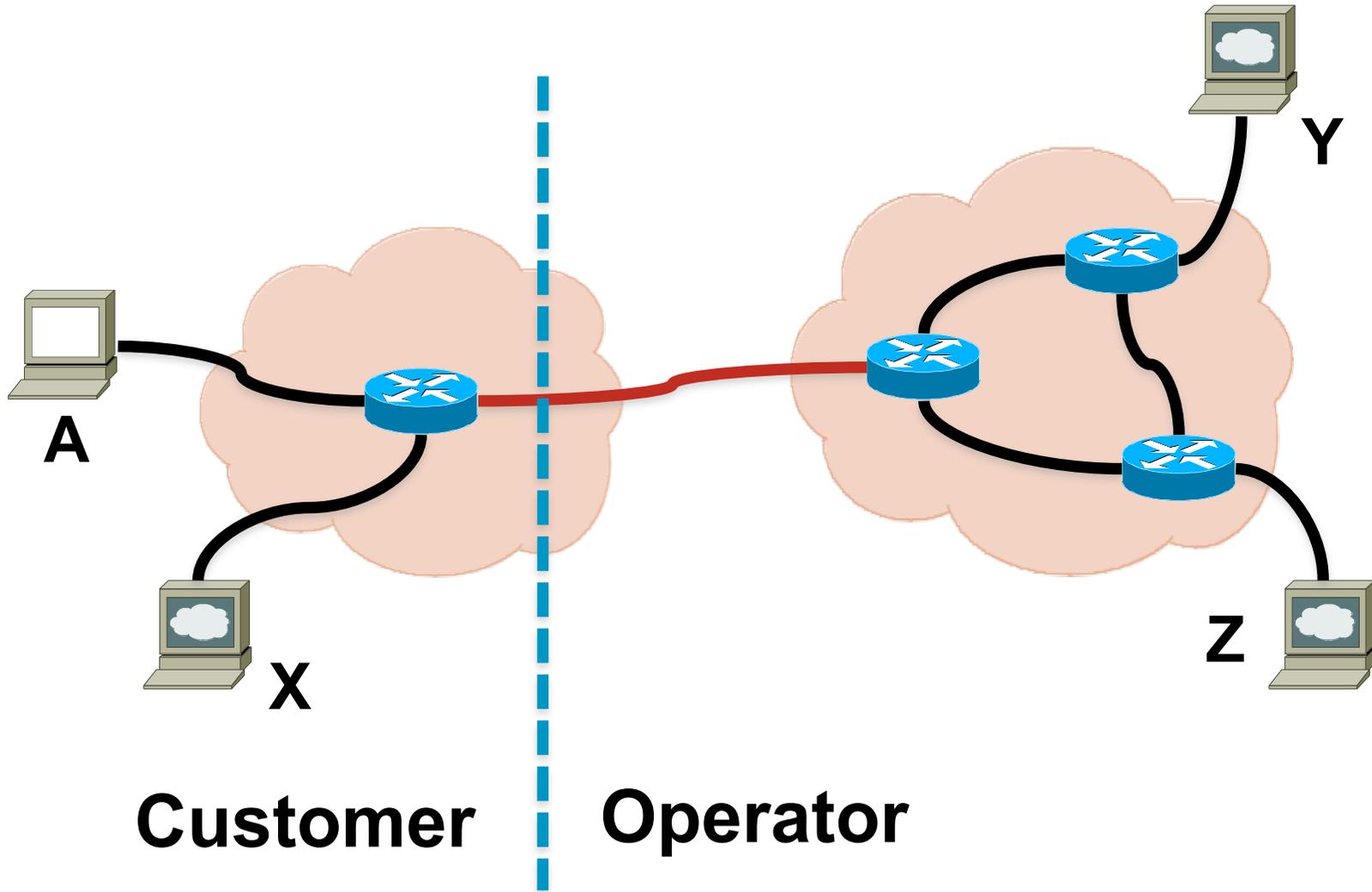


2. Prioritization

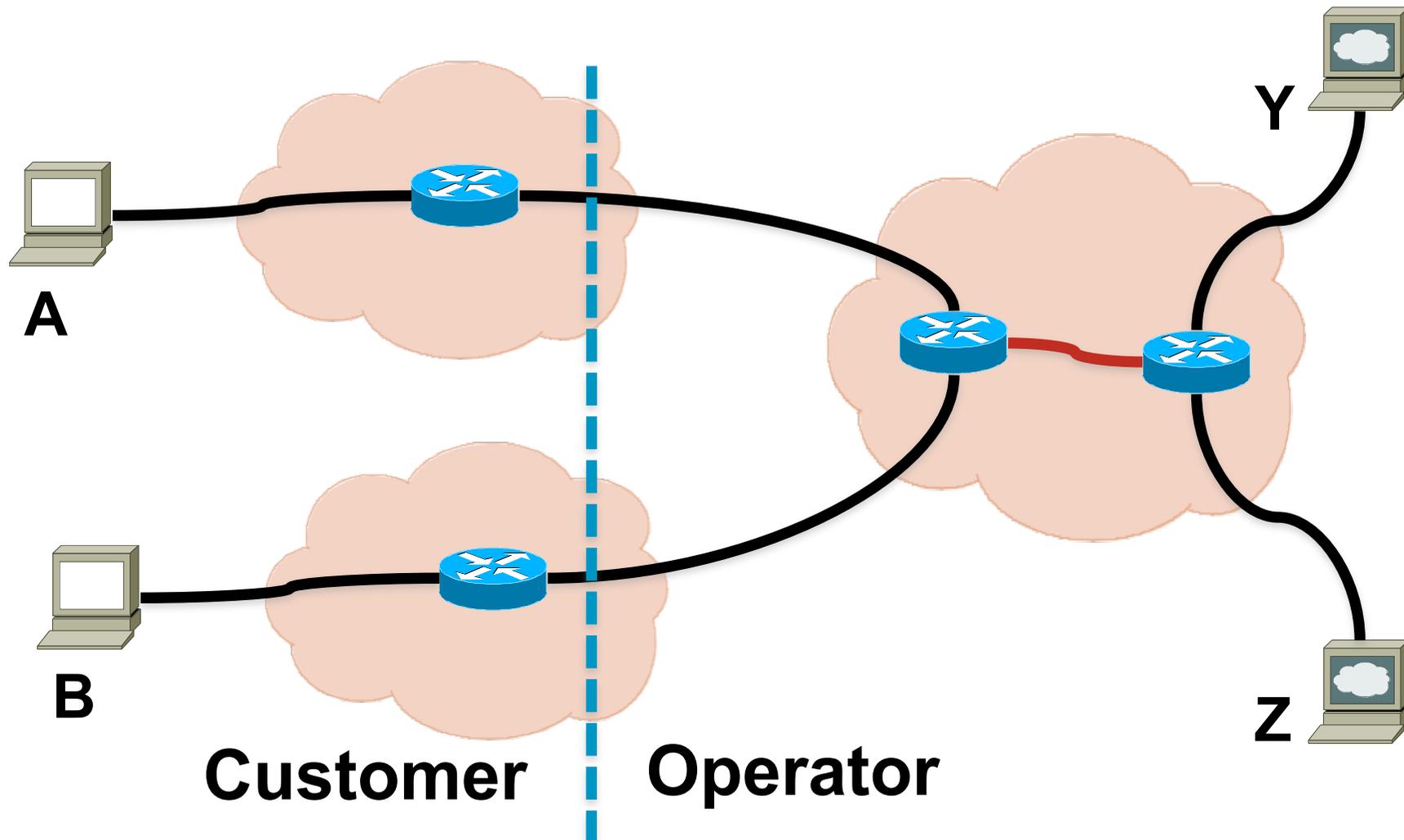
- **Different traffic is prioritized differently**
 - **According to what customer wants?**
 - **Different kinds of traffic?**
 - **Depending on provider of service?**
 - **Depending on local or global service?**
- **Does ISP sell QoS or QoE*?**

***Quality of Experience**

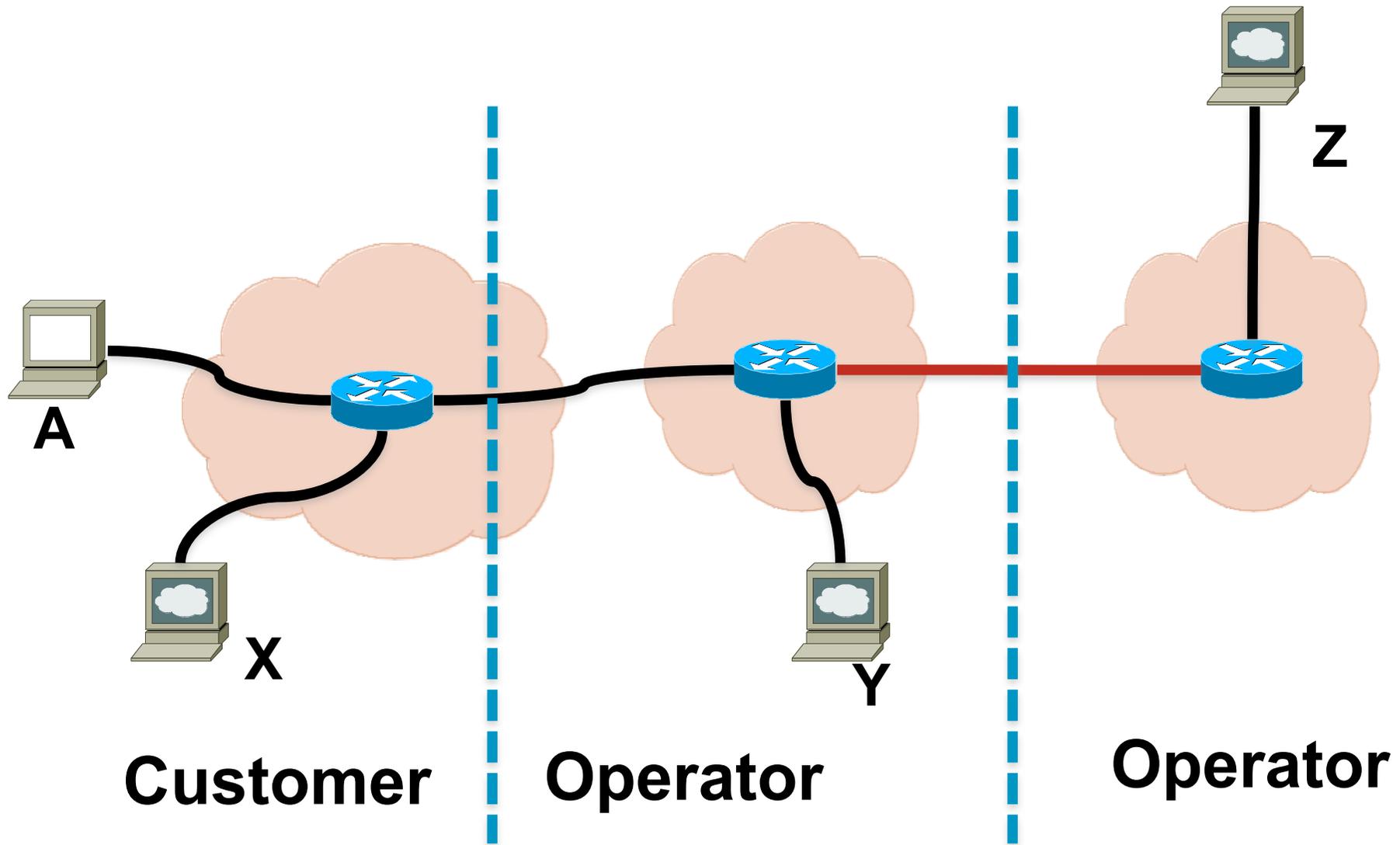
Prioritization – customer side



Prioritization – operator side



Prioritization – local/global



In Sweden, KO and ISP

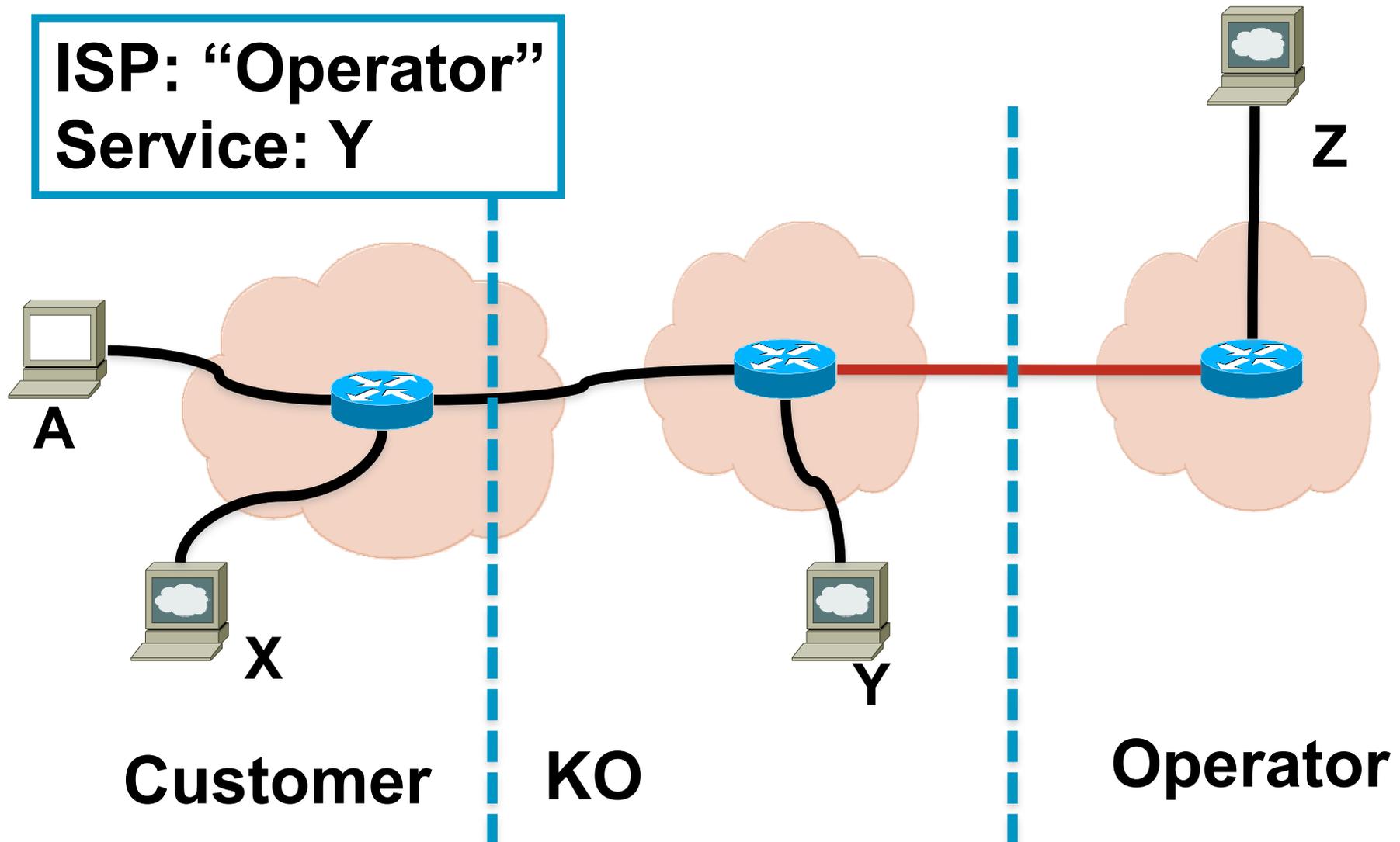
- We have many players
 - ISP, that have own services and agreements with providers...
 - Communication provider (KO) with agreements with ISPs, service providers and their own services...
- Whoever is a de-facto monopoly...

3. Transparency

- Inform customers what products are sold, but how?
- Minimize risk customer is surprised and disappointed?
- Do we need a taxonomy?

What is offered to customer?

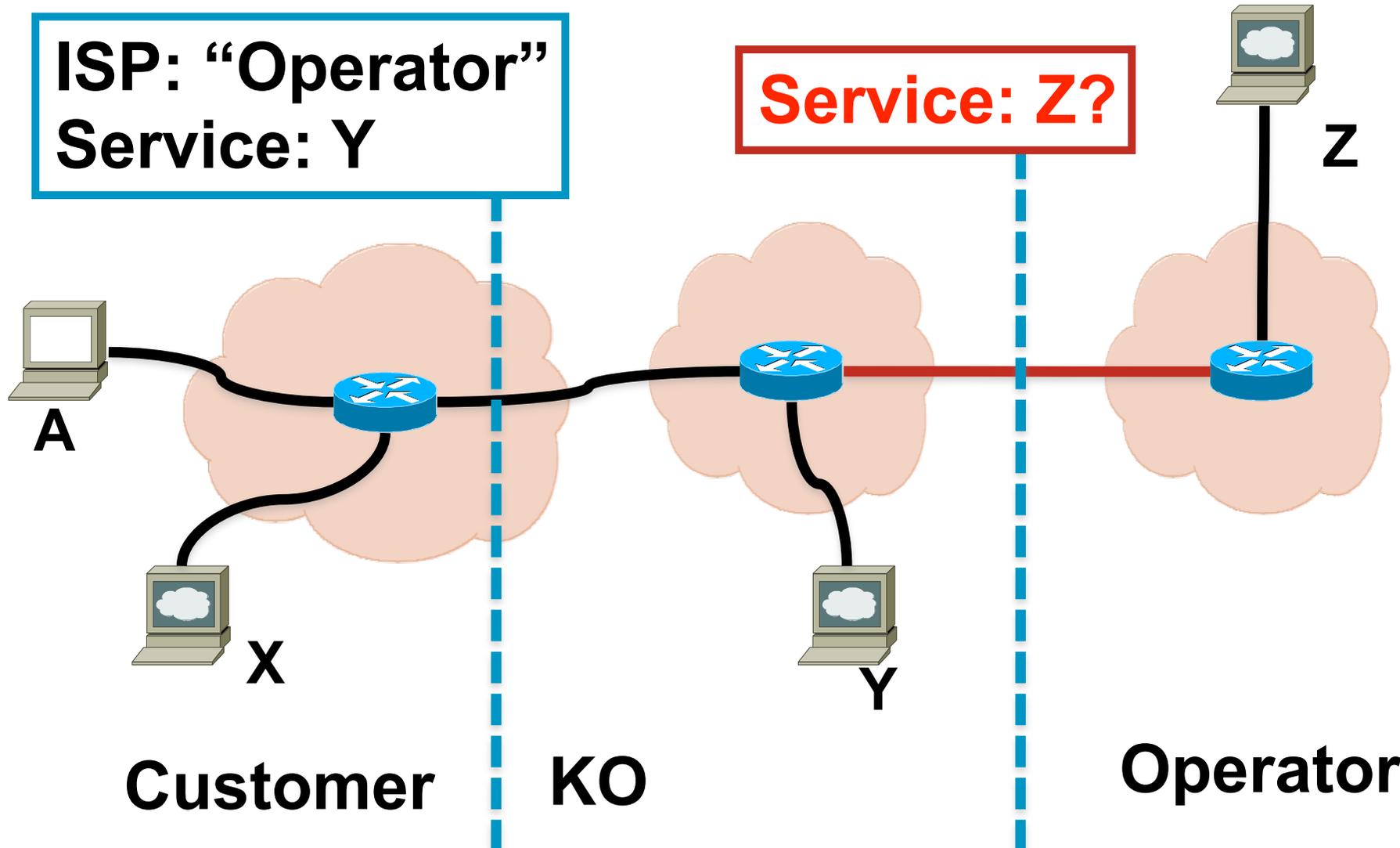
ISP: "Operator"
Service: Y



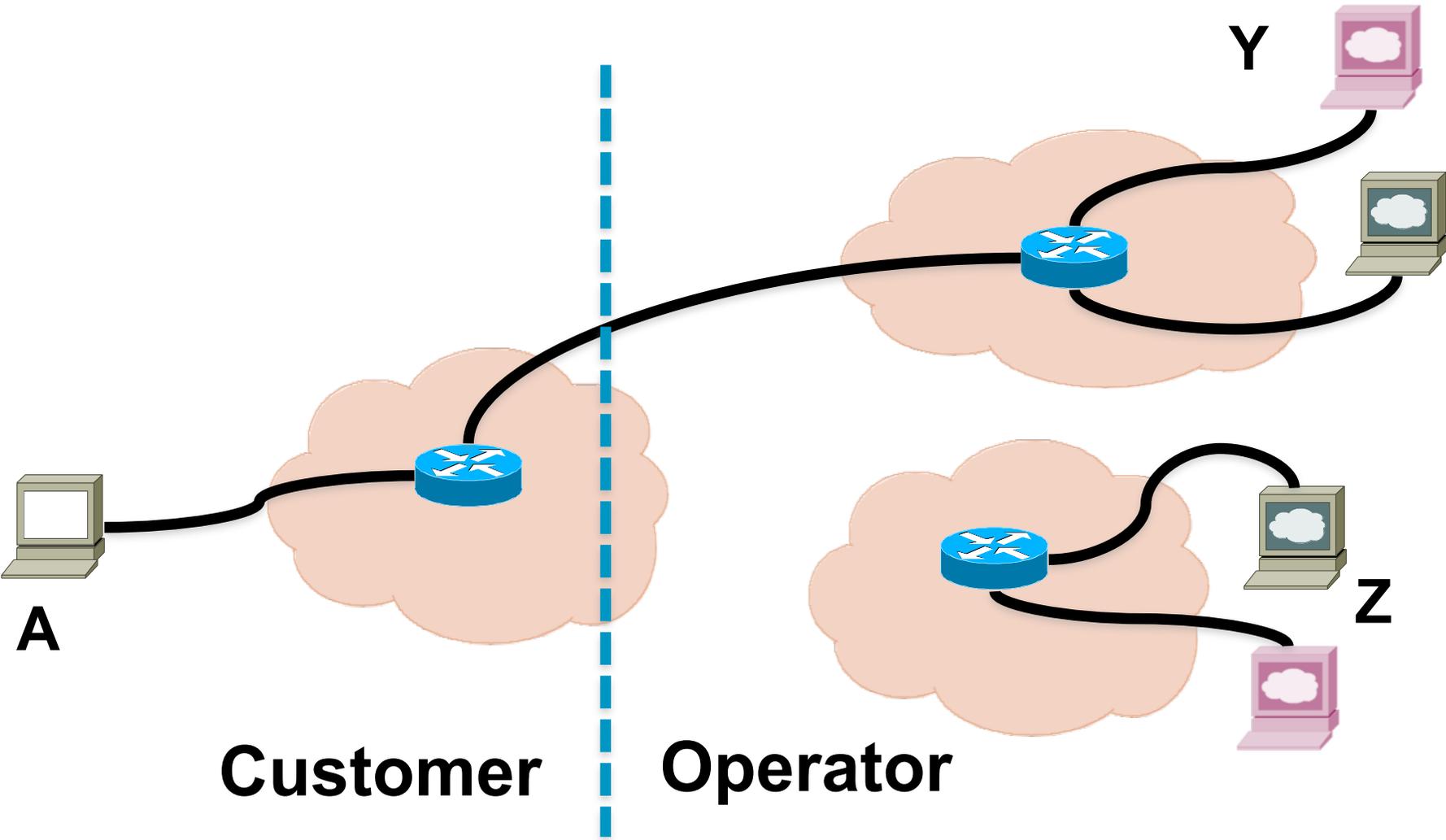
What is offered to customer?

ISP: "Operator"
Service: Y

Service: Z?

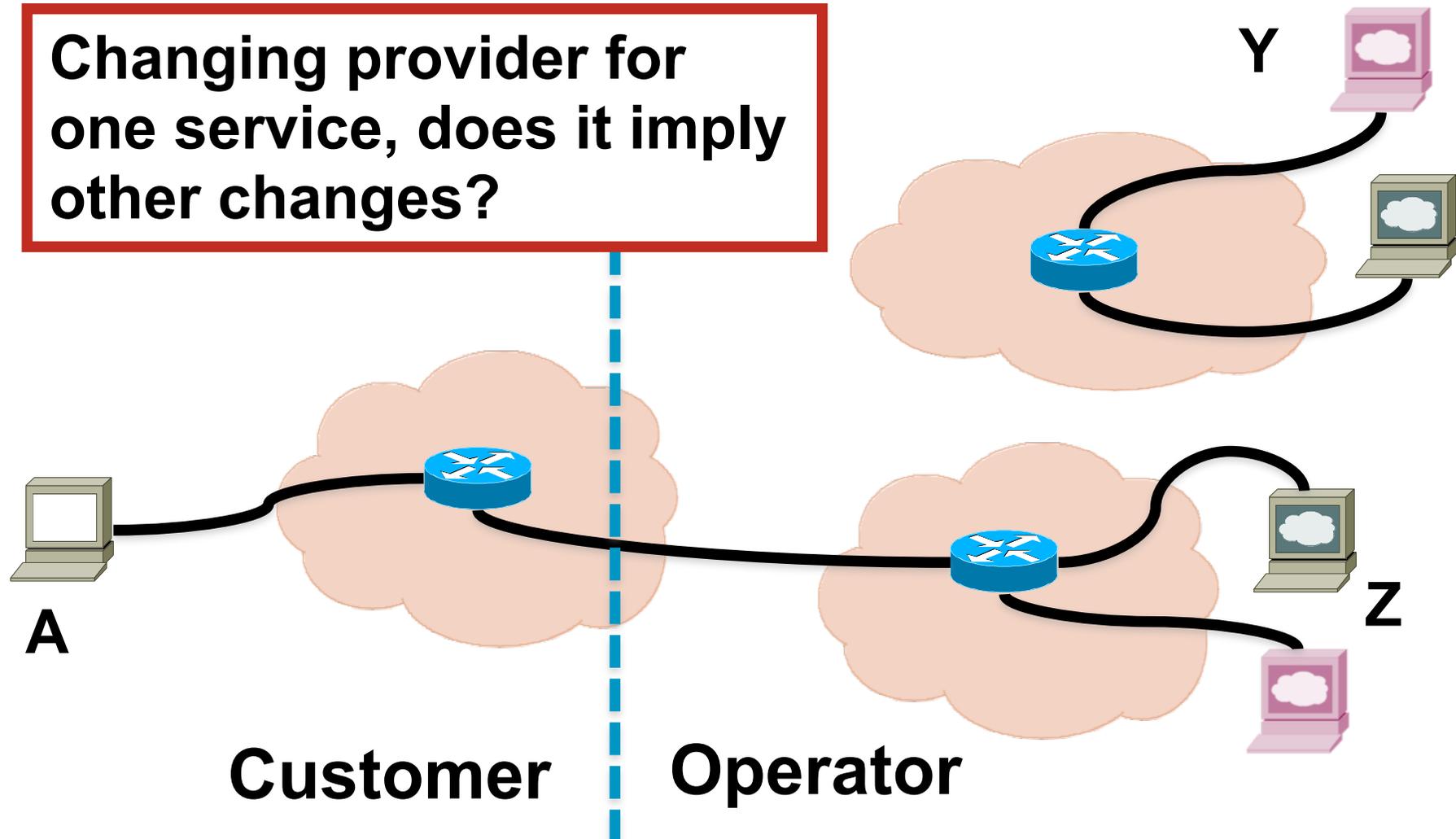


If you are not happy?



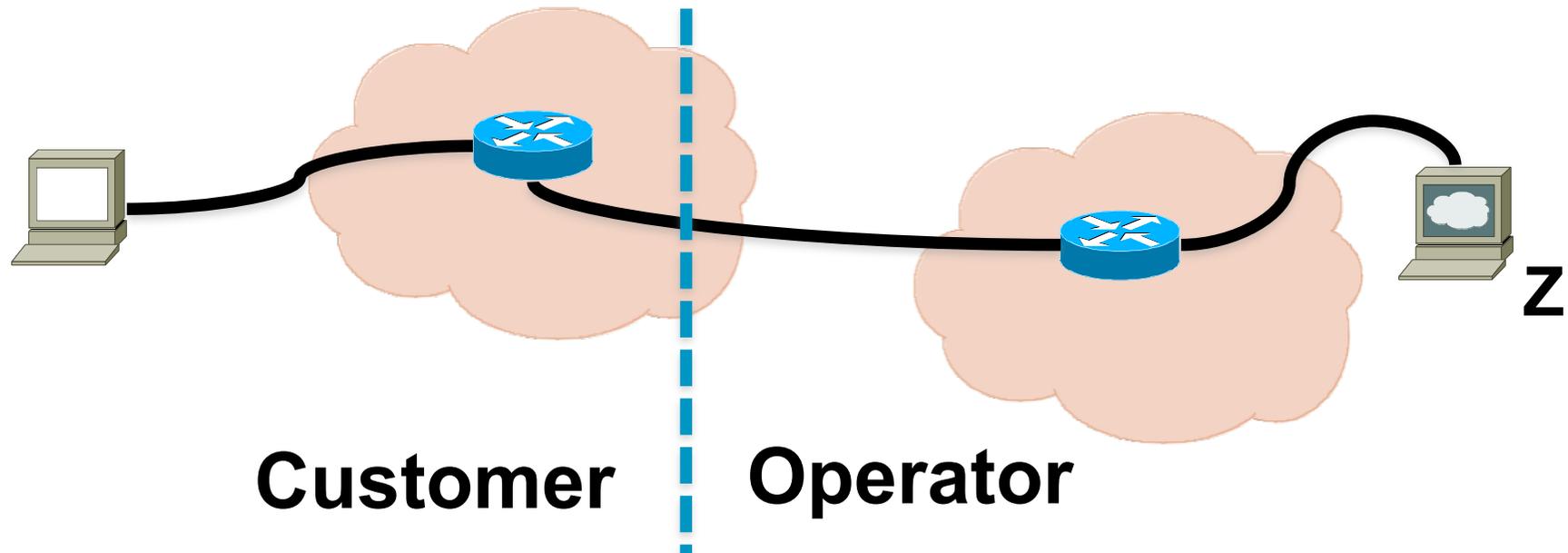
If you are not happy?

Changing provider for one service, does it imply other changes?



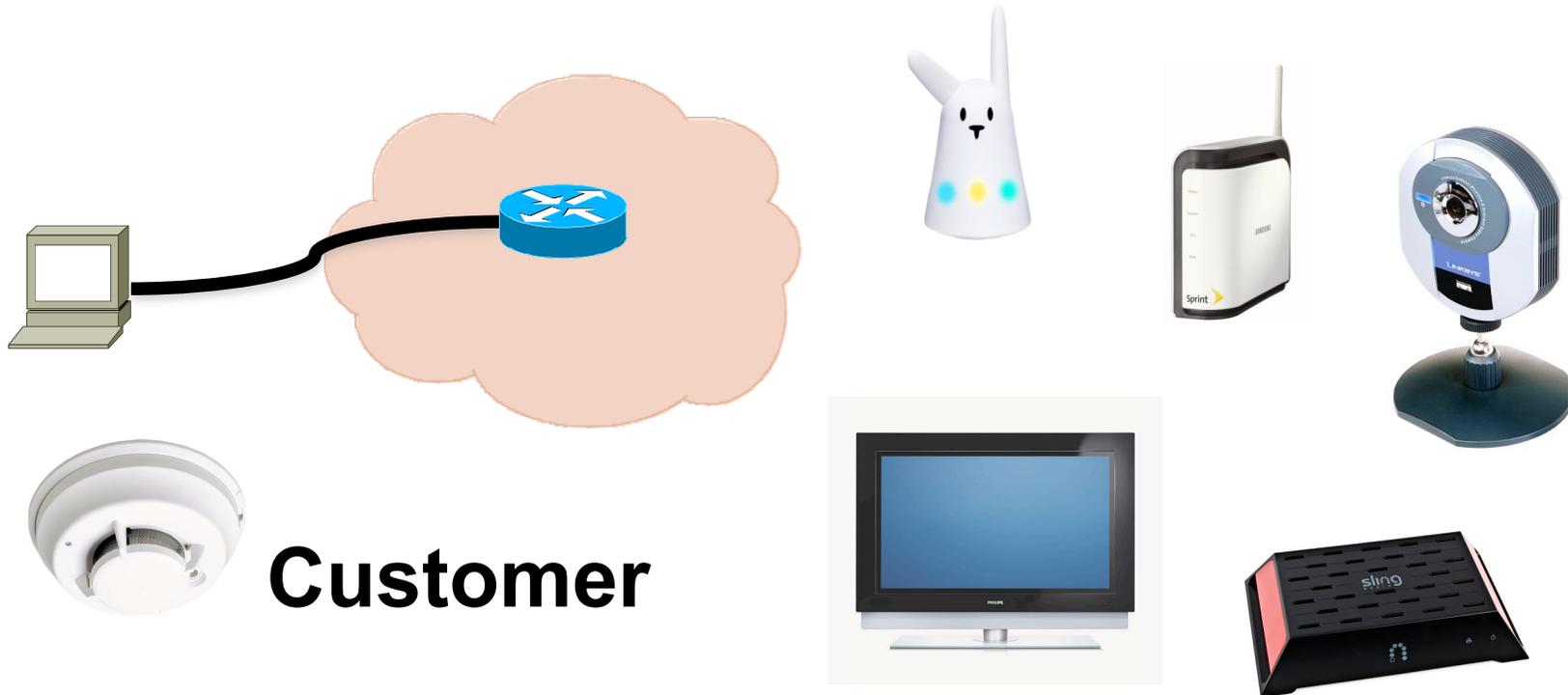
4. Predictability

- **Both for provider and customer**
- **Who can invest? Only operator?
Also other providers?**



4. Predictability

- Both for provider and customer
- Who can invest? Only operator?
Also other providers?



5. Regulation

- **Do we need regulation?**
 - **What can the market handle?**
 - **Can regulation have impact on innovation?**
 - **What can existing regulation handle?**
- **Consumer/provider agreements?**

Summary

- **There are conflicting goals**
- **We agree on many things**
- **Question is “how”, not so much “why”**
 - **And of course “who” ...**

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Do we need permission to innovate?

Summary

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 - **And of course “who” ...**

Do we need permission to innovate?

In the core as well as at the edge!

Questions?

