Enterprise Storage Power/Performance Comparisons

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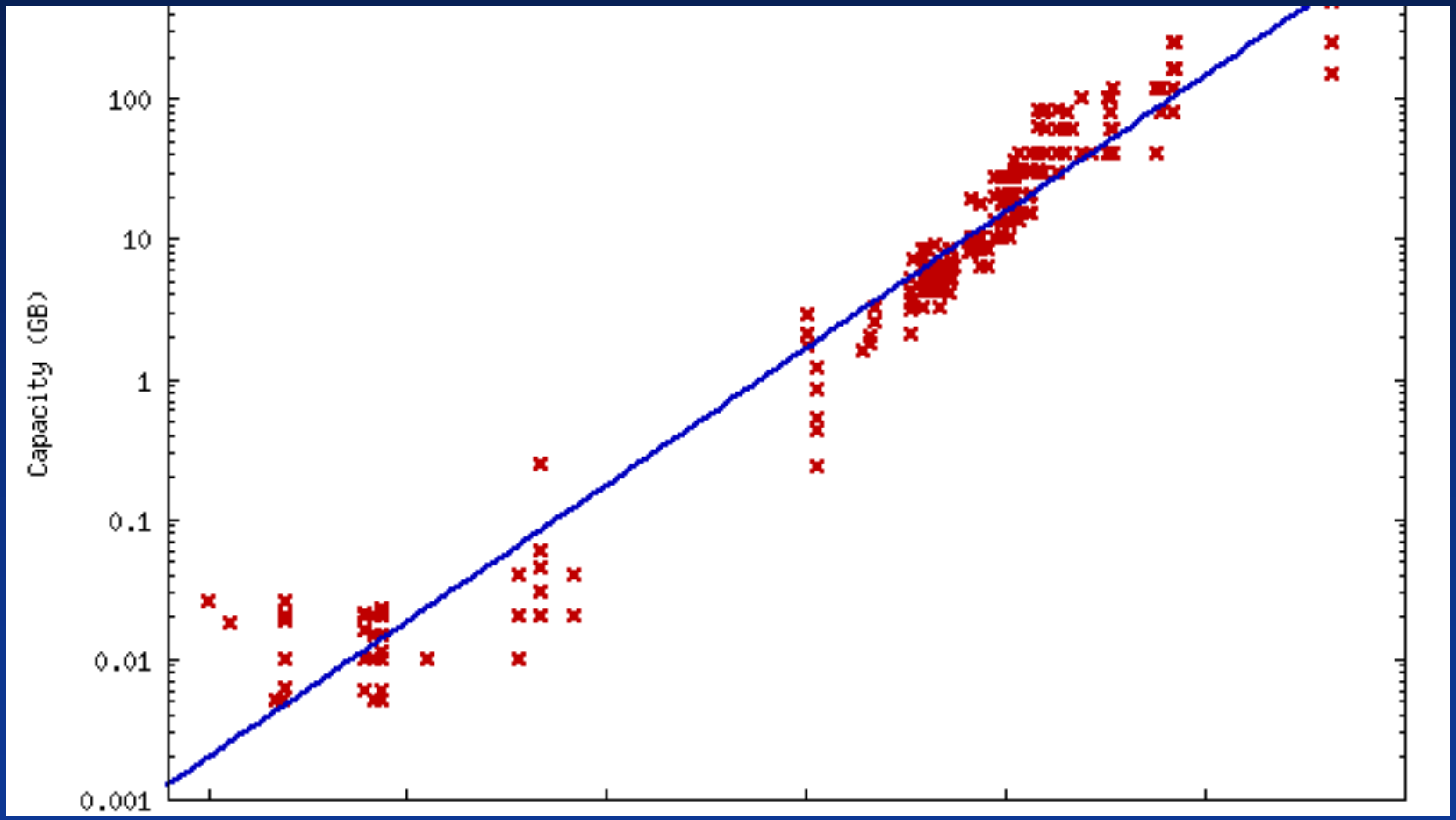
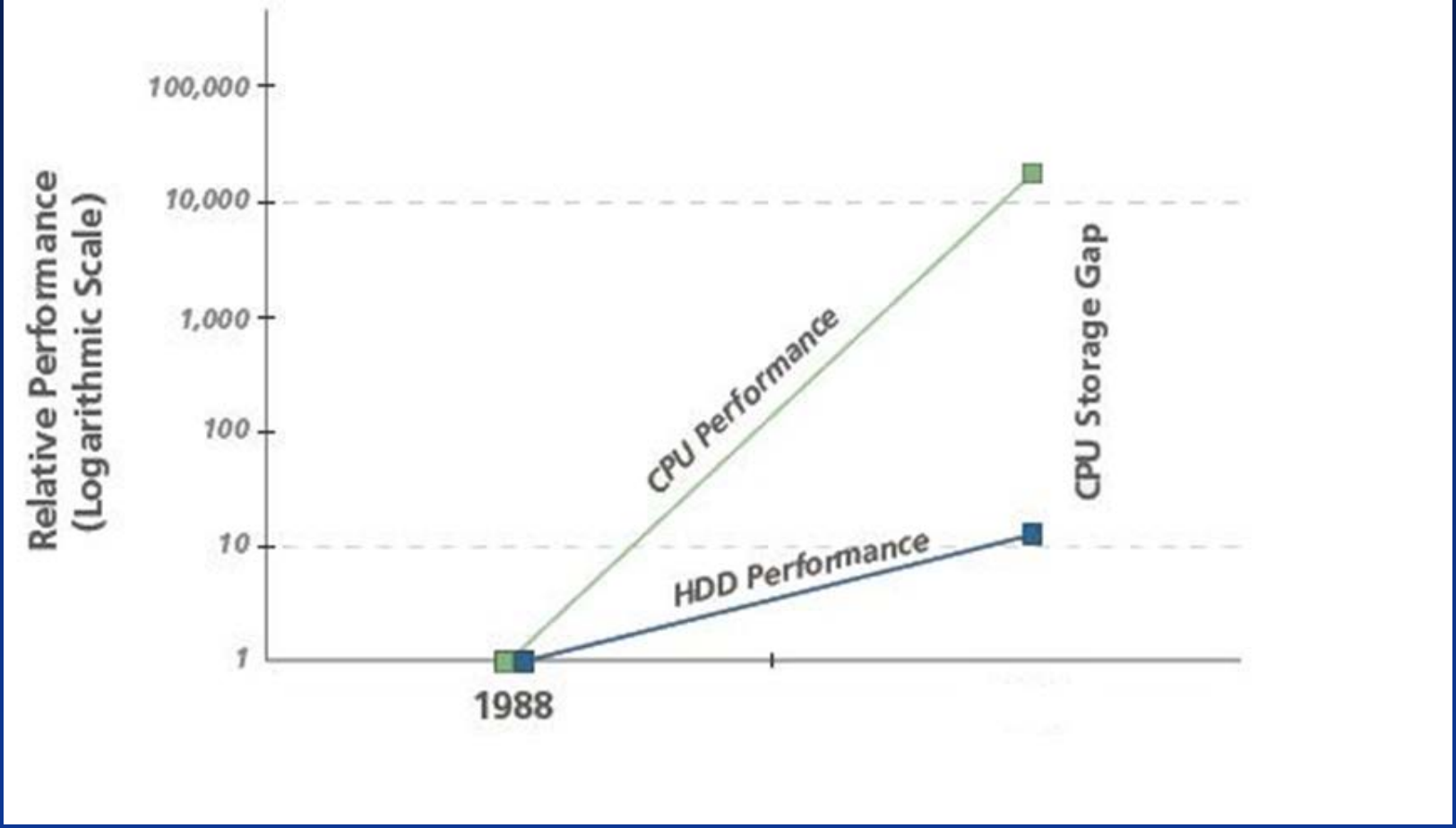
Moore's Law

Computer technology has an exponential growth rate, doubling every 18 to 24 months.

Applies to Hard Drive Capacity



CPU Performance Gap



PCIE FLASH vs HDD Performance Characteristics

- Flash Characteristics
  - High IOPS
    - 100k-1,000,000 IOPS /card
  - High bandwidth
    - 1.5GB/s to 6.0GB/s per card
  - Low latency
    - As low as 30 microseconds
- HDD Characteristics
  - LOW IOPS
    - 100-200 IOPS per device
  - Low bandwidth
    - 85 to 100 MB/s per device
  - High latency
    - 10’s of milliseconds

PCIE FLASH vs HDD Power Characteristics

- Flash Characteristics
  - Power Consumption
    - 4 Watts/card (active)
    - 3 Watts/card (idle)
  - IOPS/Watt: ~ 166,000

- HDD Characteristics
  - Power Consumption
    - 5 Watts/card (active)
    - 4 Watts/card (idle)
  - IOPS/Watt: ~ 30

5,500x Increase in IOPS/Watt!

Thank you