

Achieving sustainability goals with co-location.

Sustainability has become a top priority for businesses worldwide. With increasing pressure from governments, investors and consumers to reduce environmental impact, organizations are actively seeking ways to lower their carbon footprint while maintaining operational efficiency. The rapid growth of digital infrastructure, however, presents a significant challenge - for storing data vast amounts of energy is consumed, contributing to rising electricity costs and carbon emissions.



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For companies relying on in-house IT infrastructure, being energy efficient can be complex and costly. Cooling IT components, upgrading hardware and integrating renewal energy solutions require significant capital investments and technical expertise. This is where co-location offers a scalable and sustainable alternative. By housing IT infrastructure in a professionally managed, energy-efficient data center, organizations can benefit from optimized resource use, lower operational costs, and a reduced environmental footprint.

What is co-location?

Co-location is a service that allows organizations to place their servers and IT infrastructure in a shared, professionally managed data center rather than housing them on their own premises. Organizations rent space in the data center, which in turn takes care of everything from providing reliable power, cooling, physical security and network connectivity. One of the biggest benefits of this model is cost efficiency, as organizations avoid high ongoing expenses of maintaining their own facilities. But another huge benefit is the extra sustainability perks co-location offers. Data centers continuously optimize energy efficiency, integrate renewable energy and implement advanced cooling techniques.

Co-location not only provides a secure and efficient environment for IT infrastructure but also enhances business continuity through geo-redundancy. By co-locating in strategically located data centers, organizations can distribute their workloads across multiple sites, reducing the risk of downtime due to local power failures, natural disasters, or network disruptions. This ensures critical applications remain accessible even in the face of unexpected events. Additionally, co-location providers offer high-speed interconnectivity between data centers, enabling seamless data replication and failover strategies that strengthen disaster recovery and improve overall resilience.

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Sustainability benefits of co-location

Traditional, on-premise data centers are often inefficient, consuming excessive energy for both computing and cooling. In contrast, co-location data center providers design their facilities for maximum efficiency, significantly reducing waste and lowering the overall carbon footprint. Four key ways in which co-location contributes to a more sustainable IT strategy are:

1. Efficient energy use

Data centers that are optimized for energy efficiency, use advanced technologies to reduce power consumption. An important metric for data center energy efficiency is Power Usage Effectiveness (PUE). PUE is determined by dividing the total amount of power entering the data center by the power used to run the IT equipment within it. As PUE is expressed as a ratio, data centers closer to 1 PUE are more efficient than data centers with a higher number. Co-location providers continuously refine their operations to maintain low PUE values, minimizing unnecessary energy waste and ensuring that client workloads run in the most efficient environment possible.

2. Advanced cooling techniques

One of the biggest energy consumers within data centers are the cooling systems. Unlike many in-house server rooms that often rely on inefficient air conditioning, co-location providers optimize their cooling methods. The way how co-location data centers cool their infrastructure varies. Data centers located in the arctic benefit from the cold climate and might leverage this in free (air) cooling systems, while data centers located in the Caribbean don't have this advantage and have to look for other options such as liquid cooling solutions.

3. Renewable energy integration

To reduce reliance on fossil fuels, many data centers are investing in renewable energy sources such as solar, wind and hydroelectric power. In the Caribbean, the sun always shines, so investing in on-site solar parks and battery storage solutions to power operations sustainably, makes sense. By colocating with a provider committed to renewable energy, organizations indirectly reduce their carbon footprint without the need for their own renewable infrastructure.

4. Predictive maintenance and smart infrastructure

Co-location facilities often use predictive maintenance to enhance efficiency or to extend the lifecycle of hardware. Sensors and automated systems track equipment performance in real time, allowing operators to anticipate and address maintenance needs before failures occur. This not only prevents downtime but also reduces waste by extending the life cycle of hardware and optimizing cooling and power use.

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Future trends for sustainable data centers

As organizations continue to digitalize, data centers remain at the forefront of integrating new technologies and strategies to make data storage and processing as (energy-)efficient as possible. Currently AI is playing an increasingly important role in optimizing energy consumption for instance. With AI-powered monitoring systems, it's possible to analyze data about power usage, temperature and cooling efficiency in real time and optimize it accordingly.

Another popular upcoming technology is liquid cooling. Traditional air cooling is gradually being replaced or supplemented by liquid cooling technologies, which - especially in warmer climates - offer a more efficient way to manage heat. By circulating liquid coolant directly to high-performance computing components, data centers can significantly reduce cooling energy consumption while increasing processing capacity. Some facilities are even experimenting with immersion cooling, where entire servers are submerged in specially designed, non-conductive liquid baths to dissipate heat more effectively. Another new technology that is currently under development is using ocean water for cooling IT infrastructure. Using deep-sea water, coastal data centers might be able to form a closed cooling loop, minimizing water usage, while dramatically increasing cooling efficiency and reducing energy consumption.

When looking at renewable energy and alternative energy sources, we can go even beyond solar and wind power. Innovations are being made in generating energy from the tides, but also in geothermal cooling/warming and on-site batteries to store this renewable energy. Some data centers are also working on integrating fuel cells and hydrogen-based energy sources to create more sustainable, self-sufficient operations.

Conclusion

Co-location offers a smart, sustainable alternative to in-house data centers, helping businesses reduce energy consumption, lower costs, and meet ESG goals. By leveraging efficient infrastructure, advanced cooling and renewable energy, companies can shrink their carbon footprint without heavy investments in their own facilities.