



THE ENTERPRISE MIDDLEWARE SOLUTION

BEA eLink Adapter for R/3 Installation and Configuration Guide

BEA eLink Adapter for R/3, Version 1.4
Document Edition 1.1.3
August 1999

Copyright

Copyright © 1998, 1999 BEA Systems, Inc. All Rights Reserved.

Restricted Rights Legend

This software and documentation is subject to and made available only pursuant to the terms of the BEA Systems License Agreement and may be used or copied only in accordance with the terms of that agreement. It is against the law to copy the software except as specifically allowed in the agreement. This document may not, in whole or in part, be copied photocopied, reproduced, translated, or reduced to any electronic medium or machine readable form without prior consent, in writing, from BEA Systems, Inc.

Use, duplication or disclosure by the U.S. Government is subject to restrictions set forth in the BEA Systems License Agreement and in subparagraph (c)(1) of the Commercial Computer Software-Restricted Rights Clause at FAR 52.227-19; subparagraph (c)(1)(ii) of the Rights in Technical Data and Computer Software clause at DFARS 252.227-7013, subparagraph (d) of the Commercial Computer Software--Licensing clause at NASA FAR supplement 16-52.227-86; or their equivalent.

Information in this document is subject to change without notice and does not represent a commitment on the part of BEA Systems. THE SOFTWARE AND DOCUMENTATION ARE PROVIDED "AS IS" WITHOUT WARRANTY OF ANY KIND INCLUDING WITHOUT LIMITATION, ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. FURTHER, BEA Systems DOES NOT WARRANT, GUARANTEE, OR MAKE ANY REPRESENTATIONS REGARDING THE USE, OR THE RESULTS OF THE USE, OF THE SOFTWARE OR WRITTEN MATERIAL IN TERMS OF CORRECTNESS, ACCURACY, RELIABILITY, OR OTHERWISE.

Trademarks or Service Marks

BEA, ObjectBroker, TOP END, and TUXEDO are registered trademarks of BEA Systems, Inc. BEA Builder, BEA Connect, BEA Manager, BEA MessageQ, Jolt and M3 are trademarks of BEA Systems, Inc.

eSolutionsTM and eLinkTM are trademarks.

All other company names may be trademarks of the respective companies with which they are associated.

BEA eLink Adapter for R/3 Installation and Configuration Guide

| Document Edition | Part Number | Date | Software Version |
|------------------|----------------|-------------|--------------------------------|
| 1.1.3 | 870-001003-001 | August 1999 | BEA eLink Adapter for R/3 v1.4 |

Contents

About this Document

| | |
|--|------|
| Purpose of This Document | vii |
| Who Should Read This Document | vii |
| Prerequisite Knowledge | viii |
| How This Document Is Organized | viii |
| How to Use This Document | ix |
| Opening the Document in a Web Browser | ix |
| Printing from a Web Browser | ix |
| Documentation Conventions | x |
| Related Documentation | xi |
| BEA eLink Adapter for R/3 Documentation..... | xii |
| BEA Publications | xii |
| Other Publications..... | xii |
| Contact Information..... | xiii |
| Documentation Support | xiii |
| Customer Support | xiii |

1. Pre-Installation Tasks

| | |
|---|-----|
| System Requirements | 1-1 |
| Determining the Installation Node | 1-2 |
| TUXEDO Requirements | 1-3 |

2. Installing BEA eLink Adapter for R/3

| | |
|-----------------------------------|-----|
| Installing on a UNIX System | 2-1 |
| Creating the conr3 User | 2-2 |
| Logging In as con3..... | 2-2 |
| Running install.sh..... | 2-2 |

| | |
|--|-----|
| Installing on a Windows NT System | 2-6 |
| 3. Configuring TUXEDO | |
| TUXEDO Initialization File | 3-1 |
| Creating Queues for ALE | 3-2 |
| 4. Configuring RFC Integration | |
| Configuring the RFC Inbound Server | 4-2 |
| Configuring the Inbound Connection for RFC Inbound | 4-2 |
| Configuring the UBB File for RFC Inbound | 4-2 |
| Defining the Server Group | 4-2 |
| Defining the RFC Inbound Server | 4-3 |
| Defining the RFC Inbound Service..... | 4-3 |
| Setting Environment Variables for RFC Inbound | 4-4 |
| Environment Variables..... | 4-4 |
| Sample Environment File (cr3rfcin.env)..... | 4-6 |
| Specifying the Adapter Label..... | 4-7 |
| Setting Up the Inbound Connection to R/3 | 4-7 |
| Exiting if the Connection is Lost | 4-8 |
| Specifying the Initial Size of the Response Buffer | 4-8 |
| Configuring RFCs | 4-8 |
| Configuring Trace Output to the RFC Inbound Log | 4-9 |
| 5. Configuring ALE Integration | |
| Configuring the ALE Inbound Server | 5-2 |
| Configuring the UBB File for ALE Inbound | 5-2 |
| Defining the Server Group | 5-2 |
| Defining the ALE Inbound Server and Environment File | 5-3 |
| Defining ALE Inbound Services | 5-3 |
| Setting Environment Variables for ALE Inbound | 5-4 |
| Environment Variables for ALE Inbound | 5-4 |
| Sample Environment File for ALE Inbound (cr3alein.env)..... | 5-6 |
| Setting Up the Inbound Connection to R/3 | 5-6 |
| Configuring Queues for ALE Inbound..... | 5-6 |
| Specifying the TID File for ALE Inbound | 5-7 |
| Splitting Inbound IDOC Packets Containing Multiple IDOCs | 5-7 |

| | |
|---|------|
| Configuring Logging for ALE Inbound | 5-7 |
| Configuring Load Balancing for Inbound IDOCs | 5-8 |
| Configuring the ALE Outbound Client | 5-9 |
| Starting the ALE Outbound Client | 5-9 |
| Using the Startup Script for ALE Outbound | 5-9 |
| Command Line Options for ALE Outbound | 5-10 |
| Setting Environment Variables for ALE Outbound | 5-11 |
| Sample Startup Script for ALE Outbound (cr3aleout.bat) | 5-12 |
| Configuring Queues for ALE Outbound | 5-13 |
| Setting the Default Data-Dependent Routing Value | 5-13 |
| Configuring a Destination Map File | 5-14 |
| Splitting Outbound IDOC Packets | 5-16 |
| Specifying the TID File for ALE Outbound | 5-17 |
| Configuring Logging for ALE Outbound | 5-17 |
| Configuring Load Balancing | 5-18 |
| Configuring Multiple Program IDs | 5-18 |
| Configuring Queues | 5-20 |
| About TUXEDO Queues | 5-20 |
| Setting Up Queues for Inbound IDOCs | 5-20 |
| Defining the TMQUEUE and TMQFORWARD Servers in the UBB File | 5-21 |
| Setting Environment Variables | 5-21 |
| Setting Up Queues for Outbound IDOCs | 5-22 |
| Configuring the TID File Manager | 5-22 |
| Command Line Options | 5-23 |
| Running the TID File Manager | 5-23 |
| How the TID File Manager Works | 5-24 |

6. Configuring R/3 Connections

| | |
|--|-----|
| Configuring Inbound Connections | 6-1 |
| Setting Environment Variables for the Inbound Connection | 6-2 |
| Configuring the sideinfo File | 6-3 |
| Contents of the sideinfo File | 6-3 |
| Sample Settings | 6-4 |
| Specifying the Location of the sideinfo File | 6-5 |

| | |
|--|-----|
| Configuring Outbound Connections | 6-5 |
| Troubleshooting Connection Problems | 6-6 |
| 7. Managing Your Installation | |
| Managing ALE Inbound and RFC Inbound | 7-1 |
| Managing ALE Outbound | 7-1 |
| A. Sample cr3.ubb File | |
| UNIX | A-2 |
| Windows NT..... | A-3 |
| Index | |

About this Document

This Preface includes the following sections:

- Purpose of This Document
- How to Use This Document
- Related Documentation
- Contact Information

Purpose of This Document

This document provides instructions for installing and configuring the BEA eLink Adapter for R/3 product on a UNIX or Windows NT system.

Who Should Read This Document

This document is intended for system managers who are responsible for installing products in the UNIX or Windows NT environments and for configuring layered products. Portions of this guide are intended for experienced R/3 users with knowledge of ALE and RFC configuration.

Prerequisite Knowledge

To use and understand this guide, you must have experience in:

- For UNIX installations, UNIX system management and UNIX scripting in one or more shells, particularly the C Shell (csh).
- For Windows NT installations, Windows NT system management.
- BEA TUXEDO system management.
- Configuring ALE and RFC within R/3.

How This Document Is Organized

The BEA eLink Adapter for R/3 Installation and Configuration Guide is organized as follows:

- Chapter 1, “Pre-Installation Tasks,” describes system requirements and information that you need to review before installing BEA eLink Adapter for R/3.
- Chapter 2, “Installing BEA eLink Adapter for R/3,” provides instructions for installing BEA eLink Adapter for R/3 on UNIX and Windows NT systems.
- Chapter 3, “Configuring TUXEDO,” describes how to configure TUXEDO to enable integration with BEA eLink Adapter for R/3.
- Chapter 4, “Configuring RFC Integration,” describes how to configure BEA eLink Adapter for R/3 to enable access to Remote Function Calls (RFCs) on your SAP R/3 system. You complete these tasks only if TUXEDO applications will use the RFC Inbound feature of BEA eLink Adapter for R/3.
- Chapter 5, “Configuring ALE Integration,” describes how to configure BEA eLink Adapter for R/3 to enable access to Application Linking and Embedding (ALE) on your SAP R/3 system. You complete these tasks only if TUXEDO applications will manage SAP Intermediate Documents (IDOCs) using the ALE Inbound or ALE Outbound features of BEA eLink Adapter for R/3.
- Chapter 6, “Configuring R/3 Connections,” describes how to configure the inbound and outbound connections to your SAP R/3 system.

-
- Chapter 7, “Managing Your Installation,” describes ongoing maintenance tasks for your BEA eLink Adapter for R/3 installation.
 - Appendix A, “Sample cr3.ubb File,” describes the sample cr3.ubb file that accompanies BEA eLink Adapter for R/3.

How to Use This Document

This document, the BEA eLink Adapter for R/3 Installation and Configuration Guide, is designed primarily as an online, hypertext document. If you are reading this as a paper publication, note that to get full use from this document you should install and access it as an online document via a Web browser.

The following sections explain how to view this document online, and how to print a copy of this document.

Opening the Document in a Web Browser

To access the online version of this document, open the following HTML file in a Web browser:

`<your eLink app directory>/docs/index.htm`

Note: The online documentation requires a Web browser that supports HTML version 3.0. Netscape Navigator version 2.02 or Microsoft Internet Explorer version 3.0 or later are recommended.

Printing from a Web Browser

You can print a copy of this document, one file at a time, from the Web browser. Before you print, make sure that the chapter or appendix you want is displayed and *selected* in your browser. (To select a chapter or appendix, click anywhere inside the chapter or appendix you want to print. If your browser offers a Print Preview feature, you can use the feature to verify which chapter or appendix you are about to print.)

The BEA eLink Adapter for R/3 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.

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 | <p>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.</p> <p><i>Examples:</i></p> <pre>#include <iostream.h> void main () the pointer psz chmod u+w * \tux\data\ap .doc tux.doc BITMAP float</pre> |
| monospace boldface text | <p>Identifies significant words in code.</p> <p><i>Example:</i></p> <pre>void commit ()</pre> |
| <i>monospace italic text</i> | <p>Identifies variables in code.</p> <p><i>Example:</i></p> <pre>String <i>expr</i></pre> |

| 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> buildobjclient [-v] [-o name] [-f file-list]... [-l file-list]... |
| | Separates mutually exclusive choices in a syntax line. The symbol itself should never be typed. |
| ... | 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> buildobjclient [-v] [-o name] [-f file-list]... [-l file-list]... |
| | Indicates the omission of items from a code example or from a syntax line. The vertical ellipsis itself should never be typed. |

Related Documentation

The following sections list the documentation provided with the BEA eLink Adapter for R/3 software as well as other publications related to SAP's R/3 technology.

BEA eLink Adapter for R/3 Documentation

The BEA eLink Adapter for R/3 information set consists of the following documents:

- BEA eLink Adapter for R/3 *Installation and Configuration Guide*
- BEA eLink Adapter for R/3 *User Guide*

Note: The BEA eLink Adapter for R/3 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

The following TUXEDO-related BEA publications are also available:

- BEA TUXEDO Administrator's Guide
- *BEA TUXEDO Installation and Configuration Guide* for UNIX
- *BEA TUXEDO Programmer's Guide*
- *FML Programmer's Guide*
- /Q Guide

Other Publications

For more information about SAP R/3 technology, refer to the following SAP publications. R/3 documentation is provided typically on-line or on CD-ROM. The following headings, based on the SAP R/3 CD-ROM for Version 3.1H of R/3, are applicable:

- Application Link Enabling (ALE)
- Remote Communications

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** or by telephone at **+1.408.542.4193**. (For information about how to contact Customer Support, refer to the following section.)

Customer Support

If you have any questions about this version of BEA eLink Adapter for R/3, or if you have problems installing and running BEA eLink Adapter for R/3, 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



1 Pre-Installation Tasks

This chapter describes important information that you need to review before installing BEA eLink Adapter for R/3. It includes the following sections:

- System Requirements
- Determining the Installation Node
- TUXEDO Requirements

System Requirements

This document is validated for the following versions of the layered products:

Table 1-1 Supported Platforms

| Product | Version(s) |
|------------|----------------------|
| SAP R/3 | 3.1H |
| TUXEDO | 6.4 |
| HP-UX | 10.20, 11.00 |
| Solaris | 2.5, 2.6 |
| AIX | 4.1.4, 4.2.1, 4.3 |
| Windows NT | 4.0 (Service Pack 3) |

Determining the Installation Node

In general, you should install BEA eLink Adapter for R/3 on a node running an R/3 application server:

- **Single Node.** If the R/3 environment is a single node configuration, then you should install BEA eLink Adapter for R/3 on that node.
- **Multiple Nodes.** If the R/3 environment is a multiple node configuration, then you should install BEA eLink Adapter for R/3 on one or more of the application servers. BEA eLink Adapter for R/3 must *not* be installed on the database server.

BEA eLink Adapter for R/3 interacts with R/3 using the SAP RFC library. The RFC library uses IP sockets to communicate with the R/3 application servers. Installing BEA eLink Adapter for R/3 on an R/3 application server node minimizes the risk of failure in this IP socket connection. If BEA eLink Adapter for R/3 is installed on a R/3 application server node, it is recommended that no other TUXEDO applications run on that same node in order to reduce the workload on the node.

However, BEA eLink Adapter for R/3 can be installed on a node other than a R/3 application server. In this situation, the IP socket connection will transparently go across the network to the R/3 application server.

TUXEDO Requirements

BEA eLink Adapter for R/3 requires that you properly install and configure TUXEDO:

- **Installation Node.** TUXEDO must be installed on the node running BEA eLink Adapter for R/3. For installation instructions, see the *BEA TUXEDO Administrator's Guide* for your platform.
- **TUXEDO Configuration.** After you install BEA eLink Adapter for R/3, you must configure TUXEDO according to the instructions described in Chapter 3, “Configuring TUXEDO.” BEA eLink Adapter for R/3 provides a semi-configured TUXEDO initialization file, which requires only minimal configuration for the TUXEDO environment.

2 Installing BEA eLink Adapter for R/3

This chapter describes how to install BEA eLink Adapter for R/3 on UNIX and Windows NT systems. It covers the following topics:

- Installing on a UNIX System
- Installing on a Windows NT System

Installing on a UNIX System

This section describes how to install BEA eLink Adapter for R/3 on UNIX systems. It covers the following topics:

- Creating the conr3 User
- Logging In as con3
- Running install.sh

Creating the conr3 User

A UNIX user with non-administrative privileges should be created on the R/3 application server to provide a context in which to run both TUXEDO and BEA eLink Adapter for R/3. This user should be used to run TUXEDO and BEA eLink Adapter for R/3 *only* so that processes associated with TUXEDO and BEA eLink Adapter for R/3 can be identified easily.

BEA suggests that you use `conr3` for the user name. This document will refer to this UNIX user as `conr3`. If your organization uses a different user name, then substitute your user name whenever you encounter a reference to `conr3` in this document.

Note: BEA strongly recommends that you do *not* use the UNIX R/3 administration user (`nnnadm`, where *nnn* represents the R/3 system identifier) to run TUXEDO and BEA eLink Adapter for R/3.

Logging In as con3

After creating the `conr3` user name, log in as that user.

Running install.sh

Run the `install.sh` script to install the BEA eLink Adapter for R3 as follows:

1. Insert the CD-ROM in the CD-ROM drive.

If your system is not already configured to access data from a CD-ROM directory, you will need to create a mount directory (for example, `mkdir /cdrom`) and mount the CD-ROM device (with the `mount` command).

Change directories to your CD-ROM directory, for example:

```
cd /cdrom
```

2. Type `ls` to view the contents of the CD.

The CD should contain the following files and directories:

```
HPUX/    IBM/    install.sh  readme.txt  SUN5X/    WINNT/
```

3. Start the installation by typing the following at the command line prompt:

```
sh ./install.sh
```

Press **Enter**.

This invokes the installation script.

The UNIX system installation script provides a set of step-by-step instructions to help you quickly install the BEA eLink Adapter for R3. This script lets you specify your platform, operating system, and the directory where you want to install. The installation script prompts you through the entire installation process. You can cancel the installation at any time by pressing CTRL-C simultaneously.

4. Type the number that corresponds to the name of the operating system you are using (for example, if using HP/UX1020, type 1).

```
01) HP/HPUX1020      02) HP/HPUX1100      03) IBM/AIX414
04) IBM/AIX421       05) IBM/AIX43       06) SUN5X/SOL251
07) SUN5X/SOL26
```

```
Install which platform's files? [01-7, q to quit, l for list]: 1
```

Press **Enter**.

5. You are prompted to confirm your choice. If correct, type *y* for “yes,” or *n* for “no” or *q* to “quit.” Press **Enter**.

```
** You have chosen to install from HP/HPUX1020 **
```

```
BEA eLink Adapter for R/3 Release 1.4
```

```
This directory contains the BEA eLink Adapter for R/3 for
HP-UX 10.20 on 9000/800 series.
```

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

6. The script indicates which packages are available for the chosen operating system. Indicate which package to install and press **Enter**.

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

```
1  eLinkR3  BEA eLink Adapter for R/3
```

```
Select the package(s) you wish to install (or 'all' to install
all packages) (default: all) [?,?,q]: 1
```

The following copyright information is displayed about the product you are about to install:

BEA eLink Adapter for R/3 Release BEA eLink Adapter for R/3
Release 1.4

Copyright (c) 1999 BEA Systems, Inc.

All Rights Reserved.

Distributed under license by BEA Systems, Inc.

BEA and eLink are trademarks of BEA Systems, Inc.

7. You are prompted for the directory location where you want to install the product. Type the install directory and press **Enter**.

Note: It is recommended that you install BEA eLink Adapter for R3 under a directory named eLink. The host machine where you install and the prefix path to the eLink directory is up to you. For this example, we install on /usr/eLink/.

Directory where eLink files are to be installed [?,q]: **/usr/eLink**

8. Watch the screen messages to verify that the installation is successful. The messages will be similar to the following.

Creating /usr/eLink

Using /usr/eLink as the eLink base directory

Creating /usr/eLink/adapters

Creating /usr/eLink/adapters/sapr3

Determining if sufficient space is available ...

3180 blocks are required

8201216 blocks are available to /usr/eLink/adapters/sapr3

Using /usr/eLink/adapters/sapr3

as the eLink Adapter for R/3 install directory

Unloading /usr/cd/HP/HPUX1020/ELINKR3/ELINKR3.Z ...

bin/cr3alein

bin/cr3aleout

bin/cr3rfcin

bin/cr3tidmanager

config/cr3_queues.sh

config/cr3_tlog.sh

```

config/cr3aleout.sh
config/setenv.sh
config/cr3alein.env
config/cr3rfcin.env
config/cr3.ubb
config/cr3.fml
config/sideinfo
3180 blocks
... finished

```

Installation of BEA eLink Adapter for R/3 was successful

The following packages are available:

```
1  eLinkR3  BEA eLink Adapter for R/3
```

9. When the installation completes successfully, exit the install script. (Or proceed with another installation, as appropriate.)

```

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

```

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

Table 2-1 describes the files and directories that are installed for BEA eLink Adapter for R3 on a UNIX system.

Table 2-1 Directory Structure of BEA eLink Adapter for R/3 on a UNIX System

| File or Directory Name | Description |
|------------------------|----------------------------------|
| eLink/bin/ | Directory containing executables |
| eLink/bin/cr3alein | ALE Inbound executable |
| eLink/bin/cr3aleout | ALE Outbound executable |
| eLink/bin/cr3rfcin | RFC Inbound executable |

Table 2-1 Directory Structure of BEA eLink Adapter for R/3 on a UNIX System

| File or Directory Name | Description |
|----------------------------|---|
| eLink/bin/cr3tidmanager | TID manager executable |
| eLink/config | Directory containing configuration files. |
| eLink/config/cr3_queues.sh | Semi-configured startup script for queues |
| eLink/config/cr3_tlog.sh | Semi-configured startup script for log files |
| eLink/config/setenv.sh | Semi-configured setup file for generic eLink for R3 environment variables |
| eLink/config/cr3aleout.sh | Semi-configured startup script for ALE Outbound |
| eLink/config/cr3alein.env | Environment file for ALE Inbound |
| eLink/config/cr3rfcin.env | Environment file for RFC Inbound |
| eLink/config/cr3.ubb | TUXEDO UBB configuration file |
| eLink/config/cr3.fml | CR3 FML field table |
| eLink/config/sideinfo | Example R/3 sideinfo file |

Installing on a Windows NT System

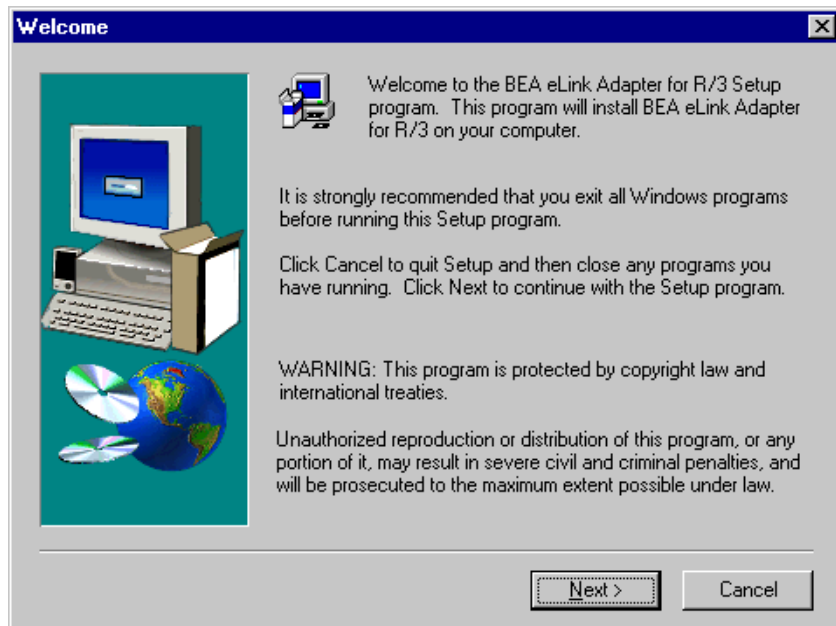
The BEA eLink Adapter for R3 product install program for the Windows NT platform is located in the winnt\setup.exe file on the CD-ROM.

To install the product, insert the CD into the CD-ROM drive and double click on the winnt\setup.exe file to launch the installation wizard.

When the installation program launches, follow the prompts shown in the windows as described.

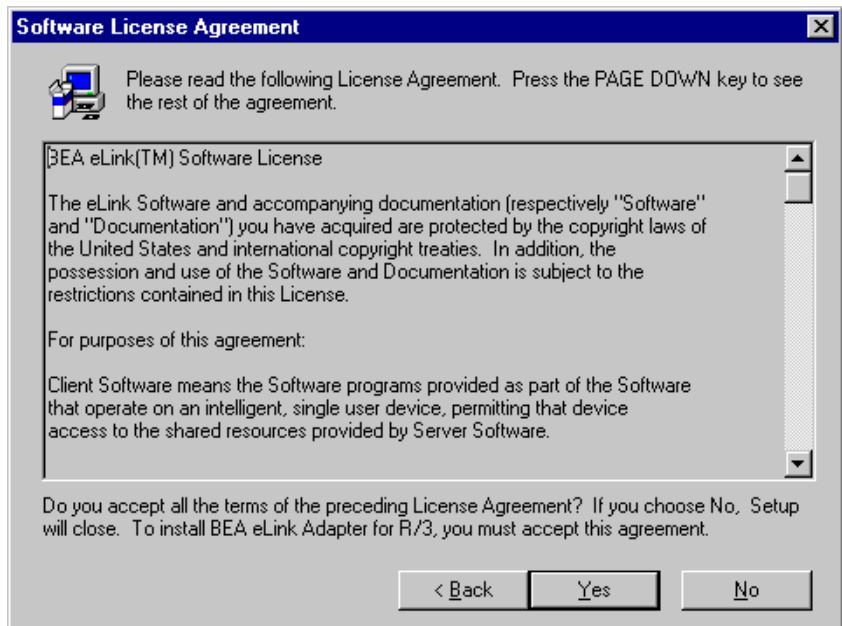
1. The Welcome window describes the product you are about to install. Click **Next** to continue (or click **No** to cancel the installation process).

Figure 2-1 Welcome to BEA eLink Adapter for R3 Setup Program



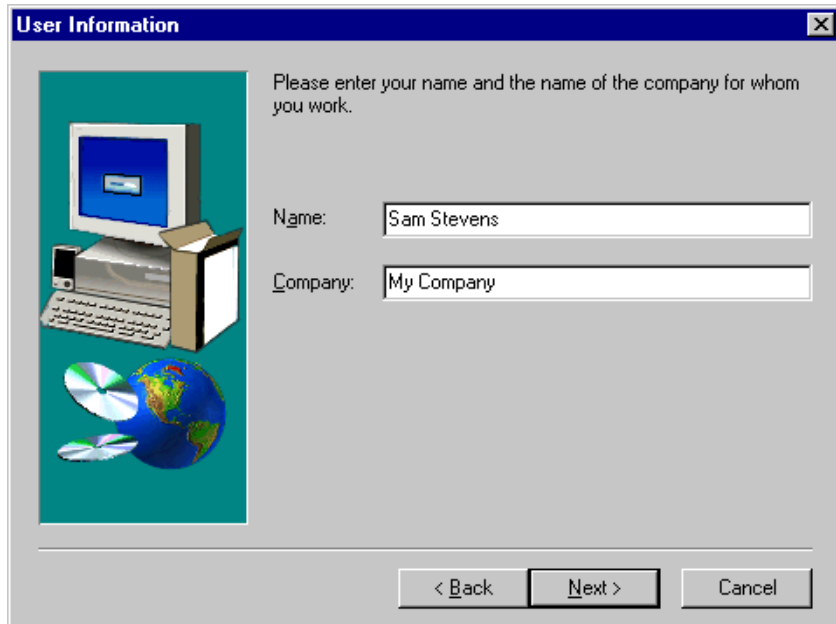
2. In order to proceed with the installation, you must accept the license agreement. Click **Yes** to accept (or click **No** to cancel the installation process).

Figure 2-2 License Agreement



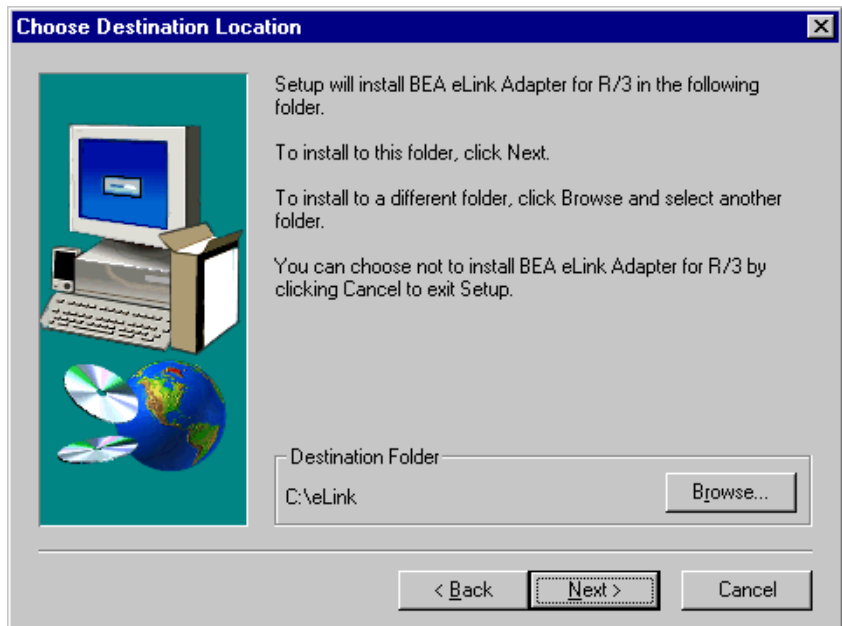
3. After you accept the license agreement, the User Information window is displayed. Provide the requested information, and click **Next** to continue (or **Back** to return to a previous window).

Figure 2-3 Provide User Information



4. The path shown for the “Destination Folder” on the Choose Destination Location window is the location where the BEA eLink product(s) will be installed. The default Destination Folder is *YourDrive:\eLink* as shown in Figure 2-4. To accept the default, click **Next** to continue. Otherwise, use the file browser to choose a different destination folder as explained below.

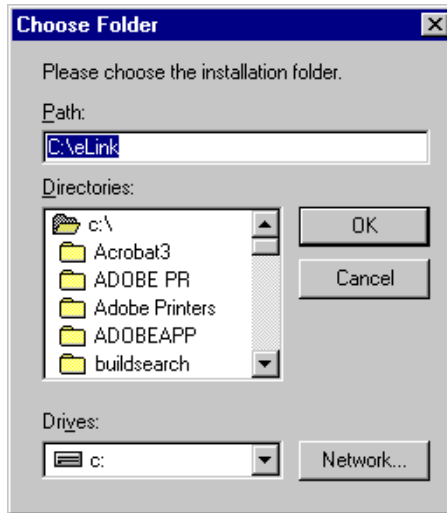
Figure 2-4 Choose Directory Location for Product Installation



If you want to install the BEA eLink product in a folder other than the default, click on the **Browse** button to get the file browser. Use the file browser to locate the directory in which you want to install the BEA eLink product and click **OK** to specify this new path name as the Destination Folder.

Note: It is recommended that you install BEA eLink Adapter for R3 under a directory named eLink. The host machine where you install and the prefix path to the eLink directory is up to you. For this example, we install on C:\eLink\.

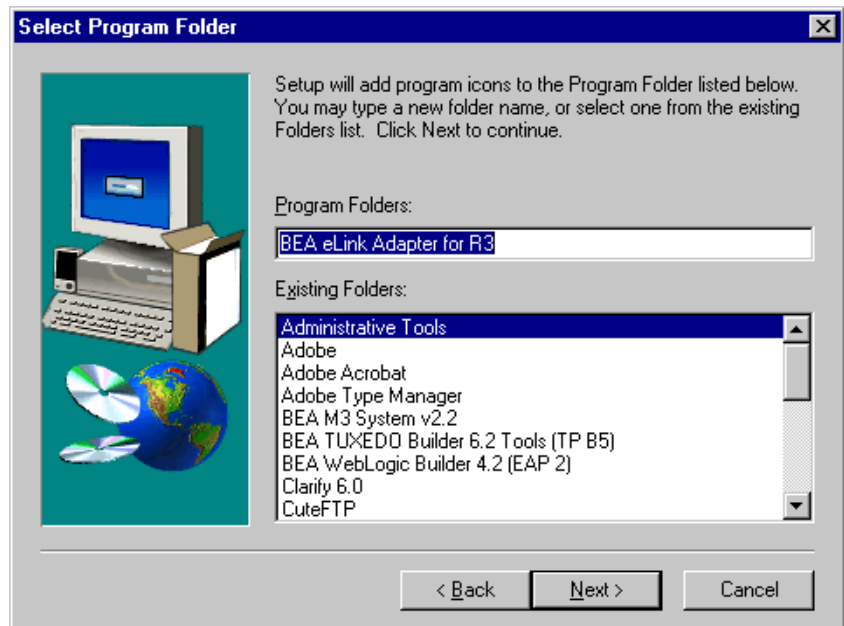
Figure 2-5 File Browser for Choosing an Install Location



If you do change the Destination Folder to something other than the default, you should now see the new path name reflected on the Choose Destination Location window.

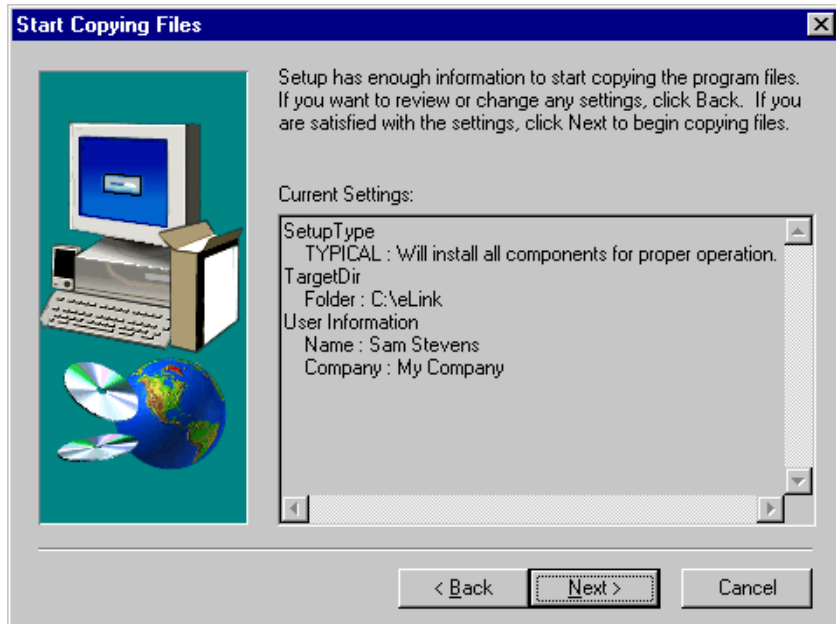
5. Select the program folder where you want to store the startup icon for the BEA eLink Adapter for R3 product. The default folder is already chosen for you. If you wish to choose a different folder, do so. Click **Next** to continue (or **Back** to return to a previous window).

Figure 2-6 Select a Program Folder



6. If you are satisfied with the current settings, click **Next** to proceed with the installation. (Otherwise, click **Back** to return to a previous window.)

Figure 2-7 Current Settings



7. When all files have been successfully copied to the destination folders, the Setup Complete window is displayed. Click **Finish** to exit the installation.

Figure 2-8 Setup Complete



Table 2-2 describes the files and folders that are installed for BEA eLink Adapter for R3 on a Windows NT system.

Table 2-2 Directory Structure of BEA eLink Adapter for R/3 on Windows NT

| File or Folder Name | Description |
|-----------------------------|---|
| eLink\bin\ | Directory containing executables |
| eLink\bin\cr3alein.exe | ALE Inbound executable |
| eLink\bin\cr3aleout.exe | ALE Outbound executable |
| eLink\bin\cr3rfcin.env | Environment file for RFC Inbound |
| eLink\bin\cr3tidmanager.exe | TID manager executable |
| eLink\bin\librfc.dll | R/3 RFC Dynamic Link Library |
| eLink\config | Directory containing configuration files. |
| eLink\config\cr3_queues.nt | Semi-configured startup script for queues |

Table 2-2 Directory Structure of BEA eLink Adapter for R/3 on Windows NT

| File or Folder Name | Description |
|----------------------------|---|
| eLink\config\cr3_tlog.bat | Semi-configured startup script for log files |
| eLink\config\setenv.bat | Semi-configured setup file for generic eLink for R3 environment variables |
| eLink\config\cr3aleout.bat | Semi-configured startup script for ALE Outbound |
| eLink\config\cr3alein.env | Environment file for ALE Inbound |
| eLink\config\cr3rfcin.exe | RFC Inbound executable |
| eLink\config\cr3.ubb | TUXEDO UBB configuration file |
| eLink\config\cr3.fml | CR3 FML field table |
| eLink\config\sideinfo | Example R/3 sideinfo file |

3 Configuring TUXEDO

This chapter describes how to configure your BEA eLink Adapter for R/3 installation for TUXEDO. It includes the following sections:

- TUXEDO Initialization File
- Creating Queues for ALE

TUXEDO Initialization File

BEA eLink Adapter for R/3 requires some configuration of the TUXEDO initialization file. For configuration instructions, see the *BEA TUXEDO Administrator's Guide* for your platform.

BEA eLink Adapter for R/3 provides a semi-configured TUXEDO initialization file, `cr3.ubb`, in the `config` sub-directory of the BEA eLink Adapter for R/3 installation directory. This `cr3.ubb` file is configured for the BEA eLink Adapter for R/3 servers and it requires further configuration for integration into the global TUXEDO environment. For example, in the `GROUPS` section of your UBB file, you must define the server group to which the ALE Inbound belongs, such as `CR3`. See Appendix A, “Sample `cr3.ubb` File,” for a listing of this file.

Note: ALE Inbound and ALE Outbound use TUXEDO transactions. For these components, you need to create a transaction log (TLOG) using TUXEDO administrative tools. See the *BEA TUXEDO Administrator's Guide* for your platform.

Creating Queues for ALE

If TUXEDO applications will be using the ALE Inbound or ALE Outbound features of BEA eLink Adapter for R/3, you will need to create one or more queues to handle IDOC packets. If you are not using these features, you do not need to create additional queues.

For more information about creating and managing queues, see your TUXEDO documentation.

4 Configuring RFC Integration

This chapter describes how to configure your BEA eLink Adapter for R/3 installation for integration with SAP's Remote Function Call (RFC) technology. It includes the following sections:

- Configuring the RFC Inbound Server

Using BEA eLink Adapter for R/3, TUXEDO applications can invoke RFC-enabled ABAP/4 functions on R/3 systems. For more information about RFC integration, see Chapter 2, "Integrating with RFCs," in the BEA eLink Adapter for R/3 *User Guide*.

Note: You need to complete the tasks in this chapter *only* if you require application integration with RFC technology.

Configuring the RFC Inbound Server

This section describes how to configure the RFC Inbound server. It includes the following topics:

- Configuring the Inbound Connection for RFC Inbound
- Setting Environment Variables for RFC Inbound

RFC Inbound is a standard TUXEDO server that is defined in the TUXEDO configuration file.

Configuring the Inbound Connection for RFC Inbound

You must configure the inbound connection for RFC Inbound, including the sideinfo file and environment variables. For more information, see “Configuring Inbound Connections” in Chapter 6, “Configuring R/3 Connections.”

Configuring the UBB File for RFC Inbound

RFC Inbound is a standard TUXEDO server that is defined in the UBB file. You must configure this file to specify the server group, server, environment file, and services associated with the RFC Inbound server. See Appendix A, “Sample cr3.ubb File,” for a listing of the sample UBB file that comes with BEA eLink Adapter for R/3.

Defining the Server Group

In the SERVERS section of your UBB file, you must first define the server group (such as CR3) to which RFC Inbound belongs. See “TUXEDO Initialization File” in Chapter 3, “Configuring TUXEDO,” for instructions.

Defining the RFC Inbound Server

In the **SERVERS** section of your UBB file, you must define the RFC Inbound server, specifying its server group, server ID, and environment file using the following syntax:

```
SRVGRP=GroupId SRVID=ServerID  
CLOPT = " -- -i unique_id -e env_filename"
```

where:

- *GroupId* is the unique ID of the server group to which the RFC Inbound server belongs.
- *ServerID* is the unique ID of the RFC Inbound server.
- *-i unique_id* is the unique ID that identifies the label section in the environment file containing the adapter's environment variables. You would use this when running multiple eLink adapters (for example, RFC Inbound and ALE Outbound) that share this configuration file. If it is not specified, then the unique ID defaults to the process name.
- *-e env_filename* is the environment file that specifies the detailed configuration information.

Listing 4-1 shows **SERVERS** settings for RFC Inbound in a sample UBB file for Windows NT:

Listing 4-1 Sample **SERVERS** Settings for RFC Inbound Server

```
#####  
*SERVERS  
#####  
cr3rfcin  
    SRVGRP=CR3 SRVID=4  
    CLOPT="-o cr3rfcin.log -- -i cr3rfcin -e cr3.env"
```

Defining the RFC Inbound Service

In the **SERVICES** section of your UBB file, you must define the **CR3_RFC_IN** service. Listing 4-2 shows **SERVICES** settings for RFC Inbound in a sample UBB file for Windows NT:

Listing 4-2 Sample SERVICES Settings for RFC Inbound Server

```
#####  
*SERVICES  
#####  
CR3_RFC_IN
```

Setting Environment Variables for RFC Inbound

The RFC Inbound server requires particular environment variables that specify connection information to R/3 and the behavior of the server. These environment variables are defined in an environment file that is specified in the TUXEDO initialization file as the ENVFILE parameter for the server.

BEA eLink Adapter for R/3 provides a semi-configured TUXEDO environment file (cr3rfcin.env) for use with the RFC Inbound server. There should a separate environment file specified in the cr3.ubb configuration for each RFC Inbound server. See Appendix A, “Sample cr3.ubb File,” for more information.

Environment Variables

You can configure the following environment variables for the RFC Inbound server:

Table 4-1 Environment Variables for the RFC Inbound Server

| Task / Variable | Value | Description |
|------------------------------|------------|---|
| Adapter Label Section | | |
| [SERVER= <i>AdapterID</i>] | Adapter ID | Defines the label section containing the adapter environment variables. The unique <i>AdapterID</i> is the value of the -i flag on the CLOPT line in the UBB file. If not specified, then the default value is the process name. <i>Required.</i> |

Connecting to R/3

Table 4-1 Environment Variables for the RFC Inbound Server

| Task / Variable | Value | Description |
|-----------------------------|---------------|---|
| CR3_DESTINATION | System Name | The destination switch in the sideinfo file that defines the R/3 application server to connect to. Default is undefined. <i>Required.</i> |
| CR3_CLIENT | Client Number | R/3 login client number. Default is undefined. <i>Required.</i> |
| CR3_USER | User | R/3 login user. Default is undefined. The user must be of type CPIC. <i>Required.</i> |
| CR3_PASSWORD | Password | R/3 login user password. Default is undefined. <i>Required.</i> |
| CR3_LANGUAGE | Language | R/3 login language. Default is E for English. <i>Required.</i> |
| SIDE_INFO | Path and File | Full path to the sideinfo file, which defines the R/3 connection information that is used by the RFC library. If not specified, then the sideinfo file must reside in the same directory as the RFC Inbound executable. <i>Optional.</i> |
| CR3_EXIT_R3_CONNECT_LOSS | Y or N | If set to Y, RFC Inbound exits when it detects that it has lost the RFC connection to R/3. If set to N or unspecified, then RFC Inbound will not exit but instead will try to restore the connection upon the next service call. <i>Optional.</i> |
| Response Buffer Size | | |
| CR3_RESPONSE_BUFFER_SIZE | Size (bytes) | Defines the starting size of the FML32 response buffer. If not specified, then the default starting size is 10,000 bytes. <i>Optional.</i> |

Defining Callable RFCs

Table 4-1 Environment Variables for the RFC Inbound Server

| Task / Variable | Value | Description |
|---------------------------------|-----------------------------------|---|
| SERVICE_LIST | List of services to be advertised | Comma-delimited list containing the names of TUXEDO services that RFC Inbound will advertise. <i>Required.</i> |
| [SERVICE= <i>Service Name</i>] | Service name | Service name for each service in the SERVICES_LIST environment variable. Signifies the start of the service configuration definition. <i>Required.</i> |
| CR3_RFC_NAME | RFC Name | Name of the ABAP/4 function to execute when the associated service is invoked. <i>Required.</i> |
| CR3_EXPORT_PARAMS | Export parameters to be returned | Comma-delimited list containing the names of the RFC's export parameters to be returned in the FML32 response buffer. <i>Optional.</i> |
| CR3_EXPORT_TABLES | Export tables to be returned | Comma-delimited list containing the names of the RFC's export tables to be returned in the FML32 response buffer. <i>Optional.</i> |
| Logging | | |
| CR3_TRACE | Y or N | If set to Y, then RFC Inbound logs detailed tracing information during processing. If set to N or unspecified, RFC Inbound does not log trace information. <i>Optional.</i> |

Sample Environment File (cr3rfcin.env)

Listing 4-3 shows the settings for the sample cr3rfcin.env file:

Listing 4-3 Sample Environment File

```
CR3_DESTINATION=<R/3 System Name>
CR3_CLIENT=<R/3 Client ID>
CR3_USER=<R/3 User>
CR3_PASSWORD=<R/3 Password>
CR3_LANGUAGE=E
SIDE_INFO=<your eLink app directory>\sideinfo
CR3_EXIT_R3_CONNECT_LOSS=N
CR3_TRACE=Y
SERVICES_LIST=service_1,service_2,service_3
[SERVICE=service_1]
CR3_RFC_NAME=RFCName1
CR3_EXPORT_PARAMS=ExportParam1,ExportParam2
CR3_EXPORT_TABLES=ExportTable1
[SERVICE=service_2]
CR3_RFC_NAME=RFCName2
CR3_EXPORT_PARAMS=ExportParam1,ExportParam2
CR3_EXPORT_TABLES=ExportTable1
[SERVICE=service_3]
CR3_RFC_NAME=RFCName3
CR3_EXPORT_PARAMS=ExportParam1,ExportParam2
CR3_EXPORT_TABLES=ExportTable1
```

Specifying the Adapter Label

You can specify an optional adapter label in the environment file to define a label section containing the adapter's environment variables. You would use this when running multiple eLink adapters (for example, RFC Inbound and ALE Outbound) that share this configuration file. The unique *AdapterID* corresponds to the value of the `-i` flag on the CLOPT line in the UBB file. See “Defining the RFC Inbound Server” on page 4-3 for more information.

Setting Up the Inbound Connection to R/3

To set up the inbound connection to R/3, you must set environment variables and configure the sideinfo file. See “Configuring Inbound Connections” in Chapter 6, “Configuring R/3 Connections” for more information.

Exiting if the Connection is Lost

You can configure RFC Inbound to exit if it detects a lost connection to R/3 by setting the `CR3_EXIT_R3_CONNECT_LOSS` environment variable to `Y`, as shown in the following example:

```
CR3_EXIT_R3_CONNECT_LOSS=Y
```

If you do not specify this environment variable or if you set it to `N`, then RFC Inbound will try to restore the connection to R/3 instead upon the next service call.

Specifying the Initial Size of the Response Buffer

You can configure the initial size, in bytes, of the response buffer that RFC Inbound allocates for exported parameters by setting the `CR3_RESPONSE_BUFFER_SIZE` environment variable, as shown in the following example:

```
CR3_RESPONSE_BUFFER_SIZE=15000
```

If you do not specify this environment variable, then RFC Inbound sets the initial size of the response buffer to 10,000 bytes. You would increase this to improve performance for RFC calls that return very large volumes of data.

Configuring RFCs

To execute an ABAP/4 function on R/3, the calling application prepares an FML32 request buffer that contains the applicable RFC import parameters and import tables. The calling application invokes the TUXEDO service associated with the RFC, passing in the request buffer. RFC Inbound makes the remote function call on R/3, passing the import parameters to R/3. RFC Inbound receives the results and returns them in an FML32 response buffer to the calling application. You configure environment variables to control this process.

For each ABAP/4 function that you want to execute remotely using RFC Inbound, you must specify a label in the environment file that identifies the name of the TUXEDO service associated with this RFC (`[SERVICE=ServiceName]`). For each service, you must specify the following attributes (in environment variables):

- Name of the RFC to execute when this service is invoked (`CR3_RFC_NAME`).
- Export parameters, if any, to return in the FML32 response buffer (`CR3_EXPORT_PARAMS`).

- Export tables, if any, to return in the FML32 response buffer (CR3_EXPORT_TABLES).

In addition, you must specify a list of all services to be advertised to calling applications (SERVICES_LIST). RFC Inbound reads and processes this list, and then advertises the service names, aliasing them to the CR3_RFC_IN service.

Defining the List of Services to Advertise

You must specify the list of services (a comma-delimited series) that RFC Inbound advertises in the SERVICES_LIST environment variable, as shown in the following example:

```
SERVICES_LIST=service_1,service_2,service_3
```

Defining Each Advertised Service

For each service specified in the SERVICES_LIST, you must specify a service label and define the name of the RFC to execute as well as the contents of the FML32 response buffer (export parameters and export tables) that you want RFC Inbound to return to the calling application, as shown in the following example:

```
[SERVICE=service_1]  
CR3_RFC_NAME=RFCName1  
CR3_EXPORT_PARAMS=ExportParam1,ExportParam2  
CR3_EXPORT_TABLES=ExportTable1
```

Note: It is the developer's responsibility to ensure that the names of export parameters and export tables are spelled exactly as they appear in the ABAP/4 function definition.

Configuring Trace Output to the RFC Inbound Log

You can configure RFC Inbound to write detailed trace information to the log by setting the CR3_TRACE environment variable to Y, as shown in the following example:

```
CR3_TRACE=Y
```

If you set this to N or do not specify it, RFC Inbound writes no trace information to the log.

4 *Configuring RFC Integration*

You can redirect stdout by changing the value of the `-o` flag on the CLOPT line in the UBB file. See “Defining the RFC Inbound Server” on page 4-3 for more information.

5 Configuring ALE Integration

This chapter describes how to configure your BEA eLink Adapter for R/3 installation for integration with SAP's Application Linking and Embedding (ALE) technology. It includes the following sections:

- Configuring the ALE Inbound Server
- Configuring the ALE Outbound Client
- Configuring Queues
- Configuring the TID File Manager

Note: You need to complete the tasks in this chapter only if you require application integration with ALE.

Using BEA eLink Adapter for R/3, TUXEDO applications can exchange SAP Intermediate Documents (IDOCs) with R/3 systems. See Chapter 4, "Integrating with ALE," in the BEA eLink Adapter for R/3 *User Guide* for more information about ALE integration.

Configuring the ALE Inbound Server

This section describes how to configure the ALE Inbound server. It includes the following topics:

- Configuring the UBB File for ALE Inbound
- Setting Environment Variables for ALE Inbound
- Configuring Load Balancing for Inbound IDOCs

In addition, see the following topics for further configuration instructions:

- “Setting Up Queues for Inbound IDOCs” on page 5-20
- “Configuring Inbound Connections” in Chapter 6, “Configuring R/3 Connections”

ALE Inbound is a TUXEDO server that submits IDOC packets to R/3 via tRFC. ALE Inbound receives IDOC packets forwarded from a TUXEDO queue, encodes the IDOC data for R/3, and submits the message to R/3 via tRFC. See “Processing Inbound IDOCs” in Chapter 4, “Integrating with ALE,” in the *BEA eLink Adapter for R/3 User Guide* for more information about ALE Inbound.

Configuring the UBB File for ALE Inbound

ALE Inbound is a standard TUXEDO server that is defined in the UBB file. You must configure this file to specify the server group, server, environment file, and services associated with the ALE Inbound server. See Appendix A, “Sample cr3.ubb File,” for a listing of the sample UBB file that comes with BEA eLink Adapter for R/3.

Defining the Server Group

You must first define the server group (such as CR3) to which the ALE Inbound belongs, as described in “TUXEDO Initialization File” in Chapter 3, “Configuring TUXEDO.”

Defining the ALE Inbound Server and Environment File

In the SERVERS section of your UBB file, you must define the ALE Inbound server, specifying its server group and server ID, as shown in the following example:

```
cr3alein
    SRVGRP=CR3 SRVID=3
```

You must also define the environment file for the ALE Inbound Server, as shown in the following example:

```
ENVFILE="cr3alein.env"
```

Defining ALE Inbound Services

In the SERVICES section of your UBB file, you must define the CR3_SUBMIT and CR3_IDOC_IN services, as shown in the following example:

```
CR3_SUBMIT
CR3_IDOC_IN
```

Setting Environment Variables for ALE Inbound

The ALE Inbound server requires environment variables that specify connection information to R/3 and the behavior of the server. These environment variables are defined in an environment file that is specified in the UBB file as the ENVFILE parameter for the server.

Environment Variables for ALE Inbound

You can configure the following required and optional environment variables for ALE Inbound:

Table 5-1 Environment Variables for the ALE Inbound Server

| Category / Variable | Set To | Description |
|------------------------------|---------------|---|
| Connecting To R/3 | | |
| CR3_DESTINATION | System Name | Destination in the sideinfo that defines the R/3 application server to connect to. Default is undefined. <i>Required.</i> |
| CR3_CLIENT | Client Number | R/3 login client number. Default is undefined. <i>Required.</i> |
| CR3_USER | User | R/3 login user. Default is undefined. The user must be of type CPIC. <i>Required.</i> |
| CR3_PASSWORD | Password | R/3 login user password. Default is undefined. <i>Required.</i> |
| CR3_LANGUAGE | E | R/3 login language. Default is E for English. <i>Required.</i> |
| SIDE_INFO | Path and File | Full path to the sideinfo file. <i>Required.</i> |
| Managing the TID File | | |
| CR3_ALEIN_TID_FILE | Path and File | Full path and filename for the ALE Inbound TID file, <i>without</i> the .tid file extension. <i>Required.</i> |

Table 5-1 Environment Variables for the ALE Inbound Server

| Category / Variable | Set To | Description |
|------------------------------|---------------|---|
| CR3_ALEIN_TID_PER_IDOC | Y or N | Specify “Y” to split IDOC packets containing multiple IDOCs and pass them as individual IDOCs to R/3. Specify “N” (the default) to pass multiple IDOCs to R/3 in one batch. <i>Optional.</i> |
| Managing Queues | | |
| CR3_ALEIN_IDOCIN_QUEUE | Queue Name | Name of the queue for messages containing processed IDOCs and their corresponding TIDs. By default, should be set to CR3_IDOC_IN. TMQFORWARD dequeues messages from this queue and forwards them to the CR3_IDOC_IN service for submission to R/3. <i>Required.</i> |
| CR3_ALEIN_IDOCIN_QUEUE_SPACE | Queue Space | Queue space that contains the CR3_IDOC_IN queue. <i>Required.</i> |
| CR3_ALEIN_ERROR_QUEUE | Queue Name | Name of the queue for messages containing IDOCs that the CR3_SUBMIT has received and rejected due to IDOC format or consistency errors. By default, should be set to CR3_ERROR. <i>Required.</i> |
| CR3_ALEIN_ERROR_QUEUE_SPACE | Queue Space | Queue space that contains the CR3_ERROR_QUEUE. <i>Required.</i> |
| Logging | | |
| CR3_ALEIN_PRINT_OPTION | F | Default output is to the TUXEDO USERLOG. You can write logging and tracing output to the file specified in CR3_ALEIN_PRINT_FILE by setting this environment variable to “F”. <i>Optional.</i> |
| CR3_ALEIN_PRINT_FILE | Path and File | Specifies the full path and file for logging and tracing output if CR3_ALEIN_PRINT_OPTION is set to “F”. <i>Optional.</i> |
| CR3_ALEIN_TRACE | Y or N | Specify “Y” to include detailed trace information in the log output. <i>Optional.</i> |

Sample Environment File for ALE Inbound (cr3alein.env)

BEA eLink Adapter for R/3 provides a semi-configured TUXEDO environment file (cr3alein.env) for use with ALE Inbound. You should create a separate environment file for each ALE Inbound server specified in the cr3.ubb configuration file.

Listing 5-1 shows the settings in the sample cr3alein.env file:

Listing 5-1 Sample Environment File (cr3alein.env)

```
CR3_DESTINATION=<R/3 system name>
CR3_CLIENT=<R/3 client id>
CR3_USER=<R/3 user>
CR3_PASSWORD=<R/3 password>
CR3_LANGUAGE=E
CR3_ALEIN_TID_FILE=<your eLink app directory>\cr3alein
CR3_ALEIN_TID_PER_IDOC=N
CR3_ALEIN_IDOCIN_QUEUE=CR3_IDOC_IN
CR3_ALEIN_IDOCIN_QUEUE_SPACE=QSPACE
CR3_ALEIN_ERROR_QUEUE=CR3_ERRQUE
CR3_ALEIN_ERROR_QUEUE_SPACE=QSPACE
CR3_ALEIN_PRINT_OPTION=F
CR3_ALEIN_PRINT_FILE=<your eLink app directory>\cr3alein.log
CR3_ALEIN_TRACE=Y
```

Note: You can use any directory for the eLink application directory. However, it is recommended that you use the same directory as the TUXEDO APPDIR.

Setting Up the Inbound Connection to R/3

To set up the inbound connection to R/3, you must set environment variables and configure the sideinfo file. See “Configuring Inbound Connections” in Chapter 6, “Configuring R/3 Connections” for instructions.

Configuring Queues for ALE Inbound

ALE Inbound requires that you set up two TUXEDO queues, CR3_ALE_ERROR_QUEUE, and CR3_ALE_IDOC_IN_QUEUE. See “Setting Up Queues for Inbound IDOCs” on page 5-20 for instructions.

Specifying the TID File for ALE Inbound

ALE Inbound uses a TID file to log TIDs that it has already processed to guarantee that it delivers an IDOC packet to R/3 once and only once. You must specify the path and file name of the TID file (*without* an extension) in the `CR3_ALEIN_TID_FILE` environment variable, as shown in the following example:

```
CR3_ALEIN_TID_FILE=<your eLink app directory>\cr3alein
```

Upon start-up, if ALE Inbound does not find a TID file in the specified location, it creates one automatically. See “Configuring the TID File Manager” on page 5-22 for information about configuring and administering the TID file.

Splitting Inbound IDOC Packets Containing Multiple IDOCs

By default, ALE Inbound passes an IDOC message containing multiple IDOCs to R/3 in a single packet. You can configure ALE Inbound to split IDOC messages containing multiple IDOCs into individual IDOC messages, each with its own TID. For example, if an IDOC message contains six IDOCs, ALE Inbound can create six IDOC separate packets, each containing a single IDOC and associated with a unique TID.

To split inbound IDOC packets, set the `CR3_ALEIN_TID_PER_IDOC` environment variable to “Y”, as shown in the following example:

```
CR3_ALEIN_TID_PER_IDOC=Y
```

See “Splitting Inbound IDOC Packets” in Chapter 4, “Integrating with ALE,” in the BEA eLink Adapter for R/3 *User Guide* for more information.

Configuring Logging for ALE Inbound

By default, ALE Inbound writes logging output to the TUXEDO USERLOG. You can set the `CR3_ALEIN_PRINT_OPTION` environment variable to “F” to send output to a log file. If sending output to a file, you must specify its name and location in the `CR3_ALEIN_PRINT_FILE` environment variable.

You can also include trace information in the log by setting the `CR3_ALEIN_TRACE` environment variable to “Y”. You exclude trace information by omitting this environment variable or setting it to “N”.

The following example sets logging options for ALE Inbound:

```
CR3_ALEIN_PRINT_OPTION=F  
CR3_ALEIN_PRINT_FILE=<your eLink app directory>\cr3alein.log  
CR3_ALEIN_TRACE=Y
```

Configuring Load Balancing for Inbound IDOCs

Multiple instances of ALE Inbound can log onto R/3 and submit inbound IDOCs for processing. For deployments that involve high volumes of inbound IDOCs, you can enhance system performance by balancing the load across multiple instances of ALE Inbound.

Use TUXEDO's load balancing capabilities to manage the number of ALE Inbound instances running. See your BEA TUXEDO documentation regarding TUXEDO administrative tools for more information.

Note: Each instance of ALE Inbound requires a separate R/3 login, so be sure to tune the number of concurrent instances to optimize system performance without requiring excessive R/3 resources. Instances can log in using the same user name and password.

Configuring the ALE Outbound Client

This section describes how to configure the ALE Outbound client. It includes the following topics:

- Starting the ALE Outbound Client
- Setting Environment Variables for ALE Outbound
- Configuring Load Balancing
- Configuring Multiple Program IDs

In addition, see the following topics for further configuration instructions:

- “Setting Up Queues for Outbound IDOCs” on page 5-22

ALE Outbound is a TUXEDO client that connects to R/3 using the register mode, receives outbound IDOC packets from R/3 via Transactional RFC (tRFC), encodes each IDOC packet to an FML32 message buffer, and enqueues the IDOC message into a TUXEDO queue for subsequent processing. See “Processing Outbound IDOCs” in Chapter 4, “Integrating with ALE,” in the BEA eLink Adapter for R/3 *User Guide* for more information about ALE Outbound.

Starting the ALE Outbound Client

You start ALE Outbound with a startup script that specifies environment variables and command line options.

Using the Startup Script for ALE Outbound

ALE Outbound is started with a script that defines a number of environment variables used to control the behavior of the server. BEA eLink Adapter for R/3 provides a sample ALE Outbound startup program that is partially configured:

- **UNIX:** cr3aleout.sh (Bourne shell format)
- **Windows NT:** cr3aleout.bat

Command Line Options for ALE Outbound

To connect to R/3, you specify the following command line options to the `cr3aleout` command:

```
cr3aleout -a program-id -g gateway_host_name -x  
gateway_service_name
```

where `program-id`, `gateway_host_name`, and `gateway_service_name` are the appropriate values for your R/3 environment, as shown in the following example:

```
cr3aleout -a bea.cr3.beadocl.ale -g hpsap -x sapgw00
```

These parameters are required to register with the SAP Gateway. The `program-id` must match a program ID that has already been configured for the specified gateway service on the specified R/3 host so that the ALE Subsystem can send IDOC packets to the correct ALE Outbound instance. See “Configuring Outbound Connections” in Chapter 6, “Configuring R/3 Connections,” for more information about these start-up options.

Note: The `cr3aleout` command resides in the `\adapters\sap3\bin` subdirectory of your BEA eLink Adapter for R/3 installation directory.

Setting Environment Variables for ALE Outbound

You can configure the following required and optional environment variables for ALE Outbound:

Table 5-2 Environment Variables for the ALE Outbound Client

| Variable | Set To | Description |
|---------------------------------|------------------------------------|---|
| Configuring IDOC Routing | | |
| CR3_ALE_DEFAULT_TARGET_ID | Data-dependent routing (DDR) value | Default data-dependent routing value that is encoded in the CR3_TARGET_ID field in the FML32 message (if it is not specified in the destination map file). This value matches the field ID configured in the ROUTING section of the cr3.ubb configuration file. To use DDR, the server group to receive the IDOC must also be configured. This environment variable <i>must</i> be defined even if it is a dummy value that is not defined in cr3.ubb. <i>Required.</i> |
| CR3_ALEOUT_DEST_MAP_FILE | File Name | Destination map file specifies the mapping between outbound IDOCs and the destination queue. <i>Optional.</i> |
| Splitting IDOC Packets | | |
| CR3_ALE_DEFAULT_IDOC_SPLIT | Y or N | If no destination map file is specified, then specifies whether IDOC packets containing multiple IDOCs are passed either together in a single message or split into separate IDOC packets, with one IDOC per message. <i>Optional.</i> |
| Configuring Queues | | |
| CR3_ALE_TARGET_QUEUE | Queue | Name of the default target TUXEDO queue. Used if no destination map file is specified or if no matching entry is found for the IDOC in the destination map file. <i>Required.</i> |
| CR3_ALE_TARGET_QUEUE_SPACE | Queue Space | Name of the TUXEDO queue space containing the default target queue. <i>Required.</i> |

Table 5-2 Environment Variables for the ALE Outbound Client

| Variable | Set To | Description |
|-------------------------------------|--------------------|---|
| Configuring the TID Log File | | |
| CR3_ALEOUT_TID_FILE | Path and File Name | Name and location of the TID file. The file name must <i>not</i> include an extension. <i>Required.</i> |
| Logging Options | | |
| CR3_ALEOUT_PRINT_OPTION | S or F | Default output is to the TUXEDO USERLOG. <i>Optional.</i> You can write logging and tracing output to file or stdout using these settings: <ul style="list-style-type: none"> ■ “S” sends output to stdout. ■ “F” sends output to the file specified in CR3_ALEOUT_PRINT_FILE. |
| CR3_ALEOUT_PRINT_FILE | Path and File | Specifies the full path and file for logging and tracing output if CR3_ALEOUT_PRINT_OPTION is set to “F”. <i>Optional.</i> |
| CR3_ALEOUT_TRACE | Y or N | Specify “Y” to include detailed trace information in the log output. <i>Optional.</i> |

These environment variables are defined in the server startup program.

Sample Startup Script for ALE Outbound (cr3aleout.bat)

Listing 5-2 shows a sample startup script that specifies TUXEDO and ALE Outbound settings:

Listing 5-2 Sample Startup Script (cr3aleout.bat)

```
set CR3_BIN=<your eLink install directory>\adapters\sapr3\bin
set TUXDIR=<your Tuxedo directory>
set APPDIR=<your eLink app directory>
set PATH=%TUXDIR%\bin;%APPDIR%;%PATH%
set TUXCONFIG=%APPDIR%\tuxconfig
```

```
set TLOGDEVICE=<your eLink app directory>\TLOG
set QMCONFIG=<your eLink app directory>\QUE
set FLDTBLS32=cr3.fml
set FLDTBLDIR32=<your eLink app directory>\<your Tuxedo
directory>\udataobj
set CR3_ALE_TARGET_QUEUE=CR3_SUBMIT
set CR3_ALE_TARGET_QUEUE_SPACE=QSPACE
rem set CR3_MERCATOR_FV_IN=Y
set CR3_ALE_DEFAULT_TARGET_ID=CR3_ERROR
set CR3_ALE_DEFAULT_IDOC_SPLIT=N
rem set CR3_ALEOUT_DEST_MAP_FILE=<your eLink app
directory>\cr3aleout.map
set CR3_ALEOUT_TID_FILE=<your eLink app directory>\cr3aleout
set CR3_ALEOUT_PRINT_OPTION=S
set CR3_ALEOUT_TRACE=Y
set CR3_ALEOUT_DUMP_IDOC_BUFFER=N
set CR3_ALEOUT_DUMP_IDOC_FML_BUFFER=N
%CR3_BIN%\cr3aleout.exe -a <your.program.id> -g <R/3 system> -x
sapgw00
```

Note: This example applies to Windows NT. For Unix startup scripts, use the `setenv` command for the C shell or the `export` command for the Bourne or Korn shells.

Configuring Queues for ALE Outbound

ALE Outbound requires that you set up at least one default TUXEDO queue and additional queues as needed. See “Setting Up Queues for Outbound IDOCs” on page 5-22 for instructions.

Setting the Default Data-Dependent Routing Value

You can configure the default data-dependent routing (DDR) value that ALE Outbound assigns to each IDOC message (in the `CR3_TARGET_ID` field) that it enqueues. See your TUXEDO documentation for more information about data-dependent routing.

Note: To use DDR, the DDR value must match the field ID configured in the `ROUTING` section of the `cr3.ubb` configuration file.

The following example sets the `CR3_ALE_DEFAULT_TARGET_ID` environment variable to a DDR value:

set CR3_ALE_DEFAULT_TARGET_ID=DDR_VALUE

See “Setting Data-Dependent Routing Values in the Map File” on page 5-16 and “Managing Data-Dependent Routing” in Chapter 4, “Integrating with ALE,” in the BEA eLink Adapter for R/3 *User Guide* for more information.

Configuring a Destination Map File

You can configure ALE Outbound to use a destination map file so that ALE Outbound can enqueue IDOC messages into different target queues, manage data-dependent routing, and group similar IDOC messages into larger IDOC messages. ALE Outbound makes routing and grouping decisions about individual IDOCs according to two settings specified in an IDOC’s control record: the logical system ID of the target R/3 system and the IDOC message type. If a destination map file is used, ALE Outbound automatically splits IDOC packets containing multiple IDOCs into separate IDOC messages, with each message containing a single IDOC.

Structure of the Destination Map File

The destination map file is an ASCII text file. Each line denotes a separate entry and consists of the following columns:

Table 5-3 Columns in the Destination Map File

| # | Column | Length | Description |
|---|----------|--------|--|
| 1 | RCVPRN | 10 | Logical System ID of the target R/3 logical system. If the logical system is less than ten characters long, you must pad spaces at the end until its length is ten characters. |
| 2 | MESTYP | 6 | Message type specified in the IDOC. If the message type is less than six characters long, you must pad spaces at the end until its length is six characters. |
| 3 | Compress | 1 | Compress (Y or N). Starting position is column 18. If Compress=Y, then ALE Outbound concatenates IDOC packets with matching logical system and IDOC message type values into a single IDOC message in the queue. If Compress=N, then ALE Outbound keeps the IDOCs in individual IDOC messages. |

Table 5-3 Columns in the Destination Map File

| # | Column | Length | Description |
|---|------------|----------|---|
| 4 | TargetId | variable | Data-dependent routing (DDR) value. Starting position is column 20. The value is encoded in the FML field CR3_TARGET_ID for use with DDR. |
| 5 | QueueSpace | variable | Name of the destination queue space for the IDOC message. |
| 6 | QueueName | variable | Name of the destination queue for the IDOC message. |

Sample Destination Map File

Listing 5-3 shows the contents of a sample destination map file:

Listing 5-3 Sample Destination Map File

```
LOGSYS1    MATMAS  N  DDR_VALUE_1  QSPACE1  QUEUE1
LOGSYS2    MATMAS  Y  DDR_VALUE_2  QSPACE1  QUEUE2
LOGSYS3    DEBMAS  N  DDR_VALUE_3  QSPACE2  QUEUE3
LOGSYS4    CREMAS  Y  DDR_VALUE_4  QSPACE3  QUEUE4
```

Setting the CR3_ALEOUT_DEST_MAP_FILE Environment Variable

To use a destination map file, you must specify its name and location in the CR3_ALEOUT_DEST_MAP_FILE environment variable, as shown in the following example:

```
set CR3_ALEOUT_DEST_MAP_FILE=<your eLink app
directory>\cr3aleout.map
```

Specifying Default Target Queue Spaces and Queue Names in the Map File

You use the QueueSpace and QueueName columns in the destination map file to associate an IDOC with a destination TUXEDO queue space and queue. If an entry in the destination map file matches the logical system ID of the target R/3 system and the IDOC message type specified in an IDOC's control record, then ALE Outbound enqueues the IDOC into the specified queue space and queue name. If no matching

entry is found in the destination map file, then ALE Outbound enqueues the IDOC message into the default queue space and queue, which are defined in the `CR3_ALE_TARGET_QUEUE_SPACE` and `CR3_ALE_TARGET_QUEUE` environment variables.

Note: You must create the default queue and any individual queues before processing outbound IDOCs. See “Setting Up Queues for Outbound IDOCs” on page 5-22 for information.

Setting Data-Dependent Routing Values in the Map File

You use the `TargetId` column in the destination map file to associate an IDOC with a data-dependent routing value. If an entry in the destination map file matches the logical system ID of the target R/3 system and the IDOC message type specified in an IDOC’s control record, then ALE Outbound encodes the specified `TargetId` value in the `CR3_TARGET_ID` FML32 field of the IDOC message. If no matching entry is found in the destination map file, then ALE Outbound encodes the default DDR value, which is defined in the `CR3_ALE_DEFAULT_TARGET_ID` environment variable. See “Setting the Default Data-Dependent Routing Value” on page 5-13 for more information.

Note: To use DDR, the DDR value must match the field ID configured in the ROUTING section of the `cr3.ubb` configuration file.

Compressing Outbound IDOCs

You use the `Compress` column in the destination map file to combine IDOC messages with matching logical system IDs and IDOC message types into an IDOC message containing multiple IDOCs. If an entry in the destination map file matches the logical system ID of the target R/3 system and the IDOC message type specified in an IDOC’s control record, and if the `Compress` column is “Y”, then ALE Outbound aggregates this with other matching IDOCs in a single, larger IDOC message that it then enqueues into the appropriate target queue. If the `Compress` column is “N”, then ALE Outbound enqueues each IDOC message separately.

Splitting Outbound IDOC Packets

If no destination map file is specified, you can configure ALE Outbound to split IDOC packets containing multiple IDOCs into separate IDOC messages, each containing a single IDOC. By default, ALE Outbound enqueues the entire IDOC packet. If you set

the `CR3_ALE_DEFAULT_IDOC_SPLIT` environment variable to “Y”, ALE Outbound will split the IDOC packet into individual IDOC packets. See “Splitting Outbound IDOC Packets Into Individual IDOCs” in Chapter 4, “Integrating with ALE,” in the BEA eLink Adapter for R/3 *User Guide* for more information.

Specifying the TID File for ALE Outbound

ALE Outbound uses a TID file to log TIDs that it has already processed to guarantee that it enqueues an IDOC packet from R/3 once and only once. You must specify the path and file name of the TID file (*without* an extension) in the `CR3_ALEOUT_TID_FILE` environment variable, as shown in the following example (Windows NT):

```
CR3_ALEOUT_TID_FILE=<your eLink app directory>\cr3aleout
```

Upon start-up, if ALE Outbound does not find a TID file in the specified location, it creates one automatically. See “Configuring the TID File Manager” on page 5-22 for information about configuring and administering the TID file.

Configuring Logging for ALE Outbound

By default, ALE Outbound writes logging and tracing output to the TUXEDO USERLOG. You can set the `CR3_ALEOUT_PRINT_OPTION` environment variable to “S” to send output to stdout, or you can set it to “F” to send output to a log file. If you are sending output to a file, you must specify its name and location in the `CR3_ALEOUT_PRINT_FILE` environment variable.

You can also include trace information in the log by setting the `CR3_ALEOUT_TRACE` environment variable to “Y”. You exclude trace information by omitting this environment variable or setting it to “N”.

The following example from a startup script file (Windows NT) sets logging options for ALE Outbound:

```
set CR3_ALEOUT_PRINT_OPTION=S
set CR3_ALEOUT_TRACE=Y
```

Configuring Load Balancing

Multiple instances of ALE Outbound can register using the same program ID. For deployments that involve high volumes of outbound IDOC packets, you can enhance system performance by balancing the load across multiple instances of ALE Outbound. Instances that register under the same program ID must also share the same TID file.

To run multiple instances of ALE Outbound, specify the shared TID file (set the `CR3_ALEOUT_TID_FILE` environment variable), and then run the `cr3aleout` command multiple times. Listing 5-3 launches three instances of ALE Outbound using the program ID `bea.cr3.beadoc1.ale`:

Listing 5-4 Sample Commands Launching Multiple ALE Outbound Instances

```
set CR3_BIN=<your eLink install directory>\adapters\sapr3\bin
CR3_ALEOUT_TID_FILE=<your eLink app directory>\cr3aleout
%CR3_BIN%\cr3aleout.exe -a bea.cr3.beadoc1.ale -g hpsap -x sapgw00
%CR3_BIN%\cr3aleout.exe -a bea.cr3.beadoc1.ale -g hpsap -x sapgw00
%CR3_BIN%\cr3aleout.exe -a bea.cr3.beadoc1.ale -g hpsap -x sapgw00
```

Note: Instances of ALE Outbound that share the same TID file should all be launched on the same machine.

See “Configuring Load Balancing” in Chapter 4, “Integrating with ALE,” in the BEA eLink Adapter for R/3 *User Guide* for more information.

Configuring Multiple Program IDs

If R/3 is configured to send outbound IDOCs to different program IDs, you can configure ALE Outbound to handle these IDOCs by running multiple instances of ALE Outbound using different program IDs. You must make sure that all instances sharing the same program ID also share the same TID file, and that all instances sharing the same TID file also share the same program ID. Instances that register under different program IDs must *not* share the same TID file.

Listing 5-5 launches three instances of ALE Outbound using the program ID `bea.cr3.beadoc1.aleX` and other three instances of ALE Outbound using the program ID `bea.cr3.beadoc1.aleY`:

Listing 5-5 Sample Commands Launching Multiple ALE Outbound Instances

```
set CR3_BIN=<your eLink install directory>\adapters\sapr3\bin
CR3_ALEOUT_TID_FILE=<your eLink app directory>\cr3aleoutX
%CR3_BIN%\cr3aleout.exe -a bea.cr3.beadoc1.aleX -g hpsap -x sapgw00
%CR3_BIN%\cr3aleout.exe -a bea.cr3.beadoc1.aleX -g hpsap -x sapgw00
%CR3_BIN%\cr3aleout.exe -a bea.cr3.beadoc1.aleX -g hpsap -x sapgw00
CR3_ALEOUT_TID_FILE=<your eLink app directory>\cr3aleoutY
%CR3_BIN%\cr3aleout.exe -a bea.cr3.beadoc1.aleY -g hpsap -x sapgw00
%CR3_BIN%\cr3aleout.exe -a bea.cr3.beadoc1.aleY -g hpsap -x sapgw00
%CR3_BIN%\cr3aleout.exe -a bea.cr3.beadoc1.aleY -g hpsap -x sapgw00
```

Note: Instances of ALE Outbound that share the same TID file should all be launched on the same machine.

See “Registering Multiple Program IDs” in Chapter 4, “Integrating with ALE,” in the BEA eLink Adapter for R/3 *User Guide* for more information.

Configuring Queues

This section describes how to create and configure TUXEDO queues for ALE processing. It includes the following topics:

- About TUXEDO Queues
- Setting Up Queues for Inbound IDOCs
- Setting Up Queues for Outbound IDOCs

About TUXEDO Queues

You must set up queues for both ALE Inbound and ALE Outbound. You need to create and configure the Server Group (TMS_QM), Message Queue Server (TMQUEUE) and Message Forwarding Server (TMQFORWARD). See the */Q Guide* in your BEA TUXEDO documentation for more information about TUXEDO queues.

Setting Up Queues for Inbound IDOCs

ALE Inbound uses the following queues:

| Queue Name | Description |
|-------------|--|
| CR3_SUBMIT | IDOC submit queue. Handles IDOC packets that a TUXEDO application or other application has submitted to the CR3_SUBMIT service for processing. |
| CR3_ERROR | IDOC error queue. Handles invalid IDOC packets that have failed validation by the CR3_SUBMIT service. |
| CR3_IDOC_IN | IDOC inbound queue. Handles IDOC packets that the CR3_SUBMIT service has validated, assigned a TID, and enqueued. TMQFORWARD forwards each IDOC packet to the CR3_IDOC_IN service for submission to R/3. |

Use the TUXEDO Queue manager administration utility (qmadmin) to create these queue spaces and queues. See the */Q Guide* in your BEA TUXEDO documentation for instructions.

Defining the TMQUEUE and TMQFORWARD Servers in the UBB File

In the SERVERS section of your UBB file, you must define the TMQUEUE and TMQFORWARD servers, as shown in Listing 5-6:

Listing 5-6 Sample SERVERS Section of UBB File

```
TMQUEUE
  SRVGRP=QUE SRVID=1
  CLOPT="-s QSPACE:TMQUEUE -- "
TMQFORWARD
  SRVGRP=QUE SRVID=2
  CLOPT=" -- -i 10 -q CR3_IDOC_IN,CR3_SUBMIT"
```

Setting Environment Variables

After creating the error and inbound queue spaces and queues, you must specify their names in environment variables, as shown in Listing 5-7:

Listing 5-7 Setting Environment Variables for Queues

```
SET CR3_ALEIN_IDOCIN_QUEUE=CR3_IDOC_IN
SET CR3_ALEIN_IDOCIN_QUEUE_SPACE=QSPACE
SET CR3_ALEIN_ERROR_QUEUE=CR3_ERROR
SET CR3_ALEIN_ERROR_QUEUE_SPACE=QSPACE
```

See Table 5-1, “Environment Variables for the ALE Inbound Server,” on page 5-4 for a description of these environment variables.

Setting Up Queues for Outbound IDOCs

ALE Outbound can enqueue outbound IDOC messages into one or more queues. At a minimum, you must create at least one default queue. If you are using a destination map file to enqueue IDOC messages to multiple queues, you must create all the target queues, including the default queue.

Use the TUXEDO Queue manager administration utility (qmadmin) to create these queue spaces and queues. See the */Q Guide* in your BEA TUXEDO documentation for instructions.

After creating the outbound queues, you must specify the default queue space and queue name in environment variables, as shown the following example:

```
set CR3_ALE_TARGET_QUEUE=CR3_SUBMIT
set CR3_ALE_TARGET_QUEUE_SPACE=QSPACE
```

See Table 5-2, “Environment Variables for the ALE Outbound Client,” on page 5-11 for a description of these environment variables.

Configuring the TID File Manager

This section describes the TID File Manager, a command line utility that manages the size of the TID file in the run-time environment. It contains the following sections:

- Command Line Options
- Running the TID File Manager
- How the TID File Manager Works

Command Line Options

The TID File Manager uses the following command line options:

Table 5-4 Command Line Options for the TID File Manager

| Option | Description |
|---------|---|
| -h or - | Help text that describes each option. |
| -f | Name of the TID file (path is optional). <i>Required.</i> |
| -n | Number of lines to keep in the TID file. Default is 10 lines. If the date (-d) option is also specified, this setting overrides the date setting. The TID File Manager retains at least this number of lines in the original TID file. |
| -t | Frequency (in seconds) with which the TID File Manager periodically checks the TID file. Default is 60 seconds. If this option is omitted, then the TID File Manager runs once and exits. If this option is specified, the TID File Manager keeps running. <i>Optional.</i> |
| -d | Last save date. The TID File Manager removes any CONFIRMED entries that are older than the specified date. Valid date formats include: <ul style="list-style-type: none"> ■ Jan/1/2000 ■ 2000,1,jan ■ "1 JAN 2000" |

Running the TID File Manager

To run the TID File Manager, enter the following command:

```
cr3tidmanager -f FileName [OptionalParameters]
```

where *FileName* is required and *OptionalParameters* include any of the other options in Table 5-4, “Command Line Options for the TID File Manager,” on page 5-23.

Note: You must run a *separate* TID File Manager for *each* TID file used by instances of ALE Inbound and ALE Outbound.

How the TID File Manager Works

Upon startup, the TID File Manager does the following:

- Locks the specified TID file.
- Creates a backup file using the original file name plus the date-time and a .bck extension.
- Removes from the TID log file only **CONFIRMED** entries that meet the configured criteria.
- Appends each removed entry to the backup file.
- Saves both files.
- Releases the file lock.

Because the TID File Manager locks the file while editing, be careful to specify a large enough frequency to contain the file size without slowing run-time performance.

6 Configuring R/3 Connections

This chapter describes how to configure your BEA eLink Adapter for R/3 installation for inbound and outbound communication with R/3. It includes the following sections:

- Configuring Inbound Connections
- Configuring Outbound Connections
- Troubleshooting Connection Problems

Configuring Inbound Connections

The RFC Inbound and ALE Inbound servers use the sideinfo method of connecting to R/3. This section includes the following topics:

- Setting Environment Variables for the Inbound Connection
- Configuring the sideinfo File

Setting Environment Variables for the Inbound Connection

You must configure the following environment variables for inbound connections:

Table 6-1 Environment Variables for Connecting to R/3

| Variable Name | Set To | Description |
|-----------------|---------------|--|
| CR3_DESTINATION | System Name | Destination in the sideinfo that defines the R/3 application server to connect to. Default is undefined. |
| CR3_CLIENT | Client Number | R/3 login client number. Default is undefined. |
| CR3_USER | User | R/3 login user. Default is undefined. The user must be of type CPIC. |
| CR3_PASSWORD | Password | R/3 login user password. Default is undefined. |
| CR3_LANGUAGE | E | R/3 login language. Default is E for English. |
| SIDE_INFO | Path and File | Full path to the sideinfo file. See “Specifying the Location of the sideinfo File” on page 6-5. |

Listing 6-1 shows sample settings in an environment file:

Listing 6-1 Sample Environment Variable Settings for Inbound Connections

```
CR3_DESTINATION=SAPNODE
CR3_CLIENT=SAPCLIENT
CR3_USER=LOGINNAME
CR3_PASSWORD=LOGINPASSWORD
CR3_LANGUAGE=E
SIDE_INFO=<your eLink app directory>\sideinfo
```

The settings you specify depend on the configuration of your R/3 installation. See your R/3 system administrator for more information.

Configuring the sideinfo File

The RFC Inbound and ALE Inbound servers use the sideinfo method of connecting to R/3. The sideinfo file is an ASCII text file that specifies the connection point for external programs to communicate with the R/3 application server. See your SAP R/3 documentation for more information about the sideinfo file.

The sideinfo file is associated with the parameters provided to the RFC Inbound and ALE Inbound servers when they are started. A sample sideinfo file comes with BEA eLink Adapter for R/3, but you must configure this sample file for your particular R/3 environment and BEA eLink Adapter for R/3 installation. Errors in this file will prevent the RFC Inbound or ALE Inbound servers from connecting to R/3.

Contents of the sideinfo File

The following table describes the attributes in the sideinfo file:

Table 6-2 Attributes in the sideinfo File

| Attribute | Description |
|-----------|---|
| DEST | Connection identifier. You can set this to any name, usually a few characters in all uppercase. It is recommended that you use the node name of the R/3 application server. The RFC Inbound and ALE Inbound servers use this identifier to determine the R/3 application server to connect to. The RFC Inbound and ALE Inbound servers get the identifier name from the CR3_DESTINATION environment variable that is defined in the server start-up script. The identifier links its setting to the connection. |
| LU | TCP/IP name of the node on which the R/3 application server is running. The RFC Inbound and ALE Inbound servers will open a TCP/IP socket to the R/3 application node. The LU can be specified as the full TCP/IP name or as an alias. This name or alias must match exactly what is specified in the hosts file, or it must be translated by the directory name service. Test this by using the ping command and the exact string used in the LU line item (ping <i>node</i>). |
| TP | Name of the R/3 user presentation connection socket (the network socket to which the SAPGUI connects). This name is configured in R/3 and is specific to the instance of R/3. The last two characters in the name specify the instance number. This name must appear in the services file on the node on which the RFC Inbound or ALE Inbound is running, and the value of the socket number must match the same number in the services file on the R/3 application server. |

Table 6-2 Attributes in the sideinfo File

| Attribute | Description |
|-----------|---|
| PROTOCOL | Set to I for RFC Inbound, indicating a TCP/IP connection to R/3. |
| GWHOST | Node name for the R/3 Gateway. As with the LU attribute, it must be translated correctly into a TCP/IP address (test it by using the ping command to ping the node). The gateway host is usually the same node as the R/3 application server, although this is not required. The R/3 Gateway process might reside on a different node. If the gateway must be moved, then the gateway identifier must be changed in the R/3 profile. Be sure to check with the R/3 system manager to ensure that this value matches the gateway location. |
| GWSERV | Name of the TCP/IP socket that is the R/3 Gateway connection. All processes connecting to R/3 in the background use this socket number as an entry point. As with the TP attribute, this name must be defined in the services file on the node which the RFC Inbound and ALE Inbound servers are running, and the definition must match the definition of the R/3 application server. |

In an R/3 environment with multiple R/3 application servers, this list of attributes is simply repeated for different node names, different instances of R/3, and possibly different gateways.

Sample Settings

Listing 6-2 shows sample settings in a sideinfo file:

Listing 6-2 Sample Settings for sideinfo File

```
DEST=SAPNODE
LU=nodename
TP=sapdp00
PROTOCOL=I
GWHOST=nodename
GWSERV=sapgw00
```

Specifying the Location of the sideinfo File

The sideinfo file is usually located in the directory where the RFC Inbound and ALE Inbound servers are running (for example, the TUXEDO `appdir`). If you cannot use this location in your environment (for example, a number of other processes also connect to R/3 and use the same sideinfo information), then you can avoid duplicating the file by assigning the `SIDE_INFO` environment variable to a path containing the sideinfo table, as shown in the following examples:

UNIX C shell (csh):

```
setenv SIDE_INFO ../your eLink app directory/sideinfo
```

Windows NT:

```
set SIDE_INFO=your eLink app directory/sideinfo
```

The sideinfo file must have protections set so that all processes can read it.

For the RFC Inbound and ALE Inbound servers, this environment variable is defined in the server start-up script. See “Setting Environment Variables for RFC Inbound” in Chapter 4, “Configuring RFC Integration,” and “Setting Environment Variables for ALE Inbound” in Chapter 5, “Configuring ALE Integration,” for more information.

Configuring Outbound Connections

The ALE Outbound server uses the register mode method of connecting to R/3. When the ALE Outbound server is started, it connects to R/3 and registers with a specific Program ID. This Program ID is defined in the RFC destination, as defined in transaction SM59. The servers *must* be started and registered on the Program ID.

To register with R/3, the following information must be passed to ALE Outbound as command line parameters (which are specified in the server start-up script):

| Setting | Description |
|------------|---|
| Program-Id | Program ID (text string). It must match the program-id defined in transaction SM59. |

| Setting | Description |
|----------------------|---|
| Gateway Host Name | Name of the host running the SAP gateway server. It must match the GWHOST parameter specified in the sideinfo file. |
| Gateway Service Name | Service name of the SAP gateway server. It must match the GWSERV parameter specified in the sideinfo file. |

Troubleshooting Connection Problems

R/3 provides extensive help in isolating and testing connection problems involving the R/3 Gateway. The R/3 Gateway is sometimes called the CPIC Gateway because the CPIC protocol is the lowest-level protocol used on the TCP/IP socket when connecting to R/3.

To troubleshoot connection problems:

- Verify that the TCP/IP network is functioning by using network testing.
- Examine your R/3 installation. Common problems arise from typographical errors in the sideinfo file, the hosts file, and the services file. Examine these files, bearing in mind that UNIX is case-sensitive (including TCP/IP translation and socket name translation).
- If problems persist, thoroughly examine the CPIC implementation on the R/3 application server. The R/3 documentation provides extensive material about the CPIC setup under the heading "BC - SAP Communication: Configuration." If necessary, the CPIC implementation can be modified to accommodate the BEA eLink Adapter for R/3 installation.

7 Managing Your Installation

This chapter describes how to manage your BEA eLink Adapter for R/3 installation. It includes the following sections:

- Managing ALE Inbound and RFC Inbound
- Managing ALE Outbound

Managing ALE Inbound and RFC Inbound

The ALE Inbound and RFC Inbound servers can be started and managed as normal TUXEDO application servers.

Managing ALE Outbound

The ALE Outbound client is a TUXEDO client that is started by executing its startup script.

A Sample cr3.ubb File

This appendix describes the two preconfigured sample cr3.ubb files (for UNIX and Windows NT) that come with BEA eLink Adapter for R/3.

UNIX

```
#####
*RESOURCES
#####

IPCKEY          40000
DOMAINID        CR3
MASTER          SITE1
MAXACCESSERS    30
MAXSERVERS      20
MAXSERVICES     30
SCANUNIT        10
SANITYSCAN      12
BLOCKTIME       30
MAXGTT          200
MODEL           SHM
LDBAL           Y

#####
*MACHINES
#####

<system name>
  LMID=SITE1
  TYPE="HP-UX"
  TUXDIR="<your Tuxedo install directory>"
  TUXCONFIG="<your Tuxedo app directory>/tuxconfig"
  TLOGDEVICE="<your Tuxedo app directory>/bin/TLOG"
  TLOGSIZE=10
  APPDIR="<your Tuxedo app directory>"
  ULOGPFX="<your Tuxedo app directory>/ULOG"
  MAXWSCLIENTS=2
  UID=278

#####
*GROUPS
#####

QUE
  LMID=SITE1  GRPNO=1
  TMSNAME=TMS_QM  TMSCOUNT=2
  OPENINFO="TUXEDO/QM:<your Tuxedo app directory>/QUE:QSPACE"

CR3
```

```

LMID=SITE1   GRPNO=2
TMSNAME=TMS  TMSCOUNT=2

#####
*SERVERS
#####

DEFAULT:
    CLOPT="-A"

TMQUEUE
    SRVGRP=QUE SRVID=1
    GRACE=0   RESTART=Y CONV=N   MAXGEN=10
    CLOPT="-s QSPACE:TMQUEUE --  "

TMQFORWARD
    SRVGRP=QUE SRVID=2
    GRACE=0   RESTART=Y CONV=N   MAXGEN=10
    CLOPT=" -- -i 10 -q CR3_IDOC_IN,CR3_SUBMIT"

cr3alein
    SRVGRP=CR3 SRVID=3
    ENVFILE="cr3alein.env"

cr3rfcin
    SRVGRP=CR3 SRVID=4
    CLOPT="-o cr3rfcin.log -- -i cr3rfcin -e cr3.env"

#####
*SERVICES
#####

CR3_SUBMIT
CR3_IDOC_IN
CR3_RFC_IN

```

Windows NT

```

#####
*RESOURCES
#####
IPCKEY          40000
DOMAINID        CR3
MASTER          SITE1

```

A Sample cr3.ubb File

```
MAXACCESSERS      30
MAXSERVERS        20
MAXSERVICES        30
SCANUNIT          10
SANITYSCAN        12
BLOCKTIME         30
MAXGTT            200
MODEL             SHM
LDBAL             Y

#####
*MACHINES
#####

<system name>
  LMID=SITE1
  TYPE="Win32"
  TUXDIR="<your Tuxedo install directory>"
  TUXCONFIG="<your Tuxedo app directory>\tuxconfig"
  TLOGDEVICE ="<your Tuxedo app directory>\TLOG"
  TLOGSIZE=10
  APPDIR="<your Tuxedo app directory>"
  ULOGPFX="<your Tuxedo app directory>\ULOG"
  MAXWSCLIENTS=2
#####
*GROUPS
#####
QUE
  LMID=SITE1  GRPNO=1
  TMSNAME=TMS_QM  TMSCOUNT=2
  OPENINFO="TUXEDO/QM:<your Tuxedo app directory>\QUE;QSPACE"

CR3
  LMID=SITE1  GRPNO=2
  TMSNAME=TMS  TMSCOUNT=2
#####
*SERVERS
#####
DEFAULT:
  CLOPT="-A"
TMQUEUE
  SRVGRP=QUE  SRVID=1
  GRACE=0  RESTART=Y  CONV=N  MAXGEN=10
  CLOPT="-s QSPACE:TMQUEUE --  "
TMQFORWARD
  SRVGRP=QUE  SRVID=2
  GRACE=0  RESTART=Y  CONV=N  MAXGEN=10
  CLOPT=" -- -i 10 -q CR3_IDOC_IN,CR3_SUBMIT"
cr3alein
```

```
        SRVGRP=CR3 SRVID=3
        ENVFILE="cr3alein.env"
cr3rfcin
        SRVGRP=CR3 SRVID=4
        CLOPT="-o cr3rfcin.log -- -i cr3rfcin -e cr3.env"
#####
*SERVICES
#####
CR3_SUBMIT
CR3_IDOC_IN
CR3_RFC_IN
```

Index

A

- advertising services 4-9
- ALE Inbound
 - configuring 5-2
 - environment variables 5-4
 - environment variables for connections 6-2
 - inbound connections, configuring 6-1
 - load balancing 5-8
 - logging 5-7
 - managing 7-1
 - queues
 - configuring 5-20
 - creating 3-2
 - splitting IDOC packets 5-7
 - TID file 5-7
 - UBB file 5-2
- ALE Outbound
 - command line options 5-10
 - compressing outbound IDOCs 5-16
 - configuring 5-9
 - data-dependent routing
 - environment variable 5-13
 - in destination map file 5-16
 - destination map file 5-14
 - environment variables 5-11
 - load balancing 5-18
 - logging 5-17
 - managing 7-1
 - outbound connections, configuring 6-5
 - program IDs, multiple 5-18

- queues
 - configuring 5-22
 - creating 3-2
 - splitting IDOC packets 5-16
 - starting 5-9
 - startup program 5-9
 - TID file 5-17

audience vii

B

- batch files
 - cr3aleout.bat 5-12

C

- command line options
 - ALE Outbound 5-10
- compressing outbound IDOCs 5-16
- configuring
 - ALE Inbound 5-2
 - ALE Outbound 5-9
 - R/3 connections
 - inbound 6-1
 - outbound 6-5
 - RFC Inbound 4-2
 - TUXEDO 3-1
- connections
 - inbound connections, configuring 6-1
 - lost connections 4-8
 - outbound connections, configuring 6-5
 - troubleshooting 6-6

cr3.ubb file 3-1

CR3_ALE_DEFAULT_IDOC_SPLIT

environment variable 5-11

CR3_ALE_DEFAULT_TARGET_ID

environment variable 5-11

CR3_ALE_TARGET_QUEUE environment

variable 5-11

CR3_ALE_TARGET_QUEUE_SPACE

environment variable 5-11

CR3_ALEIN_ERROR_QUEUE

environment variable 5-5

CR3_ALEIN_ERROR_QUEUE_SPACE

environment variable 5-5

CR3_ALEIN_IDOCIN_QUEUE

environment variable 5-5

CR3_ALEIN_IDOCIN_QUEUE_SPACE

environment variable 5-5

CR3_ALEIN_PRINT_FILE environment

variable 5-5

CR3_ALEIN_PRINT_OPTION

environment variable 5-5

CR3_ALEIN_TID_FILE environment

variable 5-4

CR3_ALEIN_TID_PER_IDOC

environment variable 5-5

CR3_ALEIN_TRACE environment variable

5-5

CR3_ALEOUT_DEST_MAP_FILE

environment variable 5-11

CR3_ALEOUT_PRINT_FILE environment

variable 5-12

CR3_ALEOUT_PRINT_OPTION

environment variable 5-12

CR3_ALEOUT_TID_FILE environment

variable 5-12

CR3_ALEOUT_TRACE environment

variable 5-12

CR3_CLIENT environment variable 6-2

CR3_DESTINATION environment variable

6-2

CR3_EXIT_R3_CONNECT_LOSS

environment variable 4-5

CR3_EXPORT_PARAMS environment

variable 4-6

CR3_EXPORT_TABLES environment

variable 4-6

CR3_LANGUAGE environment variable

6-2

CR3_PASSWORD environment variable 6-2

CR3_RESPONSE_BUFFER_SIZE

environment variable 4-5

CR3_RFC_NAME environment variable 4-6

CR3_TRACE environment variable 4-6

CR3_USER environment variable 6-2

cr3alein.env 5-6

cr3aleout.bat file 5-12

cr3rfcin.env 4-6

customer support xiii

D

data-dependent routing

environment variable 5-13

in destination map file 5-16

destination map file 5-14

documentation

audience vii

browsing in a web browser ix

conventions x

how to use this document ix

organization viii

prerequisite knowledge viii

printing from a web browser ix

purpose vii

related documentation xi

support xiii

E

environment files

cr3alein.env 5-6

cr3rfcin.env 4-6

environment variables

CR3_ALE_DEFAULT_IDOC_SPLIT
5-11
CR3_ALE_DEFAULT_TARGET_ID
5-11
CR3_ALE_TARGET_QUEUE 5-11
CR3_ALE_TARGET_QUEUE_SPAC
E 5-11
CR3_ALEIN_ERROR_QUEUE 5-5
CR3_ALEIN_ERROR_QUEUE_SPAC
E 5-5
CR3_ALEIN_IDOCIN_QUEUE 5-5
CR3_ALEIN_IDOCIN_QUEUE_SPA
CE 5-5
CR3_ALEIN_PRINT_FILE 5-5
CR3_ALEIN_PRINT_OPTION 5-5
CR3_ALEIN_TID_FILE 5-4
CR3_ALEIN_TID_PER_IDOC 5-5
CR3_ALEIN_TRACE 5-5
CR3_ALEOUT_DEST_MAP_FILE
5-11
CR3_ALEOUT_PRINT_FILE 5-12
CR3_ALEOUT_PRINT_OPTION 5-12
CR3_ALEOUT_TID_FILE 5-12
CR3_ALEOUT_TRACE 5-12
CR3_CLIENT 6-2
CR3_DESTINATION 6-2
CR3_EXIT_R3_CONNECT_LOSS 4-5
CR3_EXPORT_PARAMS 4-6
CR3_EXPORT_TABLES 4-6
CR3_LANGUAGE 6-2
CR3_PASSWORD 6-2
CR3_RESPONSE_BUFFER_SIZE 4-5
CR3_RFC_NAME 4-6
CR3_TRACE 4-6
CR3_USER 6-2
for ALE Inbound 5-4
for ALE Outbound 5-11
for RFC Inbound 4-4
SERVICE_LIST 4-6
SIDE_INFO 6-2

export parameters, configuring 4-8

export tables, configuring 4-9

F

files

cr3.ubb file 3-1
cr3alein.env 5-6
cr3aleout.bat 5-12
cr3rfcin.env 4-6
sideinfo file 6-3

G

gateway host name 6-6

gateway service name 6-6

I

inbound connections, configuring 6-1

installing

on UNIX 2-1
on Windows NT 2-6

L

labels

SERVER label 4-4
SERVICE label 4-6

load balancing

ALE Inbound 5-8
ALE Outbound 5-18

logging

ALE Inbound 5-7
ALE Outbound 5-17
RFC Inbound 4-9

login user, UNIX 2-2

M

managing

ALE Inbound 7-1

ALE Outbound 7-1
RFC Inbound 7-1

logging 4-9
managing 7-1
UBB file 4-2

N

nodes
 R/3 installation nodes 1-2
 TUXEDO installation node 1-3
notation x

O

outbound connections, configuring 6-5

P

prerequisite knowledge viii
program IDs, multiple 5-18
program-Id 6-5

Q

queues
 configuring for ALE 5-20
 creating for ALE 3-2
 specifying default queues for ALE
 Outbound 5-15

R

R/3
 nodes 1-2
requirements
 prerequisite knowledge viii
 system requirements 1-1
 TUXEDO requirements 1-3
response buffers, configuring initial size for
 4-8
RFC Inbound
 configuring 4-2
 environment variables 4-4
 inbound connections, configuring 6-1

S

SERVER label 4-4
SERVICE label 4-6
SERVICE_LIST environment variable 4-6
services
 advertising 4-9
 defining 4-9
SIDE_INFO environment variable 6-2
sideinfo file 6-3
splitting IDOC packets
 ALE Inbound 5-7
 ALE Outbound 5-16
starting
 ALE Outbound 5-9
support
 customer support xiii
 documentation support xiii
system requirements 1-1

T

technical support xiii
TID file
 ALE Inbound 5-7
 ALE Outbound 5-17
TID file manager 5-22
transaction log (TLOG) 3-1
troubleshooting
 connection problems 6-6
TUXEDO
 configuring 3-1
 initialization file (cr3.ubb) 3-1
 installation node 1-3
 transaction log (TLOG) 3-1

U

UBB file

- ALE Inbound 5-2
- RFC Inbound 4-2
- UNIX listing A-2
- Windows NT listing A-3

UNIX

- installation instructions 2-1
- login user 2-2
- system requirements 1-1
- UBB file A-2

W

Windows NT

- installation instructions 2-6
- system requirements 1-1
- UBB file A-3