



CUDO[®]
COMPUTE

A comprehensive guide

What is the cloud?

Cloud computing is a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g. networks, servers, storage, applications, and services). This technology allows businesses to scale their IT operations and reduce costs by using resources that are available on demand.

Cloud computing has two main components:

- Infrastructure as a Service (IaaS): This is the foundation of the cloud. IaaS provides businesses with access to storage, networking, and computing resources on demand.
- Platform as a Service (PaaS): PaaS provides businesses with a platform for developing, deploying, and managing applications in the cloud.

Cloud computing is important for businesses because it provides a flexible and scalable way to manage IT resources by enabling the optimisation of IT infrastructure and reducing costs through the deployment of resources available on demand.

The goal of Cudo Compute is to provide a sustainable, decentralised alternative to the existing cloud model. The Cudo Compute platform will support both IaaS and PaaS

offerings, powered by a distributed network of data centre partners and infrastructure providers.

If you'd like to find out how you could benefit from our decentralised cloud solution, visit the **Cudo Compute website** and book a demo today. Or read on to learn how innovative approach will solve a range of key issues within the cloud computing industry.

Cloud-enabling infrastructure

Cloud infrastructure refers to the necessary hardware and software to support cloud computing, consisting of processing power, networking, and storage. Cloud infrastructure typically **mirrors** physical infrastructure, providing servers, network switches, memory, and storage clusters that are virtual instead of physical.

Cloud users may access their virtualised resources via a web interface, API, or CLI Tool, which provide the same user experience as if they were working with physical resources. Typically, infrastructure also scales elastically on demand, meaning that more resources can be provisioned as needed to support increased usage, and may be managed by a cloud provider, who is responsible for ensuring that the necessary resources are available to support their customers' workloads.

The hardware underutilisation dilemma

You may have heard the term “server underutilisation” before, but what does it actually mean? Server underutilisation is a phenomenon where servers are not used to their full potential. This results in significant e-waste and unnecessary energy consumption.

The cloud has been **described** as the “nexus of technology”. The industry's importance to modern commerce compels us to reassess its role in our current environmental predicament. For example, **recent studies** associate the rise in global electricity consumption with the proliferation of data hubs and a raft of associated socioeconomic factors. However, compounding this problem is the **considerable amount of e-waste** in data centres, offices, and homes. The underutilisation of computing hardware, from idle servers in data centres to underutilised video game GPUs, has thrust us into a vicious cycle of excessive manufacturing and limited usage.

The Natural Resources Defense Council (NRDC) published a **paper in 2014** estimating data centre server utilisation to be between 12% and 18% on average. Despite subsequent improvements, server utilisation remains low across data centres. During non-peak hours, servers are frequently inactive or underutilised, resulting in significant e-waste. A practical alternative approach to hardware management is to provide avenues for spare computational capacity on a global scale. We will discuss how Cudo Compute proposes to solve this problem later.

Read more: **Decentralised cloud computing can help push back the tide of e-waste**

Cloud computing and environmental sustainability

The cloud service industry is one of the fastest-growing sectors in the world today. Accompanying that growth has been a rise in the creation and maintenance of energy-guzzling data centres. Recent **reports** suggest data centre facilities make up 3% of global energy consumption and are soon expected to reach the 8% mark. Centralised cloud service providers such as Amazon, Microsoft, and Google have all claimed to be “carbon neutral” and are ostensibly on course to achieve net-zero status by 2040. But do these claims stack up to reality?

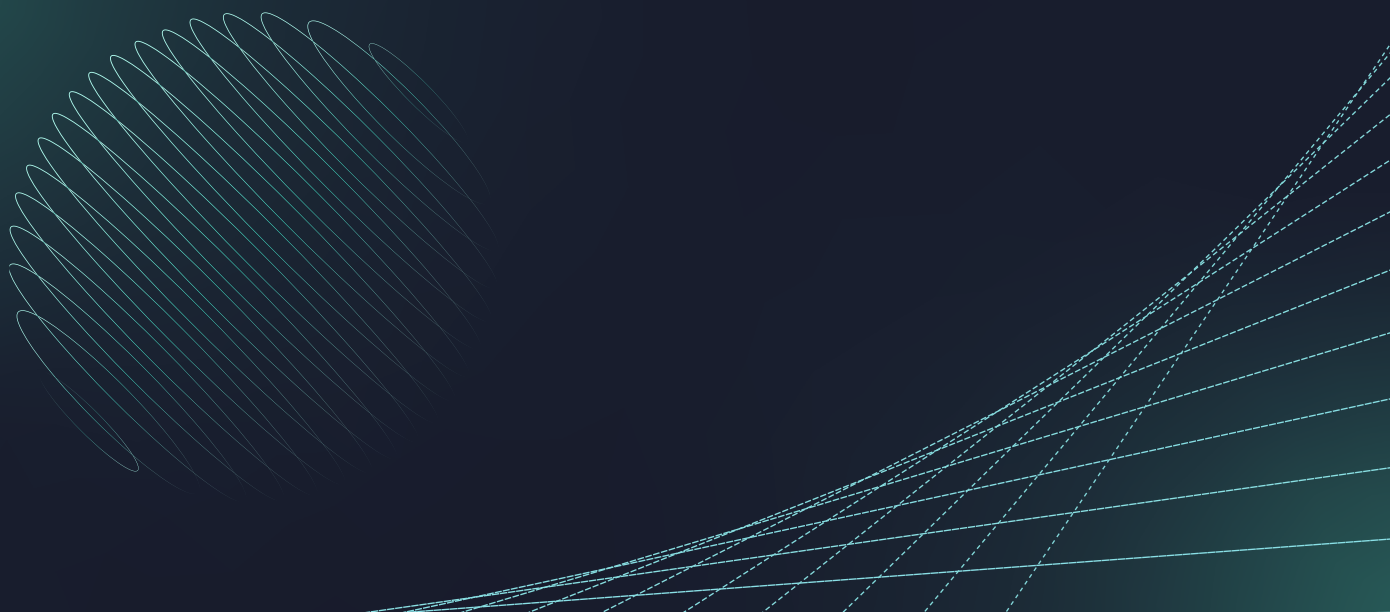
Achieving net-zero emissions is no easy feat. It requires a fundamental shift in the way businesses operate. For the cloud service providers mentioned above, this would entail a move away from reliance on fossil fuels for energy generation and towards renewable sources. It would also mean an increase in energy efficiency measures, such as using recycled materials and investing in cutting-edge cooling technologies. The major cloud service providers have made some progress in this area. For example, Amazon has invested in two large wind farms and has committed to using 100% renewable energy by 2030. Google has also invested heavily in renewable energy, with a goal of achieving carbon neutrality by 2030. Microsoft, meanwhile, has pledged to be “carbon negative” by 2050.

Cudo Compute is committed to environmental sustainability. We believe that the cloud service industry can be a force for good, and we are working towards making that a reality. Our innovative hardware lifecycle management approach ensures that data centre facilities operate at peak efficiency, and our spare capacity recycling ensures that no energy is wasted. We are proud to be leading the way towards a more sustainable future for the cloud service industry. Visit **our website** to find out more about how we're tackling the cloud's environmental impact.

What is Cudo Compute?

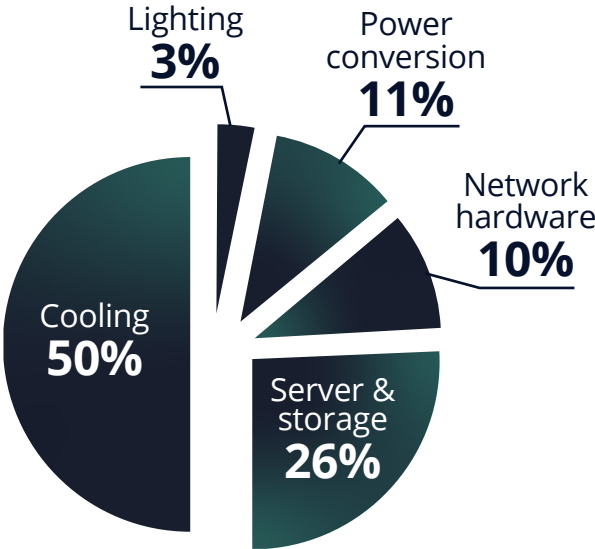
Cudo Compute is the Airbnb for sustainable computing. Like Airbnb's marketplace, which allows owners to rent out their unused homes, Cudo Compute facilitates data centre operators, service providers, and other businesses to lend their hardware's unused compute power to users and organisations that might need it. Emerging innovations in the tech space will demand a significant increase in real-time processing capacity over the coming years, and consumers now have the opportunity to be part of this supply chain.

Cudo Compute's underlying philosophy is built on the recognition that hardware lifecycle management is the fundamental solution for enhanced cloud services performance and achieving environmental sustainability. For a full overview of how our platform can support your needs, visit the **Cudo Compute website** to explore our marketplace and book a demo.

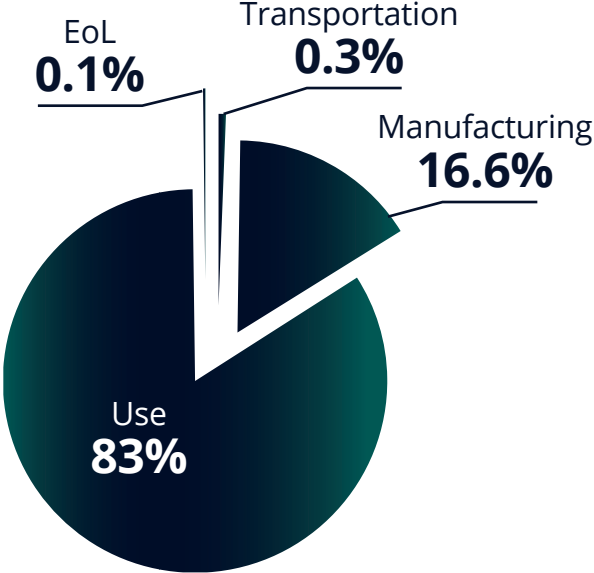


Rethinking hardware lifecycle management: The Cudo Compute approach

The modern data-driven economy is more reliant on data centres than ever before. Amidst our planet's critical environmental crisis, a re-evaluation of data centre infrastructure and its contribution to the climate problem is necessary. For example, a **2016 study** projected data centre emissions to reach 3.2% of global CO2 emissions by 2025. That number is expected to double by 2040 in tandem with ever-increasing worldwide internet penetration rates. While figures may differ depending on various factors, servers may account for up to 26% of data centre energy consumption, as shown below.



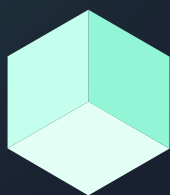
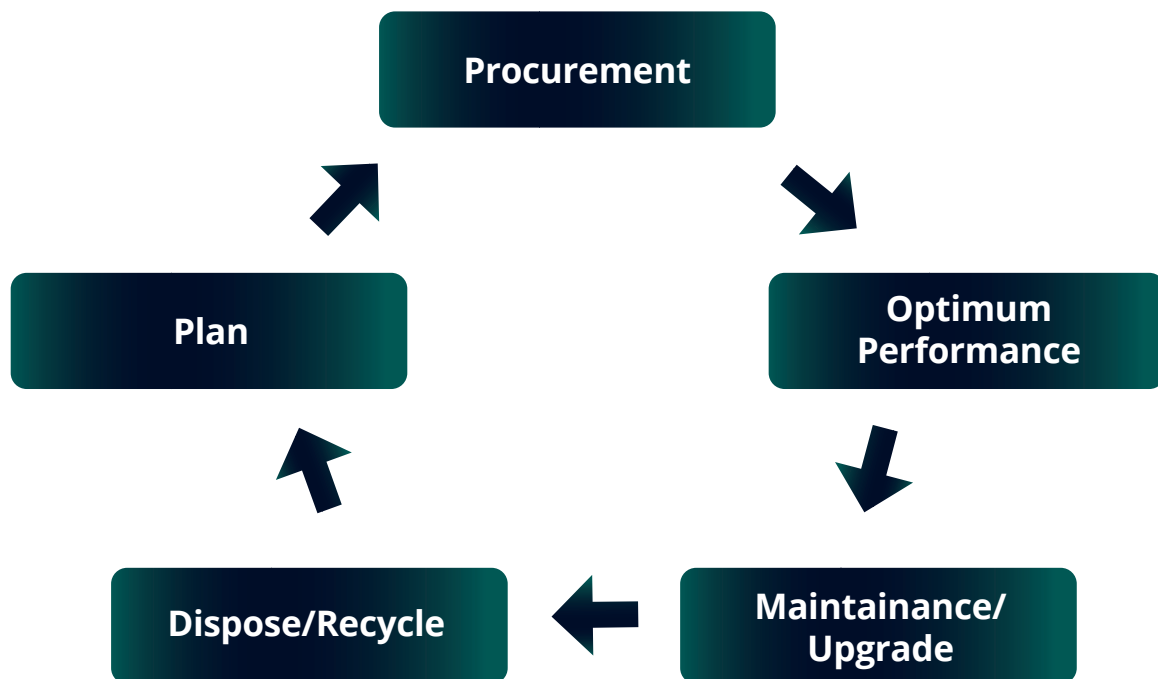
Data Centre Energy



Go Climate

From manufacture to disposal, the lifecycle of a server is not a particularly green journey. Most studies on server lifecycle management (LCM) have typically focused on energy usage and waste, with little or no attention paid to the manufacturing and deployment phases, which may account for up to a fifth of total server energy use. Exacerbating this problem is the fact that most proposed solutions to the consumption and waste challenge have generally converged around alternative energy sources, efficient cooling systems, and data virtualisation. We believe that consolidating underutilised servers via spare capacity recycling (SCR) will significantly increase efficiency, reduce waste, lower procurement costs, and meet environmental goals.

Learn more: **Cudo Compute at the edge: combining the strengths of blockchain and decentralised architectures.**



Achieving environmental sustainability via spare capacity recycling

Adequate lifecycle management requires usage optimisation, recycling, and accountability. Given current server underutilisation statistics, we envision the possibility of increasing utilisation by an additional 20% per server. Achieving utilisation anywhere near that figure will effectively eliminate the need for one-sixth of procured servers, thus reducing energy consumption associated with the manufacturing and transportation processes.



Learn more: **Cudo Compute and nuco.cloud to build a sustainable future**

Decentralised cloud computing with blockchain

[Watch Video](#)

Spare capacity recycling is a revolutionary model

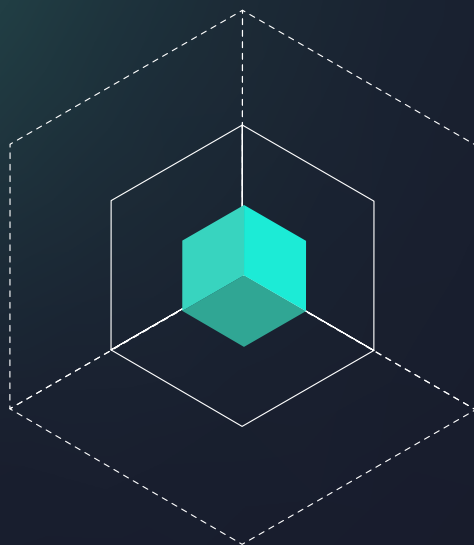
In the previous section, we addressed how proper server recycling would enhance overall lifecycle management. This underlines one of our core value propositions as a network. Cudos is a decentralised cloud and computation blockchain aiming to meet the cloud computing demands of the future by enabling the buying and selling of computing capacity.

Finding the right balance between technological advancements and a healthier environment will define the future of our planet. The manufacture, use, servicing, and disposal of technology have been the single most consequential factor for our planet **since the start of the industrial revolution**. Global CO2 emissions alarmingly **reached historic new levels** in 2021 after a COVID-enforced decline in emissions in 2020.

In a 1996 essay on the relationship between technology and the environment, Dominique Foray and Arnulf Grubler **famously argued** that tackling climate change would require a “deeper understanding of the mechanisms underlying technological change and the factors governing the diffusion of environmentally relevant technologies”. In essence, scaling back on creating new technologies is not the answer to the problem. Instead, the design of environmentally friendly tech and more innovative use of existing systems might be our only way out of the climate crisis.

With **Cudo Compute**, we are **challenging the monopoly** of centralised cloud providers like Amazon, Microsoft, and Google with an ecologically viable alternative. Globally, data centres are squandering tremendous amounts of computing and hardware capacity as they utilise roughly only a quarter of their total computational capability.

Furthermore, Cudo Compute will comprise a range of hardware beyond simple CPU compute, offering GPUs and other sources of high-performance computing power when the platform goes live. The range of Cudo Compute hardware will effectively democratise the cloud industry, make it accessible to numerous participants, improve network latency, and address environmental needs.



Find out how Cudo Compute can transform your cloud services

Cudo Compute is providing a sustainable and scalable source of computing power for the next-generation web. Our platform offers unique benefits for those looking to buy or sell compute.

For buyers, Cudo Compute provides an efficient, cost-effective and robust source of cloud computing. We give you access to various hardware configurations, network services and geographical locations, enabling you to fine-tune how and where you deploy your applications.

For sellers, Cudo Compute provides a simple and efficient way to maximise the utilisation of your compute infrastructure, enabling you to generate revenue from spare or dedicated capacity. You are free to decide how much compute you want to contribute at a given time, and the Cudo Compute platform will then deploy secured compute workloads matched against your profile.

If you would like to find out more about how we can help to transform your cloud services, visit the **Cudo Compute website**.