

# Application Solution

## Server Room Environment Monitoring

### Disaster Prevention

Temperature and humidity monitoring in data centers, computer rooms, or server rooms has become a key part of disaster prevention for today's IT managers - a company's IT infrastructure is vital for the functioning of the entire organization.

Without continued availability of IT resources, an organization has no access to business-critical information. The result is substantial revenue loss and image as the average hourly cost of downtime for a computer network is in the tens of thousands of dollars. At these high costs, even companies with exceptional uptime lose hundreds of thousands of dollars each year in unplanned downtime.

Maintaining recommended temperature and humidity levels in a data center can reduce unplanned downtime caused by environment conditions. Additionally, environmental conditions (like temperature and humidity) have a huge impact on the longevity of your servers, switches and routers. Bad environmental conditions will reduce the life of mission critical expensive components.

The best way to protect sensitive IT equipment is to constantly monitor the temperature and/or humidity in your data center, computer room, or server room and be notified immediately about an air conditioning system failure.

Spinwave's monitoring solution will give you immediate notification when environmental variables approach dangerous levels. This early warning will allow you to take corrective action before your IT equipment shuts down, bringing your enterprise to a halt. After an alert, real-time and historical sensor data can be validated remotely to help determine the root cause of the problem.

### Server Room Temperature

Over the years computers have increased their heat output considerably due to faster processor speeds. The effects of running at high temperatures for prolonged periods can be unpredictable, resulting in intermittent or permanent failure.

Modern servers, switches and routers generate an enormous amount of heat and generally a separate cooling or air conditioning system is required. Air conditioning units are complex and can fail without warning.



Ambient temperature in a server room is typically the temperature of concern. However the temperature within a server room will vary significantly depending on the exact location. Equipment racks typically display the highest temperature values and sensors should be located in the hottest area of the racks, usually on top.

It is generally recommended that the temperature inside a rack not to exceed 73° F (23°C). An ambient temperature range of 68° to 73°F (20° to 23°C) is optimal for system reliability. This temperature range provides a safe buffer for equipment to operate in the event of air conditioning or HVAC equipment failure while making it easier to maintain safe relative humidity levels.

### Avoiding Hotspots

Hotspots can be a danger in equipment rooms. Often the heat builds up behind equipment racks or near larger machines. Poor equipment layout can cause the discharge from one unit to feed directly to the intake of another. Positioning sensors in various locations will help to pinpoint potential problems.

### Humidity

A second major danger to electronic equipment is condensation. Condensation can cause hardware corrosion and early system and component failure. It is imperative to avoid environmental conditions where condensation can occur, e.g. rapid temperature drops and/or high humidity. Electrostatic buildup and discharge (ESD) are likely to occur at low relative humidity levels ( $\leq 35\%$  RH). ESD can result in severe damage to sensitive IT equipment.

# Specifications

In a server room, data center or computer room, maintaining ambient relative humidity levels between 45% and 55% is recommended for optimal performance and reliability.

Relative humidity is directly related to the ambient temperature and therefore monitoring of temperature and humidity together is critical.

## Solution

Thankfully, there are easy-to-install, cost-effective and proven solutions available to prevent environment-caused IT disasters.

Spinwave's wireless temperature and humidity sensors can be easily mounted at critical locations throughout your server room, computer room or data center, capturing temperature gradients and relative humidity values at critical locations.

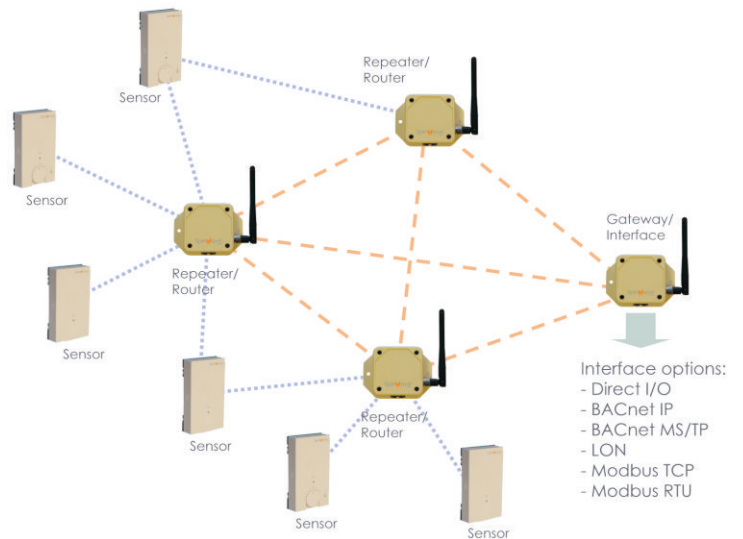
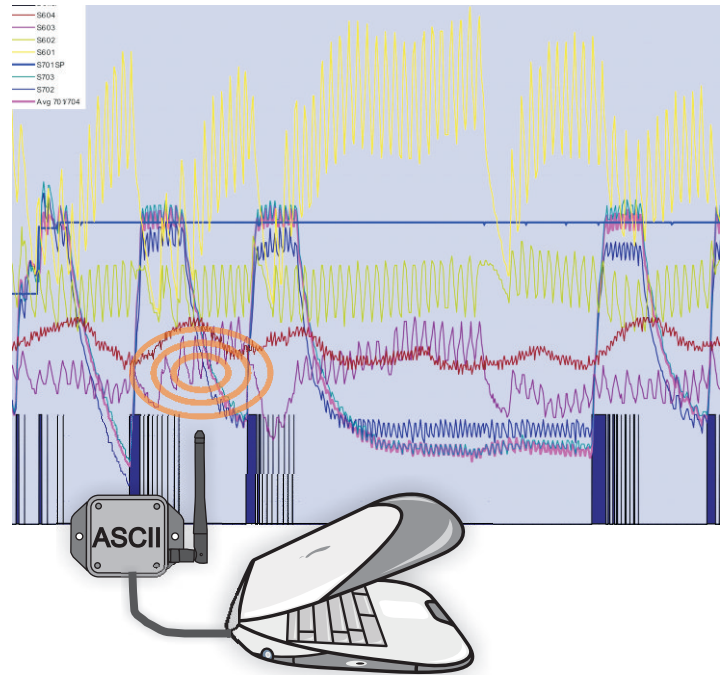
Sensors can be installed in minutes without the need for wires or conduit and without disturbing operation. Sensor data is then wirelessly transmitted to a receiver. Out-of-range sensor data will trigger an automatic notification of IT and/or facility personnel, enabling them to correct the potential problem before equipment shuts down.

## A wide range of monitoring options:

**All-in-one PC-based solution:** Through an easy-to-install USB adapter, sensor data is wirelessly made available to Spinwave's Sensor Monitoring Software running on a customer-supplied PC. An easy-to-use graphical user interface indicates server room temperature and/or humidity problems. The Sensor Monitor notifies IT personnel through an email message as soon as a value drifts out the acceptable range (user configurable). The Sensor Monitoring Software can periodically upload historic (CSV format) and current sensor data (HTML format) to a web server for remote monitoring, root cause analysis and documentation of one or more server rooms.

**Building Automation System Integration:** Server room environment data can be easily integrated with virtually any building automation system, PLC or SCADA software through Spinwave's wireless LON, BACnet, Modbus or direct I/O interfaces. Wireless sensor data can be configured to trip a system alarm, notifying facility managers and/or IT personnel of out-of-range temperature or humidity levels.

**The Bottom Line:** Spinwave's wireless sensor networks provide an easy-to-install and cost-effective solution to increase the uptime of your mission-critical IT resources.



0807A

Spinwave Systems, Inc.  
235 Littleton Road  
Westford, MA 01886  
978-392-9000  
www.spinwavesystems.com

© 2007 Spinwave Systems, Inc. All rights reserved.

Spinwave and NetQuest are trademarks of Spinwave Systems, Inc.

All other product and company names are trademarks or registered trademarks of their respective owners.