



Accelerated outcomes, financial value on your terms

HPE GreenLake for high-performance computing

Brochure



“On average \$507 in revenue per dollar of HPC invested was generated.”¹

Make high-performance computing accessible with the HPE GreenLake edge-to-cloud platform

Digital transformation is driving new data-intensive workloads and real-time analytics to operate at an unprecedented scale, and high-performance computing (HPC) offers enterprises better data analytics, simulations, and artificial intelligence (AI). It enables them to be smarter, faster, and more competitive. However, deploying HPC infrastructure has often been challenging.

HPC is becoming widely used across many industries, for use cases as varied as computer-aided design and engineering, autonomous driving, production optimization, predictive maintenance, drug discovery, precision medicine, fraud and anomaly detection, treasury and trading analytics, IoT/smart cities, and many more. For each, the power of HPC is needed to deliver accurate simulation and modeling in a short period of time. Gaining the insight before your competitors, or before events overtake the analysis, can be the difference between business success and failure.

However, there can be barriers. HPC is a specialized technique and often the skills and resources to design, implement, and operate HPC environments are scarce. Though the ROI can be exceptional from HPC, the capital needed for HPC can be daunting. HPC can take years to design and implement and is often an inflexible environment once it's up and running. Customers testing HPC in the public cloud are finding that the cloud wasn't built for this. Getting the expected performance and predictable cost can be a challenge. That is about to change with HPE GreenLake for HPC.

HPE GreenLake for HPC is an on-premises end-to-end solution for HPC that makes it easier and faster for customers to deploy HPC and AI workloads, allowing end users, developers, and data scientists to run pure HPC, pure AI, and converged HPC/AI workflows on high-performance clusters leveraging the full HPE GreenLake customer experience.

The needs of HPC are well served by running in your data center or colocation. Though the benefits of public cloud are obvious—speed, flexibility, and simpler IT—83% of HPC implementations today are outside the public cloud.² Production-scale HPC is a classically cloud-last workload due to:

- Low latency requirements
- Requirement for performance portability of complex HPC workloads that typically were tuned for specific software configurations, hardware architecture and settings (for example, BIOS), and data locality
- Hardware tuning (for example, BIOS settings, which are workload dependent)
- Requirements in specialized data services for large-scale processing—high throughput storage and data transfers (egress) for data moved to and from the cloud

¹ “Updated Financial ROI and Innovation ROR Results from Investments in HPC analyst report,” Hyperion Research, Nov 2020

² “SC20 Virtual Market Update,” Hyperion Research, Nov 2020





- Requirement to have transparent and predictable costs
- IP protection—given that HPC is often used for R&D and other critical workloads

For HPC to achieve the expected results, implementations must meet very stringent requirements. These include consistent performance, platform resiliency, particularly given that some HPC jobs can run for days or weeks, and the ability to use public cloud services opportunistically—when and where it makes sense. And importantly, using workload-optimized resources which in the case of HPC means using specialized processor, storage, and interconnect technology as well as HPC-specific software.

HPE GreenLake for HPC combines three essential ingredients.

- First, industry-leading HPC technology from Hewlett Packard Enterprise developed specifically to help you solve the world's biggest problems, including HPE Cray technologies—simulation to exascale³
- Second, data and HPC expertise to help you define, deliver, and integrate the right solution, reliably
- And third, HPE GreenLake, the premier provider of the cloud outside the cloud

The HPE GreenLake platform combines the simplicity, agility, and economics of public cloud with the security and performance benefits of on-premises IT. This consumption-based IT model helps you accelerate time to value, align IT economics with business priorities, simplify IT operations, and gain better control. With HPE GreenLake for HPC, you can design your own HPC infrastructure solution using industry-leading HPE technologies or you can standardize your service with HPE GreenLake for HPC cloud services.

HPE GreenLake for HPC provides a standard, self-service, and fully managed solution based on validated configurations that include all required hardware, software, and services. By removing the operational heavy lifting from each step of the process, this service enables customers to focus on deploying HPC workloads without worrying about provisioning and managing underlying HPC clusters and associated infrastructure.

HPE is powering the exascale era

The HPC solution is offered with standard solution stacks based on the best-of-breed components to address every HPC customer need, a comprehensive and modular software portfolio for HPC and AI workloads, as well as, fully integrated system management software for deployment at any scale. And more customers choose HPE for HPC than any other vendor.⁴

HPE has the full stack of IP to give HPC customers the speed and scalability that they need. And unlike other vendors, these are fully integrated, fully supported, and can be fully managed by HPE. HPE delivers:

- Massive I/O capability and speeds up to and including HPE Slingshot
- Choice of NVIDIA® accelerators to enhance performance for the matrix and tensor calculations prevalent in AI/DL applications
- HPC workload management, containers, and orchestration for flexibility
- Choice of developer tools, utilities, and HPC applications
- Local scratch storage, enterprise, and HPE Parallel File System Storage purpose built for HPC and AI
- HPC job scheduler to help optimizing the usage of the cluster

³ "SC20 Virtual Market Update," slide 12, Hyperion Research, Nov 2020

⁴ "SC20 Virtual Market Update," Hyperion Research, Nov 2020





The value of HPE GreenLake

As an as-a-service offer, the HPE GreenLake platform provides clear business value. Forrester Research and other analysts have closely examined HPE GreenLake and found the following benefits:

- **30%** CAPEX savings due to eliminated need for overprovisioning⁵
- **65%** shorter time to deploy digital projects⁶
- **44%** less time spent **keeping the lights on**, freeing in-house IT time for value-add and innovation⁷
- **40%** increased IT team productivity by reducing the support load on IT⁸
- [HPE GreenLake Estimator](#)

To make HPC accessible to a wide range of use cases, we've simplified the approach and the experience, without taking away the performance. Within the HPE GreenLake platform building blocks, we have devised a set of workload-optimized platforms in extra small, small, medium, and large sizes. This helps to eliminate the long design and implementation phase, which can take months or even a year. With a lower entry point, there is less risk to getting started with HPC. And of course, with the HPE GreenLake platform you get what you need today, no need to plan for the next five years. We provide a buffer of additional capacity that enables immediate growth without waiting for long purchasing cycles and ongoing capacity management to make sure that you always have enough to handle unexpected growth. You can renew and integrate new technologies as part of this process. And you pay for what you use based on actual metered usage.

You can gain flexibility to customize your private HPC environments to fit their workflows.

Add value-added software and services from our ecosystem, integrated with HPE GreenLake for HPC.

The HPE GreenLake experience

Get a cloud experience and operating model for your private clouds that automates on-premises cloud operations through HPE GreenLake Central. By simplifying IT operation, we help to manage performance, cost, security, and compliance across the IT estate to reduce risk and speed the business. And the HPC administrator has one place to go to:

- Configure and monitor queues and clusters
- Configure user access and quotas
- Gain insight into performance via historical monitoring data per jobs
- Review or accept containerized applications
- Manage licenses
- Use "blueprints" to deliver converged HPC-AI workflow in engineering manufacturing (VDI, CAE, CFD) and bio/life sciences
- Use HPE GreenLake for HPC "bursting" to monetize unused compute capacity for and reduce e-waste, balance workloads across multiple sites, create specialized clouds, consortiums, and network alliances, etc., across private clouds, or extend to the public cloud
- With multicloud connector APIs (hybrid cloud APIs), submit HPC jobs to a diverse pool of computing resources
- Orchestrate data center scale workflows with user-defined policies to determine best computing target for each task

^{5, 6, 8} "The Total Economic Impact™ of HPE GreenLake," a commissioned study conducted by Forrester Consulting, May 2020

⁷ "The Business Value of HPE GreenLake Management Services," IDC, sponsored by HPE, January 2020



HPC expertise

AI experts and data scientists can help to build and deploy AI/ML models in cloud, at the edge, and through HPE GreenLake cloud services. Our experts from HPE Pointnext Services integrate open-source AI tools, frameworks, AI partner ecosystem, and HPE technologies for these solutions. The services include workshops and proof of value specific to the use case and production deployment.

Data transformation services

Today's enterprises tackling their digital transformation projects face numerous challenges around data strategy, access, security, management, and analytics. HPE delivers a range of data transformation services including data strategy, capability assessment, platform agile design, and secure implementation of unified data foundation from edge to cloud.

HPC container services

To rapidly move to a container-based system, HPE offers a tool-based service to take your apps and data into a modern container system. A container-based system can perform better and make it easier to secure and manage data than other systems.

With HPE GreenLake for HPC you can:

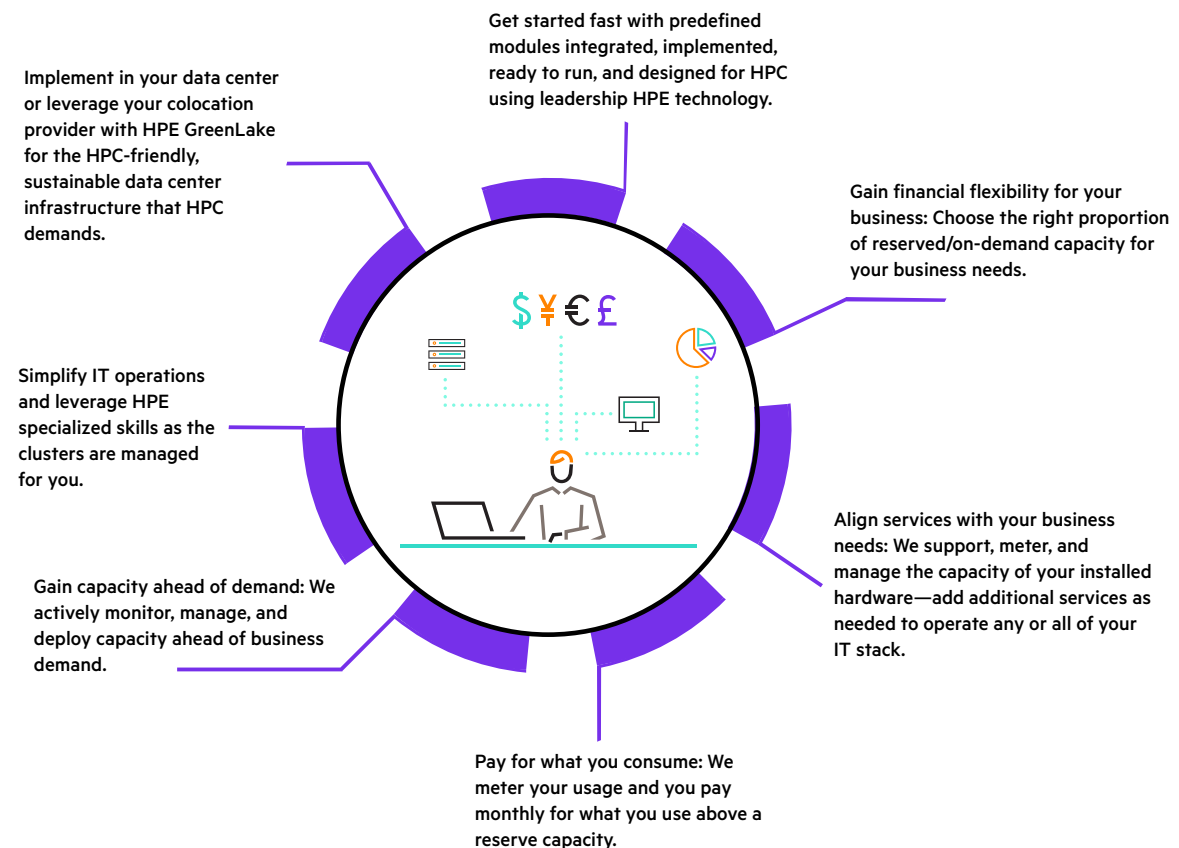


Figure 1. Benefits of HPE GreenLake





HPE GreenLake for HPC redefines high performance computing to help you thrive in the exascale era. Seize new opportunities and gain competitive advantage with flexible on-demand, industry-leading HPC infrastructure that's ready when you need it.

Learn more at
hpe.com/greenlake/hpc

Visit **HPE GreenLake** 

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Contact our presales specialists.**

 **Chat now (sales)**

 **Call now**



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