




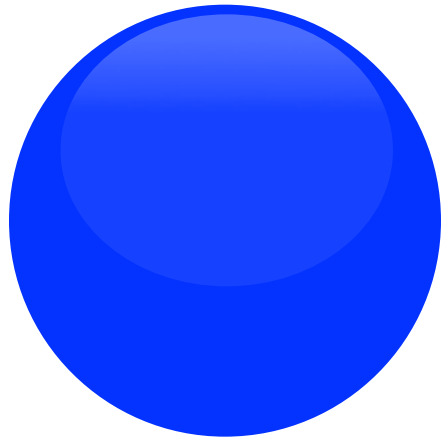
The Tricks of the Trade 

Understanding the

# Internet Peering Playbook



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# THE INTERNET PEERING PLAYBOOK

The Tricks of the Trade



# Research “The Art of Peering”

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Q: When you get no response or a “No” response to a peering request, what do seasoned Peering Coordinators do?

Give up?

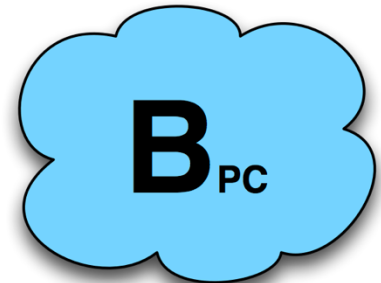
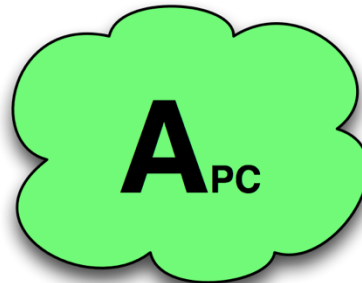
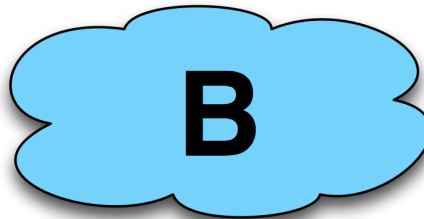
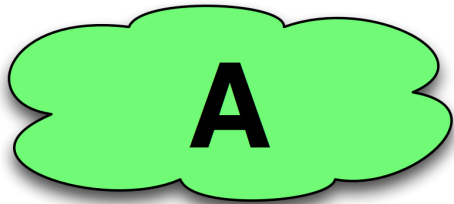
A: No, there are some tricks.

- Smartest Peering Coordinator “Tricks of the Trade”
- 20 Tactics successfully used to obtain Peering where you otherwise might not be able to.

Disclaimer: These are NOT recommended tactics...I am simply documenting what has been successfully used in the field to obtain peering.

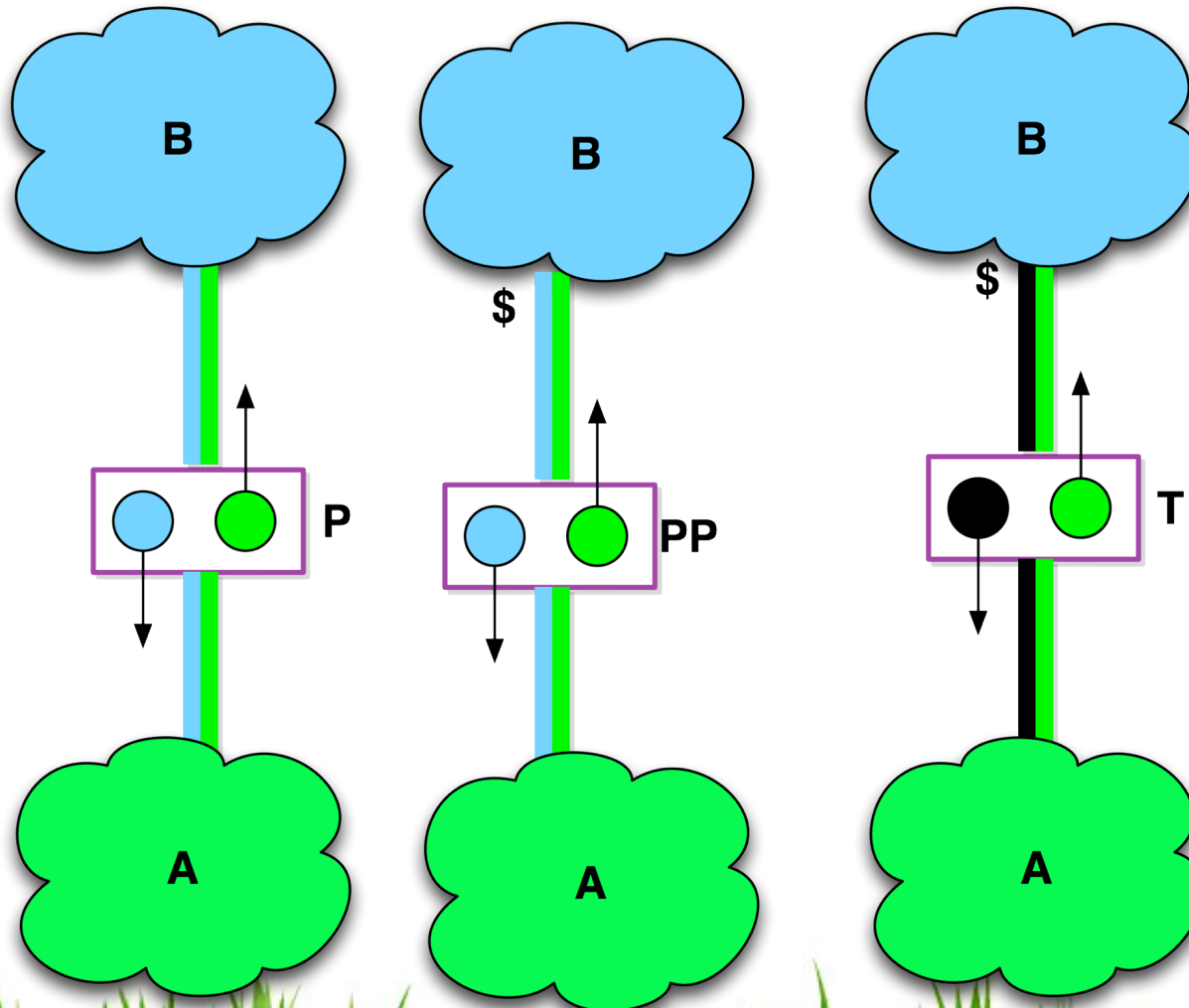
# The Players

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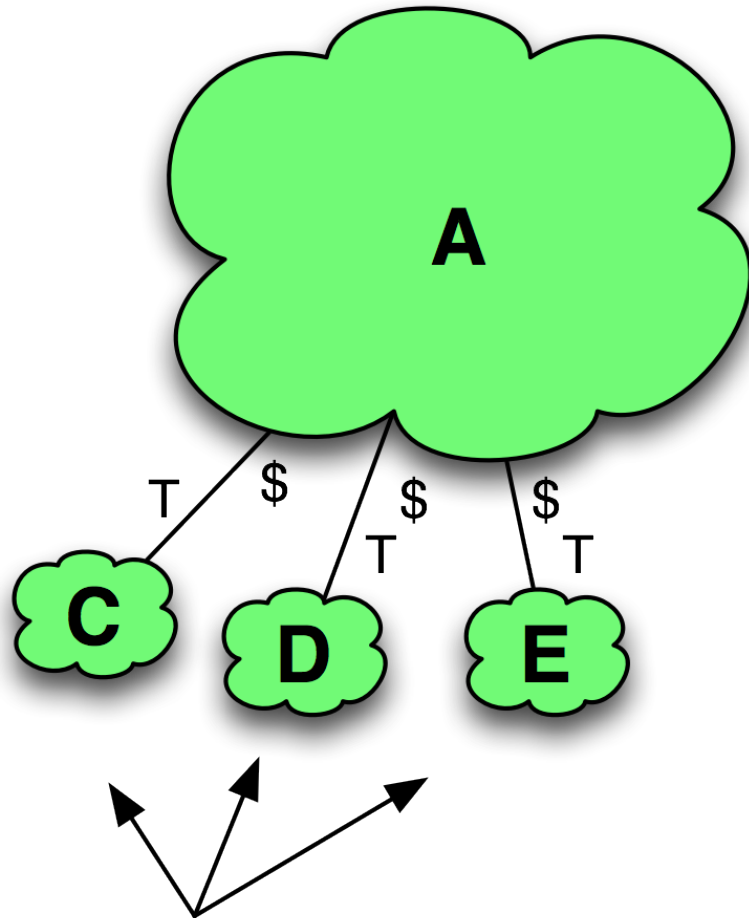




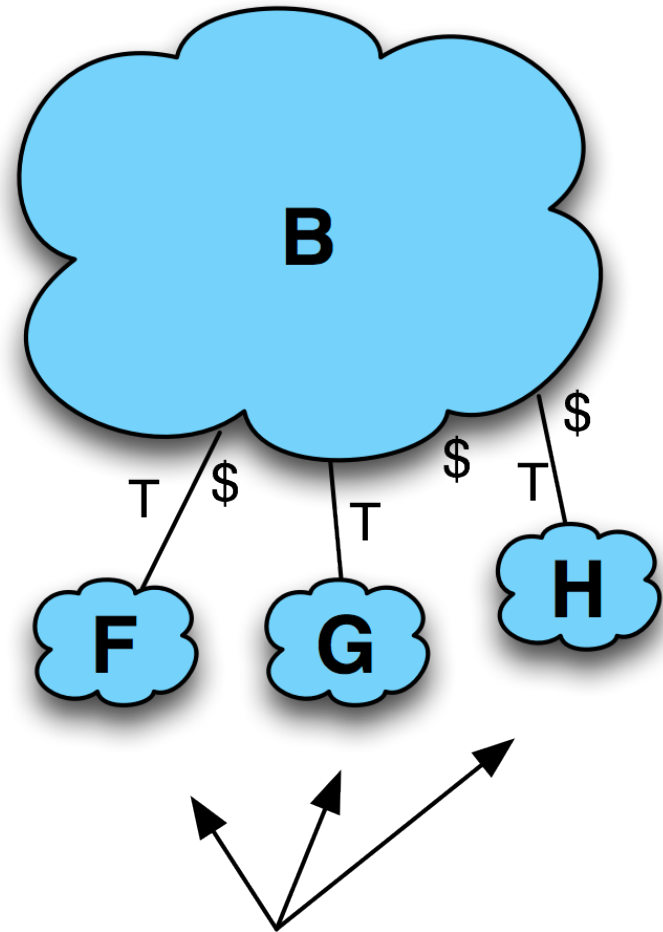
# Internet Peering, Paid Peering, Internet Transit



# ISP Customers



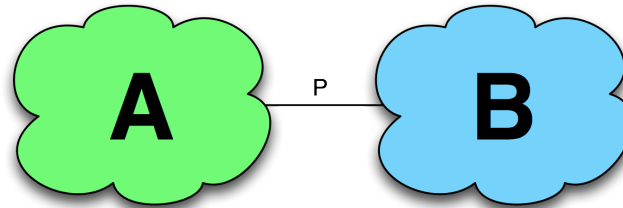
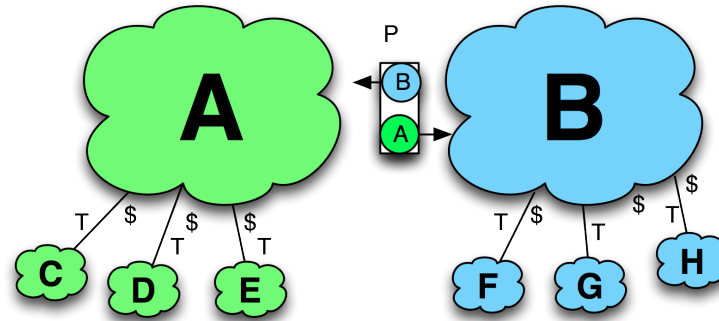
Customers of ISP A



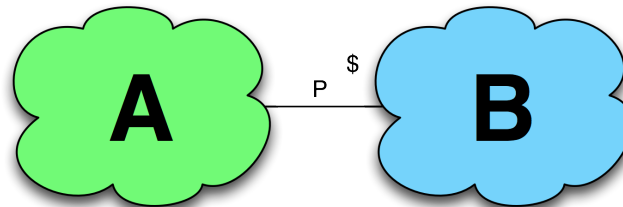
Customers of ISP B



# Equivalent Peering Notations

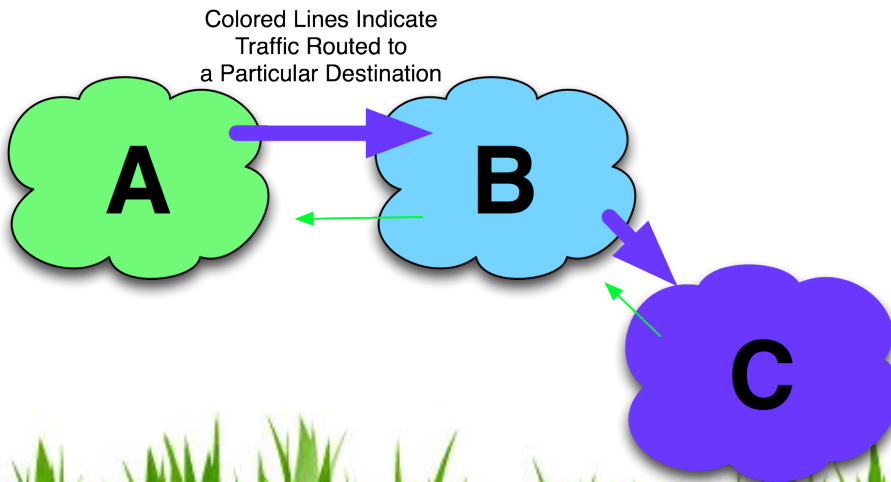
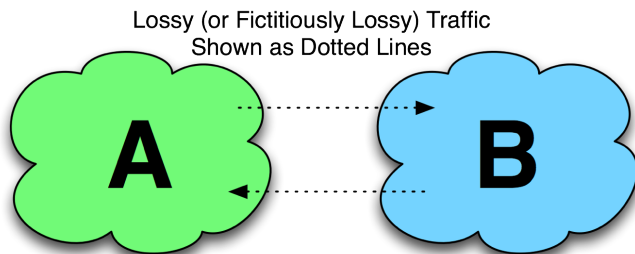
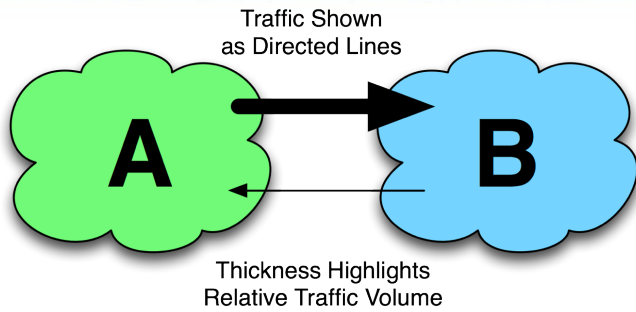


ISP A and ISP B Are Peers



ISP A Is Compensating (\$) ISP B for Peering

# Traffic Flow Notation



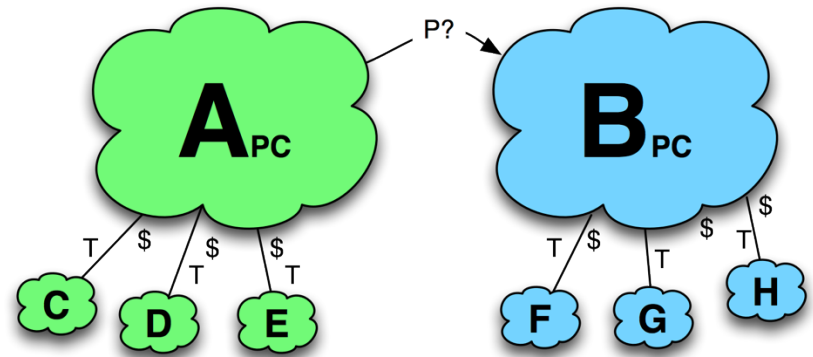
# The ISP Peering Playbook

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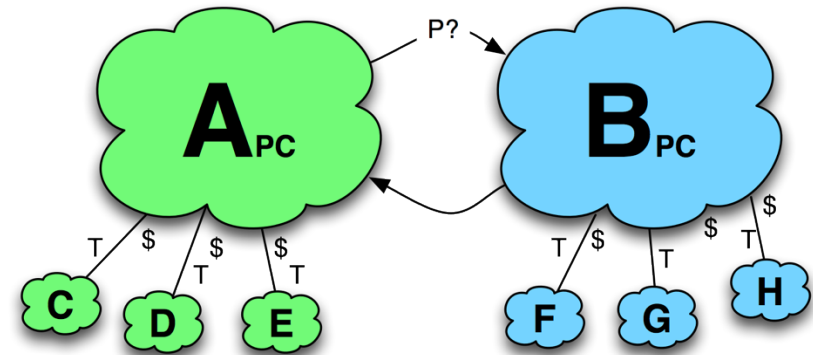
- Where ISP obtained peering
- Where ISP defended its position
- Telecom Italia & Deutsche Telekom by the #
  - “Last night we had another 19”
- Expanded



# Tactic 1. Extended Direct Approach



ISP A Peering Request to ISP B



ISP A and B Enter into Peering Relationship

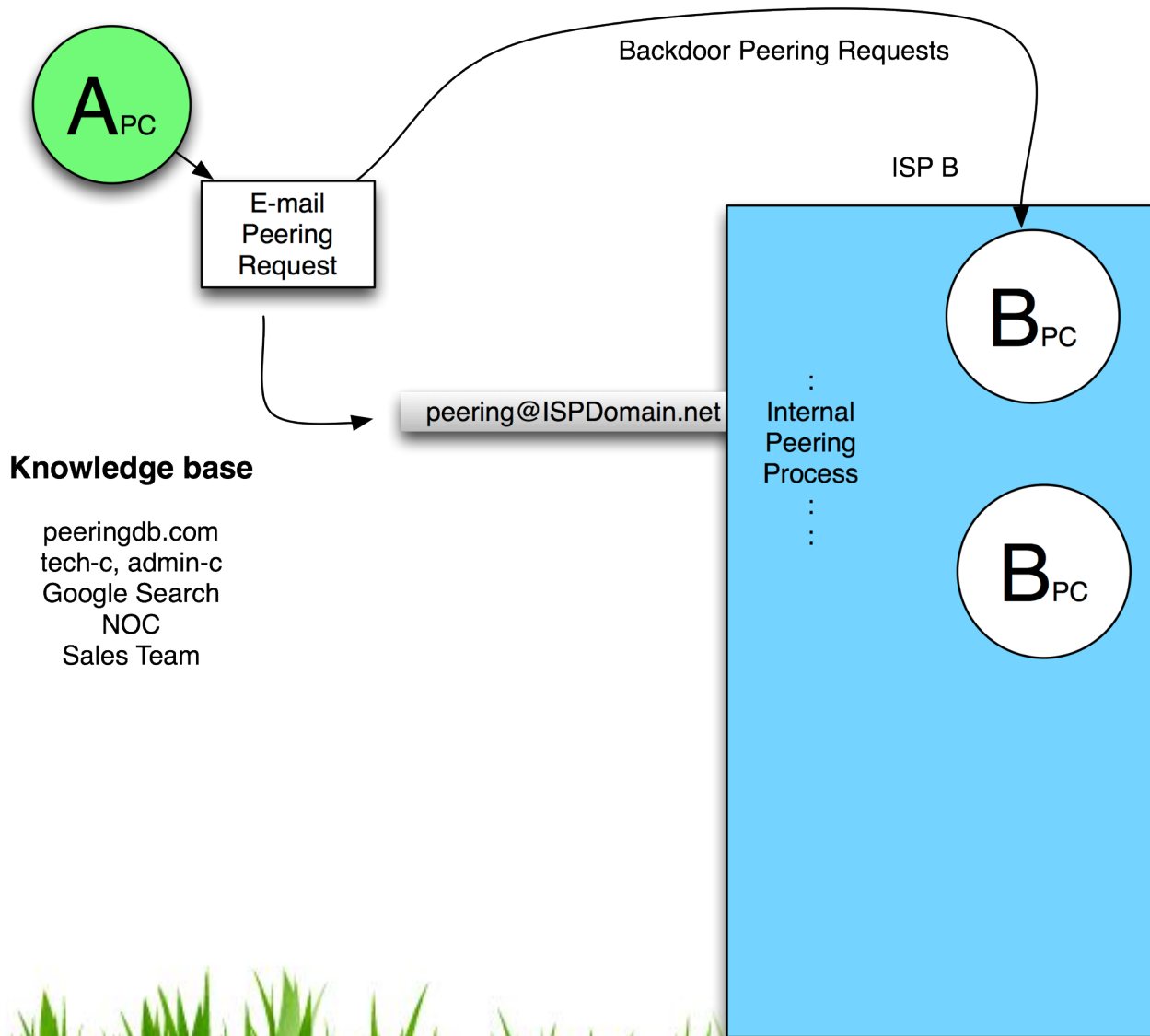
# Top 10 Ways the Pros Contact Target ISPs

1. face-to-face at informal meeting in an Internet Operations forum like NANOG, IETF, RIPE, GPF, APNIC, AFNOG, etc.,
2. face-to-face at Commercial Peering Forums like Global Peering Forum (you must be a customer of one of the sponsoring Ixes)
3. face-to-face at IX Member Meetings like DE-CIX, LINX, or AMS-IX member meetings.
4. introductions through an *IX Chief Technical Liaison* (or a peer) that knows the right contacts

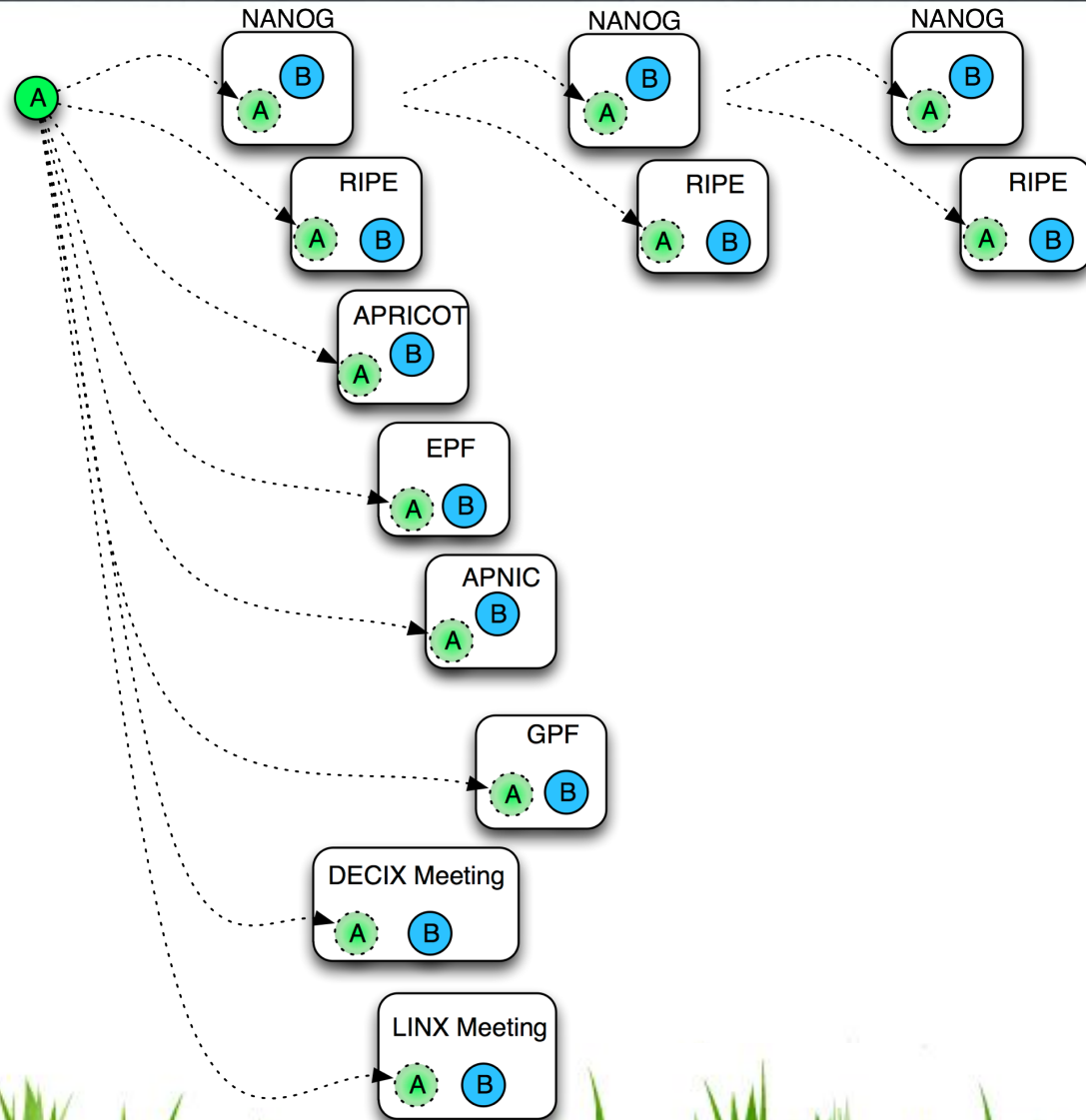
# Top 10 ways the Pros Contact Target ISPs

5. via electronic mail, using the pseudo standard peering@ispdomain.net or a personal contact,
6. from contacts listed on an exchange point participant list, or peeringdb registrations,
7. with tech-c or admin-c from DNS or ASN registries,
8. Google for peering contact \$ASN peering ,
9. from the target ISP sales force, at trade show or as part of sales process,
10. from the target ISP NOC.

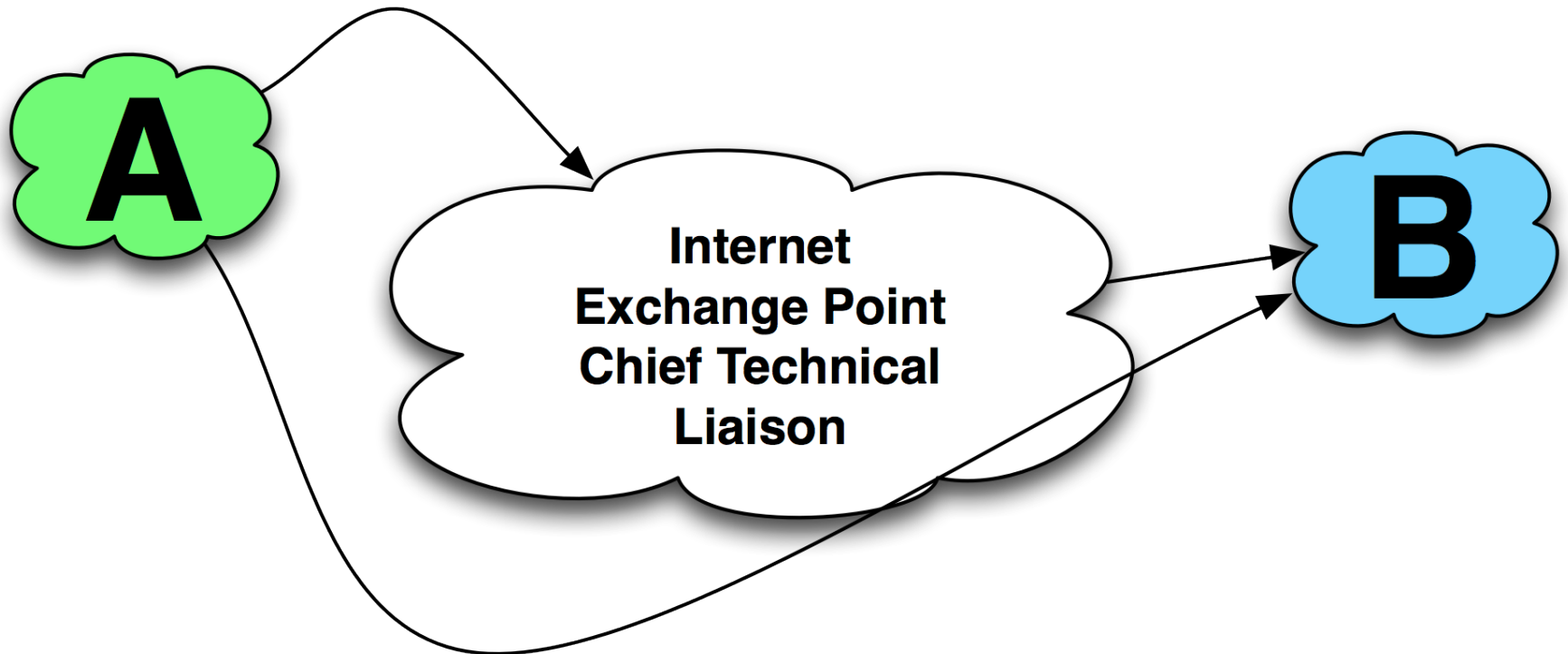
# Email Bypass



# Maximize Face Time



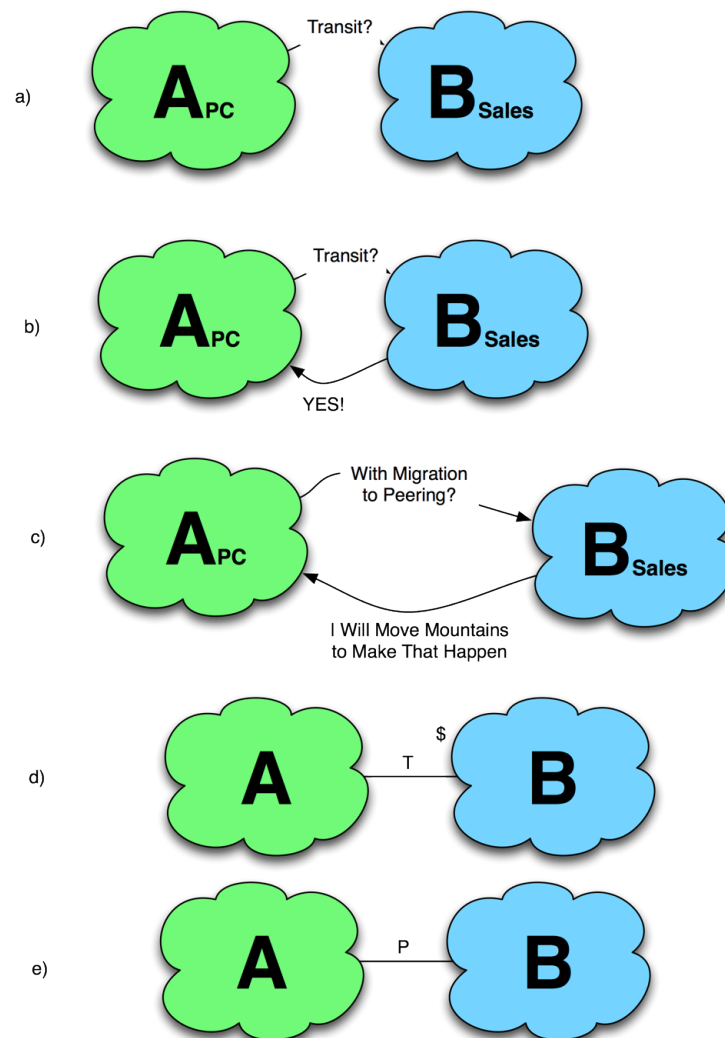
# Leverage IXP Resources





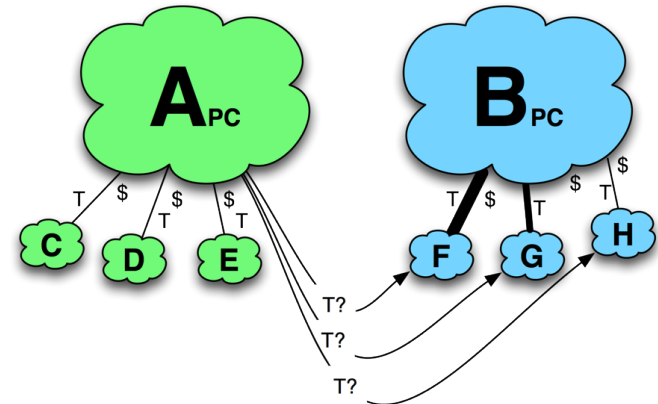
## Tactic 2. Internet Transit with Peering Migration

- Leverage internal advocate
- Transit Contract
- If peering prerequisites are met, migrate to peering
- If not, try again...
- Williams story

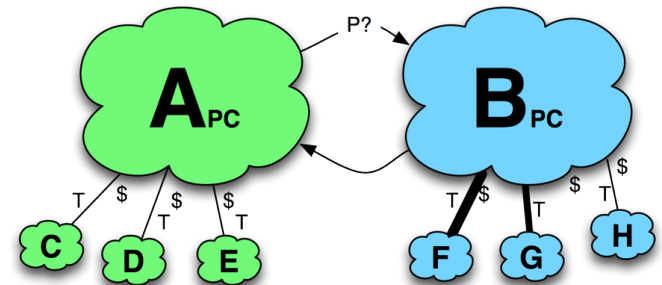


# Tactic 3. End Run Maneuver

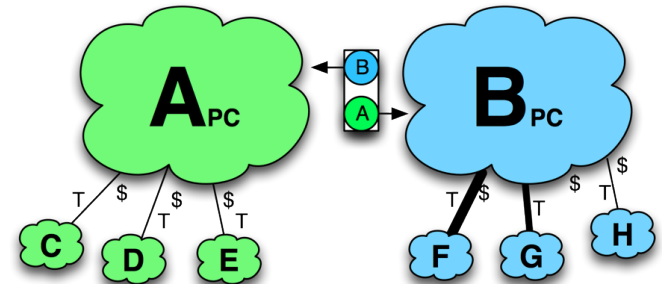
- Minimizes need for peering
- When you need it less you can more easily get it.
- Rather peer than lose customers
- Takes time
- Cherry picking may annoy peer



Offer Cheap Transit (or Paid Peering, Free Peering)



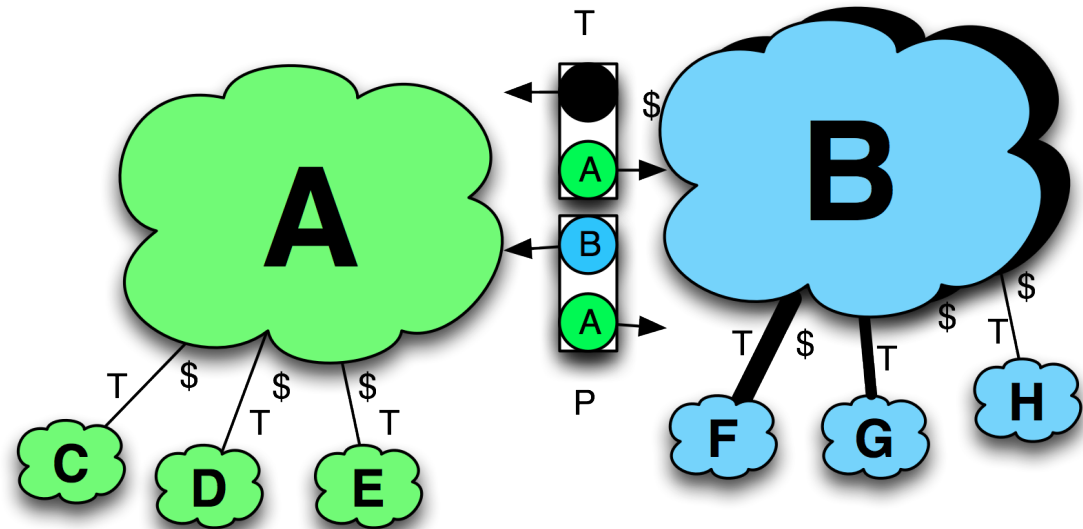
Peering Between A and B Removes the Incentive to Peer with B's Downstream Customers



Peering Between A and B Removes the Incentive to Peer with B's Downstream Customers 18

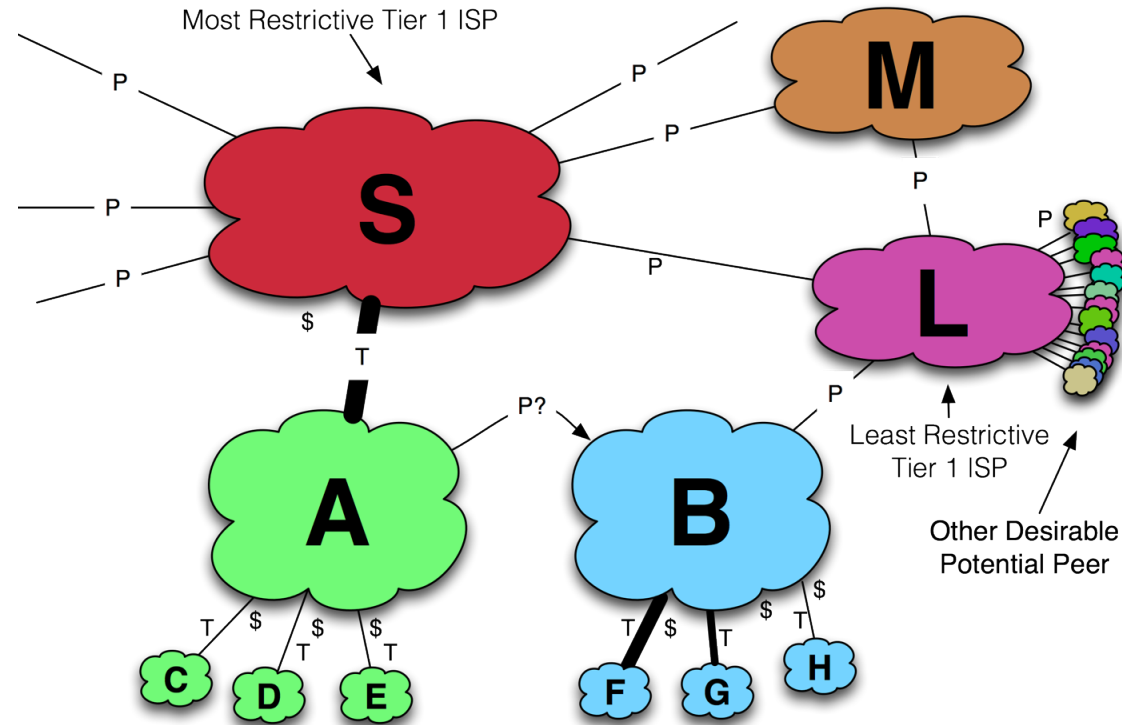
# Tactic 4. Bundle Internet Transit with Peering

- BBC Internet
- Internal advocate
- May be tough to support
- Can be gamed



# Tactic 5. Buy Transit from most Restrictive Tier 1 ISP

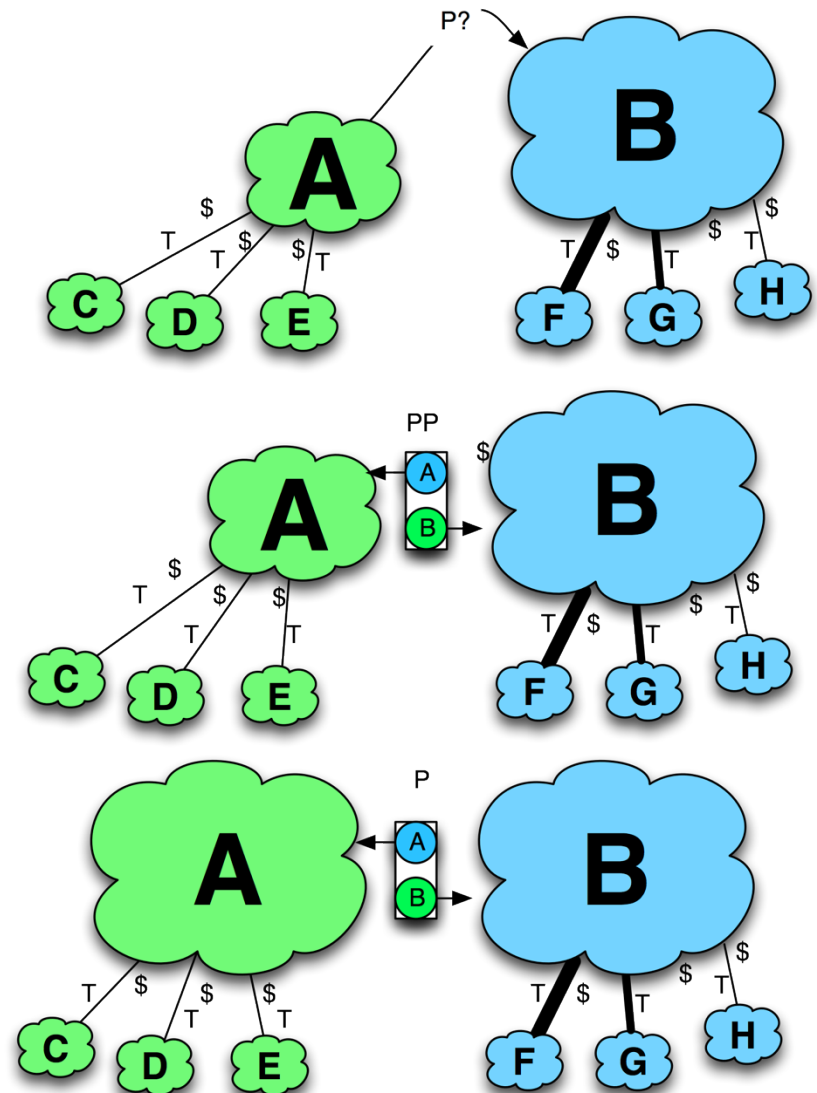
- Peering request process
  - Do I already hear these routes for free?
  - Yes=deny peering
- So buy from someone that doesn't peer
- Minimize chance of rejection



“Once a customer, never a peer” – UK Story

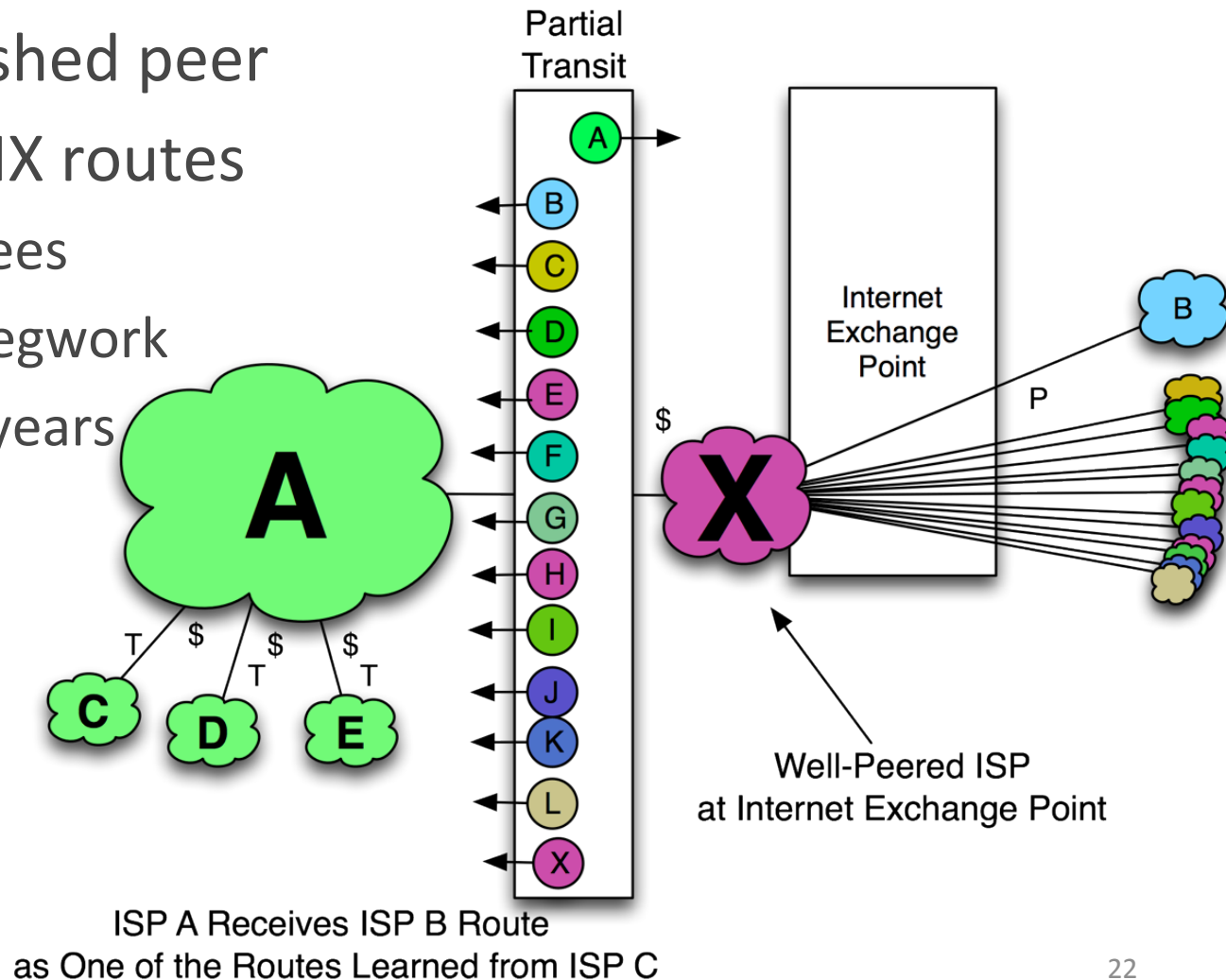
# Tactic 6. Transitional Paid Peering

- “Stepping Stone” to free peering
- Free peering when prerequisites satisfied
- Few success stories



# Tactic 7. Partial-Route Internet Transit

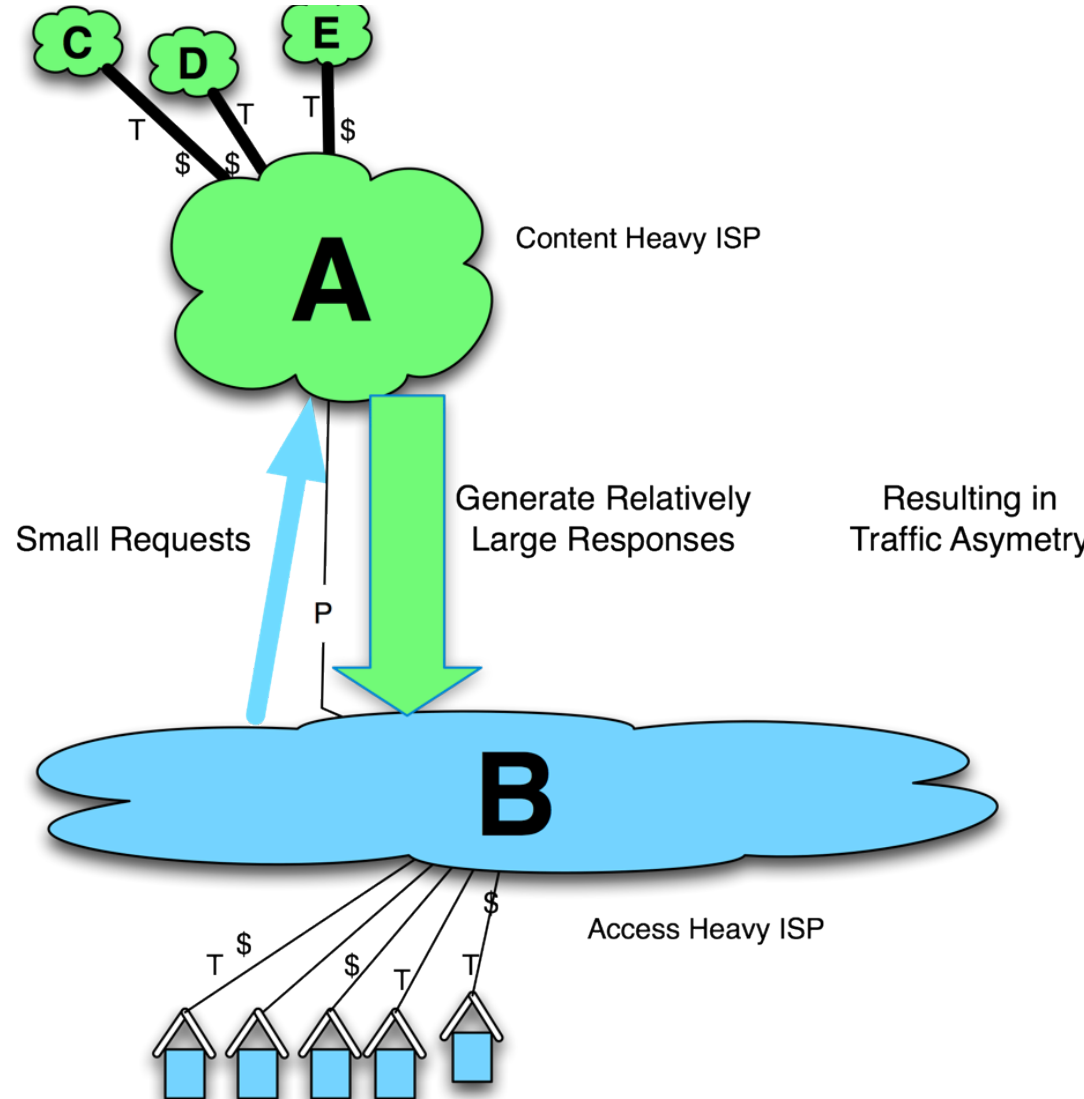
- X well established peer
- I will sell you IX routes
  - No Joining Fees
  - No Peering legwork
  - Would take years
- Priced cheap





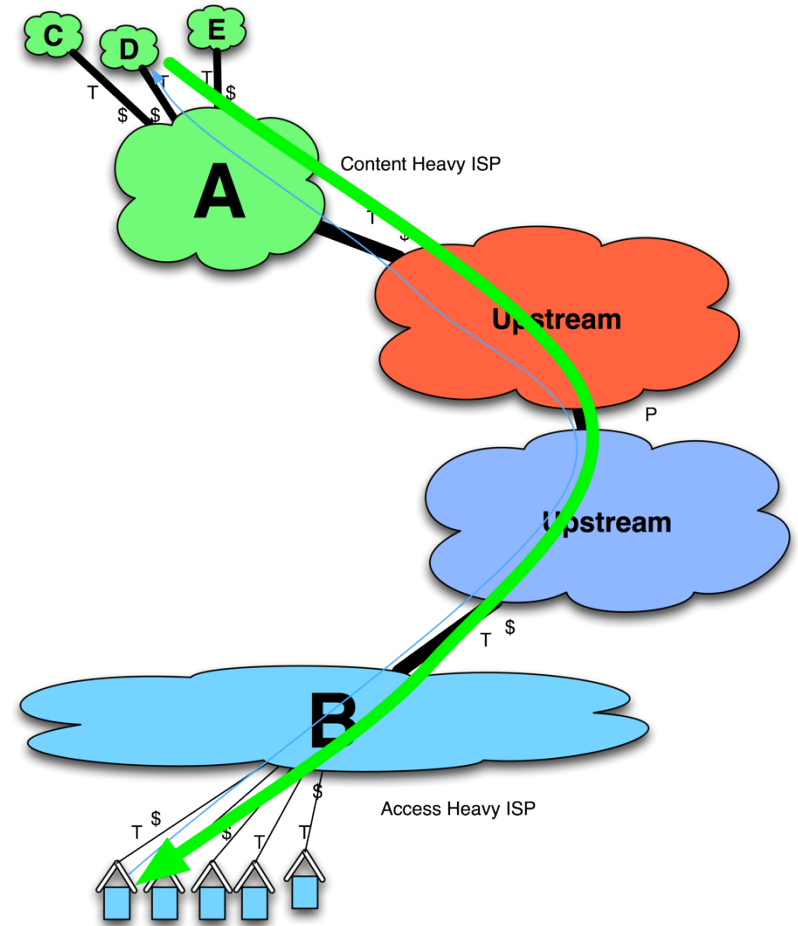
# Tactic 8. Play Chicken (1 of 3)

- Confrontational
- Upgrade-Pay Me
- No? Disconnect
- Then...



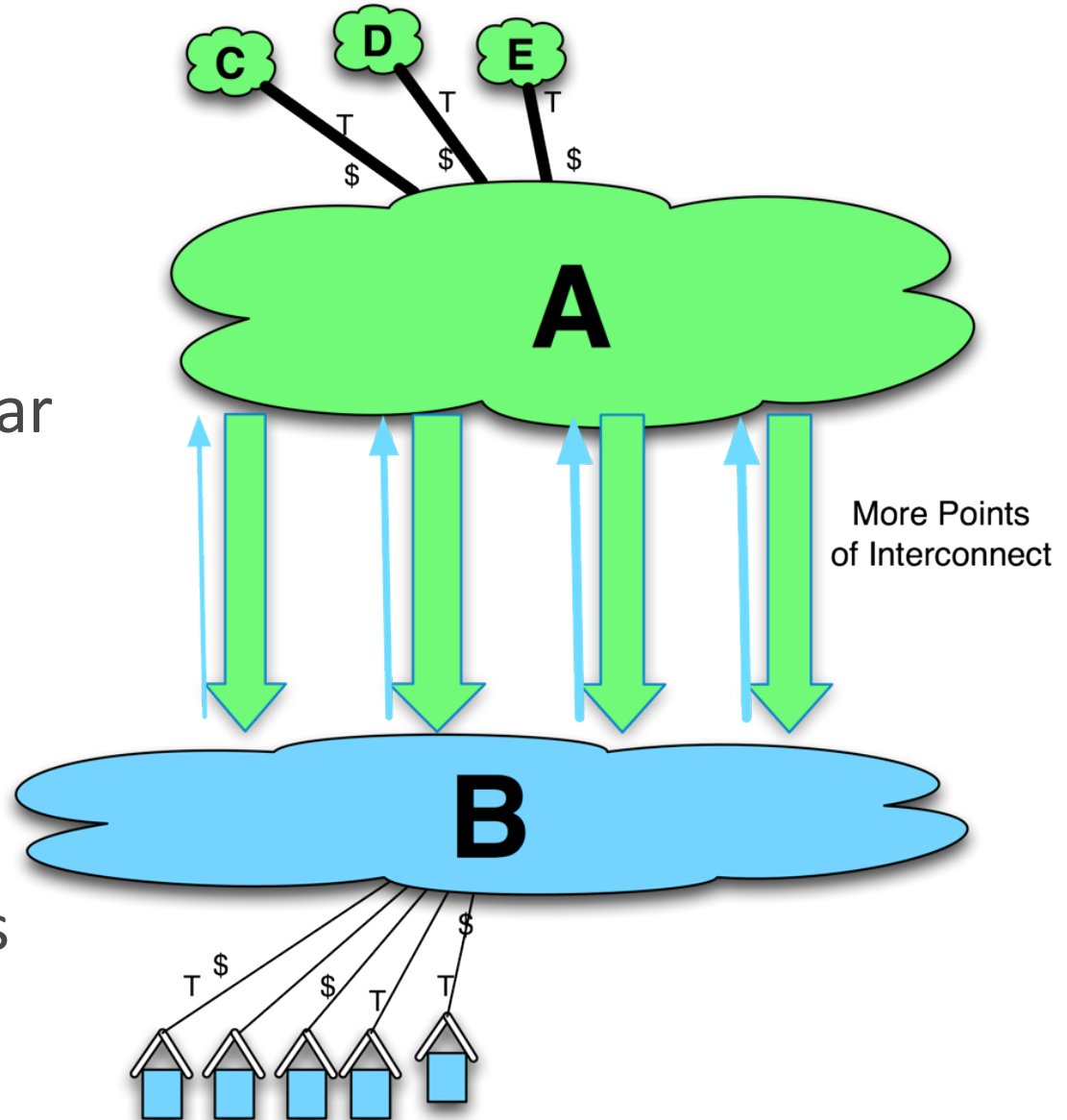
# Tactic 8. Play Chicken (2of3)

- More circuitous path
- Maybe partition



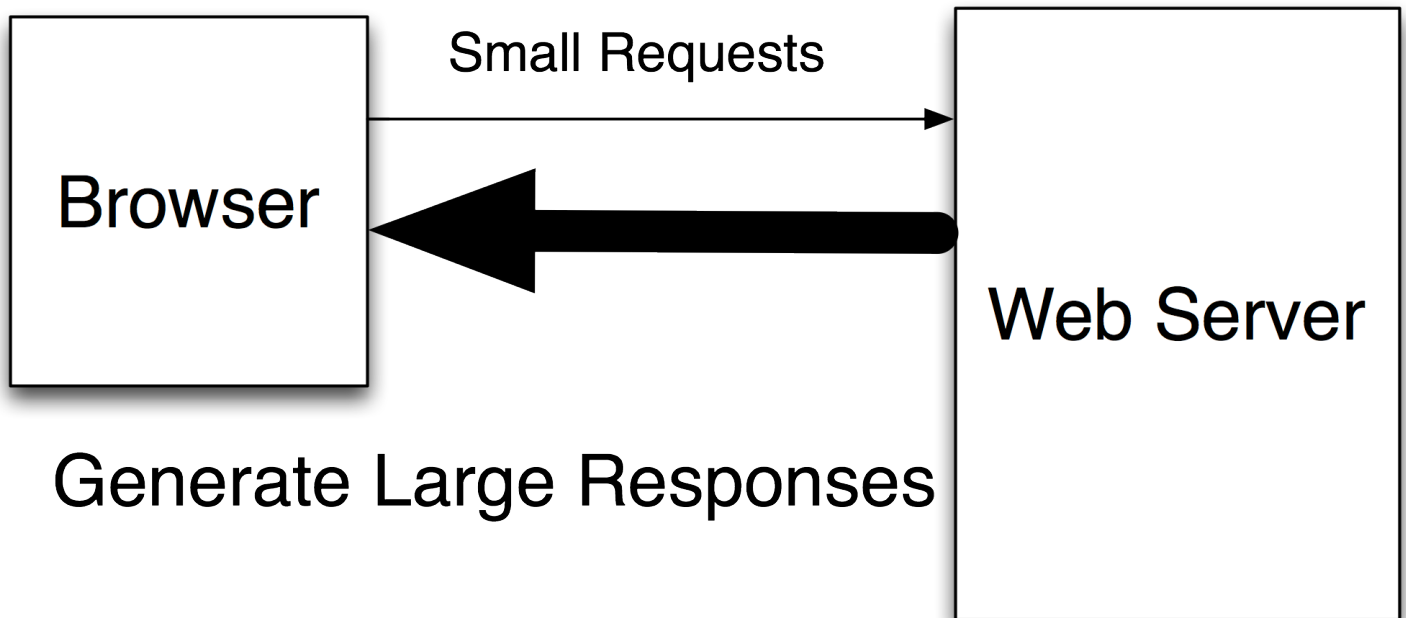
# Tactic 8. Play Chicken (3of3)

- Renegotiate terms
- Exodus-Genuity
- Peering Ratio sidebar
- End result?
- Name calling
- Public scrutiny
- More interconnects



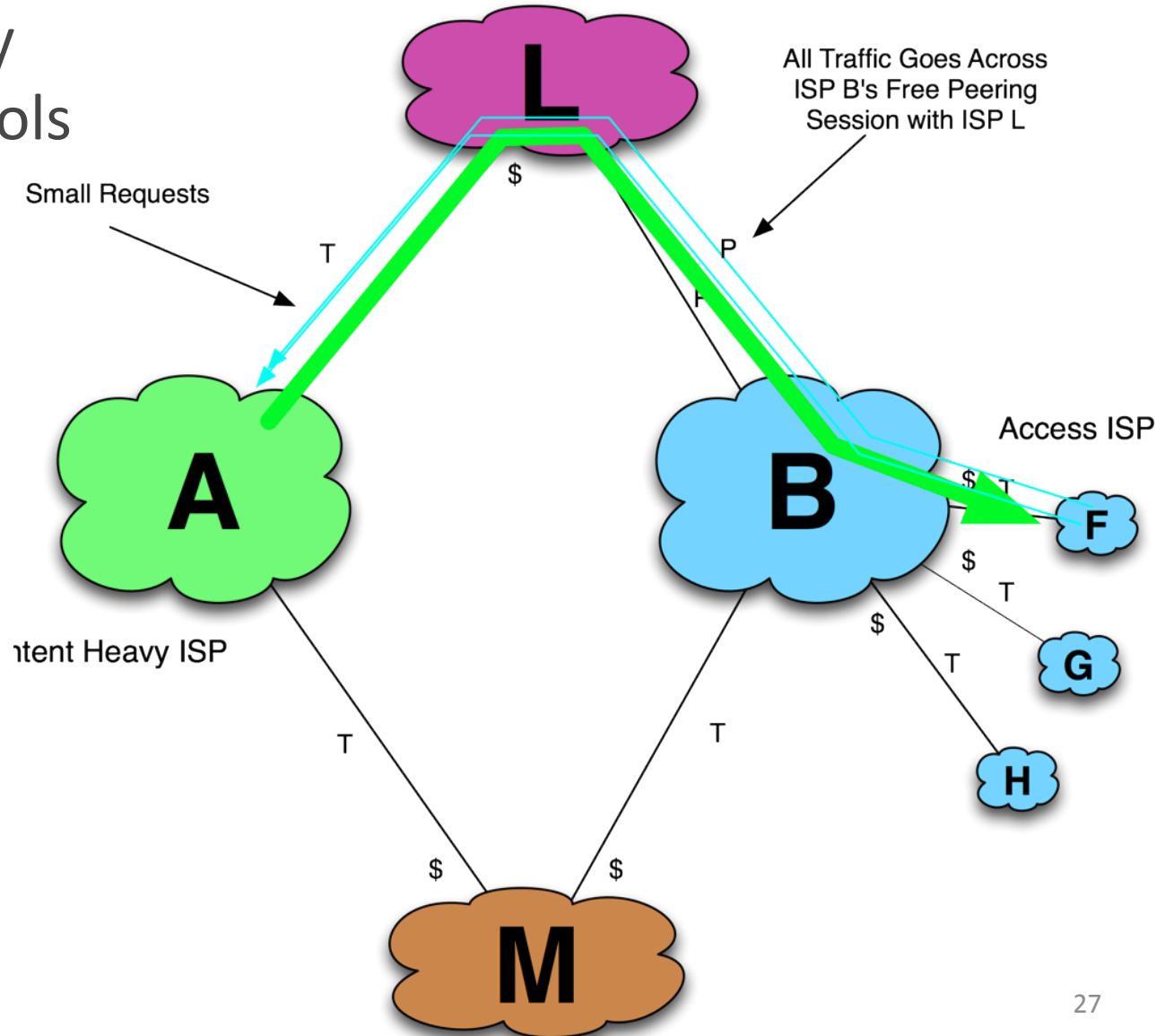
# Tactic 9. Traffic Manipulation

- Leverages Traffic Asymmetry



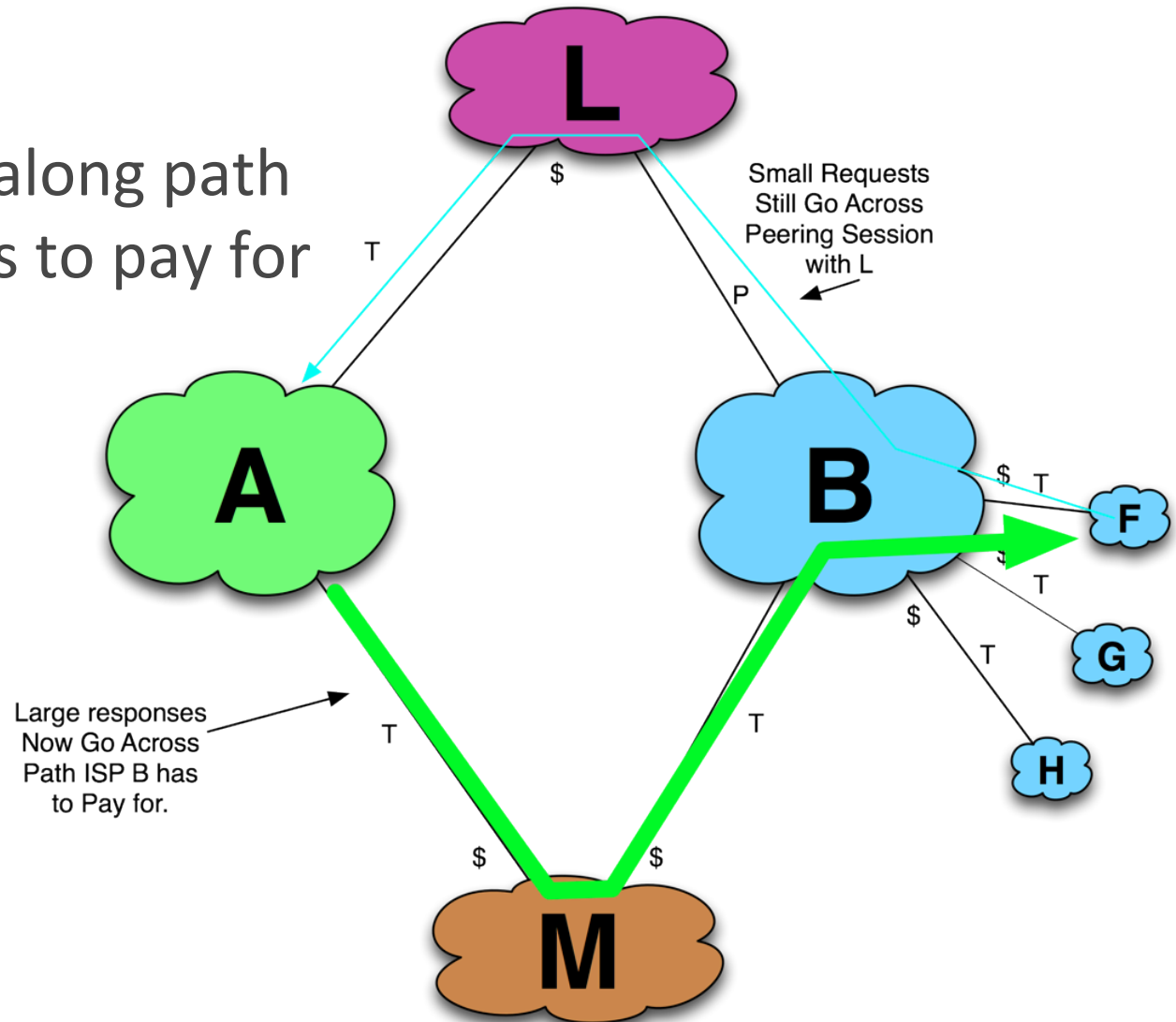
# Tactic 9. Traffic Manipulation

- Content-Heavy network controls spigot
- Understand Motivations



# Tactic 9. Traffic Manipulation Tactic

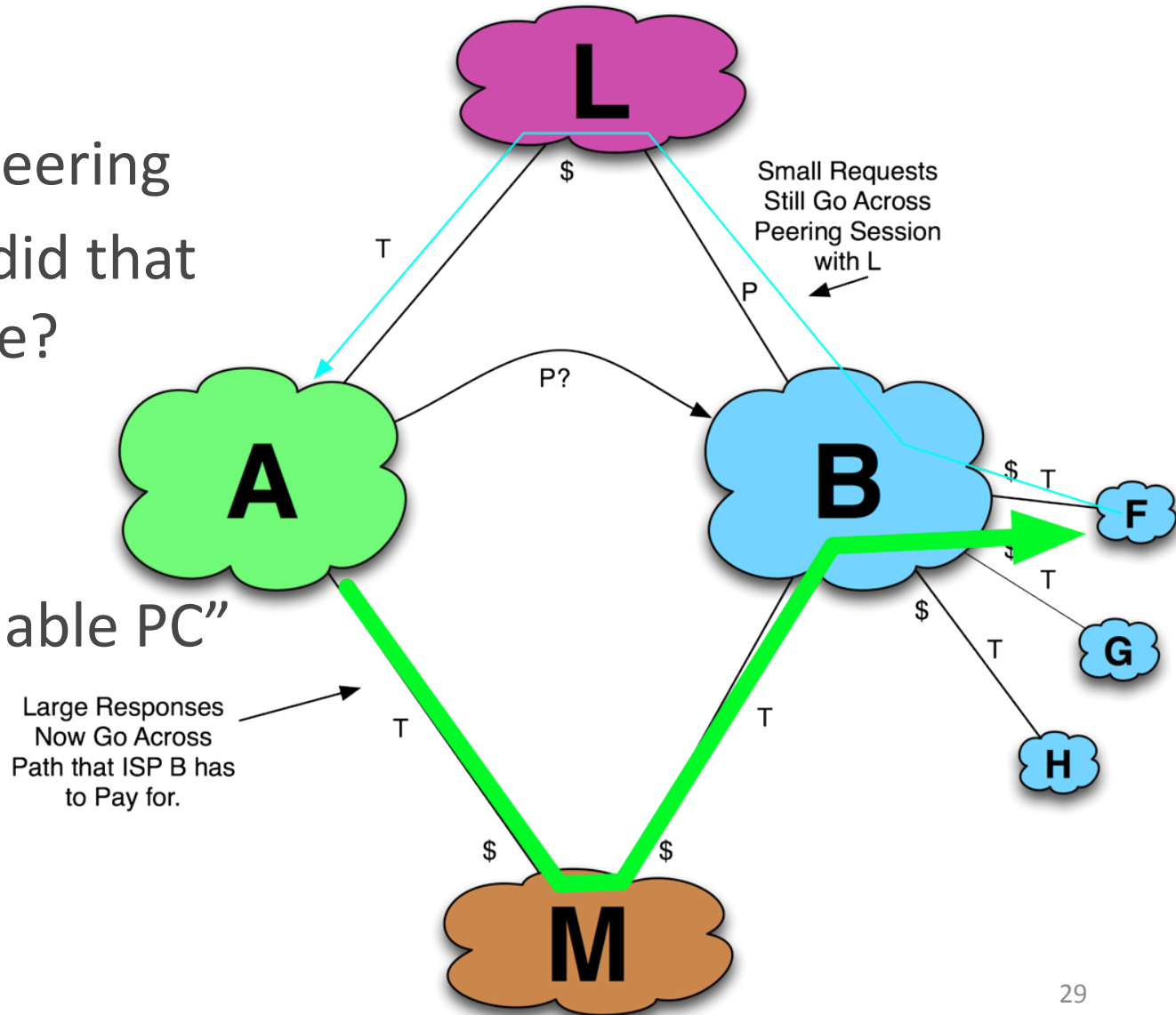
- Force traffic along path that ISP B has to pay for





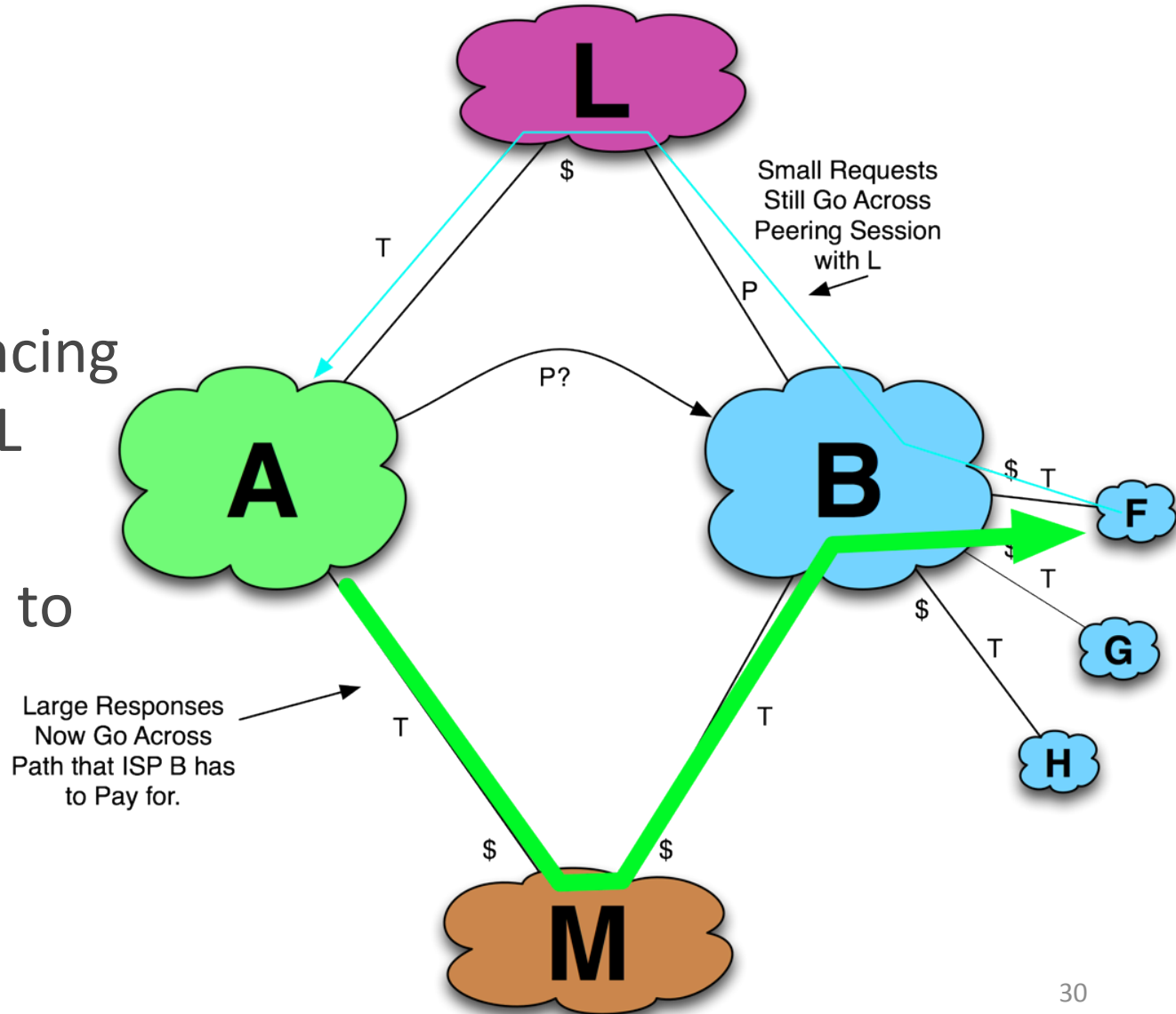
# Tactic 9. Traffic Manipulation

- THEN ask for peering
- “Oh my! How did that creep up on me?”
- Yes, let’s peer.
- I’ll save \$\$
- I’m such a valuable PC”



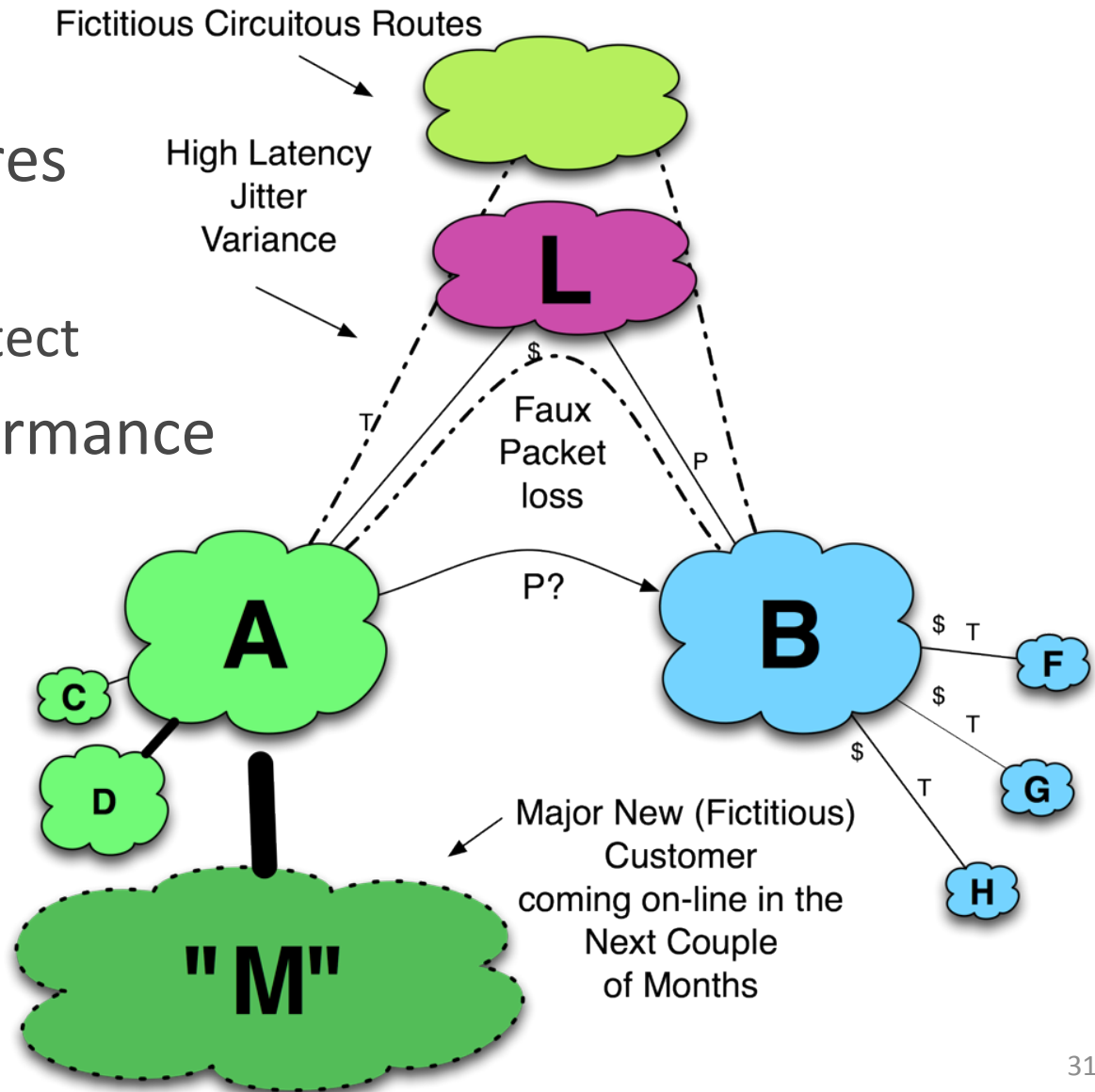
# Tactic 9. Traffic Manipulation

- Unethical?
- Variations:
- A stops announcing reachability to L
- A inserts B in announcement to trigger loop suppression



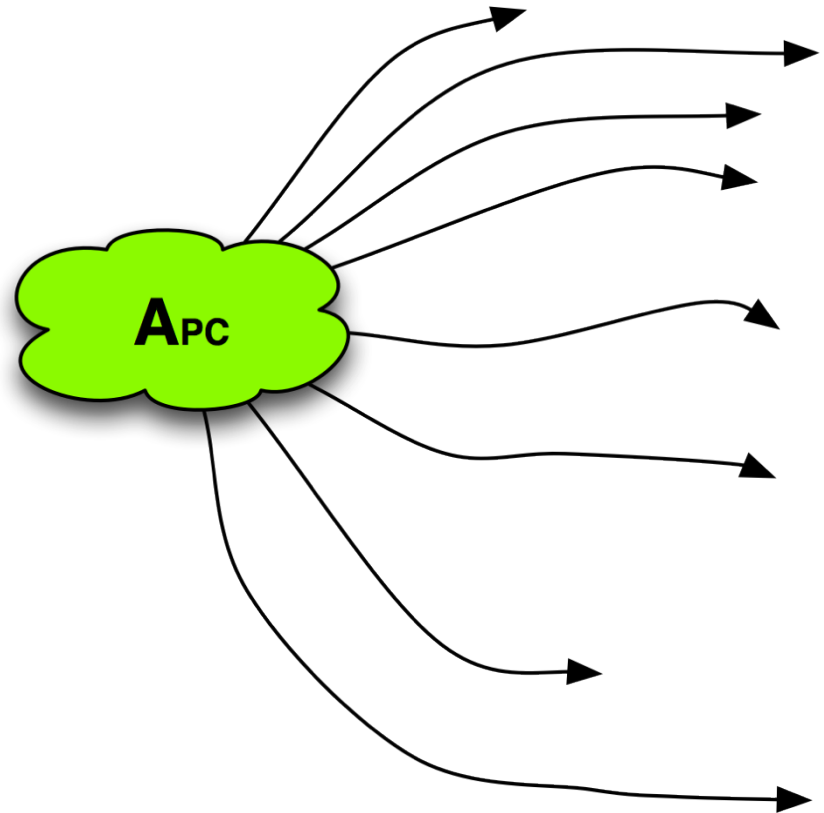
# Tactic 10. Bluff Issues

- Bluff load futures
  - Msft
  - Difficult to detect
- Bluff bad performance
  - Traceroute
  - Jitter
  - latency



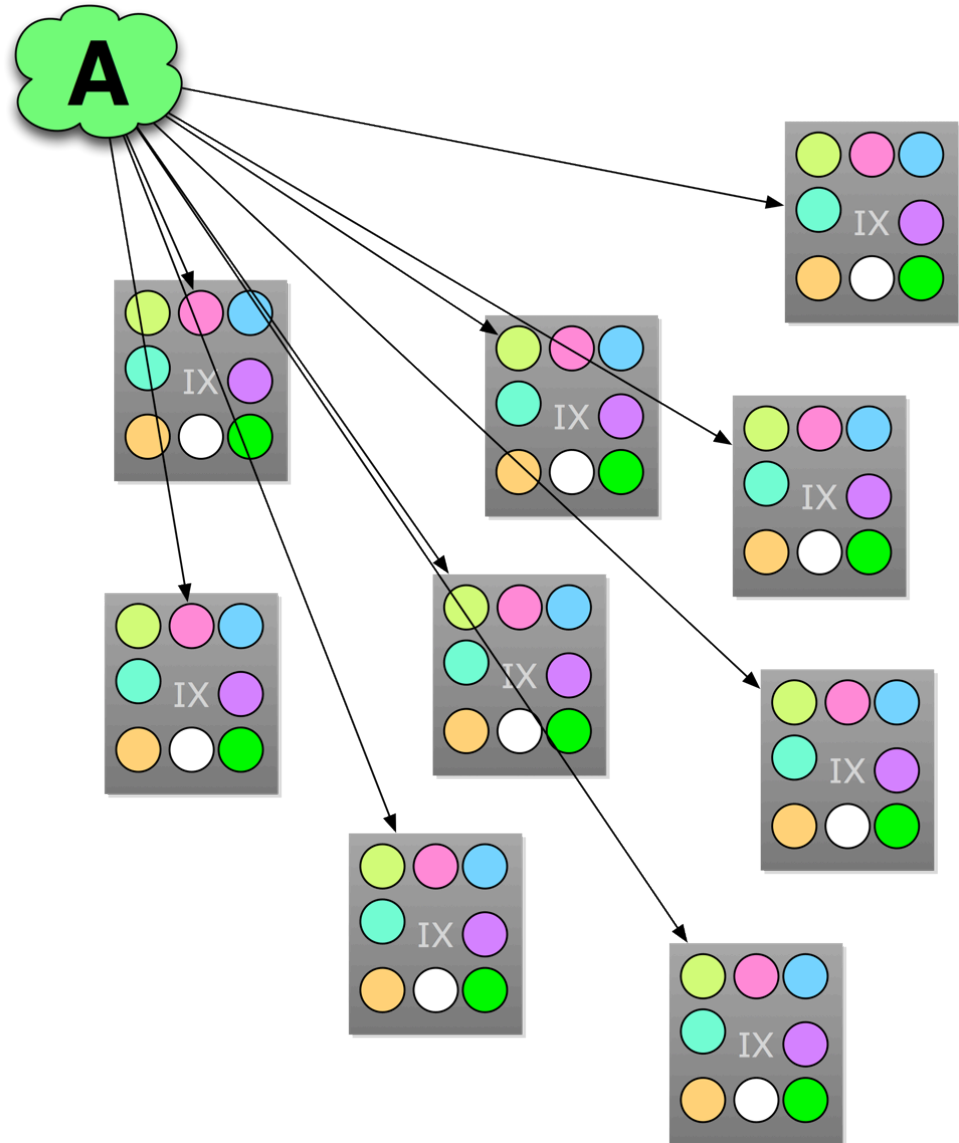
## Tactic 11. Be Open. Loudly.

- PC faces rejection
- Phone calls and emails go unanswered
- Be the low hanging fruit
- # of sessions, volume of traffic used in performance reviews
- Make it clear you will make them look good



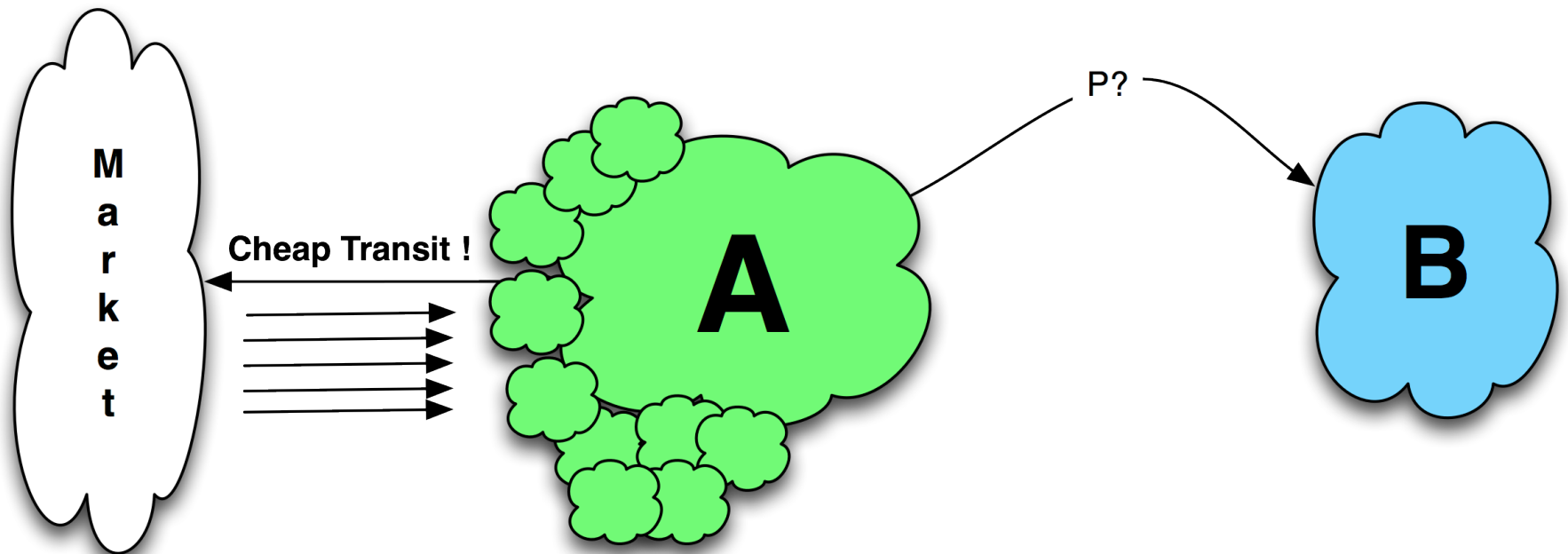
# Tactic 12. Be Everywhere

- Build into large # of POPs, IXPs, colos
- Meet geographic distribution requirements
- Signal big peer volume potential



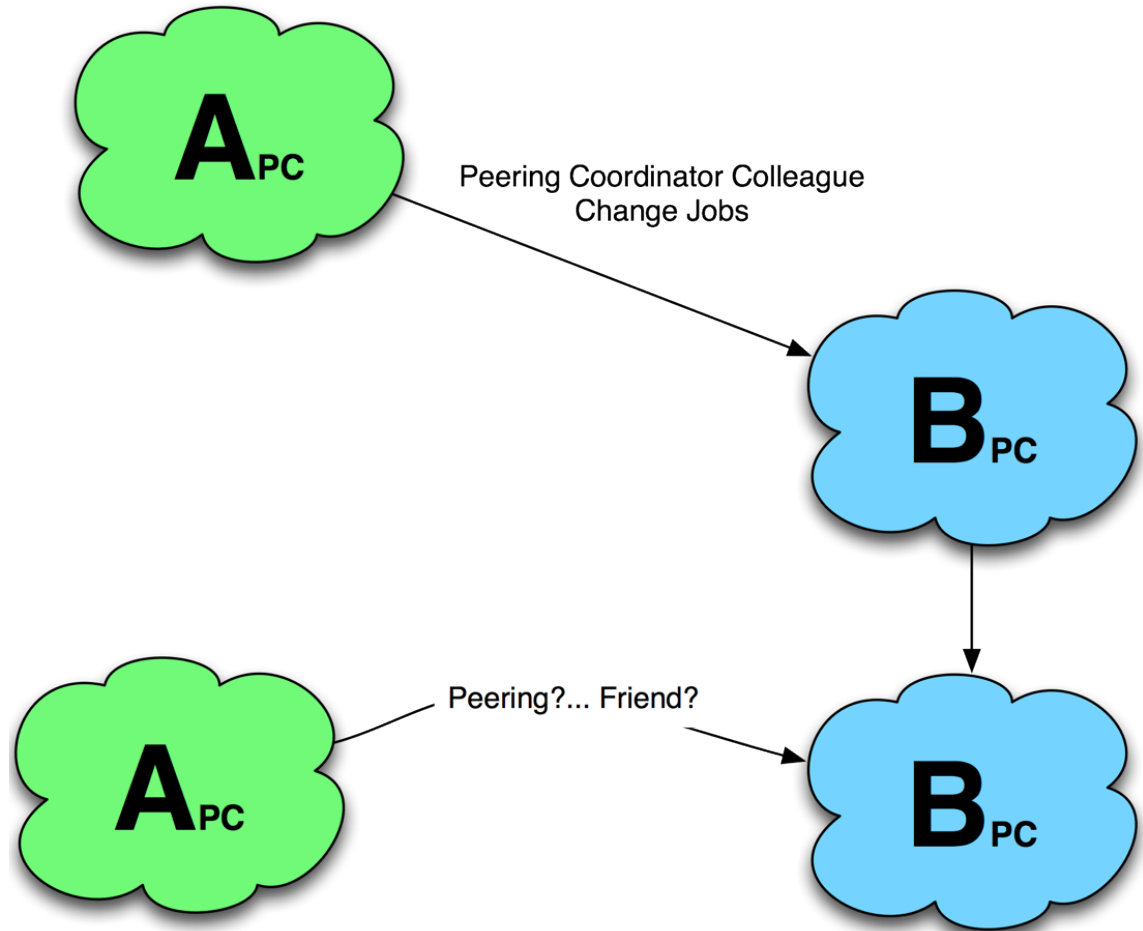
# Tactic 13. Get Traffic

- Cogent
- More attractive peering candidate



# Tactic 14. Friendship-based Peering

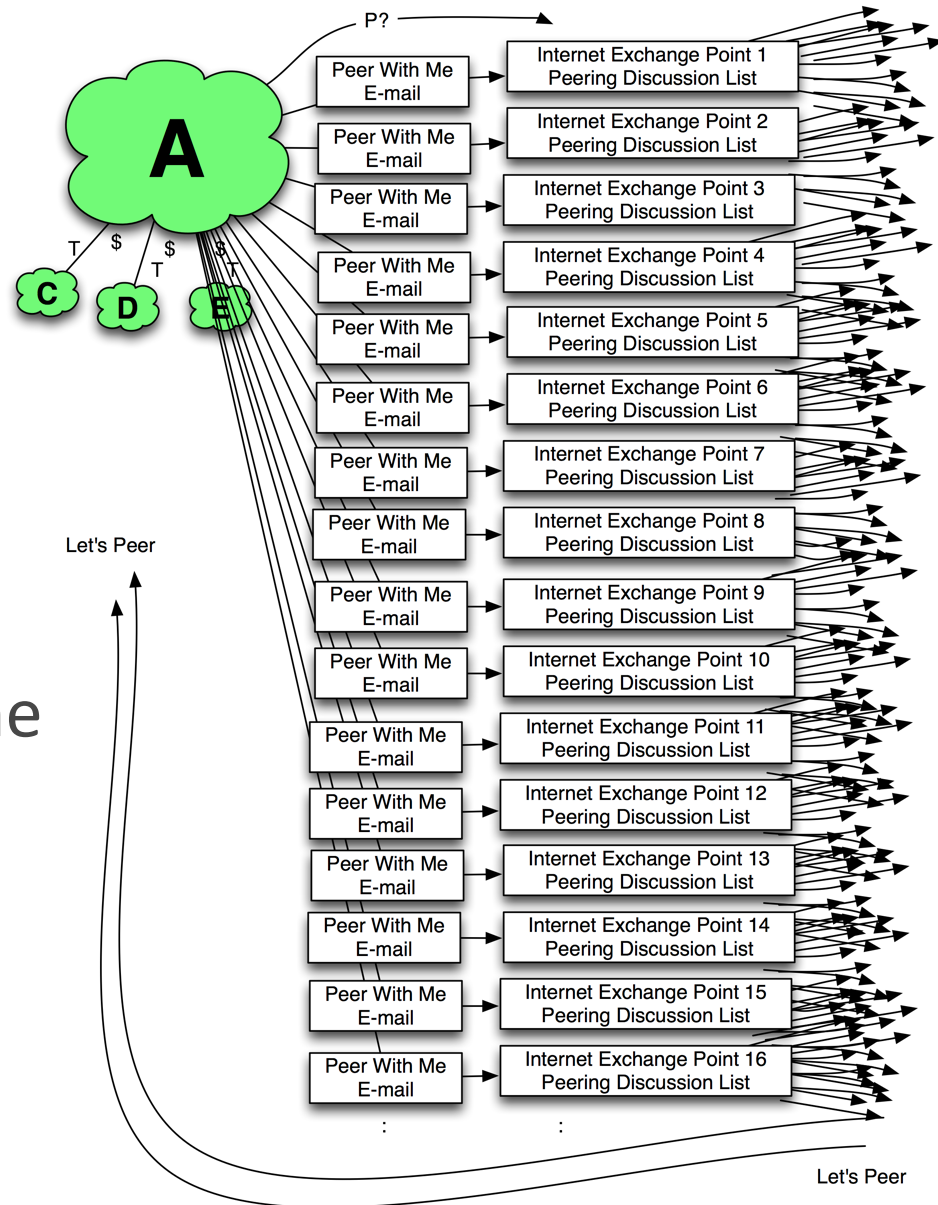
- Related: Bro-lo
- “Brother can you spare some colo?”
- As CTL peers became friends, introduced newbies to “friendly” peers





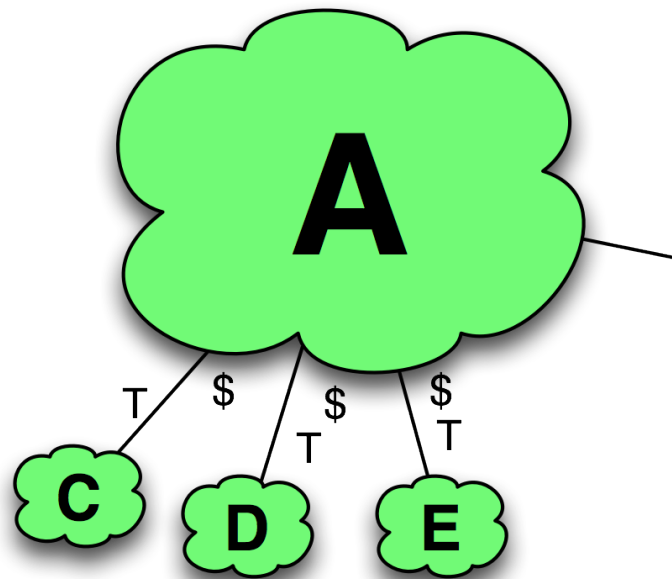
# Tactic 15. Spam Peering Requests

- Discussion lists
- “Reply to self”
- “Dozens of peering sessions resulted”
  - Mitchell Rose
- Might be low volume peers
- Some unexpected positive responses



# Tactic 16. The Honey Approach - Be Sweet

- Yahoo! Microsoft desirability of content
- Thousands of webcasts, personal radio stations, web properties your eyeballs want! Easier to be approached than to approach.



## #1 ISP in Silicon Valley

2007-2010

Host of 17 of The top 500 Web Sites in the World

50Gbps of traffic

(before secret customer A  
does their popular OS updates)

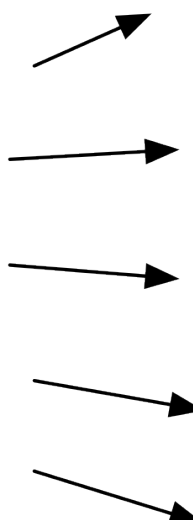
50 Portals Growing at 50% per Year

Open to peering with anyone here!

Peering Personals Participant

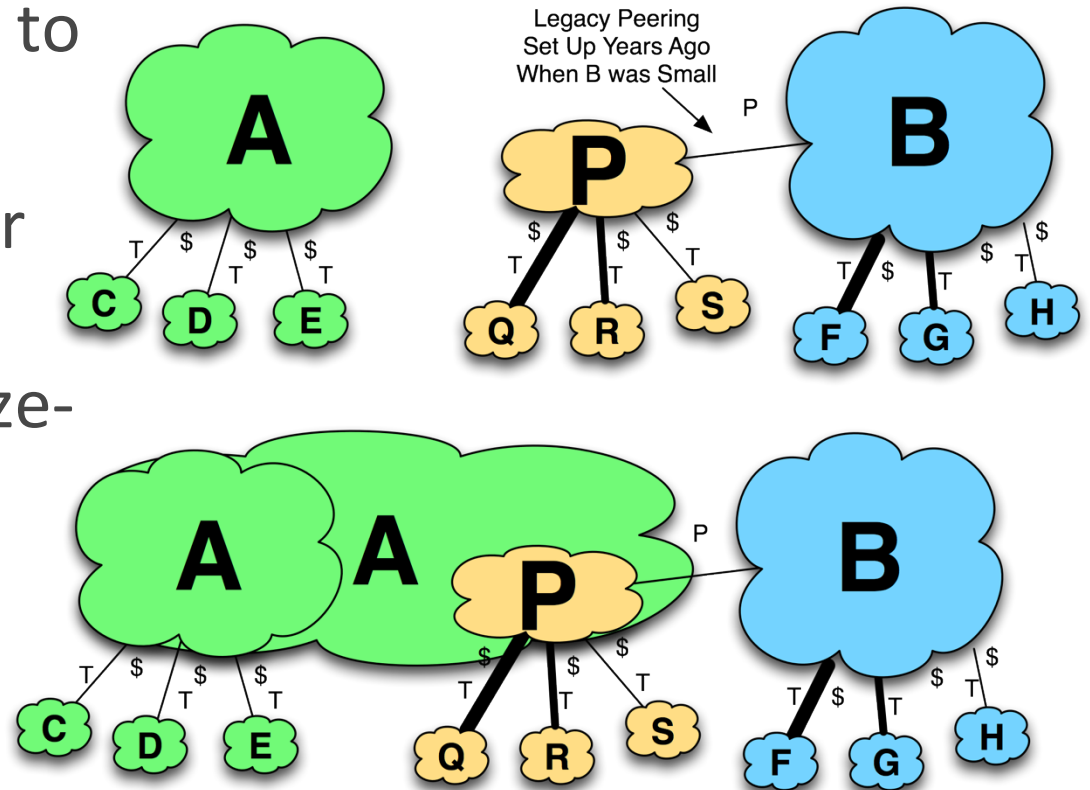
Speaker at Peering Fora

Includes Promotional Pitch at Every Opportunity  
in order to Appear Desirable to Obtain Peering



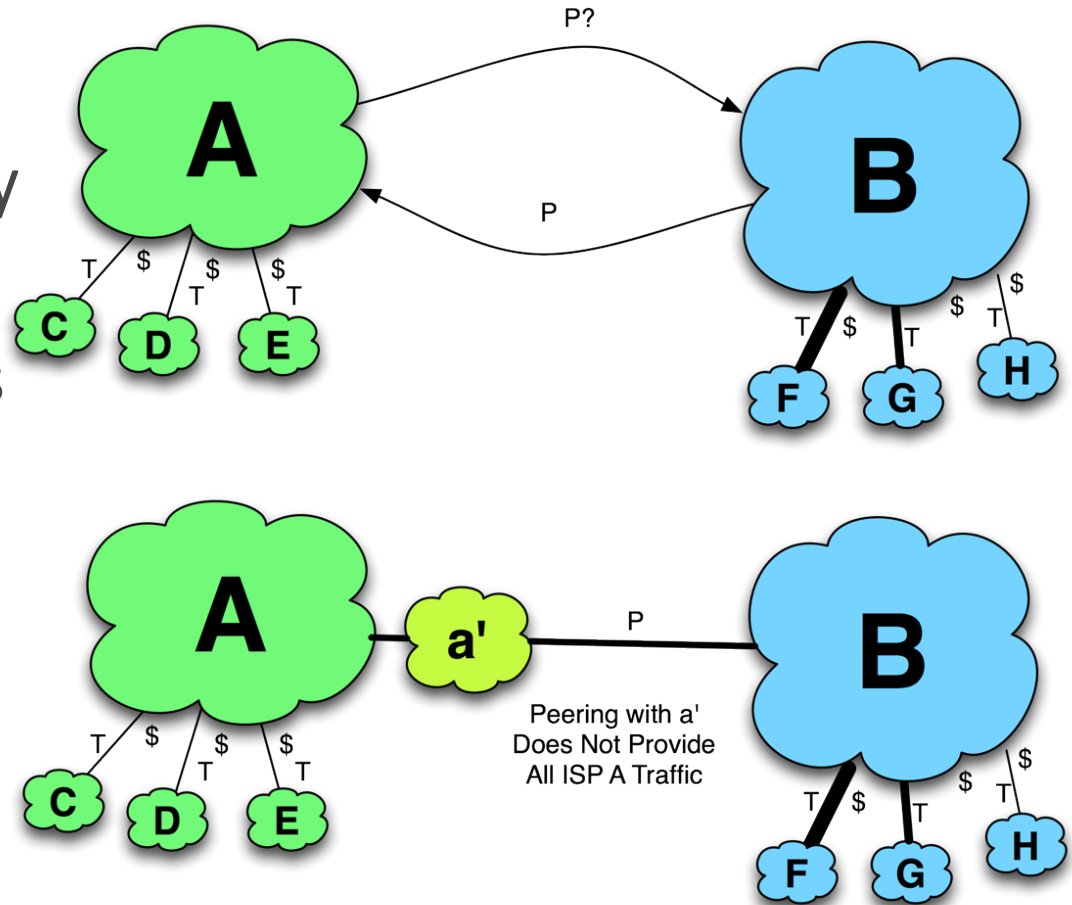
# Tactic 17. Purchase a well-peered ISP

- Level 3 acquired ISPs to become Tier 1
- Telstra forced to peer with Optus, Connect.com, and Oze-mail
- Optus → SingTel
- Connect.com → TNZ
- Oze-mail → Verizon
- 1990's Value ~ Value of peering



# Tactic 18. Bait-and-Switch

- Large parent company power is leveraged
- Smaller company gets peered



# Tactic 19. False Peering Outage

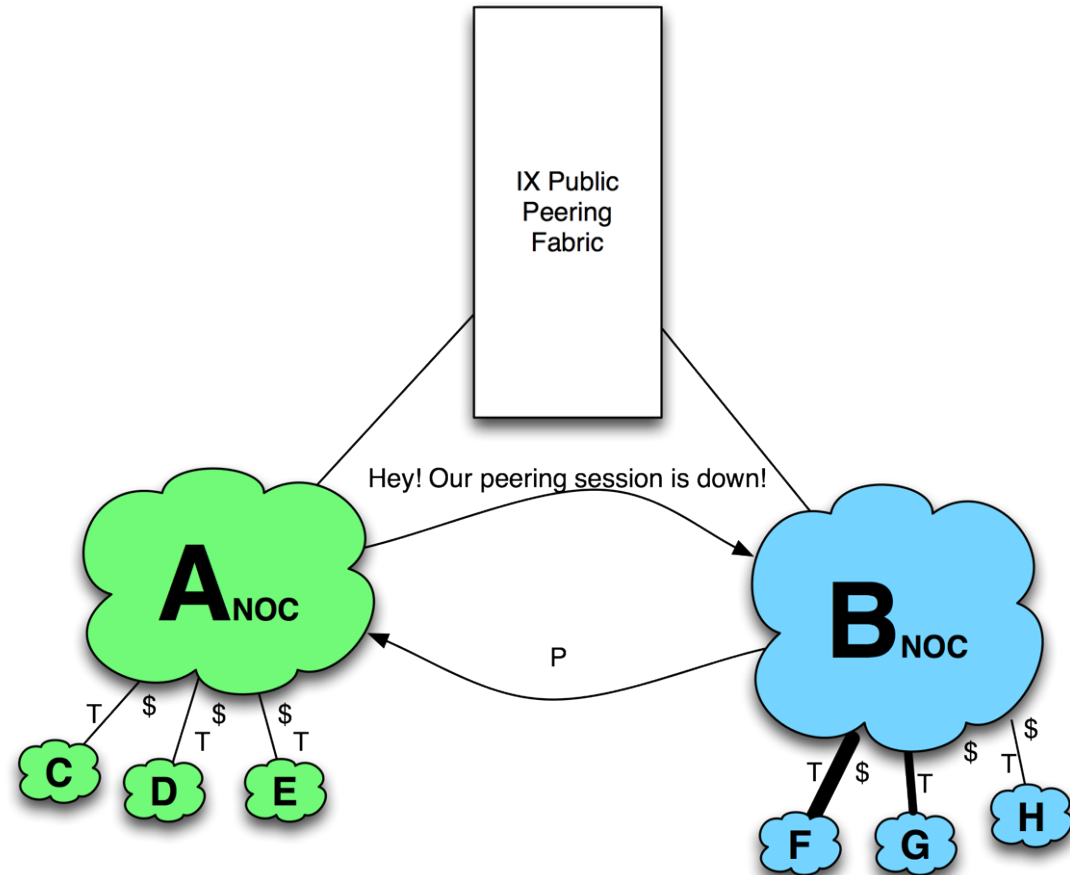
**NOC A:** “Hey! Our peering session is down again.  
AGAIN!”

AGAIN!”

**NOC B:** “I don’t see any  
alerts”

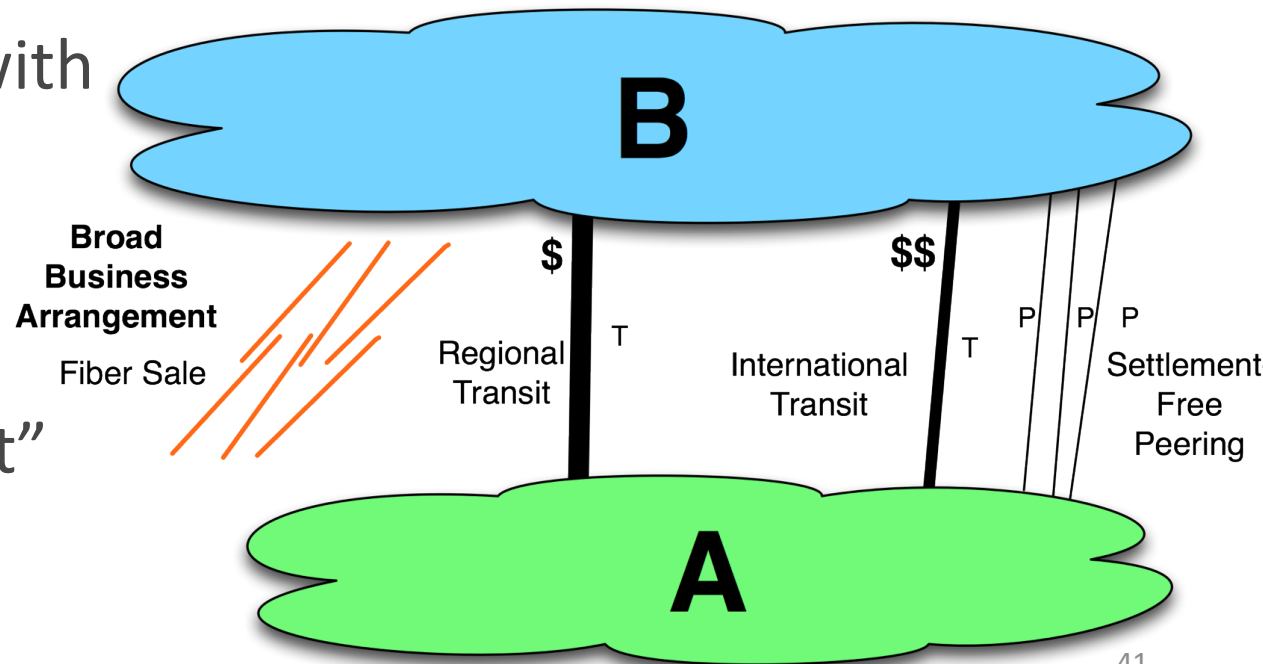
**NOC A:** “Don’t make wake  
Hans-Werner Braun out of  
bed again. Set it up and  
we’ll settle it tomorrow”

*What would your NOC do?*



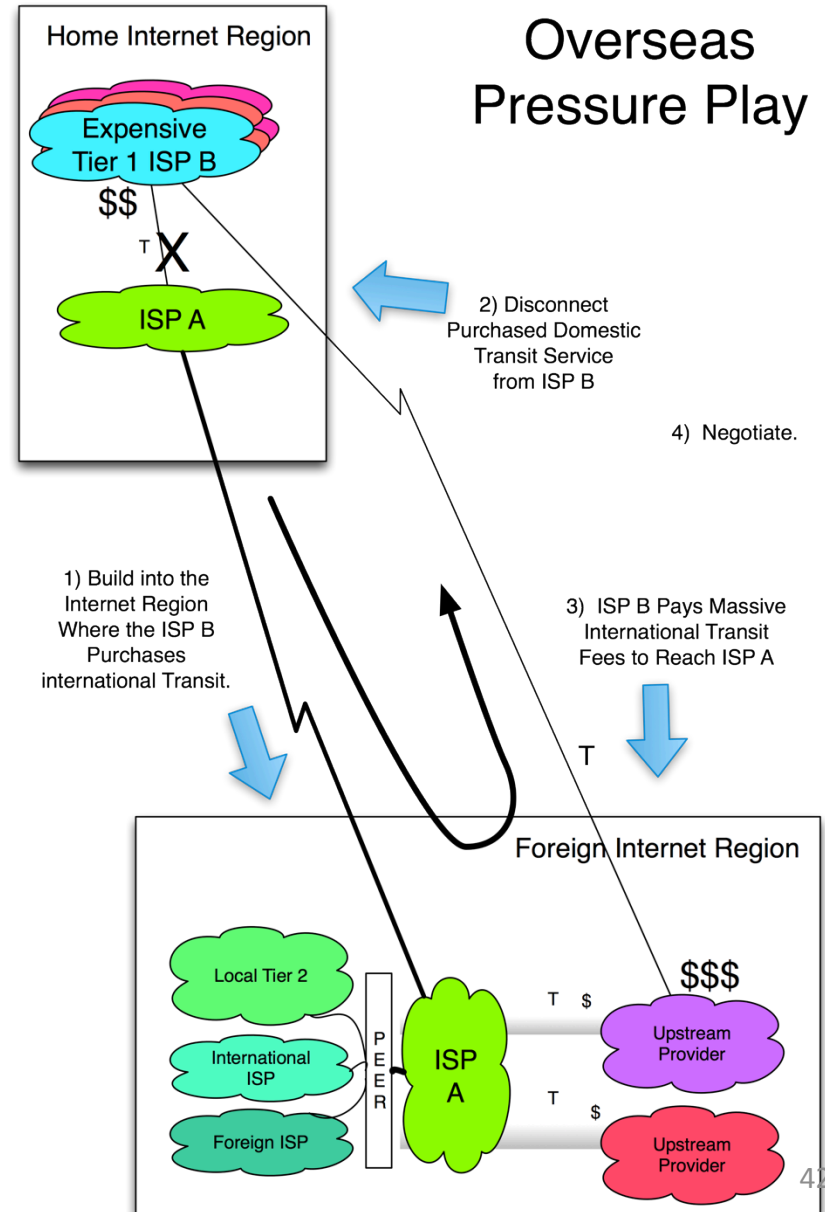
# Tactic 20. Leverage Broader Business Arrangement

- As with the Level 3 Comcast relationship
- AOL did this in the 00's
- Bundle peering with
  - Fiber
  - Colo
  - Wavelengths
- Aka "Free On-Net"



# Tactic 21. Overseas Power Play

- Pressure incumbent ISP B to peer
- Cut transit in country
- Force traffic through expensive ISP B international transit link
- Expensive tactic
- Requires PR





## Tactic 21. Overseas Power Play

Home Internet Region

Overseas

“We have made a conscious decision that starting next month [November] we will not pay anybody for transit traffic anymore. So if you don't want to peer with us, that is it! We will not pay you one single cent anymore.”

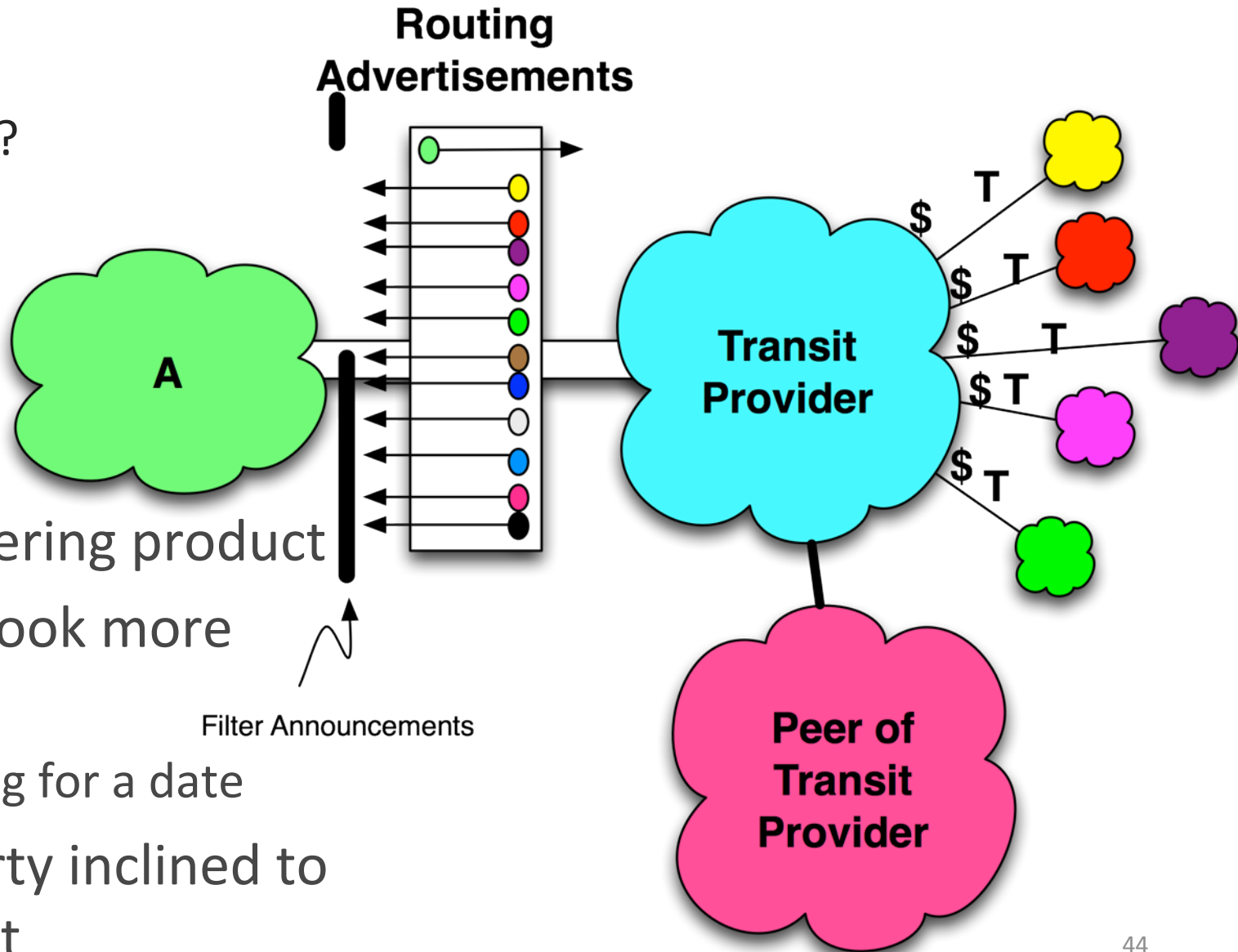
-- Rudy Jansen, MWEB CEO

Foreign ISP

Upstream Provider

# Tactic 22. Construct Peering from Transit

Why do this?



- No paid peering product

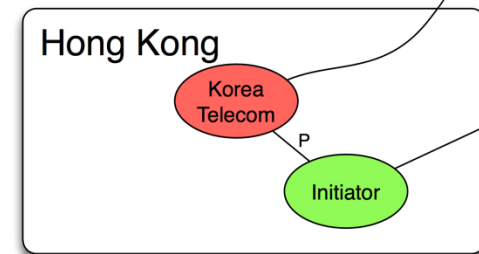
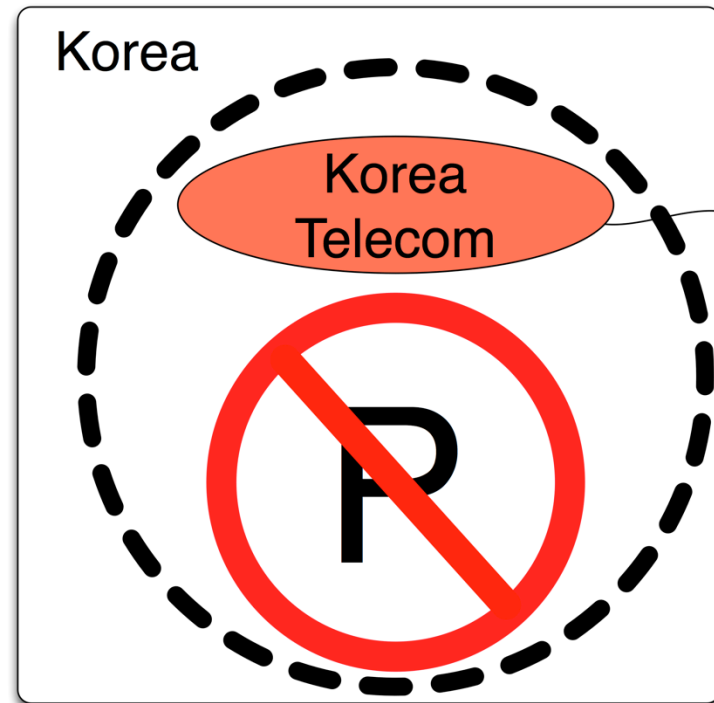
- Make you look more attractive

  - Like paying for a date

- Neither party inclined to talk about it

# Tactic 23. Do Not Peering in your home market

- Defensive tactic
- “The desire to protect one’s home market dwarfs any benefits peering might provide.”  
– John Milburn
- KT Story



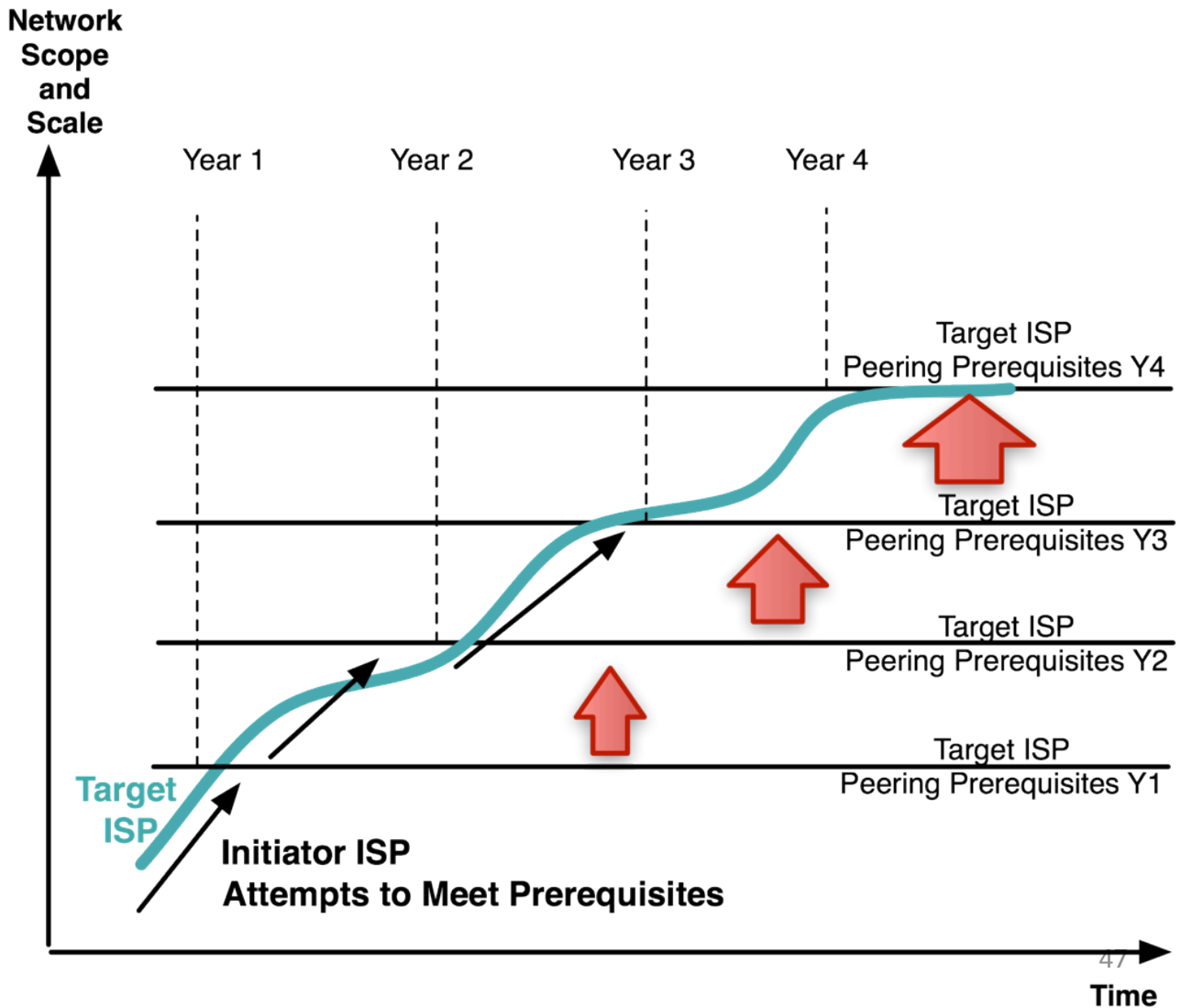
## Tactic 24. Protect Peering Policy

- Defensive tactic
- Do not publish peering policy
- Require NDAs before peering discussions
- Reduces unqualified peering candidate requests
- Avoid court of public opinion and regulatory interest

# Tactic 25. Change and Escalate Peering Prerequisites

## Prerequisites Always Just Out of Reach

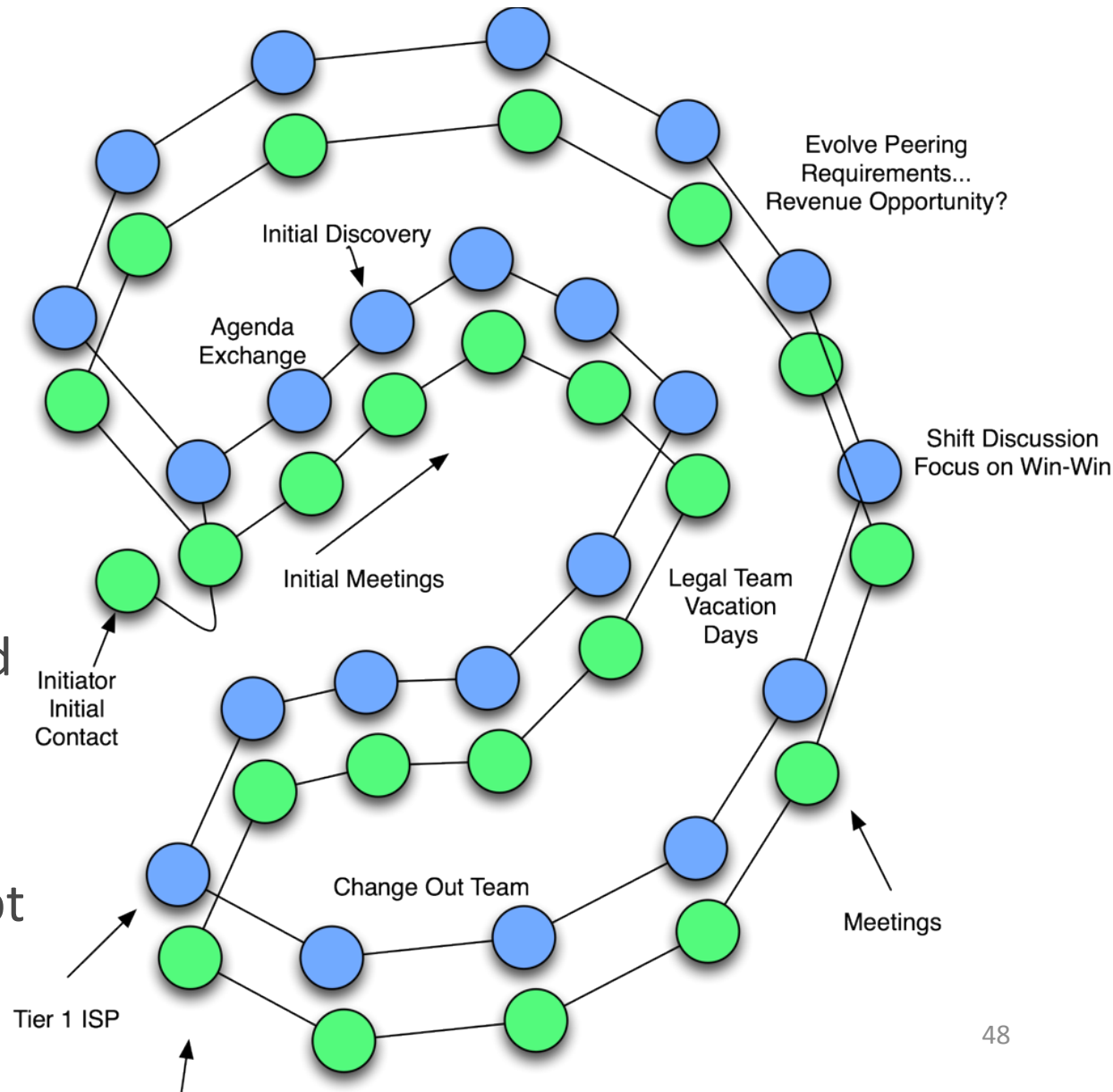
- Defensive tactic



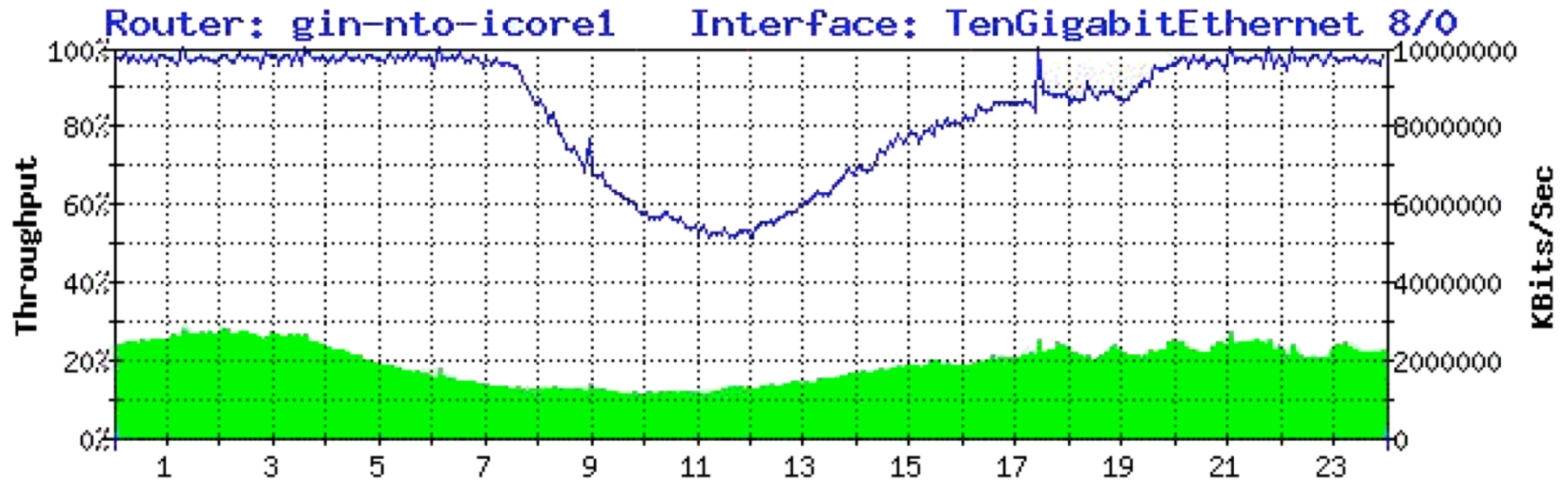
# Tactic 26. Make it Long and Difficult (MILD)



- Defensive tactic
- Comindico story
  - Telstra anecdote
  - High Bar
  - Reschedule mtg
  - Swap out teams
  - More docs required
  - Meeting
  - Prereqs changing
  - Comindico bankrupt



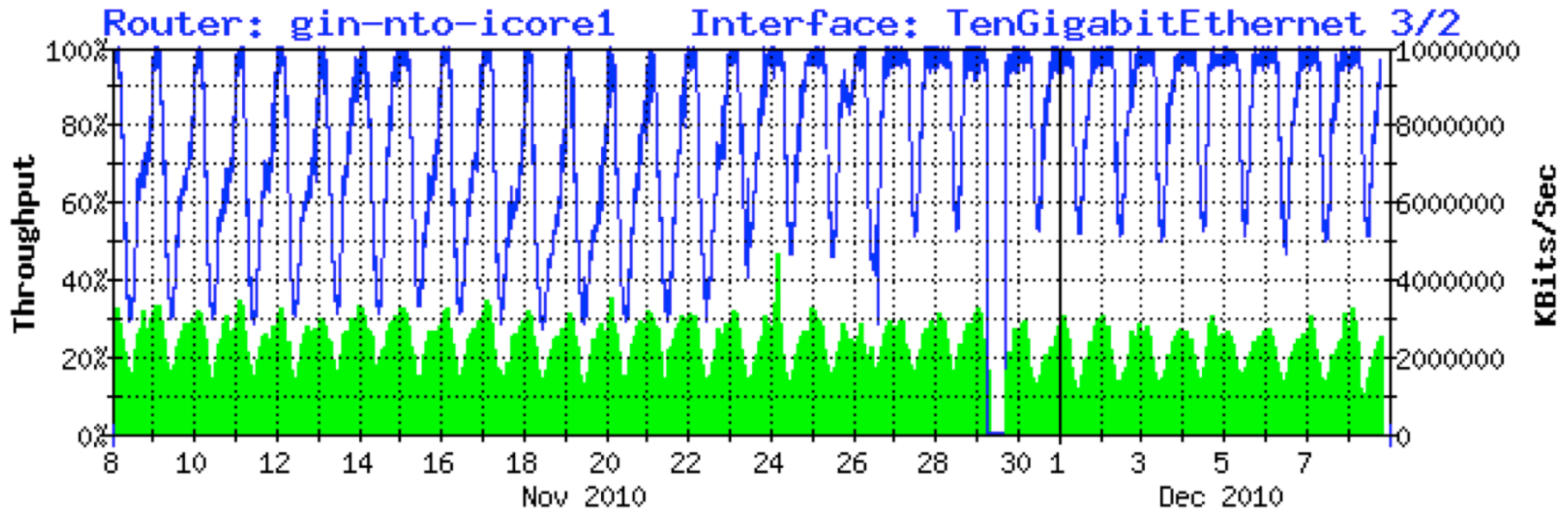
# Tactic 27. Congest Transit Pipes



- Makes paid peering look pretty attractive, doesn't it?
- Was this on purpose?
- Or just a bad day?



# Tactic 27. Congest Transit Pipes



- Maybe just a bad day?
- 30 day view

# Tactics that don't work

- Hold desirable content hostage
- Exert market dominance in a foreign market
- Threaten litigation
- Public name calling and badgering
- Blind peering requests with largest target peers first
- Demonstrating lack of knowledge regarding peer and backbone operations
- Refusal to register in routing registries