Introduction to Peering and Interconnection

LACNIC 29
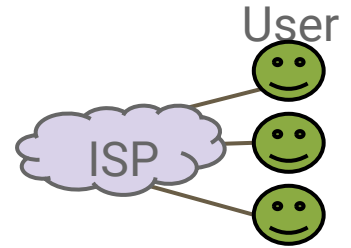## May 2018

Arturo Servin

What is "Peering"?

- Peering is the direct interconnection between two networks for the exchange of traffic.

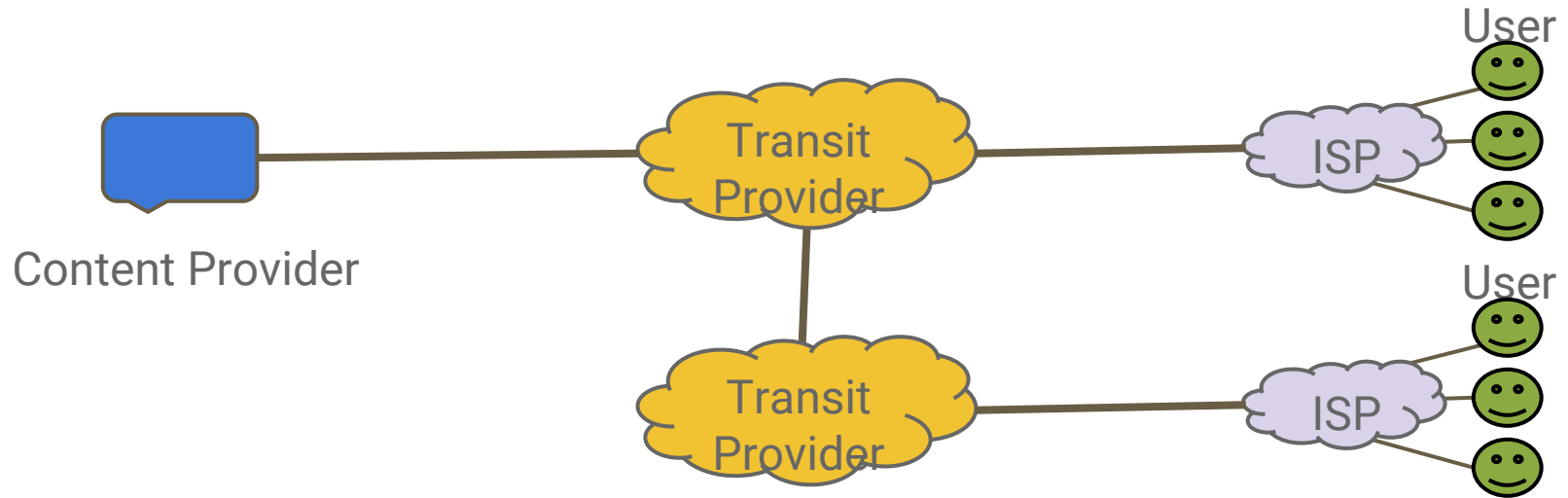# Imagine you are a Content Provider or an ISP
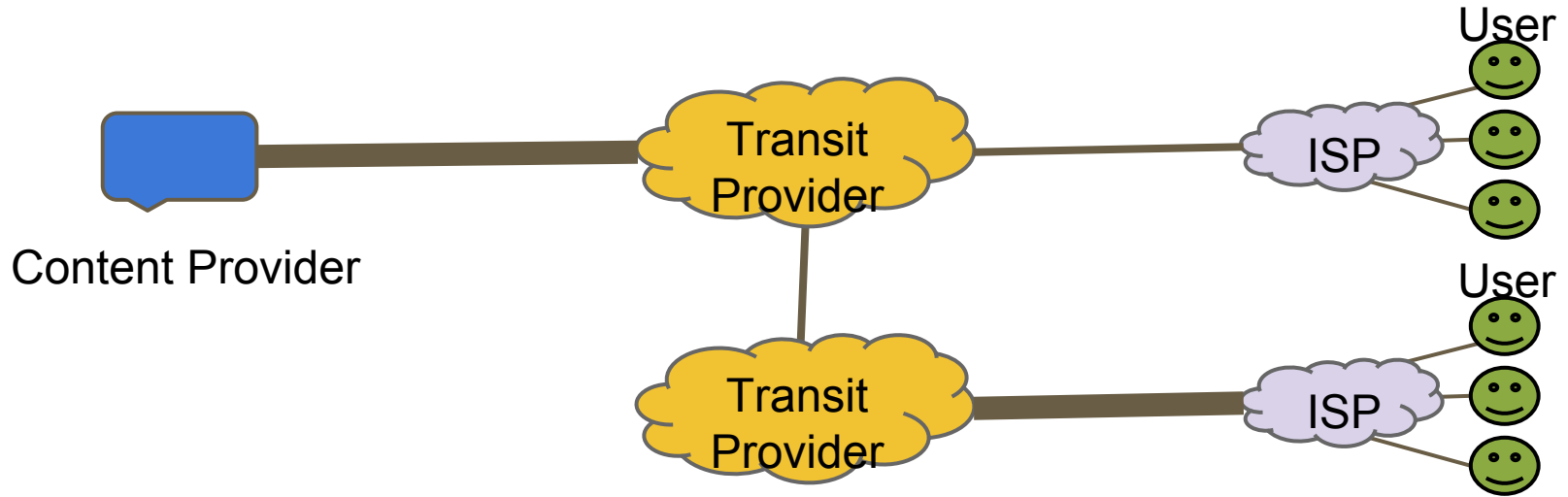
Content Provider

User

ISP

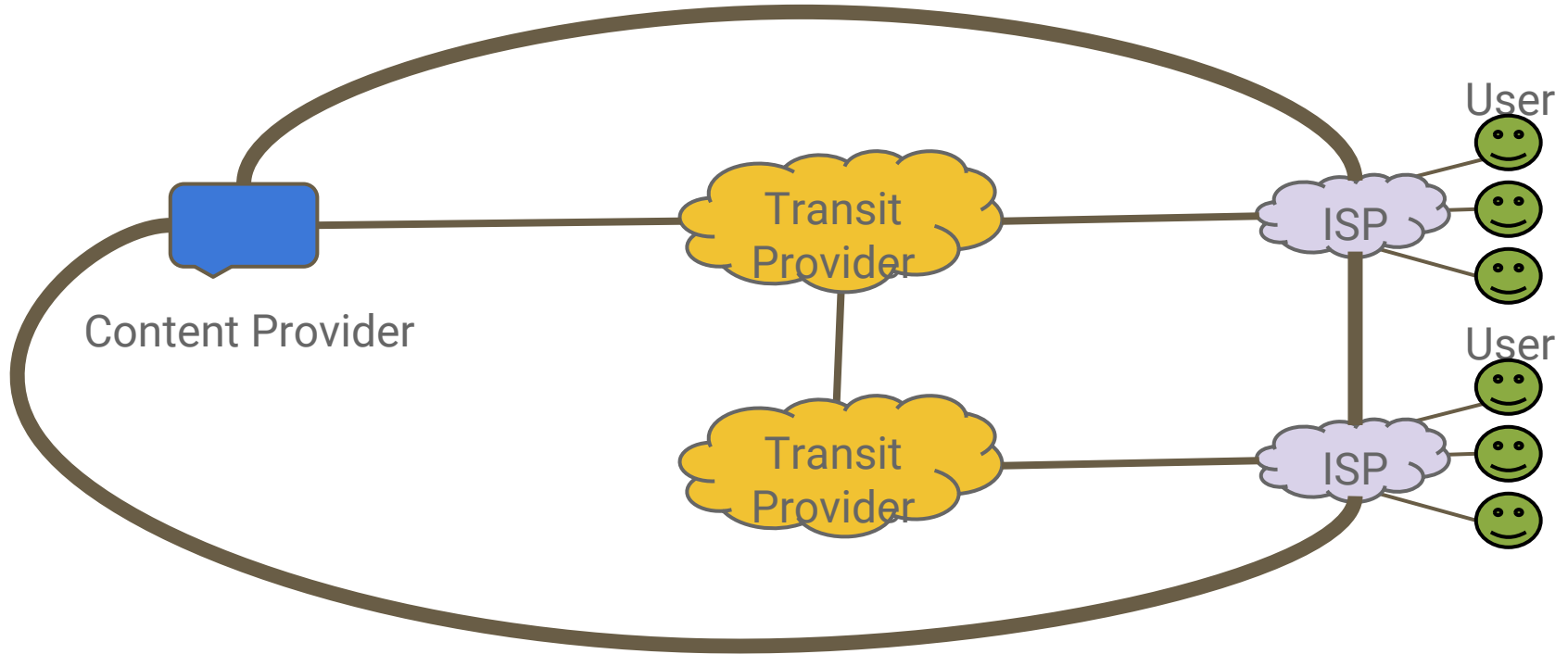# You start connecting to the world using transit

You start connecting to the world using transit

If you are very successful ...

Peering

Peering

Content Provider

IXP or
Colo Facility

ISP

ISP
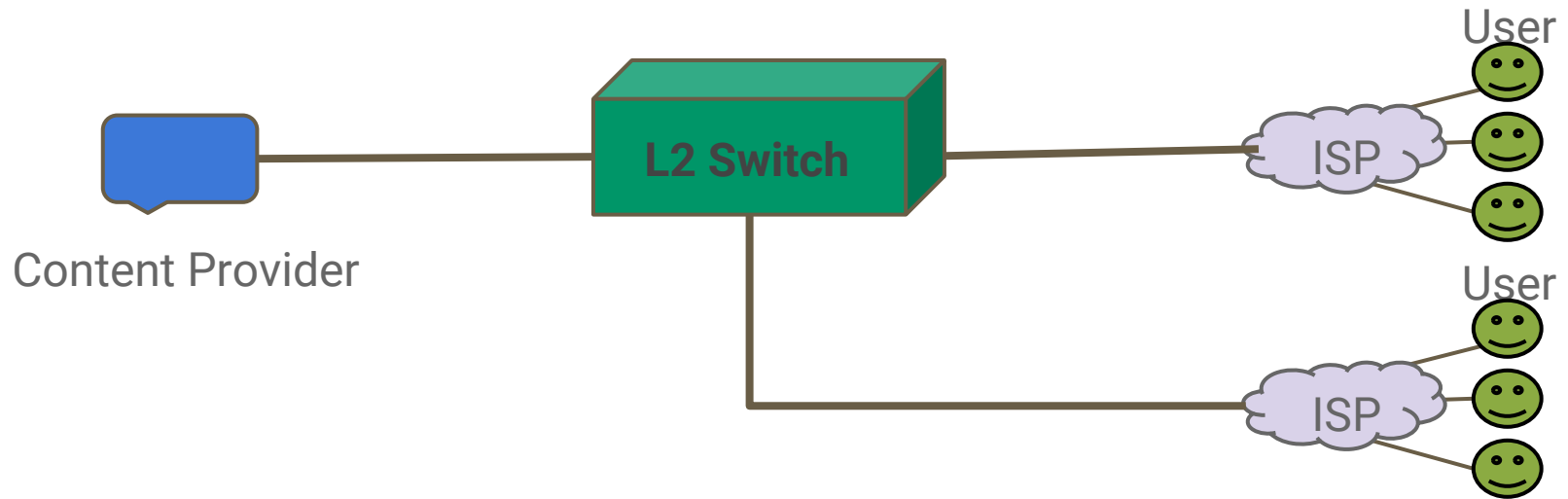
User

User
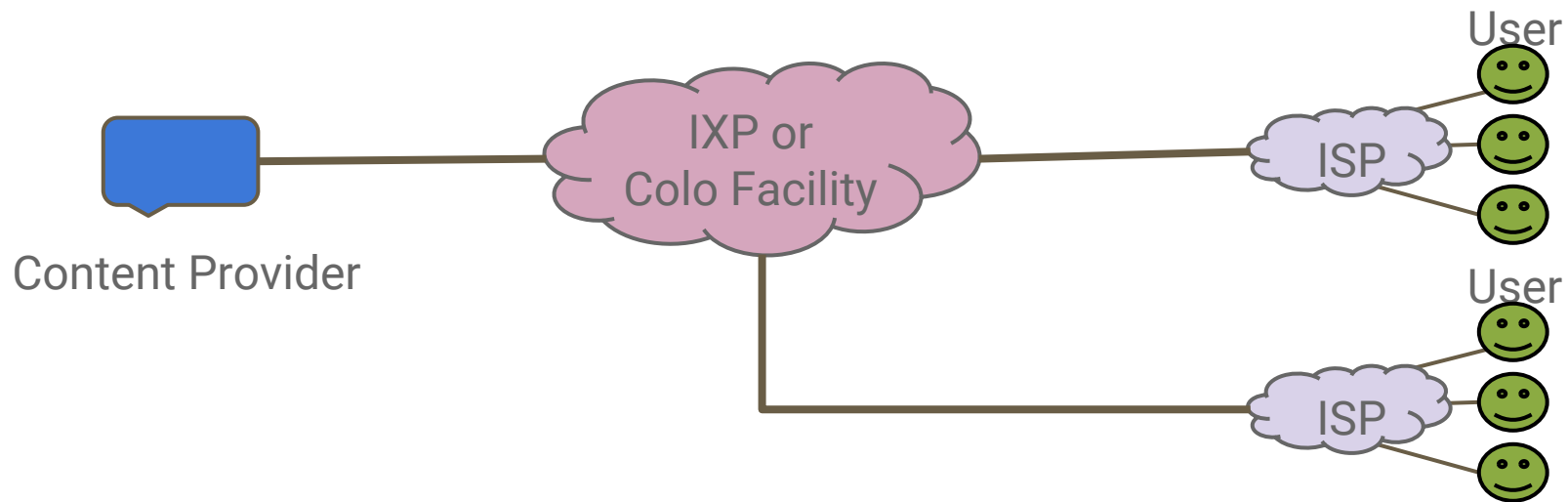
Public Peering

- Public Peering
  - Done in Internet Exchange Points
  - Preferred by some when traffic to many individual peers is low individually but aggregated creates an economic incentive

Public Peering - IXP
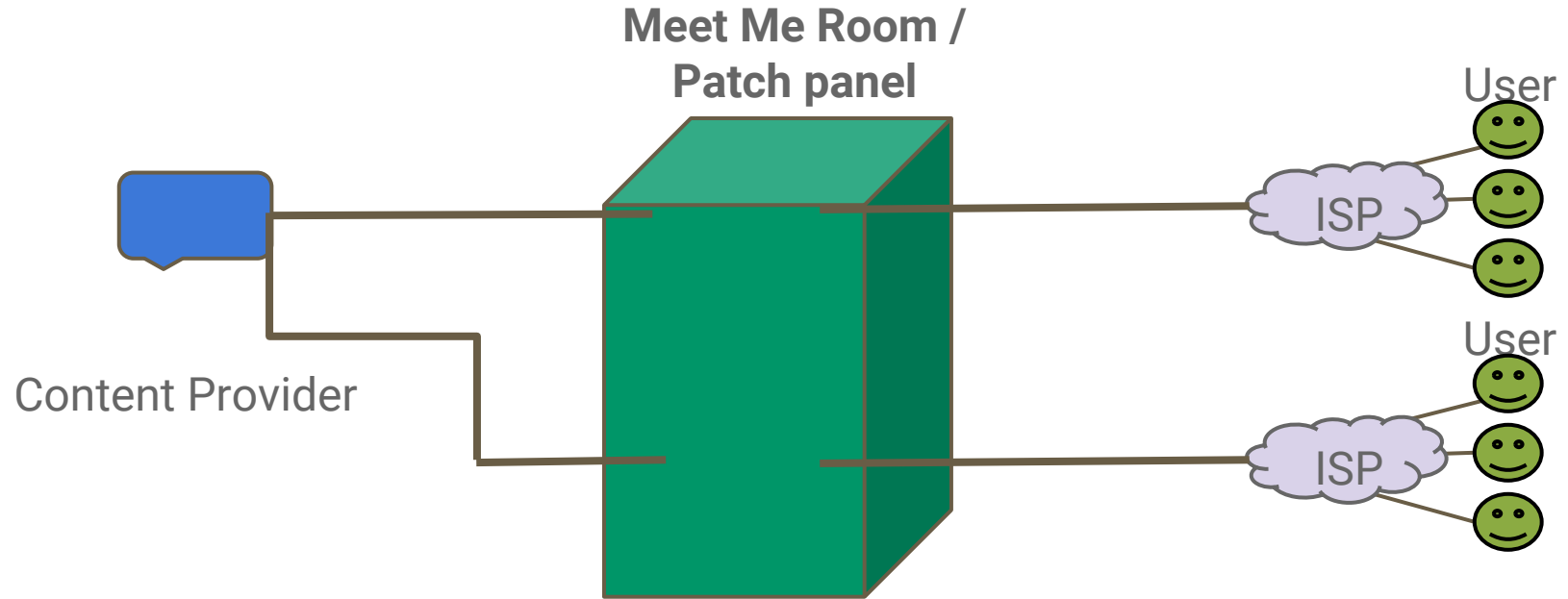
Private Peering

- Private Peering
  - Done using private links or in carrier houses
  - Control of traffic flows
  - Preferred when individual traffic is high

Private Peering in colo facility

Meet Me Room / Patch panel

User

ISP

Content Provider

User

ISP

Private Peering in colo facility

Meet Me Room / Patch panel

User

ISP

Content Provider

User

ISP

cross-connection
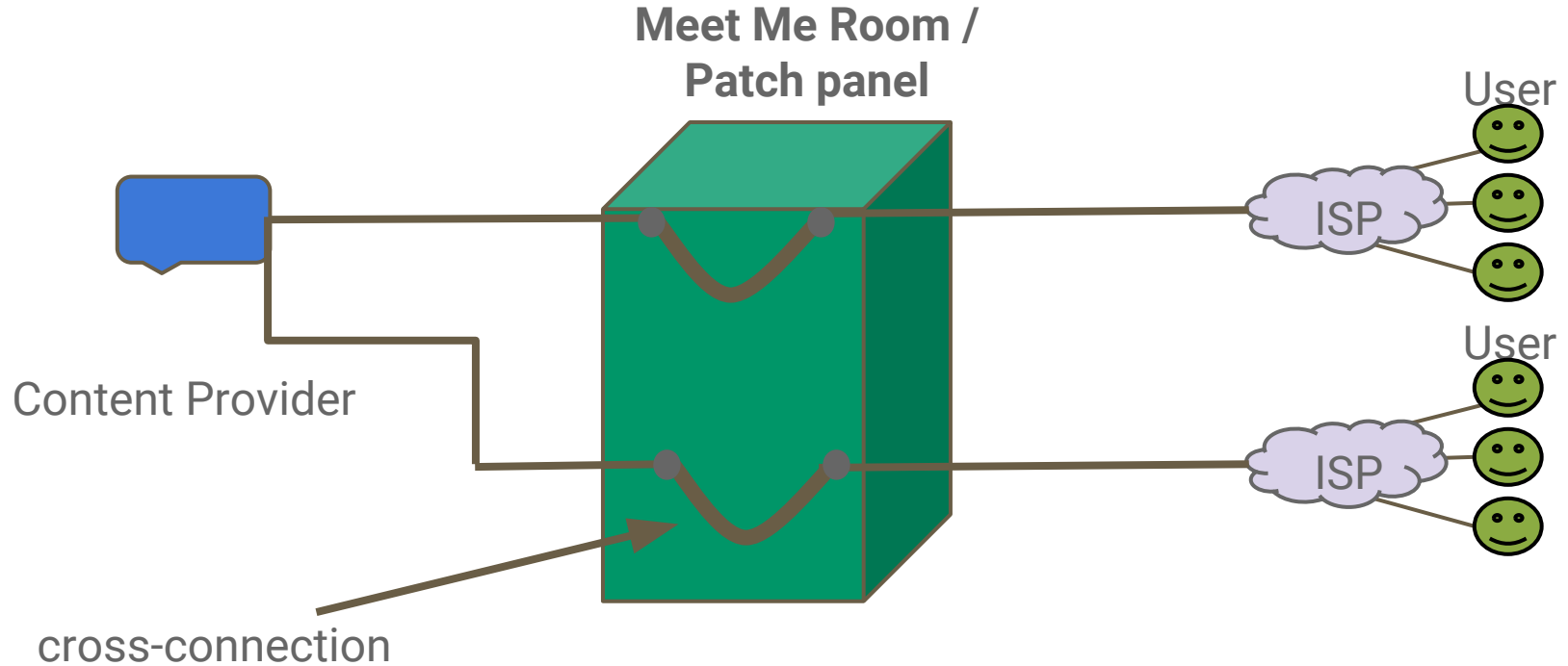
Private peering vs Public Peering

- Both are good solutions aimed to different needs
- Small-medium ISPs/Content providers generally use more Public Peering
- Very large ISPs/Content providers generally use more private peering to other large peers and public to small-medium

Benefits of Peering

- For users:
  - Lower latency
  - Higher reliability
  - Better performance

- For network operators:
  - Lower costs
  - Higher reliability
  - More predictable routing
  - Better performance for customers
  - No third parties involved
  - Mutually beneficial relationship with partner

The business case for peering

- How to convince your CFO?
- Forget about BGP, routing, latency improvements, etc. Those are important but first:
- Do a business case with the economical benefits to peer

To peer or not to peer?
Business case for peering

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To peer or not peer, that is ...

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Costs to consider

- Peering
  - Transport to colo facility or IXP
  - Colo facilities fee
  - IXP fee
  - Hardware (router, port, cards)

- Transit
  - Cost per use, considered
    - Average
    - P95
    - Cost Mbit/EUR
    - Committed spend

Costs comparison

Transport to peering point	Fixed to specific capacity
Colocation	Fixed
Hardware	Fixed
X-connect	Fixed
IXP fee	Fixed

Transit	Based on use

Peering vs. Transit cost comparison
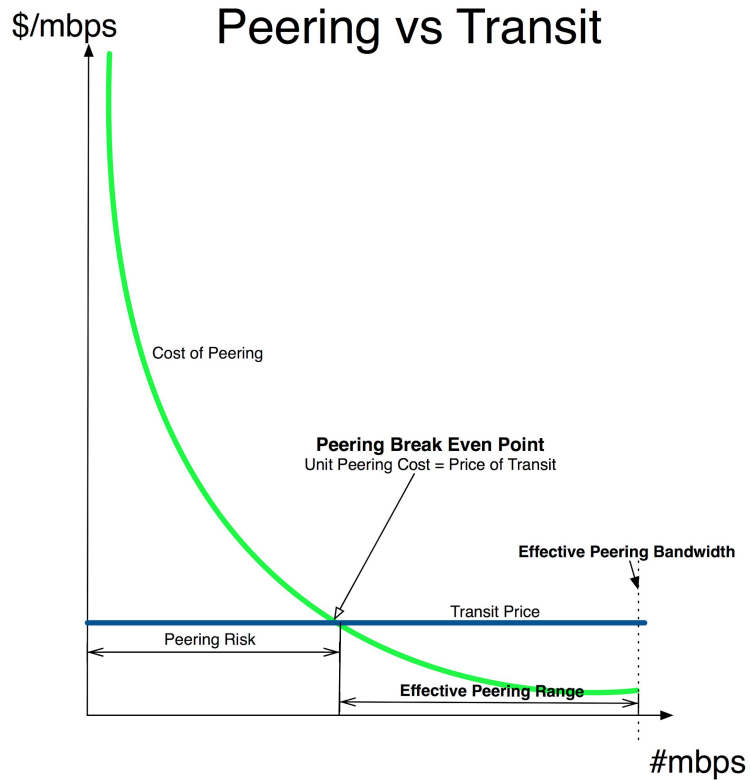
Source: Dr Peering

Business case to peer in IXP

- Transit
  - Cost of transit 5 USD per Mbit per month
- Peering (10G)
  - Local transport: 500 USD per month (10G)
  - Colocation fee: 1,000 USD per month
  - IX port: 800 USD per month
  - Equipment: 8,000 USD per month (router amortized at 36 months)
 - Total: 10,300 USD total per month

Peering break even

- Cost of peering at maximum efficiency
  - Cost of peering / BW
  - 10,300 / 10,000
  - **= 1.03 Mbps per USD per Month**
- Break even point in BW
  - Cost of peering / Transit cost
  - (10,300 MRC) / (5 USD/Mbps/MRC)
  - **= 2.06G**

Fine-tuning model

- **PNI instead would be same case but** remove IXP port fee.
- Calculate your model for **port utilization expectation**
- I**nvestigate which ASNs you can reach** at the interconnection point and what would the traffic levels
- Other costs that you would save or increases in revenue by peering
- **Sunk cost of investments** already made, i.e equipment, transport investments
- Forecast traffic growth

Fine-tuning the model

Cost considering utilization and hardware sunk costs
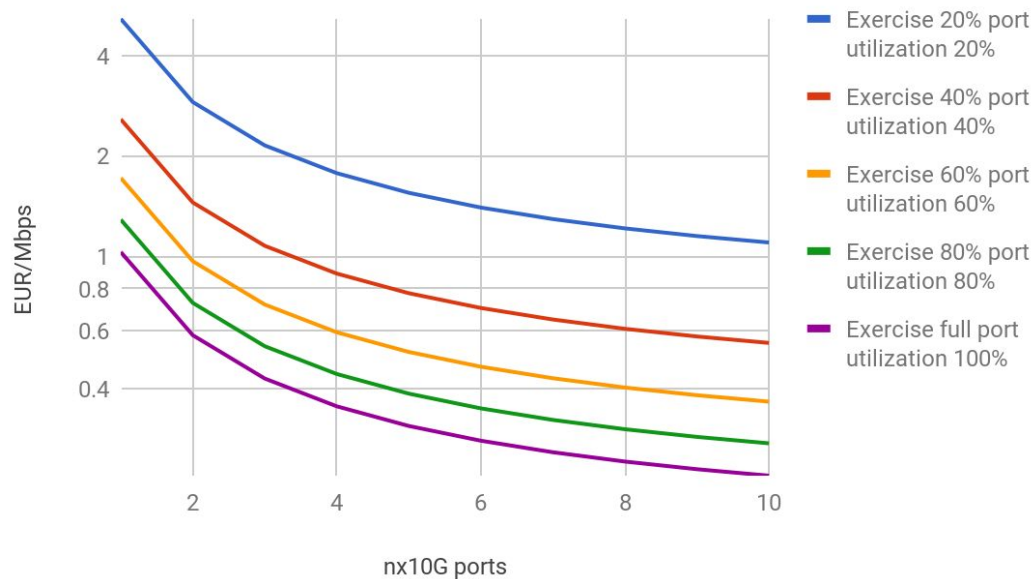
Try it yourself [here](#)

Conclusions

- Peering is a business decision executed with technology
- Peering could bring savings in interconnection costs and improve the user experience
- Where to peer and how to peer will depend on your own needs and traffic patterns

[Video by niversa](#)

Thank you and happy peering