Why aren't you managing your server-room airflow?

Airflow management (AFM)

is a simple and cost effective, first step in an IT server-room strategic energy management program. It not only saves energy, but it also helps with system reliability, server-room 'hot spots' and your return on investment. AFM could reduce your Power Usage Effectiveness (PUE) by up to 0.2.

Risks

The risks associated with airflow management projects are very limited. There is no need to power down servers, and AFM can be done without compromising IT equipment or CRAC (computer room air conditioner) unit warranty.

- **$** Utility incentives to help with purchase costs
- **$$** Lower energy bills
- Fewer hot spots
- Better operational visibility with some control systems
- Safer and more reliable operation
- Lower maintenance costs
- Increased cooling capacity for future IT equipment

Contact your utility about incentives for improving your server-room performance!

Server-Room Airflow Management Case Study:

This case study describes a typical server-room airflow management retrofit project, where the following 4 steps were performed:

1. VFDs (variable frequency drives) and controls are added to six 30-ton computer room air conditioner (CRAC) unit,
2. Under-air floor distribution tiles and grilles are rearranged to eliminate hot spots,
3. The front and back rack doors are removed to optimize airflow, and
4. The CRAC units return air temperatures are increased to 75F.

Server-Room Airflow Management Project Economics:

- Total project cost: $54,000
- Estimated annual electricity savings: 200,000 kWh per year
- Annual electricity cost savings: $16,000/year (at $0.08 per kWh)
- Potential utility incentives: $37,800 (capped at 70% of project cost)
- Net cost after utility incentive: $16,200
- Simple payback: 1 year
- Return on Investment (%):1,134.6% over 15 years

By operating all of the CRAC units at lower speeds and moving floor tiles, you will have fewer hot spots and able to increase your server room temperature, without compromising server operation. This project could prevent 152 tons of CO_2 from being generated per year (equal to planting 3,536 trees).

Other Energy Efficiency Server-Room Strategies:

In addition to AFM, consider these other energy efficiency server-room strategies to reduce your IT loads! They will improve your server-room performance and further your AFM savings.

- Decommissioning unused/zombie servers
- Server virtualization and consolidation
- Server power management features implementation
- Energy efficient data storage management
- Energy efficient servers
- More efficient, Energy Star Platinum rated, server power supplies
- More efficient network topology
- More efficient transformers
- More efficient power supplies (UPS)
- More efficient lighting and controls
- Hot or cold aisle configuration
- Hot or cold aisle configuration with containment
- Variable speed drives on pumps and fans
- Replace conventional fan/motor assembly with plug fans/EC motors
- Premium efficiency motors
- Installing air-side or water-side economizers, or in-row cooling or ultrasonic humidifiers

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