

BUSINESS WHITE PAPER

The High Price of Insight

How Pure Storage and Intel are reducing the energy cost and environmental impact of big data.



Introduction

Climate change poses an existential threat to who we are and how we function as a society. Rising global temperatures, fueled by excess carbon dioxide in the atmosphere, will result in strained infrastructure, species loss, and sea level rise. The consequences of these changes will be catastrophic for many, and disruptive at a level that is difficult to fully comprehend. Some of these changes are already underway, with rising ocean levels eroding coastal cities and towns, and fundamental changes occurring in weather patterns and species migration. Other, more profound consequences are on the horizon. The longer we take to address the causes of climate change, the more dire the outcomes will be.

As the impact of the climate crisis grows more convincing, governments are accelerating efforts to regulate industry and encourage energy efficiency. And consumers are increasingly weighing environmental factors in their purchase decisions, especially in younger generations, where value capitalism plays a more decisive role. Today's employees prefer work opportunities at companies that share their concerns about a warming planet. In other words, the circumstances in which we find ourselves are directing us toward a more sustainable future, and demanding that we take appropriate actions.

The question for those of us in IT is how can we respond to that call.

The Double-edged Sword of 2020

The start of the 2020s brought some temporary carbon relief. When the world shut down in an effort to combat the spread of COVID-19, emissions of greenhouse gas declined substantially for the first time in decades. Less manufacturing and fewer people moving to acquire goods and services meant less industry and fewer emissions.

Unfortunately, what was beneficial for environmental well-being was far more problematic economically. The situation put enormous strain on many companies, which now found themselves dealing with disruptions in supply chains and workflows, including an abrupt and seismic transition to remote work. As a result, many organizations radically accelerated their digital transformation efforts, including investments in comprehensive, real-time, and predictive data services in all parts of the organization. Those investments, and the larger emphasis on leveraging data, has continued to play an important role in defining company strategy, even as the world has come out the other side and returned to whatever this new normal is.

Data has always been incredibly useful for companies, helping to deliver optimization of workflows and inventory management, improving differentiation, and generating improvements in the overall customer experience, from prospect through purchase and beyond. In times of macro-economic uncertainty, which is where we find ourselves now, data becomes even more important as a source of competitive advantage. As such, every organization is working to enhance, improve, and enlarge the data resources at their disposal.



The problem is that data usage doesn't scale free of cost.

We live in an increasingly dense data world. Not only are mainstream consumer and business applications insatiably data hungry; the rise of video and growth in IoT—including the rapid proliferation of connected sensors—will continue to explode data production. We can expect that the increase in data creation will be exponential, with consumers and companies alike producing more data, and inviting more data to be generated about that data¹. And there will be more data reporting on the more effective ways that data gets put to use. As the data grows in volume and density and the potential insights become more profound, the gravity of that data also increases. More and more people across an organization look to use that data to provide actionable insights, so that the company can work smarter, not harder.

Computer power is required to generate those insights, and storage capacity is needed to house the massive amounts of data being produced. This all requires energy that comes with an environmental price tag that contributes to the climate changes already happening.

The energy used to power data insights also comes with a substantial and growing financial cost. The cost of energy is rising globally, even if the rate of these cost increases varies by region and by season. As populations continue to swell, and the strain on electrical infrastructure grows, the cost of electrical consumption will rise, even with offsets from renewable sources.

Despite the temporary decline in greenhouse gas emissions that occurred during the pandemic, the subsequent investment in data—an investment that began prior to the COVID-19 pandemic and will continue long after—is contributing to the overall energy and climate crisis. The same investments in data that companies need to improve their bottom line are now contributing to more global risk. As such, organizations must embrace a more sustainable approach to IT—one that looks for ways to optimize the energy efficiency of compute and storage across the organization, at whatever scale.

Pure Storage and Intel: Towards More Sustainable IT

A more sustainable approach begins with IT manufacturers taking responsibility for the tools and technologies they create, and designing and creating them in a way that helps to reduce the environmental impact of their use.

In this effort, Intel and Pure Storage® are natural partners, aligned by a shared vision and sustained collaboration. It is a partnership driven by a mission to protect the well-being of the environment with a sustained commitment to do right by their customers.



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Intel's purpose is to build world-changing technology that improves the life of every person on the planet. By necessity, that mission begins with the customer but ends with the health of the world in which that customer finds themselves. As data services power the next generation of consumer experiences and business applications, and as organizations turn to data to power decision-making when it matters most, Intel's mission encompasses both the compute that powers those uses and also the carbon costs of doing that work. This dedication can be seen in Intel's commitment to a 10-times increase in energy efficiency in client and server processors by 2030.

The mission of Pure Storage is to uncomplicate data storage, forever. A core foundation of that mission is the emphasis on energy efficiency and environmental sustainability in its products, not only because it's the right thing to do, but because regulatory compliance and rising energy costs make data storage more complicated. It's harder to plan, more difficult to manage, and offers less room for innovation if companies are always running into the limits of their storage solutions.

Because of these overlapping missions and the joint emphasis on sustainable IT, Intel and Pure Storage have become natural partners, providing full-spectrum coverage of compute and storage needs for customers across a wide variety of verticals. Intel processors sit at the heart of Pure Storage technology, which has been architected from the ground up for efficiency that never compromises performance, delivering density, reliability, and simplicity. The result, in the case of FlashArray™ products, is a built-for-flash storage architecture that boosts performance while also saving up to 85% in both energy and direct carbon usage versus competitive all-flash systems².

FlashArray//C™ and the all new FlashBlade//E™ bring the same efficiency to secondary workloads and longer-term storage, rendering legacy magnetic disk solutions relics of a bygone and unsustainable era. And FlashBlade//S™ conquers fast file and object workloads with similar energy efficiency. In addition, Pure's unique Evergreen® architecture means that products are not built with obsolescence in mind, enabling arrays to be upgraded without disruption, extending storage life, and helping to reduce the overall carbon cost of upgrading.

These combined commitments to sustainable IT offer insight into the direction that hardware manufacturers can take to fulfill their own obligations to the environment. At the same time, what these commitments have produced are technologies that are better because of the effort put into designing them with sustainability in mind. Unlike other approaches, where inefficient legacy designs serve as a drag on corporate environmental, social, and governance (ESG) efforts and regulatory compliance, the missions that motivate Intel and Pure Storage result in better customer outcomes and smaller energy and carbon footprints.



With data production and usage growing exponentially, the reality is that every manufacturer bears the same level of responsibility to do right by their customers and our collective climate. “When I think about driving business results,” Patrick Casselman, Senior Director, Intel Sustainability Center of Excellence, says, “I think about providing value. To provide that value for our customers, making sure they have what they need is a given. But if the way we provide one specific solution, one particular value, comes at the cost of so much more, whether it’s exorbitant power bills or a worse world for the next generation of customers, then I don’t think we’re really providing true value at all. If we don’t care about the world in which we’re conducting our business, if we don’t care about the high external costs of the value we provide, then why are we doing business at all?”

Rob Lee, who serves as CTO of Pure Storage, likes to put it this way:

“When it comes to a more sustainable approach to data, we preemptively solve for the environmental costs of our products, today and in the future by driving significant reductions in energy utilization and e-waste. This is actually just part of our overall approach, where our customer experience is designed to be predictive and proactive, so we are identifying and solving issues before they ever become problems that customers have to deal with. We have industry-leading Net Promoter Scores, largely due to how we focus on serving customers. We deliver upgradable storage that keeps pace with customers’ expanding data needs and lasts far longer than competing systems—a benefit to their operations and sustainability needs.”

The New Total Cost of Ownership

Environmental stewardship is important. It denotes the baseline of where corporate responsibility for the climate should be. Using sustainability as a decision criterion for IT purchases should be a part of any organization’s overall ESG efforts. But the reality is that a smaller environmental footprint is also a smarter business decision.

The reason is that over the next decade, as the operating costs of energy consumption increase along with data production, storage, and overall data gravity, organizations will quickly realize that the total cost of ownership, when it comes to the technologies and infrastructures that power the data services their organization need, requires a broader definition. Total cost of ownership will need to account for the accelerating frequency with which the data gets used, and with that, the attendant power consumption from processing, as well as the various requirements that flow from storage, including the costs of operating, cooling, and housing the arrays.

At the start of the pandemic, back in 2020, data centers accounted for roughly 2% of the world’s electricity. Before this decade ends, that number could exceed 10%³. By 2030, if we maintain the current rate of data growth, then more than one out of every ten kilowatt-hours will be spent in the service of warehousing and processing the data we are already generating today⁴.

As energy costs and data growth rise, companies will find that the more insightful their data becomes, the more costly those insights become. Data might be each company’s most strategic asset, but in a world of high energy costs, the unprecedented amounts of storage and compute power that will be required to take advantage of that strategic asset will be tactically compromised.



Put differently, the total cost of ownership of data will scale proportionally to its value, thus reducing any return on investment.

This will slow innovation, complicate compliance efforts, and vex financial, operating, and executive teams.

In addition, we can expect that as the younger generations move into more pivotal roles within enterprises and large organizations, and as regulatory compliance becomes a more pressing concern for C-suites and boards alike, more decisions about which companies to engage or buy from will likely center around environmental preference. This won't be the only factor that influences purchase decisions in IT, but it will become an increasingly significant one. To some extent, this is already happening.

Casselman is often in the room when the big decisions around storage and compute are being made, and he notes that "increasingly we're seeing questions being asked by people outside of traditional IT about carbon footprint and measurement, and what it means for their own carbon reporting, as well as their energy costs. Five years ago, this happened only rarely or not at all, now it's something we expect."

Andy Stone, Field CTO, Americas at Pure Storage, echoes the sentiment: "I'm routinely asked to come in and assess a workflow to see if there are ways that we can improve efficiency when it comes to overall energy usage, and I'm getting pressed on how efficient Pure might be versus the competition, because they're trying to think about compliance at the same time they're managing their legacy storage upgrade cycles."

The frequency of these conversations is increasing because many companies realize that the critical point for any decision regarding their own sustainable efforts—and the impact on environmental reputation—is already here. The decisions organizations make today and the investments they make in the next few years will define their relationship to sustainable practices tomorrow. In a world in which consumers—and the internet—have long memories and many platforms in which to vocalize their concerns, it matters when a company makes the turn toward a more responsible environmental stewardship.

After all, every trendline points in the same direction: up. Energy costs, environmental consequences, consumer preference, performance, and regulatory compliance—these will invariably push companies to adopt a more sustainable approach to IT at some point in the future. But when all roads are leading toward the same destination, no one is excited by the companies that dragged their feet and arrived late. Instead, companies that embrace more innovative and environmentally-friendly solutions now will benefit with lower costs and a stronger reputation for corporate responsibility. And those benefits will be far better with more time and history as their foundation.



Many organizations are already feeling a growing sense of regulatory and consumer or constituent pressure, and need to reduce their operating energy costs. And they're turning to the full-spectrum solution that Intel and Pure Storage can offer them.

[Admiral Insurance Group](#), an award-winning insurance company that offers a wide variety of insurance policies, has data and digital at the core of who they are and how they service their customers. They rely on data to run everything from claims processing to policy pricing, as well as their chatbots and customer routing. They needed to upgrade the performance of their storage and the agility of their implementation, but they also needed any solution to align with their goal of being net zero for carbon emissions by 2040. When they knew it was time for a change, they turned to Pure Storage solutions, and the power provided by Intel technologies.

When [Dentons UKIME](#), one of the world's largest law firms, looked to upgrade its storage needs, they knew they needed something that was absolutely reliable, non-disruptive to their communication needs, and flexible. At the same time, as a firm that advises many clients on ESG matters, sustainability was a top priority in their decision-making. They turned to Pure Storage FlashArray, powered by Intel technologies.

And when the [British Army](#) needed to reduce the cost of owning and using data, and when they saw it was time to evolve to more effective and efficient digital processes, they turned to Pure Storage technologies as a solution.

What unites these and so many other organizations in their efforts towards environmental stability is the knowledge that with the right solution, one can prioritize both performance and sustainability.

Where Right and Smart Intersect

The reality is that when it comes to reducing both energy costs and carbon emissions, responsibility is strategic. Lowering the cost of using data means that the insights generated from that data yield a more robust competitive advantage.

This is a reality that companies will need to embrace, because this isn't a responsibility that can be solved by merely passing it along or waiting for someone else to fix it. Yes, energy producers will turn to more renewables, which may or may not prove a viable substitute for meeting the world's energy consumption needs. After all, the adoption of more renewables will be happening alongside increased demand for energy and might not do much to abate energy costs, even if their impact on the environment is more marginal. In addition, the cost of energy is tied to the means of its production and the strain on infrastructure and the requirements that need to be met to maintain and distribute it.

This is not a problem solved by just waiting for other industries to lead the way. Certainly, the energy giants could be cleaner. Car manufacturers could do more to boost efficiency. Shipping and trucking businesses could try going still greener, and on and on. None of these efforts are in any way mutually exclusive with a more sustainable approach to IT. When the future is defined by data, and data centers are predicted to use 10% of all produced energy worldwide by 2030, the environmental buck has to stop, at least in part, with those who make the decisions about which investments will define our future.

Climate change will likely be the most disruptive force we face in the next several decades, unless we do more to control our contributions to it and do our part to minimize the external costs of providing value. Doing so might not fix the world's climate problems, but being responsible isn't just about getting the right outcome. It's about taking the right action. More sustainable IT means data that costs less and generates more value. It means a smarter solution for companies that want smarter decisions. It means making the right choices when it matters, and not when it's too late.

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