BullSequana XH2000

Computing Solutions

Expand your horizons with Hybrid Computing

Trusted partner for your **Digital Journey**

Atos

Welcome to the world of Hybrid Computing

A new era in high performance computing is coming: 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 maximum capabilities of supercomputing, for the widest possible spectrum of applications.

The BullSequana XH2000 from Atos is a high-end solution 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 running 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.

Relying on to the hybrid computing capabilities of 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 infrastructures and from cloud-based solutions.

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

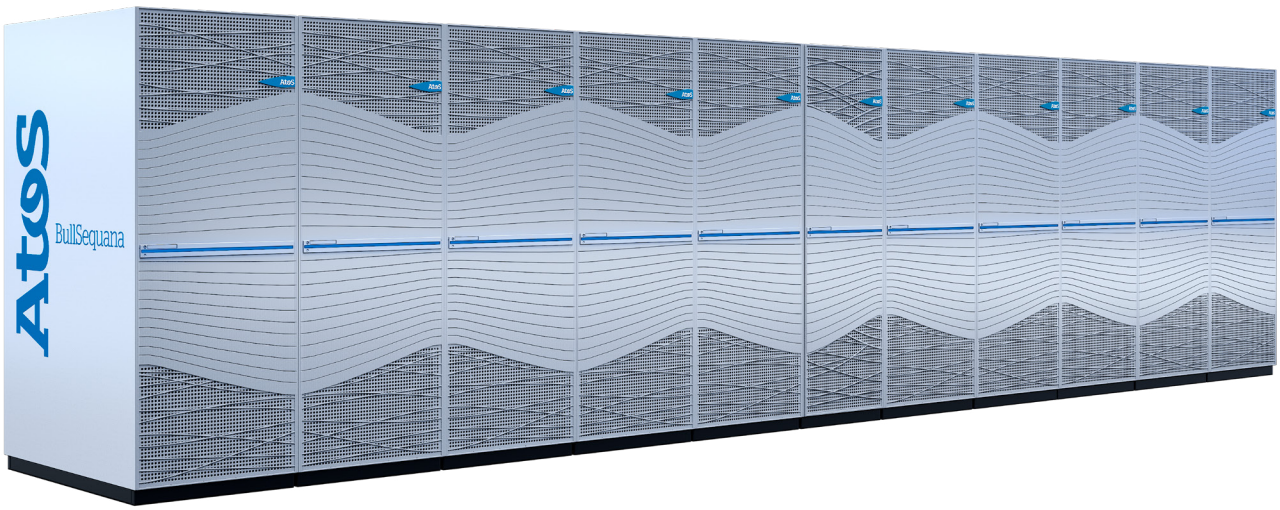
Designed with hybrid computing in mind, it will deliver a new range of HPC capabilities to our customers.

BullSequana XH2000 is one of the first supercomputers 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 the Open Sequana architecture, making it ready for future 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 and decreasing time to result.

The Hybrid Computing model will play a critical role 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 exponentially the models' accuracy.

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.

PDU + Power Management Controller

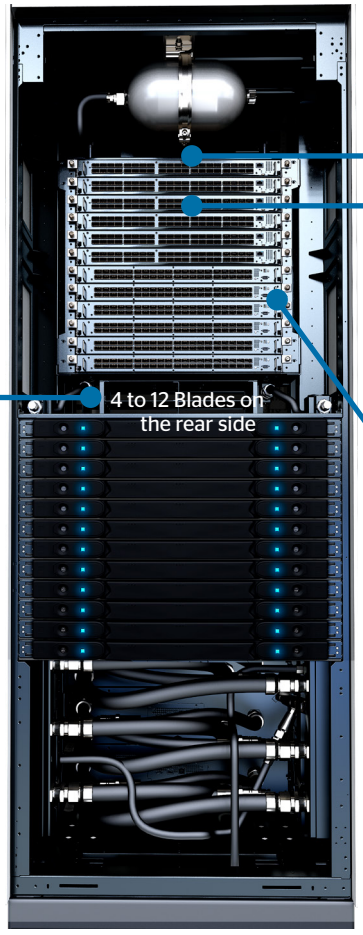
Up to 6 x 15kW PSU shelves
DLC & hot-pluggable

Up to 32 compute blades
Technologies provided by:
- Intel
- Nvidia
- ARM
- AMD

DLC & hot-pluggable

Up to 3 Hydraulic chassis for Direct Liquid Cooling
- Inlet water temperature up to 40°C
- N+1 redundancy

42U cabinet front view



42U cabinet rear view

Up to 2 Management network switches
hot-pluggable

Up to 10 Interconnect Network Switches
Technologies:
- BXI
- Mellanox HDR
- High-speed Ethernet

DLC & hot-pluggable

Flexible mid plane
Allows for:
- routing customization
- mixed interconnect bandwidths
- two possible topologies (Full Fat Tree and DragonFly+)

Future-proofed computing and 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 technologies, 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 (BXI), InfiniBand HDR and HDR100 and High-speed Ethernet.

As a result, customers can choose configurations best suiting their workload types, from traditional HPC through AI-augmented simulations, to Deep Learning.

Compatible with a wide variety of processor technologies, the BullSequana will also support the new EPYC Rome CPU from AMD.

As part of the Open Sequana program, the BullSequana XH2000's open specifications allow any third party to develop their own compute blades. Consequently, customers will be able to easily upgrade the system to adapt to successive generations of future processor and interconnect technologies.

Easy upgrading and high serviceability

The XH2000's electrical 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.

We offer N, N+1 and 2N power unit redundancy. A BullSequana XH2000 rack integrates up to three redundant cooling distribution units (CDU).

Built for premium performance

BullSequana XH2000's flexible and energy-efficient architecture enables our customers to use the highest performing processors while reducing costs and controlling their energy consumption.

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.

These technologies allow BullSequana XH2000 to target a Power Usage Effectiveness (PUE) very close to 1. 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.

A new level of efficiency

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 and 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.

Smart software optimizes the power envelope

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.

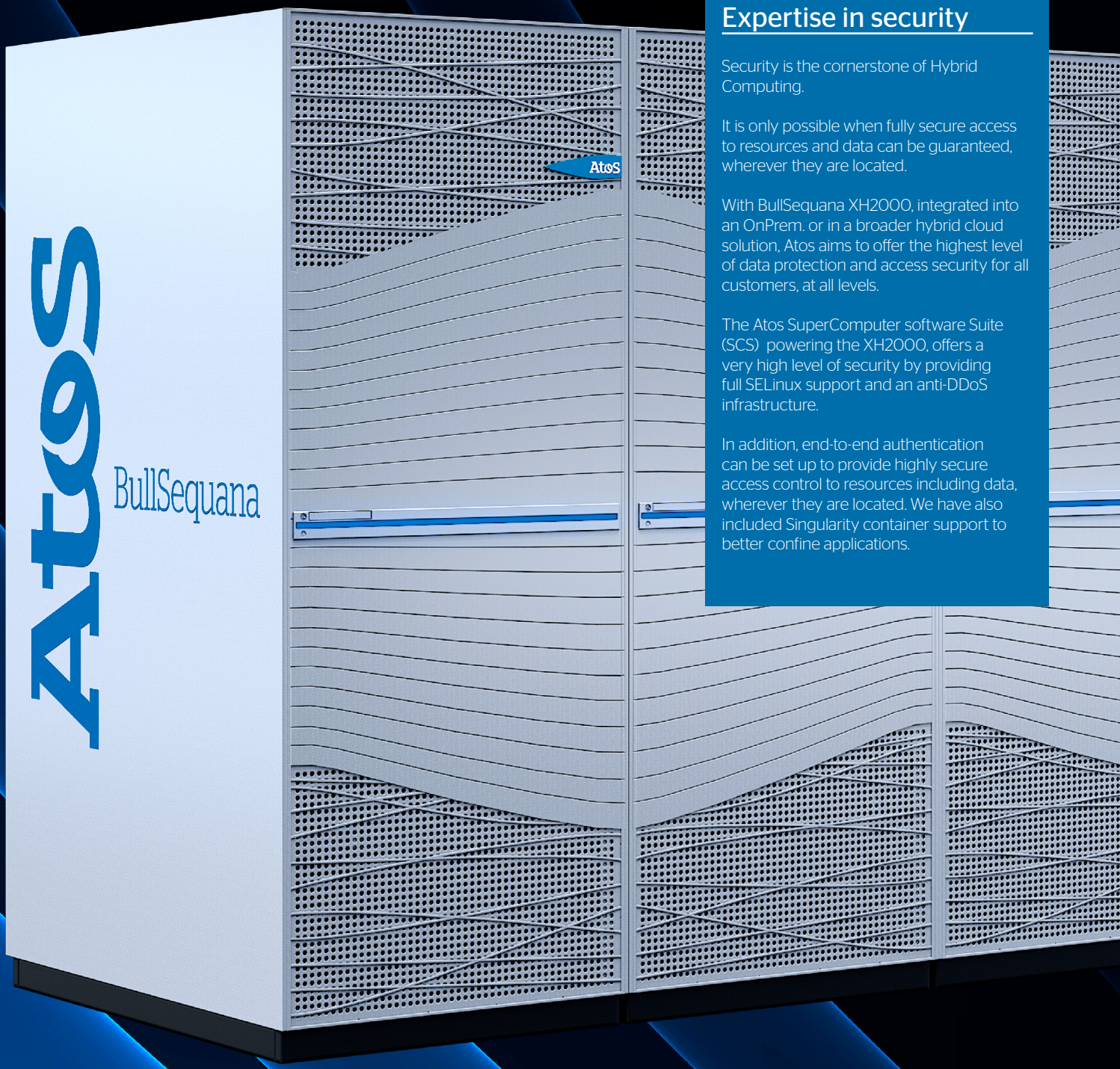
Furthermore, Dynamic Power Optimizer adapts each processor's energy consumption, based on the individual phases of each application.

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

Putting our HPC expertise at your service

With BullSequana XH2000, Atos does not only deliver the highest performing HPC solution on the market: it gives you access to an outstanding service level. Your BullSequana XH2000 supercomputer will be installed and tested on your premises by highly skilled engineers who will answer any of your questions. Guided by Atos HPC experts through a Fast Start Program, your team will be able to run workloads on the system very quickly and efficiently. Because application performance is also a matter of experience, Atos experts in the Center for Excellence in Performance Programming (CEPP) will help you optimize your applications. High quality maintenance and support will be provided during the whole lifecycle of your BullSequana XH2000 supercomputer. We pride ourselves in offering a tailored customer experience and thus maintain flexible SLA options. Atos offers dedicated or mutualized managed services depending on your needs. By choosing BullSequana XH2000, you choose to be guided and trained by some of the most qualified HPC experts.

Atos, a reliable partner



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 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.

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
atos.net
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For more information: hpc@atos.net