

*The Internet is fundamentally changing the way organizations use their business data by speeding up the transfer of information and extending the types of accessible information to include images, sound, video, HTML pages, spatial data, and many more diverse information types. New Web-based applications and services such as electronic commerce and information portals rely on data that is personalized, timely, and dynamic. As a result, organizations require affordable and flexible tools to integrate legacy data and new rich data to create powerful Web-based applications.*

*The Informix® Web DataBlade® module is a complete and cost-effective solution that enables any organization to rapidly build Web-enabled database applications and dynamically publish business data directly from an Informix database to the Internet. By extending the database to bring rich data to the Web, the Web DataBlade module reduces the cost and complexity of deploying dynamic database-driven Web sites. From e-commerce sites to corporate Intranets to Web applications, the Web DataBlade module leverages existing hardware and software to transform virtually any data into Web content quickly and affordably.*

### **What Are DataBlade Modules?**

A DataBlade module is an extension to the Informix database server that supports new data domains for enterprise-specific applications. A DataBlade module consists of a collection of database objects and code that adds new functionality to the server, enabling intelligent and optimized processing of this new rich data. 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.

For example, the Informix Geodetic DataBlade module and several third-party DataBlade modules manage the spatial data found in geographic information systems. Another example is the Informix TimeSeries DataBlade module, which allows brokers to track and manage stock price data over a period of time.

With DataBlade module technology, you can implement complex solutions quickly and cost effectively, giving you a consistently faster time to market—and a big jump on your competition.

### **What Is the Informix Web DataBlade Module?**

The Web DataBlade module enables you to maximize the potential of the Internet by extending the Informix database server with features that ease the development, management, and deployment of database applications for the Web. The Web DataBlade module provides a complete set of SQL functions, data types, tags, and client applications that enables you to create complex Web applications that incorporate data retrieved dynamically from Informix databases easily.

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You can create Internet-enabled Web services, applications, and electronic commerce storefronts with the Web DataBlade module rapidly and cost effectively.

### **Informix Web DataBlade Module Architecture Overview**

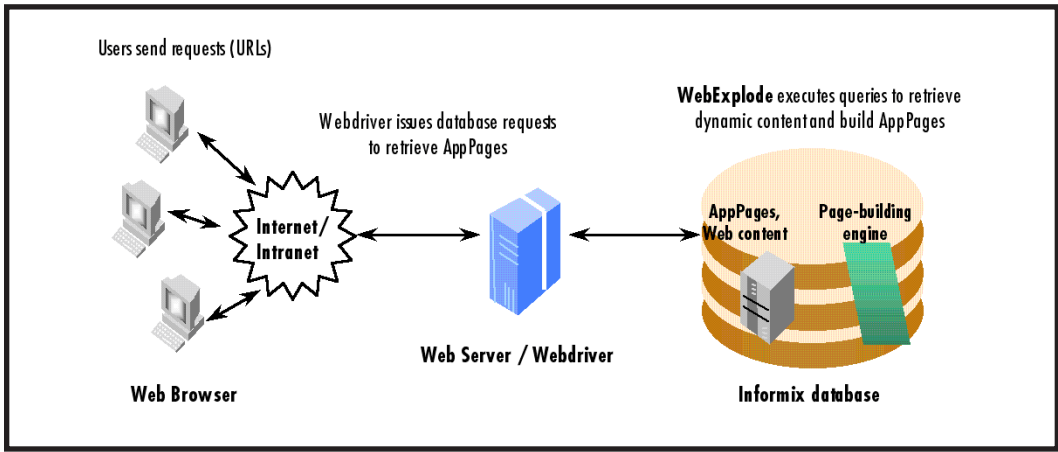
In typical Web database applications, most of the logic is in Web server gateway application code written in Perl, Tcl, or C. The gateway program, which enables the Web server to communicate with the database, connects to a database, builds and executes SQL statements, and formats the results.

When you use the Web DataBlade module, you need not develop a gateway program to dynamically access database data. Instead, you create HTML pages that include Web DataBlade module specific tags (also called *AppPage tags*) and functions that execute your SQL queries dynamically and format the results for the Web. These pages are called *Application Pages (AppPages)*. The types of data you retrieve can include traditional data types, as well as HTML, image, audio, video, and other rich data. Similarly, the Web DataBlade module enables users to generate XML data and documents over the Internet. XML can be delivered to either an XML Web browser or an XML-enabled application that utilizes the HTTP protocol.

AppPages are themselves stored in the database. A Web application that uses the Web DataBlade module, therefore, first retrieves the AppPage from the database, then passes the AppPage through an SQL function that interprets the special AppPage tags and functions, typically to retrieve or update data from database tables and format the results.

As in any Web application, you navigate Web DataBlade module applications by typing in a URL, clicking on a link, or submitting an HTML form. When you take one of these actions in a Web DataBlade module application, the Web browser invokes a URL to request information stored in the Informix database. The browser makes a request to the Web server. The Web server invokes the Webdriver process, which establishes a database connection to request the information from the database. The **WebExplode** function, which runs within the Informix extensible database, retrieves the desired information dynamically and returns it to Webdriver as HTML. Finally, Webdriver returns the new information to the Web server, which in turn returns the HTML page to be rendered by the Web browser. This process is illustrated in Figure 1.

For example, in an online catalog application, when customers navigate the site, they seamlessly execute queries against the database, including requests for product information, such as images of the product and searchable text descriptions. The information retrieved can be personalized based on their preferences and application logic you build into the application using session variables and other Web DataBlade module features. Because all of the catalog content is stored in the Informix database, your catalog administrator can update product information, including price or inventory updates, using their secure Web browser interface to the application, and the new information is immediately reflected in the results of customer queries.



**Figure 1** The Web DataBlade module enables you to create Web applications that incorporate data retrieved dynamically from the Informix database.

### Informix Web DataBlade Module Components and Component Features

#### Webdriver

Webdriver is a database client application that builds the SQL queries that execute the **WebExplode** function to retrieve AppPages from your database. Webdriver returns the HTML that results from calls to the **WebExplode** function to the Web server, which in turn displays the results in a Web browser.

Webdriver allows you to customize Web applications using information from its configuration file, the Webdriver configurations stored in the database, the Web server environment, URLs, HTML forms, and your own Web application variables, without gateway programming. Webdriver also allows you to track persistent session variables between AppPages.

The Web DataBlade module includes four implementations of Webdriver:

- **NSAPI Webdriver.** This implementation of Webdriver is written with the Netscape Server API and is used only with Netscape Web servers.
- **Apache Webdriver.** This implementation of Webdriver is written with the Apache API and is used only with Apache Web servers.
- **ISAPI Webdriver.** This implementation of Webdriver is written with the Microsoft Internet Information Server API and is used only with Microsoft Internet Information Web servers.
- **CGI Webdriver.** This implementation of Webdriver is a standard CGI program that can be executed by all Web servers.

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For optimal performance, you should use the implementation of Webdriver written for your specific Web server. You should only use the CGI Webdriver for Web servers that do not have their own implementation of Webdriver. The NSAPI, ISAPI, and Apache implementations of Webdriver allow you to use the proprietary features of the Netscape Web server, Microsoft Internet Information Server, and Apache Web Server, respectively.

### The WebExplode Function

The **WebExplode** function is an SQL function that builds dynamic HTML pages based on data stored in your database. The **WebExplode** function parses AppPages that contain AppPage tags within HTML and dynamically builds and executes the SQL statements and processing instructions embedded in the AppPage tags. The **WebExplode** function formats the results of these SQL statements and processing instructions, and returns the resulting HTML page to the client application, Webdriver. The SQL statements and processing instructions are specified using SGML-compliant processing tags.

### AppPage Elements

The Web DataBlade module includes a built-in set of SGML-compliant tags and attributes to identify the elements of an HTML page and specify the structure and formatting for that page. These tags are referred to as *AppPage tags*. AppPages tags are provided with the Web DataBlade module and are processed by the **WebExplode** function. You can use these tags and tag attributes within AppPages to

retrieve dynamically constructed or static HTML documents and associated rich content. For example, the MISQL tag allows you to execute an SQL statement, such as SELECT or UPDATE, and format the results of the statement in your AppPage.

In addition to embedding SQL statements directly within AppPages, Web DataBlade module tags enable you to:

- handle errors within AppPages. The Web DataBlade module provides the MIERROR tag and variables to handle error conditions such as SQL errors, undefined variables, and incorrect constructs;
- execute statements conditionally within AppPages using the MIBLOCK and MIELSE tags and the COND attribute for all AppPage tags;
- manipulate variables within AppPages using the MIVAR tag and variable-processing functions. Variable-processing functions enable calculations to be performed using variables that are passed into an AppPage, generated within the AppPage, or returned from the database;
- execute user-written HTTP server modules by calling NSAPI or ISAPI shared objects or DLLs from within an AppPage using the MIFUNC tag; execute Perl programs within an AppPage using the MIEXEC tag; and execute database server user-defined routines (UDRs), using UDR tags written in C, Java, or SPL; and,
- use other advanced query processing and formatting techniques.

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The Web DataBlade module supports additional tags called *dynamic tags*. Dynamic tags are segments of AppPages that are stored in a database table and can be shared among multiple AppPages. Dynamic tags allow you to standardize components of multiple AppPages, such as headers and footers that might appear on every AppPage in your Web application. Dynamic tags allow you to centralize the source of updates to Web applications to simplify the construction and maintenance of your Web applications.

The Web DataBlade module provides *system dynamic tags* to simplify the creation of check box lists, radio button lists, and selection lists. You can also create your own user dynamic tags. You can create and register your user *dynamic tags* in the database to perform routine customized tasks, such as displaying an image in a standardized format.

#### **Application Development and Administration Tools**

*AppPage Builder (APB)*, a development tool packaged with the Web DataBlade module, provides a browser-based interface to create and update AppPages and to manage rich database content. APB is itself a Web DataBlade module application made up of linked AppPages.

The *Web DataBlade Module Administration Tool*, also a Web DataBlade module application, provides a browser-based interface to create and update Webdriver mappings and configurations.

*Data Director™ for Web* runs on Windows platforms and provides a development environment and project and content management capabilities that enable teams to collaborate on development projects easily. Data Director for Web has two components:

- AppPage Editor allows you to develop Web pages using a WYSIWYG editor and wizards in addition to a color-coded view of the HTML source code. AppPage Editor takes care of many of the tedious tasks involved in writing HTML source code.
- Site Manager allows you to manage your Web sites using an interface similar to the Windows Explorer interface. AppPages and their components are represented as files and folders that you can drag and drop. Site Manager takes care of updating the underlying files and database tables to reflect your changes.

Data Director for Web is a separately-ordered product, and is not included within the Web DataBlade module.

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### **Benefits of the Informix Web DataBlade Module**

The Web DataBlade module reduces the cost and complexity of deploying dynamic database-driven Web sites. From e-commerce sites to corporate Intranets to Web applications, the Web DataBlade module enables you to transform virtually any data into Web content quickly. When you create your Web applications using the Web DataBlade module you can:

- Reduce costs by simplifying the administration of your Web application and rich content. Because your Web applications and their associated content are stored within the Informix database, you can take advantage of database management features including security, full query capabilities, backup and recovery, and more.
- Leverage existing database and legacy infrastructure for Web deployment by using your existing SQL queries within AppPage tags to dynamically retrieve and update information.
- Quickly develop Web applications using an open, robust environment to handle errors, track users, customize your applications, and integrate them with applications developed in C, C++, and Java.
- Optimize performance and scalability through tight integration with the Informix database as well as Web-specific load and performance enhancements.
- Implement commerce-ready applications with application persistence offered by connection and session management features.
- Leverage powerful database security in the Web environment, allowing for audit trails and access control over Web server access at the object level.
- Take advantage of an open architecture that enables you to choose among standard Web browsers and Web servers.
- Simplify database and Web server configuration tasks with an intuitive browser-based configuration utility.

Combined, these capabilities allow you to easily build dynamic, intelligent Web applications using industry-leading technology while leveraging your existing infrastructure.

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## System Requirements

This section lists system requirements for the first release of version 4.0 of the Web DataBlade module. Contact your sales representative for the latest list of supported operating systems, database servers, and Web servers.

The following operating systems are supported:

- Sun SPARC running Solaris 2.5.1 or higher

The following database servers are supported:

- Informix Dynamic Server™ with Universal Data Option™, version 9.14.UC4 or higher
- Informix Internet Foundation.2000™, version 9.20.UC1 or higher
- Informix Dynamic Server.2000, version 9.20.UC1 or higher

Informix Client Software Development Kit, version 2.10.UC1 or higher, is required for the Webdriver client.

## Web Server Compatibility

Figure 2 lists the versions of Web servers that are compatible with the corresponding implementation of Webdriver for the Web DataBlade module.

## Web Browser Compatibility

The Web DataBlade module is compatible with any Web browser that conforms to the HTML 3.0 specification for tables and forms.

The Web DataBlade Module Administration Tool must be viewed in a JavaScript-enabled browser. Informix recommends you use one of the following two browsers to invoke the Web DataBlade Module Administration Tool:

- Netscape Communicator, version 3.0 or higher
- Microsoft Internet Explorer, version 4.0 or higher

## Disk Space

The Web DataBlade module, including documentation and examples, uses 40 megabytes of disk space.

Webdriver Implementation	Web Server:
<ul style="list-style-type: none"><li>• NSAPI Webdriver</li><li>• Apache Webdriver</li><li>• ISAPI Webdriver</li><li>• CGI Webdriver</li></ul>	<ul style="list-style-type: none"><li>• Netscape Enterprise Server, versions 3.51 and 3.6x</li><li>• Apache Web Server, versions 1.3.4 and 1.3.6</li><li>• Microsoft Internet Information Server, version 4.0</li><li>• Any CGI-enabled Web server</li></ul>

Figure 2 Web server compatibility.

### About Informix

Informix Corporation, based in Menlo Park, California, provides innovative database solutions that assist the world's major corporations attain competitive advantage. Informix is widely recognized as the technology leader for corporate computing environments ranging from small workgroups to very large parallel processing applications. Informix's database server, application development tools, superior customer service, and strong partnerships enable the company to be at the forefront of major information technology solution areas including data warehousing, high-performance OLTP, and Web/e-commerce. For more information, contact the sales office nearest you or visit our Web site at <http://www.informix.com>.



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