

Informix® Dynamic Server.2000™ delivers a first-in-its-class database server for the next generation of Internet computing by combining the robustness, high performance, and scalability of Informix's flagship relational database management system (RDBMS) with Informix's advanced object-relational technology to store, retrieve, and manage rich data intelligently and efficiently. Informix Dynamic Server.2000 handles video, image, HTML, XML, geospatial, and other rich data, side by side with traditional legacy data, to do just about anything imaginable. Informix Dynamic Server.2000 lowers total cost of ownership by leveraging existing standards in development tools, systems infrastructure, and customer skill sets.

Informix Dynamic Server.2000

Advantages

The following features make Informix Dynamic Server.2000 the smartest database server for the Internet:

- Informix's industry-leading Dynamic Scalable Architecture™ (DSA) takes full advantage of all available hardware resources to parallelize all database operations. DSA is specifically designed to help you manage increasingly larger and more complex databases while substantially improving overall system performance and scalability.
- Informix Dynamic Server.2000 supports multimedia data types and any data type created for a specific business domain, such as geographic data. Moreover, these rich data types are stored in the database in the same way as built-in data types, making it easy to deploy and manage content-rich Web sites at minimal cost.
- Informix Dynamic Server.2000 enables you to create and use existing packages called DataBlade® modules to encapsulate specialized data types, operations that process the data, and access methods that

index the data. DataBlade modules can be plugged into the database server to do anything with any type of data. Informix and members of our DataBlade Partners Program have created DataBlade modules for a wide variety of domain-specific needs.

- Informix Dynamic Server.2000 provides Web browser-based system administration so database administrators can easily manage servers from any location with Internet access, as well as mainframe-caliber tools optimized for high performance, high availability, and ease of use.

Dynamic Scalable Architecture

The foundation of Informix Dynamic Server.2000's superior performance, scalability, and reliability is its parallel database architecture, *Dynamic Scalable Architecture (DSA)*, built to fully exploit the inherent processing power of any hardware. DSA enables all major database operations, such as I/O, complex queries, index builds, log recovery, and backups and restores to execute in parallel across all available system resources.

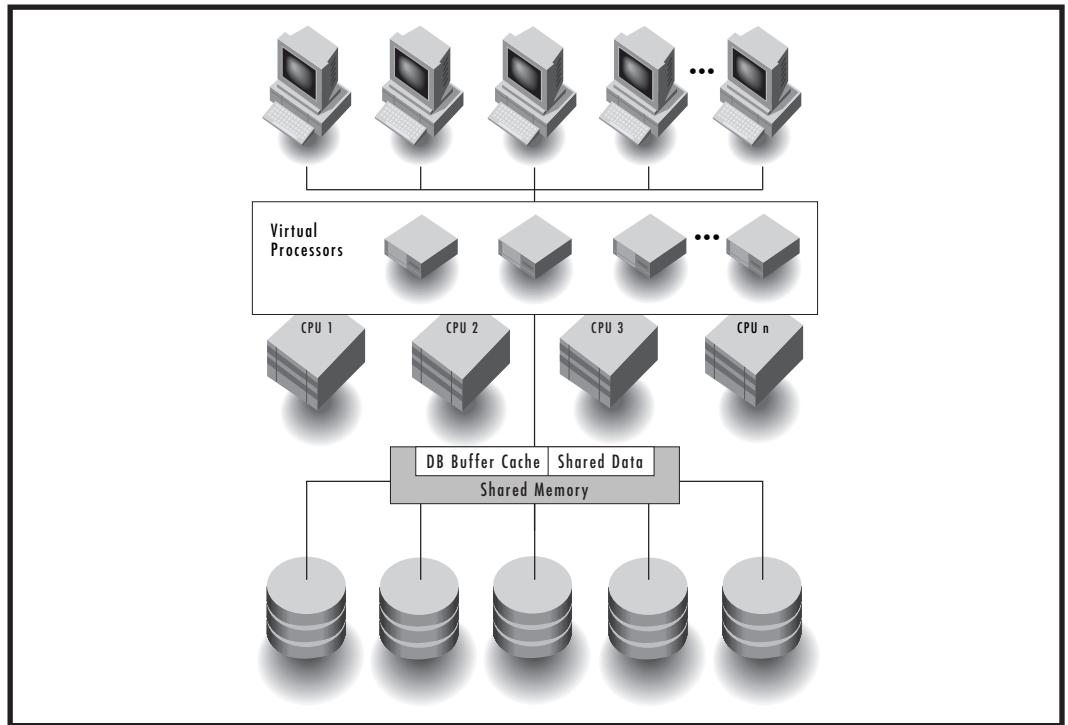


Figure 1: Informix Dynamic Server.2000 consists of a configurable pool of database server processes, called virtual processors, that can respond to any client's request.

To most effectively utilize system resources, a configurable pool of database server processes called *virtual processors* schedule and manage user requests across multiple CPUs and disks. User requests are represented by lightweight mechanisms called *threads*. Each thread consists of a single sequential flow of control that represents part of a discrete task within a database server process. For example, a processing-intensive request such as a multi-table join can be divided into multiple database threads (*subtasks*) and spread across all the available virtual processors in the system.

The *thread scheduler* takes advantage of in-depth knowledge of database objects and algorithms to provide smarter scheduling than a general-purpose operating system scheduler. Threads are spawned, queued, and serviced by the first available virtual processor, each of which can respond to multiple user requests. When one thread is waiting for a resource, a virtual processor can work on behalf of another thread, ensuring

efficient hardware utilization with no bottlenecks. This flexibility requires fewer operating system processes and less context switching within the operating system. And with Informix Dynamic Server.2000, you can take advantage of special scheduling features provided by hardware vendors, such as processor affinity, without adversely affecting your overall system performance.

Because the server automatically determines how the data is distributed and the processing resources available to complete a query, Informix provides unique support for *application transparency*. Applications need not be tailored to the specific hardware and operating system environment on which they run. As you outgrow your current environment, you can easily move to more powerful systems without recoding your applications because the data, applications, and skills developed in one Informix database environment can be easily moved to a different environment without a tedious migration process.

Object-Relational Extensibility

Informix Dynamic Server.2000 provides a complete set of features to extend the database server, including support for new data types, routines, aggregates, and access methods. This object-relational extensibility ensures transactional consistency and data integrity and simplifies database optimization and administration. Other DBMSs rely on middleware to link multiple servers managing different data types, compromising not only performance, but also transactional consistency and integrity, because problems with the network can corrupt the data.

Data Types

Data types determine how to store and retrieve different kinds of data. *Built-in data types* include standard types such as character, numeric, and large object types. An *extended data type* is a data type that is not originally built into the Informix database server but, once defined, can be intelligently stored and processed to meet your business needs. Extended data types can be used in queries or function calls, passed as arguments to database functions, indexed, and optimized in the same way as the core built-in types.

Any data that can be represented in C or Java can be natively stored and processed by the server, so you can easily encapsulate applications that have already implemented data types as C or Java structures within Informix Dynamic Server.2000. Extended data types give you complete control over how the data is stored and processed, resulting in

very high performance through specialized access, with the benefits of the proven manageability and integrity of Informix's database architecture. Furthermore, extended data types are fully and automatically recoverable and managed by all the same database facilities as built-in types.

Routines

A *routine* is a collection of program statements that performs a particular task within the database server. A *user-defined routine* (UDR) is a routine you can define and then invoke (within an SQL statement or another UDR) to provide new domain-specific capabilities such as searching geographic data or collecting data from Web site visitors. You can use UDRs to capture business logic and run that logic in the server, reducing the time it takes to develop applications and increasing the applications' speed.

You can write routines in Informix Stored Procedure Language (SPL), or in an external language, such as C or Java. SPL routines contain SQL statements that are parsed, optimized, and stored in the system catalog tables in executable format, making SPL ideal for SQL-intensive tasks. Since C and Java are powerful, full-function development languages, routines written in these languages can carry out much more complicated tasks than SPL routines. To write routines in Java, you must have Informix J/Foundation™.

SYSTEM REQUIREMENTS

To install Informix Dynamic Server.2000 on Windows NT, you must have:

- Windows NT 4.0, Service Pack 3 or later
- **Recommended:** 128 MB RAM, 128 MB virtual memory;
Minimum: 32 MB RAM, 64 MB virtual memory
- 140 MB disk space
- Installation on an NTFS volume
- TCP/IP
- WinSock 1.1 or higher

To install Informix Dynamic Server.2000 on UNIX and Linux, you must have:

- 64 MB RAM (minimum)
- 200 MB disk space
- CD-ROM drive (may be remote mount) OR 4mm DAT or 8mm QIC tape drive

Check with your sales representative for supported operating systems and hardware platforms.

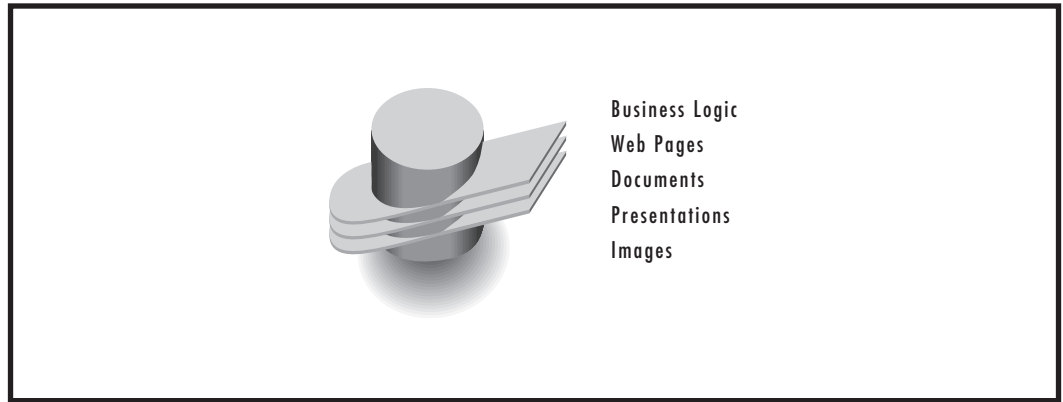


Figure 2: Informix DataBlade module technology lets you do anything with any data.

Aggregates

An *aggregate* returns information about a set of query results. For example, the built-in SUM aggregate adds values returned from a query and returns the result. You can extend the functionality of aggregates in Informix Dynamic Server.2000 by creating UDRs to:

- extend built-in aggregates (such as AVG, MAX, and MIN) to work with user-defined data types, enabling the reuse of existing client applications without requiring new SQL syntax for aggregates; and
- create new user-defined aggregates, providing new operations inside the Informix database server to easily calculate complex operations with one command.

Access Methods

The server uses *access methods* to access and manipulate tables and indexes. In addition to providing built-in access methods, Informix Dynamic Server.2000 enables you to define new access methods. User-defined access methods provide SQL access to data in either a database table or an external location and can be created using the server application programming interfaces (APIs) described in the next section.

DataBlade Module Support

DataBlade modules can be viewed as object-oriented packages that encapsulate specialized data types, operations that process the data, and access methods that index the data. The server provides the same level of support for these new data types, operations, and access methods that it provides for built-in data types. DataBlade modules add greater intelligence to the database server and enable you to easily manage any kind of information to meet the needs of a specific business domain.

You can choose from a growing portfolio of third-party DataBlade modules, or create your own with the DataBlade Developer's Kit (DBDK), described in the DataBlade Developers Kit technical brief at www.informix.com/informix/techbriefs/datablade/. Unlike our competition, Informix provides a single development kit for Java, C, and SPL. Additional support for DataBlade module developers includes:

- Informix by Example, at examples.informix.com, providing fully-annotated examples of how to utilize Informix technology with other industry-standard applications and middleware; and

-
- Informix Developer Network (IDN), at www.informix.com/idn, enabling developers to interact with peers, pass along information and expertise, and discuss new development trends, strategies, and products.

Server-Side Application

Programming Interfaces

Informix Dynamic Server.2000 offers the following server application programming interfaces (APIs) enabling developers to access data stored in an Informix Dynamic Server.2000 database, create user-defined access methods, and integrate legacy data from a variety of disparate systems, databases, and formats:

- the DataBlade API is an interface for adding functionality to the database server, managing database connections, server events, errors, and memory, and processing query results;
- the Informix Virtual Table Interface™ (VTI) is an open interface for implementing a gateway (also known as a primary access method) in an external or specialized data source; and
- the Virtual Index Interface (VII) is an open interface for implementing a secondary access method in an external or specialized data source or for data stored in the Informix database.

Client-Side Application

Programming Interfaces

Informix Dynamic Server.2000 offers the following client APIs enabling developers to embed SQL statements directly into programming languages:

- Informix Driver for JDBC, versions 1.x and 2.x, provides standard connectivity between Java applications and any Informix database on all platforms. JDBC 2.x adds support for extended data types and gives developers full access to Informix data types from Java. Informix JDBC drivers achieve optimal performance and robustness with a pure Java implementation and a native interface to connect to the database server.
- Informix Embedded SQLJ enables developers to embed SQL statements into Java applications, resulting in improved performance for static SQL operations.
- Informix SQL/C enables developers to embed SQL statements into C applications.
- Informix ODBC Driver enables developers to create custom applications using ODBC to access external data sources by conforming to Microsoft's Open Database Connectivity (ODBC) specification. For larger, more complex applications, Informix ODBC also supports Microsoft Transaction Server (MTS).
- Informix Database Driver for Perl is a standard Perl interface for database access. This DBI (Database Interface) driver enables Perl applications and Web server components written in Perl to access and manipulate database data.

-
- [Object Interface for C++](#) enables developers to develop client applications using C++ by encapsulating Informix database server features into an easy-to-use class hierarchy and extensible object library.

For more information on developing DataBlade modules, see [Developing DataBlade Modules with Informix Foundation.2000™](#) at www.informix.com/informix/whitepapers/devdbm_wp.pdf.

Manageability, Usability, and Ease of Administration

Informix Dynamic Server.2000 provides mainframe-caliber administration tools that enable database administrators (DBAs) to perform most system administration tasks without bringing the system down. Additionally, most utilities execute their operations in parallel to deliver the highest performance possible. The Informix Server Administrator Web browser-based tool provides anytime, anywhere administration of Informix servers.

Manageability is further improved because business components that would typically run in an application can run in the database server. Because the application logic and data can all be managed in one data store, it is not necessary to manage every client application individually and monitor the network traffic generated between clients and servers.

Informix Server Administrator™ (ISA) enables DBAs to monitor and administer Informix database servers from a Web browser. ISA is the first in a new generation of browser-based and cross-platform administrative tools providing Informix DBAs with rich functionality and ease of use. ISA provides easy access to every Informix Dynamic Server.2000 command line function and presents the output in an easy-to-read format, eliminating the need to memorize the many commands and options available.

Informix Database Administrator (IDBA) works with ISA to provide comprehensive database administration for Informix servers. While ISA provides Web-based database monitoring, IDBA provides Windows NT-based management of database schemas, SQL scripts, archives and restores, client configuration, and Enterprise Replication. IDBA includes Schema Tools (SQL Editor and Table Editor), Enterprise Replication Manager (ERM), the Informix Storage Manager (ISM) GUI, and the Client Configuration Tool.

Informix Dynamic Server.2000 is the Core Server for Foundation.2000

Informix Dynamic Server.2000 is the database server for Foundation.2000—the ideal platform to move your business to the Internet quickly and easily. The following additional components of Foundation.2000 are tightly integrated with the database server to deliver maximum performance and scalability while facilitating Internet application development and deployment:

[Informix J/Foundation](#) provides an open, flexible, embedded Java Virtual Machine (JVM) environment that delivers scalable, high-performance Java applications by executing Java code directly in the server. J/Foundation provides a completely standard Java environment that enables you to deploy your Java applications across all tiers.

The [Informix Web DataBlade module](#) simplifies the development, management, and deployment of database applications for the Web, enabling all types of data—including HTML and XML files and multimedia content—to be retrieved dynamically from the database, then viewed and modified from a Web browser.

The Excalibur Text DataBlade module performs full-text searches of documents from within the database server. Fuzzy-search, boolean, phrase, wildcard, and synonym searching provide a wide range of capabilities in customizing queries. The Excalibur Text DataBlade module supports any language, word or phrase that can be expressed in an 8-bit, single-byte character set.

Informix Office Connect™ simplifies the task of retrieving data from a database and visualizing it in Microsoft Excel worksheets, regardless of the data types behind the data, and without requiring any SQL knowledge or understanding of database technology.

Informix Object Translator™ connects business objects with enterprise data by enabling Visual Basic and Java developers deal with objects in the manner that they are accustomed to without programming in low-level APIs like ODBC or JDBC. Object Translator combines an easy-to-use, drag-and-drop development paradigm with a powerful runtime platform that optimizes data access to provide the best of both worlds: a rapid application development environment and sophisticated, automated data access and manipulation.

As part of Foundation.2000, the smartest Internet platform in the market today, Informix Dynamic Server.2000 is ideally suited for hosting today's scalable Internet applications.

Conclusion

Informix Dynamic Server.2000 is Informix's powerful and extensible database server, designed to deliver breakthrough scalability, manageability, and performance. Informix Dynamic Server.2000 enables you to manage business logic, create and access rich data, and define complex database functions in an integrated, intelligent information management system. With Informix Dynamic Server.2000, you benefit from the performance and scalability offered by a traditional relational database, while gaining all the advantages of object-oriented technology and unlimited extensibility—resulting in an unlimited capacity to grow and adapt to ever-changing needs.

About Informix

Informix Software is the technology leader in software infrastructure solutions for the Internet—providing a fast, simple and complete way to bring businesses to the Web. Based in Menlo Park, Calif., Informix is the first and only company to integrate e-commerce and business intelligence on a true Internet infrastructure. The company's highly scalable Web engines, together with its personalized content management, real-time analytics and media asset management capabilities, offer customers a unique competitive advantage. For more information, contact the nearest sales office or visit the Web site at www.informix.com.



4100 Bohannon Drive
Menlo Park, CA 94025
Tel. 650.926.6300
www.informix.com

INFORMIX REGIONAL SALES OFFICES

Asia Pacific	65 298 1716	Japan	81 3 5562 4500
Canada (Toronto)	416 730 9009	Latin America	305 591 9592
Europe/Middle East/Africa	44 208 818 1000	North America	800 331 1763
Federal	703 847 2900		650 926 6300

© 2000 Informix Corporation. All rights reserved. The following are trademarks of Informix Corporation or its affiliates, one or more of which may be registered in the U.S. or other jurisdictions: Informix®, way to web™, Informix Dynamic Server.2000™, Informix Foundation.2000™, Informix J/Foundation™, Office Connect™, Object Translator™, Dynamic Scalable Architecture™, Virtual Table Interface™, Informix Server Administrator™, and DataBlade®.