

# AdaptivCOOL Saves InteQ 30% Annually in Data Center Cooling Energy Costs

## Background

InteQ is a leader in On Demand IT Service Management (ITSM). Since 1995, the company has been dedicated to helping enterprise customers worldwide achieve IT service excellence using a unique portfolio of solutions based on practical experience.

InteQ's data center was suffering from hot spots due to airflow inefficiencies. These inefficiencies included uneven distribution of supply air to racks and mixing of supply and exhaust air. To combat these hot spots, InteQ ran their Computer Room Air Conditioners (CRAC) to capacity creating an overcooled data center. While this was successful in removing all hot spots, it dramatically increased the energy consumption.

InteQ was concerned with operating costs associated with overcooling which led InteQ to seek cost effective solutions for their energy consumption crisis.

## The Demand Based Cooling Approach

Demand Based Cooling was chosen because it is a comprehensive solution to airflow management that required no server downtime or rack movement. This was extremely advantageous to the mission critical operations that are performed at this site.

Demand Based Cooling (DBC) is a holistic approach to data center cooling efficiency. Many data centers are thought to be at IT or thermal capacity due to restrictions in cooling or space. However, the restriction is typically caused by the lack of airflow management within the data center. Through Computational Fluid Dynamics (CFD) modeling, analyses, industry best practices, and a patented active airflow management system; DBC created a cooling efficiency improvement of 30% for InteQ.

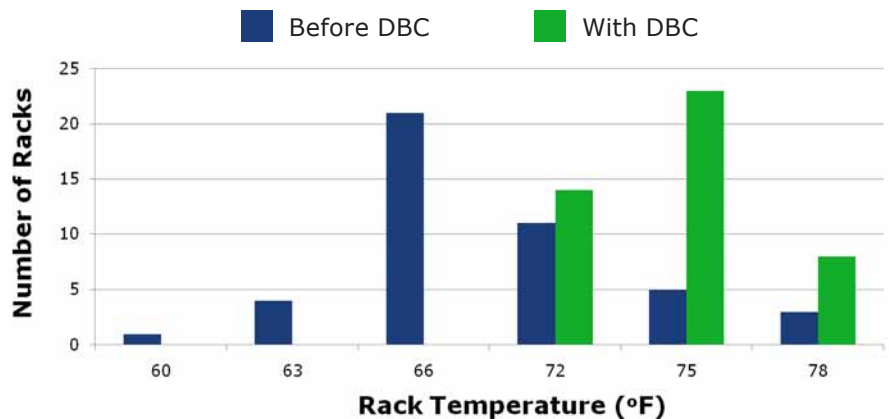


Fig 1.) The data center had server racks at a wide temperature range of 60-78° F. With all CRAC's in operation the hotter racks were kept at acceptable temperatures while several racks were overcooled. DBC narrowed the intake temperature spread to 72-78° F with less CRACs through proper airflow management.

## Path to Active Airflow Management

AdaptivCOOL's Computational Fluid Dynamics analyses and engineering were able to create the optimum solution for InteQ's thermal and airflow issues. The CFD modeling and testing found the perfect installation architecture for DBC's dynamic airflow system and best practices.

Installation of networked under-floor and overhead air movers in conjunction with a Cooling Resource Manager and CRAC controller allowed proper airflow control within the data center. This enabled three out of five CRAC's to be put in hot-standby allowing for added cooling redundancy and energy savings all while keeping the data center thermally safe.

"AdaptivCOOL has made our data center's cooling system far more efficient. We are finally in control of energy costs and confident to add any type of IT equipment into the room."  
-Santhana Krishnan, Chairman and CEO

The Demand Based Cooling solution ensured proper airflow management and a more energy efficient data center. This provided the energy savings that InteQ was in search of.

## Energy Savings

AdaptivCOOL's Environmental Management Services (EMS) proactively manages thermal health of this data center. A team of dedicated Environmental Management Technicians (EMT) are assigned to the site and have full responsibility of managing and monitoring all set-points, temperature readings and cooling load. Through the EMS program, AdaptivCOOL guarantees energy savings or increased cooling capacity.

With AdaptivCOOL's patented methodology for airflow management and CRAC control, InteQ reduced its cooling costs by 30% for an annual savings of \$52,424. The EMS monthly data can be found on Page 3 of this report.

**Before:**

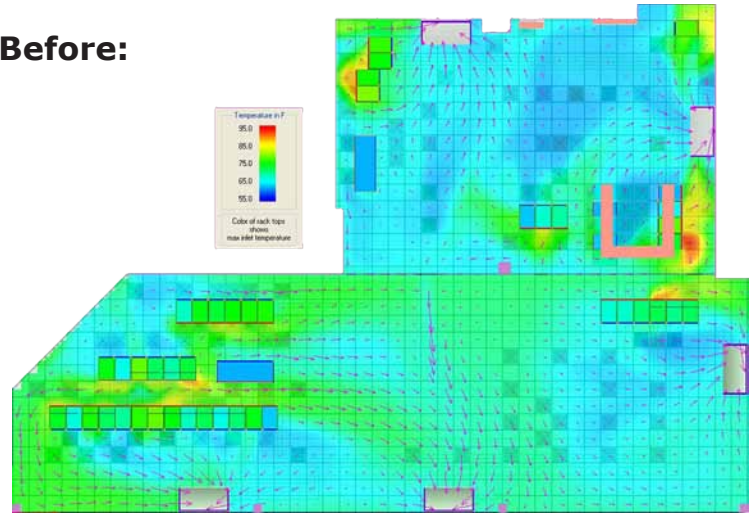


Fig. 2) The data center was using all 5 CRAC's to overcool the room in order to eliminate hot spots.

**After:**

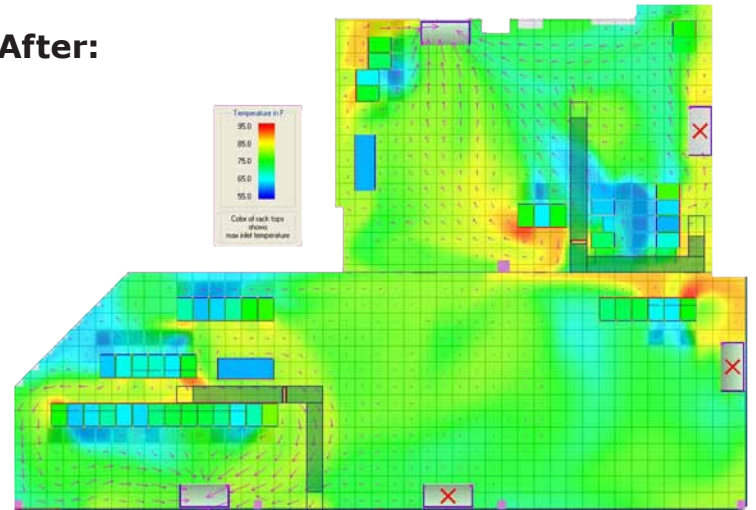
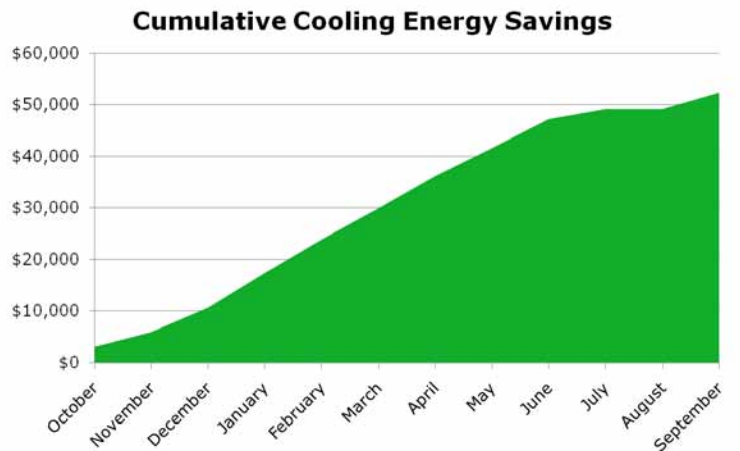


Fig. 3) With DBC, 3 CRAC's were able to be put into standby through the use of airflow management allowing the servers to run at safe temperature levels.



# InteQ Recorded Energy Usage & Savings

The following chart is data recorded by AdaptivCOOL's Environmental Management Services at InteQ's data center from October 2009 to September 2010. This chart reflects InteQ's energy usage in the entire data center, servers, and cooling hardware. In addition, it displays the costs that were associated with the energy consumption as well as monthly savings. The *Baseline* information was taken prior to Demand Based Cooling installation.

	Total Data Center kW Usage	IT kW Usage	Misc Loss kW Usage	Cooling kW Usage	kW/hr Rate	Cooling kW Needed to Cool 1 IT kW	Cost to Cool 1 IT kW per month	Savings Per IT kW	Estimated Monthly Savings
<b>Baseline<sub>1</sub></b>	224 kW	83 kW	22 kW	119 kW	\$0.17	1.43 kW	\$184.13	-	-
<b>October</b>	188 kW	80 kW	15 kW	93 kW	\$0.17	1.16 kW	\$144.53	\$39.60	\$3,168
<b>November</b>	186 kW	78 kW	15 kW	93 kW	\$0.17	1.16 kW	\$147.59	\$36.54	\$2,850
<b>December</b>	188 kW	85 kW	15 kW	88 kW	\$0.17	1.04 kW	\$129.01	\$55.12	\$4,685
<b>January</b>	168 kW	84 kW	13 kW	70 kW	\$0.17	0.83 kW	\$103.63	\$80.50	\$6,761
<b>February</b>	181 kW	88 kW	14 kW	78 kW	\$0.17	0.89 kW	\$110.31	\$73.82	\$6,496
<b>March</b>	182 kW	87 kW	15 kW	81 kW	\$0.17	0.93 kW	\$114.86	\$69.27	\$6,026
<b>April</b>	183 kW	88 kW	15 kW	80 kW	\$0.17	0.91 kW	\$112.75	\$71.38	\$6,281
<b>May</b>	187 kW	87 kW	15 kW	85 kW	\$0.17	0.98 kW	\$121.65	\$62.48	\$5,435
<b>June</b>	186 kW	87 kW	15 kW	84 kW	\$0.17	0.97 kW	\$119.80	\$64.33	\$5,597
<b>July</b>	207 kW	83 kW	17 kW	107 kW	\$0.17	1.29 kW	\$160.67	\$23.46	\$1,947
<b>August<sub>2</sub></b>	225 kW	84 kW	18 kW	123 kW	\$0.17	1.47 kW	\$182.28	\$1.85	\$155
<b>September</b>	203 kW	85 kW	16 kW	102 kW	\$0.17	1.20 kW	\$148.60	\$35.53	\$3,020

1. Baseline reading was a snapshot taken at the initial audit.

2. DBC reacted to an increase in thermal load for the month of August by activating 2 standby CRAC's, which added an additional 40 tons of cooling. This kept rack temperatures at safe levels and ensured the thermal health of the data center.