# Oracle Database 12c:
## Making the Impossible, Possible
## Top 5 reasons to upgrade to Oracle Database 12c

*Pythian's Oracle team has had the opportunity over this last year to explore, test, and assess every aspect of Oracle's latest database release—Oracle Database 12c—and we have to say, it's very impressive. Oracle Database 12c is by far the most important Oracle release in the last 10 years. Its advanced capabilities promote better performance, increased scalability, and easier data management. For the enterprise, this translates into significant cost savings, reduced risk, and increased flexibility.*

*Below is a list we've compiled of the top five features and options that make upgrading worthwhile. While there are many good reasons to move to Oracle Database 12c, depending on your business goals and strategies, these are the most broadly applicable to both large and small organizations.*

## 1. Consolidate your data infrastructure with pluggable databases

One of the main challenges in database management is achieving the cost benefits associated with running multiple databases on the same server or cluster without sacrificing access, growth, and optimization of each database.

Prior to Oracle Database 12c, companies had three choices for Oracle database consolidation: schema-level, database-level, and virtual server-level. Schema-level consolidation offers the best use of resources, particularly heavily-contended-for memory, by eliminating redundant shared pool areas and by sharing a common buffer cache. But many applications cannot co-exist with applications in other schemas. Database and server-level consolidation permit some hardware savings, but sharing fewer resources means fewer benefits.

Oracle Database 12c pluggable database feature allows you to reduce costs by consolidating multiple databases and isolating applications while still sharing the same memory structures. You can also move the databases that you consolidated between servers easily. If one of those databases grows more than expected, performance doesn't need to suffer on all databases—just move the "problem" one. You never know how your customers will grow, and pluggable databases deliver the benefits of virtualization, like increased flexibility and scalability, without the overhead. Pluggable databases also make it much easier to upgrade to Oracle Database 12c and with less risk.

## 2. Simplify information lifecycle management with data tiering

The value of data changes over time. A purchase completed today, for example, may need to be easily accessed in near real-time, because it impacts other parts of the business. A purchase made in 2008, however, is more interesting from a statistical perspective and can be part of batch reporting.
Oracle Database 12c offers a data-tiering feature, which moves data to different types of storage based on its usage. These rules can be applied as you define your database. Data that doesn't need to be accessed frequently, for example, can be compressed and then moved to slower storage. The ability to dynamically classify and move data simplifies information management, saves money on storage, and improves performance.

## 3. Increase performance across globally distributed databases with GDS

Before Oracle Database 12c, global load balancing was delivered through external hardware or software products, which was highly inefficient because of the lack of integration. The result was slow query times because of high demand or network latency from some databases, whereas other database resources would be underutilized.

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With Oracle Database 12c, dynamic, global load balancing is now integrated, so that client connections and workload requests are automatically equalized across resources. You can run load balancing across clusters and geographies, which allows traffic to be distributed between facilities in real time. The result is significantly increased performance, higher availability, and improved resource utilization. Oracle Database 12c GDS is an exceptional workload management solution for large environments that have multiple locations with active replication, and large, distributed reader farms

## 4. Improve productivity with application continuity

Oracle has put a lot of effort into high availability for Oracle RAC, but until now, one nagging issue has remained:  if a database server goes down, what do you do about in-flight data changes?  How can an application even know a commit was successful?

Prior to Oracle Database 12c, DBAs could be spend hours making changes to a database and would have to choose between committing these changes too early and possibly losing their work. With Oracle Database 12c application continuity feature, they don't have to make that choice. Java-based applications can seamlessly fail over in case of a server failure—even when there are outstanding data changes.  It does this by keeping a record of uncommitted changes and seamlessly replaying them in case of a failure—all of which is completely transparent to the application. The net effect is higher availability, improved productivity, and cost savings because applications can now handle server failures without complicated and expensive coding projects.

## 5. Reduce costs and improve manageability with Flex ASM

Centralized enterprise storage can significantly reduce performance and become very expensive—easily costing millions of dollars in some cases. For start-ups and small companies, this option is usually cost-prohibitive.

Oracle Database 12c Flex ASM's flexible storage configurations help reduce storage costs by allowing you to decentralize storage using disks on computers and servers. With Flex ASM, it is now possible to have a storage server with only Oracle ASM software and provide storage to multiple remote databases.  Consolidating all of your storage requirements onto disks not only significantly reduces costs, but by balancing data across several disks which increases performance and enhances manageability. Storing data on a separate physical server from the database server means the system can support more database clients while reducing the system's overall footprint.

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