Ken's Korner

TIPS ON SELECTING DATA CENTER SERVER CABINETS

Over the years, I've had the opportunity to be involved in both data center renovations and new construction, and one topic that seems to get little consideration, yet is critical to a data center's success, is server cabinet selection. While choosing cabinets to house server equipment may sound like an easy task, there is actually a lot more to be considered than just size.

Selecting Server Cabinets

Server racks and cabinets come in a wide range of sizes, shapes, styles and accessories. Following are a few things to consider when choosing the right cabinet for your data center.

1. Thermal Management
2. Physical Characteristics
3. Cable Management
4. Security
5. Accessories
6. Other Considerations

1. Thermal Management
Servers and other electronic equipment generate heat. It's important to dissipate heat to limit equipment from overheating which could lead to failure and downtime.
• Know your cooling strategy. If you are like the majority of data centers, utilizing raised floors and Computer Room Air Conditioning units (CRAC), having vents or grills to allow airflow through the structure is essential.
• Look for server cabinets that provide good ventilation.
• You'll want cabinets that draw cold air from the front and discharge in the back to enable hot/cold isle configuration.
• They should not allow mixing of plenum and the above floor room air and compromise the static pressure in the plenum.
• Will the server cabinets cause any adverse effects to other adjacent cabinets on the raised floor?
• If your cabinets require fan assistance, does the fan capacity meet your server requirement?
• Regardless if the fans are roof or rack mounted, are they redundantly powered, can they be connected to your uninterruptable power supply (UPS) system?

2. Physical Characteristics
It is important to select a server cabinet that is spaced to house your current equipment and ensure that you have room to accommodate future and possible unplanned equipment purchases.
• Are the server cabinets' free standing? If you're space constrained wall mounted cabinets are a space saver, but you need to know if they'll work with your cooling strategy.
• Consider the special height and cabinet needs if you are utilizing an overhead sprinkler based fire suppression system.
• Do they provide ample working space, you want to be able to easily install and access the equipment for servicing.
• Will there be any problems getting the cabinets in the data center and positioned into the allocated floor space?
• Can your floor tiles handle the weight capacity of a fully loaded cabinet?
• Can the doors be removed or reversed if needed?
• Are they standard depth, 36 to 42 inches?
• Is circuit access easy to work with?
• Are they designed for standard raised floor tile cuts?
• Work with your server vendors to insure they are compatible their equipment you have or are planning to purchase.

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3. Cable Management

Cable management involves the routing of cable from the servers through the cabinet and the raised floor or overhead above the cabinet.

• Will the cabinet allow overhead or under floor entrance or both depending on the cabling system you are using in your data center?
• Does the cabinet have enough breakouts for all of your server devices?
• Does the cabinet provide adequate space for your data cabling?
• Will the cabling provide unobstructed airflow when completed?
• Don't forget to consider other key cable management equipment and accessories, like plinths, cable trays, horizontal cable tidy bars, brush strip panels and jumper rings.

4. Security

Server cabinets provide a basic level of security for your electrical equipment, but for enhanced security, you might consider the following:

• Do the cabinet doors have locks on them, front and back?
• Are the hinges internal?
• Can you add intrusion alarms that can be remotely monitored for unauthorized access?
• Can environmental monitoring devices be set up to proactively monitor the cabinets?

5. Accessories

A wide range of accessories exist to allow each cabinet to be configured to a data centers unique needs and specifications.

• Are the shelves fixed or adjustable, solid or vented; will you need a set up to accommodate a sliding keyboard tray, utility drawer or monitors?
• Are the top and side panels perforated or slotted for added ventilation, provide grommet holes for cable management or mounting for additional exhaust fans?
• Stabilizing feet, levelers or casters, a level stable platform for the equipment is important safety precaution; while load rated casters will permit mobility to the cabinet.
• Another often forgotten accessory essential to improved airflow management and proper equipment cooling are blanking panels for unused space in your server cabinet.

6. Other Considerations

• First and foremost, make sure that your server rack will fit inside your cabinet. Buy to the cabinet's internal dimensions, not external.
• You may think you're saving money by buying bigger cabinets that can hold more servers. But remember that if your cooling capacity cannot handle that many servers in a confined space, then you'll end up having to leave out servers to reduce your density.
• Also, purchasing a more common sized cabinet might be cheaper regardless of its size, if the manufacturers are producing more of them and has priced them accordingly.
• Will the server cabinet offer compatibility with other manufacturers servers, or servers of different dimensions? Servers are being replaced constantly; either due to failure or through obsolescence; make sure that cabinets can accommodate "common" sized servers saving you time and money in the long run.
• If the cabinet is to be positioned near staff, choose a cabinet that is soundproof, they'll appreciate it.
• If your data center entertains executives or clients on a regular basis, selecting cabinets that are aesthetically pleasing may play a role in your decision.
• Make sure the supplier you are purchasing from has a solid reputation in the marketplace. This come from years in business, quality of product sold and level of customer service.
• If the cabinet doesn't have an incorporated grounding strip you may need to purchase a supplemental grounding busbar to ground the cabinet to the grounding grid.
• One final thing that you might consider when buying server cabinets, find a manufacturer or distributor that carries a variety of sizes and accessory options. That way they serve as a one-stop-shop for all of your needs.

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