HPE GreenLake

Accelerate digital transformation with sustainability, IT efficiency

Contents

1. Introduction

Digital transformation has become a strategic imperative for enterprises of all sizes. Yet, increasingly, capitalizing on the new opportunities of a digital-first world requires core operations and processes to change as well, and to do so with sustainability in mind. According to a 2021 Accenture report, companies leading in both digital adoption and sustainable practices are nearly three times more likely than other companies to be among tomorrow's strongest-performing businesses.[1]

Designing and implementing a sustainable IT strategy is a critical step for any organization seeking to capture this opportunity, scale technology deployments, and accelerate digital transformation. This paper offers technology leaders an overview of essential components that this strategy must include to accelerate digital transformation with sustainability and IT efficiency.

The dawn of the sustainable era does not change traditional goals. It does, however, enrich them.[2]

Not all digital transformation leaders are sustainability savvy. So, it is essential to understand the key business drivers, determine the most significant areas of impact and opportunity for the organization, identify your key stakeholders and what motivates them, and what success looks like for a sustainable IT strategy.

This paper aims to help IT and digital transformation leaders conduct this discovery phase more broadly. Once a strategy is in place, Increasing competitiveness with a comprehensive IT efficiency strategy technical white paper will cover the processes and technologies that IT leaders can adopt to deliver and drive efficiencies throughout the IT stack and value chain.

2. Setting up the strategy

Setting up a strategy can be the most challenging step in ensuring a successful transformation, yet it is likely the most important. This is even more relevant when your strategy needs to achieve multiple objectives—meet your sustainability and business goals. This section explores the business objectives that your sustainable IT strategy may support, how to align with the corporate sustainability strategy to ensure buy-in and the importance of measuring and managing your environmental footprint to help maximize the impact of your strategy.

a. Defining your scope and aligning the business case with corporate strategy

Identifying the relevant digital transformation drivers

For digital organizations, sustainability is often not a top-of-mind driver for business or operational benefits. In fact, some perceive it as adding more work and cost to an already infamously staff- and resource-constrained industry. That is a misconception. As IDC describes, "The dawn of the sustainable era does not change traditional goals but it does, however, enrich them." The appeal and imperative of undertaking sustainability initiatives become clear once leaders understand that sustainability is largely about doing more with less. It's about transforming businesses and modernizing while driving efficiency, lowering costs, and achieving sustainability objectives.

As enterprises harness more data to achieve their objectives, the expanding compute and analytics needs are constrained by resource limitations such as power, space, cooling, and financial flexibility, making the need for efficient and sustainable digital transformations more critical than ever. At the same time, the acceleration of digital transformation to reduce costs and increase efficiencies is also helping companies meet their sustainability goals.

Improved monitoring and efficiency can significantly reduce operational expenditure (OPEX) and capital expenditure (CAPEX) while improving operational efficiencies for equipment, staff, and infrastructure. That is exactly why a chief information officer (CIO), and the team should seize the opportunity to own sustainable IT initiatives, feel accountable for them, and coordinate with relevant stakeholders to achieve shared objectives.

An efficient and sustainable IT strategy should support many business objectives.

Identifying the drivers that align with your organizational needs and objectives

The first step in building a sustainable IT strategy is identifying the drivers that align with your organizational needs and goals. These may include:

- **Sustainable digital transformation:** Modernize, reduce your footprint and energy use, and create an ongoing model that optimizes your operations and lowers cost. Increasingly most customers we talk to are telling HPE that they want to lower their overall IT energy consumption and be able to monitor it.

[1] "The European double up: Twin strategy that will strengthen competitiveness," Accenture, 2021
[2] "Technology for a Sustainable Organization: The Role of the C-Suite," IDC blog, 2020

- **De-risk and advance your sustainability profile:** Mitigate the operational, compliance, and reputational risks inherent in IT supply chains—from human rights and labor laws to climate and waste management.
- **Accelerate innovation for global impact:** Capture new market opportunities by leveraging technology to build a more sustainable and connected world. 84% of executives agree that business transformation is likely to have greater success when integrated with purpose.[3]
- **IT infrastructure modernization:** Drive better energy efficiency and a lower carbon footprint. Modernizing an IT estate is costly and deprioritized due to budget constraints. Integrating environmental dimension into decision-making can often help justify such investments.
- **Return on investment (ROI):** Get a better rate of return and accelerate time to value by doing more with less.
- **Improved margins:** Acquire the right solutions for long-term cost reduction and lower cost of ownership by integrating a lifecycle approach to how digital and IT organizations think, as the environmental dimension requires.
- **Increased resources allocated to innovation:** Eliminate IT sprawl, cooling, space, and power constraints, as well as automate labor-intensive tasks to be handled by embedded intelligence—thereby, freeing human resources to focus on adding value and innovation.
- **Data center readiness:** Achieve efficiency and resiliency. As explained in the efficient disaster recovery section of Increase competitiveness with a comprehensive IT efficiency strategy technical white paper, resilience doesn't necessarily mean redundancy and, as a result, resilience doesn't equate to inefficiency.

Finally, an efficient IT dimension can bring together and drive one vision for all stakeholders, whether the IT organization is trying to accelerate development or modernize its infrastructure.

Aligning with the corporate sustainability strategy

The second step for any digital transformation leader willing to develop a sustainable IT strategy is to identify synergies between their company's sustainability strategy and their IT organization's business objectives.

Many organizations have integrated sustainability into their strategic planning.[4, 5] Often, this is led by a corporate sustainability team who sets its vision and ambition. However, the corporate sustainability ecosystem does not just comprise the corporate sustainability team. Various other organizations could either sponsor, own, contribute, or are accountable for the different goals set in the strategy. It is unsurprising to see real estate leaders held responsible for energy reduction and renewable energy sourcing targets or procurement leaders increasingly integrate sustainability-related criteria in their purchasing scorecards. There are many reasons for organizations to set a robust sustainability or environmental, social, and corporate governance (ESG) strategy at the corporate level, including attracting investment, recruiting talent, meeting customer demands, mitigating regulatory risks, and enhancing brand value. These benefits are detailed in the "Appendix" section.

In the case of a sustainable IT challenge, the corporate sustainability team is unlikely to know how to drive a comprehensive sustainable IT strategy. Still, it is certainly likely to be interested in determining how it can support their overall agenda. Sustainable IT initiatives can often help you achieve business and sustainability goals concurrently. For instance, greenhouse gas (GHG) emission reduction is inherently linked to energy consumption and, as a result, to cost savings. Similarly, waste reduction goals often drive IT disposal cost reductions and new sources of revenue can even be created through refurbishment and remarketing, as explained in the asset end-of-use management section of Increasing competitiveness with a comprehensive IT efficiency strategy technical white paper. Any waste stream—such as energy, natural resources, water, or emissions—should be considered a preventable business leak that could benefit both the bottom line and the environment.

Inversely, most of the efficiency and optimization initiatives implemented in IT operations can lead to more sustainable resource use. For example, modernizing an IT estate supports more energy-efficient operations due to power efficiency gains from newer product generations and can, therefore, reduce GHG emissions. In addition, virtualizing IT infrastructure decouples applications from the hardware layer. Consequently, it helps increase infrastructure utilization levels and decreases the space, hardware, energy, and cooling needed to fuel the underutilized resources.

While digital transformation leaders can define and implement a sustainable IT strategy independently, the corporate sustainability team can support them in getting there faster. For instance, the latter's knowledge in environmental impact assessments, lifecycle analysis, greenhouse gas (GHG) accounting, waste management best practices, corporate sustainability marketing, communications, and integrating business processes and sustainability goals are skills digital transformation leaders must possess. For example, the HPE corporate sustainability team directly engages with customers to help them understand the benefits of sustainable IT practices and reports revenue generated from sustainability-related customer wins to bolster the internal business case for sustainability leadership.

[3] The business case for purpose, Harvard Business Review analytic services report, 2019
[4] IT's Role in Driving Sustainability Progress, IDC, July 2020
[5] The State of Sustainable Business 2019: Toward a Critical Decade, BSR, November 2019

It will be critical to partner with the organization's sustainability ecosystem and better understand their ESG goals. Goals are usually passed down from top to bottom. Understanding how this ecosystem is intertwined and how it drives the company's sustainability agenda is key. Digital transformation leaders who succeed in aligning to their peers' objectives will likely be drivers of the corporate agenda and more likely to be rewarded and understood in their journey.

Setting objectives for the IT organization

The third step in developing the strategy is to set objectives for the IT organization. These should be informed by an analysis of environmental impacts and supported by measurable goals.

IT organizations are often asked to reduce IT sprawl, space requirements, and water and energy consumption while increasing staff retention, operational resilience, agility, innovation, and services. In short, do more with less. When addressing each of these demands individually, the link to sustainability may seem tenuous; however, when approached holistically, it becomes clear that all can be tackled with a bold and clearly defined sustainable IT strategy. After all, doing more with less is a fundamental guiding principle for sustainability. As explained, digital transformation leaders must first identify these opportunities to align the company's sustainability targets and their IT organization's business objectives. Given the breadth of sustainable IT issues faced by any organization, it is critical to take a data-driven approach to define strategic priorities.

Defining your scope and priorities

As with any industry, every part of the IT value chain creates environmental impacts. Therefore, it is crucial to define the scope of the sustainable IT strategy. Depending on available resources, priorities, and areas of interest, digital transformation leaders can either choose to tackle the entire value chain, address one at a time, or focus on the areas of greatest impact. The value chain can be mapped as follows:

- **Supply chain (upstream impact):** The environmental impact linked to manufacturing and transportation of goods used by the IT organization. This is often described as the gray environmental impact. For example, it comprises indirect impacts such as the GHG emissions associated with the fuel consumed by excavators needed to extract cobalt in the process of building backup batteries.
- **Operations (in-house impact):** The environmental impact associated with the use of goods by the IT organization. For instance, the water consumed by a data center's evaporative cooling systems, or the diesel consumed by backup generators.
- **End of use (downstream impact):** The environmental impact of assets that are no longer under the operational or financial control of the IT organization, such as soil pollution associated with chemicals from electronic waste leaking in landfills.

So where should digital transformation leaders start? It is important to first identify the most significant untapped opportunities and inefficiencies for any respective organization. A science-based and data-driven approach can help form the right decision. Lifecycle analysis (LCA) is a methodology that maps the environmental footprint of a functional unit across its lifespan. There are various LCA methods, different functional units, and even more diverse environmental footprints. For instance, HPE implements its sustainable IT strategy based on a cradle-to-grave lifecycle analysis of its environmental footprint every year (Figure 1).[6] This helps prioritize initiatives that can deliver the biggest environmental ROI by focusing on the key contributors of environmental harm across the value chain.

[6] Living Progress Report 2019, Hewlett Packard Enterprise, 2020

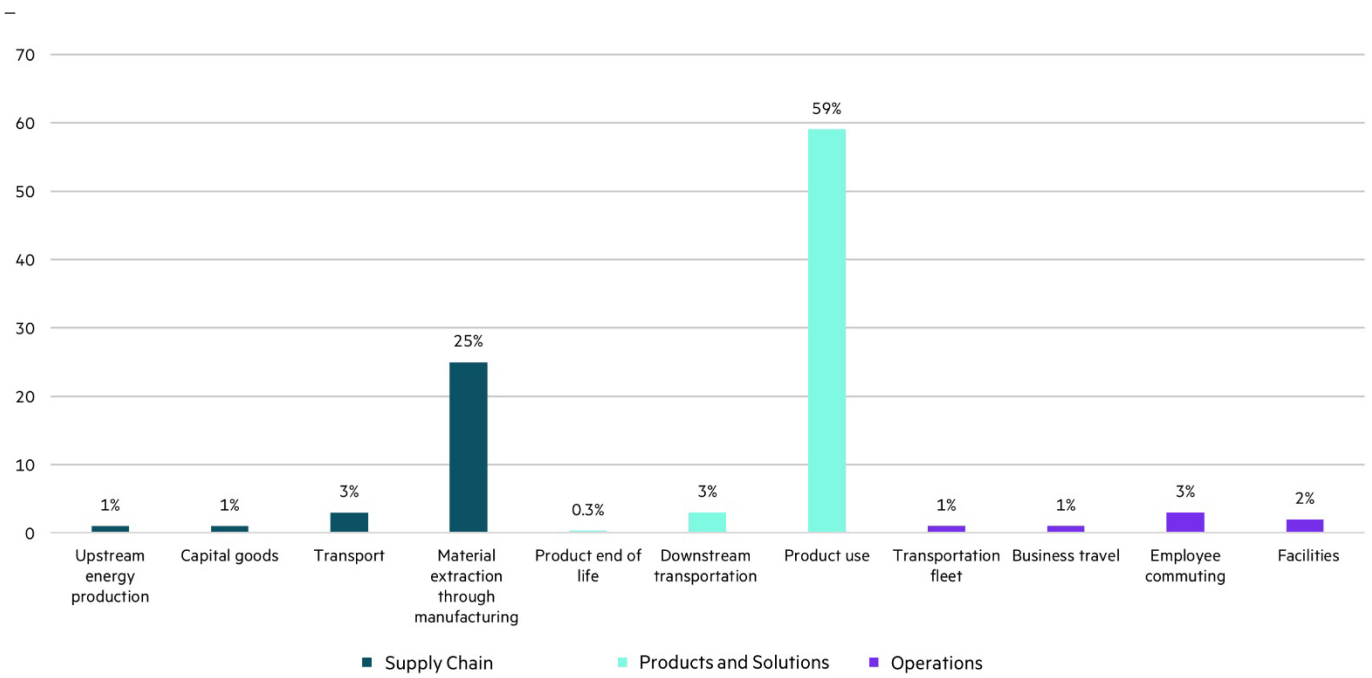

Figure 1. Percentage of total carbon footprint of HPE across the value chain (Living Progress Report 2019)

This data suggests that if a company like HPE wants to tackle climate change effectively, the first thing to do is to drive efficiencies in the use phase of the products and solutions it provides its customers. That category is responsible for 59% of HPE emissions. A secondary focus should be reducing the GHG emissions of the supply chain since it accounts for another 30% of the company's footprint.[7]

It is worth mentioning that not all IT organizations have a similarly distributed footprint. For example, consumer IT companies that manufacture smaller devices such as laptops, printers, and phones, may have an environmental footprint that is concentrated in the manufacturing phase.[8] For IT departments that operate data centers, it is often their operations.[9] Although all emissions sources and parts of the value chain must be addressed, digital transformation leaders should prioritize the operational phase if they're looking to significantly and rapidly reduce the environmental footprint of their department. More information regarding how to understand the operational efficiency opportunities in one's IT estate is detailed in Increasing competitiveness with a comprehensive IT efficiency strategy technical white paper.

Finally, a data-driven approach is essential. Digital transformation leaders can manage what they can measure. It is, therefore, important to identify:

- The objectives and associated KPIs
- The data that needs to be collected and where it is collected from
- The frequency at which the data will be collected.
- Who is responsible for providing and updating the data?
- Whether they will be incorporated in the corporate data governance model

Setting measurable goals

Once this discovery phase is complete, digital transformation leaders should be able to set several time-bound goals for their organization. IDC's 2020 Datacenter Operational Survey[10] shows that 87% of respondents said their organization includes data center facility metrics in corporate sustainability reporting. Of these organizations, almost half cite a reduction in energy use, 45% include renewable energy investment, 42% include power usage effectiveness (PUE) improvement, and 40% include circular economy metrics in their reporting. These metrics should be accompanied by targets and KPIs to measure granular progress toward achieving these goals.

[7] Living Progress Report 2019, HPE, 2020
[8] Industry Report on GHG Emissions, Consumer Technology Association, 2019
[9] Google™ Environmental Report, 2020
[10] 2020 Datacenter Operational Survey, IDC, 2020

Brainstorm box

Here are some additional questions that digital transformation leaders should ask to understand how their objectives align with the corporate sustainability strategy and define goals and priorities:

- Corporate sustainability stakeholders and strategy
  - Why does my organization have a sustainability strategy in the first place?
  - Who and which departments are owners, contributors, or accountable for my organization's sustainability strategy and related goals?
  - What are the key pillars of my organization's sustainability strategy?
  - What are the ESG awards, rankings, and listings my organization considers a priority?
  - Are there any sustainability credentials and certifications (for example, ISO 14001, ISO 50001, and others) my organization is already a part of or wants to be part of?
- Sustainability goals
  - What is my organization's energy reduction goal, if any?
  - What is my organization's renewable energy sourcing goal, if any?
  - What is my organization's waste refurbishing, recycling, and reduction goal, if any?
  - What is my organization's greenhouse gas emissions reduction goal?
  - What are my organization's supply chain responsibility strategy and goals?
  - What is my organization's water consumption reduction goal?
  - What questions are my suppliers asked when their products and solutions are assessed for sustainability?
  - Is there a goal for clean revenue or revenue generated from goods and services that have an environmental benefit?
  - For all the above:
    - When is the goal likely to be achieved?
    - Comparing to which baseline year?
    - Is my organization on track, ahead, or delayed in achieving it?
    - Who in the organization is accountable for these goals?
    - How is the progress for each goal measured?
    - Are the metrics constant or do they need to change over time?

If the corporate sustainability team is not available to answer these questions, this information can sometimes be difficult to find. Here are some potential sources where digital transformation leaders can find these answers:

- Annual corporate sustainability report
- CDP (formerly, the Carbon Disclosure Project)
- Science Based Target initiative (SBTi)
- Dow Jones Sustainability Index (DJSI)
- EcoVadis

b. Gathering the right partners

As a sustainable IT strategy requires a variety of skills and expertise, involving the right stakeholders and gaining their support is crucial. As explained previously, sustainable IT objectives must be aligned with business objectives, meaning other leaders can significantly support developing and implementing them. More importantly, understanding what will benefit these stakeholders if they support the initiative, and how the performance of these stakeholders is measured, is vital to gaining their active engagement. This section looks beyond the sustainability organization, discussed in the previous section, to identify additional organizations an IT leader will commonly need to collaborate and succeed.

c. Finance organization

The finance department and its leaders are likely to benefit from the integration of sustainability into the IT organization's strategy given that an efficiency mindset, which is focused on the total cost of ownership (TCO), can improve the profitability of IT projects. Such initiatives should support the chief financial officer's (CFO) profitability margin increase goals by reducing capital expenditure (CAPEX) and operating expenses (OPEX), as well as by better managing the risks involved in running IT operations.

For instance, transitioning from an infrastructure procurement model, where everything is based on CAPEX, to a consumption model can enable organizations to not only pay for what they use but also reap environmental sustainability benefits through reduced overprovisioning (as detailed in the sustainable consumption models section of Increasing competitiveness with a comprehensive IT efficiency strategy technical white paper). Overall, doing more work with less financial resources should certainly be an initiative of interest for the finance organization. A clear and long-term cost reduction target, both for CAPEX and OPEX, should be the goal that links the IT organization's sustainability strategy to the finance organization's objectives. In return, the finance organization will be essential in supporting the following:

- **Shift to a TCO mindset:** As previously explained, a sustainable IT strategy must extend across the entire value chain, taking a full lifecycle approach to an organization's sustainability impacts. Evaluating both the financial and environmental costs and benefits of innovative solutions, resources, or goods across their entire lifespan is essential. Some organizations go even further in this integration: as of 2020, more than 2000 organizations had implemented an internal carbon price that supported the purchase and use of low-carbon goods.[11]
- **Shift from IT ownership to technology outcomes access:** How organizations invest in IT is undergoing a paradigm shift. Purchasing and running excess capacity is typical and often necessary for IT organizations; however, digital transformation leaders only want to pay for what they use—nearly nine-in-ten (87%) IT decision-makers report that their organizations have started implementing as-a-service (aaS) solutions or have already completed the process.[12] This shift necessitates a fundamental change of economics and an agile financial foundation to operate it.

Given this, to effectively integrate sustainability in any IT organization, a change in investment strategy and traditional IT spend, and forecasting is necessary. Finance organizations must reimagine their traditional CAPEX IT budget planning processes to enable the transition to new consumption models. The reward can be worthwhile—reduced TCO and minimized environmental impact.

d. Procurement organization

Integrating sustainability in the decision-making process of IT purchasers is one of the most impactful opportunities for an IT leader. These investments could either support their sustainable IT initiative or damage it significantly. Thus, it is essential to involve the procurement department early, making sure they're aligned with the sustainability, financial, and business objectives the IT organization is trying to achieve. (Principles and recommendations for sustainable procurement are detailed in the sustainable procurement section of Increasing competitiveness with a comprehensive IT efficiency strategy technical white paper).

The good news is procurement leaders are increasingly being held accountable for the integration of sustainability in the procurement strategy of their organization. This mitigates social and environmental risks associated with the supply chain and ensures that end users are empowered with quality assets that are durable, are efficient, and can drive meaningful value in their ecosystem. The procurement department will be essential to support in:

Lowering the embodied environmental footprint of products purchased: By preferring products and suppliers that generate less environmental harm in the manufacturing phase, procurement officers can help reduce the indirect upstream environmental footprint of their organization.

- **Reducing the total financial and environmental cost of products purchased:** By integrating sustainability in the procurement process, the entire lifecycle of the product can be considered. This includes all environmental and financial costs throughout the lifespan of the solution considered, including asset disposal.
- **Setting ESG criteria in purchasing scorecards:** A recognized method to integrate sustainability in the decision-making chain is to add ESG criteria in the purchasing scorecard, alongside quality and financial criteria.

[11] Commit to putting a price on carbon, CDP, 2020
[12] HPE 2019 As-a-Service: Driving Change Report, December 2019

- **Keeping key strategic suppliers engaged:** Suppliers can contribute to the agendas of digital transformation leaders pursuing sustainability initiatives. Procurement leaders often own this relationship and are, therefore, essential in facilitating these outcomes. In addition, procurement is often subject to regulations, which increasingly include sustainability-related criteria, making supplier engagement on these issues critical.

There are several reasons for procurement leaders to support a sustainable IT initiative. It is well-aligned with increasing expectations for them to play a role in driving the sustainability agenda of the organization and can drive their cost reduction objectives without compromising the need for quality assets.

Suppliers

This is an opportunity for IT decision-makers to assess which of their suppliers are simple transactional vendors and which are trusted advisors and long-term partners. As product and solution suppliers are responsible for a significant portion of the environmental footprint of the goods they sell, both from the manufacturing and use phase, it is their responsibility to provide their customers with the right tools, resources, and advisory services. This helps support digital transformation leaders' sustainable IT strategies.

Most vendors today can provide environmental specifications, such as energy consumption, at various product loads, product carbon footprints for different configurations and parameters, and environmental impact assessments associated with the end-of-use phase. All these tools and insights can help speed the process of data gathering and reduce the workload of digital transformation leaders. Vendors that are trusted advisors can provide a wealth of experience from their experiences and those of customers who have successfully implemented sustainable IT strategies.

Executive leadership

As with any strategy, implementing a sustainable digital transformation is impossible without a clear and consistent mandate from the top, including from the C-suite and the board of directors. While most of the initiatives we suggest in this paper have a clear business case, developing and implementing such a strategy will require the investment of time, effort, and resources. It is, therefore, essential to have executive sponsorship and support paired with ambitious targets that executives feel accountable for.

Others

Many other organizations and stakeholders could either benefit from or contribute to a more sustainable transformation: facilities, real estate, human resources, marketing, communication, and global operations, among others. Depending on your organization's nature, these could be essential partners or occasional contributors.

e. Choosing the right measurement and reporting tools

Once objectives and performance indicators are set, finding the tools and software to measure them can be tricky. These tools, at any level, should be able to:

- Collect verified data from reliable sources both at granular and holistic levels (for example, hardware level and data center level)
- Update at near real-time frequency
- Keep historical data points
- Predict and forecast

In an April 2020 study by the IDC, 62% of respondents said they had reduced their energy spend by using software tools. With 12% of data center budgets spent on energy, the potential for savings is significant.[13] Yet, it's difficult to manage energy use properly without adequate measurement. This section outlines various reporting and measuring tools that can help digital transformation leaders in their journey.

IT infrastructure management and reporting tools

As detailed in Increasing competitiveness with a comprehensive IT efficiency strategy technical white paper, digital transformation leaders must begin by tackling IT inefficiencies in their infrastructure. This requires the right infrastructure-level measuring and reporting tools. These tools should become the source of insights for IT decision-makers, including understanding whether the organization is on track to achieve its goals and identifying untapped efficiency opportunities.

The good news is these tools are sometimes already part of the software stack, yet digital transformation leaders have simply been using them for tasks entirely different from IT efficiency. It's often a matter of understanding the full capabilities of existing software management tools in place so their full potential can be unleashed.

[13] IT's Role in Driving Sustainability Progress, IDC, 2020

The Amsterdam Economic Board and its Lower Energy Acceleration Program (LEAP) offers a case study for driving significant efficiency gains using software tools.[14] The coalition achieved energy savings of 10% simply by running data servers in power-saving modes, even when applied to highly utilized servers, without any loss of performance. A pilot run with KPN, a large telecommunication company based in the Netherlands, reduced their power consumption by 7% by optimizing their power management features, thanks to BIOS and server-level software tools. The figures may sound inconsequential, but who wouldn't take a 7% to 10% cut on their monthly power bill, especially when some organizations pay hundreds of thousands for their data centers' power consumption? Better yet, no technological innovation was required; these power savings can be achieved by activating settings that are often not optimally used.

Digital transformation leaders should ensure that their monitoring and management tools include the following key capabilities:

Real-time thermal and power monitoring: To begin with, these IT infrastructure software management tools should be physically linked to real-time thermal and power monitoring, across both the IT and facility infrastructure.

Example: HPE iLO

HPE servers have embedded power and thermal monitors on critical components with output data aggregated and reported through HPE iLO, a firmware management tool. HPE iLO allows users to monitor equipment utilization, power consumption, and thermal output via tools such as HPE OneView. These insights allow users to visualize and increase utilization to avoid IT sprawl and overprovisioning and help minimize data center cooling to actual heat generation. This helps avoid overcooling and the associated energy consumption. HPE OneView manages servers, storage, networking, and power and cooling resources through their use phase. It collapses infrastructure management tools into a single resource-oriented architecture that provides direct access to all logical and physical resources.

System integration: These tools should be built with open application programming interfaces (APIs), enabling digital transformation leaders to integrate various software and ecosystems that talk to each other. For instance, unified API of HPE OneView helps digital transformation leaders achieve efficiency faster through integrations with a broad ecosystem of third-party management services and tools.

Example: IT/OT Convergence

ABB and HPE developed such integration by converging IT and OT systems. HPE OneView, at the IT hardware stack level, and ABB Data Center Automation (DCA), at the data center facility equipment level, were able to communicate through the REST API (Figure 2). By merging both data sets, including workload utilization and types, CPU clocking, temperature, cooling capacity, air speed, humidity, and others, the converged system was able to adapt the output of air conditioners according to workload utilization. What's more, it also improved the dynamic frequency scaling of CPUs. These activities resulted in more than €200,000 in savings per 1000m² per year and a > 20% reduction in energy consumption.[15]

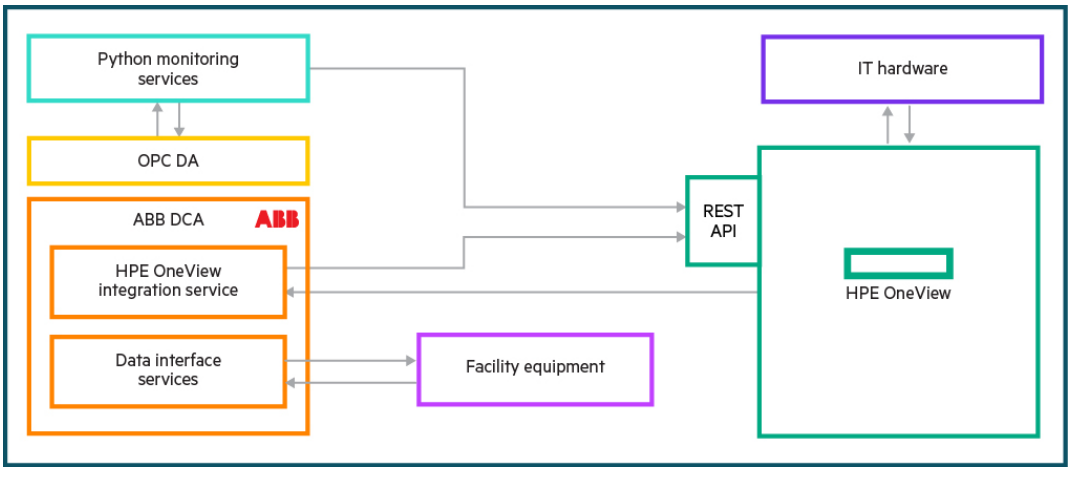

Figure 2. HPE and ABB IT/OT integration architecture

[14] LEAP & KPN Case Study, LEAP, 2020
[15] IT/OT Integration, HPE & ABB, 2019

Example: HPE OneView and Eaton's Intelligent Power Manager

Another example of such integration is the partnership between HPE and Eaton. Through the integration with HPE OneView, Eaton's Intelligent Power Manager (IPM) gives IT professionals the insight and control they need to manage and mitigate issues such as overheating equipment and power anomalies. It also improves the availability of critical resources and maintains business continuity, which can be achieved by addressing issues such as overheating down to the server level. When issues do arise, Eaton's software delivers alerts through HPE iLO and triggers preventive actions, such as power capping, through Eaton's leading disaster avoidance portfolio.

Intelligent automation and performance management: Efficiency, automation, and autonomy must be driven through embedded intelligence. As the complexity of IT increases, intelligence can help IT decision-makers and their staff reduce the amount of time spent on daily operational tasks by automating them and can also predict failure (see Efficient disaster recovery in Increasing competitiveness with a comprehensive IT efficiency strategy technical white paper). Most importantly, intelligence can improve efficiencies.

Example: HPE InfoSight

HPE InfoSight uses artificial intelligence to help optimize capacity utilization. It solves CPU overutilization by rogue virtual desktop infrastructure (VDI) instances, saving $1 million in storage spend and reducing CPU utilization by 50%.[16] In the case of HPE Primera, HPE InfoSight is leveraged to enable the upgrade and scale with the latest technology such as nonvolatile memory and storage class memory. This allows customers to reduce their data center footprint and improve environmental performance by reducing energy use and limiting waste with in-place upgrades.

Single-pane management: The tools should provide digital transformation leaders with a holistic view of infrastructure efficiency to enable easier management. Too many tools will increase complexity and may slow time to value. One single pane of glass tremendously eases the management of the infrastructure and should help IT staff focus on driving value. HPE OneView has been shown to provide a 10x reduction in the tools required to learn, manage, deploy, and integrate workloads.[17] The more effective the tool, the fewer tools digital transformation leaders will need in the first place.

Example: HPE GreenLake Central

HPE GreenLake Central is an intuitive, self-service portal, and operations console that allows enterprises to rapidly deploy services, gain cost and compliance insights, and simplify management across the entire hybrid estate. HPE GreenLake Central delivers the right insights and capabilities for CIOs, DevOps, and IT professionals. It unifies the experience across a hybrid environment (private and multiple public clouds), transforming IT operations into cloud operations. Users have experienced a 40% increase in IT team productivity by reducing the support load on IT.[18]

Data center infrastructure management software

On average, data centers have over twice the required cooling capacity. If we disregard the IT equipment, cooling systems are responsible for a staggering 75% of energy consumption costs.[19] However, software and tools can also drive efficiencies at this level and provide a solution to IT decision-makers. As previously stated, 62% of respondents in an IDC survey said that they had reduced spend on energy using software tools. The mean energy reduction was 26%—a significant portion of data center operational expenses.[20] The more mature organizations used data center infrastructure management (DCIM) software; the less mature or ad hoc respondents used static tools such as Excel spreadsheets. These numbers clearly show how successful these initiatives can be if the appropriate tools are chosen. The tools used at the facility level are no different.

Digital transformation leaders who adopt more sophisticated management tools are likely to be more successful in achieving the objectives of their sustainable IT strategy and better able to demonstrate the ROI of such initiatives.

DCIM is a class of software that gives data center operators the ability to run efficient data center operations and improve data center infrastructure planning and design. It typically replaces Excel and home-grown databases. This type of tool is complementary to the previously mentioned IT infrastructure software management tools and interoperability between both tool types is essential for combined effectiveness.

[16] HPE internal data as cited in HPE InfoSight Customer Presentation, HPE, 2020
[17] Integration with HPE OneView: A technical overview for ISVs and developers, HPE, 2020
[18] HPE GreenLake service brief, HPE, 2020
[19] Addressing the massive inefficiencies of datacenter cooling, Schneider Electrics, 2017
[20] IT's Role in Driving Sustainability Progress, IDC, 2020

Similarly, facility-level tools must gather information from energy-monitoring sensors installed along all points of the power—infrastructure for DCIM software to accurately aggregate and analyze the information coming from power supplies, cooling units, ambient parameters, and other sources. The DCIM software can also be integrated with hardware-level tools, achieving efficiency goals by dynamically operating the data center ecosystem. DCIM can help digital transformation leaders understand where, how, and if they can achieve better resource efficiency, gradually operating IT infrastructures at higher temperatures (for example, > 25°C instead of < 20°C) by:

- Improving hot and cold air management
- Identifying hot spots
- Adjusting and automating cooling capacity to hardware heating generation

In the new normal, in which a third of operators are worried a reduced level of IT infrastructure operations staff poses the single biggest risk to operations,[21] digital transformation leaders should increasingly consider implementing automation and remote working tools such as DCIM.

Looking ahead with high-performance computing tools

As often experienced—from the military to consumer goods industries or within space and aeronautics—some cutting-edge technology is narrowly accessible when brought to market but tends to commoditize with time and cost reduction. The same can be said for high-performance computing (HPC) and more traditional IT. The components of supercomputers are often found years later in traditional enterprise-grade servers and laptops. Looking at the tools that are used in HPC today is, therefore, interesting for predicting forthcoming enterprise tools. For instance, HPE Performance Cluster Manager is the console that helps monitor and manage power in high-performance computers. The system manages power capping based on specified thresholds. This system also supports power envelopes for jobs. The user can decide to run a job at low power and priority in the job queue to save power and money.

3. Conclusion

Leaders embarking on a digital transformation journey, or simply seeking to review their processes, should develop an end-to-end sustainable IT strategy to maximize the value of their IT investments. It will also implement the appropriate tools to gain visibility into the entire IT estate and measure progress toward goals.

To capitalize on the opportunities of a sustainable digital transformation, enterprises need to partner with vendors that have proven solutions and expertise in IT efficiency and sustainability. Increasing competitiveness with a comprehensive IT efficiency strategy technical white paper explores the next steps that IT leaders should take to implement their sustainable IT strategy, including assessing opportunities to drive efficiency at the IT hardware and infrastructure levels and tackling the upstream and downstream A successful strategy can deliver on defined business drivers. The corporate sustainability strategy will involve partners across the enterprise working toward shared objectives. impacts of IT.

[21] COVID-19: What worries data center management the most?, Uptime Institute, 2020

4. Appendix

The following table highlights the many ways sustainable practices can add value to an organization and meet stakeholder expectations.

Table 1. Benefits of a corporate ESG strategy

Attracting investment: Digital transformation leaders working for global organizations with active shareholders should consider investors' increasing scrutiny of ESG performance and climate risk to meet investor demands and enhance share price	Investors and asset managers are increasingly paying attention to the ESG performance of the organizations they invest in.[22, 23] The European Investment Bank, the world's largest multilateral lender, considers climate as the top issue in their political agenda and will end financing of fossil fuel energy projects by 2021.[24] Similarly, Larry Fink,[25] Chairperson of the world's largest asset management firm BlackRock, has described this fundamental reshaping of finance as a trend that boardrooms are watching carefully and with good reason: climate risk is investment risk.[26] It is now proven that ESG indices are more resilient and outperform non-ESG peers, especially in times of crisis such as pandemics.[27] According to Morgan Stanley, 88% of studies reviewed found that companies that adhered to social or environmental standards showed better operational performance, and 80% of studies showed a positive effect on stock price performance.
Recruiting talent: Digital transformation leaders seeking qualified talent should consider sustainability as a strong differentiator to hire new talent	Attracting young talent and retaining them can be crucial for some industries. According to CBRE,[28] millennials are projected to make up more than half the workforce in two years, and roughly 75% by 2025. It is, therefore, vital to understand the key factors influencing their employment decisions. More than half would take a salary cut to work for an environmentally responsible company.[29] Taking a closer look at the IT and data center industries, 50% of digital transformation leaders find it difficult to recruit qualified candidates for open jobs.[30] That number has increased by a staggering 25% in one year. The IT industry is, therefore, facing a talent-constrained and sustainability-sensitive workforce.
Meeting customer demands: Digital transformation leaders working for organizations that position their sustainability leadership as a competitive edge should focus on developing sustainability initiatives that the sales organization can leverage in customer pursuits	Organizations are increasingly seeking sustainable offerings and partners to help drive toward their sustainability objectives. According to IDC,[31] 58% of European companies incorporate ESG objectives in their request for proposals (RFPs) when choosing IT services partners and 65% of European IT executives plan to dedicate between 10% and 50% of their budget to sustainable products and services in 2021. Not only has the inclusion of ESG criteria in tenders increased, the percentage of points allocated to these criteria is increasing as well. This is particularly true of public sector organizations in Europe, where sustainability leaders are setting the bar at as much as 20% of their total scores.
Mitigating regulatory risks: Digital transformation leaders should consider market access requirements that can be met through sustainable practices and the potential value offered by ESG-related certifications	Environmental and social regulatory frameworks are increasingly complex, and organizations are subject to changing policy requirements. There has been an increase in regulations and initiatives concerning ESG issues over recent years, including newly implemented ESG disclosure requirements in the European Union and United States in 2021. In some cases, a sustainability strategy merely serves to ensure compliance with national and regional regulatory requirements. In addition, sustainable practices and attributes are often required to obtain ESG-related certifications, which are sometimes mandatory. These include global standards that certify operational energy efficiency such as ISO 50001 or environmental management such as ISO 14001. Various standards exist specifically for data center certification and IT leaders need to understand how these may add value to the bigger picture.
Enhancing brand value: Digital transformation leaders should understand how their strategy can enhance their organization's reputation as a force for good	Brand reputation has, for a long time, been the primary reason for organizations to implement sustainability practices. Although this is no longer the case,[32] reputational damage has never been more threatening. Customers, regulators, and investors are all watching, and few companies can financially survive a scandal such as Volkswagen's car emissions cover-up. Meanwhile, enhancing reputation with a clear, transparent, and ambitious sustainability strategy is key to long-term success. Reputation accounts for 63% of a company's market value.[33] In addition, a study by HPE found that ESG and CSR account for 10% to 11% of the company's overall brand value.[34]

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