



The Structure of the Yesterday's Public
Internet 

The
20th Century Internet
Peering Ecosystem




©2012 DrPeering International
Licensed material – sales@DrPeering.net
<http://DrPeering.net>



THE EARLY INTERNET PEERING ECOSYSTEM

Provide a historical perspective on how Internet Peering evolved



Why should we care about the history of peering? About these “peering ecosystems?”

My Airplane Story

- NWA Flight DTW-LAX Delay → Cancel
- Rebook, go to gate 34 (short walk)
- On plane. Boarding disgruntles
- Flight attendant: “sit anywhere”
- Delayed... Palpable Anger

What happened?

What happened?

- Back at gate
- Flight was Cancelled
- “Room for 15-20 passengers”
- “Proceed in orderly fashion”
- “Will handle as many as we can”
- 154 people hauled
- Line → special case override → Mob Scene
- Get the yellors out of the line
- Aggression, pushing, shoving, many cops called

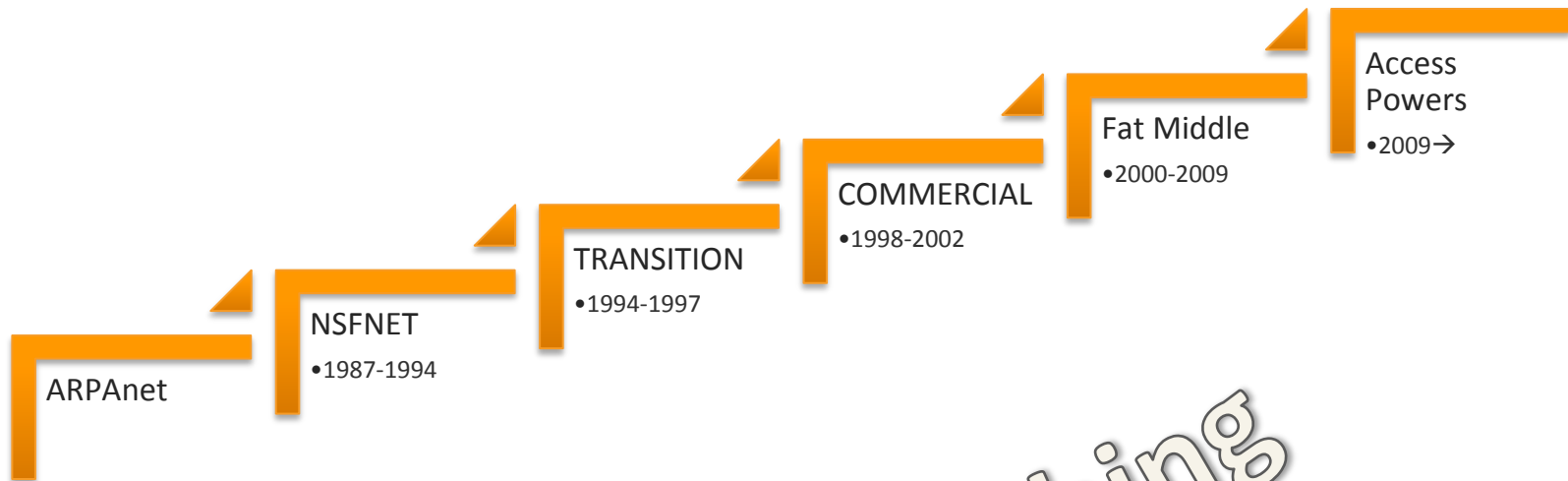
Who is responsible?

- Airline vs. Passengers
- Show of hands
 - ___ Airline 100% Passengers 0% responsible
 - ___ Airline 90% Passengers 10% responsible
 - ___ Airline 80% Passengers 20% responsible
 - ___ Airline 70% Passengers 30% responsible
 - :

The Peering Problematic

- Evolving *Internet Peering* context
 - Positional power
 - Predictable Behavior
- This is a talk about the future of peering
 - Trajectory from the past
- From a Recent Discussion Paper

History of Internet Peering Contexts



Morphing

1st Peering: ARPANET 80's

- USENET/BITNET/X.25 could not connect
- ARPAnet limited to gov't & contractors
- CSNet-NSF project to connect all CS depts
- Spotlighted AUP problem
- Bureaucratic complexity
 - Settlement of financial, admin, contract etc.
- Peering is “interconnection without explicit accounting or settlement”

Source: <http://www.interisle.net/sub/ISP%20Interconnection.pdf>

http://drpeering.net/AskDrPeering/blog/articles/Ask_DrPeering/Entries/2010/10/22_Origins_of_Internet_Peering.html

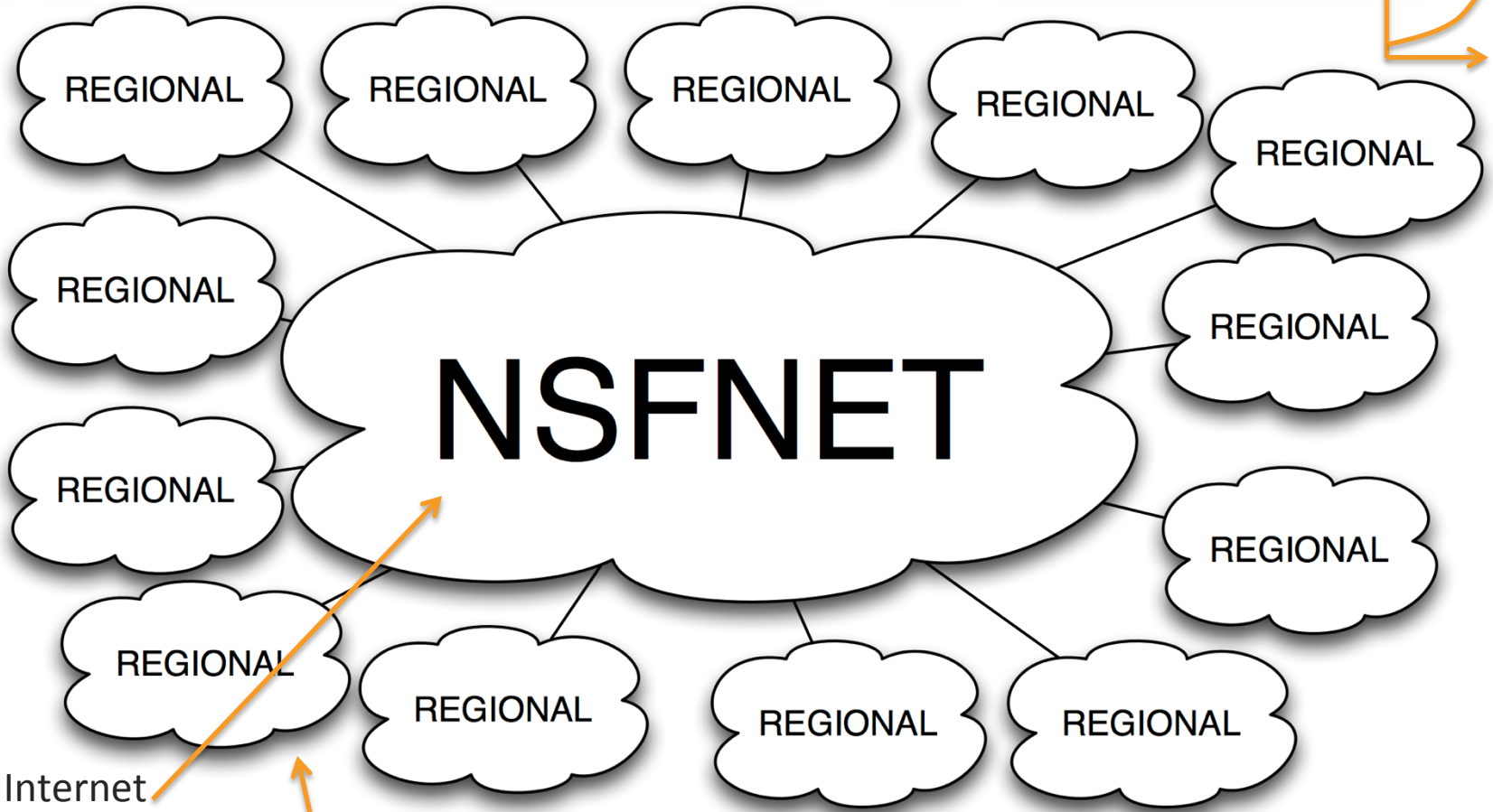
Reference: The First Peering

- “This disconnect persisted as both sides assumed that any agreement to exchange traffic would necessarily involve the settlement of administrative, financial, contractual, and a host of other issues, the bureaucratic complexity of which daunted even the most fervent advocates of interconnection – until CSNet managers came up with the idea we now call ‘peering’, or the interconnection without explicit accounting or settlement.”

Source: [http://interisle.net/sub/ISP Interconnection.pdf](http://interisle.net/sub/ISP%20Interconnection.pdf)

NSFNET – '87-'94

Growth → Time to privatize

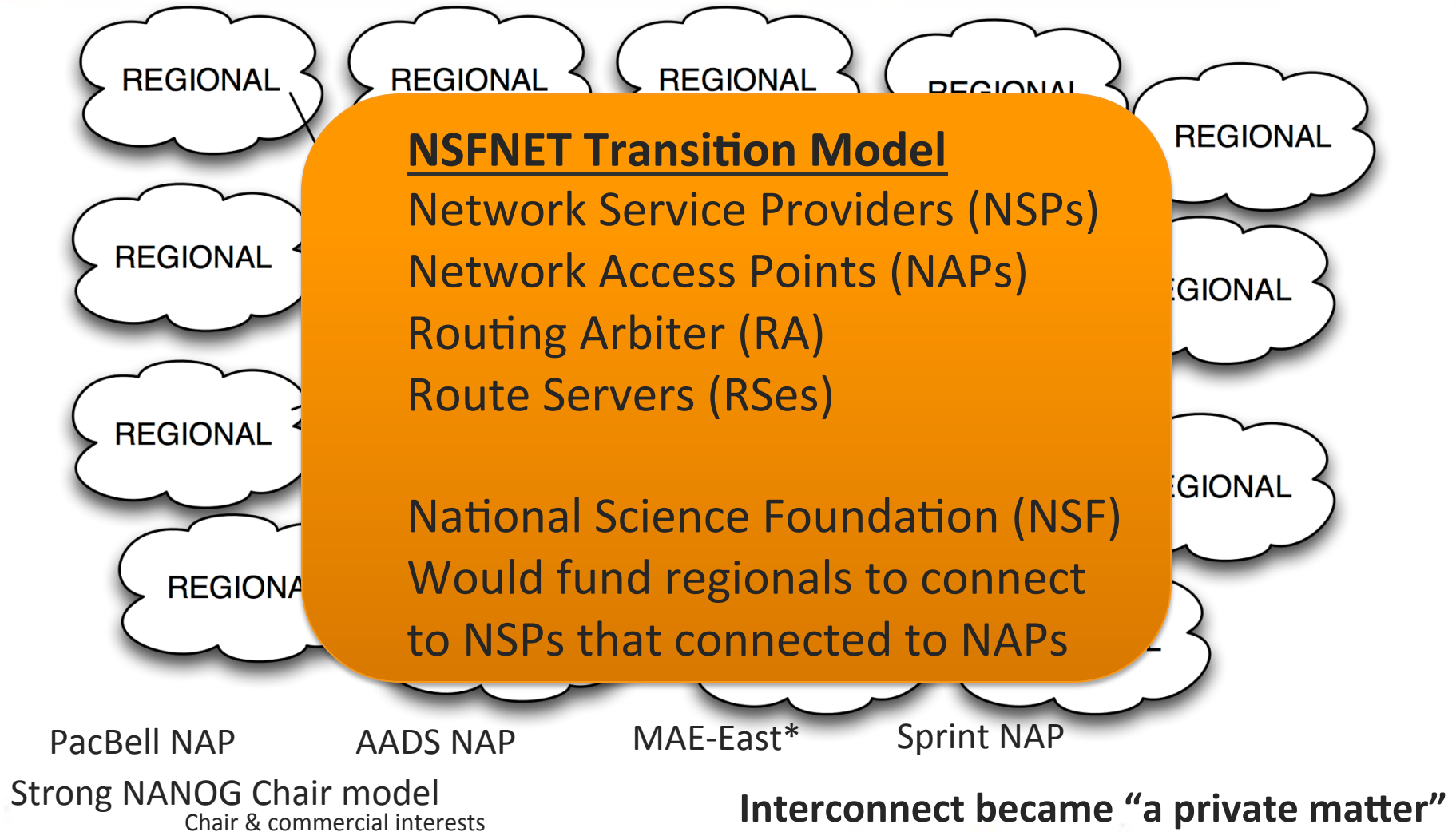


The Internet Core

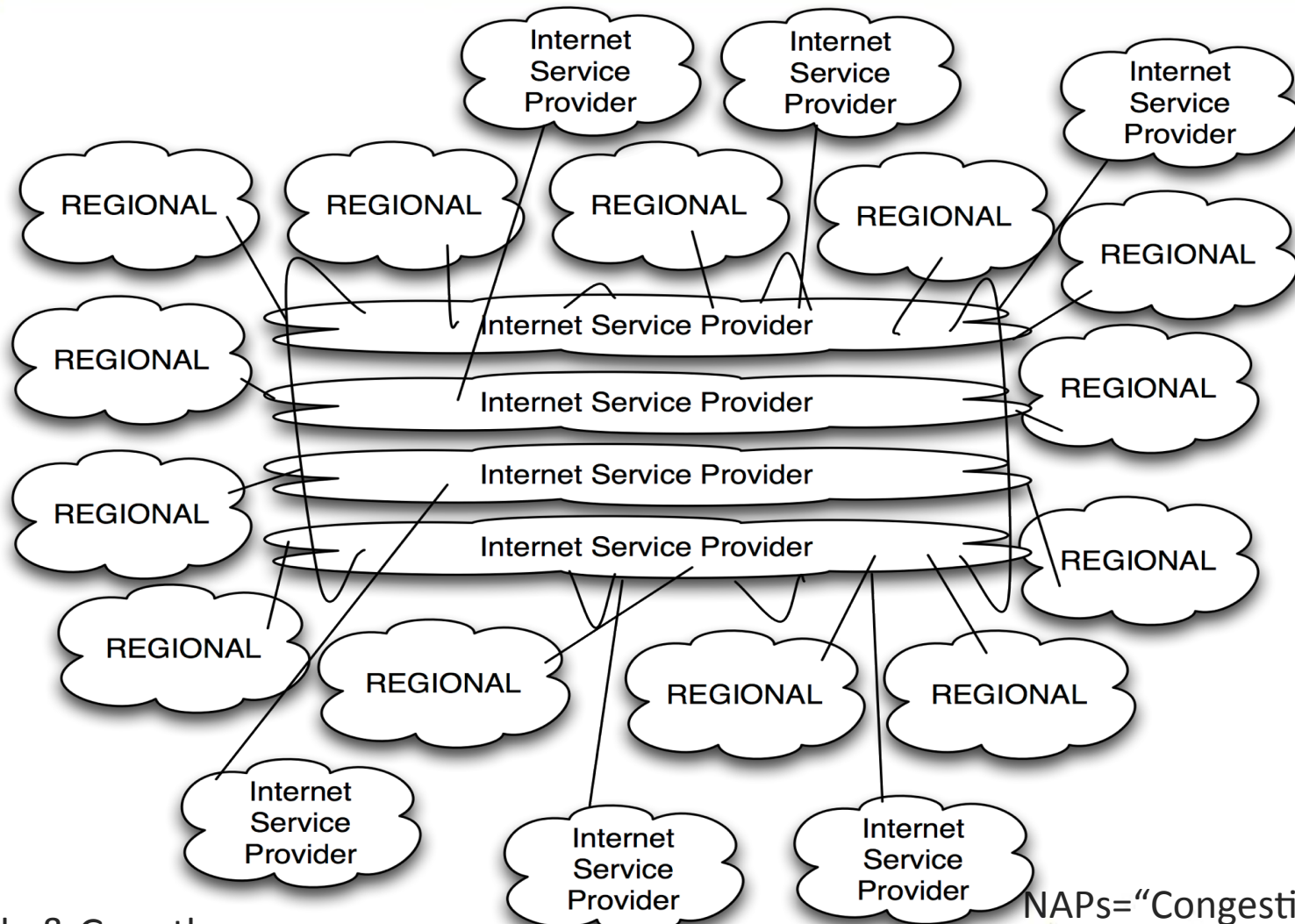
NSF sponsored attachments

Cooperative Agreement (Merit, IBM, MCI,...)
Open Regional Techs Meetings
Announce/celebrate new attachments

NSFNET Transition – '94-'96



Commercial Internet – '96-'98

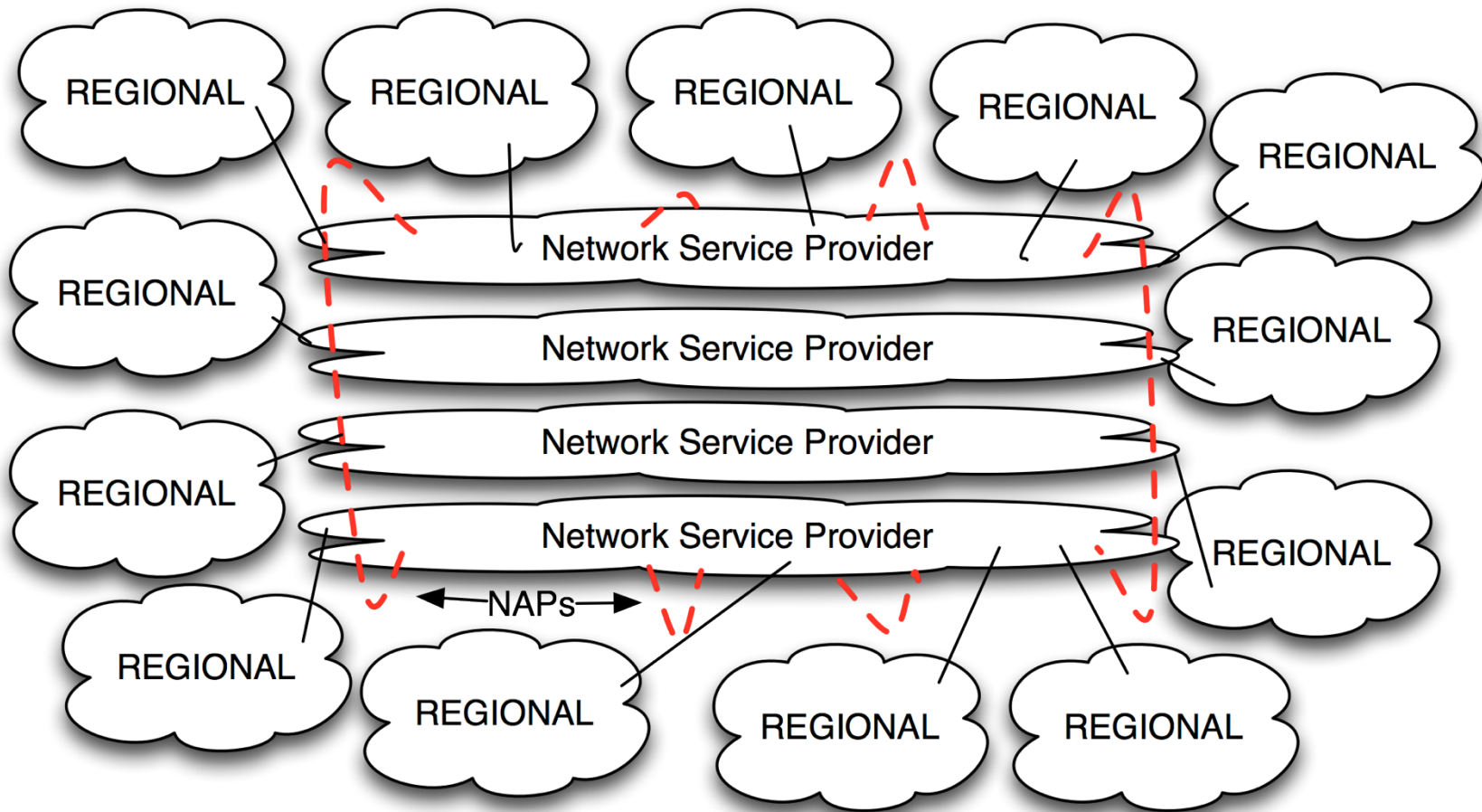


Resale & Growth

Little visibility/sharing

NAPs="Congestion Points"
→ Private Peering

Growing Pains Commercial Internet – '98-...

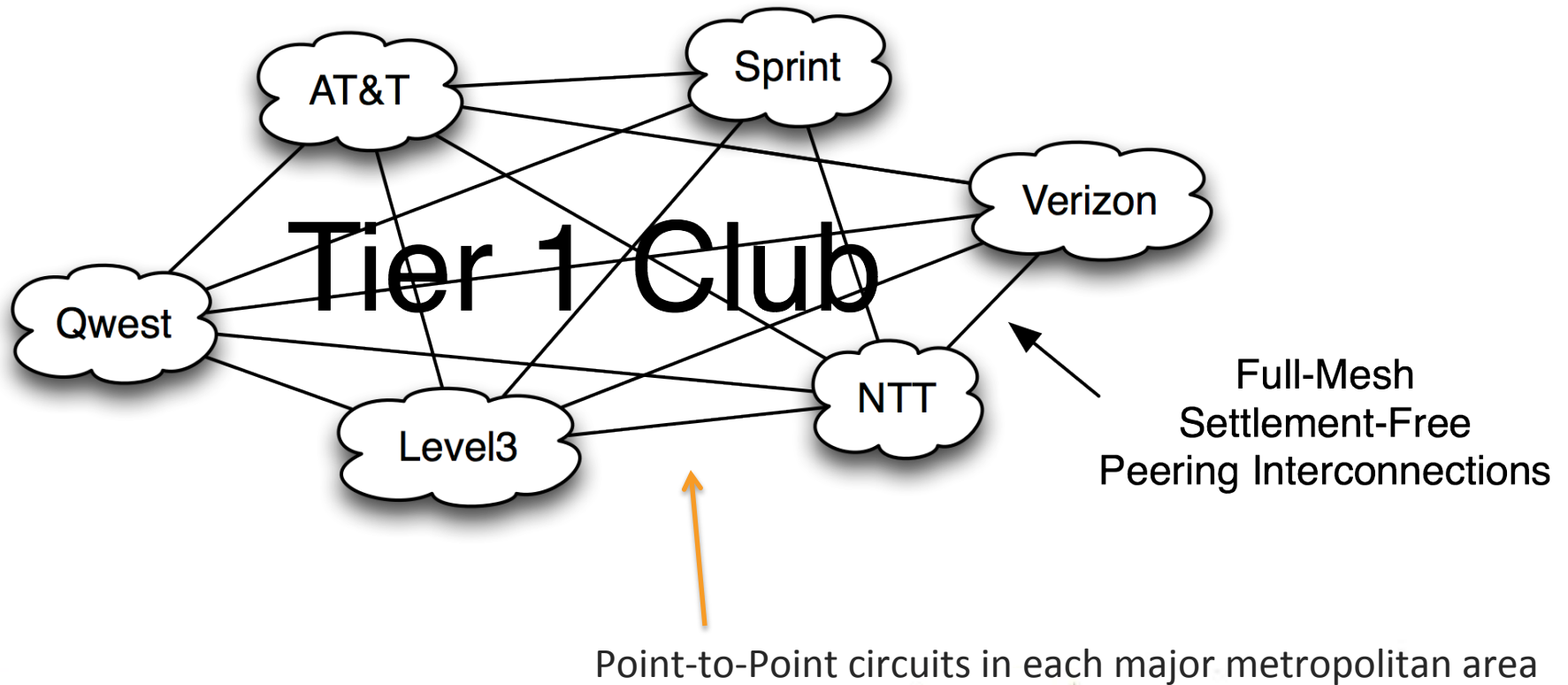


NAPs="Congestion Points"
...Private Peering

Resale & Growth

Little visibility/sharing

So the big guys privately peered with each other



Challenges

What motivated the large ISPs to move out of the NAPs?

- A) Congestion problems at the NAPs
- B) NAPs were operated by competitors
- C) The National Science Foundation (NSF) carried little weight in the commercial Internet
- D) all of the above

This led to the Global Internet Peering Ecosystem

- Players independently act in their own interests
- No U.S. Government operated backbone
- Not U.S. Government controlled Internet