

# Data Center Energy Efficiency POE



## AI Overview

Power over Ethernet (PoE) enhances data center energy efficiency by delivering both power and data over a single cable, reducing energy waste, simplifying infrastructure, and enabling centralized power management.

**Overview of Data Center Energy Efficiency**

Data centers are significant energy consumers, accounting for approximately 1.5% of global electricity use, projected to rise to 945 TWh by 2030 due to AI and accelerated computing demands. Energy efficiency in data centers is critical to reduce operational costs, environmental impact, and carbon emissions. Key strategies include optimizing IT systems, cooling, electrical systems, and implementing metrics like Power Usage Effectiveness (PUE) to benchmark energy performance. The EU has introduced reporting obligations and a rating scheme to monitor and improve data center energy efficiency, including minimum performance standards and waste heat recovery requirements.

**Power over Ethernet (PoE) in Data Centers**

PoE technology allows Ethernet cables to transmit both data and electrical power to devices such as IP cameras, wireless access points, and VoIP phones, eliminating the need for separate power lines. PoE standards include:

- IEEE 802.3af (PoE): up to 15.4W per port
- IEEE 802.3at (PoE+): up to 30W per port
- IEEE 802.3bt (PoE++): up to 60W (Type 3) or 100W (Type 4) per port

**Benefits of PoE for Energy Efficiency**

- Simplified Infrastructure:** Reduces cabling complexity and installation costs by combining power and data in a single cable.
- Centralized Power Management:** Enables efficient allocation of power, reducing overall energy consumption.
- Reduced Heat Generation:** Minimizes energy loss from power conversion, lowering cooling requirements.
- Scalability and Flexibility:** Supports easy addition of devices without major reconfiguration, improving operational efficiency.
- Optimized Power Usage:** Delivers only the necessary power to devices, reducing waste and improving sustainability.
- Integration with Broader Energy Efficiency Practices** PoE complement...

## Article Content

Data Centre Facilities Explained (2025): Standards, Cooling, Power,

A data centre facility is a layered physical infrastructure delivering continuous power, stable cooling, connectivity, fire protection, and security. It supports IT but is distinct from IT itself.

Data Center Power Solutions | Siemens Energy

Power up your data center with Siemens Energy! From boosting efficiency to hitting sustainability targets, we're here to help you navigate the digital world's energy demands and stay ahead of the

Data Center Waste Heat Recovery 2026: District Heating Economics ...

Microsoft, Google, and Meta are transforming data center waste heat into community heating. Full economics, interactive ROI calculator, and global benchmarks.

Power Over Ethernet in Data Centres: What You Need to Know

Power over Ethernet (PoE) has emerged as a groundbreaking technology, offering a simplified way to power and connect devices through a single Ethernet cable. Its ability to transmit

Cisco Catalyst 9200 Series Switches Data Sheet

This data sheet describes the benefits, specifications, and ordering information for the Cisco Catalyst 9200 Series Switches.

Industrial Automation Asia

Established since 2001, Industrial Automation Asia (IAA) has emerged as the frontrunner in it's industry. Our many achievements include being the first BPA

PoE Technology for Data Centers: Powering Smarter, Scalable

Whether you're expanding your footprint, boosting energy efficiency, or integrating AI and automation, we deliver what's next in PoE technology for data centers.

Review of energy efficiency and technological advancements in data ...

The first section, overview of data centers, introduces the importance of energy efficiency in data centers and discusses the design considerations for improving power usage effectiveness

Energy demand from AI – Energy and AI – Analysis

Energy demand from AI What is a data centre? Artificial intelligence (AI) model training and deployment occur mainly in data centres. Understanding the role of data centres as actors in the energy system

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## PNNL/ASHRAE/NEMA AI Data Center Energy Performance Framework

The AI Data Center Framework is a collaborative initiative between ASHRAE, NEMA, and Pacific Northwest National Laboratory (PNNL) to guide the design, operation, and optimization of next

## 2025 ESG Report: Data centre environmental impact

The 2025 ESG Report finds that while data centre energy usage continues to rise – now accounting for more than 1.1% of global energy consumption – average

## Energy performance of data centres

The Commission will regularly assesses the energy efficiency and sustainability of EU data centres that have reported their data and indicators. In July 2025, the

## Power Over Ethernet in Data Centres: What You Need to Know

PoE is not just a technology of convenience—it is paving the way for smarter, more efficient data centres. With the rise of IoT and smart devices, PoE will continue to play a critical role

## Schneider Electric University | Schneider Electric United

Schneider Electric University courses cover markets and industries that represent 72% of energy consumption worldwide. With access to data center training and

## 2025 Best Practice Guidelines for the EU Code of Conduct on Data

This Best Practice document for the European Code of Conduct for Energy Efficiency in Data Centres is a reference document to assist data centre operators in identifying and implementing measures to

## In focus: Data centres – an energy-hungry challenge

Data centres are a vital infrastructure supporting our ever-growing use of cloud storage, social media, AI, streaming services and more. They're also an increasingly hot topic of the clean

## Media Center

Johnson Controls Media Center provides all the latest updates and materials on our industry-leading solutions.

## Meta's Sustainable Design Strategy for Data Centres

Meta is reshaping its data centres with sustainable design through modular hardware, energy efficiency, low-carbon materials and circularity

EU plans energy standards for data centres amid concerns over

The European Union will develop minimum energy-efficiency standards for data centres, it said on Wednesday, as concerns grow over their rapidly rising power use.

Optimizing Cooling Efficiency in Modern Data Centers

Optimizing Cooling Efficiency in Modern Data Centers Cooling systems in data centers account for roughly 30% to 40% of total energy consumption. As rack densities grow and

AI Cuts Google Data Center Cooling Costs 40% (DeepMind)

DeepMind AI reduced Google data center cooling energy use by 40%, improving overall efficiency by 15% through advanced neural networks and sensor data analysis.

Data Center Infrastructure Management (DCIM) Tools

Nlyte is a software designed for data center infrastructure management, focusing on providing organizations with tools to monitor, manage, and optimize physical and virtual assets within data

Energy and Thermal Efficiency | AI Data Center Energy Performance

This page is part of the PNNL/ASHRAE/NEMA AI Data Center Energy Performance Framework and focuses on energy and thermal efficiency strategies for AI-driven data centers, highlighting methods

Best Practices Guide for Energy-Efficient Data Center Design

This guide provides an overview of best practices for energy-efficient data center design which spans the categories of information technology (IT) systems and their environmental conditions, data center

PoE for Data Centers | Power over Ethernet Technology

Data centers are among the largest consumers of electricity, making energy efficiency a top priority. The use of PoE for data centers helps reduce power consumption while optimizing performance across

## Contact Us

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