

# Airflow Management Solutions



# KOLDLOK® Raised Floor Grommets

The biggest operational cost in a data centre is power. Optimising cooling systems improves energy efficiency and reduces cost. One of the quickest ways to make energy cost savings is to seal cable openings within the raised floor. KoldLok® raised floor grommets are the market leading solution for managing cable openings. By sealing cable openings you increase the static pressure under the raised floor and reduce bypass airflow (any conditioned air which doesn't pass through the IT equipment is considered to be bypass airflow).

KoldLok® grommets are a range of specially designed brush grommets which seal cable openings preventing cold air leakage, whilst still allowing cables to be easily passed through the grommet. Once installed KoldLok® grommets require no policing.



**Split Integral**  
46-1000-3030

## Features:

- Double layer of filaments, where the thicker under layer support the top layer filaments.
- Greater number of filaments per square inch than competitor models.
- KoldLok® grommets integrate with the raised floor static dissipation system, providing 1 GigaOhm of resistance.
- The grommets contain no loose or partially fastened parts which can become separated or fall through the raised floor.
- The grommets are impact resistant and durable.

## The KoldLok® Range:



**Integral**  
46-1000-1010



**Mini**  
46-1000-10077



**Surface**  
46-2000-2020



**Surface L**  
46-2000-2030



**Surface XL**  
46-2000-2040



**3" Extended**  
46-4000-10012



**6" Extended**  
46-4000-10013

### Surface Grommet Sealing Effectiveness:

- 100% bypass airflow sealing in areas undisturbed by cable penetrations at static pressures up to 0.10 inches of water column.
- 100% bypass airflow sealing with four 13mm (½") cables penetrating the grommet at the static pressure required to cool up to 3kW per cabinet.
- 96% bypass airflow sealing with four 13mm (½") cables penetrating the grommet at a static pressure of 0.10 inches of water column.



### Benefits:

- Increases existing cooling unit capacity.
- Reduces the need to purchase additional cooling units.
- Improves equipment reliability and extends equipment life.
- Increases static pressure under the raised floor, and improves cool air delivery through floor grates and perforated tiles.
- Facilitates Cold Aisle / Hot Aisle best practices.



## Floor Tile with Brush Grommets



### Features & Benefits:

- 600mm x 600mm tile with custom depth to suit individual floor requirements.
- Three large openings of 285mm x 125mm provide ample access for cables.
- Each opening fitted with double layer KoldLok® brushes.
- KoldLok® brushes offer the best performance for bypass airflow reduction in the market today.
- Rapid deployment of data centre infrastructure.
- No tile cutting required, reduces labour cost.
- Strong construction allows for cabinets to be directly mounted on top.



## Features:

- **Sealing Effectiveness** - Wave shaped thermoplastic elastomer offers the best sealing against bypass airflow, unsurpassed by any brush grommet on the market.
- **Usable Cable Area** - Offers 45.5 sq inches of usable cable area, over two and a half times that of a leading brush competitor.
- **Maintenance Free** - Wave shaped material seals around cables with no additional maintenance or monitoring required.
- **Configuration** - Split design allows edge-cut tiles to be removed without capturing cables.
- **Fire Resistant** - Thermoplastic elastomer material is rated UL94 HB.
- **Longevity** - Durable, impact resistant ABS frame.
- **Safety Cover** - Optional cover available to ensure greater safety before rack & cable installation.



**KoldLok® Wave™**  
46-20100

**KOLDLOK®**  
ROUND

The KoldLok® Round 4" (102mm) is the first ever round KoldLok® grommet. It is also the first to use KoldLok® Hybrid Brush Technology (HBT) which offers exceptional sealing and airflow management. Easier to install, installation time is quicker and cutting time reduced by over 50%.



**KoldLok® Round**  
46-40001

## Features:

- Split design allows product installation & removal without disturbing cables.
- HBT combines brush with a membrane layer for filament support and superior seal.
- Impact resistant and durable, with no loose or partially fastened parts that may fall through the raised floor.
- Grommets self-dress raw metal edges of raised floor tile cable cutouts.
- RoHS compliant.
- Tapered joining structure.

# RackSEAL

Preventing the recirculation of hot exhaust air within and between IT equipment racks plays an important role in reducing data centre cooling costs. Whilst blanking panels enable unused rack space to be blocked off, hot exhaust air has still been able to recirculate to the front of the rack via gaps between the sides of the cabinets and the rails, externally between racks or underneath the rack. RackSEAL combats this issue and seals these gaps.

RackSEAL is a compressed foam tape that expands to fill a range of gap sizes and works with 600mm or 800mm wide racks. RackSEAL Air Barrier still permits cables to be passed between the side of the rack and the rails, and simply moulds itself around them to ensure gaps are sealed.

## Rack Air Barrier



### Features:

- Slow expansion allows RackSEAL Air Barrier to be installed without disturbing cables.
- Black in colour, and supplied on pre-compressed rolls.
- Self adhesive acrylic scrim makes installation to racks quick and easy.
- Virtually no particulation.
- RackSEAL Air Barrier is free from chlorinated compounds, CFC and halogens.
- Temperature operating range: -30°C to 130°C.
- Fire retardant: Class B1 as laid out in DIN 4102-1.

## PLENAFORM®



**PlenaForm®**  
49-PF-2448-12

## Air Baffle System

PlenaForm® is a flexible, snap together, airflow baffle system which helps to solve dynamic thermal imbalances in data centres. It is scored both vertically and horizontally so sections can be removed or added to meet any height or width requirement. All angles of bend radius may be attained, including inside and outside mounting to raised floor pedestals. The continuous punch-out hole pattern allows attachment to any style raised floor pedestal at any height or width location with cable ties.

### Easy to Install - Right Out of the Box!

- Control and balance data centre airflow.
- Separate hot aisles from cold aisles.
- No installation tools required.
- On-site configurable (width & height).
- Fits ANY raised floor pedestal.
- Reduces energy consumption and operating costs.
- An inert, non-conductive and non-hygroscopic material.
- Flammability rating of UL V-0 per UL94.
- RoHS and WEEE compliant.
- An energy saving and thermal tuning tool.





# Airflow Floor Grilles

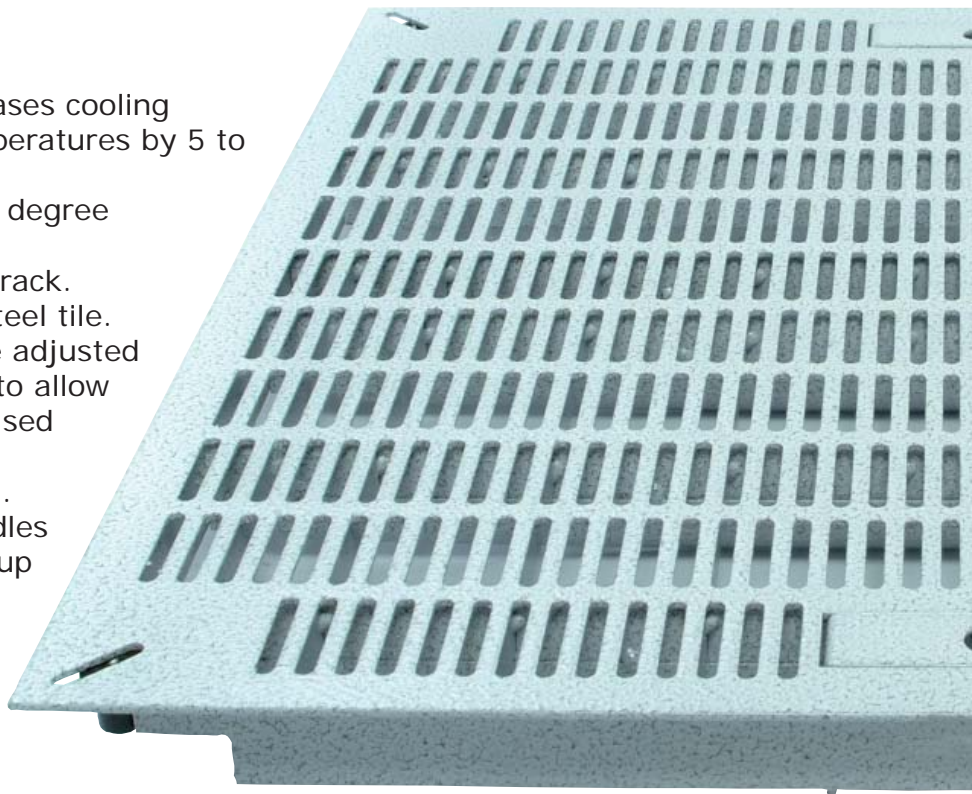
Standard flat bottom floor grilles have a major design flaw that leads to jet stream, short cycling and negative airflow. In tests carried out by the Uptime Institute it was found that only 28% of air coming through a tile actually passes through the servers. The Triad airflow grille is different, its specially designed Hi-Plume Stratification fin creates a dispersed pattern of airflow out of the tile. The fin causes the air to "bend" outwardly allowing it to flow into the servers and reach servers at the top of the racks.

## Triad Performance Parameters:

1. Removes the short cycle that is prevalent in flat bottom tiles. This lowers the temperature of air coming out of the tile by 2°C.
2. Disperses the air into the server. This improves the mass flow rate through the server.
3. Stratifies to 2.1m (7') enabling the upper servers to be cooled.

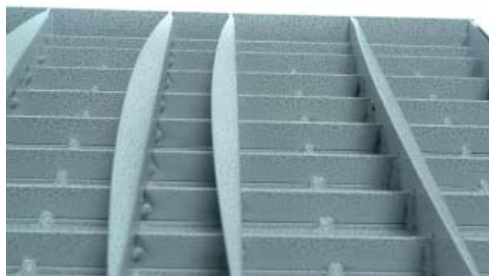
## Features & Benefits:

- Hi-Plume Stratification fin increases cooling capacity and lowers server temperatures by 5 to 15°F.
- 4% Energy cost saving for each degree Fahrenheit lowered.
- Delivers air to full height of the rack.
- 600mm x 600mm heavy duty steel tile.
- TopSat leveler allows level to be adjusted both vertically and horizontally to allow a flush mount to the existing raised floor.
- Load rating of 680Kg (1,500lbs).
- Dual Lift-n-Lock integrated handles eliminate the need for suction cup lifters.
- Optional dampers and baffles can be fitted.



**Triad Floor Grille**  
47-15TSM-GF

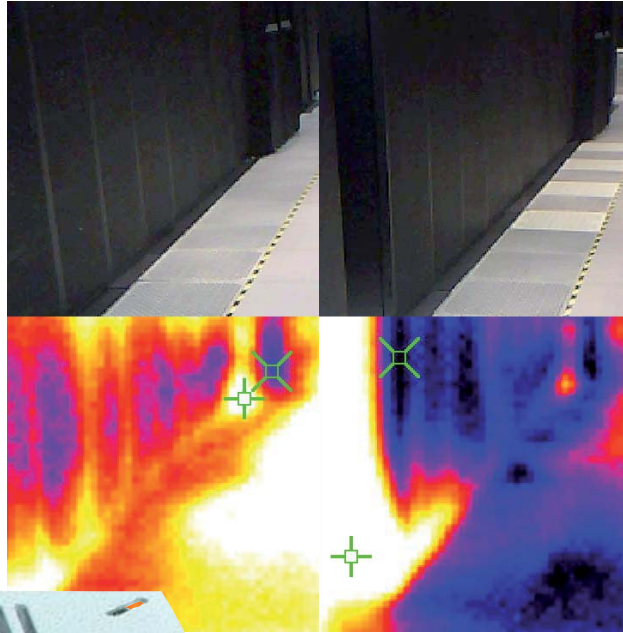
## Hi-Plume Stratification Fin



The core part of the Triad airflow grille is the Hi-Plume Stratification fin. The fin uses Bernoulli's principle and has a number of patents or patent-pendings against it, including the angle of the fin and the curve of the fin. The net result is a dispersion pattern and positive airflow across the entire surface of the tile, that allows the air to disperse and stratify.

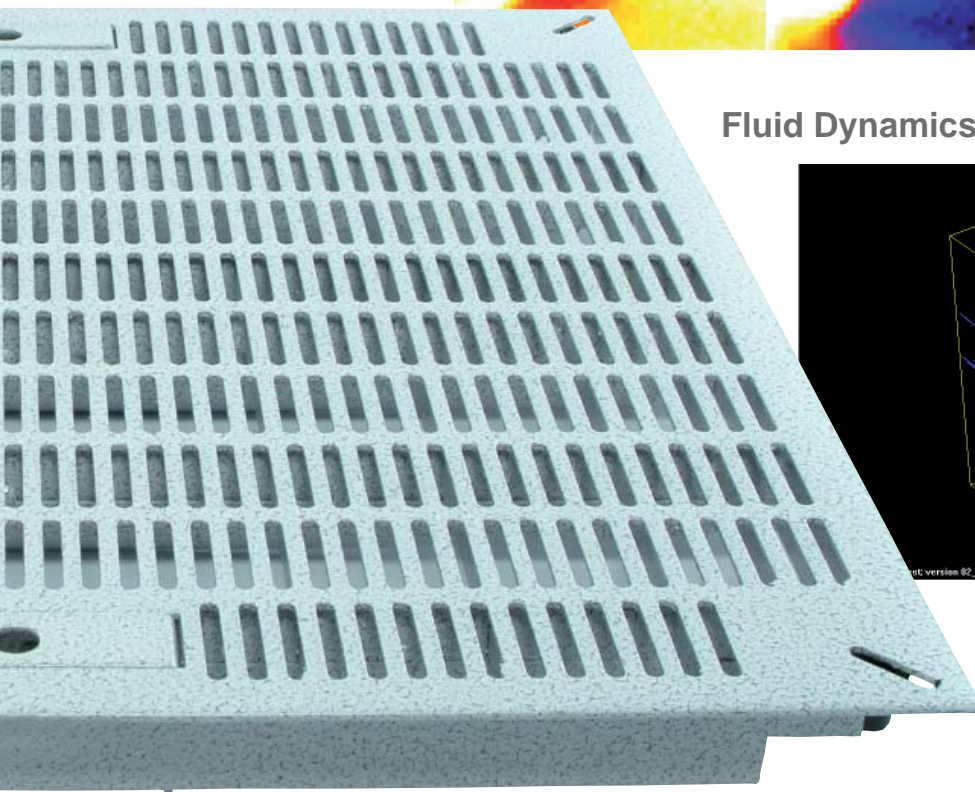
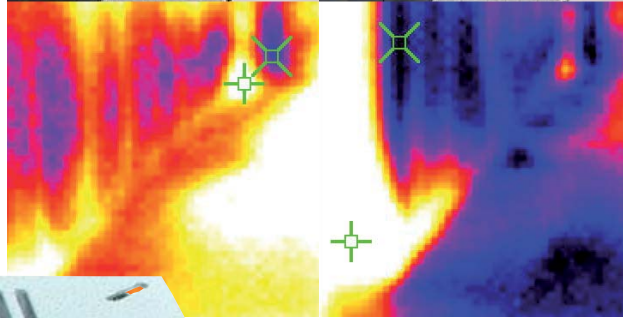
## Before Installation

This thermal image of a row of racks, shows the amount of heat radiating from the servers despite a full row of 56% open floor grilles.

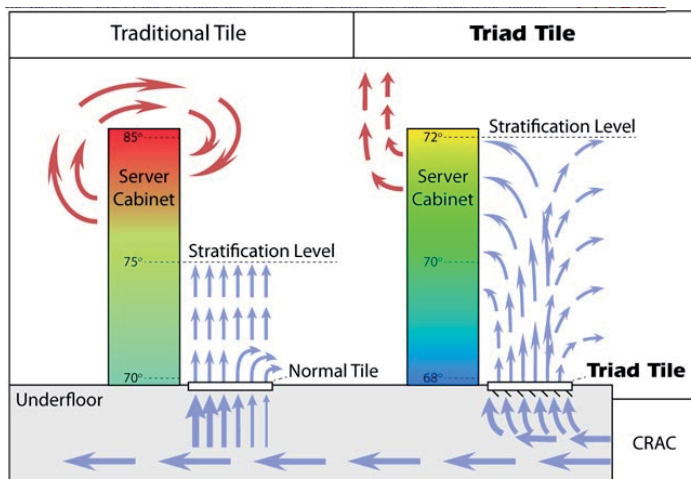
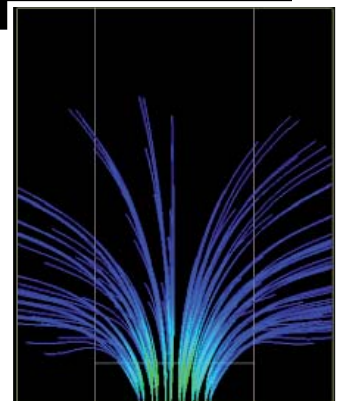
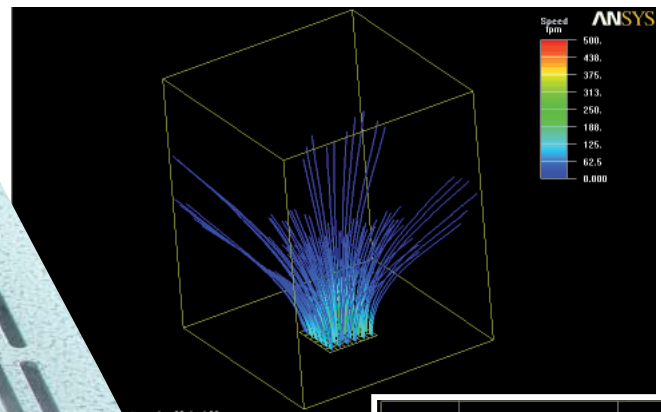


## Two Minutes After Installation

In this thermal image just three Triad airflow grilles have been inserted into the row, the results are dramatic. After just two minutes the cooling dispersion from the three Triads creates a 360° dispersion pattern and a balanced stratification level that reaches the top of the rack.



## Fluid Dynamics of Triad's Airflow Pattern







# 19" Blanking Panels

HotLok® blanking panels are a snap-in blanking panel solution that provides a 99%+ effective seal in IT equipment racks. The state-of-the-art technology, designed for both 1U and 2U openings, controls airflow for optimised cooling effectiveness.

The energy-efficient cantilevered sealing vanes eliminate the gap between adjoining HotLok® blanking panels or the installed equipment, providing a snug seal and no air leaks.



**46-10031** - 1U HotLok® Blanking Panels

**46-10033** - 2U HotLok® Blanking Panels

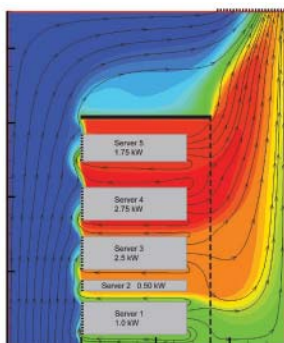
**46-10035** - 1U HotLok® Blanking Panels with Temperature Strip

**46-10038** - 2U HotLok® Blanking Panels with Temperature Strip

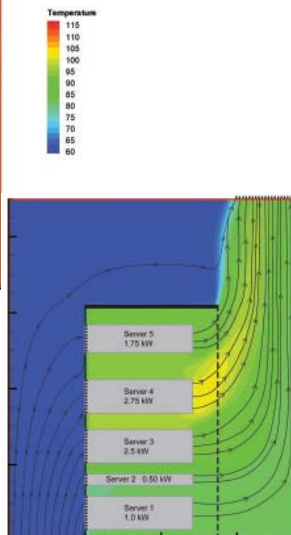
**46-10075** - 1U HotLok® Light Grey (RAL7035) Blanking Panels

## Features & Benefits:

- Snap-spring design offers durable, 99%+ effective seal.
- Tool-free installation & removal via ergonomically designed finger grips, which prevent injury to fingernails and knuckles.
- Cantilevered sealing vanes eliminate the gap between adjoining blanking panels or installed equipment.
- HotLok® blanking panels are stackable for easy storage and ready availability.
- Reduce hot spots and bypass airflow by preventing equipment exhaust air, or hot-aisle air, from migrating to the conditioned air intake stream at the front of the cabinet.
- Deliver lower temperature conditioned air to the upper third of the cabinet, typically the hottest area and most prone to equipment failure.
- Control airflow to save energy by adjusting cooling unit setpoints.



*Before HotLok®*



*After HotLok®*

**HotLok® Round**  
46-40002



## HotLok® Round Rack Grommet

- 102mm (4") HotLok® Round rack grommet designed to seal cable openings in new and existing server rack cutouts.
- Split design allows installation and removal without disturbing cables.
- HRT membrane layer ensures maximum air containment.



Best practice in the data centre requires that unused U space is sealed to prevent hot exhaust air from finding its way to the air intake area at the front of the cabinet. PlenaFill® blanking panels are supplied in 27U sheets which are scored at individual 1U intervals. This allows the required size to be easily snapped off, avoiding the need to store several sizes of traditional blanking panel.

PlenaFill® provides an excellent solution to quickly and efficiently seal large areas of unused rack space, reducing the risk of hot spots, and reducing the overall cabinet temperature.



**PlenaFill® Dark Grey**  
49-PF-27U-10



**PlenaFill® White**  
49-PF-27U-10W

### Features:

- Pack of 10 PlenaFill® blanking panels equals 270 44.45mm (1¾") rack mount U's.
- Fits all 19" EIA server racks.
- Fire rated material: ULVO class 94.
- Quickly and easily fill large sections of unoccupied rack space, stopping bypass airflow.
- No more guessing how many blanking panels are required.
- Scaleable, less storage space & less freight cost.
- Installs in seconds - no tools required.
- Available in Dark Grey or White.
- White PlenaFill® offers some improvement in light levels, due to the reflectiveness of white material. It also makes it easier to identify unused rack space and looks better in light coloured racks.



**Blanks Less Than 1U!**



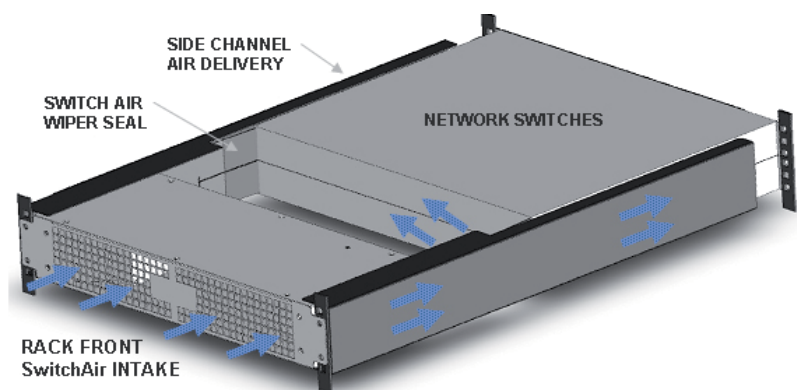
# Network Switch Cooling

SwitchAir™ 2U, from Opengate Data Systems, is specifically designed to provide effective cooling for top of rack network switches. Due to high switch port density, placing network switches facing the rear of the rack is very common and simplifies network cabling. In this top of rack network switch deployment the heat typically exhausts out to the front or side of the rack. This can lead to mixing air streams and potential failure of the switch.



**SwitchAir™ 2U**  
83-SA2-002B

SwitchAir™ 2U installs into the front of the rack and delivers cool air to the network switch air intake, via the channels that attach to the SwitchAir™. This installation is very easy and installs in minutes, and more importantly can be done while the network switch is operational. Once installed the network switch becomes effectively cooled with intake air temperatures stabilised to within a few degrees of the temperature at the front of the rack, whilst the warm air naturally finds its way out of the rear of the rack.



## Features & Benefits:

- Network switch receives cool air from outside the front of the rack and is delivered to the switch without mixing air streams.
- Switches with varying airflow patterns can be stacked together.
- Quickly and easily retro-fits onto operational switches.
- Compatible with most side and rear intake network switches including:
  - Nexus 2000 Series
  - Cisco 4948
  - Catalyst 3570E
- Single input cord runs on any voltage and continually delivers required air.



# Aisle Containment Solution

**Aisle Containment is a popular way of cooling high density server installations.**

Aisle containment can work in two ways: Cold Aisle Containment where the cold aisle of a data centre is enclosed, so containing the cold air and preventing it from mixing or, Hot Aisle Containment where the hot aisle is enclosed and the hot exhaust air is directed back to the CRAC units. EDP Europe's aisle containment solution is flexible enough to accommodate both methods. This is because, unlike many other systems, EDP aisle containment is retrofittable and can be fitted to existing rows of cabinets.

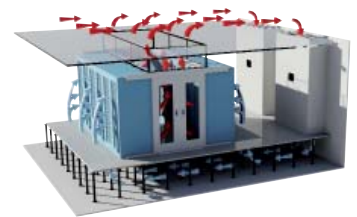
## Features

- EDP aisle containment retrofits to existing cabinets no matter what their height, width or manufacturer.
- Lightweight roof panels are easily demounted for maintenance access to the top of a cabinet.
- Roof panels also have a high light transmission.
- Tailor-made centre roof support bracket with a choice of fire protection options.
- Fusible link mechanism allows the release of the roof panels at 58°C allowing sprinklers to distribute water to the source of the combustion.
- Gas fire protection system also available, where roof panels feature a rubber seal to prevent gas leakage.
- Electronic roof release system that can be integrated into existing fire suppression system, and can be used with both gas and water based fire suppression systems.
- Self closing doors with the option to keep aisle entry at floor level clear of obstruction.
- Top and bottom door guide system ensures smooth running while maintaining door rigidity when closed.
- Provides a cost effective solution without reduction in quality.



## Benefits

- EDP Europe aisle containment is a non-intrusive, bespoke, retrofitting aisle containment system.
- Containment prevents mixing of cold air and hot exhaust air.
- Increasing the temperature of CRAC units by 1°C, provides a typical saving in the region of 8% of cooling power bills.
- With cold aisle containment cost savings can be made, of between 10% and 30% on current building cooling systems.
- Power savings on room hardware (servers, switches, routers, etc.).
- Better control of room temperatures, humidity, airflow and balancing.
- Improved U space utilisation.
- Reduces the building's carbon emissions, improving eco-friendly status.







## Secure IT Environment AS

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