Electronic Environments
Infrastructure Solutions

AdaptivCOOL™
Greener Data

Maximize Your
Data Center Capacity

⌀DBC
Demand Based Cooling™

Safely Increase IT Capacity
Increase Data Center Uptime
Reduce Power Consumption

Why Do I Need Demand Based Cooling?

- Increase Data Center Uptime & Reliability
- Maximize IT Capacity and Density
- Improve PUE Through Proper Airflow Management
- Maintain a Thermally Safe Data Center
- Eliminate Overcooling and Reduce Cooling Costs
- Thermal Peace of Mind

## Improve PUE Through Proper Air Flow Management

In an average data center, the IT equipment consumes about half of all power and the rest is used for cooling the data center. Increasing power demands combined with rising power costs have left data enters with a critical challenge of trying to combat rising operating expenses. The solution is to find efficiencies in cooling power consumption– to improve data center PUE (power usage effectiveness).

Demand Based Cooling incorporates a fully engineered solution to improve your PUE. Through CFD modeling, best practices and the optimization of airflow in your data center, DBC will reduce your cooling consumption on an average of 20-30%.

Maximize IT Capacity and Server Density

Are you considering adding blade servers or consolidating existing servers? Go ahead. With Demand Based Cooling you can safely add servers or increase rack density in the same space and still gain up to 20 – 30% in data center efficiencies. There's no need to relocate or purchase additional CRAC units. Our DBC system will monitor and self-adjust airflow to maintain server temperatures at multiple locations simultaneously.
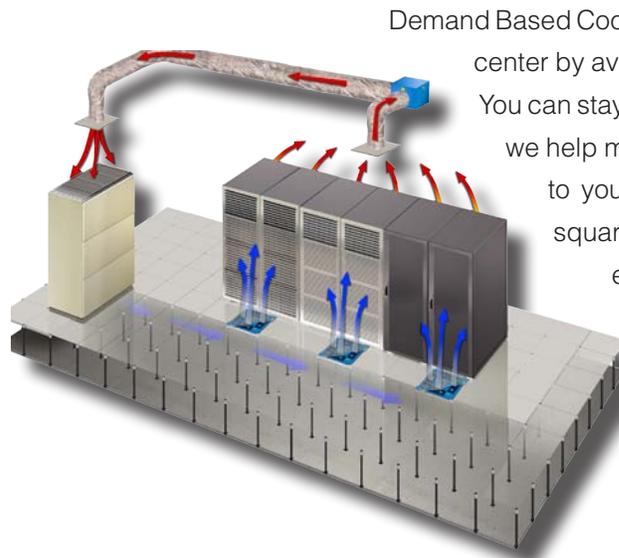
Demand Based Cooling solution extends the life of your data center by avoiding costly expansions or relocations. You can stay longer in your current location because we help manage both server and space capacity to your advantage. At more than $1000 per square foot construction cost, a data center expansion presents both higher capital and operating expenses. DBC, at a fraction of this cost, will allow you to use your existing cooling hardware and facilities to increase your IT kW capacity.

Increase Data Center Uptime & Reliability

Availability or Uptime is the most critical issue in a data center today. When servers are down, the IT service is lost, seriously affecting your business. The number one cause of data center outage is overheating servers leading to server failure. Demand Based Cooling solution increases your data center uptime threefold:

- Demand Based Cooling maintains a thermally safe environment free of hot spots; increasing your server life and maintains server warranties.
- Engineered fail-safes add cooling redundancy and allows your data center to be properly cooled when catastrophe, such as, CRAC/CRAH failure arises.
- Through proper airflow management many CRACs can be put into hot-standby creating backup for a failed CRAC.

There is no server downtime required for installing Demand Based Cooling. The data center remains fully operational before, during and after installation. Equipment installation is quick and easy and requires no movement of existing server racks.

How We Do It – A Patented Methodology for Success

Demand Based Cooling is built on a solid foundation of experience and know-how.

We match the airflow distribution in the data center with existing server heat distribution such that every spot in the data center received adequate cooling under all operating conditions. First we analyze the data center for inefficiencies in airflow distribution. Then we engineer an airflow management system that tackles those inefficiencies, install the solution components, and commission the system's operation. Finally, our Cooling Resource Manager (highly customizable controller) will ensure that the overall thermal health of the data center is maintained. We take our customers through our 6-Step Process to a more efficient data center.

1. **On-Site Data Center Audit-** Our engineers visit your data center to collect information to create a CFD model of your data center.

2. **Computational Fluid Dynamics (CFD) Analysis-** We analyze the data center by studying airflow pattern in the room, which is recommended by the EPA as a way to optimize data center cooling efficiency. Computer simulation of various configurations and failure-conditions can uncover the optimum design or pinpoint the cause of current issues and remedies.
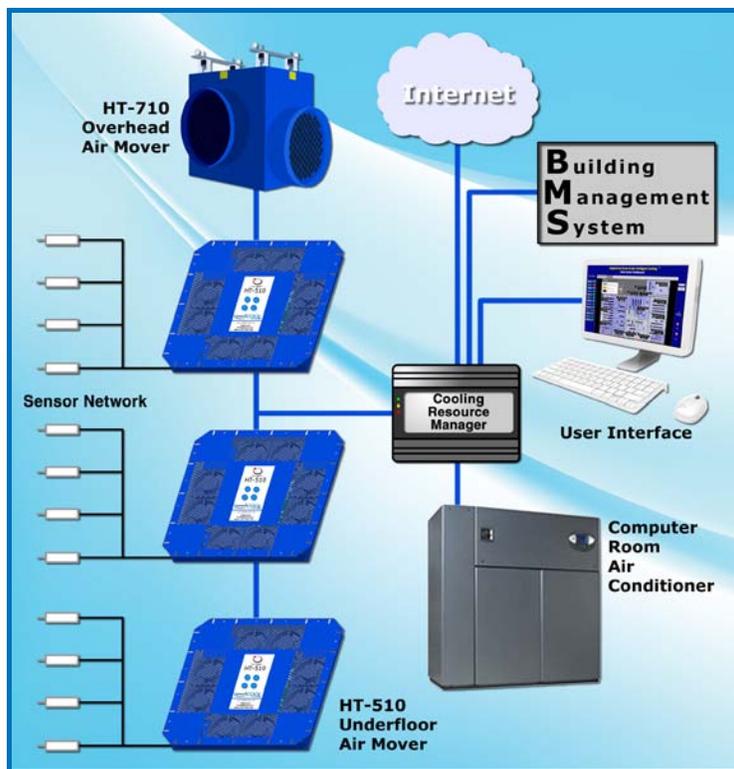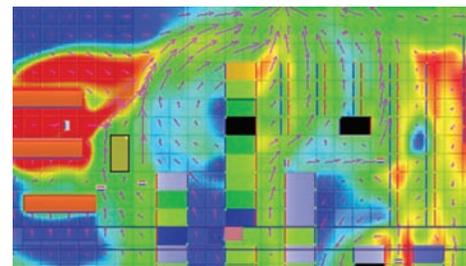
3. **DBC Solution Engineering-** Based on our simulated best configuration, we design a system consisting of a network of intelligent air movers, sensors, CRAC control module and centralized controller with customized control software. The room layout for component placement and wiring are developed for installation.

4. **Turn-key Installation-** DBC system installation does not disrupt the data center operation since it does not require powering down or relocating servers. The IT equipment layout in the data center is maintained but the airflow distribution is modified to complement the heat distribution in the room.

5. **Commissioning-** Following the installation our team commissions the airflow management system. The system is tested for normal operation conditions in the first phase. It is then taken through a battery of simulated failures to study its response and adaptability. Once the DBC system is fully validated it is put into operation, with live data monitoring.

6. **Environment Management Services-** Ongoing services provide remote thermal monitoring, data gathering, and analysis to help predict and mitigate thermal problems due to increases or changes in IT equipment loads and cooling requirements. This ensures that hot spots are avoided, cooling energy is not wasted, and the overall thermal "health" of the room is maintained.

Eliminate Overcooling and Reduce Cooling Costs

Data centers typically cool their entire space to accommodate the hottest spot, which can cause overcooling in already cool zones. A study has found that typical data centers are overcooled by 2.6 times and still have hot spots.
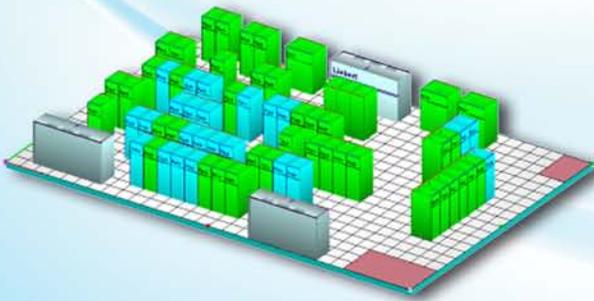
Demand Based Cooling system lowers cooling costs by improving cooling efficiency through active airflow distribution and management. This allows data centers to adjust their CRAC set points safely and in most cases put several CRACs on standby. Typical DBC installation can provide reduction in cooling costs by 20- 40%.

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