Sender-Keeps-All: Telecoms heaven, or Telecoms hell?

Dr Tim Kelly,
Strategic Planning Unit,
International
Telecommunication Union,
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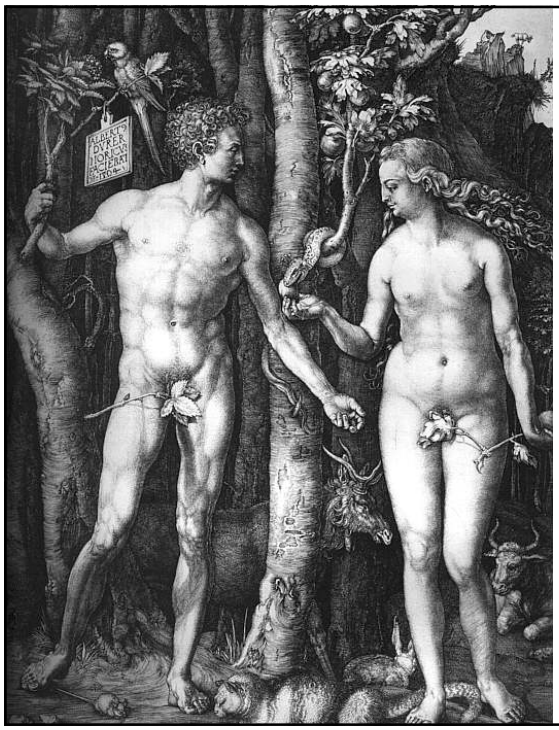
Sender-keeps-all: Telecom heaven or Telecom hell?

- In the beginning there was … Sender-keeps-all
  - ⇨ Early days of the telegraph
  - ⇨ Early days of the Internet
- A vision of Telecom heaven
  - ⇨ Why, where and when Sender-keeps-all works well
  - ⇨ Why it might work again in the future
- A vision of Telecom hell
  - ⇨ Why it proved to be unsustainable
  - ⇨ Why it usually ends in tears
- Lessons across the centuries
  - ⇨ What the telegraph pioneers might teach the Internet

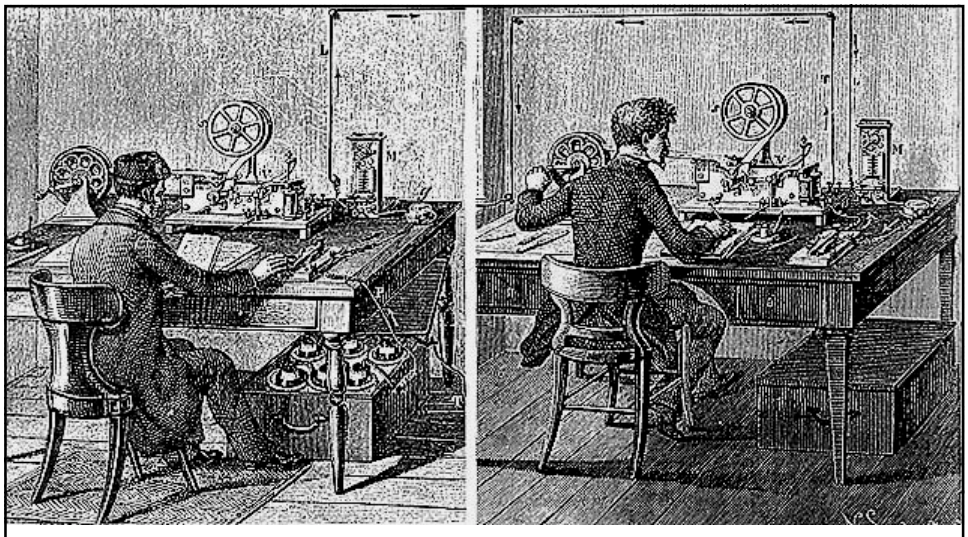


In the beginning there was:

Sender-Keeps-All

"A system in which the service provider originating a call keeps the entire revenue derived from it"

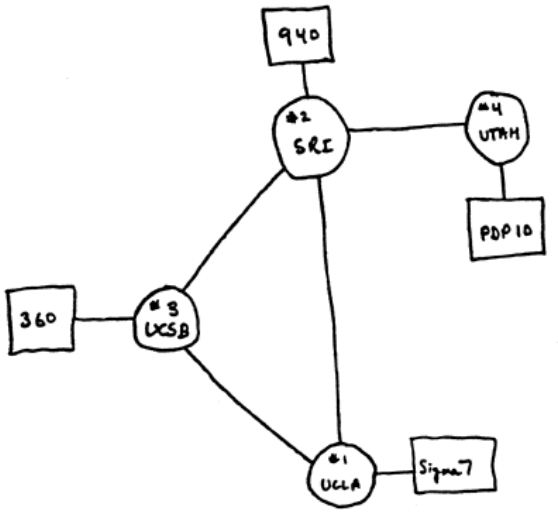
Albrecht Durer, Adam & Eve, 1504



Sender-Keeps-All in action (1):

A German telegraph operator (left) sends a message to a French operator (right), both using Morse equipment

Source: ITU Photo library © Genot



Sender-Keeps-All in action (2):

A network diagram of the nascent four-node Internet (ARPANET), circa 1969, with nodes in UCLA, SRI, UCSB and Univ of Utah.

Source: Hobbes Internet Timeline at: http://www.isoc.org/zakon/Internet/History/HIT.html

Sender-keeps-all as Telecom heaven

- No requirement for correspondent agreement
- No requirement to monitor incoming and outgoing traffic
- No requirement to make financial settlements
- No need for debts or disputes
- Possible to get service up and running quickly
- The marginal cost of an extra unit of traffic is zero, so:
  - ⇨ Extra traffic means pure profit
  - ⇨ Sender-keeps-all is cheaper than interconnect

Sender-keeps-all: Where it works well ...

- When traffic flows are balanced
- When the revenues derived from traffic flows are balanced
- Where tax regimes are harmonised
- Between similar network types
- Where partners trust each other
- Where traffic is "too cheap to meter"
- Where distance is irrelevant
- In border areas between 'similar' neighbours

Past examples of sender-keeps-all

- Early telegraph network
- Between countries of Eastern and Southern African regions
- Between UK and Ireland
- Between Singapore and Malaysia
- Between Russia and the other Republics of the former Soviet Union
- Early Internet, prior to commercialisation
- Between tier one Internet peers

Note: Sender-keeps-all has subsequently been abandoned in some of these relations, e.g., formally ended on 1/1/99 in Southern Africa

Alternatives to Sender-keeps-all

- International accounting-revenue division method
  - ⇨ Accounting rate, split 50/50 between correspondents
  - ⇨ US International Settlements Policy became dominant paradigm for most international relations
- Flat-rate price procedure (e.g., leased capacity)
- Traffic-unit price procedure

but increasingly, the trend is towards

- Facilities-based interconnect agreements (e.g., fixed to mobile)

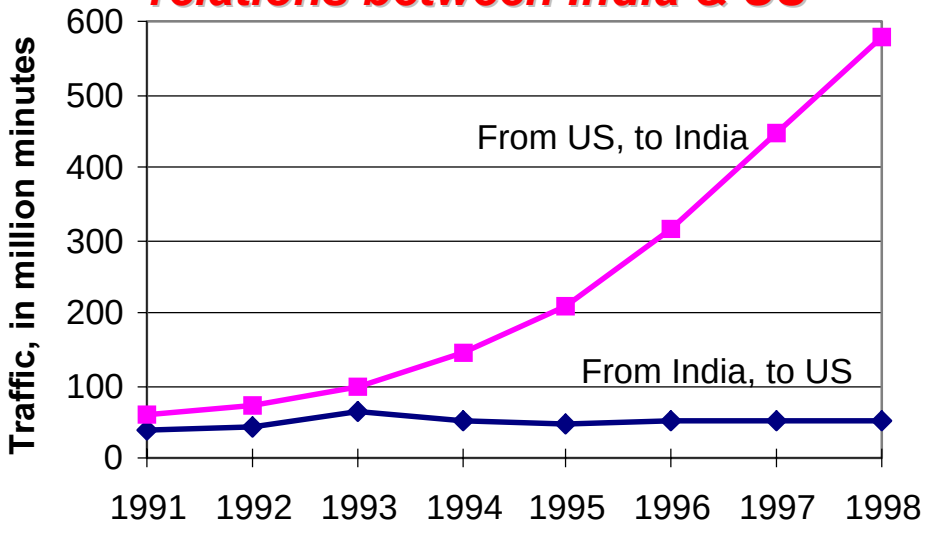
Sender-keeps-all as Telecom hell

- Sender-keeps-all encourages partners to "cheat" on each other
  - ⇨ Usually strong partners cheating on weaker ones
  - ⇨ Usually "clever" partners cheating on naïve ones
  - ⇨ Usually involves being "economical with the truth"
- Promotes refile, re-origination, tromboning of calls and other forms of call re-routing
- Encourages "dumping" of calls (e.g., junk e-mail)
- Sender-keeps-all discourages development of enhanced or content-rich services

Sender-keeps-all: Where it works badly

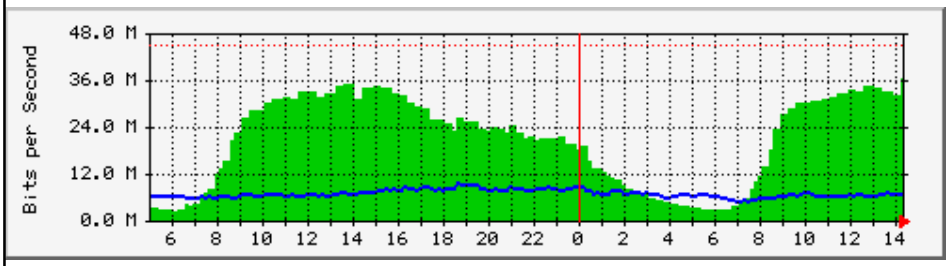
- Where traffic flows are asymmetric:
  - ⇨ on voice networks due to development of call-back, calling cards, refile etc
  - ⇨ on Internet as web-browsing and streaming media have become major forms of traffic
- Where partners are unequal in terms of their wealth, size, economic development, tariff structure or degree of market liberalisation
- Where different types of network with different cost structures (e.g., mobile and fixed-line; voice and data) are interconnecting

Why Sender-keeps-all was unsustainable (1): Voice Traffic relations between India & US



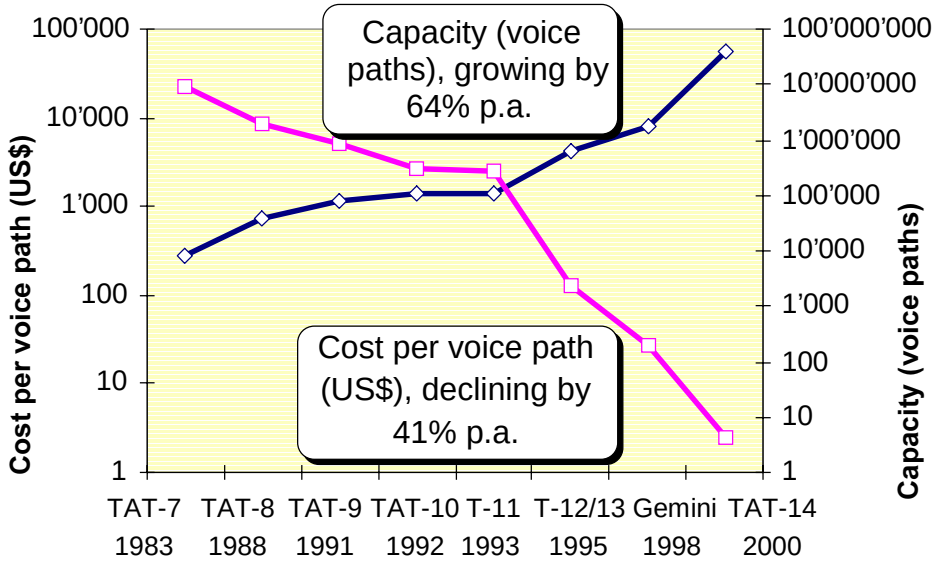
Source: ITU, India country case study, available at: http://www.itu.int/wtpf/cases/index.htm

Why Sender-keeps-all was unsustainable (2): IP Traffic relations between Sweden & US



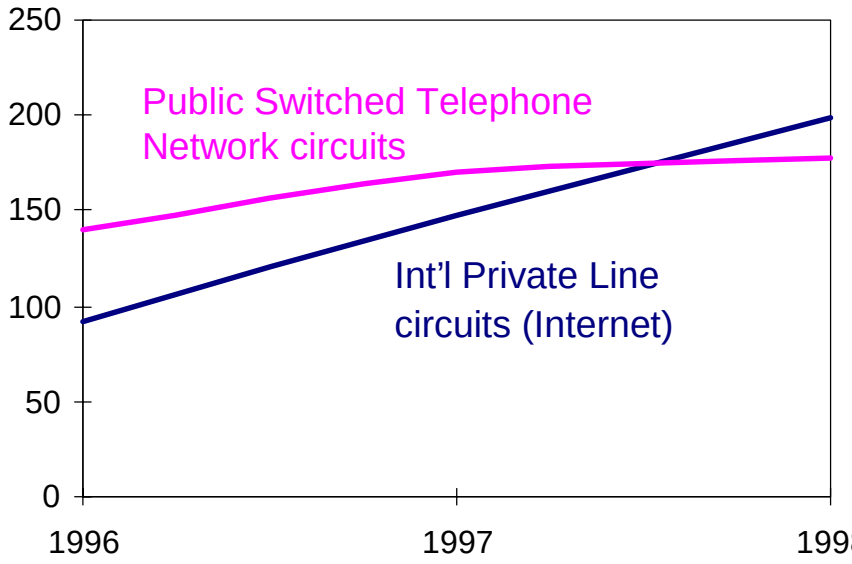
Source: Stefan@telia.net

The future (1): Will traffic be "too cheap to meter"? TransAtlantic cables, 1983-2000



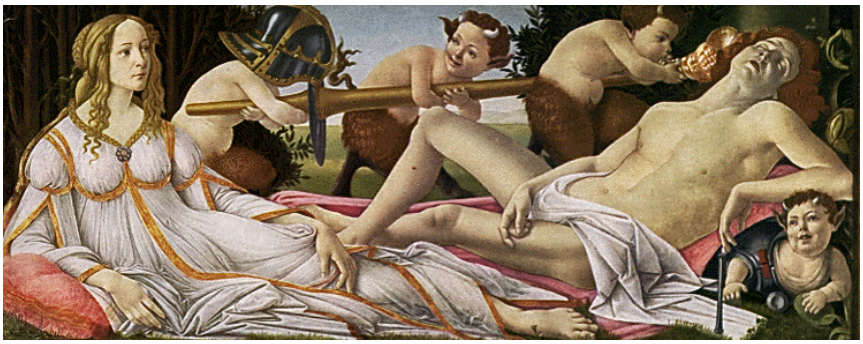
Source: ITU, TeleGeography Inc., FCC.
Note: Voice-path numbers assume a compression ratio of 5:1 to number of circuits.

The future (2): Will IP render PSTN circuits obsolete? International circuit usage



Note: Based on usage of circuits between the US and the rest of the world. *Source:* FCC.

Sender-keeps-all: A wake-up call from the past to the future?



Sandro Botticelli, Venus and Mars

- **Sender-keeps-all is the way things began in telecom, and it may be the way things end-up**
- **But sender-keeps-all broke down because of:**
  - ⇨ **traffic asymmetry: are things any different now?**
  - ⇨ **the dominance of US practices on international settlements: as is now the case for IP traffic**