## DRIVERS OF CHANGE:

# Meeting the Energy and Data Challenges of AI Adoption

**The age of artificial intelligence (AI) has sparked growing excitement across industries with new tools like ChatGPT promising a competitive edge. However, as organizations feel the push to integrate AI into their operations, their supporting infrastructure may not set them up for success.**
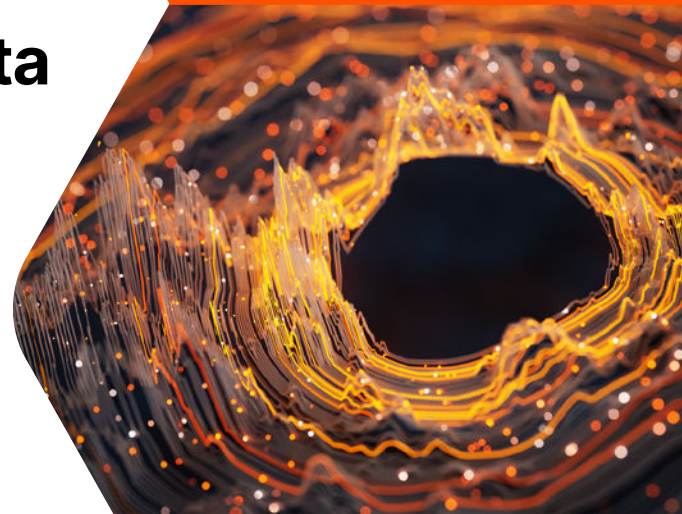
Most organizations lack the necessary infrastructure to handle the high-performance data demands and energy requirements essential for maximizing AI's benefits. In fact, legacy systems often cannot support the massive AI data pipelines required to get the most from machine learning models. And while AI brings immense promise, its impact on energy requirements can be surprising.

These hidden costs of AI pose a challenge to the successful implementation of critical corporate initiatives, including those aimed at achieving environmental goals. As AI continues to accelerate in adoption, IT teams require a meaningful data strategy to ensure they can efficiently and effectively operationalize AI through the right infrastructure.

## Research Findings

The challenge for IT leaders is not just about creating a durable AI architecture; it's also about embracing AI in a way that aligns with their priority ESG objectives. To help pinpoint the hurdles of AI adoption in parallel to organizational sustainability goals, Pure Storage has partnered with Wakefield Research to survey more than 500 IT buyers at companies of 500 employees or more in four major global markets (US, UK, France, Germany).

The survey found that for **88%** of those who have adopted AI, the need for computing power has surged dramatically. In fact, **nearly half (47%) have had to increase their computing power by double or more** since adopting AI. Moreover, **nearly 3 in 4 IT buyers (73%) whose companies have implemented AI were not completely prepared for the energy requirements**.

# 3 in 4

**IT BUYERS (73%) WHOSE COMPANIES HAVE IMPLEMENTED AI WERE NOT COMPLETELY PREPARED FOR THE ENERGY REQUIREMENTS.**

## Not being prepared for AI's impact on infrastructure puts those same initiatives at risk.

The top consequences of adopting AI without the proper IT infrastructure are more pressure on IT departments to address data team problems **(51%)**, more investments required to upgrade infrastructure **(49%)**, and the inability to effectively use AI **(48%)**.

### TOP CONSEQUENCES OF ADOPTING AI WITHOUT PROPER IT INFRASTRUCTURE

| 51% | 49% | 48% |
|---|---|---|
| More pressure on IT departments to address data team problems | More investments required to upgrade infrastructure | Inability to effectively use AI |
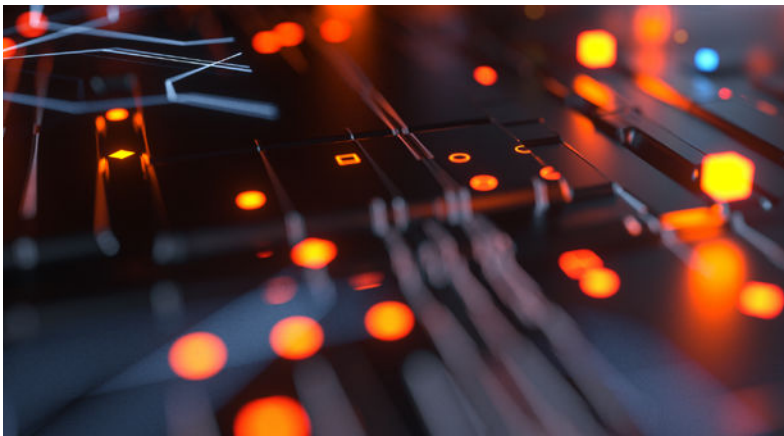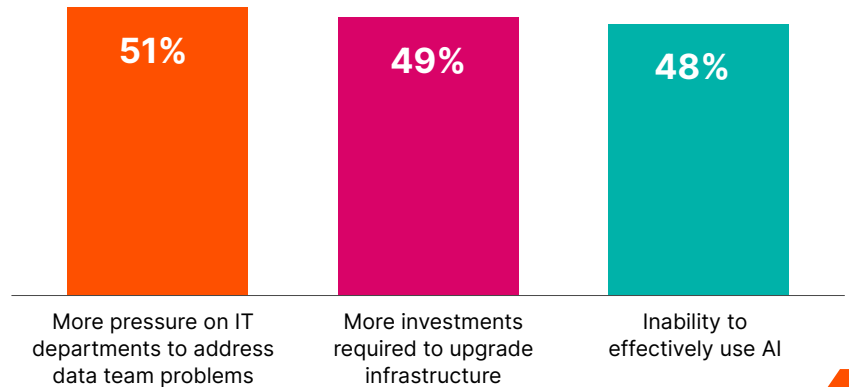
### AI REQUIRES CRITICAL DATA MANAGEMENT UPGRADES TO DRIVE RESULTS

For
# 73%
of buyers, AI demands data management improvements of some kind.

## Energy requirements are just one way AI adoption is imposing infrastructure upgrades.

Notably, data management tools **(48%)**, data management processes **(46%)**, and data storage infrastructure **(46%)** play a significant role in this regard. Other IT infrastructure upgrades required include networking infrastructure **(44%)**, security and privacy tools/processes **(44%)**, and compute infrastructure **(43%)**.

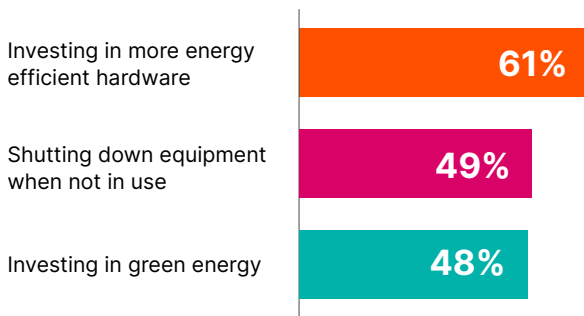## These challenges have also set back businesses' sustainability goals.

Nearly all IT buyers **(more than 99%)** say they face pressure to use providers who are committed to sustainability via their products and solutions. This pressure is also felt by employees **(51%)**, clients **(49%)**, leadership **(49%)**, and investors **(49%)**.

IT leaders have found that there is no way around the electrical, energy, and space requirements associated with AI. In fact, **88%** agree that meeting ESG goals is impossible without properly preparing their IT infrastructure to support AI initiatives. As a result, **nearly all respondents (96%) have already or plan to update their IT infrastructure**, including **29%** who say it has or will require a complete overhaul.

However, implementing AI means working with leadership to overcome misperceptions— which means figuring out exactly why they neglect infrastructure.

The top reason IT buyers believe leadership overlooks IT infrastructure when investing in AI is the expectation that AI work be done in the cloud **(51%)**. Other reasons include a narrow view on the impacts of AI **(50%)** and their rush to adopt AI **(48%)**. Moreover, more than 2 in 5 **(41%)** say it's because leadership doesn't have a full understanding of their current IT infrastructure.

# 74%
**CONFIRMED THAT AI REQUIRED OR WILL REQUIRE SIGNIFICANT UPGRADES OR A COMPLETE OVERHAUL OF THEIR IT INFRASTRUCTURE.**

## TOP MEASURES COMPANIES PLAN TO TAKE TO OFFSET THE ENERGY USE OF AI

| Measure | Percentage |
| --- | --- |
| Investing in more energy efficient hardware | 61% |
| Shutting down equipment when not in use | 49% |
| Investing in green energy | 48% |

**FOR NEARLY**

# 3 in 4 (72%)
**THESE MEASURES ARE PART OF LONG-TERM PLANS RATHER THAN SHORT-TERM SOLUTIONS.**

**Ideally, infrastructure upgrades should be prepared before an organization deploys AI.**

According to the survey, **89% of respondents faced difficulties meeting ESG goals when upgrading IT infrastructure after AI adoption.**

To address this challenge head-on, **60%** of those who have already adopted AI technologies (or plan to in the next 12 months) stated that they invested in or will invest in more energy-efficient hardware to meet their ESG goals.

# Infrastructure Essentials for Sustainable AI Adoption

Implementing AI within an organization's processes and operations can be highly effective for increasing competitive advantage, enabling organizations to achieve greater agility, increased customer satisfaction, improved operational excellence, and accelerated innovation. However, as ESG adoption has hit critical mass, organizations face the challenge of balancing environmental impact with business-driven objectives to harness the value of exponential data growth. As such, the successful adoption of AI and other data-intensive technologies will increasingly be defined by the forethought given to an organization's infrastructure capabilities for both scale and efficiency.

Right now, the vast majority of data in data centers—over 80%—remain trapped on magnetic hard disks. Shifting to flash-optimized systems is a preliminary step organizations can take to reduce power usage between 5x and 10x. In addition to helping reduce emissions, flash systems can handle the evolving data demands of AI workloads and are designed to accommodate growing data volumes without compromising performance.

Pure Storage delivers a unified all-flash platform that is more sustainable than any other enterprise data storage technology and is the only vendor dedicated to reducing data center carbon emissions and energy footprints; absorbing customers' power and rack space costs. As organizations work towards meeting net-zero goals without compromising the pace of innovation, it is clear that IT buyers will increasingly look to embrace AI in ways that align with ESG objectives. **Those that begin with a critical look at their infrastructure will end up saving cost, time and headache.**

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## Methodology

The Pure Storage Survey was conducted by Wakefield Research (www.wakefieldresearch.com) among 500 IT buyers at companies of 500 employees or more, defined as those whose primary responsibility is purchasing hardware, software, and support services for their organizations in the following markets: US (200), Germany (100), France (100), UK (100), between October 13th and October 19th, 2023, using an email invitation and an online survey. The results of any sample are subject to sampling variation. The magnitude of the variation is measurable and is affected by the number of interviews and the level of the percentages expressing the results. For the interviews conducted in this particular study, the chances are 95 in 100 that a survey result does not vary, plus or minus, by more than 4.4 percentage points overall, 6.9 percentage points for results in the US, and 9.8 percentage points for results in each of the remaining markets, from the result that would be obtained if interviews had been conducted with all persons in the universe represented by the sample.

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