

What caused the telecom crash: Technology, business, or demand?

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- **Cause of telecom crash:**

Technology successfully met the challenge posed by unrealistic business plans that were formulated in willful disregard of real demand.

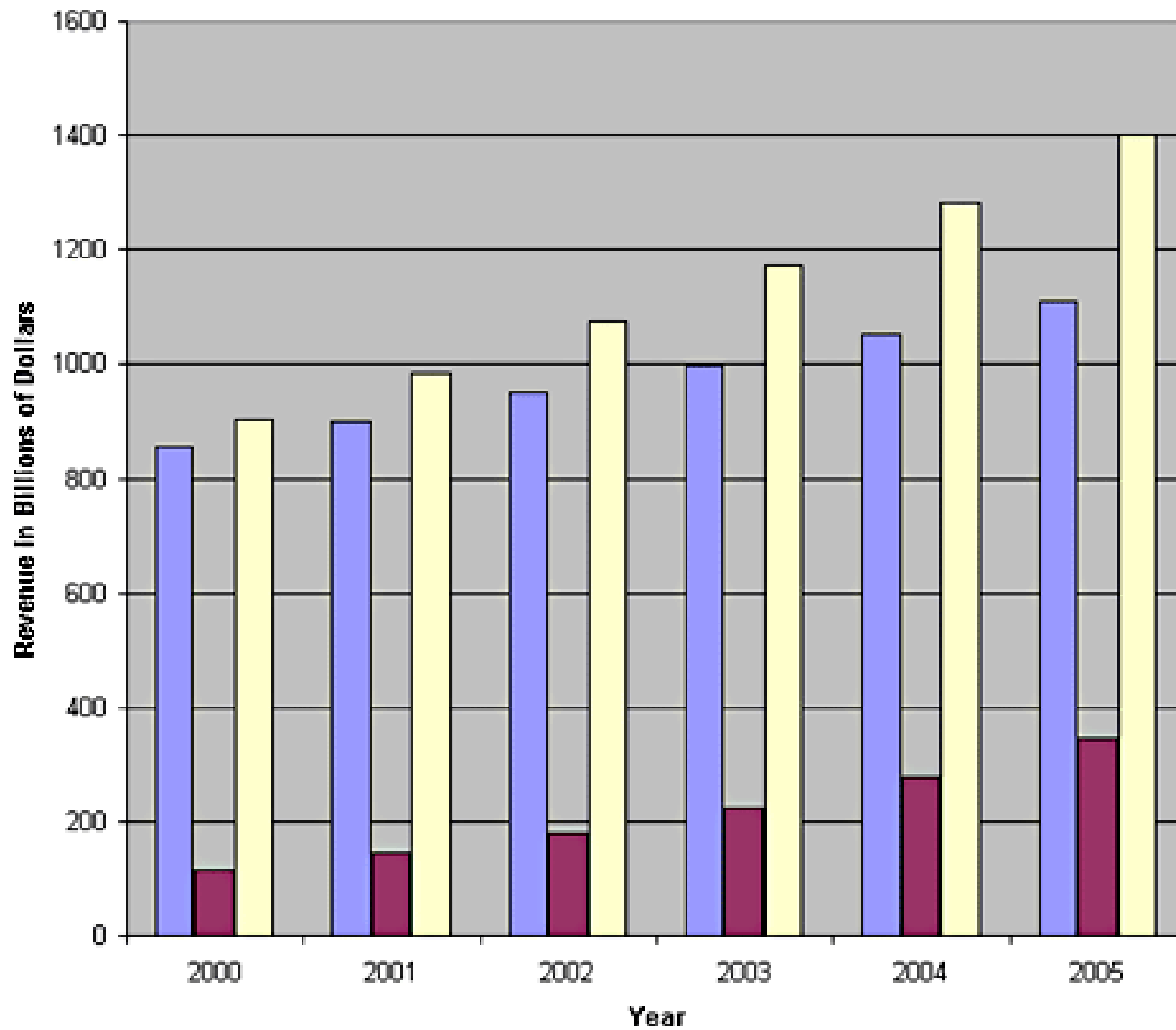
No crash on the telecom services side:

- total revenues still increasing
- declines among long distance carriers, but primarily in voice with growth in data (even Global Crossing had increasing legitimate data services revenues)
- stable among ILECs
- booming in wireless

A real crash on the supplier side:

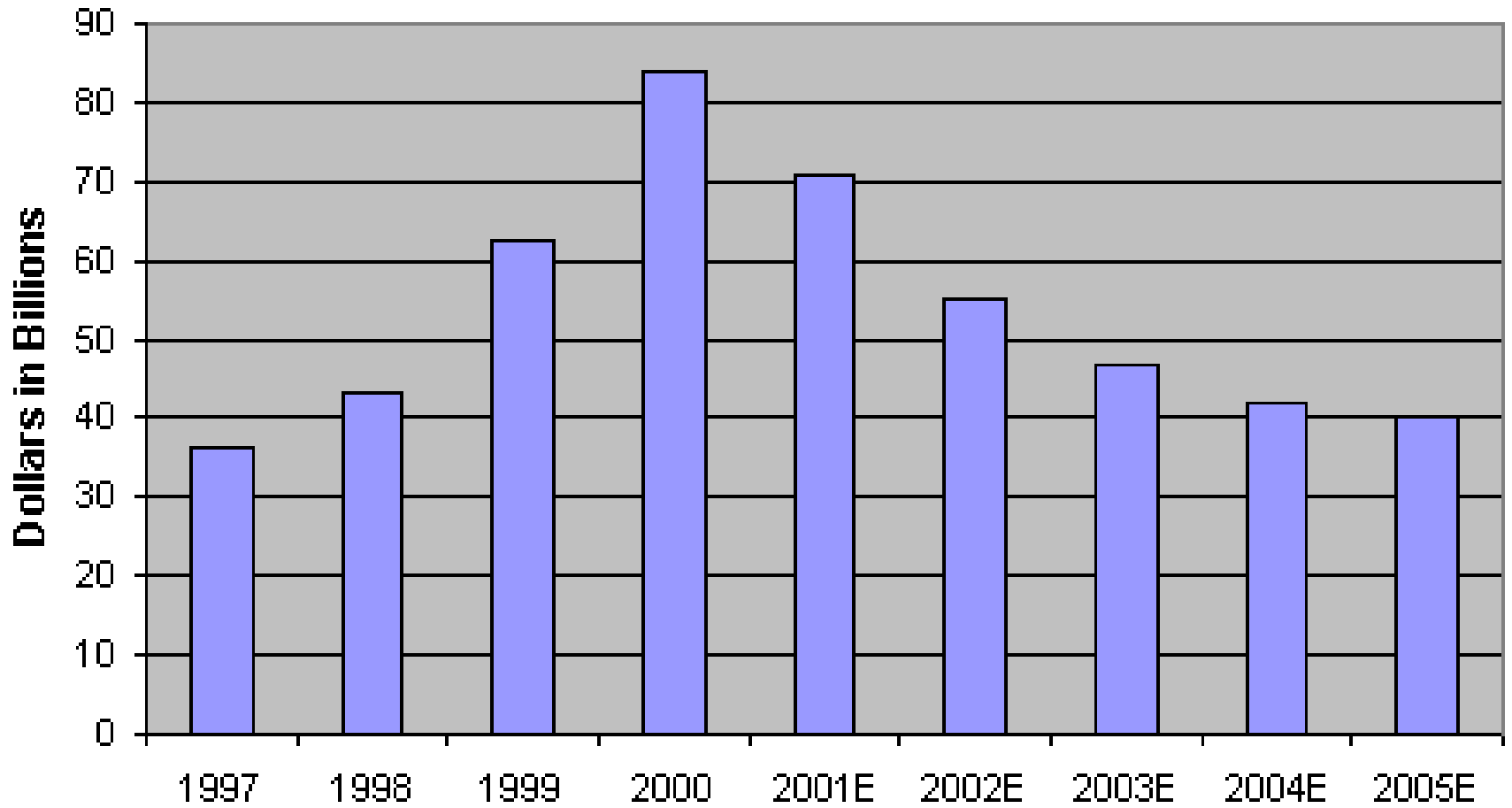
- result of an unsustainable burst of irrational investment

Telecommunications Service Revenue between 2000 and 2005



Source: IDC

Capital Spending



Source: Light Reading

The most destructive myths of the boom:

"build it and they will come"

"insatiable demand for bandwidth"

"Internet time"

"Internet traffic doubles every three months"

From year-end 1997 to year-end 2001:

- long distance fiber deployment: fiber miles growth of 5x
- transmission capacity: DWDM advances of 100x
- Cumulative fiber capacity growth of around 500x
- Actual demand growth: around 4x

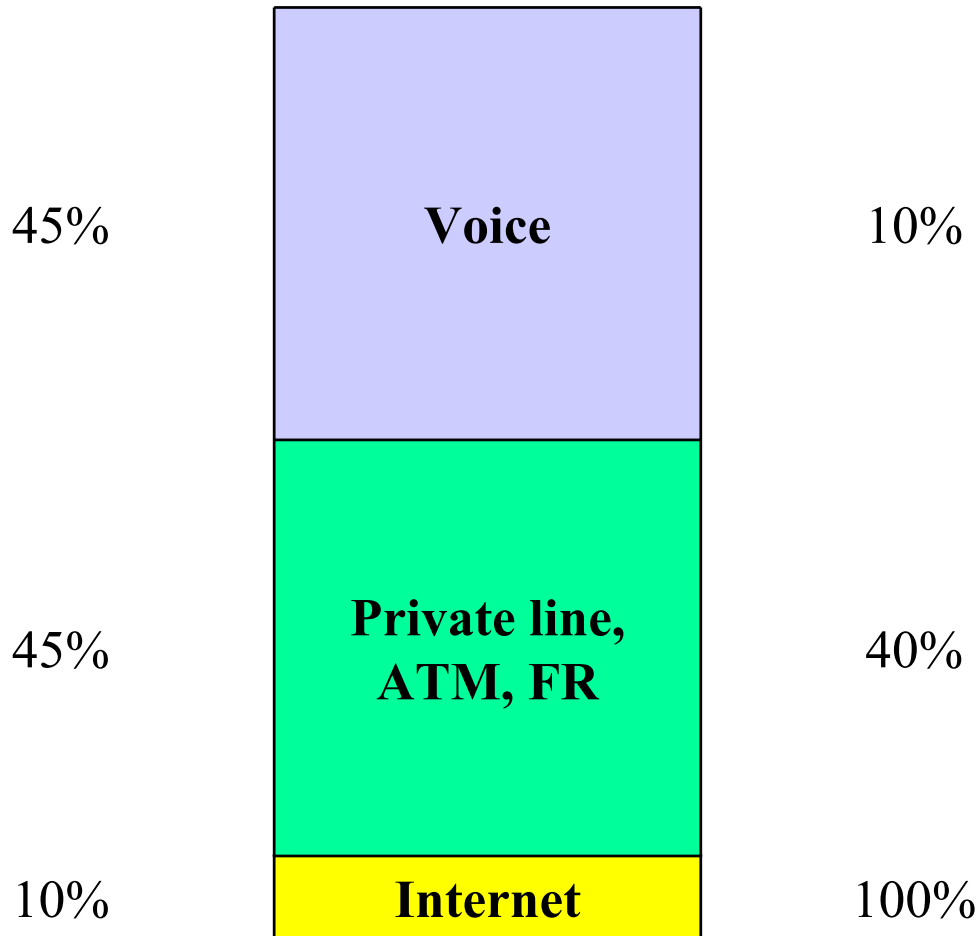
Two fundamental mistakes:

- (i) assume astronomical rate of growth for Internet traffic
- (ii) extrapolate that rate to the entire network

Bandwidth and Growth Rate of U.S. Long Distance networks, year-end 1997

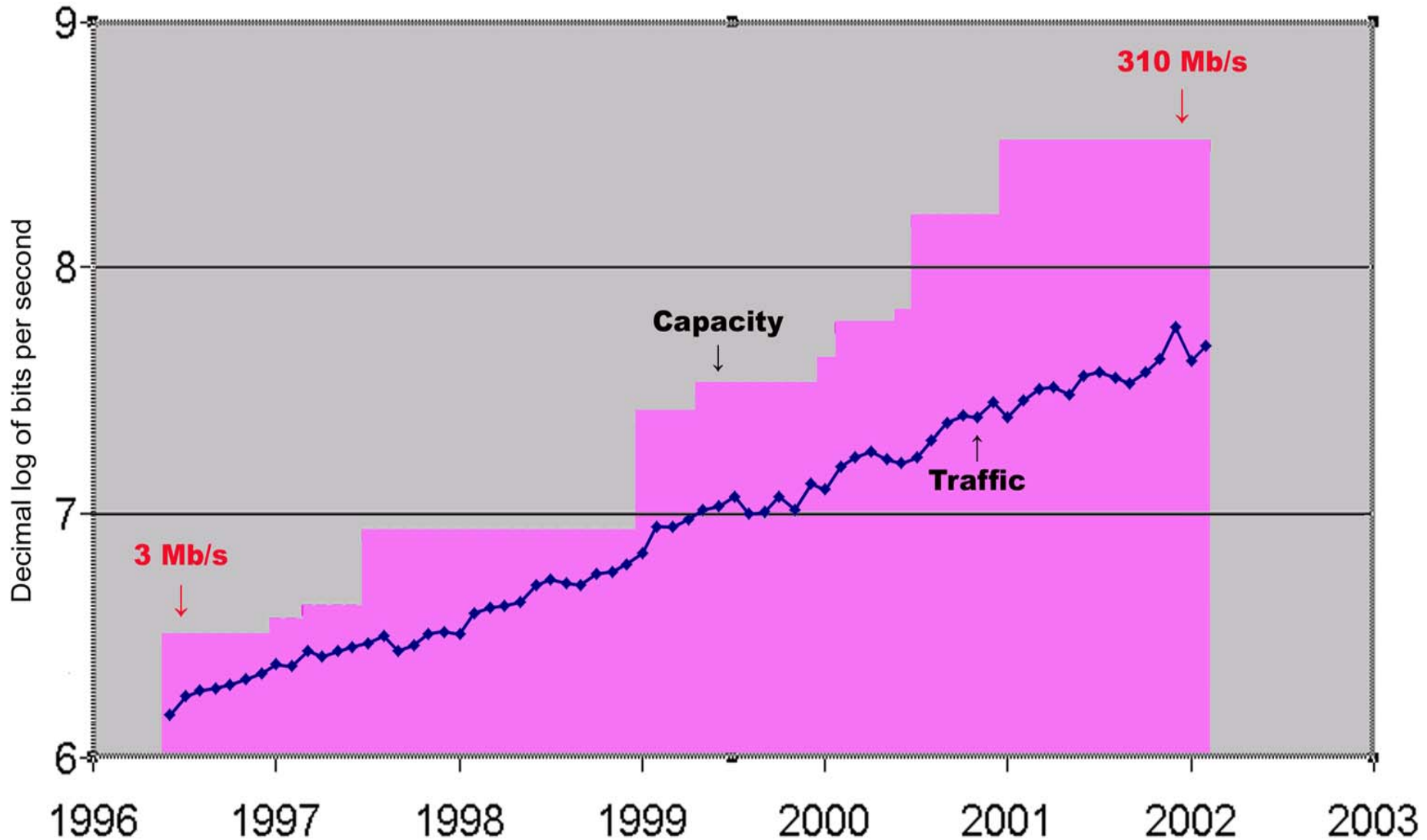
Percent of total
Bandwidth

Growth Rate



Source: Coffman and Odlyzko, "The Size and Growth Rate of the Internet", 1998

SWITCH traffic and capacity across the Atlantic



- SWITCH and other examples fit a remarkably consistent pattern of Internet traffic approximately doubling each year, even in the absence of bandwidth bottleneck.
- Telecom crash caused by assumption of unrealistically high growth rates for Internet traffic (“doubling every three or four months”), by gross misallocation of investment, and by naïve expectations that society was moving on “Internet time”

Further Reading:

<<http://www.dtc.umn.edu/~odlyzko/doc/recent.html>>

- **Internet Traffic:**

Brief: *“Internet growth: Myth and Reality use and abuse,”* 2000.

Detailed (joint with K. Coffman): *“The size and grow rate of the Internet,”* 1998.

“Internet growth: Is there a ‘Moore’s Law’ for data traffic?”, 2000.

- **Rate of Change:**

Brief: *“The myth of Internet time”*, 2001

Detailed: *“The slow evolution of electronic publishing”*, 1997.