

# *Customizable Airflow Solutions for Data Centers*



**DUCTSOX**<sup>®</sup>  
*Redefining Air Dispersion*

[ductsox.com](http://ductsox.com)

# Critical Airflow in Data Centers:

Data centers of today consume high levels of power to maintain an optimal level of performance. Many factors contribute to the overall usage of this power, but one of the most significant components is conditioning the equipment space.

As technological advancements increase, hardware manufacturers can continually improve their equipment offerings to the data center industry. These new hardware opportunities lead to increased power density within the conditioned space; this creates the need for additional cooling to meet the acceptable temperature requirements that hardware manufacturers and ASHRAE have established.

As the data center industry continues to grow, the following critical airflow challenges need to be addressed:

**TEMPERATURE CONSISTENCY**

**TARGETED AIR DISPERSION**

**AIR CONTAINMENT**

## Better Performance, With Lower Costs

DuctSox has developed the first directionally adjustable air displacement system for the data center industry. The air displacement portion of the DuctSox places large volumes of air within the cold aisle with low velocity while the adjustability allows for higher wattage server targeting. Minimal hot air entrainment is achieved, eliminating or reducing the need for physical containment structures, while lowering construction costs and getting better PUE (Power Usage Effectiveness) ratings.



# Airflow Challenges Solved

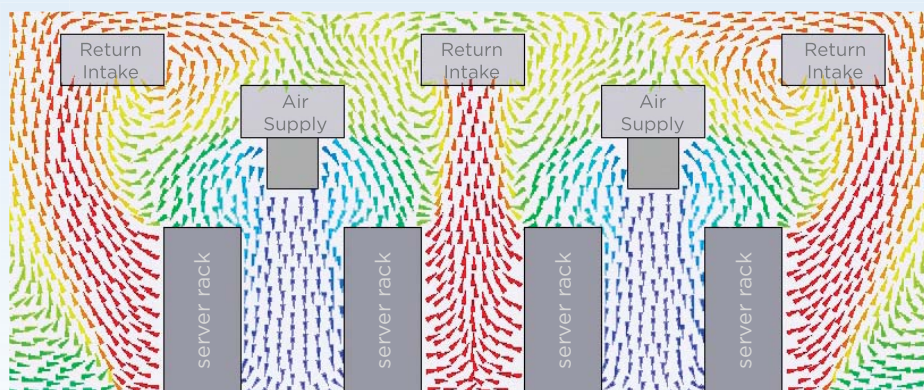
## Targeted Air Dispersion

- **100% Customizable** - DuctSox are designed to fit the specific need of each space allowing for data centers to get the exact airflow where it is needed.
- **Specially Designed Fabric** - A unique combination of antistatic and porous materials help prevent any static charge that could build up while dispersing large volumes of air at low velocities.
- **Adjustable Nozzles** - Provide targeted, consistent velocities along the entire length of the cold aisles to allow for maximum efficiency of equipment in the aisles.

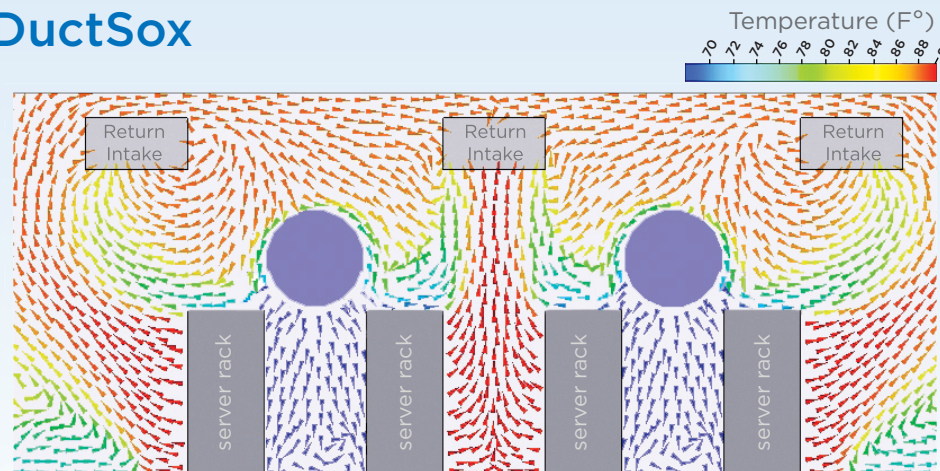
## Adjustable Nozzles



## Airflow Direction and Temperature Comparison Metal vs. DuctSox



Metal Air Distribution - Side View



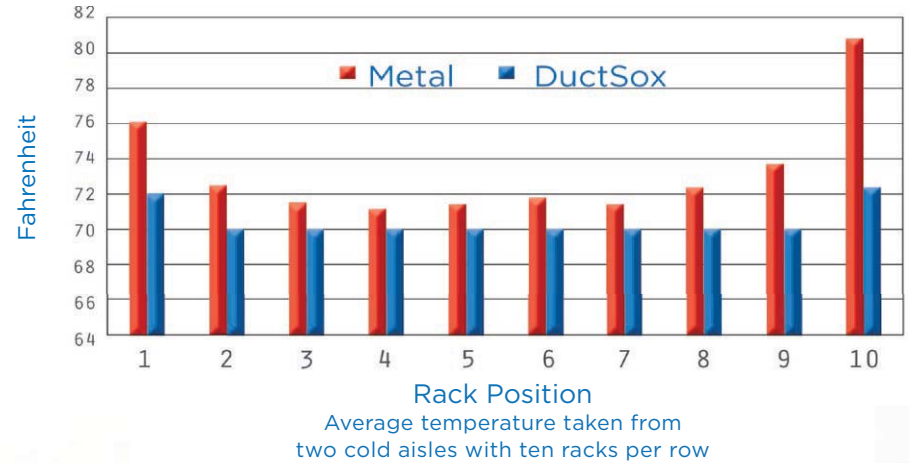
DuctSox Air Distribution - Side View

Graphics above depict a side view multiply server rack aisles in a data center. Arrows indicate airflow direction as well as temperature according to the scale above for a metal system vs. a DuctSox fabric system.

## Temperature Consistency

Temperature control is crucial in ensuring that all hardware equipment is working efficiently at all times. Unlike conventional methods of air delivery that entrain warm air into the supply stream, DuctSox uses targeted air dispersion to place the air into the cold aisle. The results are lower temperatures in the air delivery area of 3°F - 5°F.

- **Consistent Inlet Temperatures** - Are achieved along entire aisles putting less burden on hardware and reducing the workload on Computer Room Air Conditioner (CRAC) units.



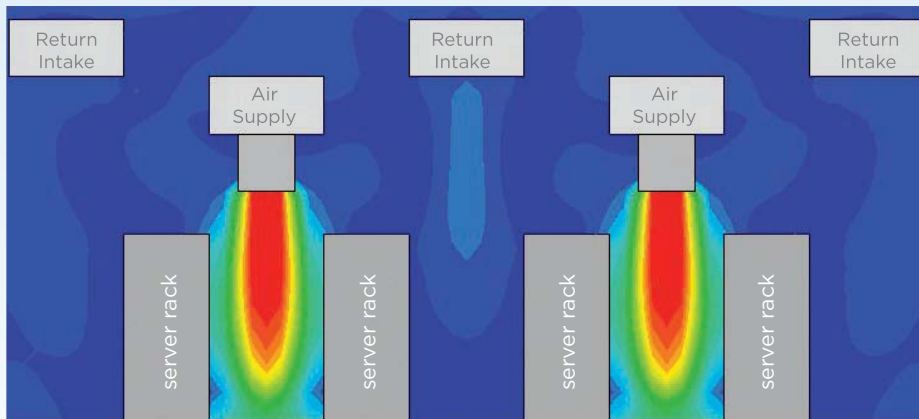
## Air Containment

Lower air velocities are crucial in allowing hardware to accurately draw in the necessary airflow without having to overwork the equipment.

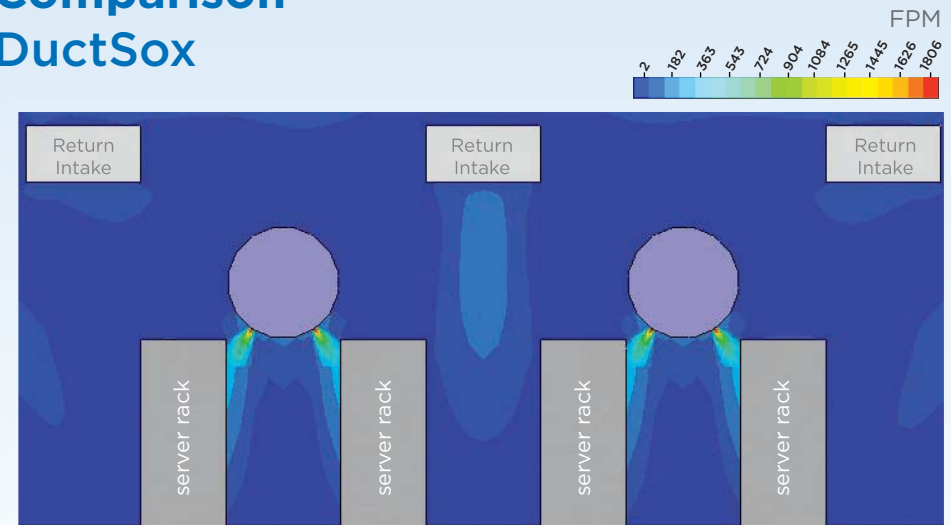
- **Eliminate Physical Containment** - By lowering air velocities, DuctSox can reduce or eliminate the need for physical containment structures, while lowering construction costs and getting better PUE (Power Usage Effectiveness) ratings.
- **Large Air Volume** - DuctSox allows for large volumes of cooled air to be introduced into the cold aisles without the presence of higher air velocities that are associated with traditional air dispersion methods.
- **Lower Air Velocities** - Reduces the entrainment of hot air into the cold aisle while also reducing spillage outside of the cold aisle where cold air is not required.



## Air Velocity Comparison Metal vs. DuctSox



Metal Air Distribution - Side View



DuctSox Air Distribution - Side View

Graphics above depict a side view multiply server rack aisles in a data center. CFD illustrations represent the velocity profile of airflow introduced through a traditional metal system vs. a DuctSox fabric system.

# Features and Benefits of DuctSox in Data Centers

## Basics

- Anti-Static fabric
- Highly porous fabric
- 100% Customizable
- Lightweight
- Adjustable nozzles
- Targeted cooling
- Field adjustable dispersion
- Easily movable to gain access

## Airflow

- Wide range of airflow rates
- Reduced dispersion velocities
- Less noise
- Less spillage
- Less containment
- Consistent temperatures
- Increased life of equipment
- Comfortable work environment

## Reduced Time & Materials Cost

- Reduced Time & Materials Cost
- Reduced containment
- Material cost can be reduced by over 50% for comparable solutions
- Installation can be completed up to 75% quicker than metal solutions
- Minimal balancing
- No painting

## DuctSox Airflow Solutions

From coffee shops to airplane hangers our full range of products are custom designed and configured to fit ANY space and are ideal for a variety of environments...

- Cleanrooms
- Convention Centers
- Data Centers
- Education
- Fitness Centers
- Food Processing
- Grow / Agriculture
- Gymnasiums
- Industrial / Manufacturing
- Kitchens
- Laboratories
- Office Buildings
- Pools / Water Parks
- Retail
- Stadiums / Arenas
- Warehousing

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