CONTEG DATASHEET

TOTAL SOLUTIONS FOR DATA CENTERS

HOT / COLD AISLE

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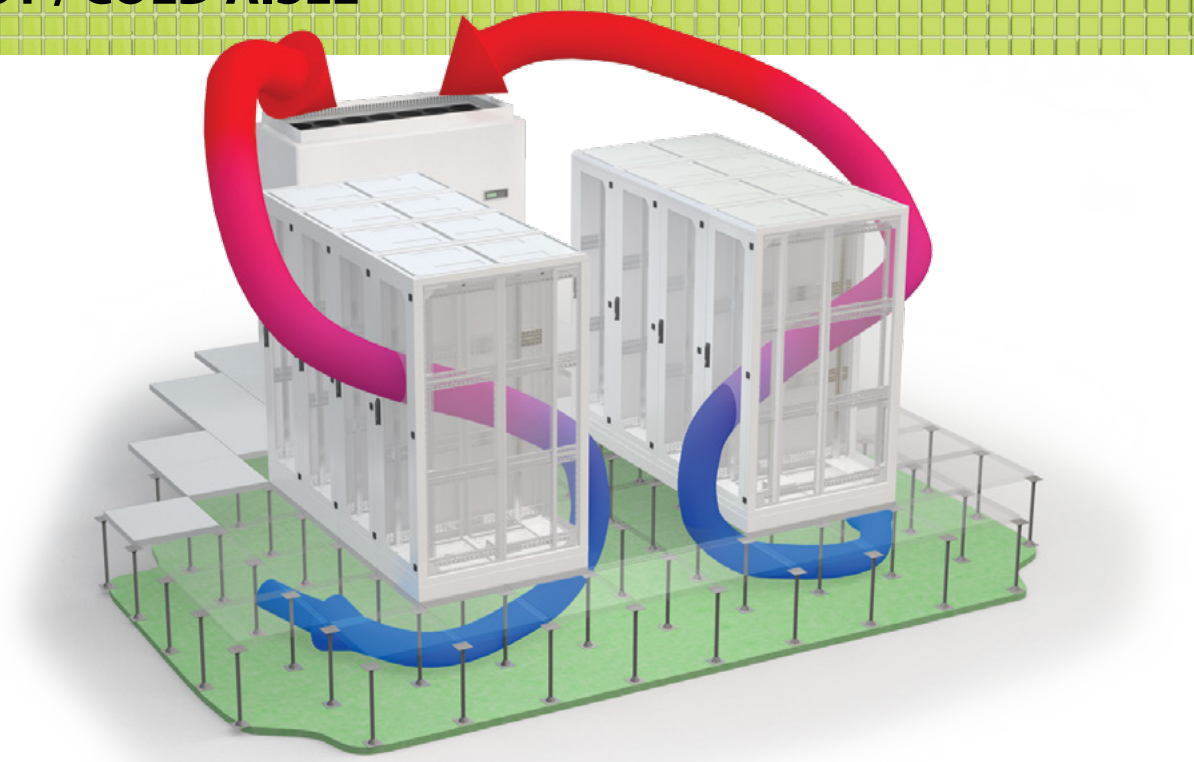
1.4 HOT / COLD AISLE



The Hot/Cold Aisle approach is considered to be the "norm" for data center designs. Racks are aligned front to front and cold air is delivered using the raised floor as a cold air handling space (plenum).

The ANSI/TIA/EIA-942-A (data center) standard recommends a cold aisle width of 1.2 meters (which is equivalent to two floor tiles) to allow a perforated tile to be placed in front of each cabinet which allows cold air to be delivered to the cabinet front.

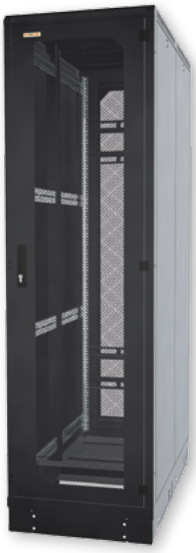
The RSF, RDF and ROF rack series are strongly recommended for hot/cold aisle data center designs. For maximum efficiency, highly perforated doors are required. Conteg test data shows a significant improvement to airflow in cases where the 83% vented doors are used instead of using standard perforated doors. In order to make the best use of available cold air, it is recommended to fill any unused space within the rack with standard blank panels. Additionally, using an air separation frame at the front of the rack will help to block unwanted cold air by-pass and hot air return around the mounting profiles, leading to an improvement in efficiency and ultimately an operational cost savings.

As an alternative to the cabinets, open frames can be used to house all the equipment. Conteg has developed a special high-load open frame series called RSG. It is the best choice when unlimited access to the installed equipment is required, while a safe dust-free environment can be guaranteed.

As the raised floor is being used to deliver the cold air, it is essential that all openings within the floor, such as the passage of cables, are well sealed using double brush grommets. This helps to maintain static pressure within the floor and minimizes the amount of air that can escape the floor in unintended or undesired locations.

Hot/Cold Aisle design can be modified in various ways to meet today's higher energy efficiency requirements. It can be easily improved (i.e. by separating the cold and the hot air streams) making the solution contained. See next chapter to learn more.

Cold air is delivered to the cold aisle using a raised floor as a cold air handling plenum. The hot air is blown out on the back side to the hot aisle.

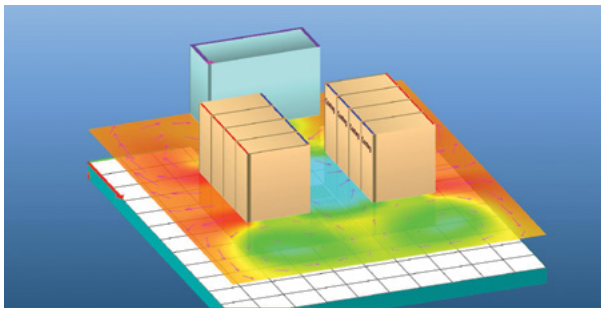


Rack design in a hot-cold aisle arrangement requires front vented (83%) & rear vented (83%) doors to easily enter the rack.

The RSG open frame series (two and four posts) is a rack alternative which gives you unmatched access to installed equipment.

COOLING

In the Hot/Cold Aisle design the airflow is managed at the rack level only. Within the data center/server room no barriers are applied to separate hot and cold air streams. This makes this solution very simple, but creates potentially future problems when high-density applications are housed in the cabinets. However, for a traditional Hot/Cold Aisle design, a central room cooling system with perimeter positioned close control units is recommended.



RECOMMENDED RACK / OPEN FRAME SERIES

Rack / open frame series	Description	Read more
PREMIUM Server RSF	PREMIUM rack series, highly configurable with load rating up to 1500 kg	36
PREMIUM Cabling RDF	PREMIUM rack series provides maximum compatibility with Targeted Cooling solutions and is developed for cabling support; load rating up to 800 kg	32
OPTIMAL ROF	OPTIMAL rack series, highly configurable with load rating up to 800/1100 kg, for racks that are 1200 mm deep – 1100 kg	45
Open Frames RSG4	Alternative to racks for housing equipment, load rating up to 1500 kg	68

- Front vented door (83% perforation rate) with multipoint swivel handle lock (universal key)
- Rear vented door (83% perforation rate) with multipoint swivel handle lock (universal key)
- Removable sheet steel side panels with lock (universal key)
- Two pairs of 19" vertical sliding extrusions
- Top and bottom openings for cable entry
- Adjustable feet as standard; recommended plinth or plinth with filter (not included)

Protection rating IP20, load rating ROF & RDF - 800/1100 kg, RSF – 1500 kg, (for ROF racks 1200 mm deep – 1100 kg), color black RAL 9005 (optionally light gray RAL 7035). For detailed technical information on RSF, RDF and ROF racks please refer to pages 27 & 45.

Code [1]
RSF-42-60/10T-WWWWA-2EF-H
RSF-45-60/10T-WWWWA-2EF-H
RSF-42-60/12T-WWWWA-2EF-H
RSF-45-60/12T-WWWWA-2EF-H
RSF-42-80/10U-WWWWA-2EF-H
RSF-45-80/10U-WWWWA-2EF-H
RSF-42-80/12U-WWWWA-2EF-H
RSF-45-80/12U-WWWWA-2EF-H

Code [1]
RDF-42-80/10C-WWWWA-2H5-H
RDF-45-80/10C-WWWWA-2H5-H
RDF-45-80/12C-WWWWA-2H5-H
RDF-42-80/12C-WWWWA-2H5-H

Code [1]
ROF-42-60/100-WWWWA-205-H
ROF-45-60/100-WWWWA-205-H
ROF-42-60/120-WWWWA-20A-H
ROF-45-60/120-WWWWA-20A-H
ROF-42-80/10C-WWWWA-205-H
ROF-45-80/10C-WWWWA-205-H
ROF-42-80/12C-WWWWA-20A-H
ROF-45-80/12C-WWWWA-20A-H

Code [2]
RSG4-42-19/50-LF
RSG4-42-19/74-LF
RSG4-42-19/92-LF
RSG4-45-19/50-LF
RSG4-45-19/74-LF
RSG4-45-19/92-LF
RSG4-47-19/50-LF
RSG4-47-19/74-LF
RSG4-47-19/92-LF

[1] *All racks in black; 48U height available; for gray – simply change H in the end of the code to B*
[2] *All open frames in black*

RELATED PRODUCTS

Related products	Description	Read more
Cable entries	Products for passage of cabling/pipes through raised floor with minimal loss of air pressure	138
Modular plinths	Replace adjustable feet and use as stabilizing and aesthetic element	135
Air separation frames	Prevent by-pass airflow between frame and 19" extrusion to optimize cooling of equipment	112
Brackets	Needed when vertical PDU installation into rack is planned	126
Blank panels	Prevent cold air by-pass through unused U positions	112

BASIC HOT/COLD AISLE DESIGN GUIDELINES

- Typically for heat loads of 4.5 kW to 7 kW per cabinet
- 42U to 48U – 600 mm or 800 mm wide cabinets – 1000 mm or 1200 mm deep cabinets
- Air separation frames – 50 mm to 200 mm deep
- 83% vented front and rear door
- 1200 mm or 1800 mm aisle spacing
- Double brush grommets for cable entries
- Blanking panels for all vacant equipment mounting locations in racks

Note: Recommendations based on room conditions compliant with TIA-942 standard. All the recommendations indicated in this brochure are typical guidelines to be used as a starting point for planning. Results may vary depending on the specifics and related variables for each design. Guidance is available from Conteg product specialists to resolve unique design challenges.