

Whitepaper

# Bare metal: New opportunities for cloud providers

A path to modernize your application  
infrastructure landscape



**Atos**

# Executive summary

In every sector, cloud is rapidly becoming mainstream. Business and technology leaders know that only cloud can offer them the agility, efficiency and flexibility they need in the digital age. Hybrid and multi-cloud are increasingly the model of choice for those seeking maximum performance and cost efficiency with data security.

Yet while enterprises want to embrace the opportunities of the modern-day cloud, they don't want to cause unnecessary disruption to their existing IT landscape or upgrade all their legacy applications. This presents a conundrum, as most legacy applications were not designed to run in the cloud. Migrating them can be challenging, risky and cost prohibitive.

As a result, by 2025, Gartner predicts that 80% of enterprises are expected to shut down their traditional data centers – a trend accelerated by COVID-19. To do this, in partnership with their cloud providers, organizations must address specialized workloads that are not suitable for public or private cloud. This is where bare metal can help, by making it possible to run such workloads – including Oracle, SAP HANA and mainframe – within a cloud environment. This means organizations can lower their costs and minimize disruption on their journey to cloud.

As a leading integrator and technology provider, Atos has developed and matured an established bare metal infrastructure. We have been working with hyperscalers, leveraging this capability to provide enterprise clients with tailored bare metal solutions. We see major opportunities for cloud providers to expand into bare metal services.

Atos has trusted long-term relationships with leading enterprises across all sectors, supporting them on their digital transformation journeys. This paper examines the case for bare metal and key opportunities for cloud providers in the bare metal market.

We look forward to working with cloud partners to deliver the full benefits of bare metal to enterprise customers all over the world.

**According to Market Research Future, the global bare metal cloud market is expected to grow from \$1.52 billion in 2017 to \$7.73 billion by 2023.**

# The case for bare metal

Accelerated during COVID-19, the shift away from the traditional data center is a top priority for many enterprises. Many organizations are rethinking the placement of applications, based on network latency, customer population cluster, and geopolitical limitations driving new regulation of data sovereignty.

Enterprises with older data centers don't want to rebuild them due to high capital costs — instead preferring to have someone else manage their physical infrastructure. Enter hyperscale cloud service providers and IT service providers, two groups teaming up to develop data center strategies that offer innovative hybrid cloud approaches for application modernization and cloud migration.

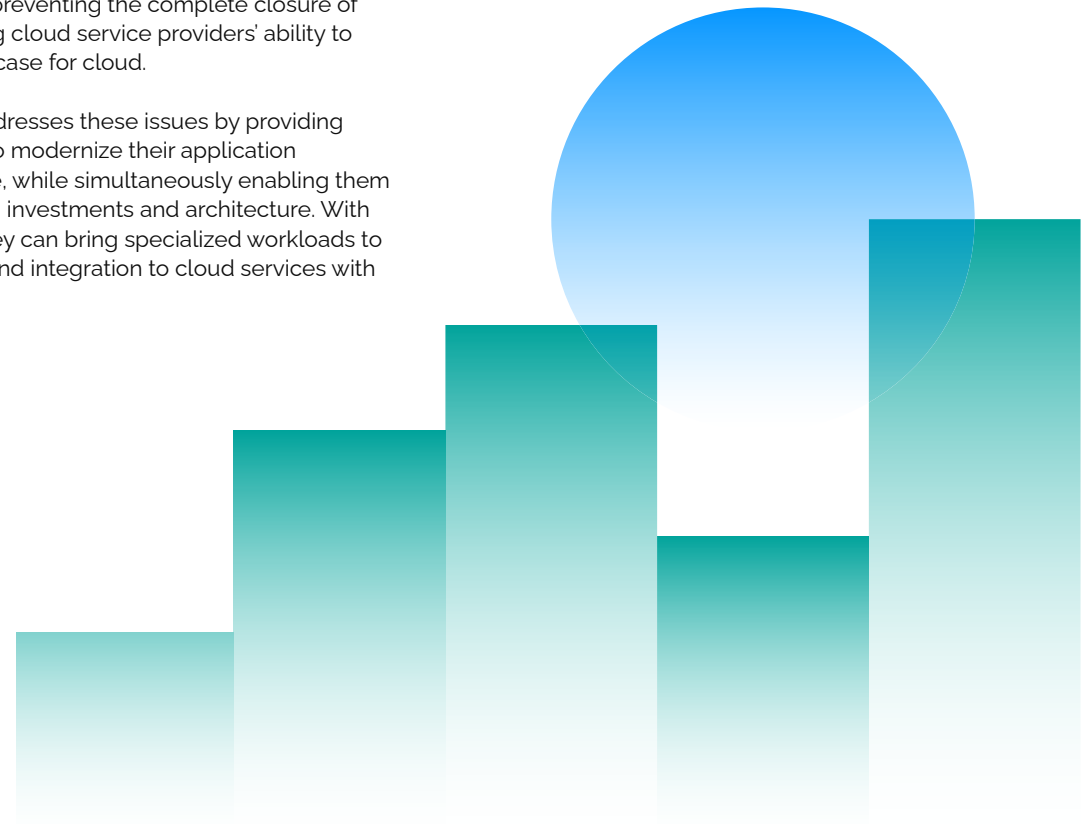
With enterprises migrating workloads to the cloud to reduce management overhead and increase agility, many enterprises recognize that not everything can be virtualized or run effectively in a cloud environment. There are certainly workloads that are easy to lift and shift to the cloud. Yet, there are also specialized workloads that are difficult to migrate to a cloud environment. These often require certified hardware and complicated licensing and support agreements.

## Enabling specialized workloads

Specialized workloads are typically high-performance computing or big data applications, such as Oracle databases, SAP HANA, gaming and finance workloads. They can be applications with complex security, compliance or regulatory requirements, such as in finance, government and healthcare. They can be large steady-state workloads, such as larger SAP instances that require high levels of throughput, memory and storage. These specialized workloads require a physical bare metal environment for optimal performance.

Organizations also have immutable legacy technologies, meaning they are key to the business and simply too difficult to change; mainframe applications fall into this category. These workloads, and their dependencies, are often labeled as "leave on premises," preventing the complete closure of data centers and limiting cloud service providers' ability to deliver on the business case for cloud.

A bare metal service addresses these issues by providing customers with a path to modernize their application infrastructure landscape, while simultaneously enabling them to maintain their existing investments and architecture. With a bare metal service, they can bring specialized workloads to the cloud, with access and integration to cloud services with minimal latency.



# Seven benefits of bare metal for cloud

|  |  |
|--|--|
|  Performance              | Physical resource-optimized single-tenant service leverages full high processing power, customized for specialized workloads. In addition, with no hypervisor or virtual layer consuming part of the compute and networking power, application performance is stable and constant. This is important for mission-critical applications such as SAP HANA and Oracle databases.  |
|  Flexibility              | Clients can combine specific technological requirements, stability and reliability of an on-premises solution with all the flexibility of the public cloud. Hardware partitioning and control over hardware and software with root access to the machine means that systems can be sized flexibly and optimized for the client's needs.  |
|  Cost                     | A consumption-based pricing model reduces cost, with optimized licensing costs for required software.  |
|  Compliance               | Full compliance with local data protection requirements and regulations, the customer can know at any time where their data is processed and stored.   |
|  Reliability             | Dedicated hardware avoids the “noisy neighbors” effect, which could affect application stability, with high-quality levels of service and SLAs — thanks to dedicated compute and memory resources.   |
|  Security               | Physical isolation of data, applications and infrastructure provides a higher level of security compared to virtual servers. An exclusive IP address for each customer mitigates risks in addition to cloud security controls. Customers know where their data is processed and stored. Separation of the control and data planes keeps customer data secure. Data can be encrypted end-to-end in a way that is not possible in a virtual environment. |
|  Public cloud offerings | Clients can benefit from additional public cloud service offerings, such as advanced analytics and machine learning.   |

# Google Bare Metal Solution, powered by Atos

In 2020, Google Cloud launched Google Bare Metal Solution, a managed service powered by Atos. This state-of-the-art bare metal infrastructure is connected through a dedicated, low-latency and highly resilient interconnect to all native Google Cloud services.

As an integral part of Google Cloud, Google Bare Metal enables clients to offload provisioning, management and monitoring of their infrastructure to Google and Atos. This solution runs on BullSequana S ultra-secure enterprise servers with certified security levels established and proven with global hyperscalers to meet security requirements and regulations anywhere in the world.

The Google Bare Metal Solution is for enterprises with specialized workloads who want to fully embrace the benefits of the cloud. Pre-integrated and ready to use, the Bare Metal Solution can rapidly extend your offerings, minimize time-to-market and rapidly launch new customer offerings to meet competitive demands. Combined with our OpEx-based payment model, limited up-front investment is required by you and your cloud customers.

This highly scalable service can quickly be adapted to changing customer needs and ensures a high usage rate for the installed capacity. Workloads can be modernized over time according to each client's business priorities.



## BullSequana: a world leader

The BullSequana S server is a scalable and open platform, providing everything needed to deliver high-performance bare metal services. With its dynamic reconfiguration capabilities, it combines exceptional performance with unparalleled agility and generates efficiencies at every level, thereby optimizing costs for bare metal customers.

BullSequana S, with the newest Intel Xeon scalable processors, enable more power per licensed core. The extreme scalability of BullSequana provides the flexibility to remotely address evolving client demands.

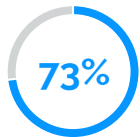
# Bare metal use cases

## SAP HANA

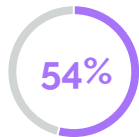
With SAP ending support for old SAP systems, SAP clients are on the move to S/4HANA in the cloud.

SAP HANA is one of the most critical workloads requiring a specific infrastructure for performance reasons. To migrate to SAP HANA, clients need to invest in new infrastructure to ensure the necessary memory and processing power. Clients on the journey to cloud always evaluate the option of migrating to SAP HANA in the cloud.

A bare metal server is needed for SAP HANA databases larger than three terabytes for online analytical processing (OLAP) systems (such as BW, BW4/HANA, Analytics or Big Data) or six terabytes for online transactional processing (OLTP) workloads. This is necessary to secure the required latencies and reaction. However, offerings of large bare metal server and instances in the market are limited.



of SAP clients globally are planning on deploying S/4HANA



say they will make the switch within three years



will deploy SAP S/4HANA to the cloud

This is where Atos can help. With Atos's **Bare Metal-as-a-Service**, all SAP HANA databases of up to 24 terabytes can be run on HANA-certified infrastructure. This is in scale-up or scale-out mode for flexibility and ease of growth over time.

## Kubernetes

By migrating workloads to the cloud, more and more clients are using container-based services and implementing Kubernetes. A Kubernetes cluster can, of course, be built on virtual machines. However, increasing numbers of clients and IT experts are recognizing that building Kubernetes clusters on bare metal is the best choice for optimum performance and scalability, even for the largest clusters.

Set-up and management of Kubernetes on bare metal is complex and demanding. Updates in the cluster must be implemented precisely and securely. Leveraging Atos's extensive experience, client development teams are free to focus on the development of microservices with the full transparency of a toolset and monitoring options provide as part of the service.



### Maximum performance

No resources for hardware emulation are used, so all compute resources are available to run the application.



### No overhead of a virtual layer or hypervisor

Use of system resources can be optimized with the flexibility of Kubernetes.



### High security

If sensitive data requires an isolated server, this provides the solution — with the possibility of integrating legacy systems' dedicated servers.

## Oracle

Oracle workloads are difficult to migrate to the cloud, and require certified hardware and complicated licensing and support agreements. Migrating to bare metal for Oracle offers significant continuity, cost and flexibility benefits.



### Business continuity

Clients can migrate older versions of Oracle than are possible with public cloud services.



### Lower costs

Hardware partitioning of a bare metal server significantly reduces Oracle license costs. Clients can run their Oracle software on dedicated hardware and not be subject to Oracle's non-contractual virtualization policies that may require hundreds of additional licenses. All existing licenses and contracts can be reused.



### Flexibility

With no disruption to existing managed service models, clients using a service provider to run their Oracle environment can continue the service contract as-is.

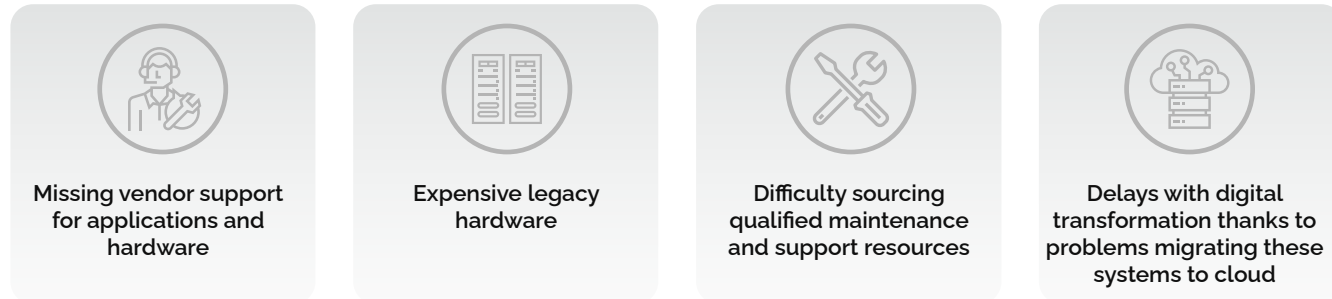
### Migrating Oracle workloads with Atos Database Hotel

The Atos Database Hotel offering is a private cloud solution that runs in a co-located data center with a low-latency connection to Google Cloud, saving clients time and money on licensing costs and giving them more power per license core.

As a trusted Google Cloud Premier Partner, Atos is delivering its Atos Database Hotel on top of Google Cloud's Bare Metal Solution (BMS) for Oracle. This is a managed service for enterprise clients, providing organizations with a fully managed and secure cloud services, seamlessly integrated with Google Cloud and leveraging Atos's end-to-end orchestration, management and infrastructure services.

# Bare metal offers key advantages over traditional cloud environments

While mainframe is alive and well, running legacy and mainframe applications has become more expensive due to:

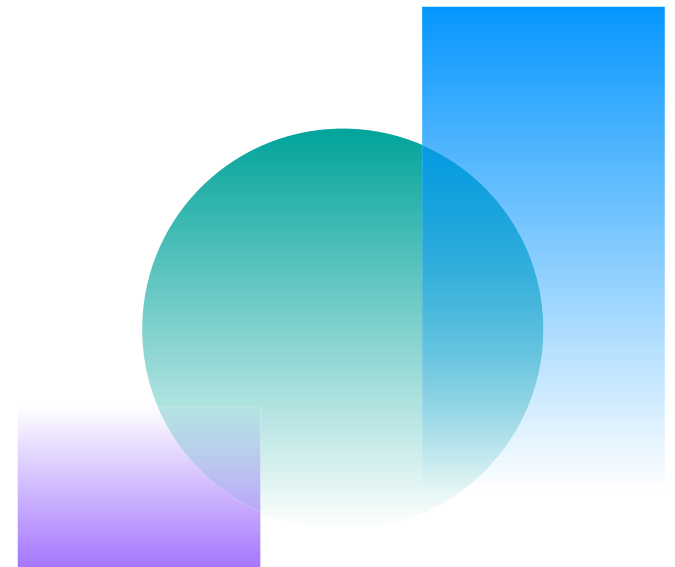


The 2020 Mainframe Market Pulse survey by Forrester found that 74% of respondents believe that mainframe has long-term viability as a strategic platform for their organizations. 72% are planning upgrades to their mainframe in the next three years.

Moving these applications and systems to bare metal:



Mainframe is an Atos core competency. In fact, over time, our mainframe practice has developed and promoted its MIII (Manage Migrate Modernize) approach for customers' mainframe environments. By combining this expertise approach with a fully managed Bare Metal-as-a-Service, Atos can offer customers a complete path to mainframe modernization while taking full advantage of the cloud.



# Conclusion

As both an IT service provider with extensive data center management experience and a manufacturer of high-performance computing systems, Atos works with hyperscale cloud service providers to build technology solutions that enable our clients to fully execute their data center exit while taking full advantage of the cloud.

These solutions are available on-demand and can be set up in a cloud provider's data center or a regional extension near the cloud provider compute engine. Close proximity ensures that clients benefit from extremely low latency and high bandwidth connectivity to the rest of their applications that run in the cloud provider environment. Naturally, these workloads can be modernized over time (according to client business priorities) and are no longer on the critical path of a data center closure.

With Atos Bare Metal-as-a-Service, your clients can:



Maximize all the benefits of cloud across their enterprise – with the freedom to focus on their core business



Accelerate their digital transformation with cloud as a critical enabler



Minimize disruption and maintain flexibility to keep evolving their cloud environment and migration strategies on an application-by-application basis

At Atos, we put cloud at the core of our IT, which ensures all your cloud platforms and cloud services align to your business strategies to create maximum value. We are technology agnostic and have 5,500+ cloud experts across three main public cloud providers. Our world-class partnerships, notably with hyperscalers, enable significant deployment at scale.



## Get in touch

We look forward to working with cloud partners to deliver the full benefits of bare metal to enterprise clients all over the world. For additional information, contact:



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# About Atos

Atos is a global leader in digital transformation with 107,000 employees and annual revenue of over € 11 billion. European number one in cybersecurity, cloud and high performance computing, the Group provides tailored end-to-end solutions for all industries in 71 countries. A pioneer in decarbonization services and products, Atos is committed to a secure and decarbonized digital for its clients. Atos is a SE (Societas Europaea), listed on Euronext Paris and included on the CAC 40 ESG and Next 20 Paris Stock Indexes.

The purpose of Atos is to help design the future of the information space. Its expertise and services support the development of knowledge, education and research in a multicultural approach and contribute to the development of scientific and technological excellence. Across the world, the Group enables its customers and employees, and members of societies at large to live, work and develop sustainably, in a safe and secure information space.

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Let's start a discussion together



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