
Introduction to Peering and Interconnection

Arturo Servin

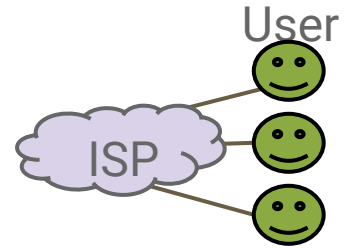
What is “Peering”?

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

Imagine you are a Content Provider or an ISP



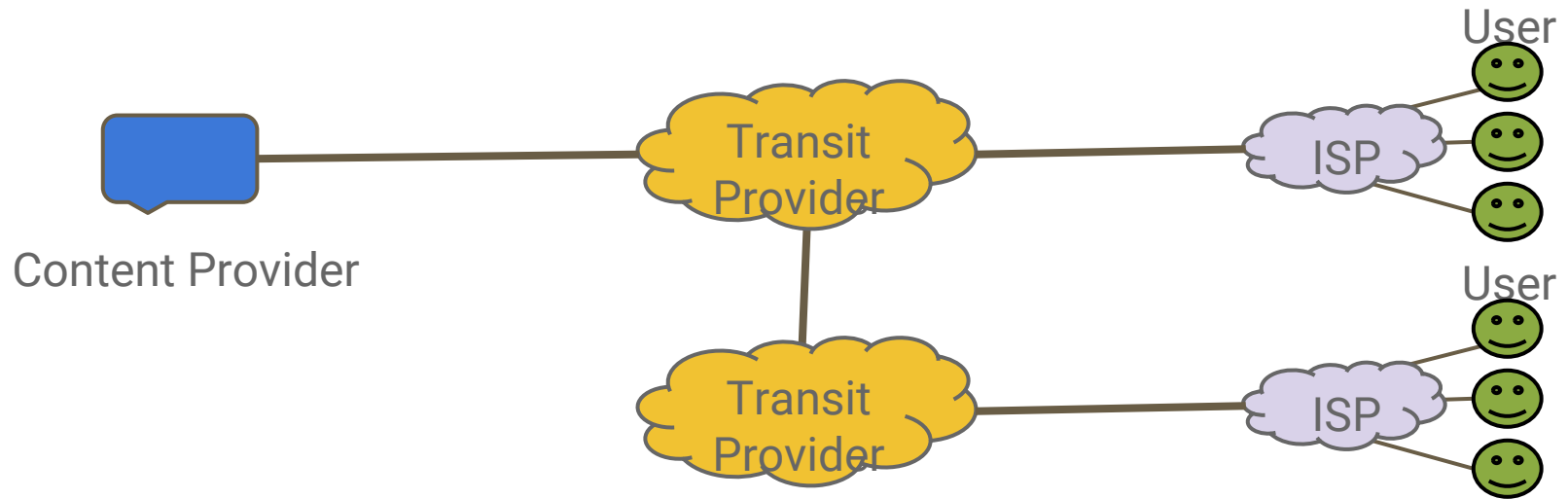
Content Provider



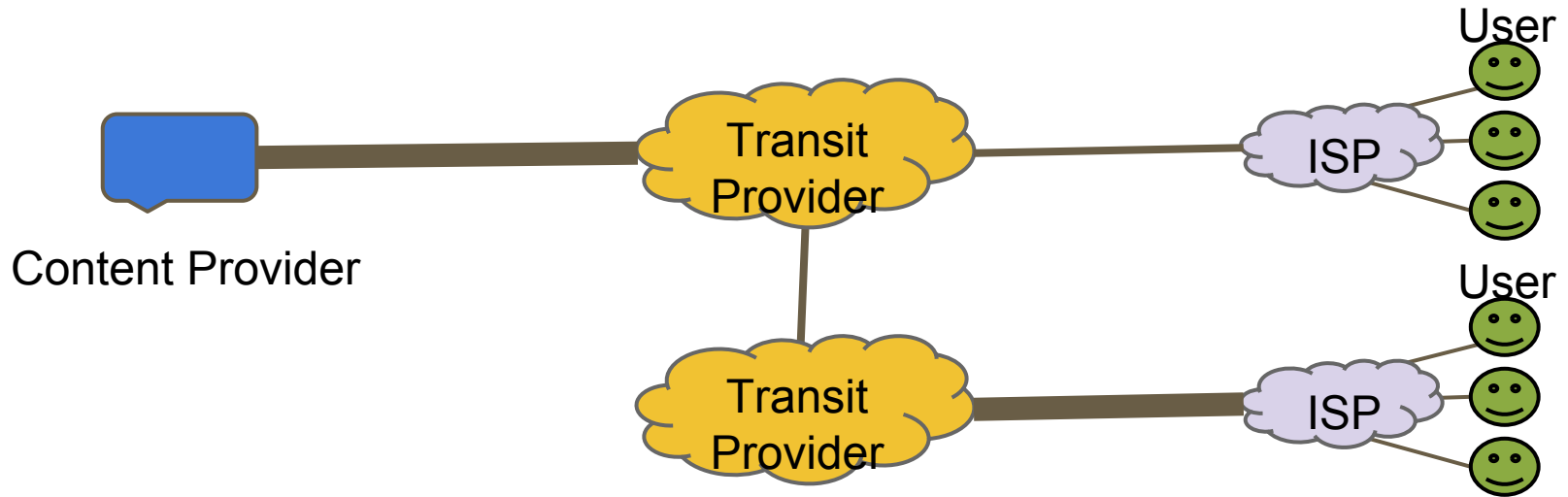
You start connecting to the world using transit



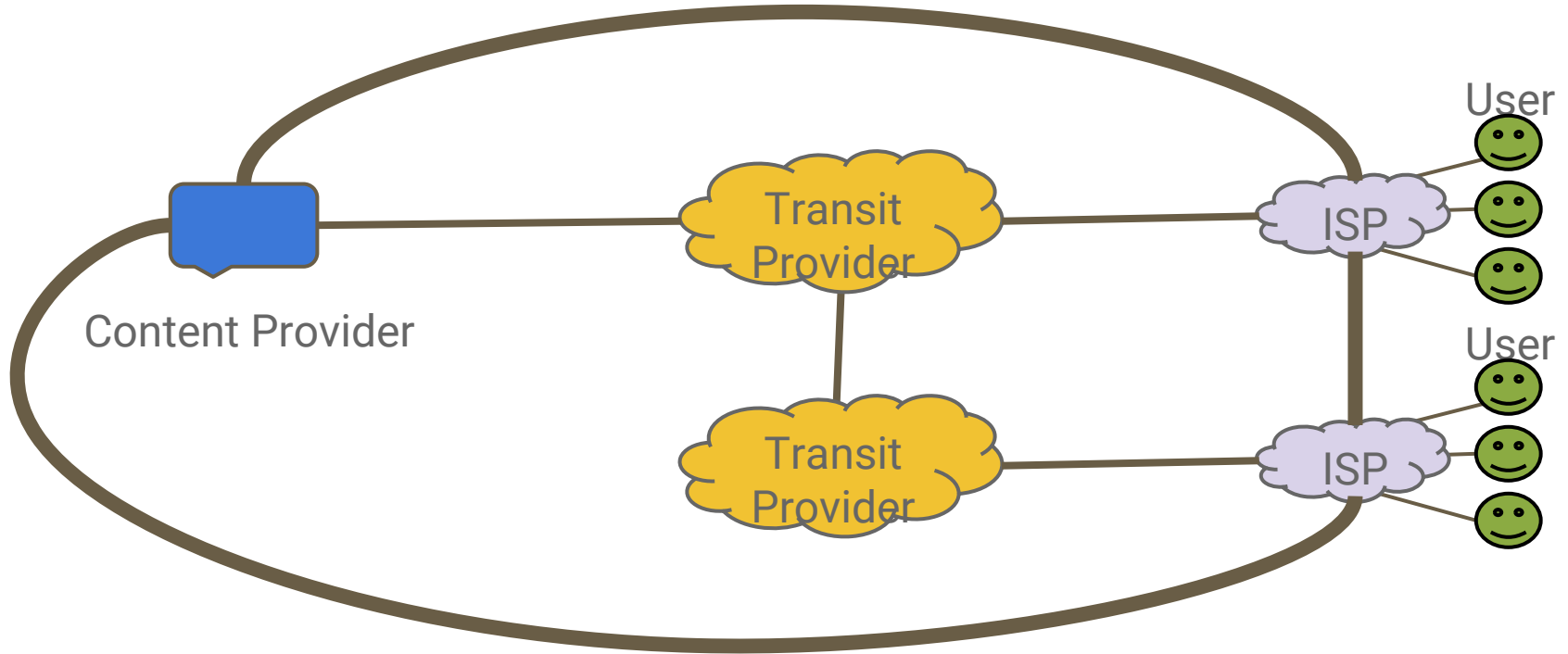
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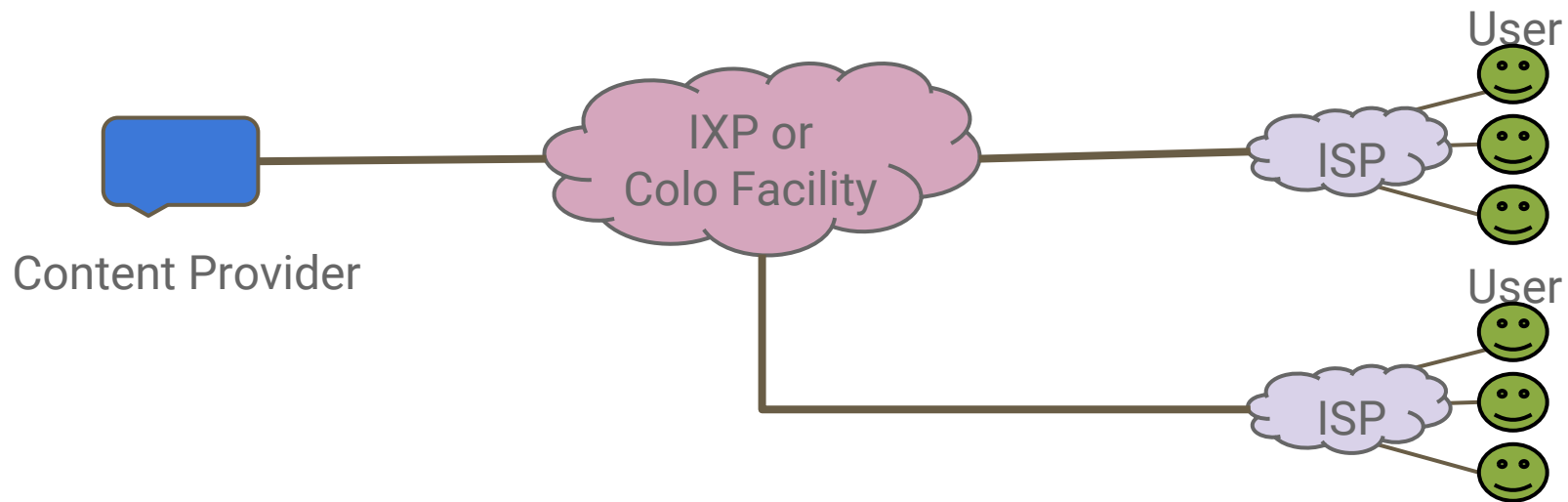
If you are very successful ...



Peering



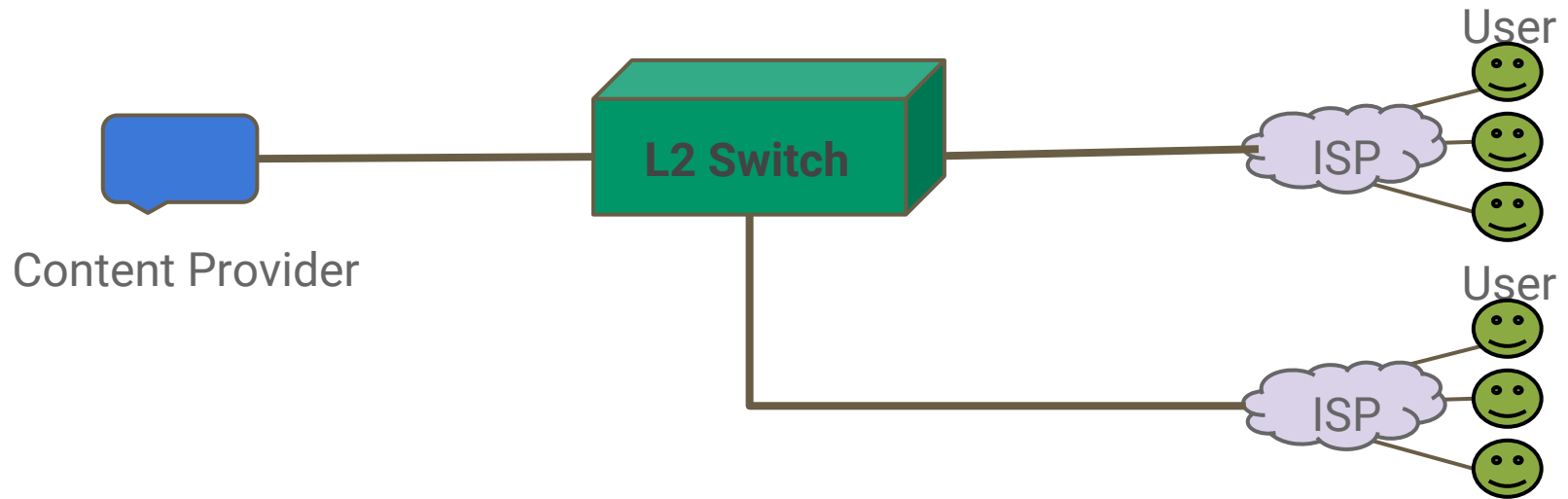
Peering



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

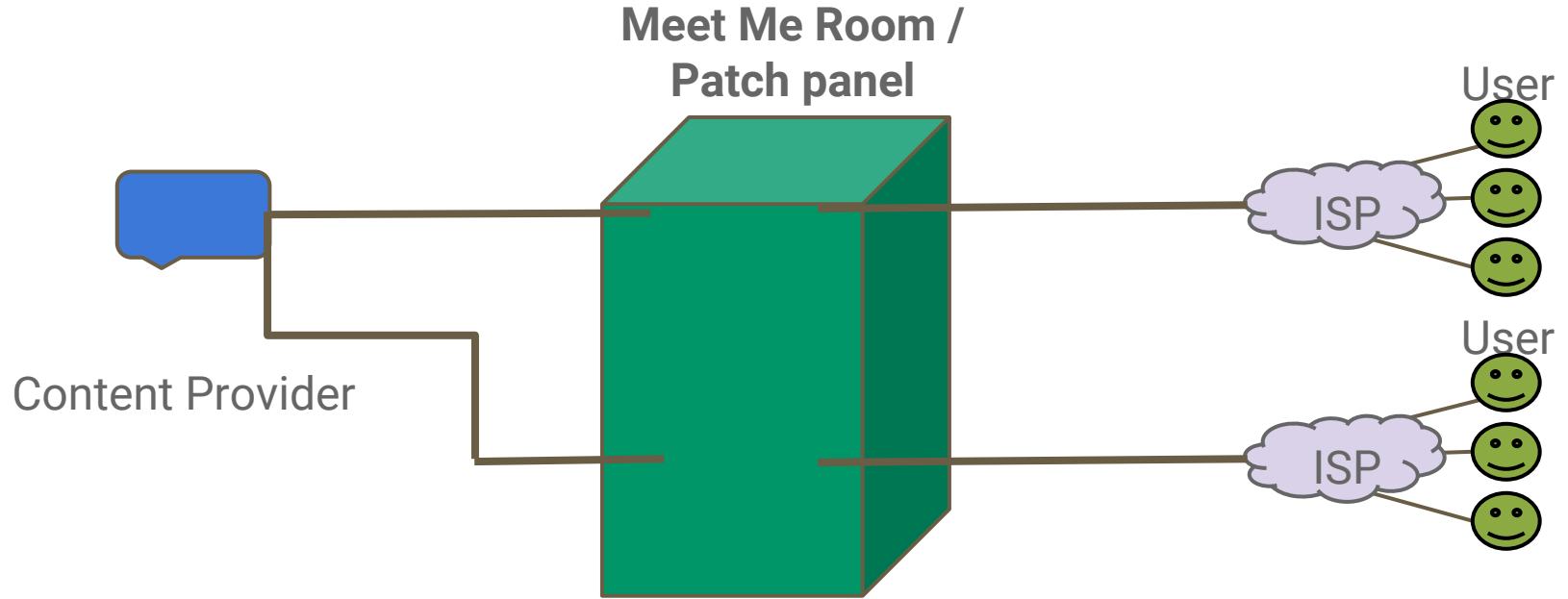
Public Peering - IXP



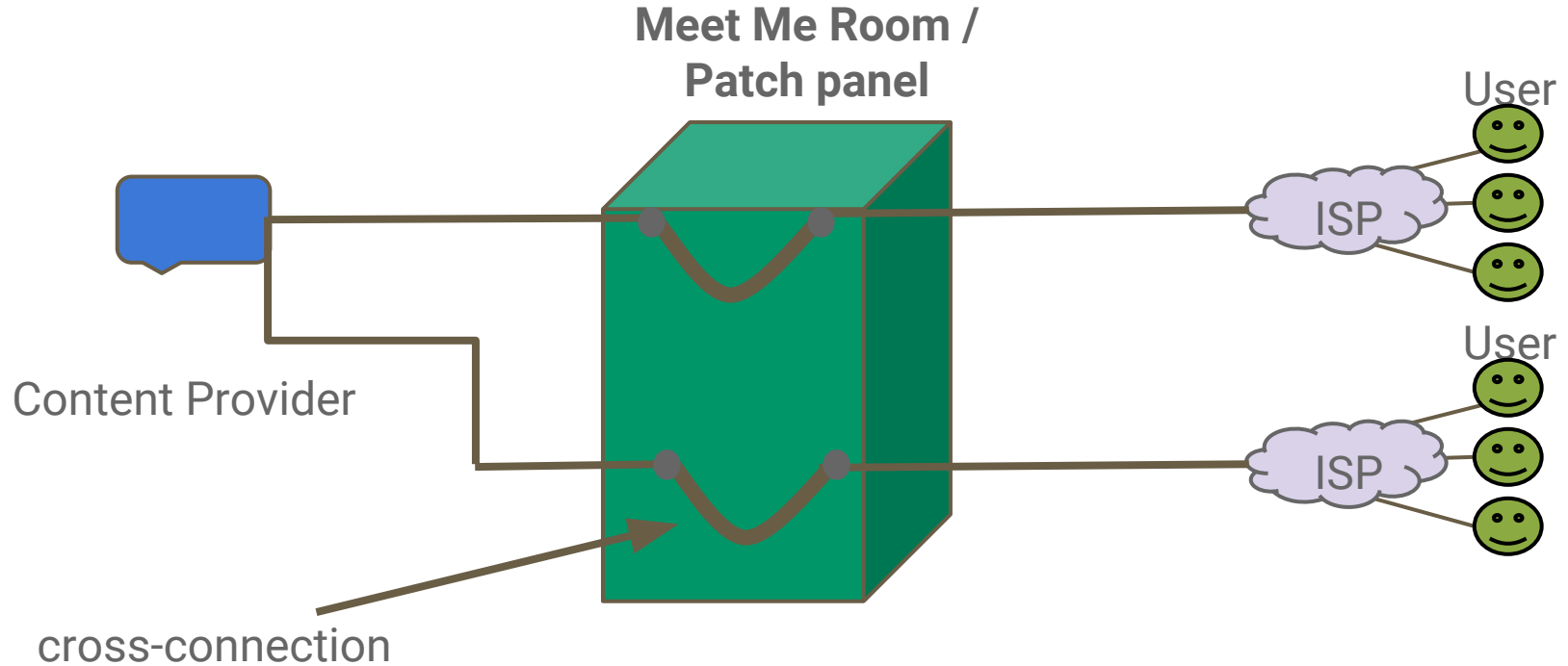
Private Peering

- 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



Private Peering in colo facility



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 ...



[Image by Mike Derderian](#)

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Costs to consider

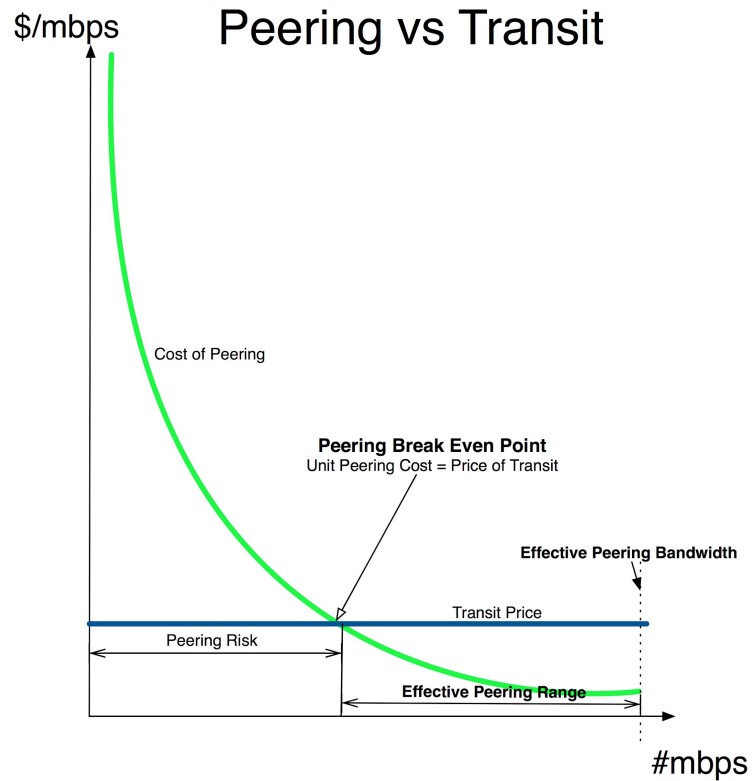
- Peering
 - Transport to colo facility or IXP
 - Colo facilities fee
 - IXP fee
 - Hardware (router, port, cards)
- Transit
 - Cost per use, considered
 - Average
 - P95
 - Cost Mbit/EUR
 - Committed spend

Costs comparison

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

Transit	Based on use
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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

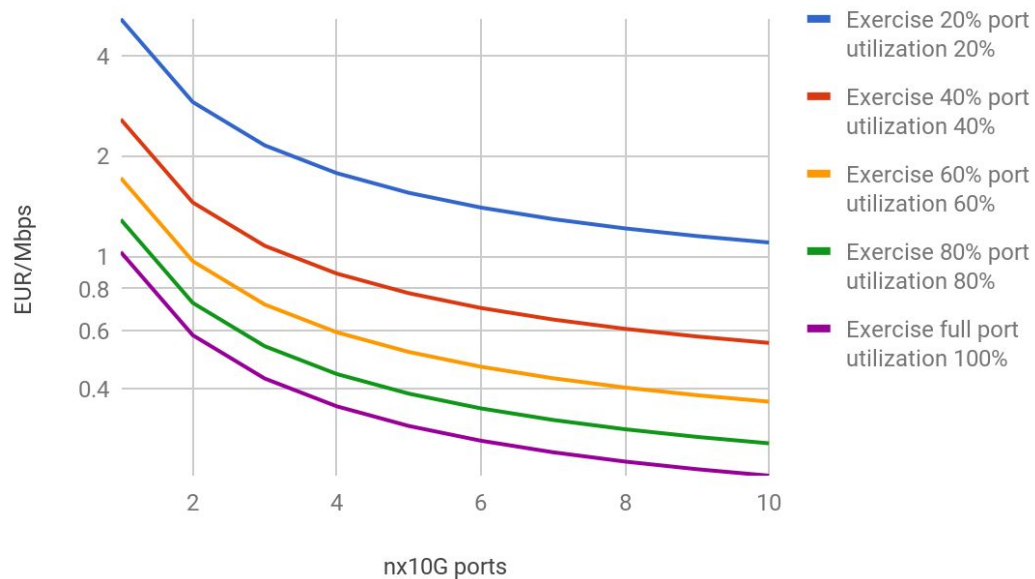
- Cost of peering at maximum efficiency
 - Cost of peering / BW
 - 10,300 / 10,000
 - = **1.03 Mbps per USD per Month**
- Break even point in BW
 - Cost of peering / Transit cost
 - (10,300 MRC) / (5 USD/Mbps/MRC)
 - = **2.06G**

Fine-tuning model

- **PNI instead would be same case but** remove IXP port fee.
- Calculate your model for **port utilization expectation**
- **Investigate 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**
