Is your database ready for the Cognitive Era?
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**Highlights**

- IBM® Db2® database software supports hybrid cloud for rapid development of new applications to help you compete in the digital era.
- Db2 with IBM BLU Acceleration® technology allows you to fully utilize available system resources to deliver results rapidly by running ad hoc queries and real-time analytics to generate actionable insights.
- Db2 Hosted lets you push data closer to where users need it.
- Autonomic features and self-healing capabilities can address common database issues while further simplifying management.

Welcome to the era of the digital enterprise, where digital is your journey and cognitive is your destination. As business leaders, you are under growing pressure to use information to its fullest potential, delivering new customer experiences as fuel for business growth. The digital economy is changing the way we gather information, gain insights, reinvent our businesses and innovate both quickly and iteratively.

In this environment, it’s not enough to just manage data volume. Organizations need to become cognitive businesses, combining information and experience to unlock deeper understanding of customers, processes and strategies. Hybrid cloud is the new normal, accelerating your transformation to a digital enterprise through business innovation and enhanced cloud-enabled solutions designed to maximize customer engagement, as shown in Figure 1. In fact, 70 percent of IT decision-makers say they expect to always have a hybrid blend of traditional IT and cloud, according to a 2016 IBM Center for Applied Insights survey.

A hybrid cloud environment, combining traditional IT systems and public cloud, enables you to extend business processes beyond the walls of your organization. For example, many organizations use public cloud as a collaborative development environment to create innovative applications that can then be ported to an on-premises or hybrid production environment.

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**Figure 1:** Hybrid cloud is becoming the preferred state of IT.

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<thead>
<tr>
<th>Public cloud</th>
<th>Development infrastructure</th>
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<td></td>
<td>• Simplified development process</td>
</tr>
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<td></td>
<td>• Portable and collaborative</td>
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<td>• New solutions</td>
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</tbody>
</table>

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<tr>
<th>Hosted private cloud</th>
<th>Dedicated environment</th>
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</thead>
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<tr>
<td></td>
<td>• Application development for apps with mission-critical data</td>
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<td>• Business process information, secured</td>
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<th>Hybrid cloud</th>
<th>End-game stage for most enterprises</th>
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<td>• Business process applications stay intact</td>
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<td></td>
<td>• Managed/new applications on the cloud</td>
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<td>• Ubiquitous database software</td>
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IBM Db2 software is your transformation agent in this new era of the digital enterprise and cloud computing. It allows you to make use of data from multiple sources, connect enterprise data to new web or mobile applications, and support born-on-the-cloud applications. And it's available as a cloud service, enabling you to push data closer to where users need and access it. The versatility of Db2 allows it to support practically any application; coupled with massive data scalability, these capabilities enable the innovation and agility required to thrive in the digital economy.

**Data for next-generation applications**

As organizations develop next-generation applications for the digital era, many are using cognitive computing ushered in by IBM Watson® technology. Cognitive applications can learn and react to customer preferences, and then use that information to support capabilities such as confidence-weighted outcomes with data transparency, systematic learning and natural language processing.

To make the most of these next-generation applications, you need a next-generation database. It must handle a massive volume of data while delivering high performance to support real-time analytics. At the same time, it must provide data availability for demanding applications, scalability for growth and flexibility for responding to changes.

Db2 enables you to meet these challenges without breaking the budget. It provides enterprise-class scalability and pervasive query parallelism. It leverages adaptive in-memory BLU Acceleration technology to increase response time and better support the analytics needs of your business. Db2 also handles structured and semi-structured data from a variety of sources to provide deep insight. With the ability to support thousands of terabytes, you can use historic and current data to identify trends and make sound decisions.

Forward-thinking organizations are embracing all available data to engage clients more deeply, anticipate and resolve problems before they happen, and uncover entirely new business models. The key to making it work is using software and systems that are designed for the unique challenges and opportunities of the Cognitive Era™—systems like IBM Db2 solutions.

**Make short work of big data**

To make the most of big data volumes and capitalize on time-sensitive opportunities, you need to generate new insights rapidly. Db2 software is a next-generation database that changes the game for in-memory computing. Leveraging the innovative BLU Acceleration technology from IBM Research and Development labs, Db2 databases provide extreme performance with massively parallel processing and the simplicity of a load-and-go setup to enable speed-of-thought analytics without the constraints of other in-memory solutions. With Db2 software, you can analyze petabytes of data faster and more efficiently than ever before to uncover insights from your operational and historical data for growing revenue, reducing costs and lowering risk.

Db2 leads the database software field on multiple fronts, as demonstrated by recent client testimonials. The new generation of Db2 helps you get more value from big data while dramatically improving IT economics.

Db2 software can deliver business answers on demand with in-memory computing performance that’s not limited by availability of memory. It allows you to fully utilize available system resources to deliver results rapidly. With the ability to run ad hoc queries and real-time analytics to generate actionable insights at the speed of thought, Db2 software helps you unlock new markets and revenue opportunities.
Columnar data storage and encoded compression technologies help improve database efficiency by significantly reducing the amount of storage capacity required — resulting in lower costs and faster response times.

**When system downtime is not an option**

Marketers want to know a great deal of information about their customers:

- Which specific promotion was responded to, from what device, when and where
- How long someone spent looking at each page or item online
- Which navigation path they took
- What they put into their shopping cart and what they removed
- Even what social media posts they made before, during or after their engagement

All this information makes transactional data richer and more valuable, but it must be captured, analyzed and put to use. Databases must be prepared to handle the increasing volume of new data, and they must be available around the clock. This volume of data presents a risk to many organizations: Can your systems handle the load and deliver results? Can they meet your service-level requirements for availability and performance to keep your business running?

With Db2 database software, you’re able to support end-to-end business processes, online transactions, queries, analytics and other tasks even during planned and unplanned outages. Plus, Db2 software helps ensure always-available business data and gives your organization the transparent scalability at will to handle unexpected transactional demand. In addition, Db2 provides the resiliency to continue business operations and recover quickly if a disaster strikes.

The high-availability disaster recovery (HADR) capabilities of Db2 database software help keep transactions flowing — even following large-scale outages caused by weather, power failures or other events. By replicating data to one or more remote disaster recovery sites, you can protect and maintain data availability for your critical business processes and customer applications.

For another layer of assurance, you can boost capacity and expand or contract your environment as needed with IBM Db2 pureScale® technology, available in IBM Db2 Advanced editions. Using Db2 pureScale technology, administrators can transparently add and manage multiple database nodes, which share data and workload in a clustered system, without changing applications or data distribution. This capability can free applications from the underlying complexities of database architecture, simplify application coding and testing, and improve developer productivity. Thanks to broad choices for infrastructure and commodity network hardware, you can change the economics of continuous availability for a much wider range of use cases.

“**IBM Db2 brings new economics to the continuity of available data, allowing us to transform our infrastructure without prohibitive costs.**”

— Yuan Chunguang, Head of Database Operation and Maintenance, Science and Technology Department, China Minsheng Banking Corporation
Combine the power of Db2 with the agility of cloud

IBM Db2 Hosted offers the same functionality as its on-premises equivalent—along with rapid self-service cloud deployment and pay-as-you-go licensing that make it especially useful in the following scenarios:

- **Cloud strategy adherence:** Db2 Hosted helps you comply with mandates to deploy new projects to the cloud to reduce capital IT expenditures and conserve on-premises data center resources.
- **Short-term database projects:** Db2 Hosted is ideal for born-on-the-cloud applications and other short-term development or analytics projects, because you pay only for the time you use it.
- **Disaster recovery:** On-premises Db2 database software instances can replicate data to Db2 Hosted, which can be your fail-safe in the event of a primary data center disaster.
- **Geographic reach and regulatory compliance:** Deploy Db2 Hosted to SoftLayer® data centers around the world to help you meet requirements for hosting data in specific regions or countries.

Protect your vital information assets

Leveraging data assets is necessary for business growth. Data governance rules dictate strict standards for data protection and organizations can face heavy penalties for failing to meet these standards. Db2 software helps you achieve security and privacy goals while maintaining high performance, protecting your data from external and internal threats, and keeping it accessible to those who need it.

The essential security measures in Db2 start with reliable authentication, authorization and multilevel access control. Db2 software enables tight control over exactly who can access certain data—or even confirm that it exists. Furthermore, the industrial strength of Db2 encryption capabilities help protect your data in motion or at rest from prying eyes.

Improve cost-effectiveness—the database matters

IT costs boil down to two elements: performance and people. Costs for servers, data storage, floor space, cooling and electricity tend to go up approximately in proportion to processing capacity. How efficiently your database delivers and manages performance is, therefore, a fundamental issue in cost control.
By increasing the processing performance of your database and your infrastructure, you can reduce data center energy and real estate requirements. With a powerful database and dense infrastructure, you can also reduce the costs of buying and operating hardware.

People are the other part of the IT cost equation. IT systems must be programmed, maintained and occasionally fixed. But your senior IT people should be focused on innovating and pushing the business forward rather than handling trouble tickets. An easy-to-maintain database with well-integrated tools and autonomic capabilities requires fewer staff members for maintenance, so you can deploy more of your skilled staff to higher-value tasks.

Db2 software helps your IT organization make the most of both performance and people. It delivers outstanding performance and time-saving automation. You can maintain investments in your existing environments, including SAP and other solutions, and skills, and adopt next-generation in-memory technology without disrupting your business.

Time and again, Db2 has demonstrated high overall performance and high performance per core. The in-memory computing technology in Db2 software with BLU Acceleration technology runs on x86 and other commodity hardware, and is also optimized to leverage the IBM POWER8® processor. IBM Power Systems™ runs more concurrent queries in parallel faster, across multiple cores with more threads per core.¹

“With more detailed, responsive monitoring in place given by IBM Db2 with BLU Acceleration, we have the tools to ensure consistently excellent service across all of our channels. Even better, this is achieved alongside greater internal efficiency with easier database management and lower storage costs.”

— Gustavo Maia Aguiar, Leader of Information Technology, Sicoob

Database performance also depends heavily on storage efficiency—which is why Db2 software uses multi-temperature data management and advanced workload-balancing techniques to promote efficient use of storage assets for a given set of workloads. Deep and adaptive compression technologies help dramatically reduce storage requirements, enhance data availability and shorten backup-and-restore windows. By reducing storage capacity requirements, Db2 helps you drive down hardware and storage costs while also cutting energy costs and boosting performance.

To help reduce personnel costs, the intelligent administration features in Db2 software are designed to make it relatively easy to set up and maintain a database. For example, Db2 database software can automatically perform high-skill tasks such as memory tuning and optimization for faster processing, freeing IT staff to work on the next innovation.
Autonomic features and self-healing capabilities help address common database issues while further simplifying management. For example, the Db2 Health Center continually monitors the database, searching for potential problems. If the Health Center discovers an issue, such as when the database is running low on memory, it automatically notifies administrators and suggests solutions for the problem, helping make faster adjustments.

Db2 Configuration Advisor can save database administrators time by automatically configuring a database for use—setting the processor speed, the amount of memory that needs to be allocated and the number of users on the system. A related capability, the self-tuning memory manager (STMM), helps avoid slowdowns in performance that could negatively affect business operations.

**Help reduce application migration cost and risk**

The Db2 SQL compatibility feature can greatly reduce the cost and risk of migrating Oracle Database and data mart applications to take advantage of Db2 software. Db2 includes extensive native support for the Oracle PL/SQL procedural language, as well as new data types, scalar functions, improved concurrency, built-in packages and more. Applications built to run on Oracle databases or data marts require few or no code changes to run on Db2, which helps speed up migration and reduce associated risks. In fact, Db2 software achieves an average of 98 percent compatibility with Oracle PL/SQL.

You can leverage your existing Oracle database skills and investments while taking advantage of the speed and simplicity of BLU Acceleration technology.

**Future-ready, today**

Today more than ever, effective data management is critical to business success. Db2 is ready for the challenge. Drawing on field-proven technologies from across the IBM portfolio, Db2 software combines the high performance needed for hybrid environments with exceptional security-rich features and the availability, scalability and flexibility that a digital enterprise demands. By improving data management efficiency and helping to simplifying management, Db2 helps you capitalize on the potential of cloud and cognitive computing while helping to drive down costs.

Make sure your database and IT resources are fully prepared for the Cognitive Era. IBM and Db2 database software are ready today.

**Why IBM Db2?**

Db2 is hard-working database software for the business that never stops. By combining continuously available transactional processing with high-speed analytics, Db2 software helps simplify the IT landscape to deliver better performance with fewer resources. It’s designed for extremely fast time to value and operational simplicity, and can be deployed on premises or in the cloud for maximum flexibility.

**For more information**

To learn more about Db2 database software, contact your IBM representative or IBM Business Partner, or visit: ibm.com/db2

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