BLOG

TEMPERATURE AND HUMIDITY MAY DAMAGE DATA CENTERS

Continuous monitoring is a value-added procedure that has direct action on the ability to manage physical infrastructure to optimize resource application, efficiency and availability.

The early years of the 21st century led to rapid growth and change in data centers. As major assets in data security and information flow, they have undergone a revolution in their modus operandi with the arrival of the **Internet of Things** (IoT) that has leveraged its value in the information stream that defines this concept. Data centers are now a major technology player that features a noted optimization of processes that proactively influence the management of information networks and business organizations.

Achieving this outstanding performance reflects into improved infrastructure management enhanced by approaches to reach better efficiency and service values. One of the most significant and effective approaches to conduct in the data centers environment is the introduction of a physical environment monitoring solution.

Continuous monitoring is a value-added procedure that has direct action on the ability to manage physical infrastructure to optimize resource application, efficiency and availability. **The measures applied in data center management aim to ensure the absence of downtime**.

Assume that for a moment, it is impossible access to clinical data from a hospital or the system oh a pharmacy becomes inoperable due to the inability to access data.

Among the quantities that worth highlighting due to the way they can impact the smooth functioning of these information repositories, we focus our

attention on the significance of temperature and humidity. Being variables conducive to rapid value fluctuation in a short period of time, their real-time monitoring merits key prominence in this process that influences the expected performance of data centers.

The high performance of IT equipment causes normal business events such as infrastructure overheating occurrences. Equipment overheating is one of the episodes with greatest impact on data center performance, raising the risk of data loss and operational damage for companies. The high temperature in these spaces can lead to physical threats due to the sensivity of electronic components.

The essential cooling systems installed in data centers influence the humidity values present in the air. It's imperative to keep the values of this variable within the recommended levels. Exposing electronic components to a dry air environment that represents a low humidity level may cause electrostatic discharges that damage server appliances. In other way, a high humidity level will cause a lot of condensation that initiates a hardware corrosion process and leads to equipment failure.

As a reference entity, ***American Society of Heating, Refrigerating and Air Conditioning Engineers*** (ASHRAE), defined a **set of guidelines** on which acceptable standard values are set for temperature and humidity parameters in data centers that support the relevance of these variables in expected lifetime for the devices that make up this infrastructure.

Variáveis	Variáveis
Limite mínimo da temperatura	18º C
Limite máximo da temperatura	27º C
Limite mínimo da humidade	40 %
Limite máximo da humidade	60 %

Table 1 - ASHRAE recommended reference values

The installation of a monitoring solution should be viewed as a measure of adding value to the platform and not as a necessary expense. The advantages of deploying a monitoring system are directly linked to several aspects:

- **More data center uptime**

Keeping an up-to-date perspective on the environment and infrastructure state increases your uptime and service availability;

- **Increased hardware lifetime**

Ensuring that temperature and humidity values are framed within reference ranges will extend the lifetime of hardware by saving exposure to corrosion and overheating equipment failures;

- **Energy costs savings**

The energy costs of these critical environments are substantially reduced with custom management of cooling systems based on collected data;

WIRELESS REAL TIME MONITORING

Tekon Electronics is aware of the role security and prompt access to data plays in the productivity of organizations and everyday applications. The **IoT** wireless solutions developed by the R&D team bring **DUOS HYGROTEMP** to the wireless monitoring market with technical specificities tailored to meet the challenges of critical data center environments.

The versatility of this wireless solution simplifies the process of monitoring temperature and humidity in a single device, reducing the number of transmitters required to record these two quantities.

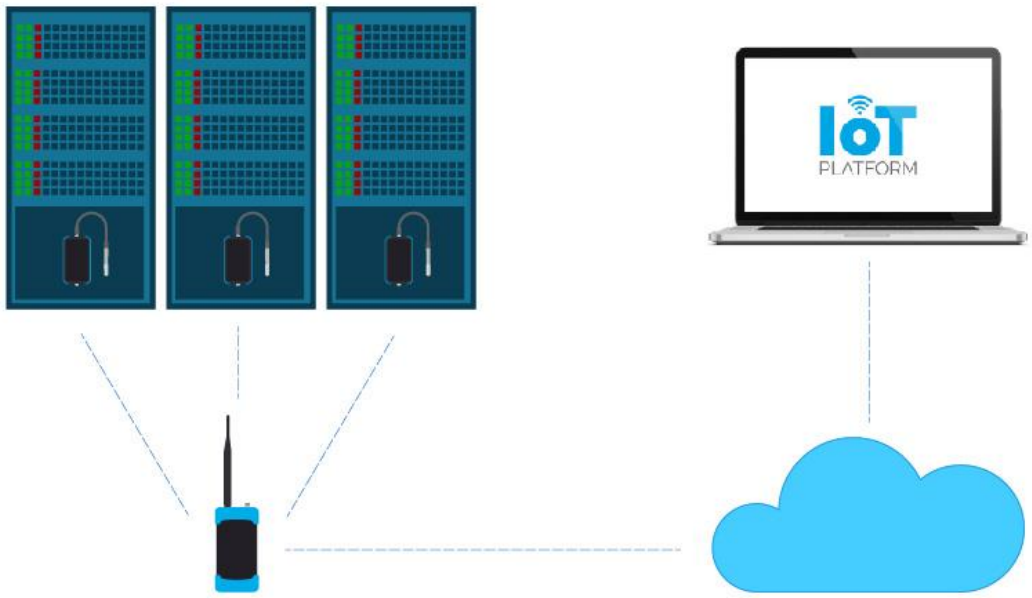

Figura 1 - Exemplo de arquitetura da solução sem fios DUOS HYGROTEMP

Recording the behaviour of the data center environment returns a large amount of information that, in order to translate into a valuable resource, must be transposed into a format that demonstrates it as such. **DUOS** wireless solutions complement each other by interacting with an **IoT platform** that provides all the necessary information for the user.

Tekon IoT Platform, developed by **Tekon Electronics** is a necessary decision-making support tool with a demonstration panel of the entries collected by devices installed in your data center, allowing you to get a profile

of the monitored facilities in real time, with access from anywhere, using any device (pc, tablet, smartphone).

The flexibility of its configuration allows a set of alarm measures to be defined so that users can be informed of occurrences that require intervention, for example, the temperature rise at a specific point caused by the ventilation/cooling system failure.

Tekon Iot Platform hold in its main features the opportunity to enable the user access to a custom reporting option to get an overview of the detailed information and analysis that underpins the implementation of corrective measures to be applied in the physical space – renewal of the cooling system, changing infrastructure layout to achieve better efficiency and resource savings, etc.

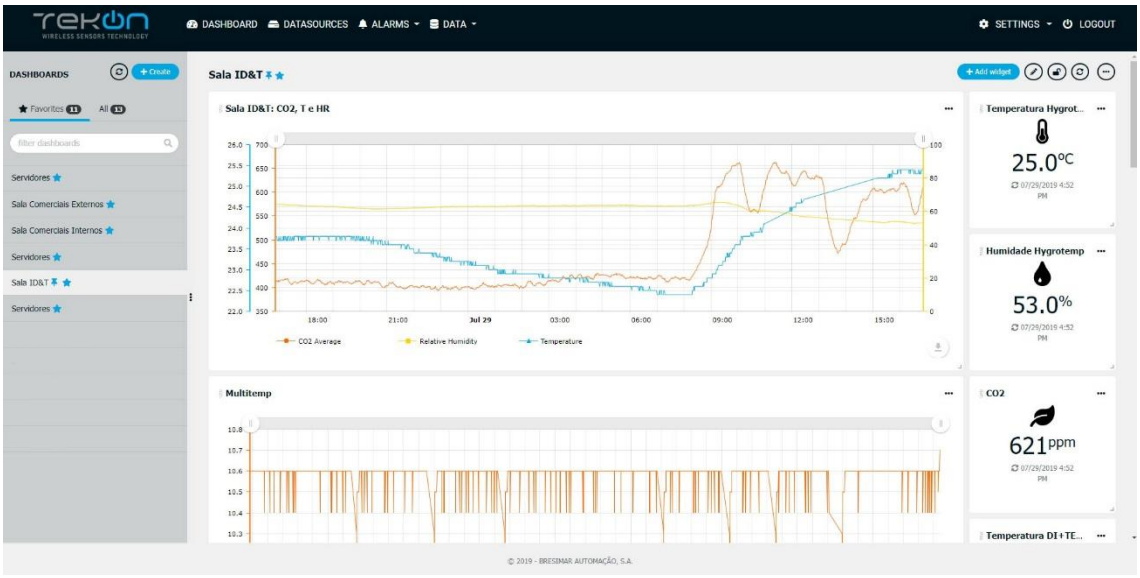

Figure 2 - Graphical example of readings on Tekon IoT Platform

FINAL CONCLUSIONS

Poor control of your data center conditions can shorten equipment life. Overheating and condensation can cause intermittent failures and in extreme cases lead to complete equipment failure. The losses are reflected in material costs, time and productivity associated with the need for information.

In order to ensure controlled environmental conditions between 18ºC and 27ºC temperature and 40% and 60% humidity, immediate access to the data and the definition of alarms relative to defined thresholds for the infrastructure becomes peremptory.

Tekon wireless solutions allow you to closely monitor the environment, avoiding hardware problems and causing service failures.