

White Paper

# Building Smarter, Faster, and Scalable Data-rich Applications for Businesses that Operate in Real Time

Operational and Analytics Workloads on a Unified Data Platform

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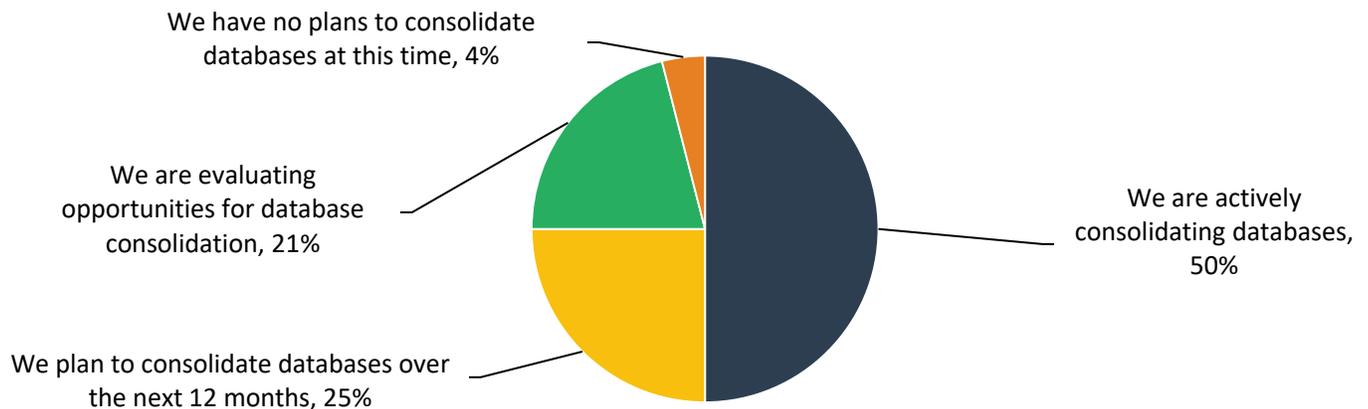
## Modern Applications Require a Modern Database

As the technology landscape evolves, organizations struggle with addressing the needs of modern applications. One reason for this is that organizations continue to leverage traditional database infrastructures, even force-fitting modern applications into an RDBMS due to familiarity or internal mandate. This leads to headaches for DBAs who are then stuck with managing independent physical infrastructures for each application, while also struggling to meet the performance, scalability, and flexibility requirements of many of these modern applications. In fact, ESG recently surveyed more than 350 IT and business professionals across enterprise and midmarket organizations familiar with their organization’s current database environment and asked them about the top challenges with their current database deployments and infrastructure. Unsurprisingly, the top two most-cited challenges were managing data growth and database size (48%), and meeting database performance requirements (35%).<sup>1</sup>

These challenges are compounded by the large number of production databases deployed within a single organization that are a mix of RDBMS and NoSQL. In fact, ESG research shows that 38% of respondents report that they have between 25 and 100 unique database instances, while another 20% have over 100. The infrastructure cost alone must be alarmingly high, never mind the impressive feat of managing all of them and being able to respond to an issue when something goes wrong. As such, database consolidation and modernization initiatives are well underway, with 50% of organizations currently consolidating their database infrastructures and another 25% planning to do so over the next 12 months (see Figure 1). And during these efforts, it is essential for organizations to understand how their existing mission-critical databases fit into their plans.

**Figure 1. Database Consolidation Efforts**

**Which of the following statements regarding database consolidation at your organization is most accurate? (Percent of respondents, N=354)**



Source: Enterprise Strategy Group, 2017

These consolidation efforts are not just for traditional RDBMSs—NoSQL database technologies are included, as they are also widely adopted. ESG research shows that 78% of organizations currently use NoSQL databases, while another 18% plan to or are interested in using them in the next 12 months.<sup>2</sup> NoSQL databases rely on a different architecture than that of an RDBMS, benefiting from being distributed across multiple servers. This means that, to address performance or scalability challenges in NoSQL environments, DBAs can simply scale out their infrastructures by adding another server.

<sup>1</sup> Source: ESG Survey, *Enterprise Database Trends*, January 2017. All ESG research references and charts in this white paper are taken from this report, unless otherwise noted.

<sup>2</sup> Source: ESG Brief, [Market Disruption: Next-generation Databases](#), April 2017.

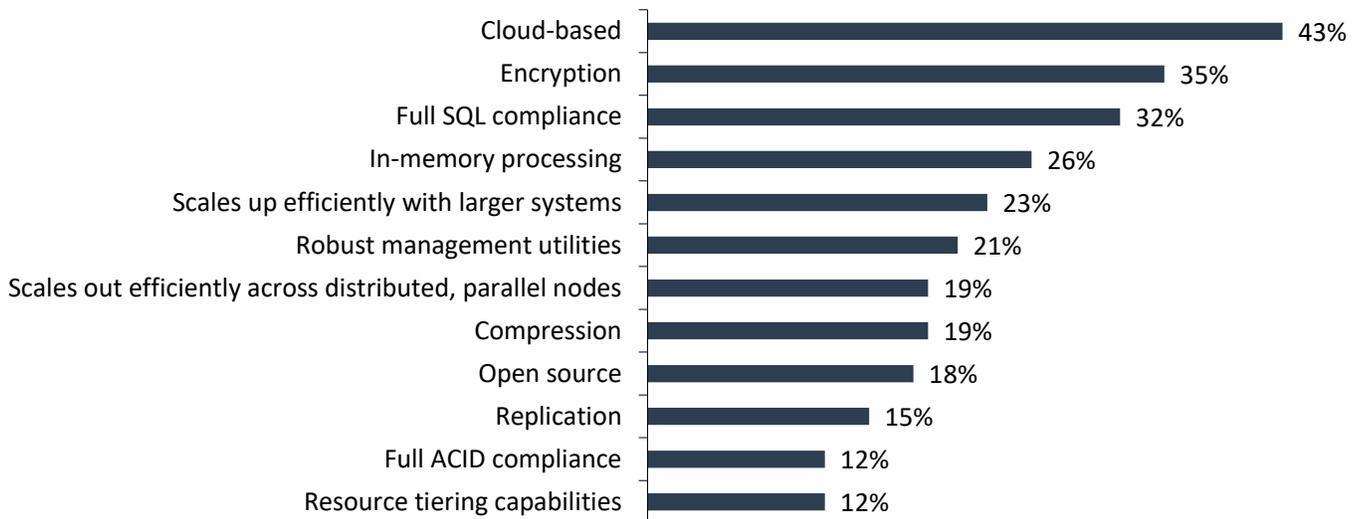
Organizations are working to reduce their data footprints across various operational, transactional, and analytical workloads, including real-time, historical, predictive, natural language processing, and business intelligence. As they do, finding just a few vendors that address all the requirements of every database workload is nearly impossible, never mind finding a single vendor that does it all. Organizations want to work with as few vendors as possible while ensuring all their database requirements are met, regardless of database workload or data type. Further, organizations want peace of mind knowing the lifeline of their business—the data—is in the hands of an industry-proven vendor that has and will continue to exceed customer expectations.

### Attributes for a Modern Database Solution

As organizations are consolidating their database infrastructures and transforming into more data-driven entities, ESG research shows that a core set of attributes are being prioritized, regardless of database type. As shown in Figure 2, when asked about the most important attributes and capabilities that their DBAs are looking for when evaluating and selecting databases, nearly half of respondents selected the fact that the database is based in the cloud.<sup>3</sup>

**Figure 2. Important Attributes and Capabilities When Evaluating and Selecting Databases**

**When evaluating and selecting databases, which of the following are the most important attributes and capabilities to your organization? (Percent of respondents, N=354, three responses accepted)**



Source: Enterprise Strategy Group, 2017

Additional key attributes include encryption for security purposes, being fully SQL compliant (since SQL is the most widely understood database query language), in-memory processing for fast performance and low latency, scale-up and scale-out capabilities for deployment agility and flexibility, and robust management utilities to minimize the burden of managing a growing database and database infrastructure on-premises and in the cloud.<sup>4</sup> It is important to note that these attributes, when combined, create the ideal database solution. As an example, if a database just used in-memory technology, while delivering high levels of performance, it would still be insufficient without additional capabilities to improve durability and maintain reasonable costs at scale.

When looking at the complete list of database attributes, it is clear there is a need to address both transactional processing and analytics processing within a single solution or platform. In fact, ESG research shows that hybrid transactional and analytics processing (HTAP) is a growing priority, especially when associated with in-memory database processing. In fact, nearly 70% of organizations use in-memory processing to support HTAP environments.<sup>5</sup> To address these needs in the

<sup>3</sup> Source: ESG Brief, [Database Purchase Criteria](#), June 2017.

<sup>4</sup> Source: ESG Brief, [Database Purchase Criteria](#), June 2017.

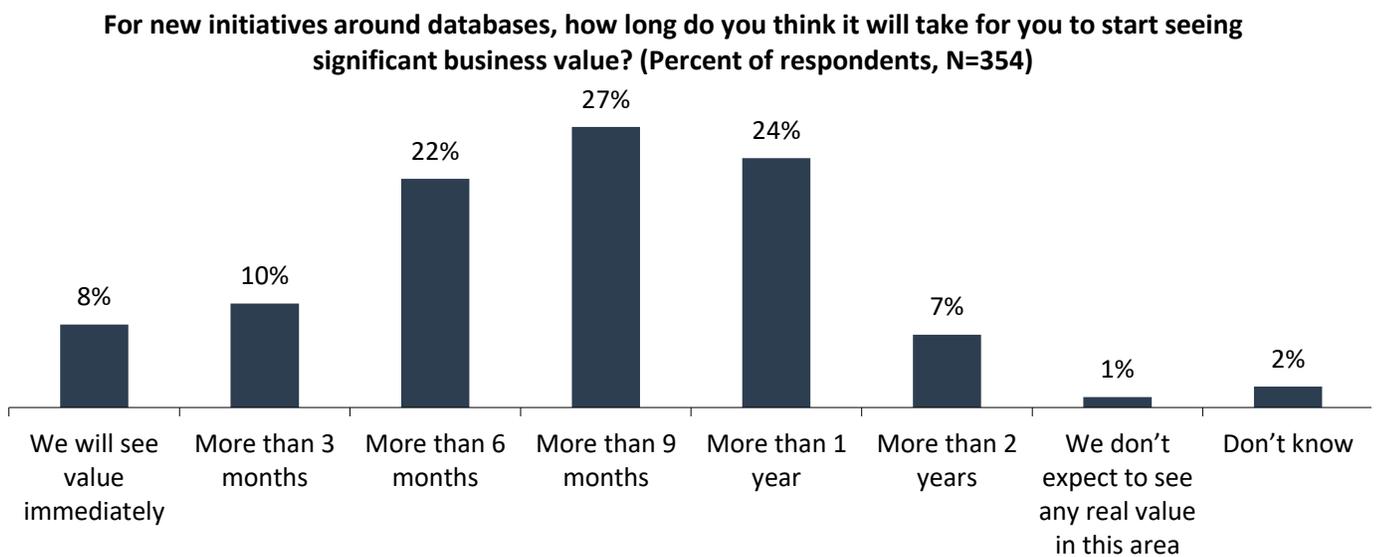
<sup>5</sup> Source: ESG Brief, [Strategies for Enhancing Database Performance](#), June 2017.

market, data platforms are emerging that help enable organizations to build intelligent, data-rich applications that support multiple use cases that span both transaction processing and analytics. These platforms should enable organizations to collect, integrate, manage, and analyze structured, semi-structured, and unstructured data quickly and easily, while continuing to provide freedom of choice by seamlessly supporting the integration of third-party applications and open-source ecosystem tools.

### A Need for Faster Time to Value

After understanding current challenges, the road that must be taken to modernize, and the key attributes and capabilities organizations are looking for to satisfy their requirements, the final piece of the puzzle is associated with time to value. With organizations carving out large budgets, expected timelines and, more importantly, expectations around the length of time until significant business value is achieved, should be fully understood before making a final decision on a solution or platform. As shown in Figure 3, ESG research shows that the time associated with new database initiatives, from selecting the right technology to seeing significant business benefits, can be quite lengthy—over 80% of organizations expect the time until they start seeing business value to be more than six months, while over 25% of organizations expect that timeframe to be more than a year. As such, an agile and flexible solution that is easily deployed and managed both on-premises and in the cloud, which also satisfies as many database workload requirements as possible associated with scalability, performance, and reliability, will ensure that a solution lands atop a buyer’s shopping list.

**Figure 3. Time Expected to Pass Before Seeing Significant Business Value**



Source: Enterprise Strategy Group, 2017

### InterSystems IRIS Data Platform

With the landscape considerations above in mind, InterSystems has unveiled InterSystems IRIS Data Platform, a unified, real-time platform built from the ground up that wraps powerful data management, analytics, and interoperability into a single solution. InterSystems IRIS is designed to handle and optimize mixed workloads and data-intensive applications at scale in the cloud, on-premises, or in hybrid environments, while providing built-in security, proven reliability, and support.

InterSystems IRIS provides a single database with a flexible underlying data representation capable of multiple projections of the same data, rather than a traditional siloed database approach, to meet modern business process requirements. This multi-model approach or the ability to provide a single integrated database back-end that supports multiple data models, is flexible enough to support nearly every type of data model including relational, key-value, document, and object and a variety of schema-free NoSQL data. Its ability to process both analytical and transactional workloads within the same database not only reduces latency, but also eliminates management complexities associated with multiple database

deployments. This level of agility enables InterSystems IRIS to process and index transactional data while simultaneously running real-time or historical analytics for a faster response to the business with better insight. The platform also provides support for natural language processing of unstructured data from sources such as emails and social media.

Just as important as the core technology and performance capabilities are its interoperability and accessibility features. The comprehensive integration and open analytics provide DBAs with streamlined data coordination, business orchestration, and hands-on management. Even cloud deployments become less intimidating with built-in, automated cloud-first deployments. And with the adoption of tools such as Apache Spark to help create and build intelligent, data-rich applications that can respond to the business in real time, InterSystems IRIS also includes integration support for widely used open-source tools. These tools offer organizations the opportunity to spend less time treading water with administration and more time making proactive and informed decisions that enable a more agile business.

## The Bigger Truth

As organizations push to become more data-driven, they are also recognizing a growing list of requirements that necessitates the use of more advanced cloud-based applications to meet their modernization initiatives. The requirements to support growing and more diverse data sets have exceeded the limits of traditional database architectures. As they increasingly need to respond to real-time events with real-time insights, organizations are demanding faster performance, easier management, seamless interoperability with existing infrastructures and open-source tools, and the ability to run whatever they want wherever they want, whether on-premises or in the cloud. Organizations want to consolidate their database infrastructures and analytics workflows to leverage as few tools and vendors as possible, with the ideal scenario being an all-inclusive platform that can address a range of requirements and data types across both operational and analytics workloads and use cases.

InterSystems IRIS Data Platform is an agile, unified engine that handles the processing of both transactional and analytics use cases. Regardless of data size, structure, or location, organizations can bring together data from disparate sources and applications to provide real-time and historical insights through interoperability across existing business processes and technologies, including integration with commonly used open-source third-party tools. Further, because it is an open analytics platform, InterSystems IRIS can incorporate real-time and batch analytics into applications, including business intelligence, predictive models, machine learning, and natural language processing. And the platform can provide all of this in an agile way, with support for both on-premises and cloud environments to deliver scale-up and scale-out capabilities.

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