White Space Cooling Optimization
for Data Centers

Meet today's toughest challenges with the speed, safety and control of autonomous cooling management.

usa.siemens.com/energyservices

Difficult situations require smart decisions

The recent shift to remote working has transformed your data center into a critical lifeline for your organization – and introduced a new set of very real challenges. Heat loads are rising and shifting. Infrastructure is being tested. Reliability is more critical than ever. Meanwhile, staffing is stretched thin, forcing you to do more with less.

Times like these require new solutions and smarter ways to work. We're partnering with customers today to help their data centers work more efficiently. Our White Space Cooling Optimization (WSCO) is a simple solution using proven technology. And it can be implemented now. Designed to run autonomously, White Space Cooling Optimization assists in predicting heat loads, quickly responds to demand, and eliminates the need for on-site staff to manage cooling, reducing your operational risk.
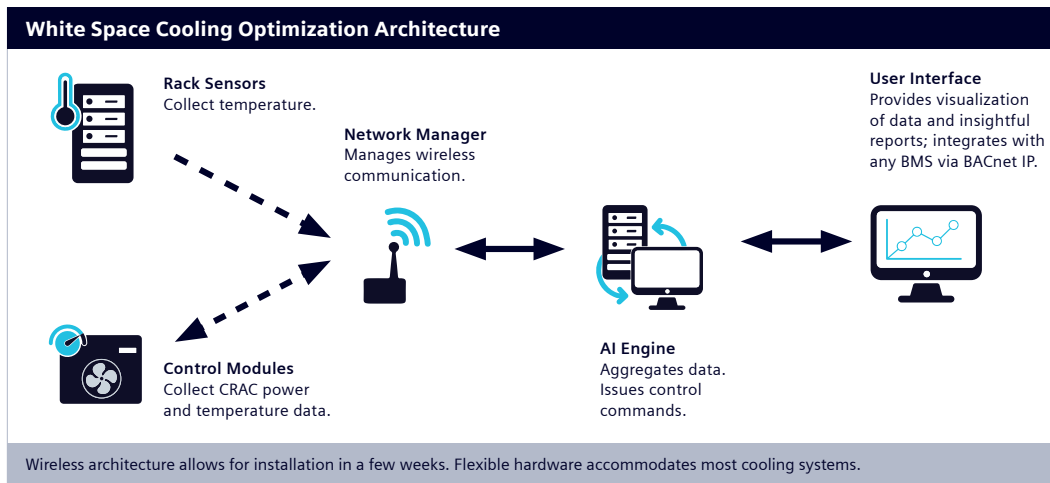
White Space Cooling Optimization uses artificial intelligence (AI) to apply the right amount of cooling when and where it is needed among data racks. It addresses the challenges of managing processes with minimal on-site staff, while optimizing performance and increasing reliability. A cost-effective solution, White Space Cooling Optimization can be fully deployed in just a few weeks, in almost any data center, with minimal on-site intrusion.

Where optimization works

Cost-effective and scalable, White Space Cooling Optimization is employed at hyperscale, cloud-based, and enterprise data centers serving organizations of all types:

• Colleges and universities

• K-12 schools

• Corporate and commercial buildings

• Finance/Insurance

• Healthcare

• Laboratories

SIEMENS

White Space Cooling Optimization Architecture

Rack Sensors
Collect temperature.

Network Manager
Manages wireless
communication.

User Interface
Provides visualization
of data and insightful
reports; integrates with
any BMS via BACnet IP.

Control Modules
Collect CRAC power
and temperature data.

AI Engine
Aggregates data.
Issues control
commands.

Wireless architecture allows for installation in a few weeks. Flexible hardware accommodates most cooling systems.

How White Space Cooling Optimization works

White Space Cooling Optimization employs a network of sensors, cooling unit controls, and an AI engine to match facility cooling with your real-time IT load. Sensors are deployed in a dense network to measure temperature where it matters most – at the IT equipment air inlets. The temperature data is relayed to our AI engine, which is stored virtually or on dedicated,

on-site hardware. The AI engine maintains a real-time model of airflow throughout the facility that incorporates the impact of cooling on each and every sensor. The AI engine determines the best combination of cooling units to ensure the desired temperature at each sensor and then sends those commands to cooling units.White Space Cooling Optimization works autonomously and in real time. As demand on your servers increases,

it responds automatically, dynamically adjusting the number of units and the airflow required to match the load requirements. Data center managers can manage the system and access performance and facility data through Siemens Desigo CC or any other building management system (BMS) via BACnet IP.

How your data center benefits

White Space Cooling Optimization reduces the stress on your data center infrastructure and team members, and:

• Responds in real time to maintain optimal temperatures at equipment level
• Reacts appropriately to sudden or erratic shifts in demand
• Reduces the need for ad hoc cooling measures, like moving floor tiles
• Supports ongoing operations with minimal staff
• Prepares your data center for the unpredictable
• Increases overall energy efficiency of data center by avoiding overcooling
• Provides insightful, cooling capacity management data via Desigo CC or other BMS
• Is a long-term solution that maximizes data center performance in any business environment

Ready in a matter of weeks

Fast, flexible and cost-effective, White Space Cooling Optimization can be up and running in about two weeks. It's minimally intrusive, with few cables and most setup and commissioning done remotely without impacting your ongoing, critical operations.

Creating a smarter data center

The AI engine uses a predictive control algorithm to optimize performance through a continuous process and:

1. Measure heat load and cooling equipment efficiency
2. Determine cooling airflow influence
3. Predict how to optimize cooling
4. Control cooling equipment
5. Learn effects of control actions
6. Repeat the process

SIEMENS