

6 key criteria for evaluating HPC cloud providers

Partner with a provider that can meet your current and long-term needs

With pressures to do more with less, you need cloud solutions that are easy to deploy and easy to manage, and will optimize your infrastructure and resource investments. Therefore, it's important to understand which provider offers the best set of cloud resources to meet your current and long-term needs and provide maximum value. When selecting a cloud provider, consider these key evaluation criteria.

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Performance

- **Raw compute**
Bare-metal servers use the latest CPUs and accelerators, like GPUs and SSDs, for the power needed for most high-performance computing (HPC) applications.
- **Fast networks**
Multiple 10 Gbps connections and dedicated networks for high throughput support HPC and MPI workloads.
- **High-performance storage**
Insist on a storage solution that handles thousands of simultaneous connections and scales as needed.
- **Avoid the noise**
Dedicated servers offer reliable and consistent performance, avoiding the "noisy neighbor" problem.

Flexibility

- **Hybrid**
Get full hybrid interoperability between on-premises and on-cloud resources.
- **Choice of physical and virtual**
Select the right machine for the job and mix physical and virtual machines when needed.
- **Capacity to scale**
Work with a vendor that can deliver consistent compute and storage performance at scale.
- **Customization when needed**
Provide a high degree of hardware customization when needed.
- **Multiple support options**
Choose from fully managed, 24x7 expert per incident or DIY.

Reliability

- **Redundancy**
Multiple data centers include redundant power, cooling and network carriers.
- **Market-proven**
Workload management and storage are designed for large-scale systems with built-in redundancy.
- **Clarity**
A clear price structure lets you transfer data between data centers and out of the cloud.
- **Support**
A proven support organization is available 24x7 with expertise to solve HPC and infrastructure problems.

Security

- **Dedicate and isolate**
Non-shared servers, storage and segregated networks should be available to protect your valuable data.
- **End-to-end data protection**
Make encryption available to protect data at rest and technologies such as VPN and VLAN, and make specialized high-performance file transfer available to protect data while in motion.
- **Reputation**
Go with an organization that has a long history of providing secure compute facilities—the longer the better. Ask about physical and software precautions put in place for your security.

Expertise

- **Experience**
HPC is business-critical—look for a provider that can demonstrate experience building, running and supporting HPC environments.
- **Pedigree**
Look for a vendor that can demonstrate decades of experience with HPC hardware, OS, networks, storage and workload management—both on-premises and on-cloud.
- **Enterprise-grade support**
Insist on support from HPC experts who have experience providing worldwide 24x7 coverage.

Value

- **Scale**
Dedicate HPC capacity when needed with easy-to-understand, free network access to worldwide data centers.
- **Optimize**
Use your provider's proven HPC experience to first optimize your on-premises resources, and then provide interoperability between on-premises and cloud resources.
- **Maximize**
Take advantage of your HPC cloud provider's experience to give you a clear picture of when and where an HPC cloud makes sense.



Take advantage of HPC cloud capabilities without the headaches

Use resources wisely

Reduce administrative burdens
"The IBM cloud platform removes the financial and administrative burden, and makes HPC much more accessible to us."¹

Built-in scheduling

Optimize capacity utilization
"IBM offered built-in job scheduling via IBM® Spectrum LSF, which enables us to create intelligent, policy-based schedules to optimize both performance and capacity utilization on the cluster."²

60% better performance

Gain an edge with speed
The IBM SoftLayer® environment delivered approximately 60 percent better performance than the closest Amazon EC2 offering for resource-intensive HPC applications.³

Accelerate time to results

Get a performance advantage
IBM SoftLayer delivers the best overall file system performance for workloads comprising both read and write activity.⁴

Get more efficient

Reduce ownership costs
IBM SoftLayer cloud can help reduce per-node licensing costs by delivering more performance per machine and enabling the same work to be performed with fewer resources.⁵

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¹ Dr. Elsa Aristodemou, Senior Lecturer, London South Bank University
² Florian Klein, Cloud Architect at Transvalor
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