

Overview

Trends towards consolidation and higher-density computing configurations make the problem of heat management & one of the critical challenges in emerging data centers. Conventional approaches to addressing this problem have focused at the facilities level to develop new cooling technologies or optimize the delivery of cooling.

The last few years have seen a dramatic increase in the number, size, and uses of data centers. Large data centers contain up to tens & thousands of servers and support hundreds or thousands of users. For such data centers, in addition to traditional IT infrastructure issues, designers increasingly need to deal with issues of power consumption, heat dissipation, and cooling provisioning.

Challenges

Rack Weight to Static Load Capacity - Deploy more servers in Rack as datacenter floor has limiting factor weight per Sq.mtr
Enhancing the cooling of mission critical equipment by honeycomb perforated doors and Thermal Sealing to minimize hot air cool air mixing.

Rack manufacture to work in tandem with PAC to decide the on Rack and corridor solution

Power availability at Rack - To deploy more servers / Equipment in rack

Benefits

Decrease cooling costs. 20% - 40% Big savings in cooling costs.

Increase hardware reliability and Higher MTBF

Decrease response times to transients and emergencies

Increase compaction and improve operational efficiencies

NetRack Products

- Hot Air Corridors
- Cold Air Corridors
- Brush Tile
- Enhanced Cooling
- Air Seal Kit & Filler Panel

Corridor Solutions

The corridor concept is based on the principle of separation of hot and cold airflows thus preventing any 'short-circuiting' between hot and cold air which leads to significant efficiency improvements.

This is achieved by enclosing the both ends of the cold aisle are closed using doors for, cold air contentment. In addition all cabinets are fitted with Plinth, Rack Side Thermal Sealing and Blanking Panels between the equipment, in this way the only route for the Cold air is through the equipment.

The advantages are quite clear - the temperature between the bottom and top of the rack is now more constant. Reduction in Hot & Cold Air Mixing.

Today NetRack with 15 Years of experience capable of offering world-class CAC & HAC solutions with Hot Air Chimneys, Accesses to CAC / HAC with PVC Blinds, Sliding Doors and Automatic Slide Door system integrated with Fire management system/ Building management system.

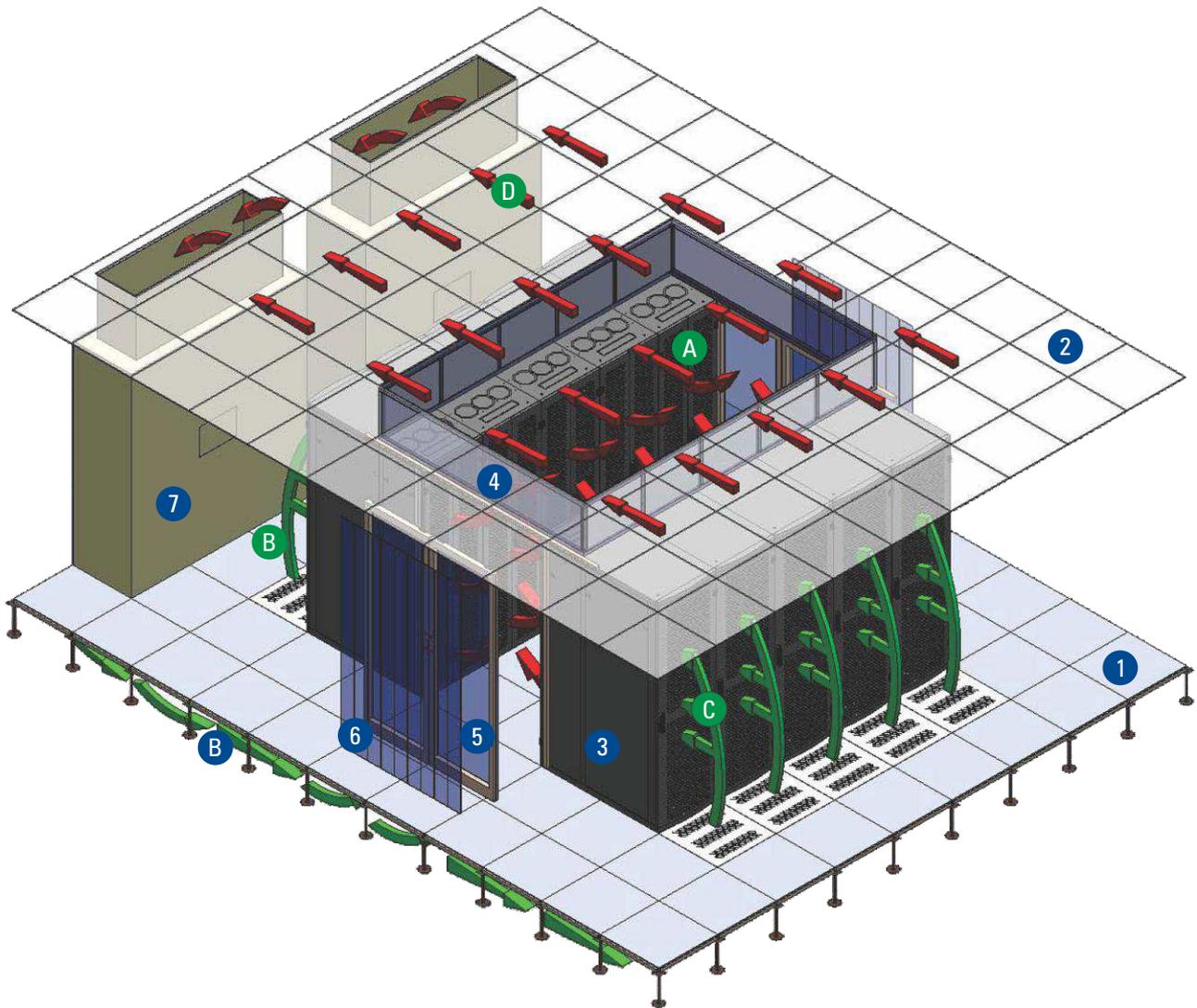
Some of the standard practices have been shown but can be customized to suit customer Requirement.

Design Concept

The HAC concept is achieved by enclosing both ends of the Hot aisle and are closed using Swing / Sliding Doors or Blinds for cold air containment and the Hot air returns to PAC through remaining area as shown in the Concept Drawing.

In this concept Top panel is Perpendicular to Floor & Installed on the rack Top panel Vertically touches false ceiling, Top panel is composite metal toughened glass / Poly carbonate for Lighting can be customized.

On Cold Aisle side the cabinets are fitted with Plinth, Rack Side Thermal Sealing and Blanking Panels between the equipment, in this way the only route for the Cold air is through the equipment.



- | | |
|--------------------------|---------------|
| 1. Raised Floor | A. Hot Aisle |
| 2. False Ceiling | B. Cold Aisle |
| 3. Rack | C. Cold Air |
| 4. Vertical Panel | D. Hot Air |
| 5. Swing / Sliding Doors | |
| 6. Corridor Blinds | |
| 7. PAC | |

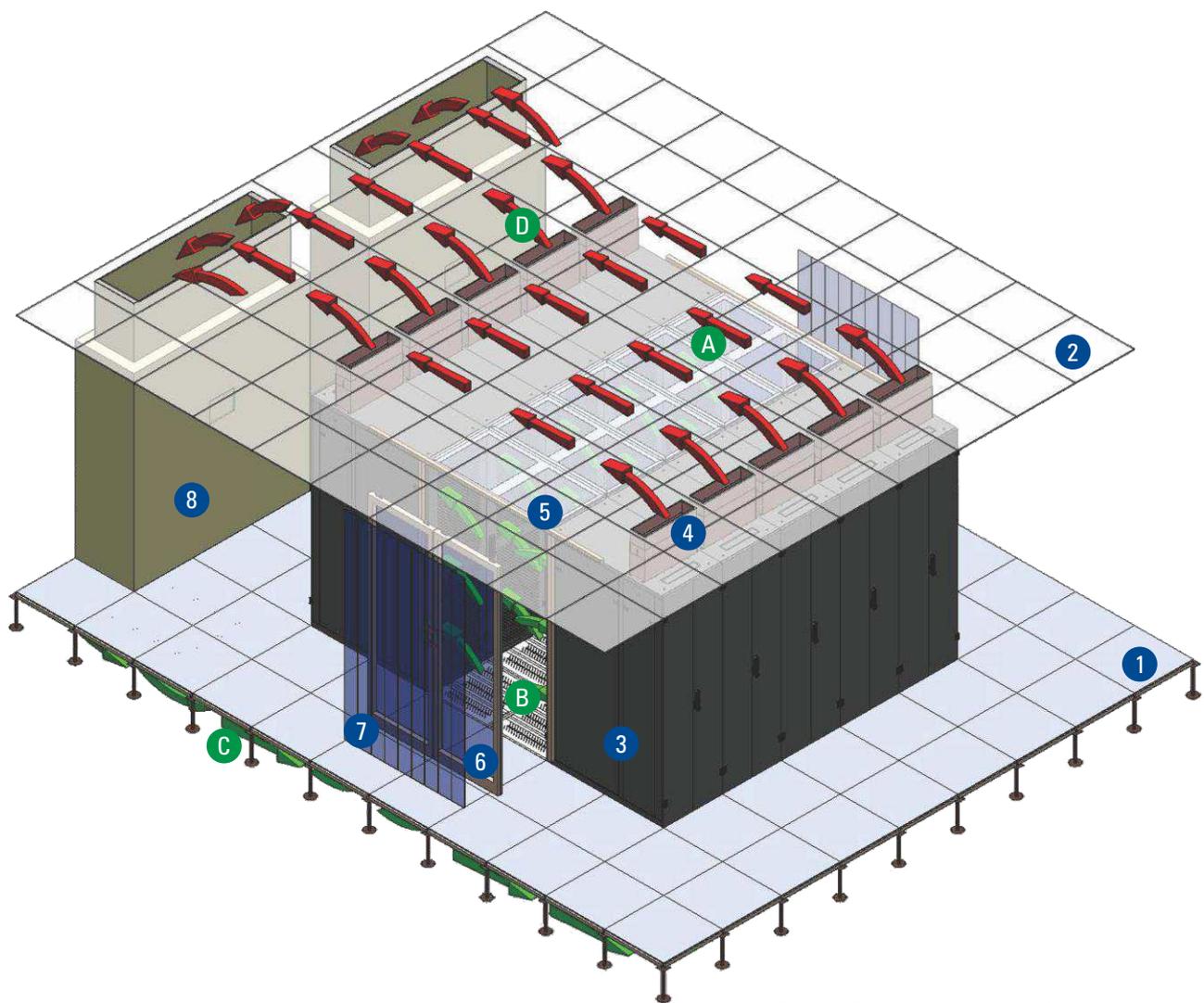
Design Concept - Horizontal Panel with Chimney

The CAC concept is achieved by enclosing both ends of the cold aisle and are closed using Swing / Sliding Doors or Blinds for cold air containment. In addition all cabinets are fitted with Plinth, Rack Side Thermal Sealing and Blanking Panels between the equipment, in this way the only route for the Cold air is through the equipment.

The Hot air returns to PAC through chimney above False ceiling and Plain Door Blocks the Hot air moving to other area. This concept is the best option as per NetRack.

In this concept Top panel is perpendicular to Floor & Installed on the rack Top panel.

Top panel is composite with metal and toughened glass / Poly carbonate top Panel for lighting in corridor area can have provision for FM 200 / NOVEC lines. Smoke and other required sensors as per data centre standards.



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|--------------------------|---------------|
| 1. Raised Floor | A. Hot Aisle |
| 2. False Ceiling | B. Cold Aisle |
| 3. Rack | C. Cold Air |
| 4. Chiminy | D. Hot Air |
| 5. Top Panel | |
| 6. Swing / Sliding Doors | |
| 7. Corridor Blinds | |
| 8. PAC | |

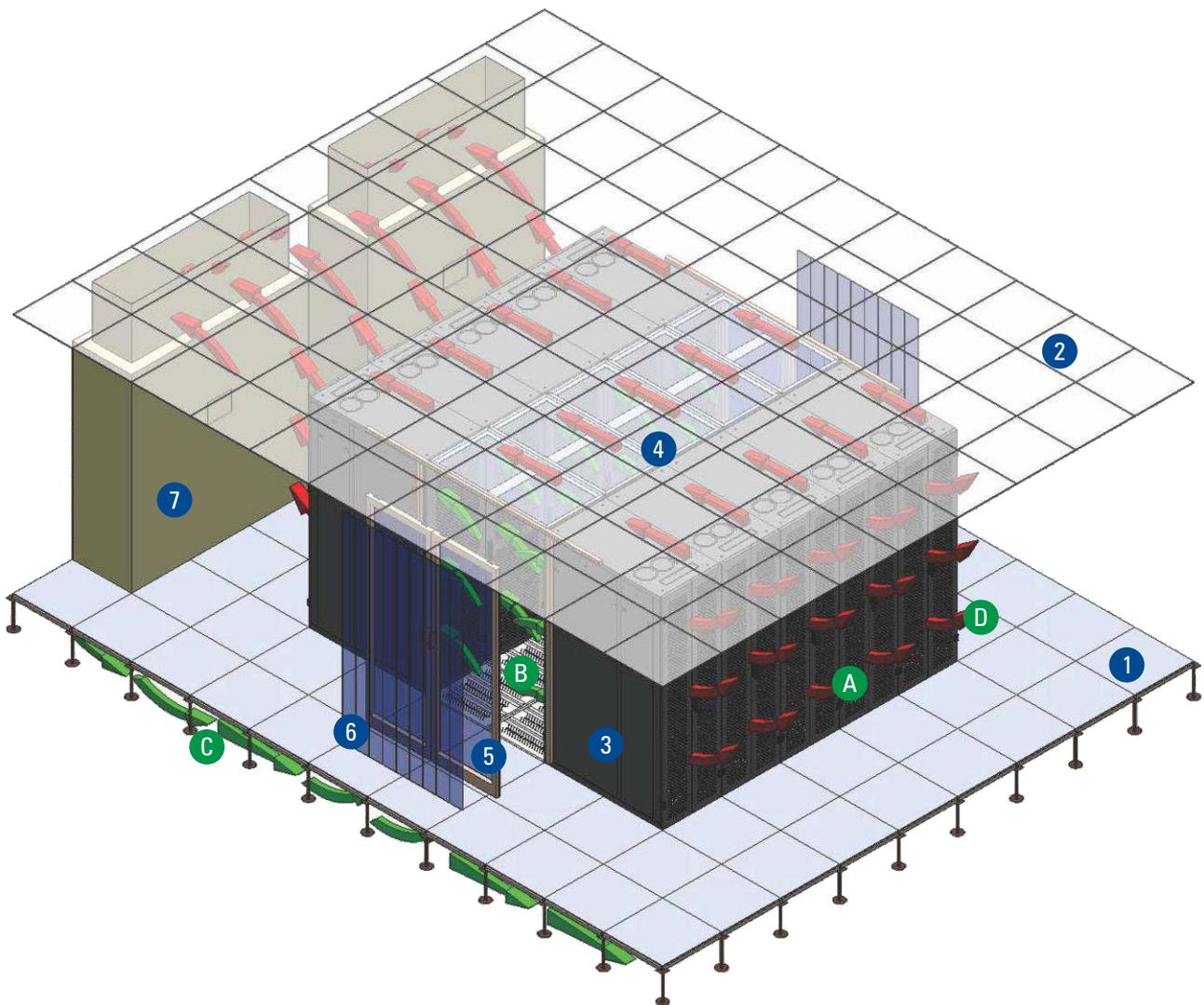
Design Concept - Horizontal Panel without Chimney

The CAC concept is achieved by enclosing both ends of the Cold aisle and are closed using Swing / Sliding Doors or Blinds for cold air containment. In addition all cabinets are fitted with Plinth, Rack Side Thermal Sealing and Blanking Panels between the equipment and route the cold through the equipment.

The Hot air returns to PAC through remaining area as shown in the Concept Drawing.

In this concept Top panel is perpendicular to Floor & Installed on the rack Top panel.

Top panel is composite metal toughened glass / Poly carbonate top panel for lighting in corridor area can have provision for FM 200 / NOVEC lines. Smoke and other required sensors as per data centre standards.



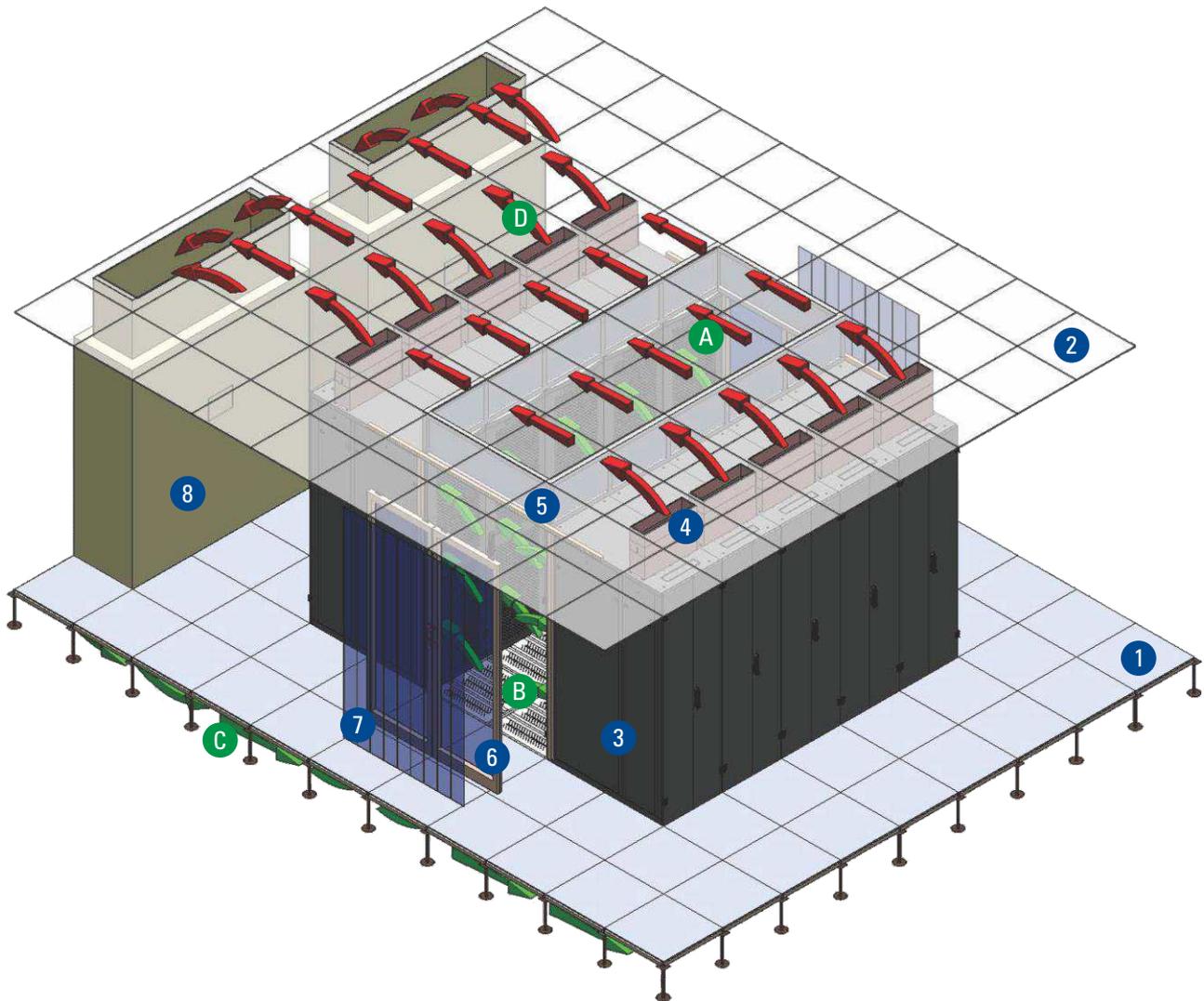
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|--------------------------|---------------|
| 1. Raised Floor | A. Hot Aisle |
| 2. False Ceiling | B. Cold Aisle |
| 3. Rack | C. Cold Air |
| 4. Top Panel | D. Hot Air |
| 5. Swing / Sliding Doors | |
| 6. Corridor Blinds | |
| 7. PAC | |

Design Concept - Vertical Panel with Chimney

The CAC concept is achieved by enclosing both ends of the Cold aisle and are closed using Swing / Sliding Doors or Blinds for Cold Air containment. In addition all cabinets are fitted with Plinth, Rack Side Thermal Sealing and blanking panels between the equipment, in this way the only route for the Cold air is through the equipment.

The Hot air returns to PAC through Chimney above False ceiling and Plain Door Blocks the hot air moving to other area. This concept is the best option as per NetRack.

In this concept Top panel is perpendicular to Floor & Installed on the rack top panel vertically touches false ceiling, Top panel is composite metal toughened glass / Poly carbonate for Lighting can be customized.



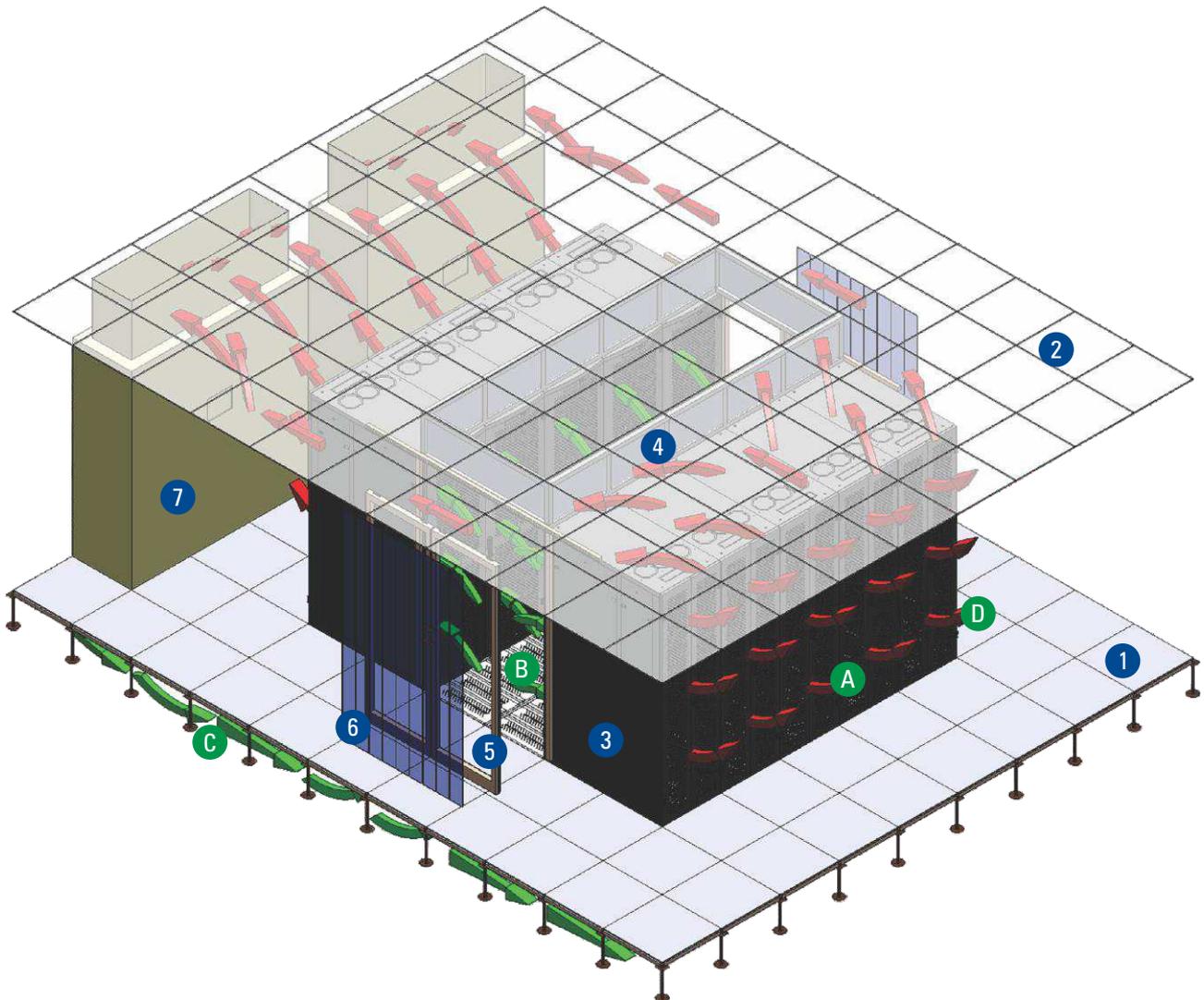
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|--------------------------|---------------|
| 1. Raised Floor | A. Hot Aisle |
| 2. False Ceiling | B. Cold Aisle |
| 3. Rack | C. Cold Air |
| 4. Chiminy | D. Hot Air |
| 5. Top Panel | |
| 6. Swing / Sliding Doors | |
| 7. Corridor Blinds | |
| 8. PAC | |

Design Concept - Vertical Panel without chimney

The concept is achieved by enclosing both ends of the cold aisle and are closed using Swing / Sliding Doors or Blinds for cold air containment. In addition all cabinets are fitted with Plinth, Air Seal Kit and blanking panels between the equipment and route the Cold air through the equipment.

The Hot air returns to PAC through remaining area as shown in the Concept Drawing

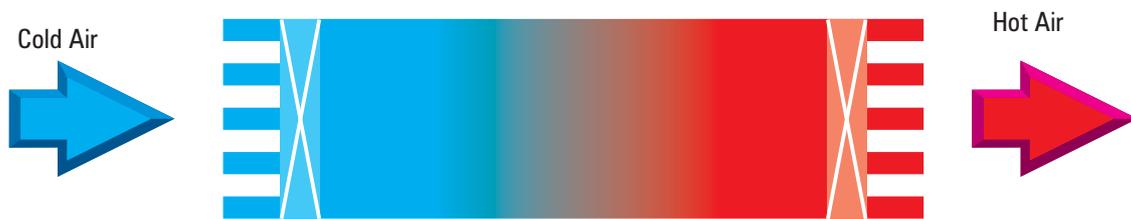
In this Concept Top panel is Perpendicular to Floor & Installed on the rack top panel vertically touches false ceiling, top panel is composite metal toughened glass / Poly carbonate for Lighting can be customized



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| 4. Top panel | D. Hot air |
| 5. Swing / Sliding Doors | |
| 6. Corridor Blinds | |
| 7. PAC | |

Introduction

The Servers and Equipments used in Data Centre Solutions and Server Rooms generate a lot of heat and when these equipments are housed in the rack, manufacturer has to provide a system to take out the hot air and allow more cool air to enter front side of the Racks.



Overview

As explained in above drawing, the servers and equipments will breathe Cool air from Front side and exhaust from the back side this forced cooling happens through suction (Front) and exhaust (Back) fans provided inside the Server / Equipments by OEM. The air acts as a heat transfer media to take out the heat from the internal components to the outside of the equipment.

We at Netrack constantly working on increasing the Cool air flow inside the rack and exhaust the hot air and we have come out with below solutions to meet various site conditions and requirements.

NetRack understands challenges in high-density computing as this increases heat in the rack and Data Centre. Netrack Thermal management solutions are designed to handle large heat generated by IT equipments and servers, by improving airflow in the racks and also by preventing the mixing of Cool and Hot air. This ensures that your mission critical equipment runs cool with more reliability with an increased MTBF, saving energy costs and capital cost on the AC plant.

The Ready Accessories and solutions are,

- a) Brush Tile
- b) Brush Module for Cable Entry & Exit
- c) Air Seal Kit
- d) Front Filler Panels
- e) Enhanced Rack Cooling
- f) Hot & Cold Corridors
- g) Air Diverter Solutions

All Products Design to reduces bypass of airflow and increases under-floor static pressure which in turn will help increase the cooling efficiencies, reduces running and infrastructural costs. Helps to promote Hot Aisle / Cold Aisle best practices and improves air cooling performance and reduces carbon footprint.