



Computing Solutions

Expand your
horizons with
Hybrid Computing



Atos

Welcome to the world of Hybrid Computing

A new era in high performance computing is arriving:
the era of Hybrid Computing

Combining the resources and flexibility of different computing universes, Hybrid Computing enables organizations to take full advantage of both on-premises and cloud solutions to harness the full power of supercomputing, for the widest possible spectrum of applications.

The BullSequana XH2000 from Atos is a high-end solution that is specifically designed for this new

world. Incorporating cutting-edge networking standards, processing components and energy efficiency innovations, the system enables our customers to benefit from the new capabilities of hybrid workloads, AI and HPC on one single system, all competitively priced and highly secure.

Whether in industry, government or the scientific community, organizations can now enjoy the

highest levels of flexibility, security and efficiency in the HPC marketplace.

Thanks to the hybrid computing capabilities of the BullSequana XH2000 and its value added software ecosystem, businesses and organizations of all sizes and in all sectors will be able to run any type of workload, anywhere – now and tomorrow.

Introducing BullSequana XH2000

At Atos, we believe that high performance and unprecedented levels of efficiency and flexibility can be achieved by leveraging computing power from both on-premises infrastructure and from cloud-based solutions.

In recognition of this new paradigm, the H in BullSequana XH2000 stands for Hybrid.

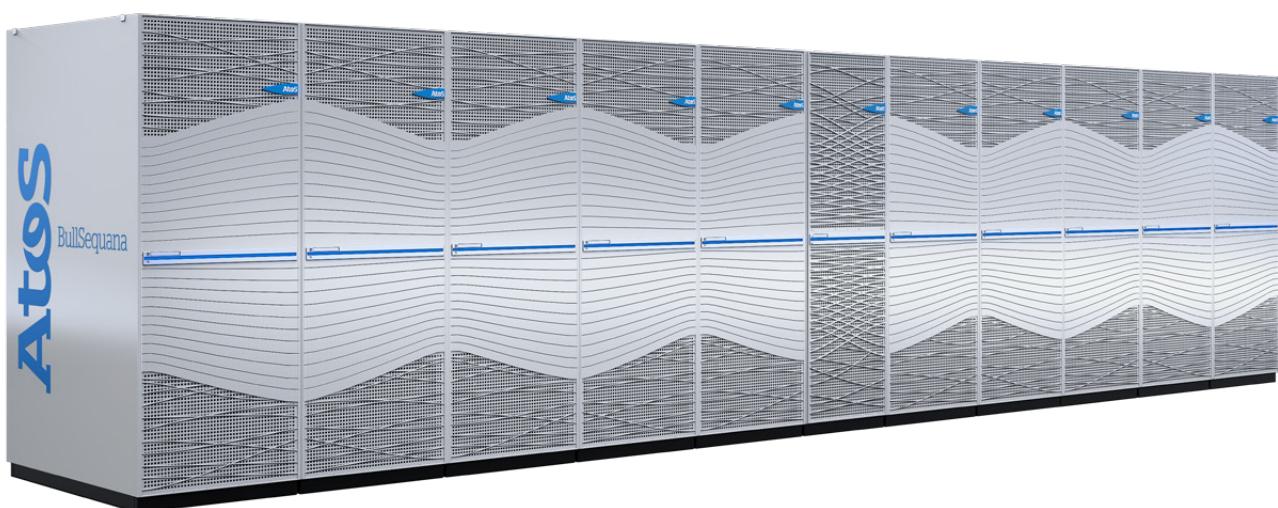
Designed with hybrid computing in mind, it will deliver a new range of HPC capabilities to our customers.

BullSequana XH2000 is one of the first systems in the market that can run on the same system, compute-intensive, memory-bound, AI-augmented simulations or Deep Learning workloads, at scale

With power saving, modular and hybrid computing capabilities, BullSequana XH2000 will open exciting new possibilities for our customers in the race for exascale.

BullSequana XH2000 also benefits from an Open Sequana architecture, making it ready for not yet invented technologies.

In today's market, HPC resources are most commonly used to run powerful simulations, such as weather forecasts, genomics explorations, or risk management. Many of the technologies that will transform our world ultimately depend upon the raw power and efficiency of HPC systems.



When AI augments HPC

With the emergence of new capabilities in Artificial Intelligence (AI), a whole new chapter is opening up in the history of computing.

The HPC users are just beginning to sense the possibilities that AI can bring into traditional simulation workflows, not replacing them but enhancing resolution or decreasing time to result.

The Hybrid Computing model will play a critical part in opening up

these possibilities to a new type of customers, delivering massively available computing power where and when organizations need it.

For the first time, BullSequana XH2000 brings AI-augmented simulations capabilities to customers of any size.

Guided by Atos experts, organizations can now make the most of hybrid computing to overcome traditional simulations limits and explore new applications.

BullSequana XH2000 fosters the convergence between HPC and AI, thus accelerating business transformation and innovation.

HPC: pioneering through technology

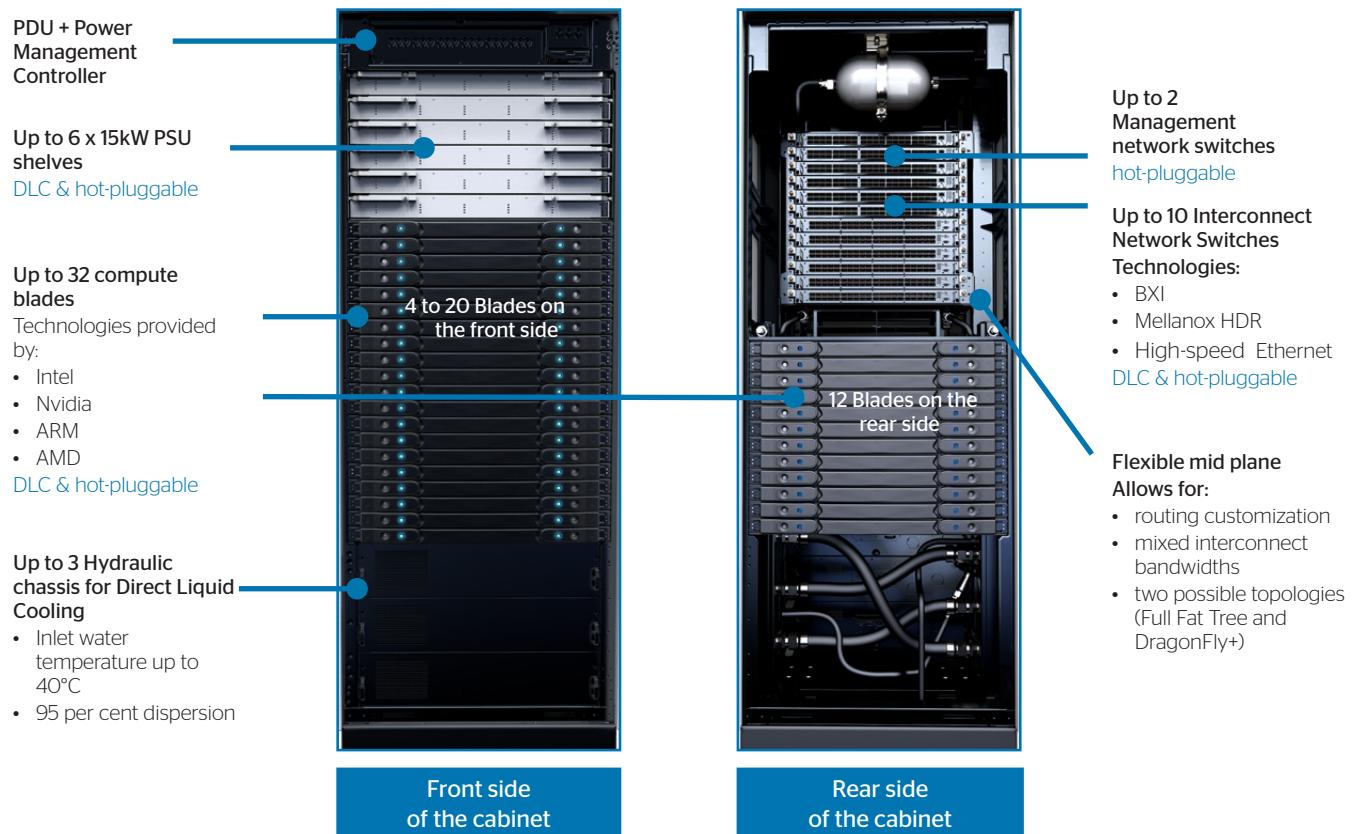
The arrival of AI and deep learning raises the prospect of increasing the accuracy of these models by an exponential degree. By incorporating Deep Learning into simulations' workflows, AIs will be able to dramatically enhance and accelerate the simulation process.

The result could be one of the most far-reaching revolutions in the history of IT, requiring customers in all sectors to rethink the way they run their simulations.



Discover BullSequana XH2000

BullSequana XH2000's self-contained and modular architecture makes it scalable and open to future technologies.



Future-proofed power

Different types of processor and interconnect technologies can also be combined within a single rack. BullSequana XH2000 is designed to integrate the most advanced current and future processing, including bandwidth-oriented CPUs, floating-point-oriented CPUs, GPUs and low-power processors.

Each rack will also support a range of interconnect technologies, including Bull eXascale Interconnect or Bull BXI, InfiniBand HDR and HDR100 and High-speed Ethernet.

As a result, a customer who first needs to process traditional HPC workloads exclusively will be able to replace CPU with GPU blades and

InfiniBand with High-speed Ethernet switches, to have either an AI-augmented HPC or a massive Deep Learning architecture.

Compatible with a wide variety of blades, the BullSequana XH2000 will also offer support for Rome, the new CPU architecture from AMD.

Easy upgrading and high serviceability

The Open Sequana architecture allows for the integration within BullSequana XH2000 of any current or future computing blade technology that fulfils the system's requirements. Consequently, customers will be able to easily upgrade the

system to adapt to successive generations of future processor and interconnect technologies.

The XH2000's electrical busbar architecture and its hydraulic non-spill quick disconnect

couplings make it very easy to change components and integrate computing blades. The system's critical components are hot-pluggable, making maintenance much easier and less time consuming.



Built for premium performance

Thanks to the flexibility and energy efficiency of the BullSequana XH2000, our customers are able to control their energy consumption and reduce costs, at the same time as benefitting from processors with the very highest power requirements.

Organizations of all sizes can manage peak computing demand using either private or public cloud solutions while consuming less energy, enjoying higher elasticity and benefiting from new opportunities for scale, all for a lower Total Cost of Ownership (TCO).

The most efficient cooling solution

Controlling energy consumption is widely recognized as the main challenge on the path to exascale. In the BullSequana XH2000, Atos has deployed a series of cutting-edge innovations to ensure ultra energy-efficient performance at all times.

Thanks to these technologies, the XH2000 targets a Power Usage Effectiveness (PUE) of very close to 1, the theoretical maximum performance possible for PUE. It also achieves heat dispersion of c.95%.

The system is equipped with an enhanced version of our Direct Liquid Cooling (DLC) technology, which cools critical components using warm water up to 40°C, significantly reducing energy consumption.

Smart software optimizes the power envelope

Installed on BullSequana XH2000, the optional Smart Data Management Suite, is built to transparently enhance, whenever possible, applications' performances.

A set of tools are monitoring and storing on a datalake all IO related events, then offer a graphical analysis of pain points. Smart IO optimizer & Smart IO Libraries are using machine learning algorithms to dynamically change malformed IO, replacing them by accelerators that can boost overall application performance by up to 30%, requiring zero application change.

Because application performance is also a matter of experience, Atos experts in the Center for Excellence in Parallel Programming (CEPP) will help you optimize your applications.

A new level of efficiency

Part of Atos Smart Power Management Suite, Smart Energy Optimizer provides accurate information on energy, power and temperature, ensuring that the customers' energy constraints are met through power-capping policies.

Furthermore, Dynamic Power Optimizer optimizes each processor's energy consumption, based on the individual phases of each application.

Thanks to this sophisticated Software Suite, customers can fine tune their applications and improve their energy efficiency dramatically.

Fully secure and compliant



Expertise in security

Security is the cornerstone of Hybrid Computing.

It is only possible when fully secure access to resources and data can be guaranteed, wherever they are located.

With the BullSequana XH2000, integrated into an OnPrem. or in a broader hybrid cloud solution, Atos aims to offer the highest level of data protection and access security for all customers, at all levels.

Software support

The Atos SuperComputer software Suite (SCS) powering the XH2000, offers a very high level of security by providing full SELinux support and an anti-DDoS infrastructure.

In addition, end-to-end authentication can be set up to provide highly secure access control to resources including data, wherever they are located. We have also included Singularity container support to better confine applications.

About Atos

Atos is a global leader in digital transformation with over 110,000 employees in 73 countries and annual revenue of over € 11 billion. European number one in Cloud, Cybersecurity and High-Performance Computing, the Group provides end-to-end Orchestrated Hybrid Cloud, Big Data, Business Applications and Digital Workplace solutions. The group is the Worldwide Information Technology Partner for the Olympic & Paralympic Games and operates under the brands Atos, Atos Syntel, and Unify. Atos is a SE (Societas Europaea), listed on the CAC40 Paris stock index. The purpose of Atos is to help design the future of the information technology space. Its expertise and services support the development of knowledge, education as well as multicultural and pluralistic approaches to research that contribute to scientific and technological excellence. Across the world, the group enables its customers, employees and collaborators, and members of societies at large to live, work and develop sustainably and confidently in the information technology space.

Find out more about us

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Let's start a discussion together

