



BEA WebLogic Enterprise

Installation Guide

WebLogic Enterprise 5.0
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BEA WebLogic Enterprise Installation Guide

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About This Document

This document explains how to install the BEA WebLogic Enterprise (WLE) software and the optional WLE Security Services software.

This document covers the following topics:

- Chapter 1, “Preparing to Install the WLE Software”
- Chapter 2, “WLE Installation on Windows NT, 98, and 95 Systems”
- Chapter 3, “WLE Security Service Installation on Windows NT, 98, and 95 Systems”
- Chapter 4, “WLE Installation on UNIX Systems”
- Chapter 5, “WLE Security Service Installation on UNIX Systems”
- Chapter 6, “BEA Administration Console Startup”
- Chapter 7, “WLE Postinstallation Considerations”
- Appendix A, “WLE Platform Data Sheets”

What You Need to Know

This document is intended mainly for system administrators and installers who will install one or more WLE server, client, or administration components.

e-docs Web Site

The BEA WebLogic Enterprise product documentation is available on the BEA 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.beasys.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 WebLogic Enterprise 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 WebLogic Enterprise 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, you can get it for free from the Adobe Web site at <http://www.adobe.com/>.

Related Information

Before installing the BEA WLE software, read the BEA WebLogic Enterprise Release Notes.

For more information about topics covering CORBA, Java 2 Enterprise Edition (J2EE), BEA TUXEDO, distributed object computing, transaction processing, C++ programming, and Java programming, see the [WLE Bibliography](#) in the WebLogic Enterprise online documentation.

Contact Us!

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

In your e-mail message, please indicate that you are using the documentation for the BEA WLE 5.0 release.

If you have any questions about this version of BEA WebLogic Enterprise, or if you have problems installing and running BEA WebLogic Enterprise, contact BEA Customer Support through BEA WebSupport at www.beasys.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.

Convention	Item
<i>italics</i>	Indicates emphasis or book titles.
monospace text	Indicates code samples, commands and their options, data structures and their members, data types, directories, and file names and their extensions. Monospace text also indicates text that you must enter from the keyboard. <i>Examples:</i> #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. <i>Example:</i> void commit ()
<i>monospace italic text</i>	Identifies variables in code. <i>Example:</i> String <i>expr</i>
UPPERCASE TEXT	Indicates device names, environment variables, and logical operators. <i>Examples:</i> 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. <i>Example:</i> buildobjclient [-v] [-o name] [-f <i>file-list</i>]... [-l <i>file-list</i>]...

Convention	Item
	Separates mutually exclusive choices in a syntax line. The symbol itself should never be typed.
...	<p>Indicates one of the following in a command line:</p> <ul style="list-style-type: none">■ 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 <p>The ellipsis itself should never be typed.</p> <p><i>Example:</i></p> <pre>buildobjclient [-v] [-o name] [-f file-list]... [-l file-list]...</pre>
. . . .	<p>Indicates the omission of items from a code example or from a syntax line.</p> <p>The vertical ellipsis itself should never be typed.</p>



1 Preparing to Install the WLE Software

BEA WebLogic Enterprise (WLE) is a sophisticated software product. It should not be installed without proper planning.

This chapter discusses the following topics:

- Checking the WLE Product Box
- WLE Software Components
- Hardware and Software Prerequisites for the WLE Software
- Overview of Upgrade Considerations
- Managing Files and Databases
- Selecting Directories for the WLE Files
- Selecting an Administrative Password
- Configuring the WLE System for Microsoft Windows NT
- Configuring the UNIX Operating System for the WLE Software

Checking the WLE Product Box

When you open your WLE product box, you will find the following:

- A compact disc (CD) that contains the WLE 5.0 software components
- A CD that contains the online documentation for the WLE software
- Three printed documents:
 - *Release Notes*
 - *Installation Guide* (this document)
 - *Getting Started*
- A *BEA Software License and Limited Warranty* pamphlet
- A *Customer Support Quick Reference and Other Important Information* card

A 3.5-inch diskette that contains the product license is either mailed to you or attached to the outside of the WLE product box.

Note: If you ordered the WLE 5.0 56-bit or 128-bit Security Service software, a separate package contains the CD for this software. Installation of the optional Security Service software on Windows systems is explained in Chapter 3, “WLE Security Service Installation on Windows NT, 98, and 95 Systems.” Installation of the optional Security Service software on UNIX systems is explained in Chapter 5, “WLE Security Service Installation on UNIX Systems.”

For a list of the platforms supported for this release of the WLE software, see Appendix A, “WLE Platform Data Sheets.”

WLE Software Components

The WLE software CD contains the following components.

- The following WLE server components:
 - CORBA Java and J2EE
 - CORBA C++
 - BEA TUXEDO 6.5 for WLE 5.0
- The following WLE client components:
 - CORBA C++ client Object Request Broker (ORB), including environmental objects
 - CORBA Java client Object Request Broker (ORB), including environmental objects
 - RMI/EJB client
 - ActiveX client for Windows systems, including the BEA Application Builder graphical user interface
 - BEA TUXEDO /WS client
- BEA Administration Console
- Optional BEA WLE 56-bit or 128-bit Security Service software that provides Secure Sockets Layer (SSL) and Link-Level Encryption (LLE) for WLE applications. If you purchased this software, it is packaged and distributed on a separate CD.

The WLE 5.0 installation procedure lets you select or deselect the components that you want to install. You can also select or deselect specific subcomponents within the servers or clients categories.

At least one component or subcomponent must be selected for installation. Selecting a main component category causes all of its subcomponents to be selected. Deselecting a component causes all of its subcomponents to be deselected. Deselecting all subcomponents causes their parent component to be deselected.

The main component categories are:

1 *Preparing to Install the WLE Software*

- Servers
- Clients
- Administration Console

Note: Depending on the resolution of your screen, the Administration Console option might appear in an abbreviated form, such as “Administration Co.”

Within the Servers category, the options are:

- TUXEDO
- CORBA C++
- CORBA Java
- J2EE

This feature allows you to install one or more server components on the target system.

Please note:

- The TUXEDO server software is always installed as a base component for any of the other WLE servers.
- The CORBA Java and J2EE server components are always installed together, even if you only select one of those items.

If you select the Clients component, you can indicate which types of clients you want to install.

Depending on the selections you made in the Servers category, the Client options are:

- BEA TUXEDO /WS Client
- BEA CORBA C++ Client
- BEA CORBA Java Client
- BEA RMI/EJB Client
- BEA ActiveX Client (Windows systems only)

The Administration category consists of the Administration Console and does not have any subcomponents. For information about how to start this console after it is installed, refer to Chapter 6, “BEA Administration Console Startup.” For information about how to use this console, refer to the online help that is accessible through the Console’s Help button.

idltojava Compiler from BEA Systems

In previous BEA WebLogic Enterprise (WLE) releases, programmers who developed CORBA Java applications downloaded the idltojava compiler from the Sun Microsystems, Inc. Web site. The WLE 5.0 software includes a BEA implementation of the idltojava compiler. By providing its own implementation, BEA ensures that the compiler will be maintained properly on all platforms that WLE supports.

After a WLE installation that includes the CORBA Java server component, the idltojava compiler is located in the `$TUXDIR/bin` (UNIX systems) or `%TUXDIR%\bin` (Windows NT systems) directory, where `TUXDIR` is the directory in which you installed the WLE software.

For information about using the WLE idltojava compiler, see *Using the idltojava Compiler* in the WebLogic Enterprise online documentation.

Hardware and Software Prerequisites for the WLE Software

The WLE software must be installed on each machine that will run a WLE client or server application.

Note: Do not share the WLE executables across remote file systems.

The BEA Administration Console must be installed in a file system that supports long file names (that is, those containing more than 14 characters).

1 *Preparing to Install the WLE Software*

Before you can install the optional WLE Security Service 5.0 software, you must first install at least one WLE 5.0 server component, or at least one of the following WLE 5.0 client component options:

- All WLE client components (recommended)
- BEA C++ client
- BEA /WS client

If you are installing the WLE 5.0 Security Service software on a Windows 98 or Windows 95 client system, you must first install at least one of the WLE 5.0 client components shown in the previous list. Installation of the optional Security Service software on Windows systems is explained in Chapter 3, “WLE Security Service Installation on Windows NT, 98, and 95 Systems.” Installation of the optional Security Service software on UNIX systems is explained in Chapter 5, “WLE Security Service Installation on UNIX Systems.”

For details about the hardware and software prerequisites for all platforms on which the WLE software is supported, see Appendix A, “WLE Platform Data Sheets.” Check the data sheet for each platform on which you plan to install the WLE software.

For UNIX Systems

You need the following information and resources before installing the WLE software on a UNIX system:

- A system that meets the hardware and software requirements described in Appendix A, “WLE Platform Data Sheets.”
- The superuser password so that you can mount the CD as a file system.
- The name of a file system with enough free space for the WLE software packages you want to install. For disk space requirements, see Appendix A, “WLE Platform Data Sheets.”

For Microsoft Windows NT, 95, and 98 Systems

You need the following resources before installing the WLE software on a Microsoft Windows system:

- Administrative privileges.
- A system that meets the hardware and software requirements described in Appendix A, “WLE Platform Data Sheets.”
- Enough disk space for the packages you want to install. For disk space requirements, see Appendix A, “WLE Platform Data Sheets.”

Note: Microsoft Windows 95 and 98 systems support only the WLE Client Only software. Microsoft Windows 95 and 98 systems do not support the full WLE system software (server and client) or the BEA Administration Console software.

Overview of Upgrade Considerations

If you are installing the WLE 5.0 software on a Windows NT, Windows 98, or Windows 95 system that contains a previous version of WLE, M3, or BEA TUXEDO software, there are important upgrade considerations. In general, BEA recommends that you use the Windows Add/Remove (uninstall) program to remove the previous WLE, M3, or BEA TUXEDO software on the target system, before you install WLE 5.0. These considerations are discussed in *Chapter 2, “WLE Installation on Windows NT, 98, and 95 Systems.”*

Managing Files and Databases

This section explains how to assign ownership of the WLE system files to the system administrator, and how to set up your disk to accommodate those files.

Assigning File Ownership on UNIX Systems

If you are installing the WLE software on a UNIX system, BEA recommends that you create a separate user account for the WLE system administrator and give ownership of the WLE system files to that account.

Allocating Disk Space

A running WLE client or server application needs disk space for system files and for the application's database(s). You do not use this space until you begin to develop or run your WLE client or server application, but it is important to plan for this space before installing the software. To help explain what is involved, the following sections describe how the WLE system handles files.

For more information about the commands discussed in this section, see the following documents:

- The *Administration* topics in the WebLogic Enterprise online documentation
- The *BEA TUXEDO Reference Manual*, which is included in the WebLogic Enterprise online documentation

The WLE System Disk Management Interface

The WLE system has a facility, the Disk Management Interface (DMI), that manages logical files within a single disk device or set of devices. Among other things, the DMI stores binary configuration tables and the transaction log.

The WLE disk management software supports the notion of a WLE file system that is distinct from any operating system file system. (For the remainder of this discussion, the term OS file system is used to refer to any operating system file system.)

Administrative access to the DMI to create, initialize, or destroy entries in the WLE file system is through `tadmin` administrative commands.

There are two ways to physically store the logical files managed by the DMI:

- Physical storage can be on an OS file system.
- Disk space outside the control of all OS file systems can be set aside for the WLE system.

Files reside on special device files in that disk space, and the DMI manages the files directly. Space outside the OS file system is usually referred to as raw disk space. Not only is I/O faster when done by system calls reading directly from and writing directly to device special files on raw disks, raw disk space is preferred when it is important to know for certain that a physical `write()` has been done.

With the OS file system, the precise moment at which a `write()` is done cannot be relied upon. In the WLE system, accurate control of the write operation is particularly important for entries in the transaction log. With multiple users, control of the write operation is also an important element in assuring database consistency.

Arranging for Raw Disk Space

If you decide to use raw disk space for your WLE client or server application, you may find that the hard disk devices on your machine are fully allocated to file systems such as `/(root)`, `/usr`, and other UNIX file systems. If that is the case, it is necessary to repartition your hard disk device to set aside some partitions that are not to be used for an OS file system. Information about how to do this can be found in the system administration documentation for your particular platform.

Notes: Repartitioning disks can render the machine unusable and should be attempted only by experienced UNIX system administrators.

On Microsoft Windows NT platforms, the default behavior is unbuffered I/O; no special arrangements are needed.

How the WLE File System Is Organized

A WLE file system has a Volume Table of Contents (VTOC) that lists files on a set of devices named in the Universal Device List (UDL). The UDL contains information about the location of the physical storage space for the WLE tables.

In a WLE system, all the system files might be stored together on the same raw disk slice or OS file system file. While it is possible to use regular OS file system files for the configuration tables, it is strongly recommended that the transaction log (TLOG) be stored on a raw disk device.

Because the TLOG seldom needs to be larger than 100 blocks and because disk partitions are always substantially larger than 100 blocks, it may make sense to use the same device for everything. The pathname of the device needs to be contained in both the TUXCONFIG and the FSCONFIG environment variables.

Listing 1-1 shows approximately how the content might appear.

Listing 1-1 VTOC and UDL Output

Output based on setting FSCONFIG=\$TUXCONFIG, and invoking tmdadmin:

No bulletin board exists. Entering boot mode.

```
> livtoc
```

```
Volume Table of Contents on /usr2/bank/tuxconfig:
```

```
0: VTOC: Device 0 Offset 0 Pages 7
1: UDL: Device 0 Offset 7 Pages 28
2: _RESOURCE_SECT: Device 0 Offset 35 Pages 3
3: _MACHINES_SECT: Device 0 Offset 38 Pages 40
4: _GROUPS_SECT: Device 0 Offset 78 Pages 40
5: _SERVERS_SECT: Device 0 Offset 118 Pages 40
6: _SERVICES_SECT: Device 0 Offset 158 Pages 20
7: _ROUTING_SECT: Device 0 Offset 178 Pages 100
8: _NETWORK_SECT: Device 0 Offset 278 Pages 20
9: _MIBPERMS_SECT: Device 0 Offset 298 Pages 2
```

```
# If the TLOG is stored on the same device, there will be an
# entry something like:
```

```
9: TLOG1: Device 0 Offset 236 Pages 100
> q
```

The WLE system administrator must ensure that raw disk slices are available, as needed, on each machine participating in a WLE domain. The size of entities in the WLE file system are shown in Table 1-1.

Table 1-1 Size of System Tables

Entity	512-byte Pages
VTOTC	1
TUXCONFIG	270
TLOG	100 (default)
UDL	28
TOTAL	399

The size of the TUXCONFIG file is larger if there are more entries in the configuration file (UBBCONFIG). The administrator is encouraged to allocate additional space for dynamic reconfiguration and for growth of the application. The default size assumed by the `crdl` subcommand of `tmadmin` is 1000 blocks, which should be adequate for the initial installation.

Space for Application Databases (If You Are Using /D)

If your WLE server application is using the BEA TUXEDO system/D as a resource manager, your database tables can be listed in the same UDL and can be managed by the WLE VTOTC. If another resource manager is used, check the installation instructions for that product to see how its space requirements affect your WLE system planning.

Space for Queue Spaces (If You Are Using /Q)

If your WLE application is using the BEA TUXEDO system/Q for store-and-forward queue management, your queue space can be listed in the same UDL and can be managed by the WLE VTOTC.

Space for Application Servers

As you are calculating the space requirements for the WLE system, also consider the requirements of the server machines that perform the work of the server application. These requirements are specified by the application, and they are in addition to the requirements for the WLE system itself (unless otherwise specified).

Space for Stateful Session Bean Storage

When you calculate the space requirements for the WLE system, also consider the requirements for saving the state of EJB Stateful Session Beans. These requirements are specified by the application, and they are in addition to the requirements for the WLE system itself.

Selecting Directories for the WLE Files

During the installation process, you are prompted to make decisions about where, in your file system, a number of your WLE directories and files are installed. To help you plan for this part of the process, this section describes the directories and files about which you are prompted to make a decision, as follows:

- “For All Platforms” should be read by anyone installing the WLE software.
- “For All Server Platforms Supporting the BEA Administration Console” should be read by anyone installing the BEA Administration Console for WLE administration.

For All Platforms

You are prompted for a pathname for the base directory of your WLE software. This directory must meet the following requirements:

- The directory must be dedicated to the WLE software. It must not contain files for any other applications.

- The directory must have read, write, and search (execute) permissions for the WLE administrator.

In the WLE documentation, this directory is referred to as `$TUXDIR` (UNIX systems) or `%TUXDIR%` (Windows NT systems), except in cases where a sample path is shown, such as `c:\wledir`.

For All Server Platforms Supporting the BEA Administration Console

If you are installing the WLE Administration software, you are prompted to accept or replace the default pathnames and file names used for the BEA Administration Console components. These default pathnames and file names are based on the value of `%TUXDIR%` (Windows NT systems) or `$TUXDIR` (UNIX systems) that you specify.

If you are running a commercial Web server, you may find the default settings inappropriate, especially if your server is handling requests from both the BEA Administration Console and other Web programs on the same port. To accommodate this situation, the WLE software enables you to choose between accepting the defaults and assigning your own pathnames and file names. The remainder of this section describes the choices you are given, as follows:

1. A pathname for the HTML files—By default, the following HTML files are installed in the directory `%TUXDIR%\udataobj\webgui` (Windows NT systems), and `$TUXDIR/udataobj/webgui` (UNIX systems). You are prompted to supply your own paths for these files if you prefer to have them installed elsewhere.
 - An HTML template file (`webgui.html`) that is used by `tuxadm` as the basis for many screens displayed during a BEA Administration Console session.
 - An HTML file (`webguitop.html`) that displays legal notices and warnings when the BEA Administration Console is first displayed on the screen.
 - The HTML files that make up the BEA Administration Console documentation. These HTML files are installed in `%TUXDIR%\help` (Windows NT systems) and in `$TUXDIR/help` (UNIX systems).

Exception: If you are installing the WLE software on a Microsoft Windows NT platform and the installation program detects an existing Web server, a default directory appropriate for that Web server is used, instead.

1 *Preparing to Install the WLE Software*

2. A pathname for the Java and image files—By default, the class files for the Java applet are installed in one of the following directories. You are prompted to supply your own paths for these files if you prefer to have them installed elsewhere.
 - %TUXDIR%\udataobj\webgui\java (Windows NT systems) and \$TUXDIR/udataobj/webgui/java (UNIX systems)
 - A subdirectory called java in the HTML directory you specified after the prompt described in step 1
3. A directory pathname for the CGI program (tuxadm)—Specify one of the following (unless the following exception applies):
 - %TUXDIR%\udataobj\webgui\cgi-bin (Windows NT systems) \$TUXDIR/udataobj/webgui/cgi-bin (UNIX systems)
 - A subdirectory called cgi-bin in the HTML directory you specified after the prompt described in step 1

Exception: If the installation program detects the Microsoft Internet Information Server (IIS) in a standard directory, tuxadm is installed in a subdirectory called scripts in the directory you specified in step 1 as the pathname for the HTML files.

Note: Do not specify \$TUXDIR/bin (UNIX systems) or %TUXDIR%\bin (Windows NT systems) as your CGI directory. If you do, you risk having other WLE client or server applications executed accidentally by an uninformed user of the BEA Administration Console. You may also introduce a security risk.
4. An alias for the directory pathname for tuxadm. This is the path for the directory in which Web clients expect to find tuxadm. The default is either /cgi-bin or /scripts (for UNIX systems) or \cgi-bin or \scripts (for Microsoft Windows NT systems).

Selecting an Administrative Password

The WLE system uses an administrative password to protect the machine on which it is installed from unauthorized administrative requests and operations (such as `tmboot`). Whenever administrative communications arrive on this machine through the `tlisten` and `wlisten` processes, the WLE system authenticates the communications by means of the password.

You assign an administrative password during the installation process (to the machine on which the WLE software is being installed) by entering the password of your choice after the appropriate prompt. The password must be a string of alphanumeric characters in clear-text format. It may contain no more than 80 characters.

A common password is required for two machines in a WLE domain to communicate successfully. For this reason, you must use the same password whenever you install the WLE software on multiple machines for a single domain. As described previously, you are prompted to provide the password during the WLE installation process. If, however, you use a different password for one machine, you must add that password to the `tlisten.pw` file on each existing machine with which you want that machine to communicate.

For these reasons, you may have more than one administrative password in your `tlisten.pw` file. A single password file may contain no more than 20 passwords, with one password per line.

The administrative password that you enter during installation is collected by the installation script and is stored in:

```
$TUXDIR/udataobj/tlisten.pw (UNIX systems)
%TUXDIR%\udataobj\tlisten.pw (Windows NT systems)
```

Make sure the permissions on your `tlisten.pw` file are set such that only the WLE system administrator can read the file.

Configuring the WLE System for Microsoft Windows NT

You cannot configure your WLE system for Microsoft Windows NT until after you install the WLE software and license. After you complete the installation as described in Chapter 2, “WLE Installation on Windows NT, 98, and 95 Systems,” refer to the section “Configuring the WLE System for Microsoft Windows NT” on page 7-2 for instructions on configuring the WLE system for Microsoft Windows NT.

Configuring the UNIX Operating System for the WLE Software

The WLE software uses the UNIX operating system Interprocess Communications (IPC) resources.

IPC resources are configured by three sets of tuning parameters that control the amount of shared memory (prefix SHM), number of semaphores (prefix SEM), and size of message queues and messages (prefix MSG).

The settings for these parameters are WLE system dependent. Most UNIX systems, however, are shipped with default values that are too low for WLE systems.

The following sections describe the IPC parameters and provide guidelines for configuring them. Because these parameters vary across different versions of UNIX, the following descriptions are generic. For the exact parameter names, default settings, settings used for the University Sample applications for each platform, and information about how to change the parameters, see Appendix A, “WLE Platform Data Sheets.”

If you change a parameter, you need to rebuild the kernel and reboot the operating system using the standard administrative tools. Consult your operating system administrator or the system administrator’s guide for your platform for details.

If your WLE client or server application is distributed, the minimum IPC resources must be available on every UNIX platform participating in the application.

Semaphores

Every process that participates in a WLE system requires a semaphore. When the system boots, the number of semaphores configured in the operating system is checked, and the boot fails if the configured number is not high enough.

Semaphores on UNIX systems are grouped in semaphore sets. Each semaphore in a set can be accessed separately. Although WLE does not perform operations on semaphore sets, it attempts to allocate as many semaphores per semaphore set as possible. WLE also needs undo structures to function properly. The operating system uses undo structures to unlock semaphores held by a process that dies unexpectedly.

The following semaphore parameters may need to be adjusted:

SEMMNS

Maximum number of semaphores in the system. The minimum requirement for SEMMNS is:

$\text{MAXACCESSERS} - \text{MAXWSCLIENTS} + 13$

where MAXACCESSERS is the maximum number of WLE processes on a particular machine (including servers and native clients), and MAXWSCLIENTS is the maximum number of WLE remote clients. Both of these parameters are specified in the application's UBBCONFIG file.

For more information about UBBCONFIG, see *Creating a Configuration File* in the WebLogic Enterprise online documentation, or the `ubbconfig(5)` reference page in the *BEA TUXEDO Reference*.

SEMMNI

Maximum number of active semaphore sets. See SEMMSL.

SEMMSL

Maximum number of semaphores per semaphore set. SEMMNI and SEMMSL are commonly chosen so that their product equals SEMMNS. The WLE system does not perform semaphore operations on semaphore sets; however, it attempts to allocate as many semaphores per semaphore set as possible.

SEMMAP

Size of the control map used to manage semaphore sets. SEMMAP should be equal to SEMMNI.

SEMMNU

Number of undo structures in the system. Because an undo structure is needed for each process that can access the Bulletin Board, `SEMMNU` must be at least as large as `SEMMNS`.

SEMUME

Maximum number of undo entries per undo structure. The value 1 suffices.

Message Queues and Messages

WLE client and server applications use UNIX messages and message queues for client/server communication. Examples of such messages are service requests, service replies, conversational messages, unsolicited notification messages, administrative messages, and transaction control messages.

Every Multiple Servers, Single Queue (MSSQ) set of servers, and every individual server has a message queue for receiving requests. Every client has its own queue for receiving replies. Servers that specify the `REPLYQ` parameter also get individual reply queues.

The adjustment of kernel message parameters is important to the proper tuning of the WLE system. Inappropriate values can lead to an inability to boot, or to severe performance degradation.

There are various message queue parameters. They limit various characteristics of the queue space, including the total number of outstanding messages (`MSGTQL`), the total number of bytes that can be on one queue (`MSGMNB`), the size limit of an individual message (`MSGMAX`), the total number of message segments that can be outstanding at one time (`MSGSEG`), and the size of each segment (`MSGSSZ`).

Exceeding any of the parameter limits described previously results in what is known as a blocking condition. There is a special case for `MSGMAX`. Messages that exceed 75 percent of `MSGMNB`, or that are larger than `MSGMAX`, are placed in a UNIX file. A very small message with the file name in it is then sent to the recipient. Avoid this mode of operation, because it results in a severe reduction in performance.

An application deadlock can result if every process is blocked when it tries to send a message. For example, when client applications fill the message space with requests, and server applications are all blocked when they try to send replies, because no server application can read a message, there is a deadlock. Timeouts can sometimes break the deadlock, but no useful work will have been done.

Especially troublesome is a client application that sends its requests with the `TPNOREPLY` flag. This practice can fill either individual queues or the system message space, depending on the size of the messages. Such applications may have to implement their own flow control to limit the number of outstanding messages.

To summarize, if client applications or server applications are blocking on their send operations (that is, requesting services or sending replies), there is potential for trouble. It is usually no problem, though, for a single server request queue to always be full, as long as there is space in the system for more messages on other queues.

There are performance implications to queue blocking conditions, both on the sending side and the receiving side. The UNIX operating system, when waking up blocked processes, wakes up all the processes blocked on a particular event, even if only one can proceed. The other processes go back to sleep. This process scheduling overhead can be expensive.

For example, on an empty server request queue where there is more than one server application (that is, `MSSQ`), an arriving message wakes up all the idle, or blocked, server applications on that queue. In the case of a full server request queue, as each request is read by a server application, the system wakes up all the blocked clients. Depending on the size of the messages, zero or more clients are allowed to place their messages on the queue. The remainder of the clients have to go back to sleep. Because there may be hundreds of clients in the system, the mass wakeup of all of these clients every time a service request is processed can severely degrade performance.

A properly tuned system rarely fills its queues. Enough slack should be left in the queues to handle the natural variability of the message flow. No exact settings can be recommended. Tuning is very system dependent. The UNIX `ipcs(1)` command provides a snapshot of the queues so you can tell whether they are full. You can try the `TPNOBLOCK` flag when sending requests. That way, clients can tell when queues are full, and they can slow down a bit. It might help to increase the scheduling priority of the servers whose request queues are full.

The following message parameters may need to be adjusted:

MSGMNI

Number of unique message queue identifiers. Each process participating in a WLE client or server application on a particular machine typically needs at least one message queue. This number is reduced if `MSSQ` sets are used, where multiple server processes share a single queue. For transaction processing, count an additional queue per server group for TMS processes. Thus, the minimum requirement for `MSGMNI` can be determined by this formula:

1 *Preparing to Install the WLE Software*

```
MSGMNI = MAXACCESSERS + 7
+ (number of servers with REPLYQ)
+ (number of MSSQ sets)
- (number of servers in MSSQ sets)
```

MSGMAX

Maximum message size in bytes. MSGMAX must be large enough to handle any WLE client or server application running on this machine.

MSGMNB

Maximum message queue length in bytes. This number must accommodate the total size of all messages that are on a queue and that have not been taken off by the associated process(es). The minimum value for MSGMNB is MSGMAX. Messages longer than 75 percent of MSGMNB are sent to a file instead of to a message queue. Avoid this situation because it severely degrades performance.

MSGMAP

Number of entries in the control map used to manage message segments. MSGMAP should be the same as the number of message segments (MSGSEG), which should be twice the size of MSGMNI.

MSGSSZ

Size of a message segment in bytes. A message can consist of several such segments. The value of MSGSSZ should be such that a multiple of MSGSSZ is equal to the size (including the WLE system header) of the most commonly sent message. This practice avoids wasting space.

MSGSEG

Number of message segments in the system.

MSGTQL

Total number of outstanding messages that can be stored by the kernel. This is the maximum number of unread messages at any given time.

Shared Memory

In the WLE environment, shared memory is used for the Bulletin Board and for the control table of the IIOP Server Listener. An application also may choose to use shared memory for its own purposes.

The following shared memory parameters may need to be adjusted:

SHMMAX

Maximum shared memory segment size in bytes. This number represents the largest shared memory segment that can be allocated. A process can, however, attach to more than one segment of size `SHMMAX`.

SHMSEG

Maximum number of shared memory segments per process. For a given configuration, the maximum amount of shared memory in bytes to which a process can attach is `SHMMAX * SHMSEG`. A value between 6 and 15 should be adequate.

SHMMNI

Maximum number of shared memory identifiers in the system. The WLE system requires one identifier per Bulletin Board and an additional identifier if the IIOF Server Listener is running.

SHMMIN

Minimum shared memory segment size in bytes. This should always be set to 1.

Other Kernel Tuning Parameters

Experience with WLE systems has shown that some other UNIX tuning parameters may need to be set to higher values. The settings are dependent on the application and do not apply to all applications.

ULIMIT

Maximum file size. `ULIMIT` needs to be large enough so that you can install the WLE software and build servers. We recommend 4 megabytes.

NOFILES

Maximum number of open files per process. A WLE server application requires a minimum of four file descriptors.

MAXUP

Maximum number of processes per non-super user. The WLE system processes (servers and administrative processes) run with the `UID` specified in the application's `UBBCONFIG` file. `MAXUP` needs to be large enough to allow all these processes to run.

NPROC

Maximum number of processes (system wide).

NREGION

Number of region table entries to allocate. Most processes have three regions: text, data, and stack. Additional regions are needed for each shared memory segment and shared library (text and data) attached. However, the region table entry for the text of a shared text program is shared by all processes executing that program. Each shared memory segment attached to one or more processes uses another region table entry.

NUMTIM

Maximum number of STREAMS modules that can be pushed by the Transport Layer Interface (TLI). A typical default value is 16. Set `NUMTIM` to at least 256.

NUMTRW

The number of TLI read/write structures to allocate in kernel data space. A typical default value is 16. Set `NUMTRW` to at least 256.

Calculating IPC Requirements

When the WLE software has been installed and an application configuration file (UBBCONFIG file) is available, the `tmloadcf` command can be used to calculate the IPC resources needed to support the application. For more information, see the `tmloadcf(1)` reference page in the *BEA TUXEDO Reference*. Also see “Verifying IPC Requirements” on page 7-17.

2 WLE Installation on Windows NT, 98, and 95 Systems

This chapter discusses the following topics:

- Platforms Supported
- If You Are Upgrading from a Previous Release
- Installing the WLE Software on Microsoft Windows NT Systems
- Installing the WLE Software on Microsoft Windows 98 and 95 Systems
- Removing (Uninstalling) the WLE Software from Your System

Platforms Supported

The Microsoft Windows platforms listed in Table 2-1 are supported.

Table 2-1 Supported Microsoft Platforms

Operating System	Release/Version
Microsoft Windows NT	4.0 Service Pack 4 (SP4) on Intel
Microsoft Windows 95	Service Pack 1
Microsoft Windows 98	

You can install all or selected WLE server, client, and administration components on a Microsoft Windows NT 4.0 SP4 (Intel) operating system. You can install only the WLE client components on the Microsoft Windows 95 and 98 operating systems. Windows 95 and 98 systems cannot be used as WLE server systems.

For the hardware and software requirements for these operating systems, see Appendix A, “WLE Platform Data Sheets.”

If You Are Upgrading from a Previous Release

If you are installing the WLE 5.0 software on a Windows NT, Windows 98, or Windows 95 system that contains a previous version of WLE, M3, or BEA TUXEDO software, there are important upgrade considerations.

In general, BEA recommends that you use the Windows Add/Remove (uninstall) program to remove a previous version of WLE, M3, or BEA TUXEDO software on the target system, before you install WLE 5.0. Although the WLE 5.0 installation program detects most prior versions of the WLE, M3, and BEA TUXEDO software on

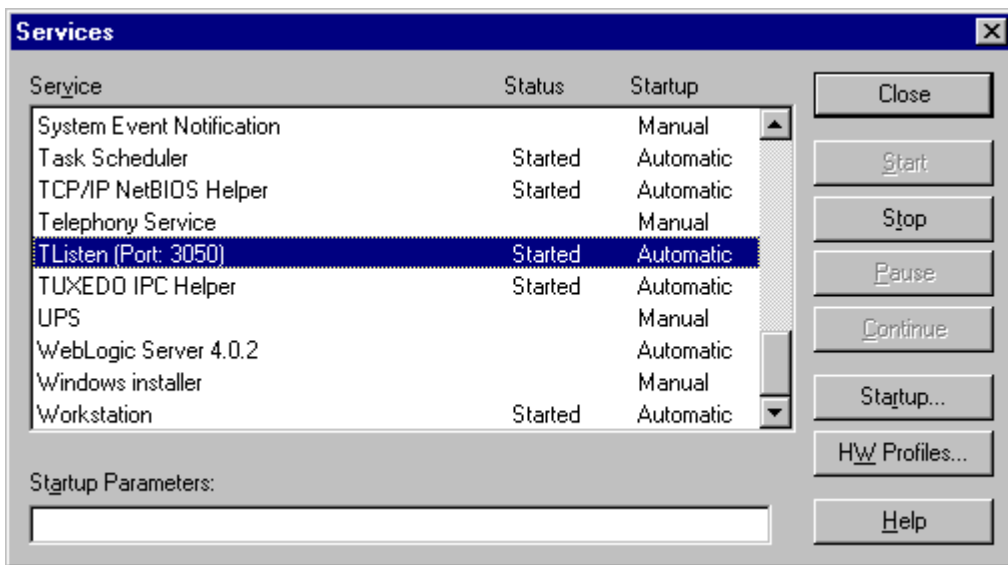
your Windows system and could remove them for you during the WLE 5.0 installation, in some cases older Registry key values or Windows Start menu items could continue to exist after the WLE 5.0 installation completes.

Note: BEA strongly recommends that you not run more than one version of WLE, M3, or BEA TUXEDO software on the same system. Unexpected problems can occur.

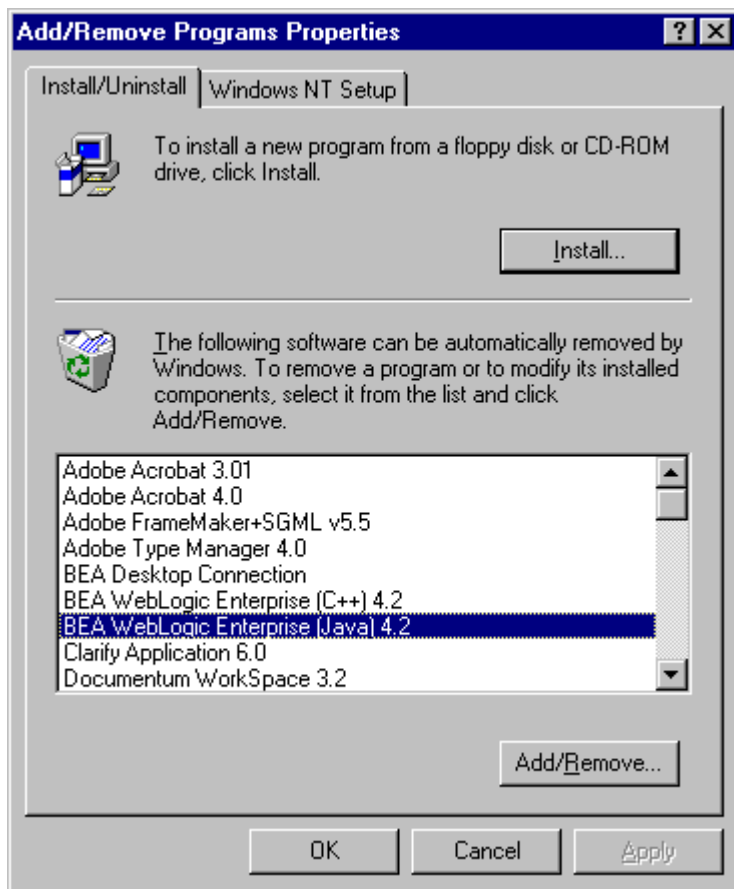
Starting with a Clean System

To ensure that you are starting with a clean system, before you install WLE 5.0, follow these steps:

1. Use the `tmshutdown` command to stop any running WLE, M3, or BEA TUXEDO applications. This command is described in the *Administration* topics in the WebLogic Enterprise online documentation.
2. If necessary, stop the `TListen` and `TUXEDO IPC Helper` services. From the Start menu, click Start —> Settings —> Control Panel —> Services. A screen similar to the following is displayed.

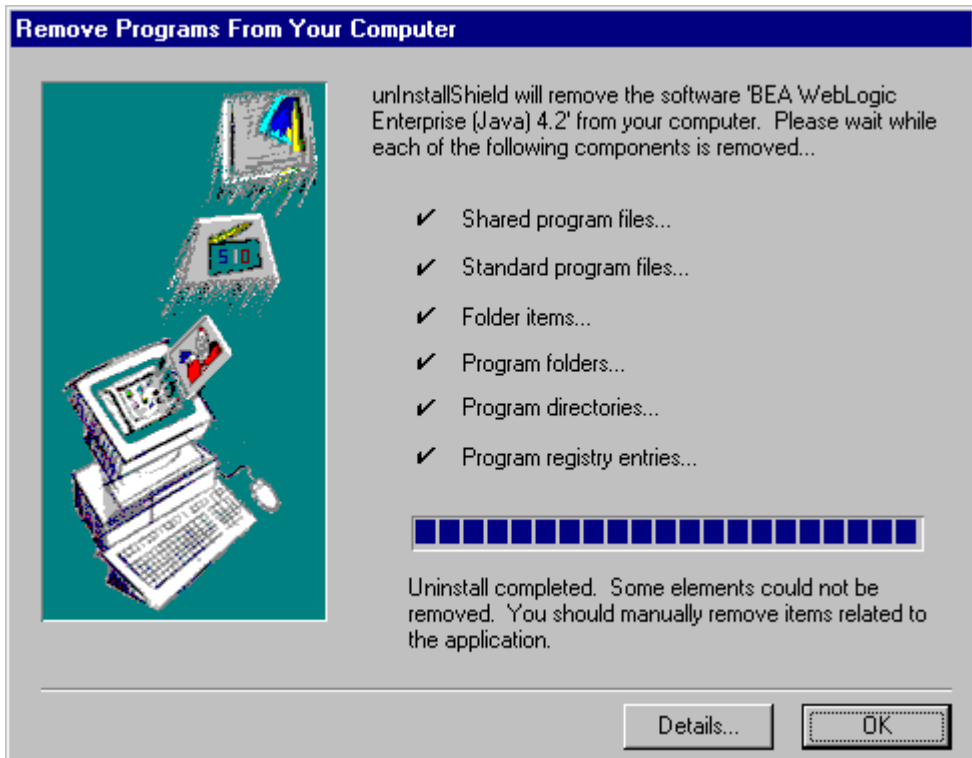


3. Scroll to the entry for the `TListen` service, select it, and then click the Stop button. The Status value should change from Started to a blank entry. Then scroll to the `TUXEDO IPC Helper` service, select it, and click the Stop button. In some cases, you may see an error; however, the service's Status value should change from Started to a blank entry. Click the Close button.
4. Move to a temporary location any files that you or your coworkers added to the `%TUXDIR%` directory, where `TUXDIR` is the directory in which the prior WLE, M3, or BEA TUXEDO software resides. This step is necessary because the Windows Add/Remove uninstall program only knows about the original set of files that were installed by BEA. If additional files are present, older directories may continue to exist after you run the uninstall program.
5. Back up any existing WLE, M3, or BEA TUXEDO files that you customized for your environment. For example, you should back up the Resource Manager (RM) file in `%TUXDIR%\udataobj\Rm`. The `Rm` file contains database vendor-specific settings that are used by commands such as `buildtms` and `buildXAJIS`. You may also need to back up the BEA Administration Console `webgui.ini` initialization file to a temporary location. This file is located in the `%TUXDIR%\udataobj\webgui`, where `TUXDIR` is the directory in which you installed the prior version of WLE, M3, or BEA TUXEDO.
6. Run the Windows Add/Remove program to remove the prior WLE, M3, or BEA TUXEDO software version. From the Start menu, click Start —> Settings —> Control Panel —> Add/Remove Programs. A screen similar to the following is displayed:



7. Scroll to the entry for the prior WLE, M3, or BEA TUXEDO software, select it, and click the Add/Remove button.

8. In response to the prompt, confirm that you want to uninstall the software. After the program finishes, it displays a screen similar to the following:



9. If the uninstall program was not able to remove all directories (usually because the files were added after the original installation), you can click the Details button to find out which directories remain on your system. If the files in the directories contain changes that you made, such as a modified sample file, move it to a temporary location.
10. If the prior version of WLE was 4.2 or 4.1, you may need to uninstall the WLE Java and WLE C++ software as separate steps.
11. Reboot your system after the uninstall completes.

12. Install the WLE 5.0 software, as described in this chapter. When the WLE 5.0 software installation finishes, compare the files from a previous release that you moved to a temporary location (such as your RM file described in a previous step) with the installed version. If appropriate, customize the installed file so that it contains the data that is appropriate for your environment.

If You Do Not Uninstall Before Starting the WLE 5.0 Installation

Although BEA does not recommend it, it is possible to install the WLE 5.0 software on a system that contains a previous version of WLE, M3, or BEA TUXEDO.

During the WLE 5.0 installation, before asking the installer for the destination path, the program checks whether the WLE 5.0 software is already installed by looking into the Registry for the following known key:

```
HK_LOCAL_MACHINE\\SOFTWARE\\BEA Systems\\WebLogic Enterprise\\5.0
```

If the WLE 5.0 installation program finds this key, it defaults to the path found under that key in the Environment\\TUXDIR key.

If the procedure does not find the key, it defaults to C:\\WLEDIR.

After selecting the destination path and components to install, the program looks for older versions of BEA software in the following order:

1. WLE 4.2 C++
2. M3 2.2
3. TUXEDO 6.5
4. TUXEDO 6.4
5. TUXEDO 6.3
6. TUXEDO 6.2
7. TUXEDO 6.1 Volume 2
8. TUXEDO 6.1

If any of the prior software product versions are found, the WLE 5.0 program checks to see if the TUXEDO IPC Helper & TListen services are running. If they are running, the procedure asks if you want the program to stop them. If you click No, the installation program exits. If you click Yes, the program attempts to stop the services.

If successful, the program identifies the existing product name and version that it found on your system. The program then asks if you want to delete the detected previous release. If you click No, a message box is displayed telling you that the previous release is not removed, and the installation continues in the destination directory you selected earlier (not the directory where the previous version resides).

Note: Although this multiple version configuration is not recommended, it is possible to have multiple versions on the same system. One potential problem is that the WLE 5.0 services overwrite the previous software's services in the Startup settings.

If you indicated that you want the older software release removed, the following happens:

- The WLE 5.0 installation program checks the directory found in the detection step to see if an uninstall log file exists (`DeIsLl.isu`). If it does not exist, the program deletes the directory without regard for its contents.
- If the WLE 5.0 installation does find a `DeIsLl.isu` file, it looks in the `\udataobj` directory for a `tuxuninst.dll` file provided by BEA. If the installation program finds the file, it creates a command line to run the uninstall process, which is the same process used when you choose to uninstall from the control panel, and launches it.
- When the uninstall finishes, the directory is removed.
- Once the directory is removed, the registry key for that version is also removed, in case the uninstall did not work.

To summarize, the best and recommended option is to first uninstall the previous software, as outlined in the section “Starting with a Clean System” on page 2-3.

Installing the WLE Software on Microsoft Windows NT Systems

This section describes how to install the WLE software on Microsoft Windows NT systems.

Preinstallation Considerations

This section describes some important tasks that you should perform before starting the WLE installation.

Backing Up Files

If you are installing WLE software on a system that already has M3 or WLE software installed, there are some files that you may want to back up prior to the installation, and then restore them after the installation is complete. This is because some files that you may have modified for your M3 or WLE software are overwritten when the WLE software is installed.

To avoid having to modify these files again, proceed as follows:

1. If you are installing one or more of the WLE server software components, back up the `RM` file to a temporary location. This file is located in the `%TUXDIR%\udataobj` or `$TUXDIR/udataobj` directory, where `TUXDIR` is the directory in which you installed the M3 or WLE software.
2. If you are installing the BEA Administration Console, back up the `webgui.ini` file to a temporary location. This file is located in the `%TUXDIR%\udataobj\webgui` or `$TUXDIR/udataobj/webgui` directory.
3. After the installation is complete, restore these files to their original locations.

Stopping WLE or BEA TUXEDO Applications and Related Services

Before beginning the installation, make sure no BEA TUXEDO or WLE client or server applications are running. For information about the `tmshutdown` command, see *Starting and Shutting Down Applications* in the Administration section of the WebLogic Enterprise online documentation.

Checking that Your Account Has Administrator Privilege

You need administrator privileges to perform the installation. If you attempt to install the WLE software without administrator privileges, the following error message will be displayed:

```
Cannot Install TUXEDO IPC Helper Service.
```

Microsoft Windows NT Installation Procedure

It will take approximately 10 minutes to install the software.

Warning: If you are **re-installing the WLE 5.0 software** on your system, and you also already installed the optional WLE Security Service software (56-bit or 128-bit) on your system, you must:

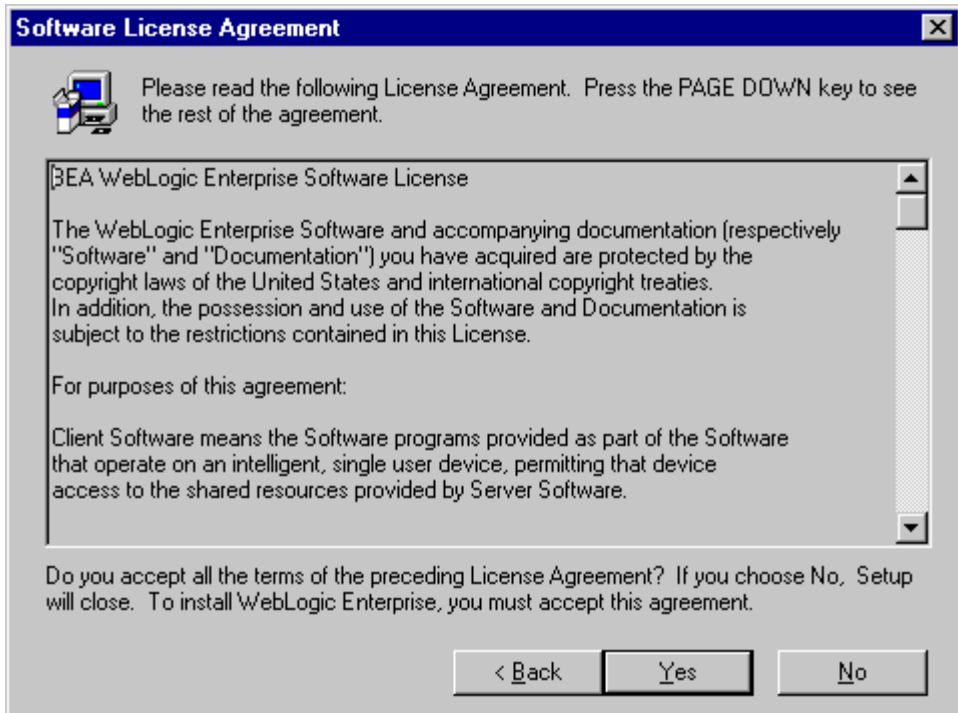
- First uninstall the WLE 5.0 software, which also removes the WLE Security Service software. See the section “Removing (Uninstalling) the WLE Software from Your System” on page 2-42.
- Then re-install the WLE 5.0 software, as explained in this section.

To install the WLE software on a Microsoft Windows NT operating system, perform the following steps:

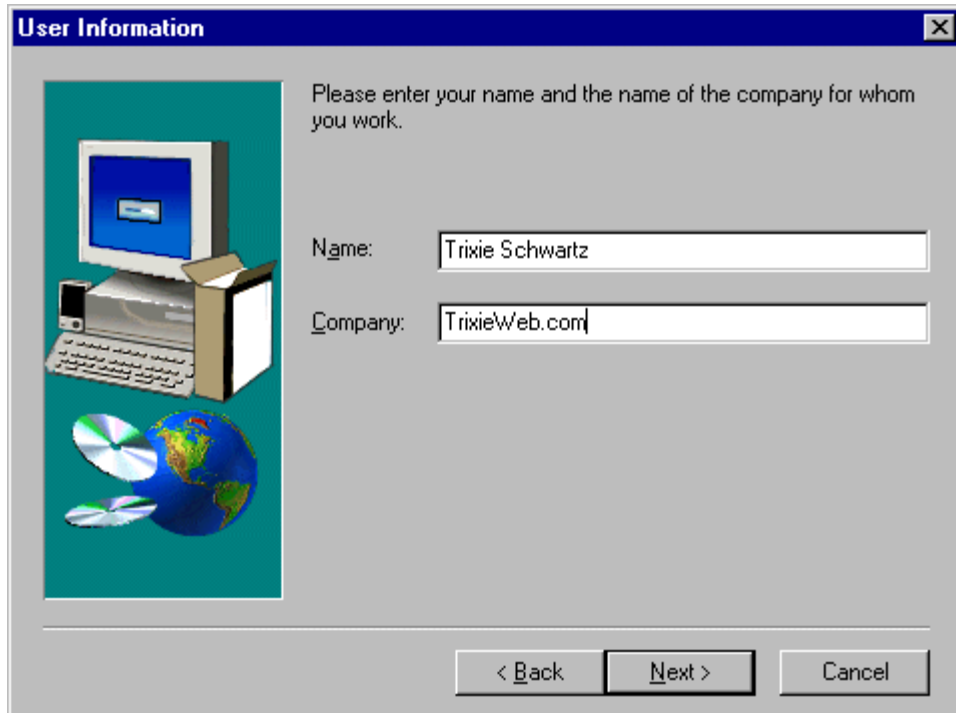
1. Insert the BEA WLE software CD in the CD player. The Windows autorun feature is used to automatically begin the installation. (To bypass the autorun feature, hold down the Shift key while inserting the CD in the CD player. You can then run the `setup.exe` file in the `inwnt40` directory on the CD.)
2. The Setup screen is displayed, followed by the Welcome screen.



3. Click Next. The Software License Agreement screen is displayed.



4. To accept the license agreement, click Yes. The User Information screen is displayed.



The 'User Information' dialog box has a blue title bar with the text 'User Information' and a close button. On the left is a graphic showing a computer monitor, keyboard, and CD-ROMs. The main text area says 'Please enter your name and the name of the company for whom you work.' Below this are two text input fields. The first is labeled 'Name:' and contains the text 'Trixie Schwartz'. The second is labeled 'Company:' and contains the text 'TrixieWeb.com'. At the bottom are three buttons: '< Back', 'Next >', and 'Cancel'.

User Information

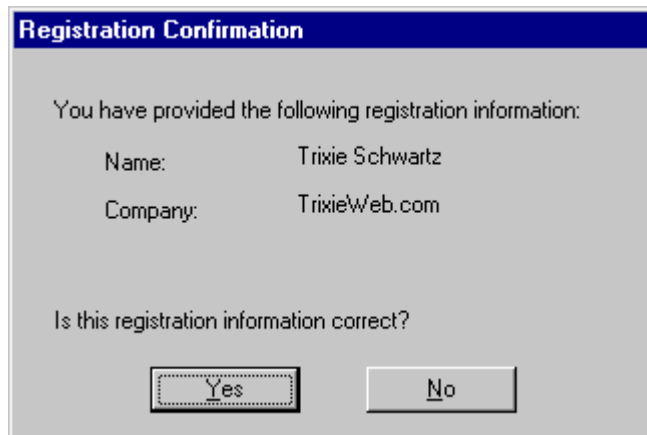
Please enter your name and the name of the company for whom you work.

Name:

Company:

< Back Next > Cancel

5. Enter your name and the name of your company and click Next. The Registration Confirmation screen is displayed.



The 'Registration Confirmation' dialog box has a blue title bar with the text 'Registration Confirmation'. The main text area says 'You have provided the following registration information:'. Below this are two lines of text: 'Name: Trixie Schwartz' and 'Company: TrixieWeb.com'. Below these is the question 'Is this registration information correct?'. At the bottom are two buttons: 'Yes' and 'No'.

Registration Confirmation

You have provided the following registration information:

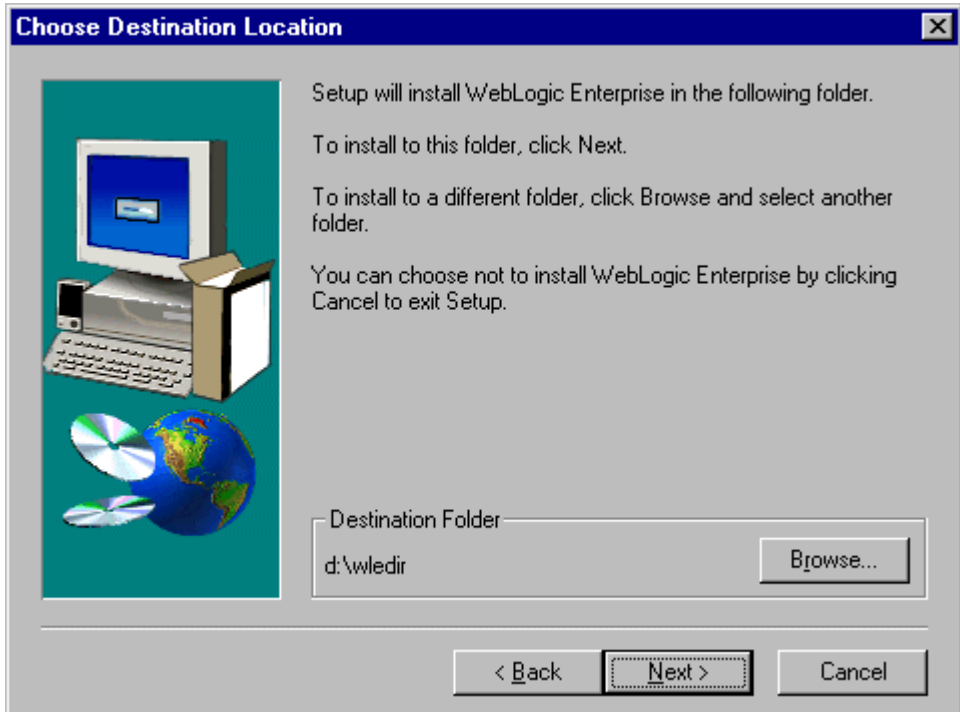
Name: Trixie Schwartz

Company: TrixieWeb.com

Is this registration information correct?

Yes No

6. If the registration information is correct, click Yes; otherwise, click No and correct the information. The Choose Destination Location screen is displayed.

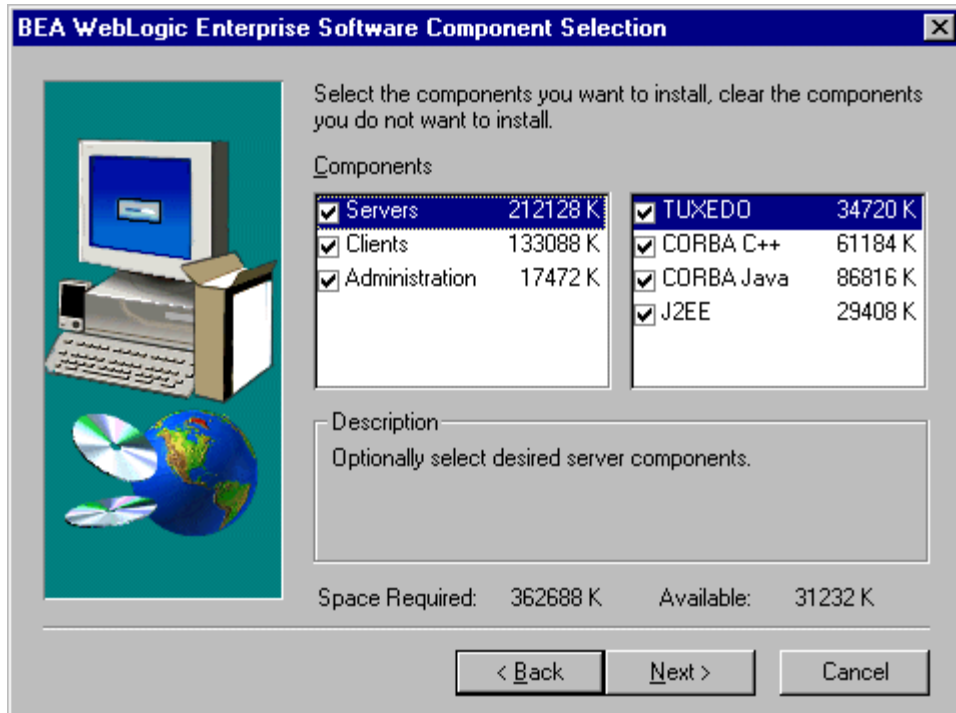


The default destination folder is c:\wledir. In the previous sample screen, the user selected d:\wledir.

7. Click Next to accept the location, or click Browse to select a different location. If you enter a path that does not exist, the installation procedure prompts for a confirmation that you want the directory created.

After you complete the directory path screen, the BEA WebLogic Enterprise Software Component Selection screen is displayed.

Note: Depending on the resolution of your screen, the Administration Console option might appear in an abbreviated form, such as "Administration" or "Administration Co."



8. By default, all components are selected for installation. The WLE 5.0 installation procedure lets you select or deselect the components that you want to install. You can also select or deselect specific subcomponents within each category.

You must select at least one component or subcomponent for installation. Selecting a main component category causes all of its subcomponents to be selected. Deselecting a component causes all of its subcomponents to be deselected. Deselecting all subcomponents causes their parent component to be deselected.

The main component categories are:

- Servers
- Clients
- Administration

Within the Servers category, the options are:

- TUXEDO
- CORBA C++
- CORBA Java
- J2EE

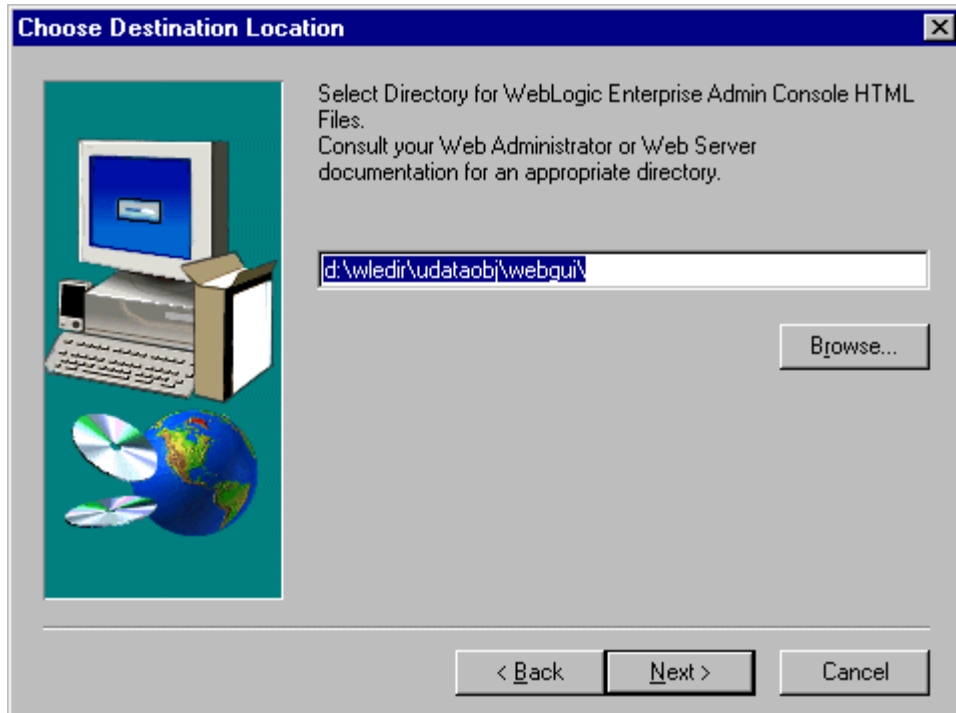
This feature allows you to install one or more server components on the target system.

If you select the Clients component, you can indicate which types of clients you want to install. Depending on the selections you made in the Servers category, the Client options are:

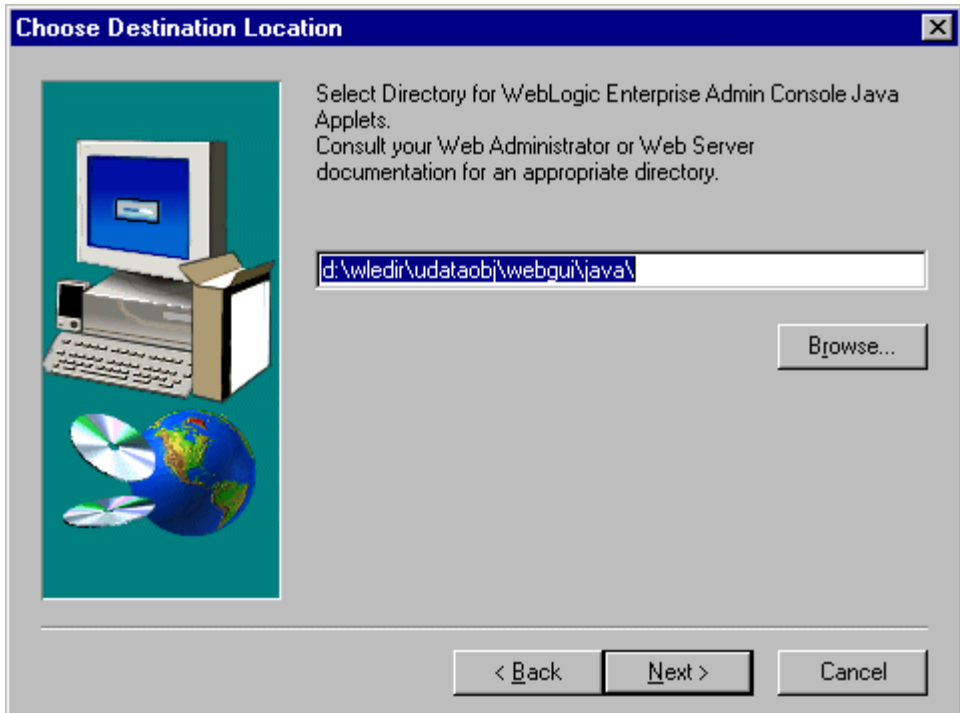
- BEA TUXEDO /WS Client
- BEA CORBA C++ Client
- BEA CORBA Java Client
- BEA RMI/EJB Client
- BEA ActiveX Client

The Administration category consists of the Administration Console and does not have any subcomponents. For information about how to start this Console after it is installed, refer to Chapter 6, “BEA Administration Console Startup.” For information about how to use this Console, refer to the online help that is accessible through the Console’s Help button.

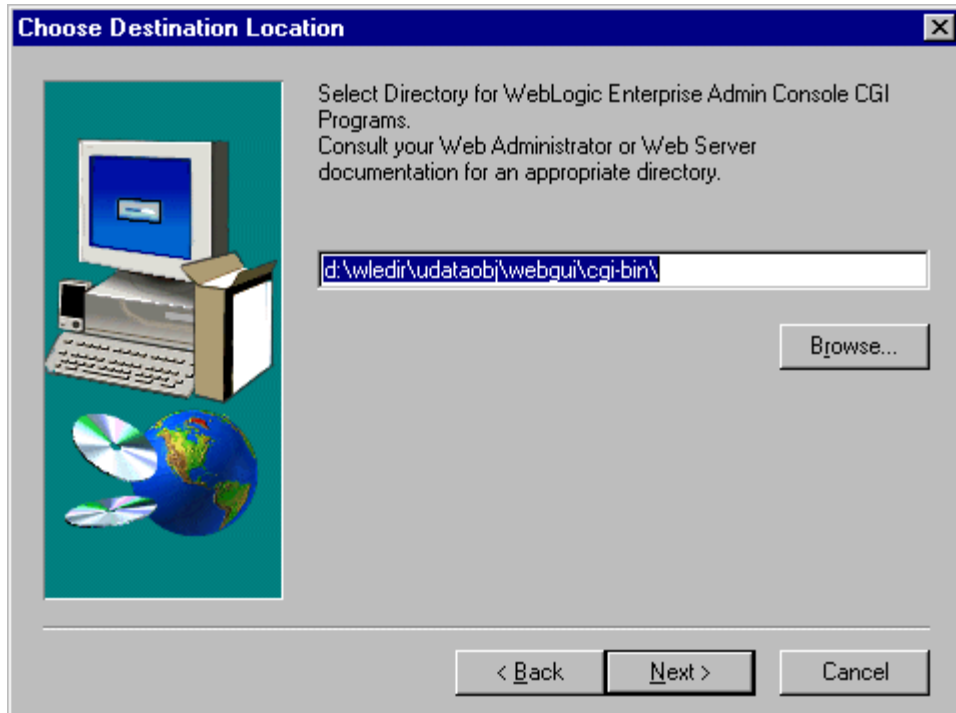
When you have made your selections, click Next. If you indicated that you wanted to install the Administration component, the Choose Destination Location screen for the Administration Console HTML files is displayed.



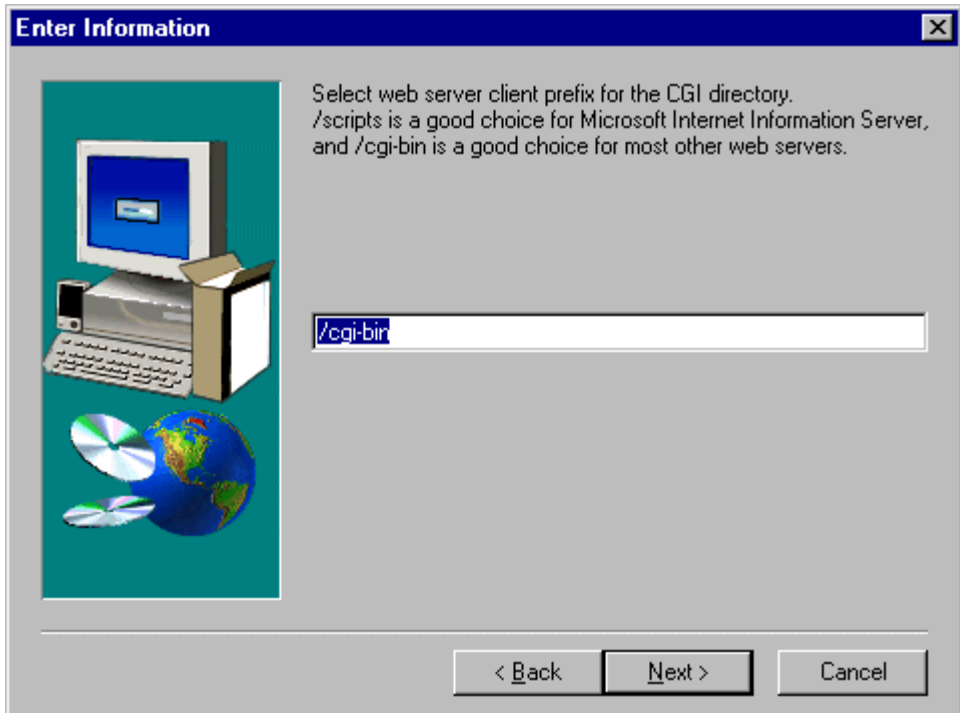
9. For information about the path on this screen, see the section “For All Server Platforms Supporting the BEA Administration Console” on page 1-13. To specify a nondefault directory for the BEA Administration Console HTML files, click Browse, specify the nondefault directory, and click Next. Otherwise, click Next. Another Choose Destination Location screen is displayed.



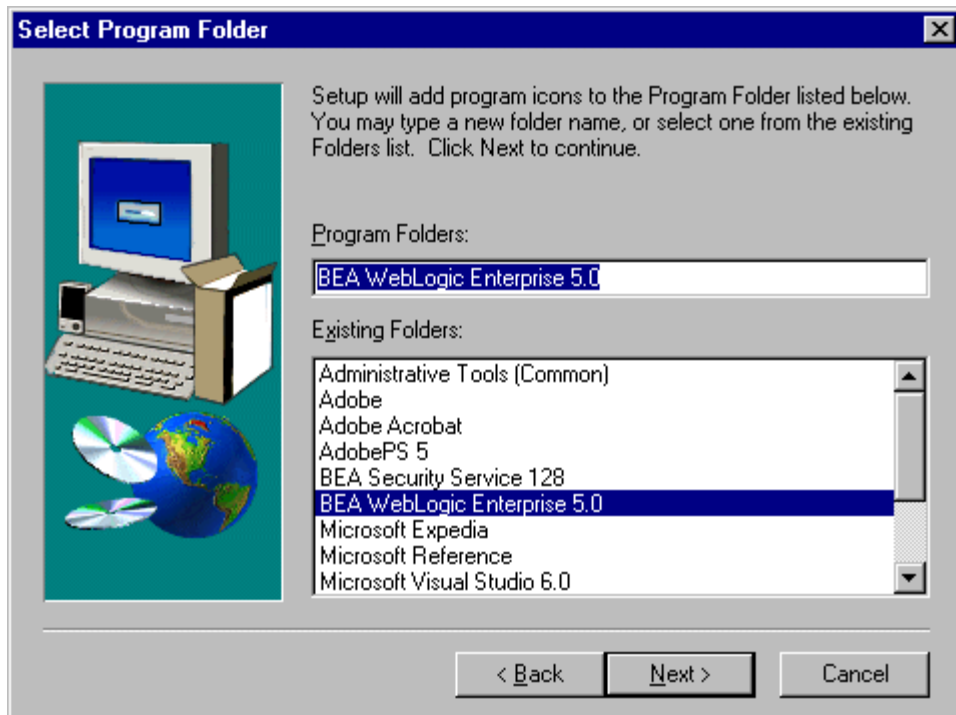
10. For information about the path on this screen, see the section “For All Server Platforms Supporting the BEA Administration Console” on page 1-13. To specify a nondefault directory for the BEA Administration Console GUI Java applets, click Browse, specify the nondefault directory, and click Next. Otherwise, click Next. Another Choose Destination Location screen is displayed.



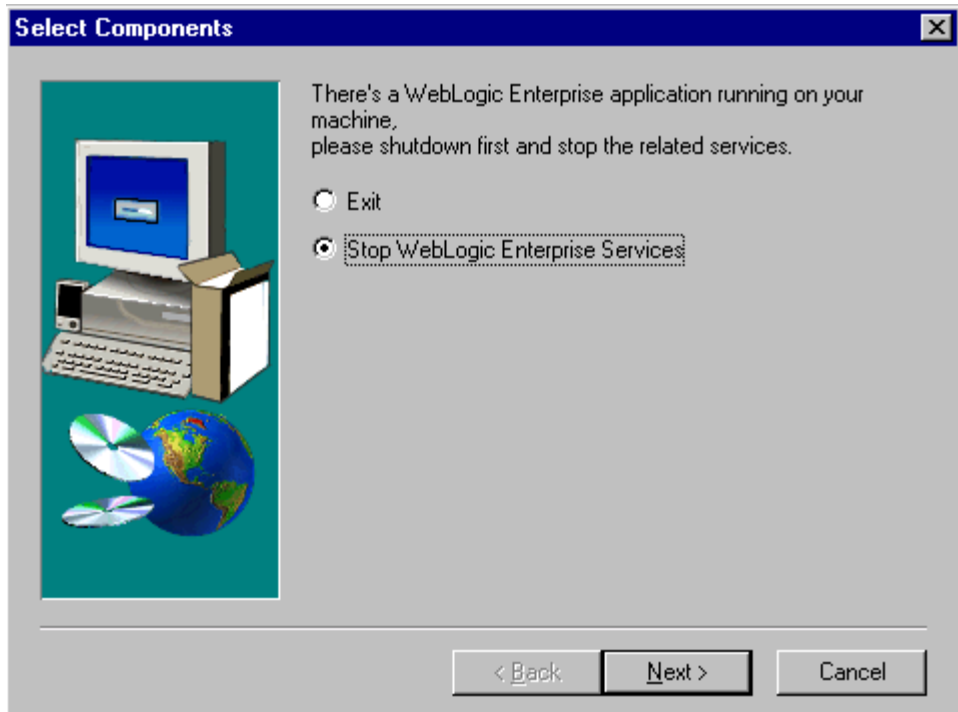
11. For information about the path on this screen, see the section "For All Server Platforms Supporting the BEA Administration Console" on page 1-13. To specify a nondefault directory for the BEA Administration Console GUI CGI programs, click Browse, specify the nondefault directory, and click Next. Otherwise, click Next. The Enter Information screen is displayed.



12. For information about the path on this screen, see the section “For All Server Platforms Supporting the BEA Administration Console” on page 1-13. To specify a nondefault Web Server client prefix for the GUI CGI directory, click Browse, specify the nondefault prefix, and click Next. Otherwise, click Next. The Select Program Folder screen is displayed.

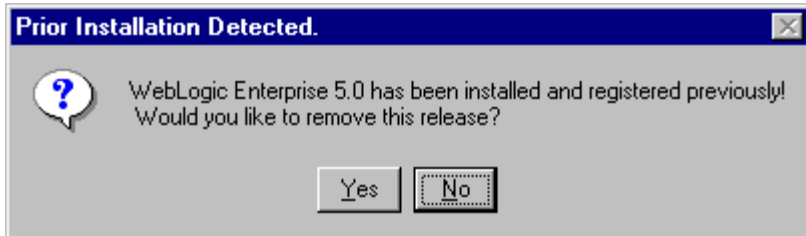


13. To specify a nondefault program folder name, enter the folder name or select a folder name from the Existing Folders, and click Next.
14. If a WLE application is running on the target system, the installation program displays the following screen:



If stopping a running WLE application and its related services on the target system is appropriate, select **Stop WebLogic Enterprise Services** and click **Next** to proceed. The WLE installation program attempts to stop the application and its services for you. If the installation program cannot stop the application, exit the installation and use the `tmshutdown` command. For information about the `tmshutdown` command, see *Starting and Shutting Down Applications* in the Administration section of the WebLogic Enterprise online documentation.

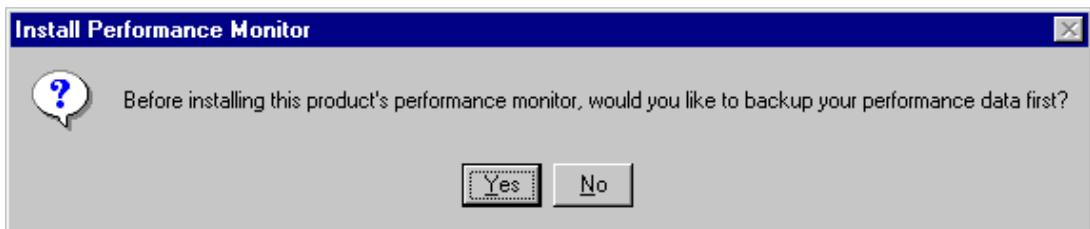
If there were no WLE applications running, or if the WLE applications were successfully stopped, the installation procedure proceeds. If a prior version of M3 or WLE was installed on the target system, the installation program asks whether you want to remove it, as shown in the following screen:



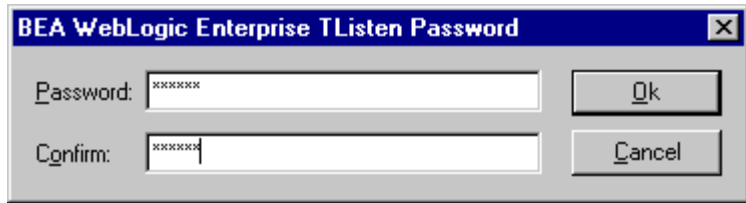
BEA recommends that you not run multiple versions of WLE, M3, or BEA TUXEDO on the same machine. If appropriate, click Yes to remove the prior version or an earlier installation of WLE 5.0. The Delete Directory screen is displayed:



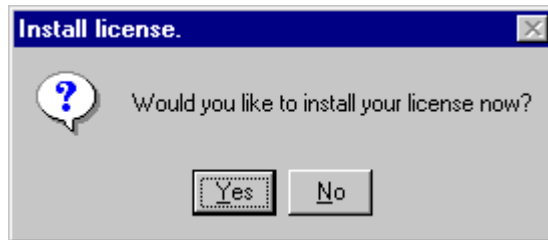
15. BEA recommends that you not run multiple versions of WLE, M3, or BEA TUXEDO on the same machine. If appropriate, click Yes to confirm the deletion of files under the previous release's WLEDIR. You are prompted about having the installation program back up the target system's performance data:



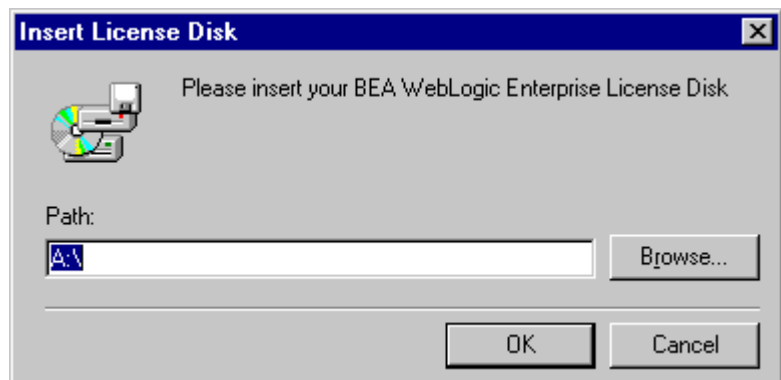
16. To back up your performance data files before you install the WLE performance monitor, click Yes. The BEA WebLogic Enterprise TListen Password screen is displayed:



17. Enter the `tlisten` password in the Password field and again in the Confirm field and click Ok. If Cancel is clicked, the `tlisten` password installation is deferred. For information about the `tlisten` password and instructions for setting it, see the section "Selecting an Administrative Password" on page 1-15. The Install license screen is displayed.

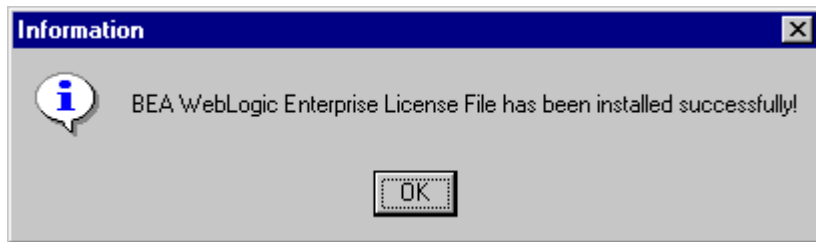


18. To install the WLE software license now, click Yes; otherwise, click No to install the license later. If you click Yes, the Insert License Disk screen is displayed.

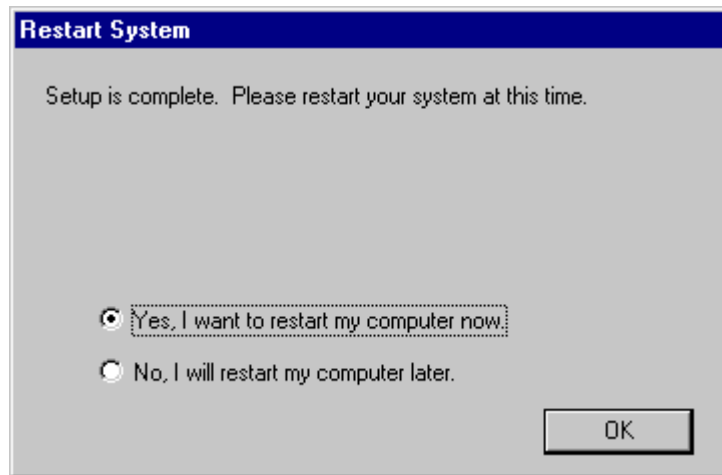


19. Your product license is on a 3.5-inch diskette that is included in the WLE product box. To install the license, insert the license diskette in the disk drive on your machine and, if your diskette drive is drive A, click OK; otherwise, enter the correct drive and click OK. An Information screen is displayed informing you that the WLE license file installed successfully.

Note: If you decide that you do not want to install the license now, but you want to complete the installation procedure and install the license later, do not click Cancel. Clicking Cancel terminates the installation. Instead, remove the license diskette from the disk drive and click OK. A screen is displayed that states that the `lic.txt` could not be found and you can elect to complete the installation without installing the license.



20. Click OK. The Restart System screen is displayed.



21. Click OK. Your system restarts.

Note: If you attempt to run the WLE software before you restart your system, the software will fail.

Setting Microsoft Windows NT Environment Variables

Before you use the WLE software, you may need to define the `JDK_HOME` environment variable.

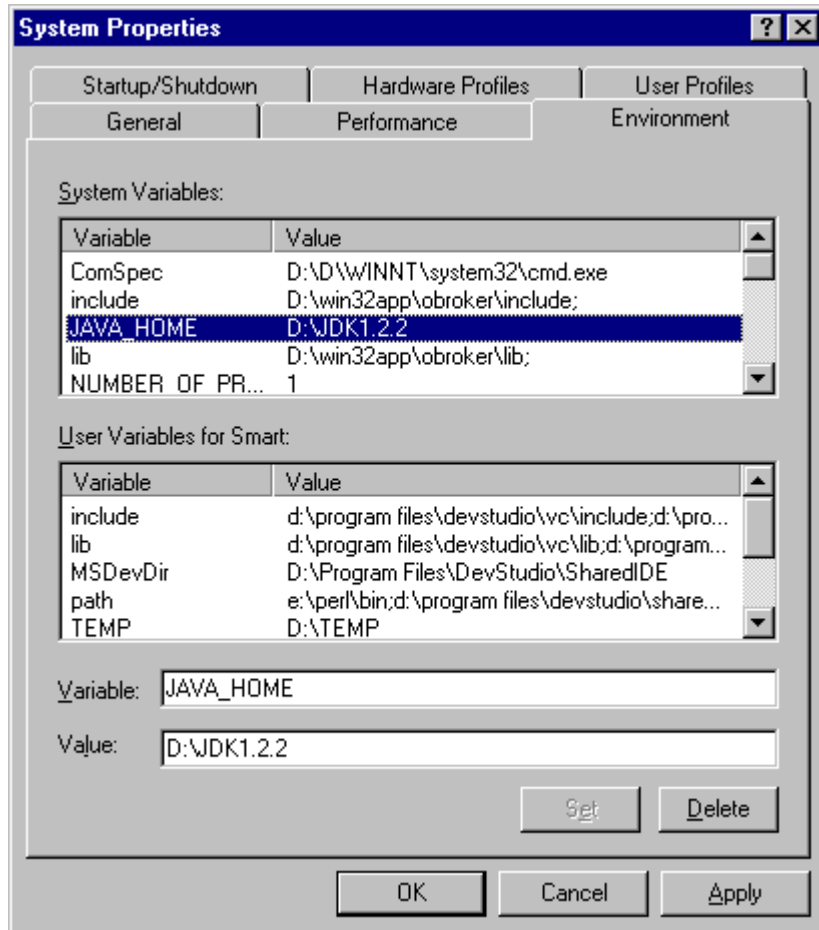
Note: If you run the University Sample applications, this variable will be automatically set for you and you can ignore this section.

The `JAVA_HOME` variable is needed only to build and run Java clients.

To set this variable, perform the following procedure:

1. Click the Microsoft Windows NT Start button, and click Settings—>Control Panel—>System—>Environment.

The System Properties screen is displayed.



2. Enter the JDK_HOME environment variable and set its value to the directory containing the JDK, as shown in the sample screen.

Note: For instructions on how to set environment variables, click the Microsoft Windows NT Start button, click Help, and enter environment variables on the Index tab.

3. Click Apply and OK to close the System Properties window.

Installing the Product License After You Install the WLE Software

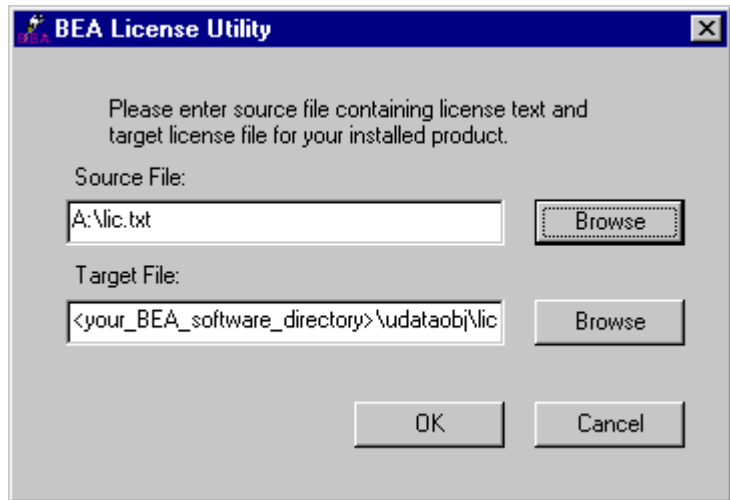
If you elected not to install your software license when you installed the WLE software, you can install the license using the BEA License Utility.

Note: Your product license is on a 3.5-inch disk that is included in the software box.

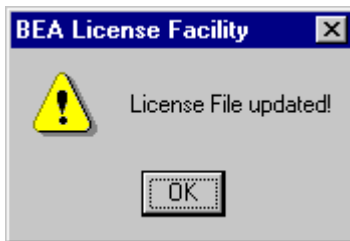
To install the license, perform the following steps:

1. Insert the license disk into the disk drive on your machine.
2. Use the taskbar to click Start—>Programs—>BEA WebLogic Enterprise 5.0—>BEA License Utility 5.0.

The BEA License Utility screen is displayed.



3. If the disk drive on your machine is drive A, click OK; otherwise, enter the correct drive and click OK. The license is installed and the License File updated message is displayed.



Running Simpapp to Verify the WLE Software Installation on Microsoft Windows NT

To verify that you have successfully installed the WLE client and server software, execute the `simpapp` application. This “simple application” is a WLE client/server application that converts text strings to uppercase and lowercase letters.

Note: This section assumes you installed all WLE server components, or one of the CORBA server components. If you installed only the J2EE server component, see the next section, “Running a Basic EJB Sample to Verify the WLE J2EE Software Installation” on page 2-32, for information about running an EJB sample to verify the installation.

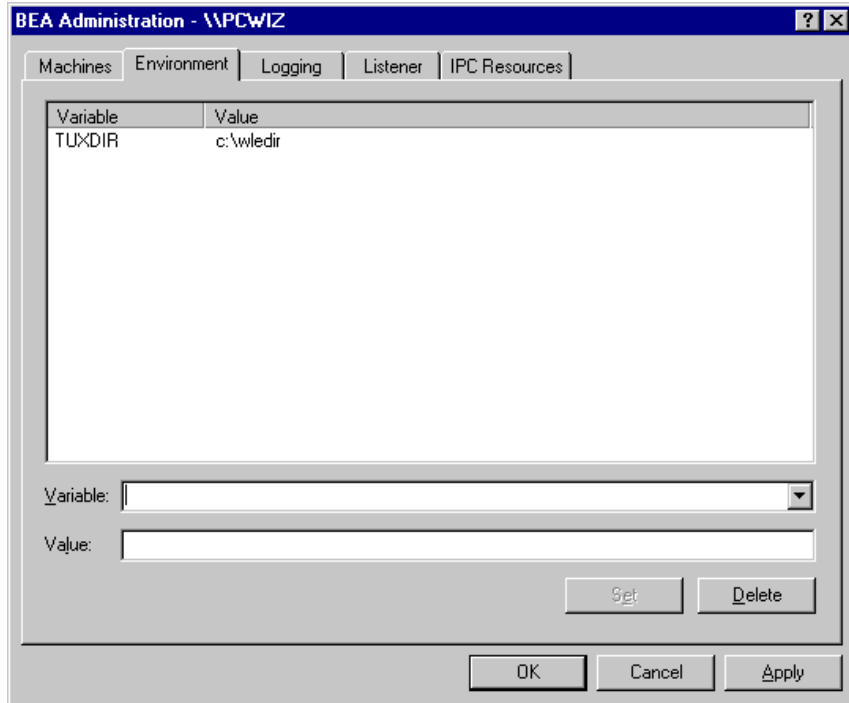
Before attempting to run `simpapp`, refer to the section “Software Requirements” on page A-10 to ensure that the software requirements are satisfied. For example, the path to the Microsoft Visual C++ 6.0 environment must be known on this system, because `nmake` is used.

To run `simpapp`, open an MS-DOS window and perform the following steps:

1. Make sure that the directory in which you installed the WLE software is set in the environment variable `TUXDIR`. For example, if you installed the software in the default directory, perform the following steps to set the `TUXDIR` environment variable to `C:\WLEDIR`:
 - a. On the Microsoft Windows NT taskbar, click Start—>Settings—>Control Panel. The Control Panel is displayed.



- b. Click the BEA Administration icon. The BEA Administration screen is displayed.



- c. If the BEA Administration screen is not displaying the Environment page as shown in the above screen, click the Environment tab. The Environment page is displayed.
- d. Click on the TUXDIR variable, enter C:\WLEDIR in the value field, and click OK.
2. Create a directory under WLEDIR and copy the contents of the simpapp directory to it. If you installed the WLE software in the default directory, the simpapp directory is located at C:\WLEDIR\Samples\Corba\Simpapp.
3. Change (cd) to the copy directory.
4. Check the permissions on all the files in the copy directory and, if necessary, change the permissions to allow full access. To set permissions to full access, enter `attrib -R /S *.*.`

5. To run `simpapp` automatically, enter `runme`. The `simpapp` application runs and prints the following messages:

```
Testing simpapp
  cleaned up
  prepared
  built
  loaded ubb
  booted
  ran
  shutdown
  saved results
PASSED
```

6. To run the sample manually to observe the `simpapp` processes starting and stopping, perform the following steps:
 - a. Enter `results\setenv`.
 - b. Enter `tmboot -y`. The application starts several processes.
 - c. Enter `simple_client`. The prompt `String?` is displayed.
 - d. Enter a word in lowercase letters. The application converts the word to uppercase and then to lowercase letters.
 - e. Enter `tmshutdown -y`. The application shuts down the processes.
7. To restore the directory to its original state, enter the following:
 - a. `results\setenv`
 - b. `nmake -f makefile.nt clean`

Running a Basic EJB Sample to Verify the WLE J2EE Software Installation

If you installed only the WLE J2EE server component, you can run a stateless session EJB sample provided by the WLE software to verify the installation.

Before running the sample application, see Appendix A, “WLE Platform Data Sheets” for important information about prerequisite software. For example, on NT systems, you must first download and install the Java 2 SDK version 1.2.2.

This sample demonstrates the usage of stateless session EJBs using a simple stock trader application. This sample demonstrates how the client must maintain any persistent state -- such as the change in the cash account -- across repeated calls to the session EJB. All the logic for the balance is encapsulated in the client, where all the persistence is provided by the container and the logic is maintained in the EJB.

The EJB in this sample provides basic trading methods, such as buying and selling stocks. Because there are no persistent stores involved in this sample, all the stock data are set in the deployment descriptor of the EJB as environment properties. The container supplies the data to the EJB through a JNDI lookup operation.

Main Directory Location

The following directory contains the Java source files and XML-based deployment descriptors, where `TUXDIR` is the directory in which you installed the WLE software:

```
%TUXDIR%\samples\j2ee\ejb\basic\statelessSession
```

A common build script, `runme.cmd`, is provided for all the EJB samples and is in the following directory:

```
%TUXDIR%\samples\j2ee\ejb
```

This `runme.cmd` file contains commands to set the environment, boot the server, and execute the client for this sample.

Source Files

The following table lists and describes all the files for this sample application.

File Name	Description
<code>ejb-jar.xml</code>	The XML deployment descriptor file used to help add the bean to the EJB container.
<code>weblogic-ejb-extensions.xml</code>	A file containing the WLE extensions to the deployment descriptor DTD.
<code>Client.java</code>	The Java source code for the client.

2 WLE Installation on Windows NT, 98, and 95 Systems

File Name	Description
<code>TraderBean.java</code>	The Java source code for the stateless session bean. This class contains the business logic method implementations and methods required by the EJB 1.1 specification.
<code>Trader.java</code>	The Java source code for the Remote interface of the <code>TraderBean</code> class.
<code>TraderHome.java</code>	The Java source code for the Home interface of the <code>TraderBean</code> class.
<code>TradeResult.java</code>	Application-specific utility class used to carry a trade execution result between the EJB and the client.
<code>ProcessingErrorException.java</code>	Application-specific exception thrown by the <code>TraderBean</code> class for business methods.

Utility Files

The following table lists and describes the utility files for this sample application. These files are generated based on the WLE installation environment. Because a common build script is provided for all the EJB samples, instructions to build and execute the samples are provided in the section “Building the EJB Sample Applications” on page 2-35. The `runme.cmd` file resides in the `%TUXDIR%\samples\j2ee\ejb` directory. The other utility files are in the `%TUXDIR%\samples\j2ee\ejb\basic\statelessSession` directory.

File	Description
<code>runme.cmd</code>	The batch file that contains commands to set the environment, boot the server, and execute the client for this sample.
<code>run_client.cmd</code>	The batch file to run the client on Windows NT systems.
<code>setenv.cmd</code>	The batch file to set the necessary environment variables on Windows NT systems.
<code>ubbconfig.nt</code>	The WLE server configuration file to be used on Windows NT systems.

File	Description
<code>ejb_basic_statelessSession.jar</code>	The <code>ejb-jar</code> file that contains the source file classes, the container-specific class files generated by the <code>ejbc</code> command, and the deployment descriptor files. This is the <code>ejb-jar</code> file that is deployed on the WLE server.

Variable Descriptions

HOST

The host name portion of the TCP/IP network address used by the ISL process to accept connections from Java clients. The default value is the name of the local machine.

PORT

The TCP port number at which the ISL process listens for incoming requests; it must be a number between 0 and 65535. The default value is 2468.

IPCKEY

The address of shared memory; it must be a number greater than 32769 unique to this application on this system. The default value is 55432.

Building the EJB Sample Applications

Use the following steps to build the EJB samples:

1. Make sure that the directory in which you installed WLE is set in the environment variable `TUXDIR`. Make sure to set the `JAVA_HOME` environment variable.
2. Make a copy of the `%TUXDIR%\samples\j2ee\ejb` directory into a working directory.
3. Change directory to the working directory.
4. Change the permissions on all the files to give them write-access. For example:

```
prompt>attrib /S -r *
```
5. Run the JavaServer version of the sample automatically by entering the `runme` command:

```
prompt>runme basic statelessSession
```

6. A number of messages are displayed, along with information about whether the build procedure was successful. The sample is built, the servers are booted, and the client is run once.

After you have executed the `runme` command, you can run the samples manually if you like. To run the samples manually:

1. Change the current directory to your work samples directory.
2. Make sure that your environment is set correctly by entering the following command:

```
prompt>setenv
```

3. Boot the server, run the client, and shut down the server by entering the following commands:

```
prompt>tmboot -y
```

```
prompt>run_client.cmd
```

```
prompt>tmshutdown -y
```

To restore the sample application directory to its original state:

1. Set the directory to the directory containing the sample application.
2. Enter the following command:

```
prompt>%TUXDIR%\samples\j2ee\ejb\clean.cmd
```

Installing the WLE Software on Microsoft Windows 98 and 95 Systems

Notes: Before beginning installation, ensure that no BEA TUXEDO or WLE applications are running.

It takes approximately 10 minutes to install the software.

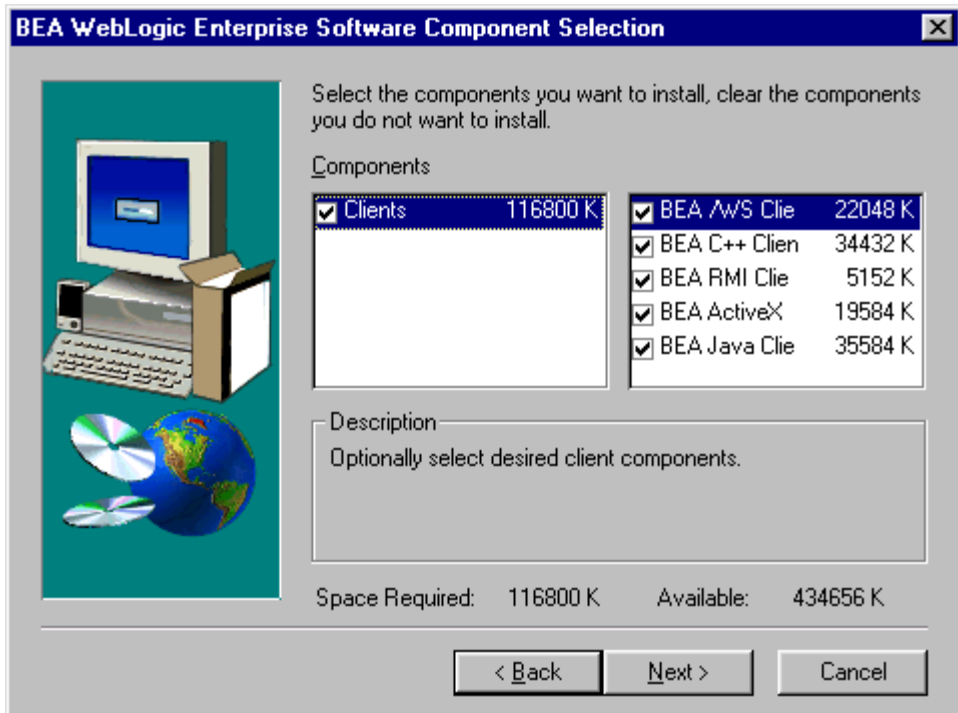
Warning: If you are **re-installing the WLE 5.0 software** on your system, and you also already installed the optional WLE Security Service software (56-bit or 128-bit) on your system, you must:

- First uninstall the WLE 5.0 software, which also removes the WLE Security Service software. See the section “Removing (Uninstalling) the WLE Software from Your System” on page 2-42.
- Then re-install the WLE software, as explained in this section.

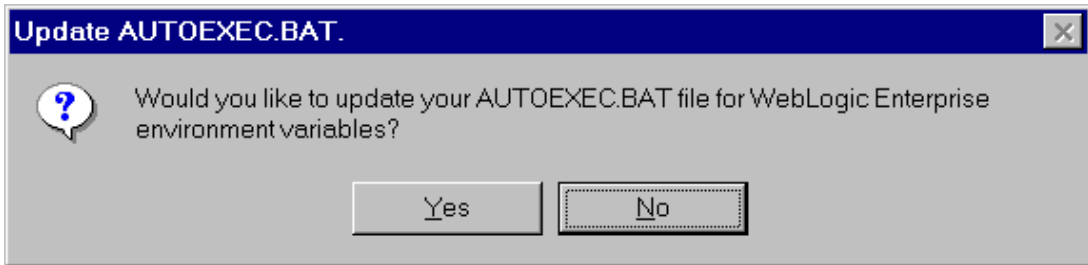
To install the BEA WLE software on a Microsoft Windows 98 or 95 operating system, follow the steps listed below.

Note: In this section, installation screens that are identical to the screens shown in the Windows NT section are not repeated.

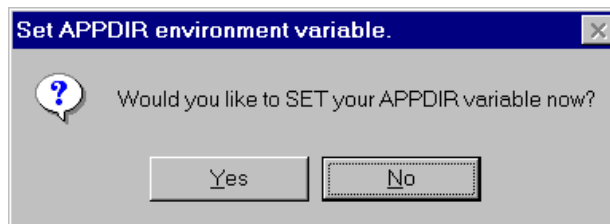
1. Insert the BEA WLE software CD in the CD player. The Windows autorun feature is used to automatically begin the installation. (To bypass the autorun feature, hold down the Shift key while inserting the CD in the CD player. You can then run the `setup.exe` file in the `inwnt40` directory on the CD.)
2. The Setup screen is displayed, followed by the Welcome screen.
3. Click Next. The Software License Agreement screen is displayed.
4. To accept the license agreement, click Yes. The User Information screen is displayed.
5. Enter your name and the name of your company and click Next. The Registration Confirmation screen is displayed.
6. If the registration information is correct, click Yes; otherwise, click No and correct the information. The Choose Destination Location screen is displayed.
7. The default destination folder is `c:\wledir`. Click Next to accept this location, or click Browse to select a different location. If you enter a path that does not exist, the installation procedure prompts for a confirmation that you want the directory created.
8. After you complete the directory path screen, the BEA WebLogic Enterprise Software Component Selection screen is displayed. For an installation on a Windows 98 or Windows 95 system, you can only install components from the client list.



9. Select one or more of the following client components for the client-only installation:
 - BEA TUXEDO /WS client
 - BEA CORBA C++ client
 - BEA RMI/EJB client
 - BEA ActiveX client
 - BEA CORBA Java client
10. The WLE software is installed. When the software installation completes, the Update AUTOEXEC.BAT screen is displayed.



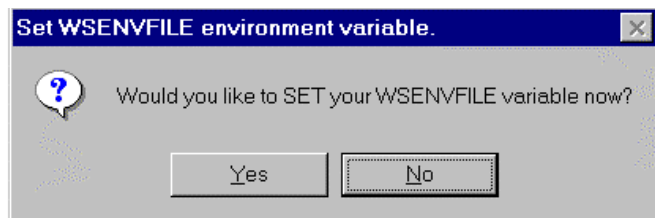
11. Click Yes to update the AUTOEXEC.BAT file. The Set APPDIR environment variable screen is displayed.



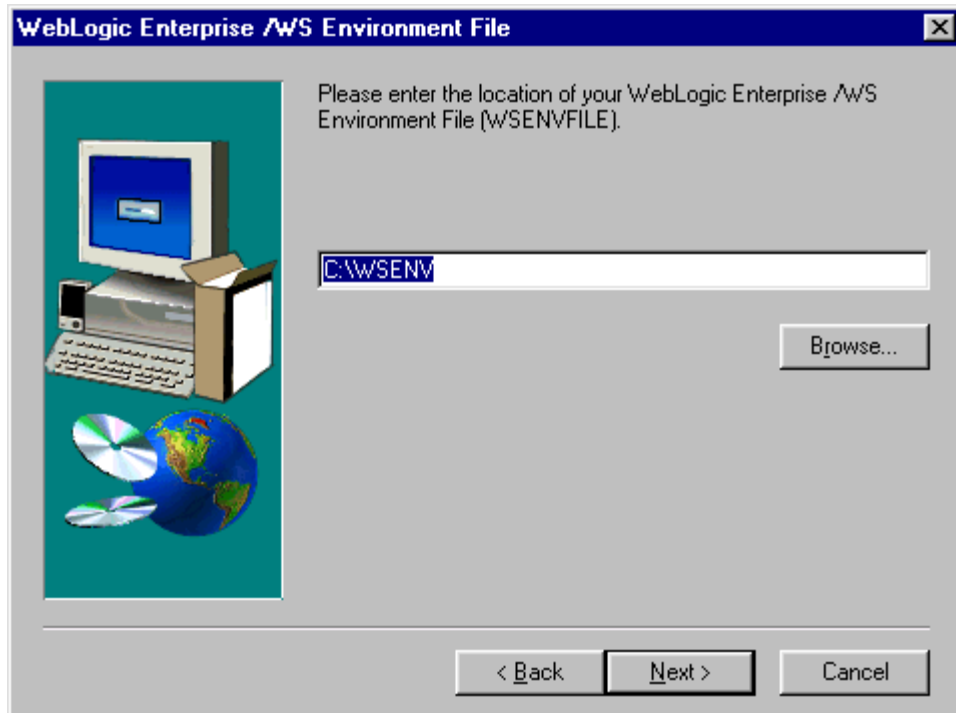
12. Click Yes. The WebLogic Enterprise Application Directory screen is displayed.



13. To accept the default directory, click Next. To specify a nondefault directory, click Browse, enter the desired directory, and click Next. If BEA /WS Client was selected, the Set WSENVFILE environment variable screen is displayed.



14. To set the WSENVFILE environment variable, click Yes. The WebLogic Enterprise /WS Environment File screen is displayed.



15. To accept the default directory, click Next. To specify a nondefault directory, click Browse, enter the desired directory, and click Next. The Setup is verifying installation screen is displayed.
16. After the Setup program verifies the installation, the Setup has successfully verified installation of product screen is displayed.
17. The Restart System screen is displayed.
18. Click OK to restart your system. If you attempt to run the WLE software before you restart your system, the software may fail.

Removing (Uninstalling) the WLE Software from Your System

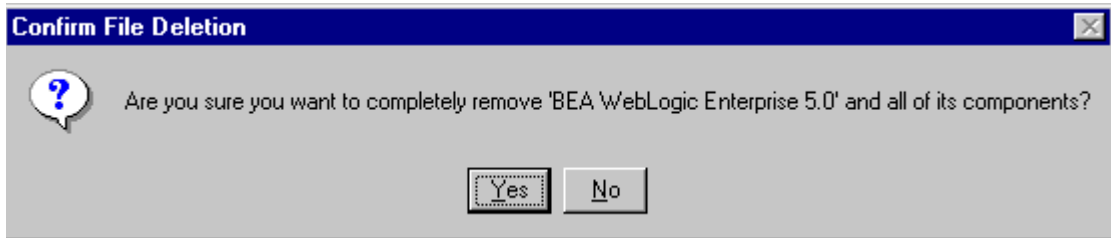
This section explains how to remove the WLE software from your system.

Warning: If you also installed the optional WLE Security Service software (56-bit or 128-bit) on your system, you must:

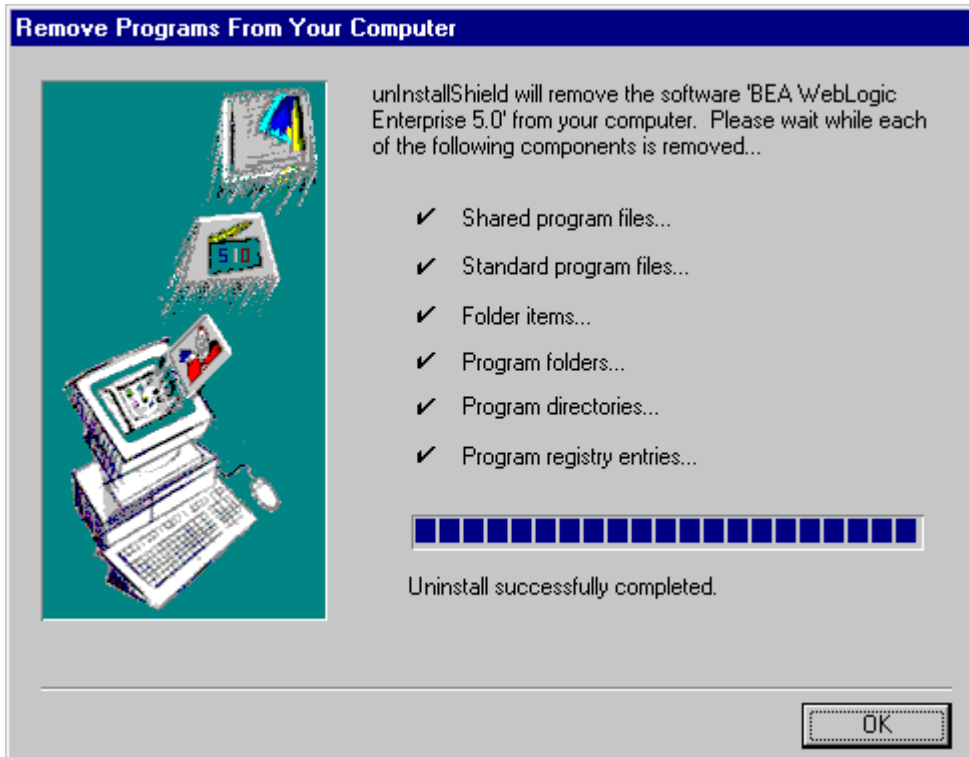
- First uninstall the WLE Security Service software, as described in “Removing (Uninstalling) the WLE Security Service from Your System” on page 3-14.
- Then uninstall the WLE software, as explained in this section.

To remove the WLE software from your system, proceed as follows:

1. Log on to the system. If you are using a Microsoft Windows NT system, log on as the administrator or as a member of the Administrator group.
2. Make sure that no BEA TUXEDO or WLE client or server applications are running. Use `tmshutdown` to shut down all WLE applications.
3. On the Microsoft Windows taskbar, click Start —> Programs—> BEA WebLogic Enterprise 5.0—> UnInstall BEA WebLogic Enterprise 5.0. The Confirm File Deletion screen is displayed:



4. Click Yes to confirm the removal and uninstall the WLE software. The Remove Programs From Your Computer screen is displayed.



The WLE product is removed from your system and from the Windows Registry.

3 WLE Security Service Installation on Windows NT, 98, and 95 Systems

This chapter explains how to install the optional BEA WebLogic Enterprise (WLE) Security Service software on a Microsoft Windows system. The following topics are discussed:

- Before You Install
- Platforms Supported
- Installing the WLE Security Service on Microsoft Windows Systems
- Removing (Uninstalling) the WLE Security Service from Your System

For information about installing WLE Security Service software on a UNIX system, see Chapter 5, “WLE Security Service Installation on UNIX Systems.”

The WLE Security Service software is packaged on a CD that is separate from the WLE product box. A WLE Security Service CD is distributed only if you purchased this software. This software provides 56-bit or 128-bit Secure Sockets Layer (SSL) and Link-Level Encryption (LLE) features for WLE applications. Each level of encryption is packaged on a separate CD.

The installation screens are similar for both levels of security. In this chapter, the sample screens are from a WLE Security Service 128-bit installation on Microsoft Windows NT.

Before You Install

This section describes the following topics:

- Confirming That the WLE 5.0 Software Has Been Installed
- LDAP Information Required During the Installation
- Before Re-installation, Backup LDAP Files
- Stopping WLE or BEA TUXEDO Applications and Related Services
- Check That Your Account Has Administrator Privileges

Confirming That the WLE 5.0 Software Has Been Installed

Before you can install the WLE Security Service 5.0 software, you must first install at least one WLE 5.0 server component, or one of the following WLE 5.0 client component options:

- All WLE client components (recommended)
- BEA CORBA C++ client
- BEA TUXEDO /WS client

If you are installing the WLE 5.0 Security Service software on a Windows 98 or Windows 95 client system, you must first install one of the WLE 5.0 client component options shown in the previous list.

If the target system only has the TUXEDO server or client (shown as "BEA /WS Client") software installed from the WLE 5.0 installation, the WLE Security Service installation procedure only installs the Link-Level Encryption (LLE) components. The Secure Sockets Layer (SSL) components are not installed on this type of target system.

LDAP Information Required During the Installation

During the 56-bit or 128-bit Security Service installation, the procedure will prompt you for the required LDAP server information shown in the following list.

If you do not know the appropriate LDAP values for the prompts, contact the person in your organization or company who is responsible for defining the LDAP server tree. At most companies, this person is the Security Administrator or the Directory Services Administrator.

Note: After the installation, it is not possible to modify a file to adjust these values. The only way to change these values is to re-install the WLE Security Service software and specify the updated values. Therefore, it is important that you understand the appropriate values for the requested information before you start the installation.

- The hostname of the LDAP server computer system.
- The port on the LDAP server computer system that is listening for requests.
- An appropriate base object in the LDAP server tree. The **base object** is the point in the LDAP tree at which you want users to start searching for certificates. By defining a specific location in the LDAP tree, you can narrow the scope of the search for certificates on the relevant portion of the LDAP server tree, and avoid longer-than-necessary searches through irrelevant portions of the LDAP server tree.

Note: These LDAP prompts are not presented if the target system only has the TUXEDO server or client software installed (from WLE 5.0). In this case, only the WLE Security Service's Link-Level Encryption (LLE) components are installed on the target system. During the WLE Security Service installation procedure, the Secure Sockets Layer (SSL) components are not installed on this type of target system.

Before Re-installation, Backup LDAP Files

If you are re-installing the 56-bit or 128-bit WLE Security Service software on a system, the installation procedure will overwrite the LDAP filter file if you selected its default name and location. By default, the LDAP filter file is installed in

`%TUXDIR%\udataobj\security\bea_ldap_filter.dat`, where `TUXDIR` is the directory in which you installed the WLE software. This file is used to define search filters that can further refine the scope of searches in the LDAP server tree.

On re-installation, the Security Service installation procedure will also overwrite the LDAP peer validation rule file, `%TUXDIR%\udataobj\security\peer_val.rul`.

Before you re-install the Security Service software, temporarily rename these files if you do not want the installation procedure to overwrite them. After the installation procedure, rename the files back to their original names and locations.

Stopping WLE or BEA TUXEDO Applications and Related Services

Before beginning the installation, make sure no BEA TUXEDO or WLE client or server applications are running. For information about the `tmshutdown` command, see *Starting and Shutting Down Applications* in the Administration section of the WebLogic Enterprise online documentation.

Check That Your Account Has Administrator Privileges

You need administrator privileges to perform the installation. If you attempt to install the WLE Security Service software without administrator privileges, the following error message will be displayed:

Cannot Install TUXEDO IPC Helper Service.

Platforms Supported

The Microsoft Windows platforms listed in Table 3-1 are supported.

Table 3-1 Supported Microsoft Windows Platforms

Operating System	Release/Version
Microsoft Windows NT	4.0 (Intel) Service Pack 4 (SP4)
Microsoft Windows 95	Service Pack 1
Microsoft Windows 98	

For the hardware and software requirements for NT, see Appendix A, “WLE Platform Data Sheets.”

Installing the WLE Security Service on Microsoft Windows Systems

This section describes how to install the 56-bit or 128-bit WLE Security Service software on Microsoft Windows systems. The sample screens show the installation of the 128-bit software on a Windows NT system.

Microsoft Windows NT Installation Procedure

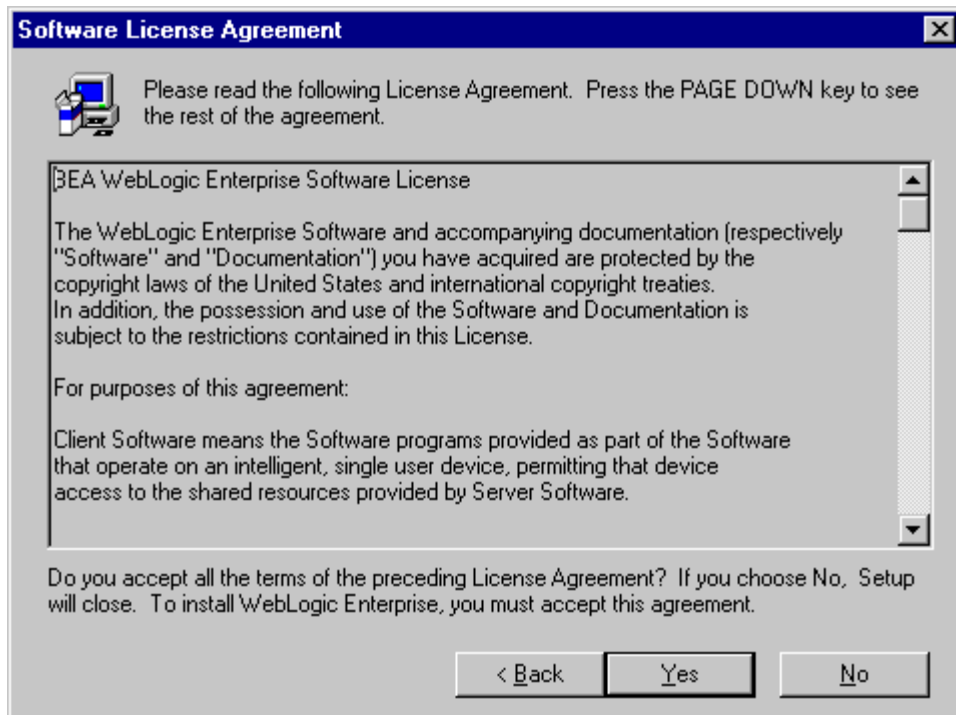
It will take approximately 5 minutes to install the software.

To install the WLE Security Service 56-bit or 128-bit software on a Microsoft Windows system, perform the following steps:

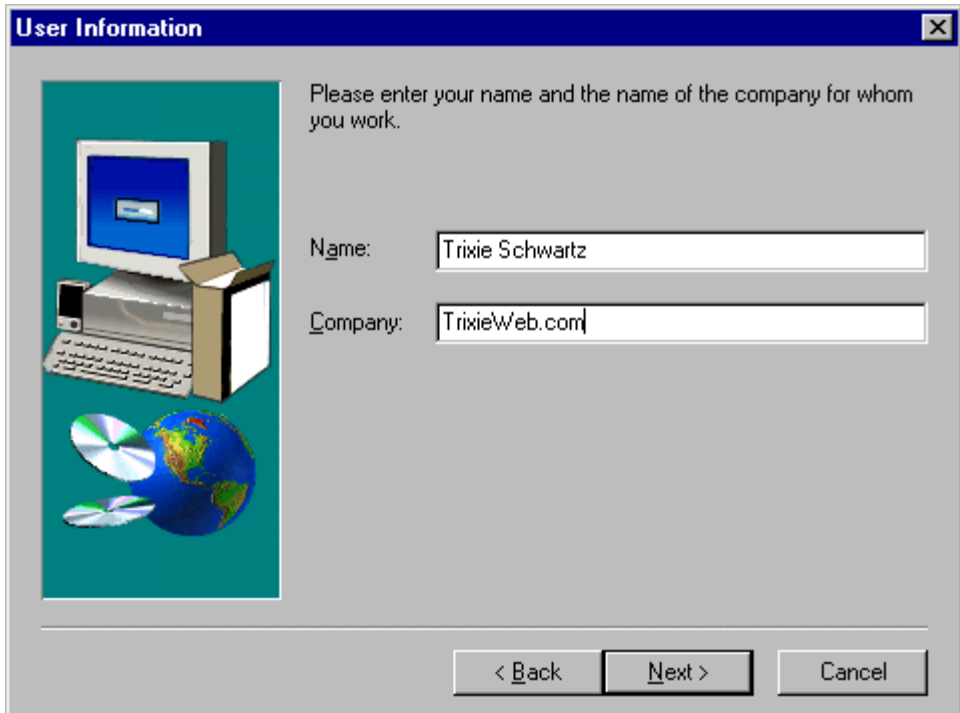
1. Insert the WLE Security Service software CD in the CD player. The Windows autorun feature is used to automatically begin the installation. (To bypass the autorun feature, hold down the Shift key while inserting the CD in the CD player. You can then run the `setup.exe` file in the `inwnt40` directory on the CD.)
2. The Setup screen is displayed, followed by the Welcome screen.



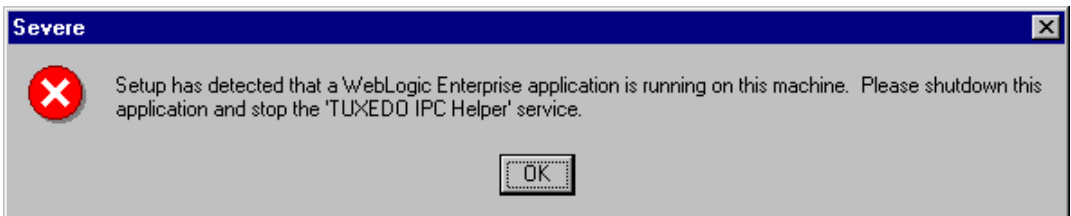
3. Click Next. The Software License Agreement screen is displayed.



4. To accept the license agreement, click Yes. The User Information screen is displayed.

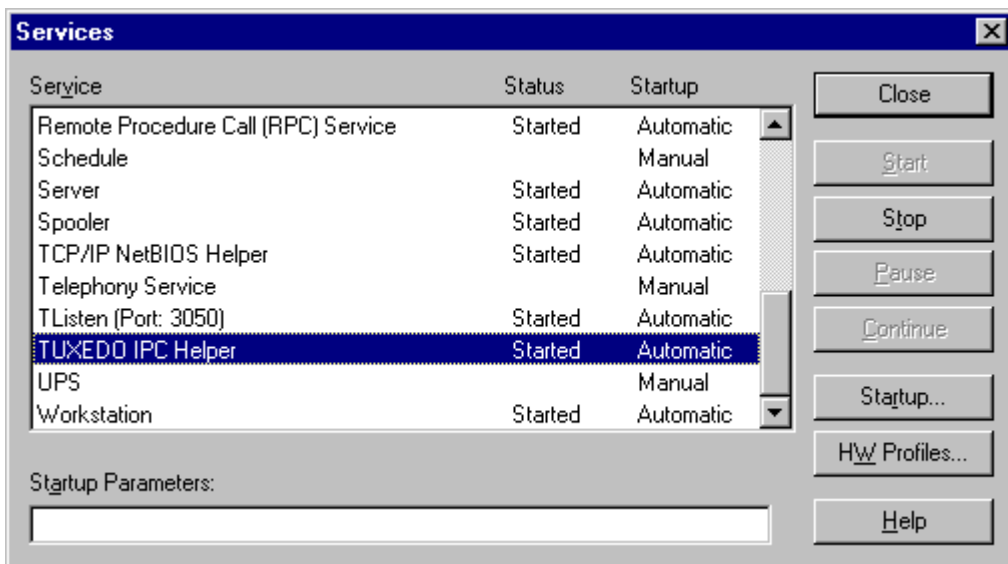


5. Enter your name and the name of your company and click Next.
6. If a WLE or BEA TUXEDO application and related services are running, the Severe message screen is displayed:



If this happens, click OK, which will exit the installation without installing any portion of the software. Then use the `tmshutdown` command, if appropriate, to stop any running applications. Also stop any WLE or BEA TUXEDO services, if appropriate. You can do this on Windows NT systems by clicking Start —>

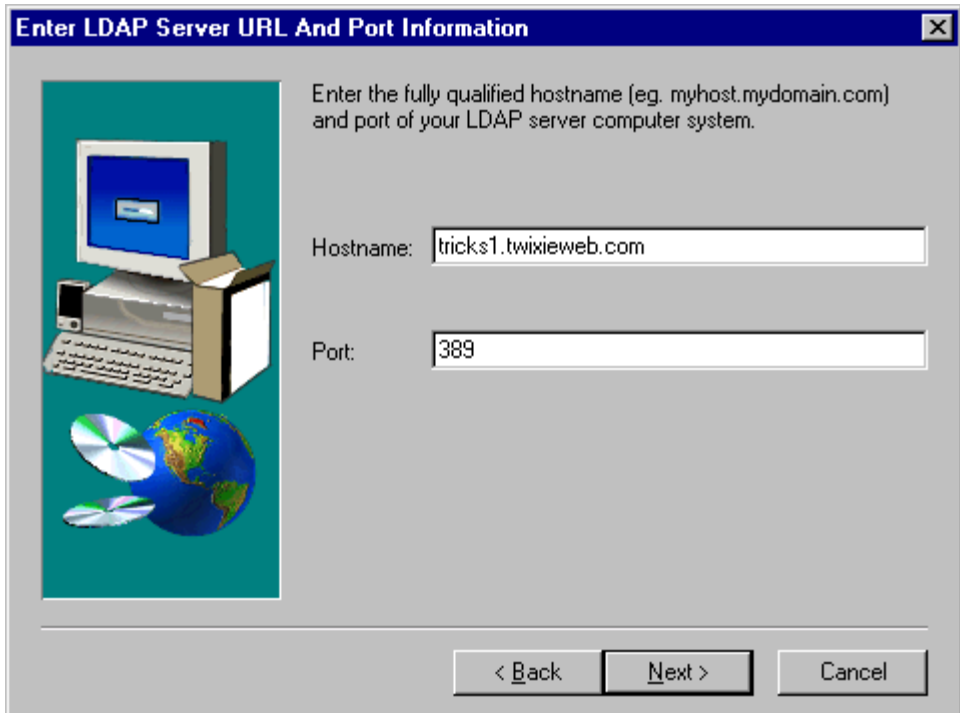
Settings —> Control Panel. In the Control Panel, open the Services panel. The Services screen is displayed.



Scroll to the entries for TUXEDO IPC Helper and TListen. For each entry, select it in the display box and click Stop to change its status from Started to Stopped. Then click Close. If you encountered the screens shown in this step, you will have to restart the installation program.

7. If you did not encounter the problem described in the preceding step, the installation program displays the Enter LDAP Server URL And Port Information screen.

Note: If you installed only BEA TUXEDO server or client software on this system, the following screen is not displayed.



Enter LDAP Server URL And Port Information

Enter the fully qualified hostname (eg. myhost.mydomain.com) and port of your LDAP server computer system.

Hostname:

Port:

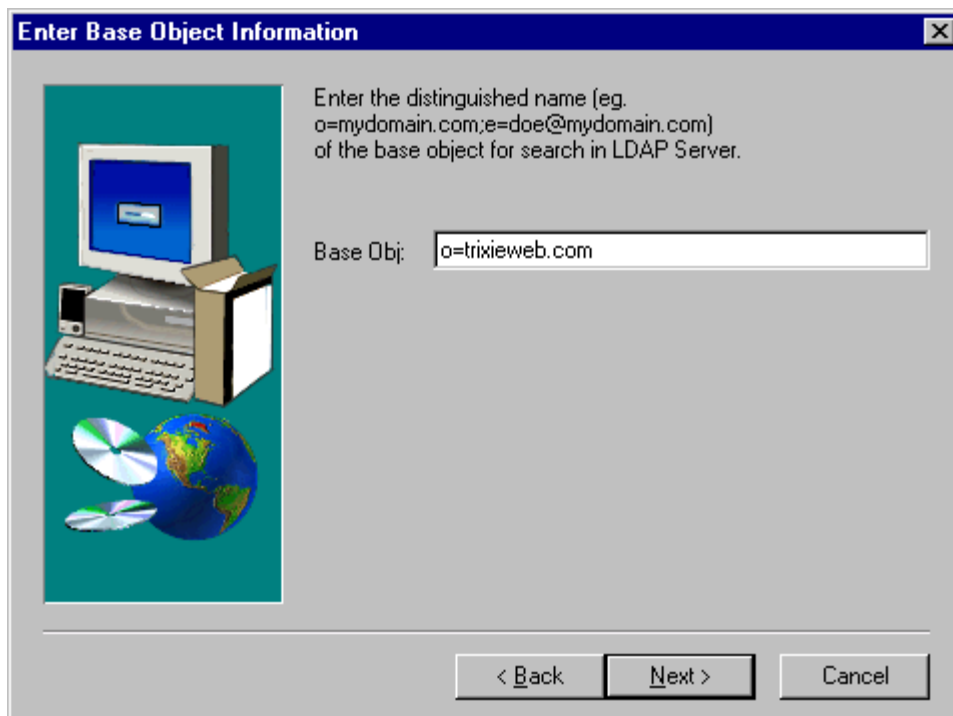
< Back Next > Cancel

Note: For this release, the Back button on this screen is disabled.

This information will be stored locally as a registered SSL certificate lookup plug-in that WLE client and server applications can use.

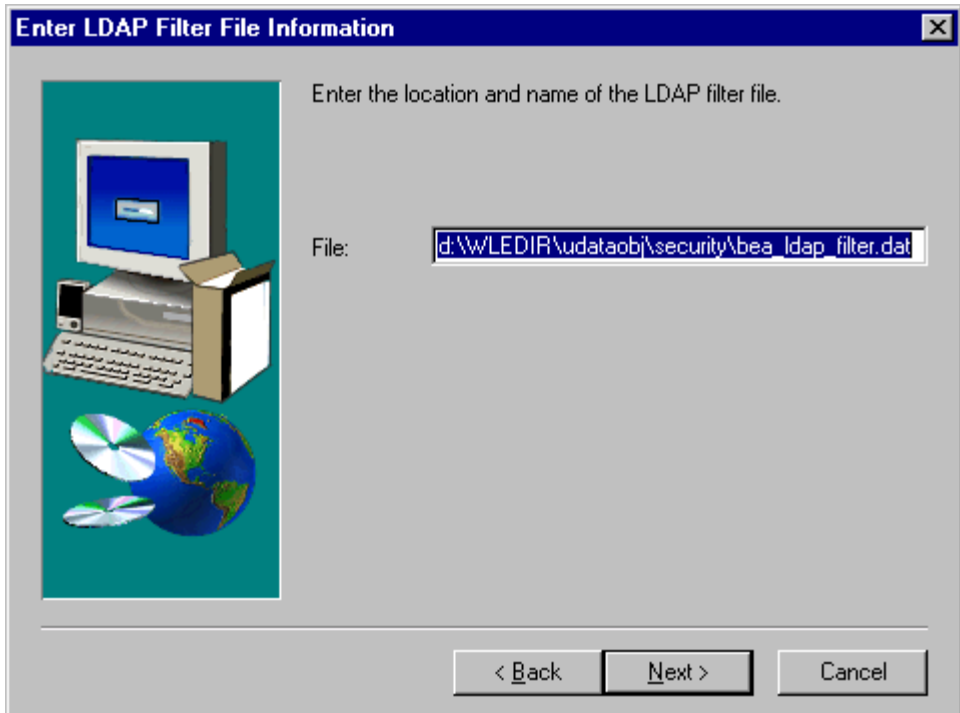
- In the Hostname input box, enter the LDAP server's fully qualified node name and domain name.
 - In the Port input box, enter the port on which the LDAP server is listening.
8. The Base Object screen is displayed.

Note: If you installed only BEA TUXEDO server or client software on this system, the following screen is not displayed.



9. The base object is the point in the LDAP tree at which you want users to start searching; in this case, to start searching for certificates. There are no strict rules about the syntax for this value. Enter the base object string exactly as it was specified in the LDAP server tree. Click Next. The Enter LDAP Filter File Information screen is displayed.

Note: If you installed only BEA TUXEDO server or client software on this system, the following screen is not displayed.



10. The default location for the LDAP filter file is `wledir\udataobj\security\bea_ldap_filter.dat`. This file is used to define search filters that can further refine the scope of searches in the LDAP server tree. (For more information, see *Using Security* in the WebLogic Enterprise online documentation.) Click Next to accept this default; or, enter a new value and click Next. The Setup Complete screen is displayed:



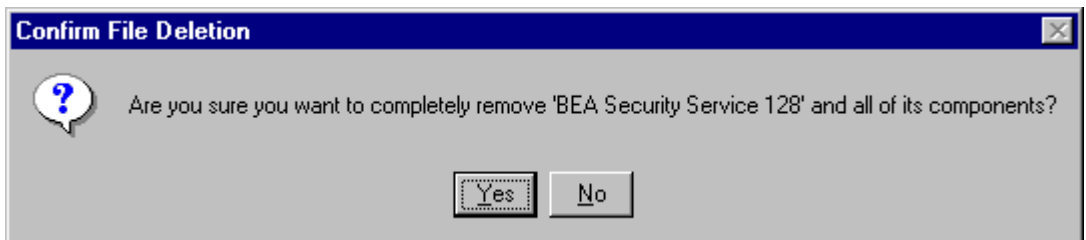
11. Click Finish to complete the installation.
12. Reboot your system. Your system restarts. If you attempt to run the WLE software before you restart your system, the software may fail.

Removing (Uninstalling) the WLE Security Service from Your System

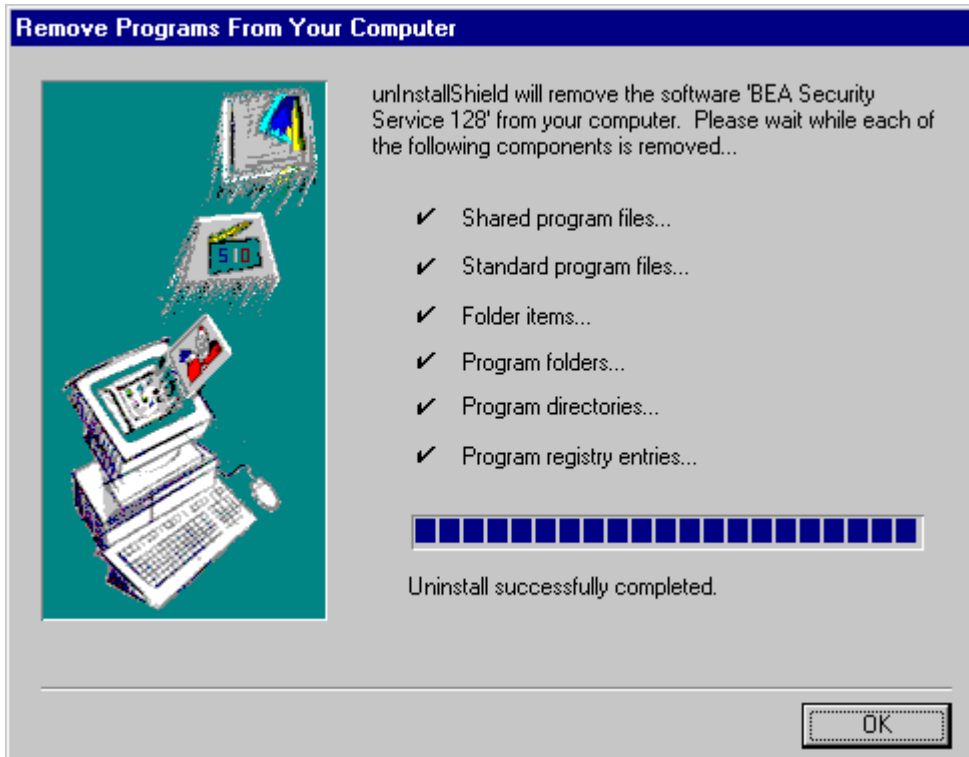
To remove the WLE Security Service software from your system, follow the steps in this section.

Warning: After you complete these steps, you will have to re-install the WLE 5.0 software on your system.

1. Log on to the system. If you are using a Microsoft Windows NT system, log on as the administrator or as a member of the Administrator group.
2. Make sure that no BEA TUXEDO or WLE client or server applications are running. Use `tmshutdown` to shut down all WLE applications.
3. On the Microsoft Windows taskbar, click Start —> Programs—> BEA Security Service 128 —> UnInstall BEA Security Service 128. (If you installed the 56-bit version of the Security Service, the taskbar path is Start —> Programs—> BEA Security Service 56 —> UnInstall BEA Security Service 56.)
4. The Confirm File Deletion screen is displayed. For example:



5. Click Yes to confirm the removal and to uninstall the WLE Security Service software. The Uninstall screen is displayed. For example:



The WLE Security Service product is removed from your system and from the Windows Registry.

Warning: Again, after you complete these steps, you will have to re-install the WLE 5.0 software on your system.

3 *WLE Security Service Installation on Windows NT, 98, and 95 Systems*

4 WLE Installation on UNIX Systems

This chapter discusses the following topics:

- Platforms Supported
- Installing the WLE Software on UNIX Systems
- Removing (Uninstalling) the WLE Software from Your System

Platforms Supported

The platforms listed in Table 4-1 are supported.

Table 4-1 Supported Platforms

Vendor	Operating System	Release/Version
HP	HP-UX	11.00 32-bit plus patches B.11.00.B0315
Sun	Solaris	2.6 and 7.0 (UltraSPARC)

For the hardware and software requirements for these operating systems, see Appendix A, “WLE Platform Data Sheets.”

Installing the WLE Software on UNIX Systems

This section describes how to install the WLE software on UNIX systems.

Preinstallation Considerations

This section describes some important tasks that you should perform before starting the WLE installation.

Backing Up Files

If you are installing WLE software on a system that already has M3 or WLE software installed, there are some files that you may want to back up prior to the installation, and then restore them after the installation is complete. This is because some files that you may have modified for your M3 or WLE software are overwritten when the WLE software is installed.

To avoid having to modify these files again, proceed as follows:

1. If you are installing one or more of the WLE server software components, back up the `RM` file to a temporary location. This file is located in the `M3DIR/udataobj` or `WLEDIR/udataobj` directory.
2. If you are installing the BEA Administration Console, back up the `webgui.ini` file to a temporary location. This file is located in the `M3DIR/udataobj/webgui` or `WLEDIR/udataobj/webgui` directory.
3. After the installation is complete, restore these files to their original locations.

Stopping WLE or BEA TUXEDO Applications and Related Services

Before beginning the installation, make sure no BEA TUXEDO or WLE client or server applications are running. For information about the `tmshutdown` command, see *Starting and Shutting Down Applications* in the *Administration* section of the WebLogic Enterprise online documentation.

Checking That Your Account Has the Required Privileges

On most systems, you need superuser privileges to mount the software CD. The account that you log on to to perform the installation must have administrative privileges.

UNIX Installation Procedure

It takes approximately 10 minutes to install the software.

Warning: If you are **re-installing the WLE 5.0 software** on your system, and you also already installed the optional WLE Security Service software (56-bit or 128-bit) on your system, you must:

- First uninstall the WLE 5.0 software on your UNIX system, which also removes the WLE Security Service software. See the section “Removing (Uninstalling) the WLE Software from Your System” on page 4-17.
- Then re-install the WLE 5.0 software, as explained in this section.

To install the WLE software on a UNIX operating system, perform the following steps:

1. Log on to the system with administrative privileges.
2. Insert the WLE CD into the reader.
3. Mount the CD as a file system. For platform-specific instructions on how to do this, see Appendix A, “WLE Platform Data Sheets.” On most systems, you need superuser privileges to perform the mount.

Note: If your system does not have a directly connected CD reader, you can mount the CD on a remote system, share (export) the CD file system, and then mount the remote file system. For detailed instructions for each platform, see Appendix A, “WLE Platform Data Sheets.” Alternatively,

you can mount the CD on a remote system, copy the contents of the CD directory for your platform to the system in which you plan to install the WLE software, and continue with the remainder of the installation procedure.

4. Use the `cd` command to change your working directory to the root of the WLE 5.0 software CD.
5. Run the `ls` command in the root directory to check the CD's contents. If all the files are in lowercase characters, begin the installation by entering:

```
sh install.sh.
```

If all the files are in uppercase characters, begin the installation by entering:

```
sh INSTALL.SH
```

6. The following platform choices are displayed:

- 1) HP-UX v11.0
- 2) Sun Solaris v2.6
- 3) Sun Solaris 7

Install which platform's files? [01- 3, q to quit, l for list]:

Enter the number 1 to install the WLE 5.0 software on an HP-UX system; or enter 2 to install the WLE 5.0 software on a Solaris 2.6 system; or enter 3 to install the WLE 5.0 software on a Solaris 7.0 system; or enter the **letter** l to display the list again.

7. The remaining prompts in this chapter show a sample WLE 5.0 installation on a Solaris 2.6 system. For example, a confirmation prompt is displayed:

```
** You have chosen to install software for **
```

```
BEA WebLogic Enterprise Release 5.0
```

```
This directory contains the BEA WLE Installation Software for  
Sun Solaris 2.6 on Sun SPARC.
```

```
Is this correct? [y,n,q]:
```

8. Enter `y` to accept the selection; or enter `n` to reject the selection and return to the list of platforms; or enter `q` to quit the installation.
9. An informational messages and the initial component selection menu are displayed:

To terminate the installation at any time press the interrupt key, typically , <break>, or <ctrl+c>.

The following components are available:

- | | | |
|---|---------|---------------------------------|
| 1 | servers | BEA WebLogic Enterprise Servers |
| 2 | clients | BEA WebLogic Enterprise Clients |
| 3 | admcon | BEA Administration Console |

Select the one you wish to install [?,??,q]:

The server and client components have packages that you can select for a more specific installation. Enter the number 1 to display all the WLE server packages; or enter 2 to display all the WLE client packages; or enter 3 to display the Administration Console component; or enter a single question mark (?) to display a brief help message; or enter two question marks (??) to redisplay the menu; or enter q to quit the installation.

10. **If you entered the number 1** in the initial component selection menu to view the list of WLE server packages, the following menu is displayed:

The following packages are available:

- | | | |
|---|---------|---|
| 1 | wletsrv | BEA WebLogic Enterprise TUXEDO Server |
| 2 | wlecsrv | BEA WebLogic Enterprise CORBA C++ Server |
| 3 | wlejsrv | BEA WebLogic Enterprise CORBA Java Server |
| 4 | wlej2ee | BEA WebLogic Enterprise J2EE Server |

Select the package(s) you wish to install (or 'all' to install all packages) (default: all) [?,??,q]:

Select the server package or packages you want to install. Separate multiple server packages with a comma. Or enter all, the default option, to install all packages.

Note: You cannot select a particular server package and then a particular client package. When you select a particular server package or set of server packages, only those server packages are installed. The client packages and the Administration Console component are not installed. If you subsequently wanted to install particular clients or the Administration Console on the system, you could run the installation procedure again to select and install those items.

Note: The BEA TUXEDO server software is always installed as a base component for any of the other WLE servers. The CORBA Java and J2EE server components are always installed together, even if you only select one of those items.

If instead you entered 2 in the initial component selection menu to view the list of WLE client packages, the following menu is displayed:

The following packages are available:

```
1      wletcli    BEA /WS Client
2      wleccli    BEA C++ Client
3      wlejcli    BEA Java Client
4      wlercli    BEA RMI Client
```

Select the package(s) you wish to install (or 'all' to install all packages) (default: all) [?,??,q]:

Note: The BEA Java Client is the CORBA Java client; it does not include RMI. The BEA /WS Client is the BEA TUXEDO /WS client.

Select the client package or packages you want to install. Separate multiple client packages with a comma. Or enter all, the default option, to install all the client packages.

If, instead, you entered 3 in the initial component selection menu, the following menu is displayed:

The following packages are available:

```
1      admcon     BEA Administration Console
```

Select the package(s) you wish to install (or 'all' to install all packages) (default: all) [?,??,q]:

Enter the number 1 or the word all if you want to install the Administration Console.

11. The installation procedure displays the name of the component you are installing, and lists copyright information. For example, if you selected 1 in the initial component selection menu, and then selected 3, CORBA Java Servers, the procedure displays the following:

```
BEA WebLogic Enterprise CORBA Java Server
(sparc) Release 5.0
Copyright (c) 1999 BEA Systems, Inc.
All Rights Reserved.
BEA and WebLogic are trademarks of BEA Systems, Inc.
```

SSLplus is a trademark of Certicom Corporation, 1999.
BSAFE is a trademark of RSA Data Security, Inc., 1999.

12. Enter the target directory for the selected software. The following prompt is displayed:

```
Directory where WebLogic Enterprise files are to be installed  
[?,q]:
```

For example, you could enter the `/usr/local/wledir` directory.

Most server components can be installed in any directory whose file system has enough disk space to accommodate them. There may be one or more server components that have to be installed over an existing WLE server component.

When you enter the directory name, the installation program verifies it by using the following criteria:

- The value entered must be a full directory specification.
- If the directory already exists, it must be writable by the user performing the installation.
- If the directory already exists, it must have its executable permission set for the user performing the installation.
- The name provided for the directory cannot be an existing file.

If the target directory name passes the verification check and does not exist, the installation program creates the directory.

13. The file system for the target directory is checked for available space. For example:

```
Determining if sufficient space is available ...  
272989 blocks are required  
16118268 blocks are available to /usr/local/wledir  
  
Using /usr/local/wledir as the WebLogic Enterprise base  
directory
```

If enough disk space is available, the installation continues. If there is insufficient disk space, the installation returns to the prompt asking for the name of a directory.

14. If you entered 3 or all in the initial component selection menu, indicating that the installation would include the Administration Console, you are asked to choose between the following:

- Accepting default locations for files being installed
- Specifying nondefault pathnames for these files

For details on the options, see the section “Selecting Directories for the WLE Files” on page 1-12.

Press the Enter key to accept the default locations, if desired. If you accept the default locations, the following prompt is displayed. (In this sample, the user entered /usr/local/wlmdir as the target directory.)

```
Creating /usr/local/wlmdir/udataobj/webgui
```

```
Using /usr/local/wlmdir/udataobj/webgui as the BEA  
Administration Console document tree
```

```
Directory where BEA Administration Console java applets are to be  
installed (default:
```

```
/usr/local/wlmdir/udataobj/webgui/java) [?,q]:
```

15. Again, you have a choice. If you accept the default, the following prompt is displayed:

```
Creating /usr/local/wlmdir/udataobj/webgui/java
```

```
Using /usr/local/wlmdir/udataobj/webgui/java as the BEA  
Administration Console document tree
```

```
Directory where BEA Administration Console CGI programs are to  
be installed (default:
```

```
/usr/local/wlmdir/udataobj/webgui/cgi-bin) [?,q]:
```

Press the Enter key to accept the default locations, if desired.

16. If you accept the default, the following prompt is displayed:

```
Creating /usr/local/wlmdir/udataobj/webgui/cgi-bin
```

```
Using /usr/local/wlmdir/udataobj/webgui/cgi-bin as the BEA  
Administration Console CGI directory
```

```
Web server client prefix for CGI directory. /cgi-bin is a good  
choice for most web servers. (default: /cgi-bin) [?,q]:
```

Press the Enter key to accept the default locations, if desired.

17. If you accept the default, the following prompt is displayed:

```
Using /cgi-bin as the BEA Administration Console CGI prefix
```


18. At this point, the installation program proceeds to install the WLE files.

19. After the installation of the WLE files is completed, the following text and prompt is displayed:

```
... finished
.
.
.
Changing file permissions...
... finished
Processing default license file...
... finished
Install tlisten password? [y/n]:
```

20. If you want to specify a `tlisten` password, enter `y`; otherwise, enter `n`. For information about the `tlisten` password and instructions for setting it, see the section “Selecting an Administrative Password” on page 1-15. If you enter `y`, the following prompt is displayed:

```
Please enter the tlisten password:
```

21. Enter the `tlisten` password. The following prompt is displayed:

```
Please verify the password:
```

22. Enter the `tlisten` password again. The following prompt is displayed:

```
tlistpwd: INFO: Password appended to file
"/usr/local/wledir/udataobj/tlisten.pw".
Verifying installation...
... Installation successful!
If your license file is accessible, you may install it now.
Install license file? [y/n]:
```

23. If you want to install the WLE software license now, enter `y`; otherwise, enter `n` and install the license later. If you enter `y`, the following prompt is displayed:

```
To terminate the license update at any time
press the interrupt key,
typically <del>, <break>, or <ctrl+c>.
Directory containing source license text file [?,q]:
```

24. Insert the license diskette, which is shipped in the WLE software box, in the diskette reader on your machine, mount the disk (if necessary), copy the `lic.txt` file to a system directory, and enter the location of the `lic.txt` file at the prompt. For example, if you copy the `lic.txt` file to `/usr`, enter `/usr`. The following prompt is displayed:

```
Using /usr/lic.txt to copy license information.
```

```
Updating /usr/local/wledir/udataobj/lic.txt with license information.
```

```
Please don't forget to fill out and send in your registration card
```

25. After the installation is completed, unmount the CD file system and remove the CD from the reader. For platform-specific instructions for unmounting the CD, see Appendix A, “WLE Platform Data Sheets.”

Installing the Product License After You Install the WLE Software

If you elected not to install the product license when you installed the WLE software, you can install the license using the BEA License Utility.

Note: Your product license is on a 3.5-inch diskette that is included in the WLE product box.

To install the license, use the following steps:

1. Insert the license diskette, which is shipped in the WLE software box, in the disk reader on your machine, mount the disk (if necessary), and copy the `lic.txt` file to a directory of your choice, but not to the `wledir` directory or any of its subdirectories.
2. Change to the `bin` directory where you installed the WLE software. For example:

```
cd /usr/local/wledir/bin
```
3. Enter `sh ./lic.sh`.

The following prompt is displayed:

To terminate the license update at any time
press the interrupt key,
typically , <break>, or <ctrl+c>.

Directory containing source license text file [?,q]:

4. Enter the name of the directory that contains the `lic.txt` file (for example, `/kits/license`). The following prompt is displayed:

Using `/kits/license/lic.txt` to copy license information.

Directory where WebLogic Enterprise files are installed. [?,q]:

5. Enter `/usr/local/wlmdir` or the name of the directory where you installed the WLE software. The following prompt is displayed:

Updating `/usr/local/wlmdir/udataobj/lic.txt` with license
information.

Running Simpapp to Verify the WLE Software Installation

To verify that you have successfully installed the WLE client and server software, run the `simpapp` application. This “simple application” is a WLE client/server application that converts strings to uppercase and lowercase letters.

Note: This section assumes you installed all WLE server components, or one of the CORBA server components. If you installed only the J2EE server component, see the next section, “Running a Basic EJB Sample to Verify the WLE J2EE Software Installation” on page 4-13, for information about running an EJB sample to verify the installation.

Before running the sample application, see Appendix A, “WLE Platform Data Sheets” for important information about prerequisite software.

To run `simpapp`, perform the following steps:

1. Make sure that the directory in which you installed the WLE software is set in the environment variable `TUXDIR`. For example, if you installed the software in the default directory, enter the following to set the `TUXDIR` environment variable:
`TUXDIR=/usr/local/wlmdir; export TUXDIR`

2. Create a directory under `wledir` and copy the content of the `simpapp` directory to it.

Notes: If you installed all WLE servers or the CORBA C++ server component in the default directory, a C++ `simpapp` directory is located at
`usr/local/wledir/samples/corba/simpapp`.

If you installed the CORBA Java server component in the default directory, the `simpapp` directory is located at
`usr/local/wledir/samples/corba/simpapp_java`.

If you installed the BEA TUXEDO server component in the default directory, the `simpapp` directory is located at
`usr/local/wledir/samples/atmi/simpapp`.

3. Change (`cd`) to the copy directory.
4. To change the permissions on all the files to allow full access, enter:
`chmod 777 *`
5. Ensure that `make` is in your path.
6. To run `simpapp` automatically, enter `./runme.ksh`. The `simpapp` application runs and prints the following messages:

```
Testing simpapp
  cleaned up
  prepared
  built
  loaded ubb
  booted
  ran
  shutdown
  saved results
PASSED
```

7. To run `simpapp` manually to observe the processes starting and stopping, do the following:
 - a. Enter `KSH`.
 - b. Enter `./results/setenv.ksh`.
 - c. Enter `tmloadcf -y results/ubb`.
 - d. Enter `tmboot -y`. The application starts several processes.

- e. Enter `./simple_client`. The prompt `String?` is displayed.
 - f. Enter a word in lowercase letters. The application converts the word to uppercase and then to lowercase letters and displays the results.
 - g. Enter `tmshutdown -y`. The application shuts down the processes.
8. To restore the directory to its original state, enter:
- a. `./results/setenv.ksh`
 - b. `make -f makefile.mk clean`

Running a Basic EJB Sample to Verify the WLE J2EE Software Installation

If you installed only the WLE J2EE server component, you can run a stateless session EJB sample provided by the WLE software to verify the installation.

Before running the sample application, see Appendix A, “WLE Platform Data Sheets” for important information about prerequisite software. For example, on NT systems, you must first download and install the Java 2 SDK version 1.2.2.

This sample demonstrates the usage of stateless session EJBs using a simple stock trader application. This sample demonstrates how the client must maintain any persistent state -- such as the change in the cash account -- across repeated calls to the session EJB. All the logic for the balance is encapsulated in the client, where all the persistence is provided by the container and the logic is maintained in the EJB.

The EJB in this sample provides basic trading methods, such as buying and selling stocks. Because there are no persistent stores involved in this sample, all the stock data are set in the deployment descriptor of the EJB as environment properties. The container supplies the data to the EJB through the JNDI lookup operation.

Main Directory Location

The following directory contains the Java source files and XML-based deployment descriptors:

```
$TUXDIR/samples/j2ee/ejb/basic/statelessSession
```

A common build script, `runme.cmd`, is provided for all the EJB samples and is in the following directory:

```
$TUXDIR/samples/j2ee/ejb
```

This `runme.ksh` shell script file contains commands to set the environment, boot the server, and execute the client for this sample.

Source Files

The following table lists and describes all the files for this sample application.

File Name	Description
<code>ejb-jar.xml</code>	The XML deployment descriptor file used to help add the bean to the EJB container.
<code>weblogic-ejb-extensions.xml</code>	A file containing the WLE extensions to the deployment descriptor DTD.
<code>Client.java</code>	The Java source code for the client.
<code>TraderBean.java</code>	The Java source code for the stateless session bean. This class contains the business logic method implementations and methods required by the EJB 1.1 specification.
<code>Trader.java</code>	The Java source code for the Remote interface of the <code>TraderBean</code> class.
<code>TraderHome.java</code>	The Java source code for the Home interface of the <code>TraderBean</code> class.
<code>TradeResult.java</code>	An application-specific utility class used to carry a trade execution result between the EJB and the client.
<code>ProcessingErrorException.java</code>	An application-specific exception thrown by the <code>TraderBean</code> class for business methods.

Utility Files

The following table lists and describes the utility files for this sample application. These files are generated based on the WLE installation environment. Because a common build script is provided for all the EJB samples, instructions to build and execute the samples are provided in the section “Building the EJB Sample Applications” on page 4-16. The `runme.ksh` file resides in the `$TUXDIR/samples/j2ee/ejb` directory. The other utility files are in the `$TUXDIR%/samples/j2ee/ejb/basic/statelessSession` directory.

File	Description
<code>runme.ksh</code>	The UNIX Korn shell script that contains commands to set the environment, boot the server, and execute the client for this sample.
<code>run_client.ksh</code>	The UNIX Korn shell script to run the client on UNIX systems.
<code>setenv.ksh</code>	The UNIX Korn shell script to set the necessary environment variables on UNIX systems.
<code>ubbconfig</code>	The WLE server configuration file to be used on UNIX systems.
<code>ejb_basic_statelessSession.jar</code>	The <code>ejb-jar</code> file that contains the source file classes, the container-specific class files generated by the <code>ejbc</code> command, and the deployment descriptor files. This is the <code>ejb-jar</code> file that is deployed on the WLE server.

Variable Descriptions

HOST

The host name portion of the TCP/IP network address used by the ISL process to accept connections from Java clients. The default value is the name of the local machine.

PORT

The TCP port number at which the ISL process listens for incoming requests; it must be a number between 0 and 65535. The default value is 2468.

IPCKEY

The address of shared memory; it must be a number greater than 32769 unique to this application on this system. The default value is 55432.

JAVA_HOME

The directory path where you installed the Java 2 SDK software. For example:

JAVA_HOME = c:\jdk1.2.2 (on NT)

JAVA_HOME = /usr/local/jdk1.2.1 (on UNIX)

Building the EJB Sample Applications

Use the following steps to build the EJB samples:

1. Ensure that the directory in which you installed WLE is set in the environment variable `TUXDIR`. Make sure to set the `JAVA_HOME` environment variable.
2. Make a copy of the `$TUXDIR/samples/j2ee/ejb` directory into a working directory.
3. Change directory to the working directory.
4. Change the permissions on all the files to give them write-access. For example:

```
prompt>chmod -R +w *
```

Change the permission of the `runme.ksh` file to give it execute permission, as in the following command:

```
prompt>chmod +x runme.ksh
```

5. Run the JavaServer version of the sample automatically by entering the `runme` command:

```
prompt>. ./runme.ksh basic statelessSession
```

6. A number of messages are displayed, along with information about whether the build procedure was successful. The sample is built, the servers are booted, and the client is run once.

After you have executed the `runme` command, you can run the samples manually if you like. To run the samples manually:

1. Change the current directory to your work samples directory.

2. Ensure that your environment is set correctly by entering the following command:

```
prompt>. ./setenv.ksh
```

3. Boot the server, run the client, and shut down the server by entering the following commands:

```
prompt>tmboot -y
```

```
prompt>. ./run_client.ksh
```

```
prompt>tmshutdown -y
```

To restore the sample application directory to its original state:

1. Set the directory to the directory containing the sample application.
2. Enter the following command, where TUXDIR is the directory in which you installed the WLE software:

```
prompt>. $TUXDIR/samples/j2ee/ejb/clean.ksh
```

Removing (Uninstalling) the WLE Software from Your System

To remove the software from your system, use the following procedure. This procedure also removes the WLE Security Service software, if present on your system.

1. Log on as the WLE administrator or superuser.
2. Make sure that no BEA TUXEDO or WLE client or server applications are running. Use `tmshutdown` to shut down all WLE applications.
3. Enter the following command:

```
prompt> rm -rf wledir
```

where `wledir` is the WLE base directory.

5 WLE Security Service Installation on UNIX Systems

This chapter explains how to install the optional BEA WebLogic Enterprise (WLE) Security Service software on the supported UNIX systems. The following topics are discussed:

- Before You Install
- Platforms Supported
- Installing WLE Security Service on UNIX Systems
- Removing (Uninstalling) the WLE Security Service Software from Your System

For information about installing WLE Security Service software on an NT, Windows 98, or Windows 95 system, see Chapter 3, “WLE Security Service Installation on Windows NT, 98, and 95 Systems.”

The WLE Security Service software is packaged on a CD that is separate from the WLE product box. A WLE Security Service CD is distributed only if you purchased this software. This software provides 56-bit or 128-bit Secure Sockets Layer (SSL) and Link Level Encryption (LLE) features for WLE applications. Each level of encryption is packaged on a separate CD.

The installation screens are similar for both levels of security. In this chapter, the sample screens are from a WLE Security Service 56-bit installation on a Solaris 2.6 system.

Before You Install

This section describes the following topics:

- Confirming That the WLE 5.0 Software Has Been Installed
- Environment Variables
- LDAP Information Required During the Installation
- Before Re-installation, Back Up LDAP Files
- Stopping WLE or BEA TUXEDO Applications and Related Services
- Checking That Your Account Has Administrator Privileges

Confirming That the WLE 5.0 Software Has Been Installed

Before you can install the WLE Security Service 5.0 software, you must first install at least one WLE 5.0 server component, or one of the following WLE 5.0 client component options:

- All WLE client components (recommended)
- BEA C++ client
- BEA TUXEDO /WS client

Environment Variables

The environment variables discussed in the section “Setting Up Your Environment on UNIX Systems” on page 7-12 must be set prior to installing the WLE Security Service software. The `TUXDIR` and dynamic shared library path variables are critical to the success of this Security Service installation, because the SSL plug-in registration step depends on these variables.

LDAP Information Required During the Installation

During the 56-bit or 128-bit Security Service installation, the procedure will prompt you for the required LDAP server information shown in the following list.

If you do not know the appropriate LDAP values for the prompts, contact the person in your organization or company who is responsible for defining the LDAP server tree. At most companies, this person is the Security Administrator or Directory Services Administrator.

Note: After the installation, it is not possible to modify a file to adjust these values. The only way to change these values is to re-install the product. Therefore, it is important that you understand the appropriate values for the requested information before you start the installation.

- The hostname of the LDAP server computer system.
- The port on the LDAP server computer system that is listening for requests.
- An appropriate base object in the LDAP server tree. The **base object** is the point in the LDAP tree at which you want users to start searching for certificates. By defining a specific location in the LDAP tree, you can narrow the scope of the search for certificates on the relevant portion of the LDAP server tree, and avoid longer-than-necessary searches through irrelevant portions of the LDAP server tree.

Note: These LDAP prompts are not presented if the target system only has the TUXEDO server or client software installed (from WLE 5.0). In this case, only the WLE Security Service's Link-Level Encryption (LLE) components are installed on the target system. During the WLE Security Service installation procedure, the Secure Sockets Layer (SSL) components are not installed on this type of target system.

Before Re-installation, Back Up LDAP Files

If you are re-installing the 56-bit or 128-bit WLE Security Service software on a system, the installation procedure will overwrite the LDAP filter file if you selected its default name and location. By default, the LDAP filter file is installed in

`$TUXDIR/udataobj/security/bea_ldap_filter.dat`, where `TUXDIR` is the directory in which you installed the WLE software. The filter file is used to define search filters that can further refine the scope of searches in the LDAP server tree.

On re-installation, the Security Service installation procedure will also overwrite the LDAP peer validation rule file, `$TUXDIR/udataobj/security/peer_val.rul`.

Before you re-install the Security Service software, temporarily rename these files if you do not want the installation procedure to overwrite them. After the installation procedure, rename the files back to their original names and locations.

Stopping WLE or BEA TUXEDO Applications and Related Services

Before beginning the installation, ensure that no BEA TUXEDO or WLE client or server applications are running. For information about the `tmshutdown` command, see *Starting and Shutting Down Applications* in the *Administration* section of the WebLogic Enterprise online documentation.

Checking That Your Account Has Administrator Privileges

On most systems, you need superuser privileges to mount the software CD. The account that you log on to to perform the installation must have administrative privileges.

Platforms Supported

The platforms listed in Table 5-1 are supported.

Table 5-1 Supported Platforms

Vendor	Operating System	Release/Version
HP	HP-UX	11.00 32-bit plus patches B.11.00.B0315
Sun	Solaris	2.6 and 7.0 (UltraSPARC)

For the hardware and software requirements for these operating systems, see Appendix A, “WLE Platform Data Sheets.”

Installing WLE Security Service on UNIX Systems

This section describes how to install the 56-bit or 128-bit WLE Security Service software on the supported UNIX systems. The sample screens show the installation of the 56-bit software on a Solaris 2.6 system.

UNIX Installation Procedure

It takes approximately 10 minutes to install the software.

To install the WLE Security Service software on a UNIX operating system, perform the following steps:

1. Log on to the system with administrative privileges.
2. Insert the WLE Security Service CD into the reader.

3. Mount the CD as a file system. For platform-specific instructions on how to do this, see Appendix A, “WLE Platform Data Sheets.” On most systems you need superuser privileges to perform the mount.

Note: If your system does not have a directly connected CD reader, you can mount the CD on a remote system, share (export) the CD file system, and then mount the remote file system. For detailed instructions for each platform, see Appendix A, “WLE Platform Data Sheets.” Alternatively, you can mount the CD on a remote system, copy the contents of the CD directory for your platform to the system in which you plan to install the WLE software, and continue with the remainder of the installation procedure.

4. Use the `cd` command to change your working directory to the root of the WLE Security Service software CD.
5. Run the `ls` command in the root directory to check the CD’s contents. If all the files are in lowercase characters, begin the installation by entering:

```
sh install.sh.
```

If all the files are in uppercase characters, begin the installation by entering:

```
sh INSTALL.SH
```

6. Depending on the system upon which you are installing the software, one of the following platform-specific entries is displayed:

- 1) HP-UX v11.0
- 2) Sun Solaris v2.6
- 3) Sun Solaris 7

```
Install which platform's files? [01-      03, q to quit, l for list]:
```

Enter 1 to install the Security Service on an HP-UX system; or enter 2 to install the Security Service on a Solaris 2.6 system; or enter 3 to install the Security Service on a Solaris 7.0 system.

7. The remaining prompts in this chapter show a sample Security Service application on a Solaris 2.6 system. For example, a confirmation prompt is displayed:

```
** You have chosen to install software for **
```

```
BEA WebLogic Enterprise Release 5.0
```


This directory contains the BEA WLE Installation Software for Sun Solaris v2.6 on Sun SPARC.

Is this correct? [y,n,q]:

Enter y to proceed; or enter n to redisplay the platform menu; or enter q to quit the installation.

8. If you entered y, a component menu is displayed:

To terminate the installation at any time
press the interrupt key,
typically , <break>, or <ctrl+c>.

The following components are available:

1 security BEA Security Service 56

Select the one you wish to install [?,??,q]:

Enter the number 1 to select the Security Service; or enter a single question mark (?) to display a brief help message; or enter two question marks (??) to redisplay the menu; or enter q to quit the installation.

9. If you entered the number 1 or pressed the Enter key, a packages menu is displayed:

The following packages are available:

1 sec56 BEA Security Service 56 For WLE

Select the package(s) you wish to install (or 'all' to install all packages) (default: all) [?,??,q]:

Enter the number 1 or the word all to install the Security Service for WLE; or enter a single question mark (?) to display a brief help message; or enter two question marks (??) to redisplay the menu; or enter q to quit the installation.

10. If you entered the number 1 or the word all, the following messages are displayed:

BEA Security Service 56 For WLE
(sparc) Release 5.0
Copyright (c) 1999 BEA Systems, Inc.
All Rights Reserved.

BEA and WebLogic are trademarks of BEA Systems, Inc.

SSLplus is a trademark of Certicom Corporation, 1999.
BSAFE is a trademark of RSA Data Security, Inc., 1999.

WebLogic Enterprise must be installed prior to installing the Security Service

11. The installation program checks for existing BEA software and prompts you for the WLE base directory:

```
Location of existing BEA software installation (default:
/usr/local/wlmdir) [?,q]:
```

Press the Enter key if the default value shown matches the base directory location of the WLE software; or enter the correct path to the WLE base directory.

12. If the installation program finds the WLE software in the location specified, the installation continues. A confirmation message is displayed, and then the installation program checks for sufficient disk space. For example:

```
Using /usr/local/wlmdir as the base directory
```

```
Determining if sufficient space is available ...
5818 blocks are required
1032768 blocks are available to /usr/local/wlmdir
```

13. If sufficient space is found, the installation program starts moving files to the target system and displays messages.

Note: In the following displays and steps, all the SSL-related messages and prompts starting with "Unloading...SECSSL.Z" through "Registering SSL plug-in...finished" (in step 20) are not displayed if the system only has TUXEDO server or client software from a WLE 5.0 software installation. In this case, the Security Service installation procedure installs the LLE software, but not the SSL software.

```
Moving /usr/local/wlmdir/lib/libgp.so.65 to
/usr/local/wlmdir/lib/libgp.so.65.0
```

```
Moving /usr/local/wlmdir/lib/libgp.a to
/usr/local/wlmdir/lib/libgp.a.0
```

```
Unloading /usr/local/wlmdir/spsol26/security/sec56/SEC56.Z ...
lib/libgp.so.65
lib/libgp.a
2750 blocks
... finished
```

```
Unloading /usr/local/wlmdir/spsol26/security/sec56/SECSSL.Z ...
lib/liborbssl.so.65
lib/libjsec.so
lib/libsecssl.so.65
lib/libwlesec.so.65
```

```
lib/libwlesys.so.65
locale/C/IJSSLN.text
locale/C/IJSSLN_CAT
udataobj/security/bea_ldap_filter.dat
udataobj/security/certs/peer_val.rul
udataobj/security/certs/revoked.crl
udataobj/security/certs/trust_ca.cer
2970 blocks
... finished
```

14. Enter information about the LDAP server. This information will be stored locally as a registered SSL certificate lookup plug-in that WLE client and server applications can use. The following prompt is displayed:

Enter fully qualified hostname for URL of the LDAP server system.
[?,q]:

Enter the LDAP server's fully qualified node name and domain, such as
myhost.mydomain.com.

Note: This prompt is not displayed if the system only has TUXEDO server or client software from a WLE 5.0 software installation.

15. Enter the port number on which the LDAP server will be listening for certificate requests:

Enter a port number for the URL of the LDAP server system. [?,q]:

For example, enter 389 if that is the correct port number. If you are not sure, check the value with the system administrator of the LDAP server.

Note: This prompt is not displayed if the system only has TUXEDO server or client software from a WLE 5.0 software installation.

16. The installation program displays a confirmation message:

Using 'myhost.mydomain.com:389' as the URL of the LDAP
server/port

Enter a base object for searches in the LDAP server. The base object is the point in the LDAP tree at which you want users to start searching (in this case, to start searching for certificates). There are no strict rules about the syntax for this value. Enter the base object string exactly as it was specified in the LDAP server tree.

Enter a base object for search in LDAP server. [?,q]:
o=mydomain.com

For example, you could enter a value such as o=mydomain.com, or a value such as o=trixie@trixieweb.com.

Note: This prompt is not displayed if the system only has TUXEDO server or client software from a WLE 5.0 software installation.

17. The installation program displays a confirmation message for the value you entered:

Using 'o=mydomain.com' as the base object

Note: This message is not displayed if the system only has TUXEDO server or client software from a WLE 5.0 software installation.

18. Enter the location for the LDAP filter file. This file is used to define search filters that can further refine the scope of searches in the LDAP server tree. For more information, see *Using Security* in the WebLogic Enterprise online documentation.

Location and name of LDAP filter file. (default:
/usr/local/wlmdir/udataobj/security/bea_ldap_filter.dat) [?,q]:

The file's default location is shown. Press the Enter key to accept this default; or enter a new value and click Enter.

Note: This prompt is not displayed if the system only has TUXEDO server or client software from a WLE 5.0 software installation.

19. The installation program displays a confirmation message for the value you entered:

Using

'file:///usr/local/wlmdir/udataobj/security/bea_ldap_filter.dat'
' as the location and name of LDAP filter file

Note: This message is not displayed if the system only has TUXEDO server or client software from a WLE 5.0 software installation.

20. The installation program then completes the installation and displays confirmation messages:

Registering SSL plug-in...
... finished

Note: The Registering SSL... message is not displayed if the system only has TUXEDO server or client software from a WLE 5.0 software installation.

Changing file permissions...
... finished

Installation of BEA Security Service 56 For WLE was successful

Please don't forget to fill out and send in your registration card

Removing (Uninstalling) the WLE Security Service Software from Your System

To remove the WLE Security Service software from your UNIX system, you must:

1. Uninstall the WLE 5.0 software, as explained in the section “Removing (Uninstalling) the WLE Software from Your System” on page 4-17.

This also removes the WLE Security Service software, if present.

2. Then re-install the WLE 5.0 software.

6 BEA Administration Console Startup

If you elected to install the Administration component, read this topic for important information about starting the BEA Administration Console. This chapter discusses the following topics:

- System Requirements
- Setting Up Your Environment
- Starting the BEA Administration Console

System Requirements

This section lists the hardware, operating system resources, and browser you must provide to support the BEA Administration Console.

Platforms Supported

The BEA Administration Console runs on all server platforms that support the BEA WLE 5.0 server software. For a complete list of supported platforms, see the section “Supported Platforms” on page A-2.

Hardware Requirements

In addition to the hardware and software requirements for installing WLE client and server software on your particular platform (see Appendix A, “WLE Platform Data Sheets”), the BEA Administration Console requires a color display device with the following capabilities:

- Resolution: 800 by 600 dpi or more is required; 1024 by 768 or more is recommended.
- Colors: 256 colors or more is recommended.

Operating System Requirements

Given the broad outlines of an application design, you must verify the availability of operating system resources needed to support your application. Operating system resources include:

- System shared resources (IPC), which control the maximum message size and maximum queue length, among other things
- Resources governed by kernel parameters

For information about setting Microsoft Windows NT IPC parameters, see the section “Maximizing System Performance” on page 7-9.

For information about setting UNIX system IPC parameters, see the section “Verifying IPC Requirements” on page 7-17.

For more information about system tuning parameters for a particular platform, see Appendix A, “WLE Platform Data Sheets.”

Browser Requirements

Although any Java-capable Web browser may be able to run the BEA Administration Console, at this time BEA supports only the following browsers when the Administration Console is configured for 40-bit, 56-bit, or 128-bit encryption:

Browsers Supported	Platforms Supported
Netscape Navigator 4.6.1 or 4.7	Microsoft Windows NT (Intel), Windows 98, Solaris 2.6, and Solaris 7.0
Microsoft Internet Explorer 5.0	Microsoft Windows NT (Intel) and Windows 98

An additional requirement is that all browsers must be running the browser vendor's Java plug-in version 1.1 or later.

The Administration Console encryption level is set in its `webgui.ini` file with the `ENCRYPTBITS` parameter. The `ENCRYPTBITS` parameters can be set to 0, 40, 56, or 128. This parameter specifies the strength of encryption used in communication between the GUI applet and the Administration Console server. The default is 128-bit.

On UNIX platforms that are supported by WLE, Netscape 4.6.1 or later is supported if the Administration Console is configured for zero-bit encryption.

Setting Up Your Environment

To run the BEA Administration Console, you need to set up two servers:

- `tuxwsvr`
A Web server provided with the WLE system software. (You are not required to use this server; you may, if you prefer, use your own commercial Web server.)
- `wlisten`
A server required to administer the BEA Administration Console. It should be run on the master machine.

Note: You can use any machine that supports a Java-capable browser for performing WLE system administration through the BEA Administration Console.

Starting tuxwsvr

To start `tuxwsvr` on UNIX systems, enter:

```
$ tuxwsvr -l //machine:port -i \  
    ${TUXDIR}/udataobj/tuxwsvr.ini
```

To start `tuxwsvr` on Microsoft Windows NT systems:

1. Open an MS-DOS window.
2. Enter `tuxwsvr -l//machine:port -i%TUXDIR%\udataobj\tuxwsvr.ini`

During installation, the `tuxwsvr.ini` file is created. Usually, you do not need to edit this file. Under certain circumstances, however, you may want to edit this file. For example, you may decide, after installation, to move your Java files to a nondefault directory. In that case, you would need to edit the pathnames in the initialization file appropriately. For details, see the `tuxwsvr(1)` reference page in the *BEA TUXEDO Reference*.

Starting wlisten

To start `wlisten`, proceed as follows:

1. Before starting `wlisten`, check the `webgui.ini` file (located in `WLEDIR\udataobj\webgui` for Microsoft Windows NT systems and in `WLEDIR/udataobj/webgui` for UNIX systems) to make sure that the default values assigned to the parameters during installation are appropriate. Otherwise, make the appropriate changes.
2. For example, on a machine called `popeye`, the default port assigned to `wlisten` is 4003. To run `wlisten` with port 6060, edit the `NADDR` parameter line in the `webgui.ini` file, as follows:

```
NADDR=//popeye:6060
```

For details about other parameters in the `webgui.ini` file, see the `wlisten(1)` reference page in the *BEA TUXEDO Reference*.

3. Start the `wlisten` process:

```
$ wlisten
```

Starting the BEA Administration Console

To start the BEA Administration Console, proceed as follows:

1. Start the browser.
2. Enter the following URL:

```
http://<machine_name>:<port>/webguitop.html
```

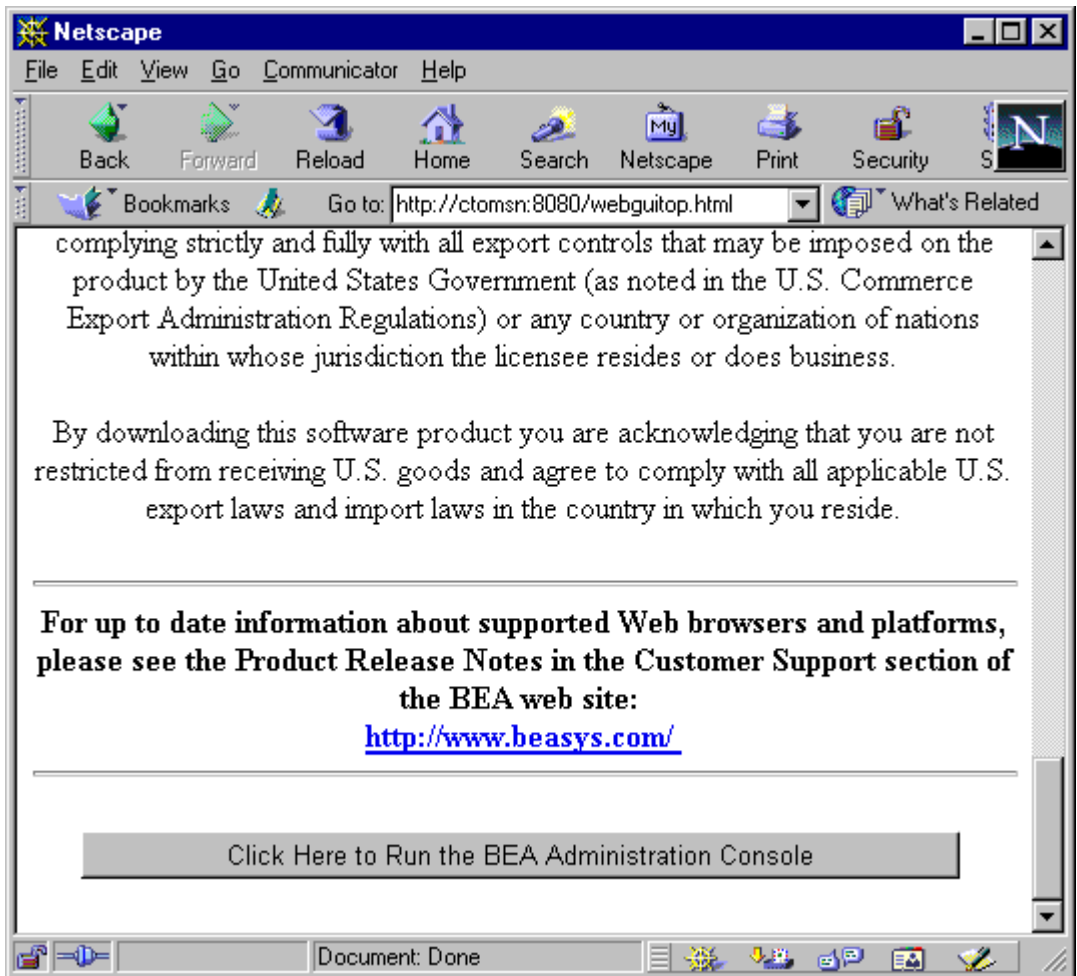
Use of this URL depends on the following assumptions:

- You are using `tuxwsvr` with the file `tuxwsvr.ini`.
- The `webgui.ini` file is in the default location, `WLEDIR/udataobj/webgui`.

Note: If you are using a commercial browser on the default port (8080), you can use something like the following URL:

```
http://ctomsn:8080/webguitop.html
```

The BEA Administration Console entry page is displayed, including warranty and license notices.



3. To start the BEA Administration Console, click the prompt at the bottom of the screen. The Login window is displayed.

Please enter your BEA Administration Console Password

Login Name:

Password:

4. Enter your login name and password in the appropriate fields, and click LOGIN. The password must be one of the entries in the `tlisten.pw` file in the `WLDIR/udataobj` directory. The main window of the BEA Administration Console is displayed.

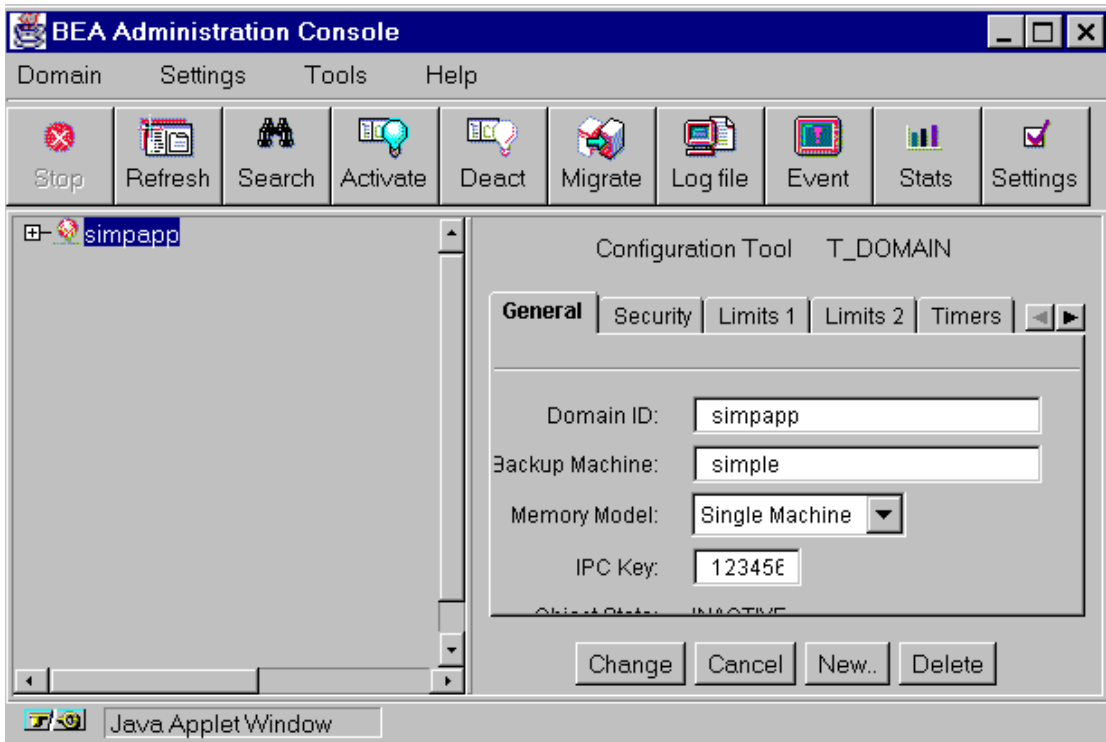


Table 6-1 contains instructions for accessing additional information about the BEA Administration Console main window.

Table 6-1 Accessing Information About the BEA Administration Console Main Window

If . . .	Then . . .
The main window is displayed and you want to start working with the GUI	See the “Tutorial” section in the BEA Administration Console online help.
The main window is displayed and you want to read a description of it	See Chapter 2, “A Tour of the Main Window,” in the BEA Administration Console Online Help.
The main window does not display and the <code>Connect Failed</code> error message is displayed	<ol style="list-style-type: none"> 1. Enter the <code>ps</code> command to verify that the <code>wlisten</code> process is running. 2. If <code>wlisten</code> is not running, open the <code>webgui.ini</code> file and, in the line “<code>NADDR=//lcs011:4003</code>”, replace the port number (4003) with a valid port number. 3. Enter <code>wlisten</code> again: <pre>\$ wlisten -i \ WLEDIR/udataobj/webgui/webgui.ini</pre> 4. Check that the <code>tuwsvr</code> process is running at the port as described in the URL. 5. Verify the password. It must match one of the entries in the <code>tlisten.pw</code> file in the <code>WLEDIR/udataobj</code> directory. 6. Return to step 1 above.

5. To exit the BEA Administration Console, click `Domain—>Exit`.

You may now start setting up your environment for your own application domain.

7 WLE Postinstallation Considerations

Now that you have successfully installed the WLE software, you must set up your machine and parts of the WLE software to prepare for developing or installing your application.

This chapter discusses the following topics:

- Configuring the WLE System for Microsoft Windows NT
- Setting Up Your Environment on UNIX Systems
- Editing a UBBCONFIG File
- Verifying IPC Requirements
- Creating the Universal Device List and TLOG
- Starting the tlisten Process on UNIX Systems
- Running buildtms and buildXAJS for WLE Applications That Use XA Resource Managers
- Using the TYPE Parameter in the UBBCONFIG File
- Internet Browser Requirements

Configuring the WLE System for Microsoft Windows NT

In addition to the BEA Administration Console, the WLE system provides a control panel applet that you can use to configure the WLE machine for Microsoft Windows NT.

This section describes how to use the applet to do the following:

- Access machines on a network by setting the Machines page.
- Modify environment variables on the Environment page.
- Direct system messages to the Microsoft Windows NT Event Log by setting the Logging page.
- Configure one or more `tlisten` processes to start automatically by setting the Listener page.
- Maximize system performance by tuning the IPC Resources page setting.

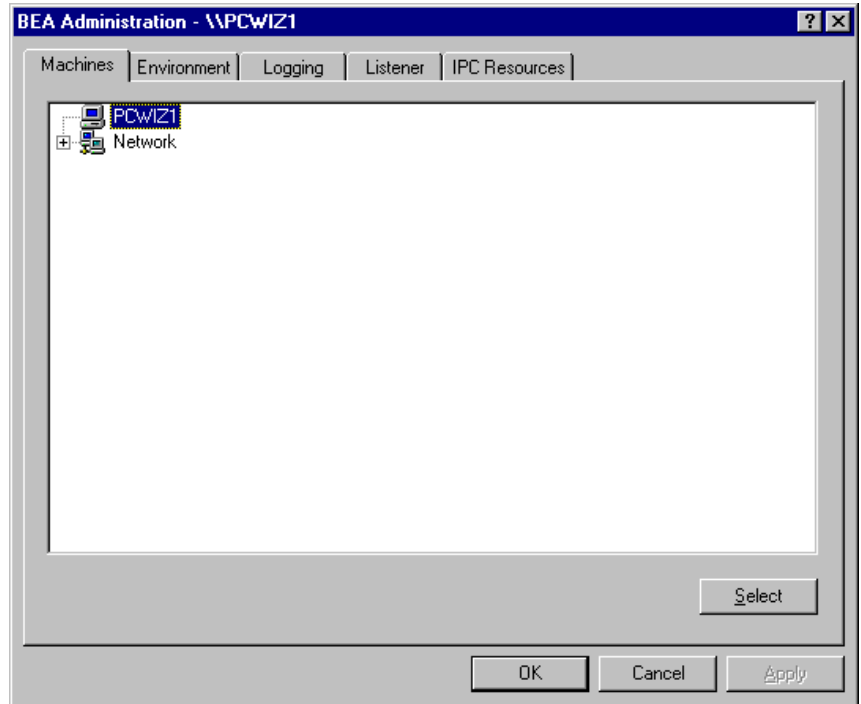
Accessing the Control Panel Applet

To access the control panel applet, proceed as follows:

1. Click Start—>Settings—>Control Panel. The Control Panel is displayed.



2. Click the BEA Administration icon. The BEA Administration screen is displayed.



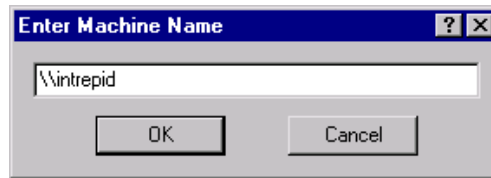
Accessing Machines on a Network

To display the Machines page of the Control Panel, click the Machine tab.

The Machines Page enables the WLE system administrator to access any machine on the Microsoft Windows Network running Microsoft Windows NT, where the administrator has login privileges. The system administrator can then set environment variables remotely; determine the location of BEA WLE event logging; add, start, or remove `tlisten` services; and tune IPC resources. To access a remote machine, the administrator locates the machine on a network tree.

If you know a machine's name, but not its work group, proceed as follows:

1. Click Select. The Enter Machine Name screen is displayed.



2. Enter the name of the remote machine on the Enter Machine Name window and click OK.

All subsequent actions on other folders in the control panel applet take place on the selected machine.

Modifying Environment Variables

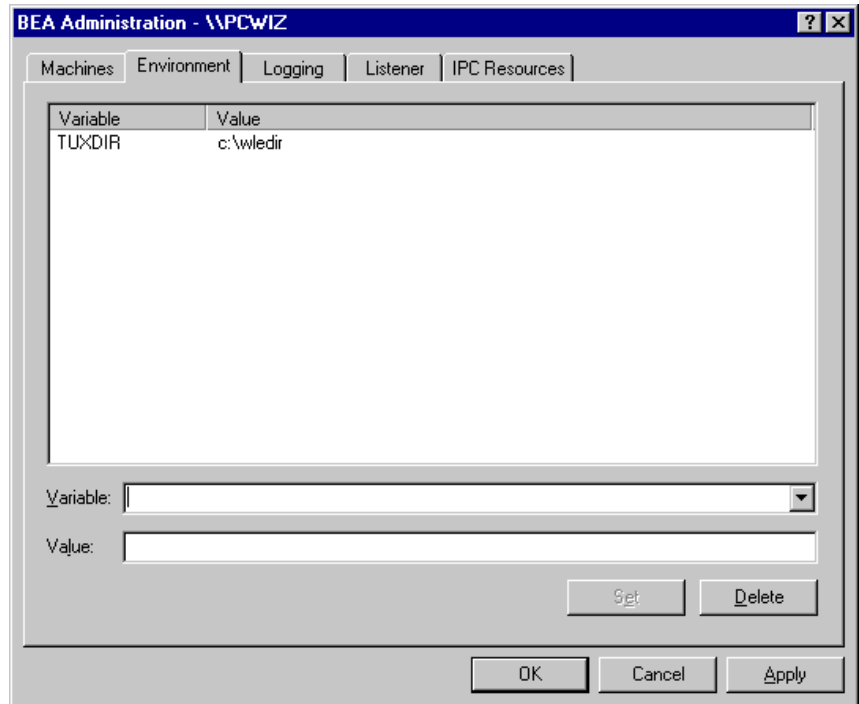
To display the Environment Page of the Control Panel, click the Environment tab.

Modifying WLE environment variables is almost identical to modifying Microsoft Windows NT environment variables. The Variable field (see Figure 7-1) contains a list of the most commonly used WLE environment variables.

To modify the variables, proceed as follows:

1. To add or edit a variable, select the variable, enter its value in the Value field, and click Set.
2. To delete a variable, select the variable you want to delete, and click Delete.
3. Click OK or Apply to save any changes.

Figure 7-1 WLE Software for Microsoft Windows NT Environment Control Panel

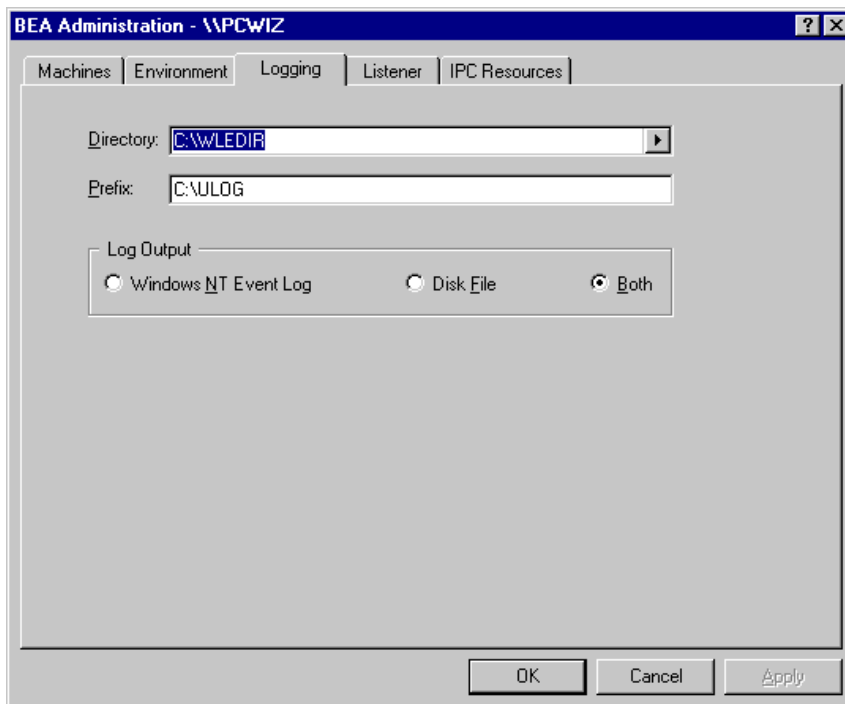


Directing WLE Messages to the Microsoft Windows NT Event Log

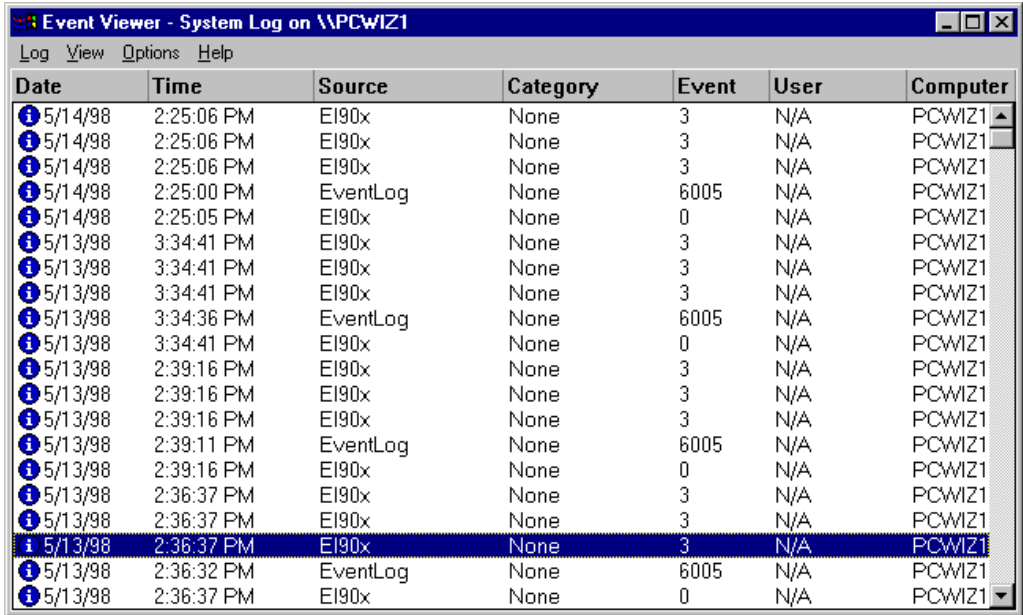
To display the Logging page (Figure 7-2) of the Control Panel, click the Logging tab.

You can set the Logging Page to direct WLE system messages to the Microsoft Windows NT Event Log. You can select the Logging option (Microsoft Windows NT Event Log) or the traditional user log (Disk File), or both. If you want traditional user log (ULOG) messages, select the directory into which ULOG messages will be written, as well as the prefix for the file name. The default prefix is ULOG, and the default file name is ULOG.<mmddyy>.

Figure 7-2 WLE Software for Microsoft Windows NT Logging Control Panel



To view Event Log entries, click Start—>Programs—>Administrative Tools—>Event Viewer. The Event Viewer window is displayed.



Date	Time	Source	Category	Event	User	Computer
5/14/98	2:25:06 PM	El90x	None	3	N/A	PCWIZ1
5/14/98	2:25:06 PM	El90x	None	3	N/A	PCWIZ1
5/14/98	2:25:06 PM	El90x	None	3	N/A	PCWIZ1
5/14/98	2:25:00 PM	EventLog	None	6005	N/A	PCWIZ1
5/14/98	2:25:05 PM	El90x	None	0	N/A	PCWIZ1
5/13/98	3:34:41 PM	El90x	None	3	N/A	PCWIZ1
5/13/98	3:34:41 PM	El90x	None	3	N/A	PCWIZ1
5/13/98	3:34:41 PM	El90x	None	3	N/A	PCWIZ1
5/13/98	3:34:36 PM	EventLog	None	6005	N/A	PCWIZ1
5/13/98	3:34:41 PM	El90x	None	0	N/A	PCWIZ1
5/13/98	2:39:16 PM	El90x	None	3	N/A	PCWIZ1
5/13/98	2:39:16 PM	El90x	None	3	N/A	PCWIZ1
5/13/98	2:39:16 PM	El90x	None	3	N/A	PCWIZ1
5/13/98	2:39:11 PM	EventLog	None	6005	N/A	PCWIZ1
5/13/98	2:39:16 PM	El90x	None	0	N/A	PCWIZ1
5/13/98	2:36:37 PM	El90x	None	3	N/A	PCWIZ1
5/13/98	2:36:32 PM	EventLog	None	6005	N/A	PCWIZ1
5/13/98	2:36:37 PM	El90x	None	0	N/A	PCWIZ1

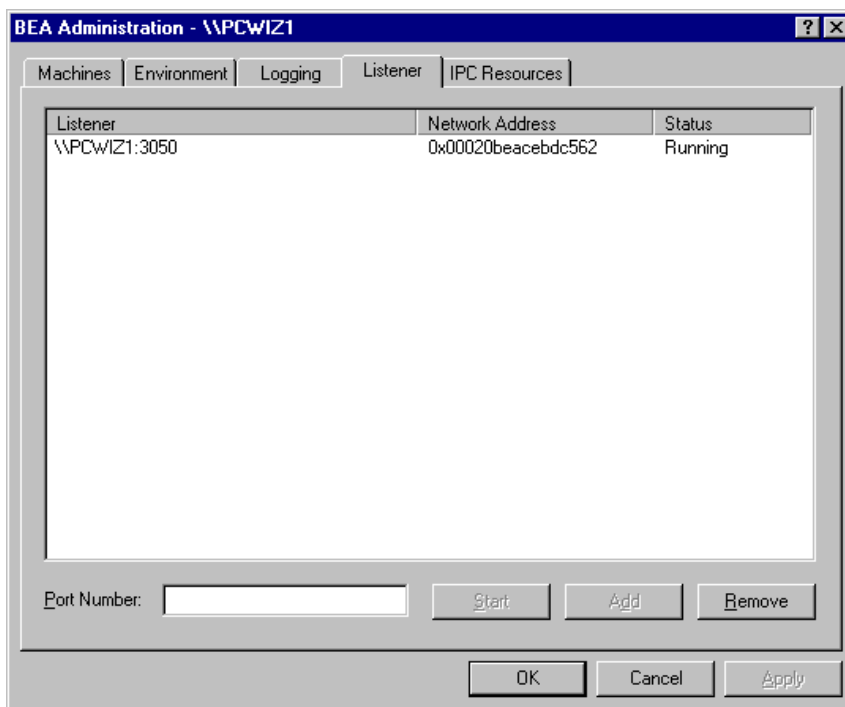
Configuring tlisten Processes to Start Automatically

To display the Listener page (Figure 7-3) of the Control Panel, click the Listener tab.

You can configure one or more `tlisten` processes to start automatically when you boot your machine. To configure `tlisten` processes, proceed as follows:

1. On the Listener page, enter a port number in the Port Number field and click Add to add the service to the list.
2. After you click OK or Apply and reopen the control panel, you can start or stop `tlisten` services from the Listener page (see Figure 7-3). You can also use the Microsoft Windows NT control panel to start or stop a `tlisten` service or to configure the service to start automatically.

Figure 7-3 WLE Software for Microsoft Windows NT Listener Control Panel



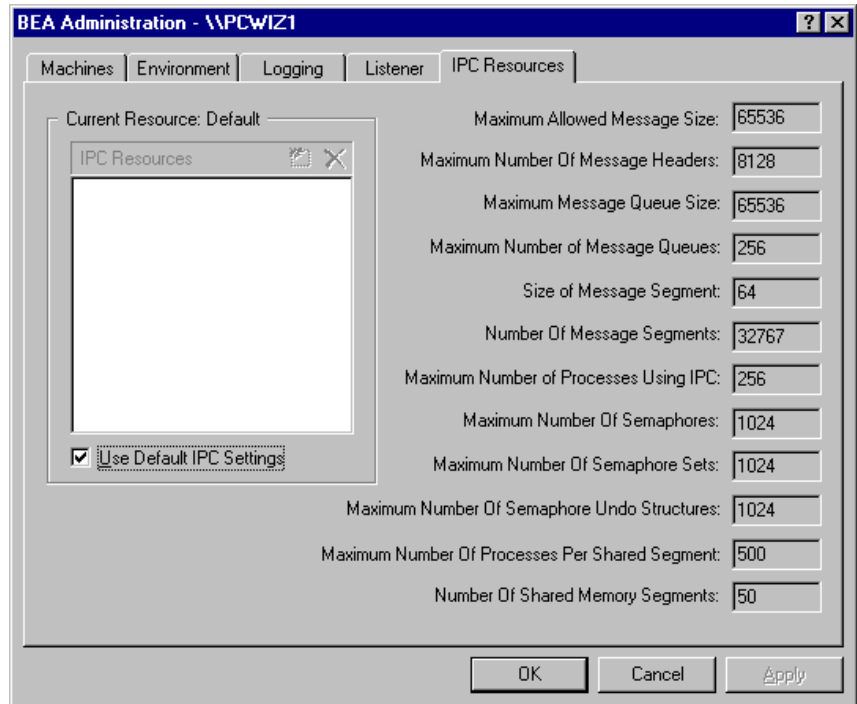
You can use the `tlisten` process to perform administrative actions in a server application across multiple machines. You must start the `tlisten` process on each machine before running the server application. Generally, you need one `tlisten` process for each server application running on the machine.

Maximizing System Performance

To display the IPC Resources page (Figure 7-4) of the Control Panel, click the IPC Resources tab.

The WLE software for Microsoft Windows NT systems provides you with BEA TUXEDO IPC Helper (TUXIPC), an interprocess communication subsystem, that is installed with the product. On most machines, IPC Helper runs as installed; however, you can use the IPC Resources page of the control panel applet to tune the TUXIPC subsystem and maximize performance.

Figure 7-4 WLE Software for Microsoft Windows NT IPC Resources Control Panel



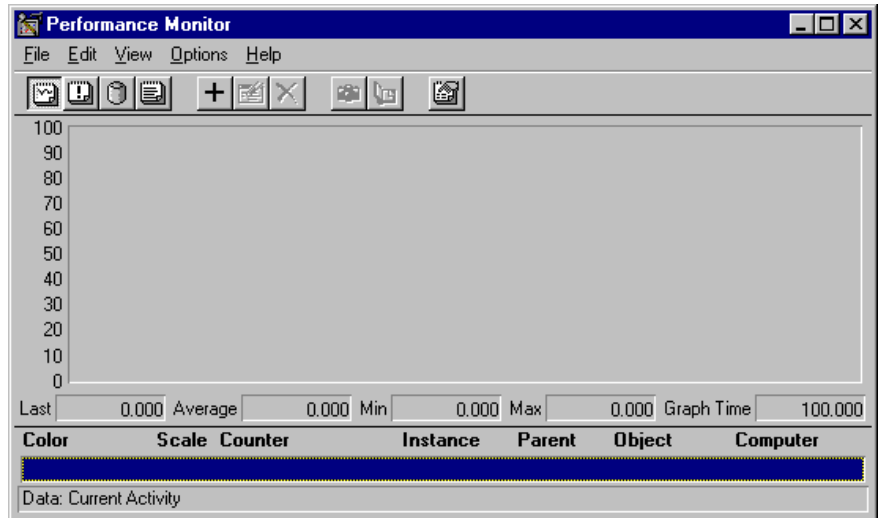
With the IPC Resources control panel, you can set a variety of IPC resources. To define IPC settings for your WLE machine, proceed as follows:

1. In the Current Resource Default box, click the Use Default IPC Settings check box to clear it.
2. Click the insert box.
3. Enter the name of your machine and press Enter.
4. Click the fields next to the IPC resources you want to set, enter the desired values, and click Apply. Clicking Apply saves the changes in the Registry Table. You must then stop and then restart the TUXEDO IPC Helper for the changes to take effect.
5. Click OK to close the Control Panel.

You can view the performance of a running WLE server application on the NT Performance Monitor (Figure 7-5).

To start the Performance Monitor, click
Start—>Programs—>Administration Tools—>Performance Monitor on the NT taskbar. The Performance Monitor screen is displayed.

Figure 7-5 WLE Software for Microsoft Windows NT Performance Monitor



Setting Up Your Environment on UNIX Systems

On a UNIX system, before you can invoke WLE system commands, you need to set several environment variables. The Bourne shell script `wle.env`, located in the base directory you specified at installation time, serves as a model for setting these variables.

The following examples assume that you are using the Bourne shell:

- `TUXDIR` contains the full pathname of the directory in which you installed the WLE software. For example, if you installed the WLE software in `/var/opt/WLEDIR`, enter the following:

```
TUXDIR=/var/opt/WLEDIR; export TUXDIR
```

- `PATH` is the search path for commands. Include `$TUXDIR/bin` in your path. For example:

```
PATH=$PATH:$TUXDIR/bin; export PATH
```

- `LD_LIBRARY_PATH` (on Solaris systems), `SHLIB_PATH` (on HP-UX systems), and `LIBPATH` (on IBM-AIX systems) name the search path for dynamic shared libraries. These environment variables are needed only on systems that support dynamic shared libraries. Append `$TUXDIR/lib` to your existing library path. For example, on Solaris systems, set the path variable as follows:

```
LD_LIBRARY_PATH=$LD_LIBRARY_PATH:$TUXDIR/lib; export  
LD_LIBRARY_PATH
```

- `TUXCONFIG` contains the full pathname of the binary configuration file of a specific WLE server application. Several WLE system commands require `TUXCONFIG` to be set appropriately. For example, if your application's binary configuration file is located in `/var/opt/wleappl/tuxconfig`, set and export `TUXCONFIG` as follows:

```
TUXCONFIG=/var/opt/wleappl/tuxconfig; export TUXCONFIG
```

Editing a UBBCONFIG File

Each WLE machine has a configuration file, commonly called the `UBBCONFIG` file, which specifies the system parameters that are dependent on the installation. Typically, the configuration file has a name that begins with `ubb` and ends with something mnemonic, such as `ubbsimple`. Usually, you must edit this file before you can boot the application.

As an example, Listing 7-1 shows the configuration file from the University sample applications. This file, `Ubb_b_nt`, is delivered with the WLE software and is located in `WLEDIR/samples/corba/university` (for UNIX systems) or `WLEDIR\samples\corba\university` (for Microsoft Windows NT systems).

To edit the configuration file for your application, replace the strings provided for the following values:

```
IPCKEY  
<machine_name>  
APPPDIR  
TUXCONFIG  
TUXDIR
```

These values are highlighted as **boldface** text in Listing 7-1, “University Samples UBBCONFIG File,” on page 7-15. The values you need to provide are as follows:

IPCKEY

A numeric key that identifies the shared memory segment where the structures used by your application are located. The value must be greater than 32,768 and less than 262,143.

machine_name

The node name of the machine. To obtain the node name on a UNIX system, enter the `uname -n` command. If you are using a Microsoft Windows NT system and you do not know the node name of your machine, contact your system administrator. In the University sample application shown in Listing 7-1, “University Samples UBBCONFIG File,” on page 7-15, the machine name is SRV.

APPPDIR = string_value

APPPDIR refers to directories in which application and administrative servers will be booted. The *string_value* is the absolute pathname of that directory, optionally followed by a colon-separated list of other directory pathnames, on the machine being defined.

TUXCONFIG = string_value

TUXCONFIG is the binary version of the UBBCONFIG file, produced by `tmloadcf(1)`. The *string_value* is the absolute pathname of the file or device of the TUXCONFIG file.

TUXDIR = string_value

Names the base directory of the WLE software. It must be an absolute pathname.

If you need to look up other values when editing your configuration file, the complete syntax can be found on the `ubbconfig(5)` reference page in the *BEA TUXEDO Reference* that is included in the WebLogic Enterprise online documentation.

Note: The configuration file must be edited before you use the `tmloadcf(1)` command to verify the IPC requirements; otherwise, the `tmloadcf(1)` command fails with syntax errors. For instructions on how to determine IPC requirements, see the section “Verifying IPC Requirements” on page 7-17.

Listing 7-1 University Samples UBBCONFIG File

```
#-----
#
# ubb_b.nt
#
# NT template configuration file for the university sample
# application
#
# Also, check that the value of TUXDIR is correct.
# (this file contains typical values)
#
# For more information on the contents of this file, refer to the
# document "Administration Guide"
#
# BEA Systems Inc. sample code
#
#-----
*RESOURCES
    IPCKEY      55432
    DOMAINID    university
    MASTER      SITE1
    MODEL       SHM
    LDBAL       N
#-----
*MACHINES
#   Specify the name of your server machine
#
    SRV
        LMID = SITE1
#   Pathname of your copy of this sample application.
#   Must match "APPDIR" in "setenv.cmd"
#
    "APPDIR = d:\wlework\checkin\basic"
#   Pathname of the tuxconfig file.
#   Must match "TUXCONFIG" in "setenv.cmd"
#
    TUXCONFIG = "d:\wlework\checkin\basic\resultsb\tuxconfig"
#   Pathname of the WebLogic Enterprise installation.
#   Must match "TUXDIR" in "setenv.cmd"
#
```

```

    TUXDIR = "d:\wledir"
    MAXWSCLIENTS = 10
#-----
*GROUPS
    SYS_GRP
        LMID      = SITE1
        GRPNO     = 1
    ORA_GRP
        LMID      = SITE1
        GRPNO     = 2
#-----
*SERVERS
    DEFAULT:
        RESTART = Y
        MAXGEN = 5
    # Start the TUXEDO System Event Broker. This event broker must
    # be started before any servers providing the NameManager Service
    #
    TMSYSEVT
        SRVGRP = SYS_GRP
        SRVID  = 1
    # TMFFNAME is a BEA WebLogic Enterprise provided server that
    # runs the
    # object-transactional management services. This includes the
    # NameManager and FactoryFinder services.
    # The NameManager service is a BEA WebLogic Enterprise-specific
    # service that maintains a mapping of application-supplied
    # names to object references.
    # Start the NameManager Service (-N option). This name manager
    # is being started as a Master (-M option).
    #
    TMFFNAME
        SRVGRP = SYS_GRP
        SRVID  = 2
        CLOPT  = "-A -- -N -M"
    # Start a slave NameManager Service
    #
    TMFFNAME
        SRVGRP = SYS_GRP
        SRVID  = 2
        CLOPT  = "-A -- -N"
    # Start the FactoryFinder (-F) service
    #
    TMFFNAME
        SRVGRP = SYS_GRP
        SRVID  = 3
        CLOPT  = "-A -- -F"
    # Start the IR Server
    #

```

```

TMIFRSVR
    SRVGRP = SYS_GRP
    SRVID = 5
# Start the university server
#
univb_server
    SRVGRP = ORA_GRP
    SRVID = 2
    RESTART = N
# Start the listener for IIOP clients
#
# Specify the host name of your server machine as
# well as the port. A typical port number is 2500
#
ISL
    SRVGRP = SYS_GRP
    SRVID = 6
    CLOPT = "-A -- -n //SRV:2500"
#-----
*SERVICES
#-----

```

Verifying IPC Requirements

The WLE system uses Interprocess Communications (IPC) resources heavily. On many platforms, the default values for the parameters that control the size and quantity of the various IPC resources are below the minimums needed to run even a modest WLE system application. Therefore, you may need to reset some of the parameters. After editing your configuration file, the next step is to determine whether the IPC resources suffice for the application.

To do this, enter the `tmloadcf(1)` command, specifying your edited configuration file as input:

```
tmloadcf -c ubbconfig
```

An example of the result for the University samples UBBCONFIG file is shown in Listing 7-2.

Listing 7-2 Output Produced by tmloadcf -c

```

Ipc sizing (minimum /T values only)...
                                Fixed Minimums Per Processor
SHMMIN: 1
SHMALL: 1
SEMMAP: SEMMNI

                                Variable Minimums Per Processor
                                SEMUME,      A      SHMMAX
                                SEMMNU,      *
Node SEMMNS SEMMSL SEMMSL SEMMNI MSGMNI MSGMAP SHMSEG
-----
sftuxe      65      8      60  A + 1      28      56      403k

where 1 <= A <= 8.

The number of expected application clients per processor should be
added to each MSGMNI value.
```

This output indicates that to run the University sample application, your system must have SEMUME, SEMMNU, and SEMMNS set to no less than 65. SEMMSL must be at least 8, and SEMMNI and SEMMAP must be at least 4 (assuming A is 3). MSGMNI must be at least 28, and MSGMAP must be at least 56. Finally, the product of SHMMAX and SHMSEG must be at least 403K bytes.

The IPC values are dependent on the client or server application, and the numbers in this example reflect a very small configuration. If other client or server applications that use IPC resources are running on the same machine with a WLE client or server application, the requirements of both applications must be satisfied. Also, every machine participating in an application must have sufficient IPC resources available.

If the current IPC resources are inadequate, you must increase the values of the associated IPC parameters. Additional information is available at these locations:

- For instructions on determining and changing the current IPC values for your platform, see the section “Tuning Parameters” for your platform in Appendix A, “WLE Platform Data Sheets.”

- For a description of parameters in the UBBCONFIG file that affect IPC resources, refer to the section “Defining IPC Limits” of *Creating a Configuration File* in the WebLogic Enterprise online documentation.

Creating the Universal Device List and TLOG

The Universal Device List (UDL) is like a map of the WLE file system. It is loaded into shared memory when the application is booted. The TLOG refers to a log in which information on transactions is kept until the transaction is completed.

Creating the UDL

To create the UDL, enter the following command before the application has been booted:

```
tmadmin -c  
crdl -z config -b blocks
```

where `-z config` specifies the full pathname for the device where the UDL should be created, and `-b blocks` specifies the number of blocks to be allocated on the device. The value of `config` should match the value of the `TLOGDEVICE` parameter in the `MACHINES` section of the UBBCONFIG file.

Note: In general, the value that you supply for blocks should not be less than the value for `TLOGSIZE`. For example, if `TLOGSIZE` is specified as 200 blocks, specifying `-b 500` would not cause a degradation.

Creating the TLOG

Several parameters in the `MACHINES` section of the UBBCONFIG file are used to define a global transaction log (TLOG). The WLE system administrator must manually create the device list entry for the `TLOGDEVICE` on each machine where a TLOG is needed. The device list entry can be created either before or after `TUXCONFIG` has been loaded, but it must be done before the machine is booted.

To create an entry in the UDL for the TLOGDEVICE, create the UDL as described previously on each machine that will be involved with global transactions. If the TLOGDEVICE is mirrored between two machines, it is not necessary to create an entry on the paired machine. The Bulletin Board Liaison (BBL) then initializes and opens the TLOG during the boot process.

Starting the tlisten Process on UNIX Systems

When used in a distributed environment, the WLE system requires the capability to start, shut down, and administer processes on remote machines running WLE servers. The `tlisten(1)` process provides this facility. Once `tlisten` is running, `tmboot(1)`, for example, can start WLE servers on remote machines.

The `tlisten` process is a generic listener process that operates with either of the two network interfaces: Sockets or TLI. It runs as a daemon process, and it can be started in several ways, as follows:

- By the UNIX system administrator as part of a UNIX initialization (boot) script
- By the WLE system administrator as a `cron` job
- By the WLE system administrator starting `tlisten` manually from the command line

In all cases, the same basic invocation syntax is used:

```
TUXDIR=WLEDIR; export TUXDIR
LD_LIBRARY_PATH=libpath:$LD_LIBRARY_PATH; export LD_LIBRARY_PATH
$TUXDIR/bin/tlisten -d devname -l nlsaddr -u appuid
```

Note: If your machine uses an environment variable other than `LD_LIBRARY_PATH` for the shared library path, specify that variable, instead.

The `-l` option is required. The `-d` option is not required. The value for `-d` represents the network device. The correct values for various platforms are shown in Table 7-1.

Table 7-1 Network Devices for `tlisten`

Platform	Device Name
HP-UX 11.00	/dev/null
Solaris V2.6 and V7.0	/dev/tcp

The value for `-l` should be the same as that specified for the `NLSADDR` parameter in the `NETWORK` section of the configuration file. For information about determining the value of `NLSADDR`, see the `ubbconfig(5)` or `tlisten(1)` reference page in the *BEA TUXEDO Reference* or *Creating a Configuration File* in the WebLogic Enterprise online documentation.

Use the `-u appuid` option when the command is part of an installation script run by `root`. The value of *appuid* is the `UID` or login name of the WLE system administrator; the numeric version is the same as the value of the `UID` parameter in the `RESOURCES` section of the configuration file. Therefore, even though the `tlisten` process is started by `root`, it runs with the effective `UID` of the owner of the WLE installation. If `tlisten` is started by the WLE system administrator either manually or as a `cron` job, the `-u` option is unnecessary, because the job is already owned by the correct account.

Running *buildtms* and *buildXAJS* for WLE Applications That Use XA Resource Managers

For WLE applications that use distributed transactions and XA-compliant resource managers, you must use the `buildtms` command to construct a transaction manager server load module. When the module has been created, it must reside in `wledir\bin`. This requirement exists on UNIX and NT systems.

Note: If you run the CORBA C++ University sample applications, or the WLE Java Bankapp XA sample application, each sample's makefile creates the TMS load module for you and calls it `tms_ora.exe`. Therefore, running `buildtms` as a separate step is necessary only if you do not plan to run any of these sample applications.

For information about the `buildtms` command with WLE applications, see the `buildtms(1)` reference page in the *BEA TUXEDO Reference* that is included in the WebLogic Enterprise online documentation.

You also must use the `buildXAJS` command to build an XA resource manager that will be used with a JavaServerXA application group. See *Using the JDBC Drivers* in the WebLogic Enterprise online documentation.

Using the TYPE Parameter in the UBBCONFIG File

The `TYPE` parameter in the `MACHINES` section of the `UBBCONFIG` file specifies the invocation of the XDR (EXternal Data Representation) encode/decode routines when messages are passed between unlike machines. The term *unlike* applies even to machines of the same type if the compiler on each machine is different. In such a case, give each machine a unique `TYPE` string to force the message to go through the encode/decode routines.

Internet Browser Requirements

The BEA Application Builder online help requires an Internet browser. When you run the online Help from within Application Builder, Netscape is required. If you open the online Help files directly from a browser, you can use Netscape or Microsoft Internet Explorer.

A WLE Platform Data Sheets

This appendix contains detailed information about the platforms supported by the WebLogic Enterprise (WLE) 5.0 software. Each data sheet includes the following platform-specific information:

- A list of available WLE packages
- Hardware, software, network, and disk space requirements
- Instructions for mounting and unmounting the WLE software CDs
- Tuning parameters

Supported Platforms

The following table lists the supported platforms. Data sheets are provided for each platform.

Vendor	Operating System	Release/Version
HP	HP-UX	11.00, 32-bit, plus patches B.11.00.B0315, for the HP 9000 Series
Microsoft	Windows NT	4.0 (Intel) plus Service Pack 4 (SP4)
	Windows 95 (clients only)	Service Pack 1
	Windows 98 (clients only)	
Sun Microsystems	Solaris	2.6 and 7.0 (32-bit) (UltraSPARC)

HP-UX Version 11.0 (32-bit) on HP 9000 Series

The following sections list requirements for the HP-UX platform.

WLE 5.0 Components

The WLE 5.0 software components for the HP-UX platform are as follows:

- WLE servers, consisting of:
 - CORBA Java servers and J2EE servers
 - CORBA C++ servers
 - TUXEDO servers (always installed as a base component for any of the other WLE servers)
- WLE clients, consisting of:
 - CORBA Java clients
 - CORBA C++ clients
 - RMI/EJB clients
 - TUXEDO /WS clients
- WLE Administration software, consisting of the BEA Administration Console.

Note: On all UNIX platforms where it is available, Netscape 4.61 is the supported host for the Administration Console applet. However, Netscape currently does not officially support a browser for HP-UX 11.0. Therefore, the client-side components of the Administration Console are not supported on HP-UX.
- WLE 56-bit Security Services or 128-bit Security Services software, if you purchased this optional software. The Security Services installation can occur only after you install the core WLE 5.0 software.

Hardware Requirements

- HP 9000 Series
- 64 MB of RAM
- Access to a compact disk (CD) reader

Software Requirements

Software Requirements	HP-UX 11.0 (32-bit) Plus Y2K Patches ^a
C compiler ^b	HP Native C compiler HP3899BA B.11.0 (\$700).
C++ compiler ^c	HP Native C++ compiler B3913CB B.11.0a (\$700).
Internet browser	A browser that is Y2K compliant (either Netscape Communicator or Microsoft Internet Explorer).
Java 2 Software Development Kit (SDK) for the development environment	Java 2 SDK 1.2.1
Java 2 JRE for the run-time environment	JRE 1.2.1. This is needed for the BEA WebLogic EJB Deployer.
Secure Sockets Layer (SSL) vendor	Certicom 3.03.
Database for CORBA C++ applications	Oracle 8.0.4 for HP-UX 11.0. Note: when using Oracle, Programmer/2000 Pro*C/C++ version 2.2.3.0.0 is required to build the WLE University samples.
Database for CORBA Java and J2EE applications	Oracle 8.0.4 for HP-UX 11.0. Oracle 8.1.5 (also known as Oracle 8i).

Software Requirements	HP-UX 11.0 (32-bit) Plus Y2K Patches ^a
JDBC drivers	jdbcKona/Oracle 8.0.4 (Type 2), no XA. WLE JDBC/XA for Oracle 8.1.5, also known as Oracle 8i (Type 2); supports XA.

- a. Y2K patch 1100, Revision B11.00.B0315 required.
- b. Required for BEA WLE development environment only.
- c. Required for BEA WLE development environment only.

Additional Notes

- EJB and RMI do not require C or C++.
- JDBC/XA users need a C compiler and linker to run the `buildtms` and `buildXAJS` commands.
- Java IDL users need a C preprocessor. On UNIX systems, the C preprocessor comes with the system.
- JNI users need a C or C++ compiler and linker.
- BEA TUXEDO users need a C or C++ compiler or linker.
- CORBA C++ users need a C++ compiler and linker.

Network Requirements

TCP/IP, using the SOCKETS network interface

Disk Space Requirements

The disk space requirements for installation on HP-UX 11.0 systems depends on which components you select during the installation, and whether other WLE 5.0 components have been installed previously. Use the following estimates as guidelines. These requirements are approximate and have been rounded up to the nearest megabyte (MB).

Components	HP-UX 11.0 Disk Space
All WLE servers, all WLE clients, and the BEA Administration Console server software	89 MB
Servers only	All servers: 71 MB TUXEDO server only: 20 MB CORBA C++ server only: 50 MB CORBA Java server only: 70 MB J2EE server only: 71 MB
Clients only	All clients: 31 MB TUXEDO /WS client only: 7 MB CORBA C++ client only: 22 MB RMI/EJB client only: 6 MB CORBA Java client only: 25 MB
Administration	The server components of the BEA Administration Console: 12 MB
Security Services, 56-bit or 128-bit	2 MB for LLE only on TUXEDO server or client system 4 MB for LLE and SSL

Mounting and Unmounting the CD

To mount a CD, enter the following commands:

```
su
mkdir /cdrom
mount -F cdfs -o cdcase /dev/dsk/cdrom_device /cdrom
```

where *cdrom_device* is listed in the output of the `ioscan -f -n` command.

To unmount the CD, enter the following command:

```
umount /cdrom
```

where *cdrom* is the mounting point.

Tuning Parameters

You probably need to reconfigure the HP-UX kernel before running BEA WLE software because the default values of some tuning parameters are too low.

To adjust the tuning parameters, proceed as follows:

1. Determine whether the current values are adequate.

For instructions about determining whether the current tuning parameter values are adequate, refer to “Verifying IPC Requirements” on page 7-17.

2. Reset the tuning parameters as necessary.

For instructions about reconfiguring HP-UX, see “Setting Up a System” in the *HP-UX System Administration Tasks Manual*.

The following table shows the default settings for the parameters and the settings used for the University sample applications. Use these settings as a starting point; however, your applications may require different settings.

The parameters currently set on your system are located in `/stand/build/tune.h`.

HP-UX Name	Traditional Name	Default Setting	Setting for University Sample Applications
shmmax	SHMMAX	67108864	0x40000000
shmseg	SHMSEG	12	32
shmmni	SHMMNI	100	512
semmns	SEMMNS	128	(SEMMNI*2)
semmni	SEMMNI	64	NPROC*5
semmap	SEMMA	semmni+2	1
semmnu	SEMMNU	30	(SEMMNI / 2)
semume	SEMUME	10	64
msgmni	MSGMNI	50	NPROC
msgmap	MSGMAP	2+msgtql	MSGTQL + 2
msgmax	MSGMAX	8192	32768
msgmnb	MSGMNB	16384	65535
msgssz	MSGSSZ	8	128
msgtql	MSGTQL	40	(NPROC * 10)
msgseg	MSGSEG	2048	(MSGTQL * 4)
maxusers	MAXUSERS	32	200
nproc	NPROC	20+8*maxusers	(MAXUSERS * 3) + 64
maxuprc	MAXUPRC	50	(NPROC * 9) / 10
maxfiles	NFILES	60	15 * NPROC + 2048

Microsoft Windows NT Version 4.0 on Intel

The following sections list requirements for the Microsoft Windows NT/Intel platform.

BEA WLE Version 5.0 Components

The WLE 5.0 software components for the HP-UX platform are as follows:

- WLE servers, consisting of:
 - CORBA Java servers and J2EE servers
 - CORBA C++ servers
 - TUXEDO servers (always installed as a base component for any of the other WLE servers)
- WLE clients, consisting of:
 - CORBA Java clients
 - CORBA C++ clients
 - RMI/EJB clients
 - TUXEDO /WS clients
 - ActiveX clients
- WLE Administration software, consisting of the BEA Administration Console.
- WLE 56-bit Security Services or 128-bit Security Services software, if you purchased this optional software. The Security Services installation can occur only after you install the core WLE 5.0 software.

Hardware Requirements

- Pentium processor or better
- 64 MB of RAM
- Access to a compact disk (CD) reader

Software Requirements

Software Requirements	NT (Intel) Service Pack 4 (SP4)
Compilers	Microsoft Visual C++ 6.0 Service Pack 2 (SP2). Microsoft Visual Basic 6.0. This is required only for client systems that run ActiveX client applications. It is not required for C++, Java, and VisiJava client systems or server-only systems.
Java 2 Software Development Kit (SDK) for the development environment	Java 2 SDK 1.2.2.
Java 2 JRE for the run-time environment	JRE 1.2.2. This is needed for the BEA WebLogic EJB Deployer.
Non BEA CORBA Java clients	Java 2 SDK 1.2 IDL ORB.
Internet browsers for the BEA Administration Console	Netscape 4.6.1 Netscape 4.7 Microsoft Internet Explorer 5.0

Software Requirements	NT (Intel) Service Pack 4 (SP4)
Internet browser for BEA Application Builder Help	Netscape 4.0 or later. This browser is required only for the online Help used in the BEA Application Builder. This graphical user interface is installed on your system if you selected ActiveX Clients.
Secure Sockets Layer (SSL) vendor	Certicom 3.03.
SSL interoperability clients	Visigenics SSL 3.3. Orbix SSL 2.3C.
Database for CORBA C++ applications	Oracle 7.3.4. Note: When using Oracle, Programmer/2000 Pro*C/C++ version 2.2.3.0.0 is required to build the WLE University samples.
Database for CORBA Java and J2EE applications	Oracle 7.3.4 (Type 2), no XA. Oracle 8.1.5 (also known as Oracle 8i). Microsoft SQL 6.5.
JDBC drivers	jdbcKona/Oracle 7.3.4 (Type 2), no XA. WLE JDBC/XA for Oracle 8.1.5, also known as Oracle 8i (Type 2); supports XA jdbcKona/MSSQL srv4 (Type 4).

Additional Notes

- EJB and RMI do not require C or C++.
- JDBC/XA users need a C compiler and linker to run the `buildtms` and `buildXAJS` commands.
- Java IDL users need a C preprocessor. On NT, Visual C++ is needed.
- JNI users need a C or C++ compiler and linker.
- BEA TUXEDO users need a C or C++ compiler or linker.
- CORBA C++ users need a C++ compiler and linker.

Network Requirements

TCP/IP provided by Microsoft Windows NT (32-bit Winsock).

Disk Space Requirements

The disk space requirements for installation on NT 4.0 (Intel) SP4 systems depends on which components you select during the installation, and whether other WLE 5.0 components have been installed previously. Use the following estimates as guidelines. These requirements are approximate and have been rounded up to the nearest megabyte (MB).

Components	NT 4.0 (Intel) SP4 Disk Space
All WLE servers, all WLE clients, and the BEA Administration Console server software	83 MB
Servers only	All servers: 54 MB TUXEDO server only: 21MB CORBA C++ server only: 37 MB CORBA Java server only: 53 MB J2EE server only: 54 MB
Clients only	All clients: 42 MB TUXEDO /WS client only: 13 MB CORBA C++ client only: 24 MB RMI/EJB client only: 5 MB ActiveX client only: 13 MB CORBA Java client only: 24 MB
Administration	BEA Administration Console: 11 MB
Security Services, 56-bit or 128-bit	1 MB for LLE only on TUXEDO server or client system 3 MB for LLE and SSL

Tuning Parameters

You may need to reconfigure the parameters shown in Figure 7-4, “WLE Software for Microsoft Windows NT IPC Resources Control Panel,” on page 7-10 before running the WLE software. For instructions about reconfiguring the parameters, see “Maximizing System Performance” on page 7-9.

Microsoft Windows 95 and 98

The following sections list requirements for the Microsoft Windows 95 and 98 platforms.

Available BEA WLE Version 5.0 Packages

Only the WLE client software components are supported:

- CORBA Java clients
- CORBA C++ clients
- RMI/EJB clients
- ActiveX clients

Note: On Windows 95 systems, the ActiveX Client software requires DCOM 1.1 and a patch from Microsoft. For details, see
<http://www.microsoft.com/msdn/downloads/files/40comupd.htm>.

- TUXEDO /WS clients

Hardware Requirements

- Pentium processor or better
- 32 MB of RAM
- Access to a compact disc (CD) reader

Software Requirements

- Microsoft Windows 95 plus Service Pack 1 or Microsoft Windows 98

Note: Because all development is done on server systems, no compilers are required.

- On Windows 95 systems that are used as ActiveX clients, DCOM for Windows 95 Version 1.1 is required, plus a patch from Microsoft. For details, see
<http://www.microsoft.com/msdn/downloads/files/40comupd.htm>.

Network Requirements

TCP/IP provided by Microsoft Windows NT (32-bit Winsock).

Disk Space Requirements

Components	Windows 95 or 98 Disk Space
Clients only	All clients: 42 MB TUXEDO /WS client only: 13 MB CORBA C++ client only: 24 MB RMI/EJB client only: 5 MB ActiveX client only: 13 MB CORBA Java client only: 24 MB

Solaris 2.6 and Solaris 7.0 (32-Bit) UltraSPARC

The following sections list requirements for the Solaris platform.

Available BEA WLE Version 5.0 Packages

The WLE 5.0 software components for the Solaris 2.6 and Solaris 7.0 32-bit platforms are as follows:

- WLE servers, consisting of:
 - CORBA Java servers and J2EE servers
 - CORBA C++ servers
 - TUXEDO servers (always installed as a base component for any of the other WLE servers)
- WLE clients, consisting of:
 - CORBA Java clients
 - CORBA C++ clients
 - RMI/EJB clients
 - TUXEDO /WS clients
- WLE Administration software, consisting of the BEA Administration Console.
- WLE 56-bit Security Services or 128-bit Security Services software, if you purchased this optional software. The Security Services installation can occur only after you install the core WLE 5.0 software.

Hardware Requirements

- UltraSparc uniprocessor
- 64 MB of RAM
- Access to a compact disc (CD) reader

Software Requirements

Software Requirements	Solaris SPARC 2.6 and Solaris SPARC 7.0 32-bit
Compiler	Sun SparcWorks Compiler 4.2. This is required for the WLE development environment only.
Java 2 Software Development Kit (SDK) for the development environment	Java 2 SDK 1.2.1, Production release.
Java 2 JRE for the run-time environment	JRE 1.2.1. This is needed for the BEA WebLogic EJB Deployer.
Non BEA CORBA Java client	Java 2 SDK 1.2 IDL ORB.
Internet browsers for the BEA Administration Console	Netscape 4.6.1 Netscape 4.7
Secure Sockets Layer (SSL) vendor	Certicom 3.03.
SSL interoperability clients	Visigenics SSL 3.3.

Software Requirements	Solaris SPARC 2.6 and Solaris SPARC 7.0 32-bit
Database for CORBA C++ applications	Oracle 7.3.4. Note: When using Oracle, Programmer/2000 Pro*C/C++ version 2.2.3.0.0 is required to build the WLE University samples.
Database for CORBA Java and J2EE applications	Oracle 7.3.4 (Type 2), no XA. Oracle 8.1.5 (also known as Oracle 8i).
JDBC drivers	jdbcKona/Oracle 7.3.4 (Type 2), no XA. WLE JDBC/XA for Oracle 8.1.5, also known as Oracle 8i (Type 2); supports XA.

Additional Notes

- EJB and RMI do not require C or C++.
- JDBC/XA users need a C compiler and linker to run the `buildtms` and `buildXAJMS` commands.
- Java IDL users need a C preprocessor. On UNIX systems, the C preprocessor comes with the system.
- JNI users need a C or C++ compiler and linker.
- BEA TUXEDO users need a C or C++ compiler or linker.
- CORBA C++ users need a C++ compiler and linker.

Network Requirements

TCP/IP using the TLI network interface

Disk Space Requirements

The disk space requirements for installation on Solaris systems depends on which components you select during the installation, and whether other WLE 5.0 components have been installed previously. Use the following estimates as guidelines. These requirements are approximate and have been rounded up to the nearest megabyte (MB).

Components	Solaris 2.6 and Solaris 7.0 32-bit
All WLE servers, all WLE clients, and the BEA Administration Console server software	87 MB
Servers only	All servers: 69 MB TUXEDO server only: 22 MB CORBA C++ server only: 43 MB CORBA Java server only: 68 MB J2EE server only: 69 MB
Clients only	All clients: 29 MB TUXEDO /WS client only: 8 MB CORBA C++ client only: 20 MB RMI/EJB client only: 6 MB CORBA Java client only: 23 MB
Administration	BEA Administration Console: 12 MB
Security Services, 56-bit or 128-bit	2 MB for LLE only on TUXEDO server or client system 4 MB for LLE and SSL

Mounting and Unmounting the CD

The Solaris Volume Management software automatically mounts CDs on `/cdrom/cdrom0/s0`.

It is not necessary to unmount CDs on Solaris systems. However, it is necessary to issue a command to open the CD reader.

To open the CD reader, `cd` to `root` and enter `eject`.

Tuning Parameters

You probably need to reconfigure the Solaris kernel before running BEA WLE software, because the default values of some tuning parameters are too low.

To adjust the tuning parameters, proceed as follows:

1. Determine whether the current values are adequate.

For instructions about determining whether the current tuning parameter values are adequate, refer to “Verifying IPC Requirements” on page 7-17.
2. Reset the tuning parameters as necessary.

Information regarding kernel configuration is provided in the Solaris `systune(1M)` manual page.

The following table shows the default settings for the parameters and the settings used for the University sample applications. Use these settings as a starting point; however, your applications may require different settings.

The parameters currently set on your system are located in `/etc/<systemname>`.

Solaris Name	Traditional Name	Default Setting	Setting for University Sample Applications
shmsys:shminfo_shmmax	SHMMAX	131072	67108864
shmsys:shminfo_shmseg	SHMSEG	6	100

Solaris Name	Traditional Name	Default Setting	Setting for University Sample Applications
shmsys:shminfo_shmmni	SHMMNI	100	300
semsys:seminfo_semmns	SEMMNS	60	5048
semsys:seminfo_semmni	SEMMNI	10	5029
semsys:seminfo_semmnl	SEMMNL	25	2000
semsys:seminfo_semmmap	SEMMAP	10	5024
semsys:seminfo_semmnu	SEMMNU	30	1024
semsys:seminfo_semume	SEMUME	10	128
msgsys:msginfo_msgmni	MSGMNI	50	1024
msgsys:msginfo_msgmap	MSGMAP	100	2048
msgsys:msginfo_msgmax	MSGMAX	2048	65535
msgsys:msginfo_msgmnb	MSGMNB	4096	65535
msgsys:msginfo_msgssz	MSGSSZ	8	256
msgsys:msginfo_msgtql	MSGTQL	40	2048
msgsys:msginfo_msgseg	MSGSEG	1024	8192
maxusers	maxusers	32	200
max_nprocs	NPROC	10+16*maxusers	(MAXUSERS*3)+64
maxuprc	MAXUP	max_nprocs-5	(NPROC * 9) / 10
semsys:siminfo	semusz		1024
semsys:siminfo	semvmx		32767
semsys:siminfo	semaem		16384

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