BEA eLink Adapter for Kenan Arbor/BP

User Guide

BEA eLink Adapter for Kenan Arbor/BP Version 1.1
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BEA eLink Adapter for Kenan Arbor/BP User Guide

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About This Document

This document describes the BEA eLink Adapter for BroadVision component and gives instructions for transferring data between Kenan Arbor/BP and the eLink Platform. This guide explains how to install and configure the eLink Adapter for BroadVision, and how to initiate data transfer requests.

The *BEA eLink Adapter for Kenan Arbor/BP User Guide* is organized as follows:

- *Understanding the eLink Adapter for Kenan Arbor/BP* introduces the eLink Adapter for Kenan Arbor/BP component and explains how eLink Adapter for BroadVision fits into the BEA eLink Platform environment.
- *Installing eLink Adapter for Kenan Arbor/BP* explains how to install the eLink Adapter for Kenan Arbor/BP component.
- *Configuring eLink Adapter for Kenan Arbor/BP* provides information for configuring the servers required to run eLink Adapter for BroadVision.
- *Running eLink Adapter for Kenan Arbor/BP* provides information about booting the BEA eLink Platform server and initiating information transfer requests between a eLink Platform environment and Kenan Arbor/BP.
- *Error Messages* describes error and informational messages as well as actions to resolve the errors.

What You Need to Know

This document is intended for system administrators who will install the eLink Adapter for Kenan Arbor/BP on various platforms, as well as programmers who will configure the eLink Adapter for Kenan Arbor/BP and set up eLink Platform services to execute information transfers with Kenan Arbor/BP. This guide assumes knowledge of BEA eLink Platform and Kenan Arbor/BP products.

e-docs Web Site

BEA product documentation is available on the BEA corporate Web site. From the BEA Home page, click on Product Documentation or go directly to the "e-docs" Product Documentation page at http://e-docs.beasys.com.

How to Print the Document

You can print a copy of this document from a Web browser, one file at a time, by using the File—>Print option on your Web browser. A PDF version of this document is available on the eLink documentation Home page on the e-docs Web site (and also on the documentation CD).

You can open the PDF in Adobe Acrobat Reader and print the entire document (or a portion of it) in book format. To access the PDFs, open the eLink documentation Home page, click the PDF files button and select the document you want to print.If you do not have the Adobe Acrobat Reader, you can get it for free from the Adobe Web site at http://www.adobe.com/.

Related Information

The following BEA publications are also available for more information:

- *BEA Tuxedo Application Development Guide*
- *BEA Tuxedo Programmer's Guide*
- *BEA Tuxedo Reference Guide*

Contact Us

Your feedback on the BEA eLink documentation is important to us. Send us e-mail at docsupport@beasys.com if you have questions or comments. Your comments will be reviewed directly by the BEA professionals who create and update the eLink documentation. In your e-mail message, please indicate that you are using the documentation for the BEA eLink Adapter for BroadVision Product Version: release.

If you have any questions about this version of the eLink Adapter for Kenan Arbor/BP, or if you have problems installing and running the eLink Adapter for Kenan Arbor/BP, 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 eLink Adapter for Kenan Arbor/BP you are using
- A description of the problem and the content of pertinent error messages

Document Conventions

The following documentation conventions are used throughout this document:

Item	Examples
Variable names	Variable names represent information you must supply or output information that can change; they are intended to be replaced by actual names. Variable names are displayed in italics and can include hyphens or underscores. The following are examples of variable names in text: *error_file_name* The *when-return* value...

User input and screen output	For screen displays and other examples of input and output, user input appears as in the first of the following lines; system output appears as in the second through fourth lines:
	`dir c:\accounting\data`
	`Volume in drive C is WIN_NT_1`
	`Volume Serial Number is 1234-5678`
	`Directory of C:\BEADIR\DATA`

Syntax	Code samples can include the following elements: ■ Variable names can include hyphens or underscores (e.g., *error_file_name)* ■ Optional items are enclosed in square brackets: [ ]. If you include an optional item, do not code the square brackets. ■ A required element for which alternatives exist is enclosed in braces {}. The alternatives are separated by the pipe (vertical bar) character: |. You must include only one of the alternatives for that element. Do not code the braces or pipe character. ■ An ellipsis (...) indicates that the preceding element can be repeated as necessary.
Omitted code	An ellipsis (...) is used in examples to indicate that code that is not pertinent to the discussion is omitted. The ellipsis can be horizontal or vertical.

Item	Examples
Environment variables	Environment variables are formatted in an uppercase font. ENVFILE=${APPDIR}
Key names	Key names are presented in boldface type. Press Enter to continue.
Literals	Literals are formatted in a monospace font. `class extendSample`
Window items	Window items are presented in boldface type. Window items can be window titles, button labels, text edit box names or other parts of the window. Type your password in the Logon window. Select Export to make the service available to the client.

CHAPTER

1 Understanding the eLink Adapter for Kenan Arbor/BP

This chapter contains the following topics:

- BEA eLink Solution Overview
- Overview of the eLink Adapter for Kenan Arbor/BP

BEA eLink Solution Overview

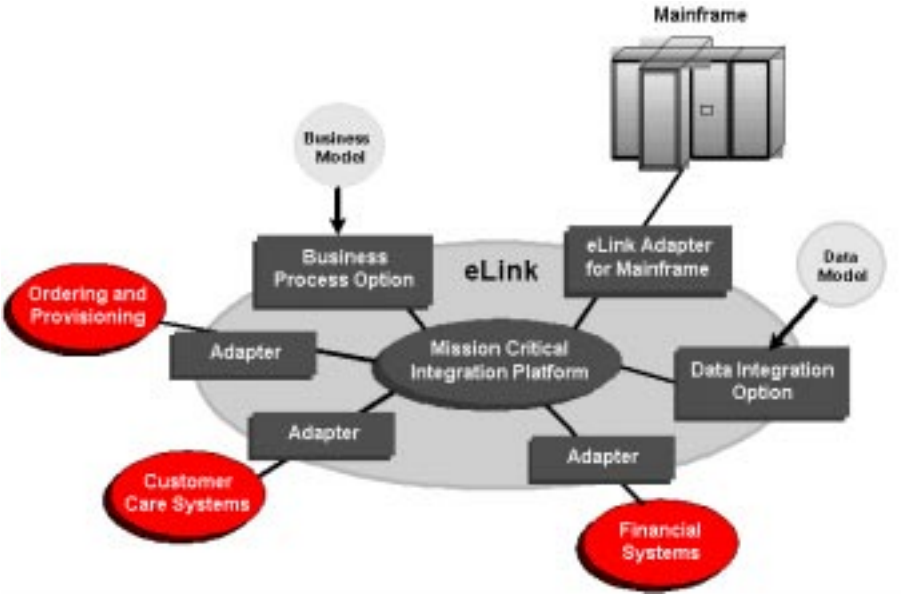
BEA eLink™ provides an open Enterprise Application Integration (EAI) solution that allows applications throughout organizations to communicate seamlessly. Using EAI, you gain the long-term flexibility and investment protection you need to keep up with today's ever-changing business environment.

Typically, companies use packaged applications to automate internal operations, such as financial, manufacturing, or human resources. While they successfully address the needs of these specific areas, these proprietary platforms often do not work together. To compete today, you need a much greater exchange of information. Systems need to communicate at a process level within your own organization, as well as with customer's and supplier's systems. BEA eLink Platform is the underlying basis of

BEA eLink, a family of off-the-shelf enterprise application integration (EAI) products that leverage the BEA transaction platform to integrate existing legacy applications with customer-focused and business-to-business e-commerce initiatives.

BEA eLink Platform provides a proven infrastructure for integrating applications within the enterprise and across the Web. BEA eLink Platform ensures high-performance, secure transactions and transparent access to mission-critical applications and information throughout the enterprise and across the Web. Figure 1-1 illustrates the eLink logical architecture and shows where the eLink Adapters fit into the process.

Figure 1-1 BEA eLink Solution Illustration



The entire BEA eLink family (including all options and adapters) is highly scalable. Multiple instances of BEA eLink components can collaborate so that work is divided between eLink domains. BEA eLink includes SNMP integration for enterprise management.

The current BEA eLink Platform leverages the BEA Tuxedo infrastructure because it is based on a service-oriented architecture. Both BEA Tuxedo and BEA eLink communicate directly with each other and with other applications through the use of services. Multiple services are grouped into “application servers” or “servers”. The

terms, Tuxedo services/servers and eLink services/servers can be used interchangeably. Because this document is specifically addressing the eLink family, the terms “eLink service” and “eLink server” are used throughout.

The BEA eLink Platform complies with the Open Group’s X/Open standards including support of the XA standard for two-phase commit processing, the X/Open ATMI API, and XPG standards for language internationalization. C, C++, COBOL, and Java are supported. The BEA eLink Platform connects to any RDBMS, OODBMS, file manager or queue manager, including a supplied XA-compliant queueing subsystem.

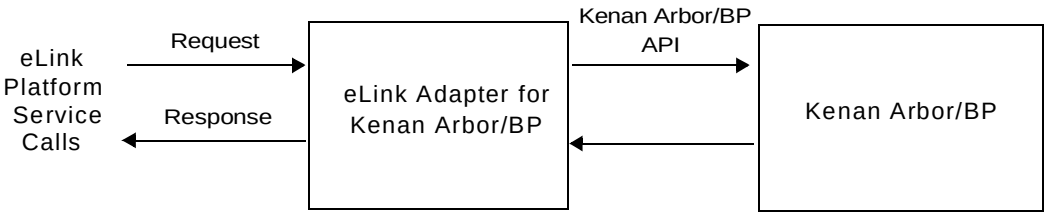
The following components operate with BEA eLink Platform:

- The Data Integration Option translates data models used by different applications into a common data format. It provides a cost-effective alternative to writing or generating programs to perform this function. It also handles complex translation with great power and scalability. The DIO leverages technology based on the TSI Mercator product, which is integrated with eLink.
- The Business Process Option helps automate tasks in the distributed global business process and dynamically responds to business events and exceptions. The BPO is currently implemented by integrating eLink with technology based on InConcert workflow management software.
- An eLink Adapter provides the interface between the BEA eLink Platform and external applications with out-of-the-box functionality.

Overview of the eLink Adapter for Kenan Arbor/BP

The eLink Adapter for Kenan Arbor/BP provides communication between Kenan Arbor/BP objects and BEA eLink Platform applications. The eLink Adapter for Kenan Arbor/BP consists of a server that processes all requests for Kenan Arbor/BP services. This server is managed in the eLink environment. The eLink Platform client calls the service advertised by the eLink to the Kenan Arbor/BP server. The eLink Adapter for Kenan Arbor/BP validates the incoming service request and invokes the appropriate programs to complete the request. This enables any eLink Platform compliant client application to access Kenan Arbor/BP objects using the eLink Adapter for Kenan Arbor/BP. Figure 1-2 illustrates an overview of the process.

Figure 1-2 eLink Adapter for Kenan Arbor/BP Transaction Process Overview



The eLink Adapter for Kenan Arbor/BP consists of a generic service that processes all requests to invoke Kenan Arbor/BP functionality. The functionality that is available to be called and the service names by which the functionality is advertised are defined in the configuration file. See “Configuring eLink Adapter for Kenan Arbor/BP” for more information.

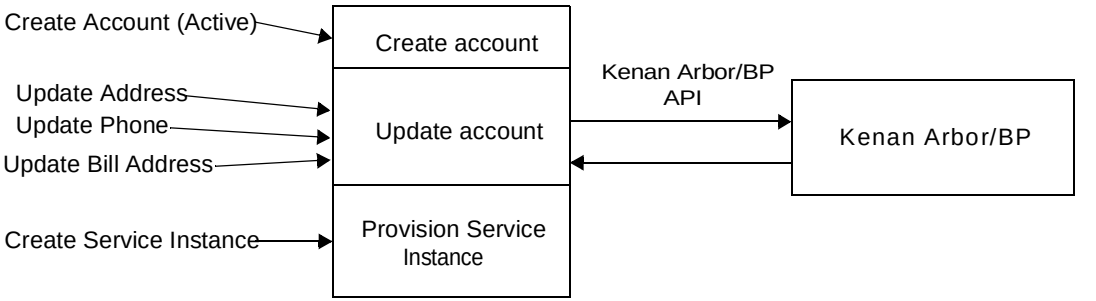
The Kenan Arbor/BP business functionality is grouped into objects. For example, all business functionality directly affecting accounts is grouped under the Account object, all service functionality is grouped under the Service Instance object. Each eLink Platform service that provides business functionality belongs to a particular object. Further, the services belonging to an object are divided into groups based on the

functionality they provide. For example, all services that update accounts belong to the Update group. These objects and groups are defined in the configuration file. See "Configuring eLink Adapter for Kenan Arbor/BP" for more information.

Addiitonally, each object may have some control parameters that specify information regarding the type of service needed. For example, a newly created account can have either an Active or Pending status. This type of information is specified in the configuration file. See "Configuring eLink Adapter for Kenan Arbor/BP" for more information.

The following diagram shows the architecture of the eLink Adapter for Kenan Arbor/BP. It illustrates business actions being translated into eLink Platform services.

Figure 1-3 Architecture of the eLink Adapter for Kenan Arbor/BP



2 Installing eLink Adapter for Kenan Arbor/BP

This chapter contains the following topics:

- Pre-Installation Considerations
- Installing on Unix Platforms
- Distribution Libraries and Executables

Pre-Installation Considerations

The eLink Adapter for Kenan Arbor/BP runs on the HP-UX platform. Complete the following tasks prior to installing eLink Adapter for Kenan Arbor/BP:

- Read the *BEA eLink Adapter for Kenan Arbor/BP Release Notes*.
- Install and verify the operation of the BEA eLink Platform product.

Installing on Unix Platforms

To install the eLink Adapter for Kenan Arbor/BP on Unix platforms, you run the `install.sh` script. This script installs all the necessary software components. Perform the following steps to install the eLink Adapter for Kenan Arbor/BP on a supported UNIX platform.

1. Log on as root.

   ```
   $ su -
   Password:
   ```

2. Access the CD-ROM device.

   ```
   # ls -1 /dev/cdrom
   total 0
   brw-rw-rw-   1 root   sys    27,   0 January 27  10:55 c1b0t010
   ```

3. Mount the CD-ROM.

   ```
   # mount -r -F cdfs /dev/cdrom/c1b0t010 /mnt
   ```

4. Change the directory to your CD-ROM device.

   ```
   # cd /mnt
   ```

5. List the CD-ROM contents.

   ```
   # ls
   install.sh  hp
   ```

6. Execute the installation script.

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

7. The installation script runs and prompts you for responses. Listing 2-1 is an example of the installation script. The entries in bold represent user responses.

Listing 2-1 `Install.sh` Example

```
cmadm@dalsun4:/cmhome/dist/bat-1 ls
hp          install.sh  sun5x
cmadm@dalsun4:/cmhome/dist/bat-1 sh install.sh
```

```
01) hp/hpux1020      02) sun5x/sol26

Install which platform's files? [01-      2, q to quit, l for list]:
2

** You have chosen to install from sun5x/sol26 **

BEA eLink Adapter for Kenan Arbor/BP Release 1.1

This directory contains the BEA eLink Adapter for Kenan Arbor/BP
System for
SunOS 5.6 (Solaris 2.6) on SPARC.


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

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

The following packages are available:

  1     eken            BEA eLink Adapter for Kenan Arbor/BP

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

BEA eLink Adapter for Kenan Arbor/BP
(sparc) Release 1.1
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BEA eLink is a trademark of BEA Systems, Inc.


Directory where Kenan Arbor/BP Adapter files are to be installed
(Enter your eLink Platform directory path) [?,q]: /work/cmadm/tux65

Using /work/cmadm/tux65 as the Kenan Arbor/BP Adapter base
directory

Determining if sufficient space is available ...
9406 blocks are required
626198 blocks are available to /work/cmadm/tux65

Unloading /cmhome/dist/bat-1/sun5x/sol26/eken/EKENT65.Z ...
bin/ELINKABPO
bin/lic.sh
eLink/kenan_abp/elabp_env.cfg
```

```
eLink/kenan_abp/setenv.sh
eLink/kenan_abp/ubbelabp
udataobj/fml_fields
9380 blocks
... finished

Changing file permissions...
... finished

If your license file is accessible, you may install it now.
Install license file? [y/n]: n

Please don't forget to use lic.sh located in your product bin
directory
to install the license file from the enclosed floppy.
Refer to your product Release Notes for details on how to do this.


Installation of BEA eLink Adapter for Kenan Arbor/BP was successful

Please don't forget to fill out and send in your registration card
cmadm@dalsun4:/cmhome/dist/bat-1
```

8. Change the directory to your root directory.

   ```
   # cd /
   ```

9. Unmount the CD-ROM device.

Distribution Libraries and Executables

The eLink Adapter for Kenan Arbor/BP CD-ROM contains the following libraries and executable programs. After installing the eLink Adapter for Kenan Arbor/BP software, verify that these libraries and programs are installed on your system. Verify that the following files are installed by the eLink Adapter for Kenan Arbor/BP software.

Table 2-1 Distribution Libraries and Executables

Directory	Files
/bin	ELINKABPO
/elink/kenan_abp	elabp_env.cfg
/elink/kenan_abp	ubbelabp
/elink/kenan_abp	setenv.sh
/udataobj	fml_fields

3 Configuring eLink Adapter for Kenan Arbor/BP

This chapter contains the following topics:

- Defining the Server
- Configuring the eLink Adapter for Kenan Arbor/BP
- Understanding Service Invocation Requirements
- Understanding Kenan Arbor/BP Adapter Services

Defining the Server

Before running the eLink Adapter for Kenan Arbor/BP, you must identify the `ELINKABPO` server in the `UBBCONFIG` file. A sample `UBBCONFIG` file is provided on the installation CD-ROM. You can use this sample file as a base for creating your own `UBBCONFIG` file. Listing 3-1 shows the syntax for defining the `ELINKABPO` server in the `UBBCONFIG` file.

Listing 3-1 Syntax for ELINKABPO Server Definition in the UBBCONFIG File

```
ELINKABPO
   SRVGRP="identifier" SRVID="number'
   CLOPT=" -- -i "unique_id -e configuration_file_name"
```

For information about the SRVGRP, SRVID, and CLOPT parameter syntax and definitions, refer to the *BEA Tuxedo Reference Manual*.

-- -i *unique_id*
: identifies the label section in the configuration file containing the eLink Adapter for Kenan Arbor/BP environment variables. This is optional. If not specified, it defaults to the process name.

-e *configuration_file_name*
: specifies the name of the eLink Adapter for Kenan Arbor/BP configuration file.

Configuring the eLink Adapter for Kenan Arbor/BP

The elabp_env.cfg file controls the operation of the eLink Adapter for Kenan Arbor/BP server (ELINKABPO). Following are the sections of the configuration file and the parameters you can define for each section. A sample configuration file is provided in the "Sample eLink Adapter for Kenan Arbor/BP Configuration File" section.

Note: elabp_env.cfg is a generic filename. You can name this file anything you choose, but the filename must match the -e *configuration_file_name* parameter you specify in the eLink Platform UBBCONFIG file. (See "Understanding Service Invocation Requirements" for instructions on configuring the ELINKABPO server in the UBBCONFIG file.)

The eLink Adapter configuration file is divided into the following sections:

- SERVER

Contains the general parameters required during server startup.

- SERVICE

Contains a list of services to be performed and the parameters required for each service.

Defining the SERVER Section

The syntax for the SERVER section of the eLink Adapter for Kenan Arbor/BP configuration file is as follows:

Listing 3-2 Syntax for SERVER section

```
[SERVER=identifier]
EXIT_CONNECT_LOSS=Y
TRACE=Y
CAT_SERVER=server name
CAT_DATABASE=database name
CAT_USERNAME=user name
CAT_PASSWORD=password
APPNAME=application name
DATE_FORMAT=MMDDYYYY
RESPONSE_BUFFER_SIZE=buffer size
SERVICE_LIST=service1, service2, service3
```

Required Parameters

The following parameters must be defined in the SERVER section:

SERVER
: A unique identifier for this specific instance of the adapter. Alphanumeric.

CAT_SERVER
: The catalog server to be connected.

CAT_DATABASE
: The catalog database to be connected.

CAT_USERNAME
: Login name to be used to for logging in to the database.

CAT_PASSWORD
: Password associated with the CAT_USERNAME.

APPNAME
: The name or ID of the application being used by Kenan Arbor/BP. Cannot contain more than 8 characters.

DATE_FORMAT
: The date format to be used.

SERVICE_LIST
: The names of the services to be advertised. List each service name, separated by commas.

RESPONSE_BUFFER_SIZE
: Sets the size of the response buffer in bytes. Default is 10,000.

Optional Parameters

The following parameters are optional in the SERVER section:

EXIT_CONNECT_LOSS
: Specifies whether the eLink Adapter for Kenan Arbor/BP should exit when it detects that the connection to the Kenan Arbor/BP server has been lost.

TRACE
: Indicates whether trace output should be produced.

Defining the SERVICE Section

The syntax for the SERVICE section of the eLink Adapter for Kenan Arbor/BP configuration file is as follows:

Listing 3-3 Syntax for SERVICE section

```
[SERVICE=service name]
SERVICE_OBJECT=business object name
SERVICE_METHOD=business object method
SERVICE_TYPE=type of service
FIELD_NAME=M,O,K,R
```

Required Parameters

The following parameters must be defined in the `SERVER` section:

`SERVICE`
: The name of the service being advertised.

`SERVICE_OBJECT`
: The business object with which the service is identified. This tells the eLink Adapter for Kenan Arbor/BP which type of initialization to perform.

`SERVICE_METHOD`
: The business method with which the service is identified. This tells the eLink Adapter for Kenan Arbor/BP the type of functionality that needs to be invoked for the service request.

`FIELD_NAME`
: The name of each field to be used by this service, and a value indicating whether the field is mandatory or optional, whether the field is a key field, and whether the field is part of the request or response buffer. Valid values are:

  M=Mandatory for input
  O=Optional for input
  K=Key field; used for update operations in which some key fields cannot be updated
  R=Required as a response

  The M, O, or K value is presented first, followed by the R value.

Optional Parameters

The following parameters are optional in the `SERVICE` section:

`SERVICE_TYPE`
: Provides the control information associated with the service.

Sample eLink Adapter for Kenan Arbor/BP Configuration File

Listing 3-4 shows an example of the adapter configuration file that is provided with the eLink Adapter for Kenan Arbor/BP. The concepts discussed in the "Configuring the eLink Adapter for Kenan Arbor/BP" section are illustrated in this file.

Listing 3-4 Sample Configuration File for the eLink Adapter for Kenan Arbor/BP

```
[SERVER=2]
TRACE=Y
RESPONSE_BUFFER_SIZE=12000
CAT_SERVER=beabp
CAT_DATABASE=beabp
CAT_USERNAME=arbor
CAT_PASSWORD=arbor123
APPNAME=my_app
DATE_FORMAT=MMDDYYYY

SERVICE_LIST=Create_Account1,Create_Account2,Update_Account1,Li
st_Account1,Select_Account1,Get_Act_Status1,Cease_Acct,Activate
_Acct,Reactivate_Acct,Reinstate_Acct,Suspend_Acct,Terminate_Acc
t,Writeoff_Acct,Prov_Serv1,Prov_Serv2,List_Serv1,List_Serv2,Sel
_Serv1,Sel_Serv2,GetStat_Serv1,GetStat_Serv2,SetStat_Serv1,SetS
tat_Serv2,Update_Serv1,Update_Serv2,Provision_ppkg,Set_status_p
pkg,Get_status_ppkg,List_ppkg,Select_ppkg,Update_ppkg,Provision
_ac,Set_status_ac,List_ac,Select_ac,Update_ac,Get_status_ac,Pro
vision_sv,Set_status_sv,List_sv,Select_sv,Update_sv,Get_status_
sv

[SERVICE=Create_Account1]
SERVICE_OBJECT=ACCOUNT
SERVICE_METHOD=CREATE
SERVICE_TYPE=ACTIVE
ACCOUNT_CATEGORY=M
ACCOUNT_TYPE=M
ACCT_SEG_ID= R
ALT_BANK_ACC_NUM=  O
AVS_ADDRESS_ID=OR
AVS_RESPONSE_CODE= O
BANK_AGENCY_CODE=O
BANK_AGENCY_NAME=O
BILL_ADDRESS1=M
```

```
BILL_ADDRESS2=O
BILL_ADDRESS3=O
BILL_CITY=M
BILL_COMPANY=O
BILL_COUNTRY_CODE=M
BILL_COUNTY=O
BILL_DISP_METH=M
BILL_FMT_OPT=M
BILL_FNAME=M
BILL_FRANCHISE_TAX_CODE=O
BILL_GEOCODE=O
BILL_HOLD_CODE=O
BILL_LNAME=O
BILL_MINIT=O
BILL_NAME_GENERATION=O
BILL_NAME_PRE=O
BILL_PERIOD=O
BILL_STATE=O
BILL_TITLE=O
BILL_ZIP=O
BILLING_FREQUENCY=O
CCARD_ACCOUNT=O
CCARD_CARRIER=O
CCARD_CLEARING_HOUSE_ID=O
CCARD_EXPIRE=O
CCARD_ID_SERV=O
CCARD_OWNR_NAME=O
CHARGE_THRESHOLD=O
CHG_WHO=O
CHILD_COUNT=O
CLEARING_HOUSE_ID=OR
CODEWORD=OR
COLLECTION_HISTORY=OR
COLLECTION_INDICATOR=MR
COLLECTION_STATUS=MR
CONTACT1_NAME=OR
CONTACT1_PHONE=OR
CONTACT2_NAME=OR
CONTACT2_PHONE=OR
CONVERTED=R
CRED_STATUS=MR

CREDIT_RATING=O
CREDIT_THRESH=OR
CURRENCY_CODE=MR
CUST_ADDRESS1=MR
CUST_ADDRESS2=OR
CUST_ADDRESS3=OR
CUST_BANK_ACC_NAME=OR
```

```
[SERVICE=Create_Account2]
SERVICE_OBJECT=ACCOUNT
SERVICE_METHOD=CREATE
SERVICE_TYPE=PENDING
ACCOUNT_CATEGORY=M
ACCOUNT_TYPE=M
ACCT_SEG_ID= R
ALT_BANK_ACC_NUM=  O
AVS_ADDRESS_ID=OR
AVS_RESPONSE_CODE= O
BANK_AGENCY_CODE=O
BANK_AGENCY_NAME=O
BILL_ADDRESS1=M
BILL_ADDRESS2=O
BILL_ADDRESS3=O
BILL_CITY=M
BILL_COMPANY=O
BILL_COUNTRY_CODE=M
BILL_COUNTY=O
BILL_DISP_METH=M
BILL_FMT_OPT=M
BILL_FNAME=M
BILL_FRANCHISE_TAX_CODE=O
BILL_GEOCODE=O
BILL_HOLD_CODE=O
BILL_LNAME=O
BILL_MINIT=O
BILL_NAME_GENERATION=O
BILL_NAME_PRE=O
BILL_PERIOD=O
BILL_STATE=O
BILL_TITLE=O
BILL_ZIP=O
BILLING_FREQUENCY=O
CCARD_ACCOUNT=O
CCARD_CARRIER=O
CCARD_CLEARING_HOUSE_ID=O
CCARD_EXPIRE=O
CCARD_ID_SERV=O
CCARD_OWNR_NAME=O
```

Understanding Service Invocation Requirements

Each unique business-level function that can be invoked by the eLink Adapter for Kenan Arbor/BP is advertised as an eLink Platform service. To invoke a service, a calling application prepares an FML32 request buffer specifying the input values that are to be passed to Kenan Arbor/BP. The calling application then invokes the corresponding eLink Platform service, passing the FML32 request buffer.

The eLink Adapter for Kenan Arbor/BP has a generic service that processes all the service requests. When invoked, the service code determines the service name that was used to invoke it. The service code then calls a function that processes the request, depending on the operation requested. This function takes the service name and FML32 request buffer as input parameters and returns the FML32 response buffer and error information (if any) as output parameters.

From the service name, the function determines the `SERVICE_OBJECT`, the `SERVICE_METHOD`, and the `SERVICE_TYPE` configuration parameters associated with the service. By analyzing these parameters, the eLink Adapter for Kenan Arbor/BP determines the functionality to invoke. The function then processes the FML32 request buffer, invokes the Kenan Arbor/BP functionality, and returns the response parameters in an FML32 buffer. If any errors occur, the function returns error information.

If the Kenan Arbor/BP interface functionality was invoked successfully, a `TPSUCCESS` code is returned, with the `tpurcode` set to 0. If the invocation failed, the service code returns the error code and error message as parameters of `tpreturn()` call.

The eLink Adapter for Kenan Arbor/BP uses only FML32 field names, not field IDs, when processing the request and response buffers. The field names must be defined in the eLink Platform FML Field Table file. This allows the actual field IDs to be customer-defined.

The table below illustrates the mapping between Kenan Arbor/BP data types and FML buffer data types.

Kenan Arbor/BP Data Types	FML Buffer Data Types
Char	Short
Char[]	String
Int	Long
Short	Short
Numeric	String
Date	String

Note: The maximum number of characters an FML field name can contain is 30. Several fields in the Service Instance Object contain more than 30 characters. These fields are abbreviated in the FML buffer. The following table shows the field names and their abbreviations.

Kenan Arbor/BP Field Name	Abbreviated FML Field Name
external_account_no	EXT_ACCOUNT_NO
external_account_no_bill_nrc	EXT_ACCOUNT_NO_BILL_NRC
external_account_no_bill_nrc_type	EXT_ACCOUNT_NO_BILL_NRC_TYPE
external_account_no_bill_rc	EXT_ACCOUNT_NO_BILL_RC
external_account_no_bill_rc_type	EXT_ACCOUNT_NO_BILL_RC_TYPE
external_account_no_bill_usg	EXT_ACCOUNT_NO_BILL_USG
external_account_no_bill_usg_type	EXT_ACCOUNT_NO_BILL_USG_TYPE
external_account_no_type	EXT_ACCOUNT_NO_TYPE

Understanding Kenan Arbor/BP Adapter Services

When a service request is received, the eLink Adapter for Kenan Arbor/BP reads the SERVICE_OBJECT, SERVICE_METHOD, and, if applicable, the SERVICE_TYPE parameters in the configuration file to determine the required action. For example, a request is made for a new account to be created. The eLink Adapter for Kenan Arbor/BP determines the name of the service that initiated the request, in this case, Create_Account1. The eLink Adapter for Kenan Arbor/BP then finds this service in the configuration file and reads the SERVICE_OBJECT, SERVICE_METHOD, and SERVICE_TYPE parameters. For this service, the values for these parameters are:

```
SERVICE_OBJECT=Account
SERVICE_METHOD=Create
SERVICE_TYPE=Active
```

By reading these parameters, the eLink Adapter for Kenan Arbor/BP determines that it needs to create a new account with a status of Active.

As another example, a second request is made for a new account to be created. This time the calling service is Create_Account2. The eLink Adapter for Kenan Arbor/BP reads the configuration parameters for this service and finds the following:

```
SERVICE_OBJECT=Account
SERVICE_METHOD=Create
SERVICE_TYPE=PENDING
```

Both of the above examples create new accounts, but with different statuses. Some services have identical names, but different numbers, such as Create_Account1 and Create_Account2. The only difference between these two services is the status of the object that is created. This facilitates maximum functionality for the eLink Adapter for Kenan Arbor/BP without having to restart the EL_ARBOR_IN service.

The table below lists the service names and the specialized functionality that can be performed on service objects. For more detailed information, refer to the *Kenan Arbor/BP API Guide* and *Kenan Arbor/BP API Reference*.

Service Name	Action Performed
Create_Account1 and Create_Account2	Creates an Account.
Update_Account1	Updates an account
List_Account1	Lists account(s)
Select_Account1	Selects account(s)
Get_Act_Status1	Gets the status of an account
Cease_Acct	Ceases an account
Activate_Acct	Activates an account.
Reactivate_Acct	Reactivates an account
Reinstate_Acct	Reinstates an account
Suspend_Acct	Suspends an account
Terminate_Acct	Terminates an account
Writeoff_Acct	"Writes-off" an account
Prov_Serv1 and Prov_Serv2	Provisions a Service Instance
List_Serv1 and List_Serv2	Lists Service Instances
Sel_Serv1 and Sel_Serv2	Selects Service Instances
GetStat_Serv1 and GetStat_Serv2	Gets Service Instance status
SetStat_Serv1 and SetStat_Serv2	Sets the status of a Service Instance
Update_Serv1 and Update_Serv2	Updates a Service Instance
Provision_ppkg	Provisions a Product Package
Set_status_ppkg	Sets the status of a Product Package
Get_status_ppkg	Gets the status of a Product Package

Service Name	Action Performed
`List_ppkg`	Lists a Product Package
`Select_ppkg`	Selects a Product Package
`Update_ppkg`	Updates a Product Package
`Provision_ac`	Provisions a Product Package Account
`Set_status_ac`	Sets the status of a Product Package Account
`Get_status_ac`	Gets the status of a Product Package Account
`List_ac`	Lists a Product Package Account
`Select_ac`	Selects a Product Package Account
`Update_ac`	Updates a Product Package Account
`Provision_sv`	Provisions a Product Package Service Instance
`Set_status_sv`	Sets the status of a Product Package Service Instance
`Get_status_sv`	Gets the status of a Product Package Service Instance
`List_sv`	Lists a Product Package Service Instance
`Select_sv`	Selects a Product Package Service Instance
`Update_sv`	Updates a Product Package Service Instance

Understanding the SERVICE_OBJECT

The eLink Adapter for Kenan Arbor/BP can perform actions on the following objects. These objects are listed in the configuration file as the `SERVICE_OBJECT` for each service.

- Account objects
- Service Instance objects
- Product Package objects
- Product Package Account objects
- Product Package Service Instance objects

Understanding the SERVICE_METHOD

The eLink Adapter for Kenan Arbor/BP can perform the following actions on the service objects. These actions are listed in the configuration file as the `SERVICE_METHOD` for each service. The table below lists and describes the actions that can be performed.

SERVICE_METHOD	Description
Create/Provision	Creates new objects.
Update	Updates an existing object, but generally cannot change the status of an object.
List	Retrieves a list based on the input criteria specified in the FML buffer.
Select	Returns one object based on its primary keys. The returned values of that object are specified in the configuration file ('R').
Get Status	For Account `SERVICE_OBJECT`, gets the "net" status of an account object. For all other `SERVICE_OBJECT`s, returns the status of that object.

SERVICE_METHOD	Description
Set Status	Sets the status of an object. This service does not apply for accounts.

Service Configuration Requirements

The eLink Adapter for Kenan Arbor/BP reads the `SERVICE_OBJECT`, `SERVICE_METHOD`, and `SERVICE_TYPE` parameters in the configuration file to determine the action to be performed. The tables below list the values that are required for these parameters for each service.

Account Service Configuration Parameters

Table 3-1 lists the values that are required for these parameters for each Account service.

Table 3-1 Configuration Parameters for Account Services

Service Name	SERVICE_ OBJECT	SERVICE_ METHOD	SERVICE_TYPE
`Create_Account1` or `Create_Account2`	ACCOUNT	CREATE	■ ACTIVE ■ PENDING
`List_Account1`	ACCOUNT	LIST	ACTIVE lists only Active Accounts that match your criteria. If not specified, all accounts that match your criteria are returned. Selection criteria is specified in the input (request) FML fields.
`Select_Account1`	ACCOUNT	SELECT	NONE to specify this parameter is not used for this service.
`Update_Account1`	ACCOUNT	UPDATE	NONE to specify this parameter is not used for this service.

Table 3-1 Configuration Parameters for Account Services

Service Name	SERVICE_ OBJECT	SERVICE_ METHOD	SERVICE_TYPE
Get_Act_Status1	ACCOUNT	GET_STATUS	NONE to specify this parameter is not used for this service.
Cease_Acct	ACCOUNT	SET_STATUS	CEASE
Activate_Acct	ACCOUNT	SET_STATUS	ACTIVE
Reactivate_Acct	ACCOUNT	SET_STATUS	REACTIVATE
Reinstate_Acct	ACCOUNT	SET_STATUS	REINSTATE
Suspend_Acct	ACCOUNT	SET_STATUS	SUSPEND
Terminate_Acct	ACCOUNT	SET_STATUS	TERMINATE
Writeoff_Acct	ACCOUNT	SET_STATUS	WRITE_OFF

Service Instance Configuration Parameters

Table 3-2 lists the values that are required for these parameters for each Service Instance service.

Table 3-2 Configuration Parameters for Service Instance Services

Service Name	SERVICE_ OBJECT	SERVICE_ METHOD	SERVICE_TYPE
Prov_Serv1 and Prov_Serv2	SERVICE_INSTANCE	PROVISION	NONE to specify this parameter is not used for this service.
List_Serv1 and List_Serv2	SERVICE_INSTANCE	LIST	■ ACTIVE to specify listing only Active Service Instances. ■ ALL to specify all Service Instances will be listed.

Table 3-2 Configuration Parameters for Service Instance Services

Service Name	SERVICE_ OBJECT	SERVICE_ METHOD	SERVICE_TYPE
`Sel_Serv1` and `Sel_Serv2`	SERVICE_INSTANCE	SELECT	NONE to specify this parameter is not used for this service.
`Update_Serv1` and `Update_Serv2`	SERVICE_INSTANCE	UPDATE	NONE to specify this parameter is not used for this service.
`GetStat_Serv1` and `GetStat_Serv2`	SERVICE_INSTANCE	GET_STATUS	NONE to specify this parameter is not used for this service.
`SetStat_Serv1` and `SetStat_Serv2`	SERVICE_INSTANCE	SET_STATUS	■ CEASE ceases a Service Instance. ■ REACTIVATE reactivates a disconnected Service Instance.

Product Package Service Configuration Parameters

Table 3-3 lists the values that are required for these parameters for each Product Package service.

Table 3-3 Configuration Parameters for Product Package Services

Service Name	SERVICE_ OBJECT	SERVICE_ METHOD	SERVICE_TYPE
`Provision_ppkg`	PRODUCT_PACKAGE	PROVISION	NONE to specify this parameter is not used for this service.

Table 3-3 Configuration Parameters for Product Package Services

Service Name	SERVICE_ OBJECT	SERVICE_ METHOD	SERVICE_TYPE
`List_ppkg`	PRODUCT_PACKAGE	LIST	■ ALL to specify that all Product Packages should be listed. ■ ACTIVE to specify that only Active Product Packages should be listed.
`Select_ppkg`	PRODUCT_PACKAGE	SELECT	NONE to specify this parameter is not used for this service.
`Update_ppkg`	PRODUCT_PACKAGE	UPDATE	NONE to specify this parameter is not used for this service.
`Set_status_ppkg`	PRODUCT_PACKAGE	SET_STATUS	■ ACTIVE marks Product Package as ACTIVE. ■ CEASE ceases a Product Package. ■ REMOVE removes a Product Package.
`Get_status_ppkg`	PRODUCT_PACKAGE	GET_STATUS	NONE to specify this parameter is not used for this service.

Product Package Account Service Configuration Parameters

Table 3-3 lists the values that are required for these parameters for each Product Package Account service.

Table 3-4 Configuration Parameters for Product Package Account Services

Service Name	SERVICE_OBJECT	SERVICE_METHOD	SERVICE_TYPE
`Provision_ac`	PROD_PKG_ACCT	PROVISION	NONE to specify this parameter is not used for this service.
`List_ac`	PROD_PKG_ACCT	LIST	■ ALL to specify that all Product Package Accounts should be listed. ■ ACTIVE to specify that only Active Product Package Accounts should be listed.
`Select_ac`	PROD_PKG_ACCT	SELECT	NONE to specify this parameter is not used for this service.
`Update_ac`	PROD_PKG_ACCT	UPDATE	NONE to specify this parameter is not used for this service.
`Set_status_ac`	PROD_PKG_ACCT	SET_STATUS	■ ACTIVE marks Product Package Account as ACTIVE. ■ CEASE ceases a Product Package Account. ■ REMOVE removes a Product Package Account.
`Get_status_ac`	PROD_PKG_ACCT	SELECT	NONE to specify this parameter is not used for this service.

Product Package Service Instance Configuration Parameters

Table 3-3 lists the values that are required for these parameters for each Product Package Service Instance service.

Table 3-5 Configuration Parameters for Product Package Service Instance Services

Service Name	SERVICE_OBJECT	SERVICE_METHOD	SERVICE_TYPE
`Provision_sv`	PROD_PKG_SERV_INST	PROVISION	NONE to specify this parameter is not used for this service.
`List_sv`	PROD_PKG_SERV_INST	LIST	■ ALL to specify that all Product Package Service Instances should be listed. ■ ACTIVE to specify that only Active Product Package Service Instances should be listed.
`Select_sv`	PROD_PKG_SERV_INST	SELECT	NONE to specify this parameter is not used for this service.
`Update_sv`	PROD_PKG_SERV_INST	UPDATE	NONE to specify this parameter is not used for this service.
`Set_status_sv`	PROD_PKG_SERV_INST	SET_STATUS	■ ACTIVE marks Product Package Service Instance as ACTIVE. ■ CEASE ceases a Product Package Service Instance. ■ REMOVE removes a Product Package Service Instance.
`Get_status_ac`	PROD_PKG_SERV_INST	SELECT	NONE to specify this parameter is not used for this service.

4 Running eLink Adapter for Kenan Arbor/BP

The eLink Adapter for Kenan Arbor/BP reads a server configuration files and attempts to connect to the specified Kenan Arbor/BP server. Running the eLink Adapter for Kenan Arbor/BP consists of the following startup operations:

- Specifying the Configuration File
- Reading the Configuration Information
- Advertising the Services

Specifying the Configuration File

The eLink Adapter for Kenan Arbor/BP configuration file must be specified on the `CLOPT` line of the `UBBCONFIG` file, or the eLink Adapter for Kenan Arbor/BP generates an error and exit the startup. (See "Configuring eLink Adapter for Kenan Arbor/BP" for more information.)

Reading the Configuration Information

The eLink Adapter for Kenan Arbor/BP reads the configuration variables in the SERVER section of the specified configuration file. If any required variables are missing, the eLink Adapter generates an error and exits the startup procedure.

Once all configuration information in the SERVER section is processed, the eLink Adapter for Kenan Arbor/BP opens a connection to Kenan Arbor/BP. If the connection cannot be opened, the eLink Adapter for Kenan Arbor/BP logs an error and exits.

The eLink Adapter for Kenan Arbor/BP then reads the services listed in the SERVICE section of the specified configuration file. Each service must have a SERVICE_OBJECT, SERVICE_METHOD, and SERVICE_TYPE specified. In addition, the object fields that comprise the request and response buffer must be specified.

Note: Service names must comply with eLink Platform requirements.

Advertising the Services

Once the eLink Adapter for Kenan Arbor/BP has processed all the service names specified in the SERVICE section of the configuration file, the eLink Adapter for Kenan Arbor/BP advertises the service names. If the configuration file contains insufficient data for the service, an error is generated and the service is not advertised. The eLink Adapter for Kenan Arbor/BP then proceeds with the next service configuration.

A Error Messages

This document contains the following descriptions of error, informational, and warning messages that can be encountered while using the BEA eLink Adapter for Kenan Arbor/BP component.

1 ELABP_ADAP_NOMEMORY	**No Memory allocated by the system**	
	DESCRIPTION	The system could not allocate the memory needed.
	ACTION	Contact technical support.
2 ELABP_ADAP_NOENVFILE	**The configuration file is not found**	
	DESCRIPTION	The adapter could not find the specified configuration file.
	ACTION	Check your entry for the configuration file.
3 ELABP_ADAP_SYSTEMERR	**A system error has occurred**	
	DESCRIPTION	An unanticipated system error has occurred.
	ACTION	Contact technical support.
4 ELABP_ADAP_NO_SERVICE_LIST	**The Environment variable SERVICE_LIST is absent in the configuation file**	
	DESCRIPTION	The adapter could not find the `SERVICE_LIST` environment variable in the configuration file.
	ACTION	Supply a `SERVICE_LIST` environment variable in your configuration file.
5 ELABP_ADAP_NO_TRACE	**The Environment variable TRACE is absent in the configuration file**	

	DESCRIPTION	The adapter could not find the `TRACE` environment variable in the configuration file.
	ACTION	Supply a `TRACE` environment variable in your configuration file.
6 ELABP_ADAP_NO_SERV_ LABEL	**The SERVICE label is absent in the configuration file**	
	DESCRIPTION	The adapter could not find the `[SERVICE]` label in the configuration file.
	ACTION	Make sure you supply at least one valid `[SERVICE=<Service Name>]` entry in your configuration file.
7 ELABP_ADAP_NO_SERV_ OBJECT	**The Environment variable SERVICE_OBJECT is absent in the configuration file**	
	DESCRIPTION	The adapter could not find a `SERVICE_OBJECT` entry in the configuration file.
	ACTION	Make sure you supply the `SERVICE_OBJECT` entry immediately below the corresponding `SERVICE` entry in your configuration file.
8 ELABP_ADAP_NO_SERV_ TYPE	**The Environment variable SERVICE_TYPE is absent in the configuration file**	
	DESCRIPTION	The adapter could not find a `SERVICE_TYPE` entry in the configuration file.
	ACTION	Make sure you supply the `SERVICE_TYPE` entry immediately below the corresponding `SERVICE_METHOD` entry in your configuration file.
9 ELABP_ADAP_NO_SERV_ METH	**The Environment variable SERVICE_METHOD is absent in the configuration file**	
	DESCRIPTION	The adapter could not find a `SERVICE_METHOD` entry in the configuation file.

	ACTION	Make sure you supply the `SERVICE_METHOD` entry immediately below the corresponding `SERVICE_OBJECT` entry in your configuration file.
10 ELABP_ADAP_DUPLICATE_ SERV	**Duplicate Service. This Service already exists.**	
	DESCRIPTION	The adapter found the same Service name defined twice in your configuration file.
	ACTION	You can only specify a service name once in the configuration file.
11 ELABP_ADAP_ADVERTISE	**Error occured during tpadvertise**	
	DESCRIPTION	The adapter received an error from the tpadvertise() call.
	ACTION	Contact technical support.
12 ELABP_ADAP_FIND_NODE	**Error finding the desired Configuration Node in the Tree**	
	DESCRIPTION	The adapter encountered an internal processing error.
	ACTION	Contact technical support.
13 ELABP_ADAP_INVALID_ CONF	**An invalid value has been specified in configuration file**	
	DESCRIPTION	One of the entries in the configuration file is invalid.
	ACTION	Check the syntax of your configuration file.
14 ELABP_ADAP_CFADD_RES_ BUF	**Error occured while adding fields to the response buffer using CFadd**	
	DESCRIPTION	The adapter encountered an error adding FML fields to the request buffer.
	ACTION	Contact technical support.
15 ELABP_ADAP_CFADD_ERR_ BUF	**Error occured while adding fields to the error buffer using CFadd**	
	DESCRIPTION	The adapter encountered an error adding FML fields to the error buffer.

	ACTION	Contact technical support.
16 ELABP_ADAP_MANDATORY_ FIELD	**A mandatory value is absent in the Request Buffer**	
	DESCRIPTION	A mandatory field was specified in the configuration file, but no corresponding data was found in the FML buffer.
	ACTION	Make sure all mandatory fields exist in the input data stream.
17 ELABP_ADAP_CFGET_REQ_ BUF	**Error occured while getting fields from the request buffer using CFget**	
	DESCRIPTION	The adapter encountered an error extracting FML fields from the request buffer.
	ACTION	Contact technical support.
18 ELABP_ADAP_INVALID_ TYPE	**An Invalid Field type in the FML Buffer**	
	DESCRIPTION	The adapter encountered an invalid Field type in the FML buffer.
	ACTION	Make sure the field types for the fields in the FML buffer are valid.
19 ELABP_ADAP_INVALID_ SERV_METHOD	**An Invalid value has been specified for Service Method**	
	DESCRIPTION	A `SERVICE_METHOD` entry in the configuration file has a syntax error.
	ACTION	Correct the `SERVICE_METHOD` entry in the configuration file. Make sure the `SERVICE_METHOD` is valid for its corresponding `SERVICE_OBJECT`.
20 ELABP_ADAP_INVALID_ SERV_TYPE	**An Invalid value has been specified for Service Type**	
	DESCRIPTION	A `SERVICE_TYPE` entry in the configuration file has a syntax error.

	ACTION	Correct the `SERVICE_TYPE` entry in the configuration file. Make sure the `SERVICE_TYPE` is valid for its corresponding `SERVICE_METHOD` and `SERVICE_OBJECT`.
21 ELABP_ADAP_KEY_ABSENT	**A key field in the adapter request buffer is absent**	
	DESCRIPTION	An Kenan Arbor/BP 'key' value is missing.
	ACTION	Make sure you have specified all required 'key' values for the Kenan Arbor/BP object.
22 ELABP_ADAP_NO_DATE_ FORMAT	**The Environment variable DATE_FORMAT is absent in the configuration file**	
	DESCRIPTION	The adapter could not find the `DATE_FORMAT` environment variable in the configuration file.
	ACTION	Supply a `DATE_FORMAT` environment variable in your configuration file.
23 ELABP_ADAP_CONNECT_ ERROR	**Error occured while connecting to the database**	
	DESCRIPTION	The adapter could not connect to the Kenan Arbor/BP database.
	ACTION	Check your configuration file entries for the Kenan Arbor/BP server, database, username, and password.
24 ELABP_ADAP_NO_USERNAME	**The Environment variable CAT_USERNAME is absent in the configuration file**	
	DESCRIPTION	The Environment Variable `CAT_USERNAME` is absent in the configuration file.
	ACTION	You must specify a username (`CAT_USERNAME` environment variable) for the Kenan Arbor/BP database.
25 ELABP_ADAP_NO_PASSWORD	**The Environment variable CAT_PASSWORD is absent in the configuration file**	
	DESCRIPTION	The Environment Variable `CAT_PASSWORD` is absent in the configuration file.

	ACTION	You must specify a password (`CAT_PASSWORD` environment variable) for the Kenan Arbor/BP database.
26 ELABP_ADAP_NO_SERVER	**The Environment variable CAT_SERVER is absent in the configuration file.**	
	DESCRIPTION	The Environment Variable `CAT_SERVER` is absent in the configuration file.
	ACTION	You must supply the server name (`CAT_SERVER` environment variable) that hosts the Kenan Arbor/BP database.
27 ELABP_ADAP_NO_ DATABASE	**The Environment variable CAT_DATABASE is absent in the configuration file**	
	DESCRIPTION	The Environment Variable `CAT_DATABASE` is absent in the configuration file.
	ACTION	You must supply the name (`CAT_DATABASE` environment variable) of the Kenan Arbor/BP database.
101 ELABP_APP_ERROR	**An Arbor/BP error has occured**	
	DESCRIPTION	The adapter received an error from the Kenan Arbor/BP application.
	ACTION	Read the Kenan Arbor/BP error message and take appropriate action. Refer to Kenan Arbor/BP documentation.
102 ELABP_APP_NO_DATA	**No Data was found matching the selection criterion**	
	DESCRIPTION	There was no data returned from the Kenan Arbor/BP application.
	ACTION	Check your data to make sure you have supplied the correct and necessary values in order to return data from Kenan Arbor/BP.
103 ELABP_APP_MULTI_REC	**Multiple records were found matching the selection criterion**	
	DESCRIPTION	The data entries supplied did not return a unique Kenan Arbor/BP record.

	ACTION	If this is not the desired action, modify your data so you can access a unique record within Kenan Arbor/BP.