

# InterSystems IRIS Data Platform



A next-generation data platform, InterSystems IRIS simplifies implementation and maintenance of converged data architectures.

## InterSystems in the Era of Data Convergence

More than ever, organizations are striving to gain an edge, deliver value to customers, reduce risk, respond quickly to business needs, and out-innovate their competition. To achieve these goals, organizations need to consolidate their data and tools sprawl and to access a single, efficient, accurate view of current, consistent, and trusted data. As data grows, organizations must rise to the challenge of growing data silos, instead integrating and leveraging data from internal and external sources into a unified, scalable converged data solution.

Lying at the heart of our software universe, the InterSystems IRIS® data platform meets this 21st-century challenge and offers a complete, modern solution for data management and applications that includes:

- **Security, reliability, and flexible deployment:** cloud & cloud services, local (on-prem) or mixed deployment
- **A powerful, fast database:** accepting virtually any kind of data (multi-modal); structuring data in a wide range of data models (multi-model, not just relational); and enabling very large transactional and query workloads simultaneously (massively concurrent). Common governance for all data and jobs.
- **Massive vertical and horizontal scalability:** scaling both on standalone systems and across large clusters of multiple servers, with powerful, fast proprietary caching and sharding features.
- **Analytical capabilities:** business intelligence (BI), reporting, adaptive analytics, ultrafast columnar storage, and interfacing with third-party analytics tools.
- **Vector search, natural language processing (NLP), and vector database:** a complete foundation for generative artificial intelligence (genAI) applications, including ultrafast vector search and RAG.
- **Application development environment:** advanced development for both server-side and client-side applications, with interfaces to third-party applications through up-to-date API libraries. Compute brought to data without copying or moving.

Sharding and ECP are transparently combined so applications can handle both large data volumes and large compute workloads.

## Security, Reliability & Deployment

### Deployment: Cloud or Cloud Services, Local or Mixed

InterSystems IRIS is available as a managed service and deployable on all major cloud platforms, in private clouds, on premises, and in multi-cloud and hybrid environments. This flexibility:

- Eliminates lock-in to a single cloud provider.
- Runs on standard hardware with no custom configurations required.
- Supports various cloud and hybrid deployments through a single API, without modifications.
- Continuously leverages the optimizations released by the various cloud providers and hardware vendors.

### Reliability & Security as Built-Ins

InterSystems IRIS offers high availability (HA) and disaster recovery (DR) options to shorten planned and unplanned downtime through clustering, virtualization, and database mirroring. InterSystems® technology is regularly deployed in highly regulated, mission-critical environments, including healthcare, financial services, government, and supply chain. InterSystems is constantly adding new security capabilities to support evolving requirements and standards for authentication, authorization, encryption, and auditing.

## Multi-model, Massively Concurrent, Hybrid Database

At the core of InterSystems IRIS is an ultra-high-performance, multi-model, multi-workload database engine that supports both vertical and horizontal scalability and highly efficient caching.

**Multi-Model Data Access:** Data is stored once, accessible as native or foreign tables, objects, documents, key-value pairs, columnar storage, embedded vectors, or multidimensional arrays without performance-killing copying or moving. All methods can be simultaneously used on the same data with full concurrency. Developers can use the most appropriate data models for their applications in one environment.

**Multi-Workload Concurrency:** The platform is optimized for real-time applications that require high-throughput data ingestion at scale. In recent testing, InterSystems IRIS performs up to hundreds of times faster than popular database management software.

## Massive Vertical & Horizontal Scalability

InterSystems IRIS supports vertical and horizontal scaling, the vertical case to take advantage of bigger, multicore machines through efficient, fully automated parallelization. Once big multicore machines become cost-prohibitive, InterSystems IRIS supports horizontal scaling, implemented through unique **sharding** features and our **Enterprise Cache Protocol (ECP)**.

InterSystems IRIS supports advanced AI features, including ultrafast vector search, the foundation of large language models and other generative AI capabilities, like RAG.

Horizontal scaling shards the data, splitting up very large databases onto multiple machines. Queries run in parallel on each shard, with results aggregated before return. ECP enables horizontal scaling on the number of users by caching on application servers, retrieving data only if necessary, and automatically synchronizing the data. ECP is transparent to both users and applications, providing superior performance and resource efficiency as workloads increase.

Sharding and ECP are transparently and securely combined so applications can handle both large volumes of data and high volumes of compute workloads efficiently and independently.

## **Analytics, Machine Learning (ML) & Business Intelligence (BI)**

InterSystems IRIS provides a range of powerful, built-in analytics capabilities, to run a wide variety of analytics directly within applications close to the data and to incorporate top analytics tools. The platform provides:

- **Interactive business intelligence** capabilities for data exploration, BI cubes, and high-performance, interactive, complex dashboard development. BI can be embedded in real-time applications to generate insights at the point of action.
- **IntegratedML**<sup>®</sup>, enabling application developers to easily create and train ML models. Without advanced data science skills, you can develop and deploy ML models using SQL quickly and easily. Applications execute these ML models directly on the data, in response to real-time events and transactions, without extracting or moving any models or data.
- **Order-of-magnitude faster analytical queries**, compared to row storage, with optional **Columnar Storage**, dramatically reducing the required I/O and exploiting hardware optimizations. Operations become limited by only the CPU cores available.
- **Adaptive Analytics** to visualize, analyze, and interrogate data from multiple sources. Semantic layers and drag-and-drop data modeling allow you to interactively explore your data to make timely and accurate decisions on a self-service basis.
- **Pixel-perfect form and report generation**, in many formats, and the scheduling, exporting, and embedding of reports in customer and partner applications.
- **Third-party tools and technologies** for data exploration, business intelligence, NLP, AI, and ML, as an open platform, accommodating your preferences. This access directly within the platform provides the freedom to use familiar best-of-breed technologies.

## **Natural Language Processing (NLP), Generative AI, and Vector Technology**

Built-in **NLP** and **text exploration** capabilities provide insights from unstructured data that can be embedded within applications. Plain text and other unstructured data can be tokenized and embedded into word or similar weighted vectors. These vectors form the basis of NLP and its underlying vector databases. NLP can create new ML features from text useful for developing ML models. InterSystems text exploration technology—also available as open source—uniquely uses a bottom-up approach, discovering concepts and relations within the data itself.

InterSystems IRIS supports a special **vector data type** and other advanced features that enable **ultrafast vector search**, the foundation of **large language models** (LLMs) and related technologies like chatbots, retrieval-augmented generation (RAG), and other generative AI capabilities.

## Smarter Application Development, Data Management, and Data Fabrics

InterSystems IRIS provides a complete application development environment for building sophisticated data- and analytics-intensive applications. Designed to work with all the common development technologies in an open, standards-based fashion and support both server-side and client-side programming. The platform supports:

- **High-efficiency, server-side application development** with both **Python** and InterSystems **ObjectScript**, a flexible, high-performance, object language optimized for developing complex data- and analytics-intensive applications. Developers can build applications in either—or both—languages, choosing the most suitable. The code executes on the server as embedded within the platform kernel for extremely high performance.
- **Client-side development** using many popular technologies, including Java, C#/.NET, Node.js, Python, and ObjectScript, for greatest flexibility in supporting a wide range of developers and applications. Database objects can be exposed through built-in libraries to Java, .NET, C++, JavaScript, and many other languages.
- **Enterprise data fabrics**, a crucial architectural advance that provides visibility and access to data from across an entire business, without the typical silos. They integrate, transform, and harmonize data from disparate sources—on demand, as needed—to make it actionable for a wide range of applications, without the latencies associated with manual integration or data lakes, warehouses, and marts. A smart data fabric directly incorporates data and analytics capabilities, including data exploration, BI and business rules, NLP, ML, multiple data models, vector search and databases, and AI.

### Why InterSystems

Established in 1978, InterSystems is the leading provider of next-generation solutions for enterprise digital transformations in the healthcare, finance, manufacturing, and supply chain sectors. Its cloud-first data platforms solve interoperability, speed, and scalability problems for large organizations around the globe. Privately held and headquartered in Boston, Massachusetts, InterSystems is committed to excellence through its award-winning, 24×7 support for customers and serves its customers from 37 global offices. InterSystems software is in use in over 80 countries worldwide.

[Learn more](#) about our flagship data platform and try it for free.

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