



DBBC

Demand Based Cooling™

Demand Based Cooling Case Study #1

Before and After Results Using
the Demand Based Cooling System

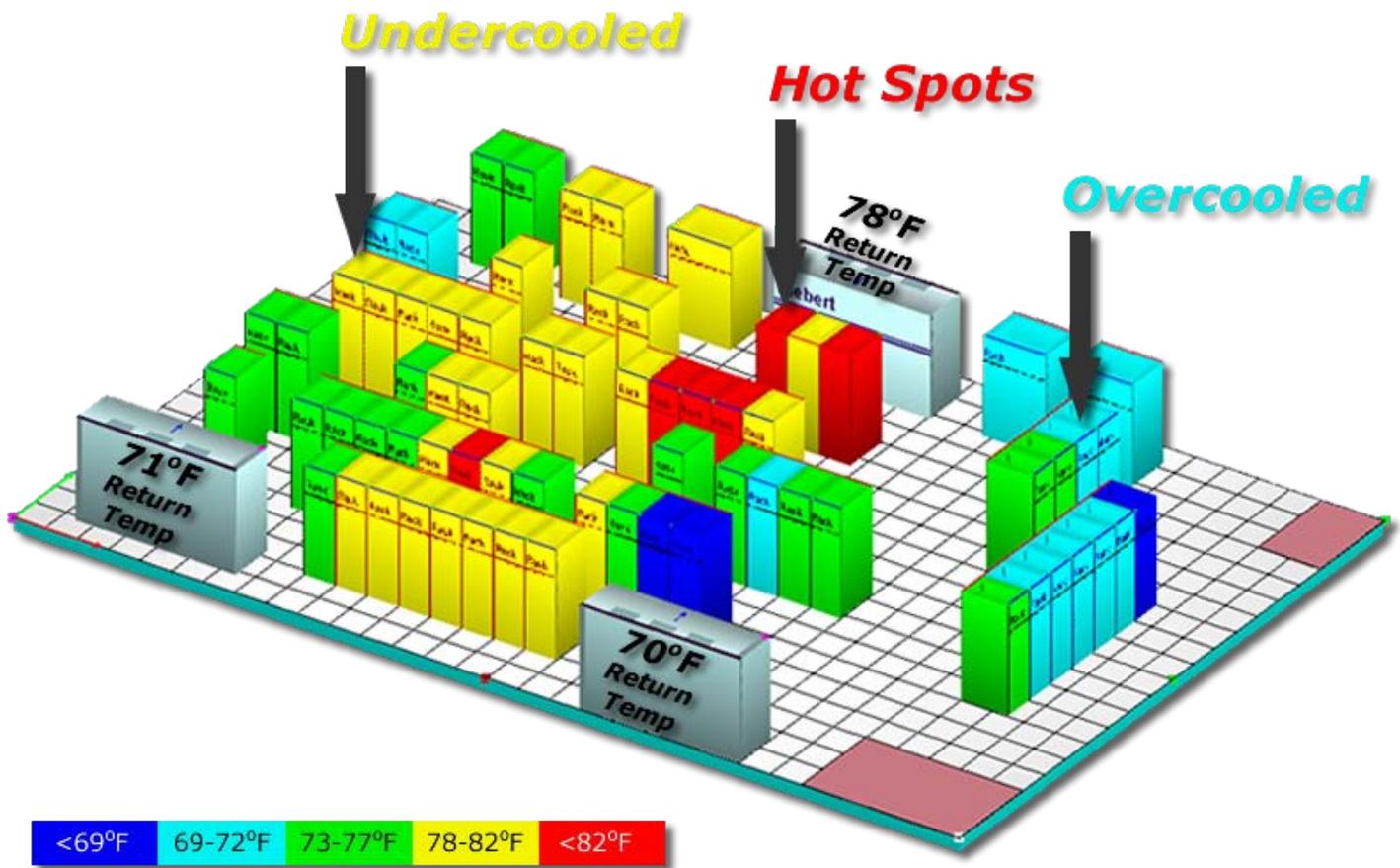


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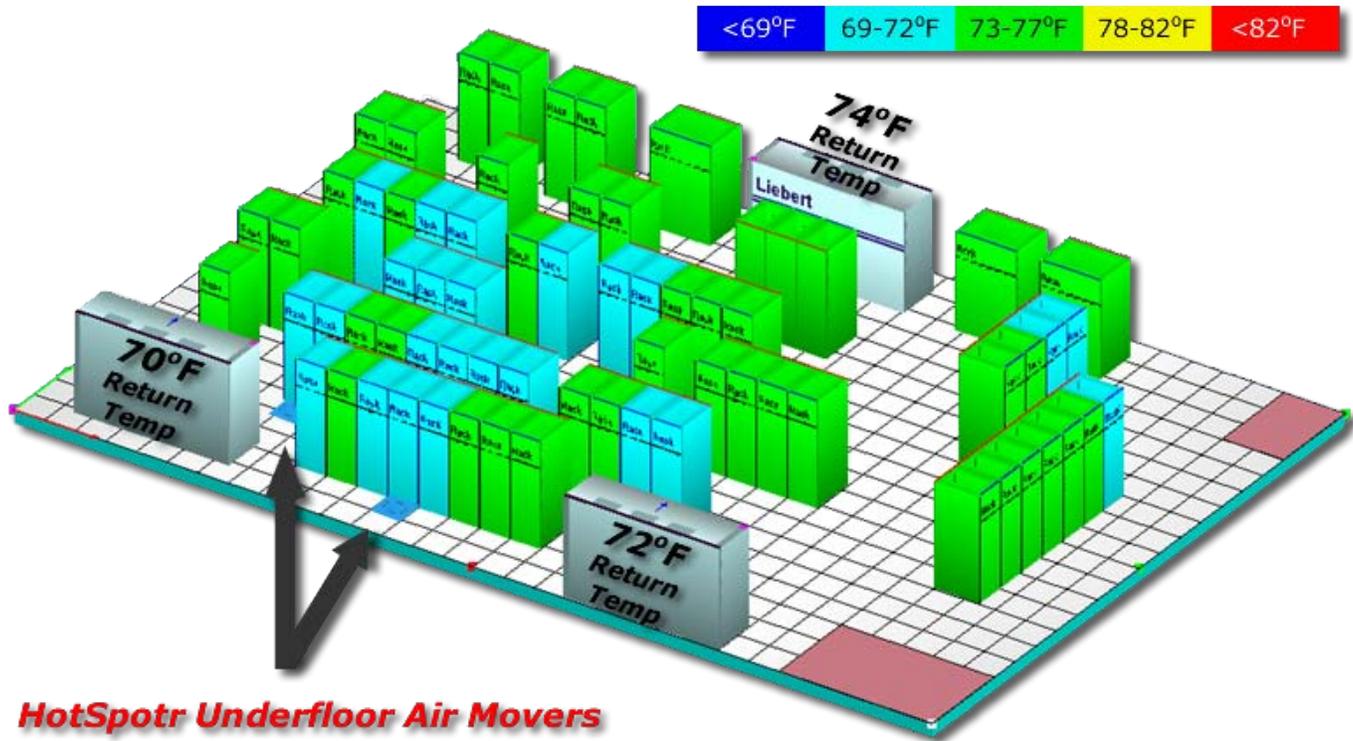


SITUATION:

The customer's data center was not set up with a hot aisle/cold aisle configuration. Consequently, the data center was experiencing hot spots up to 84F and the three CRACs were battling humidification versus dehumidification causing them to work harder than necessary. Furthermore, if only two out of the three CRAC's were running, large portions of the data center would not be able to run because of overheating even though there was enough tonnage with 2 CRACs to cool the data center. This poor air distribution did not allow the customer to service the CRACs properly. Finally, energy usage was much higher than expected due to the need to run all three CRACs simultaneously.

TOOLS USED:

On Site Data Center Audit by AdaptivCOOLTeam and CFD Simulations



HotSpotr Underfloor Air Movers

SOLUTION:

Audit and CFD simulations showed deficiencies in airflow distribution under the floor due to rack layout, shallow raised floor depth and leakage through the Data Center envelope. Redistribution of underfloor airflow by removing un-needed obstructions, correcting leakage, redistributing perforated tiles and installation of the Demand Based Cooling system controlling 2 underfloor HotSpotr airmovers eliminated hot spots and brought maximum rack temperatures below 77F. The data center could now run properly using 2 of the 3 CRACs without experiencing overheating and CRACs are no longer battling to control humidity. No racks or servers were moved to affect this change. Energy usage for cooling was reduced by 22% with a return on investment of less than 12 months.

Notes:

The severe hot spots could actually be helped without flow tiles, just by passive improvements in the distribution since the rack density was not too high in these overheated areas. There were 2 areas where more flow was needed to get rack temperatures down from the high 70's low 80's into the low 70's but the placement of the CRACs to racks prevented enough pressure from building up here.