

Tivoli Directory Integrator
Version 7.1

Problem Determination Guide

IBM

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Version 7.1

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IBM

Note

Note: Before using this information and the product it supports, read the general information under Appendix B, "Notices," on page 59.

Product Version 7.1

This edition applies to version 7.1 of the IBM Tivoli Directory Integrator and to all subsequent releases and modifications until otherwise indicated in new editions.

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Contents

Preface	v
Who should read this publication	v
Publications	v
IBM Tivoli Directory Integrator library	v
Related publications	vi
Accessing publications online	vi
Accessibility	vi
Accessibility features	vii
Keyboard navigation	vii
Interface Information	vii
Vendor software	viii
Related accessibility information	viii
Contacting IBM Software support	viii

Chapter 1. Introduction to problem determination	1
IBM Tivoli Directory Integrator 7.1 overview	1
Troubleshooting topics	1
Built-in troubleshooting features	1
Using the Messages Guide to resolve errors	3

Chapter 2. Performance Test Utilities and Debugging.	5
Performance Test Utilities	5
Running the Performance Test Utilities scripts	5
Performance debugging	6
Data collected by the Performance Debugging tool	6
Running the Performance Debugging tool	6

Chapter 3. Installation and uninstallation	7
Troubleshooting Installation	7
Gathering installation information	7
Performing a manual uninstallation.	8
Troubleshooting installation problems	10
Ikeyman file needs executable permissions on HP-UX and Solaris operating systems	14
Unable to migrate Cloudscape System Store of Tivoli Directory Integrator 6.0 to Tivoli Directory Integrator 7.0 or 7.1.	14
Known limitations	15
Multiple installations not registered correctly in Windows Add/Remove Programs	15
Glibc package 2.3 or higher required for installation on Linux operating systems	15
Maintenance Level 3 required for installation on an AIX 5.3 operating system.	15
Incorrect text emphasis when installing Tivoli Directory Integrator on a Windows operating system in Simplified Chinese	16
Some messages display when uninstalling Tivoli Directory Integrator 6.1.1 using the -console option	16

Debug statements created when installing and uninstalling Tivoli Directory Integrator V7.0 using the -console option on Windows and UNIX operating systems	16
Migration from Tivoli Directory Integrator 6.0 to Tivoli Directory Integrator 7.0 on the HP-UX 11iv2 operating system is not supported.	16
Avoid JAVA errors by having executable and JAR files in the installation directory	16
Monitor the installation or uninstallation log during silent installation execution	17

Chapter 4. Configuration Editor	19
Troubleshooting the Configuration Editor	19
Verify that the server associated with your project has been started	19
Consult the Error View when using the Configuration Editor	19
Unwanted perspective changes	19
Problems during installation of the CE into Eclipse	19
Known Limitations	19
Solution directory does not always resolve to expected path	19
Upper part of characters truncated in Javascript panel	20
Tooltips are not shown on Dropdown combos on Solaris.	20
CE hangs after seeing the splash screen or choosing the workspace on AIX.	20

Chapter 5. IBM JavaScript limitations	21
java.lang.OutOfMemoryError: Failed to fork OS thread	21
String representations of numbers not represented in exponential format	21
Package and class references do not return string values	21
Date constructors cannot take values higher than the maximum integer value	21
All comparisons of prototypes return false	21
Arrays with high numeric values truncate	22
Sandbox not supported with connectors that return nonserializable data	22
Variable override of standard types allowed	22
Declaring two or more functions on same line allowed.	22
Redeclared variable does not retain the previous value	22

Chapter 6. Troubleshooting the Administration and Monitoring Console	23
Administration and Monitoring Console Problem Determination	23
Problems with localized messages in the console	23

Action Manager and Administration and Monitoring Console on different machines	23
Unable to delete Tivoli Directory Integrator Server and Solution Views	24
String is truncated on the Start AssemblyLine window	24
The background of the text in Filter field overlaps the field	24
Unable to start Administration and Monitoring Console using the start_tdiadc script.	24
SSL communications problems with AMC in ISC AE	25
Authentication failure on UNIX when LWI runs as non-root user	25

Chapter 7. Components 27

Components overview.	27
Connectors	27
Remote Agent Controller (RAC) Connector.	27
Connectors whose libraries do not ship with Tivoli Directory Integrator	29
For Domino or Lotus Notes connectors running on Linux operating systems, set PATH and LD_LIBRARY_PATH variables	30
TDI process privileges and Domino on Linux	30
CommandLine Connector	31
JDBC Connector	31
JNDI Connector	33
Insufficient memory issue with Domino	34
Domino User's Connector	34
Windows Users and Groups Connector	36
SAP Connection Suite	36
Function Components	36
Parsers	36
LDIF Parser	36

Chapter 8. Password Synchronization plug-ins 37

Problem with ICU4J on Windows when automatic daylight saving changes are disabled	37
---	----

Chapter 9. Known limitations and general troubleshooting 39

Known limitations	39
Troubleshoot problems with Delta Features and solidDB.	39
Cannot start another queue manager for JMS	39
Regular Expression support in the IBM Java Script engine shipped with Tivoli Directory Integrator 6.1 and newer	40
Launchpad exit confirmation window title bar displays incorrectly in Firefox browser	40
SSL connects with expired self signed certificates	40
Programmatically disabling components.	41
Specifying multiple Configs to the ibmdisrv command	41
RHEL 5.0 (or any other system with SELinux enabled), Tivoli Directory Integrator 7.0 commands fail with "Failed to find VM – aborting" message	42

General troubleshooting	42
Certain scripted utilities must be invoked in specific way	42
System Store database might get corrupted when shutting down an AssemblyLine that uses Derby in embedded mode.	43
Cannot connect to TDI server from a remote machine even though the TDI server says the server API has started.	43
OutOfMemoryError thrown when an AL in manual mode makes huge number of attempts to initialize	44
Remote Command Line Function Component can execute shell scripts remotely only if there are no carriage returns in the shell script	44
java.io.IOException: The pipe has been ended	45
Error occurs when an encrypted password exceeds the size of the table column in which the password is stored	45
AssemblyLine Flow.	45
ibmdisrv -c switch does not allow you to work with multiple file names	46
tdisrvctl not listing created tombstones when -c option specifies file name.	46
Memory Leaks	46
Platform specific problems	46
IBM Message Queue (MQ) Connector (JMS) on z/OS	46
Domino User's Connector running on AIX 5.3 with Domino Server 7.0	47

Chapter 10. Troubleshooting scenarios 49

Log files not showing up or showing up after only the second run of the server.	49
---	----

Appendix A. Support information . . . 51

IBM Support Assistant plug-in	51
IBM Support Assistant for Tivoli Directory Integrator (Tivoli Directory Integrator)	54
Searching knowledge bases	55
Search the information center on your local system or network	55
Search the Internet	55
Obtaining fixes	55
Contacting IBM Software Support	56
Determine the business impact of your problem	57
Describe your problem and gather background information	57
Submit your problem to IBM Software Support	57

Appendix B. Notices 59

Third-Party Statements	61
ICU License - ICU 1.8.1 and later	61
Trademarks	61

Index 63

Preface

This publication provides information about possible problems and corrective actions that can be tried before contacting IBM® Software Support. It also includes information about tools you can use for problem

determination with IBM Tivoli® Directory Integrator 7.1.

Who should read this publication

This publication is intended for those responsible for the identification and resolution of problems in the IBM Tivoli Directory Integrator.

Publications

Read the descriptions of the IBM Tivoli Directory Integrator library and the related publications to determine which publications you might find helpful. After you determine the publications you need, refer to the instructions for accessing publications online.

IBM Tivoli Directory Integrator library

The publications in the Tivoli Directory Integrator library are:

IBM Tivoli Directory Integrator V7.1 Getting Started

A brief tutorial and introduction to Tivoli Directory Integrator 7.1. Includes examples to create interaction and hands-on learning of IBM Tivoli Directory Integrator.

IBM Tivoli Directory Integrator V7.1 Installation and Administrator Guide

Includes complete information about installing, migrating from a previous version, configuring the logging functionality, and the security model underlying the Remote Server API of IBM Tivoli Directory Integrator. Contains information on how to deploy and manage solutions.

IBM Tivoli Directory Integrator V7.1 Users Guide

Contains information about using IBM Tivoli Directory Integrator 7.1. Contains instructions for designing solutions using the Tivoli Directory Integrator designer tool (**ibmditk**) or running the ready-made solutions from the command line (**ibmdisrv**). Also provides information about interfaces, concepts and AssemblyLine creation.

IBM Tivoli Directory Integrator V7.1 Reference Guide

Contains detailed information about the individual components of IBM Tivoli Directory Integrator 7.1: Connectors, Function Components, Parsers and so forth – the building blocks of the AssemblyLine.

IBM Tivoli Directory Integrator V7.1 Problem Determination Guide

Provides information about IBM Tivoli Directory Integrator 7.1 tools, resources, and techniques that can aid in the identification and resolution of problems.

IBM Tivoli Directory Integrator V7.1 Messages Guide

Provides a list of all informational, warning and error messages associated with the IBM Tivoli Directory Integrator 7.1.

IBM Tivoli Directory Integrator V7.1 Password Synchronization Plug-ins Guide

Includes complete information for installing and configuring each of the five IBM Password Synchronization Plug-ins: Windows Password Synchronizer, Sun Directory Server Password Synchronizer, IBM Directory Server Password Synchronizer, Domino Password Synchronizer and Password Synchronizer for UNIX® and Linux®. Also provides configuration instructions for the LDAP Password Store and JMS Password Store.

IBM Tivoli Directory Integrator V7.1 Release Notes

Describes new features and late-breaking information about IBM Tivoli Directory Integrator 7.1 that did not get included in the documentation.

Related publications

Information related to the IBM Tivoli Directory Integrator is available in the following publications:

- IBM Tivoli Directory Integrator 7.1 uses the JNDI client from Sun Microsystems. For information about the JNDI client, refer to the *Java™ Naming and Directory Interface™ Specification* on the Sun Microsystems Web site at <http://java.sun.com/j2se/1.5.0/docs/guide/jndi/index.html>.
- The Tivoli Software Library provides a variety of Tivoli publications such as white papers, datasheets, demonstrations, redbooks, and announcement letters. The Tivoli Software Library is available on the Web at: <http://www.ibm.com/software/tivoli/library/>
- The *Tivoli Software Glossary* includes definitions for many of the technical terms related to Tivoli software. The *Tivoli Software Glossary* is available on the World-Wide Web, in English only, at <http://publib.boulder.ibm.com/tividd/glossary/tivoliglossarymst.htm>

Accessing publications online

The publications for this product are available online in Portable Document Format (PDF) or Hypertext Markup Language (HTML) format, or both in the Tivoli software library: <http://www.ibm.com/software/tivoli/library>.

To locate product publications in the library, click the **Product manuals** link on the left side of the Library page. Then, locate and click the name of the product on the Tivoli software information center page.

Information is organized by product and includes READMEs, installation guides, user's guides, administrator's guides, and developer's references as necessary.

Note: To ensure proper printing of PDF publications, select **Fit to page** in the Adobe Acrobat Print window (which is available when you click **File->Print**).

Accessibility

Accessibility features help a user who has a physical disability, such as restricted mobility or limited vision, to use information technology products successfully. With Tivoli Directory Integrator 7.1, you can use assistive technologies to hear and navigate the interface. After installation you also can use the keyboard instead of the mouse to operate all features of the graphical user interface.

Accessibility features

The following list includes the major accessibility features in Tivoli Directory Integrator 7.1:

- Supports keyboard-only operation.
- Supports interfaces commonly used by screen readers.
- Discerns keys as tactually separate, and does not activate keys just by touching them.
- Avoids the use of color as the only way to communicate status and information.
- Provides accessible documentation.

Keyboard navigation

This product uses standard Microsoft® Windows® navigation keys for common Windows actions such as access to the File menu, copy, paste, and delete. Actions that are unique to Tivoli Directory Integrator use Tivoli Directory Integrator keyboard shortcuts. Keyboard shortcuts have been provided wherever needed for all actions.

Interface Information

The accessibility features of the user interface and documentation include:

- Steps for changing fonts, colors, and contrast settings in the Configuration Editor:
 1. Type **Alt-W** to access the Configuration Editor **Window** menu. Using the downward arrow, select **Preferences...** and press Enter.
 2. Under the **Appearance** tab, select **Colors and Fonts** settings to change the fonts for any of the functional areas in the Configuration Editor.
 3. Under **View and Editor Folders**, select the colors for the Configuration Editor, and by selecting colors, you can also change the contrast.
- Steps for customizing keyboard shortcuts, specific to IBM Tivoli Directory Integrator:
 1. Type **Alt-W** to access the Configuration Editor **Window** menu. Using the downward arrow, select **Preferences...**
 2. Using the downward arrow, select the General category; right arrow to open this, and type downward arrow until you reach the entry **Keys**.
Underneath the **Scheme** selector, there is a field, the contents of which say "type filter text." Type `tivoli directory integrator` in the filter text field. All specific Tivoli Directory Integrator shortcuts are now shown.
 3. Assign a keybinding to any Tivoli Directory Integrator command of your choosing.
 4. Click **Apply** to make the change permanent.

The Configuration Editor is a specialized instance of an Eclipse workbench. More detailed information about accessibility features of applications built using Eclipse can be found at <http://help.eclipse.org/help33/topic/org.eclipse.platform.doc.user/concepts/accessibility/accessmain.htm>

- The information center and its related publications are accessibility-enabled for the JAWS screen reader and the IBM Home Page Reader. You can operate all documentation features using the keyboard instead of the mouse.

Vendor software

The IBM Tivoli Directory Integrator installer uses the InstallAnywhere 2009 (IA) installer technology.

The IBM Tivoli Directory Integrator 7.1 installer has accessibility features that are independent from the product. The installer supports 3 UI modes:

GUI Keyboard-only operation is supported in GUI mode, and the use of a screen reader is possible. In order to get the most from a screen reader, you should use the Java Access Bridge and launch the installer with a Java access Bridge enabled JVM, for example:

```
install_tdiv71_win_x86.exe LAX_VM "Java_DIR/jre/bin/java.exe"
```

The JVM used should be a Java 6 JRE.

Console

In console mode, keyboard-only operation is supported and all displays and user options are displayed as text that can be easily read by screen readers. Console mode is the suggested install method for accessibility.

Silent In silent mode, user responses are given through a response file, and no user interaction is required.

Related accessibility information

Visit the *IBM Accessibility Center* at <http://www.ibm.com/able> for more information about IBM's commitment to accessibility.

Contacting IBM Software support

Before contacting IBM Tivoli Software support with a problem, refer to IBM System Management and Tivoli software Web site at:

<http://www.ibm.com/software/sysmgmt/products/support/>

If you need additional help, contact software support by using the methods described in the *IBM Software Support Handbook* at the following Web site:

<http://techsupport.services.ibm.com/guides/handbook.html>

The guide provides the following information:

- Registration and eligibility requirements for receiving support
- Telephone numbers and e-mail addresses, depending on the country in which you are located
- A list of information you must gather before contacting customer support

A list of most requested documents as well as those identified as valuable in helping answer your questions related to IBM Tivoli Directory Integrator can be found at <http://www-01.ibm.com/support/docview.wss?rs=697&uid=swg27009673>.

Chapter 1. Introduction to problem determination

This guide provides information about IBM Tivoli Directory Integrator 7.1 tools, resources, and techniques that can aid in the identification and resolution of problems.

IBM Tivoli Directory Integrator 7.1 overview

IBM Tivoli Directory Integrator (Tivoli Directory Integrator) manages the technicalities of connecting to and interacting with the various data sources that you want to integrate, abstracting away the details of their APIs, transports, protocols and formats. Instead of focusing on data, Tivoli Directory Integrator lifts your view to the information level, enabling you to concentrate on the transformation, filtering and other business logic required to perform each exchange.

The architecture of IBM Tivoli Directory Integrator is divided into two parts:

- The kernel, where most of the system's functionality is provided, and which you leverage to quickly build the framework of your solution.
- The components, which abstract away the technical details of the data systems, platforms and formats that you want to work with. Tivoli Directory Integrator provides you with a number of component types, such as: connectors, parsers and Function Components.

When faults and errors occur, several built-in diagnostic tools are used to collect information and determine the exact cause of the problem.

Troubleshooting topics

This guide contains troubleshooting information for the following topics:

- Installation: See Chapter 3, "Installation and uninstallation," on page 7 for more information.
- Configuration Editor: See Chapter 4, "Configuration Editor," on page 19 for more information.
- Administration and Monitoring Console: See "Administration and Monitoring Console Problem Determination" on page 23 for more information.
- Components: See Chapter 7, "Components," on page 27 for more information.
- Known limitations and general troubleshooting: See Chapter 9, "Known limitations and general troubleshooting," on page 39 for more information.
- Scenarios: See Chapter 10, "Troubleshooting scenarios," on page 49 for more information.

Built-in troubleshooting features

Note: Many of the built-in troubleshooting features are documented elsewhere in the IBM Tivoli Directory Integrator 7.1 documentation library. The following sections tell you where to look for information about these features.

Logging

IBM Tivoli Directory Integrator relies on log4j as a logging engine. It is a very flexible framework that lets you log to file, NT eventlog, Unix syslog

and more, and can be tuned so it suits most needs. It can be a great help when you want to troubleshoot or debug your solution.

For information about IBM Tivoli Directory Integrator logging, see the "Logging and debugging" chapter in the *IBM Tivoli Directory Integrator V7.1 Installation and Administrator Guide*.

To see examples of the logging windows of the Configuration Editor see the "Configuration Editor" chapter in the *IBM Tivoli Directory Integrator V7.1 Users Guide*

AssemblyLine Auto Dump

The property `com.ibm.tdi.autodump.directory` is a property you can set in `global.properties` or `solution.properties`. It enables AssemblyLine state dumps to be performed automatically when an AssemblyLine terminates abnormally. The state dump contains valuable information about the state of the AssemblyLine at the time of termination such as JavaScript variables and other useful information. The value of this property should be a relative or absolute path to an existing directory. For default installations it is useful to specify "logs" so that the dumps end up in the same directory as the other logs. The log for each AssemblyLine is named after the AssemblyLine itself. The dump is appended to existing files.

Debugging

Tivoli Directory Integrator 7.1 offers an AssemblyLine debugging tool called the AssemblyLine Stepper. The AssemblyLine Stepper allows you to:

1. Define breakpoints for AssemblyLines.
2. Pause AssemblyLine processing at the defined breakpoints to examine the AssemblyLine for errors.

The AssemblyLine Stepper is part of the Configuration Editor. For more information about how to use the AssemblyLine Stepper, refer to the "Configuration Editor" chapter of the *IBM Tivoli Directory Integrator V7.1 Users Guide*.

Tracing and First Failure Data Capture (FFDC)

IBM Tivoli Directory Integrator is instrumented throughout its code with tracing statements, using the JLOG framework, a logging library similar to log4j, but which is used inside Tivoli Directory Integrator specifically for tracing and First Failure Data Capture (FFDC).

For information about IBM Tivoli Directory Integrator logging, see the "Tracing and FFDC" chapter in the *IBM Tivoli Directory Integrator V7.1 Installation and Administrator Guide*.

Sandbox

Tivoli Directory Integrator includes a Sandbox feature that enables you to record the operation of one or more Connectors in an AssemblyLine for later replay without the necessary data sources being available. This feature uses the System Store.

This feature can be very useful when providing support materials. Often, the time to reproduce the environment for an AssemblyLine and the state of data sources to reproduce a condition can be quite comprehensive. With a sandbox database with a recorded session, a support person can run the AssemblyLine without having access to all data stores the AssemblyLine requires. In addition, the AssemblyLine configuration can be modified to print out more information if that is necessary. The only change that cannot be done to the AssemblyLine configuration is to make additional

calls or reorder the calls to recorded components. This would cause an error during playback as calls to the connector would not match the next expected call to the connector.

For more information, see the section called "Debugging features in Tivoli Directory Integrator" in *IBM Tivoli Directory Integrator V7.1 Users Guide*.

Action Manager

The Action Manager is an error management mechanism that allows you to create Action Manager rules for your AssemblyLines.

An Action Manager rule consists of two parts:

1. The condition under which the rule is to be invoked, called a "trigger." Some examples of triggers are Server API failure, AssemblyLine failure, or failure of the AssemblyLine to run at specified intervals.
2. A set of alternate actions to perform when the trigger is encountered.

The Action Manager is part of the Administration and Monitoring Console (Administration and Monitoring Console). For instructions on how to use the Action Manager, consult the Administration and Monitoring Console chapter in the *IBM Tivoli Directory Integrator V7.1 Installation and Administrator Guide*

Performance Test and Debug Utilities

IBM Tivoli Directory Integrator 7.1 includes Performance Test and Debug Utilities tools. The Performance Test Tool monitors the system-level parameters and the server, records and logs information for the system and server at specified intervals of time. Performance test parameters are then used for throughput measurement and capacity planning.

The Debug Utilities tool identifies memory usage and memory leaks in specific Tivoli Directory Integrator components by collecting information at specific intervals and upon certain actions.

See Chapter 2, "Performance Test Utilities and Debugging," on page 5 for more information about Tivoli Directory Integrator's benchmarking tools.

Using the Messages Guide to resolve errors

See the *IBM Tivoli Directory Integrator V7.1 Messages Guide* for information about why the error occurred and how to resolve it.

Chapter 2. Performance Test Utilities and Debugging

There are two performance tools included with IBM Tivoli Directory Integrator 7.1: a Performance Test Utilities tool and a Performance Debugging tool. These tools monitor and log system and server information at specified intervals of time. The information gathered can then be used for throughput measurement and capacity planning.

This chapter describes these tools and explains how to configure and gather information from them.

Performance Test Utilities

The Performance test utilities are shell scripts that launch a server instance for a particular configuration and log system-level (Input/Output (IO), Central Processing Unit (CPU), network) and Java Virtual Machine (JVM) level information. The test utilities can be used to benchmark macro parameters such as throughput, application memory and CPU usage. Data is logged into the performance logs at user specified intervals.

Running the Performance Test Utilities scripts

There are two shell scripts: The `ibmdisrvtp.sh` utility and the `ibmdibenchmark.sh` utility. The `ibmdisrvtp.sh` utility measures server throughput. The `ibmdibenchmark.sh` utility logs system-level information. The utilities must be executed separately.

Note: The Performance Test Utilities shell scripts are not supported on Windows operating systems.

Running the `ibmdisrvtp.sh` utility

1. Copy the `ibmdisrvtp.sh` and `benchmark.properties` files from the `<itdi_install_dir>/performance` directory to the solution directory.
2. Open the `benchmark.properties` file, and specify the following settings:
 - `ibmdiroot`: Specify the Tivoli Directory Integrator install directory:
 - `solutiondir`: Specify Tivoli Directory Integrator solution directory
 - `configfile`: The name of the Config file to be loaded
 - `assemblyline`: The AssemblyLine to be started
 - `cmdoptions`: The `ibmdisrv` command line options. By default, the value for `cmdoptions` is `None`.
 - `jvmcmdoptions`: The JVM command line options. By default, the value for `jvmcmdoptions` is `None`.
3. At a command prompt, execute the following command from the command line:

```
./ibmdisrvtp.sh -f benchmark.properties
```

Running the `ibmdibenchmark.sh` utility

1. Copy the `ibmdibenchmark.sh` and `benchmark.properties` files from `<itdi_install_dir>/performance` directory to solution directory.
2. Open the `benchmark.properties` file, and specify the following properties:

- duration: Duration time in seconds, set it to -1 to run it for an infinite time period.
 - interval: Interval time in seconds to collect system-level information. If duration is not set to -1 then interval should be less than the duration.
 - ios: enable or disable input-output information recording (y to enable, n to disable)
 - vms: enable or disable memory usage/information recording (y to enable, n to disable)
 - nets: enable or disable network information recording (y to enable, n to disable)
3. From the command line, execute the following command:
- ```
./ibmdibenchmark.sh -f benchmark.properties
```

---

## Performance debugging

The Performance Debugging tool identifies memory usage and memory leaks in specific Tivoli Directory Integrator components by collecting information at specific intervals and upon certain actions.

### Data collected by the Performance Debugging tool

This feature logs the following information:

- Component name
- Time (in milliseconds)
- Memory usage

Component names are prefixed with the name of the AssemblyLine instance that uniquely identifies each component.

Memory usage is the difference between total memory available (JVM) at start and total memory available at end for each component during its execution.

Before AssemblyLine terminates, the performance entry that contains performance statistics is logged. This is then followed by logging of the overall AssemblyLine performance statistics.

### Running the Performance Debugging tool

To run the Performance Debugging tool, use one of the following methods:

- Start the server using the -T parameter
- Start the server by setting the following property in the global.properties or solution.properties file:

```
Enable\Disable performance logging
com.ibm.di.server.perfStats=true
```

**Note:** The -T parameter takes precedence over the solution.properties file setting. If the com.ibm.di.server.perfStats value is set to false, you can still obtain performance statistics by starting the server using the -T parameter.



---

## Chapter 3. Installation and uninstallation

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### Troubleshooting Installation

Installation and uninstallation of IBM Tivoli Directory Integrator is scripted and implemented using InstallAnywhere 2009 (IA) installer technology.

#### Gathering installation information

Gathering information about your installation can help IBM Support determine the source of your problem.

For any problems with the user interface, the install process or post-install process collects the `tdiv70install.log` found in the system's temp directory.

On i5/OS the install log will be found in the `/tmp/InstallShield` directory.

During an upgrade from Tivoli Directory Integrator 6.0 to Tivoli Directory Integrator 7.0 or 7.1, if there is a problem with uninstalling Tivoli Directory Integrator 6.0 then collect the `idiuninstall.log` and `tdiv70install.log` found in the system's temp directory.

During an upgrade from Tivoli Directory Integrator 6.1 or Tivoli Directory Integrator 6.1.1 to Tivoli Directory Integrator 7.0 or 7.1, if there is a problem with uninstalling Tivoli Directory Integrator 6.1.x then collect the following:

- The *SI install directory*/logs/si\_trace.log file.
- The `tdiv70install.log` found in the system's temp directory

In addition, collect any of the following files, if present, from the system's temp directory:

- `amcInstall.log`
- `amcInstallErr.log`
- `amcRoles.log`
- `amcRolesErr.log`
- `StdErr.log`
- `StdOut.log`
- `tdiv70uninstall.log`
- `tdiMQeCreate.log`
- `tdiMQeCreateErr.log`
- `tdiSoldir.log`
- `tdiSoldirErr.log`
- `lum.out`
- `lumerr.out`
- `tdiMQeCreate.log`
- `tdiMQeCreateErr.log`
- `ITLM.xx`

In exceptional circumstances, you may want to run the installer such that it generates a debug log. If you would like to generate an ISMP 11.5 debug log which

contains more information than the regular install log, run the installer with the `-is:log` option: `installer -is:log logfile` where `logfile` is the name of the logfile to be generated.

## Performing a manual uninstallation

In the case where an unexpected error occurs which causes the uninstalling of Tivoli Directory Integrator using the uninstaller to fail, the target system will need to be manually restored to a state without Tivoli Directory Integrator. Refer to the InstallShield Multiplatform (ISMP) Registry Location for details on where you can find the ISMP vpd registry. Perform the following steps:

### Removing Tivoli Directory Integrator on Windows

1. Run `TDI_install_dir\bin\amc\stopAM.bat` to stop Action Manager (AM), if it is running.
2. If the AMC was installed as service, execute the following commands:
  - `sc stop <amcservice_name>`
  - `sc delete <amcservice_name>`Else use the `stop_tdiamc.bat` utility in the `TDI_install_dir\bin\amc` folder.
3. If the AMC was deployed on WAS use `TDI_install_dir\bin\amc\uninstall.bat` to undeploy it from WAS.
4. Run `ibmditk -tdishutdown`. This stops any other TDI server instances that might have left running.
5. If you have installed the password plugins make sure you go back through the install steps and successfully unregister any native plugin you have registered.
6. Use the `pwd_plugins/bin/stopProxy.bat` script to stop the running Java Proxy.
7. Remove the Tivoli Directory Integrator install directory. Optionally you may want to remove the Tivoli Directory Integrator Solutions Directory as well.
8. Remove the Windows shortcuts from the Start Menu.
9. Remove TDI's Add/Remove Program entries and the AMC service from the Windows Registry.
10. Locate the ISMP vpd.script file on your machine (*Platform-specific VPD location/engine/version/\_vpddb/vpd.script* - on Windows, this file location should be `C:\Program Files\Common Files\InstallShield\Universal\common\Gen2\_vpddb`), and perform the following:
  - Delete all "INSERT INTO PERSISTED\_VARIABLES\_TABLE" that reference the associated install location
  - Delete all "INSERT INTO PARENT\_SOFTWARE\_OBJECT\_TABLE VALUES" that correspond to the "INSERT INTO PERSISTED\_VARIABLES\_TABLE" entries previously deleted
  - Delete all "INSERT INTO EXEC\_ACTION\_TABLE VALUES" entries that correspond to the installation you are deleting.
  - Delete all "INSERT INTO LOCAL\_PERSISTED\_VARIABLES\_TABLE VALUES" entries that correspond to the installation you are deleting.

### Removing Tivoli Directory Integrator on Unix, Linux, i5/OS

1. Run `TDI_install_dir/bin/amc/stopAM.sh` to stop AM.

2. Call the stop\_tdiadc.sh script. If the AMC was deployed on WAS, use the `TDI_install_dir/bin/amc/uninstall.sh` to undeploy it from WAS.
3. If you have installed the password plugins make sure you go back through the install steps and successfully unregister any native plugin you have registered.
4. Use the `pwd_plugins/bin/stopProxy.sh` script to stop the running Java Proxy.
5. Remove the Tivoli Directory Integrator install directory. Optionally you may want to remove the Tivoli Directory Integrator Solutions Directory as well.
6. Edit the `/etc/inittab` file and remove the `"amc::once:/opt/IBM/Tivoli Directory Integrator/V7.0/lwi/bin/lwistart.sh > /dev/console 2>&1"` line that is associated with the Tivoli Directory Integrator instance you are removing. The install location should match the location you are removing.
7. Locate the ISMP `vpd.script` file on your machine (*Platform-specific VPD location/engine/version/\_vpddb/vpd.script*), and perform the following:
  - Delete all "INSERT INTO PERSISTED\_VARIABLES\_TABLE" that reference the associated install location
  - Delete all "INSERT INTO PARENT\_SOFTWARE\_OBJECT\_TABLE VALUES" that correspond to the "INSERT INTO PERSISTED\_VARIABLES\_TABLE" entries previously deleted
  - Delete all "INSERT INTO EXEC\_ACTION\_TABLE VALUES" entries that correspond to the installation you are deleting.
  - Delete all "INSERT INTO LOCAL\_PERSISTED\_VARIABLES\_TABLE VALUES" entries that correspond to the installation you are deleting.

Example: If the following text was the contents of your `vpd.script` file, you would remove the italicized entries to get rid of the installation located at `C:\Program Files\IBM\TDI\V7.0`:

```
INSERT INTO INSTALLED_SOFTWARE_OBJECT VALUES (1, 'faddba0181b51d9316ef30cc8eb4700d', 'C:\Program Files\IBM\TDI\V7.0\1\7.0.0\3,true',NULL,'false','IBM',NULL,
INSERT INTO INSTALLED_SOFTWARE_OBJECT VALUES (2, '6b1cd089763a140ad1c705cb64d345', 'C:\Program Files\IBM\TDI\V7.0\1\1\3,true',NULL,'false',NULL,
INSERT INTO INSTALLED_SOFTWARE_OBJECT VALUES (3, '33afd943d7c33561e056caebc630d80f', 'C:\Program Files\IBM\TDI\V7.0\1\1\3,true',NULL,'false',NULL,
INSERT INTO INSTALLED_SOFTWARE_OBJECT VALUES (4, 'eeda69304fad8c7d11d965cf4458f4f', 'C:\Program Files\IBM\TDI\V7.0\1\1\3,true',NULL,'false',NULL,
INSERT INTO INSTALLED_SOFTWARE_OBJECT VALUES (5, 'b6131b3f5fa06f5ea4c4f10adbfef4cb', 'C:\Program Files\IBM\TDI\V7.0\1\1\3,true',NULL,'false',NULL,
INSERT INTO INSTALLED_SOFTWARE_OBJECT VALUES (6, '7d21b7e24de305f98e0b509c25851179', 'C:\Program Files\IBM\TDI\V7.0\1\1\3,true',NULL,'false',NULL,
INSERT INTO INSTALLED_SOFTWARE_OBJECT VALUES (7, '2c0c8aa7ff0fcf4a06bd5021e69f14ec', 'C:\Program Files\IBM\TDI\V7.0\1\1\3,true',NULL,'false',NULL,
INSERT INTO INSTALLED_SOFTWARE_OBJECT VALUES (8, '0fbfc79b749f3f140c7e2433741889af', 'C:\Program Files\IBM\TDI\V7.0\1\1\3,true',NULL,'false',NULL,
INSERT INTO INSTALLED_SOFTWARE_OBJECT VALUES (9, '58b82c4d5e8c03b1791508a625924846', 'C:\Program Files\IBM\TDI\V7.0\1\1\3,true',NULL,'false',NULL,
INSERT INTO INSTALLED_SOFTWARE_OBJECT VALUES (10, '09bf91ade090d706d281ef740af6e461', 'C:\Program Files\IBM\TDI\V7.0\1\1\3,true',NULL,'false',NULL,
INSERT INTO INSTALLED_SOFTWARE_OBJECT VALUES (11, 'dfcda2f8d80dd31b6c8d092655c51dd5', 'C:\Program Files\IBM\TDI\V7.0\1\1\3,true',NULL,'false',NULL,
INSERT INTO INSTALLED_SOFTWARE_OBJECT VALUES (12, 'b84c3e4634373c4fb2938b7e34aa0693', 'C:\Program Files\IBM\TDI\V7.0\1\1\3,true',NULL,'false',NULL,
INSERT INTO INSTALLED_SOFTWARE_OBJECT VALUES (13, 'a6a8afbaea1dade56749accf9cfd867b', 'C:\Program Files\IBM\TDI\V7.0\1\1\3,true',NULL,'false',NULL,
INSERT INTO INSTALLED_SOFTWARE_OBJECT VALUES (14, 'bc174cd39b429b762c37d7b6d355995', 'C:\Program Files\IBM\TDI\V7.0\1\1\3,true',NULL,'false',NULL,
INSERT INTO INSTALLED_SOFTWARE_OBJECT VALUES (15, 'dfaf62cd7c8269c813196e9e77e92dcb', 'C:\Program Files\IBM\TDI\V7.0\1\1\3,true',NULL,'false',NULL,
INSERT INTO INSTALLED_SOFTWARE_OBJECT VALUES (16, 'b405c583687a80001d43c38c600c98d', 'C:\Program Files\IBM\TDI\V7.0\1\1\3,true',NULL,'false',NULL,
INSERT INTO INSTALLED_SOFTWARE_OBJECT VALUES (17, 'faddba0181b51d9316ef30cc8eb4700d', 'C:\Program Files\IBM\TDI\V7.0_copy2\2\7.0.0\3,true',NULL,'false',NULL,
INSERT INTO INSTALLED_SOFTWARE_OBJECT VALUES (18, '6b1cd089763a140ad1c705cb64d345', 'C:\Program Files\IBM\TDI\V7.0_copy2\2\1\3,true',NULL,'false',NULL,
INSERT INTO INSTALLED_SOFTWARE_OBJECT VALUES (19, '33afd943d7c33561e056caebc630d80f', 'C:\Program Files\IBM\TDI\V7.0_copy2\2\1\3,true',NULL,'false',NULL,
INSERT INTO INSTALLED_SOFTWARE_OBJECT VALUES (20, 'eeda69304fad8c7d11d965cf4458f4f', 'C:\Program Files\IBM\TDI\V7.0_copy2\2\1\3,true',NULL,'false',NULL,
INSERT INTO INSTALLED_SOFTWARE_OBJECT VALUES (21, 'b6131b3f5fa06f5ea4c4f10adbfef4cb', 'C:\Program Files\IBM\TDI\V7.0_copy2\2\1\3,true',NULL,'false',NULL,
INSERT INTO INSTALLED_SOFTWARE_OBJECT VALUES (22, '7d21b7e24de305f98e0b509c25851179', 'C:\Program Files\IBM\TDI\V7.0_copy2\2\1\3,true',NULL,'false',NULL,
INSERT INTO INSTALLED_SOFTWARE_OBJECT VALUES (23, '2c0c8aa7ff0fcf4a06bd5021e69f14ec', 'C:\Program Files\IBM\TDI\V7.0_copy2\2\1\3,true',NULL,'false',NULL,
INSERT INTO INSTALLED_SOFTWARE_OBJECT VALUES (24, '0fbfc79b749f3f140c7e2433741889af', 'C:\Program Files\IBM\TDI\V7.0_copy2\2\1\3,true',NULL,'false',NULL,
INSERT INTO INSTALLED_SOFTWARE_OBJECT VALUES (25, '58b82c4d5e8c03b1791508a625924846', 'C:\Program Files\IBM\TDI\V7.0_copy2\2\1\3,true',NULL,'false',NULL,
INSERT INTO INSTALLED_SOFTWARE_OBJECT VALUES (26, '09bf91ade090d706d281ef740af6e461', 'C:\Program Files\IBM\TDI\V7.0_copy2\2\1\3,true',NULL,'false',NULL,
INSERT INTO INSTALLED_SOFTWARE_OBJECT VALUES (27, 'dfcda2f8d80dd31b6c8d092655c51dd5', 'C:\Program Files\IBM\TDI\V7.0_copy2\2\1\3,true',NULL,'false',NULL,
INSERT INTO INSTALLED_SOFTWARE_OBJECT VALUES (28, 'b84c3e4634373c4fb2938b7e34aa0693', 'C:\Program Files\IBM\TDI\V7.0_copy2\2\1\3,true',NULL,'false',NULL,
INSERT INTO INSTALLED_SOFTWARE_OBJECT VALUES (29, 'a6a8afbaea1dade56749accf9cfd867b', 'C:\Program Files\IBM\TDI\V7.0_copy2\2\1\3,true',NULL,'false',NULL,
INSERT INTO INSTALLED_SOFTWARE_OBJECT VALUES (30, 'bc174cd39b429b762c37d7b6d355995', 'C:\Program Files\IBM\TDI\V7.0_copy2\2\1\3,true',NULL,'false',NULL,
INSERT INTO INSTALLED_SOFTWARE_OBJECT VALUES (31, 'dfaf62cd7c8269c813196e9e77e92dcb', 'C:\Program Files\IBM\TDI\V7.0_copy2\2\1\3,true',NULL,'false',NULL,
INSERT INTO INSTALLED_SOFTWARE_OBJECT VALUES (32, 'b405c583687a80001d43c38c600c98d', 'C:\Program Files\IBM\TDI\V7.0_copy2\2\1\3,true',NULL,'false',NULL,
INSERT INTO PARENT_SOFTWARE_OBJECT_TABLE VALUES (32,17)
INSERT INTO PARENT_SOFTWARE_OBJECT_TABLE VALUES (31,17)
INSERT INTO PARENT_SOFTWARE_OBJECT_TABLE VALUES (30,17)
INSERT INTO PARENT_SOFTWARE_OBJECT_TABLE VALUES (29,18)
INSERT INTO PARENT_SOFTWARE_OBJECT_TABLE VALUES (28,18)
INSERT INTO PARENT_SOFTWARE_OBJECT_TABLE VALUES (27,18)
INSERT INTO PARENT_SOFTWARE_OBJECT_TABLE VALUES (26,18)
INSERT INTO PARENT_SOFTWARE_OBJECT_TABLE VALUES (25,18)
INSERT INTO PARENT_SOFTWARE_OBJECT_TABLE VALUES (24,18)
INSERT INTO PARENT_SOFTWARE_OBJECT_TABLE VALUES (23,18)
```

```

INSERT INTO PARENT_SOFTWARE_OBJECT_TABLE VALUES(22,18)
INSERT INTO PARENT_SOFTWARE_OBJECT_TABLE VALUES(21,17)
INSERT INTO PARENT_SOFTWARE_OBJECT_TABLE VALUES(20,17)
INSERT INTO PARENT_SOFTWARE_OBJECT_TABLE VALUES(19,17)
INSERT INTO PARENT_SOFTWARE_OBJECT_TABLE VALUES(18,17)
INSERT INTO PARENT_SOFTWARE_OBJECT_TABLE VALUES(17,17)
INSERT INTO PARENT_SOFTWARE_OBJECT_TABLE VALUES(16,1)
INSERT INTO PARENT_SOFTWARE_OBJECT_TABLE VALUES(15,1)
INSERT INTO PARENT_SOFTWARE_OBJECT_TABLE VALUES(14,1)
INSERT INTO PARENT_SOFTWARE_OBJECT_TABLE VALUES(13,2)
INSERT INTO PARENT_SOFTWARE_OBJECT_TABLE VALUES(12,2)
INSERT INTO PARENT_SOFTWARE_OBJECT_TABLE VALUES(11,2)
INSERT INTO PARENT_SOFTWARE_OBJECT_TABLE VALUES(10,2)
INSERT INTO PARENT_SOFTWARE_OBJECT_TABLE VALUES(9,2)
INSERT INTO PARENT_SOFTWARE_OBJECT_TABLE VALUES(8,2)
INSERT INTO PARENT_SOFTWARE_OBJECT_TABLE VALUES(7,2)
INSERT INTO PARENT_SOFTWARE_OBJECT_TABLE VALUES(6,2)
INSERT INTO PARENT_SOFTWARE_OBJECT_TABLE VALUES(5,1)
INSERT INTO PARENT_SOFTWARE_OBJECT_TABLE VALUES(4,1)
INSERT INTO PARENT_SOFTWARE_OBJECT_TABLE VALUES(3,1)
INSERT INTO PARENT_SOFTWARE_OBJECT_TABLE VALUES(2,1)
INSERT INTO PARENT_SOFTWARE_OBJECT_TABLE VALUES(1,1)
INSERT INTO EXEC_ACTION_TABLE VALUES(1,'eeda69304afad8c7d11d965cf4458f4f','1','$(absoluteInstallLocation)\bin\tdiSetJavaHome.bat',0,'','','')
INSERT INTO EXEC_ACTION_TABLE VALUES(2,'b84c3e4634373c4fb2938b7e34aa0693','1','$(absoluteInstallLocation)\bin\setDefaultSolDir.bat',0,'','','')
INSERT INTO EXEC_ACTION_TABLE VALUES(3,'a6a8afbbae1dade56749accf9cf4867b','1','$(absoluteInstallLocation)\jars\plugins\mqeconfig.bat',0,'','','')
INSERT INTO EXEC_ACTION_TABLE VALUES(4,'eeda69304afad8c7d11d965cf4458f4f','2','$(absoluteInstallLocation)\bin\tdiSetJavaHome.bat',0,'','','')
INSERT INTO EXEC_ACTION_TABLE VALUES(5,'b84c3e4634373c4fb2938b7e34aa0693','2','$(absoluteInstallLocation)\bin\setDefaultSolDir.bat',0,'','','')
INSERT INTO EXEC_ACTION_TABLE VALUES(6,'a6a8afbbae1dade56749accf9cf4867b','2','$(absoluteInstallLocation)\jars\plugins\mqeconfig.bat',0,'','','')
INSERT INTO DATABASE_META VALUES('2')
INSERT INTO LOCAL_PERSISTED_VARIABLES_TABLE VALUES(1,'TDI_Soldir_UnderHome','true',NULL,'false')
INSERT INTO LOCAL_PERSISTED_VARIABLES_TABLE VALUES(1,'TDI_Soldir_Working','false',NULL,'false')
INSERT INTO LOCAL_PERSISTED_VARIABLES_TABLE VALUES(1,'TDI_No_ISC_Chosen','false',NULL,'false')
INSERT INTO LOCAL_PERSISTED_VARIABLES_TABLE VALUES(1,'TDI_AMC_Service_Name','',NULL,'false')
INSERT INTO LOCAL_PERSISTED_VARIABLES_TABLE VALUES(1,'TDI_Soldir_SelectDir','false',NULL,'false')
INSERT INTO LOCAL_PERSISTED_VARIABLES_TABLE VALUES(1,'TDI_Soldir_InstallDir','false',NULL,'false')
INSERT INTO LOCAL_PERSISTED_VARIABLES_TABLE VALUES(1,'TDI_JRE_DIR','$(absoluteInstallLocation)\jvm',NULL,'false')
INSERT INTO LOCAL_PERSISTED_VARIABLES_TABLE VALUES(1,'TDI_Edition','Identity',NULL,'false')
INSERT INTO LOCAL_PERSISTED_VARIABLES_TABLE VALUES(1,'TDI_SOLDIR','C:\Documents and Settings\Administrator\My Documents\TDI',NULL,'false')
INSERT INTO LOCAL_PERSISTED_VARIABLES_TABLE VALUES(1,'TDI_INSTALL_BASE','true',NULL,'false')
INSERT INTO LOCAL_PERSISTED_VARIABLES_TABLE VALUES(1,'TDI_Bundled_ISC_Chosen','false',NULL,'false')
INSERT INTO LOCAL_PERSISTED_VARIABLES_TABLE VALUES(17,'TDI_Soldir_UnderHome','true',NULL,'false')
INSERT INTO LOCAL_PERSISTED_VARIABLES_TABLE VALUES(17,'TDI_Soldir_Working','false',NULL,'false')
INSERT INTO LOCAL_PERSISTED_VARIABLES_TABLE VALUES(17,'TDI_No_ISC_Chosen','false',NULL,'false')
INSERT INTO LOCAL_PERSISTED_VARIABLES_TABLE VALUES(17,'TDI_AMC_Service_Name','',NULL,'false')
INSERT INTO LOCAL_PERSISTED_VARIABLES_TABLE VALUES(17,'TDI_Soldir_SelectDir','false',NULL,'false')
INSERT INTO LOCAL_PERSISTED_VARIABLES_TABLE VALUES(17,'TDI_Soldir_InstallDir','false',NULL,'false')
INSERT INTO LOCAL_PERSISTED_VARIABLES_TABLE VALUES(17,'TDI_JRE_DIR','$(absoluteInstallLocation)\jvm',NULL,'false')
INSERT INTO LOCAL_PERSISTED_VARIABLES_TABLE VALUES(17,'TDI_Edition','Identity',NULL,'false')
INSERT INTO LOCAL_PERSISTED_VARIABLES_TABLE VALUES(17,'TDI_SOLDIR','C:\Documents and Settings\Administrator\My Documents\TDI',NULL,'false')
INSERT INTO LOCAL_PERSISTED_VARIABLES_TABLE VALUES(17,'TDI_INSTALL_BASE','true',NULL,'false')
INSERT INTO LOCAL_PERSISTED_VARIABLES_TABLE VALUES(17,'TDI_Bundled_ISC_Chosen','false',NULL,'false')

```

## Troubleshooting installation problems

This section explains troubleshooting problems and explains any workarounds you can use.

For a more detailed Installation procedure, see *IBM Tivoli Directory Integrator V7.1 Installation and Administrator Guide*.

### Tivoli Directory Integrator v7.1 installer does not appear to honor `-D$INSTALLER_TEMP_DIR$` option

#### Symptom:

On Windows, this option appears to be silently ignored, and temporary installer data still is stored in the system TEMP directory. On Linux/UNIX, specifying the option results in an exception being thrown.

#### Resolution:

To use a custom temporary files directory for the Tivoli Directory Integrator v7.1 installer installer, you need to specify the InstallAnywhere temp variable as a system environment variable.

For Windows: Setting "IATEMPDIR" (without quotes) as an environment variable prior to launching the installer does not appear to work in this version of InstallAnywhere; instead, empty the system TEMP directory and ensure you have enough space available there to continue with the installation, or set the environment variable %TEMP% to point to a directory with sufficient space.

For Linux/UNIX: Set the environment variable for IA to use as a temp directory in the console window, for example:

```
IATEMPDIR=/opt/IBM/TDI/temp
```

```
export IATEMPDIR
```

## **Tivoli Directory Integrator v7.1 installer does not support -D\$TDI\_NOSHORTCUTS\$ and -D\$TDI\_SKIP\_VERSION\_CHECKS\$ options**

### **Symptom:**

On non-Windows platforms, these options cause the installer to throw exceptions like the following trace:

Invocation of this Java Application has caused an InvocationTargetException. This application will

### **Stack Trace:**

```
java.lang.StringIndexOutOfBoundsException
at java.lang.String.substring(String.java:1092)
at com.zerog.ia.installer.util.VariableManager.h(DashoA10*..)
at com.zerog.ia.installer.util.VariableManager.a(DashoA10*..)
at com.zerog.ia.installer.util.VariableManager.a(DashoA10*..)
at com.zerog.ia.installer.util.VariableFacade.setVariable(DashoA10*..)
at com.zerog.ia.installer.util.VariableFacade.a(DashoA10*..)
at com.zerog.ia.installer.LifeCycleManager.a(DashoA10*..)
at com.zerog.ia.installer.Main.main(DashoA10*..)
at sun.reflect.NativeMethodAccessorImpl.invoke0(Native Method)
at sun.reflect.NativeMethodAccessorImpl.invoke(NativeMethodAccessorImpl.java:48)
at sun.reflect.DelegatingMethodAccessorImpl.invoke(DelegatingMethodAccessorImpl.java:37)
at java.lang.reflect.Method.invoke(Method.java:600)
at com.zerog.lax.LAX.launch(DashoA10*..)
at com.zerog.lax.LAX.main(DashoA10*..)
```

This Application has Unexpectedly Quit: Invocation of this Java Application has caused an Invocati

### **Resolution:**

This is an InstallAnywhere 2009 defect, for which there currently is no resolution. If you do not need shortcuts or aliases, you can remove them yourselves after installation is complete.

## **Tivoli Directory Integrator 7.0 installer fails to detect previously installed v6.1 or v6.1.1 instances**

### **Symptom:**

A Solution Installation exception was encountered. There may be undetected versions of Tivoli Directory Integrator installed. If an installation directory of a previously installed version of Tivoli Directory Integrator is chosen as the new installation location, the previously installed version of Tivoli Directory Integrator will be overwritten. When the previously installed version of Tivoli Directory Integrator is overwritten, this may cause a loss of user data.

The Tivoli Directory Integrator 7.1 installer caught an exception from the Solution Installation other than SINotInstalledException. Although the v6.1 and the v6.1.1 versions of Tivoli Directory Integrator may be installed, the Tivoli Directory Integrator 7.1 installer is unable to detect them. The installer will display the following message:

### **Resolution:**

If you choose to continue, you must manually verify that the directory you install to does not contain a 6.1 or 6.1.1 installation of Tivoli Directory Integrator. If the

directory you chose does contain a 6.1 or 6.1.1 installation, Tivoli Directory Integrator 7.1 will be installed to that directory, but a migration will not take place. The old user data may be lost, and the previous Tivoli Directory Integrator version will be unusable.

You may also try restarting the ACSI service on the system and running the installer again to attempt to detect previous versions of Tivoli Directory Integrator.

### **install\_tdiv70\_linux\_x86.bin fails to launch with error ./install\_tdiv70\_linux\_x86.bin: line 1957: warning: here-document at line 1957 delimited by end-of-file (wanted '/dev/null')**

Note that this error has only been seen on Linux distributions that are not supported.

1. The user launches the Tivoli Directory Integrator installer

```
./install_tdiv70_linux_x86.bin
```

2. Message will appear stating:

```
./install_tdiv70_linux_x86.bin: line 1957: warning: here-document at line 1957 delimited by end-of-file (wanted '/dev/null')
```

The solution is to edit line 1957 of the `install_tdiv70_linux_x86.bin` file to change the occurrence of "`<<`" to "`<`" (replace the first '`<`' with a space).

### **On RHEL 5.0 (or any other system with SELinux enabled), Tivoli Directory Integrator 7.0 installer fails to launch with error "No Java Runtime Environment (JRE) was found on this system"**

The RHEL 5.0 default settings for SELinux have been known to prevent Java 5 from running properly. Tivoli Directory Integrator 7.0 bundles Java 5 and uses it to launch the installer

The following steps produce the error:

1. The user launches the Tivoli Directory Integrator installer

```
./install_tdiv70_linux_x86.bin
```

2. Message will appear stating:

```
Initializing Wizard....
Extracting Bundled JRE.
Verifying JVM
```

```
No Java Runtime Environment (JRE) was found on this system.
```

There are two solutions available:

1. Temporarily disable SELinux by using the `setenforce 0` command, run the install; then, enable SELinux by using the `setenforce 1` command, or
2. Edit the `/etc/selinux/config` file and set SELINUX to either permissive or disabled. This solution, however, affects the level of security for the entire system.

### **"No Java Runtime Environment (JRE) was found on this system": JVM verification fails while installing Tivoli Directory Integrator on some slower platforms**

**Note:** On RHEL 5.0, there can be another reason for this error situation. Verification of the JVM sometimes fails during installation on some slower platforms. Failure usually results because the verification takes more time than the installer expects it to take.

The following steps produce the error:

1. The user launches the Tivoli Directory Integrator installer.

Linux example:

```
./install_tdiv70_linux_x86.bin
```

2. Message will appear stating:

```
Initializing Wizard.....
Extracting Bundled JRE.
Verifying JVM
```

No Java Runtime Environment (JRE) was found on this system.

The solution is to run the installer from the command line and specify a longer time to wait before verifying the JRE:

```
... -is:jvmtimer
```

Use a longer time span to give the verification step more time on slower platforms. Specify the time span in seconds. The syntax of this parameter is (this parameter is valid on non-Windows platforms only):

```
-is:jvmtimer <seconds>
```

Linux example:

```
./install_tdiv70_linux_x86.bin -is:jvmtimer 15
```

For HP-IA64 11iV2, this value needs to be 60 seconds. Use a command as follows:

```
./install_tdiv70_hpx_ia64.bin -console -is:log log.txt -is:jvmtimer 60 -is:tempdir ./tmp
```

The value 15 may be altered as needed.

## **AIX: problem during uninstall**

### **Problem::**

When uninstalling Tivoli Directory Integrator, the following message appears:

```
The size of the extracted files to be installed are corrupted.
Please attempt to download the installer again. Make sure that the file is
transferred in "binary" mode.
```

### **Solution::**

This may be caused by the ISMP installer never completely finishing, for example, the product has installed but the user has not hit the last button to complete the installation. If this is not the case, there may be a problem with the current temporary directory being used by the installer; try specifying a different temporary directory:

```
TDI_install_dir/uninst/uninstaller.bin -is:tempdir /mytmp
```

Specifying a different temporary directory may produce another error:

```
"The wizard cannot run because of the following condition: An installation is
currently running with process id 753774. You must finish or cancel the
currently running installation before proceeding.
```

```
An installation is currently running with process id 753774. You must finish or
cancel the currently running installation before proceeding."
```

You may kill the process id mentioned in the message and then retry the previous command. You may also reboot the machine and restart the uninstaller to uninstall Tivoli Directory Integrator. A reboot may still be required if you are going to reinstall Tivoli Directory Integrator.

### **AIX 5.3: No Java Runtime Environment (JRE) was found on this system.**

On AIX 5.3, if you receive the following error message when trying to run the installer:

```
No Java Runtime Environment (JRE) was found on this system.
```

This may indicate that AIX is not at the appropriate level. You may check this with the `oslevel -r` command:

```
oslevel -r
5300-00
```

The digits after the dash indicate the maintenance level, and at least ML03 is required. Apply this maintenance level if it is not installed and attempt to run the installer again.

### **Attempting to install Tivoli Directory Integrator version 7.0 to a location where Tivoli Directory Integrator is already installed**

If you try to install Tivoli Directory Integrator 7.1 to a location where a Tivoli Directory Integrator instance is already installed you will get an error indicating that:

```
The directory you have chosen already contains an installation of Tivoli Directory Integrator. Choose another directory.
```

The following steps produce the error:

1. The user selects to install Tivoli Directory Integrator to a new location.
2. When prompted for the installation directory, the user selects the same directory and version as are already installed for the existing installed instance.
3. The following error appears:

```
The directory you have chosen already contains an installation of Tivoli Directory Integrator, please choose another directory.
```

The solution is to install Tivoli Directory Integrator to a different directory from the one where it is already installed.

## **Ikeyman file needs executable permissions on HP-UX and Solaris operating systems**

On HP-UX and Solaris operating systems, the Ikeyman file requires executable file permissions; for example, 555. The Ikeyman file is located in the `jre/bin` directory.

## **Unable to migrate Cloudscape System Store of Tivoli Directory Integrator 6.0 to Tivoli Directory Integrator 7.0 or 7.1.**

These conditions are symptoms of a failed migration from Cloudscape System Store 6.0 to Derby System Store 7.0 or 7.1.

- The Tivoli Directory Integrator SysStore folder is empty.
- Unable to access Tivoli Directory Integrator 6.0 System Store data.
- Installer failed with message similar to: Unable to migrate Cloudscape Database.

The migration failed because the Cloudscape Database could not be migrated by the installer.



Tivoli Directory Integrator 7.0 and later uses Derby v10.3 drivers that are not compatible with previous versions of Cloudscape. Because Tivoli Directory Integrator 6.0 uses Cloudscape version 5.1 as its System Store, Cloudscape must be migrated to a Derby version 10.3 database in 7.0

To migrate to Derby version 10, you need the migrateCS script shipped with Tivoli Directory Integrator 7.0 and 7.1. This script is located in the following directory:

```
TDI_install_dir/tools/CSMigration
```

To migrate your older Cloudscape database, invoke the migrateCS script as follows:

```
migrateCS <oldCSdirectoryDB> <newCSdirectoryDB>
```

For example, if your old Cloudscape DB is in the E:\MyDB directory, and you wish to create a new one in the E:\Tivoli Directory Integrator61\MyDB\_10 directory, run the following command:

```
migrateCS E:\MyDB E:\Tivoli Directory
Integrator61\MyDB_10
```

**Note:** The MyDB\_10 folder will be automatically created by the script. It must not exist before invoking the script.

---

## Known limitations

The following statements represent known issues with the Tivoli Directory Integrator installation process. Workarounds are provided where available.

### Multiple installations not registered correctly in Windows Add/Remove Programs

The InstallAnywhere 2009 (IA) installer used by Tivoli Directory Integrator v7.1 allows you to install multiple versions of Tivoli Directory Integrator. However, these installations are not tracked properly in the Windows Add/Remove Programs control panel.

In fact, only the last installation you performed is visible there. If you use the control panel to uninstall Tivoli Directory Integrator, it is indeed the last installation you remove. Any remaining installations will not be visible.

The recommended and safer way to uninstall a particular version is to go to the *TDI\_install\_dir/\_uninst* folder of a particular installation, and run the uninstaller executable from there.

### Glibc package 2.3 or higher required for installation on Linux operating systems

When installing Tivoli Directory Integrator on a Linux operating system, the *glibc* package must be at level 2.3 or higher.

To determine the level of the glibc package, run the following command:

```
rpm -qa|grep glibc
```

### Maintenance Level 3 required for installation on an AIX 5.3 operating system

Make sure that Maintenance Level 3 has been applied before installing IBM Tivoli Directory Integrator 7.1 on an AIX® 5.3 operating system.

## **Incorrect text emphasis when installing Tivoli Directory Integrator on a Windows operating system in Simplified Chinese**

During Tivoli Directory Integrator installation on a Windows operating system in Simplified Chinese, some text strings in normal text should be in bold text.

## **Some messages display when uninstalling Tivoli Directory Integrator 6.1.1 using the -console option**

Some errors are shown at the start of uninstallation in console mode.

**Note:** These messages may display when you uninstall Tivoli Directory Integrator from any Tivoli Directory Integrator supported operating system. Messages similar to these may display when you uninstall Tivoli Directory Integrator 6.1.1 using the -console option:

Windows:

```
Additional class path file not found: /tmp/istemp3045024053031/_bundledJRE_/jre/lib/ext/ibmjsseprovider2.jar
Additional class path file not found: /tmp/istemp3045024053031/_bundledJRE_/jre/lib/ext/jdmpview.jar
Additional class path file not found: /tmp/istemp3045024053031/_bundledJRE_/jre/lib/ext/gsk1km.jar
Additional class path file not found: /tmp/istemp3045024053031/_bundledJRE_/jre/lib/ext/jaccess.jar
Additional class path file not found: /tmp/istemp3045024053031/_bundledJRE_/jre/lib/ext/indicom.jar
Additional class path file not found: /tmp/istemp3045024053031/_bundledJRE_/jre/lib/ext/ibmjceprovider.jar
Additional class path file not found: /tmp/istemp3045024053031/_bundledJRE_/jre/lib/ext/ldapsec.jar
Additional class path file not found: /tmp/istemp3045024053031/_bundledJRE_/jre/lib/ext/oldcertpath.jar
Additional class path file not found: /tmp/istemp3045024053031/_bundledJRE_/jre/lib/ext/IBMKeyManagementServer.jar
Additional class path file not found: /tmp/istemp3045024053031/_bundledJRE_/jre/lib/ext/ibmjcefpis.jar
Additional class path file not found: /tmp/istemp3045024053031/_bundledJRE_/jre/lib/ext/CmpCrmf.jar
Additional class path file not found: /tmp/istemp3045024053031/_bundledJRE_/jre/lib/ext/ibmkeycert.jar
Additional class path file not found: /tmp/istemp3045024053031/_bundledJRE_/jre/lib/ext/ibmpkcs11impl.jar
```

AIX:

```
cat: 0652-050 Cannot open /tmp/istemp332024160032502/chunk2.
rm: /tmp/istemp332024160032502/chunk1: A file or directory in the path name does not exist.
rm: /tmp/istemp332024160032502/chunk2: A file or directory in the path name does not exist.
bash#
```

These messages do not cause the uninstaller to fail. You can ignore these messages.

## **Debug statements created when installing and uninstalling Tivoli Directory Integrator V7.0 using the -console option on Windows and UNIX operating systems**

ISMP debug statements may display when you install or uninstall Tivoli Directory Integrator V7.0 using the -console option on any supported operating systems. These statements do not cause the installation or uninstallation to fail.

## **Migration from Tivoli Directory Integrator 6.0 to Tivoli Directory Integrator 7.0 on the HP-UX 11iv2 operating system is not supported**

Tivoli Directory Integrator 6.0 does not support the HP-UX 11iv2 operating system. Because of this, migration from Tivoli Directory Integrator 6.0 to Tivoli Directory Integrator 7.0 is not supported on HP-UX 11iv2 (11.23) PA-RISC platforms.

## **Avoid JAVA errors by having executable and JAR files in the installation directory**

The installer fails with the message:  
The JAVA class is not found: run.

You must have both the .exe file and the JAR installer files in the directory where you are running the installer. Note that the executable file for Windows is the .exe file and the UNIX executable file is .bin.

## **Monitor the installation or uninstallation log during silent installation execution**

A silent installation or uninstallation runs in the background. The only way to tell when the silent process has completed, or if an error has occurred, is to follow the installation or uninstallation log while the silent process executes. If you do not monitor the log during installation or uninstallation, you are unable to determine if the silent process completes.



---

## Chapter 4. Configuration Editor

---

### Troubleshooting the Configuration Editor

This section explains how to troubleshoot problems and describes any workarounds you can use.

#### Verify that the server associated with your project has been started

If you receive connection errors when you try to run an AssemblyLine, verify that you have started the server associated with the project. This is usually the *Default* server unless it has been reconfigured to a different server. Also check the `logs/ibmdi.log` file in your server's working directory. This log file shows indications of server errors that prevent the Configuration Editor from running an AssemblyLine on that server.

#### Consult the Error View when using the Configuration Editor

Check the Error View in the Configuration Editor for error messages when your actions do not produce the expected results. Select **Window** in the main window toolbar, then select **Show View > Error Log**.

If the Configuration Editor by itself does not start, you may be able to pinpoint problems by looking at the very file this view represents; this file can be found in `workspace/.metadata/.log`, where *workspace* is the path to the workspace directory you have instructed TDI to use.

#### Unwanted perspective changes

If you for some reason see the "Resource" perspective when you start the Configuration Editor, you should probably switch to the "Tivoli Directory Integrator" perspective that shows the proper TDI views and functions. Use the **Window -> Open Perspective -> Other...** menu option and choose "Tivoli Directory Integrator" from the list of perspectives.

#### Problems during installation of the CE into Eclipse

If you experience problems installing the TDI CE into a non-TDI Eclipse environment, you may have to add an additional update site where software update can access plugins for Eclipse version 3.4.1 prior to installing the TDI feature.

---

### Known Limitations

The following issue statements represent known issues with the Tivoli Directory Integrator Configuration Editor. Workarounds are provided where available.

#### Solution directory does not always resolve to expected path

The default working directory for the Configuration Editor is your solution directory. However, you can have many projects associated with different servers, each server having a different solution directory path. The relative path for the solution directory in each of your project components may not resolve to the path you expect.

## **Upper part of characters truncated in Javascript panel**

When tabs in a tabbed control have English text as the first label in the list and other tabs have Chinese labels, the Chinese labels will be cut off at the top by a few pixels when they are not selected. Clicking on a tab with Chinese text will properly make the full text visible.

## **Tooltips are not shown on Dropdown combos on Solaris.**

This is a defect in the Eclipse jface/swt libraries for Eclipse 3.4.1.

## **CE hangs after seeing the splash screen or choosing the workspace on AIX.**

The CE may hang after seeing the splash screen or choosing the workspace on AIX. This has been seen happening when there are many firewalls/routers/bridges between the client and the AIX machine on which the CE is started. Getting closer to the AIX in networks terms can possibly solve the issue. Also try a different window manager.

---

## Chapter 5. IBM JavaScript limitations

The following sections describe limitations you might encounter when using IBM JavaScript™.

---

### java.lang.OutOfMemoryError: Failed to fork OS thread

This section explains the following error:

```
java.lang.OutOfMemoryError: Failed to fork OS thread
```

This error occurs when thousands of threads are started in very quick succession (almost simultaneously). The error indicates that the upper limit on the number of concurrent threads for the JVM has been reached.

Normally this error occurs when a Javascript loop starts thousands of threads in a very short period of time. This error should not occur in normal conditions in which Tivoli Directory Integrator solutions usually operate.

You can avoid this error by inserting a very small delay between starting successive threads (even as small as 1 millisecond). This delay can cause performance to decrease a little, but the error would disappear.

---

### String representations of numbers not represented in exponential format

String representations of numbers do not use exponential format. For example, the following string:

```
String(-100000000000000000000000000000000)
```

yields the following results:

```
"-100000000000000000000000000000000"
```

---

### Package and class references do not return string values

Package and class references do not return string values. For example, the following reference:

```
main.logmsg ("String: " + java.lang.String);
```

results in an exception.

---

### Date constructors cannot take values higher than the maximum integer value

Date constructors that use numeric values higher than 2.32 wrap and return the wrong date value.

---

### All comparisons of prototypes return false

Comparisons of prototypes return false; for example:

```
Math.__proto__ == Object.prototype --> false
```

---

## Arrays with high numeric values truncate

Creating an array with a numeric value higher than  $2^{32}$  results in a truncated value and a smaller array than requested.

---

## Sandbox not supported with connectors that return nonserializable data

Nonserializable data returned cannot be stored in a database. For this reason, Sandbox is not supported for connectors that return this kind of data.

---

## Variable override of standard types allowed

IBM JavaScript allows variables to override standard types; for example, the following string:

```
STRING = ""; new STRING()
```

does not result in an exception.

---

## Declaring two or more functions on same line allowed

IBM JavaScript allows you to declare more than one function on the same line.

---

## Redeclared variable does not retain the previous value

Redeclaring a variable does not retain the previous value, even if the declaration is unspecified; for example:

```
a = 10; var a; a --> null/undefined
```



---

## Chapter 6. Troubleshooting the Administration and Monitoring Console

---

### Administration and Monitoring Console Problem Determination

This section explains problems found in the Administration and Monitoring Console, and provides workarounds, where available.

#### Problems with localized messages in the console

The embedded Web server (LWI) web container used by AMC relies on UTF-8 for encoding its messages. This encoding is capable to represent every character in the Unicode standard but causes problems when messages are logged in the Windows command prompt. The reason is that the prompt uses the default code page (encoding) of the machine, specified by the language for non-Unicode applications configured in '**Control Panel > Regional and Language Options**' (Advanced tab). Thus, for example, when a Japanese message is logged it is encoded by LWI using UTF-8 and transferred to the console which displays it using the default Japanese encoding (code page 930). This causes the message to appear incorrectly. For TDI messages we have overridden the LWI behavior to use the default encoding of the machine, so there should be no problem to display, for instance, Japanese messages on a Japanese machine. Please note that, if the option for non-Unicode programs in the Control Panel differs from the language used by TDI, it must be modified accordingly.

When AMC is started, several LWI and ISC messages can be seen in the console. They are not under the control of TDI, so if users need to see them properly, they must comment the following line in file *TDI\_install\_dir/lwi/conf/logging.properties*:

```
java.util.logging.ConsoleHandler.encoding=UTF-8
```

This way, the default encoding of the machine will be used instead of UTF-8, so all message should appear normally.

Another option is to change the code page used by the console to UTF-8 by entering command 'chcp 65001' in the console. Please note, though, that this may cause problems when executing the AMC bat scripts.

#### Action Manager and Administration and Monitoring Console on different machines

If Action Manager is running on a machine other than the machine where Administration and Monitoring Console is running (for example, Action Manager on zOS), then you should either the use IP Address or the Domain Name Server name

while registering Tivoli Directory Integrator servers. Administration and Monitoring Console is shipped with a default local Tivoli Directory Integrator Server registered using 'localhost'. You should re-register this server using either the IP Address or the DNS name.

## Unable to delete Tivoli Directory Integrator Server and Solution Views

You can configure Action Manager rules for a Solution View, so that one rule references some other rule. If one rule references another rule in the Solution View, then you cannot delete either the Solution View or the server that is running the Solution View. To avoid this problem, you can reference one rule to another rule if you associate either of the following with the rule:

- An Execute Action Manager Rule action
- An Enable or Disable Action Manager rule action

### Deleting a Server

To delete a Tivoli Directory Integrator server where one rule references another in the Solution View:

1. Select **Servers** in the left navigation area under the AMC grouping. The Servers window appears.
2. In the Servers table, select the **Server** that you want to delete.
3. Click **Delete**.
4. When the confirmation message appears, click **OK** to delete the Server, and click **Cancel** to cancel the deletion.

### Deleting a Solution View

To delete the Tivoli Directory Integrator Solution Views where one rule references another in the Solution View:

1. Select **Solution Views** in the left navigation area under the AMC grouping. The Solution Views window appears.
2. In the Solution Views table, select the **Solution View** you want to delete.
3. Click **Delete**.
4. When the confirmation message appears, click **OK** to delete the Solution View and click **Cancel** to cancel the deletion.

## String is truncated on the Start AssemblyLine window

The following string is truncated in the Start AssemblyLine window: The attributes exposed for the selected operation.

This problem occurs only in Internet Explorer, and only in Korean.

## The background of the text in Filter field overlaps the field

When using Simplified Chinese locale in AMC and working with Internet Explorer some text fields might overlap the near images. This is not observed with Mozilla Firefox.

## Unable to start Administration and Monitoring Console using the start\_tdiamc script

If the Tivoli Directory Integrator server error log contains the following exception it could mean that a port required by WebSphere Application Server (WAS) is already in use:

```
ORBX0390E: Cannot create listener thread. Exception=[> java.net.BindException:
Address already in use: NET_Bind].
```

This error might also occur if you have Google Web Accelerator installed on the system from which you are attempting to start the Administration and Monitoring Console. You may need to uninstall Google Web Accelerator to resolve this problem.

## SSL communications problems with AMC in ISC AE

AMC can communicate with the TDI server over SSL. This is the default mode of communication between AMC and a TDI Server. For SSL communication the certificates have to be added in the trust store of WAS to enable it to trust the certificates. If this is not done, Websphere throws the following exception:

```
[5/8/08 14:39:39:984 IST] 00000021 SystemOut 0 CWPKI0022E: SSL HANDSHAKE FAILURE: A signer with SubjectDN "CN=host IP, O=IBM, C=US" was sent from target host:port "*:9043". The signer may need to be added to local trust store "${WAS_HOME}\systemApps\isc\lite.ear\tdiamc.war\testadmin.jks" located in SSL configuration alias "DefaultSystemProperties" loaded from SSL configuration file "System Properties". The extended error message from the SSL handshake exception is: "No trusted certificate found".
```

In order to resolve the above mentioned error you have to follow the steps mentioned below:

1. Create a new Key store and certificate entry using the **SSL certificate and key management > Key stores and certificates** panel.
2. In the New Panel fill in the necessary details, that is the SSL Configuration name and select the required alias.
3. Add a new entry for the SSL configurations. Map the key store and certificates entry added in step one to the new SSL Configuration.
4. Map the newly added SSL Configuration to the Inbound and Outbound endpoints of the Local Topology.

## Authentication failure on UNIX when LWI runs as non-root user

On some UNIX platforms (for example, SLES 10) AMC in ISE SE fails consistently to authenticate users, even when correct credentials are specified. Such behavior is observed when AMC is run as a non-root user and the operating system uses a password database (for example, a `/etc/shadow` file).

To work around this problem, run AMC as a user that has read permissions to the password database. For example, on systems that use shadow passwords you should try adding the user to the shadow group.

Here is an explanation:

By default on UNIX platforms LWI uses a JAAS module that authenticates users through the PAM stack on the machine (see `TDI_install_dir/lwi/security/jaas/jaas.config`). PAM is not normally a part of the operating system kernel, so it runs with the permissions of the calling process. To authenticate a user on a system that uses a password database, PAM has to verify the specified password against the password database. This task requires read access to the password database. To work around this restriction, some PAM modules use a special utility which is able to run with root permissions regardless of the caller (an executable whose `setuid` bit is set and whose owner is root). For example the "pam\_unix.so" module available in RHEL 5 uses the "unix\_chkpwd" tool to access the password database. Yet there exist PAM modules that do not employ such a mechanism and therefore require the calling process to have read access to the password database.

On systems that use so called "shadow passwords", passwords are stored in hashed form in the `/etc/shadow` file. To verify a password one needs read access

to that file. Usually `/etc/shadow` is associated with a group named "shadow", whose members are given read access to the file.

---

## Chapter 7. Components

This chapter contains troubleshooting information about IBM Tivoli Directory Integrator (Tivoli Directory Integrator) components.

---

### Components overview

Components abstract away the technical details of the data systems, platforms and formats that you want to work with, allowing you to integrate your information across various data sources.

IBM Tivoli Directory Integrator provides you with a number of components types:

- Connectors
- Function Components
- Parsers

**Note:** The concept of EventHandlers is no longer available in IBM Tivoli Directory Integrator 7.1. Use AssemblyLines with Server Mode connectors instead.

The following sections contain troubleshooting information for each type of component.

---

### Connectors

Connectors help you to build your AssemblyLine. Each one is designed to tie a specific data source to your data flow.

#### Remote Agent Controller (RAC) Connector

The following four sections explain issues with the RAC Connector.

##### Agent controller on a non-Windows platform

Currently, the Remote Agent Controller (RAC) Connector in Iterator Mode cannot operate with a non-Windows installation of the Agent Controller. This problem is due to the instability of the Agent Controller implementation. Any attempt to run the RAC Connector in Iterator Mode on any non-Windows operating system could cause the Agent Controller process to stop.

##### Slow network connection to the agent controller

If the network connection between the RAC Connector in Iterator mode and the Agent Controller is very slow, the slow network connection may have the following results:

- The Agent Controller may stop.
- The RAC connector may throw a timeout error.

##### No agent is registered by the RAC Connector in AddOnly mode

If the RAC Connector is run in **AddOnly** mode, but it does not register a logging agent in the local Agent Controller, it may be because the RAC cannot locate Agent Controller binaries. The AddOnly mode of the RAC Connector requires that the binaries of the Agent Controller (.dll, .so) be available for the dynamic library

loader of the operating system. The preferred way to make the Agent Controller binaries available to the .dll of the operating system is to locate the binaries folder of the Agent Controller in :

- the PATH environment variable on Windows platforms.
- the LD\_LIBRARY\_PATH environment variable on Linux platforms.

You can point to the binaries globally or just for the process of the Tivoli Directory Integrator Server. For example:

- On Windows, modify the PATH environment variable from **My Computer > Properties > Advanced > Environment variables**
- On Linux, add lines like the following in the startup scripts (ibmdisrv and ibmditk) after the PATH definition and before the startup line:  
`LD_LIBRARY_PATH=/AgentController/lib export LD_LIBRARY_PATH`

### **Agent Controller is accessible using the LTA Eclipse tool but not by the RAC Connector in Iterator mode**

The Agent Controller may be visible using the Log and Trace Analyzer Eclipse tool, but the RAC Connector in Iterator mode may report the following error:

Error: Unable to connect to the Agent Controller.

The reason for this error could be that the Agent Controller installation may not be a new technology Agent Controller. Releases of new technology Agent Controller support the new technology communication protocol. In Iterator mode, the RAC Connector uses the new technology communication protocol, but the Log and Trace analyzer uses the old communication protocol.

### **Assorted Connectors**

This section documents the following issues:

- Axis Easy Web Service Server Connector.
- Inconsistency across Secure Socket Layer (SSL) clients.

**Backlog parameter and server mode connectors:** The Axis Easy Web Service Server Connector may generate exceptions if multiple clients are trying to access the server at the same time. The following exception code shows the content of the error:

```
2007-01-25 13:08:55,828 ERROR [AssemblyLine.AssemblyLines/Square_SimpleClient.753] - [EasyInvokeWebService]
at com.ibm.di.fc.webservice.AxisEasyInvokeSoapWS.perform(Unknown Source)
at com.ibm.di.server.FunctionComponent.callReply(Unknown Source)
at com.ibm.di.server.AssemblyLine.msExecuteNextConnector(Unknown Source)
at com.ibm.di.server.AssemblyLine.executeMainStep(Unknown Source)
at com.ibm.di.server.AssemblyLine.executeMainLoop(Unknown Source)
at com.ibm.di.server.AssemblyLine.executeMainLoop(Unknown Source)
at com.ibm.di.server.AssemblyLine.executeAL(Unknown Source)
at com.ibm.di.server.AssemblyLine.run(Unknown Source)
```

**Cause:** On initialization the AxisEasyWSServerConnector opens a server socket to accept connections from clients. In the listening state, the server socket adds each incoming client connection request to an internal queue called a *backlog*. If client requests arrive at a faster rate than the server program "accepts" them, the backlog starts filling up. Eventually the backlog fills up and newly arrived clients are refused a connection to the server.

**Solution:** Try increasing the value of the Connection Backlog parameter in the server mode connector. The maximum backlog size depends on the platform. For example, on Windows XP Professional the maximum limit for the backlog size is 200, so any backlog size above 200 will have no effect. Slow down the arrival of client connection requests. Use a Tivoli Directory Integrator script to introduce a

time delay between clients as they start. The goal is to bring client request arrival speed below the servicing speed of the server.

### **Some platforms do not throw exceptions when accepting post-dated SSL server certificates**

There is a potential inconsistency across Secure Socket Layer (SSL) clients running Tivoli Directory Integrator 7.1. Tivoli Directory Integrator components that use SSL can accept SSL server certificates whose "valid From" dates are not yet valid. Failure to issue an error could be a problem if users expect an exception to be thrown in these cases. This behavior is inconsistent across the platforms.

**Cause:** The JRE being used is accepting not yet "valid From" dates in certificates and is failing to warn the user of invalid certificates, therefore engaging in invalid behavior. If the client system has an earlier system date from the date of the certificate valid date, then the client should not connect to the server over SSL.

Example exception on Solaris when the issue is properly detected by the JRE:

```
javax.net.ssl.SSLHandshakeException: com.ibm.jsse2.util.h:
Certificate not valid yet
```

**Note:** The Solaris operating system demonstrates the desired behavior by throwing an exception when facing certificates with not yet valid "valid From" dates. By default, the IBM JRE will not throw the proper exception on any platform except Solaris. The Sun JRE will throw the proper exception on all platforms.

**Solution:** The Trust Manager configured in the JRE must be updated. For IBM JREs you can update the Trust Manager by doing the following:

1. Locate the line in the `java.security` file of the JRE that starts with the following:  
`ssl.TrustManagerFactory.algorithm=`
2. Modify the value to look like this if you want the JRE to validate the "valid From" dates in certificates and throw an exception when it encounters an error:  
`ssl.TrustManagerFactory.algorithm=IbmX509`
3. Modify the value to look like this if you want the JRE to ignore the "valid From" dates in certificates and not throw an exception:  
`ssl.TrustManagerFactory.algorithm=PKIX`
4. Restart the Tivoli Directory Integrator Server to enable the configuration change in the JRE.

## **Connectors whose libraries do not ship with Tivoli Directory Integrator**

Some third-party libraries for Tivoli Directory Integrator connectors must be obtained from their proprietary sources, and do not ship with Tivoli Directory Integrator. Using the Configuration Editor, you can configure connectors. However, if a connector is missing its required library (.jar) file, the Connector in the Configuration Editor GUI looks as if it supports *all* Connector modes. For example, a Connector such as the Domino ChangeDetection Connector may support Iterator mode only, but if you configure the connector in the Configuration Editor with the required .jar file missing, it will show as supporting all other modes, such as Lookup, Update, Delete, etc. To avoid this problem, you must obtain and supply (to Tivoli Directory Integrator) the library for these connectors. The following connectors have libraries that do not ship with Tivoli Directory Integrator. Obtain the .jar files for these connectors before attempting to configure them in the Configuration Editor GUI:

| IBM Tivoli Directory Integrator Component Name | Component Internal Class Name  |
|------------------------------------------------|--------------------------------|
| Domino Change Detection Connector              | ibmdi.ChangeDetectionConnector |
| Domino Users' Connector                        | ibmdi.DominoUsersConnector     |
| Lotus Notes Connector                          | ibmdi.Notes                    |
| SAP ALE IDoc Connector                         | ibmdi.SapALEIDocConnector      |
| TAM Connector                                  | ibmdi.TAM                      |
| Domino AdminP Connector                        | ibmdi.DominoAdminP             |

For information on how to use Connectors, see the section below and the *IBM Tivoli Directory Integrator V7.1 Reference Guide*.

## For Domino or Lotus Notes connectors running on Linux operating systems, set PATH and LD\_LIBRARY\_PATH variables

Before using any of the Domino or Lotus Notes connectors, set environment variables for \$PATH and for \$LD\_LIBRARY\_PATH. Add the following two lines to the ibmdisrv and ibmditk scripts. Place the environment variable settings just before the last line of each script:

```
export PATH={notes.data.dir}:{notes.binary.dir}/notes/latest/linux/:$PATH export
LD_LIBRARY_PATH={notes.binary.dir}/notes/latest/linux/:$LD_LIBRARY_PATH
```

The notes.data.dir is the directory where the data for the Domino server or for the Lotus Notes client is installed. The

notes.binary.dir

is the directory where the Domino server or for the Lotus Notes client binary and executable files are installed. For example: The default directories for the Domino server on Linux platforms are:

{notes.data.dir} - /local/notesdata

{notes.binary.dir} - /opt/ibm/lotus

## TDI process privileges and Domino on Linux

The privileges of the Tivoli Directory Integrator server process are determined by the user that starts the server.

For security reasons, the Domino Server forbids execution of commands using root privileges. To run the Domino server, you must run with the user configured during the installation process, normally the Lotus Notes user. The Tivoli Directory Integrator server is required to run with the user configured during installation only when the Domino libraries enforcing this restriction are loaded. The Tivoli Directory Integrator server is able to run with root privileges only if no Domino or Lotus Notes connectors are used in an AssemblyLine.

It is possible, however, that you require both of the following privileges:

- To access a Domino server
- To execute certain tasks as root user

If you need to access a Domino server while executing certain tasks as a root user, you must:



1. The Lotus Notes user designs a single process that is responsible only for communicating with the Domino server. To achieve this single process, start the following server instances:
  - a. Give one server instance root privileges [TDIserverRoot]
  - b. Start another server instance by the Lotus Notes user [TDIserverNotes]
2. The [TDIserverNotes] requires a configuration with an AssemblyLine accessed by the [TDIserverRoot]. This AssemblyLine behaves as a proxy and handles the communication with the Domino server. The [TDIserverRoot] can use either the AssemblyLineConnector or the AssemblyLineFC to access the remote proxy AssemblyLine on the [TDIserverNotes].

The [TDIserverRoot] could use either the AssemblyLineConnector or the AssemblyLineFC to access the remote proxy assembly line on the [TDIserverNotes].

## CommandLine Connector

### **AssemblyLine AssemblyLines/CommandLine failed with error: CreateProcess: dir error=2**

If you are running Windows, and trying to execute an internal shell command (such as dir or any command listed by the command), you might have forgotten to prepend cmd /c . For example, the correct syntax for the dir command is cmd /c dir.

### **DOS-encoded output on Windows operating systems**

When you use the Command Line Connector to run a program on a Windows operating system, the output from the program might be encoded using a DOS code page. This can cause unexpected results, because Windows programs usually use a Windows code page. Because a DOS code page is different from a Windows code page, it might be necessary to set the character encoding in the Command Line Connector's parser to the correct DOS code page for your region; for example: cp850.

## JDBC Connector

### **NullPointerException while using Custom Prepared Statements**

When the JDBC Connector is using a JDBC 2.0 driver (or less) for communicating with a database, there may be problems with Custom Prepared Statements. For instance, IBM SolidDB 6.5 provides only a JDBC 2.0 compliant driver. If you want to work with SolidDB and also enable the **Use custom SQL prepared statements** option of the Connector a java.lang.NullPointerException will be thrown when you try to start the AssemblyLine. The reason is that for handling custom prepared statements the JDBC Connector relies on functionality added in JDBC 3.0 and SolidDB driver is only JDBC 2.0 compliant. To solve this issue, use a JDBC 3.0 driver for your solution. If there is no such driver available for the needed database, as is with SolidDB 6.5, you will not be able to make use of the "Use custom SQL prepared statements" functionality.

### **COM.ibm.db2.jdbc.DB2Exception: CLI0616E Error opening socket. SQLSTATE=08S01**

A server service named DB2® JDBC Applet Server must be running on the Windows system where the DB2 server is running. If The DB2 JDBC Applet Server service is not running you will get this message.

## CLI0616E Error opening socket

The remote DB2 server is not configured for DB2 net driver communications. Refer to the FAQ that has more information on connecting to a DB2 server.

## java.sql.SQLException: ORA-01830: date format picture ends before converting entire input string

If you are getting this when inserting or updating date-fields, you are probably passing the Oracle driver dates as a string that does not match what the driver expects. Problem Scenario: (For more detailed information about a situation where this can happen, skip to the "Suggestions" section if not interested). You have an AssemblyLine with a JDBC Connector in AddOnly mode that writes some records to an Oracle table with a field of type DATE. Normally, you can insert something like:

```
INSERT INTO table1 values (to_date('2005/03/01 10:05:13','YYYY/MM/DD HH:MI:SS'))
```

as part of an INSERT query. However with Tivoli Directory Integrator, you can only do something like this in the output map:

```
ret.value = '2005/03/01 10:05:13';
```

But if Oracle fails with the following error:

```
java.sql.SQLException: ORA-01830:
```

The **Date Format** picture ends before converting entire input string.

**Suggestions:** When dates are supplied as strings (which is what you are doing here) the Tivoli Directory Integrator JDBC Connector will attempt to parse the data using the pattern provided in its **Date Format** configuration parameter, as explained in the *IBM Tivoli Directory Integrator V7.1 Reference Guide*. To debug your problem: What is your Data Pattern configuration? Find out how Tivoli Directory Integrator sees this field by checking in the schema tab of the Connector. A fair guess is that your JDBC driver will convert the Oracle Data type into a java.sql.TimeStamp or java.sql.Date type (and note that there are differences between java.util.Date and java.sql.Date, in terms of precision for example). In the case, for example, of a java.sql.Timestamp type, try specifying:

```
ret.value = java.sql.Timestamp(java.util.Date().getTime());
```

and see if this helps. Then you will be able to use:

```
ret.value = java.sql.Timestamp(system.parseDate(work.getString("yourDate"),
"yyyyMMddHHmmssz").getTime());
```

If none of the above helps, run the Connector in detailed log mode and see whether the Connector is able to get the schema from the database. If not, the Connector does not use prepared statements, which makes it less efficient and more error-prone, so you'll have to make sure that the Connector's **schema** configuration parameter is set correctly.

## Handling of CLOB/BLOB (Character/Binary large object)

If your attributes are of CLOB/BLOB type, the Connector does not handle them on output. On input, you can do something like this:

```
desc = conn.getObject("yourCLOBAttribute");
ret.value = desc.getSubString(1,desc.length());
```

but it is slow and clumsy. Also, it will only work if the JDBC driver actually returns a java.sql.Blob or java.sql.Clob interface object.

## Disabling Prepared Statement can result in an exception for queries that exceed the maximum length value

If Prepared Statement is disabled, the JDBC connector attempts to construct a complete SQL query. If the database has a restriction on the length of the SQL query, and the query exceeds the maximum length value, an exception is thrown. This is a common problem with BLOB or binary data types.

## Use ojdbc14.jar to transfer BLOB data from table to another in an Oracle database

Use ojdbc14.jar instead of using classes12.jar when using the JDBC Connector to transfer BLOB data from one table to another table in an Oracle database.

## InitConnectors: com.ibm.db2.jcc.a.SqlException: The version of the IBM Universal JDBC driver in use is not licensed for connectivity to QDB2/<OS> databases.

To connect to this DB2 server, obtain a licensed copy of the IBM DB2 Universal Driver for JDBC and SQLJ.

**Cause:** Tivoli Directory Integrator 7.1 comes with updated Derby database (previously known as Cloudscape) and the driver needed for it. 7.1 also comes with a license file that enables you to connect to Derby, but not to other DB2 databases.

**Solution:** As of DB2 UDB v8.1.2 the Universal JDBC driver requires a license JAR file to be in the CLASSPATH along with the db2jcc.jar file. Here are the names of the required license JAR files:

- For Cloudscape Network Server V5.1: db2jcc\_license\_c.jar
- For DB2 UDB V8 for Linux, UNIX, and Windows servers: db2jcc\_license\_cu.jar
- For DB2 UDB for iSeries® and z/OS® servers (provided with DB2 Connect™ and DB2 Enterprise Server Edition): db2jcc\_license\_cisuz.jar

An appropriate location for this license file to be placed in a Tivoli Directory Integrator system would be <Tivoli Directory Integrator *Install Directory*>\\_jvm\jre\lib\ext directory.

For more information, see <http://www-128.ibm.com/developerworks/db2/library/techarticle/0307zikopoulos/0307zikopoulos.html>.

## JNDI Connector

### Problem

Excessive " com.ibm.dsml2.\* " log messages may be received in the log of the AssemblyLine.

### Symptom

Examples of the excessive log activity may include:

```
com.ibm.dsml2.jndi.DSML2DirContext [search] dc=HRLoad (uid=Vox) javax.naming.directory.SearchControls@2f9ad92
com.ibm.dsml2.jndi.SearchMessage [getFilter] filter: (uid=Vox)
com.ibm.dsml2.jndi.SearchMessage [getFilter] filterObject:
com.ibm.dsml2.parser.Filter@1bc52d92
com.ibm.dsml2.jndi.SearchMessage [checkResponse] reader is java.io.BufferedReader@17792d92
com.ibm.dsml2.jndi.SearchMessage [checkResponse] Starting unmarshaller thread
com.ibm.dsml2.jndi.SearchResultEnumeration Creating a search result enumeration
com.ibm.dsml2.jndi.SearchResultUnmarshaller [run] Starting unmarshal thread
com.ibm.dsml2.jndi.SearchResultUnmarshaller$ResultEnumeration [getNext] got a com.ibm.dsml2.parser.SearchResultEntry
```

## Solution

To eliminate the excessive logging of the " com.ibm.dsml2.\* " messages seen while using the JNDI Connector, add the following line to the **Provider Param** parameter of the JNDI Connector:

```
com.ibm.dsml2.jndi.logLevel:ERROR
```

## Insufficient memory issue with Domino

When you are processing a very large amount of data in Domino server it is possible to receive errors similar to these:

- Your Domino server panics with the following error: - PANIC: Cannot attach to shared memory region, due to insufficient access (probably owned by another user or group)
- an "Insufficient memory" error is received from many tasks without any reference to a Domino pool.

Both of these errors indicate that your Domino server is running out of memory resources. The first error may occur on servers with very high process local memory usage. An example would be the HTTP server serving up large databases, port compression is enabled and there is a large population of users using the system.

In Domino the private and shared memory must reside in a limited virtual address space, which is usually 4 gigabytes. The error occurs when Domino runs out of virtual memory or out of shared memory. In order to prevent this from occurring you can use either of these two new notes.ini entries:

```
ConstrainedSHM=1
ConstrainedSHMSizeMB="size in megabytes"
```

The variable ConstrainedSHM=1 will restrict shared memory to a set of default sizes, as follows:

Windows and Macintosh platforms: 2 gigabytes  
AIX platforms: 2.25 gigabytes  
Solaris and Linux: 3 gigabytes  
iSeries: 2 gigabytes

The ConstrainedSHMSizeMB="size in megabytes" will restrict memory to the "size in megabytes".

## Domino User's Connector

This section explains exceptions for Domino User's Connector and provides a workaround.

### **java.lang.Exception: Connector Notes Thread not alive. Cannot perform.**

```
at com.ibm.di.connector.dominoUsers.DominoUsersConnector.executeCommand(Unknown Source)
at com.ibm.di.connector.dominoUsers.DominoUsersConnector.initialize(Unknown Source)
at com.ibm.di.server.AssemblyLineComponent.initialize(Unknown Source)
at com.ibm.di.server.AssemblyLine.initConnectors(Unknown Source)
at com.ibm.di.server.AssemblyLine.msInitConn(Unknown Source)
at com.ibm.di.server.AssemblyLine.executeMainStep(Unknown Source)
at com.ibm.di.server.AssemblyLine.executeMainLoop(Unknown Source)
at com.ibm.di.server.AssemblyLine.executeMainLoop(Unknown Source)
at com.ibm.di.server.AssemblyLine.executeAL(Unknown Source)
at com.ibm.di.server.AssemblyLine.run(Unknown Source)
```

**Cause:** The exception can be caused by a wrong directory or misspelling in the LD\_LIBRARY\_PATH set within the "ibmditk" or "ibmdisrv" startup files.

For example, LD\_LIBRARY\_PATH=/opt/lotus/notes/latest/linux.

**Solution:** Add the following two lines to the shell script ( "ibmditk" or "ibmdisrv") after the PATH definition and before the startup line:

```
LD_LIBRARY_PATH=<Domino Binary>
export LD_LIBRARY_PATH
```

where <Domino Binary> is the location of the Domino® Binary folder.

### Example file: ibmdisrv.sh

```
#!/bin/sh
start up script for Directory Integrator v6.1 for Unix platforms
JRE_PATH=_jvm/bin
OS=`uname`
if [$OS = "Linux" -o $OS = "AIX"];then
JRE_PATH=_jvm/jre/bin
fi

PATH="/opt/IBM/ITivoli Directory
Integrator61/$JRE_PATH:$PATH:/opt/lotus/notes/latest/linux:/local/notesdata:"
export PATH

LD_LIBRARY_PATH=/opt/lotus/notes/latest/linux:
export LD_LIBRARY_PATH

#
Only set Tivoli Directory
Integrator_SOLDIR if it hasn't been set already in caller's shell
#
if [-z "$Tivoli Directory
Integrator_SOLDIR"]; then
Tivoli Directory
Integrator_SOLDIR="."
fi

#
-s overrides Tivoli Directory
Integrator_SOLDIR env
#
solnext=0
for s
do
case $s in
-s) solnext=1;;
-s*) Tivoli Directory
Integrator_SOLDIR="`echo $s | cut -c3-`";
-*) solnext=0;;
*) if [$solnext -eq 1]; then
Tivoli Directory
Integrator_SOLDIR=$s
solnext=0
fi;;
esac
done

if [-n "$Tivoli Directory
Integrator_SOLDIR"]; then
cd "$Tivoli Directory
Integrator_SOLDIR"
fi

Check solution directory files
if [! -f IDILoader.jar -a ! -f log4j.properties]; then
echo Copying log4j.properties to solution directory
cp -f "/opt/IBM/ITivoli Directory
Integrator61/log4j.properties" log4j.properties
fi

"/opt/IBM/ITivoli Directory
Integrator61/$JRE_PATH/java" -Dos.name=Linux -Djava.library.path=$PATH \
-Dlog4j.configuration=file:log4j.properties" -jar "/opt/IBM/ITivoli Directory
Integrator61/IDILoader.jar" \
com.ibm.di.server.RS "$@"
```

For more information, see: IBM Tivoli Directory Integrator: Post Release 6.0 Issue.

## Windows Users and Groups Connector

### **java.lang.UnsatisfiedLinkError: can't find library NTMetaData (libNTMetaData.so)**

This error occurs when you attempt to use the Windows Users and Groups Connector on a non-Windows platform. The Windows Users and Groups Connector is supported on Windows platforms only.

## SAP Connection Suite

### **JCO.classInitialize(): Could not load middleware layer 'com.sap.mw.jco.rfc.MiddlewareRFC'JCO.nativeInit()**

After installation of the sapjco 2.1.7 SAP interface library, connections still fail. When the connector establishes a connection to the R/3 system, you get this JCO.classInitialize exception.

**Cause:** You are unable to start 32-bit programs from SAP Release 6.40 (or higher) because Microsoft runtime DLLs are missing (MSCVR71.dll and MSCVP71.dll).

**Solution:** For more information, see SAP Note 684106 for a procedure to fix this problem.

---

## Function Components

Function Components are modeless components that facilitate wrapping of custom logic and external methods. Function Components are not data-source specific.

Currently there is no troubleshooting information about specific Function Components.

---

## Parsers

Parsers are used in conjunction with a transport Connector to interpret or generate the content that travels over the Connector's byte stream.

### LDIF Parser

#### **Performance degradation**

The Tivoli Directory Integrator 7.1 LDIF Parser shows some performance degradation in terms of execution time compared to the Tivoli Directory Integrator 6.0 LDIF Parser.

This is due to underlying JVM changes in Tivoli Directory Integrator 7.1, in which certain APIs experience a performance drop when working with very large data sets.

The degradation is dependent on various considerations such as hardware, RAM, processor speed, and disk input/output.

---

## Chapter 8. Password Synchronization plug-ins

This chapter contains problem determination information regarding the IBM Tivoli Directory Integrator 7.1 Password Synchronization plug-ins. For general information about the plug-ins, see *IBM Tivoli Directory Integrator V7.1 Password Synchronization Plug-ins Guide*.

---

### Problem with ICU4J on Windows when automatic daylight saving changes are disabled

The problem is manifested by the following exception in the log of the Java Proxy and/or the log of the Domino server:

```
java.lang.NullPointerException
 at com.ibm.icu.util.TimeZone.getDefault(TimeZone.java:700)
 at com.ibm.icu.util.Calendar.getInstance(Calendar.java:1613)
 at com.ibm.icu.text.DateFormat.get(DateFormat.java:942)
 at com.ibm.icu.text.DateFormat.getDateTimeInstance(DateFormat.java:736)
 at com.ibm.di.plugin.log.PWSyncLog.<init>(PWSyncLog.java:49)
```

To fix the problem open the lib/ext folder of the Domino server's JVM (for example, C:\Program Files\IBM\Lotus\Domino\jvm\lib\ext) and locate the ICU4J jars (there should be two of them – the original one of the Domino server and the one from the Domino Password Synchronizer). Remove the one named "icu4j.jar" and restart the Domino server.

Some versions of the Domino server (8.0 and 8.5) ship with ICU4J version 3.4.5 (the "icu4j.jar" file in the "lib/ext" folder of the JVM). This version of ICU4J exhibits problems on Windows when the "Automatically adjust clock for daylight saving changes" option is unchecked (**Control Panel -> Date and Time -> Time Zone**). More precisely, problems are observed when a non-zero DWORD value named "DisableAutoDaylightTimeSet" (before Windows Vista) or "DynamicDaylightTimeDisabled" (Windows Vista) exists under HKEY\_LOCAL\_MACHINE\SYSTEM\CurrentControlSet\Control\TimeZoneInformation in the Windows registry. The Domino Password Synchronizer ships with a newer version of the ICU4J library that does not have the same problem. To fix the issue, remove the original Domino ICU4J library and use the one from the Domino Password Synchronizer.





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## Chapter 9. Known limitations and general troubleshooting

This chapter contains miscellaneous problem determination information.

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### Known limitations

#### Troubleshoot problems with Delta Features and solidDB

**Problem:**

When using IBM solidDB® as the default TDI System Store the following error may be encountered:

```
CTGDIS810E handleException - cannot handle exception , get java.sql.SQLException:
[Solid JDBC 06.30.0029] SOLID Database Error 16503: Serializable isolation level is not supported
```

This exception is thrown because the in-memory tables in solidDB do not support the default isolation level set in the Delta settings. You can find more information about this at <http://publib.boulder.ibm.com/infocenter/soliddb/v6r3/index.jsp?topic=/com.ibm.swg.im.soliddb.admin.doc/doc/choosing.transaction.isolation.levels.html>.

**Solution:**

Possible workarounds are:

- Set "Row Locking" parameter in the Delta tab to "Repeatable Read", or
- Configure solidDB to use disk-based tables.

#### Cannot start another queue manager for JMS

**Problem:**

If you start 2 TDI Server instances using the same solution directory, with the default system queue, you may get this message from JMS:

```
javax.jms.JMSEException: Cannot start a queue manager for JMS
 at com.ibm.mqe.jms.MQeConnectionFactory.startQueueManager(DashoA8173)
 at com.ibm.mqe.jms.MQeConnectionFactory.getQueueManager(DashoA8173)
 at com.ibm.mqe.jms.MQeConnectionFactory.startConnection(DashoA8173)
 at com.ibm.mqe.jms.MQeQueueConnectionFactory.createQueueConnection(DashoA8173)
 at com.ibm.mqe.jms.MQeQueueConnectionFactory.createQueueConnection(DashoA8173)
 at com.ibm.di.systemqueue.SystemQueue.<init>(SystemQueue.java:155)
 at com.ibm.di.systemqueue.SystemQueueEngine.initSystemQueue(SystemQueueEngine.java:158)
 at com.ibm.di.systemqueue.SystemQueueEngine.getInstance(SystemQueueEngine.java:119)
 at com.ibm.di.server.RS.initializeSystemQueue(RS.java:681)
 ...
```

MQe allows only once instance of a queue manager in one JVM, see <http://publib.boulder.ibm.com/infocenter/iwedhelp/v6r0/index.jsp?topic=/com.ibm.mqe.doc/ovr51440.html>

The first TDI Server/JVM will use the MQePWStore directory in the Solution Directory as its base directory.

Any subsequent TDI Server that is started with the same Solution Directory will have a separate JVM, and could potentially have its own MQE. However, since it's using the same Solution Directory as the first JVM it doesn't have rights to that MQePWStore directory and hence the exception is thrown.

**Solution:**

Use different Solution Directories for your TDI Servers, or use a different Queue Manager like IBM MQSeries®.

## **Regular Expression support in the IBM Java Script engine shipped with Tivoli Directory Integrator 6.1 and newer**

**Problem**

Tivoli Directory Integrator 6.1 and newer ships with the IBM Java Script Engine, replacing Rhino. The IBM Java Script Engine utilizes the regular express library shipped with Java 1.5 (`java.util.regex.Pattern`). This library is not fully compliant with the ECMA-262 specification regarding regular expressions.

**Solution**

Tivoli Directory Integrator does not claim support for the ECMA-262 specification with regards to regular expressions. See the following URL to get details on the behavior and proper usage of the particular regular expression library that the IBM Java Script Engine uses: <http://java.sun.com/j2se/1.5.0/docs/api/java/util/regex/Pattern.html>.

## **Launchpad exit confirmation window title bar displays incorrectly in Firefox browser**

When you start **Launchpad**, one of the options in the left navigation area is **Exit**. When you click **Exit**, a confirmation dialog box appears, giving the options **OK** and **Cancel**. The title bar of the confirmation window should display IBM Tivoli Directory Integrator Install Launchpad. Firefox browsers incorrectly display the following string in the **Exit** confirmation window: Javascript Application.

This is a current limitation of Mozilla Firefox browsers. The problem may be fixed in future versions of Tivoli Directory Integrator or Firefox browsers.

## **SSL connects with expired self signed certificates**

The TrustManager shipped with IBM Java Runtime Environment (JRE) 1.5.0 verifies a certificate chain up to the trusted certificate; it does not verify the trusted certificate itself. If the self-signed certificate is the trusted certificate, CERTPATH will not examine it to see whether the certificate is expired. Because CERTPATH does not check for self-signed certificate expiration, an SSL connection can be established with an expired certificate.

The TrustManager shipped with IBM JRE 1.4.2 verifies the entire certificate chain up to and including the trusted certificate. As a result, if an expired certificate is encountered, an exception is thrown. If you are using IBM JRE 1.5.0, but want to revert to 1.4.2 behavior regarding expired certificates, make the following changes:

In the `java.security` file of the Client JVM, change the following entry:

```
ssl.KeyManagerFactory.algorithm=IbmX509
ssl.TrustManagerFactory.algorithm=PKIX
```

```
to
ssl.KeyManagerFactory.algorithm=IbmX509
ssl.TrustManagerFactory.algorithm=IbmX509
```

If the SSL Client-Auth value is set to True, make the same change in the Server JVM's java.security file.

## Programmatically disabling components

To disable components you will need to use the Initial Work Entry (IWE) to pass a control flag. If your AssemblyLine has an Iterator, store the value in a script variable and zero out the Work Entry; otherwise the Iterator will not engage on the first cycle.

For example, to disable a branch, you can use a script like this:

```
var branchEnabled = work.getString("enableBranch"); task.setWork(null);
```

Then set your Branch to "Match All" and include a scripted condition like this:

```
ret.value = branchEnabled.equals("yes");
```

If you intend to use IWE, you must use an extra attribute that you must clear out before continuing.

Disabling connectors is difficult and requires modifying the Config object before starting the AssemblyLine. If the connector is not disabled before you start the AssemblyLine, it will be initialized even if you disable it in the prolog before initialization. Modifying the in-memory Config object is possible, but not advised. An alternative is to set your connector to passive, but this will not help if you are trying to avoid an initialization completely.

## Specifying multiple Configs to the `ibmdisrv` command

The `-c` switch does not work with multiple filenames.

### Cause

The `-c` switch has been designed so that a single configuration filename can be passed to the `ibmdisrv` command. If you do not specify the `-d` switch, only one configuration file is allowed.

### Solution

`ibmdisrv` cannot be used to specify the AssemblyLines, using the `-r` switch, when the `-c` (config file) option specifies multiple Configs. Because the `-r` option is not operative while loading multiple Configs, you have to use either the autostart option or use `-d` and start the AssemblyLine using the Administration and Monitoring Console Interface.

Example:

With the AssemblyLines in the autostart folder, use this command to start multiple configs and AssemblyLines using `ibmdisrv`. You must specify the autostart option for the corresponding AssemblyLines.

```
ibmdisrv -d -c C1.xml,C2.xml
```

You can also start AssemblyLines on a running server other than the Administration and Monitoring Console using the `tdisrvctl` command in the `bin` folder.

## RHEL 5.0 (or any other system with SELinux enabled), Tivoli Directory Integrator 7.0 commands fail with "Failed to find VM – aborting" message

When using Tivoli Directory Integrator on a computer system that is running the Red Hat Enterprise Linux (RHEL) 5.0 operating system, or while using Tivoli Directory Integrator on a computer system that is running any security-enhanced Linux (SELinux) operating system, a customer may see the error Failed to find VM - aborting when trying to invoke the Tivoli Directory Integrator server, Configuration Editor, or other Tivoli Directory Integrator commands.

### Cause

RHEL 5.0 has a new security feature named "Security Enhanced Linux", or SELinux. A weaker version of SELinux was included in RHEL 4.0, and was disabled by default. RHEL 5.0 enables SELinux by default. 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 1.5 from running properly.

The Tivoli Directory Integrator installer issues the command `chcon -R -t textrel_shlib_t <install_dir/jvm/jre>` to set the permissions. If for some reason the `chcon` command failed, or was unavailable, the Tivoli Directory Integrator JRE is prevented from running by SELinux.

### Solution

To fix this issue, you can choose *one* of the following options:

**Note:** Substitute the installation path *tdi\_install\_dir*, for an installation path such as `/opt/IBM/TDI/V7.0`.

- Change the mode of SELinux to **Permissive** by entering **setenforce 0** on the command line. Note, however, that SELinux is fully enabled again the next time the system is rebooted or if **setenforce 1** is entered on the command line. You must fix the permissions each time you run Tivoli Directory Integrator.
- Configure SELinux so that it knows that the IBM JRE 1.5 shared libraries shipped with Tivoli Directory Integrator are acceptable to run. To make the JRE 1.5 shared libraries acceptable, run the command: `chcon -R -t textrel_shlib_t tdi_install_dir/jvm/jre`.
- Edit the `/etc/selinux/config` file and set SELinux to either permissive or disabled. This solution, however, affects the level of security for the entire system.

---

## General troubleshooting

The following sections describe general problems and solutions in IBM Tivoli Directory Integrator:

### Certain scripted utilities must be invoked in specific way

On Linux/UNIX systems, a number of utilities in the `TDI_install_dir/bin` directory must be invoked in a specific way due to scripting limitations. For example, a given utility script like `tdiVerifyInstall.sh` can be invoked as follows (assuming you are in the `TDI_install_dir/bin` directory):

```
./tdiVerifyInstall.sh
or
sh ./tdiVerifyInstall.sh
or
```

```
sh <absolute path>/tdiVerifyInstall.sh
or
tdiVerifyInstall.sh
or
sh tdiVerifyInstall.sh
```

The latter two invocations may yield an error like the following output shows:

```
which: no tdiVerifyInstall.sh in (/sbin:/usr/sbin:/usr/local/sbin:/root/bin:/usr/local/bin:/usr/bin:/usr/X11R6/bin:/usr/games:/usr/lib/mit/bin:/usr/lib/mit/sbin)
dirname: missing operand
Try `dirname --help' for more information.
```

This is because the script fails to determine the absolute path of itself if invoked in those ways. Use one of the three first invocation ways instead.

## System Store database might get corrupted when shutting down an AssemblyLine that uses Derby in embedded mode

When the configuration instance of an AssemblyLine is terminated on demand, this may cause corruption of the Derby database (applies only to Derby in embedded mode).

If that happens, on subsequent runs the Server may report an error with the System Store like: "java.sql.SQLException: Directory C:\tdi\TDISysStore already exists."

A configuration instance is terminated on demand when:

- `shutdownServer()` method is invoked on the config instance that contains the AssemblyLine (e.g. call "main.shutdownServer()" in a script inside the AssemblyLine)
- `stop()` method is invoked using the ConfigInstance Server API interface, while an AssemblyLine from that configuration instance is still running.

To avoid the problem, either do not use termination on demand or do not use Derby in embedded mode.

## Cannot connect to TDI server from a remote machine even though the TDI server says the server API has started

This is a problem that can occur on certain platforms. It all depends on how the platform resolves a hostname to an IP address when the hostname is represented by several IP addresses in the hosts file (or whatever mechanism is used to resolve hostnames). In order to troubleshoot the problem, check the following items:

### 1. Verify basic network connectivity

First you should verify that there is a connection between the Config Editor (CE) workstation and the TDI server machine. Use `ping ip-address` to see if there is a path to the server where the TDI server runs. If the ping command fails, it could be that the firewall on the remote server has blocked this service.

### 2. Check firewalls

Second, you should check the remote machine (or path to it) to see if it blocks access to ports used by the TDI server.

### 3. Check RMI and multiple `/etc/hosts` entries

The error message in the CE will indicate a connection failure to an IP address that does not match the IP address you specified in the server document.

One reason for this may be that there are multiple entries in the /etc/hosts file on the TDI server side and one of them is inaccessible from the CE workstation.

On SLES 11 you will typically find an additional entry in the hosts file for the servers hostname (127.0.0.2 <hostname>). In the CE, if you see that it cannot connect to "127.0.0.\*" this is an indication that this is the case. You can either remove this entry or tell TDI specifically which IP address to use for the server API.

If you choose the latter, then before starting "ibmdisrv" edit the script and modify the line that starts the server:

```
"$TDI JAVA PROGRAM" -Djava.rmi.server.hostname=<ip-address> $TDI MIXEDMODE_FLAG
-cp "$TDI_HOME_DIR/IDILoader.jar" "$LOG_4J" com.ibm.di.loader.IDILoader com.ibm.di.server.RS "$@"
```

The <ip-address> should be replaced with the proper IP address for the server where the TDI server runs. This is also the IP address you use in your server document connection string.

## OutOfMemoryError thrown when an AL in manual mode makes huge number of attempts to initialize

### Problem Description:

This problem is seen when your solution meets the following conditions:

- You have a configuration in which one AL is repeatedly started in manual mode.
- That AL have a connector that is not able to initialize normally due to some network related problem or a 3-rd party system failure.
- Your solution tries to make a great number of attempts to restart the AL in manual mode (the number depends on the amount of memory the JVM is allowed to occupy) and the 3-rd party system still fails on each attempt.

### Test observations:

On a machine with 3 GB of system memory the AL had failed to initialize more than 30000 times before this could be seen.

### Possible solution:

This only affects ALs failing to initialize when started in Manual Mode. If your solution allows it, start the AL in Normal Mode instead and wait for it to complete, otherwise please contact technical support.

## Remote Command Line Function Component can execute shell scripts remotely only if there are no carriage returns in the shell script

You can use the Remote Command Line Function Component to execute shell scripts remotely (limited to the capabilities of the shell), but do not insert carriage returns into your shell script. Perform these steps:

1. Enter target system details such as:
  - Hostname
  - Remote user
  - Password
2. Enter the command /bin/sh.

**Note:** Any shell script with a carriage return will not execute successfully.  
Avoid carriage returns in shell scripts.

3. Provide the local stdin source file as, for example, `test.sh`, where `test.sh` is the shell script, to be executed remotely, that is stored on the local system.

## java.io.IOException: The pipe has been ended

You can find the following message: The java class is not found:  
Files\IBM\Tivoli Directory Integrator\V6.1\IDILoader.jar  
com.ibm.di.server.RS - r AssemblyLines.allied -S C:\Documents in either the:

- Tivoli Directory Integrator Configuration Editor AssemblyLine output.
- `ibmdisrv server log Tivoli Directory Integrator Installation\logs\ibmdi.log`.

### Cause

This is a problem with the PATH variable that Tivoli Directory Integrator references from the OS. Tivoli Directory Integrator sets the PATH variable in both the `ibmditk.bat` and `ibmdisrv.bat`, and ends the assignment with the system path - `%PATH%`. If your system path ends with a `"\"`, it will cause this error to occur.

### Solution

The reason the PATH variable is misbehaving is because the last entry might have the PATH variable ending with a `"\"`, instead of `;"`.

Hence,

```
PATH=C:\SomeProgram\bin;C:\Tivoli Directory Integrator (This is OK).
PATH=C:\SomeProgram\bin;C:\Tivoli Directory Integrator; (This is OK).
PATH=C:\SomeProgram\bin;C:\Tivoli Directory Integrator\; (This is OK).
PATH=C:\SomeProgram\bin;C:\Tivoli Directory Integrator\ (This is not OK).
```

## Error occurs when an encrypted password exceeds the size of the table column in which the password is stored

An error occurs when an encrypted password exceeds the size of the column where the password is stored:

```
ORA 12899 value too large for column "System".TESTPASSWD"."test1"(actual 178 , maximum 50)
```

To work around this problem, ensure that the tables used to store passwords are sufficiently large.

## AssemblyLine Flow

### Connector in Lookup mode with no match in a loop component causes error

Normally a connector in Lookup mode expects only one hit, and if more than one hit occurs, you are given the opportunity to remedy the situation using error Hooks **On Multiple Entries** or **On No Match**. Connectors in the Loop Component behave differently:

- **On Multiple Entry** is never called.
- **On No Match** is called only if no match is returned by the Lookup Connector.

If the Lookup Connector finds no entries, the following error occurs:  
java.lang.Exception: [IF\_MgrFound] Entry not found

Occasionally a crash also occurs if the exception is not caught.

To work around this error, enable the **No Entry Found** Hook without any code in it.

### **Advanced link criteria for a Lookup Connector in a Loop deleted when saving config**

To prevent deletion of advanced link criteria, put your advanced Link Crit in a connector in your Library that you use in the Loop. Then you will inherit the Link Crit as well.

## **ibmdisrv -c switch does not allow you to work with multiple file names**

If you want to use more than one configuration file on the `ibmdisrv` command line, you must also specify the `-d` switch (Run in daemon mode) in addition to the `-c` switch. If you do not specify the `-d` switch, only one configuration file is allowed.

## **tdisrvctl not listing created tombstones when -c option specifies file name**

The problem is observed for configurations that have a solution name defined. When you request tombstones for such configuration by specifying the configuration file name instead of the solution name, no tombstones are found.

When querying tombstones, you can use a configuration file name for the `-c` option only when the configuration file contains no Solution Name:

```
tdisrvctl -op tombstone -c myconfig.xml -r al
```

In all other cases you must specify a configuration instance id or you will get no results:

```
tdisrvctl -op tombstone -c myconfig -r al
```

Note that from version 7.0 the Config Editor puts a Solution Name in each configuration file by default.

## **Memory Leaks**

### **Reinitialization of connectors**

If you reinitialize connectors a lot, make sure to use their `terminate()` method before you call their `initialize()` method. The classic example is an `AssemblyLine` starting up but not able to connect to your data source. If the connector is not terminated before being initialized again, you might leak memory.

---

## **Platform specific problems**

### **IBM Message Queue (MQ) Connector (JMS) on z/OS**

The following issue is for z/OS. An error results if you use the IBM MQ 6.0 and client jars from the MQ 6.0 installation. The following error is reported:

```
javax.jms.JMSEException: MQJMS2005: failed to create MQQueueManager for '9.182.182.232:
at com.ibm.mq.jms.services.ConfigEnvironment.newException(ConfigEnvironment.java:546)
```



To avoid the error, use MQ 5.3 library jar files on the JMS Connector system (z/OS).

When Tivoli Directory Integrator runs on z/OS, the JMS Connector and the System Queue cannot use WebSphere MQ as the JMS provider, because of a limitation in WebSphere MQ (WebSphere MQ doesn't support client code on z/OS).

## **Domino User's Connector running on AIX 5.3 with Domino Server 7.0**

The following issue is for the AIX operating system only.

While running the Local Server Session on AIX, the Domino User's Connector generates an error during initialization.

To avoid the error, use the Domino User's Connector on a different system and connect to the Domino server on AIX using a Local Client Session.



---

## Chapter 10. Troubleshooting scenarios

This chapter contains some troubleshooting scenarios you might encounter and provides some solutions.

---

### Log files not showing up or showing up after only the second run of the server

If log files are not showing up, the problem is probably that log4j.properties does not exist in the solution directory before the server is run. The log4j.properties is one of the places where (default) log-files location is configured, so you might want to check out the file's content as well. For 6.0 this file is created by the server/ce batch-files that you start Tivoli Directory Integrator with. If you are running Tivoli Directory Integrator as a Windows service, make sure that you have followed the instructions on how to run Tivoli Directory Integrator as a Windows service.



---

## Appendix A. Support information

This section describes the following options for obtaining support for IBM products:

- “IBM Support Assistant plug-in”
- “Searching knowledge bases” on page 55
- “Obtaining fixes” on page 55
- “Contacting IBM Software Support” on page 56

---

### IBM Support Assistant plug-in

The IBM Support Assistant (ISA) is a free local software serviceability workbench that helps resolve questions and problems with IBM software products. It is a stand-alone application that can be installed on any workstation and then enhanced by installing plug-in modules for IBM products.

The three basic components of ISA are:

1. **Concurrent Search tool** – This searches across the bulk of IBM documentation as well as product infocenters and returns the results categorized by source for easy reviews.
2. **Product Information feature** – This has links to the product home page, support page, news groups, forums and other links relevant to the product.
3. **Service Feature** - This consists of a data collection tool and a problem submission tool. There are two types of data collection tools.

The first type is the System Collector that is provided by ISA and gathers general information from your operating system, registry, and so forth.

The second type is a product specific data collector that is driven by a control file defined by the respective product teams. Collector output file names have the format collector\_timestamp.jar. These JARs can then be attached to a problem report.

The problem submission tool helps in the creation and submission of problem reports. To log into the tool, called ESR (Electronic Service Request), you need the following information:

- IBM ID
- IBM password
- IBM customer number
- Country or region

IBM Support Assistant can be downloaded from <http://www-306.ibm.com/software/support/isa/>.

A useful demo on ISA and its features can be found at <http://publib.boulder.ibm.com/infocenter/ieduasst/v1r1m0/index.jsp>.

Detailed information for developers can be obtained from [https://wst.austin.ibm.com/isahome/dev\\_corner.html](https://wst.austin.ibm.com/isahome/dev_corner.html).

The Tivoli Directory Integrator version of the Plug-in gathers the following info from the TDI Installation (and Solution Directory, if defined):

1. Logs from the *TDI\_install\_dir/logs* folder – *ibmdi.log*, *ibmditk.log*, *tdisrvctl.log*
2. For Tivoli Directory Integrator versions prior to v7.0, all property, XML and rules files from the *TDI\_install\_dir/etc* folder:

*build.properties*  
*ce-log4j.properties*  
*CSServersInfo.xml*  
*derby.properties*  
*executetask.properties*  
*global.properties*  
*jlog.properties*  
*log4j.properties*  
*reconnect.rules*  
*tdisrvctl-log4j.properties*

3. From Tivoli Directory Integrator v7.0 onwards various issues will be categorized. You will have the option to select a category and only the log files pertaining to that category will be collected. The following categories are available:

- TDI Server Related Issues.
- AMC Related Issues.
- TDI Install Related Issues.
- TDI Config editor Related Issues.
- TDI Plug-in Related Issues.

You have the option to select anyone of these issues and start collecting files by clicking the **Collect** button. After selecting the type of issue, you are prompted to specify appropriate directory paths to collect various log files. The default TDI installation folders (on Windows/Linux/UNIX) are supplied by default for convenience.

Also, a PMR number should be specified and the output .zip file with the collected info will be placed in the installation directory specified, with the following name:

`ISA_[Type]_PMR#[Number].zip`

where [Type] can be Server/AMC/Install/CE/Plugins and [Number] is the PMR number specified (none if left empty).

Details about the files being collected are as follows:

#### **TDI Server Related Issues**

You will be prompted to provide the Tivoli Directory Integrator installation directory as well as a solution directory (leave blank if you do not want to specify solution folder ) and a PMR number. Also, the following note prompts the user to turn his log level to DEBUG if his problem is easily re-creatable:

Note: If your problem is easily re-creatable and you use the default Log4J logging it is best if you set your logging root category to DEBUG in `etc\log4j.properties` and enable detailed log for your problematic components. Then you should re-run your scenario and come back to this dialog to collect the logs with detailed information for your problem.

The following files are collected:

- a. *ibmditk.bat(.sh)*

- b. `ibmdisrv.bat(.sh)`
- c. `derby.log`
- d. `ibmdiservice.props`
- e. `TDI_install_dir/etc/*.properties`
- f. `TDI_install_dir/etc/*.properties/*.xml`
- g. `TDI_install_dir/etc/*.properties/reconnect.rules`
- h. `TDI_install_dir/system_logs/*.log`
- i. `TDI_install_dir\win32_service\*.properties` (on Windows)
- j. List of all `.jar` files
- k. Component version information
- l. Host, memory, and list of started services.

#### AMC related issues

The following files are collected:

- a. `amc.properties`
- b. `am_config.properties`
- c. `am_logging.properties`
- d. `tdimigam-log4j.properties`
- e. All files inside the `TDI_install_dir\lwi\runtime\isc\eclipse\plugins\AMC_7.1.0\WEB-INF` folder.
- f. All the log files inside the `TDI_install_dir\bin\amc\ActionManager\logs` folder.
- g. All properties files inside the `TDI_install_dir\bin\amc` folder
- h. All properties files inside the `TDI_install_dir\lwi\runtime\isc\eclipse\plugins\AMC_7.1.0\WEB-INF\classes` folder

#### Install related issues

You will be prompted to provide the temp directory on the machine that the installer has used to store the collected files (for example, corresponding to the TEMP environment variable on Windows) as well as the Tivoli Directory Integrator installation directory, Common Solution Install directory and PMR Number.

Note that on z/OS the temp directory is `/temp/InstallShield`.

The following files are collected:

- a. `temp/tdiv71install.log`
- b. `temp/tdiv71uninstall.log`
- c. `temp/tdiSoldir.log`
- d. `temp/tdiSoldirERR.log`
- e. `temp/tdiMQeCreate.log`
- f. `temp/tdiMQeCreateERR.log`
- g. `common_solution_dir/logs*/si_trace.log`
- h. Information for installed components and fixpacks applied collected using `applyUpdates.bat(.sh)` script and saved in `TDI_install_dir/TDIUpdateInstaller.txt`

#### Config editor related issues

You will be prompted to provide the Tivoli Directory Integrator installation directory and PMR number.

The following files are collected:

- a. *TDI\_install\_dir*/ibmditk.bat(sh)
- b. *TDI\_install\_dir*/ce/eclipsece/configuration/config.ini
- c. *workspace*/.metadata/\*.log

#### **TDI Plugin Related Issues**

You will need to specify the plugins installation directory (which normally is *TDI\_install\_dir*/pwd\_plugins) and PMR number, and for each of the following plugins the files mentioned below them will be collected.

##### **Domino Plug-in**

- a. *TDI\_install\_dir*\pwd\_plugins\domino\\*.props
- b. *TDI\_install\_dir*\pwd\_plugins\domino\\*.log

##### **PAM Plug-in**

- a. *TDI\_install\_dir*\pwd\_plugins\pam\\*.props
- b. *TDI\_install\_dir*\pwd\_plugins\pam \\*.log

##### **SunOne Plug-in**

- a. *TDI\_install\_dir*\pwd\_plugins\sun\\*.props
- b. *TDI\_install\_dir*\pwd\_plugins\sun \\*.log

##### **TDS Plug-in**

- a. *TDI\_install\_dir*\pwd\_plugins\tds\\*.props
- b. *TDI\_install\_dir*\pwd\_plugins\tds \\*.log

##### **Windows Plug-in**

- a. *TDI\_install\_dir*\pwd\_plugins\windows\\*.props
- b. *TDI\_install\_dir*\pwd\_plugins\windows \\*.log
- c. *TDI\_install\_dir*\pwd\_plugins\windows \\*.reg

4. A list of all jars present in the *TDI\_install\_dir*/jars folder
5. Versions of all Tivoli Directory Integrator components
6. If you have selected AMC related issues – amc.property files, all files in the WEB-INF folder and amc logs will be collected
7. If the Solution Directory is different from the *TDI\_install\_dir*, then along with solution.properties all logs and property files as mentioned above are collected from the solution directory

The Tivoli Directory Integrator version of the ISA plugin has been instrumented with the proper access information in order to support the process of sending the collected files through HTTP or FTP.

## **IBM Support Assistant for Tivoli Directory Integrator (Tivoli Directory Integrator)**

These are the steps to use IBM Support Assistant to generate problem records for Tivoli Directory Integrator:

1. Download ISA version 4.0, from <http://www-306.ibm.com/software/support/isa/>.
2. Open ISA, select the **Updater** tab and then select the **New Products and Tools** tab.
3. Select IBM Tivoli Directory Integrator 7.1 from the available plug-ins list and install.
4. Restart ISA to start using the tool for Tivoli Directory Integrator.



5. Or alternatively, if the plug-in and features folder are available then drop the plug-in (com.ibm.esupport.client.product.SSCQGF71\_4.0.0.20080815) into the plugin and feature (com.ibm.esupport.client.product.SSCQGF71.feature\_4.0.0.00) into features folder of ISA and restart ISA.

---

## Searching knowledge bases

If you have a problem with your IBM software, you want it resolved quickly. Begin by searching the available knowledge bases to determine whether the resolution to your problem is already documented.

### Search the information center on your local system or network

IBM provides extensive documentation that can be installed 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, reference information, and support documents.

### 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, expand the product folder in the navigation frame to the left and select **Web search**. From this topic, you can search a variety of resources including:

- IBM technotes
- IBM downloads
- IBM Redbooks®
- IBM developerWorks®
- Forums and newsgroups
- Google

---

## Obtaining fixes

A product fix might be available to resolve your problem. You can determine what fixes are available for your IBM software product by checking the product support Web site:

1. Go to the IBM Software Support Web site (<http://www.ibm.com/software/support>).
2. Under **Products A - Z**, select your product name. This opens a product-specific support site.
3. Under **Self help**, follow the link to **All Updates**, where you will find a list of fixes, fix packs, and other service updates for your product. For tips on refining your search, click **Search tips**.
4. Select the name of a fix to read the description and optionally download the fix.

To receive weekly e-mail notifications about fixes and other news about IBM products, follow these steps:

1. From the support page for any IBM product, click **My support** in the upper-right corner of the page.

2. If you have already registered, skip to the next step. If you have not registered, click register in the upper-right corner of the support page to establish your user ID and password.
3. Sign in to **My support**.
4. On the My support page, click **Edit profiles** in the left navigation pane, and scroll to **Select Mail Preferences**. Select a product family and check the appropriate boxes for the type of information you want.
5. Click **Submit**.
6. For e-mail notification for other products, repeat Steps 4 and 5.

For more information about types of fixes, see the *Software Support Handbook* (<http://techsupport.services.ibm.com/guides/handbook.html>).

---

## 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 Web page ([http://www.lotus.com/services/passport.nsf/WebDocs/Passport\\_Advantage\\_Home](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 Web site (<http://techsupport.services.ibm.com/guides/contacts.html>) and select the name of your geographic region.
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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 or, from other countries, go to the contacts page of the IBM Software Support Handbook on the Web (<http://techsupport.services.ibm.com/guides/contacts.html>) and select the name of your geographic region for phone numbers of people who provide support for your location.

Follow the steps in this topic to contact IBM Software Support:

1. Determine the business impact of your problem.
2. Describe your problem and gather background information.
3. Submit your problem to IBM Software Support.

## Determine the business impact of your problem

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 you are reporting. Use the following criteria:

|                   |                                                                                                                                                                  |
|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Severity 1</b> | <b>Critical</b> business impact: You are unable to use the program, resulting in a critical impact on operations. This condition requires an immediate solution. |
| <b>Severity 2</b> | <b>Significant</b> business impact: The program is usable but is severely limited.                                                                               |
| <b>Severity 3</b> | <b>Some</b> business impact: The program is usable with less significant features (not critical to operations) unavailable.                                      |
| <b>Severity 4</b> | <b>Minimal</b> business impact: The problem causes little impact on operations, or a reasonable circumvention to the problem has been implemented.               |

## Describe your problem and gather background information

When explaining 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 the problem be re-created? If so, what steps led to the failure?
- Have any changes been made to the system? (For example, hardware, operating system, networking software, and so on.)
- Are you currently using a workaround for this problem? If so, be prepared to explain it when you report the problem.

## Submit your problem to IBM Software Support

You can submit your problem in one of two ways:

- **Online:** Go to the "Submit and track problems" page on the IBM Software Support site (<http://www.ibm.com/software/support/probsub.html>). Enter your information into the appropriate problem submission tool.
- **By phone:** For the phone number to call in your country, go to the contacts page of the IBM Software Support Handbook on the Web ([techsupport.services.ibm.com/guides/contacts.html](http://techsupport.services.ibm.com/guides/contacts.html)) and select the name of your geographic region.

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 for you to implement until the APAR is resolved and a fix is delivered. IBM publishes resolved APARs on the IBM product support Web pages daily, so that other users who experience the same problem can benefit from the same resolutions.

For more information about problem resolution, see Searching knowledge bases and Obtaining fixes.



---

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# Index

## A

accessibility vii  
    keyboard vii  
    shortcut keys vii  
Accessibility vii

Software Support (*continued*)  
    submitting problem to IBM Software  
    Support 57

## C

customer support  
    see Software Support 56

## D

disability vii

## F

fixes, obtaining 55

## I

information centers, searching to find  
    software problem resolution 55  
Internet, searching to find software  
    problem resolution 55

## K

Keyboard shortcuts vii  
knowledge bases, searching to find  
    software problem resolution 55

## M

messages, resolving 3

## P

problem determination  
    describing problem for IBM Software  
    Support 57  
    determining business impact for IBM  
    Software Support 57  
    submitting problem to IBM Software  
    Support 57

## S

shortcut keys  
    keyboard vii  
Software Support  
    contacting 56  
    describing problem for IBM Software  
    Support 57  
    determining business impact for IBM  
    Software Support 57







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