

Networking



Networking Operations

3.1.4 - Environmental Factors and Sensors

What are some environmental factors that could impact a network and sensors that help monitor these factors?

Overview

Given a scenario, the student will use the appropriate statistics and sensors to ensure network availability

Grade Level(s)

10, 11, 12

Cyber Connections

- Threats & Vulnerabilities
- Networks & Internet
- Hardware & Software

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Teacher Notes:

CompTIA N10-008 Network+ Objectives

Objective 3.1

- Given a scenario, use the appropriate statistics and sensors to ensure network availability
 - Environmental factors and sensors
 - Temperature
 - Humidity
 - Electrical
 - Flooding

Environmental Factors and Sensors

Natural Disasters!

Environmental factors can be a real concern when running a network. Just like other computing devices, switches, routers, hubs, etc., require proper environmental conditions to operate correctly. Environmental monitors and sensors are designed to monitor any risk posed to systems from the environment.

Any device with a CPU, which includes routers and switches, need to be protected from improper *temperature* conditions. When temperatures rise, servers start to reboot, and appliance CPUs start to overwork. Any rooms housing these devices should be provided with heavy-duty HVAC systems and plenty of ventilation.

With *humidity*, the systems need somewhere in the middle, not too damp, not too dry. It is common knowledge that water is bad with electrical circuits because of the risk of corrosion/short circuits but may not understand the risk of aridness. If it is too dry, static electricity can build in the air. It takes very little static electricity to fry electrical components. HVAC systems can maintain humidity which is recommended to remain between 45% and 55%.

It is important to protect personal devices against thunder/lightning storms and power outages and since many devices required for a network have more sensitive *electrical* components than our stoves, microwaves, televisions, etc.

Teacher Notes:

Therefore, it is so important for all our systems to have a constant clean source of power. Any fluctuations can easily destroy our systems which is why it is important that our devices run on uninterruptable power supplies (UPS).

Flooding can obviously cause the same damage as too much humidity which is why some rooms will be designed with rises, lofting all computing systems off the ground in case of flooding.