

# *Fragmentation Of The Internet*

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# Thesis

- What we perceive today as a unified global network is going to be divided by an increasing number of barriers, toll-gates, disparate name and address spaces, and restricted protocols.
  - Sometimes this will be a good time, sometimes it will be a bad thing.
  - Most users won't notice.
  - We could lose the End-to-End principle.

# *The End-to-End Principle*

- At the heart of the internet is a most precious thing: the End-to-End principle.
  - Any two devices at the edges of the net may exchange packets subject only to the constraints of a best-effort packet delivery service and security.
- Loss or damage to the End-to-End principle would be a catastrophe.

# *The End-to-End Principle Makes The Internet Special*

- The End-to-End principle gives the power to innovate to users at the edge.
  - It is not not necessary to obtain permission.
- Without the End-to-End principle the internet could come to have the same lack innovation as the telephone system of the 1950s.
- Certain kinds of fragmentation erode or destroy the End-to-End principle.

# *Innovation Usually Causes Fragmentation*

- Those who do not adapt are left behind.
- Many kinds of innovation and fragmentation do not damage the End-To-End principle.
- We must distinguish between innovation that damages the principle and that which does not.
  - The distinctions are subtle.
  - This will be a major challenge for policymakers.

# *Forces Driving Fragmentation*

## *(1 of 2)*

- The desire to control behavior or coerce money has created a rush to locate and control Internet choke points.
- Resource resource limitations (or scarcity) is driving people to look for new pastures.
- Network rot is making some existing internet resources unpalatable or unusable.

# *Forces Driving Fragmentation*

## *(2 of 2)*

- Social or cultural communities and national governments want to define their own internet landscapes.
- Overbearing, burdensome, or expensive internet regulation (e.g. ICANN) is driving people to seek “new worlds”.

# *Factors Facilitating Fragmentation*

- Shift of perception of what the internet is:
  - Less of a communications medium.
  - More of an applications platform.
- NATs (Network Address Translators) make it seem easy and safe.



# *Factors Resisting Fragmentation*

- Inertia
- Fear
- Lack of imagination
- Techno dogma

These obstacles will erode, they won't last forever.

# *Our Challenge As Lawyers and Policymakers*

- We must come to understand the End-to-End principle.
  - This isn't as easy as it sounds.
- We must learn to distinguish between fragmentation is is merely inconvenient to incumbents and users and that which damages the End-to-End principle.
- Let me suggest the following:

# *The First Law of The Internet*

- Every person shall be free to use the Internet in any way that is privately beneficial without being publicly detrimental.
  - The burden of demonstrating public detriment shall be on those who wish to prevent the private use.
    - Such a demonstration shall require clear and convincing evidence of public detriment.
  - The public detriment must be of such degree and extent as to justify the suppression of the private activity .

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