



THE ENTERPRISE MIDDLEWARE SOLUTION

BEA WebLogic Enterprise

Installation Guide

BEA WebLogic Enterprise 4.2
Document Edition 4.2
July 1999

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Installation Guide

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Preface

Purpose of This Document

This document describes how to install and configure the BEA WebLogic Enterprise (sometimes referred to as WLE) software.

Note: Effective February 1999, the BEA M3 product is renamed. The new name of the product is BEA WebLogic Enterprise (WLE).

Who Should Read This Document

This document is intended for the WLE software installers and system administrators.

How This Document Is Organized

The *Installation Guide* is organized as follows:

- ◆ Part 1, which includes Chapters 1 through 5, describes how to install the WebLogic Enterprise (C++) software, including the BEA Administration console. Separate chapters describe the installation procedure on the Microsoft Windows and UNIX platforms.
- ◆ Part 2, which includes Chapters 6 through 8, describes how to install the WebLogic Enterprise (Java) software. Separate chapters describe the installation procedure for the Microsoft Windows NT and Solaris platforms.

- ◆ Appendix A provides data sheets for the platforms that are supported for the WebLogic Enterprise (C++) software.
- ◆ Appendix B provides data sheets for the platforms that are supported for the WebLogic Enterprise (Java) software.

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.
<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 * .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>

Convention	Item
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> <pre>buildobjclient [-v][-o name] [-f firstfile-syntax] [-l lastfile-syntax] -P</pre>
	Separates mutually exclusive choices in a syntax line. The symbol itself should never be typed.
...	Indicates one of the following in a command line: <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 The ellipsis itself should never be typed. <i>Example:</i> <pre>genicf [options] idl-filename...</pre>
. . . .	Indicates the omission of items from a code example or from a syntax line. The vertical ellipsis itself should never be typed.

Related Documentation

The following sections list the documentation provided with the BEA WebLogic Enterprise software, related BEA publications, and other publications related to the technology.

BEA WebLogic Enterprise Documentation

The BEA WebLogic Enterprise information set consists of the following documents:

Installation Guide (this document)

C++ Release Notes

Java Release Notes

Getting Started

Guide to the University Sample Applications

Guide to the Java Sample Applications

Creating Client Applications

Creating C++ Server Applications

Creating Java Server Applications

Administration Guide

Using Server-to-Server Communication

C++ Programming Reference

Java Programming Reference

Java API Reference

JDBC Driver Programming Reference

System Messages

Glossary

Technical Articles

Note: The BEA WLE Online Documentation CD also includes Adobe Acrobat PDF files of all of the online documents. You can use the Adobe Acrobat Reader to print all or a portion of each document.

BEA Publications

Selected BEA TUXEDO Release 6.5 for BEA WebLogic Enterprise version 4.2 documents are available on the Online Documentation CD.

To access these documents:

1. Click the Other Reference button from the main menu.
2. Click the TUXEDO Documents option.

Other Publications

For more information about CORBA and related technologies, refer to the following books and specifications:

Cobb, E. 1997. *The Impact of Object Technology on Commercial Transaction Processing*. VLDB Journal, Volume 6. 173-190.

Edwards, J. with DeVoe, D. 1997. *3-Tier Client/Server At Work*. Wiley Computer Publishing.

Edwards, J., Harkey, D., and Orfali, R. 1996. *The Essential Client/Server Survival Guide*. Wiley Computer Publishing.

Flanagan, David. May 1997. *Java in a Nutshell*, 2nd Edition. O'Reilly & Associates, Incorporated.

Flanagan, David. September 1997. *Java Examples in a Nutshell*. O'Reilly & Associates, Incorporated.

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- Fowler, M. with Scott, K. 1997. *UML Distilled, Applying the Standard Object Modeling Language*. Addison-Wesley.
- Gamma, E., Helm, R., Johnson, R., and Vlissides, J. 1995. *Design Patterns: Elements of Reusable Object-Oriented Software*. Addison-Wesley Professional Computing Series.
- Jacobson, I. 1994. *Object-Oriented Software Engineering: A Use Case Driven Approach*. Addison-Wesley.
- Mowbray, Thomas J. and Malveau, Raphael C.(Contributor). 1997. *CORBA Design Patterns*, Paper Back and CD-ROM Edition. John Wiley & Sons, Inc.
- Orfali, R., Harkey, D., and Edwards, J. 1997. *Instant CORBA*. Wiley Computer Publishing.
- Orfali, R., Harkey, D., February 1998. *Client/Server Programming with Java and CORBA*, 2nd Edition. John Wiley & Sons, Inc.
- Otte, R., Patrick, P., and Roy, M. 1996. *Understanding CORBA*. Prentice Hall PTR.
- Rosen, M. and Curtis, D. 1998. *Integrating CORBA and COM Applications*. Wiley Computer Publishing.
- Rumbaugh, J., Blaha, M., Premerlani, W., Eddy, F., and Loresen, W. 1991. *Object-Oriented Modeling and Design*. Prentice Hall.
- The Common Object Request Broker: Architecture and Specification*. Revision 2.2, February 1998. Published by the Object Management Group (OMG).
- CORBA services: Common Object Services Specification*. Revised Edition. Updated: November 1997. Published by the Object Management Group (OMG).

Contact Information

The following sections provide information about how to obtain support for the documentation and software.

Documentation Support

If you have questions or comments on the documentation, you can contact the BEA Information Engineering Group by e-mail at **docsupport@beasys.com**. (For information about how to contact Customer Support, refer to the following section.)

Customer Support

If you have any questions about this version of the BEA WebLogic Enterprise product, or if you have problems installing and running the BEA WebLogic Enterprise software, 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



Part I WLE (C++) Software Installation

- Chapter 1. Preparing to Install the WLE (C++) Software
- Chapter 2. WLE (C++) Installation on Windows NT, 95,
 and 98 Systems
- Chapter 3. WLE (C++) Installation on UNIX Systems
- Chapter 4. BEA Administration Console Startup
- Chapter 5. WLE (C++) Postinstallation Considerations

1 Preparing to Install the WLE (C++) Software

The WLE (C++) product is a sophisticated software product; it should not be installed without proper planning.

This chapter discusses the following topics:

- ◆ Checking Your Package
- ◆ WLE (C++) Software Components
- ◆ Managing Files and Databases
- ◆ Selecting Directories for the WLE Files
- ◆ Selecting an Administrative Password
- ◆ Configuring the WLE (C++) System for Microsoft Windows NT
- ◆ Configuring the UNIX Operating System for the WLE (C++) Software

Checking Your Package

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

- ◆ A compact disk (CD) that contains the WLE (C++) version 4.2 Full System software (server and client) and the WLE (C++) Client Only software for all supported platforms. The CD also contains the BEA Administration Console software.
- ◆ A compact disk (CD) that contains the WLE (Java) Version 4.2 Full System software (server and client) and the WLE (Java) Client Only software for all supported platforms.
- ◆ A CD that contains the online documentation for the WLE software (C++ and Java).
- ◆ A 3.5-inch diskette that contains the product license.
- ◆ Two manuals:
 - ◆ *Getting Started*
 - ◆ *Installation Guide* (this manual)
- ◆ WLE (C++) Release Notes.
- ◆ WLE (Java) Release Notes.
- ◆ A *BEA Software License and Limited Warranty* pamphlet.
- ◆ A product registration card.
- ◆ A *Customer Support Quick Reference and Other Important Information* card.

If you also have a license for the BEA Administration Console, that package is enabled automatically when the license file is installed.

For a list of the platforms supported for this release of the WLE software, see Appendix A, “WLE (C++) Platform Data Sheets,” and Appendix B, “WLE (Java) Platform Data Sheets.”

WLE (C++) Software Components

The WLE (C++) software CD contains the following components:

- ◆ All BEA WLE (C++) server components
- ◆ C++ Wrapper Classes
- ◆ BEA TUXEDO 6.5 for WLE (C++) V4.2
- ◆ The following WLE (C++) client components:
 - ◆ BEA WLE (C++) client Object Request Broker (ORB) (including environmental objects)
 - ◆ BEA WLE ActiveX client (including environmental objects)
 - ◆ Java Development Kit (JDK) client ORB environmental objects
 - ◆ VisiBroker Java ORB environmental objects
- ◆ BEA Administration Console

The installation program offers the following options:

- ◆ The WLE (C++) Full System

This option installs the complete client and server WLE (C++) software (including the C++ Wrapper Classes) and the BEA TUXEDO 6.5 for WLE V4.2 software. This option must be installed on any machine on which you plan to develop or deploy WLE client or server applications.
- ◆ The WLE (C++) Client Only System

This component contains the client components listed above and the C++ Wrapper Classes. This option should be installed on machines on which you plan only to deploy, but not develop, WLE (C++) client applications.
- ◆ BEA Administration Console

The BEA Administration Console is a graphical user interface that enables you to perform most administrative tasks for WLE and BEA TUXEDO applications. This option can be installed only with the WLE (C++) Full System software or on machines that already have the full system software installed.

Note: For information about how to start up this console after it is installed, refer to Chapter 4, “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.

Hardware and Software Prerequisites for the WLE (C++) Software

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

Note: Do not try to share the WLE (C++) executables across remote file systems; this practice has proven to be unreliable.

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

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

For UNIX Systems

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

- ◆ A system that meets the hardware and software requirements described in Appendix A, “WLE (C++) 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 (C++) software packages you want to install. For disk space requirements, see Appendix A, “WLE (C++) Platform Data Sheets.”

For Microsoft Windows NT, 95, and 98 Systems

You need the following resources before installing the WLE (C++) software on a Microsoft Windows system:

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

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

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 (C++) software on a UNIX system, we strongly recommend 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.

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 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 `tmadmin` 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, and alternatively, 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 on how to do this can be found in the system administration documentation for your particular platform.

Note: 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.

All System Tables on the Same Device?

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 Diagram

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
VTOC	1
TUXCONFIG	270
TLOG	100 (default)
UDL	28

Table 1-1 Size of System Tables (Continued)

Entity	512-byte Pages
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 VTOC. If another resource manager is used, you should 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 VTOC.

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).

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. There is no restriction on the location of this directory, as long as it meets 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.

Throughout the WLE documentation this directory is referred to as `WLEDIR`.

For All Server Platforms Supporting the BEA Administration Console

If you are installing the WLE (C++) software on a server machine, and you elect to install the BEA Administration Console for system administration, you are prompted, during the installation process, 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 `WLEDIR` 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 `WLEDIR\udataobj\webgui` on Microsoft Windows NT systems and `WLEDIR/udataobj/webgui` on 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 are installed in `WLEDIR\help` on Microsoft Windows NT systems and `WLEDIR/help` on UNIX systems

Exception: If you are installing the WLE (C++) 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.

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.
 - ◆ `WLEDIR\udataobj\webgui\java` on Microsoft Windows NT systems and `WLEDIR/udataobj/webgui/java` on 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):
 - ◆ `WLEDIR\udataobj\webgui\cgi-bin` on Microsoft Windows NT systems and `WLEDIR/udataobj/webgui/cgi-bin` on 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 `WLEDIR/bin` (for UNIX systems) or `WLEDIR\bin` (for Microsoft 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:

`WLEDIR/udataobj/tlisten.pw` (UNIX systems)

`WLEDIR\udataobj\tlisten.pw` (Microsoft 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 (C++) System for Microsoft Windows NT

You cannot configure your WLE (C++) system for Microsoft Windows NT until after you install the WLE (C++) software and license. After you complete the installation as described in Chapter 2, “WLE (C++) Installation on Microsoft Windows NT, 95, and 98 Systems,” refer to the section “Configuring the WLE System for Microsoft Windows NT” on page 5-2 for instructions on configuring the WLE (C++) system for Microsoft Windows NT.

Configuring the UNIX Operating System for the WLE (C++) 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 (C++) 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.

The following semaphore parameters may need to be adjusted:

SEMMNS

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

`MAXACCESSERS - 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 the *Administration Guide* 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:

```
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 IIOP 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 (C++) 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 (C++) 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* and the section “Verifying IPC Requirements” on page 5-17.

2 WLE (C++) Installation on Microsoft Windows NT, 95, and 98 Systems

This chapter discusses the following topics:

- ◆ Platforms Supported
- ◆ Installing the WLE (C++) Software on Microsoft Windows NT Systems
- ◆ Installing the WLE (C++) Software on Microsoft Windows 95 and 98 Systems
- ◆ Removing (Uninstalling) the WLE (C++) Software from Your System

Platforms Supported

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

Table 2-1 Supported Platforms

Vendor	Operating System	Release/Version
Microsoft	Microsoft Windows NT	4.0 (Intel) with Service Pack 4
	Microsoft Windows NT	4.0 (Alpha) with Service Pack 4
	Microsoft Windows 95	Not applicable
	Microsoft Windows 98	Not applicable

WLE (C++) Full System (client and server) software can be installed and used on the Intel NT and Alpha NT operating systems. The WLE (C++) Client Only software can be installed and used on the Microsoft Windows 95 and 98 operating systems. Microsoft Windows 95 and 98 systems cannot be used as WLE (C++) server systems.

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

Installing the WLE (C++) Software on Microsoft Windows NT Systems

This section describes how to install the WLE (C++) software on Microsoft Windows NT systems.

Preinstallation Consideration: Backing Up Files

If you are installing WLE (C++) 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 the WLE (C++) Full System software, back up the `RM` file to a temporary location. This file is located in the `M3DIR\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` directory.
3. After the installation is complete, restore these files to their original locations.

Microsoft Windows NT Installation Procedure

To install the WLE (C++) software on a Microsoft Windows NT operating system, perform the following procedure:

Note: Before beginning installation, make sure no BEA TUXEDO or WLE client or server applications are running.

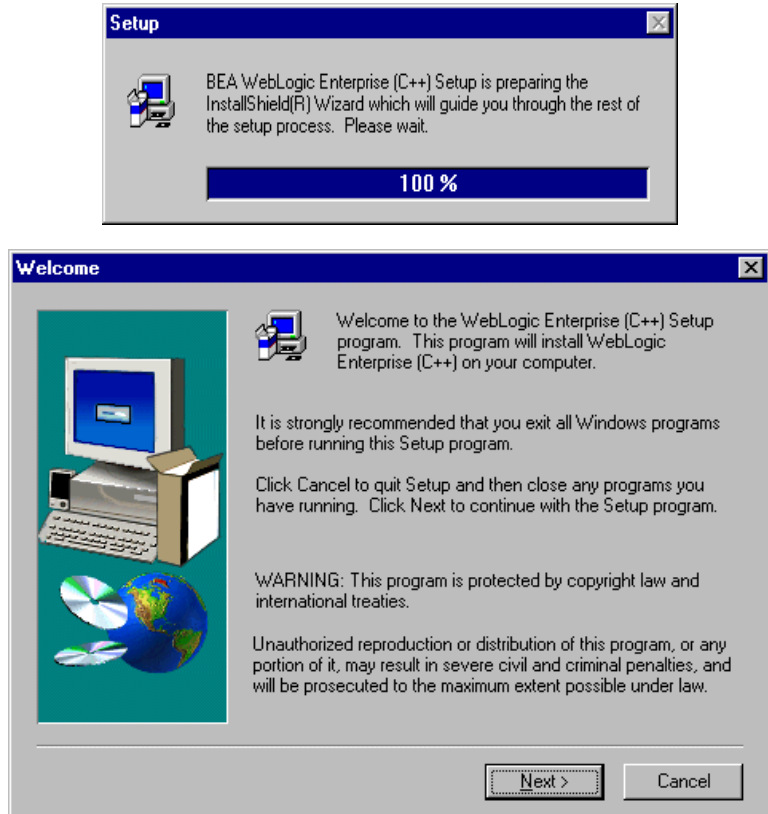
Note: It will take approximately 5 minutes to install the software on a local disk; installation on a remote disk may take as long as 10 minutes.

Note: You need administrative privileges to perform the installation. If you attempt to install the WLE (C++) software without administrative privileges, the following error message will be displayed: “Cannot Install WLE IPC Helper Service.”

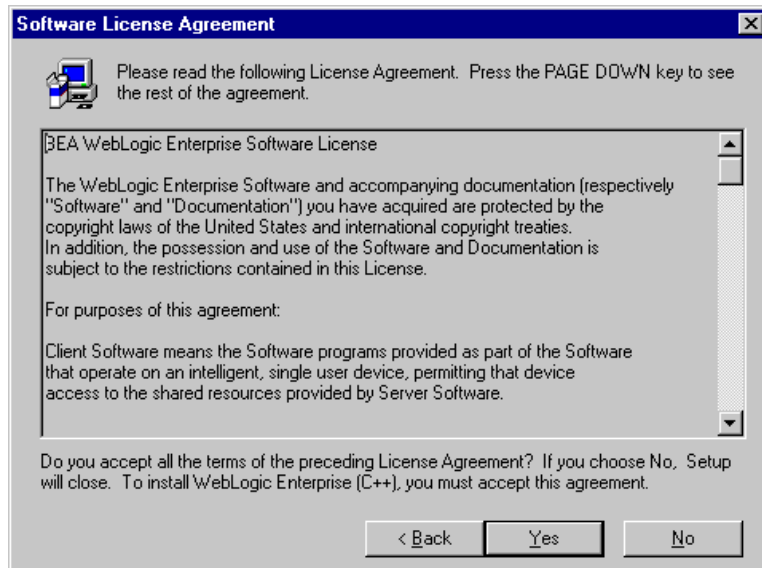
1. Insert the BEA WLE CD in the CD drive and use the Taskbar to click Start—>Programs—>Windows NT Explorer.
2. Click the CD drive and then click the `winnt` folder.

2 WLE (C++) Installation on Microsoft Windows NT, 95, and 98 Systems

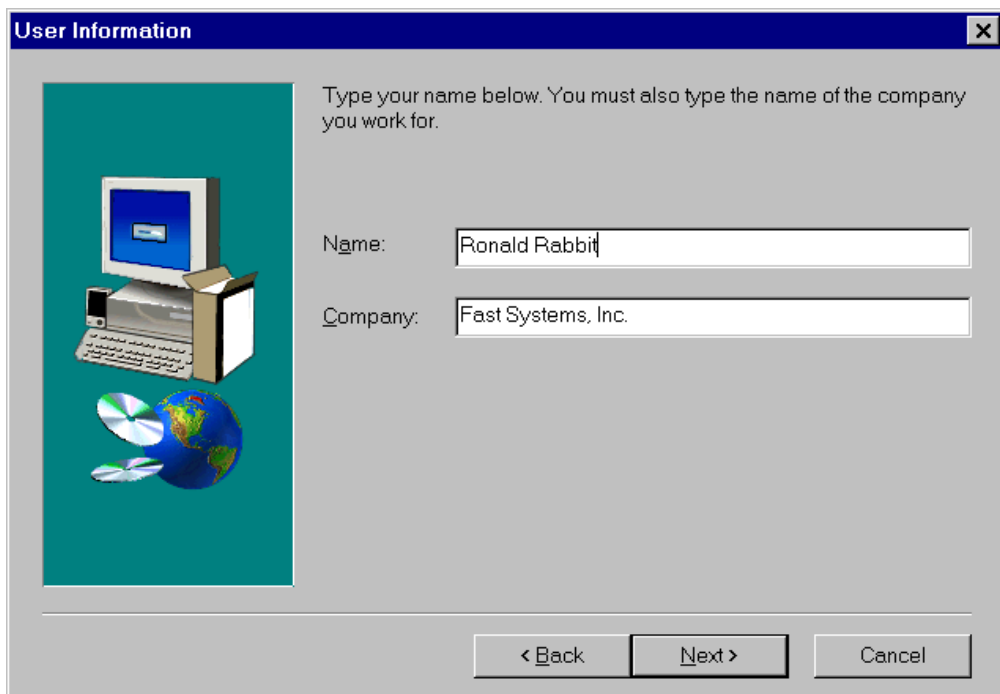
3. Double-click the Setup.exe program. The Setup screen is displayed, followed by the Welcome screen.



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



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



The image shows a Windows-style dialog box titled "User Information". On the left is a graphic of a computer monitor, keyboard, and CD-ROMs. On the right, there is instructional text and two input fields. The "Name:" field contains "Ronald Rabbit" and the "Company:" field contains "Fast Systems, Inc.". At the bottom are three buttons: "< Back", "Next >", and "Cancel".

User Information

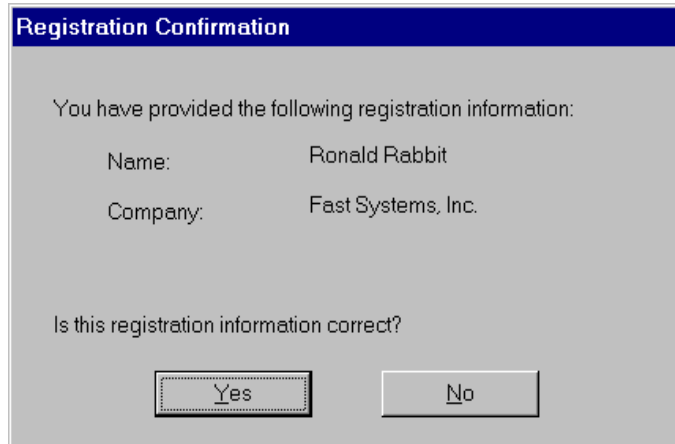
Type your name below. You must also type the name of the company you work for.

Name:

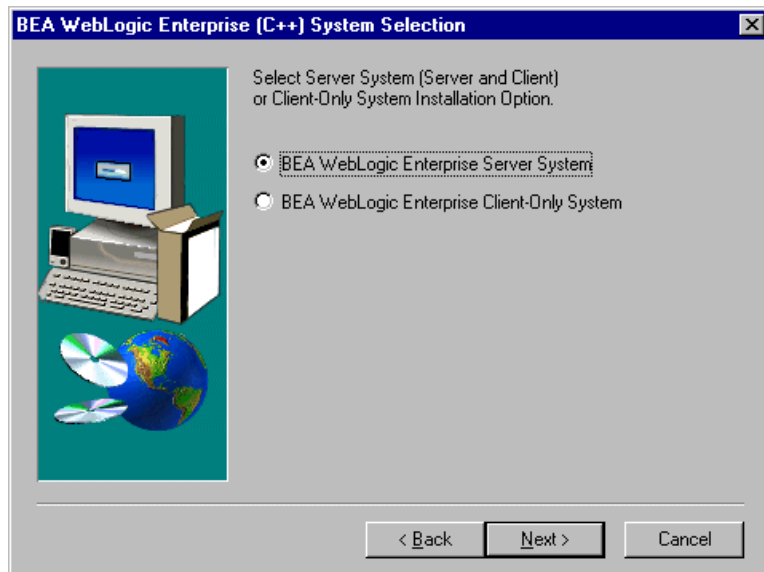
Company:

< Back Next > Cancel

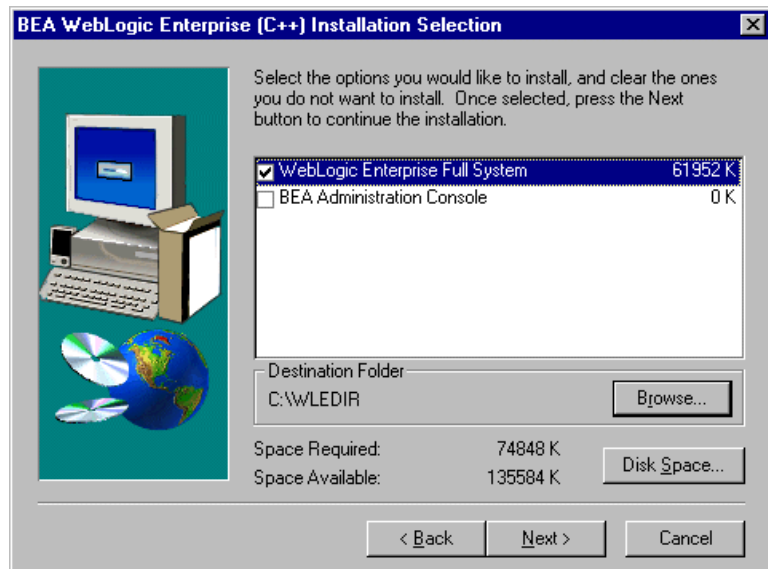
6. Enter your name and the name of your company and click Next. The Registration Confirmation screen is displayed.



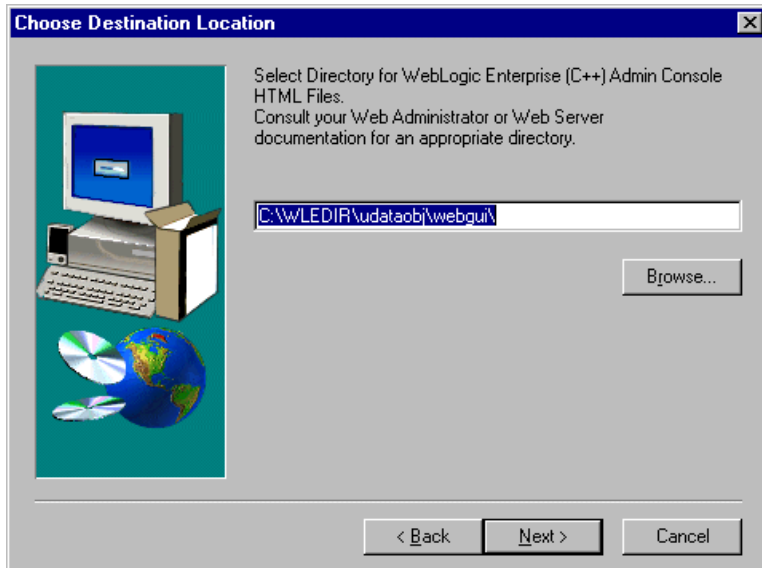
7. If the registration information is correct, click Yes; otherwise, click No and correct the information. The BEA WebLogic Enterprise (C++) System Selection screen is displayed.



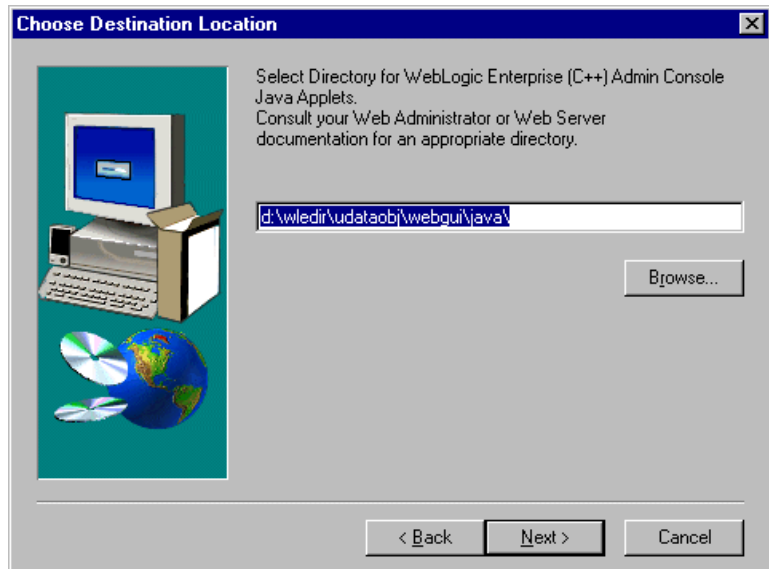
8. The BEA WebLogic Enterprise Server System is selected as the default. This selection includes both the server software and the client software. To install the client software only, click the bottom radio button and click Next; otherwise, just click Next. The BEA WebLogic Enterprise (C++) Installation Selection screen is displayed.



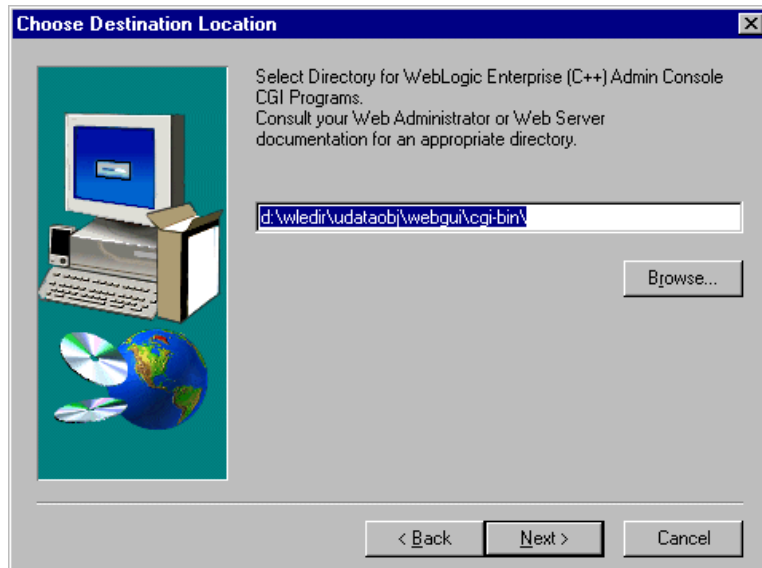
9. Respond to the BEA WebLogic Enterprise Installation Selection screen as follows:
 - ◆ To install the WLE (C++) Full System only, leave the check boxes as they are. To install the BEA Administration Console and the WLE (C++) Full System, select both boxes.
 - ◆ To specify a nondefault directory for the software, click Browse and specify the nondefault directory. For information about default file locations and path names, see the section “Selecting Directories for the WLE Files” on page 1-10.
 - ◆ Verify that your machine has enough free disk space and click Next.
10. If you chose to install the BEA Administration Console, the Choose Destination Location screen is displayed. Go to the next step. Otherwise, the Select Program Folder screen is displayed. Skip to step 15 and continue.



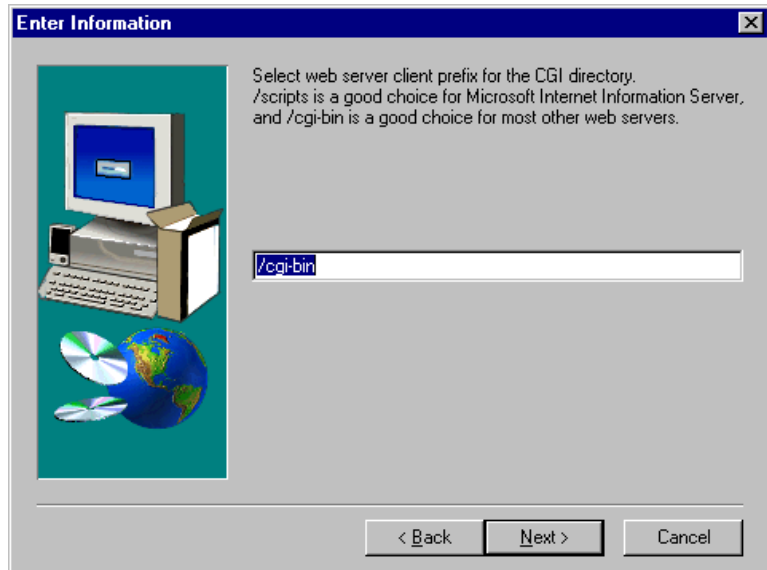
11. To specify a nondefault directory for the BEA Administration Console GUI HTML, click Browse, specify the nondefault directory, and click Next. Otherwise, click Next. Another Choose Destination Location screen is displayed.



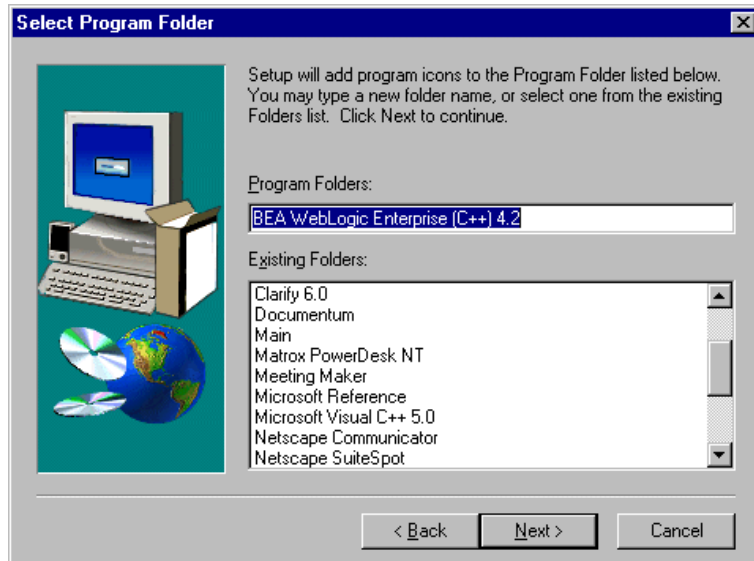
12. To specify a nondefault directory for the BEA Administration Console GUI Java applets, click Browse, specify the nondefault directory, and click Next. Otherwise, click Next. Another Choose Destination Location screen is displayed.



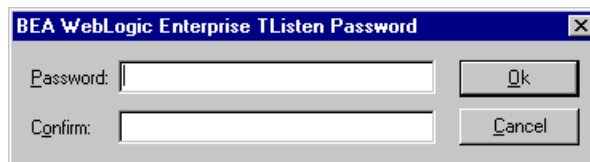
13. To specify a nondefault directory for the BEA Administration Console GUI CGI programs, click Browse, specify the nondefault directory, and click Next. Otherwise, click Next. The Enter Information screen is displayed.



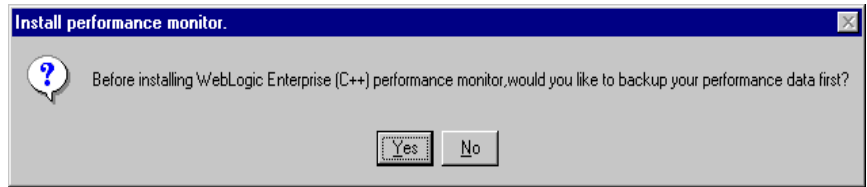
14. To specify a nondefault Web Server client prefix for the GUI CGI directory, click Browse, specify the nondefault prefix, and click Next. Otherwise, click Next. The Select Program Folder screen is displayed.



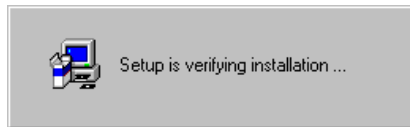
15. To specify a nondefault program folder name, enter the folder name or select a folder name from the Existing Folders, and click Next.
16. The Setup Program installs the WLE (C++) software. When the software installation is completed, the BEA WebLogic Enterprise TListen Password screen is displayed.



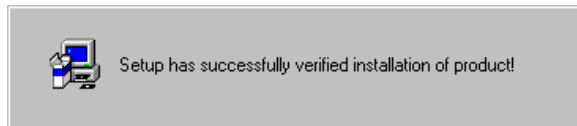
17. Enter the `tlisten` password in the Password field and again in the Confirm field and click Ok. If Cancel is clicked, the `tlisten` password installation is deferred. For information about the `tlisten` password and instructions for setting it, see the section “Selecting an Administrative Password” on page 1-12. The Install performance monitor screen is displayed.



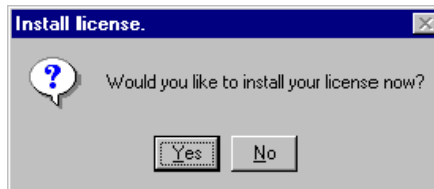
18. To back up your performance data files before you install the WLE performance monitor, click Yes. The Setup is verifying installation... screen is displayed.



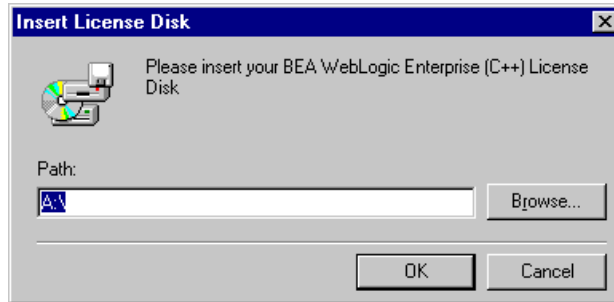
19. After the Setup program verifies the installation, the installation successful screen is displayed.



20. The Install license screen is displayed.

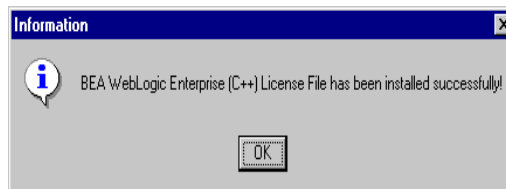


21. To install the WLE (C++) software license now, click Yes; otherwise, click No to install the license later. If you click Yes, the Insert License Disk screen is displayed.

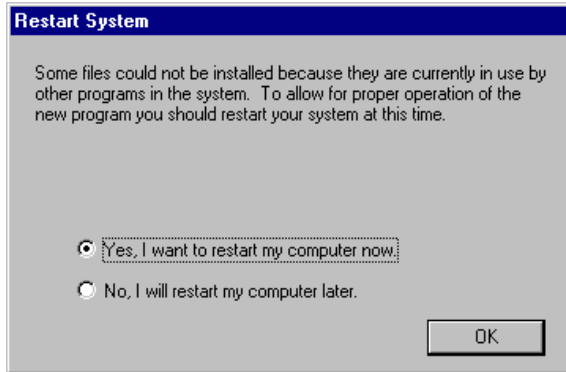


22. Your product license is on a 3.5-inch disk that is included in the software box. To install the license, insert the license disk in the disk drive on your machine and, if your disk drive is drive A, click OK; otherwise, enter the correct drive and click OK. An Information screen is displayed informing you that the WLE (C++) 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 disk 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.



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



24. Click OK. Your system restarts.

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

Setting Microsoft Windows NT Environment Variables

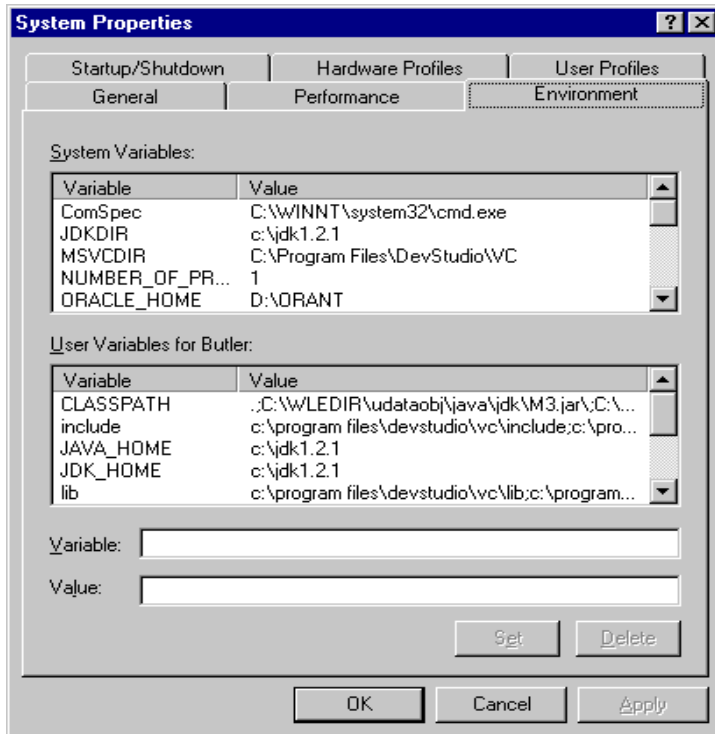
Before you use the WLE (C++) software, you may need to set two environment variables, `NETSCAPE` and `JDK_HOME`.

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

- ◆ The `NETSCAPE` variable is needed only by the WLE (C++) online help files.
- ◆ The `JDK_HOME` variable is needed only to build and run Java clients.

To set these variables, 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 following environment variables as user variables:

- ◆ NETSCAPE = c:\netscape\suitespot
- ◆ JDK_HOME = c:\jdk1.2.1

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 (C++) Software

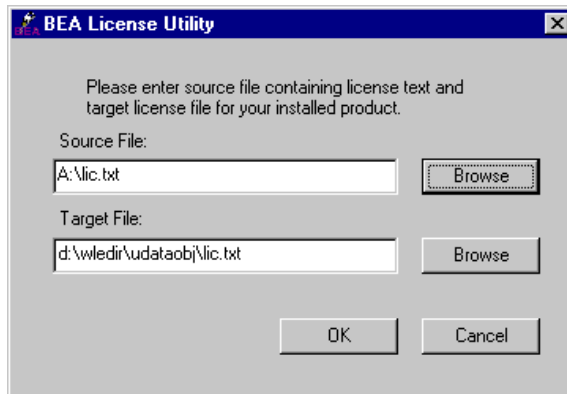
If you elected not to install your software license when you installed the WLE (C++) software, you can install the license using the BEA License Utility.

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 (C++) 4.2—>BEA License Utility 4.2.

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 (C++) Software Installation on Microsoft Windows NT

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

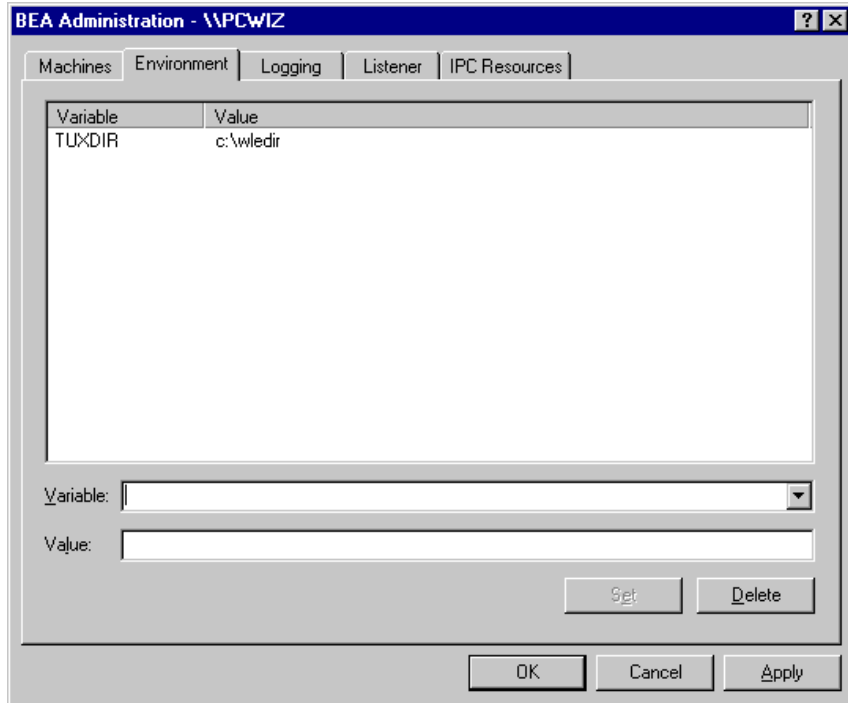
Note: Before attempting to run `simpapp`, refer to the section “Software Requirements” on page A-14 (for Windows NT/Intel) or the section “Software Requirements” on page A-16 (for Windows NT/Alpha) and ensure that software requirements are satisfied.

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 (C++) 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 Control Panel is displayed.



- c. If the Control Panel is not displaying the Environment page as shown in the above screen, click on 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 (C++) 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`

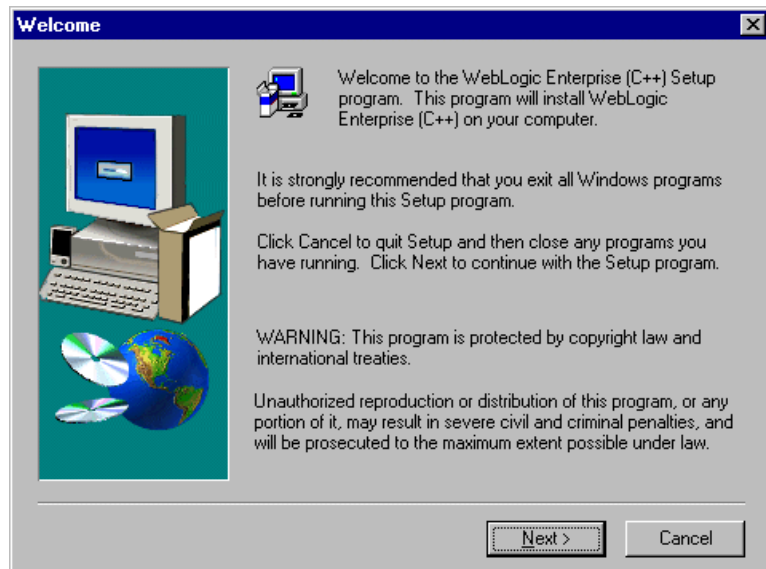
Installing the WLE (C++) Software on Microsoft Windows 95 and 98 Systems

Note: Before beginning installation, make sure no BEA TUXEDO or WLE client applications are running.

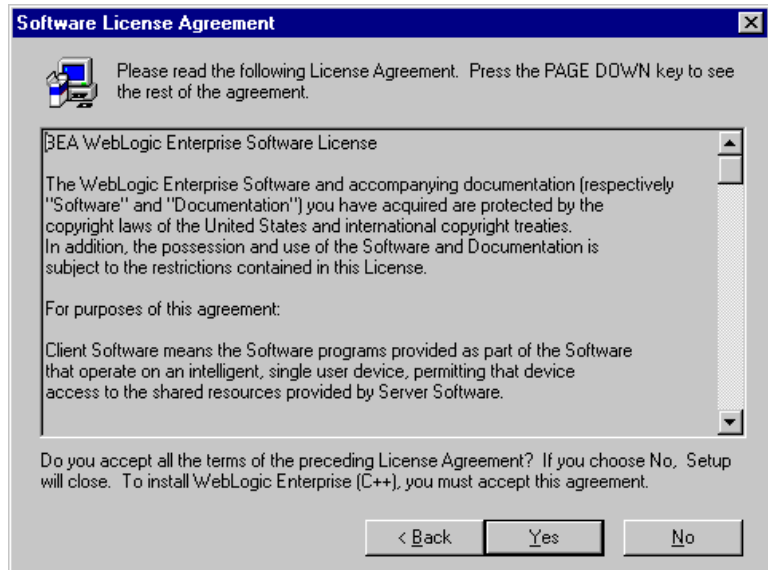
Note: It takes approximately 5 minutes to install the software on a local disk; installation on a remote disk may take as long as 10 minutes.

To install the BEA WLE (C++) software on a Microsoft Windows 95 or 98 operating system, use the following procedure:

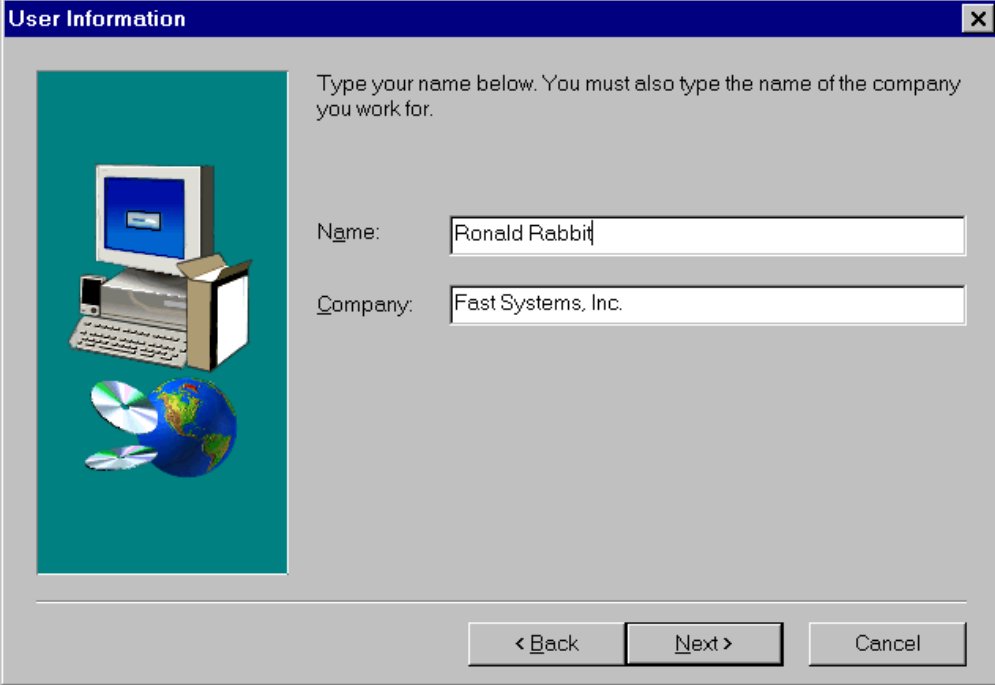
1. Insert the BEA WLE CD in the CD drive and use the taskbar to click Start—>Programs—>Windows Explorer.
2. Click the CD drive and then click the `winnt` folder.
3. Double click the Setup.exe program. The Welcome screen is displayed.



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



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



The image shows a Windows-style dialog box titled "User Information". On the left is a graphic of a computer monitor, keyboard, and CD-ROMs. On the right, there is a text prompt: "Type your name below. You must also type the name of the company you work for." Below this are two text input fields. The first is labeled "Name:" and contains the text "Ronald Rabbit". The second is labeled "Company:" and contains the text "Fast Systems, Inc.". At the bottom right are three buttons: "< Back", "Next >", and "Cancel".

User Information

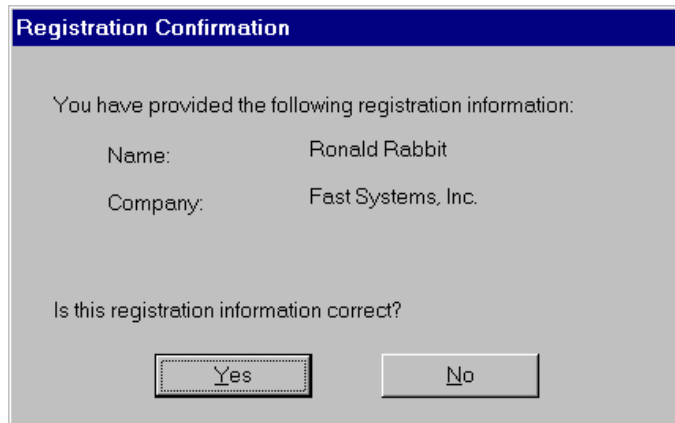
Type your name below. You must also type the name of the company you work for.

Name:

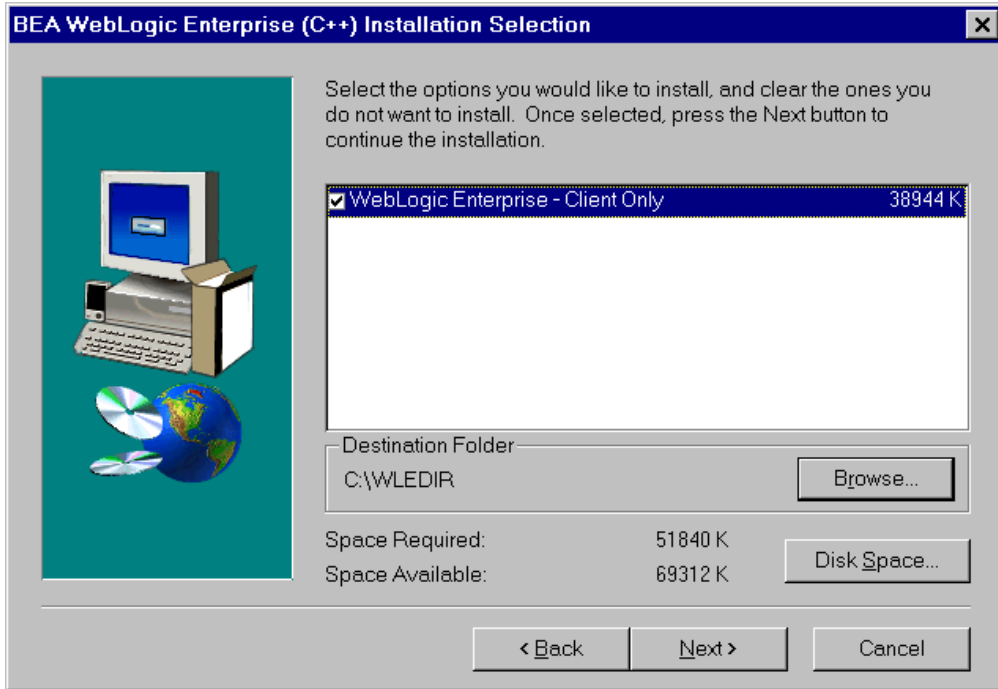
Company:

< Back Next > Cancel

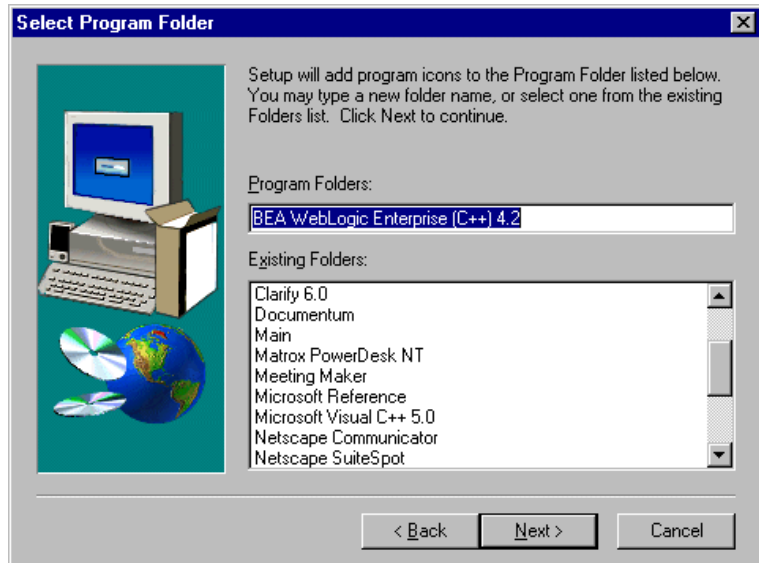
6. Enter your name and the name of your company and click Next. The Registration Confirmation screen is displayed.



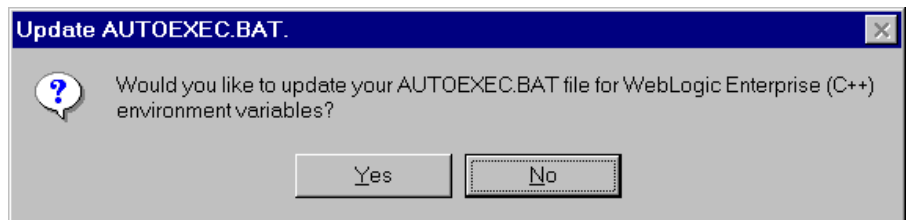
7. If the registration information is correct, click Yes. Otherwise, click No and correct the information. The BEA WebLogic Enterprise (C++) Installation Selection screen is displayed.



8. Respond to the Installation Selection screen as follows:
 - ◆ You can install only client software on Microsoft Windows 95 and 98 systems, so leave the check box as is.
 - ◆ To specify a nondefault directory for the software, click Browse, and specify the nondefault directory. For information about default file locations and pathnames, see the section "Selecting Directories for the WLE Files" on page 1-10.
9. Verify that your machine has enough free disk space and click Next. The Select Program Folder screen is displayed.



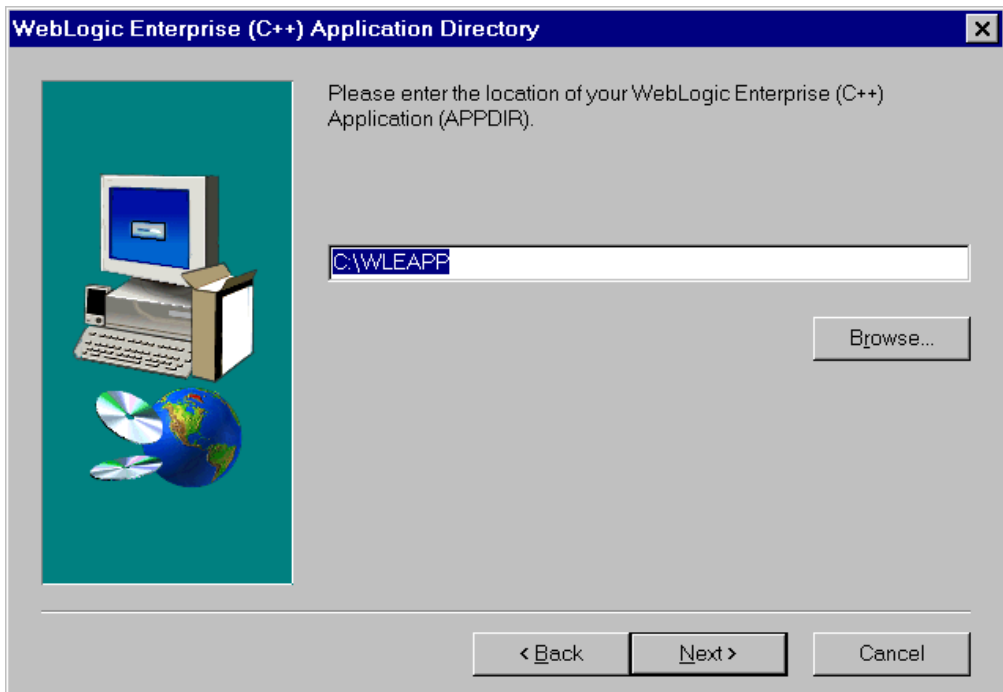
10. To specify a nondefault program folder name, enter the folder name or select a folder name from the Existing Folders, and click Next. The WLE (C++) software is installed. When the software installation completes, the Update AUTOEXEC.BAT screen is displayed.



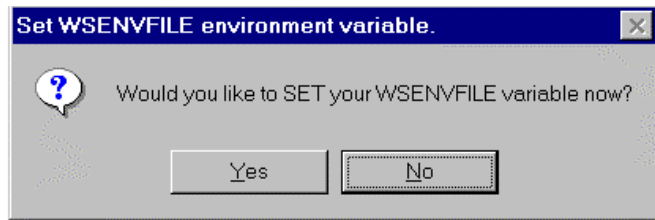
11. Click Yes to update the AUTOEXEC .BAT file. The Set APPDIR environment variable screen is displayed.



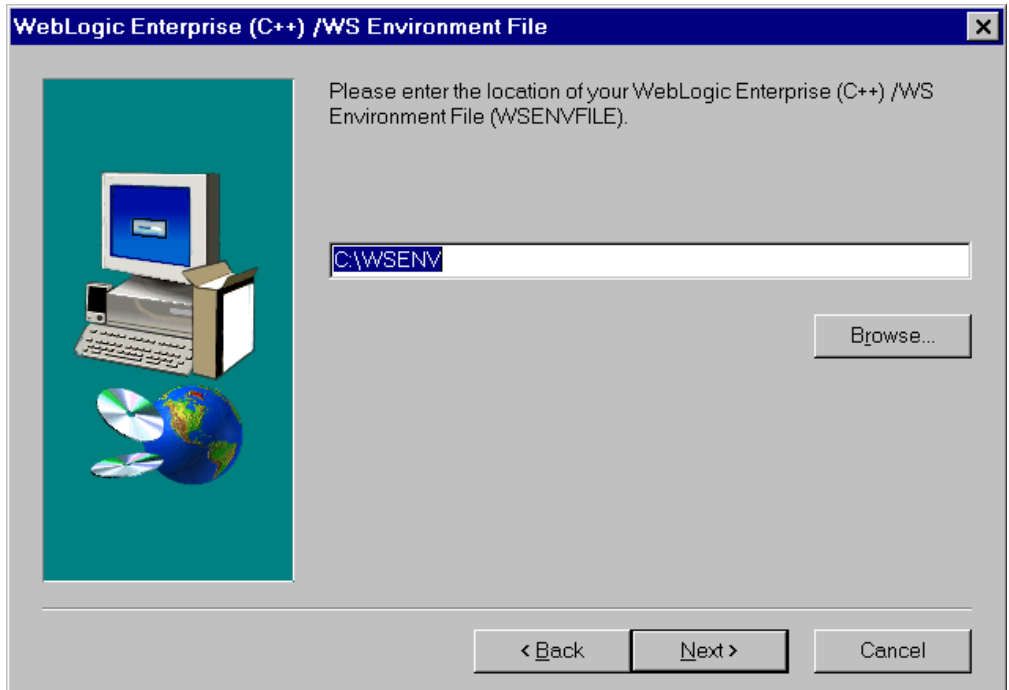
12. Click Yes. The WebLogic Enterprise (C++) Application Directory screen is displayed.



13. To accept the default directory, click Next. To specify a nondefault directory, click Browse, enter the desired directory, and click Next. The Set WSENVFILE environment variable screen is displayed.



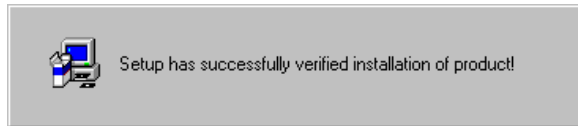
14. To set the WSENVFILE environment variable, click Yes. The WebLogic Enterprise (C++) /WS Environment File screen is displayed.



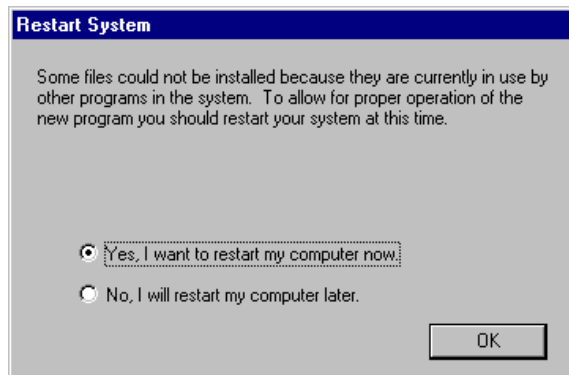
15. To accept the default directory, click Next. To specify a nondefault directory, click Browse, enter the desired directory, and click Next. The Setup is verifying installation... screen is displayed.



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. To restart your system later, click the No radio button and click OK.

Note: If you attempt to run the WLE (C++) software before you restart your system, the software may fail.

Removing (Uninstalling) the WLE (C++) Software from Your System

To remove the WLE (C++) software from your system, proceed as follows:

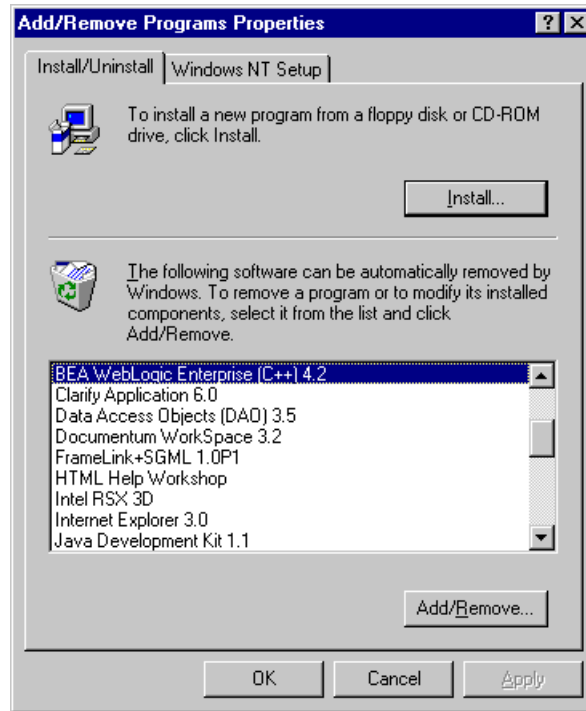
1. Log on to the system. (If you are using a Microsoft Windows NT system, log on as the administrator or as a member of the Administrator group.)
2. Make sure that no BEA TUXEDO or WLE client or server applications are running. Use `tmshutdown` to shut down all WLE applications.
3. On the Microsoft Windows NT taskbar, click Start—>Settings—>Control Panel.
The Control Panel is displayed.



4. Double click the Add/Remove Programs icon.

Removing (Uninstalling) the WLE (C++) Software from Your System

The Add/Remove Programs Properties window is displayed.



5. Click BEA WebLogic Enterprise (C++) 4.2 and click Add/Remove.
6. Click Yes to confirm the removal.

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

3 WLE (C++) Installation on UNIX Systems

This chapter discusses the following topics:

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

Platforms Supported

The platforms listed in Table 3-1 are supported.

Table 3-1 Supported Platforms

Vendor	Operating System	Release/Version
Compaq	Tru64 UNIX	4.0e (Alpha)
HP	HP-UX	10.20 and 11.00
IBM	AIX	4.3.2 (RS/6000, SP2)
Sequent	Dynix/ptx	4.4.2
SGI	IRIX	6.5
Sun	Solaris	2.6 and 7.0 (UltraSPARC)

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

Installing the WLE (C++) Software on UNIX Systems

This section describes how to install the WLE (C++) software on UNIX systems.

Preinstallation Consideration: Backing Up Files

If you are installing WLE (C++) 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 the WLE (C++) full system software, back up the `RM` file to a temporary location. This file is located in the `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 `wledir/udataobj/webgui` directory.
3. After the installation is complete, restore these files to their original locations.

UNIX Installation Procedure

Note: Before beginning installation, use the `tmshutdown` command to shut down any active WLE or BEA TUXEDO applications.

Note: It takes approximately 5 minutes to install the software on a local disk; installation on a remote disk may take as long as 10 minutes.

Note: On most systems, you need superuser privileges to mount the CD.

To install the WLE (C++) software on a UNIX operating system, use the following procedure:

1. Log on to the system with administrative privileges.
2. Insert the WLE (C++) 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 (C++) 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 (C++) 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 (C++) software, and continue with the remainder of the installation procedure. Table 3-2 lists the CD directory names.

Table 3-2 BEA WLE CD Directory Name for UNIX Platforms

Platform	Directory
Tru64 UNIX v4.0e on DEC Alpha	alpha/dux40
HP UX v10.20 on HP 9000 Series 800	hp/hpux1020
HP UX v11 on HP 9000 Series 800	hp/hpux11
IBM AIX v4.3.2 on RS/6000 and SP2	ibm/aix432
Sequent Dynix/ptx 4.4.2 on i386	seq/dynix442
SGI IRIX 6.5 on IP27	sgi/irix65
Solaris v2.6 on UltraSPARC	sun5x/sol26
Solaris v7.0 on UltraSPARC	sun5x/sol27

3 WLE (C++) Installation on UNIX Systems

4. Change (cd) to the /cdrom/bea directory.
5. To invoke the installation procedure, enter `sh ./install.sh`. The following prompt is displayed:

```
01) alpha/dux40      02) hp/hpux1020      03) hp/hpux11
04) ibm/aix432       05) seq/dynix442      06) sgi/irix65
07) sun5x/sol126     08) sun5x/sol127
```

Install which platform's files [01-08, q to quit, l for list]:

6. Select the desired operating system. For example, if you select Solaris 2.6, the following prompt is displayed:

```
** You have chosen to install from sun5x/sol126 **
```

```
BEA WebLogic Enterprise (C++) 4.2
```

```
This directory contains the BEA WebLogic Enterprise System for
SunOS 5.6 (Solaris 2.6) on SPARC.
```

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

7. Enter `y`. The following prompt is displayed:

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

```
The following packages are available:
```

```
1      wle      BEA WebLogic Enterprise (C++)
```

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

8. Enter `1`. The following prompt is displayed:

```
BEA WebLogic Enterprise (C++)
(sparc) Release 4.2
Copyright (c) 1999 BEA Systems, Inc.
All Rights Reserved.
BEA, M3 and WebLogic are trademarks of BEA Systems, Inc.
```

```
The following installation options are available:
```

```
1      both      Install the full system - client and server
2      client     Install the client only
```

```
Select an option (default: both) [?,??,q]:
```

Note: The following steps assume that you select option 1.

9. Select the desired option. The following prompt is displayed:

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

10. Enter the name of the desired directory (for example, /usr/local/wledir). If you elected to install the WLE (C++) full system, the following prompt is displayed:

```
Determining if sufficient space is available ...  
91086 blocks are required  
331202 blocks are available to /usr/local/wledir  
  
Using /usr/local/wledir as the WebLogic Enterprise base  
directory  
  
Directory where BEA Administration Console documents and images  
are to be installed  
(default: /usr/local/wledir/udataobj/webgui) [?,q]:
```

11. This prompt allows you to choose between (a) accepting default locations for files being installed, or (b) specifying nondefault pathnames for these files. For details, see the section “Selecting Directories for the WLE Files” on page 1-10. If you accept the default, the following prompt is displayed:

```
Creating /usr/local/wledir/udataobj/webgui  
  
Using /usr/local/wledir/udataobj/webgui as the BEA  
Administration Console document tree  
  
Directory where BEA Administration Console java applets are to be  
installed (default:  
/usr/local/wledir/udataobj/webgui/java) [?,q]:
```

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

```
Creating /usr/local/wledir/udataobj/webgui/java  
  
Using /usr/local/wledir/udataobj/webgui/java as the BEA  
Administration Console document tree  
  
Directory where BEA Administration Console CGI programs are to  
be installed (default:  
/usr/local/wledir/udataobj/webgui/cgi-bin) [?,q]:
```

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

```
Creating /usr/local/wledir/udataobj/webgui/cgi-bin
Using /usr/local/wledir/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]:
```

14. If you accept the default, the following prompt is displayed and the install program proceeds to install the WLE (C++) files:

```
Using /cgi-bin as the BEA Administration Console CGI prefix
Unloading /cdrom/bea/sun5x/sol26/wle/WS.Z ...
```

15. After the installation of the WLE (C++) files is completed, the following prompt is displayed:

```
... finished

Moving BEA Administration Console files to their proper
location...
... finished

Changing file permissions...
... finished

Processing default license file...
... finished

Install tlisten password? [y/n]:
```

16. 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 1-12. If you enter y, the following prompt is displayed:

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

17. Enter the tlisten password. The following prompt is displayed:

```
Please verify the password:
```

18. 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]:

19. If you want to install the WLE (C++) 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 ``, `<break>`, or `<ctrl+c>`.

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

20. Insert the license disk, which is shipped in the WLE software box, in the disk 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/wlmdir/udataobj/lic.txt` with license
information.

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

21. 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 (C++) Platform Data Sheets."

Installing the Product License After You Install the WLE (C++) Software

If you elected not to install your software license when you installed the WLE (C++) 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 WLE product box.

To install the license, use the following steps:

1. Insert the license disk, 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. Enter the following command to change to the `/bin` directory:

```
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 <del>, <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/wledir` or the name of the directory where you installed the WLE (C++) software. The following prompt is displayed:

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


Running Simpapp to Verify the WLE (C++) Software Installation

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

To run `simpapp`, perform the following steps:

1. Make sure that the directory in which you installed the WLE (C++) 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/wledir; export TUXDIR`
2. Create a directory under `wledir` and copy the content of the `simpapp` directory to it. If you installed the software in the default directory, the `simpapp` directory is located at `usr/local/wledir/samples/corba/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. Make sure `make` is in your path.
6. To run the `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 the `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.
 - 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`

Removing (Uninstalling) the WLE (C++) Software from Your System

To remove the software from your system, use the following procedure:

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:

```
# rm -rf wledir
```

where `wledir` is the WLE base directory.

4 BEA Administration Console Startup

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 (C++) version 4.2 software. For a complete list of supported platforms, see the section “Supported Platforms” on page A-1.

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 (C++) 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 5-9.

For information about setting UNIX system IPC parameters, see the section “Verifying IPC Requirements” on page 5-17.

For more information about system tuning parameters for a particular platform, see Appendix A, “WLE (C++) 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:

Browsers Supported	Platforms Supported
Netscape Navigator 4.5	HP-UX 10.20, IBM AIX, Microsoft Windows 95, 98, and NT (Intel), and Solaris
Netscape Navigator 4.07	Tru64 UNIX, HP-UX 11.00, Microsoft Windows NT (Alpha), Sequent Dynix, and SGI IRIX
Microsoft Internet Explorer 4.0	Microsoft Windows 95, 98, and NT (Intel)

For up-to-date information about other supported Web browsers, see the WLE (C++) Release Notes on the Customer Support section of the BEA Web site:

<http://www.beasys.com/>

The Release Notes are also included in the WLE 4.2 product box.

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
```

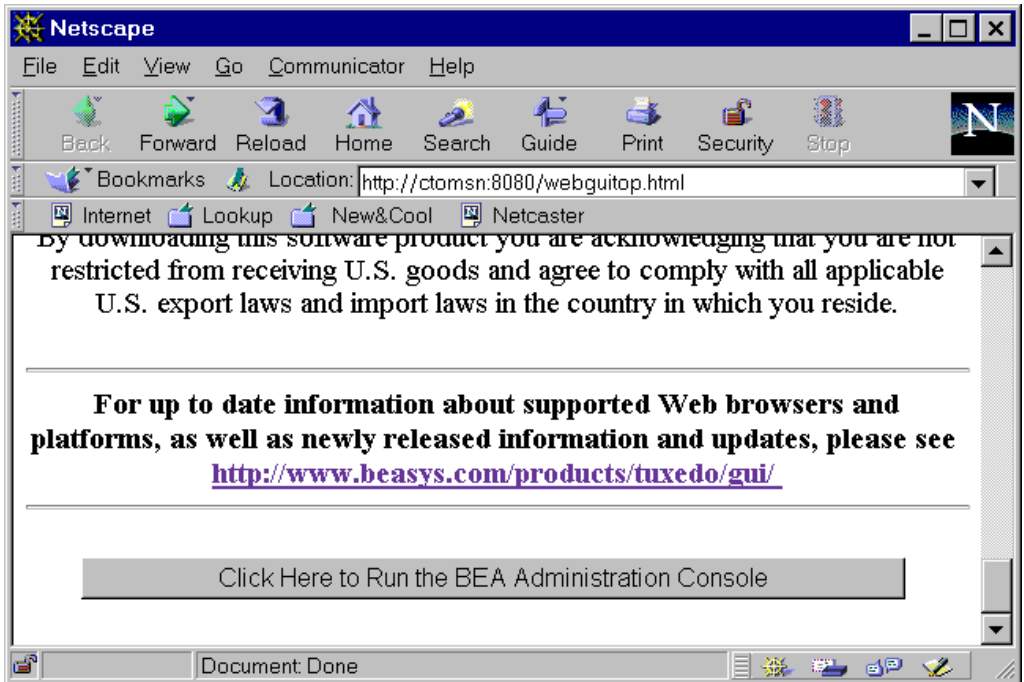
Use of this URL depends on the following assumptions:

- ◆ You are using `tuxwsrv` with the file `tuxwsrv.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.



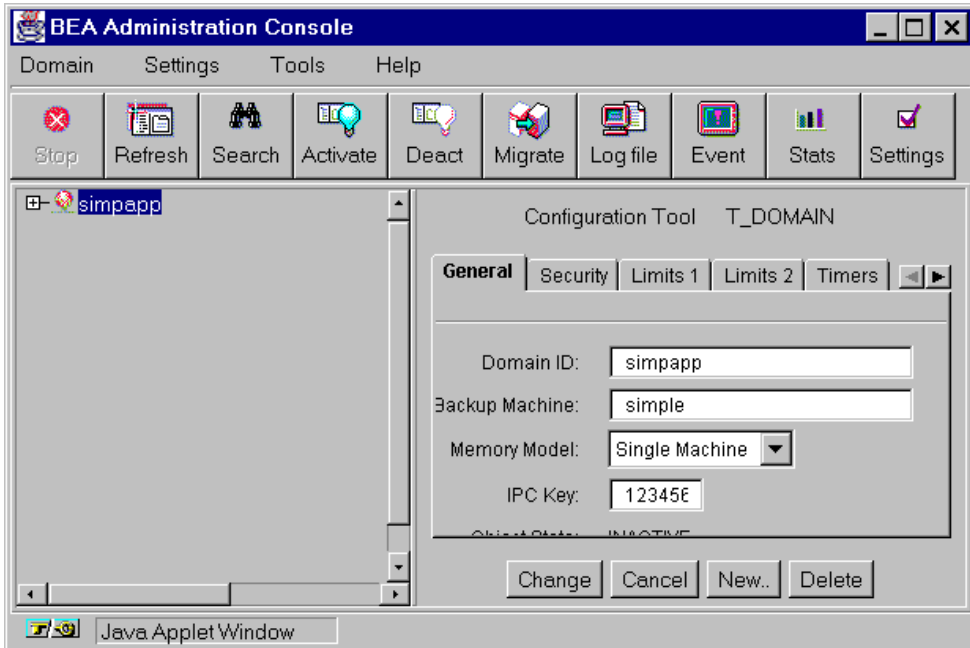
3. To start the BEA Administration Console, click the prompt at the bottom of the screen. The Login window is displayed.

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 `WLEDIR/udataobj` directory. The main window of the BEA Administration Console is displayed.



Note: Refer to Table 4-1 for instructions for accessing additional information about the BEA Administration Console main window.

Table 4-1 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 “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.

Table 4-1 Accessing Information About the BEA Administration Console Main Window (Continued)

If . . .	Then . . .
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: <code>\$ wlisten -i \</code> <code>WLEDIR/udataobj/webgui/webgui.ini</code>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.

5 WLE (C++)

Postinstallation Considerations

Now that you have successfully installed the WLE (C++) software, you must set up your machine and parts of the WLE (C++) 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
- ◆ 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

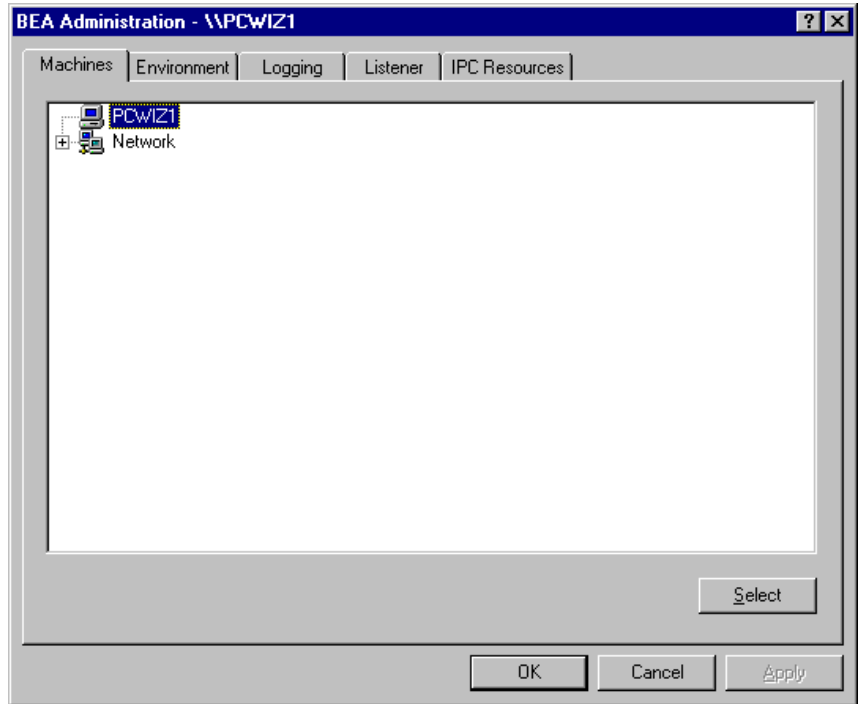
Accessing the Control Panel Applet

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 Control Panel is displayed.



Accessing Machines on a Network

To display the Machines page of the Control Panel, click on 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

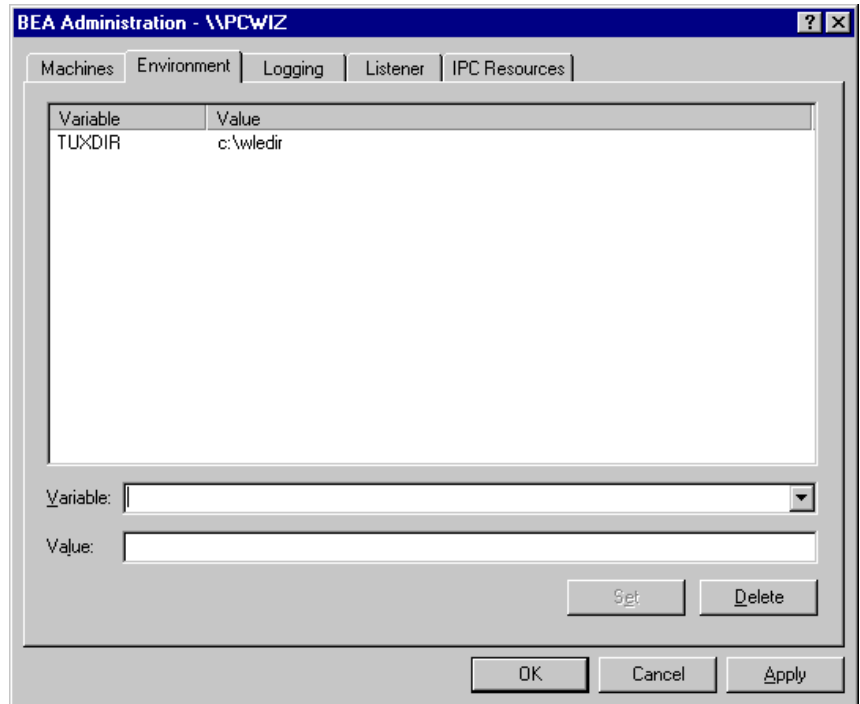
To display the Environment Page of the Control Panel, click the Environment tab.

Modifying WLE environment variables is almost identical to modifying Microsoft Windows NT environment variables. The Variable field (see Figure 5-1) 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 5-1 WLE Software for Microsoft Windows NT Environment Control Panel



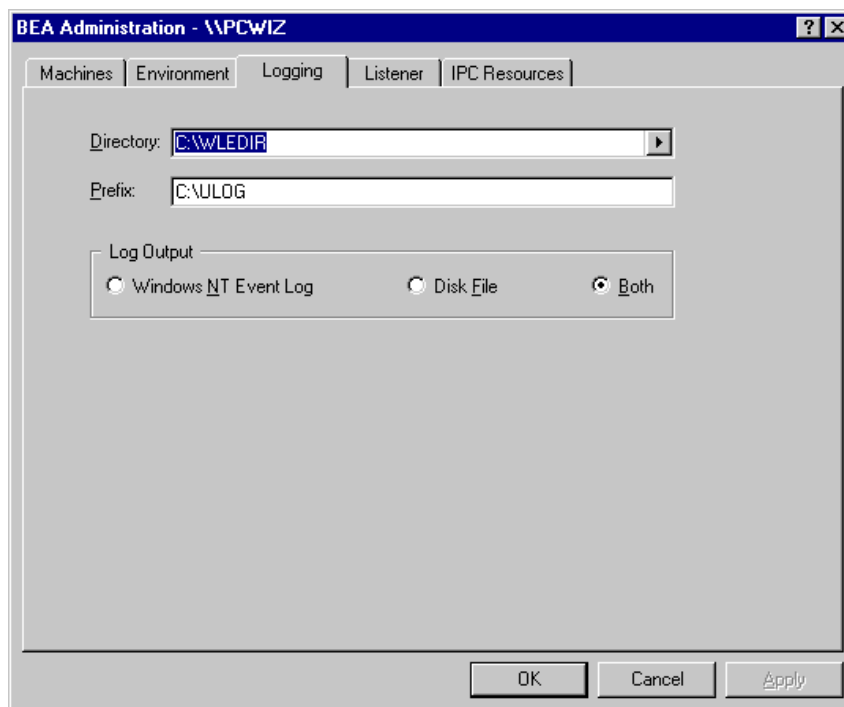
Directing WLE Messages to the Microsoft Windows NT Event Log

To display the Logging page (Figure 5-2) of the Control Panel, click on the Logging tab.

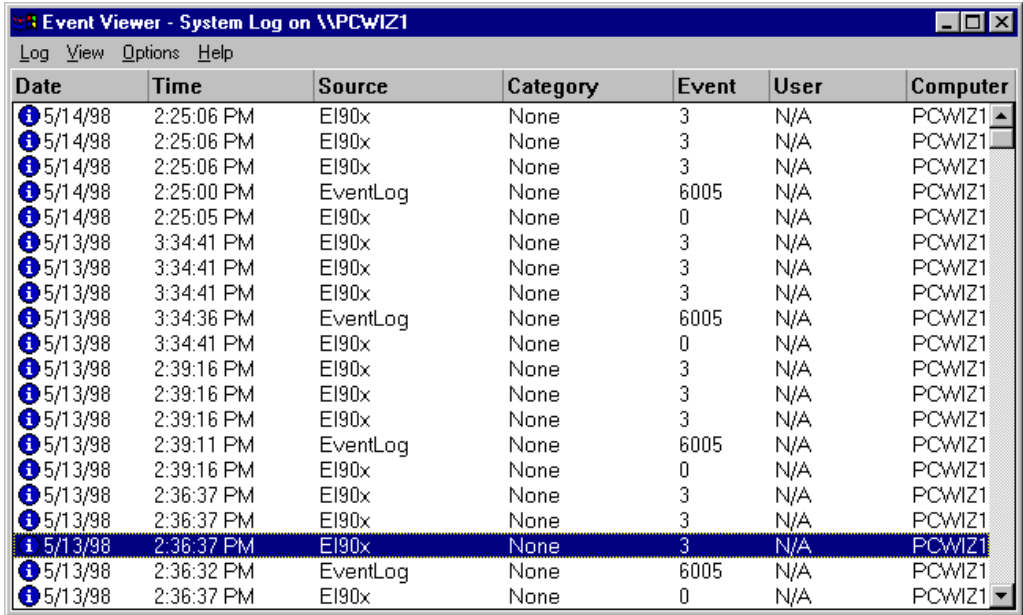
You can set the Logging Page to direct WLE system messages to the Microsoft Windows NT Event Log. You can select the Logging option (Microsoft Windows NT Event Log) or the traditional user log (Disk File), or both. If you want traditional user

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 5-2 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	2:36:37 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

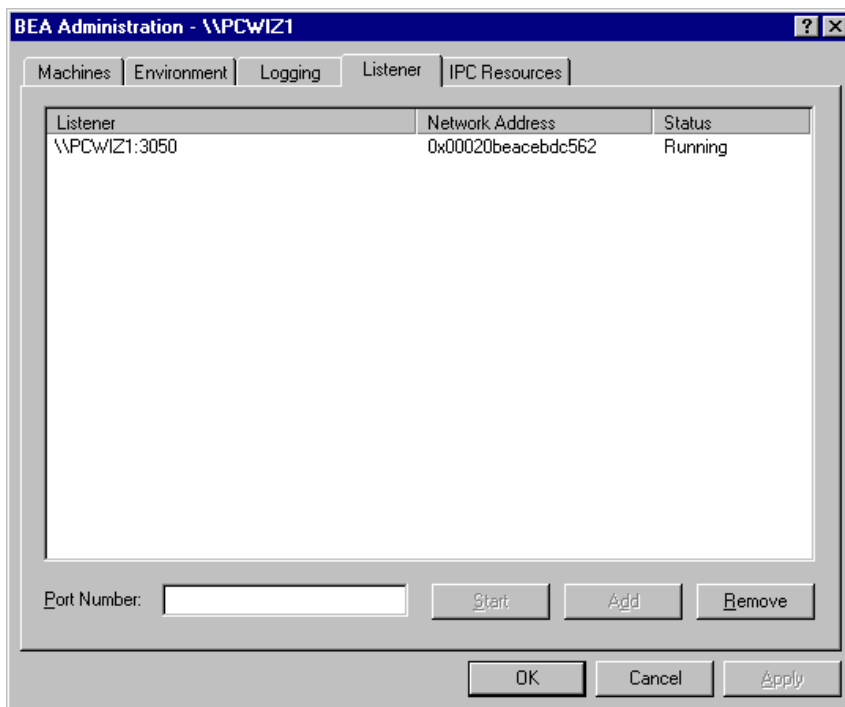
Configuring tlisten Processes to Start Automatically

To display the Listener page (Figure 5-3) of the Control Panel, click on 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 5-3). 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 5-3 WLE Software for Microsoft Windows NT Listener Control Panel



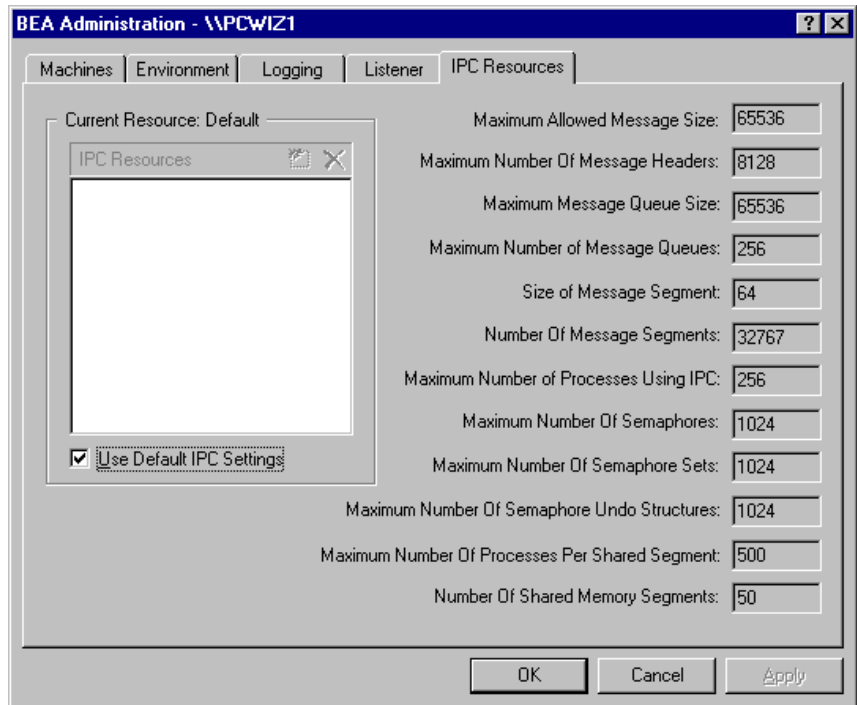
You can use the `tlisten` process to perform administrative actions in a server application across multiple machines. You must start the `tlisten` process on each machine before running the server application. Generally, you need one `tlisten` process for each server application running on the machine.

Maximizing System Performance

To display the IPC Resources page (Figure 5-4) of the Control Panel, click on 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 5-4 WLE Software for Microsoft Windows NT IPC Resources Control Panel



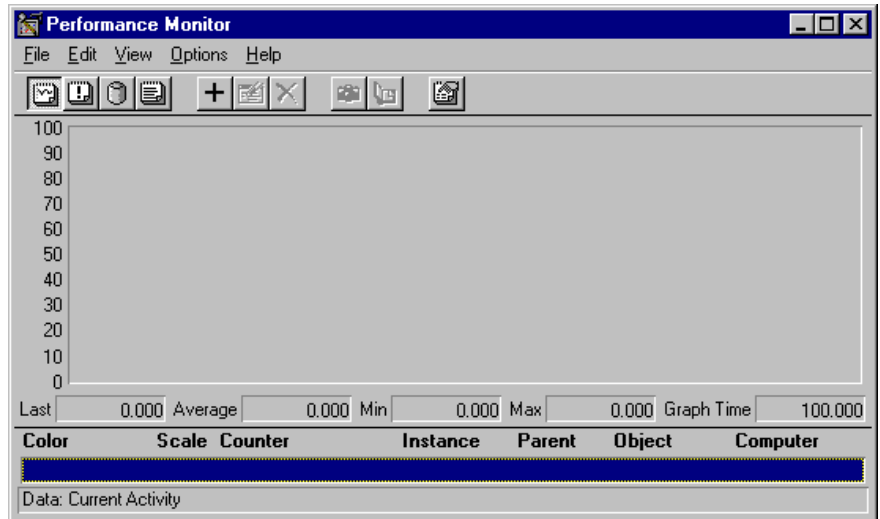
With the IPC Resources control panel, you can set a variety of IPC resources. To define IPC settings for your WLE machine, proceed as follows:

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 `tuxipc.exe` service 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 5-5).

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

Figure 5-5 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 5-1 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 5-1, “University Samples UBBCONFIG File,” on page 5-15. 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 5-1, “University Samples UBBCONFIG File,” on page 5-15, the machine name is EIEIO.

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*.

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 5-17.

Listing 5-1 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
#
    EIEIO
        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 //EIEIO: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 5-2.

Listing 5-2 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 (C++) Platform Data Sheets.”

- ◆ For a description of parameters in the UBBCONFIG file that affect IPC resources, refer to the section “Defining IPC Limits” in Chapter 3 of the *Administration Guide*.

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 5-1.

Table 5-1 Network Devices for *tlisten*

Platform	Device Name
Tru64 UNIX V4.0e	<code>/dev/streams/xtiso/tcp</code>
HP-UX V10.20 and V11.00	<code>/dev/null</code>
IBM-AIX V4.3.2	<code>/dev/null</code>
Sequent Dynix 4.4.2	<code>/dev/tcp</code>
SGI IRIX 6.5	<code>/dev/tcp</code>
Solaris V2.6 and V7.0	<code>/dev/tcp</code>

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 the *Administration Guide*.

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.

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. Install a browser that is Y2K compliant, either a Netscape Communicator browser or an Internet Explorer browser.

Part II WLE (Java) Software Installation

Chapter 6. Preparing to Install the WLE (Java) Software

Chapter 7. WLE (Java) Installation on Microsoft
Windows NT Systems

Chapter 8. WLE (Java) Installation on Solaris Systems

6 Preparing to Install the WLE (Java) Software

The WLE (Java) product is a sophisticated software product; it should not be installed without proper planning.

This chapter discusses the following topics:

- ◆ WLE (Java) Software Components
- ◆ Hardware and Software Prerequisites

WLE (Java) Software Components

The WLE (Java) software CD contains the following two components:

◆ Full System software

This component contains the complete client and server WLE (Java) software (including the m3.JAR file and the Java Wrapper Classes), which must be installed on any machine on which you plan to develop or deploy WLE (Java) client or server applications.

Note: To complete the development environment, you must install the Sun Microsystems JDK 1.2.1 software and `idltojava` compiler along with the Full System software.

You can only install this component on a machine on which the WebLogic Enterprise (C++) 4.2 Full System component (client and server) has already been installed.

◆ Client Only software

This component contains a subset of the WLE (Java) software (including the Java Wrapper Classes), which you may install as a lightweight alternative to the full client and server system. The Client Only software is appropriate for machines on which you plan only to deploy, but not develop, WLE (Java) client applications.

Note: To complete the deployment environment, you must install the Sun Microsystems JRE 1.2.1 software along with the Client Only software.

You can only install this component on a machine on which the WebLogic Enterprise (C++) 4.2 Full System component or Client Only component has already been installed.

When you run the installation procedure located on the WLE (Java) software CD, you may choose to install only one of these two components.

Hardware and Software Prerequisites

The BEA WLE (C++) 4.2 Full System software must be installed on your machine prior to installing the WLE (Java) 4.2 Full System software. For instructions for installing the BEA WLE (C++) 4.2 Full System software, refer to Chapter 2, “WLE (C++) Installation on Microsoft Windows NT, 95, and 98 Systems”.

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

Microsoft Windows NT Systems

You need the following resources before installing the WLE (Java) software on a Microsoft Windows NT system:

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

Solaris Systems

You need the following information and resources before installing the WLE (Java) software on a Solaris system:

- ◆ A system that meets the hardware and software requirements described in Appendix B, “WLE (Java) 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 (Java) software you want to install. For disk space requirements, see Appendix B, “WLE (Java) Platform Data Sheets.”

7 WLE (Java) Installation on Microsoft Windows NT Systems

This chapter discusses the following topics:

- ◆ Platforms Supported
- ◆ Installing the WLE (Java) Software on Microsoft Windows NT Systems
- ◆ Removing (Uninstalling) the WLE (Java) Software from Your System

Platforms Supported

Microsoft Windows NT is the only Windows platform supported for this release of WLE (Java).

For the hardware and software requirements for Microsoft Windows NT, see Appendix B, “WLE (Java) Platform Data Sheets.”

Installing the WLE (Java) Software on Microsoft Windows NT Systems

The installation procedure includes the following:

1. Downloading and installing the Java Development Kit (JDK) 1.2.1 software from the Sun Microsystems, Inc. Web site. If you are installing the Client Only WLE (Java) software component, skip this step.
2. Downloading and installing the `idltojava` compiler from the Sun Microsystems, Inc. Web site. If you are installing the Client Only WLE (Java) software component, skip this step.
3. Choosing one of the following two WLE (Java) components to install:
 - ◆ Full System
Installs the complete client and server WLE (Java) software
 - ◆ Client Only
Installs a client-only subset of the WLE (Java) software

For more information about the differences between these two components, see the section titled “WLE (Java) Software Components” on page 6-2.
4. Downloading the Java Runtime Environment (JRE) software from the Sun Microsystems Inc. Web site. You perform this step only if you are installing the Client Only WLE (Java) software component, and you are not downloading the JDK 1.2.1 software.
5. Setting environment variables on your system.
6. Running `simpapp_java` to verify the installation.

The following sections discuss these steps in detail.

Downloading and Installing the JDK 1.2.1 Software

If you are installing the WLE (Java) Full System software component, you also need to download and install the JDK 1.2.1 software from the Sun Microsystems, Inc., Web site. (If you are installing the Client Only software, skip this section and go to the section titled “Installing the WLE (Java) Software” on page 7-4.)

To download and install the JDK 1.2.1 software:

1. Open your Web browser and enter the following URL:

`http://www.javasoft.com/products/index.html`

The Sun Microsystems, Inc. Web site specified in the above URL provides links to the JDK 1.2.1 software kit for NT systems and also to complete installation instructions.

2. Follow the instructions for installing the JDK 1.2.1 software, which are available at the preceding URL.

Downloading and Installing the idltojava Compiler

If you are installing the WLE (Java) Full System software component, you need to download and install the Sun Microsystems, Inc. `idltojava` compiler to build WLE (Java) client and server applications. (If you are installing the Client Only software, skip this section and go to the section titled “Installing the WLE (Java) Software” on page 7-4.)

To download and install the `idltojava` compiler:

1. Open your Web browser and enter the following URL:

`http://java.sun.com/marketing/enterprise/jidl.html`

Note: If you are not a member of the Java Developer Connection, you will be prompted to join. There is no fee to join. After you join, you will be allowed to access the Web page.

2. Follow the installation instructions provided at the preceding URL. When you are prompted for a folder, direct the load to the `wledir\bin` folder. For example, if you installed the WLE (Java) software in the default location, direct the download to `C:\wledir\bin`. When the download completes, you will have a file named `idltojava-ea-win32.exe`.
3. Double click the file `idltojava-ea-win32.exe`, which is a self-extracting file that places the `idltojava` compiler in a folder named `idltojava-win32`. The `idltojava-win32` folder is created by default under `wledir\bin`.
4. Add to your path the folder that contains the `idltojava` compiler.

Installing the WLE (Java) Software

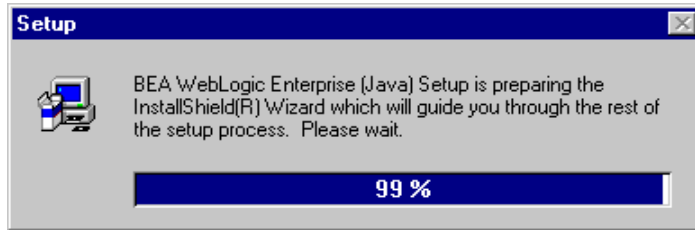
Note: Before beginning the installation, make sure that the BEA WLE (C++) v4.2 Full System software is installed on the machine, and use the `tmshutdown` command to shut down any running WLE or BEA TUXEDO applications.

Note: It takes approximately 5 minutes to install the software.

To install the WLE (Java) software on a Microsoft Windows NT system, perform the following procedure:

1. To ensure all BEA TUXEDO and WLE applications, servers, and services are shut down, execute the `tmshutdown` command on every running BEA TUXEDO and WLE application.
2. Insert the CD labeled WLE (Java) 4.2 in the CD reader and use the Microsoft Windows NT taskbar to click Start—>Programs—>Windows NT Explorer.
3. Click the CD drive and then click the `winnt` folder.
4. Double click the `setup.exe` program.

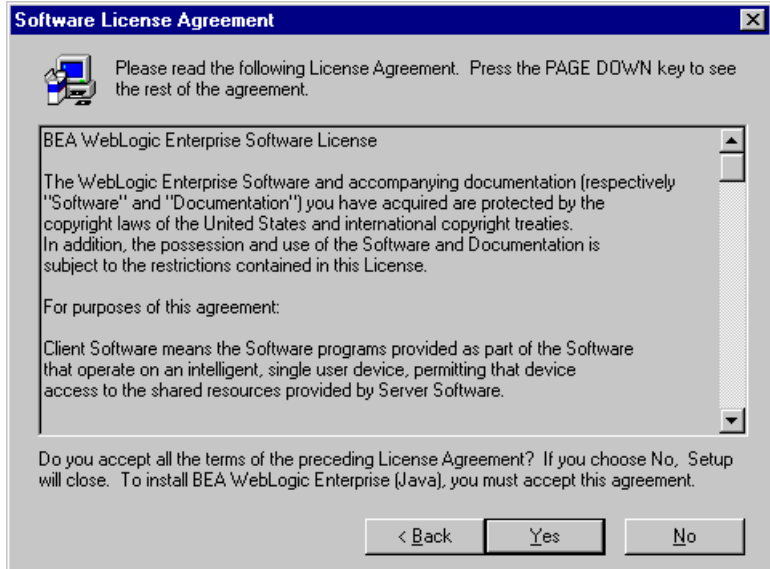
The Setup screen is displayed.



5. After the Setup screen displays, the Welcome screen is displayed.

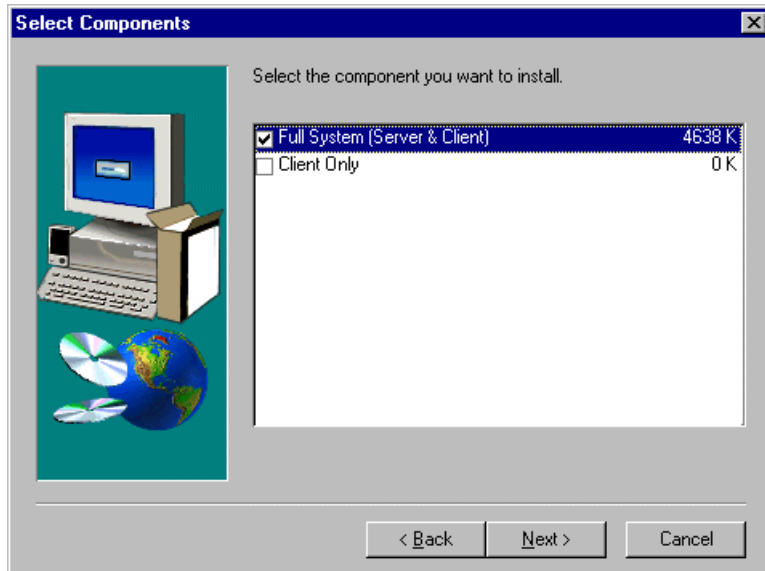


6. Click Next. The Software License Agreement screen is displayed.



7. To accept the license agreement, click Yes.

The Select Components screen is displayed, allowing you to choose which WLE (Java) software component you want to install: the Full System component, or the Client Only component. For a description of the differences between these two components, see the section titled "WLE (Java) Software Components" on page 6-2.



8. Choose the kit you want to install and click Next.

If you are installing the Client Only component, skip the remainder of this section and go to the section “Installing the Java Runtime Environment (JRE)” on page 7-8.

The Setup Complete screen is displayed.



9. Click Finish to complete the installation.

Installing the Java Runtime Environment (JRE)

The Client Only kit requires, as a minimum, the JRE. If you already have the JRE, or the JDK 1.2.1 software, installed on your machine, you can skip this step in the installation procedure.

To download and install the JRE software:

1. Open your Web browser and enter the following URL:

`http://www.javasoft.com/products/index.html`

The Sun Microsystems, Inc. Web site specified in the above URL provides links to the JRE software kit for NT systems and also to complete installation instructions.

2. Follow the instructions for installing the JRE software, which are also available at the preceding URL.

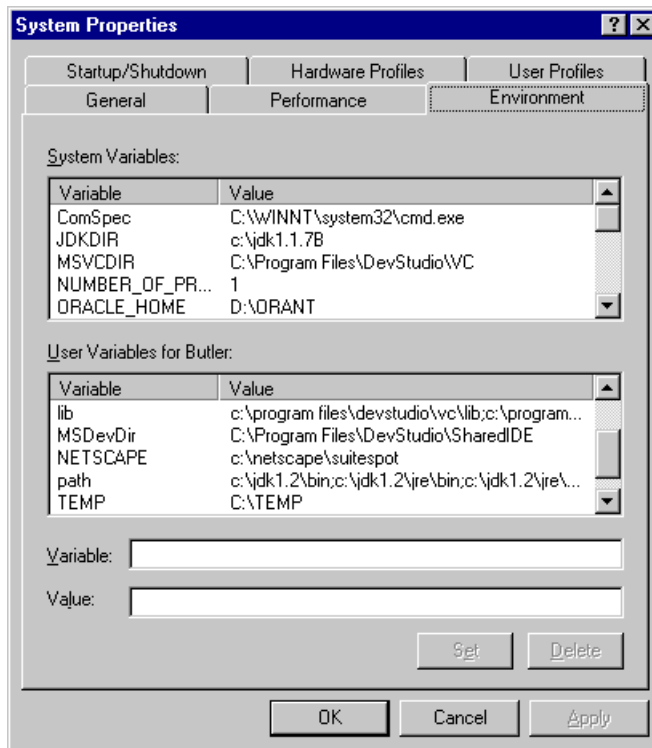
Setting Environment Variables on Your Windows NT System

Before you use the WLE (Java) software, you need to set three environment variables: JAVA_HOME, PATH, and CLASSPATH.

To set these variables, perform the following procedure:

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

The System Properties window is displayed.



2. Enter the following environment variables as user variables:

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.

- ◆ `JAVA_HOME=c:\jdk1.2.1`
- ◆ `PATH=%JAVA_HOME%\bin;%JAVA_HOME%\jre\bin;%JAVA_HOME%\jre\bin\classic;%PATH%`
- ◆ `CLASSPATH=.;%TUXDIR%\udataobj\java\jdk\m3.jar;%TUXDIR%\locale\java\M3`

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

Running the Java simpapp Sample Application to Verify the Full System Software Installation

If you have installed the WLE (Java) Full System software component, you can verify that the installation has been successful by executing the Java `simpapp` sample application. This “simple Java application” is a WLE (Java) client/server application that converts strings to uppercase and lowercase letters.

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

1. Create a directory under `WLEDIR` and copy the content of the `simpapp_java` directory to it. If you installed the WLE (Java) software in the default directory, the `simpapp_java` directory is located at `C:\WLEDIR\Samples\Corba\simpapp_java`.
2. Change (`cd`) to the copy directory.
3. 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 the following:

```
attrib -r *.*
```


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

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

5. To run the simpapp application manually to observe the processes starting and stopping, perform the following steps:

- a. Enter `results\setenv`.
- b. Enter `tmboot -y`. The application starts several processes.
- c. Enter the following:

```
java -DTOBJADDR=%TOBJADDR% SimpleClient
The prompt String? is displayed.
```

- d. Enter a word in lowercase letters. The application converts the word to uppercase letters and then to lowercase letters.
- e. Enter the following:

```
tmshutdown -y
The application shuts down the processes.
```

6. To restore the copy directory to its original state, enter the following:

- a. `results\setenv`
- b. `nmake -f makefile.nt clean`

Running the Java simpapp Sample Application to Verify the Client Only Software Installation

If you have installed the WLE (Java) Client Only software component on your machine, you can verify that the installation has been successful by running the client component of the Java `simpapp` application.

To run the client component of the Java `simpapp` application:

1. Make sure the server component of the `simpapp` application is running by checking the following:
 - ◆ The WLE (Java) Full System software component has been installed on a separate server machine.
 - ◆ The server machine is accessible from the client machine on which you have installed the Client Only software.
 - ◆ The `simpapp` sample application has been built and is running on the server machine, as described in steps 1 through 5d in the section titled “Running the Java `simpapp` Sample Application to Verify the Full System Software Installation” on page 7-10.

2. Copy the file `SimpleClient.jar` from the copy directory on the server machine identified in step 1 above to the client machine.
3. On the client machine, verify that the `CLASSPATH` environment variable specifies both the `SimpleClient.jar` file and the following file:

```
$TUXDIR\udataobj\java\jdk\m3envobj.jar
```

4. On the client machine, open an MS-DOS window and enter the following command:

```
simpapp: java -DTOBJADDR=//server-host:port# SimpleClient
```

In the preceding command line, *server-host* represents the name of the server machine (that is, the machine on which the WLE (Java) Full System software has been installed), and *port#* represents the port number of the IIOP Server Listener/Handler of the server machine.

The prompt `String?` is displayed.

5. Enter a word in lowercase letters. The application converts the word to uppercase letters and then to lowercase letters.

Removing (Uninstalling) the WLE (Java) Software from Your System

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

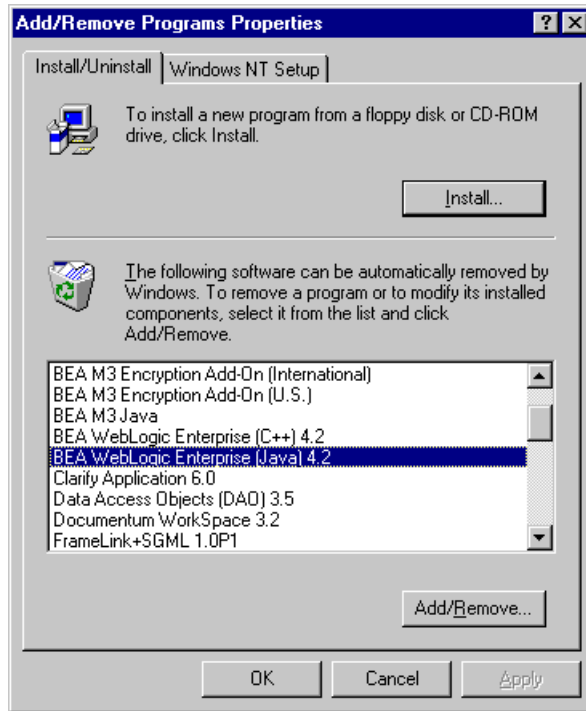
1. Log on to the system as the administrator or as a member of the Administrator group.
2. Make sure that no BEA TUXEDO or WLE client or server applications are running. Use `tmshutdown` to shut down all WLE applications.
3. On the Microsoft Windows NT taskbar, click Start—>Settings—>Control Panel.

The Control Panel is displayed.



4. Double click the Add/Remove Programs icon.

The Add/Remove Programs Properties window is displayed.



5. Click BEA WebLogic Enterprise (Java) 4.2 and click Add/Remove.
6. Click Yes to confirm the removal.

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

8 WLE (Java) Installation on Solaris Systems

This chapter discusses the following topics:

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

Platforms Supported

This release of WLE (Java) is supported on Solaris 2.6 and 7.0.

For the hardware and software requirements for Solaris, see Appendix B, “WLE (Java) Platform Data Sheets.”

Installing the WLE (Java) Software on Solaris Systems

The installation procedure includes the following:

1. Downloading and installing the Java Development Kit (JDK) 1.2.1 software from the Sun Microsystems, Inc. Web site. If you are installing the WLE (Java) Client Only software component, skip this step.
2. Downloading and installing the `idltojava` compiler from the Sun Microsystems, Inc. Web site. If you are installing the WLE (Java) Client Only software component, skip this step.
3. Choosing one of the following two WLE (Java) components to install:
 - ◆ Full System
Installs the complete client and server WLE (Java) software
 - ◆ Client Only
Installs a client-only subset of the WLE (Java) software

For more information about the differences between these two components, see the section titled “WLE (Java) Software Components” on page 6-2.
4. Downloading the Java Runtime Environment (JRE) software from the Sun Microsystems Inc. Web site. You perform this step only if you are installing the Client Only WLE (Java) software component, and you are not downloading the JDK 1.2.1 software.
5. Setting environment variables on your system.
6. Running `simpapp_java` to verify the installation.

The following sections discuss these steps in detail.

Downloading and Installing the JDK 1.2.1 Software

If you are installing the WLE (Java) Full System software component, you need to download and install the Sun Microsystems, Inc. JDK 1.2.1 software to build and run WLE (Java) applications. (If you are installing the Client Only software component, skip this section and go to the section titled “Installing the WLE (Java) Software” on page 8-4.)

To download and install the JDK 1.2.1 software:

1. Open your Web browser and enter the following URL:

`http://www.javasoft.com/products/index.html`

The Sun Microsystems, Inc. Web site specified in the above URL provides links to the JDK 1.2.1 software kit for Solaris systems and also to complete installation instructions.

2. Follow the instructions for installing the JDK 1.2.1 software, which are available at the preceding URL.

Downloading and Installing the idltojava Compiler

If you are installing the WLE (Java) Full System software component, you need to download and install the Sun Microsystems, Inc. `idltojava` compiler to build WLE (Java) client and server applications. (If you are installing the Client Only software component, skip this section and go to the section titled “Installing the WLE (Java) Software” on page 8-4.)

To download and install the `idltojava` compiler:

1. Open your Web browser and enter the following URL:

`http://java.sun.com/marketing/enterprise/jidl.html`

Note: If you are not a member of the Java Developer Connection, you will be prompted to join. There is no fee to join. After you join, you will be allowed to access the Web page.

2. Log on, select the Solaris download format, and download the compiler.

3. When you are prompted for a directory to which to download the compiler, direct the load to the `/bin` directory under `wledir`. For example, if you installed the BEA WLE (C++) software in the `/usr/local/wledir` directory, direct the download to `/usr/local/wledir/bin`. When the download completes, you will have a file named `idltojava-ea-solaris.bin`.
4. To unbundle the compiler, change (`cd`) to the `/usr/local/wledir/bin` directory and enter `idltojava-ea-solaris`. The `idltojava` compiler executable is created.

Installing the WLE (Java) Software

Note: Before beginning the installation, make sure that the BEA WLE (C++) 4.2 Full System software is installed on the machine, and use the `tmshutdown` command to shut down any active WLE or BEA TUXEDO applications.

Note: It takes approximately 5 minutes to install the software on a local disk; installation on a remote disk may take as long as 10 minutes.

To install the WLE (Java) software on a Solaris operating system, use the following procedure:

1. Log on to the system as `root` or as a superuser.
2. To ensure all BEA TUXEDO and BEA WLE applications, servers, and services are shut down, execute the `tmshutdown` command on every running BEA TUXEDO and WLE application.
3. Insert the CD labeled WLE (Java) 4.2 into the reader. Solaris systems automatically mount the CD.

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. Alternatively, you can mount the CD on a remote system, copy the content of the CD directory for your platform to the system in which you plan to install the WLE (Java) software, and continue with the remainder of the installation procedure. Table 8-1 lists the CD directory name.

Table 8-1 WLE (Java) 4.2 Software CD Directory Name for the Solaris Platform

Platform	Directory
Solaris v2.6 on UltraSPARC	sun5x/sol26
Solaris v7.0 on UltraSPARC	sun5x/sol27

4. Change (cd) to the /cdrom/bea#1 directory.

5. To invoke the installation procedure, enter `sh ./install.sh`. The following prompt is displayed:

```
01) SUN5X/SOL26      02) SUN5X/SOL27
Install which platform's files? [01-2, q to quit, l for list]:
```

6. Select the desired operating system. For example, if you select Solaris 2.6, the following information is displayed:

```
** You have chosen to install from sun5x/sol26 **
BEA WebLogic Enterprise (Java) 4.2
This directory contains the BEA WebLogic Enterprise System for
SunOS 5.6 (Solaris 2.6) on SPARC.
Is this correct? [y,n,q]:
```

7. Enter `y`. The following information is displayed:

```
To terminate the installation at any time
press the interrupt key,
typically <del>, <break>, or <ctrl+c>.
The following packages are available:
1      wlejava      BEA WebLogic Enterprise (Java)
Select the package(s) you wish to install (or 'all' to install
all packages) (default: all) [?,??,q]:
```

8. Enter `1`. The following information is displayed:

```
BEA WebLogic Enterprise (Java)
(sparc) Release 4.2
Copyright (c) 1999 BEA Systems, Inc.
All Rights Reserved.
BEA, M3 and WebLogic are trademarks of BEA Systems, Inc.
WebLogic Enterprise (C++) is required to install this Package
```

Location of existing BEA software installation [?,q]:

9. Enter the name of the existing directory. For example, /usr/local/wlmdir. The following information is displayed:

Determining if sufficient space is available ...

17752 blocks are required

1035478 blocks are available to /usr/local/wlmdir

Using /usr/local/wlmdir as the WebLogic Enterprise (Java) base directory

The following installation options are available:

- | | | |
|---|--------|---|
| 1 | both | Install the full system - client and server |
| 2 | client | Install the client only |

Select an option (default: both) [?,??,q]:

10. If you are installing the Client Only component, enter 2. Then skip the remainder of this section and go to the section “Installing the Client Only Component” on page 8-7.
11. If you are installing the Full System component, enter 1. The WLE (Java) Full System software is installed.

After the software installation is completed, the following messages are displayed:

... finished

Changing file permissions...

... finished

Installation of BEA WebLogic Enterprise (Java) was successful

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

12. After the installation is complete, open the CD reader and remove the CD. To open the CD reader, change (cd) to the root directory and enter eject.

Installing the Client Only Component

If you chose to install the Client Only component in step 10 in the preceding section, the WLE (Java) Client Only software is installed.

After the software installation is completed, the following messages are displayed:

```
... finished
```

```
Changing file permissions...  
... finished
```

```
Installation of BEA WebLogic Enterprise (Java) was successful
```

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

After the installation is complete, open the CD reader and remove the CD. To open the CD reader, change (cd) to the root directory and enter eject.

Installing the Java Runtime Environment (JRE)

The Client Only kit requires, as a minimum, the JRE. If you already have the JRE, or the JDK 1.2.1 software, installed on your machine, you can skip this step in the installation procedure.

To download and install the JRE software:

1. Open your Web browser and enter the following URL:

```
http://www.javasoft.com/products/index.html
```

The Sun Microsystems, Inc. Web site specified in the above URL provides links to the JRE software kit for Solaris systems and also to complete installation instructions.

2. Follow the instructions for installing the JRE software, which are also available at the preceding URL.

Setting Environment Variables on Your Solaris System

Before you use the WLE (Java) software, you need to set four environment variables: `JAVA_HOME`, `PATH`, `LD_LIBRARY_PATH`, and `CLASSPATH`.

To set these variables, perform the following procedure:

1. To set the `JAVA_HOME` variable to the directory where you installed JDK 1.2.1, enter:
`JAVA_HOME=/home/<user_name>/jdk1.2.1`
2. To set the `PATH` variable to contain `JAVA_HOME`, enter:
`PATH=$JAVA_HOME/bin:$PATH`
3. To set the `LD_LIBRARY_PATH` variable, enter:
`LD_LIBRARY_PATH=$JAVA_HOME/jre/lib/sparc`
4. To set the `CLASSPATH` variable, enter:
`CLASSPATH=.: $TUXDIR/udataobj/java/jdk/m3.jar:$TUXDIR/locale/java/M3`

Running the Java `simpapp` Sample Application to Verify the Full System Software Installation

If you have installed the WLE (Java) Full System software component, you can verify that the installation has been successful by executing the Java `simpapp` sample application. This “simple Java application” is a WLE (Java) client/server application that converts strings to uppercase and lowercase letters.

To run the `simpapp` application, open a terminal window and perform the following steps:

1. Create a directory under your directory—for example, `/home/<username>/simpapp_java`—and copy the content of the `simpapp_java` directory to it. If you installed the WLE (Java) software in the default directory, the `simpapp_java` directory is located at `usr/local/wledir/samples/corba/simpapp_java`.
2. Change (`cd`) to the copy directory.

3. 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 the following:

```
chmod +w *
```

4. To change the permission of the `runme.ksh` file to give it execute permission, enter the following:

```
chmod +x runme.ksh
```

5. Make sure `make` is in your path.
6. To run the `simpapp` application automatically, use the korn shell (ksh) and enter `./runme.ksh`. The `simpapp_java` application runs and prints the following messages:

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

7. To run the `simpapp` application manually to observe the processes starting and stopping, do the following:
 - a. Enter `KSH`.
 - a. Enter `./results/setenv.ksh`.
 - b. Enter `tmboot -y`. The application starts several processes.
 - c. Enter `java -DTOBJADDR=$TOBJADDR SimpleClient`. The prompt `String?` is displayed.
 - d. Enter a word in lowercase letters. The application converts the word to uppercase letters and then to lowercase letters.
 - e. Enter `tmshutdown -y`. The application shuts down the processes.

8. To restore the directory created in step 1 to its original state, enter:

- a. `./results/setenv.ksh`
- b. `make -f makefile.mk clean`

Running the Java simpapp Sample Application to Verify the Client Only Software Installation

If you have installed the WLE (Java) Client Only software component on your machine, you can verify that the installation has been successful by running the client component of the Java `simpapp` application.

To run the client component of the Java `simpapp` application:

1. Make sure the server component of the `simpapp` application is running by checking the following:
 - ◆ The WLE (Java) Full System software component has been installed on a separate server machine.
 - ◆ The server machine is accessible from the client machine on which you have installed the Client Only software.
 - ◆ The `simpapp` sample application has been built and is running on the server machine, as described in the section “Running the Java `simpapp` Sample Application to Verify the Full System Software Installation” on page 8-8.
2. Copy the file `SimpleClient.jar` from the directory created in step 1 in the section titled “Running the Java `simpapp` Sample Application to Verify the Full System Software Installation” on page 8-8 to the client machine.
3. On the client machine, verify that the `CLASSPATH` environment variable specifies both the `SimpleClient.jar` file and the following file:
`$TUXDIR/udataobj/java/jdk/m3envobj.jar`
4. On the client machine, open a terminal window and enter the following command:

```
simpapp: java -DTOBJADDR=//server-host:port# SimpleClient
```

In the preceding command line, *server-host* represents the name of the server machine (that is, the machine on which the WLE (Java) Full System software has been installed), and *port#* represents the port number of the IIOP Server Listener/Handler of the server machine.

The prompt `String?` is displayed.

5. Enter a word in lowercase letters. The application converts the word to uppercase letters and then to lowercase letters.

Removing (Uninstalling) the WLE (Java) Software from Your System

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

1. Log on to the system as `root` or as a superuser.
2. To ensure that all BEA TUXEDO and WLE applications, servers, and services are shut down, execute the `tmshutdown` command on every running BEA TUXEDO and WLE application.
3. Enter the following command, where `$TUXDIR` is the environment variable that represents the location of the WLE (Java) software:

```
sh $TUXDIR/bin/uninstall.sh
```

The following prompt is displayed:

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

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

4. Press Enter to accept the default location, or enter the location on the system where the WLE (Java) software is installed.

The following prompt is displayed:

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

The following uninstallable BEA software was detected:

```
1      BEA WLE (Java) 4.2
```

Select the item you wish to remove [?,??,q]:

5. Enter 1 to remove the WLE (Java) software.

The following prompt is displayed:

```
"Are you sure you want to delete this software? [y,n,?,q]:"
```

6. Press Enter to continue removing the WLE (Java) software.

The installation procedure displays the names of the files being removed from your system, as in the following example:

```
Deleting: ${TUXDIR}/samples/corba/simpapp_java/makefile.nt...
Deleting: ${TUXDIR}/samples/corba/simpapp_java/runme.cmd...
Deleting: ${TUXDIR}/samples/corba/simpapp_java/runme.ksh...
Deleting: ${TUXDIR}/samples/corba/simpapp_java/smakefile.nt...
Deleting: ${TUXDIR}/udataobj/java/jdbc/jdbcKona.jar...
Deleting: ${TUXDIR}/udataobj/java/jdk/m3.jar...
Deleting: ${TUXDIR}/udataobj/java/jdk/m3envobj.jar...
```

After the removal procedure is completed, the following message is displayed:

```
Uninstall successfully completed.
```


A WLE (C++) Platform Data Sheets

This appendix contains detailed information about the platforms supported by the WLE (C++) version 4.2 software. Each data sheet includes the following platform-specific information:

- ◆ A list of available WLE (C++) packages
- ◆ Hardware, software, network, and disk space requirements
- ◆ Instructions for mounting and unmounting the CD
- ◆ Tuning parameters

Supported Platforms

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

Vendor	Operating System	Release/Version
Compaq	Tru64 UNIX	4.0e (Alpha)
HP	HP-UX	10.20 and 11.00 (32-bit) (HP 9000 Series 800)
IBM	AIX	4.3.2 (RS/6000, SP2)

Vendor	Operating System	Release/Version
Microsoft	Windows NT	4.0 (Intel) plus SP4
	Windows NT	4.0 (DEC Alpha) plus SP4
	Windows 95	Not applicable
	Windows 98	Not applicable
Sequent	Dynix	4.4.2
SGI	IRIX	6.5
Sun Microsystems	Solaris	2.6 and 7.0 (32-bit) (UltraSPARC)

Tru64 UNIX Version 4.0e on DEC Alpha

The following sections list requirements for the Tru64 UNIX platform.

Available BEA WLE (C++) Version 4.2 Packages

- ◆ WLE (C++) Full System (client and server) software
- ◆ WLE (C++) Client Only software
- ◆ BEA Administration Console

Hardware Requirements

- ◆ DEC 2000, 2100, 3000, 4000, 7000, or 10000 series processor
- ◆ 64 MB of RAM
- ◆ Access to a compact disk (CD) reader

Software Requirements

- ◆ Tru64 UNIX 4.0e plus Y2K patches
- ◆ DEC C compiler version 5.8 (This is required for a WLE (C++) development environment only.)
- ◆ DEC C++ compiler version 6.1 (This is required for a WLE (C++) development environment only.)
- ◆ An Internet browser that is Y2K compliant (either Netscape Communicator or Internet Explorer) (The BEA Application Builder online help requires an Internet browser.)
- ◆ Netscape Enterprise Server 3.6
- ◆ Java Development Kit 1.1.6
- ◆ Oracle 7.3.3 for Tru64 UNIX (This is required for WLE (C++) server systems only; it is not required for client-only systems.)
- ◆ Programmer/2000 Pro*C/C++ version 2.2.3.0.0 (When using Oracle database software, this is required to build the University samples.)

Network Requirements

TCP/IP, using the SOCKETS network interface

Disk Space Requirements

Package	Disk Space
WLE (C++) Full System (server and client) software	78, 000 blocks (39 MB)
WLE (C++) Client Only software	27,000 blocks (14 MB)

Mounting and Unmounting the CD

Mounting a CD requires the type `CDFS`. Because `CDFS` is a configurable kernel option, the following line must exist in the system configuration file:

```
options CDFS
```

If the system configuration file does not contain this line, modify the file and then rebuild the kernel.

To mount a CD, enter the following commands:

```
su
mkdir /cdrom
/usr/sbin/mount -r -t cdfs -o noversion /dev/rzunit#c /cdrom
```

where `unit#` is the unit number of your CD drive.

In almost all cases, the unit number of the CD drive on a new system is 4 (that is, `/dev/rz4c`). However, to ensure that you have the correct unit number of the drive, enter the following:

```
su
file /dev/rrz*c
```

The output identifies the CD drive as an RRD disk. The unit number of the drive is in the left column. For example:

```
/dev/rrz4c: character special (8/4098) SCSI #0 RRD43 disk #32 (SCSI
ID #4)
```

To unmount the CD, enter the following command:

```
umount /cdrom
```

where *cdrom* is the mounting point.

Tuning Parameters

You probably need to reconfigure the Tru64 UNIX kernel before running BEA WLE (C++) 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 5-17.

2. Reset the tuning parameters as necessary.

For instructions about reconfiguring, rebuilding, and rebooting, see the following documentation from Compaq Computer Corporation: the `doconfig(8)` man page and the *System Tuning and Performance Management* 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.

Note: The parameters currently set on your system are located in `/sys/conf/<systemname>`. To display the parameters, log in as `root` and enter `/usr/bin/x11/dxkerneltuner` at the command prompt.

Tru64 UNIX Name	Traditional Name	Default Setting	Setting for University Sample Applications
shmmax	SHMMAX	4194304	8388608
shmseg	SHMSEG	32	32
shmmni	SHMMNI	100	128

Tru64 UNIX Name	Traditional Name	Default Setting	Setting for University Sample Applications
semmns	SEMMNS	60	(SEMMNI*2)
semmni	SEMMNI	10	16
semmnl	SEMMNL	25	25
semume	SEMUME	10	10
semopm		10	10
semvmx		32767	32767
semaem		16384	16384
msgmni	MSGMNI	50	84
msgmax	MSGMAX	8192	8192
msgmnb	MSGMNB	16384	16384
msgtql	MSGTQL	40	40
maxusers	maxusers	varies	32
maxproc	NPROC	20+8*maxusers	32-72 per user
maxuprc	MAXUP	64	(NPROC * 9) / 10

To determine the current value of a tunable parameter, examine the kernel configuration file located in the `/sys/conf` directory. This file typically has the same name as the node (machine) name.

To change the value of a tunable parameter, follow the instructions on the `dmconfig` man page.

To specify the value of a parameter that was previously unspecified, add a line such as the following to the kernel configuration file:

```
semmni 256
```

where `semmni` is the name of the parameter and 256 is its value.

HP-UX Version 10.20 and 11.0 (32-bit) on HP 9000 Series 800

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

Available BEA WLE (C++) Version 4.2 Packages

- ◆ WLE (C++) Full System (client and server) software
- ◆ WLE (C++) Client Only software
- ◆ BEA Administration Console

Hardware Requirements

- ◆ HP 9000 series 800
- ◆ 64 MB of RAM
- ◆ Access to a compact disk (CD) reader

Software Requirements

Software Requirements	HP-UX 10.20 ^a Plus Y2K Patches ^b	HP-UX 11.0 (32-bit) Plus Y2K Patches ^c
C compiler ^d	HP C/ANSI compiler HP92453-01 A.10.32.03	HP Native C compiler HP92453-01 A.11.00.00
C++ compiler ^e	HP aC++ compiler B3910BA A.01.07 Programmer/2000 Pro*C/C++ Version 2.2.3.0.0 ^f	HP Native C++ compiler B3910B A.03.04 (970930) Programmer/2000 Pro*C/C++ Version 2.2.3.0.0
Internet browser	A browser that is Y2K compliant (either Netscape Communicator or Internet Explorer) ^g	A browser that is Y2K compliant (either Netscape Communicator or Internet Explorer)
Java and Java Developer's Kit	Netscape Enterprise Server 3.6 and JDK 1.1.6	Netscape Enterprise Server 3.6 and JDK 1.1.6
Database software	Oracle 7.3.3 for HP-UX 10.20	Oracle 8.0.4 for HP-UX 11.0

- a. To run WLE (C++) on HP-UX 10.20, you must install accumulator patch PHCO_14645 and two pre-requisite patches: PHKL_8694 and PHKL_14173. If patch PHKL_14173 is not available, use patch PHKL_15247 instead.
- b. Y2K patch 10205700, Revision B.10.20.B0315 required.
- c. Y2K patch 1100, Revision B11.00.B0315 required.
- d. Required for BEA WLE (C++) development environment only.
- e. Required for BEA WLE (C++) development environment only.
- f. When using Oracle database software, this software is required to build the University sample applications.
- g. The BEA Application Builder online help requires an Internet browser.

Network Requirements

TCP/IP, using the SOCKETS network interface

Disk Space Requirements

Package	HP-UX 10.20 Disk Space	HP-UX 11.0 Disk Space
WLE (C++) Full System (client and server) software	98,000 blocks (49 MB)	98,000 blocks (49 MB)
WLE (C++) Client Only software	36,000 blocks (18 MB)	36,000 blocks (18 MB)

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 (C++) 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 5-17.

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
semms	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

HP-UX Name	Traditional Name	Default Setting	Setting for University Sample Applications
maxfiles	NFILES	60	15 * NPROC + 2048

IBM-AIX Version 4.3.2 on RS/6000 and SP2

The following sections list requirements for the IBM-AIX platform.

Available BEA WLE (C++) Version 4.2 Packages

- ◆ WLE (C++) Full System (client and server) software
- ◆ WLE (C++) Client-Only software
- ◆ BEA Administration Console

Hardware Requirements

- ◆ IBM RS/6000 or SP2
- ◆ 64 MB of RAM
- ◆ Access to a compact disk (CD) reader

Software Requirements

- ◆ AIX Release 4.3.2 plus Y2K patches
- ◆ C Set ++ for AIX Compiler 3.6.4 (This is required for a BEA WLE (C++) development environment only.)

- ◆ An Internet browser that is Y2K compliant (either Netscape Communicator or Internet Explorer) (The BEA Application Builder online help requires an Internet browser.)
- ◆ Netscape Enterprise Server 3.6
- ◆ Java Development Kit 1.1.6
- ◆ Oracle 8.0.4 for AIX (This is required for WLE (C++) server systems only; it is not required for client-only systems.)
- ◆ Programmer/2000 Pro*C/C++ version 2.2.3.0.0 (When using Oracle database software, this is required to build the University samples.)

Network Requirements

TCP/IP, using the SOCKETS network interface

Disk Space Requirements

Package	Disk Space
WLE (C++) Full System (client and server) software	80,000 blocks (40 MB)
WLE (C++) Client Only software	32,000 blocks (16 MB)

Mounting and Unmounting the CD

To mount a CD, examine the file `/etc/filesystems` to determine whether there is a standard place in which to mount a CD. If there is, enter the mount command and specify the directory named in the `/etc/filesystems` entry.

For example, to mount a CD if `/etc/filesystems` contains an entry that specifies `/cd` as the mount point for CDs, enter:

```
su
/etc/mount /cd
```

If `/etc/filesystems` does not contain a CD entry, enter:

```
su
mkdir /cd
/etc/mount -v cdrfs -r cd_device /cd
```

where `cd_device` is the name of the CD device file, typically `/dev/cd0`.

Alternatively, you can use the System Management Interface Tool (SMIT) to perform the mount. To use SMIT, enter:

```
smit mount
```

To unmount the CD, enter the following command:

```
umount /cdrom
```

where `cdrom` is the mounting point.

Tuning Parameters

No IPC configuration is required for AIX Release 4.2.1. To change the value of a kernel tuning parameter (`maxuproc` only), do the following:

1. Acquire superuser privileges.
2. Determine the values of all tuning parameters.
3. Change the parameter's value.
4. Reboot the system.

Microsoft Windows NT Version 4.0 on Intel

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

Available BEA WLE (C++) Version 4.2 Packages

- ◆ WLE (C++) Full System (client and server) software
- ◆ WLE (C++) Client Only software
- ◆ BEA Administration Console

Hardware Requirements

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

Software Requirements

- ◆ Microsoft Windows NT Version 4.0, Service Pack 4
- ◆ Microsoft Visual C++ Version 6.0, Service Pack 2
- ◆ Microsoft Visual Basic Version 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.)
- ◆ An Internet browser that is Y2K compliant (either Netscape Communicator or Internet Explorer) (The BEA Application Builder online help requires an Internet browser.)

- ◆ Netscape Enterprise Server 3.6 (This is required for Java clients only.)
- ◆ Java Development Kit 1.2.1 (This is required for Java clients only.)
- ◆ Oracle 7.3.3.0.0 for Windows NT or Oracle 8.0 for Windows NT (This is required for WLE (C++) server systems only; it is not required for client-only systems.)
- ◆ Programmer/2000 Pro*C/C++ Version 2.2.3.0.0 (When using Oracle database software, this is required to build the University samples.)

Network Requirements

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

Disk Space Requirements

Package	Disk Space
WLE (C++) Full System (client and server) software	46 MB
WLE (C++) Client-Only	35 MB

Tuning Parameters

You may need to reconfigure the parameters shown in Figure 5-4, “WLE Software for Microsoft Windows NT IPC Resources Control Panel,” on page 5-10 before running the WLE (C++) software. For instructions about reconfiguring the parameters, see “Maximizing System Performance” on page 5-9.

Microsoft Windows NT Version 4.0 on DEC Alpha

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

Available BEA WLE (C++) Version 4.2 Packages

- ◆ WLE (C++) Full System (client and server) software
- ◆ WLE (C++) Client Only software
- ◆ BEA Administration Console

Note: The WLE (C++) software that runs on Microsoft Windows NT on DEC Alpha does *not* support ActiveX clients.

Hardware Requirements

- ◆ DECpc LXP150, AlphaServer 1000A
- ◆ 64 MB of RAM
- ◆ Access to a compact disk (CD) reader

Software Requirements

- ◆ Microsoft Windows NT server for Alpha 4.0, Service Pack 4
- ◆ Microsoft Visual C++ Risc Edition Version 6.0 for Alpha, Service Pack 2

- ◆ Oracle 7.3.3.0.0 for Alpha NT or Oracle 8.0.3 Server for Alpha NT (This is required only for WLE (C++) server systems; it is not required for client-only systems.)
- ◆ Programmer/2000 Pro*C/C++ Version 2.2.3.0.0 (When using Oracle database software, this is required to build the University samples.)

Network Requirements

TCP/IP using the SOCKETS network interface

Disk Space Requirements

Package	Disk Space
WLE (C++) Full System (client and server) software	46 MB
WLE (C++) Client Only software	35 MB

Tuning Parameters

You may need to reconfigure the parameters shown in Figure 5-4, “WLE Software for Microsoft Windows NT IPC Resources Control Panel,” on page 5-10 before running the WLE (C++) software. For instructions about reconfiguring the parameters, see “Maximizing System Performance” on page 5-9.

Microsoft Windows 95 and 98

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

Available BEA WLE (C++) Version 4.2 Packages

Only WLE (C++) Client Only software is supported.

Hardware Requirements

- ◆ Pentium processor or better
- ◆ 32 MB of RAM
- ◆ Access to a compact disk (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.

- ◆ DCOM for Windows 95 Version 1.1 (This is required only on systems that are used as ActiveX clients.)

Network Requirements

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

Disk Space Requirements

The client-only software requires 35 MB of disk space.

Sequent DYNIX/ptx v4.4.2 on Sequent i386 Data Sheet

The following sections list requirements for the Sequent DYNIX platform.

Available BEA WLE (C++) Version 4.2 Packages

- ◆ WLE (C++) Full System (client and server) software
- ◆ WLE (C++) Client Only software
- ◆ BEA Administration Console

Hardware Requirements

- ◆ Sequent i386
- ◆ 64 MB of RAM
- ◆ Access to a compact disk (CD) reader

Software Requirements

- ◆ Sequent DYNIX/ptx 4.4.2
- ◆ Native 4.4.2 C Compiler ptx (This is required for the WLE (C++) development environment only.)
- ◆ C++ Compiler 5.0.11 with patches FP#243535.246118 and FP#244647.246118 (This is required for the WLE (C++) development environment only.)
- ◆ An Internet browser that is Y2K compliant (either Netscape Communicator or Internet Explorer) (The BEA Application Builder online help requires an Internet browser.)
- ◆ Netscape Enterprise Server 3.6
- ◆ Java Development Kit 1.1.6
- ◆ Oracle 8.0.4 for Sequent/DYNIX (This is required only for WLE (C++) server systems; it is not required for client-only systems.)
- ◆ Programmer/2000 Pro*C/C++ Version 2.2.3.0.0 (When using Oracle database software, this is required to build the University samples.)

Network Requirements

TCP/IP, using the TLI network interface

Disk Space Requirements

Package	Disk Space
WLE (C++) Full System (client and server) software	101,384 blocks (51 MB)
WLE (C++) Client Only software	36,750 blocks (18 MB)

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 *cd0*.

To unmount the CD, enter the following command:

```
umount /cdrom
```

where *cdrom* is the mounting point.

Tuning Parameters

You probably need to reconfigure the Sequent kernel before running BEA WLE (C++) 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 5-17.

2. Reset the tuning parameters as necessary.

For instructions on reconfiguring, rebuilding, and rebooting, see Chapters 1 and 3 in the *DYNIX/ptx System Configuration and Performance Guide*. You may need to increase the settings for the parameters listed in the following table.

The following table shows the default settings for the parameters. 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>`.

Sequent Name	Traditional Name	Default Setting
SHMMAX	SHMMAX	8388608
SHMSEG	SHMSEG	3500
SHMMNI	SHMMNI	100
SEMMNS	SEMMNS	60
SEMMNI	SEMMNI	10
SEMMSL	SEMMSL	25
SEMAP	SEMAP	10
SEMMNU	SEMMNU	30
SEMUME	SEMUME	10
MSGMNI	MSGMNI	50
MSGMAP	MSGMAP	100
MSGMNB	MSGMNB	8192
MSGSSZ	MSGSEG	16384
MSGTQL	MSGTQL	8
MSGSEG	MSGSEG	40
MAXUSERS	MAXUSERS	1024
PROC_MULT	MAXUSERS	64
NPROC	NPROC	T:8, P:16, C:5 (See Note)
FILE_DIV	N/A	20+PROC_MULT*MAXUSERS
FILE_MULT	N/A	T:5, P:5, C:1 (See Note)

Sequent Name	Traditional Name	Default Setting
NFILE	NFILES	T:8, P:8, C:2 (See Note)
MAXUP	MAXUPRC	FILE_MULT*(NPROC+16+MAXUSERS)/FILE_DIV+320

Note: Letters in the preceding table represent the following environments:

- ◆ T = default in a TIMESHARE environment
- ◆ P = default in a PARALLEL environment
- ◆ C = default in a COMMERCIAL environment

SGI IRIX v6.5 on Silicon Graphics IP27 Data Sheet

The following sections list requirements for the SGI IRIX platform.

Available BEA WLE (C++) Version 4.2 Packages

- ◆ WLE (C++) Full System (client and server) software
- ◆ WLE (C++) Client Only software
- ◆ BEA Administration Console

Hardware Requirements

- ◆ SGI IP27
- ◆ 64 MB of RAM

Software Requirements

- ◆ SGI IRIX 6.5 IP27
- ◆ MIPs pro C/C++ Compilers v7.2.1 with patches SG0002992, SG0003048, SG0003077, SG0003131, and SG0003139 (This is required for the WLE (C++) development environment only.)
- ◆ An Internet browser that is Y2K compliant (either Netscape Communicator or Internet Explorer) (The BEA Application Builder online help requires an Internet browser.)
- ◆ Netscape Enterprise Server 3.6
- ◆ Java Development Kit 1.1.6
- ◆ Oracle 8.0.4 for SGI IRIX (This is required only for WLE (C++) server systems; it is not required for client-only systems.)
- ◆ Programmer/2000 Pro*C/C++ Version 2.2.3.0.0 (When using Oracle database software, this is required to build the University samples.)

Network Requirements

- ◆ TCP/IP, using TLI network interface

Disk Space Requirements

Package	Disk Space
WLE (C++) Full System (client and server) software	157,736 blocks (78 MB)
WLE (C++) Client Only software	75,440 blocks (36 MB)

Tuning Parameters

You probably need to reconfigure the SGI kernel before running BEA WLE (C++) 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 5-17.

2. Reset the tuning parameters as necessary.

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

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

SGI Name	Traditional Name	Default Settings
shmmax	SHMMAX	536870912
shmseg	SHMSEG	100
shmmni	SHMMNI	100
semmns	SEMMNS	60
semmni	SEMMNI	10

SGI Name	Traditional Name	Default Settings
semmap	SEMMA	
semmnu	SEMMNU	30
semume	SEMUME	10
msgmni	MSGMNI	50
msgmap	MSGMAP	
msgmax	MSGMAX	32768
msgmnb	MSGMNB	32768
msgssz	MSGSSZ	8
msgtql	MSGTQL	40
msgseg	MSGSEG	1536
maxusers	MAXUSERS	
nproc	NPROC	30+KB(mem)/240
maxuprc	MAXUPRC	150
maxfiles	NFILES	

Solaris Version 2.6 and 7.0 (32-Bit) UltraSPARC

The following sections list requirements for the Solaris platform.

Available BEA WLE (C++) Version 4.2 Packages

- ◆ WLE (C++) Full System (client and server) software
- ◆ WLE (C++) Client Only software
- ◆ BEA Administration Console

Hardware Requirements

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

Software Requirements

- ◆ Sun SparcWorks Compiler 4.2 (This is required for the WLE (C++) development environment only.)
- ◆ An Internet browser that is Y2K compliant (either Netscape Communicator or Internet Explorer) (The BEA Application Builder online help requires an Internet browser.)
- ◆ Netscape Enterprise Server 3.6
- ◆ Java Development Kit 1.2.1

- ◆ Oracle 7.3.4.0.1 Enterprise Edition for SUN Sparc v2.6 (This is required only for WLE (C++) client systems; it is not required for server-only systems.)
- ◆ Oracle 7.4.3 for SUN Sparc v7.0 (This is required only for WLE (C++) server systems; it is not required for client-only systems.)
- ◆ Programmer/2000 Pro*C/C++ Version 2.2.3.0.0 (When using Oracle database software, this is required to build the University samples.)

Network Requirements

TCP/IP, using the TLI network interface

Disk Space Requirements

Package	Disk Space
WLE (C++) Full System (client and server) software	94,000 blocks (47 MB)
WLE (C++) Client Only software	36,000 blocks (18 MB)

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 (C++) 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 5-17.

2. Reset the tuning parameters as necessary.

Information regarding kernel configuration is provided in the Solaris `sysune(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
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

Solaris Name	Traditional Name	Default Setting	Setting for University Sample Applications
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

B WLE (Java) Platform Data Sheets

This appendix contains detailed information about the platforms supported by the WLE (Java) software. Each data sheet includes the platform-specific information including hardware, software, network, and disk space requirements

Supported Platforms

Table B-1 lists the supported platforms. Data sheets are provided for each platform.

Table B-1 Supported Platforms

Vendor	Operating System	Release/Version
Microsoft	Windows NT	4.0 (Intel) plus SP4
Sun Microsystems	Solaris	2.6 and 7.0 (32-bit) (UltraSPARC)

Microsoft Windows NT Version 4.0 on Intel

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

Hardware Requirements

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

Software Requirements

Before you install the WLE (Java) 4.2 software, you must install the BEA WLE (C++) 4.2 Full System (client and server) software. For software requirements of the WLE (C++) software, refer to “Software Requirements” on page A-14.

In addition to the software required by the WLE (C++) software, the following software is required by the WLE (Java) software:

- ◆ Java Development Kit 1.2.1
- ◆ Sun Microsystems, Inc. `idltojava` compiler
- ◆ Netscape Enterprise Server 3.6 (This is required only to use Visigenic software to develop Java clients.)
- ◆ Microsoft SQL Srvr 6.5 (This is required for WLE (Java) server systems only; it is not required for client-only systems.)

Network Requirements

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

Disk Space Requirements

The WLE (Java) 4.2 software kit is 5 MB.

Solaris Version 2.6 and 7.0 UltraSPARC

The following sections list requirements for the Solaris platform.

Hardware Requirements

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

Software Requirements

Before you install the WLE (Java) software, you must install the WLE (C++) 4.2 Full System (client and server) software. For software requirements of the WLE (C++) software, refer to “Software Requirements” on page A-14.

In addition to the software required by the WLE (C++) Full System software, the following software is required by the WLE (Java) software:

- ◆ Java Development Kit 1.2.1
- ◆ Sun Microsystems, Inc. `idltojava` compiler
- ◆ Netscape Enterprise Server 3.6 (This is required only to use Visigenic software to develop Java clients.)

Network Requirements

TCP/IP, using the TLI network interface

Disk Space Requirements

The WLE (Java) 4.2 software kit is 5 MB.

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