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A vertical rectangular image on the left side of the page, showing a close-up of a circuit board with various components and traces, rendered in a warm, golden-brown color scheme.

Choosing a Cabinet or Rack

What to look for when

The main component of a cabinet is a set of vertical rails with mounting holes to wh



With a cabinet, the first measurement you need to know is the width of the rails. The most common size is 19" (48.3cm) with hole-to-hole centres measuring 46.5cm. There are also 23" (58.4cm) and 24" (60.9cm) cabinets. Most rackmount equipment is made to fit 19" (48.3cm) rails, but can be adapted for wider rails. When ordering rackmount equipment, you need to know if you have 48.3cm or 58.4cm rails, and whether your rails have 10-32, 12-24 or M6 holes.

After width, the most important specification is racking height, expressed as a number of rack units, abbreviated as 'U'. Cabinets, racks and rackmount equipment are all measured in rack units. This is a measurement of space available to mount equipment. One rack unit (1U) is 44.45mm of usable space and is usually, but not always, measured vertically. So, for example, a rackmount device that is 20U high has 889mm of usable space. Because the widths are standard, the amount of vertical space is what determines how much equipment you can actually install. Remember that this measurement of usable vertical space is smaller than the external height of the rack.

Below is a quick checklist of features to keep in mind before you choose a cabinet for servers or other network devices:

- High-volume airflow.
- Adjustable rails.
- Rails with M6 square holes.
- Moisture and dust resistance.
- Air filters.
- Front and/or rear accessibility.
- Locking doors.
- Left- or right-hinging doors.
- Power strips and cables organisers.
- Interior lighting.
- Pre-assembly.
- Availability of optional shelves, fans and castors.
- Cable management rails, space and knockouts.
- Extra depth to accommodate newer and deeper servers.

Ingress protection ratings

The requirements of individual environments are different from those of offices, and there have been a proliferation of industrial standards. The most commonly accepted are the Ingress Protection (IP) ratings developed by the European Committee for Electrotechnical Standardisation (CENELEC). These specify the environmental protection that an enclosure provides.

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which you attach your equipment or shelves. But there's much more to it than that:

An IP rating consists of two or three numbers. The first number refers to protection from solid objects or materials; the second number refers to protection from liquids and the third number, commonly omitted from the rating, refers to protection against mechanical impacts. An IP54 rating means that the equipment is protected from dust (limited Ingress) and splashing water from all directions.

What else to consider when choosing a rack

There are several things you should consider when choosing a rack. What kind of equipment will you be putting in it? If you need frequent access to all sides of the equipment, an open rack is more convenient than a cabinet. If your equipment needs ventilation, a rack poses no air-circulation limitations. Also, don't neglect aesthetics. Will customers or clients see your installation? A rack with cable management looks much neater.

Finally, consider security. Because a rack is open, you need to take steps to secure your equipment. Put your rack in a locked room so that prying fingers can't access your network equipment.

Racks come in various sizes and installation styles. Some are freestanding and some are designed to be wall-mounted. Some can be a combination of both styles — they sit on the floor but are attached to the wall for more stability.

The fully accessorised rack

After you choose your rack, consider how you'll set it up and what accessories you might need. Your rack may need to be secured. A typical rack has about a 38.1cm deep base, providing some stability, but not enough to prevent the rack from tipping if heavy objects are mounted on it. To solve this problem, most rack bases can be bolted to the floor.

You also need to decide how to accommodate standalone equipment, which is not actually rackmounted or bolted to the rack. You can place small devices on a cantilevered shelf - however, you should place heavier items, such as monitors, on a centre weight shelf.

Small extras, such as patch panel hinge kits, can make your job easier. These hinges enable you to access the back of the patch panel simply by swinging it out from the rack. They are particularly useful for racks in hard-to-reach areas. If you need to mount both 19" and 23" equipment in the same rack, use a 23" to-19" rackmount adaptors to fit the 19" devices. For a neater appearance you can cover unused spaces in a rack with filler panels. Cable management is also an important consideration. Horizontal and vertical cable managers help you to route cable along the sides of racks, between racks and to the rackmounted equipment.



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