

# A note about sizes

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# Some sizes to consider

- 1984: 10 Kbits/second
- 1994: 10 Mbits/second
- 2004: 10 Gbits/second

Six orders of magnitude growth.

- Moving a kilobyte to California in 1984: 1500 ms
- Moving a kilobyte to California in 1994: 451 ms
- Moving a kilobyte to California in 2004: 450 ms

Factor of three growth.

# Change The Question

- 1984: Shaped by slow
  - Keep data under local control. Moving is expensive.
- 1994: Shaped by control
  - Centralize data. We have the bandwidth.
  - Access control management is hard.
- 2009: Shaped by distance
  - The cloud solves access control.
  - Moving is cheap.
  - Duplicate data. Distance takes time.

What are the questions for 2012?

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# What is the Challenge?

- 10 Gbits/sec is *not* a fast network.
  - Order-of-magnitude changes do *not* automatically mean order-of-magnitude effects.
  - The real challenges are the real world effects.
    - World hunger
    - Climate change
    - Peace
  - We are the tool-builders.
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