

# New World, New Tools: Transforming DB2 Data Management for Today's Digital Business

Enterprise IT and DB2 for z Systems have changed dramatically over the years, but many organizations haven't updated their data management tools or processes, leading to costly downtime and unmet SLAs. They need simple, intelligent, and powerful next-generation data management solutions designed specifically for the digital reality.



Twenty years ago, the world was a very different place. The Internet was still in its infancy, and the dot-com bubble hadn't yet formed—let alone burst. Trendy cellphone owners were showing off their flip phones, and the first smartphones were years away.

Since then, the digital economy has exploded, radically changing the ways that businesses and their customers interact. According to [Forrester Research](#), U.S. businesses will likely spend more than \$1 trillion on e-commerce purchases by 2020, and U.S. consumers will spend nearly another half trillion on online purchases by that time. The [Pew Research Center](#) reports that 68% of U.S. adults now own a smartphone, and 92% own some sort of mobile device.

In this new world, consumers expect to be able to get personalized service any time, from anywhere. In order to meet those expectations, organizations are creating and deploying new applications at a staggering rate. [Gartner predicts](#) that worldwide spending on enterprise application software will increase from \$149.9 billion in 2015 to more than \$201 billion in 2019. And much of that spending will be on software organizations build or customize themselves rather than out-of-the-box solutions.

All those applications are generating a massive amount of data. According to the latest [Digital Universe study from IDC](#), the amount of data in digital systems worldwide is doubling every two years and will reach 44 zettabytes (44 trillion gigabytes) by 2020.

Data growth puts tremendous pressure on IT and mainframe database administrators (DBAs). This data is like a massive wave bearing down on your system. If your business is not prepared, this



data can flood your system and your applications, endangering not only your efficiency but your business itself. Massive data growth isn't the only challenge they face. Customers now expect to be able to conduct business around the clock, leaving IT little or no window for downtime to conduct database maintenance. At the same time, governments have passed new regulations increasing their compliance requirements related to the management and availability of data.

### New DB2, Old Tools

In order to keep up with the digital demands, DB2 has changed significantly over the years. The latest releases can handle many different types of data that older versions of the database could not. For example, DB2 can now handle pureXML and unstructured data, including images, audio and video files, and large text documents such as contracts, emails, reports, and medical records. These types of unstructured data are among the fastest growing data, and enterprises are increasingly looking to derive previous hidden insights from these sources. Unfortunately, unstructured data drives new data

management demands and processes that the IT team must maintain.

Today's mainframe DB2 can also handle more data, faster than ever before. Multimember data-sharing groups can handle 1,000 or more transactions per second, and single DB2 subsystems can sustain 750 or more transactions per second for an hour or more. The theoretical maximum number of rows for one DB2 table is 1 trillion and growing, and it can support buffer pools with more than 100 GB worth of data.

In addition, DB2 has updated its data structures. Most noticeably, it has introduced universal tablespaces, which combine the benefits of partitioned and segmented tablespaces while improving performance and supporting some new data management features.

However, while DB2 has changed dramatically to keep up, most data management tools and processes haven't yet made the necessary changes. They are still incrementally updating outdated architecture designed when DB2 was a much simpler database. Many organizations continue to use the same manual and error-prone processes they used 10 or 20 years ago to maintain their new digital databases. And unfortunately, this is leading to some big problems.

### The Problem: Outdated Data Management

In the "good old days," when DBAs had nightly windows, they could take their databases offline and perform routine maintenance for up to 12 hours without interfering with customers. Over time, these windows shrank until they were nearly nonexistent. In fact, in its 2014 mainframe survey, BMC Software found that 39% of enterprises said they could not tolerate outages longer than one minute for their critical databases.

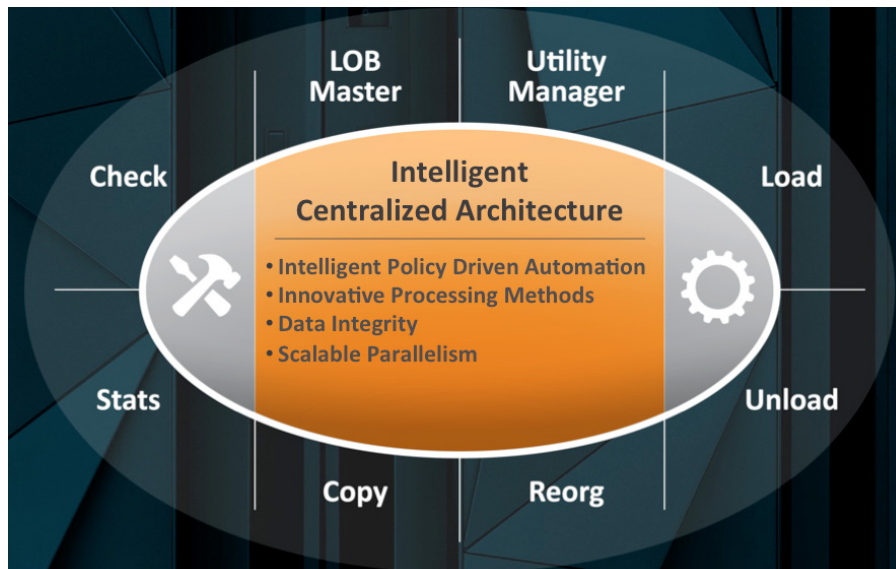
### BMC NEXT GENERATION TECHNOLOGY (NGT) FOR DB2

*Designed specifically to scale to meet the needs of 24x7 digital businesses, NGT for DB2 provides a new paradigm for database maintenance—one that is simple, intelligent, and powerful. It provides a centralized architecture designed to provide zero-outage database management that is scalable to the extremes of digital business, with intelligent policy-driven automation that simplifies complex systems, increases performance, and reduces costs.*

Because traditional data management tools require at least some downtime for maintenance, DBAs are left in a bind: They need to take their databases offline if they want to keep them performing optimally, but taking databases offline for even a minute would have serious financial repercussions for their companies. As a result, many choose to skip routine maintenance or write scripts that do the job only partially.

This decision has cascading repercussions. The applications slow because the underlying data isn't being optimized as often as it should. That means IT is unable to meet its service-level agreements (SLAs), database transactions aren't being processed in a timely manner, and costs are increasing. DBAs begin to spend more and more of their time reacting to problems rather than proactively maintaining their databases to prevent issues. Ultimately, this results in lost business for the company and higher costs and more headaches for IT. Often IT relies on external "automation" packages that only simplify setup but do not actually automate any of the process.

For more information, [visit www.bmc.com/ngt](http://www.bmc.com/ngt)



Making matters worse, most IT shops are facing new staffing realities. Mainframe management traditionally requires a high level of expertise in the system. Veteran mainframe experts are reaching retirement age and leaving their companies. The younger generation of DBAs has grown up with distributed computing and, in general, is more comfortable with a graphical interface and a mouse than with mainframe systems. In addition, many organizations have diversified their databases, and they now expect their DBAs to be generalists who can work on a wide variety of databases and platforms, rather than specialists who know all the intricacies of DB2 on z Systems. These younger DBAs have less specialized knowledge and are expected to be responsible for managing eight times as much data per professional as their predecessors were.

## The Solution: Next-Generation Data Management

To deal with these new realities, enterprises need next-generation data management tools with three key capabilities. First, they need **data optimization** solutions that allow DBAs to perform routine maintenance without taking DB2 offline, even for a second. IT must be able to reorganize tablespaces as often as necessary to maintain peak efficiency, whether managing structured or unstructured data. These tools must automate the process in a new way in order to minimize the burden on DBAs. Real automation must make real-time dynamic decisions based on user-defined policies and system statistics while the utility is running to determine not only what needs to be processed, but how. These tools must be able to handle the incredible scale of the new DB2 with ease so that IT does not have to change its processes or make sacrifices of necessary processes just to get by. Next-generation data optimization speeds performance, allowing IT to meet its SLAs and support critical business functions.

Second, organizations need **administration tools** that allow them to make changes to the data schema without taking the database offline. These solutions should allow IT to quickly, safely, and confidently alter their databases to meet the needs of changing applications. They should also allow IT workers to move and convert data when they need to, and they should make it easy to connect DB2 to new applications, keeping the enterprise agile.

Third, enterprises need next-generation **backup and recovery** tools that allow them not only to protect their data, but also to prove for compliance purposes that their data is protected. These next-generation solutions must allow organizations to verify

recoverability and predict the amount of time required to restore service after an incident. In addition, they should proactively alert IT to any potential problems with the backup and recovery process before they occur. Often, companies rely on technology such as mirroring to “check the box” of recoverability. Unfortunately, the majority of issues requiring recovery are duplicated to all remote sites only through mirroring. Next-generation backup and recovery must account for all types of issues and eliminate the costly “think time” often required in a recovery situation so the business and all applications stay available and accurate for customers.

In order to meet the needs of their current workforce, enterprises need all these tools to be simple, intelligent, and powerful. Their data management solutions must allow their current staff to discover, analyze, optimize, and predict their data management needs and capabilities. These next-generation solutions should enable newer generalist DBAs who don't have in-depth, specialized knowledge of the mainframe platform and DB2 on z Systems to complete their work with a minimum amount of effort and time, helping IT become more efficient.

### Real-World Results

While many organizations are still trying to make do with the DB2 management tools and process they used 10 or 20 years ago, IT leaders have upgraded to next-generation technology. These enterprises have found that after upgrading their data management capabilities, they are able to handle more data with their current DBA staff, while decreasing costs and increasing availability.

For example, [Florida Hospital](#), the largest hospital in the United

States, runs DB2 on its mainframe, and it needs data to be available 24 hours a day, seven days a week in order to support ongoing clinical operations. In the past, it had difficulty completing DB2 maintenance, and administrators found that backup processes were running around the clock without ever completing. Since deploying BMC's Next Generation Technology (NGT), they haven't experienced any data integrity issues, and they are now able to complete maintenance and backups. In addition, these utilities kept the hospital's costs low, freeing up funds for additional software that helped it become even more efficient.

Businesses around the world—in credit card processing, financial services, insurance, retail, and virtually all other industries—have embraced BMC's Next Generation Technology and are enjoying automated DB2 data management that provides full application availability, increased application performance, and more efficient IT departments, even as their data continues to grow and become more complex.

For organizations that haven't yet updated their DB2 data management tools, now is the time to investigate and deploy next-generation solutions. The world—and DB2—have changed significantly. It's time for data management tools and processes to change as well.

.....

**BMC is a global leader in innovative software solutions that enable businesses to transform into digital enterprises for the ultimate competitive advantage. Our Digital Enterprise Management solutions are designed to make digital business fast, seamless, and optimized, from mainframe to mobile to cloud and beyond. BMC – Bring IT to Life**  
**BMC digital IT transforms 82% of the Fortune 500®.**

For more, go to [www.bmc.com/ngt](http://www.bmc.com/ngt)