IBM Tivoli Workload Scheduler

Troubleshooting Guide

Version 9 Release 2

SC32-1275-15

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Note

Before using this information and the product it supports, read the information in "Notices" on page 227.

This edition applies to version 9, release 2, modification level 0 of Tivoli Workload Scheduler (program number 5698-WSH) and to all subsequent releases and modifications until otherwise indicated in new editions.

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About this guide

Gives useful information about the guide, such as what it contains, who should read it, what has changed since the last release, and how to obtain training and support.

IBM® Tivoli® Workload Scheduler: Troubleshooting provides information about troubleshooting IBM Tivoli Workload Scheduler and its components.

What is new in this release

Learn what is new in this release.

For information about the new or changed functions in this release, see *Tivoli Workload Automation: Overview*, section *Summary of enhancements*.

For information about the APARs that this release addresses, see the Tivoli Workload Scheduler Release Notes at http://www-01.ibm.com/support/docview.wss?rs=672&uid=swg27041032 and the Dynamic Workload Console Release Notes at http://www-01.ibm.com/support/docview.wss?rs=672&uid=swg27041033.

What is new in this release for troubleshooting

Learn what is new in this release for troubleshooting.

This section describes what has changed in this release with regard to troubleshooting since version 8.5.1.

Who should read this publication

Learn the audience of this publication.

This publication is designed to help users deal with any error situations they encounter while working with Tivoli Workload Scheduler. The publication includes targeted troubleshooting information about some specific activities and solutions to problems that you might encounter while running the product.

Some of these solutions need an expert user of Tivoli Workload Scheduler to resolve them, while others require the expertise of an expert systems programmer, who has a reasonable understanding of the Tivoli Workload Scheduler infrastructure and its inter-component interactions.

Publications

The Tivoli Workload Automation product is supported by a set of publications.

For a list of publications in the Tivoli Workload Automation product library, see *Publications* under *Reference* in the product documentation.

For a list of terms used in the Tivoli Workload Automation product, see *Glossary* under *Reference* in the product documentation.

Accessibility

Accessibility features help users with a physical disability, such as restricted mobility or limited vision, to use software products successfully.

With this product, you can use assistive technologies to hear and navigate the interface. You can also use the keyboard instead of the mouse to operate all features of the graphical user interface.

For full information with respect to the Dynamic Workload Console, see the Accessibility Appendix in the *IBM Tivoli Workload Scheduler User's Guide and Reference*.

Tivoli technical training

Tivoli provides technical training.

For Tivoli technical training information, refer to the following IBM Tivoli Education website:

http://www.ibm.com/software/tivoli/education

Support information

IBM provides several ways for you to obtain support when you encounter a problem.

If you have a problem with your IBM software, you want to resolve it quickly. IBM provides the following ways for you to obtain the support you need:

- Searching knowledge bases: You can search across a large collection of known problems and workarounds, Technotes, and other information.
- Obtaining fixes: You can locate the latest fixes that are already available for your product.
- Contacting IBM Software Support: If you still cannot solve your problem, and you need to work with someone from IBM, you can use a variety of ways to contact IBM Software Support.

For more information about these three ways of resolving problems, see the appendix on support information in *Tivoli Workload Scheduler: Troubleshooting Guide*.

Chapter 1. Getting started with troubleshooting

Gives an overview of what troubleshooting information is contained in this publication, and where to find troubleshooting information which is *not* included.

This publication gives troubleshooting information about the Tivoli Workload Scheduler *engine*. The engine comprises the components of Tivoli Workload Scheduler that perform the workload scheduling activities, together with the command line by which they can be controlled.

Troubleshooting for other Tivoli Workload Scheduler activities, products, and components can be found in their relevant publications, as follows:

Table 1. Where to find other troubleshooting material

Activity, Product, or Component	**Publication**
Installation, upgrade, and uninstallation of Tivoli Workload Scheduler components and the Dynamic Workload Console	*Tivoli Workload Scheduler: Planning and Installation Guide, SC32-1273*
Limited fault-tolerant agents for IBM i	*Tivoli Workload Scheduler: Limited Fault-tolerant Agent for IBM i, SC32-1280*
Tivoli Workload Scheduler for z/OS®	*Tivoli Workload Scheduler for z/OS: Diagnosis Guide and Reference, SC32-1261* *Tivoli Workload Scheduler for z/OS: Messages and Codes, SC32-1267*
Tivoli Workload Scheduler for Applications	*Tivoli Workload Scheduler for Applications: User's Guide, SC32-1278*
Tivoli Workload Scheduler for Virtualized Data Centers	*Tivoli Workload Scheduler for Virtualized Data Centers: User's Guide, SC32-1454*

Many of the procedures described in this publication require you to identify a file in the installation path of the product and its components. However, they can have more than one installation path, as described in "Where products and components are installed."

Where products and components are installed

Describes where the Tivoli Workload Scheduler products and components are installed.

This section commences by briefly introducing Tivoli Workload Automation and explaining how this concept impacts the installed structure of Tivoli Workload Scheduler.

Tivoli Workload Automation

Tivoli Workload Automation is the name of a family of products and components, which includes the following components:

- Tivoli Workload Scheduler
- Tivoli Workload Scheduler for z/OS
- Tivoli Workload Scheduler for Applications
- Dynamic Workload Console
- Tivoli Workload Scheduler for Virtualized Data Centres
- Tivoli Workload Scheduler Plug-in for Informatica PowerCenter

Many Tivoli Workload Scheduler components are installed in what is called a *Tivoli Workload Automation instance*.

Installation paths

TWA_home installation path

As described above, many of the components are installed in a Tivoli Workload Automation instance. Although this is a notional structure it is represented on the computer where you install Tivoli Workload Automation components by a common directory referred to in the documentation as *TWA_home*. The path of this directory is determined when you install a Tivoli Workload Scheduler component for the first time on a computer. You have the opportunity to choose the path when you make that first-time installation, but if you accept the default path, it is as follows:

Linux `/opt/IBM/TWA<n>`

UNIX `/opt/ibm/TWA<n>`

Windows
`C:\Program Files\IBM\TWA<n>`

where <n> is an integer value ranging from <null> for the first instance installed, 1 for the second, and so on.

This path is called, in the publications, *TWA_home*. For details about the directories created outside of *TWA_home*, see *Tivoli Workload Scheduler: Planning and Installation*.

Tivoli Workload Scheduler installation path

You can install more than one Tivoli Workload Scheduler component (master domain manager, backup master domain manager, domain manager, or backup domain manager) on a system, but each is installed in a separate instance of .Tivoli Workload Automation, as described above.

The installation path of Tivoli Workload Scheduler is:

```
TWA_home/TWS
```

Tivoli Workload Scheduler agent installation path

The agent also uses the same default path structure, but has its own separate installation directory:

```
TWA_home/TWS/ITA/cpa
```

Note: The agent also installs some files outside this path. If you have to share, map, or copy the agent files (for example when configuring support for clustering) share, map, or copy these files, as well:

UNIX and Linux operating systems

```
/etc/teb/teb_tws_cpa_agent_<TWS_user>.ini
/opt/IBM/CAP/EMICPA_default.xml
/etc/init.d/tebctl-tws_cpa_agent_<TWS_user>
   (on Linux and Solaris)
/etc/rc.d/init.d/tebctl-tws_cpa_agent_<TWS_user>
   (on AIX)
/sbin/init.d/tebctl-tws_cpa_agent_<TWS_user>
   (on HP-UX)
```

Windows operating systems

```
%windir%\teb\teb_tws_cpa_agent_&lt;tws_user>.ini
%ALLUSERSPROFILE%\Application Data\ibm\CAP\EMICPA_default.xml
```

The agent uses the following configuration files which you might need to modify:

JobManager.ini

This file contains the parameters that tell the agent how to run jobs. You should only change the parameters if advised to do so in the Tivoli Workload Scheduler documentation or requested to do so by IBM Software Support. Its path is:

TWA_home/TWS/ITA/cpa/config/JobManager.ini

JobManagerGW.ini

When a dynamic agent is installed and **-gateway** local|remote is specified, then this file contains the same parameters as the JobManager.ini file except for the following differences:

- The **ResourceAdvisorUrl** parameter points to the dynamic workload broker, and not the master domain manager.

The JobManagerGW.ini file is installed in the following location:

TWA_home/TWS/ITA/cpa/config/JobManagerGW.ini

ita.ini

This file contains parameters which determine how the agent behaves. Changing these parameters may compromise the agent functionality and require it to be reinstalled. You should only change the parameters if advised to do so in the Tivoli Workload Scheduler documentation or requested to do so by IBM Software Support. Its path is:

TWA_home/TWS/ITA/cpa/ita/ita.ini

Installation path for files giving the dynamic scheduling capability

The files that give the dynamic scheduling capability are installed in the following path:

TWA_home/TDWB

Dynamic Workload Console installation path

The Dynamic Workload Console can be installed in the path of your choice, but the default installation path is as follows:

On Windows

C:\Program Files\IBM\TWAUI

On UNIX

/opt/IBM/TWAUI

The WebSphere Application Server installation path

The WebSphere Application Server is automatically installed when you create a new *Tivoli Workload Automation instance*. You can specify any path for the installation. The default installation path is:

TWA_home/WAS

For the Dynamic Workload Console: `C:\Program Files\IBM\JazzSM`

The command line client installation path

The command line client is installed outside all *Tivoli Workload Automation instances*. Its default path is:

UNIX `/opt/ibm/TWS/CLI`

Windows
`C:\Program Files\IBM\TWS\CLI`

The application server tools installation path

Because the WebSphere Application Server is not supplied with an administration GUI, many of its administration tasks are performed by running tools supplied with Tivoli Workload Scheduler, that perform the required configuration changes. These tools are known as the *wastools*, and are installed in:

TWA_home/wastools

However, the information above supplies only the *default* paths. To determine the actual paths of products and components installed in your Tivoli Workload Automation instances, see "Finding out what has been installed in which Tivoli Workload Automation instances"

Finding out what has been installed in which Tivoli Workload Automation instances

How to identify which Tivoli Workload Scheduler components are installed on a computer.

If you are not the installer of Tivoli Workload Scheduler and its components, you might not know what components have been installed, and in which instances of Tivoli Workload Automation. Follow this procedure to find out:

1. Access the following directory:

   `/etc/TWA`

   `/etc/TWA`

   `%windir%\TWA`
2. List the contents of the directory. Each Tivoli Workload Automation instance is represented by a file called: `twainstance<`*`instance_number`*`>.TWA.properties`. These files are deleted when all the products or components in an instance are uninstalled, so the number of files present indicates the number of valid instances currently in use.
3. Open a file in a text viewer.

   Attention: Do not edit the contents of this file, unless directed to do so by IBM Software Support. Doing so might invalidate your Tivoli Workload Scheduler environment.

   The contents are similar to this:

```
TWS_version=9.1.0.0
DB2_basePath=/home/db2inst1/sqllib
DB2_IS_SERVER=TRUE
EWas_basePath=/opt/IBM/WebSphere/AppServer
DB2_INSTANCE_PORT=50000
TWS_counter=1
EWas_counter=1
TWA_path=/opt/tws/tws
```

```
TWS_server_name=bvtserver
DB2_ADMINISTRATOR_NAME=db2inst1
TWS_instance_type=MDM
EWas_profile_path=/opt/tws/tws/Appserver/profiles/TWSProfile
EWas_node_name=TWSNode
TWS_basePath=/opt/tws/tws/TWS
EWas_user=tws
EWas_cell_name=TWSCell
EWas_version=8.5.0.1
DB2_version=10.1.0.0
EWas_server_name=server1
EWas_update_installer_dir=
TWS_LAST_COMMITED_LEVEL_KEY=9.1.0.00
TWS_user_name=tws
TWS_FIX_LIST_KEY=
DB2_INSTANCE_NAME=db2inst1
DB2_counter=1
TWA_componentList=TWS,EWas,DB2
EWas_isc_version_key=8.5.0.1
EWas_profile_name=BVTProfile
EWas_service_name=IBMWAS85Service - tws
```

The important keys to interpret in this file are:

TWA_path

This is the base path, to which the installation added one or more of the following directories, depending on what was installed:

`TWS`
Where the Tivoli Workload Scheduler component is installed

`TDWC`
Where the Dynamic Workload Console is installed

`eWAS`
Where the WebSphere Application Server is installed

`wastools`
Where the tools that you use to configure WebSphere Application Server are installed

TWA_componentList

Lists the components installed in the instance of Tivoli Workload Automation

TWS_counter

Indicates if a Tivoli Workload Scheduler component is installed in this instance of Tivoli Workload Automation (when the value=1)

TWS_instance_type

Indicates which component of Tivoli Workload Scheduler is installed in this instance:

MDM Master domain manager

BKM Backup master domain manager

FTA Agent or domain manager

TDWC_counter

Indicates if an instance of Dynamic Workload Console is installed in this instance of Tivoli Workload Automation (when the value=1)

EWas_counter

Indicates how many applications are installed in this instance of Tivoli Workload Automation that access the WebSphere Application Server

TWS_user_name

The ID of the <*TWS_user*> of the Tivoli Workload Scheduler component.

The only component of Tivoli Workload Scheduler which is installed in a Tivoli Workload Automation instance, but which is not explicitly indicated here, is the Connector. To determine if it has been installed, look at the following combinations of keys:

Agent installed with no Connector

```
TWS_counter=1
TWS_instance_type=FTA
TWA_componentList=TWS
```

Agent installed with Connector

```
TWS_counter=1
EWas_counter=1
TWS_instance_type=FTA
TWA_componentList=TWS,EWas
```

Agent installed with no Connector and Dynamic Workload Console

```
TWS_counter=1
EWas_counter=1
TWS_instance_type=FTA
TDWC_counter=1
TWA_componentList=TWS,EWas,TDWC
```

Agent installed with Connector and Dynamic Workload Console

```
TWS_counter=1
EWas_counter=2
TWS_instance_type=FTA
TDWC_counter=1
TWA_componentList=TWS,EWas,TDWC
```

Note: The only difference between these last two is that the `EWas_counter` is 2 instead of 1.

Built-in troubleshooting features

A list, brief description and links to more information on the tools and facilities which are built in to the product to facilitate troubleshooting.

Tivoli Workload Scheduler is supplied with the following features that assist you with troubleshooting:

- Informational messages that inform you of expected events.
- Error and warning messages that inform you of unexpected events.
- Message helps for the most commonly-occurring messages. See *Tivoli Workload Scheduler: Messages*.
- A logging facility that writes all types of messages to log files, which you use to monitor the progress of Tivoli Workload Scheduler activities. See "Tivoli Workload Scheduler logging and tracing using CCLog" on page 14.
- Various tracing facilities which record at varying levels of details the Tivoli Workload Scheduler processes for troubleshooting by IBM Software Support. See "Difference between logs and traces" on page 13 for more details.
- A facility to save a configurable level of log and tracing information in memory and then save all or part of this information to a single fully integrated file for troubleshooting by IBM Software Support. See Chapter 4, "In-Flight Trace facility for engine," on page 53 for more details.
- A Log Analyzer that you use to read, analyze and compare log and some trace files. See "Engine Log Analyzer" on page 18.

- An auditing facility that provides an audit trail of changes to the Tivoli Workload Scheduler database and plan for use in both monitoring and troubleshooting. See the section about Auditing in the *Tivoli Workload Scheduler Administration*, for more details.
- A configuration snapshot facility that you can use for backup, and also which provides IBM Software Support with configuration information when unexpected events occur. See "Data capture utility" on page 41.
- A facility that automatically creates a First Failure Data Capture (ffdc) configuration snapshot if the failure of any of the key components can be detected by its parent component. See "First failure data capture (ffdc)" on page 50.
- An automatic backup mechanism of the `Symphony` file whereby each fault-tolerant agent and domain manager that receives a new `Symphony` file, automatically archives the previous `Symphony` to `Symphony.last` in the path `<`*`TWA_home`*`/TWS/`, so that a backup copy is always maintained. This permits viewing of the previous `Symphony` data in case there were any message updates on the job and job stream states that were lost between the agent and its master domain manager.

Keeping up-to-date with the latest fix packs

Reminds you that the best way to avoid problems is to apply fix packs

Tivoli Workload Scheduler fix packs contain fixes to problems that IBM, you, or other customers have identified. Install the latest fix pack when it becomes available, to keep the product up to date.

Upgrading your whole environment

When upgrading, although compatibility with previous version components is a feature of Tivoli Workload Scheduler, potential problems can be avoided by upgrading all components to the new level as quickly as possible.

To avoid problems, ensure that when you upgrade to a new version of Tivoli Workload Scheduler you do so across your whole environment.

The components of this version of Tivoli Workload Scheduler are compatible with components of many previous versions (see *Tivoli Workload Automation: Overview* for full details). However, running Tivoli Workload Scheduler in a mixed network increases the possibility of problems arising, because each new release of Tivoli Workload Scheduler not only adds functions, but also improves the stability and reliability of the various components. Try not to run in a mixed network for extended periods.

Chapter 2. Logging and tracing

Provides detailed information about logs and traces, and how to customize them and set the logging and tracing levels.

Information on the logging and tracing facilities of Tivoli Workload Scheduler, Dynamic Workload Console, and the WebSphere Application Server is described in these topics:

- "Quick reference: how to modify log and trace levels"
- "Difference between logs and traces" on page 13
- "Tivoli Workload Scheduler logging and tracing using CCLog" on page 14
- "Dynamic Workload Console log and trace files" on page 30
- "Log file for the Self-Service mobile applications" on page 32
- "Dynamic workload scheduling log and trace files" on page 32
- "Dynamic agent log and trace files" on page 33
- "Log and trace files for the application server" on page 37
- "Log files for the command line client" on page 39

For details of the installation log files, see *Tivoli Workload Scheduler: Planning and Installation Guide*.

Quick reference: how to modify log and trace levels

Quick reference information about how to modify log and tracing levels for all components.

Modifying Tivoli Workload Scheduler logging level

1. Edit `<`*`TWA_home`*`>/TWS/TWSCCLog.properties`
2. Modify `tws.loggers.msgLogger.level`.

   This determines the type of messages that are logged. Change this value to log more or fewer messages, as appropriate, or on request from IBM Software Support. Valid values are:

   INFO All log messages are displayed in the log. The default value.

   WARNING
   All messages except *informational* messages are displayed.

   ERROR
   Only *error* and *fatal* messages are displayed.

   FATAL
   Only messages which cause Tivoli Workload Scheduler to stop are displayed.
3. Save the file. The change is immediately effective.

See "Engine log and trace customization" on page 15 for more details.

Modifying Tivoli Workload Scheduler tracing level

1. Edit `<`*`TWA_home`*`>/TWS/TWSCCLog.properties`
2. Modify `tws.loggers.trc<`*`component`*`>.level`.

This determines the type of trace messages that are logged. Change this value to trace more or fewer events, as appropriate, or on request from IBM Software Support. Valid values are:

DEBUG_MAX
Maximum tracing. Every trace message in the code is written to the trace logs.

DEBUG_MID
Medium tracing. A medium number of trace messages in the code is written to the trace logs.

DEBUG_MIN
Minimum tracing. A minimum number of trace messages in the code is written to the trace logs.

INFO All *informational*, *warning*, *error* and *critical* trace messages are written to the trace. The default value.

WARNING
All *warning*, *error* and *critical* trace messages are written to the trace.

ERROR
Only *error* and *critical* messages are written to the trace.

CRITICAL
Only messages which cause Tivoli Workload Scheduler to stop are written to the trace.

3. Save the file. The change is immediately effective.

See “Engine log and trace customization” on page 15 for more details.

Modifying Dynamic Workload Console tracing level

Follow these steps to activate the Dynamic Workload Console traces at run time:

1. Log in to the Dynamic Workload Console as administrator of the WebSphere Application Server
2. In the Dynamic Workload Console navigation pane select **Settings > WebSphere Admin Console**
3. Click Launch **WebSphere Admin Console**.
4. In the navigation tree, click **Troubleshooting** > **Logs and Trace** > ***server name*** (for example **tdwcserver**) > **Diagnostic Trace**.
5. Select:

   Configuration
   If you want to apply the changes to the trace settings after having restarted the server.

   Run time
   If you want to apply the changes to the trace settings without restarting the server.
6. Click **Change Log Detail Levels** under Additional Properties.
7. Choose the packages for which you want to activate the traces. For the Dynamic Workload Console traces, make this selection:
   a. Scroll down to **com.ibm.tws.*** and expand the tree
   b. Click **com.ibm.tws.webui.***
   c. Either select **All Messages and Traces** or click **Messages and Trace Levels** and choose the trace level you require.

d. Click **OK** > **Save**.

8. Stop and start the server, if necessary.

Alternatively, you can activate the Dynamic Workload Console traces as follows:

1. Edit the following XML file:

   Installed on the WebSphere Application Server:

   ```
   JazzSM_profile_dir/config/cells/JazzSMNode01Cell/n
   odes/JazzSMNode01/servers/server1/server.xml
   ```

   where, the default value of *JazzSM_profile_dir* is:

   On Windows operating systems
   `C:\Program Files\IBM\JazzSM\profile`

   On UNIX operating systems
   `/opt/IBM/JazzSM/profile`

2. Change the value assigned to the property **startupTraceSpecification** from:

   `com.ibm.tws.webui.*=info`

   to:

   `com.ibm.tws.webui.*=all.`

3. Save the changes

4. Stop and start the server.

See: "Activating and deactivating traces in Dynamic Workload Console" on page 31 for more details.

Modifying WebSphere® Application Server tracing level

The procedure for changing the trace level on the WebSphere Application Server is as follows:

1. Log on to the computer where Tivoli Workload Scheduler is installed as the following user:

   UNIX root

   Windows
   Any user in the *Administrators* group.

2. Access the directory: `<TWA_home>/wastools`

3. Run the script:

   UNIX

   ```
   ./changeTraceProperties.sh -user <TWS_user>
                              -password <TWS_user_password>
                              -mode <trace_mode>
   ```

   Windows

   ```
   changeTraceProperties.bat -user <TWS_user>
                             -password <TWS_user_password>
                             -mode <trace_mode>
   ```

   where: <*trace_mode*> is one of the following values:

   active_correlation
   All communications involving the event correlator are traced.

   tws_all_jni
   All communications involving the jni code are traced. The jni code

refers to code in shared C libraries invoked from Java™. This option is used by, or under the guidance of, IBM Software Support.

tws_all
All Tivoli Workload Scheduler communications are traced.

tws_alldefault
Resets the trace level to the default level imposed at installation.

tws_cli
All Tivoli Workload Scheduler command line communications are traced.

tws_conn
All Tivoli Workload Scheduler connector communications are traced.

tws_db
All Tivoli Workload Scheduler database communications are traced.

tws_info
Only information messages are traced. The default value.

tws_planner
All Tivoli Workload Scheduler planner communications are traced.

tws_secjni
All Tivoli Workload Scheduler jni code auditing and security communications are traced. The jni code refers to code in shared C libraries invoked from Java. Only use this option under the guidance of, IBM Software Support.

tws_utils
All Tivoli Workload Scheduler utility communications are traced.

tws_broker_all
All dynamic workload broker communications are traced.

tws_broker_rest
Only the communication between dynamic workload broker and the agents is traced.

tws_bridge
Only the messages issued by the workload broker workstation are traced.

4. Stop and restart the application server, as described in the section on starting and stopping the application server in the *Tivoli Workload Scheduler: Administration Guide*.

See "Setting the traces on the application server for the major Tivoli Workload Scheduler processes" on page 38 for more details.

Managing dynamic agent tracing level

To manage traces for the dynamic agent, refer to the following sections:

- "See command usage and verify version" on page 35
- "Enable or disable trace" on page 35
- "Set trace information" on page 35
- "Show trace information" on page 36
- "Collect trace information" on page 36

You can also configure the traces when the agent is not running by editing the [JobManager.Logging] section in the `JobManager.ini` file as described in Configuring the agent section. This procedure requires that you stop and restart the agent.

Difference between logs and traces

Describes the difference between log and trace messages, and indicates in which languages they are available.

Tivoli Workload Scheduler and the Dynamic Workload Console create both log and trace messages:

Log messages

These are messages that provide you with information, give you warning of potential problems, and inform you of errors. Most log messages are described in *Tivoli Workload Scheduler: Messages*. Log messages are translated into the following languages:

- Chinese - simplified
- Chinese - traditional
- French
- German
- Italian
- Japanese
- Korean
- Portuguese - Brazilian
- Spanish

Messages are written to the log file in the language of the locale set on the computer where they were generated, at the moment when they were generated.

Trace messages

These are messages for IBM Software Support that provide in depth information about Tivoli Workload Scheduler processes. In most cases they are in English. Whereas log messages are written so that you can understand them in relation to the activity you were performing, trace messages might not be. There is no guarantee that you can diagnose any error situations from the information they contain.

The traces are provided at several different levels and in several different forms:

Messages for IBM Software Support

These are similar to log messages, and while not intended for customer use, can be sometimes helpful to experienced customers who know the product well. The information they contain is used by IBM Software Support to understand problems better.

Specific software traces

These are traces written directly by the program code normally indicating the values of variables being used in complex processes. They are not for use by the customer.

Automatic software traces

These are traces issued automatically by the code when it enters and exits code modules. They are not for use by the customer.

The following table gives more detailed information:

Table 2. Difference between logs and traces

Characteristics	**Log Messages**	**Messages for IBM Software Support**	**Specific software traces**	**Automatic software traces**
Translated	√			
Documented in Information Center	√	Some		
Written to <*TWA_home*>/TWS/stdlist/logs/	√			
Written to <*TWA_home*>/TWS/stdlist/traces/	√	√	√	
Logging level, format etc. controlled by `TWSCCLog.properties`	√	√	√	
Logging level, format etc. controlled by **TWSFullTrace**				√
Optionally written to memory by **TWSFullTrace** and written to disc by that utility when requested.	√	√	√	√

If you want to merge the logs and traces controlled by `TWSCCLog.properties` into one file, set the **localopts** option `merge stdlist` to `yes`.

Note: It is also possible to merge these two sets of messages using the correlate logs facility of the Log Analyzer; see "Engine Log Analyzer" on page 18

Tivoli Workload Scheduler logging and tracing using CCLog

Describes the log and trace files created by the CCLog logging engine, and how they are configured.

CCLog is a logging engine that creates log files in a defined structure. It can be used to monitor many products from a variety of software suppliers. The configuration supplied with Tivoli Workload Scheduler uses it uniquely for the processes of Tivoli Workload Scheduler.

The CCLog engine is used wherever any of the following components are installed:

- Master domain manager
- Backup master domain manager
- Fault-tolerant agent

The contents of this section are as follows:

- "Engine log and trace file locations"
- "Engine log and trace file switching" on page 15
- "Engine log and trace customization" on page 15
- "Engine log and trace performance" on page 18
- "Engine Log Analyzer" on page 18

Engine log and trace file locations

Describes where to find the engine log and trace files produced by CCLog.

All log and trace files produced by Tivoli Workload Scheduler are stored in:

```
<TWA_home>/TWS/stdlist/logs/
<TWA_home>/TWS/stdlist/traces/
```

The files have different names, depending on the settings in the `localopts` file:

merge stdlists = yes

- `<yyyymmdd>_NETMAN.log`

  This is the log file for netman.
- `<yyyymmdd>_TWSMERGE.log`

  This is the log file for all other processes.

merge stdlists = no

`<yyyymmdd>_<process_name>.log`

where <*process_name*> can be one of the following values:

```
APPSRVMAN
BATCHMAN
CONNECTR
JOBMAN
JOBMON
MAILMAN
NETMAN
WRITER
```

Low-level traces, and open source library messages that do not conform to the current standard Tivoli Workload Scheduler message format (for instance, some SSL stdout and stderror messages), are found in the following files: `<yyyy.mm.dd>/<process_name>`, where <*process_name*> is as above. For more information, see the *Tivoli Workload Scheduler: User's Guide and Reference*.

Note: You can add a local option `restricted stdlists` to your `localopts` file to limit access to the `stdlist` directory on your UNIX workstation. For details, see the *Tivoli Workload Scheduler: Administration Guide*.

Engine log and trace file switching

Describes when new log and trace files with the next day's datestamp are created.

The Tivoli Workload Scheduler log files are switched every day, creating new log files with the new datestamp, at the time set in the *startOfDay* global options (**`optman`**).

Engine log and trace customization

Describes how you can customize the CCLog logging and tracing facility. You can modify the appearance of the log and the logging and tracing levels.

You can customize the information written to the log files by modifying selected parameters in its properties file. The changes you can make affect the format of the log or trace file and the logging level or trace level.

Attention: Do not change any parameters in this file other than those detailed here, otherwise you might compromise the logging facility.

The CCLog properties file is as follows:

```
<TWA_home>/TWS/TWSCCLog.properties
```

where <*TWA_home*> is the directory where Tivoli Workload Scheduler is installed.

Parameters

The parameters that can be modified are as follows:

Logging level

tws.loggers.msgLogger.level

This determines the type of messages that are logged. Change this value to log more or fewer messages, as appropriate, or on request from IBM Software Support. Valid values are:

INFO All log messages are displayed in the log. The default value.

WARNING
All messages except *informational* messages are displayed.

ERROR
Only *error* and *fatal* messages are displayed.

FATAL
Only messages which cause Tivoli Workload Scheduler to stop are displayed.

Tracing level

tws.loggers.trc<*component*>**.level**

This determines the type of trace messages that are logged. Change this value to trace more or fewer events, as appropriate, or on request from IBM Software Support. Valid values are:

DEBUG_MAX
Maximum tracing. Every trace message in the code is written to the trace logs.

DEBUG_MID
Medium tracing. A medium number of trace messages in the code is written to the trace logs.

DEBUG_MIN
Minimum tracing. A minimum number of trace messages in the code is written to the trace logs.

INFO All *informational*, *warning*, *error* and *critical* trace messages are written to the trace. The default value.

WARNING
All *warning*, *error* and *critical* trace messages are written to the trace.

ERROR
Only *error* and *critical* messages are written to the trace.

CRITICAL
Only messages which cause Tivoli Workload Scheduler to stop are written to the trace.

Component names used in the `tws.loggers.trc` property names are for the most part self-explanatory, but the following short explanations might help:

Logger
The main internal component of Tivoli Workload Scheduler that performs the scheduling activities.

Sendevnt
The event processor.

Connectr
The connector.

Log format parameters

fomatters.basicFmt.dateTimeFormat
This contains a specification of the date and time format used by CCLog when adding the date and time stamp to the message header. The format uses the standard *strftime* format convention, used by many programming libraries. The full format details can be found by searching the Internet, but a synthesis of the commonly used definitions is included in Appendix B, "Date and time format reference - strftime," on page 225.

fomatters.basicFmt.separator
This defaults to the pipe symbol "`|`", and is used to separate the header of each log message, which contains information such as the date and time stamp and the process that issued the error, from the body, which contains the process-specific information such as the issuing process, the message number and the message text. You can change the separator to another character or characters, or set it to null.

twsHnd.logFile.className
This indicates if CCLog uses semaphore memory to write to the log file. The default setting (`ccg_filehandler`) tells CCLog to write each line of a multiline message separately. Each process interleaves each line of its multiline messages with messages from other processes, if necessary, improving performance. While this approach could potentially make the log files more difficult to read, this interleaving only occurs in extreme situations of very high use, for example when many jobs are running concurrently.

The setting `ccg_multiproc_filehandler`, defines that each process completes writing any log message, including multiline messages, before freeing the log file for another process to use. This can have an impact on performance when many processes are running concurrently.

tws.loggers.className
This indicates the type of log layout you want to use, determining the number of fields in the log record header. The default setting (`ccg_basiclogger`) tells CCLog to put just the date/time stamp and the process name in the header. The alternative setting is `ccg_pdlogger`, which contains more information in the header, thus reducing the length of the log records available for the message text.

tws.loggers.organization
This defaults to *IBM* and is used to differentiate between log entries from applications from different suppliers when the same instance of CCLog is being used by more than one software supplier. Tivoli Workload Scheduler is supplied with a unique

instance, and thus unique log files, so if this value is prefixed to your log messages, you can set the value of this parameter to null to avoid it being displayed.

tws.loggers.product
This defaults to *TWS* and is used to differentiate when the same log files are used by more than one product. Tivoli Workload Scheduler is supplied with unique log files, so if this value is prefixed to your log messages, you can set the value of this parameter to null to avoid it being displayed.

Other parameters
No other parameters must be modified. To do so risks compromising the logging or tracing facility, or both.

Making changes effective

Making your changes effective depends on the type of change:

Changes to log or trace levels
If you change the `tws.loggers.msgLogger.level` or the `tws.loggers.trc<component>.level`, the change is immediately effective after the file has been saved.

All other changes
Restart Tivoli Workload Scheduler to make overall changes effective; restart a process to make process-specific changes effective.

Engine log and trace performance

Describes what impact logging and tracing has on the product's performance.

If you use the default configuration, CCLog does not normally have a significant impact on performance. If you believe that it is impacting performance, check that the default values for the parameters `twsHnd.logFile.className` and `twsloggers.className` are as described in "Engine log and trace customization" on page 15, and have not been set to other values.

However, even if the default parameters are in use, you might find that in situations of very heavy workload, such as when you have many jobs running simultaneously on the same workstation, multiline log messages become interleaved with messages from other processes. The length of log messages has been increased to offset this risk, but if you find it becoming a problem, contact IBM Software Support for advice on how to reset the previous settings, which avoided the interleaved messages, but had an impact on performance at busy times.

Engine Log Analyzer

Use Log Analyzer to display log details from the Tivoli Workload Scheduler engine log files, and compare one or more log files. It has facilities to filter log messages by a variety of criteria, reorder log messages by a variety of criteria, and search for specific messages. You can correlate two or more log files from different computers (in different time zones, if required) and select common or corresponding messages. Log Analyzer uses Eclipse technology.

Note: Various websites are indicated in the following procedures. These websites are not owned or controlled by IBM. The following steps were correct at time of writing, but might be different when you perform them. If one or more of the items discussed below is not available, contact IBM Software Support for assistance.

The information about Log Analyzer is in these sections:
- "Installing Eclipse and the Test and Performance Tools Platform"
- "Installing and configuring the Log Analyzer plug-in" on page 20
- "Upgrading Log Analyzer" on page 20
- "Adding a log file" on page 21
- "Using Log Analyzer" on page 22

Installing Eclipse and the Test and Performance Tools Platform

Eclipse is an open source community whose projects are focused on providing an extensible development platform and application frameworks for building software.

Log Analyzer requires Eclipse, version 3.1, or higher. It is available for the Windows and Linux operating systems (see website for full details). Tivoli Workload Scheduler uses Eclipse version 3.0 as its platform of choice for the Tivoli Information Center. However, *Eclipse, version 3.0 cannot be used for Log Analyzer* because Log Analyzer requires a higher version.

Log Analyzer also requires the *Test and Performance Tools Platform*, version 4.1, or higher.

To install Eclipse and the Test and Performance Tools Platform, follow these steps:

1. Check that you have Java run time environment (JRE) or Java development kit (JDK), version 1.4.2 or higher installed on your machine in order to run Eclipse. If you do not have the appropriate level of JRE or JDK, follow these steps:
   a. Go to www.java.com
   b. Download and install Java Standard Edition (Java SE), version 1.4.2, or higher. At time of writing, this could be found by clicking **Free Java Download** on the home page.
   c. Follow the instructions on the website for downloading and installing J2SE.
2. Go to the Eclipse website at http://www.eclipse.org/
3. Click **Downloads**.
4. Under **Third Party Distros**, click **IBM**.
5. In the description of the **Europa testing project bundle:** you should see **Eclipse Test and Performance Tools Platform (TPTP)**. This contains both the prerequisite versions of Eclipse and the Test and Performance Tools Platform. Click **Europa testing project bundle: → Free download**.
6. Save the .zip (Windows) or .gz (UNIX) file containing the Test and Performance Tools files in a temporary directory.
7. Open the .zip or .gz and extract the files to a temporary directory.

Configuring the Log Analyzer memory:
After installing Eclipse, you must configure the memory usage for the Tivoli Workload Scheduler plug-in as follows:

1. Close Eclipse.
2. Edit the `eclipse.ini` file in the Eclipse install directory.
3. Set the following options:

--launcher.XXMaxPermSize
Set to:

```
512m
```

-vmargs
Set to:

```
-Xms100m
-Xmx512m
```

When you have finished, your file looks like the following example:

```
-showsplash
org.eclipse.platform
--launcher.XXMaxPermSize
512m
-vmargs
-Xms100m
-Xmx512m
```

4. Start Eclipse.
5. Select **Window → Preferences**.
6. Expand the **Java** option.
7. Click **Installed JREs**.
8. Double-click the **Installed JRE** that you are using (the one in the list that is selected by a check box)
9. In the Edit JRE window, add the following line to the field **Default VM Arguments**:

   ```
   -Xms100m -Xmx512m
   ```
10. Close Eclipse.

Eclipse is now ready for use with the Tivoli Workload Scheduler plug-in.

Installing and configuring the Log Analyzer plug-in

What you have installed up to now is generic software for analyzing log files. You now need to install the plug-in that Eclipse uses to read and analyze the specific Tivoli Workload Scheduler log files. To install and configure the Log Analyzer plug-in perform the following steps:

1. Find the Tivoli Workload Scheduler plug-in located on the DVD *IBM Tivoli Workload Scheduler 8.6 Integrations, Multiplatform Multilingual* for your platform, in the following path:

   ```
   TWS_INTEGRATION\integrations\log_analyzer\TWSLogParser.tar
   ```

   This is a compressed archive, which contains just one file: `TWSLogParser_8.6.0.jar`
2. Extract the file into the `Eclipse` directory, and it is automatically placed in the `Eclipse/plugins` directory. For example, on Windows, if the location you chose to install Eclipse and the Test and Performance Tools Platform was `D:\`, you should specify to install the jar file in `D:\eclipse`

The installation of the Log Analyzer is now complete.

Upgrading Log Analyzer

If you have already installed and used Log Analyzer in a previous release of Tivoli Workload Scheduler you can upgrade the analyzer to be able to use the additional facilities offered in the latest version of Eclipse, details of which can be found on the Eclipse website: http://www.eclipse.org/.

To upgrade the Log Analyzer, follow these steps:

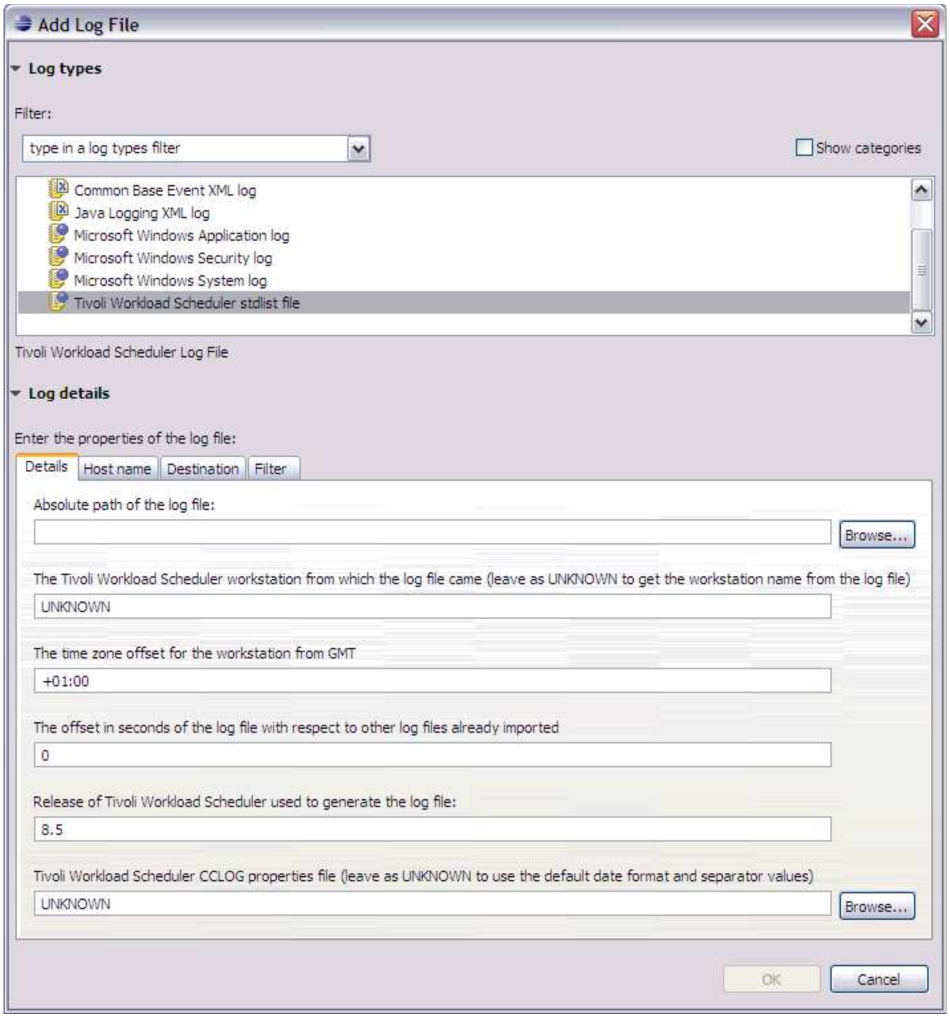
1. Delete the existing Eclipse folder and all its plug-ins.
2. Install and configure the new version.
3. Import the log files as described in the following sections.

If you upgrade to this version you should also import the new symptom catalog (formerly called a symptom database), because the format of the catalog has changed (see "Analyzing messages with a symptom catalog" on page 28) for details of the advantages of using the symptom catalog.

Adding a log file

Each log file that you want to look at or analyze must be identified to Log Analyzer, as follows:

1. Run `Eclipse`.
2. From the **File Menu** select **Import**.
3. From the list of import sources, select **Profiling and Logging** → **Log File**. Click **Next**.
4. On the **Import Log File** panel, select **Add**.
5. On the **Add Log File** panel, select **Tivoli Workload Scheduler stdlist file** from the list of log file types.
6. Click the **Details** tab of the log file properties:


Add Log File
Log types
Filter:
type in a log types filter
□ Show categories
Common Base Event XML log
Java Logging XML log
Microsoft Windows Application log
Microsoft Windows Security log
Microsoft Windows System log
Tivoli Workload Scheduler stdlist file
Log details
Details
Host name
Destination
Filter
Browse...
Browse...
OK
Cancel

Tivoli Workload Scheduler Log File

Enter the properties of the log file:

Absolute path of the log file:

The Tivoli Workload Scheduler workstation from which the log file came (leave as UNKNOWN to get the workstation name from the log file)
UNKNOWN

The time zone offset for the workstation from GMT
+01:00

The offset in seconds of the log file with respect to other log files already imported
0

Release of Tivoli Workload Scheduler used to generate the log file:
8.5

Tivoli Workload Scheduler CCLOG properties file (leave as UNKNOWN to use the default date format and separator values)
UNKNOWN

7. Enter or browse for the following information:

   Absolute path of the log file
   Enter or browse for the absolute path of the log file that you want to load. See Chapter 2, “Logging and tracing,” on page 9 for information about the location of log files.

   The Tivoli Workload Scheduler workstation name
   Leave as "UNKNOWN" and Log Analyzer adds the information when it loads the file.

   Time zone offset for the workstation from GMT
   Enter the time zone offset from GMT of the workstation where the log file was recorded, in the format:

   ```
   ±hh:mm
   ```

   The default is the time zone offset of the workstation where Log Analyzer is being run.

   The offset in seconds of the log file with respect to other log files already imported
   Enter any additional offset, in seconds, that this log file has from other log files already imported. The default is zero.

   Release of Tivoli Workload Scheduler used to generate the log file
   Enter the release of Tivoli Workload Scheduler that was running on the workstation when the log file was created. The default is 8.6.

   Tivoli Workload Scheduler CCLOG properties file
   Enter or browse for the path of the `TWSCCLog.properties` file (see “Engine log and trace customization” on page 15 for the location). If the log file you want to analyze is not a CCLog file, use the properties file appropriate for the log file, or leave the field as "UNKNOWN" if you want Log Analyzer to use the default values for the date format and field separator values.

8. Click **OK**.
9. Click **Finish** on the Import Log File panel.
10. If the Confirm Perspective Switch window opens, inviting you to switch to the Profiling and Logging Perspective, click **Yes**.

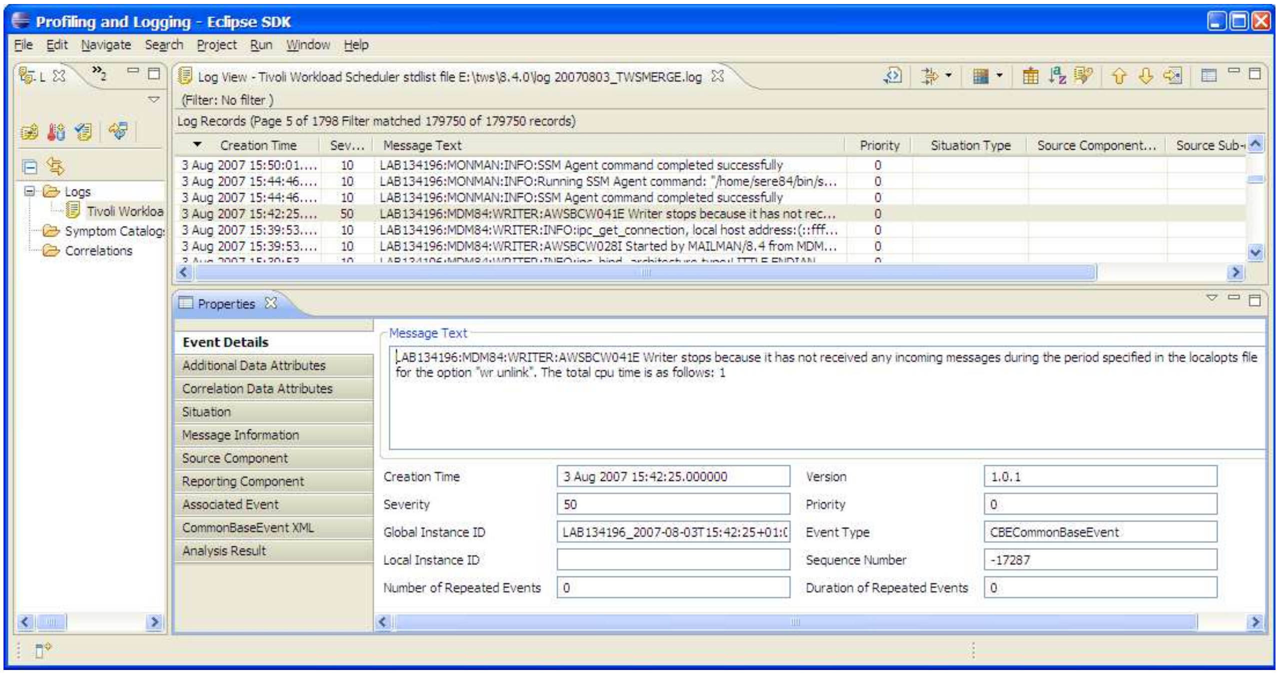
Using Log Analyzer

To use Log Analyzer follow these steps:

1. Run Eclipse.
2. Select a log file that you have already added (see “Adding a log file” on page 21).
3. Use the Log Analyzer options to examine and analyze the data in the file. Following is a list of the available options:
   - “Log Analyzer main window” on page 23
   - “Navigating the log messages” on page 24
   - “Locating a specific message” on page 24
   - “Sorting messages” on page 24
   - “Filtering messages” on page 24
   - “Creating reports” on page 26
   - “Managing the log message properties” on page 26
   - “Comparing log files” on page 28

- “Analyzing messages with a symptom catalog” on page 28

Log Analyzer main window: After you have run `Eclipse` and the Log Analyzer window has opened with a log file already added, you see the following window:



Profiling and Logging - Eclipse SDK
File Edit Navigate Search Project Run Window Help
Logs
Tivoli Workloa
Symptom Catalog
Correlations
Log View - Tivoli Workload Scheduler stdlist file E:\tws\8.4.0\log 20070803_TWSMERGE.log
Properties
Event Details
Additional Data Attributes
Correlation Data Attributes
Situation
Message Information
Source Component
Reporting Component
Associated Event
CommonBaseEvent XML
Analysis Result

(Filter: No filter)

Log Records (Page 5 of 1798 Filter matched 179750 of 179750 records)

Creation Time	Sev...	Message Text	Priority	Situation Type	Source Component...	Source Sub-
3 Aug 2007 15:50:01....	10	LAB134196:MONMAN:INFO:SSM Agent command completed successfully	0			
3 Aug 2007 15:44:46....	10	LAB134196:MONMAN:INFO:Running SSM Agent command: "/home/sere84/bin/s...	0			
3 Aug 2007 15:44:46....	10	LAB134196:MONMAN:INFO:SSM Agent command completed successfully	0			
3 Aug 2007 15:42:25....	50	LAB134196:MDM84:WRITER:AWSBCW041E Writer stops because it has not rec...	0			
3 Aug 2007 15:39:53....	10	LAB134196:MDM84:WRITER:INFO:ipc_get_connection, local host address:(::fff...	0			
3 Aug 2007 15:39:53....	10	LAB134196:MDM84:WRITER:AWSBCW028I Started by MAILMAN/8.4 from MDM...	0			

Message Text

LAB134196:MDM84:WRITER:AWSBCW041E Writer stops because it has not received any incoming messages during the period specified in the localopts file for the option "wr unlink". The total cpu time is as follows: 1

Creation Time	3 Aug 2007 15:42:25.000000	Version	1.0.1
Severity	50	Priority	0
Global Instance ID	LAB134196_2007-08-03T15:42:25+01:(	Event Type	CBECommonBaseEvent
Local Instance ID		Sequence Number	-17287
Number of Repeated Events	0	Duration of Repeated Events	0

The window tabs are as follows:

Log Navigator tab

This is where your log files are listed. Correlations are created by you (see “Comparing log files” on page 28), and you can work with symptom catalogs (see “Analyzing messages with a symptom catalog” on page 28)

Log View tab

The main tab is the Log View tab. This is a list of the records in the log file. An error message with a severity of 50 has been highlighted (severities higher than the standard 10 are highlighted in yellow or red, depending on the severity, but the color disappears when you click the message to select it.

When a message is highlighted, its details appear in the Properties tab, below. If the Properties tab is not showing, right-click the message you want to examine and select **Properties**.

Above the Log View tab are the icons that you use to perform the functions of Log Analyzer.

Properties tab

This contains several panes of information about the message. Those which contain information with respect to Tivoli Workload Scheduler messages are Event Details, Additional Data Attributes, and CommonBaseEvent XML.

For general help for using Eclipse select **Help → Help Contents**.

For specific help for using Log Analyzer select **Help → Dynamic Help**

Navigating the log messages: To follow the message flow, scroll down the Log Record list. Logs are listed in pages of 50 messages.

The navigation of this list is as follows:

Moving within a page

Use the scroll bars to move up and down within a page. Your keyboard's **PageUp** and **PageDown** keys move the display up and down within a single page.

Moving between pages

To move from one page to the next click the **Page-Down** icon: ⇩ icon or the **Page-Up** icon: ⇧ . Alternatively, you can jump to a particular page by clicking the **Go To Page** icon: and entering a page number.

Locating a specific message:
To locate a specific message, follow these steps:

1. Click the **Find Log Record** icon: .
2. In the Find Log Record window, click **Add** to define a search expression, by selecting a property and an operator, and entering the value or partial value for the property to search for. Wildcards can be used for the partial value.

For example, selecting the *Message Text* property with "=" (equals), and supplying a value of **AWSBCW041E** creates a search expression that, when you click Find Next, locates the first message containing the string "AWSBCW041E".

These expressions are saved automatically and permanently in the Find Log Record window. On a subsequent visit to this window you can select a search expression you have previously created or add a new one.

Sorting messages:
Messages are presented by default in ascending order of *Creation Time*. If you want to change this order, follow these steps:

1. Click the **Sort Columns...** icon:
2. Use the central arrow buttons > and < to move selected properties to and from the Properties list and the Selected Properties list.
3. Use the Up and Down buttons to move properties in the Selected Properties list into the correct sort sequence.
4. Click **OK**. The messages are redisplayed in the selected sequence.

Filtering messages: Many log files are very large, and you might be interested only in a subset of the messages in them. To restrict the messages shown, apply a filter in Log Analyzer to display only the messages that match the filter criteria:

Apply an existing filter

To apply a defined filter, click the arrow beside the **Manage Filters...** icon: to choose a filter from those you have already created yourself and the default filters (such as "All error messages"). Filters are not cumulative, so, for example, if you apply a filter for "Error messages", and then apply one that you have created for "All MAILMAN messages", you get a list of "All MAILMAN messages", not "All MAILMAN error messages".

Apply no filter
To stop the effect of the currently applied filter, click the arrow beside the **Manage Filters...** icon and select **No Filter**.

Create a new filter when no filter is in force
If no filter is in force, click the **Manage Filters...** icon to open the Filters panel and create a new filter (see "Adding a new filter" for details on the filter options available).

Create a new filter when another filter is in force
To create a new filter when another filter is in force, click the arrow beside the **Manage Filters...** icon and select the **Manage Filters...** option. From the Add/Edit/Remove Filters window click **New** (see "Adding a new filter" for details on the filter options available).

Edit a filter currently in force
If you have applied a filter and want to edit it, click the **Manage Filters...** icon to open the Filters panel and edit the filter currently in force (see "Adding a new filter" for details on the filter options available).

Edit any other filter
To edit an existing filter, click the arrow beside the **Manage Filters...** icon and select the **Manage Filters...** option. From the Add/Edit/Remove Filters window select a filter to edit, and click **Edit** (see "Adding a new filter" for details on the filter options available).

Delete (remove) a filter
To delete a filter, click the arrow beside the **Manage Filters...** icon and select the **Manage Filters...** option. From the Add/Edit/Remove Filters window click **Remove**.

Adding a new filter:
To add a new filter In the Filters panel, follow this procedure:

1. Give a name to the filter.
2. Decide if you want to set either of the options on the **Standard** tab:

   Show events by severity
   Set this to select that the filter includes only specific types of message

   Show correlated log records only
   Select this if you are using a correlation, and want the filter to include only messages that are correlated. See "Comparing log files" on page 28 for more details about correlations.
3. Click the **Advanced** tab.
4. Click Add to add a new filter expression. Note that you can make complex filters by creating an unlimited number of filter expressions.
5. On the Add Filter Property window, select a property and an operator, and enter the value or partial value for the property to filter for. Wildcards can be used for the partial value. These expressions are saved automatically and permanently in the Add Filter Property window when you click **OK**.
6. Click **OK** to close the Edit Filter window.
7. If the Add/Edit/Remove Filters window is open, click **OK** to close it.
8. The new filter is applied immediately. If you have a complex filter or many records, you might have to wait for the results to be visible.

For example, creating a filter expression selecting the *Message Text* property with "=" (equals), and supplying a value of **JOBMON**, and then creating a second filter expression selecting the *Creation time* property with ">" (greater than), and supplying a value of *2008-02-08 21:53:16.38+0100* creates a filter that, when you apply it, displays only messages containing the string "JOBMON" created after the indicated date.

Creating reports:

Reports of selected log details can be created in CSV, HTML, or XML formats, as follows:

1. Use the other facilities described in the above sections to select the messages for which you want to create a report.
2. Ensure that you only have the required properties selected, because the report is created using all of the selected properties. For details, see "Managing the log message properties."
3. Click the **Report ...** icon: .
4. On the New Report panel select the **Report to be created** (CSV, HTML, or XML).
5. Decide if you want to edit the report after it is created, clearing the **Open editor** check box, if not.
6. Click **Next**.
7. On the Report panel, enter the parent folder for the report, or select one of the listed folders.
8. Supply a file name for the report.
9. If you have selected an HTML Report, you can optionally click **Next** to open a panel where you select which pages of the Log Records view should be included in your report.
10. Click **Finish**. If you selected **Open editor**, the report is displayed as follows:

    CSV format

    Log Analyzer opens a window in your default application for CSV files (this might be Microsoft Excel, for example, on Windows).

    HTML format

    A pane is opened at the bottom of the Log Analyzer window.

    XML format

    A pane is opened at the bottom of the Log Analyzer window.
11. For HTML and XML reports make any changes you require. The pane does not verify the integrity of the HTML or XML after you have edited it, so any changes must be compatible with HTML format or the DTD or schema of the XML file, as appropriate.
12. If you have made any changes, when you click the **Close** icon you are asked if you want to save the changed file.

Managing the log message properties:

The message properties are not only displayed in the Property and Value pane, but also used for the search, sort, and filter actions. Some of the message properties might not be of interest to you. For example, there is a default property called *priority* that might not interest you. You can hide properties that do not interest you, as follows:

1. Click the **Choose Columns...** icon: .
2. In the Filter Properties panel are displayed all possible properties that Log Analyzer can manage. Many of them are not properties of Tivoli Workload Scheduler log files, and can be ignored.

Use the central arrow buttons > and < to move selected properties to and from the Properties list and the Selected Properties list.

Use the Up and Down buttons to move properties in the Selected Properties list into the display order you require (Click the **Sort** buttons on either list to order the properties in alphabetical order).

3. Click OK to finish. Any properties you have selected or deselected are added to or removed from displays and selection panels and drop-downs.

Highlighting messages:

Using the filters described in “Filtering messages” on page 24, you can set a highlight that automatically applies a background color to messages that match the filter in question. For example, by default, messages with a high severity (error messages) display the severity value with a red background; but using this facility you can configure Log Analyzer to display the entire message with a red background.

The following options are available:

Set highlights

Do this as follows:

1. Click the **Highlight Events...** icon: ▦.
2. In the Highlight Events... window, select one or more defined filters by clicking their check box.
3. For each selected filter, click the Color column and then the ellipsis button ... that is displayed in the color column.
4. Select, or define and select, the color you require.
5. Click OK to finish. The chosen background color or colors will be applied to the displayed messages.

   Note:

   a. You are using the filters only to determine the highlight – whatever filter you might have applied to the messages remains in force, but any displayed messages that match the filters have the chosen background color.
   b. If a message satisfies more than one filter, it is displayed against a black background to warn you of this duplication. To read the black text against the black background, click the message, and the text is displayed in white.

Remove highlights

To remove a highlight, open the Highlight Events window as above and deselect the appropriate filter.

Add new filters

You can add a new filter to the list of defined filters by clicking **New...** (see “Adding a new filter” on page 25 for details on the filter options available)

Edit or delete filters

You can edit or delete a filter from the list of defined filters by clicking the filter name and selecting **Edit...** or **Remove...**, as appropriate (see “Adding a new filter” on page 25 for details on the filter options available)

Show only highlighted events

To show only the highlighted events, click the arrow beside the **Highlight Events...** icon and select **Show only highlighted events**.

Comparing log files:
Two or more log files can be correlated, so that you can compare the messages from each. This might be useful, for example, when comparing a log from the master domain manager with a log from an agent.

To correlate log files take the following steps:

1. Ensure that you have imported the log files you want to correlate.
2. Right-click the **Correlations** folder in the **Log Navigator** tab, and select **New → Log Correlation**.
3. On the New Log Correlation panel give a name to the correlation.
4. Use the central arrow buttons > and < to move selected log files to and from the Available Logs list and the Selected Logs list.
5. Click **Next**.
6. Choose the correlation method:

   Tivoli Workload Scheduler Events Correlation
   The log files are correlated for matching Tivoli Workload Scheduler events

   Tivoli Workload Scheduler Job Execution Correlation
   The log files are correlated for matching Tivoli Workload Scheduler jobs

   Tivoli Workload Scheduler Linking Correlation
   The log files are correlated for corresponding linking and unlinking actions

   Time The log files are correlated with respect to time.

   Note that the first three correlations can only be performed on files that are in the Tivoli Workload Scheduler stdlist format.
7. Click **Finish**. The chosen log files are correlated.

The correlated log files can now be viewed in one of three ways:

Log View
This is the default. It shows the correlated messages in the first of the chosen log files. Select another log file in the **Log Navigator** pane to see the correlated messages in that file. To return to this view after working with one of the others, right-click **Correlation** in the **Log Navigator** pane and select **Open With → Log View**.

Log Interactions
Right-click **Correlation** in the **Log Navigator** pane and select **Open With → Log Interactions**. A graphic display shows how the two log files interact.

Log Thread Interactions
Right-click **Correlation** in the **Log Navigator** pane and select **Open With → Log Thread Interactions**. A graphic display shows how the two log files interact for individual threads.

Analyzing messages with a symptom catalog: Tivoli Workload Scheduler messages in the log file contain just the message text. To store more information about a message, or to document a course of action in respect of that message, you can create a symptom catalog, recording information in the catalog for any message that could appear in the log.

The symptom catalog is in the form of an xml file. The dtd of the xml file is simple, and can be determined by looking at the symptom catalog supplied with Tivoli Workload Scheduler.

This symptom catalog contains the message help information (explanation, system action, and operator response) for all of the messages that are logged in the Tivoli Workload Scheduler logs (from the *Maestro*, *Unison*, *Netman*, *Cluster*, and *Altinst* catalogs). To determine which messages these are, look at the beginning of each message set described in *Tivoli Workload Scheduler: Messages* – those belonging to the above-mentioned catalogs are indicated. This information is available in English, only. You can use this catalog as it is, modify the catalog, adding information pertinent to your enterprise, or create your own catalog, based on the structure of the example. Log Analyzer supports the contemporaneous presence of more than one catalog, though a message can be analyzed by only one catalog at a time.

Note: Not included are those messages logged in the log files of the application server.

The following sections describe how:

- "Installing the Tivoli Workload Scheduler symptom catalog"
- "Using the symptom catalog"

Installing the Tivoli Workload Scheduler symptom catalog:
The Tivoli Workload Scheduler symptom catalog is included in the `TWSLogParser.tar` that you have already installed. However, it needs to be separately imported into Log Analyzer, as follows:

1. Open the `TWSPLUGINS/TWSLogParser.tar`, described in "Installing and configuring the Log Analyzer plug-in" on page 20 by using a compression utility.
2. Open the `TWSLogParser_8.6.0.jar`, contained therein, by using a compression utility.
3. Extract the `TWSSymptomDB.symptom` into a temporary directory.
4. Start **`Eclipse`**.
5. From the **File Menu** select **Import**.
6. From the list of import sources, select **Symptom Catalog File** and click **Next**.
7. On the Symptom Catalog File panel, select the **Local Host** radio button.
8. Navigate to and select the `TWSSymptomDB.symptom` file in the temporary directory created in step 3.
9. Click **Finish** on the Import Symptom Catalog File panel.

The installation of the example symptom catalog is now complete. Use a similar procedure to install your own symptom catalog, if you decide to create one.

Using the symptom catalog:
If you have installed a symptom catalog (see "Installing the Tivoli Workload Scheduler symptom catalog") take the following steps to see the message help for one or more messages.

1. Select the log message which you require to analyze.
2. Right-click the log message and select **Analyze** to analyze just the selected message or **Analyze All** to analyze all messages in the log file page.
3. The message or messages you have chosen to analyze are listed in the Symptom Analysis Results View.

4. Click a message in this view.
5. Click the **Properties** tab.
6. Under **Other symptom properties**, click the message number in the field **Description**.
7. If the message is present in the symptom catalog, the message number will be highlighted in the TWSSymtomDB.symptom Symptom Definitions view.
8. Expand the selection to show the **Rule** and **Effect** entries.
9. Click **Effect**. In the same panel, under **Symptom effect details**, then **Identification properties**, then **Description**, is displayed the message help.
10. Click the associated ellipsis button … to view a panel showing the Explanation, System Action and Operator Response of the message.

Dynamic Workload Console log and trace files

This section describes the Dynamic Workload Console log and trace files, where to find them, and how to modify log and tracing levels.

Table 3 lists the log and trace files created by the Dynamic Workload Console:

Table 3. Locations of log files and trace files

Path	Files	Content

Dynamic Workload Console installed on the WebSphere Application Server:
On Windows:
`<`*`JazzSM_profile_dir`*`>\logs\server1`
On UNIX:
`<`*`JazzSM_profile_dir`*`>/logs/server1`, where, the default value of *JazzSM_profile_dir* is: `/opt/IBM/JazzSM/profile`
	`SystemOut.log,`
	`SystemErr.log`
	`trace.log`
		The Dynamic Workload Console run time logs and traces.

On Windows:
`<`*`INSTALLATION_MANAGER_LOGS_DIR`*`>\<`*`YYYYMMDD_HHMM`*`>.xml`. The default path is `C:\ProgramData\IBM\InstallationManager\logs\<`*`YYYYMMDD_HHMM`*`>.xml`
On UNIX and Linux:
`<`*`INSTALLATION_MANAGER_LOGS_DIR`*`>/<`*`YYYYMMDD_HHMM`*`>.xml`. The default path is `/var/ibm/InstallationManager/logs/<`*`YYYYMMDD_HHMM`*`>.xml`
where, `<`*`INSTALLATION_MANAGER_LOGS_DIR`*`>` is the directory where Installation Manager creates the log files, *`YYYYMMDD`* is the date and *`HHMM`* is the time when the log file is created.
	`<`*`YYYYMMDD_HHMM`*`>.xml`	The Dynamic Workload Console installation and uninstallation logs.

On Windows:
`%TEMP%``\TWA\TDWC`
On UNIX:
`$TMPDIR``/TWA/TDWC` if set, otherwise `/tmp/TWA/TDWC`
	`wsadmin.log`	The trace file containing the information about the configuration procedures stored during the installation phase.

Note: For information about the path represented by *`JazzSM_profile_dir`*, see the *Tivoli Workload Scheduler: Planning and Installation Guide*.

Activating and deactivating traces in Dynamic Workload Console

Describes how to activate or deactivate the Dynamic Workload Console traces.

Activating traces

This task activates Dynamic Workload Console traces.

Follow these steps to activate the Dynamic Workload Console traces at run time:

1. Log in to the Dynamic Workload Console as administrator of the WebSphere Application Server
2. In the Dynamic Workload Console navigation pane select **Settings > WebSphere Admin Console**
3. Click Launch **WebSphere Admin Console**.
4. In the navigation tree, click **Troubleshooting** > **Logs and Trace** > ***server name*** (for example **tdwcserver**) > **Diagnostic Trace**.
5. Select:

   Configuration

   If you want to apply the changes to the trace settings after having restarted the server.

   Run time

   If you want to apply the changes to the trace settings without restarting the server.
6. Click **Change Log Detail Levels** under Additional Properties.
7. Choose the packages for which you want to activate the traces. For the Dynamic Workload Console traces, make this selection:
   a. Scroll down to **com.ibm.tws.*** and expand the tree
   b. Click **com.ibm.tws.webui.***
   c. Either select **All Messages and Traces** or click **Messages and Trace Levels** and choose the trace level you require.
   d. Click **OK** > **Save**.
8. Stop and start the server, if necessary.

Alternatively, you can activate the Dynamic Workload Console traces as follows:

1. Edit the following XML file:

   Installed on the WebSphere Application Server:

   `*JazzSM_profile_dir*/config/cells/JazzSMNode01Cell/nodes/JazzSMNode01/servers/server1/server.xml`

   where, the default value of *JazzSM_profile_dir* is:

   On Windows operating systems

   `C:\Program Files\IBM\JazzSM\profile`

   On UNIX operating systems

   `/opt/IBM/JazzSM/profile`
2. Change the value assigned to the property **startupTraceSpecification** from:

   `com.ibm.tws.webui.*=info`

   to:

   `com.ibm.tws.webui.*=all.`
3. Save the changes

4. Stop and start the server.

When you enable tracing at run time the traces are stored in the following file:

Installed on the WebSphere Application Server:
<*JazzSM_profile_dir*>/logs/twaserver<*n*>/trace.log, (where <n> is null, 1, 2, and so on)

Deactivating traces

This task deactivates Dynamic Workload Console traces.

Follow the instructions for activating traces (see "Activating traces" on page 31), with these differences:

Deactivating traces using the Integrated Solutions Console
When you have selected **com.ibm.tws.webui.***, select **Messages Only**.

Deactivating traces by editing the startupTraceSpecification configuration
Change the value assigned to the property **startupTraceSpecification** from

```
com.ibm.tws.webui.*=all.to
```

```
com.ibm.tws.webui.*=info
```

Log file for the Self-Service mobile applications

The log file for the Self-Service Catalog and Self-Service Dashboards mobile applications can be configured in the Dynamic Workload Console global settings file. The log file is enabled by default. See Auditing mobile app activity for more information.

The log file is written to the following path:

On UNIX:
<*JazzSM_profile_dir*>/logs/server1/audit_SSC_SSD.log

On Windows:
<*JazzSM_profile_dir*>\logs\server1\audit_SSC_SSD.log

where the default value of *JazzSM_profile_dir* is: \TWA\JazzSM\profile or /opt/IBM/JazzSM/profile.

Dynamic workload scheduling log and trace files

The logs and traces produced by the dynamic workload scheduling processes are in most part included in the log and trace files of the Tivoli Workload Scheduler master domain manager. In addition, the files listed in Table 4 also contain log and trace material from these processes.

Table 4. Locations of log and trace files

Component	Path	Trace files	Log files	Content
Tivoli Workload Scheduler master domain manager	<*WAS_profile_path*> /logs/twaserver*N* where *N* is the number of the TWA instance and the default path for <*WAS_profile_path*> is *TWA_home*/WAS/TWSprofile	native_stderr.log native_stdout.log serverStatus.log startServer.log stopServer.log SystemErr.log trace.log	SystemOut.log	Additional log files used by dynamic workload scheduling

Table 4. Locations of log and trace files (continued)

Component	Path	Trace files	Log files	Content
Tivoli Workload Scheduler agent	*TWA_home* /TWS/stdlist/JM	JobManager_trace.log ita_trace.log	JobManager_message.log ita_message.log	Log and trace files
	TWA_home /TWS/stdlist/JM/ JOBMANAGER-FFDC/*yy-mm-dd*/		JobManager_message.log	Processing error log file
Job Brokering Definition Console	*user's home directory*/jd_workspace/ .metadata/tivoli/JBDC/logs	trace.log	msg.log, msg_cbe.log	Trace files
	$TEMP/TWA/jbdc851	trace_installation.log trace_installation_xml.log	msg_installation.log	Installation log and trace files

Activating logs for Job Brokering Definition Console

By default, logging is disabled. To generate log files, you must enable tracing in the **Preferences** dialog box.

To enable logging, perform the following steps:

1. Select **Preferences** in the Windows menu. The **Preferences** dialog box is displayed.
2. Optionally, specify a path and name for the log file in the **Log file directory** field.
3. Select the **Enable logging to console** check box.

The logs are saved in the directory indicated in Table 4 on page 32.

Dynamic agent log and trace files

Describes how to collect log and trace files for the agent.

You can collect log and trace files for the agent, by performing the following actions:

When the agent is running:
By using the **twstrace** command as described in “twstrace command” on page 35.

When the agent is stopped:
By configuring the [JobManager.Logging] section in the `JobManager.ini` file as described in Configuring log message properties [JobManager.Logging.cclog]. This procedure requires that you stop and restart the dynamic agent.

The log messages are written in the following file:

On Windows operating systems:
`<`*`TWA_home`*`>\TWS\stdlist\JM\JobManager_message.log`

On UNIX and Linux operating systems:
`<`*`TWA_home`*`>/TWS/stdlist/JM/JobManager_message.log`

The trace messages are written in the following file:

On Windows operating systems:

- `<`*`TWA_home`*`>\TWS\stdlist\JM\ITA_trace.log`
- `<`*`TWA_home`*`>\TWS\stdlist\JM\JobManager_trace.log`
- `<`*`TWA_home`*`>\TWS\JavaExt\logs\javaExecutor0.log`

On UNIX and Linux operating systems:

- <*TWA_home*>/TWS/stdlist/JM/ITA_trace.log
- <*TWA_home*>/TWS/stdlist/JM/JobManager_trace.log
- <*TWA_home*>/TWS/JavaExt/logs/javaExecutor0.log

Logging information about job types with advanced options

You can use the logging.properties file to configure the logging process for job types with advanced options, with the exception of the Executable and Access Method job types.

The logging.properties file is located on the Tivoli Workload Scheduler for z/OS Agent, under *TWA_home*/TWS/JavaExt/cfg/logging.properties.

After installation, this file is as follows:

```
# Specify the handlers to create in the root logger
# (all loggers are children of the root logger)
# The following creates two handlers
handlers = java.util.logging.ConsoleHandler,
           java.util.logging.FileHandler

# Set the default logging level for the root logger
.level = INFO

# Set the default logging level for new ConsoleHandler instances
java.util.logging.ConsoleHandler.level = INFO

# Set the default logging level for new FileHandler instances
java.util.logging.FileHandler.level
    = ALL
java.util.logging.FileHandler.pattern
    = C:\TWA_home\TWS\JavaExt\logs\javaExecutor%g.log
java.util.logging.FileHandler.limit
    = 1000000
java.util.logging.FileHandler.count
    = 10

# Set the default formatter for new ConsoleHandler instances
java.util.logging.ConsoleHandler.formatter =
            java.util.logging.SimpleFormatter
java.util.logging.FileHandler.formatter =
            java.util.logging.SimpleFormatter

# Set the default logging level for the logger named com.mycompany
com.ibm.scheduling = INFO
```

You can customize:

- The logging level (from INFO to WARNING, ERROR, or ALL) in the following keywords:

  .level Defines the logging level for the internal logger.

  com.ibm.scheduling
  Defines the logging level for the job types with advanced options. To log information about job types with advanced options, set this keyword to ALL.

- The path where the logs are written, specified by the following keyword:

  java.util.logging.FileHandler.pattern

Configuring trace properties when the agent is running

Use the **twstrace** command to set the trace on the agent when it is running.

Using the **twstrace** command, you can perform the following actions on the agent when it is running:

- “See command usage and verify version.”
- “Enable or disable trace.”
- Set the traces to a specific level, specify the number of trace files you want to create, and the maximum size of each trace file. See “Set trace information.”
- “Show trace information” on page 36.
- Collect trace files, message files, and configuration files in a compressed file. See “Collect trace information” on page 36.

You can also configure the traces when the agent is not running by editing the [JobManager.Logging] section in the `JobManager.ini` file as described in Configuring the agent section. This procedure requires that you stop and restart the agent.

twstrace command

Use the **twstrace** command to configure traces, and collect logs, traces, and configuration files (ita.ini and jobManager.ini) for agents. You collect all the information in a compressed file when it is running without stopping and restarting it.

See command usage and verify version

To see the command usage and options, use the following syntax.

Syntax

twstrace -u | **-v**

Parameters

-u Shows the command usage.

-v Shows the command version.

Enable or disable trace

To set the trace to the maximum or minimum level, use the following syntax.

Syntax

twstrace -enable | **-disable**

Parameters

-enable
Sets the trace to the maximum level. The maximum level is **1000**.

-disable
Sets the trace to the minimum level. The minimum level is **3000**.

Set trace information

To set the trace to a specific level, specify the number of trace files you want to create, and the maximum size the trace files can reach, use the following syntax.

Syntax

twstrace [**-level** <*level_number*>] [**-maxFiles** <*files_number*>] [**-maxFileBytes** <*bytes_number*>]

Parameters

`-level` <*`level_number`*>
: Sets the trace level. Specify a value in the range from 1000 to 3000, which is also the default value. Note that if you set this parameter to 3000, you have the lowest verbosity level and the fewest trace messages. To have a better trace level, with the most verbose trace messages and the maximum trace level, set it to **1000**.

`-maxFiles` <*`files_number`*>
: Specifies the number of trace files you want to create.

`-maxFileBytes` <*`bytes_number`*>
: Sets the maximum size in bytes that the trace files can reach. The default is **1024000** bytes.

Show trace information

To display the current trace level, the number of trace files, and the maximum size the trace files can reach, use the following syntax.

Syntax

twstrace -level | **-maxFiles** | **-maxFileBytes**

Parameters

`-level`
: See the trace level you set.

`-maxFiles`
: See the number of trace files you create.

`-maxFileBytes`
: See the maximum size you set for each trace file

Sample

The example shows the information you receive when you run the following command:

```
twstrace -level -maxFiles -maxFileBytes
```

```
AWSITA176I The trace properties are: level="1000",
max files="3", file size="1024000".
```

Collect trace information

To collect the trace files, the message files, and the configuration files in a compressed file, use the following syntax.

Syntax

twstrace -getLogs [**-zipFile** <*compressed_file_name*>] [**-host** <*host_name*>] [**-protocol** {*http* | *https* } [**-port** <*port_number*>][**-iniFile** <*ini_file_name*>]

Parameters

-zipFile *<compressed_file_name>*
Specify the name of the compressed file that contains all the information, that is logs, traces, and configuration files (ita.ini and jobManager.ini) for the agent. The default is **logs.zip**.

-host *<host_name>*
Specify the host name or the IP address of the agent for which you want to collect the trace. The default is **localhost**.

-protocol *http|https*
Specify the protocol of the agent for which you are collecting the trace. The default is the protocol specified in the **.ini** file of the agent.

-port *<port_number>*
Specify the port of the agent. The default is the port number of the agent where you are running the command line.

-iniFile *<ini_file_name>*
Specify the name of the **.ini** file that contains the SSL configuration of the agent for which you want to collect the traces. If you are collecting the traces for a remote agent for which you customized the security certificates, you must import the certificate on the local agent and specify the name of the **.ini** file that contains this configuration. To do this, perform the following actions:

1. Extract the certificate from the keystore of the remote agent.
2. Import the certificate in a local agent keystore. You can create an ad hoc keystore whose name must be **TWSClientKeyStore.kdb**.
3. Create an **.ini** file in which you specify:
   - **0** in the **tcp_port** property as follows:
     ```
     tcp_port=0
     ```
   - The port of the remote agent in the **ssl_port** property as follows:
     ```
     ssl_port=<ssl_port>
     ```
   - The path to the keystore you created in Step 2 in the **key_repository_path** property as follows:
     ```
     key_repository_path=<local_agent_keystore_path>
     ```

Log and trace files for the application server

The log and trace files for the WebSphere Application Server can be found in:

On UNIX:

```
<WAS_profile_path>/logs/server1/SystemOut.log
```

```
<WAS_profile_path>/logs/server1/trace.log
```

On Windows:

```
<WAS_profile_path>\logs\server1\SystemOut.log
```

```
<WAS_profile_path>\logs\server1\trace.log
```

where *WAS_profile_path* corresponds to the WebSphere Application Server profile path you specified when you installed one of the following components: master domain manager, backup master domain manager, dynamic domain manager, backup dynamic domain managers. The default path is: `TWA_home/WAS/TWSprofile`.

Setting the traces on the application server for the major Tivoli Workload Scheduler processes

The application server handles all communications between the Tivoli Workload Scheduler processes. The trace for these communications is set to "tws_info" by default (information messages only). The application server can be set to trace "all" communications, either for the whole product or for these specific groups of processes:

- Command line
- Connector
- Database
- Planner
- Utilities
- Dynamic workload broker

Significant impact on performance: Activating traces for the WebSphere Application Server leads to a significant impact on performance, especially if you set the tracing to "all". Thus you are strongly advised to identify the process group where the problem that you want to trace is occurring, and only set the trace to that group.

The procedure for changing the trace level on the WebSphere Application Server is as follows:

1. Log on to the computer where Tivoli Workload Scheduler is installed as the following user:

   UNIX root

   Windows
   Any user in the *Administrators* group.
2. Access the directory: `<TWA_home>/wastools`
3. Run the script:

   UNIX

   ```
   ./changeTraceProperties.sh -user <TWS_user>
                              -password <TWS_user_password>
                              -mode <trace_mode>
   ```

   Windows

   ```
   changeTraceProperties.bat -user <TWS_user>
                             -password <TWS_user_password>
                             -mode <trace_mode>
   ```

   where: <*trace_mode*> is one of the following values:

   active_correlation
   All communications involving the event correlator are traced.

   tws_all_jni
   All communications involving the jni code are traced. The jni code refers to code in shared C libraries invoked from Java. This option is used by, or under the guidance of, IBM Software Support.

   tws_all
   All Tivoli Workload Scheduler communications are traced.

   tws_alldefault
   Resets the trace level to the default level imposed at installation.

tws_cli
All Tivoli Workload Scheduler command line communications are traced.

tws_conn
All Tivoli Workload Scheduler connector communications are traced.

tws_db
All Tivoli Workload Scheduler database communications are traced.

tws_info
Only information messages are traced. The default value.

tws_planner
All Tivoli Workload Scheduler planner communications are traced.

tws_secjni
All Tivoli Workload Scheduler jni code auditing and security communications are traced. The jni code refers to code in shared C libraries invoked from Java. Only use this option under the guidance of, IBM Software Support.

tws_utils
All Tivoli Workload Scheduler utility communications are traced.

tws_broker_all
All dynamic workload broker communications are traced.

tws_broker_rest
Only the communication between dynamic workload broker and the agents is traced.

tws_bridge
Only the messages issued by the workload broker workstation are traced.

4. Stop and restart the application server, as described in the section on starting and stopping the application server in the *Tivoli Workload Scheduler: Administration Guide*.

To reset the traces to the default value, either run the above procedure with `trace_mode` as *tws_info*, or just stop and start the server, as follows:

1. Log on to the computer where Tivoli Workload Scheduler is installed as the following user:

   UNIX root

   Windows
   Any user in the *Administrators* group.
2. Access the directory: `<`*`TWA_home`*`>/wastools`
3. Stop and restart the application server as described in the section on starting and stopping the application server in the *Tivoli Workload Scheduler: Administration Guide*.

Log files for the command line client

The command line client writes its logs in the following files:

UNIX `<command line client install directory>/stdlist/yyyy.mm.dd/<TWS_user>`

Windows

```
<command line client install directory>\stdlist\yyyy.mm.dd\
<TWS_user>
```

For example, a log file created on UNIX on December 1, 2008 for the user *myUserID* where the command line client was installed in the default directory is called:

```
/opt/ibm/TWS/CLI/stdlist/2008.12.01/myUserID
```

Chapter 3. Capturing data in the event of problems

Describes the facilities available for data capture in the event of problems occurring. It provides full details of the Data capture utility and the provisions for first failure data capture.

In the event of any problems occurring while you are using Tivoli Workload Scheduler, you might be asked by the IBM Support Center to supply information about your system that might throw a light on why the problem occurred. The following utilities are available:

- A general data capture utility command that extracts information about Tivoli Workload Scheduler and related workstations; see “Data capture utility.”
- A first failure data capture (ffdc) facility built into **batchman** and **mailman** that automatically runs the data capture utility when failures occur in **jobman**, **mailman**, or **batchman**; see “First failure data capture (ffdc)” on page 50.

Data capture utility

The data capture utility is a script named `tws_inst_pull_info` which extracts information about a product instance of Tivoli Workload Scheduler.

This script collects information that IBM Software Support can use to diagnose a problem. The data capture utility runs on all the supported operating systems.

The data capture utility script is located in the `<TWA_home>/TWS/bin` directory and can be run from the UNIX or DOS prompt on the master domain manager, the backup master domain manager, or a standard or fault-tolerant agent.

When to run the utility

Describes the circumstances in which you would use the data capture utility.

Use the data capture utility in these circumstances:

- A Tivoli Workload Scheduler process has failed, but the automatic ffdc facility has not detected the failure and run the script for you (see “First failure data capture (ffdc)” on page 50)
- Tivoli Workload Scheduler is very slow or is behaving in any other abnormal way
- You are requested to do so by IBM Software Support

Using the utility when you need to switch to the backup master domain manager

If the master domain manager fails you might decide that you want to switch to the backup master domain manager to keep your scheduling activities running. If you also want to run the data capture utility you have two choices:

Data capture first

Run the data capture utility first to ensure that the information extracted is as fresh as possible. Then run **switchmgr**.

To reduce the time between the failure event and the running of **switchmgr**, run the data capture utility without dumping the DB2®

database, then run it again on what is now the backup master domain manager as soon as **switchmgr** has completed, and this time dump the DB2 database.

Switchmgr first
In an emergency situation, where you must continue scheduling activities, run **switchmgr** immediately and then run the data capture utility on both the new master domain manager and the new backup master domain manager as soon as **switchmgr** has completed.

Prerequisites

Describes the prerequisites for running the `tws_inst_pull_info` data capture utility.

Where the utility can be run
The utility can be run on the master domain manager, the backup master domain manager or a standard or fault-tolerant agent.

Who can run it
The utility must be run by one of the following users:

- Any Tivoli Workload Scheduler user
- Root (recommended on UNIX or Linux systems)
- Administrator (on Windows systems)

To determine the best user to run the script, make the following considerations:

Troubleshooting any type of problem

- On UNIX operating systems the user running the script must have read access to the `/etc` and `/etc/TWS` directories and read access to the `/etc/TWS/TWSRegistry.dat` file

Troubleshooting installation problems

- On UNIX operating systems, run the script as root to ensure to gather all installation information.

Troubleshooting problems when the product is running

- The script will only extract database object descriptions to which the user running it has EXTRACT permission in the Security file. The <*TWS_User*> (the user who performed the installation) normally has full access to all database objects, so this is the best user to run the script.
- The Tivoli Workload Scheduler instance must have a Symphony file otherwise some information will not be extracted.

Other prerequisites
The facility to dump the database is only available for DB2 databases.

Command and parameters

Describes the command syntax and parameters of the data capture utility.

Command syntax

Run the data capture utility with the following command:

```
tws_inst_pull_info.sh -u
tws_inst_pull_info.sh
     -twsuser <userid>
     -log_dir_base <path>
     [-run_db2_module <y/n>]
     [-extract_db_defs <y/n>]
     [-date <yyyymmdd>]
```

This is the syntax for UNIX operating systems; on Windows use **tws_inst_pull_info.cmd**

Parameters

-twuser
The Tivoli Workload Scheduler user that you specify when you install the Tivoli Workload Scheduler. This user must exist in the /etc/TWS/TWSregistry.dat file if the Tivoli Workload Scheduler instance already exists. This parameter is mandatory.

-log_dir_base
The base directory location where the collected data is stored. The user must have write access to the specified directory. This parameter is mandatory.

-run_db2_module
Only applicable if you are using a DB2 database. Identifies if DB2 related data is to be extracted. This operation might take some time. Valid values are y or n. Set to y if you want to collect DB2 related data. This parameter is optional. The default is n.

-extract_db_defs
Only applicable on the master domain manager. Identifies if database definitions are extracted. Valid values are y or n. This parameter is optional. The default is y.

The Tivoli Workload Scheduler Security access permission (EXTRACT) for the user running the script determines which database objects can be extracted. If the user (including root or Windows Administrator) running the script does not exist in the Tivoli Workload Scheduler Security files, then no database data is extracted.

-date
Used as the base date for collected data logs. If not specified, the script uses the current date by default. Run the data capture utility as soon as a problem occurs, to collect the data specific to the date and time of the problem. Thus, if the problem occurs on the current date, this option is not required. If the problem occurred earlier, then the date on which the problem occurred must be specified in the yyyymmdd format. Either the current date or the specified date is used to identify which files and logs are extracted. This parameter is optional.

-u Displays the usage of the command.

Tasks

Describes the tasks performed by the data capture utility.

Check that the user exists

The script verifies if the specified user exists in the TWSRegistry.dat file. If it does, the <TWS_HOME> directory used for data collection is extracted from the TWSRegistry.dat file. (UNIX only) If the specified user does not exist, the script verifies if the user exists in the /etc/passwd file. If no user exists, the script terminates.

Check the user permissions

The commands that are used during the data collection try to retain the original ownership of the files; when the script is run on Solaris platforms, the ownership of the files might change. If the script is run by a IBM Tivoli Workload Scheduler user (for example, not the root user) the script collects the available instance data.

Note:

Some Windows security policies can affect which data is extracted.

Create the directories in which to store the collected data

The script first creates the `<log_dir_base>` directory, where `<log_dir_base>` is the value provided for the `-log_dir_base` option. Within the `<log_dir_base>` directory, the script creates the `tws_info` directory and its subdirectories `TWS_yyyymmdd_hhmmss`, where yyyy=year, mm=month, dd=day, hh=hour, mm=minute and ss=seconds.

Collect data

The script collects system and product-specific data, creating a structure of subdirectories as described in "Data structure" on page 47.

Create the TAR file

UNIX The script creates the TAR file `TWS_yyyymmdd_hhmmss.tar` and compresses it to `TWS_yyyymmdd_hhmmss.tar.Z`, or if the operating system is Linux_i386, `TWS_yyyymmdd_hhmmss.tar.gz`.

Windows

On Windows operating systems there is no built-in compression program, so the script does not create a compressed file. If you intend to send the data to IBM Software Support you should use your own compression utility to create the compressed archive.

Data collection

Describes the data collected by the data capture utility.

System-specific data

For system-specific data, the script performs the following operations:

- Extracts local CPU node information
- Extracts the environment for the current IBM Tivoli Workload Scheduler instance
- Extracts `nslookup` information for local CPU
- Extracts `netstat` information for local CPU
- Extracts Services information
- Extracts the current running processes for the current Tivoli Workload Scheduler user
- Extracts the current available disk space for `%TWS_HOME%`
- Extracts the current available disk space for the `tmp` directory
- (UNIX only) Extracts the current system disk space
- (UNIX only) Extracts the current disk space of root `filesystem`
- (Solaris 10.x or above) Extracts `zonecfg` information
- (AIX® only) Copies `netsvc.conf`
- (UNIX only, except AIX) Copies the`nsswitch.*` files

- Copies the host and services files

Tivoli Workload Scheduler-specific data

For Tivoli Workload Scheduler-specific data, the script performs the following operations:

Collects Tivoli Workload Scheduler messages, as follows:
- Generates a list of the.msg files
- Extracts a list of the files in the %TWS_HOME%\ftbox directory

Collects Tivoli Workload Scheduler information, as follows:
- Extracts information about the Tivoli Workload Scheduler instance installation
- Extracts the Tivoli Workload Scheduler Security file
- Extracts a list of the Tivoli Workload Scheduler binaries
- Extracts a list of the files in the %TWS_HOME% directory
- Extracts a list of the files in the %TWS_HOME%\mozart directory
- Extracts a list of the files in the %TWS_HOME%\pids directory
- Extracts a list of the files in the %TWS_HOME%\network directory
- Extracts a list of the files in the %TWS_HOME%\audit\database directory
- Extracts a list of the files in the %TWS_HOME%\audit\plan directory
- Extracts the database definitions to flatfiles
- (UNIX only) Extracts the optman output
- (UNIX only) Extracts planman "showinfo" output
- (UNIX only) Extracts the list of the %TWS_HOME%\trace directory
- Copies jobmanrc.cmd and jobmanrc (if it exists)
- Copies the schedlog files of the previous day (the option -date is not used)
- Copies the schedlog files of the day on which the problem occurred, day - 1 and day + 1 (the option -date is used)
- Copies a list of the files in %TWS_HOME%\audit\database\${today}
- Copies a list of the files in %TWS_HOME%\audit\database\${yesterday}
- Copies a list of the files in %TWS_HOME%\audit\plan\${today}
- Copies a list of the files in %TWS_HOME%\audit\plan\${yesterday}
- Copies the BmEvents.conf file and the event log (if %TWS_HOME%\BmEvents.conf exists)
- Copies the content of the BmEvents log file (if %TWS_HOME%\BmEvents.conf exists)
- Copies the TWSRegistry.dat file
- Copies the content of the %TWS_HOME%\version directory
- Copies the files of the local workstation (the master domain manager and the backup master domain manager are also workstations on which jobs can be scheduled)
- (Windows only) If the z/OS connector is installed locally, copies the TWSZOSConnRegistry.dat file

Collects Tivoli Workload Scheduler logs, as follows:
- Copies the TWSUser BATCHUP and NETMAN stdlist files for current and previous date

- Copies the TWSMERGE and NETMAN log files from the stdlist\logs directory for current and previous date
- Copies the TWSMERGE BATCHUP and NETMAN stdlist files from the stdlist\traces directory for current and previous date

Collects Tivoli Workload Scheduler files, as follows:

- If the dynamic agent is installed, extracts a list of the files in the %TWS_HOME%\ITA directory
- If the dynamic agent is installed, when twstrace -getLogs is submitted to collect trace files, message files, and configuration files, the result is returned when the data capture utility script is run, tws_inst_pull_info.sh/tws_inst_pull_info.cmd.
- Extracts a list of the files in the %TWS_HOME%\stdlist\JM directory
- Extracts a list of the files in the %TWS_HOME%\jmJobTableDir directory
- If the dynamic agent is installed, copies the *.ini and *.log files in %TWS_HOME%\ITA and %TWS_HOME%\ITA\bin
- If the dynamic agent is installed, copies the *.out files in %TWS_HOME%\ITA and %TWS_HOME%\ITA\bin
- Copies all the files in the %TWS_HOME%\stdlist\JM directory
- Copies all the files in %TWS_HOME%\jmJobTableDir

Collect xtrace information from Tivoli Workload Scheduler processes as follows:

- Generates snapshot files for Tivoli Workload Scheduler processes in raw format
- Generates snapshot files in XML format from the raw format

If Tivoli Workload Scheduler for Applications is installed on the workstation, collects data on the methods, as follows:

- Copies the content of the %TWS_HOME%\methods directory (if it exists)
- (Windows only) Collects information about the Peoplesoft method
- Collects information about the r3batch method
- (UNIX only) Collects the r3batch picklist results

WebSphere-specific data

For WebSphere-specific data, the script performs the following operations:

- (Windows only) Extracts the list of WebSphere logs
- Extracts a list of the <WAS_HOME>/profiles
- Extracts a list of the Tivoli Workload Scheduler server files specific to WebSphere
- Copies the WebShpere logs
- Copies the Tivoli Workload Scheduler specific WebSphere logs
- Copies all the files from %WAS_PROFILE%.deleted (if it exists)
- Copies security.xml of defaultnode
- Copies all the Tivoli Workload Scheduler server files specific to WebSphere
- Collects the javacore*.txt files from the path <WAS_HOME>/profiles/TIPProfile when the data capture utility script is run, tws_inst_pull_info.sh/ tws_inst_pull_info.cmd.
- (On UNIX for root user only) Collects the data source properties
- (On UNIX for root user only) Collects the host properties
- (On UNIX for root user only) Collects the security properties

DB2-specific data

For DB2-specific data, the script performs the following operation (if the database is running on other supported database software, no data is collected):

- Collects the DB2 data using the `DB2Support` tool

Data structure

Describes the data structure created by the data capture utility to contain the extracted data.

Table 5. Collected data structure on UNIX

Gathered data directory structure	TWS filesystem or command	Files and listings
<root_dir>	General collector output	datagather_summary.log,TWS_<today>_files.txt NODE_*<hostname>*_TWSuser_*<twsuser>*_Base_Date_*<yyyymmdd>*.README
<root_dir>/db2_oracle_info	${db2user_home}/sqllib/db2dump "db2support -d *<db2db>*" output	db2diag.log db2support.zip
<root_dir>/system_info	"uname -a" output "env" output "nslookup ${local_cpu}" output "netstat -a", "netstat -rn" output "ps -ef |grep ${tws_user}" output "df -k" output "df -k /" output "df -k ${TWS_HOME}" output "df -k ${TMP_DIR}" output /etc "zonecfg list" output	cpu_node_info.txt instance_env_info.txt cpu_nslookup_info.txt cpu_netstat_info.txt ps_ef_listing.txt system_disk_available.txt root_disk_available.txt tws_home_disk_available.txt tmp_disk_available.txt hosts, services, netsvc.conf (AIX only), nsswitch.* (UNIX, except AIX) zonecfg.txt (Solaris 10.x or higher)
<root_dir>/tws_<version>_install	TWS install, upgrade log files from /tmp/TWA/tws<version> directory	*.*
<root_dir>/tws_info	${TWS_HOME}	Symphony, Sinfonia, StartUp, Jnext*, prodsked, Symnew, Jobtable, localopts, Security_file.txt (output from dumpsec), jobmanrc.txt,.jobmanrc.txt, twshome_files_list.txt
	${TWS_HOME}/schedlog	M${today}*, M${tomorrow}*, M${yesterday}* (-date option used)M${yesterday}* (-date option not used)
	${TWS_HOME}/mozart ${TWS_HOME}/bin/* ${TWS_HOME}/ftbox ${TWS_HOME}/pids ${TWS_HOME}/network ${TWS_HOME}/audit/database ${TWS_HOME}/audit/database/${today} ${TWS_HOME}/audit/database/${yesterday} ${TWS_HOME}/audit/plan ${TWS_HOME}/audit/plan/${today} ${TWS_HOME}/audit/plan/${yesterday} ${TWS_HOME}/BmEvents.conf ${TWS_HOME}/BmE* Composer output on master ${TWS_REGISTRY_PATH} ${TWS_HOME}/version ${TWS_HOME}/bin/optman ${TWS_HOME}/bin/planman "showinfo" ${TWS_HOME}/trace	globalopts, mozart_dir_list.txt tws_binary_list.txt ftbox_dir_list.txt pids_dir_list.txt network_dir_list.txt audit_database_dir_list.txt audit_database_${today} audit_database_${yesterday} audit_plan_dir_list.txt audit_plan_${today} audit_plan_${yesterday} BmEvents.conf BmEvents_event_log.txt job_defs, sched_defs, cpu_defs, calendar_defs, parms_defs, resource_defs, prompt_defs, user_defs TWSRegistry.dat *.* optman_ls_info.txt planman_showinfo.txt trace_dir_image_existing_snap.txt
<root_dir>/tws_ita_files	${TWS_HOME}/ITA	*.out, ita_dir_list.txt
<root_dir>/tws_ita_bin_files	${TWS_HOME}/ITA/bin	*.ini, *.log, ita_bin_dir_list.txt

Table 5. Collected data structure on UNIX (continued)

Gathered data directory structure	TWS filesystem or command	Files and listings
<root_dir>/tws_jobmgr_ffdc _files	N/A	--
<root_dir>/tws_jobmgr_ffdc _files/<date>	${TWS_HOME}/stdlist/JM/JOBMANAGER-FFDC/*	*.*
<root_dir>/tws_jobmgr_files	${TWS_HOME}/stdlist/JM	*.*, jobmanager_dir_list.txt
<root_dir>/tws_jobstore_files	${TWS_HOME}/jmJobTableDir/*	*.*, jobstore_dir_list.txt
<root_dir>/tws_logs	N/A	–
<root_dir>/tws_logs/stdlist	N/A	–
<root_dir>/tws_logs/stdlist /<date>	${TWS_HOME}/stdlist/<date>	twsuser, netman, JnextPlan, and ResetPlan files from date and date-1
<root_dir>/tws_logs/stdlist /logs	${TWS_HOME}/stdlist/logs	twsmerge and netman logs from date and date-1
<root_dir>/tws_logs/stdlist /traces	${TWS_HOME}/stdlist/traces	twsmerge and netman traces from data and date-1
<root_dir>/tws_methods	${TWS_HOME}/methods ./r3batch -v ./r3batch -t PL -c <cpu> -l * -j * -- "-debug -trace"	*.*, methods_dir_list.txt <cpu>_r3batch_ver.txt, r3batch version output <cpu>_r3_batch_info.txt, picklist of scheduled jobs on SAP
<root_dir>/tws_msg_files	${TWS_HOME} ${TWS_HOME}/pobox	*.msg, msg_file_listing.txt *.msg
<root_dir>/tws_xtrace_files	${TWS_HOME}/xtrace ./xcli -snap <snapfile> -p <process> ./xcli -format <snapfile> -d <symbolDB> -xml	<process>.snap_file, <process>.snap_file.xml
<root_dir>/was_info	${WAS_SERVER_DIR} ${WAS_SERVER_DIR} ${WAS_PROFILE_DIR}/config/cells/DefaultNode/security.xml "find ${WAS_DIR}/profiles" output "showDataSourceProperties.sh" output "showHostProperties.sh" output "showSecurityProperties.sh" output	${WAS_SERVER_DIR}_config_listing.txt *.* security.xml websphere_profile_home_list.txt DataSourceProperties.txt (on twsuer = root) HostProperties.txt (on twsuer = root) SecurityProperties.txt (on twsuer = root)
	For Solaris Operating Environment and HP-UX: ${WAS_PROFILE_DIR}/logs/${WAS_SERVER_DIR}	native_stdout.log
	For all other UNIX: ${WAS_PROFILE_DIR}	javacore*.txt
<root_dir>/was_info/logs	${WAS_PROFILE_DIR}/logs (WebSphere logs)	*.*
<root_dir>/was_info/ logs/<add. folders>	${WAS_DIR}/logs (TWS specific logs)	*.*

Table 6. Collected data structure on Windows

Gathered data directory structure	TWS filesystem or command	Files and listings
<root_dir>	General collector output	TWS_%today%_files.txt NODE_<hostname>_TWSuser_<twsuser>_Base_Date_<yyyymmdd>.README
<root_dir>/db2_oracle_info	"db2support -d <db2db>" output	db2support.zip

Table 6. Collected data structure on Windows (continued)

Gathered data directory structure	TWS filesystem or command	Files and listings
<root_dir>/system_ info	"netstat -abenoprsv" output "echo %COMPUTERNAME%" output "nslookup %local_cpu%" output %windir%\System32\drivers\etc\hosts "set" output (sc qc tws_maestro_%tws_user% output sc qc tws_netman_%tws_user% output sc qc tws_tokensrv_%tws_user% output) %windir%\System32\drivers\etc\services dir /w "%TMP_DIR%" dir /w "%TWS_HOME%" ntprocinfo.exe -v|findstr /I /c:%TWS_HOME%	cpu_netstat_info.txt cpu_node_info.txt cpu_nslookup_info.txt hosts instance_env_info.txt local_services_info.txt services tmp_disk_available.txt tws_home_disk_available.txt tws_process_listing.txt
<root_dir>/tws_info	%TWS_HOME%\Symphony %TWS_HOME%\Sinfonia %TWS_HOME%\StartUp.cmd %TWS_HOME%\Jnext*.* %TWS_HOME%\prodsked %TWS_HOME%\Symnew %TWS_HOME%\Jobtable %TWS_HOME%\schedlog %TWS_HOME%\localopts %TWS_HOME%\mozart\globalopts %TWS_HOME%\bin\dumpsec %TWS_HOME%\jobmanrc.cmd %TWS_HOME%\djobmanrc.cmd dir %TWS_HOME%* dir %TWS_HOME%\bin\* dir %TWS_HOME%\mozart\* dir %TWS_HOME%\pids\* dir %TWS_HOME%\network\* dir %TWS_HOME%\audit\database\* %TWS_HOME%\audit\database\%today% %TWS_HOME%\audit\database\%yesterday% %TWS_HOME%\audit\plan %TWS_HOME%\audit\plan\%today% %TWS_HOME%\audit\plan\%yesterday% %TWS_HOME%\BmEvents.conf %TWS_HOME%\BmE* Composer output on master %WINDIR%\system32\TWSRegistry.dat %WINDIR%\system32\TWSZOSConnRegistry. datxcopy /S "%TWS_HOME%\version	Symphony Sinfonia StartUp.cmd Jnext*.* prodsked Symnew Jobtable M%today%*, M%tomorrow%*, M%yesterday%* (-date option used) M%yesterday% (-date option not used) localopts globalopts Security_file.txt jobmanrc.txt djobmanrc.txt twshome_files_list.txt tws_binary_list.txt mozart_dir_list.txt pids_dir_list.txt network_dir_list.txt audit_database_dir_list.txt audit_database_%today% audit_database_%yesterday% audit_plan_dir_list.txt audit_plan_%today% audit_plan_%yesterday% BmEvents.conf BmEvents_event_log.txt job_defs, sched_defs, cpu_defs, calendar_defs, parms_defs, resource_defs, prompt_defs, user_defs TWSRegistry.dat TWSZOSConnRegistry.dat *.*
<root_dir>/tws_ <version>_install	xcopy /S "%TEMP%\tws%TWS_VMR%" xcopy /S "%TEMP%\tws%TWS_VMR%fixpack"	*.* *.*
<root_dir>/tws_ita_ files	dir %TWS_HOME%\ITA %TWS_HOME%\ITA\*.ini %TWS_HOME%\ITA\*.log %TWS_HOME%\ITA\*.out	ita_dir_list.txt *.ini *.log *.out,
<root_dir>/tws_ jobmgr_ffdc_files	%TWS_HOME%\stdlist\JM\JOBMANAGER-FFDC\*	*.*
<root_dir>/tws_ jobmgr_files	dir %TWS_HOME%\stdlist\JM %TWS_HOME%\stdlist\JM\*	jobmanager_dir_list.txt *.*
<root_dir>/tws_ jobstore_files	dir %TWS_HOME%\jmJobTableDir %TWS_HOME%\jmJobTableDir\*	jobstore_dir_list.txt *.*
<root_dir>/tws_ logs	%TWS_HOME%\stdlist/<date> %TWS_HOME%\stdlist/logs %TWS_HOME%\stdlist/traces	twsuser, netman and batchup files from date and date-1 twsmerge, netman, JnextPlan, and ResetPlan logs from date and date-1 twsmerge and netman traces from data and date-1

Table 6. Collected data structure on Windows (continued)

Gathered data directory structure	TWS filesystem or command	Files and listings
<root_dir>/tws_methods	%TWS_HOME%\methods\* echo %CMDEXTVERSION% (PeopleSoft method) psagent.exe -v (PeopleSoft method) r3batch -v (SAP method)	*.* CMDEXTVERSION.txt psagent_exe_v.txt r3batch_ver.txt
<root_dir>/tws_msg_files	"%TWS_HOME%*.msg" "%TWS_HOME%\pobox\*.msg" dir "%TWS_HOME%\ftbox\*"	*.msg, msg_file_listing.txt *.msg ftbox_dir_list.txt
<root_dir>/tws_methods	%TWS_HOME%/methods ./r3batch -v ./r3batch -t PL -c <cpu> -l * -j * -- "-debug -trace"	*.*, methods_dir_list.txt <cpu>_r3batch_ver.txt, r3batch version output <cpu>_r3_batch_info.txt, picklist of scheduled jobs on SAP
<root_dir>/tws_xtrace_files	%TWS_HOME%/xtrace xcli -snap <*snapfile*> -p <*process*> xcli -format <*snapfile*> -d <*symbolDB*> -xml	<*process*>.snap_file, <*process*>.snap_file.xml
<root_dir>/was_info	dir "%WAS_SERVER%* dir "%WAS_HOME%\profiles %WAS_PROFILE%\config\cells\DefaultNode\security.xml @cmd /C "%WAS_TOOLS%\showDataSourceProperties.bat" @cmd /C "%WAS_TOOLS%\showHostProperties.bat" @cmd /C "%WAS_TOOLS%\showSecurityProperties.bat"	%WAS_SERVER%_config_listing.txt websphere_profile_home_list.txt security.xml showDataSourceProperties.txt showHostProperties.txt showSecurityProperties.txt
	%WAS_PROFILE%	javacore*.txt
<root_dir>/was_info/ %WAS_SERVER%_config_files	%WAS_SERVER%*	*.*
<root_dir>/was_info/ MAIN_WAS_LOGS	xcopy /S "%WAS_HOME%\logs" (WebSphere logs)	*.*
<root_dir>/was_info/ %WAS_PROFILE%_logs	xcopy /S "%WAS_PROFILE%\logs" (TWS specific logs)	*.*
<root_dir>/was_info/ %WAS_PROFILE%.deleted	xcopy /S "%WAS_HOME%\profiles\%WAS_PROFILE%.deleted"	*.*

First failure data capture (ffdc)

Describes how the data capture tool is used automatically by components of the product to create a *first failure data capture* of the products logs, traces and configuration files.

To assist in troubleshooting, several modules of the product have been enabled to create a *first failure data capture* in the event of failure. This facility uses the data capture tool tws_inst_pull_info (see "Data capture utility" on page 41) to copy logs, traces, configuration files and the database contents (if the database is on DB2) and create a compressed file that you can send to IBM Software Support.

This tool is run in the following circumstances:

Jobman fails
If batchman detects that jobman has failed, it runs the script, placing the output in <TWA_home>/stdlist/*yyyy.mm.dd*/collector/JOBMAN

Batchman fails
If mailman detects that batchman has failed, it runs the script, placing the output in <TWA_home>/stdlist/*yyyy.mm.dd*/collector/BATCHMAN

Mailman fails

If mailman detects that it itself has failed with a terminal error, it runs the script, placing the output in <TWA_home>/stdlist/*yyyy.mm.dd*/collector/MAILMAN. Note that process hard stops, for example, segmentation violations, are not tracked by mailman itself.

Netman child process fails

If netman detects that one of its child processes has failed, it runs the script, placing the output in <TWA_home>/stdlist/*yyyy.mm.dd*/collector/NETMAN

Only one data collection is kept for each day. Each day a new data collection overwrites the previous day's collection.

Within each of the target output directories, the output file is stored in the /tws_info/TWS_yyyymmdd_hhmmss directory.

To perform ffdc, the tws_inst_pull_info script is run by a script called collector.sh (.cmd). You can customize this script (located in <*TWA_home*>/TWS/bin) to apply different parameters to the tws_inst_pull_info script for any of the enabled modules (jobman, mailman, batchman and netman)

Creating a core dump of the application server

If the WebSphere Application Server hangs, and you decide to contact IBM Software Support for assistance, it would help the diagnosis of the problem if you could provide one or more core dumps taken during the hang. Use the following procedure to create a core dump:

1. Log on as a WebSphere Application Server administrator
2. Change to the directory:*WAS_profile_path*/bin and run the script **wsadmin.sh/bat** to open the administration shell. *WAS_profile_path* corresponds to the WebSphere Application Server profile path you specified at installation time. The default path is *TWA_home*/WAS/TWSprofile.
3. Set the *jvm* variable as follows:

   ```
   set jvm [$AdminControl completeObjectName type=JVM,process=<server_name>,*]
   ```

   where <*server_name*> is determined by looking in the following directory: *WAS_profile_path*/config/cells/ TWSNodeCell/nodes/TWSNode/servers.

   For each instance of Tivoli Workload Automation on the computer you will see a directory, the name of which is the <*server_name*>. If there is more than one directory you must determine which instance you want to dump.
4. Run the core dump as follows:

   ```
   $AdminControl invoke $jvm dumpThreads
   ```

   This creates a core dump in the *WAS_profile_path*/bin directory with the following name:

   Windows and Linux

   javacore.<*yyyymmdd*>.<*hhmmss*>.<*pid*>.txt, where yyyy = year, mm = month, dd = day, ss = second, and pid = process ID.

   UNIX javacore<*pid*>.<*time*>.txt where pid = process ID and <time> = the number of seconds since 1/1/1970.
5. Repeat step 4. The more dumps you can take, the more information is available to the support team.

6. Send the dumps, the application server log files and a detailed description of what you were doing, to IBM Software Support.

Chapter 4. In-Flight Trace facility for engine

Describes the tracing facility for troubleshooting the Tivoli Workload Scheduler engine. This facility is called In-Flight Trace.

This document describes the Tivoli Workload Scheduler server tracing facility that replaced Autotrace from version 8.6. The facility is designed to be used by IBM Software Support, but is fully described here so that you understand how to use it if requested to do so by IBM Software Support.

The Tivoli Workload Scheduler server tracing facility (hereafter called In-Flight Trace) is a facility used by IBM Software Support to help solve problems in Tivoli Workload Scheduler. At maximum capacity it can trace the entry into and exit from every Tivoli Workload Scheduler function, plus many other events, and includes all log and trace messages currently issued by the CCLog facility.

In-Flight Trace has been conceived as a multi-product tool, although this description concentrates on its use for Tivoli Workload Scheduler.

It works as follows:

Existing trace calls

In-Flight Trace uses the logging and tracing facilities still used by the CCLog logging and tracing mechanism, and which were used by the Autotrace facility in releases before 8.6.

Function entry and exit

In addition, the Tivoli Workload Scheduler engine product build now inserts trace calls in the code to record the entry to and exit from every function and assigns a sequential numeric function ID to each function. The trace calls use these IDs to identify the functions.

Building the xdb.dat symbols database

During the same process, the build creates the **xdb.data** symbols database associating the name of each function with the function ID. In this way, the trace writes the minimum information possible to the trace record (the function ID), which can then be expanded to give the function name later for viewing.

The build also stores in the database the source file and line number of each function.

Further, it stores the name of the component which "owns" the function. One program contains many components, each of which contains many functions.

The symbols database is the key to managing the activation/deactivation and filtering of the traces. The information it contains is encrypted.

Tracing in shared memory

The traces are written to shared memory. This is divided into segments, and the traces chosen to be written to each segment are written in an endless loop. At maximum capacity (tracing all events on all functions) the traces might loop every few seconds, while at minimum capacity (tracing just one little-used function), the trace might not loop for months.

Segments

You can choose to use any number of segments (each is identified by a unique number) and for each segment can determine how much shared memory the segment is to use. More and bigger segments consume more memory, with all the normal consequences that entails.

Programs

Any number of Tivoli Workload Scheduler programs can be configured to be saved to the same segment. You decide which programs are to be traced to which segments, and whether those segments are to be enabled for tracing, by modifying the basic configuration. Any of the Tivoli Workload Scheduler programs and utilities can be configured for tracing.

Basic configuration

The basic configuration determines which segments are enabled for tracing, and makes an initial determination of whether the tracing for a specific program is activated. It is achieved by editing a configuration file with a text editor. The Tivoli Workload Scheduler engine (the product) must be restarted to make the changes take effect. The configuration is divided into the following sections:

Global

This section not only includes general information like the product code and the segment size, but also acts as a "catch-all", where traces from programs not specifically configured are configured.

<program>

If a program is not to be traced under the "global" section, a specific program section must be configured, defining which segment the program is to be traced in, and other basic information. The information in a program section overrides that in the global section, but just for that program.

Activating and deactivating traces

For segments which are enabled, traces for specific programs can be activated and deactivated on-the-fly, from the command line, as these flags are held in memory.

Trace levels

Events in the code have been assigned trace levels. The lower the level, the more drastic the event. The levels range from reporting only unrecoverable errors, through recoverable errors, warnings, and informational messages and three debug levels to the maximum reporting level, where even function entry and exit events are recorded.

Trace levels can also be changed on-the-fly, from the command line, without restarting the engine.

Snapshots

In-Flight Trace lets you take a snapshot of the current contents of the traces for a program or segment and save it to a file. You can optionally clear the memory in the segment after taking the snapshot. The snapshot file is in the internal format, containing function IDs, etc., and is not easily readable. It must be formatted to make it readable.

Formatting the snapshot

A command-line option lets you format a snapshot file for the standard output. The output can be in CSV or XML format, and information about the source data (file name and line number) is automatically included. Or you can select the standard trace format (one line per trace record) and choose whether to include the source information. And finally you can choose whether to include the header information (ideal for a printed output) or not (ideal for the creation of a file you are going to analyze programmatically).

Filtering

The tooling-up of the code is a fully automatic process and you might find that your traces include frequently used components or functions that are not causing any problems. You would like to exclude them from the trace and you do this by using the command line to create a filter file, in which you can specify to include all and then exclude any combinations of specific components, functions, and source files. Alternatively, you can exclude all and then include any combinations of specific components, functions, and source files. Functions can also be included or excluded by specifying a range of function IDs.

Once created, a filter file is declared either in the global section of the configuration file or one of the program sections. You can have more than one filter file which you use with different programs, however, note that the filter is applied at segment level. This means that if you have two programs writing to the same segment, the filter is applied to both even if it is only specified for one of them.

Existing filter files can be modified from the command line.

Products

In-Flight Trace is conceived as a multi-product facility. Each product has its own separate configuration file. Multiple instances of the facility can be run on the same system, completely independently of each other. However, you can also control one product from the tracing facility of another, by identifying the product to which to apply the commands. For example, if you had two versions of Tivoli Workload Scheduler running on the same system, you could control the In-Flight Trace facility for both of them from one place, inserting the appropriate product code when required by the command syntax.

In-Flight Trace configuration file

Describes the In-Flight Trace configuration file, `xtrace.ini`.

The In-Flight Trace configuration file is used to initialize the shared memory at product startup. The information in shared memory determines which traces are saved at which level. All function trace calls are parsed by the trace facility to determine if they should be saved.

The In-Flight Trace configuration file is found in the following path:

`<`*TWA_home*`>/TWS/xtrace/xtrace.ini`

An example of the file is as follows:

```
[ _GLOBAL_ ]
Product      = <PRODUCT>
Enabled      = y
Active       = y
SegNum       = 1
FilterFile   = $(install_dir)/bin/xfull.xtrace
SegSize      = 10240
Level        = 80
SegPerUser   = n
```

```
[netman]
Enabled      = y
Active       = y
SegNum       = 2
Level        = 80
```

Changing the configuration

Describes how to modify the configuration file.

To permanently change the configuration in shared memory that controls the tracing, edit the file, save it, and restart the product. On UNIX platforms you must also clean up the memory by running the tracing command with the **-clean** parameter between stopping and restarting the product. Thus, the procedure to change the configuration file is as follows:

UNIX

1. Modify the configuration file
2. Save the configuration file
3. Stop the product
4. Run **`xcli -clean`**
5. Restart the product

Windows

1. Modify the configuration file
2. Save the configuration file
3. Stop the product
4. Restart the product

You can change much of the configuration in shared memory that controls the tracing by using the **`xcli`** command (see “xcli command syntax” on page 59). However, any changes made in this way are not updated in the configuration file, so at the next initialization, unless you have specifically edited the file, the parameters used are those that were in the file last time you restarted the product.

Configuration file syntax

The configuration file is divided into sections.

Each section begins with a header in one of the two following formats (the square brackets are required, they are not command syntax indicators):

```
[ _GLOBAL_ ]
[<program>]
```

[_GLOBAL_]
There must be only one `[ _GLOBAL_ ]` section containing general information about the product and the tracing configuration for all programs that do not have a specific section.

[<*program*>]
You can define a separate section for each of the Tivoli Workload Scheduler programs ([<*program*>]). The following programs are most likely to require tracing:

APPSRVMAN
BATCHMAN
JOBMAN

JOBMON
MAILMAN
NETMAN
WRITER
JAVA (the connector)

However, you can trace any executable program such as COMPOSER, CONMAN and all the utilities stored in the Tivoli Workload Scheduler `/bin` directory.

You cannot have more than one instance of a section for the same program.

If a program has no specific section, its trace configuration uses the defaults in the `[ _GLOBAL_ ]` section. Details defined in the program sections in almost all cases override the corresponding values in the `[ _GLOBAL_ ]` section (the exception is Product).

The program name is not case-sensitive. For example, you can write `Netman`, `NetMan`, `netman` or `NETMAN`.

Note: On UNIX operating systems, `JOBMAN` and `jobman` are two separate programs performing different functions. This means that on UNIX operating systems, because of the case-insensitivity, if you set a trace configuration section for either `JOBMAN` or `jobman`, both programs will be traced using that section and therefore to the same segment. This is a limitation that cannot be avoided at present.

Available keys (each key can be defined only once in each section):

Product
`[ _GLOBAL_ ]` only. Product identification string. Required.

Enabled
Specifies if the segment is enabled. If you change the enablement of a segment by changing this value and saving the configuration file, you must restart the product to make the change effective. If the segment in the `[ _GLOBAL_ ]` section is not enabled, the entire tracing facility is disabled. Enter "y" or "n".

Active
Specifies whether tracing for the specific program is active. If the `[ _GLOBAL_ ]` section is not activated, the tracing for all programs without a specific section is not activated. This value can be changed without restarting the product by using the tracing command. Enter "y" or "n".

SegNum
Determines the segment number to use for tracing for a specific section. More than one program can be defined for the same segment in different sections. The `SegNum` specified in the `[ _GLOBAL_ ]` section is used by any program that does not have a specific section defined. If you change the segment number of a program by changing this value and saving the configuration file, you must restart the product to make the change effective. Enter any numeric value.

FilterFile
Specifies the file that contains the criteria for filtering components, functions, or source files. The file is applied at segment level, so you cannot specify different filter files for different programs that use the same segment. This value can be changed without restarting the product by using the tracing command. Enter the fully qualified file path.

The default filter file supplied with the product does not trace the top 5% most-used routines (by being most-used they are less likely to exhibit problems).

SegSize
Specifies the segment size (Kb). If this value is supplied more than once in different sections for the same segment, the trace facility uses the highest of the supplied values. If you change the size of a segment by changing this value and saving the configuration file, you must restart the product. Enter a numeric value.

The full shared memory usage is the sum of all enabled segments, plus several Kbytes for the control data.

On UNIX, ensure that you do not exceed the configurable kernel parameter which determines the maximum size of shared memory.

Level Specifies the maximum level to be traced for the program. Enter one of the following numeric values:

Level	Description
10	Unrecoverable
20	Error
30	Warning
40	Informational
50	Debug minimum
60	Debug medium
70	Debug maximum
80	Function entry and exit

If this value is supplied more than once in different sections for different programs that trace in the same segment, the trace facility uses the appropriate values for each program. Thus, the segment might contain traces for one program at level 10 and for another at level 80.

This value can be changed without restarting the product by using the tracing command.

SegPerUser
Specifies if the segment provides access to the owner of the segment only (y) or all users (n). Enter "y" or "n"

In-Flight Trace command: xcli

This topic describes the command used to control all aspects of the run time behavior of In-Flight Trace.

The `xcli` command modifies the information in shared memory. Shared memory is initialized from the information in the configuration file, but any changes to shared memory that are made using the options of this command are *not* saved in the configuration file.

Selecting programs, segments, and products

Describes how to select programs, segments, and products in the xcli command.

In many of the parameters of the `xcli` command, you are required to select a program or a segment, and optionally a product. To avoid repeating the same information, details of how to do this are supplied here:

Program
: Select a program for a specific action by identifying the global section ([`_GLOBAL_`]) or any of the configuration file sections containing Tivoli Workload Scheduler programs ([<*program*>]).

Segment
: Select one of the segment numbers that were defined in the configuration file when the shared memory was initialized. If you need to use extra segments or redistribute the programs within the segments, you must edit and save the configuration file and then stop and restart the Tivoli Workload Scheduler engine.

Product
: The tracing facility is multi-product. However, if you run the `xcli` command from the same directory as a configuration file, you automatically run it on the product defined in that configuration file, without having to define the product in the command.

But if you are using In-Flight Trace to trace more than one product, and you want to use the command supplied with product A to modify the tracing of product B, you must supply the product code for product B as a parameter to the command, by adding the **-P** <*product*> parameter to the command string. This parameter in only applicable to the **-snap**, **-query**, **-active**, **-level**, and **-filter** subcommands.

xcli command syntax

Gives the full syntax of the xcli command.

Controls all of the runtime aspects of the In-Flight Trace facility. It modifies the information in shared memory. Shared memory is initialized from the information in the configuration file, but any changes to shared memory made using the options of this command are *not* saved in the configuration file.

You must be the ***TWS_user*** to run the command.

Syntax

```
xcli

-snap <snap_file>
   { -p <program> | -s <segment> }
   [ -descr <description> ]
   [ -clean ]
   [ -P <product> ]

-format <snap_file>
   -d <symbols_database>
   [ -full ]
   [ -noHeader ]
   [ -standard [ -source ] | -xml | -csv ]

-query [ -p <program> | -s <segment> ] [-P <product> ]
```

```
-active { y | n }
   { -p <program> | -s <segment> | -all }
   [ -P <product> ]

-level <level>
   { -p <program> | -s <segment> | -all }
   [ -P <product> ]

-filter <filter_file>
   { -p <program> | -s <segment> }
   [ -P <product> ]

-createFilter <filter_file> -d<symbols_database>
   [ -add_all |
     -add_comp <component> | -remove_comp <component> |
     -add_func <function_name> | -remove_func <function_name> |
     -add_func_id <function_ID> | -remove_func_id <function_ID> |
     -add_func_id_range <from> <to> | -remove_func_id_range <from> <to> |
     -add_filter <filter_file> | -remove_filter <filter_file> ] ...

-modifyFilter<filter_file> -d<symbols_database>
   [ -add_all | -remove_all
     -add_comp <component> | -remove_comp <component> |
     -add_func <function_name> | -remove_func <function_name> |
     -add_func_id <function_ID> | -remove_func_id <function_ID> |
     -add_func_id_range <from> <to> | -remove_func_id_range <from> <to> |
     -add_filter <filter_file> | -remove_filter <filter_file> ] ...

-clean

-config [<config_file> ]
```

Arguments

-snap <*snap_file***>**

Saves a snapshot of part of the shared memory to the indicated file. For the snapshot, you can use the following parameters:

{ -p <*program***> | -s <***segment***> }**

Define if the snapshot is for either a program or a segment. If it is made for a program which shares a segment with other programs, the whole segment is snapped, but the header information shows which program it was snapped for. See also "Selecting programs, segments, and products" on page 58.

[-descr <*description***>]**

Supply a description for the snapshot. Surround it with double quotation marks if it contains spaces.

[-clean]

Optionally clear the entire segment memory after taking the snapshot. If any process is still using the memory, the clean operation cannot be performed and a warning message is given.

Note: If your snapshot is of a program, this option clears the memory for all traces in the segment for which the program is configured, including those of any other programs that have been configured to write to it.

[-P <*product* >**]**
See “Selecting programs, segments, and products” on page 58.

The snap file header information is as follows:

```
"Snap information:
"  Product:        <product>
"  Description:    <description>
"  Snap platform:  <platform>
"  Snap time (GMT): <time>
"  Snap program:   <program>
"  Snap segment:   <segment>
"     Segment size: <size>(Kb)
"     Segment use:  <percent_used>
```

-format <*snap_file*>
Formats the supplied snapshot file for the standard output. The formatting options are:

-d <*symbols_database*>
Supply the name of the symbols database to use for the formatting. The database must be either the same version as the instance of Tivoli Workload Scheduler from which the snap was captured (ideally), or a later version. The default symbols database is **xdb.dat**.

[-full]
If the snap was taken of a single program in a multi-program segment, use this option to send the full set of traces (all programs) to the standard output, rather than that of the single program as determined by the header information in the snap file.

[-noHeader]
Use this to suppress the output of the header information. The standard output then just consists of trace messages, which is more acceptable as input to an analysis program.

[-standard [-source] | -xml | -csv]
Define the formatting of the traces. If you have selected **-standard**, use the optional parameter **-source** to add information about the source file and line number. This source information is automatically included in the **-xml** and **-csv** options. If you supply none of these, the format defaults to **-standard**.

-query Outputs the enablement or activation state of a program or segment. Without parameters, this option displays information about the entire configuration to the standard output. The parameters are:

[-p <*program*> **| -s** <*segment*> **]**
Optionally define whether the query is for a specific program or a specific segment. See also “Selecting programs, segments, and products” on page 58.

[-P <*product*> **]**
See “Selecting programs, segments, and products” on page 58.

-active { y | n }
Activates (y) or deactivates (n) a program or segment in memory, or all programs and segments. The parameters are as follows:

{ -p <*program*> **| -s** <*segment*> **| -all }**
Activate either a specific program or a specific segment, or all programs and segments. See also “Selecting programs, segments, and products” on page 58.

[-P *<product>* **]**
See “Selecting programs, segments, and products” on page 58.

-level *<level>*
Sets the tracing level for a program or segment in memory. Specify one of the following level codes:

Level	Description
10	Unrecoverable
20	Error
30	Warning
40	Informational
50	Debug minimum
60	Debug medium
70	Debug maximum
80	Function entry and exit

For example, to trace only unrecoverable failures and errors, supply "20".

The parameters are as follows:

{ -p*<program>* **|** **-s***<segment>* **|** **-all }**
Set the level for either a specific program or a specific segment, or all programs and segments. See also “Selecting programs, segments, and products” on page 58.

[-P*<product>* **]**
See “Selecting programs, segments, and products” on page 58.

-filter *<filter_file>*
Applies a new filter file for a program or segment in shared memory. The parameters are as follows:

{ -p *<program>* **|** **-s** *<segment>* **}**
Determine the filter file to be used for either a program or a segment. See also “Selecting programs, segments, and products” on page 58.

[-P *<product>* **]**
See “Selecting programs, segments, and products” on page 58.

default

The filter file is created using the **-createFilter** option. In this option (and the associated **-modifyFilter** option) you specify any components and functions you want to include or exclude from the tracing (see below for more details). This information is written in the filter file as a list of all functions in the symbols database (by ID) with a bit set to indicate whether they are to be included or excluded. The default symbols database is **xdb.dat**.
Any filter files defined in the configuration file are loaded into shared memory at initialization. If you use this option, the shared memory area is overwritten with the new contents. If the new filter file has been created using a different symbols database than the original file, a warning is given, because it is advisable to use the same symbols database when creating the new filter file.
The default filter file supplied with the product is set to not trace the 5%

most-used routines, on the basis that the most-used routines are less likely to create problems because they are well tried and tested.

-createFilter *<filter_file>*

Creates the filter file named in the parameter. The file must not already exist. There is no facility to view a filter file, so use meaningful names and maintain your own documentation of the contents of each filter file.

To populate the file supply one or more of the following parameters. If you *add* an item, its traces will be saved; if you *remove* an item, its traces will *not* be saved. By default, all components and functions are removed.

-d *<symbols_database>*

Identify the symbols database to use to verify the component names, and the function names and IDs.

-add_all

Add all components and functions to the filter file. Use this with one of the **-remove** options to create an exclusive "all except ..." filter.

-add_comp *<component>* **|** **-remove_comp** *<component>*

Add a component to the file or remove one that has already been added. For example, you could add all components using **-add_all** and then remove just one, which would be easier than adding all of the required components individually. Discover component names by viewing a formatted snapshot.

-add_func *<function_name>* **|** **-remove_func** *<function_name>*

Add a function to the file or remove one that has already been added. For example, you could add a component using **-add_comp** and then remove one of its functions, which would be easier than adding all of the required functions individually. Discover function names by viewing a formatted snapshot.

-add_func_id *<function_ID>* **|** **-remove_func_id** *<function_ID>*

Adds a function to the file by ID, or removes one that has already been added. For example, you could add a component using **-add_comp** and then remove one of its functions, which would be easier than adding all of the required functions individually. A function ID is a sequential number allocated to a function when the product was built, and stored in the symbols database. Discover function IDs by viewing a formatted snapshot.

-add_func_id_range *<from>* *<to>* **|** **-remove_func_id_range** *<from>* *<to>* **|**

Adds a range of functions to the file by ID or removes a range of functions that have been already added. Discover function IDs by viewing a formatted snapshot.

-add_filter *<filter_file>* **|** **-remove_filter** *<filter_file>*

Adds or removes the contents of an existing (different) filter file, as follows:

Adding a filter file

If you add a filter file, the items in that filter file which are set to be filtered (traced) are added to whatever other filter criteria you might have set.

Removing a filter file

If you remove a filter file, the items in the filter file which are set to be filtered (traced) are removed from whatever other filter criteria you might have set.

For example, you might create a filter file that configures the tracing of the communications functions. You could then add this set of functions to your filter set in one command, or remove them, depending on whether you think the communications are part of the problem you are trying to solve.

The add and remove actions are processed in the order you submit them. Thus if you add a function ID, and then remove a range that includes that ID it is removed from the criteria. But if you remove the range, and then add the ID, it is added to the criteria.

-modifyFilter <*filter_file*>
Modifies the existing filter file named in the parameter.

This subcommand takes all of the parameters used in the **-addFilter** subcommand in the same way, with the addition of the following action:

-remove_all
Removes all components and functions from the filter file. Use this with one of the **-add** options to create an inclusive "all of the following" filter.

-clean On UNIX operating systems only, use this to delete the shared memory segments after you have modified and saved the configuration file, and stopped the product. If a segment is in use, it is marked for deletion and will be automatically deleted when no longer in use.

-config [<*config_file*>]
This initializes the memory. It is run automatically when the Tivoli Workload Scheduler engine is restarted, using the default configuration file `./xtrace.ini`. In normal circumstances, you never need to run this manually. If you believe that the shared memory is corrupted, it is better to restart the product, which automatically re-initializes the memory.

Examples

The following examples are a scenario for using the trace to troubleshoot an instance of Tivoli Workload Scheduler which is hanging for 5 minutes when you run a particular utility command, without giving any log messages to indicate why.

The presupposition is that you have the following configuration file:

```
[ _GLOBAL_ ]
Product      = TWS_8.6.0
Enabled      = y
Active       = n
SegNum       = 1
FilterFile   = $(install_dir)/bin/xfull.xtrace
SegSize      = 10240
Level        = 80
SegPerUser   = n

[netman]
Enabled      = y
Active       = n
SegNum       = 2
Level        = 80
```

```
[batchman]
Enabled      = y
Active       = n
SegNum       = 3
Level        = 80
```

1. **Start the tracing**

   Tracing is enabled but inactive for three segments. You think the problem is not network related, so **netman** is not involved. To activate the other two segments run the following commands:

   ```
   xcli -active y -s 1
   xcli -active y -s 3
   ```

2. **Adjust the levels for minimum debug**

   You want to trace as much activity as possible so that you understand what is happening. So you adjust the tracing levels to minimum debug:

   ```
   xcli -level 50 -s 1
   xcli -level 50 -s 3
   ```

3. **Take a snapshot when the product hangs**

   Restart Tivoli Workload Scheduler and run the utility again. When the product hangs immediately take a snapshot of each segment. You include the option to clean the memory after the snapshot:

   ```
   xcli -snap main_snap -s 1
          -descr "Snap of segment 1 when TWS hangs after using utility" -clean
   xcli -snap batchman_snap -s 3
          -descr "Snap of batchman when TWS hangs after using utility" -clean
   ```

4. **Format the trace to view it**

   Run the following command for a standard format for each file, and save it to a text file:

   ```
   xcli -format main_snap -d xdb.dat > main_snap.txt
   xcli -format batchman_snap -d xdb.dat  > batchman_snap.txt
   ```

5. **The problem seems to be with batchman, but you need more detail**

   After examining the two snap files it seems as though the problem is occurring in batchman, but you need more detail:

   ```
   xcli -level 80 -s 3
   ```

6. **Take another snapshot of batchman when the product hangs**

   Restart Tivoli Workload Scheduler and run the utility again. When the product hangs immediately take another snapshot of batchman's segment:

   ```
   xcli -snap batchman2_snap -s 3 -descr "Second snap of batchman (level 80)"
   ```

7. **Format the trace again to view it**

   Run the following command to save the snap file in XML format to a file:

   ```
   xcli -format batchman2_snap -d TWS86SymDB -xml > batchman2_snap.xml
   ```

You now have a well-formatted XML file of the traces to examine in details and determine where the problem is occurring.

xcli messages

Lists all the messages that might be issued by the xcli command.

This section details the messages that might be produced by xcli and explains what they mean.

Incorrect syntax in configuration file.
In-Flight Trace has found syntax that it cannot parse in the configuration

file. Check the syntax carefully with the information in this manual. Correct the error and rerun the command.

Cannot create the semaphore '%d', error %ld.
The error message is from the operating system. There might be a memory usage problem which requires an operating system reboot.

Cannot lock the semaphore, error %ld.
The error message is from the operating system. There might be a memory usage problem which requires an operating system reboot.

Cannot create the shared memory, error %ld.
The error message is from the operating system. There might be a memory usage problem which requires an operating system reboot.

Cannot map the shared memory, error %ld.
The error message is from the operating system. There might be a memory usage problem which requires an operating system reboot.

Incorrect value for key %s in section '%s'.
The syntax of the configuration file is correct but the indicated key in the indicated section has an incorrect value.

The tracing facility is not active.
If the "Enable" key in the [_GLOBAL_] section is set to "n", the tracing facility is disabled. To enable it, edit the configuration file, set the "Enable" key in the [_GLOBAL_] section to "y", save the file and restart Tivoli Workload Scheduler.

Unable to open file '%s', error %d.
The error message is from the operating system. Check the error code. The file might be open in another process, or the user running the command might not have rights to open the file. Correct the problem and try the command again.

Not enough free memory to allocate %d bytes.
The message indicates the memory required by your configuration. Either reduce the amount of memory used by the configuration by editing the configuration file, changing the values, saving the file and restarting Tivoli Workload Scheduler, or free some memory by closing other applications. You might also be able to enlarge the memory paging file. Use the **-config** option to reinitialize the memory.

Unable to write to file '%s', error %d.
The error message is from the operating system. Check the error code. The file might have been deleted by another process, or the user running the command might not have rights to write to the file. Correct the problem and try the command again.

Unable to read from file '%s', error %d.
The error message is from the operating system. Check the error code. The file might have been deleted by another process, or the user running the command might not have rights to read from the file. Correct the problem and try the command again.

The selected file does not contain a valid snapshot.
You have identified a snapshot file to format, but either it is not a snapshot file or the snapshot file was not written correctly. Check the name you supplied. If it was not correct, reissue the command with the correct file name. If the file name is correct, rerun the snap to regenerate the file.

Memory not correctly initialized.
The shared memory has not been correctly created. Check that there is sufficient free memory to create the shared memory you have defined in the configuration file.

The tracing facility is not active for program %s.
You have requested to change tracing information for the indicated program which is not active. Activate the program first, using the **-active** option.

The tracing facility is not active for segment %s.
You have requested to change tracing information for the indicated segment which is not active. Activate the segment first, using the **-active** option.

Operation successful.
No-brainer! Whatever you were doing has worked!

Unable to remove the semaphore %x, error %d.
The error message is from the operating system. There might be a memory usage problem which requires an operating system reboot.

Unable to remove the shared memory %x, error %d.
The error message is from the operating system. There might be a memory usage problem which requires an operating system reboot.

The tracing facility is not active for product %s.
You have identified a product for which the "Enable" key in the [_GLOBAL_] section is set to "n", and so the tracing facility is disabled. To enable it, edit the appropriate configuration file, setting the "Enable" key in the [_GLOBAL_] section to "y", save the file and restart the product.

The maximum number of products (%d) has already been reached.
In-Flight Trace can only trace a limited number of products at one time, regardless of the amount of memory available. You have reached that limit!

The sections '%s' and '%s' have the same segment number but different %s.
Some of the keys in a section are "segment-based", in that if more than one section traces to the same segment, they must have the same values. For example, the filter file for programs that trace to the same segment must be the same. Either change the programs to trace to different segments or supply the same filter file for all programs that trace to the same segment.

Segment %d is too small for the filter file '%s'.
The space you allocate to a segment is used to store the filter file for more than 12,000 functions, in addition to the traces. In this case, you have not created sufficient space to store the filter file. You cannot change the size of the filter file, because it uses one entry for every function in the product, regardless of whether that function is or is not filtered for tracing. So you must increase the segment size by editing the configuration file, saving it and restarting Tivoli Workload Scheduler.

Cannot open the symbols database '%s'.
Either the symbols database does not exist with the name you supplied, the user running the command does not have the rights to open the file, or the file is corrupted. Check that the name is correct and ensure that you are the *TWS_user*.

Too many input parameters.
The syntax of the command you supplied is not correct. Check the syntax with what is documented in this publication and try the command again.

An error occurred while opening the symbols database '%s'.

The database file might be corrupted.

Warning: the function ID %d is not in the symbols database.

You have tried to add or remove a function which is not in the symbols database. Check the source from which you obtained the function name or ID. Check that you are using the correct symbols database. The default symbols database is **xdb.dat**. Correct the error and try the command again.

Duplicated section '%s' in the configuration file.

Each program section can only be present once in the configuration file. Perhaps you copied a section intending to change the name but did not. Edit the configuration file, save it and restart Tivoli Workload Scheduler.

Warning: There is a mismatch between the size of the new filter file and the previous one (new size = %d, previous size = %d).

You have used the **-filter** option to supply a new filter file, but the new filter file was generated using a symbols database different from that used when the filter file currently in use was created. Put a different way, you seem to have used different symbols databases to create two different filter files, and the two different databases have different numbers of functions. In-Flight Trace can continue tracing but the filtering might not be applied correctly. You are advised always to use only the symbols database generated when the version of the product you are tracing was built.

Cannot clean up the shared memory because some process is currently using it.

You have used the **-clean** option to clean the shared memory, but one or more processes is still using the shared memory, so it cannot be cleaned. Use your system resources to determine which process is using the shared memory, stop it, and retry the **-clean** option.

Chapter 5. Auditing facilities

Describes the audit facilities to track changes in the database and the plan, as well as those that track changes to objects involved in dynamic workload scheduling.

Audit trails are useful to check enforcement and effectiveness of IT controls, for accountability, and vulnerability and risk analysis. IT organizations can also use auditing of security-related critical activities to aid in investigations of security incidents. When a security incident occurs, audit trails enable analysis of the history of activities (who did what, when, where, and how) that occurred prior to the security incident, so appropriate corrective actions can be taken. For these reasons, audit trails might need to be archived and accessible for years.

The auditing logs are created in XML format and can be viewed with a standard text editor or parsed using third-party utilities.

You can also view the auditing logs using the Log and Trace Analyzer (LTA), a component of the IBM Autonomic Computing Toolkit. In general, the Log and Trace Analyzer is used for importing and correlating different logs generated by different products. The Log and Trace Analyzer can be very useful in correlating auditing logs with other logs from different sources, such as databases (DB2, Oracle), WebSphere Application Server, and the operating system. See "Engine Log Analyzer" on page 18 for details.

Two separate audit trail facilities are provided:

- Database and plan change tracking - see "Database and plan audit"
- Tracking of changes to scheduling objects to support dynamic workload scheduling - see "Dynamic workload scheduling audit" on page 75

Database and plan audit

An auditing option is available to track changes to the database and the plan. It is disabled by default. It is described in these sections:

- "How audit works"
- "Enabling the audit feature" on page 70
- "Audit log header format" on page 70
- "Audit log body format" on page 71
- "Sample audit log entries" on page 74

How audit works

The storage of audit records varies depending on whether you maintain trails for the database or the plan. You have the following options:

database auditing
You can track changes to the database in a file, in the database itself, or in both. All user modifications are logged, including the current definition of each modified database object. If an object is opened and saved, the action is logged even if no modification has been done.

plan auditing
You can track changes to the plan in a file. All user modifications to the plan are logged. Actions are logged whether they are successful or not.

Each audit log provides audit information for one day, from 00:00:00 UTC to 23:59:59 UTC regardless of the timezone of the local workstation, but the log file is only created when an action is performed or the WebSphere Application Server is started.

The files are called `yyyymmdd`, and are created in the following directories:

`<`*`TWA_home`*`>/TWS/audit/plan`

`<`*`TWA_home`*`>/TWS/audit/database`

Audit entries are logged to a flat text file on individual workstations in the Tivoli Workload Scheduler network. This minimizes the risk of audit failure due to network issues. The log formats are the same for both plan and database in a general sense. The logs consist of a header portion which is the same for all records, an action ID, and a section of data which varies according to the action type. All data is kept in clear text and formatted to be readable and editable from a text editor such as **vi** or **notepad**.

Note: For **modify** commands, two entries are made in the log for resources, calendars, parameters and prompts. The **modify** command is displayed in the log as a combination of the **delete** and **add** commands.

Enabling the audit feature

The auditing option is enabled by setting the following two entries in the global options, using **optman**:

```
enPlanAudit = 0|1
enDbAudit = 0|1
```

A value of *1* (one) enables auditing and a value of *0* (zero) disables auditing. Auditing is disabled by default on installation of the product.

To initiate database auditing, you must shut down Tivoli Workload Scheduler completely. When you restart Tivoli Workload Scheduler, the database audit log is initiated. Plan auditing takes effect when JnextPlan is run.

Audit log header format

Each log file starts with a header record that contains information about when the log was created and whether it is a plan or database log.

The header record fields are separated by vertical bars (|), as follows:

```
HEADER|<GMT_date>|<GMT_time>|<local_date>|<local_time>|<object_type>| >
<workstation>|<user_ID>|<version>| <level>
```

Log Type
HEADER

GMT Date
The GMT date when the log file was created.

GMT Time
The GMT time when the log file was created.

Local Date
The local date when the log file was created. The local date is defined by the time zone option of the workstation.

Local Time
The local time when the log file was created. The local time is defined by the time zone option of the workstation.

Object Type
DATABASE for a database log file and PLAN for a plan log file.

Workstation Name
The Tivoli Workload Scheduler workstation name for which this file was created. Each workstation in the Tivoli Workload Scheduler network creates its own log.

User ID
The Tivoli Workload Scheduler user ID that created the log file.

Version
The version of the file.

Level The logging level.

Audit log body format

The audit log formats are basically the same for the plan and the database. The log consists of a header portion, an action ID, and data sections that vary with the action type. The data is in clear text format and each data item is separated by a vertical bar (|).

The log file entries are in the following format:

```
<log_type>|<GMT_date>|<GMT_time>|<local_date>|<local_time>|<object_type>| >
<action_type>|<workstation>|<user_ID>|<object_name>|<action_data_fields>
```

The log files contain the following information:

log_type
Displays an eight character value indicating the source of the log record. The following log types are supported:

CONMAN
conman command text

DATABASE
Database action

HEADER
The log file header

MAKESEC
makesec run

PARMS
Parameter command text

PLAN Plan action

RELEASE
release command text

STAGEMAN
: **stageman** run

GMT_date
: Displays the GMT date the action was performed. The format is *yyyymmdd* where *yyyy* is the year, *mm* is the month, and *dd* is the day.

GMT_time
: Displays the GMT time the action was performed. The format is *hhmmss* where *hh* is the hour, *mm* is the minutes, and *ss* is the seconds.

local_date
: Displays the local date the action was performed. The local date is defined by the time zone option of the workstation. The format is *yyyymmdd* where *yyyy* is the year, *mm* is the month, and *dd* is the day.

local_time
: Displays the local time the action was performed. The local time is defined by the time zone option of the workstation. The format is *hhmmss* where *hh* is the hour, *mm* is the minutes, and *ss* is the seconds.

object_type
: Displays the type of the object that was affected by an action, from the following defintions:

DATABASE
: Database definition (for header only)

DBCAL
: Database calendar definition

DBDOMAIN
: Database domain definition

DBJBSTRM
: Database Job Scheduler definition

DBJOB
: Database job definition

DBPARM
: Database parameter definition

DBPROMPT
: Database prompt definition

DBRES
: Database resource definition

DBSEC
: Database security

DBUSER
: Database user definition

DBVARTAB
: Database variable table definition

DBWKCLS
: Database workstation class definition

DBWKSTN
: Database workstation definition

PLAN Plan (for header only)

PLDOMAIN
Plan domain

PLFILE
Plan file

PLJBSTRM
Plan Job Scheduler

PLJOB
Plan job

PLPROMPT
Plan prompt

PLRES
Plan resource

PLWKSTN
Plan workstation

action_type
Displays what action was performed on the object. The appropriate values for this field are dependent on which action is being performed.

For the plan, the <action_type> can be ADD, DELETE, MODIFY, or INSTALL.

For the database, the ADD, DELETE and MODIFY actions are recorded for workstation, workstation classes, domains, users, jobs, job streams, calendars, prompts, resources and parameters in the database.

The <action_type> field also records the installation of a new Security file. When **makesec** is run, Tivoli Workload Scheduler records it as an INSTALL action for a Security definition object.

LIST and DISPLAY actions for objects are not logged.

For parameters, the command line with its arguments is logged.

workstation
Displays the Tivoli Workload Scheduler workstation from which the user is performing the action.

user_ID
Displays the logon user who performed the particular action. On Windows operating systems, if the user who installed WebSphere Application Server was a domain user, for Log Types **stageman** and **conman** this field contains the fully qualified user ID *domain\user*.

object_name
Displays the fully qualified name of the object. The format of this field depends on the object type as shown here:

DATABASE
N/A

DBCAL
<calendar>

DBDOMAIN
<domain>

DBJBSTRM
<workstation>#<job_stream>

DBJOB
<workstation>#*<job>*

DBPARM
<workstation>#*<parameter>*

DBPROMPT
<prompt>

DBRES
<workstation>#*<resource>*

DBSEC
N/A

DBUSER
[*<workstation>*#]*<user>*

DBVARTAB
<variable_table>

DBWKCLS
<workstation_class>

DBWKSTN
<workstation>

PLAN N/A

PLDOMAIN
<domain>

PLFILE
<workstation>#*<path>*(*<qualifier>*)

PLJBSTRM
<workstation>#*<job_stream_instance>*

PLJOB
<workstation>#*<job_stream_instance>*.*<job>*

PLPROMPT
[*<workstation>*#]*<prompt>*

PLRES
<workstation>#*<resource>*

PLWKSTN
<workstation>

action_data_fields
Displays the action-specific data fields. The format of this data is dependent on the <action_type> field.

Sample audit log entries

This is a sample database audit log:

```
HEADER  |20080207|084124|20080207|094124|DATABASE|      |WK1|         | | |Version=A1.0| Level=1

DATABASE|20080207|084124|20080207|094124|DBRES   |ADD   |WK1|operator1| |res=WK1#RESOURCE    |

DATABASE|20080207|100524|20080207|110524|DBWKSTN |MODIFY|WK1|operator1| |ws=TIVOLI10         |

DATABASE|20080207|100525|20080207|110525|DBWKSTN |MODIFY|WK1|operator1| |ws=ASLUTRI1         |
DATABASE|20080207|100525|20080207|110525|DBWKSTN |MODIFY|WK1|operator1| |ws=WK1              |

DATABASE|20080207|100526|20080207|110526|DBDOMAIN|MODIFY|WK1|operator1| |dom=MASTERDM        |

DATABASE|20080207|100610|20080207|110610|DBWKSTN |MODIFY|WK1|operator1| |ws=TIVOLI10         |

DATABASE|20080207|100610|20080207|110610|DBWKSTN |MODIFY|WK1|operator1| |ws=ASLUTRI1         |

DATABASE|20080207|100611|20080207|110611|DBWKSTN |MODIFY|WK1|operator1| |ws=WK1              |

DATABASE|20080207|100611|20080207|110611|DBWKSTN |ADD   |WK1|operator1| |ws=WK2              |

DATABASE|20080207|100612|20080207|110612|DBDOMAIN|MODIFY|WK1|operator1| |dom=MASTERDM        |
```

This is a sample plan audit log:

```
HEADER  |20080207|100758|20080207|110758|PLAN    |       |WK1|admin| |     |Version=A1.0|Level=1

STAGEMAN|20080207|100758|20080207|110758|PLAN    |INSTALL|WK1|admin| |C:\IBM\TWS\oper1\Symphony|
                     AWSBHV030I The new Symphony file is installed.

STAGEMAN|20080207|100758|20080207|110758|PLAN    |INSTALL|WK1|admin| |C:\IBM\TWS\oper1\Sinfonia|
                  AWSBHV036I Multi-workstation Symphony file copied to C:\IBM\TWS\oper1\Sinfonia

STAGEMAN|20080207|100758|20080207|110758|ADITLEVL|MODIFY |WK1|admin| |                         |
                     AWSBHV077I Audit level changing from 0 to 1.

CONMAN  |20080207|100800|20080207|110800|PLWKSTN |MODIFY |   |admin| |WK1                      |
                     continue & start

CONMAN  |20080207|100941|20080207|110941|PLWKSTN |MODIFY |   |admin| |SLUTRI1                  |
                     limit cpu=slutri1;10

PLAN    |20080207|101018|20080207|111018|PLWKSTN |MODIFY |WK1|oper1| |WK1                      |
                     limit cpu=SLUTRI1;20

PLAN    |20080207|101028|20080207|111028|PLDOMAIN|MODIFY |WK1|oper1| |ECCOLO                   |
                     reply ECCOLO;yes
```

A **ResetPlan** command run against the current production plan is stored in the plan audit log file as follows:

```
STAGEMAN|20080207|100758|20080207|110758|PLAN|DELETE|WK1|admin|
     |/home/WK1/schedlog/M200803140127|
                     AWSBHV025I The old Symphony file renamed /home/WK1/schedlog/M200803140127
```

Dynamic workload scheduling audit

Description

When you select the dynamic scheduling capability at installation time, the auditing feature is automatically installed. By default, the auditing feature is disabled.

Auditable events are as follows:

JobDefinitionAuditEvent
Maintains a track of operations performed on job definitions.

JobLogAuditEvent
Maintains a track of operations performed on job logs.

JobAuditEvent
Maintains a track of operations performed on jobs.

ResourceAuditEvent
Maintains a track of operations performed on resources.

RelationshipAuditEvent
Maintains a track of operations performed on relationships between resources.

RecoveryActionAuditEvent
Maintains a track of operations performed on recovery actions.

HistoryDataAuditEvent
Maintains a track of operations performed on historical data.

To configure the auditing of events, enable the auditing feature and optionally change the default values in the configuration file to define event types to be audited. The configuration file is located in the following path:

```
TWA_home\TDWB\config\audit.properties
```

Configuring the audit

Configure one or more of the properties in the `audit.properties` file to enable and configure auditing:

audit.enabled
Specifies whether the auditing feature is enabled or disabled. The default value is false. Supported values are as follows:

false The auditing feature is not enabled.

true The auditing feature is enabled.

onSecurityEnabled
The auditing feature is enabled if global security is enabled on the WebSphere Application Server.

audit.consumer.file.auditFilePrefix
Specifies the file prefix for the auditing log file. The file name is defined using the file prefix plus the _audit*N*.log suffix, where *N* is a progressive number. If you want the date and time of the file creation specified in the file prefix, use the default format: ‘tdwb_'yyyy-MM-dd. For instance, using the default prefix ‘tdwb_'yyyy-MM-dd generates the tdwb_2010-12-20_audit*N*.log family of files. Note that the text between single quotation marks (') is not processed by the program and remains unchanged. This format creates a different file for each day the auditing feature is enabled. Also, changing the prefix to ‘tdwb_'yyyy-MM generates the tdwb_2010-12_audit*N*.log family of files. This format creates a different file for each month the auditing feature is enabled.

You can modify this format as required to create files on a weekly, monthly or yearly basis, depending on your auditing requirements. Depending on the date and time format you choose, the maximum size and number of log files vary. The maximum size and number of log files are defined using the **audit.consumer.file.maxFileSize** and **audit.consumer.file.maxAuditFiles** properties respectively. Use these three parameters to control the size of the audit logs stored. For example, using the default values for these parameters, then every day you will have a maximum of 10 MB x 100 files each day. Once the maximum is reached, the first file created is overwritten. If you want use less space to store audit logs, you can decided to change the maximum number of files or only have files on a monthly basis, by specifying the format for the `audit.consumer.file.auditFilePrefix` property as ‘tdwb_'yyyy-MM.

audit.consumer.file.auditFileLocation
Specifies the path where the log files are created. The default path is `/audit`.

audit.consumer.file.maxFileSize
Specifies the maximum size in bytes of the log files. When a file reaches the maximum size, a new log file is created. The default value is 10000000 bytes (10 MB). This is also the highest supported value.

audit.consumer.file.maxAuditFiles
Specifies the maximum number of files with a specific prefix. When all files reach the maximum size and the maximum number of files is exceeded, the oldest file with a specific prefix is overwritten. The default value is 100 files. This is also the highest supported value.

Configuring dynamic audit events

The following table lists the supported actions and properties for each event with the related default values. You can configure these values in the `audit.properties` file.

Table 7. Auditable event properties

Event	Action	Property	Default value
JobDefinitionAuditEvent	create	audit.tdwb.JobDefinitionAuditEvent.create.enabled	true
	delete	audit.tdwb.JobDefinitionAuditEvent.delete.enabled	true
	get	audit.tdwb.JobDefinitionAuditEvent.get.enabled	true
	query	audit.tdwb.JobDefinitionAuditEvent.query.enabled	false
	update	audit.tdwb.JobDefinitionAuditEvent.update.enabled	true
JobLogAuditEvent	get	audit.tdwb.JobLogAuditEvent.get.enabled	true
JobAuditEvent	cancel	audit.tdwb.JobAuditEvent.cancel.enabled	true
	get	audit.tdwb.JobAuditEvent.get.enabled	true
	query	audit.tdwb.JobAuditEvent.query.enabled	false
	submit	audit.tdwb.JobAuditEvent.submit.enabled	true
ResourceAuditEvent	create	audit.tdwb.ResourceAuditEvent.create.enabled	true
	delete	audit.tdwb.ResourceAuditEvent.delete.enabled	true
	query	audit.tdwb.ResourceAuditEvent.query.enabled	false
	resume	audit.tdwb.ResourceAuditEvent.resume.enabled	true
	suspend	audit.tdwb.ResourceAuditEvent.suspend.enabled	true
	update	audit.tdwb.ResourceAuditEvent.update.enabled	true
RelationshipAuditEvent	create	audit.tdwb.RelationshipAuditEvent.create.enabled	true
	delete	audit.tdwb.RelationshipAuditEvent.delete.enabled	true
	query	audit.tdwb.RelationshipAuditEvent.query.enabled	false
RecoveryActionAuditEvent	invoke	audit.tdwb.RecoveryActionAuditEvent.invoke.enabled	true
HistoryDataAuditEvent	move	audit.tdwb.HistoryDataAuditEvent.move.enabled	true

By default, auditing is disabled for query actions, while all the other actions are enabled. If the auditing feature is disabled, all properties are ignored.

Log file specifications

The elements used in the auditing log files are extensions to the Common Base Event (CBE) schema. The types and elements listed below are available in the auditing log files. Supported action types for each element are listed in Table 7 on page 77.

Action

Represents the action that is being taken. Each auditable event supports a different set of possible actions. See Table 7 on page 77. The Action type contains the following element:

Table 8. Elements in Action type

Element name	Element description	Always returned in the output
Action	The action type that is being taken on the dynamic workload broker object.	Yes

ObjectInfoList

Represents a list of dynamic workload broker objects. The `ObjectInfoList` type contains the following element:

Table 9. Elements in ObjectInfoList type

Element name	Element description	Always returned in the output
objectInfo	The class of the object being involved in the action	Yes

ObjectInfo

Represents information about a dynamic workload broker object in an `objectInfoList` type or in another `objectInfo` element. The `ObjectInfo` type contains the following elements:

Table 10. Elements in ObjectInfo type

Element name	Element description	Always returned in the output
objectClass	The class of the object being involved in the action.	Yes
objectName	The name of the dynamic workload broker object.	Only if available
objectNamespace	The namespace of the dynamic workload broker object.	Only if available
objectType	The type of the dynamic workload broker object.	Only if available
objectAlias	The alias of the dynamic workload broker object.	Only if available
objectIdentifier	The unique identifier of the dynamic workload broker object.	Only if available

Table 10. Elements in ObjectInfo type (continued)

Element name	Element description	Always returned in the output
objectRole	The role of the dynamic workload broker object, if any. For instance a Resource can have the source or destination role in a relationship	Only if available
objectSubmitterType	The type of the component which submitted the operation. It can be one of the following: • Tivoli Dynamic Workload Broker Console • Command line • Dynamic workload broker workstation • Third party utility	Only if available
objectInfo	A child `objectInfo` object. For instance, a relationship is always related to two resources.	Only if available

Outcome

Defines the outcome of a security event. The Outcome type contains the following elements:

Table 11. Elements in Outcome type

Element name	Element description	Always returned in the output
result	The status of the event. This information can be used when filtering the information in the log file.	Yes
failureReason	Additional information on the outcome of the operation.	Yes, if the operation was unsuccessful.

UserInfoList

Represents a list of `userInfo` elements, each representing the list of users in the delegation chain. The `UserInfoList` type contains the following element:

Table 12. Elements in UserInfoList type

Element name	Element description	Always returned in the output
objectInfo	An array of Information about each user in the delegation chain. The first `userInfo` element identifies the user which authenticated first. The last `userInfo` element identifies the user with whose credentials the action is being taken.	Yes

UserInfo

Represents information about a user. Elements of this type return information about the user involved in the operation being audited. The `UserInfo` type contains the following element:

Table 13. Elements in UserInfo type

Element name	**Element description**	**Always returned in the output**
UserInfo	The user name provided to dynamic workload broker for authentication.	Yes

How to perform queries on log files

Log files can be very long and detailed. When you view your log files with the Log and Trace Analyzer, you can apply one or more queries to filter information in the file and make searches faster. You can use the following queries to filter only the relevant information or you can create your own queries depending on your requirements. The following queries are written in XPath query language.

- To filter all the events generated by a specific user:

  /CommonBaseEvent [extendedDataElements/children[@name='*userInfo*' and values='*username*']]
- To filter all the events related to a specific object class:

  /CommonBaseEvent [extendedDataElements//children[@name='objectClass' and values='Resource]]
- To filter all the events related to a specific object:

  //CommonBaseEvent [extendedDataElements//children[@name='objectName' and values='myresource']/../children[@name='objectClass' and values='Resource']]
- To filter all the events related to a specific action:

  /CommonBaseEvent [extendedDataElements[@name='action' and values='uninstall']]
- To filter all the events with SUCCESSFUL outcome:

  /CommonBaseEvent [extendedDataElements/children[@name='result' and values='SUCCESSFUL']]

The following query returns all create actions:

```
/CommonBaseEvent[ extendedDataElements[@name = 'action' and values = 'create']]
```

You can export this query into an XML file as follows:

```
<?xml version="1.0" encoding="UTF-8"?><cbeviewer_configuration>
<logParserSets>
   <logParserSet  description="Parser for CBE log"
                  id="com.ibm.cbeviewer.parsers.cbeLogParserSet"
                  label="Common Base Event log"
                  parentId="com.ibm.cbeviewer.parsers.jdLogParserSet"/>
   <logParserSet  description="Parser for CEI Server"
                  id="com.ibm.cbeviewer.parsers.ceiLogParserSet"
                  label="Common Event Infrastructure server"
                  parentId="com.ibm.cbeviewer.parsers.jdLogParserSet"/>
   <logParserSet description="Other parsers"
                  id="com.ibm.cbeviewer.parsers.otherParsersLogParserSet"
                  label="Other parsers"/>
</logParserSets>
<recent_expressions>
     <xpath name="All Create Events">
     /CommonBaseEvent[ extendedDataElements[@name = 'action' and values = 'create']]
     </xpath>
</recent_expressions></cbeviewer_configuration>
```

The following example describes a short log file:

```
<CommonBaseEvent
      creationTime="2007-06-06T14:26:23.311Z"
      extensionName="TDWB_JOB_AUDIT_EVENT"
      globalInstanceId="CEFC6DD156CA54D902A1DC1439E6EC4ED0"
      sequenceNumber="1"
      version="1.0.1">
   <extendedDataElements
         name="userInfoList"
         type="noValue">
      <children
            name="userInfo"
            type="string">
         <values>UNAUTHENTICATED</values>
      </children>
   </extendedDataElements>
   <extendedDataElements
         name="action"
         type="string">
      <values>submit</values>
   </extendedDataElements>
   <extendedDataElements
         name="outcome"
         type="noValue">
      <children
            name="result"
            type="string">
         <values>SUCCESSFUL</values>
      </children>
   </extendedDataElements>
</CommonBaseEvent>
```

Examples

The following examples describe a standard usage of the auditing feature.

In the following example, user `root` successfully retrieves the definition of a job named **MyTestJob** using the `jobstore` command.

```
<CommonBaseEvent
      creationTime="2007-06-21T16:05:19.455Z"
      extensionName="TDWB_JOB_AUDIT_EVENT"
      globalInstanceId="CE8F5E102AE3419AF7A1DC201135463A40"
      sequenceNumber="188"
      version="1.0.1">
   <extendedDataElements
         name="userInfoList"
         type="noValue">
      <children
            name="userInfo"
            type="string">
         <values>root</values>
      </children>
   </extendedDataElements>
   <extendedDataElements
         name="action"
         type="string">
      <values>get</values>
   </extendedDataElements>
   <extendedDataElements
         name="outcome"
         type="noValue">
      <children
```

```
            name="result"
            type="string">
         <values>SUCCESSFUL</values>
      </children>
   </extendedDataElements>
   <extendedDataElements
         name="objectInfoList"
         type="noValue">
      <children
            name="objectInfo"
            type="noValue">
         <children
               name="objectClass"
               type="string">
            <values>Job</values>
         </children>
         <children
               name="objectName"
               type="string">
                  <values>MyTestJob</values>
         </children>
         <children
               name="objectIdentifier"
               type="string">
            <values>3ebf6d62-0b83-3270-9b83-83c393e9cbca</values>
         </children>
         <children
               name="objectSubmitterType"
               type="string">
            <values>TDWB CLI</values>
         </children>
      </children>
   </extendedDataElements>
   <extendedDataElements
         name="CommonBaseEventLogRecord:sequenceNumber"
         type="long">
       <values>80808</values>
   </extendedDataElements>
   <extendedDataElements
         name="CommonBaseEventLogRecord:threadID"
         type="int">
      <values>280</values>
   </extendedDataElements>
   <sourceComponentId
         application="JobManagement"
         component="None"
         componentIdType="Application"
         location="tdws08"
         locationType="Hostname"
         subComponent="None"
         threadId="Default : 84"
         componentType="http://www.ibm.com/namespace/autonomic/Tivoli_componentTypes"/>
   <situation
         categoryName="ReportSituation">
      <situationType
            xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
            xsi:type="ReportSituation"
            reasoningScope="INTERNAL"
            reportCategory="SECURITY"/>
   </situation>
</CommonBaseEvent>
```

In the following example, user `testuser` tries deleting a job instance named **MySecondJob** using the appropriate command line. The operation fails because the job was submitted by another user. Deleting jobs submitted by other users requires `Operator` or `Administrator` rights. For more information on access rights, see *IBM Tivoli Workload Scheduler: Scheduling Workload Dynamically* or *IBM Tivoli Workload Scheduler: Administration Guide*.

```
<CommonBaseEvent
      creationTime="2007-06-21T16:05:32.746Z"
      extensionName="TDWB_JOB_AUDIT_EVENT"
      globalInstanceId="CE8F5E102AE3419AF7A1DC20113D32BB20"
      sequenceNumber="189"
      version="1.0.1">
   <extendedDataElements
         name="userInfoList"
         type="noValue">
      <children
            name="userInfo"
            type="string">
         <values>testuser</values>
      </children>
   </extendedDataElements>
   <extendedDataElements
         name="action"
         type="string">
      <values>cancel</values>
   </extendedDataElements>
   <extendedDataElements
         name="outcome"
         type="noValue">
      <children
            name="result"
            type="string">
         <values>UNSUCCESSFUL</values>
      </children>
      <children
            name="failureReason"
            type="string">
         <values>userNotAuthorized</values>
      </children>
   </extendedDataElements>
   <extendedDataElements
         name="objectInfoList"
         type="noValue">
      <children
            name="objectInfo"
            type="noValue">
         <children
               name="objectClass"
               type="string">
            <values>Job</values>
         </children>
         <children
               name="objectName"
               type="string">
            <values>MySecondJob</values>
         </children>
         <children
               name="objectIdentifier"
               type="string">
            <values>a05732c8-c008-3103-afd1-84b567d78de7</values>
         </children>
         <children
               name="objectSubmitterType"
               type="string">
            <values>TDWB CLI</values>
         </children>
      </children>
   </extendedDataElements>
   <extendedDataElements
         name="CommonBaseEventLogRecord:sequenceNumber"
         type="long">
      <values>80964</values>
   </extendedDataElements>
   <extendedDataElements
         name="CommonBaseEventLogRecord:threadID"
         type="int">
      <values>292</values>
   </extendedDataElements>
   <sourceComponentId
         application="JobManagement"
         component="None"
         componentIdType="Application"
         location="tdws08"
         locationType="Hostname"
         subComponent="None"
         threadId="Default : 91"
         componentType="http://www.ibm.com/namespace/autonomic/Tivoli_componentTypes"/>
   <situation
         categoryName="ReportSituation">
      <situationType
            xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
            xsi:type="ReportSituation"
            reasoningScope="INTERNAL"
            reportCategory="SECURITY"/>
   </situation>
</CommonBaseEvent>
```

Chapter 6. Troubleshooting performance issues

This refers you to the *Administration Guide* for the resolution of performance problems.

The performance of Tivoli Workload Scheduler can depend on many factors. Preventing performance problems is at least as important as resolving problems that occur. For this reason, all discussion of performance issues has been placed together in the chapter on performance in the *Tivoli Workload Scheduler: Administration Guide*.

Chapter 7. Troubleshooting networks

Describes how to recover from short-term and long-term network outages and offers solutions to a series of network problems.

This section describes how to resolve problems in the Tivoli Workload Scheduler network. It covers the following topics:
- "Network recovery"
- "Other common network problems" on page 89

Network recovery

Several types of problems might make it necessary to follow network recovery procedures. These include:
- Initialization problems that prevent agents and domain managers from starting properly at the start of a new production period. See "Initialization problems."
- Network link problems that prevent agents from communicating with their domain managers. See "Network link problems" on page 88.
- Loss of a domain manager, which requires switching to a backup. See "Replacement of a domain manager" on page 89.
- Loss of a master domain manager, which is more serious, and requires switching to a backup or other more involved recovery steps. See "Replacement of a master domain manager" on page 89.

Note: In all cases, a problem with a domain manager affects all of its agents and subordinate domain managers.

Initialization problems

Initialization problems can occur when Tivoli Workload Scheduler is started for a new production period. This can be caused by having Tivoli Workload Scheduler processes running on an agent or domain manager from the previous production period or a previous Tivoli Workload Scheduler run. To initialize the agent or domain manager in this situation, perform the following steps:
1. For a domain manager, log into the parent domain manager or the master domain manager. For an agent, log into the agent domain manager, the parent domain manager, or the master domain manager.
2. Run the Console Manager and issue a **`stop`** command for the affected agent.
3. Run a **`link`** command for the affected agent. This initializes and starts the agent.

If these actions fail to work, check to see if netman is running on the affected agent. If not, issue the **`StartUp`** command locally and then issue a **`link`** command from its domain manager.

If there are severe network problems preventing the normal distribution of the new Symphony file, a fault-tolerant agent or subordinate domain manager can be run as a standalone system, provided the following conditions are met:
- The Sinfonia file was generated on the master domain manager after the network problem occurred, and so has never been transferred to the agent or domain manager

- You have some other method, such as a physical file transfer or FTP to transfer the new Sinfonia file from the master domain manager to the agent or subordinate domain manager.
- The master domain manager and the agent or subordinate domain manager have the same processor architecture.

If these conditions are met, perform the following steps:

1. Stop the agent or domain manager.
2. Delete the <*TWA_home*>/TWS/Symphony file on the agent or domain manager.
3. Copy the file <*TWA_home*>/TWS/Sinfonia from the master domain manager to the <*TWA_home*>/TWS directory on the agent or domain manager.
4. Rename the copied file <*TWA_home*>/TWS/Symphony
5. Run **StartUp** to start the agent or domain manager.

   Any inter-workstation dependencies must be resolved locally using appropriate console manager commands, such as **Delete Dependency** and **Release**.

Network link problems

Tivoli Workload Scheduler has a high degree of fault tolerance in the event of a communications problem. Each fault-tolerant agent has its own copy of the Symphony file, containing the production period's processing. When link failures occur, they continue processing using their own copies of the Symphony file. Any inter-workstation dependencies, however, must be resolved locally using appropriate console manager commands: **deldep** and **release**, for example.

While a link is down, any messages destined for a non-communicating workstations are stored by the sending workstations in the <*TWA_home*>/TWS/pobox directory, in files named <*workstation*>.msg. When the links are restored, the workstations begin sending their stored messages. If the links to a domain manager are down for an extended period of time, it might be necessary to switch to a backup (see *Tivoli Workload Scheduler: Administration Guide*).

Note:

1. The **conman submit job** and **submit schedule** commands can be issued on an agent that cannot communicate with its domain manager, provided that you configure (and they can make) a direct HTTP connection to the master domain manager. This is configured using the *conman connection* options in the localopts file, or the corresponding options in the useropts file for the user (see the *Tivoli Workload Scheduler: Administration Guide* for details).

   However, all events have to pass through the domain manager, so although jobs and job streams can be submitted, their progress can only be monitored locally, not at the master domain manager. It is thus always important to attempt to correct the link problem as soon as possible.
2. If the link to a standard agent workstation is lost, there is no temporary recovery option available, because standard agents are hosted by their domain managers. In networks with a large number of standard agents, you can choose to switch to a backup domain manager.

Troubleshooting a network link problem

When an agent link fails it is important to know if the problem is caused by your network or by Tivoli Workload Scheduler. The following procedure is run from the master domain manager to help you to determine which:

1. Try using **telnet** to access the agent: **telnet <node>:<port>**
2. Try using **ping** to access the agent: **ping <node>:<port>**

3. Run **nslookup** for the agent and the master domain manager from both, and check that the information on each system is the same from each system
4. Run **netstat -a |grep <port>** and check if any FIN_WAIT_2 states exist
5. Verify that the port number of the master domain manager matches the entry for "nm port" in the localopts file of the master domain manager
6. Verify that the port number of theagent matches the entry for "nm port" in the localopts file of the agent
7. Check the netman and TWSMerge logs on both the master domain manager and the agent, for errors.

Note:

1. Any issues found in steps 1 on page 88 to 4 suggest that there are problems with the network
2. Any issues found in steps 5 to 7 suggest that there are problems with the Tivoli Workload Scheduler configuration or installation

If this information does not provide the answer to the linking issue, call IBM Software Support for further assistance.

The commands used in steps 1 on page 88 to 4 are IP network management commands, information about which can be obtained in the Internet. The following technical note also provides useful information about their use: http://www.ibm.com/support/docview.wss?rs=0&uid=swg21156106

Replacement of a domain manager

A domain manager might need to be changed as the result of network linking problems or the failure of the domain manager workstation itself. It can be temporarily replaced by switching any full status agent in its domain to become the new domain manager, while the failed domain manager is repaired or replaced.

The steps for performing this activity are as described for the planned replacement of a domain manager; see *Tivoli Workload Scheduler: Administration Guide*.

Replacement of a master domain manager

If you lose a master domain manager, you have to perform all of the steps described in *Tivoli Workload Scheduler: Administration Guide* for the planned replacement of a master domain manager.

Other common network problems

The following problems could be encountered:

- "Using SSL, no connection between a fault-tolerant agent and its domain manager" on page 90
- "After changing SSL mode, a workstation cannot link" on page 90
- "In a configuration with a firewall, the start and stop remote commands do not work" on page 91
- "The domain manager cannot link to a fault-tolerant agent" on page 91
- "Changes to the SSL keystore password prevent the application server from starting" on page 92
- "Agents not linking to master domain manager after first JnextPlan on HP-UX" on page 92

- “Fault-tolerant agents not linking to master domain manager” on page 93
- “The dynamic agent cannot be found from Dynamic Workload Console” on page 94
- “Submitted job is not running on a dynamic agent” on page 94
- “Job status of a submitted job is continually shown as running on dynamic agent” on page 94
- “Network performance” on page 94
- “AWSITA245E or AWSITA104E - Agent is down but jobmanager is running” on page 95

Using SSL, no connection between a fault-tolerant agent and its domain manager

In a network using SSL authentication, no connection can be established between a fault-tolerant agent and its domain manager. The standard lists of the two workstations display messages like in the following examples.

- On the domain manager, mailman messages:

```
+ ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
+ AWSBCV082I Workstation FTAHP, Message: AWSDEB009E Data
+ transmission is not possible because the connection is broken.
+ The following gives more details of the error: Error 0.
+ ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
+ AWSBCV035W Mailman was unable to link to workstation: rsmith297;
+ the messages are written to the PO box.
+ ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
```

- On the fault-tolerant agent, writer messages:

```
/* *******************************************************************
/* AWSBCW003E Writer cannot connect to the remote mailman. The
/* following gives more details of the error: "
/* AWSDEB046E An error has occurred during the SSL handshaking. The
/* following gives more details of the error: error:140890B2:SSL
/* routines:SSL3_GET_CLIENT_CERTIFICATE:no certificate returned
/* *******************************************************************
/* AWSDEZ003E **ERROR**(cpu secs 0)
```

Cause and solution:

In the localopts file of either the domain manager or the fault-tolerant agent , the SSL port statement is set to 0.

Correct the problem by setting the SSL port number to the correct value in the localopts file. You then need to stop and restart netman on the workstation so that it can now listen on the correct port number.

After changing SSL mode, a workstation cannot link

You have changed the SSL mode between a workstation and its domain manager. However, you are unable to relink to the workstation from the domain manager.

Cause and solution:

The following Symphony file and message files at the workstation must be deleted after a change of SSL mode, otherwise the data does not match:

```
Symphony
Sinfonia
$HOME/*.msg
$HOME/pobox/*.msg
```

In a configuration with a firewall, the start and stop remote commands do not work

In a configuration with a firewall between the master domain manager and one or more domain managers, the **start** and **stop** commands from the master domain manager to the fault-tolerant agents in the domains do not work. This is often the case when an "rs final" ends and the impacted fault-tolerant agents are not linked.

Cause and solution:

The fault-tolerant agents belonging to these domains do not have the *behind firewall* attribute set to *on* in the Tivoli Workload Scheduler database. When there is a firewall between the master domain manager and other domains, **start** and **stop** commands must go through the Tivoli Workload Scheduler hierarchy. This parameter tells the master domain manager that the **stop** request must be sent to the domain manager which then sends it to the fault-tolerant agents in its domain.

Use either the Dynamic Workload Console or the composer **cpuname** command to set to the *behind firewall* attribute *on* in the workstation definitions of these fault-tolerant agents.

Remote command job fails to connect to remote computer

After submitting a remote command job, error message AWKRCE012E indicates that an error has occurred establishing a connection to the remote computer.

Cause and solution:

There are several possible causes to this problem:

- The host name specified for the computer where the remote command instance is running does not exist.
- The port number is incorrect, for example, a port number which is different from the port number configured for a specific protocol.
- The protocol type specified is unable to establish a connection because the remote computer is not open to using that particular protocol.

See Job definition - remote command jobs for information about the connection settings for the remote computer.

The domain manager cannot link to a fault-tolerant agent

The domain manager cannot link to a fault-tolerant agent. The stdlist records the following messages:

```
+ ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
+ AWSEDW020E: Error opening IPC
+ AWSEDW001I: Getting a new socket: 9
+ ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
```

Cause and solution:

The fault-tolerant agent has two netman processes listening on the same port number. This is the case if you installed more than one Tivoli Workload Scheduler instance on the same workstation and failed to specify different netman port numbers.

Stop one of the two netman services and specify a unique port number using the `nm port` local option (`localopts` file).

Ensure that the workstation definition on the master domain manager is defined with the unique port number or it will not be able to connect.

Changes to the SSL keystore password prevent the application server from starting

You change the password to the SSL keystore on the application server, or you change the security settings using the WebSphere Application Server **`changeSecuritySettings`** tool. The application server does not start. The following message is found in the application server's trace file `trace.log` (the message is shown here on three lines to make it more readable):

```
JSAS0011E: [SSLConfiguration.validateSSLConfig] Java. exception
Exception = java.io.IOException:
Keystore was tampered with, or password was incorrect
```

This problem is discussed in “The application server does not start after changes to the SSL keystore password” on page 123.

Agents not linking to master domain manager after first JnextPlan on HP-UX

You have successfully installed the components of your network with the master domain manager on HP-UX. You perform all the necessary steps to create a plan and run your first **`JnextPlan`**, which appears to work correctly. The Symphony file is distributed to the agents but they cannot link to the master domain manager, even if you issue a specific **`link`** command for them. The **`conman`** error log shows that the agents cannot communicate with the master domain manager.

Cause and solution:

One possible cause for this problem is that while on HP-UX host names are normally limited to eight bytes, on some versions of this platform you can define larger host names. The problem occurs if you define the master domain manager's host name as more than eight bytes. When you install the master domain manager on this host a standard operating system routine obtains the host name from the operating system, but either truncates it to eight bytes before storing it in the database, or stores it as "unknown". When you install the agents, you supply the longer master domain manager host name. However, when the agents try to link to the master domain manager they cannot match the host name.

To resolve this problem, perform the following steps:

1. Change the workstation definition of the master domain manager to the correct host name.
2. Run **`ResetPlan -scratch`**.
3. Run **`JnextPlan`**.

The agents now link.

Fault-tolerant agents not linking to master domain manager

A fault-tolerant agent does not link to its master domain manager and any other link problem scenarios documented here do not apply.

Cause and solution:

The cause of this problem might not be easy to discover, but is almost certainly involved with a mismatch between the levels of the various files used on the fault-tolerant agent.

To resolve the problem, if all other attempts have failed, perform the following cleanup procedure. However, note that this procedure loses data (unless the fault-tolerant agent is not linking after a fresh installation), so should not be undertaken lightly.

Perform the following steps:

1. Using **`conman "unlink @;noask"`** or the Dynamic Workload Console, unlink the agent from the master domain manager
2. Stop Tivoli Workload Scheduler, in particular netman, as follows:
   a. **`conman "stop;wait"`**
   b. **`conman "shut;wait"`**
   c. On Windows only; **`shutdown`**
   d. Stop the SSM agent, as follows:
      - On Windows, stop the Windows service: Tivoli Workload Scheduler SSM Agent (for <*TWS_user*>).
      - On UNIX, run **stopmon**.

   Note: If the **`conman`** commands do not work, enter the following command:

   UNIX ps -ef |grep <TWS_user> & kill -9

   Windows
   <TWA_home>\TWS\unsupported\listproc & killproc
3. **Risk of data loss:** Removing the followoing indicated files can cause significant loss of data. Further, if jobs have run on the fault-tolerant agent for the current plan, without additional interaction, the fault-tolerant agent will rerun those jobs.

   Remove or rename the following files:

   ```
   <TWS_home>\TWS\*.msg
                \Symphony
                \Sinfonia
                \Jobtable
                \pobox\*.msg
   ```

   Note: See Chapter 15, “Corrupt Symphony file recovery,” on page 211 for additional options.
4. Start **`netman`** with **`StartUp`** run as the TWS_user
5. Issue a "**`link`**" command from the master domain manager to the fault-tolerant agent
6. Issue a **`conman start`** command on the fault-tolerant agent.

The IBM technical note describing this procedure also contains some advice about starting with a lossless version of this procedure (by omitting step 3) and then looping through the procedure in increasingly more-aggressive ways, with the intention of minimizing data loss. See http://www.ibm.com/support/docview.wss?uid=swg21296908

The dynamic agent cannot be found from Dynamic Workload Console

You correctly installed a dynamic agent but cannot see it from the Dynamic Workload Console.

Cause and solution:

A possible cause for this problem might be that either the dynamic workload broker hostname, **-tdwbhostname**, or the dynamic workload broker port, or both, and which are both registered on the agent, are not known in the network of the master domain manager because the broker host is in a different DNS domain.

Edit the JobManager.ini configuration file (for its path, see "Where products and components are installed" on page 1). Edit the following parameter:

```
ResourceAdvisorUrl = https://<servername>:
                     31116/JobManagerRESTWeb/JobScheduler/resource
```

Submitted job is not running on a dynamic agent

From Dynamic Workload Console, you can see a dynamic agent, but the submitted job appears as "No resources available" or is dispatched to other agents.

Cause and solution:

A possible cause might be that the local hostname of a registered dynamic workload broker server on the agent is not known in the network of the master domain manager because it is in a different DNS domain.

Edit the JobManager.ini configuration file (for its path, see "Where products and components are installed" on page 1). Edit the following parameter:

```
FullyQualifiedHostname = <servername>
```

Job status of a submitted job is continually shown as running on dynamic agent

From Dynamic Workload Console, you can see a dynamic agent, but the job status of a submitted job is continually in the running state.

Cause and solution:

A possible cause might be that the master domain manager local hostname is not known in the network of the agent because it is in a different DNS domain.

Open the JobDispatcherConfig.properties file and edit the parameter JDURL=https://*<localhostname>*

See the *Administration Guide* for more details about editing this file.

Network performance

If your network shows performance problems, you can use the environment variable TWS_TRUSTED_ADDRESS to resolve these problems. You can set

TWS_TRUSTED_ADDRESS to an IP address or leave it blank. If you set it to an IP address, all the processes use this address for their connections. If you leave it blank, the processes use the address returned by the operating system. If you do not create this variable, the processes use the IP address returned by the Symphony file.

AWSITA245E or AWSITA104E - Agent is down but jobmanager is running

If while using **conman** or the Dynamic Workload Console you receive one of the following error messages stating that the agent is down, while jobmanager process is up and running, causes and solutions might be as follows:

Cause and solution

AWSITA245E

An error occurred getting the response of the HTTP request.

- If the detailed error reports problems about `CURL Error ##`, check the following link: http://curl.haxx.se/libcurl/c/libcurl-errors.html .
- If the error is `35`, perform the following steps:
  1. Enable **gskit** traces, as described in the following section: http://www-01.ibm.com/support/docview.wss?uid=swg21283690.
  2. Edit the `JobManager.ini` file and add a the following line `GSK_TRACE_FILE = /tmp/gskit.log` in the `ITA Env`section.
  3. Reproduce the problem.
  4. Collect the `/tmp/gskit.log` file.

AWSITA104E

Unable to perform the system resources scan. The problem is that the *Common Inventory Technology* (CIT) is unable to perform correctly the resources scan because the hostname of the machine is not recognized. The CIT return codes are documented at the following site: http://pic.dhe.ibm.com/infocenter/tivihelp/v3r1/index.jsp?topic=%2Fcom.ibm.tivoli.itcm.doc%2Finvug265.htm

To solve the problem, perform the following steps:

1. Run the `/opt/tivoli/bin/cit/wscanhw` command and check if you obtain the same result.
2. Enable the traces of the `JobManager` process, wait for the error to occur and check the `JobManager_trace.log` file.
   - If the error is `executed with error(s)! exit why is <1>, exit code is <1>`, check the command line used by running the following and parameters:

     ```
     /home/twsuser/TWS/bin/citLauncher --cit -task WSCANHW -c
     /home/twsuser/TWS/ITA/cpa/ita/fullScan.xml
     ```

   - Run the `/opt/tivoli/bin/cit/wscanhw` command again, as `twsuser`.
3. If it still fails, check that the permissions of the `/home/twsuser/TWS/bin/citLauncher` file are: `-r-s--s--x 1 root tws86`.

Chapter 8. Troubleshooting common engine problems

Gives solutions to problems that might occur with the modules and programs that comprise the basic scheduling "engine" on the master domain manager.

This section details commonly occurring problems and their solutions in components and activities not already discussed in previous chapters.

Other common problems are dealt with in other guides, or other chapters of this guide:

- For installation problems see the *Tivoli Workload Scheduler: Planning and Installation Guide*.
- For network problems see Chapter 7, “Troubleshooting networks,” on page 87
- For problems with the fault-tolerant switch manager see Chapter 13, “Troubleshooting the fault-tolerant switch manager,” on page 201.
- For problems with the Symphony file see Chapter 15, “Corrupt Symphony file recovery,” on page 211.

The problems are grouped according to their typology:

Composer problems

The following problems could be encountered with composer:

- “Composer gives a dependency error with interdependent object definitions”
- “The `display cpu=@` command does not work on UNIX” on page 98
- “Composer gives the error "user is not authorized to access server"” on page 98
- “The deletion of a workstation fails with the "AWSJOM179E error” on page 99
- “When using the composer add and replace commands, a Job Scheduler has synchronicity problems” on page 99

Composer gives a dependency error with interdependent object definitions

You are running composer to add or modify a set of object definitions where one object is dependent on another in the same definition. An error is given for the dependency, even though the syntax of the definition is correct.

Cause and solution:

`Composer` validates objects in the order that they are presented in the command or the definition file. For example, you define two jobs, and the first-defined (*job_tom*) has a `follows` dependency on the second-defined (*job_harry*). The object validation tries to validate the `follows` dependency in *job_tom* but cannot find *job_harry* so gives an error and does not add the job to the database. However, it then reads the definition of *job_harry*, which is perfectly valid, and adds that to the database.

Similarly, this problem could arise if you define that a job needs a given resource or a Job Scheduler needs a given calendar, but you define the resource or calendar *after* defining the job or Job Scheduler that references them.

This problem applies to all composer commands that create or modify object definitions.

To resolve the problem, you can just simply repeat the operation. In the above example the following happens:

- The first job defined (*job_tom*) now finds the second job (*job_harry*) which was added to the database initially.
- You receive a "duplicate job" error for the second.

Alternatively, you can edit the object definition and retry the operation with just the object definition that gave the error initially.

To ensure that the problem does not reoccur, always remember to define objects in the order they are to be used. Define depending jobs and job streams before dependent ones. Define referred objects before referring objects.

Note: There is a special case of this error which impacts the use of the **`validate`** operation. Because **`validate`** does not add *any* job definitions to the database, correct or otherwise, *all* interdependent job definitions give an error.

In the example above, the problem would not have occurred when using add, new, create, or modify if the job definition of *job_harry* preceded that of *job_tom*. *job_harry* would have been added to the database, so the validation of *job_tom* would have been able to verify the existence of *job_harry*. Because the **`validate`** command does not add *job_harry* to the database, the validation of the `follows` dependency in *job_tom* fails.

There is no workaround for this problem when using **`validate`**. All you can do is to ensure that there are no interdependencies between objects in the object definition file.

The `display cpu=@` command does not work on UNIX

In UNIX, nothing happens when typing **`display cpu=@`** at the composer prompt.

Cause and solution:

The @ (atsign) key is set up as the "kill" character.

Type **`stty -a`** at the UNIX prompt to determine the setting of the @ key. If it is set as the "kill" character, then use the following command to change the setting to be "control/U" or something else:

```
stty kill ^U
```

where ^U is "control/U", not caret U.

Composer gives the error "user is not authorized to access server"

Troubleshooting for a user authorization error in composer.

You successfully launch composer but when you try to run a command, the following error is given:

```
user is not authorized to access server
```

Cause and solution:

This is a problem that is common to several CLI programs; see "Command line programs (like composer) give the error "user is not authorized to access server"" on page 142.

The deletion of a workstation fails with the "AWSJOM179E error

You want to delete a workstation either using **Composer** or the Dynamic Workload Console and the following error occurs:

```
AWSJOM179E An error occurred deleting definition of the workstation {0}.
The workload broker server is currently unreachable.
```

Cause and solution:

This problem occurs if you removed a dynamic domain manager without following the procedure that describes how to uninstall a dynamic domain manager in the *Tivoli Workload Scheduler: Planning and Installation Guide*.

To remove workstations connected to the dynamic domain manager, perform the following steps:

1. Verify that the dynamic domain manager was deleted, not just unavailable, otherwise when the dynamic domain manager restarts, you must wait until the workstations register again on the master domain manager before using them.
2. Delete the workstations using the following command:

   ```
   composer del ws <workstation_name>;force
   ```

When using the composer add and replace commands, a Job Scheduler has synchronicity problems

The composer **add** and **replace** commands do not correctly validate the time zone used in the Job Scheduler definition at daylight savings; as a consequence, the following unexpected warning message is displayed:

```
AWSBIA148W  WARNING: UNTIL time occurs before AT time for
             <workstation>#<schedule>.
AWSBIA019E  For <workstation>#<schedule> Errors 0, warnings 1.
AWSBIA106W  The schedule definition has warnings.
AWSBIA015I  Schedule <workstation>#<schedule> added.
```

The same might happen for the `deadline` keyword.

Cause and solution:

The problem is related to the C-Runtime Library `date` and `time` functions that fail to calculate the correct time during the first week of daylight savings time.

To ensure the accuracy of scheduling times, for the time argument of the `at`, `until`, or `deadline` scheduling keywords, specify a different value than that of the start time for the Tivoli Workload Scheduler production period defined in the global options file. These values must differ from one another by plus or minus one hour.

JnextPlan problems

The following problems could be encountered with JnextPlan:

- "JnextPlan fails to start" on page 100

- "JnextPlan fails with the database message "The transaction log for the database is full.""
- "JnextPlan fails with a Java out-of-memory error" on page 101
- "JnextPlan fails with the DB2 error like: nullDSRA0010E" on page 101
- "JnextPlan fails with message AWSJPL017E" on page 102
- "JnextPlan is slow" on page 102
- "A remote workstation does not initialize after JnextPlan" on page 103
- "A job remains in "exec" status after JnextPlan but is not running" on page 103
- "A change in a resource quantity in the database is not also implemented in the plan after JnextPlan" on page 105
- "On SLES8, after the second JnextPlan, an agent does not link" on page 105
- "CreatePostReports.cmd, or Makeplan.cmd, or Updatestats.cmd, or rep8.cmd hang on Windows operating systems" on page 106

JnextPlan fails to start

JnextPlan fails to start.

Cause and solution:

This error might be a symptom that your Tivoli Workload Scheduler network requires additional tuning because of a problem with the sizing of the `pobox` files. The default size of the `pobox` files is 10MB. You might want to increase the size according to the following criteria:

- The role (master domain manager, domain manager, or fault-tolerant agent) of the workstation in the network. Higher hierarchical roles need larger `pobox` files due to the larger number of events they must handle (since the total number of events that a workstation receives is proportional to the number of its connections). For a domain manager, also the number of sub domains under its control make a difference.
- The average number of jobs in the plan.
- The I/O speed of the workstation (Tivoli Workload Scheduler is IO- dependent).

JnextPlan fails with the database message "The transaction log for the database is full."

You receive a message from **`JnextPlan`** which includes the following database message (the example is from DB2, but the Oracle message is very similar):

```
The transaction log for the database is full.
```

The **`JnextPlan`** message is probably the general database access error message AWSJDB801E.

Cause and solution:

The problem is probably caused by the number of Job Scheduler instances that **`JnextPlan`** needs to handle. The default database transaction log files cannot handle more than the transactions generated by a certain number of Job Scheduler instances. In the case of DB2 this number is 180 000; in the case of Oracle it depends on how you configured the database. If **`JnextPlan`** is generating this many instances, you need to change the log file creation parameters to ensure more log space is created. You might also need to increase the Java heap size on the application server. See "Scalability" in the *Tivoli Workload Scheduler: Administration Guide* for a full description of how to perform these activities.

JnextPlan fails with a Java out-of-memory error

You receive the following message from **JnextPlan**:

```
AWSJCS011E An internal error has occurred.
The error is the following: "java.lang.OutOfMemoryError".
```

Cause and solution:

This error is a symptom that the processes running in the WebSphere Application Server during **JnextPlan** phase need more Java virtual memory to run. To increase the Java virtual memory for the WebSphere Application Server, you must increase the default Java heap size values.

In the file

```
<WAS_profile_path>/config/cells/
TWSNodeCell/nodes/TWSNode/servers/server1/server.xml
```

where the default path for <*WAS_profile_path*> is *TWA_home*/WAS/TWSprofile, modify the values of the initialHeapSize and maximumHeapSize variables as described in the Heap size settings for jvm 64 bits table.

Note: The minimum value for initialHeapSize is 512 MB and for maximumHeapSize is 1024 MB.

For more information about increasing the application server heap size, see the *Tivoli Workload Scheduler Administration Guide: Scalability*.

JnextPlan fails with the DB2 error like: nullDSRA0010E

JnextPlan has failed with the following messages:

```
AWSJPL705E An internal error has occurred. The planner is unable to create
the preproduction plan.

AWSBIS348E An internal error has occurred. MakePlan failed while running:
planman.

AWSBIS335E JnextPlan failed while running: tclsh84
```

The SystemOut.log has an error like this:

```
AWSJDB801E An internal error has been found while accessing the database.
The internal error message is: "nullDSRA0010E: SQL State = 57011, Error
Code = -912".
```

Cause and solution:

This indicates that the memory that DB2 allocates for its "*lock list*" is insufficient. To understand why the problem has occurred and resolve it, see the section in the *Tivoli Workload Scheduler: Administration Guide* about monitoring the "*lock list*" value among the DB2 administrative tasks.

JnextPlan fails with message AWSJPL017E

You receive the following message from **JnextPlan**:

```
AWSJPL017E The production plan cannot be created because a
previous action on the production plan did not complete successfully.
See the message help for more details.
```

Cause and solution:

The problem might be caused by a **JnextPlan** being launched before the previous **JnextPlan** has run the **SwitchPlan** command.

The situation might not resolve itself. To resolve it yourself, perform the following steps:

1. Reset the plan by issuing the command **ResetPlan -scratch**
2. If the reset of the plan shows that the database is locked, run a **planman unlock** command.

On Windows operating systems JnextPlan fails with cscript error

On Windows operating systems, you receive the following message from **JnextPlan** or **ResetPlan**:

```
'cscript' is not recognized as an internal or external command,
operable program or batch file
```

Cause and solution:

JnextPlan or **ResetPlan** fails because the **cscript** utility that runs files with .vbs extension is not installed.

Install the **cscript** utility on your Windows operating system and rerun **JnextPlan** or **ResetPlan**.

JnextPlan is slow

You find that JnextPlan is unacceptably slow.

Cause and solution:

There are three possible causes for this problem:

Tracing too much

One possible cause is the tracing facility. It could be that it is providing too much trace information. There are three possible solutions:

- Reduce the number of processes that the tracing facility is monitoring. See "Quick reference: how to modify log and trace levels" on page 9 for full details.
- Stop the tracing facility while JnextPlan is running. To do this issue the following command before it starts:

  ```
  atctl off TWS all
  ```

  Issue the following command to turn the tracing back on again:

  ```
  atctl on TWS all
  ```

  This can be automated within a script that launches JnextPlan.

Application server tracing too much

Another possible cause is that the application server tracing is set to high. See “Log and trace files for the application server” on page 37 for more details about the trace and how to reset it.

Database needs reorganizing

Another possible cause is that the database needs reorganizing. See "Reorganizing the database" in *Tivoli Workload Scheduler: Administration Guide* for a description of how and why you reorganize the database, logically and physically.

A remote workstation does not initialize after JnextPlan

After running JnextPlan you notice that a remote workstation does not immediately initialize. The following message is seen:

```
+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
+ AWSBCW037E  Writer cannot initialize this workstation because mailman
+ is still active.
+ ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
+ AWSBCW039E Writer encountered an error opening the Mailbox.msg file.
+ The total cpu time used is as follows:  0
+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
```

Cause and solution:

If mailman is still running a process on the remote workstation, JnextPlan cannot download the Symphony file and initialize the next production period's activities. Instead, the domain manager issues a **stop** command to the workstation. The workstation reacts in the normal way to the **stop** command, completing those activities it must complete and stopping those activities it can stop.

After the interval determined in the `localopts` parameter *mm retrylink*, the domain manager tries again to initialize the workstation. When it finds that the **stop** command has been implemented, it starts to initialize the workstation, downloading the Symphony file and starting the workstation's activities.

A workstation does not link after JnextPlan

On UNIX and Windows operating systems, after running JnextPlan a workstation does not link to the domain manager.

Cause and solution:

The workstation does not recognize its own IP address and host name. To resolve this problem, add the workstation IP address and hostname to the `hosts` file located in `C:\Windows\System32\Drivers\etc\hosts` (Windows) or `/etc/hosts` (UNIX) file in the following format:

```
IPaddress hostname hostname.domain
```

For example, `9.168.60.9 nc060009 nc060009.romelab.it.ibm.com`

A job remains in "exec" status after JnextPlan but is not running

After running **`JnextPlan`** you notice that a job has remained in "exec" status, but is not being processed.

Cause and solution:

This error scenario is possible if a job completes its processing at a fault-tolerant agent just before `JnextPlan` is run. The detail of the circumstances in which the error occurs is as follows:

1. A job completes processing
2. The fault-tolerant agent marks the job as "succ" in its current Symphony file
3. The fault-tolerant agent prepares and sends a job status changed event (JS) and a job termination event (JT), informing the master domain manager of the successful end of job
4. At this point `JnextPlan` is started on the master domain manager
5. `JnextPlan` starts by unlinking its workstations, including the one that has just sent the JS and JT events. The message is thus not received, and waits in a message queue at an intermediate node in the network.
6. `JnextPlan` carries the job forward into the next Symphony file, and marks it as "exec", because the last information it had received from the workstation was the Launch Job Event (BL).
7. `JnextPlan` relinks the workstation
8. The fault-tolerant agent receives the new Symphony file and checks for jobs in the "exec" status.
9. It then correlates these jobs with running processes but does not make a match, so does not update the job status
10. The master domain manager receives the Completed Job Event that was waiting in the network and marks the carried forward job as "succ" and so does not send any further messages in respect of the job
11. Next time `JnextPlan` is run, the job will be treated as completed and will not figure in any further Symphony files, so the situation will be resolved. However, in the meantime, any dependent jobs will not have been run. If you are running `JnextPlan` with an extended frequency (for example once per month), this might be a serious problem.

There are two possible solutions:

Leave `JnextPlan` to resolve the problem
If there are no jobs dependent on this one, leave the situation to be resolved by the next `JnextPlan`.

Change the job status locally to "succ"
Change the job status as follows:

1. Check the job's stdlist file on the fault-tolerant agent to confirm that it did complete successfully.
2. Issue the following command on the fault-tolerant agent:

   ```
   conman "confirm <job>;succ"
   ```

To prevent the reoccurrence of this problem, take the following steps:

1. Edit the `JnextPlan` script
2. Locate the following command:

   ```
   conman "stop @!@;wait ;noask"
   ```

3. Replace this command with individual stop commands for each workstation (`conman "stop <workstation> ;wait ;noask"`) starting with the farthest distant nodes in the workstation and following with their parents, and so on, ending up with the master domain manager last. Thus, in a workstation at any level, a message placed in its forwarding queue either by its own job monitoring

processes or by a communication from a lower level should have time to be forwarded at least to the level above before the workstation itself is closed down.

4. Save the modified **JnextPlan**.

A change in a resource quantity in the database is not also implemented in the plan after JnextPlan

You make changes to the number of available resources in the database, but the number of available resources in the plan does not change. The global option `enCFResourceQuantity` is set to *no*.

Cause and solution:

If the global option `enCFResourceQuantity` is set to *yes*, you would expect that any changes to the available quantity of a given resource in the database would not be implemented in the plan, provided there is at least one job or Job Scheduler instance using that resource in the extended plan.

Similarly, if the global option `enCFResourceQuantity` is set to *no* you might expect that the available resource quantity would change after **JnextPlan**. However, this is not always true, depending on the quantity of that resource being used by jobs and Job Scheduler instances currently in the plan:

- If the usage of the resource by jobs and Job Scheduler instances is *less than or equal to* the new total of available resources in the database, the available quantity of the resource is changed in the plan.
- If the usage of the resource by jobs and Job Scheduler instances is *greater than* the new total of available resources in the database, the available quantity of the resource is *not* changed in the plan.

To be sure to update the quantity of resources in the plan, make available at least as many instances of the resource as are required by the jobs and Job Scheduler instances in the plan.

See also the description of the `enCFResourceQuantity` option in the *Tivoli Workload Scheduler: User's Guide and Reference*.

On SLES8, after the second JnextPlan, an agent does not link

You have installed an agent on SLES8. The first **JnextPlan** works fine, but the second fails, with **conman** giving an error.

Cause and solution:

The problem is caused by a missing library on the agent workstation, called `ligcc_s.so.1`.

The **conman** process cannot run without this library, and **JnextPlan** uses **conman** to stop Tivoli Workload Scheduler processes that were started after the Symphony file arrived after the first **JnextPlan**. That is why **JnextPlan** did not fail the first time, because **JnextPlan** detected that processes were not running and did not need to use **conman** to stop them.

This is a library that is normally in `/lib`, but in this case is not. Look for it in other directories, such as `/usr/lib`. If you cannot locate it on your computer, contact IBM Software Support for assistance.

When you have located it, make a soft link to it from the `/lib` directory and rerun **JnextPlan**.

CreatePostReports.cmd, or Makeplan.cmd, or Updatestats.cmd, or rep8.cmd hang on Windows operating systems

CreatePostReports.cmd, or Makeplan.cmd, or Updatestats.cmd, or rep8.cmd hang on Windows operating systems

Cause and solution:

On Windows operating systems it might happen that, when running `CreatePostReports.cmd`, or `Makeplan.cmd`, or `Updatestats.cmd`, or `rep8.cmd` jobs, the Tool Command Language interpreter hangs not returning an answer to the caller and the jobs do not complete. These jobs use by default the Tool Command Language interpreter but can be configured to not use it. To avoid that `CreatePostReports.cmd`, or `Makeplan.cmd`, or `Updatestats.cmd`, or `rep8.cmd` jobs use the Tool Command Language interpreter, open each of them with a text editor, find the following line:

```
set USETCL=yes
```

and change it either commenting it:

```
REM set USETCL=yes
```

or setting the variable to `no`:

```
set USETCL=no
```

In this way, when `CreatePostReports.cmd`, or `Makeplan.cmd` or `Updatestats.cmd`, or `rep8.cmd` jobs run, the Tool Command Language interpreter is not invoked.

Conman problems

The following problems could be encountered when running **conman**:

- "On Windows, the message AWSDEQ024E is received"
- "Conman on a SLES8 agent fails because a library is missing" on page 108
- "Duplicate ad-hoc prompt number" on page 108
- "Submitting job streams with a wildcard loses dependencies" on page 109

On Windows, the message AWSDEQ024E is received

When attempting to log in to **conman** on a Windows operating system, the following error is received:

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
+ AWSDEQ024E Error owner is not of type user in TOKENUTILS.C;1178
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
```

Cause and solution:

This problem can have a variety of causes related to users and permissions. On the server, perform the following checks:

<TWS_user> **password**

Make sure that the password that you supplied for the *<TWS_user>* user is correct, that the account is not locked out, and that the password has not expired.

Tokensrv service

Ensure that the Tivoli Token Service (tokensrv) is started by the Tivoli Workload Scheduler administrative user (not the local system account). This must be verified in the properties of that service in the Services panel; see *Tivoli Workload Scheduler: Administration Guide* for details of how to access that panel and view the details of the user that "owns" the service.

If the password to this user has changed on the workstation, check also that the password has been changed in the entry on the Services panel.

File ownerships

Check that the following ownerships are correct:

- All `.exe` and `.dll` files in the `<TWA_home>\TWS\bin` directory are owned by the *<TWS_user>*
- All `.cmd` files are owned by "Administrator"

If necessary, alter the ownership of these files as follows:

1. Stop any active Tivoli Workload Scheduler processes.
2. Change to the `<TWA_home>\TWS` directory.
3. Issue the following commands:

```
setown -u <TWS_user> .\bin\*.exe
setown -u <TWS_user> .\bin\*.dll c:\win32app\maestro>
setown -u administrator .\bin\*.cmd
```

4. Issue a **StartUp** command on the affected server.
5. On the Tivoli Workload Scheduler master domain manager, launch **conman**.
6. Once conman is started, issue the following command sequence: **link @!@;noask**
7. Keep issuing the **sc** command to ensure that all the servers relink. A server is considered linked if the State shows "LTI JW"

Advanced user rights

Make sure that the *<TWS_user>* has the correct advanced user rights, as documented in the *Tivoli Workload Scheduler: Planning and Installation Guide*. These are as follows:

- Act as part of the operating system
- Adjust memory quotas for a process
- Log on as a batch job
- Log on as a service
- Log on locally
- Replace a process level token
- Impersonate a client after authentication right

Resolving the problem by reinstalling

If none of the above suggestions resolve the problem, you might need to reinstall Tivoli Workload Scheduler. However, it might happen that the uninstallation fails to completely remove all of the Registry keys from the previous installation. In this case, remove the registry keys following the procedure in the *Tivoli Workload Scheduler: Planning and Installation Guide*. Then make a fresh installation from the product DVD, subsequently reapplying the most recent fix pack, if there is any.

Conman on a SLES8 agent fails because a library is missing

You are running **conman** on an agent on Linux SLES8. A message is received indicating that **conman** cannot be run because the library ligcc_s.so.1 is missing.

Cause and solution:

This is a library that is normally in /lib, but in this case is not. Look for it in other directories, such as /usr/lib. If you cannot locate it on your computer, contact IBM Software Support for assistance.

When you have located it, make a soft link to it from the /lib directory and rerun **JnextPlan**.

Duplicate ad-hoc prompt number

You issue a job or Job Scheduler that is dependent on an ad-hoc prompt, but conman cannot submit the job because the prompt number is duplicated.

Cause and solution:

On the master domain manager, prompts are created in the plan using a unique prompt number. This number is maintained in the file of the master domain manager. **JnextPlan** initially sets the prompt number to "1", and then increments it for each prompt that is to be included in the plan.

If you want to submit a job or Job Scheduler using an ad-hoc prompt on another Tivoli Workload Scheduler agent during the currency of a plan, the local **conman** looks in its own runmsgno file in its own <*TWA_home*>/TWS/mozart/ directory, and uses the number it finds there. The value in the local file does not necessarily reflect the current value used in the Symphony file. For example, when the file is first created on an agent the run number is created as the highest run number used in the Symphony file at that time, plus *1000*. It is then incremented every time **conman** needs to assign a number to a prompt. Despite this interval of 1000, it is still possible for duplicates to occur.

To resolve the problem, edit the file and change the number. An example of the file contents is as follows:

```
         0       1236
```

The format is as follows:

- The 10-digit last Symphony run number, right-justified, blank filled. This should not be edited.
- A single blank.
- The 10-digit last prompt number, right-justified, blank filled.

For example:

```
123456789012345678901
         0         98
```

When modifying the last prompt number, remember that the least significant digit must always be in character position 21. This means that if the current number is "98" and you want to modify it to display "2098" then you must replaces two spaces with the "20", and not just insert the two characters. For example:

```
123456789012345678901
         0       2098
```

Save the file and rerun the submit. No error should be given by **conman**.

During Jnextplan fault-tolerant agents cannot be linked

When you run the **conman** command **stop**, the command might take time to stop all the Tivoli Workload Scheduler processes on local fault-tolerant agents. If, in the meantime, the Symphony file was downloaded, it cannot be received by the Tivoli Workload Scheduler agent because some processes are still running and the following message is displayed:

```
AWSBCW037E Writer cannot initialize this workstation because
  WRITER:+ mailman is still active.
```

Solution:

Insert `sleep 60` after **conman stop** in the Jnextplan script.

Submitting job streams with a wildcard loses dependencies

You issue a submit of interdependent job streams using a wildcard. In certain circumstances you lose the dependencies in an anomalous way.

Cause and solution:

To understand the cause, follow this example, in which the job streams are represented by A, B, C, and their instances are represented by 1, 2:

1. You have the following job streams and jobs in the Symphony file:

   ```
   A1
   B1 (A1,C1)
   C1
   ```

   where B1 depends on A1 and C1.
2. You submit all the jobs, using:

   ```
   sbs @
   ```

   The planner creates the following Job Scheduler instances:

   ```
   A2
   B2 (A2,C1)
   C2
   ```

   B2 now depends on A2 and C1. This is correct, because at the moment of submitting the B2 Job Scheduler C2 did not exist, so the highest instance available was C1.
3. The planner then asks you to confirm that you want to submit the instances:

   ```
   Do you want to submit A2?
   Do you want to submit B2?
   Do you want to submit C2?
   ```
4. Assume that you do not want to submit the job streams A2 and C2, yet, so you reply "No" to the first and last questions. In these circumstances you lose the dependency on A2, but not on C1. This behavior is correct and logical but could be seen by some as anomalous.

To correct the situation, stop the agent on the workstation where the Job Scheduler is running and cancel the Job Scheduler. Then determine the correct sequence of actions to achieve the objective you want, and submit the appropriate jobs.

Fault-tolerant agent problems

The following problems could be encountered with fault-tolerant agents.

- “A job fails in heavy workload conditions”
- “Batchman, and other processes fail on a fault-tolerant agent with the message AWSDEC002E”
- “Fault-tolerant agents unlink from mailman on a domain manager” on page 111

A job fails in heavy workload conditions

A job fails on a fault-tolerant agent where a large number of jobs are running concurrently and one of the following messages is logged:

- “TOS error: No space left on device.”
- “TOS error: Interrupted system call.”

Cause and solution:

This problem could indicate that one or more of the CCLog properties has been inadvertently set back to the default values applied in a prior version (which used to occasionally impact performance).

See “Tivoli Workload Scheduler logging and tracing using CCLog” on page 14 and check that the `TWSCCLog.properties` file contains the indicated default values for the properties `twsHnd.logFile.className` and `twsloggers.className`.

If the correct default values are being used, contact IBM Software Support to address this problem.

Batchman, and other processes fail on a fault-tolerant agent with the message AWSDEC002E

The batchman process fails together with all other processes that are running on the fault-tolerant agent, typically mailman and jobman (and JOBMON on Windows 2000). The following errors are recorded in the stdlist log of the fault-tolerant agent:

```
+ ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
+ AWSBCV012E Mailman cannot read a message in a message file.
+ The following gives more details of the error:
+ AWSDEC002E  An internal error has occurred. The following UNIX
+ system error occurred on an events file: "9" at line = 2212
+ ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
```

Cause and solution:

The cause is a corruption of the file `Mailbox.msg`, probably because the file is not large enough for the number of messages that needed to be written to it.

Consider if it seems likely that the problem is caused by the file overflowing:

- If you are sure that this is the cause, you can delete the corrupted message file.

  All events lost: Following this procedure means that all events in the corrupted message file are lost.

  Perform the following steps:

1. Use the **evtsize** command to increase the Mailbox.msg file. Ensure that the file system has sufficient space to accommodate the larger file.
2. Delete the corrupt message file.
3. Restart Tivoli Workload Scheduler by issuing the conman **start** command on the fault-tolerant agent.

- If you do not think that this is the answer, or are not sure, contact IBM Software Support for assistance.

Fault-tolerant agents unlink from mailman on a domain manager

A message is received in the maestro log on the domain manager from mailman for each of the fault-tolerant agents to which it is connected. The messages are as follows:

```
MAILMAN:06:15/ + ++++++++++++++++++++++++++++++++++++++++++++++++
MAILMAN:06:15/ + WARNING: No incoming from <<workstation>>
                 - disconnecting. [2073.25]
MAILMAN:06:15/ + ++++++++++++++++++++++++++++++++++++++++++++++++
```

These messages usually occur in the 30 - 60 minutes immediately following JnextPlan.

Cause and solution:

This problem is normally caused by a false timeout in one of the mailman processes on the domain manager. During the initialization period immediately following JnextPlan, the "*.msg" files on the domain manager might become filled with a backlog of messages coming from fault-tolerant agents. While mailman is processing the messages for one fault-tolerant agent, messages from other fault-tolerant agents are kept waiting until the configured time interval for communications from a fault-tolerant agent is exceeded, at which point mailman unlinks them.

To correct the problem, increase the value of the *mm response* and *mm unlink* variables in the configuration file ~maestro/localopts. These values must be increased together in small increments (60-300 seconds) until the timeouts no longer occur.

Dynamic agent problems

The following problems could be encountered with dynamic agent.

- “The dynamic agent cannot contact the server”
- “V8.5.1 fault-tolerant agent with dynamic capabilities cannot be registered” on page 112
- “Error message AWKDBE009E is received” on page 112

The dynamic agent cannot contact the server

The dynamic agent cannot communicate with the server.

The dynamic agent cannot contact the Tivoli Workload Scheduler master domain manager or dynamic domain manager.

Cause and solution:

This problem might indicate that the list of URLs for connecting to the master domain manager or dynamic domain manager stored on the dynamic agent is incorrect. Perform the following steps:

1. Stop the dynamic agent
2. Delete the `BackupResourceAdvisorUrls` property from the `JobManager.ini` file
3. Edit the `ResourceAdvisorUrl` property in the `JobManager.ini` file and set the URL of the master domain manager or dynamic domain manager.
4. Start the dynamic agent.

V8.5.1 fault-tolerant agent with dynamic capabilities cannot be registered

Describes how to resolve the problem of a V8.5.1 fault-tolerant agent that cannot be registered with its master domain manager.

You have installed a fault-tolerant agent with dynamic capabilities, version 8.5.1, in a domain controlled by a version 8.6 master domain manager. When you try and register the agent manually with the master domain manager, and the name you want to give the agent is its hostname, an error is given because an agent with that name already exists.

Cause and solution:

This problem is caused because the V8.5.1 fault-tolerant agent with dynamic capabilities is actually two agents, the fault-tolerant agent and a lightweight dynamic agent. This dynamic agent registers itself automatically with the master domain manager using the hostname as its registered name. When you try and register the fault-tolerant agent manually, an error is given.

To solve this problem, you can perform one of the following operations:

- Give the fault-tolerant agent a name other than the hostname
- Rename the dynamic agent

To avoid encountering this problem in the future, register the agent using its hostname before installing it. When the dynamic agent attempts to register itself automatically, it discovers that an agent with its hostname already exists and registers itself as <*hostname*>_1 (or <*hostname*>_2, <*hostname*>_3 and so on.)

This is not a problem with V8.6 dynamic agents, because you cannot register a fault-tolerant agent. using its hostname.

Error message AWKDBE009E is received

Submission of an MSSQL job or of a Database job on an MSSQL database fails.

When you try to submit an MSSQL job or a Database job running on an MSSQL database, an error message similar to the following is returned, despite the required JDBC driver being installed in the correct directory:

```
AWKDBE009E Unable to create the connection - "
java.lang.UnsupportedOperationException:
Java Runtime Environment (JRE) version 1.6 is not supported by this driver.
Use the sqljdbc4.jar class library, which provides support for JDBC 4.0."
```

Cause and solution:

Verify that only the required **sqljdbc4.jar** driver is present in the JDBC driver directory. If unsupported JDBC drivers are also present in this directory, the dynamic agent might load them and cause the error message.

To solve the problem, perform the following steps:

1. Remove the unsupported JDBC drivers.
2. Stop the dynamic agent with command **ShutDownLwa**.
3. Restart the dynamic agent with command **StartUpLwa**.

For more information, see the section about configuring to schedule job types with advanced options in *Tivoli Workload Scheduler: Administration Guide*.

Error message AWSITA104E is received

System resources scan fails.

From the **Tivoli dynamic workload broker > Tracking > Computers** entry of the Dynamic Workload Console, if you see the *status* of the agent *online*, but the *availability* is *unavailable*, you can see in the`JobManager_trace.log` file the following error:

```
 AWSITA104E Unable to perform the system resources scan.
 The error is "Unable to parse hardware scan output".
AWSITA105E Unable to notify scan results to the server
 because of a resources scanner error.
```

Cause and solution:

The problem is that the *Common Inventory Technology* (CIT) is unable to perform correctly the resources scan because the hostname of the machine is not recognized.

To solve the problem, perform the following steps:

on UNIX operating systems

- verify that the hostname is listed in the `/etc/hosts` file.
- verify that the `ping` *`hostname`* command is performed successfully.

on Windows operating systems

- verify that the `ping` *`hostname`* command is performed successfully.

Event condition on dynamic agent does not generate any action

After the event rules are deployed on the dynamic agent, the dynamic agent is stopped and restarted automatically. The restarting process takes place only after some minutes, therefore an event condition issued briefly after the deployment of the event rule does not generate any action.

Problems on Windows

You could encounter the following problems running Tivoli Workload Scheduler on Windows.

- “Interactive jobs are not interactive using Terminal Services” on page 114
- “The Tivoli Workload Scheduler services fail to start after a restart of the workstation” on page 114

- “The Tivoli Workload Scheduler for user service (batchup) fails to start”
- “An error relating to impersonation level is received” on page 116

Interactive jobs are not interactive using Terminal Services

You want to run a job at a Windows fault-tolerant agent, launching the job remotely from another workstation. You want to use Windows Terminal Services to launch the job on the fault-tolerant agent, either with the Dynamic Workload Console or from the command line. You set the "is interactive" flag to supply some run time data to the job, and indicate the application program that is to be run (for example, `notepad.exe`). However, when the job starts running, although everything seems correct, the application program window does not open on the Terminal Services screen. An investigation at the fault-tolerant agent shows that the application program is running on the fault-tolerant agent, but Terminal Services is not showing you the window.

Cause and solution:

The problem is a limitation of Terminal Services, and there is no known workaround. All "interactive jobs" must be run by a user at the fault-tolerant agent, and cannot be run remotely, using Terminal Services. Jobs that do not require user interaction are not impacted, and can be run from Terminal Services without any problems.

The Tivoli Workload Scheduler services fail to start after a restart of the workstation

On Windows, both the Tivoli Token service and the Tivoli Workload Scheduler for user service (batchup) fail to start after a restart of the workstation on which they are running.

Cause and solution:

The user under which these services start might have changed password.

If you believe this to be the case, follow the procedure described in *Tivoli Workload Scheduler: Administration Guide*.

The Tivoli Workload Scheduler for user service (batchup) fails to start

The Tivoli Workload Scheduler for <*TWS_user*> service (sometimes also called *batchup*) does not start when the other Tivoli Workload Scheduler processes (for example, mailman and batchman) start on workstations running Windows 2000 and 2003 Server. This problem occurs on a fault-tolerant agent, either after a conman start command or after a domain manager switch. The Tivoli Token service and netman services are unaffected.

This problem does not impact scheduling, but can result in misleading status data.

Cause and solution:

The problem is probably caused either because the <TWS_user> has changed password, or because the name of the service does not match that expected by Tivoli Workload Scheduler. This could be because a change in the configuration of the workstation has impacted the name of the service.

To resolve the problem temporarily, start the service manually using the Windows Services panel (under **Administrative Tools**. The service starts and runs correctly. However, the problem could reoccur unless you correct the root cause.

To resolve the problem permanently, follow these steps:

1. If the <*TWS_user*> has changed password, ensure that the service has been changed to reflect the new password, as described in *Tivoli Workload Scheduler: Administration Guide*.
2. Look at the Windows Event Viewer to see if the information there explains why the service did not start. Resolve any problem that you find.
3. If the failure of the service to start is referred to the following reason, there is a mismatch between the name of the installed service and the name of the service that the mailman process calls when it starts:

```
System error code 1060:
      The specified service does not exist as an installed service
```

   The normal reason for this is that the user ID of the <*TWS_user*> has changed. The <*TWS_user*> cannot normally be changed by you, so this implies some change that has been imposed externally. A typical example of this is if you have promoted the workstation from *member server* to *domain controller*. When this happens, the local <*TWS_user*> is converted automatically to a domain user, which means that the domain name is prefixed to the user ID, as follows: `<domain_name>\<TWS_user>`.

   The problem occurs because of the way Tivoli Workload Scheduler installs the service. If the workstation is *not* a domain controller the installation names the service: `tws_maestro_<TWS_user>`. If the workstation *is* a domain controller the installation names the service: `tws_maestro_<domain_name>_<TWS_user>`.

   When batchman starts up it discovers that the <*TWS_user*> is a domain user. Batchman tries to use the domain user service name to start the batchup service. The action fails because the service on the workstation has the local user service name.

   To resolve this problem you must change the name of this service, and to do this you are recommended to uninstall the Tivoli Workload Scheduler instance and install it again.

   An alternative, but deprecated, method is to change the name of the service in the Windows registry.

   Attention: Making changes to the Windows Registry can make the operating system unusable. You are strongly advised to back up the Registry before you start.

   If you decide to use this method you must edit the following keys:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\tws_maestro_<TWS_user>
HKEY_LOCAL_MACHINE\SYSTEM\ControlSet001\Services\tws_maestro_<TWS_user>
HKEY_LOCAL_MACHINE\SYSTEM\ControlSet002\Services\tws_maestro_<TWS_user>
```

   and change them as follows:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\tws_maestro_<domain_name>_<TWS_user>
HKEY_LOCAL_MACHINE\SYSTEM\ControlSet001\Services\tws_maestro_<domain_name>_<TWS_user>
HKEY_LOCAL_MACHINE\SYSTEM\ControlSet002\Services\tws_maestro_<domain_name>_<TWS_user>
```

   If you have changed the name of the service in the registry, you must ensure that the logon is correct. Open the **Log On** tab of the service in the Windows Services panel and change the account name, if necessary, to <*domain_name*>\<*TWS_user*>. You must also enter the password and confirm it.

An error relating to impersonation level is received

On Windows, an error is received when you try to use any of the Tivoli Workload Scheduler commands (for example, **conman**, **composer**, **datecalc**). The error message is similar to the following example:

```
AWSDEQ008E Error opening thread token ../../src/libs/tokenutils.c:1380
message = Either a required impersonation level was not provided, or the
provided impersonation level is invalid
```

Cause and solution:

This issue occurs when the user account that is used to run the Tivoli Workload Scheduler command line does not have the user right: "Impersonate a client after authentication". This is a new security setting that was first introduced in the following service packs:

Windows 2000
Service Pack 4

Windows XP
Service Pack 2

Windows 2003
All versions.

Windows 7

Windows 2008

The upgrade does not grant this right to existing users.

For full details of this right, see the appropriate Windows publication.

To resolve this problem, grant the user right "Impersonate a client after authentication" to all users that need to run Tivoli Workload Scheduler commands on the workstation. To do this, follow these steps:

1. Select **Start** → **Programs** → **Administrative Tools** → **Local Security Policy**
2. Expand **Local Policies**, and then click **User Rights Assignment**.
3. In the right pane, double-click **Impersonate a client after authentication**.
4. In the Local Security Policy Setting dialog box, click **Add**.
5. In the Select Users or Group dialog box, click the user account that you want to add, click **Add**, and then click **OK**.
6. Click **OK**.

Extended agent problems

The following problem could be encountered with extended agents:

The return code from an extended agent job is not recognized

You have a network including Tivoli Workload Scheduler versions 8.5, 8.4, 8.3, 8.2, or 8.2.1 and Tivoli Workload Scheduler for Applications, version 8.1.1. An extended agent job (submitted either through the Dynamic Workload Console or **conman**), has given an unrecognized return code.

Cause and solution:

If Tivoli Workload Scheduler does not receive a return code from the extended agent job, it substitutes the return code with the exit code of the method. If this last is zero, the job has finished successfully. If it is not zero, contact IBM Software Support for an explanation of the exit code and a resolution of the problem.

Planner problems

The following problems could be encountered with the planner:

There is a mismatch between Job Scheduler instances in the `Symphony` file and the preproduction plan

You notice that there are Job Scheduler instances in the `Symphony` file that are not in the preproduction plan.

Cause and solution:

Job streams are automatically deleted from the preproduction plan when they are completed. However, it is possible to set the "carryStates" global option (using **`optman`**) so that job streams with jobs in the *SUCC* status are carried forward. In this case such job streams are carried forward to the new `Symphony` file when the plan is extended, but are deleted from the preproduction plan if the job streams have been successfully completed. This is not an error. These job streams can remain in the current plan (`Symphony` file) and can even be run again.

To resolve the situation for a given plan, use **`conman`** or the Dynamic Workload Console to delete the Job Scheduler instances from the plan.

To prevent the problem reoccurring, consider why the "carryStates" global option is set so that job streams with jobs in the *SUCC* status are carried forward. If it has been set in error, or is no longer required, change the settings of the option (using **`optman`**) so that this no longer happens.

Planman deploy error when deploying a plug-in

When using the planman deploy command to deploy a plug-in, the deploy fails with the following error:

```
AWSJCS011E An internal error has occurred. The error is the following:
"ACTEX0019E The following errors
from the Java compiler cannot be parsed:
error: error reading <file_name>; Error opening zip file
<file_name>
```

Cause and solution:

The .jar file identified in the message is corrupt. Check and correct the format of the file before retrying the deploy.

An insufficient space error occurs while deploying rules

When using the planman deploy command with the -scratch option to deploy all non-draft rules, the following error occurs:

```
AWSJCS011E An internal error has occurred. The error is the following:
"ACTEX0023E The Active Correlation Technology compiler cannot
communicate with the external Java compiler.
java.io.IOException: Not enough space".
```

Cause and solution:

This error occurs when there is insufficient swap space (virtual memory) to perform the operation.

Create more swap space or wait until there are fewer active processes before retrying the operation.

UpdateStats fails if it runs more than two hours (message AWSJCO084E given)

When running the **UpdateStats** command in a large plan, if the job run time exceeds two hours, the job fails with messages that include the following:

```
AWSJCO084E The user "UNAUTHENTICATED" is not authorized to work with the
          "planner" process.
```

Cause and solution:

This error occurs because the large number of jobs in the plan has caused the job run time to exceed two hours, which is the default timeout for the user credentials of the WebSphere Application Server.

To increase the timeout so that the **UpdateStats** command has more time to run, perform the following steps:

1. Locate the following file:

   ```
   <WAS_profile_path>/config/cells/
   TWSNodeCell/nodes/TWSNode/servers/server1/server.xml
   ```

   where the default path for <*WAS_profile_path*> is `<TWA_home>/WAS/TWSprofile`.
2. Locate the parameter `authValidationConfig="system.LTPA" timeout="120"`
3. Edit the timeout value from 120 minutes to a value that you consider sufficient.
4. Stop and restart the WebSphere Application Server by using the conman **stopappserver** and **startappserver** commands (or, in the latter case, the **StartUp** command).

The planman showinfo command displays inconsistent times

The plan time displayed by the `planman showinfo` command might be incongruent with the time set in the operating system of the workstation. For example, the time zone set for the workstation is `GMT+2` but `planman showinfo` displays plan times according to the `GMT+1` time zone.

Cause and solution:

This situation arises when the WebSphere Application Server Java virtual machine does not recognize the time zone set on the operating system.

As a workaround for this problem, set the time zone defined in the `server.xml` file equal to the time zone defined for the workstation in the Tivoli Workload Scheduler database. Proceed as follows:

1. Stop WebSphere Application Server
2. Create a backup copy of the following file:

   ```
   <WAS_profile_path>/config/cells/
   TWSNodeCell/nodes/TWSNode/servers/server1/server.xml
   ```

   where the default path for <*WAS_profile_path*> is *`TWA_home`*`/WAS/TWSprofile`.
3. Open the original file with a text or XML editor

4. Find the `genericJvmArguments` string and add:

   ```
   genericJvmArguments="-Duser.timezone=time_zone"
   ```

   where *time_zone* is the time zone defined for the workstation in the Tivoli Workload Scheduler database.
5. Restart WebSphere Application Server

A bound z/OS shadow job is carried forward indefinitely

A z/OS shadow job, defined for the distributed environment, is successfully bound to a remote z/OS job, but the z/OS shadow job never completes and is carried forward indefinitely.

Cause and solution:

A Refresh Current Plan operation was performed on the remote Tivoli Workload Scheduler for z/OS instance. Because this operation scratches the current plan, the remote z/OS job instance binding was removed.

To prevent the z/OS shadow job from being indefinitely carried forward, manually cancel the z/OS shadow job instance in the distributed engine plan.

For instructions on how to do this, see the *cancel job* topic in the *Managing objects in the plan - conman* chapter of the *Tivoli Workload Scheduler: User's Guide and Reference*.

Problems with DB2

The following problems could be encountered with DB2:
- “Timeout occurs with DB2”
- “JnextPlan fails with the DB2 message "The transaction log for the database is full."” on page 120
- “The DB2 UpdateStats job fails after 2 hours” on page 120
- “DB2 might lock while making schedule changes” on page 121

Timeout occurs with DB2

You are trying to edit an object, but after a delay an error is issued by DB2 referring to a timeout:

```
AWSJDB803E
An internal deadlock or timeout error has occurred while processing a
database transaction. The internal error message is:
"The current transaction has been rolled back because of a deadlock or timeout.
Reason code "68".
```

Cause and solution:

In this case the object you are trying to access is locked by another user, or by you in another session, but the lock has not been detected by the application. So the application waits to get access until it is interrupted by the DB2 timeout.

By default, both DB2 and WebSphere Application Server have the same length timeout, but as the WebSphere Application Server action starts before the DB2 action, it is normally the WebSphere Application Server timeout that is logged:

```
AWSJCO005E WebSphere Application Server has given the following error:
CORBA NO_RESPONSE 0x4942fb01 Maybe; nested exception is:
     org.omg.CORBA.NO_RESPONSE:
     Request 1685 timed out vmcid:
     IBM minor code: B01 completed: Maybe.
```

To resolve the problem, check if the object in question is locked. If it is, take the appropriate action to unlock it, working with the user who locked it. If it is not locked retry the operation. If the problem persists contact IBM Software Support for assistance.

JnextPlan fails with the DB2 message "The transaction log for the database is full."

You receive a message from **JnextPlan** that includes the following DB2 message:

```
The transaction log for the database is full.
```

The **JnextPlan** message is probably the general database access error message AWSJDB801E.

Cause and solution:

This scenario is described in "JnextPlan fails with the database message "The transaction log for the database is full."" on page 100.

The DB2 UpdateStats job fails after 2 hours

You are running the DB2 **UpdateStats** job, but after 2 hours it fails. The log contains messages similar to the following example:

```
[2/20/08 8:22:11:947 CET] 0000001e ServiceLogger I
     com.ibm.ws.ffdc.IncidentStreamImpl initialize FFDC0009I:
     FFDC opened incident stream file /opt/ibm/TWA0/WAS/TWSprofile/
          logs/ffdc/server1_78387838_08.02.20_08.22.11_0.txt
[2/20/08 8:22:11:957 CET] 0000001e ServiceLogger I
     com.ibm.ws.ffdc.IncidentStreamImpl resetIncidentStream FFDC0010I:
     FFDC closed incident stream file /opt/ibm/TWA0/WAS/TWSprofile/
          /logs/ffdc/server1_78387838_08.02.20_08.22.11_0.txt
[2/20/08 8:22:11:999 CET] 0000001e ConnException E
     com.ibm.tws.conn.exception.ConnSecurityException
          ConnException(String currentMessageID, Object[] currentArgs)
     AWSJCO084E The user "UNAUTHENTICATED" is not authorized to work with
                the "planner" process. UNAUTHENTICATED
[2/20/08 8:22:12:004 CET] 0000001e ConnException E
     com.ibm.tws.conn.exception.ConnException
          ConnException(TWSException e)
     AWSJCO084E The user "UNAUTHENTICATED" is not authorized to work with
                the "planner" process.
[2/20/08 8:22:12:088 CET] 0000001e ExceptionHelp E
     com.ibm.tws.cli.exception.ExceptionHelper
          handleException(Throwable e, String commandName,
               TWSServletResponse response)
     AWSJCL054E The command "LOGREPORT" has failed, for the following reason:
          "AWSJCO084E The user "UNAUTHENTICATED" is not authorized to work with
          the "planner" process.".
     LOGREPORT AWSJCO084E The user "UNAUTHENTICATED" is not authorized to work
          with the "planner" process.
[2/20/08 8:22:12:091 CET] 0000001e ThreadMonitor W
     WSVR0606W: Thread "WebContainer : 2" (0000001e) was previously reported
          to be hung but has completed.  It was active for approximately 7200340
          milliseconds.  There is/are 0 thread(s) in total in the server that
          still may be hung.
```

Cause and solution:

The problem is with the WebSphere Application Server which has a default authentication timeout of 2 hours. The **UpdateStats** job runs without any interrupt that would allow the WebSphere Application Server to reset its timeout.

To resolve the problem, reset the timeout as follows:

1. Edit the following file with a text editor:

   ```
   <WAS_profile_path>/config/cells/
   TWSNodeCell/nodes/TWSNode/servers/server1/server.xml
   ```

   where the default path for <*WAS_profile_path*> is `TWA_home/WAS/TWSprofile`.
2. Locate the key: `authValidationConfig="system.LTPA" timeout="120"`
3. Change the value of the timeout to an appropriately higher figure (the log of **UpdateStats** shows you how much progress the job had made when it stopped; it should be possible to extrapolate from that how much additional time is required).
4. Save the file.
5. Stop and restart the application server using the **stopappserver** and **startappserver** commands.
6. Rerun **UpdateStats**.

DB2 might lock while making schedule changes

Multiple concurrent changes (modify, delete or create) to job streams or domains might cause a logical deadlock between one or more database transactions. This is a remote but possible problem you might encounter.

This deadlock might take place even if the objects being worked on are different (for example, different job streams).

The problem affects database elements (rows or tables), not Tivoli Workload Scheduler objects, so it is unrelated with the `Locked By` property of Tivoli Workload Scheduler objects.

The same problem might arise when making concurrent changes for plan generation.

When the deadlock occurs, DB2 rollbacks one of the deadlocking threads and the following error is logged in the `SystemOut.log` of WebSphere Application Server:

```
AWSJDB803E An internal deadlock or timeout error has occurred
while processing a database transaction. The internal error
message is: "The current transaction has been rolled back
because of a deadlock or timeout. Reason code "2"."
```

In general, this type of error is timing-dependent, and the transactions involved must overlap in very specific conditions to generate a deadlock. However it might easily occur during plan generation (either forecast, trial, or current), when the plan includes many objects and DB2 must automatically escalate locks from row to table level, as the number of locked objects exceeds the current maximum limit.

You can mitigate the error by increasing the maximum number of locks that DB2 can hold. Refer to the DB2 Information Center to learn more about the DB2 lock escalation mechanism and to find how to increase the maximum number of concurrent locks.

In the above scenarios, if an interactive user session is rolled back, the user gets an error message but is allowed to repeat the task. Instead, if a script session is rolled back (for example, a script that generates a forecast plan or updates a job stream definition), the script ends in failure.

Problems with Oracle

The following problems could be encountered with Oracle:

- "JnextPlan fails with the database message "The transaction log for the database is full.""
- "You cannot do Oracle maintenance on UNIX after installation"

JnextPlan fails with the database message "The transaction log for the database is full."

You receive a message from **JnextPlan** that includes the following database message:

```
The transaction log for the database is full.
```

The **JnextPlan** message is probably the general database access error message AWSJDB801E.

Cause and solution:

This scenario is described in "JnextPlan fails with the database message "The transaction log for the database is full."" on page 100.

You cannot do Oracle maintenance on UNIX after installation

You have installed Tivoli Workload Scheduler, creating the installation directory with the default root user permission. When you switch to the Oracle administration user and try and use the Oracle tools, you encounter access problems.

Cause and solution:

The problem could be that the Oracle administration user does not have "read" permission for the entire path of the Tivoli Workload Scheduler installation directory. For example, if you have created the Tivoli Workload Scheduler installation directory as `/opt/myProducts/TWS`, the Oracle administration user must have "read" permission for `/opt` and `/myProducts`, as well as `/TWS`.

Give the Oracle administration user read permission for the full path of the Tivoli Workload Scheduler installation directory.

Application server problems

The following problems might occur:

- "Timeout occurs with the application server" on page 123
- "The application server does not start after changes to the SSL keystore password" on page 123

The application server does not start after changes to the SSL keystore password

You change the password to the SSL keystore on the application server, or you change the security settings using the WebSphere Application Server **changeSecuritySettings** tool. The application server does not start. The following message is found in the application server's trace file trace.log (the message is shown here on three lines to make it more readable):

```
JSAS0011E: [SSLConfiguration.validateSSLConfig] Java. exception
Exception = java.io.IOException:
Keystore was tampered with, or password was incorrect
```

Cause and solution:

The certificate has not been reloaded or regenerated. Any change to the keystore password on the server or connector requires the SSL certificate to be reloaded or regenerated to work correctly.

Reload or regenerate the certificate and restart the application server.

To regenerate the certificate issue this command:

```
openssl genrsa -des3 -passout pass:<your_password> -out client.key 2048
```

If you do not want to supply the password openly in the command, omit it, and you will be prompted for it.

Timeout occurs with the application server

You are trying to edit an object, but after a delay an error is issued by the WebSphere Application Server referring to a timeout:

```
AWSJCO005E WebSphere Application Server has given the following error:
CORBA NO_RESPONSE 0x4942fb01 Maybe; nested exception is:
     org.omg.CORBA.NO_RESPONSE:
     Request 1685 timed out vmcid:
     IBM minor code: B01 completed: Maybe.
```

Cause and solution:

In this case the object you are trying to access is locked from outside Tivoli Workload Scheduler, maybe by the database administrator or an automatic database function. So the application waits to get access until it is interrupted by the application server timeout.

DB2 By default, both DB2 and WebSphere Application Server have the same length timeout, but as the WebSphere Application Server action starts before the DB2 action, it is normally the WebSphere Application Server timeout that is logged.

If one or both of the timeouts have been modified from the default values, and the DB2 timeout is now shorter, the following message is issued:

```
AWSJDB803E
An internal deadlock or timeout error has occurred while processing a
database transaction. The internal error message is:
"The current transaction has been rolled back because of a
deadlock or timeout.
Reason code "68".
```

Oracle There is no corresponding timeout on Oracle, so the Dynamic Workload Console hangs.

To resolve the problem, get the database administrator to check if the object in question is locked outside Tivoli Workload Scheduler. If it is, take the appropriate action to unlock it, if necessary asking the database administrator to force unlock the object.

If the object is not locked outside Tivoli Workload Scheduler, retry the operation. If the problem persists contact IBM Software Support for assistance.

On Windows, "java process already running" error, restarting the WebSphere Application Server

On Windows operating systems, if you try to restart the WebSphere Application Server, after `stopWas.cmd`, you can have the following error message: `java process is already running`, even if the `stopWas.cmd` command returned no error because the WebSphere Application Server java process is still up and running but WASService process is down.

Cause and solution:

The Tivoli Workload Scheduler uses the WASService process to stop and start WebSphere Application Server. If the WASService stops itself, sometimes it is unable to stop java process before goes down and it returns no error, also *appservman* process stops itself and returns no error even if the java process is already up and running.

Resolution: in order to restart the WebSphere Application Server again, you must end the java process associated to WebSphere Application Server from the *Windows Task Manager* panel.

Event management problems

This section describes problems that might occur with processing of events. The topics are as follows:

- “Troubleshooting an event rule that does not trigger the required action” on page 125
- “Actions involving the automatic sending of an email fail” on page 131
- “An event is lost” on page 131
- “Expected actions not triggered following an event” on page 132
- “Event rules not deployed after switching event processor” on page 132
- “Event *LogMessageWritten* is not triggered” on page 133
- “Deploy (D) flag not set after ResetPlan command used” on page 133
- “Missing or empty event monitoring configuration file” on page 134
- “Events not processed in correct order” on page 134
- “The stopeventprocessor or switcheventprocessor commands do not work” on page 134
- “Event rules not deployed with large numbers of rules” on page 135
- “Problem prevention with disk usage, process status, and mailbox usage” on page 135
- “On AIX operating systems the SSM agent crashes if you have a very large number of files to be managed using event-driven workload automation” on page 135
- “File creation and deletion actions not triggered” on page 136

Troubleshooting an event rule that does not trigger the required action

You have created an event rule, but the required action is not triggered when the event condition is encountered.

Cause and solution:

The cause and subsequent solution might be any of a number of things. Use the following checklist and procedures to determine what has happened and resolve the problem. The checklist uses a test event which has the following characteristics:

```
<eventRule name="TEST1" ruleType="filter" isDraft="no">
  <description>A Rule that checks the sequence of events</description>
 <eventCondition name="fileCreated1" eventProvider="FileMonitor"
  eventType="FileCreated">
   <scope>
    C:\TEMP\FILE5.TXT ON CPU_MASTER
   </scope>
   <filteringPredicate>
    <attributeFilter name="FileName" operator="eq">
     <value>c:\temp\file5.txt</value>
    </attributeFilter>
    <attributeFilter name="Workstation" operator="eq">
     <value>CPU_MASTER</value>
    </attributeFilter>
    <attributeFilter name="SampleInterval" operator="eq">
     <value>60</value>
    </attributeFilter>
   </filteringPredicate>
  </eventCondition>
  <action actionProvider="TWSAction" actionType="sbj" responseType="onDetection">
   <scope>
    SBJ CPU_MASTER#JOB1 INTO CPU_MASTER#JOBS
   </scope>
   <parameter name="JobUseUniqueAlias">
    <value>true</value>
   </parameter>
   <parameter name="JobDefinitionWorkstationName">
    <value>CPU_MASTER</value>
   </parameter>
   <parameter name="JobDefinitionName">
    <value>JOB1</value>
   </parameter>
  </action>
 </eventRule>
```

The checklist is as follows:

Step 1: Is event management enabled?

Check if the event management feature is enabled (at installation it is enabled by default):

1. Run the following command:

   ```
   optman ls
   ```

   and look for the following entry:

   ```
   enEventDrivenWorkloadAutomation / ed = YES
   ```

   If the value is "YES", go to Step 2: Is the workstation enabled for event processing?.
2. **Action:** If the property is set to *NO*, run the command:

   ```
   optman chg ed=YES
   ```

3. To effect the change, run:

   ```
   JnextPlan –for 0000
   ```

   Check that the event rule is now being processed correctly. If not, go to Step 2: Is the workstation enabled for event processing?.

Step 2: Is the workstation enabled for event processing?

Check that the workstation is enabled for event processing. By default the master domain manager and backup master domain manager are enabled for event processing, but the default value might have been changed. Perform the following steps:

1. View the `localopts` file on the master domain manager with a text editor or viewer, and check for the following entry:

   ```
   can be event processor = yes
   ```

   If the value is "yes", go to Step 3: Is the event processor installed, up and running, and correctly configured?.
2. **Action:** If the value is "no", set it to "yes". Save the `localopts` file and stop and start Tivoli Workload Scheduler. Check that the event rule is now being processed correctly. If not, go to Step 3: Is the event processor installed, up and running, and correctly configured?.

Step 3: Is the event processor installed, up and running, and correctly configured?

1. Start **`conman`**.
2. Issue the **`showcpus`** command:

   ```
   %sc @!@
   ```

   You will see the following output:

```
CPUID        RUN NODE        LIMIT FENCE DATE     TIME  STATE       METHOD   DOMAIN
CPU_MASTER    11 *WNT  MASTER    0     0 09/03/07 09:51    I JW MDEA         MASTERDM
FTA1          11  WNT  FTA       0     0                LT                   MASTERDM
```

3. Check the STATE field for the presence of an M, a D, and an E (uppercase). In the example, the STATE field has a value of *I JW MDEA*, and the *MDE* is highlighted. If *all* are present, the event processor is installed, up and running, and correctly configured; go to Step 9: Is the SSM agent running (for rules with `FileMonitor` plug-in-related events only?).
4. **Actions:** If one or more of M, D, and E are not present, perform one or more of the following actions until they are all present:

   The STATE field has neither an uppercase E nor a lowercase e

   If there is neither an uppercase E nor a lowercase e, the event processor is not installed. The event processor is installed by default on the master domain manager and backup master domain manager. If you are working on either, then the installation did not complete correctly. Collect the log files in the `<`*`TWA_home`*`>/TWS/stdlist` directory and contact IBM Software Support for assistance.

   The STATE field has a lowercase e

   If the STATE field has a lower case e, the event processor is installed but not running. Start the event processor using the **`conman startevtproc`** command, or the Dynamic Workload Console. If you use **`conman`**, for example, you will see the following output:

```
%startevtproc
AWSJCL528I The event processor has been started successfully.
```

The STATE field has no M

If the STATE field has no M, **monman** is not running. Start **monman** using the **conman startmon** command. You will see the following output:

```
%startmon
AWSBHU470I A startmon command was issued for CPU_MASTER.
```

The STATE field has no D

If the STATE field has no D, the current monitoring package configuration is not deployed. Go to Step 5: Has the rule been added to the monitoring configuration on the workstation?.

5. Rerun the **showcpus** command.
6. When the M, D, and E are all present, check that the event rule is now being processed correctly. If not, go to Step 9: Is the SSM agent running (for rules with FileMonitor plug-in-related events only?).

Step 4: Is the workstation definition present in the plan?

1. Start **conman**.
2. Issue the **showcpus** command:

   ```
   %sc @!@
   ```

   If the workstation definition is not included in the plan, add it. For more information about how to add a workstation to the plan, see the*Administration Guide*. If the workstation definition is included, go to Step 5: Has the rule been added to the monitoring configuration on the workstation?.

Step 5: Has the rule been added to the monitoring configuration on the workstation?

1. Check if the rule is present in the workstation monitoring configuration by running the **conman showcpus** command with the **;getmon** argument:

   ```
   %sc ;getmon
   Monitoring configuration for CPU_MASTER:
   *******************************************
   ***  Package date : 2008/09/03 07:48 GMT ***
   *******************************************

   TEST1::FileMonitor#FileCreated:C:\TEMP\FILE5.TXT ON CPU_MASTER;
   TEST1::TWSObjectsMonitor#JobSubmit:* # * . TEST*;
   ```

   If the rule is present, go to Step 7: Has the new monitoring configuration been deployed to the workstation?.
2. **Action:** If the configuration does not contain the expected rule, go to Step 6: Is the rule active.

Step 6: Is the rule active

If the configuration does not contain the expected rule, check if it is active.

1. Check the rule status, using the **composer list** command or the Dynamic Workload Console. For example, if you use composer you will see the following output:

```
-list er=@

Event Rule Name                Type      Draft  Status          Updated On  Locked By
------------------------------ --------- -----  --------------- ----------  ----------------
TEST1                         filter       N     active           09/03/2008  -
```

If the rule is in *active* status go to Step 7: Has the new monitoring configuration been deployed to the workstation?.

2. **Action:** If the rule is in *error* status, activate the Tivoli Workload Scheduler trace, collect the log files in the <*TWA_home*>/TWS/stdlist directory and contact IBM Software Support for assistance.

Step 7: Has the new monitoring configuration been deployed to the workstation?

If the rule is active, check if the new monitoring configuration has been deployed to the workstation.

1. The deployment of a new monitoring configuration can be checked in either of these ways:
   - Check in the <*TWA_home*>/TWS/monconf if the configuration is present
   - Check in the SystemOut file in <*TWA_home*>/WAS/TWSprofile/logs/server1. Look for the message:

```
[9/3/07 9:50:00:796 CEST] 00000020 sendEventReadyConfiguration(wsInPlanIds, zipsToDeploy)
                          AWSDPM001I The workstation "CPU_MASTER" has been notified about
                          a new available configuration.
```

   If the message is present for the workstation in question after the time when the rule was made available for deployment, then the new configuration has been deployed.

   If the configuration has been deployed, go to Step 8: Has the deploy of the new monitoring configuration worked correctly?.

2. **Action:** If the configuration has not been deployed, deploy it with the **conman deploy** command:

```
%deploy
AWSBHU470I A deployconf command was issued for MASTER_CPU.
```

   Check that the event rule is now being processed correctly. If not, go to Step 8: Has the deploy of the new monitoring configuration worked correctly?.

Step 8: Has the deploy of the new monitoring configuration worked correctly?

If the new monitoring configuration has been deployed, check that the deployment was successful:

1. Check in the <*TWA_home*>/TWS/stdlist/traces/<*date*>_TWSMERGE.log, and look for the most recent occurrence of these 2 messages:

```
09:51:57 03.09.2008|MONMAN:INFO:=== DEPLOY ===> CPU_MASTER has been notified
                                of the availability of the new monitoring configuration.
09:51:57 03.09.2008|MONMAN:INFO:=== DEPLOY ===> The zip file d:\TWS\twsuser\monconf\deployconf.zip
                                has been successfully downloaded.
```

   If you find these messages, referring to the workstation in question, and occurring after the time when the rule was deployed, then the rule has been successfully deployed to the workstation: go to Step 9: Is the SSM agent running (for rules with FileMonitor plug-in-related events only?).

2. **Actions:** If you find messages that indicate an error, follow one of these actions:

   Message indicates that the server could not be contacted or that the action has been resubmitted by monman

   You find one of the following messages:

```
=== DEPLOY ===> ERROR contacting the server for receiving the zip file (rc=8)

=== DEPLOY ===> The deploy action has been automatically resubmitted by monman.
```

The application server could be down. Either wait for 5 minutes, or follow the instructions about how to use **appserverman** (see *Tivoli Workload Scheduler: Administration Guide*) to determine if the application server is down, and if it is being restarted automatically, or needs to be restarted manually.

If you need to change any aspect of the application server configuration, run **JnextPlan –for 0000**.

When you are certain that the application server is up, retry Step 8: Has the deploy of the new monitoring configuration worked correctly?.

Message indicates a problem with decoding or extracting the compressed file

You find one of the following messages:

```
=== DEPLOY ===> ERROR decoding the zip file temporarily downloaded in
                                                <TWA_home>/TWS/monconf

=== DEPLOY ===> ERROR unzipping the zip file <file_name>
```

Collect the log files and contact IBM Software Support for assistance.

Step 9: Is the SSM agent running (for rules with `FileMonitor` plug-in-related events only?)

1. If the rule has an event that uses the `FileMonitor` plug-in, check that the SSM Agent is running. Check in the log that when the **conman startmon** command was run (either when you ran it manually or when Tivoli Workload Scheduler started).
2. Search in the log for the following message:

   ```
   11:13:56 03.09.2008|MONMAN:INFO:SSM Agent service successfully started
   ```

   If it is present, or the rule does not use the `FileMonitor` plug-in, go to Step 6: Is the rule active.
3. **Action:** If the SSM Agent message is not present, collect the log files in the <*TWA_home*>`/TWS/stdlist` directory and the <*TWA_home*>`/TWS/ssm/` directory and contact IBM Software Support for assistance.

Step 10: Have the events been received?

You know the rule has been deployed, but now you need to know if the event or events have been received.

1. Check in the `SystemOut` of the server to see if the event has been received. The output is different, depending on the type of event:

   FileMonitorPlugIn event

   a. Following is the output of a FileMonitorPlugIn event:

```
[9/3/07 9:55:05:078 CEST] 00000035 EventProcessor A com.ibm.tws.event.EventProcessorManager
                          processEvent(IEvent)
                          AWSEVP001I The following event has been received:
                          event type = "FILECREATED"; event provider = "FileMonitor";
                          event scope = "c:\temp\file5.txt on CPU_MASTER".
                          FILECREATED FileMonitor c:\temp\file5.txt on CPU_MASTER
```

If the event has been received, go to Step 11: Has the rule been performed?.

b. If the event has not been received check if it has been created by looking in the `traps.log` for the message that indicates that the event has been created:

```
.1.3.6.1.4.1.1977.47.1.1.4.25 OCTET STRING FileCreatedEvent event
```

c. **Action:** Whether the event has or has not been created, collect the information in the *<TWA_home>*`/TWS/ssm` directory and contact IBM Software Support for assistance.

TWSObjectMonitorPlugIn event

a. Following is the output of a TWSObjectMonitorPlugIn event:

```
[9/3/07 12:28:38:843 CEST] 00000042 EventProcesso A com.ibm.tws.event.EventProcessorManager
                           processEvent(IEvent)
                           AWSEVP001I The following event has been received: event type = "JOBSUBMIT";
                           event provider = ""TWSObjectsMonitor""; event scope = "CPU_MASTER # JOBS .
                           (CPU_MASTER #) TEST". JOBSUBMIT "TWSObjectsMonitor" CPU_MASTER # JOBS .
                           (CPU_MASTER #) TEST
```

b. **Action:** If the event has not been received, collect the log data and contact IBM Software Support for assistance.

c. If the TWSObjectMonitorPlugIn event has been received, check in the same log that the EIF event has been sent. Following is the output of an EIF event:

```
12:27:18 03.09.2008|MONMAN:INFO:Sending EIF Event:
                 "JobSubmit;
                  TimeStamp="2008-09-03T12:26:00Z/";
                  EventProvider="TWSObjectsMonitor";
                  HostName="CPU_MASTER";
                  IPAddress="9.71.147.38";
                  PlanNumber="11";
                  Workstation="CPU_MASTER";
                  JobStreamWorkstation="CPU_MASTER";
                  JobStreamId="JOBS";
                  JobStreamName="JOBS";
                  JobStreamSchedTime="2008-09-03T12:26:00";
                  JobName="TEST";
                  Priority="10";
                  Monitored="false";
                  EstimatedDuration="0";
                  ActualDuration="0";
                  Status="Waiting";
                  InternalStatus="ADD";
                  Login="twsuser";END
```

d. If the EIF event has been sent, it might be cached in the *<TWA_home>*`/TWS/EIF` directory.

e. If the event is found there, check the communication with the agent and the server. If no communication problem is present wait until the event is sent.

f. The event might also be cached in the machine where the event processor is located. Check this in the path *<WAS_profile_path>*`/temp/TWS/EIFListener`, where the default path for *<WAS_profile_path>* is *TWA_home*`/WAS/TWSprofile`. If the event is found there, check the communication with the agent and the server. If no communication problem is present wait until the event is sent.

2. **Action:** If the problem persists, collect the log data and contact IBM Software Support for assistance.

Step 11: Has the rule been performed?

You now know that the event has been received, but that the action has apparently not been performed.

1. Check in the SystemOut of the server to see if the rules have been performed. Look for messages like these:

```
[9/3/07 9:55:05:578 CEST] 00000035 ActionHelper  A com.ibm.tws.event.plugin.action.ActionHelper
                          invokeAction(ActionContext,Map,EventRuleHeader)
                          AWSAHL004I The rule "TEST1" has been triggered. TEST1
[9/3/07 9:55:05:625 CEST] 00000036 ActionHelper  A com.ibm.tws.event.plugin.action.ActionHelper
                          AsynchAction::run()
                          AWSAHL002I The action "sbj" for the plug-in "TWSAction" has been started.
                          sbj TWSAction
[9/3/07 9:55:06:296 CEST] 00000036 ActionHelper  A com.ibm.tws.event.plugin.action.ActionHelper
                          AsynchAction::run()
                          AWSAHL003I The action "sbj" for the plug-in "TWSAction" has completed.
                          sbj TWSAction
```

   If the rule has been triggered and the action completed, go to Step 12: Is the problem in the visualization of the event?.

2. **Action:** If the action has not been completed collect the log data and contact IBM Software Support for assistance.

Step 12: Is the problem in the visualization of the event?

Action: If the event has been received, but you cannot see it, there might be a problem with the console you are using to view the event. See Chapter 11, "Troubleshooting Dynamic Workload Console problems," on page 159.

Actions involving the automatic sending of an email fail

An event rule is created, including as the required action the sending of an email. When the event occurs, the action fails with the following message:

```
AWSMSP104E  The mail "<mailID>" has not been successfully
            delivered to "<recipient>".
Reason: "Sending failed;
nested exception is:
?????class javax.mail.MessagingException: 553 5.5.4 <TWS>...
Domain name required for sender address TWS
```

Cause and solution:

The mail send action failed because the domain name of the SMTP server was not defined in the mail sender name global option: mailSenderName (ms).

Use the **optman** command to specify the correct mail sender name including the domain. For example, if the mail sender name is tws@alpha.ibm.com, issue the following command:

```
optman chg ms=tws@alpha.ibm.com
```

An event is lost

You have sent a large number of events to the event processor. When you check the event queue you find that the most recent event or events are missing.

Cause and solution:

The event queue is not big enough. The event queue is circular, with events being added at the end and removed from the beginning. However, if there is no room to write an event at the end of the queue it is written at the beginning, overwriting the event at the beginning of the queue.

You cannot recover the event that has been overwritten, but you can increase the size of the queue to ensure the problem does not recur. Follow the instructions in "Managing the event queue" in *Tivoli Workload Scheduler: Administration Guide*.

Expected actions not triggered following an event

In situations where a large number of events are generated and where an action or actions that are expected to be triggered on the master are not triggered, then most probably not all events arrived on the server. There are a number of steps you can perform to collect the necessary information IBM Software Support requires to assist you in solving the problem.

Collecting required information:

1. Set the keyword **LogEvents** = YES in the following files on the server and client. By default, the value assigned to this keyword is NO.

   On the client
   - *TWA_HOME*/ssm/eif/tecad_snmp_eeif.templ
   - *TWSA_HOME*/EIF/monmaneif.templ

   On the server
   <*WAS_profile_path*>/temp/TWS/EIFListener/eif.templ

   where the default path for <*WAS_profile_path*> is *TWA_home*/WAS/TWSprofile.
2. On the client, stop and start monman by submitting the respective command.

   Stop **conman stopmon**

   Start **conman startmon**
3. On the server, stop and start the event processor submitting the respective command.

   Stop **conman stopevtproc**

   Start **conman startevtproc**
4. All generated events are logged in a file. By default, this file is stored in the path *TWA_home*/EIF. Collect these logs and send them to IBM support. Because this log file can become quite large very quickly, there are ways to filter the events that get logged in the file.

   On the server, set the **LogEventsFilter** keyword using a regular expression to filter events written on the server. By default, the value of this keyword is "**.***" and therefore all events are logged. For example, if you are aware that problems originate from a specific client, then you can specify the CPU name of the client in the value of the **LogEventsFilter** keyword to limit the events logged to the file to this specific client as follows:

   ```
   LogEventsFilter=.*<cpu_name>#MONMAN.*
   ```

Event rules not deployed after switching event processor

You have switched the event processor, but new or amended rules have not been deployed (the event states of the workstations that were affected by the new or amended rules do not show "D" indicating that the rules are not up-to-date, and the **getmon** command shows the old rules).

Cause and solution:

The probable cause is that you made some changes to the rules before running the **switcheventprocessor** command, and these rules were not deployed (for whatever reason) before the switch.

To remediate the situation, run the command **conman deployconf <workstation_name>**, for each affected workstation, and the rule changes will be deployed.

To avoid that this problem reoccurs, run **planman** with the *deploy* action before running **switcheventprocessor**.

Event *LogMessageWritten* is not triggered

You are monitoring a log file for a specific log message, using the *LogMessageWritten* event. The message is written to the file but the event is not triggered.

Cause and solution:

The SSM agent monitors the log file. It sends an event when a new message is written to the log file that matches the string in the event rule. However, there is a limitation. It cannot detect the very latest message to be written to the file, but only messages prior to the latest. Thus, when message line "n" is written containing the string that the event rule is configured to search for, the agent does not detect that a message has been written, because the message is the last one in the file. When any other message line is written, if or not it contains the monitored string, the agent is now able to read the message line containing the string it is monitoring, and sends an event for it.

There is no workaround to resolve this problem. However, it should be noted that in a typical log file, messages are being written by one or other processes frequently, perhaps every few seconds, and the writing of a subsequent message line will trigger the event in question. If you have log files where few messages are written, you might want to attempt to write a dummy blank message after every "real" message, in order to ensure that the "real" message is never the last in the file for any length of time.

Deploy (D) flag not set after ResetPlan command used

The deploy (D) flag is not set on workstations after the **ResetPlan** command is used.

Cause and solution:

This is not a problem that affects the processing of events but just the visualization of the flag which indicates that the event configuration file has been received at the workstation.

No action is required, because the situation will be normalized the next time that the event processor sends an event configuration file to the workstation.

However, if you want to take a positive action to resolve the problem, perform the following steps:

1. Create a dummy event rule that applies only to the affected workstations.

2. Perform a **planman deploy** to send the configuration file.
3. Monitor the receipt of the file on the agent.
4. When it is received, delete the dummy rule at the event processor.

Missing or empty event monitoring configuration file

You have received a MONMAN trace message on a workstation, similar to this:

```
MONMAN:INFO:=== DEPLOY ===> ERROR reading the .zip file
                /home/f_edwa3/monconf/deployconf.zip.
                It is empty or does not exist".
```

Cause and solution:

The Tivoli Workload Scheduler agent on a workstation monitors for events using a configuration file. This file is created on the event processor, compressed, and sent to the agent. If a **switcheventprocessor** action is performed between the creation of the file on the old event processor and the receipt on the new event processor of the request for download from the agent, the file is not found on the new event processor, and this message is issued.

To resolve the problem, perform the following steps:

1. Create a dummy event rule that applies only to the affected workstation.
2. Perform a **planman deploy** to send the configuration file.
3. Monitor the receipt of the file on the agent.
4. When it is received, delete the dummy rule at the event processor.

Events not processed in correct order

You have specified an event rule with two or more events that must arrive in the correct order, using the *sequence* event grouping attribute. However, although the events occurred in the required sequence the rule is not triggered, because the events arrived at the event processor in an order different from their creation order.

Cause and solution:

Events are processed in the order they arrive, not the order they are created. If they arrive in order different from the creation order, you will not get the expected result.

For example, consider a rule which is triggered if event A defined on workstation AA occurs before event B which is defined on workstation BB. If workstation AA loses its network connection before event A occurs, and does not regain it until after event B has arrived at the event processor, the event rule will not be satisfied, even though the events might have occurred in the correct order.

The solution to this problem is that if you need to define a rule involving more than one event, use the *set* event grouping attribute, unless you can be certain that the events will arrive at the event processor in the order they occur.

The stopeventprocessor or switcheventprocessor commands do not work

You have run **stopeventprocessor** or **switcheventprocessor** but the command has failed. The log indicates a communication problem.

Cause and solution:

If you issue the **stopeventprocessor** command from a workstation other than that where the event processor is configured, the command uses the command-line client, so the user credentials for the command-line client must be set correctly.

Similarly, if you use **switchevtprocessor**, it also uses the command-line client, so the user credentials for the command-line client must be set correctly also in this case.

Event rules not deployed with large numbers of rules

You have run **planman deploy** (or the equivalent action from the Dynamic Workload Console), with a very large number of event rules, but the command has failed. The log indicates a memory error.

Cause and solution:

A large number of event rules requires a Java heap size for the application server larger then the default. In this context, a large number would be 10 000 or more. Doubling the default size should be sufficient.

Full details of how to do this are described in the *Tivoli Workload Scheduler: Administration Guide* in the section on *Increase application server heap size* in the *Performance* chapter.

Problem prevention with disk usage, process status, and mailbox usage

You can use event-driven workload automation (EDWA) to monitor the health of the Tivoli Workload Scheduler environment and to start a predefined set of actions when one or more specific events take place. You can prevent problems in the Tivoli Workload Scheduler environment by monitoring the filling percentage of the mailboxes, the status of Tivoli Workload Scheduler processes, and the disk usage of the Tivoli Workload Scheduler file system.

Full details of how to do this are described in the *Tivoli Workload Scheduler: Administration Guide*, as follows:

- section on *Monitoring the disk space used by Tivoli Workload Scheduler* in the *Data maintenance* chapter
- sections on *Monitoring the size of Tivoli Workload Scheduler message queues* and *Monitoring the status of Tivoli Workload Scheduler processes* in chapter *Network administration*

See also “Configuring trace properties when the agent is running” on page 34.

On AIX operating systems the SSM agent crashes if you have a very large number of files to be managed using event-driven workload automation

On AIX operating systems the SSM agent crashes if you use the have a very large number of files to be managed using the FileCreated and FileDeleted event types of the FileMonitor events provided by even-driven workload automation (EDWA) feature.

Cause and solution:

This problem is due to a missing option setting in the EDWA configuration file. To solve this problem, add the following line in the files <*TWS_INST_DIR*>/TWS/ssm/bin/preload_ssmagent_0.sh and <*TWS_INST_DIR*>/TWS/EDWA/ssm/bin/preload_ssmagent_0.sh:

```
export LDR_CNTRL=MAXDATA=0x80000000
```

where <*TWS_INST_DIR*> is the Tivoli Workload Scheduler installation directory.

File creation and deletion actions not triggered

You are monitoring the creation or the deletion of a file on Windows using the FileCreated and FileDeleted events. The file is created or deleted, but the event action is not triggered.

Cause and solution:

The SSM agent monitors the file creation and deletion. An event is sent when a file that matches the string in the event rule is created or is deleted. However, on Windows platforms, if the file path contains forward slashes ("/"), the event action is not triggered. Replace forward slashes ("/") with backward slashes ("\") and redeploy the rule.

Problems using the "legacy" global options

This section describes problems that might occur when running Tivoli Workload Scheduler with the "legacy" global options set. The "legacy" global options are those that have the word "Legacy" in their option name in **optman**. Use them if you want to maintain certain Tivoli Workload Scheduler behaviors as they were in previous versions of Tivoli Workload Scheduler.

- “Time zones do not resolve correctly with enLegacyStartOfDayEvaluation set”
- “Dependencies not processed correctly when enLegacyId set”

Time zones do not resolve correctly with enLegacyStartOfDayEvaluation set

You are using Tivoli Workload Scheduler with the enLegacyStartOfDayEvaluation and enTimeZone options set to *yes* to convert the startOfDay time set on the master domain manager to the local time zone set on each workstation across the network. You submit a job or job stream with the **at** keyword, but the job or job stream does not start when expected.

Cause and solution:

Add the **absolute** keyword to make sure that the submission times are resolved correctly. The **absolute** keyword specifies that the start date is based on the calendar day rather than on the production day.

Dependencies not processed correctly when enLegacyId set

You are using Tivoli Workload Scheduler in a network which includes agents running on versions older than 8.3, but managed by a version 8.3 or later master domain manager, with the enLegacyId option set to *yes*, to enable the use of the former job stream ID format. When you create multiple instances of a job stream as pending predecessors, errors caused by identification problems at submission time are given.

Cause and solution:

There is no workaround to this other than to upgrade the agents to the level of the master domain manager.

Managing concurrent accesses to the Symphony file

This section contains two sample scenarios describing how Tivoli Workload Scheduler manages possible concurrent accesses to the `Symphony` file when running **stageman**.

Scenario 1: Access to Symphony file locked by other Tivoli Workload Scheduler processes

If Tivoli Workload Scheduler processes are still active and accessing the `Symphony` file when **stageman** is run, the following message is displayed:

```
Unable to get exclusive access to Symphony.
Shutdown batchman and mailman.
```

To continue, stop Tivoli Workload Scheduler and rerun **stageman**. If **stageman** aborts for any reason, you must rerun both **planman** and **stageman**.

Scenario 2: Access to Symphony file locked by stageman

If you try to access the plan using the command-line interface while the `Symphony` is being switched, you get the following message:

```
Current Symphony file is old. Switching to new Symphony.
Schedule mm/dd/yyyy (nnnn) on cpu, Symphony switched.
```

StartApp Server problems

The **`StartApp Server`** command checks if the WebSphere Application Server is running, if the WebSphere Application Server is not running **`startApp Server`** starts it.

In case of failure:
- Rerun the job.

MakePlan problems

`MakePlan` performs the following actions:
- Replans or extends the preproduction plan.
- Produces the Symnew file.
- Generates preproduction reports in the joblog

The following problems could be encountered when running **`MakePlan`**:
- “MakePlan fails to start” on page 138
- “Unable to establish communication with the server on host - AWSBEH023E” on page 138
- “The user "twsuser" is not authorized to access the server on host - AWSBEH021E” on page 138
- “The database is already locked - AWSJPL018E” on page 138
- “An internal error has occurred - AWSJPL006E” on page 138
- “The production plan cannot be created - AWSJPL017E” on page 139

- "An internal error has occurred - AWSJPL704E" on page 139

MakePlan fails to start

If MakePlan fails to start:

- Global lock might be left to 'set'. Use **`planman unlock`** to 'reset' it
- Rerun the job to recover:
  - Preproduction plan is automatically reverified and updated.
  - Symnew is created again.

  How to stop it:

  - Stopping the job might not stop the processing that is still running on WebSphere Application Server or in the database.
  - Force the Database statement to close if a database statement runs for too long and causes **`MakePlan`** to abend.
  - Restart the WebSphere Application Server if processing is still running on WebSphere Application Server and **`MakePlan`** does not finish.

  Note: Check if the database statistics are enabled. If not, it is recommended to schedule the runstatistics script stored in the dbtools Tivoli Workload Scheduler directory.

Unable to establish communication with the server on host - AWSBEH023E

If you receive the following error message from **`MakePlan`** stdlist:

```
AWSBEH023E Unable to establish communication with the server on host
"127.0.0.1" using port "31116"
```

Cause and solution: This error means that the application server is down and **`MakePlan`** cannot continue. If this happens, start the WebSphere Application Server and check the WebSphere Application Server logs to identify the reason why the WebSphere Application Server has stopped.

The user "twsuser" is not authorized to access the server on host - AWSBEH021E

```
AWSBEH021E The user "twsuser" is not authorized to access the server on
host "127.0.0.1" using port "31116"
```

Cause and solution: This is an authorization error. Check your Tivoli Workload Scheduler user name and password in the useropts file.

The database is already locked - AWSJPL018E

```
AWSJPL018E The database is already locked
```

Cause and solution: The previous operation of **`MakePlan`** is stopped and the global lock is not reset. To recover the situation run **`planman unlock`**.

An internal error has occurred - AWSJPL006E

```
AWSJPL006E An internal error has occurred. A database object "xxxx"
cannot be loaded from the database.
```

Cause and solution: Usually "xxxx" is an object like a workstation, job, or job stream. This error means that a connection with the database is broken. In this case, check the error in the SystemOut.log and the ffdc directory as additional information related to the error is logged there.

The production plan cannot be created - AWSJPL017E

```
AWSJPL017E The production plan cannot be created because a previous
action on the production plan did not complete successfully. Refer to
the message help for more details.
```

Cause and solution: This error might mean that a previous operation on the preproduction plan is performed but ended with an error. Generally it is present when "ResetPlan - scratch" is performed but does not end successfully.

An internal error has occurred - AWSJPL704E

```
AWSJPL704E An internal error has occurred. The planner is unable to
extend the preproduction plan.
```

Cause and solution: This error might mean that **MakePlan** cannot extend the preproduction plan. Different root causes are associated with this issue, typically always related to the database, for example, no space for the tablespace or full transaction logs. Check for more information in the SystemOut.log directory or in the directories where ffdc (*first failure data capture*) utility saves the extracted information.

SwitchPlan problems

SwitchPlan performs the following actions:

- Stops all the workstations
- Runs **Stageman** to:
  - Merge the old Symphony file with SymNew
  - Archive the old Symphony file in the schedlog directory
- Runs the **planman confirm** command to update the database plan status information . For example, the plan end date and the current run number.
- Restarts the master to distribute the Symphony file and restart scheduling.

The following problems could be encountered when running **SwitchPlan**:

- "When SwitchPlan fails to start"
- "The previous Symphony file and Symnew file have the same run number - AWSBHV082E" on page 140

When SwitchPlan fails to start

If **SwitchPlan** fails to start:

1. **planman confirm** is not running. Perform the following actions:
   a. Check the logs
   b. Run "**planman showinfo**
   c. Rerun **SwitchPlan**
2. **planman confirm** failed. Perform the following action:
   - Manually run **planman confirm** and **conman confirm**.
3. **planman confirm** was already run and the plan end date has been updated. Perform the following action:
   - Run **conman start**

If **conman stop** hangs, kill the **conman** command. This might impact the plan distribution because it stops the agents left running before distributing the new Symphony.

The previous Symphony file and Symnew file have the same run number - AWSBHV082E

If **SwitchPlan** stdlist shows the following messages:

```
STAGEMAN: AWSBHV082E: The previous Symphony file and Symnew file have
the same run number. They cannot be merged to form the new symphony file.
```

Cause and solution: There are several possible causes because the Symphony and Symnew run numbers have the same values, common causes for this are:

1. **MakePlan** did not extend the run number in the Symnew file.
2. **SwitchPlan** ran before **MakePlan**.
3. The **Stageman** process ran twice on the same Symnew file without resetting the plan or deleting the Symphony file.

```
AWSJCL054E: The command "CONFIRM" has failed.
```

```
AWSJPL016E: An internal error has occurred. A global option "confirm
run member" cannot be set.
```

Cause and solution: These error messages are present when the last step of the **SwitchPlan**, that is **planman confirm** fails. Analyze the SystemOut.log for more information and rerun **planman confirm**.

Create Post Reports

Create Post Reports has the following function:

- General post production reports in the job output.

In case of failure:

- Rerun the job if reports are needed.

Update Stats problems

Update Stats has the following functions:

- Runs logman to update job statistics and history.
- Extends the Preproduction plan if it's length is shorter than minLen.

In case of failure:

- Rerun the job or manually run "**logman <file>** " on the latest schedlog file.
- If it does not run, the statistics and history will be partial. Pre production plan is updated at the beginning of **MakePlan** .

How to stop it:

- Kill the job or logman process, the statistics and history will be partial until the job or logman is rerun.

Miscellaneous problems

The following problems might occur:

- “An error message indicates that a database table, or an object in a table, is locked”
- “Command line programs (like composer) give the error "user is not authorized to access server"” on page 142
- “The rmstdlist command gives different results on different platforms” on page 142
- “Question marks are found in the stdlist” on page 142
- “Deleting stdlist or one of its files when processes are still running” on page 143
- “A job with a "rerun" recovery job remains in the "running" state” on page 143
- “Job statistics are not updated daily” on page 144
- “A Job Scheduler dependency is not added” on page 144
- “Incorrect time-related status displayed when time zone not enabled” on page 144
- “Completed job or job stream not found” on page 144
- “Variables not resolved after upgrade” on page 145
- “Default variable table not accessible after upgrade” on page 145
- “Local parameters not being resolved correctly” on page 145
- “Log files grow abnormally large in mixed environment with version 8.4 or higher master domain manager and 8.3 or lower agents” on page 146
- “Deleting leftover files after uninstallation is too slow” on page 147
- “Corrupted special characters in the job log from scripts running on Windows” on page 148
- “Failover Cluster Command Interface deprecated” on page 148

An error message indicates that a database table, or an object in a table, is locked

An error message indicates that a function cannot be performed because a table, or an object in a table, is locked. However, the table or object does not appear to be locked by another Tivoli Workload Scheduler process.

Cause and solution:

The probable cause is that a user has locked the table by using the database command-line or GUI:

DB2 Just opening the DB2 GUI is sufficient to lock the database tables, denying access to all Tivoli Workload Scheduler processes.

Oracle If the Oracle command-line is opened without the auto-commit option, or the GUI is opened, Oracle locks all tables, denying access to all Tivoli Workload Scheduler processes.

To unlock the table close the command-line or GUI, as appropriate.

Note: Tivoli Workload Scheduler provides all of the database views and reports you need to manage the product. You are strongly recommended to not use the facilities of the database to perform any operations, including viewing, on the database tables.

Command line programs (like composer) give the error "user is not authorized to access server"

You launch CLI programs (like composer) but when you try and run a command, the following error is given:

```
user is not authorized to access server
```

Cause and solution:

This problem occurs when the user running the command has a null password. Composer, and many of the other Tivoli Workload Scheduler CLI programs cannot run if the password is null.

Change the password of the user and retry the operation.

The rmstdlist command gives different results on different platforms

The rmstdlist command on a given UNIX platform gives results that differ from when it is used on other platforms with the same parameters and scenario.

Cause and solution:

This is because on UNIX platforms the command uses the *-mtime* option of the **find** command, which is interpreted differently on different UNIX platforms.

To help you determine how the *-mtime* option of the **find** command is interpreted on your workstation, consider that the following command:

```
<TWA_home>/TWS/bin/stdlist/rmstdlist -p 6
```

gives the same results as these commands:

```
find <TWA_home>/TWS/stdlist/ -type d ! -name logs ! -name traces -mtime +6 -print
find <TWA_home>/TWS/stdlist/logs/ -type f -mtime +6 -print
find <TWA_home>/TWS/stdlist/traces/ -type f -mtime +6 -print
```

Look at your operating system documentation and determine how the option works.

The rmstdlist command fails on AIX with an exit code of 126

The rmstdlist command on AIX fails with an exit code of 126 and no other error message.

Cause and solution:

This could be because there are too many log files in the `stdlist` directory.

On AIX, you should regularly remove standard list files every 10-20 days. See the usage instructions in the *Tivoli Workload Scheduler: User's Guide and Reference* for full details.

Question marks are found in the stdlist

You discover messages in the log or trace files that contain question marks, as in the following example (the message has been split over several lines to make it more readable and the question marks are highlighted to make them more obvious):

```
10:20:02 03.02.2008|BATCHMAN:+ AWSBHT057W
Batchman has found a non-valid run number in the Symphony
file for the following record type: "Jt" and object:
"F235011S3_01#???[(),(0AAAAAAAAAAAAAZD)].A_7_13 (#J18214)".
```

Cause and solution:

This problem occurs when the process that needs to write the log message cannot obtain the Job Scheduler name. For example, when a Job Scheduler is dependent on a Job Scheduler that is not in the current plan (Symphony file). The process writes "???" in place of the missing Job Scheduler name.

The message contains the Job Scheduler ID (in the above example it is the string in the second set of parentheses: (0AAAAAAAAAAAAAZD). Use the Job Scheduler ID to identify the instance of the Job Scheduler, and take any action suggested by the message that contained the question marks.

Deleting stdlist or one of its files when processes are still running

Erroneously deleted the `stdlist` directory or one of its files while processes are running.

You erroneously deleted the `stdlist` directory or one of its files while processes are running and you receive the following error when performing an operation:

```
Permission denied
Bad file descriptor
```

Cause and solution:

This problem occurs because the directories or files with root ownership are not re-created during the initialization phase.

According to your operating system, perform one of the following actions:

UNIX

- Create the directory or file that you deleted with **twsuser** and **group** ownership.
- Modify the ownership of the directory or file created with **root** ownership to **twsuser** and **group** ownership.

Windows

- Ensure that you are running the command line with the **Run as Administrator** privilege level.

A job with a "rerun" recovery job remains in the "running" state

You have run a job specifying a recovery job using the "rerun" recovery method. The original job fails, but when the recovery job starts the original job shows that the recovery action has been completed successfully, but remains in the "running" state.

Cause and solution:

This problem would occur if the recovery job was specified to run on a different workstation and domain from the original job. The original job is then unable to detect the state of the recovery job, so it cannot determine if the recovery job has finished or what state it finished in.

To resolve the problem for the specific job that is still in "running" state, you must manually stop the job.

To avoid the recurrence of the problem specify the "rerun" recovery action on the same workstation in the same domain.

Job statistics are not updated daily

Job statistics are not updated daily, as they were with versions prior to version 8.3.

Cause and solution:

Job statistics are updated by **`JnextPlan`**. If you are running **`JnextPlan`** less frequently than daily, the statistics are only updated when **`JnextPlan`** is run.

A Job Scheduler dependency is not added

A dependency is added to a Job Scheduler instance and the Job Scheduler is saved. When the list of dependencies is reopened, the new dependency is not present.

Cause and solution:

This occurs when a Job Scheduler instance already has the maximum number (40) of dependencies defined. Normally, an error message would alert you to the limit, but the message might not be displayed if there is a delay propagating the Symphony updates across the network or if your update coincided with updates by other users.

Incorrect time-related status displayed when time zone not enabled

You are using Tivoli Workload Scheduler in an environment where nodes are in different time zones, but the time zone feature is not enabled. The time-related status of a job (for example, "Late") is not reported correctly on workstations other than that where the job is being run.

Cause and solution:

Enable the time zone feature to resolve this problem. See *Tivoli Workload Scheduler: User's Guide and Reference* to learn more about the time zone feature. See *Tivoli Workload Scheduler: Administration Guide* for instructions on how to enable it in the global options.

Completed job or job stream not found

A job or job stream that uses an alias has completed but when you define a query or report to include it, the job or job stream is not included.

Cause and solution:

Jobs and job streams in *final* status are stored in the archive with their *original* names, not their aliases, so any search or reporting of completed jobs must ignore the aliases.

Variables not resolved after upgrade

After upgrading to version 8.5, global variables are not resolved.

Cause and solution:

During the upgrade to version 8.5, all the security file statements relating to your global variables were copied by the installation wizard into a default variable table in the new security file. Global variables are disabled in version 8.5, and can only be used through the variable tables. If you subsequently rebuilt the security file using the output from your *previous* **dumpsec** as input to the new **makesec**, you will have overwritten the security statements relating to your default variable table, so no user has access to the default variable table.

If you have a backup of your security file from prior to when you ran **makesec**, run **dumpsec** from that, and merge your old **dumpsec** output file with your new one, as described in the upgrade procedure in the *Tivoli Workload Scheduler: Planning and Installation Guide*.

If you do not have a backup, create the default variable table security statement, following the instructions about configuring the security file in the *Tivoli Workload Scheduler: Administration Guide*.

Default variable table not accessible after upgrade

After upgrading to version 8.5, your default variable table is not accessible by any user.

Cause and solution:

This problem has exactly the same Cause and solution: as the preceding - see "Variables not resolved after upgrade."

Local parameters not being resolved correctly

You have scheduled a job or job stream that uses local parameters, but the parameters are not resolved correctly.

Cause and solution:

One reason for this could be that one or both of the files where the parameters are stored have been deleted or renamed.

Check that the following files can be found in the `*TWA_home*/TWS` directory:

```
parameters
parameters.KEY
```

These files are required by Tivoli Workload Scheduler to resolve local parameters, so they must not be deleted or renamed. Fix the problem as follows:

1. If the files have been renamed, rename them to the original names.
2. If the files have been deleted, re-create them, using the **parms** utility.
3. To make the changes effective, restart the application server, using the **stopappserver** and **startappserver** commands.

Log files grow abnormally large in mixed environment with version 8.4 or higher master domain manager and 8.3 or lower agents

The problem occurs in mixed environments where Tivoli Workload Scheduler agents version 8.3 or earlier run under a master domain manager version 8.4 or later. The problem is that the older version agents do not correctly handle the Tivoli Workload Scheduler events generated by the features added by version 8.4 and later, such as Event Driven Workload Automation (`monman`), Workload Service Assurance (critical path), and WebSphere Application Server manager (`appservman`). This may cause random execution, duplication of Tivoli Workload Scheduler events or dumping of Tivoli Workload Scheduler event records type "00" that flood the log files.

The cure to this problem is to install on your older version agents the corresponding fix pack containing the fix for `APAR IZ62730`.

An alternative to installing the fix pack on your agents is to apply the following workaround on your version 8.4 or later master domain manager, provided your master runs one of the following product versions:

- 8.4 with fix pack 5 or later
- 8.5 with fix pack 1 or later
- 8.5.1 with fix pack 1 or later

Perform the following steps:

1. Disable the Event Driven Workload Automation (EDWA) feature:
   ```
   - optman chg ed=no
   ```
2. Check that EDWA is actually disabled:
   ```
   - optman  ls
   >>>>>   enEventDrivenWorkloadAutomation / ed = NO
   ```
3. Shut down Tivoli Workload Scheduler and WebSphere Application Server.
4. Delete the `Mailbox.msg` file because it contains messages related to stopping the `appservman` process.
5. Enable new behavior of `appservman` by adding to the `localopts` file the following key:
   ```
   Appserver disable send event = yes
   ```
6. Start Tivoli Workload Scheduler.
7. Check that the broadcast of newer product versions (8.4 and later) events is actually disabled by looking for the following message in the `<TWS_home>/stdlist/traces/TWSMERGE.log`: *"Broadcasting of Appservman events is disabled"*.

If you cannot find this message, the reason is that your master is not patched with the fix pack version listed above. If this is the case, you can run the following recovery procedure (but this will preclude `appservman` from starting):

1. Shut down Tivoli Workload Scheduler and WebSphere Application Server.
2. Delete the `Mailbox.msg` file because it contains messages related to the startup of `appservman` .
3. Start WebSphere Application Server without the `appservman` process:
   ```
    <TWSHOME>/wastools/StartWas.sh -direct
   ```
4. Start Tivoli Workload Scheduler without the *appservman* process:
   ```
    Startup -noappsrv
   ```

The master domain manager is now ready to create a plan without the Event Driven Workload Automation. You can wait for the next `JnextPlan` or run:

```
JnextPlan -for 000
```

If you have a mix of version 8.3 and version 8.4 agents, perform the following steps:

1. Unlink and shut down only the version 8.4 agents.
2. Check that no Tivoli Workload Scheduler processes are running:
   ```
   ps -fu <TWS_user>
   ```
3. Delete the `Mailbox.msg` file because it contains messages related to the `monman` process.
4. Disable the `monman` process from starting by modifying the following key in the `localopts` file:
   ```
   autostart monman = no
   ```
5. Restart Tivoli Workload Scheduler.

Inconsistent time and date in conman and planman output

If you notice inconsistent times and dates in jobs and job streams on an AIX master domain manager, ensure that the system time zone is set correctly. For example, you might notice this problem in the job schedtime or start time, or in other properties related to date and time.

Cause and solution:

The problem might be due to an incorrect setting of the time zone. To set the correct time zone, perform the following steps on the AIX master domain manager:

1. Start smit (System Management Interface Tool).
2. Select System Environments > Change / Show Date, Time, and Time Zone > Change Time Zone Using User Entered Values.
3. Set the relevant time zone. For example, to set the Central European Time (CET) time zone, enter the following values:
   ```
   * Standard Time ID(only alphabets)                  [CET]
   * Standard Time Offset from CUT([+|-]HH:MM:SS)      [-1]
     Day Light Savings Time ID(only alphabets)         [CEST]
   ```
4. Restart the system to make the change effective.

For information about how to set the time zone, see *Tivoli Workload Scheduler: Administration Guide*. For a description of how the time zone works, see *Tivoli Workload Scheduler: User's Guide and Reference*.

Deleting leftover files after uninstallation is too slow

Deleting leftover O*nnnn.hhmm* files *TWA_installation_directory*\TWS\stdlist\yyyy.mm.dd\ after uninstalling Tivoli Workload Scheduler is too slow.

Cause and solution:

This problem is caused by a known Microsoft issue on Windows operating systems. It occurs when you try to delete the O*nnnn.hhmm* files in *TWA_installation_directory*\TWS\stdlist\yyyy.mm.dd\ on the Windows system after having uninstalled the master domain manager.

To prevent the problem, remove the O*nnnn.hhmm* files permanently using the Shift-Canc keys instead of using the Delete key or sending the files to the Recycle Bin.

Corrupted special characters in the job log from scripts running on Windows

When you run scripts on Windows systems, any special characters resulting from the commands in the script might not be displayed correctly in the job log. This is a display problem that does not affect the correct run of the job. No workaround is currently available for this problem.

Failover Cluster Command Interface deprecated

The `cluster.exe` command-line tool for Failover Clustering was deprecated for Windows Server 2012 platforms. The commands `Startup_clu.cmd`, `ShutDown_clu.cmd`, and `clusterupg` do not work.

Cause and solution:

This occurs because of the deprecation of the cluster.exe command-line tool for Failover Clustering on Windows Server 2012 platforms. To avoid this problem, you must reinstall the deprecated Failover Clustering feature `cluster.exe`.

StartUp shows an error after upgrade

Problem:

After upgrading to version 8.6, StartUp script shows the following error:

```
TWS for UNIX/STARTUP 8.5.1
Licensed Materials - Property of IBM*
5698-WSH
(C) Copyright IBM Corp. 1998, 2012 All rights reserved.
* Trademark of International Business Machines
Program code level: 20120510
Killed
ld.so.1: /export/home/svtUser/TWS/trace/atctl: fatal:
libatrc.so: open failed: No such file or directory
Killed
AWSBHU507I A start command was issued for NC121016.
```

Cause and solution:

During the upgrade to version 8.6, the following configuration files:

- tws_env.sh
- tws_env.csh
- jobmanrc
- TWSCCLog.properties
- StartUp
- MakePlan
- SwitchPlan
- SwitchPlan
- CreatePostReports
- UpdateStats
- ResetPlan

- Sfinal

are not overwritten but the 8.6 version of above files are installed under `tws_home/config` directory, and therefore to remove the above error message you must merge manually the two version of the files modifying the file under `tws_home` directory.

Chapter 9. Troubleshooting dynamic workload scheduling

This section provides information that is useful in identifying and resolving problems with dynamic workload scheduling, including how to tune the job processing rate and how to solve common dynamic scheduling problems.

It includes the following sections:

- "How to tune the rate of job processing"
- "Troubleshooting common problems" on page 154
- "Remote command job fails" on page 153

See also*Tivoli Workload Scheduler Administration* in the section on Auditing.

How to tune the rate of job processing

The processing of jobs submitted for dynamic scheduling is handled by the two subcomponents of dynamic workload broker, job dispatcher and resource advisor, through a mechanism of queues and a cache memory. Job dispatcher uses a system of queues into which jobs are placed according to their processing status and thus transmitted to the resource advisor. Resource advisor uses a system of time slots during which it takes a number of jobs from the job dispatcher and allocates them to the resources that will run them.

The `JobDispatcherConfig.properties` and `ResourceAdvisorConfig.properties` configuration files are tuned to suit most environments. However, if your environment requires a high job throughput or if jobs are processed too slowly, you can add the parameters listed below to the specified configuration files and provide customized values. The configuration files are created for dynamic workload broker at installation time and are documented in *IBM Tivoli Workload Scheduler: Administration Guide*.

By default, the parameters listed below are not listed in the configuration files to prevent unwanted modifications. Only expert administrators should set these parameters.

After modifying these parameters, stop and restart dynamic workload broker, as explained in startbrokerapp.

JobDispatcherConfig.properties

MaxProcessingWorkers

Job dispatcher queues the submitted jobs according to their processing status. By default the following 3 queues are already specified:

```
Queue.actions.0 = cancel,
                  cancelAllocation,
                  completed,
                  cancelOrphanAllocation
Queue.actions.1 = execute,
                  reallocateAllocation
Queue.size.1    = 20
Queue.actions.2 = submitted,
                  notification,
                  updateFailed
```

Each queue is determined by the keywords:

Queue.actions.*queue_number*
Specifies the jobs added in this queue based on their processing status. The *queue_number* identifies the queue and ranges from 0 to 9. You can specify a maximum of 10 queues. The following table shows the entire list of process statuses you can specify in the queues.

Table 14. Job processing status to queue jobs for dispatching

Job processing statuses:		
activated	cancel	cancelAllocation
cancelJobCommand	cancelOrphanAllocation	childActivated
childCompleted	childDeactivated	childStarted
completed	deleteJobCommand	execute
getJobLogCommand	getJobPropertiesCommand	holdJobCommand
notification	reallocateAllocation	reconnect
resumeJobCommand	submitJobCommand	submitted
updateFailed	-	-

Unspecified job processing statuses are automatically placed in queue 0.

Queue.size.*queue_number*
Specifies the number of threads available to the queue identified by *queue_number*. You can specify 1 to 100 threads for each queue you define. The default is the number specified for `MaxProcessingWorkers`.

`MaxProcessingWorkers` specifies the default number of concurrent threads available to each queue. Each job dispatcher queue uses `MaxProcessingWorkers` threads, unless otherwise specified in `Queue.size.`*`queue_number`*. The `MaxProcessingWorkers` default is 10. Of the three default queues shown above, only queue 1 has its size specified to 20 threads (or workers). Queues 0 and 2 use the default defined in `MaxProcessingWorkers` (10 threads).

For example, in a test scenario with 250K jobs submitted through the workload broker workstation, the job allocation queues are re-configured as follows:

```
# Override default settings
Queue.actions.0 = cancel,
                  cancelAllocation,
                  cancelOrphanAllocation
Queue.size.0    = 10
Queue.actions.1 = reallocateAllocation
Queue.size.1    = 10
Queue.actions.2 = updateFailed
Queue.size.2    = 10

# Relevant to jobs submitted from
# workload broker workstation, when successful
Queue.actions.3 = completed
Queue.size.3    = 50
Queue.actions.4 = execute
Queue.size.4    = 50
Queue.actions.5 = submitted
Queue.size.5    = 50
Queue.actions.6 = notification
Queue.size.6    = 50

# Default for every queue size
MaxProcessingWorkers = 10
```

Tune this parameter carefully to avoid impairing product performance.

HistoryDataChunk

Specifies the number of jobs to be processed at the same time when moving job data to the archive database. This is applicable only to a DB2 RDBMS. This parameter prevents an overload on the job dispatcher. The unit of measurement is jobs. The default value is 1000 jobs.

ResourceAdvisorConfig.properties

MaxAllocsPerTimeSlot

Specifies the number of requests for job allocation to be processed for each time slot. The default value is 100 requests per time slot. By default, each time slot lasts 15 seconds. Increasing this number causes the resource advisor to process a higher number of resource allocation requests per time slot with consequent processor time usage. This also allows the processing of a higher number of jobs per time slot. Decreasing this number causes the resource advisor to process a lower number of resource allocation requests per time slot resulting in a smoother processor usage and slower job submission processing. You can also modify the time slot duration using the `TimeSlotLength` parameter available in this file.

MaxAllocsInCache

Specifies the number of requests for job allocation submitted by job manager to the resource advisor and stored in its cache. This number should be substantially higher than the value specified in the `MaxAllocsPerTimeSlot` parameter. The default value is 5000 allocation requests. Increasing this number causes the resource advisor to process a potentially higher number of resource reservations per time slot with consequent processor time usage. This also allows the processing of a higher number of jobs. Decreasing this number causes the resource advisor to process a lower number of resource reservations per time slot resulting in lower processor usage and slower job submission processing. For optimal performance, this value should be at least 10 times the value specified in the `MaxAllocsPerTimeSlot` parameter.

Remote command job fails

You define and run a remote command job that performs a task on a remote Windows system. If the remote command job goes into ABEND state, and the job log contains a message like: **AWKRCE012E Could not establish a connection to "*nc112134.romelab.it.ibm.com*" target machine.**, see the following cause and solution.

Cause and solution:

A necessary Windows service might be stopped. Start the Remote Registry Windows service on the remote system.

On Windows 2012 the user interfaces for the interactive jobs are not visible on dynamic agents

On dynamic agent installed on Windows 2012 operating system, if you are running an interactive job, no user interface required by the interactive job, is displayed.

Cause and solution:

Ensure that the Interactive Services Detection service is running on Windows 2012 workstation where the dynamic agent is installed, and rerun the interactive job.

Note: Before start the Interactive Services Detection service on your operating system, ensure to read carefully the Windows documentation for the Interactive Services Detection running.

Troubleshooting common problems

The following problems could be encountered with dynamic workload broker:

- "Dynamic workload broker cannot run after the Tivoli Workload Scheduler database is stopped" on page 155
- "Getting an OutofMemory exception when submitting a job" on page 155
- "Getting an error exception when submitting a job on a fresh agent" on page 155

On AIX operating systems the concurrent submission of one hundred or more jobs on the same agent can result in a core dump or in a resource temporarily unavailable message

On AIX operating systems, the concurrent submission of one hundred or more jobs on the same agent can result in a memory dump or in a resource temporarily unavailable message

On AIX operating systems if you submit concurrently one hundred or more jobs on the same agent you can receive a core memory dump or the following message:

```
resource temporarily unavailable
```

Cause and solution:

This problem is due to insufficient memory and the process number per user allocated to run the jobs concurrently. To solve this problem, verify the value of the following configuration settings and change them as follows:

Ulimit settings

The submission of a significant number of Java jobs requires a large amount of memory. Change the value for data, stack, and memory limits according to the number of jobs you want to submit. The submission of a significant number of native jobs requires a high number of file descriptors and processes. Change the values for nofiles and processes according to the number of jobs you want to submit. The following example gives possible setting values to submit 100 jobs concurrently:

```
time(seconds)       unlimited
file(blocks)        2097151
data(kbytes)        131072
stack(kbytes)       32768
memory(kbytes)      32768
```

```
coredump(blocks)     2097151
nofiles(descriptors) 4000
threads(per process) unlimited
processes(per user)  unlimited
```

Process number per user

To submit a high number of jobs concurrently you must have a high value for the **maxuproc** setting. Use the **lsattr -E -l sys0 -a maxuproc** command to verify the number of concurrent processes that a user can create. Use the **chdev -l sys0 -a maxuproc=<*value*>** command to change the value for the **maxuproc** setting. For example, to submit 100 jobs concurrently use the following command:

```
chdev -l sys0 -a maxuproc=500
```

Dynamic workload broker cannot run after the Tivoli Workload Scheduler database is stopped

Dynamic workload broker cannot run as long as the database is down. When the database is up and running again, restart dynamic workload broker manually with the `startBrokerApplication` command. The command is described in *IBM Tivoli Workload Scheduler: Administration Guide*.

Getting an OutofMemory exception when submitting a job

If you get the following message after you submit a job for dynamic scheduling:

```
The job with ID job ID failed to start.
The error is "unable to create new native thread".
```

you must tune a property of the scheduling agent.

The property is named **ExecutorsMinThreads** and is located in the `JobManager.ini` file on the agent (for the path, see "Where products and components are installed" on page 1). Its default value is 38 but if this error occurs, you must decrease it to reduce the number of threads created when the job is launched.

The `JobManager.ini` file is described in the *IBM Tivoli Workload Scheduler: Administration Guide*.

Getting an error exception when submitting a job on a fresh agent

If you register a dynamic agent after the generation of a plan and you submit a job or a jobstream on a workstation class using this agent, you get an error message.

This behaviour is normal considering that the agent is not in the plan yet. To avoid getting this error message, do not use agents registered after the plan has been generated.

Chapter 10. Troubleshooting when automatically adding dynamic agent workstations to the plan

This section provides information that is useful in identifying and resolving problems in the Tivoli Workload Scheduler environment when you enable the automatic adding of dynamic agent workstations to the plan.

It includes the following sections:

- "Batchman fails on V8.6 and V9.1 fault-tolerant agents configured with the mailman server process."
- "The dynamic agent workstation automatically added to the plan is not initialized."

Batchman fails on V8.6 and V9.1 fault-tolerant agents configured with the mailman server process

The `enAddWorkstation` global option is set to `yes` on a V9.2 master domain manager in a mixed version environment. After you successfully install a V9.2, dynamic agent, the batchman process fails on the V8.6, and V9.1 fault-tolerant agents that have the mailman server process configured.

Cause and solution:

The cause is that the dynamic agent workstation is automatically added to the plan of each agent in the Tivoli Workload Scheduler mixed version network. The batchman process on the V8.6 and V9.1 fault-tolerant agents that have the mailman server process configured is unable to manage the broadcast of the Tivoli Workload Scheduler event that communicates the addition of the dynamic agent to the plan.

To solve this problem, set `enAddWorkstation` to `no` on the master domain manager to prevent the automatic addition of the dynamic agent workstation in the plan.

The dynamic agent workstation automatically added to the plan is not initialized

The global option `enAddWorkstation` is set to "yes". On the master domain manager, if the `Intercom.msg` file is full and you are stopping processes during the dynamic agent workstation addition to the plan, the dynamic agent workstation is added to the plan, but it might not be initialized, linked, or started. On the master domain manager, after the master domain manager processes restart, you cannot see the `LTI J` flags in the **conman** command-line output, if you perform the following command:

```
conman sc dynamic_agent_workstation_name
```

Where *dynamic_agent_workstation_name* is the dynamic agent workstation name that you inserted during the installation process.

Cause and solution:

The cause is that the master domain manager mailman stopping process is unable to manage the Tivoli Workload Scheduler event that communicates the workstation addition to the plan, also after the master domain manager processes restart.

To solve the problem, restart the master domain manager processes by performing in order the following commands:

```
conman stop mdm_workstation_name
conman start mdm_workstation_name
```

Where *mdm_workstation_name* is the master domain manager workstation name.

Chapter 11. Troubleshooting Dynamic Workload Console problems

Describes how to troubleshoot problems with the Dynamic Workload Console related to connections, performance, user access, reports, and others.

This section describes the problems which could occur while using the Dynamic Workload Console:

Note: For the troubleshooting run time scenarios impacting the Tivoli dynamic workload broker environment, refer to the *Tivoli Dynamic Workload Broker: Installation and Configuration guide*

The problems are described in these groups:
- "Troubleshooting connection problems"
- "Troubleshooting performance problems" on page 170
- "Troubleshooting user access problems" on page 172
- "Troubleshooting problems with reports" on page 174
- "Troubleshooting problems with graphical views" on page 182
- "Troubleshooting problems with database" on page 183
- "Troubleshooting other problems" on page 186

Troubleshooting connection problems

The following problems could occur with the connection to the engine or the database:
- "The engine connection does not work" on page 160
- "Test connection takes several minutes before returning failure" on page 161
- "Engine version and connection status not displayed" on page 162
- "Failure in testing a connection or running reports on an engine using an Oracle database" on page 162
- "Connection error when running historical reports or testing connection from an external instance of WebSphere Application Server" on page 163
- "Connection problem with the engine when performing any operation" on page 163
- "Engine connection does not work when connecting to the z/OS connector (versions 8.3.x and 8.5.x)" on page 164
- "Engine connection does not work when connecting to the z/OS connector V8.3.x or a distributed Tivoli Workload Scheduler engine V8.3.x" on page 165
- "Engine connection does not work when connecting to distributed Tivoli Workload Scheduler engine V8.4 FP2 on UNIX" on page 166
- "WebSphere does not start when using an LDAP configuration" on page 167
- "WebSphere Application Server problem when using an LDAP configuration with SSL authentication mechanism" on page 168
- "Engine connection settings are not checked for validity when establishing the connection" on page 169
- "LDAP account locked after one wrong authentication attempt" on page 169

The engine connection does not work

You define an engine connection, you verify that the values entered for the engine connection are correct, and then you click **Test Connection**. The test fails and a connection error message is returned.

Cause and solution:

Assuming that `system_A` is where you installed the Dynamic Workload Console, and `system_B` is where you installed Tivoli Workload Scheduler, follow these verification steps to investigate and fix the problem:

1. Verify that there is no firewall between the two systems as follows:
   a. Make sure the two systems can ping each other. If you are trying to connect to a z/OS engine you must check that the system where the Dynamic Workload Console is installed and the system where the Tivoli Workload Scheduler z/OS connector is installed can ping each other.
   b. Make sure you can telnet from `system_A` to `system_B` using the port number specified in the engine connection settings (for example, 31117 is the default port number for distributed engine).
   c. Make sure you can telnet from `system_A` to `system_B` using the CSIv2 authentication port numbers specified during installation (for example, 31120 is the default server port number and 31121 is the default client port number).

   If either of these two steps fails then there might be a firewall preventing the two systems from communicating.
2. Check if you can connect using the **composer** command line interface, or the Dynamic Workload Console to the Tivoli Workload Scheduler engine on `system_B` using the same credentials specified in the engine connection. If you cannot, then check if the user definition on `system_B` and the user authorization specified in the Tivoli Workload Scheduler security file are correct.
3. If you are using LDAP or another User Registry on the Dynamic Workload Console make sure that:
   a. The connection to the user registry works.
   b. The User Registry settings specified on the Integrated Solutions Console in the **Security** menu under **Secure administration, applications, and infrastructure** are correct.
   c. You restarted the affected WebSphere Application Server of both the Dynamic Workload Console and Tivoli Workload Scheduler, after configuring the User Registry
   d. You ran the `updateWas` and (on Windows) `updateWasService` scripts after restarting WebSphere Application Server

   For more information about how to configure the Dynamic Workload Console to use LDAP or about how to test the connection to a User Registry, refer to the chapter on configuring user security in the *Tivoli Workload Scheduler: Administration Guide*.
4. If you set up to use Single Sign-On between the Dynamic Workload Console and the Tivoli Workload Scheduler engine, make sure you correctly shared the LTPA_keys as described in the chapter on configuring SSL in the *Tivoli Workload Scheduler: Administration Guide*.

   Note: Make sure that you correctly shared the LTPA_keys also if you get errors AWSUI0766E and AWSUI0833E. The problem occurs when the realm values are the same for more than one WebSphere Application Server (Dynamic Workload

Console, Tivoli Workload Scheduler z/OS connector, or Tivoli Workload Scheduler engine). These steps are usually described only when you configure the Single Sign On, but they are required also when you have the same realm. You have the same realm when you configure all WebSphere Application Servers with the same LDAP user registry and when you install all WebSphere Application Servers on the same machine.

If this checklist does not help you in identifying and fixing your problem then activate tracing on the Dynamic Workload Console by running the steps listed in "Activating and deactivating traces in Dynamic Workload Console" on page 31 (adding also the Java packages `com.ibm.ws.security.*=all:com.ibm.tws.*=all`), and on the Tivoli Workload Scheduler engine by running the following steps:

1. Connect as ROOT to the system where the Tivoli Workload Scheduler engine is located.
2. Edit the file `TWA_home/wastools/TracingProps.properties`, add the statement:

   ```
   tws_with_sec=com.ibm.ws.security.*=all:com.ibm.tws.*=all
   ```

   and then save your changes.
3. Run the following script to start tracing:

   ```
   <TWA_home>/wastools/changeTraceProperties.sh -user
   <TWS_user> -password <TWS_user_password> -mode tws_with_sec
   ```

   where <*TWS_user*> and <*TWS_user_password*> are the credentials of the Tivoli Workload Scheduler administrator.

Connect to the Dynamic Workload Console again, test the connection to the Tivoli Workload Scheduler engine, and then check the information stored in the following trace logs:

- On the Dynamic Workload Console:

  ```
  <JazzSM_profile_dir>/logs/server1/trace.log
  ```

  where <*JazzSM_profile_dir*> is

  On Windows operating systems
  C:\Program Files\IBM\JazzSM\profile

  On UNIX operating systems
  /opt/IBM/JazzSM/profile

  On the Tivoli Workload Scheduler engine:

  ```
  <WAS_profile_path>/logs/server1/trace.log
  ```

  where the default path for <*WAS_profile_path*> is `<TWA_home>/WAS/TWSprofile`

In these files you see the information about the error that occurred. If useful, compare the connection information stored in the traces with the information set for WebSphere Application Server security on both sides. Refer to the *Tivoli Workload Scheduler: Administration Guide* to list the information about the security properties.

Test connection takes several minutes before returning failure

You select an engine connection and click **Test Connection** to check that the communication is working. The test takes several minutes to complete and then returns a failure.

Cause and solution:

When the **Test Connection** is run, the result is returned only after the timeout expires. The timeout for running the **Test Connection** operation cannot be customized. The connection failed because of one of the following reasons:

- The system where the Tivoli Workload Scheduler engine is installed is not active.
- The IP address or the hostname of the system where the Tivoli Workload Scheduler engine is installed was not correctly specified (in other words, the host name specified by the `showHostProperties` command must be capable of being contacted by the Dynamic Workload Console and vice versa)
- A network firewall prevents the system where the Dynamic Workload Console is installed and the system where the Tivoli Workload Scheduler engine is installed from communicating.

Check which of these reasons causes the communication failure, fix the problem, and then retry.

Engine version and connection status not displayed

The table listing your engine connections, in the Manage Engines panel of the Dynamic Workload Console does not display the engine version or the icon identifying the connection status.

Cause and solution:

Probably it happened because you tried to establish an engine connection using wrong credentials, then you entered the correct credentials and tested the connection again without checking the **Save** option. The correct credentials have not been saved and even though the connection is successful, data relating engine version and connection status is not loaded in the table.

Refresh the panel to make data displayed.

Failure in testing a connection or running reports on an engine using an Oracle database

You test the connection to an engine by specifying the user credentials for an Oracle database, or you run a report on that engine connection. The operation fails and the following error message is displayed:

```
AWSUI0360E The JDBC URL is not configured on the selected engine,
so the reporting capabilities cannot be used.
          Contact the Tivoli Workload Scheduler administrator."
```

Cause and solution:

Make sure that the Tivoli Workload Scheduler administrator has updated the `TWSConfig.properties` file by adding the following key:

```
com.ibm.tws.webui.oracleJdbcURL
```

specifying the JDBC Oracle URL. For example:

```
com.ibm.tws.webui.oracleJdbcURL=jdbc:oracle:thin:@//9.132.235.7:1521/orcl
```

Rerun the operation after the `TWSConfig.properties` has been updated. For more information about showing and changing database security properties for Tivoli Workload Scheduler, refer to the *IBM Tivoli Workload Scheduler: Administration and Troubleshooting guide.*

Connection error when running historical reports or testing connection from an external instance of WebSphere Application Server

You try to test the connection to an engine where you Enable Reporting, or you try to run a historical report, the report fails and the following database connection error is saved to the WebSphere Application Server logs:

```
[date_and_time] 00000044 SystemErr R Exception in thread "WnTransactionThread-10"
java.lang.VerifyError:
class loading constraint violated (class: com/ibm/db2/jcc/c/p method:
getSQLJLogWriter()Lcom/ibm/db2/jcc/SQLJLogWriter;) at pc: 0
[date_and_time] 00000044 SystemErr R at java.lang.J9VMInternals.verifyImpl
                (Native Method)
[date_and_time] 00000044 SystemErr R at java.lang.J9VMInternals.verify
                (J9VMInternals.java:59)
[date_and_time] 00000044 SystemErr R at java.lang.J9VMInternals.verify
                (J9VMInternals.java:57)
[date_and_time] 00000044 SystemErr R at java.lang.J9VMInternals.initialize
                (J9VMInternals.java:120)
[date_and_time] 00000044 SystemErr R at com.ibm.db2.jcc.DB2Driver.connect
                (DB2Driver.java:163)
[date_and_time] 00000044 SystemErr R at java.sql.DriverManager.getConnection
                (DriverManager.java:562)
[date_and_time] 00000044 SystemErr R at java.sql.DriverManager.getConnection
                (DriverManager.java:186)
[date_and_time] 00000044 SystemErr R at
```

The Dynamic Workload Console is installed on an external WebSphere Application Server together with other products using either DB2 or Oracle databases.

Cause and solution:

Because of a current WebSphere Application Server limitation, you must run these steps to run historical reports if your Dynamic Workload Console is installed on an external WebSphere Application Server together with other products using either DB2 or Oracle databases.

1. Stop the WebSphere Application Server.
2. Access the directory:
   ```
   <TWA_home>/WAS/systemApps/isclite.ear/TWSWebUI.war/WEB-INF/lib
   ```
3. Remove the following JDBC driver files:
   ```
   db2jcc.jar
   db2jcc_license_cu.jar
   ojdbc14.jar
   ```
4. Start WebSphere Application Server.

Note: This WebSphere Application Server limitation does not affect your activities if:

- You run Actual Production Details and Planned Production Details reports.
- You run operations that do not require to select Enable Reporting in the engine connection properties.

Connection problem with the engine when performing any operation

Whatever operation you try to run in the Dynamic Workload Console, you get an error message saying that there is a connection problem with the engine.

Cause and solution:

Do the following steps:

1. Exit the Dynamic Workload Console.
2. Restart the WebSphere Application Server.
3. Log in again to the Dynamic Workload Console.

Continue with your activities on Dynamic Workload Console.

Engine connection does not work when connecting to the z/OS connector (versions 8.3.x and 8.5.x)

If one of the following errors occurs when running the test connection, follow the steps described in the cause and solution section:

1. `AWSUI0766E Test connection to` *`myengine`*`: failed. AWSUI0833E The operation did not complete. There was a communication failure. The internal message is: AWSJZC093E The requested engine zserver is not defined.`
2. `AWSUI0766E Test connection to` *`myengine`* `: failed. AWSUI0833E The operation did not complete. There was a communication failure. The internal message is: A communication failure occurred while attempting to obtain an initial context with the provider URL: "corbaloc:iiop:ZOS_CONNECTOR_HOSTNAME:31127".`
3. `AWSUI0766E Test connection to` *`myengine`* `: failed. AWSUI0833E The operation did complete. There was a communication failure. The internal message is: EQQPH26E TME user ID missing in TME user to RACF userid mapping table: myuser@hostname1.test.com`

Cause and solution:

The possible causes for the case above are:

1. The name of the server startup job on host side must be defined on the z/OS connector before you perform the test connection from the TDWC.
2. The WebSphere Bootstrap port is incorrect. Make sure that any bootstrap address information in the URL is correct and that the target name server is running. A bootstrap address with no port specification defaults to port 2809. Possible causes other than an incorrect bootstrap address or unavailable name server include the network environment and workstation network configuration.
3. The RACF® user ID has not been defined in the mapping table on host side.

You can solve the problem as follows:

Environment description example

The environment is composed of a z/OS connector installed on the `hostname1.test.com`, a TDWC installed on either the same or another system, and a z/OS engine installed on the `hostname2.test.com(port 445)`.

Steps on the z/OS connector side

Define a connection from the z/OS connector to the host side by running the following script located in the directory `<ZCONN_INST_DIR>/wastools` and then restart WebSphere:

```
> createZosEngine -name zserver -hostName hostname2.test.com/portNumber 445
> stopWas
> startWas
```

where *zserver* is a logical name and can be changed to any other name.

Check the Bootstrap port by running the script showHostProperties.bat (sh) located in the directory `<ZCONN_INST_DIR>/wastools`.

Steps on the TDWC side

On the TDWC web interface, define an engine connection from TDWC to the z/OS connector, as follows:

Engine name
Choose any name.

Engine Type
z/OS.

Host Name
Either `hostname1.test.com` or localhost depending on if TDWC is installed on the same host of Z/CONN or not.

Port Number
The z/OS connector Bootstrap port.

Remote Server Name
zserver (or the name you used in step 2 - createZosEngine).

User ID / Password
For example, the credentials you specified when installing z/OS Connector (that is, the user that owns the z/OS Connector instance). The user can be any user that is authenticated by the User Registry configured on the embedded WebSphere installed with the products.

Note: Bootstrap Port Number in version 8.5.x depends on which product is installed first. If TDWC is installed first, the Bootstrap port is 22809 and subsequent products installed on top of TDWC inherit that. If z/OS Connector is installed first, the Bootstrap port is 31217. If the z/OS connector version is 8.3 FPx, the default Bootstrap port is 31127.

Steps on the z/OS side

Make sure that user `myuser@hostname1.test.com` is defined in the RACF user ID mapping table on host side (USERMAP parameter in the SERVOPTS initialization statement).

Engine connection does not work when connecting to the z/OS connector V8.3.x or a distributed Tivoli Workload Scheduler engine V8.3.x

If one of the following errors occurs when running the test connection, follow the steps described in the cause and solution section:

1. `AWSUI0766E Test connection to` *`myengine`*`: failed. AWSUI0833E The operation did not complete.`

```
Reason: AWSJCO005E WebSphere Application Server gives the following error:
CORBA NO_PERMISSION 0x0 No; nested exception is:
org.omg.CORBA.NO_PERMISSION: Trace from server: 1198777258 at host
myhostname.com >>
org.omg.CORBA.NO_PERMISSION: java.rmi.AccessException: ; nested exception is:
com.ibm.websphere.csi.CSIAccessException:
SECJ0053E: Authorization failed for /UNAUTHENTICATED while invoking (Bean)
ejb/com/ibm/tws/zconn/engine/ZConnEngineHome
getEngineInfo(com.ibm.tws.conn.util.Context):
1 securityName: /UNAUTHENTICATED;accessID:
UNAUTHENTICATED is not granted any of the required roles:
TWSAdmin vmcid: 0x0 minor code: 0 completed: No . . .
```

2. `AWSUI0778E There was an authentication failure: the user name or password is incorrect.`

Cause and solution:

The symptoms above are caused because on the z/OS connector, or on the distributed engine side, the script **webui.sh** (bat) must be run to enable communication with the TDWC. Under the `wastools` directory of the home directory of the installation directory, run these commands:

```
./webui.sh -operation enable -user wasuser
-password waspwd -port soap_port
-pwdLTPA anypassword -server server1

./stopWas.sh -user wasuser -password waspwd

./startWas.sh
```

where:

`user` and `password` are those specified at installation time.

`port` is the WebSphere SOAP port (display it by running the command **showHostProperties.sh**).

`pwdLTPA` is any password used to export and encrypt the LTPA keys.

`server` is the WebSphere server name. The default is `server1`.

Engine connection does not work when connecting to distributed Tivoli Workload Scheduler engine V8.4 FP2 on UNIX

If one of the following errors occurs when running the test connection, follow the steps described in the cause and solution section:

```
AWSUI0766E Test connection to myengine: failed.
```

```
SECJ0053E: Authorization failed for /UNAUTHENTICATED while invoking
(Bean)ejb/com/ibm/tws/conn/engine/ConnEngineHome getEngineInfo
(com.ibm.tws.conn.util.Context):1 securityName:
/UNAUTHENTICATED;accessID: UNAUTHENTICATED is not granted any
of the required roles: TWSAdmin vmcid: 0x0 minor code: 0 completed: No
```

Cause and solution:

The problem is caused by a missing setting, which is already fixed in later versions of the engine. You can solve the problem by specifying on the engine instance the fully qualified hostname in the `security.xml`. Run the following steps to solve the problem:

1. Stop WebSphere on the engine using the command: `<twa_install_dir>/wastools/stopWas.sh`
2. Back up and then edit the following file (make sure that the editor does not change the formatting): `<`*`JazzSM_profile_dir`*`>/config/cells/JazzSMNode01Cell/nodes/JazzSMNode01/servers/server1/server.xml` where, the default value of <*JazzSM_profile_dir*> is /opt/IBM/JazzSM/profile
3. Locate the line related to the `CustomUserRegistry`, for example:

```
<userRegistries xmi:type="security:CustomUserRegistry"
xmi:id="CustomUserRegistry_1203516338790"
serverId="mywasadmin" serverPassword="{xor}Mj46LCstMA==" limit="0"
ignoreCase="true" useRegistryServerId="true" realm=""
customRegistryClassName="com.ibm.tws.pam.security.registry.
PamUnixRegistryImpl"/>
```

4. Add the fully qualified hostname to the realm attribute, as in the following example:

   ```
   <userRegistries xmi:type="security:CustomUserRegistry"
   xmi:id="CustomUserRegistry_1203516338790"
   serverId="a840" serverPassword="{xor}Mj46LCstMA==" limit="0"
   ignoreCase="true" useRegistryServerId="true"
   realm="nc114040.romelab.it.ibm.com"
   customRegistryClassName="com.ibm.tws.pam.security.registry.
   PamUnixRegistryImpl"/>
   ```

5. Restart WebSphere on the engine using the command: `<twa_install_dir>/wastools/startWas.sh`

Note: If you have any problems when restarting WebSphere, restore the original `security.xml` and start again.

WebSphere does not start when using an LDAP configuration

The WebSphere startup fails and the `SystemOut.log` file contains one of the following messages with exceptions.

1.

   ```
   SECJ0419I: The user registry is currently connected to the LDAP server
   ldap://nc125088.romelab.it.ibm.com:389.
   ....
   WSVR0009E: Error occurred during startup
   com.ibm.ws.exception.RuntimeError: com.ibm.ws.exception.RuntimeError:
   javax.naming.NameNotFoundException: [LDAP: error code 32 - No Such Object];
   remaining name 'ou=asiapacific,dc=test,dc=it'
   at com.ibm.ws.runtime.WsServerImpl.bootServerContainer(WsServerImpl.java:199)
   at com.ibm.ws.runtime.WsServerImpl.start(WsServerImpl.java:140)
   . . .
   ```

2.

   ```
   SECJ0418I: Cannot connect to the LDAP server ldap://nc125088.romelab.it.
   ibm.com:389.....
   WSVR0009E: Error occurred during startup
   com.ibm.ws.exception.RuntimeError: com.ibm.ws.exception.RuntimeError:
   javax.naming.AuthenticationException: [LDAP: error code 49 - 80090308:
   LdapErr: DSID-0C090334, comment: AcceptSecurityContext error, data 525,
   vece...
   ```

3.

   ```
   SECJ0270E: Failed to get actual credentials.
   The exception is com.ibm.websphere.security.PasswordCheckFailedException:
   No user AMusr1@test.it found
   at com.ibm.ws.security.registry.ldap.LdapRegistryImpl.checkPassword
   (LdapRegistryImpl.java:311)
   at com.ibm.ws.security.registry.UserRegistryImpl.checkPassword
   (UserRegistryImpl.java:308)
   at com.ibm.ws.security.ltpa.LTPAServerObject.authenticate
   (LTPAServerObject.java:766)
   ```

4.

   ```
   SECJ0352E: Could not get the users matching the pattern AMusr1@test.it
   because of the following exception javax.naming.CommunicationException:
   nc1250881.romelab.it.ibm.com:389 [Root exception is
   java.net.UnknownHostException:
   nc1250881.romelab.it.ibm.com]
   ```

Cause and solution:

The answers to the problems are listed below. The answers refer to some of the security properties provided to the wastool script **changeSecurityProperties.sh** (bat).

1. Connect with an LDAP Browser to the LDAP server and verify that the `LDAPBaseDN` value is a valid Base Distinguished Name and ensure that the `LDAPServerId` value is an existing user for the `LDAPBaseDN`.
2. Ask the LDAP administrator for the user and password to perform LDAP queries and set them in the `LDAPBindDN` or `LDAPBindPassword` properties.
3. Connect with an LDAP Browser to the LDAP server and verify that the properties of a valid user match the properties specified in the `LDAPUserFilter`, and also ensure that these properties are congruent with the type of the value specified on the `LDAPServerId`. For example, the `objectCategory` must be an existing `objectClass` and if `LDAPServerId` is an email address value, then the property to use on the filter must be the "mail" coerently. A valid user filter for the example is: `(&(mail=%v)(objectCategory=user))`.
4. Ensure that the *LDAPHostName* is a valid existing host and that it can be reached on the network. A useful test is to try to telnet to that host on the *LDAPPort* specified.

After changing the properties as suggested in the above list, run the **changeSecurityProperties.sh** (bat) script again, providing a file containing the updated security properties. Then start WebSphere.

WebSphere Application Server problem when using an LDAP configuration with SSL authentication mechanism

On AIX 6.1 workstations you installed Dynamic Workload Console version 8.6 integrated with a Tivoli Workload Scheduler version 8.6. TheWebSphere Application Server uses LDAP with Microsoft active Directory configured in SSL.

The SSL connection between WebSphere Application Server and the Microsoft active Directory LDAP server fails with the following error:

```
The extended error message from the SSL handshake exception is:
"PKIX path validation failed:
java.security.cert.CertPathValidatorException: The revocation
status of
the certificate with subject (CN=xxx.xx.net, OU=aaaaa,
O=bbbbb, L=ccccc, ST=ccccc, C=US ) could not be determined."
```

Cause and solution:

The problem is that WebSphere Application Server version 7.0 does not correctly manage the public key infrastructure (PKIX). An SSL Handshake exception is thrown when the WebSphere Application Server starts. Change the *trust manager* settings by performing the following steps:

1. Stop the WebSphere Application Server.
2. Open the file `TWA_home/eWAS/profiles/TIPProfile/config/cells/TIPCell/security.xml` and locate the following line:

   ```
   trustManager="TrustManager_TIPNode_2 TrustManager_TIPNode_1"
   ```

3. Change the value of *trustManager* as follows:

   ```
   trustManager="TrustManager_TIPNode_1"
   ```

   and save the `security.xml` file.

4. Start the WebSphere Application Server.

Engine connection settings are not checked for validity when establishing the connection

You incorrectly defined an engine connection to a distributed engine specifying a value for **Remote Server Name**. The **Remote Server Name** is not a valid setting for a connection to a distributed engine.

The check runs when you save the engine connection definition or when you run a test connection to that engine, but no exception about the incorrect setting is returned.

Cause and solution:

Whenever the test connection is run, only the mandatory fields for that specific type of engine, distributed rather than z/OS, are used to test the connection. Fields that are not mandatory, such as **Remote Server Name** for distributed engine connections are not taken into account.

LDAP account locked after one wrong authentication attempt

LDAP accounts might be blocked even after only one login attempt when connecting using the web user interface or Dynamic Workload Console through LDAP/AD authentication, if wrong credentials are provided because of internal LDAP/AD security policy. This happens because one login attempt with wrong credentials using the web user interface or Dynamic Workload Console, is transformed into several authentication requests to LDAP.

Cause and solution:

When a single LDAP hostname is mapped to multiple IP addresses in a network configuration, if an invalid password is entered during the login, WebSphere makes as many login attempts as the number of associated IP addresses plus 1. If the resulting number exceeds the maximum number of failed logins allowed by local LDAP/AD security policy, the LDAP account is blocked. In the log file `SystemOut.log` the following error shows an authentication error because of wrong credentials:

```
ECJ0369E: Authentication failed when using LTPA. The exception is
javax.naming.AuthenticationException: [LDAP: error code 49 -
80090308: LdapErr: DSID-0C090334, comment:
AcceptSecurityContext error, data 52e, vece
```

The WebSphere APAR PK42672 addresses this problem in the following way:

Two new custom properties are available to prevent this issue; use the one suitable for your LDAP configuration:

1. If LDAP is configured using the **`wsadmin`**l command to register backend LDAP server hostnames, in the administration console click **Security > User Registries > LDAP > Custom Properties** and set to `true` the property `com.ibm.websphere.security.ldap.retryBind`. If this property is set to `false`, the Application Server does not retry LDAP bind calls. The default value is `true`.
2. If LDAP is configured associating a hostname with multiple IP addresses using the network configuration, in the administration console click **Security > User Registries > LDAP > Custom Properties** and set to `false` the property

com.ibm.websphere.security.registry.ldap.singleLDAP. If this property is set to true, the Application Server does not resolve an LDAP hostname to multiple IP addresses. The default value is false.

Troubleshooting performance problems

- "With a distributed engine the responsiveness decreases overtime"
- "Running production details reports might overload the distributed engine"
- "A "java.net.SocketTimeoutException" received"
- "Graphical view and dashboard stop responding on shared WebSphere Application Server on Solaris" on page 183

With a distributed engine the responsiveness decreases overtime

When working with a distributed engine the responsiveness decreases overtime.

Cause and solution:

The problem might be related to multiple production plan report request running on that Tivoli Workload Scheduler engine, since those operations are CPU consuming. Ensure to wait until the report completion before running again other requests of the same kind.

Running production details reports might overload the distributed engine

The WebSphere Application Server on the distributed engine where the production details reports run, is overloaded and the temporary directory is full.

Cause and solution:

The amount of memory used by the WebSphere Application Server to extract the data varies depending on the number of objects to be extracted. For example, to extract 70 000 objects required almost 1 GB of RAM. To change the WebSphere Application Server heap size, see Increasing application server heap size.

Note: As a general recommendation, use filters to avoid extracting huge production report files.

A "java.net.SocketTimeoutException" received

You are accessing the Dynamic Workload Console with Internet Explorer 6.0, service pack 2, on a slow workstation (for example: Pentium 4, CPU 1.8 GHz) and are performing one of the following actions, which does not complete:

- You are querying objects in the plan, but on navigating through the result pages the browser hangs while drawing a result page, leaving the page with just the table header and footer shown and none of the result rows displayed. The hang of the browser can be resolved by clicking a button or link, but the missing data is not displayed.
- You are performing either a **Save**, **Edit**, or **Search** operation in the Workload Designer, which hangs for about 60 seconds and then displays one of these two error messages:

```
AWSUI6171E  The operation could not be completed because the Tivoli
Dynamic Workload Console server is unreachable. Possible causes are that
the Tivoli Dynamic Workload Console server has been stopped or that your
login authentication has expired or has become invalid.
AWSUI6182E The operation could not be completed because an internal error
occurred. The internal error is: the service name has not been provided.
```

Cause and solution:

What exactly causes the problem has not been ascertained (it might be a bug in Internet Explorer), but it can be resolved by increasing the value of one of the configurable timeouts in the application server.

Perform the following steps:

1. Identify the instance of WebSphere Application Server running the Dynamic Workload Console where this workstation normally connects to (if it connects to more than one, perform the procedure for all of them)
2. On that instance, edit the WebSphere Application Server configuration file "server.xml". The default location is

   ```
   JazzSM_profile_dir/config/cells/JazzSMNode01Cell/n
   odes/JazzSMNode01/servers/server1/server.xml
   ```

   where, the default value of *JazzSM_profile_dir* is:

   On Windows operating systems
   `C:\Program Files\IBM\JazzSM\profile`

   On UNIX operating systems
   `/opt/IBM/JazzSM/profile`
3. Increase the value of the persistentTimeout of the HTTPInboundChannel related to the WCInboundAdminSecure chain section of the file. The default value is *30*, but for the given example (Pentium IV, CPU 1.8 GHz) a suggested value to set is *120*. An example using the relevant parts of a modified server.xml is as follows:
   a. Identify the WCInboundAdminSecure chain by looking in the chains section:

   ```
   <chains
    xmi:id="Chain_1226491023533"
    name="WCInboundAdminSecure"
    enable="true"
    transportChannels="TCPInboundChannel_1226491023530
                       SSLInboundChannel_1226491023530
                       HTTPInboundChannel_1226491023531
                       WebContainerInboundChannel_1226491023531"/>
   ```

   Note the value of the HTTPInboundChannel.

   b. Use the value of the HTTPInboundChannel to locate its entry:

   ```
   :<transportChannels
    xmi:type="channelservice.channels:HTTPInboundChannel"
    xmi:id="HTTPInboundChannel_1226491023531"
    name="HTTP_3"
    discriminationWeight="10"
    maximumPersistentRequests="100"
    keepAlive="true"
    readTimeout="60"
    writeTimeout="60"
    persistentTimeout="120"
    enableLogging="false"/>
   ```

Modify persistentTimeout as has already been done here.

4. Stop the instance of WebSphere Application Server using the **stopWas** command.
5. If a Tivoli Workload Scheduler component is also running under the same instance of the WebSphere Application Server, you need take no further action, as appservman will automatically restart the application server. Otherwise, use the **startWas** command.
6. Test the modified value to see if it has resolved the problem. If not, repeat the operation with a larger value, until the problem is resolved.

Troubleshooting user access problems

- "Wrong user logged in when using multiple accesses from the same system"
- "Unexpected user login request after having configured to use Single Sign-On"
- "Authentication problem: the administrative user cannot see the portfolio" on page 173
- "Single Sign-On authentication doesn't work anymore from Dynamic Workload Console with master version 8.5.1 and master upgraded to version 8.6.0." on page 173
- "Authentication problem when opening the Workload Designer" on page 174

Wrong user logged in when using multiple accesses from the same system

You try to access the Dynamic Workload Console as *user2* using Firefox or Internet Explorer 7, where a connection as *user1* is already active in the same browser. In the case of Firefox the problem occurs if *user1* is active in *any* other Firefox window or tab. In Internet Explorer 7 the problem only occurs if the other user is active in a different tab of the same browser instance. But in both cases the result is the same: the browser logs you in to the Dynamic Workload Console as *user1* instead of *user2*.

Cause and solution:

This is a browser limitation. If you have an active connection through Internet Explorer 7 to the Dynamic Workload Console, and you want to open another session on the same system, you need only to open a different browser window. If the active connection is on Firefox, however, you must use a different browser. For a list of supported browsers, see the Dynamic Workload Console System Requirements Document at http://www-01.ibm.com/support/docview.wss?rs=672&uid=swg27041008.

Unexpected user login request after having configured to use Single Sign-On

It might happen that, after running successfully all the steps required to configure the Single Sign-On between the Dynamic Workload Console and a Tivoli Workload Scheduler engine, when you try to test the connection or run a task on that engine, you are unexpectedly prompted to enter your user credentials to connect. This behavior means that the Single Sign-On method is not working properly on that engine and you receive the following exception:

Cause and solution:

Make sure that the *application_server*/profiles/*profile_name*/config/cells/*cell_name*/security.xml files of both the Dynamic Workload Console and the Tivoli Workload Scheduler engine have identical values assigned to the *realm* field of the *security:LDAPUserRegistry* section. This setting belongs to the WebSphere Application Server profile configuration.

For example, even though you ran all the required steps to configure the Single Sign-On, it might still not work if you set `realm="myHost.myDomain:389"` on the Dynamic Workload Console and `realm="myHost:389"` on the Tivoli Workload Scheduler engine. To make it work, you must enter: `realm="myLDAPHost.myDomain:389"`.

After setting the correct string, click **Apply**, save the configuration and restart the Dynamic Workload Console and WebSphere Application Server.

Single Sign-On authentication doesn't work anymore from Dynamic Workload Console with master version 8.5.1 and master upgraded to version 8.6.0.

You have a Single Sign-On configuration between the Dynamic Workload Console version 8.6.0 or fix pack 1 and a Tivoli Workload Scheduler engine earlier version with federated LDAP repository name: ou=svt,dc=test,dc=it. After the Tivoli Workload Scheduler upgrade to version 8.6.0, when you try to test the connection or run a task on that engine from the Dynamic Workload Console, you have the following message:

```
[3/27/12 12:28:54:499 CEST] 00000009 ContextManage 3
Setting recSavedSubject:Subject:
Principal: nc125088.romelab.it.ibm.com:389/fcarteri1
Public Credential: com.ibm.ws.security.auth.WSCredentialImpl@64aa64aa
Private Credential: com.ibm.ws.security.token.SingleSignonTokenImpl@1de21de2
Private Credential: com.ibm.ws.security.token.AuthenticationTokenImpl@46694669
Private Credential: com.ibm.ws.security.token.AuthorizationTokenImpl@17c917c9

[3/27/12 12:28:54:499 CEST] 00000009 ContextManage < setSavedSubjects Exit
[3/27/12 12:28:54:453 CEST] 0000000b ContextManage < runAs(System)
-> Exception occurred. Exit

com.ibm.websphere.wim.exception.InvalidUniqueNameException:
CWWIM0515E The 'CN=dcore,OU=SVT,DC=test,DC=it' entity is not in
the scope of the 'defined' realm.
```

Cause and solution:

The upgrade process changes the security configuration with a federated repository named o=twaLDAP instead of the old value. This causes that SSO authentication doesn't work from the Dynamic Workload Console to the engine. To solve the problem, see the Technote: http://www-01.ibm.com/support/docview.wss?uid=swg21592036.

Authentication problem: the administrative user cannot see the portfolio

You log in to the Dynamic Workload Console using the administrative user but neither the Dynamic Workload Console entries, nor the Dashboard Application Services Hub security entries are displayed in the navigation tree.

Cause and solution:

Probably, during manual configuration of the authentication mechanism to access the Dynamic Workload Console, the old primary admin ID (`twaPAM`) entry was deleted from the repository before all the configuration steps had been completed.

Perform the following procedure to solve the authentication problem:

1. Assign the following roles to a user in the repository:
   - ISC Admin
   - Admin security manager
2. Log into the Dynamic Workload Console using this user and assign the following roles to the primary administrative user (the new administrative user):
   - Iscadmins
   - TDWBAdministrator
   - TWSWEBUIAdministrator
   - chartAdministrator
3. Use the new administrative user to revoke *ISC Admin* and *Admin security manager* permissions from the user chosen in 1 or, optionally, to delete the user.

Authentication problem when opening the Workload Designer

You try to open theWorkload Designer but the action fails and you receive a message saying that the engine credentials are wrong, even though you entered the correct user name and password. This happens in a configuration with the Dynamic Workload Console connected to Tivoli Workload Scheduler for z/OS connector on z/OS WebSphere Application Server.

The problem is due to the definition of the engine connection that contain the engine IP address instead of the hostname.

To solve the problem, open the Engine Connection Properties panel and replace the IP address with the hostname in the Connection Data section.

Troubleshooting problems with reports

- "The output of a report run on Job Statistics View shows -1 in the Average CPU Time and Average Duration fields" on page 175
- "The validate command running on a custom SQL query returns the error message AWSWUI0331E" on page 175
- "The output of report tasks is not displayed in a browser with a toolbar installed" on page 175
- "WSWUI0331E error when running reports on an Oracle database" on page 176
- "CSV report looks corrupted on Microsoft Excel not supporting UTF8" on page 176
- "Insufficient space when running production details reports" on page 176
- "After Tivoli Workload Scheduler upgrades from version 8.3 to version 8.5 some fields in the output of reports show default values (-1, 0, unknown, regular)" on page 177
- "Report error: the specified run period exceeds the historical data time frame" on page 177

The output of a report run on Job Statistics View shows -1 in the Average CPU Time and Average Duration fields

You run a report accessing the Job Statistics Database View, such as Job Run Statistics or a Custom SQL report, and the output shows the value -1 in Average CPU Time and Average Duration fields.

Cause and solution:

The historical report, regardless of what kind of report you run (for Jobs, Workstations, or Custom SQL), reads in the database the information about the previous production plan run. If some fields in a database view are empty, the value returned in the report output is -1. This means that if you run **JNextPlan** for the first time, and then you run for example the Job Run Statistics report, the value of Average CPU Time and Average Duration fields is -1.

Run **JNextPlan** again, or wait for the *final* job stream to run, to populate the database views and get values different from -1.

The validate command running on a custom SQL query returns the error message AWSWUI0331E

You are creating a Custom SQL report, and you run the **Validate** command to check your query. The validate fails and the following error message is returned:

```
AWSWUI0331E The SQL query could not be validated. The database internal message is:
[ibm][db2][jcc][10103][10941] Method executeQuery cannot be used for update.
```

Cause and solution:

The validate failure is caused by a syntax error in the query statement, for example, a typing error, such as:

```
sele Workstation_name,Job_name,Job_start_time from MDL.JOB_HISTORY_V
 where Workstation_name like 'H%'
```

In this query, *sele* is written in place of *select*.

Verify the SQL query is correct and, optionally, try to run the same query from the DB2 command line to get additional details.

The output of report tasks is not displayed in a browser with a toolbar installed

You tested that the connection to the database set in the engine connection works properly but, after you run a report task, no window opens in your browser to display the task results. You have a third-party toolbar installed on your browser.

Cause and solution:

A third-party toolbar (such as Yahoo! or Google or similar) installed on top of the browser might conflict with the correct operation of the Dynamic Workload Console reporting feature. To make the reporting feature work correctly you must uninstall the toolbar and then rerun the report task.

WSWUI0331E error when running reports on an Oracle database

You try to run a report on an engine connection where an Oracle database has been referenced. The report task fails and the following error is displayed:

```
WSWUI0331E SQL validate failure.The database internal message is:ORA-00942:
          table or view does not exist
```

If you try to run an SQL query statement in the Oracle database on the same table or view using the userid specified for the database connection in the engine connection properties, the query runs successfully.

Cause and solution:

On Oracle databases only, you must run these steps, as Oracle database administrator, to allow the database user specified in the engine connection properties to run reports from the Dynamic Workload Console:

1. Assign to the database user the "CREATE TABLE" Oracle System privilege.
2. Run the following script:

   On Windows
   `TWA_home\TWS\dbtools\oracle\script\dbgrant.bat`

   On UNIX:
   `TWA_home/dbtools/oracle/script/dbgrant.sh`

CSV report looks corrupted on Microsoft Excel not supporting UTF8

You run a report asking to save the result in a CSV file. When you open the CSV file using Microsoft Excel, the content of the file looks corrupted.

Cause and solution:

To bypass this problem, make sure that the version of Microsoft Excel you are using supports the UTF8 character set. If it does not, install a more recent version that supports UTF8. Then, follow these steps to correctly open CSV reports from Microsoft Excel:

1. Open Microsoft Excel.
2. In the **Data** menu entry, select **Import External Data** and then **Import Data**.
3. Select the CSV file saved and click **Open**.
4. In the field File Origin, select **UTF8**.

Insufficient space when running production details reports

When running production details reports the temporary directory on the Tivoli Workload Scheduler engine where the reports run, could be full.

Cause and solution:

You need to free some space in the temporary directory on the Tivoli Workload Scheduler engine before continuing to work on that engine.

After Tivoli Workload Scheduler upgrades from version 8.3 to version 8.5 some fields in the output of reports show default values (-1, 0, unknown, regular)

After migrating Tivoli Workload Scheduler from version 8.3 to version 8.5, the output on the Dynamic Workload Console of reports run on old migrated jobs show default values for the new fields introduced since version 8.3.

Cause and solution:

This is not a problem or a limitation but the result of migrating data from old tables to new tables containing newly created fields. After migration, it is necessary to assign a value to the new fields introduced since version 8.3 for job runs that occurred before migrating. The values assigned by default to these new fields are:

For job run statistic reports:

Table 15. Default settings for new job run statistic reports

Value	Field
0	Number of "Long Duration" job runs
0	Number of "Suppressed" job runs
0	Number of "Started Late" job runs
0	Number of "Ended late" job runs
0	Total Reruns
-1	Average CPU Time
-1	Average Duration

For job run history reports:

Table 16. Default settings for new job run history reports

Value	Field
unknown	Workstation Name (Job Stream)
-1	Started Late (delay hh:mm)
-1	Ended Late (delay hh:mm)
-1	Estimated Duration (hh:mm)
No	Long Duration
Regular	Run Type
-1	Iteration Number
0	Return Code
0	Job Number
unknown	Login

Report error: the specified run period exceeds the historical data time frame

You define a report specifying a valid date range as execution period in the filter criteria. When you run the report, you receive the following warning message:

AWSUI2003I`The specified run period exceeds the historical data time frame. The database contains historical data from....`

Cause and solution:

This problem occurs if different time zones are used when creating the report and when running it. To solve the problem, edit the report task, change the time zone making it equal to the time zone currently specified in the user preferences and run the report again.

Troubleshooting problems with browsers

- “Default tasks are not converted into the language set in the browser”
- “"Access Error" received when launching a task from the browser bookmark”
- “If you close the browser window, processing threads continue in the background” on page 179
- “Unresponsive script warning with Firefox browser” on page 179
- “Plan View panel seems to freeze with Internet Explorer version 7” on page 179
- “Workload Designer does not show on foreground with Firefox browser” on page 180
- “Some panels in Dynamic Workload Console might not be displayed correctly in Internet Explorer, version 8 and 9” on page 180
- “Web page error with Internet Explorer, version 9” on page 181
- “Dynamic Workload Console problems with Internet Explorer developer tools” on page 181
- “Some Simplified Chinese characters are missing or corrupted when using Google Chrome or Apple Safari browser” on page 181

Default tasks are not converted into the language set in the browser

An existing user logs in to the Dynamic Workload Console using a browser where the language set is different from the language that was set in the browser the first time he logged in. In the Manage Tasks window, the default tasks are not translated into the new language.

Cause and solution:

The default tasks are created, using the current language set in the browser, when the new user logs into the Dynamic Workload Console for the first time. To have the default tasks translated into a different language, the WebSphere Application Server administrator must create a new Dynamic Workload Console user, and use that to login to the Dynamic Workload Console for the first time using a browser configured with the requested language. By doing this the default tasks are created using the requested language.

"Access Error" received when launching a task from the browser bookmark

A Dynamic Workload Console task has been saved in the list of bookmarks of the browser. You try to launch the task using the bookmark but you receive the following error message:

"User does not have access to view this page, use the browser back button to return to previous page."

Cause and solution:

You do not have the necessary role required to run the task. To run a task you must have a role that allows you to access the Dynamic Workload Console panels that are relevant to the type of task you need.

For more information about setting roles to work with the Dynamic Workload Console, see the Administration Guide, under the section about Configuring new users to access Dynamic Workload Console

If you close the browser window, processing threads continue in the background

You perform an action or make a selection and immediately close the browser window. You expect that processing terminated but the messages stored in the `SystemOut.log` file show that processing continued in the background.

Cause and solution:

This is normal behavior for any WEB application, when the client browser is closed no notification is delivered to the server according to the HTTP protocol specifications. This is the reason why the last triggered thread continues to process even after the browser window was closed. You do not need to run any action, just allow the thread to end.

Unresponsive script warning with Firefox browser

When opening the Workload Designer with Firefox, the following warning message might appear:

```
Warning: Unresponsive script
A script on this page may be busy, or it may have stopped responding.
You can stop the script now, or you can continue to see if the script will complete.
```

Cause and solution:

This is caused by a Firefox timeout. If prompted with this warning message, select the **Continue** option.

This behavior of Firefox is ruled by its `dom.max_script_run_time` preference, which determines the timeout that the browser must wait for before issuing the warning. The default value is 10 seconds, and might be changed to another value according to your needs.

To change this value, perform the following steps:

1. Type `about:config` in the address field of the browser.
2. Scroll down to the preference, select it, change the value, and click **OK**.

Plan View panel seems to freeze with Internet Explorer version 7

When using Internet Explorer version 7, some actions performed in sequence might cause the **Plan View** browser window to freeze and stay frozen for about 5 minutes. After this timeframe the browser window resumes.

Cause and solution:

Action sequences that might cause this problem typically include opening multiple **Plan View** panels at the same time and refreshing the **Plan View** panels that were already open.

To avoid or limit this behavior add the Dynamic Workload Console website to the **Local intranet** security zone of Internet Explorer 7, with its default security level.

Blank page displayed (in High availability disaster recovery configuration)

You are in a high availability disaster recovery (HADR) configuration and the Dynamic Workload Console displays blank panels when trying to retrieve information from DB2.

Cause and solution:

When DB2 primary node stops, every Dynamic Workload Console request waits for a manual switch to a standby node.

If you have a HADR DB2 configuration related to your Tivoli Workload Scheduler engine, and you get an empty or blocked panel in the Dynamic Workload Console, verify that your primary node is up and running.

Workload Designer does not show on foreground with Firefox browser

With Firefox, if you open the Workload Designer from a graphical view (with the `Open Job definition` or the `Open Job stream definition` commands), and the Workload Designer window is already open, this window might not be moved to the foreground.

Solution:

To fix this problem, change the Firefox settings as follows:

1. On the Firefox action bar select **Tools**, then **Options**, then **Content**, and finally **Advanced**
2. Enable the `Raise or lower windows` option

Some panels in Dynamic Workload Console might not be displayed correctly in Internet Explorer, version 8 and 9

When using Internet Explorer version 8 or 9, some panels in Dynamic Workload Console, might not display as expected, for example

- The Graphical View or some Dashboard graphics, might not be displayed correctly.
- When duplicating a Monitor task, the entire Dashboard Application Services Hub navigation toolbar appears duplicated.

Cause and solution:

This problem can be due to incorrect settings in Internet Explorer.

To avoid or limit this behavior, use the following workarounds:

- Add the Dynamic Workload Console web site to the **Local intranet** security zone of Internet Explorer, with its default security level.

- Add the hostname of the Dynamic Workload Console to the web sites used in Compatibility View by Internet Explorer. To do it, from Internet Explorer toolbar, click **Tools > Compatibility View Settings** and add the Dynamic Workload Console hostname to the list.
- Turn off Internet Explorer Enhanced Security mode as described in the following documentation: *IBM Tivoli Security Information and Event Manager*, section about Disabling Enhanced Security Configuration.. In fact, Dashboard Application Services Hub does not support Internet Explorer with Enhanced Security mode active.

Web page error with Internet Explorer, version 9

When using Internet Explorer version 9, some panels in Dynamic Workload Console, might not be displayed correctly and the page issues the following web page error: "`object Error`".

Cause and solution:

To solve this problem, clear the browser cache.

Dynamic Workload Console problems with Internet Explorer developer tools

When using Internet Explorer version 8 or 9, the Dashboard might not display correctly when working with Internet Explorer developer tools open. Some sections of the Dashboard might remain loading without completing the update.

Cause and solution:

This problem is due to a conflict between how events are managed respectively by Internet Explorer developer tools and the Dashboard.

To avoid or limit this behavior, close the developer tools and try again the operation.

Some Simplified Chinese characters are missing or corrupted when using Google Chrome or Apple Safari browser

When you access the Self-Service Catalog or Self-Service Dashboard from a mobile device that uses the Google Chrome or Apple iPad Safari browser, if you use the GB18030 Simplified Chinese character set, the characters that you type might be missing or corrupted.

Cause:

Google Chrome and Apple iPad Safari do not fully support GB18030 Simplified Chinese.

Solution:

Ensure that you are using a browser that supports the GB18030 Simplified Chinese character set.

Troubleshooting problems with graphical views

- “Language-specific characters are not correctly displayed in graphical views”
- “Plan View limit: maximum five users using the same engine”
- “Graphical view and dashboard stop responding on shared WebSphere Application Server on Solaris” on page 183
- “Job stream no longer displayed in job stream view”
- “AWSITA122E or AWKRAA209E error while working with jobs in the Workload Designer” on page 183

Language-specific characters are not correctly displayed in graphical views

When working with the graphical views some language specific characters might not be displayed correctly.

Cause and solution:

This might occur because the necessary language files have not been installed on the computer on which the Dynamic Workload Console is running. To solve the problem, install the operating system language files on the system hosting the Dynamic Workload Console.

Plan View limit: maximum five users using the same engine

If you try to open the **Plan View** when five users are already concurrently using it, with the same engine, your request is rejected with the following error message: `AWSJCO136E No more than 5 users are allowed to perform this operation at the same time. The maximum number of concurrent requests has been reached: please try again later.`

Cause and solution:

The maximum number of users that can use the **Plan View** connected to the same engine is five.

If needed, you can modify this limit by editing the `com.ibm.tws.conn.plan.view.maxusers` property in the `TWSConfig.properties` file.

Job stream no longer displayed in job stream view

Working with an empty job stream in the job stream view, after you have clicked the **Hide/Show dependencies** button, the job stream is no longer displayed.

This only happens when working with job streams that do not contain any job.

Cause and solution:

The problem is due to IBM ILOG limitation that prevents a correct job stream visualization.

Reload the job stream to solve the problem and have a correct view.

Graphical view and dashboard stop responding on shared WebSphere Application Server on Solaris

On Solaris sparc systems, where the Dynamic Workload Console and the Master Domain Manager share the same WebSphere Application Server when you open some panels, like the graphical view or the dashboard, the console might stop responding and you might receive an error message saying that the server is unreachable. In the log files you could find an OutOfMemory exception (java.lang.OutOfMemoryError: PermGen space).

Cause and solution:

The problem is caused by insufficient MaxPermSize. To solve the problem, increase the **MaxPermSize** to 512 MB in `server.xml` file.

AWSITA122E or AWKRAA209E error while working with jobs in the Workload Designer

While you are working with a job in the Workload Designer, you might receive one of the following errors:

`AWSITA122E - A Java exception occurred while calling the command ....`

Cause and solution:

An unexpected error occurred while running a Java method.

In case it happens, check the following log files:

1. Check the `JobManager_message.log` file.
2. Check the latest `/opt/ibm/TWA/TWS/JavaExt/eclipse/configuration/*.log` file

`AWKRAA209E - The job with advanced options with ID "`*`application_type`*`" was not found.`

Cause and solution:

The job with advanced options cannot be found.

In case it happens, perform the following steps:

1. Ensure that the job plug-in is present in the `/opt/IBM/TWA/TWS/JavaExt/eclipse/plugins` directory.
2. Ensure that the job plug-in is listed in the `/opt/IBM/TWA/TWS/JavaExt/eclipse/configuration/config.ini` file
3. Check the latest `/opt/IBM/TWA/TWS/JavaExt/eclipse/configuration/*.lma` log file.

Troubleshooting problems with database

- "Import preferences fails" on page 184
- "Communication failure with DB2 when working with the Dynamic Workload Console on a Red Hat Enterprise Linux (RHEL) Version 5.6 system" on page 184

Communication failure with DB2 when working with the Dynamic Workload Console on a Red Hat Enterprise Linux (RHEL) Version 5.6 system

When trying to access the user preferences stored on a DB2 repository from a Dynamic Workload Console on a Red Hat Enterprise Linux Version 5.6, you might receive the following message: "Unable to access to preferences repository".

Cause and solution:

There are some compatibility issues between Dynamic Workload Console DB2 driver and RHEL 5.6 that in some cases prevent the Dynamic Workload Console from accessing DB2 repository properly.

To solve this problem, upgrade the RHEL to Red Hat Enterprise Linux Version 6.

Import preferences fails

When trying to import your settings repository from the XML file by specifying the **Cancel and recreate** option, the import operation fails and you receive the following message: *AWSUI0924E Preferences import operation failed: Unable to create database*. Moreover, the following error is logged in the `SystemErr.log` file: `DB2 SQL error: SQLCODE: -601, SQLSTATE: 42710, SQLERRMC: TDWC.TDWC_PREFERENCEABLE;TABLE`.

Cause and solution:

This might occur because the database user with administrative authority specified to import the settings does not have the privileges required to drop the existing Dynamic Workload Console tables that were created with Dynamic Workload Console V8.6.0.0.

To solve this problem, provide the specified user with `CONTROL` privilege on all Dynamic Workload Console tables.

For example,

```
db2 "GRANT CONTROL ON TABLE TDWC.TDWC_CONFIGURATIONPROPERTY TO USER myuser"
 db2 "GRANT CONTROL ON TABLE TDWC.TDWC_CREDENTIAL TO USER myuser"
 db2 "GRANT CONTROL ON TABLE TDWC.TDWC_ENGINECONNECTION TO USER myuser"
 db2 "GRANT CONTROL ON TABLE TDWC.TDWC_MEQUERYTASK TO USER myuser"
 db2 "GRANT CONTROL ON TABLE TDWC.TDWC_PREFERENCEABLE TO USER myuser"
 db2 "GRANT CONTROL ON TABLE TDWC.TDWC_QUERYTASK TO USER myuser"
 db2 "GRANT CONTROL ON TABLE TDWC.TDWC_REPORTTASK TO USER myuser"
```

Troubleshooting configuration problems

The following problems could occur during the dynamic workload Console configuration.

IHS load balancing configuration for Dynamic Workload Console cluster fails

Problem:

When trying to perform the IHS load balancing configuration for Dynamic Workload Console cluster, the configuration fails with the `PLGC0028E An exception` occurred while reading the deployed applications for the specified server. JazzSMNode01Cell.JazzSMNode01.server1. error:

```
IBM WebSphere Application Server, Release 8.5
WebSphere Plugin Configuration Generator
Copyright IBM Corp., 1997-2012
PLGC0061I: Debug log file = /opt/IBM/JazzSM/profile/logs/plugin-cfg.log
PLGC0013I: The plug-in is generating a server plug-in configuration file for all
of the servers in the cell. JazzSMNode01Cell.
PLGC0041W: The plug-in is unable to load the com.ibm.wkplc.generator.LotusCfgHelper
helper class.
java.lang.IncompatibleClassChangeError: org.objectweb.asm.ClassVisitor
        at java.lang.ClassLoader.defineClassImpl(Native Method)
        at java.lang.ClassLoader.defineClass(ClassLoader.java:286)
        at java.security.SecureClassLoader.defineClass(SecureClassLoader.java:154)
        at java.net.URLClassLoader.defineClass(URLClassLoader.java:711)
        at java.net.URLClassLoader.access$400(URLClassLoader.java:92)
        at java.net.URLClassLoader$ClassFinder.run(URLClassLoader.java:1159)
        at java.security.AccessController.doPrivileged(AccessController.java:314)
        at java.net.URLClassLoader.findClass(URLClassLoader.java:594)
        at com.ibm.ws.bootstrap.ExtClassLoader.findClass(ExtClassLoader.java:204)
        at java.lang.ClassLoader.loadClassHelper(ClassLoader.java:713)
        at java.lang.ClassLoader.loadClass(ClassLoader.java:690)
        at com.ibm.ws.bootstrap.ExtClassLoader.loadClass(ExtClassLoader.java:119)
        at java.lang.ClassLoader.loadClass(ClassLoader.java:660)
        at java.lang.ClassLoader.defineClassImpl(Native Method)
        at java.lang.ClassLoader.defineClass(ClassLoader.java:286)
        at java.security.SecureClassLoader.defineClass(SecureClassLoader.java:154)
        at java.net.URLClassLoader.defineClass(URLClassLoader.java:711)
        at java.net.URLClassLoader.access$400(URLClassLoader.java:92)
        at java.net.URLClassLoader$ClassFinder.run(URLClassLoader.java:1159)
        at java.security.AccessController.doPrivileged(AccessController.java:314)
        at java.net.URLClassLoader.findClass(URLClassLoader.java:594)
        at com.ibm.ws.bootstrap.ExtClassLoader.findClass(ExtClassLoader.java:204)
        at java.lang.ClassLoader.loadClassHelper(ClassLoader.java:713)
        at java.lang.ClassLoader.loadClass(ClassLoader.java:690)
        at com.ibm.ws.bootstrap.ExtClassLoader.loadClass(ExtClassLoader.java:119)
        at java.lang.ClassLoader.loadClass(ClassLoader.java:660)
        at java.lang.J9VMInternals.verifyImpl(Native Method)
        at java.lang.J9VMInternals.verify(J9VMInternals.java:85)
        at java.lang.J9VMInternals.initialize(J9VMInternals.java:162)
        at com.ibm.ws.amm.commonarchive.AnnotationsProcessorImpl.merge
(AnnotationsProcessorImpl.java:87)
        at com.ibm.ws.amm.commonarchive.AnnotationsProcessorImpl.merge
(AnnotationsProcessorImpl.java:66)
        at org.eclipse.jst.j2ee.commonarchivecore.internal.impl.
WARFileImpl.processAnnotations(WARFileImpl.java:923)
        at com.ibm.ws.webfragmerger.WebFragMergerImpl.merge
(WebFragMergerImpl.java:493)
        at org.eclipse.jst.j2ee.commonarchivecore.internal.impl.WARFileImpl.
mergeAnnotationsAndFragments(WARFileImpl.java:869)
        at org.eclipse.jst.j2ee.commonarchivecore.internal.impl.WARFileImpl.
getDeploymentDescriptor(WARFileImpl.java:648)
        at org.eclipse.jst.j2ee.commonarchivecore.internal.impl.WARFileImpl.
getDeploymentDescriptor(WARFileImpl.java:367)
        at org.eclipse.jst.j2ee.commonarchivecore.internal.impl.WARFileImpl.
getStandardDeploymentDescriptor(WARFileImpl.java:1498)
        at org.eclipse.jst.j2ee.commonarchivecore.internal.impl.EARFileImpl.
getDeploymentDescriptor(EARFileImpl.java:817)
        at org.eclipse.jst.j2ee.commonarchivecore.internal.impl.EARFileImpl.
getDeploymentDescriptor(EARFileImpl.java:789)
        at com.ibm.websphere.plugincfg.generator.ConfigurationParser.
getDeployedModules(ConfigurationParser.java:2503)
        at com.ibm.websphere.plugincfg.generator.ConfigurationParser.
setClusterDeployedModuleInfo(ConfigurationParser.java:2192)
        at com.ibm.websphere.plugincfg.generator.ConfigurationParser.
    <init>ConfigurationParser.java:261)at com.ibm.websphere.plugincfg.
```

```
generator.PluginConfigGenerator.generate9
    (PluginConfigGenerator.java:798)      at com.ibm.websphere.plugincfg.
generator.PluginConfigGenerator.generate
    (PluginConfigGenerator.java:762) at com.ibm.websphere.plugincfg.
generator.PluginConfigGenerator.main
    (PluginConfigGenerator.java:1357)  at sun.reflect.
NativeMethodAccessorImpl.invoke0(Native Method)
    at sun.reflect.NativeMethodAccessorImpl.invoke
(NativeMethodAccessorImpl.java:88)
    at sun.reflect.DelegatingMethodAccessorImpl.invoke
(DelegatingMethodAccessorImpl.java:55)
    at java.lang.reflect.Method.invoke(Method.java:613)
    at com.ibm.ws.bootstrap.WSLauncher.main(WSLauncher.java:277)
 PLGC0028E: An exception occurred while reading the deployed applications for
the specified server.
 JazzSMNode01Cell.JazzSMNode01.server1.
 PLGC0005I: Plug-in configuration file =
/opt/IBM/JazzSM/profile/config/cells/plugin-cfg.xml
```

Cause and solution:

The WebSphere Application Server V8.5.0 that is a Dynamic Workload Console prerequisites has problems.

To solve this problem, install the WebSphere Application Server *8.5.0.1-WS-IFPM88913 8.5.1.20130513_1520* fix, as described in "WebSphere Application Server fix installation procedure."

WebSphere Application Server fix installation procedure

To install the WebSphere Application Server *8.5.0.1-WS-IFPM88913 8.5.1.20130513_1520* fix, perform the following steps:

1. Locate the <*eImage_dir*>/IFPM88913 directory, where <*eImage_dir*> is the directory where you downloaded the Tivoli Workload Scheduler or Dynamic Workload Console images.
2. Open the Installation Manager wizard.
3. Add an Installation Manager repository that contains the *8.5.0.1-WS-IFPM88913 8.5.1.20130513_1520* fix in network format, by running the following steps:
   a. Select **File** > **Preferences**. The Repositories page is displayed and shows available repositories, repository locations, and the connection status for the repositories.
   b. Click **Add Repository**. The Add Repository page is displayed.
   c. In the Add Repository page, click **Browse**, select the <*eImage_dir*>/IFPM88913/repository.config file and click **Open**.
   d. Click **OK**.
4. Install the WebSphere Application Server fix, by performing the following steps:
   a. In the Installation Manager wizard, click **Update**.
   b. In the Fixes panel, select the IBM WebSphere Application Server 8.5.0.1 offering and select the 8.5.0.1-WS-IFPM88913 8.5.1.20130513_1520 fix and click **Next**.
5. Leave the default fields values and click **Next**.
6. Click **Update**.

Troubleshooting other problems

- "The deletion of a workstation fails with the "AWSJOM179E error" on page 99

- “Data not updated after running actions against monitor tasks results” on page 188
- “"Session has become invalid" message received” on page 188
- “Actions running against scheduling objects return empty tables” on page 188
- “Default tasks are not converted into the language set in the browser” on page 178
- “"Access Error" received when launching a task from the browser bookmark” on page 178
- “The validate command running on a custom SQL query returns the error message AWSWUI0331E” on page 175
- “If you close the browser window, processing threads continue in the background” on page 179
- “The list of Available Groups is empty in the Enter Task Information window” on page 190
- “JVM failure when working with the Dynamic Workload Console on a Red Hat Enterprise Linux (RHEL) Version 5 system” on page 190
- “Communication failure with DB2 when working with the Dynamic Workload Console on a Red Hat Enterprise Linux (RHEL) Version 5.6 system” on page 184
- “Missing daylight saving notation in the time zone specification on Dynamic Workload Console 8.4 Fix Pack 1 and later” on page 191
- “A "java.net.SocketTimeoutException" received” on page 191
- “Blank page displayed (in High availability disaster recovery configuration)” on page 180
- “Some panels in Dynamic Workload Console might not be displayed correctly” on page 191
- “Extraneous exception logged in SystemOut” on page 192
- “Filtering task results might not work as expected” on page 193
- “Sorting task results might not work as expected” on page 194
- “Upgrading Dynamic Workload Console by selecting the option Update All does not work” on page 194
- “Monitoring job streams on multiple engines does not respect the scheduled time range on z/OS” on page 195

The deletion of a workstation fails with the "AWSJOM179E error

You want to delete a workstation either using **Composer** or the Dynamic Workload Console and the following error occurs:

```
AWSJOM179E An error occurred deleting definition of the workstation {0}.
The workload broker server is currently unreachable.
```

Cause and solution:

This problem occurs if you removed a dynamic domain manager without following the procedure that describes how to uninstall a dynamic domain manager in the *Tivoli Workload Scheduler: Planning and Installation Guide*.

To remove workstations connected to the dynamic domain manager, perform the following steps:

1. Verify that the dynamic domain manager was deleted, not just unavailable, otherwise when the dynamic domain manager restarts, you must wait until the workstations register again on the master domain manager before using them.
2. Delete the workstations using the following command:

   ```
   composer del ws <workstation_name>;force
   ```

Data not updated after running actions against monitor tasks results

After you run an action on a list of objects returned from running a monitor task, the list is not updated.

Cause and solution:

The scheduling objects lists are not automatically updated after running actions. Click the **Refresh** button to update the list of objects.

"Session has become invalid" message received

You try to use the Dynamic Workload Console user interface, your working session closes, and you get the following warning:

```
Session has become invalid
Your session has become invalid. This is due to a session timeout, an administrator
has logged you out, or another user has invalidated your session by logging on with
the same User ID.
```

Cause and solution:

Check which reason among those listed in the warning has occurred, solve the issue, and then log in again to continue your working session.

If the session expired because either the HTTP session or the Lightweight Third Party Authentication (LTPA) session timeout was exceeded, you might decide to customize the timeout settings to values that are appropriate for your environment.

For instructions on how to do this, see the topic on session timeout settings in the *Performance* chapter of the *Tivoli Workload Scheduler: Administration Guide*.

Actions running against scheduling objects return empty tables

After running a monitor task, you run an action against the scheduling objects listed in the result table, but you get, as a result of the action, an empty table or window, and no error message is displayed. This occurs regardless of which action you try to run against the listed scheduling objects.

Cause and solution:

Check if the connection with the Tivoli Workload Scheduler engine where you run the task failed by performing the following steps:

1. In the **Configuration** window select Scheduler Connections.
2. Select in the list the engine used to run the browse task and click **Test Connection**.

Note: The user ID you use to connect to the Dynamic Workload Console must belong either to the **TWSWEBUIAdministrator** or to the **TWSWEBUIConfigurator** groups to test the engine connection.

If the connection with the Tivoli Workload Scheduler engine is not active, ask the Tivoli Workload Scheduler administrator to restart the connection as described in the *IBM Tivoli Workload Scheduler Reference Guide*, and then rerun the action.

If the connection with the Tivoli Workload Scheduler engine is active, then, on that engine, check that:

- The Tivoli Workload Scheduler user running the command to list scheduling objects is authorized to do so. For more information about how to set user authorization, refer to the *IBM Tivoli Workload Scheduler Reference Guide*.
- The global property *enListSecChk* is set to enable on the Tivoli Workload Scheduler master domain manager. For more information about how to set global properties, refer to the *IBM Tivoli Workload Scheduler Planning and Installation Guide*.

Then rerun the action.

Default tasks are not converted into the language set in the browser

An existing user logs in to the Dynamic Workload Console using a browser where the language set is different from the language that was set in the browser the first time he logged in. In the Manage Tasks window, the default tasks are not translated into the new language.

Cause and solution:

The default tasks are created, using the current language set in the browser, when the new user logs into the Dynamic Workload Console for the first time. To have the default tasks translated into a different language, the WebSphere Application Server administrator must create a new Dynamic Workload Console user, and use that to login to the Dynamic Workload Console for the first time using a browser configured with the requested language. By doing this the default tasks are created using the requested language.

"Access Error" received when launching a task from the browser bookmark

A Dynamic Workload Console task has been saved in the list of bookmarks of the browser. You try to launch the task using the bookmark but you receive the following error message:

"User does not have access to view this page, use the browser back button to return to previous page."

Cause and solution:

You do not have the necessary role required to run the task. To run a task you must have a role that allows you to access the Dynamic Workload Console panels that are relevant to the type of task you need.

For more information about setting roles to work with the Dynamic Workload Console, see the Administration Guide, under the section about Configuring new users to access Dynamic Workload Console

If you close the browser window, processing threads continue in the background

You perform an action or make a selection and immediately close the browser window. You expect that processing terminated but the messages stored in the `SystemOut.log` file show that processing continued in the background.

Cause and solution:

This is normal behavior for any WEB application, when the client browser is closed no notification is delivered to the server according to the HTTP protocol specifications. This is the reason why the last triggered thread continues to process even after the browser window was closed. You do not need to run any action, just allow the thread to end.

The list of Available Groups is empty in the Enter Task Information window

You are creating a task, and you notice that in the Enter Task Information the list of Available Groups is empty. You are using an LDAP user registry.

Cause and solution:

Log into the Integrated Solutions Console as administrator and check the advanced LDAP configuration settings are correct as follows:

1. In the Navigation tree click **Security**.
2. Click **Secure administration, applications, and infrastructure**.
3. Check that the **Available realm definitions** field is set to **Standalone LDAP registry**.
4. Click **Configure**.
5. Click **Advanced Lightweight Directory Access Protocol (LDAP) user registry settings** under **Additional Properties**.
6. Verify that the settings for groups and users are correct for your configuration.

For more information about how to set these values, refer to: http://publib.boulder.ibm.com/infocenter/wasinfo/v6r0/topic/com.ibm.websphere.express.doc/info/exp/ae/usec_advldap.html

JVM failure when working with the Dynamic Workload Console on a Red Hat Enterprise Linux (RHEL) Version 5 system

When working with the Dynamic Workload Console on a Red Hat Enterprise Linux Version 5 system, a user might see the error "Failed to find VM - aborting"

Cause and solution:

Red Hat Enterprise Linux Version 5 has a new security feature named 'Security Enhanced Linux', or SELinux for short. A weaker version of SELinux was included in Red Hat Enterprise Linux Version 4, and was disabled by default. Red Hat Enterprise Linux Version 5 defaults SELinux to enabled. SELinux helps to keep the host secure from certain types of malicious attacks. However, the default settings have been known in many cases to prevent Java from running properly.

To fix this issue, you can choose one of the following options:

- Configure SELinux so that it knows that the Dynamic Workload Console Java related processes are acceptable to run.
- Change the mode of SELinux to *Permissive* by entering `setenforce 0` on the command line. SELinux will be fully enabled again the next time the system is rebooted or if `setenforce 1` is entered on the command line.

Missing daylight saving notation in the time zone specification on Dynamic Workload Console 8.4 Fix Pack 1 and later

When using Dynamic Workload Console 8.4, the time zone is displayed using the *Daylight Saving*, or *Summer* notation, for example:

```
Europe/Paris (Central European Summer Time, GMT+1:00)
```

Starting from Dynamic Workload Console 8.4 Fix Pack 1, the *Summer* notation is no longer displayed and the time zone is expressed as follows:

```
Europe/Paris (Central European Time, GMT+1:00)
```

Cause and solution:

This is just a change in the standard time zone notation and does not affect the time conversion mechanisms. You can ignore this difference.

A "java.net.SocketTimeoutException" received

See the following scenario: “A "java.net.SocketTimeoutException" received” on page 170.

Blank page displayed (in High availability disaster recovery configuration)

You are in a high availability disaster recovery (HADR) configuration and the Dynamic Workload Console displays blank panels when trying to retrieve information from DB2.

Cause and solution:

When DB2 primary node stops, every Dynamic Workload Console request waits for a manual switch to a standby node.

If you have a HADR DB2 configuration related to your Tivoli Workload Scheduler engine, and you get an empty or blocked panel in the Dynamic Workload Console, verify that your primary node is up and running.

Some panels in Dynamic Workload Console might not be displayed correctly

Some panels in Dynamic Workload Console might not be displayed correctly.

Cause and solution:

This is due to problems in enabling the Java Authorization Contract for Containers (JACC)-based authorization.

To resolve this problem, run the **propagatePolicyToJACCProvider{-appNames appNames}** command in WebSphere Application Server:

On Windows systems

```
"c:\Program Files\IBM\JazzSM\profile\bin\wsadmin.bat" -conntype SOAP
-username "wasadmin" -password ***** -c "$AdminTask
propagatePolicyToJACCProvider"
```

On UNIX systems

```
/opt/IBM/JazzSM/profile/bin/wsadmin.sh -conntype SOAP -username
wasadmin -password ***** -lang jython -c
"AdminTask.propagatePolicyToJACCProvider()"
```

where

conntype
Specifies the type of connection to use.

username
Specifies a user name to be used by the connector to connect to the server if security is enabled in the server.

password
Specify a password to be used by the connector to connect to the server, if security is enabled in the server

lang
Specifies the language of the script file, the command, or an interactive shell.

c
Specifies to run a single command.

For more information, see WebSphere Application Server documentation.

Exceptions might not be displayed in Language-specific in the Dynamic Workload Console

When working with the Dynamic Workload Console, some exception might not be displayed correctly in the specific Language.

Cause and solution:

This might occur because if the master domain manager is installed in English language, all the exception that the master domain manager returns, are in English. To solve the problem, you need to change the language of the machine where the engine is installed and restart master domain manager.

Extraneous exception logged in SystemOut

While working with the Dynamic Workload Console, the following exception message might be reported in the SystemOut.log file:

```
ConnException E   AWSJCO005E WebSphere Application Server
has given the following error:
CORBA NO_PERMISSION 0x0 No;
nested exception is:
 org.omg.CORBA.NO_PERMISSION:
>> SERVER (id=4773e3aa, host=axrsgpar0612.metlife.com) TRACE START:
>>    org.omg.CORBA.NO_PERMISSION: java.rmi.AccessException: ;
nested exception is:
 com.ibm.websphere.csi.CSIAccessException: SECJ0053E:
Authorization failed for
/UNAUTHENTICATED while invoking (Bean)ejb/com/ibm/tws/conn/engine
/ConnEngineHome getEngineInfo(com.ibm.tws.conn.util.Context):1 securityName:
```

```
/UNAUTHENTICATED;accessID: UNAUTHENTICATED is not granted any
of the required roles:
TWSAdmin   vmcid: 0x0  minor code: 0  completed: No
```

Cause and solution:

This exception message might be logged if you are using an engine for which the credentials are not stored. You can ignore the exception message. It is not an indication that the product is not functioning correctly.

Filtering task results might not work as expected

When you use the quick filtering feature to filter the list of results shown in Dynamic Workload Console tables, with engines version 9.1 or later, you must consider the following limitations:

Filtering on dates and duration

- You cannot filter by timezone and offset.
- You cannot filter using text strings in date columns.
- Even though the table of results shows dates in the following format: `mm/dd/yyyy`, the leading "0" is not considered when filtering. For example, `6/8` when filtering is considered as if it was `06/08`.
- Even though the table of results shows duration time in the following format: `hh:mm`, the leading "0" is not considered when filtering. For example, `06:08` when filtering is considered as if it was `6:08`. In durations like `00:01` the `00`part cannot be matched with the search string `00`, because all non significant digits are discarded. The proper way to search for that is with the string `0`.

Filtering not supported

Quick filtering feature is not supported on the following columns:

- Information
- Node type

Filtering on job types

To filter for the following job types you must use the specified text:

Shadow Distributed
In the filter field, enter: **`distributedShadowJob`**

Shadow z/OS
In the filter field, enter: **`zShadowJob`**

Remote Command
In the filter field, enter: **`remotecommand`**

Database
In the filter field, enter: **`database`**

Executable
In the filter field, enter: **`executable`**

File Transfer
In the filter field, enter: **`filetransfer`**

IBM i In the filter field, enter: **`ibmi`**

J2EE In the filter field, enter: **`j2ee`**

Java In the filter field, enter: **`java`**

z/OS In the filter field, enter: **`jcl`**

MS SQL
In the filter field, enter: `mssqljob`

Provisioning
In the filter field, enter: `provisioning`

Web Services
In the filter field, enter: `ws`

Access Method
In the filter field, enter: `xajob`

OSLC Automation
In the filter field, enter: `oslcautomation`

Cause and solution:

This is due to a mismatch between how data is stored in the database and how it is shown from the Dynamic Workload Console.

You must set your user preferences so that dates are shown in short format (`6/27/08 5:59`) and you must use the specified strings to filter for job types.

Sorting task results might not work as expected

When you use the sorting feature to sort the list of results shown in Dynamic Workload Console tables, with engines version 9.1 or later, you must consider the following limitations:

- Sorting is not supported on Information column.
- When sorting on Node type column of Monitor workstations tasks, the sorting might result not correct.

Cause:

This is due to a mismatch between how data is stored in the database and how it is shown from the Dynamic Workload Console.

Upgrading Dynamic Workload Console by selecting the option Update All does not work

When you upgrade the Dynamic Workload Console by selecting the option **Update all**, if WebSphere Application Server is running an error message is displayed, because WebSphere Application Server must be stopped to be upgraded.

If you stop WebSphere Application Server, an error message is displayed because to upgrade Dynamic Workload Console it is required that WebSphere Application Server is running.

Solution:

Upgrading Dynamic Workload Console and WebSphere Application Server must be performed as separate procedures.

Monitoring job streams on multiple engines does not respect the scheduled time range on z/OS

If you created a task to monitor job streams on multiple engines with Dynamic Workload Console V9.1 or earlier, the scheduled time range is not respected on z/OS engines.

Solution:

This problem was solved on Dynamic Workload Console V9.2. Create the task again by using this version of the console.

Chapter 12. Troubleshooting workload service assurance

Gives you troubleshooting information about workload service assurance by explaining how it works and how it exchanges information between the modules. In addition, it provides solutions to common problems.

This chapter provides information that is useful in identifying and resolving problems with the Workload Service Assurance feature. It includes the following sections:

- "Components involved in workload service assurance"
- "Exchange of information" on page 198
- "Common problems with workload service assurance" on page 198

Components involved in workload service assurance

Workload service assurance uses the following components to plan, monitor, and if necessary, intervene in the processing of jobs that are part of a critical network:

Planner

The planner component is triggered by the **JnextPlan** command. It includes a series of actions that result in the creation of the Symphony file on the master domain manager.

When workload service assurance is enabled, the planner calculates job streams and job networks, taking into consideration all "follows" dependencies in the new plan.

The planner then identifies all the jobs and job streams that are part of a critical network. These are jobs that are direct or indirect predecessors of a critical job. For each job, a critical start time is created and added to the Symphony file. It represents the latest time at which the job can start without putting the critical job deadline at risk. The plan information is then replicated in the database.

The Symphony file is subsequently distributed to all agents.

Plan monitor

The plan monitor component is introduced with the workload service assurance feature. It runs in the WebSphere Application Server on the master domain manager and is responsible for keeping track of the job streams and job network and for updating it when changes to the plan occur either because of the normal running of jobs or because of manual operations.

The plan monitor holds the information that is required to monitor the progress of the jobs involved in a critical network, for example critical start, planned start, estimated start, and risk level. It changes these values in response to changes in the plan, identified by the **batchman** process running on the master domain manager and communicated to the plan monitor using the server.msg file.

The information maintained by the plan monitor can be viewed on the Dynamic Workload Console in specialized views for critical jobs, allowing you easily to identify real and potential problems.

Agent processes (batchman and jobman)

Jobs in the critical network that are approaching the critical start time and have not started are promoted. The time at which the job is considered to be approaching its critical start time is determined by the global options setting `promotionOffset`.

The **batchman** process monitors the critical start time to determine if promotion is required and if so to schedule it at the highest job priority available in Tivoli Workload Scheduler. The **batchman** process also communicates with the **jobman** process, which is responsible for promoting the job at operating system level so that it receives more system resources when it starts. The operating system promotion is controlled by the local options settings jm promoted nice (UNIX) and jm promoted priority (Windows).

Exchange of information

Initially, the critical start time for jobs in the critical network is calculated by the planner and then recalculated, as required, by the plan monitor. Both of these components run on the master domain manager.

The critical start time is used by agents to determine when to promote a job. It is initially sent to the agent when the new `Symphony` file for the plan is distributed. Subsequent changes to critical start times are sent by the plan manager to agents using a Tivoli Workload Scheduler message. The agents update the local copy of the `Symphony` file.

The most common situations in which the plan monitor updates critical start times are:

- The Workload Designer functions on the Dynamic Workload Console or the **`conman`** command are used to modify jobs in the critical network. For example, predecessor jobs are added or cancelled.
- When **JnextPlan** is run to create the plan extension that includes the critical job, jobs in the original plan might be predecessors of the critical job and so be part of the critical network. In this case, critical start times are calculated by the plan monitor and sent in messages to the agents. This information is updated in both the local `Symphony` files and in the database where the plan data is replicated.

Common problems with workload service assurance

The following problems might occur when you are using Tivoli Workload Scheduler with workload service assurance enabled:

- "Critical start times not aligned"
- "Critical start times inconsistent" on page 199
- "Critical network timings change unexpectedly" on page 199
- "A high risk critical job has an empty hot list" on page 200

Critical start times not aligned

The values for critical start times in a critical network obtained from the appropriate conman commands on an agent are different from those displayed on the Tivoli Dynamic Workload Console.

Cause and solution:

Changes that affect the critical start times have been made to the plan since the Symphony file was sent to the agent. The changes are calculated on the master domain manager and sent to agents in messages. It is probable that the message has not reached the affected agent.

Check that the agent is active and linked to the master domain manager, either directly or by other domain managers.

Critical start times inconsistent

The values for critical start time in the chain of jobs in the critical network appears to be inconsistent. There are predecessor jobs that have critical start dates that are later than their successors.

Cause and solution:

This inconsistency occurs when critical start times are recalculated after some of the jobs in the critical network have completed. To optimize the calculation, new critical start times are only recalculated and updated for jobs that have not yet completed. The completed jobs retain the original critical start time. If a completed job is subsequently selected to be rerun, its critical start date will be recalculated.

Critical network timings change unexpectedly

Timings for jobs in the critical network change even though there have been no user actions related to the timing of jobs.

Cause and solution:

Changes can be made to timings because of a plan extension or because of the submission of jobs or job streams.

A critical job is consistently late

A job that is defined as critical is consistently late despite promotion mechanisms being applied to it and its predecessors.

Cause and solution:

Using the successful predecessors task, compare the planned start, the actual start, and the critical start of all the predecessors of the late job. Check if any of them have time values that are too close together or have a planned start time that is later than the critical start time.

In such a case, you can:

- Consider changing the timings of these jobs. For example, postpone the deadline if possible, or if the deadline must be maintained anticipate the start of some of the jobs.
- Consider redesigning your job streams to optimize the paths that are causing delays.
- Increase the value of the `promotionOffset` global option, so that jobs are promoted earlier.
- On the workstations where jobs are tending to be late, increase the jm promoted nice (UNIX) and jm promoted priority (Windows) local options, so that promoted jobs receive more system resources.

A high risk critical job has an empty hot list

A job that is defined as critical is shown to be at high risk, but its hot list is empty.

Cause and solution:

This normally only occurs if you have designed a critical job or a critical predecessor with a conflict which means it will always be late, for example a start restriction after the critical job deadline. The hot list is empty if either the job or job stream that is causing the problem doesn't have its follows dependencies resolved, or the job stream that is causing the problem is empty.

The only solution is to examine the critical path in detail and determine where the problem lies. The steps to resolving this problem are the same as those documented in “A critical job is consistently late” on page 199.

Chapter 13. Troubleshooting the fault-tolerant switch manager

Provides troubleshooting information about the fault-tolerant switch manager in terms of the event counter, the Ftbox, and link problems. It also provides solutions to some common problems with the backup domain manager.

This section describes how to address the potential problems related to the use of the fault-tolerant switch manager.

It is divided into the following sections:

- "Event counter"
- "Ftbox" on page 202
- "Troubleshooting link problems" on page 202
- "Common problems with the backup domain manager" on page 206

Event counter

The messages displayed in the log file concerning the event counter table are of three types:

- Messages that confirm the successful event counter initialization. No action is needed.
- Messages that the event counter reports related to problems not related to it. For example, they could reveal that the workstation received a message out of sequence. If action is required it does not impact the event counter.
- Messages that indicate that the event counter has failed. User action is needed to restore the counter.

This section concerns itself with this third type of messages.

Two processes can display this kind of error message:

Writer When an error message of this type is received from writer, the event counters stops. All messages received from the workstation which asked netman to activate writer, and from all its children, are ignored. This can lead to two situations:

- The workstation talking to writer is switched to a new manager. In this case the new manager asks for a counter table and receive a corrupt counter table. The replay protocol proceeds following the default behavior.
- Before the **`switchmgr`** operation can be performed, writer fails and is automatically restarted. In this case the counter mechanism partially repairs itself. New messages received by the process are stored in the counter, but the messages received by the writer from the moment the error message was displayed up to the point at which writer restarted are not tracked. The situation for a given workstation might be considered as reset only when the new instance of writer receives a message from it.

The situation is recovered after the next scheduled JnextPlan. If you need to recover more urgently, run **`JnextPlan -for 0000`** to refresh the Symphony file.

Mailman

When an error message of this type is received from mailman, the event counters stops. Mailman sets the IDs of all messages to 0. This means that there is a risk of duplication, because without the event counter, mailman is unable to properly sequence and process messages.

When the **switchmgr** is performed, and the new domain manager commences the replay protocol mechanism, for each message in the ftbox it looks at the position of the target workstation with respect to its own position in the tree:

- If the position of the target workstation in the workstation tree is higher than the new domain manager's (the workstation is either the domain manager or a full-status member of the parent domain of the domain where the **switchmgr** operation took place), the message is sent.
- If the position of the target workstation in the workstation tree is lower than the new domain manager's (the workstation either belongs to the domain where the **switchmgr** operation took place and it is not the new domain manager or is the domain manager or a full-status member of one of the child domains), the message is *not* sent.

The situation is recovered after JnextPlan.

Ftbox

If, on a full-status agent, you receive an error message concerning the ftbox, it means that the fault-tolerant backup domain manager feature is not working properly on that agent. Do not make this agent the new domain manager.

To restore the correct functionality of the feature on the instance, solve the problem as described in the error message, and restart the agent.

Troubleshooting link problems

When troubleshooting a link problem, the analysis is started from the master domain manager. The loss of the "F" flag at an agent indicates that some link had a problem. The absence of a secondary link can be located by matching the "W" flags found on the full-status fault-tolerant agent on the other side.

Consider the network shown in Figure 1 on page 203, where the workstation ACCT_FS, which is a full-status fault-tolerant agent, is not linked:

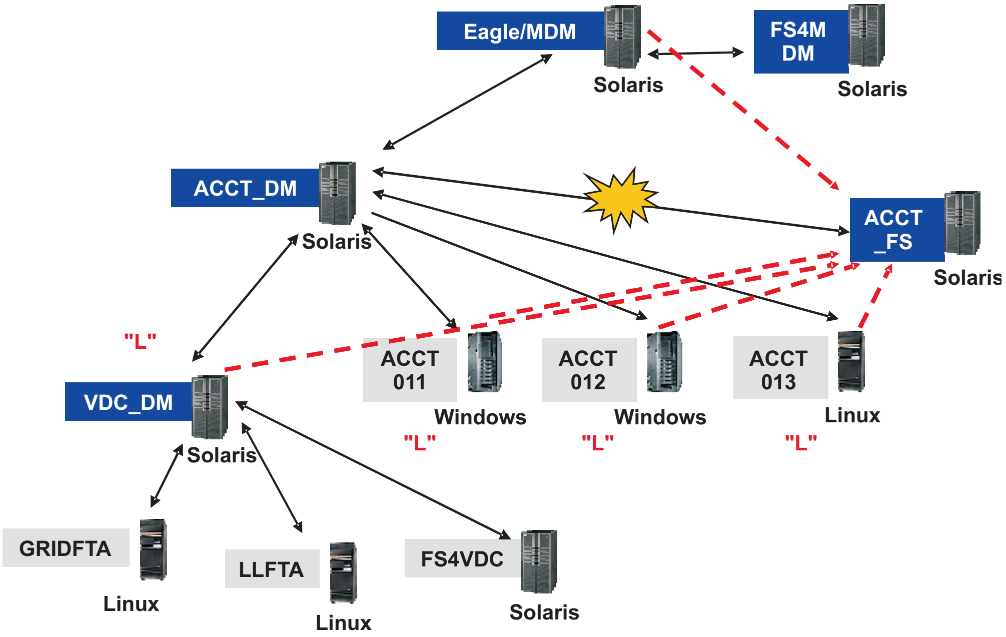


Figure 1. ACCT_FS has not linked

The key to Figure 1 is as follows (for those looking at this guide online or who have printed it on a color printer, the colors of the text and labels is indicated in parentheses, but if you are viewing it without the benefit of color, just ignore the color information):

White text on dark (blue) labels
CPUIDs of fault-tolerant agents in the master domain

Black text
Operating systems

Black text on grey labels
CPUIDs of standard agents in the master domain, or any agents in lower domains

Text (red) in "double quotation marks"
Status of workstations obtained by running **conman sc @!@** at the master domain manager. Only statuses of workstations that return a status value are shown.

Black double-headed arrows
Primary links in master domain

Explosion
Broken primary link to ACCT_FS

Dotted lines (red)
Secondary links to ACCT_FS from the other workstations in the ACCT domain that could not be effected.

You might become aware of a network problem in a number of ways, but if you believe that a workstation is not linked, follow this procedure to troubleshoot the fault:

1. Use the command **conman sc @!@** on the master domain manager, and you can see that there is a problem with ACCT_FS, as shown in the example command output in Figure 2 on page 204:

```
$ conman sc @!@
Installed for user 'eagle'.
Locale LANG set to "C"
Schedule (Exp) 01/25/11 (#365) on EAGLE.  Batchman LIVES.  Limit: 20, Fence: 0,
Audit Level: 1
sc @!@
CPUID      RUN   NODE     LIMIT FENCE    DATE   TIME  STATE  METHOD   DOMAIN
EAGLE     365  *UNIX MASTER   20    0   01/25/11 05:59   I J           MASTERDM
FS4MDM    365   UNIX FTA      10    0   01/25/11 06:57 FTI JW          MASTERDM
ACCT_DM   365   UNIX MANAGER  10    0   01/25/11 05:42 LTI JW          DM4ACCT
ACCT011   365   WNT  FTA      10    0   01/25/11 06:49 L I J           DM4ACCT
ACCT012   365   WNT  FTA      10    0   01/25/11 06:50 L I J           DM4ACCT
ACCT013   365   UNIX FTA      10    0   01/25/11 05:32 L I J           DM4ACCT
ACCT_FS   363   UNIX FTA      10    0                                  DM4ACCT
VDC_DM    365   UNIX MANAGER  10    0   01/25/11 06:40 L I J           DM4VDC
FS4VDC    365   UNIX FTA      10    0   01/25/11 06:55 F I J           DM4VDC
GRIDFTA   365   OTHR FTA      10    0   01/25/11 06:49 F I J           DM4VDC
GRIDXA    365   OTHR X-AGENT  10    0   01/25/11 06:49 L I J   gridage+ DM4VDC
LLFTA     365   OTHR FTA      10    0   01/25/11 07:49 F I J           DM4VDC
LLXA      365   OTHR X-AGENT  10    0   01/25/11 07:49 L I J   llagent  DM4VDC
$
```

Figure 2. Example output for **conman sc @!@** *run on the master domain manager*

2. From the ACCT_DM workstation run **conman sc**. In this case you see that all the writer processes are running, except for ACCT_FS. These are the primary links, shown by the solid lines in Figure 1 on page 203. The output of the command in this example is as shown in Figure 3:

```
$ conman sc
TWS for UNIX (SOLARIS)/CONMAN 8.6 (1.36.2.21)
Licensed Materials  Property of IBM
5698-WKB
(C) Copyright IBM Corp 1998,2011
US Government User Restricted Rights
Use, duplication or disclosure restricted by GSA ADP Schedule Contract with IBM
Corp.
Installed for user 'dm010'.
Locale LANG set to "C"
Schedule (Exp) 01/25/11 (#365) on ACCT_DM.  Batchman LIVES.  Limit: 10, Fence: 0
, Audit Level: 1
sc
CPUID      RUN   NODE     LIMIT FENCE    DATE   TIME  STATE  METHOD   DOMAIN
EAGLE     365   UNIX MASTER   20    0   01/25/11 05:59 LTI JW          MASTERDM
ACCT_DM   365  *UNIX MANAGER  10    0   01/25/11 05:42   I J           DM4ACCT
ACCT011   365   WNT  FTA      10    0   01/25/11 06:49 LTI JW          DM4ACCT
ACCT012   365   WNT  FTA      10    0   01/25/11 06:50 LTI JW          DM4ACCT
ACCT013   365   UNIX FTA      10    0   01/25/11 05:32 LTI JW          DM4ACCT
ACCT_FS   363   UNIX FTA      10    0                                  DM4ACCT
VDC_DM    365   UNIX MANAGER  10    0   01/25/11 06:40 LTI JW          DM4VDC
$
```

Figure 3. Example output for **conman sc** *run on the domain manager*

3. From the ACCT_FS workstation run **conman sc**. In this case you see that there are no writer processes running. These are the secondary links, shown with the

dashed lines in Figure 1 on page 203. The output of the command in this example is as shown in Figure 4:

```
$ conman sc
Installed for user 'dm82'.
Locale LANG set to "C"
Schedule (Exp) 01/24/11 (#364) on ACCT_FS.  Batchman LIVES.  Limit: 10, Fence: 0
, Audit Level: 1
sc @!@
CPUID      RUN   NODE     LIMIT FENCE    DATE   TIME  STATE  METHOD   DOMAIN
EAGLE     363   UNIX MASTER   20    0                      W           MASTERDM
FS4MDM    363   UNIX FTA      10    0                                  MASTERDM
ACCT_DM   363   UNIX MANAGER  10    0                                  DM4ACCT
ACCT011   363   WNT  FTA      10    0                                  DM4ACCT
ACCT012   363   WNT  FTA      10    0                                  DM4ACCT
ACCT013   363   UNIX FTA      10    0                                  DM4ACCT
ACCT_FS   363  *UNIX FTA      10    0                                  DM4ACCT
VDC_DM    363   UNIX MANAGER  10    0                                  DM4VDC
FS4VDC    363   UNIX FTA      10    0                                  DM4VDC
GRIDFTA   363   OTHR FTA      10    0                                  DM4VDC
GRIDXA    363   OTHR X-AGENT  10    0                         gridage+ DM4VDC
$
```

Figure 4. Example output for **conman sc** *run on the unlinked workstation*

4. If a network problem is preventing ACCT_FS from linking, resolve the problem.
5. Wait for ACCT_FS to link.
6. From the ACCT_FS workstation, run **conman sc @!@**. If the workstation has started to link, you can see that a writer process is running on many of the workstations indicated in Figure 1 on page 203. Their secondary links have now been made to ACCT_FS. The workstations that have linked have an "F" instead of their previous setting. This view also shows that the master domain manager has started a writer process running on ACCT_FS. The output of the command in this example is as shown in Figure 5 on page 206:

```
$ conman sc @!@
Installed for user 'dm82'.
Locale LANG set to "C"
Schedule (Exp) 01/24/11 (#364) on ACCT_FS.  Batchman LIVES.  Limit: 10, Fence: 0
, Audit Level: 1
sc @!@
CPUID       RUN   NODE     LIMIT FENCE    DATE   TIME  STATE  METHOD   DOMAIN
EAGLE      371   UNIX MASTER   20    0   01/25/11 10:16 F I JW          MASTERDM
FS4MDM     370   UNIX FTA      10    0                                  MASTERDM
ACCT_DM    371   UNIX MANAGER  10    0   01/25/11 10:03 LTI JW          DM4ACCT
ACCT011    369   WNT  FTA      10    0                                  DM4ACCT
ACCT012    371   WNT  FTA      10    0   01/25/11 11:03 F I JW          DM4ACCT
ACCT013    371   UNIX FTA      10    0   01/25/11 09:54 F I JW          DM4ACCT
ACCT_FS    371  *UNIX FTA      10    0   01/25/11 11:08 F I J           DM4ACCT
VDC_DM     371   UNIX MANAGER  10    0   01/25/11 10:52 F I JW          DM4VDC
FS4VDC     371   UNIX FTA      10    0   01/25/11 11:07 F I J           DM4VDC
GRIDFTA    371   OTHR FTA      10    0   01/25/11 11:01 F I J           DM4VDC
GRIDXA     371   OTHR X-AGENT  10    0   01/25/11 11:01 L I J   gridage+ DM4VDC
LLFTA      371   OTHR FTA      10    0   01/25/11 12:02 F I J           DM4VDC
LLXA       371   OTHR X-AGENT  10    0   01/25/11 12:02 L I J   llagent  DM4VDC
$
```

Figure 5. Example output for **conman sc @!@** *run on the unlinked workstation*

7. Another way of checking which writer processes are running on ACCT_FS is to run the command: **ps -ef | grep writer** (use Task Manager on Windows). The output of the ps command in this example is as shown in Figure 6:

```
$ ps -ef | grep writer
dm82  1363  616  0  06:43:11 ? 0:01  /usr/local/Tivoli/dm82/bin/write -- 2001  EAGLE MAILMAN UNIX 8.6 9
dm82  1317  616  0  06:42:21 ? 0:01  /usr/local/Tivoli/dm82/bin/write -- 2001  ACCT_DM MAILMAN UNIX 8.6 9
dm82  1337  616  0  06:42:25 ? 0:01  /usr/local/Tivoli/dm82/bin/write -- 2001  ACCT013 MAILMAN UNIX 8.6 9
dm82  1338  616  0  06:42:27 ? 0:01  /usr/local/Tivoli/dm82/bin/write -- 2001  VDC_DM MAILMAN UNIX 8.6 9
dm82  1364  616  0  06:51:48 ? 0:01  /usr/local/Tivoli/dm82/bin/write -- 2001  ACCT012 MAILMAN WNT 8.6 9
dm82  1336  616  0  06:42:24 ? 0:00  /usr/local/Tivoli/dm82/bin/write -- 2001  ACCT011 MAILMAN WNT 8.6 9
$
```

Figure 6. Example output for **ps -ef | grep writer** *run on the unlinked workstation*

8. To determine if a workstation is fully linked, use the **Monitor Workstations** list in the Dynamic Workload Console.

Common problems with the backup domain manager

The following problems could be encountered with the fault-tolerant backup domain manager (note that a backup domain manager is an agent with the *full status* attribute set):

- "The Symphony file on the backup domain manager is corrupted." on page 207
- "Processes seem not to have been killed on previous UNIX domain manager after running switchmgr" on page 207
- "In a scenario involving more than one switchmgr command, agent cannot relink" on page 207

The Symphony file on the backup domain manager is corrupted.

When switching to the backup domain manager from the master domain manager, the Symphony file on the backup domain manager might become corrupted.

Cause and solution:

The "thiscpu" variable in the `localopts` file does not match the workstation name. Change the variable to match the workstation name and the problem no longer occurs.

Processes seem not to have been killed on previous UNIX domain manager after running switchmgr

You want to use the switch manager facility. You first stop all Tivoli Workload Scheduler processes on the domain manager and then you run **`switchmgr`**, which completes successfully. However, after running **`%sc @!@`**, the J flag state is given for the domain manager where you stopped the processes.

Cause and solution:

When a **`shutdown`** command is sent to a workstation, some unexpected output might be shown by the status of the processes shown by conman, as follows:

- The J flag relative to the shut workstation remains active (no message indicating that jobman is not running can be transmitted because mailman is also not running).
- Conman output on the shutdown workstation is not up-to-date (the Symphony file is not updated on the shutdown workstation).
- The shutdown workstation seems linked from its parent and child workstations (no unlink operation is run by the writers on the workstation that is shutting down).
- Both F or L flags might be displayed, depending on the messages processed by mailman before unlinking and stopping.

The correct link situation is restored as soon as a new link attempt is made to the workstation, either manually, or automatically (after 10 minutes).

The **`shutdown`** command must be sent only in critical situations (where a workstation is shutting down, for example).

To avoid these problems, precede the **`shutdown`** command with an **`unlink @!@`** or **`stop`** command.

In a scenario involving more than one switchmgr command, agent cannot relink

You have been using the **`switchmgr`** command to switch to backup master domain manager, and then back to the master domain manager, but an agent might not have relinked to the original master domain manager.

Cause and solution:

The complex interaction of variables, environments, network conditions, and linking and relinking events can sometimes prevent an agent from relinking correctly.

No events or messages are lost, you can repeat the use of **switchmgr**, if necessary, and the performance of the network is not normally impacted because one agent is out of communication.

If only one agent is involved the easiest solution is to manually relink it.

However, to avoid having to identify and specifically relink the non-linked agent or agents, you can, in any case, issue the following command, which automatically relinks all agents without needing to specifically identify the unlinked ones:

```
JnextPlan -for 0000
```

Chapter 14. Synchronizing the database with the Symphony file

If you suspect the plan data loaded in the database is not up-to-date, you can run **planman resync** to update the database with the latest information in the Symphony file.

Note: If the message box, mirrorbox.msg, responsible for synchronizing the database with the Symphony file becomes full, for example, the database is unavailable for a long period of time, then a **planman resync** is automatically issued so that the plan is fully reloaded in the database.

The procedure requires you to run the following step on the master domain manager. If you run the command on the backup master domain manager when it is not acting as the master domain manager, the plan data is not replicated in the database.

On the master domain manager, issue the following command:

```
planman resync
```

All of the plan data currently stored in the Symphony file is replicated in database tables in the database.

For the complete command-line syntax for the **planman** command, refer to the *Tivoli Workload Scheduler: User's Guide and Reference*.

To see the database views containing information about the objects in the plan, see the views beginning with "PLAN_" in *Tivoli Workload Scheduler: Database Views*.

Chapter 15. Corrupt Symphony file recovery

Explains the symptoms of Symphony file corruption and links you to tasks that can recover the file on the master domain manager, fault-tolerant agent, or lower domain manager.

Symphony file corruption is a rare event, and a potential corruption must be verified before taking action. Following are common symptoms of the file corruption:

- A specific message informing you that the Symphony file is corrupt.
- A shutdown of various processes (especially batchman) with error messages referring to problems with the Symphony file in the stdlist.

The normal reason for the corruption of the Symphony file is a full file system. This can be avoided by regular monitoring of the file system where Tivoli Workload Scheduler is installed.

The procedure is different, depending on the location of the corrupt Symphony file.

Recovery procedure on a master domain manager

If a **Symphony** file is corrupt on a master domain manager, there are several ways in which you can regenerate it.

The **Symphony** file can be regenerated in the following ways:

1. Using the backup master domain manager
2. Using the logman and ResetPlan commands
3. Using the latest archived plan

Recovering using the backup master domain manager

If the `Symphony` file is corrupt on a master domain manager, it can be regenerated using the backup master domain manager.

The regeneration of the `Symphony` file causes some minor loss of data. The following procedure indicates what is lost.

The prerequisite for the procedure is to have a backup master domain manager already available. A backup master domain manager is a fault-tolerant agent in the master domain with its `fullstatus` attribute set to *yes*.

Note: If you have not already created a backup master domain manager, the `Symphony` file cannot be recovered and the processing it contains is lost.

The procedure requires you to take the following steps on either the master domain manager or the backup master domain manager:

Note: The steps must be followed in strict order; each step description below is prefaced by the identification of the workstation on which it must be performed.

1. On the backup master domain manager, do the following:
   a. Issue the **`switchmgr`** command.

   b. Verify that the backup master domain manager is acting as the master domain manager.

2. From the new master domain manager set the job "limit" on the old master domain manager to "0", using **conman** or the Dynamic Workload Console.

   This prevents jobs from launching.

3. On the original master domain manager do the following:

   a. Shut down all Tivoli Workload Scheduler processes

   b. Rename the `Sinfonia` file and the corrupt `Symphony` file (any names will do).

4. On the current master domain manager (previous backup master domain manager) do the following:

   a. Verify that it is linked to all agents *except* the old master domain manager.

   b. Shut down all Tivoli Workload Scheduler processes (unlink from all agents).

   c. Rename `Sinfonia` as `Sinfonia.orig`

   d. Copy `Symphony` to `Sinfonia`

      You now have identical `Symphony` and `Sinfonia` files.

5. On the original master domain manager do the following:

   a. Issue a **StartUp** from the operating system's command line, to start the **netman** process.

   b. Verify that the process remains active.

6. On the current master domain manager (previous backup master domain manager) do the following:

   a. Issue a **StartUp** from the operating system's command line, to start the **netman** process.

   b. Issue a **conman start**, or use the Dynamic Workload Console to start the current master domain manager.

   c. Issue a link to the original master domain manager.

      This action sends the Symphony file to the original master domain manager.

7. On the original master domain manager do the following:

   a. Verify that the Symphony file is present and is the correct size (same as on the current master domain manager (previous backup master domain manager)

   b. Verify that all Tivoli Workload Scheduler processes are active.

8. On the current master domain manager (previous backup master domain manager) verify that the original master domain manager is linked.

9. On the original master domain manager do the following:

   a. Set the job "limit" on the old master domain manager to the previous level, using **conman** or the Dynamic Workload Console.

      Jobs can commence launching.

   b. Verify that the original master domain manager has the current job status for all agents.

   c. Issue the **switchmgr** command to switch control back to the original master domain manager.

Following this procedure some information is lost, in particular, any events that were suspended on the master domain manager when you started the recovery procedure.

If this procedure cannot be performed, try using the procedure that uses the **logman** and **ResetPlan** commands: "Recover using the logman and ResetPlan commands."

Recover using the logman and ResetPlan commands

The following procedures can also be used to recover a corrupt Symphony file on the master domain manager.

These procedures do not recover as much data as "Recovering using the backup master domain manager" on page 211, but they might be useful if that procedure cannot be performed.

The procedure that makes use of `ResetPlan` might result in a more complete recovery, but it is more demanding in time since it scratches both the production and the preproduction plans. The preproduction plan will be created again based on the modeling information stored in the database when you later generate a new production plan. This means that the new production plan will contain all job stream instances scheduled to run in the time frame covered by the plan regardless of whether or not they were already in COMPLETE state when the plan was scratched.

You should first run the recovery procedure that makes use of `logman`. If you do not obtain satisfactory results, run the other one.

Neither procedure requires the use of a backup master domain manager.

Recovering the Symphony file using the logman command

Describes how to recover from a corrupt Symphony file using the logman command.

Perform these steps on the master domain manager:

1. Set the job "limit" to "0" on all the workstations by using **conman**, the Dynamic Workload Console. If you are using **conman**, run the following command:

   ```
   conman "limit cpu=@!@;0;noask"
   ```

   This command prevents jobs from launching.
2. Shut down all Tivoli Workload Scheduler processes on the master domain manager.
3. Run **logman -prod** to update the preproduction plan with the information for the job streams that are in COMPLETE state.
4. Run **planman showinfo** and check for the first incomplete job stream instance.
5. Run **ResetPlan**.
6. Run **JnextPlan**, setting the **-from** parameter to the start time of the first incomplete job stream instance in the preproduction plan (acquired from the output of `planman showinfo`) and the **-to** parameter to the end date of your plan (or to the following day). Only incomplete job stream instances will be included in the new Symphony file. If the instance of the first incomplete job stream is very old the new plan creation can take a long time. The incomplete jobs and job streams that are created again with the **JnextPlan -from** parameter are those present in the database when the command is run.
7. Check the created plan and verify that all the jobs and job streams in the plan have the correct status.
8. Ensure that you want to run all the instances in the plan, deleting those that you do not want to run.

9. All the submitted job streams are not carried forward. Resubmit them.
10. Reset the job "limit" to its previous value. The Symphony file is distributed and production starts again.

Note: The status of the jobs and the job streams after you run the recovery procedure is reset to HOLD or READY.

Recovering with the use of the ResetPlan command

Perform these steps on the master domain manager:

1. Set the job "limit" to “0”, using **conman** or the Dynamic Workload Console.

   This prevents jobs from launching.
2. Shut down all Tivoli Workload Scheduler processes on the master domain manager.
3. Run **ResetPlan -scratch**.
4. Run **JnextPlan**, setting the **-from** and **-to** parameters to cover the period for which there are still outstanding jobs.
5. Check the created plan and ensure that you want to run all the instances it contains, deleting those that you do not want to run.
6. Reset the job "limit" to the previous value. The Symphony file is distributed and production recommences.

Recovering the plan from the latest archived plan

You can recover a corrupted plan on a master domain manager using the latest archived plan, however; this is possible only if you have performed some configuration steps prior to the occurrence of the file corruption.

The following procedure recovers a corrupted plan using **ResetPlan**. The plan is recovered using the latest archived plan and any events logged throughout the day are written to a new event message file. The last archived Symphony file is copied into the current Symphony file and then **JnextPlan** is run to apply the events from the evtlog.msg file.

Restriction: Before you can perform the recovery procedure, you must have completed some configuration steps prior to the file corruption occurrence.

1. **Complete the following configuration steps so that you can use the recovery procedure in the future if it becomes necessary**:
   a. In the localopts file, add the following attribute and value: **bm log events** = ON.
   b. Optionally, customize the path where Tivoli Workload Scheduler creates the evtlog.msg event file by setting the **bm log events path** property in the localopts file. If you do not modify this setting, the evtlog.msg event file is created in the following default location: <*TWA_INST_DIR*>/TWS.
   c. Stop and start all Tivoli Workload Scheduler processes or run **JnextPlan** to create the evtlog.msg file.
   d. If necessary, you can configure the maximum size of both the evtlog.msg and Intercom.msg event files as follows:

```
evtsize -c evtlog.msg 500000000
evtsize -c Intercom.msg 550000000
```

   Note: The default size of these event files is 10 MB. When the maximum size is reached, events are no longer logged to these files and the recovery procedure is unable to recover them and any that follow. Moreover, the following **BATCHMAN** warning is logged to <*TWA_INST_DIR*>/TWS/stdlist/traces/*YYYYMMDD*_TWSMERGE.log:

```
13:11:51 18.10.2012|BATCHMAN:+ WARNING:Error writing in evtlog:
  AWSDEC003I End of file on events file.
13:11:51 18.10.2012|BATCHMAN:*
13:11:51 18.10.2012|BATCHMAN:* AWSBHT160E The EvtLog message file is full,
  events will not be logged until a new Symphony is produced. Recovery with
  event reapply is no more possible until that time.
13:11:51 18.10.2012|BATCHMAN:*
```

If you encounter this problem increase the size of the evtlog.msg and Intercom.msg event files.

Consider that for 80,000 jobs and a Symphony file of size 40 MB, the evtlog.msg file is approximately 70 MB in size.

Important: The Intercom.msg maximum size should always be set to a value greater than the maximum size of evtlog.msg

In the <*TWA_INST_DIR*>/TWS/stdlist/traces/*YYYYMMDD*_TWSMERGE.log trace file, the **BATCHMAN** process logs an informational line containing the expected size of the evtlog.msg queue. For example:

```
19:02:06 14.10.2012|BATCHMAN:INFO:0.25 MB of events to log during this
  batchman run
```

If Intercom.msg reaches the maximum size during the recovery procedure, **batchman** stops.

e. If the file system where evtlog.msg resides runs out of space, a **BATCHMAN** warning is logged to <*TWA_INST_DIR*>/TWS/stdlist/traces/*YYYYMMDD*_TWSMERGE.log as follows:

```
13:10:36 16.10.2012|BATCHMAN:+ WARNING:Error writing in evtlog:
  AWSDEC002E An internal error has occurred.
The following UNIX system error occurred on an events file:
 "No space left on device" at line = 3517.
```

2. **Complete the recovery procedure**:
   a. Ensure the Tivoli Workload Scheduler processes are stopped. Run conman stop to stop them.
   b. Copy the information retrieved by running the **planman showinfo** command.
   c. Run ResetPlan. The corrupted Symphony file is archived in the schedlog folder.
   d. Copy the second last Symphony file archived in the schedlog folder, and not the most recent one which is the corrupted file. For example, on UNIX, submit the following command:

      ```
      cp -p /opt/ibm/TWA/TWS/schedlog/MYYYYMMDDhhmm /opt/ibm/TWA/TWS/Symphony
      ```

   e. Run **JnextPlan** as follows using the information retrieved when you ran **planman showinfo**:

      ```
      JnextPlan -from MM/DD/YYYY hhmm TZ Timezone -for hhhmm
      ```

      where,

      -from Production plan start time of last extension.

      -for Production plan time extension.

When running this procedure, consider that the run number, that is, the total number of times the plan was generated, is automatically increased by one.

Job stream instances that have already completed successfully at the time this procedure is run are not included in the recovered plan.

After you have performed the recovery procedure, the workstation limit is set to 0 and the `evtlog.msg` queue is cleared with each successive run of **`JnextPlan`**.

Recovery procedure on a fault-tolerant agent or lower domain manager

If the Symphony file is corrupt on a lower level domain manager, or on a fault-tolerant agent, it can be replaced.

Complete removal and replacement of the `Symphony` file causes some loss of data. The following procedure minimizes that loss and indicates what is lost.

The procedure involves two agents, the agent where the `Symphony` file is corrupt and its domain manager.

Note: Where the agent is a top level domain manager (below the master), or a fault-tolerant agent in the master domain, the manager is the master domain manager.

The procedure is as follows:

1. On the domain manager, unlink the agent which is having the `Symphony` file problem.
2. On the agent do the following:
   a. Stop the agent if it has not yet failed. You do not need to shut it down.
   b. Delete the `Symphony` and the `Sinfonia` files from the agent workstation. Alternatively you can move them to a different location on the agent workstation, or rename them.
3. On the domain manager do the following:
   a. Back up the `Sinfonia` file if you want to be able to restore the original situation after completion. This is not an obligatory step, and no problems have been reported from not performing it.
   b. Ensure that no agent is linking with the domain manager, optionally stopping the domain manager agent.
   c. Copy the domain manager's `Symphony` file to the `Sinfonia` file, replacing the existing version.
   d. Restart the domain manager agent if necessary.
   e. Link the agent and wait for the `Symphony` file to copy from the domain manager to the agent. The agent automatically starts.
   f. Optionally restore the `Sinfonia` file from the backup you took in step 3a. This restores the original situation, but with the agent now having an uncorrupted `Symphony` file. This is not an obligatory step, and no problems have been reported from not performing it.

Following this procedure some information is lost, in particular, the contents of the `Mailbox.msg` message and the `tomaster.msg` message queues. If state information about a job was contained in those queues, such that the `Symphony` file on the domain manager was not updated by the time the `Sinfonia` file is replaced (step 3c), that job is rerun. To avoid that event, add these steps to the procedure immediately before step 3a:

1. Make a list of jobs that ran recently on the agent.

2. At the domain manager, change their states to either SUCC or ABEND, or even cancel them on the domain manager.

   Note: if you set the states of jobs to SUCC, or cancel them, any successor jobs would be triggered to start. Ensure that this is the acceptable before performing this action.

This way these jobs are not rerun.

Recovery procedure on a fault-tolerant agent with the use of the resetFTA command

If the Symphony file is corrupt on a fault-tolerant agent, you can use the **resetFTA** command to automate the recovery procedure.

Complete removal and replacement of the Symphony file causes some loss of data, for example events on job status, or the contents of the Mailbox.msg message and the tomaster.msg message queues. If state information about a job was contained in those queues, that job is rerun. The following procedure minimizes that loss and indicates what is lost. It is recommended that you apply this procedure with caution.

The procedure renames the Symphony, Sinfonia, *.msg files on the fault-tolerant agent where the Symphony corruption occurred and generates an updated Sinfonia file, which is sent to the fault-tolerant agent. You can therefore resume operations quickly on the affected fault-tolerant agent, minimize loss of job and job stream information, and reduce recovery time.

The procedure involves two agents, the fault-tolerant agent where the Symphony file is corrupt and its domain manager.

You can start the command from any Tivoli Workload Scheduler workstation, with the exception of the fault-tolerant agent where the corruption occurred. Connection to the target fault-tolerant agent and to its domain manager is established using the **netman** port number. The default port number is 31111.

When you start the **resetFTA** command, the following operations are performed in the specified order:

on the fault-tolerant agent

- The following files are renamed:
  - Appserverbox.msg
  - clbox.msg
  - Courier.msg
  - Intercom.msg
  - Mailbox.msg
  - Monbox.msg
  - Moncmd.msg
  - Symphony
  - Sinfonia

  The operations are performed asynchronously, to ensure that all target files have been renamed before starting the procedure on the domain manager.

on the domain manager

1. A backup of the `Sinfonia` file is created.
2. The `Symphony` file is copied to the `Sinfonia` file.
3. The target fault-tolerant agent is linked.
4. The updated `Sinfonia` file is sent to the target fault-tolerant agent.

The syntax of the command is as follows:

Syntax

resetFTA cpu

Arguments

cpu Is the fault-tolerant agent to be reset.

This command is not available in the Dynamic Workload Console.

For more information, see the section about the **`resetfta`** command in *Tivoli Workload Scheduler: User's Guide and Reference*.

Appendix A. Support information

If you have a problem with your IBM software, you want to resolve it quickly. This section describes the following options for obtaining support for IBM software products:

- "IBM Support Assistant"
- "Searching knowledge bases" on page 220
- "Obtaining fixes" on page 221
- "Receiving support updates" on page 221
- "Contacting IBM Software Support" on page 222

IBM Support Assistant

The IBM Support Assistant is a free, stand-alone application that you can install on any workstation. You can then enhance the application by installing product-specific add-on modules for the IBM products you use.

The IBM Support Assistant saves you time searching product, support, and educational resources. The IBM Support Assistant helps you gather support information when you need to open a problem management record (PMR), which you can then use to track the problem.

The product-specific add-on modules provide you with the following resources:
- Support links
- Education links
- Ability to submit problem management reports

The IBM Support Assistant website is at http://www.ibm.com/software/support/isa/. Use this site for the following:

- Obtain general information about the IBM Support Assistant
- Choose the IBM Support Assistant more appropriate for your needs, and perform the following actions:

  Download the IBM Support Assistant Lite for your product

  To quickly collect diagnostic files to solve problems faster. This is a special offering of the IBM Support Assistant that contains only the data collection component customized for a specific product. IBM Support Assistant Lite provides quick deployment of IBM Support Assistant's data collection tool. It is customized to automate product-specific data collection. You can run ISA Lite to do data collection for your product without ever installing ISA or your ISA add-on.

  Download and install the IBM Support Assistant Workbench and the add-on for Tivoli Workload Scheduler

  To benefit from concurrent search, media viewer, guided troubleshooter, diagnostic tools, data collectors, service request submission, and other features. IBM Support Assistant can be customized for over 350 products.

  Note: To locate and download the add-on for a product, use the IBM Support Assistant's interface. Full instructions about how to use the application and add-on are provided within the interface. Add-ons are available at release level at the following URL: http://www.ibm.com/support/docview.wss?&uid=swg27013117).

If you cannot find the solution to your problem in the IBM Support Assistant, see "Searching knowledge bases."

Searching knowledge bases

You can search the available knowledge bases to determine if your problem was already encountered and is already documented.

Search the local information center

IBM provides extensive documentation that you can install on your local computer or on an intranet server. You can use the search function of this information center to query conceptual information, instructions for completing tasks, and reference information.

The information center can be found online at http://publib.boulder.ibm.com/infocenter/tivihelp/v47r1/index.jsp?topic=/com.ibm.tivoli.itws.doc_8.6/welcome_TWA.html, from where you can download and install the information center locally, or on your intranet server.

Search the Internet

If you cannot find an answer to your question in the information center, search the Internet for the latest, most complete information that might help you resolve your problem.

To search multiple Internet resources for your product, use the **Web search** topic in your information center. In the navigation frame, click **Troubleshooting and support → Searching knowledge bases** and select **Web search**. From this topic, you can search a variety of resources, including the following:

- IBM technical notes (Technotes)
- IBM downloads
- IBM Redbooks®
- IBM developerWorks®
- Forums and newsgroups
- Google

Search the IBM support website

The IBM software support website has many publications available online, one or more of which might provide the information you require:

1. Go to the IBM Software Support website (http://www.ibm.com/software/support).
2. Select **Tivoli** under the **Select a brand and/or product** heading.
3. Select **IBM Tivoli Workload Scheduler** under **Select a product**, and click the "Go" icon: ● . The Tivoli Workload Scheduler support page is displayed.
4. In the **IBM Tivoli Workload Scheduler support** pane click **Documentation**, and the documentation page is displayed.
5. Either search for information you require, or choose from the list of different types of product support publications in the **Additional Documentation support links** pane:
   - Information center

   - Manuals
   - IBM Redbooks
   - White papers

   If you click **Information center**, the Tivoli Workload Scheduler Information Center page opens, otherwise a search for the selected documentation type is performed, and the results displayed.

6. Use the on-screen navigation to look through the displayed list for the document you require, or use the options in the **Search within results for** section to narrow the search criteria. You can add **Additional search terms** or select a specific **Document type**. You can also change the sort order of the results (**Sort results by**). Then click the search icon to start the search: 🔍 .

To access some of the publications you need to register (indicated by a key icon beside the publication title). To register, select the publication you want to look at, and when asked to sign in follow the links to register yourself. There is also a FAQ available on the advantages of registering.

Obtaining fixes

A product fix might be available to resolve your problem. To determine what fixes are available for your IBM software product, follow these steps:

1. Go to the IBM Software Support website (http://www.ibm.com/software/support).
2. Select **Tivoli** under the **Select a brand and/or product** heading.
3. Select **IBM Tivoli Workload Scheduler** under **Select a product** and click the "Go" icon: ➡ . The Tivoli Workload Scheduler support page is displayed.
4. In the **IBM Tivoli Workload Scheduler support** pane click **Download**, and the download page is displayed.
5. Either choose one of the displayed most-popular downloads, or click **View all download items**. A search for the downloads is performed, and the results displayed.
6. Use the on-screen navigation to look through the displayed list for the download you require, or use the options in the **Search within results for** section to narrow the search criteria. You can add **Additional search terms**, or select a specific **Download type**, **Platform/Operating system**, and **Versions**. Then click the search icon to start the search: 🔍 .
7. Click the name of a fix to read the description of the fix and to optionally download the fix.

For more information about the types of fixes that are available, see the *IBM Software Support Handbook* at http://www14.software.ibm.com/webapp/set2/sas/f/handbook/home.html.

Receiving support updates

To receive email notifications about fixes and other software support news, follow these steps:

1. Go to the IBM Software Support website at http://www.ibm.com/software/support.
2. Click **My notifications** under the **Stay informed** heading in the upper-right corner of the page.

3. If you have already registered for **My support**, sign in and skip to the next step. If you have not registered, click **register now**. Complete the registration form using your email address as your IBM ID and click **Submit**.
4. Follow the instructions on the page for subscribing to the information you require, at the frequency you require, for the products you require.

If you experience problems with the **My notifications** feature, you can obtain help in one of the following ways:

Online

Send an email message to erchelp@ca.ibm.com, describing your problem.

By phone

Call 1-800-IBM-4You (1-888 426 4409).

Contacting IBM Software Support

IBM Software Support provides assistance with product defects.

Before contacting IBM Software Support, your company must have an active IBM software maintenance contract, and you must be authorized to submit problems to IBM. The type of software maintenance contract that you need depends on the type of product you have:

- For IBM distributed software products (including, but not limited to, Tivoli, Lotus®, and Rational® products, as well as DB2 and WebSphere products that run on Windows, or UNIX operating systems), enroll in Passport Advantage® in one of the following ways:

  Online

  Go to the Passport Advantage website at http://www.lotus.com/services/passport.nsf/ WebDocs/Passport_Advantage_Home and click **How to Enroll**.

  By phone

  For the phone number to call in your country, go to the IBM Software Support website support handbook contacts page at http://www14.software.ibm.com/webapp/set2/sas/f/handbook/contacts.html, and click `IBM Directory of worldwide contacts` or select your geographical area for a list of contacts.
- For customers with IBMLink, CATIA, Linux, S/390®, System i®, System p, System z®, and other support agreements, go to the IBM Support Line website at http://www.ibm.com/services/us/index.wss/so/its/a1000030/dt006.
- For IBM eServer™ software products (including, but not limited to, DB2 and WebSphere products that run in System i, System p, and System z environments), you can purchase a software maintenance agreement by working directly with an IBM sales representative or an IBM Business Partner. For more information about support for eServer software products, go to the IBM Technical Support Advantage website at http://www.ibm.com/servers/eserver/techsupport.html.

If you are not sure what type of software maintenance contract you need, call 1-800-IBMSERV (1-800-426-7378) in the United States. From other countries, go to the contacts page of the *IBM Software Support Handbook* at http://www14.software.ibm.com/webapp/set2/sas/f/handbook/contacts.html and click the name of your geographic region for phone numbers of people who provide support for your location.

To contact IBM Software support, follow these steps:

1. "Determine the business impact"
2. "Describe problems and gather information"
3. "Submit problems"

Determine the business impact

When you report a problem to IBM, you are asked to supply a severity level. Therefore, you need to understand and assess the business impact of the problem that you are reporting. Use the following criteria:

Severity 1
The problem has a *critical* business impact. You are unable to use the program, resulting in a critical impact on operations. This condition requires an immediate solution.

Severity 2
The problem has a *significant* business impact. The program is usable, but it is severely limited.

Severity 3
The problem has *some* business impact. The program is usable, but less significant features (not critical to operations) are unavailable.

Severity 4
The problem has *minimal* business impact. The problem causes little impact on operations, or a reasonable circumvention to the problem was implemented.

Describe problems and gather information

When describing a problem to IBM, be as specific as possible. Include all relevant background information so that IBM Software Support specialists can help you solve the problem efficiently. To save time, know the answers to these questions:

- What software versions were you running when the problem occurred?
- Do you have logs, traces, and messages that are related to the problem symptoms? IBM Software Support is likely to ask for this information.
- Can you re-create the problem? If so, what steps were performed to re-create the problem?
- Did you make any changes to the system? For example, did you make changes to the hardware, operating system, networking software, and so on.
- Are you currently using a workaround for the problem? If so, be prepared to explain the workaround when you report the problem.

Submit problems

You can submit your problem to IBM Software Support in one of two ways:

Online
Click **Submit and track problems** on the IBM Software Support site at http://www.ibm.com/software/support/probsub.html. Type your information into the appropriate problem submission form.

By phone
For the phone number to call in your country, go to the IBM Software Support website support handbook contacts page at http://www14.software.ibm.com/webapp/set2/sas/f/handbook/contacts.html,

and click **IBM Directory of worldwide contacts** or select your geographical area for a list of contacts.

If the problem you submit is for a software defect or for missing or inaccurate documentation, IBM Software Support creates an Authorized Program Analysis Report (APAR). The APAR describes the problem in detail. Whenever possible, IBM Software Support provides a workaround that you can implement until the APAR is resolved and a fix is delivered. IBM publishes resolved APARs on the Software Support website daily, so that other users who experience the same problem can benefit from the same resolution.

Appendix B. Date and time format reference - strftime

Tivoli Workload Scheduler uses the *strftime* standard method for defining the presentation of the date and time in log files generated by CCLog. There is a parameter in the properties file of CCLog, where you define the format (see "Tivoli Workload Scheduler logging and tracing using CCLog" on page 14).

This parameter uses one or more of the following variables, each of which is introduced by a "%" sign, separated, if required, by spaces or other character separators.

For example, to define a date and time stamp that would produce the following (12-hour time, followed by the date) "7:30:49 a.m. - November 7, 2008", you would use the following definition:

```
%l:%M:%S %P - %B %e, %G
```

The full details of the parameters you can use are as follows:

Table 17. strftime date and time format parameters

Parameter	Description	Example
%a	The abbreviated weekday name according to the current locale.	Wed
%A	The full weekday name according to the current locale.	Wednesday
%b	The abbreviated month name according to the current locale.	Jan
%B	The full month name according to the current locale.	January
%c	The preferred date and time representation for the current locale.	
%C	The century number (year/100) as a 2-digit integer.	19
%d	The day of the month as a decimal number (range 01 to 31).	07
%D	Equivalent to %m/%d/%y. (This is the USA date format. In many countries %d/%m/%y is the standard date format. Thus, in an international context, both of these formats are ambiguous and must be avoided.)	12/25/04
%e	Like %d, the day of the month as a decimal number, but a leading zero is replaced by a space.	7
%G	The ISO 8601 year with century as a decimal number. The 4-digit year corresponding to the ISO week number (see %V). This has the same format and value as %y, except that if the ISO week number belongs to the previous or next year, that year is used instead.	2008
%g	Like %G, but without century, i.e., with a 2-digit year (00-99).	04
%h	Equivalent to %b.	Jan
%H	The hour as a decimal number using a 24-hour clock (range 00 to 23).	22
%I	The hour as a decimal number using a 12-hour clock (range 01 to 12).	07
%j	The day of the year as a decimal number (range 001 to 366).	008
%k	The hour (24-hour clock) as a decimal number (range 0 to 23); single digits are preceded by a blank. (See also %H.)	7

Table 17. strftime date and time format parameters (continued)

Parameter	Description	Example
%l	The hour (12-hour clock) as a decimal number (range 1 to 12); single digits are preceded by a blank. (See also %I.)	7
%m	The month as a decimal number (range 01 to 12).	04
%M	The minute as a decimal number (range 00 to 59).	58
%n	A newline character.	
%p	Either `AM' or `PM' according to the given time value, or the corresponding strings for the current locale. Noon is treated as `pm' and midnight as `am'.	AM
%P	Like %p but in lowercase: `am' or `pm' or a corresponding string for the current locale.	am
%r	The time in a.m. or p.m. notation. In the POSIX locale this is equivalent to `%I:%M:%S %p'.	07:58:40 am
%R	The time in 24-hour notation (%H:%M). For a version including the seconds, see %T below.	07:58
%s	The number of seconds since the Epoch, i.e., since 1970-01-01 00:00:00 UTC.	1099928130
%S	The second as a decimal number (range 00 to 61). the upper level of the range 61 rather than 59 to allow for the occasional leap second and even more occasional double leap second.	07
%t	A tab character.	
%T	The time in 24-hour notation (%H:%M:%S).	17:58:40
%u	The day of the week as a decimal, range 1 to 7, Monday being 1. See also %w.	3
%U	The week number of the current year as a decimal number, range 00 to 53, starting with the first Sunday as the first day of week 01. See also %V and %W.	26
%V	The ISO 8601:1988 week number of the current year as a decimal number, range 01 to 53, where week 1 is the first week that has at least 4 days in the current year, and with Monday as the first day of the week. See also %U and %W.	26
%w	The day of the week as a decimal, range 0 to 6, Sunday being 0. See also %u.	5
%W	The week number of the current year as a decimal number, range 00 to 53, starting with the first Monday as the first day of week 01.	34
%x	The preferred date representation for the current locale without the time.	
%X	The preferred time representation for the current locale without the date.	
%y	The year as a decimal number without a century (range 00 to 99).	04
%Y	The year as a decimal number including the century.	2008
%z	The time-zone as hour offset from GMT. Required to emit RFC822-conformant dates (using "%a, %d %b %Y %H:%M:%S %z").	-2
%Z	The time zone or name or abbreviation.	GMT
%%	A literal `%' character.	%

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