

# Smarter genomics analyzing

## Lenovo High performance computing

The Vienna BioCenter uses HPC to meet the demands of diverse, complex workloads and drive groundbreaking discoveries in life sciences with Lenovo ThinkSystem servers powered by Intel®.



Smarter  
technology  
for all

Lenovo



## Background

The Vienna BioCenter (VBC) is a global hub of groundbreaking life sciences research. Located on a single campus in Vienna, Austria, the center is home to more than 90 research groups spanning wide areas of expertise, including biochemistry, biophysics, evolution, immunology, epigenetics, neurobiology, and stem cell development and generation.

Together, this diverse group of researchers is pursuing discoveries with the potential to change our health, our lives and our planet.



## Challenge

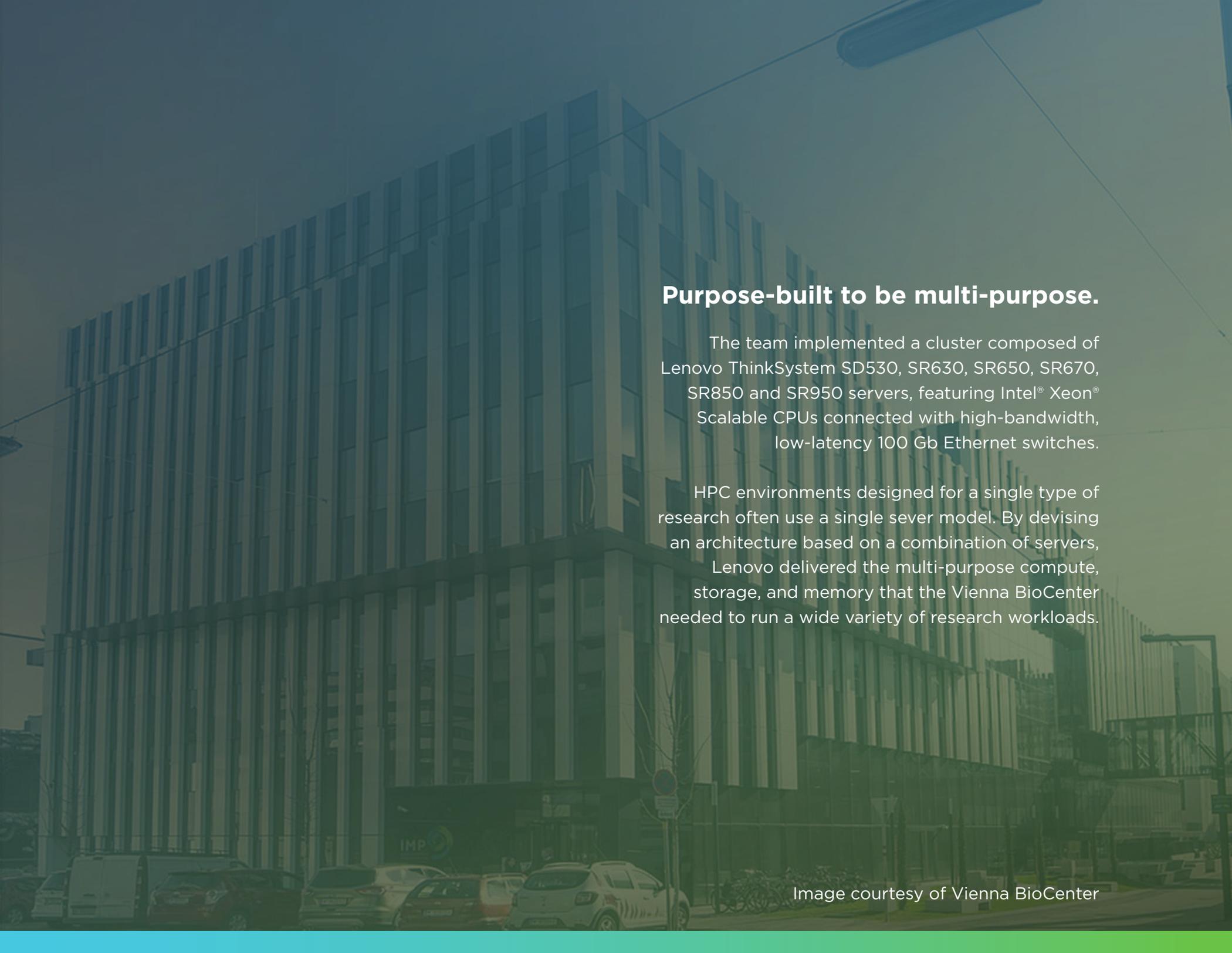
High performance computing is vital to the work at VBC. But, due to the variety and volume of research, the center's infrastructure must support a vast array of systems and workloads. Some groups perform large-scale computations requiring high performance CPUs and low-latency storage. Others require purpose-built GPUs for pattern recognition and 3D data visualization workloads.

Previously, each institute within the Vienna BioCenter owned and operated its own HPC environment, tailored to the needs of its researchers. These small clusters were time-consuming and costly for the individual institutes to maintain.

## In search of a smarter solution.

Five institutes within the Vienna BioCenter joined forces to procure an HPC platform that could boost performance, require less maintenance, and meet the diverse computing needs of all its researchers.

VBC's project leads teamed up with Lenovo HPC implementation partner pro-com DATENSYSTEME GmbH, who proposed a design based around six different models of Lenovo ThinkSystem servers.



## Purpose-built to be multi-purpose.

The team implemented a cluster composed of Lenovo ThinkSystem SD530, SR630, SR650, SR670, SR850 and SR950 servers, featuring Intel® Xeon® Scalable CPUs connected with high-bandwidth, low-latency 100 Gb Ethernet switches.

HPC environments designed for a single type of research often use a single server model. By devising an architecture based on a combination of servers, Lenovo delivered the multi-purpose compute, storage, and memory that the Vienna BioCenter needed to run a wide variety of research workloads.

Image courtesy of Vienna BioCenter

“ It’s a very unique HPC environment. The diversity of the Lenovo ThinkSystem servers in the cluster supports a huge range of workloads, making it the ideal platform to underpin the interdisciplinary research we do here at the Vienna BioCenter.”

**Ronny Zimmerman**

Head of IT, Joint IT Department  
of IMBA, GMI and IMP



## Results

With the shared Lenovo ThinkSystem cluster now in place, scientists have access to powerful, state-of-the-art HPC resources with the immense compute and graphics processing capabilities to rapidly deliver the results they need.

The speed and efficiency of the new system is dramatically reducing wait times, with the ultimate goal of being able to start 98% of jobs within 24 hours of receiving a request.

What's more, the flexibility built into the Lenovo ThinkSystem cluster is driving further efficiency and innovation in VBC's infrastructure. The Lenovo cluster supports an OpenStack private cloud environment, which the project team will use to introduce an infrastructure-as-a-service (IaaS) offering. This will allow researchers to quickly spin up virtual machines and handpick their compute specifications at their convenience.

With smarter, faster and more efficient resources at their fingertips, the researchers at the Vienna BioCenter can focus on what they do best—breaking new ground in the life sciences.



**Increased**  
speed and performance



**Reduced**  
maintenance burden



**Flexibility**  
to run CPU and GPU workloads



**Supports**  
infrastructure-as-a-service  
(IaaS) solutions

“ We expect users to be able to crunch numbers and perform simulations so much faster with the Lenovo ThinkSystem cluster, helping scientists get their research results rapidly and break new ground.”

**Ronny Zimmerman**

Head of IT, Joint IT Department  
of IMBA, GMI and IMP

## Let's break new ground together.

Get faster, smarter business outcomes with flexible, scalable HPC solutions and a proven partner who's with you every step of the way.

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