Storage Architecture for the Data Center in 2020

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Safe Harbor

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Hadoop
Twitter
BIG DATA
Information
Database
IBM
SAN
Gigabytes
SQL
Analytics
Google
Deduplication
MySQL
Petabytes
Exabytes
EMC
Facebook
Query
HP
Dell
Bing
Business Cloud

Data Statistics

30

Billion pieces of data added to Facebook each month

72

hours of video added to YouTube each minute

92%

of the world's data was created in the past 2 years

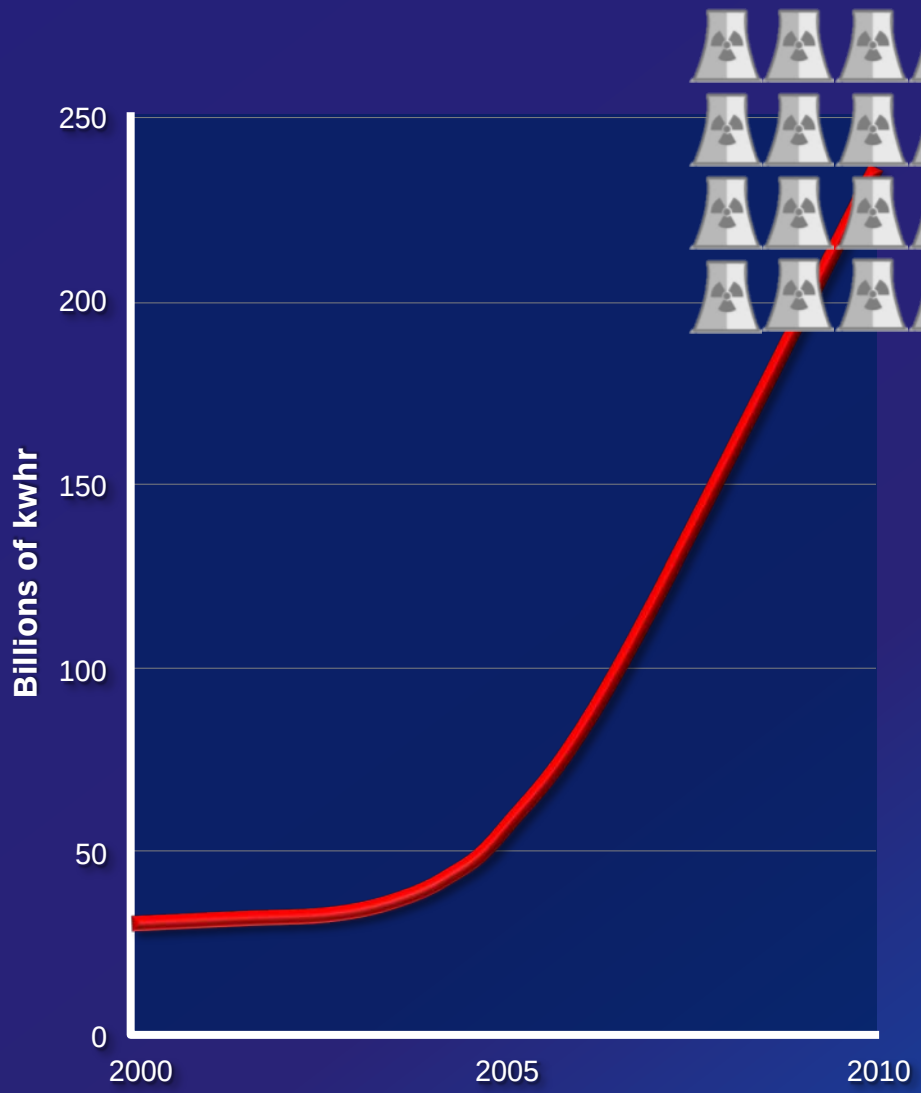
$600

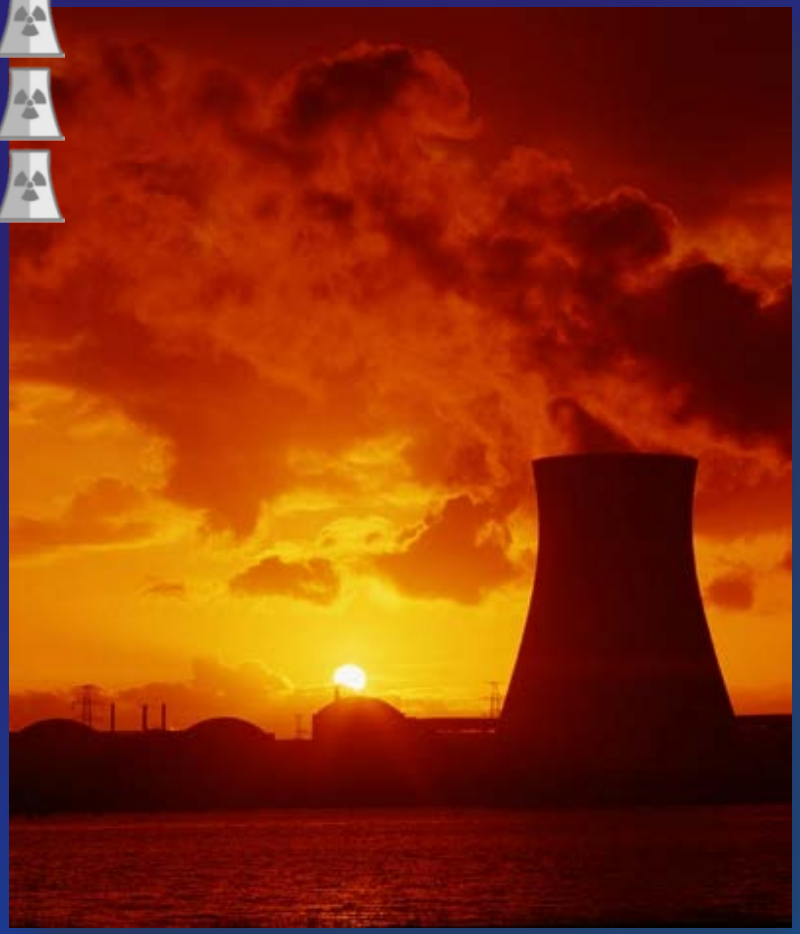
Buys a disk that stores all music on Earth

Source: Gongos Research

What's the Cost of This?

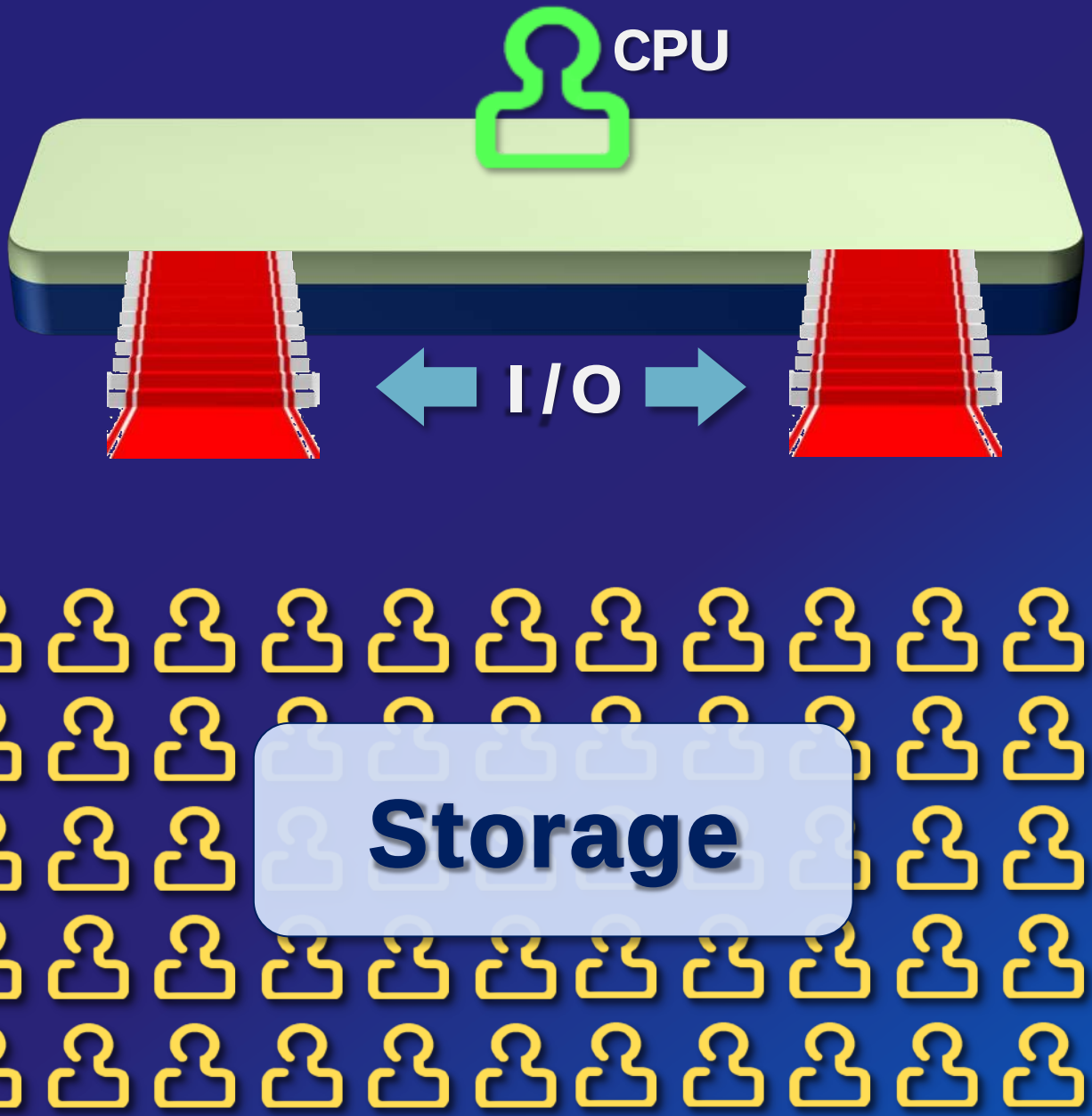
What about Power?





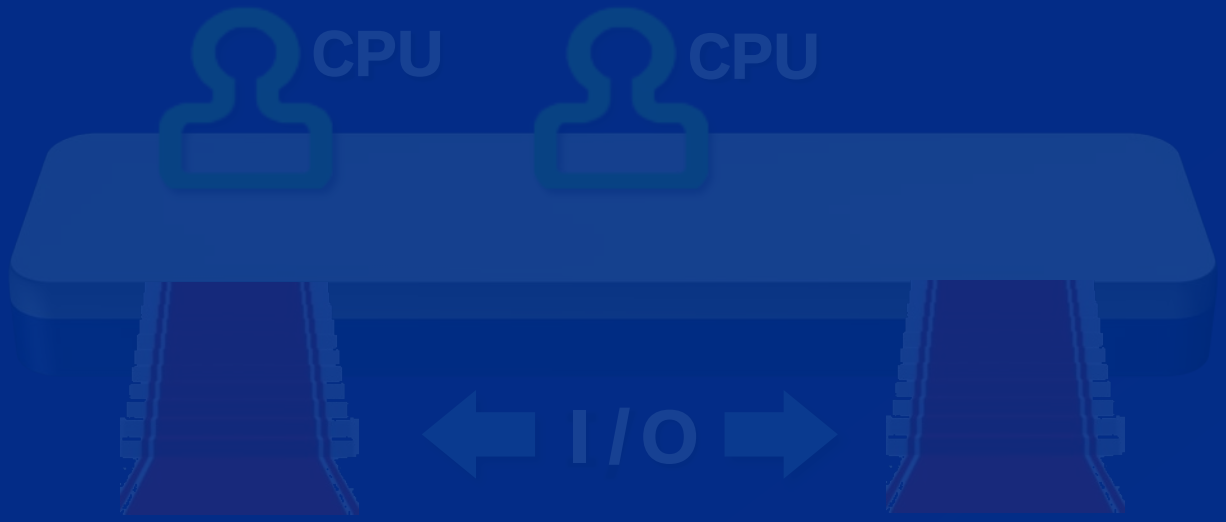
Source: Growth in Data Center Electricity Use Jonathan Koomey August, 2011

So What Do we Do?


CPU
I/O
Storage

Audience = Storage

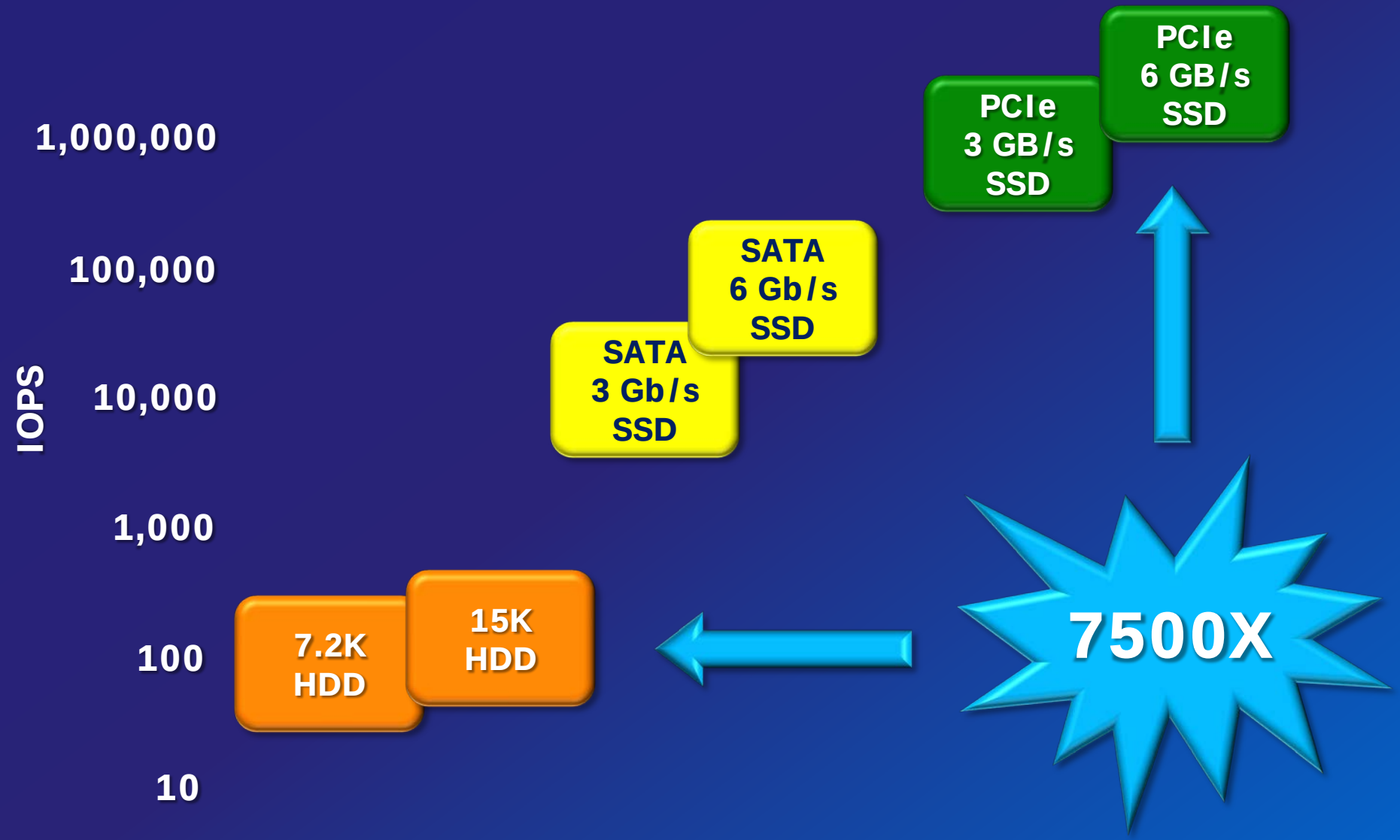
Goal: Find the Blue Buttons



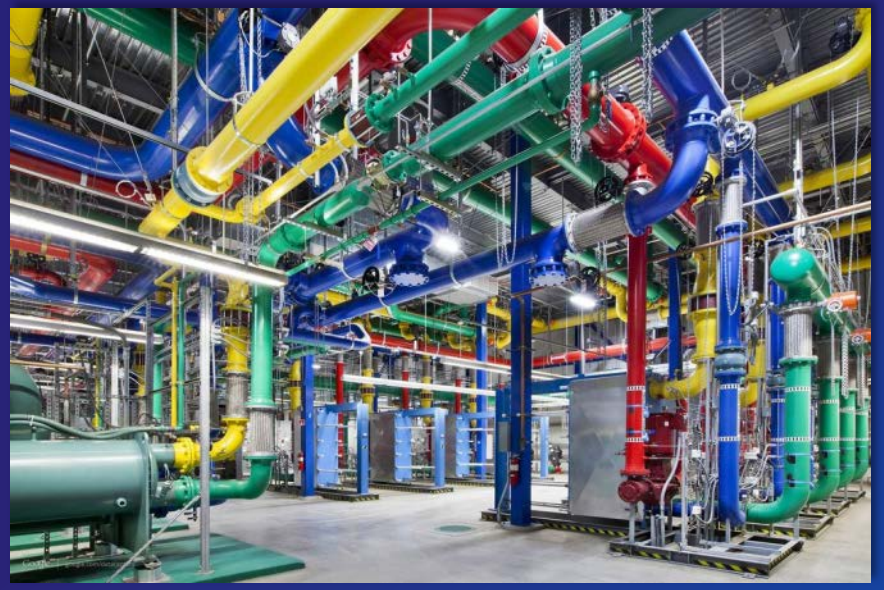
Scale Out

Storage

Brute Force Engineering



Still Building Data Centers...



bing

Ballmer: Microsoft has 1 Million Servers

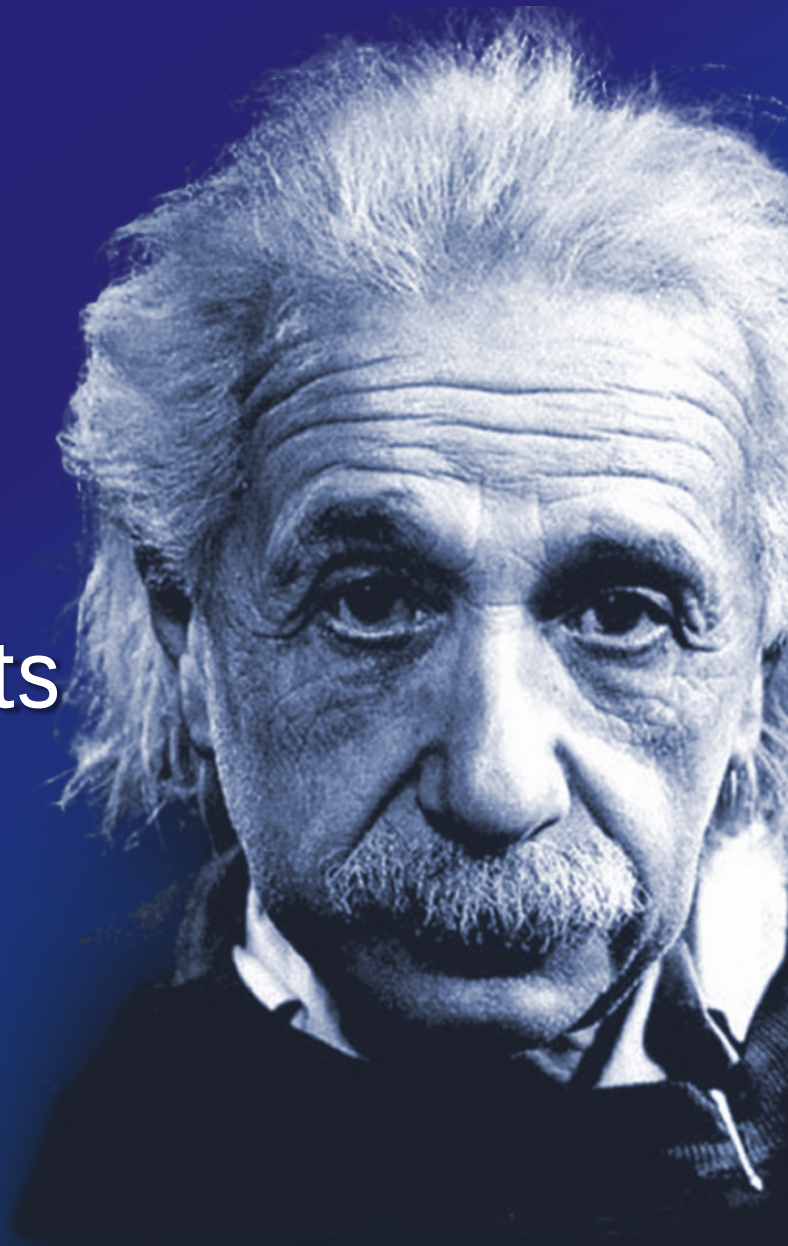
Insanity:

doing the same thing

over and over again and

expecting different results

- Albert Einstein



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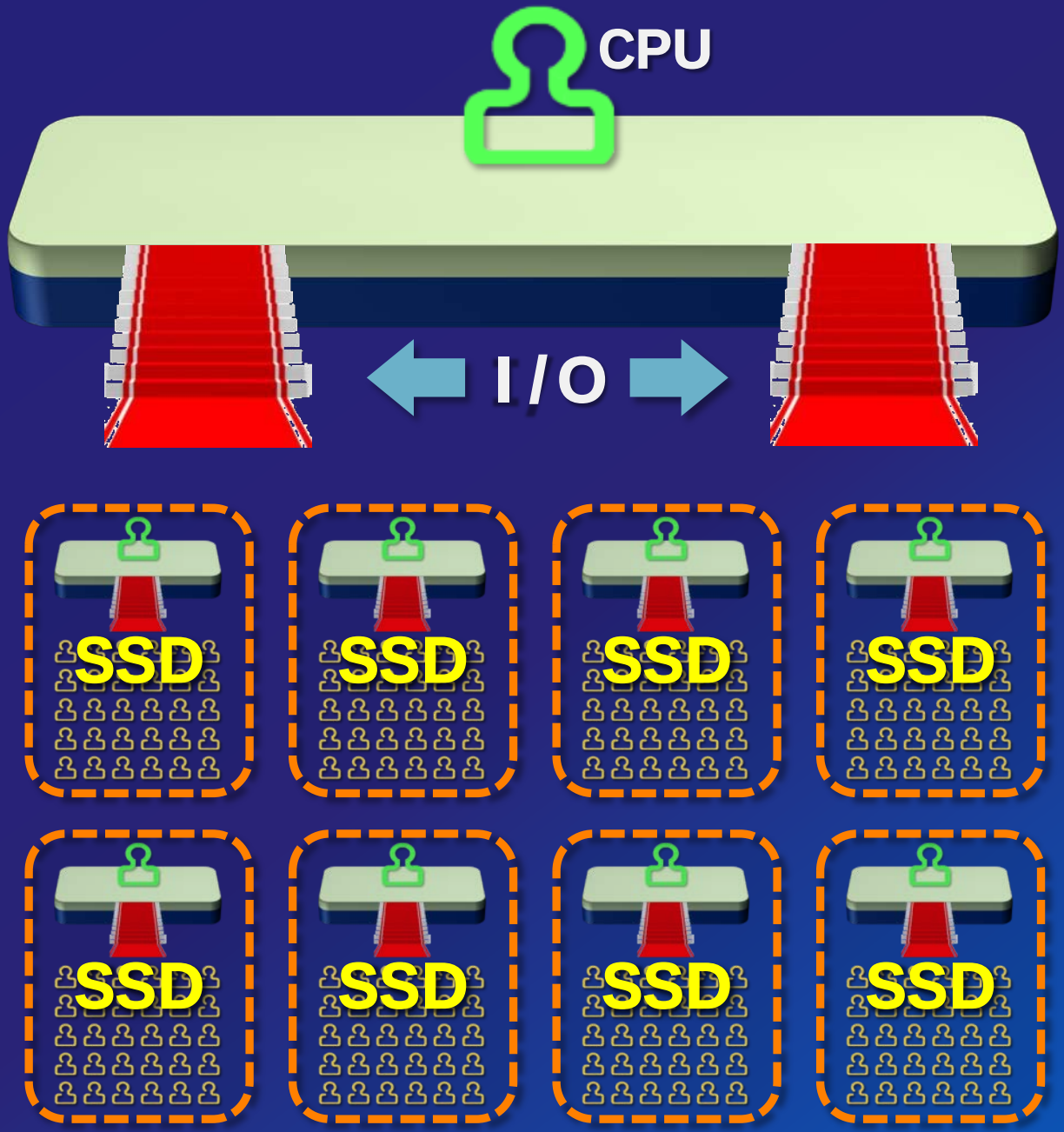
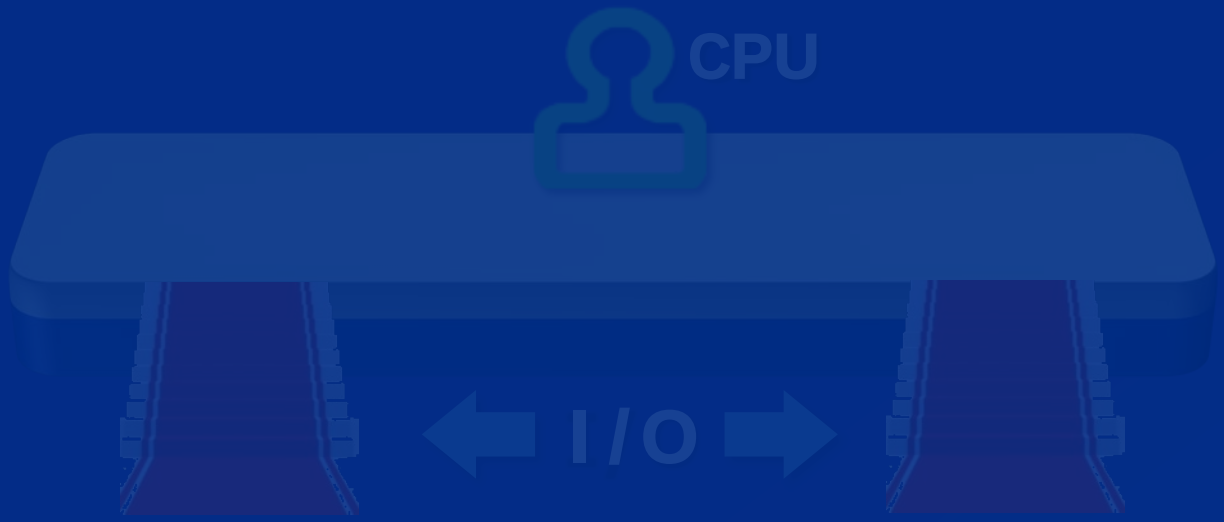

CPU
I/O
SSD
SSD
SSD
SSD
SSD
SSD
SSD
SSD

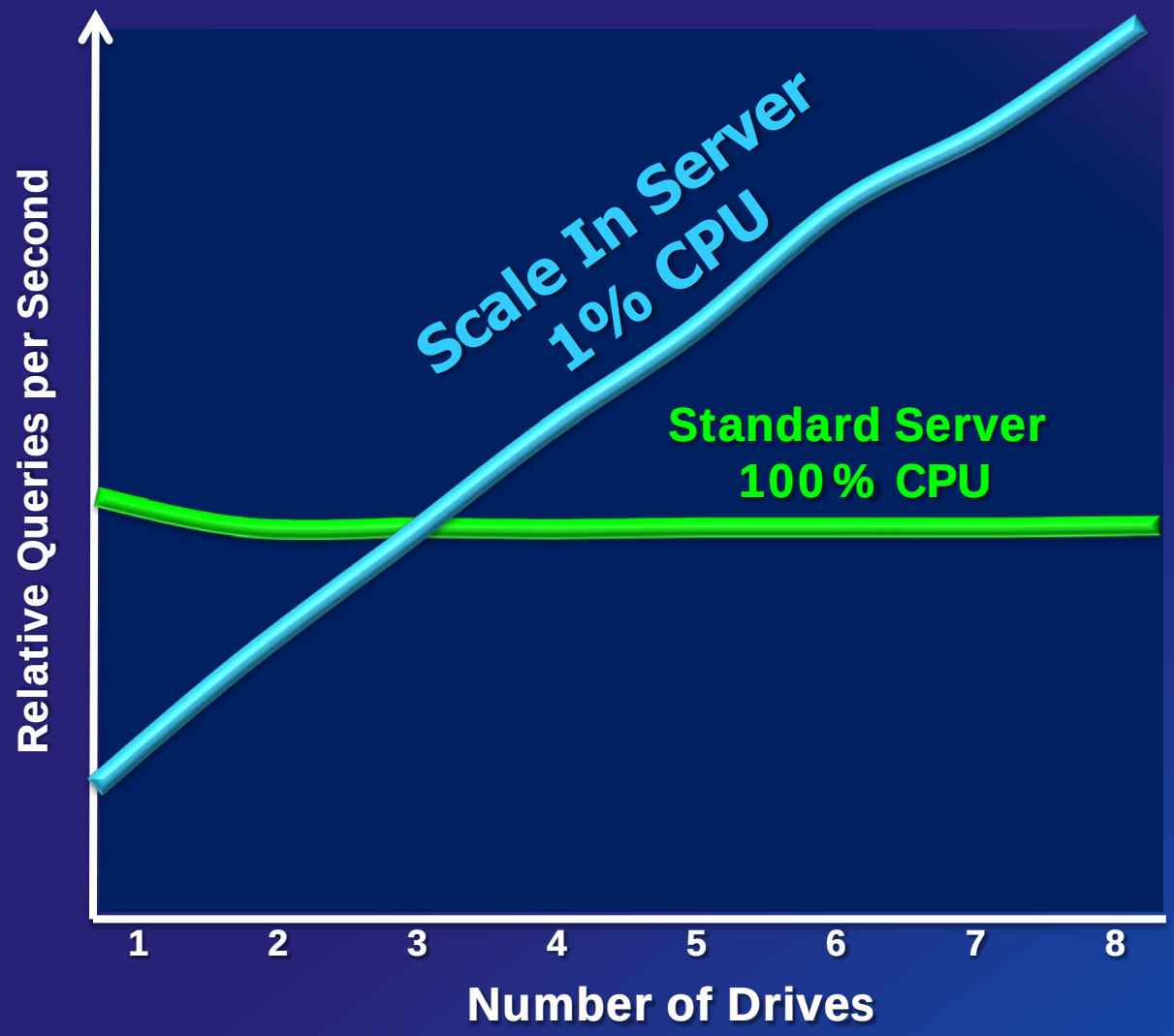
We Built a System to Test our Hypothesis

- Proof of Concept
- SSD that searches itself
- No additional hardware
- Modified MySQL search



Scale In

MySQL Search Performance 8 SSDs



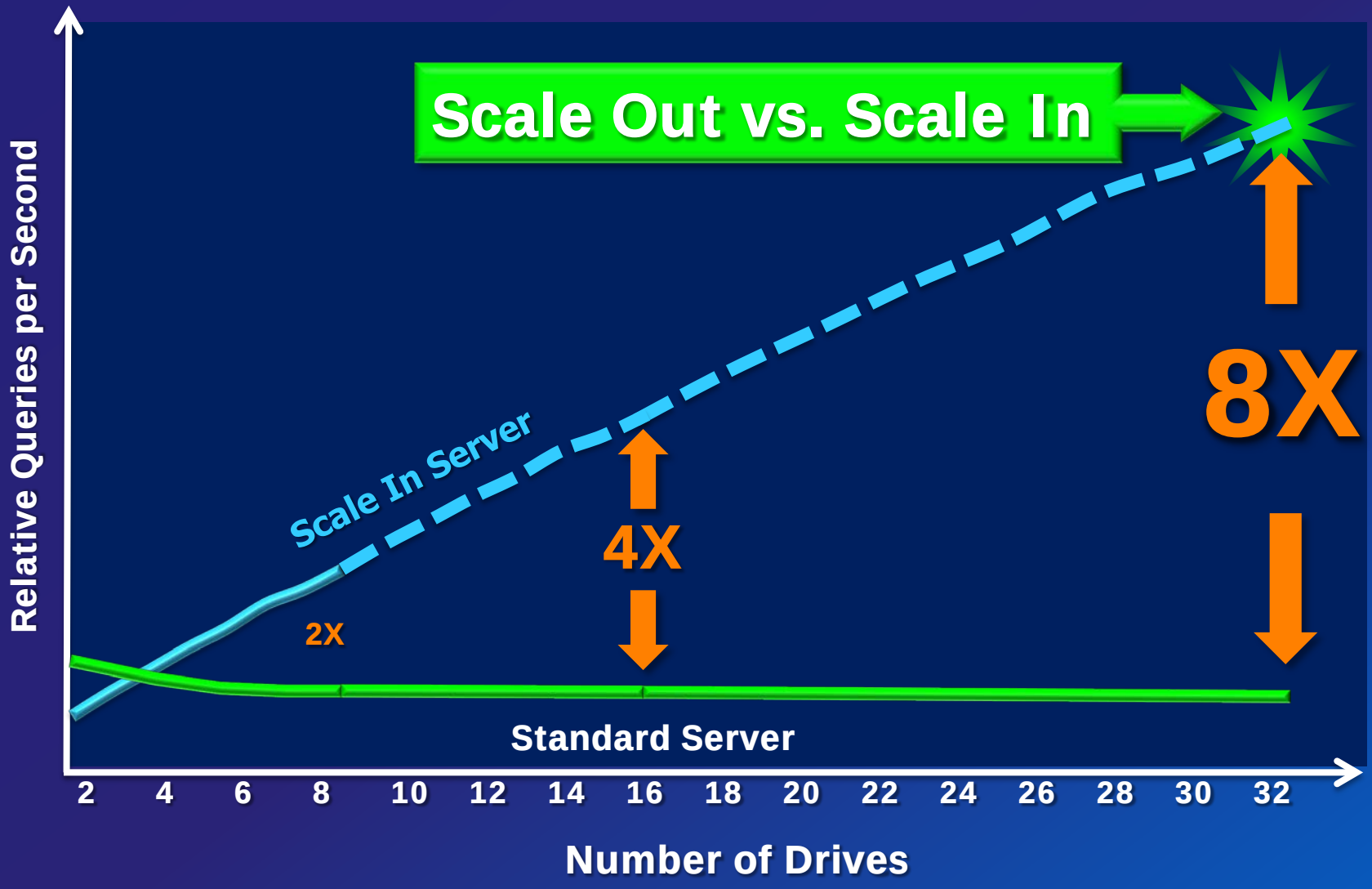
2X
Performance

39%
Less Power

Source: Micron Tested M500 SSD

10 concurrent search records, 40Byte Record
Server running MyISAM; Scale In Server running MyAM

“Scale In” Performance Benefit



Source: Micron

10 concurrent search records, 40Byte Record
Server running MyISAM; Scale In Server running MyAM

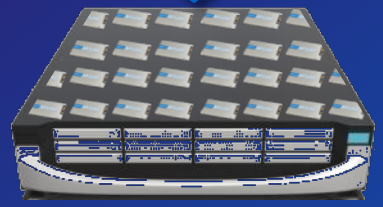
Equivalent Search Performance

Scale Out vs. Scale In

Equal Performance

8:1 Space Savings

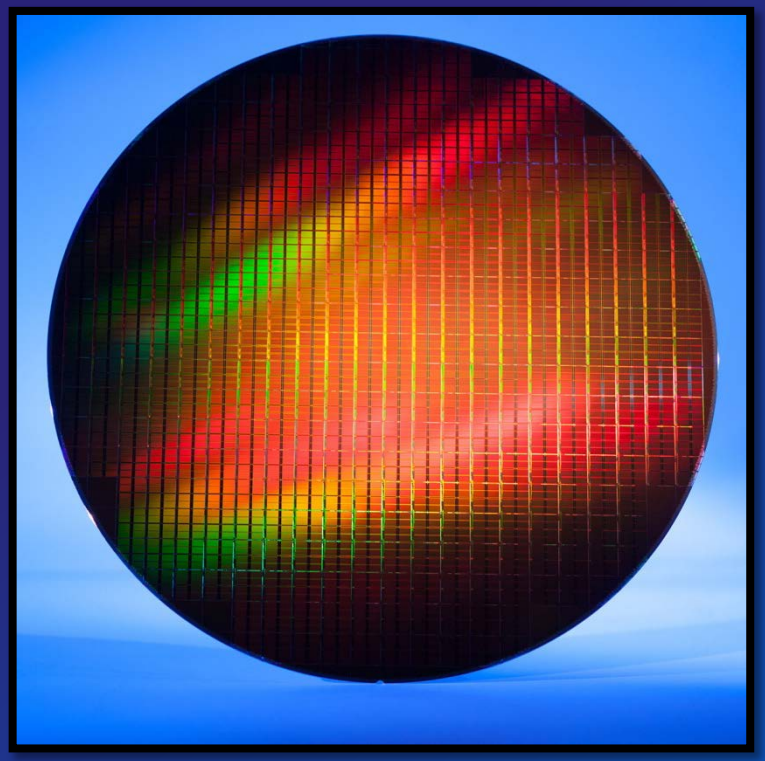
8:1 Cost Savings



84% Power Savings

Based on 32 SSD Scale In

Data Center Vision for 2020



#ScaleIn

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