ORACLE
Cloud Infrastructure

Build a sustainable future with Oracle Cloud Infrastructure

Helping customers reach their sustainability goals

Working together to make a difference

Climate change continues to pose an existential threat, creating a wide array of economic, health, and social risks. There isn't an area of the world, an enterprise, a community, or an individual that won't be impacted by it. How we collectively respond to this crisis will determine the future for generations to come. And the only way to mitigate climate change is to aggressively decarbonize our economy and our daily lives.

Companies of all sizes are taking bold steps to address the crisis in a collaborative way by reducing energy consumption and carbon emissions. Environmental, social, and governance (ESG) concerns have become an integral part of the corporate agenda. According to a Gartner article from late 2021, 63% of survey respondents indicated that investments in IT and digital solutions are now part of their sustainability programs. The steps companies are taking toward sustainability are often influenced by consumers and stakeholders who support organizations that act on their commitment to do better for the world. KPMG reports that 58% of CEOs say they have increased transparency regarding their ESG goals based on investor, regulator, and customer demands.

Earth's temperature has risen by 0.32°F (0.18°C) per decade since 1981.

National Oceanic and Atmospheric Administration's 2020 Annual Climate Report

To meet the goal of the Paris Agreement, all participating parties need to reduce their carbon footprint by more than 45% by 2030 and eliminate all emissions by 2050.

SAIL GP™

SailGP, sailing's fastest racing league, is an interesting example of an organization that's improving both operations and sustainability through IT transformation. SailGP has moved away from physical infrastructure and onto Oracle Cloud Infrastructure (OCI) to improve their operational performance. They rely on Oracle Autonomous Database to handle their race-related data, with streaming analytics, machine learning, and visualization technologies all running on OCI without database administration. In a matter of seconds, SailGP can analyze more than 240,000 data points collected every second from 800 sensors across their F50 catamarans. SailGP is also using OCI-powered data and analytics to accurately measure the carbon footprint of league events and take action to lower the impact on the environment.

A faster path to sustainability with the cloud

Business leaders are facing increasing pressure to accurately report their emissions data. Companies are acting by adopting cloud and data services to meet their ESG goals. CIOs are playing a pivotal role in guiding their organizations to make technology decisions that drive a more sustainable business strategy. And they're well positioned to make the choices—from data infrastructure to the cloud—that will help their companies achieve their ESG goals and report comprehensive emissions data.

Digital sustainability investments enable organizations to develop products and services that require less energy and water and fewer chemicals—and create more sustainable operations and processes to improve energy efficiency. Using technologies to build a sustainability data platform where companies can gather and analyze ESG data from their operations empowers businesses to measure their carbon footprint, optimize supply chains, and compare themselves to their peers.

The cloud has become a key element of many companies' sustainability strategies. Moving workloads to a public cloud not only offers flexible resources and the ability to scale workloads as needed, it also dramatically reduces power consumption and carbon emissions. Public cloud data centers use multitenant architectures to promote higher utilization, reduce energy usage, and increase operational excellence.

Going green with the cloud

Cloud adoption across industries continues to accelerate as companies look to take advantage of all the benefits and services the cloud offers. Public cloud spending is poised to surge to nearly 22% of all enterprise IT spending in 2022 and will increase to 45% of all enterprise IT spending by 2026. By moving data center infrastructure and resources to the cloud, organizations are not only more agile, cost-efficient, and innovative in how they operate, but they're also moving closer to meeting their sustainability goals.

Efficient resource utilization

Moving to the cloud can be compared with carpooling or using public transportation rather than owning a car, which is the on-premises server in this scenario. By "carpooling" with other public cloud service provider customers, businesses can more efficiently share and use resources.

> Accenture indicates that migrations to the public cloud can reduce carbon dioxide emissions by 59 million tons per year.

Reduced power

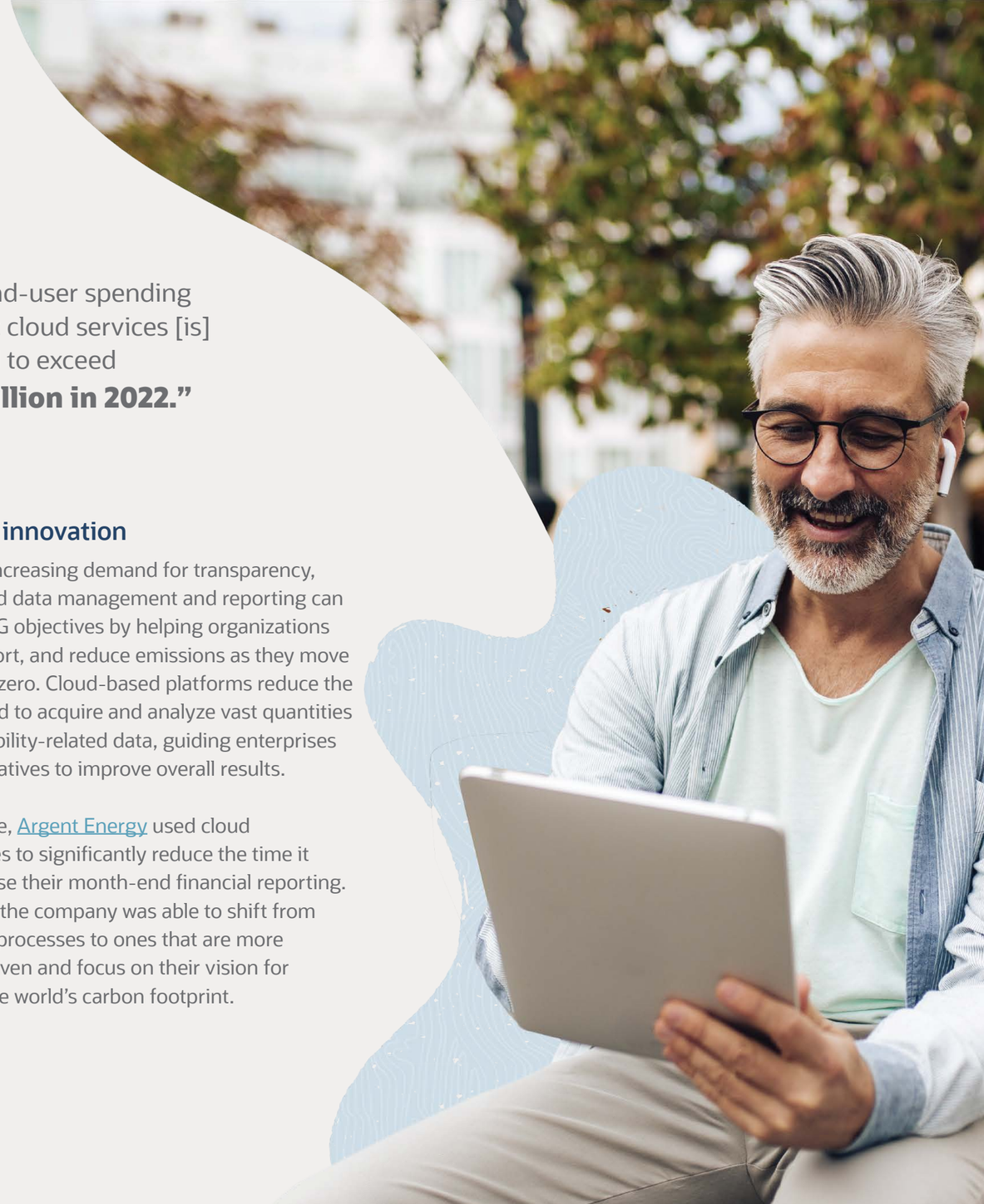
Power consumption is a closely watched indicator of environmental sustainability. It's typically measured in power usage effectiveness (PUE) for data centers. A PUE close to 1.0 is ideal as it means that most of the power consumed by the data center is consumed by IT equipment rather than cooling and similar functions. According to Uptime Institute, the typical data center had an average PUE of 1.57, whereas a public cloud service provider has optimized the power usage of their data centers to be closer to a PUE of 1.0.

> "Global end-user spending on public cloud services [is] expected to exceed **$480 billion in 2022."**
>
> - Gartner

Data-led innovation

Given the increasing demand for transparency, cloud-based data management and reporting can support ESG objectives by helping organizations record, report, and reduce emissions as they move toward net zero. Cloud-based platforms reduce the time needed to acquire and analyze vast quantities of sustainability-related data, guiding enterprises in their initiatives to improve overall results.

For example, Argent Energy used cloud technologies to significantly reduce the time it takes to close their month-end financial reporting. As a result, the company was able to shift from supply-led processes to ones that are more demand driven and focus on their vision for reducing the world's carbon footprint.



Choosing the right green cloud service provider

The cloud allows organizations to meet their business needs without compromising their ability to meet the needs of future generations. Enterprises have historically derived benefits such as cost reduction, security improvements, and increased agility from cloud adoption. But not all cloud migrations are environmentally sustainable due to some cloud providers' incongruous power consumption and reliance on nonrenewable energy for their data centers.

Businesses should look to enhance their environmental credentials by selecting a carbon-thoughtful cloud provider that will help them meet both financial and sustainability commitments. Many cloud providers have implemented their own green initiatives, and organizations planning to implement green cloud optimization strategies should assess and monitor the gross carbon emissions associated with their cloud usage.

The three pillars of a green cloud

In the context of the cloud, "green" denotes energy-efficient data centers that minimize their carbon footprint. A green cloud reduces the use of hazardous materials, maximizes energy efficiency during a product's lifetime, and ensures the recyclability of defunct products and e-waste. Green cloud providers practice three main behaviors.

1. Build an energy-efficient infrastructure

The large-scale migration of business data and IT services to the cloud has accelerated the need for more-sustainable data centers and made it imperative that data center operators follow energy-efficient design principles. Three essential components should be considered when selecting a cloud provider with an energy-efficient infrastructure.

Energy-efficient servers

Organizations should consider cloud service providers that have energy-efficient data centers. Environmentally friendly data centers can adapt hardware for greater efficiency to reduce power consumption and keep heat generation to a minimum. Incorporating the use of renewable energy sources (solar, wind, and hydroelectric power) wherever possible, further increases energy efficiency and uptime.

"With Oracle Cloud Infrastructure, we significantly reduced IT operational costs, cut energy consumption by 20%, simplified administration and compliance, and delivered the scalability we need to meet our sustainable growth plans."

Vlad Moca, Deputy Group IT Director, KMG Rompetrol SRL

Energy-efficient cooling solutions

When selecting cloud service providers, companies should evaluate their data center cooling solutions. The sole purpose of data center cooling technology is to maintain optimal environmental conditions for information technology equipment. Data centers can be very energy intensive, and it's possible for cooling systems to use as much as or more energy than the computer they support.

Environment-friendly cooling strategies such as intelligent building management systems, economizers, high-efficiency chillers, liquid-to-chip cooling, and airflow modeling can boost the energy efficiency of data center cooling systems.

Optimized hardware refresh cycles

Reducing environmental waste through lifecycle assessment and refresh cycle optimization of all data center hardware components can further reduce a data center's carbon footprint.

2. Make operations more environment friendly

Addressing linear economy practices, where a product is created, used, and then discarded, is a key component of any green cloud. If a cloud provider is constantly consuming new hardware, they're not doing everything they can to improve sustainability. Reduce, reuse, and recycle are the three tenets of the circular economy. Incorporating these principles into data center operations will help organizations meet their sustainability goals. Many cloud providers are resolving to make circularity the cornerstone of their business. The following actions can help significantly reduce landfill and greenhouse gas emissions.

"Oracle offers the best solution for our current and future business needs. We know that Oracle is continually looking for ways to design its hardware for reduced environmental impact, and to control the end-of-life treatment of its hardware to reduce environmental waste."

Paul Cardell, Vice President, Corporate Operations, Communications Test Design Inc

Refuse
Refuse materials that don't align with your overall sustainability efforts.

Reduce
Reduce your carbon footprint by using products that maximize performance and have been designed with the environment in mind.

Reuse
Repurpose whole or partial computing solutions.

Recycle
Convert retired assets into reusable material.

3. Measure and report on sustainability goals

With more organizations prioritizing ESG values, shareholders and stakeholders are putting pressure on firms to disclose information about their sustainability commitments. Today, most companies recognize that ESG metrics are linked to both business performance and compliance. Measuring the business impact of sustainability is key.

In addition, at the COP26 conference, the International Financial Reporting Standards Foundation Trustees announced the creation of the International Sustainability Standards Board (ISSB). The ISSB will provide the foundation for consistent, global ESG reporting standards that enterprises can use to report on ESG factors affecting their business.

To address this requirement, organizations need cloud-based software solutions that connect data from disparate sources, accurately report carbon count, and provide analytics. Embedding sustainability metrics, such as energy, waste, and water usage, in analytics platforms can influence decision-making, lead to a reduction in greenhouse gas emissions, and improve operational efficiency.

What to consider

Selecting the best cloud provider isn't the only way to ensure a greener cloud approach. It's imperative to understand and quantify their sustainability impact too. While evaluating cloud providers, organizations should solicit information about their environmental practices and policies, data center facility management and equipment, and data center power sources. This will help organizations gain better insight into a cloud provider's environmental performance, which can translate into sustainability benefits for the organization. Companies should gather the following information from cloud service providers to better understand and calculate the potential impact on their organization's sustainability efforts:

- **Steps taken by a provider to minimize the environmental impacts** associated with the data centers used to provide cloud services, particularly their water consumption.
- **Publicly stated goals** for power utilization effectiveness (PUE), water utilization efficiency (WUE), and other key environmental sustainability indicators. How do the **data centers' current efficiency metrics** compare to these goals?
- **Commitment to using renewable energy** for their data centers and the provider's current use of renewable energy to power the data centers.
- **Policies and management systems** that the provider has in place to reduce greenhouse gases that are byproducts of certain data center cooling mechanisms.
- **Greenhouse gas reduction targets** and the greenhouse gas emissions reductions the provider has achieved to date.
- **How the provider measures, calculates, and tracks greenhouse gas emissions** and energy use in their data centers.
- **Sustainable procurement policies** that demonstrate a provider's commitment to an environmentally responsible supply chain.
- **Commitment to reducing e-waste** through reuse and by diverting the amount of e-waste that goes to the landfill.

Create a sustainable future with Oracle

As a global leader in sustainability, Oracle is committed to developing practices and products that help protect the environment. We have a dual focus: internal initiatives that support our own sustainability commitments, and delivering solutions that empower customers to do the same. As an organization, Oracle has set ambitious sustainability goals, including reducing greenhouse gas emissions across our operations and supply chain by 50% by 2030 and achieving net-zero emissions by 2050.

In 2021 Oracle earned a fifth consecutive
Gold Sustainability Rating from EcoVadis,
putting us in the top 5% of responding companies
for supplier sustainability.

Oracle provides an unmatched breadth and depth of solutions to help companies in all industries design more environmentally friendly products, source materials responsibly, transport goods in more sustainable ways, manage risk, and analyze and report on environmental impacts. Technologies such as the Internet of Things, blockchain, and artificial intelligence provide opportunities for organizations to change their environmental impact. These technologies deliver real-time information about a business's carbon footprint to departments across the organization, helping companies achieve sustainability goals and reducing costs.

The World Bee Project uses AI, data visualizations, and analytics on Oracle Cloud Infrastructure
to study bee behavior through sound acoustics, uncover health threats, and help protect these crucial pollinators.

Beyond its inherent business benefits, OCI offers a more sustainable alternative for companies looking to minimize their environmental impact. OCI manages and maintains a very dense computing environment, attaining much higher utilization rates than an organization can achieve with an on-premises system. Oracle further reduces their carbon footprint by leveraging state-of-the art cooling and energy-efficient technologies in their data centers.

In Europe, Oracle Cloud data centers are powered using
100% renewable energy

Oracle has decreased the amount of waste
sent to landfills at Oracle-owned buildings
on a square foot basis by 25% since 2015

At Oracle, we design and develop our products for circularity, use technology to improve efficiency, and reduce our reliance on single use plastics. Since we reuse and recycle 99.5% of our retired hardware, we're meeting our customers' ambition of creating a more circular economy.

Oracle helps customers make a difference both in terms of the technology solutions they use and the clean OCI platform on which they operate. With Oracle solutions, customers have been able to optimize resource management, value chain execution, and environmental analytics and reporting. Organizations such as National Grid, d.light, and FLSmidth are leveraging OCI to drive more sustainable outcomes.

Build a more sustainable business for you and your customers with OCI.

Take the next steps to reach your sustainability goals with Oracle

Learn more about Oracle Cloud Services.

Start today with Oracle Cloud Free Tier.

Discover how Oracle sustainability solutions can help you improve your environmental performance.

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