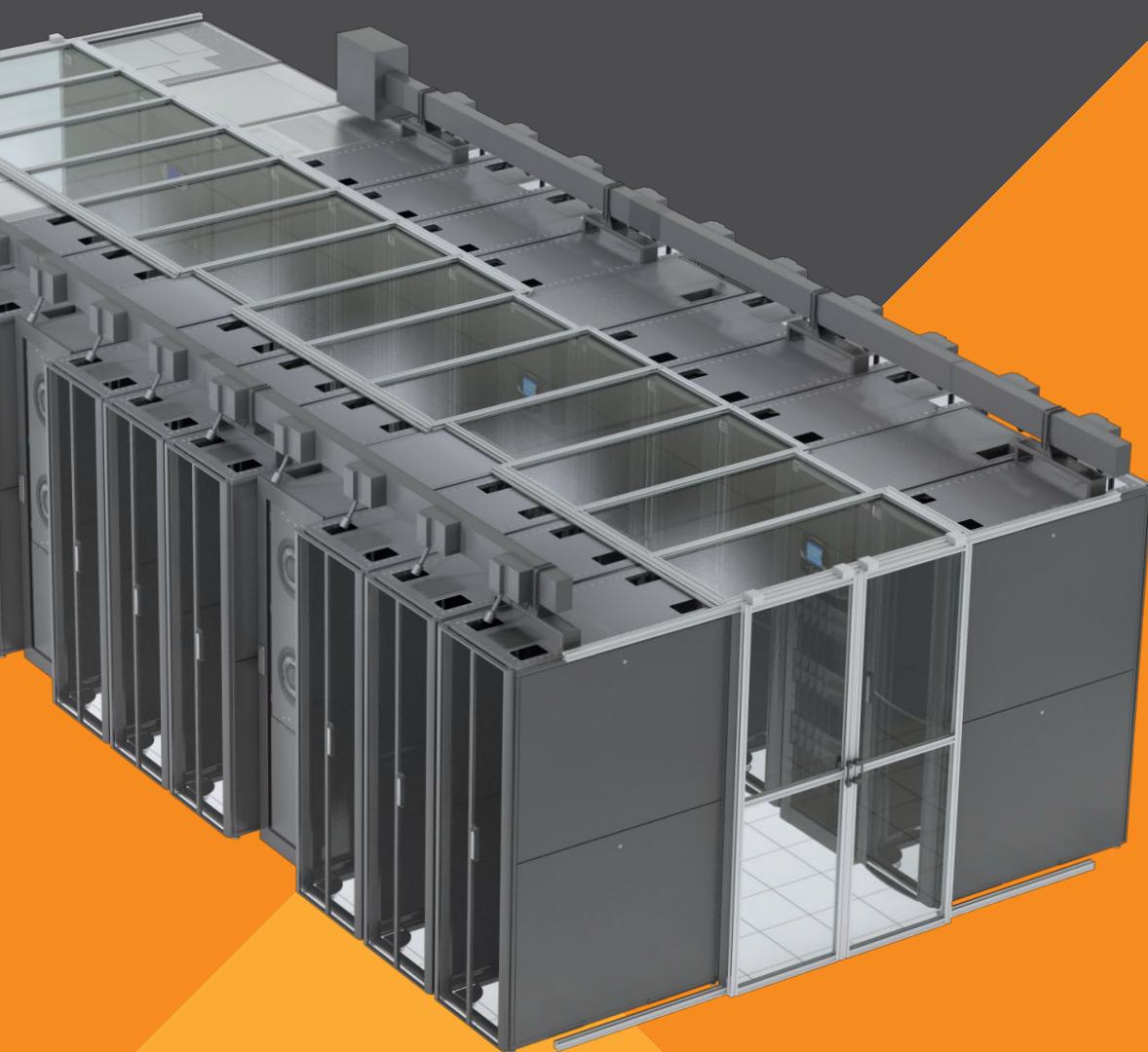




Aisle Containment Systems

Physical Containment Systems
Selection Guide



Aisle Containment Systems by Vertiv™



Aisle Containment is the logical extension of the hot aisle/cold aisle concept of data center design.

Hot aisle/cold aisle configuration is a best practice solution that separates hot and cold air streams. This method raises the temperature of the air returning to a Computer Room Air Conditioner (CRAC) unit, which allows the unit to operate more efficiently. However, without a physical barrier, you can still have wrap-around and bypass air, which can result in unacceptably high air temperatures for servers at the top of the racks and at the ends of the aisles.

Vertiv™ offers a comprehensive offering to fit both standard and non-uniform hot /cold aisle configurations.

Modular System

This door, ceiling or combined system is designed for Knurr DCM cabinets with 4' or 6' aisles, and requires a uniform row. The Modular system is physically attached to the rack, and features sliding doors with Lexan (polycarbonate) windows. It has aluminum profile roof

panels that span the width of the aisle. Individual panels are removable for servicing and cleaning.

Vertical System

This door, ceiling or combined solution uses a vertical vinyl strip design to accommodate non-uniform rack heights and nonuniform rows. While it is the most flexible solution to deploy, it does require a drop ceiling. The design is a simple one that incorporates current fire detection and suppression.

Retractable System

This ceiling system that is designed exclusively for a 4' and 6' aisle and requires a uniform row. If that uniformity is present, this is the simplest ceiling to implement. It can be used in conjunction with the RS Door to make it a combined solution.

Door Options

Aluminum Profile dual sliding doors can be used at the ends of uniform aisles. The doors are full height viewing lexan panels for safety and are delivered pre-assembled. For non-uniform aisles, the Vertical system door may be used.

What To Consider Before Choosing Your Aisle Containment Solution

All of our containment systems offer similar functionality – containment of the aisle to improve data center cooling functionality and increase energy efficiency. Selection largely depends on conditions at your site.

- Flexible designs independent of rack width
- Sliding doors
- Overhead panels
- Vertical partitions and strip doors
- Integrated adaptive control for reduced fan energy cost

Modular System: The Ultimate Aisle Containment Solution

The Modular System is a door, ceiling or combined solution designed for Knurr DCM cabinets.

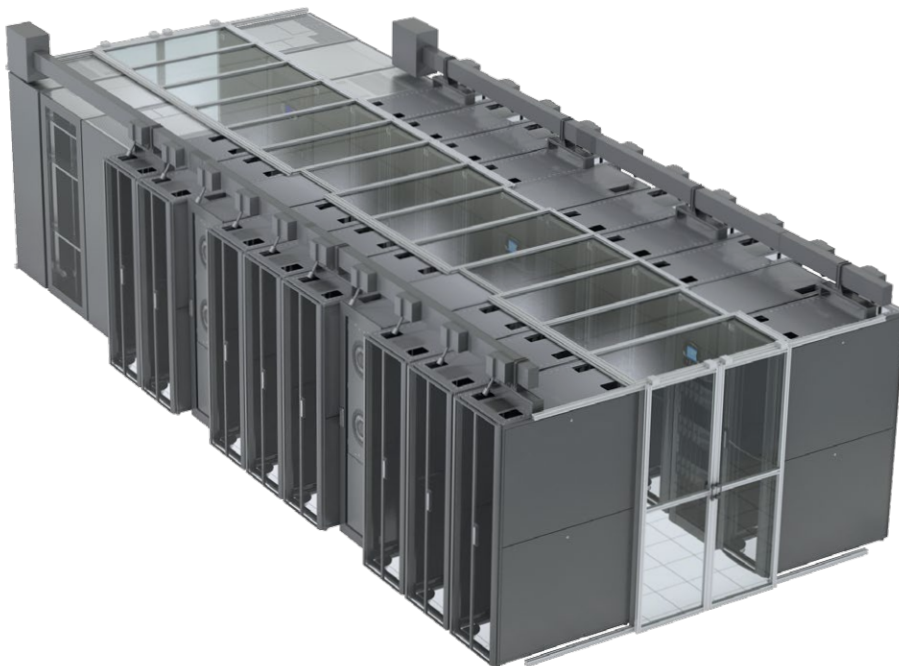
The roof panels are transparent Lexan allowing the room lighting to be used. The panels are easy to remove for servicing. Since it attaches directly to the rack, it is essential that the two rows of racks have uniform heights along the total length of the aisle. This solution requires a continuous run, so there cannot be gaps, such as missing cabinets in the line-up or obstructions, such as columns or pillars in the row.

Details:

- Attaches to racks
- Sliding doors
- Lexan windows
- Clear Lexan roof panels

Things to consider about the Modular Solution:

- Requires uniform rack heights and row lengths
- Designed for a continuous row - No obstructions/opening, columns or missing racks
- Knurr DCM racks must be clustered and spacers used to properly space the Liebert® CRV row-based cooling, Liebert APM UPS, and Liebert XDH high density cooling if they are in your row of racks



Advantages:

- Perfect match for Knurr DCM racks.
- Easy to install.
- Sturdy components.
- Cosmetically the most appealing solution.
- Sliding doors.

Vertical System: The Truly Flexible Aisle Containment Solution

The Vertical System is a door, ceiling or combined solution that uses a curtain design to accommodate non-uniform rows and rack heights, and third party racks.

The Vertical System requires a dropped ceiling. If a dropped ceiling is present, this is the simplest combined solution to deploy.

Most curtain system products require hardware to be installed. The Vertical System is completely tool-less. It starts with a small clip that mounts on the drop ceiling runner. This clip has a small, round ball at the end that slides into a track on the aluminum extrusion that holds the vinyl material. Since the ball turns freely in the slot, the extrusion can be installed at any angle on the drop ceiling. It is not dependent on running parallel to either the long or the short runner in a drop ceiling, it can run at an angle.

For fire protection purposes there is a fusible link in the clip that mounts on the runner. When the aisle heats up to 135°F, the fusible link releases, and the vinyl along with the aluminum extrusion drops to the floor allowing the suppression system to operate fully.

Details:

- .040" vinyl curtain material
- Suspends from drop ceilings
- Independent from rack
- Can be used with sliding door
- Curtains come in incremental lengths of 25"-182"
- Meets requirements of California Fire Marshall
- Meets requirements of CPAI-84 (Standard for fire retardency of pliable materials)
- Meets requirements of NFPA-701 (Standard for flame / fire retardency tests for films)
- 1,000 Hours U.V. - ASTM Weatherometer
- Standard for testing fade resistance to UV light
- Also tests for cracking or other deterioration



Things to consider about the Vertical Solution:

- Requires Dropped Ceiling
- Works with any rack Manufacturer
- Easily accommodates irregular height/length rows
- Automatically brings Fire Detection/Suppression into the contained space
- Fusible links allow suppression patterns to work
- Vertical Solution will be middle in terms of installation time
- Easily snaps together to run length of aisle

Advantages:

- Simple handling of fire suppression devices– extends the cold aisle all the way to the ceiling so any detection or suppression components are automatically included in the aisle space
- Fire suppression system operates fully – fusible link clip releases at 135°F, dropping the curtain and providing clear access for suppression devices
- Completely tool-less – clip system fits in sliding track
- Accommodates varying cabinet heights – curtain length is customized
- Flexible installation – can be installed on an angle; doesn't require installation parallel to the runners in the dropped ceiling
- Suitable for uniform or non-uniform rows of racks from any manufacturer

Retractable System: The Easy-To-Install Containment Solution

The Retractable System exclusively for a 4' or 6' aisle ceiling, is a truly unique and easily deployed solution.

The Retractable System requires a uniform height of rack heights and two uniform rows of racks to work. It will work with virtually any rack manufacturer's products. This is the easiest ceiling solution to deploy. It can be used in conjunction with the RS door or Vertical door types to make it a combined solution.

The Retractable system consists of an aluminum canister that straddles the aisle with a 20' or 30' length of the same vinyl film used in the Vertical Solution. It pulls out the length of the aisle and is held in place on the edges by a sheet metal guide.

For fire protection purposes, the Retractable system also uses fusible links. The fusible links release at 135°F. When the temperature reaches 135°F, the link is broken and the film safely retracts into the fire resistant aluminum canister. Guides ensure that the film retracts smoothly when the fusible links are separated.

Details:

- .040" vinyl material
- Attaches to cabinet
- Mounts across the aisle, with 4' or 6' foot aisle wide film that pulls out length of aisle
- Canisters are available with either 20' or 30' of vinyl. Max aisle length is 60'
- Optional electronic fusible links can be tied to smoke detector
- When triggered, film retracts into canister
- Meets requirements of California Fire Marshall
- Meets requirements of CPAI-84 (Standard for fire retardency of pliable materials)
- Meets requirements of NFPA-701 (Standard for flame / fire retardency tests for films)
- 1,000 Hours U.V. - ASTM Weatherometer
- Standard for testing fade resistance to UV light
- Also tests for cracking or other deterioration

Things to consider about the Retractable System:

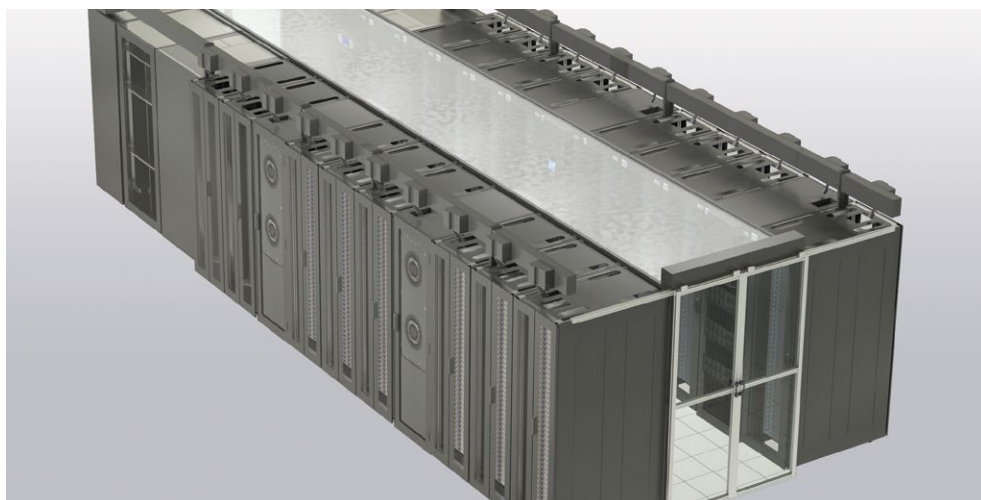
- Requires uniform rack height and row length
- Works with virtually any rack manufacturer
- Designed for continuous row -no obstructions or openings, columns / missing racks
- Fusible links make this a great solution
- In an emergency, curtain rolls back into aluminum canister
- Retractable solution has the highest material cost
- Retractable solution is the simplest to install

Advantages:

- Fire suppression system operates fully - fusible link clips release at 135°F, retracting the film and providing clear access for suppression devices
- Easy to install.
- Suitable for uniform rows of racks from any manufacturer



Fusible link



Door Options

A choice of door options is available for use with the aisle containment system to provide the right combination of safety and security.

Dual sliding doors or Vertical doors can be chosen for ends of the aisles.

Modular doors:

- Clean high tech look
- Aluminum profile doors with full view lexan panels
- Easy to install
- Delivered Pre Assemble
- Works with 42U or 45U DCM Racks
- Aisle width must be 4' or 6'
- Uniform rack heights and uniform row lengths

RS Universal Door:

- Dual sliding doors
- Black aluminum frame suitable for any rack manufacturer
- Must bolt into the data center floor
- Width must be 4' or 6'
- Uniform row heights and uniform aisle lengths

Vertical Door:

- Must have a drop ceiling
- Accommodates any aisle width
- Accommodates aisles with non uniform rack heights and missing racks
- Fusible link allows fire suppression to operate fully
- Can be installed on an angle

Advantages:

- A door only solution typically solves 80% of wrap around air

Modular Doors

PART NUMBER	HEIGHT	WIDTH
MODULAR SLIDING DOOR		
DC42X4RD	42U	4 FT
DC42X6RD	42U	6 FT
DC45X4RD	45U	4 FT
DC45X6RD	45U	6 FT

PART NUMBER	RACK DEPTH	AISLE
DOOR HEADER ASSEMBLY		
DC1000X4RHD	1000MM	4FT
DC1100X4RHD	1100MM	4FT
DC1200X4RHD	1200MM	4FT
DC1000X6RHD	1000MM	6FT
DC1100X6RHD	1100MM	6FT
DC1200X6RHD	1200MM	6FT

Vertical Doors

PART NUMBER	LINEAR FT	CLEAR POLY DROP DOWN	FUSIBLE LINK
ESD FIRE RESISTANT VINYL STRIP DOOR KIT ALL INCLUDE A TRACK AND SPLICER			
DC98X01VDKIT	1	98"	1
DC98X02VDKIT	2	98"	1
DC98X03VDKIT	3	98"	2
DC98X04VDKIT	4	98"	2
DC98X05VDKIT	5	98"	2
DC98X06VDKIT	6	98"	2
DC110X01VDKIT	1	110"	1
DC110X02VDKIT	2	110"	1
DC110X03VDKIT	3	110"	2
DC110X04VDKIT	4	110"	2
DC110X05VDKIT	5	110"	2
DC110X06VDKIT	6	110"	1
DC122X01VDKIT	1	122"	1
DC122X02VDKIT	2	122"	1
DC122X03VDKIT	3	122"	2
DC122X04VDKIT	4	122"	2
DC122X05VDKIT	5	122"	2
DC122X06VDKIT	6	122"	2
DC146X01VDKIT	1	146"	1
DC146X02VDKIT	2	146"	1
DC146X03VDKIT	3	146"	2
DC146X04VDKIT	4	146"	2
DC146X05VDKIT	5	146"	2
DC146X06VDKIT	6	146"	2
DC182X01VDKIT	1	182"	1
DC182X02VDKIT	2	182"	1
DC182X03VDKIT	3	182"	2
DC182X04VDKIT	4	182"	2
DC182X05VDKIT	5	182"	2
DC182X06VDKIT	6	182"	2

RS Universal Doors

PART NUMBER	HEIGHT
SLIDING DOORS – UNIVERSAL	
DCAE78DSL	42U
DCAE84DSL	45U

Roof Options

Modular Roof

PART NUMBER	WIDTH	AISLE
SOLID ROOF PANEL		
DC300X4SRRP	300MM	4FT
DC600X4SRRP	600MM	4FT
DC700X4SRRP	700MM	4FT
DC800X4SRRP	800MM	4FT
DC4CRVSRRP	CRV	4FT
DC300X6SRRP	300MM	6FT
DC600X6SRRP	700MM	6FT
DC700X6SRRP	600MM	6FT
DC800X6SRRP	800MM	6FT
DC6CRVSRRP	CRV	6FT

Modular Roof Extras

PART NUMBER	DESCRIPTION
MODULAR SPACERS	
DCMCRVSPCR	Spacer - CRV/XDH
DCAPMSPCR	Spacer - AMP/BDC
539608G2	42U Tool Less Cluster Kit
539608G3	45U Tool Less Cluster Kit

Retractable Roof

PART NUMBER	WIDTH	LENGTH	EDGES
RETRACTABLE ROOF - SELF RETRACTING WITH FUSIBLE LINK			
DC60X30RS	60"	30'	54" width to inside edge 60" to outside
DC60X20RS	60"	20'	54" width to inside edge 60" to outside
DC84X30RS	84"	30'	78" width to inside edge 84" to outside
DC84X20RS	84"	20'	78" width to inside edge 84" to outside



Modular Door



RS Universal Door

Vertical Roof - Corners

PART NUMBER	ESD FIRE RESISTANT VINYL DROP DOWN
VINYL CORNER KIT - ALL INCLUDE CORNER TRACK, FUSIBLE LINK AND SPLICER	
DC29VCORNR	29"
DC56VCORNR	56"
DC98VCORNR	98"
DC110VCORNR	110"
DC122VCORNR	122"
DC146VCORNR	146"
DC182VCORNR	182"

Vertical Roof - Partitions and Strips

PART NUMBER	LINEAR FT	DROP DOWN LENGTH	FUSIBLE LINK
ESD FIRE RESISTANT VINYL - ALL INCLUDE TRACK AND SPLICER			
DC29X01VRKIT	1	29"	1
DC29X02VRKIT	2	29"	1
DC29X03VRKIT	3	29"	2
DC29X04VRKIT	4	29"	2
DC29X05VRKIT	5	29"	2
DC29X06VRKIT	6	29"	2
DC56X01VRKIT	1	56"	1
DC56X02VRKIT	2	56"	1
DC56X03VRKIT	3	56"	2
DC56X04VRKIT	4	56"	2
DC56X05VRKIT	5	56"	2
DC56X06VRKIT	6	56"	2
DC98X01VRKIT	1	98"	1
DC98X02VRKIT	2	98"	1
DC98X04VRKIT	4	98"	2
DC110X01VRKIT	1	110"	1
DC110X02VRKIT	2	110"	1
DC110X04VRKIT	4	110"	2
DC122X01VRKIT	1	122"	1
DC122X02VRKIT	2	122"	1
DC122X04VRKIT	4	122"	2
DC146X01VRKIT	1	146"	1
DC146X02VRKIT	2	146"	1
DC146X04VRKIT	4	146"	2
DC182X01VRKIT	1	182"	1
DC182X02VRKIT	1	29"	1
DC182X04VRKIT	1	29"	1



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