



# Energy density of standard power scale site cabinet





## Overview

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What is a data center cabinet specification?

The specification is hierarchical and modular, so that different rooms and zones can have different density requirements. The specification comprehends that IT cabinets within data centers have different power requirements, and that these requirements may not be well-defined in advance.

What is a good density specification for a data center?

A better approach to specifying density considers the reality that IT power varies among cabinets as well as over time, and comprehends the issues of modularity and growth. To illustrate the problems with a vague density specification, consider the case of a data center that has the typical specification of 120 W/ft<sup>2</sup> (1,292 W/m<sup>2</sup>).

How much power does a data center cabinet use?

Almost every data center has some variation of power among cabinets. It is common to find cabinets operating from 50 watts (a network switch with patch panels) up to 30 kW (fully loaded high performance blade servers). This represents a range of 60 to 1 in power consumption.

What is a data center rack density?

As a result, data center rack densities are increasing. Rack density refers to the amount of power consumed by all of the IT equipment in the rack. For many years, rack densities averaged 2kW to 5kW. That's not the case anymore. According to AFCOM's 2024 State of the Data Center Report, average rack density now sits around 12 kW.



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Rising Rack Densities: A Driver for High-Density Rack Power Distribution Units The average power density of data center racks continues to rise to support AI and ML, ...



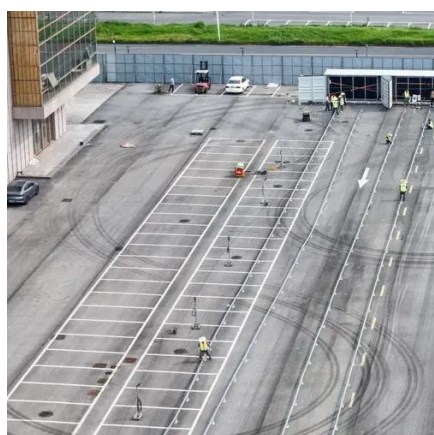
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The value of this "average power density per rack" correlates to DC size, cooling capacity, and technology utilization, thus impacting ...



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The evolution of technology has data center rack densities skyrocketing. Learn why average power consumption (kW) per data center rack has reached an all-time high.



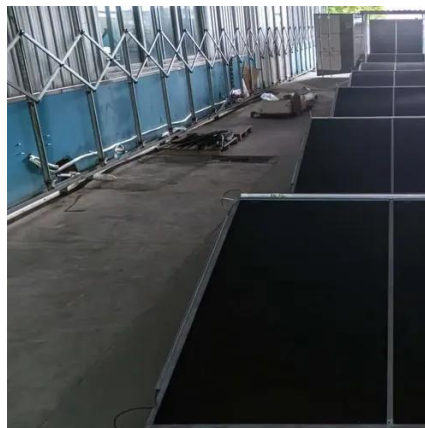
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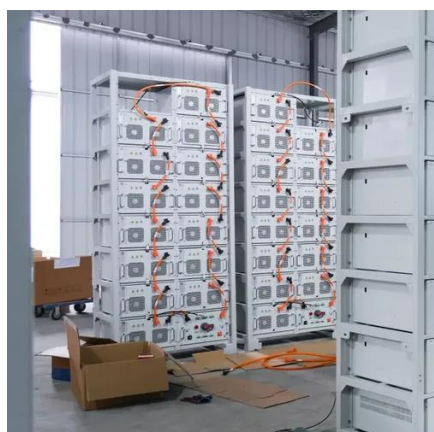
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