SYBASE®

Troubleshooting Guide

EAServer

Version 5.2

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Contents

About This Book

About This Book

This book contains procedures for troubleshooting problems that EAServer users may encounter. The problems addressed here are those that the Sybase® Technical Support staff hear about most often. This guide is applicable to EAServer version 5.2, and its purpose is to provide:

- Information about common errors so you can resolve problems without help from Technical Support.
- A list of information that you can gather before calling Technical Support to help resolve your problem more quickly.
- A greater understanding of EAServer.

Audience

This book is for EAServer administrators, and those responsible for administering, supporting, developing, or deploying client applications or components that run on EAServer.

How to use this book

This book includes these chapters:

Chapter 1, "Monitoring Techniques," introduces the tools and techniques available for logging events and errors, and monitoring the server.

Chapter 2, "Common Problem Areas," describes common problem areas such as start-up and connection problems, server crashes and hangs, and configuration issues.

Chapter 3, "Performance Issues," provides an overview of resources available for performance tuning and troubleshooting.

Chapter 4, "Exception Handling," explains how to handle errors in EAServer components and applications.

Chapter 5, "Common Error Messages," contains a listing of server errors with links to additional information.

Chapter 6, "Advanced Topics," surveys more advanced topics like debuggers, stack traces, and tools for memory management and runtime monitoring.

Related documents

Core EAServer documentation The core EAServer documents are available in HTML format in your EAServer software installation, on the *Sybooks* CD, and online at the Sybase InfoCenter at http://infocenter.sybase.com/help/index.jsp.

What's New in EAServer summarizes new functionality in this version.

The *EAServer Cookbook* contains tutorials and explains how to use the sample applications included with your EAServer software.

The *EAServer Feature Guide* explains application server concepts and architecture, such as supported component models, network protocols, server-managed transactions, and Web applications.

The *EAServer System Administration Guide* explains how to:

- Start the preconfigured Jaguar server and manage it with the EAServer Manager plug-in for Sybase Central™
- Create, configure, and start new application servers
- Define connection caches
- Create clusters of application servers to host load-balanced and highly available components and Web applications
- Monitor servers and application components
- Automate administration and monitoring tasks with command line tools or the Repository API

The *EAServer Programmer's Guide* explains how to:

- Create, deploy, and configure components and component-based applications
- Create, deploy, and configure Web applications, Java servlets, and JavaServer Pages
- Use the industry-standard CORBA and Java APIs supported by EAServer

The *EAServer Web Services Toolkit User's Guide* describes Web services support in EAServer, including:

- Support for standard Web services protocols such as Simple Object Access Protocol (SOAP), Web Services Description Language (WSDL), and Uniform Description, Discovery, and Integration (UDDI)
- Administration tools for deployment and creation of new Web services, WSDL document creation, UDDI registration, and SOAP management

The *EAServer Security Administration and Programming Guide* explains how to:

- Understand the EAServer security architecture
- Configure role-based security for components and Web applications
- Configure SSL certificate-based security for client connections using the EAServer Manager plug-in for Sybase Central
- Implement custom security services for authentication, authorization, and role membership evaluation
- Implement secure HTTP and IIOP client applications
- Deploy client applications that connect through Internet proxies and firewalls

The *EAServer Performance and Tuning Guide* describes how to tune your server and application settings for best performance.

The *EAServer API Reference Manual* contains reference pages for proprietary EAServer Java classes, ActiveX interfaces, and C routines.

The *EAServer Troubleshooting Guide* (this book) describes procedures for troubleshooting problems that EAServer users may encounter.

Message Bridge for Java™ Message Bridge for Java simplifies the parsing and formatting of structured documents in Java applications. Message Bridge allows you to define structures in XML or other formats, and generates Java classes to parse and build documents and messages that follow the format. The *Message Bridge for Java User's Guide* describes how to use the Message Bridge tools and runtime APIs. This document is included in PDF and DynaText format on your *EAServer SyBooks* CD.

Adaptive Server Anywhere documents EAServer includes a limited-license version of Adaptive Server® Anywhere for use in running the samples and tutorials included with EAServer. Adaptive Server Anywhere documents are available on the Sybase Web site at http://sybooks.sybase.com/aw.html.

jConnect for JDBC documents EAServer includes the jConnect™ for JDBC™ driver to allow JDBC access to Sybase database servers and gateways. The *Programmer's Reference jConnect for JDBC* is available on the Sybase Web site at http://sybooks.sybase.com/jc.html.

Conventions

The formatting conventions used in this manual are:

Formatting example	To indicate
commands and methods	When used in descriptive text, this font indicates keywords such as: • Command names used in descriptive text • C++ and Java method or class names used in descriptive text • Java package names used in descriptive text • Property names in the raw format, as when using jagtool to configure applications rather than EAServer Manager
variable, *package*, or *component*	Italic font indicates: • Program variables, such as *myCounter* • Parts of input text that must be substituted, for example: `Server.log` • File names • Names of components, EAServer packages, and other entities that are registered in the EAServer naming service
File | Save	Menu names and menu items are displayed in plain text. The vertical bar shows you how to navigate menu selections. For example, File | Save indicates “select Save from the File menu.”
`package 1`	Monospace font indicates: • Information that you enter in EAServer Manager, a command line, or as program text • Example program fragments • Example output fragments

Other sources of information

Use the Sybase Getting Started CD, the SyBooks CD, and the Sybase Product Manuals Web site to learn more about your product:

- The Getting Started CD contains release bulletins and installation guides in PDF format, and may also contain other documents or updated information not included on the SyBooks CD. It is included with your software. To read or print documents on the Getting Started CD, you need Adobe Acrobat Reader, which you can download at no charge from the Adobe Web site using a link provided on the CD.
- The SyBooks CD contains product manuals and is included with your software. The Eclipse-based SyBooks browser allows you to access the manuals in an easy-to-use, HTML-based format.

  Some documentation may be provided in PDF format, which you can access through the PDF directory on the SyBooks CD. To read or print the PDF files, you need Adobe Acrobat Reader.

Refer to the *SyBooks Installation Guide* on the Getting Started CD, or the *README.txt* file on the SyBooks CD for instructions on installing and starting SyBooks.

- The Sybase Product Manuals Web site is an online version of the SyBooks CD that you can access using a standard Web browser. In addition to product manuals, you will find links to EBFs/Maintenance, Technical Documents, Case Management, Solved Cases, newsgroups, and the Sybase Developer Network.

  To access the Sybase Product Manuals Web site, go to Product Manuals at http://www.sybase.com/support/manuals/.

Sybase certifications on the Web

Technical documentation at the Sybase Web site is updated frequently.

❖ **Finding the latest information on product certifications**

1. Point your Web browser to Technical Documents at http://www.sybase.com/support/techdocs/.
2. Select Products from the navigation bar on the left.
3. Select a product name from the product list and click Go.
4. Select the Certification Report filter, specify a time frame, and click Go.
5. Click a Certification Report title to display the report.

❖ **Creating a personalized view of the Sybase Web site (including support pages)**

Set up a MySybase profile. MySybase is a free service that allows you to create a personalized view of Sybase Web pages.

1. Point your Web browser to Technical Documents at http://www.sybase.com/support/techdocs/.
2. Click MySybase and create a MySybase profile.

Sybase EBFs and software maintenance

❖ **Finding the latest information on EBFs and software maintenance**

1. Point your Web browser to the Sybase Support Page at http://www.sybase.com/support.
2. Select EBFs/Maintenance. If prompted, enter your MySybase user name and password.
3. Select a product.

4 Specify a time frame and click Go. A list of EBF/Maintenance releases is displayed.

   Padlock icons indicate that you do not have download authorization for certain EBF/Maintenance releases because you are not registered as a Technical Support Contact. If you have not registered, but have valid information provided by your Sybase representative or through your support contract, click Edit Roles to add the "Technical Support Contact" role to your MySybase profile.

5 Click the Info icon to display the EBF/Maintenance report, or click the product description to download the software.

Accessibility features

This document is available in an HTML version that is specialized for accessibility. You can navigate the HTML with an adaptive technology such as a screen reader, or view it with a screen enlarger.

EAServer 5.2 and the HTML documentation have been tested for compliance with U.S. government Section 508 Accessibility requirements. Documents that comply with Section 508 generally also meet non-U.S. accessibility guidelines, such as the World Wide Web Consortium (W3C) guidelines for Web sites.

The online help for this product is also provided in HTML, which you can navigate using a screen reader.

For information on using this product without a mouse, see "Keyboard navigation" in Chapter 2, "Sybase Central Overview," of the *EAServer System Administration Guide*.

Note You might need to configure your accessibility tool for optimal use. Some screen readers pronounce text based on its case; for example, they pronounce ALL UPPERCASE TEXT as initials, and MixedCase Text as words. You might find it helpful to configure your tool to announce syntax conventions. Consult the documentation for your tool.

For information about how Sybase supports accessibility, see Sybase Accessibility at http://www.sybase.com/accessibility. The Sybase Accessibility site includes links to information on Section 508 and W3C standards.

If you need help

Each Sybase installation that has purchased a support contract has one or more designated people who are authorized to contact Sybase Technical Support. If you cannot resolve a problem using the manuals or online help, please have the designated person contact Sybase Technical Support or the Sybase subsidiary in your area.

CHAPTER 1 Monitoring Techniques

Overview

This chapter introduces several useful tools and techniques for monitoring and analyzing your EAServer applications and environment.

Some of the resources described in this chapter serve more than one purpose. For example, a tool may provide both monitoring and analysis features, and therefore is mentioned in multiple sections.

Note Some techniques and suggestions in this document may require that you restart the server for changes to take effect, or to test the result and impact.

Gathering information

When you are investigating an EAServer error, before you report the problem to Sybase Technical Support, gather the following information to expedite a solution:

1 Full text of error message and crash details, as appropriate.

2 Information about your EAServer installation:

- Version number
- Build number
- Edition

This information appears at the start of the server log. See "Logging" on page 4 for more information about log files.

3 Information about the EAServer process that is running in your environment, including version numbers of the DLLs or libraries loaded—see "ListDLLs" on page 71. To list which libraries are loaded and their load locations, use pmap, or a similar command for your platform.

4 Relevant log files, such as:

- EAServer log
- HTTP error log
- HTTP request log
- HTTP servlet log

See "Logging" on page 4 for more information on log files.

5 Information about your platform:

- Number of CPUs
- Operating system version and patch levels
- Memory

6 Environment variables, many of which are defined in the setup script *setenv.sh* (UNIX) or *setenv.bat* (Windows):

- PATH
- JAGUAR
- SQLANY
- CLASSPATH
- BOOTCLASSPATH
- LD_LIBRARY_PATH
- JAGUAR_JDK12, JAGUAR_JDK13, and JAGUAR_JDK14

Not all the variables are defined in the setup script. The server and tools start-up scripts configure PATH, CLASSPATH, BOOTCLASSPATH and other settings.

Also check the user-defined scripts *user_setenv.sh* (UNIX) or *user_setenv.bat* (Windows) for additional settings.

See "Configuration issues" on page 35 for more information on environment variables.

7. Information about the server JDK; including:
   - Java version (from the server log file)
   - VM type (from the server log file)
   - Other server properties that configure the Java VM
8. Database:
   - Database server
   - Database version/driver
   - Connection type (ODBC, JDBC, native)
9. Application information:
   - Nature of the application (for example, an order entry system)
   - Application type, client/server or Web application
   - Number of concurrent users that access the application during peak time
   - Maximum amount of data that the components retrieve
   - Amount of data returned to the clients
   - If service components exist, their function (verify that they are not transactional)
   - If shared components (versus multiple instance components) exist, their purpose
   - Whether components are being pooled
   - If stateful components exist, their function; also, whether SetComplete and SetAbort functions are called for these components
   - Types of components in use: PowerBuilder®, Web applications, servlets, JSPs, and so on
   - For applications that include PowerBuilder components, the number of:
     - PowerBuilder components used in the application

- Whether any PowerBuilder components are invoked by a non-PowerBuilder client; and if so, the type of client
- Whether the SetComplete and SetAbort functions are being called for stateful components, or whether the auto-demarcation deactivation component property is set for the components

Logging

A number of log files provide useful troubleshooting information and are described in this section.

EAServer log

This log file contains the server version, build number, listener addresses, Java VM version and type, trace and debug messages, all other messages logged by the server, and component output.

Use any of these techniques to output messages to the EAServer log file from an EAServer component or application:

- Enable debug, trace, or other properties as outlined in "EAServer traces" on page 10.
- Call System.out.print from a Java component.
- Call jaguar.server.Jaguar.writeLog method in a Java component. See the *EAServer API Reference Manual* for information.
- Call JagServer::WriteLog from an ActiveX component. See the *EAServer API Reference Manual* for an example.
- Call JagLog from a C or C++ component. See "Handle errors in your C component" in Appendix C, "Creating C Components," in the *EAServer Programmer's Guide* for information.
- Utilize the ErrorLogging object for a PowerBuilder component. See "Error logging service" in the *PowerBuilder Application Techniques* manual for usage information.

The preconfigured server writes messages to the *Jaguar.log* file. Change the log file name for each new server that you create.

If you have changed the default configuration, or run user-defined servers, the log file may not be *Jaguar.log*. To change or verify the log file name:

1. In EAServer Manager, highlight the server, right-click and select Server Properties.
2. On the Log/Trace tab, enter the Log File Name and click OK.

The server may exit immediately without logging errors if there are errors in the server configuration; in this case, the server prints error messages to the shell window (console) where it was started.

Integrating with other logging systems

EAServer includes a configurable logging mechanism that allows integration with the JDK 1.4 Java logging package or the Apache Log4j logging system. A server's logging properties are defined in a **log profile**, which defines the logging subsystem used as well as other properties, such as output destinations, formats, and the level of severity required before a message is recorded. You can also configure different log profiles for the debug and production server versions.

You can use the following logging subsystems:

- The built-in EAS subsystem, which offers the same functionality available in EAServer 4.x versions, plus several enhancements:
    - The ability to configure log levels so that messages below a specified level of severity are discarded
    - Support for different logging configurations in the debug and production servers
    - Optional archiving and compression of previous log file versions
    - More control over message formatting
- Apache Log4j, which is commonly used on large projects. For more information, see the Apache Log4j Documentation at http://jakarta.apache.org/log4j/docs/api/overview-summary.html.
- The Java Logging package, included in JDK 1.4. This API is Sun's proposed standard for logging in Java applications. For more information, see the Java Logging documentation at http://java.sun.com/j2se/1.4.1/docs/guide/util/logging/overview.html. To use this package, your server must be running JDK 1.4 or a later JDK version.

If you use the Log4j or Java Logging packages, you can extend default behavior by plugging in your own code that implements the required interfaces. For example, you can install Log4j log handler classes that write messages to the Windows System event log or to a database. Also, if you use one of these packages to log messages from your own component or application code, you can configure the server's log profile so that server log messages go to the same destinations.

Logging APIs

Regardless of the logging system you use, you can write messages to the log using all of the methods supported in earlier versions of EAServer, such as:

- System.out.println or Jaguar.writeLog from Java code running in the server
- ErrorLogging.log from PowerBuilder NVO (nonvisual object) components
- JagLog from C or C++ components
- IJagServer.writeLog from ActiveX components

In addition, if you use Log4j or the Java Logging system, you can log messages from in-server Java code by calling the logging API directly.

Managing log profiles

"Configuring log profiles" in Chapter 3, "Creating and Configuring Servers," in the *EAServer System Administration Guide* describes how to manage log profiles.

Server diagnostics

You can export a diagnostic log file that describes the server version and environment in detail. To use this feature, highlight the server icon, choose Export Diagnostic Log, and enter a file name.

HTTP logs

The HTTP error logs contain information about client requests. The default location for the log files is the EAServer *bin* subdirectory. You can change the name and location of any of the HTTP logs on the HTTP Config tab of the Server Properties dialog box. You can also enable or disable request logging on this tab.

HTTP error log The HTTP error log contains information about failed client request errors, such as requests for nonexistent files. The default file name is *<server_name>httperror.log*.

HTTP request log The HTTP request log tracks all requests to the HTTP listener. The default file name is *<server_name>httprequest.log* .

HTTP servlet log The HTTP servlet log contains information logged by the EAServer servlet engine; this is in addition to the servlet-related messages recorded in the server log file. The default file name is *<server_name>httpservlet.log*.

IIOP log

You can use the IIOP log property of EAServer to trace IIOP session activity by setting com.sybase.jaguar.server.iiop.log to true and restarting the server. All IIOP traffic between all clients and the server is written to the server log.

The log may be helpful in diagnosing these problems:

- Client application issues, such as login failures
- Component issues, including:
    - Method invocation errors
    - Result sets not returned as expected
    - Trouble connecting to the target database
    - Intercomponent call errors

The log may be difficult to decipher when multiple clients are talking to the server in parallel. If possible, run only one client when using the IIOP log information.

IIOP logging is verbose IIOP logging can quickly fill up the disk and diminish server performance. Use IIOP logging only for short durations; turn it off as soon as you gather the information you need.

C/C++ and PowerBuilder clients

For C/C++ and PowerBuilder clients, Table 1-13 on page 15 describes how to direct the ORB to log IIOP protocol trace information.

Installation log

You can run the installer in debug mode, and direct the output to a log file using the following command:

```
JRE_1_4\bin\java -Dis.debug=true -Deas.debug=true -jar EAS500.jar > log_file
```

where *log_file* is the name of the file where you want to save the output.

Other useful data

Other useful data comes from:

- The *<ServerName>_boot.log* file is generated as the server is starting. If the server fails to start, this file may help you find the reason for the failure.
- Server console messages, which may provide additional error information.
- The file *Repository/Server/<ServerName>.admin*. If the server starts in Admin mode, this file contains an explanation.
- Licensing output in the log file.
- Client-side log files. See "EAServer traces" on page 10 for more information.

Using stack traces

Stack traces, dump files and core files contain useful information about what a server process is doing at a given time, such as:

- Methods called
- Memory information
- Active thread information

These files are time-consuming to read and not always easy to understand. It is better to try simple troubleshooting techniques first. Use the server log first, which is much more readable, to review server and component output and check any errors raised. Next, check the dump file to get an idea of which debug/trace flags should be turned on. This may help identify things like operating system signal issues.

For information about how to obtain various trace files for troubleshooting, see "Stack traces, dump files, and core files" on page 76.

Note Stack traces, dump files, and core files are not mutually exclusive. Depending on the platform and tools or options you use, the output file may contain one or more types of detail.

Obtaining stack traces

The EAServer process stack trace contains information about the active threads for the process.

❖ Obtaining a stack trace in Windows

1. Change to the *%JAGUAR%/bin* directory.
2. Open the *serverstart.bat* file, and look for the line that contains:

```
jagsrvagent.exe -servername %ServerName% .... 2>&1 tee ...
```

3. Remove "2>&1 tee", then save and close the file.
4. Restart EAServer.
5. Ctrl+Break

❖ Obtaining a stack trace in UNIX

- In UNIX, to generate a JVM full thread dump, enter:

  ```
  kill -QUIT EAServer_process_id
  ```

  This does not work if you use "-Xrs" as a JVM parameter.

  Note AIX may need special configuration for a full dump.

  On the Solaris platform, to generate a C back trace, you can use pstack, which is located in */usr/proc/bin*.

Another alternative is to generate a core file—see "UNIX core files" on page 78.

EAServer traces

EAServer provides trace facilities to help you obtain information on different areas of activity:

- Server level—see Table 1-1 on page 10.
- Open Server—see Table 1-2 on page 11.
- Methods as Stored Procedures (MASP)—see Table 1-3 on page 11.
- Listeners—see Table 1-4 on page 11.
- Security—see Table 1-5 on page 12.
- Servlets and Web applications—see Table 1-6 on page 12.
- Components—see Table 1-7 on page 12.
- Message service—see Table 1-8 on page 12.
- Java class loading and unloading—see Table 1-9 on page 13.
- Additional Java and JVM tracing—see Table 1-10 on page 13.
- Connections and transactions—see Table 1-11 on page 14.
- Web server redirector—see Table 1-12 on page 14.
- PowerBuilder or C/C++ clients—see Table 1-13 on page 15.
- Other related properties—see Table 1-14 on page 15.

The tables below describe the options available in each area.

Note Some properties exist only in certain EAServer versions. Check the documentation and release notes for your EAServer version.

For information about setting the com.sybase.jaguar.* properties, see Appendix B, “Repository Properties Reference,” in the *EAServer System Administration Guide*. Consult *PowerBuilder Application Techniques* for information about how to configure the PowerBuilder properties.

Table 1-1: Server-level tracing

Name	Description
com.sybase.jaguar.server.lwc.debug	Logs the EJB-to-EJB calls that use the lightweight container.

Name	Description
com.sybase.jaguar.server.logspid	Includes the thread identifier in each message in the log file. **Note** To enable this property, you must add “%SI” to the server log profile.
com.sybase.jaguar.threadmonitor.trace	Logs peak number of active and waiting threads in server log. If com.sybase.jaguar.threadmonitor.callstats is nonzero, also enables printing call statistics.
com.sybase.jaguar.threadmonitor.callstats	Number of seconds between call statistics in server log.
com.sybase.jaguar.instancepool.debug	Logs named instance pool information.
com.sybase.jaguar.server.flowcontrol.trace	Initialization and processing for flow control.
com.sybase.jaguar.CosNaming.debug	Outputs server- and cluster-naming properties. You must set this property on the Advanced tab of the *CosNaming* package.
com.sybase.jaguar.server.dynamo.trace	Traces PowerDynamo plug-in calls.
Synchronization -verbose	Sends verbose output to the log during synchronization. You can set this property using either the Synchronize Cluster dialog box in EAServer Manager or jagtool—see the *EAServer System Administration Guide* for more information.

Table 1-2: Open Server tracing

Name	Description
com.sybase.jaguar.server.tracenetdriver	Traces network driver requests
com.sybase.jaguar.server.tracenetrequests	Traces requests to transport control layer (an internal EAServer library that serves as an interface to network drivers)

Table 1-3: MASP tracing

Name	Description
com.sybase.jaguar.server.traceattentions	Tracks TDS (Tabular Data Stream™) protocol attentions
com.sybase.jaguar.server.tracetdsdata	Tracks TDS packet contents
com.sybase.jaguar.server.tracetdshdr	Tracks TDS header contents

Table 1-4: Listener tracing

Name	Description
com.sybase.jaguar.server.http.cache.debug	Writes static page cache information to the server log.
com.sybase.jaguar.server.iiop.log	IIOP logging. Output is verbose.
com.sybase.jaguar.server.iiop.log.ac	IIOP logging for events that occur after the server begins accepting messages. Less output than com.sybase.jaguar.server.iiop.log; omits server start-up messages.

Name	Description
com.sybase.jaguar.server.http.requestlogenable	Logs all HTTP requests. Enabled by default.
com.sybase.jaguar.server.http.elffenable	Determines if the extended log file format is used to write information to the request log.
com.sybase.jaguar.server.http.elffitems	Determines the items that are logged and the order in which they are written to the request log. Fourteen items can be logged, including request, status, bytes, and cookie—see Appendix B in the *EAServer System Administration Guide* for the complete list.

Table 1-5: SSL connection tracing

Name	Description
com.sybase.jaguar.security.logpeerIP	If this property is set to true in an SSL listener’s security profile, a client’s IP address is logged when an SSL connection cannot be established. The default value is false.

Table 1-6: Servlets/Web applications tracing

Name	Description
com.sybase.jaguar.server.servlet.trace	Sets trace logging in EAServer servlet execution engine
com.sybase.jaguar.webapplication.sectrace	Sets security implementation tracing

Table 1-7: Component tracing

Name	Description
com.sybase.jaguar.component.debug	Logs trace information for instance lifecycle events (creation, destruction, pooling and so on)
com.sybase.jaguar.component.trace	Logs methods and parameters
com.sybase.datawindow.trace	Set to true to enable tracing for the Web DataWindow component (DataWindow/HTMLGenerator)

Table 1-8: Message service tracing

Name	Description

com.sybase.jms.debug	Enables message service JMS debugging
	
	To help debug your JMS client application, you can enable tracing by setting this property to true in the InitialContext object. When you enable tracing, diagnostic messages are printed in the console window. By default, tracing is disabled. This code sample illustrates how to set the tracing property:
	
	`Properties prop = new Properties();`
	
	`prop.put(“com.sybase.jms.debug”,`
	`        “true”);`
	`javax.naming.Context ctx = new`
	`javax.naming.InitialContext(prop);`

Name	Description
cms.debug	Enables all message-service debugging options **Note** You can set this property and the following two properties in the *MessageServiceConfig.props* file, located in *$JAGUAR/Repository/Component/CtsComponents*.
cms.debug.network	Enables message service network-level debugging
cms.debug.session	Enables message service session-level debugging

Table 1-9: Java class loading/unloading tracing

Name	Description
com.sybase.jaguar.server.jvm.verbose	Logs all Java classes loaded and the location where each class file was read
com.sybase.jaguar.server.classloader.debug	Logs information about loading classes from custom class lists defined for the component, package, application, or server
com.sybase.jaguar.server.jvm.verboseGC	Logs information when memory is freed by the Java garbage collector

Table 1-10: Additional Java tracing

Name	Description
com.sybase.jaguar.server.jvm.debugging	Enables Java in-server predebugging in the pre-4.1.3 debug server. In EAServer version 4.1.3 and later, simply use the debug server.
com.sybase.jaguar.server.jvm.debug.options	Enables additional JVM options to configure in-server Java debugging.
com.sybase.jaguar.server.jvm.displayOptions	Writes the current JVM properties to the server log.
com.sybase.jaguar.server.jvm.nojit	When using the Client Hotspot JVM, indicates whether the JIT (just-in-time) compiler is disabled. In EAServer versions earlier than 4.1, the default for new servers is true. In 4.1 and later, the default is false.
com.sybase.jaguar.server.jvm.options	Specifies options to pass to the server’s Java virtual machine.
com.sybase.jaguar.server.jvm.minHeapSize	Specifies the minimum heap size for the server’s Java virtual machine.
com.sybase.jaguar.server.jvm.maxHeapSize	Specifies the maximum heap size for the server’s Java virtual machine.

For more information about the cmp_driver properties defined in Table 1-11, see Chapter 4, “EJB CMP Tuning,” in the *EAServer Performance and Tuning Guide*.

Table 1-11: Connection and transaction tracing

Name	Description
com.sybase.jaguar.server.jcm.trace	Traces Java Connection Manager (JCM) activity.
cmp_driver_debug	Tracks what the driver wrapper is doing; for CMP (container-managed persistence) wrapper driver.
cmp_driver.print_warnings	Logs all database warning messages received by driver wrapper; for CMP wrapper driver.
cmp_driver.trace_commit	Traces transaction commit, rollback, and autoCommit changes for CMP wrapper driver.
cmp_driver.trace_connect	Traces connect and reconnect operation for CMP wrapper driver.
cmp_driver.trace_create	When using the Sybase driver (CMP JDBC wrapper for Sybase jConnect driver), traces the creation of semipermanent stored procedures.
cmp_driver.trace_execute	Traces the execution of stored procedures and SQL command batches; for CMP wrapper driver.
cmp_driver.trace_execute_ms	Traces the execution of stored procedures and SQL command batches that take longer than the specified number of milliseconds. Takes precedence over cmp_driver.trace_execute; for CMP wrapper driver.
com.sybase.jaguar.conncache.cmp_stats	Seconds between “Table Statistics” entries in the server log when using CMP.
com.sybase.jaguar.server.jta.trace	Java Transaction API; set to an integer for the desired trace level.

For information about setting the Web server redirector properties, see the *EAServer Installation Guide* for your platform.

Table 1-12: Web server redirector tracing

Name	Description
Connector.LogLevel = [inform | error | verbose]	Add this directive to the Web server redirector plug-in configuration file, and specify the logging level: inform, error, or verbose.
Connector.SessionId *ID*	Traces requests from connectors. Set this directive in the redirector config file so the connector appends the value of Connector.SessionId to the URL forwarded to EAServer. EAServer writes the URL to the server’s HTTP request log to help in debugging.

Table 1-13: PowerBuilder or C/C++ clients

Name	Description
ORBLogIIOP	Specifies whether the ORB should log IIOP protocol trace information. If set to true, enables logging. The default is false. This parameter can also be set in the JAG_LOGIIOP environment variable. When this parameter is enabled, you must set the ORBLogFile option (or the corresponding environment variable) to specify the file where protocol log information is written.
ORBLogFile	Sets the path and name of the file in which to log client execution status and error messages. This parameter can also be set in the JAG_LOGFILE environment variable. The default setting is no log.
JAG_LOGFILE environment variable	Setting this variable is an alternate way to set the ORBLogIIOP and ORBLogFile properties.

Table 1-14: Other related properties that do not affect logging

Name	Description
com.sybase.jaguar.component.cpp.debug	Determines whether to catch exceptions for a C++ component.
com.sybase.jaguar.server.debug.useagent	Specifies the remote debugging interface. If set to true, the server supports Java debugging using the sun.tools.debug interface. If set to false, the server supports remote debugging using the JPDA (Java Platform Debugging Architecture) interface.
com.sybase.jaguar.server.jpda.port	Specifies the port number for JPDA remote debugging connections.
com.sybase.jaguar.component.pb.debug	Specifies whether a PowerBuilder component can be debugged while executing.
com.sybase.jaguar.component.refresh	Specifies whether the component implementation can be replaced without restarting the server. **Note** For Java components, if refresh is disabled, the component is loaded in the system class loader, using the system CLASSPATH setting. If refresh is enabled, the EAServer class loader loads the component using the settings in the Component Properties/Java Classes tab. For C++ components, refresh is supported by running a copy of the specified component DLL or shared library.
com.sybase.jaguar.webapplication.web-resource-collection	A comma-separated list of HTTP methods including: POST, GET, TRACE, DELETE, PUT, OPTIONS.

Java exception traces

There are two types of stack traces, thread-level and process-level. When you catch an exception in your component, you can print the thread-level stack trace using the printStackTrace method in the component's try/catch block:

```
try {
// whatever
}
catch (Exception e) {
{
// Important to avoid empty catch blocks
// Remember to output error information
   e.printStackTrace();
}
```

Many APIs such as JDBC and JNDI throw generic exceptions, with the original error information embedded as a nested exception. For JDBC, you can retrieve the nested exception using the java.sql.SQLException.getNextException method. Record the nested exception message and stack trace.

You may also need to print naming exceptions. For example, when creating proxies in an EJB client, a naming exception may be thrown. Since the lookup method must throw NamingException, other errors can be embedded, such as the NamingException root cause. Often, you must retrieve details about the embedded error to diagnose the problem. The code below demonstrates how to retrieve and print the root cause information for a JNDI NamingException:

```
catch (NamingException ne)
{
   System.out.println("Naming exception: " +
                      ne.toString());
   ne.printStackTrace();
   throwable rc = ne.getRootCause();
   if (rc != null)
   {
     System.out.println("\nRoot cause: + rc.toString();
     rc.printStackTrace();
   }
}
```

If you do not catch exceptions in component code, EAServer catches the exception, logs the error, and aborts method execution. However, the server may not record all information required to debug the problem, such as nested exceptions. For this reason, you should catch exceptions in your own code and log the information required to diagnose the problem.

If serious internal errors occur, the Java VM may abort and produce a process-level stack trace that contains trace information for all Java threads, signals received, and thread states at the time of the error.

Tracing network problems

A number of tools and techniques are available to monitor the operation of the server, its environment, and applications. Some useful network and protocol-level monitoring tools and resources are described below.

TCP/IP

Network tracing tools for the TCP/IP layer include:

- netstat – displays current TCP/IP network connections and protocol statistics.
- TDImon – an application that lets you monitor TCP and UDP (user datagram protocol) activity, track down network-related configuration problems, and analyze application network usage. This tool is available at the Sysinternals Web site at http://www.sysinternals.com.
- ping – attempts to elicit a response from a specified host.
- traceroute – helps you determine the route IP packets take to a network host.

IIOP

Network tracing tools for IIOP include:

- EAServer Manager monitoring – shows IIOP current and peak sessions, requests, and bytes read.
- IIOP output logging – displays IIOP session activity. See “Logging” on page 4 for more information.

HTTP

EAServer Manager monitoring displays the following HTTP information:

- Current and peak sessions
- Requests
- Bytes read
- Logging of HTTP requests, HTTP statistics, HTTP errors, and servlet requests. See “Logging” on page 4 for more information.

TDS

You can monitor Tabular Data Stream (TDS) traffic using:

- EAServer properties to log output; see Table 1-3 on page 11.
- The jConnect Ribo utility to capture the TDS stream and translate it to text.

You can find more information about TDS, including command syntax and parameters, in TechNote 1009790, Sybase jConnect for JDBC Programmer’s Reference: jConnect Utilities at http://www.sybase.com/detail?id=1009790.

CHAPTER 2

Common Problem Areas

Installation issues

If you encounter installation issues, consult the *EAServer Installation Guide* for your platform, which can help you resolve problems and answer questions about:

- Installing
- Upgrading
- Licensing
- Adding components
- Reinstalling

To locate the *EAServer Installation Guide*:

1. Go to the Product Manuals site at http://infocenter.sybase.com.
2. Select EAServer 5.2 Installation Guides.
3. Select the Installation Guide for your platform.

Server crashes, hangs, or disappears

This section describes techniques for isolating the cause if a server crashes, hangs, or disappears. These are guidelines only, subject to your application or environment; they may or may not help to successfully isolate the cause.

Server crashes

A server failure (crash) can take several forms:

- Server crashes on start-up
- Server fails at a specific point that is reproducible
- Server crashes intermittently

Server crashes on start-up

To resolve or analyze a start-up crash:

1. Set the JAGUAR_RANDOMSEED variable, which is known to resolve start-up crashes in some instances, especially if the server takes a long time to start. See Chapter 3, “Creating and Configuring Servers,” in the *EAServer System Administration Guide* for details.
2. Make sure that the PATH and CLASSPATH variables are correctly set.

   Also verify which DLL or library versions were loaded, and class load locations. For Windows, see “ListDLLs” on page 71. For UNIX, use pmap or another command or tool appropriate for your platform.
3. If operating in a cluster environment:
   - Check cluster start-up/check settings
   - Ensure all members have the same listener names and types
4. Check the server log file. Besides reporting errors, the log file can also help determine how far along the start-up process was. The start-up tasks are:

   a. Load licensing files, check options

   b. Load network libraries for listeners

   c. Initialize JVM

   d. Initialize various data structures

e. Load server ClassLoader

f. Load JCM (Java Connection Management) caches, connectors, and resources

g. Start services:

   - Repository, GC, JCM, and Naming ServletService
   - User services; for example, the message service

Up to this point, the server is in Admin mode. If there are no problems, the server begins accepting regular client connections, as indicated by the console message "Accepting connections." If a problem occurs, the server may remain in Admin mode as described in "Server starts in Admin mode" on page 27.

5. Use the JagRepair server to:

   - Check whether the server is looking for listeners that do not exist
   - Temporarily prevent user-defined services from starting automatically
   - Check for connection caches configured without a DLL or library name, or other inappropriate settings

6. Set com.sybase.jaguar.server.jvm.verbose to true.

   This shows all JVM initialization details, listing each JAR file that is opened and each class file that is loaded.

   Try a different JVM version. If the problem persists, continue with the steps below.

7. In the server start batch file, set ECHO to on. This provides more output and may help determine the point of failure.

8. Gather crash information such as the load address. For Windows, see "ListDLLs" on page 71; for UNIX, use pmap or another command or tool appropriate for your platform.

   When the server crashes, the first step is to identify the crash address. You can obtain this from the console or log file. For example:

```
jagsrv.exe Exception access violation (0xc0000005)
   Address: 0x02af57c6
```

You can use the address to identify the crash area or the module being executed. When an executable is launched, it tends to use the same set of base addresses, as virtual addresses normally do not change. This helps determine the specific product or application to investigate. The address may show that the crash occurred outside of EAServer; for example, in a system module. If the crash occurred in EAServer or a Sybase module, the address may be helpful to Technical Support, and may point to a known issue.

9. If EAServer crashes while running as a service, start EAServer in a console instead. A service typically runs under different resource constraints and permissions than a console.
10. If the message service is configured, set `cms.debug` to true.

Server fails at a specific point that is reproducible

If the server fails at a specific, reproducible point, take the following steps:

1. Check the server log for errors, to assess when the crash occurred, and to determine areas for further investigation.
2. Use the Runtime Monitoring feature in EAServer Manager to find out which components are active, the connections being used, and so on—see “Runtime monitoring tools” on page 69.
3. Using the insights from steps 1 and 2, turn on debug and trace flags for specific components, connections, and so on.
4. Explore what is happening in the application or component. Look for common application trouble spots—see “Generic issues” on page 28.
5. Check the component and server property settings.
6. Debug the component.
7. Check the server configuration, specifically:
   - Patch levels—see “EAServer log” on page 4 for details.
   - Resource and memory usage.
   - DLL versions, library versions, and Java class loading—see “Verifying your configuration” on page 36 for library and class information, and “ListDLLs” on page 71.
8. Invoke a service component just before the crash to write information to the EAServer log—see “ListDLLs” on page 71:

- JVM properties
- Free and total memory
- EAServer monitoring data
- EAServer memory dump

9 If a C++ component is involved, try running it within a dedicated external process, identified by the com.sybase.jaguar.component.cpp.process property.

   There are restrictions on running externally, and not all C++ components are suitable candidates. See "Running C++ components externally" in Chapter 14, "Creating CORBA C++ Components," of the *EAServer Programmer's Guide* for details.

10 Run the debug server for more information in the dump file. Use the stack trace, dump file, and crash address for advanced troubleshooting—see "Stack traces, dump files, and core files" on page 76.

Server crashes intermittently

If EAServer runs for a while, then crashes intermittently, use a similar plan as for reproducible crashes above. Recommended steps include:

- Ensure that sanity checks are enforced on the connection cache; otherwise, the cache may hand out invalid connections.
- Use a service component to periodically write information to the server log.
- Look for common application trouble spots.
- Monitor for memory leaks.
- Check peaks, maximums, and exhausted system resources.

Server hangs

If EAServer runs for awhile, then stops responding to requests:

1 Check whether the issue exists only with specific types of requests (listeners, connections, and so on) or with everything (EAServer is not responding at all). If it is specific, continue with step 2; otherwise, go to step 4.

Check listeners, including IIOP, TDS, and HTTP as follows:

- Connect to the IIOP listener port using EAServer Manager. A successful connection means that IIOP is working.

  If you cannot connect, check to see whether the maximum number of IIOP or total sessions have been reached. If not, obtain a stack trace.

- Check the TDS listener port by executing a MASP call. Use isql for an Adaptive Server Anywhere or Adaptive Server Enterprise database. Use a vendor-supplied tool for other database types.

  For example, use the following isql command to return the server build number, using the Management component:

  ```
  isql -Ujagadmin -P -SJaguar
  1> exec Jaguar.Management.getServerBuildNumber
  2> go
  ```

  See Appendix A of the *EAServer Programmer's Guide* for more information about MASP.

- Check the HTTP listener port at http://*machine_name*:8080 for default documentation. If the document is visible, HTTP is working. If you cannot view the default documentation:

  - Check whether the maximum HTTP or total sessions have been reached.
  - Turn on HTTP request logging, and include additional items com.sybase.jaguar.server.http.elffenable (show extended items) com.sybase.jaguar.server.http.elffitems (show item information).
  - If you are using a Web server redirector, set verbose logging in the configuration file.
  - Check the HTTP request log, HTTP error log, and the server log.

2 Check the connection cache:

- Ping the connection cache in EAServer Manager. If ping fails, use isql (or a vendor-supplied tool for a non-Sybase database) to try a simple SQL request outside EAServer.

  Using a database monitoring tool, investigate what is happening on the database server side. Check locks held.

- Look at the cache in EAServer Monitor. Verify that you have not reached the maximum number of connections for the cache. Check the number of connections: active, pooled, forced, peak, and so on.

- If you were connecting to Adaptive Server Enterprise, check that the log file is not full; this can cause EAServer to hang. Trace the connection using the Ribo utility to verify that the last TDS or SQL requests passed. For information about using Ribo, see the jConnect for JDBC Installation Guide at http://sybooks.sybase.com/jc.html.
- If you are making a JDBC connection, turn on the JCM debug flag to identify any SQL requests that may be causing the problem; try connecting through isql (or a vendor-supplied tool for a non-Sybase database) to check the response time.

3 Check whether a specific component or Web application may be responsible:

- Try another component.
- Review component properties. Is the component shared? Are variables set unexpectedly?
- Set com.sybase.jaguar.component.debug and com.sybase.jaguar.component.trace to on.
- Review the component code to look for:
  - A non-threadsafe sleep call
  - Synchronization for static variables
  - Proper release of resources
- Try using the Apache TomCat servlet engine to host your Web components, delegating EJB requests to EAServer. See White Paper 1016589, Using EAServer 4.0 with Apache's TomCat 3.3, at http://www.sybase.com/detail?id=1016589 for details.

4 If there is no response from any facility, including HTTP and IIOP listeners, connection caches, or components:

- Verify whether EAServer maximums are being reached; specifically, check if client sessions (IIOP + TDS) are at their maximum, or if the maximum thread limit (IIOP + HTTP) is reached.

Note In versions of PowerBuilder earlier than 8.0.3, instance data stores use twice as many threads as they currently do.

- Check whether other tasks are running, and whether operating system peaks are being hit.

- Get a stack trace or dump. You must first kill the jagsrv process, run the core image, or generate the dump using a debugger. See Chapter 6, “Advanced Topics” for more information.

Server disappears

If the server runs for a while, then disappears:

1. Check log files for errors. See “Logging” on page 4 for details.
2. On UNIX, check to see if a core file was generated. On Windows, check for a *.log* or *.dbg* file.
3. Check the jagsrv console for errors.
4. If there are no errors, restart the server to capture information next time.
    - Start the server from the command line, and redirect the output:

      UNIX:

      ```
      serverstart.sh > err.out 2>&1
      ```

      Windows:

      ```
      serverstart.bat >info.out 2 >err.out
      ```

    - On Windows, set the crash handler to *userdmp.exe* instead of Dr. Watson. See Chapter 6, “Advanced Topics,” for more on debugging tools.
    - Try the debug server.
5. Implement a service component to periodically write information to the server log.

Server slows or runs out of memory

If the server slows down or runs out of memory, you can investigate several areas:

1. In EAServer Manager, select Servers | <*Server Name*> | Runtime Monitoring, and monitor the system to check pooling, peaks, maximums, sessions, and so on.

2. Check system sizing.
3. Use system tools to see which resource is failing. Check virtual bytes, CPU utilization, threads waiting, and so on. For each of these steps, see “Runtime monitoring tools” on page 69.
4. Review EAServer timeout properties. If no timeout is set, this leads to indefinite wait for transactions, components, or methods (often the EAServer default).
5. Look for application trouble spots—see “Application issues” on page 28.
6. Check for memory leaks. For Java profiling, use OptimizeIt. On Windows, use the Performance Monitor.
7. Implement a service component to periodically write information to the server log.

Server starts in Admin mode

In some cases, EAServer may start in Admin mode. In this mode, the server accepts only IIOP client connections from EAServer Manager or clients that are coded to connect in Admin mode. Normal client connections are refused.

The server may start in Admin mode for a variety of reasons, for example:

- The server may belong to a cluster, but the server configuration is not synchronized with the cluster configuration.
- The message service is configured, but cannot start.

To find out why the server is in Admin mode, check the server log or the contents of the *Repository/Server/<Servername>.props* file, where *Servername* is the name of the server.

Connection problems

If you have trouble connecting to EAServer, check these items:

- If your server’s listeners use “localhost” for the machine name, rather than the actual network host address, you can connect only from clients running on the same machine, and connecting clients must use “localhost.” To connect from other machines, change the server listeners to use the actual network name rather than “localhost.”
- Some clients may have trouble resolving DNS host names to IP addresses. In this case, change the server’s listeners to use the host IP address rather than the DNS host name.
- If you have trouble connecting from Java clients, check for exceptions related to Java class loading. See “Deploying and running Java clients” in Chapter 12, “Creating Java CORBA Clients,” in the *EAServer Programmer’s Guide* for details.

If you are trying to connect from a Java applet, check your Web browser’s Java console for error messages.

Application issues

Generic issues

Common application problems for all component types include:

Non-threadsafe sleep calls Cause the server, instead of a specific thread, to sleep. Always use jagsleep().

User-spawned threads Use EAServer Thread Manager to allow EAServer to manage threads that must be spawned by a component.

ResultSets You must explicitly free the structures that you use to process result sets. A ResultSet object is closed only when the Statement object that generated it is closed.

Shared components A single shared component instance services all client requests. A shared component can store data in instance variables. However, if the component’s Concurrency option is also selected, you must add code to synchronize access to instance variables.

If a PowerBuilder component is Shared, disable Concurrency. PowerBuilder is thread safe at the session level only.

Lack of error handling Code that does not check for errors, and invalid object references and calls are common problems. For more information, see Chapter 4, “Exception Handling.”

No timeout on stateful components, or no remove() to disconnect the client proxy Before destroying the client proxy, deactivate the component instance using the SetComplete method. Do not leave a component instance bound to the client without a reference to it.

Variables holding references Set variables that hold references to null, particularly pooled components or connections.

Java component issues

Deploying from an EAR, JAR, or WAR If you have trouble deploying from an EAR, JAR, or WAR, you can use the Verifier tool to verify that it is valid. For details, search for “Verifier Tool” on the Java Web site at http://java.sun.com.

If you are having trouble deploying a Web application, check the J2EE requirements. If an application does not adhere to the J2EE rules, you may not be able to deploy it. For example, because they require local access, entity beans that participate in a container-managed relationship must all reside in the same EJB JAR.

Static variables in Java Static variables must be final or primitive, and cannot be larger than 32 bits. They can lead to potential race conditions: a variable is defined at the class level rather than the instance level; two threads try to modify a variable simultaneously. Race conditions are difficult to troubleshoot, and cause intermittent problems. You can use synchronization to prevent race conditions, but synchronization can cause performance bottlenecks.

Synchronizing component skeletons A skeleton class interprets component invocation requests and calls the corresponding method in your component with the parameter values supplied by the client. When a client sends an invocation request, the skeleton reads the parameter data and calls the Java method. When the method returns, the skeleton sends output parameter values, return values, and exception status to the client.

Problems can arise if component skeletons become out of sync. You must generate a new skeleton class if you do any of the following:

- Install the component in a different EAServer package

- Change the name of the implementation class or move it to a different Java package
- Add a method to the component interface
- Delete a method from the component interface
- Change the signature of an existing method in the component interface

C++ component issues

Incorrectly coded C++ components can corrupt EAServer memory unless they are run as external processes. If you are having trouble with C++ components, Sybase suggests that you configure the components to run as external processes. If this is not possible, try moving them to another server and repository, so that if they crash, other components are not impacted. See “Running C++ components externally” in Chapter 14, “Creating CORBA C++ Components,” in the *EAServer Programmer’s Guide* for details.

PowerBuilder component issues

Web DataWindow stability You may see stability issues or hanging behavior seen in the Web DataWindow component, in some pre-9.0 PowerBuilder versions. See TechNote 1023707, Web DataWindow Stability Issue, at http://www.sybase.com/detail?id=1023707 for details.

EAServer/PBVM memory tuning See TechNote 1027319, EAServer/PBVM Memory Tuning and Troubleshooting, at http://www.sybase.com/detail?id=1027319.

PBOnFatalError variable The PBOnFatalError system environment variable allows you to specify whether EAServer should continue, restart, or shut down when an internal exception occurs in the PBVM. For more information, see “Unhandled PowerBuilder exceptions” on page 54.

PBRollbackOnRTError variable If a runtime exception is raised by a PowerBuilder component running in EAServer, the value of PBRollbackOnRTError determines the outcome of the transaction. If set to true, the transaction is rolled back; if set to false, the transaction is committed. After the transaction is either rolled back or committed, the exception is thrown back to the client.

The default behavior in PowerBuilder 8 prior to Build 10656 and in versions of PowerBuilder 9 prior to build 7151 is to commit the transaction.

Threading models on Sun Solaris Using a many-to-many threading model on Solaris may cause EAServer to hang or crash, if the server is highly stressed. Consider using a one-to-one threading model instead. See TechNote 1026268, EAServer on Solaris - Troubleshooting Tip for Crashes or Hangs, at http://www.sybase.com/detail?id=1026268.

Performance guidelines If you have trouble running PowerBuilder components under a heavy load, refer to the PowerBuilder section of the *EAServer Performance and Tuning Guide*. You can find the online version of the PowerBuilder section at http://www.sybase.com/detail?id=1019504#pb.

Code sets Use the following guidelines when deploying PowerBuilder clients or components to EAServer and when troubleshooting issues related to code sets:

- In PowerBuilder clients that use char values greater than 127, specify the code set using the -ORBCodeSet property. The default code set (UTF-8) does not work, because PowerBuilder strings cannot handle 3-byte encodings. To specify the code set, set the Connection object's Options property; for example, to handle Korean characters in the eucksc code set, use the following syntax, where *myConnection* represents the Connection object:

  ```
  myConnection.Options ="ORBCodeSet='eucksc'"
  ```

- Specify the component- or server-level default code set.
- For PowerBuilder clients and components, verify that the specified code set is compatible with the operating system locale where they are running. That is, a client's code set must be compatible with the client's locale, and a component's code set must be compatible with the component's locale. The client's and component's locales need not be the same.
- If you encounter an erroneous character-conversion problem, verify that the character is valid in the selected code set, and that it has a well-defined encoding in Unicode; for example, the euro character is not valid in ISO 8859-1.

For more information about working with code sets, see the Guidelines for Code Set Interoperability with PowerBuilder and EAServer at http://content.sybase.com/detail?id=1028793.

Trace flags All EAServer trace flags are described in "EAServer traces" on page 10.

Client log file To configure a client log file, see Table 1-13 on page 15.

Error handling See "PowerBuilder error handling" on page 54.

Avoiding memory leaks

Here are some ways to avoid memory leaks when designing your EAServer applications. Some points are more relevant to PowerBuilder applications and others to Java.

- Stateful objects have a one-to-one relationship with the client, so if the client goes away, the object persists until a timeout in the server. Stateless objects are preferable.
- Close database connections when finished; otherwise, the transaction manager cannot give connection resources to another requestor until a timeout occurs.
- Keep variable scope as small as possible. Limit the use of instance variables since their storage persists for the lifetime of the component instance, even if that instance is not currently active.
- Use the appropriate event to create and destroy objects. If stateful, create instance objects in the constructor event and destroy them in the destructor event. If stateless, reset instance objects in the activate and deactivate events. In the deactivate event, set instance variables in Java components to null. When using DataStores in PowerBuilder components, reset the DataWindowObject to an empty string: `ds.dataobject = ""`, where *ds* is a data store reference to an instance variable.
- Minimize refreshing EAServer components and Web applications in production environments. Refreshing leaves the prior implementation loaded in memory, and excessive refreshing can overuse memory. When you do refresh components or Web applications in a production server, perform the refresh operation at the lowest level possible. For example, if you change one component, refresh that component only.

  Note Never refresh a server in a production environment, as this reloads all components and Web applications.

- Destroy any objects you create; do not rely on the garbage collector.
- Clean up after database activity, closing database connections and voting on the transaction to ensure correct lifecycle execution of components.
- Set blobs to null when finished.

Other design issues

For a discussion of the performance aspects of client applications, see Section 5, Client Applications, in TechNote 1019504, EAServer Performance Tuning Techniques, at http://www.sybase.com/detail?id=1019504.

Web server redirector plug-in issues

This section describes issues you may encounter if you use one of the Web server redirector plug-ins that are included with EAServer.

All Web server redirectors

If you are using one of the Web server redirector plug-ins, you must set the value of the com.sybase.jaguar.listener.http.connector_events property to true; otherwise, the HTTP responses that are sent to clients may be incorrect. The default value of the com.sybase.jaguar.listener.http.connector_events property is false.

Microsoft IIS Web server redirector plug-in

If you are having trouble using the IIS Web server redirector plug-in, verify that your environment is configured correctly.

❖ **Verifying the environment for an IIS redirector**

1 Verify these files exist in the EAServer *dll* directory, or if you are using the debug version of the server, verify that the files are in the *dll/debug* directory:

   - *lijctssecct.dll*
   - *libjcc.dll*
   - *libjsybscl.dll*
   - *libjintl.dll*
   - *libjeas_iis.dll*

2 Verify that the PATH system variable includes the EAServer *dll* directory, or the *dll/debug* directory for the debug server.

3 Verify that the WSPLUGIN_CONFIG_FILE system variable points to the location of the *redirector.cfg* file. For example, if *redirector.cfg* is located in *c:\winnt\system32\inetpub*, the value of WSPLUGIN_CONFIG_FILE should be *c:\winnt\system32\inetpub\redirector.cfg*.

4 Check the following logging settings in *redirector.cfg*:

- connector.IIS.LogLevel should be set to “verbose” only when debugging, not when using the runtime DLLs.
- connector.IIS.LogFile must be set to a valid drive and folder; otherwise, the plug-in may not load.

5 Look for error information in the log file that is defined by connector.IIS.LogFile (in *redirector.cfg*).

6 Expand the context path so the redirector handles all requests sent to the Web server. In *redirector.cfg*, set Connector.IIS.URLS to “/*”.

7 Verify that entries in *redirector.cfg* have a corresponding protocol listener defined in EAServer. For example, the following entry in *redirector.cfg* requires that an EAServer HTTP protocol listener is defined with the host name “prodhost” and the port number 8080:

```
Connector.WebApp /* = http://prodhost:8080
```

8 Examine the log file to ensure that the host name is correct and the port number is valid. For example, given the following entries in *redirector.cfg*:

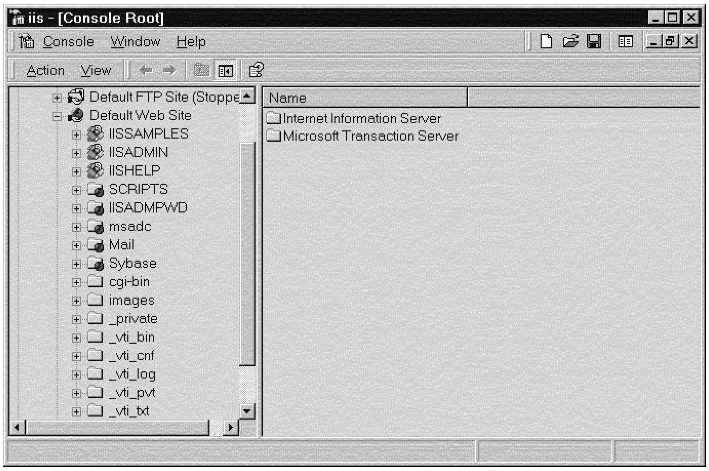
```
Connector.WebApp /enowcorporate = http://prodhost:8080

Connector.IIS.LogLevel inform
```

the log file should display the following:

```
Wed May 21 16:53:58 2003 INFO: ws: 1de1090, URL: [http://prodhost:8080],
protocol: [http], host: [prodhost], port: [8080] down_time:0
```

9 Using the IIS administration tool, verify that the icon for the virtual directory you are using looks like the Sybase folder in Figure 2-1. If the icon looks as expected, skip to step 11.

Figure 2-1: IIS administration tool



10 If the icon for your virtual directory looks like the IISADMIN icon:

   a Open the Properties dialog box for your virtual directory.

   b Select the Virtual Directory tab, and to the right of Application Settings Name, click Remove.

   c Restart IIS.

11 If none of the previous steps help identify the problem, try running the debug version of the plug-in, and check the log for error information.

Configuration issues

If you are having trouble starting EAServer, connecting from a client to the server, or invoking components from the server, first verify your configuration and try to identify any runtime errors following the instructions below. If all else fails:

- Shut down and restart the server.
- Perform a full rebuild of applications.

Verifying your configuration

All platforms

- Verify that you can ping your connection cache.
- Check the deployment properties of the application's components. See Chapter 14, "Importing and Exporting Application Components," in the *EAServer System Administration Guide* for information about deploying components.
- Look for Java classes loading from unexpected locations. Class loader logging is enabled by com.sybase.jaguar.server.jvm.verbose.

  You can find all occurrences of a class in BOOTCLASSPATH and CLASSPATH using the ClassSearch utility, which is described in TechNote 1017251, ClassSearch Utility, at http://www.sybase.com/detail?id=1017251.
- Verify that maximums and limits are set appropriately for the production environment:
  - EAServer properties (caches, sessions, threads, and so on)
  - JVM
- Ensure that the listener ports are not already in use and that no two EAServer listeners are defined to use the same port number.
- Check that the versions of the PBVM on the server and the PowerBuilder client match. Check all files, especially *libjcc.dll,* which may be shipped with both PowerBuilder and EAServer releases, ESDs, and EBFs.

Note EAServer includes *libjcc.dll* in the EAServer *dll* directory. PowerBuilder may include the file as well, in the *%SYBASE_SHARED%/PowerBuilder* directory, since this file is needed on PowerBuilder client installations. Sybase recommends that you not copy the *libjcc.dll* provided with PowerBuilder to the server as part of a PBVM setup. Even if you have the latest PowerBuilder patch, use the EAServer *libjcc.dll.*

Problems can result if either the EAServer application server or EAServer Manager uses a different version than its own (such as the one provided with PowerBuilder). This used to be a problem when EAServer looked at the system path variable. However, now that EAServer sets up the path in the serverstart script, the problem is less likely to occur; users must modify either the script or environment to cause the problem.

- If you specify the CacheName in the dbparm property of the transaction object, make sure you check the Enable Cache-By-Name access box.

Solaris platforms

Verify that LD_LIBRARY_PATH includes:

```
$JAGUAR/lib:$SQLANY/lib:$JAGUAR/intersolv/lib
$JAGUAR/jdk/jdk_latest/lib/sparc/libthread/5.5.1
$JAGUAR/jdk/jdk_latest/lib/sparc/native_threads
$LD_LIBRARY_PATH
```

Other UNIX platforms

Add the location of the X-Window xterm utility to your PATH variable. For example:

```
set path = ($path /usr/bin/x11/)
```

Verify that the THREADS_FLAG variable is either not set or is set to “native_threads.”

If you cannot start the server, verify that these environment variables are properly set:

- PATH – must include *$JAGUAR/bin*.
- JAGUAR – specifies the location of the EAServer installation directory.
- SQLANY – specifies the location of the Adaptive Server Anywhere directory.

Windows platforms

If the PATH or CLASSPATH settings do not include the required directories, or if the settings are too long, you may experience problems.

The *%JAGUAR%\bin\serverstart.bat* and *%JAGUAR%\html\classes\jagmanager.bat* files modify the PATH and CLASSPATH variables. Look at these files to investigate problems with either of these variables.

Running EAServer as a service

If you experience problems running EAServer as a service, try running it from the console. The service installed by default runs under the LocalSystem account, and access to printers and other resources is limited. Resource allocation problems associated with running the server as a service may not occur when running the server from the console.

If you run EAServer as a service, all the ODBC data sources for defined connection caches must be system data sources. The server cannot find user data source names.

System-level issues

This section describes system-level issues that may affect EAServer.

Operating system issues

Operating system issues, sometimes obscure and apparently unrelated, may adversely impact EAServer. Recent examples include:

- Solaris timers, which may affect looping service components
- AIX signals, which may lock up threads

CPU sizing

Check that your machine is sized properly to handle peak loads.

To determine a reasonable upper value of simultaneous client connections before the server starts "thrashing," see TechNote 1019577, CPU Sizing for Concurrent Client Connections to EAServer, at http://www.sybase.com/detail?id=1019577.

Multiprocessors

Numerous EAServer Change Requests (CRs) have already addressed multiprocessor issues. Check that you have the latest relevant patches.

Not all operating systems fully utilize multiple CPUs. Depending on your operating system, you may need to bind EAServer to each CPU to take advantage of multiple processors. See TechNote 1010600, Binding a PowerBuilder Process to a CPU on Windows NT or Sun Solaris, at http://www.sybase.com/detail?id=1010600 for details. This document is written for PowerBuilder but has wider application.

UNIX file descriptors

On UNIX platforms, concurrent client connections to EAServer are limited by the operating system limit for the number of file descriptors that one process can open. Before you start the server, use the ulimit command to set the file descriptor limit in the shell where you will start the server.

See your UNIX system documentation for details about ulimit.

Windows virtual bytes

On Windows, every process has a default limit of 2G virtual bytes. The default limit may not be sufficient in some conditions, such as high-load scenarios with many instances of PowerBuilder components. The EAServer process may reach on out-of-memory condition when the virtual byte limit is reached.

Some Windows server editions, such as the Advanced edition, allow you to configure a higher limit such as 3GB.

To determine if the EAServer process is reaching the virtual bytes limit, see "Evaluating Windows memory" on page 69.

To increase the virtual bytes limit for the EAServer process, use the Windows *imagecfg.exe* utility. For more information about the utility, see the Microsoft Knowledge Base article 171793 Information on Application Use of 4GT RAM Tuning at http://www.microsoft.com.

CHAPTER 3

Performance Issues

Resources

A number of documents are available in MySybase to help you improve performance for EAServer applications. They include:

- *EAServer Performance and Tuning Guide*

  This document covers all key aspects of performance, including:

  - General server tuning
  - Clusters
  - All components, including service, Java, EJB, JSP, Servlet, C/C++, ActiveX, and PowerBuilder components
  - Message service
  - Client applications
  - Database access
  - Web Services Toolkit
  - Runtime monitoring

- *What's New in EAServer*

  Chapter 1, "New Features in EAServer Versions 5.2," highlights new features in this version.

- *EAServer System Administration Guide*

  Chapter 7, "Load Balancing, Failover, and Component Availability," explains how to optimize performance for your EAServer cluster by adjusting the load across the servers.

Chapter 12, “Runtime Monitoring,” describes how you can use the File Viewer, Runtime Monitor, and OTS Transaction Monitor to track EAServer’s performance.

- *EAServer Programmer’s Guide*

  Chapter 7, “Advanced Features,” explains how to increase performance for EJB entity beans with object and query caching.

CHAPTER 4 Exception Handling

Overview

As a general rule, developers should always include exception handling in their code to catch and output error message details to help with troubleshooting. For example:

```
try {
   // some logic here
} catch (Exception e) {
System.out.println("Exception caught in mycomponent/mymethod: “
                         + e.getExplanation() + e.toString());
   // depending on exception type, you may want a stack trace
   e.printStackTrace();
   // return or retry as appropriate
}
```

The sections below provide information about handling exceptions for different EAServer component modes.

Note A listing of commonly encountered server errors appears in Chapter 5, “Common Error Messages.”

Error handling in CORBA Java components

Handle errors occurring during component execution gracefully, as follows:

1. Write detailed descriptions of the error to the log. This will help you debug the problem later. You can call any of the System.out.print methods to write to the log (the output is redirected).
2. If the error prevents the current transaction from completing, roll it back; for details, see “Set transactional state” in Chapter 11, “Creating CORBA Java Components” of the *EAServer Programmer’s Guide*.
3. Throw an exception with a brief, descriptive message appropriate for display to an end user of the client application.

Java components can record errors or status messages to the server’s log file. Writing to the log creates a permanent record of the error, and log messages can be automatically stamped with the date and time that the message was written. Call any of the System.out.print methods to write to the log.

- You can also throw an uncaught exception. Ideally, any exception thrown by your component should be a standard CORBA IDL exception or a user-defined IDL exception; the latter must be listed in the raises clause of the IDL method definition and the throws clause of the equivalent Java method declaration. All exceptions are forwarded to the client, but only exceptions defined in IDL can be rethrown by the client stub as a duplicate of the server-side exception.

CORBA ORB and EAServer EJB clients receive forwarded exceptions differently:

- CORBA ORB clients rethrow any exception defined in IDL as a duplicate of the original exception. Other exceptions are rethrown as the standard CORBA exception UNKNOWN.
- EAServer EJB clients rethrow any server exception as a JException instance with the message text returned by calling toString() on the original exception.

Handling exceptions in CORBA Java clients

The client-side ORB throws two kinds of exceptions:

- CORBA system exceptions; defined in the CORBA specification

- User-defined exceptions; defined in the component's IDL definition

CORBA system exceptions in Java

The CORBA specification defines the list of standard system exceptions. In Java, all CORBA system exceptions extend org.omg.CORBA.SystemException. System exceptions are unchecked exceptions (they extend java.lang.RuntimeException). The Java compiler does not require that you catch CORBA system exceptions. However, some exceptions can occur in a well-behaved program. For example, the Session.loookup call throws a NO_PERMISSION exception when you request a component instance and the user lacks permission to instantiate that component. You may want to trap the exceptions shown in the code fragment below:

```
try
{
   // invoke method(s)
   ...
}
catch (org.omg.CORBA.COMM_FAILURE cf)
{
   // If this occurs when instantiating a Manager
   // instance, the server is likely down or has run
   // out of connections. You can retry the connection
   // if desired.
   //
   // If this occurs after a method call, you
   // can retry the call (or the transaction call
   // sequence for a stateful component).
   ...
}
catch (org.omg.CORBA.TRANSACTION_ROLLEDBACK tr)
{
   // A component on the server aborted the EAServer
   // transaction, or the transaction timed out.
   // Retry the method call(s) if desired.
   ...
}
catch (org.omg.CORBA.OBJECT_NOT_EXIST one)
{
   // Possibly try to create another instance. Check
   // that the package and component are installed
   // on the server.
   // Received when trying to instantiate a component
   // that does not exist. Also received when invoking
   // a method if the object reference has expired
   // (this can happen if the component is stateful
  // and is configured with a finite Instance Timeout
  // property). Create another instance if desired.
  ...
}
catch (org.omg.CORBA.NO_PERMISSSION np)
{
  // Tell the user they are not authorized
  ...
}}

catch (org.omg.CORBA.SystemException se)
{
  // Catch-all clause for any CORBA system exception
  // that was not explicitly caught above.
  // Report the error but don't bother retrying.


  ...
```

The example does not show all of the possible system exceptions. See the CORBA/IIOP 2.3 specification for a list of all the possible exceptions.

User-defined exceptions in Java

User-defined exceptions are defined in the component's IDL definition. For example, you might define OverdrawnException to be thrown by methods that withdraw money from a bank account. In Java, all user-defined exceptions extend org.omg.CORBA.UserException.

- In Java, IDL user-defined exceptions are checked exceptions; if the IDL definition of a method contains a raises clause, the equivalent Java stub method will have a throws clause that lists the equivalent Java exceptions. For example, consider the IDL definition below:

```
module MyModule {
  exception MyException
  {
    string reason;
  };

  interface MyIntf {
    boolean throwException
    ( in boolean yes_no )
    raises (MyException);
  };
};
```

The equivalent Java throwException method is:

```
boolean throwException (boolean yes_no)
  throws MyModule.MyException;
```

Note As per the CORBA specification, methods defined on exceptions cannot be marshalled to the client; that is, information provided with an exception must be in a public variable.

Error handling in CORBA C++ components

The client-side ORB throws two kinds of exceptions:

- CORBA system exceptions; defined in the CORBA specification
- User-defined exceptions; must be defined in the component's IDL definition

CORBA system exceptions in C++

The CORBA specification defines the list of standard system exceptions. In C++, all CORBA system exceptions are mapped to a C++ class that is derived from the standard SystemException class defined in the CORBA module. You may want to trap the exceptions shown in this code fragment:

```
try
{
... // invoke methods
}
catch (CORBA::COMM_FAILURE& cf)
{
... // A component aborted the EAServer transaction,
  // or the transaction timed out. Retry the
  // transaction if desired.
}
catch (CORBA::TRANSACTION_ROLLEDBACK& tr)
{
... // possibly retry the transaction
}
catch (CORBA::OBJECT_NOT_EXIST& one)
{
... // Received when trying to instantiate
  // a component that does not exist. Also
  // received when invoking a method if the
```

```
    // object reference has expired
    // (this can happen if the component
    // is stateful and is configured with

    // a finite Instance Timeout property).
    // Create a new proxy instance if desired.}
  }
  catch (CORBA::NO_PERMISSSION& np)
  {
  ... // tell the user they are not authorized
  }
  catch (CORBA::SystemException& se)
  {
  ... // report the error but don't bother retrying
  }
```

Not all of the possible system exceptions are shown in this example. See the CORBA/IIOP 2.3 specification for a list of all the possible exceptions.

User-defined exceptions in C++

In C++, all CORBA user-defined exceptions are mapped to a C++ class that is derived from the standard UserException class defined in the CORBA module. For more information, see "User-defined IDL datatypes" and "User-defined exceptions" in Chapter 5, "Defining Component Interfaces" of the *EAServer Programmer's Guide*.

User-defined types must exist in the EAServer IDL repository before you can use them in interface declarations.

Error handling in ActiveX components

Handle errors that may occur during a method call as follows:

- Call the JagServer::WriteLog method to write a description of the error to the log file.

  JagAxWrap.dll must be registered on your machine. If you are developing on a machine that already has EAServer installed on it, *JagAxWrap.dll* is already registered.

- You can also generate an ActiveX automation exception with text that describes the error. EAServer returns the text of the exception to the client. Java clients receive the message as a Java exception (class com.sybase.jaguar.util.JException) and ActiveX clients receive the message as an ActiveX automation exception.

In general, if an error prevents completion of a desired task (such as database updates that represent a new sales order), you should generate an ActiveX automation exception to send a concise description of the problem to the client. Messages sent to the client should be concise and contain language suitable for display to the end user. You can record more detailed messages in the log file.

IDL user-defined exceptions are not supported.

Never write your component to send error messages to the console to display dialog boxes. Servers run unattended; showing a dialog box does nothing but hang the thread that executes your component.

Handling exceptions in ActiveX clients

Always make sure that your application handles exceptions gracefully. At minimum, you should display the exception text, which may aid debugging.

Errors in ActiveX proxy execution can be handled as ActiveX exceptions, or inline using a try/catch model similar to the structured exception-handling model in the C++ and Java languages.

Using an ActiveX error handler

By default, the ActiveX proxy raises an ActiveX exception when an EAServer component method raises an exception or an internal error occurs. Visual Basic and most other ActiveX scripting tools do not allow you to handle these errors inline. Instead, control transfers to an error handler (specified by an error goto in Visual Basic) or to a system-wide error dialog box. To handle proxy errors inline, you must enable inline exception handling as described in “Handling exceptions inline” in the *EAServer Programmer’s Guide*.

Structure of an ActiveX exception

In C++, the OLE EXCEPINFO structure describes an ActiveX exception. Different ActiveX-enabled IDEs provide different mechanisms for applications to obtain the EXCEPINFO structure contents.

In Visual Basic, exceptions are mapped to the built-in Err object. The exception number maps to Err.Number and the description is available as Err.Description. You can handle exceptions by activating error handling code with the `On Error Goto` statement or by checking whether Err.Number is > 0.

IDL user-defined exceptions are not supported and are mapped to error number 9000.

Using error pages

You can create error pages to customize error and exception reports that are sent to clients. When the servlet engine detects an error or catches an exception thrown by a servlet, it searches for a corresponding error page to handle the response. You can declare error pages at the server level and for a Web application or JavaServer Page (JSP).

You can specify HTML and JSP files to send in response to HTTP error codes and to Java exceptions thrown in JSPs or servlets. For information about JSP error pages, see "JSPs as error pages" on page 52.

Server-level error pages

To set up server-level error pages, set the value of the com.sybase.jaguar.server.servlet.error-page property on the Advanced tab of the Server Properties dialog box. Use the following syntax to define a comma-delimited list of complex properties. Each property includes a location, and either an error code or an exception field.

(location=*/file.jsp*,error-code=*code*),
(location=*/exception.htm*,exception=*java.lang.Exception*)

where:

- The locations of error pages *file.jsp* and *exception.htm* are relative to the HTML document root.
- *code* is the error code that triggers the error page.

- *java.lang.Exception* is the fully-qualified Java class name of the exception that triggers the error page.

Error pages for Web applications

When an exception is thrown, the servlet engine searches the error page mappings for the exception and its super classes. For example, assume AException extends BException and BException extends CException and CException extends java.lang.Exception. When AException is thrown, EAServer checks if AException is mapped. If not, EAServer checks if BException is mapped, and so forth.

Adding an error page

Use the following steps to add an error page:

1. Display the File Refs tab in the Web Application Properties dialog box.
2. Under Error Mapping, click Add. A new row is added to the mapping table with default settings.
3. Place the cursor in the Error/Exception cell, and enter the error number or Java exception class name.
4. Place the cursor in the URL cell, and type the path to the file, relative to the Web application's context root; for example, */etc/error404.html*.
5. Verify that the file exists in your EAServer installation directory and can be read by the server process. For example, the path */etc/error404.html* corresponds to the *Repository/WebApplication/web_app/etc/error404.html* file in your EAServer installation, where *web_app* is the name of the Web application.

Error pages for JavaServer Pages

When a client request is processed, runtime errors can occur in the body of the implementation class for a JSP or in Java code that is called by the page. You can handle these exceptions in the JSP code using the Java language's exception mechanism.

Uncaught exceptions

You can handle any exceptions that are thrown from the body of the implementation class and are not caught by using an error page that you specify using a page directive. Both the client request and the uncaught exception are forwarded to the error page.

To specify an error page for a JSP, set its errorPage attribute to the URL of the error page in a page directive:

```
<%@ page errorPage="ErrorPage.jsp" %>
```

The java.lang.Throwable exception is stored in the javax.ServletRequest instance for the client request using the putAttribute method, using the name javax.servlet.jsp.jspException.

Saving Java source code

Normally, EAServer deletes the Java source code after compiling a JSP. To keep the generated source code to view or use in a debugger:

1. Display the properties for the Web application in which the JSP is installed.
2. On the Advanced tab, set the com.sybase.jaguar.webapplication.keepgenerated property to true.

JSPs as error pages

If you specify a JSP as an error page, you can use its implicit exception variable to obtain information about the exception. The exception variable type is java.lang; it is throwable and initialized to the throwable reference when the uncaught exception is thrown.

To define a JSP as an error page, set its isErrorPage attribute to true in a page directive:

```
<%@ page isErrorPage="true" %>
```

This sample error page JSP uses the exception variable’s toString method to return the name of the actual class of this object and the result of the getMessage method for the object. If no message string was provided, toString returns only the name of the class.

The example also uses the getParameterNames and getAttributeNames methods of the request object to obtain information about the request.

```
<%@ page language="java" import="java.util.*"
   isErrorPage="true" %>

<H1 align="Center">Exceptions</H1>

<br><%= exception.toString() %>

<%! Enumeration parmNames; %>

<%! Enumeration attrNames; %>

<br>Parameters:

<%    parmNames = request.getParameterNames();

   while (parmNames.hasMoreElements()) {

%>

   <br><%= parmNames.nextElement().toString() %>

<%

   }

%>

<br>Attributes:

<%    attrNames = request.getAttributeNames();

   while (attrNames.hasMoreElements()) {

%>

      <br><%= attrNames.nextElement().toString() %>

<%

   }

%>
```

PowerBuilder error handling

The PowerBuilder documentation set includes extensive details on handling exceptions. Here are some useful references:

- "Exception Handling in PowerBuilder" in Chapter 3 of the *Application Techniques* manual
- "Testing and debugging the component" in Chapter 22 of the *Application Techniques* manual
- "Handling errors" in Chapter 23 of the *Application Techniques* manual
- "Troubleshooting connections" in Chapter 23 of the *Application Techniques* manual
- "Handling Data Windows Errors" in Chapter 2 of the *DataWindow Programmer's Guide*

Unhandled PowerBuilder exceptions

If an unhandled fatal exception is raised by a PowerBuilder component running in EAServer, it can cause the PBVM to become unstable, resulting in unpredictable behavior and unforeseen problems with the PBVM and EAServer. This scenario is unlikely, but possible. Rather than allow EAServer to continue running in an unstable state, you may want to restart or shut down the server.

The PBOnFatalError system environment variable allows you to specify the action you want EAServer to take when an unhandled exception is raised in the PBVM. The PBOnFatalError variable is supported in PowerBuilder 8.0.4 (Build 10501) and PowerBuilder 9.0.1 (Build 6533) maintenance releases, and later. These are the values you can assign to the PBOnFatalError variable:

Value	Resulting behavior when a fatal error occurs in a PowerBuilder component
continue	EAServer continues running, and a CORBA_TRANSACTION_ROLLEDBACK exception is thrown.
restart	EAServer restarts automatically.
shutdown	EAServer shuts down.

If the PBOnFatalError variable is not set, the default value is "continue."

CHAPTER 5 Common Error Messages

Introduction

This chapter lists the errors most commonly encountered during EAServer operation. It provides the context for each error and troubleshooting tips as applicable.

When an error is raised, try to determine where the error came from: is it an EAServer error, or was it passed to EAServer from another source such as a database or the Java virtual machine?

Some errors include a source indicator. For example:

Source	Meaning
SRVLIB	Generated by EAServer
DEBUG	Generated by a component when the debug property is enabled
TRACE	Generated by a component when the trace property is enabled
CORBA	Generated by CORBA client ORB

Error messages

This section lists common messages and their explanation, with possible causes and tips on how to resolve them.

Note For simplicity, only the key portions of the error messages are provided. The actual message text may contain a prefix such as "Exception" or "System exception," which is not included in these listings.

Table 5-1: Server messages

Message text (or text fragment)	Explanation
Cannot find interfaces file	See "Connection problems" on page 27 and "Configuration issues" on page 35.
Cannot find localization files	See "Connection problems" on page 27 and "Configuration issues" on page 35.
Cannot start network listener	The main IIOP listener may be configured incorrectly. Check the console and log files for listener failures. Use EAServer Manager to verify the correct listener properties. Try to connect to the server with another application, using the same protocol. See "Configuration issues" on page 35 for information about resolving start-up problems.
ClassCastException error	If you see NamingContext exceptions with root-cause exception ClassCastException when calling javax.naming.InitialContext.lookup, check for the following problems: • You may be casting to an incorrect type (check the class name of the object returned by lookup). • Your component has refresh enabled, and the custom class list does not contain some required classes. • Your component has refresh enabled, and calls a component that has refresh disabled, or vice-versa.
com.sybase.jdbc.SybSQLException	When EAServer starts a transaction, it puts the connection into chained mode. By default, Adaptive Server Enterprise runs procedures in unchained mode. Use sp_procxmode to change the mode of the stored procedure; for example: `sp_procxmode "sp_myproc", "anymode" go` You can run the stored procedure sp_myproc only in unchained transaction mode. The SET CHAINED OFF command causes the current session to use unchained mode.

Message text (or text fragment)	Explanation
CORBA marshall exception	You may have tried to return a NULL object, which CORBA forbids. This error may also occur when you attempt to access an ActiveX component from Visual Basic if you have not explicitly initialized a structure field that uses complex types. Initialize fields of complex types such as struct, union, object, date, time, or timestamp. If you do not initialize these fields before passing the union as an EAServer method parameter or return value, the ActiveX dispatcher throws a marshalling exception. Fields of other types are implicitly set to a default value.
CORBA:: NO_PERMISSION	The user is not authorized to perform the requested operation. For example, the Session.loookup call throws a NO_PERMISSION exception when you request a component instance and the user lacks permission to instantiate that component. Check permissions for the component, package, and user. A CORBA::NO_PERMISSION exception can also mean that an attempt was made to access an object from a less secure session than it was originally created with. If the original proxy instance was created by connecting to a secure port with a client-side SSL certificate, the proxy must be deserialized in a session that connects using the same client certificate and equal or greater security constraints. For example, if you create an object with a session that uses 128-bit SSL encryption, serialize the object, then later try to deserialize the object during a session that uses 40-bit SSL encryption, the ORB throws the CORBA::NO_PERMISSION exception. Access is allowed when objects created using a less secure session are later accessed using a more secure session.
CORBA::NO_RESOURCE_EXCEPTION	This exception is raised if a component request arrives when the maximum number of instances exist, all are busy, and the blocking time expires. (com.sybase.jaguar.component.objects specifies the maximum number of instances, and the Resources/Maximum Wait property specifies the blocking time.) Network latency between client and server is not included in the measured method execution time. For C++ components running in an external process, the measured time includes interprocess communication latency.

Message text (or text fragment)	Explanation
CORBA::OBJECT_NOT_EXIST	This message can mean that the package or component is not installed on the server. It may also be received when a method is invoked but the object reference has expired, which can happen if the component is stateful and is configured with a finite Instance Timeout property. When the timeout period is exceeded for a component instance, EAServer deactivates the component and invalidates the client's object reference. If the client attempts another method invocation, the client-side ORB throws the CORBA::OBJECT_NOT_EXIST exception. At this point, the client must create a new proxy instance for the component if it wants to continue.
CORBA::TRANSIENT	For EJB clients, this exception is the root cause of the java.rmi.RemoteException thrown by the EJB stub. This message is associated with concurrency control; it may indicate a rollback due to an optimistic update failure. The default optimistic update check is to compare the old values with the new values. Someone else may have updated the data between your ejbLoad and ejbStore. Use one of the following corrective actions: • Set the property com.sybase.jaguar.component.debug=true to get more information; or • Use a timestamp column in your database table; or • Disable optimistic updates as appropriate for your application. See Chapter 25, "Managing Persistent Component State," in the *EAServer Programmer's Guide* for more information on concurrency control.
Could not start thread	The EAServer maximum threads property must include thread requirements of the entire server, including the message service thread pools. You can set this property on the HTTP Config tab in the Server Properties dialog box.
CtsComponents::CreateException	See javax.ejb.CreateException error.
CtsComponents::FinderException	See javax.ejb.FinderException error.

Message text (or text fragment)	Explanation
DBMS is not supported in your current installation	This is a PowerBuilder error message. The probable cause is that the value of SQLCA.DBMS is not set. In PowerBuilder component code, you typically have a series of lines that set up database connection parameters using a PowerBuilder transaction object. For the default transaction object, SQLCA, you must set the value of SQLCA.DBMS to a string that begins with one of: ODB, JDB, SYJ, O90, O84, or O73, and the definition must come before this statement: `CONNECT USING SQLCA;` PowerBuilder uses the DBMS string to build the DLL or library name that it needs. If you are using a transaction object other than SQLCA, verify that its DBMS property is set correctly, before calling the connect statement.
Deployment error accessing server <*server_name*> at port 9000	This is a PowerBuilder error message. Connect to EAServer Manager to confirm that EAServer is running. Confirm that EAServer is listening on the server name and port mentioned in the error. An IIOP listener must be configured on that port and server name. Check the EAServer user ID and password specified on the Server tab in the Component Generator properties. Check the path specified in the PowerBuilder Dynamic Library Name text field on the Libraries tab in the Component Generator Properties.
Deployment error functions using ANY type arguments or an ANY return type not supported. Correct the following for component <*component*>:<*method*>.	This message applies specifically to the ANY datatype, which is not supported for public instance variables, function arguments, or function return values. The remedies are the same as described for “Deployment error or warning (from PowerBuilder) SYSTEM variables not supported.”
Deployment error or warning (from PowerBuilder): SYSTEM variables not supported	Public instance variables and arguments to public functions can be any of: • Standard datatypes • Structures • Custom class user objects that have been deployed as EAServer components • ResultSets If you are using system datatypes (transaction, data store, and so on) as instance variables, declare them as protected or private. If you are using system datatypes as function arguments, declare the function as protected or private.

Message text (or text fragment)	Explanation
The Instruction at *** referenced memory at ***, the memory could not be written	You may see this message if the JAGUAR_RANDOMSEED variable is not set, or is set to a value that does not match the name of an accessible file. See Chapter 3, “Creating and Configuring Servers,” in the *EAServer System Administration Guide* for more information. If that does not resolve the problem, see “Server crashes, hangs, or disappears” on page 20.
INVALID_TRANSACTION	If you are using the message service, this exception occurs if you try to use two concurrent threads within a single transacted session to send or receive messages. You must create a separate transacted session for each thread that you use to send or receive messages. This restriction applies to messages received synchronously or asynchronously; that is, regardless of whether you call “receive” or use a message listener.
javax.ejb.CreateException OR CtsComponents::CreateException	When instantiating an entity bean proxy, call a finder method first if you are unsure whether an entity bean’s data is already in the database. Create methods throw a javax.ejb.CreateException exception if you attempt to insert a duplicate database row.
javax.ejb.FinderException OR CtsComponents::FinderException	EJB finder methods return instances that match an existing row in the underlying database based on the lookup parameters passed to the method. Finder methods throw javax.ejb.FinderException if no rows match the specified search criteria.
java.lang.NoClassDefFoundError	A class definition could not be found. Make sure the class file is in the CLASSPATH. If necessary, set the com.sybase.jaguar.server.classloader.debug property to true to enable class loader tracing while you troubleshoot class loading issues. Remember to set the property back to false when you are finished.

Message text (or text fragment)	Explanation
javax.naming.NamingException	The lookup method throws javax.naming.NamingException if the bean JNDI name cannot be resolved or the home interface proxy cannot be created. Reasons include: • The server address specified with the Context.PROVIDER_URL property is incorrect or the server is not running. • Authentication with the specified credentials failed. • The bean is incorrectly configured on the server. For example, a skeleton has not been generated, or the bean's properties specify the wrong implementation class. • Check the EJB references in EAServer Manager to be sure the values are correct. Check the server's log file if the cause of the error is not clear from the exception's detail message.
JCM Caught Throwable: java.sql.SQLException: Error: Current enlistment requires 2PC Resource and No 2PC Resource Configured for Cache:SybaseJMS	A component is attempting to write a JMS message to an EAServer message service topic or queue, without using the same connection cache. The component must use the same connection cache as the EAServer message service.
jmsException	An exception has occurred with the message service. The ExceptionListener provides access to the error information—see Chapter 29, "Creating connections," in the *EAServer Programmer's Guide* for information. You can also output debug information for the message service using the com.sybase.jms.debug property.
No such file libpb90x.so: not found	This is the same problem as described in "DBMS is not supported in your current installation."

Message text (or text fragment)	Explanation
OBJECT_NOT_EXIST	Most commonly, this is because the server component cannot be instantiated or an instance is no longer available. Verify that: • The specified component is installed in the specified EAServer Manager package. • The specified EAServer Manager package is installed in the server. • The Java class, Windows DLL, or UNIX shared library that implements the component is available. • If you are instantiating a Java component, the component’s skeleton class is available. This error may also occur when a component’s cache size is not large enough, causing clients to experience cache overflow errors. When this happens, the least recently accessed instance is removed from the cache. If a client attempts to invoke an instance, the client receives a CORBA::OBJECT_NOT_EXIST exception. See “Mirror Cache tab component properties” in Chapter 25 of the *EAServer Programmer’s Guide* for more information. The error may also be raised when more than one client simultaneously tries to receive a message from a message service queue that is not shared.
NullPointerException	For in/out parameters to CORBA Java component methods, you must pass a non-null value for the parameter input value. Otherwise, method calls fail and throw NullPointerExceptions. Use output parameters in the method definition if the parameter’s input value does not matter.
ObjectKey::init: <servername>.cycle create failed: No such file or directory	This error may be seen on server start-up. Causes include: • Your installation does not have a repository, or • The repository is corrupt, or • Repository/Server directory is not writeable. **Note** *servername.cycle* is not required for the server to start. If the file does not exist, it is automatically created when you first start the server.
SetDwObject (*PBL_name*, *DataWindow_name*) failed = -1	Verify the HTML DataWindow property in the DataWindow painter. Verify that the PBL (PowerBuilder library) or PBD (PowerBuilder dynamic library) is in the system PATH of the server machine.
srv__read_packet: Protocol error occurred: length in header (21536) more than packet size(512)	Verify that the listener port matches the client protocol.

Message text (or text fragment)	Explanation
SRVLIB message: Net-Library routine net_listener (host:port) failed in srv_start_listeners Network error: status = 23 - Net-Lib protocol driver call to register a listener failed	The listener is currently in use. Network listeners must be unique for the server machine. If the server runs as a Windows NT service, verify that you did not attempt to start another instance of the same server. To fix the problem, modify the listener properties in the repository and restart the server. Be sure there is only one instance of a specific server running.
SystemException: CORBA::COMM_FAILURE	Possible reasons for this error include: • The server is down. • The server has run out of connections. • You did not specify the correct host name or listener address.
TRANSACTION_ROLLEDBACK	A component participating in the transaction called the rollbackWork transaction primitive to indicate that the transaction should not be committed, or the transaction timed out. You may retry the method calls if desired. There is a different cause for this error if you are running EJB CMP entity beans with automatic persistence and timestamp verification (specified on the component properties Persistence tab). If you see “TRANSACTION_ROLLEDBACK: Optimistic Concurrency Control” messages in the server log, try changing the persistence setting to Generated Class, then regenerate stubs and skeletons for the component. **Note** In some cases, you may see this message simply because of the activity of other transactions, in which case you must restart the transaction, either in client code or by enabling automatic retry.
Trust verification failed. Client certificate not available.	The server listener requires mutual authentication. Make sure the certificate label is set in the client ORB/SSLServiceProvider and that the SSLCallback::getCertificateLabel callback is implemented.
Trust verification failed. SSL protocol X.509 certificate chain is incomplete.	Make sure the client’s certificate chain is complete. Use EAServer Manager to verify the client’s certificate. If the client’s CA certificate is not in the client PKCS token, install it.
Trust verification failed. SSL protocol X.509 certificate chain is invalid.	Use EAServer Manager to verify that the client’s certificate chain is valid.
Trust verification failed. SSL protocol X.509 certificate has expired.	Use EAServer Manager to verify the client’s certificate. If a certificate has expired, get a new certificate from the CA and install it at the client site.
Trust verification failed. SSL protocol X.509 certificate chain contains an unknown CA.	Install the certificate of the CA that signed the client certificate in EAServer, using EAServer Manager, and mark it trusted. You must be the server administrator to do this.
Trust verification failed. SSL protocol CA certificate is untrusted.	Have the server administrator mark the client’s CA as trusted.

Message text (or text fragment)	Explanation
Unable to initialize the VM	See “Starting the server” in Chapter 3, “Creating and Configuring Servers,” in the *EAServer System Administration Guide* for details on selecting and running the Java VM. Check that the PATH and CLASSPATH environment variables are set correctly.
Warning: Failed to initialize SSL Service Provider: protocol IIOPS not supported	Verify that the SSL deployment kit is installed and configured correctly and that the JAGUAR_CLIENT_ROOT environment variable points to where the deployment kit is installed. On Windows, verify that the PATH contains *%JAGUAR_CLIENT_ROOT%/lib*. On UNIX, make sure the library path variable contains *$JAGUAR_CLIENT_ROOT/lib*.
Warning: protocol IIOPS not supported	Check the SSL deployment installation, configuration, and the JAGUAR_CLIENT_ROOT environment variable, as described in the previous warning.

System exceptions

System exception identifiers are predefined and listed in Table 5-2.

Table 5-2: System exception identifiers

Identifier	Notes
Jaguar/ClientException	An error occurred internally to the ActiveX proxy. For example, you may have called a method that uses an unsupported parameter type.
CORBA/BAD_CONTEXT	Raised when a client invokes the operation but the passed context does not contain the context values required by the operation.
CORBA/BAD_INV_ORDER	Indicates that the caller has invoked operations in the wrong order; for example, you cannot make an ORB-related call without first initializing the ORB.
CORBA/BAD_PARAM	A passed parameter is out of range or considered illegal, such as a null values or null pointer.
CORBA/BAD_OPERATION	Indicates that an object reference denotes an existing object, but the object does not support the operation that was invoked.
CORBA/BAD_TYPECODE	The datatype for a variable could not be determined or processed.
CORBA/COMM_FAILURE	A network error occurred. When creating a connection, this usually indicates that the server is down or you have specified the wrong listener address. When calling a method, the error may indicate a transient network fault; you can retry the method.

Identifier	Notes
BA/DATA_CONVERSION	A code set conversion problem occurred.
CORBA/FREE_MEM	JaguarORB failed in an attempt to free dynamic memory; for example, because of heap corruption or memory segments being locked.
CORBA/IMP_LIMIT	Indicates that an implementation limit has exceeded in the ORB runtime; for example, a parameter’s size may have exceeded the allowed maximum.
CORBA/INTERNAL	Indicates an internal failure in the JaguarORB, for example, if JaguarORB has detected corruption of its internal data structures.
CORBA/INTF_REPOS	Component information or properties could not be read from the repository.
CORBA/INV_FLAG	An invalid flag was passed to an operation.
CORBA/INV_IDENT	An RMI/IDL (remote method invocation/interface definition language) repository ID could not be mapped to a Java class.
CORBA/INV_OBJREF	An object reference is invalid.
CORBA/INVALID_TRANSACTION	A problem occurred while attempting to process a transaction.
CORBA/INITIALIZE	JaguarORB has encountered a failure during its initialization, such as failing to acquire networking resources or detecting a configuration error.
CORBA/MARSHAL	A request or reply from the network is structurally invalid. This error typically indicates an error in either the client-side or server-side runtime.
CORBA/NO_IMPLEMENT	The component does not implement the method that you called.
CORBA/NO_MEMORY	The ORB runtime has run out of memory.
CORBA/NO_RESOURCES	JaguarORB has encountered some general resource limitation; for example, the runtime may have reached the maximum permissible number of open connections.
CORBA/NO_RESPONSE	This exception is raised if a client attempts to retrieve the result of a deferred synchronous call, but the response for the request is not yet available.
CORBA/NO_PERMISSION	The user cannot access the server or a specified component.
CORBA/OBJ_ADAPTER	Indicates an administrative mismatch; for example, a server may have made an attempt to register itself using a name that is already in use, or is unknown to the repository.

Identifier	Notes
CORBA/OBJECT_NOT_EXIST	The object does not exist. This can happen if: • The component installed incorrectly on the server. For example, the component class or skeleton class cannot be loaded. • The object represents a stateful component and your reference to it has expired. Check the value of the component's property, and, if needed, code your client to create another instance in response to this error.
CORBA/PERSIST_STORE	A persistent storage failure; for example, failure to establish a database connection or corruption of a database.
CORBA/TRANSACTION_REQUIRED	The method you attempted to call must be called in the context of an open transaction.
CORBA/TRANSACTION_ROLLEDBACK	The method you called rolled back its transaction, or if you have started a client-managed transaction, the transaction timed out.
CORBA/TRANSIENT	An attempt to establish a connection fails, for example, because the server or the implementation repository is down.
CORBA/UNKNOWN	An operation implementation throws a non-CORBA exception or raises a user exception that does not appear in operation's raises exception.

See the CORBA specification for general descriptions of CORBA system exceptions.

See the *EAServer Programmer's Guide* for examples of exception handling code.

CHAPTER 6

Advanced Topics

Operational management tools

A number of tools and techniques are available to monitor the operation of the server, its environment, and applications.

Windows platforms provide a number of diagnostic tools:

- See “Windows debugging tools” on page 74.
- Other Windows tools are described under “Runtime monitoring tools” on page 69.

UNIX systems also provide a number of tools:

- See “UNIX debugging tools” on page 76.
- On HP-UX, numerous commands and tools are available including:
    - tusc – to list all system calls; useful for tracing application crashes.
    - vmstat – for virtual memory statistics.
    - top – for a list of processes using the most CPU.

- On AIX, use the System Admin tools.
- On Solaris, numerous commands are available, including:
  - top – to see which processes are consuming the most CPU.
  - vmstat – displays CPU and memory usage.
  - pstack – for stack dump analysis.
  - pmap – lists which libraries are loaded and their load locations.
  - pldd – similar to pmap but includes less information.
  - pfiles – lists file descriptors, sockets, files, and so on.
  - truss – displays what is happening with file descriptors, signals, O/S interactions with a process, and so on. truss is useful if you know that a specific action leads to a specific problem.

Note truss can generate large volumes of output. To reduce truss output, use truss -p.

Memory management tools

The following code sample shows how to output information about free memory, total memory, and JVM properties:

```
import java.util.*;
import java.io.*;

public class printMemAndProps {

   public static void main (String[] args) {

   System.out.println(new Date());  // print system date

      // get runtime info and print Free/Total memory
      Runtime rte = Runtime.getRuntime();

      long freeMem = rte.freeMemory();
      long totalMem = rte.totalMemory();

      System.out.println("Free Memory: " + freeMem);
      System.out.println("Total Memory: " + totalMem + "\n");

      java.util.Properties p = null;
      try {
      p = System.getProperties();
      }
      catch(Exception e) {
      e.printStackTrace();
      return;
      }
      p.list(System.out);  // print all JVM propererties

   }

}
```

Evaluating Windows memory

You can find a detailed article on Windows memory management titled "Evaluating Memory and Cache Usage" on the Microsoft Web site at http://www.microsoft.com.

This article explains the Performance Console and other Windows tools, with emphasis on:

- How to monitor memory
- Interpreting output
- How to identify memory leaks—see "Investigating User-Mode Memory Leaks" and subsequent sections

PowerBuilder memory tuning

For information about tuning and troubleshooting the C/C++ heap memory manager that is used by EAServer and PowerBuilder, see the EAServer/PowerBuilder Memory Tuning and Troubleshooting at http://www.sybase.com/detail?id=1027319.

Runtime monitoring tools

The tools described in this section enable you to perform EAServer runtime monitoring.

EAServer Manager

In EAServer Manager, HTTP and IIOP network monitoring shows thread usage, and IIOP network monitoring shows the host and thread information for current clients. For information, see Chapter 11, “Runtime Monitoring,” in the *EAServer System Administration Guide*.

Debugging wizards

These wizards step you through the configuration that enables tracing and debugging of components and servers. To run the wizard on a server, highlight the server icon, then choose File | Server Debug Settings Wizard. To run the wizard on a component, highlight the component icon, then choose File | Component Debug Settings Wizard.

Performance tuning wizards

These wizards guide you through the tuning of server, component, Web application, servlet/JSP or server settings that affect performance. To run them, highlight the server, component, Web application, or JSP icon, then choose File | Performance Tuning Wizard.

EAServer monitoring APIs

The EAServer monitoring APIs allow you to monitor aspects of your runtime environment such as sessions, threads, components, connection caches, listeners, IIOP and HTTP traffic, and so on. Available information includes:

- Peaks
- Maximums
- Current values
- Forced connects

Using the Jaguar::Monitoring API, you can:

- Write service components that periodically check desired characteristics such as peak values and forced connections
- Retrieve configured values for maximum HTTP threads and the maximum number of simultaneous client threads, as well as the existing keys for current thread usage
- Return information on IIOP clients using the getConnectedUsers method

Jaguar::PerfMonitor is a performance monitoring interface that provides performance statistics in a per-second, per-minute, and per-hour bucket model.

Jaguar::StatProvider and Jaguar::StatProviderController are interfaces implemented by *statistic provider* components that collect performance statistics. EAServer includes statistics providers for the connection caching and HTTP protocol handler subsystems. You can also implement your own statistics providers using these interfaces.

For information on the monitoring APIs, see the generated HTML documentation for the Jaguar IDL module, in this file within your installation:

```
html/ir/Jaguar.html
```

jagtool

The jagtool commands getserverinfo and getserverstate allow you to get additional information about the server status. getserverinfo returns the server status and version number. getserverstate queries the state of service components and is useful in scripts that start or restart servers; you can use it to determine whether the server is ready to accept client connections by checking whether the name service status is "STOPPED." Custom services can implement an additional method, getServiceState, to allow jagtool to query their status. For more information, see:

- Chapter 12, "Using jagtool and jagant," in the *EAServer System Administration Guide*
- Chapter 33, "Creating Service Components," in the *EAServer Programmer's Guide*

ListDLLs

ListDLLs is available on the Sysinternals Web site at http://www.sysinternals.com. It is a Windows tool that displays all the DLLs that are currently loaded, including load locations and their version numbers, for each process. Version 2.0 prints the full path names of loaded modules. This tool can be very useful for verifying whether the correct DLL versions are loaded in a process.

Run ListDLLs in a DOS window at the command line to show all processes. For best results, redirect the output to a file so that you can review the file at your convenience. To redirect the output to a file named *myfile.txt*, which you can open in Notepad or any text editor, enter:

```
listdlls jagsrv.exe >myfile.txt
```

The following is sample output:

```
ListDLLs V2.23 - DLL lister for Win9x/NT
Copyright (C) 1997-2000 Mark Russinovich
http://www.sysinternals.com

-----------------------------------------------------------------------------
jagsrv.exe pid: 330
Command line: jagsrv.exe Jaguar -c

Base        Size      Version          Path
0x00400000  0x1f000                    D:\Sybase\EAServer5\jagsrv.exe
0x77f60000  0x5e000   4.00.1381.0174  C:\WINNT\System32\ntdll.dll
0x10000000  0xae000                    D:\Sybase\EAServer\lib\libjdispatch.dll
0x00230000  0x15000                    D:\Sybase\EAServer\lib\libjaf.dll
0x00250000  0xc0000                    D:\Sybase\EAServer\lib\libjintl.dll
0x77f00000  0x5e000   4.00.1381.0178  C:\WINNT\system32\KERNEL32.dll
0x77dc0000  0x3f000   4.00.1381.0203  C:\WINNT\system32\ADVAPI32.dll
0x77e70000  0x54000   4.00.1381.0133  C:\WINNT\system32\USER32.dll
0x77ed0000  0x2c000   4.00.1381.0115  C:\WINNT\system32\GDI32.dll
0x77e10000  0x57000   4.00.1381.0193  C:\WINNT\system32\RPCRT4.dll
0x78000000  0x43000   6.01.8293.0000  C:\WINNT\system32\MSVCRT.dll
0x00260000  0x59000                     D:\Sybase\EAServer\lib\libjcomn.dll
```

Process Explorer

Process Explorer is a GUI version of ListDLLs that displays DLLs and handles that are in use by a specific process. Process Explorer is available on the Sysinternals Web site at http://www.sysinternals.com. Full information is available in the *Readme* file included in the downloaded file.

After you download and unzip the program file (*procexp.exe*), use Process Explorer as follows:

1. Select Start | Run. Enter the full path to *procexp.exe*.
2. Select View DLLs.
3. In the Process view in the top pane, select the *javsrv.exe* and *jagsrvagent.exe* processes to see which DLLs each process has loaded.

You can also use the Process Explorer to:

- Save the output to a file (File | Save and File | Save As)
- View the DLL or handle properties
- Show the process tree, including parent-child relationships

- Refresh the view
- Set various options
- Search
- Display online help

Profiling tools

Profiling tools allow you to identify and track performance issues.

For Java profiling, refer to the following documents:

- TechNote 1011357, Integrating Optimizeit in Sybase EAServer, at http://www.sybase.com/detail?id=1011357

  This document shows how you can integrate the Optimizeit Java profiler with EAServer.

- TechNote 1011550, Memory Management within Java Processes, at http://www.sybase.com/detail?id=1011550

  This document assists in monitoring and managing memory in Java processes.

For C++ profiling, use Purify (UNIX) or PurifyPlus (Windows) from Rational. Purify is designed to track down memory leaks and invalid memory-use errors.

For more information, check Rational documentation at http://www.rational.com/support/documentation/manuals/index.jsp .

ps, pstat, pmon, and PsList

The ps command in UNIX systems displays information about active processes.

On Windows 2000, you can use pstat and pmon for similar information. PsList, which is freeware available from the Sysinternals Web site at http://www.sysinternals.com, combines much of this information so you can view processes, CPU and memory information, or thread statistics. PsList can provide either summary or detailed data.

SQL tracing

You can trace the SQL commands sent through connection caches. For more information, see “SQL tracing properties” in Chapter 4, “Database Access,” in the *EAServer System Administration Guide*.

Debuggers

Debuggers and crash handlers can:

- Generate and analyze stack dumps and core files (see “Stack traces, dump files, and core files” on page 76 for more information)
- Attach to a running process
- Step through and debug specific components

Java debugging tools

For Java, you can use jdb, a simple command line debugger for Java classes, or other tools that support the same remote debugging interfaces as EAServer.

EAServer supports two Java debugging interfaces when you are running the debug version of the server. You can select the debugging interface on the Java Debug tab of the Server Properties dialog box:

- To use the JPDA interface, select Use JPDA, and specify the port.
- To use the sun.tools.debug interface, select Use Agent.

For details about Java debugging, see:

- Chapter 11, “Creating CORBA Java Components,” in the *EAServer Programmer’s Guide*, and
- Sun’s Java site at http://java.sun.com.

Windows debugging tools

Windows provides several debugging options, which may require help from Sybase Technical Support to use effectively:

- AutoDump+, also known as ADPlus, a console-based tool to help troubleshoot a process or application that stops responding or fails.
- CDB, a console program for debugging kernel-mode drivers on Windows NT.
- Dr. Watson, which records program errors in a log file for analysis. Configuration options let you define:
    - The type of files to output and where that file is located
    - Options to dump all thread contexts and symbols
    - The number of errors or instructions to save

  For details:

    - Run *drwtsn32.exe*, then click Help.
    - Go to the Microsoft Web site at http://www.microsoft.com for information on how to read a Dr. Watson log.
- Kernel debugger (*kd.exe*), a command line debugger.

  Use the kd utility to load a dump file or attach to a running process before a crash occurs. You can view memory or the callstack, go to a specific offset, and so on.
- UserDump, which generates a user dump of a process that shuts down with an exception or hangs. UserDump (*userdump.exe*) is included in the Microsoft OEM Support Tools Package; set it up from the Control Panel.

  Note UserDump and Dr. Watson differ in the types of exceptions they track. If your server inexplicably disappears, you may find UserDump useful for analysis.
- WinDbg, an analysis tool that Technical Support can use to examine the *.dmp* file generated by the UserDump utility. Accurate analysis of the *.dmp* file requires access to the EAServer and PowerBuilder symbol files, which customers do not have.

Table 6-1 summarizes the features of Windows dump analysis tools:

Table 6-1: Windows Dump Analysis Tools

Able to create dump file upon	AutoDump+	CDB	Dr. Watson	UserDump
Crash	Yes	Yes	Yes	Yes
Exception	Yes	Yes	Yes	Yes

Able to create dump file upon	**AutoDump+**	**CDB**	**Dr. Watson**	**UserDump**
Hang	Yes	Yes	No	Yes
Startup failure	No	Yes	No	Yes
Normal run	No	Yes	No	No

See the Microsoft Web site at http://www.microsoft.com for more information about these debugging tools.

UNIX debugging tools

Common UNIX debuggers include:

- dbx, which works with programs compiled with debugging information (usually by compiling with the -g option). You can also probe core dumps with dbx to determine the cause of the crash.

  dbx is available on Solaris and Digital UNIX.

- gdb, the gnu debugger, which is a command line debugger that can debug programs compiled on a variety of different compilers (including C and Fortran), on several platforms.

Attaching a debugger to EAServer

You can attach a debugger to the jagsrv process. To do this, run WinDbg and attach to process jagsrv before a crash occurs. Use symbol files to see the call stack, memory, and so on.

If EAServer is running as a service, you may be able to attach the debugger to the Windows service. More information is available on the Microsoft support site at http://support.microsoft.com.

Stack traces, dump files, and core files

Stack traces, dump files, and core files contain useful information about what a server process is doing at a given time, such as:

- Methods called

- Memory information
- Active thread information

These files are time-consuming to read and not always easy to understand. It is better to try simple troubleshooting techniques first. Use the server log, which is much more readable, to review server and component output and check any errors raised. See "Logging" on page 4 for more information on log files. Next, check the dump file to get an idea of which debug/trace flags should be turned on. This may help identify things like operating system signal issues.

This section explains how to obtain dump and core files for troubleshooting. See "Using stack traces" on page 8 for a complete list of available traces and how to obtain a trace.

Note Stack traces, dump files, and core files are not mutually exclusive. Depending on your platform, and the tools and options you use, the output file may contain different types of data.

Windows dump files

When an unhandled exception or fault occurs, Windows generates either a *.dmp* or a *.log* file based on system settings.

The *.log* file:

- Is generated by Dr. Watson (see "Windows debugging tools" on page 74)
- Is readable with any text editor
- Includes details about the environment, active programs, services, and modules (DLLs) when the crash occurred

A *.dmp* file is generated by tools like the kernel debugger, UserDump, and Dr. Watson if you select the Create Crash Dump option. It includes dumps of memory, call stack, offsets, and so on. A log file is also generated.

You can read the dump file with various tools. For a comparison of the kinds of dump file analysis provided by the tools, see "Windows debugging tools" on page 74.

A Windows Registry entry determines which program handles uncaught exceptions.

For information on how to configure your preferences, go to the Microsoft support site at http://support.microsoft.com.

Note For help interpreting Windows *.dmp* or *.log* files, contact Sybase Technical Support.

UNIX core files

The core file contains memory and stack trace for a running process. Core files are generally usable only on the same machine where the server is running and the core file was generated. The syntax to create a core file is:

```
gcore [option] process_id
```

You can use the resulting core image with debugging utilities such as sdb, adb, or dbx—see "UNIX debugging tools" on page 76.

You can create core files only on Solaris, HP-UX, and Linux; you cannot on AIX.

Class loader configuration issues

This section presents information that can be useful when diagnosing class loader configuration problems.

Common problems with custom class lists

Common problems encountered in the custom class list configuration include:

- **Class cast exceptions** In Java, classes loaded by different class loaders are considered different types. You cannot assign a class loaded by one class loader to a reference loaded by another class loader. This restriction must be accounted for when specifying the custom class list, or when deciding the level at which a class should be loaded. Otherwise, the invocation can fail, and you may see one these Java exceptions in the server log file:
    - java.lang.ClassCastException

- java.lang.LinkageError
- java.lang.NoClassDefFoundError
- java.lang.IncompatibleClassChangeError

There are two variations of this issue:

- When using EJB local interfaces, the calling entity and the caller must share the same instance of classes that are passed as method parameters or return values. In this case, fix the problem by copying the relevant custom class list entries to parent entities, up to a common ancestor. For more information, see Chapter 30, “Configuring Custom Java Class Lists,” in the *EAServer Programmer’s Guide*.
- For other Java or EJB component calls, the entity that calls the component uses stubs that are system loaded. This call fails because stubs in the component are custom loaded, and Java considers classes that are loaded by different class loaders to be different types, even when the classes have the same name and deployment location. To fix this problem, add the called component’s stub classes to the custom class list for the component or Web application that makes the call.

- **Refreshing classes** Classes must be refreshed at the level at which they were loaded. For example, if you configure an application class loader to share some class instances between components and Web applications, you must refresh the application to reload new versions of these classes.

Custom class loader tracing

To troubleshoot class loader problems, you can enable custom class loader tracing by setting the server property com.sybase.jaguar.server.classloader.debug to true using the Advanced tab in the Server Properties dialog box.

JAR file locking and copying

JAR files that are in the server's CLASSPATH setting are locked while in use by the system class loader. Consequently, on some platforms such as Windows, you cannot update or overwrite the JAR file while the server is running. To verify the server's CLASSPATH setting, connect to the server with EAServer Manager and check the value in the General tab of the Server Properties dialog box, or connect to the server with jagtool and check the value of the server property com.sybase.jaguar.server.jvm.classpath.

To allow custom-loaded JAR files to be refreshed, each class loader instance works with a copy of the JAR files that it has loaded. Copies are created in subdirectories of the EAServer *work/server-name/tempjars* subdirectory, where *server-name* is the name of your server. EAServer deletes these directories and files when you restart the server.

Troubleshooting Web services

This section describes ways to determine why an EAServer Web service may be inaccessible or working improperly.

For complete information about using EAServer Web services, see the *EAServer Web Services Toolkit User's Guide*.

Check logs and error messages

To determine the cause of a Web service problem, check these error log files, which are located in the EAServer *bin* subdirectory:

- *Jaguar.log*
- *Jaguarhttpservlet.log*
- *Jaguarhttprequest.log*

In addition, if you are using the EAServer Web Services Eclipse plug-in, check the Eclipse file *\workspace\.metadata\.log*.

Table 6-2 describes the common Web services error messages.

Table 6-2: Web services error messages

Error message	Description
Error 500 Servlet jspservlet: unable to service request: Provider org.apache.xerces.jaxp.DocumentBuilderFactoryImpl not found.	Occurs when the *xerces.jar* file is found in neither the Web application's class path nor in the EAServer */java/lib* subdirectory.
AxisFault faultCode: Server.userException faultSubcode: faultString: No such operation.	Verify that you are using the correct datatypes for the parameter values.
WSTAdminException: com.sybase.wst.admin.WSTAdminException:java.lang.ClassCastException: org.apache.crimson.jaxp.DocumentBuilderFactoryImpl	This indicates a class loader issue, which can occur when you deploy a Web service if you have specified a dependency class in the deployment descriptor, and the same class was loaded by the EAServer system class loader. To work around this problem, do not include dependency JAR files for third-party libraries to the Web application if those libraries are already provided by EAServer and loaded during start-up.

Verify WSDL files and SOAP addresses

For a specific collection, EAServer allows you to generate a list of its Web services, links to their corresponding Web Services Description Language (WSDL) files, and a list of the operations in each service. To display this information, open a Web browser, and access the following URL, where *host* represents the machine name where EAServer is running, *http_port* is the port number of the EAServer HTTP listener, and *collection* is the name of the Web service collection:

```
http://host:http_port/collection/services
```

For example, the following URL:

```
http://localhost:8080/ws/services
```

could generate the output below for the *ws* service, which includes two Web services, *n_pbhello* and *GoogleSearchPort*:

```
n_pbhello (WSDL link)
  o fhello

GoogleSearchPort (WSDL link)
  o doGetCachedPage
  o doSpellingSuggestion
  o doGoogleSearch
```

To verify a WSDL file, click the WSDL link. The contents of the WSDL file should display in the browser. You can also open a WSDL file in EAServer, using the following URL, where *host* represents the machine name where EAServer is running, *port* is the port number of the EAServer HTTP listener, *collection* is the name of the Web service collection, and *service_name* is the name of the Web service:

```
http://host:port/collection/services/service_name?wsdl
```

For example, the following URL opens the WSDL file for the *n_pbhello* Web service in the *ws* collection:

```
http://localhost:8080/ws/services/n_pbhello?wsdl
```

To verify that a Simple Object Access Protocol (SOAP) address is accessible:

1. Determine the URL for the Web service using the EAServer wstool utility as follows, where *collection* is the name of the Web service collection and *service_name* is the name of the Web service:

   ```
   wstool list URL service:collection/service_name
   ```

2. In a Web browser, access the Web service's URL; for example:

   ```
   http://localhost:8080/ws/services/n_pbhello
   ```

   Accessing the SOAP address does not invoke the Web service, but should display a message similar to the following:

   ```
   n_pbhello
   Hi there, this is an AXIS service!
   ```

Invoke operations and create a test client

Using the Web Services Eclipse plug-in, you can invoke a service's operations:

1. In Eclipse, expand the collection (*ws* is the default), then expand the Operations folder under the service name.
2. Right-click the operation, and choose Invoke from the menu.
3. Specify the input values, if required for the operation, then click Invoke. The results display.

To create a test client, you can use the Web services GUI, the Web Console, or the wstool utility. See the *EAServer Web Services Toolkit User's Guide* for more information.

View incoming and outgoing SOAP messages

EAServer 5.*x* includes the Apache *soap.jar* file in the *java/classes* subdirectory. This JAR file includes the TcpTunnel and TcpTunnelGui utility classes, which can be used to proxy HTTP requests. These classes allow you to view all HTTP request headers, reply headers, and content for incoming and outgoing SOAP messages. To use the TcpTunnelGui utility:

1 Start EAServer.

2 Run the following command, where *tunnel_port* is an unused port to which proxy requests can be directed, *server* is the name of the machine where EAServer is running, and *http_port* is the EAServer HTTP listener port:

```
java org.apache.soap.util.net.TcpTunnelGui tunnel_port server http_port
```

3 Invoke the Web service operation using the *tunnel_port* number, instead of the EAServer HTTP port number.

SOAP Inspector view

To view SOAP messages in the SOAP Inspector view:

1 Open the SOAP Inspector view.

2 Enable messages.

3 Run the Web Service client as a Web Services application.

PowerBuilder Web service considerations

- If a Web service implementation is a PowerBuilder component, verify that you can invoke the corresponding method on the underlying PowerBuilder component from a PowerBuilder client program.
- If you invoke an EAServer Web service from a PowerBuilder client, verify that the client program is not loading an old copy of the *libeay32.dll* (for example, from *WINNT\system32*), because this can cause the PowerBuilder Web service invocation to fail.

Debugging C++ pseudocomponents

Once loaded in your debugger, a C++ pseudocomponent can be debugged in the same manner as any other shared library or DLL. However, since the library is not loaded until a client program instantiates the pseudocomponent, setting breakpoints is tricky. The procedure below allows you to set breakpoints and step into your method code.

❖ Debugging a C++ pseudocomponent

1. Verify that the process is using the debug versions of the EAServer libraries. For pseudocomponents executing in EAServer, start the debug version of the server executable. For standalone programs, verify that the debug DLLs or libraries are listed before the non-debug libraries in your system's library search path. (On UNIX platforms, the debug libraries are in the *lib/debug* directory of your client installation. On Windows, they are in the *dll\debug* directory.)

2. Attach the program that is instantiating the pseudocomponent with your debugger. This can be a standalone client executable, or EAServer process.

   Alternately, start the debugger to load the executable. For example, on UNIX, this command starts the dbx debugger and loads the debug server executable:

   ```
   dbx $JAGUAR/devbin/jagsrv ServerName
   ```

   As another example, on Windows, this command starts the Microsoft Visual C++ debugger and loads the debug server executable:

   ```
   msdev %JAGUAR%\devbin\jagsrv ServerName
   ```

   In these examples, *ServerName* is the name of the server. If you are using the preconfigured server rather than one that you created yourself, use "Jaguar."

3. Set a breakpoint on the function jag_client_dbg_stop. This function executes every time the client runtime constructs a pseudocomponent instance. The jag_client_dbg_stop prototype is:

   ```
   void jag_client_dbg_stop(char *compName)
   ```

The *compName* parameter specifies the name of the library or shared library that was just started. Several pseudocomponents may be loaded before yours. In the debugger, display the *compName* value when the jag_client_dbg_stop breakpoint is tripped, and monitor the value to determine when your component is loaded.

Note Make sure the jag_client_dbg_stop breakpoint is set before your client application instantiates any pseudocomponents.

---

4 When your pseudocomponent's DLL is loaded, you can specify the method names as breakpoints and step into the method's code when it is invoked.

For more information about pseudocomponents, see Chapter 34, "Creating and Using EAServer Pseudocomponents," in the *EAServer Programmer's Guide*.

EAServer plug-in for JBuilder

This section describes how to troubleshoot problems associated with the EAServer plug-in for JBuilder. For information about installing the plug-in, see the Sybase white paper, Configuring and Troubleshooting the Sybase EAServer Plug-in for JBuilder X, at http://www.sybase.com/detail?id=1028173.

❖ **Verifying your configuration**

If you are having trouble with the EAServer plug-in for JBuilder, verify the following:

1 You have the latest *easerver-jbsp.jar* file.

2 The working directory matches the EAServer installation location.

3 The plug-in is set up using the JBuilder Project | Default Project Properties.

4 The project's application server is set to EAServer. Verify using the JBuilder Project | Project Properties | Servers menu item.

5 If you are debugging a JSP, you are using a local EAServer installation.

6 If the WAR file contains extra files, or if it contains other application servers, such as the BNX Authentication Suite (BAS) 5.0:

   a Right-click the Web application, and choose the Dependencies tab.

   b. Select EAServer, and select Never Include any Classes or Resources.

❖ Reviewing deployment output and generating verbose logging

1. Examine the output that was generated during deployment. Pay special attention to the CLASSPATH.
2. Display extra internal logging information and runtime exceptions by running JBuilder with the -verbose option; for example:

   ```
   jbuilder\bin\jbuilder -verbose > output.txt
   ```

   where *output.txt* is the log file.
3. Examine the EAServer log files, which are typically found in the EAServer *bin* or *devbin* subdirectory.

❖ Deploying externally

1. Deploy the WAR file to EAServer using EAServer Manager or jagtool.
2. Run the J2SDKEE Sun verifier on the generated EAR, JAR, or WAR file; for example, on Windows:

   ```
   verifier.bat myWAR.war
   ```

JBuilder JSPs that use connection caches to retrieve ResultSets

This section describes how to troubleshoot problems associated with JSPs in JBuilder that retrieve ResultSets using EAServer connection caches. For information about creating JSPs in JBuilder that perform this task, see the Sybase white paper, Create JSP in JBuilder to Retrieve ResultSet from EAServer Connection Cache, at http://www.sybase.com/detail?id=1028828.

❖ Troubleshooting JSPs in JBuilder

1. Verify your configuration—see “Verifying your configuration” on page 85.
2. If the JSP does not compile, review the content of the JBuilder Messages pane for information about why the compilation failed.
3. If attempts to deploy the Web module fail:
   a. Review the content of the JBuilder Messages pane for information about why the deployment failed.
   b. Verify that EAServer is running.

   c. Verify that the server name and port number in the project deployment settings match the actual running server and HTTP listener.

4. If the Web browser displays a “page not found” error:
   a. Verify that EAServer is running.
   b. Verify that the HTTP listener can process requests by attempting to access the default documentation page; for example, http://*serverName*:8080.
   c. Restart EAServer.

5. If the Web browser displays an exception, or a message that indicates there is a problem with the page; for example, “internal server error 500”:
   a. Check the EAServer log files *Jaguarhttpservlet.log* and *Jaguar.log* for error details.
   b. Add an error page to the JSP, then rebuild and redeploy the project. For example:
      1. Add the following line to your JSP:

         ```
         <% page errorPage=”jsp2_error.jsp” %>
         ```

      2. Create a new JSP named *jsp2_error.jsp* with the following content:

```
<%@ page isErrorPage="true" %>
<html>
<body>
<h1>Error page</h1>
<br>Error occurred in the JSP: <%= exception.getMessage() %>
<Br>Stack Trace:
<%
java.io.CharArrayWriter cw = new java.io.CharArrayWriter();
java.io.PrintWriter pw = new java.io.PrintWriter(cw,true);
exception.printStackTrace(pw);
out.println(cw.toString());
%>
</body>
</html>
```

6. If you make any changes to the Web application, you must rebuild the WAR file before redeploying it to EAServer; otherwise, the WAR file does not include your changes.

WINS and server response time

If you are using a Microsoft Windows Internet Naming Service (WINS) server, response times can be improved by configuring your system to allow NetBIOS traffic to and from EAServer.

Windows XP and Service Pack 2

If you are running Windows XP and have Service Pack 2 installed, establishing a session between a client and a server may take up to five seconds. This problem exists because the Windows XP firewall blocks NetBIOS traffic between workstations and EAServer. To work around this issue, configure the XP firewall to allow traffic on port 137 to and from EAServer.

Cisco VPN clients

If a Cisco VPN client is installed, the Cisco stateful firewall is deployed, which does not allow NetBios traffic, and thus slows server response time. To permit NetBIOS traffic, set the VPN client status to Connected.

Personal firewalls and router ACLs

Personal firewalls, such as Zone Alarm, block NetBIOS traffic. If a personal firewall or Web-database (WDB) controlled hardware firewall is deployed between the WDB network and the internal network, it must be configured to allow NetBIOS traffic (on port 137) to and from EAServer.

Routers with access control lists (ACLs) may also block NetBIOS traffic. If a WDB-controlled router is running ACLs, it must be configured to allow NetBIOS traffic (on port 137) to and from EAServer.

Miscellaneous topics

Additional tools and utilities

For more information about tuning and debugging tools and utilities, see the Monitor/Tune folder on the EAServer CodeXchange Web page at http://easerver.codexchange.sybase.com/servlets/ProjectDocumentList.

Internet Explorer security patch

If you install Internet Explorer Security Patch MS01-055, Web applications that use session cookies may not work. This security patch denies cookies from servers whose domain names do not comply with the specifications of RFC 833; for example, names that include underscores are not supported. The result is that session variables may not be maintained when dealing with some Web applications. For more information, see the Microsoft Knowledge Base article 316112 at http://support.microsoft.com/default.aspx?scid=kb;en-us;316112

Drivers that use the DataSource interface

Drivers implementing the DataSource interface are treated differently than "simple" drivers. This is the difference between JDBC level 1 and JDBC level 2 (also known as "JDBC specification version 2.0"). Applications must use getXXX and setXXX methods to pass the user name, password, and other information to the driver. The get/set methods you use are URL-dependent. For example, if you connect to an Oracle database using an Oracle JDBC driver, and your Oracle cache URL is as listed below, EAServer calls these methods on the driver instance: setDriverType(thin), setServer(conlabtt), setPort(1521).

```
DriverType=thin:Server=conlabtt:Port=1521:DatabaseName=conlabtt
```

To find the exact name of the driver class, and the properties, run:

```
$JAVA_HOME/bin/javap oracle.jdbc.pool.OracleDataSource
```

Systems Management Web console

To use the Systems Management Web console, you must enable JavaScript. If you use Netscape 7.0 with Java Script disabled, you may not be able to navigate the Systems Management interface, and the wizards may not work correctly.

Alert Management System and the message service

The Alert Management System (AMS) version 4.1.1 processes and manages XML alert messages. The main component of AMS is an MDB (message-driven bean) that writes alert message to a JMS topic. If you run this application with EAServer, both the MDB and the EAServer message service must use the same connection cache; otherwise, errors similar to the following are written to *Jaguar.log*:

```
JCM Caught Throwable: java.sql.SQLException: Error: Current enlistment requires
2PC Resource and No 2PC Resource Configured for Cache:SybaseJMS
```

Duplicate server names in EAServer Manager

The server names listed under the *Servers* folder in EAServer Manager should be unique. If you see multiple servers with the same name, look in your *$JAGUAR/Repository/Server* directory. For each server that is defined, there is a *<servername>.props* file, and within each file, the name of the server is identified by the com.sybase.jaguar.server.name property. For example, in *Jaguar.props*, the following line defines the name of the Jaguar server:

```
com.sybase.jaguar.server.name=Jaguar
```

If more than one property file contains the same server name, you must edit the file, and change the value of com.sybase.jaguar.server.name.

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