



A digital
transformation accelerator



Bullion: a powerful family of servers...

Unique functionalities

With many exceptional technology innovations, bullion is the practical solution to meet IT departments demands. Its blade form-factor for memory and input/output components enables hot-swapping, for unparalleled flexibility and ease of maintenance. The innovative Bull Connecting Box eliminates cabling, simplifying Data Center operations to a new level.

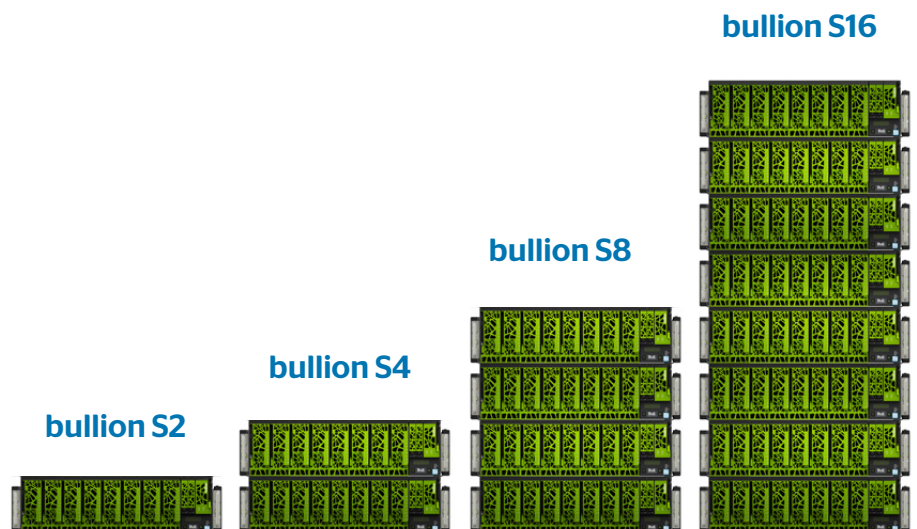
Moreover with its unique active-passive power supply and intelligent cooling, bullion delivers energy savings of up to 40%.

...with a modular approach

Exceptional scalability

Equipped with 2 to 16 Intel® Xeon® processors E7 family, with up to 24TB of memory, bullion is the only x86 platform capable of responding flexibly, securely and cost-effectively to all your challenges. The ability to dynamically reconfigure bullion (Software Defined Hardware) - for on-demand capacity expansion - means it offers unrivalled elasticity in the face of changing needs, especially for Cloud, Big Data and critical applications.

Bullion is regularly ranked #1 in SPECint benchmarks, demonstrating its scalable & exceptional power



The go-to server for:

- ▶ IT modernization through virtualization & cloud
- ▶ Business acceleration with in-memory computing
- ▶ Big data acceleration

• Visit bull.com/bullion

Data center modernization through virtualization & cloud



Secure and accelerated shift from legacy to cloud provides better business outcomes, shortened « time-to-market », optimized ROI, and simplified IT management with better agility.

Your organization is turning extensively to digital and the data center is the cornerstone of this change. Is it ready for the challenge?

Service quality: The more the business relies on digital, the more its effectiveness depends on service levels. Your data center is in the front line when it comes to meeting your SLAs. Your priority? To optimize so it keeps pace with business objectives: availability, performance, flexibility and cost reduction.

Optimization: Consolidation, rationalization and, above all, virtualization are the means to ensure this optimization. A process that includes every aspect of operations, system supervision and maintenance to energy savings. Cloud, Big Data, mobility will make unprecedented demands on your infrastructure. So be prepared.

The bullion solution

Designed for private cloud

The world's fastest x86 enterprise server, bullion, was born for virtualization and private Cloud. With its dynamic reconfiguration capabilities, it combines exceptional performance with unparalleled agility.

Generating efficiencies

Simplified connectivity, hot-swappable components, integrated diagnostic and monitoring tools, intelligent cooling: bullion generates efficiencies at every level of production, by limiting the number of objects to manage, simplify their use and delivering savings.

Bullion integrated systems & appliances

To speed up use-case implementation and digitalization adoption on customer premises, Atos engineered systems that have in common pre-integration, validation and possibly certification, to shorten the "time to market" with a one-stop shop and support for simplified operations.

These integrated systems & appliances leverage bullion superior performance and exceptional scalability to preserve and optimize investments over all products lifecycle.

- Visit bull.com/optimize-your-data-center-with-bullion/

Database by bullion: leverage your data, reduce your cost

Databases being cornerstones to a large part of organization applications and a major asset due to their intrinsic value have to integrate the optimization and consolidation path for better efficiency. Server's consolidation is already widely implemented across the data centers.

Is your database infrastructure already modernized to efficiently sustain workloads over time?

Database by bullion is an integrated system, to optimize database environment, waive bottlenecks and reduce costs. It combines a bullion high-end server, a virtualization solution - Oracle VM® - and state-of-the-art flash storage. This integrated system is **certified by Oracle**, and is pre-validated by Atos R&D teams.

It achieves at **significant reduction of the Oracle license and support fees** thanks to consolidation and use of optimized processors.

With **database by bullion**, the same technology is used for any Oracle deployment, without any rupture - from 8 to 80 highly performant cores per server, scaling from 1 TB up to 6 TB RAM. The very flexible upgrade path protects investments.

Performance over time:

Sprawled dedicated servers shared, classical storage arrays, ever-growing databases are main bottlenecks to meet SLA over time. And slowing the databases directly impacts the business!

Cost reduction:

Follow the consolidation path in the datacenter and decrease your database TCO while ensuring performance and Quality Of Service! The freed resources can then be invested into improving organization digitalization and operational excellence.

Concerning the storage - often a bottleneck in the database architectures - there are 2 flash disks storage offerings which both provides very high IOPS performance with very low latency and their modular design ensures steady growth in terms of performance while always delivering the required I/O level.

Database by bullion allows hosting different Oracle versions - from version 9 to 12c - on a single server. This means no need of migration of applications or data. Consequently, thanks to **database by bullion**, the transition of the whole existing Oracle ecosystem is smooth, with low impact on users.

The bullion solution

Scalable performance

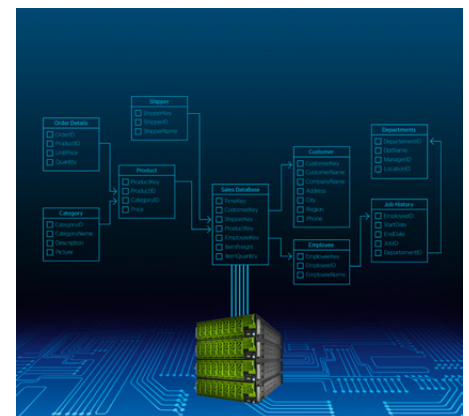
Benefit from an optimized solution with a scalable server, virtualization and state of the art flash storage. As needs arise, infrastructure scales!

Improved resiliency

Bullion advanced RAS features, Oracle® certified infrastructure, robust enterprise class storage and network keep databases away from risks.

Reduced TCO

Lower support fees thanks to server consolidation, optimized processors and additional savings on operations result in up to 35% cost savings.



Why consolidate with database by bullion?

- Reduce your TCO up to 35%
- Benefit from scalable performance to meet SLA over time
- Improve resiliency to keep databases from risk

• Visit bull.com/database-by-bullion/

Bullion for SAP HANA: unlock new insight in real time!



Over the years, the legacy systems on which you rely have become a barrier to achieving the simplicity and agility you need to succeed in the digital economy. sap hana offers a platform for effective real-time business.

Is your infrastructure really compatible with fast growing in-memory platform?

Bullion for SAP HANA pre-integrates server, storage, network, OS and HANA and delivers performances certified by SAP. The bullion server's superior scalability, availability and serviceability make it the ideal scale-up platform for very large enterprise applications and in-memory databases.

Bullion for SAP HANA is one of the very few to propose **from small (512GB) to extra-large (16TB) HANA environments** systems to preserve investments and face the data volume growing challenge.

Performance: Ensuring rapid and secure access to data consolidated in a central repository, enables to optimize a production, work on live financial elements or inventories.

Ready to grow: The key element to go real-time is to have all structured data staged in-memory. As a very rapidly evolving environment, more and more data are eligible to this environment. Your goal? To find more room for maneuver, without abandoning your investments.

Bullion for SAP HANA proposes also an exceptional flexibility as it is available also in TDI (Tailored Datacenter Integration) to reuse certified storage arrays or VMware® mode for virtualized solutions.

Moreover, as HANA is a component of the most critical systems, reliability, availability and maintainability of the infrastructure with optimal uptime is an asset. Bullion server has many patented elements leveraging RAS features to improve uptime within a high level integrated infrastructure.

The bullion solution

Scalability

Benefit from the most powerful and scalable SAP HANA solution on the market developed by Atos. SAP certified different configurations up to 16TB and 16CPUs.

Reliability and performance

Bullion leverages an extensive experience in mainframes and the world's most powerful supercomputers.

SAP® Certified
Hardware for SAP HANA®

Atos bullion for SAP HANA is adopted by many Fortune 500 customers, herein for Siemens in the largest SAP HANA deployment worldwide.

- Visit bull.com/saphana/

Data lake and analytics factory by bullion: unleash data value

A Big Data accelerator to make it simple

Atos provides the combination of data storage and analysis: the **Data Lake and Analytics Factory by bullion**, an fully integrated appliance in a secure and industrialized packaging.

This unique solution is easy to integrate, embedding a large set of advanced analytics tools. It is based on an open architecture, leveraging bullion, the most scalable and powerful server available in the market.

With this integrated systems, core platform of Atos Codex (world's first business-focused portfolio for data-driven business transformation), gain agility and speed up Big Data deployments:

- ▶ Data Lake created in a few weeks;
- ▶ Big Data applications deployed in a few days.

Its integrated and powerful software suite proposes:

- ▶ A state of the art Data Lake, based on Hadoop technology, with all the tools to deploy it in a few seconds and easily manage all its lifecycle;
- ▶ Combined products to very quickly deploy data refining and analytics capacities;
- ▶ A low-level software layer enabling flexibility and scalability to sustain needs and data growth (on premise or in the cloud) for temporary capacity add-on.

The underlying bullion server delivers an exceptional processing power performance and unmatched modularity, enabling fine tuning of hardware needs thanks to its unique architecture and virtualization technology.

This enables to power both the data lake and analytics environments on the very same hardware and improves dramatically the flexibility, security and TCO.

Flexibility

Bullion servers can be used in a scale-up model when compute or memory needs arise (to deploy more analytics virtual machines for example). They provide from 2 to 16 CPU and up to 24TB of RAM in a single server and a few hundreds of TB of storage thanks to the attached EBODs. Depending on the organization needs, the appliance can follow a scale up or scale-out track, making the appliance even more flexible. The capacity to deploy or re-allocate virtual machines in minutes with a whole and consistent stack thanks to dedicated blueprints is a key since needs might evolve fast.

Security

Data lake and analytics factory by bullion provides advanced security at different levels.

The first level (compared to cloud solutions) is that all data are staged on premise and do not transit through public networks.

The second level of security is closely tied to the bullion server. In critical environments, bullion offers unique RAS and warning features that anticipate potential breakdowns. Combined with a wide range of diagnostic resources, this allows you to prevent problems and react appropriately enabling exceptional **Quality of Service**.

TCO enhancements

The appliance is designed to optimize resource allocation thanks to its **unique architecture and virtualization technology**.

Bullion hosts both an infrastructure as a service (IAAS) and the virtual machines to run on the very same hardware which improves the TCO. In addition, the bullion server is powered by high-end processors meaning **better consolidation capabilities** reducing the number of servers, simplifying network topology and reducing licensing costs.

Moreover this architecture will allow additional TCO improvements linked to the **upgrade path**. Creating a global resource pool enables to optimize resource allocation since there is a disconnection between CPU, memory and storage capacities. As time goes, data volume will grow and needs evolve.

To address data volume growth, the scalability proposed by bullion architecture enables to add extra compute, memory and/or storage capacity with a very controlled pace. To deploy a new Big Data application, the virtualization technology will enable accelerated and simplified deployment by allocating free resources from the virtualized pool.



A flexible appliance to speed up implementation of Big Data solutions

- Visit bull.com/data-lake-and-analytics-factory-bullion/

SIEM by bullion: a cornerstone to threat intelligence

The Security information and event management (SIEM) system provides a centralized reporting and analysis by bringing all data from various sources (hosts, servers, ...) to a central point and making cross source correlation.

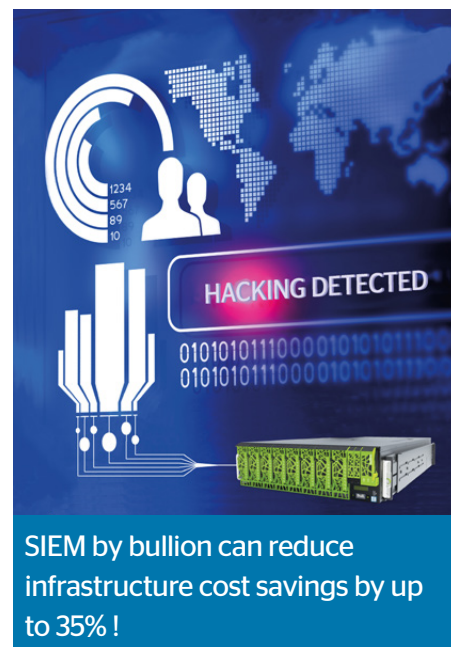
It is a cornerstone to threat intelligence and enables to **apply security analytics** to event data for the early detection of targeted attacks and data breaches. Moreover, it simplifies **regulatory compliance** as it proposes compliant reporting.

SIEM by bullion consolidates inside a single high-end server (2 in HA mode) many virtual machines, each one delivering a specific function compared to classical deployments based on a "one function-one server" model. It enables a smooth data center integration and easy connection to other security services.

Moreover bullion superior scalability allows to smoothly adjust resources to growing needs.

SIEM by bullion's main benefits are **improved security** and **cost reduction**.

- Visit to bull.com/siem-by-bullion/

A graphic illustration for SIEM by bullion. It features a dark blue background with a world map, a circular gauge with numbers 1234, 567, 89, and 10, and a server rack. A red banner with the text "HACKING DETECTED" is overlaid on the graphic. Below the graphic, a blue box contains the text: "SIEM by bullion can reduce infrastructure cost savings by up to 35%!".

SIEM by bullion can reduce infrastructure cost savings by up to 35%!

Java booster by bullion: solve java problems and go in-memory

Java booster by bullion

The Java booster platform is the combination and preintegration of two best of breed elements: Zing Java Virtual Machine (JVM) from Azul Systems® and the bullion server. It is the sum of common engineering efforts.

It enables to break the classical Java limit and expand it further with no **Garbage Collector pause** so now java applications can be used with very large data volumes. This architecture delivers an unmatched **scalability** (from 2CPU/48GB to 16CPU/24TB of RAM).

Java booster by bullion is a best of breed platform that addresses two different use-cases:

- ▶ **Solving classical Java capacity or performance problems.**
- ▶ Enabling very large in-memory Java applications.

Its main benefits are:

- ▶ Preintegration: preloaded java environment, ready to use.
- ▶ Evolution: simplified upgrade with the same components, investment protection.
- ▶ Flexibility: the platform grows following the needs.
- ▶ Robustness: ready for mission critical.
- ▶ Performance level: preserved, whatever the memory capacity.

- Visit bull.com/javabooster-bullion/

Real time analytics for finance

Being able to calculate all types of risk metrics with data visualization both aggregated and very detailed is a real challenge for finance industry.

This is now possible with the real-time analytics Appliance based on ActivePivot® from Activeviam® and powered by the **JavaBooster by bullion** platform.

The Real time analytics for finance appliance is an innovative Java in-memory database and an aggregation and calculation engine that allow financial institutions to calculate all types of risk metrics and evaluate "what if" scenarios. This enables to take decisions in a matter of seconds instead of minutes or hours and ensures a fluid end-user experience.

- Visit bull.com/real-time-analytics-finance/

About Atos

Atos is a global leader in digital transformation with approximately 100,000 employees in 72 countries and annual revenue of around € 12 billion. The European number one in Big Data, Cybersecurity, High Performance Computing and Digital Workplace, The Group provides Cloud services, Infrastructure & Data Management, Business & Platform solutions, as well as transactional services through Worldline, the European leader in the payment industry. With its cutting-edge technologies, digital expertise and industry knowledge, Atos supports the digital transformation of its clients across various business sectors: Defense, Financial Services, Health, Manufacturing, Media, Energy & Utilities, Public sector, Retail, Telecommunications and Transportation. The Group is the Worldwide Information Technology Partner for the Olympic & Paralympic Games and operates under the brands Atos, Atos Consulting, Atos Worldgrid, Bull, Canopy, Unify and Worldline. Atos SE (Societas Europaea) is listed on the CAC40 Paris stock index.

Find out more about us

atos.net

ascent.atos.net

Bull is the Atos brand for its technology products and software, which are today distributed in over 50 countries worldwide. With a rich heritage of over 80 years of technological innovation, 2000 patents and a 700 strong R&D team supported by the Atos Scientific Community, it offers products and value-added software to assist clients in their digital transformation, specifically in the areas of Big Data and Cybersecurity.

Bull is the European leader in HPC and its products include Bull sequana, the open exascale-class supercomputers; bullion, one of the most powerful x86 servers in the world developed to meet the challenges of Big Data; Evidian, the software security solutions for identity and access management; Trustway, the hardware security module and Hoox, the ultra-secure smartphone. Bull is part of Atos.

For more information, **visit bull.com**