

Article Overview

Outdoor server racks typically use weather-resistant PDUs, redundant power supplies, and UPS systems to ensure reliable, scalable, and monitored power delivery in harsh environments.

Key Components

Power Distribution Units (PDUs): Outdoor server racks rely on PDUs to distribute electricity from a single input source to multiple devices. PDUs for outdoor use are often modular, weather-resistant, and capable of handling high-density loads. They may include features such as real-time monitoring, per-outlet control, and remote reboot capabilities to manage servers, switches, and storage devices efficiently . Popular brands include Schneider Electric, Eaton, Vertiv, and Raritan .

Redundant Power Supplies: To maintain uptime, outdoor racks often use dual or multiple redundant power supplies for each server or network device. This ensures that if one supply fails, the other can continue powering the equipment without interruption .

Uninterruptible Power Supplies (UPS): UPS systems provide backup power during outages and protect against voltage fluctuations. Outdoor UPS units are typically ruggedized to withstand temperature extremes and moisture, complementing the PDU and redundant power setup .

Power Considerations

- o **Voltage and Amperage:** Outdoor racks may use 120V, 208V, or 240V circuits, depending on the equipment load. PDUs are rated for specific amperages (e.g., 15A, 20A) and may be derated for continuous loads to prevent breaker trips .
- o **Power Density:** High-density servers require careful planning of watts per rack unit to avoid overloading circuits. Outdoor PDUs should accommodate future expansion and higher power demands .
- o **Connector Types:** Standard server power supplies use C13 connectors, while higher-wattage devices may require C19 outlets. Outdoor PDUs often provide a mix to simplify cabling and reduce adapters .

Environmental and Safety Features

Outdoor racks prioritize IP-rated enclosures for protection against dust, water, and corrosion. PDUs and power supplies must be rated for outdoor conditions, including temperature extremes and humidity. Safety certifications like UL and ISO9001 are recommended to ensure compliance and reliability .

Best Practices

- o Use modular PDUs to allow easy expansion as server needs grow.
- o Implement redundancy at both the PDU and server power supply level.
- o Include remote monitoring to track power consumption and detect anomalies.



Power supply for outdoor server racks

- o Ensure UPS integration for critical equipment to prevent downtime during outages.
- o Verify compatibility with outdoor enclosures to maintain IP protection and thermal management . By combining weather-resistant PDUs, redundant power supplies, and UPS systems, outdoor server racks can maintain reliable operation in challenging environments while providing scalability and monitoring for future growth.

Designed to support the demanding needs of modern servers, these units help ensure consistent operation and minimize downtime.

Explore our comprehensive Rack PDU Selection Guide for server racks. Find the perfect

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power levels to fit many

The better the balance of rack loads, the better the rack behaves. Here's how to correctly size your power

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