

e-shop and IBM WebSphere Application Server

The e-shop turns any company running MOVEX/JD Edwards into a company with a business-to-business (B2B) presence on the Internet.

How does it work?

The e-shop consists of software components: an Internet component (a Java web application) and an AS/400 component, a web server, an application server and MOVEX/JD Edwards. The e-shop has chosen to use the IBM WebSphere Application Server as its preferred application web server.

How does e-shop take advantage of IBM WebSphere Application Server?

Hardware Independence

First, the e-shop uses the Open Standards architecture of the Sun Java J2EE platform. There are now *optimized* Java Virtual Machines for every hardware platform and operating system. The IBM WebSphere Application Server is just as versatile.

WebSphere Application Server version 3.5 supports Windows NT, Windows 2000, Solaris, AIX, AS/400, HP-UX, Red Hat Linux, Caldera Linux, and Novell Netware. WebSphere Application Server version 4.0 supports z/OS and OS/390.

Industry Standard Web Servers

Second, the e-shop running under IBM WebSphere Application Server will run under any of the industry standard web servers:

- Apache Server, version 1.3.12 or higher,
- Netscape Enterprise Server, version 3.5.1 or higher,
- iPlanet Enterprise Server 4.0,
- Microsoft Internet Information Server (IIS) version 4.0 and 5.0,
- Lotus Domino Application Server, release 5.0.2b or higher, and
- IBM HTTP Server 1.3.12 or higher.

All of these web servers support Secure Socket Layer (SSL) communications, providing secure Internet communications.

Scalability, Performance, Administration

Third, the IBM WebSphere Application Server is designed for medium to high volume sites. It can be run in

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- A single server configuration,
- A multiple server configuration, and
- A multiple server configuration with a load-balancing server.

Every WebSphere Application Server contains performance monitors and tools to watch and adjust the server performance. WebSphere Application Server also contains a local Administration Console, and a remote Java client administration console; as well as Tivoli ready modules. Tivoli software is enterprise network software for managing network resources.

E-shop runs in a single or multiple server environments. WebSphere Application Server handles this diverse range of environments. With the WebSphere Application Server, the e-shop is fully scalable, covering a simple single server model to the most complex enterprise environment with NO SOFTWARE CHANGE.

Enterprise Security

Fourth, whether IBM WebSphere Application Server runs in a single server, local resource model or a multiple server distributed resource model, the WebSphere security server protects the URI name space, the file space, and direct access and remote method invocation access to Enterprise Java Beans (EJB). The WebSphere security model is built upon operating system security, Java 1.2 security, CORBA security, EJB security, WebSphere security, and Internet security (SSL).

WebSphere is designed to provide a unified security model for both web resources and enterprise beans. WebSphere allows a single policy to govern the security of web pages and enterprise beans in an enterprise environment.

WebSphere can be used in conjunction with third party industry standard Lightweight Directory Access Protocol (LDAP) directory support software for providing secure access to network files and resources.

The e-shop runs in secure enterprise environments (e.g. SSL, CORBA, EJB, LDAP environments), as well as simpler secure environments (e.g. SSL, network security, WebSphere security).

e-shop is also happy in environments with demilitarized zones (DMZ). DMZ's are an extra layer of protection, in addition to Firewall security.

Open Standards Java J2EE Architecture

Fifth, the IBM WebSphere Application Server supports the Open Standards Java J2EE Architecture that the e-shop is built upon. J2EE is the J2SE (Java 2 JVM) plus Java 2 Enterprise components. For the e-shop this means

- Java 2 (1.2.2) JVM support (e.g. J2SE),
- Java servlet API 2.2 specification support, and
- JavaServer Page (JSP) API 1.1 specification support.

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The e-shop is built around Java 2 J2SE compatibility. The e-shop expects a Java 1.2.2 JVM, and JSP 1.1 and servlet 2.2 compatibility. These are the foundation of the e-shop.

Another critical J2EE component is JavaMail. The e-shop uses the JavaMail component for email correspondence with e-shop users.

In addition, WebSphere supports JDBC 2.0 Database Connection Pooling with DB2 Universal, Oracle and MS-SQL/Server. e-shop uses high-speed database connection pooling via the `DataSource.getConnection()` method with WebSphere. e-shop uses its' own connection pooling mechanism with other web servers.

The developers of the e-shop use industry standard development tools:

- Java 2 Integrated Development Environments (IDE's): such as IBM Visual Age for Java, Sun Forte or Borland Jbuilder,
- JSP and HTML editors and page designers, such as Allaire Homesite and Dreamweaver, and IBM WebSphere Studio, and
- XML, XSL, XML DTD editors, validators and parsers: such as Xerxes, Sun JAXP, tibco/Extensibility XML Authority and XML Instance.

This is made possible by the Open Standards architecture of Java 2 J2EE, which WebSphere Application Server fully supports.

The e-shop code is a JSP 1.1 compliant web application. The developers produce web application archive files, or .WAR files for short, that are then run or executed by the WebSphere Application server. Thus, the e-shop *architecture* and *deployment* is fully JSP 1.1 compliant. This is a big plus, for the developers.

For the developers, WebSphere Application Server especially shines for testing and debugging the servlets and JSP pages of the e-shop. We use the integrated WebSphere Test Environment to remotely test and debug servlets and JSP pages using IBM WebSphere Studio and Visual Age for Java, and the IBM OLT Debugger. We don't have to start and stop the web server to develop and debug. This is a great advantage over other web server configurations!

XML and XSL

Sixth, the IBM WebSphere Application Server comes with an XML-compliant DTD for JSP pages, XML validation, parser and data transformation tools and XSL support for XML conversion into HTML, WML (wireless) formats.

e-shop developers use this WebSphere XML and XSL functionality to design JSP pages that are valid XML. The e-shop XSL style sheets are used by WebSphere to convert the JSP and CSS into pure HTML. This allows e-shop to lighten the burden on the client web browser.

The e-shop also sends order confirmations to users in plain text or in an XML DTD format specified by the user. XML format order information can be used by many EDI systems.

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J2EE Enterprise Architecture

Seventh, the IBM WebSphere Application Server and the WebSphere security server fully support the enterprise model of business. WebSphere supports and protects distributed/networked web resources, and enterprise java web applications.

The Java J2EE platform is powerful, extensive, high-performance and pervasive (hand-held, wireless); supports the Internet and distributed computing (java enterprise beans, ORB, CORBA, LDAP). WebSphere Application Server fully supports this environment.

24 x 7 Availability

Do you need to take orders and give customers access to their customer information around the clock? Even when MOVEX/JD edwards is down? This is enterprise computing put into business terms.

The next generation e-shop will support 24 x 7 availability. We can design this because of the Java 2 J2EE architecture, and employ and run this securely because the WebSphere Application Server.

The IBM WebSphere Family of Software

Ninth, the WebSphere Application Server is a part of the IBM WebSphere Family of integrated software. The WebSphere Family of software is huge, but at the core (at least for the e-shop) is

- 1) The Database: **DB2 Universal database**,
- 2) The WebServer: **IBM WebSphere Application Server**,
- 3) The RunTime Platform and Programming Language: **The Java 2 platform**,
- 4) The Development Tools:
 - **IBM Visual Age for Java** (Java 2 Integrated Development Environment), and
 - **IBM WebSphere Studio** (HTML, JSP, servlet development environment).

The IBM WebSphere Family is

- Integrated and
- Platform-Independent

So e-shop developers, installers and implementers benefit by being able to use *integrated* software tools across *multiple* platforms. e-Business software development and deployment is heterogeneous, requiring myriads of different technical and business skills. Having the integrated cross-platform tools of WebSphere helps the e-shop team manage the complexity.