The Great Debate

Understanding the

The Folly of Peering Ratios
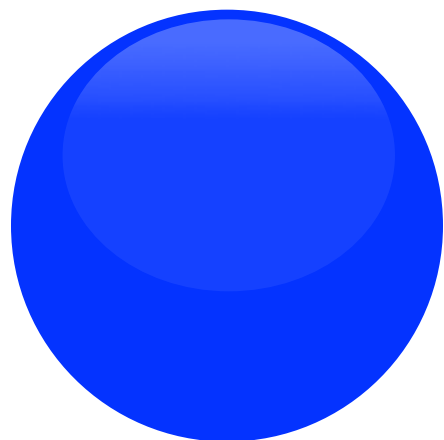
THE INTERNET PEERING PLAYBOOKS

The Tricks of the Trade

The Folly of Peering Ratios?

From Debate…
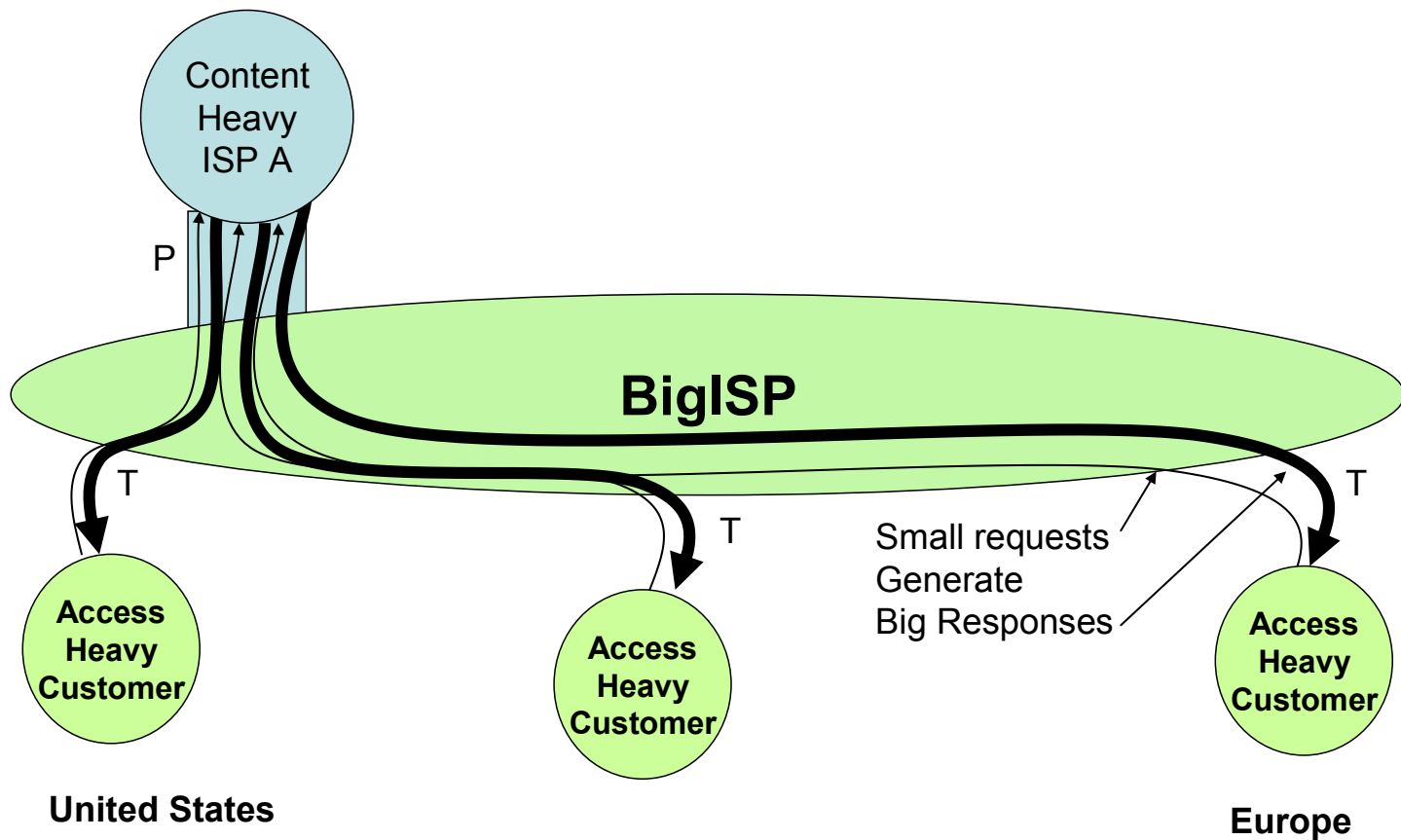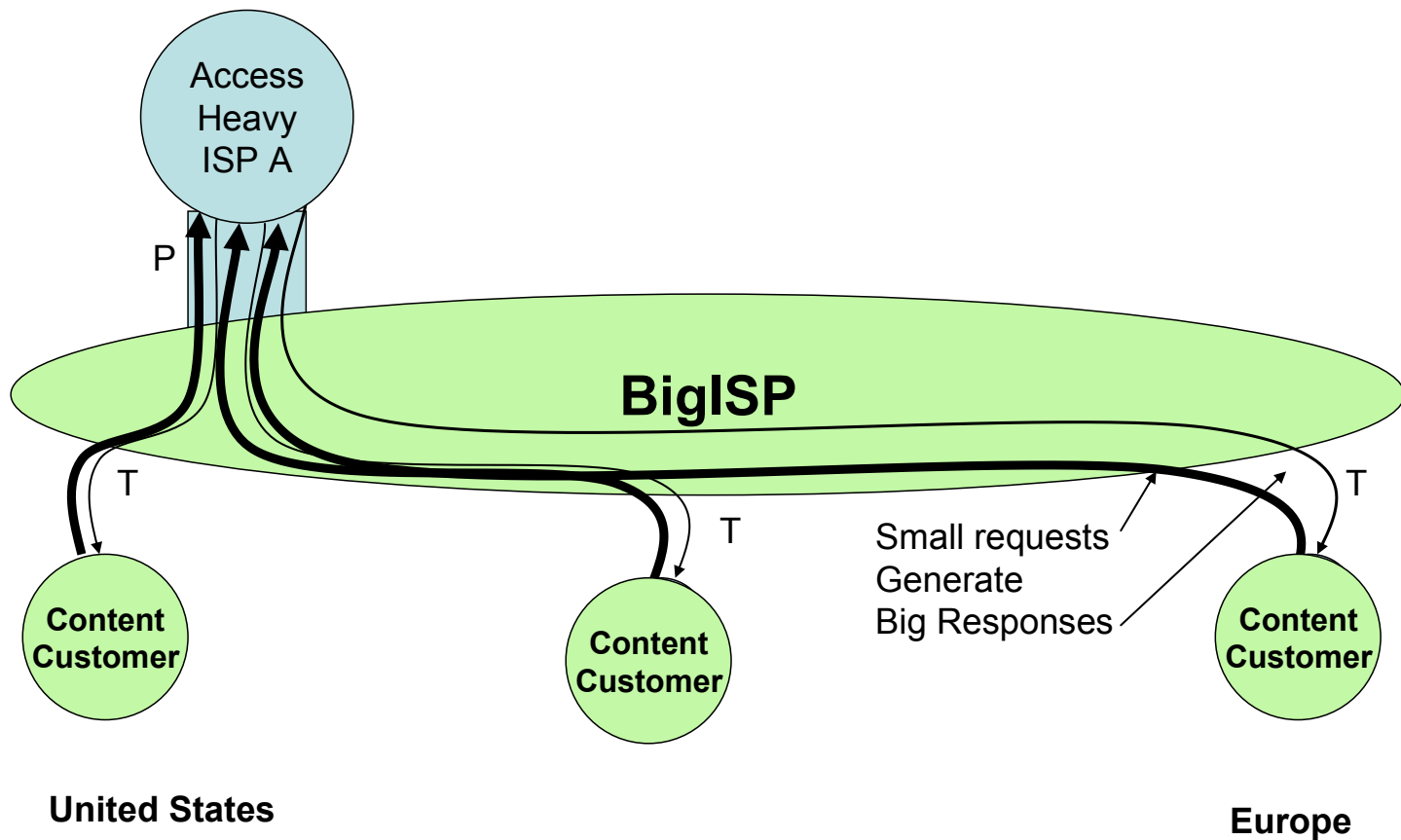
The Great Peering Ratios Debate

- is based on the "Great Peering Debate" held in Los Angeles at the Peering BOF X
- using Peering Ratios as a discriminator for peering candidates
- Most commonly used by large Tier 2 and Tier 1 ISPs to deny peering w/content
- Here are the best arguments and counter arguments

Argument #1 – "I don't want to haul your content all over the world for free."

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Access Heavy ISP A

P

BigISP

T

T

Small requests Generate Big Responses

T

Content Customer

Content Customer

Content Customer

United States

Europe

Argument #2 – "OK, but there is massive asymmetry here. Look at how many bit miles I have to carry your content, while you have only to deliver the traffic across the exchange point."

- Distribution Argument
- Not related to ratios

Argument #3 – "I don't want to peer with Content Heavy ISPs because doing so will screw up my peering traffic rat

ISP X

Big Response
P

Access Heavy ISP Y

Small requests

Big Response
T

$

Content Heavy ISP A

ISP Y:X
Out:In
1:1 ratio

Once we peer…

ISP X

Access Heavy ISP Y

P

$

T

P

Small requests

Big Response

ISP Y:X
Out:In
1.2:1 ratio
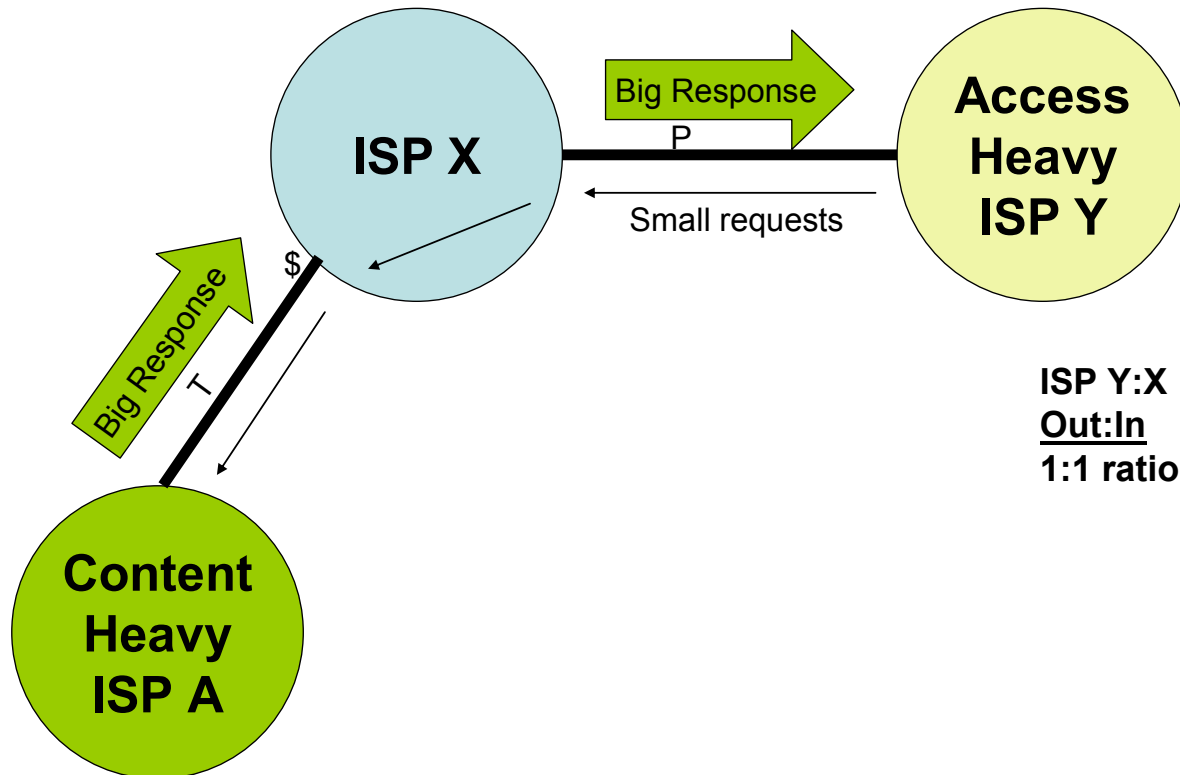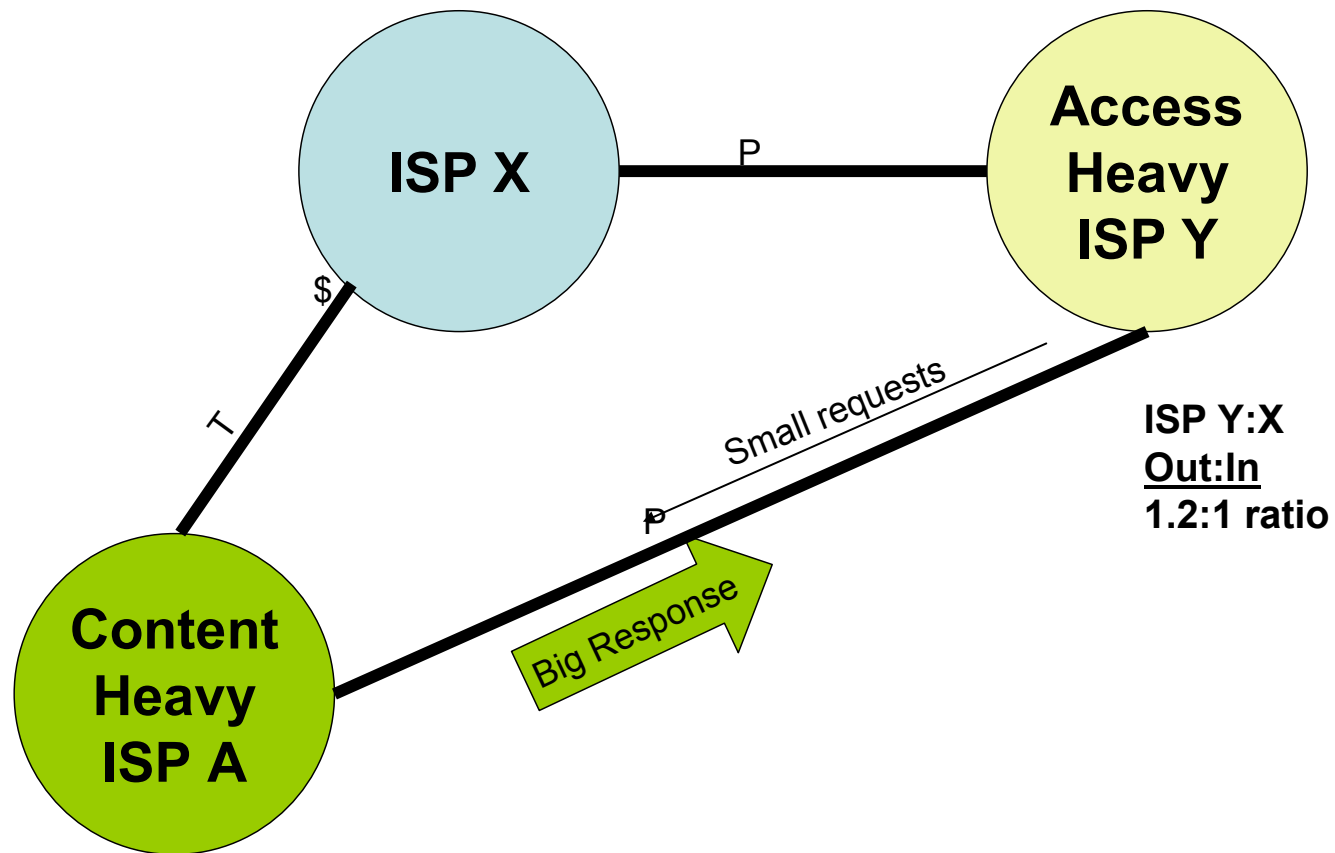
Content Heavy ISP A

Conclusion 3A: If an Access Heavy ISP peers with a Content Heavy ISP, it can adversely affect its peering traffic ratios with its other peers.

Big Response

ISP X

Content Heavy ISP Y

P

Small requests

$

Big Response

T

Access Heavy ISP A

ISP Y:X
Out:In
1:1 ratio
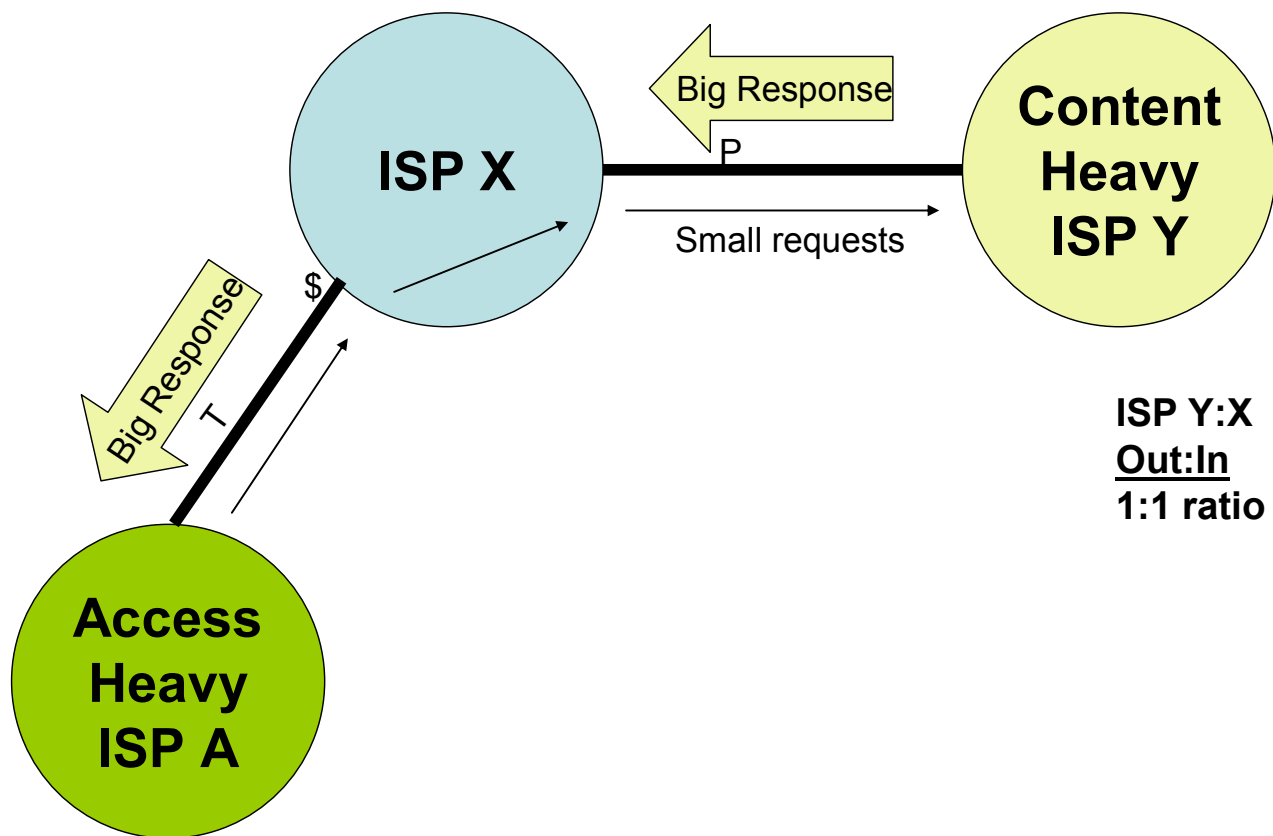
Conclusion 3B: If a Content Heavy ISP peers with an Access Heavy ISP, it can positively affect its peering traffic ratios with its other peers.

- (False) Conclusion 3: Peering traffic ratios are valid discriminators because they help maintain peering traffic ratios with other (existing) peers.

- **While demonstrable, THIS IS A CIRCULAR ARGUMENT for the general question at hand.**

Argument #4 – "I want revenue for carrying your packets."

- **Counter-Argument #1 -** All peering and transit relationships are negotiable business relationships, but peering traffic ratios are probably not the right metric for determining the terms of the relationship.
- **Counter-Argument #2 -** As discussed above, the cost of distribution is the same regardless of whether content or access heavy. A more appropriate negotiating discussion surrounds the incremental value provided to the content or access customers by the network in question.
- **Counter-Argument #3 -** And remember, you will have to carry this traffic by some means (transit or peering) to get it to your customers. So when negotiating, you are just negotiating for a different delivery mechanism to your customers – this may not command a high price.

Argument #5 – "My backbone is heavily loaded in one direction – I don't have the $ to upgrade the congested portion of the core in that direction without a corresponding increase in revenue."

- **Counter-Argument #1 -** This may signal that you are neither a good peering nor a good transit provider candidate.
- **Counter-Argument #2 -** This loading problem can best be solved with better traffic engineering, with the allocation of more resources to the backbone, or by temporarily denying peering until the needed upgrades are done.

Argument #6 – "I don't want to peer with anybody else. I don't have to – I have all the peering that I need. Peering traffic ratios help me systematically keep people out."

- **Counter-Argument -** One could just as easily specify higher traffic volume, more points of interconnect, a larger backbone capacity into more geographic regions including ones that don't make any sense. This is not a strong defense for the validity of peering traffic ratios as a rational discriminator.

The Problems with Peering Traffic Ratios

1. Dictating Peering Ratio requirements force you are creating a competitor.

2. Dictating Peering Ratio requirements ratios encourage companies to "creatively route"

3. Peering directly <u>can increase revenue</u>.

Enter…Network Neutrality

Control over last mile.

- Why is this important?
- LastMile: expensive infrastructure to build, maintain, expand. We want to maximize shareholder value – give us revenue.
- 1000 times more expensive than a server
- FedEx gets $ for every Amazon transaction
- Amazon may eat the cost of delivery, but not for overnight delivery. Pay for higher performance.
- Selling video? Share $ with delivery.
- You are making $$$ loading my network.

Paid peering is part of the answer.

Network Neutrality – Content View

- Emerging video services – video distro – 40G movies to set top boxes
- Peering is only way to do this effectively
- Only outbound really
- Massive volume, maybe off peak scheduling w/paid peering?
- Google: Last Mile effective monopoly, launch their services w/o allowing competition…and Next Gen Services.

Summary

- Both sides of the debate
- What do you think?
- Might Paid Peering be in the solution space for negotiated Network Neutrality?