

# Power consumption of a standard data center rack



## Article Overview

A standard data center rack typically consumes between 7 and 10 kW of power, depending on the equipment and workload.

### Typical Power Usage

Standard server racks in data centers generally draw 7-10 kW of power, which includes the combined consumption of servers, storage, and networking equipment . This range represents conventional IT workloads; racks designed for high-performance computing, AI, or machine learning can demand significantly more, often 30 kW to over 100 kW per rack .

### Factors Affecting Rack Power Consumption

- Servers and IT Equipment: CPUs, GPUs, memory, and storage devices account for roughly 40% of total data center power .
- Cooling Systems: Cooling infrastructure is the largest non-IT power consumer, using 40-54% of total power to maintain safe operating temperatures .
- Network Infrastructure: Switches and routers consume less than 5% of total power but indirectly increase cooling requirements .
- Other Infrastructure: Power distribution units (PDUs), uninterruptible power supplies (UPS), lighting, and monitoring systems contribute additional overhead .

### Calculating Energy Usage...



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How Many KW Does a Rack Use?

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Data Center Power Equipment Thermal Guidelines and Best Practices Whitepaper created by ASHRAE Technical Committee (TC)

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Frequently Asked Questions How much electricity does a typical data center use compared

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