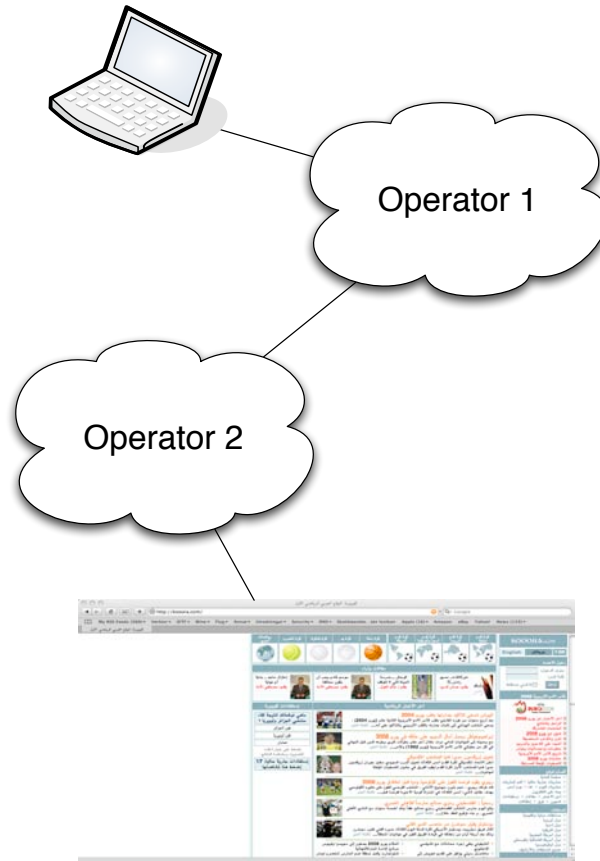


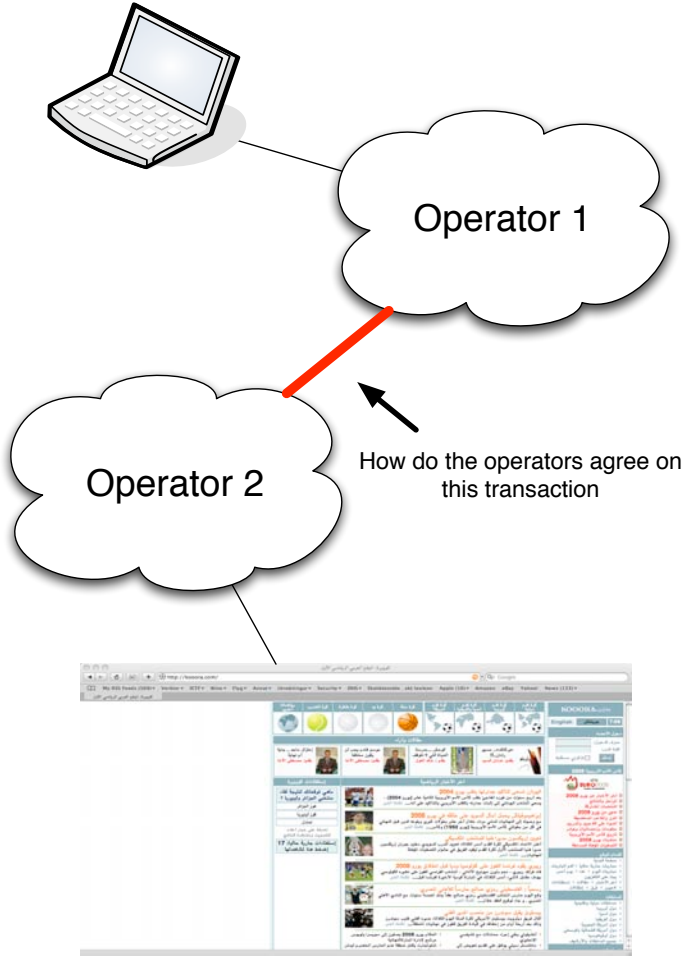
# Overview of Transit and peering models

[kurtis@netnod.se](mailto:kurtis@netnod.se)

# Traffic flow on the Internet



# Traffic flow on the Internet



# Why exchange traffic?

- One provider will never have all customers
  - Providers might also target different customer bases, i.e content vs. eye-balls
- A provider with a limited network foot-print will need to exchange traffic with a provider with a larger (or different) foot-print

# Peering vs. transit

- The 10k meter view is that
  - Peering is exchange of traffic in both directions for free
  - Transit is exchange of traffic in both directions for a fee (that is exchanged in only one direction)

# Why pay for traffic?

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

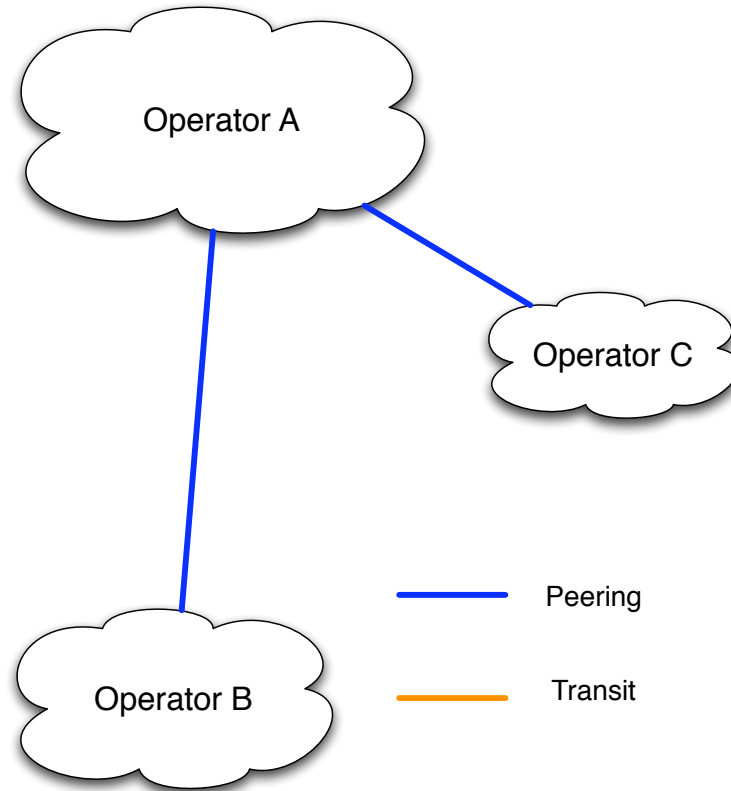
# Why not pay for traffic?

- 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 will lower your transit costs
- Money saved on transit can be invested in better peering infrastructure for the benefit of end-users

# The options

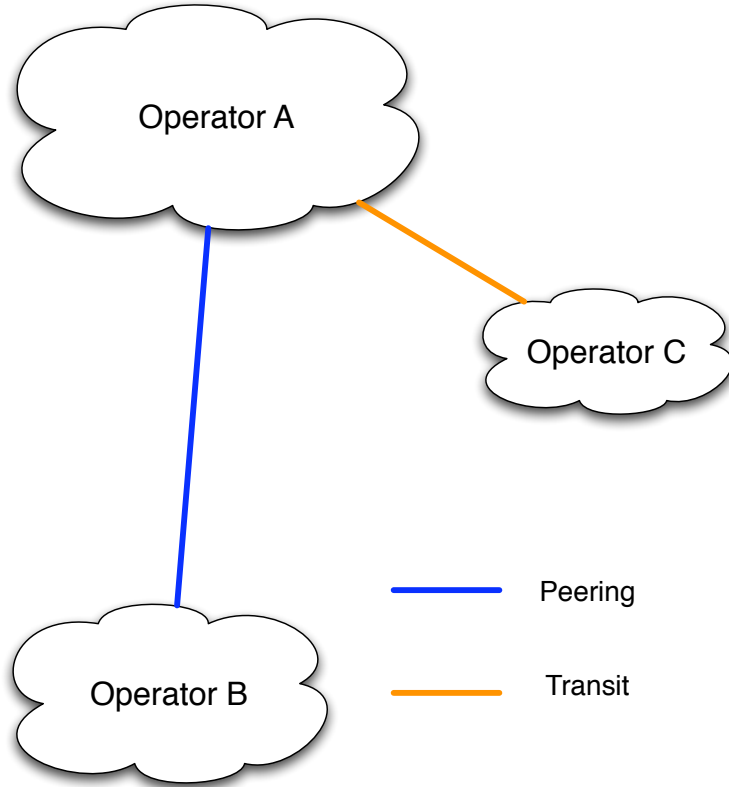
- Transit
  - I pay you for sending you traffic and receiving your traffic back
- Private peering
  - We agree to send traffic for free between our network and our customers networks. This is implemented over a dedicated connection
- Public peering
  - We agree to send traffic for free between us and we implement in a neutral exchange point where we both are located

# Peering



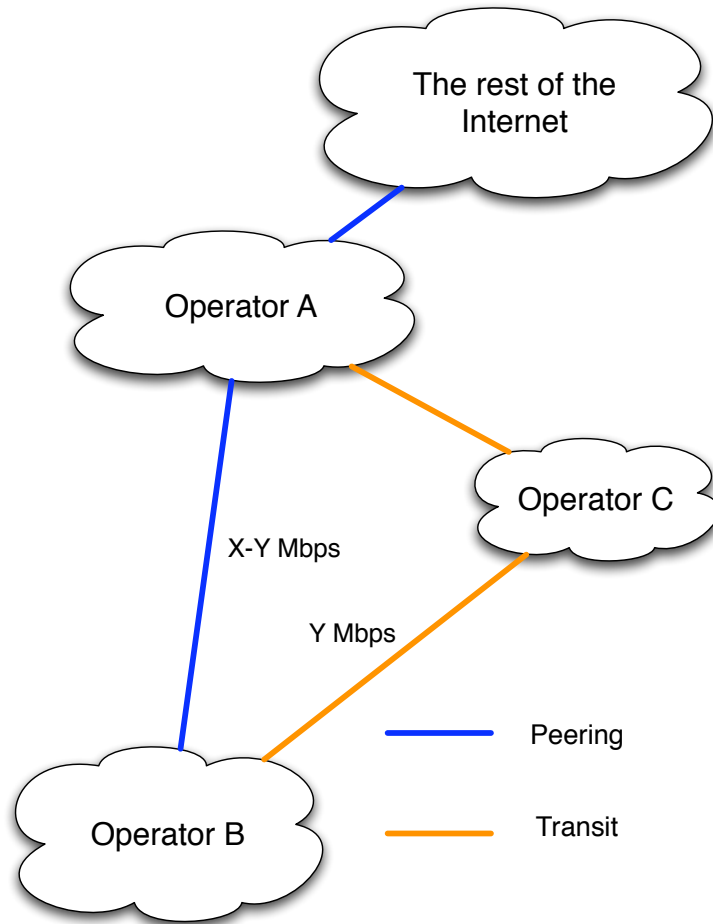
Operator A and it's customers can reach Operator B and Operator C  
Operator B and it's customers can reach Operator A  
Operator C and it's customers can reach Operator A

# Transit



Operator A and it's customers can reach Operator B and Operator C  
Operator B and it's customers can reach Operator A and Operator C  
Operator C and it's customers can reach Operator A and Operator B

# But in reality...



# Hybrid models

- There are also hybrid models, for example “paid peering”
  - Where 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 it 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 eye-balls) localization of traffic might have value in itself
  - But content is also often considered potential customers

# How do I measure the benefit?

- Common metrics are
  - Number of peers at IXP
  - Number of routes at IXP
- Less published but probably more interesting
  - Total IXP traffic / IXP connected operator (potential peer)
  - Traffic per prefix

*Rock Solid Internet Exchange*

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