

Data Centers & Servers Initiative – Informing Local Data Center Program Opportunities

Jason Erwin, CEE
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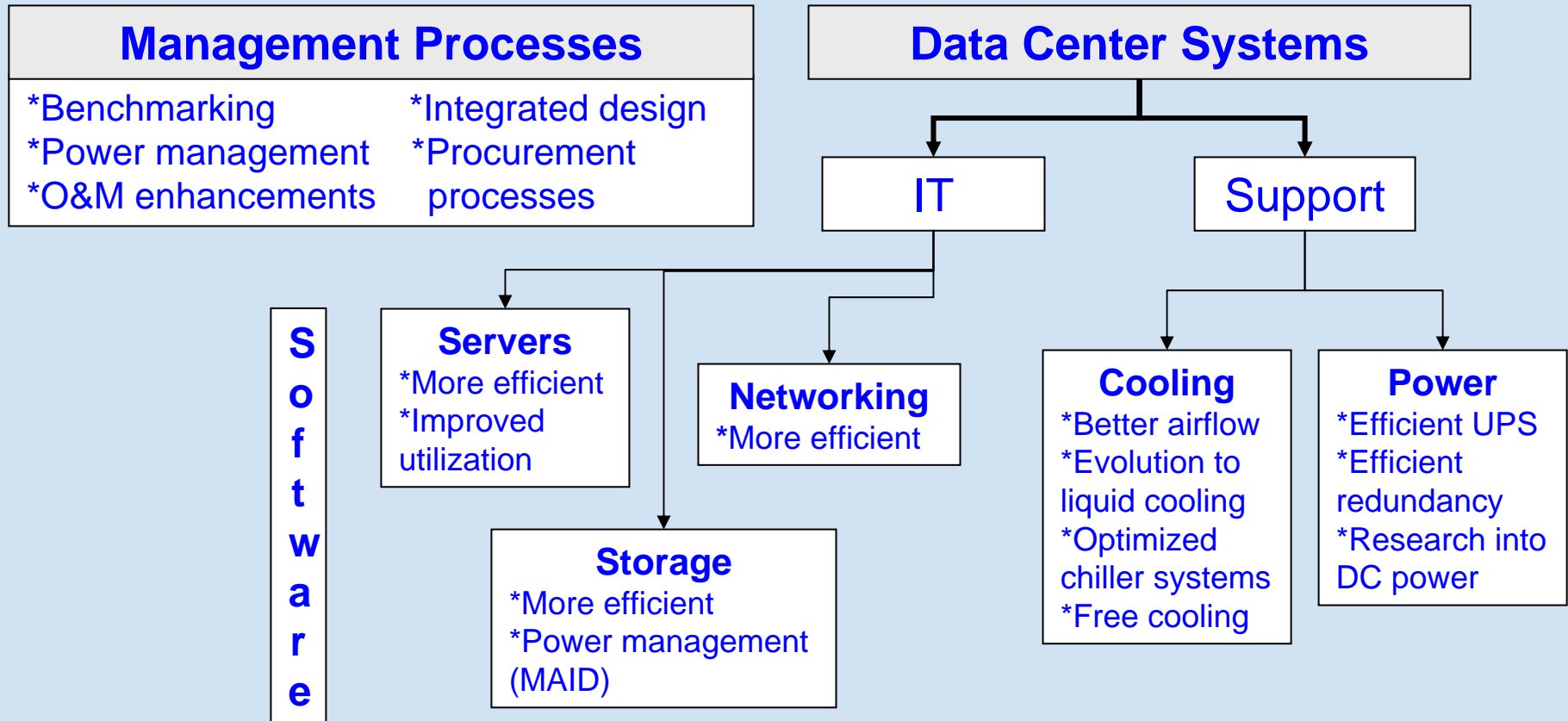


Figure 1 The National Energy Research Scientific Computing Center (NERSC) operated by LBNL

Overview

- The Data Center EE Opportunity
- CEE Data Centers & Servers Initiative
- Current Work Area Activities
- Future Focus

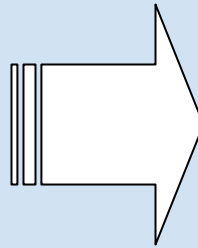
Data Centers Energy Efficiency Opportunities



CEE Data Centers & Servers Initiative

Some Challenges

- Lack of efficiency definitions, metrics & test procedures for equipment & data centers
- Split incentives between IT & facility managers
- Risk aversion and barriers to EE acceptance – reliability & uptime concerns trump others
- Traditional EE program focus on facility systems
- Dynamic nature of hardware/software options



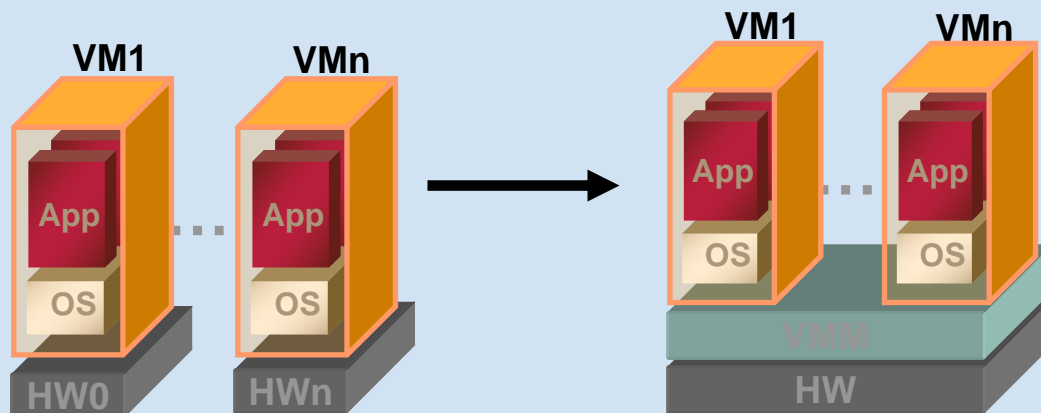
CEE Initiative Objectives

- Developing & supporting consensus-based definitions and performance specs
- Facilitating our collective understanding of opportunity, market players & industry motivations
- Identifying recommended program strategies to help move more of the market to a preferred outcome

CEE Data Centers & Servers Initiative

Collective Understanding: E.g., Server Virtualization

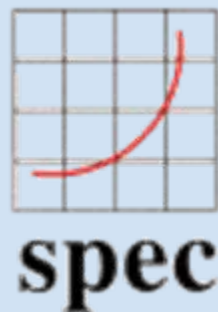
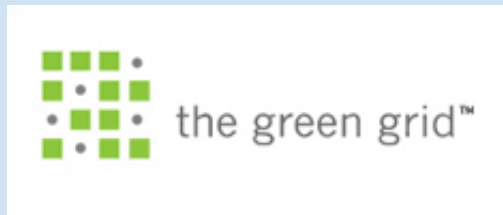
- Consolidates multiple workloads onto one physical server (3-1; 5-1; 7-1; 30-1 and more depending on application)
- More businesses moving towards virtual environments
- EE programs trying to understand: technology, appropriate applications, risks, economics, role and value-add



Sources: Intel Corporation (Graphic); VMWare, IDC (Content)

Data Centers Energy Efficiency Opportunities

Lots of Interest in “Green” Data Centers



CEE Data Centers Work Activities



Broad Activities:

- Support active Data Centers and Servers Committee
 - Over 25 organizations participating
 - Initiative description: <http://www.cee1.org/com/dcs/dcs-main.php3>
- Building knowledge of IT industry and opportunities to work together
- Active participation with EPA and DOE in the ENERGY STAR and Save Energy Now programs
- Developing and supporting program strategies that meet spectrum of member needs

CEE Data Centers Work Activities

EE Program Tracking	Data Center Program Offerings
Austin Energy	*Financial incentives for IT and other measures (e.g., MAID, server virtualization, efficient UPSs, chillers/cooling)
BC Hydro	*Integrating data center assessment assistance and potential financial incentives for capital measures
Efficiency VT	*Technical assistance and may offer custom financial incentives for virtualization.
Energy Trust of OR	*Pilot project providing technical assistance on more efficient enterprise data center design
PG&E	*Financial incentives for various IT and facilities energy savings measures (e.g., server virtualization, MAID, cooling) *Design assistance for new construction (Savings by Design)
SCE, SDG&E	*Offer virtualization and other DC incentives through Standard Performance Contract (SCE running first pilot); *Design assistance (Savings by Design)

CEE Data Centers Work Activities



Current Activities:

- Working for consensus definitions for EE program use
 - Participating in ENERGY STAR draft enterprise server specification and benchmarking development process
 - Member education about DOE DC benchmarking and assessments tools, and related training opportunities
- Building knowledge of IT industry and opportunities to work together
 - 2007 Industry Partners, Data Center Track:
http://www.cee1.org/cee/mtg/09-07ppt/09-07_pres.php3
 - 2008 CEE Industry Partners meeting, invitation only

CEE Data Centers Future Focus

- Create basis for differentiating data center “types” and related knowledge base
- Understanding what is “baseline” versus “efficient” performance across DC “types”
 - Developing member data center assessment pilot with DOE
- Develop enduring EE program strategies
 - Support spectrum of EE program needs (e.g., individual specifications, bundled program offerings, NC design assistance, etc.)
 - Advancing program strategies that accelerate better energy performance for different DC customers that are additive to industry efforts