

IT infrastructure efficiency and software efficiency improvements are required for successful management of hybrid and multicloud IT infrastructure.

Sustainable Energy Use for Hybrid and Multicloud IT Infrastructure

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Introduction

The larger topic of sustainability and ESG parameters has now filtered into organizations' business strategy, planning, and operational activities in an unprecedented way. Sustainability is now a must do, rather than a nice to have. Both business and regulatory reasons drive that demand. In Europe, in particular, both the existing and upcoming regulations (e.g., the expected revision to the European Energy Efficiency Directive [EED]) represent a tangible lever for businesses to focus on sustainable energy use.

A gap, however, exists between intent and execution, as organizations fall short on embedding sustainability into day-to-day operations. To meet both business and sustainability objectives, organizations must bring together people, processes, partners, and technology.

The key business driver for sustainable operations stems from the quest to lower operational costs, which implies controlling and optimally decreasing energy consumption and, as a by-product, also decreasing global carbon emissions. Consequently, given the growing role of digital economy, information technology holds the key to achieving sustainable energy use.

In its annual IT industry predictions, IDC identified a couple trends related to sustainability: First, by 2024, 80% of G2000 companies will capture their carbon data and report their enterprisewide carbon footprint using quantifiable metrics compared with 50% today. Second, by 2025, more than 60% of organizations will require datacenter providers to disclose to them their energy usage, use of renewable energy sources, and recyclable IT equipment.

AT A GLANCE

WHAT'S IMPORTANT

- Cost reductions represent the key business driver for sustainability.
- Growing energy prices further put pressure on companies to run efficient and sustainable IT infrastructure.
- Datacenter providers will disclose their energy usage, use of renewable energy sources, and recyclable IT equipment.

KEY TAKEAWAYS

- Sustainability has become a must do, not nice to have due to business reasons.
- Technology plays an important role — yet it remains only a means that requires strategy, processes, and management to bridge the gap between intention and operationalization.
- Investing in modern and efficient infrastructure, leveraging cloud tiering, and avoiding data waste are all important to achieving predictable and sustainable energy spending.

The Four Pillars of IT Efficiency

The importance of efficient and sustainable IT has further increased in the light of growing energy prices resulting from geopolitical uncertainties. IT efficiency in a broader context is a complex and interrelated set of forces (i.e., people, processes, hardware, software, services) that all need to work together to harness the power of technology to accomplish energy-efficient, low-carbon business and sustainability goals.

IDC has identified four pillars of IT efficiency that apply to both on-premises and cloud environments:

- » **Modern and efficient infrastructure that provides the highest performance per watt:** Technology is the key enabler to achieve certain sustainability objectives, yet the cost of energy powering infrastructure (servers and storage) is equally important. Consequently, investing in modern and efficient infrastructure that provides the highest performance per watt is the right way to achieve predictable and sustainable energy spending.
- » **Automation and AIOps to drive efficient infrastructure utilization:** Automation and AIOps empower organizations to operate their infrastructure more efficiently. For example, AIOps can recommend and automate a tiered storage architecture with hot, warm, and cold data designations. Hot data can be stored in a high-priority tier with high-availability and low-latency access utilizing more energy-efficient solid state drives (SSDs). Warm data represents a tier that is accessed less frequently, yet is important and may require relatively fast access. Cold storage will be designated for less frequently used data in a less energy-intense archive tier in cloud. AIOps can also recommend data to be destroyed to save energy use.
- » **Reducing datacenter overhead with direct liquid cooling and support for high-temperature operations:** Power-hungry datacenters are responsible for increasing the proportion of overall global energy consumption and consequently for global carbon emissions. In some outdated datacenters, the energy required to deliver power and cool the infrastructure can be more than double that required to run the server and storage. Focusing on improving the efficiency of cooling should become a priority to reduce datacenters' overhead. Visionary organizations deploy technologies and new approaches to cooling such as free-air cooling, higher-temperature operations, and closed-loop cooling to reduce energy consumption.
- » **Leveraging renewable or low-carbon energy sources, including enhanced energy storage capabilities:** Infrastructure will always need energy to operate, regardless of how efficient it becomes over time. Selection of renewable or low-carbon energy can become one of the major levers to reduce the overall carbon footprint because energy supplied from only renewable energy sources has no net-new emissions. Therefore, hyperscalers and large collocation providers are investing in power purchase agreement (PPA) contracts to power their datacenters with green energy, which consequently lessens the carbon footprint burden of their operations. Organizations are advised to move away from the reliance on fossil fuels for powering their datacenters to negotiate energy supply contracts that include renewables such as hydropower, solar, and wind. Companies should consider self-generated power from renewables and potentially leveraging energy storage technologies.

Achieving Sustainability Success

Businesses must plan for sustainability from the beginning and consider a variety of software and hardware enablers to help them meet their goals. According to IDC research, 99% of firms that made investments in their digital infrastructure improved their sustainability performance. Here are examples to consider:

- » Scenario modeling using digital twins powered by AI can improve infrastructure efficiency and performance optimization by identifying performance bottlenecks, capacity constraints, or latency issues and recommending optimizations such as load balancing or data tiering.
- » Decomposing infrastructure to scale compute and storage independently allows for more efficient matching of workload requirements to infrastructure with minimal energy waste.
- » Optimizing applications can reduce CPU usage resulting in lower energy consumption.
- » Using techniques like data deduplication can reduce the amount of storage and energy resources needed.
- » Sustainability skills, expertise, and awareness can be developed within your human capital.

IDC research states that 74% of organizations consider sustainability objectives to be of high importance, requiring a strategy for monitoring and automation. Technology plays an important role — yet it remains only a means that requires strategy, processes, and management to bridge the gap between intention and operationalization.

Conclusion

Sustainability has become a must do, not a nice to have due to business reasons such as cost reduction, access to funding, and regulatory pressures. Managing energy use for hybrid and multicloud environments is essential to balance multiple requirements such as cutting operational costs, maintaining infrastructure resiliency, and lowering the carbon footprint. To succeed, organizations must have a clear strategy, endurance, and commitment. The decisive execution phase requires organizations to bring together multiple elements and walk through the following steps to meet their respective sustainability-related objectives:

- » Adopt standards-based measurement strategies and establish metrics to track and analyze.
- » Implement new technologies that improve energy efficiency.
- » Become proactive rather than reactive through software automation.
- » Enhance your business resiliency by investing in people's sustainability skills and expertise.
- » Partner with suppliers that align with your sustainability goals.

About the Analyst



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Vladimir Kroa, based in Prague, Czech Republic, is part of IDC's Worldwide Sustainable Strategies and Technologies program. He oversees aligning research methodologies, coordinating global sustainability surveys, developing forecasts, and providing insight on regulatory and environmental sustainability trends. He is building on the pioneering work when he initiated and co-created IDC's first dedicated sustainability research program in Europe, covering the role of IT in supporting enterprise sustainability initiatives.

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