

ORACLE

Simplify the complexity of data management

—
Discover how database consolidation increases
performance and lowers costs



Consolidate and modernize your database

Fact: Every aspect of a business produces and requires information whether it's marketing or human resources. It doesn't matter if the department is responsible for campaign development or time management reports, the flow, control, and availability of this data is vital.

Database consolidation places an organization's data in one secure and integrated environment with always-on availability that reduces maintenance and support. This eBook will help you understand the distinct advantages of database consolidation and the key technology solutions that are available.

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Database consolidation meets business goals

Insights drive innovation

A key differentiator to achieving revenue goals and key performance indicators is how an organization utilizes its customer data to gain insights and deliver value.

A data-driven customer experience strategy can be challenging when the data is fragmented. Identifying individual customers and optimizing their experience can be difficult when data is spread across multiple data silos. For instance, if a retailer has information on individuals spread across an e-commerce platform, customer rewards portal, social-media analysis, and in-person purchase information, it will be a struggle to create the 360-degree view required for a fully personalized experience. Database consolidation provides an integrated approach where information can be treated with more certainty—what customers are linking to and what they are buying, even at the in-store level.

Agility is everything

Database consolidation increases an organization's agility by providing the power and capability to react faster to changing conditions. This includes the ability to reallocate consolidated resources to different databases based on the needs and priorities of each one, scaling up individual database performance to meet spikes in demand or reducing it to more efficiently support other requirements. Increasing database agility is now easier than ever, with fully autonomous databases that can be provisioned, managed, secured, and protected throughout their life cycle with little or no manual administration.

The 3rd annual State of Business Analytics survey¹

was compiled from insights from more than 250 global organizations. It uncovered trends that support the need for increased IT-driven business agility:



Companies need to close and consolidate their **financial results at a faster rate**



Timely reporting and interactive data analysis across functions is more important than ever



The adoption of **artificial intelligence and machine learning** will create competitive differentiation

IT can now be at the forefront of developing tools that meet business needs rather than just resolving technical issues. For example, consolidating supply chain and distribution data allows manufacturers to increase efficiency and profitability by continuously adjusting production and distribution plans to match parts with supply and regional demand.

¹ [Survey Says: How Better Analytics Help You Be More Agile, May 10, 2019](#)

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Increase performance

The pressure to deliver high system performance for databases and applications without a corresponding increase in costs is an everyday challenge for enterprise IT.

Database consolidation opens multiple opportunities of cost optimization such as: server load management, networking, and administrative costs. The IT department now has fewer data channels to monitor and dataflow patterns are more visible. Increasing performance for an individual database in a consolidated environment is easier than with separate systems for each database. Existing resources can now be shared instead of having to purchase new one—a process that may take months to complete.

Maintain systems availability

Scheduled downtime for maintenance and unscheduled downtime due to crashes and malfunctions affect productivity. A database that manages, secures, and upgrades itself with little or no manual administration increases availability while reducing the need for admin support after consolidation. For unscheduled downtime it's about faster recovery of data and restarting applications in a timely manner. Organizations reduce the need for admin support and increase availability throughout with database consolidation.

Ensure security

Security is improved with consolidation and standardization, which minimizes the number of vulnerabilities an organization has to protect itself against. Consolidation forces companies to standardize on fewer technologies, with fewer points of vulnerability, allowing the organization to focus on employing best practices needed to secure those technologies.

Consolidation also allows organizations to deploy security fixes more quickly simply because there are fewer combinations of cross-component changes to test and less discrete systems to manage.

Reduce operational costs

Database consolidation means cutting hardware, software, and support costs. By aligning resources to workloads as required, there is flexibility where you pay for what you need when you need it. IT will spend less time maintaining hardware and software, and more time innovating as technology becomes integral to business strategy.

Regardless of whether your databases are deployed in an on-premises data center or cloud data center, under-utilization of those systems will drive up costs. In fact, [consolidating multiple server, storage, and networking components](#) onto a cloud data center reduces management and infrastructure costs by eliminating excess capabilities.



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What is database consolidation?

Database consolidation involves running multiple databases onto a single set of computing infrastructure, either on-premises or in the cloud. This is similar to but different from server consolidation which involves consolidating multiple physical servers into a single physical server running virtual machines. Database consolidation reduces hardware requirements and takes advantage of multiple, powerful servers that work together and include dozens of processor cores in a single server.



Database consolidation means more databases run on fewer servers which reduces infrastructure and operational costs.

- Multiple databases on a single physical server
- Multiple databases on a single virtual machine
- Multiple databases on a cluster of physical servers
- Multiple databases on a cluster of virtual machines

Scaling in a crisis: How McMaster University keeps up with student demand

Three years ago, a decision to deploy a cloud database helped a top-100, public research university in Ontario, Canada keep up with student expectations without sacrificing security and data sovereignty.

[Learn more about cloud database consolidation at McMaster University](#)

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Three Oracle Database consolidation methods:

1. Virtualization, physical servers, and clustering

For example, start off with 10 databases, each on its own physical server and end up with 10 databases, each running in a cluster of virtual machines spread out across multiple physical servers. This provides higher availability for each database, greater performance, flexibility, and reduced costs with lower amounts of over provisioning.

2. Oracle multitenant option

The multitenant architecture enables an Oracle Database to function as a multitenant container database where individual pluggable databases are isolated from each other but can share physical resources and are managed together. The Oracle multitenant option enables data consolidation without altering existing applications.

3. Schema consolidation

Schema consolidation substitutes many databases for transactional, reporting, and backup purposes into a single Oracle Database for workload separation and management. This approach requires the most work, but also results in the highest level of data and resource sharing.

The three methods can be used separately or in combination to consolidate databases onto virtual machines and physical servers in single-server or clustered deployments.

Oracle Exadata Database Machine allows customers to utilize any combination of the three database consolidation methods, all of which benefit from the same underlying high-performance Exadata technology. Exadata is also the platform on top of which Autonomous Database runs in Oracle Cloud Infrastructure or customer data centers, providing customers with a broad choice of deployment options.



[Exadata On-Premises](#)

Full-stack solution which consolidates databases onto a single system improving performance, scale, and availability



[Exadata Cloud@Customer](#)

Consolidate on a high-performance cloud infrastructure with the ability to have cloud-like features in a data center



[Exadata Cloud Service](#)

Exadata Cloud Service runs any type of Oracle Database workloads with higher performance, security, and scalability



[Autonomous Database](#)

Leverages AI and machine learning to self-drive, self-secure, self-repair and reduce operational costs by up to 90%



[Autonomous Database on Exadata Cloud@Customer](#)

Transform on-premises databases by eliminating complexity and matching resources to business needs with a pay-per-use model



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Modernize and accelerate

Oracle Exadata infrastructure not only provides high performance and scalability, but also unique technology that makes it an ideal platform for database consolidation on-premises or in the cloud. Oracle Exadata Database Machine is an engineered system, purpose-built to provide optimal performance, availability, and manageability for Oracle Database. Its scalable architecture and advanced software capabilities make it ideally suited as a standard database platform for consolidation of Oracle Databases. Exadata addresses each of the following business goals: faster performance, seamless integration, and lower costs.

Transform and consolidate

- Computing, intelligent storage, and networking co-engineered with Oracle Database to work seamlessly together
- Significantly higher performance, scale, and availability with no changes to customer databases or applications
- Dramatically faster performance with SQL latencies that are up to 98% less than leading cloud database alternatives
- Fully compatible deployment options: on premises, Exadata Cloud Service in Oracle Cloud Infrastructure and Exadata Cloud@Customer which brings the Oracle Cloud into customer data centers to meet data sovereignty, security, and latency requirements
- Flexible, cost-effective licensing options that grow with your business
- Costs reduced by consolidating workloads on less infrastructure that requires less system management



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Simplify the complexity of data center infrastructure with database consolidation. The result is a more agile environment and increased operational efficiency with lower administrative support required to “keep the lights on.” Expenses are reduced through lower acquisition costs, data center costs, and administrative expenses. Freed up IT resources and high-performance operations become the catalyst for digital transformation.

Oracle Exadata Database Machine is recognized as the best architecture for next-generation database deployments. Exadata infrastructure delivers secure isolation and high performance to handle any increase in workloads while reducing response times. Exadata infrastructure can be deployed in Oracle Cloud Infrastructure and on-premises using different methods while delivering high efficiency, lower infrastructure requirements, and greater scalability so customers can efficiently meet current and future database workload requirements.



Discover how database consolidation with Oracle modernizes operations, reduces costs, and transforms IT capabilities.

Find out how

Read the blog

Download white paper



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