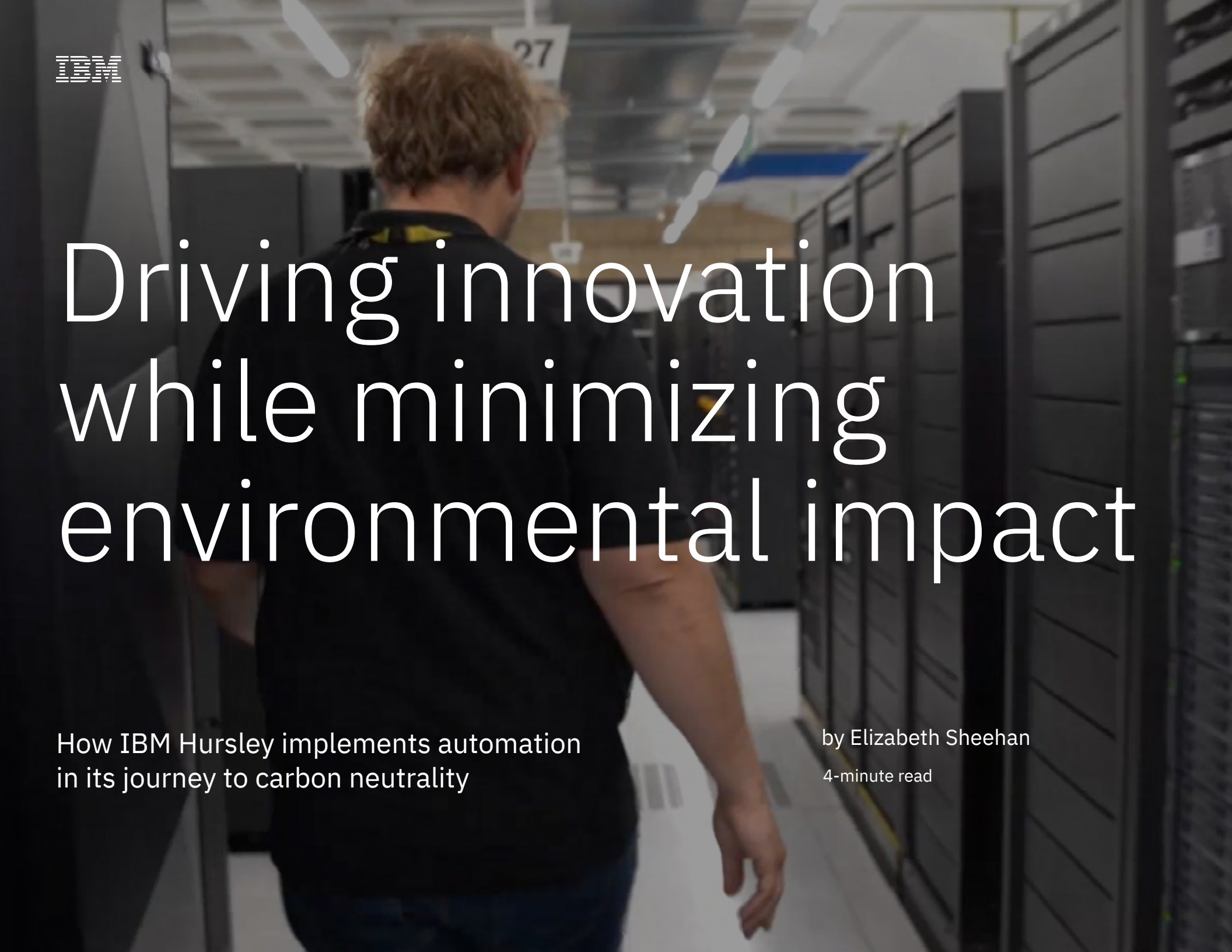


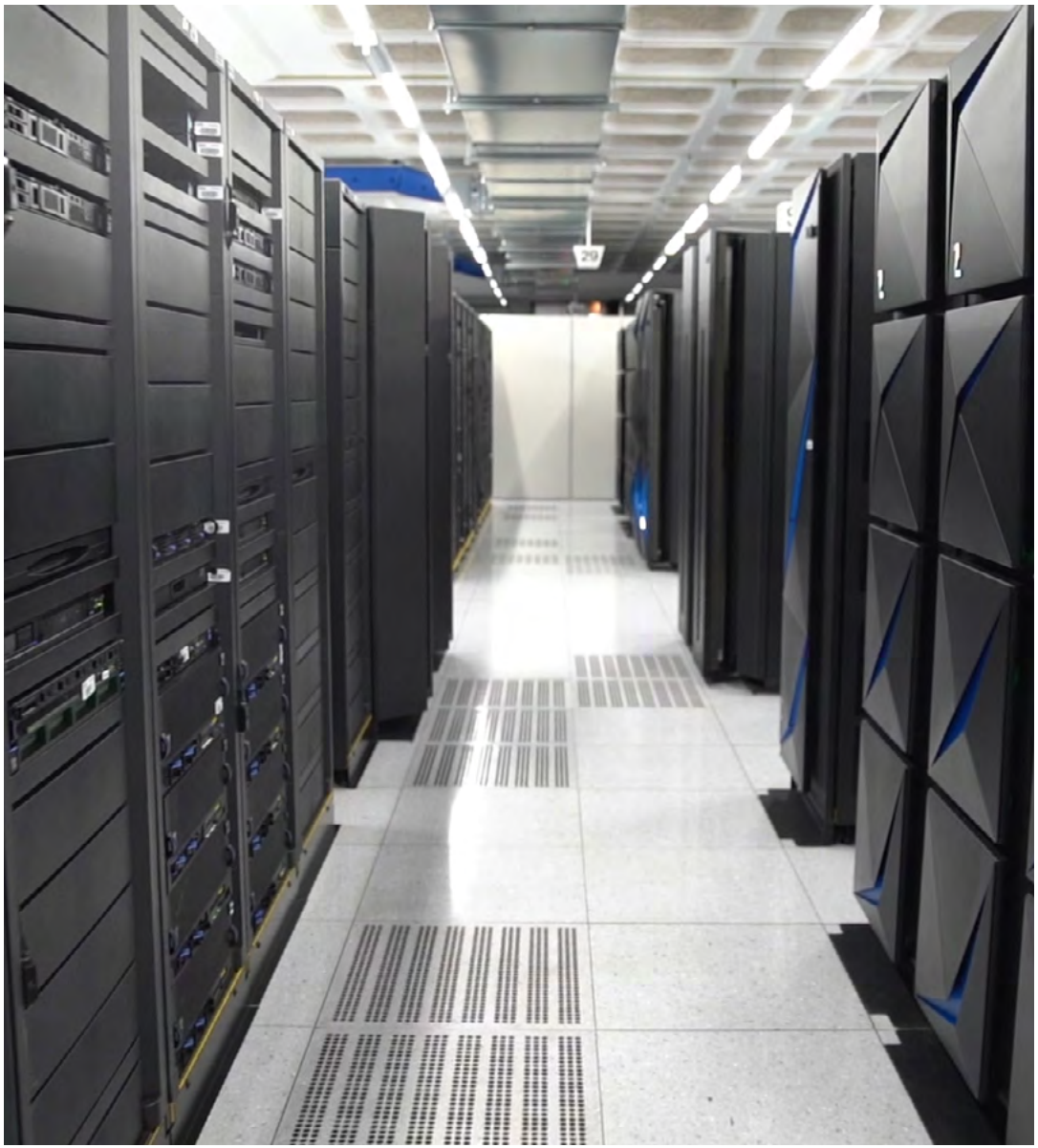
Driving innovation while minimizing environmental impact

How IBM Hursley implements automation in its journey to carbon neutrality

by Elizabeth Sheehan

4-minute read

Since the 1950s, IBM Hursley, a cloud-based data center owned by IBM and located in Hampshire, England, has been a leader in research, development and innovation. It has been the birthplace of several key products in the history of computing; for example, it brought speech and color to computers for the very first time.



Today, the team at IBM Hursley is also focused on corporate sustainability. Following the UN Climate Change Conference in Glasgow (COP26), IBM's goal is to achieve net zero greenhouse gas emissions by the year 2030. The IBM Hursley team is taking a multi-facetted approach in this journey to carbon neutrality by carbon-neutralizing facilities, following green operating procedures and deploying intelligent automation. For example, the IBM Hursley team plans to utilize an underground reservoir to support cooling and is working with IBM partners to take the data center off grid for periods of time.

And as part of its journey to carbon neutrality, Hursley uses the IBM® Turbonomic® Application Resource Management solution to assure performance and conserve power use across 4,500 physical systems.

With the help of Turbonomic, optimized

6,000

virtual systems

Those who rely on IBM Hursley's data center include

11,000

developers

Deploying IBM Turbonomic

Colin Holyoake and Graham Eames at IBM Hursley first implemented IBM Turbonomic in November of 2021. Within just a couple of hours of the installation, 6,000 virtual systems started to appear in the team's instance of Turbonomic. The team finally had a singular view into their full data center application stack from the application (virtual machine/container) all the way through to the associated storage.

"IBM Turbonomic is almost like a sixth sense," explains Holyoake, Certified Datacenter Design and Sustainability Manager at IBM Hursley. "It gives you a full visibility of your entire environment and how it's running. It doesn't compromise the resiliency at all. It assesses, advises, and improves performance."

With Turbonomic, the IBM Hursley team has the ability to quickly identify inter-dependencies of the logical environment throughout the physical data center and reallocate resources to assure performance. Within 24 hours of installing Turbonomic, for example, the team identified a critical performance risk and resizing opportunity. They observed that in one of their hosting clusters each node containing 60 cores and 2 TB RAM was experiencing excessive CPU ready states and was negatively impacting development operations. Using Turbonomic's resourcing recommendations, the IBM Hursley team then identified lightly used resources elsewhere in their environment which could be reallocated to reduce this performance risk and they implemented those recommendations right away.

An important component of this full-stack visibility is the range of integrations IBM Turbonomic offers. For example, the IBM Hursley team implemented the Instana® integration as well as the Red Hat® OpenShift® integration. A large percentage of the workloads on that cluster with critical performance risks consisted of Red Hat OpenShift-based workloads. Deploying Turbonomic at this level of the stack provided much deeper visibility of those workloads and helped the team quickly resolve the performance issue. This level of visibility has also helped the team tune the workload sizings within OpenShift via automation and better balance performance demands with their available resources on an ongoing basis.

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How IBM Turbonomic manages cost and environmental impact

Because Turbonomic helps the team identify opportunities to rebalance resources across the IBM Hursley data center, the team is now better equipped to maximize their utilization of their existing infrastructure without sacrificing performance. This ability to maximize utilization has financial and environmental benefits as it helps the team reduce future capital expenditure (Capex) demands. By extending the use of their existing infrastructure, the IBM Hursley team avoids unnecessary expenditures on new hardware as well as the operational expense to power and cool it. This continuous performance-optimized consolidation also reduces IBM Hursley's carbon footprint by reducing the electricity required to both power and cool unnecessary infrastructure.

"Think of it this way," Holyoake advises. "You don't leave your car engine running while you're in the office just in case you need it. So why are you allowing your hardware resources to sit unused when you could instead make use of them? IBM Turbonomic can help you make sure you are fully utilizing and optimizing your infrastructure to simultaneously assure performance and minimize cost, both financially and environmentally."

The IBM Hursley team also relies on Turbonomic to plan for growth. They use IBM Turbonomic's full-stack visibility to assess the impact of adding or removing resources into clusters before they implement those changes. This ability to examine different resourcing decisions before acting on them has already helped the team optimize their Capex plans. With Turbonomic, Holyoake and his team have the data they need to develop precise growth plans and map out the exact quantity and specification of hardware replacements so that they minimize waste.

As they look ahead, the IBM Hursley team plans to expand their usage of Turbonomic's automated resourcing actions across their environment as well as Turbonomic's integrations. They will continue to explore new ways they can rely on AI-powered automation to reduce waste and accelerate their journey to carbon neutrality.

Since the 1950s, IBM Hursley has been the birthplace of meaningful innovation and lasting change within the technology industry and beyond. In this era of climate change, the Hursley team will carry on that legacy of exploration and innovation by taking any action they can to support IBM's goal of achieving net zero greenhouse gas emissions by the year 2030. Automation has been and will continue to be an important part of that journey.

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Colin Holyoake, Certified Datacenter Design and Sustainability Manager, IBM Hursley

About IBM Hursley

IBM Hursley is a 27,000 square-foot flagship cloud data center owned by IBM and located in Hampshire, England. Launched in 1977, this data center supports 4,500 physical systems. It is 87% virtualized with a range of technologies including two private developer clouds and 6,000 VMware based systems. It includes 11 mainframes, and it supports approximately 11,000 developers.

Solution component

- IBM® Turbonomic® Application Resource Management