



Troubleshooting

Note

Before using this information, be sure to read the general information under “Notices” on page 227.

Compilation date: April 20, 2004

© Copyright International Business Machines Corporation 2004. All rights reserved.

US Government Users Restricted Rights – Use, duplication or disclosure restricted by GSA ADP Schedule Contract with IBM Corp.

Contents

How to send your comments v

Chapter 1. Troubleshooting or problem determination 1

Chapter 2. Diagnosing and fixing problems 3

Message reference	4
CORBA minor codes.	4
Working with message logs	5
Viewing the JVM logs	6
Interpreting the JVM logs	6
Configuring the JVM logs	8
Process logs	10
Viewing the service log	10
Interpreting the service log	11
Configuring the service log	12
Debugging WebSphere Application Server applications	13
Debugging with the Application Server Toolkit	15
Working with trace	15
Enabling trace	15
Managing the application server trace service	18
Interpreting trace output	18
Diagnostic trace service settings	20
Logging and tracing settings.	23
Working with troubleshooting tools	23
Gathering information with the Collector tool	24
First Failure Data Capture tool	27
Log Analyzer.	28
Obtaining help from IBM.	39
Diagnosing and fixing problems: Resources for learning	40
Debugging Service details	41
Startup	41
JVM debug port	41
JVM debug arguments.	41
Debug class filters	41
BSF debug port	41
BSF logging level	41
Configuration problem settings.	41
Configuration document validation	42
Cross validation	42
Configuration Problems	42
Scope	42
Message	42
Explanation	42
User action	42
Target Object	42
Severity	42
Local URI	42
Full URI	42
Validator classname	43

Chapter 3. Troubleshooting by task: What are you trying to do? 45

Troubleshooting installation problems	45
Error messages issued during installation	45
Installation either completes with errors or warnings, or hangs	46
Installation completes but the administrative console does not start	47
The application server or deployment manager does not start or starts with errors.	49
Installation completes, but Sample applications do not work	50
Reinstalling WebSphere Application Server with embedded messaging	51
Garbled install panel when trying to install a non-English version of the product	52
Fixpack fails to install	53
Troubleshooting migration problems	53
Troubleshooting code deployment and installation problems	56
Errors deploying enterprise beans	57
Errors or problems deploying, installing, or promoting applications	58
Troubleshooting testing and first time run problems	62
The application does not start or starts with errors	63
A web resource does not display	64
Cannot access a data source	72
Cannot access an enterprise bean from a servlet, a JSP file, a stand-alone program, or another client	87
Cannot look up an object hosted by WebSphere Application Server from a servlet, JSP file, or other client	91
Access problems after enabling security	94
Errors after enabling security	98
Errors after enabling Secure Sockets Layer, or Secure Sockets Layer-related error messages	104
Errors in messaging	107
Errors returned to a client sending a SOAP request	107
A client program does not work	108
Errors connecting to WebSphere MQ and creating WebSphere MQ queue connection factory	109
Troubleshooting application runtime and management problems	109
Problems starting or using the wsadmin command.	110
Web module or application server dies or hangs	113
Errors when trying to configure or enable security	115
Errors trying to enable or configure Secure Socket Layer (SSL) encrypted access.	117
Workload not getting distributed	117

Errors setting up multiserver environments . . .	120
Cannot uninstall an application or remove a node or application server	123
Problems creating or using HTTP sessions. . .	124
JSP source code shown by the Web server . . .	127
Problems using tracing, logging or other troubleshooting features	127
A scheduler client runs with errors	128
Errors connecting to the administrative console from a Netscape browser	129
J2EE client request hangs and cannot be recovered.	131

Chapter 4. Troubleshooting by component: What is not working? . . . 133

Installation component troubleshooting tips . . .	133
Migration utility troubleshooting tips	133
Administration and administrative console troubleshooting tips	134
Web Container troubleshooting tips	136
JDBC and data source troubleshooting tips . . .	136
HTTP plug-in component troubleshooting tips . .	138
HTTP session manager troubleshooting tips . . .	141
Naming services component troubleshooting tips	142
Messaging component troubleshooting tips . . .	143
Universal Discovery, Description, and Integration, Web Service, and SOAP component troubleshooting tips	144
Enterprise bean and EJB container troubleshooting tips.	144

Security components troubleshooting tips	145
Troubleshooting the Web services gateway . . .	155
Web services gateway messages	160
JSP engine troubleshooting tips	179
Workload Management component troubleshooting tips.	180
Object request broker component troubleshooting tips.	183
Sybase troubleshooting tips.	196
DB2 troubleshooting tips	200
Web services security troubleshooting tips. . . .	200
Problems installing or starting Apache or IBM HTTP Server	203

Chapter 5. Adding logging and tracing to your application 205

Programming with the JRas framework	205
Understanding the JRas facility	205
JRas Extensions.	207
JRas Messages and Trace event types	217
Instrumenting an application with JRas extensions	220

Notices 227

Trademarks and service marks. . . . 229

How to send your comments

Your feedback is important in helping to provide the most accurate and highest quality information.

- To send comments on articles in the WebSphere Application Server Information Center
 1. Display the article in your Web browser and scroll to the end of the article.
 2. Click on the **Feedback** link at the bottom of the article, and a separate window containing an e-mail form appears.
 3. Fill out the e-mail form as instructed, and click on **Submit feedback** .
- To send comments on PDF books, you can e-mail your comments to: **wasdoc@us.ibm.com** or fax them to 919-254-0206.

Be sure to include the document name and number, the WebSphere Application Server version you are using, and, if applicable, the specific page, table, or figure number on which you are commenting.

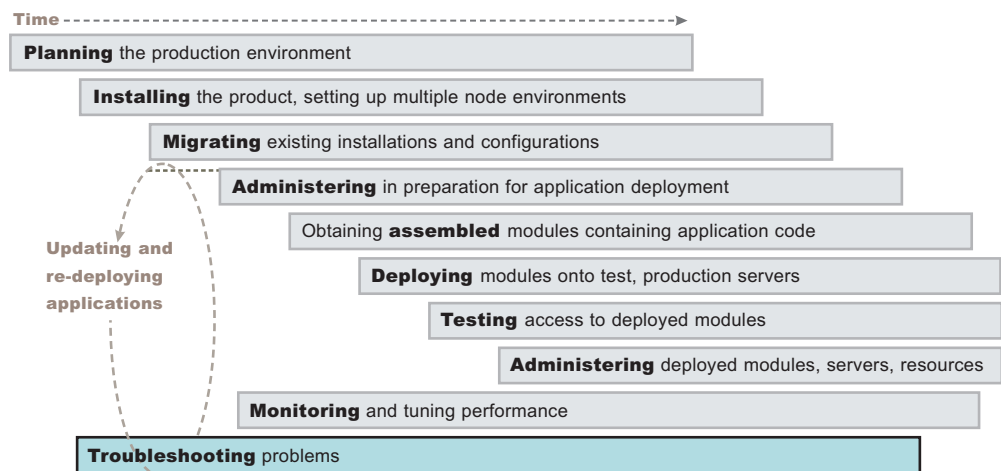
When you send information to IBM, you grant IBM a nonexclusive right to use or distribute the information in any way it believes appropriate without incurring any obligation to you.

Chapter 1. Troubleshooting or problem determination

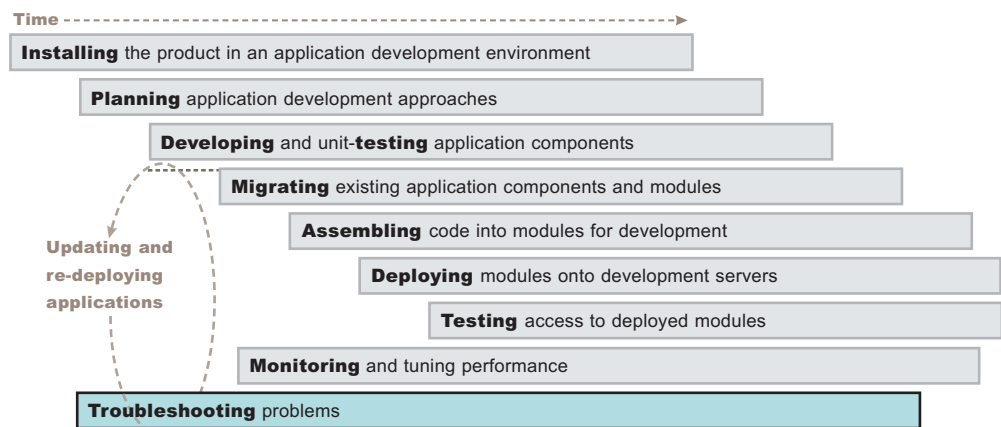
Note: If you would prefer to browse PDF versions of this documentation using your Adobe Reader, see the **Troubleshooting** PDF files available from www.ibm.com/software/web servers/appserv/infocenter.html.

As an activity, troubleshooting or problem determination encompasses a wide range of tasks that might need to be performed at any phase in product usage. In addition to built-in preventative measures, the product provides a variety of tools to make problem determination easier.

A simple time line of activities for **Planning, Installer and Administrator roles.**



A simple time line of activities for an **Application Developer role.**



The troubleshooting section of the documentation helps you understand why your enterprise application, application server, or product installation is not working, and helps you resolve the problem. There are several ways to find information for diagnosing and resolving problems:

- For tips on investigating common problems, organized by task, see Chapter 3, “Troubleshooting by task: What are you trying to do?,” on page 45.
- To look up the explanation and recommended response for a particular WebSphere Application Server error message, see the message reference.
- For help finding product error and warning messages, interpreting messages, and configuring product log files, see “Working with message logs” on page 5.
- Difficult problems might require the use of product tracing, which exposes the low-level flow of control and interactions among product components. For help understanding and using product traces, see “Working with trace” on page 15.
- For help adding log and trace capability to your own application, see Chapter 5, “Adding logging and tracing to your application,” on page 205.
- For help using product utilities to diagnose the problem, see “Working with troubleshooting tools” on page 23.
- To find out how to look up documented problems, common mistakes, product prerequisites, and other problem-determination information on the IBM WebSphere Application Server public web site, or to obtain technical support, see “Obtaining help from IBM” on page 39.

Chapter 2. Diagnosing and fixing problems

The purpose of this section is to aid you in understanding why your enterprise application, application server, or WebSphere Application Server is not working and to help you resolve the problem. Unlike performance tuning which focuses on solving problems associated with slow processes and un-optimized performance, problem determination focuses on finding solutions to functional problems.

The kind of problem you are encountering, and how much you already know about it, determine what steps to take to resolve it:

1. For tips on investigating common problems organized according to tasks within WebSphere Application server, see *Troubleshooting by task*.
2. For tips on how to investigate common kinds of problems based on the component that is causing the problem, see *Troubleshooting by component*.
3. If you already have an error message and want to quickly look up its explanation and recommended response, look up the message by selecting the **Reference** view of the information center navigation and expanding **Messages**.
4. For help in knowing where to find error and warning messages, interpreting messages, and configuring log files, see *Working with message logs*.
5. Difficult problems can require the use of tracing, which exposes the low-level flow of control and interactions between components. For help in understanding and using traces, see *Working with trace*.
6. For help in adding log and trace capability to your own application, see “Programming with the JRas framework” on page 205.
7. For help in using settings or tools to help you diagnose the problem, see *Working with troubleshooting tools*. Some of these tools are bundled with the product, and others are freely downloadable.
8. To find out how to look up documented problems, common mistakes, WebSphere Application Server prerequisites, and other problem-determination information on the WebSphere Application Server public web site, or to obtain technical support from IBM, see *Obtaining help from IBM*.
9. The IBM Developer Kit and Runtime Environment, Java 2 Technology Edition, Version 1.3.1 Diagnostics Guide describes debugging techniques and the diagnostic tools that are available to help you solve problems with Java. It also gives guidance on how to submit problems to IBM. You can find the guide at <http://www.ibm.com/developerworks/java/jdk/diagnosis/>.
10. For current information available from IBM Support on known problems and their resolution, see the IBM Support page.
11. IBM Support has documents that can save you time gathering information needed to resolve this problem. Before opening a PMR, see the IBM Support page.

Message reference

You can log WebSphere Application Server system messages from a variety of sources, including application server components and applications. Messages logged by application server components and associated IBM products start with a unique message identifier that indicates the component or application that issued the message. The message identifier can be either 8 or 9 characters in length and has the form:

CCCC1234X

where:

CCCC is a four character alphabetic component or application identifier.

1234 is a four character numeric identifier used to identify the specific message for that component.

X is an optional alphabetic severity indicator. (I=Informational, W=Warning, E=Error)

To view the messages generated by WebSphere Application Server components, select the **Reference** view of the information center navigation and expand the topic **Messages**.

CORBA minor codes

Overview

Common Object Request Broker Architecture (CORBA) is an industry-wide standard for object-oriented communication between processes, which is supported in several programming languages. Several subcomponents of WebSphere Application Server use CORBA to communicate across processes.

When a CORBA process fails, that is a request from one process to another cannot be sent, completed, or returned, a high-level exception is thrown, such as `TransactionRolledBackException: CORBA TRANSACTION_ROLLEDBACK`. In order to show the underlying cause of the failure, applications which use CORBA services generate minor codes, which appear in the exception stack. Look for "minor code" in the exception stack to locate these exceptions.

Minor codes used by WebSphere Application Server components

Range	Related subcomponent	Where to find details
0x49424300-0x494243FF	Security	"Security components troubleshooting tips" on page 145
0x49421050-0x4942105F, 0x49421070-0x4942107F	ORB services	"Object request broker component troubleshooting tips" on page 183
0x4f4d and above	Standard CORBA exceptions	http://www.omg.org
0x49421080-0x4942108F	Naming services	Javadoc for class <code>ws.code.naming.src.com.ibm.websphere.naming.WsnCorbaMinorCodes</code>
0x49421080-0x4942108F	Workload Management	Javadoc for class <code>com.ibm.websphere.wlm.WsCorbaMinorCodes</code>

Working with message logs

WebSphere Application Server can write system messages to several general purpose logs. These include the JVM logs, the process logs and the IBM service log.

The JVM logs are created by redirecting the `System.out` and `System.err` streams of the JVM to independent log files. WebSphere Application Server writes formatted messages to the `System.out` stream. In addition, applications and other code can write to these streams using the `print()` and `println()` methods defined by the streams. Some Developer Kit built-ins such as the `printStackTrace()` method on the `Throwable` class can also write to these streams. Typically, the `System.out` log is used to monitor the health of the running application server. The `System.out` log can be used for problem determination, but it is recommended to use the IBM Service log and the advanced capabilities of the Log Analyzer instead. The `System.err` log contains exception stack trace information that is useful when performing problem analysis.

Since each application server represents a JVM, there is one set of JVM logs for each application server and all of its applications, located by default in the `installation_root/logs/server_name` directory. In the case of a WebSphere Application Server Network Deployment configuration, JVM logs are also created for the deployment manager and each node manager, since they also represent JVMs.

The process logs are created by redirecting the `stdout` and `stderr` streams of the process to independent log files. Native code, including the Java virtual machine (JVM) itself writes to these files. As a general rule, WebSphere Application Server does not write to these files. However, these logs can contain information relating to problems in native code or diagnostic information written by the JVM.

As with JVM logs, there is a set of process logs for each application server, since each JVM is an operating system process, and in the case of a WebSphere Application Server Network Deployment configuration, a set of process logs for the deployment manager and each node manager.

The IBM service log contains both the WebSphere Application Server messages that are written to the `System.out` stream and some special messages that contain extended service information that is normally not of interest, but can be important when analyzing problems. There is one service log for all WebSphere Application Server JVMs on a node, including all application servers. The IBM Service log is maintained in a binary format and requires a special tool to view. This viewer, the Log Analyzer, provides additional diagnostic capabilities. In addition, the binary format provides capabilities that are utilized by IBM support organizations.

In addition to these general purpose logs, WebSphere Application Server contains other specialized logs that are very specific in nature and are scoped to a particular component or activity. For example, the HTTP server plug-in maintains a special log. Normally, these logs are not of interest, but you might be instructed to examine one or more of these logs while performing specific problem determination procedures. For details on how and when to view the plug-in log, see HTTP server and Application Server are working separately, but requests are not passing from HTTP server to Application Server.

Viewing the JVM logs

The JVM logs are written as plain text files. Therefore there are no special requirements to view these logs. They are located in the *installation_directory/logs/applicationServerName* directory, and by default are named `SystemOut.log` and `SystemErr.log`.

There are two techniques that you can use to view the JVM logs for an application server:

- Use the administrative console. This supports viewing the JVM logs from a remote machine.
 - Use a text editor on the machine where the logs are stored.
1. View the JVM logs from the administrative console.
 - a. Start the administrative console.
 - b. Click **Troubleshooting > Logs and Trace** in the console navigation tree. To view the logs for a particular server, click on the server name to select it, then click **JVM Logs**.
 - c. Select the runtime tab.
 - d. Click **View** corresponding to the log you want to view.
 2. View the JVM logs from the machine where they are stored.
 - a. Go to the machine where the logs are stored.
 - b. Open the file in a text editor or drag and drop the file into an editing and viewing program.

Interpreting the JVM logs

The JVM logs contain print data written by applications. The application can write this data written directly in the form of `System.out.print()`, `System.err.print()`, or other method calls. The application can also write data indirectly by calling a JVM function, such as an `Exception.printStackTrace()`. In addition, the `System.out` JVM log contains system messages written by the WebSphere Application Server.

You can format application data to look like WebSphere Application Server system messages by using the Installed Application Output field of the JVM Logs properties panel, or as plain text with no additional formatting. WebSphere Application Server system messages are always formatted.

Depending on how the JVM log is configured, formatted messages can be written to the JVM logs in either basic or advanced format.

Message formats

Formatted messages are written to the JVM logs in one of two formats:

Basic Format

The format used in earlier versions of WebSphere Application Server.

Advanced Format

Extends the basic format by adding information about an event, when possible.

Basic and advanced format fields

Basic and Advanced Formats use many of the same fields and formatting techniques. The various fields that may be found in these formats follow:

TimeStamp

The timestamp is formatted using the locale of the process where it is formatted. It includes a fully qualified date (for example YYYYMMDD) , 24 hour time with millisecond precision and a time zone.

ThreadId

An 8 character hexadecimal value generated from the hash code of the thread that issued the message.

ShortName

The abbreviated name of the logging component that issued the message or trace event. This is typically the class name for WebSphere Application Server internal components, but can be some other identifier for user applications.

LongName

The full name of the logging component that issued the message or trace event. This is typically the fully qualified class name for WebSphere Application Server internal components, but can be some other identifier for user applications.

EventType

A one character field that indicates the type of the message or trace event. Message types are in upper case. Possible values include:

- A** An Audit message.
- I** An Informational message.
- W** A Warning message.
- E** An Error message.
- F** A Fatal message.
- O** A message that was written directly to System.out by the user application or internal components.
- R** A message that was written directly to System.err by the user application or internal components.
- u** A special message type used by the message logging component of the WebSphere Application Server run time.
- Z** A placeholder to indicate the type was not recognized.

ClassName

The class that issued the message or trace event.

MethodName

The method that issued the message or trace event.

Organization

The organization that owns the application that issued the message or trace event.

Product

The product that issued the message or trace event.

Component

The component within the product that issued the message or trace event.

Basic format

Message events displayed in basic format use the following format. The notation <name> indicates mandatory fields that will always appear in the basic format message. The notation [name] indicates optional or conditional fields that will be included if they can be determined.

```
<timestamp><threadId><shortName><eventType>[className] [methodName] <message>
```

Advanced format

Message events displayed in advanced format use the following format. The notation <name> is used to indicate mandatory fields that will always appear in the advanced format for message entries. The notation [name] is used to indicate optional or conditional fields that will be included if they can be determined.

```
<timestamp><threadId><eventType><UOW><source=longName>[className] [methodName]  
<Organization><Product><Component><message>
```

Configuring the JVM logs

Use the administrative console to configure the JVM logs for an application server. Configuration changes for the JVM logs that are made to a running application server are not applied until the next restart of the application server.

1. Start the administrative console
2. Click **Troubleshooting > Logging and Tracing**, then click *server* > **JVM Logs**.
3. Select the Configuration tab.
4. Scroll through the panel to display the attributes for the stream to configure.
5. Change the appropriate configuration attributes and click **Apply**.
6. Save your configuration changes.

Java virtual machine (JVM) log settings

Use this page to view and modify the settings for the Java virtual machine (JVM) System.out and System.err logs.

To view this administrative console page, click **Troubleshooting > Logs and Trace >server > JVM Logs**.

File Name:

Specifies the name of one of the log file described on this page.

The first file name field specifies the name of the System.out log. The second file name field specifies the name of the System.err file.

Press the **View** button on the Runtime tab to view the contents of a selected log file.

The file name specified for the System.out log or the System.err log must have one of the following values:

filename

The name of a file in the file system. It is recommended that you use a fully qualified file name. If the file name is not fully qualified, it is considered to be relative to the current working directory for the server. Each stream must be configured with a dedicated file. For example, you cannot redirect both System.out and System.err to the same physical file.

If the directory containing the file already exists, the user ID under which the server is running requires read/write access to the directory. If the directory does not exist, it will be created with the proper permissions. The user id under which the server is running must have authority to create the directory.

console

This is a special file name used to redirect the stream to the corresponding

process stream. If this value is specified for System.out, the file is redirected to stdout. If this value is specified for System.err, the file is redirected to stderr.

none Discards all data written to the stream. Specifying **none** is equivalent to redirecting the stream to dev/null on a UNIX system.

File formatting:

Specifies the format to use in saving the System.out file.

Log file rotation: Use this set of configuration attributes to configure the System.out or System.err log file to be self-managing.

A self-managing log file writes messages to a file until reaching either the time or size criterion. At the specified time or when the file reaches the specified size, logging temporarily suspends while the log file rolls over, which involves closing and renaming the saved file. The new saved file name is based on the original name of the file plus a timestamp qualifier that indicates when the renaming occurs. Once the renaming completes, a new, empty log file with the original name reopens and logging resumes. All messages remain after the log file rollover, although a single message can split across the saved and the current file.

You can only configure a log to be self-managing if the corresponding stream is redirected to a file.

File Size

Click this attribute for the log file to manage itself based on its file size. Automatic roll over occurs when the file reaches the specified size you specify in the maximum size field.

Maximum Size

Specify the maximum size of the file in megabytes. When the file reaches this size, it rolls over.

This attribute is only valid if you click File size.

Time Click this attribute for the log file to manage itself based on the time of day. At the time specified in the start time field, the file rolls over.

Start Time

Specify the hour of the day, from 1 to 24, when the periodic rollover algorithm starts for the first time after an Application Server restart. The algorithm loads at Application Server startup. Once started at the (start time field) hour, the rollover algorithm rolls the file every (repeat time field) hours. This rollover pattern continues without adjustment until the Application Server stops.

Note: The rollover always occurs at the beginning of the specified hour of the day. The first hour of the day, which starts at 00:00:00 (midnight), is hour 1 and the last hour of the day, which starts at 23:00:00, is hour 24. Therefore, if you want log files to roll over at midnight, set the start time to 1.

Repeat Time

Specify the number of hours, from 1 to 24, when a periodic rollover occurs.

Repeat time

Specifies the number of hours after which the log file rolls over. Valid values range from 1 to 24.

Configure a log file to roll over by time, by size, or by time and size. Click **File Size** and **Time** to roll the file at the first matching criterion. For example, if the

repeat time field is 5 hours and the maximum file size is 2 MB, the file rolls every 5 hours, unless it reaches 2 MB before the interval elapses. After the size rollover, the file continues to roll at each interval.

Maximum Number of Historical Log Files: Specifies the number of historical (rolled) files to keep. The stream writes to the current file until it rolls. At rollover, the current file closes and is saved as a new name consisting of the current name plus the rollover timestamp. The stream then reopens a new file with the original name to continue writing. The number of historical files grows from zero to the value of the maximum number of historical files field. The next rollover deletes the oldest historical file.

Installed Application Output: Specifies whether System.out or System.err print statements issued from application code are logged and formatted.

Show application print statements

Click this field to show messages that applications write to the stream using **print** and **println** stream methods. WebSphere Application Server system messages always appear.

Format print statements

Click this field to format application print statement like WebSphere Application Server system messages.

Process logs

WebSphere Application Server processes contain two output streams that are accessible to native code running in the process. These streams are the stdout and stderr streams. Native code, including the JVM, may write data to these process streams. In addition, the JVM provided System.out and System.err streams can be configured to write their data to these streams also.

By default, the stdout and stderr streams are redirected to log files at application server startup, which contain text written to the stdout and stderr streams by native modules (.dlls, .exes, UNIX libraries, and other modules). By default, these files are stored as *installation_root/logs/applicationServerName/native_stderr.log* and *native_stdout.log*.

This is a change from previous versions of WebSphere Application Server, which by default had one log file for both JVM standard output and native standard output, and one log file for both JVM standard error and native error output.

Viewing the service log

The service log is a special log written in a binary format. You cannot view the log directly using a text editor. You should never directly edit the service log, as doing so will corrupt the log. To move the service log from one machine to another, you must use a mechanism like FTP, which supports binary file transfer.

You can view the service log by using the Showlog tool to convert the contents of the service log to a text format that you can then write to a file or dump to the command shell window. The steps for using the Showlog tool are described in "Showlog Script."

Showlog Script

The service log is a special log written in a binary format. You cannot view the log directly using a text editor. You should never directly edit the service log, as doing

so will corrupt the log. To move the service log from one machine to another, you must use a mechanism like FTP, which supports binary file transfer.

You can view the service log by using the Showlog script to convert the contents of the service log to a text format that you can then write to a file or dump to the command shell window.

To run the showlog script:

1. Open a shell window on the machine where the service log resides.
2. Change the directory to *install_directory/bin* where *install_directory* is the fully qualified path where the WebSphere Application Server product is installed.
3. Run the showlog script:
On Windows systems, the script is named showlog.bat. On UNIX systems, the script is named showlog.sh.

Displaying user instructions

Run the showlog script with no parameters to display usage instructions. On Windows systems, the script is named

showlog.bat

On UNIX systems, the script is named

showlog.sh

Displaying the service log contents to the shell window

Use the invocation

```
showlog service_log_filename
```

If the service log is not in the default location, you must fully qualify the *service_log_filename*

Format and write the service log contents to a file

Use the invocation

```
showlog service_log_filename output_filename
```

If the service log is not in the default location, you must fully qualify the *service_log_filename*

Interpreting the service log

To take advantage of the Log Analyzer's browsing and analysis capabilities, start the Log Analyzer tool:

- On UNIX systems: *installation_root/bin/waslogbr*
- On Windows systems: *installation_root/bin/waslogbr.bat*

Use the **File > open** menu item, and select the file */logs/activity.log*. You can also browse to activity logs from other WebSphere Application Server installations, and even other versions of the product. Expand the tree of administrative and application server logging sessions. Uncolored records are "normal", yellow records are warnings, and pink records are errors. If you select a record, you will see its contents, including the basic error or warning message, date, time, which component logged the record, and which process (i.e., administrative server or an application server) it came from, in the upper right-hand pane.

The activity log does not analyze any other log files, such as `default_stderr.log` or `tracefile`. To analyze these records, right click on a record in the tree on the left (click on the **UnitOfWorkView** at the top to get them all), and select **Analyze**. Any records with a green check mark next to them match a record in the symptom database. When you select a check-marked record, you will see an explanation of the problem in the lower right-hand pane.

Updating the symptom database

The database of known problems and resolutions used when you click the Analyze menu item is periodically enhanced as new problems come to light and new versions of the product are introduced. To ensure that you have the latest version of the database, use the **File > Update Database > WebSphere Application Server Symptom Database** menu item from within the log analyzer tool at least once a month. Users who have just installed the product and have never run the update should do so immediately, since updates may have occurred since the version was first released.

The knowledge base used for analysis is built gradually from problems reported by users. For a recently released version of the product, you might not find any analysis hits. However, the Log Analyzer tool still provides a way to see all error messages and warnings from all components in a convenient, user-friendly way.

Configuring the service log

By default, the service log is shared among all server processes for a node. The configuration values for the service log are inherited by each server process from the node configuration. You can configure a separate service log for each server process by overriding the configuration values at the server level.

1. Start the administrative console.
2. Click **Troubleshooting > Logs and Trace > *server_name* > IBM Service Logs**.
3. Select the **Enable** box to enable the service log, clear the check box to disable the log.
4. Set the name for the service log. The default name is `install_directory/logs/activity.log`. If the name is changed, the run time requires write access to the new file, and the file must use the `.log` extension.
5. Set the maximum file size. Specifies the number of megabytes to which the file can grow. When the file reaches this size, it wraps, replacing the oldest data with the newest data.
6. Set the message filter level to the desired state.
7. Save the configuration.
8. Restart the server to apply the configuration changes.

IBM service log settings

To view this administrative console page, click **Troubleshooting > Logs and Trace > *server* > IBM Service Logs**.

Enable service log:

Specifies creation of a log file by the IBM Service log.

File Name:

Specifies the name of the file used by the IBM Service log.

Maximum File Size:

Specifies the maximum size in megabytes of the service log file. The default value is 2 megabytes.

When this size is reached, the service log wraps in place. Note that the service log does not roll over to a new log file like the JVM logs.

Message Filtering:

Specifies the message filter level to the desired state. You can use this option to filter out or suppress some message categories. This filter value is applied to all logs, not just the service log.

Enable Correlation ID:

Specifies the generation of a correlation ID that is logged with each message.

You can use the correlation ID to correlate activity to a particular client request, or correlate activities on multiple application servers.

Debugging WebSphere Application Server applications

In order to debug your application, you must use your application development tool (such as WebSphere Studio Application Developer) to create a Java project or a project with a Java nature. You must then import the program that you want to debug into the project. By following the steps below, you can import the WebSphere Application Server examples into a Java project.

There are two debugging styles available:

- **Step-by-step** debugging mode prompts you whenever the server calls a method on a Web object. A dialog lets you step into the method or skip it. In the dialog, you can turn off step-by-step mode when you are finished using it.
- **Breakpoints** debugging mode lets you debug specific parts of programs. Add breakpoints to the part of the code that you must debug and run the program until one of the breakpoints is encountered.

Breakpoints actually work with both styles of debugging. Step-by-step mode just lets you see which Web objects are being called without having to set up breakpoints ahead of time.

You need not import an entire program into your project. However, if you do not import all of your program into the project, some of the source might not compile. You can still debug the project. Most features of the debugger work, including breakpoints, stepping, and viewing and modifying variables. You must import any source that you want to set breakpoints in.

The inspect and display features in the source view do not work if the source has build errors. These features let you select an expression in the source view and evaluate it.

1. Create a Java Project by opening the New Project dialog.
2. Select **Java** from the left side of the dialog and **Java Project** in the right side of the dialog.
3. Click **Next** and then specify a name for the project (such as WASExamples).

4. Press **Finish** to create the project.
5. Select the new project, choose **File > Import > File System**, then **Next** to open the import file system dialog.
6. Select the directory Browse pushbutton and go to the following directory:
installation_root\installedApps*node_name*
 \DefaultApplication.ear\DefaultWebApplication.war.
7. Select the checkbox next to DefaultWebApplication.war in the left side of the Import dialog and then click **Finish**. This will import the JavaServer Pages files and Java source for the examples into your project.
8. Add any JAR files needed to build to the Java Build Path. To do this, select **Properties** from the right-click menu. Choose the Java Build Path node and then select the Libraries tab. Use the Add External JARs pushbutton to add the following JAR files:
 - *installation_root*\installedApps*node_name*\DefaultApplication.ear\Increment.jar.
 Once you have added this JAR file, select it and use the **Attach Source** pushbutton to attach Increment.jar as the source - Increment.jar contains both the source and class files.
 - *installation_root*\lib\j2ee.jar
 - *installation_root*\lib\pagelist.jar
 - *installation_root*\lib\webcontainer.jar
 Click **OK** when you have added all of the JARs.
9. You can set some breakpoints in the source at this time if you like, however, it is not necessary as step-by-step mode will prompt you whenever the server calls a method on a Web object. Step-by-step mode is explained in more detail below.
10. To start debugging, you need to start the WebSphere Application Server in debug mode and make note of the JVM debug port. The default value of the JVM debug port is 7777.
11. Once the server is started, switch to the debug perspective by selecting **Window > Open Perspective > Debug**. You can also enable the debug launch in the Java Perspective by choosing **Window > Customize Perspective** and selecting the **Debug** and **Launch** checkboxes in the **Other** category.
12. Select the workbench toolbar **Debug** pushbutton and then select **WebSphere Application Server Debug** from the list of launch configurations. Click the **New** pushbutton to create a new configuration.
13. Give your configuration a name and select the project to debug (your new WASExamples project). Change the port number if you did not start the server on the default port (7777).
14. Click **Debug** to start debugging.
15. Load one of the examples in your browser (for example, <http://localhost:9080/hitcount>).

To learn more about debugging, launch the Application Server Toolkit, select **Help > Help Contents** and choose the **Debugger Guide bookshelf** entry. To learn about known limitations and problems that are associated with the Application Server Toolkit, see the Application Server Toolkit release notes. For current information available from IBM Support on known problems and their resolution, see the IBM Support page.

IBM Support has documents that can save you time gathering information needed to resolve this problem. Before opening a PMR, see the IBM Support page.

Debugging with the Application Server Toolkit

The Application Server Toolkit, included with the WebSphere Application Server on a separately-installable CD, includes debugging functionality that is built on the Eclipse workbench and that includes the following:

The WebSphere Application Server debug adapter

which allows you to debug Web objects that are running on WebSphere Application Server and that you have launched in a browser. These objects include enterprise beans, JavaServer Pages files, and servlets.

The JavaScript debug adapter

which enables server-side JavaScript debugging.

The Compiled language debugger

which allows you to detect and diagnose errors in compiled-language applications.

The Java development tools (JDT) debugger

which allows you to debug Java code.

All of the debug components in the Application Server Toolkit can be used for debugging locally and for remote debugging.

To learn more about the debug components, launch the Application Server Toolkit, select **Help > Help Contents** and choose the **Debugger Guide bookshelf** entry. To learn about known limitations and problems that are associated with the Application Server Toolkit, see the Application Server Toolkit release notes.

Working with trace

Use trace to obtain detailed information about the execution of WebSphere Application Server components, including application servers, clients, and other processes in the environment. Trace files show the time and sequence of methods called by WebSphere Application Server base classes, and you can use these files to pinpoint the failure.

Collecting a trace is often requested by IBM technical support personnel. If you are not familiar with the internal structure of WebSphere Application Server, the trace output might not be meaningful to you.

1. Configure an output destination to which trace data is sent.
2. Enable trace for the appropriate WebSphere Application Server or application components.
3. Run the application or operation to generate the trace data.
4. Analyze the trace data or forward it to the appropriate organization for analysis.

Enabling trace

Trace for an application server process is enabled while the server process runs by using the administrative console. You can configure the application server to start in a trace-enabled state by setting the appropriate configuration properties. You can only enable trace for an application client or stand-alone process at process startup.

Trace strings

By default, the trace service for all WebSphere Application Server components is disabled. To request a change to the current state of the trace service, a trace string

is passed to the trace service. This trace string encodes the information detailing which level of trace to enable or disable and for which components.

You can type in Trace strings, or construct them with a user-friendly GUI in the administrative console. Trace strings must conform to a specific grammar for processing by the trace service. The specification of this grammar follows:

```
TRACESTRING=COMPONENT_TRACE_STRING[:COMPONENT_TRACE_STRING]*
```

```
COMPONENT_TRACE_STRING=COMPONENT_NAME=LEVEL=STATE[,LEVEL=STATE]*
```

```
LEVEL = all | entryExit | debug | event
```

```
STATE = enabled | disabled
```

```
COMPONENT_NAME = COMPONENT | GROUP
```

The COMPONENT_NAME is the name of a component or group registered with the trace service. Typically, WebSphere Application Server components register using a fully qualified Java classname, for example `com.ibm.servlet.engine.ServletEngine`. In addition, you can use a wildcard character of asterisk (*) to terminate a component name and indicate multiple classes or packages. For example, use a component name of `com.ibm.servlet.*` to specify all components whose names begin with `com.ibm.servlet`.

Examples of legal trace strings include:

```
com.ibm.ejs.ras.ManagerAdmin=debug=enabled  
com.ibm.ejs.ras.ManagerAdmin=all=enabled,event=disabled  
com.ibm.ejs.ras.*=all=enabled  
com.ibm.ejs.ras.*=all=enabled:com.ibm.ws.ras=debug=enabled,entryexit=enabled
```

Trace strings cannot contain blanks.

Trace strings are processed from left to right. Specifying a trace string like `abc.*=all=enabled,event=disabled`

first enables all trace for all components whose names start with `abc`, then disables event tracing for those same components. This means that the trace string `abc.*=all=enabled,event=disabled`

is equivalent to

```
abc.*=debug=enabled,entryexit=enabled
```

Enabling trace at server startup

The diagnostic trace configuration settings for a server process determines the initial trace state for a server process. The configuration settings are read at server startup and used to configure the trace service. You can also change many of the trace service properties or settings while the server process is running.

1. Start the administrative console.
2. Click **Troubleshooting > Logs and Trace** in the console navigation tree, then click **Server > Diagnostic Trace**.
3. Click **Configuration**.
4. Select the **Enable Trace** check box to enable trace, clear the check box to disable trace.
5. Set the trace specification to the desired state by entering the proper TraceString.

6. Select whether to direct trace output to either a file or an in-memory circular buffer.
7. If the in-memory circular buffer is selected for the trace output set the size of the buffer, specified in thousands of entries. This is the maximum number of entries that will be retained in the buffer at any given time.
8. If a file is selected for trace output, set the maximum size in megabytes to which the file should be allowed to grow. When the file reaches this size, the existing file will be closed, renamed, and a new file with the original name reopened. The new name of the file will be based upon the original name with a timestamp qualifier added to the name. In addition, specify the number of history files to keep.
9. Select the desired format for the generated trace.
10. Save the changed configuration.
11. Start the server.

Enabling trace on a running server

You can modify the trace service state that determines which components are being actively traced for a running server by using the following procedure.

1. Start the administrative console.
2. Click **Troubleshooting > Logging and Tracing** in the console navigation tree, then click **server > Diagnostic Trace**.
3. Select the **Runtime** tab.
4. Select the **Save Trace** check box if you want to write your changes back to the server configuration.
5. Change the existing trace state by changing the trace specification to the desired state.
6. Configure the trace output if a change from the existing one is desired.
7. Click **Apply**.

Enabling trace on client and standalone applications

When standalone client applications (such as Java applications which access EJBs hosted in WebSphere Application Server) have problems interacting with WebSphere Application Server, it may be useful to enable tracing for the application. Enabling trace for client programs will cause the WebSphere Application Server classes used by those applications, such as naming-service client classes, to generate trace information. A common troubleshooting technique is to enable tracing on both the application server and client applications, and match records according to timestamp to try to understand where a problem is occurring.

1. To enable trace for the WebSphere Application Server classes in a client application, add the `DtraceSettingsFile=filename` system property to the startup script or command of the client application. The location of the output and the classes and detail included in the trace follow the same rules as for adding trace to WebSphere Application Servers. For example, trace the standalone client application program named `com.ibm.sample.MyClientProgram`, you would enter the following command:


```
java -DtraceSettingsFile=MyTraceSettings.properties com.ibm.samples.MyClientProgram
```

The file identified by *filename* must be a properties file placed in the classpath of the application client or stand-alone process. An example file is provided in `install_root/properties/TraceSettings.properties`.

You cannot use the `-DtraceSettingsFile=TraceSettings.properties` property to enable tracing of the ORB component for thin clients. ORB tracing output for thin clients can be directed by setting `com.ibm.CORBA.Debug.Output = debugOutputFilename` parameter in the command line.

2. You can configure the `MyTraceSettings.properties` file to send trace output to a file using the `traceFileName` property. Specify one of two options:
 - The fully qualified name of an output file. For example, `traceFileName=c:\\MyTraceFile.log`. You must specify this property to generate visible output.
 - `stdout`. When specified, output is written to `System.out`.
3. You can also specify a trace string for writing messages with the Trace String property. Specify a startup trace specification similar to that available on the server. For your convenience, you can enter multiple individual trace strings into the trace settings file, one trace string per line.

Here are the results of using each optional property setting:

- Specify a valid setting for the `traceFileName` property without a trace string to write messages to the specified file or `System.out` only.
- Specify a trace string without a `traceFileName` property value to generate no output.
- Specify both a valid `traceFileName` property and a trace string to write both message and trace entries to the location specified in the `traceFileName` property.

Managing the application server trace service

You can manage the trace service for a server process while the server is stopped and while it is running. You can specify which components to trace, where to send trace output, the characteristics of the trace output device, and which format to generate trace output in.

1. Start the administrative console.
2. Click **Troubleshooting > Logging and Tracing** in the console navigation tree, then click *server* > **Diagnostic Trace**
3. If the server is running, select the **Runtime** tab.
4. For a running server, check the Save trace check box to write your changes back to the server configuration. If Save trace is not selected, the changes you make will apply only for the life of the server process that is currently running.
5. Perform the desired operation:
 - a. Enter the file name and click **Dump** to dump the in-memory circular buffer.
 - b. To change the trace destination from a file to the in-memory circular buffer or to a different file, or to change from the in memory circular buffer to a file, select the appropriate radio buttons, then click Apply.
 - c. To change the format in which trace output is generated, select the appropriate value from the drop-down list.

Interpreting trace output

On an application server, trace output can be directed either to a file or to an in-memory circular buffer. If trace output is directed to the in-memory circular buffer, it must be dumped to a file before it can be viewed.

On an application client or stand-alone process, trace output can be directed either to a file or to the process console window.

In all cases, trace output is generated as plain text in either basic, advanced or log analyzer format as specified by the user. The basic and advanced formats for trace output are similar to the basic and advanced formats that are available for the JVM message logs.

Basic and advanced format fields

Basic and Advanced Formats use many of the same fields and formatting techniques. The fields that can be used in these formats include:

TimeStamp

The timestamp is formatted using the locale of the process where it is formatted. It includes a fully qualified date (YYMMDD), 24 hour time with millisecond precision and the time zone.

ThreadId

An 8 character hexadecimal value generated from the hash code of the thread that issued the trace event.

ShortName

The abbreviated name of the logging component that issued the trace event. This is typically the class name for WebSphere Application Server internal components, but may be some other identifier for user applications.

LongName

The full name of the logging component that issued the trace event. This is typically the fully qualified class name for WebSphere Application Server internal components, but may be some other identifier for user applications.

EventType

A one character field that indicates the type of the trace event. Trace types are in lower case. Possible values include:

- > a trace entry of type method entry.
- < a trace entry of type method exit.
- e a trace entry of type event.
- d a trace entry of type debug.
- m a trace entry of type dump.
- u a trace entry of type unconditional.
- Z a placeholder to indicate that the trace type was not recognized.

ClassName

The class that issued the message or trace event.

MethodName

The method that issued the message or trace event.

Organization

The organization that owns the application that issued the message or trace event.

Product

The product that issued the message or trace event.

Component

The component within the product that issued the message or trace event.

Basic format

Trace events displayed in basic format use the following format:

```
<timestamp><threadId><shortName><eventType>[className] [methodName] <textmessage>  
      [parameter 1]  
      [parameter 2]
```

Advanced formats

Trace events displayed in advanced format use the following format:

```
<timestamp><threadId><eventType><UOW><source=longName>[className] [methodName]<Organization><Product>  
<textMessage>[parameter 1=parameterValue] [parameter 2=parameterValue]
```

Log analyzer

Specifying the log analyzer format allows you to open trace output using the Log Analyzer. This is useful if you are trying to correlate traces from two different server processes, because it allows you to use the Log Analyzer's merge capability).

Diagnostic trace service settings

Use this page to review and modify the properties of the diagnostic trace service.

To view this page, click **Troubleshooting > Logs and Trace > server > Diagnostic trace**.

Enable Trace

Enables the trace service.

If this option is not selected, the following configuration properties are not passed to the application server trace service at server startup.

Save Trace

Save changes made on the runtime tab to the trace configuration as well.

Select this box to copy runtime trace changes to the trace configuration settings as well. Saving these changes to the trace configuration will cause the changes to persist even if the application is restarted.

Trace Specification

Specifies tracing details.

Enter a trace string that specifies the components, packages, or groups to trace. The trace string must conform to the specific grammar described below. You can enter the trace string directly, or generate it using the graphical trace interface. Click **Modify** to start the graphical trace interface.

If you start the graphical trace interface from the configuration tab, a list of well-known components, packages, and groups is displayed. This list might not be exhaustive.

If you start the graphical trace interface from the runtime tab, the list of components, packages, and groups displays all such components currently registered on the running server.

The format of the trace specification is:

```
<component> = <trace_type>= enabled | disabled
```

where: *<component>* is the component for which to enable or disable tracing, and *<trace_type>* is the type of tracing to enable or disable. Separate multiple tracing specifications with colons (:).

Components correspond to Java packages and classes, or to collections of Java packages. Use * as a wildcard to indicate components that include all classes in all packages contained by the specified component. For example:

* Specifies all traceable code running in the application server, including WebSphere Application Server system code and customer code.

com.ibm.ws.*

specifies all classes whose package name begins with com.ibm.ws.

com.ibm.ws.classloader.JarClassLoader

Specifies only the JarClassLoader class.

For more information on trace string grammar, see the article *Enabling trace* in the WebSphere Application Server information center navigation.

Note: An error can occur when setting a trace specification from the administrative console if selections are made from both the Groups and Components lists. In some cases, the selection made from one list is not lost when adding a selection from the other list. To work around this problem, enter the desired trace specification directly into the Trace Specification entry field.

Trace Output

Specifies where trace output should be written.

The trace output can be written directly to an output file, or stored in memory and written to a file on demand using the Dump button found on the run-time page.

Memory Buffer

Specifies that the trace output should be written to an in-memory circular buffer. If you select this option you must specify the following parameters:

Maximum Buffer Size

Specifies the number of entries, in thousands, that can be cached in the buffer. When this number is exceeded, older entries are overwritten by new entries.

Dump File Name

The name of the file to which the memory buffer will be written when it is dumped. This option is only available from the Runtime tab.

File Specifies to write the trace output to a self-managing log file.

The self-managing log file writes messages to the file until a size criteria is reached. When the file reaches the specified size, logging is temporarily suspended and the log file is closed and renamed. The new name is based on the original name of the file, plus a timestamp qualifier that indicates when the renaming occurred. Once the renaming is complete, a new, empty log file with the original name is reopened, and logging resumes. No messages are lost as a result of the rollover, although a single message may be split across the two files.

If you select this option you must specify the following parameters:

Maximum File Size

Specifies the maximum size, in megabytes, to which the output file is allowed to grow.

This attribute is only valid if the File Size attribute is selected. When the file reaches this size, it is rolled over as described above.

Maximum Number of Historical Files

Specifies the maximum number of rolled over files to keep.

File Name

Specifies the name of the file to which the trace output is written.

Trace Output Format

Specifies the format of the trace output.

You can specify one of three levels for trace output:

Basic (Compatible)

Preserves only basic trace information. Select this option to minimize the amount of space taken up by the trace output.

Advanced

Preserves more specific trace information. Select this option to see detailed trace information for use in troubleshooting and problem determination.

Log Analyzer

Preserves trace information in a format that is compatible with the Log Analyzer tool. Select this option if you want to use the trace output as input to the Log Analyzer tool.

Runtime tab

Specifies the format of the trace output.

Save Trace

Save changes made on the runtime tab to the trace configuration as well.

Select this box to copy run-time trace changes to the trace configuration settings as well. Saving these changes to the trace configuration will cause the changes to persist even if the application is restarted.

Trace Specification

Specifies tracing details.

Enter a trace string that specifies the components, packages, or groups to trace. The trace string must conform to the specific grammar described below. You can enter the trace string directly, or generate it using the graphical trace interface. Click **Modify** to start the graphical trace interface.

If you start the graphical trace interface from the configuration tab, a list of well-known components, packages, and groups is displayed. This list might not be exhaustive.

The format of the trace specification is:

```
<component> = <trace_type> = enabled | disabled
```

where <component> is the component for which to enable or disable tracing, and <trace_type> is the type of tracing to enable or disable. Separate multiple tracing specifications with colons (:).

Components correspond to Java packages and classes, or to collections of Java packages. Use * as a wildcard to indicate components that include all classes in all packages contained by the specified component. For example:

- * Specifies all traceable code running in the application server, including WebSphere Application Server system code and customer code.

com.ibm.ws.*

specifies all classes whose package name begins with com.ibm.ws.

com.ibm.ws.classloader.JarClassLoader

Specifies only the JarClassLoader class.

For more information on trace string grammar, see the article [Enabling trace in the WebSphere Application Server information center navigation](#).

Note: An error can occur when setting a trace specification from the administrative console if selections are made from both the Groups and Components lists. In some cases, the selection made from one

list is not lost when adding a selection from the other list. To work around this problem, enter the desired trace specification directly into the Trace Specification entry field.

Trace Output

Specifies where trace output should be written.

Specifies where trace output should be written.

The trace output can be written directly to an output file, or stored in memory and written to a file on demand using the Dump button found on the runtime page.

Memory Buffer

Specifies that the trace output should be written to an in-memory circular buffer. If you select this option you must specify the following parameters:

Maximum Buffer Size

Specifies the number of entries, in thousands, that can be cached in the buffer. When this number is exceeded, older entries are overwritten by new entries.

Dump File Name

The name of the file to which the memory buffer will be written when it is dumped. This option is only available from the runtime tab.

File Specifies to write the trace output to a self-managing log file.

The self-managing log file writes messages to the file until a size criteria is reached. When the file reaches the specified size, logging is temporarily suspended and the log file is closed and renamed. The new name is based on the original name of the file, plus a timestamp qualifier that indicates when the renaming occurred. Once the renaming is complete, a new, empty log file with the original name is reopened, and logging resumes. No messages are lost as a result of the rollover, although a single message may be split across the two files.

If you select this option you must specify the following parameters:

Maximum File Size

Specifies the maximum size, in megabytes, to which the output file is allowed to grow.

This attribute is only valid if the File Size attribute is selected. When the file reaches this size, it is rolled over as described above.

Maximum Number of Historical Files

Specifies the maximum number of rolled over files to keep.

File Name

Specifies the name of the file to which the trace output is written.

Logging and tracing settings

Use this page to view and configure logging and trace settings for the server.

To view this administrative console page, click **Troubleshooting > Logs and Trace** *server_name > service_type*.

Working with troubleshooting tools

WebSphere Application Server includes a number of troubleshooting tools that are designed to help you isolate the source of problems. Many of these tools are designed to generate information to be used by IBM Support, and their output might not be understandable by the customer.

This section only discusses tools that are bundled with the WebSphere Application Server product. A wide range of tools which address a variety of problems is available from the WebSphere Application Server Technical Support Web site.

1. Select the appropriate tool for the task. For more information on the capacities of the supplied troubleshooting tools, see the relevant articles in this section.
2. Run the tool as described in the relevant article.
3. Contact IBM Support for assistance in deciphering the output of the tool. For current information available from IBM Support on known problems and their resolution, see the IBM Support page. IBM Support has documents that can save you time gathering information needed to resolve this problem. Before opening a PMR, see the IBM Support page.

Gathering information with the Collector tool

The collector tool gathers information about your WebSphere Application Server installation and packages it in a Java archive (JAR) file that you can send to IBM Customer Support to assist in determining and analyzing your problem. Information in the JAR file includes logs, property files, configuration files, operating system and Java data, and the presence and level of each software prerequisite.

Beginning with Version 5.0.2, there are two ways to run the collector tool. The collector tool can be executed to collect summary data or to traverse the system to gather relevant files and command results. The collector tool produces a Java archive (JAR) file of information needed to determine and solve a problem. The collector summary option produces a lightweight collection of version and other information that is useful when first reporting the problem to IBM Support.

There are two phases of using the collector tool. The first phase runs the collector tool on your WebSphere Application Server product and produces a Java archive (JAR) file. The IBM Support team performs the second phase, which is analyzing the Java archive (JAR) file that the collector program produces.

The collector program runs to completion as it creates the JAR file, despite any errors that it might find. Errors might include missing files or commands. The collector tool collects as much data in the JAR file as possible.

Collector tool

The collector tool gathers extensive information about your WebSphere Application Server installation and packages it in a Java archive (JAR) file that you can send to IBM Customer Support to assist in determining and analyzing your problem. Information in the JAR file includes logs, property files, configuration files, operating system and Java data, and the absence or level of each software prerequisite.

The collector program runs to completion despite any errors that it might find. Errors might include missing files or commands. The collector tool collects as much data in the JAR file as possible.

See “Running the collector tool” on page 25 for the steps for running the collector program.

You can also run the collector summary option to create a lightweight version of the information in a text file and on the console. The lightweight information is useful for getting started in communicating your problem to IBM Support.

Running the collector tool:

To run the collector tool:

1. Log on to the system as **root** (or **Administrator** in a Windows platform).
2. Verify that Java 1.2.2 or higher is available in the path. The collector program requires Java code to run. It also collects data about the IBM Developer Kit, Java Technology Edition in which it runs. If there are multiple Developer Kits on the system, verify that the one that the WebSphere Application Server product uses is the one in the path for the collector program. If the Developer Kit being used by the WebSphere Application Server is not available, putting another Developer Kit in the path for the collector program lets you collect all data except information about the Developer Kit.
3. Verify that all necessary information is in the path being used by the collector program and that you are not running the program from within the WebSphere Application Server product installation root directory.
 - a. If this system is a Linux or UNIX-based platform, verify that the path contains:
 - /bin
 - /sbin
 - /usr/bin
 - /usr/sbin
 - b. If this system is a Windows platform, include `regedit` in the path.
4. Create a work directory where you can start the collector program.
5. Make the work directory the current directory. The collector program writes its output JAR file to the current directory. The program also creates and deletes a number of temporary files in the current directory. Creating a work directory to run the collector program avoids naming collisions and makes cleanup easier. You cannot run the collector tool in a directory under the WebSphere Application Server installation directory.
6. Run the collector program by entering the command: **collector** from the command line.

Using the **collector** command with no additional parameters gathers one copy of the node data and data from each server in the node, and stores them in a single JAR output file. To gather data from a specific server in the node, use the command **collector *servername***, where *servername* is the name of the problem server.

Note:

Set the path correctly to use the non-qualified version of the command. For Linux and UNIX-based platforms, *install_root/bin* must be in the path to locate the **collector.sh** command. For Windows platforms, *install_root\bin* must be in the path to locate the **collector.bat** command.

The WebSphere Application Server installation root directory is determined at installation. It is identified in the `setupCmdLine.sh` file (or the `setupCmdLine.bat` file on a Windows platform).

You can enter a fully qualified path to the collector command. For example, enter this command in a default installation on a Windows platform:

```
c:\WebSphere\AppServer\bin\collector.bat
```

The collector program creates a log file, `Collector.log`, and an output JAR file in the current directory.

The name of the JAR file is based on the hostname and package of the Application Server product, in the format: `hostname-ND-WASenv.jar` or `hostname-Base-WASenv.jar`. For example, if you run the collector tool on the server `ws-laceweb` within a Network Deployment cell, the filename is `ws-laceweb-ND-WASenv.jar`.

The `Collector.log` log file is one of the files collected in the `hostname-ND-WASenv.jar` or `hostname-Base-WASenv.jar` file.

Send the `hostname-ND-WASenv.jar` or `hostname-Base-WASenv.jar` file to IBM Support for analysis.

Analyzing collector tool output

The first step in using the collector tool on your WebSphere Application Server product is to run the tool to produce a Java archive (JAR) file as output. The second step in using the collector tool is to analyze its output. The preferred method of performing this analysis is to send the JAR file to IBM Support for analysis. However, you can use this topic to understand the content of the JAR file if you perform your own analysis.

You can view the files contained in the JAR file without extracting the files from the JAR file. However, it is easier to extract all files and view the contents of each file individually. To extract the files, use one of the following commands:

- `jar -xvf WASenv.jar`
- `unzip WASenv.jar`

`Wasenv.jar` stands for the name of the JAR file that the collector tool creates.

The JAR file contains:

- A collector tool log file, `collector.log`
- Copies of stored WebSphere Application Server files and their full paths
- Operating system information in a directory named `OS`
- Java information in a directory named `Java`
- WebSphere Application Server information in a directory named `WAS`
- Collector shell script (or batch file) execution information in a directory named `debug`
- MQ information in a directory named `MQ`, if you installed WebSphere MQ or the embedded messaging feature
- A JAR file manifest

Tips and suggestions

- Unzip the JAR file to an empty directory for easy access to the gathered files and for simplified cleanup.
- Check the `collector.log` file for errors:
 - Some errors might be normal or expected. For example, when the collector attempts to gather files or directories that do not exist for your specific installation, it logs an error about the missing files.
 - A non-zero return code means that a command that the collector tool attempted to run does not exist. This might be expected in some cases. If this type of error occurs repeatedly, there might actually be a problem.
- On Linux and UNIX-based systems, the file `OS/commands` has the location of all commands used. If you are missing command output, check this file to see if the command was found.

- On Linux and UNIX-based systems, the collector runs some shell scripts. The shell script output is saved in files in the OS directory, while the corresponding debug information is saved in the debug directory. If the output of a shell script is missing, check the corresponding file in the debug directory.
- When you issue the **collector** command when there are multiple installation instances, the tool that runs depends on what is in the PATH statement. For example, if you install both the base WebSphere Application Server and the Deployment Manager product on the same machine, the bin directory that first appears in the PATH variable is the one that furnishes the collector tool. To work around this problem, use a fully qualified filepath when calling the collector tool as shown in this example for a Windows platform:

```
c:\WebSphere\AppServer\bin\collector.bat
```
- On Windows systems, the OS directory contains a file named `installed.out`. This file contains a list of programs found in the Add/Remove Programs list. This same information is contained in the file `Desktop\My Computer\Control Panel\Add/Remove Programs\Install/Uninstall`.

Collector summary

WebSphere Application Server products include an enhancement to the collector tool beginning with Version 5.0.2, known as the *collector summary option*.

The collector summary option helps you communicate with WebSphere Application Server technical staff at IBM Support. Run the collector tool with the `-Summary` option to produce a lightweight text file and console version of some of the information in the Java archive (JAR) file that the tool produces without the `-Summary` parameter. You can use the collector summary option to retrieve basic configuration and prerequisite software level information when starting a conversation with IBM Support.

The collector summary option produces version information for the WebSphere Application Server product and the operating system as well as other information. It stores the information in the `Collector_Summary.txt` file and writes it to the console. You can use the information to answer initial questions from IBM Support or you can send the `Collector_Summary.txt` file directly to IBM Support.

Run the **collector** command to create the JAR file if IBM Support needs more information to solve your problem.

To run the collector summary option, start from a temporary directory outside of the WebSphere Application Server product installation root directory and enter one of the following commands.

Linux and UNIX-based platforms::

```
install_root/bin/collector.sh -Summary
```

Windows platforms::

```
install_root\bin\collector.bat -Summary
```

First Failure Data Capture tool

The First Failure Data Capture tool preserves the information generated from a processing failure and returns control to the affected engines. The captured data is saved in a log file for use in analyzing the problem.

The First Failure Data Capture tool is intended primarily for use by IBM Service. It runs as part of the IBM WebSphere Application Server, and you cannot start or stop it. It is recommended that you not attempt to configure the First Failure Data Capture tool. If you experience conditions requiring you to contact IBM Service, your IBM Service representative will assist you in reading and analyzing the First Failure Data Capture log.

The First Failure Data Capture tool does not affect the performance of the IBM WebSphere Application Server.

Log Analyzer

The Log Analyzer takes one or more service or activity logs, merges all of the data, and displays the entries. Based on its symptom database, the tool analyzes and interprets the event or error conditions in the log entries to help you diagnose problems. Log Analyzer has a special feature enabling it to download the latest symptom database from the IBM Web site.

To download the latest updates to the symptom database, use the **File -> Update Database -> WebSphere Application Server Symptom Database** option for WebSphere Application Server, or **WebSphere Application Server Network Deployment Symptom Database** option for WebSphere Application Server Network Deployment in the Log Analyzer interface.

About the service or activity log

The application server creates the service or activity log file from the activity of the various WebSphere Application Server components. Log Analyzer is used to view the service or activity log file. Log Analyzer can merge service or activity log files into one log file. The service or activity log file, `activity.log`, is a binary file in the `logs` directory of the `install_root`.

You cannot view the service or activity log with a text editor. The Log Analyzer tool lets you view the file.

Viewing a service or activity log file in the absence of a graphical interface

The Log Analyzer tool cannot view remote files. If the operating system on which you are running WebSphere Application Server does not support the use of a graphical interface, transfer the file in binary mode to the system on which you are running the Java administrative console. Use the Log Analyzer tool there.

In cases where transferring the file is impractical or inconvenient, use the alternate viewing tool, **showlog**, to view the service or activity log file:

1. Change directory to `bin` directory of the `install_root`.
2. Run the **showlog** tool with no parameters to display usage instructions:
 - On Windows systems, run **showlog.bat**.
 - On UNIX systems, run **showlog.sh**.

To direct the service or activity log (`activity.log`) contents to stdout, use the **showlog activity.log** command.

To dump the service or activity log to a text file for viewing with a text editor, use the **showlog activity.log *textFileName*** command.

Accessing Log Analyzer help files

You can access Log Analyzer help files on Windows platforms, using the operating system default Internet browser only. You cannot access the help files using an Internet browser other than the default. However, Windows systems do let you select either Netscape or Internet Explorer as the default browser. There is an option to let you select either Netscape or Internet Explorer as the browser to display HTML help files.

Access help files using any Internet browser on UNIX platforms. You can use such browsers as Netscape Navigator, by explicitly setting the location of its executable in the tool Preferences dialog. The option that appears to allow you to select either Netscape or Internet Explorer as the browser to display HTML help files is not used on UNIX systems.

To specify the browser on UNIX platforms:

1. Click **File > Preferences** in the Log Analyzer tool.
2. Click **Help** from the **General** folder in the Log Analyzer Preferences dialog.
3. Set the path to the Internet browser executable in the Browser Location field.

Installing Log Analyzer silently

Installing Log Analyzer "silently" prevents installation messages from being displayed, but the file `responsefile.txt` for silent installation needs more information to install Log Analyzer. To silently install Log Analyzer, add the following option to this file:

```
-P logAnalyzerBean.active="true"
```

The Performance and Analysis Tools property in the file `responsefile.txt` needs to be set to true to install the Log Analyzer tool. The property in the `responsefile.txt` is: `-P performanceAndAnalysisToolsBean.active="true"`.

Using the Log Analyzer

To view the service or activity.log using the Log Analyzer:

1. Change directory to: `install_dir/bin`.
2. Run the `waslogbr` script file. This file is named:
 - `waslogbr.bat` on Windows systems.
 - `waslogbr` on UNIX systems.

This script must be run from the `install_dir/bin` directory. This starts the Log Analyzer interface.

3. Select **File -> Open**.
4. Navigate to the directory containing the service or activity log file.
5. Select the service or activity log file and click **Open**.
6. To analyze the records, right-click on a record in the tree on the left, select **UnitOfWorkView** from the right-click menu, and select **Analyze**. Now any records with a green check mark next to them match a record in the symptom database. When you select a check-marked record, you will see an explanation of the problem in the lower-right-hand pane.

Note: When starting the Log Analyzer for the first time, or after the Log Analyzer preferences files of the users have been deleted, the following message is displayed in the Log Analyzer's shell window:

```
Cannot open input stream for waslogbrsys
```

You can disregard this message, as it is informational and not indicative of abnormal operation.

WebSphere Application Server includes the following Log Analyzer files for use with the WebSphere Commerce Suite:

- install_root\bin:
 - wcslogbr.bat
 - wcslogbrsys.cfg
 - wcslogbrsys.ini
- install_root\properties\logbr:
 - wcsanalyzers.xml
 - wcslogtypes.xml
 - wcsrecdef.xml

You can ignore these files.

Log Analyzer main window: To view this page, launch the Log Analyzer, install_root/bin/waslogbr on UNIX systems or install_root\bin\waslogbr.bat on Windows NT or Windows 2000 systems. Click **Help > Tasks**.

The Log Analyzer takes one or more service or activity logs, merges all the data, and, by default, displays the entries in unit of work (UOW) groupings. It analyzes event and error conditions in the log entries to provide message explanations. The Log Analyzer main window interface has the following elements:

- Three window panes
- Status line
- Menu bar
- Pop-up actions

Window panes

The Log Analyzer window has three panes:

Logs pane (left)

By default, Log Analyzer Logs pane displays log entries by UOW. It lists all the UOW instances and its associated entries from the logs that you have opened. You may find the UOW grouping useful when you are trying to find related entries in the service or activity log or when you are diagnosing problems across multiple machines. The file name of the first log you open appears in the pane title bar. There is a root folder and under it, each UOW has a folder icon which you can expand to show all the entries for that UOW. All log entries without any UOW identification are grouped into a single folder in this tree view. The UOW folders are sorted to show the UOW with the latest timestamp at the top of the list. The entries within each UOW are listed in the reverse sequence, that is the first (earliest) entry for that UOW is displayed at the top of the list. If you have merged several logs in the Log Analyzer, all the log entries are merged in timestamp sequence within each UOW folder, as if they all came from the same log.

Every log entry is assigned an entry number, Rec_#####, when a log is opened in the Log Analyzer. If more than one file is opened in the Log Analyzer (merged files), the Rec_##### identification will not be unique because the number is relative to the entry sequence in the original log file and not to the merged data that the Log Analyzer is displaying. This Rec_##### appears in the first line (**RecordId**) in the Records pane.

By default, each entry in this pane is color-coded to help you quickly identify the ones that have high severity errors. The values listed here are the default values, you can configure your own colors.

- Non-selected log entry with background color of:
 - Pink indicates that it has a severity 1 error.
 - Yellow indicates that it has a severity 2 error.
 - White indicates that it has a severity 3 error.
- Selected log entry with background color of:
 - Red indicates that it has a severity 1 error.
 - Green indicates that it has a severity 2 error.
 - Blue indicates that it has a severity 3 error.

These colors are configurable and can be changed in the Log Analyzer Preferences Log page. See the help for the Severity page in the Log Analyzer Preferences notebook for different error severity levels and for more information on how to do this.

The Log Analyzer can display the log entries in different groupings. Use the Log Analyzer Preferences notebook: Logs page to set the grouping filters.

After the Analyze action has been invoked, each analyzed log entry has the following icons:

- A check icon indicates that the entry has some analysis information in one or more pages in the Analysis pane.
- A cascading plus sign (+) icon indicates that the entry has some analysis information and that it has a reraised or remapped exception. You may want to look at the log entry prior to this one when diagnosing problems.
- A question mark icon indicates that the entry has either a severity 1 or 2 error but no additional analysis information is available for it.
- An "x" icon indicates that the entry has a severity 3 error and it has no analysis information.

Record pane (upper right)

When you select an entry in the Logs pane, you see the entry in the Record pane. The entry identification appears in the pane title bar. Right-click in the Record pane to see actions that you can perform on the selected entry. A drop down arrow next to Record lets you look at the last ten records you have viewed. The cache for the historical data (10, by default) is set in the Preferences General page.

Note:

- The page does not display associated analysis data for these cached records. To see analysis information for cached data, reselect the entry from the Logs pane.

You can enable or disable line wrap mode for the Record Pane using the Log Analyzer Preferences notebook: Record. To print contents of this pane, select **Record > Print** when the Record pane is in focus.

Analysis pane (lower right)

When the analyze action has been invoked and additional information is available, the information will appear in the Symptom page. If the page tab is grayed out, there is no information in that page. The pages of the Analysis pane are:

Symptom

The Log Analyzer provides a database of information on common events and errors to help you recover from some common errors. As a part of the analyze action, if such information is found in the database for the selected log entry, the information is displayed in this page.

Status line

There is a status line at the bottom of the window showing the status of actions.

Menu bar

The menu bar in the Log Analyzer main window, has the following selections:

File

Open...

Opens a new log file. You can select either a service or activity log or a previously saved XML file. If you want the Log Analyzer to format a raw log file (by running the showlog command) prior to opening it, name the log file with suffix.log. If the Log Analyzer finds that the .log file contains formatted data, it skips the showlog formatting step.

If you want to merge data from another log, select **Merge with**.

Merge with...

When another log file is already opened in the Log Analyzer, use the **Merge with** action to open subsequent logs. The Log Analyzer merges the data from all the logs that it opens and displays all the entries within timestamp sequence in the UOW folders. The data appears as if they came from one log.

If you want the Log Analyzer to format a raw log file (by running the showlog command) prior to opening it, name the log file with suffix.log. If the Log Analyzer finds that the .log file contains formatted data, it skips the showlog formatting step.

Redisplay logs

To redisplay the logs using the recently set filters.

Save as...

Saves the log as an XML file (or text file). If **analyze action** has been performed, all the Symptom analysis information is also saved. If logs are merged in the Log Analyzer, the saved file contains entries of all the merged logs in the sequence that is shown in the Logs pane.

Note: If the merged logs have different timestamp formats, you should not save the merged information because the Log Analyzer only recognizes a single timestamp format for each file that it opens.

Save

Is only enabled if the first file that you opened is an XML file. It resaves the XML file with all the data that is currently displayed in the Log Analyzer. If **analyze action** has been performed, all the Symptom analysis information is also saved. If logs are merged in the Log Analyzer, the saved file contains entries of all the merged logs in the sequence that is shown in the Logs pane.

Note: If the merged logs have different timestamp formats, you should not save the merged information because the Log Analyzer only recognizes a single timestamp format for each file that it opens.

Print Log...

Prints all the entries that the Log Analyzer is displaying. If logs are merged in the Log Analyzer, the output contains entries of all the merged logs in the sequence that is shown in the Logs pane. If analyze action has been performed, all Symptom analysis information is also printed. To print parts of the log, use **Record > Print**.

Close Closes the opened log.

Update Database

Updates the symptom database which is used for Symptom analysis. It downloads the latest version of the symptom database from the URL specified in the ivblogbr.properties file.

Preferences...

Lets you configure and change the appearance of the Log Analyzer window and its contents.

Exit Exits the Log Analyzer and closes its window.

Edit

Copy Copies the selected text in the Record or Analysis pane to the clipboard. If you have not selected any text, **Copy** does not appear in the menu.

Find Allows you to find text strings in the focused pane.

View

Logs Toggles the visibility of the Logs pane.

Record Toggles the visibility of the Record pane.

Symptom Toggles the visibility of the Symptom page in the Analysis pane.

Record

All the actions under this menu applies to the focused pane.

To select several entries, hold down the **Ctrl** key when making the selection. When a folder is selected, the action applies to all the entries in that folder.

Analyze

Retrieves and displays additional documentation on known events and event messages in the Analysis pane (Symptom page). Select the folders and entries in the Logs pane, right-click to select the **Analyze** action, or from the menu bar, select **Record > Analyze**.

Note: If you invoke Analyze for the root folder, then all the entries in the log that you are viewing will be analyzed.

If some analysis information is available for an entry, it will either have a check icon or a cascading plus sign (+) icon next to it in the Logs pane. If the analyze action has already been performed, the selection will be grayed out.

Save to file

Saves the selected entries in the Logs pane. If folders are selected, all the entries in the folder are saved. Any retrieved analysis information is also saved. If the focused pane is either the Records or Analysis pane, then only information in that pane is saved.

Print

- If the focused pane is Logs, the action prints the selected folders and entries. Any retrieved analysis information for those entries is also printed.
- If the focused pane is Record, the action prints the entry that is currently in the Record pane. Any retrieved analysis information is not printed.
- If the focused pane is Analysis, the action prints Symptom page contents.

Windows

If you detach the Symptom page in the Analysis pane into separate windows, all windows appear under this menu. You can select windows to bring them to the foreground.

Help Provides a list of online documentation for additional information.

Pop-up actions

In the focused pane, right-click to bring up a list of actions in a pop-up menu. Actions that you cannot perform are grayed out. When a folder is selected in the Logs pane, the action applies to all entries in that folder. To select several folders or entries in the Logs pane, hold down the **Ctrl** key when making the selection.

Log Analyzer find window: To view this page, launch the Log Analyzer, `install_root/bin/waslogbr` on UNIX systems or `install_root\bin\waslogbr.bat` on Windows NT or Windows 2000 systems. Click **Edit > Find**.

The Log Analyzer Find window lets you look for text strings in the focused pane. For example, if you remember the Unit of Work identification, you can enter that text string in the Find window to quickly locate the Unit of Work folder in the Logs pane.

Log Analyzer Preferences notebook - General: To view this page, launch the Log Analyzer, `install_root/bin/waslogbr` on UNIX systems or `install_root\bin\waslogbr.bat` on Windows NT or Windows 2000 systems. Click **File > Preferences > General**.

The General page of the Log Analyzer Preferences notebook lets you specify the behavior of panes in the Log Analyzer window:

Show title bars

Shows the title bars of window and its panes.

Highlight selected pane

Highlights the pane that is in focus.

Pane history cache size

Specifies a number of records to save in the cache. The Log Analyzer keeps a history of the (specified number of) records that you have viewed. You can use the drop down list next to Record in the pane title bar to see these cached entries.

Note: The associated analysis data for these records are not saved. To see analysis information, reselect the entry from the Logs pane.

Show logo at startup

Shows the logo when you start-up the Log Analyzer.

When you are finished, click **OK** to apply your changes and close the Preferences notebook.

Log Analyzer Preferences notebook - Appearance: To view this page, launch the Log Analyzer, `install_root/bin/waslogbr` on UNIX systems or `install_root\bin\waslogbr.bat` on Windows NT or Windows 2000 systems. Click **File > Preferences > General > Appearance**.

The Appearance page of the Log Analyzer Preferences notebook lets you define the overall appearance of the Log Analyzer. You can select the family of products and its texture schemes that you want the Log Analyzer window to emulate.

When you are finished, click **OK** to apply your changes and close the Preferences notebook.

Log Analyzer Preferences notebook - Toolbars: To view this page, launch the Log Analyzer, `install_root/bin/waslogbr` on UNIX systems or `install_root\bin\waslogbr.bat` on Windows NT or Windows 2000 systems. Click **File > Preferences > General > Toolbars**.

The Toolbars page of the Log Analyzer Preferences notebook lets you customize the appearance and contents of the toolbar in the Log Analyzer window. You can select whether there is text and/or icon in the toolbar, as well as, the functions that you want in the toolbar.

When you are finished, click **OK** to apply your changes and close the Preferences notebook.

Log Analyzer Preferences notebook - Help: To view this page, launch the Log Analyzer, `install_root/bin/waslogbr` on UNIX systems or `install_root\bin\waslogbr.bat` on Windows NT or Windows 2000 systems. Click **File > Preferences > General > Help**.

The Help page of the Log Analyzer Preferences notebook lets you select the browser that is to display online help files.

For Windows, the default Web browser is used. You need not update any settings unless there are problems when bringing up the default browser.

For AIX, HP-UX, and Solaris operating environment, you must update the following settings, especially the full path of the browser in the **Browser location** entry.

Help browser

Select the Web browser you want to use.

Browser location

Select the location of the browser executable file. This should be correct by default, but if you cannot access help then you may need to explicitly enter the browser location.

When you are finished, click **OK** to apply your changes and close the Preferences notebook.

Log Analyzer Preferences notebook - Proxy: To view this page, launch the Log Analyzer, `install_root/bin/waslogbr` on UNIX systems or `install_root\bin\waslogbr.bat` on Windows NT or Windows 2000 systems. Click **File > Preferences > Proxy**.

The symptom database included in the Log Analyzer package contains entries for common events and errors. New versions of the symptom database provide

additional entries. Download new versions of the database from the IBM FTP site. The URL for the FTP site is located in file: *install_dir/bin/ivblogbr.properties*.

The default setting for the FTP site is:

```
ftp://ftp.software.ibm.com/software/websphere/info/tools/loganalyzer/  
symptoms/std/symptomdb.xml
```

You can update your symptom database in one of two ways:

1. Download a new version from the FTP site, and replace your existing database with the new version. Your database is:
install_dir/symptoms/std/symptomdb.xml.
2. Use the Log Analyzer graphical user interface (GUI) to update your database by selecting: **File -> Update database -> WebSphere Application Server Symptom Database** (for WebSphere Application Server) or **WebSphere Application Server Network Deployment Symptom Database** for WebSphere Application Server Network Deployment.

Setting the proxy definition

If your organization uses a FTP or SOCKS proxy server, contact your system administrator for the host name and port number of the proxy server.

If you use the Log Analyzer GUI to update the database, you can add a proxy definition to the Proxy Preferences page as described below:

1. Select **File -> Preferences -> Proxy**.
2. Select the appropriate proxy type.
3. Enter the host name and port number of the proxy server on the **Proxy** panel.

If you do not use the Log Analyzer GUI, add the proxy definition to the command that launches Log Analyzer.

- Do the following to add the proxy definition for the FTP proxy server:

- For Windows systems:

1. Modify file: *install_dir\bin\waslogbr.bat*.
2. Add the following text to the file:

```
%JAVA_HOME%\bin\java -DIVB_HOME=%USERPROFILE%/logbr ^  
....  
-Dftp.proxyHost=proxy_host -Dftp.proxyPort=port_number ^
```

- For UNIX:

1. Modify file: *install_dir/bin/waslogbr*.
2. Add the following text to the file:

```
$JAVA_HOME/bin/java -ms10m -mx255m -DIVB_HOME=$HOME/logbr \  
....  
-Dftp.proxyHost=proxy_host -Dftp.proxyPort=port_number \  
^
```

- Do the following to add the proxy definition for the SOCKS proxy server:

- For Windows systems:

1. Modify file: *install_dir\bin\waslogbr.bat*.
2. Add the following text to the file:

```
%JAVA_HOME%\bin\java -DIVB_HOME=%USERPROFILE%/logbr ^  
....  
-DsocksProxyHost=proxy_host -DsocksProxyPort=port_number ^
```

- For UNIX:

1. Modify file: *install_dir/bin/waslogbr*.
2. Add the following text to the file:

```
$JAVA_HOME/bin/java -ms10m -mx255m -DIVB_HOME=$HOME/logbr \  
....  
-DsocksProxyHost=proxy_host -DsocksProxyPort=port_number \  
^
```

Log Analyzer Preferences notebook -- Logs: To view this page, launch the Log Analyzer, `install_root/bin/waslogbr` on UNIX systems or `install_root\bin\waslogbr.bat` on Windows NT or Windows 2000 systems. Click **File > Preferences > Logs**.

The Logs page of the Log Analyzer Preferences notebook lets you group the entries in the logs by different entry fields for viewing. For example, you can select to group the log entries by `TimeStamp` or `clientHostName` when they are displayed in the Logs pane.

Primary sort field

Use this filter to set the first level of grouping when log entries are displayed in the Logs pane. By default, the log entries are grouped by `UnitOfWork`.

Secondary sort field

Use this filter to set the second level of grouping (that is, within the grouping of the primary sort field) when log entries are displayed in the Logs pane.

All the entries within the grouped folders are always sorted in timestamp sequence with the earliest entry at the top of the list.

Redisplay log file immediately

Select this box to immediately regroup the logs entries (after you have clicked **OK**) based on the new filter settings. The entries in the Logs Pane are redisplayed according to the new grouping. If you want to delay the grouping, then do not select this box and, at a later time, you can use the **File > Redisplay logs...** menu selection to regroup and display the log entries based on the changed filter settings.

When you are finished, click **OK** to apply your changes and close the Preferences notebook.

Log Analyzer Preferences notebook -- Severity: To view this page, launch the Log Analyzer, `install_root/bin/waslogbr` on UNIX systems or `install_root\bin\waslogbr.bat` on Windows NT or Windows 2000 systems. Click **File > Preferences > Logs > Severity**.

The Severity page of the Log Analyzer Preferences notebook lets you change background colors of log entries that appear in the Logs pane. Use colors to quickly indicate entries with high severity errors and the currently selected entry.

Use colors to indicate severities

Select this checkbox to color-code the background of log entries and folders. When selected, the radio button selections in this page are enabled.

Background color

For each folder and entry in the Logs pane, there is some text describing the entry. To choose a background color for selected log entry that has a severity 1 error, do the following:

1. Select **Selected node**.
2. Select **Severity 1**.
3. Select the color by clicking on the color Swatches. To use the default setting, click **Restore Default**. To see the results of your change, look at the Preview box.
4. Click **Apply** to save that setting.

Repeat similar steps to change the background color for selected log entries that have severity 2 and 3 errors.

To choose a background color for an unselected log entry that has a severity 1 error, do the following:

1. Select **Unselected node**.
2. Select **Severity 1**.
3. Select the color by clicking on the color Swatches. To use the default setting, click **Restore Default**. To see the results of your change, look at the Preview box.
4. Click **Apply** to save that setting.

Repeat similar steps to change the background color for unselected log entries that have severity 2 and 3 errors.

Sample

You can see the result of your color change prior to applying the change. Look at the nodes shown in the Sample box. For color changes of selected nodes, click on the node in the sample box to see the color change.

When you are finished, click **OK** to apply your changes and close the Preferences notebook.

Log Analyzer Preferences notebook -- Analyzer output: To view this page, launch the Log Analyzer, `install_root/bin/waslogbr` on UNIX systems or `install_root\bin\waslogbr.bat` on Windows NT or Windows 2000 systems. Click **File > Preferences > Analyzer output**.

The Log Analyzer Preferences notebook lets you enable line wrap for information that appears in the Analysis pane.

Set line wrap

Select the appropriate checkbox to enable line wrap for the Symptom page that appears in the Analysis pane.

When you are finished, click **OK** to apply your changes and close the Preferences notebook.

Log Analyzer Preferences notebook -- Record: To view this page, launch the Log Analyzer, `install_root/bin/waslogbr` on UNIX systems or `install_root\bin\waslogbr.bat` on Windows NT or Windows 2000 systems. Click **File > Preferences > Record**.

The Record page of the Log Analyzer Preferences notebook lets you set the line wrap mode for the data that is displayed in the Record pane. It also lets you set the time and date format of the timestamp displayed in the Record pane.

Enable line-wrap mode for record pane

Select this checkbox to enable line wrapping for the information that appears in the Record pane.

Date format

When viewing logs, this date format only changes the timestamp format that is displayed in the Record pane. The timestamp format in the log file and the timestamp shown in the Logs pane are not affected by this setting.

Time format

When viewing logs, this time format only changes the timestamp format that is displayed in the Record pane. The timestamp format in the log file and the timestamp shown in the Logs pane are not affected by this setting.

When you are finished, click **OK** to apply your changes and close the Preferences notebook.

Installing the Log Analyzer silently:

To silently install the Log Analyzer, you must set the relevant properties in the `responsefile.txt` file.

1. Add the following option to the `responsefile.txt` file:
 - `-P logAnalyzerBean.active="true"`
2. Set the Performance and Analysis Tools property in the `responsefile.txt` file to true for the Log Analyzer to install. The property in the `responsefile.txt` file is:
 - `-P performanceAndAnalysisToolsBean.active="true"`

Accessing the Log Analyzer help files:

For Windows platforms, you can only access the Log Analyzer help files using the operating system default Internet browser. You cannot access the help files using any Internet browser, even though there are options allowing you to select either Netscape or Internet Explorer and set the location of the browser to display HTML help files.

For UNIX platforms, you can access the help files using any Internet browser, such as Netscape Navigator, by explicitly setting the location of the browser executable in the tool Preferences dialog. The option that seemingly allows you to select either Netscape or Internet Explorer as the browser to display HTML help files is not used.

The following steps describe how to specify the browser on UNIX platforms:

1. In the Log Analyzer tool, select **File -> Preferences**
2. In the Log Analyzer **Preferences** dialog, click **Help** from the **General** folder.
3. Set the path to the Internet browser executable in the **Browser Location** field.

Obtaining help from IBM

If you are not able to resolve a WebSphere Application server problem by following the steps described in the Troubleshooting guide, by looking up error messages in the message reference, or looking for related documentation on the online help, contact IBM Technical Support.

Purchase of WebSphere Application Server entitles you to one year of telephone support under the Passport Advantage program. For details on the Passport Advantage program, visit http://www.lotus.com/services/passport.nsf/WebDocs/Passport_Advantage_Home.

The number for Passport Advantage members to call for WebSphere Application Server support is 1-800-237-5511. Please have the following information available when you call:

- Your Contract or Passport Advantage number.
- Your WebSphere Application Server version and revision level, plus any installed fixes.
- Your operating system name and version.
- Your database type and version.
- Basic topology data: how many machines are running how many application servers, and so on.
- Any error or warning messages related to your problem.

IBM Support has documents that can save you time gathering information needed to resolve this problem. Before opening a PMR, see the IBM Support page.

The Collector Tool

WebSphere Application Server comes with a built-in utility that collects logs and configuration information into one file, the Collector Tool. IBM Technical Support may ask you to run this tool and submit the output.

Tracing

WebSphere Application Server support engineers might ask you to enable tracing on a particular component of the product to diagnose a difficult problem. For details on how to do this, see Enabling trace.

Consulting

For complex issues such as high availability and integration with legacy systems, education, and help in getting started quickly with the WebSphere product family, consider using IBM consulting services. To learn about these services, browse the Web site <http://www-1.ibm.com/services/fullservice.html>.

Diagnosing and fixing problems: Resources for learning

In addition to the information center, there are several Web-based resources for researching and resolving problems related to the WebSphere Application Server.

The WebSphere Application Server support page

The official site for providing tools and sharing knowledge about WebSphere Application Server problems is the WebSphere Application Server support page: <http://www.ibm.com/software/webservers/appserv/support.html>. Among the features it provides are:

- A search field for searching the entire support site for documentation and fixes related to a specific exception, error message, or other problem. Use this search function before contacting IBM Support directly.
- *Hints and Tips*, *Technotes*, and *Solutions* links take you to specific problems and resolutions documented by WebSphere Application Server technical support personnel.
- A link *All fixes, fix packs, and tools* provides free WebSphere Application Server maintenance upgrades and problem determination tools.
 - *fixes* are software patches which address specific WebSphere Application Server defects. Selecting a specific defect from the list in the *All fixes, fix packs, and tools* page takes you to a description of what problem the fix addresses.
 - Fix packs are bundles of multiple fixes, tested together and released as a maintenance upgrade to WebSphere Application Server. If you select a fix pack from this page, you are taken to a page describing the target platform, WebSphere Application Server prerequisite level, and other related information. Selecting the *list defects* link on that page displays a list of the fixes which the fix pack includes. If you intend to install an fix which is part of a fix pack, it is usually better to upgrade to the complete fix pack rather than to just install the individual fix.
 - Tools are free programs that help you analyze the configuration, behavior and performance of your WebSphere Application Server installation.

Accessing WebSphere Application Server support page resources

Some resources on the WebSphere Application Server support page are marked with a key icon. To access these resources, you must supply a user ID and password, or to register if do not already have an ID. When registering, you are asked for your contract number, which is supplied as part of a WebSphere Application Server purchase.

WebSphere Developer Domain

The Developer Domains are IBM-supported sites for enabling developers to learn about IBM software products and how to use them. They contain resources such as articles, tutorials, and links to newsgroups and user groups. You can reach the WebSphere Developer Domain at <http://www7b.software.ibm.com/wsdd/>.

The IBM Support page

IBM Support has documents that can save you time gathering information needed to resolve this problem. Before opening a PMR, see the IBM Support page.

Debugging Service details

Use this page to view and modify the settings used by the Debugging Service.

To view this administrative console page, click **Servers > Application Servers > server > Debugging Service**.

Startup

Specifies whether the server will attempt to start the Debug service when the server starts.

JVM debug port

Specifies the port that the Java virtual machine will listen on for debug connections.

JVM debug arguments

Specifies the debugging argument string used to start the JVM in debug mode.

Debug class filters

Specifies an array of classes to ignore during debugging. When running in step-by-step mode, the debugger will not stop in classes that match a filter entry.

BSF debug port

Specifies the port that the BSF Debug Manager listens on.

BSF logging level

Specifies the level of logging provided by the BSF Debug Manager. The valid range is 0-3, with 3 being the highest level of logging.

Configuration problem settings

Use this page to identify and view problems that exist in the current configuration.

To view this administrative console page, click **Troubleshooting > Configuration Problems** in the console navigation tree.

Click a configuration problem in the Configuration Problems table to see more information about the problem.

Configuration document validation

Use these fields to specify the level of validation to perform on configuration documents.

Cross validation

Enables cross validation of configuration documents.

Enabling cross validation enables comparison of configuration documents for conflicting settings.

Configuration Problems

Displays current configuration problem error messages. Click a message for detailed information about the problem.

Scope

Sorts the configuration problem list by the configuration file where each error occurs. Click a message for detailed information about the problem.

Fields that explain each configuration problem:

The following informational fields appear when you click a configuration problem message.

Message

Displays the message returned from the validator.

Explanation

A brief explanation of the problem.

User action

Specifies the recommended action to correct the problem.

Target Object

Identifies the configuration object where the validation error occurred.

Severity

Indicates the severity of the configuration error, with 1 being a severe error. Severity decreases as the severity descriptor increases.

Local URI

Specifies the local URI of the configuration file where the error occurred.

Full URI

Specifies the full URI of the configuration file where the error occurred.

Validator classname

The classname of the validator reporting the problem.

Chapter 3. Troubleshooting by task: What are you trying to do?

This section provides troubleshooting information based on the task you were trying to accomplish when the problem occurred. To find more information about your problem, select a task category from the list below.

If you do not see a task that resembles yours, or if the information provided does not solve your problem, contact IBM support for further assistance.

Troubleshooting installation problems

Select the problem you are having with the WebSphere Application Server installation:

- “Installation either completes with errors or warnings, or hangs” on page 46.
- The installation process completes, but “The application server or deployment manager does not start or starts with errors” on page 49.
- The “Installation completes, but Sample applications do not work” on page 50.
- **5.1+** I see a “Garbled install panel when trying to install a non-English version of the product” on page 52.
- **5.1+** There are **5.1+** “Error messages issued during installation”
- The “Installation completes but the administrative console does not start” on page 47
- **5.1+** A **5.1+** “Fixpack fails to install” on page 53

If you installed WebSphere embedded messaging and are having problems uninstalling or reinstalling WebSphere Application Server, see Reinstalling WebSphere Application Server with Embedded Messaging.

If you do not see a problem that resembles yours, or if the information provided does not solve your problem, see Troubleshooting the Installation. If that article does not provide you with a resolution to your problem, see “Obtaining help from IBM” on page 39.

For current information available from IBM Support on known problems and their resolution, see the IBM Support page.

IBM Support has documents that can save you time gathering information needed to resolve this problem. Before opening a PMR, see the IBM Support page.

Error messages issued during installation

What kind of problem are you having?

- Error: /usr/opt/ibm/gskta/bin/gsk7ikm: not found.
- Error: wempsdeletebroker.exe - Unable To Locate DLL

If you do not see a problem that resembles yours, or if the information provided does not solve your problem, contact IBM support for further assistance.

Error: /usr/opt/ibm/gskta/bin/gsk7ikm: not found

This error indicates that the x1C.rte 6.0 runtime code has not been installed. You must install the x1C.rte 6.0 runtime code before you install Global Security Kit 7 (GSKit7).

To correct this problem, download the runtime code from the AIX Support site at <https://techsupport.services.ibm.com/server/aix.fdc>. If you have AIX 5.2, you can install the x1C.rte 6.0 runtime code from the AIX 5.2 CD.

Error: wempsdeletebroker.exe - Unable To Locate DLL. The dynamic link library MSVCP60.dll could not be found in the specified path...

The embedded messaging feature requires a DLL file (msvc60.dll) on Windows 2000 Server platforms. This error indicates that msvc60.dll could not be found on your system. The prerequisite checker in the installer program does not check for this DLL file on the Windows 2000 Server platform.

To correct this problem, download the msvc60.dll file from the Microsoft Web site.

If you select the Windows 2000 Support Tools during Windows 2000 Server installation, the installation program for Windows 2000 Server installs the DLL file in the C:\Program Files\Support Tools directory.

This DLL file is already installed on Windows 2000 Advanced Server and other Windows platforms that are supported. On Windows 2000 Advanced Server, the DLL file is installed in the C:\WINNT\system32 directory.

For a complete list of installation prerequisites, see <http://www.ibm.com/software/webservers/appserv/doc/latest/prereq.html>.

Installation either completes with errors or warnings, or hangs

Errors while installing the product

If the WebSphere Application Server installation program indicates that errors were encountered while installing the product:

- Browse all of the log files in `install_dir/logs/` for clues. Pay particular attention to the main installation log file, `log.txt`.
- Check the command prompt from which the installation panel was launched for error messages.
- Look up any error or warning messages in the message reference table by selecting the "Reference" view in the information center navigation and expanding the "Messages" heading.
- Ensure that you have installed the latest fixes and fix packs.
For instructions, see [Installing interim fixes and fix packs](#).
- Review [Troubleshooting the installation](#).

Note: **5.1+** When you select the "migration installation" option the installation may take a long time to complete - several hours, depending on the number of applications on the older version - and appear to hang, even though it is running correctly.

Error message MSGS0601I occurs during installation of WebSphere Application Server

The series of messages that follow can occur in the SystemOut.log file when you install WebSphere Application Server on all platforms except Windows platforms. These messages indicate that WebSphere Embedded Messaging has not been installed

```
[date time CDT] 60cf2faf JMSRegistrati A MSGS0601I: WebSphere Embedded Messaging
has not been installed
[date time CDT] 60cf2faf JMSEmbeddedPr A MSGS0050I: Starting the Queue Manager
[date time CDT] 60cf2faf JMSEmbeddedPr E MSGS0058E: Unable to start the JMS Server
as WebSphere Embedded Messaging has not been installed
[date time CDT] 60cf2faf JMSService E MSGS0001E: Starting the JMS Server failed
with exception: java.lang.Exception: MSGS0058E: Unable to start the JMS Server as
WebSphere Embedded Messaging has not been installed
```

The following associated messages are added to the mq_install.log file:

```
wmsetup: date time Checking if user "root" is in group "mqm"
wmsetup: date time
wmsetup: date time ERROR: Group "mqm" exists, id "root" is defined to the group but
does not
wmsetup: date time have the group in its current set of effective groups.
wmsetup: date time Current group membership is :
wmsetup: date time uid=0(root) gid=0(system) groups=2(bin)
wmsetup: date time You may need to login.
wmsetup: date time
wmsetup: date time ... RC 4 from Check_root
wmsetup: date time ERROR: User "root" not in group "mqm"
wmsetup: date time Check_root mqbrkrs
wmsetup: date time Checking for group "mqbrkrs" ...
wmsetup: date time lsgroup returned "mqbrkrs id=203 admin=false users=root adms=root
registry=files " RC=0
wmsetup: date time Checking if user "root" is in group "mqbrkrs"
wmsetup: date time
wmsetup: date time ERROR: Group "mqbrkrs" exists, id "root" is defined to the group
but does not
wmsetup: date time have the group in its current set of effective groups.
wmsetup: date time Current group membership is :
wmsetup: date time uid=0(root) gid=0(system) groups=2(bin)
wmsetup: date time You may need to login.
wmsetup: date time
wmsetup: date time ... RC 4 from Check_root
wmsetup: date time ERROR: User "root" not in group "mqbrkrs"
```

To prevent this problem, use the local machine to run WebSphere Application Server commands (for example, install, addnode, and startnode). If you must logon remotely, use ssh instead of telnet.

To correct this problem, reinstall the embedded messaging feature. Issue the install command from the local machine, or use ssh instead of telnet

If you do not see a problem that resembles yours, or if the information provided does not solve your problem, see "Obtaining help from IBM" on page 39.

Installation completes but the administrative console does not start

What kind of problem are you having?

- An "Internal Server Error", "Page cannot be found", 404, or similar error occurs trying to view the administrative console.

- An "Unable to process login. Check user ID and password and try again. " error occurs when trying to access console page.
- The directory paths in the console contain strange characters.

If you can bring up the browser page, but the console behavior is inconsistent, error prone, or unresponsive, try upgrading your browser. Older browsers might not support all the features of the administrative console.

If none of these steps solves the problem, see if the problem has been identified and documented by using the links in "Diagnosing and fixing problems: Resources for learning" on page 40. If you do not see a problem that resembles yours, or if the information provided does not solve your problem, see "Obtaining help from IBM" on page 39.

An "Internal Server Error", "Page cannot be found", 404, or similar error occurs trying to view the administrative console

Here are some steps to try if you are unable to view the administrative console:

- Verify that the application server that supports the administrative console is up and running. For a base configuration, the administrative console is deployed by default on server1. Before viewing the administrative console, you must take one of the following actions:
 - Run the **startServer server1** command for the Windows platform or **./startServer.sh server1** command for a UNIX platform from a command prompt in the *install_dir\bin* directory
 - Click the **Start application server** link from the first steps panel
 - Start WebSphere Application Server as a service or from the Start menu, if you are using a Windows operating system.
- If you are using the deployment manager for a multi-node configuration, run the **startManager** command from the *Network_Deployment_install_dir\bin* directory.
- View the SystemOut.log file for the application server or the deployment manager to verify that the server supporting the administrative console has started.
- Check the URL you use to view the console. By default, it is `http://server_name:9090/admin`.
- If you are browsing the console from a remote machine, try to eliminate connection, address and firewall issues by pinging the server machine from a command prompt, using the server name in the URL.
- If you have never been able to access the administrative console see Troubleshooting the installation.

An "Unable to process login. Check user ID and password and try again. " error occurs when trying to access console page

This error indicates that security is enabled for WebSphere Application Server, and that the user ID or password supplied is either invalid or not authorized to access the console.

To access the console:

- If you are the administrator, use the ID defined as the security administrative ID. This ID is stored in the WebSphere Application Server file security.xml.
- If you are not the administrator, ask the administrator to enable your ID for the administrative console.

The directory paths in the console contain strange characters

Directory paths used for class paths or resources specified in the Application Assembly Tool (AAT), configuration files, or elsewhere that contain strange characters when they are viewed in the administrative console might result from the Java run time interpreting a backslash (\) as a control character.

To resolve, modify Windows-style class paths by replacing occurrences of single back slashes to two. For example, change `c:\MyFiles\MyJsp.jsp` to `c:\\MyFiles\\MyJsp.jsp`.

The application server or deployment manager does not start or starts with errors

If the WebSphere Application Server installation program completes successfully, but the Application Server does not start, or starts with errors:

- Browse the application server log files, which are located by default in `install_dir\logs\server_name\SystemErr.log` and `SystemOut.log` for clues. Several applications deployed on an application server or node can take time to start. Browse the `SystemOut.log` periodically and look at the most recent updates to see if the server is still starting up.
- On UNIX platforms, the `tail -f installation_path/logs/SystemOut.log` is a convenient way to watch the progress of the server.
- Look for any errors or warnings relating to specific resources with the module, such as Web modules, enterprise beans and messaging resources. If you find any, examine the application server configuration file for the configuration settings of that resource. For example, in a base or non-distributed configuration on Windows systems, browse `install_dir\config\cells\BaseApplicationServerCell\nodes\host_name\servers\server_name\se` and examine the xml tags for the properties of that resource. Change its **initialState** value from `START` to `STOP`. Then restart the server to see if this component causes the problem.
- Look up any error or warning messages in the message reference table by clicking the **Reference** view of the information center navigation and expanding **Messages** in the navigation tree.
- If the application server is part of a network deployment or multiple server configuration,
 - Verify that you followed the steps for adding the application server to the configuration.
 - Verify that the configuration is synchronized between the deployment manager and the node. If auto synchronization is running, wait until the synchronization completes. If you are using manual synchronization, request a synchronization to each node in the cluster.
 - Before starting an application server:
 1. Start the deployment manager process by typing either `installation_root/bin/startManager.sh` or `installation_root\bin\startManager.bat`.
 2. Complete the one-time step of federating the node on which the application server is running to the deployment manager. This step has to be done, even if there is only one node, and it is the same physical server as the one on which the deployment manager is running. Run the `addnode nodename` utility in the `installation_root/bin` directory of the application server host.

3. Start the node manager process on the nodes hosting the application servers you want to run by typing either `installation_root/bin/startNode.sh` or `installation_root\bin\startNode.bat`.
- Verify that the logical name that you specified to appear on the console for your application server does not contain invalid characters like: - / \ : * ? " < > and leading or trailing spaces.
 - If you are unable to start the deployment manager after an otherwise successful installation:
 - Look in the `installation_root/dmgr/logs/SystemErr.log` and `SystemOut.log` files for messages.
 - Check the location of the product installation. This product is not stand-alone, and depends upon some files that are already installed as part of the base. Look for the Network Deployment product under the WebSphere Application Server root directory of a node with the base product, at the same level as the base product.
For example, if the base product is in the `/usr/WebSphere/AppServer` directory, the network deployment product is installed into a directory like `/usr/WebSphere/NetworkDeployment`. Installing the product apart from the base product can result in an error running the `startManager` command similar to: `WSVR0102E: An error occurred stopping, null [class com.ibm.ws.cache.ServerCache]`.
 - If you are using IBM Cloudscape and receive an `ERROR XSDB6: Another instance of Cloudscape may have already booted the database databaseName. error starting the application server`, consult this topic for more information.
 - When using a non-root user ID to run application servers, verify that the non-root user has write access to the `WebSphereRoot/AppServer/temp` directory
 - When using a non-root user ID to run application servers, verify that the JVM has write access to `WebSphereRoot/config/plugin-cfg.xml`

If you do not see a problem that resembles yours, or if the information provided does not solve your problem, see "Obtaining help from IBM" on page 39.

Installation completes, but Sample applications do not work

If the WebSphere Application Server installation program completes successfully, but the Sample applications do not run:

- Browse the application server log files `install_dir\logs\server_name\SystemErr.log` and `SystemOut.log` for clues.
- "Viewing the JVM logs" on page 6 of the hosting application server for clues, after attempting to run a Sample application,
- Look up any error or warning messages in the message table by clicking on the **Reference** view of the information center navigation and expanding the **Messages** heading.
- Verify any security-related problems. The error message "MSGSO508E: The JMS Server security service was unable to authenticate userid" might display in the `SystemOut.log` file when starting an application server.
- **5.1+** You may see the error "com.ibm.mq.jms.BrokerCommandFailedException: Broker command failed: 3008 Reason code 3008" and related errors in the `System.out` log file after starting the application server which contains the sample applications. This can occur if the userid of the administrative console user is more than 12 characters. The full message will be similar to the following:
[9/9/03 9:53:41:234 CST] d05dcb1 ConnectionEve A J2CA0056I: The Connection Manager received a fatal connection error from the Resource

Adaptor for resource Sample/JMS/TCF. The exception which was received is com.ibm.mq.jms.BrokerCommandFailedException: Broker command failed: 3008 Reason code 3008 [9/9/03 9:53:41:281 CST] d05dcb1 MDBListenerIm W WMSG0019E: Unable to start MDB Listener PSSampleMDB, JMSDestination Sample/JMS/listen : com.ibm.mq.jms.BrokerCommandFailedException: Broker command failed: 3008 Reason code 3008

If this appears to be the problem, try logging out of the administrative console, then log on again with a shorter ID (unless security is enabled, you may enter any alphanumeric value as the user ID). You can also try starting the server from the command line using the command `startserver servername` or `startserver.sh servername`.

- Review Troubleshooting the installation for more information.

If you do not see a problem that resembles yours, or if the information provided does not solve your problem, check to see if your problem has been identified. See *Diagnosing and fixing problems: Resources for learning for information on getting the latest updates*. If your problem has not been reported, see “Obtaining help from IBM” on page 39 for further assistance.

Reinstalling WebSphere Application Server with embedded messaging

If WebSphere Application Server embedded messaging is installed, some components of the product might not be uninstalled properly when the product is uninstalled, which can cause problems during reinstallation.

Before you begin

Before you uninstall the product, remove messaging objects such as queue connection factories and queue destinations from the configuration, using the administrative console page or the `wsadmin` command tool

If these objects are not removed prior to an uninstall, the messaging component detects that these objects still exist and, by design, will not uninstall itself. The file `mq_uninstall.log` will show messages similar to these:

```
Publish And Subscribe configuration exists>> - Not uninstalling Pub Sub
MQ Server configuration exists>> - not uninstalling MQ and MA88
```

Even if you see these messages, it might be possible to reinstall the product, including embedded messaging. The installation detects that the messaging component is already installed, and writes error messages to indicate this condition. It is recommended that you proceed with the installation. If the installation is successful, recreate messaging objects in the administrative console using different names for messaging objects from the prior installation. Further actions, such as manually uninstalling embedded messaging in the Windows control panel, or editing the Windows registry, are not recommended unless you tried a reinstallation and it cannot complete, or does not create a usable WebSphere Application Server.

Reinstalling when message components do not unistall completely

Even if all Java Messaging Service (JMS) resources, such as queue connection factories and queue destinations, are removed, or none are created, the messaging component still might not uninstall completely, which causes the reinstall of the

product to fail. This failure is indicated by the following message in the mq_uninstall.log file: Return code from Publish And Subscribe uninstall was ERROR_INSTALL_FAILURE (1603)

The messaging component may be still resident and usable, and the recommended resolution is to first try reinstalling WebSphere Application Server with messaging, in the same location as before, ignoring messages indicating that messaging is already installed, and to proceed normally unless you encounter problems.

Note:

After installing the WebSphere Application Server product with the embedded messaging feature, you can install the WebSphere MQ product.

For instructions on installing a JMS provider, see *Installing and configuring a JMS provider*

Uninstalling embedded messaging

On a Windows platform, try using the **Add/Remove Programs** application in the Windows Control Panel to remove IBM WebSphere MQ and IBM WebSphere EMPS. This action ensures that the programs are removed properly.

If the automated removal does not work, follow these steps to manually remove the programs:

1. Delete the registry keys for the product by removing the key HKLM\SOFTWARE\IBM\WebSphereEmbeddedMessagingPublishAndSubscribe.
2. Delete the product files.
3. Delete the product Microsoft Software Installer (MSI) record. Use Microsoft's MSI Cleanup Utility, available from Microsoft's Web site as msicuu.exe:
 - a. Click the downloaded .exe file to install it. Once the program is installed, it appears on the program menu. When started, the program lists all the products that it knows about.
 - b. Click **IBM WebSphere EMPS >Remove** to remove its MSI record.
4. Reboot your system.

You are now ready to reinstall WebSphere Application Server with embedded messaging.

For instructions on how to uninstall WebSphere Application Server with embedded messaging on other platforms, see *Uninstalling the product*, and follow the appropriate link for directions on how to uninstall WebSphere Application Server on your platform.

Garbled install panel when trying to install a non-English version of the product

When you try to install WebSphere Application Server Version 5.1 using a double byte character set language (for example, Korean, Japanese, Simplified Chinese, Traditional Chinese), you might find the install panel illegible. The garbled panel prevents you from installing the product correctly. This problem occurs primarily on Red Hat Linux.

To correct this problem, add the true type font path to system fonts path. On Red Hat Linux, execute the following command while logged on as **root**: `chkfontpath -a /usr/X11R6/lib/X11/fonts/TrueType`

Fixpack fails to install

What kind of problem are you having when you try to install a fixpack

- "No fixes were found in the specified directory" dialog when attempting to execute the UpdateWizard.
- Failed installation with "Failed to perform extraction" error message in installation log file.

If none of these problems match yours, or these do not resolve your problem, view the log file created by the fix pack installer, which can be found in the WebSphere Application Server installation directory in the file `/logs/update/[date_nnnnnn_wasversion_fixpackversion].log`. Also, review the installation instructions as described in the readme file provided in the `update/docs` subdirectory of the fix pack and on the download web site. If the information provided does not solve your problem, see [Troubleshooting the Installation](#). If that does not provide you with a resolution to your problem, contact IBM support for further assistance

"No fixes were found in the specified directory" dialog when attempting to execute the UpdateWizard

This problem can occur if you have extracted the fix pack outside of the WebSphere Application Server directory structure. If this is the case, try extracting the fix pack directly into the Websphere Application Server install root/`update` directory, as described in the readme files provided online and with the fix pack.

Failed installation with "Failed to perform extraction" error message in installation log file

This problem can occur if there are Java processes running at the same time as the update. Try the installation again after stopping all Java processes, as described in the readme files provided online and with the fix pack.

Troubleshooting migration problems

To resolve problems encountered in migrating an application from an older version of WebSphere Application Server to version 5, determine whether your problems occur using the pre-upgrade tool or the post-upgrade tool.

- Errors using the WASPreUpgrade tool.
- Errors using the WASPostUpgrade tool.
- For other kinds of migration problems, such as an application imported from another version of WebSphere Application Server that will not start, look up the related problem under Chapter 3, "Troubleshooting by task: What are you trying to do?," on page 45.

If none of these steps fixes your problem,

- For general tips on migration problems, see [Troubleshooting the migration utility](#).
- Review the Migration topic and its subtopics, which address migrating specific kinds of components.

- Check to see if the problem has been identified and documented by looking at the available online support (hints and tips, technotes, and fixes).
- If you do not find your problem listed, contact IBM support.

Errors using the WASPreUpgrade tool

What kind of error are you encountering?

- "Not found" or "no such file or directory" message
- **5.1+** DB2 JDBC driver and DB2 JDBC driver (XA) cannot be found in the drop down list of supported JDBC providers in the administrative console
- MIGR0108E: The specified WebSphere directory does not contain WebSphere version that can be upgraded.
- MIGR0125E: The call to XMLConfig was not successful

Errors using the WASPostUpgrade tool

What kind of error are you encountering?

- "Not found" or "no such file or directory" message
- MIGR0102E: Invalid Command Line. MIGR0105E: You must specify the primary node name.
- MIGR0108E: The specified WebSphere directory does not contain WebSphere version that can be upgraded
- MIGR0116E: The backup directory [migration_backup_directory] does not contain the required xml data file.
- MIGR0253E: The backup directory *migration_backup_directory* does not exist

"Not found" or "no such file or directory" message is returned from the WASPostUpgrade or WASPreUpgrade tool

This problem can occur if you are trying to run the WASPostUpgrade tool or the WASPreUpgrade tool from a directory other than *install_dir\bin*. Verify that the WASPostUpgrade or WASPreUpgrade .bat or .sh files reside in the *install_dir\bin* directory, and launch either file from that location.

DB2 JDBC driver and DB2 JDBC driver (XA) cannot be found in the drop down list of supported JDBC providers in the administrative console **5.1+**

Starting in WebSphere Application Server, Version 5.1, the administrative console will no longer display deprecated JDBC provider names. The new JDBC provider names used in the administrative console are more descriptive and less confusing. The new providers will differ only by name from the deprecated ones.

The deprecated names will continue to exist in the *jdbc-resource-provider-templates.xml* file for migration reasons (for example, for existing JACL scripts). However, you are encouraged to use the new JDBC provider names in your JACL scripts.

MIGR0102E: Invalid Command Line. MIGR0105E: You must specify the primary node name.

The most likely cause of this error is that Version 4.0.x of the WebSphere Application Server is installed, and the WASPostUpgrade tool was not run from the *bin* directory of the WebSphere Application Server Version 5 installation root.

If the following messages appear when the WASPostUpgrade tool is run, the Version 4.0 migration tool was run:

- IBM WebSphere Application Server, Release 4.0
- MIGR0002I: java com.ibm.websphere.migration.postupgrade.WASPostUpgrade
 <backupDirectoryName>
 -adminNodeName <primary node name>
 [-nameServiceHost <hostName> [-nameServicePort <portNumber>]]
 [-substitute <"key1=value1[;key2=value2;...]">]
 In input xml file, the key(s) should appear as \$key\$ for substitution."
 [-import <xml data file>]
 [-traceString <trace specification> [-traceFile <filename>]]}"

To correct this problem, run the WASPostUpgrade command from the bin directory of the WebSphere Application Server Version 5 installation root.

MIGR0108E: The specified WebSphere directory does not contain WebSphere version that can be upgraded.

Several possible reasons for this error exist:

- If WebSphere Application Server version 4.0.x is installed, you might not have run the WASPreUpgrade tool from the bin directory of the Version 5 installation root.
 1. Look for the following message to display when the WASPreUpgrade tool runs: IBM WebSphere Application Server, Release 4.0. This message indicates that you are running the WebSphere Application Server Release 4.0 migration utility, not the version 5 migration utility.
 2. Alter your environment path or change the current directory so that you can launch the WebSphere Application Server Version 5 WASPreUpgrade program.
- WebSphere Application Server version 5 might be installed in the same root directory as the earlier version.
 1. Browse the directory structure of the older version to see whether it contains new Version 5.0 directories, such as WebSphere\AppServer\logs\ffdc.
 2. Uninstall all versions of WebSphere Application Server.
 3. Reinstall and reconfigure the older version.
 4. Install WebSphere Application Server Version 5 in a different root directory than the previous one.
- An invalid directory might have been specified when launching the WASPostUpgrade tool, or the WASPreUpgrade tool has not been run.

MIGR0116E: The backup directory [migration_backup_directory] does not contain the required xml data file. error returned from the WASPostUpgrade tool.

If Version 4.0.x of WebSphere Application Server is installed, you might not have run the WASPostUpgrade tool from the bin directory of the Version 5.0 installation root.

- If the message IBM WebSphere Application Server, Release 4.0 displays when launching the WASPostUpgrade program, then the wrong version of the program is executing.
- Run the WASPostUpgrade command from the bin directory of the Version 5.0 installation root.

MIGR0125E: The call to XMLConfig was not successful error when trying to run WASPreUpgrade

The WASPreUpgrade tool saves selected files from WebSphere Application Server Version 3.5.x and Version 4.x bin directories. It also exports the existing application server configuration from the repository.

If you are migrating from WebSphere Application Server Version 4.0.x Advanced Edition, the WASPreUpgrade command calls the **XMLConfig** command to export the existing application server configuration from the repository. If errors occur during this part of the WASPreUpgrade command, you might have to apply fixes to the installation to successfully complete the export step. Contact IBM Support for the latest applicable fixes.

MIGR0253E: The backup directory migration_backup_directory does not exist. error returned from the WASPostUpgrade tool

Several possible reasons for this error exist:

- The WASPreUpgrade tool was not run prior to the WASPostUpgrade tool.
 1. Check to see if the backup directory specified in the error message exists.
 2. If not, run the WASPreUpgrade .bat or .sh file.
 3. Retry the WASPostUpgrade tool.
- An invalid backup directory might be specified. For example, the directory might have been a subdirectory of the V3.5.x or V4.0.x tree, which was deleted after the WASPreUpgrade tool was run and the older version of the product was uninstalled, but before the WASPostUpgrade tool was run.
 1. Determine if the full directory structure specified in the error message exists.
 2. If possible, rerun the WASPreUpgrade tool, specifying the correct full migration backup directory.
 3. If the backup directory does not exist, and the older version it came from is gone, rebuild the older version from a backup repository or XML configuration file.
 4. Rerun the WASPreUpgrade tool.

For current information available from IBM Support on known problems and their resolution, see the IBM Support page.

IBM Support has documents that can save you time gathering information needed to resolve this problem. Before opening a PMR, see the IBM Support page.

Troubleshooting code deployment and installation problems

Select the problem you are having with deploying or installing developed code for WebSphere Application Server:

- Errors deploying enterprise beans
- Errors or problems deploying, installing, or promoting applications and databases
- Installation completes, but sample applications do not work

If you do not see a problem that resembles yours, or if the information provided does not solve your problem, see “Obtaining help from IBM” on page 39.

For current information available from IBM Support on known problems and their resolution, see the IBM Support page.

IBM Support has documents that can save you time gathering information needed to resolve this problem. Before opening a PMR, see the IBM Support page.

Errors deploying enterprise beans

What kind of error are you seeing?

- ConnectionFac E J2CA0102E: Invalid EJB component: Cannot use an EJB module with version 1.1 using The Relational Resource Adapter
- WSVR0040E: addEjbModule failed for MyApp-EJB.jar [class com.ibm.ws.runtime.component.DeployedModuleImpl]
java.lang.NoClassDefFoundError: com/ibm/ejs/ras/Tr
- Exception: Class must implement the inherited abstract method AnnuityHolder20BeanCacheEntry_25ce2e23.setACustEmail(String)

If neither of these errors matches the ones you are seeing:

- Browse the application server log files for the server containing the application for clues.
- Look up any error or warning messages in the message table.
- If the application server is part of a Network Deployment or a multiple-server configuration, verify that you followed the steps for adding the application server to the configuration.
- If the problems began after WebSphere Application Server security was enabled, view the topic Errors and access problems after enabling security, in the information center.

If you do not see a problem that resembles yours, or if the information provided does not solve your problem, see “Obtaining help from IBM” on page 39.

**WSVR0040E: addEjbModule failed for MyApp-EJB.jar [class com.ibm.ws.runtime.component.DeployedModuleImpl]
java.lang.NoClassDefFoundError: com/ibm/ejs/ras/Tr**

Possible causes of this error include:

1. Security permissions are not given for the application in the *installation_root*\properties\server.policy file.

Check the server.policy file to see if the security permissions are given for the application.

Give permissions for the application in the server.policy file. For example:

```
//purchaseOrder permission
grant codeBase "file:${was.install.root}/installedApps/myApp.ear/-"{
  permission java.security.AllPermission;
};
```

where **myApp.ear** is the application name.

2. A **was.policy** file does not exist in the application/META-INF directory, while deploying the application to the server.
 - a. Check for syntax errors in the was.policy file in the application\META-INF directory and make sure the application ear file name is given correctly.
 - b. Create a was.policy file in the EAR of the application containing the problem enterprise bean, under the application\META-INF directory with the following contents:

```
// WebSphere Application Server Security Policy for the application you are running
grant codeBase "file:myApp.ear"
{
  permission java.security.AllPermission;
};
.
```

Exception: Class must implement the inherited abstract method AnnuityHolder20BeanCacheEntry_25ce2e23.setACustEmail(String)

The following error might appear when you use the Application Server Toolkit (ASTK) to regenerate deployment code.

Description:Class must implement the inherited abstract method AnnuityHolder20BeanCacheEntry_25ce2e23.
On Resource:AnnuityHolder20BeanCacheEntryImpl_25ce2e23.java
In Folder:Annuity20EJB/ejbModule/com/ibm/wssvt/tc/pli/ejb/websphere_deploy/DB2UDBNT_V72_1

This error occurs because when you regenerate the deployment code, the old code is not deleted.

To correct this problem delete the folder
com.ibm.wssvt.tc.pli.ejb.websphere_deploy.DB2UDBNT_V72_1

Errors or problems deploying, installing, or promoting applications

What kind of problem are you having?

- I installed my application using the wsadmin tool, but the application does not display under Applications-Manage Applications.
- I get a java.lang.RuntimeException: Failed_saving_bytes_to_wor_ERROR_ in the assembly tool, administrative console or wsadmin tool
- I get a WASX7015E error running the wsadmin command \$AdminApp installInteractive or \$AdminApp install..
- A data definition language (DDL) generated by the Application Assembly Tool (AAT) throws an SQL error on the target platform.
- The error ADMA0004E: Validation error in task Specifying the Default Datasource for EJB 1.x Modules occurs when installing application in administrative console or the wsadmin tool.
- The error No valid target is specified in ObjectName *object* for module *module* occurs from installation.
- The addNode -includeapps option does not appear to upload all applications to the deployment manager.
- "Timeout!!!" error displays when attempting to install an enterprise application in the administrative console.
- During application installation, the call to EJB deploy throws an exception
- While uploading documents, addNode -includeapps fails with an OutOfMemoryError exception

Check the following first:

- Verify that the logical name that you have specified to appear on the console for your application, enterprise bean module or other resource does not contain invalid characters such as these: - / \ : * ? " < > |.
- If the application was installed using the wsadmin \$AdminApp install command with the -local flag, restart the server or rerun the command without the -local flag.

If you do not see a problem that resembles yours, or if the information provided does not solve your problem, check to see if the problem is identified and documented by looking at available online support including hints and tips, technotes, and fixes. If the problem has not been identified, see "Obtaining help from IBM" on page 39.

I installed my application using the wsadmin tool, but the application does not display under Applications-Manage Applications

The application might be installed but you have not saved the configuration:

1. Verify that the application subdirectory is located under the *install_dir/installedApps* directory.
2. Run the `$AdminApp list` command and verify that the application is not among those displayed.
 - In the bin directory, run the `wsadmin.bat` or `wsadmin.sh` command.
 - From the `wsadmin` prompt, enter `$AdminApp list` and verify that the problem application is not among the items that display.
3. Reinstall your application using the `wsadmin` tool. Run the `$AdminConfigsave` command in the `wsadmin` tool before exiting.

I get a java.lang.RuntimeException: Failed_saving_bytes_to_wor_ERROR_ error in the assembly tool, administrative console or the wsadmin tool.

If you see this error when attempting to generate deployed code in the Application Assembly Tool (AAT), installing an application or module in the administrative console, or using the `wsadmin` tool to install an application or module, the file path length of the temporary system file might be exceeded. This situation is typically an issue only on Windows platforms.

To verify this problem, check the `TEMP` and `TMP` environment variables for your system. Long environment variables add path length to the file names accessed by the `EJBDeploy` tool.

To resolve the problem:

1. Stop all WebSphere Application Server processes and close all DOS prompts.
2. Set the `TMP` and `TEMP` environment variables to something short, for example `C:\TMP` and `C:\TEMP`.
3. Reinstall the application.

Otherwise, try rebooting and redeploying or reinstalling the application.

WASX7015E error running wsadmin command "\$AdminApp installInteractive" or "\$AdminApp install"

This problem has two possible causes:

- If the full text of the error is similar to:

```
WASX7015E: Exception running command:
"$AdminApp installInteractive C:/Documents and Settings/
myUserName/Desktop/MyApp/myapp.ear"
;
exception information: com.ibm.bsf.BSFException: error while
eval'ing Jacl expression: can't find method
"installInteractive" with 3 argument(s) for class
"com.ibm.ws.scripting.AdminAppClient"
```

The file and path name are incorrectly specified. In this case, since the path included spaces, it was interpreted as multiple parameters by the `wsadmin` program.

Enter the path of the `.ear` file correctly. In this case, by enclosing it in double quotes:

```
$AdminApp installInteractive
"C:\Documents and Settings\myUserName\Desktop\MyApps\myapp.ear"
```

- If the full text of the error is similar to:

```
WASX7015E: Exception running command: "$AdminApp installInteractive c:\MyApps\myapp.ear ";
exception information: com.ibm.ws.scripting.ScriptingException:
WASX7115E: Cannot read input file
"c:\WebSphere\AppServer\bin\MyAppsmyapp.ear"
```

The application path is incorrectly specified. In this case, you must use UNIX-style "forward-slash" (/) separators in the path.

Data definition language (DDL) generated by Application Assembly Tool (AAT) throws SQL error on target platform

If you receive SQL errors in attempting to execute data definition language (DDL) statements generated by the Application Assembly Tool (AAT) on a different platform, for example if you are deploying a container-managed persistence (CMP) enterprise bean designed on Windows onto a UNIX operating system server, try the following actions:

- Browse the DDL statements for dependencies on specific user IDs and passwords, and correct as necessary.
- Browse the DDL statements for dependencies on specific server names, and correct as necessary.
- Refer to the message reference of the vendor for causes and suggested actions regarding specific SQL errors. For IBM DB2, you can view the message references online at <http://www.ibm.com/cgi-bin/db2www/data/db2/udb/winoss2unix/support/index.d2w/report>.

If you receive the following error after executing a DDL file created on Windows operating system on a UNIX platform, the problem might come from a difference in file formats:

```
SQL0104N  An unexpected token "CREATE TABLE AGENT (COMM DOUBLE, PERCENT DOUBLE, P"
was found following "      ".  Expected tokens may include: " ".  SQLSTATE=42601
```

To resolve this problem:

- For UNIX platforms other than Linux, edit the DDL in the vi editor, removing the Ctl-M character at the beginning of each line.
- For Linux systems, regenerate the deployment code for the application EAR file on a Linux platform.

Error message ADMA0004E: Validation error in task Specifying the Default Datasource for EJB 1.x Modules returned when installing application using the administrative console or the wsadmin tool

If you see the following error when trying to install an application through the administrative console or the wsadmin command prompt:

```
AppDeploymentException: [ADMA0014E: Validation failed.
ADMA0004E: Validation error in task Specifying the Default
Datasource for EJB 1.x Modules JNDI name is not
specified for module beanameBean Jar with URI filename.jar,
META-INF/ejb-jar.xml. You have not specified the
data source for each CMP bean belonging to this module.
Either specify the data source for each CMP beans or
specify the default data source for the entire module.]
```

one possible cause is that in WebSphere Application Server Version 4.0, it was mandatory to have a data source defined for each CMP bean in each JAR. In Version 5, you can specify either a data source for a container-managed persistence (CMP) bean or a default data source for all CMP beans in the JAR file. Thus during installation interaction, such as the installation wizard in the administrative

console, the data source fields are optional, but the validation performed at the end of the installation checks to see that at least one data source is specified.

To correct this problem, step through the installation again, and specify either a default data source or a data source for each CMP-type enterprise bean. If you are using the wsadmin tool, either:

- Use the **\$AdminApp installInteractive filename** command to receive prompts for data sources during installation, or to provide them in a response file.
- Specify data sources as an option to the **\$AdminApp install** command. For details on the syntax, see Installing applications with the wsadmin tool.

Error message No valid target is specified in ObjectName anObject for module module_name from installation

This error can occur in a clustered environment if the target cell, node, server or cluster into which the application is to be installed is incorrectly specified. For example, it can occur if the target is misspelled.

To correct this problem, check the target names against the actual WebSphere Application Server topology and reenter them with corrections.

addNode -includeapps option does not appear to upload all applications to the Deployment Manager

This error can occur when some or all applications on the target node are already uploaded to the deployment manager. The addNode program detects which applications are already installed and does not upload them again.

Use the administrative console to browse the deployment manager configuration and see the applications that are already installed.

"Timeout!!!" error displays when attempting to install an enterprise application in the administrative console

This error can occur if you attempt to install an enterprise application that has not been deployed.

To correct this problem:

- Open the *file_name*.ear file Application Assembly Tool (AAT) and then click **File ->Generate code for deployment...** This action creates a file with a name like *Deployed_file_name*.ear.
- In the administrative console, install the deployed ear file.

During application installation, the call to EJB deploy throws an exception

When you specify that EJB deploy be run during application installation and if installation fails with the error command line too long, the problem is that the deployment command generated during installation exceeds the character limit for a command line on the Windows platform. This problem occurs only on Windows platforms.

To work around this problem, you can reduce the length of the EAR file name, reduce the length of the JAR file name within the EAR file, reduce the class path or other options specified for deployment, or change the %TEMP% location of the Windows system to make its path shorter.

While uploading documents, addNode -includeapps fails with an OutOfMemoryError exception

This error can occur when you use addNode -includeapps while you are installing applications with large EAR files. To correct this problem:

- If you are using addNode to add a node from the base server, modify the addNode script to include the following parameter:
-Xmxsize
- If you are adding a node from the administrative console, increase the *maximumHeapSize* in the Java virtual machine settings of the Deployment Manager, then restart the Deployment Manager. See Java virtual machine settings for details.

For example, the addNode.bat file that follows sets a maximum heap size of 512 MB on a Windows platform:

```
%JAVA_HOME%\bin\java" -Xmx512m %DEBUG% %WAS_TRACE% %CONSOLE_ENCODING% "%CLIENTSOAP%"
"%CLIENTSAS%" "-classpath" "%WAS_CLASSPATH%" "-Dws.ext.dirs=%WAS_EXT_DIRS%"
%USER_INSTALL_PROP% -Dwas.install.root=%WAS_HOME%" "com.ibm.ws.bootstrap.WSLauncher"
"com.ibm.ws.management.tools.NodeFederationUtility" "%CONFIG_ROOT%" "%WAS_CELL%"
"%WAS_NODE%" %*
```

Related tasks

Chapter 3, “Troubleshooting by task: What are you trying to do?,” on page 45

Chapter 4, “Troubleshooting by component: What is not working?,” on page 133

Related reference

“Troubleshooting code deployment and installation problems” on page 56

Troubleshooting testing and first time run problems

Select the problem you are having with testing or the first run of deployed code for WebSphere Application Server:

- “The application server or deployment manager does not start or starts with errors” on page 49.
- “The application does not start or starts with errors” on page 63.
- “A web resource does not display” on page 64.
- “Cannot access a data source” on page 72.
- “Cannot access an enterprise bean from a servlet, a JSP file, a stand-alone program, or another client” on page 87.
- “Cannot look up an object hosted by WebSphere Application Server from a servlet, JSP file, or other client” on page 91.
- “Access problems after enabling security” on page 94.
- “Errors after enabling security” on page 98.
- “Errors after enabling Secure Sockets Layer, or Secure Sockets Layer-related error messages” on page 104.
- “Errors in messaging” on page 107.
- “Errors returned to a client sending a SOAP request” on page 107.
- “A client program does not work” on page 108.
- “Errors connecting to WebSphere MQ and creating WebSphere MQ queue connection factory” on page 109.

If you do not see a problem that resembles yours, or if the information provided does not solve your problem, see “Obtaining help from IBM” on page 39.

For current information available from IBM Support on known problems and their resolution, see the IBM Support page.

IBM Support has documents that can save you time gathering information needed to resolve this problem. Before opening a PMR, see the IBM Support page.

The application does not start or starts with errors

What kind of error do you see when you start an application?

- A `java.lang.ClassNotFoundException: classname`
`Bean_AdderServiceHome_04f0e027Bean` error occurs
- A `ConnectionFactory E J2CA0102E: Invalid EJB component: Cannot use an EJB module with version 1.1 using The Relational Resource Adapter` error occurs
- `NMSV0605E: A Reference object looked up from the context...` error when starting an application.
- Other name server ("NMSV...") errors.

If none of these errors match the error you see:

- Browse the log files of the application server for this application looking for clues. By default, these files are: `install_dir/logs/server_name/SystemErr.log` and `SystemOut.log`.
- Look up any error or warning messages in the message reference table by clicking the Reference view and expanding the "Messages" heading.

If you do not see a problem that resembles yours, or if the information provided does not solve your problem, see "Obtaining help from IBM" on page 39.

**`java.lang.ClassNotFoundException: classname`
`Bean_AdderServiceHome_04f0e027Bean`**

An similar exception occurs when you try to start an undeployed application containing enterprise beans, or containing undeployed enterprise bean modules.

enterprise bean modules created in tools like Eclipse or the Application Assembly Tool (AAT) or the Assembly Toolkit intentionally have incomplete configuration information. Deploying these modules completes the configuration by reading the module's deployment descriptor and completing platform- or installation-dependent settings and adding related classes to the enterprise bean JAR file.

To avoid this problem, do one of the following actions:

- Open the undeployed `.ear` file containing the enterprise bean, or the stand-alone undeployed EJB JAR file, in the AAT Assembly Toolkit and run the **File > Generate code for deployment** option. Uninstall the application or EJB module in the administrative console and install the deployed version created by the AAT Assembly Toolkit
- If you are using the `wsadmin $AdminApp install` command, uninstall it and then reinstall using the `-EJBDeploy` option. Follow the install command with the `$AdminConfig save` command.

`ConnectionFactory E J2CA0102E: Invalid EJB component: Cannot use an EJB module with version 1.1 using The Relational Resource Adapter`

This error occurs when an enterprise bean developed to the EJB 1.1 specification is deployed with a WebSphere Application Server V5 J2C-compliant data source, which is the default data source. By default, persistent enterprise beans created under WebSphere Application Server V4.0's using the AAT Assembly Toolkit fulfill the EJB 1.1 specification. To run on WebSphere Application Server V5, these enterprise beans must be associated with a WebSphere Application Server V4.0-type data source.

Either modify the mapping in the application of enterprise beans to associate 1.x container managed persistence (CMP) beans to associate them with a V4.0 data source or delete the existing data source and create a V4.0 data source with the same name.

To modify the mapping in the application of enterprise beans, in the WebSphere Application Server administrative console, select the properties for the problem application and use **map resource references to resources** or **Map data sources for all 1.x CMP beans** to switch the data source the enterprise bean uses. Save the configuration and restart the application.

To delete the existing data source and create a V4.0 data source with the same name:

1. In the administrative console, click **Resources>Manage JDBC Providers>JDBC_provider_name>Data sources**.
2. Delete the data source associated with the EJB 1.1 module.
3. Click **Resources>Manage JDBC Providers>JDBC_provider_name>Data sources (Version 4)**.
4. Create the data source for the EJB 1.1 module.
5. Save the configuration and restart the application.

NMSV0605E: "A Reference object looked up from the context..." error when starting an application

If the full text of the error is similar to:

```
[7/17/02 15:20:52:093 CDT] 5ae5a5e2 UriContextHel W NMSV0605E: A Reference object looked up from the
"java:" with the name "comp/PM/WebSphereCMPConnectionFactory" was sent to the JNDI Naming Manag
and an exception resulted. Reference data follows:
Reference Factory Class Name: com.ibm.ws.naming.util.IndirectJndiLookupObjectFactory
Reference Factory Class Location URLs:
Reference Class Name: java.lang.Object
Type: JndiLookupInfo
Content: JndiLookupInfo: ; jndiName="eis/jdbc/MyDatasource_CMP"; providerURL=""; initialContext
```

then the problem might be that the data source intended to support a CMP enterprise bean is not correctly associated with the enterprise bean.

To resolve this problem:

1. Select the **Use this Data Source in container managed persistence (CMP)** check box in the data source's "General Properties" panel of the administrative console.
2. Verify that the JNDI Name given in administrative console under **Resources->Manage JDBC Provider > DataSource > JNDI Name** for DataSource matches the JNDI Name given for CMP or BMP Resource Bindings at the time of Assembling the application in the AATAssembly Toolkit, or
3. Check the JNDI Name for CMP or BMP resource bindings specified in the code by J2EE Application Developer. Open the deployed .ear folder in the AATAssembly Toolkit, and look for the JNDI Name for your entity beans under CMP or BMP resource bindings. Verify that the names match.

A web resource does not display

If you are not able to display a resource in your browser, follow these steps:

1. Verify that your HTTP server is healthy by accessing the URL `http://server_name` from a browser and seeing whether the Welcome page appears. This action indicates whether the HTTP server is up and running, regardless of the state of WebSphere Application Server.

2. If the HTTP server Welcome page does not appear, that is, if you get a browser message like page cannot be displayed or something similar, try to diagnose your Web server problem.
3. If the HTTP server appears to function, the Application Server might not be serving the target resource. Try accessing the resource directly through the Application Server instead of through the HTTP server.

If you cannot access the resource directly through the Application Server, Verify that the URL used to access the resource is correct.

If the URL is incorrect and it is created as a link from another JSP file, servlet, or HTML file, try correcting it in the browser URL field and reloading, to confirm that the problem is a malformed URL. Correct the URL in the "from" HTML file, servlet or jsp file.

If the URL appears to be correct, but you cannot access the resource directly through the Application Server, verify the health of the hosting Application Server and Web module:

- a. View the hosting Application Server and Web module in the administrative console to verify that they are up and running.
 - b. Copy a simple HTML or JSP file (such as SimpleJsp.jsp in the WebSphere Application Server directory structure) to your Web module document root, and try to access it. If successful, the problem is with your resource. View the JVM log of your Application Server to find out why your resource cannot be found or served
4. If you can access the resource directly through the Application Server, but not through an HTTP server, the problem lies with the HTTP plug-in -- the component that communicates between the HTTP server and the WebSphere Application Server.
 5. If the JSP file and the servlet output are served, but not static resources such as .html and image files, see the steps for enabling file serving.
 6. If some kinds of resources display correctly, but you cannot display a servlet by its class name:
 - Verify that the servlet is in a directory in the Web module class path, such as in the `/Web_module_name.war/WEB-INF/classes` directory.
 - Verify that you specify the full class name of the servlet, including its package name, in the URL.
 - Verify that `/servlet` precedes the class name in the URL. For example, if the root context of a Web module is "myapp", and the servlet is `com.mycom.welcomeServlet`, then the URL reads:
`http://hostname/myapp/servlet/com.mycom.welcomeServlet`
 - Verify that serving the servlets by class name is enabled for the hosting Web module by opening the source Web module in the Application Assembly Tool (AAT) Assembly Toolkit and browse the *serve servlets by classname* setting in the IBM Extensions property page. If necessary, enable this flag and redeploy the Web module.
 - For servlets or other resources served by mapped URLs, the URL is `http://hostname/web module context root/mappedURL`.

If none of these steps fixes your problem, see if the problem has been identified and documented by looking at available online support (hints and tips, technotes, and fixes). If you do not find your problem listed there, see "Obtaining help from IBM" on page 39.

Diagnosing Web server problems

If you are unable to view the welcome page of your HTTP server, determine if the server is operating properly.

On Windows systems, look in the Services panel for the service corresponding to your HTTP server, and verify that the state is **Started**. If not, start it. If the service does not start, try starting it manually from the command prompt. If you are using IBM HTTP Server, the command is `IHS_install_dir\apache .`

On UNIX systems, execute the `ps -ef | grep httpd` command. There should be several processes running with a name of "httpd". If not, start your HTTP server manually. If you are using IBM HTTP Server, the command is `IHS_install_dir/bin/apachectl start`.

If the HTTP server does not start:

- Examine the HTTP server error log for clues.
- Try restoring the HTTP server to its configuration prior to installing WebSphere Application Server and restarting it. If you are using IBM HTTP Server:
 - Rename the file `IHS_install_dir\httpd.conf`.
 - Copy the `httpd.conf.default` file to the `httpd.conf` directory.
 - If Apache is running, stop and restart it.
- For the Sun ONE (iPlanet) Web server, restore the `obj.conf` configuration file for Sun ONE V4.1 and both `obj.conf` and `magnus.conf` files for Sun ONE V6.0 and later.
- For the Microsoft Internet Information Server (IIS), remove the WebSphere Application Server plug-in through the IIS administrative GUI.

If restoring the HTTP server default configuration file works, manually review the configuration file that has WebSphere Application Server updates to verify directory and file names for WebSphere Application Server files. If you cannot manually correct the configuration, you can uninstall and reinstall WebSphere Application Server to create a clean HTTP configuration file.

If restoring the default configuration file does not help, contact technical support for the Web server you are using. If you are using IBM HTTP Server with WebSphere Application Server, check available online support (hints and tips, technotes, and fixes). If you do not find your problem listed there, see "Obtaining help from IBM" on page 39

Accessing a Web resource through the application server and bypassing the HTTP server

Starting with WebSphere Application Server Version 4.0, you can bypass the HTTP server and access a web resource through the application server. It is not recommended to serve a production Web site in this way, but it provides a good diagnostic tool when it is not clear whether a problem resides in the HTTP server, WebSphere Application Server, or the HTTP plug-in.

To access a Web resource through the Application Server:

1. Determine the port of the HTTP service in the target Application Server.
 - a. In the WebSphere administrative console, click **Servers>Manage Application Servers**.
 - b. Select the target server, then under Additional Properties click **Web Container**.
 - c. Under the Additional Properties of the Web Container, click **HTTP Transports**. You see the ports listed for virtual hosts served by the Application Server.
 - d. There can be more than one port listed. In the default Application Server (server1), for example, 9090 is the port reserved for administrative requests,

9443 and 9043 are used for SSL-encrypted requests. To test the sample "snoop" servlet, for example, use the default application port 9080, unless it changes.

2. Use the HTTP transport port number of the Application Server to access the resource from a browser. For example, if the port is 9080, the URL is `http://hostname:9080\myAppContext\myJSP.jsp`.
3. If you are still unable to access the resource, verify that the HTTP transport port is in the "Host Alias" list:
 - a. Click **Application Servers > Your_ApplicationServer > Web Container > HTTP Transports** to check the Default virtual host and the HTTP transport ports used by this Application Server.
 - b. Click **Environment > Manage Virtual Hosts > default host > Host Aliases** to check if the HTTP transport port exists. Add an entry if necessary. For example, if the HTTP port for your application is server is 9080, add a host alias of `*:9082`.

Errors starting an application

What kind of error do you see when you start an application?

- HTTP server and Application Server are working separately, but requests are not passing from HTTP server to Application Server
- File serving problems
- Graphics do not appear on the JavaServer Pages (JSP) file or servlet output
- SRVE0026E: [Servlet Error]-[Unable to compile class for JSP error on JSP]
- After modifying and saving a JSP file, the change does not show up in the browser (the old JSP file displays)
- Message similar to "Message: /jspname.jsp(9,0) Include: Mandatory attribute page missing" displays when trying to access JSP file
- The Java source generated from a JSP file is not retained in the temp directory (only the class file is found)
- The JSP batch compiler fails with the message "Enterprise Application [application name you typed in] not found"
- There is a translation problem with non-English browser input
- Scroll bars do not appear around items in the browser window
- A "Page cannot be displayed... server not found or DNS error" error displays when attempting to browse a Java Server Page (JSP) using Internet Explorer

HTTP server and Application Server are working separately, but requests are not passing from HTTP server to Application Server

If your HTTP server appears to be functioning correctly, and the Application Server also works on its own, but browser requests sent to the HTTP server for pages are not being served, a problem exists in the WebSphere Application Server plug-in.

In this case:

1. Determine whether the HTTP server is attempting to serve the requested resource itself, rather than forwarding it to the WebSphere Application Server.
 - a. Browse the HTTP server access log (*IHS install root\logs\access.log* for IBM HTTP Server). It might indicate that it could not find the file in its own document root directory.
 - b. browse the plug-in log file as described below.
2. Refresh the *install_dir/config/plugin-cfg.xml* file that determines which requests sent to the HTTP server are forwarded to the WebSphere Application Server, and to which Application Server. You might need to refresh this file:

- In the WebSphere Application Server administrative console, expand the Environment tree control.
 - Click **Update WebSphere Plugin**.
 - Stop and restart the HTTP server and retry the Web request.
3. Browse the *install_dir/logs/http_plugin.log* file for clues to the problem. Make sure the timestamps with the most recent plug-in information stanza, which is printed out when the plug-in is loaded, correspond to the time the Web server started.
 4. Turn on plug-in tracing by setting the `LogLevel` attribute in the *install_dir/config/plugin-cfg.xml* file to `Trace` and reloading the request. Browse the *install_dir/logs/http_plugin.log* file. You should be able to see the plug-in attempting to match the request URI with the various URI definitions for the routes in the *plugin-cfg.xml*. Check which rules the plug-in is not matching against and then figure out if you need to add additional ones. If you just recently installed the application you might need to manually regenerate the plug-in configuration to pick up the new URIs related to the new application.
 5. For further details on troubleshooting plug-in-related problems, see the topic [Troubleshooting the HTTP plug-in component](#).

File serving problems

If text output appears on your JSP- or servlet-supported Web page, but image files do not:

- Verify that your files are in the right place: the **document root** directory of your Web application WebSphere Application Server follows the J2EE standard, which means that the document root is the *Web_module_name.war* directory of your deployed Web application. Typically this directory will be found in the *installation_root/installedApps/nodename/appname.ear* directory or *installation_root/installedApps/nodename/appnameNetwork.ear* directory.
If the files are in a subdirectory of the document root, verify that the reference to the file reflects that. That is, if the *invoices.html* file is stored in Windows directory *Web_module_name.war\invoices*, then links from other pages in the Web application to display it should read "*invoices\invoices.html*", not "*invoices.html*".
- Verify that your Web application is configured to enable file serving (in other words, that it is enabled to display static resources like image and .html files):
 1. View the file serving property of the hosting Web module by browsing the source .war file in the Application Assembly Tool (AAT)Assembly Toolkit. If necessary, update the property and redeploy the module.
 2. Edit the **fileServingEnabled** property in the deployed Web application *ibm-web-ext.xmi* configuration file, typically found in the *install_root/config/cells/nodename* or *nodenameNetwork/applications/application_name/deployments/application_name/Webmodule name/web-inf* directory.

Graphics do not appear in the JSP file or servlet output

If text output appears on your JSP- or -servlet-supported Web page, but image files do not:

- Verify that your graphic files are in the right place: the **document root** directory of your Web application WebSphere Application Server Version 5 follows the J2EE standard, which means that the document root is the *Web_module_name.war* directory of your deployed Web application. Typically this directory is found in the *installation_root/installedApps/nodename/appname.ear* directory or *installation_root/installedApps/nodename/appnameNetwork.ear* directory.

If the graphics files are in a subdirectory of the document root, verify that the reference to the graphic reflects that; for example, if the banner.gif file is stored in Windows directory *Web_module_name.war/images*, the tag to display it should read: ****, not ****.

- Verify that your Web application is configured to enable file serving (that is, display of static resources like image and .html files).
 1. View the file serving property of the hosting Web module by browsing the source .war file in the AATAssembly Toolkit. If necessary, update the property and re-deploy the module.
 2. Edit the **fileServingEnabled** property in the deployed Web application *ibm-web-ext.xmi* configuration file, typically found in the *install_root/config/cells/nodename* or *nodenameNetwork/applications/application name/deployments/application name/Webmodule name/web-inf* directory.
 3. After following the previous steps:
 - In the administrative console, expand the **Environment** tree control .
 - Click **Update WebSphere Plugin**.
 - Stop and restart the HTTP server and retry the Web request.

SRVE0026E: [Servlet Error]-[Unable to compile class for JSP file

If this error appears in a browser when trying to access a new or modified .jsp file for the first time, the most likely cause is that the JSP file Java source failed (was incorrect) during the javac compilation phase.

Check the SystemErr.log file for a compiler error message, such as:

```
C:\WASROOT\temp\ ... test.war\_myJsp.java:14: \Duplicate variable declaration: int myInt was int m
int myInt = 122;
String myString = "number is 122";
static int myStaticInt=22;
int myInt=121;
    ^
```

Fix the problem in the JSP source file, save the source and request the JSP file again.

If this error occurs when trying to serve a JSP file that was copied from another system where it ran successfully, then there is something different about the new server environment that prevents the JSP file from running. Browse the text of the error for a statement like:

```
Undefined variable or class name: MyClass
```

This error indicates that a supporting class or jar file is not copied to the target server, or is not on the class path. Find the MyClass.class file, and place it on the Web module WEB-INF/classes directory, or place its containing .jar file in the Web module WEB-INF/lib directory.

Verify that the URL used to access the resource is correct by completing the following steps:

- For a JSP file, html file, or image file:
http://host_name/Web_module_context_root/subdir under doc root, if any/filename.ext. The document root for a Web application is the *application_name.WAR* directory of the installed application.
 - For example, to access the myJsp.jsp file, located in *c:\WebSphere\ApplicationServer\installedApps\myEntApp.ear\myWebApp.war\invoices* on myhost.mydomain.com, and assuming the context root for the myWebApp

Web module is myApp, the URL is

`http://myhost.mydomain.com/myApp/invoices/myJsp.jsp`.

- JSP serving is enabled by default. File serving for HTML and image files must be enabled as a property of the Web module, in the Application Assembly Tool (AAT)Assembly Toolkit, or by setting the **fileServingEnabled** property to **true** in the **ibm-web-ext.xmi** file of the installed Web application and restarting the application.
- For servlets served by class name, the URL is
`http://hostname/Web_module_context_root/servlet/packageName.className`.
 - For example, to access `myCom.myServlet.class`, located in `c:\WebSphere\ApplicationServer\installedApps\myEntApp.ear\myWebApp.war\WEB-INF\classes`, and assuming the context root for the `myWebApp` module is "myApp", the URL would be
`http://myhost.mydomain.com/myApp/servlet/myCom.MyServlet`.
- Serving servlets by class name must be enabled as a property of the Web module, and is enabled by default. File serving for HTML and image files must be enabled as a property of the Web application, in the Application Assembly Tool (AAT)Assembly Toolkit, or by setting the **fileServingEnabled** property to **true** in the **ibm-web-ext.xmi** file of the installed Web application and restarting the application.

Correct the URL in the "from" HTML file, servlet or JSP file. An HREF with no leading slash (/) inherits the calling resource context. For example:

- an HREF in `http://[hostname]/myapp/servlet/MyServlet` to "ServletB" resolves to "`http://hostname/myapp/servlet/ServletB`"
- an HREF in `http://[hostname]/myapp/servlet/MyServlet` to "servlet/ServletB" resolves to "`http://hostname/myapp/servlet/servlet/ServletB`" (an error)
- an HREF in `http://[hostname]/myapp/servlet/MyServlet` to "/ServletB" resolves to "`http://hostname/ServletB`" (an error, if ServletB requires the same context root as MyServlet)

After modifying and saving a JSP file, the change does not show up in the browser (the old JSP file displays)

It is probable that the Web application is not configured for servlet reloading, or the reload interval is too high.

To correct this problem, in the Application Assembly Tool (AAT)Assembly Toolkit, check the **Reloading Enabled** flag and the **Reload Interval** value in the IBM Extensions for the Web module in question. Turn Reloading on, or if it is already on, then set the Reload Interval lower.

Message like "Message: /jspname.jsp(9,0) Include: Mandatory attribute page missing" appears when attempting to browse JSP file

It is probable that the JSP file failed during the translation to Java phase. Specifically, a JSPdirective, in this case an Include statement, was incorrect or referred to a file that could not be found.

To correct this problem, fix the problem in the JSP source, save the source and request the JSP file again.

The Java source generated from a JSP file is not retained in the temp directory (only the class file is found)

It is probable that the JSP processor is not configured to keep generated Java source.

In the Application Assembly Tool (AAT)Assembly Toolkit, check the **JSP Attributes** under **Assembly Property Extensions** for the Web module in question. Make sure the **keepgenerated** attribute is there and is set to true. If not, set this attribute and restart the Web application. To see the results of this operation, delete the classfile from the temp directory to force the JSP processor to translate the JSP source into Java source again.

The JSP Batch Compiler fails with the message "Enterprise Application [application name you typed in] not found."

It is probable that the full enterprise application path and name, starting with the .ear subdirectory that resides in the *install_root\config\cells\node_nameNetwork\applications* directory is expected as an argument to the JspBatchCompiler tool, not just the display name. For example:

- "JspBatchCompiler -enterpriseapp.name sampleApp.ear/deployments/sampleApp" is correct, as opposed to
- "JspBatchCompiler -enterpriseapp.name sampleApp", which is incorrect.

There is a translation problem with non-English browser input.

If non-English-character-set browser input cannot be translated after being read by a servlet or JSP file, ensure that the request parameters are encoded according to the expected character set before reading. For example, if the site is Chinese, the target .jsp file should have a line:

```
req.setCharacterEncoding("gb2312");
```

before any req.getParameter() calls.

This problem affects servlets and jsp files ported from earlier versions of WebSphere Application Server, which converted characters automatically based upon the locale of the WebSphere Application Server.

Scroll bars do not appear around items in the browser window

In some browsers, tree or list type items that extend beyond their allotted windows do not have scroll bars to permit viewing of the entire list.

To correct this problem, right-click on the browser window and click **Reload** from the menu.

Error "Page cannot be displayed... server not found or DNS error" appears when attempting to browse a Java Server Page (JSP) using Internet Explorer

This error can occur when an HTTP timeout causes the servant to be brought down and restarted. To correct this problem, increase the ConnectionIOTimeout . value:

1. From the administrative console select System Administration > DeploymentManager > Administration Services > Custom Properties

2. Select ConnectionIOTimeout
3. Increase the ConnectionIOTimeout value
4. Click OK.

Cannot access a data source

What kind of database are you trying to access?

- Oracle
- DB2
- SQL Server
- Cloudscape
- Sybase
- General data access problems

If the errors described in the previous articles do not match the errors you see:

1. Browse the log files of the application server that contains the application, for clues. By default these files are *install_root/server_name/SystemErr.log* and *SystemOut.log*.
2. Browse the Helper Class property of the data source to verify that it is correct and that it is on the WebSphere Application Server class path. Mysterious errors or behavior might result from a missing or misnamed Helper Class name. If WebSphere Application Server cannot load the specified class, it uses a default helper class that might not function correctly with your database manager.
3. Verify that the Java Naming and Directory Interface (JNDI) name of the data source matches the name used by the client attempting to access it. If error messages indicate that the problem might be naming-related, such as referring to the **name server** or **naming service**, or including error IDs beginning with **NMSV**, look at the Naming related problems and Troubleshooting the naming service component topics.
4. Enable tracing for the resource adapter using the trace specification, `RRA=all=enabled`. Follow the instructions for dumping and browsing the trace output, to narrow the origin of the problem.

If none of these steps fixes your problem, see if the problem is identified and documented in available online support (hints and tips, technotes, and fixes). If none of the online resources listed in the topic describes your problem, see "Obtaining help from IBM" on page 39.

General data access problems

- An exception "IllegalConnectionUseException" occurs
- WTRN0062E: An illegal attempt to enlist multiple one phase capable resources has occurred.
- ConnectionWaitTimeoutException.
- com.ibm.websphere.ce.cm.StaleConnectionException: [IBM][CLI Driver] SQL1013N The database alias name or database name "NULL" could not be found. SQLSTATE=42705
- java.sql.SQLException: java.lang.UnsatisfiedLinkError:
- "J2CA0030E: Method enlist caught java.lang.IllegalStateException" wrapped in error "WTRN0063E: An illegal attempt to enlist a one phase capable resource with existing two phase capable resources has occurred" when attempting to execute a transaction.
- java.lang.UnsatisfiedLinkError:xaConnect exception when attempting a database operation
- "J2CA0114W: No container-managed authentication alias found for connection factory or datasource *datasource*" when attempting a database operation

IllegalConnectionUseException

This error can occur because a connection obtained from a `WAS40DataSource` is being used on more than one thread. This usage violates the J2EE 1.3 programming model, and an exception generates when it is detected on the server. This problem occurs for users accessing a data source through servlets or bean-managed persistence (BMP) enterprise beans.

To confirm this problem, examine the code for connection sharing. Code can inadvertently cause sharing by not following the programming model recommendations, for example by storing a connection in an instance variable in a servlet, which can cause use of the connection on multiple threads at the same time.

WTRN0062E: An illegal attempt to enlist multiple one phase capable resources has occurred

This error can occur because:

- An attempt was made to share a single-phase connection, when each **getConnection** method has different connection properties; such as the `AccessIntent`. This attempt causes a non-shareable connection to be created.
- An attempt was made to have more than one unshareable connection participate in a global transaction, when the data source is not an XA resource.
- An attempt was made to have a one-phase resource participate in a global transaction while an XA resource or another one-phase resource already participated in this global transaction.
 - Within the scope of a global transaction you try to get a connection more than once and at least one of the resource-refs you use specifies that the connection is unshareable, and the data source is not configured to support two-phase commit transactions. It does not support an `XAResource`. If you do not use a resource-ref, you default to unshareable connections.
 - Within the scope of a global transaction you try to get a connection more than once and at least one of the resource-refs you use specifies that the connection is shareable and the data source is not configured to support two-phase commit transactions. That is, it does not support an `XAResource`. In addition, even though you specify that connections are shareable, each `getConnection` request is made with different connection properties (such as `IsolationLevel` or `AccessIntent`). In this case, the connections are not shareable, and multiple connections are handed back.
 - Multiple components (servlets, session beans, BMP entity beans, or CMP entity beans) are accessed within a global transaction. All use the same data source, all specify shareable connections on their resource-refs, and you expect them to all share the same connection. If the properties are different, you get multiple connections. `AccessIntent` settings on CMP beans change their properties. To share a connection, the `AccessIntent` setting must be the same. For more information about CMP beans sharing a connection with non-CMP components, see the *Data access application programming interface support* and *Example: Accessing data using IBM extended APIs to share connections between container-managed and bean-managed persistence beans* topics in the `DataAccess` section of the information center.

To correct this error:

- Check what your client code passes in with its `getConnection` requests, to ensure they are consistent with each other.
- Check the connection sharing scope from the resource binding, using the Application Assembly Tool (AAT) Assembly Toolkit.

- If you are running an unshareable connection scope, verify that your data source is an XA data source.
- If you are running a shareable connection scope, verify that all connection properties, including AccessIntent, are sharable.
- Check the JDBC provider implementation class from the Manage JDBC resource panel of the administrative console to ensure that it is a class that supports XA-type transactions.

ConnectionWaitTimeoutException accessing a data source or resource adapter

If your application receives exceptions like a `com.ibm.websphere.ce.cm.ConnectionWaitTimeoutException` or `com.ibm.websphere.ce.j2c.ConnectionWaitTimeoutException` when attempting to access a WebSphere Application Server data source or JCA-compliant resource adapter, respectively, some possible causes are:

- The maximum number of connections for a given pool is set too low. The demand for concurrent use of connections is greater than the configured maximum value for the connection pool. One indication that this situation is the problem is that you receive these exceptions regularly, but your CPU utilization is not high. This exception indicates that there are too few connections available to keep the threads in the server busy.
- Connection Wait Time is set too low. Current demand for connections is high enough such that sometimes there is not an available connection for short periods of time. If your connection wait timeout value is too low, you might timeout shortly before a user returns a connection back to the pool. Adjusting the connection wait time can give you some relief. One indication of this problem is that you use close to the maximum number of connections for an extended period and receiving this error regularly.
- You are not closing some connections or you are returning connections back to the pool at a very slow rate. This situation can happen when using unshareable connections, when you forget to close them, or you close them long after you are finished using them, keeping the connection from returning to the pool for reuse. The pool soon becomes empty and all applications get `ConnectionWaitTimeoutExceptions`. One indication of this problem is you run out of connections in the connection pool and you receive this error on most requests.
- You are driving more load than the server or backend system have resources to handle. In this case you must determine which resources you need more of and upgrade configurations or hardware to address the need. One indication of this problem is that the application or database server CPU is nearly 100% busy.

To correct these problems, either:

- Modify an application to use fewer connections
- Properly close the connections.
- Change the pool settings of `MaxConnections` or `ConnectionWaitTimeout`.
- Adjust resources and their configurations.

com.ibm.websphere.ce.cm.StaleConnectionException: [IBM][CLI Driver] SQL1013N The database alias name or database name "NULL" could not be found. SQLSTATE=42705

This error occurs when a data source is defined but the `databaseName` attribute and the corresponding value are not added to the custom properties panel.

To add the `databaseName` property:

1. Click **Resources>Manage JDBC Providers** link in the administrative console.
2. Select the JDBC provider that supports the problem data source.
3. Select **Data Sources** and then select the problem data source.
4. Under **Additional properties** click **Custom Properties**.
5. Select the **databaseName** property, or add one if it does not exist, and enter the actual database name as the value.
6. Click **Apply** or **OK**, and then click **Save** from the action bar.
7. Access the data source again.

java.sql.SQLException: java.lang.UnsatisfiedLinkError:

This error indicates that the directory containing the binary libraries which support a database are not included in the LIBPATH environment variable for the environment in which the WebSphere Application Server starts.

The path containing the DBM vendor libraries vary by dbm. One way to find them is by scanning for the missing library specified in the error message. Then you can correct the LIBPATH variable to include the missing directory, either in the .profile of the account from which WebSphere Application Server is executed, or by adding a statement in a .sh file which then executes the startServer program.

"J2CA0030E: Method enlist caught java.lang.IllegalStateException" wrapped in error "WTRN0063E: An illegal attempt to enlist a one phase capable resource with existing two phase capable resources has occurred" when attempting to execute a transaction.

This error can occur when last participant support (LPS) is missing or disabled. LPS allows a one-phase capable resource and a two-phase capable resource to enlist within the same transaction.

LPS is only available if the following are true:

- WebSphere Application Server Programming Model Extensions (PME) is installed. PME is included in the Application Server Integration Server product.
- The Additional Integration Server Extensions option is enabled when PME is installed. If you perform a typical installation, this function is enabled by default. If you perform a custom installation, you have the option to disable this function, which disables LPS.
- The application enlisting the one-phase resource is deployed with the **Accept heuristic hazard** option enabled. This deployment is done through the Application Assembly Tool (AAT)Assembly Toolkit. To enable this option in the Application Assembly Tool (AAT)Assembly Toolkit:
 1. Load the EAR file into the Application Assembly Tool (AAT)Assembly Toolkit.
 2. If the EAR file is actually a JTEE1.2 EAR then it must be upgraded to a JTEE1.3 EAR by clicking **File> Convert EAR** from the Application Assembly Tool (AAT)Assembly Toolkit.
 3. Select the EAR file in the left-hand panel of the Application Assembly Tool (AAT)Assembly Toolkit.
 4. Select the **WAS Integration Server** tab in the bottom right window panel of the Application Assembly Tool (AAT)Assembly Toolkit
 5. Ensure that the **Accept heuristic hazard** option is selected.
 6. Save the EAR file.

java.lang.UnsatisfiedLinkError:xaConnect exception when attempting a database operation

This problem has two main causes:

- The most common cause is that the jdbc driver which supports connectivity to the database is missing, or is not the correct version, or that native libraries which support the driver are on the system's path.
 - To resolve this problem on a Windows platform, verify that the JDBC driver jar file is on the system PATH environment variable:
 - If you are using DB2, verify that at least the DB2 client product has been installed on the WebSphere host
 - On DB2 version 7.2 or earlier, the file where the client product is installed on the WebSphere Application Server is db2java.zip. Verify that the usejdbc2.bat program has been executed after the database install and after any upgrade to the database product.
 - On DB2 version 8.1 or later, use the DB2 Universal JDBC Provider Driver when defining a JDBC provider in WebSphere Application Server. The driver file is db2jcc.jar. If you use the type 2 (default) option, verify that at least the DB2 client product is installed on the WebSphere Application Server host. If you specify the type 4 option, the DB2 client does not need to be installed, but the file db2jcc.jar still must be present.

When specifying the location of the driver file, it is recommended to that you specify the path and file name of the target DB2 installation, rather than simply copying the file to a local directory, if possible. Otherwise, you may be exposed to problems if the target DB2 installation is upgraded and the driver used by WebSphere Application Server is not. If you choose **DB2 Legacy CLI-based type 2 JDBC Driver** when defining a JDBC provider in WebSphere Application Server, then you must still follow the steps to ensure that you have the correct version of the db2java.zip file (see instructions for DB2 7.2 or earlier).

 - On a Unix platform, ensure that any native libraries required to support the database client of your database product are specified in the LD_LIBRARY_PATH environment variable in the profile of the account under which WebSphere Application Server executes.

If you are using DB2 The native library is libdb2jdbc.so. The best way to ensure that this library is accessed correctly by WebSphere is to call the db2profile script supplied with DB2 from the .profile script of the account (such as "root") under which WebSphere runs.

 - If you are using DB2 version 7.2 or earlier, ensure that the usejdbc2,script provided with DB2 is called from the profile of the account under which WebSphere Application server is launched.
 - If you are using DB2 version 8.1 or later, see the previous instructions for the Windows operating system.
- If the database manager is DB2, you may have chosen the option to create a 64-bit instance. A 64-bit configuration is not supported. If this has happened, remove the database instance and create a new one with the default 32-bit setting.

Note: For general help in configuring JDBC drivers and data sources in WebSphere Application Server, see the topic Accessing data from applications.

"J2CA0114W: No container-managed authentication alias found for connection factory or datasource *datasource*" when attempting a database operation

This error might occur in the SystemOut.log file when you run an application to access a data source after creating the data source using JACL script.

The error message occurs because the JACL script did not set container-managed authentication alias for CMP connection factory. The JACL is missing the following line:

```
$AdminConfig create MappingModule $cmpConnectorFactory "{mappingConfigAlias DefaultPrincipalMapping}
```

To correct this problem, add the missing line to the JACL script and run the script again. See Example: Creating a JDBC provider and data source using Java Management Extensions API and the scripting tool for a sample JACL script.

Problems accessing an Oracle data source

What kind of error do you see when you try to access your Oracle-based data source

- An Invalid Oracle URL is specified
- "DSRA0080E: An exception was received by the Data Store Adapter. See original exception message: ORA-00600" when connecting to or using an Oracle data source.
- "DSRA8100E: Unable to get a {0} from the DataSource. Explanation: See the linkedException for more information."
- An "Error while trying to retrieve text for error" message occurs when connecting to an Oracle data source.
- A java.lang.UnsatisfiedLinkError occurs when connecting to an Oracle data source.
- The exception java.lang.NullPointerException or an "internal error: oracle.jdbc.oci8.OCIEnv" occurs when connecting to an Oracle data source.
- WSVR0016W: Classpath entry, \${ORACLE_JDBC_DRIVER_PATH}/classes12.zip, in Resource, Oracle JDBC Thin Driver, located at cells/BaseApplicationServerCell/nodes/wasrtp/resources.xml has an invalid variable.

An invalid Oracle URL is specified

This error might be caused by an incorrectly specified URL on the URL property of the target data source.

Examine the URL property for the data source object in the administrative console. For the 8i OCI driver, verify that **oci8** is used in the URL. For the 9i OCI driver, you can use either **oci8** or **oci**.

Examples of Oracle URLs:

- For the thin driver: jdbc:oracle:thin:@hostname.rch1and.ibm.com:1521:IBM
- For the thick (OCI) driver: jdbc:oracle:oci8:@tnsname1

"DSRA0080E: An exception was received by the data store adapter. See original exception message: ORA-00600" when connecting to or using an Oracle data source
"DSRA0080E: An exception was received by the data store adapter. See original exception message: ORA-00600" when connecting to or using an Oracle data source
"DSRA0080E: An exception was received by the Data Store Adapter. See original exception message: ORA-00600" when connecting to or using an Oracle data source

A possible reason for this exception is that the version of the Oracle JDBC driver being used is older than the Oracle database. It is possible that more than one version of the Oracle JDBC driver is configured on the WebSphere Application Server.

Examine the version of the JDBC driver. Sometimes you can determine the version by looking at the class path to determine what directory the driver is in.

If you cannot determine the version this way, use the following program to determine the version. Before running the program, set the class path to the location of your JDBC driver files.

```
import java.sql.*;
import oracle.jdbc.driver.*;
class JDBCVersion
{
    public static void main (String args[])
    throws SQLException
    {
        // Load the Oracle JDBC driver
        DriverManager.registerDriver(new oracle.jdbc.driver.OracleDriver());
        // Get a connection to a database
        Connection conn = DriverManager.getConnection
        ("jdbc:oracle:thin:@appaloosa:1521:app1","sys","change_on_install");
        // Create Oracle DatabaseMetaData object
        DatabaseMetaData meta = conn.getMetaData();
        // gets driver info:
        System.out.println("JDBC driver version is " + meta.getDriverVersion());
    }
}
```

If the driver and the database are at different versions, replace the JDBC driver with the correct version. If multiple drivers are configured, remove any that occur at the incorrect level.

DSRA8100E: Unable to get a {0} from the DataSource. Explanation: See the [linkedException](#) for more information.

When using an oracle thin driver, Oracle throws a "java.sql.SQLException: invalid arguments in call" error if no user name or password is specified when getting a connection. If you see this error while running WebSphere Application Server, the alias is not set.

To remove the exception, define the alias on the data source.

"Error while trying to retrieve text for error" error when connecting to an Oracle data source

The most likely cause of this error is that the Oracle 8i OCI driver is being used with an ORACLE_HOME property that is either not set or is set incorrectly.

To correct the error, examine the user profile that WebSphere Application Server is running under to verify that the \$ORACLE_HOME environment variable is set correctly.

"java.lang.UnsatisfiedLinkError:" connecting to an Oracle data source

The environment variable LIBPATH might not be set or is set incorrectly, if your data source throws an **UnsatisfiedLinkError** error, and the full exception indicates that the problem is related to an Oracle module, as in the following examples.

Example of invalid an LIBPATH for the 8i driver:

```
Exception in thread "main" java.lang.UnsatisfiedLinkError:
/usr/WebSphere/AppServer/java/jre/bin/libocijdbc8.so:
load ENOENT on shared library(s)
/usr/WebSphere/AppServer/java/jre/bin/libocijdbc8.so libclntsh.a
```

Example of an invalid LIBPATH for the 9i driver:

```
Exception in thread "main" java.lang.UnsatisfiedLinkError:
no ocijdbc9 (libocijdbc9.a or .so) in java.library.path
at java.lang.ClassLoader.loadLibrary(ClassLoader.java:Compiled Code)
at java.lang.Runtime.loadLibrary0(Runtime.java:780)
```

To correct the problem, examine the user profile under which the WebSphere Application Server is running to verify that the LIBPATH environment variable includes Oracle libraries. Scan for the libocijdbc8.so file to find the right directory.

java.lang.NullPointerException referencing 8i classes, or " internal error: oracle.jdbc.oci8. OCIEnv" connecting to an Oracle data source

The problem might be that the 9i OCI driver is being used on an AIX 32-bit machine, the LIBPATH is set correctly, but the ORACLE_HOME environment variable is not set or is set incorrectly. You can encounter an exception similar to either of the following when your application attempts to connect to an Oracle data source:

Exception example for the java.lang.NullPointerException:

```
Exception in thread "main" java.lang.NullPointerException
at oracle.jdbc.oci8.OCIEnv.check_error(OCIEnv.java:1743)
at oracle.jdbc.oci8.OCIEnv.getEnvHandle(OCIEnv.java:69)
at oracle.jdbc.oci8.OCIEnv.logon(OCIEnv.java:452)
at oracle.jdbc.driver.OracleConnection.<init>(OracleConnection.java:287)
```

Exception example for the java.sql.SQLException:

```
Exception in thread "main" java.sql.SQLException:
internal error: oracle.jdbc.oci8. OCIEnv@568b1d21
at oracle.jdbc.dbaccess.DBError.throwSQLException(DBError.java:184)
at oracle.jdbc.dbaccess.DBError.throwSQLException(DBError.java:226)
at oracle.jdbc.oci8.OCIEnv.getEnvHandle(OCIEnv.java:79)
```

To correct the problem, examine the user profile that WebSphere Application Server is running under to verify that it has the \$ORACLE_HOME environment variable set correctly, and that the \$LIBPATH includes \$ORACLE_HOME/lib.

WSVR0016W: Classpath entry, \${ORACLE_JDBC_DRIVER_PATH}/classes12.zip, in Resource, Oracle JDBC Thin Driver, located at cells/BaseApplicationServerCell/nodes/wasrtp/resources.xml has an invalid variable

This error occurs when there is no environment variable defined for the property, ORACLE_JDBC_DRIVER_PATH.

Verify this problem in the administrative console. Go to **Environment > Manage WebSphere Variables** to verify whether the variable ORACLE_JDBC_DRIVER_PATH is defined.

To correct the problem, click **New** and define the variable. For example, name : **ORACLE_JDBC_DRIVER_PATH** , value : **c:\oracle\jdbc\lib** Use a value that names the directory in your operating system and directory structure that contains the classes12.zip file.

Problems accessing a DB2 database

What kind of problem are you having accessing your DB2 database?

- SQL0567N "DB2ADMIN" is not a valid authorization ID. SQLSTATE=42602.
- SQL0805N Package "*package name*" was not found.
- SQL0805N Package "NULLID.SQLLC300" was not found. SQLSTATE=51002.
- SQLException, with ErrorCode -99,999 and SQLState 58004, with Java "StaleConnectionException: COM.ibm.db2.jdbc.DB2Exception: [IBM][CLI Driver] CLI0119E Unexpected system failure. SQLSTATE=58004" using WAS40-type data source.
- Error message java.lang.reflect.InvocationTargetException: com.ibm.ws.exception.WsException: DSRA0023E: The DataSource implementation class "COM.ibm.db2.jdbc.DB2XADataSource" could not be found. when trying to access a DB2 database
- CLI0119E System error. SQLSTATE=58004 - DSRA8100 : Unable to get a XAconnection, or DSRA0011E: Exception: COM.ibm.db2.jdbc.DB2Exception: [IBM][CLI Driver] CLI0119E Unexpected system failure. SQLSTATE=58004.
- COM.ibm.db2.jdbc.DB2Exception: [IBM][CLI Driver][DB2/NT] SQL0911N The current transaction has been rolled back because of a deadlock or timeout. Reason code "2". SQLSTATE=40001.
- "COM.ibm.db2.jdbc.DB2ConnectionPoolDataSource" could not be found for data source (*data_source*).

SQL0567N "DB2ADMIN " is not a valid authorization ID. SQLSTATE=42602

If you encounter this error when attempting to access a DB2 Universal Database (UDB):

1. Verify that your user name and password in the data source properties page in the administrative console are correct.
2. Ensure that the user ID and password do not contain blank characters before, in between, or after.

SQL0805N Package *package-name* was not found

Possible reasons for these exceptions:

- If the package name is NULLID.SQLLC300, see SQL0805N Package "NULLID.SQLLC300" was not found. SQLSTATE=51002. for the reason.
- You are attempting to use an XA-enabled JDBC driver on a DB2 database that is not XA-ready.

To correct the problem on a DB2 Universal Database (UDB), run this one-time procedure, using the db2cmd interface while connected to the database in question:

1. **DB2 bind @db2ubind.lst blocking all grant public**
2. **DB2 bind @db2cli.lst blocking all grant public**

The db2ubind.lst and db2cli.lst files are in the bnd directory of your DB2 installation root. Run the commands from that directory.

SQL0805N Package "NULLID.SQLLC300" was not found. SQLSTATE=51002

This error can occur because:

- The underlying database was dropped and recreated.
- DB2 was upgraded and its packages are not rebound correctly.

To resolve this problem, rebound the DB2 packages by running the db2cli.lst script found in the bnd directory. For example: db2>@db2cli.lst.

SQLException, with ErrorCode -99,999 and SQLState 58004, with Java "StaleConnectionException: COM.ibm.db2.jdbc.DB2Exception: [IBM][CLI Driver] CLI0119E Unexpected system failure. SQLSTATE=58004", when using WAS40-type data source

An unexpected system failure usually occurs when running in XA mode (two-phase commit). Among the many possible causes are:

- An invalid username or password was provided.
- The database name is incorrect.
- Some DB2 packages are corrupted.

To determine whether you have a user name or password problem, look in the db2diag.log file to view the actual error message and SQL code. A message like the following example, with an SQLCODE of -1403, indicates an invalid user ID or password:

```
2002-07-26-14.19.32.762905 Instance:db2inst1 Node:000
PID:9086(java) Appid:*LOCAL.db2inst1.020726191932
XA DTP Support sqlxa_open Probe:101
DIA4701E Database "POLICY2" could not be opened
for distributed transaction processing.
String Title: XA Interface SQLCA PID:9086 Node:000
SQLCODE = -1403
```

To resolve these problems:

1. Correct your user name and password. If you specify your password on the GUI for the data source, ensure that the user name and password you specify on the bean are correct. The user name and password you specify on the bean overwrite whatever you specify when creating the data source.
2. Use the correct database name.
3. Rebind the packages (in the bnd directory) as follows:
db2connect to dbname
c:\SQLLIB\bnd>DB2 bind @db2ubind.lst blocking all grant public
c:\SQLLIB\bnd>DB2 bind @db2cli.lst blocking all grant public
4. Ensure that the \WebSphere\AppServer\properties\wsj2cdpm.properties file has the right user ID and password.

**Error message java.lang.reflect.InvocationTargetException:
com.ibm.ws.exception.WsException: DSRA0023E: The DataSource implementation
class "COM.ibm.db2.jdbc.DB2XADataSource" could not be found. when trying to
access a DB2 database**

One possible reason for this exception is that a user is attempting to use a JDBC 2.0 DataSource, but DB2 is not JDBC 2.0-enabled. This situation frequently happens with new installations of DB2 because DB2 provides separate drivers for JDBC 1.X and 2.0, with the same physical file name. By default, the JDBC 1.X driver is on the class path.

To confirm this problem:

- On Windows systems, look for the inuse file in the java12 directory in your DB2 installation root. If the file missing, you are using the JDBC 1.x driver.
- On UNIX systems, check the class path for your data source. If the class path does not point to the db2java.zip file in the java12 directory, you are using the JDBC 1.x driver.

To correct this problem:

- On Windows systems, stop DB2. Run the usejdbc2.bat file from the java12 directory in your DB2 installation root. Run this file from a command line to verify that it completes successfully.
- On UNIX systems, change the class path for your data source to point to the db2java.zip file in the java12 directory of your DB2 installation root.

**CLI0119E System error. SQLSTATE=58004 - DSRA8100 : Unable to get a
XAconnection or DSRA0011E: Exception: COM.ibm.db2.jdbc.DB2Exception:
[IBM][CLI Driver] CLI0119E Unexpected system failure. SQLSTATE=5800**

If you encounter this error when attempting to access a DB2 Universal Database (UDB) data source:

1. Check your user name and password custom properties in the data source properties page in the administrative console. Verify that they are correct.
2. Ensure the user ID and password do not contain any blank characters, before, in between, or after.
3. Check that the WAS.policy file exists for the application, for example, D:\WebSphere\AppServer\installedApps\markSection.ear\META-INF\was.policy.
4. View the entire exception listing for an underlying SQL error, and look it up using the DBM vendor message reference.

If you encounter this error while running DB2 on Red Hat Linux, the **max queues system wide** parameter is too low to support DB2 while it acquires the necessary resources to complete the transaction. When this problem exists, the exceptions J2CA0046E and DSRA0010E can precede the exception DSRA8100E.

To correct this problem, edit the /proc/sys/kernal/msgmni file to increase the value of the **max queues system wide** parameter to a value greater than 128.

**COM.ibm.db2.jdbc.DB2Exception: [IBM][CLI Driver][DB2/NT] SQL0911N The
current transaction has been rolled back because of a deadlock or timeout.
Reason code "2". SQLSTATE=40001**

This problem is probably an application-caused DB2 deadlock, particularly if you see an error similar to the following when accessing a DB2 data source:


```
ERROR CODE: -911
COM.ibm.db2.jdbc.DB2Exception: [IBM][CLI Driver][DB2/NT] SQL0911N
The current transaction has been rolled back because of a deadlock or timeout.
Reason code "2".  SQLSTATE=40001
```

To diagnose the problem:

1. Execute these DB2 commands:
 - a. db2 update monitor switches using LOCK ON
 - b. db2 get snapshot for LOCKS on dbName >

The *directory_name\lock_snapshot.log* now has the DB2 lock information.

2. Turn off the lock monitor by executing: db2 update monitor switches using LOCK OFF

To verify that you have a deadlock:

1. Look for an application handle that has a lock-wait status, and then look for the ID of the agent holding lock to verify the ID of the agent.
2. Go to that handle to verify it has a lock-wait status, and the ID of the agent holding the lock for it. If it is the same agent ID as the previous one, then you know that you have a circular lock (deadlock).

To resolve the problem:

1. Examine your application and use a less restrictive isolation level if no concurrency access is needed.
2. Use caution when changing the **accessIntent** value to move to a lower isolation level. This change can result in data integrity problems.
3. For DB2/UDB Version 7.2 and earlier releases, you can set the DB2_RR_TO_RS flag from the DB2 command line window to eliminate unnecessary deadlocks, such as when the accessIntent defined on the bean method is too restrictive, for example, PessimisticUpdate. The DB@_RR_TO_RS setting has two impacts:
 - If RR is your chosen isolation level, it is effectively downgraded to RS.
 - If you choose another isolation level, and the DB2_RR_TO_RS setting is on, a scan skips over rows that are deleted but not committed, even though the row might qualify for the scan. The skipping behavior affects the RR, Read Stability (RS), and Cursor Stability (CS) isolation levels.

For example, consider the scenario where transaction A deletes the row with column1=10 and transaction B does a scan where column1>8 and column1<12. With DB2_RR_TO_RS off, transaction B waits for transaction A to commit or rollback. If transaction A rolls back, the row with column1=10 is included in the result set of the transaction B query. With DB2_RR_TO_RS on, transaction B does not wait for transaction A to commit or rollback. Transaction B immediately receives query results that do not include the deleted row. Setting DB2_RR_TO_RS effectively changes locking behavior, thus avoiding deadlocks.

"COM.ibm.db2.jdbc.DB2ConnectionPoolDataSource" could not be found for data source ([data-source-name])"

This error usually occurs when the class path of the DB2 JDBC driver is set correctly to \${DB2_JDBC_DRIVER_PATH}/db2java.zip but the environment variable DB2_JDBC_DRIVER_PATH is not set.

To confirm this problem:

1. Go to the **Manage WebSphere Variables** panel.
2. Select **Environment** to verify that there is no entry for the variable DB2_JDBC_DRIVER_PATH.

To correct this problem: Add the variable `DB2_JDBC_DRIVER_PATH` with **value** equal to the directory path containing the `db2java.zip` file.

Problems accessing a SQL server data source

What kind of problem are you having accessing your SQL Server database?

- ERROR CODE: 20001 and SQL STATE: HY000.
- Application fails with message stating "Cannot find stored procedure..."

ERROR CODE: 20001 and SQL STATE: HY000 accessing SQLServer database

The problem might be that the distributed transaction coordinator service is not started. Look for an error similar to the following example when attempting to access an SQL server database:

```
ERROR CODE: 20001
SQL STATE: HY000
java.sql.SQLException: [Microsoft][SQLServer JDBC Driver]
[SQLServer]xa_open (0) returns -3
at com.microsoft.jdbc.base.BaseExceptions.createException(Unknown Source) ...
at com.microsoft.jdbcx.sqlserver.SQLServerDataSource.getXAConnection
(Unknown Source) ...
```

To confirm this problem:

1. Go to the Windows **Control Panel** and click **Services**(or click **Control Panel > Administrative Tools > Services**)
2. Verify whether the service **Distributed Transaction Coordinator** or **DTC** is started.
3. If not, start the Distributed Transaction Coordinator service.

Application fails with message stating "Cannot find stored procedure..." accessing an SQLServer database

This error can occur because the stored procedures for the Java Transaction API (JTA) feature are not installed on the Microsoft SQL Server.

To resolve the problem: Repeat the installation for the stored procedures for the JTA feature, according to the ConnectJDBC installation guide.

Problems accessing a Cloudscape database

What kind of problem are you having accessing your Cloudscape database?

- Unexpected IOException wrapped in SQLException, accessing Cloudscape database.
- The "Select for update" operation on one row causes table to become locked, triggering a deadlock condition.
- "ERROR XSDB6: Another instance of Cloudscape might have already booted the database *databaseName*." error starting application server.
- Error "The version of the IBM Universal JDBC driver in use is not licensed for connectivity to Cloudscape databases"
- Running an application causes a runtime exception which produces an unreadable message.

Tip: Cloudscape errorCodes (2000, 3000, 4000) indicate levels of severity, not specific error conditions. In diagnosing Cloudscape problems, pay attention to the given `sqlState` value.

Unexpected IOException wrapped in SQLException, accessing Cloudscape database

This problem can occur because Cloudscape databases use a large number of files. Some operating systems, such as the Solaris Operating Environment, limit the number of files an application can open at one time. If the default is a low number, such as 64, you can get this exception.

If your operating system lets you configure the number of file descriptors, you can correct the problem by setting the number to a high value, such as 1024.

The "select for update" operation causes table lock and deadlock when accessing Cloudscape

If a select for update operation on one row locks the entire table, which creates a deadlock condition, there might be undefined indexes on that table. The lack of an index on the columns you use in the where clause can cause Cloudscape to create a table lock rather than a row level lock.

To resolve this problem, create an index on the affected table.

ERROR XSDB6: Another instance of Cloudscape may have already booted the database "database"

This problem occurs because Cloudscape embedded framework only allows one Java virtual machine (JVM) to access the database instance at a time.

To resolve this problem:

1. Verify that you do not have other JDBC client programs, such as **ij** or **cvview** running on that database instance, when WebSphere Application Server is running.
2. Verify that you do not use the same instance of the database for more than one data source or use the networkServer framework, which doesn't have this limitation.
3. If there are no connections to Cloudscape, delete the db.lck lock file. This file can be found in the directory where the Cloudscape database is mounted, under the schema directory. For example, if the database is mounted at /myCloudscapeDB, issue the command: `rm /myCloudscapeDB/schemaName/db.lck`

Error "The version of the IBM Universal JDBC driver in use is not licensed for connectivity to Cloudscape databases"

Error "The version of the IBM Universal JDBC driver in use is not licensed for connectivity to Cloudscape databases"

At the client runtime, an error similar to the following occurs:

```
The version of the IBM Universal JDBC driver in use is not
licensed for connectivity to Cloudscape databases. To connect
to this DB2 server, please obtain a licensed copy of the IBM DB2
Universal Driver for JDBC and SQLJ. An appropriate license file
db2jcc_license_*.jar for this target platform must be installed to
the application classpath. Connectivity to Cloudscape databases is
enabled by any of the following license files:
{ db2jcc_license_c.jar, b2jcc_license_cu.jar, db2jcc_license_cisuz.jar }
```

The problem occurs because an incorrect JDBC driver jar file name is specified in the class path for JDBC provider. For example, the jar file name may have an extra `'_'`, as follows:

```
{UNIVERSAL_JDBC_DRIVER_PATH}/db2jcc_license__cu.jar
```

To resolve the problem:

1. Correct the UNIVERSAL_JDBC_DRIVER_PATH jar file name in the JACL script
2. Restart the cluster.
3. Rerun the client.

Running an application causes a runtime exception which produces an unreadable message.

At client runtime, you may receive a message similar to the following: Caused by: com.ibm.db2.jcc.a.SqlException: DB2 SQL error: SQLCODE: -1, SQLSTATE: 42X05, SQLERRMC: ANNUITYHOLDER20^T42X05

The problem occurs because the property *retrieveMessagesFromServerOnGetMessage*, which is required by WebSphere Application Server, has not been set.

To resolve the problem, on the administrative console

1. Click **Resources -> JDBC Providers**
2. Click on a Cloudscape provider
3. Scroll down and click on **Data Sources**
4. Select your data source (or add a new one)
5. Scroll down and select **Custom Properties**
6. If the property *retrieveMessagesFromServerOnGetMessage* already exists, set its value to true. If the property does not exist, select **New** and add the property *retrieveMessagesFromServerOnGetMessage* with a value **true**
7. Rerun the client

The SystemOut.log will now generate readable messages so that you can resolve the underlying problem.

Problems accessing a Sybase data source

What kind of problem are you having accessing your Sybase database?

- "Sybase Error 7713: Stored Procedure can only be executed in unchained transaction mode" error.
- "JZ0XS: The server does not support XA-style transactions. Please verify that the transaction feature is enabled and licensed on this server."
- A container managed persistence (CMP) enterprise bean is causing exceptions.

"Sybase Error 7713: Stored Procedure can only be executed in unchained transaction mode" error

This error occurs when either:

- The JDBC attempts to put the connection in **autocommit(true)** mode.
- A stored procedure is not created in a compatible mode.

To fix the **autocommit(true)** mode problem, let the application change the connection to chained mode using the **Connection.setAutoCommit(false)** mode, or use a **set chained on** language command.

To resolve the stored procedure problem, use the `sp_procxmode procedure_name "anymode"` command.

"JZ0XS: The server does not support XA-style transactions. Please verify that the transaction feature is enabled and licensed on this server."

This error occurs when XA-style transactions are attempted on a server that does not have Distributed Transaction Management (DTM) installed.

To resolve this problem, use the instructions in the Sybase Manual titled: *Using Adaptive Server Distributed Transaction Management Features* to enable Distributed Transaction Management (DTM). The main steps in this procedure are:

1. Install the DTM option.
2. Check the `license.dat` file to verify that the DTM option is installed.
3. Restart the license manager.
4. Enable DTM in ISQL.
5. Restart the ASE service.

A container managed persistence (CMP) enterprise bean is causing exceptions

This error is caused by improper use of reserved words. Reserved words cannot be used as column names.

To correct this problem: Rename the variable to remove the reserved word. You can find a list of reserved words in the *Sybase Adaptive Server Enterprise Reference Manual; Volume 1: Building Blocks*, Chapter 4. This manual is available online at: <http://manuals.sybase.com/onlinebooks/group-as/asg1250e/refman>.

Cannot access an enterprise bean from a servlet, a JSP file, a stand-alone program, or another client

What kind of error are you seeing?

- **javax.naming.NameNotFoundException: Name *name* not found in context "local"** message when access is attempted
- **BeanNotReentrantException** is thrown
- **CSITransactionRolledbackException / TransactionRolledbackException** is thrown
- Call fails, Stack trace beginning **EJSContainer E Bean method threw exception [exception_name]** found in JVM log file.
- Call fails, **ObjectNotFoundException** or **ObjectNotFoundLocalException** when accessing stateful session EJB found in JVM log file.
- Attempt to start CMP EJB module fails with **javax.naming.NameNotFoundException: dataSourceName**
- **Transaction [tran ID] has timed out after 120 seconds** error accessing EJB.
-
- Symptom: **CNTR0001W: A Stateful SessionBean could not be passivated**
- Symptom: **org.omg.CORBA.BAD_PARAM: Servant is not of the expected type. minor code: 4942F21E completed: No** returned to client program when attempting to execute an EJB method

If the client is remote to the enterprise bean, which means, running in a different application server or as a stand-alone client, browse the JVM logs of the application server hosting the enterprise bean as well as log files of the client.

If you do not see a problem that resembles yours, or if the information provided does not solve your problem, perform these steps:

1. If the problem appears to be name-service related, which means that you see a `NameNotFoundException`, or a message ID beginning with NMSV, see these topics for more information:
 - “Cannot look up an object hosted by WebSphere Application Server from a servlet, JSP file, or other client” on page 91
 - “Naming services component troubleshooting tips” on page 142
2. Check to see if the problem is identified and documented using the links in Diagnosing and fixing problems: Resources for learning.

If you still cannot fix your problem, see “Obtaining help from IBM” on page 39 for further assistance.

ObjectNotFoundException or ObjectNotFoundLocalException when accessing stateful session EJB

A possible cause of this problem is that the stateful session bean timed out and was removed by the container. This event must be addressed in the code, according to the EJB 2.0 specification (available at <http://java.sun.com/products/ejb/docs.html>), section 7.6.2, Dealing with exceptions.

Stack trace beginning "EJSContainer E Bean method threw exception [exception_name]" found in JVM log file

If the exception name indicates an exception thrown by an IBM class that begins with "com.ibm...", then search for the exception name within the information center, and in the online help as described below. If "exception name" indicates an exception thrown by your application, contact the application developer to determine the cause.

javax.naming.NameNotFoundException: Name name not found in context "local"

A possible reason for this exception is that the enterprise bean is not local (not running in the same Java virtual machine [JVM] or application server) to the client JSP, servlet, Java application, or other enterprise bean, yet the call is to a "local" interface method of the enterprise bean. If access worked in a development environment but not when deployed to WebSphere Application Server, for example, it might be that the enterprise bean and its client were in the same JVM in development, but are in separate processes after deployment.

To resolve this problem, contact the developer of the enterprise bean and determine whether the client call is to a method in the local interface for the enterprise bean. If so, have the client code changed to call a remote interface method, or to promote the local method into the remote interface.

References to enterprise beans with local interfaces are bound in a name space local to the server process with the URL scheme of `local:`. To obtain a dump of a server `local:` name space, use the name space dump utility described in the article "Name space dump utility for java:, local: and server name spaces."

BeanNotReentrantException is thrown

This problem can occur because client code (typically a servlet or JSP file) is attempting to call the same stateful `SessionBean` from two different client threads. This situation often results when an application stores the reference to the stateful session bean in a static variable, uses a global (static) JSP variable to refer to the

stateful SessionBean reference, or stores the stateful SessionBean reference in the HTTP session object. The application then has the client browser issue a new request to the servlet or JSP file before the previous request has completed.

To resolve this problem, ask the developer of the client code to review the code for these conditions.

CSITransactionRolledbackException / TransactionRolledbackException is thrown

An enterprise bean container throws these high-level exceptions to indicate that an enterprise bean call could not successfully complete. When this exception is thrown, browse the JVM logs to determine the underlying cause.

Some possible causes include:

- The enterprise bean might throw an exception that was not declared as part of its method signature. The container is required to roll back the transaction in this case. Common causes of this situation are where the enterprise bean or code that it calls throws a `NullPointerException`, `ArrayIndexOutOfBoundsException`, or other Java runtime exception, or where a BMP bean encounters a JDBC error. The resolution is to investigate the enterprise bean code and resolve the underlying exception, or to add the exception to the problem method signature.
- A transaction might attempt to do additional work after being placed in a "Marked Rollback", "RollingBack", or "RolledBack" state. Transactions cannot continue to do work after they are set to one of these states. This situation occurs because the transaction has timed out which, often occurs because of a database deadlock. Work with the application database management tools or administrator to determine whether database transactions called by the enterprise bean are timing out.
- A transaction might fail on commit due to dangling work from local transactions. The local transaction encounters some "dangling work" during commit. When a local transactions encounters an "unresolved action" the default action is to "rollback". You can adjust this action to "commit" in the Application Assembly Tool (AAT)Assembly Toolkit. Open the enterprise bean .jar file (or the EAR file containing the enterprise bean) and select the Session Beans or Entity Beans object in the component tree on the left. The Unresolved Action property is on the IBM Extensions tab of the container properties.

Attempt to start EJB module fails with "javax.naming.NameNotFoundException dataSourceName_CMP"exception

This problem can occur because:

- When the DataSource resource was configured, container managed persistence was not selected.
 - To confirm this problem, in the administrative console, browse the properties of the data source given in the NameNotFoundException. On the Configuration panel, look for a check box labeled **Container Managed Persistence**.
 - To correct this problem, select the check box for **Container Managed Persistence**.
- If container managed persistence is selected, it is possible that the CMP DataSource could not be bound into the namespace.
 - Look for additional naming warnings or errors in the status bar, and in the hosting application server JVM logs. Check any further naming-exception problems that you find by looking at the topic "Cannot look up an object hosted by WebSphere Application Server from a servlet, JSP file, or other client" on page 91.

Transaction [tran ID] has timed out after 120 seconds accessing an enterprise bean

This error can occur when a client executes a transaction on a CMP or BMP enterprise bean.

- The default timeout value for enterprise bean transactions is 120 seconds. After this time, the transaction times out and the connection closes.
- If the transaction legitimately takes longer than the specified timeout period, go to **Manage Application Servers > server_name**, select the **Transaction Service properties** page, and look at the property **Total transaction lifetime timeout**. Increase this value if necessary and save the configuration.

Symptom:CNTR0001W: A Stateful SessionBean could not be passivated

This error can occur when a Connection object used in the bean is not closed or nulled out.

To confirm this is the problem, look for an exception stack in the JVM log for the EJB container that hosts the enterprise bean, and looks similar to:

```
[time EDT] <ThreadID> StatefulPassi W CNTR0001W:
A Stateful SessionBean could not be passivated: StatefulBean0
(BeanId(XXX#YYY.jar#ZZZ, <ThreadID>),
state = PASSIVATING) com.ibm.ejs.container.passivator.StatefulPassivator@<ThreadID>
java.io.NotSerializableException: com.ibm.ws.rsadapter.jdbc.WSJdbcConnection
  at java.io.ObjectOutputStream.writeObject((Compiled Code))
  at java.io.ObjectOutputStream.writeObject(ObjectOutputStream.java(Compiled Code))
  at java.io.ObjectOutputStream.outputClassFields((Compiled Code))
  at java.io.ObjectOutputStream.defaultWriteObject((Compiled Code))
  at java.io.ObjectOutputStream.writeObject((Compiled Code))
  at java.io.ObjectOutputStream.writeObject(ObjectOutputStream.java(Compiled Code))
  at com.ibm.ejs.container.passivator.StatefulPassivator.passivate((Compiled Code))
  at com.ibm.ejs.container.StatefulBean0.passivate((Compiled Code))
  at com.ibm.ejs.container.activator.StatefulASActivationStrategy.atUnitOfWorkEnd
    ((Compiled Code))
  at com.ibm.ejs.container.activator.Activator.unitOfWorkEnd((Compiled Code))
  at com.ibm.ejs.container.ContainerAS.afterCompletion((Compiled Code))
```

where XXX,YYY,ZZZ is the Bean's name, and <ThreadID> is the thread ID for that run.

To correct this problem, the application must close all connections and set the reference to null for all connections. Typically this activity is done in the `ejbPassivate()` method of the bean. See the enterprise bean specification mandating this requirement, specifically section 7.4 in the EJB specification Version 2.0. Also, note that the bean must have code to reacquire these connections when the bean is reactivated. Otherwise, there are `NullPointerException`s when the application tries to reuse the connections.

Symptom: org.omg.CORBA.BAD_PARAM: Servant is not of the expected type. minor code: 4942F21E completed: No

This error can be returned to a client program when the program attempts to execute an EJB method.

Typically this problem is caused by a mismatch between the interface definition and implementation of the client and server installations, respectively.

Another possible cause is when an application server is set up to use a single class loading scheme. If an application is uninstalled while the application server remains active, the classes of the uninstalled application are still loaded in the application server. If you change the application, redeploy and reinstall it on the application server, the previously loaded classes become back level. The back level classes cause a code version mismatch between the client and the server.

To correct this problem:

1. Change the application server class loading scheme to multiple.
2. Stop and restart the application server and try the operation again.
3. Make sure the client and server code version are the same.

Cannot look up an object hosted by WebSphere Application Server from a servlet, JSP file, or other client

To resolve problems encountered when a servlet, JSP file, stand-alone application or other client attempts to access an enterprise bean, ConnectionPool, or other named object hosted by WebSphere Application Server, you must first verify that the target server can be accessed from the client:

- From a command prompt on the client's server, enter "ping *server_name*" and verify connectivity.
- Use the WebSphere Application Server administrative console to verify that the target resource's application server and, if applicable, EJB module or Web module, is started.

Continue only if there is no problem with connectivity and the target resource appears to be running.

What kind of error are you seeing?

- NameNotFoundException from JNDI lookup operation
- CannotInstantiateObjectException from JNDI lookup operation
- Message NMSV0610I appears in the server's log file, indicating that some Naming exception has occurred
- OperationNotSupportedException from JNDI Context operation.
- "WSVR0046E: Failed to bind" error, with Original exception: "org.omg.CosNaming.NamingContextPackage.AlreadyBound".
- ConfigurationException from "new InitialContext" operation or from a JNDI Context operation with a URL name.
- ServiceUnavailableException from "new InitialContext" operation.
- CommunicationException thrown from a "new InitialContext" operation.
- NMSV0605E: A Reference object looked up from the context...

If you do not see a problem that resembles yours, or if the information provided does not solve your problem, contact IBM support for further assistance.

NameNotFoundException from JNDI lookup operation

If you encounter this exception in trying to access an enterprise bean, data source, messaging resource, or other resource:

- Browse the properties of the target object in the administrative console, and verify that the jndi name it specifies matches the JNDI name the client is using.
- If you are looking up an object that resides on a server different from the one from which the initial context was obtained, you must use the fully qualified name.

- If access is from another server object such as a servlet accessing an enterprise bean and you are using the default context, not specifying the fully qualified JNDI name, you may get this error if the object is being hosted on a different server.
- If access is from a stand-alone client, it may be that the object you are attempting access is on a server different from the server from which you obtained the initial context.

To correct this problem, use the fully-qualified JNDIname:

- If the object is in a single server:
`cell/nodes/nodeName/servers/serverName/jndiName`. Objects are not supported in this release.
- If the object is on a server cluster: `cell/clusters/clusterName/jndiName`.

CannotInstantiateObjectException from JNDI lookup operation

If you encounter this exception in trying to access an enterprise bean, data source, messaging resource, or other resource, possible causes include:

- A serialized Java object is being looked up, but the necessary classes required to deserialize it are not in the runtime environment.
- A Reference object is being looked up, and the associated factory used to process it as part of the lookup processing is failing.

To determine the precise cause of the problem:

- Look in the JVM logs of the server hosting the target resource. Look for exceptions immediately preceding the `CannotInstantiateObjectException`. If it is a `java.lang.NoClassDefFoundError` or `java.lang.ClassNotFoundException`, make sure the class referenced in the error message can be located by the class loader.
- Print out the stack trace for the root cause and look for the factory class. It will be called by `javax.naming.NamingManager.getObjectInstance()`. The reason for the failure will depend on the factory implementation, and may require you to contact the developer of the factory class.

Message NMSV0610I appears in the server's log file, indicating that some Naming exception has occurred

This error is informational only and is provided in case the exception is related to an actual problem. Most of the time, it is not. If it is, the log file should contain adjacent entries to provide context.

- If no problems are being experienced, ignore this message. Also ignore the message if the problem you are experiencing does not appear to be related to the exception being reported and if there are no other adjacent error messages in the log.
- If a problem is being experienced, look in the log for underlying error messages.
- The information provided in message NMSV0610I can provide valuable debug data for other adjacent error messages posted in response to the Naming exception that occurred.

OperationNotSupportedException from JNDI Context operation

This error has two possible causes:

- An update operation, such as a bind, is being performed with a name that starts with `"java:comp/env"`. This context and its subcontexts are read-only contexts.
- A Context bind or rebind operation of a non-CORBA object is being performed on a remote name space that does not belong to WebSphere Application Server. Only CORBA objects can be bound to these `CosNaming` name spaces.

To determine which of these errors is causing the problem, check the full exception message.

WSVR0046E: Failed to bind, ejb/jndiName: ejb/jndiName. Original exception : org.omg.CosNaming.NamingContextPackage.AlreadyBound

This error occurs two enterprise bean server applications were installed on the same server such that a binding name conflict occurred. That is, a jndiName value is the same in the two applications' deployment descriptors. The error will surface during server startup when the second application using that jndiName value is started.

To verify that this is the problem, examine the deployment descriptors for all enterprise bean server applications running in the server in search for a jndiName that is specified in more than one enterprise bean application.

To correct the problem, change any duplicate jndiName values to ensure that each enterprise bean in the server process is bound with a different name.

ConfigurationException from "new InitialContext" operation or from a JNDI Context operation with a URL name

If you are attempting to obtain an initial JNDI context, a configuration exception can occur because an invalid JNDI property value was passed to the InitialContext constructor. This includes JNDI properties set in the System properties or in some jndi.properties file visible to the class loader in effect. A malformed provider URL is the most likely property to be incorrect. If the JNDI client is being run as a thin client such that the CLASSPATH is set to include all of the individual jar files required, make sure the .jar file containing the properties file com/ibm/websphere/naming/jndiprovider.properties is in the CLASSPATH.

If the exception is occurring from a JNDI Context call with a name in the form of a URL, the current JNDI configuration may not be set up properly so that the required factory class name cannot be determined, or the factory may not be visible to the class loader currently in effect. If the name is a Java: URL, the JNDI client must be running in a J2EE client or server environment. That is, the client must be running in a container.

Check the exception message to verify the cause.

If the exception is being thrown from the InitialContext constructor, correct the property setting or the CLASSPATH.

If the exception is being thrown from a JNDI Context method, make sure the property java.naming.factory.url.pkgs includes the package name for the factory required for the URL scheme in the name. URL names with the Java scheme can only be used while running in a container.

ServiceUnavailableException from "new InitialContext" operation

This exception indicates that some unexpected problem occurred while attempting to contact the name server to obtain an initial context. The ServiceUnavailableException, like all NamingException objects, can be queried for a root cause. Check the root cause for more information. It is possible that some of the problems described for CommunicationExceptions may also result in a ServiceUnavailableException.

Since this exception is triggered by an unexpected error, there is no probable cause to confirm. If the root cause exception does not indicate what the probable cause is, investigate the possible causes listed for CommunicationExceptions.

CommunicationException thrown from a "new InitialContext" operation

The name server identified by the provider URL cannot be contacted to obtain the initial JNDI context. There are many possible causes for this problem, including:

- The host name or port in the provider URL is incorrect.
- The host name cannot be resolved into an IP address by the domain name server, or the IP address does not match the IP address which the server is actually running under.
- A firewall on the client or server is preventing the port specified in the provider URL from being used.

To correct this problem:

- Make sure the provider URL and the network configurations on the client and server machines are correct.
- Make sure the host name can be resolved into an IP address which can be reached by the client machine. You can do this using the ping command.
- If you are running a firewall, make sure that use of the port specified in the provider URL will be allowed.

Access problems after enabling security

What kind of error are you seeing?

- I cannot access all or part of the administrative console or use the wsadmin tool after enabling security
- I cannot access a Web page after enabling security
- Authentication error accessing a Web page
- Authorization error accessing a Web page
- The client cannot access an enterprise bean after enabling security
- The client never gets prompted when accessing a secured enterprise bean
- I cannot stop an application server, node manager, or node after enabling security
- AccessControlException is reported in SystemOut.log.
- After enabling single signon, I cannot log on to the administrative console.

For general tips on diagnosing and resolving security-related problems, see the topic [Troubleshooting the security component](#).

If you do not see a problem that resembles yours, or if the information provided does not solve your problem, see ["Obtaining help from IBM"](#) on page 39.

I cannot access all or part of the administrative console or use the wsadmin tool after enabling security

- If you cannot access the administrative console, or view and update certain objects, look in the SystemOut log of the application server which hosts the administrative console page for a related error message.
- You might not have authorized your ID for administrative tasks. This problem is indicated by errors such as:
 - [8/2/02 10:36:49:722 CDT] 4365c0d9 RoleBasedAuth A SECJ0305A: Role based authorization check failed for security name MyServer/myUserId, accessId MyServer/S-1-5-21-882015564-4266526380-2569651501-1005 while invoking method getProcessType on resource Server and module Server.

- Exception message: "ADMN0022E: Access denied for the getProcessType operation on Server MBean"
- When running the command: `wsadmin -username j2ee -password j2ee: WASX7246E: Cannot establish "SOAP" connection to host "BIRKT0" because of an authentication failure. Please ensure that user and password are correct on the command line or in a properties file.`

To grant an ID administrative authority, from the administrative console, click **System Administration > Console Users** and validate that the ID is a member. If it is not, add the ID with at least monitor access privileges, for read-only access.

- Check that the *enable_trusted_application* flag is set to true. To check the *enable_trusted_application* flag, from the Administrative Console, click **Security > Global Security > Custom Properties > Enable Trusted Application** and verify that it is set to true.

I cannot access a Web page after enabling security

When secured resources are not accessible, probable causes include:

- Authentication errors - WebSphere Application Server security cannot identify the ID of the person or process. Symptoms of authentication errors include:
 - On a Netscape browser:
 - Authorization failed. Retry? message displays after an attempt to log in.
 - Accepts any number of attempts to retry login and displays Error 401 message when Cancel is clicked to stop retry.
 - A typical browser message displays: Error 401: Basic realm='Default Realm'.
 - On an Internet Explorer browser:
 - Login prompt displays again after an attempt to log in.
 - Allows three attempts to retry login.
 - Displays Error 401 message after three unsuccessful retries.
- Authorization errors - the security function has identified the requesting person or process as not authorized to access the secured resource. Symptoms of authorization errors include:
 - Netscape browser: "Error 403: AuthorizationFailed" message is displayed.
 - Internet Explorer:
 - "You are not authorized to view this page" message is displayed.
 - "HTTP 403 Forbidden" error is also displayed.
- SSL errors - WebSphere Application Server security uses Secure Socket Layer (SSL) technology internally to secure and encrypt its own communication, and incorrect configuration of the internal SSL settings can cause problems. Also you might have enabled SSL encryption for your own Web application or enterprise bean client traffic which, if configured incorrectly, can cause problems regardless of whether WebSphere Application Server security is enabled.
 - SSL related problems are often indicated by error messages which contain a statement such as: ERROR: Could not get the initial context or unable to look up the starting context.Exiting. followed by `javax.net.ssl.SSLHandshakeException`

The client cannot access an enterprise bean after enabling security

If client access to an enterprise bean fails after security is enabled:

- Review the steps for securing and granting access to resources.
- Browse the server JVM logs for errors relating to enterprise bean access and security. Look up any errors in the message table.

Errors similar to **Authorization failed for /UNAUTHENTICATED while invoking resource securityName:/UNAUTHENTICATED;accessId:UNAUTHENTICATED not granted any of the required roles** indicate that:

- An unprotected servlet or JavaServer Page (JSP) file accessed a protected enterprise bean. When an unprotected servlet is accessed, the user is not prompted to log in and the servlet runs as UNAUTHENTICATED. When the servlet makes a call to an enterprise bean that is protected the servlet fails.

To resolve this problem, secure the servlet that is accessing the protected enterprise bean. Make sure the *runAs* property for the servlet is set to an ID that can access the enterprise bean.

- An unauthenticated Java client program is accessing an enterprise bean resource that is protected. This situation can happen if the file read by the *sas.client.props* properties file used by the client program does not have the *securityEnabled* flag set to **true**.

To resolve this problem, make sure that the *sas.client.props* file on the client side has its *securityEnabled* flag set to **true**.

Errors similar to **Authorization failed for valid_user while invoking resource securityName:/username;accessId:xxxxxx not granted any of the required roles** indicate that a client attempted to access a secured enterprise bean resource, and the supplied user ID is not assigned the required roles for that enterprise bean.

- Check that the required roles for the enterprise bean resource are accessed. View the required roles for the enterprise bean resource in the deployment descriptor of the Web resource.
- Check the authorization table and make sure that the user or the group that the user belongs to is assigned one of the required roles. You can view the authorization table for the application that contains the enterprise bean resource using the administrative console.

If `org.omg.CORBA.NO_PERMISSION` exceptions occur when programmatically logging on to access a secured enterprise bean, an authentication exception has occurred on the server. Typically the CORBA exception is triggered by an underlying `com.ibm.WebSphereSecurity.AuthenticationFailedException`. To determine the actual cause of the authentication exception, examine the full trace stack:

1. Begin by viewing the text in the exception, following `WSSecurityContext.acceptSecContext()`, reason:. Typically, this text describes the failure without further analysis.
2. If this action does not describe the problem, look up the CORBA minor code. The codes are listed in the article titled [Troubleshooting the security components](#) reference.

For example, the following exception indicates a CORBA minor code of 49424300. The explanation of this error in the CORBA minor code table reads: authentication failed error.

In this case the user ID or password supplied by the client program is probably invalid:

```
org.omg.CORBA.NO_PERMISSION: Caught WSSecurityContextException in WSSecurityContext.acceptSecCont
```

A CORBA INITIALIZE exception with JSAS1477W: SECURITY CLIENT/SERVER CONFIGURATION MISMATCH error embedded, is received by client program from the server.

This error indicates that the security configuration for the server differs from the client in some fundamental way. The full exception message lists the specific mismatches. For example, the following exception lists three errors:

```
Exception received: org.omg.CORBA.INITIALIZE:
JSAS1477W: SECURITY CLIENT/SERVER CONFIG MISMATCH:
The client security configuration (sas.client.props or outbound settings in GUI) does not support
ERROR 1: JSAS0607E: The client requires SSL Confidentiality but the server does not support it.
ERROR 2: JSAS0610E: The server requires SSL Integrity but the client does not support it.
ERROR 3: JSAS0612E: The client requires client (e.g., userid/password or token), but the server does not support it.
minor code: 0
completed: No
at com.ibm.ISecurityLocalObjectBaseL13Impl.SecurityConnectionInterceptor.getConnectionKey(SecurityConnectionInterceptor.java:100)
```

In general, resolving the problem requires a change to the security configuration of either the client or the server. To determine which configuration setting is involved, look at the text following the JSAS error message. For more detailed explanations and instructions, look in the message reference, by selecting the **Reference** view of the information center navigation and expanding **Messages** in the navigation tree.

In these particular cases:

- In ERROR 1, the client is requiring SSL confidentiality but the server does not support SSL confidentiality. Resolve this mismatch in one of two ways. Either update the server to support SSL confidentiality or update the client so that it no longer requires it.
- In ERROR 2, the server requires SSL integrity but the client does not support SSL integrity. Resolve this mismatch in one of two ways. Either update the server to support SSL integrity or update the client so that it no longer requires it.
- In ERROR 3, the client requires client authentication through a user id and password, but the server does not support this type of client authentication. Either the client or the server needs to change the configuration. To change the client configuration, modify the SAS.CLIENT.PROPS file for a pure client or change the outbound configuration for the server in the Security GUI. To change the configuration for the target server, modify the inbound configuration in the Security GUI.

Similarly, an exception like org.omg.CORBA.INITIALIZE: JSAS0477W: SECURITY CLIENT/SERVER CONFIG MISMATCH: appearing on the server trying to service a client request indicates a security configuration mismatch between client and server. The steps for resolving the problem are the same as for the JSAS1477W exceptions previously described.

Client program never gets prompted when accessing secured enterprise bean

Even though it appears security is enabled and an enterprise bean is secured, it can happen that the client executes the remote method without prompting. If the remote method is protected, an authorization failure results. Otherwise, execute the method as an unauthenticated user.

Possible reasons for this problem include:

- The server with which you are communicating might not have security enabled. Check with the WebSphere Application Server administrator to ensure that the server security is enabled. Access the global security settings from within the Security section of the administrative console.
- The client does not have security enabled in the sas.client.props file. Edit the sas.client.props file to ensure the property **com.ibm.CORBA.securityEnabled** is set to true.
- The client does not have a ConfigURL specified. Verify that the property **com.ibm.CORBA.ConfigURL** is specified on the command line of the Java client, using the -D parameter.

- The specified ConfigURL has an invalid URL syntax, or the `sas.client.props` that is pointed to cannot be found. Verify that the `com.ibm.CORBA.ConfigURL` property is valid, for example, similar to the file: `/C:/WebSphere/AppServer/properties/sas.client.props` file on Windows systems. Check the Java documentation for a description of URL formatting rules. Also, validate that the file exists at the specified path.
- The client configuration does not support message layer client authentication (user ID and password). Verify that the `sas.client.props` file has one of the following properties set to true:
 - `com.ibm.CSI.performClientAuthenticationSupported=true`
 - `com.ibm.CSI.performClientAuthenticationRequired=true`
- The server configuration does not support message layer client authentication (user ID and password). Check with the WebSphere Application Server administrator to verify that user ID and password authentication is specified for the inbound configuration of the server within the System Administration section of the administrative console administration tool.

Cannot stop an application server, node manager, or node after enabling security

If you use command line utilities to stop WebSphere Application Server processes, apply additional parameters after enabling security to provide authentication and authorization information.

Use the `./stopServer.sh -help` command to display the parameters to use.

Use the following command options after enabling security:

- `./stopServer.sh hostname -username name -password password`
- `./stopNode.sh -username name -password password`
- `./stopManager.sh -username name -password password`

After enabling single signon, I cannot log on to the administrative console

This problem occurs when single signon (SSO) is enabled, and you attempt to access the administrative console using the short name of the server, for example `http://myserver:9090/admin`. The server accepts your user ID and password, but returns you to the log on page instead of the administrative console.

To correct this problem, use the fully qualified host name of the server, for example `http://myserver.mynetwork.mycompany.com:9090/admin`.

Errors after enabling security

What kind of error are you seeing?

- Authentication error accessing a Web page
- Authorization error accessing a Web page
- Error Message: SECJ0314E: Current Java 2 security policy reported a potential violation
- MSGS0508E: The JMS Server security service was unable to authenticate user ID: error displayed in SystemOut.log when starting an application server
- Error Message: SECJ0237E: One or more vital LTPAServerObject configuration attributes are null or not available after enabling security and starting the application server.
- An AccessControlException is reported in the SystemOut.log.
- Error Message: SECJ0336E: Authentication failed for user {0} because of the following exception {1}

For general tips on diagnosing and resolving security-related problems, see the topic *Troubleshooting the security component*.

If you do not see a problem that resembles yours, or if the information provided does not solve your problem, see “Obtaining help from IBM” on page 39.

Authentication error accessing a Web page

Possible causes for authentication errors include:

- **Incorrect user name or passwords.** Check the user name and password and make sure they are correct.
- **Security configuration error : User registry type is not set correctly.** Check the user registry property in global security settings in the administrative console. Verify that it is the intended user registry.
- **Internal program error.** If the client application is a Java standalone program, this program might not gather or send credential information correctly.

If the user registry configuration, user ID, and password appear correct, use the WebSphere Application Server trace to determine the cause of the problem. To enable security trace, use the `com.ibm.ws.security.*=all=enabled` trace specification.

Authorization error accessing a Web page

If a user who should have access to a resource does not, there is probably a missing configuration step. Review the steps for securing and granting access to resources.

Specifically:

- Check required roles for the accessed Web resource.
- Check the authorization table to make sure that the user, or the groups to which the user belongs, is assigned to one of the required roles.
- View required roles for the Web resource in the deployment descriptor of the Web resource.
- View the authorization table for the application that contains the Web resource, using the administrative console.
- Test with a user who is granted the required roles, to see if the user can access the problem resources.
- If the problem user is required to have one or more of the required roles, use the administrative console to assign that user to required roles. Then stop and restart the application.

If the user is granted required roles, but still fails to access the secured resources, enable security trace, using `com.ibm.ws.security.*=all=enabled` as the trace specification. Collect trace information for further resolution.

Error Message: SECJ0314E: Current Java 2 security policy reported a potential violation on server

If you find errors on your server similar to:

```
Error Message: SECJ0314E: Current Java 2 Security policy reported a potential violation of Java 2
{0}Permission\:{1}Code\:{2}{3}Stack Trace\:{4}Code Base Location\:{5}
```

The Java security manager `checkPermission()` method has reported an exception, `SecurityException`.

The reported exception might be critical to the secure system. Turn on security trace to determine the potential code that might have violated the security policy. Once the violating code is determined, verify if the attempted operation is permitted with respect to Java 2 Security, by examining all applicable Java 2 security policy files and the application code.

A more detailed report is enabled by either configuring RAS trace into debug mode, or specifying a Java property.

- Check the trace enabling section for instructions on how to configure RAS trace into debug mode, or
- Specify the following property in the **Application Servers > server name > ProcessDefinition > Java Virtual Machine** panel from the administrative console in the **Generic JVM arguments** panel:
 - Add the run-time flag **java.security.debug**
 - Valid values:
 - access** Print all debug information including: required permission, code, stack, and code base location.
 - stack** Print debug information including: required permission, code, and stack.
 - failure** Print debug information including: required permission and code.

For a review of Java security policies and what they mean, see the Java 2 Security documentation at <http://java.sun.com/j2se/1.3/docs/guide/security/index.html>.

Tip: If the application is running with a Java Mail API, this message might be benign. You can update the *installed Enterprise Application root/META-INF/was.policy* file to grant the following permissions to the application:

- permission java.io.FilePermission "\${user.home}\${/}.mailcap", "read";
- permission java.io.FilePermission "\${user.home}\${/}.mime.types", "read";
- permission java.io.FilePermission "\${java.home}\${/}lib\${/}mailcap", "read";
- permission java.io.FilePermission "\${java.home}\${/}lib\${/}mime.types", "read";

Error message: MSGS0508E: The JMS Server security service was unable to authenticate user ID:" error displayed in SystemOut.log when starting an application server

This error can result from installing the JMS messaging API sample and then enabling security. You can follow the instructions in the Configure and Run page of the corresponding JMS sample documentation to configure the sample to work with WebSphere Application Server security.

You can verify the installation of the message-driven bean sample by launching the installation program, selecting **Custom**, and browsing the components which are already installed in the **Select the features you like to install** panel. The JMS sample is shown as **Message-Driven Bean Sample**, under **Embedded Messaging**.

You can also verify this installation by using the administrative console to open the properties of the application server which contains the samples. Select **MDBSamples** and click **uninstall**.

If the problem persists, review the section Messaging (JMS) component troubleshooting tips

Error message: SECJ0237E: One or more vital LTPAServerObject configuration attributes are null or not available after enabling security and starting the application server.

This error message can result from selecting LTPA as the authentication mechanism, but not generating the LTPA keys. The LTPA keys encrypt the LTPA token.

To resolve this problem:

1. Click **System Administration > Console users > LTPA**
2. Enter a password, which can be anything.
3. Enter the same password in **Confirm Password**.
4. Click **Apply**.
5. Click **Generate Keys**.
6. Click on **Save**.

The exception AccessControlException, is reported in the SystemOut.log

The problem is related to the Java 2 Security feature of WebSphere Application Server, the API-level security framework that is implemented in WebSphere Application Server Version 5. An exception similar to the following example displays. The error message and number can vary.

```
E SRVE0020E: [Servlet Error]-[validator]: Failed to load servlet:  
java.security.AccessControlException:  
access denied (java.io.FilePermission  
C:\WebSphere\AppServer\installedApps\maeda\adminconsole.ear\adminconsole.war\  
WEB-INF\validation.xml read)
```

For an explanation of Java 2 security, how and why to enable or disable it, how it relates to policy files, and how to edit policy files, see the Java 2 security topic in the information center navigation. The topic explains that Java 2 security is not only used by this product, but developers can also implement it for their business applications. Administrators might need to involve developers, if this exception is thrown when a client tries to access a resource hosted by WebSphere Application Server.

Possible causes of these errors include:

- Syntax errors in a policy file.
- Syntax errors in permission specifications in the ra.xml file bundled in a .rar file. This case applies to resource adapters that support connector access to CICS or other resources.
- An application is missing the specified permission in a policy file, or in permission specifications in an ra.xml file bundled in a .rar file
- The class path is not set correctly, preventing the permissions for the resource.xml file for SPI from being correctly created.
- A library called by an application, or the application, is missing a doPrivileged block to support access to a resource.
- Permission is specified in the wrong policy file.

To resolve these problems:

- Check all of the related policy files to verify that the permission shown in the exception, for example java.io.FilePermission, is specified.

- Look for a related `ParserException` in the `SystemOut.log` file which reports the details of the syntax error. For example: `SECJ0189E: Caught ParserException while creating template for application policy C:\WAS\config\cells\xxx\nodes\xxx\app.policy . The exception is com.ibm.ws.security.util.ParserException: line 18: expected ';', found 'grant'`
- Look for a message similar to: `SECJ0325W: The permission permission specified in the policy file is unresolved.`
- Check the call stack to determine which method does not have the permission. Identify the class path of this method. If it is hard to identify the method, enable the Java2 security Report.
 - Configuring RAS trace by specifying `com.ibm.ws.security.core.*=all=enabled`, or specifying a Java **property:java.security.debug** property. Valid values for the **java.security.debug** property are:
 - access** Print all debug information including: required permission, code, stack, and code base location.
 - stack** Print debug information including: required permission, code, and stack.
 - failure** Print debug information including: required permission and code.
 - The report shows:
 - Permission** the missing permission.
 - Code** which method has the problem.
 - Stack Trace** where the access violation occurred.
 - CodeBaseLocation** the detail of each stack frame.

Usually, `Permission` and `Code` are enough to identify the problem. The following example illustrates a report:

```
Permission:
C:\WebSphere\AppServer\logs\server1\SystemOut_02.08.20_11.19.53.log
:
access denied (java.io.FilePermission
C:\WebSphere\AppServer\logs\server1\SystemOut_02.08.20_11.19.53.log
delete)

Code:
com.ibm.ejs.ras.RasTestHelper$7 in
{file:/C:/WebSphere/AppServer/installedApps/maeda/JrasFVTApp.ear/RasLib.jar
}

Stack Trace:

java.security.AccessControlException: access denied (java.io.FilePermission
C:\WebSphere\AppServer\logs\server1\SystemOut_02.08.20_11.19.53.log delete
)
    at java.security.AccessControlContext.checkPermission
        (AccessControlContext.java(Compiled Code))
    at java.security.AccessController.checkPermission
        (AccessController.java(Compiled Code))
    at java.lang.SecurityManager.checkPermission
        (SecurityManager.java(Compiled Code))
    .

Code Base Location:

com.ibm.ws.security.core.SecurityManager :
file:/C:/WebSphere/AppServer/lib/securityimpl.jar

ClassLoader: com.ibm.ws.bootstrap.ExtClassLoader
Permissions granted to CodeSource
```

```
(file:/C:/WebSphere/AppServer/lib/securityimpl.jar <no certificates>
```

```
{  
  (java.util.PropertyPermission java.vendor read);  
  (java.util.PropertyPermission java.specification.version read);  
  (java.util.PropertyPermission line.separator read);  
  (java.util.PropertyPermission java.class.version read);  
  (java.util.PropertyPermission java.specification.name read);  
  (java.util.PropertyPermission java.vendor.url read);  
  (java.util.PropertyPermission java.vm.version read);  
  (java.util.PropertyPermission os.name read);  
  (java.util.PropertyPermission os.arch read);  
}  
( This list continues.)
```

- If the method is SPI, check the resources.xml file to ensure that the class path is correct.
- To confirm that all of the policy files are loaded correctly, or what permission each class path is granted, enable the trace with **com.ibm.ws.security.policy.*=all=enabled**. All loaded permissions are listed in the trace.log file. Search for the app.policy, was.policy and ra.xml files. To check the permission list for a class path, search for **Effective Policy for classpath**.
- If there are any syntax errors in the policy file or ra.xml file, correct them with the policytool. Avoid editing the policy manually, because syntax errors can result.
- If a permission is listed as Unresolved, it does not take effect. Verify that the specified permission name is correct.
- If the class path specified in the resource.xml file is not correct, correct it.
- If a required permission does not exist in either the policy files or the ra.xml file, examine the application code to see if you need to add this permission. If so, add it to the proper policy file or ra.xml file.
- If the permission should not be granted outside of the specific method that is accessing this resource, modify the code needs to use a doPrivileged block.
- If this permission does exist in a policy file or a ra.xml file and they were loaded correctly, but the class path still does not have the permission in its list, the location of the permission might not be correct. Read Java 2 Security in the information center navigation carefully to determine in which policy file or ra.xml file that permission should be specified.

Tip: If the application is running with the Java Mail API, you can update the *installed Enterprise Application root/META-INF/was.policy* file to grant the following permissions to the application:

- permission java.io.FilePermission "\${user.home}\${/}.mailcap", "read";
- permission java.io.FilePermission "\${user.home}\${/}.mime.types", "read";
- permission java.io.FilePermission "\${java.home}\${/}lib\${/}mailcap", "read";
- permission java.io.FilePermission "\${java.home}\${/}lib\${/}mime.types", "read";

Error Message: SECJ0336E: Authentication failed for user {0} because of the following exception {1}

This error message results if the user ID indicated is not found in the LDAP user registry. To resolve this problem:

1. Verify that your user ID and password are correct.
2. Verify that the user ID exists in the registry.
3. Verify that the base distinguished name (DN) is correct.
4. Verify that the user filter is correct.

5. Verify that the bind DN and the password for the bind DN are correct. If the bind DN and password are not specified, add the missing information and retry.
6. Verify that the host name and LDAP type are correct.

Consult with the administrator of the user registry if the problem persists.

Error Message: AlarmListener E SCHD0102I: java.rmi.MarshalException:CORBA BAD_PARAM

The following error can be sent to the SystemOut.log file by a Scheduler client application when global security is enabled on WebSphere Business Integration Server Foundation:

```
12/19/03 1:30:27:260 CST] 3fc9894d AlarmListener E SCHD0102I:
java.rmi.MarshalException: CORBA BAD_PARAM 0x494210c7 No; nested exception is:
    org.omg.CORBA.BAD_PARAM: Major Code[15] Minor Code[0] Message[
CSIUtil.create_gss_initial_context_token: Java exception:
java.lang.NullPointerException] vmcid: 0x49421000 minor code: C7 completed: No
at com.ibm.CORBA.iiop.UtilDelegateImpl.mapSystemException(UtilDelegateImpl.jav
a:220)
```

This error occurs because Identity Assertion is turned off.

To correct this error, enable Identity Assertion:

1. On the administrative console, select **Security > Authentication Protocol**
2. Select CSIV2 Inbound Authentication and add the following:
 - Identity Assertion 'Checked'
 - Trusted Servers '*' (* indicates that all servers are trusted. Alternatively, you can enter
3. Select CSIV2 Outbound Authentication, and add the following:
 - Identity Assertion 'Checked'

Errors after enabling Secure Sockets Layer, or Secure Sockets Layer-related error messages

If you are unable to access resources using a Secure Sockets Layer (SSL) URL (beginning with https:), or encounter error messages which indicate SSL problems, verify that your HTTP server is configured correctly for SSL by browsing the welcome page of the HTTP server using SSL by entering the URL:
https://hostname.

If the page works with HTTP, but not HTTPS, the problem is with the HTTP server.

- Refer to the documentation for your HTTP server for instructions on correctly enabling SSL. If you are using the IBM HTTP Server or Apache, go to: <http://www.ibm.com/software/webservers/htpservers/library.html>. Click **Frequently Asked Questions > SSL**.
- If you are use the IBM Key Management (IKeyman) tool to create certificates and keys, remember to stash the password to a file when creating the KDB file with the IBM Key Management Tool.
 1. Go to the directory where the KDB file was created, and see if there is a .sth file.
 2. If not, open the KDB file with the IBM Key Management Tool, and click **Key Database File > Stash Password**. The following message displays: The password has been encrypted and saved in the file.

If the HTTP server handles SSL-encrypted requests successfully, or is not involved (for example, traffic flows from a Java client application directly to an enterprise

bean hosted by the WebSphere Application Server, or the problem appears only after enabling WebSphere Application Server security), what kind of error are you seeing?

- `javax.net.ssl.SSLHandshakeException` - The client and server could not negotiate the desired level of security. Reason: handshake failure
- `javax.net.ssl.SSLHandshakeException` - The client and server could not negotiate the desired level of security. Reason: unknown certificate
- `javax.net.ssl.SSLHandshakeException` - The client and server could not negotiate the desired level of security. Reason: bad certificate
- `org.omg.CORBA.INTERNAL: EntryNotFoundException` or `NTRegistryImp E SECJ0070E: No privilege id configured for: error when programmatically creating a credential.`

For general tips on diagnosing and resolving security-related problems, see “Security components troubleshooting tips” on page 145

If you do not see a problem that resembles yours, or if the information provided does not solve your problem, see “Obtaining help from IBM” on page 39

`javax.net.ssl.SSLHandshakeException` - The client and server could not negotiate the desired level of security. Reason: handshake failure

If you see a Java exception stack similar to the following example:

```
[Root exception is org.omg.CORBA.TRANSIENT: CAUGHT_EXCEPTION_WHILE_CONFIGURING_SSL_CLIENT_SOCKET]
```

Some possible causes are:

- Not having common ciphers between the client and server.
- Not specifying the correct protocol.

To correct these problems:

1. Review the SSL settings. Click **WebSphere Administrative Console Security Settings > SSL Configuration Repertoires > DefaultSSLSettings** (or other named SSL settings).
2. Select the **Secure Sockets Layer (SSL)** option from the Additional Properties menu. You can also browse the file manually by viewing the `install_dir/properties/sas.client.props` file.
3. Check the property specified by the `com.ibm.ssl.protocol` file to determine which protocol is specified.
4. Check the cipher types specified by the `com.ibm.ssl.enabledCipherSuites`. You might want to add more cipher types to the list. To see which cipher suites are currently enabled: Go to the properties page of the SSL settings as described above, and look for the **Cipher Suites** property. To see the list of all possible cipher suites, go to the properties page of the SSL settings as described above, then view the online help for that page. From the help page, click **Configure additional SSL settings**.
5. Correct the protocol or cipher problem by using a different client or server protocol and cipher selection. Typical protocols are SSL or SSLv3.
6. Make the cipher selection 40-bit instead of 128-bit. For CSIV2, set both of the following properties to false in the `sas.client.props` file, or set security level=medium in the administrative console settings:
 - `com.ibm.CSI.performMessageConfidentialityRequired=false`
 - `com.ibm.CSI.performMessageConfidentialitySupported=false`

javax.net.ssl.SSLHandshakeException: unknown certificate

If you see a Java exception stack similar to the following example, it might be caused by not having the personal certificate for the server in the client truststore file:

```
ERROR: Could not get the initial context or unable to look up the starting context. Exiting. Except
```

To correct this problem:

1. Check the client truststore file to determine if the signer certificate from the server personal certificate is there. For a self-signed server personal certificate, the signer certificate is the public key of the personal certificate. For a certificate authority signed server personal certificate, the signer certificate is the root CA certificate of the CA that signed the personal certificate.
2. Add the server signer certificate to the client truststore file.

javax.net.ssl.SSLHandshakeException: bad certificate

If you see a Java exception stack similar to the following example, it can be caused by having a personal certificate in the client keystore used for SSL mutual authentication but not having extracted the signer certificate into the server truststore file so that the server can trust it whenever the SSL handshake is made:

```
ERROR: Could not get the initial context or unable to look up the starting context. Exiting. Except
```

To verify this problem, check the server truststore file to determine if the signer certificate from the client personal certificate is there. For a self-signed client personal certificate, the signer certificate is the public key of the personal certificate. For a certificate authority signed client personal certificate, the signer certificate is the root CA certificate of the CA that signed the personal certificate.

To correct this problem, add the client signer certificate to the server truststore file.

org.omg.CORBA.INTERNAL: EntryNotFoundException or NTRegistryImp E SECJ0070E: No privilege id configured for: error when programmatically creating a credential

If you encounter the following exception in a client application attempting to request a credential from a WebSphere Application Server using SSL mutual authentication:

```
ERROR: Could not get the initial context or unable to look up the starting context. Exiting. Excepti
```

or a simultaneous error from the WebSphere Application Server that resembles:

```
[7/31/02 15:38:48:452 CDT] 27318f5 NTRegistryImp E SECJ0070E: No privilege id configured for: testus
```

The cause might be that the user ID sent by the client to the server is not in the user registry for that server.

To confirm this problem, check that an entry exists for the personal certificate that is sent to the server. Depending on the user registry mechanism, look at the native operating system user ID or Lightweight Directory Access Protocol (LDAP) server entries.

To correct this problem, add the user ID to the user registry entry (for example, operating system, LDAP directory, or other custom registry) for the personal certificate identity.

Errors in messaging

What kind of problem are you seeing?

- `javax.jms.JMSEException: MQJMS2008: failed to open MQ queue in JVM log.`
- `SVC: jms.BrokerCommandFailedExceptfailed: 3008.`

If you do not see a problem that resembles yours, or if the information provided does not solve your problem, see “Messaging component troubleshooting tips” on page 143. If you are still unable to resolve the problem, see “Obtaining help from IBM” on page 39.

javax.jms.JMSEException: MQJMS2008: failed to open MQ queue in JVM log

This error can occur when the MQ queue name is not defined in the internal Java Messaging Service (JMS) server queue names list. This problem can occur if a WebSphere Application Server queue destination is created, without adding the queue name to the internal JMS server queue names list.

To resolve this problem:

1. Open the WebSphere Application Server administrative console.
2. Click **Servers > Manage Application Servers > *server_name* > Server Components > JMS Servers.**
3. Add the queue name to the list.
4. Save the changes and restart the server.

SVC: jms.BrokerCommandFailedExceptfailed: 3008

One possible cause for this error is that you logged on to a Windows 2000 system as an administrator.

To correct this problem, log out and log in again as a user, rather than an administrator.

For current information available from IBM Support on known problems and their resolution, see the IBM Support page.

IBM Support has documents that can save you time gathering information needed to resolve this problem. Before opening a PMR, see the IBM Support page.

Errors returned to a client sending a SOAP request

What kind of problem are you seeing?

- `SOAPException: faultCode=SOAP-ENV:Client; msg=Error opening socket; java.net.ConnectException: Connection refused: connect`
- `javax.security.cert.CertPathBuilderException: No end-entity certificate matching the selection criteria could be found.`

If none of these errors match the one you see:

- Browse the target application server log files.
(*installation_directory*/server_name/SystemErr.log and SystemOut.log for clues. See “Viewing the JVM logs” on page 6 for more information.
- Look up any error or warning messages in the message table.
- See “Universal Discovery, Description, and Integration, Web Service, and SOAP component troubleshooting tips” on page 144 for more information.

If you do not see a problem that resembles yours, or if the information provided does not solve your problem, see “Obtaining help from IBM” on page 39.

SOAPException: faultCode=SOAP-ENV:Client; msg=Error opening socket; java.net.ConnectException: Connection refused: connect

The most likely cause of this refused connection is that it was sent to the default port, 80, and an HTTP server is not installed or configured.

To verify this situation, send the message directly to the SOAP port; for example, to `http://hostname:9080`. If the message is sent correctly, there are two ways to resolve the problem:

- Continue specifying port 9080 on SOAP requests.
- If an HTTP server is not installed, install one and the associated plug-in component.
- If an HTTP server is installed:
 - Regenerate the HTTP plug-in configuration in the administrative console by clicking **Environment > Update WebServer Plugin**, and restarting the HTTP server.
 - If the problem persists, view the HTTP server access and error logs, as well as the `install_dir/logs/http_plugin.log` file for more information.

javax.security.cert.CertPathBuilderException: No end-entity certificate matching the selection criteria could be found

This error usually indicates that new or updated security keys are needed. The security key files are:

- SOAPclient
- SOAPserver
- sslserver.p12

In an installed application, these files are located in the: `install_dir/installedApps/application_name.ear/soapsec.war/key/` directory. After replacing these files, you must stop and restart the application.

To replace these files in a SOAP-enabled application that is not yet installed:

- Expand the `application_name.ear` file.
- Expand the `soapsec.war` file.
- Replace the security key files in the `key/` directory.
- After you replace these files, install the application and restart the server.

For current information available from IBM Support on known problems and their resolution, see the IBM Support page.

IBM Support has documents that can save you time gathering information needed to resolve this problem. Before opening a PMR, see the IBM Support page.

A client program does not work

What kind of problem are you seeing?

ActiveX client fails to display ASP files, or WebSphere Application Server resources (JSP files, servlet, or HTML pages), or both

A possible cause of this problem is that both IIS for serving Active Server Pages (ASP) files and an HTTP server that supports WebSphere Application Server (such as IBM HTTP Server) are deployed on the same host. This deployment leads to misdirected HTTP traffic if both servers are listening on the same port (such as the default port 80).

To resolve this problem, either:

- Open the IIS administrative panel, and edit the properties of the default Web server to change the port number to a value other than 80
- Install IIS and the HTTP server on separate servers.

For current information available from IBM Support on known problems and their resolution, see the IBM Support page.

IBM Support has documents that can save you time gathering information needed to resolve this problem. Before opening a PMR, see the IBM Support page.

Errors connecting to WebSphere MQ and creating WebSphere MQ queue connection factory

If this problem does not resemble yours, or if the information provided does not solve your problem, see *Troubleshooting WebSphere Messaging*. If you are still unable to resolve the problem, contact IBM support for further assistance.

The following exception may occur when trying to create the MDBListener instance:

```
6/23/03 22:45:58:232 CDT] 673106a8 MsgListenerPo W WMSG0049E:
Failed to start MDB PSSampleMDB against listener port SamplePubSubListenerPort
[6/23/03 22:47:58:289 CDT] 673106a8 FreePool E J2CA0046E:
Method createManagedConnctionWithMCWrapper caught an exception
during creation of the ManagedConnection for resource
JMS$SampleJMSQueueConnectionFactory, throwing ResourceAllocationException.
Original exception: javax.resource.spi.ResourceAdapterInternalException:
  createQueueConnection failed
com.ibm.mq.MQException: MQJE001: An MQException occurred:
Completion Code 2, Reason 2009
MQJE003: IO error transmitting message buffer at
com.ibm.mq.MQManagedConnectionJ11. (MQManagedConnectionJ11.java:239)
```

This problem occurs because the MQ manager userid does not have write access to the /tmp directory. To correct this problem, before you use a Jacl procedure to configure WebSphere Application Server resources and install an application:

1. Ensure that all applications have write access to /tmp directory. Use the `chmod 1777` command on the directory if necessary.
2. Create another subdirectory under /tmp (for example, /tmp/mydir). Use this directory as a "working directory" for the Jacl.
3. Restart the server.

Applications that use messaging on startup should start successfully.

Troubleshooting application runtime and management problems

Select the problem you are having with running or managing deployed code for WebSphere Application Server:

- I have problems bringing up or using the administrative console.
- I have problems starting or using the **wsadmin** command prompt.
- My Web module or application server dies or hangs.
- I get errors trying to configure and enable security.
- I cannot seem to distribute the workload across clustered servers.
- There are problems setting up the multiserver Deployment Manager environment.
- I cannot uninstall or remove a node or application server.
- I have problems creating or using HTTP sessions.

- I have problems using tracing, logging, logfiles, or other troubleshooting features.
- I get errors when running a scheduler client.
- I get errors connecting to the administrative console from a Netscape browser.

If you do not see a problem that resembles yours, or if the information provided does not solve your problem, contact IBM support for further assistance.

For current information available from IBM Support on known problems and their resolution, see the IBM Support page.

IBM Support has documents that can save you time gathering information needed to resolve this problem. Before opening a PMR, see the IBM Support page.

Problems starting or using the wsadmin command

What kind of problem are you having?

- "WASX7023E: Error creating "SOAP" connection to host" or similar error trying to launch wsadmin command line utility.
- "com.ibm.bsf.BSFException: error while eval'ing Jacl expression: no such method "<command name>" in class com.ibm.ws.scripting.AdminConfigClient" returned from wsadmin command.
- WASX7022E returned from running "wsadmin -c ..." command, indicating invalid command.
- com.ibm.ws.scripting.ScriptingException: WASX7025E: String "" is malformed; cannot create ObjectName.
- "The input line is too long" error returned from the wsadmin command on a Windows platform.

If you do not see your problem here:

- If you are not able to enter wsadmin command mode, try running **wsadmin -c "\$Help wsadmin"** for help in verifying that you are entering the command correctly.
- If you can get the wsadmin command prompt, enter **\$Help help** to verify that you are using specific commands correctly.
- wsadmin commands are a superset of Jacl (Java Command Language), which is in turn a Java-based implementation of the Tcl command language. For details on Jacl syntax beyond wsadmin commands, refer to the Tcl developers' site, <http://www.tcl.tk>. For specific details relating to the Java implementation of Tcl, refer to <http://www.tcl.tk/software/java>.
- Browse the *install_dir*/logs/wsadmin.traceout file for clues.
 - Keep in mind that wsadmin.traceout is refreshed (existing log records are deleted) whenever a new wsadmin session is started.
 - If the error returned by wsadmin does not seem to apply to the command you entered, for example, you receive WASX7023E, stating that a connection could not be created to host "myhost," but you did not specify "-host myhost" on the command line, examine the properties files used by wsadmin to determine what properties are specified. If you do not know what properties files were loaded, look for the WASX7326I messages in the wsadmin.traceout file; there will be one of these messages for each properties file loaded.

If none of these steps fixes your problem, check to see if the problem has been identified and documented by looking at the available online support (hints and tips, technotes, and fixes). If you don't find your problem listed there contact IBM support.

"WASX7023E: Error creating "SOAP" connection to host" or similar error trying to launch wsadmin command line utility

By default, the wsadmin utility attempts to connect to an application server at startup. This is because some commands act upon running application servers. This error indicates that no connection could be established.

To resolve this problem:

- If you are not sure whether an application server is running, start it by entering **startserver** *servername* from the command prompt. If the server is already running, you will see an error similar to "ADMU3027E: An instance of the server is already running".
- If you are running a Network Deployment configuration, you will first need to start the deployment manager by running "startManager" or "startManager.sh" from the *install_dir/bin* directory. Then you can launch wsadmin immediately to connect to the deployment manager, or start a node and application server to connect to.
- If an application server is running and you still get this error:
 - If you are running remotely (that is, on a different machine from the one running WebSphere Application Server), you must use the **-host** *hostname* option to the wsadmin command to direct wsadmin to the right physical server.
 - If you are using the **-host** option, try pinging the server machine from the command line from the machine on which you are trying to launch wsadmin to verify there are no issues of connectivity such as firewalls.
 - verify that you are using the right port number to connect to the WebSphere Application Server process:
 - If you are not specifying a port number (using the **-port** option) when you start wsadmin, wsadmin uses the default port specified in *install_dir/properties/wsadmin.properties*, property **name=com.ibm.ws.scripting.port** (default value =8879).
 - The port that wsadmin should send on depends on the server process wsadmin is trying to connect to.

For a single-server installation, wsadmin attempts to connect to the application server process by default. To verify the port number:

- Look in the file *install_dir/config/cells/node_name/nodes/node_name/serverindex.html* for a tag containing the property **serverType="APPLICATION_SERVER"**.
- Look for an entry within that tag with the property **endPointName="SOAP_CONNECTOR_ADDRESS"**.
- Look for a **port** property within that tag. This is the port wsadmin should send on.

In a Network Deployment installation, wsadmin launched from the bin directory on the Network Deployment installation attempts to send requests to the deployment manager by default. To verify the port number:

- Get the hostname of the node on which the Deployment Manager is installed.
- Using that hostname, look in *install_dir/config/cells/node_nameNetwork/nodes/node_nameManager/serverindex.htm* for a tag containing the property **serverType="DEPLOYMENT_MANAGER"**.
- Within that tag, look for an entry with a property **endPointName="SOAP_CONNECTOR_ADDRESS"**.

- Within that tag, look for a "port" property. This is the port wsadmin should send on.

"com.ibm.bsf.BSFException: error while eval'ing Jacl expression: no such method command name in class com.ibm.ws.scripting.AdminConfigClient" returned from wsadmin command.

This error is usually caused by a misspelled command name. Use the **\$AdminConfig help** command to get information about what commands are available. Note that command names are case-sensitive.

WASX7022E returned from running "wsadmin -c ..." command, indicating invalid command

If the command following -c appears to be valid, the problem may be caused by the fact that on Unix, using wsadmin -c to invoke a command that includes dollar signs results in the shell attempting to do variable substitution. To confirm that this is the problem, check the command to see if it contains an unescaped dollar sign, for example: **wsadmin -c "\$AdminApp install"**.

To correct this problem, escape the dollar sign with a backslash. For example: **wsadmin -c "\\$AdminApp install ..."**.

com.ibm.ws.scripting.ScriptingException: WASX7025E: String "" is malformed; cannot create ObjectName

One possible cause of this error is that an empty string was specified for an object name. This can happen if you use one scripting statement to create an object name and the next statement to use that name, perhaps in an "invoke" or "getAttribute" command, but you don't check to see if the first statement really returned an object name. For example (the following samples use basic Jacl commands in addition to the wsadmin Jacl extensions to make a sample script):

```
#let's misspell "Server"
set serverName [$AdminControl queryNames type=Server,*]
$AdminControl getAttributes $serverName
```

To correct this error, make sure that object name strings have values before using them. For example:

```
set serverName[$AdminControl queryNames type=Server,*]
if {$serverName == ""} {puts "queryNames returned empty - check query argument"}
else {$AdminControl getAttributes $serverName}
```

For details on Jacl syntax beyond wsadmin commands, refer to the Tcl developers' site, <http://www.tcl.tk>.

"The input line is too long" error returned from the wsadmin command on a Windows platform

This error indicates that the Windows command line limit of 1024 characters has been exceeded, probably due to a long path name used within the wsadmin.bat command. The problem can be avoided by using the Windows subst command, which allows you to map an entire path to a virtual drive. To see the syntax of the subst command, enter **help subst** from a Windows command prompt.

For example if the product resides in
c:\TestEnvironment\Beta\WebSphere\AppServer, edit the file
c:\TestEnvironment\Beta\WebSphere\AppServer\bin\setupCmdLine.bat as follows:

```
subst w: c:\TestEnvironment\Beta\WebSphere\AppServer

REM comment out the old line
REM SET WAS_HOME=C:\TestEnvironment\Beta\WebSphere\AppServer

SET WAS_HOME=w:

REM comment out the old line
REM SET JAVA_HOME=C:\TestEnvironment\Beta\WebSphere\AppServer\java

SET JAVA_HOME=w:\java
```

IBM Support has documents that can save you time gathering information needed to resolve this problem. Before opening a PMR, see the IBM Support page.

Web module or application server dies or hangs

If an application server dies (its process spontaneously closes), or freezes (its Web modules stop responding to new requests):

- Isolate the problem by installing Web modules on different servers, if possible.
- Read the Monitoring performance with Tivoli performance viewer (formerly resource analyzer) topic. You can use the performance viewer to determine which resources have reached their maximum capacity, such as Java heap memory (indicating a possible memory leak) and database connections. If a particular resource appears to have reached its maximum capacity, review the application code for a possible cause:
 - If database connections are used and never freed, ensure that application code performs a **close()** on any opened **Connection** object within a **finally{}** block.
 - If there is a steady increase in servlet engine threads in use, review application **synchronized** code blocks for possible deadlock conditions.
 - If there is a steady increase in a JVM heap size, review application code for memory leak opportunities, such as static (class-level) collections, that can cause objects to never get garbage-collected.
- As an alternative to using the performance viewer to detect memory leak problems, enable verbose garbage collection on the application server. This feature adds detailed statements to the JVM error log file of the application server about the amount of available and in-use memory. To set up verbose garbage collection:
 1. Select **Servers > Application Servers > server_name > Process Definition > Java Virtual Machine**, and enable **Verbose Garbage Collection**.
 2. Stop and restart the application server.
 3. Periodically, or after the application server stops, browse the log file for garbage collection statements. Look for statements beginning with "allocation failure". The string indicates that a need for memory allocation has triggered a JVM garbage collection (freeing of unused memory). Allocation failures themselves are normal and not necessarily indicative of a problem. The allocation failure statement is followed by statements showing how many bytes are needed and how many are allocated.

If there is a steady increase in the total amount of free and used memory (the JVM keeps allocating more memory for itself), or if the JVM becomes unable to allocate as much memory as it needs (indicated by the bytes needed statement), there might be a memory leak.

- If either the performance viewer or verbose garbage collection output indicates that the application server is running out of memory, one of the following problems might be present:

- There is a memory leak in application code that you must address. To pinpoint the cause of a memory leak, enable the **RunHProf** function in the Servers > Application Servers > server_name > Process Definition > Java Virtual Machine pane of the problem application server:
 - In the same JVM pane, set the **HProf Arguments** field to a value similar to `depth=20,file=heapdump.txt`. This value shows exception stacks to a maximum of 20 levels, and saves the heapdump output to the `install_root/bin/heapdump.txt` file.
 - Save the settings.
 - Stop and restart the application server.
 - Re-enact the scenario or access the resource that causes the hang or crash, if possible. Stop the application server. If this is not possible, wait until the hang or crash happens again and stop the application server.
 - Examine the file into which the heapdump was saved. For example, examine the `install_root/bin/heapdump.txt` file:
 - Search for the string, "SITES BEGIN". This finds the location of a list of Java objects in memory, which shows the amount of memory allocated to the objects.
 - The list of Java objects occurs each time there was a memory allocation in the JVM. There is a record of what type of object the memory instantiated and an identifier of a trace stack, listed elsewhere in the dump, that shows the Java method that made the allocation.
 - The list of Java object is in descending order by number of bytes allocated. Depending on the nature of the leak, the problem class should show up near the top of the list, but this is not always the case. Look throughout the list for large amounts of memory or frequent instances of the same class being instantiated. In the latter case, use the ID in the trace stack column to identify allocations occurring repeatedly in the same class and method.
 - Examine the source code indicated in the related trace stacks for the possibility of memory leaks.
- The default maximum heap size of the application server needs to be increased.
- There is a defect in the WebSphere Application Server product that you must either report, or correct by installing a fix or FixPak, from a maintenance download. Contact IBM support.
- If an application server spontaneously dies, look for a Java thread dump file. The JVM creates the file in the product directory structure, with a name like `javacore[number].txt`.
- Force an application to create a thread dump (or javacore). Here is the process for forcing a thread dump, which is different from the process in earlier releases of the product:
 1. Using the wsadmin command prompt, get a handle to the problem application server: `wsadmin>set jvm [$AdminControl completeObjectName type=JVM,process=server1,*]`
 2. Generate the thread dump: `wsadmin>$AdminControl invoke $jvm dumpThreads.`
 3. Look for an output file in the installation root directory with a name like `javacore.date.time.id.txt`.
- Browse the thread dump for clues:
 - If the JVM creates the thread dump as it closes (the thread dump is not manually forced), there might be "error" or "exception information" strings at the beginning of the file. These strings indicate the thread that caused the application server to die.
 - The thread dump contains a snapshot of each thread in the process, starting in the section labeled "Full thread dump."

- Look for threads with a description that contains "state:R". Such threads are active and running when the dump is forced, or the process exited.
- Look for multiple threads in the same Java application code source location. Multiple threads from the same location might indicate a deadlock condition (multiple threads waiting on a monitor) or an infinite loop, and help identify the application code with the problem.

If these steps do not fix your problem, search to see if the problem is known and documented, using the methods identified in the available online support (hints and tips, technotes, and fixes) topic. If you find that your problem is not known, contact IBM support to report it.

For current information available from IBM Support on known problems and their resolution, see the IBM Support page.

IBM Support has documents that can save you time gathering information needed to resolve this problem. Before opening a PMR, see the IBM Support page.

Errors when trying to configure or enable security

What kind of error are you seeing?

- "LTPA password not set validation failed" message displayed as error in the Administrative Console after enabling global security.
- "Validation failed for user [userid]. Please try again..." displayed in the Administrative Console when enabling global security.
- The setupClient.bat or setupClient.sh file is not working correctly
- "Java HotSpot(TM) Server VM warning: Unexpected Signal 11 occurred under user-defined signal handler 0x7895710a" message occurs in the native_stdout.log file when enabling security on the HP-UX11i platform
- If you have successfully configured security (made changes, saved the configuration, and enabled security with no errors), but are now having problems accessing Web resources or the administrative console, refer to Errors or access problems after enabling security.

For general tips on diagnosing and resolving security-related problems, see the topic Troubleshooting the security component.

If you do not see a problem that resembles yours, or if the information provided does not solve your problem, contact IBM support for further assistance.

"LTPA password not set. validation failed" message displayed as error in the Administrative Console after saving global security settings

This error can be caused if, when configuring WebSphere Application Server security, "LTPA" is selected as the authentication mechanism, and the LTPA password field is not set. To resolve this problem:

- Select Security **Authentication Mechanism** > LTPA in the console left-hand navigation pane.
- Complete the password and confirm password fields.
- Click **OK**.
- Try setting Global Security again.

"Validation failed for user userid. Please try again..." displayed in the Administrative Console after saving global security settings

This typically indicates that a setting in the User Registry configuration is not valid:

- If the user registry is LocalOS, it is likely that either the server user ID and password are invalid or the server user ID does not have "Act As Part of the Operating System" (for NT) or root authority (for UNIX). The server user ID needs this authority for authentication using the LocalOS user registry.
- If the user registry is Lightweight Directory Access Protocol (LDAP):
 - Any of the settings that enable WebSphere Application Server to communicate with LDAP might be invalid, such as the LDAP server's user ID, password, host, port, or LDAP filter. When you select **Apply** or **OK** on the Global Security panel, a validation routine connects to the registry just as it would during runtime when security is enabled. This is done in order to verify any configuration problems immediately, instead of waiting until the server restarts.
 - Verify whether your LDAP server requires the Bind Distinguished Name (DN) to find the user in the LDAP directory. If the bind distinguished name is required, you must specify a DN instead of a short name. You can specify the bind distinguished name by clicking **Security > User Registries > LDAP** in the administrative console. For example, you might add `cn=root`.
 - Sometimes the LDAP server might be down during configuration. The best way to check this is to issue a command line search using a utility such as `ldapsearch` to search for the server ID. This way you can determine if the server is running and if the server ID is a valid entry in the LDAP. The `ldapsearch` utility is installed during an LDAP or Lotus Notes installation.
- If the user registry is Custom, double check that your implementation is in the classpath. Also, check to see if your implementation is authenticating properly.
- Regardless of registry type, check the User Registries configuration panels to see if you can find a configuration error:
 - Go back to the User Registries configuration panels and retype the password for the server ID.
- See if there is an obvious configuration error. Double check the attributes specified.

The `setupClient.bat` or `setupClient.sh` file is not working correctly

The `setupClient.bat` file on Windows platforms and the `setupClient.sh` file on UNIX platforms incorrectly specify the location of the SOAP security properties file.

In the `setupClient.bat` file, the correct location should be:

```
set CLIENTSOAP=-Dcom.ibm.SOAP.ConfigURL=file:%WAS_HOME%/properties/soap.client.props
```

In the `setupClient.sh` file, the `CLIENTSOAP` variable should be:

```
CLIENTSOAP=-Dcom.ibm.SOAP.ConfigURL=file:$WAS_HOME/properties/soap.client.props
```

In the `setupClient.bat` and `setupClient.sh` files, complete the following steps:

1. Remove the leading `/` after `file:`.
2. Change `sas` to `soap`.

Java HotSpot(TM) Server VM warning: Unexpected Signal 11 occurred under user-defined signal handler 0x7895710a message occurs in the native_stdout.log file when enabling security on the HP-UX11i platform

After you enable security on HP-UX 11i platforms, the following error in the native_stdout.log file occurs, along with a core dump and WebSphere Application Server does not start:

```
Java HotSpot(TM) Server VM warning:
Unexpected Signal 11 occurred under user-defined signal handler 0x7895710a
```

To work around this error, apply the fixes recommended by HP for Java at the following URL:

<http://www.hp.com/products1/unix/java/infolibrary/patches.html>.

For current information available from IBM Support on known problems and their resolution, see the IBM Support page.

IBM Support has documents that can save you time gathering information needed to resolve this problem. Before opening a PMR, see the IBM Support page.

Errors trying to enable or configure Secure Socket Layer (SSL) encrypted access

What kind of error are you seeing?

- "The Java Cryptographic Extension (JCE) files were not found." error when launching iKeyman.

If you do not see a problem that resembles yours, or if the information provided does not solve your problem, contact IBM support for further assistance.

"The Java Cryptographic Extension (JCE) files were not found." error when launching iKeyman.

You may receive the following error when you attempt to start the iKeyman tool: "The Java Cryptographic Extension (JCE) files were not found. Please check that the JCE files have been installed in the correct directory". When you click OK, the iKeyman tool closes. To resolve this problem:

- Set the JAVA_HOME parameter so that it points to the JDK that is shipped with WebSphere Application Server.
 - For example, on a Unix platform the command would be similar to: export JAVA_HOME=/opt/WebSphere/AppServer/java
 - On a Windows platform, if WebSphere Application Server is installed on your c: drive, the command would be: set JAVA_HOME=c:\WebSphere\AppServer\java
- Rename the file install_dir/java/jre/lib/ext/gskikm.jar to gskikm.jar.org.

Workload not getting distributed

What kind of problem are you seeing?

- Web (HTTP) requests are not distributed to all servers.
- Enterprise bean requests are not distributed to all servers.
- Enterprise bean requests are not distributed evenly.
- A failing server still receives enterprise bean requests (failover fails).
- Stopped or hung servers do not share the workload after being restored.

If none of these problem solution descriptions fixes your problem:

1. Browse the of the problem deployment manager and application servers:

- a. Look up any error messages by selecting the **Reference** view of the information center navigation and expanding **Messages** in the navigation tree.
 - b. If Java exceptions appear in the log files, try to determine the actual subcomponent directly involved in the problem by examining the trace stack and looking for a WebSphere Application Server-related class near the top of the stack (names beginning with `com.ibm.websphere` or `com.ibm.ws`) that threw the exception. If appropriate, review the steps for troubleshooting the appropriate subcomponent under the Troubleshooting by component: what is not working? topic.
For example, if the exception appears to have been thrown by a class in the `com.ibm.websphere.naming` package, review the Naming Services Component troubleshooting tips topic.
2. Ensure that all the machines in your configuration have TCP/IP connectivity to each other by running the **ping** command:
 - a. From each physical server to the Deployment Manager
 - b. From the Deployment Manager to each physical server
 3. Although the problem is happening in a clustered environment, the actual cause might be only indirectly related, or unrelated, to clustering. Investigate all relevant possibilities:
 - a. If an enterprise bean on one or more servers is not serving requests, review the Cannot access an enterprise bean from a servlet, JSP, stand-alone program, or other client and Cannot access an object hosted by WebSphere Application Server from a servlet, JSP file, or other client topics.
 - b. If problems seem to appear after enabling security, review the Errors or access problems after enabling security topic.
 - c. If an application server stops responding to requests, or spontaneously dies (its process closes), review the Web module or application server dies or hangs topic.
 - d. If SOAP requests are not being served by some or all servers, review the Errors returned to client trying to send a SOAP request topic.
 - e. If you have problems installing or deploying an application on servers on one or more nodes, review the Troubleshooting code deployment and installation problems topic.
 4. If your topology consists of a Windows-based Deployment Manager with UNIX-based servers, browse any recently-updated `.xml` and `.policy` files on the UNIX-based platform using `vi` to ensure that Control-M characters are not present in the files. To avoid this problem in the future, edit these files using `vi` on the UNIX-based platform, to avoid inserting these characters.
 5. Check the steps for troubleshooting the Workload Management component.
 6. Check to see if the problem is identified and documented by looking at available online support (hints and tips, technotes, and fixes).

Web (HTTP) requests are not distributed to all servers

If HTTP requests are not being distributed to all servers:

- Check your PrimaryServers list. The plug-in load balances across all servers that are defined in the PrimaryServers list, if affinity has not been established. If you do not have a PrimaryServers list defined, the plug-in load balances across all servers defined in the cluster, if affinity has not been established. In the case where affinity has been established, the plug-in should go directly to that server, for all requests within the same HTTP session.
- If some servers are servicing requests and one or more others are not, try accessing a problem server directly to verify that it works, apart from workload management issues. If that does not work:
 - Use the administrative console to ensure that the affected server is running.

- See the article Web resource (JSP, servlet, html file, image, etc) will not display for more information.
- See the article HTTP plug-in component troubleshooting tips for more information.
- Check the steps for diagnosing workload management issues in Troubleshooting the Workload Management component.

EJB requests are not distributed to all servers

If a client cannot reach a server in a cluster thought to be reachable, a server might be marked unusable, or is down. To verify this:

- Use the administrative console to verify that the server is started. Try starting it, or if started, stop and restart it.
- Browse the administrative console and verify that the node that runs the server having the problem appears. If it does not:
 - Review the steps for adding a node to a cluster.
 - Review the steps in the One or more nodes do not show up in the administrative console topic.
- If possible, try accessing the enterprise bean directly on the problem server to see if there is a problem with TCP/IP connectivity, application server health, or other problem not related to workload management. If this fails, review the topic Cannot access enterprise bean from a servlet, JSP, stand-alone program , or other client.
- Check the steps for diagnosing workload management issues in the Troubleshooting the Workload Management component topic.

EJB requests are not distributed evenly

There are a number of possible reasons for this behavior, which generally fall into one or more of these categories:

- Improper configuration
- Environment issues such as the availability of servers or applications.
- A large numbers of requests that involve transactional affinity, or
- A small number of clients

Work load management of WebSphere Application Server is based on a round robin scheme of request distribution. This results in balance being determined by numbers of requests rather than by any other measure. A true balance problem is determined by comparing the number of requests processed by each member of the cluster with the weights that have been set for each of those members. This is done by following the steps in the Troubleshooting the Workload Management component topic.

- When the percentage of requests that arrive for each member of the cluster is consistent with the weights then further analysis of the application is required to determine the cause for the workload being imbalanced even when the number of requests is balanced.
- When the number of **numIncomingNonWLMObjectRequests** is not balanced among the members of the cluster and is large in relation to the **numIncomingRequests** then the reason for the imbalance is the non-distributable components installed on the members of the cluster. A modification to the configuration will yield a more balanced environment.
- When the number of **numIncomingStrongAffinityRequests** is not balanced among the members of the cluster and is large in relation to the **numIncomingRequests** then the reason for the imbalance is the requests which are invoked within a transaction. These can be reduced by installing the objects involved within a transaction within the same cluster.

A failing server still receives enterprise bean requests (failover fails)

Some possible causes of this problem are:

- The client might have been in a transaction with an enterprise bean on the server that went down. If the application server hosting the problem enterprise bean instance. If a request is returned with **CORBA SystemException COMM_FAILURE org.omg.CORBA.completion_status.COMPLETED_MAYBE**, this might be working as designed. The design is to let this particular exception flow back to the client, since the transaction might have completed. Failing over this request to another server could result in this request being serviced twice.
- If the requests sent to the servers come back to the client with any other exceptions consistently, it might be that no servers are available. In this case, follow the resolution steps as outlined in Troubleshooting the Workload Management component.

Stopped or hung servers do not share the workload after being restored

This error occurs when the servers that were unavailable are not recognized by the Workload Management component after they are restored. There is an *unusable* interval determined by the property `com.ibm.websphere.wlm.unusable.interval` during which the workload manager waits to send to a server that has been marked unusable. By default this is 15 minutes.

You can confirm that this is the problem by ensuring that servers that were down are now up and capable of servicing requests. Then wait for the unusable interval to elapse before checking to determine whether failover occurs.

For current information available from IBM Support on known problems and their resolution, see the IBM Support page.

IBM Support has documents that can save you time gathering information needed to resolve this problem. Before opening a PMR, see the IBM Support page.

Errors setting up multiserver environments

What kind of problem are you seeing?

- After creating and starting a cluster, the cluster does not start, and logs show that servers in the cluster are not found.
- One or more nodes do not show up in the administrative console.
- The `addNode` command fails.
- Application files are not present on all nodes.
- After downloading the Network Deployment plug-in to my system, my server does not start.
- In a clustered environment, a server with debug mode enabled does not start.

If none of these problem solution descriptions fixes your problem:

1. Browse the of the problem deployment manager and application servers:
 - a. Look up any error messages by selecting the **Reference** view of the information center navigation and expanding **Messages** in the navigation tree.
 - b. If Java exceptions appear in the log files, try to determine the actual subcomponent directly involved in the problem by examining the trace stack and looking for a WebSphere Application Server-related class near the top of the stack (names beginning with `com.ibm.websphere` or `com.ibm.ws`) that threw the exception. If appropriate, review the steps for

troubleshooting the appropriate subcomponent in the Troubleshooting by component: what is not working? topic.

For example, if the exception appears to have been thrown by a class in the `com.ibm.websphere.naming` package, review the Naming Services Component troubleshooting tips topic.

2. Ensure that all the machines in your configuration have TCP/IP connectivity to each other by running the **ping** command:
 - a. From each physical server to the Deployment Manager
 - b. From the Deployment Manager to each physical server
3. Although the problem is happening in a clustered environment, the actual cause might be only indirectly related, or unrelated, to clustering. Investigate all relevant possibilities:
 - a. If an enterprise bean on one or more servers is not serving requests, review the Cannot access an enterprise bean from a servlet, JSP, stand-alone program, or other client and Cannot access an object hosted by WebSphere Application Server from a servlet, JSP file, or other client topics.
 - b. If problems seem to appear after enabling security, review the Errors or access problems after enabling security topic.
 - c. If an application server stops responding to requests, or spontaneously dies (its process closes), review the Web module or application server dies or hangs topic.
 - d. If SOAP requests are not being served by some or all servers, review the Errors returned to client trying to send a SOAP request topic.
 - e. If you have problems installing or deploying an application on servers on one or more nodes, review the Troubleshooting code deployment and installation problems topic.
4. If your topology consists of a Windows-based Deployment Manager with UNIX-based servers, browse any recently-updated `.xml` and `.policy` files on the UNIX-based platform using **vi** to ensure that Control-M characters are not present in the files. Edit these files using **vi** on the UNIX-based platform, to avoid inserting these characters.
5. Check the steps for troubleshooting the Workload Management component..
6. Check to see if the problem is identified and documented by looking at available online support (hints and tips, technotes, and fixes).

After creating and starting a cluster, the cluster does not start, and logs show that servers in the cluster are not found

This error can occur when the configuration is not synchronized from the deployment manager to a node. If *auto synchronization* is enabled, wait until the synchronization has had a chance to run. If you are using manual synchronization, explicitly request a sync to each node on the cluster.

To determine whether synchronization has taken place, look at the configuration on the node machines using the administrative console and verify that the new cluster members are defined on each node.

One or more nodes do not show up in the administrative console

This can occur when there is a basic connectivity problem between the deployment manager server and other servers in the topology. To determine whether this is the problem, look for the `fileserversindex.xml` in the deployment manager directory structure.

- If the problem node does not appear in the list, review the steps for adding a node to the cluster.
- If the problem node does appear in the list:

- From the deployment manager server, ping the server name as it appears in the list. If the ping command shows no communication, verify that the hostname is correct in the list, and correct it if necessary, then restart the deployment manager.
- If the name that appears in the list is the short name, ping the fully qualified network name. If the corrected name works, update the list and restart the deployment manager.
- If the problem server uses Dynamic Host Configuration Protocol (DHCP), try replacing the logical hostname with the IP address and restart the deployment manager. If this resolves the problem, be aware that you must change `serverindex.xml` each time the problem server address changes, potentially each time the problem machine is rebooted. To avoid this problem, consider assigning a static IP address to the server.
- If you still cannot establish communication between the servers, contact your network administrator to resolve the problem, and restart the deployment manager after the problem is corrected.

The `addNode` command fails

This error can occur when the deployment manager Domain Name Server (DNS) configuration is set up improperly. The default installation on Linux uses the loopback address (127.0.0.1) as the default host address. To verify that this is the problem, query the hostname of the suspect machine. If it returns localhost 127.0.0.1, or if file transfer traces at the node show the node trying to upload files to a URL that includes 127.0.0.1, the node has an incorrect DNS configuration.

To correct this problem, update the `/etc/hosts` file or the name service configuration file, `/etc/nsswitch.conf`, to query the Domain Name Server or Network Information Server (NIS) before searching hosts.

Application files are not present on all nodes

In the WebSphere Application Server Network Deployment environment, application binary files are transferred to the individual nodes where applications are supported as part of the **node sync** operation. During node sync, application files are only propagated if their deployment descriptors specify **enableDistribution=true**. This flag is specified as part of the application installation procedure in the administrative console, and is stored as a property in the `install_root/config/cells/cell_name/applications/application_name/deployment.xml` file.

To confirm that this is the cause, check to see whether the `enableDistribution` flag is set. If it is already set to true, ensure that the target node is configured to run auto file synchronization.

If both of these settings are correct and the problem persists, manually perform an explicit synchronization. If the application files still do not appear in the installation directory, use the `EARExpander` tool (located in `install_root/bin`) to expand the EAR file from the repository to the installation destination. On remote nodes, the repository should appear in `theconfig/cells/cell_name/applications/application_name.ear/` directory.

After downloading the Network Deployment plug-in to my system, my server does not start

If you experience this situation, the most likely cause is that the transport paths in the plug-in must be modified to work in your environment. See the Example: Manually editing transport settings in the server.xml file topic for information on how to modify these settings.

In a clustered environment, a server with debug mode enabled does not start

This problem occurs when the following three conditions exist:

- Multiple server processes are configured to run on the same node
- More than one server has Debug Mode enabled
- The debug arguments for more than one of the servers have been left at the default values, so that more than one server in the node is trying to use the same debug port (port number 7777).

The server will not start because multiple servers processes running on the same physical host machine with debug enabled cannot use the same debug port.

To correct this problem, for each server:

1. On the Administrative Console select **Server > Application Servers > server name > Process Definition > process name > Java Virtual Machine**
2. Update the Debug argument so that the address of the debug port (address=*port number*) is unique for each server process.

Cannot uninstall an application or remove a node or application server

What kind of problem are you having?

- After uninstalling an application through wsadmin tool, the application continues to run and throws "DocumentIOException"
- The removeNode command does not remove the installed application from the deployment manager
- I cannot display the syntax for the removeNode command.

If none of these steps fixes your problem:

- Make sure that the application and its Web and EJB modules, are in a stopped state before uninstalling.
- If you are uninstalling or installing an application using **wsadmin**, make sure that you are using the **-conntype NONE** option to invoke **wsadmin** and enable local mode. To use the **-conntype NONE** option, stop the hosting application server before uninstalling the application.
- Check to see if the problem has been identified and documented by looking at the available online support (hints and tips, technotes, and fixes).
- If you don't find your problem listed there contact IBM support

After uninstalling application through the wsadmin tool, the application throws "DocumentIOException"

If this exception occurs after the application was uninstalled using wsadmin with the **-conntype NONE** option:

- Restart the server or,
- Rerun the uninstall command without the **-conntype NONE** option.

The removeNode command does not remove the installed application from the deployment manager

If the applications were installed indirectly using the **addNode** program with the **-includeapps** option, then **removeNode** will not uninstall them, since they may be in use by other nodes. These applications must be explicitly uninstalled, for example through the administrative console.

I cannot display the syntax for the removeNode command

Unlike the **addNode** command, the **removeNode** command is valid with no parameters, so executing it will execute the operation, that is, remove the node, without displaying the command syntax.

To see the valid options for **removeNode**, execute **removeNode -?** or **removeNode -help**.

Problems creating or using HTTP sessions

Note: To view and update the Session Manager settings discussed here, use the administrative console. Select the application server that hosts the problem application, then under **Additional properties**, select **Web Container**, then **Session manager**.

What kind of problem are you having?

- HTTP Sessions are not getting created, or are lost between requests.
- HTTP Sessions are not persistent (session data lost when application server restarts, or not shared across cluster).
- Session is shared across multiple browsers on same client machine.
- Session is not getting invalidated immediately after specified Session timeout interval.
- Unwanted sessions are being created by jsps.

If your problem is not described here, or none of these steps fixes the problem:

- Review Troubleshooting the HTTP Session Manager for general steps on debugging Session-manager related problems.
- Review Managing HTTP sessions for information on how to configure the Session manager, and best practices for using it.
- Check to see if the problem has been identified and documented by looking at the available online support (hints and tips, technotes, and fixes).
- If you don't find your problem listed there contact IBM support.

HTTP Sessions are not getting created, or are lost between requests

By default, the Session Manager uses cookies to store the session ID on the client between requests. Unless you intend to avoid cookie-based session tracking, ensure that cookies are flowing between WebSphere Application Server and the browser:

- Make sure the **Enable cookies** checkbox is checked under the **Session tracking Mechanism** property.
- Make sure cookies are enabled on the browser you are testing from or from which your users are accessing the application.
- Check the Cookie domain specified on the SessionManager (to view the or update the cookie settings, in the **Session tracking mechanism->enable cookies** property, click **Modify**).

- For example, if the cookie domain is set as ".myCom.com", resources should be accessed using that domain name, e.g.
http://www.myCom.com/myapp/servlet/sessionServlet.
- If the domain property is set, make sure it begins with a dot (.). Certain versions of Netscape do not accept cookies if domain name doesn't start with a dot. Internet Explorer honors the domain with or without a dot. For example, if the domain name is set to *mycom.com*, change it to *.mycom.com* so that both Netscape and Internet Explorer honor the cookie.
- Check the **Cookie path** specified on the SessionManager. Check whether the problem url is hierarchially below the Cookie path specified. If not correct the Cookie path.
- If the Cookie maximum age property is set, ensure that the client (browser) machine's date and time is the same as the server's, including the time zone. If the client and the server time difference is over the "Cookie maximum age" then every access would be a new session, since the cookie will "expire" after the access.
- If you have multiple web modules within an enterprise application that track sessions:
 - If you want to have different session settings among web modules in an enterprise application, ensure that each web module specifies a different cookie name or path, or
 - If Web modules within an enterprise application use a common cookie name and path, ensure that the HTTP session settings, such as Cookie maximum age, are the same for all Web modules. Otherwise cookie behavior will be unpredictable, and will depend upon which application creates the session. Note that this does not affect session data, which is maintained separately by Web module.
- Check the cookie flow between browser and server:
 1. On the browser, enable "cookie prompt". Hit the servlet and make sure cookie is being prompted.
 2. On the server, enable SessionManager trace. Enable tracing for the HTTP Session Manager component, by using the trace specification "com.ibm.ws.webcontainer.httpSession.*=all=enabled". After trace is enabled, exercise your session-using servlet or jsp, then follow the instructions for dumping and browsing the trace output .
 3. Access the session servlet from the browser.
 4. The browser will prompt for the cookie; note the jsessionid.
 5. Reload the servlet, note down the cookie if a new cookie is sent.
 6. Check the session trace and look for the session id and trace the request by the thread. Verify that the session is stable across web requests:
 - Look for **getHttpSession(...)** which is start of session request.
 - Look for **releaseSession(..)** which is end of servlet request.
- If you are using URL rewriting instead of cookies:
 - Ensure there are no static HTML pages on your application's navigation path.
 - Ensure that your servlets and jsp files are implementing URL rewriting correctly. For details and an example see Session tracking options.
- If you are using SSL as your session tracking mechanism:
 - Ensure that you have SSL enabled on your IBM HTTP Server or iPlanet HTTP server.
 - Review Session tracking with SSL information.
- If you are in a clustered (multiple node) environment, ensure that you have session persistence enabled.

HTTP Sessions are not persistent

If your HTTP sessions are not persistent, that is session data is lost when the application server restarts or is not shared across the cluster:

- Check the Datasource.
- Check the SessionManager's Persistence Settings properties:
 - If you intend to take advantage of Session Persistence, verify that Persistence is set to **Database or Memory to Memory Replication**.
 - If you are using **Database-based persistence**:
 - Check the jndi name of the datasource specified correctly on SessionManager.
 - Specify correct userid and password for accessing the database.
Note that these settings have to be checked against the properties of an existing Data Source in the admin console. The Session Manager does not automatically create a session database for you.
 - The Datasource should be non-JTA, i.e. non XA enabled.
 - Check the JVM logs for appropriate database error messages.
 - With DB2, for row sizes other than 4k make sure specified row size matches the DB2 page size. Make sure tablespace name is specified correctly.
 - If you are using **memory-based persistence**, available in a network-deployment (multiple application server) configuration only:
 - Review .
 - Review the **Internal Replication Domains properties** of your Session manager.

Session is shared across multiple browsers on same client machine

This behavior is browser-dependent. It varies between browser vendors, and also may change according to whether a browser is launched as a new process or as a subprocess of an existing browser session (for example by hitting Ctl-N on Windows).

The Cookie maximum age property of the Session Manager also affects this behavior, if cookies are used as the session-tracking mechanism. If the maximum age is set to some positive value, all browser instances share the cookies, which are persisted to file on the client for the specified maximum age time.

Session is not getting invalidated immediately after specified Session timeout interval

The SessionManager invalidation process thread runs every x seconds to invalidate any invalid sessions, where x is determined based on the Session timeout interval specified in the Session manager properties. For the default value of 30 minutes, x is around 300 seconds. In this case, it could take up to 5 minutes (300 seconds) beyond the timeout threshold of 30 minutes for a particular session to become invalidated.

Unwanted sessions are being created by jsps

As required by the JavaServer Page specification, jsps by default perform a `request.getSession(true)`, so that a session is created if none exists for the client. To prevent jsps from creating a new session, set the session scope to **false** in the jsp file using the page directive as follows:

```
<% @page session="false" %>
```

For current information available from IBM Support on known problems and their resolution, see the IBM Support page.

IBM Support has documents that can save you time gathering information needed to resolve this problem. Before opening a PMR, see the IBM Support page.

JSP source code shown by the Web server

Problem

If you share the document root of the WebSphere Application Server within the Web server document root, a security exposure can result as the Web server might display the JSP source file as plain text.

You can use the WebSphere Web server plug-in set of rules to determine whether a given request will be handled by the WebSphere Application Server. When an incoming request fails to match those rules, the Web server plug-in returns control to the Web server so that the Web server can fulfill the request. In this case, the unknown host header causes the Web server plug-in to return control to the Web server because the rules do not indicate that the WebSphere Application Server should handle it. Therefore, the Web server looks for the request in the Web server document root. Since the JSP source file is stored in the document root of the Web server, the Web server finds the file and displays it as plain text.

Suggested solution

Move the WebSphere Application Server JSP source file outside of the Web server document root. Then, when this request comes in with the unknown host header, the plug-in returns control to the Web server and the JSP source file is not found in the document root. Therefore, the Web server returns a 404 File Not Found error rather than the JSP source file.

Problems using tracing, logging or other troubleshooting features

What kind of problem are you having?

- Error messages when launching the Log Analyzer
- Netscape browser fails when trying to enable a component trace

Error messages when launching the Log Analyzer

Upon starting the Log Analyzer for the first time or after the Log Analyzer preferences files of the users are deleted, the following message displays in the Log Analyzer shell window:

```
Cannot open input stream for waslogbrsys
```

This message is an informational message. You can disregard the message because it does not affect the execution of the Log Analyzer.

The following error messages might display in the Log Analyzer shell window when you start the Log Analyzer:

```
Cannot open input stream for default
Cannot open input stream for default
Cannot load configuration: default
Cannot open input stream for default
Cannot open input stream for default
Cannot load configuration: default
```

These error messages indicate corrupt or incomplete user preference files.

To resolve this problem, take the following steps:

1. Close the Log Analyzer.
2. Delete all user preference files in the `%USERPROFILE%\logbr` directory on Windows platforms or `$HOME/logbr` directory on UNIX platforms.
3. Restart the Log Analyzer.

Note:Deleting all user preference files removes the preferences of Log Analyzer set by the user in the preferences dialog.

Netscape browser fails when trying to enable a component trace

On systems using AIX, the Netscape browser fails when you try to enable trace on a component.

To work around this problem, do one of the following:

- Disable JavaScript on the browser and continue setting trace.
- Administer the AIX server from a remote machine running another browser and operating system.
- Change the trace manually in the `server.xml` file.

A scheduler client runs with errors

Problem

When running a scheduler client, a "java.lang.NoSuchMethodError" error (similar to the following) appears in the `SystemOut.log`:

```
[4/4/03 9:38:00:370 CST] 48506ad4 J2EEContext    E ASYN9999E: Unexpected Exception
Occurred: java.lang.NoSuchMethodError: com.ibm.ws.security.auth.WSLoginHelperImpl:
method restoreSerializedSubject(Ljavax/security/auth/Subject;Lorg/omg/SecurityLevel2/
Credentials;)Ljavax/security/auth/Subject; not found
  at com.ibm.ws.asyncbeans.J2EEContext.readObject(J2EEContext.java:665)
  at java.lang.reflect.Method.invoke(Native Method)
  at java.io.ObjectInputStream.invokeObjectReader(ObjectInputStream.java:Compiled
```

This error occurs when the base product is at a higher fix pak level than the Enterprise extensionIntegration Server product. The EnterpriseIntegration Server product must be at the same fix pack level as the product it extends. If the EnterpriseIntegration Server product extends a base WebSphere Application Server node, the interim fix or fix pack level of the EnterpriseIntegration Server product must be the same as that of the base WebSphere Application Server product.

Suggested solution

Install an EnterpriseIntegration Server fix pak level that matches the fix pak level of the base. See *Installing fixes and FixPaks* and *Uninstalling fixes and FixPaks* for instructions.

Errors connecting to the administrative console from a Netscape browser

What kind of problem are you having?

- Resizing the Netscape browser results in an error (nresize)
- Resizing the Netscape browser causes an error 404 message (404)
- Netscape screen blanks out while using the administrative console (152339)
- Resizing Netscape Version 4.7 causes errors (resizing47)
- Enabling Netscape Version 4.7 to display double-byte character set correctly (netscape479)
- Using Netscape Version 4.79 on a Solaris Operating Environment causes problems (479)
- Limitations occur when using Netscape with Solaris Operating Environment (nhas)
- Netscape browser must be capable of launching from a terminal window on all UNIX platforms (151829)

If you are able to bring up the browser page, but the console's behavior is inconsistent, error-prone, or unresponsive, try upgrading the browser you are using. Older browsers may not support the administrative console's features.

If none of these steps solves the problem, check to see if the problem has been identified and documented using the links in Diagnosing and fixing problems: Resources for learning. If you do not see a problem that resembles yours, or if the information provided does not solve your problem, contact IBM support for further assistance.

Resizing the Netscape browser results in an error (nresize)

If you resize your Netscape browser, you could get a "Data Missing" error. The error message disappears in 60 seconds.

Resizing the Netscape browser causes an error 404 message (404)

When connecting to the IBM WebSphere Application Server administrative console from a Netscape browser, resizing the browser can cause an error 404 message to occur. This situation occurs because the browser reloads the frame when resizing the window.

To avoid getting the error message, you can refrain from resizing the Netscape browser window, or you can connect to the IBM WebSphere Application Server administrative console using an Internet Explorer browser.

Netscape screen blanks out while using the administrative console (152339)

While working with the right-hand panel of the administrative console to do regular administrative tasks, the browser screen blanks out intermittently.

To work around this problem, do one of the following:

- After the problem occurs, close the Netscape browser, log in again, and continue working.
- Use the Internet Explorer browser from a Windows machine.
- Use Netscape 7.x, Mozilla 1.x, Opera 5, or Konquerer browsers on the platform, depending on which is available. Although there is not formal support for these

browsers, they have all been used successfully with the product and in many cases work better than the previous 4.7.x series of Netscape browsers

Resizing Netscape Version 4.7 causes errors (resizing47)

You receive the following error messages when resizing Netscape Version 4.7:

```
Error 0
  An error occurred while processing request: http://localhost:9090/admin/upload.do
  message:
  Details
  com.ibm.webshpere.servlet.error.ServletErrorReport:
    at java.lang.Class.newInstance0(Native Method)
    ...
```

After resizing Netscape 4.7, Netscape has to reload the page just as it initially loads the page on the first request. For pages that do not expect POST data, it is not a problem. But for pages that do, Netscape 4.7 cannot retain the data.

Enabling Netscape Version 4.7 to display double-byte character set correctly (netscape479)

When using Netscape on AIX platforms without the translated package, the English version of Netscape is available for all locale environments as the default package. However, the English version of Netscape does not display double-byte character set (DBCS) characters on the browser radio buttons and title bars because the fonts are mismatched.

To work around this problem, you can install the message resource to make the translated version of Netscape available on a DBCS environment. Use the translated version of Netscape to display the corrupted DBCS correctly. Change the locale from English to the expected DBCS locale before starting Netscape. For example, issue the following commands to display the Japanese contents on Ja_JP (AIX Shift JIS locale):

```
$ export LANG=Ja_JP
$ netscape&
```

Using Netscape Version 4.79 on a Solaris Operating Environment causes problems (479)

Using Netscape Version 4.79 on a Solaris Operating Environment to access the administrative console causes problems with some key text translations with the zh_TW.EUC locale. This situation is not a problem when you use Netscape Version 4.7. The officially supported version of Netscape on a Solaris Operating Environment is Version 4.79, but in this case the workaround is to use Netscape Version 4.7.

Limitations occur when using Netscape with Solaris Operating Environment (nhas)

If you click Troubleshooting > Logs and Trace > *server* > Diagnostic Trace > Modify, the window that pops up allowing you to select the Components and Groups to trace might not display a scroll bar, preventing you from viewing all the components and groups.

The text area displaying the selected components, groups, and trace levels does not have a vertical scroll bar. This omission is a limitation of Netscape on a Solaris Operating Environment.

To work around this problem, refresh the window to show the scroll bar.

Netscape browser must be capable of launching from a terminal window on all UNIX platforms (151829)

To make sure the Netscape browser can launch from a terminal window, edit or create a file called profile in the /etc directory and add the Netscape directory to the system path. For example: `PATH=$PATH:/opt/Netscape export PATH`

J2EE client request hangs and cannot be recovered

J2EE client request hangs and cannot recover when the requested resource is disconnected

When a J2EE client requests a web resource from a cluster, if the member on which the requested resource resides is disconnected, the client application may hang. The application cannot be recovered within the WLM environment.

To correct the problem, launch the J2EE client with the following parameters:

```
-CCDcom.ibm.CORBA.RequestTimeout=10  
-CCDcom.ibm.websphere.wlm.Unusable.Interval=180
```

For example, for Linux, use the following command:

```
/opt/WebSphere/AppServer/bin/launchClient.sh RetireServiceAppDB2.ear  
-CCBootstrapHost=wasdev16 -CCBootstrapPort=9813 -CCDcom.ibm.CORBA.RequestTimeout=10  
-CCDcom.ibm.websphere.wlm.Unusable.Interval=180 doauto -loop=30
```

For current information available from IBM Support on known problems and their resolution, see the IBM Support page.

IBM Support has documents that can save you time gathering information needed to resolve this problem. Before opening a PMR, see the IBM Support page.

Chapter 4. Troubleshooting by component: What is not working?

This section provides troubleshooting information based on the task you were trying to accomplish when the problem occurred. To find more information about your problem, select a task category from the list below.

If you do not see a task that resembles yours, or if the information provided does not solve your problem, contact IBM support for further assistance.

Installation component troubleshooting tips

If you are having problems installing the WebSphere Application Server, follow these steps to resolve the problem:

- If possible, follow the steps outlined in Troubleshooting the installation.
- Browse the relevant log files for clues:
 - The main installation log file: *install_dir/log.txt*.
 - IBM Http Server log: *install_dir/ihs_log.txt*.
 - The log file produced when the default application .ear file is installed is: *install_dir/logs/installDefaultApplication.log*.
- Ensure that you have installed the correct level of dependent software, such as operating system version and revision level, by reviewing <http://www.ibm.com/software/webservers/appserv/doc/latest/prereq.html>.

If none of these steps solves the problem, check to see if the problem is identified and documented using the links in Diagnosing and fixing problems: Resources for learning. If you do not see a problem that resembles yours, or if the information provided does not solve your problem, contact IBM support for further assistance.

For current information available from IBM Support on known problems and their resolution, see the IBM Support page.

IBM Support has documents that can save you time gathering information needed to resolve this problem. Before opening a PMR, see the IBM Support page.

Migration utility troubleshooting tips

If you are encounter problems migrating an application from a previous version of WebSphere Application Server to Version 5.0:

- Look for these log files and browse them for clues:
 - *install_dir/logs/WASPostUpgrade.time stamp.log*
 - *migration_backup_dir/WASPreUpgrade.time stamp.log*
 - *install_dir/logs/clientupgrade.time stamp.log*
- Look for **MIGR0259I: Completed successfully** or **MIGR0271W: Completed with warnings** in the *migration_backup_dir/WASPreUpgrade.time stamp.log*, *migration_backup_dir/WASPreUpgrade.time stamp.log*, or *install_dir/logs/clientupgrade.time stamp.log*.

If **MIGR0286E: Completed with errors**. appears, attempt to correct any problems based on the error messages that appear in the log file. After correcting any errors, rerun the command from the bin directory of the product installation root. If the errors persist, rerun the command with trace enabled.

- To generate more detailed messages when running the migration tools, enable tracing:
 - when running the WASPreUpgrade or WASPostUpgrade tools, add the following strings when you invoke them: **-traceString "*=all=enabled"** **-traceFile migration_backup_dir/filename.**
 - when running ClientUpgrade, add the following strings to the command line when you invoke it: **-traceString "*=all=enabled"** **-traceFile install_dir/logs/filename.**
- With WebSphere Application Server running, run the **dumpNameSpace** on Windows or **dumpNameSpace.sh** command on Unix, and pipe, redirect, or "more" the output so that it can be easily viewed. This command results in a display of all objects in WebSphere Application Server's namespace, including the directory path and object name.
- If the object a client needs to access does not appear, use the administrative console to verify that:
 - The server hosting the target resource is started.
 - The web module or EJB container hosting the target resource is running.
 - The JNDI name of the target resource is properly specified.
- To view detailed information on the runtime behavior of WebSphere Application Server's Naming service, enable trace on the following components and review the output:
 - com.ibm.ws.naming.*
 - com.ibm.websphere.naming.*

If none of these steps solves the problem, see Troubleshooting migration problems for tips on specific migration problems. If none of these match your problem, check to see if the problem is identified and documented using the links in Diagnosing and fixing problems: Resources for learning. If you do not see a problem that resembles yours, or if the information provided does not solve your problem, contact IBM support for further assistance.

For current information available from IBM Support on known problems and their resolution, see the IBM Support page.

IBM Support has documents that can save you time gathering information needed to resolve this problem. Before opening a PMR, see the IBM Support page.

Administration and administrative console troubleshooting tips

In WebSphere Application Server products, administrative functions are supported by:

- The application server (such as server1) process in the base product
- The deployment manager (dmgr) process in the Network Deployment product

The process must be running to use the administrative console. The **wsadmin** command line utility has a local mode that you can use to perform administrative functions, even when the server process is not running.

If you have problems starting or using the administrative console or wsadmin utility, verify that the supporting server process is started and that it is healthy.

- For the base product, look at these files:
 - *install_root/logs/server/startServer.log* for the message that indicates that the server started successfully: **ADMU3000I: Server server1 open for e-business; process id is nmmn..**

- *install_root*/logs/server/SystemOut.log for the message that indicates that the server started successfully: **WSVR0001I: Server *server* open for e-business.**
- For the Network Deployment product, look at these files:
 - *install_root*/logs/dmgr/startServer.log for the message that indicates that the server started successfully: **ADMU3000I: Server dmgr open for e-business; process id is *nnnn*.**
 - *install_root*/logs/dmgr/SystemOut.log for this message indicating that the server started successfully: **WSVR0001I: Server dmgr open for e-business.**
- For the z/OS product, check the job output.
- Look up any error messages in these files in the message reference table. Select the **Reference** view in the information center navigation, then click **Messages**.
- A message like **WASX7213I: This scripting client is not connected to a server process** when trying to start wsadmin indicates that either the server process is not running, the host machine where it is running is not accessible, or that the port or server name used by wsadmin is incorrect.
- Verify that you are using the right port number to communicate with the administrative console or wsadmin server using the following steps:
 - Look in the SystemOut.log file.
 - The line **ADMC0013I: SOAP connector available at port *nnnn*** indicates the port that the server is using to listen for wsadmin functions.
 - The property **com.ibm.ws.scripting.port** in the *install_root*/properties/wsadmin.properties file controls the port used by wsadmin to send requests to the server. If it is different from the value shown in the SystemOut.log file, either change the port number in the wsadmin.properties file, or specify the correct port number when starting wsadmin by using the **-port *port_number*** property on the command line.
 - The message **SRVE0171I: Transport http is listening on port *nnnn* (default 9090)** indicates the port the server uses to listen for administrative console requests. If it is different than the one specified in the URL for the administrative console, change the URL in the browser to the correct value. The default value is `http://localhost:9090/admin`.
- Use the TCP/IP **ping** command to test that the hostname where the application server or deployment manager is executing, is reachable from the system where the browser or wsadmin program are being used. If you are able to ping the hostname, this indicates that there are no firewall or connectivity issues.
- If the host where the application server or deployment manager is running is remote to the machine from which the client browser or wsadmin command is running, ensure that the appropriate hostname parameter is correct:
 - The hostname in the browser URL for the console.
 - The **-host *hostname*** option of the wsadmin command that is used to direct wsadmin to the right server
- Tracing the administrative component: WebSphere Application Server technical support might ask you to trace the administrative component for detailed problem determination. The trace specification for this component is `com.ibm.websphere.management.*=all=enabled:com.ibm.ws.management.*=all=enabled"`

If none of these steps solves the problem, see if the specific problem you are having is addressed in the Installation completes but the administrative console does not start topic. Check to see if the problem has been identified and documented using the links in the Diagnosing and fixing problems: Resources for learning topic. If you do not see a problem that resembles yours, or if the information provided does not solve your problem, contact IBM support for further assistance.

For current information available from IBM Support on known problems and their resolution, see the following topics on the IBM support page:

- Administrative interface
- System management

IBM Support has documents that can save you time gathering information needed to resolve this problem. Before opening a PMR, see the following topics on information gathering on the IBM support page:

- Administrative interface
- System management

Web Container troubleshooting tips

If you are having problems starting a Web module, or accessing resources within a particular Web module:

- View the JVM logs and process logs for the application server which hosts the problem Web modules, and look for messages in the JVM output file which indicate that the web module has started successfully. You should see messages similar to the following:

```
WebContainer A SRVE0161I: IBM WebSphere Application Server - Web Container.  
Copyright IBM Corp. 1998-2002
```

```
WebContainer A SRVE0169I: Loading Web Module: [module_name]
```

```
ApplicationMg A WSVR0221I: Application started: [application_name]
```

```
HttpTransport A SRVE0171I: Transport http is listening on port [port_number]
```

```
[server_name] open for e-business in [install_root]/log/[server_name]/SystemOut.log
```

- For specific problems that can cause servlets, HTML files, and JavaServer Pages (JSP) files not to be served, see [Web resource \(JSP file, servlet, HTML file, image\) does not display](#).
- For a detailed trace of the run-time behavior of the Web container, enable trace for the component `com.ibm.ws.webcontainer.*`.

If none of these steps fixes your problem, check to see if the problem has been identified and documented by looking at the available online support (hints and tips, technotes, and fixes). If you don't find your problem listed there contact IBM support.

For current information available from IBM Support on known problems and their resolution, see the IBM Support page.

IBM Support has documents that can save you time gathering information needed to resolve this problem. Before opening a PMR, see the IBM Support page.

JDBC and data source troubleshooting tips

To see whether your specific problem has been addressed, review the [Cannot access a data source](#) topic. If you cannot find your problem described there, investigate the problem further by using the following instructions to enable tracing for relevant WebSphere Application Server components.

This topic includes the following sections:

- Trace strings for JDBC data sources
- JDBC trace properties

Trace strings for JDBC data sources

Turn on JDBC tracing by using the following trace strings:

- **com.ibm.ws.database.logwriter** Trace string for databases that use the GenericDataStoreHelper. You can also use this trace string for unsupported databases.
- **com.ibm.ws.db2.logwriter** Trace string for DB2 databases.
- **com.ibm.ws.oracle.logwriter** Trace string for Oracle databases.
- **com.ibm.ws.cloudscape.logwriter** Trace string for Cloudscape databases.
- **com.ibm.ws.informix.logwriter** Trace string for Informix databases.
- **com.ibm.ws.sqlserver.logwriter** Trace string for Microsoft SQL Server databases.
- **com.ibm.ws.sybase.logwriter** Trace string for Sybase databases.

The trace group that includes the trace strings is WAS.database.

JDBC trace properties

Use a back-end database that supports JDBC tracing. Setting trace strings does not result in a trace if the database does not support JDBC tracing. The following databases offer JDBC tracing at this time:

- DB2
- Oracle
- SQL Server

Set the level of trace desired for DB2 Universal database and Oracle as custom properties on the datasource.

- **DB2 Universal JDBC driver provider** Custom properties for DB2 are:
 - **traceLevel** Possible traceLevel values are:
 - TRACE_NONE = 0
 - TRACE_CONNECTION_CALLS = 1
 - TRACE_STATEMENT_CALLS = 2
 - TRACE_RESULT_SET_CALLS = 4
 - TRACE_DRIVER_CONFIGURATION = 16
 - TRACE_CONNECTS = 32
 - TRACE_DRDA_FLOWS = 64
 - TRACE_RESULT_SET_META_DATA = 128
 - TRACE_PARAMETER_META_DATA = 256
 - TRACE_DIAGNOSTICS = 512
 - TRACE_SQLJ = 1024
 - TRACE_ALL = -1

Note: This trace level provides real data that sets to the PreparedStatement or gets from the ResultSet object.

- **traceFile** Use this property to integrate the DB2 trace with the WebSphere Application Server trace. If you do not set the value, traces are integrated. Otherwise, DB2 traces are directed to the desired file. You can dynamically enable or disable trace. You can run an application and turn on the DB2 trace if there is a problem. Use the run time trace enablement provided with the Application Server by specifying a trace string of `com.ibm.ws.db2.logwriter=all=enabled`.
- **Oracle JDBC provider** Custom properties for Oracle are:
 - **oraclelogCategoryMask** Controls the output category. The default is 47, which is (OracleLog.USER_OPER 1 | OracleLog.PROG_ERROR 2 | OracleLog.ERROR 4 | OracleLog.WARNING 8 | OracleLog.DEBUG1 32). Possible values are:
 - OracleLog.USER_OPER 1

- OracleLog.PROG_ERROR 2
- OracleLog.ERROR 4
- OracleLog.WARNING 8
- OracleLog.FUNCTION 16
- OracleLog.DEBUG1 32
- OracleLog.SQL_STR 128
- **oraclelogModuleMask** Controls which modules write debug output. The default is 1, which is OracleLog.MODULE_DRIVER 1.
Possible values are:
 - OracleLog.MODULE_DRIVER 1,
 - OracleLog.MODULE_DBACCESS 2
- **oraclelogPrintMask** Controls which information to print with each trace message. The default is 62, which is ([OracleLog.FIELD_OBJECT for 9i / OracleLog.FIELD_CONN for 8i] 32 | OracleLog.FIELD_CATEGORY 16 | OracleLog.FIELD_SUBMOD 8 | OracleLog.FIELD_MODULE 4 | OracleLog.FIELD_TIME 2).
Possible values are:
 - OracleLog.FIELD_TIME 2
 - OracleLog.FIELD_MODULE 4
 - OracleLog.FIELD_SUBMOD 8
 - OracleLog.FIELD_CATEGORY 16
 - OracleLog.FIELD_OBJECT 32
 - OracleLog.FIELD_THREAD 64

Notes for Oracle JDBC tracing:

1. Oracle 9i requires the use of classes12_g.zip to display traces. With Oracle8i, the classes12_g.zip is optional.
2. You can dynamically enable or disable trace. You can run an application and turn on the Oracle trace if there is a problem. Use the run-time trace enablement provided with the WebSphere Application Server products, by specifying a trace string of com.ibm.ws.oracle.logwriter=all=enabled.

If JDBC tracing does not provide enough information to isolate and fix your problem, check to see if the problem has been identified and documented by looking at the available online support (hints and tips, technotes, and fixes). If you do not find your problem listed there, contact IBM Support.

For current information available from IBM Support on known problems and their resolution, see the IBM Support page.

IBM Support has documents that can save you time gathering information needed to resolve this problem. Before opening a PMR, see the IBM Support page.

HTTP plug-in component troubleshooting tips

If you are having problems with the HTTP plug-in component - the component which sends requests from your HTTP server, such as IBM HTTP Server, Apache, Domino, iPlanet, or IIS, to the WebSphere Application Server, try these steps:

- Review the file *install_dir/logs/http_plugin.log* for clues. Look up any error or warning messages in the message table.
- Review your HTTP server's error and access logs to see if the HTTP server is having a problem:
 - IBM HTTP Server and Apache: *access.log* and *error.log*.
 - Domino web server: *httpd-log* and *httpd-error*.
 - iPlanet: *access* and *error*.
 - IIS: *timedatestamp.log*.

If these files don't reveal the cause of the problem, follow these additional steps.

Plug-in Problem Determination Steps

The plug-in provides very readable tracing which can be beneficial in helping to figure out the problem. By setting the **LogLevel** attribute in the `config/plugin-cfg.xml` file to **Trace**, you can follow the request processing to see what is going wrong. At a high level:

1. The plug-in gets a request.
2. The plug-in checks the routes defined in the `plugin-cfg.xml` file.
3. It finds the server group.
4. It finds the server.
5. It picks the transport protocol, usually HTTP.
6. It sends the request.
7. It reads the response.
8. It writes it back to the client.

You can see this very clearly by reading through the trace for a single request:

- The first step is to determine if the plug-in has loaded into the HTTP server successfully.
 - Check to make sure `thehttp_plugin.log` has been created.
 - If it has, look in it to see if any error messages indicate some sort of failure that took place during plug-in initialization. If no errors are found look for the following stanza, which indicates that the plug-in started normally. Ensure that the timestamps for the messages correspond to the time you started the Web server:

```
[Thu Jul 11 10:59:15 2002] 0000009e 000000b1 - PLUGIN: -----System Information-----
[Thu Jul 11 10:59:15 2002] 0000009e 000000b1 - PLUGIN: Bld date: Jul  3 2002, 15:35:09
[Thu Jul 11 10:59:15 2002] 0000009e 000000b1 - PLUGIN: Web server: IIS
[Thu Jul 11 10:59:15 2002] 0000009e 000000b1 - PLUGIN: Hostname = SWEETTJ05
[Thu Jul 11 10:59:15 2002] 0000009e 000000b1 - PLUGIN: OS version 4.0, build 1381, 'Service P
[Thu Jul 11 10:59:15 2002] 0000009e 000000b1 - PLUGIN: -----
```

- Some common errors are:
 - lib_security: loadSecurityLibrary: Failed to load gsk library**
The GSKit did not get installed or the installation is corrupt. If the GSKit did not get installed you can determine this by searching for the file `gsk5ssl.dll` on all drives for Win32 or see if there are any `libgsk5*.so` files in `/usr/lib` on UNIX. Try reinstalling the plug-in to see if you can get the GSKit to install in order to fix this.
 - ws_transport: transportInitializeSecurity: Keyring wasn't set**
The HTTPS transport defined in the configuration file was prematurely terminated and did not contain the Property definitions for the keyring and stashfile. Check your XML syntax for the line number given in the error messages that follow this one to make sure the Transport element contains definitions for the keyring and stashfiles before it is terminated.
- If `thehttp_plugin.log` is not created, check the Web server error log to see if any plug-in related error messages have been logged there that indicate why the plug-in is failing to load. Typical causes of this can include failing to correctly configure the plug-in with the Web server environment. Check the documentation for configuring the Web server you are trying to use with the Web server plug-in.
- Determine whether there are network connection problems with the plug-in and the various application servers defined in the configuration. Typically you will see the following message when this is the case:

ws_common: websphereGetStream: Failed to connect to app server, OS err=%d

Where %d is an OS specific error code related to why the connect() call failed. This can happen for a variety of reasons.

- Ping the machines to make sure they are properly connected to the network. If the machines can't be pinged then there is no way the plug-in will be able to contact them. Possible reasons for this include:
 - Firewall policies limiting the traffic from the plug-in to the app server.
 - The machines are not on the same network.
- If you are able to ping the machines then the likely cause of the problem is that the port is not active. This could be because the application server or cluster has not been started or the application server has gone down for some reason. You can test this by hand by trying to telnet into the port that the connect is failing on. If you cannot telnet into the port the application server is not up and that problem needs to be resolved before the plug-in will be able to connect successfully.
- Determine whether other activity on the machines where the servers are installed is impairing the server's ability to service a request. Check the processor utilization as measured by the task manager, processor ID, or some other outside tool to see if it:
 - Is not what was expected.
 - Is erratic rather than a constant.
 - Shows that a newly added member of the cluster is not being utilized.
 - Shows that a failing member that has been fixed is not being utilized.
- Check the administrative console to ensure that the application servers are started. View the administrative console for error messages or look in the JVM logs.
- In the administrative console, select the problem application server and view its installed applications to verify that they are started.

If none of these steps solves the problem:

- For specific problems that can cause web pages and their contents not to display, see Web resource (JSP file, servlet, html file, image, etc) will not display in the information center.
- Check to see if the problem has been identified and documented using the links in Diagnosing and fixing problems: Resources for learning.
- If you do not see a problem that resembles yours, or if the information provided does not solve your problem, contact IBM support for further assistance.

For current information available from IBM Support on known problems and their resolution, see the following topics on the IBM support page:

- HTTP transport
- HTTP plugin
- HTTP plugin remote install

IBM Support has documents that can save you time gathering information needed to resolve this problem. Before opening a PMR, see the following topics on the IBM support page:

- HTTP transport
- HTTP plugin
- HTTP plugin remote install

HTTP session manager troubleshooting tips

If you are having problems creating or using HTTP sessions with your Web application hosted by WebSphere Application Server, here are some steps to take:

- See HTTP session aren't getting created or are getting dropped to see if your specific problem is discussed.
- View the JVM logs for the application server which hosts the problem application:
 - first, look at messages written while each application is starting. They will be written between the following two messages:
Starting application: *application*
.....
Application started: *application*
 - Within this block, look for any errors or exceptions containing a package name of `com.ibm.ws.webcontainer.httpsession`. If none are found, this is an indication that the session manager started successfully.
 - Error "**SRVE0054E: An error occurred while loading session context and Web application**" indicates that SessionManager didn't start properly for a given application.
 - Look within the logs for any Session Manager related messages. These messages will be in the format `SESNxxxxE` and `SESNxxxxW` for errors and warnings, respectively, where `xxxx` is a number identifying the precise error. Look up the extended error definitions in the Session Manager message table.
- See Best practices for using HTTP Sessions.
- To dynamically view the number of sessions as a Web application is running, enable performance monitoring for HTTP sessions. This will give you an indication as to whether sessions are actually being created.
- To learn how to view the http session counters as the application runs, see Monitoring performance with Tivoli Performance Viewer (formerly Resource Analyzer).
- Alternatively, a special servlet can be invoked that displays the current configuration and statistics related to session tracking. This servlet has all the counters that are in performance monitor tool and has some additional counters.
 - Servlet name: **`com.ibm.ws.webcontainer.httpsession.IBMTrackerDebug`**.
 - It can be invoked from any web module which is enabled to serve by class name. For example, using `default_app`,
`http://localhost:9080/servlet/com.ibm.ws.webcontainer.httpsession.IBMTrackerDebug`.
 - If you are viewing the module via the `serve-by-class-name` feature, be aware that it may be viewable by anyone who can view the application. You may wish to map a specific, secured URL to the servlet instead and disable the `serve-servlets-by-classname` feature.
- Enable tracing for the HTTP Session Manager component:
 - Use the trace specification **`com.ibm.ws.webcontainer.httpsession.*=all=enabled`**. Follow the instructions for dumping and browsing the trace output to narrow the origin of the problem.
 - If you are using persistent sessions based on memory replication, also enable trace for **`com.ibm.ws.drs.*`**.
- If you are using **database-based persistent sessions**, look for problems related to the **data source** the Session Manager relies on to keep session state information. For details on diagnosing database related problems see Errors accessing a datasource or connection pool

Error message SRVE0079E Servlet host not found after you define a port

Error message SRVE0079E can occur after you define the port in WebContainer > HTTP Transports for a server, indicating that you do not have the port defined in your virtual host definitions. To define the port,

1. On the administrative console, go to Environment > Virtual Hosts > default_host> Host Aliases> New
2. Define the new port on host "*"

The application server gets EC3 - 04130007 ABENDs

To prevent an EC3 - 04130007 abend from occurring on the application server, change the HTTP Output timeout value. The custom property *ConnectionResponseTimeout* specifies the maximum number of seconds the HTTP port for an individual server can wait when trying to read or write data. For instructions on how to set *ConnectionResponseTimeout*, see HTTP transport custom properties.

If none of these steps fixes your problem, check to see if the problem has been identified and documented by looking at the available online support (hints and tips, technotes, and fixes). If you don't find your problem listed there contact IBM support.

For current information available from IBM Support on known problems and their resolution, see the IBM Support page.

IBM Support has documents that can save you time gathering information needed to resolve this problem. Before opening a PMR, see the IBM Support page.

Naming services component troubleshooting tips

"Naming" is a J2EE service which publishes and provides access to resources such as connection pools, enterprise beans, message listeners, etc, to client processes. If you have problems in accessing a resource which otherwise appears to be healthy, the naming service might be involved. To investigate problems with the WebSphere Application Server Naming service:

- Browse the JVM logs for the server which is hosting the resource you are trying to access. Messages starting with NMSV are related to the Naming Service.
- With WebSphere Application Server running, run the **dumpNameSpace** command for Windows systems, or the **dumpNameSpace.sh** command for UNIX and z/OS systems, and pipe, redirect, or "more" the output so that it is easily viewed. This command results in a display of all objects in the WebSphere Application Server namespace, including the directory path and object name.
- If the object a client needs to access does not appear, use the administrative console to verify that:
 - The server hosting the target resource is started.
 - The Web module or EJB container, if applicable, hosting the target resource is running.
 - The JNDI name of the target resource is correct and updated.
 - If the problem resource is remote, that is, not on the same node as the Name Server node, that the JNDI name is fully qualified, including the host name. This is especially applicable to Network Deployment configurations
- View detailed information on the run-time behavior of the WebSphere Application Server Naming service by enabling trace on the following components and reviewing the output:

- com.ibm.ws.naming.*
- com.ibm.websphere.naming.*
- If you see an exception that appears to be CORBA related ("CORBA" appears as part of the exception name) look for a naming-services-specific CORBA minor code, further down in the exception stack, for information on the real cause of the problem. For a list of naming service exceptions and explanations, see the class `com.ibm.websphere.naming.WsnCorbaMinorCodes` in the Javadoc topic in the information center.

If none of these steps solve the problem:

- For specific problems that can cause access to named object hosted in WebSphere Application Server to fail, see [Cannot look up an object hosted by WebSphere Application Server from a servlet, JSP file, or other client](#).
- Check to see if the problem has been identified and documented using the links in [Diagnosing and fixing problems: Resources for learning](#).
- If you do not see a problem that resembles yours, or if the information provided does not solve your problem, contact IBM support for further assistance.

For current information available from IBM Support on known problems and their resolution, see the [IBM Support page](#).

IBM Support has documents that can save you time gathering information needed to resolve this problem. Before opening a PMR, see the [IBM Support page](#).

Messaging component troubleshooting tips

Problems deploying or executing applications which use the WebSphere Application Server messaging capabilities

If you are having problems deploying or executing applications which use the WebSphere Application Server messaging capabilities, review these articles in the WebSphere Application Server information center:

- [Troubleshooting WebSphere Messaging](#)
- [cmm/tasks/tmc_prob.dita](#)
- [Troubleshooting message-driven beans](#)
- [Troubleshooting transactions](#)
- [ass/tasks/tas_prob.dita](#)

On a Linux platform, embedded messaging does not get removed after uninstalling the product

On a Linux platform, you may find that embedded messaging is not removed when you uninstall the product silently using the `SetRetainMQToTrue.active=false` option.

To prevent this problem, either issue the `uninstall` command from a local machine, or use `ssh` instead of `telnet` to logon to the machine where you issue the `uninstall` command. For details on the `uninstall` command, see [uninstall command](#).

To correct this problem after logging in, issue the following command for a real root login: `su -`

If none of these steps solves the problem, check to see if the problem has been identified and documented using the links in [Diagnosing and fixing problems](#):

Resources for learning. If you do not see a problem that resembles yours, or if the information provided does not solve your problem, contact IBM support for further assistance.

For current information available from IBM Support on known problems and their resolution, see the IBM Support page.

IBM Support has documents that can save you time gathering information needed to resolve this problem. Before opening a PMR, see the IBM Support page.

Universal Discovery, Description, and Integration, Web Service, and SOAP component troubleshooting tips

If you are having problems deploying or executing applications that use WebSphere Application Server Web Services, Universal Discovery, Description, and Integration (UDDI), or SOAP, try these steps:

- Review the troubleshooting documentation for messaging in the information center:
 - WSIF troubleshooting tips
 - Problem determination for the Web Services Gateway
- Investigate the following areas for SOAP-related problems:
 - View the JVM logs for the target application server, and run the on the server's service log.
 - View the error log of the HTTP server to which the SOAP request is sent.
 - View the run-time behavior of the SOAP component in more detail, by enabling trace for `org.apache.soap.*` and `com.ibm.*.soap*`.
 - Browse the Web site <http://xml.apache.org/soap/> for FAQs and known SOAP issues.

If none of these steps solves the problem, check to see if the problem has been identified and documented using the links in Diagnosing and fixing problems: Resources for learning. If you do not see a problem that resembles yours, or if the information provided does not solve your problem, contact IBM support for further assistance.

For current information available from IBM Support on known problems and their resolution, see the IBM Support page.

IBM Support has documents that can save you time gathering information needed to resolve this problem. Before opening a PMR, see the IBM Support page.

Enterprise bean and EJB container troubleshooting tips

If you are having problems starting an EJB container, or encounter error messages or exceptions that appear to be generated on by an EJB container, follow these steps to resolve the problem:

- Browse the relevant log files for clues:
 - Use the Administrative Console to verify that the application server which hosts the container is running.
 - Browse the JVM log files for the application server which hosts the container. Look for the message **server *server_name* open for e-business** in the `SystemOut.log`. If it does not appear, or if you see the message **problems occurred during startup**, browse the `SystemErr.log` for details.
 - Browse the system log files for the application server which hosts the container.

- Enable tracing for the EJB Container component, by using the following trace specification `EJBContainer=all=enabled`. Follow the instructions for dumping and browsing the trace output to narrow the origin of the problem.

If none of these steps solves the problem, check to see if the problem is identified and documented using the links in *Diagnosing and fixing problems: Resources for learning*. If you do not see a problem that resembles yours, or if the information provided does not solve your problem, contact IBM support for further assistance.

For current information available from IBM Support on known problems and their resolution, see the *IBM Support page*.

IBM Support has documents that can save you time gathering information needed to resolve this problem. Before opening a PMR, see the *IBM Support page*.

Security components troubleshooting tips

This document explains basic resources and steps for diagnosing security related issues in the WebSphere Application Server, including:

- What log files to look at and what to look for in them.
- A general approach to isolating and resolving security problems.
- When and how to enable security-related trace.
- An overview and table of security-related CORBA minor codes.

The following security-related problems are addressed elsewhere in the information center:

- Errors and access problems after enabling security
- Errors after enabling SSL, or SSL-related error messages
- Errors trying to configure and enable security

If none of these steps solves the problem, check to see if the problem has been identified and documented using the links in *Diagnosing and fixing problems: Resources for learning*. If you do not see a problem that resembles yours, or if the information provided does not solve your problem, contact IBM support for further assistance.

Note: for an overview of WebSphere Application Server security components such as SAS and how they work, see *Getting started with security*.

Log filesSDSF output logs

When troubleshooting the security component, browse the JVM logs for the server that hosts the resource you are trying to access. The following is a sample of messages you would expect to see from a server in which the security service has started successfully:

```
SASRas      A JSAS0001I: Security configuration initialized.
SASRas      A JSAS0002I: Authentication protocol: CSIV2/IBM
SASRas      A JSAS0003I: Authentication mechanism: SWAM
SASRas      A JSAS0004I: Principal name: MYHOSTNAME/aServerID
SASRas      A JSAS0005I: SecurityCurrent registered.
SASRas      A JSAS0006I: Security connection interceptor initialized.
SASRas      A JSAS0007I: Client request interceptor registered.
SASRas      A JSAS0008I: Server request interceptor registered.
SASRas      A JSAS0009I: IOR interceptor registered.
NameServerImp I NMSV0720I: Do Security service listener registration.
SecurityCompo A SECJ0242A: Security service is starting
UserRegistryI A SECJ0136I: Custom Registry:com.ibm.ws.security.registry.nt.
```

```

NTLocalDomainRegistryImpl has been initialized
SecurityCompo A SECJ0202A: Admin application initialized successfully
SecurityCompo A SECJ0203A: Naming application initialized successfully
SecurityCompo A SECJ0204A: Rolebased authorizer initialized successfully
SecurityCompo A SECJ0205A: Security Admin mBean registered successfully
SecurityCompo A SECJ0243A: Security service started successfully
SecurityCompo A SECJ0210A: Security enabled true

```

The following is an example of messages from a server which cannot start the security service, in this case because the administrative user ID and password given to communicate with the user registry is wrong, or the user registry itself is down or misconfigured:

```

SASRas      A JSAS0001I: Security configuration initialized.
SASRas      A JSAS0002I: Authentication protocol: CSIV2/IBM
SASRas      A JSAS0003I: Authentication mechanism: SWAM
SASRas      A JSAS0004I: Principal name: MYHOSTNAME/aServerID
SASRas      A JSAS0005I: SecurityCurrent registered.
SASRas      A JSAS0006I: Security connection interceptor initialized.
SASRas      A JSAS0007I: Client request interceptor registered.
SASRas      A JSAS0008I: Server request interceptor registered.
SASRas      A JSAS0009I: IOR interceptor registered.
NameServerImp I NMSV0720I: Do Security service listener registration.

```

```

SecurityCompo A SECJ0242A: Security service is starting
UserRegistryI A SECJ0136I: Custom Registry:com.ibm.ws.security.
registry.nt.NTLocalDomainRegistryImpl has been initialized
Authenticatio E SECJ4001E: Login failed for badID/<null>
javax.security.auth.login.LoginException: authentication failed: bad user/password

```

The following is an example of messages from a server for which LDAP has been specified as the security mechanism, but the LDAP keys have not been properly configured:

```

SASRas      A JSAS0001I: Security configuration initialized.
SASRas      A JSAS0002I: Authentication protocol: CSIV2/IBM
SASRas      A JSAS0003I: Authentication mechanism: LTPA
SASRas      A JSAS0004I: Principal name: MYHOSTNAME/anID
SASRas      A JSAS0005I: SecurityCurrent registered.
SASRas      A JSAS0006I: Security connection interceptor initialized.
SASRas      A JSAS0007I: Client request interceptor registered.
SASRas      A JSAS0008I: Server request interceptor registered.
SASRas      A JSAS0009I: IOR interceptor registered.
NameServerImp I NMSV0720I: Do Security service listener registration.
SecurityCompo A SECJ0242A: Security service is starting
UserRegistryI A SECJ0136I: Custom Registry:com.ibm.ws.security.registry.nt.
NTLocalDomainRegistryImpl has been initialized
SecurityServe E SECJ0237E: One or more vital LTPAServerObject configuration
attributes are null or not available. The attributes and values are password :
LTPA password does exist, expiration time 30, private key <null>, public key <null>,
and shared key <null>.

```

A problem with the SSL configuration might lead to the following message. You should ensure that the keystore location and keystore passwords are valid. Also, ensure the keystore has a valid personal certificate and that the personal certificate public key or CA root has been extracted on put into the truststore.

```

SASRas      A JSAS0001I: Security configuration initialized.
SASRas      A JSAS0002I: Authentication protocol: CSIV2/IBM
SASRas      A JSAS0003I: Authentication mechanism: SWAM
SASRas      A JSAS0004I: Principal name: MYHOSTNAME/aServerId
SASRas      A JSAS0005I: SecurityCurrent registered.
SASRas      A JSAS0006I: Security connection interceptor initialized.
SASRas      A JSAS0007I: Client request interceptor registered.
SASRas      A JSAS0008I: Server request interceptor registered.
SASRas      A JSAS0009I: IOR interceptor registered.

```



```

SASRas      E JSAS0026E: [SecurityTaggedComponentAssistorImpl.register]
Exception connecting object to the ORB. Check the SSL configuration to ensure
that the SSL keyStore and trustStore properties are set properly. If the problem
persists, contact support for assistance. org.omg.CORBA.OBJ_ADAPTER:
ORB_CONNECT_ERROR (5) - couldn't get Server Subcontract minor code:
4942FB8F completed: No

```

General approach for troubleshooting security-related issues

When troubleshooting security-related problems, the following questions are very helpful and should be considered:

Does the problem occur when security is disabled?

This is a good litmus test to determine that a problem is security related. However, just because a problem only occurs when security is enabled does not always make it a security problem. More troubleshooting is necessary to ensure the problem is really security-related.

Did security appear to initialize properly?

A lot of security code is visited during initialization. So you will likely see problems there first if the problem is configuration related. The following sequence of messages generated in the SystemOut.log indicate normal code initialization of an application server. This sequence will vary based on the configuration, but the messages are similar:

```

SASRas      A JSAS0001I: Security configuration initialized.
SASRas      A JSAS0002I: Authentication protocol: CSIV2/IBM
SASRas      A JSAS0003I: Authentication mechanism: SWAM
SASRas      A JSAS0004I: Principal name: BIRKT20/pbirk
SASRas      A JSAS0005I: SecurityCurrent registered.
SASRas      A JSAS0006I: Security connection interceptor initialized.
SASRas      A JSAS0007I: Client request interceptor registered.
SASRas      A JSAS0008I: Server request interceptor registered.
SASRas      A JSAS0009I: IOR interceptor registered.
NameServerImp I NMSV0720I: Do Security service listener registration.
SecurityCompo A SECJ0242A: Security service is starting
UserRegistryI A SECJ0136I: Custom Registry:com.ibm.ws.security.registry.nt.
NTLocalDomainRegistryImpl has been initialized
SecurityCompo A SECJ0202A: Admin application initialized successfully
SecurityCompo A SECJ0203A: Naming application initialized successfully
SecurityCompo A SECJ0204A: Rolebased authorizer initialized successfully
SecurityCompo A SECJ0205A: Security Admin mBean registered successfully
SecurityCompo A SECJ0243A: Security service started successfully

```

```
SecurityCompo A SECJ0210A: Security enabled true
```

A single stack trace tells a lot about the problem. What code initiated the code that failed? What is the failing component? Which class did the failure actually come from? Sometimes the stack trace is all that is needed to solve the problem and it can pinpoint the root cause. Other times, it can only give us a clue, and could actually be misleading. When support analyzes a stack trace, they may request additional trace if it is not clear what the problem is. If it appears to be security related and the solution cannot be determined from the stack trace or problem description, you will be asked to gather the following trace specification:

```
SASRas=all=enabled:com.ibm.ws.security.*=all=enabled from all
processes involved.
```

Is this a distributed security problem or a local security problem?

- If the problem is local, that is the code involved does not make a remote method invocation, then troubleshooting is isolated to a single process. It is important to know when a problem is local versus distributed since the behavior of the ORB, among other components, is different between the two. Once a remote method invocation takes place, an entirely different security code path is entered.

- When you know that the problem involves two or more servers, the techniques of troubleshooting change. You will need to trace all servers involved simultaneously so that the trace shows the client and server sides of the problem. Try to make sure the timestamps on all machines match as closely as possible so that you can find the request and reply pair from two different processes. Enable both SAS and Security trace using the trace specification:

```
SASRas=all=enabled:com.ibm.ws.security.*=all=enabled.
```

Is the problem related to authentication or authorization?

Most security problems fall under one of these two categories.

Authentication is the process of determining who the caller is. Authorization is the process of validating that the caller has the proper authority to invoke the requested method. When authentication fails, typically this is related to either the authentication protocol, authentication mechanism or user registry. When authorization fails, this is usually related to the application bindings from assembly and/or deployment and to the caller's identity who is accessing the method and the roles required by the method.

Is this a Web or EJB request?

Web requests have a completely different code path than EJB requests. Also, there are different security features for Web requests than for EJB requests, requiring a completely different body of knowledge to resolve. For example, when using the LTPA authentication mechanism, the Single SignOn feature is available for Web requests but not for EJB requests. Web requests involve HTTP header information not required by EJB requests due to the protocol differences. Also, the Web container (or servlet engine) is involved in the entire process. Any of these components could be involved in the problem and all should be considered during troubleshooting, based on the type of request and where the failure occurs.

Secure EJB requests heavily involve the ORB and Naming components since they flow over the RMI/IIOP protocol. In addition, when work flow management (WLM) is enabled, other behavior changes in the code can be observed. All of these components interact closely for security to work properly in this environment. At times, trace in any or all of these components might be necessary to troubleshoot problems in this area. The trace specification to begin with is
 SASRas=all=enabled:com.ibm.ws.security.*=all=enabled. ORB trace is also very beneficial when the SAS/Security trace does not seem to pinpoint the problem.

Does the problem seem to be related to the Secure Sockets Layer (SSL)?

The Secure Socket Layer (SSL) is a totally distinct separate layer of security. Troubleshooting SSL problems are usually separate from troubleshooting authentication and/or authorization problems. There are many things to consider. Usually, SSL problems are first time setup problems because the configuration can be difficult. Each client must contain the server's signer certificate. During mutual authentication, each server must contain the client's signer certificate. Also, there can be protocol differences (SSLv3 vs. TLS), and listener port problems related to stale IORs (i.e., IORs from a server reflecting the port prior to the server restarting).

For SSL problems, we sometimes request an SSL trace to determine what is happening with the SSL handshake. The SSL handshake is the process which occurs when a client opens a socket to a server. If anything goes wrong with the key exchange, cipher exchange, etc. the handshake will fail

and thus the socket is invalid. Tracing JSSE (the SSL implementation used in WebSphere Application Server) involves the following steps:

- Ensure that the client and server processes contain an `ibmjssse-debug.jar` file in the `java/jre/lib/ext` directory. The `ibmjssse-debug.jar` is shipped with the product. You can locate the file under `installation_directory\web\docs\jsse`. Make sure you remove the existing `ibmjssse.jar` file from this directory after putting in the `ibmjssse-debug.jar`. If both exist in the `/ext` directory, the JSSE trace will not be complete.
- Set the following system property on the client and server processes: `-Djavax.net.debug=true`. For the server, add this to the Generic JVM Arguments property of the Java virtual machine settings page.
- Turn on ORB trace as well.
- Recreate the problem. The `SystemOut.log` of both processes should contain the JSSE trace. You will find trace similar to the following:

```
SSLConnection: install <com.ibm.sslite.e@3ae78375>
>> handleHandshakeV2 <com.ibm.sslite.e@3ae78375>
>> handshakeV2 type = 1
>> clientHello: SSLv2.
SSL client version: 3.0
...
...
...
JSSEContext: handleSession[Socket[addr=null,port=0,localport=0]]

<< sendServerHello.
SSL version: 3.0
SSL_RSA_WITH_RC4_128_MD5
HelloRandom
...
...
...
<< sendCertificate.
<< sendServerHelloDone.
>> handleData <com.ibm.sslite.e@3ae78375>
>> handleHandshake <com.ibm.sslite.e@3ae78375>
>> handshakeV3 type = 16

>> clientKeyExchange.
>> handleData <com.ibm.sslite.e@3ae78375>
>> handleChangeCipherSpec <com.ibm.sslite.e@3ae78375>
>> handleData <com.ibm.sslite.e@3ae78375>
>> handleHandshake <com.ibm.sslite.e@3ae78375>
>> handshakeV3 type = 20
>> finished.
<< sendChangeCipherSpec.
<< sendFinished.
```

Tracing security

The classes which implement WebSphere Application Server security are:

- `com.ibm.ws.security.*`
- `com.ibm.websphere.security.*`
- `com.ibm.WebSphereSecurityImpl.*`
- SASRas

To view detailed information on the runtime behavior of security, enable trace on the following components and review the output:

- `com.ibm.ws.security.*=all=enabled:com.ibm:WebSphereSecurityImpl.*=all=enabled:com.ibm.websphere.security.*=all=enabled`. This trace statement collects the trace for the security runtime.

- `com.ibm.ws.console.security.*=all=enabled`. This trace statement collects the trace for the security center GUI.
- `SASRas=all=enabled`. This trace statement collects the trace for SAS (low-level authentication logic).

Fine tuning SAS traces:

If a subset of classes need to be traced for the SAS/CSIv2 component, a system property can be specified with the class names comma separated:
`com.ibm.CORBA.securityTraceFilter=SecurityConnectionInterceptorImpl, VaultImpl, ...`

Fine tuning Security traces:

If a subset of packages need to be traced, specify a trace specification more detailed than `com.ibm.ws.security.*=all=enabled`. For example, to trace just dynamic policy code, you can specify `com.ibm.ws.security.policy.*=all=enabled`. To disable dynamic policy trace, you can specify `com.ibm.ws.security.policy.*=all=disabled`.

Configuring CSIv2 or SAS Trace Settings

Situations arise where reviewing trace for the CSIv2 or SAS authentication protocols can assist in troubleshooting difficult problems. This section describes how to enable to CSIv2/SAS trace.

Enabling Client-Side CSIv2/SAS Trace

To enable CSIv2 and SAS trace on a pure client, the following steps need to be taken:

- Edit the file `TraceSettings.properties` in the **/WebSphere/AppServer/properties** directory.
- In this file, change `traceFileName=` to point to the path in which you want the output file created. Make sure you put a double backslash (`\\`) between each subdirectory. For example, `traceFileName=c:\\WebSphere\\AppServer\\logs\\sas_client.log`
- In this file, add the trace specification string: `SASRas=all=enabled`. Any additional trace strings can be added on separate lines.
- Point to this file from within your client application. On the Java command line where you launch the client, add the following system property:
`-DtraceSettingsFile=TraceSettings.properties.`

Note: Do not give the fully qualified path to the `TraceSettings.properties` file. Make sure that the `TraceSettings.properties` file is in your classpath.

Enabling Server-Side CSIv2/SAS Trace

To enable SAS trace in an application server, complete the following:

- Add the trace specification, `SASRas=all=enabled`, to the `server.xml` file or add it to the Trace settings within the WebConsole GUI.
- Typically it is best to also trace the authorization security runtime in addition to the authentication protocol runtime. To do this, use the following two trace specifications in combination:
`SASRas=all=enabled:com.ibm.ws.security.*=all=enabled.`
- When troubleshooting a connection type problem, it is beneficial to trace both SAS/CSIv2 and the ORB. To do this, use the following three trace specifications:
`SASRas=all=enabled:com.ibm.ws.security.*=all=enabled:ORBRas=all=enabled.`
- In addition to adding these trace specifications, for ORB trace there are a couple of system properties that also need to be set.

Go to the ORB settings in the GUI and add the following two properties: `com.ibm.CORBA.Debug=true` and `com.ibm.CORBA.CommTrace=true`.

CSIV2 CORBA Minor Codes

Whatever exceptions might occur within the security code on either the client or server, the eventual exception will become a CORBA exception. So any exception that occurs gets "wrapped" by a CORBA exception, because the CORBA architecture is used by the security service for its own inter-process communication. CORBA exceptions are generic, and indicate a problem in communication between two components. CORBA minor codes are more specific, and indicate the underlying reason that a component could not complete a request.

The following shows the CORBA Minor codes which a client can expect to receive after executing a security-related request such as authentication. It also includes the CORBA exception type that the minor code would appear in.

The following exception shows an example of a CORBA exception where the minor code is 49424300. From the table below, this minor code indicates Authentication Failure. Typically, a descriptive message is also included in the exception to assist in troubleshooting the problem. Here, the detailed message is "Exception caught invoking authenticateBasicAuthData from SecurityServer for user jdoe. Reason: com.ibm.WebSphereSecurity.AuthenticationFailedException" which indicates that the authentication failed for user "jdoe".

The completed field in the exception indicates whether the method was completed or not. In the case of a NO_PERMISSION, the method should never get invoked, so it will always be "completed:No". Other exceptions which are caught on the server side could have a completed status of "Maybe" or "Yes".

```
org.omg.CORBA.NO_PERMISSION: Caught WSSecurityContextException in
WSSecurityContext.acceptSecContext(),
reason: Major Code[0] Minor Code[0] Message[Exception caught invoking
authenticateBasicAuthData from SecurityServer for user jdoe. Reason:
com.ibm.WebSphereSecurity.AuthenticationFailedException] minor code: 49424300
completed: No
```

```
at com.ibm.ISecurityLocalObjectBaseL13Impl.PrincipalAuthFailReason.
map_auth_fail_to_minor_code(PrincipalAuthFailReason.java:83)
    at com.ibm.ISecurityLocalObjectBaseL13Impl.CSIServerRI.receive_request
        (CSIServerRI.java:1569)
    at com.ibm.rmi.pi.InterceptorManager.iterateReceiveRequest
        (InterceptorManager.java:739)
    at com.ibm.CORBA.iiop.ServerDelegate.dispatch(ServerDelegate.java:398)
    at com.ibm.rmi.iiop.ORB.process(ORB.java:313)
    at com.ibm.CORBA.iiop.ORB.process(ORB.java:1581)
    at com.ibm.rmi.iiop.GIOPConnection.doWork(GIOPConnection.java:1827)
    at com.ibm.rmi.iiop.WorkUnitImpl.doWork(WorkUnitImpl.java:81)
    at com.ibm.ejs.oa.pool.PooledThread.run(ThreadPool.java:91)
    at com.ibm.ws.util.CachedThread.run(ThreadPool.java:149)
```

The following table shows the CORBA Minor codes which a client can expect to receive after executing a security-related request such as authentication. It also includes the CORBA exception type that the minor code would appear in.

Minor code name	Minor code value (in hex)	Exception type (all in the package of org.omg.CORBA.*)	Minor code description	Retry performed (when authenticationRetryEnabled=true)

AuthenticationFailed	49424300	NO_PERMISSION	This is a generic authentication failed error. It does not give any details about whether the userid or password is invalid. Some registries can choose to use this type of error code, others might choose to use the next three types which are more specific.	Yes
InvalidUserId	49424301	NO_PERMISSION	This occurs when the registry returns bad userid.	Yes
InvalidPassword	49424302	NO_PERMISSION	This occurs when the registry returns bad password.	Yes
InvalidSecurityCredentials	49424303	NO_PERMISSION	This is a generic error indicating that the credentials are bad for whatever reason. It could be that they don't have the right attributes set.	Yes, if client has BasicAuth credential (token based credential was rejected in the first place).
InvalidRealm	49424304	NO_PERMISSION	This occurs when the REALM in the token received from the client does not match the server's current realm.	No
ValidationFailed	49424305	NO_PERMISSION	A validation failure occurs when a token is sent from the client or server to a target server but the token format or the expiration is invalid.	Yes, if client has BasicAuth credential (token based credential was rejected in the first place).
CredentialTokenExpired	49424306	NO_PERMISSION	This is more specific about why the validation failed. In this case, the token has an absolute lifetime, and this lifetime has expired. Therefore, it is no longer a valid token and cannot be used.	Yes, if client has BasicAuth credential (token based credential was rejected in the first place).
InvalidCredentialToken	49424307	NO_PERMISSION	This is more specific about why the validation failed. In this case, the token cannot be decrypted or the data within it is not readable.	Yes, if client has BasicAuth credential (token based credential was rejected in the first place).
SessionDoesNotExist	49424308	NO_PERMISSION	This indicates that the CSIV2 session does not exist on the server. Typically, a retry occurs automatically and will successfully create a new session.	Yes

SessionConflictingEvidence	49424309	NO_PERMISSION	This indicates that a session already exists on the server which matches the context_id sent over by the client, however, the information provided by the client for this EstablishContext message is different from the information originally provided to establish the session.	Yes
SessionRejected	4942430A	NO_PERMISSION	This indicates that the session referenced by the client has been previously rejected by the server.	Yes
SecurityServerNotAvailable	4942430B	NO_PERMISSION	This error occurs when the server cannot contact the security server (whether local or remote) in order to authenticate or validate.	No
InvalidIdentityToken	4942430C	NO_PERMISSION	This error indicates that identity cannot be obtained from the identity token when Identity Assertion is enabled.	No
IdentityServerNotTrusted	4942430D	NO_PERMISSION	This indicates that the server id of the sending server is not on the target server's trusted principal list.	No
InvalidMessage	4942430E	NO_PERMISSION	This indicates that the CSIv2 message format is invalid for the receiving server.	No
AuthenticationNotSupported	49421090	NO_PERMISSION	This error occurs when a mechanism does not support authentication (very rare).	No
InvalidSecurityMechanism	49421091	NO_PERMISSION	This is used to indicate that the specified security mechanism is not known.	No
CredentialNotAvailable	49421092	NO_PERMISSION	This indicates a credential is not available when it is required.	No
SecurityMechanismNotSupported	49421093	NO_PERMISSION	This error occurs when a security mechanism specified in the CSIv2 token is not implemented on the server.	No

ValidationNotSupported	49421094	NO_PERMISSION	This error occurs when a mechanism does not support validation (such as LocalOS). This error should not occur since the LocalOS credential is not a forwardable credential, therefore, validation should never need to be called on it.	No
CredentialTokenNotSet	49421095	NO_PERMISSION	This is used to indicate the token inside the credential is null.	No
ServerConnectionFailed	494210A0	COMM_FAILURE	This error is used when a connection attempt fails.	Yes (via ORB retry)
CorbaSystemException	494210B0	INTERNAL	This is a generic CORBA specific exception in system code.	No
JavaException	494210B1	INTERNAL	This is a generic error that indicated an unexpected Java exception occurred.	No
ValueIsNull	494210B2	INTERNAL	This is used to indicate that a value or parameter passed in was null.	No
EffectivePolicyNotPresent	494210B3	INTERNAL	This indicates that an effective policy object for CSiv2 is not present. This object is used to determine what security configuration features have been specified.	No
NullPointerException	494210B4	INTERNAL	This is used to indicate that a NullPointerException was caught in the runtime.	No
ErrorGettingClassInstance	494210B5	INTERNAL	This indicates a problem loading a class dynamically.	No
MalFormedParameters	494210B6	INTERNAL	This indicates parameters are not valid.	No
DuplicateSecurityAttribute	494210B7	INTERNAL	A duplicate credential attribute has been specified during the set_attributes operation.	No
MethodNotImplemented	494210C0	NO_IMPLEMENT	A method invoked has not been implemented.	No
GSSFormatError	494210C5	BAD_PARAM	This indicates that a GSS encoding or decoding routine has thrown an exception.	No
TagComponentFormatError	494210C6	BAD_PARAM	This indicates that a tag component cannot be read properly.	No

InvalidSecurityAttributeType	494210C7	BAD_PARAM	This indicates an attribute type specified during the set_attributes operation is an invalid type.	No
SecurityConfigError	494210CA	INITIALIZE	A problem exists between the client and server configuration.	No

For current information available from IBM Support on known problems and their resolution, see the IBM Support page.

IBM Support has documents that can save you time gathering information needed to resolve this problem. Before opening a PMR, see the IBM Support page.

Troubleshooting the Web services gateway

This topic provides hints to help you resolve problems you experience when using the Web services gateway.

Before you begin

For information on resolving WebSphere-level problems, see Diagnosing and fixing problems.

For current information available from IBM Support on known problems and their resolution, see the IBM Support page.

IBM Support has documents that can save you time gathering information needed to resolve this problem. Before opening a PMR, see the IBM Support “must gather” page.

If you report a gateway-related problem to IBM Service and Support, include the gateway release and build information that is listed under the **About** option of the Web services gateway administrative user interface.

What you need to know

To help you identify and resolve gateway-related problems, use the WebSphere Application Server trace and logging facilities. To enable trace for the gateway, set the application server trace string to `com.ibm.wsgw.*=all=enabled`. If you encounter a problem that you think might be related to the gateway, you can check for error messages in the WebSphere Application Server administrative console, and in the application server `stdout.log` file. You can also enable the application server debug trace to provide a detailed exception dump.

The gateway administrative user interface uses cascading style sheets to lay out its pages, and Javascript to monitor progress and to advise you as you fill in each on-screen form. Your Web browser must therefore support Javascript and cascading style sheets, and it must be configured so that Javascript and style sheets are enabled. This configuration depends on which browser you use. For example for Netscape, you select **Edit > Preferences**, click **Advanced** in the Category pane, then confirm that the **Enable Javascript** and **Enable style sheets** check boxes are selected.

A list of the gateway run-time system messages, with details of what each message means, is provided in *Web services gateway messages*.

Here is a checklist of common problems:

You are about to install an upgraded gateway, but you do not want to lose your existing gateway configuration.

When you complete the installation of an upgraded gateway, any previously configured gateway is replaced with an upgraded but empty gateway. To preserve an existing gateway configuration, you need to save the configuration before you upgrade the gateway, then restore the configuration after the upgrade is installed. For detailed instructions see *Preserving an existing gateway configuration*.

You have managed to deploy your Web service in the Web services gateway but you are getting a class cast exception when you invoke the operation which takes an integer parameter.

Check that your client is using the version of the `soap.jar` file that is supplied in the WebSphere Application Server `/AppServer/lib/app` directory. If you enable trace, you can look in the trace for the request

```
<SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:xsi="http://www.w3.org/1999/XMLSchema-instance"
xmlns:xsd="http://www.w3.org/1999/XMLSchema">
```

The gateway expects the 2001 version of the XML schema. Older versions of the `soap.jar` file (including 2.2) generate 1999 schema. If you have the `soap.jar` file that is supplied with WebSphere Application Server in the client class path, you can see 2001 schema in the request.

The persistent state of the Web services gateway has become out of sync with the channel applications.

This mismatch can occur if you remove and reinstall the Apache SOAP channel applications. If this operation is necessary, then either verify that all corresponding channels configured with the Web services gateway are removed, or remove and reinstall the Web services gateway at the same time.

Note: The Web services gateway application (`wsgw.ear`) must be installed before the channel and filter applications. If the gateway application needs to be reinstalled, all channels and filters must be uninstalled first, then reinstalled after the gateway application.

You get listener port time out errors when large messages are passed using the synchronous SOAP over JMS channel.

As with any synchronous channel, time out errors can occur. To minimize the frequency of time out errors, increase the time out settings for the channel. If the problem persists, then disable trace and logging for the gateway (by setting the application server trace string to `com.ibm.wsgw.*=all=disabled`).

You are getting SOAP fault messages, but cannot determine the precise problem from the fault message.

If you receive a SOAP fault message with a faultstring that is just the value of one of the parameters of the invocation, that means the parameter value is not valid. For example if you have a service that expects an `int`

parameter and you send it a message containing the value "1.1", then the fault message you receive contains 1.1 as the fault string:

```
<faultcode>SOAP-ENV:Client</faultcode>
<faultstring>1.1</faultstring>
```

This message is consistent with Apache SOAP behavior, and is not correctable by the gateway.

If you receive a SOAP fault message containing an element that is not present in the WSDL for the target service, then the error message thrown can be difficult to identify. There are two possible scenarios:

- The WSDL is deployed to use **Generic Classes**. In this case the returned SOAP message contains an `IllegalArgumentException` exception. For example:

```
[Attributes={}] [faultCode=SOAP-ENV:Server]
[faultString=com.ibm.wsgw.WSGWException:
WSGW0043E: Exception while executing
    operation createEntry service ExchangeService.
Exception: org.apache.wsif.WSIFException: SOAPException:
SOAP-ENV:ClientNo mapping found for 'com.ibm.jrom.JROMValue'
using encoding style 'http://schemas.xmlsoap.org/soap/encoding/'.;
nested exception is:
    [SOAPException: faultCode=SOAP-ENV:Client; msg=No mapping found for
'com.ibm.jrom.JROMValue' using encoding style
'http://schemas.xmlsoap.org/soap/encoding/'.;
targetException=java.lang.IllegalArgumentException:
No mapping found for 'com.ibm.jrom.JROMValue' using encoding style
'http://schemas.xmlsoap.org/soap/encoding/'.]]
[faultActorURI=/wsgwsoap1/soaprpcrouter]
...
```

- The WSDL is deployed to use **Deployed Classes**. In this case an empty message is returned. For example:

```
[Attributes={}] [faultCode=null] [faultString=null] [faultActorURI=null]
[DetailEntries=] [FaultEntries=]
```

These messages are consistent with Apache SOAP behavior, and are not correctable by the gateway.

When you are specifying the security settings that are applied between the service requester (the client) and the gateway, you set *Identification to Digital Signature*. When you click *Apply Changes*, the following "AuthMethod signature is not valid" error message is displayed:

```
WSGW0009E: Failed to deploy service. Exception: Error change service properties:
com.ibm.wsspi.wsssecurity.SoaSecurityException: WSEC0105E: LoginConfig: AuthMethod Signature
```

This problem only occurs when you set **Identification to Digital Signature**. The problem is caused by a mismatch between the request bindings and the response bindings. For example, you might have set **Request Sender** signing information on the request bindings instead of **Request Receiver**, or **Response Receiver** on the response bindings instead of **Response Sender**. To fix the problem, set matching request and response bindings. For instructions on setting these parameters, see

- Request receiver binding collection
- Response sender binding collection
- Request sender binding collection
- Response receiver binding collection

When you run secured Web services through a Web services gateway using LTPA authentication with a certificate store defined, an "Unable to build a valid

CertPath” error similar to the following is displayed:

```
[10/23/03 12:31:40:393 CDT] 78a54799 enterprise I
com.ibm.ws.webservices.engine.enterprise
TRAS0014I: The following exception was logged WebServicesFault
faultCode: {http://schemas.xmlsoap.org/ws/2003/06/secext}InvalidSecurityToken
faultString: WSEC5085E: Unable to build a valid CertPath:
java.security.cert.CertPathBuilderException:
PKIXCertPathBuilderImpl could not build a valid CertPath.;
internal cause is: java.security.cert.CertPathValidatorException:
The certificate issued by CN=Int CA2, OU=TRL, O=IBM, ST=Kanagawa, C=JP is not trusted;
internal cause is: java.security.cert.CertPathValidatorException: Certificate chaining error
```

This problem occurs when one of the defined certificate stores on the Web services gateway administrative client is missing the certificate path.

To correct this problem,

1. Add the certificate path to the certificate store configuration. For example, if you are using the sample certificate store from WebSphere Application Server, the path is:
X509 Certificate Path: /usr/WebSphere/AppServer/etc/ws-security/samples/intca2.cer
2. Run the client again.

When you run secured Web services through the Web services gateway, a “Failed authentication” error similar to the following is displayed:

```
[10/3/03 21:35:48:597 CDT] 33c558 enterprise I
com.ibm.ws.webservices.engine.enterprise TRAS0014I: The following exception was
logged WebServicesFault
faultCode: {http://schemas.xmlsoap.org/ws/2003/06/secext}FailedAuthentication
faultString: WSEC5078E: Login failed: javax.security.auth.login.LoginException:
java.lang.NullPointerException
at com.ibm.wsspi.wssecurity.auth.module.WSSecurityMappingModule._login(WSSecur
ityMappingModule.java:152)
```

The problem occurs when the Web services gateway does not enable global security and there is no LDAP user registry information to authenticate the incoming user login.

To correct this problem, enable global security on the Web services gateway application server using the same LDAP user registry that the deployment manager uses. See Enabling gateway-level authentication for more information.

Note: Before enabling global security on the Web services gateway, you need to uninstall the Web services gateway channels and applications, then re-install them after security is enabled.

When you run secured Web services through the Web services gateway, a “Failed login” error similar to the following is displayed:

```
WSEC5078E: Login failed: com.ibm.websphere.security.auth.WSLoginFailedException:
AuthenLoginModule: Authentication failed reason = 2
```

This problem occurs when single sign-on is enabled and the same password is used on both the deployment manager and the Web services gateway application server. The login fails even though the deployment manager and the Web services gateway application server are both enabled with security, with the same LDAP user registry and with the same LTPA password. The problem occurs because the key that is generated and passed between the services is randomly generated, and is therefore different for each server even though the same password is used.

To correct this problem, export the key from one cell then import it into another.

You are enabling operation-level authorization, but when you install wsgwauth.ear, an error message appears in the WebSphere Application Server administrative console detailing a Java Naming and Directory Interface (JNDI) problem.

Check that you entered, in the “EJB References” for the authorization session bean, the correct JNDI name of the imported Web service enterprise bean. Note that this home is case sensitive.

You get JNDI lookup errors when you use the same names for JMS messaging queues and queue connection factories that run on application servers on different machines.

You should not use the same names for messaging queues and queue connection factories that run on application servers on different machines, because the Web Services Invocation Framework (WSIF) (which the gateway uses for service invocation) always looks first for JMS destinations locally, and only uses the full JNDI reference if it cannot find the destination locally. If you deploy to the gateway a Web service that is hosted on a remote machine, and the same names are used for messaging queues and queue connection factories on the remote machine and on the machine on which the gateway is hosted, then WSIF finds and uses the local queues even if the remote JNDI destination is provided in full in the WSDL service definition.

You are trying to have a Web services gateway send a SOAP/HTTPS message to another Web services gateway, and you are receiving a MalformedURLException.

The Web services gateway can invoke Web services that include https:// in their addresses, if the Java and WebSphere security properties are configured accordingly. To check your security property settings, see the topic Invoking Web services over HTTPS

You clear ‘Authorization Policy - Control access to this service’ from the deployment details for a Web service, and you find the service no longer works.

A number of tasks are required to disable security. Clearing the check box for ‘Authorization Policy - Control access to this service’ still leaves WebSphere Application Server security in place, so basic authentication might still be required.

To disable security fully, use the WebSphere Application Server administrative console Security Center to disable Global Security.

You experience problems with handling Document style SOAP messages.

If you are using the Apache SOAP channel, then the SOAP message format must be RPC style. To handle Document style SOAP messages, use the SOAP over HTTP channel (which supports both RPC style and Document style SOAP messages).

You experience problems with handling SOAP messages with attachments.

To handle SOAP messages with attachments, use the SOAP over HTTP channel.

You experience problems with a Web service that uses complex data types. The same service works fine, when not using the gateway.

You need to do one of two things to support Web services that use complex types in the Web services gateway:

- Set the message part representation for the service to **Generic classes**.
- Set the message part representation for the service to **Deployed Java classes**, and make the original classes available to the application server (either by updating the class path or by putting the JAR file somewhere like *install_root/lib/app*, where *install_root* is the root directory for your installation of IBM WebSphere Application Server). If you do not have the original classes, you can use *wsdl2java* to generate Java applications that can contain values of the complex type for the service, then compile the beans into a JAR file and make this file available to the application server.

For more information on the factors to consider when choosing between these options, see *Data type representation - Choosing between Generic classes and Deployed Java classes*.

Note:

- If your Web service has non-bean parameters (that is, it requires a custom serializer and deserializer) then it is not supported by the current release of the gateway.
- Not all complex types that are expressible in XML schema are supported by the current release of the gateway. For more information, see *Web services gateway - Supported types*.
- See also *Complex data types - mapping namespaces to packages*.

You develop a filter as described in *Writing a filter for the Web services gateway*. When you deploy the filter to the gateway, the following error message appears: WSGW0035E: Filter context version 5 not supported.

You are trying to deploy your filter to a server other than WebSphere Application Server Enterprise Version 5 or WebSphere Business Integration Server Foundation Version 5.1. Your filter uses the gateway *WorkArea* to maintain context, and the gateway *WorkArea* is only available with IBM WebSphere Application Server Enterprise Version 5 or WebSphere Business Integration Server Foundation Version 5.1.

Web services gateway messages

This topic contains a list of the Web services gateway run-time system messages, with details of what each message means.

WebSphere system messages are logged from a variety of sources, including application server components and applications. Messages logged by application server components and associated IBM products start with a unique message identifier that indicates the component or application that issued the message.

For more information about the message identifier format, see the topic *Message reference*.

GWIN0003I: Looking for {childtype} {childname} under {parenttype} {parentname}. Values are: {0}

Explanation: Gateway installation message from file *setupwsgw.jacl*.

User Response:

GWIN0004I: Looking for {childtype} {childname} under {parenttype} {parentname} and {parenttype2} {parentname2}. Values are: {0}

Explanation: Gateway installation message from file *setupwsgw.jacl*.

User Response:
GWIN0005I: Conflict found with existing {childtype} {childname}. Values are: {0}
Explanation: Gateway installation message from file setupwsgw.jacl.

User Response:
GWIN0012I: Not creating requested {childtype}. Value is: {0}
Explanation: Gateway installation message from file setupwsgw.jacl.

User Response:
GWIN0006I: Seeking {parenttype} with requested id of {parentname}. Values are: {0}
Explanation: Gateway installation message from file setupwsgw.jacl.

User Response:
GWIN0007I: Seeking {parenttype} with requested id of {parentname} under {parenttype2} {parentname2}. Values are: {0}
Explanation: Gateway installation message from file setupwsgw.jacl.

User Response:
GWIN0008I: Attempting to create {childtype} under {parenttype} of {parentID}. Values are: {0}
Explanation: Gateway installation message from file setupwsgw.jacl.

User Response:
GWIN0009I: Create command that will be issued is: {0}
Explanation: Gateway installation message from file setupwsgw.jacl.

User Response:
GWIN0010I: {childtype} {childId} was successfully created. Values are: {0}
Explanation: Gateway installation message from file setupwsgw.jacl.

User Response:
GWIN0101I: Attempting to save new configuration.
Explanation: Gateway installation message from file setupwsgw.jacl.

User Response:
GWIN0102I: Changes saved successfully.
Explanation: Gateway installation message from file setupwsgw.jacl.

User Response:
GWIN0103I: Changes were not saved on this call.
Explanation: Gateway installation message from file setupwsgw.jacl.

User Response:
GWIN0014I: Looking for builtin_rra.
Explanation: Gateway installation message from file setupwsgw.jacl.

User Response:
GWIN0015I: List for J2CResourceAdapter returned {0} members. Value is: {1}
Explanation: Gateway installation message from file setupwsgw.jacl.

User Response:
GWIN0049I: List for Applications returned {0} members. Value is: {1}
Explanation: Gateway installation message from file setupwsgw.jacl.

User Response:
GWIN0016I: Hunting J2CResourceAdapter associated with Node {nodename}. Value is: {0}
Explanation: Gateway installation message from file setupwsgw.jacl.

User Response:
GWIN0017I: Using {rraID} as builtin_rra. Value is: {0}
Explanation: Gateway installation message from file setupwsgw.jacl.

User Response:
GWIN0018I: Using provider class of {implclass} with a classpath of {classpath}. Values are: {0}
Explanation: Gateway installation message from file setupwsgw.jacl.

User Response:
GWIN0019I: Installing to server {servername}, node {nodename} using database type of {dbtype}. Values are: {0}
Explanation: Gateway installation message from file setupwsgw.jacl. The database parameter is not used in this version of the gateway.

User Response:
GWIN0023I: Checking for installed WSGW of name {appname}. Value is: {0}
Explanation: Gateway installation message from file setupwsgw.jacl.

User Response:
GWIN0025I: ApplicationManager not running, so application will not need to be stopped.
Explanation: Gateway installation message from file setupwsgw.jacl.

User Response:
GWIN0026I: Stopping application of name {0}. Value is: {1}
Explanation: Gateway installation message from file setupwsgw.jacl.

User Response:
GWIN0027W: stopApplication command for application {0} caught exception Exc. Application might not have been running on this server. Values are: {1}
Explanation: Gateway installation message from file setupwsgw.jacl.

User Response:
GWIN0028I: Application {0} stopped successfully. Value is: {1}
Explanation: Gateway installation message from file setupwsgw.jacl.

User Response:
GWIN0029I: Removing application {0}. Value is: {1}
Explanation: Gateway installation message from file setupwsgw.jacl.

User Response:
GWIN0030I: Application {0} removed successfully. Value is: {1}
Explanation: Gateway installation message from file setupwsgw.jacl.

User Response:
GWIN0050I: Install of WSGW application {0} successful. Value is: {0}
Explanation: Gateway installation message from file setupwsgw.jacl.

User Response:
GWIN0051I: Application Manager {0} found. Value is: {1}
Explanation: Gateway installation message from file setupwsgw.jacl.

User Response:
GWIN0031I: Adding resource bundles to repository.
Explanation: Gateway installation message from file setupwsgw.jacl.

User Response:
GWIN0035I: Url prefix found. Updating it to discoveryURL. Value is: {0}
Explanation: Gateway installation message from file setupwsgw.jacl.

User Response:
GWIN0038I: ws.ext.dir processing starting.
Explanation: Gateway installation message from file setupwsgw.jacl.

User Response:

GWIN0013I: JVM is: {0}
Explanation: Gateway installation message from file setupwsgw.jacl.
User Response:

GWIN0040I: Out of {0} properties we located {1} matches at positions {poslist}. Values are: {2}
Explanation: Gateway installation message from file setupwsgw.jacl.
User Response:

GWIN0042I: SYSPROP is: {0}
Explanation: Gateway installation message from file setupwsgw.jacl.
User Response:

GWIN0043I: ws.ext.dir has been set with new sysprop. Value is: {0}
Explanation: Gateway installation message from file setupwsgw.jacl.
User Response:

GWIN0107I: Changes saved successfully.
Explanation: Gateway installation message from file setupwsgw.jacl.
User Response:

GWIN0044I: ws.ext.dir update skipped, required changes already present.
Explanation: Gateway installation message from file setupwsgw.jacl.
User Response:

GWIN0045I: ws.ext.dir processing step complete.
Explanation: Gateway installation message from file setupwsgw.jacl.
User Response:

GWIN0047I: Issuing nodeSync.
Explanation: Gateway installation message from file setupwsgw.jacl.
User Response:

GWIN0048I: WSGW successfully installed.
Explanation: Gateway installation message from file setupwsgw.jacl.
User Response:

GWIN0052I: WSGW successfully installed. Please restart server {0} to activate configuration changes. Value is: {1}
Explanation: Gateway installation message from file setupwsgw.jacl.
User Response:

GWIN0053I: WSGWResourceBundles.jar file was not added to the repository - might already exist.
Explanation: Gateway installation message from file setupwsgw.jacl.
User Response:

GWIN0054I: Building new props.
Explanation: Gateway installation message from file setupwsgw.jacl.
User Response:

GWIN6001E: Incorrect number of arguments passed to script.
Explanation: Gateway installation message from file setupwsgw.jacl.
User Response:

GWIN6002E: Usage: wsadmin -f setupwsgw.jacl <deployMgrPath> <serverName> <nodeName> <dbName> <db2userid> <db2password> <db2zipLocation>
Explanation: Gateway installation message from file setupwsgw.jacl. The database parameters are not used in this version of the gateway.
User Response:

GWIN6003E: <db2userid> <db2password> <db2zipLocation> only required for db2 jdbc provider.

Explanation: Gateway installation message from file setupwsgw.jacl. Not used in this version of the gateway.

User Response:

GWIN6005E: Removal of {childtype} {childname} caught exception Exc. Values are: {0}

Explanation: Gateway installation message from file setupwsgw.jacl.

User Response:

GWIN6006E: An exception Exc occurred while creating {childtype}. Values are: {0}

Explanation: Gateway installation message from file setupwsgw.jacl.

User Response:

GWIN6008E: Unable to find requested {parenttype} of {parentname}. Values are: {0}

Explanation: Gateway installation message from file setupwsgw.jacl.

User Response:

GWIN6009E: List command for J2CResourceAdapter caught exception Exc. Value is: {0}

Explanation: Gateway installation message from file setupwsgw.jacl.

User Response:

GWIN6010E: No J2CResourceAdapter objects available.

Explanation: Gateway installation message from file setupwsgw.jacl.

User Response:

GWIN6012E: Uninstall of application {0} caught exception Exc. Values are: {1}

Explanation: Gateway installation message from file setupwsgw.jacl.

User Response:

GWIN6013E: Install of WSGW application caught exception Exc. Value is: {0}

Explanation: Gateway installation message from file setupwsgw.jacl.

User Response:

GWIN6014E: Could not get JVM.

Explanation: Gateway installation message from file setupwsgw.jacl.

User Response:

GWIN6017E: Cannot find nodeSync MBean.

Explanation: Gateway installation message from file setupwsgw.jacl.

User Response:

GWIN6018E: nodeSync failed. WSGW applications may not be fully installed.

Explanation: Gateway installation message from file setupwsgw.jacl.

User Response:

GWIN6019E: Install of WSGW application {0} caught exception Exc. Values are: {1}

Explanation: Gateway installation message from file setupwsgw.jacl.

User Response:

GWIN6020E: <dbName> only required for DB2/Cloudscape.

Explanation: Gateway installation message from file setupwsgw.jacl. Not used in this version of the gateway.

User Response:

GWIN6021E: Use all forward slashes (/) to avoid problems with escaping back slashes (\\).

Explanation: Gateway installation message from file setupwsgw.jacl.

User Response:

GWIN6022E: Example: wsadmin -f setupwsgw.jacl

C:/WebSphere/DeploymentManager bunny_server1 bunny WSGWDB db2admin

db2passwd C:/SQLLIB/java/db2java.zip

Explanation: Gateway installation message from file setupwsgw.jacl. The database parameters are not used in this version of the gateway.

User Response:

GWIN6101E: Error saving configuration, changes not saved due to exception Exc. Value is: {0}

Explanation: Gateway installation message from file setupwsgw.jacl.

User Response:

WSGW0001E: Channel name {0} from gateway configuration differs from that in JNDI: {1}

Explanation: The name specified for the channel does not match the name of the channel as defined within the EAR file.

User Response: Ensure that the channel name is specified correctly

WSGW0002E: Error storing endpoint address. Exception: {0}

Explanation: An unexpected exception occurred when storing the endpoint address for a channel.

User Response: Contact IBM Support

WSGW0003E: Error retrieving endpoint address. Exception: {0}

Explanation: An unexpected exception occurred when retrieving the endpoint address for a channel.

User Response: Contact IBM Support

WSGW0004E: Not used

Explanation:

User Response:

WSGW0005E: Error retrieving channel name. Exception: {0}

Explanation: An unexpected exception occurred when retrieving the channel name from JNDI.

User Response: Contact IBM Support

WSGW0006E: Error deploying service to {1}. Exception: {0}

Explanation: An unexpected error occurred deploying the service to the given component.

User Response: This error may be caused by a previous failure. Try redeploying the service using a different gateway service name. If that fails, reinstalling the channel and gateway applications may remove the problem.

WSGW0007E: Error getting endpoint URL from channel {0}. Exception: {1}

Explanation: An unexpected error occurred generating the endpoint URL for the given channel.

User Response: Contact IBM Support

WSGW0008E: Could not determine default port name for target service {0}

Explanation: There are no ports in the WSDL defined for the target service that are supported by currently available WSIF providers or there is an error in the WSDL file associated with the port definition or a namespace it uses.

User Response: Either ensure that a WSIF provider is correctly configured for the port in the WSDL, or ensure that the WSDL contains correctly specified port information.

WSGW0009E: Failed to deploy service. Exception: {0}

Explanation: An unexpected error occurred trying to deploy the service.

User Response: Contact IBM Support

WSGW0010E: The namespaceURI attribute cannot be changed when there are active services

Explanation: The namespaceURI is used to generate WSDL for gateway services. If this global setting is changed then current WSDL becomes invalid.

User Response: Either remove all channels or all gateway services from the gateway configuration and retry the change.

WSGW0011E: Not used

Explanation:

User Response:

WSGW0012E: Not used

Explanation:

User Response:

WSGW0013E: Could not locate home {0}. Exception: {1}

Explanation: The specified home location could not be found in JNDI.

User Response: Ensure that the home location is specified correctly, and that it appears in JNDI.

WSGW0014W: Could not access local home {0}. Attempting remote home {1}.

Explanation: The local home was found in JNDI but could not be used as the application server "Application classloader policy" is set to "Multiple". The remote home will be used for this component.

User Response: Ensure that the application server "Application classloader policy" is set to "Single" to allow the gateway to use local interfaces. Ignore this message if you require "Application classloader policy" setting to be "Multiple".

WSGW0015E: Could not create instance of class {0}. Exception: {1}

Explanation: The gateway failed to create an instance of the specified Java class.

User Response: Ensure that the Java class has a public constructor with no parameters.

WSGW0016E: Could not locate class {0}. Exception: {1}

Explanation: The gateway failed to locate the specified Java class.

User Response: Ensure that the Java class is visible to the gateway application's classloader.

WSGW0017E: Not used

Explanation:

User Response:

WSGW0018E: Not used

Explanation:

User Response:

WSGW0019E: Failed to clone definition. Exception: {1}

Explanation: An unexpected error occurred cloning a WSDL definition.

User Response: Contact IBM Support

WSGW0020E: Error while loading mapped type class {0}. Exception: {1}

Explanation: An error occurred while trying to load the given Java class which represents a type in the deployed WSDL for a target service.

User Response: Ensure that the Java class is visible to the gateway application's classloader.

WSGW0021E: Expected WSDL definition to contain a <wsdl:type> element with a schema from one of the '{0}', '{1}', or '{2}' namespaces

Explanation: Schema types in WSDL definitions must be declared using one of the specified XML schema namespaces.

User Response: Update the WSDL definition to use the appropriate namespace.

WSGW0022E: Unexpected Schema->Java problem when parsing WSDL file.

Exception: {0}

Explanation: An unexpected exception occurred when parsing a WSDL file. This may be due to unsupported elements in the WSDL.

User Response: Contact IBM Support

WSGW0023E: Unexpected Schema->JROM problem when parsing WSDL file.

Exception: {0}

Explanation: An unexpected exception occurred when parsing a WSDL file. This may be due to unsupported elements in the WSDL.

User Response: Contact IBM Support

WSGW0024E: Channel {0} cannot be removed because it is being used by a deployed service

Explanation: channels can only be removed when they are not in use by gateway services.

User Response: Remove the channel from gateway services to which it is deployed before removing the channel.

WSGW0025E: Target service identity cannot be specified as null

Explanation: A target service can only be selected using a non-null valid for the identity.

User Response: Modify the calling code to ensure that the target service identity value is never null.

WSGW0026E: Invalid gateway service name {0}. The name must be a valid XML schema NCNAME.

Explanation: The name specified for the gateway service does not conform to the required definition.

User Response: Correct the gateway service name so that it is a valid XML schema NCNAME.

WSGW0027E: Port {0} does not exist for target service {1}

Explanation: The requested port does not exist for the target service.

User Response: Ensure that a valid port is requested, or update the target service WSDL to contain a port of the requested name.

WSGW0028E: No binding for port {0} for target service {1}

Explanation: The requested port for the target service does not have a binding defined in the WSDL definition of the service.

User Response: Ensure that the target service WSDL has a binding for the requested port, or use a different port name.

WSGW0029E: No portType for binding {0} for port {1} for target service {2}

Explanation: The requested port for the target service does not have a portType defined in the WSDL definition of the service.

User Response: Ensure that the target service WSDL has a portType for the requested port, or use a different port name.

WSGW0030E: Not used

Explanation:

User Response:

WSGW0031E: Channel name {0} already exists

Explanation: The name specified for the channel is the same as that of a channel that is currently deployed.

User Response: Choose a different name for the channel, or remove the existing channel of the given name.

WSGW0032E: Channel name {0} not found

Explanation: No channel is currently deployed with the given name.

User Response: Use the name of a channel that is currently deployed.

WSGW0033E: Filter {0} cannot be removed because it is being used by a deployed service

Explanation: Filters can only be removed when they are not in use by gateway services.

User Response: Remove the filter from gateway services to which it is deployed before removing the filter.

WSGW0034W: Invocation of filter {0} failed. Exception: {1}

Explanation: An unexpected exception was thrown during processing of the given filter.

User Response: Contact IBM Support

WSGW0035E: Filter context version {0} not supported

Explanation: The context version that the filter requires is not supported by this version of the gateway.

User Response: Ensure that the filter is requesting the correct context version. It may be necessary to upgrade the gateway to support the filter.

WSGW0036E: Target service identity information {0} not matched for gateway service {1}

Explanation: A target service was requested by identity, but the identity information does not match any currently deployed target service.

User Response: Ensure that the identity information is correct, and that there is a target service deployed to the given gateway service with the right identity information.

WSGW0037E: Filter name {0} already exists

Explanation: The name specified for the filter is the same as that of a filter that is currently deployed.

User Response: Choose a different name for the filter, or remove the existing filter of the given name.

WSGW0038E: Filter name {0} not found

Explanation: No filter is currently deployed with the given name.

User Response: Use the name of a filter that is currently deployed.

WSGW0039E: Error loading state from {0}. Exception {1}

Explanation: An unexpected exception occurred loading the state of the gateway from the given location.

User Response: Ensure that the given location is visible to the gateway application.

WSGW0040E: Failed to convert definition to string. Exception: {0}

Explanation: An unexpected exception occurred converting a WSDL definition into a string in order to display it or return it to an application.

User Response: Contact IBM Support

WSGW0041E: Failed to save state. Exception {0}

Explanation: An unexpected exception occurred when saving the state of the gateway.

User Response: Contact IBM Support

WSGW0042W: No target services available to get service definition

Explanation: A request was made for the WSDL definition for the gateway service, however no target services have been defined for the gateway service, so it is not possible to generate a WSDL definition.

User Response: Deploy one or more target services to the gateway service.

WSGW0043E: Exception while executing operation {0} service {1}. Exception: {2}

Explanation: An unexpected exception occurred when passing a request on to a target Web service.

User Response: Ensure that the gateway service and target service are correctly deployed (using the correct message part representation). Ensure that the target service is available and responds correctly to direct requests (i.e. not through the gateway).

WSGW0044E: Filter position {0} invalid

Explanation: The specified position for addition or removal of the filter was not valid.

User Response: Ensure a valid value is specified. The value should be -1, 0 or a positive integer.

WSGW0045E: Filter not found in list

Explanation: An attempt was made to remove a filter from a gateway service specifying -1 as the index, but the filter is not in the list at all.

User Response: Ensure that the correct filter is specified.

WSGW0046E: Channel {0} already defined for gateway service {1}

Explanation: The given channel has already been defined for the gateway service.

User Response: Ensure that the correct channel name is specified.

WSGW0047E: Channel {0} not defined for gateway service {1}

Explanation: The channel cannot be removed from the gateway service as it is not currently defined for the gateway service.

User Response: Ensure that the correct channel name is specified.

WSGW0048E: UDDI reference {0} already defined for gateway service {1}

Explanation: The given UDDI reference has already been defined for the gateway service.

User Response: Ensure that the correct UDDI reference name is specified.

WSGW0049E: UDDI reference {0} not defined for gateway service {1}

Explanation: The UDDI reference cannot be removed from the gateway service as it is not currently defined for the gateway service.

User Response: Ensure that the correct UDDI reference name is specified.

WSGW0050E: Target service with location {0} already defined for gateway service {1}

Explanation: The given target service location has already been defined for the gateway service.

User Response: Ensure that the correct target service location is specified.

WSGW0051E: Target service with location {0} not defined for gateway service {1}

Explanation: The target service location cannot be removed from the gateway service as it is not currently defined for the gateway service.

User Response: Ensure that the correct target service location is specified.

WSGW0052E: Target service with location {0} was not found for gateway service {1}

Explanation: The target service WSDL definition could not be obtained from the given location.

User Response: Ensure that the correct target service location is specified.

WSGW0053E: gateway service {0} cannot be removed as active entities and force not specified

Explanation: A gateway service with one or more target services, channels, filters or UDDI references cannot be removed.

User Response: Remove the target services, channels, filters and UDDI references from the gateway service.

WSGW0054E: An exported definition for gateway service {0} is not available as there are no defined channels for the service

Explanation: A request was made for the WSDL definition for the gateway service, however no channels have been defined for the gateway service, so it is not possible to generate a WSDL definition.

User Response: Deploy one or more channels to the gateway service.

WSGW0055E: Not used

Explanation:

User Response:

WSGW0056E: No default target service available for {0}

Explanation: The default target service location cannot be obtained for the gateway service as no target services are defined.

User Response: Ensure that one or more target services are defined for the gateway service.

WSGW0057E: No receiving channel name in context

Explanation: A request has reached the gateway that does not contain the receiving channel name in the context.

User Response: Contact the supplier of the channel application.

WSGW0058E: Channel {0} not defined for gateway service {1}

Explanation: A request has reached the gateway for the given service through a channel which is not defined for that service. The request is rejected.

User Response: If the channel should be valid for the service, add the channel, otherwise check that the client of the request is making a valid request. This exception may be thrown when a client is making a malicious attack.

WSGW0059E: gateway service {0} does not exist

Explanation: A request was made for a gateway service that does not exist.

User Response: Ensure that the correct gateway service name is specified.

WSGW0060E: gateway service {0} already exists

Explanation: An attempt was made to create a new gateway service using a name that is used by an existing gateway service.

User Response: Use a different name for the gateway service.

WSGW0061E: Could not find Service in UDDI registry {0} with parameters {1},

{2}, {3} Explanation: The given parameters for UDDI lookup did not yield a match.

User Response: Ensure that the parameters are correct. Also ensure that the UDDI reference parameters are correct and correspond to those used to publish the service to UDDI.

WSGW0062E: Target service WSDL contains no <service> elements

Explanation: The target service WSDL could be loaded but does not contain a <service> element. This is necessary to be able to invoke the target service.

User Response: Ensure that the target service WSDL contains one or more <service> element.

WSGW0063E: Target service WSDL contains more than one service, and either target service name or namespace not specified

Explanation: When adding a target service to a gateway service, you must specify both the service name and namespace values if there is more than one <service> element in the target service WSDL.

User Response: Specify the target service name and namespace as well as the location.

WSGW0064E: Target service name {0} does not match service name in WSDL: {1}

Explanation: A target service name was specified that is not the same as any target service name in the WSDL at the given location.

User Response: Ensure that a valid target service name is specified.

WSGW0065E: Target service namespace {0} does not match service namespace in WSDL: {1}

Explanation: A target service namespace was specified that is not the same as any target service namespace in the WSDL at the given location.

User Response: Ensure that a valid target service namespace is specified.

WSGW0066E: Target service name {0} or namespace {1} not found in WSDL definition

Explanation: A target service name and namespace were both specified, but do not match any target service name and namespace combination in the WSDL at the given location.

User Response: Ensure that a valid target service name and namespace combination is specified.

WSGW0067E: UDDI reference {0} cannot be removed because it is being used by a deployed service

Explanation: UDDI references can only be removed when they are not in use by gateway services.

User Response: Remove the UDDI reference from gateway services to which it is deployed before removing the UDDI reference.

WSGW0068E: UDDI reference {0} already exists

Explanation: The name specified for the UDDI reference is the same as that of a UDDI reference that is currently deployed.

User Response: Choose a different name for the UDDI reference, or remove the existing UDDI reference of the given name.

WSGW0069E: UDDI reference {0} not found

Explanation: No UDDI reference is currently deployed with the given name.

User Response: Use the name of a UDDI reference that is currently deployed.

WSGW0070E: Invalid target service location type {0}

Explanation: The location type for the target service is not a valid value.

User Response: Ensure that a correct value is specified for the target service location type.

WSGW0071E: Failed to load URL definition from {0}

Explanation: The URL location specified was incorrect, or the WSDL it refers to cannot be loaded.

User Response: Ensure that the URL location is correct, and refers to a valid WSDL document.

WSGW0072E: Failed to load UDDI definition from {0}

Explanation: The UDDI location specified was incorrect, or the WSDL it refers to cannot be loaded.

User Response: Ensure that the UDDI location is correct, and refers to a valid WSDL document.

WSGW0073W: Not used

Explanation:

User Response:

WSGW0074W: Invocation of filter {0} failed. Exception: {1}

Explanation: An unexpected exception was thrown during processing of the named filter.

User Response: Investigate the reason for the exception being thrown. Ensure that the filter application is available.

WSGW0075E: Failed to set gateway end point address. Exception {0}

Explanation: An unexpected exception occurred when automatically setting the gateway's end point address.

User Response: Contact IBM Support

WSGW0076E: Unable to access the gateway configuration bean. Exception {0}

Explanation: An unexpected exception occurred looking up the gateway's configuration bean in JNDI.

User Response: Restart the application server.

WSGW0077E: Failed to remove gateway configuration session. Exception {0}

Explanation: An unexpected exception occurred removing the session bean while access the gateway's configuration bean.

User Response: Contact IBM Support

WSGW0078E: Unable to access the gateway EndPoint bean. Exception {0}

Explanation: An unexpected exception occurred looking up the gateway's endpoint bean in JNDI.

User Response: Restart the application server.

WSGW0079E: Failed to remove endpoint session. Exception {0}

Explanation: An unexpected exception occurred removing the session bean while access the gateway's endpoint bean.

User Response: Contact IBM Support

WSGW0080E: Performance monitoring error. Exception {0}

Explanation: An unexpected exception occurred when recording performance monitoring information.

User Response: Contact IBM Support

WSGW0081E: Unexpected error in method {0}. Exception {1}

Explanation: An unexpected exception occurred in the given method.

User Response: Contact IBM Support

WSGW0082E: Unable to determine WAS security setting

Explanation: The WAS security setting could not be determined. It will be assumed that security is enabled.

User Response: No action required.

WSGW0083W: Failed to authorize request for operation {0} on service {1}.

Exception {2}

Explanation: Authorization of the given request failed. The request has been rejected.

User Response: Ensure that the required authorization bean has been generated for the given service, and that the correct authorization policy is defined.

WSGW0084W: Invocation of filter {0} version {1} failed. Exception {2}

Explanation: An exception was thrown during processing of the given filter. Processing of the request continues.

User Response: Investigate the reason for the exception being thrown by the filter. Refer to the documentation for the filter on how to resolve the problem.

WSGW0085E: Failed to publish service {0} to UDDI registry {1}. Exception: {2}

Explanation: An unexpected exception occurred when publishing the given service to a UDDI registry.

User Response: Ensure that the properties of the gateway service and UDDI reference are specified correctly.

WSGW0086E: Failed to unpublish service {0} from UDDI registry {1}. Exception: {2}

Explanation: An unexpected exception occurred when unpublishing the given service from a UDDI registry.

User Response: Ensure that the properties of the gateway service and UDDI reference are specified correctly.

WSGW0087I: Published service {0} to UDDI registry {1}

Explanation: The service was successfully published to the UDDI registry.

User Response: None

WSGW0088I: Unpublished service {0} from UDDI registry {1}

Explanation: The service was successfully unpublished from the UDDI registry.

User Response: None

WSGW0089I: No MessageWarehouse registered. Requests will not be logged

Explanation: A MessageWarehouse implementation was not found at the expected location in JNDI, so none is being used.

User Response: If a MessageWarehouse has been implemented, ensure that it is bound to JNDI at the correct location.

WSGW0090I: No ExceptionHandler registered. Exceptions will not be handled

Explanation: An ExceptionHandler implementation was not found at the expected location in JNDI, so none is being used.

User Response: If an ExceptionHandler has been implemented, ensure that it is bound to JNDI at the correct location.

**WSGW0091I: Usage: java -jar GenAuth -DWAS_HOME=<was.install.directory>
<HostName> <ServiceName>**

where <was.install.directory> is the location of the WebSphere installation directory and <HostName> is the url pointed to by the installation of the gateway and <ServiceName> is the name of the deployed gateway service. (Please note the ServiceName is case sensitive).

For example

```
-jar GenAuth.jar -DWAS_HOME=  
c:\\websphere\\AppServer http://host.machine.name.com/wsgw ServiceName
```

Successful execution will generate a file named <ServiceName>.ear

Explanation: Usage statement. This message is used by the WSGWAuthGen command-line utility.

User Response: No action required.

WSGW0092I: Retrieving Service :

Explanation: Progress message indicating that the service definition is being retrieved. This message is used by the WSGWAuthGen command line utility.

- User Response:** No action required.
- WSGW0093I: Retrieving Port Type :**
Explanation: Progress message indicating that the port type information is being retrieved. This message is used by the WSGWAuthGen command line utility.
- User Response:** No action required.
- WSGW0094I: Retrieving Methods :**
Explanation: Progress message indicating that method information is being retrieved. This message is used by the WSGWAuthGen command line utility.
- User Response:** No action required.
- WSGW0095I: Making Directory :**
Explanation: Progress message indicating that a directory is being created. This message is used by the WSGWAuthGen command-line utility.
- User Response:** No action required.
- WSGW0096I: Using Directory :**
Explanation: Progress message indicating that a directory is being used. This message is used by the WSGWAuthGen command-line utility.
- User Response:** No action required.
- WSGW0097I: About to compile....**
Explanation: Progress message indicating that a compilation is about to start. This message is used by the WSGWAuthGen command line utility.
- User Response:** No action required.
- WSGW0098I: Command Status :**
Explanation: General command status message. This message is used by the WSGWAuthGen command-line utility.
- User Response:** No action required.
- WSGW0099I: About to create jar....**
Explanation: Progress message indicating that a JAR file is about to be created. This message is used by the WSGWAuthGen command line utility.
- User Response:** No action required.
- WSGW0100I: About to create ear....**
Explanation: Progress message indicating that an EAR file is about to be created. This message is used by the WSGWAuthGen command line utility.
- User Response:** No action required.
- WSGW0101E: Error retrieving port from service {1}**
Explanation: An error occurred retrieving the port from the service in the WSDL. This message is used by the WSGWAuthGen command line utility.
- User Response:** Ensure that the service name is specified correctly and is deployed to the gateway with at least one target service and one channel.
- WSGW0102E: Error retrieving service {0}**
Explanation: An error occurred retrieving the service. This message is used by the WSGWAuthGen command-line utility.
- User Response:** Ensure that the service name is specified correctly and is deployed to the gateway with at least one target service and one channel.
- WSGW0103E: Exception while retrieving service definition from URL: {0}/ServiceDefinition?name={1}. Exception: {2}**
Explanation: An unexpected exception occurred retrieving WSDL from the given location. This message is used by the WSGWAuthGen command-line utility.

User Response: Ensure that the service name is specified correctly and is deployed to the gateway with at least one target service and one channel.
WSGW0104E: Error retrieving methods from service {0}

Explanation: An unexpected exception occurred retrieving the methods that correspond to operations on the service.

User Response: Contact IBM Support

WSGW0105E: Error retrieving WAS_HOME environment variable

Explanation: The value of the WAS_HOME environment variable could not be retrieved.

User Response: Ensure that the WAS_HOME variable is set correctly in the environment under which the command is being executed.

WSGW0106E: Error compiling files

Explanation: An unexpected error occurred compiling the generated Java files.

User Response: Contact IBM Support

WSGW0107E: Error executing JAR command

Explanation: An unexpected error occurred generating a JAR file.

User Response: Contact IBM Support

WSGW0110E: A client attempted to load imported URL {0} for gateway service {1}. This URL is not imported by the definition for that service.

Explanation: An attempt was made to use the gateway's import mapping servlet to load information from a URL that does not correspond to one that is referenced by the WSDL definition for that service.

User Response: Ensure that the client is making a valid request. This may be a malicious attempt to obtain information that the client does not have access to.

WSGW0111W: Unsupported elements within the WSDL definition for target service {0} were ignored. The functionality of this service may be compromised.

Explanation: In order to be able to use the given WSDL definition within the gateway, certain elements of the definition were ignored.

User Response: Refer to the service provider's documentation to determine whether this will affect the use of the service.

WSGW0112E: Exception while sending response to queue {0}. Exception {1}, linked exception {2}

Explanation: An unexpected exception occurred during execution of the JMS channel.

User Response: Ensure that the JMS channel and its prerequisites are correctly configured. Examine the linked exception for information on how to resolve the problem.

WSGW0113E: Exception while creating Object Message to send response. Exception {1}, linked exception {2}

Explanation: An unexpected exception occurred during execution of the JMS channel.

User Response: Ensure that the JMS channel and its prerequisites are correctly configured. Examine the linked exception for information on how to resolve the problem.

WSGW0114E: Exception while creating Queue Sender to send response. Exception {1}, linked exception {2}

Explanation: An unexpected exception occurred during execution of the JMS channel.

User Response: Ensure that the JMS channel and its prerequisites are correctly configured. Examine the linked exception for information on how to resolve the problem.

WSGW0115E: Exception while creating Reply To Queue to send response. Exception {1}, linked exception {2}

Explanation: An unexpected exception occurred during execution of the JMS channel.

User Response: Ensure that the JMS channel and its prerequisites are correctly configured. Examine the linked exception for information on how to resolve the problem.

WSGW0116E: Exception while creating Queue Session to send response. Exception {1}, linked exception {2}

Explanation: An unexpected exception occurred during execution of the JMS channel.

User Response: Ensure that the JMS channel and its prerequisites are correctly configured. Examine the linked exception for information on how to resolve the problem.

WSGW0117E: Exception while creating Queue Connection Factory to send response. Exception {1}, linked exception {2}

Explanation: An unexpected exception occurred during execution of the JMS channel.

User Response: Ensure that the JMS channel and its prerequisites are correctly configured. Examine the linked exception for information on how to resolve the problem.

WSGW0118E: End point address keyword {0} is not valid for the JMS channel

Explanation: The keyword specified in the end point address for the JMS channel is not valid.

User Response: Consult the documentation for a list of valid keywords for the JMS channel end point address.

WSGW0119E: End point address for the JMS channel must be keyword=value pairs separated by the '&' character

Explanation: The end point address specified does not have the correct syntax.

User Response: Consult the documentation for a specification of the syntax of the JMS channel end point address.

WSGW0120E: Not used in this version of the gateway

Explanation:

User Response:

WSGW0121E: Not used in this version of the gateway

Explanation:

User Response:

WSGW0122E: Not used in this version of the gateway

Explanation:

User Response:

WSGW0123E: Not used in this version of the gateway

Explanation:

User Response:

WSGW0124E: Failed to find Business in UDDI Register

Explanation: Used for SRPUDDIPublisher.

User Response:

WSGW0125E: Not used
Explanation:
User Response:

WSGW0126E: Not used
Explanation:
User Response:

WSGW0127E: Not used
Explanation:
User Response:

WSGW0128E: Not used in this version of the gateway
Explanation:
User Response:

WSGW0129E: Not used in this version of the gateway
Explanation:
User Response:

WSGW0130E: Not used in this version of the gateway
Explanation:
User Response:

WSGW0131E: Not used in this version of the gateway
Explanation:
User Response:

WSGW0132E: Not used in this version of the gateway
Explanation:
User Response:

WSGW0133E: Not used in this version of the gateway
Explanation:
User Response:

WSGW0134E: Not used in this version of the gateway
Explanation:
User Response:

WSGW0135E: Not used in this version of the gateway
Explanation:
User Response:

WSGW0136E: Not used in this version of the gateway
Explanation:
User Response:

WSGW0137E: Not used in this version of the gateway
Explanation:
User Response:

WSGW0138E: Not used in this version of the gateway
Explanation:
User Response:

WSGW0139E: Not used in this version of the gateway
Explanation:
User Response:

WSGW0140E: Not used in this version of the gateway
Explanation:
User Response:

- WSGW0141E: Not used in this version of the gateway**
Explanation:
User Response:
- WSGW0142E: Not used in this version of the gateway**
Explanation:
User Response:
- WSGW0143E: Not used in this version of the gateway**
Explanation:
User Response:
- WSGW0144E: Not used in this version of the gateway**
Explanation:
User Response:
- WSGW0145E: Not used in this version of the gateway**
Explanation:
User Response:
- WSGW0146E: Not used in this version of the gateway**
Explanation:
User Response:
- WSGW0147E: Not used in this version of the gateway**
Explanation:
User Response:
- WSGW0148E: A problem occurred whilst processing an attachment**
Explanation:
User Response:
- WSGW0149E: Failed to import the configuration. Exception: {0}**
Explanation: An unexpected error occurred when trying to import the configuration.
User Response: Contact IBM Support
- WSGW0150W: Security config for gateway service {0} has errors. Service will not be available. Exception: {1}**
Explanation: The security configuration for the gateway service has errors which prevent the service from being available.
User Response: Review the security settings for the gateway service.
- WSGW0151W: Security config for target service {0} has errors. No security will be applied to the outgoing message. Exception: {1}**
Explanation: The security configuration for the target service has errors. No security will be applied to the outgoing message.
User Response: Review the security settings for the target service.
- WSGW0152E: A problem occurred whilst processing an attachment. Exception: {0}**
Explanation:
User Response:
- WSGW0153E: Handler name {0} already exists**
Explanation: The name specified for the handler is the same as that of a handler that is currently deployed.
User Response: Choose a different name for the handler, or remove the existing handler of the given name.
- WSGW0154E: Handler name {0} not found**
Explanation: No handler is currently deployed with the given name.
User Response: Use the name of a handler that is currently deployed.

WSGW0155E: Error managing inbound handlers list at position {0} for service {2} and channel {1}

Explanation:

User Response:

WSGW0156E: Error managing outbound handlers list at position {0} for service {2} and target port {1}

Explanation:

User Response:

WSGW0157E: Target port {0} invalid or handlers list for the port does not exist

Explanation:

User Response:

WSGW0158E: Error removing handler {0} from outbound chain

Explanation:

User Response:

WSGW0159E: Channel name {0} invalid or handlers list for channel does not exist

Explanation:

User Response:

WSGW0160E: Attempt to remove handler {0} without "force" flag

Explanation:

User Response:

WSGW0161E: Unable to load handler implementation: {0}

Explanation: The class specified could not be found on the classpath.

User Response: Make sure the class is available to the gateway application.

WSGWJ001: An error occurred using the Web Services gateway.

Explanation: This message is used by JSPs.

User Response:

WSGWJ002: The following error occurred while processing the operation

Explanation: This message is used by JSPs.

User Response:

WSGWJ003: The reason this error occurred (the original exception) is as follows

Explanation: This message is used by JSPs.

User Response:

WSGWJ004: The stack trace for the error is as follows

Explanation: This message is used by JSPs.

User Response:

WSGWJ005: The stack trace for the original exception is as follows

Explanation: This message is used by JSPs.

User Response:

JSP engine troubleshooting tips

If you are having difficulty using the JSP engine, try these steps:

1. Determine whether other resources such as .html files or servlets are being requested and displayed correctly. If they are not, the problem probably lies at a deeper level, such as with the HTTP server.
2. If other resources are being displayed correctly, determine whether the JSP engine has started normally:
 - Browse the JVM logs of the server hosting the JSP files you are trying to access. A message such as *application_name/Servlet.LOG: JSP 1.2 Processor: init* in the *root_dir/logs/server_name/SystemOut.log* file

indicates that the JSP engine has started normally. If the JSP processor fails to load, you may see a message such as **Did not realize init() exception thrown by servlet JSP 1.2 Processor** in *application_name/Servlet.LOG*: JSP 1.2 Processor: init" in the *root_dir/logs/server_name/SystemOut.log* file .

- Open the on the service log of the server which is hosting the JavaServer Pages file you are trying to access and use it to browse error and warning messages.
3. If the JSP engine has started normally, the problem may be with the JSP file itself.
- Copy a simple JavaServer Pages file file (such as the WebSphere Application Server sample "HelloHTML.jsp") to the Web application's document root and attempt to serve it.
 - If that works, examine the target application server's SystemOut.log for invalid JSP directive syntax . Errors similar to the following in a browser indicate this kind of problem: **Message: /jspname.jsp(9,0) Include: Mandatory attribute page missing.** This example indicates that line 9, column 0 of the named JavaServer Pages file is missing a mandatory page attribute. Similar messages are displayed for other syntax errors.
 - Examine the target application server's SystemErr.log files for problems with invalid Java syntax. Errors similar to **Message: Unable to compile class for JSP** in a browser indicate this kind of problem.

The error message output from the Javac compiler will be found in the SystemErr.log . It might look like:

```
C:\WASROOT\temp\ ... test.war\_myJsp.java:14: Duplicate variable declaration:
  int myInt was int myInt
  int myInt = 122; String myString = "number is 122";
  static int myStaticInt=22;
  int myInt=121;
                                     ^
1 error
```

Correct the error in the JSP file and retry the file.

If none of these steps solves the problem, check to see if the problem is identified and documented using the links in Diagnosing and fixing problems: Resources for learning. If you do not see a problem that resembles yours, or if the information provided does not solve your problem, contact IBM support for further assistance.

For current information available from IBM Support on known problems and their resolution, see the IBM Support page.

IBM Support has documents that can save you time gathering information needed to resolve this problem. Before opening a PMR, see the IBM Support page.

Workload Management component troubleshooting tips

If the Workload Management component is not properly distributing the workload across servers in multi-node configuration, use these steps to isolate the problem.

There are some basic steps for troubleshooting the Workload Management component:

- Ensure that the workload is distributed across clustered servers
- Resolve any problems with the multiserver Deployment Manager environment setup
- Eliminate environment or configuration issues
- Browse log files for WLM errors and WLM CORBA minor codes

- Analyze PMI data
- Resolve problem or contact IBM support

Eliminate environment or configuration issues

First, determine the health of the cluster. In other words, are the servers capable of serving the applications for which they have been enabled? To do this, you must identify the cluster that is exhibiting the problem.

- Are there network connection problems with the members of the cluster or the administrative servers, for example deployment manager or node agents?
 - If so, ping the machines to ensure that they are properly connected to the network.
- Is there other activity on the machines where the servers are installed that is impacting the servers ability to service a request? For example, check the processor utilization as measured by the task manager, processor ID, or some other outside tool to see if:
 - It is not what is expected, or is erratic rather than constant.
 - It shows that a newly added, installed, or upgraded member of the cluster is not being utilized.
- Are all of the application servers you started on each node running, or are some stopped?
- Are the applications installed and operating?
- If the problem relates to distributing workload across persistent (CMP or BMP) enterprise beans, have you configured the supporting JDBC drivers and datasources on each server? For problems relating to data access, review the topic Cannot access a datasource.

If you are experiencing workload management problems related to HTTP requests, such as HTTP requests not being served by all members of the cluster, be aware that the HTTP plug-in will balance the load across all servers that are defined in the PrimaryServers list if affinity has not been established. If you do not have a PrimaryServers list defined then the plug-in will load balance across all servers defined in the cluster if affinity has not been established. If affinity has been established, the plug-in should go directly to that server for all requests.

For workload management problems relating to enterprise bean requests, such as enterprise bean requests not getting served by all members of a cluster:

- Are the weights set to the allowed values?
 - For the cluster in question, log onto the administrative console and:
 1. Select **Cluster -> Manage cluster**
 2. Select your cluster from the list.
 3. Select **Cluster Members**.
 4. For each server in the cluster, click on *servername* and note the assigned weight of the server.
 - Ensure that the weights are within the valid range of 0-20. If a server has a weight of 0, no requests will be routed to it. Weights greater than 20 are treated as 0.

Note: The remainder of this article deals with enterprise bean workload balancing only. For more help on diagnosing problems in distributing Web (HTTP) requests, view the topics HTTP plug-in component troubleshooting tips and Web resource (JSP, servlet, html file, image, etc) will not display.

Browse log files for WLM errors and CORBA minor codes

If you still encounter problems with enterprise bean workload management, the next step is to check the activity log for entries that show:

- A server that has been marked unusable more than once and remains unusable.
- All servers in a cluster have been marked bad and remain unusable.
- A Location Service Daemon (LSD) has been marked unusable more than once and remains unusable.

To do this, open the service log (`activity.log`) on the affected servers, and look for the following entries:

- **WWLM0061W:** An error was encountered sending a request to cluster member *member* and that member has been marked unusable for future requests to the cluster *cluster*.

Note: It is not unusual for a server to be marked unusable. The server may be tagged unusable for normal operational reasons, such as a ripple start being executed while there is still a load on the server from a client.

- **WWLM0062W:** An error was encountered sending a request to cluster member *member* that member has been marked unusable, for future requests to the cluster *cluster* two or more times.
- **WWLM0063W:** An error was encountered attempting to use the LSD *LSD_name* to resolve an object reference for the cluster *cluster* and has been marked unusable for future requests to that cluster.
- **WWLM0064W:** Errors have been encountered attempting to send a request to all members in the cluster *cluster* and all of the members have been marked unusable for future requests that cluster.
- **WWLM0065W:** An error was encountered attempting to update a cluster member *server* in cluster *cluster*, as it was not reachable from the deployment manager.

If any of these warning are encountered, follow the user response given in the log. If, after following the user response, the warnings persist, look at any other errors and warnings in the Log Analyzer on the affected servers to look for:

- A possible user response, such as changing a configuration setting.
- Base class exceptions that might indicate a WebSphere Application Server defect.

You may also see exceptions with "CORBA" as part of the exception name, since WLM uses CORBA (Common Object Request Broker Architecture) to communicate between processes. Look for a statement in the exception stack specifying a "minor code". These codes denote the specific reason a CORBA call or response could not complete. WLM minor codes fall in range of 0x4921040 - 0x492104F. For an explanation of minor codes related to WLM, see the Javadoc for the package and class `com.ibm.websphere.wlm.WsCorbaMinorCodes`.

Analyze PMI data

The purpose for analyzing the PMI data is to understand the workload arriving for each member of a cluster. The data for any one member of the cluster is only useful within the context of the data of all the members of the cluster.

Use the to verify that, based on the weights assigned to the cluster members (the steady-state weights), each server is getting the correct proportion of the requests.

To turn on PMI metrics using the Tivoli Performance Viewer:

1. Select **Data Collection** in the tree view. Servers that do not have PMI enabled will be grayed out.
2. For each server that data you wish to collect data on, click **Specify...**
3. You can now enable the metrics. Set the monitoring level to **low** on the Performance Monitoring Setting panel
4. Click **OK**
5. You must hit **Apply** for the changes you have made to be saved.

WLM PMI metrics can be viewed on a server by server basis. In the Tivoli Performance Viewer select **Node -> Server->WorkloadManagement->Server/Client**. By default the data is shown in raw form in a table, collected every 10 seconds, as an aggregate number. You can also choose to see the data as a delta or rate, add or remove columns, clear the buffer, reset the metrics to zero, and change the collection rate and buffer size.

Resolve problem or contact IBM support

If the client logs indicate an error in WLM, collect the following information and contact IBM support.

- A detailed description of your environment.
- A description of the symptoms.
- The `SystemOut.log`s and `SystemErr.log`s for all servers in the cluster.
- The `activity.log`.
- A description of what the client is attempting to do, and a description of the client. For example, 1 thread, multiple threads, servlet, J2EE client, etc..

If none of these steps solves the problem, check to see if the problem has been identified and documented using the links in Diagnosing and fixing problems: Resources for learning. If you do not see a problem that resembles yours, or if the information provided does not solve your problem, contact IBM support for further assistance.

For current information available from IBM Support on known problems and their resolution, see the IBM Support page.

IBM Support has documents that can save you time gathering information needed to resolve this problem. Before opening a PMR, see the IBM Support page.

Object request broker component troubleshooting tips

This article describes how to diagnose problems related to the WebSphere Application Server Object Request Broker (ORB) component by explaining:

- How to enable tracing for the ORB component.
- What log files to examine for more information.
- Information on the Java packages containing the ORB Service.
- ORB-related tools.
- Where to find configurable settings.
- A listing of CORBA minor codes generated by this component.

Enabling tracing for the Object Request Broker component

The object request broker (ORB) service is one of the WebSphere Application Server run time services. Tracing of messages sent and received by the ORB is a useful starting point for troubleshooting the ORB service. You can selectively enable or disable tracing of ORB messages for each server in a WebSphere Application Server installation, and for each application client.

This tracing is referred to by WebSphere Application Server support as a *comm trace*, and is different from the general purpose trace facility. The trace facility, which shows the detailed run-time behavior of product components, may be used alongside comm trace for other product components, or for the ORB component. The trace string associated with the ORB service is "ORBRas=all=enabled".

You can enable and disable comm tracing using the administrative console or by manually editing the **server.xml** file for the server to be traced. You must stop and restart the server for the configuration change to take effect.

For example, using the administrative console:

- Navigate to the desired server by clicking **Servers > Application Servers > server1 > ORB Service**, and select the ORB tracing checkbox. Click **OK**, and then click **Save** to save your settings. Restart the server for the new settings to take effect. Or,
- Locate the **server.xml** file for the selected server, for example:
`install_dir/config/cells/nodename/nodes/nodename/servers/servername/server.xml`.
- Locate the services entry for the ORB service (xmi:type="orb:ObjectRequestBroker") and set **commTraceEnabled="true"**.

To enable ORB comm tracing for client applications, you must specify two ORB properties in the command line used to launch the client application:

- If you are using the WebSphere Application Server launcher, `launchClient`, use the option **-CCD** or
- If you are using the **java** command directly, use the **-D** option to specify these parameters:
 - `com.ibm.CORBA.Debug=true`
 - `com.ibm.CORBA.CommTrace=true`

ORB tracing output for thin clients can be directed by setting `com.ibm.CORBA.Debug.Output = debugOutputFilename` parameter in the command line.

Log files and messages associated with Object Request Broker

Messages and trace information for the ORB are captured primarily in two logs:

- The `install_dir/logs/servername/trace.log` file for output from communications tracing and tracing the behavior of the ORBRas component
- The JVM logs for each application server, for WebSphere Application Server error and warning messages

The following message in the `SystemOut.log` file indicates the successful start of the Application Server and its ORB service:

WSVR0001I: Server server1 open for e-business

When communications tracing is enabled, a message similar to the following example in the `install_dir/logs/servername/trace.log` file, indicates that the ORB service has started successfully. The message also shows the start of a listener thread, which is waiting for requests on the specified local port.

```
com.ibm.ws.orbimpl.transport.WSTransport startListening(  
ServerConnectionData connectionData ) P=693799:O=0:CT a new ListenerThread  
has been started for ServerSocket[addr=0.0.0.0/0.0.0.0,port=0,localport=1360]
```

If tracing of the Object Adapter has been enabled (`com.ibm.ejs.oa.*=all=enabled`), the following message in the `trace.log` indicates that the ORB service has started successfully:

EJSORBImp1 < initializeORB

The ORB service is one of the first services started during the WebSphere Application Server initialization process. If it is not properly configured, other components such as naming, security, and node agent, are not likely to start successfully. This is obvious in the JVM logs or `trace.log` of the affected application server.

Java packages containing the Object Request Broker service

The ORB service resides in the following Java packages:

- `com.ibm.com.CORBA.*`
- `com.ibm.rmi.*`
- `com.ibm.ws.orb.*`
- `com.ibm.ws.orbimpl.*`
- `org.omg.CORBA.*`
- `javax.rmi.CORBA.*`

JAR files that contain the previously mentioned packages include:

- `install_dir/java/jre/lib/ext/ibmorb.jar`
- `install_dir/java/jre/lib/ext/iwsorbutil.jar`
- `install_dir/lib/iwsorb.jar`

Tools used with Object Request Broker

The tools used to compile Java remote interfaces to generate language bindings used by the ORB at runtime reside in the following Java packages:

- `com.ibm.tools.rmic.*`
- `com.ibm.idl.*`

The JAR file that contains the packages is `install_dir/java/lib/ibmtools.jar`.

Object Request Broker properties

The ORB service requires a number of ORB properties for correct operation. It is not necessary for most users to modify these properties, and it is recommended that only your system administrator modify them when required.. Consult IBM Support personnel for assistance. The properties reside in the `orb.properties` file, located at `install_dir/java/jre/lib/orb.properties`.

CORBA minor codes

The CORBA specification defines standard minor exception codes for use by the ORB when a system exception is thrown. In addition, the object management group (OMG) assigns each vendor a unique prefix value for use in vendor-proprietary minor exception codes. Minor code values assigned to IBM and used by the ORB in the WebSphere Application Server follow. The minor code value is in decimal and hexadecimal formats. The column labeled minor code reason gives a short description of the condition causing the exception. Currently there is no documentation for these errors beyond the minor code reason. If you require technical support from IBM, the minor code helps support engineers

determine the source of the problem. **5.1+**

Table 1. Decimal minor exception codes 1229066320 to 1229066364

Decimal	Hexadecimal	Minor code reason
1229066320	0x49421050	HTTP_READER_FAILURE
1229066321	0x49421051	COULD_NOT_INSTANTIATE_CLIENT_SSL_SOCKET_FACTORY
1229066322	0x49421052	COULD_NOT_INSTANTIATE_SERVER_SSL_SOCKET_FACTORY
1229066323	0x49421053	CREATE_LISTENER_FAILED_1
1229066324	0x49421054	CREATE_LISTENER_FAILED_2
1229066325	0x49421055	CREATE_LISTENER_FAILED_3
1229066326	0x49421056	CREATE_LISTENER_FAILED_4
1229066327	0x49421057	CREATE_LISTENER_FAILED_5
1229066328	0x49421058	INVALID_CONNECTION_TYPE
1229066329	0x49421059	HTTPINPUTSTREAM_NO_ACTIVEINPUTSTREAM
1229066330	0x4942105a	HTTPOUTPUTSTREAM_NO_OUTPUTSTREAM
1229066331	0x4942105b	CONNECTIONINTERCEPTOR_INVALID_CLASSNAME
1229066332	0x4942105c	NO_CONNECTIONDATA_IN_CONNECTIONDATACARRIER
1229066333	0x4942105d	CLIENT_CONNECTIONDATA_IS_INVALID_TYPE
1229066334	0x4942105e	SERVER_CONNECTIONDATA_IS_INVALID_TYPE
1229066335	0x4942105f	NO_OVERLAP_OF_ENABLED_AND_DESIRED_CIPHER_SUITES
1229066352	0x49421070	CAUGHT_EXCEPTION_WHILE_CONFIGURING_SSL_CLIENT_SOCKET
1229066353	0x49421071	GETCONNECTION_KEY_RETURNED_FALSE
1229066354	0x49421072	UNABLE_TO_CREATE_SSL_SOCKET
1229066355	0x49421073	SSLSERVERSOCKET_TARGET_SUPPORTS_LESS_THAN_1
1229066356	0x49421074	SSLSERVERSOCKET_TARGET_REQUIRES_LESS_THAN_1
1229066357	0x49421075	SSLSERVERSOCKET_TARGET_LESS_THAN_TARGET_REQUIRES
1229066358	0x49421076	UNABLE_TO_CREATE_SSL_SERVER_SOCKET
1229066359	0x49421077	CAUGHT_EXCEPTION_WHILE_CONFIGURING_SSL_SERVER_SOCKET
1229066360	0x49421078	INVALID_SERVER_CONNECTION_DATA_TYPE
1229066361	0x49421079	GETSERVERCONNECTIONDATA_RETURNED_NULL
1229066362	0x4942107a	GET_SSL_SESSION_RETURNED_NULL
1229066363	0x4942107b	GLOBAL_ORB_EXISTS
1229066364	0x4942107c	CONNECT_TIME_OUT

5.1+

Table 2. Decimal minor exception codes 1229123841 to 1229124249

Decimal	Hexadecimal	Minor code reason
1229123841	0x4942f101	DSIMETHOD_NOTCALLED
1229123842	0x4942f102	BAD_INV_PARAMS
1229123843	0x4942f103	BAD_INV_RESULT
1229123844	0x4942f104	BAD_INV_CTX
1229123845	0x4942f105	ORB_NOTREADY
1229123879	0x4942f127	PI_NOT_POST_INIT
1229123880	0x4942f128	INVALID_EXTENDED_PL_CALL
1229123969	0x4942f181	BAD_OPERATION_EXTRACT_SHORT
1229123970	0x4942f182	BAD_OPERATION_EXTRACT_LONG
1229123971	0x4942f183	BAD_OPERATION_EXTRACT_USHORT
1229123972	0x4942f184	BAD_OPERATION_EXTRACT_ULONG
1229123973	0x4942f185	BAD_OPERATION_EXTRACT_FLOAT
1229123974	0x4942f186	BAD_OPERATION_EXTRACT_DOUBLE
1229123975	0x4942f187	BAD_OPERATION_EXTRACT_LONGLONG
1229123976	0x4942f188	BAD_OPERATION_EXTRACT_ULONGLONG

Table 2. Decimal minor exception codes 1229123841 to 1229124249 (continued)

1229123977	0x4942f189	BAD_OPERATION_EXTRACT_BOOLEAN
1229123978	0x4942f18a	BAD_OPERATION_EXTRACT_CHAR
1229123979	0x4942f18b	BAD_OPERATION_EXTRACT_OCTET
1229123980	0x4942f18c	BAD_OPERATION_EXTRACT_WCHAR
1229123981	0x4942f18d	BAD_OPERATION_EXTRACT_STRING
1229123982	0x4942f18e	BAD_OPERATION_EXTRACT_WSTRING
1229123983	0x4942f18f	BAD_OPERATION_EXTRACT_ANY
1229123984	0x4942f190	BAD_OPERATION_INSERT_OBJECT_1
1229123985	0x4942f191	BAD_OPERATION_INSERT_OBJECT_2
1229123986	0x4942f192	BAD_OPERATION_EXTRACT_OBJECT_1
1229123987	0x4942f193	BAD_OPERATION_EXTRACT_OBJECT_2
1229123988	0x4942f194	BAD_OPERATION_EXTRACT_TYPECODE
1229123989	0x4942f195	BAD_OPERATION_EXTRACT_PRINCIPAL
1229123990	0x4942f196	BAD_OPERATION_EXTRACT_VALUE
1229123991	0x4942f197	BAD_OPERATION_GET_PRIMITIVE_TC_1
1229123992	0x4942f198	BAD_OPERATION_GET_PRIMITIVE_TC_2
1229123993	0x4942f199	BAD_OPERATION_INVOKE_NULL_PARAM_1
1229123994	0x4942f19a	BAD_OPERATION_INVOKE_NULL_PARAM_2
1229123995	0x4942f19b	BAD_OPERATION_INVOKE_DEFAULT_1
1229123996	0x4942f19c	BAD_OPERATION_INVOKE_DEFAULT_2
1229123997	0x4942f19d	BAD_OPERATION_UNKNOWN_BOOTSTRAP_METHOD
1229123998	0x4942f19e	BAD_OPERATION_EMPTY_ANY
1229123999	0x4942f19f	BAD_OPERATION_STUB_DISCONNECTED
1229124000	0x4942f1a0	BAD_OPERATION_TIE_DISCONNECTED
1229124001	0x4942f1a1	BAD_OPERATION_DELEGATE_DISCONNECTED
1229124097	0x4942f201	NULL_PARAM_1
1229124098	0x4942f202	NULL_PARAM_2
1229124099	0x4942f203	NULL_PARAM_3
1229124100	0x4942f204	NULL_PARAM_4
1229124101	0x4942f205	NULL_PARAM_5
1229124102	0x4942f206	NULL_PARAM_6
1229124103	0x4942f207	NULL_PARAM_7
1229124104	0x4942f208	NULL_PARAM_8
1229124105	0x4942f209	NULL_PARAM_9
1229124106	0x4942f20a	NULL_PARAM_10
1229124107	0x4942f20b	NULL_PARAM_11
1229124108	0x4942f20c	NULL_PARAM_12
1229124109	0x4942f20d	NULL_PARAM_13
1229124110	0x4942f20e	NULL_PARAM_14
1229124111	0x4942f20f	NULL_PARAM_15
1229124112	0x4942f210	NULL_PARAM_16
1229124113	0x4942f211	NULL_PARAM_17
1229124114	0x4942f212	NULL_PARAM_18
1229124115	0x4942f213	NULL_PARAM_19
1229124116	0x4942f214	NULL_PARAM_20
1229124117	0x4942f215	NULL_IOR_OBJECT
1229124118	0x4942f216	NULL_PI_NAME
1229124119	0x4942f217	NULL_SC_DATA
1229124126	0x4942f21e	BAD_SERVANT_TYPE
1229124127	0x4942f21f	BAD_EXCEPTION
1229124128	0x4942f220	BAD_MODIFIER_LIST

Table 2. Decimal minor exception codes 1229123841 to 1229124249 (continued)

1229124129	0x4942f221	NULL_PROP_MGR
1229124130	0x4942f222	INVALID_PROPERTY
1229124131	0x4942f223	ORBINITREF_FORMAT
1229124132	0x4942f224	ORBINITREF_MISSING_OBJECTURL
1229124133	0x4942f225	ORBDEFAULTINITREF_FORMAT
1229124134	0x4942f226	ORBDEFAULTINITREF_VALUE
1229124135	0x4942f227	OBJECTKEY_SERVERUUID_LENGTH
1229124136	0x4942f228	OBJECTKEY_SERVERUUID_NULL
1229124137	0x4942f229	BAD_REPOSITORY_ID
1229124138	0x4942f22a	BAD_PARAM_LOCAL_OBJECT
1229124139	0x4942f22b	NULL_OBJECT_IOR
1229124140	0x4942f22c	WRONG_ORB
1229124141	0x4942f22d	NULL_OBJECT_KEY
1229124142	0x4942f22e	NULL_OBJECT_URL
1229124143	0x4942f22f	NOT_A_NAMING_CONTEXT
1229124225	0x4942f281	TYPECODEIMPL_CTOR_MISUSE_1
1229124226	0x4942f282	TYPECODEIMPL_CTOR_MISUSE_2
1229124227	0x4942f283	TYPECODEIMPL_NULL_INDIRECTTYPE
1229124228	0x4942f284	TYPECODEIMPL_RECURSIVE_TYPECODES
1229124235	0x4942f28b	TYPECODEIMPL_KIND_INVALID_1
1229124236	0x4942f28c	TYPECODEIMPL_KIND_INVALID_2
1229124237	0x4942f28d	TYPECODEIMPL_NATIVE_1
1229124238	0x4942f28e	TYPECODEIMPL_NATIVE_2
1229124239	0x4942f28f	TYPECODEIMPL_NATIVE_3
1229124240	0x4942f290	TYPECODEIMPL_KIND_INDIRECT_1
1229124241	0x4942f291	TYPECODEIMPL_KIND_INDIRECT_2
1229124242	0x4942f292	TYPECODEIMPL_NULL_TYPECODE
1229124243	0x4942f293	TYPECODEIMPL_BODY_OF_TYPECODE
1229124244	0x4942f294	TYPECODEIMPL_KIND_RECURSIVE_1
1229124245	0x4942f295	TYPECODEIMPL_COMPLEX_DEFAULT_1
1229124246	0x4942f296	TYPECODEIMPL_COMPLEX_DEFAULT_2
1229124247	0x4942f297	TYPECODEIMPL_INDIRECTION
1229124248	0x4942f298	TYPECODEIMPL_SIMPLE_DEFAULT
1229124249	0x4942f299	TYPECODEIMPL_NOT_CDROS

5.1 +

Table 3. Decimal minor exception codes 1229124250 to 1229125764

Decimal	Hexadecimal	Minor code reason
1229124250	0x4942f29a	TYPECODEIMPL_NO_IMPLEMENT_1
1229124251	0x4942f29b	TYPECODEIMPL_NO_IMPLEMENT_2
1229124357	0x4942f305	CONN_PURGE_REBIND
1229124358	0x4942f306	CONN_PURGE_ABORT
1229124359	0x4942f307	CONN_NOT_ESTABLISH
1229124360	0x4942f308	CONN_CLOSE_REBIND
1229124368	0x4942f310	WRITE_ERROR_SEND
1229124376	0x4942f318	GET_PROPERTIES_ERROR
1229124384	0x4942f320	BOOTSTRAP_SERVER_NOT_AVAIL
1229124392	0x4942f328	INVOKE_ERROR
1229124481	0x4942f381	BAD_HEX_DIGIT
1229124482	0x4942f382	BAD_STRINGIFIED_IOR_LEN
1229124483	0x4942f383	BAD_STRINGIFIED_IOR

Table 3. Decimal minor exception codes 1229124250 to 1229125764 (continued)

1229124485	0x4942f385	BAD_MODIFIER_1
1229124486	0x4942f386	BAD_MODIFIER_2
1229124488	0x4942f388	CODESET_INCOMPATIBLE
1229124490	0x4942f38a	LONG_DOUBLE_NOT_IMPLEMENTED_1
1229124491	0x4942f38b	LONG_DOUBLE_NOT_IMPLEMENTED_2
1229124492	0x4942f38c	LONG_DOUBLE_NOT_IMPLEMENTED_3
1229124496	0x4942f390	COMPLEX_TYPES_NOT_IMPLEMENTED
1229124497	0x4942f391	VALUE_BOX_NOT_IMPLEMENTED
1229124498	0x4942f392	NULL_STRINGIFIED_IOR
1229124865	0x4942f501	TRANS_NS_CANNOT_CREATE_INITIAL_NC_SYS
1229124866	0x4942f502	TRANS_NS_CANNOT_CREATE_INITIAL_NC
1229124867	0x4942f503	GLOBAL_ORB_EXISTS
1229124868	0x4942f504	PLUGINS_ERROR
1229124869	0x4942f505	INCOMPATIBLE_JDK_VERSION
1229124993	0x4942f581	BAD_REPLYSTATUS
1229124994	0x4942f582	PEEKSTRING_FAILED
1229124995	0x4942f583	GET_LOCAL_HOST_FAILED
1229124996	0x4942f584	CREATE_LISTENER_FAILED
1229124997	0x4942f585	BAD_LOCATE_REQUEST_STATUS
1229124998	0x4942f586	STRINGIFY_WRITE_ERROR
1229125000	0x4942f588	BAD_GIOP_REQUEST_TYPE_1
1229125001	0x4942f589	BAD_GIOP_REQUEST_TYPE_2
1229125002	0x4942f58a	BAD_GIOP_REQUEST_TYPE_3
1229125003	0x4942f58b	BAD_GIOP_REQUEST_TYPE_4
1229125005	0x4942f58d	NULL_ORB_REFERENCE
1229125006	0x4942f58e	NULL_NAME_REFERENCE
1229125008	0x4942f590	ERROR_UNMARSHALING_USEREXC
1229125009	0x4942f591	SUBCONTRACTREGISTRY_ERROR
1229125010	0x4942f592	LOCATIONFORWARD_ERROR
1229125011	0x4942f593	BAD_READER_THREAD
1229125013	0x4942f595	BAD_REQUEST_ID
1229125014	0x4942f596	BAD_SYSTEMEXCEPTION
1229125015	0x4942f597	BAD_COMPLETION_STATUS
1229125016	0x4942f598	INITIAL_REF_ERROR
1229125017	0x4942f599	NO_CODEC_FACTORY
1229125018	0x4942f59a	BAD_SUBCONTRACT_ID
1229125019	0x4942f59b	BAD_SYSTEMEXCEPTION_2
1229125020	0x4942f59c	NOT_PRIMITIVE_TYPECODE
1229125021	0x4942f59d	BAD_SUBCONTRACT_ID_2
1229125022	0x4942f59e	BAD_SUBCONTRACT_TYPE
1229125023	0x4942f59f	NAMING_CTX_REBIND_ALREADY_BOUND
1229125024	0x4942f5a0	NAMING_CTX_REBINDCTX_ALREADY_BOUND
1229125025	0x4942f5a1	NAMING_CTX_BAD_BINDINGTYPE
1229125026	0x4942f5a2	NAMING_CTX_RESOLVE_CANNOT_NARROW_TO_CTX
1229125032	0x4942f5a8	TRANS_NC_BIND_ALREADY_BOUND
1229125033	0x4942f5a9	TRANS_NC_LIST_GOT_EXC
1229125034	0x4942f5aa	TRANS_NC_NEWCTX_GOT_EXC
1229125035	0x4942f5ab	TRANS_NC_DESTROY_GOT_EXC
1229125036	0x4942f5ac	TRANS_BI_DESTROY_GOT_EXC
1229125042	0x4942f5b2	INVALID_CHAR_CODESET_1
1229125043	0x4942f5b3	INVALID_CHAR_CODESET_2

Table 3. Decimal minor exception codes 1229124250 to 1229125764 (continued)

1229125044	0x4942f5b4	INVALID_WCHAR_CODESET_1
1229125045	0x4942f5b5	INVALID_WCHAR_CODESET_2
1229125046	0x4942f5b6	GET_HOST_ADDR_FAILED
1229125047	0x4942f5b7	REACHED_UNREACHABLE_PATH
1229125048	0x4942f5b8	PROFILE_CLONE_FAILED
1229125049	0x4942f5b9	INVALID_LOCATE_REQUEST_STATUS
1229125050	0x4942f5ba	NO_UNSAFE_CLASS
1229125051	0x4942f5bb	REQUEST_WITHOUT_CONNECTION_1
1229125052	0x4942f5bc	REQUEST_WITHOUT_CONNECTION_2
1229125053	0x4942f5bd	REQUEST_WITHOUT_CONNECTION_3
1229125054	0x4942f5be	REQUEST_WITHOUT_CONNECTION_4
1229125055	0x4942f5bf	REQUEST_WITHOUT_CONNECTION_5
1229125056	0x4942f5c0	NOT_USED_1
1229125057	0x4942f5c1	NOT_USED_2
1229125058	0x4942f5c2	NOT_USED_3
1229125059	0x4942f5c3	NOT_USED_4
1229125512	0x4942f788	BAD_CODE_SET
1229125520	0x4942f790	INV_RMI_STUB
1229125521	0x4942f791	INV_LOAD_STUB
1229125522	0x4942f792	INV_OBJ_IMPLEMENTATION
1229125523	0x4942f793	OBJECTKEY_NOMAGIC
1229125524	0x4942f794	OBJECTKEY_NOSCID
1229125525	0x4942f795	OBJECTKEY_NOSERVERID
1229125526	0x4942f796	OBJECTKEY_NOSERVERUUID
1229125527	0x4942f797	OBJECTKEY_SERVERUUIDKEY
1229125528	0x4942f798	OBJECTKEY_NOPOANAME
1229125529	0x4942f799	OBJECTKEY_SETSCID
1229125530	0x4942f79a	OBJECTKEY_SETSERVERID
1229125531	0x4942f79b	OBJECTKEY_NOUSERKEY
1229125532	0x4942f79c	OBJECTKEY_SETUSERKEY
1229125533	0x4942f79d	INVALID_INDEXED_PROFILE_1
1229125534	0x4942f79e	INVALID_INDEXED_PROFILE_2
1229125762	0x4942f882	UNSPECIFIED_MARSHAL_1
1229125763	0x4942f883	UNSPECIFIED_MARSHAL_2
1229125764	0x4942f884	UNSPECIFIED_MARSHAL_3

5.1 +

Table 4. Decimal minor exception codes 1229125765 to 1229125906

Decimal	Hexadecimal	Minor code reason
1229125765	0x4942f885	UNSPECIFIED_MARSHAL_4
1229125766	0x4942f886	UNSPECIFIED_MARSHAL_5
1229125767	0x4942f887	UNSPECIFIED_MARSHAL_6
1229125768	0x4942f888	UNSPECIFIED_MARSHAL_7
1229125769	0x4942f889	UNSPECIFIED_MARSHAL_8
1229125770	0x4942f88a	UNSPECIFIED_MARSHAL_9
1229125771	0x4942f88b	UNSPECIFIED_MARSHAL_10
1229125772	0x4942f88c	UNSPECIFIED_MARSHAL_11
1229125773	0x4942f88d	UNSPECIFIED_MARSHAL_12
1229125774	0x4942f88e	UNSPECIFIED_MARSHAL_13
1229125775	0x4942f88f	UNSPECIFIED_MARSHAL_14
1229125776	0x4942f890	UNSPECIFIED_MARSHAL_15

Table 4. Decimal minor exception codes 1229125765 to 1229125906 (continued)

1229125777	0x4942f891	UNSPECIFIED_MARSHAL_16
1229125778	0x4942f892	UNSPECIFIED_MARSHAL_17
1229125779	0x4942f893	UNSPECIFIED_MARSHAL_18
1229125780	0x4942f894	UNSPECIFIED_MARSHAL_19
1229125781	0x4942f895	UNSPECIFIED_MARSHAL_20
1229125782	0x4942f896	UNSPECIFIED_MARSHAL_21
1229125783	0x4942f897	UNSPECIFIED_MARSHAL_22
1229125784	0x4942f898	UNSPECIFIED_MARSHAL_23
1229125785	0x4942f899	UNSPECIFIED_MARSHAL_24
1229125786	0x4942f89a	UNSPECIFIED_MARSHAL_25
1229125787	0x4942f89b	UNSPECIFIED_MARSHAL_26
1229125788	0x4942f89c	UNSPECIFIED_MARSHAL_27
1229125789	0x4942f89d	UNSPECIFIED_MARSHAL_28
1229125790	0x4942f89e	UNSPECIFIED_MARSHAL_29
1229125791	0x4942f89f	UNSPECIFIED_MARSHAL_30
1229125792	0x4942f8a0	UNSPECIFIED_MARSHAL_31
1229125793	0x4942f8a1	UNSPECIFIED_MARSHAL_32
1229125794	0x4942f8a2	UNSPECIFIED_MARSHAL_33
1229125795	0x4942f8a3	UNSPECIFIED_MARSHAL_34
1229125796	0x4942f8a4	UNSPECIFIED_MARSHAL_35
1229125797	0x4942f8a5	UNSPECIFIED_MARSHAL_36
1229125798	0x4942f8a6	UNSPECIFIED_MARSHAL_37
1229125799	0x4942f8a7	UNSPECIFIED_MARSHAL_38
1229125800	0x4942f8a8	UNSPECIFIED_MARSHAL_39
1229125801	0x4942f8a9	UNSPECIFIED_MARSHAL_40
1229125802	0x4942f8aa	UNSPECIFIED_MARSHAL_41
1229125803	0x4942f8ab	UNSPECIFIED_MARSHAL_42
1229125804	0x4942f8ac	UNSPECIFIED_MARSHAL_43
1229125805	0x4942f8ad	UNSPECIFIED_MARSHAL_44
1229125806	0x4942f8ae	UNSPECIFIED_MARSHAL_45
1229125807	0x4942f8af	UNSPECIFIED_MARSHAL_46
1229125808	0x4942f8b0	UNSPECIFIED_MARSHAL_47
1229125809	0x4942f8b1	UNSPECIFIED_MARSHAL_48
1229125810	0x4942f8b2	UNSPECIFIED_MARSHAL_49
1229125811	0x4942f8b3	UNSPECIFIED_MARSHAL_50
1229125812	0x4942f8b4	UNSPECIFIED_MARSHAL_51
1229125813	0x4942f8b5	UNSPECIFIED_MARSHAL_52
1229125814	0x4942f8b6	UNSPECIFIED_MARSHAL_53
1229125815	0x4942f8b7	UNSPECIFIED_MARSHAL_54
1229125816	0x4942f8b8	UNSPECIFIED_MARSHAL_55
1229125817	0x4942f8b9	UNSPECIFIED_MARSHAL_56
1229125818	0x4942f8ba	UNSPECIFIED_MARSHAL_57
1229125819	0x4942f8bb	UNSPECIFIED_MARSHAL_58
1229125820	0x4942f8bc	UNSPECIFIED_MARSHAL_59
1229125821	0x4942f8bd	UNSPECIFIED_MARSHAL_60
1229125822	0x4942f8be	UNSPECIFIED_MARSHAL_61
1229125823	0x4942f8bf	UNSPECIFIED_MARSHAL_62
1229125824	0x4942f8c0	UNSPECIFIED_MARSHAL_63
1229125825	0x4942f8c1	UNSPECIFIED_MARSHAL_64
1229125826	0x4942f8c2	UNSPECIFIED_MARSHAL_65
1229125827	0x4942f8c3	UNSPECIFIED_MARSHAL_66

Table 4. Decimal minor exception codes 1229125765 to 1229125906 (continued)

1229125828	0x4942f8c4	READ_OBJECT_EXCEPTION_2
1229125841	0x4942f8d1	UNSUPPORTED_IDLTYPE
1229125842	0x4942f8d2	DSI_RESULT_EXCEPTION
1229125844	0x4942f8d4	IIOINPUTSTREAM_GROW
1229125847	0x4942f8d7	NO_CHAR_CONVERTER_1
1229125848	0x4942f8d8	NO_CHAR_CONVERTER_2
1229125849	0x4942f8d9	CHARACTER_MALFORMED_1
1229125850	0x4942f8da	CHARACTER_MALFORMED_2
1229125851	0x4942f8db	CHARACTER_MALFORMED_3
1229125852	0x4942f8dc	CHARACTER_MALFORMED_4
1229125854	0x4942f8de	INCORRECT_CHUNK_LENGTH
1229125856	0x4942f8e0	CHUNK_OVERFLOW
1229125858	0x4942f8e2	CANNOT_GROW
1229125859	0x4942f8e3	CODESET_ALREADY_SET
1229125860	0x4942f8e4	REQUEST_CANCELLED
1229125861	0x4942f8e5	WRITE_TO_STREAM_1
1229125862	0x4942f8e6	WRITE_TO_STREAM_2
1229125863	0x4942f8e7	WRITE_TO_STREAM_3
1229125864	0x4942f8e8	WRITE_TO_STREAM_4
1229125865	0x4942f8e9	PROXY_MARSHAL_FAILURE
1229125866	0x4942f8ea	PROXY_UNMARSHAL_FAILURE
1229125867	0x4942f8eb	INVALID_START_VALUE
1229125868	0x4942f8ec	INVALID_CHUNK_STATE
1229125869	0x4942f8ed	NULL_CODEBASE_IOR
1229125889	0x4942f901	DSI_NOT_IMPLEMENTED
1229125890	0x4942f902	GETINTERFACE_NOT_IMPLEMENTED
1229125891	0x4942f903	SEND_DEFERRED_NOTIMPLEMENTED
1229125893	0x4942f905	ARGUMENTS_NOTIMPLEMENTED
1229125894	0x4942f906	RESULT_NOTIMPLEMENTED
1229125895	0x4942f907	EXCEPTIONS_NOTIMPLEMENTED
1229125896	0x4942f908	CONTEXTLIST_NOTIMPLEMENTED
1229125902	0x4942f90e	CREATE_OBJ_REF_BYTE_NOTIMPLEMENTED
1229125903	0x4942f90f	CREATE_OBJ_REF_IOR_NOTIMPLEMENTED
1229125904	0x4942f910	GET_KEY_NOTIMPLEMENTED
1229125905	0x4942f911	GET_IMPL_ID_NOTIMPLEMENTED
1229125906	0x4942f912	GET_SERVANT_NOTIMPLEMENTED

5.1 +

Table 5. Decimal minor exception codes 1229125907 to 1229126567

Decimal	Hexadecimal	Minor code reason
1229125907	0x4942f913	SET_ORB_NOTIMPLEMENTED
1229125908	0x4942f914	SET_ID_NOTIMPLEMENTED
1229125909	0x4942f915	GET_CLIENT_SUBCONTRACT_NOTIMPLEMENTED
1229125913	0x4942f919	CONTEXTIMPL_NOTIMPLEMENTED
1229125914	0x4942f91a	CONTEXT_NAME_NOTIMPLEMENTED
1229125915	0x4942f91b	PARENT_NOTIMPLEMENTED
1229125916	0x4942f91c	CREATE_CHILD_NOTIMPLEMENTED
1229125917	0x4942f91d	SET_ONE_VALUE_NOTIMPLEMENTED
1229125918	0x4942f91e	SET_VALUES_NOTIMPLEMENTED
1229125919	0x4942f91f	DELETE_VALUES_NOTIMPLEMENTED
1229125920	0x4942f920	GET_VALUES_NOTIMPLEMENTED

Table 5. Decimal minor exception codes 1229125907 to 1229126567 (continued)

1229125922	0x4942f922	GET_CURRENT_NOTIMPLEMENTED_1
1229125923	0x4942f923	GET_CURRENT_NOTIMPLEMENTED_2
1229125924	0x4942f924	CREATE_OPERATION_LIST_NOTIMPLEMENTED_1
1229125925	0x4942f925	CREATE_OPERATION_LIST_NOTIMPLEMENTED_2
1229125926	0x4942f926	GET_DEFAULT_CONTEXT_NOTIMPLEMENTED_1
1229125927	0x4942f927	GET_DEFAULT_CONTEXT_NOTIMPLEMENTED_2
1229125928	0x4942f928	SHUTDOWN_NOTIMPLEMENTED
1229125929	0x4942f929	WORK_PENDING_NOTIMPLEMENTED
1229125930	0x4942f92a	PERFORM_WORK_NOTIMPLEMENTED
1229125931	0x4942f92b	COPY_TK_ABSTRACT_NOTIMPLEMENTED
1229125932	0x4942f92c	PI_CLIENT_GET_POLICY_NOTIMPLEMENTED
1229125933	0x4942f92d	PI_SERVER_GET_POLICY_NOTIMPLEMENTED
1229125934	0x4942f92e	ADDRESSING_MODE_NOTIMPLEMENTED_1
1229125935	0x4942f92f	ADDRESSING_MODE_NOTIMPLEMENTED_2
1229125936	0x4942f930	SET_OBJECT_RESOLVER_NOTIMPLEMENTED
1229125937	0x4942f931	DISCONNECTED_SERVANT_1
1229125938	0x4942f932	DISCONNECTED_SERVANT_2
1229125939	0x4942f933	DISCONNECTED_SERVANT_3
1229125940	0x4942f934	DISCONNECTED_SERVANT_4
1229125941	0x4942f935	DISCONNECTED_SERVANT_5
1229125942	0x4942f936	DISCONNECTED_SERVANT_6
1229125943	0x4942f937	DISCONNECTED_SERVANT_7
1229125944	0x4942f938	GET_INTERFACE_DEF_NOT_IMPLEMENTED
1229126017	0x4942f981	MARSHAL_NO_MEMORY_1
1229126018	0x4942f982	MARSHAL_NO_MEMORY_2
1229126019	0x4942f983	MARSHAL_NO_MEMORY_3
1229126020	0x4942f984	MARSHAL_NO_MEMORY_4
1229126021	0x4942f985	MARSHAL_NO_MEMORY_5
1229126022	0x4942f986	MARSHAL_NO_MEMORY_6
1229126023	0x4942f987	MARSHAL_NO_MEMORY_7
1229126024	0x4942f988	MARSHAL_NO_MEMORY_8
1229126025	0x4942f989	MARSHAL_NO_MEMORY_9
1229126026	0x4942f98a	MARSHAL_NO_MEMORY_10
1229126027	0x4942f98b	MARSHAL_NO_MEMORY_11
1229126028	0x4942f98c	MARSHAL_NO_MEMORY_12
1229126029	0x4942f98d	MARSHAL_NO_MEMORY_13
1229126030	0x4942f98e	MARSHAL_NO_MEMORY_14
1229126031	0x4942f98f	MARSHAL_NO_MEMORY_15
1229126032	0x4942f990	MARSHAL_NO_MEMORY_16
1229126033	0x4942f991	MARSHAL_NO_MEMORY_17
1229126034	0x4942f992	MARSHAL_NO_MEMORY_18
1229126035	0x4942f993	MARSHAL_NO_MEMORY_19
1229126036	0x4942f994	MARSHAL_NO_MEMORY_20
1229126037	0x4942f995	MARSHAL_NO_MEMORY_21
1229126038	0x4942f996	MARSHAL_NO_MEMORY_22
1229126039	0x4942f997	MARSHAL_NO_MEMORY_23
1229126040	0x4942f998	MARSHAL_NO_MEMORY_24
1229126041	0x4942f999	MARSHAL_NO_MEMORY_25
1229126042	0x4942f99a	MARSHAL_NO_MEMORY_26
1229126043	0x4942f99b	MARSHAL_NO_MEMORY_27
1229126044	0x4942f99c	MARSHAL_NO_MEMORY_28

Table 5. Decimal minor exception codes 1229125907 to 1229126567 (continued)

1229126045	0x4942f99d	MARSHAL_NO_MEMORY_29
1229126046	0x4942f99e	MARSHAL_NO_MEMORY_30
1229126047	0x4942f99f	MARSHAL_NO_MEMORY_31
1229126401	0x4942fb01	RESPONSE_TIMED_OUT
1229126402	0x4942fb02	FRAGMENT_TIMED_OUT
1229126529	0x4942fb81	NO_SERVER_SC_IN_DISPATCH
1229126530	0x4942fb82	NO_SERVER_SC_IN_LOOKUP
1229126531	0x4942fb83	NO_SERVER_SC_IN_CREATE_DEFAULT_SERVER
1229126532	0x4942fb84	NO_SERVER_SC_IN_SETUP
1229126533	0x4942fb85	NO_SERVER_SC_IN_LOCATE
1229126534	0x4942fb86	NO_SERVER_SC_IN_DISCONNECT
1229126539	0x4942fb8b	ORB_CONNECT_ERROR_1
1229126540	0x4942fb8c	ORB_CONNECT_ERROR_2
1229126541	0x4942fb8d	ORB_CONNECT_ERROR_3
1229126542	0x4942fb8e	ORB_CONNECT_ERROR_4
1229126543	0x4942fb8f	ORB_CONNECT_ERROR_5
1229126544	0x4942fb90	ORB_CONNECT_ERROR_6
1229126545	0x4942fb91	ORB_CONNECT_ERROR_7
1229126546	0x4942fb92	ORB_CONNECT_ERROR_8
1229126547	0x4942fb93	ORB_CONNECT_ERROR_9
1229126548	0x4942fb94	ORB_REGISTER_1
1229126549	0x4942fb95	ORB_REGISTER_2
1229126553	0x4942fb99	ORB_REGISTER_LOCAL_1
1229126554	0x4942fb9a	ORB_REGISTER_LOCAL_2
1229126555	0x4942fb9b	LOCAL_SERVANT_LOOKUP
1229126556	0x4942fb9c	POA_LOOKUP_ERROR
1229126557	0x4942fb9d	POA_INACTIVE
1229126558	0x4942fb9e	POA_NO_SERVANT_MANAGER
1229126559	0x4942fb9f	POA_NO_DEFAULT_SERVANT
1229126560	0x4942fba0	POA_WRONG_POLICY
1229126561	0x4942fba1	FINDPOA_ERROR
1229126562	0x4942fba2	ADAPTER_ACTIVATOR_EXCEPTION
1229126563	0x4942fba3	POA_SERVANT_ACTIVATOR_LOOKUP_FAILED
1229126564	0x4942fba4	POA_BAD_SERVANT_MANAGER
1229126565	0x4942fba5	POA_SERVANT_LOCATOR_LOOKUP_FAILED
1229126566	0x4942fba6	POA_UNKNOWN_POLICY
1229126567	0x4942fba7	POA_NOT_FOUND

5.1 +

Table 6. Decimal minor exception codes 1229126568 to 1330446377

Decimal	Hexadecimal	Minor code reason
1229126568	0x4942fba8	SERVANT_LOOKUP
1229126569	0x4942fba9	SERVANT_IS_ACTIVE
1229126570	0x4942fbaa	SERVANT_DISPATCH
1229126571	0x4942fbab	WRONG_CLIENTSC
1229126572	0x4942fbac	WRONG_SERVERSC
1229126573	0x4942fbad	SERVANT_IS_NOT_ACTIVE
1229126574	0x4942fbae	POA_WRONG_POLICY_1
1229126575	0x4942fbaf	POA_NOCONTEXT_1
1229126576	0x4942fbb0	POA_NOCONTEXT_2
1229126577	0x4942fbb1	POA_INVALID_NAME_1

Table 6. Decimal minor exception codes 1229126568 to 1330446377 (continued)

1229126578	0x4942fbb2	POA_INVALID_NAME_2
1229126579	0x4942fbb3	POA_INVALID_NAME_3
1229126580	0x4942fbb4	POA_NOCONTEXT_FOR_PREINVOKE
1229126581	0x4942fbb5	POA_NOCONTEXT_FOR_CHECKING_PREINVOKE
1229126582	0x4942fbb6	POA_NOCONTEXT_FOR_POSTINVOKE
1229126657	0x4942fc01	LOCATE_UNKNOWN_OBJECT
1229126658	0x4942fc02	BAD_SERVER_ID_1
1229126659	0x4942fc03	BAD_SERVER_ID_2
1229126660	0x4942fc04	BAD_IMPLID
1229126665	0x4942fc09	BAD_SKELETON_1
1229126666	0x4942fc0a	BAD_SKELETON_2
1229126673	0x4942fc11	SERVANT_NOT_FOUND_1
1229126674	0x4942fc12	SERVANT_NOT_FOUND_2
1229126675	0x4942fc13	SERVANT_NOT_FOUND_3
1229126676	0x4942fc14	SERVANT_NOT_FOUND_4
1229126677	0x4942fc15	SERVANT_NOT_FOUND_5
1229126678	0x4942fc16	SERVANT_NOT_FOUND_6
1229126679	0x4942fc17	SERVANT_NOT_FOUND_7
1229126687	0x4942fc1f	SERVANT_DISCONNECTED_1
1229126688	0x4942fc20	SERVANT_DISCONNECTED_2
1229126689	0x4942fc21	NULL_SERVANT
1229126690	0x4942fc22	ADAPTER_ACTIVATOR_FAILED
1229126692	0x4942fc24	ORB_DESTROYED
1229126693	0x4942fc25	DYNANY_DESTROYED
1229127170	0x4942fe02	CONNECT_FAILURE_1
1229127171	0x4942fe03	CONNECT_FAILURE_2
1229127172	0x4942fe04	CONNECT_FAILURE_3
1229127173	0x4942fe05	CONNECT_FAILURE_4
1229127297	0x4942fe81	UNKNOWN_CORBA_EXC
1229127298	0x4942fe82	RUNTIMEEXCEPTION
1229127299	0x4942fe83	UNKNOWN_SERVER_ERROR
1229127300	0x4942fe84	UNKNOWN_DSI_SYSEX
1229127301	0x4942fe85	UNEXPECTED_CHECKED_EXCEPTION
1229127302	0x4942fe86	UNKNOWN_CREATE_EXCEPTION_RESPONSE
1229127312	0x4942fe90	UNKNOWN_PI_EXC
1229127313	0x4942fe91	UNKNOWN_PI_EXC_2
1229127314	0x4942fe92	PI_ARGS_FAILURE
1229127315	0x4942fe93	PI_EXCEPTS_FAILURE
1229127316	0x4942fe94	PI_CONTEXTS_FAILURE
1229127317	0x4942fe95	PI_OP_CONTEXT_FAILURE
1229127326	0x4942fe9e	USER_DEFINED_ERROR
1229127327	0x4942fe9f	UNKNOWN_RUNTIME_IN_BOOTSTRAP
1229127328	0x4942fea0	UNKNOWN_THROWABLE_IN_BOOTSTRAP
1229127329	0x4942fea1	UNKNOWN_RUNTIME_IN_INSAGENT
1229127330	0x4942fea2	UNKNOWN_THROWABLE_IN_INSAGENT
1229127331	0x4942fea3	UNEXPECTED_IN_PROCESSING_CLIENTSIDE_INTERCEPTOR
1229127332	0x4942fea4	UNEXPECTED_IN_PROCESSING_SERVERSIDE_INTERCEPTOR
1229127333	0x4942fea5	UNEXPECTED_PI_LOCAL_REQUEST
1229127334	0x4942fea6	UNEXPECTED_PI_LOCAL_RESPONSE
1330446336	0x4f4d0000	OMGVMCID
1330446337	0x4f4d0001	FAILURE_TO_REGISTER_OR_LOOKUP_VALUE_FACTORY

Table 6. Decimal minor exception codes 1229126568 to 1330446377 (continued)

1330446338	0x4f4d0002	RID_ALREADY_DEFINED_IN_IFR
1330446339	0x4f4d0003	IN_INVOCATION_CONTEXT
1330446340	0x4f4d0004	ORB_SHUTDOWN
1330446341	0x4f4d0005	NAME_CLASH_IN_INHERITED_CONTEXT
1330446342	0x4f4d0006	SERVANT_MANAGER_EXISTS
1330446343	0x4f4d0007	INS_BAD_SCHEME_NAME
1330446344	0x4f4d0008	INS_BAD_ADDRESS
1330446345	0x4f4d0009	INS_BAD_SCHEME_SPECIFIC_PART
1330446346	0x4f4d000a	INS_OTHER
1330446348	0x4f4d000c	POLICY_FACTORY_EXISTS
1330446350	0x4f4d000e	INVALID_PI_CALL
1330446351	0x4f4d000f	SERVICE_CONTEXT_ID_EXISTS
1330446353	0x4f4d0011	POA_DESTROYED
1330446359	0x4f4d0017	NO_TRANSMISSION_CODE
1330446362	0x4f4d001a	INVALID_SERVICE_CONTEXT
1330446363	0x4f4d001b	NULL_OBJECT_ON_REGISTER
1330446364	0x4f4d001c	INVALID_COMPONENT_ID
1330446365	0x4f4d001d	INVALID_IOR_PROFILE
1330446375	0x4f4d0027	INVALID_STREAM_FORMAT_1
1330446376	0x4f4d0028	NOT_VALUE_OUTPUT_STREAM
1330446377	0x4f4d0029	NOT_VALUE_INPUT_STREAM

If none of these steps fixes your problem, check to see if the problem has been identified and documented by looking at the available online support (hints and tips, technotes, and fixes). If you do not find your problem listed there, contact IBM Support.

For current information available from IBM Support on known problems and their resolution, see the IBM Support page.

IBM Support has documents that can save you time gathering information needed to resolve this problem. Before opening a PMR, see the IBM Support page.

Sybase troubleshooting tips

This article describes how to diagnose the following problems related to Sybase:

- Executing the DatabaseMetaData.getBestRowIdentifier() method in an XA transaction causes errors
- Sybase requirements for using the escapes and DatabaseMetaData methods
- Database deadlocks and XA_PROTO errors occur when using Sybase
- Executing a stored procedure containing a **SELECT INTO** command causes exception
- Error is incorrectly reported about IMAGE to VARBINARY conversion
- Java Database Connectivity (JDBC) 1.0 standard methods are not implemented and generate a SQL exception when used
- Sybase transaction manager fails after trying to alleviate deadlock error
- Starting an XA transaction when the autoCommit value of the connection is *false* causes error
- Sybase does not throw an exception when an incorrect database name is specified

Executing the DatabaseMetaData.getBestRowIdentifier() method in an XA transaction causes errors

Executing the DatabaseMetaData.getBestRowIdentifier() method while in an XA transaction causes the following errors:

SQL Exception: The 'CREATE TABLE' command is not allowed within a multi-statement transaction in the 'tempdb' database. Calling DatabaseMetaData.getBestRowIdentifier()

Currently, this method fails when using Sybase. This problem occurs with other methods as well, including:

- getBestRowIdentifier();
- getVersionColumns();
- getTablePrivileges();
- getProcedureColumns();
- getPrimaryKeys();
- getIndexInfo();
- getImportedKeys();
- getExportedKeys();
- getCrossReference();
- getColumns();
- getColumnPrivileges();

Case 10880427 has been opened with Sybase to resolve this problem.

Sybase requirements for using the escapes and DatabaseMetaData methods

To use the escapes and DatabaseMetaData methods, you must install stored procedures on the Adaptive Server Enterprise or Adaptive Server Anywhere database where you want to use these methods. These stored procedures are also required by some of the connection methods.

To check for the presence of LOCATE ():

1. Open a Sybase **isql** command prompt.
2. Type the command **use master**.
3. Type the command **go**.
4. Type the SQL command and select * from jdbc_function_escapes.
5. Type the command **go**.

The following appears:

escape_name	map_string
abs	abs(%1)
acos	acos(%1)
asin	asin(%1)
atan	atan(%1)
atan2	atn2(%1, %2)
ceiling	ceiling(%1)
.....

```
locate charindex ((convert (varchar, %1)), (convert (varchar, %2)))
```

If the function does not exist, upgrade jConnect to at least Version 5.2 EBF 10635 and run the following command:

```
java IsqlApp -U sa -P -S jdbc:sybase:Tds:hostname:4100 -I %JDBC_HOME%\sp\sql_server12.sql -c go
```

Database deadlocks and XA_PROTO errors occur when using Sybase

When using Sybase with the IBM WebSphere Application Server, do one of the following to prevent database deadlocks and errors:

- Change the transaction isolation level on the connection to TRANSACTION_READ_COMMITTED. Set the isolation level on the connection for unshareable connections or, for shareable connections, define the isolation levels in the resource reference for your data source using the Application Assembly Tool (AAT) Assembly Toolkit.
- Modify Sybase by doing one of the following:
 - If you want to use the existing tables, modify the table locking scheme using the **alter table *table name* lock datarows** command to get a row lock level granularity.
 - If you want to set the system-wide locking scheme to data rows, all subsequently created tables inherit that value and have a locking scheme of data rows.

Note: You must drop your original databases and tables.

Executing a stored procedure containing a SELECT INTO command causes exception

An attempt to execute a stored procedure containing a **SELECT INTO** command results in the following exception:

```
SVR-ERROR: SQL Exception SELECT INTO command not allowed within multi-statement transaction
```

Case 10868947 has been opened with Sybase to resolve this problem.

Error is incorrectly reported about IMAGE to VARBINARY conversion

The following error is incorrectly reported:

```
com.sybase.jdbc2.jdbc.SybSQLException: Implicit conversion from data type 'IMAGE' to 'VARBINARY' is not supported. Use the CONVERT function to run this query.
```

The error is about a VARBINARY column only and causes confusion if you also have an IMAGE column.

Do one of the following to work around this problem:

- Use a PreparedStatement.setBytes() method instead of a PreparedStatement.setBinaryStream() method
- Use a LONG VARBINARY for the column type if you want to continue using the setBinaryStream() method. You might want to make this change because the size limit for VARBINARY is 255 bytes.

For example:

```
// *****CORRECTION*****  
// setBinaryStream fails for column type of VARBINARY , use setBytes() instead  
//stmt4.setBinaryStream(8,new java.io.ByteArrayInputStream(tempbyteArray),tempbyteArray.length);  
stmt4.setBytes(8,tempbyteArray);
```

Java Database Connectivity 1.0 standard methods are not implemented and generate a SQL exception when used

The following Java Database Connectivity (JDBC) 1.0 standard methods are not implemented and generate a SQL exception when used:

- ResultSetMetaData.getSchemaName()

- `ResultSetMetaData.getTableName()` (implemented only for text and image datatypes)
- `ResultSetMetaData.getCatalogName()`

Sybase transaction manager fails after trying to alleviate a deadlock error

If an application encounters a deadlock, Sybase detects the deadlock and throws an exception. Because of this detection, the transaction manager calls an `xa_end` with a `TMFAIL` in it.

The call succeeds, but causes another Sybase exception, `XAERR_PROTO`. This exception only appears in the error log and does not cause any functional problems. All applications should continue to run, therefore no workaround is necessary.

Case 10869169 has been opened with Sybase to resolve this problem.

Starting an XA transaction when the `autoCommit` value of the connection is *false* causes error

The exception thrown is `javax.transaction.xa.XAException` with stack trace similar to the following:

```
at com.sybase.jdbc2.jdbc.SybXAResource.sendRPC(SybXAResource.java:711)
at com.sybase.jdbc2.jdbc.SybXAResource.sendRPC(SybXAResource.java:602)
at com.sybase.jdbc2.jdbc.SybXAResource.start(SybXAResource.java:312)
```

This problem affects you when you do both local and global transactions. If, in a local transaction, the `autoCommit` default value is set to *false*, and a global or XA transaction starts (either a user transaction started by you, or a container transaction started by a container), the exception occurs.

This problem is a Sybase bug as the `start()` method can fail unexpectedly, regardless of the value of `autoCommit`. Currently, there is no workaround for this problem, therefore it is not recommended that you mix local and global transactions. Case 10880792 has been opened to resolve this problem.

Sybase does not throw an exception when an incorrect database name is specified

Verify that your database name is correctly entered on the data source properties.

Most databases (DB2, Oracle, Informix, MS SQL Server and Cloudscape) throw an exception when the database specified does not exist. But Sybase does not throw an exception when an incorrect database name is specified. Sybase generates an SQL warning and then connects to the default database. If you misspell the requested database name, Sybase connects you to the master or the default database where the table you requested is not found.

[Back to Databases-Sybase](#)
[Back to Known problems and workarounds](#)

If none of these steps fixes your problem, check to see if the problem has been identified and documented by looking at the available online support (hints and tips, technotes, and fixes). If you do not find your problem listed there, contact IBM Support.

For current information available from IBM Support on known problems and their resolution, see the IBM Support page.

IBM Support has documents that can save you time gathering information needed to resolve this problem. Before opening a PMR, see the IBM Support page.

DB2 troubleshooting tips

Illegal conversion occurs on any VARCHAR FOR BIT DATA column in a container-managed persistent bean

When enterprise beans with container-managed persistent (CMP) types that have any VARCHAR FOR BIT DATA columns defined on a DB2 table are deployed in the DB2 universal JDBC type 4 driver to persist the data, an SQLException of illegal conversion is thrown at run time. This exception only occurs when you use the DB2 universal JDBC type 4 driver and with the deferPrepares property being set to true. When the deferPrepares property is set to true, the DB2 universal JDBC type 4 driver uses the standard JDBC data mapping.

Currently, the generated deployed code does not follow the standard JDBC specification mapping. The failure at execution time is because of a problem in the tool that prepared the enterprise beans for execution.

To avoid receiving this exception, choose one of the following options:

- Set the deferPrepares property to false in the data source configuration.
- Do not use the DB2 universal JDBC type 4 driver if your table has any VARCHAR FOR BIT DATA or LONG VARCHAR FOR BIT DATA columns. Use the DB2 legacy CLI-based JDBC driver to persist the data. Refer to DB2 V8.1 readme for more details.

For current information available from IBM Support on known problems and their resolution, see the IBM Support page.

IBM Support has documents that can save you time gathering information needed to resolve this problem. Before opening a PMR, see the IBM Support page.

Web services security troubleshooting tips

Troubleshooting Web services security is best done by reviewing the configurations in the Assembly Toolkit so that you can match up the client and server request and the response configurations. These configurations must match. A client request sender configuration must match a server request receiver configuration. For encryption to successfully occur, the public key of the receiver must be exported to the sender and this key must be configured properly in the encryption information. For authentication, you must specify the method used by the client in the login mapping of the server. Also, you must correctly specify the actor URI at each point in the configuration with the same URI string. The following includes a list of generic troubleshooting steps that you can perform. A listing of specific symptoms and solutions is provided after these steps.

Steps for this task:

1. Verify that the client security extensions and server security extensions match on each downstream call for the following senders and receivers:
 - Request sender and request receiver
 - Response sender and response receiver

2. Verify that when the Add Created Time Stamp option is enabled on the client-side that the server has the Add Received Time Stamp option configured. You must configure the security extensions in the Assembly Toolkit
3. Verify that the client security bindings and the server security bindings are correctly configured. When the client authentication method is signature, make sure that the server has a login mapping. When the client uses the public key `cn=Bob,o=IBM,c=US` to encrypt the body, verify that this Subject is a personal certificate in the server key store so that it can decrypt the body with the private key. You can configure the security bindings using either the Assembly Toolkit or the WebSphere Application Server administrative console.
4. Check the `SystemOut.log` file in the `${USER_INSTALL_ROOT}/logs/server1` directory (*server1* changes depending upon the server name) for messages that might provide information about the problem.
5. Enable trace for Web services security by using the following trace specification:
`com.ibm.xml.soapsec.*=all=enabled:com.ibm.ws.webservices.*=all=enabled:
com.ibm.wsspi.wssecurity.*=all=enabled:com.ibm.ws.security.*=all=enabled:
SASRas=all=enabled`

Type the previous three lines as one continuous line.

- Specific symptoms:

Symptom: WSEC5061E: The SOAP Body is not signed

Solution: This error usually occurs whenever the SOAP security handler does not load properly, and does not sign the SOAP body not to be signed. The SOAP security handler is typically the first validation that occurs on the server-side, so a multitude of problems can cause this message to display. The error might be caused by invalid actor URI configurations. You can configure the actor Universal Resource Identifier (URI) at the following locations within the Assembly Toolkit:

From the Web services client editor within the Assembly Toolkit for client configurations:

- Click **Security Extensions > Client Service Configuration Details** and indicate the actor information in the **ActorURI** field.
- Click **Security Extensions > Request Sender Configuration section > Details** and indicate the actor information in the **Actor** field.

From the Web Services Editor within the Assembly Toolkit for server configurations:

- Click **Security Extensions > Server Service Configuration** section. Verify that the actor URI has the same actor string as the client-side.
- Click **Security Extensions > Response Sender Service Configuration Details > Details** and indicate the actor information in the **Actor** field.

The actor information on both the client and the server must refer to the same string. When the actor fields on the client and the server match, the request or response is acted upon instead of being forwarded downstream. The actor fields might be different when you have Web services acting as a gateway to other Web services. However, in all other cases, verify that the actor information matches on the client and server. When the Web services implementation is acting as a gateway and it does not have the same actor configured as the request passing through the gateway, this Web services implementation does not process the message from the client. Instead, it sends the request downstream. The downstream process that contains the correct actor string processes the request. The same situation occurs for the response. Therefore, it is important that you verify that the appropriate client and server actor fields are synchronized.

Additionally, the error can appear when you do not specify that the body is signed in the client configuration. To sign the body part of the message using the Web service client editor in the Assembly Toolkit, click **Security Extensions > Request Sender Configuration > Integrity** and select the message parts to sign.

- **Symptom:** WSEC5075E: No security token found that satisfies any one of the authentication methods.

Solution: Verify that the client and server login configuration information matches in the security extensions. Also, verify that the client has a valid login binding and that the server has a valid login mapping in the security bindings. You can check this information by looking at the following locations in the Assembly Toolkit:

From the Web services client editor within the Assembly Toolkit for client configurations:

- Click **Security Extensions > Request Sender Configuration > Login Configuration** verify the authentication method.
- Click **Port Binding > Security Request Sender Binding Configuration > Login Binding** verify the authentication method and other parameters.

From the Web Services Editor within the Assembly Toolkit for server configurations:

- Click **Security Extensions > Request Receiver Service Configuration Details > Login Configuration** and verify the authentication method.
- Click **Binding Configurations > Request Receiver Binding Configuration Details > Login Mapping** and verify the authentication method and other parameters.

Also, make sure that the actor URI specified on the client and server matches. You can configure the actor URI at the following locations within the Assembly Toolkit:

From the Web services client editor within the Assembly Toolkit for client configurations:

- Click **Security Extensions > Client Service Configuration Details** and indicate the actor information in the **ActorURI** field.
- Click **Security Extensions > Request Sender Configuration section > Details** and indicate the actor information in the **Actor** field.

From the Web services editor within the Assembly Toolkit for server configurations:

- Click **Security Extensions > Server Service Configuration** section. Make sure that the **Actor URI** field has the same actor string as the client side.
- Click **Security Extensions > Response Sender Service Configuration Details > Details** and indicate the actor information in the **Actor** field.
- **Symptom:** WSEC5094E: No UsernameToken of trusted user was found or the login failed for the user while the TrustMode is BasicAuth.

Solution: This situation occurs when you have IDAssertion configured in the login configuration as the authentication method. On the sending Web service, configure a trusted basic authentication entry in the login binding. Then, on the server side, verify that the trusted ID evaluator has a property set that contains the user name of this basic authentication entry. To configure the client for identity assertion, see:

- Configuring the client for identity assertion authentication: Specifying the method

- Configuring the client for identity assertion authentication: Collecting the authentication information

To configure the server for identity assertion, see:

- Configuring the server to handle identity assertion authentication
 - Configuring the server to validate identity assertion authentication information
- **Symptom:** The following authorization error occurs with UNAUTHENTICATED as the security name: SECJ0053E: Authorization failed for /UNAUTHENTICATED while invoking (Home)com/ibm/wssvt/tc/pli/ejb/Beneficiary findBeneficiaryBySsNo(java.lang.String):2 securityName: /UNAUTHENTICATED;accessID: null is not granted any of the required roles: AgentRole

Solution: This situation occurs because a login configuration is not being configured or Web services Security is not configured from a client to a server. When the request arrives at the server and authentication information is not received, the UNAUTHENTICATED user is set on the thread. Authorization returns this error if there are any roles assigned to the resource except for the special "Everyone" role, which supports access by anyone.

If the client successfully authenticates to an EJB file but the EJB file calls a downstream Enterprise JavaBean (EJB) file that is not configured with Web services security or transport security, such as HTTP user ID and password, an error can occur for this downstream request. Using the Assembly Toolkit, verify that the enterprise archive (EAR) file for both client and server has the correct security extensions and security bindings. For more information, see:

- Configuring the client security bindings using the Assembly Toolkit
- Configuring the security bindings on a server acting as a client using the administrative console
- Configuring the server security bindings using the Assembly Toolkit
- Configuring the server security bindings using the administrative console

Problems installing or starting Apache or IBM HTTP Server

What kind of error are you seeing?

- "Failed to initialize GSK environment" error appears when trying to start Apache
- IBM HTTP Server (IHS) on Windows does not start, error WSADuplicateSocket failed for socket appears in error.log.

If you do not see a problem that resembles yours, or if the information provided does not solve your problem, contact IBM support for further assistance.

"Failed to initialize GSK environment" error appears when trying to start Apache

The following messages may appear in Apache's error log file when you attempt to start Apache:

```
[Wed Aug 27 19:21:59 2003] [error] lib_security: initializeSecurity: Failed to initialize GSK envi
[Wed Aug 27 19:21:59 2003] [error] ws_transport: transportInitializeSecurity: Failed to initialize
[Wed Aug 27 19:21:59 2003] [error] ws_server: serverAddTransport: Failed to initialize security
```

These messages are most common after building Apache from the downloadable source code and installing Apache separately from WebSphere Application Server.

If SSL Transport (https) is defined in the plugin-cfg.xml file, the plug-in will try to load the Global Security Kit (GSKit) library libgsk7ssl.so. The error messages will

appear in the error log file if the level 7 GSKit libgsk7ssl.so is not installed on your system. To correct these errors, try one of the following:

- Remove the transport section that has "https" in the plugin-cfg.xml file
- Install the level 7 GSKit

Note: The GSKit gets installed automatically if the IBM HTTP Server (IHS) provided with WebSphere Application Server is installed.

For details and help on the Apache web server, visit the Apache web site <http://httpd.apache.org/>.

IBM HTTP Server on Windows does not start, error WSADuplicateSocket failed for socket appears in error.log

If your installation of IBM HTTP Server (IHS) on a Windows platform will not start, you may find a message similar to the following in the log\error.log file of your IHS installation:

```
"[crit] (10045) The attempted operation is not supported for the type of object referenced: Parent: V
```

This problem occurs when IHS is run on a system with a Virtual Private Networking client such as Aventail Connect. Aventail Connect is a Layered Service Provider (LSP) that intercepts calls between the Winsock 2 API and Window's native Winsock 2 implementation. The failure occurs because Aventail Connect does not implement WASDuplicateSocket(). The interception still takes place when Aventail Connect is shut down.

To correct the problem try one of the following:

- Reboot the machine, or
- Uninstall the LSP product

For current information available from IBM Support on known problems and their resolution, see the IBM Support page.

IBM Support has documents that can save you time gathering information needed to resolve this problem. Before opening a PMR, see the IBM Support page.

Chapter 5. Adding logging and tracing to your application

Designers and developers of applications that run with or under WebSphere Application Server, such as servlets, JSP files, enterprise beans, client applications, and their supporting classes, may find it useful to use the same facility for generating messages that WebSphere Application Server itself uses, JRas.

This approach has advantages over simply adding `System.out.println()` statements to your code:

- Your messages appear in the WebSphere Application Server standard message format with additional data, such as a date and time stamp, added automatically.
- You can more easily correlate problems and events in your own application to problems and events associated with WebSphere Application Server components.
- You can take advantage of the WebSphere Application Server log file management features.
- You can view your messages with the WebSphere Application Server user-friendly Log Analyzer tool.

Unless you choose to extend the JRas framework, using the JRas API set is only slightly more complicated than writing basic `System.println()` statements.

Programming with the JRas framework

Use the JRas extensions to incorporate message logging and diagnostic trace into WebSphere Application Server applications. The JRas extensions are based on the stand-alone JRas logging toolkit.

1. Retrieve a reference to the JRas manager.
2. Retrieve message and trace loggers by using methods on the returned manager.
3. Call the appropriate methods on the returned message and trace loggers to create message and trace entries, as appropriate.

Understanding the JRas facility

Developing, deploying and maintaining applications are complex tasks. For example, when a running application encounters an unexpected condition it might not be able to complete a requested operation. In such a case you might want the application to inform the administrator that the operation has failed and give information as to why. This enables the administrator to take the proper corrective action. Application developers or maintainers might need to gather detailed information relating to the execution path of a running application in order to determine the root cause of a failure that is due to a code bug. The facilities that are used for these purposes are typically referred to as message logging and diagnostic trace.

Message logging (messages) and diagnostic trace (trace) are conceptually quite similar, but do have important differences. It is important for application developers to understand these differences in order to use these tools properly. To start with, the following operational definitions of messages and trace are provided.

Message

A message entry is an informational record intended to be viewed by end

users, systems administrators and support personnel. The text of the message must be clear, concise and interpretable by an end user. Messages are typically localized, meaning they are displayed in the national language of the end user. Although the destination and lifetime of messages might be configurable, some level of message logging is always enabled in normal system operation. Message logging must be used judiciously due to both performance considerations and the size of the message repository.

Trace A trace entry is an information record that is intended to be used by service engineers or developers. As such a trace record may be considerably more complex, verbose and detailed than a message entry. Localization support is typically not used for trace entries. Trace entries may be fairly inscrutable, understandable only by the appropriate developer or service personnel. It is assumed that trace entries are not written during normal runtime operation, but may be enabled as needed to gather diagnostic information.

WebSphere Application Server provides a message logging and diagnostic trace API that can be used by applications. This API is based on the stand-alone JRas logging toolkit which was developed by IBM. The stand-alone JRas logging toolkit is a collection of interfaces and classes that provide message logging and diagnostic trace primitives. These primitives are not tied to any particular product or platform. The stand-alone JRas logging toolkit provides a limited amount of support (typically referred to as systems management support), including log file configuration support based on property files.

As designed, the stand-alone JRas logging toolkit does not contain the support required for integration into the WebSphere Application Server runtime or for usage in a J2EE environment. To overcome these limitations, WebSphere Application Server provides a set of extension classes to address these shortcomings. This collection of extension classes is referred to as the JRas extensions. The JRas extensions do not modify the interfaces introduced by the stand-alone JRas logging toolkit, but simply provide the appropriate implementation classes. The conceptual structure introduced by the stand-alone JRas logging toolkit is described below. It is equally applicable to the JRas extensions.

JRas Concepts

The following is a basic overview of important concepts and constructs introduced by the stand-alone JRas logging toolkit. It is not meant to be an exhaustive overview of the capabilities of this logging toolkit, nor is it intended to be a detailed discussion of usage or programming paradigms. More detailed information, including code examples, is available in JRas extensions and its subtopics, including in the Javadoc for the various interfaces and classes that make up the logging toolkit.

Event Types

The stand-alone JRas logging toolkit defines a set of event types for messages and a set of event types for trace. Examples of message types include informational, warning and error. Examples of trace types include entry, exit and trace.

Event Classes

The stand-alone JRas logging toolkit defines both message and trace event classes.

Loggers

A logger is the primary object with which the user code interacts. Two

types of loggers are defined. These are message loggers and trace loggers. The set of methods on message loggers and trace loggers are different, since they provide different functionality. Message loggers create only message records and trace loggers create only trace records. Both types of loggers contain masks that indicates which categories of events the logger should process and which it should ignore. Although every JRas logger is defined to contain both a message and trace mask, the message logger only uses the message mask and the trace logger only uses the trace mask. For example, by setting a message logger's message mask to the appropriate state, it can be configured to process only Error messages and ignore Informational and Warning messages. Changing the state of a message logger's trace mask has no effect.

A logger contains one or more handlers to which it forwards events for further processing. When the user calls a method on the logger, the logger will compare the event type specified by the caller to its current mask value. If the specified type passes the mask check, the logger will create an event object to capture the information relating to the event that was passed to the logger method. This information may include information such as the names of the class and method which is logging the event, a message and parameters to log, among others. Once the logger has created the event object, it forwards the event to all handlers currently registered with the logger.

Methods that are used within the logging infrastructure itself should not make calls to the logger method. When an application uses an object that extends a thread class, implements the hashCode(), and makes a call to the logging infrastructure from that method, the result is a recursive loop.

Handlers

A handler provides an abstraction over an output device or event consumer. An example is a file handler, which knows how to write an event to a file. The handler also contains a mask that is used to further restrict the categories of events the handler will process. For example, a message logger may be configured to pass both warning and error events, but a handler attached to the message logger may be configured to only pass error events. Handlers also include formatters, which the handler invokes to format the data in the passed event before it is written to the output device.

Formatters

Handlers are configured with Formatters, which know how to format events of certain types. A handler may contain multiple formatters, each of which know how to format a specific class of event. The event object is passed to the appropriate formatter by the handler. The formatter returns formatted output to the handler, which then writes it to the output device.

JRas Extensions

JRas extensions

The stand-alone JRas logging toolkit defines interfaces and provides a variety of concrete classes that implement these interfaces. Since the stand-alone JRas logging toolkit was developed as a general purpose toolkit, the implementation classes do not contain the configuration interfaces and methods necessary for use in the WebSphere Application Server product. In addition, many of the implementation classes are not written appropriately for use in a J2EE environment. To overcome these shortcomings, WebSphere Application Server provides the appropriate

implementation classes that allow integration into the WebSphere Application Server environment. The collection of these implementation classes is referred to as the JRas extensions.

Usage Model

You can use the JRas extensions in three distinct operational modes:

Integrated

In this mode, message and trace records are written only to logs defined and maintained by the WebSphere Application Server runtime. This is the default mode of operation and is equivalent to the WebSphere Application Server 4.0 mode of operation.

stand-alone

In this mode, message and trace records are written solely to stand-alone logs defined and maintained by the user. You control which categories of events are written to which logs, and the format in which entries are written. You are responsible for configuration and maintenance of the logs. Message and trace entries are not written to WebSphere Application Server runtime logs.

Combined

In this mode message and trace records are written to both WebSphere Application Server runtime logs and to stand-alone logs that you must define, control, and maintain. You can use filtering controls to determine which categories of messages and trace are written to which logs.

The JRas extensions are specifically targeted to an integrated mode of operation. The integrated mode of operation can be appropriate for some usage scenarios, but there many scenarios are not adequately addressed by these extensions. Many usage scenarios require a stand-alone or combined mode of operation instead. A set of user extension points has been defined that allow the JRas extensions to be used in either a stand-alone or combined mode of operations.

JRas extension classes

WebSphere Application Server provides a base set of implementation classes that collectively are referred to as the JRas extensions. Many of these classes provide the appropriate implementations of loggers, handlers and formatters for use in a WebSphere Application Server environment. As previously noted, this collection of classes is targeted at an Integrated mode of operation. If you choose to use the JRas extensions in either stand-alone or combined mode, you can reuse the logger and manager class provided by the extensions, but you must provide your own implementations of handlers and formatters.

WebSphere Application Server Message and Trace loggers

The message and trace loggers provided by the stand-alone JRas logging toolkit cannot be directly used in the WebSphere Application Server environment. The JRas extensions provide the appropriate logger implementation classes. Instances of these message and trace logger classes are obtained directly and exclusively from the WebSphere Application Server Manager class, described below. You cannot directly instantiate message and trace loggers. Obtaining loggers in any manner other than directly from the Manager is not allowed. Doing so is a direct violation of the programming model.

The message and trace loggers instances obtained from the WebSphere Application Server Manager class are subclasses of the `RASMessageLogger()` and

`RASTraceLogger()` classes provided by the stand-alone JRes logging toolkit. The `RASMessageLogger()` and `RASTraceLogger()` classes define the set of methods that are directly available. Public methods introduced by the JRes extensions logger subclasses cannot be called directly by user code. Doing so is a violation of the programming model.

Loggers are named objects and are identified by name. When the Manager class is called to obtain a logger, the caller is required to specify a name for the logger. The Manager class maintains a name-to-logger instance mapping. Only one instance of a named logger will ever be created within the lifetime of a process. The first call to the Manager with a particular name will result in the logger being created and configured by the Manager. The Manager will cache a reference to the instance, then return it to the caller. Subsequent calls to the Manager that specify the same name will result in a reference to the cached logger being returned. Separate namespaces are maintained for message and trace loggers. This means a single name can be used to obtain both a message logger and a trace logger from the Manager, without ambiguity, and without causing a namespace collision.

In general, loggers have no predefined granularity or scope. A single logger could be used to instrument an entire application. Or users may determine that having a logger per class is more desirable. Or the appropriate granularity may lie somewhere in between. Partitioning an application into logging domains is rightfully determined by the application writer.

The WebSphere Application Server logger classes obtained from the Manager are thread-safe. Although the loggers provided as part of the stand-alone JRes logging toolkit implement the serializable interface, in fact loggers are not serializable. Loggers are stateful objects, tied to a Java virtual machine instance and are not serializable. Attempting to serialize a logger is a violation of the programming model.

Please note that there is no provision for allowing users to provide their own logger subclasses for use in a WebSphere Application Server environment.

WebSphere Application Server handlers

WebSphere Application Server provides the appropriate handler class that is used to write message and trace events to the WebSphere Application Server run-time logs. You cannot configure the WebSphere Application Server handler to write to any other destination. The creation of a WebSphere Application Server handler is a restricted operation and not available to user code. Every logger obtained from the Manager comes preconfigured with an instance of this handler already installed. You can remove the WebSphere Application Server handler from a logger when you want to run in stand-alone mode. Once you have removed it, you cannot add the WebSphere Application Server handler again to the logger from which it was removed (or any other logger). Also, you cannot directly call any method on the WebSphere Application Server handler. Attempting to create an instance of the WebSphere Application Server handler, to call methods on the WebSphere Application Server handler or to add a WebSphere Application Server handler to a logger by user code is a violation of the programming model.

WebSphere Application Server formatters

The WebSphere Application Server handler comes preconfigured with the appropriate formatter for data that is written to WebSphere Application Server logs. The creation of a WebSphere Application Server formatter is a restricted

operation and not available to user code. No mechanism exists that allows the user to obtain a reference to a formatter installed in a WebSphere Application Server handler, or to change the formatter a WebSphere Application Server handler is configured to use.

WebSphere Application Server manager

WebSphere Application Server provides a Manager class located in the `com.ibm.websphere.ras` package. All message and trace loggers must be obtained from this Manager. A reference to the Manager is obtained by calling the static `Manager.getManager()` method. Message loggers are obtained by calling the `createRASMessageLogger()` method on the Manager. Trace loggers are obtained by calling the `createRASTraceLogger()` method on the Manager class.

The manager also supports a *group* abstraction that is useful when dealing with trace loggers. The group abstraction allows multiple, unrelated trace loggers to be registered as part of a named entity called a group. WebSphere Application Server provides the appropriate systems management facilities to manipulate the trace setting of a group, similar to the way the trace settings of an individual trace logger.

For example, suppose component A consist of 10 classes. Suppose each class is configured to use a separate trace logger. Suppose all 10 trace loggers in the component are registered as members of the same group (for example `Component_A_Group`). You can then turn on trace for a single class. Or you can turn on trace for all 10 classes in a single operation using the group name if you want a component trace. Group names are maintained within the namespace for trace loggers.

Extending the JRas framework

Since the Jras extensions classes do not provide the flexibility and behavior required for many scenarios, a variety of extension points have been defined. You are allowed to write your own implementation classes to obtain the required behavior.

In general, the JRas extensions require you to call the Manager class to obtain a message logger or trace logger. No provision is made to allow you to provide your own message or trace logger subclasses. In general, user-provided extensions cannot be used to affect the integrated mode of operation. The behavior of the integrated mode of operation is solely determined by the WebSphere Application Server run-time and the JRas extensions classes.

Handlers

The stand-alone JRas logging toolkit defines the `RASHandler` interface. All handlers must implement this interface. You can write your own handler classes that implement the `RASHandler` interface. You should directly create instances of user-defined handlers and add them to the loggers obtained from the Manager.

The stand-alone JRas logging toolkit provides several handler implementation classes. These handler classes are inappropriate for usage in the J2EE environment. You cannot directly use or subclass any of the Handler classes provided by the stand-alone JRas logging toolkit. Doing so is a violation of the programming model.

Formatters

The stand-alone JRas logging toolkit defines the `RASIFormatter` interface. All formatters must implement this interface. You can write your own formatter classes that implement the `RASIFormatter` interface. You can only add these classes to a user-defined handler. WebSphere Application Server handlers cannot be configured to use user-defined formatters. Instead, directly create instances of your formatters and add them to the your handlers appropriately.

As with handlers, the stand-alone JRas logging toolkit provides several formatter implementation classes. Direct usage of these formatter classes is not supported.

Message event types

The stand-alone JRas toolkit defines message event types in the `RASIMessageEvent` interface. In addition, the WebSphere Application Server reserves a range of message event types for future use. The `RASIMessageEvent` interface defines three types, with values of `0x01`, `0x02`, and `0x04`. The values `0x08` through `0x8000` are reserved for future use. You can provide your own message event types by extending this interface appropriately. User-defined message types must have a value of `0x1000` or greater.

Message loggers retrieved from the Manager have their message masks set to *pass* or process all message event types defined in the `RASIMessageEvent` interface. In order to process user-defined message types, you must manually set the message logger mask to the appropriate state by user code after the message logger has been obtained from the Manager. WebSphere Application Server does not provide any built-in systems management support for managing any message types.

Message event objects

The stand-alone JRas toolkit provides a `RASMessageEvent` implementation class. When a message logging method is called on the message logger, and the message type is currently enabled, the logger creates and distributes an event of this class to all handlers currently registered with that logger.

You can provide your own message event classes, but they must implement the `RASIEvent` interface. You must directly create instances of such user-defined message event classes. Once it is created, pass your message event to the message logger by calling the message logger's `fireRASEvent()` method directly. WebSphere Application Server message loggers cannot directly create instances of user-defined types in response to calling a logging method (`msg()`, `message()`...) on the logger. In addition, instances of user-defined message types are never processed by the WebSphere Application Server handler. You cannot create instances of the `RASMessageEvent` class directly.

Trace event types

The stand-alone JRas toolkit defines trace event types in the `RASITraceEvent` interface. You can provide your own trace event types by extending this interface appropriately. In such a case you must ensure that the values for the user-defined trace event types do not collide with the values of the types defined in the `RASITraceEvent` interface.

Trace loggers retrieved from the Manager typically have their trace masks set to reject all types. A different starting state can be specified by using WebSphere

Application Server systems management facilities. In addition, the state of the trace mask for a logger can be changed at run-time using WebSphere Application Server systems management facilities.

In order to process user-defined trace types, the trace logger mask must be manually set to the appropriate state by user code. WebSphere Application Server systems management facilities cannot be used to manage user-defined trace types, either at start time or run-time.

Trace event objects

The stand-alone JRas toolkit provides a `RASTraceEvent` implementation class. When a trace logging method is called on the WebSphere Application Server trace logger and the type is currently enabled, the logger creates and distributes an event of this class to all handlers currently registered with that logger.

You can provide your own trace event classes. Such trace event classes must implement the `RASIEvent` interface. You must create instances of such user-defined event classes directly. Once it is created, pass the trace event to the trace logger by calling the trace logger's `fireRASEvent()` method directly. WebSphere Application Server trace loggers cannot directly create instances of user-defined types in response to calling a trace method (`entry()`, `exit()`, `trace()`) on the trace logger. In addition, instances of user-defined trace types are never processed by the WebSphere Application Server handler. You cannot create instances of the `RASTraceEvent` class directly.

User defined types, user defined events and WebSphere Application Server

By definition, the WebSphere Application Server handler will process user-defined message or trace types, or user-defined message or trace event classes. Message and trace entries of either a user-defined type or user-defined event class cannot be written to the WebSphere Application Server run-time logs.

Writing User Extensions: General Considerations

You can configure the WebSphere Application Server to use Java 2 security to restrict access to protected resources such as the file system and sockets. Since user written extensions typically access such protected resources, user written extensions must contain the appropriate security checking calls, using `AccessController.doPrivileged()` calls. In addition, the user written extensions must contain the appropriate policy file. In general, it is recommended that you locate user written extensions in a separate package. It is your responsibility to restrict access to the user written extensions appropriately.

Writing a handler

User written handlers must implement the `RASIHandler` interface. The `RASIHandler` interface extends the `RASIMaskChangeGenerator` interface, which extends the `RASIObject` interface. A short discussion of the methods introduced by each of these interfaces follows, along with implementation pointers. For more in depth information on any of the particular interfaces or methods, see the corresponding product Javadoc.

RASIObjecT interface

The RASIObjecT interface is the base interface for stand-alone JRas logging toolkit classes that are stateful or configurable, such as loggers, handlers and formatters.

- The stand-alone JRas logging toolkit supports rudimentary properties-file based configuration. To implement this configuration support, the configuration state is stored as a set of key-value pairs in a properties file. The methods *public Hashtable getConfig()* and *public void setConfig(Hashtable ht)* are used to get and set the configuration state. The JRas extensions do not support properties based configuration and it is recommended that these methods be implemented as no-operations. You can implement your own properties based configuration using these methods.
- Loggers, handlers and formatters can be named objects. For example, the JRas extensions require the user to provide a name for the loggers that are retrieved from the manager. You can name your handlers. The methods *public String getName()* and *public void setName(String name)* are provided to get or set the name field. The JRas extensions currently do not call these methods on user handlers. You can implement these methods as you want, including as no operations.
- Loggers, handlers and formatters can also contain a description field. The methods *public String getDescription()* and *public void setDescription(String desc)* can be used to get or set the description field. The JRas extensions currently do not use the description field. You can implement these methods as you want, including as no operations.
- The method *public String getGroup()* is provided for usage by the RASManager. Since the JRas extensions provide their own Manager class, this method is never called. It is recommended you implement this as a no-operation.

RASIMaskChangeGenerator interface

The RASIMaskChangeGenerator interface is the interface that defines the implementation methods for filtering of events based on a mask state. This means that it is currently implemented by both loggers and handlers. By definition, an object that implements this interface contains both a message mask and a trace mask, although both need not be used. For example, message loggers contain a trace mask, but the trace mask is never used since the message logger never generates trace events. Handlers however can actively use both mask values. For example a single handler could handle both message and trace events.

- The methods *public long getMessageMask()* and *public void setMessageMask(long mask)* are used to get or set the value of the message mask. The methods *public long getTraceMask()* and *public void setTraceMask(long mask)* are used to get or set the value of the trace mask.

In addition, this interface introduces the concept of *calling back* to interested parties when a mask changes state. The callback object must implement the RASIMaskChangeListener interface.

- The methods *public void addMaskChangeListener(RASIMaskChangeListener listener)* and *public void removeMaskChangeListener(RASIMaskChangeListener listener)* are used to add or remove listeners to the handler. The method *public Enumeration getMaskChangeListeners()* returns an Enumeration over the list of currently registered listeners. The method *public void fireMaskChangedEvent(RASMaskChangeEvent mc)* is used to call back all the registered listeners to inform them of a mask change event.

For efficiency reasons, the JRas extensions message and trace loggers implement the RASIMaskChangeListener interface. The logger implementations maintain a

"composite mask" in addition to the logger's own mask. The logger's composite mask is formed by logically *or'ing* the appropriate masks of all handlers that are registered to that logger, then *and'ing* the result with the logger's own mask. For example, the message logger's composite mask is formed by *or'ing* the message masks of all handlers registered with that logger, then *and'ing* the result with the logger's own message mask.

This means that all handlers are required to properly implement these methods. In addition, when a user handler is instantiated, the logger it is to be added to should be registered with the handler using the *addMaskChangeListener()* method. When either the message mask or trace mask of the handler is changed, the logger must be called back to inform it of the mask change. This allows the logger to dynamically maintain the composite mask.

The *RASMaskChangedEvent* class is defined by the stand-alone JRas logging toolkit. Direct usage of that class by user code is allowed in this context.

In addition the *RASIMaskChangeGenerator* introduces the concept of caching the names of all message and trace event classes that the implementing object will process. The intent of these methods is to allow a management program such as a GUI to retrieve the list of names, introspect the classes to determine the event types that they might possibly process and display the results. The JRas extensions do not ever call these methods, so they can be implemented as no operations, if desired.

- The methods *public void addMessageEventClass(String name)* and *public void removeMessageEventClass(String name)* can be called to add or remove a message event class name from the list. The method *public Enumeration getMessageEventClasses()* will return an enumeration over the list of message event class names. Similarly, the *public void addTraceEventClass(String name)* and *public void removeTraceEventClass(String name)* can be called to add or remove a trace event class name from the list. The method *public Enumeration getTraceEventClasses()* will return an enumeration over the list of trace event class names.

RASHandler interface

The *RASHandler* interface introduces the methods that are specific to the behavior of a handler.

The *RASHandler* interface as provided by the stand-alone JRas logging toolkit supports handlers that run in either a synchronous or asynchronous mode. In asynchronous mode, events are typically queued by the calling thread and then written by a worker thread. Since spawning of threads is not allowed in the WebSphere Application Server environment, it is expected that handlers will not queue or batch events, although this is not expressly prohibited.

- The methods *public int getMaximumQueueSize()* and *public void setMaximumQueueSize(int size)* throw *IllegalStateException* are provided to manage the maximum queue size. The method *public int getQueueSize()* is provided to query the actual queue size.
- The methods *public int getRetryInterval()* and *public void setRetryInterval(int interval)* support the notion of error retry, which again implies some type of queueing.
- The methods *public void addFormatter(RASFormatter formatter)*, *public void removeFormatter(RASFormatter formatter)* and *public Enumeration*

getFormatters() are provided to manage the list of formatters that the handler can be configured with. Different formatters can be provided for different event classes, if appropriate.

- The methods *public void openDevice()*, *public void closeDevice()* and *public void stop()* are provided to manage the underlying device that the handler abstracts.
- The methods *public void logEvent(RASIEvent event)* and *public void writeEvent(RASIEvent event)* are provided to actually pass events to the handler for processing.

Writing a formatter

User written formatters must implement the RASIFormatter interface. The RASIFormatter interface extends the RASIObjcet interface. The implementation of the RASIObjcet interface is the same for both handlers and formatters. A short discussion of the methods introduced by the RASIFormatter interface follows. For more in depth information on the methods introduced by this interface, see the corresponding product javadoc.

RASIFormatter interface

- The methods *public void setDefault(boolean flag)* and *public boolean isDefault()* are used by the concrete RASHandler classes provided by the stand-alone JRas logging toolkit to determine if a particular formatter is the default formatter. Since these RASHandler classes must never be used in a WebSphere Application Server environment, the semantic significance of these methods can be determined by the user.
- The methods *public void addEventClass(String name)*, *public void removeEventClass(String name)* and *public Enumeration getEventClasses()* are provided to determine which event classes a formatter can be used to format. You can provide the appropriate implementations as you see fit.
- The method *public String format(RASIEvent event)* is called by handler objects and returns a formatted String representation of the event.

Programming model summary

The programming model described in this section builds upon and summarizes some of the concepts already introduced. This section also formalizes usage requirements and restrictions. Use of the WebSphere Application Server JRas extensions in a manner that does not conform to the following programming guidelines is prohibited.

As described previously, you can use the WebSphere Application Server JRas extensions in three distinct operational modes. The programming models concepts and restrictions apply equally across all modes of operation.

- You must not use implementation classes provided by the stand-alone JRas logging toolkit directly, unless specifically noted otherwise. Direct usage of those classes is not supported. IBM Support will provide no diagnostic aid or bug fixes relating to direct usage of classes provided by the stand-alone JRas logging toolkit.
- You must obtain message and trace loggers directly from the Manager class. You cannot directly instantiate loggers.
- There is no provision that allows you to replace the WebSphere Application Server message and trace logger classes.
- You must guarantee that the logger names passed to the Manager are unique, and follow the naming constraints documented below. Once a logger is obtained from the Manager, you must not attempt to change the name of the logger by calling the setName() method.

- Named loggers can be used more than once. For any given name, the first call to the Manager results in the Manager creating a logger that is associated with that name. Subsequent calls to the Manager that specify the same name result in a reference to the existing logger being returned.
- The Manager maintains a hierarchical namespace for loggers. It is recommended but not required that a dot-separated, fully qualified class name be used to identify any given logger. Other than dots or periods, logger names cannot contain any punctuation characters, such as asterisk (*), comma(.), equals sign(=), colon(:), or quotes.
- Group names must comply with the same naming restrictions as logger names.
- The loggers returned from the Manager are subclasses of the `RASMessageLogger` and `RASTraceLogger` provided by the stand-alone JRas logging toolkit. You are allowed to call any public method defined by the `RASMessageLogger` and `RASTraceLogger` classes. You are not allowed to call any public method introduced by the provided subclasses.
- If you want to operate in either stand-alone or combined mode, you must provide your own Handler and Formatter subclasses. You are not allowed to use the Handler and Formatter classes provided by the stand-alone JRas logging toolkit. User written Handlers and Formatters must conform to the documented guidelines.
- Loggers obtained from the Manager come with a WebSphere Application Server handler installed. This handler will write message and trace records to logs defined by the WebSphere Application Server runtime. Manage these logs using the provided systems management interfaces.
- You can programmatically add and remove user-defined Handlers from a logger at any time. Multiple additions and removals of user defined handlers are allowed. You are responsible for creating an instance of the handler to add, configuring the handler by setting the handler's mask value and formatter appropriately, then adding the handler to the logger using the `addHandler()` method. You are responsible for programmatically updating the masks of user-defined handlers as appropriate.
- You may get a reference to the handler installed within a logger by calling the `getHandlers()` method on the logger and processing the results. You must not call any methods on the handler obtained in this fashion. You are allowed to remove the WebSphere Application Server handler from the logger by calling the logger's `removeHandler()` method, passing in the reference to the WebSphere Application Server handler. Once removed, the WebSphere Application Server handler cannot be re-added to the logger.
- You are allowed to define your own message type. The behavior of user-defined message types and restrictions on their definitions is discussed in Extending the JRas framework.
- You are allowed to define your own message event classes. The usage of user-defined message event classes is discussed in Extending the JRas framework.
- You are allowed to define your own trace types. The behavior of user-defined trace types and restrictions on your definitions is discussed in Extending the JRas framework.
- You are allowed to define your own trace event classes. The usage of user-defined trace event classes is discussed in Extending the JRas framework.
- You must programmatically maintain the bits in the message and trace logger masks that correspond to any user-defined types. If WebSphere Application Server facilities are being used to manage the predefined types, these updates must not modify the state of any of the bits corresponding to those types. If you are assuming ownership responsibility for the predefined types then you can change all bits of the masks.

JRas Messages and Trace event types

This section describes JRas message and trace event types.

Event types

The base message and trace event types defined by the stand-alone JRas logging toolkit are not the same as the "native" types recognized by the WebSphere Application Server run-time. Instead the basic JRas types are mapped onto the native types. This mapping may vary by platform or edition. The mapping is discussed below.

Platform Message Event Types

The message event types that are recognized and processed by the WebSphere Application Server runtime are defined in the `RASIMessageEvent` interface provided by the stand-alone JRas logging toolkit. These message types are mapped onto the native message types as follows.

WebSphere Application Server native type	JRas RASIMessageEvent type
Audit	TYPE_INFO, TYPE_INFORMATION
Warning	TYPE_WARN, TYPE_WARNING
Error	TYPE_ERR, TYPE_ERROR

Platform Trace Event Types

The trace event types recognized and processed by the WebSphere Application Server runtime are defined in the `RASITraceEvent` interface provided by the stand-alone JRas logging toolkit. The `RASITraceEvent` interface provides a rich and overly complex set of types. This interface defines both a simple set of levels, as well as a set of enumerated types.

- For a user who prefers a simple set of levels, `RASITraceEvent` provides `TYPE_LEVEL1`, `TYPE_LEVEL2`, and `TYPE_LEVEL3`. The implementations provide support for this set of levels. The levels are hierarchical (that is, enabling level 2 will also enable level 1, enabling level 3 also enables levels 1 and 2).
- For users who prefer a more complex set of values that can be *OR'd* together, `RASITraceEvent` provides `TYPE_API`, `TYPE_CALLBACK`, `TYPE_ENTRY_EXIT`, `TYPE_ERROR_EXC`, `TYPE_MISC_DATA`, `TYPE_OBJ_CREATE`, `TYPE_OBJ_DELETE`, `TYPE_PRIVATE`, `TYPE_PUBLIC`, `TYPE_STATIC`, and `TYPE_SVC`.

The trace event types are mapped onto the native trace types as follows:

Mapping WebSphere Application Server trace types to JRas `RASITraceEvent` "Level" types.

WebSphere Application Server native type	JRas RASITraceEvent level type
Event	TYPE_LEVEL1
EntryExit	TYPE_LEVEL2
Debug	TYPE_LEVEL3

Mapping WebSphere Application Server trace types to JRas `RASITraceEvent` enumerated types.

WebSphere Application Server native type	JRas RASITraceEvent enumerated types
Event	TYPE_ERROR_EXC, TYPE_SVC, TYPE_OBJ_CREATE, TYPE_OBJ_DELETE
EntryExit	TYPE_ENTRY_EXIT, TYPE_API, TYPE_CALLBACK, TYPE_PRIVATE, TYPE_PUBLIC, TYPE_STATIC
Debug	TYPE_MISC_DATA

For simplicity, it is recommended that one or the other of the tracing type methodologies is used consistently throughout the application. For users who decide to use the non-level types, it is further recommended that you choose one type from each category and use those consistently throughout the application to avoid confusion.

Message and Trace parameters

The various message logging and trace method signatures accept parameter types of `Object`, `Object[]` and `Throwable`. WebSphere Application Server will process and format the various parameter types as follows.

Primitives

Primitives, such as `int` and `long` are not recognized as subclasses of `Object` and cannot be directly passed to one of these methods. A primitive value must be transformed to a proper `Object` type (`Integer`, `Long`) before being passed as a parameter.

Object `toString()` is called on the object and the resulting `String` is displayed. The `toString()` method should be implemented appropriately for any object passed to a message logging or trace method. It is the responsibility of the caller to guarantee that the `toString()` method does not display confidential data such as passwords in clear text, and does not cause infinite recursion.

Object[]

The `Object[]` is provided for the case when more than one parameter is passed to a message logging or trace method. `toString()` is called on each `Object` in the array. Nested arrays are not handled. (i.e. none of the elements in the `Object` array should be an array).

Throwable

The stack trace of the `Throwable` is retrieved and displayed.

Array of Primitives

An array of primitive (e.g. `byte[]`, `int[]`) is recognized as an `Object`, but is treated somewhat as a second cousin of `Object` by Java code. In general, arrays of primitives should be avoided, if possible. If arrays of primitives are passed, the results are indeterminate and may change depending on the type of array passed, the API used to pass the array and the release of the product. For consistent results, user code should preprocess and format the primitive array into some type of `String` form before passing it to the method. If such preprocessing is not performed, the following may result.

- `[B@924586a0b` - This is deciphered as "a byte array at location X". This is typically returned when an array is passed as a member of an `Object[]`. It is the result of calling `toString()` on the `byte[]`.
- Illegal trace argument : array of long. This is typically returned when an array of primitives is passed to a method taking an `Object`.
- `01040703...` : the hex representation of an array of bytes. Typically this may be seen when a byte array is passed to a method taking a single `Object`. This behavior is subject to change and should not be relied on.

- "1" "2" ... : The String representation of the members of an int[] formed by converting each element to an Integer and calling toString on the Integers. This behavior is subject to change and should not be relied on.
- [Ljava.lang.Object;@9136fa0b : An array of objects. Typically this is seen when an array containing nested arrays is passed.

Controlling message logging

Writing a message to a WebSphere Application Server log requires that the message type passes three levels of filtering or screening.

1. The message event type must be one of the message event types defined in the RASIMessageEvent interface.
2. Logging of that message event type must be enabled by the state of the message logger's mask.
3. The message event type must pass any filtering criteria established by the WebSphere Application Server run-time itself.

When a WebSphere Application Server logger is obtained from the Manager, the initial setting of the mask is to forward all native message event types to the WebSphere Application Server handler. It is possible to control what messages get logged by programmatically setting the state of the message logger's mask.

Some editions of the product allow the user to specify a message filter level for a server process. When such a filter level is set, only messages at the specified severity levels are written to WebSphere Application Server logs. This means that messages types that pass the message logger's mask check may be filtered out by the WebSphere Application Server itself.

Controlling Tracing

Each edition of the product provides a mechanism for enabling or disabling trace. The various editions may support static trace enablement (trace settings are specified before the server is started), dynamic trace enablement (trace settings for a running server process can be dynamically modified) or both.

Writing a trace record to a WebSphere Application Server requires that the trace type passes three levels of filtering or screening.

1. The trace event type must be one of the trace event types defined in the RASITraceEvent interface.
2. Logging of that trace event type must be enabled by the state of the trace logger's mask.
3. The trace event type must pass any filtering criteria established by the WebSphere Application Server run-time itself.

When a logger is obtained from the Manager, the initial setting of the mask is to suppress all trace types. The exception to this rule is the case where the WebSphere Application Server run-time supports static trace enablement and a non-default startup trace state for that trace logger has been specified. Unlike message loggers, the WebSphere Application Server may dynamically modify the state of a trace loggers trace mask. WebSphere Application Server will only modify the portion of the trace logger's mask corresponding to the values defined in the RASITraceEvent interface. WebSphere Application Server will not modify undefined bits of the mask that may be in use for user defined types.

When the dynamic trace enablement feature available on some platforms is used, the trace state change is reflected both in the Application Server run-time and the

trace loggers trace mask. If user code programmatically changes the bits in the trace mask corresponding to the values defined by in the RASITraceEvent interface, the trace logger's mask state and the run-time state will become unsynchronized and unexpected results will occur. Therefore, programmatically changing the bits of the mask corresponding to the values defined in the RASITraceEvent interface is not allowed.

Instrumenting an application with JRas extensions

To instrument an application using the WebSphere Application Server JRas extensions, perform the following steps:

1. Determine the mode the extensions will be used in: integrated, stand-alone or combined.
2. If the extensions will be used in either stand-alone or combined mode, create the necessary handler and formatter classes.
3. If localized messages will be used by the application, create a resource bundle as described in Creating JRas resource bundles and message files.
4. In the application code, get a reference to the Manager class and create the manager and logger instances as described in Creating JRas manager and logger instances.
5. Insert the appropriate message and trace logging statements in the application as described in Creating JRas manager and logger instances.

Creating JRas resource bundles and message files

The WebSphere Application Server message logger provides the `message()` and `msg()` methods to allow the user to log localized messages. In addition, it provides the `textMessage()` method for logging of messages that are not localized. Applications can use either or both, as appropriate.

The mechanism for providing localized messages is the Resource Bundle support provided by the IBM Developer Java Technology Edition. If you are not familiar with resource bundles as implemented by the Developer's Kit, you can get more information from various texts, or by reading the Javadoc for the `java.util.ResourceBundle`, `java.util.ListResourceBundle` and `java.util.PropertyResourceBundle` classes, as well as the `java.text.MessageFormat` class.

The `PropertyResourceBundle` is the preferred mechanism to use. In addition, note that the JRas extensions do not support the extended formatting options such as `{1, date}` or `{0,number, integer}` that are provided by the `MessageFormat` class.

You can forward messages that are written to the internal WebSphere Application Server logs to other processes for display. For example, messages displayed on the administrator console, which can be running in a different location than the server process, can be localized using the *late binding* process. Late binding means that WebSphere Application Server does not localize messages when they are logged, but defers localization to the process that displays the message.

To properly localize the message, the displaying process must have access to the resource bundle where the message text is stored. This means that you must package the resource bundle separately from the application, and install it in a location where the viewing process can access it. If you do not want to take these steps, you can use the early binding technique to localize messages as they are logged.

The two techniques are described as follows:

Early binding

The application must localize the message before logging it. The application looks up the localized text in the resource bundle and formats the message. When formatting is complete, the application logs the message using the `textMessage()` method. Use this technique to package the application's resource bundles with the application.

Late binding

The application can choose to have the WebSphere Application Server runtime localize the message in the process where it is displayed. Using this technique, the resource bundles are packaged in a stand-alone `.jar` file, separately from the application. You must then install the resource bundle `.jar` file on every machine in the installation from which an administrator's console or log viewing program might be run. You must install the `.jar` file in a directory that is part of the extensions classpath. In addition, if you forward logs to IBM service, you must also forward the `.jar` file containing the resource bundles.

To create a resource bundle, perform the following steps.

1. Create a text properties file that lists message keys and the corresponding messages. The properties file must have the following characteristics:
 - Each property in the file is terminated with a line-termination character.
 - If a line contains only white space, or if the first non-white space character of the line is the pound sign symbol (`#`) or exclamation mark (`!`), the line is ignored. The `#` and `!` characters can therefore be used to put comments into the file.
 - Each line in the file, unless it is a comment or consists only of white space, denotes a single property. A backslash (`\`) is treated as the line-continuation character.
 - The syntax for a property file consists of a key, a separator, and an element. Valid separators include the equal sign (`=`), colon (`:`), and white space ().
 - The key consists of all characters on the line from the first non-white space character to the first separator. Separator characters can be included in the key by escaping them with a backslash (`\`), but doing this is not recommended, because escaping characters is error prone and confusing. It is instead recommended that you use a valid separator character that does not appear in any keys in the properties file.
 - White space after the key and separator is ignored until the first non-white space character is encountered. All characters remaining before the line-termination character define the element.

See the Java documentation for the `java.util.Properties` class for a full description of the syntax and construction of properties files.

2. The file can then be translated into localized versions of the file with language-specific file names (for example, a file named `DefaultMessages.properties` can be translated into `DefaultMessages_de.properties` for German and `DefaultMessages_ja.properties` for Japanese).
3. When the translated resource bundles are available, write them to a system-managed persistent storage medium. Resource bundles are then used to convert the messages into the requested national language and locale.
4. When a message logger is obtained from the J2EE manager, it can be configured to use a particular resource bundle. Messages logged via the `message()` API will use this resource bundle when message localization is performed. At run time, the user's locale setting is used to determine the properties file from

which to extract the message specified by a message key, thus ensuring that the message is delivered in the correct language.

5. If the message loggers `msg()` method is called, a resource bundle name must be explicitly provided.

The application locates the resource bundle based on the file's location relative to any directory in the classpath. For instance, if the property resource bundle named `DefaultMessages.properties` is located in the `baseDir/subDir1/subDir2/resources` directory and `baseDir` is in the class path, the name `subDir1.subDir2.resources.DefaultMessage` is passed to the message logger to identify the resource bundle.

Developing JRas resource bundles: Resource bundle sample

You can create resource bundles in several ways. The best and easiest way is to create a properties file that supports a `PropertiesResourceBundle`. This sample shows how to create such a properties file.

For this sample, four localizable messages are provided. The properties file is created and the key-value pairs inserted into it. All the normal properties files conventions and rules apply to this file. In addition, the creator must be aware of other restrictions imposed on the values by the Java `MessageFormat` class. For example, apostrophes must be "escaped" or they will cause a problem. Also avoid use of non-portable characters. WebSphere Application Server does not support usage of extended formatting conventions that the `MessageFormat` class supports, such as `{1, date}` or `{0,number, integer}`.

Assume that the base directory for the application that uses this resource bundle is "baseDir" and that this directory will be in the classpath. Assume that the properties file is stored in a subdirectory of `baseDir` that is not in the classpath (e.g. `baseDir/subDir1/subDir2/resources`). In order to allow the messages file to be resolved, the name `subDir1.subDir2.resources.DefaultMessage` is used to identify the `PropertyResourceBundle` and is passed to the message logger.

For this sample, the properties file is named `DefaultMessages.properties`.

```
# Contents of DefaultMessages.properties file
MSG_KEY_00=A message with no substitution parameters.
MSG_KEY_01=A message with one substitution parameter: parm1={0}
MSG_KEY_02=A message with two substitution parameters: parm1={0}, parm2 = {1}
MSG_KEY_03=A message with three parameter: parm1={0}, parm2 = {1}, parm3={2}
```

Once the file `DefaultMessages.properties` is created, the file can be sent to a translation center where the localized versions will be generated.

Creating JRas manager and logger instances

You can use the JRas extensions in integrated, stand-alone, or combined mode. Configuration of the application will vary depending on the mode of operation, but usage of the loggers to log message or trace entries is identical in all modes of operation.

Integrated mode is the default mode of operation. In this mode, message and trace events are sent to the WebSphere Application Server logs. See [Setting up for integrated JRas operation](#) for information on configuring for this mode of operation.

In the combined mode, message and trace events are logged to both WebSphere Application Server and user-defined logs. See Setting up for combined JRas operation for more information on configuring for this mode of operation.

In the stand-alone mode, message and trace events are logged only to user-defined logs. See Setting up for stand-alone JRas operation for more information on configuring for this mode of operation.

Using the message and trace loggers

Regardless of the mode of operation, the use of message and trace loggers is the same. See Creating JRas resource bundles and message files for more information on using message and trace loggers.

Using a message logger

The message logger is configured to use the `DefaultMessages` resource bundle. Message keys must be passed to the message loggers if the loggers are using the `message()` API.

```
msgLogger.message(RASIMessageEvent.TYPE_WARNING, this,
    methodName, "MSG_KEY_00");
... msgLogger.message(RASIMessageEvent.TYPE_WARN, this,
    methodName, "MSG_KEY_01", "some string");
```

If message loggers use the `msg()` API, you can specify a new resource bundle name.

```
msgLogger.msg(RASIMessageEvent.TYPE_ERR, this, methodName,
    "ALT_MSG_KEY_00", "alternateMessageFile");
```

You can also log a text message. If you are using the `textMessage` API, no message formatting is done.

```
msgLogger.textMessage(RASIMessageEvent.TYPE_INFO, this, methodName, "String and Integer",
    "A String", new Integer(5));
```

Using a trace logger

Since trace is normally disabled, trace methods should be guarded for performance reasons.

```
private void methodX(int x, String y, Foo z)
{
    // trace an entry point. Use the guard to make sure tracing is enabled.
    Do this checking before we waste cycles gathering parameters to be traced.
    if (trcLogger.isLoggable(RASITraceEvent.TYPE_ENTRY_EXIT) {
        // since I want to trace 3 parameters, package them up in an Object[]
        Object[] parms = {new Integer(x), y, z};
        trcLogger.entry(RASITraceEvent.TYPE_ENTRY_EXIT, this, "methodX", parms);
    }
    ... logic
    // a debug or verbose trace point
    if (trcLogger.isLoggable(RASITraceEvent.TYPE_MISC_DATA) {
        trcLogger.trace(RASITraceEvent.TYPE_MISC_DATA, this, "methodX" "reached here");
    }
    ...
    // Another classification of trace event. Here an important state change
    has been detected, so a different trace type is used.
    if (trcLogger.isLoggable(RASITraceEvent.TYPE_SVC) {
        trcLogger.trace(RASITraceEvent.TYPE_SVC, this, "methodX", "an important event");
    }
    ...
    // ready to exit method, trace. No return value to trace
```

```

        if (trcLogger.isLoggable(RASITraceEvent.TYPE_ENTRY_EXIT)) {
            trcLogger.exit(RASITraceEvent.TYPE_ENTRY_EXIT, this, "methodX");
        }
    }
}

```

Setting up for integrated JRas operation

In the integrated mode of operation, message and trace events are sent to WebSphere Application Server logs. This is the default mode of operation.

1. Import the requisite JRas extensions classes

```

import com.ibm.ras.*;
import com.ibm.websphere.ras.*;

```

2. Declare logger references.

```

private RASMessageLogger msgLogger = null;
private RASTraceLogger trcLogger = null;

```

3. Obtain a reference to the Manager and create the loggers. Since loggers are named singletons, you can do this in a variety of places. One logical candidate for enterprise beans is the `ejbCreate()` method. For example, for the enterprise bean named "myTestBean", place the following code in the `ejbCreate()` method.

```

com.ibm.websphere.ras.Manager mgr = com.ibm.websphere.ras.Manager.getManager();
msgLogger = mgr.createRASMessageLogger("Acme", "WidgetCounter", "RasTest",
    myTestBean.class.getName());
// Configure the message logger to use the message file created
// for this application.
msgLogger.setMessageFile("acme.widgets.DefaultMessages");
trcLogger = mgr.createRASTraceLogger("Acme", "Widgets", "RasTest",
    myTestBean.class.getName());
mgr.addLoggerToGroup(trcLogger, groupName);

```

Setting up for combined JRas operation

In combined mode, messages and trace are logged to both WebSphere Application Server logs and user-defined logs. The following sample assumes that you have written a user defined handler named `SimpleFileHandler` and a user defined formatter named `SimpleFormatter`. It also assumes that you are not using user defined types or events.

1. Import the requisite JRas extensions classes

```

import com.ibm.ras.*;
import com.ibm.websphere.ras.*;

```

2. Import the user handler and formatter.

```

import com.ibm.ws.ras.test.user.*;

```

3. Declare the logger references.

```

private RASMessageLogger msgLogger = null;
private RASTraceLogger trcLogger = null;

```

4. Obtain a reference to the Manager, create the loggers and add the user handlers. Since loggers are named singletons, you can obtain a reference to the loggers in a number of places. One logical candidate for enterprise beans is the `ejbCreate()` method. Make sure that multiple instances of the same user handler are not accidentally inserted into the same logger. Your initialization code must handle this. The following sample is a message logger sample. The procedure for a trace logger is similar.

```

com.ibm.websphere.ras.Manager mgr = com.ibm.websphere.ras.Manager.getManager();
msgLogger = mgr.createRASMessageLogger("Acme", "WidgetCounter", "RasTest",
    myTestBean.class.getName());
// Configure the message logger to use the message file defined
// in the ResourceBundle sample.

```

```

msgLogger.setMessageFile("acme.widgets.DefaultMessages");

// Create the user handler and formatter. Configure the formatter,
// then add it to the handler.
RASHandler handler = new SimpleFileHandler("myHandler", "FileName");
RASFormatter formatter = new SimpleFormatter("simple formatter");
formatter.addEventClass("com.ibm.ras.RASMessageEvent");
handler.addFormatter(formatter);

// Add the Handler to the logger. Add the logger to the list of the
//handlers listeners, then set the handlers
// mask, which will update the loggers composite mask appropriately.
// WARNING - there is an order dependency here that must be followed.
msgLogger.addHandler(handler);
handler.addMaskChangeListener(msgLogger);
handler.setMessageMask(RASMessageEvent.DEFAULT_MESSAGE_MASK);

```

Setting up for stand-alone JRas operation

In stand-alone mode, messages and traces are logged only to user-defined logs. The following sample assumes that you have a user-defined handler named `SimpleFileHandler` and a user-defined formatter named `SimpleFormatter`. It is also assumed that no user-defined types or events are being used.

1. Import the requisite JRas extensions classes

```

import com.ibm.ras.*;
import com.ibm.websphere.ras.*;

```

2. Import the user handler and formatter.

```

import com.ibm.ws.ras.test.user.*;

```

3. Declare the logger references.

```

private RASMessageLogger msgLogger = null;
private RASTraceLogger trcLogger = null;

```

4. Obtain a reference to the Manager, create the loggers and add the user handlers. Since loggers are named singletons, you can obtain a reference to the loggers in a number of places. One logical candidate for enterprise beans is the `ejbCreate()` method. Make sure that multiple instances of the same user handler are not accidentally inserted into the same logger. Your initialization code must handle this. The following sample is a message logger sample. The procedure for a trace logger is similar.

```

com.ibm.websphere.ras.Manager mgr = com.ibm.websphere.ras.Manager.getManager();
msgLogger = mgr.createRASMessageLogger("Acme", "WidgetCounter", "RasTest",
    myTestBean.class.getName());
// Configure the message logger to use the message file defined in
//the ResourceBundle sample.
msgLogger.setMessageFile("acme.widgets.DefaultMessages");

// Get a reference to the Handler and remove it from the logger.
RASHandler aHandler = null;
Enumeration enum = msgLogger.getHandlers();
while (enum.hasMoreElements()) {
    aHandler = (RASHandler)enum.nextElement();
    if (aHandler instanceof WsHandler)
        msgLogger.removeHandler(wsHandler);
}

// Create the user handler and formatter. Configure the formatter,
// then add it to the handler.
RASHandler handler = new SimpleFileHandler("myHandler", "FileName");
RASFormatter formatter = new SimpleFormatter("simple formatter");
formatter.addEventClass("com.ibm.ras.RASMessageEvent");
handler.addFormatter(formatter);

```

```
// Add the Handler to the logger. Add the logger to the list of the
// handlers listeners, then set the handlers
// mask, which will update the loggers composite mask appropriately.
// WARNING - there is an order dependency here that must be followed.
msgLogger.addHandler(handler);
handler.addMaskChangeListener(msgLogger);
handler.setMessageMask(RASIMessageEvent.DEFAULT_MESSAGE_MASK);
```

Notices

References in this publication to IBM products, programs, or services do not imply that IBM intends to make these available in all countries in which IBM operates. Any reference to an IBM product, program, or service is not intended to state or imply that only IBM's product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe any of IBM's intellectual property rights may be used instead of the IBM product, program, or service. Evaluation and verification of operation in conjunction with other products, except those expressly designated by IBM, is the user's responsibility.

IBM may have patents or pending patent applications covering subject matter in this document. The furnishing of this document does not give you any license to these patents. You can send license inquiries, in writing, to:

IBM Director of Licensing
IBM Corporation
500 Columbus Avenue
Thornwood, New York 10594 USA

Trademarks and service marks

The following terms are trademarks of IBM Corporation in the United States, other countries, or both:

- AIX
- AS/400
- CICS
- Cloudscape
- DB2
- DFSMS
- Domino
- Everyplace
- iSeries
- IBM
- IMS
- Informix
- iSeries
- Language Environment
- Lotus
- MQSeries
- MVS
- OS/390
- RACF
- Redbooks
- RMF
- SecureWay
- SupportPac
- Tivoli
- ViaVoice
- VisualAge
- VTAM
- WebSphere
- z/OS
- zSeries

Java and all Java-based trademarks are trademarks of Sun Microsystems, Inc. in the United States, other countries, or both.

Microsoft, Windows, Windows NT, and the Windows logo are trademarks of Microsoft Corporation in the United States, other countries, or both.

UNIX is a registered trademark of The Open Group in the United States and other countries.

Other company, product, and service names may be trademarks or service marks of others.