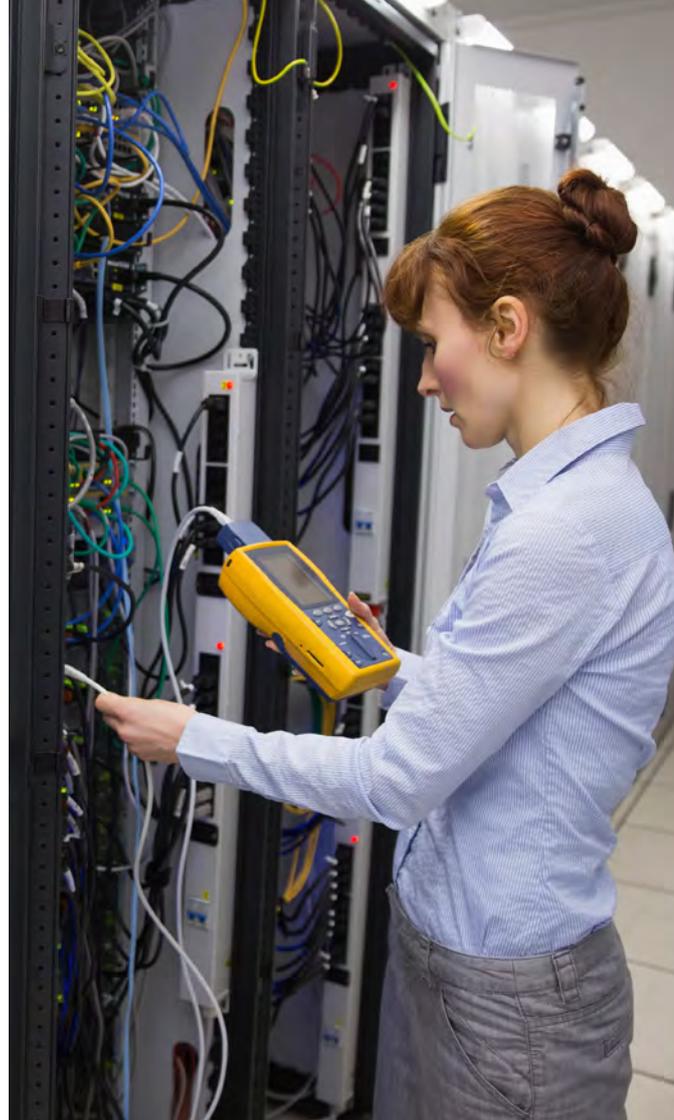# safehosts

Can data centres be environmentally friendly?

Mark Jones | August 2020

That's a pretty big question really.

And one I'm not going to attempt to answer from every possible angle.

But when you think about the sheer amount of energy being consumed in your average data centre, and how much heat is generated by all that hardware and all that energy, it all adds up to a potentially unfriendly impact on the environment.

So, when you're reviewing Colocation providers, how do you marry your organisation's environmental conscience with the need to locate your servers as cost-effectively and resiliently as possible?

One way is by reviewing the **PUE**, or **Power Usage Effectiveness**, of the data centres you're considering.

What's PUE and how is it calculated?

PUE is a ratio that shows how efficiently a data centre is using energy.

In particular, the energy used by computer equipment rather than by the infrastructure that maintains that equipment, such as cooling, ventilation, fire protection and security.

It's calculated as a ratio of the total amount of energy consumed by the facility and the amount used by computer hardware only.

The optimal PUE is 1, meaning that no more power is being consumed than what's necessary to power customers' hardware and the facility's own IT systems.

According to the Uptime Institute, the average PUE in 2019 was 1.67.

Monitoring PUE as an ongoing indicator of power consumption can also help data centres to understand the impact of further measures to improve efficiency.

It shows if those measures are having the desired effect and, over time, indicates if any systems or measures are failing.
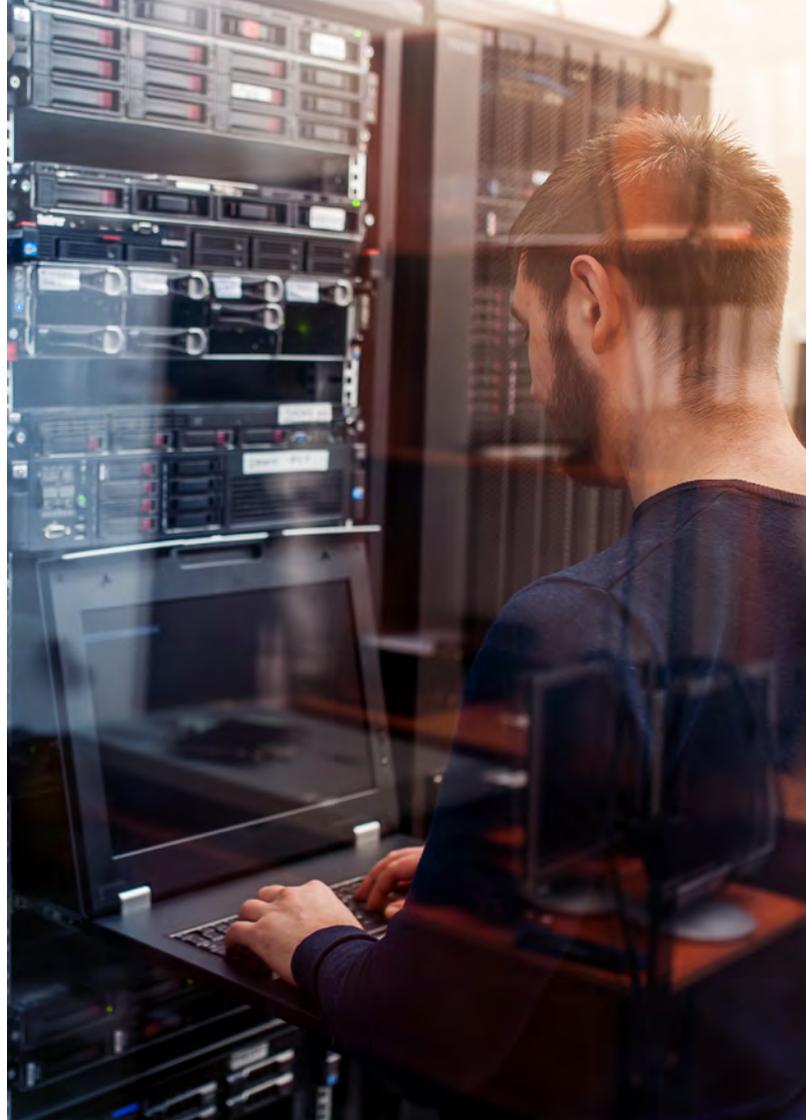
How can a data centre achieve a PUE of 1.0?

Perhaps the question ought to be, "CAN a data centre achieve a PUE of 1.0?"

To be frank, it's nigh on impossible to score a clear 1.0 but, by using innovative environmental systems and renewable energy sources, it's possible to get pretty close.

When PUE was published in 2016 as a global standard of efficiency, Google's ratio of 1.21 was considered as close as it was possible to get.

Since then, other providers around the world, such as Facebook, Supermicro and OVH, have recorded PUE ratios under 1.10.

What these facilities all have in common is innovation in cooling systems, using often patented technologies to achieve optimal PUE and a competitive edge over their competitors.

Are there any pitfalls with PUE?

There are a few traps to avoid if you're using PUE as a differentiator.

Firstly, you have to be sure that data centres are being honest with their PUE and have included all their non-IT related power consumption into their ratio.

It's also recommended that PUE is measured regularly, at different times of day and under different climatic conditions.

This allows you to gain a true understanding of overall efficiency, rather than a one time reading that might not be representative.

Thirdly, you have to compare apples with apples when it comes to geography and climate.

A data centre operating in a climate where normal outside temperatures are lower will have less need for cooling systems and, therefore, a lower PUE than a data centre operating in a warmer region where the cooling systems have to work harder.

That said, it doesn't necessarily follow that the data centre in the cooler region is running more efficiently overall.

Finally, PUE shouldn't be taken in isolation, as you might be comparing a full data centre to one where many racks or whole rooms are standing empty.

Therefore, the data centre's productivity level is also worth knowing, as well as how their PUE changes according to how full their facility is at the time.

So how can I find out a data centre's PUE?

Ask!

If a data centre is proud of its PUE, they'll tell you.

They'll perhaps even give you an insight into how they've achieved it (without giving away valuable IP, of course).

It's a great way of demonstrating their commitment to mitigating their environmental impact and reducing overheads.

If a data centre is reticent in revealing its PUE, don't dismiss them out of hand.

It might indicate that the facility isn't running as effectively as it could, but bear in mind that there could be other factors at play before writing them off.

So, back to the question:

Can data centres be environmentally-friendly?

Obviously, data centres are critical in our digital economy but, while they can't run without consuming power, they can certainly try to mitigate their environmental impact through lessening their power consumption.

With more consumers considering environmental factors in their buying decisions, organisations have to follow suit, which means using like-minded providers to help them deliver that end service.

Therefore, as service providers at the end of that chain, data centres need to provide as environmentally-friendly a service as they can, and demonstrate it, if they're to win a slice of that shared business.

PUE alone can't indicate a data centre's overall environmental impact or show what other measures are being employed to mitigate that impact.

Nevertheless, when considered judiciously, it's a valid indicator that gives Colo and hosting buyers a degree of insight into how that data centre is being maintained and how environmentally-conscious its owners are.

Safe Hosts and PUE

At Safe Hosts, we run our privately-owned data centre as efficiently as possible, resulting in environmental benefits and significant cost savings which we can pass on to our customers.

Our average PUE lies between 1.10 and 1.20 and is the result of our own innovations in using outside temperatures to help keep conditions in our server rooms as optimal as possible.

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To find out more about data centre efficiency or talk about our Colocation or Hosting packages, from single units to private cabinets, please get in touch.

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