Vertiv™ EnerSav

Energy Efficiency and Performance
Improvement within the IT Facility

About Vertiv

Vertiv brings together hardware, software, analytics, and ongoing services to ensure its customers' vital applications run continuously, perform optimally and grow with their business needs. Vertiv solves the most important challenges faced by today's data centers, communication networks, and commercial and industrial facilities with a portfolio of power, cooling, and IT infrastructure solutions and services that extends from the cloud to the edge of the network. Headquartered in Columbus, Ohio, USA, Vertiv employs around 20,000 people and does business in more than 130 countries. For more information, and for the latest news and content from Vertiv, visit Vertiv.com.

Vertiv.com

OUR PURPOSE

We believe there is a better way to meet the world's accelerating demand for data - one driven by passion and innovation.

OUR PRESENCE

GLOBAL PRESENCE
Manuf. and Assembly Locations **24**
Service Centers **220+**
Service Field Engineers **3,500+**
Technical Support/Response **220+**
Customer Experience Centers/Labs **19**

EUROPE, MIDDLE EAST AND AFRICA
Manuf. and Assembly Locations **10**
Service Centers **65+**
Service Field Engineers **650+**
Technical Support/Response **100+**
Customer Experience Centers/Labs **5**

AMERICAS
Manuf. and Assembly Locations **10**
Service Centers **80+**
Service Field Engineers **1,600+**
Technical Support/Response **90+**
Customer Experience Centers/Labs **5**

ASIA PACIFIC AND INDIA
Manuf. and Assembly Locations **4**
Service Centers **75+**
Service Field Engineers **1,250+**
Technical Support/Response **30+**
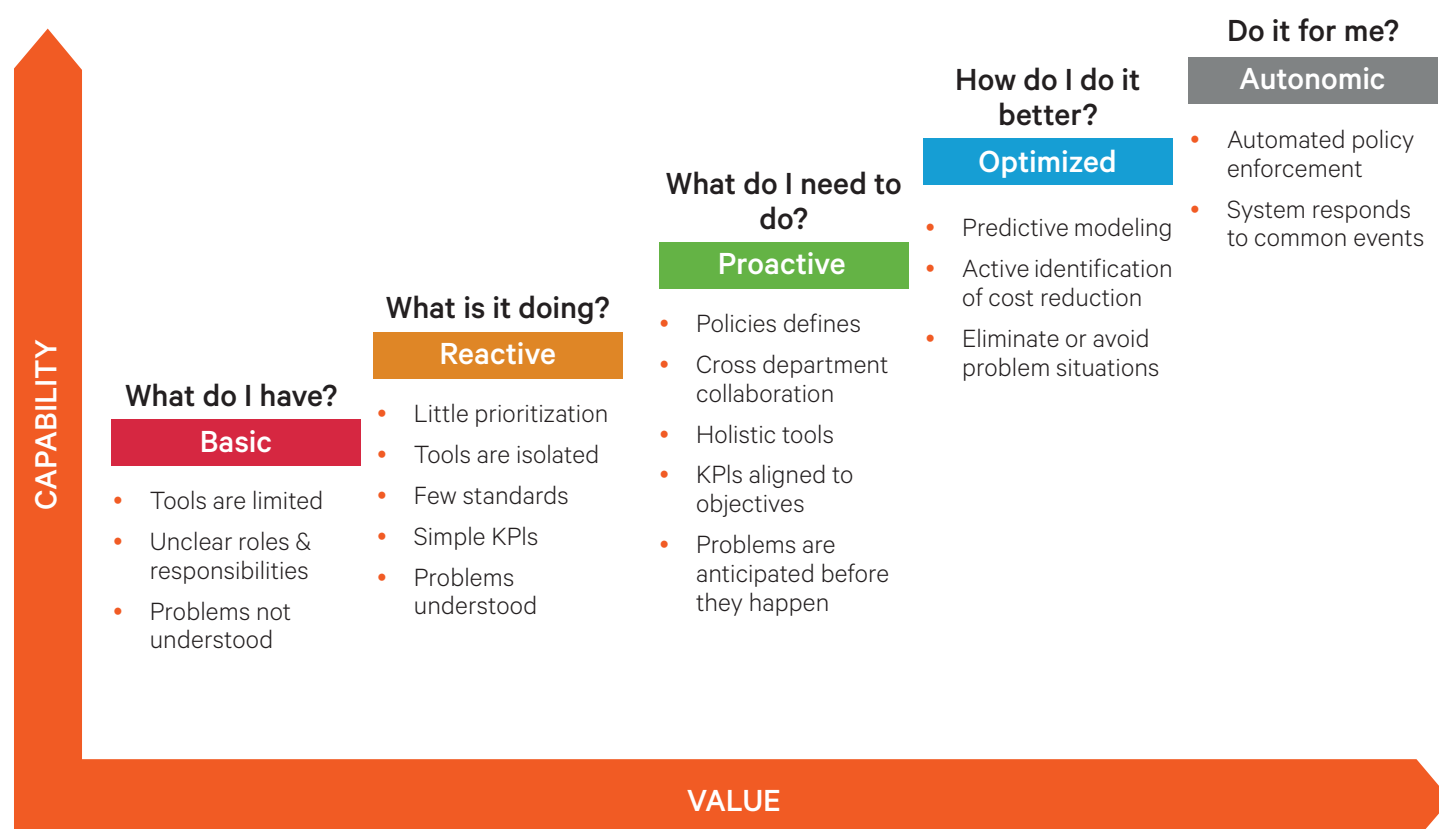Customer Experience Centers/Labs **9**

While setting up a new data center the data center managers have to face many challenges in embracing new technology trends and business strategies along with minimizing operational costs without compromising on efficiency.

Understanding Data Center Maturity

Different organizations face different challenges in their data centers. Some deal with legacy infrastructures, while others manage IT resources in silos. To address this, a top-down data center improvement assessment must be undertaken within the organization to identify areas of improvement.

Using a Data Center Maturity Curve helps organizations to identify where they are at, assess their current capabilities and benchmark their performance.

Here's what a path to building maturity within the data center looks like:

CAPABILITY

What do I have?
Basic
- Tools are limited
- Unclear roles & responsibilities
- Problems not understood

What is it doing?
Reactive
- Little prioritization
- Tools are isolated
- Few standards
- Simple KPls
- Problems understood

What do I need to do?
Proactive
- Policies defines
- Cross department collaboration
- Holistic tools
- KPls aligned to objectives
- Problems are anticipated before they happen

How do I do it better?
Optimized
- Predictive modeling
- Active identification of cost reduction
- Eliminate or avoid problem situations

Do it for me?
Autonomic
- Automated policy enforcement
- System responds to common events

VALUE

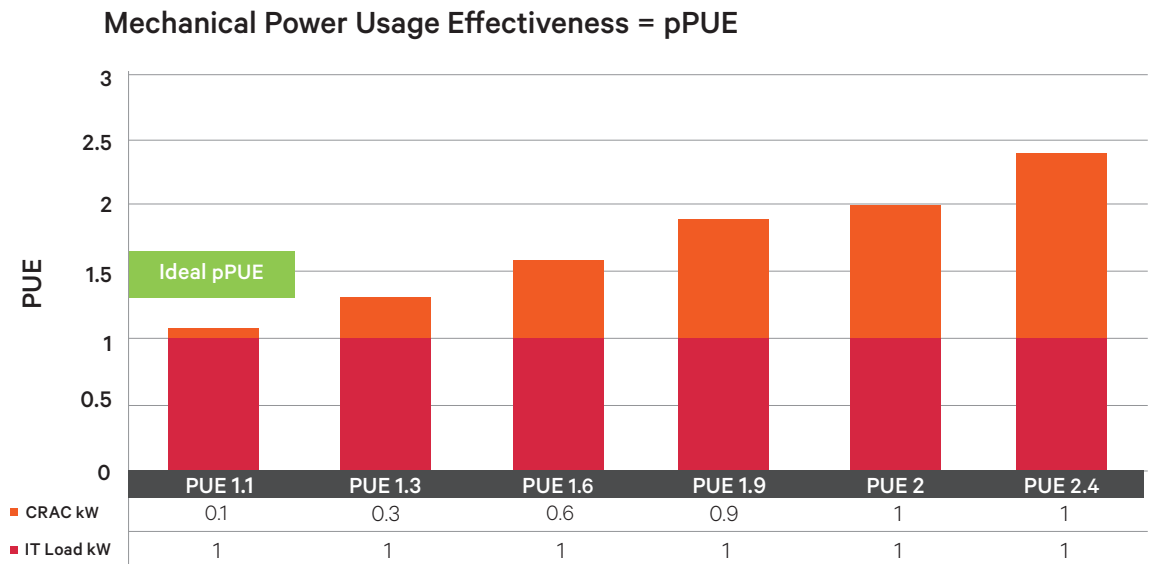*Source: http://www.climatechangenews.com/2017/12/11/tsunami-da*

Energy Optimization Challenge

Recent research from Climate Change News revealed that the ICT industry is expected to be responsible for up to 3.5% of global emissions by 2020, with the data center industry using 20% of all available electricity in the world by 2025. There's a need for continuous improvement and innovation as it relates to data center power consumption and efficiency.

As data center operators, you need to understand where and how your energy is used at a granular level. An efficient data center would consume less energy while powering more load.

Mechanical Power Usage Effectiveness = pPUE

	PUE 1.1	PUE 1.3	PUE 1.6	PUE 1.9	PUE 2	PUE 2.4
■ CRAC kW	0.1	0.3	0.6	0.9	1	1
■ IT Load kW	1	1	1	1	1	1

Steps to an Efficient Data Center

Optimization is one way of helping you reach that state of maturity by reducing operational costs through assessing your IT equipment, identifying gaps, and areas of improvement.

Measuring Data

An expert can provide you with a detailed analysis of where energy is being used the most, leading to major efficiency, capacity, and cost-saving benefits.

Analyzing Facts

Once a service expert has all the data needed, he/she will be able to accurately and effectively identify problems in the data center and suggest areas for improvement.
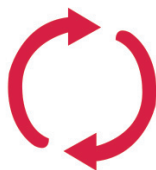
Improving Data Center Design

- Suggest different airflow management as needed (i.e. Containment, intelligent controls, and economization)
- Regulate temperature (hot aisle/cold aisle rack arrangement and sealing cooling gaps on the data center floor).

Power Metering

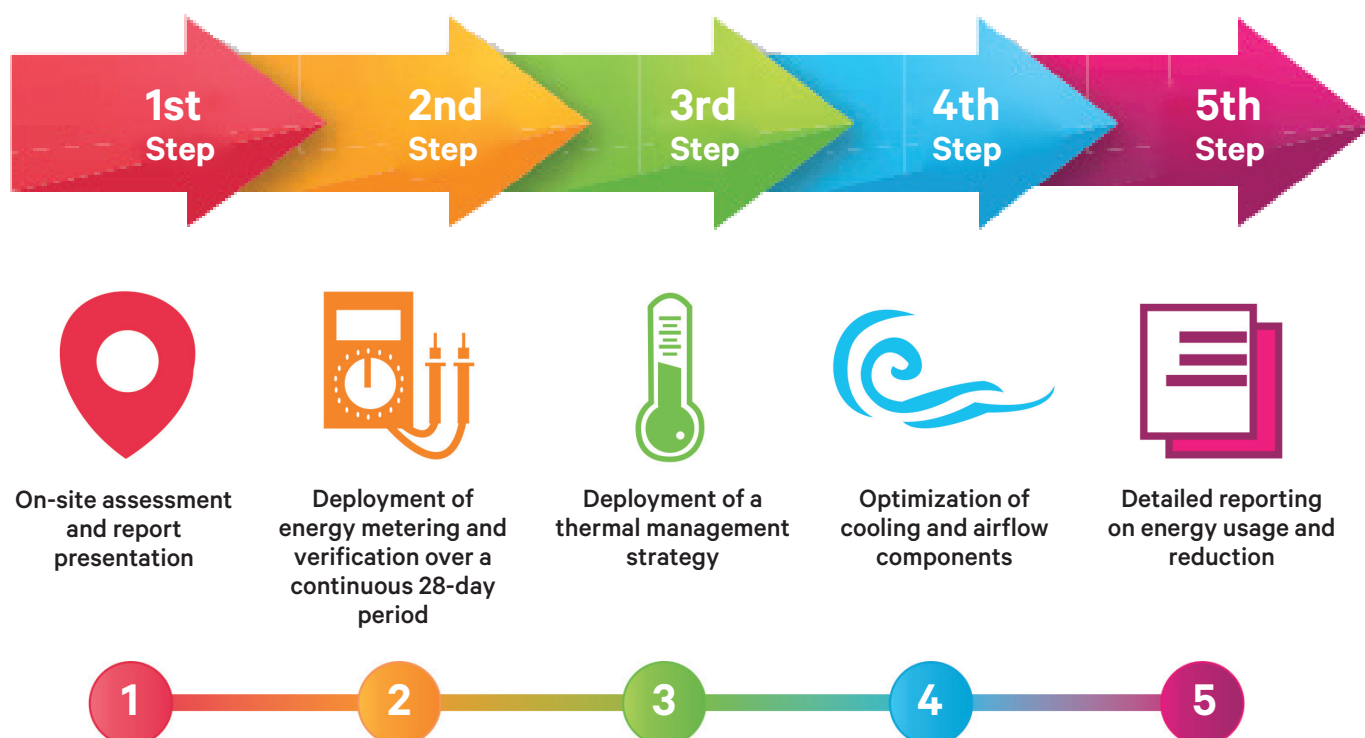PACU Redundancy

Hot/Cold Aisle Configuration

Airflow Management

Vertiv Enersav

Vertiv Enersav helps organizations reduce overall costs in the data center by examining the existing cooling infrastructure and determining opportunities for energy saving within the data center.

By viewing real time energy consumption and collecting historical energy consumption patterns experts can give you the best assessment to cut down on energy spending.

Process

1st Step	2nd Step	3rd Step	4th Step	5th Step
On-site assessment and report presentation	**Deployment of energy metering and verification over a continuous 28-day period**	**Deployment of a thermal management strategy**	**Optimization of cooling and airflow components**	**Detailed reporting on energy usage and reduction**
1	2	3	4	5

Vertiv Operations & Management

- Our priority is not only to maintain current operational capability but to ensure efficiency, smooth and consistent service delivery, and improve operational KPI.

- We will improve Energy Optimization results through this contract by maintaining and improving our AI system and expanding capability and energy reduction results.

- We will utilize our Power Management Eco-system to drive better results to all facilities in terms of energy management.

- We will help achieve Net Zero in the next few years by helping manage and drive energy optimization programs in all facilities!

Pie chart segments: Vertiv Experts, Uptime Guaranteed, 100% Compliance, Safety, PUE Maintenance, DC & Chiller AI Optimization, Customer Satisfaction

Vertiv™ Introduces External Digital Demand Response Technologies (EDD-RT)

EDD-RT (EDD) is a facility HVAC/ Chiller compressor energy management device that reduces kWh consumption without impacting on the facilities' preset conditions.

EDD includes IIoT metering system, AI control system plus accessible, and relatable software system. This process includes real time values creating a pre & post baseline power consumption of the chiller(s):

Such as:

- Chilled water & condenser water temperatures entering & leaving a chiller.

- Delta T across the chiller.

- Voltages, Current, KW, Power factor.

- Power Usage Effectiveness (PUE).

- Total kWh's consumed per device per day/week/month & year.

- Total cost per day/week/month & year based on customer cost per kWh.

- Ambient external environmental conditions, Temperature & Humidity.

- Cooling Degree Day analysis.

EDD maintains, then enhances the manufacturer's design characteristics, utilizes live energy consumption patterns, live chilled water & condenser water temperature fluctuations (Delta T) & cooling degree days analysis.

EDD is an affordable solution to the problem of rising energy consumption and costs for most consumers. Another key benefit is that reductions from EDD-RT can be quantified and as such are eligible for government and utility rebates. The ability to quantify GHG emission reductions is also critical to qualifying for participation in carbon offset trading markets.
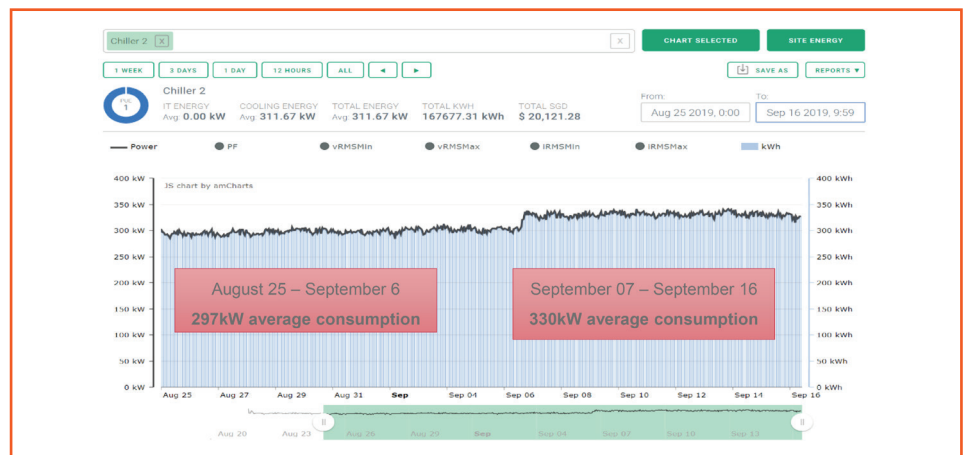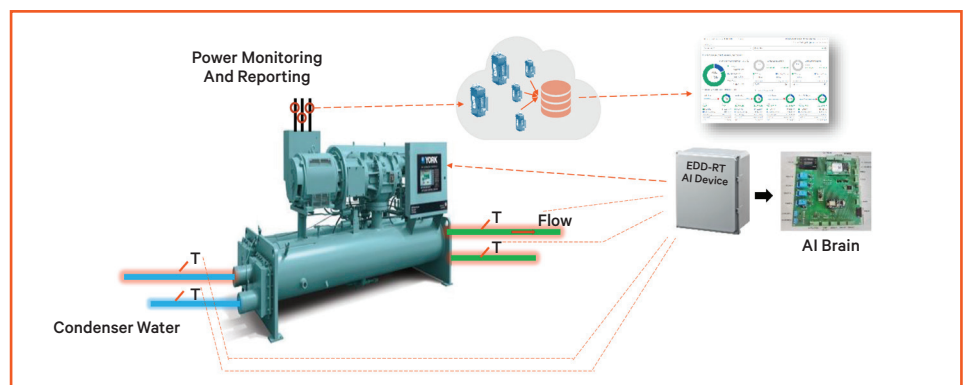

Chiller Energy Reduced by 9.5%
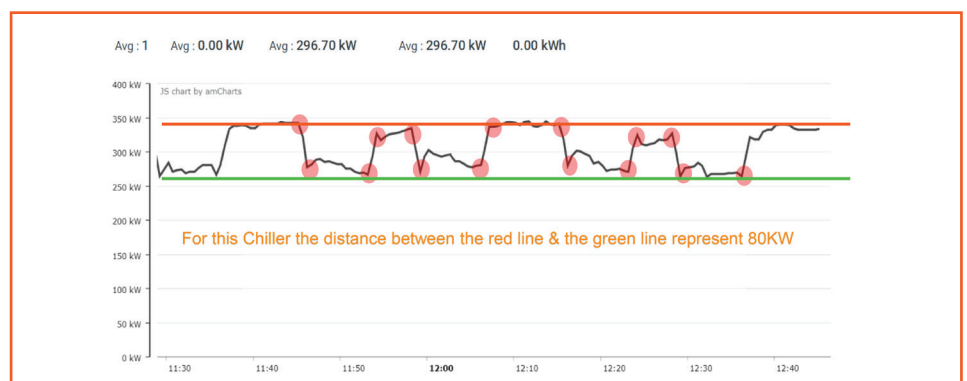
Machine Learning at 30 second Intervals

Manage Your AirFlow

Vertiv Optimization Program is a low-risk, economic & environmentally efficient solution for data centers or server rooms and is made up of complementary retrofit-able equipment that enhances the day-to-day operational capacities while reducing ongoing operational costs.
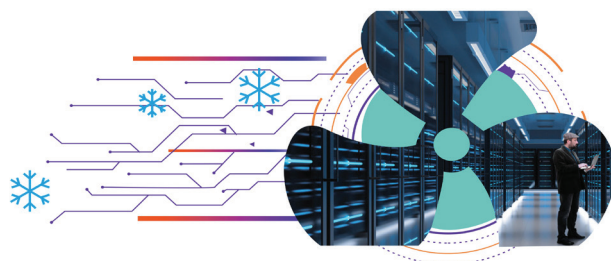
After the initial on-site consultation, a detailed gap analysis report will be presented detailing current kWh consumption & highlighting the potential energy savings or standard capacity as a business case for optimization, including return on investment calculations.

Process

- On-site assessment and report presentation

- Deployment of a thermal management strategy

- Optimization of cooling and airflow components

- Detailed reporting on energy usage and reduction throughout the process

Benefits

- Reduces ongoing electricity bills

- Frees up the stranded capacity of existing equipment

- Reduces ongoing maintenance costs

- Yields a return on investment of typically under 36 months

Liebert® iCOM™-S

Thermal management in today's complex data centers is no longer just about ensuring uptime but also that continuity is critically important companies that get thermal management right can save on their data center energy cost and create sustainable operations for market differentiation.

Liebert® iCOM™-S is data visualization software that provides facility and data center management teams with advanced thermal monitoring and control that can reduce energy costs by 30%, using advanced control algorithms.

Benefits

iCOM-S provides facility and data center teams with multiple benefits, including:

- Simplified, automated integration reduces human error

- Increased access to data for better data integrity and system visibility

- Up to 30% thermal energy reduction via advanced control algorithms

- Accelerated return on investment that is approximately one year for typical installations.

Vertiv.com **|Asia Pacific**

BR-AP-EN-EnerSav-V1-23-06