Getting real about IT sustainability

From good intentions to tangible results through smart systems selection

FREEFORM DYNAMICS　　**IBM**

Sustainability has become a focus of attention for customers, shareholders and regulators - it can't be ignored and is very likely a key issue now for your executive board. But can you achieve it within your current IT strategy, or do you need a rethink? Chances are, optimising what you already have can only take you so far, so it's time to take a step back and look at alternative system architectures designed with all aspects of sustainability in mind, including energy, water consumption, recycling, reuse and more.

How high-scale, vertically integrated systems can help

Key system characteristic	Why this matters
Built using powerful CPUs with faster cores and more bandwidth to interconnect memory, I/O and storage, all requiring less floor space than alternative server architectures.	Powerful CPUs allow systems to be assembled more densely, thereby requiring less space, power and cooling to deliver the same unit of work, with a reduction in environmental CO_2 footprint.
Operating system and virtualisation hypervisor able to logically partition the environment to enable different service capabilities to be met with minimal underutilisation of resources.	Granular system resource usage allows workloads to run optimally, minimising provisioning of physical system resources thereby reducing energy and cooling requirements.
Specifically designed for a long service lifetime, including the ability to make in-place upgrades, repurpose the system for new roles, and reuse, sell or recycle components at end-of-life.	Such systems minimise the lifetime environmental impact of the platform by limiting the deferred carbon cost of new system manufacture and having recyclable and reusable components.
Highly available and resilient, with the ability to both easily integrate with other systems via on-site clustering, and embrace public cloud resources and services as needed by individual workloads.	Resiliency designed in reduces the need for multiple systems to provide redundancy, thus limiting the total space, power, cooling and raw materials needed by systems and data centre build.

Other things to think about

Sustainability is not a simple topic that can be addressed just during procurement. It requires a long-term commitment to people, processes, technologies and monitoring, targeted at reducing carbon footprint, water consumption and waste as much as possible. Some issues are very visible, such as energy and cooling, but others are also growing in importance as legislation and customer expectations evolve. These include the potential to upgrade rather than replace systems, the carbon footprint of the entire production chain, and how systems are handled at end of life. Systems designed with sustainability as a core requirement can help address these requirements.

Real-world solution example: IBM Power

How can we design, build and assess sustainable IT? To answer this question, let's take a look at a system designed with sustainability in mind - the Power® platform from IBM®, the sponsor of this paper. Note that while nothing we say here should be taken as endorsing or recommending any particular product or service, it can be very useful to see how a specific example translates some of the key principles involved in sustainability into reality.

The most visible place to start is saving energy; less energy consumed also means less cooling required, and both of these mean a smaller carbon footprint and lower business costs. The Power platform is able to run workloads on fewer cores, because each core can handle more processing than equivalent x86 systems. Automatic workload placement optimisation further improves resource and energy usage.

The Power platform has other characteristics that help minimise an organisation's overall carbon footprint. Its compact infrastructure footprint can save space in the data centre, reducing the need for physical expansion. That in turn eliminates or reduces the requirement for concrete, structural steel and other raw materials from the supply chain that might be needed to build or expand a data centre.

Another factor is harder to visualise, but just as important for long-term sustainability. This is the ability to update equipment without having to "rip and replace" everything. Beyond that, it is essential to make the entire system life cycle more sustainable. IBM has a long history of addressing this with its "Design for the Environment" programme, which was established in 1991. The company is also taking active steps to ensure its supply chain utilises organisations that manage and report on their environmental impacts.

About the Power Perspective series

This document is one of a series of similar pieces looking at how high-scale, vertically integrated systems can provide tangible business benefits in context for a range of different themes. Other Power Perspectives include:

Supporting the needs of highly unpredictable workloads
It's all about flexibility, scalability and cost effectiveness

S/4HANA without compromise
A modern ERP architecture needs a powerful and future-proof platform

Have you made the right platform choices to minimise risk?
Critical systems have to run and run

Don't let your smart software suffer from poor system choices
Mismatched AI and analytics can be massively inefficient

About Freeform Dynamics

Freeform Dynamics is an IT industry analyst firm. Through our research and insights, we help busy IT and business professionals get up to speed on the latest technology developments and make better-informed decisions.

For more information, visit www.freeformdynamics.com.

About IBM

Discover the next generation of IBM® Power® servers built to meet today's challenges with new levels of performance, core-to-cloud data protection, and streamlined automation and insights.

For more information, visit www.ibm.com/it-infrastructure/power.