BEA Tuxedo

Product Overview

BEA Tuxedo Release 8.0
Document Edition 8.0
June 2001

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Product Overview

Document Edition	Part Number	Date	Software Version
8.0	801-001200-001	June 2001	BEA Tuxedo 8.0

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About This Document

This document presents an overview of the BEA Tuxedo® product.

This document includes the following topics:

- Chapter 1, “Introduction,” presents an overview of the BEA Tuxedo product.
- Chapter 2, “Product Features,” describes the beneficial product features.
- Chapter 3, “Product Support and Resources,” describes the resources available to users.
- Chapter 4, “Interoperability and Coexistence,” describes product interoperability and coexistence capabilities.

What You Need to Know

This document is intended for users who want to familiarize themselves with the BEA Tuxedo product.

e-docs Web Site

The BEA Tuxedo product documentation is available from the BEA Systems, Inc. corporate Web site. From the BEA Home page, click the Product Documentation button or go directly to the “e-docs” Product Documentation page at http://e-docs.bea.com.

How to Print the Document

You can print a copy of this document from a Web browser, one file at a time, by using the File—>Print option on your Web browser.

A PDF version of this document is available on the BEA Tuxedo documentation Home page on the e-docs Web site (and also on the documentation CD). You can open the PDF in Adobe Acrobat Reader and print the entire document (or a portion of it) in book format. To access the PDFs, open the BEA Tuxedo documentation Home page, click the PDF Files button, and select the document you want to print.

If you do not have the Adobe Acrobat Reader installed, you can download it for free from the Adobe Web site at http://www.adobe.com/.

Related Information

For more information about CORBA, ATMI, distributed object computing, transaction processing, C++ programming, and Java programming, see the *CORBA Bibliography* in the BEA Tuxedo online documentation.

Contact Us!

Your feedback on the BEA Tuxedo documentation is important to us. Send us e-mail at **docsupport@bea.com** if you have questions or comments. Your comments will be reviewed directly by the BEA professionals who create and update the BEA Tuxedo documentation.

In your e-mail message, please indicate that you are using the documentation for the BEA Tuxedo 8.0 release.

If you have any questions about this version of BEA Tuxedo, or if you have problems installing and running BEA Tuxedo, contact BEA Customer Support through BEA WebSUPPORT at www.bea.com. You can also contact Customer Support by using the contact information provided on the Customer Support Card, which is included in the product package.

When contacting Customer Support, be prepared to provide the following information:

- Your name, e-mail address, phone number, and fax number
- Your company name and company address
- Your machine type and authorization codes
- The name and version of the product you are using
- A description of the problem and the content of pertinent error messages

Documentation Conventions

The following documentation conventions are used throughout this document.

Convention	Item
boldface text	Indicates terms defined in the glossary.
Ctrl+Tab	Indicates that you must press two or more keys simultaneously.
italics	Indicates emphasis or book titles.

Convention	Item

`monospace text`	Indicates code samples, commands and their options, data structures and their members, data types, directories, and filenames and their extensions. Monospace text also indicates text that you must enter from the keyboard.
	Examples:
	`#include <iostream.h> void main ( ) the pointer psz`
	`chmod u+w *`
	`\tux\data\ap`
	`.doc`
	`tux.doc`
	`BITMAP`
	`float`

`monospace boldface text`	Identifies significant words in code. *Example*: `void` **`commit`** `( )`
`monospace italic text`	Identifies variables in code. *Example*: `String` *`expr`*
UPPERCASE TEXT	Indicates device names, environment variables, and logical operators. *Examples*: LPT1 SIGNON OR
`{ }`	Indicates a set of choices in a syntax line. The braces themselves should never be typed.
`[ ]`	Indicates optional items in a syntax line. The brackets themselves should never be typed. *Example*: `buildobjclient [-v] [-o` *`name`* `] [-f` *`file-list`*`]... [-l` *`file-list`*`]...`
`|`	Separates mutually exclusive choices in a syntax line. The symbol itself should never be typed.

Convention	Item

. . .	Indicates one of the following in a command line:
	■ That an argument can be repeated several times in a command line
	■ That the statement omits additional optional arguments
	■ That you can enter additional parameters, values, or other information
	The ellipsis itself should never be typed.
	Example:
	`buildobjclient [-v] [-o name ] [-f file-list]...`
	`[-l file-list]...`

. . .	Indicates the omission of items from a code example or from a syntax line. The vertical ellipsis itself should never be typed.

CHAPTER

1 Introduction

This topic includes the following sections:

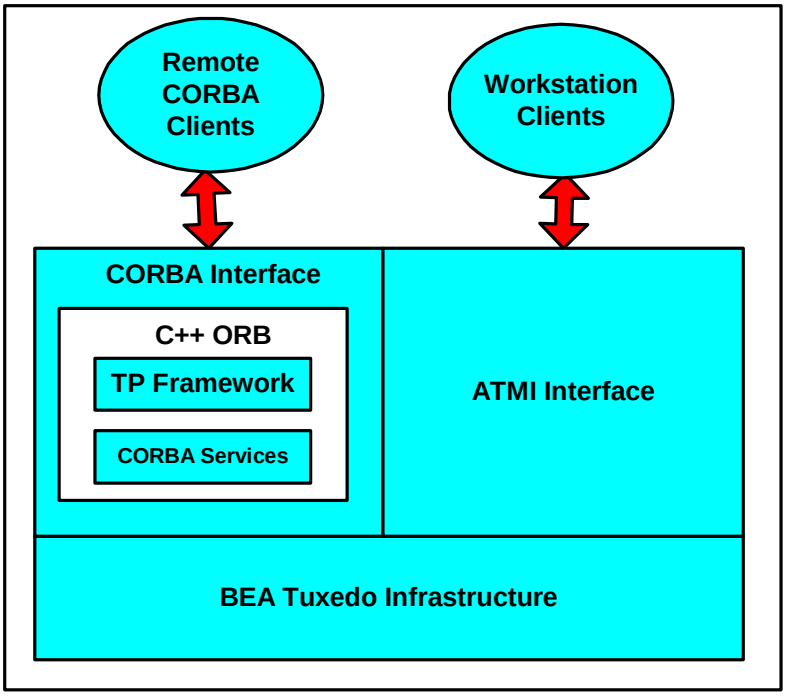
- Overview
- Packaging
- New Features and Enhancements in this Release
- Product Upgrades

Overview

In a modern, transaction-driven, global economy, your competitive resources are not only the people you hire and the products you produce, but also the software and systems that interconnect the enterprise. Mission-critical software can help you gain the competitive edge in the ever-expanding arena of globally connected electronic commerce. Transaction Monitors (TMs) is the technology upon which this competitive advantage is being built. The BEA Tuxedo system provides the best-of-breed TM for the development and deployment of your mission-critical applications.

Additionally, the BEA Tuxedo software provides businesses and organizations that depend on mission-critical applications with the flexibility of two proven programming interfaces: a Common Object Request Broker Architecture (CORBA) interface and an Application-to-Transaction Monitor Interface (ATMI). As illustrated in Figure 1-1, both interfaces use the BEA Tuxedo infrastructure, which has demonstrated, through years of use in large, transaction-based, production systems, that it is powerful, robust, scalable, manageable, and reliable.

Figure 1-1 BEA Tuxedo Product



CORBA Interface

The CORBA interface provides a C++ server ORB, the TP Framework, and several CORBA services, including FactoryFinder, Naming Service, Notification Service, the Interface Repository, and the Transaction Service. C++, Java, and ActiveX client ORBs are also included with the BEA Tuxedo software to support the development of remote client applications.

For more information on the BEA Tuxedo CORBA interface, see *Getting Started with BEA Tuxedo CORBA Applications* in the online documentation.

ATMI Interface

ATMI provides an interface for communications, transactions, and management data buffers that works in all environments supported by the BEA Tuxedo ATMI interface. ATMI defines the interface between application programs and the BEA Tuxedo system. It offers a simple interface for a comprehensive set of capabilities. It implements the X/Open distributed transaction processing (DTP) model for transaction processing. For more information on the BEA Tuxedo ATMI interface, see *Introducing BEA Tuxedo ATMI* in the online documentation.

Packaging

The following changes have been made to the product packaging:

- The BEA Tuxedo 7.1 and BEA WebLogic Enterprise 5.1 products have been merged.
- All BEA C, C++, and COBOL application and transaction server technologies have converged.
- Jolt is now packaged with the BEA Tuxedo product, however, it is still licensed separately.
- EJB and Java server support is being provided exclusively by the BEA WebLogic Server. BEA Tuxedo 8.0 does not include support for EJBs or CORBA Java servers.

New Features and Enhancements in this Release

Release 8.0 of BEA Tuxedo includes the following new features and enhancements:

- Support for Multithreaded CORBA C++ Applications
- Support for CORBA C++ Unicode Character Set
- Load Balancing Optimizations
- Support for C++ Object-by-Value Types
- Support for Single Sign-On Across ATMI and CORBA Domains
- Server Performance Enhancements
- Domain Enhancements
- Enhancements to Jolt to Improve Interoperability Between BEA WebLogic Server BEA Tuxedo ATMI

Support for Multithreaded CORBA C++ Applications

Release 8.0 of BEA Tuxedo supports multithreaded C++ client and server applications. While there are many advantages to writing multithreaded applications, there are some disadvantages such as application complexity. BEA Tuxedo 8.0 supports two threading models: thread per object and thread per request.

The characteristics of each model are as follows:

- Thread per object
  - A different thread for each object in the server process
  - Minimizes rework required to multithread an existing server
  - Customer-developed concurrency control not required
- Thread per request
  - Each client request is processed in a different thread
  - Enables long-duration requests from multiple clients
  - Requires user concurrency control mechanism

For more information on writing multithreaded applications, see *Creating CORBA Server Applications* in the online documentation.

Support for CORBA C++ Unicode Character Set

Release 8.0 of the BEA Tuxedo software supports international (multi-byte) characters, or wide characters. Support for wide characters enables the Unicode character set to be used in the CORBA Interface Definition Language (IDL) and in CORBA client and server applications. As part of this new functionality, the C++ IDL compiler now supports `wchar` and `wstring` data types, recursive sequences, indirect typecodes, and forward references.

For more information on support for wide characters, see the *CORBA Programming Reference* in the online documentation.

Load Balancing Optimizations

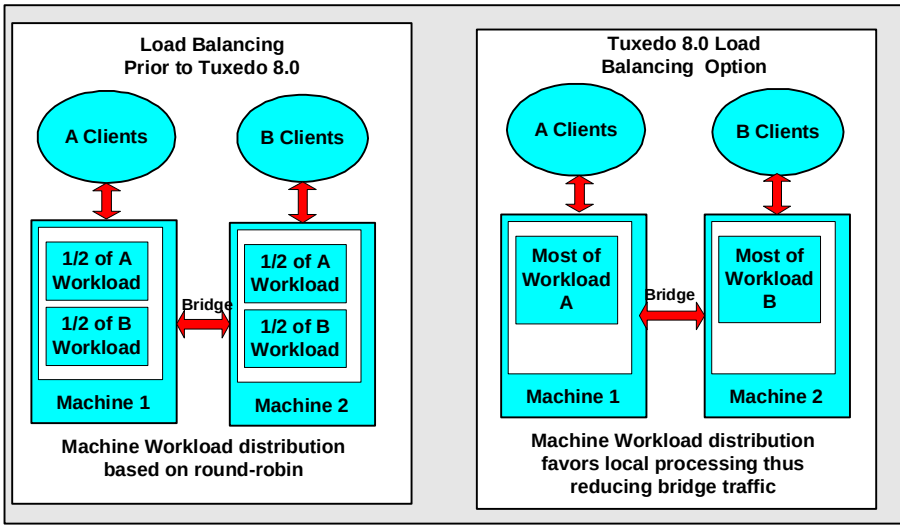
Release 8.0 of BEA Tuxedo includes new load balancing features. In BEA WebLogic Enterprise 5.1, in a multiprocessor configuration, load balancing randomly distributed the workload across all machines supporting a particular interface within a domain. In BEA Tuxedo 8.0, load balancing favors the local machine when distributing workload and, thus, reduces bridge traffic (see Figure 1-2).

Additionally, support for parallel objects was added to BEA Tuxedo CORBA in release 8.0 as a performance enhancement. The parallel objects feature enables you to designate all business objects in a particular application as stateless objects. The effect is that, unlike stateful business objects which can only run on one server in a single domain, stateless business objects can run on all servers in a single domain. Thus, the benefits of parallel objects are as follows:

- Parallel objects can run on multiple servers in the same domain at the same time. Thus, utilization of all servers to service concurrent multiple requests improves performance.
- When the BEA Tuxedo system services requests to parallel business objects, it always looks for an available server to the local machine first. If all servers on the local machine are busy processing the requested business object, the BEA Tuxedo system looks for an available server on other machines in the local domain. Thus, if there are multiple servers on the local machine, network traffic is reduced and performance is improved.

For more information on parallel objects, see *Scaling, Distributing, and Tuning CORBA Applications* in the online documentation.

Figure 1-2 Load Balancing Optimizations



Support for C++ Object-by-Value Types

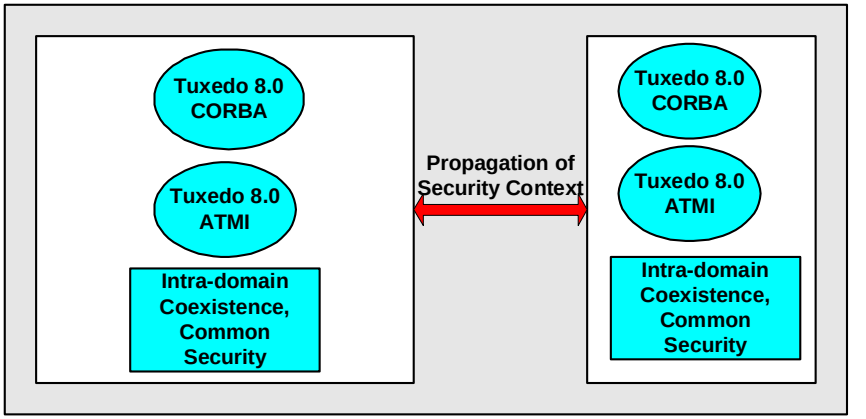
Support for C++ object-by-value types enhances the ability of BEA Tuxedo CORBA C++ applications to access BEA WebLogic Servers 6.0 via RMI/IIOP.

For more information on object-by-value types, see “Interoperability Between BEA Tuxedo 8.0 CORBA and BEA WebLogic Server 6.0 Using Object-by-Value Types” on page 4-5.

Support for Single Sign-On Across ATMI and CORBA Domains

Support for the T-Engine security plug-in framework was provided in BEA Tuxedo 7.1 and BEA WebLogic Enterprise 5.1 (CORBA-only), but security context could not be propagated across these environments. In BEA Tuxedo 8.0, both the ATMI and CORBA environments support the same plug-in framework, and therefore, common, interoperable security is achieved.

Figure 1-3 Single Sign-On Across Domains



Server Performance Enhancements

BEA Tuxedo 8.0 includes the following server options that enable you to customize the server for optimal performance:

- Service and interface caching
- Turning off authorization and auditing security
- Turning off multithreaded Processing
- Turning off XA transactions

Note: The authorization, threading, and transaction options can be turned off individually, however, you should not turn off any of these features if your applications require them.

For information on how to use the above performance options, see "Tuning a BEA Tuxedo Application" in *Administering a BEA Tuxedo Application at Run Time* in the online documentation.

Domain Enhancements

Enhancements have been made to the BEA Tuxedo Domains software to improve performance in the following areas:

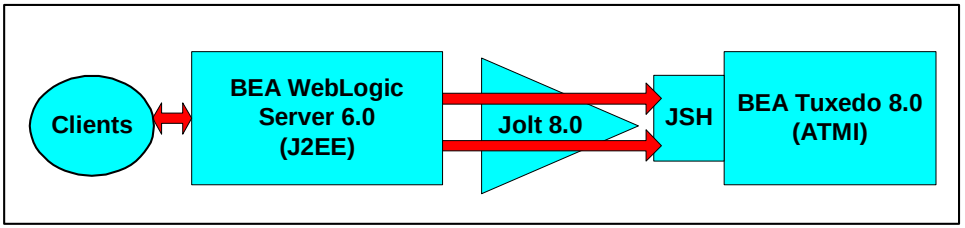
- Reduce boot time in large domain configurations—in releases prior to release 8.0 of the BEA Tuxedo software, applications that contained hundreds of domains could take a significant amount of time to boot. BEA Tuxedo 8.0 has been enhanced to substantially shorten the boot time of applications with a large number of domains.
- Enable cross-domain assignment of message priorities—in releases prior to release 8.0 of the BEA Tuxedo software, priority settings (via `tpsprio` calls) from client requests were ignored across domains. In order for users to provide Quality-of-Service (QOS) in their multi-domain applications, messages need to have assigned priorities and these priorities need to be propagated across domains. This can only be accomplished if the message priorities are propagated across domains. In BEA Tuxedo 8.0, message priorities are propagated across domains.
- Domain transaction auditing—in releases prior to release 8.0 of the BEA Tuxedo software, in cases where transactions cross domain boundaries (BEA Tuxedo Domains), it was not possible to track a transaction in certain situations (for example, if it was heuristically committed or aborted). This is because each domain assigns its own transaction ID to each request under transaction control. And although the `audit` subcommand of the `dmadmin` command can log the transaction IDs of requests across domain boundaries, that is, which domain the request came from or was sent to, only the local transaction ID was recorded. In BEA Tuxedo 8.0, a mapping feature has been added that records the transaction IDs of domains that the transaction was initiated in and sent to; this information is logged in the subordinate domain.

Enhancements to Jolt to Improve Interoperability Between BEA WebLogic Server BEA Tuxedo ATMI

In release 8.0, the Jolt software includes the following enhancements that improve the integration of BEA WebLogic Server with BEA Tuxedo services (see Figure 1-4):

- Propagation of BEA WebLogic Server user authentication—Jolt has been enhanced to automatically propagate user identity from BEA WebLogic Server. This means that once a user has been authenticated to the BEA WebLogic Server, there is no need to further authenticate that user to Jolt so that the connection can be made to the BEA Tuxedo service.
- Connection pools reset option—in releases prior to release 8.0 of Jolt, clients that used the Jolt connection pools were not able to re-establish connections after failures on the server side. When failures occurred (for example, the server crashed or the Jolt Station Handler (JSH) shut down), any subsequent request would fail on that connection. When this happened, it meant that the connection pools had to be torn down and reconstructed after the server side is revived. This required that the BEA WebLogic Server be restarted. To alleviate this problem, an option that resets the connection pools without stopping the Jolt client application has been added to Jolt.
- XML buffer type support—in release 8.0, Jolt has been enhanced to support XML buffer types and allow XML documents to flow from a Jolt client to a BEA Tuxedo service via data-dependent routing. This feature allows XML buffers to be specified in the Jolt repository so that the JSH can perform the buffer mapping prior to service invocation for requests and after the service invocation for replies.
- Buffer allocation enhancements—because buffer reallocations can result in performance degradation, Jolt 8.0 has been enhanced so that Jolt client requests to BEA Tuxedo services that return large buffers (>= 100K) do not cause as many internal reallocations of the buffer. For FML reply buffers, Jolt makes more accurate estimates of buffer allocations so that the number of reallocations is eliminated or reduced.

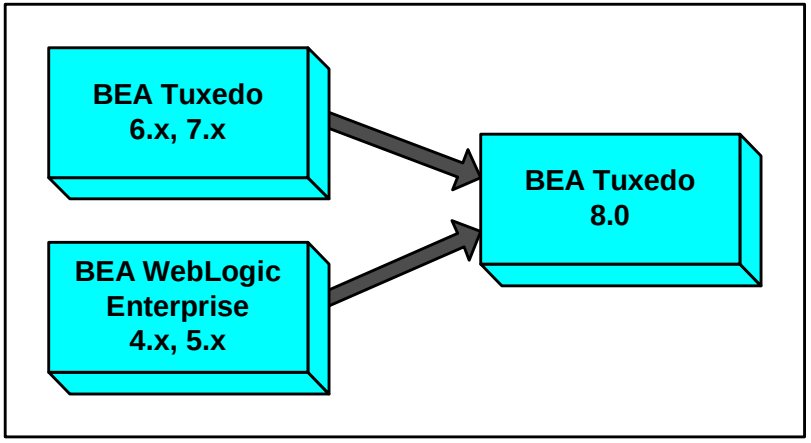
Figure 1-4 BEA WebLogic Server Integration Enhancements



Product Upgrades

Figure 1-5 shows the existing BEA Tuxedo and BEA WebLogic Enterprise products that can be upgraded to BEA Tuxedo 8.0.

Figure 1-5 Upgrade Paths



CHAPTER

2 Product Features

This topic includes the following sections:

- Introduction
- Proven Infrastructure
- Support for Popular Platforms
- Interoperability and Coexistence
- Scalability
- Support for Industry Standards
- State of the Art Security
- Transactions
- Web Accessible BEA Tuxedo Services
- Management Tools
- Support for Multiple Programming Models and Languages

Introduction

The BEA Tuxedo system provides state-of-the-art, proven software that enables businesses to take advantage of distributed software applications. BEA Tuxedo software makes it possible to design, program, and administer reliable, scalable, and secure distributed applications in a cost-effective manner.

The following sections discuss some of the capabilities and benefits of this product.

Proven Infrastructure

The BEA Tuxedo infrastructure has a proven track record of reliability and scalability. It provides efficient routing, dispatching, and management of application service requests, event postings and notification, and applications queues. After years of use in mission critical production environments, it has earned its reputation as the best transaction management software in the industry.

Support for Popular Platforms

Ideally, client/server software should be independent of hardware or operating system platforms. This allows you to mix client and server platforms and deploy client and server applications on different hardware using different operating systems, optimizing the type of work that each performs. In harmony with this, release 8.0 of the BEA Tuxedo system supports the following platforms:

- Compaq Tru64 UNIX 5.1
- Hewlett Packard HP-UX 11.0 (32-bit)
- Microsoft Windows 2000 and 98 (Windows 98 supports client software only)
- Red Hat Linux 6.2

- Sun Microsystems Solaris 8 on Sparc (32-bit)

Note: Additional platforms will be supported in the near future. For the latest information on supported platforms, contact BEA Customer Service.

Interoperability and Coexistence

Release 8.0 of the BEA Tuxedo software can interoperate and coexist with older versions of the BEA Tuxedo software, BEA WebLogic Enterprise, and BEA WebLogic Server.

For more information on interoperability and coexistence, see Chapter 4, "Interoperability and Coexistence."

Scalability

This topic includes the following sections:

- Application Scalability Requirements
- BEA Tuxedo Scalability Features

Application Scalability Requirements

Many applications perform adequately in an environment where between 1 to 10 server processes and 10 to 100 client applications are running. However, in an enterprise environment, applications may need to support hundreds of execution contexts (where the context can be a thread or a process), tens of thousands of client applications, and millions of objects at satisfactory performance levels.

Subjecting an application to exponentially increasing demands quickly reveals any resource shortcomings and performance bottlenecks in the application. Scalability is therefore an essential characteristic of BEA Tuxedo applications.

You can build highly scalable BEA Tuxedo applications by:

- Adding parallel processing capability to enable the BEA Tuxedo domain to process multiple client requests simultaneously.
- Sharing the processing load on the server applications across multiple machines.

BEA Tuxedo Scalability Features

Using the BEA Tuxedo system, you can quickly scale your applications to match varying system load demands because services and servers can be replicated and distributed easily.

The BEA Tuxedo product supports large-scale application deployments by:

- Using multiple domains
- Using data-dependent routing (BEA Tuxedo ATMI only)
- Using factory-based routing (BEA Tuxedo CORBA only)
- Multiplexing incoming client connections
- Optimizing object state management
- Load balancing objects and requests across replicated server processes and server groups
- Using multithreaded servers, which are appropriate for certain types of applications and processing environments

For more information about scaling, see “Tuning Your Application” in *Administering a BEA Tuxedo Application at Run Time* and *Scaling, Distributing, and Tuning CORBA Applications* in the online documentation.

Support for Industry Standards

The BEA Tuxedo CORBA environment supports the Common Object Request Broker Architecture (CORBA) developed by the Object Management Group. The OMG is a non-profit consortium that produces and maintains computer industry specifications for interoperable enterprise applications.

For more information about the CORBA specifications, interfaces, CORBA Services, and C++ Language Mappings supported by the BEA Tuxedo product, see the *CORBA Programming Reference* in the online documentation.

State of the Art Security

Release 8.0 of the BEA Tuxedo product includes security features that allow you to build secure Application-to-Transaction Monitor Interfaces (ATMI) and CORBA applications.

Security refers to techniques for ensuring that data stored in a computer or passed between computers is not compromised. Most security measures involve proof material and data encryption, where the proof material is a secret word or phrase that gives a user access to a particular program or system, and data encryption is the translation of data into a form that cannot be interpreted.

Distributed applications such as those used for electronic commerce (e-commerce) offer many access points for malicious people to intercept data, disrupt operations, or generate fraudulent input; the more distributed a business becomes, the more vulnerable it is to attack. Thus, the distributed computing software, or middleware, upon which such applications are built must provide security.

Security Features

The security features of the BEA Tuxedo 8.0 product let you establish secure connections between servers and clients to servers. The following security features are provided:

- Authentication of remote domain gateways, Workstation clients, and CORBA clients to the BEA Tuxedo domain. Authentication is accomplished using a standard username/password combination or in the case of CORBA applications, the identity inside of a X.509 digital certificate.
- Data integrity and confidentiality through Link-Level Encryption (LLE) or the Secure Sockets Layer (SSL) protocol. ATMI applications use LLE to protect network traffic between bridges and domains. CORBA applications use the SSL protocol to protect network communication between CORBA clients and the BEA Tuxedo domain.
- A single sign-on environment between BEA WebLogic Server and the BEA Tuxedo system so that BEA WebLogic Server principals can access BEA Tuxedo services and CORBA objects. This feature allows the propagation of the security context for the requesting WebLogic Server principal to the BEA Tuxedo domain over network connections that are part of a trusted BEA Jolt or BEA WebLogic Enterprise Connector (WLEC) connection pool.
- Security Service Provider Interfaces (SPIs) that can be used to integrate security plug-ins that provide authentication, authorization, auditing, and public key security features. Security vendors can use the SPIs to integrate third-party security offerings into the BEA Tuxedo environment.
- A Public Key Infrastructure (PKI) that uses the SSL protocol and X.509 digital certificates to provide data privacy for messages sent over network links. This feature is available for ATMI and CORBA applications. In addition, a set of PKI SPIs are provided.

The full set of BEA Tuxedo security features is delivered on the BEA Tuxedo software CD-ROM, but the LLE and SSL protocol features and the security plug-ins cannot be used without a additional licensing. For information about enabling the LLE and SSL protocol features, see *Installing the BEA Tuxedo System*.

Security Plug-ins

With the exception of LLE, the BEA Tuxedo security capabilities are implemented through the security plug-in interface. This interface enables BEA Tuxedo customers to independently define and dynamically add their own security plug-ins. A security plug-in is a code module that implements a particular security capability.

The specifications for the security plug-in interface are not generally available, but are available to third-party security vendors who have entered into a special agreement with BEA Systems. BEA Tuxedo customers who want to customize a security capability can contact one of the third-party security vendors. For example, a BEA Tuxedo customer who wants a custom implementation of public key security must acquire the appropriate plug-ins.

For more information about security plug-ins, including third-party security vendors, see your BEA account executive.

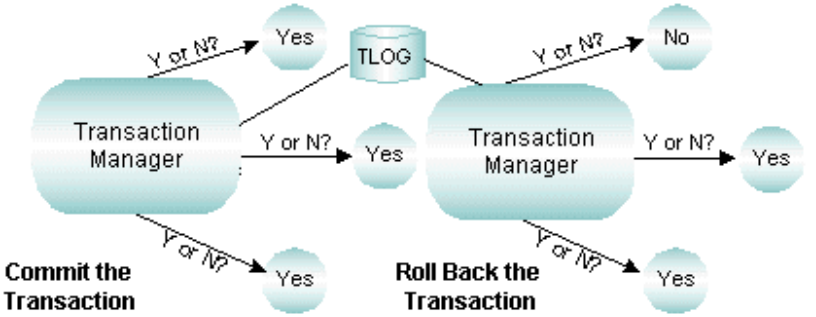
For more information on security in ATMI and CORBA applications, see *Using Security in ATMI Applications* and *Using Security in CORBA Applications* respectively in the online documentation.

Transactions

A powerful feature of the BEA Tuxedo system is the ability to manage transactions for database applications that support the XA-interface. Transactions simplify the writing of distributed applications. They allow your application to cope more easily with a large set of problems that can occur in distributed environments, such as machine, program, and network failures.

In a distributed architecture, a local machine involved in a transaction can communicate with a remote machine which may, in turn, communicate with another remote machine. The communication and the work done by the remote machines is part of the transaction, and integrity must be maintained. Keeping track of distributed transaction processing can be a complex task because the system must maintain enough information about a transaction to be able to roll it back (that is, to undo it) at any moment.

Figure 2-1 BEA Tuxedo Transaction Manager



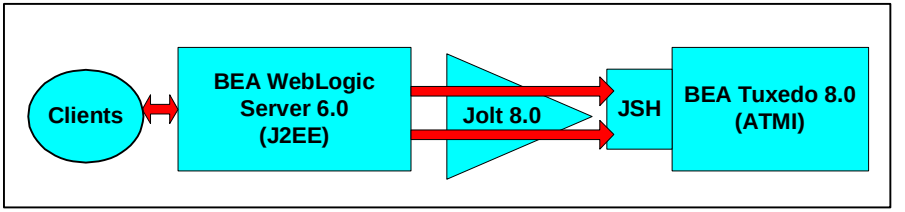
To keep track of the participants in a transaction, the BEA Tuxedo system creates a transaction log. To maintain the state of an application as represented by the contents of the computer's memory, the BEA Tuxedo system uses one or more resource managers (RMs) (a collection of information and processes for accessing it, such as a database management system). To coordinate all the operations performed and all the modules affected by a transaction, the BEA Tuxedo system uses a Transaction Manager (TM), which directs the actions of the RMs. Together, TMs and RMs maintain the atomicity of a distributed transaction.

For more information about transactions, see *Introducing BEA Tuxedo ATMI* and *Using CORBA Transactions* in the online documentation.

Web Accessible BEA Tuxedo Services

Using BEA WebLogic Server and Jolt, you can make BEA Tuxedo ATMI services accessible on the Web (see Figure 2-2).

Figure 2-2 Making BEA Tuxedo ATMI Services Web Accessible

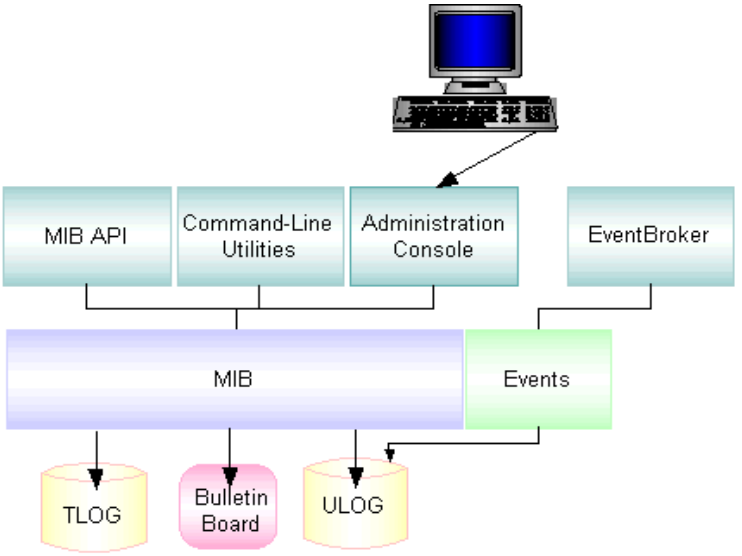


For more information about making BEA Tuxedo ATMI services Web accessible, see *Using BEA Jolt with BEA WebLogic Server* and *Using BEA Jolt* in the online documentation.

Management Tools

The BEA Tuxedo system gives you a choice of several methods for performing the same set of administrative tasks for either BEA Tuxedo ATMI or CORBA environments. Whether you are more comfortable using a graphical user interface or entering commands at a shell prompt, you will be able to find a comfortable method of doing your job as the administrator of a BEA Tuxedo application. The following figure illustrates the tools you can use to write the configuration file and administer your BEA Tuxedo application during run time.

Figure 2-3 Administration Tools



- BEA Administration Console—a Web-based tool used to monitor an application, and to dynamically configure its operation.
- BEA Tuxedo MIB Application Programming Interface—an interface to a set of procedures for accessing and modifying information in the MIBs.
- Command-line utilities—a set of commands used to manage, activate, configure, and deactivate the application. For more information, refer to the *BEA Tuxedo Command Reference* in the online documentation.

If You Use This Tool...	You Must...
BEA Administration Console	Use a graphical user interface (GUI) to create and edit the `TUXCONFIG` file. Full descriptions of the GUI are available by accessing Help directly from the GUI.
BEA Tuxedo MIB Application Programming Interface	Write a program that modifies the `TUXCONFIG` file for you.

If You Use This Tool...	You Must...
Command-line interface	1. Create and edit the `UBBCONFIG` file (a text version of `TUXCONFIG`) with a text editor. 2. Run a command to convert the `UBBCONFIG` file into a `TUXCONFIG` (binary) file.

For more about using the management tools, see *Setting Up a BEA Tuxedo Application* in the online documentation.

Support for Multiple Programming Models and Languages

BEA Tuxedo supports two programming models and three languages.

The supported programming models are:

- Remote Procedure Call (RPC)—supported for native and workstation ATMI applications.
- CORBA—supported for native and remote client, joint client/server, and server applications.

The supported programming languages are:

- C and COBOL—supported for native and remote ATMI applications.
- C++—supported for CORBA client, joint client/server, and server applications.
- JAVA—supported for remote CORBA clients applications.
- Visual Basic—using the BEA Tuxedo ActiveX component, Visual Basic is supported for remote CORBA client applications.

CHAPTER

3 Product Support and Resources

This topic includes the following sections:

- About the BEA Tuxedo Documentation
- Using the BEA Tuxedo Online Documentation. This topic includes these sections:
  - Accessing the Documentation in a Browser
  - Navigating to Information Topics from the Home Page
  - Site Map
  - PDF Document Files
  - Using the Online Search Feature
  - Learning Paths
- BEA Developer Center. This section includes these samples:
  - Accessing Unsupported Code Examples
  - Accessing Tools, Resources and Books
- BEA Professional Services
- BEA Education Services

About the BEA Tuxedo Documentation

The BEA Tuxedo documentation is designed to provide you with information at various levels to help you learn the BEA Tuxedo system. You may want to read all of the documentation or choose only those topics that will give you information for your immediate requirements.

The BEA Tuxedo documentation consists of the following:

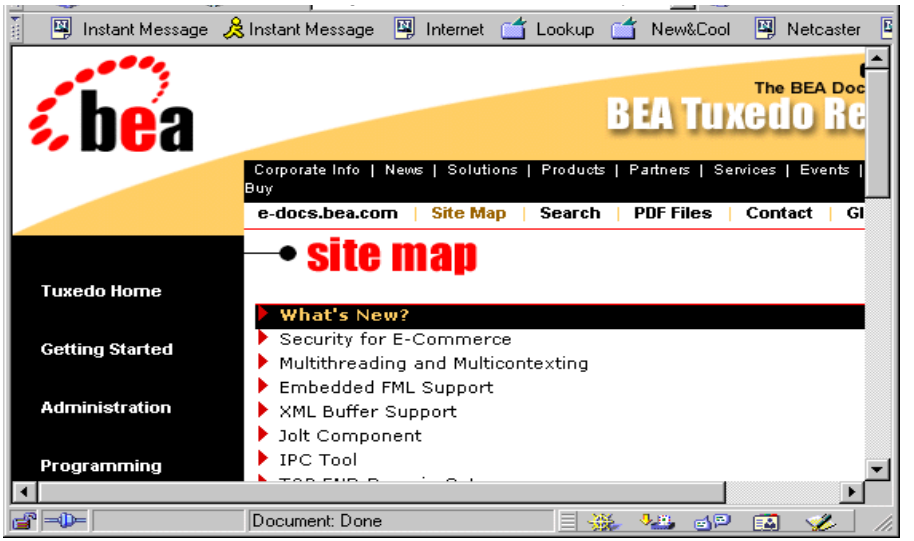
- Online information
- Context-sensitive online help for BEA Tuxedo graphical user interface (GUI)-based applications
- Printed versions of *Installing the BEA Tuxedo System*, BEA Tuxedo *Release Notes*, and this document, the *Product Overview*

The following sections give a brief description of each of these components.

BEA Tuxedo Online Documentation

The online documentation is provided on a documentation CD that ships with the product and via the e-docs Web site located at http://edocs.bea.com.

For a listing of the individual documents that are included in the online documentation, access the BEA Tuxedo Web site Home page and click on Site Map. The following Web page displays.



BEA Tuxedo Context-Sensitive Help

The BEA Tuxedo software includes a set of GUI-based tools designed to help you build and administer your BEA Tuxedo client and server applications. Table 3-1 lists the context-sensitive help components provided with each BEA Tuxedo software GUI.

Table 3-1 BEA Tuxedo Context-Sensitive Online Help

BEA Tuxedo Help Components	Description
Using CORBA ActiveX	Provides help topics that describe how to use the Application Builder to create ActiveX views of CORBA objects in an BEA Tuxedo domain.
BEA Administration Console Online Help	Provides help topics that describe how to use the BEA Administration Console to remotely administer the BEA Tuxedo system from a Web browser.

BEA Tuxedo Printed Documentation

Figure 3-2 describes the printed documents that are packaged in the BEA Tuxedo product box along with the product software and online documentation CDs.

Table 3-2 Printed Documentation

Document	Description
BEA Tuxedo Release Notes	The release notes include known product limitations and workarounds and any late breaking information that could not be included in the published product documents. You should read the release notes before you install or use the BEA Tuxedo software. The document also lists supported platforms and the new product features for this release. This document is also included on the e-docs Web site (http://www.edocs.bea.com).
Installing the BEA Tuxedo System	This installation guide describes how to install the BEA Tuxedo software, how to configure your system to run the software, and how to run simple applications that verify that the software has been installed properly. This document also includes platform data sheets for each support platform and BEA Tuxedo upgrade information. This document is also included in the online documentation in HTML and PDF formats.
Product Overview	The *Product Overview* (this document) provides a high-level overview of the BEA Tuxedo system, the product user documentation, and other resources and includes references to more detailed information. This document is also included in the online documentation in HTML and PDF formats.

Using the BEA Tuxedo Online Documentation

The BEA Tuxedo online documentation contains a comprehensive set of documents about the BEA Tuxedo system. This information is designed to help you:

- Understand the key functionality of the BEA Tuxedo system
- Design, develop, and deploy mission-critical client/server applications
- Manage your BEA Tuxedo domain resources using the software administration tools provided with the BEA Tuxedo system

The online documentation provides easy-to-access information in HTML format for viewing in your favorite Web browser.

Note: Netscape Navigator 4.x or Microsoft Internet Explorer 4.x or later are recommended.

To view the online documentation, you need a Web browser that supports HTML 3.0 features, including tables and frames. Using the documentation CD, you can copy the CD's contents to your machine, or leave the files on the CD. The documentation CD occupies less than 0.5 Megabytes of disk space. If you copy the CD's files to a new location, do not change the hierarchy of folders.

Accessing the Documentation in a Browser

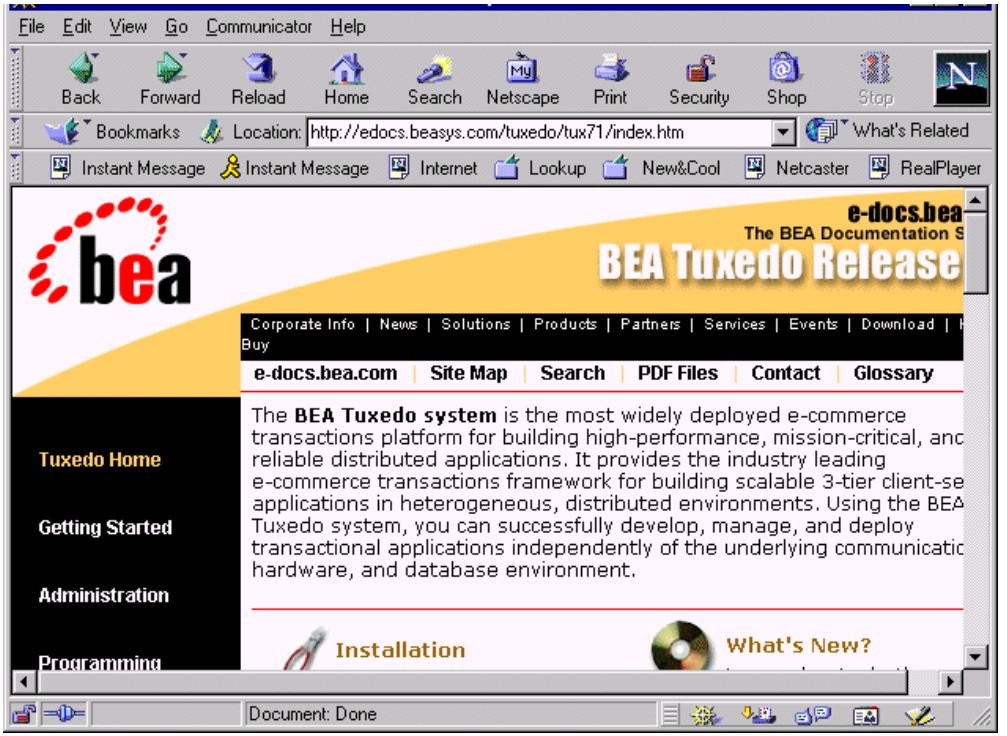
To begin viewing the Online Documentation Home page, access BEA Tuxedo on the e-docs Web site or open the `index.htm` file in the documentation CD's top-level directory.

Figure 3-1 illustrates the BEA Tuxedo Online Documentation Home page. From this page you can:

- Browse through each online document
- See what's new in this release
- View a site map of all of the documents and click on a graphic to display a document
- Search the entire set of HTML-based documentation using a word or a phrase
- Get a printed copy of each of the major documents by opening and printing an Adobe Acrobat PDF file

  Note: When you print from a document PDF file, you have the option of printing the complete document or selected pages.

Figure 3-1 BEA Tuxedo Online Documentation Home Page



Click on buttons to access topics, to view a CD site map, or to search the documentation.

Display Area: Select a topic or click a button, and the display area shows you the selected document.

Each major topic area is displayed with its own table of contents so that you can see at-a-glance what each document contains.

Once you access the online documentation, you can quickly browse through all of the available information.

Select a topic in the table of contents or click CD Home to return to the Home page.

The online documentation offers many options to access the documentation for the BEA Tuxedo system. The best way to use the documentation is to bring up the Home page in your browser and start exploring.

If you want a list of other resources and manuals that might be useful in understanding and working with the BEA Tuxedo system, click on Site Map on the Home page, and click on Bibliography.

Navigating to Information Topics from the Home Page

The BEA Tuxedo Online Documentation Home page provides navigation aids to help you find information relative to specific topics and user tasks. These aids are made available in the left navigation bar (navbar) and top navbar.

Left Navbar

The left navbar provides links to major information topics. To access the information for a particular topic, simply click the topic.

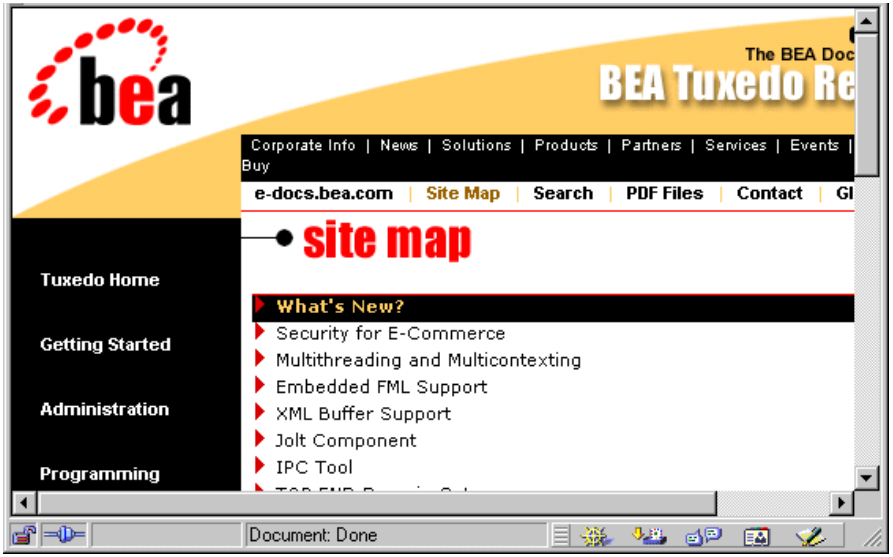
Top Navbar

The top navbar provides links to two categories of information. The top row of topics link to BEA Corporate-level information. The bottom row of topics link to information specific to online documentation.

Site Map

The site map page lists all the documents in the online information set. The documents are grouped by categories such Installation, Getting Started, and Programming.

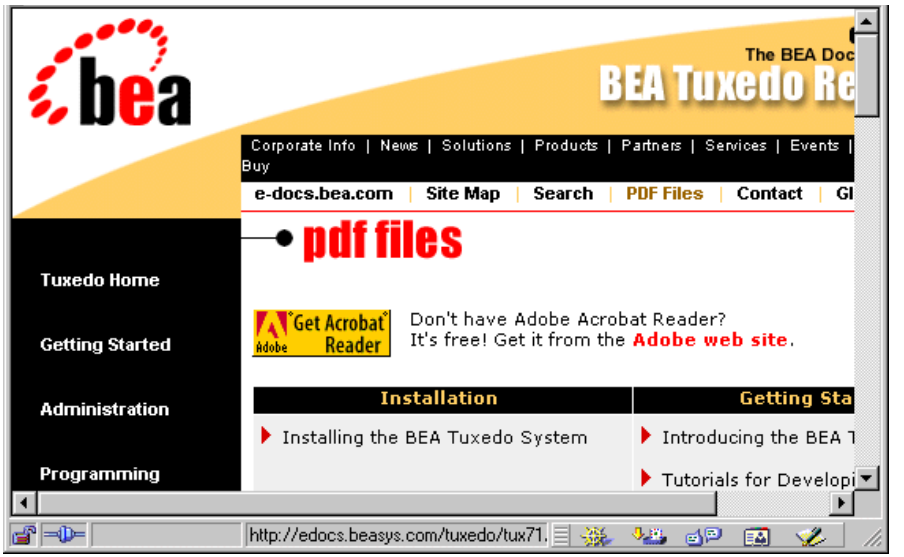
To open a document, click on the document name.



PDF Document Files

The PDF Files page lists all the documents that are available in Adobe Acrobat PDF format. The documents are group by categories such as Installation, Getting Started, and Programming.

To open a PDF file, click on the document name. Once the PDF is displayed you also have the option of printing it.



Using the Online Search Feature

The BEA Tuxedo online documentation includes a Java search applet, a platform-independent search tool, to assist you in locating topics in the BEA Tuxedo online documentation (see Figure 3-2). The search applet enables you to search for one or more keywords and returns a list of target HTML pages.

When using the search applet, keep these rules in mind:

- Searches are not case sensitive.
- Do not use “quotes” in your query.
- When doing wildcard searches, use the asterisk (*) as a suffix wildcard character in keywords. For example, enter (without quotes) “program*” to find pages with keywords such as program, programmer, or programming.

Figure 3-2 Sample Search Applet Page

To perform a search, follow these steps:

1. Click Search in the top navbar. The Search window is displayed (see Figure 3-2).
2. In the Search field, select the desired search category. If you accept the default, All Topics, as the search category, all documents in the online documentation will be searched. Other search categories limit the search to a specific set of documents, such as ATMI or CORBA documents. To see the search category choices, click the Search field drop-down button.
3. Enter the keyword in the Query field and click Find or press Enter on your keypad. The search results are displayed.
4. If no matches are found, reword your query and try again. If matches are listed, double-click on a matched entry; or, highlight the entry and click Show.

5. When the destination page appears, you can enter Ctrl+F to use the browser Find function to locate the keyword on the page.

Learning Paths

To help you find the information you need, Table 3-3 lists user tasks and the documentation appropriate to each.

Table 3-3 Learning Paths

If You Want to . . .	You Need . . .	In the Left Navbar on the BEA Tuxedo Home Page, Click . . .
Evaluate the product	A high-level overview of the BEA Tuxedo system.	■ Getting Started ■ Interoperability
Install the software	Step-by-step procedures for installing and configuring each of the BEA Tuxedo system components.	■ Installation
Design or architect a system	To know (1) BEA Tuxedo system capabilities, (2) the benefits these capabilities give you, (3) how to incorporate the benefits of the BEA Tuxedo system into your design, and (4) how to integrate applications in an BEA Tuxedo environment.	■ Getting Started ■ Interoperability ■ Sample Applications ■ Programming ■ Reference ■ Administration ■ Messages
Write client or server applications	To know how to write, build, configure, and run applications.	The same topics as for design or architect.
Administer the system	To know how to configure, monitor, tune, migrate, and manage the BEA Tuxedo system.	■ Administration ■ Migration ■ Interoperability

Table 3-3 Learning Paths (Continued)

If You Want to . . .	You Need . . .	In the Left Navbar on the BEA Tuxedo Home Page, Click . . .
Learn about using Jolt with BEA WebLogic Server and the BEA Tuxedo system	To know (1) how to configure and integrate BEA Jolt with BEA Tuxedo applications so that Tuxedo services are available to customers on the Internet and (2) how to use, configure, and integrate BEA Jolt to work with the BEA Tuxedo system and BEA WebLogic Server.	■ Jolt Documentation

BEA Developer Center

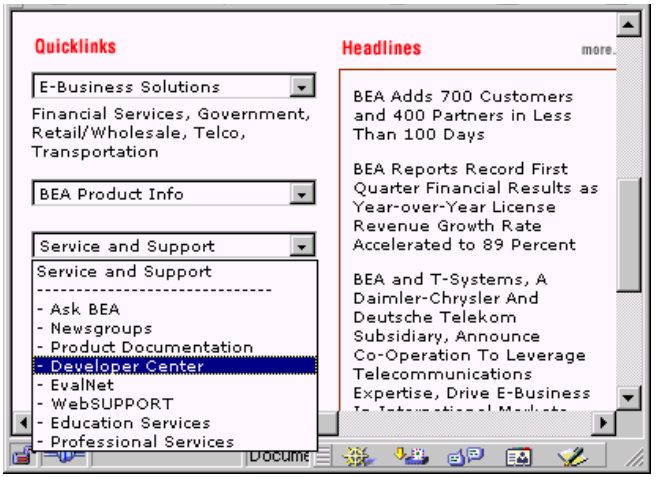
The BEA Developer Center is an online support Web site for BEA customers. It contains unsupported code examples and tools which may assist you in developing applications for BEA software.

Accessing Unsupported Code Examples

To access the unsupported code examples, follow these steps:

1. Enter http://www.bea.com in your Web browser. The BEA corporate Web page displays.
2. Under Quicklinks, click on the Service and Support drop-down menu and select Developer Center (see Figure 3-3).

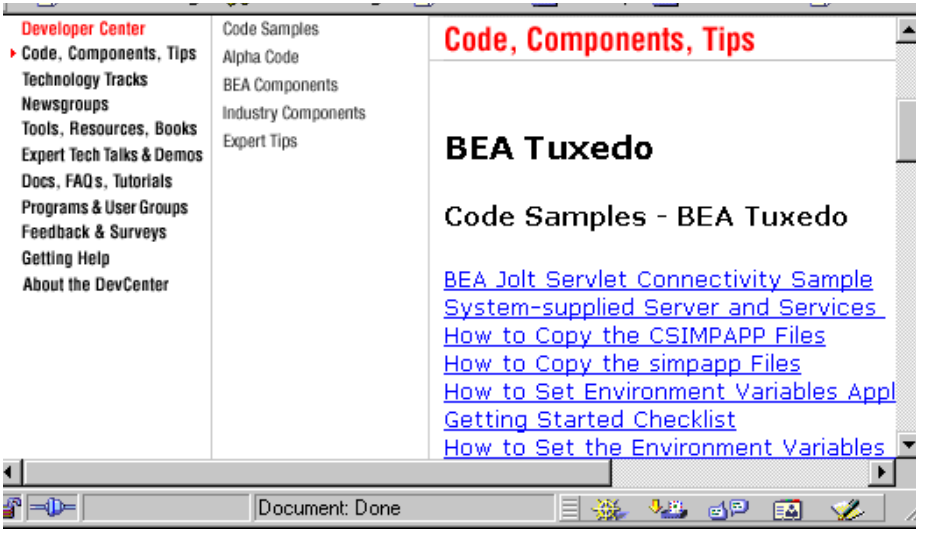
Figure 3-3 BEA Corporate Web Page



3. Enter your username and password. The Developer Center Home Web page displays (see Figure 3-4). If you do not have password, click join and complete the registration information so as receive a username and password.

Figure 3-4 Developer Center Web Page

4. Under Quicklinks, click on Tuxedo. The BEA Tuxedo Code, Components, Tips page is displayed.



Accessing Tools, Resources and Books

To access tools, resources, and books, follow these steps:

1. Enter http://www.bea.com in your Web browser. The BEA corporate Web page displays.
2. Under Quicklinks, click on the Service and Support drop-down menu and select Developer Center.
3. Enter your username and password. The Developer Center Web page displays (see Figure 3-3). If you do not have password, click join and complete the registration information so as receive a username and password.
4. Under Quicklinks, click on the Tools, Resources, Books drop-down menu and select the desired resource. The selected resource page is displayed.

BEA Professional Services

BEA provides a suite of consulting services that will enable you to quickly transform your business into an e-business. BEA consultants have the deep product knowledge and experience to design, develop, and implement solutions right the first time. And we provide full knowledge transfer to your team throughout your projects so your internal developers will become proficient faster.

BEA consulting solutions are designed to help you at any stage of your process, from gathering business requirements, to legacy and packaged application integration, to application development. BEA packaged consulting solutions can provide you with predefined consulting services to help you meet your time-to-market needs for your e-business.

For a description of the BEA Professional Services offerings and contact information, follow these steps:

1. Enter http://www.bea.com in your browser. The BEA corporate Web page displays.
2. Click on the Service and Support drop-down menu and select Professional Services (see Figure 3-3). The Professional Services Web page is displayed.

BEA Education Services

BEA Education Services delivers integrated, client-driven education solutions that help ensure successful use of BEA products. In today's competitive e-business driven market, there is also an increasing need for organizations to quickly and effectively acquire skills to adopt new technologies, such as the Java2 Enterprise Edition (J2EE), that are driving the next generation of distributed enterprise applications. BEA Education Services offers training in these technologies which are incorporated in the BEA WebLogic suite of products and includes the market-leading, J2EE-compliant, BEA WebLogic Server.

For more information on BEA Education Services offerings and contact information, please visit us on the web at http://www.bea.com/education

4 Interoperability and Coexistence

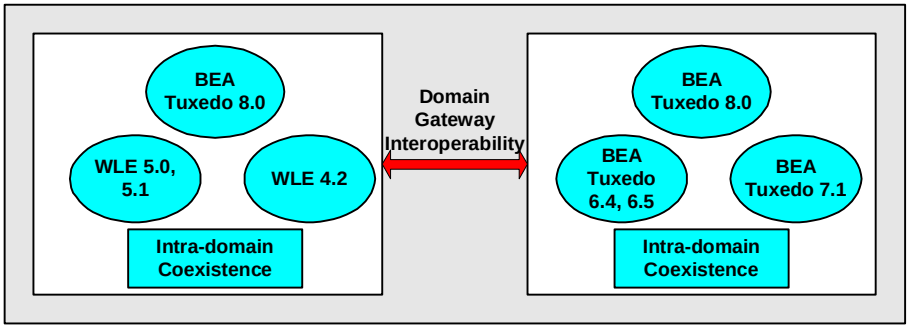
This topic discusses the following interoperability scenarios:

- Intradomain and Interdomain Interoperability and Coexistence
- Interoperability and Coexistence Between BEA Tuxedo 8.0 and BEA WebLogic Enterprise T-Engine
- Interoperability with Third-Party ORBs
- Interoperability Between BEA Tuxedo 8.0 CORBA and BEA WebLogic Server 6.0 Using Object-by-Value Types
- Interoperability Between BEA WebLogic Server 6.0 and BEA Tuxedo 8.0 ATMI Using Jolt
- Interoperability Between BEA WebLogic Server 6.0 and BEA Tuxedo 8.0 CORBA Using WLEC
- Interoperability Between BEA WebLogic Server 6.0 and BEA Tuxedo 8.0 Using WTC

Intradomain and Interdomain Interoperability and Coexistence

BEA Tuxedo supports intradomain and interdomain interoperability with BEA WebLogic Enterprise and other versions of the BEA Tuxedo software. BEA Tuxedo 8.0 can coexist in the same domain with BEA Tuxedo 6.4, 6.5, and 7.1 and BEA WebLogic Enterprise 4.2, 5.0 and 5.1. Interdomain interoperability is supported for BEA Tuxedo 8.0 and previous releases of BEA WebLogic Enterprise and older versions of BEA Tuxedo (see Figure 4-1).

Figure 4-1 Domain Gateway Interoperability



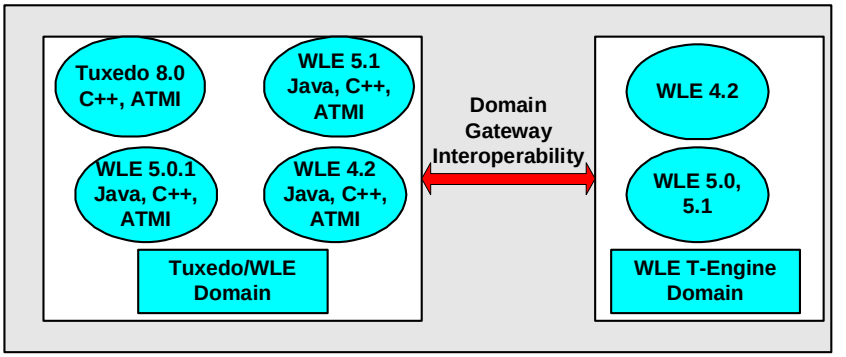
Note: While BEA Tuxedo 8.0 clients or servers cannot interoperate or coexist with BEA Tuxedo 6.3 servers, BEA Tuxedo 6.3 clients can interoperate with BEA Tuxedo 8.0 servers.

Interoperability and Coexistence Between BEA Tuxedo 8.0 and BEA WebLogic Enterprise T-Engine

Existing WLE T-Engine Java applications can interoperate with BEA Tuxedo 8.0 and take full advantage of BEA Tuxedo 8.0 features. The following scenarios are supported (see Figure 4-2):

- BEA Tuxedo 8.0 can interoperate with 4.2, 5.0, and 5.1 releases of BEA WebLogic Enterprise via domain gateways.
- BEA Tuxedo 8.0 can coexist and interoperate in the same domain with 4.2, 5.0, and 5.1 releases of BEA WebLogic Enterprise.
- BEA Tuxedo 8.0 can support administration of releases 4.2, 5.0, and 5.1 of BEA WebLogic Enterprise in the same domain.

Figure 4-2 Interoperability with BEA WebLogic Enterprise T-Engine



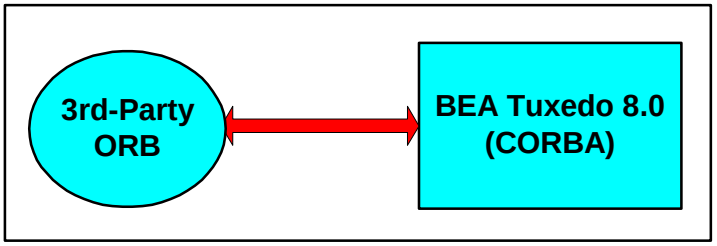
Interoperability with Third-Party ORBs

In release 8.0 support for the CORBA Services Interoperable Naming Service (INS) was added to the BEA Tuxedo system to enhance interoperability with third-party ORB applications. The addition of INS enables third-party ORBs that use INS to interoperable with the BEA Tuxedo CORBA server ORB. Using INS, third-party ORBs can execute the following operations on BEA Tuxedo CORBA servers without requiring the use of the BEA Bootstrap, SecurityCurrent, or TransactionCurrent environmental objects (see Figure 4-3):

- Bootstrapping
- Authentication
- Starting transactions

Note: The BEA Tuxedo CORBA client environmental objects continue to be supported in BEA Tuxedo 8.0 as they were in BEA WebLogic Enterprise 5.1.

Figure 4-3 Interoperability with Third-Party ORBs

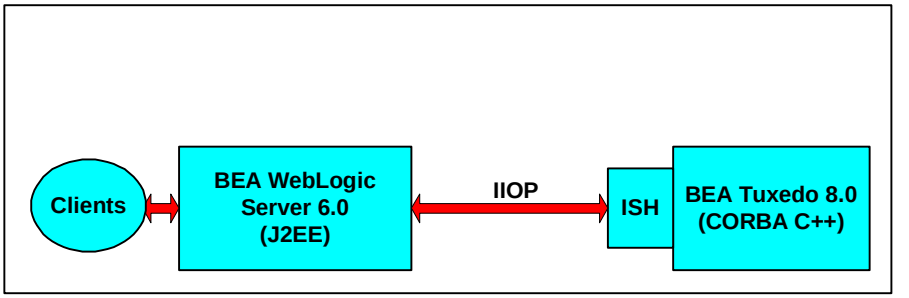


Interoperability Between BEA Tuxedo 8.0 CORBA and BEA WebLogic Server 6.0 Using Object-by-Value Types

- To enhance the ability of BEA Tuxedo CORBA C++ applications to access BEA WebLogic Servers via RMI/IIOP, support for C++ object-by-value types in the Interface Definition Language (IDL) and C++ client and server applications was added to BEA Tuxedo in release 8.0. Support of object-by-value types enables bidirectional interoperability between BEA Tuxedo CORBA C++ to BEA WebLogic Server 6.0 (and later) RMI/IIOP interoperability (see Figure 4-4):

Note: The BEA WebLogic Enterprise Connector (WLEC) software is still supported for BEA WebLogic Server to BEA Tuxedo CORBA interoperability.

Figure 4-4 Support for C++ Object-by-Value



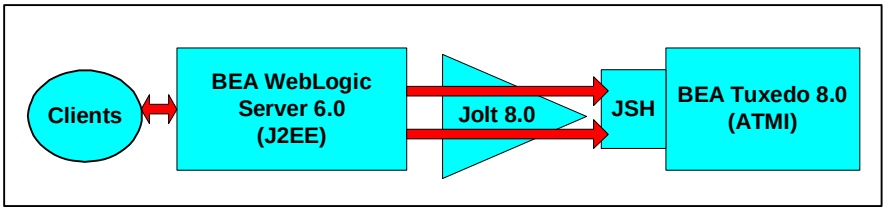
Interoperability Between BEA WebLogic Server 6.0 and BEA Tuxedo 8.0 ATMI Using Jolt

As in previous releases, using BEA WebLogic Server and Jolt, you can make BEA Tuxedo services accessible on the Web. In release 8.0, the Jolt software includes the following enhancements that improve the integration of BEA WebLogic Server with BEA Tuxedo services (see Figure 4-5):

- Propagation of BEA WebLogic Server user authentication
- Connection pools reset option
- XML buffer type support
- Buffer allocation enhancements

For more information on these enhancements, see “Enhancements to Jolt to Improve Interoperability Between BEA WebLogic Server BEA Tuxedo ATMI” on page 1-9.

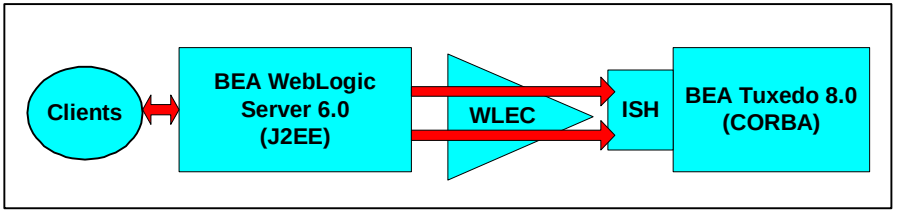
Figure 4-5 BEA WebLogic Server Integration Enhancements



Interoperability Between BEA WebLogic Server 6.0 and BEA Tuxedo 8.0 CORBA Using WLEC

The BEA WebLogic Enterprise Connector (WLEC) enables the BEA WebLogic Server connections to BEA Tuxedo 8.0 CORBA applications. WLEC connects over IIOP and supports propagation of security, connection reset and transaction demarcation.

Figure 4-6 WebLogic Enterprise Connector (WLEC)



Interoperability Between BEA WebLogic Server 6.0 and BEA Tuxedo 8.0 Using WTC

The BEA WebLogic Tuxedo Connector (WTC) enables bidirectional interoperability between the BEA WebLogic Server and BEA Tuxedo ATMI and CORBA environments. WTC uses the BEA Tuxedo domain technology and supports the following capabilities Figure 4-7):

- BEA WebLogic Server clients can invoke BEA Tuxedo services.

- BEA Tuxedo Clients can invoke BEA WebLogic Server Enterprise Java Beans in response to service requests.
- BEA WebLogic Server clients can invoke BEA Tuxedo CORBA C++ applications.
- BEA Tuxedo CORBA C++ applications can invoke BEA WebLogic Server Enterprise Java Beans.

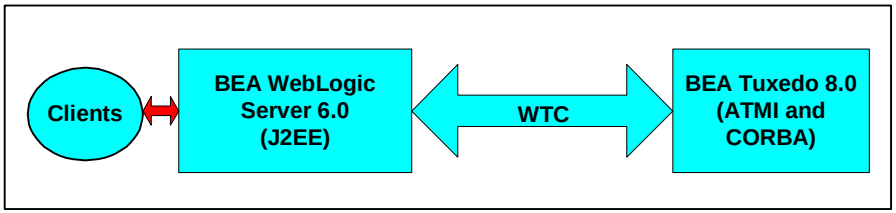
Notes: The capabilities of WTC are enhanced in subsequent releases.

WTC version 1.0 enables bidirectional interoperability between BEA WebLogic Server and BEA Tuxedo ATMI. This version is compatible with BEA WebLogic Server 6.0 with Service Pack 2 (SP2) and is available as separate software via a download over the Internet.

WTC version 1.1 enables bidirectional interoperability between BEA WebLogic Server and BEA Tuxedo ATMI and CORBA. This version is delivered with BEA WebLogic Server 6.1.

WTC enables bidirectional security context propagation and unidirectional propagation of transaction context from the BEA WebLogic Server to the BEA Tuxedo system.

Figure 4-7 WebLogic Tuxedo Connector



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