Datacenter Efficiency
What are the appropriate metrics to consider?

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What is Datacenter Efficiency ?

- Think beyond the assumption that datacenter efficiency is all about power / cooling / PUE.

- What is Efficiency:
    1. Upfront CAPEX
    2. Annual OPEX
    3. Effective Utilization of Assets
    4. All of the above

- Effective utilization of assets: i.e. Maximize Computational Capabilities of each server / appliance – in the space available.

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Types of datacenter and their differing needs / goals.

1. (HPC) High Performance Computing Datacenter
2. Enterprise / Telecommunications Datacenter
   - Often different fundamental views on OPEX
   - What are their end goals?

➢ Efficiency of Service – Focus is cost of doing business (Cloud)
   - PUE (Power Usage Effectiveness) – A measure of how efficiently a datacenter uses its power..

➢ Efficiency of Workload – Perform computational tasks in the fastest possible time. "Speed being the critical factor between success & failure"
   - Applications that <u>demand</u> Computational Performance (business analytics, financial institutions number crunching, fraud detection etc..)
   - The power and cooling costs are considered cost of doing business, not a primary metric to drive towards.
   - Maximize the I/O's per Rack or per U

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So what is Efficiency?

➢ Answer: It depends…

   CAPEX vs. OPEX vs. PPU (Performance per U)

➢ Maximum Workload Efficiencies for Data Intensive Computing Applications
   • The increase in CPU speeds & growth of raw data
   • Fuels demand for companies to generate & make use of data faster (business analytics)
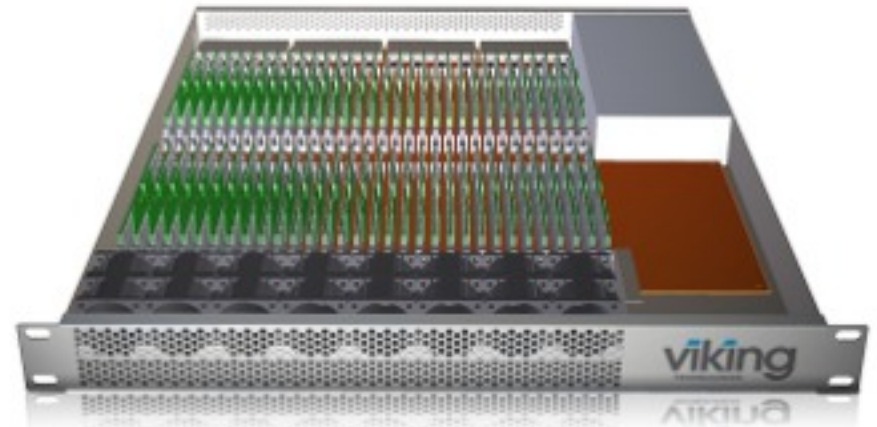
➢ Innovation needed..to deliver efficiency….
   • Optimize Rack Density / Usage

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Does an SSD need to look like an HDD?

- ➤ Storage largely based on magnetic disk
  - HDD technology from the 1950's
- ➤ Should NOT determine the physical constraints of a technology that <u>enables increased transactional performance</u>.
- ➤ SSDs can be any shape or size that gets the job done most <u>efficiently</u>

Modular SSDs:
5x more space efficiency

2.5" SSD
2U-24 Drives
6TB per U

vs.

SATADIMM
1U-64 Drives
32TB per U

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What is most important to business

Figure 1. Business Initiatives That Will Impact IT Spending Decisions, Three-year Trend

Source: Enterprise Strategy Group, 2011.

The Right Efficiency Metric for datacenter flash storage:

Performance: per U - per Rack – per floor tile – per cu-in

Better utilization of storage assets (lower space requirement)

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Thank You
Questions

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