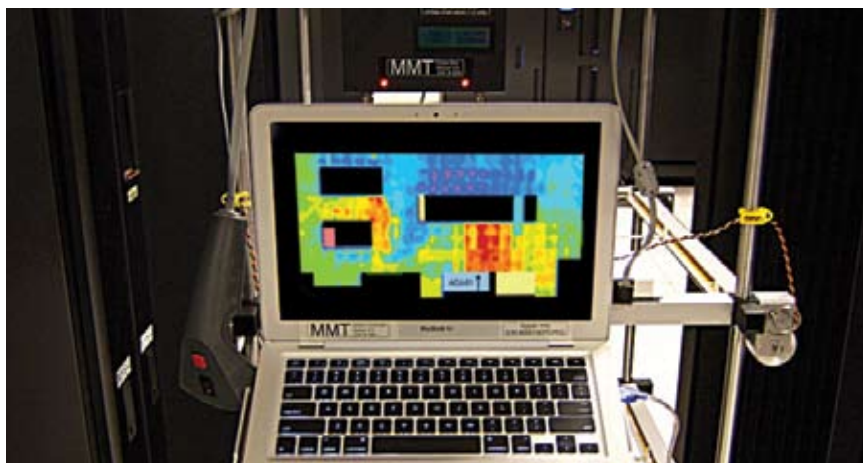


IBM Measurement & Management Technologies (MMT) Data Center Thermal Analysis

Improve the energy efficiency within your data center



Offering Highlights

This service utilizes IBM® Research-developed Measurement & Management Technologies (MMT) to help visualize and understand the thermal profile of your existing data center and IT power and cooling systems. MMT results are used to identify, diagnose, and remedy trouble spots and energy inefficiencies.

The key benefits and features of this offering may include:

- ***Reduction of data center costs by improving cooling efficiency.***
- ***Improvements in availability and reliability of new and existing IT systems.***
- ***Help to implement the new wider 2008 ASHRAE recommended operating temperature limits.***

- ***Assistance with change management in the data center – cooling capacity can be matched to IT power needs and to changes in IT equipment placement.***

What the future brings

Data center managers around the globe are looking to resolve the impacts of rising operational expenses for data center cooling, reliability and availability risks posed by thermal problems, limitations on IT growth posed by data center cooling issues, and inefficient cooling of existing compute capacity. Utilizing MMT and IBM's experience from worldwide data center analysis engagements, a thermal profile of an existing data center is created to identify possibilities for improved cooling efficiencies.

The **MMT Measurement Survey and Analysis module** uses 3D thermal maps, generated using IBM's exclusive Mobile Measurement Technology, for in-depth analysis and troubleshooting. This point-in-time measurement can help immediately fix cooling inefficiencies in the thermal envelope and extend the life of the data center.

The **MMT Dynamic Monitoring and Management module** provides a real-time solution to monitor and manage the cooling and energy efficiency of the data center. After performance of a measurement survey, sensors are installed and coupled to a software system with the measurement survey results to provide ongoing analysis and reporting of the room conditions. This enables managing to optimal energy and cooling system levels and reduces over-provisioning and over-cooling. This in turn can allow an increase of data center densities and delay capital expenditures as a response to power and cooling requirements.

IBM's engagements to-date have identified potential energy savings opportunities equivalent on average of 12% of IT power costs and 23% of cooling power costs for data centers ranging from 3,000 to 85,000 square feet. For the savings obtained from the Measurement Survey and Analysis,

payback has been achieved in 6 to 12 months, yielding a potential 100% return on investment after one year. Actual client results may vary. The Dynamic Monitoring and Management module can help maintain and improve these savings over time by providing a solution to quickly identify and address hotspots and other efficiency issues that may develop.

Offering Value

There are many factors and variables that interact to affect the thermal profile of a data center. MMT uses a multi-level cart design and networked sensors to measure thousands of temperature and humidity data points. Tile by tile, the cart collects data which is transformed into a 3D thermal map to help pinpoint trouble spots that indicate cooling inefficiencies. In-depth analysis of these trouble spots and other key cooling metrics can lead to actionable steps to remedy these hot spots and inefficiencies. To maintain and build on these improvements, a network of real-time sensors can be implemented and coupled to a unique software system developed by IBM Research. The data collected with these sensors provides the vital informational needed to effectively monitor and manage the efficiency of the data center.

Typical Project Tasks

An MMT engagement may include:

- *A 3D thermal scan of the data center using the IBM Mobile Measurement Technology tool*
- *MMT analysis presentation with temperature maps and potential energy savings opportunities*
- *Recommendations to client in the form of a detailed roadmap to achieve forecasted savings*

- *Planning, installation and verification of the real-time sensor network and software*
- *Training for the client on using the monitoring and management solution*
- *On-going support and analysis of the real-time results to maintain and build on the achieved savings*

Analysis may include:

- *Rack Inlet Hotspots - Identifies IT equipment with the hottest inlet temperatures. Locates areas affected by recirculation of warm exhaust air as well as under-cooled and over-provisioned areas.*
- *Data Center Air Flow – Measures airflow from computer room air conditioning units and through perforated tiles near rack inlets. Targets areas with low airflow possibly caused by under-floor blockages and restrictive perforated tiles.*
- *ACU Utilization – Calculates the ratio of the heat removed by an ACU to the nominal ACU heat removal capacity. It also identifies which ACUs can be turned off with the least impact.*
- *Future scenarios – “What if?” scenarios can be studied when the MMT results are combined with the Data Center Thermal Analysis and Optimization service.*

For More Information

Pricing depends on data center size and complexity of the given site infrastructure. To find out more about the IBM Measurement & Management Technologies (MMT) Data Center Thermal Analysis and other related products and services, contact IBM at datacntr@us.ibm.com.



© Copyright IBM Corporation 2009

IBM Corporation
Route 100
Somers, NY 10589
U.S.A.

Produced in the United States of America
08-09
All Rights Reserved

References in this publication to IBM products or services do not imply that IBM intends to make them available in every country in which IBM operates. Consult your local IBM business contact for information on the products, features, and services available in your area.

IBM and the IBM logo are trademarks of International Business Machines Corporation in the United States, other countries or both.

Other company, product or service names may be trademarks or service marks of others.

All statements regarding IBM future direction or intent are subject to change or withdrawal without notice and represent goals and objectives only.

The IBM home page on the Internet can be found at ibm.com