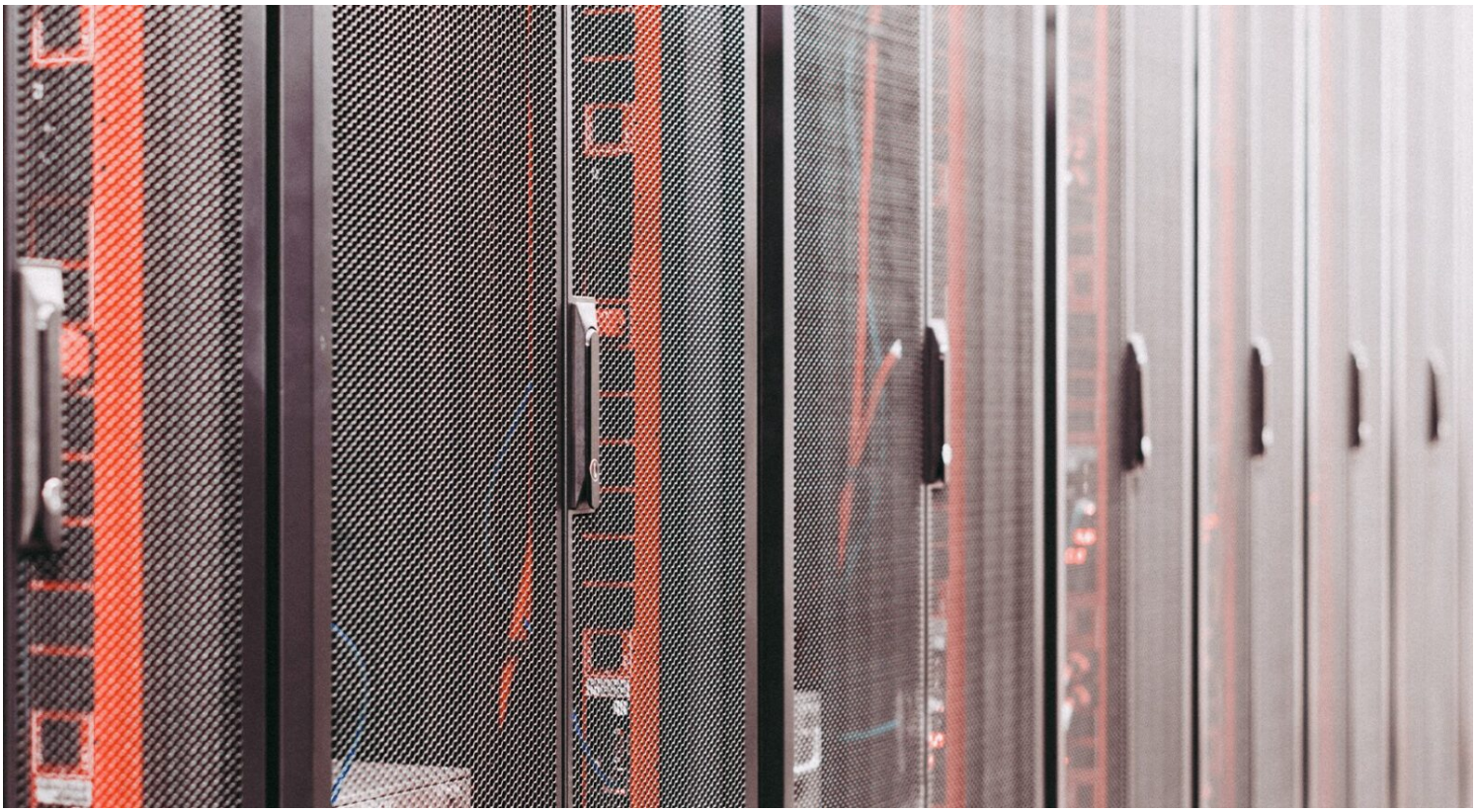
5 BEST PRACTICES FOR HIGH DENSITY DATA CENTERS

Posted on 28-12-2021 by Alexandre Araújo



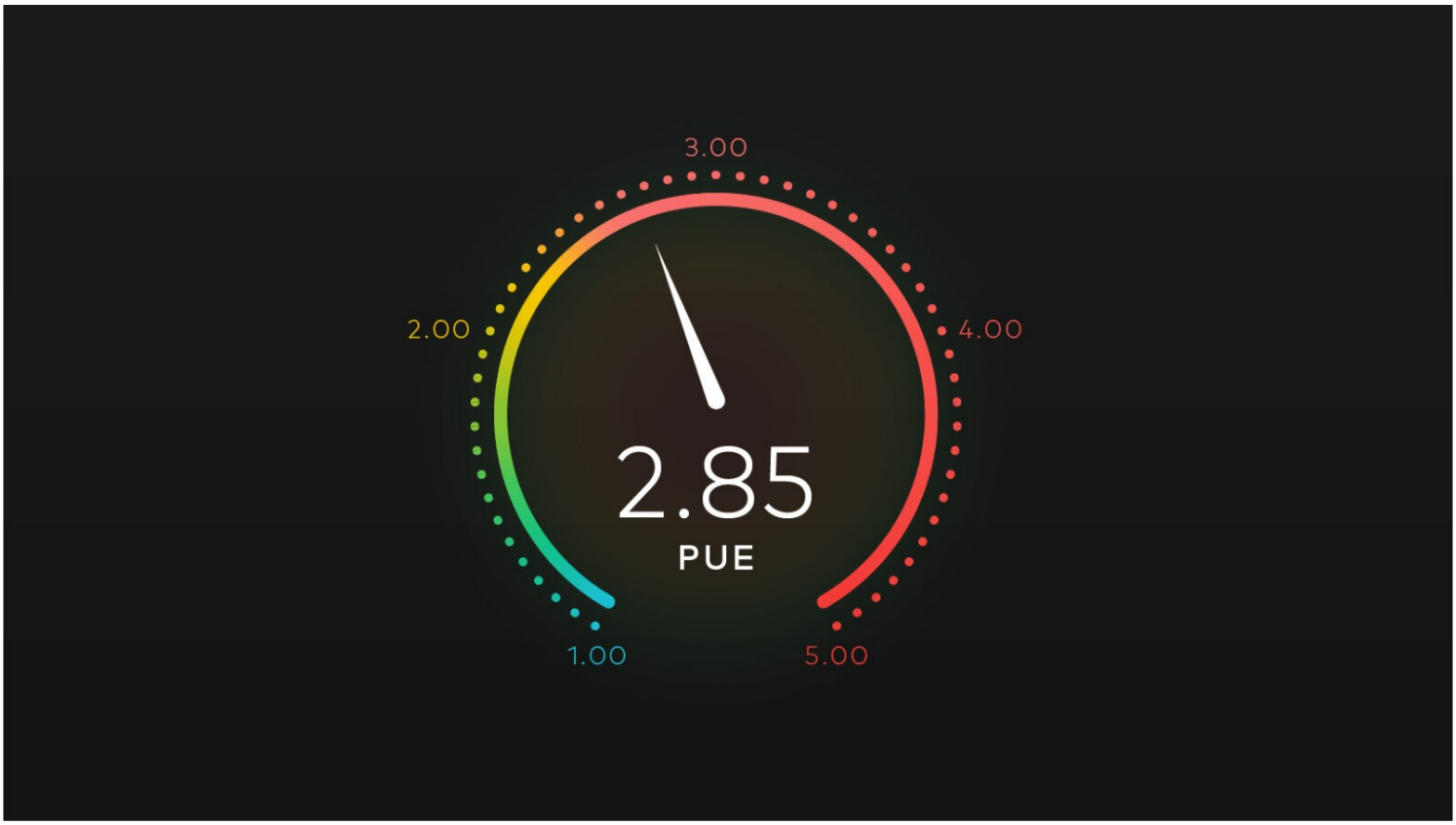
Category: Data Center

In the current days, Data Centers are expanding, each day, mainly because of the **high demand** of users that has been greatly increasing throughout the years. And with these last 2 years, mainly during the COVID-19 pandemic which made people work from home, causing an increase of usage of data centers globally. Currently, there is a lot of ways of making a Data center, and there are small, medium, big and Giga Data Centers, but I'm going to talk about generally what should be the main best practices in a high density Data Center.

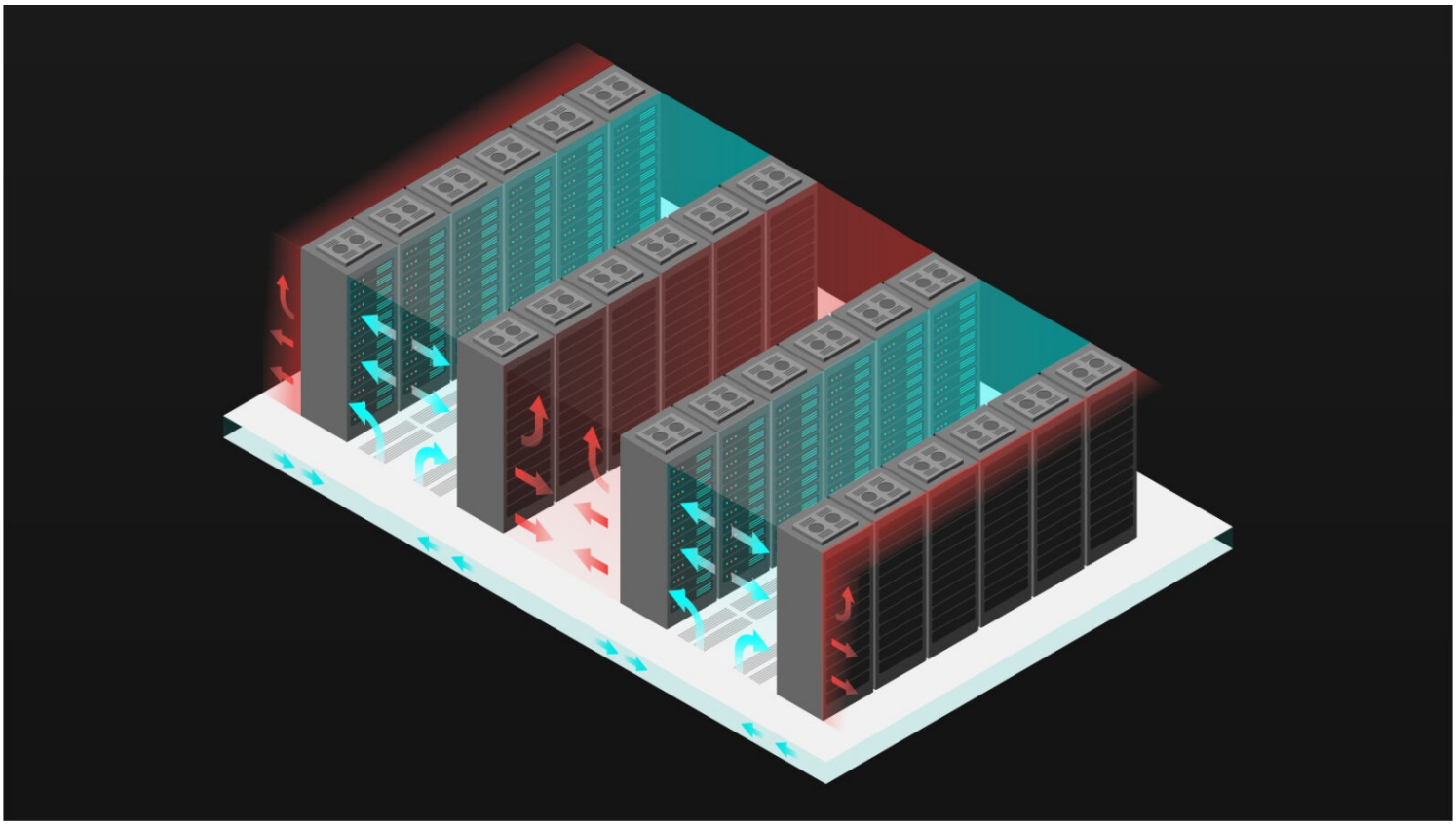
And what is a high density Data Center?

Well, there's a lot of definitions for this kind of Data Centers, but the main one is, a Data Center that uses more than **150kW** per square foot.

1- **Power Usage Effectiveness (PUE)**
It is very important that you are able to constantly check the power usage of your data center, the most detailed possible, that's why **Intelligent PDUs** are usually used for, because with them connected to your network you can check all the data, power usage, control that same power, all through your network. This is very important also to **control temperatures** because as you may know, electricity is one of the main issues of **hot spots** in a data center.



2- **Airflow and Natural cooling**
Natural cooling should always be considered. Per example, Google data centers use natural water for cooling, meaning, they deviate natural water from a far resource, let it cool down their data centers then after the water that went through goes back to the normal temperature, they put it back to the resource so that it doesn't affect the resource.
There are a lot of ways of cooling data centers, and the main used is **Airflow**, Natural airflow, because if you can create a good flow of air on the building that stores that Data center you will most probably have decent results, but of course, in a High Density Data Center that has high power consumption, Airflow might not be enough. Creating a good map of airflow is although, very important to **avoid future problems**.

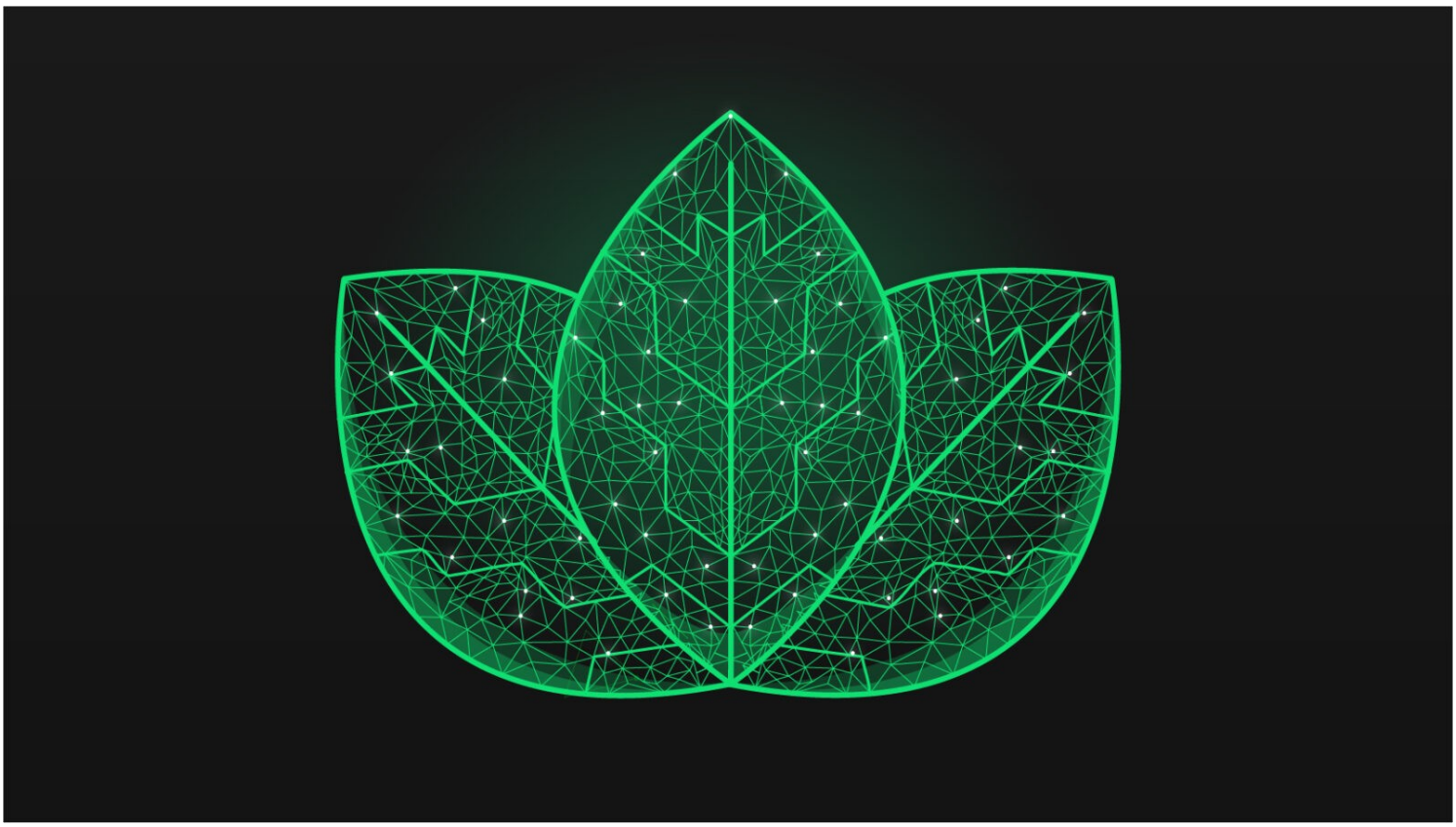


3- **Power distribution**

Power distribution losses are one of the main problems in every data centers, because many of them use a lot of power conversion devices, meaning it will not be as stable as it could be, so always make sure you use **Power Distribution Units(PDUs)** and Transformers that always specify efficiency, and that you eliminate as much as possible of these kind of power conversion devices, that way you will have a more stable power distribution with an incredible efficiency!

4- **Sustainability**

In recent years it has become very important that everyone uses less costly energy and infrastructure resources. **Renewable energy** is one big and important step that should be considered by everyone, not only Data centers, but in this case, it will give you a greater business value if you invest in it. Google, Apple and others are a good example of it because they match their growth with an equivalent or larger supply of renewable energy. (Recognized by Greenpeace)



5- **Adaptability**
Creating a high density Data Center has a lot to think about, but one main thing that should be thought of while building it, is the adaptability that your data center will have, meaning your Data Center should as future-proof as possible, the IT environment should **highly adaptable** so that anything can be deployed or reconfigured quickly as needed as the business grows. A **scalable infrastructure** is very important for this to happen, having your technology as much future-proof as possible will come in handy in a foreseeable future, without any doubts.

Recommended watchlist of Data Centers:

Green Mountain: The World's Greenest Data Centre - YouTube

How does Google design its data centers? - YouTube