

## **Importance of Front to back server grade ventilation in Server Cabinets**

During operation rack mount servers and other active equipment like storage and server appliances generate heat. Effective removal (dissipation) of this heat is very important for the reliable and continuous operation of the rack mount servers and other active devices. Because of their compact size (form factor) insufficient heat removal can cause their chassis temperatures to rise quickly and exceed their normal (reliable) operating temperature limits.

To dissipate heat, rack mount servers suck air from their front and exhaust hot air from their rear.

In a server cabinet with fully vented front AND rear doors, i.e. with front to back server grade ventilation, large volumes of air can enter, flow through and exit from the server chassis (see figure 1). This front to back ventilation (air flow) enables effective (total) heat removal. There is no heat buildup inside the rack mounted servers. Cool servers => reliable servers.

But in a server cabinet without fully vented front AND rear doors sufficient air cannot enter, flow through and exit from the server chassis (see figure 2). Insufficient air flow leads to partial heat removal and accumulation of heat inside the rack mounted servers. Hot servers => non reliable operation.

**For reliable and continuous operation of rack mount servers and other active equipment they must be kept only in server cabinets having front to back server grade ventilation. Front to back server grade ventilation is a must have feature in all server cabinets.**

Premium server cabinets like Compaq 9000 series racks, Acer Altos series racks, APC NetShelter enclosures, IBM NetBAY racks etc. all provide this type of ventilation.

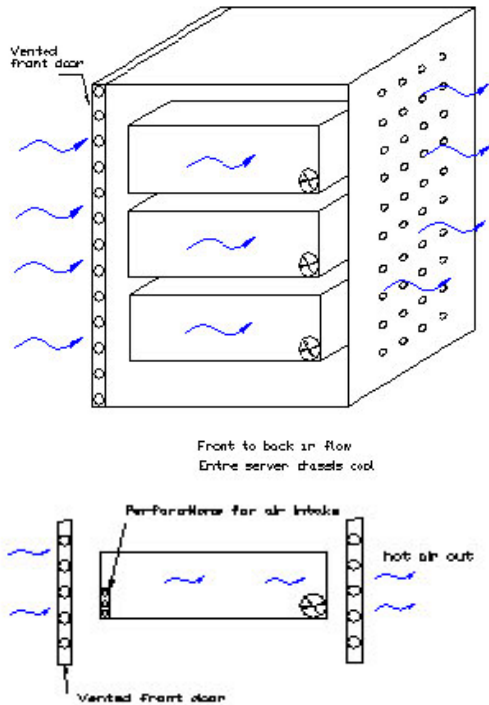
**Hanut 'Airmax' front and rear doors have 64% vent area for free air flow and effective heat dissipation. They provide front to back server grade ventilation. Therefore we recommend Hanut server cabinets with 'Airmax' front and rear doors.**

Note:

1. Front doors with glass cannot provide front to back server grade ventilation PERIOD.
2. Ventilation from side panels as provided by some cabinet manufacturers in India in place of front to back ventilation is inadequate and unsuitable for rack mount servers. This type of ventilation is also not adaptable to multi-bay configuration where two or more server cabinets are coupled side by side.
3. None of the premium server cabinets like Compaq 9000 series racks, Acer Altos series racks, APC NetShelter enclosures, IBM NetBAY™ racks etc. come with glass front door.

## Importance of Front to back server grade ventilation in Server Cabinets

Figure 1: Air flow pattern in a cabinet with fully vented front and rear doors

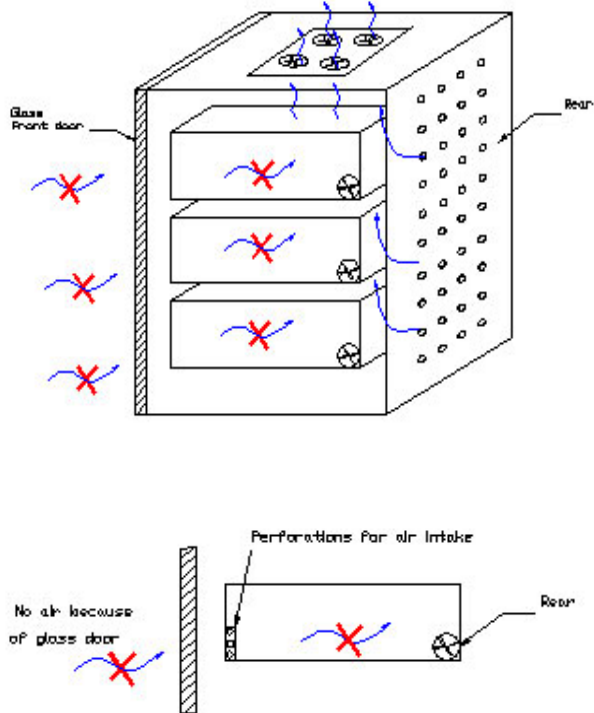


Large (sufficient) air flow through the server chassis => effective (total) heat removal. No heat buildup inside the rack mounted servers.  
Cool servers => reliable operation.

No need for roof mount exhaust fan kit. A major cost saving. Request document: "How Hanut saves you money?"

No problem.

Figure 2: Air flow pattern in a cabinet with glass front door and roof mount exhaust fan kit



Little (insufficient) air flow through the server chassis => partial heat removal and heat buildup inside the server => unreliable operation

Little (insufficient) air flow through the server chassis even with roof mount exhaust fan kit

Problem becomes more severe as the cabinet depth increases.

**Go only for server cabinets which provide front to back server grade ventilation.**

## Useful hyperlinks

[www.compaq.com/products/servers/proliantstorage/racks/](http://www.compaq.com/products/servers/proliantstorage/racks/) : Compaq series 9000 and series 1000 racks

[www.hanut-india.com/pdf/chklist.pdf](http://www.hanut-india.com/pdf/chklist.pdf) : Server cabinet buying guide / checklist. Printed version of this guide can be mailed on request.

[www.hp.com/racksolutions/infolib/evalguide.pdf](http://www.hp.com/racksolutions/infolib/evalguide.pdf) : “Guide for evaluating the installation of hp equipment in non-hp racks”

[www.pc.ibm.com/ww/eserver/xseries/rack.html](http://www.pc.ibm.com/ww/eserver/xseries/rack.html) : IBM NetBAY 42 enterprise racks

[www.acer.com.ph/altos\\_racksys.htm](http://www.acer.com.ph/altos_racksys.htm) : Acer Altos series server racks

[www.hanut-india.com](http://www.hanut-india.com) : Comprehensive product website of Hanut 19" server cabinets.

Hanut is trademark of Hulasi Metals Pvt. Ltd., India. All other product and company names mentioned in this document are trademarks or registered trademarks of their respective owners.

Using this document means that you agree to legal statement / policy mentioned at [www.hanut-india.com/legal.asp](http://www.hanut-india.com/legal.asp).