

Academic Research

Supporting scientific research in Spain **and beyond**

Institute of Physics of Cantabria

To accommodate ever-growing demand for its cluster from scientists across Europe, the Institute of Physics of Cantabria worked with Lenovo to deploy a brand-new HPC platform.



Lenovo

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Who is the Institute of Physics of Cantabria?

Founded in 1995 in Santander, Spain, the Institute of Physics of Cantabria (Instituto de Física de Cantabria, IFCA) aims to promote high-quality scientific research in the fields of astrophysics and the structure of matter. IFCA includes researchers from two institutions: the Spanish National Research Council and the University of Cantabria.

In 2010, IFCA formed the Advanced Computing and e-Science group in response to the growing scientific needs for powerful computing resources and techniques. Since then, the group has steadily expanded both its computational and human resources.



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The Challenge

Each year, researchers working at IFCA publish more than 200 papers in leading scientific journals, on subjects ranging from elementary particles to the largest structures of the universe. Based in northern Spain, the organization offers high-performance computing (HPC) resources to scientists across Europe.

Ibán Cabrillo, Advanced Computing Resources Manager at IFCA, explains: “The number of researchers using our HPC cluster is growing steadily year on year. At the same time, HPC workloads are growing in volume and complexity. To keep pace, it’s crucial we continually upgrade our compute and storage.”

Since the COVID-19 pandemic, IFCA has enabled researchers from partner institutions to submit jobs to its cluster via the cloud—driving a significant increase in demand for its HPC resources. To continue to support cutting-edge scientific research across Europe, the organization looked for a partner to help it refresh its cluster.

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“We put out a public tender for a new HPC solution. The key selection criteria included areas such as information security, services, and post-sales support. Of all the companies we evaluated, Lenovo stood out as the strongest vendor.”

Ibán Cabrillo

Advanced Computing Resources Manager, Institute of Physics of Cantabria

Building the new cluster

The HPC solution comprises 65 Lenovo ThinkSystem SR630 V2 and two Lenovo ThinkSystem SR665 compute nodes, five Lenovo ThinkSystem SR650 V2 rack servers, and two Lenovo D3284 high-density storage enclosures. The new HPC environment is based on OpenStack solutions on Linux, with the high-performance clustered file system IBM Spectrum Scale (formerly GPFS).

Working with Lenovo, IFCA sized, deployed, and configured the new HPC cluster. Cabrillo says: “The Lenovo team was fantastic—they were always there for us when we needed guidance and technical support.”

Hardware

- Lenovo Storage D3284
- Lenovo ThinkSystem SR630 V2
- Lenovo ThinkSystem SR650 V2
- Lenovo ThinkSystem SR665

Software

- AlmaLinux OS
- CentOS
- IBM Spectrum Scale
- OpenStack
- Rocky Linux
- Ubuntu

Services

- Lenovo Advanced Deployment Services
- Lenovo Warranty Upgrade



“We knew we were embarking on a complex HPC project, so we wanted a vendor with excellent support, technical expertise, and attention to detail. That’s exactly what we found in Lenovo. From the outset, they were totally dedicated to making the project a success.”

Ibán Cabrillo

Advanced Computing Resources Manager, Institute of Physics of Cantabria

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Results

Today, more than 300 researchers are using the new HPC solution to drive their work—including members of the European Space Agency. There are currently 60 projects running on the cluster, from high-energy physics to meteorology and much more.

“On our previous cluster, the data transfer rate between our compute and storage nodes was 40 Gbps, but we’ve now boosted that to 200 Gbps—a five-fold increase,” confirms Cabrillo. “Without a doubt, our new HPC platform will help us attract more researchers to IFCA.”

- ✓ 5x faster networking
- ✓ 50% increase in HPC compute resources
- ✓ 25% increase in cloud compute resources



“It’s been a true pleasure to work with Lenovo to refresh our HPC cluster—they offer good technology, good support, and a good price. When the time comes to replace the current system, we’d be delighted to consider Lenovo again.”

Ibán Cabrillo

Advanced Computing Resources Manager, Institute of Physics of Cantabria

Why **Lenovo**?

During the vendor selection process, IFCA determined that Lenovo offered the optimal combination of price and performance, enabling the organization to maximize the compute resources it delivers to researchers.

“Another thing that set Lenovo apart from the other vendors we considered is their expertise in IBM Spectrum Scale, a key component of our new HPC solution,” says Cabrillo. “We also greatly value the fact that Lenovo is an expert HPC vendor with a proven track record in this space. The team is extremely responsive, too, and we’re currently working with Lenovo to scale out our storage capacity by a further 1.5 PB.”



How can research organizations meet rising demand for HPC?

The Institute of Physics of Cantabria worked with Lenovo to deploy a brand-new HPC platform, powered by Lenovo ThinkSystem servers.

[Explore Lenovo HPC Solutions](#)