Content vs Carriage

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The best arguments in this industry…

Are the old arguments

   Because we can rehearse our positions time and time again!

Let's spin the time wheel back to 2005…

Net Neutrality

Interview with SBC CEO Edward Whitacre, Business Week Online, 7 November 2005

How concerned are you about Internet upstarts like Google, MSN, Vonage, and others?

How do you think they're going to get to customers? Through a broadband pipe. Cable companies have them. We have them. Now what they would like to do is use my pipes free, but I ain't going to let them do that because we have spent this capital and we have to have a return on it. So there's going to have to be some mechanism for these people who use these pipes to pay for the portion they're using. Why should they be allowed to use my pipes?

The Internet can't be free in that sense, because we and the cable companies have made an investment and for a Google or Yahoo! or Vonage or anybody to expect to use these pipes [for] free is nuts! "

Net Neutrality

Scott Kriens, chairman and chief executive of California-based Juniper Networks, says it is inevitable that the internet will split into different data streams, and those who can afford a better quality of service will be able to buy it.

Argument is raging over this issue in the US, where the Congress and Senate are debating bills that would either allow or prevent such a change.

Opponents claim that privileging some applications over others - for instance video over the web - could hamper innovation. Also it could fragment the internet so that it was no longer available to everyone in its entirety, but only to those who could pay for the full service.

But Mr Kriens says the internet has to be overhauled, to develop the full potential of technology such as streaming video and voice-over-IP telephony. "It has to change," he says.

Sydney Morning Herald, 21 November 2006

The Roles

- The Cast of Players:
  - Access, Carriage, Services, Content, Customers
- The Critical Question:
  - **Who owes who?**
  - **And how much?**

Inter-Provider Settlements

- A user buys a postage stamp from the local post office
- A user writes a letter
- A user affixes a stamp to the letter in order to prepay for the entire delivery process
- The local post operator passes the letter to the destination post operator
- **The local post operator pays the destination post operator a termination delivery fee as an inter-provider settlement**
- The letter is delivered at no cost to the receiver

Inter-Provider Settlements

- A user dials a phone number using a local telephone company
- The local phone company creates a connection to the destination phone company
- The destination phone company completes the call request
- The call is answered at no cost to the receiver
- The call is metered by the local phone company and the caller is charged for the entire cost of the call
- **The call is metered by the terminating phone company and a termination settlement fee is charged to the local phone company as an inter-provider settlement**
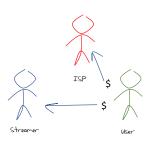
Inter-Provider Settlements

- A user takes out a broadband subscription from a local ISP

- A user takes out a streaming video subscription from a video streamer
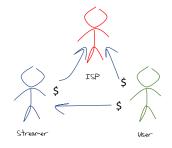
- A user streams a video

Option 1 – Settlement Free

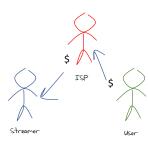The ISP and the streamer are both being funded by the user – there is no settlement to be paid

Option 2 – Content pays for Carriage

The streamer also pays for carriage across the ISP network

Option 3 – Carriage pays for Content

The ISP pays the streamer on behalf of its users and bundles the streaming service into its retail service

The Tradition

Network Neutrality and Common Carrier Roles:

- The Carrier's network is strictly neutral with respect to carried content
- The network does not prevent the carriage of data and services
- The network does not bias its response or tariffs in favour of certain services and service providers
- The network is strictly neutral with respect to competing service providers
- Everybody pays to use the carriage network

Content vs Access

- Round 1: ~1995
  - Content pays Access

  - The network provided the connection between customers and service providers
  - Customers paid the network service provider to access the services
  - Service providers paid the network service provider to access the customers
  - MSN, numerous Portal Services

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Failure!

Content vs Access

- Round 2: ~2000
  - Access pays Content

  - Content providers were failing in the initial rounds of pay-per-view models of content distribution
  - Content providers mounted the case that the only reason why customers paid access providers for Internet access was their uniquely compelling content, generated at great expense
  - Ergo: Access providers owed content providers a share of the access fees if they wanted to continue to have access to their content

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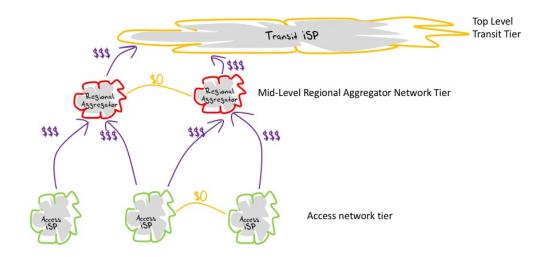Failure!

Content vs Access

- Round 3: ~2003
  - Access **owns** Content

  - Network Access Providers attempted to generate their own proprietary content
  - Content was only accessible within their access domain
  - Network enterprises purchased content generators
  - Remember Telstra's tilt at Fairfax? Yahoo's proprietary content?

Content vs Access

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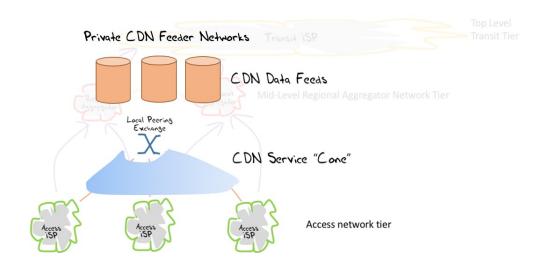Failure!

Content vs Access

- Round 4: ~2006
  - Content owes Access

  - Penetration of high speed broadband and a new round of software platforms enables a new generation of content providers
  - Google looks at traditional media enterprises and takes on the advertising industry with an entirely novel model of advertiser-funded content and services
  - The network service provider gets squeezed out of the content model completely and is relegated to dumb pipe provider
  - The network provider heads off to the regulator to seek relief from the onerous common carrier provisions in order to leverage a position against content providers

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Content vs Access

- Round 5: ~2010
  - The Rise of the CDN and the Death of Transit

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Content vs Access

- Round 5: ~2010
  - The Rise of the CDN and the Death of Common Carriage

  - The content service industry has aggregated to the extent that they can operate their own carriage services at lower cost and greater efficiency through content distribution networks

  - All that's left to the old carriage industry are a collection of last mile access networks

Why is this an issue at all?

- There are many commodity utility enterprises in today's world
  - water, electricity, transportation,…
- Why is network infrastructure provision any different?

Why is this an issue at all?

Because its easier to blame <Google | Netflix |*> for the weaknesses in a poor *<network design | business model | retail offering | *>* than actually fixing it!

Which leads to the obvious question:

> Why install a high speed broadband access infrastructure at all if it was never capable of being used to its full extent?

Because …

- It wasn't always this way for the telco business model

    - Complete control of the network
    - Complete control of the service
    - Complete control of the customer

What does the telco want to be?

- This sector has no desire to become a commodity utility provider
  - It has the wrong skills, wrong assets, wrong technology, wrong shareholders, wrong management, and the wrong outlook to survive in a harsh commodity utility world
- It still needs its past all over again…

The Converged Telco Utopia

- A small number of vertically integrated "full" service providers leveraging their underlying infrastructure investment into a high yield, high margin service delivery retail system using a single network platform for comprehensive service delivery

- Low cost, high value, strong service control, fantastic margins!

Wouldn't it be wonderful…

- If you could account for, and bill, the end user for the value of delivered services rather than just the packets

- Customers paid you for value-added service solutions, rather than the marginal cost of packet delivery

- Service Providers paid you for access to your customers

Or is this Hopelessly Unrealistic?

- Each new generation of carriage technology is heralded as the harbinger of a wonderous new converged era of communications service provision and a new era of control over service delivery

- But – it never works that way!

Carriage Reality

- Deregulation, intense competition, branching role specialization at every level

- Resulting in
  - many parallel service delivery networks, many network operators,
  - industry-wide duplication of activities,
  - continual exposure to inefficient resource use,
  - extensive regulatory provisions,
  - exposure of niche markets,
  - limited planning capability,
  - high investment risks,
  - high costs,
  - low operating margins,
  - continual restatement of investor expectations,
  - negative returns on equity investments,
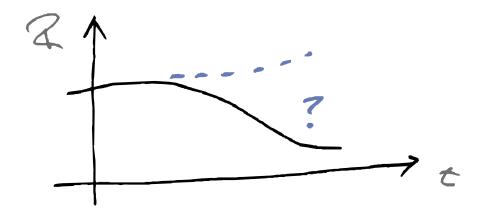 - continual recycling of management and staff

Content Reality

- Scale

So, what's the real problem?

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Money!

Reality

- Carriage operators are losing control of **pricing**, **services**, **technology**, **content** and **customers**
  - CDNs and Over-The-Top services using IP end-to-end impact every aspect of the telco business model

  - Almost the only residual asset left for the traditional carriage provider is the local access loop
    - And that's the subject of intense pressure

The Reality

- The digital economy we have today is largely based on surveillance capitalism and advertising
  - Service providers sell the user to advertisers
  - Users either don't pay for the service or pay a highly subsidised price
- But carriage providers are generally prevented from entering this market
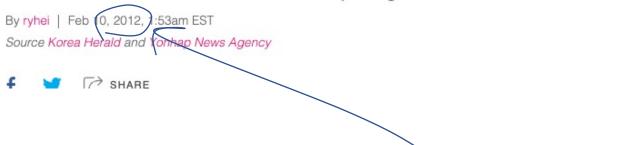 - But it didn't stop them from trying

The Revenge of Carriage

- Content blocking and selective damage

POLICY \ SMART HOME

South Korean KT Corp blocks internet access for Samsung Smart TVs

KT Corporation, South Korea's largest telecom provider, blocked network access for Samsung smart TVs after the manufacturer refused to subsidize network access. The move has drawn criticism from government.

By ryhei | Feb 10, 2012, 1:53am EST
Source Korea Herald and Yonhap News Agency

SHARE

The Revenge of Carriage

- Content blocking and selective damage
- Active user tracking

DNS – the treasure trove of information your ISP can see

BURAGLIO

DECEMBER 10, 2018 | 🔥 382 | 0 COMMENTS | 🏷 DNS, PRIVACY, ZEROTIER

In recent years, the nature of privacy on the internet has become a very important topic amongst those concerned with the now lack of net neutrality. The de-facto mechanism for dealing with privacy has been to "SSL all the things", which I am very much in favor of. What many do not realize, though, is that simply using SSL for the traffic that transits a given ISP still leaves a wealth of thick, rich, delicious personal data still easily available to your ISP to harvest, sell, and do with as they please. This data comes in the form of DNS queries. DNS is the nearly-always-forgotten, crucial aspect of how the internet functions. Without DNS, nothing works. Everything appears broken and manifest as what appears to be a networking problem. ISPs typically provide what is called a recursive resolver, which for most people is handed down by a local provider to the customer premise equipment (CPE; usually a modem or optical terminal of some kind) that they install at a residence. This CPE then hands that resolver to your clients that use it to – you guessed it – recursively resolve DNS queries. These queries can be logged and then mined for browsing habits, etc. Anyone that has ever done any network forensics will know straight away that the value of the information contained in DNS query logs is very, very high.

The Counter Move

- Content is exploiting end-to-end encryption to hide **everything**
  - Encrypt the content (TLS)
  - Encrypt the meta-data of the content (ECH)
  - Encrypt the DNS (DoT, DoQ, DoH)
  - Encrypt the transport protocol (QUIC)
  - Encrypt the end points from each other (Oblivious services)

- This pushes the carriage provider into a commodity role, dealing in undistinguished opaque traffic

What are we learning?

- This tension between carriage and content is not going away any time soon!

- Vertically integrated service providers are fading away into history - the deregulated competitive service industry continues to specialize rather than generalize at every level

- Carriage is no longer an inescapable monopoly - massively replicated content can be used as a substitute for many carriage service elements

- Structural cross-subsidies weaken the longer-term incentives for efficient infrastructure investment

Thanks!