IBM Informix 14.10

The high-performance, low-footprint database for analytics on the edge, in the cloud and on premises

IBM Informix delivers:

- Powerful, optimized time series and geospatial data management

- Automated administration and self-management features

- Footprints under 100 MB for easy IoT gateway embedding

- IBM InformixHQ for collaboration and management across multiple instances

- Integrated in-memory warehouse accelerator

Enterprise databases have always needed to deliver fast transaction processing and the replication speeds necessary for continuous availability without adding undue administrative effort or sacrificing security. Yet, new opportunities like the Internet of Things (IoT) have also arisen, bringing an increase in data of various types, which businesses hope to turn into competitive advantage. For that reason, many companies have turned to IBM® Informix®, a solution capable of satisfying database and analytics needs at the core of the enterprise or at the edge of your IoT network.

IBM Informix is an embeddable, high-performance database for integrating SQL, NoSQL, JSON, time series and spatial data, which can be up and running in minutes, and is accessible from virtually any desktop, laptop or mobile device. Its small footprint—lower than 100 MB in some cases[1] —and ability to run on distributed devices with a variety of automated administrative capabilities means IBM Informix is easier to install and manage with fewer administrators, even when used across thousands of devices worldwide. These features make IBM Informix the database of choice for high-performance, multidatabase installations with remote management—as is the case for IoT edge gateways. For example, IBM Informix has helped with production, packaging and dispatch within IoT gateways on manufacturing shop floors, as well as agriculture on gateways that sit directly within grain bins.

The newest version of IBM Informix, V14.10, improves ease of installation and use, reliability, security and performance. Switching between IBM Informix editions is also easier with a new key-based upgrading system, which helps you avoid reinstallation.

"IBM Informix is almost perfectly designed for IoT use cases"

—Amit Biyani, Founder, SmartAxiom
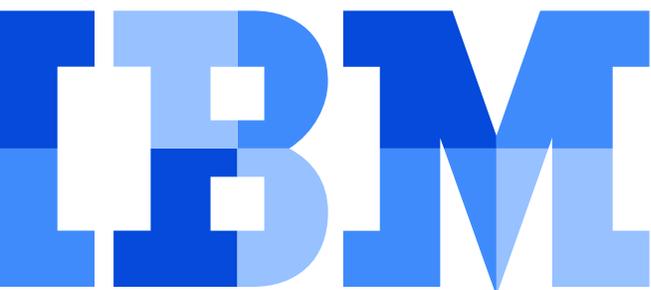
Easier administration and application development

For ease of use, IBM Informix works with popular programming environments so that DBAs, application developers, operations engineers and management can find the data they need without setting aside time to learn new skills.

Worldwide, enterprise-level use is also easier due to IBM Informix V14.10 enhancing Unicode support to the current V11.0. This enhancement gives users the ability to support storage and processing for new text characters from the last 10 years, adding support for lesser-used languages and unique written requirements worldwide.

InformixHQ

InformixHQ helps database administrators more easily visualize, monitor and manage multiple IBM Informix server instances by providing:

- A separate, centralized, graphical interface tool
- Critical performance management capabilities
- An easy way to monitor how key performance metrics are changing over time
- Tracking for workloads efficiency, even when you've stepped away from your screen
- A monitoring system that feeds directly into a customizable, immediate alerting system
- Alert notification compatibility with email, Twilio and PagerDuty
- Tools for collaboration between DBAs, application developers, operations engineers and managers
- The scalability to efficiently manage and monitor numerous IBM Informix server instances
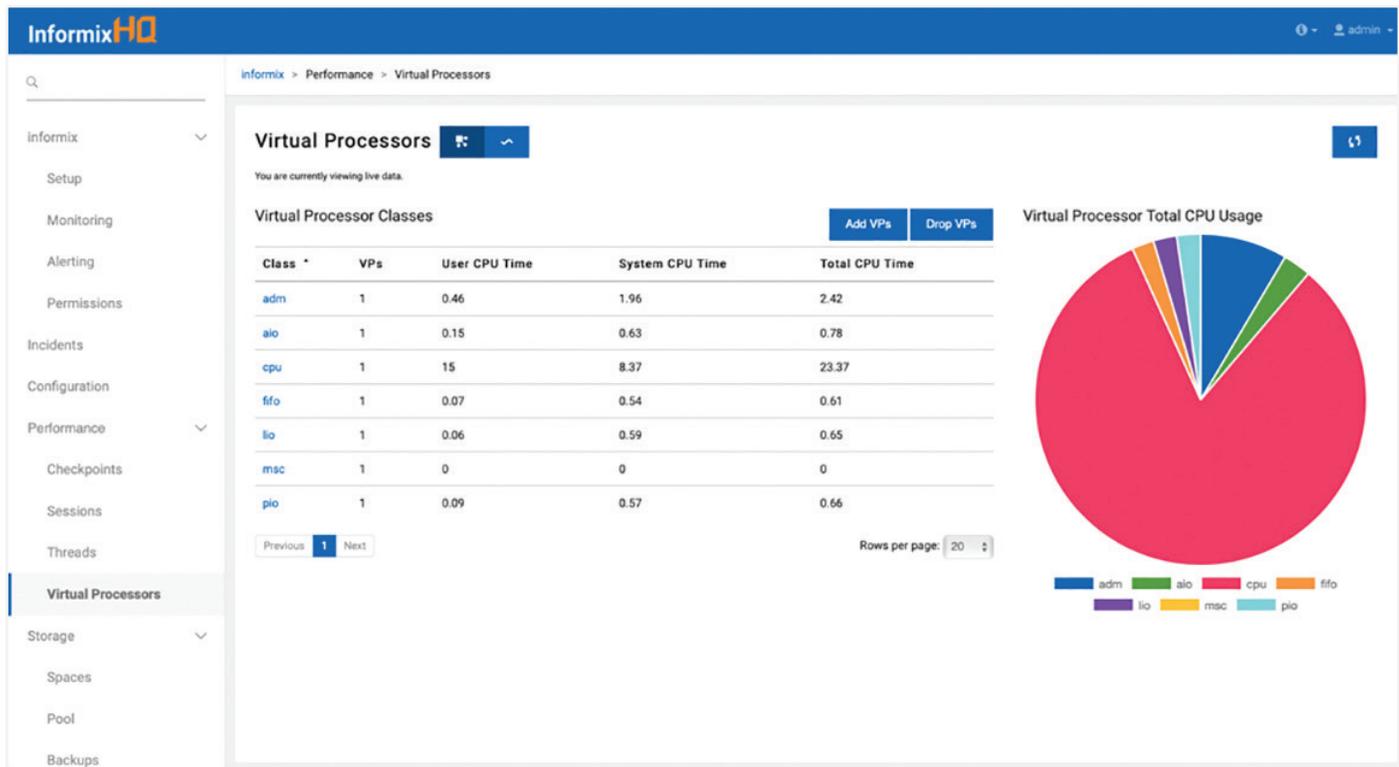
Figure 1: The user interface of InformixHQ allows you to monitor your server instances in an intuitive way.

Simpler enterprise replication

IBM Informix also delivers many automated enterprise replication capabilities. For example, a single command can automate setup of enterprise replication and data migration between two IBM Informix server instances located either on-premises or in the cloud. This setup is done in a transactional, flexibly phased manner with no downtime because the command automates the necessary tasks, including:

- Defining the enterprise replication domain between the two servers
- Adding key columns for the tables
- Creating required storage spaces for the databases
- Copying the database schema from source server to target server
- Creating replicate definitions
- Synchronizing data between source and target server instances

"The Informix Development Team [...] enhanced the replication functionality in Informix 14.10 that has delivered a 325% increase in replication performance over Informix 12.10"

—Grant Beckwith, Paddy Power Betfair

Smart triggers

Monitoring capabilities should give your DBAs and users maximum visibility of important events in the database, with minimal requirements for hands-on, customized or manual searches. You don't want to change your database schema or write custom code to poll for important changes, nor do your DBAs have time to check for every important changing condition.

That's why IBM developed Smart Triggers, which push a notification outside the database whenever a predetermined event occurs in committed data. These lightweight server-side triggers require no schema or code changes to the database itself, and can be created, modified or deleted from the requesting application. Not only are these triggers beneficial for monitoring with minimal effort, but they also make the integration of new technologies like blockchain much easier, as well.

Reliability and security

The reliability and security features of IBM Informix benefit your entire organization, particularly the edges of your network.

Informix V14.10 offers up to 5x faster replication[2]

Reliability

IBM Informix V14.10 offers up to 5x faster replication thanks to enhanced log replay performance of remote secondary servers and OLTP. Client applications can sustain near-zero latency between primary and secondary servers and recovery time in disaster scenarios is faster. Businesses can also avoid downtime thanks to support for additional in-place alter operations on tables and data types, which allows database change operations to be done faster without needing to stop the database.

Security

IBM Informix V14.10 supports remote storage of encryption-at-rest keys in Amazon Key Manager (ciphers AES128, AES192 and AES256) for an additional layer of security and better protection.

By supporting the remote key management server's ability to generate encryption keys, IBM Informix also eliminates the need for DBAs to manually encrypt data backups. The data security in backup media is also enhanced without the risk of losing keys. The encryption key is itself encrypted, which is called envelop encryption.

IBM Informix V14.10 also offers support for up to version 1.2 of Transport Layer Security (TLS), helping reduce the risk of data breaches and better position users to achieve regulatory compliance.

Performance

IBM Informix provides fast transaction speeds, efficient compression technology and powerful analytical models. Improvements in IBM Informix V14.10 mean that it's up to 10 percent faster than V12.10 for standard OLTP transactions.[3]

"Informix also runs 20 percent faster on our gateway devices and uses 25 percent less memory than the alternative databases we tested."

—Gunjan Karun, Head of Global Product Development, SmartAxiom

Data compression
Every Enterprise Edition of IBM Informix now comes with data compression technology that reduces primary, secondary, backup and log storage while simultaneously enhancing performance by reducing I/O operations. A four-fold reduction in database size, as well as faster I/O operations and backups, has been reported.[4]

Common Table Expression
Common Table Expression (CTE), new to IBM Informix V14.10, provides greater performance in two ways: allowing developers to write more complex queries and simplifying the process for writing queries in general. With the SQL standard CTE, queries can be divided into simple, ad hoc, logical building blocks which are used to build more complex, interim CTEs until the final result set is generated. Therefore, readability and maintenance of complex queries for developers is improved and they are able to reuse a CTE result set multiple times in one query, find pipeline aggregations and write powerful recursive queries.

IBM Informix Warehouse Accelerator
Advanced Enterprise editions of IBM Informix also include IBM Informix Warehouse Accelerator (IWS). By storing and processing data in-memory instead of on disk, it enables query speeds that are magnitudes faster than traditional solutions. Features of IWS include:

- In-memory data storage and query processing
- Increased query speed on SQL, NoSQL and sensor data
- Intelligent frequency partitioning
- Massively parallel processing (MPP) of data load, refresh and query
- The ability to use low-cost commodity hardware, such as Linux on Intel and AMD 64 bit (AMD64)
- Transparency to client applications

Analytics capabilities
IBM Informix handles very high-speed event generation and performs analytics directly on IoT edge gateways for low-latency insights. The latest version of IBM Informix offers:

- Subsecond timestamps—up to 0.1 second—for better time series granularity and GPS tracking
- Native support for regular and irregular time series data, even if it arrives out of sequence
- A new "ExtendCountIF" function to find missing readings for a given sensor
- The ability to capture geospatial data for high-speed transactions and operations
- A way to identify the number of objects in a defined region at a given time
- Support for geodetic and projection systems other than World Geodetic System (WGS) 84, the GPS standard, so you can track assets using your own coordinate system

IBM Informix use cases

Leading companies in multiple industries use IBM Informix. Their success stories show the impact IBM Informix can make on your operations.
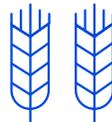
Cognitive food: Grain management
Thirty percent of all grain produced worldwide is lost to spoilage. IBM Informix databases on IoT devices help monitor and improve food production and storage conditions, resulting in lower waste, better agricultural output and higher profits. See the connection between food and data, and learn more about cognitive food, powered by IBM Informix. Learn more

SmartAxiom
SmartAxiom applies deep embedded software and decentralized blockchain technology to protect IoT devices and data. To limit the cost and complexity of its data systems, SmartAxiom turned to IBM Informix. With its new database environment, it could reduce development time by 30 percent and run database software 20 percent faster. Learn more

Petrosoft
Petrosoft is on a mission to transform the fuel retail business, but it needed a scalable, secure, performant database that could be deployed to over 100,000 connected devices worldwide. With IBM Informix and smart use of data, it's achieved safer operations, higher profitability and rapid growth. Learn more

Pick the edition that's right for you

IBM Informix is available in several cloud and on-premises editions; compare some of their major features below. Version 14.10 has increased hardware limits at the Workgroup Edition level and included storage-optimizing compression technology at the Enterprise Edition level.

For more information

To go hands-on with IBM Informix today, try our developer or Innovator-C edition at no cost. Our IBM Informix experts are also happy to answer any questions you may have.

	Express	Workgroup	Enterprise	Advanced Enterprise
Processor limits	4 cores	24 cores	Unlimited	Unlimited
Install memory limit[5]	8 GB / install	32 GB / install	Unlimited	Unlimited
Parallel operations (Parallelism)			✓	✓
Data partitioning			✓	✓
Private memory cache VP			✓	✓
High-performance loader			✓	✓
Storage optimization: Table, index and blob compression	N/A	N/A	✓	✓
Distributed operations		✓	✓	✓
Enterprise replication (ER)	2 root nodes max		✓	✓
High-availability clusters	1 secondary node of any secondary type	2 secondary nodes max of any type	✓	✓
Informix Warehouse Accelerator				✓

1 As described in http://www.redbooks.ibm.com/redbooks/pdfs/sg247666.pdf

2 As compared to IBM Informix V12.10 in internal tests for RSS replication.

3 Compared to V12.10 in Linux x86 64-bit platform based on internal testing.

4 As described in http://www.iiug.org/library/ids_12/IFMX-Compression-WhitePaper-2013-03-22.pdf

5 Memory limitations calculated by summing all SHMTOTAL allocations across all Informix instances, operating from the same install.

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