

# Exasol at a Glance

# Opening

Despite nearly four decades of data warehouse advancements, the majority of enterprises still struggle to achieve tangible ROI for their analytics investments. In fact, a number of recent studies have shown that over 80% are not satisfied with the results of their data warehousing initiatives.

What is preventing data warehouses from delivering on their promise?



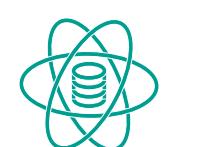
## Performance limitations

Performance is king for many mission-critical analytics workloads such as fraud and risk analysis, compliance reporting, and real-time customer analytics. Delayed time to analytics output can lead to catastrophic outcomes including increased risk exposure, steep fines, and customer churn. As more businesses become data-driven, more people than ever before need access to analytics. But current data warehouses seldom scale well with increased use, nor do they perform well enough to support those time-sensitive analytics workloads due to their suboptimal architecture. As a result, the analytics team must constantly tune performance, a time-consuming and costly effort.



## Lack of support for modern analytics use cases

The current business climate has many unforeseen questions, and organizations are increasingly turning to their data to find the best possible answers, fast. Those changing business dynamics drive the need for new types of analytics use cases such as ad hoc and real-time analysis. Given the complex, time-sensitive nature of these modern analytics workloads, analytics teams must put other projects on hold to support them, resulting in even more manual performance tuning and reconfiguration.



## Difficulty operationalizing data science workloads

Despite the hype and investment going into machine learning, [85%](#) of data science projects fail. Experts think that this is a “last mile” problem—getting machine learning algorithms into a place usable by the entire organization and users with different data science skill levels. Legacy data warehouses are not designed to facilitate the tasks at different stages of a data science project, forcing the analytics team to keep projects in silos, slowing down deployment of models in production, while adding learning and management complexity.

# Introducing Exasol: the analytics database built for performance

[Exasol](#) is an analytics database designed from the ground up to run analytics faster than any other database system. Born out of a scientific project aimed at solving demanding high-performance computing challenges, Exasol brings an in-memory, columnar database, Massively Parallel Processing (MPP) architecture, and auto-tuning to turbocharge the data warehouse. Exasol's complete choice of deployment allows enterprises to boost analytics performance from anywhere: on-premises, in the cloud, or a hybrid environment.

With Exasol, organizations benefit from blazingly fast performance, ease of use, and choice of deployment for diverse analytics use cases.

# The Exasol difference:

## Performance

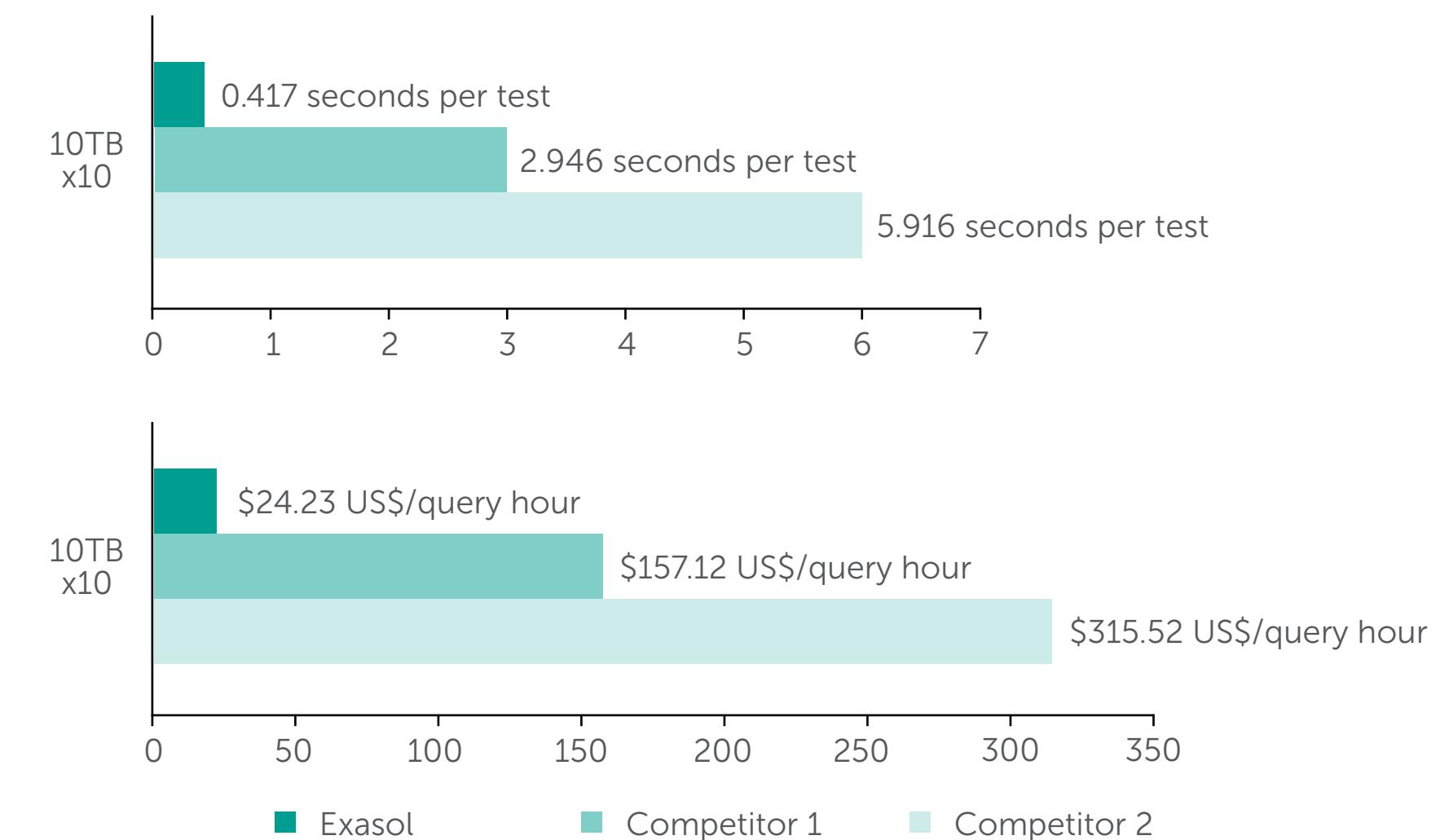
For eleven consecutive years, Exasol has been the undisputed leader for raw performance and price/performance in the [TPC-H benchmark test](#), the independent, gold standard of database performance benchmarks. Exasol's unmatched performance not only enables enterprises to easily address their most performance-demanding workloads, but also allows BI teams to deliver analytics to more people than ever before.

## Ease of use

Exasol delivers query optimization (including index creation management) without any human intervention. By automating many time-consuming tasks within the analytics workflow, your analytics team can break free from the labor-intensive, non-value-added tasks and instead work on innovative projects. Plus, since Exasol supports the BI tools and solutions you already use, you can save time from learning and managing a new system.

## Choice

Exasol turbocharges your analytics regardless of [where](#) your data lives: on-premises, in the cloud, or in a hybrid environment.



**The latest TPC-H benchmark result**

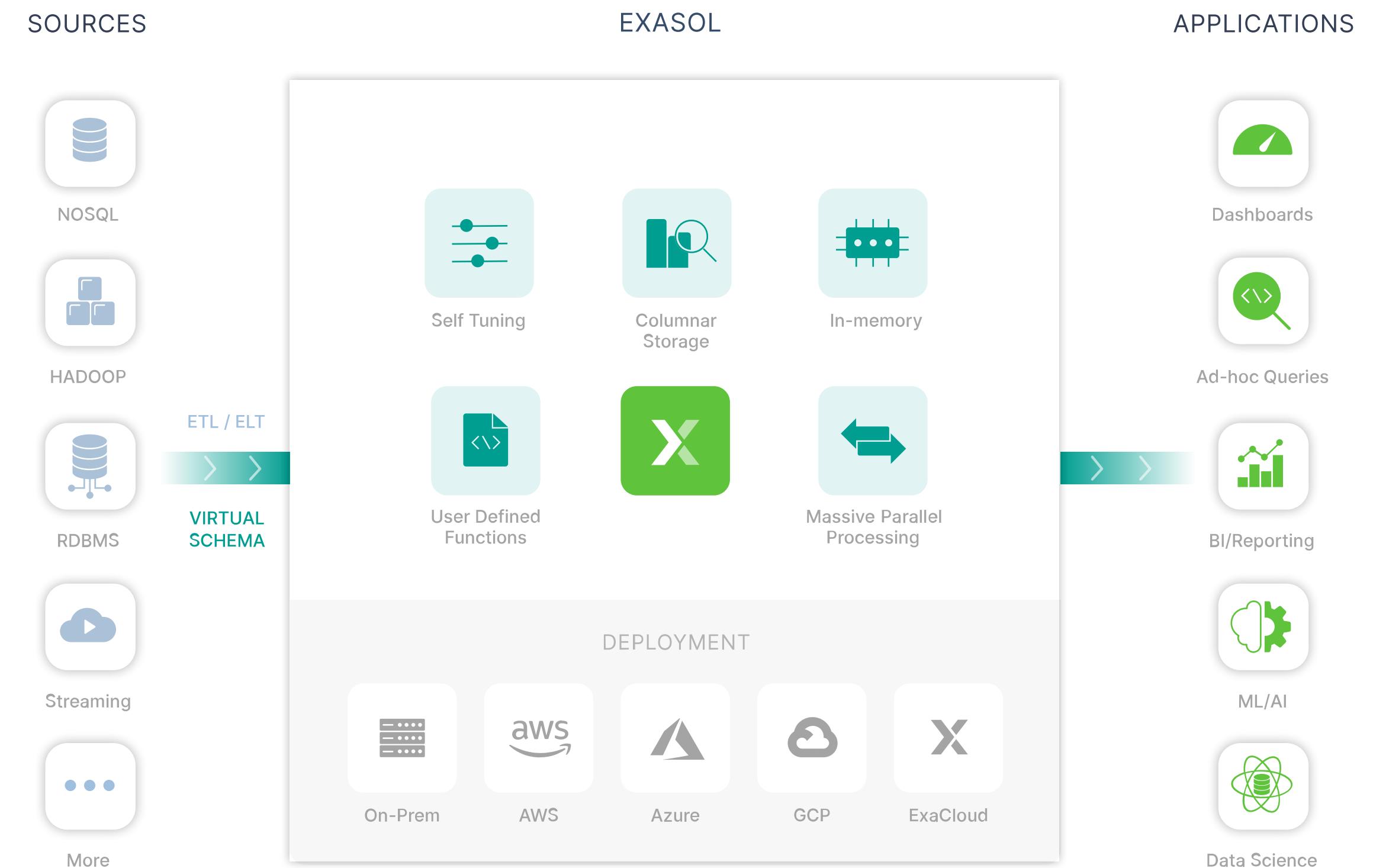
**"Exasol's analytics database proved impressive. Primarily due to an excellent price-performance ratio: low costs coupled with exceptional performance and integration with Hadoop."**

Andreas Bonet, Product Owner, OTTO



# Exasol architecture overview

As a seasoned data professional, you know the architecture of a data warehouse system matters a great deal in driving outstanding results. Exasol was architected for performance, and everything built into our platform is designed to push analytics performance to a whole new level.



How Exasol fits in your analytics ecosystem



Let's take a closer look at the key attributes that make Exasol the world's fastest analytics data warehouse.

### Built for instant query response

Exasol is an in-memory, columnar database that uses MPP to enable real-time data loading, query response and large-scale concurrency. By using techniques such as multi-level data compression, smart data prefetching predictions (hot/cold cache management), as well as sophisticated rule and cost-based query optimizer, Exasol allows users to process data at petabyte scale and run complex queries in-memory, delivering amazing speed to insights. Machine learning and deep learning algorithms get a performance boost too with our [GPU support](#). Columnar storage significantly reduces I/O bottlenecks to minimize latency, an ideal data management design to improve analytics performance. You can also load and transform your massive amounts of data in parallel by leveraging our MPP architecture, optimizing the extract, load and transform (ELT) process. The increased processing power not only helps organizations cut down the time to results from hours to seconds, but it also allows them to expand analytics to more users and new use cases, bringing greater benefits to the business.



### Piedmont Healthcare improves patient care with improved analytics

#### Before Exasol

- Poor scalability with existing Microsoft SQL Server
- 26 Tableau users
- Delayed time to insights

#### After Exasol

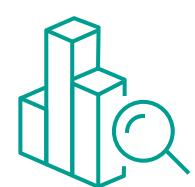
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| <b>50x</b><br><b>300+</b><br><b>40%</b> | Faster query performance<br>Tableau users<br>Reduction in patient harm |
|---|--|

**"By placing Exasol at the beating heart of our analytics we have seen significant improvements, not only to the organization's bottom line, but to the satisfaction and safe delivery of our services to patients."**

**Mark Jackson, Head of Business Intelligence,  
Piedmont Healthcare**

## Optimized to drive delightful user experience

Analytics should be a simple and fun task that does not require manual intervention or tuning by IT. By making a data warehouse easy and responsive, more people will use it. Exasol provides many built-in optimizations to automate multiple tasks within an analytics workflow. A few examples of automatic query tuning include:



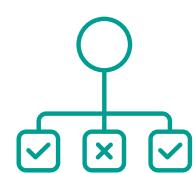
Index creation and management, including for performance-intensive operations such as JOIN and FILTER



Management of hot and cold data to optimize use of in-memory resources



Query optimizer incorporating system statistics and metadata



Replication of small tables on all nodes of a cluster to boost JOIN operations

Seamless integration with the analytics ecosystem is also a top priority for Exasol. Exasol works with popular data integration and ingestion tools such as Informatica, Oracle, Talend, and Kafka to ensure a seamless ETL process. Moving downstream, Exasol is certified for nearly every business intelligence tool on the market, including MicroStrategy, Cognos, Tableau, Power BI, Looker, Yellowfin and SAP.

Exasol makes data science development fast and easy too. Our native support for a wide range of popular programming languages such as R, Python, Java, and Lua, coupled with the [user defined function](#) (UDF) framework allow data scientists to create algorithms using their preferred language, then run the models on a parallel, in-memory analytics engine to achieve blazingly fast time to results at scale. To elevate performance to the next level in a cost-effective manner, data science teams can train and execute UDF-based models on powerful [GPUs](#) inside their Exasol cluster, instead of adding more nodes to the cluster. The best part of UDFs is they allow end users with different skill sets to easily access sophisticated data science algorithms via their dashboards and applications without the need to learn programming languages. With these advanced features, you can truly democratize data science and achieve operational efficiency with your data science initiatives.

## Deployed anywhere you like

Exasol believes you should have the freedom to run analytics anywhere you like – on-premises, in any public cloud, in a private cloud, or in a hybrid environment.

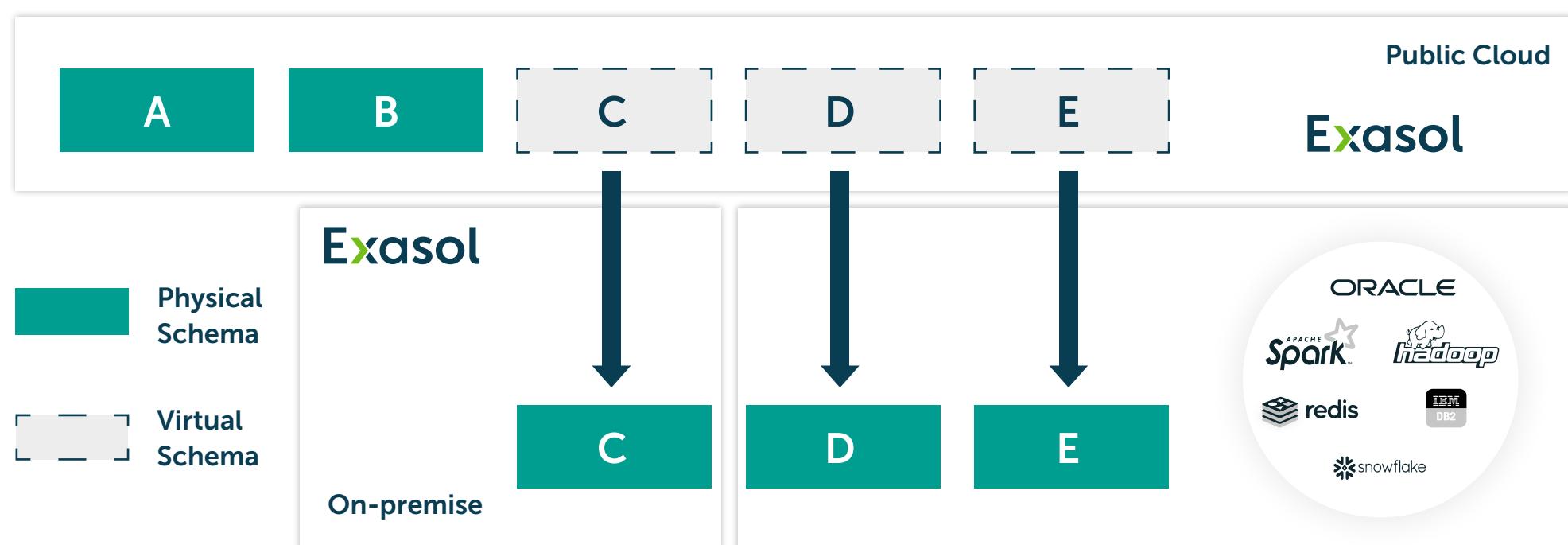
The reality is that choice isn't a luxury. Enterprises often face different business and regulatory demands that require on-premises or a hybrid cloud model—a major reason customers choose Exasol.

If you are going all-in with cloud for analytics, no problem. Exasol is seamlessly integrated with critical cloud services such as data ingestion, data lake, identity and access control, as well as various downstream BI and analytics services in AWS, Microsoft Azure and Google Cloud Platform, so you can jump-start your analytics journey in the cloud. Aside from the public cloud, Exasol offers ExaCloud, a fully-managed database-as-a-service offering in Exasol's private cloud to accelerate your analytics securely and easily.

Need a fast data warehouse to run analytics against your data on-premises? Exasol is here to help. Our in-memory, MPP data warehouse is a rocketship for your BI reporting, ad hoc analysis and even for advanced projects such as AI and machine learning you'd like to explore.

If running analytics in a hybrid cloud best meets your needs, we've also got you covered. Exasol's [Virtual Schemas](#) create a read-only link, allowing access to data wherever it sits to create a virtual table without actually moving the data. Exasol automatically sends parts of the query to the virtually connected data at runtime, our intelligent pushdown algorithms ensure execution occurs directly on the source system. Users can leverage

virtual schemas to run analytics seamlessly on their existing BI solution such as Oracle, SQL Server, Hadoop, cloud data warehouse, or any other ODBC/ JDBC-compliant database, in combination with an Exasol database instance.



**Virtual schema-based analytics in a hybrid environment**



## Secure and compliant

Security and governance is built into the core of the Exasol data warehouse. Our enterprise-class security measures provide row-, column- and table-level security, authentication via LDAP or Kerberos/SSO, role-based access control as well as fine-grained privileges. With Exasol, your data can be encrypted either at rest or in-motion. When deployed in a public cloud, we also leverage the native cloud security services such as AWS IAM and Azure Active Directory to ensure a consistent data protection policy.



**Unrivaled performance  
and security**



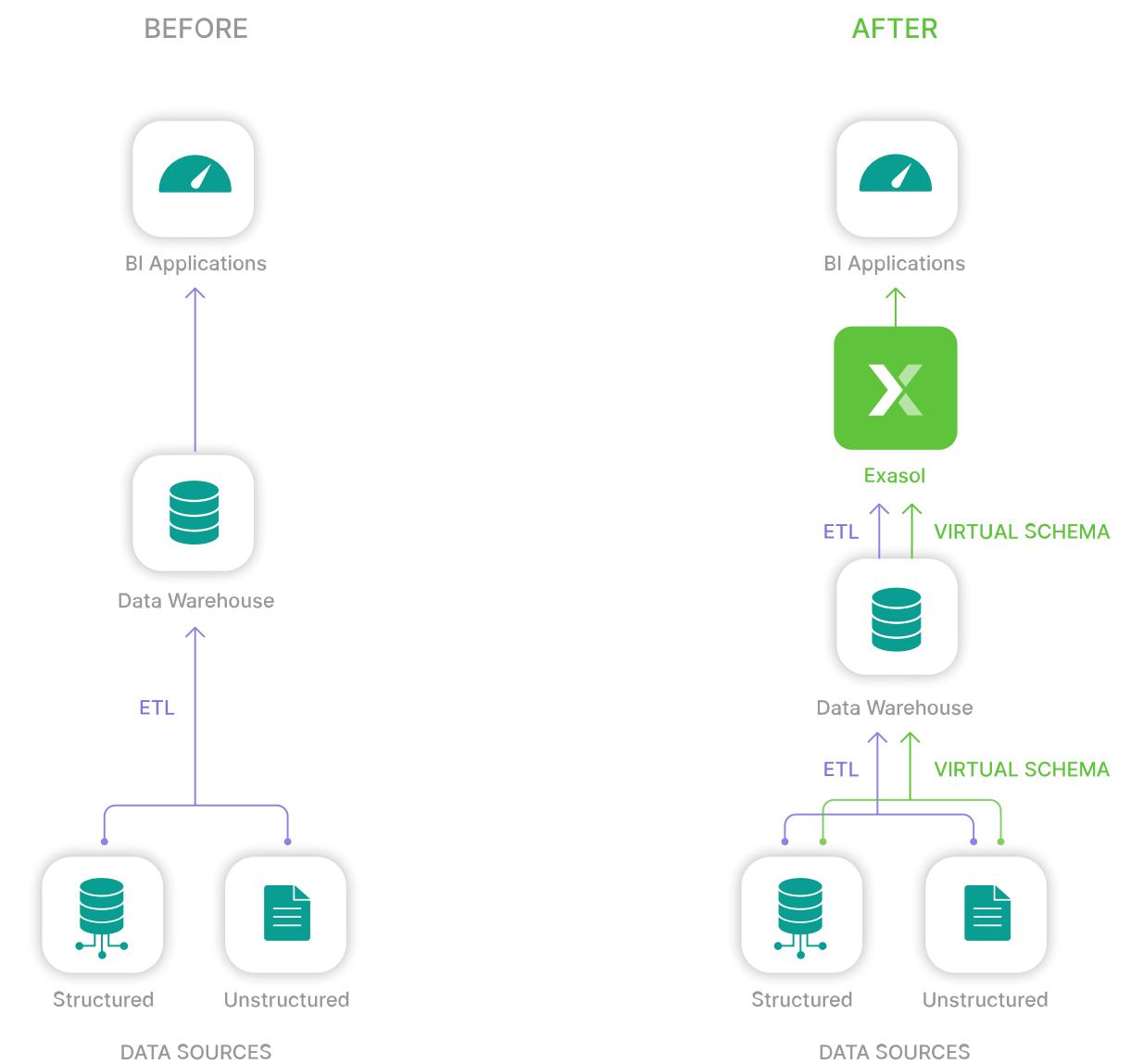
**Cloud, On-premises,  
or Hybrid**

# Three ways to use Exasol for analytics acceleration

Deploying Exasol does not have to be a major undertaking. Here are three ways you can use Exasol in your analytics environment to drive immediate results.

## 1. Use Exasol as an acceleration layer for your existing data warehouse

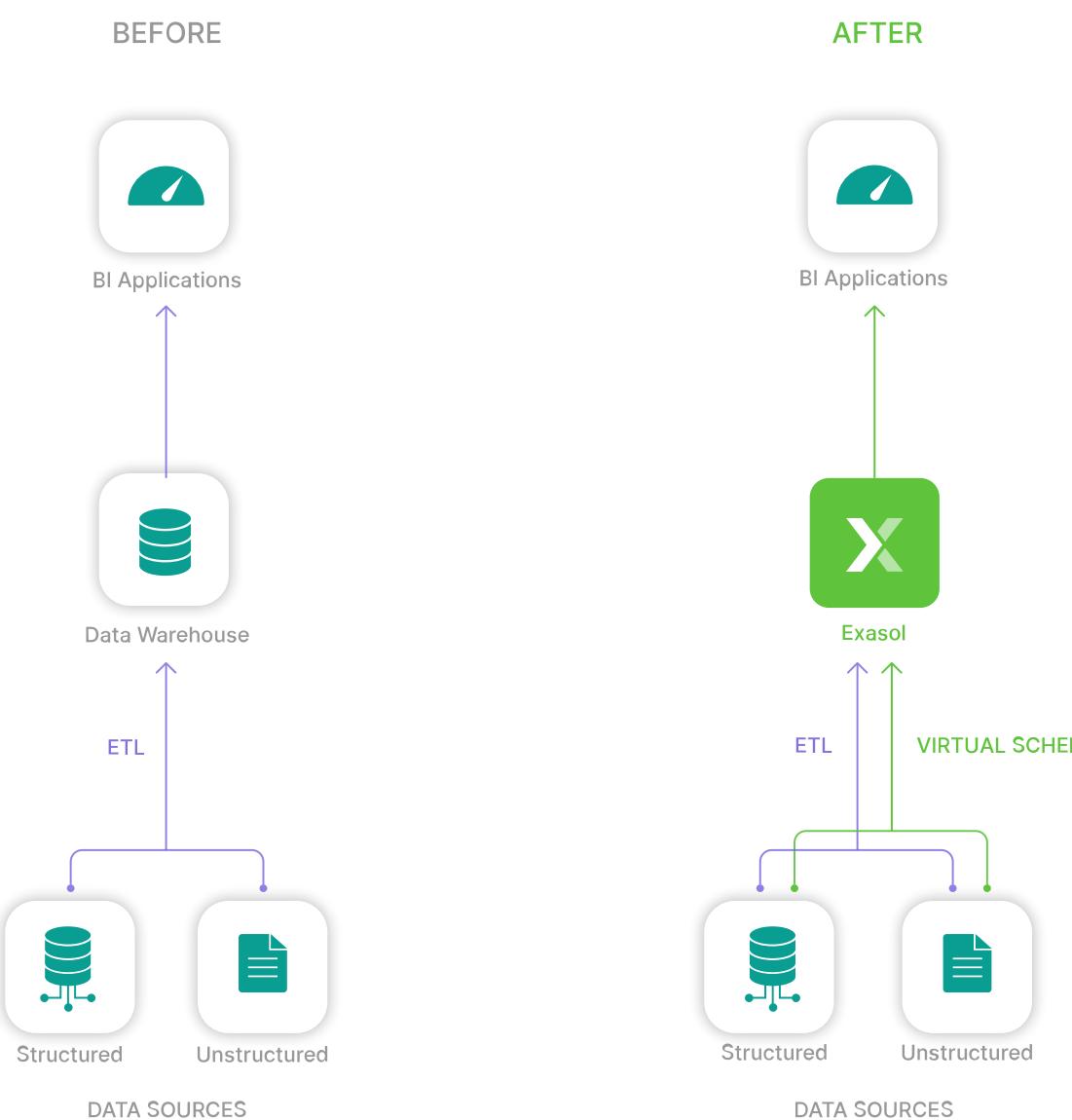
You want to speed up your most time-critical analytics workloads such as ad hoc requests and real-time analytics, but replacing your current data warehouse is simply not an option at this time. So keep everything you have and add Exasol to your existing system. You will see instant performance improvement for your most demanding workloads. In this case, Exasol is your high-performance gear to give you a speed boost whenever you need it.



Use Exasol as a BI acceleration layer

## 2. Replace your non-performing data warehouse with Exasol

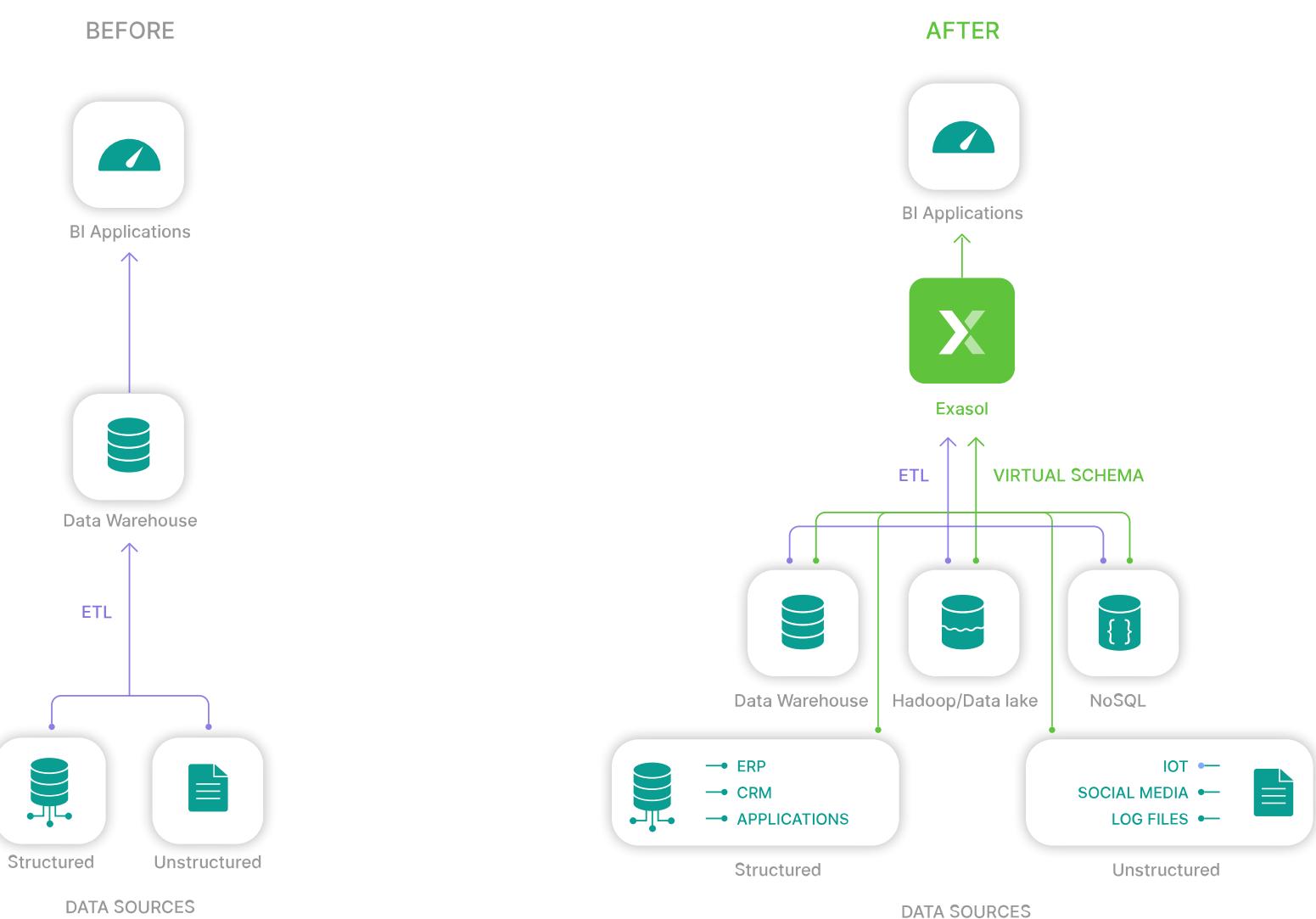
If you are fed up with your current non-performing, expensive data warehouse, consider replacing it with Exasol to modernize your analytics environment. With Exasol as part of your modern analytics stack, not only can you gain performance improvement for all your analytics use cases, but you also benefit from lower price/performance and simplified management.



Replace your legacy data warehouse with Exasol

## 3. Use Exasol as a unified, enterprise-wide BI acceleration

Tired of dealing with siloed data scattered across various systems? Had enough of troubleshooting disintegrated systems lying around in different departments? You can use Exasol as a unified BI layer to consolidate siloed data across disjointed systems, and run various types of analytic projects on a high-performance, in-memory analytics engine. Simply add Exasol as the trusted access layer to all your data lakes and data warehouse systems and start enjoying working with a single access point for analytics and insights.



Use Exasol as a unified enterprise BI

# Summary

Exasol is an analytics data warehouse architected for performance, and runs faster than any other data warehouse and analytics database systems. But you don't have to take our word for it—the most recent annual Data Management Survey with end users from [BARC](#), an independent market research firm, reveals that 100% of the survey respondents said they chose Exasol because of our "convincing performance". The same survey also demonstrated our leadership ranking in 18 categories including Innovation, Platform reliability, Price-to-value, Support quality, and Time-to-market. Turns out, 100% of surveyed users are happy to recommend Exasol!

Excited to take a test drive with Exasol yourself? [Sign up](#) for our free trial, today!

**"Unbelievable query performance with almost zero administration effort. You just have to experience it yourself. Once you see it for yourself you won't want to work with any other database."**



**"Easy to use, easy to buy, great bang for the buck, stable/reliable, unique innovative features (external schemes and UDFs), great for hybrid scenarios, almost no maintenance and fast."**



## About Exasol

The Exasol high-performance analytics database is built to run faster than any other database, delivering next-level performance, scale and ease of use. Analyze billions of rows in seconds; run high-performance analytics securely in the cloud or on-premises; deliver frictionless analytics with self-indexing that automatically tunes performance; and scale out analytics for one transparent price.

To learn more about Exasol, please visit: <https://wwwexasol.com>

Take the next step at [exasol.com](https://exasol.com)

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