Aisle Containment Ceiling

Ceiling and End of Row Doors provide total aisle containment

Executive summary
Industry studies estimate that 60% of the cool air supplied to traditional data centers is wasted. The cool air bypasses the intended IT equipment and returns directly to the hot air intake of the CRAC. Adopting a containment strategy increases the effectiveness of the cold air. Eliminating wasted airflow can reduce the amount of cold air needed for the data center or allow you to increase your IT load.

Aisle containment creates more efficient cold aisles by blocking obvious cold-air escape routes and hot air entry, preventing re-circulation and air mixing. This enables you to set a higher overall temperature within the data center and allows more use of air-side economization. Aisle containment is a cost-effective solution that improves efficiency while lowering overall operating costs.

Introduction
Wright Line’s ceiling containment system is designed to fit on Paramount 40U and 44U enclosures. The assembly is comprised of brackets that mount on top of the enclosure using the overhead cable management mounting holes. The brackets are adjustable on the vertical and horizontal axis. Brackets can hold either 12”W or 18”W clear Lexan panels that are available in four, five, or six foot lengths. The Lexan panels are made of a self-extinguishing material that is fire rated V-0. The ceiling system easily integrates with end of row doors or curtains for total aisle containment. While generally used to contain a cold aisle, this solution can also be used to contain a hot aisle if the area below the raised floor is used as the return plenum.
Deployment guidelines
Aisle containment applies to Paramount enclosures that are 40U or 44U in height and either 24"W or 30"W. Important dimensions are the length of the aisle from side panel to side panel or, divider panel to divider panel. Other important dimensions are the width of the aisle from the front door to the opposite front door. Provisions can be made to accommodate equipment such as in-row coolers or remote power panel (RPP).

NEBS
The solution is enclosure-based and NEBS testing has not been performed. The ceiling components are not NEBS compliant.

Fire safety
The Lexan panels are V-0 rated. Check on the fire codes for the zip code where the product is to be installed. If a sprinkler must be placed under the ceiling panels they are easily cut using a standard hole bit.

End of Row Doors
The containment ceiling integrates seamlessly with End of Row Doors. The End of Row Door brackets (Item # CACBKTEORD) should be ordered when integrating the doors with the ceiling. The brackets attach the ceiling to the doors. The ceiling brackets contain a splice plate that can be used to close the any gap between the enclosure and the door that may be created by the side panel.

For a 40U enclosure, specify a 7"H bracket so the café style doors can clear the ceiling when opening into the aisle. A 44U enclosure requires a 5" H bracket to ensure that the café style doors clear the ceiling when opening into the aisle.

End of Row Curtains
End of Row Curtains can be integrated with the ceiling brackets using part number CACBKTEORC. Note that attaching the curtains to the ceiling brackets requires curtains that are longer and wider than the aisle opening. You will need to add an additional 7" to the height of the curtains and 24" to the width of the aisle. The added width and length are required to compensate for the additional height and width of the ceiling bracket. The curtain bracket mounts just behind the ceiling bracket using the overhead cable management mounting holes.

Aisle widths

The Lexan panels come in 4’, 5’, and 6’ lengths. Because of the adjustable brackets and their ability to support the ceiling components, a 48”W panel will fit an aisle width from 44” to 50”W. A 60” W panel will fit an aisle width of 56” to 62”W, and a 72”W panel will fit an aisle width of 68” to 74”W. There is some adjustment at the enclosure attachment point, and finish adjustment can be made using tool-less knobs on the underside of the bracket. Aisle width is measured from the face of the door to the face of the opposing door. The brackets position the ceiling tiles at the front of the enclosure, as shown in this image.
Aisle heights
The ceiling brackets have 1.75” of vertical adjustment. Adjustment is made by loosening the hex bolt on the face of the brackets.

Aisle lengths
The Lexan panels come in widths of 12” and 18”. You can use two 12”W panels for a 24”W enclosure and an 18”W and a 12”W for a 30”W enclosure. Select the appropriate quantity and size for your row. See the following Nesting tops section for information about adjusting for aisle length.

Nesting tops
The clear Lexan panels are designed to be nested together. Nesting allows width adjustment. One panel must be inverted to provide adjustment. Two 18”W panels can be nested and then used on a 24”W enclosure. Wright Line recommends ordering at least one extra 18”W panel per aisle and inverting it to accommodate any variations that might occur due to side panels or other components.

Empty cabinet space / attachment plates
Each ceiling bracket comes with a splice plate. If a row contains an open area where an enclosure was removed it is still possible to mount the ceiling. The splice plates will hold the ceiling bracket to the two adjoining ceiling brackets and the ceiling can then be deployed. Vertical blanking panels that will contain the open area of the missing enclosure are under development.

Easily removable for cleaning and cable management
The panels are easily removed by loosening the tool-less knobs on the bottom of the bracket and sliding them backward. The panels can then be removed, which allows access to cable management on top of the enclosure or for the panels to be cleaned easily.
Sample Configuration 1
- Row of (20) 44U x 24"W Paramount Enclosures with Aisle Containment Ceiling and End of Row Doors
- Aisle dimensions are 5"W x 20'L

Add End of Row Doors and End Panels
Each enclosure requires one ceiling bracket and the row requires twenty linear feet of ceiling panels. The End of Row Door interface eliminates any open area between the ceiling brackets and End of Row Doors. The brackets also secure the ceiling to the doors for added support. Adding two 18"W ceiling panels (CACP1860) provides an additional 12" of ceiling length for the row (6" on each end). This eliminates gaps due to end of row panels or other components. See the Nesting tops section for more information.

### Ceiling Item Numbers

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<th>Description</th>
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<td>CACP1260</td>
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Sample Configuration 2

- Row of (10) 44U x 30"W Paramount Enclosures with Aisle Containment Ceiling and End of Row Curtains
- Aisle is 4"W x 12.5'L

Add End of Row Curtains

Each enclosure requires one ceiling bracket and the row requires 12.5 linear feet of ceiling panels. The End of Row Curtain interface eliminates any open area between the ceiling brackets and end of row curtains. The brackets also secure the curtains to the ceiling for added support. Adding two 18"W ceiling panels (CACP1860) provides an additional 12" of ceiling length for the row (6" each end). This eliminates gaps due to end of row panels or other components. See the Nesting tops section for more information.

Aisle width is measured from the face of the enclosure door to the face of the opposing enclosure door. You must add two feet to the aisle width when using curtains in conjunction with the containment ceiling. The height of the curtains is determined by measuring from the top panel to the floor. You must add 7" to the height of curtains when used in conjunction with the containment ceiling.

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