

Data Center Room Temperature Design



AI Overview

ASHRAE recommends maintaining data center temperatures between 18°C and 27°C (64°F to 81°F) with relative humidity between 20% and 80% to ensure optimal IT equipment performance and reliability.

Recommended Temperature and Humidity

For standard IT environments, ASHRAE's guidelines suggest an acceptable operating temperature range of 18°C to 27°C (64°F to 81°F), with lower ranges (18°C to 21°C) preferred in environments with minimal corrosion risk from copper and silver components . Relative humidity should be maintained between 20% and 80%, with stricter limits (below 60% RH) in areas prone to corrosion . Maintaining these ranges helps prevent equipment failure, reduces downtime, and extends the lifespan of servers, storage, and networking devices .

High-Density and AI Workloads

Modern high-density racks, especially those with AI accelerators or GPUs, generate significant heat loads, sometimes exceeding 1,400W per processor . For these environments, ASHRAE introduced the H1 envelope, which defines narrower temperature bands to maintain reliability and component lifespan. Cooling strategies include hot/cold aisle containment, chilled water CRAH units, and liquid-cooled cold plates directly on processors to efficiently remove heat . Proper airflow management is critical to prevent hot spots and ensure uniform temperature distribution.

Cooling and Environmental Management...

Article Content

Jul 14, 2026

Ideal temperature and humidity for computers and data

Optimal ambient temperature and recommended relative humidity For general-purpose

Jul 03, 2026

ASHRAE Recommended Data Center Temperature & Humidity

Data centers that are operating outside of ASHRAE recommended temperature and humidity ranges are at direct risk for potential

Sep 16, 2025

Thermal Guidelines and Temperature Measurements in Data Centers

Abstract This document initially develops a list of generalized thermal best-practice recommendations as a first step

Oct 07, 2025

DATA CENTER OPERATING TEMPERATURE: WHAT DOES DELL

DATA CENTER TEMPERATURE Air conditioning systems are commonly controlled by monitoring and maintaining a specific return

Aug 25, 2025

An Updated Look at Data Center Temperature and Humidity

Learn how to make sure your data center temperature and humidity stays within newly updated thresholds with AVTECH's Room Alert.

Jun 13, 2026

Recommended standards for monitoring server rooms

On this page you will find the standards recommended by ASHRAE for monitoring the environment in your

Jan 26, 2026

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

Jan 06, 2026

Data Center Temperature Management : r/networking

At what temperature do you keep your : main datacenter rooms housing compute, network, storage, etc IDF room with just switches

Oct 27, 2025

How to Design and Build a Data Center

Take on data center design by factoring in these considerations, including space, power, cooling, performance,

Jun 11, 2026

ASHRAE TC9.9 Data Center Power Equipment Thermal Guidelines

Figure 2 above shows an example of a typical data center facility space plan. Most data centers have four types of vironmental

Feb 20, 2026

How to Calculate Cooling Requirements for a Data Center

Learn more here to ensure your data center is and stays at the right temperature and meets the cooling requirements

Apr 11, 2026

Data center temperature and humidity guidelines

ASHRAE's data center temperature and humidity standards help admins determine what

Jan 01, 2026

A Look at Data Center Cooling Technologies

For many years, this system was the most common design for computer rooms and data centers. It is still employed

Jun 19, 2026

Equipment Thermal Guidelines for Data Processing Environments

Classes A3, A4, B, and C are identical to those included in the 2011 edition of Thermal Guidelines for Data Processing Environments.

Oct 31, 2025

Temperature and humidity design criteria

Temperature and humidity design criteria Use these temperature and humidity design criteria to ensure that your data

Sep 01, 2025

Data center cooling systems and technologies and how they work

Explore the various ways data center cooling systems can maintain optimal temperature and humidity levels to protect

Nov 22, 2025

“Thermal Management Strategies for Existing Data Centres”

Data Centers Main Thermal Management Needs Capacity: Always available, following the dynamic data centre's environment:

Sep 09, 2025

Data Center Cooling Best Practices

Step-by-step guide to data center cooling best practices will help data center managers take greater advantage of the

Sep 21, 2025

Data Center Temperature & Humidity Best Practices: A Complete

Data center temperature and humidity best practices so you can meet device guidelines while saving money and optimizing

Mar 19, 2026

Temperature Optimisation in Data Centres

Figure 1: A reference schematic of heat removal in modern data centres, comprising four cooling circuits which

Jan 03, 2026

General guidelines for data centers

The chart takes into account worst-case locations in a data center and are the requirements to meet the maximum temperature

Oct 17, 2025

Data Center Temperature Standards

Data center temperature is one of the most important environmental factors when it comes to the proper functioning of

Mar 12, 2026

00 ReferenceCard portrait

Typically a data center with tightly controlled environmental parameters (dew point, temperature, and RH) and mission-critical

Jun 10, 2026

HVAC Cooling Systems for Data Centers

The traditional way of specifying comfort conditions is by ambient room temperature and relative humidity (RH), but for data centers

Apr 29, 2026

ASHRAE Data Center Resources | Data Centers

An essential for professionals in data center design and operations. Keep up to date with the latest in standards and guidance on

Feb 06, 2026

How to calculate data center cooling requirements

How to calculate data center cooling requirements Data center cooling requirements are affected by several factors,

Nov 12, 2025

ASHRAE TC 9.9: Data Center Thermal Guide | 2026

Whether you operate an enterprise data center or edge computing facility, proper thermal

Dec 01, 2025

Temperature & Humidity: Data Centre & Server Rooms

Temperature & Humidity: Data Centre & Server Rooms Standards The ideal temperature range for both

Aug 10, 2025

General guidelines for data centers

These designs often involve raised floor air distribution plenums 18 to 24 inches in height, room ceiling heights of 8 to 9 feet, and

Feb 23, 2026

ASHRAE TC9.9 Data Center Power Equipment Thermal Guidelines

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

Feb 14, 2026

What is the correct temperature for a server room?

NB: It is important to note there are a lot more factors to consider in a server/data room than just the temperature, air flow & humidity

Mar 15, 2026

ASHRAE Data Center Resources | Data Centers

The print books of the ASHRAE Datacom Series – a staple in the data center industry for nearly two decades – provided

Jan 26, 2026

Best Practices Guide for Energy-Efficient Data Center Design

This guide concludes with a section on metrics and benchmarking values by which a data center and its systems energy efficiency

Jan 11, 2026

ASHRAE Data Center Temperature & Humidity Guidelines

ASHRAE data center guidelines also suggest installing temperature and humidity sensors. This helps to monitor levels

Sep 03, 2025

HVAC Cooling Systems for Data Centers

Abstract Air-conditioning systems for data centers are designed for year-round cooling with very high cooling intensity per square foot

May 07, 2026

The ASHRAE Thermal Guidelines for Data Centers Past, Present,

- The recommended envelope gives guidance to data center operators on maintaining high reliability and also operating their data

Contact Us

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