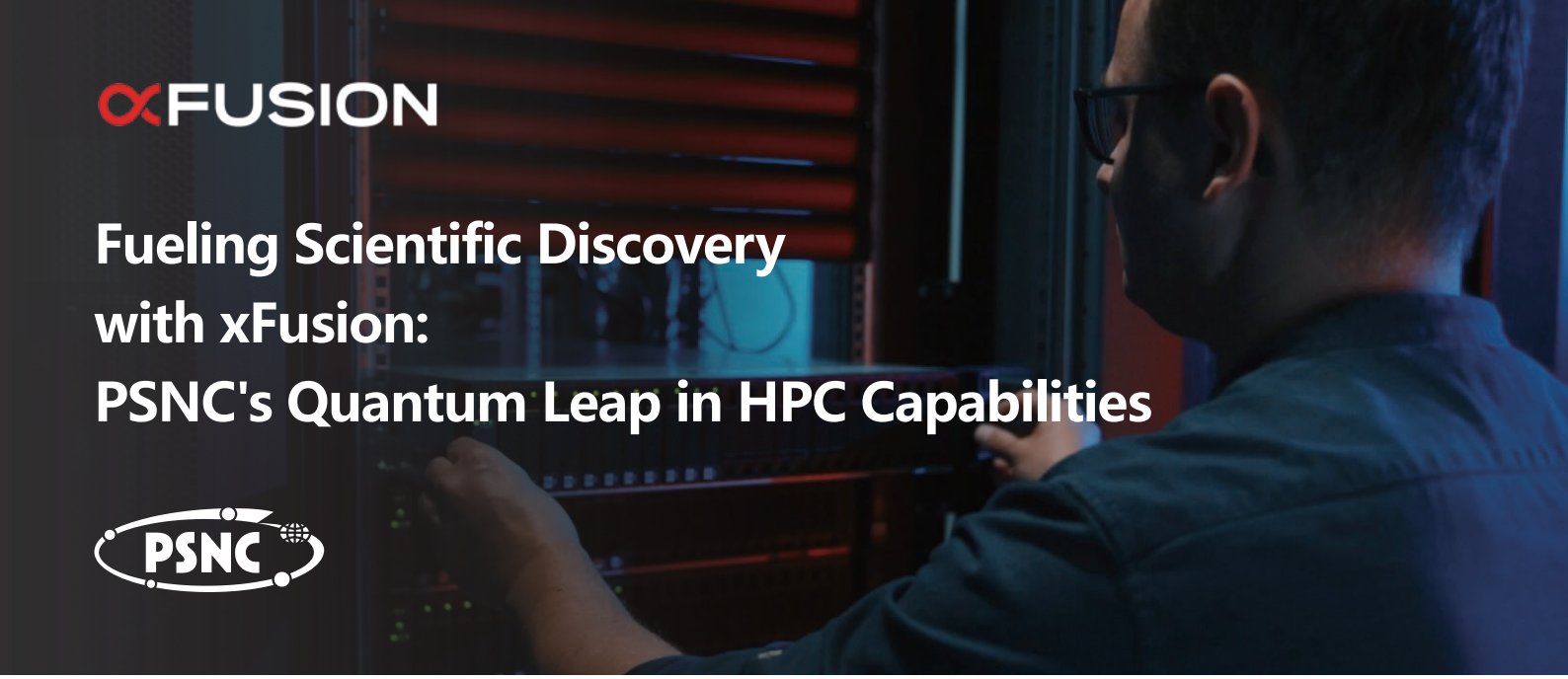


Fueling Scientific Discovery with xFusion: PSNC's Quantum Leap in HPC Capabilities

Poznan Supercomputing and Networking Center (PSNC), established in 1993 under the Institute of Bioorganic Chemistry of the Polish Academy of Sciences, stands as one of Poland's top five national research and education data centers. As a member of the Partnership for Advanced Computing in Europe (PRACE), PSNC delivers cutting-edge IT infrastructure services, including supercomputing, networking, and storage, to universities, research institutions, public agencies, and governmental bodies across Poland and Europe.

PSNC's HPC data storage system has consistently been recognized in the prestigious IO500 competition held during the ISC High Performance conference. In 2024, the system secured 8th place in the '10 Node Production List' category and 14th place in the 'Production List' category, showcasing PSNC's commitment to excellence in HPC.

The Critical Role of HPC in Addressing Global Challenges

The European Union recognizes the critical role of HPC in addressing fundamental scientific, industrial, and societal challenges, such as climate change, environmental protection, and population aging. PSNC has been at the forefront of HPC advancements, procuring and implementing cutting-edge HPC data storage systems as part of the National Data Storage (NDS), PRACE-LAB, and PRACE-LAB2 projects.

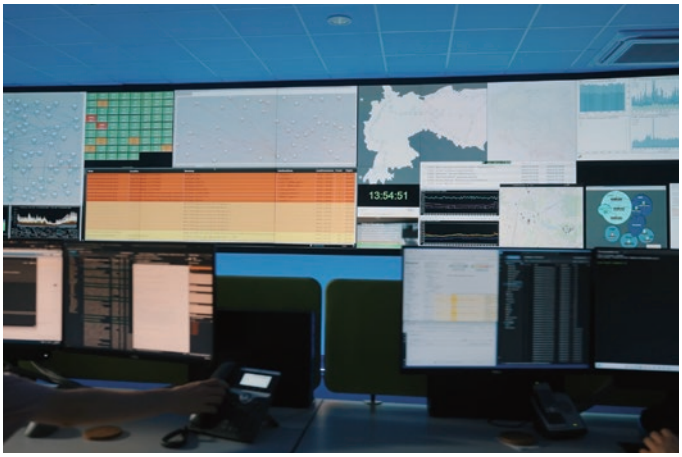
The NDS project offers nearly 700 PBytes of data storage utilizing various technologies across 9 sites, while the PRACE-LAB and PRACE-LAB2 have implemented HPC computing systems based on CPU and GPU platforms at 5 sites in Poland.
With the rapid growth of big data, computing science, and AI applications, HPC systems require efficient data access to enhance computing performance and drive progress in data-driven research, education, and business.

To bolster its competitive edge in HPC across Poland and Europe, PSNC has embarked on a significant expansion of its HPC infrastructure. The organization plans to establish multiple new sites with a comprehensive set of requirements, including over 1000 devices, all-scenario platform software, and the latest generation of IB NDR high-speed interconnection network.

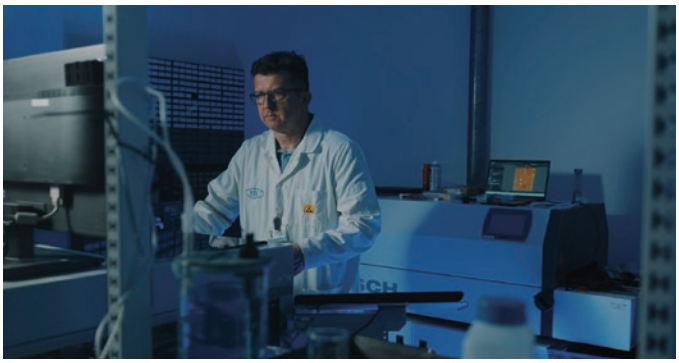
Partnering with xFusion for HPC Excellence

To achieve its ambitious goals, PSNC has partnered with xFusion, a leading provider of comprehensive HPC solutions. xFusion's offering encompasses underlying architecture design, IT platform devices, cluster management platforms, and application tuning and analysis services.

The computing network is built on cutting-edge IB NDR technology, with xFusion adopting Intel's high-performance Xeon Scalable processors and NVIDIA's high-end data center NDR IB switches to deliver an integrated solution. This collaboration supports PSNC in constructing the most advanced HPC infrastructure.



At the core of the solution are the FusionServer 2288H and 5288H servers, combined with NDR IB switches, which employ state-of-the-art technology for cluster refactoring. The solution addresses practical challenges, such as unified cluster management, job scheduling, and cluster monitoring.



Cutting-Edge Technology for Optimal Performance

FusionServer series, powered by 4th Gen Intel® Xeon® Scalable processors, offer adaptability to diverse applications and ultra-large storage capacity to cater to big data needs across various sectors. The servers incorporate advanced heat dissipation technology that ensures reliable thermal management and stronger temperature adaptation. This innovative design improves the heat dissipation capability of a single heat sink by 50%.

To support the most demanding workloads, FusionServer servers can accommodate CPUs with TDP up to 350 W and a maximum of 32 DDR5 DIMMs, delivering ultimate computing performance. xFusion's industry-leading power supply technology results in a power loss 12.5% lower than the industry average, thanks to the xFusion’s 3000W GaN PSU, the world’s first 100W/in3 with 80 Plus Titanium efficiency. This solution enhances overall power and efficiency, resulting in a best-in-class power conversion rate. It also significantly reduces the cost of operating a data center and cuts CO2 emissions by more than 100 metric tons per year.

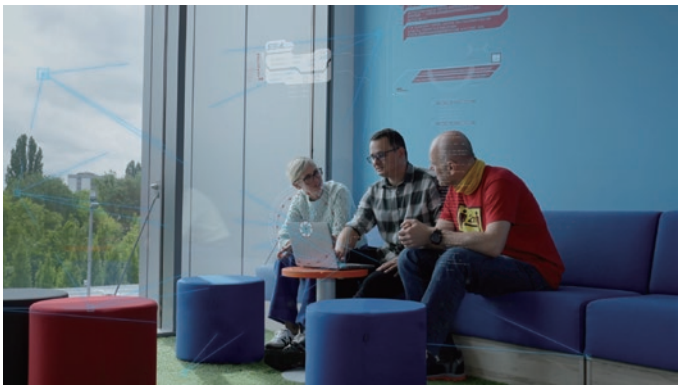
Moreover, the high-efficiency PSUs, combined with MPC-PID intelligent fan speed adjustment and virtual sensor technologies, enable FusionServer servers to save up to 8% energy under the same configuration and workload compared to industry standards. The servers' impressive performance acceleration, simplified operations and maintenance (O&M) and robust security protection have been widely recognized in the industry.

Driving HPC Innovation and Collaboration

"PSNC is going to keep tight collaboration with xFusion, delving into cutting-edge technologies together in areas such as computing chip architectures, energy efficiency, and heat recovery.

This partnership aims to provide more advanced solutions for HPC users not only in Europe but also globally." —— *Norbert Meyer,Ph.D, Director of Data Processing Technologies Division, PSNC*

The collaboration between PSNC and xFusion demonstrates the power of partnerships in driving HPC excellence and innovation. By leveraging xFusion's expertise and comprehensive solutions, PSNC is well-positioned to push the boundaries of scientific research, enhance its competitive edge, and contribute to the advancement of HPC in Europe and beyond.



Summary of Points

Client: Poznan Supercomputing and Networking Center (PSNC)

Industry: Scientific Research

Region: Poland

Challenges:

PSNC needed to expand its HPC infrastructure to meet the growing demands of big data, data science, and AI applications, while ensuring efficient data access and competitive edge in HPC across Poland and Europe.

Outcomes:

- Enhanced PSNC's research capabilities and competitiveness
- Delivered faster data processing and analysis, accelerating scientific discoveries and innovation
- 12.5% lower power loss helped to reduce DC operation cost
- Up to 8% energy saving

xFusion Solution:

- FusionServer 2288H & 5288H
- Advanced heat dissipation technology
- Support High-performance CPUs and memory configurations
- Comprehensive HPC solution, including architecture design, IT platform devices, cluster management platforms, and application tuning
- MPC-PID intelligent fan speed adjustment and virtual sensor technologies

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