Data Center Industry Leaders Reach Agreement on Guiding Principles for
Energy Efficiency Metrics
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As business demands and energy costs for data centers rise, owners and operators have focused on the energy efficiency of the data center as a whole, frequently using energy efficiency metrics. However, the metrics are not always applied clearly and consistently. To address these inconsistencies, a group of leaders from across the industry met on January 13, 2010 to agree on data center energy efficiency measurements, metrics, and reporting conventions. Organizations represented were the 7x24 Exchange, ASHRAE, The Green Grid, Silicon Valley Leadership Group, U.S. Department of Energy's Save Energy Now and Federal Energy Management Programs, U.S. Environmental Protection Agency's ENERGY STAR Program, U.S. Green Building Council, and Uptime Institute.

The following guiding principles were agreed to:

- Power Usage Effectiveness (PUE) using source energy consumption is the preferred energy efficiency metric for data centers. PUE is a measurement of the total energy of the data center divided by the IT energy consumption.
- When calculating PUE, IT energy consumption should, at a minimum, be measured at the output of the uninterruptible power supply (UPS). However, the industry should progressively improve measurement capabilities over time so that measurement of IT energy consumption directly at the IT load (i.e. servers) becomes the common practice.
- For a dedicated data center, the total energy in the PUE equation will include all energy sources at the point of utility handoff to the data center owner or operator. For a data center in a mixed-use building, the total energy will be all energy required to operate the data center, similar to a dedicated data center, and should include IT energy, cooling, lighting, and support infrastructure for the data center operations.

This guidance is meant to help the industry have a common understanding of energy efficiency metrics that can generate dialogue to improve data center efficiencies and reduce energy consumption. Member organizations are committed to applying and promoting these guidelines to their programs.

A task force, consisting of the organizations listed below, has been created to further refine these metrics and to identify a roadmap for the future. The group also aspires to address IT productivity and carbon accounting in the future.

If you are a member of one of groups listed below, please contact them directly for further details.

- 7x24 Exchange: http://www.7x24exchange.org/eemetrics.html
- ASHRAE: http://tc99.ashraetcs.org/
- The Green Grid: gdcmetrics@lists.thegreengrid.org
- Silicon Valley Leadership Group: tim.crawford@datacenterpulse.org
- U.S. Department of Energy Save Energy Now Program: http://www1.eere.energy.gov/industry/datacenters/contacts.html
- U.S. Environmental Protection Agency's ENERGY STAR Program: ENERGYSTARdatacenters@icfi.com
- U.S. Green Building Council: leedinfo@usgbc.org
- Uptime Institute: http://www.uptimeinstitute.org