

The starting point for any Informix DataBlade® module developer is the DataBlade Developers Kit (DBDK)—a comprehensive toolkit designed to facilitate the rapid development of DataBlade modules. The DBDK provides an easy-to-use graphical development environment for creating new data types and routines and manages the packaging, installation, and registration of completed DataBlade modules. While the DBDK runs only on Windows NT, you can use it to create DataBlade modules for both Windows NT and UNIX operating systems using C, Java, and Informix Stored Procedure Language (SPL).

The DBDK includes tools to help manage development projects and create a complete and easy-to-install DataBlade module. Using these tools automates many development tasks and helps you design products that have a consistent look and feel. Although you can create a DataBlade module manually, you can reduce development time considerably if you use the DBDK. The DBDK reduces development time by:

- using wizards to guide you through complex SQL object creation options;
- generating the following types of files: complete SQL definitions for your database objects, complete code or code entry points for C and Java source code, unit and functional tests, opaque data type support routines, and cast support functions;
- automating the creation of an interactive installation program for UNIX and Windows NT operating systems; and
- ensuring consistency among your user-defined routines by following good coding practices in the source code generated by the DBDK.

DataBlade Modules Extend the Power of the Server

DataBlade modules are extensions to the Informix database server that support new data domains for enterprise-specific applications. DataBlade modules can be created for virtually any data that drives today's enterprise, enabling you to store, retrieve, update, and manipulate this data efficiently.

DataBlade modules add user-defined *database objects* to the Informix database server, enabling intelligent and optimized processing of new rich data. A database object is an SQL entity, such as a data type, routine, or database table. DataBlade modules can also contain client components. The Informix database server handles DataBlade module objects the same way as built-in objects. When it handles a user-defined database object, it executes the associated source code provided with the DataBlade module.

DataBlade module extensions to the database server fit in the following two main categories:

Types of data

The database server uses *data types* to determine how to store and retrieve different kinds of data. An *extended data type* is a data type that is not built into the Informix database server. The close integration of DataBlade modules with the database server means that the database server treats new, extended data types in exactly the same way that it treats its own built-in data types.

Routines

A routine is a stored collection of programming statements that allows you to manipulate data. Types of routines include user-defined routines, aggregates, data type support routines, cast support routines, and routines that support user-defined access methods.

You can create database objects using the Informix Stored Procedure Language (SPL) or an external language, such as C or Java. For more information on programming language options and restrictions, see the Informix Developer Network Web site, <http://www.informix.com/idn>.

Advantages of Extending the Informix Database Server

The primary advantages of using the extensibility of Informix Dynamic Server.2000 over using traditional relational databases and applications are:

Better performance

The Informix database server improves the performance of your applications in a number of ways. Because user-defined routines are optimized, when you put your custom routines in the database server, the query optimizer can calculate when to run them during queries. You can also create indexes on data that cannot be sorted in a standard relational database to efficiently find and compare values. Additionally, when you use user-defined routines and other extensibility features, you perform more processing of the data within the database server. Therefore, you send less data to the client application, reducing network traffic.

Simpler applications

The use of DataBlade modules simplifies applications in a number of ways. DataBlade modules handle code for manipulating and storing data so the application does not have to do so. DataBlade module routines and data types can also be accessed using SQL, a standard language that does not require programming. Additionally, when you upgrade a DataBlade module, you do not need to re-link existing applications because all changes are handled within the database server. Finally, you can combine DataBlade modules that handle different kinds of data in the same database and create one application to integrate all the data.

Transaction control

DataBlade modules become part of the database. Therefore, all operations carried out by DataBlade module routines are supported by database services such as backup, rollback, and recovery. You can safely store your data, formerly stored in files, in the database by using smart large objects.

Scalability

DataBlade module extensions to the Informix database server scale to a large number of users just as well as the database server itself.

Advantages of Creating DataBlade Modules

You can extend the Informix database server without creating a DataBlade module by executing the SQL statements to create each object individually. However, the advantages of packaging extended database objects in a DataBlade module include:

Control

DataBlade modules contain all related extended objects, enabling you to easily install, upgrade, and remove a whole module at once. If you need to fix a problem or add a feature to a program, you only have to do it in one place—the DataBlade module. Because a DataBlade module is a package ready to be distributed commercially or internally, these changes can be easily extended to any application that uses the DataBlade module. In addition, DataBlade modules make it easy for you to maintain version information about the software.

Code Reuse

DataBlade modules can use the functionality of other DataBlade modules through interfaces. Interfaces are references to other DataBlade modules. When you include an interface in a DataBlade module, you create a dependency so that your DataBlade module can be used only if the DataBlade module that provides the interface is installed in the database server.

DataBlade Developers Kit Tools

This section describes the graphical user interfaces for creating, debugging, packaging, and registering DataBlade modules on Windows NT.

Creating DataBlade Modules with BladeSmith

You use BladeSmith to begin creating your DataBlade module, by defining its contents and generating files and source code. BladeSmith guides you through object definition with wizard pages. BladeSmith automates many of the tasks of object creation, such as writing the SQL statements necessary to define objects in the database.

Using BladeSmith, you create a project for your DataBlade module. Then you add or define the user-defined objects (including aggregates, casts, errors, interfaces, routines, and data types), imported objects (including built-in data types and interfaces from other DataBlade modules), and files (including custom SQL statements or files necessary for a client), for your module. Finally, use BladeSmith to generate the files you need for compiling a shared object file or dynamic link library, managing a DataBlade module in the Informix database server, testing object functionality, and creating installation packaging files.

SYSTEM REQUIREMENTS

The following operating system is supported:

- Microsoft Windows NT 4.0, Service Pack 3 or higher

The following hardware is supported:

- 100 MHz Pentium processor or faster for maximum productivity

Memory

- The machine on which the DBDK will be installed should have at least 32 MB of RAM.

Disk Space

- The DBDK uses up to 40 MB of disk space, depending on the installation options you choose. The Informix database server and Microsoft Developer Studio require additional disk space.

The generated source code files contain routine definitions. BladeSmith generates complete code for some routines, such as basic opaque data type support routines. BladeSmith generates code templates for other types of routines, such as user-defined routines. You must add code to these routines to implement the functionality you require. The areas of the generated source code that need modification are marked with TO DO: comments. When your code is complete, you compile it into a file that the database server can interpret.

Debugging DataBlade Modules with DBDK Add-In and IfxQuery

DBDK Add-In

The DBDK Add-In is a toolbar you add to Microsoft Developer Studio, version 6.0, to aid in debugging. You must have the database server on the same computer as the DBDK to use the debugging features of the add-in. You can then deploy the DataBlade module on any server.

IfxQuery

The IfxQuery tool is launched by the add-in from within Developer Studio. IfxQuery runs the SQL unit test file in the active window in Developer Studio. The add-in and IfxQuery automate many of the steps necessary for debugging a DataBlade module. After you compile your DataBlade module in Developer Studio and set breakpoints in your source code, you can debug your module.

Packaging DataBlade Modules with BladePack

You use BladePack to create an installable DataBlade module package. BladePack uses the packaging project file created by BladeSmith as the basis for the installation package. The packaging file references the SQL scripts, shared object file, and other files required by the DataBlade module. The installation scripts ensure that all DataBlade modules created with the DBDK can be installed in a similar way.

You can create installation packages for a UNIX installation or a Windows NT installation for InstallShield 3.1 or InstallShield 5.1. The options you have for your installation package vary with each type of installation. You can perform the following tasks with BladePack:

- Add files, such as documentation, on-line help, and example files, to your DataBlade module;
- Include several BladePack projects that facilitate similar tasks into a single installation package;
- Divide files into separate components, subcomponents, and shared components, for example, to designate what to include in typical and compact installations;
- Allow users to customize their installations by choosing the components and subcomponents they want to install;
- Include custom DLL routines, dialog boxes, and programs for Windows NT InstallShield 3.1 installations and custom programs for UNIX installations;
- Include README files for any type of installation; and
- Generate disk images or a directory tree for interactive installations including install and uninstall shell scripts on UNIX and the Setup program (and, for InstallShield 3.1, the Uninstall program) on Windows.

DataBlade Module Registration with BladeManager

You use BladeManager to register or unregister your DataBlade module in a database and to install or uninstall DataBlade module client files.

After you install a DataBlade module on a database server, you must register it in every database that uses the module. Registration involves executing the SQL scripts to create DataBlade module objects in the database and making the shared object or dynamic link library available to the database server.

BladeManager checks for dependencies between DataBlade modules. If you have imported an interface from another DataBlade module, BladeManager registers your DataBlade module only after it confirms that the interface is registered in the database. If you are upgrading your DataBlade module, BladeManager selectively and automatically unregisters objects from the previous version.

SYSTEM REQUIREMENTS (continued)

To use Microsoft Developer Studio and the DBDK to develop DataBlade modules you need the following:

- Microsoft Developer Studio 6.0
One of the following browsers is also required:
 - Netscape Navigator 4.0 or later
 - Microsoft Internet Explorer 4.0 or later

Note: You must install Microsoft Developer Studio before you install the DBDK.

To use BladePack to package your DataBlade module with an interactive installation for Windows NT, you need:

- InstallShield 3.1 or 5.1
Professional license

Note: You must install InstallShield before you install the DBDK.

The following database servers are supported:

- Informix Internet Foundation.2000, version 9.2
- Informix Dynamic Server.2000, version 9.2
- Informix Dynamic Server with Universal Data Option, version 9.14

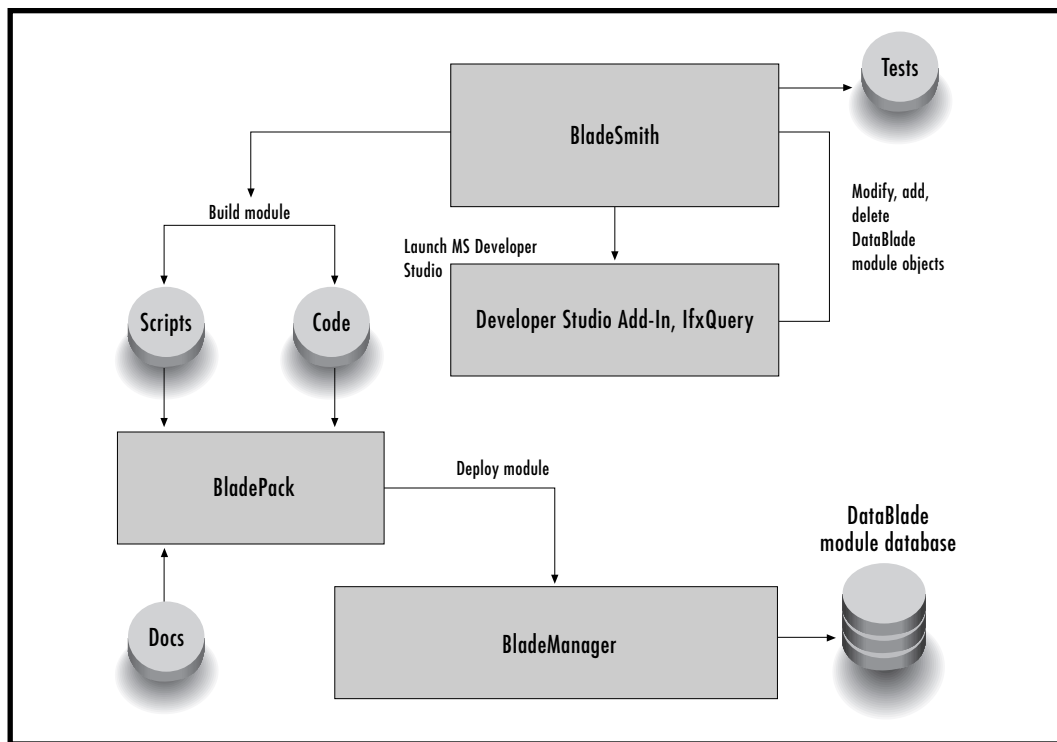


Figure 1: The DataBlade module development process using the DBDK.

You can also unregister any module by using BladeManager. BladeManager does not allow you to unregister a DataBlade module if there is another DataBlade module that depends on it or if any of its objects are in use by the database.

The diagram in Figure 1 illustrates the DataBlade module development process using the DBDK.

The Informix DataBlade Developers Program

DataBlade module development represents an excellent business opportunity for Informix partners, including ISVs, VARs, systems integrators, and consultants. The DataBlade Developers Program is dedicated to delivering professionally certified DataBlade

modules to market, offering development tools, training, support, certification, and joint-marketing opportunities to support your DataBlade module development efforts.

Through the DataBlade Developers Program, you can leverage Informix’s technology leadership and marketing resources to broaden the market scope for your products, bringing your domain-specific expertise into this expanding new market.

Dedicated Service and Support

The DataBlade Developers Program includes formal developer training, Internet access to Informix DataBlade module engineers and architects, technical support, and joint-marketing activities.

Informix's comprehensive database training helps jump-start DataBlade module development through lecture and hands-on lab exercises. The class introduces students to the DBDK using the tools to build a new DataBlade module from start to finish. Class size is restricted to encourage one-on-one interaction with other students and the instructor.

The Informix Developer Network Web site, <http://www.informix.com/idn>, including the DataBlade Developers' Corner, is designed to provide you with the technical information, tools, forums, and links to relevant information that you need when using Informix products.

Support is a critical component of the DataBlade Developers Program. Informix is committed to providing our partners with the highest level of support in order to ensure success. A dedicated team of DataBlade module development experts participates in an Internet-based support

program that answers your specific questions—from DataBlade module development to testing and packaging completed DataBlade modules for the marketplace. One-on-one consulting services are also available to assist with the design and planning of DataBlade module development projects.

DataBlade module development partners also have access to partner marketing activities offered under the Informix Solutions Alliance. These include joint press announcements, customer success stories, seminars, marketing brochures, participation in the Informix Solutions Guide, and Web-based demos. See <http://www.informix.com/alliance> for additional information.

About Informix

Based in Menlo Park, CA, Informix Software is the technology leader in software infrastructure solutions for the Internet. Informix is the first and only company to integrate e-commerce and business intelligence on a true Internet infrastructure. We provide a complete, fast, and simple way to bring businesses to the Web, personalize content management, and analyze information real-time. This, with our highly scalable Web engines and media asset management capabilities, gives our customers a unique competitive advantage. For more information, contact the sales office nearest you or visit our 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™, DataBlade®, and Informix Dynamic Server.2000™.