The future of the Internet

Patrik Fältström

March 1, 2007

What is Internet?

- Somewhere one pay bills electronically?

What is Internet?

- Somewhere one can read the latest news?

What is Internet?

- Where one can listen to the latest news?

What is Internet?

- Or maybe watch the latest news?

What is Internet?

- Something that gives you email that is mostly spam anyway?

What is Internet?

- Only filesharing with pirated music?

What is Internet?

- Chat services that no-one can control?

What is Internet?

- Just boring web pages with old information?

What is Internet?

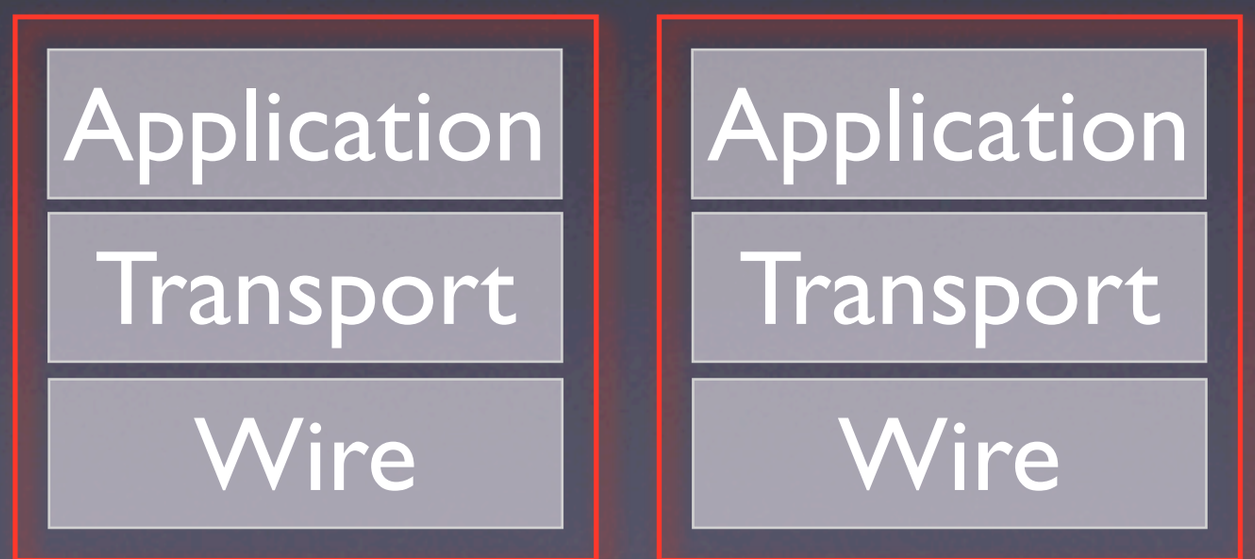
...or all of those?

What is Internet?

- It is all of the above, but why?

The old world

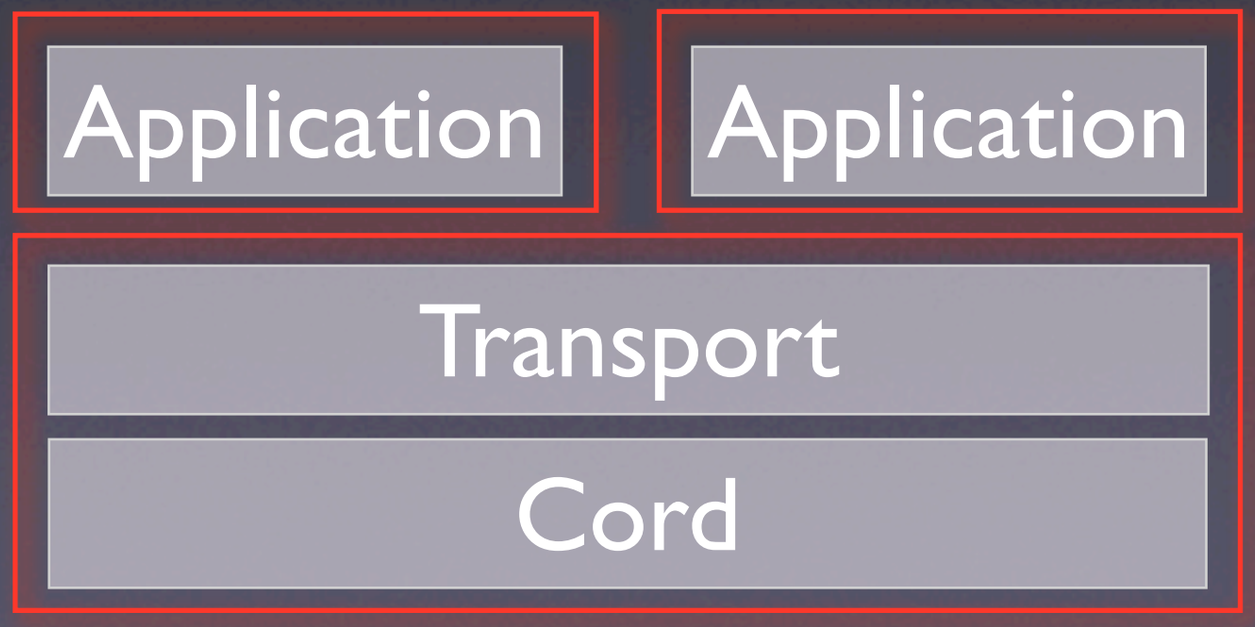
- Every operator deliver everything
- Customer can only order what is in the portfolio of the operator
- Competition between operators
- Innovations by the operators



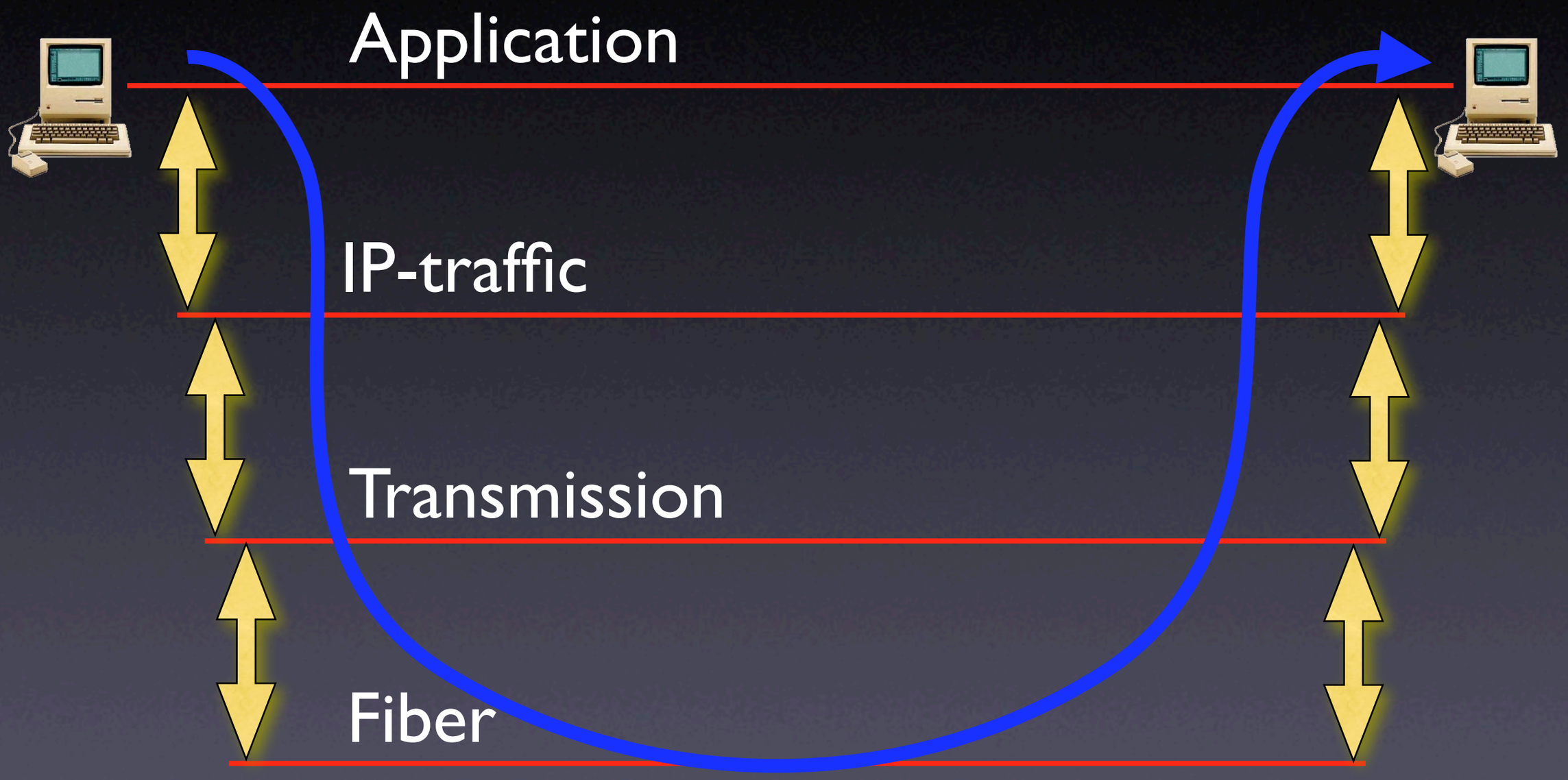
The new world

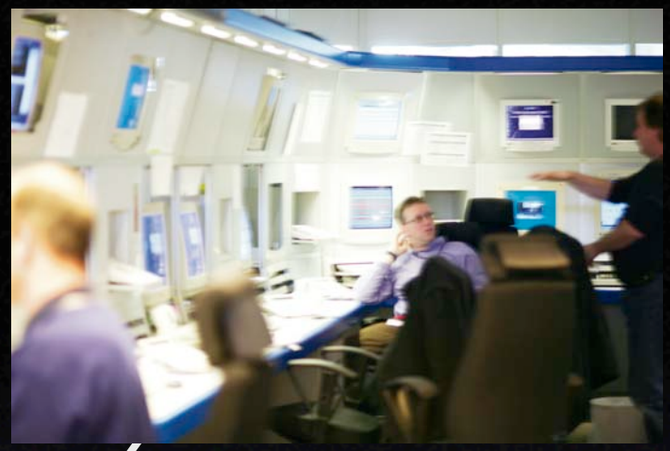
- Customer can order different products from different players
- Customer can reach services from anywhere

- Innovations by the end user

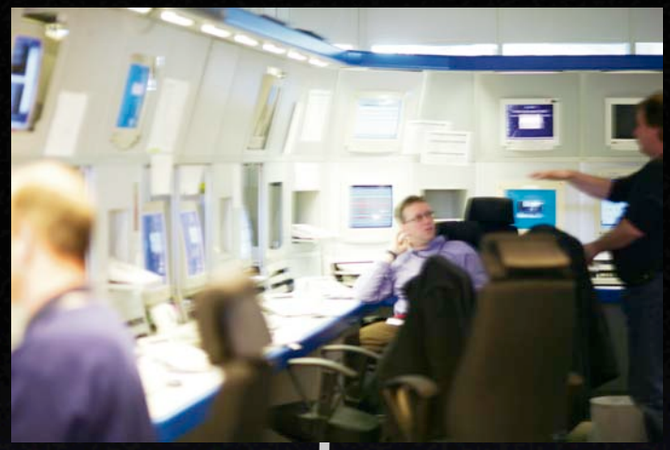


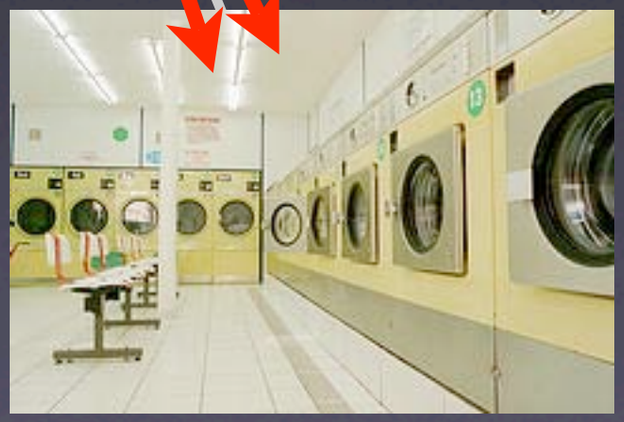
How does it work?





One might think the access is direct





In reality access is via multiple players

Computers and Internet

- Everything is in the future a computer, a networked computer of course!
- At its simplest your TV, your phone, your address book, your agenda, your micro-wave, you car, your... and your laptop are all networked computers
- The Internet belongs to all of us - or at least we all own a bit of it
- Each of us has our own personal Internet and some of it we may choose to share
- Increasingly each of us runs part of the infrastructure

Convergence?

- Information = Software
- Anyone can create Information
- Anyone can create Software
- Anyone can distribute Information
- Anyone can deploy Services

Convergence?

- Historically we know who can create information
- Historically we know who can create software
- Historically we know who can deploy services
- Historically we have known who to regulate!

Regulation?

- If anyone can create information
- If anyone can create software
- If anyone can deploy services
- Then regulation has to be “modern” as we do not know who to regulate!

What is convergence?

- Merge of services?
  - What is telephony / telephone?
  - What is Internet / computer?
- Use of connection for many things?
  - One connection / all services?

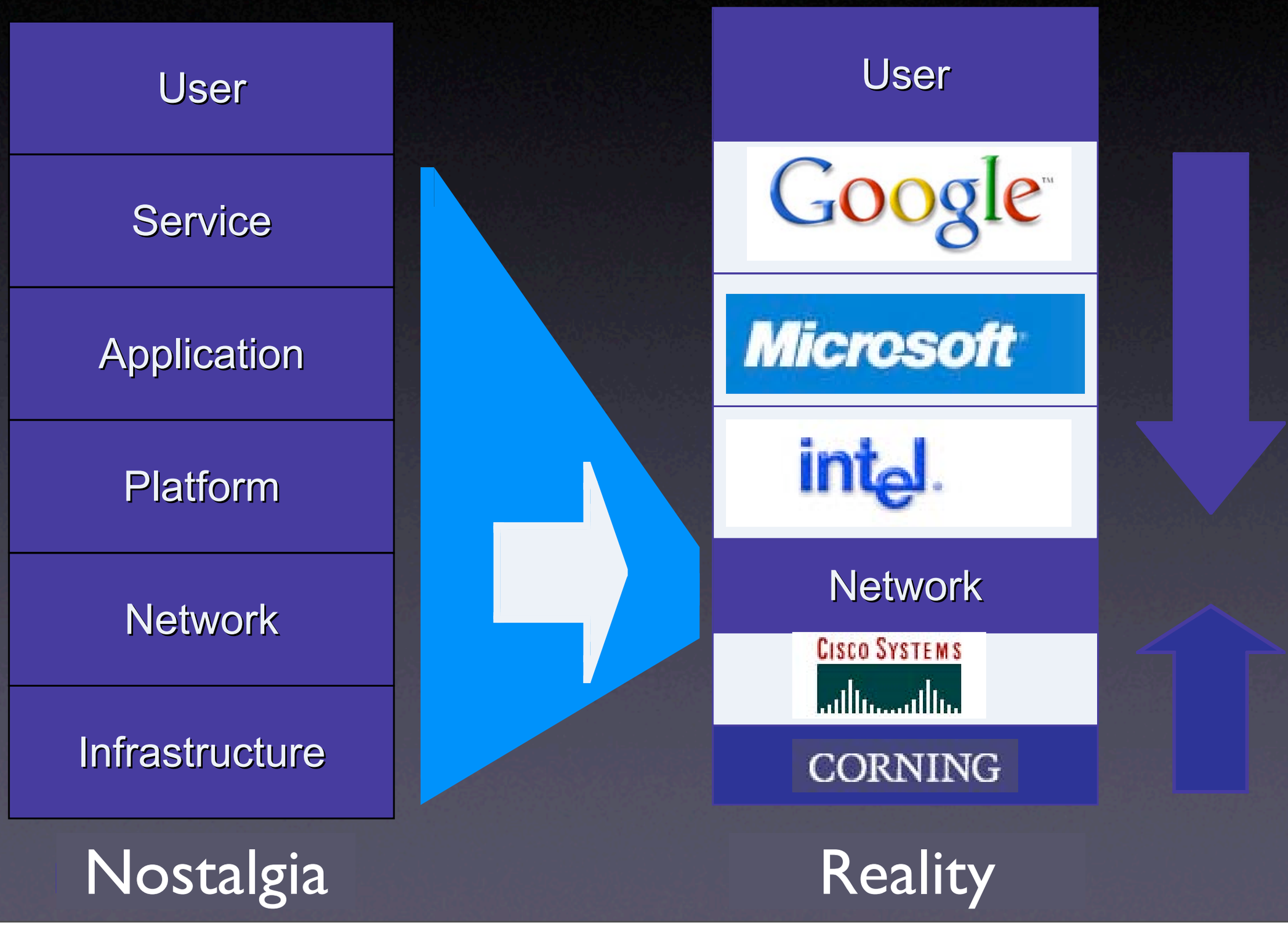
The Perfect Storm?

- Collision between old and new buissness models
  - Vertical integrated solutions
  - Open horisontal separation
- Internet / telephony payment models differs?
  - The cheapest bit is on dark fiber, any addition of “intelligence” make things more expensive.

Geoff Houston claim...

- There is no next vertical “killer app”
- Overlays have already claimed the user!
  - Think Skype, aftonbladet.se, Bittorrent, Podcasts
- Apple iTunes / 3 music service?

The market



Nostalgia

Reality

Functionality - Radio

- Several friends of mine say they do no longer keep track of the magic time 16:45 to listen to the main radio news (Ekonyheterna)
- They instead go to the web, and click on “latest news from Ekonyheterna”

nyheter & sport

Ras på Stockholmsbörsen

Tendensen densamma i övriga Europa

NYHETER Kurserna på Stockholmsbörsen fortsatte brant nedåt då handeln inleddes i dag. Efter en timmes handel hade OMX-index backat med nära 2,5 procent.

Läs mer

Norskt guld i chansartad fristil

Världsmästaren: Jag känner mig som en lottomiljonär

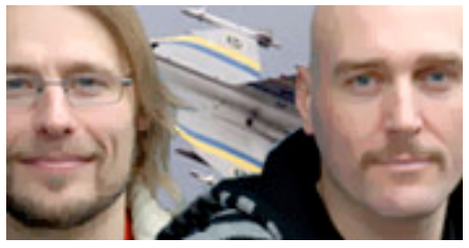
SPORT Norske skidskytten Lars Berger vann överraskande VM-fristilen över 15 km efter att ett kraftigt snöfall förstört dagen för favoriterna.

-Jag gjorde mitt bästa skatelopp för säsongen men var ju

Veckans filmsnack

Björn Kjellman konstaterar att Leonardo "babyface" DiCaprio gått och blivit man.

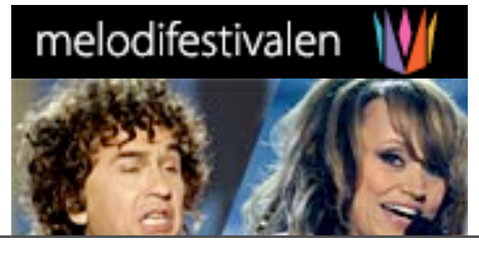
Till Filmkrönikan
Se hela programmet
Eftersnack med Kjellman
DVD-krönikan



JAS-knäckarna

Under täckmantel och med dold kamera slutförde reportrarna sin granskning av de hemliga JAS-avtalen.

Till Uppdrag granskning
Se allt om JAS-affären
Diskutera vapenexport!
De gjorde avslöjandet



på tv

11:30
UR-val - på lätt svenska

16:35
Existens

13:10
Skidskytte: Världscupen

11:25
Koki

11:15
Skolfront

18:00
Arbete - framtid - förändring

Hela tv-guiden

Se program

Filmkrönikan med eftersnack
Uppdrag granskning: JAS-affären
Höök - femte delen
Veckans Existens
Arty - säsongspremiär
Grand Prix med Salem Al Fakir
Leende guldbruna ögon

Nyheter, sport och väder

Rapport
Aktuellt
A-ekonomi
Regionala nyheter
Sportnytt
Kulturnyheterna
Väderprognos

Se fler program och klipp

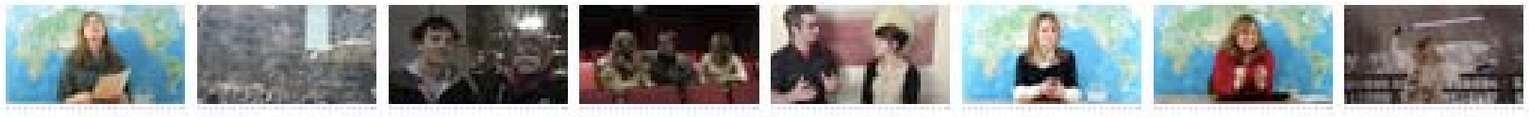
ROCKETBOOM 2.0

daily with joanne

tuesday february 27, 2007 : daily past

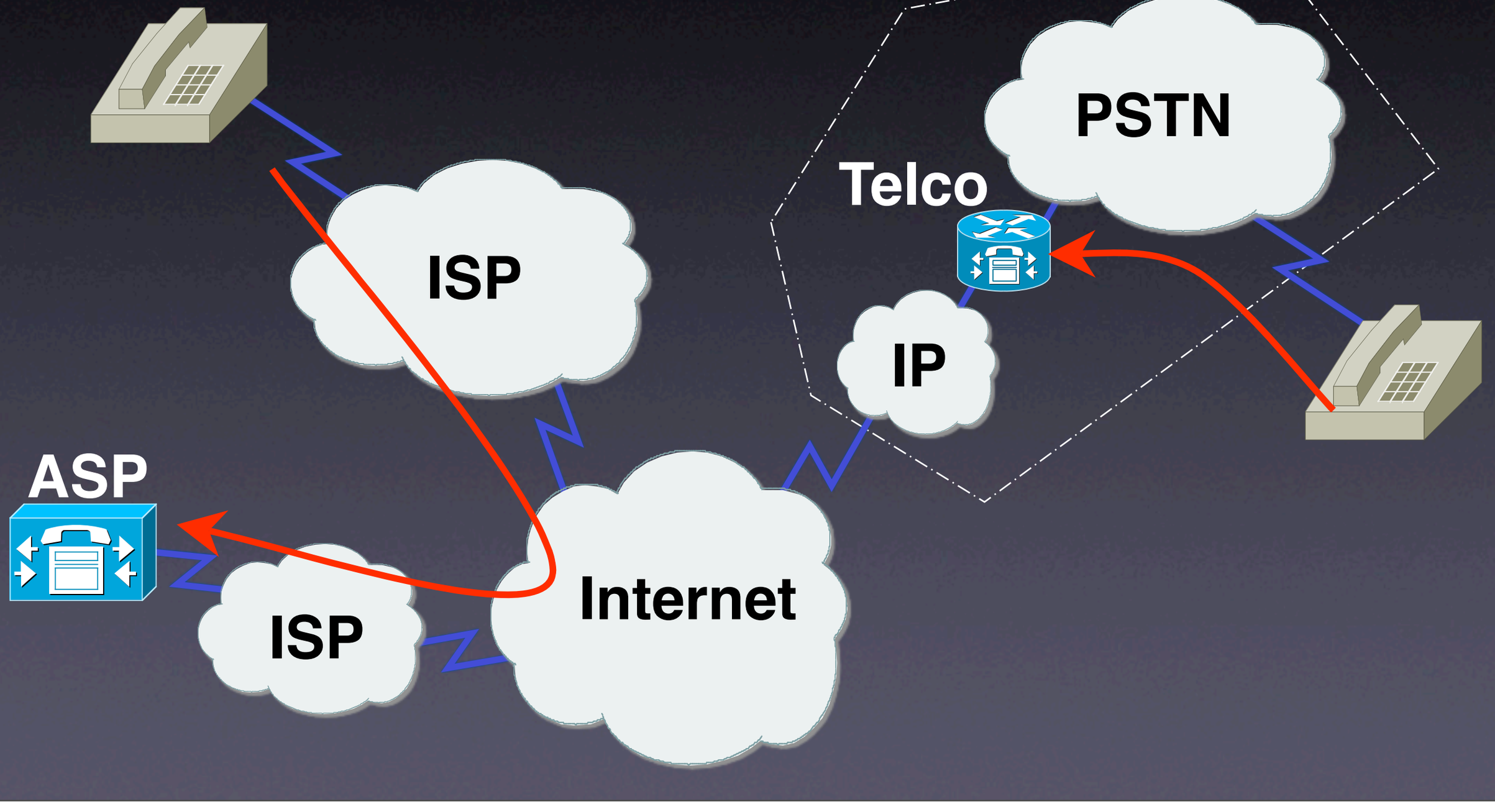
translate video | quicktime | win | HD | phone | tivo | fireant | democracy | itunes | more

comments (31) | **story links:** sea animal findings in melting ice caps, painted animals, cross breed hybrid animals, beer launching fridge animal, piano playing cat, astronauts that go animal in space, nasa procedure for astronauts that go animal

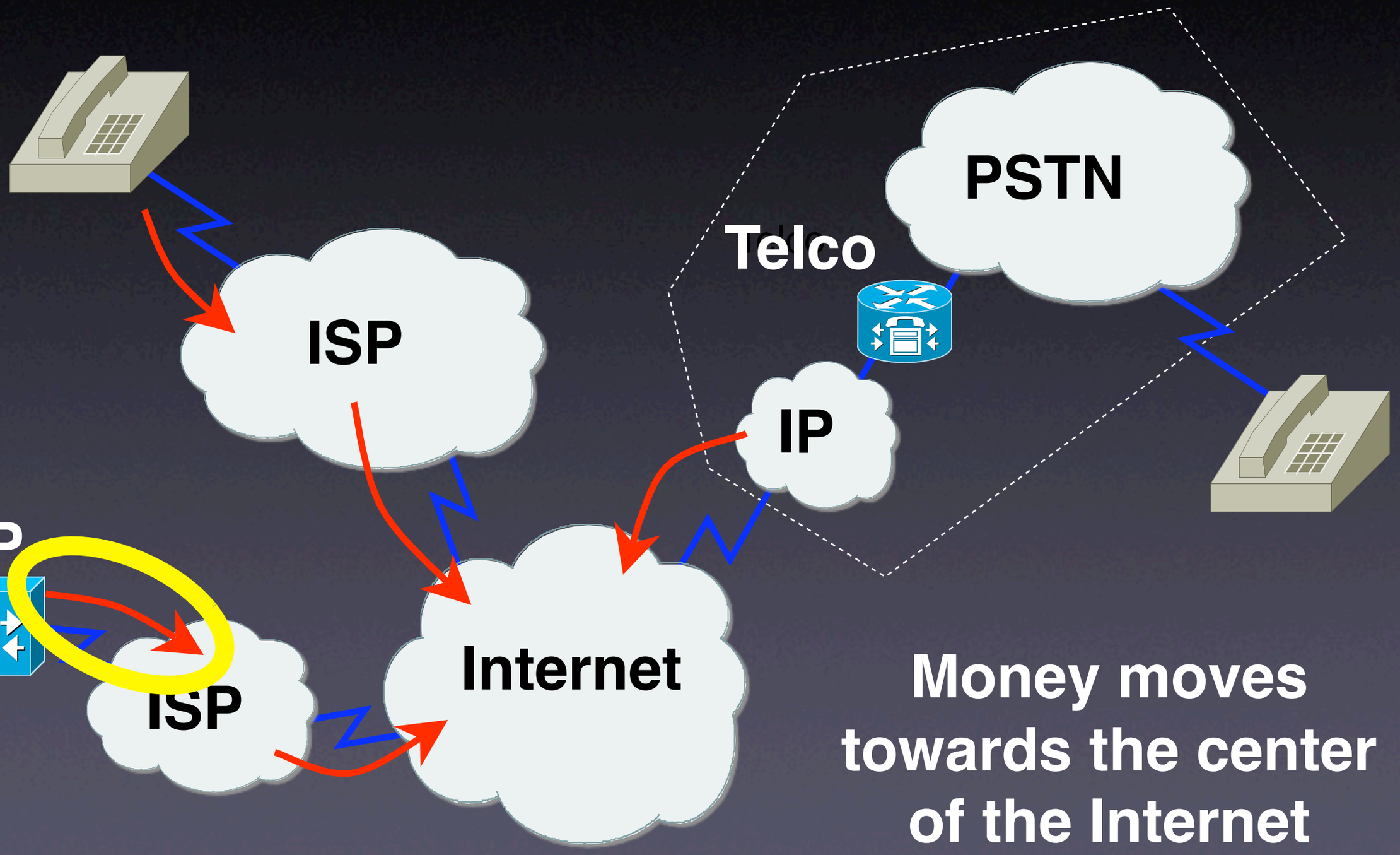


weblog | wiki | archives | suggest-a-story | field | jet set show | motion abbey | search | about RSS

Payment for services



Payment for IP



Money moves towards the center of the Internet

What is happening?

The perfect storm I

- "Telcos" try to keep the old controlled vertically integrated model of services
- End users and global (OTT) service providers try to reach each other

The perfect storm 2

- Companies that traditionally for example created television don't know what to do
- End users are still interested in moving images with audio, but create it themselves

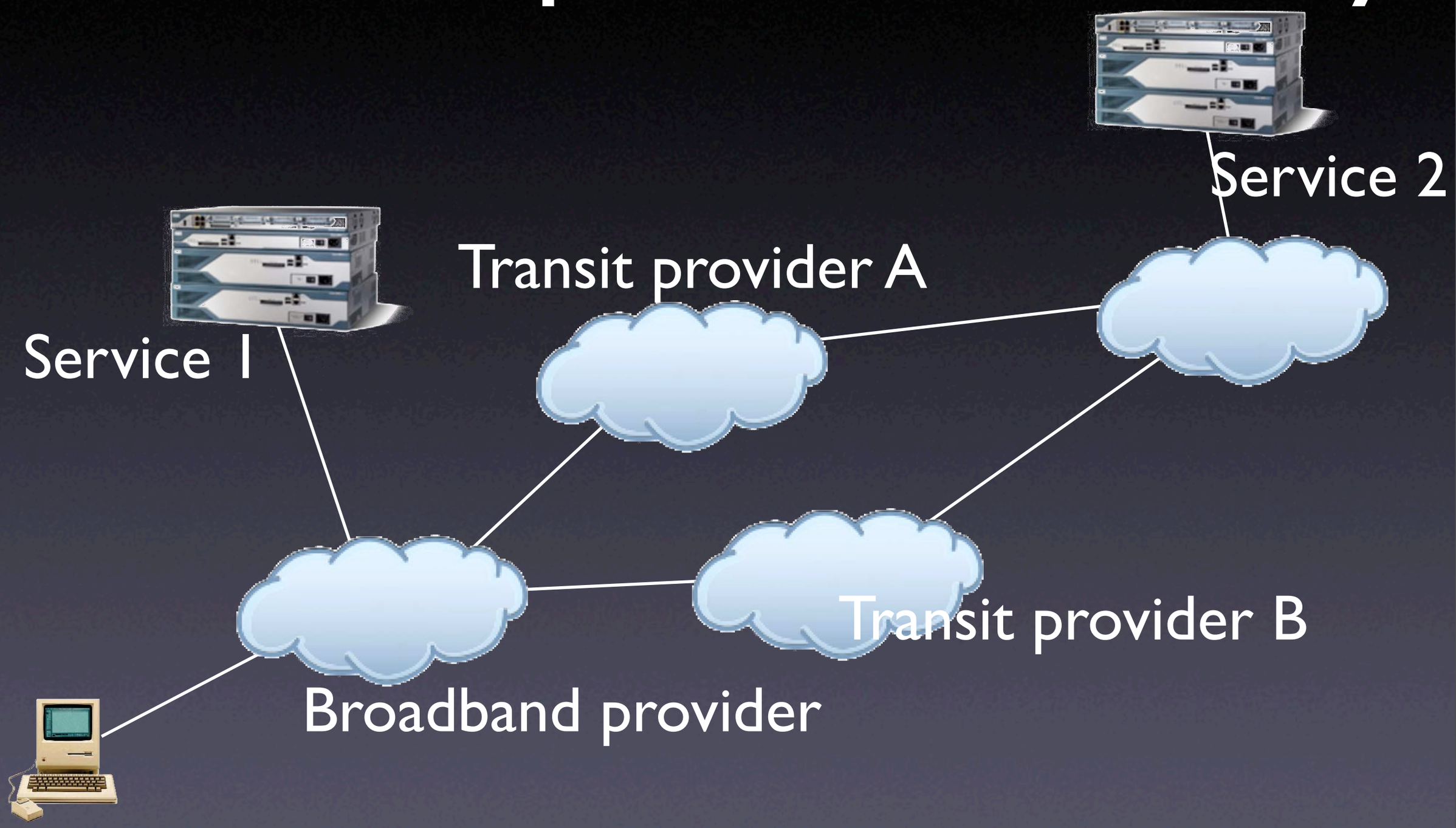
The perfect storm 3

- Newspapers that traditionally print news on paper try to move to “the web” - and make money on it
- End users write themselves in blogs what they find is happening - including links to other blogs and newspapers online

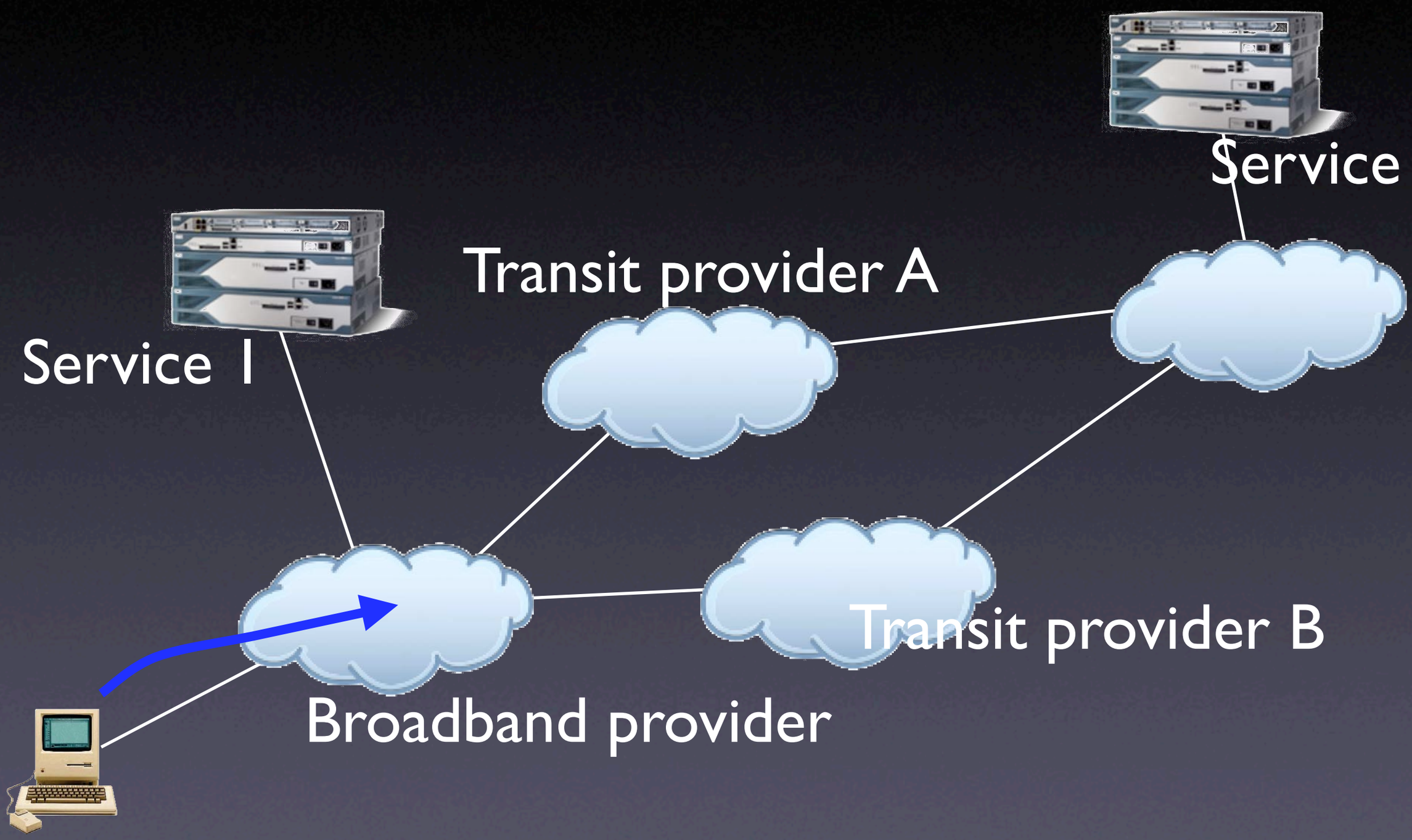
The perfect storm 4

- Regulators have no idea what to do (because they do not yet understand implications of earlier slides)
- Criminals are using the problems with, and good guys are hindered in their new thinking by old regulation

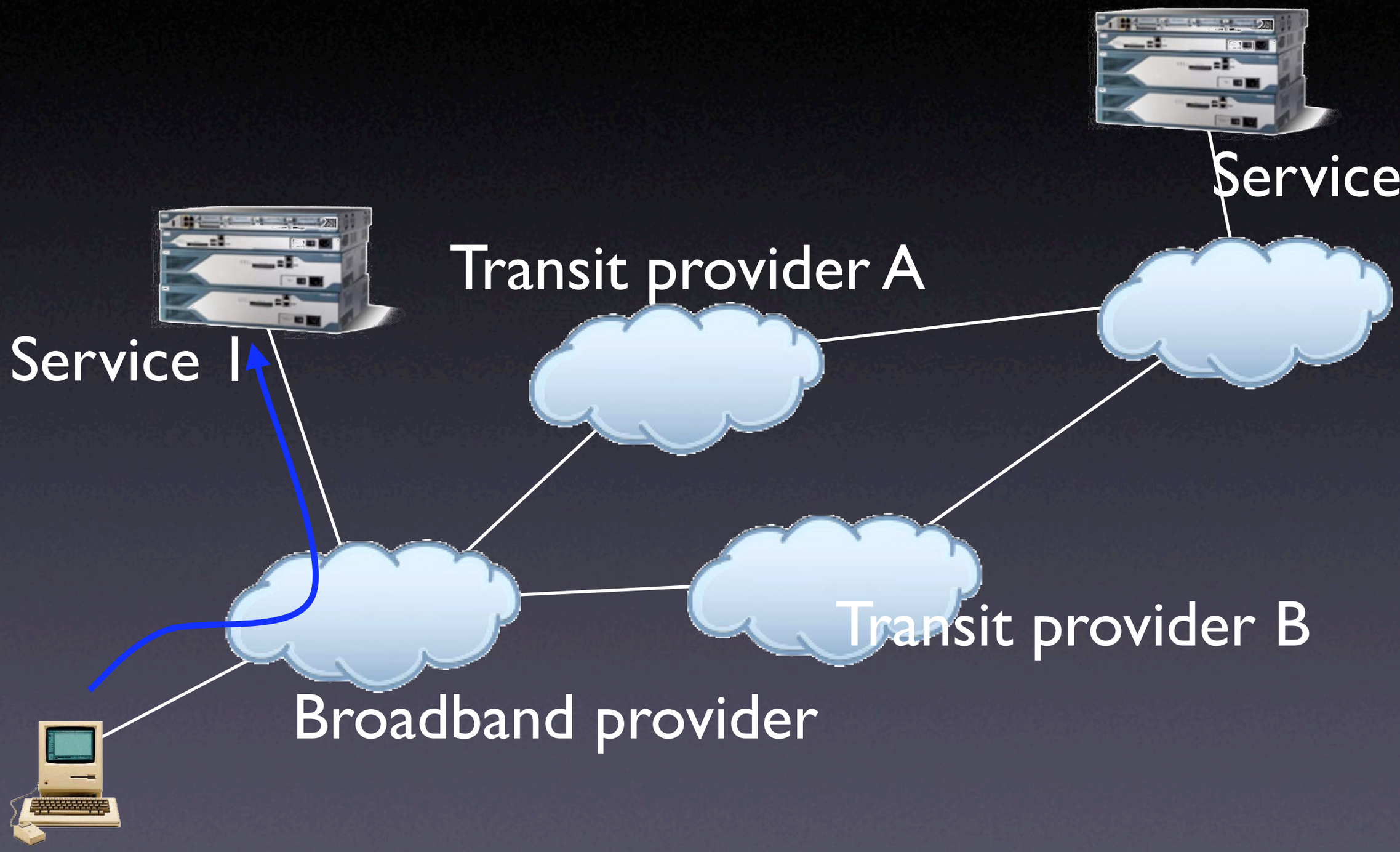
Broadband product of today



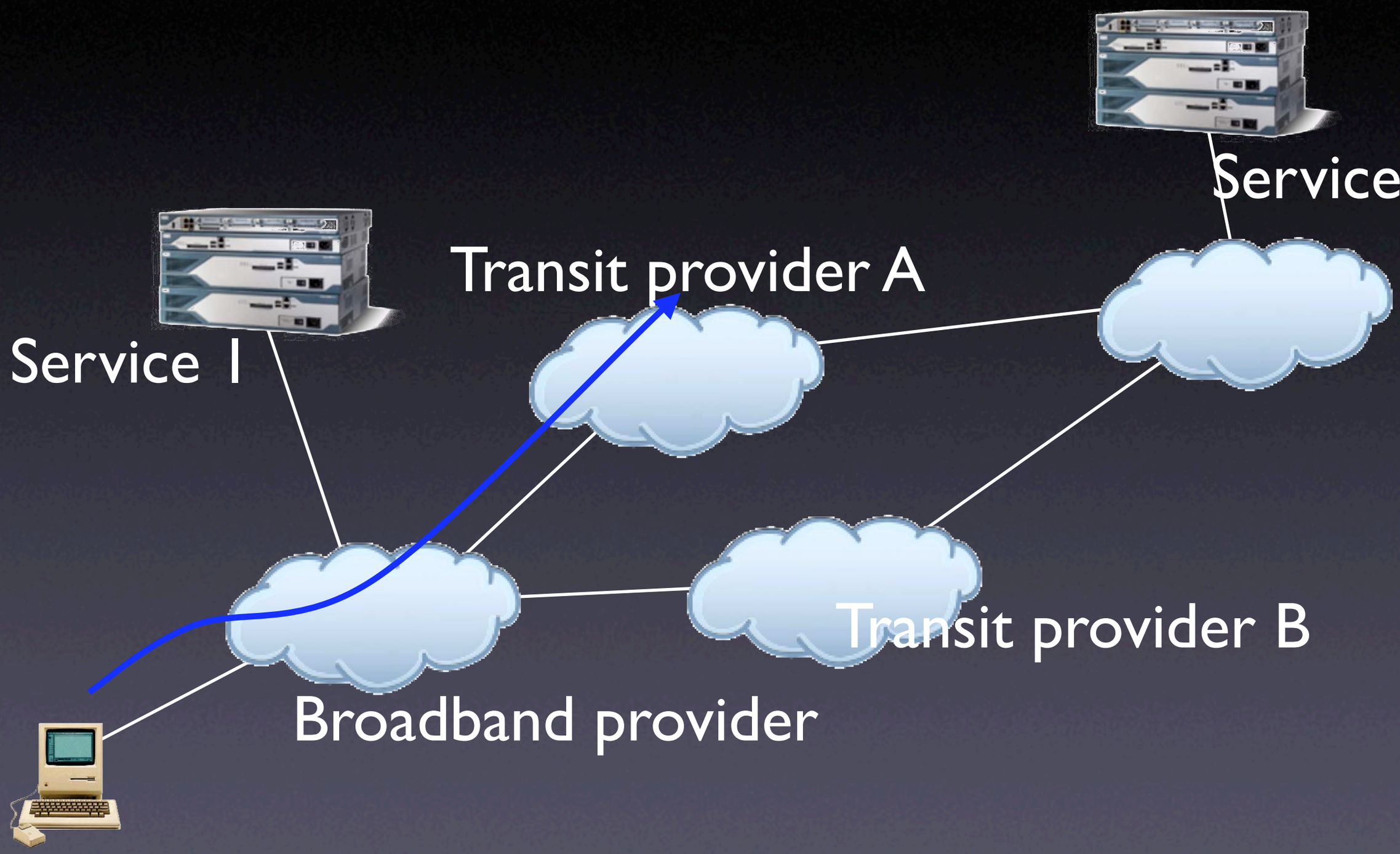
1. Broadband


Service 2
Transit provider A
Service 1
Transit provider B
Broadband provider

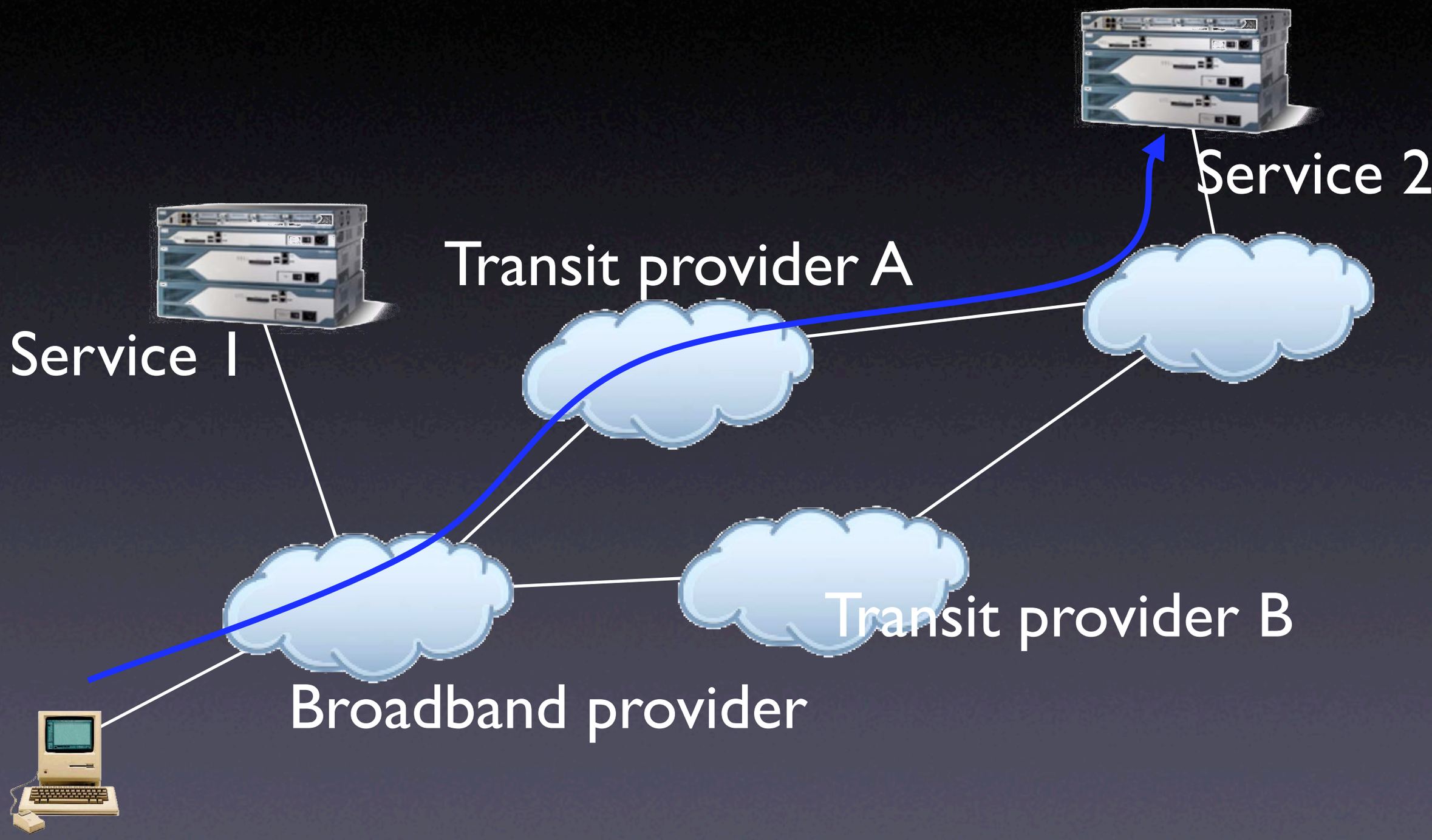
2. Local services



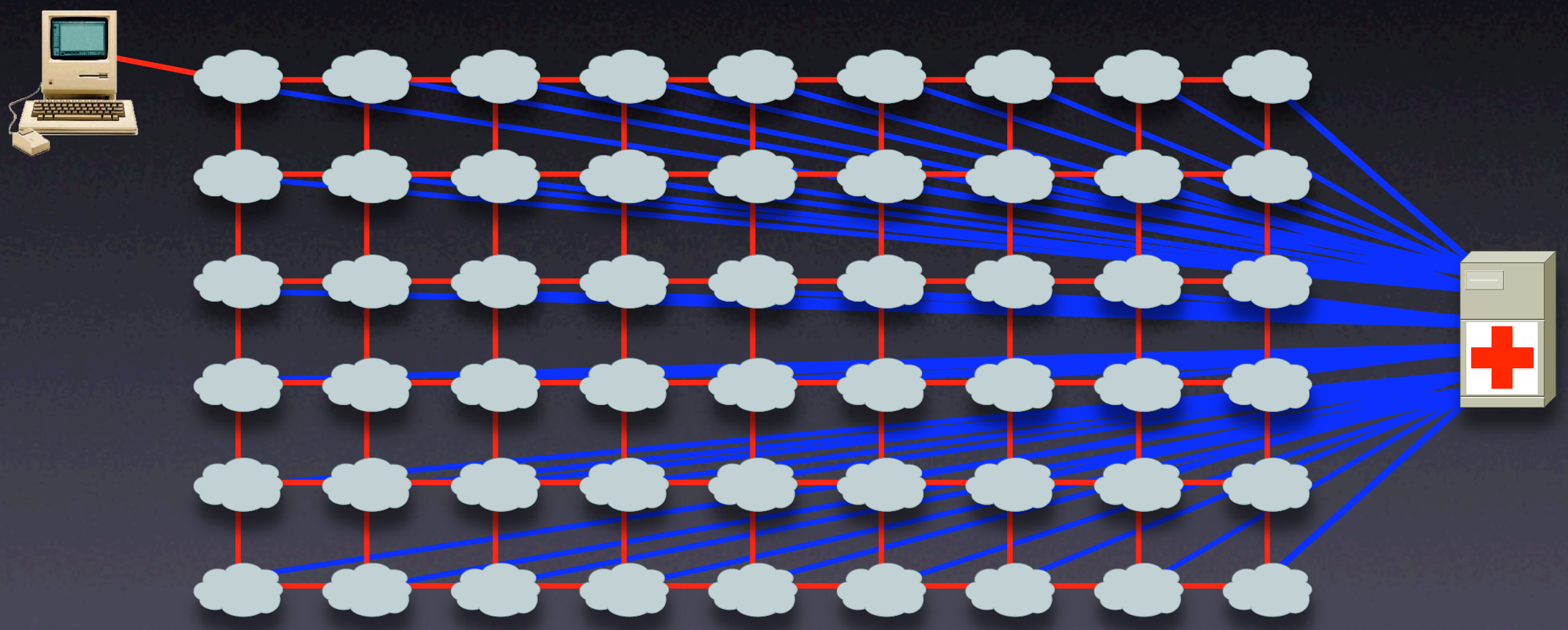
3. Internet access



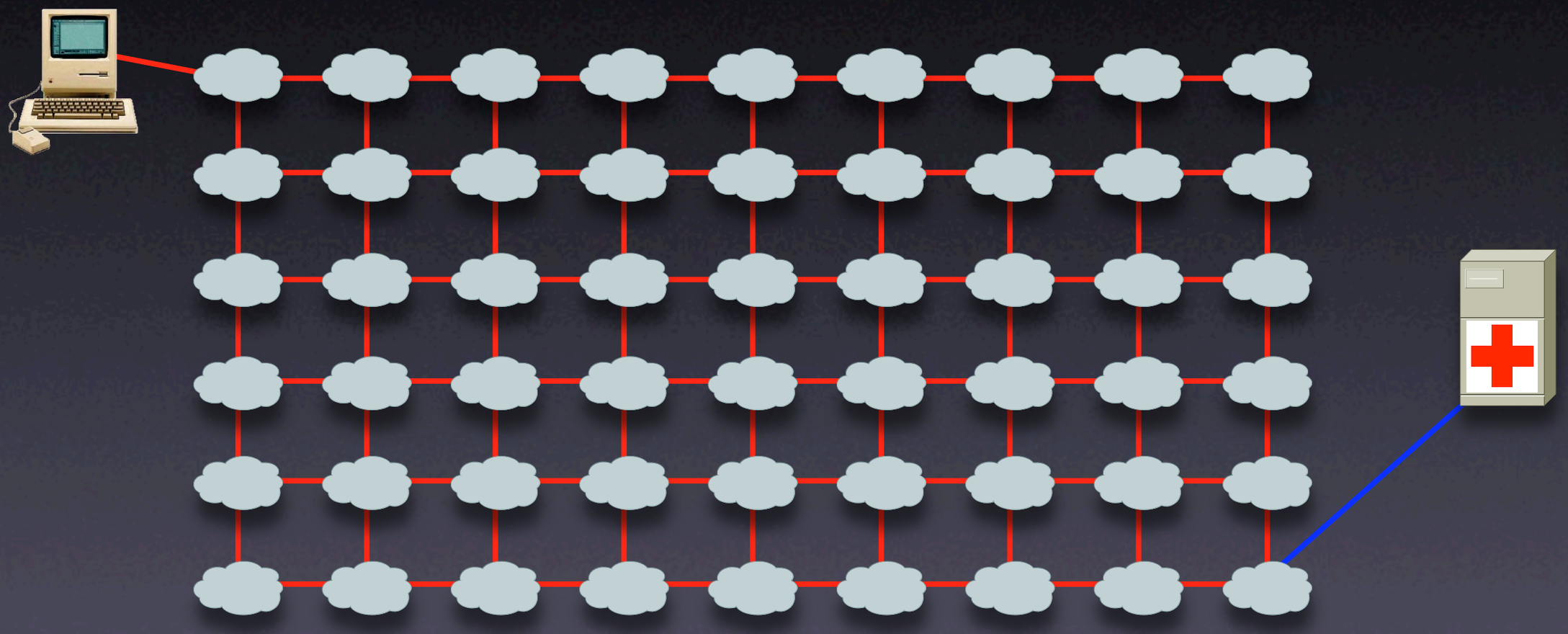
4. Global Services



Many connections?



Or only one?



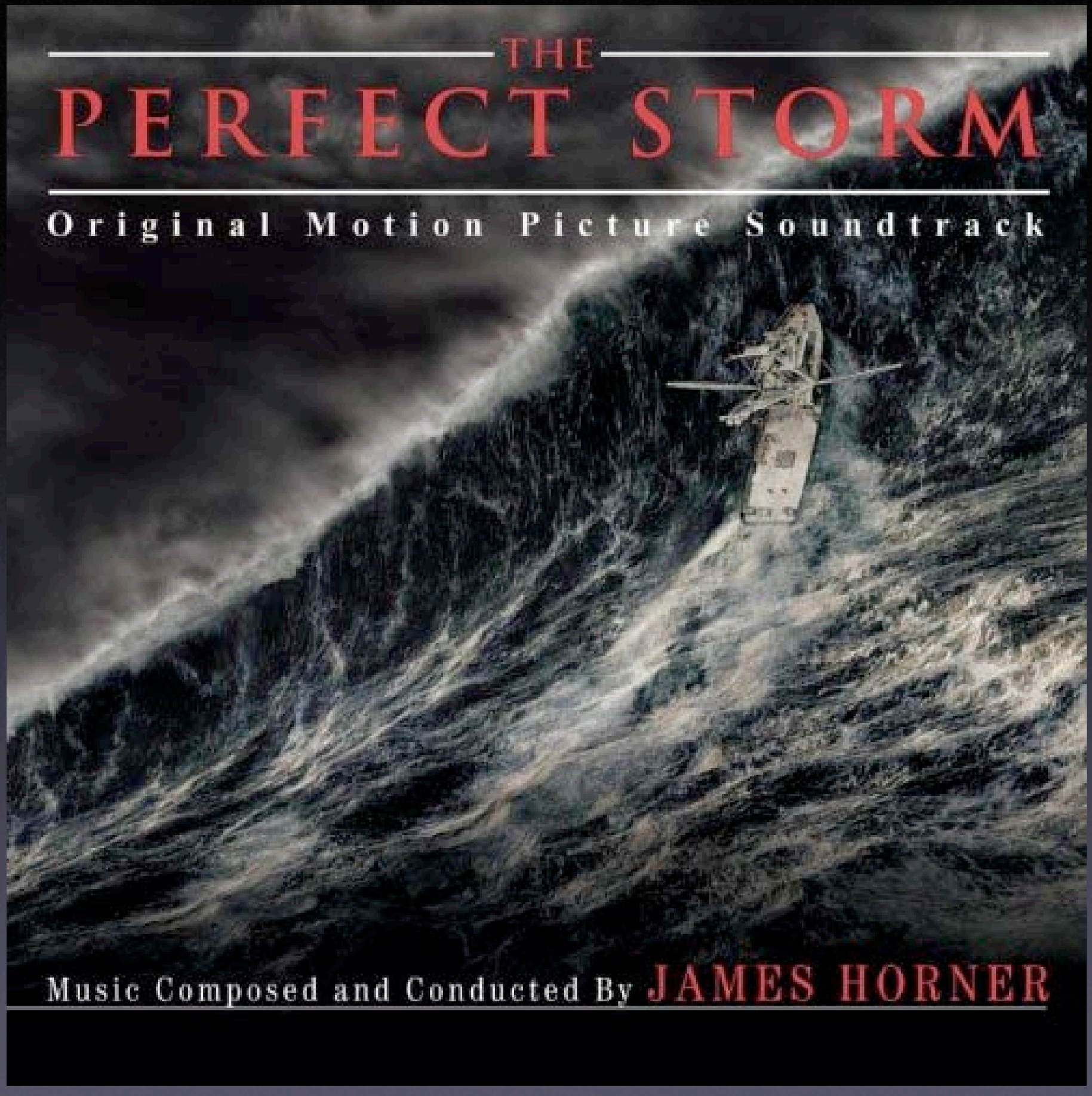
Statement by Swedish Government

The ultimate goal is that the user, independent of location and time, must be able to access the services she or he wishes, without being hindered by blocks created by business, technical, or regulative reasons.

Statement by Swedish Government

This vision of the user's ubiquitous access requires convergence when looking at services, equipment and networks.

The impression, though, is that this convergence process is slow, and is hindered by traditional business models.


THE
PERFECT STORM
Original Motion Picture Soundtrack
Music Composed and Conducted By JAMES HORNER

Myth 1: Best effort is not good enough

- QoS, MPLS etc have never produced bandwidth
- If you have 5Gbps of traffic from your customers you have to either:
  - have 5GBps of bandwidth available or
  - throw away traffic and acknowledge your SLA
- Of course different kind of traffic have different needs
  - We can have bottlenecks here and there
- QoS are instructions on what traffic to throw away
  - If we do not throw away traffic, will we need QoS?

Busted!

Myth 2: NGN will solve all of our problems

- In the NGN world, as originally specified, operators does not exchange IP traffic, but instead "service"
- Each operator has at its border a session border controler" (SBC)
- The only traffic that passes is the approved traffic, according to explicit agreements with peers
- Implicit is of course that customers can only send and receive traffic related to the services the operator peer with
- But, NGN is a buzzword, so other people have redefined the term NGN to include "agreed QoS on peering interconnects" and similar things

Busted!

Myth 3: Vertical integration is the future

- An operator have...
  - ...the need to get back investments, and one way of doing it is to also sell services
  - ...to control what services the users uses, because otherwise the "user experience" is not good enough"
  - ...to get paid by the service providers for the increase in traffic for the customers
- In reality...
  - ...the "local services" compete with over the top services like Skype, Hotmail, Google and similar
  - ...the "local services" are often hard to reach from outside of the operator, so "roaming" is difficult for the customer
- ...all services, including Google, are customers of operators

Busted!

Myth 4: Internet will break

- One day something will reach a point where the network breaks completely

Patrik vision: I

- We have today the Internet world
  - Bill and keep
  - Majority of traffic is “best effort”
  - Peering and transit agreements between operators
  - Customers pay fixed fee
  - IP level routing solves robustness issues
- We can not ignore the last 15 years of evolution
  - People have tried to apply the “bell head model” on Internet for years, and it has failed every time
- Patches to this model is the future
  - Simple QoS at known bottlenecks
  - Patches to routing system

Patrik vision: 2

- Viewer is subscribing to a channel, or program, and not to combination of channel and distributor

- A viewer want to be able to see a channel both at home and at office

Patrik vision: 3

- Distribution of TV will be non-linear for the consumer and linear for the distributor
- TiVO and similar devices will record RSS-feed like distributions of programs
- Direct broadcast will of course always exist

Patrik vision: 4

- The boundary between movie and game will be blurred in the future
- Tomorrows movie is an online game with multiple players that “act” as the actors according to scenarios that are replayed at specific times

Patrik vision: 5

- Regulators will do whatever is needed to reach the goals of "Efficient competition" and "Good environment for innovation"

- Regulators will be late in the game, so the result will be a very tragic "war"

Patrik vision: 6

- End users will complain, so providers of services have to create better products
- As long as adverts target “new customers” and are not there to decrease churn, bad companies and products will exist

Patrik vision: 7

- Global services have already won

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rocket boom

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